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<p>1 February 16, 2012</p> <p>2 (9:45 a.m.)</p> <p>3 CHAIRMAN:</p> <p>4 Q. Good morning, everybody. I got one request to</p> <p>5 make before we start. Anybody got cell phones</p> <p>6 here, please turn them off, please. There was</p> <p>7 a phone going off yesterday and the day</p> <p>8 before, and I don't know about you guys, but</p> <p>9 it drives me right up the wall literally.</p> <p>10 It's a minor obsession. Before we start, I</p> <p>11 think Madam Greene has some preliminary</p> <p>12 matters to raise.</p> <p>13 GREENE, Q.C.:</p> <p>14 Q. Yes, thank you, Mr. Chair. In terms of the</p> <p>15 process, I thought it would be helpful if we</p> <p>16 just reviewed for the public who are listening</p> <p>17 today a little bit more information about the</p> <p>18 process as we move forward. First with</p> <p>19 respect to questions from the public, the</p> <p>20 Board has received a number of questions and</p> <p>21 we have forwarded these questions to the</p> <p>22 Consumer Advocate, who has, as you know, posed</p> <p>23 questions throughout the process from</p> <p>24 consumers and the public can, of course,</p> <p>25 continue to forward questions in the same way.</p>	<p>1 will be posting the public comments on the</p> <p>2 Board's website as well. So again the</p> <p>3 deadline if anybody is listening to the</p> <p>4 webcast or here in the room who would like to</p> <p>5 file written comments, but not make a formal</p> <p>6 presentation next week, the deadline for</p> <p>7 written comments is February 29th. The next</p> <p>8 step in the process, of course, is written</p> <p>9 submissions from the Consumer Advocate and</p> <p>10 Nalcor, which will be filed on March 2nd, and</p> <p>11 then the Board's report to Government is due</p> <p>12 by the end of March. The last thing that I</p> <p>13 wanted to mention this morning because it</p> <p>14 would be of interest to the people here in the</p> <p>15 room, and to the members of the public who are</p> <p>16 watching, is information with respect to the</p> <p>17 webcast. This is the first time that the</p> <p>18 Board has used the webcast process to allow</p> <p>19 any member of the public who wishes to observe</p> <p>20 the process to be able to do so without</p> <p>21 actually coming to the hearing room, and we do</p> <p>22 have some statistics, I don't think we're up</p> <p>23 there with Oprah or -</p> <p>24 CHAIRMAN:</p> <p>25 Q. Another World.</p>
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<p>1 Secondly, yesterday was the deadline for</p> <p>2 requests for presentations to be made next</p> <p>3 week. We have received a number of requests</p> <p>4 for presentations. We are now coordinating</p> <p>5 with the individuals who have made requests to</p> <p>6 do a presentation with respect to the outline</p> <p>7 or the content of their presentations and the</p> <p>8 timing. That coordination should be complete</p> <p>9 by tomorrow and the Board will be posting a</p> <p>10 schedule tomorrow on the website relating to</p> <p>11 the presentations for next week. Four days</p> <p>12 were set aside next week for public</p> <p>13 presentations, and the schedule for the actual</p> <p>14 days that we will be hearing the</p> <p>15 presentations, as I said, will be posted and</p> <p>16 will be available on the Board's website</p> <p>17 tomorrow. The Board has also provided for</p> <p>18 parties who wish to make comments to be able</p> <p>19 to post them on the public record as well.</p> <p>20 There is a - when you go to the Board's</p> <p>21 website, you will see the process for how you</p> <p>22 can file written comments. We have also</p> <p>23 received a number of written comments so far.</p> <p>24 The deadline for any member of the public who</p> <p>25 wishes to file comments is February 29th. We</p>	<p>1 GREENE, Q.C.:</p> <p>2 QQ. Another World, but from the Board's</p> <p>3 perspective, this is new, it's the first time</p> <p>4 we've used the process and it's interesting to</p> <p>5 see the level of interest that's there, and we</p> <p>6 were able to determine the number of unique or</p> <p>7 live hits on the website. I don't have the</p> <p>8 information with respect to people who've</p> <p>9 looked at it, the archives yet, but from</p> <p>10 people who are watching live, on Monday there</p> <p>11 was about 640 unique hits, on Tuesday we</p> <p>12 peaked at about 900, yesterday was 540. So to</p> <p>13 the members of the public who are watching us</p> <p>14 at home, that gives you an idea of the level</p> <p>15 of interest and people who are actually</p> <p>16 watching us as we do what sometimes may</p> <p>17 appear, especially watching it on a camera, to</p> <p>18 be a bit boring as we go through</p> <p>19 documentation, but - and we will do an update</p> <p>20 after with respect to it. So it does appear</p> <p>21 there is a level of interest of people who are</p> <p>22 actually watching us live at home.</p> <p>23 CHAIRMAN:</p> <p>24 Q. So you can all say you had your fifteen</p> <p>25 minutes of fame. I don't know who said that,</p>

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<p>1 but someone said everybody should get fifteen 2 minutes. 3 MR. JOHNSON: 4 Q. Warhol. 5 CHAIRMAN: 6 Q. Andy Warhol. Good for you, sir, that's exactly 7 right. 8 GREENE, Q.C.: 9 Q. The last comment, I should say, is on the 10 outstanding questions and I think Mr. Johnson, 11 the Consumer Advocate, is going to speak to 12 this question, there are a number of questions 13 that have been posed by the Consumer Advocate 14 that have not yet been responded to by Nalcor, 15 and counsel have agreed that following our 16 conclusion of the hearings here today, we will 17 be meeting to discuss those questions and the 18 timing around those questions. I'm not sure 19 if there's anything else you wanted to say, 20 Mr. Johnson. 21 MR. JOHNSON: 22 Q. Other than - thank you, Ms. Greene, other than 23 that, there'll be more written questions filed 24 as of today that were receiving yesterday and 25 early this morning. The other thing, just to</p>	<p>1 subsequent to that. These hearing started on 2 the 13th and there was a fair bit of time 3 spent, Nalcor's resources and personnel 4 preparing for this, so we've had to make a 5 decision as to how best to deal with and 6 prepare for this or put people that otherwise 7 would be engaged in this process answering 8 RFIs. Nalcor is doing the best it can to 9 respond to those RFIs, and now that the 10 process - some of the panel are not necessary, 11 we can get back to answering those. So we're 12 doing the best we can on that, but there are 13 limitations on how we can respond. 14 CHAIRMAN: 15 Q. We will leave it in your capable hands, sir. 16 O'REILLY, Q.C.: 17 Q. Thank you. 18 CHAIRMAN: 19 Q. Now are we back to Mr. Johnson? 20 GREENE, Q.C.: 21 Q. Yes, thank you, Mr. Chair. 22 MR. JOHNSON: 23 Q. Good morning, gentlemen. MHI might be a 24 household name in Newfoundland, but you're not 25 household faces, I guess, is the take-away</p>
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<p>1 follow-up on the point about the identity of 2 questioners, as I understand there's been some 3 inquiries about, you know, when I'm posing a 4 question, who is giving me the question to 5 pose, and generally unless someone has said go 6 ahead and use my identity when you're asking 7 the question, I preserve the fact that they 8 don't necessarily want their name attached to 9 a particular question, no more are they 10 obliged to. 11 GREENE, Q.C.: 12 Q. And similarly with respect to people who are 13 posting comments, the Board will not release 14 the name of the individual without the consent 15 of that individual, and there is a process in 16 place around that as well with the Board. 17 CHAIRMAN: 18 Q. Okay, so I think we're back to Mr. Johnson 19 now, are we, is that correct? 20 O'REILLY, Q.C.: 21 Q. Mr. Chairman, just one remark about the RFIs 22 that have been filed. Nalcor has responded 23 to, I think, all of the RFIs submitted up to 24 February 6th, I think is the last batch that 25 we received, and we received other RFIs</p>	<p>1 from those viewing statistics. We had talked 2 yesterday a little bit about sensitivity 3 testing and I'm going to come back to that in 4 a second, but I want to draw your attention 5 first to the CPW analysis key finding, which 6 appears at page 88 of Volume 1. In that 7 bullet the third line down, you indicate the 8 detailed analysis performed by MHI determined 9 that Nalcor's cumulative present worth 10 analysis was completed using recognized best 11 practices and the cumulative present worth for 12 each option was correct, based on the inputs 13 used by Nalcor, and then you say these inputs 14 were reviewed and the technical and financial 15 analyses conducted by MHI was generally found 16 to be appropriate. Then you say, "There are, 17 however, other considerations related to risks 18 associated with the assumptions used for 19 certain key inputs, such as load, fuel prices, 20 and cost estimates, which may impact the 21 cumulative present worth analysis for the two 22 options", and those were the very factors that 23 we were discussing somewhat and has been 24 discussed in this hearing in connection with 25 sensitivity. Then you go on to say that these</p>

