



MANITOBA PUBLIC UTILITIES BOARD

Re:

MANITOBA HYDRO
NEEDS FOR AND ALTERNATIVES TO
REVIEW OF MANITOBA HYDRO'S
PREFERRED DEVELOPMENT PLAN

Regis Gosselin	- Chairperson
Marilyn Kapitany	- Board Member
Larry Soldier	- Board Member
Richard Bel	- Board Member
Hugh Grant	- Board Member

HELD AT:

Public Utilities Board
400, 330 Portage Avenue
Winnipeg, Manitoba
April 14, 2014
Pages 6675 to 6939

	APPEARANCES	
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4		
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6	Marla Boyd (np))
7	Douglas Bedford (np))
8	Helga Van Iderstine)
9	Jennifer Moroz (np))
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14	Peter Miller (np))
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18	George Orle) MKO
19	Michael Anderson (np))
20		
21	Jessica Saunders (np)) MMF
22	Corey Shefman (np))
23		
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25	Michael Weinstein)

1	TABLE OF CONTENTS	
2		Page No.
3	List Exhibits	6678
4	List of Undertakings	6679
5		
6	IEC KNIGHT PIESOLD PANEL:	
7	MICHAEL ROBERTSON, Sworn (Qual.)	
8	BORIS FICHOT, Affirmed (Qual.)	
9	Qualification of Witnesses	6685
10	Examination-in-chief by Mr. Christian Monnin	6695
11	Cross-examination by Ms. Meghan Menzies	6768
12	Cross-examination by Mr. Antoine Hacault	6818
13	Cross-examination by Ms. Helga Van Iderstine	6859
14	Cross-examination by Mr. Sven Hombach	6915
15		
16	Certificate of Transcript	6939
17		
18		
19		
20		
21		
22		
23		
24		
25		

6678

1	LIST OF EXHIBITS	
2	EXHIBIT NO.	PAGE NO.
3	KP-3-1	Redacted report, dated March 2014 6682
4	KP-3-2	Redacted supplement report, dated
5	April 2014	6682
6	KP-3-3	Unredacted page II of III of Exhibit
7	KP-3-2	6683
8	KP-4	Slide deck for presentation 6683
9	KP-5	Scope of work for KP, dated
10	September 20th, 2013	6683
11	KP-6	Scope of work for KP, dated January
12	13th, 2014	6684
13	MH-104-13	Economic summary table assuming
14	flat load growth beyond 2022/2023	6817
15	MH-174	Response to MIPUG Exhibit 21
16	Question 3	6817
17	MH-175	Response to Undertaking 67 6818
18	MIPUG-20-8	Volume VIII 6818
19	MH-173	Book of documents 6886
20	PUB-58-6	Volume VI of Board counsel's
21	book of documents	6916
22		
23		
24		
25		

1	LIST OF UNDERTAKINGS		
2	NO.	DESCRIPTION	PAGE NO.
3	117	Knight Piesold to update Table 9.1	
4		in Exhibit 3-2 to include the P90	
5		value and the P95 values	6832
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
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20			
21			
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1 --- Upon commencing at 9:02 a.m.

2

3 THE CHAIRPERSON: Good morning. I
4 believe that we are in a position to begin today's
5 proceedings. And before I ask Mr. Hombach to introduce
6 the proceedings today, I have a statement I'd like to
7 read.

8 Last Friday there was a mention on the
9 transcript that the Winnipeg Free Press had published
10 an editorial column, and had also quoted from the
11 executive summary of the January 24th, 2014, La Capra
12 Associates initial expert analysis report. All parties
13 should be advised that on Saturday, April 12th, 2014,
14 as Chair of the Public Utilities Board I received an
15 email from Mr. Laliberte also related to the evidence
16 of La Capra Associates.

17 The email that was also sent by Mr.
18 Laliberte to counsel for CAC, MMF, and MIPUG, as well
19 as the -- to one of the La Capra witnesses. I've
20 instructed the NFAT project coordinator, Madam Lemoine,
21 to post that email on the Board's NFAT website as an
22 additional presentation from Mr. Laliberte, should
23 others wish to read it.

24 I should also remind everyone that any
25 presentations should be sent directly to the NFAT

1 project coordinator, Madam Lemoine, or to the panel --
2 or the Board's executive director, Mr. Singh, rather
3 than directly to any panel member. Those presentations
4 will then be posted on the Board's NFAT website.

5 Thank you very much. Over to you, Mr.
6 Hombach.

7 MR. SVEN HOMBACH: Yes, good morning,
8 Mr. Chairman. Good morning, members of the panel.
9 Today is reserved for the evidence of Knight Piesold,
10 an independent expert consultant appointed by the NFAT
11 panel to review construction and capital cost matters.

12 Knight Piesold is scheduled to be on for
13 a day and a half. Today is reserved for the public
14 session. The morning tomorrow on April 15th is
15 reserved for the confidential, or CSI, session. And
16 I've been advised by Manitoba Hydro that Manitoba Hydro
17 has retained Ms. Helga Van Iderstine to handle the
18 examination of Knight Piesold on behalf of Manitoba
19 Hydro. I'd welcome her to the hearing room.

20 At 12:45 today there will also be a
21 presentation by Mr. David Barber, so I suggest that we
22 break on time. Lastly, Mr. Chairman, before we get
23 started I was advised by Mr. Bill Gange on behalf of
24 GAC this morning that GAC will not be in attendance
25 today and will not be taking any position with respect

1 to the evidence of Knight Piesold.

2 With that, Mr. Chairman, I would suggest
3 that we turn it over to Me. Monnin to introduce and
4 qualify the witnesses.

5 THE CHAIRPERSON: Thank you, Mr.
6 Hombach. Me. Monnin, bonjour.

7 MR. CHRISTIAN MONNIN: Bonjour, M.
8 President, members of the panel. Before I move to the
9 qualifying -- qualification questions for Mr. Robertson
10 and Mr. Fichot, I would propose to submit some
11 documents for filing.

12 Mr. Secretary, the report dated March
13 2014 redacted, which is the first report, should be KP-
14 3-1.

15 MR. KURT SIMONSEN: All right.

16
17 --- EXHIBIT NO. KP-3-1: Redacted report, dated
18 March 2014

19
20 MR. CHRISTIAN MONNIN: The supplemental
21 report, which is April 2014 redacted, should be 3-2.

22
23 --- EXHIBIT NO. KP-3-2: Redacted supplement report,
24 dated April 2014

25

1 MR. CHRISTIAN MONNIN: And earlier this
2 morning Ms. Van -- Van Iderstine, counsel for Hydro,
3 indicated that in the supplemental report which is now
4 KP-3-2 there was a redacted -- or a redaction that was
5 unredacted, and that would be found at page Roman
6 numeral II of III, and those documents -- that document
7 has been circulated. And I would propose that that be
8 filed as Exhibit KP-3-3.

9
10 --- EXHIBIT NO. KP-3-3: Unredacted page II of III
11 of Exhibit KP-3-2
12

13 MR. CHRISTIAN MONNIN: We also have a
14 slide deck for the presentation which will be provided
15 by KP today, and that would -- I propose that would be
16 KP number 4.

17
18 --- EXHIBIT NO. KP-4: Slide deck for presentation
19

20 MR. CHRISTIAN MONNIN: There's the
21 scope of work for KP dated September 20th, 2013. I
22 would propose that that be KP number 5.

23
24 --- EXHIBIT NO. KP-5: Scope of work for KP, dated
25 September 20th, 2013

1 MR. CHRISTIAN MONNIN: The
2 supplementary scope of work, which sets out the work
3 that -- that was done on the supplementary report
4 that's dated January 13th, 2014, I would suggest that
5 that be KP number 6.

6

7 --- EXHIBIT NO. KP-6: Scope of work for KP, dated
8 January 13th, 2014

9

10 MR. KURT SIMONSEN: Thank you very
11 much.

12 MR. CHRISTIAN MONNIN: Thank you, Mr.
13 Secretary. With that, I would propose to put the
14 qualification questions to Mr. Robertson, who's
15 immediately to my left, and then to Mr. Fichot, and
16 then I would ask the panel to take the next step with
17 regards to qualifications.

18 THE CHAIRPERSON: Did swear these
19 witnesses in?

20 MR. CHRISTIAN MONNIN: We did not.
21 Thank you, Mr. President.

22

23 IEC KNIGHT PIESOLD PANEL:

24 MICHAEL ROBERTSON, Sworn (Qual.)

25 BORIS FICHOT, Affirmed (Qual.)

1 QUALIFICATION OF WITNESSES:

2 MR. CHRISTIAN MONNIN: Mr. Robertson,
3 you're here on behalf on Knight Piesold, which has been
4 retained by Manitoba Public -- by the Manitoba Public
5 Utilities Board in order to assist the PUB to conduct a
6 Needs For and Alternatives To review of Manitoba
7 Hydro's proposed Preferred Development Plan.

8 Is that correct?

9 MR. MICHAEL ROBERTSON: Yes.

10 MR. CHRISTIAN MONNIN: Knight Piesold
11 has prepared two (2) reports which have been filed in
12 accordance with the terms of reference of the NFAT and
13 in accordance with Knight Piesold's scope -- scopes of
14 work dated September 20th, 2013, and January 13th,
15 2014, to critically review certain aspects of Manitoba
16 Hydro's Preferred Development Plan and filings.

17 Is that correct?

18 MR. MICHAEL ROBERTSON: Yes.

19 MR. CHRISTIAN MONNIN: Were these
20 reports prepared by you or under your supervision and
21 control?

22 MR. MICHAEL ROBERTSON: The -- the
23 reports were prepared by myself and Mr. Fichot as co-
24 authors and co-reviewers, and I take full
25 responsibility for the final product.

1 MR. CHRISTIAN MONNIN: Can you please
2 describe for the Board the primary areas of focus in --
3 in your work for the PUB?

4 MR. MICHAEL ROBERTSON: We -- we were
5 asked by the PUB to comment on Manitoba Hydro's
6 proposals with regard to construction management and
7 capital costs. In more detail, we -- we were posed in
8 the first scope of work nine (9) questions by the -- by
9 the Board, and in the second one, a further eight (8)
10 questions.

11 The first nine (9) questions were to
12 comment on the capital and operation and maintenance
13 cost estimates for Conawapa and Keeyask generating
14 station, to comment on the construction indirect costs
15 for Conawapa and Keeyask generating stations; to assess
16 the construction management schedule and contracting
17 plans for Conawapa and Keeyask generating stations; to
18 review the capital and operation and maintenanc --
19 maintenance cost estimates for wind, natural gas,
20 combined-cycle gas turbines, and solar facilities;
21 comment on the construction management plan's schedule
22 and contracting methods for wind, natural gas,
23 combined-cycle gas turbines, and solar facilities; to
24 look into the factors that led to the cost increases
25 over successive capital expenditure forecasts; to

1 provide a historical perspective of construction costs
2 of other Lower Nelson River generating stations; to
3 provide a justification for the increasing direct and
4 indirect costs; and to provide a high-level assessment
5 of the construction planning and management of
6 construction costs of Manitoba Hydro's Preferred
7 Development Plan.

8 So those were the first nine (9)
9 questions in the -- which have been covered off in the
10 main first report that we produced.

11 The second report and the second scope
12 of work comprised eight (8) questions, which were
13 overall management strategy and scheduling for the
14 tendering of the contracts for the Keeyask generating
15 station; to comment on the construction risk management
16 strategy that Manitoba Hydro is following; to comment
17 on the documents from the major Keeyask component; to
18 review the construction and equipment procurement
19 bonding and liquidated damage requirements; to comment
20 on the quality assurance and quality control
21 requirements; to review the overall civil contract
22 project management approach; to comment on the pre-
23 tender construction estimates compared to the actual
24 tender prices; and finally, to review the expected in
25 service capital cost for Keeyask.

1 MR. CHRISTIAN MONNIN: Thank you, Mr.
2 Robertson. Your curriculum vitae has been filed with
3 the -- the PUB as part of Exhibit Hill Co. number 9,
4 specifically, Tab 5B.

5 Can you describe your qualifications and
6 experience generally and specifically as they relate to
7 the work undertaken by KP?

8 MR. MICHAEL ROBERTSON: Yes, I am --
9 I'm a civil engineer with a British degree. I have
10 been in the business for forty-four (44) years, since I
11 graduated. Pretty much all of that experience has been
12 with water resource development, dams, large dams,
13 irrigation schemes, hydro power, and some work on -- on
14 mining. But most of it has been dams and hydro power
15 schemes.

16 Of -- of particular relevance, I
17 believe, to -- to today's proceedings is the work that
18 I did with the consumer advocate for Newfoundland and
19 Labrador in a similar process to this when the Muskrat
20 Falls proposals were being reviewed, and we -- we were
21 the engineers that -- that advised the consumer
22 advocate.

23 And apart from that, I've been involved
24 with any number of hydro electric power developments,
25 primarily in British Columbia, but also looking at

1 providing hydro power for mines around the world in
2 remote locations, where diesel power generation is --
3 is very expensive. So we've -- I have worked in
4 countries all around the world doing that.

5 MR. CHRISTIAN MONNIN: Thank you, Mr.
6 Robertson. Can you generally -- can you describe
7 generally the type of clientele that Knight Piesold
8 does work for?

9 MR. MICHAEL ROBERTSON: Primarily
10 independent commercial entities, independent power
11 producers in British Columbia and around the world, and
12 mining companies. As I -- as I mentioned, mining
13 companies, we -- Knight Piesold does do a lot of
14 geotechnical engineering for mining companies. But my
15 experience on mine -- mining developments has been in -
16 - in the provision of hydro power to power those mines.

17 We've also worked for -- for BC Hydro,
18 in terms of detailed engineering on -- on replacement
19 projects for them such as Aberfeldie in Southeast BC.
20 I've done a lot of dam safety review work for people
21 like TransAlta and FortisBC, and -- and some
22 engineering also for -- for TransAlta replacement
23 projects.

24 So -- but -- so mostly independent
25 commercial owners, but some utilities like -- like

1 Manitoba Hydro.

2 MR. CHRISTIAN MONNIN: Thank you, Mr.
3 Robertson. Mr. Chair, before I ask for the -- the
4 Board to accept Mr. Robertson as a -- as an expert, I
5 would suggest I put the same questions to Mr. Fichot.

6 Mr. Fichot, you're here on behalf of
7 Knight Piesold, which has been retained by the Manitoba
8 Public Utilities Board in order to assist the PUB to
9 conduct a Needs For and Alternatives To Review of
10 Manitoba Hydro's Preferred proposed -- sorry, proposed
11 Preferred Development Plan.