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<p>1 were tested with the use of several</p> <p>2 sensitivity analysis, and I just want to, I</p> <p>3 guess, talk generally about the three things</p> <p>4 that you have talked about which are at -</p> <p>5 which you have identified as being involving</p> <p>6 considerations related to risks associated</p> <p>7 with the assumptions used for certain key</p> <p>8 inputs; load, fuel prices, and cost estimates.</p> <p>9 I guess dealing with the fuel price risk, if I</p> <p>10 could put that in some sort of bucket, I take</p> <p>11 it whenever you would be comparing an option</p> <p>12 that had fuel as a component versus something</p> <p>13 that maybe had less or more fuel, that a fuel</p> <p>14 price risk is a normal or a universal type of</p> <p>15 risk as opposed to the particular discussion,</p> <p>16 for instance, we had on load having to do with</p> <p>17 a particular industrial customer or a</p> <p>18 particular load lasting for whatever period.</p> <p>19 Are they different in nature?</p> <p>20 MR. WILSON:</p> <p>21 Q. Paul Wilson. Of course, you have to recognize</p> <p>22 that they are different in nature and you have</p> <p>23 to treat them appropriately in your analysis.</p> <p>24 MR. JOHNSON:</p> <p>25 Q. And, you know, I guess, the fuel price risk,</p>	<p>1 the high side has been significantly more than</p> <p>2 that relative to the low side, but there</p> <p>3 definitely has been volatility and that's a</p> <p>4 fair statement to make.</p> <p>5 MR. JOHNSON:</p> <p>6 Q. And in terms -</p> <p>7 CHAIRMAN:</p> <p>8 Q. Pre 1859.</p> <p>9 MR. KAST:</p> <p>10 Q. Pardon me?</p> <p>11 CHAIRMAN:</p> <p>12 Q. 1859 was the first well, oil well.</p> <p>13 MR. KAST:</p> <p>14 Q. There you go.</p> <p>15 CHAIRMAN:</p> <p>16 Q. So you have to go back then. That's when it</p> <p>17 all started.</p> <p>18 MR. JOHNSON:</p> <p>19 Q. Ever since the Monte Carlo, I'm afraid.</p> <p>20 CHAIRMAN:</p> <p>21 Q. I can't get over that one either. Blame Mr.</p> <p>22 Bennett for that, I suppose.</p> <p>23 MR. JOHNSON:</p> <p>24 Q. I was going to say it was a Chevrolet, but -</p> <p>25 CHAIRMAN:</p>
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<p>1 that never goes away in - I can't imagine,</p> <p>2 it's like gravity, you know, never sleeps, but</p> <p>3 - and I guess my point is getting to your</p> <p>4 statement on fuel price where you indicate at</p> <p>5 the bottom of page 88, "There remains</p> <p>6 significant uncertainty in fuel price</p> <p>7 forecasts. Global disruptions in supply could</p> <p>8 drive the price of oil well above inflation.</p> <p>9 However, new sources of supply, such as shale</p> <p>10 oil or downward trends in natural gas pricing</p> <p>11 may have the potential to minimize fuel price</p> <p>12 increases", and I guess I'll just ask this</p> <p>13 sort of question, do you know if there has</p> <p>14 ever been a time when the statement "there</p> <p>15 remains significant uncertainty in fuel price</p> <p>16 forecasts", has not been applicable?</p> <p>17 MR. KAST:</p> <p>18 Q. Mack Kast here. Well, by nature, that's a</p> <p>19 fair statement to make, there hasn't been any</p> <p>20 time. If we go back and look at the</p> <p>21 volatility of fuel pricing over the last any</p> <p>22 number of years, you will see significant</p> <p>23 volatility in pricing, and I might add that if</p> <p>24 we tried to draw a line through the pricing</p> <p>25 and look at the volatility, the volatility on</p>	<p>1 Q. Yeah, that's true too. That's right.</p> <p>2 MR. JOHNSON:</p> <p>3 Q. Then look at the risk on capital cost</p> <p>4 estimates, and is that - that's a category of</p> <p>5 risk which has a very material bearing on the</p> <p>6 relative CPW preferences, and is that a risk</p> <p>7 that we would put in a bucket akin to fuel?</p> <p>8 MR. WILSON:</p> <p>9 Q. Paul Wilson. When the team and I reviewed</p> <p>10 those risks, we felt that the fuel price risk</p> <p>11 was - maybe had a higher impact because</p> <p>12 there's less control over that input into the</p> <p>13 analysis, whereas capital cost estimates,</p> <p>14 Nalcor has a well defined process and can</p> <p>15 manage those costs through the process to some</p> <p>16 degree.</p> <p>17 MR. JOHNSON:</p> <p>18 Q. With the exception, I think, your report</p> <p>19 points out that material costs are influenced</p> <p>20 by marketing events and inputs and -</p> <p>21 MR. WILSON:</p> <p>22 Q. Yes, of course.</p> <p>23 MR. JOHNSON:</p> <p>24 Q. And I'm - and just trying to categorize or</p> <p>25 think in principle about the risk that we are</p>

1 facing here. So I guess, I'll just move then
2 to some consumer questions, and the first one
3 is in reviewing the demand projections
4 completed by Nalcor, has MHI completed any
5 assessment of the demographic changes which
6 are occurring in the Province of Newfoundland
7 and Labrador, or was it limited to the
8 econometric data used by Nalcor in the
9 analysis?

10 MR. WILSON:

11 Q. Paul Wilson. MHI did review those input
12 assumptions that were part of that econometric
13 model. Demographics, I believe, is part of
14 that in terms of inputs into that; housing,
15 household spending, those type of inputs.

16 MR. JOHNSON:

17 Q. And, I guess, they're focusing in on the
18 demographic changes. They're asking if there
19 was any assessment of demographic changes
20 which are occurring in the province.

21 MR. WILSON:

22 Q. I'd have to go back and check with my load
23 forecasting expert in that one.

24 MR. JOHNSON:

25 Q. Okay, maybe we'll just get a reply later on

1 that particular point for this individual.
2 Then the questioner goes on to say, "I have a
3 few questions further I would like to put
4 forward to MHI", and again, I guess, in
5 keeping with my policy, I'll just put the
6 question and then we can talk about its
7 relation to the reference. It says, "Manitoba
8 Hydro has several feeding tariff programs.
9 One of these classified under open access
10 transmission tariffs has two main approaches;
11 transmission tariff and interconnection
12 tariff. Another tariff program is for
13 connecting smaller energy installations that a
14 customer owned and operated. My questions for
15 Manitoba Hydro are as follows; in their basic
16 forms, how do these tariff programs function
17 and operate and succeed from a business
18 perspective; number two, can these or other
19 similar tariff programs be of benefit to
20 Newfoundland and Labrador's energy business".

21 GREENE, Q.C.:

22 Q. Mr. Chair, those questions would, in my view,
23 be beyond the mandate and the Terms of
24 Reference that are before the Board. They
25 relate to specific tariffs in Manitoba. One

1 is to explain them, and then secondly, deals
2 with tariffs relating to transmission and
3 other types of tariffs which are not issues
4 before the Board in the mandate, and I don't
5 know, Mr. Johnson, if you'd like to respond to
6 that or Mr. O'Reilly.

7 MR. JOHNSON:

8 Q. I would concur with Board counsel.

9 CHAIRMAN:

10 Q. Feed-in tariffs.

11 MR. JOHNSON:

12 Q. Another individual asks for MHI to comment on
13 the PPA method, and in particular, the
14 question is, "Have they seen it used before".

15 (10:00 a.m.)

16 MR. KAST:

17 Q. Well, I'm not sure the context of the
18 question, but, of course, the PPA has been
19 used in very many instances and it's in place
20 with respect to rates on the island.

21 MR. JOHNSON:

22 Q. I think they're probably - probably read some
23 context into it, I guess. They're probably
24 driving at the use of the PPA versus cost of
25 service, I think, would probably be a fair

1 inference.

2 MR. KAST:

3 Q. Oh, that's fair enough. I mean, there are any
4 number of ways in which costs can be recovered
5 and what one needs to look at is what's most
6 appropriate in the circumstance, and in this
7 case a decision was made with respect to
8 Muskrat Falls that the PPA was the most
9 appropriate.

10 MR. JOHNSON:

11 Q. The next question is, "Nalcor has used a CPW
12 approach which uses costs only to compare the
13 two options over a 50 year period. The cost
14 of the Muskrat Falls site have been kept
15 artificially low in the early years by Nalcor
16 by using of the PPA method for Muskrat Falls
17 sales to Hydro, which is then used in the
18 CPW". Then they make a reference to a
19 statement that MHI makes at Volume 2, page
20 185, where MHI states, "Other types of
21 analysis that are commonly used include net
22 present value and internal rate of return.
23 The net present value and the internal rate of
24 return method use both revenue and costs", and
25 the question that they wish posed to MHI is,

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<p>1 "Has MHI used the NPV and IRR method", being</p> <p>2 the internal rate of return method, "to</p> <p>3 compare to the CPW result of 2.2 billion</p> <p>4 dollars".</p> <p>5 MR. KAST:</p> <p>6 A. Mack Kast here. The NPV method takes into -</p> <p>7 is a useful approach if revenues are going to</p> <p>8 be taken into account. In this case, there</p> <p>9 are no revenues to be taken into account, and</p> <p>10 the same can be said with respect to the IRR.</p> <p>11 Therefore, the CPW approach, i.e. just</p> <p>12 discounting the values from the future back to</p> <p>13 the present is the most appropriate approach,</p> <p>14 and that's what we've used. So in short to</p> <p>15 your question, the answer is that we did not</p> <p>16 take NPV into account with respect to this</p> <p>17 because it was not possible to do so.</p> <p>18 MR. JOHNSON:</p> <p>19 Q. And why was it not possible to do so, just so</p> <p>20 the person understands?</p> <p>21 MR. KAST:</p> <p>22 A. Because there are no revenue in-flows with</p> <p>23 respect to the analysis.</p> <p>24 MR. JOHNSON:</p> <p>25 Q. There's a question that I think I'll have to</p>	<p>1 costs incurred in relation to interest during</p> <p>2 construction on account of the fact that</p> <p>3 interest during construction, or IDC, does not</p> <p>4 accrue because under the analysis question the</p> <p>5 financing of the Muskrat Falls generating</p> <p>6 station is assumed to be based on 100 percent</p> <p>7 equity, and I guess the question is what</p> <p>8 bearing would it have on a CPW comparison if</p> <p>9 you were to assume a financing for Muskrat</p> <p>10 Falls generating station using some debt.</p> <p>11 MR. KAST:</p> <p>12 A. I think the premise is - we should review the</p> <p>13 premise again, and that is the statement that</p> <p>14 there is no debt to be used. Yesterday when I</p> <p>15 was commenting on the weighted average cost to</p> <p>16 capital, I did indicate that there is a dual</p> <p>17 component that an equity component and a debt</p> <p>18 component. The equity only component relates</p> <p>19 to the overall determination of the \$75.82 per</p> <p>20 megawatt hour for power. That was the first</p> <p>21 step. The second step is with respect to as</p> <p>22 it relates to Muskrat Falls, and as it relates</p> <p>23 to Muskrat Falls, it was determined that the</p> <p>24 IRR would be 8.4 percent, but then after that</p> <p>25 I did say that to the extent that Nalcor can</p>
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<p>1 follow up with on Nalcor similarly because I</p> <p>2 don't know if it got answered on the record</p> <p>3 appropriately when the Nalcor panel was here</p> <p>4 the other day, but it's a similar question</p> <p>5 that a customer wishes to pose to MHI having</p> <p>6 to do with whether - as we know, the Muskrat</p> <p>7 Falls generating station is assumed for the</p> <p>8 purpose of the analysis to be financed with</p> <p>9 100 percent equity, accordingly interest</p> <p>10 during construction would not be applicable to</p> <p>11 that scenario. The question is if a more</p> <p>12 commercially reasonable or probable equity to</p> <p>13 debt relationship were going to prevail in</p> <p>14 relation to the financing of the Muskrat Falls</p> <p>15 generating station, how that might have an</p> <p>16 impact on the CPW calculation, and hence the</p> <p>17 preference of the in-feed option over the</p> <p>18 isolated option?</p> <p>19 MR. KAST:</p> <p>20 A. I should ask you to repeat the essence of the</p> <p>21 question, please.</p> <p>22 MR. JOHNSON:</p> <p>23 Q. The essence of the question, I think, is that</p> <p>24 in the present analysis there is assumed for</p> <p>25 the purposes of the CPW analysis to be no</p>	<p>1 introduce, and I do believe that that is the</p> <p>2 expectation, that there will be some debt and</p> <p>3 in this analysis we have 75/25 percent debt</p> <p>4 equity ratio. So there will be debt</p> <p>5 introduced into the equation, and it's been</p> <p>6 costed out and they have, in fact, calculated</p> <p>7 AFUDC and IDC in the calculations to determine</p> <p>8 the cost inputs for capital.</p> <p>9 MR. JOHNSON:</p> <p>10 Q. So would it make any difference to the CPW</p> <p>11 preference?</p> <p>12 MR. KAST:</p> <p>13 A. If debt is included?</p> <p>14 MR. JOHNSON:</p> <p>15 Q. Yes.</p> <p>16 MR. KAST:</p> <p>17 A. Well, if you - if you charge IDC or AFUDC, it</p> <p>18 does increase the capital cost. It does, but</p> <p>19 you're still going to do that - when we start</p> <p>20 talking about IDC and AFUDC, what we are</p> <p>21 really saying is that money has a cost</p> <p>22 attached to it. Now the question is, at what</p> <p>23 cost? So in either case we should be charging</p> <p>24 AFUDC or IDC. We're tying up somebody's money</p> <p>25 during the process of construction before the</p>

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<p>1 revenue stream starts to flow, so when we</p> <p>2 introduce debt, what happens is the overall</p> <p>3 cost to capital is going to decrease relative</p> <p>4 if you have 100 percent equity financing.</p> <p>5 That has been done. Now it's a question of at</p> <p>6 what rate.</p> <p>7 MR. JOHNSON:</p> <p>8 Q. And I think with the exception of the written</p> <p>9 questions, which in my view should be in</p> <p>10 written form because they were a bit more</p> <p>11 detailed, those are the questions for the</p> <p>12 panel this morning.</p> <p>13 CHAIRMAN:</p> <p>14 Q. Mr. O'Reilly, sir.</p> <p>15 O'REILLY, Q.C.:</p> <p>16 Q. Thank you, Mr. Chairman. Good morning,</p> <p>17 gentlemen. A lot of the questions my learned</p> <p>18 friend, Mr. Johnson, has put to you, and I</p> <p>19 don't intend to repeat or try to improve on</p> <p>20 the quality or the length of the answers, but</p> <p>21 I do have a few things that I want to cover</p> <p>22 with you out of your report, and in the</p> <p>23 process of that if I transgressed on some of</p> <p>24 the areas that Mr. Johnson has already</p> <p>25 answered, it's a display of my own ignorance,</p>	<p>1 interview Nalcor people, interview their</p> <p>2 consultants and so on, and satisfy yourself</p> <p>3 that, as I see it here, that Nalcor's work and</p> <p>4 that of the consultants that they engaged in,</p> <p>5 is well founded and generally in accordance</p> <p>6 with industry practice as of DG 2, is that</p> <p>7 right, and then you note there are certain</p> <p>8 exceptions and I'll deal with that in a</p> <p>9 minute? So the DG 2 practice is, as I</p> <p>10 understand it, a recognized process or</p> <p>11 procedure set of guidelines in the</p> <p>12 construction industry in dealing with these</p> <p>13 types of large projects that covers the whole</p> <p>14 gamut from conception of the idea right</p> <p>15 through to development, to execution of the</p> <p>16 work and completion, is that right?</p> <p>17 MR. WILSON:</p> <p>18 A. Paul Wilson. I believe so. Our contest is in</p> <p>19 the utility industry.</p> <p>20 O'REILLY, Q.C.:</p> <p>21 Q. Yeah, okay, I probably took you outside your -</p> <p>22 but in the utility industry, I'll confine it</p> <p>23 to that.</p> <p>24 MR. WILSON:</p> <p>25 A. From what we've seen -</p>
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<p>1 not the lack of his ability to ask very fine</p> <p>2 questions of you gentlemen. I want to take</p> <p>3 you, I guess, to the - really start at the end</p> <p>4 of your report, your summary, and probably if</p> <p>5 I can ask you just to bring up page 8 of the</p> <p>6 Volume 1 of the summary, of your report, and</p> <p>7 under the heading of "Key Findings". Now I</p> <p>8 gather from what we heard, the description</p> <p>9 yesterday in your presentation, that there was</p> <p>10 a team - you're really the phalanx of the</p> <p>11 team, but there was a much larger group of</p> <p>12 people, I gather, that MHI drew on their</p> <p>13 internal and probably even external, I think,</p> <p>14 resources to analyze the DG 2, the things that</p> <p>15 went into the DG 2 decision by Nalcor to</p> <p>16 develop the least cost option, and to develop</p> <p>17 the preference to come to the 2.2 billion</p> <p>18 dollar preference of the one over the other,</p> <p>19 is that correct, there was a fairly large</p> <p>20 group of people?</p> <p>21 MR. WILSON:</p> <p>22 A. Yes, I did assemble a fairly large team.</p> <p>23 O'REILLY, Q.C.:</p> <p>24 Q. Okay, and you were able to dispatch these</p> <p>25 people to go through all of the reports and</p>	<p>1 O'REILLY, Q.C.:</p> <p>2 Q. The Decision Gate process is a recognized</p> <p>3 standard?</p> <p>4 MR. WILSON:</p> <p>5 A. I don't know if I'd use the word "standard",</p> <p>6 but it's a process that is followed by many,</p> <p>7 yes.</p> <p>8 O'REILLY, Q.C.:</p> <p>9 Q. Yeah, okay, right, and that what you reviewed</p> <p>10 were the inputs that Nalcor made to come to</p> <p>11 their decision, their DG 2 decision?</p> <p>12 MR. WILSON:</p> <p>13 A. Yes.</p> <p>14 O'REILLY, Q.C.:</p> <p>15 Q. I'm sorry, I can't - you'll have to -</p> <p>16 MR. WILSON:</p> <p>17 Q. Excuse me, yes, we reviewed the inputs into</p> <p>18 the capital costs and the various components</p> <p>19 that led to that decision.</p> <p>20 O'REILLY, Q.C.:</p> <p>21 Q. Okay, all right, and the expectation is that</p> <p>22 this will progress through DG 3, and then</p> <p>23 there is certain decisions can be taken at</p> <p>24 that point and the options of that are to get</p> <p>25 project release, or to shelf the project, or</p>

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<p>1 something has happened to cause a delay.</p> <p>2 MR. WILSON:</p> <p>3 A. Uh-hm, yes.</p> <p>4 O'REILLY, Q.C.:</p> <p>5 Q. Those are the things that would be - at that</p> <p>6 stage would be made?</p> <p>7 MR. WILSON:</p> <p>8 A. Are you referring to the DG 3 step?</p> <p>9 O'REILLY, Q.C.:</p> <p>10 Q. Yes.</p> <p>11 (10:15 a.m.)</p> <p>12 MR. WILSON:</p> <p>13 A. Well, the gatekeeper will define that for DG 3</p> <p>14 for Nalcor, that's the process they're</p> <p>15 following to move to now.</p> <p>16 CHAIRMAN:</p> <p>17 Q. I think you should speak up, boy, we can't -</p> <p>18 having trouble hearing you.</p> <p>19 MR. WILSON:</p> <p>20 A. I'm sorry, Mr. Chairman, I'll just move the</p> <p>21 mic a little closer.</p> <p>22 O'REILLY, Q.C.:</p> <p>23 Q. I think they're concerned with the cameras</p> <p>24 more so the - the video rather than the audio.</p> <p>25 CHAIRMAN:</p>	<p>1 demonstrating again now, I know it comes up on</p> <p>2 the screen, but I prefer to deal with the</p> <p>3 written text myself and work from that. Flip</p> <p>4 over to page 17 of your report, and under the</p> <p>5 "Conclusions and Recommendations" sections,</p> <p>6 there are three things that you noted there.</p> <p>7 They said that there were several - MHI</p> <p>8 completed a detailed review of the information</p> <p>9 generally as of DG 2 provided by Nalcor on the</p> <p>10 in-feed and the isolated island options, and</p> <p>11 has made a number of key findings. "While the</p> <p>12 working analysis completed by Nalcor generally</p> <p>13 meets utility best practices, there are</p> <p>14 several significant exceptions which have been</p> <p>15 noted above and are summarized as follows",</p> <p>16 and the first one deals with reliability</p> <p>17 assessment. There's talk there about - as I</p> <p>18 understand this, there's deterministic and</p> <p>19 probabilistic discussions around that sort of</p> <p>20 thing. It's all very interesting lingo and</p> <p>21 I'm trying to get my head down into that, but</p> <p>22 the probabilistic assessment is a design - I</p> <p>23 guess affects the design criteria for the</p> <p>24 transmission system. Is this what we're</p> <p>25 talking about here?</p>
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<p>1 Q. You have nothing to fear but fear itself.</p> <p>2 O'REILLY, Q.C.:</p> <p>3 Q. Okay, so with that in mind, and you say with</p> <p>4 certain key exceptions, and then you go on and</p> <p>5 you deal with the key findings and you cover</p> <p>6 such things as load forecasting, generation</p> <p>7 resources, you've gone through all of that, I</p> <p>8 don't want to go through all of that again,</p> <p>9 the key findings that you've made, but I do -</p> <p>10 I guess, there's three or four things that you</p> <p>11 categorize as sort of the significant things</p> <p>12 that you felt were either gaps or things that</p> <p>13 should have been done.</p> <p>14 MR. WILSON:</p> <p>15 A. Uh-hm.</p> <p>16 O'REILLY, Q.C.:</p> <p>17 Q. Or that you recommended be done, and I'd like</p> <p>18 to just talk about those a little bit, and</p> <p>19 please forgive me if I display again my lack</p> <p>20 of technical knowledge on this stuff, so I'm</p> <p>21 going to try to get it into a sense where I</p> <p>22 can understand it and hope others will be able</p> <p>23 to understand it as well - is that fair</p> <p>24 enough, so bear with me here, okay. I guess</p> <p>25 the first thing that - if we flip over - I'm</p>	<p>1 MR. WILSON:</p> <p>2 A. Paul Wilson. Yeah, that is correct.</p> <p>3 O'REILLY, Q.C.:</p> <p>4 Q. Yeah -</p> <p>5 MR. WILSON:</p> <p>6 A. That is an input into the design.</p> <p>7 O'REILLY, Q.C.:</p> <p>8 Q. Work with me a little bit on this now, work</p> <p>9 with me a little bit on this, okay, and the</p> <p>10 other - the probabilistic and the</p> <p>11 deterministic is - probabilistic conveys to</p> <p>12 me, well, what is the probability that</p> <p>13 something is going to come along to put the</p> <p>14 system out, and so if we look at the</p> <p>15 probabilities, 1 in 50 tells me that, well,</p> <p>16 okay, that 1 in 50 - once in 50 years there's</p> <p>17 an expected event is going to come along</p> <p>18 that's going to put the system out, and a 1 in</p> <p>19 150 year return means that if we design to a</p> <p>20 better standard, we can now get to one event</p> <p>21 in 150 years that's going to come along. If</p> <p>22 we design even - put in even more stringent</p> <p>23 standards, we can go to 1 in 500, that's there</p> <p>24 an event only one in 500 years that's going to</p> <p>25 come along that's going to put the system out.</p>