12 Is that correct?

13 MR. BORIS FICHOT: That is correct.

14 MR. CHRISTIAN MONNIN: Mr. Fichot,
15 Knight Piesold has prepared two (2) reports which have
16 been filed in accordance with the terms of reference
17 and also in accordance with the scopes of work for
18 Knight Piesold dated September 20th, 2013, and January
19 13th, 2014, to critically review a certain aspect of
20 Manitoba Hydro's Preferred Development Plan and
21 filings.

22 Is that correct?

23 MR. BORIS FICHOT: That is correct.

24 MR. CHRISTIAN MONNIN: Were these
25 reports prepared by you or under your supervision or

1 control?

2 MR. BORIS FICHOT: Yes, I co-authored
3 those reports with Mike Robertson.

4 MR. CHRISTIAN MONNIN: Now, you heard
5 Mr. Robertson provide a -- a description of the primary
6 areas of the focus in the -- in the work conducted by
7 Knight Piesold.

8 Do you care to add to that?

9 MR. BORIS FICHOT: No.

10 MR. CHRISTIAN MONNIN: Mr. Fichot, your
11 curriculum vitae has been filed with the PUB as part of
12 Exhibit Hill Co. number 8, Tab 5A.

13 Can you please describe your
14 qualifications generally and specifically as they
15 relate to the work undertaken by Knight Piesold in
16 these proceedings?

17 MR. BORIS FICHOT: Yes. I'm a civil
18 engineer, bachelor's degree from McGill, master's
19 degree from Colorado State 'U' in water resources
20 planning and management. I've got over twelve (12)
21 years' experience. I've worked for three and a half (3
22 1/2) years with the Lower Colorado River Authority,
23 which is a similar entity to Manitoba Hydro. I worked
24 in the -- the planning department there.

25 Then I've worked with Knight Piesold

1 after that, mainly working on hydro power projects in
2 the consulting fields. I've worked on everything in
3 hydro power from green-field assessments all the way
4 through detailed construction, supervision, and -- and
5 implementation.

6 I've worked on due diligence for a
7 number of entities on hydro power projects. I've done
8 due diligence on wind power -- power projects, as well.

9

10 MR. CHRISTIAN MONNIN: Mr. Fichot,
11 you've also heard Mr. Robertson provide a description
12 of the general clientele that Knight Piesold does work
13 for.

14 Do you care to add to that?

15 MR. BORIS FICHOT: I'll add that Knight
16 Piesold is a -- is a consulting firm that works a lot
17 with mining clients. But one of the primary focus when
18 you work with mining clients is on tailings dams, so it
19 relates to embankment construction, as well.

20 I've personally worked with First
21 Nations and INAC on some due diligence on hydro power
22 projects, as well. We do due diligence on hydro power
23 projects for investment firms that are looking to
24 invest in -- in hydro power projects. So we'll write
25 reports and do -- do an analysis on that front for

1 them.

2 But the -- the bulk of the clientele, as
3 -- as Mike Robertson said, is -- is independent power
4 producers with some work for -- for major utilities.
5 And the -- the mining clients that we work for
6 typically are mines in remote places that are looking
7 for resources to -- to supply electricity for them. So
8 we'll do a comparative analysis of hydro power and, on
9 occasion, wind power and some other options to -- to
10 supply the mines.

11 MR. CHRISTIAN MONNIN: Merci, Mr.
12 Fichot. Mr. Chair, with that, I would ask that Mr. --
13 Mr. Robertson and Mr. Fichot be accepted by the Board
14 as experts for the purposes of giving evidence on the
15 work performed by Knight Piesold according to their
16 respective scopes of work under the NFAT.

17 THE CHAIRPERSON: Thank you, Me.
18 Monnin. I'd like to hear from the Intervenors,
19 starting with you, Ms. Menzies.

20 MS. MEGHAN MENZIES: Thank you, and
21 good morning. CAC (Manitoba) has no objections to
22 these qualifications.

23 THE CHAIRPERSON: Thank you, Ms.
24 Menzies. Me. Hacault, s'il vous plait.

25 MR. ANTOINE HACAULT: On behalf of

1 MIPUG -- MIPUG, we have no objections to the
2 qualifications of these two (2) experts.

3 THE CHAIRPERSON: Merci, Me. Hacault.
4 Mr. Orle, please, on behalf of MKO?

5 MR. GEORGE ORLE: We have no objection
6 to the witnesses being qualified as experts. Thank
7 you.

8 THE CHAIRPERSON: Thank you, Mr. Orle.
9 Could I hear from Manitoba Hydro, please?

10 MS. HELGA VAN IDERSTINE: We have no
11 objection to their being qualified, as well. I would,
12 however, just alert you to the -- during the cross of
13 these witnesses, I may ask some questions about their
14 qualifications, but it's not going to go towards their
15 -- whether or not they are qualified to give this
16 evidence. So we accept them as experts. Thanks.

17 THE CHAIRPERSON: Thank you, Ms. Van
18 Iderstine. Mr. Hombach, would you like to comment or
19 do you...?

20 MR. SVEN HOMBACH: I have no further
21 comments. If the panel is satisfied with the
22 witnesses' credentials, it is up to the panel whether
23 or not to accept them as expert witnesses.

24 THE CHAIRPERSON: Thank you, Mr.
25 Hombach. Just a second, please.

1 The panel is in agreement. We'll accept
2 both Mr. Robertson and Mr. Fichot as expert witnesses
3 for the purposes of these proceedings. So back to you,
4 Me. Monnin.

5

6 EXAMINATION-IN-CHIEF BY MR. CHRISTIAN MONNIN:

7 MR. CHRISTIAN MONNIN: Merci, Me.

8 President. I can advise that Mr. Robertson will be
9 doing the presentation on behalf of Knight Piesold this
10 morning. I advised Mr. Hombach yesterday evening they
11 are making a presentation for two (2) reports, and we
12 expect that presentation to be about an hour and
13 fifteen (15), an hour and twenty (20) minutes.

14 On the CSI portion of their
15 presentation, I advised again My -- My Friend, Mr.
16 Hombach, that I don't expect that to be more than
17 fifteen (15), twenty (20) minutes, so just to give you
18 an idea of time.

19 MR. MICHAEL ROBERTSON: Excuse me.
20 Good morning, ladies and gentlemen. The presentation
21 that is -- that I'm going to do now is formatted along
22 the lines of the -- the nine (9) questions in the first
23 report and the eight (8) questions in the second
24 report. So the documents and materials that I'm
25 relying on are those two (2) reports, both the CSI and

1 the redacted or public versions.

2 There were a number of Information
3 Requests from us to -- to Hydro, which are -- which we
4 used in -- in producing our opinions. And there are
5 Knight Piesold responses to the IRs, a few of which
6 contain CSI.

7 We quoted a number of references in our
8 reports, but we're not providing separate -- separately
9 copies of those in this proceeding. And as a general
10 comment, most of the information that we have relied
11 upon has been provided by Manitoba Hydro, mostly CSI in
12 hard blue paper copy, and in some emails.

13 And as -- as Christian has -- has allude
14 -- has mentioned, these reports were produced by me and
15 Boris Fichot, and some contributions obviously from
16 other Knight Piesold engineers, but all under my
17 supervision and control. Versions that are quoted here
18 are the final versions. There are no revisions,
19 updates, or corrections that we wish to make to them.

20 The -- we -- we need to note that the --
21 the CSI version of the report in -- in the bottom
22 right-hand corner erroneously is still labelled
23 Revision A of February the 18th, 2014. And my
24 apologies. That should have been Revision 0 of April
25 the 8th, 2014. And then, as you know, we will talk to

1 the CSI content tomorrow.

2 Moving on to slide 3, the scope of work
3 was provided by those nine (9) questions which I have
4 numbered 1 to 9 in the first report, and the second set
5 of questions I have labelled S1 to S8.

6 And because of the timing, some of the
7 data that I am talking to in the first nine (9)
8 questions was out of date by the time we did the
9 second. And so there have been some updates and some
10 changes, and that will be detailed in the presentation.

11 So slide 4, Question 1, the question
12 was:

13 "Review and assess Manitoba Hydro's
14 capital and operation and maintenance
15 cost estimates for Conawapa
16 generating station and Keeyask
17 generating station, including the
18 adequacy of the management reserves
19 for the project."

20 So the general methodology for forming
21 the capital cost estimates used by Manitoba Hydro --
22 and in yellow here on these -- on this slide deck I
23 have referenced the page of the report that I am
24 quoting for ease of reference. So that's -- this is on
25 page 11 of the first report.

1 The -- the graphic there shows that
2 Manitoba Hydro builds up their estimated in-service
3 cost by starting with a point estimate, which comprises
4 direct costs and indirect costs. And it essentially is
5 the -- the best estimate.

6 To that is added an allowance -- two (2)
7 allowances for uncertainty: contingency and a
8 management reserve. And together, that is known as the
9 base cost. That is at a particular date. And then to
10 bring that up to any other date, like today, you
11 multiply by the interest and escalation from that date
12 to today, and you add the money spent to date, and you
13 end up with the total expected in-service cost for the
14 project.

15 The direct costs are those directly
16 related to doing the generation station work; in other
17 words, the labour, materials, and equipment involved in
18 providing the structures.

19 The indirect costs are all the other
20 capital costs; for example, the provision of site
21 infrastructure and services, the costs of the
22 engineering and project management, and environmental
23 activities. And this is expanded upon in our answer to
24 Question 2.

25 Moving on to slide 5, allowances are

1 made for the uncertainties in the point estimate
2 through the contingency which includes two (2) types of
3 risks: systemic risks, which are risks associated with
4 a process that is being followed by Manitoba Hydro --
5 in other words, the system that they are using to
6 manage the -- the project; and then project-specific
7 risks, which are uncertainties specific to Keeyask and
8 Conawapa. For example, in -- in that case, we are
9 talking about things like foundation conditions, the
10 weather up north, delay in delivery of items,
11 constructability, the availability of resources, and
12 quality.

13 Now, Manitoba Hydro has elected to
14 assess the contingency at what is known as the P50
15 level, i.e., there is a 50 percent probability that the
16 final project cost will be less than the number given,
17 and there's a 50 percent probability that it'll be
18 more, and on page 24 of our report, you can obtain more
19 detail of that.

20 Slide 6. The other allowance for
21 contingency is the management reserve, and this
22 includes an allowance for two (2) specific risks for
23 escalation over and above CPI. So escalation at CPI is
24 included in the point estimate, and this reserve makes
25 a provision for escalation in excess of CPI.

1 And then the second part of the
2 management reserve is a labour reserve, which is a
3 special pool of money that has been set aside to cater
4 for the possibility of labour costs and/or productivity
5 being different from what was assumed in the point
6 estimate, and these reserves were set up as a direct
7 result of the Wuskwatim experience, and that Wuskwatim
8 experience is examined in further detail in question 9
9 that follows.

10 Now, in -- in my experience -- in Knight
11 Piesold's experience, contingency usually includes the
12 management reserve, but Manitoba Hydro have chosen to
13 split them up, if only, we understand, because the two
14 (2) allowances are managed differently within Manitoba
15 Hydro.

16 So slide 7, just reminding you how the
17 in-service cost is built up. You start with a point
18 estimate. You add the allowances for uncertainty. You
19 end -- you end up with a base cost. You then -- so the
20 base cost is the expected final cost before adding the
21 effects of interest on borrowed capital and escalation,
22 and money spent to date. And you add all of those up,
23 and you have the in-service cost.

24 So the first thing we did, looking at
25 Manitoba Hydro's cost estimates for these two (2)

1 projects, was try and ballpark them by comparing them
2 with the capital cost estimates of similar projects in
3 Canada. And on the table there, you can see that we
4 looked at Muskrat Falls, and as I mentioned, we -- we
5 were involved in that review.

6 Site C in British Columbia is at a
7 similar stage of development as -- as Keeyask, although
8 somewhat behind. Petit -- Petit Mecatina Projects in
9 Quebec. Unfortunately we're not able to get capital
10 costs, but it's another big project that is being
11 developed at the moment. La Romaine in Quebec, and
12 then to those big hydro projects in Canada being
13 developed by others, we have compared Keeyask,
14 Conawapa, and we put Wuskwatim in there.

15 The -- the two (2) yardsticks we -- we
16 used are the capital cost in billion dollars per
17 megawatt of capacity, and also the capital cost in
18 million dollars divided by the average annual energy
19 that that project is slated to produce.

20 And you can see that Keeyask and
21 Conawapa are in the ballpark. They are high within
22 that ballpark, but they are in the ballpark, and so
23 they are not radically different.

24 The second part of the question, slide
25 9, relates to operation and maintenance costs, which I

1 show in that table. These costs include wages,
2 salaries and benefits, and training. In the initial
3 years insurance, partnership expenses, internal
4 administrative costs, internal and external consulting
5 environmental services, accommodation, and then in
6 later years, capital maintenance as the
7 mechanical/electrical equipment requires upgrades,
8 replacements, and/or refurbishments as required.

9 On slide 10, the conclusions on question
10 1 regarding capital cost estimates. We believe that
11 Manitoba Hydro's estimating process has been thorough
12 based on a detailed design, estimation of quantities,
13 and initial bottom-up approach to unit rates in 2009
14 for Keeyask and 2010 for Conawapa, major updates to
15 2012 based on the results of Wuskwatim, and then
16 inclusion of allowances for uncertainty.

17 We'd make the point that there is more
18 clarity in the Manitoba Hydro process of a direct costs
19 than an indirect. And I'll pick up on that again in
20 Question 2. And make the comment that many
21 jurisdictions use a higher value than a P50 estimate to
22 establish the contingency, but a significant number of
23 others do not. They also use the P50.

24 Regarding operation and maintenance
25 costs, we believe the estimated costs are commensurate

1 with similar hydro projects elsewhere in Canada.

2 So that was a long question. I don't
3 know if there are any questions from the panel or
4 anybody else at this stage? Okay. Moving on to
5 Question 2 at page 11.

6

7 (BRIEF PAUSE)

8

9 MS. MARILYN KAPITANY: The capital
10 estimates here are the -- I think we have revised
11 information on those capital estimates. So did you
12 look at this table in the context of the revised
13 estimates, and would your judgment still remain the
14 same of whether or not Keeyask and Conawapa fall into
15 the category of high but reasonable?

16 MR. MICHAEL ROBERTSON: Yes, we -- we
17 have -- we are aware, obviously, of the -- the increase
18 in the in service estimated capital cost. And we will
19 be dealing with that in the second set of questions,
20 once that information became available from Hydro.
21 And, no, I don't believe that increase changes our
22 essential conclusion that it -- that these projects are
23 in the ballpark, but at the high end of it.

24 MS. MARILYN KAPITANY: Okay.

25 MR. MICHAEL ROBERTSON: So moving on to

1 Question 2, slide 11:

2 "Review and assess Manitoba Hydro's
3 construction indirect costs including
4 the access roads, campsites, and
5 offsite mitigation costs for Conawapa
6 GS and Keeyask GS."

7 The -- a reminder, the indirect costs
8 include all temporary and permanent items not directly
9 associated with the primary structures but still
10 required to successfully implement the project. And
11 you can find details on page 34 of our report. So that
12 includes the preconstruction costs; site
13 infrastructure, including access roads and campsites;
14 site services; engineering and project management;
15 environment and litigation activities; general
16 expenses, including consultants, travel, site office,
17 insurance; and First Nation participation payments.

18 So much of the construction work, the
19 indirect construction work, was provided in the Keeyask
20 Infrastructure Project, KIP. In general we found the
21 information provided by Manitoba Hydro to be sensible.
22 But as I alluded to earlier, we could not offer an
23 opinion on costs like the internal Manitoba Hydro
24 project management and other costs and general
25 expenses.

1 The indirect costs, just to note,
2 exclude related costs to date, or money spent. And
3 Manitoba Hydro has stated that the indirect costs form
4 approximately one-third (1/3) of the point estimate.

5 Moving on to Question 3, slide 12: r

6 "Review and assess Manitoba Hydro's
7 construction management schedule and
8 contracting plans for the design,
9 engineering, procurement,
10 construction, startup, commissioning,
11 testing, and commercial operation of
12 Conawapa generating station and
13 Keeyask generating station."

14 So Manitoba Hydro created a Project
15 Execution Plan, PEP, for the Keeyask project. The
16 details are on page 40 of our report. It is a high-
17 level management guideline which describes the means,
18 methods, tools, and techniques used to manage the KIP
19 and the KGSP. The KGSP is the Keeyask Generating
20 Station Project. So Keeyask comprises these two (2)
21 projects.

22 It serves as a record of the planning
23 effort undertaken by Manitoba Hydro for the
24 construction phase of the project, and it serves as a
25 resource for staff to ensure that the project is

1 managed consistently.

2 Slide 13. The PEP is backed by a number
3 of Manitoba Hydro corporate policies and standards, the
4 most important of which that we have seen are the total
5 cost and schedule management standard, monitor and
6 control of engineering consultant standard, preparation
7 of project dashboards and tren -- trend analysis
8 standard, project change authorization process, work
9 package change management process, consultant
10 communication plans, division plan for managing the
11 consultants, and engineering work package scope sheets.

12 So Knight Piesold is able to see that
13 Hydro has good procedures in place for the management
14 of the projects, despite the fact that the PEP is
15 presently only in its draft form.

16 THE CHAIRPERSON: That last set of
17 words, Despite the PEP pres -- presently being in draft
18 form only, should we attach any significance to that?

19 MR. MICHAEL ROBERTSON: My opinion
20 would be probably not, but it's -- it would be nice to
21 see that finalized if that is the management tool that
22 is being used by BC Hydro, as they -- Manitoba Hydro,
23 forgive me. Manitoba Hydro are -- are moving into
24 serious expenditure and construction. I believe that
25 should be finalized.

1 Moving on to slide 14, contracting
2 methods considered by Manitoba Hydro for the various
3 contracts included -- details on page 42 -- fixed-price
4 contract, FPC; or otherwise known as EPC, engineer,
5 procure, construct; and also known in the trade as
6 design bid -- design build. Essentially, they're
7 different names for the same thing.

8 Second alternative would be a cost-
9 reimbursable contract, or CRC; direct negotiated
10 contracts, DNCs; unit price contract, UPC, which is the
11 traditional way of procuring large civil construction
12 works in the industry historically; and then supply-
13 only contracts, which are lump sum.

14 From the contracts seen by Knight
15 Piesold, it is apparent that Manitoba Hydro has made
16 appropriate choices for different contracts. For
17 example, it is using a fixed-price contract for the
18 turbine generating equipment and a cost-reimbursable
19 contract for the main civil works.

20 The main civil works contract -- the
21 acronym is GCC -- is also utilizing an early contractor
22 involvement process to obtain input from the chosen
23 contractor to refine the design, the construction
24 technique, the schedule, and risk sharing. And we
25 believe that to be entirely appropriate.

1 Slide 15. The Preferred Development
2 Plan includes an implementation schedule. Schedules
3 are also provided in the basis of cost estimate
4 documents. The schedules are consistent, we believe,
5 with the described developments and the anticipated
6 work breakdown structures.

7 A more detailed and complete schedule
8 for Keeyask was included with the tender package for
9 the general civil contract, and all tenderers
10 essentially confirmed that schedule as part of their
11 bids. And the -- the details of that schedule are
12 being refined as part of the ECI process.

13 The one (1) omission in the schedules
14 was the details of time needed for input by Manitoba
15 Hydro, such as refused by them -- reviews by themselves
16 or their independent engineers.

17 And then the PEP for Keeyask states that
18 execution will follow the Hydro cost and schedule
19 standard for schedule management.

20 THE CHAIRPERSON: Mr. Robertson, that
21 reference to the fact that the schedule did not include
22 time for review by Manitoba Hydro or the independent
23 engineers, that suggests that the schedule could be
24 impacted if they haven't planned for it?

25 MR. MICHAEL ROBERTSON: Yes, it could

1 be impacted. I -- we just don't know whether there is
2 any time associated with approvals of the contractors'
3 plans, for instance, which -- which might be
4 significant, or whether effectively that is built into
5 the -- into the existing bars in the Gantt shot.

6 I guess it's just a caution that, if
7 Manitoba Hydro do take a long time to approve things,
8 it could impact the schedule.

9 THE CHAIRPERSON: There was an earlier
10 reference to the fact that the indirect cost
11 represented about a third of the -- of the costs
12 associated with the -- the Keeyask plant.

13 Is that unusual that it be one-third
14 (1/3) as opposed to some other figure?

15 MR. MICHAEL ROBERTSON: It -- it's --
16 it's very much site specific, obviously, things like
17 access and remote camps and things like that. But it
18 is also very much a reflection of the -- the management
19 by the developer, the management costs, internal
20 management costs.

21 So I would have to say that's probably
22 higher than our independent power plants, who -- who
23 possibly don't spend so much money on that kind of
24 thing.

25 THE CHAIRPERSON: I think that one (1)

1 of the questions I had -- as I recall reading in your
2 report, there was a -- a -- sort of a side reference to
3 the fact that this was a government-utility-run
4 project, and kind of an allusion -- allusion to the
5 fact it would be more expensive than a -- than a
6 private project?

7 Did I misread that, or -- is that what
8 you were trying to convey?

9 MR. MICHAEL ROBERTSON: You did not
10 misread that. In my experience, that is the case. And
11 it's not unique to Manitoba Hydro.

12 THE CHAIRPERSON: And -- and what is
13 the cause of that? What -- what would be different in
14 --

15 MR. MICHAEL ROBERTSON: I -- I think
16 it's just a bigger machine that -- that needs feeding,
17 and the -- the backup costs are -- are higher, for
18 whatever reason.

19 MS. MARILYN KAPITANY: Could we just go
20 back to the contract methods for one (1) minute?

21 Did I hear you say that the unit price
22 contract would be the type of contract most usually
23 used for this type of project?

24 MR. MICHAEL ROBERTSON: No. What I
25 meant to say was that unit price contracts certainly

1 used to be the traditional method of -- of procurement.
2 In fact, the -- the cost reimbursable contract that
3 Manitoba Hydro is using for the GCC is -- is a
4 variation of -- on that.

5 It -- it is still based on quantities
6 and on unit prices, but there is a target set, and
7 there are procedures for dealing with anything over and
8 above the target. So it -- it's like a refinement, or
9 a halfway house, if you like, between a unit price
10 contract and fixed price contract.

11 MS. MARILYN KAPITANY: Thank you.

12 THE CHAIRPERSON: There's also
13 reference in your report -- and I'm not sure if this is
14 an appropriate time to ask the question, but there was
15 also a reference in the report -- a discussion in the
16 report, rather, about escalation of capital costs and
17 the appropriateness of using CPI as the measure for
18 escalation.

19 I can't remember offhand; I'm just
20 trying to recollect what -- how it concluded. But you
21 indicated -- I believe you indicated that that is a
22 measure used by most utilities, although it may not be
23 the most appropriate measure. Now, you provided some
24 data as well from another source that indicated what
25 would represent a more appropriate inflation factor for

1 capital projects.

2 Could you discuss that just for a
3 second, please?

4 MR. MICHAEL ROBERTSON: We -- we do
5 address that further down the line, but essentially
6 historical evidence is that capital works like this
7 have not escalated at CPI. They've -- they've
8 escalated a higher than CPI. And therefore -- you
9 know, and -- and Manitoba Hydro does recognize that and
10 they have provided one (1) part of their management
11 reserve to cater for the possibility or likelihood
12 that, in fact, escalation is going to be higher than
13 CPI. I'm sorry, does that answer your
14 question?

15 THE CHAIRPERSON: It does in part. I'm
16 just trying to get a sense of what factor was used by
17 Manitoba Hydro as an escalation factor. Do -- do you
18 recall, or do you...?

19 MR. BORIS FICHOT: Yes. Our
20 understanding is that they've calculated an index based
21 on a number of sour -- reputable sources related to
22 materials and projected costs of materials that come up
23 with what they called a 'Hydro index of escalation'.
24 And then they used that number -- a variation of that
25 number to come up with the anticipated escalation, and

1 then calculate the difference between that number and
2 CPI, and use that to calculate the management reserve.

3 The basis -- they've got a scientific
4 basis behind that number that they -- that they've used
5 to justify. And their internal standard dictates that
6 when they're escalating projects, it must be accord --
7 in accordance with CPI.

8 THE CHAIRPERSON: So the figure that --
9 well, ultimately used, is it much different than
10 regular capital projects undertaken by a utility?

11 In other words, I'm trying to get at --
12 trying to understand the difference between CPI
13 appropriate to a large construction project like this
14 one and CPI that would relate to a regular capital
15 update program that Manitoba Hydro would undertake.

16 MR. BORIS FICHOT: I believe that in --
17 in most instances you would use the scientific number,
18 which is the -- what you anticipate the -- the
19 escalation to actually be, as opposed to CPI. And in
20 the report, we refer to what's in the public domain as
21 Muskrat Falls anticipated escalation, which is higher
22 than CPI.

23 THE CHAIRPERSON: Thank you.

24 MR. MICHAEL ROBERTSON: And -- and we
25 will -- Mr. Chair, we will be examining that further.

1 (BRIEF PAUSE)

2

3 MR. MICHAEL ROBERTSON: Okay, if we're
4 moving back now to slide 16, question 4:

5 "Review and assess Manitoba Hydro's
6 capital cost and O&M cost estimates
7 for wind, natural gas, combined cycle
8 gas turbines, and solar facilities."

9 So firstly, wind, page 50 of our report,
10 the capital cost. Manitoba Hydro has assumed an
11 overall capital cost of twenty-one hundred dollars
12 (\$2,100) per kilowatt, excluding major transmission, in
13 the comparative exercises they have undertaken.

14 From the data in the next slide and data
15 from other jurisdictions, we believe that a figure of
16 eighteen hundred dollars (\$1,800) per kilowatt is
17 deemed to be more appropriate, and yet still
18 sufficiently conservative for this exercise.

19 I'll turn to the O&M costs. Manitoba
20 Hydro's assumption of an O&M cost of approximately
21 forty dollars (\$40) per kilowatt is appropriate and it
22 is within the recommended range of thirty-five (35) to
23 fifty-five dollars (\$55).

24 Now slide 17 shows the trend in prices
25 of wind turbines, and -- and, essentially, the point

1 we're making is that, whilst twenty-one hundred dollars
2 (\$2,100) per megawatt might have been appropriate in
3 2009 at the peak of the costs, those costs have dropped
4 significantly since, and there is no thought in the
5 industry that they are going to go back up again in --
6 in any significant manner, and therefore, in the
7 exercise, a -- a figure of eighteen hundred dollars
8 (\$1,800) per kilowatt would have been more appropriate
9 than twenty-one hundred (2,100).

10 On slide 18, to do with natural gas
11 combined cycle turbines, the details are on page 53 and
12 4 of our report, Manitoba Hydro has assumed a capital
13 cost of 1.3 million per megawatt. We've deemed that to
14 be appropriate. On the chart there, you will see where
15 my cursor is, that's Manitoba Hydro's point, and you
16 can see that it's very much in the middle of the
17 scatter of the historical record.

18 So in -- so in terms of capital costs,
19 we believe they're -- they're okay. In terms of the
20 operation and maintenance costs, they've assumed twenty
21 dollars (\$20) per kilowatt per year, and three dollars
22 fifty (\$3.50) per kilowatt hour, which we are -- which
23 we also deem to be reasonable, and they're within the
24 recommended range of six dollars thirty (\$6.30) to
25 twenty-two (22) kilowatts -- dollars per kilowatt per

1 year.

2 Slide 19, solar on pages 55 and -- to 57
3 of our report. The -- Manitoba Hydro's present
4 assumptions on capital costs are deemed appropriate,
5 but again, solar costs have been reducing significantly
6 in recent years, and so one could logically use a -- a
7 lower number, and the chart basically shows how the
8 prices have been coming down.

9 That's all we have to say on question 4.
10 Moving on to question 5, slide 20:

11 "Review and assess Manitoba Hydro's
12 construction management plan schedule
13 and contracting methods for the
14 design engineering procurement
15 construction start-up, commissioning
16 testing and commercial operation for
17 wind, natural gas, combined cycle
18 gas, turbines, and solar facilities."

19 Wind, on page 58, Manitoba Hydro assumed
20 that wind power projects will be developed in-house,
21 whereas an observation is that the existing Manitoba
22 wind farms have been developed by independent power
23 producers. The time frame is assumed to be three (3)
24 to five (5) years, including the resource assessment.

25 Asset life is assumed to be

1 approximately twenty (20) years. We have no further
2 details from Manitoba Hydro, and we understand that
3 wind will only be developed if and when wind becomes
4 cost competitive.

5 Slide 21. With regard to natural gas
6 combined cycle gas turbines, the NFAT assumes the
7 development by Manitoba Hydro and construction through
8 EPC contract. The time frame is assumed to be three
9 (3) to five (5) years, which is reasonable, but it
10 might be shorter. It could be two (2) to four (4)
11 years, depending on turbine supply time and how much
12 demand there is at the time.