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<p>1 Is that right?</p> <p>2 MR. WILSON:</p> <p>3 A. I would amend that by saying "on the average".</p> <p>4 O'REILLY, Q.C.:</p> <p>5 Q. On the average, okay.</p> <p>6 MR. WILSON:</p> <p>7 A. On the average, 1 in 150, etc, yes.</p> <p>8 O'REILLY, Q.C.:</p> <p>9 Q. So the - so we're dealing with probabilities,</p> <p>10 okay, and the better design you put into the</p> <p>11 system, the more money you put into the system</p> <p>12 to develop more stringent requirements and so</p> <p>13 on, the least likely it is or the less</p> <p>14 probable than an event is going to come along</p> <p>15 with those parameters, those year parameters?</p> <p>16 MR. WILSON:</p> <p>17 A. I believe the event will come in those</p> <p>18 parameters.</p> <p>19 O'REILLY, Q.C.:</p> <p>20 Q. I'm going to get tot hat.</p> <p>21 MR. WILSON:</p> <p>22 A. Right, the infrastructure was designed to</p> <p>23 survive those things.</p> <p>24 O'REILLY, Q.C.:</p> <p>25 Q. Should be able to survive it, okay, but, of</p>	<p>1 probabilistic methods are just different</p> <p>2 methods of trying to look at the system and</p> <p>3 deterministic methods are based on engineering</p> <p>4 judgment and gives you a view of the system.</p> <p>5 You go in and you test this one, you make a</p> <p>6 test for that one just to get perhaps a feel</p> <p>7 of what would happen, whereas a probabilistic</p> <p>8 approach puts a little more science behind it.</p> <p>9 O'REILLY, Q.C.:</p> <p>10 Q. Yeah. So I guess the result would be if you</p> <p>11 would be more concerned with the consequences</p> <p>12 of the outage, how do you deal with the</p> <p>13 consequences of the outage? Is that a</p> <p>14 reasonable approach or a reasoning approach</p> <p>15 for the utility to take?</p> <p>16 MR. WILSON:</p> <p>17 A. I missed the first part of the question.</p> <p>18 O'REILLY, Q.C.:</p> <p>19 Q. You know, I understand the probabilistic part</p> <p>20 of it, that you know you design to try and</p> <p>21 make it less likely that it's going to occur</p> <p>22 whereas if the approach, as I understand the -</p> <p>23 - you heard Mr. Humphries explain, you were</p> <p>24 sitting here, and I gather the question came</p> <p>25 up and the Chairman sort of picked up on this</p>
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<p>1 course, what we don't know is when is the</p> <p>2 event going to occur, do we? I mean, we can</p> <p>3 design a system to 1 in 500, and the day that</p> <p>4 you commission the system and put it in</p> <p>5 operation along comes that event, right.</p> <p>6 MR. WILSON:</p> <p>7 A. That's correct.</p> <p>8 O'REILLY, Q.C.:</p> <p>9 Q. The system goes down.</p> <p>10 MR. WILSON:</p> <p>11 A. That's correct.</p> <p>12 O'REILLY, Q.C.:</p> <p>13 Q. Okay, and whereas the deterministic approach</p> <p>14 to that is, well, let's think about when the</p> <p>15 event comes along and the system goes down,</p> <p>16 what do we have to do - what are the results</p> <p>17 of that, how can we respond to that sort of</p> <p>18 thing. Is that sort of - what are the</p> <p>19 consequences of the event occurring?</p> <p>20 MR. WILSON:</p> <p>21 A. No, that's not correct.</p> <p>22 O'REILLY, Q.C.:</p> <p>23 Q. Oh, okay.</p> <p>24 MR. WILSON:</p> <p>25 A. I'm sorry, just deterministic versus the</p>	<p>1 as well that in the probabilistic approach to</p> <p>2 design, to add more cost to designing, raising</p> <p>3 the return period or increase the return</p> <p>4 period has a cost consequence to it. You'd do</p> <p>5 that. And as I understand Mr. Humphries'</p> <p>6 analysis of it, he said they're familiar with</p> <p>7 the system, have a lot of experience with it</p> <p>8 and what they're concerned with is that they</p> <p>9 would be concerned with having the resources</p> <p>10 available to respond to an outage that would</p> <p>11 occur that would put the system down for two</p> <p>12 weeks, which is within a 14-day, I think</p> <p>13 you'll agree, is a reasonable objective to</p> <p>14 have the system up and running within that</p> <p>15 period of time. So we would develop the</p> <p>16 resources or our concern and focus of concern</p> <p>17 is to make sure we have the resources</p> <p>18 available to be able to restore service within</p> <p>19 those parameters. Is that -- that's what I</p> <p>20 thought I heard him say.</p> <p>21 MR. WILSON:</p> <p>22 A. It's Paul Wilson. I believe it's an admirable</p> <p>23 goal. I guess what you need to ask yourself</p> <p>24 is, you know, what is the relative cost</p> <p>25 between the two measures and analysis -</p>

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1 O'REILLY, Q.C.:
 2 Q. I'm sorry, I can't -
 3 MR. WILSON:
 4 A. You have to look at what's the relative cost
 5 between the measures of prevention versus, you
 6 know, a response and how would you know those
 7 without doing this analysis and that's what
 8 our recommendation is leading to is to assess
 9 and do those probabilistic analysis so you can
 10 have the best information to make those
 11 determinations now.
 12 O'REILLY, Q.C.:
 13 Q. So I guess maybe it comes down to a business
 14 decision, how you -
 15 MR. WILSON:
 16 A. If you're going to make business case
 17 decisions, you want to have the best
 18 information you can and most business case
 19 decisions, you know, typically don't take the
 20 extremes, which is maybe what's happening with
 21 the deterministic analysis. Use the
 22 probabilistic analysis to give you better
 23 information.
 24 O'REILLY, Q.C.:
 25 Q. Let's just go to the standard that we were

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1 looking at and I think that's reproduced in
 2 your report as well. I think it's at page 62,
 3 I think it is. Or actually, it starts at 61.
 4 This is the standard and it's an exhibit
 5 contained -- you're referring to Exhibit 106
 6 and it deals with the selection of reliability
 7 levels and so on and this is a quotation from
 8 page 125 of the IEC 2003 document, 2003
 9 documents presented below in full, and then
 10 you quote from that. And if we flip over the
 11 page to page -- top of 62, the direction given
 12 -- and again, I know Mr. Johnson took you
 13 through some of this yesterday, but I just
 14 wanted to get down to some of the more
 15 particulars. It says "in all cases, lines
 16 should at least meet the requirements of a
 17 reliability level characterized by a return
 18 period of loads of 50 years." So that, I take
 19 it, is a direction?
 20 MR. WILSON:
 21 A. Yes.
 22 O'REILLY, Q.C.:
 23 Q. Do you agree with that?
 24 MR. WILSON:
 25 A. Yes.

1 O'REILLY, Q.C.:
 2 Q. And as I understood Mr. Humphries' statements
 3 while he was over there that that is what --
 4 that's essentially what Nalcor's standard is,
 5 agreed?
 6 MR. WILSON:
 7 A. I believe that's what he said, yeah.
 8 O'REILLY, Q.C.:
 9 Q. And then it goes on and it says "an increase
 10 in reliability above this level could be
 11 justified for more important lines of the
 12 network as indicated by the following
 13 guidelines" and then it goes on to say "it is
 14 suggested, it is suggested to use a
 15 reliability level characterized by return
 16 periods of 150 years for lines above 230
 17 kilovolts, kV. The same is suggested for
 18 lines below 230 kV which contribute -- which
 19 constitute the principal or perhaps the only
 20 source of supply to a particular electric load
 21 level two. And finally, it is suggested to
 22 use a reliability level characterized by
 23 return periods of 500 years for lines mainly
 24 above 230 kV which constitute the principal or
 25 perhaps the only source of supply to a

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1 particular electric load. Their failure would
 2 have serious consequences to the power
 3 supply." So then at the very bottom it says
 4 "when establishing a national and regional
 5 standards or specifications, decisions on the
 6 reliability level should be made taking into
 7 consideration also the experience with
 8 existing lines."
 9 So it seems to me that there is a wide
 10 discretion in the utility to use its
 11 discretion if it gets above the 1 in 500 --
 12 I'm sorry, the 1 in 50 return. There's a wide
 13 discretion and essentially knowledge of its
 14 existing system and its experience with that
 15 system is really a big determination as to
 16 whether it should advance the return period
 17 beyond the 1 in 50. Would you agree with
 18 that?
 19 MR. WILSON:
 20 A. I would have two comments to that. I guess
 21 the first comment deals with it is in the
 22 standard as written and they specify those
 23 numbers, the 1 in 50, the 1 in 150 and the 1
 24 in 500 and other utilities are building,
 25 according to this, at the 1 in 150 standard or

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<p>1 the 1 in 500 standard, as we heard with Hydro</p> <p>2 Quebec yesterday. I believe that was</p> <p>3 yesterday or the day before.</p> <p>4 My second comment to that would be in</p> <p>5 establishing -</p> <p>6 O'REILLY, Q.C.:</p> <p>7 Q. I'm sorry. So your comment is that there are</p> <p>8 others who are building to that standard?</p> <p>9 MR. WILSON:</p> <p>10 A. There are others in Canada building to the 1</p> <p>11 in 150 standard, including Manitoba Hydro for</p> <p>12 bipole III.</p> <p>13 O'REILLY, Q.C.:</p> <p>14 Q. And I presume there are some that aren't as</p> <p>15 well.</p> <p>16 MR. WILSON:</p> <p>17 A. Apparently here in Newfoundland, I'm sorry.</p> <p>18 O'REILLY, Q.C.:</p> <p>19 Q. No, Alberta. I thought you told yesterday</p> <p>20 Alberta -</p> <p>21 MR. WILSON:</p> <p>22 A. Oh no. In Alberta, they build to the -</p> <p>23 O'REILLY, Q.C.:</p> <p>24 Q. 1 in 100?</p> <p>25 MR. WILSON:</p>	<p>1 O'REILLY, Q.C.:</p> <p>2 Q. But that's a recommendation that you make, and</p> <p>3 I understand that. I mean, that's what it is.</p> <p>4 MR. SNYDER:</p> <p>5 A. Yes.</p> <p>6 O'REILLY, Q.C.:</p> <p>7 Q. And the standard, the suggested suggestion,</p> <p>8 but your recommendation is that they consider</p> <p>9 going to the 1 in 150?</p> <p>10 MR. SNYDER:</p> <p>11 A. Yes.</p> <p>12 O'REILLY, Q.C.:</p> <p>13 Q. That's essentially a recommendation?</p> <p>14 MR. SNYDER:</p> <p>15 A. Yes.</p> <p>16 (10:30 a.m.)</p> <p>17 O'REILLY, Q.C.:</p> <p>18 Q. Okay. Now the other item that we talked about</p> <p>19 that's on -- I'm sorry, you spoke about dealt</p> <p>20 -- and this is on page 18 of your report,</p> <p>21 Volume 1 -- dealt with the AC Integration</p> <p>22 Study and again, trying to get it down to a</p> <p>23 basic level that I can try and understand it.</p> <p>24 The issue here deals with the concept that you</p> <p>25 have an existing system, distribution system</p>
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<p>1 A. 1 in 100 with a 100 percent safety factor.</p> <p>2 O'REILLY, Q.C.:</p> <p>3 Q. Yeah.</p> <p>4 MR. WILSON:</p> <p>5 A. The second comment I was leading onto is that</p> <p>6 dealing with the experience of existing lines,</p> <p>7 this HVdc transmission line is transversing</p> <p>8 ground where there is no existing experience</p> <p>9 and perhaps, you know, it would be prudent to</p> <p>10 look at these measures as well for that.</p> <p>11 MR. SNYDER:</p> <p>12 A. I guess my further comment was, as I suggested</p> <p>13 yesterday, you know, given the consideration</p> <p>14 that it is greater than a 230 kV line, given</p> <p>15 that it is going through territory that there</p> <p>16 is no history of transmission lines through</p> <p>17 that area and so it's remote, the time to</p> <p>18 repair is difficult, there is no</p> <p>19 interconnection considered, therefore there is</p> <p>20 no alternate supply available, and you know,</p> <p>21 basically the LIL HVdc system is a backbone</p> <p>22 system for the Province of Newfoundland and</p> <p>23 it's our recommendation therefore that it</p> <p>24 should follow best utility practice, which is</p> <p>25 1 in 150 years.</p>	<p>1 or transmission system, and you're going to</p> <p>2 construct a new system, another system, and</p> <p>3 that these two systems, the new one and the</p> <p>4 existing one, are going to be integrated so</p> <p>5 that it operates as one system?</p> <p>6 MR. SNYDER:</p> <p>7 A. Yes.</p> <p>8 O'REILLY, Q.C.:</p> <p>9 Q. Okay. And the issue here is when you</p> <p>10 construct a new system and you tie it in with</p> <p>11 the existing system, will it function as a</p> <p>12 unit or are there things that have to be done</p> <p>13 to make it compatible?</p> <p>14 MR. SNYDER:</p> <p>15 A. Through the AC Integration Studies you should</p> <p>16 -</p> <p>17 O'REILLY, Q.C.:</p> <p>18 Q. No, no, no. Is my concept right?</p> <p>19 MR. SNYDER:</p> <p>20 A. Oh yeah, your concept is right.</p> <p>21 O'REILLY, Q.C.:</p> <p>22 Q. I'm trying to get -- before I go to the next</p> <p>23 step, I want to make sure I understand where</p> <p>24 I'm going, right.</p> <p>25 MR. SNYDER:</p>

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<p>1 A. Sorry, yes.</p> <p>2 O'REILLY, Q.C.:</p> <p>3 Q. So, and as I understand the point of this</p> <p>4 recommendation is that before doing that,</p> <p>5 before you put these two things together, you</p> <p>6 should go and look at your existing system to</p> <p>7 see if there are some upgrades that need to be</p> <p>8 done or some additions to be put on so that</p> <p>9 the system will function properly.</p> <p>10 MR. SNYDER:</p> <p>11 A. That's correct.</p> <p>12 O'REILLY, Q.C.:</p> <p>13 Q. Okay. Now you heard again, I think, Mr.</p> <p>14 Humphries spoke to this, that there were some</p> <p>15 studies that they had available and I presume</p> <p>16 you saw them, for in 1998?</p> <p>17 MR. SNYDER:</p> <p>18 A. Yes.</p> <p>19 O'REILLY, Q.C.:</p> <p>20 Q. These were parts of the things you looked at.</p> <p>21 And also there was, I think, a refinement of</p> <p>22 that or an updating of that in -- a study in</p> <p>23 2007?</p> <p>24 MR. SNYDER:</p> <p>25 A. Correct.</p>	<p>1 MR. SNYDER:</p> <p>2 A. Yes.</p> <p>3 MR. WILSON:</p> <p>4 A. Paul Wilson. Yeah, I did hear him say that.</p> <p>5 When we did the MHI review of this area, that</p> <p>6 material was not provided to us. All we saw</p> <p>7 was the original Gull study and the Teshmont</p> <p>8 study.</p> <p>9 O'REILLY, Q.C.:</p> <p>10 Q. The material, but you heard him say that they</p> <p>11 had a level of comfort that the systems would</p> <p>12 integrate for purposes of making a DG2</p> <p>13 decision?</p> <p>14 MR. SNYDER:</p> <p>15 A. Al Snyder. I don't think he actually said</p> <p>16 that, but I stand corrected.</p> <p>17 O'REILLY, Q.C.:</p> <p>18 Q. You don't think he said that?</p> <p>19 MR. SNYDER:</p> <p>20 A. They had not done the AC integration studies.</p> <p>21 O'REILLY, Q.C.:</p> <p>22 Q. No, not a study, internal, their own internal</p> <p>23 work that was done on this to come to the</p> <p>24 conclusion -- satisfy themselves that the</p> <p>25 systems could be integrated.</p>
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<p>1 O'REILLY, Q.C.:</p> <p>2 Q. Okay. That's correct, is it?</p> <p>3 MR. SNYDER:</p> <p>4 A. Well, it's a different study.</p> <p>5 O'REILLY, Q.C.:</p> <p>6 Q. A different study, but it related to the same</p> <p>7 subject matter?</p> <p>8 MR. SNYDER:</p> <p>9 A. Related to transmission, yes.</p> <p>10 O'REILLY, Q.C.:</p> <p>11 Q. Yes, correct?</p> <p>12 MR. SNYDER:</p> <p>13 A. Yes, different transmission schemes though on</p> <p>14 both cases.</p> <p>15 O'REILLY, Q.C.:</p> <p>16 Q. Right, okay. And Mr. Humphries said that</p> <p>17 although it wasn't a full integration study</p> <p>18 that internally they had done a great -- you</p> <p>19 know, their own internal work to make a</p> <p>20 determination based on the 1998 study and I</p> <p>21 guess their experience with the system that</p> <p>22 they had, that the systems could be</p> <p>23 integrated. That this was an internal thing</p> <p>24 that was done. I mean, you heard him say</p> <p>25 that?</p>	<p>1 MR. SNYDER:</p> <p>2 A. That was not available to us.</p> <p>3 O'REILLY, Q.C.:</p> <p>4 Q. Okay. Anyway, I understood -- I stand</p> <p>5 corrected, but I understood that Mr. Humphries</p> <p>6 did say that they had done their own internal</p> <p>7 studies. Nalcor had done its own internal</p> <p>8 studies and that they were now doing -</p> <p>9 GREENE, Q.C.:</p> <p>10 Q. Perhaps Mr. O'Reilly, if you could bring the</p> <p>11 witness to the transcript, because my</p> <p>12 recollection is Mr. Humphries did not refer to</p> <p>13 internal studies as well. He may have said</p> <p>14 that they had done an internal assessment.</p> <p>15 There was no recollection of studies, nor were</p> <p>16 they ever provided to the Board when asked by</p> <p>17 the Board.</p> <p>18 O'REILLY, Q.C.:</p> <p>19 Q. The word was internal analysis, not study.</p> <p>20 GREENE, Q.C.:</p> <p>21 Q. Yes.</p> <p>22 O'REILLY, Q.C.:</p> <p>23 Q. Internal analysis.</p> <p>24 GREENE, Q.C.:</p> <p>25 Q. And that was never provided to the Board as</p>

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<p>1 well, any analysis that was done.</p> <p>2 O'REILLY, Q.C.:</p> <p>3 Q. But it was internal analysis that was done to</p> <p>4 determine that the systems would be -- could</p> <p>5 be integrated and that they were in the</p> <p>6 process of going to do the study that you're</p> <p>7 contemplating, integration study, for DG -- on</p> <p>8 the way to DG3.</p> <p>9 MR. WILSON:</p> <p>10 A. It's Paul Wilson. I understand those DG3</p> <p>11 studies are under way now and are to be</p> <p>12 completed in March.</p> <p>13 GREENE, Q.C.:</p> <p>14 Q. And at this point, again with respect to if</p> <p>15 there was even analysis done, I would like a</p> <p>16 reference to the transcript and I would ask</p> <p>17 Nalcor to provide the analysis that was</p> <p>18 completed that has not been yet provided with</p> <p>19 respect to their assessment that the two</p> <p>20 studies done previously were adequate so that</p> <p>21 system integration studies were not further</p> <p>22 required.</p> <p>23 O'REILLY, Q.C.:</p> <p>24 Q. I understood that the analysis provided them -</p> <p>25 - the substance of the notes I had was that</p>	<p>1 leave that to the end, so I can get through</p> <p>2 this.</p> <p>3 GREENE, Q.C.:</p> <p>4 Q. And sorry if I'm interrupting. I didn't mean</p> <p>5 to do that, but my understanding of your</p> <p>6 question was that Nalcor had actually done or</p> <p>7 produced -- whether you call it a study, an</p> <p>8 assessment or an analysis, and we would like</p> <p>9 it for the record.</p> <p>10 O'REILLY, Q.C.:</p> <p>11 Q. I tend to use analysis and study, internal</p> <p>12 study and internal analysis interchangeably.</p> <p>13 You may -- and that's why I say, I have to</p> <p>14 apologize if I'm using a term that has a</p> <p>15 particular industry use, but I understand that</p> <p>16 before you would make the conclusion to go to</p> <p>17 DG2 that, as a part of the DG2 analysis,</p> <p>18 something was done -- Mr. Humphries had done</p> <p>19 some work internally to make the determination</p> <p>20 that these systems were compatible when</p> <p>21 constructed. I think if we go to -- let's go</p> <p>22 to page -- just a second, just wait one</p> <p>23 second, before we bring it up. Thank you.</p> <p>24 Yes, if we go to the February 14th transcript</p> <p>25 at page 204.</p>
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<p>1 they had provided -- done an analysis that</p> <p>2 provided him with a level of comfort that the</p> <p>3 systems could be integrated.</p> <p>4 GREENE, Q.C.:</p> <p>5 Q. And my -</p> <p>6 O'REILLY, Q.C.:</p> <p>7 Q. And that they were doing the integration</p> <p>8 studies now.</p> <p>9 GREENE, Q.C.:</p> <p>10 Q. And I will let you -- you can certainly put</p> <p>11 the question to the Panel. I guess I'm asking</p> <p>12 for an undertaking from Nalcor that if there</p> <p>13 was analysis done that the previous studies</p> <p>14 were adequate, that you did not need to do an</p> <p>15 update for DG2, that the analysis that was</p> <p>16 done by Nalcor be provided to the Board as</p> <p>17 part of the written record.</p> <p>18 O'REILLY, Q.C.:</p> <p>19 Q. What I think that I'll ask Mr. Chair to do is</p> <p>20 to -- if counsel can let me finish my</p> <p>21 questioning of the witnesses, if there is an</p> <p>22 issue that is taken with either the</p> <p>23 examination or the accuracy of the questions I</p> <p>24 put or a further -- you know, something,</p> <p>25 additional undertaking, that probably we can</p>	<p>1 MR. JOHNSON:</p> <p>2 Q. What page?</p> <p>3 O'REILLY, Q.C.:</p> <p>4 Q. Page 204, February 14th. And it starts -- and</p> <p>5 Mr. Humphries' answer, this is in response to</p> <p>6 Ms. Greene's question, and we're talking about</p> <p>7 the integration here. Question "And what did</p> <p>8 Nalcor do as a result of that decision of</p> <p>9 change in focus to look at the implications of</p> <p>10 moving to Muskrat ahead of Gull?" and Mr.</p> <p>11 Humphries said "from the perspective that just</p> <p>12 for the minute, go back to the 1998 studies.</p> <p>13 The 1998 studies that were completed, while</p> <p>14 they were a Teshmont study, we did have four</p> <p>15 of our engineers seconded to Teshmont during</p> <p>16 that period and they actually did the</p> <p>17 computational work and were present during the</p> <p>18 assessment of the results. So we did have</p> <p>19 four people that were intimately familiar with</p> <p>20 the studies of 1998 and in fact, two of those</p> <p>21 individuals are still working in the same</p> <p>22 area. So they were familiar with the models</p> <p>23 to be able to do some preliminary analysis to</p> <p>24 look at things like advancing Muskrat Falls,</p> <p>25 putting in transmission connection and while</p>