13 Again, we have no further details from
14 Manitoba Hydro, and we understand that this energy
15 source will be developed as the Preferred Development
16 Plan proceeds.

17 Solar page 59, the Manitoba Hydro
18 assumes a time frame of three (3) years for development
19 and construction of a generic 20 megawatt facility.
20 This could be reduced if and when solar is perceived to
21 be a key energy resource in the future.

22 Moving on to Question 6, page 22 --
23 slide 22. Review Manitoba Hydro's capital expenditure
24 forecasts, essentially from the capital expenditure
25 forecast of 2009 through 2013. That first table, which

1 is from page 60 of our report, shows that, for example,
2 Keeyask has gone from 4.6 billion in 2009 to 6.2
3 billion in 2013, and as we know, in 2014, it went up a
4 little bit more.

5 Now, the significant factors in those
6 cost increases, which are detailed in page 61, are the
7 delay of in-service dates, which adds project
8 management interest and escalation costs, and you can
9 see in the -- in the table below there that Keeyask
10 effectively has lost a year over those four (4) -- five
11 (5) year estimates, and Conawapa has lost four (4)
12 years.

13 There was a big shift from '09 to -- to
14 2010 due to the update -- updated detailed cost
15 estimates by KGS-Acres. In other words, a much better
16 project definition in terms of design and -- and real
17 quantities, and cost estimates from the bottom up. So
18 I guess 2010 was the first real -- real detailed cost
19 estimate.

20 And then the other big jump came from
21 2011 to 2012, and that essentially is the Wuskwatim
22 experience, whereby the -- a -- a management reserve
23 was added to deal with the -- the probability that
24 you're going to have a -- a higher escalation than they
25 had assumed, and changing interest rates, and that is

1 detailed further in our reply to Question 9.

2 Slide 23, Question 7.

3 "Provide a historical perspective on
4 the construction cost components of
5 other Lower Nelson River hydraulic
6 generating stations, which were
7 Limestone, Long Spruce, and Kettle,
8 and analyze the major components of
9 direct costs, including: a)
10 spillways, dams, dikes; b) power
11 houses; and c) turbines and
12 generators, and compare these to the
13 Keeyask and Conawapa GS costs for
14 these components."

15 At the outset, we have to say that a
16 meaningful assessment is not possible with the
17 information that has been made available to us.
18 Manitoba Hydro did provide the total costs of those
19 projects, but not the individual component costs, so we
20 cannot comment on it component by component. They also
21 did provide the major quantities.

22 As a general observation, the -- there
23 have been very significant differences between the
24 contracting construction environment at that time,
25 which was 1992 back to 1973 for those three (3)

1 projects and now. And in now, we include Wuskwatim and
2 the estimates for Keeyask and Conawapa. Page 64 of our
3 report is the reference.

4 First the -- the Manitoba Hydro is now
5 engaged in a partnership framework with the First
6 Nations. There has been a significant increase in the
7 rigour of the environmental process, which came into
8 force after Limestone, and -- and associated with that
9 is that, certainly initially, there was a lack of
10 regulatory capacity in Manitoba to deal with these new
11 requirements and to ensure that proponents were
12 following them, and labour costs and productivity.

13 My apology, we were -- I was going to
14 try to move this table so that you could see what was
15 underneath it, but... The Limestone example, page 65,
16 this is slide 24. It was completed in 1992 on time and
17 within budget, at a total cost of 1.43 billion. Using
18 the quantities that we obtained from Manitoba Hydro and
19 Knight Piesold's typical unit costs for -- or unit
20 rates for those types of work, the excavation, the
21 earthfill concrete, the generating plant, et cetera, we
22 would estimate that at about 2.2 billion today.
23 However, if you escalate the 1.43 billion at, say, 2
24 1/2 percent for eleven (11) years, we only get 1.88
25 billion, which is less than the direct cost alone, let

1 alone adding all the other costs to provide the in-
2 service cost.

3 So -- and -- and going back to that
4 first ballparking yardstick which I showed you, with a
5 capacity of 1,314 megawatts that gives a cost of \$1
6 million per megawatt, which was a very traditional
7 figure back in the day, and you compare that with eight
8 point nine (8.9) for Keeyask and six point nine (6.9)
9 for Conawapa, clearly things are very different now
10 from what they were.

11 Slide 25. Long Spruce. Very little
12 information. We -- we were told that it cost 508
13 million when it was completed in 1979, with a capacity
14 of approximately, you know, 1,010 megawatts. That
15 gives you a cost of point five (.5) of a million
16 dollars per megawatt, which is about the cost of the
17 turbine generators alone today. And we have no
18 information regarding the schedule and the cost
19 performance.

20 Kettle, even further back. Commissioned
21 in 1974 for a cost of 240 million. Capacity of 1,220
22 megawatts gives this ballpark parameter of \$.2 million
23 per megawatt. And again, we have no information
24 regarding the schedule and the cost performance.

25 Slide 26. Question 8:

1 "Analyze Manitoba Hydro's
2 justifications for increasing the
3 direct costs and for increasing the
4 indirect costs with respect to: a)
5 labour productivity and shortages,
6 competition with other large civil
7 projects in Canada, remote location,
8 Northern and First Nation jobs, and
9 other contractual hiring
10 constraints."

11 Dealing first with labour productivity
12 and shortages, the details are on page 66 of our
13 report. The labour productivity and the construction
14 industry is documented to have decreased since a peak
15 in the 1970s, mainly due to a reduction in skill level.
16 Other factors include a decline in the number of
17 employees, the capital to labour ratio, percentage
18 union, and average age of workers. And Canada has
19 experienced at least a decade of labour shortages.

20 Manitoba Hydro have attributed -- have
21 attributed the lack of productivity to the difficulties
22 in hiring and/or retaining staff and the use of
23 inexperienced staff. As a result of the low
24 productivity experienced at Wuskwatim, Manitoba Hydro
25 has, for Keeyask and Conawapa, adjusted the contracting

1 methods, added staff, and invested in better camp
2 facilities. And these are deemed to be reasonable
3 measures.

4 Slide 27. Competition with other large
5 civil projects in Canada. Details on page 66 of our
6 report. Forty (40) percent of the overall project
7 workforce for Wuskwatim was out of province; and for
8 the generating structure itself specifically, it was
9 more 60 percent of the labour had to come from out of
10 province. Keeyask's demand on labour is greater, and
11 the situation is likely to be even worse. In other
12 words, probably going to have to find even more than 60
13 percent of the labour from outside of the province.

14 As -- as -- in support of that, we have
15 found in British Columbia that, for our recent hydro
16 projects that Knight Piesold has been involved with,
17 there has had to be a significant importation of labour
18 from Eastern Canada. And Manitoba Hydro is relying on
19 offering competitive wages and an attractive camp
20 environment in -- in this competitive situation.

21 The third point with regard to labour
22 was the remote location, dealt with on page 66 of our
23 report. Yes, the location is remote but it is known,
24 and therefore is factored into the cost estimates
25 already, and it's factored into the contractor's bid

1 prices. So there should be no surprises. And also
2 factored in are the fact that staff rotations are
3 necessary to -- to get people in and out of these
4 remote sites and to keep them happy.

5 Northern and First Nation jobs on page
6 67, similarly, yes, it's a remote Northern project, but
7 that's always been part of Canada's nonresidential
8 construction outlook. There are a number of other
9 natural resource development and mining projects in the
10 pipeline, and we expect that to grow significantly
11 through 2020.

12 Slide 28, other contractual hiring
13 constraints, details on page 67. The Burntwood Nelson
14 agreement sets out the terms for the hands-on tools,
15 basically, the -- the labour -- the -- the craft labour
16 workers, including the First Nations contributors, on
17 hydro projects in Northern Manitoba.

18 This is a collective agreement between
19 the Hydro Project Management Associating representing
20 the contractors and the Allied Hydro Council of
21 Manitoba representing the unions.

22 The general civil contract tenders that
23 were expressly included that the tenders had to comply
24 with the BNA requirements. And then it was anticipated
25 at the time we produced that first report that the --

1 the assessment of the bidders, the large contractors,
2 they -- they would effectively provide their assessment
3 of the difficulties of hiring and retaining labour for
4 that work. And that's picked up further in Question
5 S7.

6 Question 9, "Provide" -- this is slide
7 29:

8 "Please provide a high-level
9 assessment of the construction
10 planning and management of the
11 construction costs of the new
12 Preferred Development Plan project,
13 including the experience gained from
14 Wuskwatim."

15 So just referring back to Question 3 to
16 do with construction planning and management of
17 construction costs. And we'd also pick that up on --
18 under Question S1.

19 So the experience gained from Wuskwatim,
20 in terms of costs detailed on page 68, Wuskwatim
21 witnessed a lower than expected labour productivity.
22 It occurred during a period of international commodity
23 escalation, and it suffered a three (3) year delay of
24 in-service date.

25 The cost went from 988 million in CEF03

1 to 1.771 billion in CEF12, in other words, a 79 percent
2 increase. And the details behind that are shown on the
3 next slide. In light of that, the Keeyask and Conawapa
4 cost estimates were updated on -- based on the actual
5 labour material and equipment rates, as well as labour
6 productivity.

7 So on this slide 30, there is the -- the
8 breakdown of the extra cost. The slide carries on, on
9 -- on -- on slide 31. The table continues on slide 31.
10 The explanation given by Manitoba Hydro in the -- part
11 of the NFAT submittals, number 47, is in the third
12 column. And then we have added a column on what we
13 believe the implications are for Keeyask and Conawapa.

14 I don't plan to go through this table.
15 I can if anybody would like to, but the -- the main
16 points are picked up in other points made during the
17 presentation. That's the -- the other half of the
18 table on slide 31.

19 Continuing the experience gained from
20 Wuskwatim on slide 32, access and First Nation enga --
21 First Nation engagement on page 70 of our report.
22 Advancing the infrastructure work ahead of the
23 generating station benefits the First Nation through
24 increased and advanced employment, training, and
25 capacity building opportunities. It also reduces

1 financial risks to the First Nation joint venture
2 partners.

3 And this process was pursued on Keeyask
4 to avoid repetition of some difficulties experienced
5 with a First Nation joint venture partner at Wuskwatim.
6 And the other bonus of advancing this infrastructure
7 work is that it allows the developer, i.e., Manitoba
8 Hydro, to focus then on the engagement of the general
9 civil contractor.

10 Slide 33, changes to the construction
11 planning and management process that Manitoba Hydro
12 uses as a result of Wuskwatim. Initially, they bid
13 Wuskwatim as a unit-price contract in 2007, but they
14 only received one (1) bid, which was basically too
15 expensive.

16 They then went out with a -- a CRC, for
17 which they received four (4) bids, and much -- much
18 better prices, a cost-reimbursable contract. They --
19 they -- one (1) of the other changes to -- to the
20 construction planning and management is that they will
21 be providing better camp conditions at Keeyask.

22 And other evidence that the process
23 review has resulted in changes, a target-price contract
24 is being used for Keeyask to improve the alignment with
25 the prevailing market and to share cost escalation

1 risk, and that is being explored in detail with this
2 ECI process.

3 Market research into craft labour and
4 heavy construction costs and productivity and
5 development of strategies for labour recruitment and
6 retention -- for example, much better camp conditions.

7 Earlier scheduling for the development
8 arrangements, which we dealt with in the previous
9 slide, agreements and adverse effects and careful
10 management through integration of engineering,
11 regulatory and procurement processes, and then finally,
12 inclusion of management reserves for escalation and
13 labour costs on top of the normal contingency.

14 Slide 34. In terms of the cost
15 estimate, a high-quality cost estimate has to satisfy
16 four (4) basic characteristics. It has to be credible.
17 In the case of Keeyask and Conawapa, the direct-point
18 estimate is credible, as it has been prepared by a
19 reputable engineering firm with a wealth of recognized
20 hydro power expertise.

21 Documentation. The -- the layout and
22 design of the generating stations is well-documented,
23 as is the makeup of direct-cost estimates. The
24 indirect-cost estimates, as I've alluded to before, are
25 not as well-documented, or at least, they have not been

1 provided to Knight Piesold. Project management
2 processes and standards are well-documented.

3 The third characteristic that a high-
4 quality cost estimate has to satisfy is accuracy, and
5 essentially, we believe the current estimates are
6 likely as accurate as they can be. This was still
7 prior to the general civil contractor award, but we
8 talk further about that in questions S7 and S8.

9 And then the estimate needs to be
10 comprehensive, and we believe that estimate is
11 comprehensive. It includes, as far as we can see, all
12 the possible project costs, and is structured in
13 sufficient detail to ensure that costs are not omitted
14 or duplicated, and it has been put together by a
15 suitably experienced estimating team.

16 So perhaps at the end of those nine (9)
17 questions on the first report, I'll ask if there are
18 any other questions.

19 THE CHAIRPERSON: The previous slide to
20 this one, the comments that you have made apply to both
21 the generating -- both generating stations, both
22 Conawapa and Keeyask.

23 MR. MICHAEL ROBERTSON: Correct.

24 THE CHAIRPERSON: Is that correct?

25 Yes. Okay.

1 MR. MICHAEL ROBERTSON: So if we move
2 on to the second set of questions, which, essentially,
3 were asked because when we -- when we produced our
4 first report in January, we -- we had to say with
5 regard to the cost estimate that all would be revealed,
6 or much would be revealed, when we got the results of
7 the general civil contract tender, which is the single
8 biggest cost item in the -- in the makeup of the costs
9 for -- for Keeyask. And -- and from now on, we're
10 pretty much talking only Keeyask, not -- not Conawapa.

11 And so the Board came back and said,
12 Because we had reservations or we felt we couldn't make
13 any definite statements at that time, or -- or that it
14 would be advisable to wait until we did get that data
15 to make a sensible observation, we -- we were given
16 these extra eight (8) questions, the first of which, on
17 slide 35, Question S1 is to:

18 "Review Manitoba Hydro's overall
19 management strategy and scheduling
20 for the tendering of contracts for
21 the Keeyask generating station, and
22 their procurement of other major
23 facility components such as
24 spillways, dams, dikes, powerhouse
25 turbines, intake gates, generators,

1 control, et cetera. Comment on the
2 effectiveness of this management
3 approach for minimizing capital
4 costs, securing competitive bids, and
5 managing construction and
6 procurement, cost escalation, and
7 construction risks."