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<p>1 not completing a full assessment, getting the 2 feel of comfort that there were not 3 significant -- it was by no means a complete 4 integration study, but it gave us that level 5 of comfort to know that this looks very 6 similar." And that's what he said. 7 So, acknowledge that it's not -- but they 8 had done some internal analysis as well that 9 allowed them to get to the position of DG2, to 10 make the DG2 decision that there were not -- 11 there were sufficient similarities in the two 12 studies that would allow them a measure of 13 comfort to make the DG2 decision. 14 MR. WILSON: 15 A. Paul Wilson. Well, that analysis was not 16 provided to us to review, so our point of view 17 is there is no integration studies done for 18 DG2 as a normal practice in utility. 19 O'REILLY, Q.C.: 20 Q. Okay. So that's the point I'm making. The 21 point you're making is that there's no -- a 22 binder with, you know, integration study, here 23 it is. That's -- this is the point. 24 MR. WILSON: 25 A. The work is incomplete, in my view.</p>	<p>1 O'REILLY, Q.C.: 2 Q. Yeah. Now I notice that this is not the first 3 time this came up. This came up on the 14th. 4 So you didn't - 5 GREENE, Q.C.: 6 Q. And I guess - 7 O'REILLY, Q.C.: 8 Q. - you did not require it then, but you want it 9 now? 10 GREENE, Q.C.: 11 Q. Right, and I guess, when Mr. Humphries made 12 the statement, I did not place the weight on 13 his statement that you have which was that 14 there was a formal analysis done. I thought 15 they had a level of comfort based on their 16 prior information. So I just want -- if there 17 was some type of internal memo or any written 18 piece of paper that talked about how they had 19 looked at the two previous studies and they 20 were good enough, that's all that the Board 21 would like to place on the record to ensure 22 the record is complete for DG2. When Mr. 23 Humphries made the statement, I took it that 24 based on his knowledge and his experience, it 25 gave him a level of comfort, but there hadn't</p>
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<p>1 O'REILLY, Q.C.: 2 Q. Record of the work is incomplete. 3 MR. WILSON: 4 A. Yes. 5 O'REILLY, Q.C.: 6 Q. The record for the work is incomplete? 7 MR. WILSON: 8 A. Yes, I believe so. 9 O'REILLY, Q.C.: 10 Q. Okay. So I don't know if that - 11 GREENE, Q.C.: 12 Q. No, and we can address at the end the 13 additional outstanding information, but the 14 request from the Board at this point is if 15 there was any analysis or assessment done that 16 the system integration studies arising in 1998 17 and again in 2010 for a different 18 configuration were adequate so that it was not 19 necessary to complete integration studies for 20 the new configuration, if any of that -- if 21 there was an assessment done or internal 22 analysis, could that please be provided to the 23 Board because it has not been previously when 24 the Board asked about system integration 25 studies.</p>	<p>1 been a specific piece of analysis done that 2 would support that decision. So, it goes to 3 how - 4 O'REILLY, Q.C.: 5 Q. I'm not attributing to Mr. Humphries any more 6 than he said in his report and what I'm doing 7 is I'm taking that and I put that to the 8 witness. I'm not attributing any more work 9 being done other than what he said was there 10 and I can only go back to what he said. 11 GREENE, Q.C.: 12 Q. Okay. And my question could be an additional 13 question or follow up, however you wish to 14 characterize it, that if there was that 15 internal type of analysis done, the Board 16 would request that Hydro file that as an 17 undertaking so that we could -- MHI can assess 18 then the level of - what had given the 19 comfort. 20 O'REILLY, Q.C.: 21 Q. Well, I can deal with that. I think we can 22 move on from that. 23 GREENE, Q.C.: 24 Q. Oh yes, that's fine. 25 O'REILLY, Q.C.:</p>

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1 Q. Now the other item are the NERC standards and
 2 I gather that that is -- NERC standards,
 3 again, are -- these are reproduced. This
 4 comment, your report on that or your
 5 commentary on that is at page 18 and the
 6 reference is that a number of findings
 7 discussed the applicability of NERC standards
 8 in the definition and application of good
 9 utility practices and MHI has determined that
 10 -- the last paragraph, "MHI has determined
 11 that a majority of utilities in Canada have
 12 adopted the definition of good utility
 13 practice that incorporates adherence to NERC
 14 standards." Now, NERC, I presume, is -- what
 15 is that? Is that an industry, hydro industry
 16 standards?

17 MR. WILSON:

18 A. Paul Wilson. NERC is the North American
 19 Electric Reliability Corporation.

20 O'REILLY, Q.C.:

21 Q. Right.

22 MR. WILSON:

23 A. Located in the United States, mandated to
 24 develop reliability standards for the
 25 transmission industry.

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1 (10:45 a.m.)
 2 O'REILLY, Q.C.:
 3 Q. And when was this established? Was this
 4 established -
 5 MR. WILSON:
 6 A. Well, throughout my career, I've -- they've
 7 been around for a long time.
 8 O'REILLY, Q.C.:
 9 Q. Alright, so it's long standing.
 10 MR. WILSON:
 11 A. Long time.
 12 O'REILLY, Q.C.:
 13 Q. And I presume to try to get a national or
 14 international standard is because of the
 15 integration of networks, the hydro network
 16 throughout say North America or something like
 17 that? If an event occurs in one place to
 18 reduce the possibility that it can occur in
 19 another place, cascading of events, to remove
 20 the cascading of failures on one part of the
 21 system?

22 MR. WILSON:

23 A. That would certainly be one of their concerns,
 24 yes.

25 O'REILLY, Q.C.:

1 Q. Yeah, and I think mainly of the ice storm in
 2 Quebec when the ice storm in Quebec in 1998
 3 actually shut down New York City. It cut off
 4 the lights in New York City for a period of
 5 time and I would imagine that would get the
 6 Americans hopping pretty good, and if there
 7 wasn't a council to establish some kind of a
 8 standard to avoid that, it probably would be
 9 shortly after that, right?

10 MR. WILSON:

11 A. Yes.

12 O'REILLY, Q.C.:

13 Q. So when you say that all of the -- I guess you
 14 say that it's a good utility practice that has
 15 been adopted by most of the utilities, but not
 16 all, and in Canada, I think there was
 17 reference yesterday that you made that there
 18 were eight out of the ten provinces have
 19 adopted that standard?

20 MR. WILSON:

21 A. Eight of the ten provinces have identified
 22 these standards and have made them mandatory
 23 in all cases so far.

24 O'REILLY, Q.C.:

25 Q. And is that adopting all of the standards? I

1 mean -

2 MR. WILSON:

3 A. Well, we know in Alberta that they do not
 4 follow 43 of the standards because they deal
 5 with market operations and Alberta does not
 6 have an interconnection into the United
 7 States.

8 O'REILLY, Q.C.:

9 Q. Does Quebec adopt -- for example, I'm just
 10 trying to get a feel for this now, so bear
 11 with me a bit. I mean, is it like you're in
 12 for a penny, you're in for a pound or, you
 13 know, there are some parts we'll take and
 14 we'll adopt and other parts of the NERC
 15 standard we won't?

16 MR. WILSON:

17 A. Yes, you can do that. There is some
 18 flexibility in how those standards are
 19 applied.

20 O'REILLY, Q.C.:

21 Q. What are the sorts of things that would
 22 indicate that it's -- that would dictate
 23 whether or not parts should be adopted and
 24 other parts not adopted? Market
 25 considerations, economics? I'm thinking.

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1 MR. WILSON:

2 A. Well, market considerations is a primary one.
3 Whether they're adopted or not is typically
4 done in the regulatory framework or the
5 legislative framework in the jurisdiction.

6 O'REILLY, Q.C.:

7 Q. Yeah, okay. So it would be a decision by -- a
8 policy decision say by the regulator or the
9 government or whatever who sets the standards
10 that we should be going to this thing, because
11 there's a cost associated with that, isn't
12 there? There could be a cost associated with
13 it?

14 MR. SNYDER:

15 A. There could be a cost, but it's a very minor
16 cost. I know that when we, at Manitoba Hydro,
17 went to NERC standards, it was deemed that it
18 might be expensive, but it turned out not to
19 be expensive.

20 O'REILLY, Q.C.:

21 Q. Mainly because it would depend on what you had
22 in place already versus what you're moving
23 from?

24 MR. SNYDER:

25 A. That's correct.

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1 O'REILLY, Q.C.:

2 Q. Yeah. So, it depends on what you're moving
3 from to get to the standard. In the case of
4 Manitoba, it wasn't much of a leap, but for
5 other jurisdictions, it might be, and
6 consequently more cost?

7 MR. SNYDER:

8 A. That's true.

9 O'REILLY, Q.C.:

10 Q. So, and you know, I appreciate and I'm trying
11 to -- this is a recommendation that you
12 recommend that Nalcor move to that standard,
13 the NERC standards, but to a certain extent,
14 that decision is influenced by other
15 considerations such as government policy and
16 things of that nature. Is that correct?

17 MR. WILSON:

18 A. Paul Wilson. You're correct. I think our
19 recommendation was that they do a self-
20 assessment.

21 O'REILLY, Q.C.:

22 Q. Yeah, yeah.

23 MR. WILSON:

24 A. To move to compliance.

25 O'REILLY, Q.C.:

1 Q. Right, okay.

2 MR. WILSON:

3 A. That is Nalcor's task.

4 O'REILLY, Q.C.:

5 Q. Yeah, okay.

6 MR. WILSON:

7 A. And they've stated they are -- have a team.

8 O'REILLY, Q.C.:

9 Q. And they're doing it.

10 MR. WILSON:

11 A. They have a team.

12 O'REILLY, Q.C.:

13 Q. Yes, okay. The question came up again this
14 morning, Mr. Johnson raised the issue of risk
15 management or the management of risk, I guess
16 it is, related to fuel oil prices and I think
17 it was agreed that, you know, that is -- there
18 is a fair degree of volatility in that and
19 it's difficult to project, but in -- and I'm
20 trying to get a handle on this. If the idea
21 is that in a project, in the consideration of
22 these projects and the alternatives, they all
23 have risks. Would we agree with that, they
24 all have risks associated with them?

25 MR. WILSON:

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1 A. Yes, of course.

2 O'REILLY, Q.C.:

3 Q. On the construction -- on the Labrador-Island
4 infed alternative, the risk would be is on
5 the capital side mainly, isn't it,
6 construction and capital side? That's where
7 the risk is of managing that risk of bringing
8 the project in, you know, on a cost efficient
9 basis and so on? Is that correct?

10 MR. WILSON:

11 A. Yes, that's correct.

12 O'REILLY, Q.C.:

13 Q. Okay. And that risk would be largely
14 something that can be -- the requirement to
15 manage that is over a six or seven year
16 period. I forget the construction period, but
17 I think it was six years, wasn't it?

18 MR. WILSON:

19 A. I think we said 62 months.

20 O'REILLY, Q.C.:

21 Q. 62 months, sorry, okay. Whereas on the other
22 side, with the Isolated island, the risk
23 extends over the review period or puts it over
24 60 years?