8 So the first point, the management
9 strategy for tendering, this is detailed on page 2 of
10 the supplemental report. Manitoba Hydro's Project
11 Execution Plan is a high-level guideline to manage both
12 the Keeyask infrastructure project and the Keeyask
13 generating station project. It provides the means,
14 methods, tools, and techniques used by Manitoba Hydro
15 to manage the project. It serves as a record of the
16 planning effort for the construction phase, and as a
17 resource for staff to ensure consistent project
18 management.

19 Slide 36. The process of procurement of
20 the contracts is detailed in the Project Execution
21 Plan. We have seen copies of the following documents:
22 the total cost and schedule management; engineering
23 consulting contract monitoring and controls;
24 construction contract monitoring and controls; contract
25 change management; risk management, project contingency

1 management; and project change authorization.

2 And a breakdown of the total cost and
3 schedule management document, which is detailed on page
4 3, it -- it follows what is -- what they describe as a
5 PDCA process: plan, do, check, act. 'Planning'
6 comprises establishing the project baseline schedule
7 and budget. 'Do' is the implementation of the project
8 controls on the contracts and internal labour.

9 'Check', retrieve the actual costs from SAP, which is
10 Manitoba Hydro's proprietary accounting software, and
11 later schedule and budget for costs from project leads.
12 And then 'act', assess the performance, and management
13 change and the contingency.

14 Slide 37. The overall tendering and
15 project -- and -- and procurement management strategy,
16 detailed on page 3 of our second report. The work is
17 divided into work packages. There is a project
18 controls coordinator in Manitoba Hydro who is
19 responsible for the process all the way from contract
20 drafting to the early periods of the contract
21 execution.

22 For each contract, the awarded contract
23 value is compared to the based estimate, and relevant
24 amounts of the contingency are allocated from the
25 contingency pool to each contract. And this is

1 examined further in our reply to Question S2. The PDCA
2 iterative management approach ensures that project
3 estimate and schedule are updated accordingly.

4 The tendering has been a mixture of
5 methods tailored to individual contracts. For example,
6 the supply and installation of turbine generating
7 equipment is essentially fixed price, while the main
8 civil works is essentially designed bid build or unit
9 price but with a target price and an ECI process.
10 Knight Piesold deems the overall approach to be
11 appropriate in principle.

12 And then just a reminder that Question 3
13 gives details of the various forms of contacts used or
14 considered by Manitoba Hydro.

15 Slide 38. In the general civil contract
16 early contract involvement process, the selected
17 contractor has been engaged early, two (2) years before
18 major construction, so is involved in helping finalize
19 contract details. The main objectives are to ensure
20 that the construct -- contractor's construction
21 knowledge is incorporated into the design and
22 constructability issues. It -- they -- he is helping
23 to refine the delivery schedule, helping to secure the
24 necessary labour, and he is forming alliances with
25 Manitoba suppliers and subcontractors.

1 Slide 39. The schedule for tendering,
2 details on page 4. The Project Execution Plan requires
3 the execution to follow the Hydro cost and scheduling
4 standard for schedule management. Schedule performance
5 is one of the key performance indicators tracked by
6 Manitoba Hydro. The overall schedule anticipates
7 construction starting in July 2014 and being complete
8 in January 2021.

9 The procurement of long lead time items
10 of equipment is already underway in order to ensure
11 deliver to site on -- in time for incorporation in the
12 works.

13 The detailed schedules for the Keeyask
14 Generating Station Project were included in the 2009
15 cost estimate and in the general civil contractor RFP,
16 request for proposals. Again, just making the point
17 that neither of these schedules include time for
18 Manitoba Hydro's contributions.

19 All of the GCC tenderers confirmed that
20 basic schedule. And as a general comment, Knight
21 Piesold would say that the overall schedule is not
22 deemed to be overly aggressive, with the singular
23 exception that it is assumed that the first-stage
24 coffer dam will be able to go in this year, starting in
25 July. And you'll see later that we -- we believe there

1 is a risk associated with that assumption.

2 Slide 40, procurement of the major
3 facility components, on page 5 of our report. The long
4 leads time items, for example, the turbine generator
5 supply, is being procured early. And the -- the rest,
6 the -- the balance of plant, as it is sometimes known,
7 the remaining mechanical and electrical equipment
8 supply has been wrapped into the general civil contract
9 to minimize interface issues, which was another lesson
10 learned from Wuskwatim.

11 There were some other activities which
12 initially were scheduled to be outside of the GCC but
13 have now been wrapped into it, as well. And this
14 includes excavation, coffer dams, and draft tube forms.
15 And certainly it is Knight Piesold's experience and
16 mine personally that that is a very sound move.

17 THE CHAIRPERSON: The previous slide
18 indicated a project completion date of 2021. Now, I
19 was working under the assumption that it was in-service
20 date of 2019.

21 Am I misreading that reference or -- or
22 is it a matter where some of the work will be completed
23 after the in -- the dam started generating power?

24 MR. MICHAEL ROBERTSON: To -- to be
25 honest, I -- I am -- I can't from memory recall exactly

1 when the various units were going to come online. It
2 is -- normally, they come in on sequence, so your first
3 unit is -- is up some months before the -- the final
4 project is absolutely complete and -- and all the
5 demobilization has happened.

6 From the slide, I don't know. Boris,
7 can you comment?

8

9 (BRIEF PAUSE)

10

11 MR. MICHAEL ROBERTSON: Yeah. So
12 probably the first unit might come online in 2019. I
13 don't know. We -- we could go and check if...

14 THE CHAIRPERSON: Perhaps Manitoba
15 Hydro could clarify that directly instead of my stewing
16 in this.

17 MR. MICHAEL ROBERTSON: They should
18 know.

19 MR. DAVE BOWEN: Sure. It's -- it's
20 Dave Bowen. So our first unit comes online in November
21 2019. The subsequent units come online about the two
22 (2) month interval thereafter. So the -- the end of
23 the project is expected in 2021, but our first unit
24 comes in -- the 2019 date always refers to our first
25 unit in service.

1 THE CHAIRPERSON: Thank you.

2 MR. MICHAEL ROBERTSON: Thank you,

3 Dave. Okay, moving on to slide 41, which deals

4 with the effectiveness of tendering and procurement

5 management approach. The details are on page 4 of our

6 report. We believe that Manitoba Hydro is using an

7 appropriate approach to minimizing capital costs

8 primarily by sharing the risk with contractors and

9 suppliers through advancing the design prior to

10 procurement so there is less uncertainty there,

11 identifying and managing the risks, sharing them with

12 the contractor, and detailed management of the

13 construction process.

14 Most significant contracts have been or

15 are being procured through a competitive bid process,

16 basically, the GCC and the equipment supply being the -

17 - the major two (2) contracts. A number of projects

18 have been or are being procured through non-competitive

19 direct negotiated contracts because of a preference by

20 Manitoba Hydro for particular contractors to undertake

21 specific work assi -- assignments. And we understand

22 that is also based on the Wuskwatim experience.

23 And then finally, repeating that the

24 internal management -- sorry, the internal Manitoba

25 Hydro costs may not be deemed to be competitive, but

1 Knight Piesold has insufficient data to offer an
2 opinion on this issue. And, Mr. Chair, you've --
3 you've picked up on that point.

4 THE CHAIRPERSON: The use of non-
5 competitive DNCs is it -- is that unusual in respect of
6 hydro projects that you've examined?

7 MR. BORIS FICHOT: In British Columbia
8 we've -- we've seen that occur with a number of
9 independent power producers where -- for initial
10 engagement with First Nation or local communities,
11 usually -- especially basic infrastructure costs or
12 road construction costs, those contracts would be
13 awarded very early on in a non-competitive process, and
14 then the main civil works would be engaged in a -- in a
15 competitive process.

16 So we -- we have seen that before.

17 MR. MICHAEL ROBERTSON: And it -- it
18 also depends somewhat on the capacity of the First
19 Nations to do that work. We -- we don't have too many
20 First Nations with construction divisions that can do
21 it, for instance. They can certainly provide a lot of
22 the -- the assistance in terms of environmental data
23 collection and survey and -- and labour of one (1) sort
24 or another; some equipment hire. But there's --
25 there's not been a lot of capacity in British Columbia,

1 certainly, the -- the projects we've been involved
2 with.

3 Boris is correct, yeah.

4 MS. MARILYN KAPITANY: You mentioned a
5 couple of times that there isn't time built into the
6 schedule for Manitoba Hydro contributions.

7 Could you say a bit more about that and
8 how significant that is?

9 MR. MICHAEL ROBERTSON: Well -- well, I
10 guess I would say I don't know if there's time built
11 into the schedule for Manitoba Hydro's input. It's not
12 expressly shown, and then it sometimes is. And I don't
13 know details of their review process.

14 The -- the fear might be that if -- if
15 the contractor is required to provide details of all
16 his plans and his drawings and everything else, and --
17 and that that takes time within the overall process for
18 approval by Manitoba Hydro before he can go ahead and
19 do it, that that might trip up the project. But I
20 don't believe it's -- it's an issue, but I just don't
21 know.

22

23 (BRIEF PAUSE)

24

25 MR. MICHAEL ROBERTSON: Now, I believe

1 we are halfway through slide -- no, we finished slide
2 41, I think. Slide 42, on page 5 of our report, it's
3 difficult to measure Manitoba Hydro's effectiveness in
4 managing construction and procurement cost escalation,
5 as the current process is relatively new and it's
6 significantly different from the old. And so they --
7 they are using -- they're using a new process. It
8 seems to be well documented and -- and thorough and
9 sensible, but I do not believe it's been tested yet
10 with another project. So we're not really able to
11 comment on that.

12 In terms of the new processes, the
13 project team and the risk engineer execute the contract
14 -- construction risk management process and the
15 contingency management process during construction.
16 And there's some more comment on that under Question
17 S2.

18 But as an overall assessment of
19 effectiveness, we are able to see that Manitoba Hydro
20 is following a well-documented process; again, despite
21 the fact that the PEP is presently only in draft, and
22 that the project generally appears to be on schedule.

23 Moving on to Question S2, page -- slide
24 43: "Review Manitoba Hydro's construction
25 risk management strategy and comment

1 on its effectiveness."

2 We were given, confidentially, copies of
3 the following documents by Manitoba Hydro, the risk
4 management procedure. The purpose of that is to,
5 quote:

6 "Detail the activities of planning,
7 identifying, evaluating, responding,
8 and monitoring for effective risk
9 management, as well as detailing the
10 standard risk reporting templates."

11 We also got a copy of the project
12 contingency management procedure; a copy of the project
13 risk register for Keeyask specifically; and project
14 risk report, which shows the -- drawn out on the
15 contingency; the schedule, a one (1) year look-ahead of
16 project specific risks based on the project schedule;
17 the project risk profile, top five (5) global, and top
18 five (5) specific risks; and risk by phase of
19 implementation.

20 Slide 44. Now, the risks in the risk
21 management procedure are assessed as the product of
22 probability and impact in the following categories.

23 Technical requirements: technology,
24 complexity, and interfaces, performance and
25 reliability, quality; organizational: project

1 dependencies, resources, including Manitoba Hydro
2 staff, funding, prioritization and customer, which
3 includes, again, Manitoba Hydro; project management:
4 estimating, scheduling, controlling, communication;
5 external: regulatory, market intelligence, performance
6 and reliability, weather, stakeholders; and safety:
7 design standards, qualifications, training, and
8 awareness.

9 So on -- sorry.

10 MS. MARILYN KAPITANY: You mentioned
11 Manitoba Hydro's staff.

12 MR. MICHAEL ROBERTSON: Yes.

13 MS. MARILYN KAPITANY: What about
14 contracted labour? Where would that fall in here?

15

16 (BRIEF PAUSE)

17

18 MR. MICHAEL ROBERTSON: Not sure
19 exactly where one would put that. Yes, clearly, the
20 contractor has risks. To be honest with you, I'm not
21 sure, on the fly, how I would -- how I would answer
22 that. Boris, can you...?

23 MR. BORIS FICHOT: Rephrase the entire
24 question. If you could rephrase the entire question?

25 MS. MARILYN KAPITANY: Sure. I was

1 just looking in the risks that were outlined here, and
2 I saw resources defined as Manitoba Hydro staff.

3 But we had talked before about contract
4 labour and the difficulty of finding labour and keeping
5 labour engaged, and I wondered where that risk would
6 fall in these items.

7

8 (BRIEF PAUSE)

9

10 MR. BORIS FICHOT: I'm sure it wouldn't
11 be -- it's not reflected in this -- in this list here.

12 MR. MICHAEL ROBERTSON: I -- I think,
13 in fact, we're -- we're not able to answer directly
14 which of those five (5) boxes that should go in.
15 Clearly, it is a risk. It should -- and -- and it is
16 encompassed in the whole risk assessment, as you will
17 see later.

18 But when we're talking about
19 organization, we're kind of talking about what I had
20 previously referred to as systemic risk. It's part of
21 the process, and the process is driven by Manitoba
22 Hydro.

23 So if we move on to slide 45, there are
24 two (2) charts there. Essentially, this shows the --
25 the matrix of probability and impact, and the -- the

1 risk is statistically always defined as the product of
2 probability and impact.

3 So you can see that for those risks
4 which are deemed to have a probability of, say, greater
5 than 70 percent occurring, and will have a very high
6 impact, there is a total score of 80 in the top right-
7 hand corner, and in the second chart, there is -- there
8 are three (3) risk ranges which dictate the defined
9 level of risk, and the necessary response from the new
10 generation construction division.

11 Anything more than fifteen (15), in
12 other words, the -- the dark grey, is deemed to be a
13 critical risk. It's deemed to be unacceptable, and it
14 must be mitigated, and they say to moderate in stage 4
15 and low in stage 5. Well, when you're going into
16 construction, that's -- that's the final stage, and
17 that's low, and we will pick up on that later.

18 So on slide 46, the major risks in the
19 risk -- risk register, i.e., those with a total risk
20 score of eighty (80), were perceived in
21 August/September of 2013 to be -- details on page 9 --
22 the costs of labour and associated labour issues, which
23 is your point, madam, increased costs for project
24 management as a result of insufficient capacity in
25 Manitoba Hydro, and the consequent need to hire

1 consultants to -- for construction management,
2 escalation and market conditions leading to higher
3 tender prices, inexperienced craft labour workforce
4 leading to increased time and cost to perform
5 construction. And these are all themes that we have
6 heard on a recurring basis throughout our assessments,
7 and -- and in my presentation today.

8 And Manitoba Hydro proposed to deal with
9 these risks by mitigation, basically through the
10 contingency and/or the management reserve.

11 MR. BORIS FICHOT: I was just going to
12 answer that first question from -- from Marilyn Kapitany
13 a little bit more clearly.

14 If the -- the risk associated with --
15 with performance and reliability was in -- in the first
16 question there where, If productivity wasn't within
17 what was expected, then that falls under the -- on
18 their performance expectation.

19 MR. MICHAEL ROBERTSON: Thanks, Boris.
20 So on slide 47, it is apparent that new procedures and
21 systems have been set up for Keeyask and Conawapa as a
22 direct result of the lessons learned on Wuskwatim and
23 that they reflect a genuine concern on the part of
24 Manitoba Hydro to manage the whole process better. The
25 risk management strategy appears to be well set up, and

1 it appears to be being followed.

2 So an appreciation of the present risks
3 faced by the project -- and this is a Knight Piesold
4 opinion -- it can be assumed at this stage of the
5 project that most significant technical risks have been
6 addressed. The -- they have employed a reputable
7 experienced designer of large hydro power facilities in
8 Northern Canada. And they have done extensive
9 geotechnical investigations, so we should not expect
10 significant technical risks remaining.

11 A significant financial risk has been
12 removed with the award of the general civil contract,
13 but there are still other financial risks remaining.
14 Environmental risks remain. The contractor's
15 activities may lead to impacts which will have
16 consequences, in terms of remediation and/or
17 compensation. He -- he is no doubt bound by a
18 construction environmental management plan of some
19 description, and a reputable contractor should not get
20 himself into trouble, but there is a risk.

21 And then the other environmental
22 consequence of the development of the project is the
23 Adverse Effects Agreement with the First Nation. We've
24 not examined that in any detail, but we have observed
25 that it has led to an increase in the indirect cost

1 estimates in successive estimates.

2 And then in terms of construction,
3 Manitoba Hydro have chosen suitable, reputable, and
4 experienced contractors, and the remaining construction
5 risks are associated with contractor performance, in
6 terms of quality, cost, and scheduling.

7 Manitoba Hydro also carries some risk
8 during the construction phase: a risk that the
9 quantities have not been estimated accurately, and to
10 some degree impacts of inclement weather. And to cover
11 those, portions of the contingency have been added to
12 each contract to cover these unknowns.

13 But the whole issue ultimate comes down
14 to cost, and this is discussed further in Questions S7
15 and S8. So Question S3, slide 39 -- sorry --

16 THE CHAIRPERSON: Excuse me, Mr.
17 Robertson --

18 MR. MICHAEL ROBERTSON: -- beg your
19 pardon.

20 THE CHAIRPERSON: -- I think that it's
21 probably an appropriate time to take a break.

22 MR. MICHAEL ROBERTSON: M-hm.

23 THE CHAIRPERSON: I'd suggest we take
24 ten (10) minutes and -- and resume the proceedings
25 after that.

1 MR. MICHAEL ROBERTSON: Thank you.

2

3 --- Upon recessing at 10:35 a.m.

4 --- Upon resuming at 10:48 a.m.

5

6 THE CHAIRPERSON: I believe that we're
7 ready to continue with the proceedings, so back to you,
8 Mr. Robertson.

9 MR. MICHAEL ROBERTSON: Right. We're
10 now on slide 49, Question S3:

11 "Review the contract documents
12 prepared by Manitoba Hydro for the
13 major Keeyask components and comment
14 on how such documents have been
15 designed to secure cost-effective
16 bids from suppliers and contractors
17 and where Manitoba Hydro may be
18 vulnerable for cost increases,
19 schedule changes, et cetera. Comment
20 on the overall thoroughness of the
21 contract documents and the drawings."

22 Reference page 11 of our report. So
23 Question 3 provides details of the forms of contracts
24 typically used to procure works like the Keeyask
25 Infrastructure Project and the Keeyask Generating

1 Station Project.

2 Knight Piesold confirms, based on the
3 contracts that they have seen, that Manitoba Hydro has
4 made appropriate choices for the Keeyask contracts.
5 Contracts are designed to secure the most cost-
6 effective bids from suppliers and contractors.

7 That said, all contracts, except fixed
8 price contracts, are vulnerable to cost increases. But
9 Manitoba Hydro has attempted to mitigate these risks by
10 sharing them -- sorry, to mitigate cost increases by
11 sharing the risk.

12 Remaining risks and possible increases
13 in costs have been acknowledged and accounted for in a
14 professional and competent manner through the
15 contingency and the management reserves. See Questions
16 S2 and, further in, Question S8 to come.

17 Slide 50. Non-fixed price contracts
18 also have possible implications on schedule. The
19 process of schedule changes has been defined, and costs
20 associated with schedule risks are included in the
21 contingency and management reserve to a certain extent.
22 And we'll pick up on that later.

23 Contract documents seen by Knight
24 Piesold have clearly been drawn up by competent,
25 experienced engineers from within Manitoba Hydro and

1 reputable consultants. The general civil contract
2 involves the earlier -- early contract involvement to
3 maximize the benefit of input from the contractor, and
4 it has a target price.

5 Variations from the initial agreed
6 target price are shared between Manitoba Hydro and the
7 contractor, generally, and certainly initially, to the
8 greater benefit of Manitoba Hydro to the tune of
9 approximately -- of -- of 80 percent, specifically,
10 than the contractor.

11 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
12 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
13 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
14 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
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16 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
17 XXXXXXXXXXXXXXXXXXXXXXXX

18 Page 51 -- slide 51, Question S4:

19 "Review the construction and
20 equipment procurement bonding and any
21 liquidated damage requirements and
22 comment on the appropriateness of
23 such bonding and cost implications to
24 the project."

25 Well, in general terms, bonding' refers

1 either to -- this is on page 14 of our report -- either
2 to a performance bond which provides assurance that the
3 work will be done, it's normally used for a civil site
4 construction works, in my experience; or a letter of
5 credit which provides assurance that Manitoba Hydro
6 will not be out-of-pocket. And that is used to procure
7 equipment manufactured off site typically. Manitoba
8 Hydro has used both; different requirements for each
9 contract suited to those contracts.

10 Knight Piesold believes that the
11 Manitoba Hydro process is appropriate, including the
12 required amounts. They provide a reasonable balance
13 between protecting Manitoba Hydro interests and paying
14 excessive premiums for this insurance. We believe that
15 Manitoba Hydro have also handled liquidated damages in
16 an appropriate manner.

17 Slide 52, Question S5:

18 "Review Manitoba Hydro's quality
19 assurance and quality control, QA/QC,
20 requirements for Keeyask construction
21 and comment on the effectiveness and
22 costs."

23 That's dealt with on page 17 of our
24 report. So the best common arrangement in hydro power
25 construction has the contractor responsible for quality

1 control, QC, and the owner or his engineer responsible
2 for quality assurance. Manitoba Hydro is conforming to
3 this practice.

4 Quality management in Manitoba Hydro is
5 specified at a high level in the project execution
6 plan, with more detail in a new generation construction
7 division standard. That standard also includes a third
8 main activity, which is called quality planning.

9 Manitoba Hydro made available to Knight
10 Piesold copies of quality management section 5 of the
11 Project Execution Plan, a copy of the NGCD standard
12 number 20 -- 204 on quality management, QA/QC
13 requirements built into the turbine generator contract,
14 and QA/QC requirements built into the general civil
15 works contract.

16 Slide 53. With regard to the turbine
17 generator contract, the contractor's own quality
18 management system, it is -- it is a requirement that
19 the contractor's quality management system must conform
20 fully to the spirit and intent of the International
21 Quality Management System, ISO 9001. The contractor is
22 also obliged to have a project quality plan, a quality
23 team, and various inspection and testing plans.

24 The document is deemed to be detailed,
25 comprehensive, and appropriate for its purpose. With

1 regard to the general civil works contract, the
2 document confirms that quality control is the
3 responsibility of the contractor and quality assurance
4 is the respol -- the responsibility of the engineer.

5 Details were not made available to
6 Knight Piesold, but we believe they are likely to be
7 entirely appropriate.

8 THE CHAIRPERSON: Could you draw a
9 distinction for -- between quality assurance and
10 quality control, very high level?

11 MR. MICHAEL ROBERTSON: Right. So the
12 -- the quality control, essentially the -- the contract
13 documents tells the contractor what the owner/engineer
14 is expecting, in terms of evidence that the contractor
15 has met the stated requirements. So, for example, they
16 say that the density of the earth will -- will be no
17 less than 98 percent of some international standard or
18 that the strength of the concrete will be no less than
19 a certain value.

20 Now, the quality control is the process
21 of documenting proof that indeed those requirements
22 have been met. So the documents will typically specify
23 that for every 1,000 cubic metres of concrete that you
24 place, you have to do these tests and they have to pass
25 these results. And that has to be documented and so

1 that they -- the contractor can show the owner that he
2 has indeed met those requirements.

3 So that is basically providing the data.
4 Now, the quality assurance process is one of inspecting
5 that data to make sure that sufficient tests have been
6 done, that they have been reported, that they have been
7 -- that they passed the requirements, and that where
8 they haven't, suitable processes have taken place to
9 correct non-conforming products.

10 So, yes, the final point I was going to
11 make on slide 53 is that the costs of QA/QC are not
12 expressly shown anywhere. They are essentially part of
13 Manitoba Hydro's overhead with regard to QA, and the
14 contract is overhead with regard to QC.

15 Questionnaire 6, page 54:

16 "Review the overall civil contract
17 project management approach. Comment
18 on its effectiveness and what project
19 management controls are in place to
20 minimize cost escalations."

21 So the general civil contract is being
22 managed with all the procedures, processes, and
23 standards mentioned in replies to the earlier
24 questions.

25 Financial activities are part of SAP,

1 which is Manitoba Hydro's systemwide accounting system.
2 Some processes being used for Keeyask are new and
3 they're still not finalized. We had a number of
4 conference calls with Manitoba Hydro, and these details
5 were provided to us by them. They have project change
6 authorizations which are used to transfer funds to and
7 from the project contingency in real time. There is a
8 single person in Manitoba Hydro responsible for
9 managing this contingency.

10 All significant network numbers. Now,
11 network numbers are basically the work breakdown
12 structure items within SAP. They call them network
13 numbers. They have a portion of the overall
14 contingency allocated to them, and actuals and
15 revisions to forecast are tracked, and they keep a
16 contract revision register that records budget changes
17 like the PCAs.

18 Slide 55. They also have what they call
19 'dashboards', which are reports tailored to present the
20 information to particular audiences, and there is an
21 example of a dashboard included in the KP report.

22 Estimates of future expenditure are
23 adjusted in real time by adding inflation and deducting
24 money spent to date. The check is made at the same
25 time on the expected final cost of each item; i.e., is

1 the budget still appropriate?

2 Changes are also recorded in other parts
3 of the estimate to keep the overall in-service costs
4 the same. So, for example, if -- if the tenders come
5 in, and they now think that a particular contract is
6 going to cost more, they will draw from the contingency
7 pool and allocate part of that contingency to that
8 particular contract, and the remaining contract pool
9 will go down by that amount. So the -- the inter --
10 the overall in-service cost remains the same.

11 They do a -- a reconciliation overall
12 every year with quarterly reports in the interim, and
13 they are presently working to making this
14 reconciliation possible more in real time. They
15 perceive that schedule management is as -- as important
16 as costs, and this -- this is certainly true.

17 Question S7, slide 56. Critically
18 review Manitoba Hydro's pre-tender construction
19 estimates and compare with actual tender prices.
20 Define where significant differences are noted, and
21 rationalize the specific differences.

22 It's page 21 of our report. Manitoba
23 Hydro has provided Knight Piesold with a summary
24 presentation material and bills or quantities comparing
25 the general civil contractor proposals, the independent

1 estimator's estimate -- a company named Chant -- and an
2 escalated original engineer's estimate, the original of
3 which was produced by KGS-Acres.

4 We believe that Manitoba Hydro -- Hydro
5 has been diligent in their internal comparison between
6 the GCC tenders, their engineer's estimate, and the
7 independent third-party estimate.

8 The tender -- tenderers have, and this
9 is picking up on a point I made earlier, have built
10 into their bids their assessment of labour
11 availability, productivity, and costs.

12 Slide 57, finally, Question S8:

13 "Provide an opinion as to the
14 expected in-service capital cost for
15 Keeyask once all work has been
16 completed."

17 That's on page 23 of our report.

18 So Knight Piesold essentially confirms
19 that Manitoba Hydro's expected in-service capital cost
20 of \$6.5 billion, which was the March 2014 revision, but
21 we are of the opinion that a more risk-averse decision
22 maker would incorporate a higher contingency -- for
23 example, a P80 as opposed to a P50 -- and a management
24 reserve that incorporates greater allowances for labour
25 and escalation, plus an allowance for schedule delay,

1 primarily the risk that the 2014 start date will not be
2 achieved.

3 And that, Mr. Chairman, is our
4 presentation.

5 THE CHAIRPERSON: Coming back to the
6 last -- the previous slide to this one, now, you
7 indicated that 'P' -- a P80 as opposed to P50, are you
8 in a position to quantify what that would mean for the
9 contingency in terms of dollars?

10 MR. MICHAEL ROBERTSON: Yes.

11 MR. BORIS FICHOT: Tho -- those numbers
12 are in the report.

13 THE CHAIRPERSON: And -- and also --

14 MR. BORIS FICHOT: I -- I'll add that
15 the numbers are considered CSI material.

16 THE CHAIRPERSON: I'm sorry, the -- the
17 management reserve, the -- the -- is also part of the
18 CSI, your expectation? Okay. I have --

19 MR. BORIS FICHOT: Yes.

20 THE CHAIRPERSON: -- another question
21 that relates to an earlier comment you made, and it's
22 with respect of a -- an unidentified project in BC.
23 Remember that table that indicated the -- Muskrat Falls
24 and the other projects, and you indicated there was --
25 the BC project was delayed. Could you -- it was right

1 at the outset.

2 MR. MICHAEL ROBERTSON: It was in that
3 first ballparking exercise. I think --

4 THE CHAIRPERSON: Yes.

5 MR. MICHAEL ROBERTSON: -- that's the
6 one.

7 THE CHAIRPERSON: And you indicated as
8 -- as an aside that that project was delayed. Could
9 you -- could you explain that, please?

10 MR. MICHAEL ROBERTSON: Oh, Site C? No
11 -- no, sorry, I -- I think I said it -- it's not
12 delayed, it's just slightly further back on the track
13 than is Keeyask.

14 THE CHAIRPERSON: Yes.

15

16 (BRIEF PAUSE)

17

18 DR. HUGH GRANT: I'm just wondering if
19 the big elephant, or big gorilla in the room is the
20 fact that a -- a lot of these large construction
21 projects seem to have a habit of going seriously wrong
22 in terms of the cost estimate, and you referred in many
23 cases to Hydro relying upon reputable consultants and
24 following industry standards, but is it quite possible
25 that those standards in the industry aren't terribly

1 good ones in the sense that this area seems
2 particularly plagued by cost overruns?