25 MR. WILSON:

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1 A. In reference to fuel price, you're correct.
 2 O'REILLY, Q.C.:
 3 Q. With reference to fuel prices. And in one
 4 case, it seems to me, it's easier to manage
 5 the capital construction risk over six years
 6 than it is to manage the risk associated with
 7 something over which you have very little or
 8 no control over a very long period of time?
 9 MR. WILSON:
 10 A. Yes, you're correct.
 11 O'REILLY, Q.C.:
 12 Q. Okay. So this is the management, from a risk
 13 management perspective or the management of
 14 risk, the Labrador-Island link option is more
 15 manageable than the Isolated island risk?
 16 MR. WILSON:
 17 A. There is still an element of volatility and
 18 material pricing that has no management.
 19 O'REILLY, Q.C.:
 20 Q. That's right, but more manageable than the
 21 Isolated island?
 22 MR. WILSON:
 23 A. Yes, I would believe so.
 24 O'REILLY, Q.C.:
 25 Q. Now Manitoba Hydro has its own network of long

1 Hydro Quebec annual comparison of electricity
 2 rates set for -- Winnipeg has very, very low
 3 rates comparable.
 4 MR. WILSON:
 5 A. That's correct.
 6 O'REILLY, Q.C.:
 7 Q. Right. So, I guess that goes to the point of
 8 costing out, getting to the net book value as
 9 it was described yesterday by the Nalcor
 10 people that as you go out and get the -- these
 11 assets depreciate down, the cost goes down and
 12 there's less of a cost recovery element for
 13 the -- is that right?
 14 MR. KAST:
 15 A. Mack Kast here. It would be presumptuous for
 16 us at this point, without looking into this a
 17 bit more, to know why the Manitoba Hydro rates
 18 are what they are. Of course, as an asset
 19 depreciates over time and if the rates are
 20 based on a cost of service basis, you would
 21 expect a particular asset to depreciate and,
 22 you know, the cost of service to be reduced.
 23 But, Manitoba Hydro has an extensive capital
 24 program and you know, there are so many
 25 variables that are at play with respect to how

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1 lead, major hydro development that it did back
 2 in the '70s, I think. Isn't that right?
 3 MR. WILSON:
 4 A. Yes.
 5 O'REILLY, Q.C.:
 6 Q. Over very long -- over long distances,
 7 invested considerable capital in the
 8 construction of hydro facilities for its
 9 customers, its customer base?
 10 MR. WILSON:
 11 A. That's correct.
 12 O'REILLY, Q.C.:
 13 Q. Yeah. And I was just looking at a -- I guess,
 14 those assets would largely be paid off now, I
 15 presume?
 16 MR. WILSON:
 17 A. I don't have the numbers on net book value,
 18 but those plants have been depreciated over
 19 time.
 20 O'REILLY, Q.C.:
 21 Q. Down pretty good.
 22 MR. WILSON:
 23 A. We have a new plant that would not be.
 24 O'REILLY, Q.C.:
 25 Q. And I was just looking at the -- from the

1 the company is operated with respect to
 2 revenue stream, et cetera, et cetera, that I
 3 don't think would be really right to -
 4 O'REILLY, Q.C.:
 5 Q. A useful comparison.
 6 MR. KAST:
 7 A. - draw the conclusion at this point that just
 8 because they might be on a cost of service
 9 basis for a plant that was installed years ago
 10 that the rates are low today.
 11 O'REILLY, Q.C.:
 12 Q. The only point I'm making, it seems like a
 13 long term investment in large capital costs
 14 seem to have worked out for Manitoba Hydro.
 15 MR. WILSON:
 16 A. As Mack has indicated, there's other variables
 17 to be considered in that equation as well.
 18 O'REILLY, Q.C.:
 19 Q. So we just go back to your report again and
 20 Volume 1, if we go back to the last paragraph,
 21 page 19 of the report. You know, having done
 22 what you've done and conducted the examination
 23 that you did with the resources that you had
 24 available and notwithstanding the
 25 recommendations and so that you have in your

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<p>1 findings, your key findings, you still were</p> <p>2 able -- you concluded that MHI finds that the</p> <p>3 Muskrat Falls generating station and Labrador-</p> <p>4 Island link HVdc projects represent the least</p> <p>5 cost option of the two alternatives when</p> <p>6 considered together with the underlying</p> <p>7 assumptions and inputs provided by Nalcor at</p> <p>8 DG2, of course. Is that correct?</p> <p>9 MR. WILSON:</p> <p>10 A. That's correct.</p> <p>11 O'REILLY, Q.C.:</p> <p>12 Q. And you are comfortable making that</p> <p>13 recommendation to the Board?</p> <p>14 MR. WILSON:</p> <p>15 A. We are, yes.</p> <p>16 O'REILLY, Q.C.:</p> <p>17 Q. Thank you. I don't think I have anything</p> <p>18 else. Probably what I'd do, we're almost at</p> <p>19 the break, I think I'm finished with that, but</p> <p>20 I would like to take instruction from my</p> <p>21 client and make sure that -</p> <p>22 CHAIRMAN:</p> <p>23 Q. So we'll take a break is what you're</p> <p>24 suggesting, sir?</p> <p>25 O'REILLY, Q.C.:</p>	<p>1 safety factor added to that tower and line</p> <p>2 family. Now essentially what this does is it</p> <p>3 doubles the strength of that line, in terms of</p> <p>4 what that really means is that towers are</p> <p>5 heavier and the conductors are heavier,</p> <p>6 perhaps the guys are stronger as well, so it</p> <p>7 can take more than the one and 100 year.</p> <p>8 MR. JOHNSON:</p> <p>9 Q. Okay, so 100 percent safety factor, how do</p> <p>10 they insulate--they beef it up somehow</p> <p>11 physically?</p> <p>12 MR. WILSON:</p> <p>13 A. Yes, that's correct.</p> <p>14 MR. JOHNSON:</p> <p>15 Q. But it still meets a one and 100 year return</p> <p>16 period.</p> <p>17 MR. WILSON:</p> <p>18 A. It's originally designed at a one and 100 year</p> <p>19 return period, but with the added safety</p> <p>20 factor, there's no doubt that it would be</p> <p>21 higher than a one and 100 year return period.</p> <p>22 MR. JOHNSON:</p> <p>23 Q. So is this like, they come along after and</p> <p>24 sort of beef it up? It's been in operation</p> <p>25 for a number of years and then they -</p>
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<p>1 Q. If that's in order, Mr. Chairman?</p> <p>2 CHAIRMAN:</p> <p>3 Q. Sure, absolutely.</p> <p>4 (BREAK 10:57 a.m.)</p> <p>5 (RESUME - 11:29 a.m.)</p> <p>6 CHAIRMAN:</p> <p>7 Q. I think we're back to you, Mr. O'Reilly.</p> <p>8 O'REILLY, Q.C.:</p> <p>9 Q. Yes, Mr. Chairman, I have no further questions</p> <p>10 of the panel, thank you very much.</p> <p>11 CHAIRMAN:</p> <p>12 Q. Oh, that was easy. Do you have any--okay,</p> <p>13 sir.</p> <p>14 MR. JOHNSON:</p> <p>15 Q. Yes, I have just one question and see where it</p> <p>16 goes. As it relates to the AltaLink one and</p> <p>17 100 year return with a 100 safety factor--100</p> <p>18 percent safety factor and I guess that's taken</p> <p>19 on a bit more significance, so I would like to</p> <p>20 know what that involves?</p> <p>21 MR. WILSON:</p> <p>22 A. It's Paul Wilson. The AltaLink design</p> <p>23 criteria and tower family has a one in 100</p> <p>24 year return period, as we indicated, depending</p> <p>25 on the type of circuit it is, and 100 percent</p>	<p>1 MR. WILSON:</p> <p>2 A. No, this is a new design.</p> <p>3 MR. JOHNSON:</p> <p>4 Q. A new design.</p> <p>5 MR. WILSON:</p> <p>6 A. Yes.</p> <p>7 MR. JOHNSON:</p> <p>8 Q. Okay, and if I was looking at a one and 100</p> <p>9 year return line and then--in Alberta, and</p> <p>10 then I said, okay, now, could you show me the</p> <p>11 one and 100 year return with the 100 percent</p> <p>12 safety factor, they would look physically</p> <p>13 different?</p> <p>14 MR. WILSON:</p> <p>15 A. I believe so as there would be more steel and</p> <p>16 structures and heavier materials.</p> <p>17 MR. JOHNSON:</p> <p>18 Q. And the 100 percent safety factor, is that</p> <p>19 referring to life safety, property safety?</p> <p>20 MR. WILSON:</p> <p>21 A. It refers to the strength of the tower and the</p> <p>22 design itself, so if it could take, for</p> <p>23 example, 10 pounds of weight on that</p> <p>24 structure, you doubled it to take 20 pounds of</p> <p>25 weight.</p>

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<p>1 MR. JOHNSON:</p> <p>2 Q. And what would that equate to if we were</p> <p>3 thinking in terms of a return period? What's</p> <p>4 the one and 100 equate to if we used, you</p> <p>5 know, conventional thinking about return</p> <p>6 period design?</p> <p>7 MR. WILSON:</p> <p>8 A. It starts with a one and 100 year return</p> <p>9 period design and then they add to that, so it</p> <p>10 has something more than a one and 100 year. I</p> <p>11 don't know what it ultimately is.</p> <p>12 MR. JOHNSON:</p> <p>13 Q. I guess that would be--is it possible to</p> <p>14 determine what--does my question make sense</p> <p>15 I'm wondering. Is it possible to say a one</p> <p>16 and 100 year return line with a 100 percent</p> <p>17 safety factor is equivalent to a one and 150</p> <p>18 or a one and 250?</p> <p>19 MR. WILSON:</p> <p>20 A. I would suggest that it would be close to the</p> <p>21 one and 150, but I don't know exactly.</p> <p>22 MR. JOHNSON:</p> <p>23 Q. I'd like that clarified, if we could.</p> <p>24 GREENE, Q.C.:</p> <p>25 Q. I don't believe that MHI--maybe they should</p>	<p>1 more strength to that tower. If you're adding</p> <p>2 100 percent safety factor, then you're</p> <p>3 doubling the strength of that tower and line.</p> <p>4 MR. JOHNSON:</p> <p>5 Q. Doubling the strength of it, but may not be</p> <p>6 doubling the return period.</p> <p>7 MR. WILSON:</p> <p>8 A. Correct.</p> <p>9 MR. JOHNSON:</p> <p>10 Q. Okay, okay. I'm just thinking because in the</p> <p>11 break I was thinking about it and I was</p> <p>12 putting it in terms of--this sounds strange,</p> <p>13 but some sort of analogy for me. If you take</p> <p>14 a fishing line, a trout line -</p> <p>15 GREENE, Q.C.:</p> <p>16 Q. Or a salmon line?</p> <p>17 MR. JOHNSON:</p> <p>18 Q. Or a salmon fishing line, exactly, and it's</p> <p>19 got a 10 pound test, so that means that</p> <p>20 presumably it can withstand a certain amount</p> <p>21 of weight, 10, 15, so if there's a safety</p> <p>22 factor--it could probably withstand a bit more</p> <p>23 than 10 pounds, you'd think you'd probably get</p> <p>24 13, 14, is that in any way analogous or -</p> <p>25 MR. WILSON:</p>
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<p>1 comment on whether they can complete that--</p> <p>2 their own analysis without information for the</p> <p>3 Alberta line, I don't know.</p> <p>4 MR. WILSON:</p> <p>5 A. No, we did not do the integral design of that</p> <p>6 line, this is the published design criteria by</p> <p>7 TransAlta. They have built those towers, so</p> <p>8 for MHI to go and determine what that</p> <p>9 reliability and return period would be, would</p> <p>10 be, I think, frustrating, we would not be able</p> <p>11 to do that.</p> <p>12 MR. JOHNSON:</p> <p>13 Q. So the 100 percent safety factor and forgive</p> <p>14 me if I sound obtuse, wouldn't be the first</p> <p>15 time, the 100 percent safety factor says that</p> <p>16 I'm safe from what 100 percent of the time?</p> <p>17 Safe from what?</p> <p>18 MR. WILSON:</p> <p>19 A. I guess safety factor is used as a term and</p> <p>20 design for, to measure strength, so when you</p> <p>21 build something to withstand a certain event,</p> <p>22 if you build in a safety factor, what you're</p> <p>23 doing is you're strengthening that structure</p> <p>24 or line to some level. If you build in a 50</p> <p>25 percent safety factor, you may add 50 percent</p>	<p>1 A. I guess if you add 100 percent safety factor</p> <p>2 to a 10 pound test line, I guess, you're going</p> <p>3 to catch a 20 pound fish, but -</p> <p>4 MR. JOHNSON:</p> <p>5 Q. I regret going fishing now. I think--I</p> <p>6 appreciate your reply, I think I'm going to</p> <p>7 have a further look on this on our own to find</p> <p>8 out about it.</p> <p>9 O'REILLY, Q.C.:</p> <p>10 Q. Might want to have a review of his fishing</p> <p>11 skills too.</p> <p>12 CHAIRMAN:</p> <p>13 Q. Is that it?</p> <p>14 MR. JOHNSON:</p> <p>15 Q. I'm sorry, yes, it is, yes, that was the only</p> <p>16 question I had.</p> <p>17 CHAIRMAN:</p> <p>18 Q. So, we're -</p> <p>19 GREENE, Q.C.:</p> <p>20 Q. I have a couple of questions for the panel,</p> <p>21 Mr. Chair.</p> <p>22 CHAIRMAN:</p> <p>23 Q. Over to you, okay.</p> <p>24 GREENE, Q.C.:</p> <p>25 Q. The first question relates to the issue of</p>