3 And I'm wondering if you could comment
4 on why that seems to have been the case in the past?

5 MR. MICHAEL ROBERTSON: Well, they --
6 they are. They're -- they're very big projects. There
7 are many uncertainties. Obviously, one needs to
8 eliminate or mitigate those risks as far as possible,
9 and -- and I -- I do believe that Manitoba Hydro has
10 done that.

11 And -- and the main things that tend to
12 go wrong is that a -- a major civil engineering
13 project in the ground like this, you really don't know
14 what you've got until you open it up. You -- you do
15 investigations, and they've done a good, thorough job
16 of that, but there are always surprises. There's
17 always something different.

18 If you put a series of drill holes along
19 a dam centerline, Murphy's Law is that you'll put them
20 into the high points where the rock is, and you will
21 miss the low points where the rock isn't. I mean, it
22 just -- Murphy's Law dictates that.

23 But -- but at the same time, I mean, I
24 do believe from what we've seen that that risk in this
25 case has been mitigated as -- as well as possible. The

1 -- the construction climate is -- is another big factor
2 in -- in terms of -- of prices that -- that tenders can
3 afford to ask for. That risk is now largely removed
4 because -- because they have the bids.

5 I -- I -- there is no logical reason, in
6 my opinion, that -- and -- and as I've -- as I've said,
7 that the 6.5 billion as an expected cost, I -- I
8 wouldn't revise it. I -- I have no grounds to make it
9 more or less. I mean, it -- it's a -- it's a sensible
10 best estimate. We're -- we're just waving a couple of
11 flags on -- on where it might go, just because of these
12 outstanding risks.

13 And, yes, they do -- these -- these big
14 projects do tend to, it seems on -- on the historical
15 record, to -- to overrun, but you -- you -- as I say,
16 you -- you mitigate the risks as -- as well as you can.
17 I mean, I -- I would point out that a -- a lot of the
18 independent power projects that we have been involved
19 with in British Columbia with, primarily, contractor
20 Kiewit, a big international North American company.

21 They've all come in early, and they've
22 all come in on budget, because they're a fixed price,
23 so our experiences may be very fortunate, but it's not
24 the same as -- as we have seen elsewhere.

25 DR. HUGH GRANT: I -- I guess to follow

1 up, I -- I just wanted to clarify my question. There's
2 really been two (2) issues, and one (1) would be the
3 escalation in construction costs, large projects over
4 the past 'X' number of years, and why they seem to have
5 increased so rapidly? And the other one (1) would be,
6 once a project is given a go-ahead, why the cost may
7 escalate within that particular project?

8 On -- on the first issue, you mentioned
9 the decline in labour productivity in the construction
10 industry, and the only data I've ever looked at shows -
11 - or recently, for example, the productivity -- labour
12 productivity in construction has been increasing
13 rapidly and dramatically in the last eight (8) years in
14 Canada, but that may be dominated by the residential
15 housing sector, I'm not sure. But there's -- there
16 doesn't seem to be clear evidence of a decline in
17 labour productivity -- physical labour productivity, so
18 that would be one (1) sort of question, I guess, I'm
19 putting out there.

20 And -- and the other thing I was
21 wondering about, in terms of once a project is actually
22 contracted, and quite apart from the nature of the
23 contract, are there not always hold-up costs in these
24 sorts of contracts? I -- I mean, no matter how thick
25 the contract may be, there's incomplete -- and it's

1 incompleted contracting, and it seems to be that the
2 person doing the contracting is able to hold up, in a
3 sense, if there's -- if there's a cost over and to pass
4 those costs on.

5 Could you comment on both of those?

6 MR. MICHAEL ROBERTSON: Well -- well,
7 with regard to the first one, I don't know, Boris, if
8 you can quote that reference? I mean, maybe -- maybe
9 we should dig back and -- and remind ourselves what
10 that reference was that -- that basically said that
11 labour productivity had decreased over the recent
12 years.

13 I have certainly found on construction
14 sites, supervising construction as the engineer, that
15 even -- even a good contractor like Kiewit there, their
16 staff has not been particularly skilled or experienced,
17 and -- and is, therefore, not particularly productive.
18 I have certainly seen that in the last ten (10) years.

19 MR. BORIS FICHOT: I couldn't quote the
20 references outright, but I'm pretty sure that the --
21 the references -- all the reference material that I've
22 seen, it's all said that labour productivity has -- has
23 gone down. Anecdotal, it's just a -- a change in
24 era, the -- the era where a bunch of guys would put all
25 their stuff in a backpack and go and bunk eight (8) to

1 a room up north and live there for two (2) years, until
2 the -- the project was done. It's different now, and
3 everybody expects to have their own room, to be able to
4 go home every two (2) weeks, and that's just a major,
5 major shift in -- in your ability to be productive.

6 If the guy that was doing the concrete
7 one (1) week is different from the guy that was doing
8 the concrete a week ago, there's a rotation, you need
9 to allot for a lot more staff to do the same type of
10 work. It's just a result of the --

11 DR. HUGH GRANT: Trying to --

12 MR. BORIS FICHOT: -- the conditions,
13 and people expect that. I've worked in camps up in
14 Alaska where you had to bunk two (2) to a room, and
15 some guys wouldn't show up the -- the next week,
16 because they found a job that was giving them their own
17 room, so I've seen that firsthand.

18 DR. HUGH GRANT: That's interesting.
19 The issue -- labour productivity is most closely
20 associated with the amount of capital per worker. So
21 if you give me a pick and shovel, I'm not so
22 productive. You give me a tractor, I'm very
23 productive. And so usually, it's identified with
24 something in the nature of the technology in the
25 organisation, economies of scale and things of that

1 nature, as opposed to just, you know, I want my own
2 bedroom, or something.

3 MR. MICHAEL ROBERTSON: Yeah.

4 DR. HUGH GRANT: I was just looking at
5 STAT Canada data, and it's -- it's a bit ambiguous, and
6 I suspect it's dominated by the residential
7 construction industry, where we've seen housing prices
8 surmising up -- rising dramatically that's probably
9 driven this, but --

10 MR. MICHAEL ROBERTSON: Yeah.

11 DR. HUGH GRANT: -- in any event...

12 MR. MICHAEL ROBERTSON: Yeah. So --
13 and -- and your second question, sir?

14 DR. HUGH GRANT: I'm just wondering
15 about -- I think the term is 'holdup costs' --

16 MR. MICHAEL ROBERTSON: Oh, yeah.

17 DR. HUGH GRANT: -- the nature of
18 incomplete contracting and -- and that nature.

19 MR. MICHAEL ROBERTSON: Well, you --
20 you know, we -- we all are at -- to some extent, at the
21 mercy of a contractor who may take a litigious approach
22 to -- to his work. You cannot write a document that
23 doesn't -- that -- that a smart lawyer will not find a
24 hole in, and if -- if that is the attitude of the
25 contractor, then you -- you would expect some claims.

1 Now, hopefully, the contract document is
2 well enough written that they won't get very far. I
3 think, in general, Manitoba Hydro have done a good job
4 with that main civil contract. I -- I think the -- the
5 whole idea of bringing the contractor in early --
6 early, getting his buy and getting him to be part of
7 the establishment at this initial target price should
8 diffuse a lot of his ammunition if he then comes later
9 and wants to argue that things are different from what
10 he assumed, because he's worked through this whole
11 process with them for a year.

12 And as -- as I've tried to say that, you
13 know, I think the information -- they have as much
14 information as they can reasonably at this time to --
15 before they actually open up the ground. The weather's
16 always something that you can't anticipate exactly how
17 that's going to turn out.

18 The schedule is not unduly aggressive.
19 I -- I don't really see any reason why, as I say, that
20 expected value should be different. I -- I don't see
21 any big loopholes that the jump -- the contractor can
22 jump into. I -- I won't say I've read every word of
23 the document, but it's -- it's -- the -- the whole idea
24 of the target price and basing quantities and what
25 happens if it's different from the target price is --

1 is well defined. And as I said, it's -- certainly
2 initially it's -- it's to the benefit of Manitoba Hydro
3 if there is a variation and not to the contractor.

4 So there's a big incentive on the -- to
5 the contractor to performing properly. Essentially, in
6 terms of cost overrun, it's going to be things outside
7 of his control, like labour availability and
8 productivity, that -- that might cause concern.

9 THE CHAIRPERSON: I think that's all
10 the questions that the panel has. Mr. --

11 MR. SVEN HOMBACH: Mr. Chairman, before
12 we proceed with cross-examination I've been advised
13 that there's a matter that counsel may need to add --
14 address for ten (10) minutes. I'm wondering if it's
15 possible to step down for ten (10) minutes for counsel
16 to speak?

17 THE CHAIRPERSON: Yes, let's do that.
18 Ten (10) minutes then. So back here at twenty-five
19 (25) after.

20

21 --- Upon recessing at 11:15 a.m.

22 --- Upon resuming at 11:46 a.m.

23

24 THE CHAIRPERSON: I believe that we're
25 ready to resume the proceedings. So, Ms. Menzies, do

1 you have questions for these witnesses?

2

3 CROSS-EXAMINATION BY MS. MEGHAN MENZIES:

4 MS. MEGHAN MENZIES: I do, yes. Thank
5 you. Bonne matin, tout le monde. Good morning, Board
6 members, and good morning Mr. Robertson and Mr. Fichot.
7 Before I begin today -- first of all, my name is Meghan
8 Menzies and I represent the Manitoba branch of the
9 Consumers' Association of Canada.

10 I was just recently advised that it is
11 someone's special day today, and I just wanted to
12 acknowledge that on the record. Apparently Patti
13 Ramage -- Ms. Patti Ramage is turning thirty-five (35)
14 today I figured that we should all... So happy
15 birthday, bonne fete. Is that bonne anniversaire or --
16 not sure.

17 So many of my questions for you today
18 are based in the original report from January 2014.
19 However, there will be a little bit of jumping back and
20 forth between that and then the supplemental report of
21 April 2014. So I would just ask -- and I'm sure you --
22 you already have them ready, but just make sure to have
23 both reports before you. And I ask for the forgiveness
24 of Ms. Villegas for all the jumping back and forth, but
25 I'll -- I'll try to stick to one (1) report at a time.

1 So first off, I would like to direct you
2 to page 9 of your March 2014 redacted report.

3

4 (BRIEF PAUSE)

5

6 MS. MEGHAN MENZIES: And so here we see
7 Table 2.2, which is from the International Association
8 for the Advancement of Cost Engineering.

9 Is that correct?

10 MR. MICHAEL ROBERTSON: Yes, that's
11 correct.

12 MS. MEGHAN MENZIES: And I should have
13 said before, I'll be directing my questions generally
14 to both of you, so please feel free to answer wherever
15 it's appropriate. And I'll just be referring to them
16 as the AACE, as you do in your report, if that works.

17 Okay. And so can you please confirm
18 that this table provides AACE's internationally
19 recommended generic cost estimate classification
20 matrix?

21 MR. MICHAEL ROBERTSON: Yes.

22 MS. MEGHAN MENZIES: Thank you. And
23 looking to the left-hand side of the table, what we see
24 here are five (5) different classes.

25 Is that correct?

1 MR. MICHAEL ROBERTSON: Yes.

2 MS. MEGHAN MENZIES: And my
3 understanding of these classes is that each is used to
4 identify the level of certainty of a particular cost
5 estimate.

6 Am I correct in my understanding?

7 MR. BORIS FICHOT: That's the intent.

8 MS. MEGHAN MENZIES: That's the intent.
9 Thank you. And it appears to me that a project that
10 has received a Class 5 would have less certainty than a
11 project that has received a Class 4.

12 Is that correct?

13 MR. BORIS FICHOT: That's correct.

14 MS. MEGHAN MENZIES: This is going to
15 move a little slow at the beginning. So the lower the
16 number of class, the higher the certainty in cost
17 estimates? Yes?

18 MR. BORIS FICHOT: That's correct.

19 MS. MEGHAN MENZIES: Thank you. And
20 looking at this table, am I again correct in saying
21 that the more developed a project is, the more certain
22 it is likely to be? Would that be --

23 MR. MICHAEL ROBERTSON: Just -- just
24 rephrase that.

25 MS. MEGHAN MENZIES: So looking at the

1 different characteristics that are considered in
2 classifying a project, would it be appropriate to
3 assume that the more developed a project is, the more -
4 - the more certain it is likely to be, or the lower the
5 class number it's likely to be given?

6 MR. BORIS FICHOT: What do you mean,
7 'to be'?

8 MS. MEGHAN MENZIES: So the -- the more
9 certain it is likely to be classified as.

10 MR. MICHAEL ROBERTSON: I -- I think
11 perhaps -- with respect, I think perhaps where you're
12 going is -- is that the -- the lower the class --

13 MS. MEGHAN MENZIES: M-hm.

14 MR. MICHAEL ROBERTSON: -- the more
15 certain you should be of what you're saying about it,
16 in terms of cost estimates.

17 MS. MEGHAN MENZIES: Yes, and I was
18 trying to move one (1) step further from that to
19 suggest that the more developed a project is the more
20 likely that it is to receive a lower class.

21 Would that be an appropriate assumption?
22 I'm kind of making a bit of a jump here.

23 MR. MICHAEL ROBERTSON: Well, the --
24 they've broken it up into five (5) classes. And one of
25 the ways to help you put it in the right box is the

1 degree of definition of the project.

2 MS. MEGHAN MENZIES: M-hm.

3 MR. MICHAEL ROBERTSON: And so, yes,
4 the better defined the project, the lower
5 classification that fits into this process.

6 MS. MEGHAN MENZIES: Perfect.

7 MR. MICHAEL ROBERTSON: And the more
8 certain you are about what you're going to do.

9 MS. MEGHAN MENZIES: Thank you. That's
10 exactly what I was trying to get at. Thank you. So
11 looking at -- looking at this table, am I also -- am I
12 correct in my understanding that within each class,
13 there does exist a range of certainty?

14 MR. MICHAEL ROBERTSON: Yes.

15 MS. MEGHAN MENZIES: And so for
16 instance, two (2) separate projects could be classified
17 as a Class 3, with one being towards the lower range of
18 certainty within Class 3 and the other towards the
19 higher range?

20 MR. MICHAEL ROBERTSON: Yes.

21 MS. MEGHAN MENZIES: Yes? Thank you.
22 So I would now like to take you to page 10 of that
23 report, just the next page. And here we see at the far
24 right column that the Keeyask Generating Project and
25 the Conawapa Generating Station Project have both been

1 categorized as Class 2s.