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1 risk management and Mr. O'Reilly asked you
2 questions about management to risk and the
3 difference between the Isolated-Island Option
4 and the Infeed Option and I wonder if you
5 would like to comment with respect to the
6 management of the risks on the Infeed Option
7 where you addressed in your reply the issue of
8 management of the construction risks. Are
9 there other risks that would exist with
10 respect to the Infeed Option that you did not
11 comment on previously?

12 MR. WILSON:

13 A. Paul Wilson. Yes, thank you, I'd like to
14 clarify a little bit. When we were asked
15 about the construction risks in the Infeed
16 Option for capital costs and there's obviously
17 other risks that need to be identified in the
18 operation and reliability of the Labrador-
19 Island Link itself, which is also integral to
20 the Infeed Option, and I just wanted to note
21 that that is also a concern as we've noted in
22 our report.

23 GREENE, Q.C.:

24 Q. So, in addition to, as you say, the
25 construction cost issues, I believe, there is

1 MR. WILSON:

2 A. Yes, we do, that is correct.

3 GREENE, Q.C.:

4 Q. That concludes the questions that I have for
5 the Panel, Mr. Chair.

6 CHAIRMAN:

7 Q. Do you have any other matters that you wanted
8 to -

9 GREENE, Q.C.:

10 Q. Now, I didn't know if the Panel would have any
11 -

12 CHAIRMAN:

13 Q. Oh, I'm sorry, you guys got any -

14 GREENE, Q.C.:

15 Q. - the Commissioners would have have questions
16 for the Panel?

17 CHAIRMAN:

18 Q. Excuse me.

19 COMMISSIONER OXFORD:

20 Q. No.

21 CHAIRMAN:

22 Q. No?

23 COMMISSIONER WHALEN:

24 Q. No, thank you very much.

25 CHAIRMAN:

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1 the issues you identified with respect to
2 reliability that need to addressed and
3 mitigated.

4 MR. WILSON:

5 A. That's correct.

6 GREENE, Q.C.:

7 Q. And the final question for you, the final
8 area, is you--as you reviewed in your report
9 and outlined in your report, reviewed the
10 documentation available from Nalcor and
11 provided your report to the Board. This week
12 you heard the evidence provided by Nalcor, the
13 information provided by Nalcor during their
14 presentations was based on the information
15 that you have heard this week, does that
16 affect in any way any of your key findings and
17 conclusions that you have outlined in your
18 written report

19 MR. WILSON:

20 A. MHI's key findings, we still believe are
21 correct. They are--yes, we stand behind them.

22 GREENE, Q.C.:

23 Q. And with respect to the areas of concern
24 identified in your report, do you still have
25 the same areas of concern?

1 Q. None for me.

2 MR. WILSON:

3 A. Thank you very much.

4 CHAIRMAN:

5 Q. Alright.

6 GREENE, Q.C.:

7 Q. There was one additional item before we
8 conclude that we have had discussion or I have
9 had discussion with counsel for Nalcor about
10 it and it concerns one of the previous
11 requests and the response to the an
12 undertaking which related to the value of the
13 various packages that had been outlined.
14 Perhaps, Mr. McNiven, if you could bring up
15 the website that we had up there two days ago.
16 The Lower Churchill Project, SNS Lavalin
17 website which lists a number of package
18 descriptions and pre-qualifications is the
19 heading. Yes. And that's because--I think
20 there may have been some misunderstanding or
21 not clarity around how I had asked the
22 question. So, in terms of that, there are a
23 number of different packages that are outlined
24 there and the question had been whether Nalcor
25 could indicate the value of the various

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<p>1 packages. And at one stage I may have said, 2 contracts ready to award, but the intent of 3 the question and what we would like Nalcor to 4 provide is an order of magnitude of the total 5 value of all of the packages that are listed 6 on the website. So, Mr. Kean had replied that 7 it was four and a half million dollars, but I 8 believe he interpreted that as ready, of 9 contracts to award. What we would like is the 10 order of magnitude for all of the packages 11 that are shown on this website. And I don't 12 know if Nalcor would have any questions around 13 it, just for clarity, but -</p> <p>14 O'REILLY, Q.C.: 15 Q. Just a moment, can I just--there seems to be 16 some confusion over--when we read the 17 transcript, there was one and Mr. Kean's 18 response, I think, was trying to be responsive 19 to what was in the -</p> <p>20 GREENE, Q.C.: 21 Q. Yes, what you interpreted what we -</p> <p>22 O'REILLY, Q.C.: 23 Q. - what was in the transcript, but now I'm told 24 that there was something other than that 25 intended and I just -</p>	<p>1 terms of value, magnitude of the value of all 2 of this without, I suppose, disclosing what 3 you expect the bidders to come in, what you're 4 prepared to accept, which would be kind of 5 counterproductive to the bidding process. I'm 6 trying to get a handle on it. So, what you 7 want is just an order of magnitude of what the 8 assessment was of the total value of those 9 packages.</p> <p>10 GREENE, Q.C.: 11 Q. Yes, that's correct. And as I indicated when 12 we had this discussion earlier this week, we 13 are not asking that it be broken down by each 14 package because obviously there is commercial 15 sensitivity around it.</p> <p>16 O'REILLY, Q.C.: 17 Q. No, that's okay, that's okay. As long as we 18 understand that because I mean -</p> <p>19 GREENE, Q.C.: 20 Q. Right, okay. So, thank you, it was just to 21 clarify for the record what we would like 22 Nalcor to file.</p> <p>23 O'REILLY, Q.C.: 24 Q. Alright, that's fine.</p> <p>25 GREENE, Q.C.:</p>
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<p>1 GREENE, Q.C.: 2 Q. I guess if you read the transcript it does go 3 as to the nature of the question. And I'm 4 sure we don't want to go back there. This is 5 to clarify what we would actually like.</p> <p>6 O'REILLY, Q.C.: 7 Q. We obviously don't have that information here 8 today and -</p> <p>9 GREENE, Q.C.: 10 Q. No, no, just that we were all on the same 11 page.</p> <p>12 O'REILLY, Q.C.: 13 Q. But so that I'm--I'm looking at this and I'm 14 seeing that really it's comprised of packages. 15 It identifies a package -</p> <p>16 GREENE, Q.C.: 17 Q. Yes.</p> <p>18 O'REILLY, Q.C.: 19 Q. - and you know, description of a certain of a 20 piece of work or whatever and then it gives-- 21 there's--some have bidders' list, some are 22 pending and I guess people that have qualified 23 as or pre-qualified as people from whom 24 they'll take bidders and then there's the RFP 25 issue date. So, some of this information, in</p>	<p>1 Q. Thank you.</p> <p>2 CHAIRMAN: 3 Q. Well, I guess we're all finished. I wanted to 4 just acknowledge MHI's contribution, thank you 5 very much. You need to do some work on your 6 climate change position, but you're not beyond 7 redemption, like Mr. Bennett. But other than 8 that, I think your comments were very 9 instructive and very helpful and thank you 10 very much. And to Mr. O'Reilly and Mr. 11 Bennett and your group as well, I think we've 12 had some pretty good exchange here and we will 13 reconvene. I'm not sure when we're 14 reconvening. Are we going to announce that 15 tomorrow?</p> <p>16 GREENE, Q.C.: 17 Q. Yes, we are working now with the people who've 18 asked to make a presentation with respect to 19 the scope of their presentation and then 20 timing. So, it will be tomorrow before we 21 have a schedule.</p> <p>22 CHAIRMAN: 23 Q. There's some 13 or 14 -</p> <p>24 GREENE, Q.C.: 25 Q. Right now, we have 14 people who have</p>

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1 expressed an interest in making a presentation
 2 and we will be working with each of those
 3 presenters with respect to what their
 4 presentation will concern and the time for
 5 their presentation. And that will be posted
 6 on the Board's website tomorrow and we will
 7 advise the parties as soon as that has been
 8 completed.

9 CHAIRMAN:
 10 Q. So, we shall adjourn, as they say, until
 11 further notice.

12 MR. WILSON:
 13 Q. I'd just like -

14 CHAIRMAN:
 15 Q. You want to have the last word? Okay.

16 MR. WILSON:
 17 Q. On behalf of MHI and my colleagues here I
 18 wanted to thank Mr. Chair and the Board and
 19 counsel and interested parties here for this
 20 opportunity to work on this project with you.
 21 So, thank you very much.

22 CHAIRMAN:
 23 Q. Thank you and good luck in future endeavours.
 24 So, we'll adjourn at the call of the Chair, I
 25 guess, as they say, is it?

1 CERTIFICATE
 2 I, Judy Moss, do hereby certify that the foregoing
 3 is a true and correct transcript of a hearing of the
 4 Muskrat Falls Review held before the Board of
 5 Commissioners of Public Utilities on the 16th day of
 6 February, 2012 A.D. in the city of St. John's,
 7 Newfoundland and Labrador and was transcribed by me to
 8 the best of my ability by means of a sound apparatus.
 9 Dated at St. John's, NL this
 10 16th day of February, 2012
 11 Judy Moss
 12 Discoveries Unlimited Inc.

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1 Upon conclusion at 11:44 a.m.

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