2 Is that correct?

3 MR. BORIS FICHOT: In this table,
4 that's correct.

5 MS. MEGHAN MENZIES: Okay.

6 MR. MICHAEL ROBERTSON: No. In this
7 table, KIP is Class 1 -- oh, Class 3.

8

9 (BRIEF PAUSE)

10

11 MS. MEGHAN MENZIES: If you look just
12 below -- so that's the infrastructure, and then just
13 below is the generating station project. Does that --

14 MR. MICHAEL ROBERTSON: The -- the
15 Conawapa Generating Station Project is two (2).

16 MR. BORIS FICHOT: That -- that was our
17 appreciation at the time, yes.

18 MS. MEGHAN MENZIES: Okay. And when
19 you say, "at the time," what is your appreciation now?

20 MR. BORIS FICHOT: It would probably be
21 more in the line with the Class 3, but it's with a lot
22 of reservations. You have to see that -- if you look
23 at what the associated accuracy of the estimate is,
24 that doesn't necessarily have to change. Like these
25 things are -- are kind of -- there's a range where

1 these things go on top of each other.

2 MS. MEGHAN MENZIES: Okay. Fair
3 enough. And I think -- I do think that you responded
4 to that in an IR previously, and I'm just following up
5 on that.

6 And so just to surmise what -- just to
7 summarize what you've just said, so Conawapa could be
8 classified now as a Class 3?

9 MR. BORIS FICHOT: Yes.

10 MS. MEGHAN MENZIES: Yes?

11 MR. BORIS FICHOT: Yes.

12 MS. MEGHAN MENZIES: Thank you. Okay.
13 And so now if we could move to page 22 of your report.
14 And now I would like to discuss with you the concepts
15 of systemic risk and project specific risks, which I
16 think you also mentioned in your presentation this
17 morning.

18 So looking at page 22, and if we could
19 just move just a little over; thank you very much.
20 Here I see that it says -- and I'm just going to read
21 it to you and if you could just confirm that this is
22 what you see -- that:

23 "Systemic risks are those that are
24 inherent to the project development
25 process and are not unique to the

1 project."

2 Can you confirm that?

3 MR. BORIS FICHOT: Correct.

4 MS. MEGHAN MENZIES: Thank you. And
5 then:

6 "Secondly, in general, as a project
7 advances in development, system risks
8 are reduced or developed -- or
9 develop into project-specific risks."

10 Is that correct?

11 MR. MICHAEL ROBERTSON: Yes.

12 MS. MEGHAN MENZIES: Yes. Thank you.

13 MR. BORIS FICHOT: I would -- I would
14 underline the 'in general'. MS. MEGHAN MENZIES:
15 Fair enough. Thank you. And...

16

17 (BRIEF PAUSE)

18

19 MS. MEGHAN MENZIES: All right. And so
20 according to what I've gotten from your report, and
21 please correct me if I'm wrong, but Cona -- the
22 Conawapa Generating Station Project is less developed
23 than the Keeyask Generating Station Project?

24 MR. MICHAEL ROBERTSON: Yes.

25 MS. MEGHAN MENZIES: And so would I be

1 correct in saying that, as compared to Keeyask,
2 Conawapa is more likely to face systemic risks?

3 MR. BORIS FICHOT: That's correct.

4 MS. MEGHAN MENZIES: And Keeyask, being
5 further developed, is more likely to face project-
6 specific risks?

7 MR. MICHAEL ROBERTSON: Yes.

8 MS. MEGHAN MENZIES: Thank you.

9 MR. BORIS FICHOT: It's -- are you
10 talking about magnitude or in terms of -- like they
11 both face those risks.

12 MS. MEGHAN MENZIES: And -- and fair
13 enough, and I take your point. More I'm just trying to
14 get at the -- get at the point that where they are in
15 their development right now, the types of risks that
16 they're facing, not -- not comparing the magnitudes to
17 each project, but just the types of risks that they
18 will generally be facing are probably syste -- systemic
19 risks for Conawapa and project-specific risks for
20 Keeyask, more generally?

21 Did I say that wrong?

22 MR. BORIS FICHOT: I -- I wouldn't
23 state -- I wouldn't say it that way. I would say they
24 -- they both face those risks in an equal way. The
25 systemic risks are -- are a lot more significant for

1 Conawapa, but since there's no -- there's no
2 association with the actual magnitude, it's -- it's
3 something that can be very subjective.

4 MS. MEGHAN MENZIES: Thank you. I
5 appreciate that.

6 MR. MICHAEL ROBERTSON: I'd also say
7 that the project-specific risks on Keeyask are now less
8 than they are for Conawapa because there's more known
9 about Keeyask.

10 MS. MEGHAN MENZIES: Okay. And that's
11 good to know. Thank you.

12 THE CHAIRPERSON: Could we go back to
13 the previous document that we were examining? I'm a
14 little bit confused here. And I want to make sure I
15 clarify it in my own mind. This is a table that showed
16 the hydro classification versus the KP class -- KP
17 classification?

18 MS. MEGHAN MENZIES: Yes, and that's at
19 page 10.

20

21 (BRIEF PAUSE)

22

23 THE CHAIRPERSON: I understood you to
24 say that the KP classification for Keeyask is now Class
25 3 as opposed to what's here?

1 MR. BORIS FICHOT: I think it's -- it
2 reflects a little bit more of our appreciation of we've
3 delved deeper into the material. I think the first
4 thing, as engineers, that we've reviewed that was
5 provided to us was the -- the estimate of the direct
6 costs for Keeyask and Conawapa. And those were very
7 well documented. They had a lot of backup material,
8 engineering studies. And that gave us some confidence
9 that the degree of definition in the project was fairly
10 -- was -- was fairly elaborate.

11 I think, in -- in retrospect, especially
12 examining the validating estimating report, which is
13 their -- their specialized risk analysis report, the --
14 the overall systemic risk described, there's a lot more
15 risk attributed to that and a lower level of -- of
16 definition and certainty with those -- attributed to
17 those.

18 So as a result, I'd probably be more
19 inclined to classify it as a Class 3 today.

20 THE CHAIRPERSON: So that even now
21 knowing the -- having seen the GCC contract or bid,
22 that would still cause you to classify it as a Class 3?

23 MR. BORIS FICHOT: That -- that is the
24 case. That is the case. And I'd highlight that the --
25 one of the things that we did outline in this report

1 when we wrote is that, irregardless of the class, we
2 still thought that the accuracy was -- did not change
3 as a result of changing. It's really just an
4 appreciation of what the definition of the project is.

5

6 But our appreciation is the -- of the
7 risk and the uncertainty around the project is almost
8 independent from whatever ball -- whatever category you
9 want to put it in, with all respect to AACE.

10

11 CONTINUED BY MS. MEGHAN MENZIES:

12 MS. MEGHAN MENZIES: Thank you. And
13 actually just following up on the Chair's question, can
14 I just get it confirmed for the record that you would
15 still classify the Keeyask Generating Station Project
16 as a Class 2?

17 MR. MICHAEL ROBERTSON: Okay. Can we
18 just take that offline a second?

19 MS. MEGHAN MENZIES: Yes.

20

21 (BRIEF PAUSE)

22

23 MR. MICHAEL ROBERTSON: No, I'm just
24 confirming with my colleague here that, essentially,
25 because of the reappreciation of the systemic risk,

1 which validating, estimating did, together with
2 Manitoba Hydro, we would go back to Class 3,
3 essentially, as per Manitoba Hydro's original
4 submission.

5 MS. MEGHAN MENZIES: For the Keeyask
6 generating --

7 MR. MICHAEL ROBERTSON: For -- for both
8 those projects.

9 MS. MEGHAN MENZIES: Okay. So now both
10 -- I'm going to call them the KGSP and CGSP would be
11 classified as Class 3?

12 MR. MICHAEL ROBERTSON: Yes. Well, all
13 three (3), the first three (3) rows.

14 MS. MEGHAN MENZIES: So the -- the
15 Keeyask Infrastructure Project as well?

16 MR. MICHAEL ROBERTSON: Yes.

17 MS. MEGHAN MENZIES: Okay. Thank you
18 very much.

19 THE CHAIRPERSON: Just to make sure
20 that the panel members are on -- on the same
21 wavelength, so the first three (3) listed there would
22 be Class 3 according to KP?

23 MR. MICHAEL ROBERTSON: Correct.

24 THE CHAIRPERSON: The KIP, the KG --
25 GSP, and the CGSP, all three (3) will be Class 3?

1 MR. MICHAEL ROBERTSON: Yes.

2 MS. MARILYN KAPITANY: Sorry, Ms.

3 Menzies. Could you just go over again what you said
4 about -- even though you had decreased the level of
5 classification that you gave these projects, that
6 doesn't necessarily mean -- I thought I heard you say
7 it doesn't necessarily mean you have less confidence in
8 them, but somehow that doesn't make sense to me?

9 MR. MICHAEL ROBERTSON: No. I -- I
10 think what -- what has happened is that, when we first
11 did this, we -- we saw that Manitoba Hydro had
12 classified all three (3) projects into Class 3.

13 We believed that based on the -- the
14 level of definition, the maturity of the projects, that
15 that class should be lower, because there was more
16 definition than the general guidelines of AACE would
17 indicate should be in Class 3.

18 So the KIP, a lot of the contracts had
19 been awarded. There should be much better project
20 definition and more certainty, and to -- to some
21 extent, but not to the same extent, the KGSP had a
22 number of contract awarded -- contracts awarded, like
23 the turbine generator, for instance, at that time.

24 And we deemed that there was perhaps
25 more definition than was implicit in Manitoba Hydro's

1 classification, and therefore, we recommended that it
2 should rather be Class 2.

3 However, the -- the validating
4 estimating exercise that was undertaken once the -- or
5 undertaken again once the general civil contracts came
6 in highlighted a number of systemic risks, not the
7 project-specific risks, which essentially drove us to
8 reclassify KIP and KGSP, but the systemic risks are
9 still very significant, and therefore, in the light of
10 that, we would want to go back and classify all of
11 those as Class 3.

12

13 CONTINUED BY MS. MEGHAN MENZIES:

14 MS. MEGHAN MENZIES: And thank you for
15 that clarification. I might ask that -- would you be
16 able to expand -- you -- you had just said that the
17 systemic risks are still very significant.

18 Could you expand on -- on those risks?
19 And I guess specifically for -- for the Keeyask
20 Generating Project, but then to follow up with,
21 specifically, the Conawapa Generation -- Generating
22 Project.

23 MR. BORIS FICHOT: One of the things
24 that we're thinking is that it ventures into CSI
25 territory pretty readily, so.

1 MS. MEGHAN MENZIES: Okay. All right.
2 But -- and you can stop me if -- if I'm venturing into
3 CSI, but -- but today, as compared to when you
4 originally wrote the report, your opinion is that there
5 are -- there are more systemic -- there are more
6 systemic risks at play than -- than you originally --
7 than you originally thought.

8 Is that correct?

9 MR. BORIS FICHOT: Yeah. I think a lot
10 -- as I -- as I stated earlier, a lot of our original
11 appreciation was -- I'd almost say, like, we hone in on
12 the engineering aspects --

13 MS. MEGHAN MENZIES: M-hm.

14 MR. BORIS FICHOT: -- and those were
15 clearly done out well. The -- the thing that I think
16 took us a bit longer to -- to gain an appreciation was
17 for all the underlying project management
18 organisational driven type costs or -- or risks.

19 For example, one (1) of the -- the ones
20 that came to light more recently was for the overall
21 construction project management, would that be do --
22 done on -- in-house, or would that be done externally?
23 To us, if they didn't have enough knowledge about
24 whether it should be done internally before or after,
25 that's kind of a major flag that says, Well, maybe this

1 whole process of how it would be carried forward is not
2 clearly defined. Therefore, lower level of project
3 definition, therefore, lower level of certainty, and
4 incidently, AACE classification of three (3) instead of
5 two (2).

6 THE CHAIRPERSON: I think it's probably
7 an appropriate time to -- to break for lunch. We are
8 going to be resuming our proceedings at a quarter to
9 1:00. We are expecting a presenter at a quarter to
10 1:00, Mr. David Barber, so we will see each other again
11 at a quarter to 1:00. Thank you.

12

13 --- Upon recessing at 12:05 p.m.

14 --- Upon resuming at 12:54 p.m.

15

16 THE CHAIRPERSON: I don't like to be a
17 grinch, but we should go back to our proceedings. The
18 cake was wonderful. Thank you very much.

19 MR. RICHARD BEL: Yes, thank you.
20 Thank you.

21 MS. MARILYN KAPITANY: Yes, thank you
22 for having a birthday party.

23 THE CHAIRPERSON: With -- with that,
24 I'll turn the microphone over to Mr. Hombach, please.

25 MR. SVEN HOMBACH: Thank you, Mr.

1 Chairman. I note that this morning I indicated that
2 there would be a presentation by Mr. David Barber at
3 12:45. Mr. Barber has not shown up yet, so it would be
4 my suggestion that we proceed with the cross-
5 examination of Knight Piesold by Ms. Menzies, and
6 perhaps if Mr. Barber subsequently shows up, he could
7 deliver his presentation after the afternoon break.

8 THE CHAIRPERSON: Agreed. Ms. Menzies,
9 please...?

10

11 CONTINUED BY MS. MEGHAN MENZIES:

12 MS. MEGHAN MENZIES: Okay. Well, I'm
13 glad that this begins before the sugar crash, so all
14 right. Good afternoon. So the first document that I'd
15 like to direct you to this afternoon is KP-3-3, and
16 that's the updated Roman numeral II of the supplemental
17 report.

18 And I note that this morning when I was
19 asking about systemic risks, there was some concern
20 about some contracting deals or -- or possibly some CSI
21 being discussed. And so I do want to flag that again.
22 And -- and I appreciate that you -- I appreciate your
23 response with regard to CSI, and I do want to make sure
24 that I don't push into CSI. So again if at any point
25 I'm -- I'm pushing a little too far, please feel free

1 to let me know.

2 So what I'm hoping is, at the beginning,
3 at -- at the top here it says:

4 "The highlighted key risks confirmed
5 by a validation estimating..."

6 And there's five (5) bullets, and I'm
7 wondering if, possibly, we could walk through those
8 bullets and you could provide a bit of a description,
9 or -- or a -- a bit of an -- a further explanation on
10 each of those risks to the extent that you're able, so
11 starting with the resource challenges?

12

13 (BRIEF PAUSE)

14

15 MR. BORIS FICHOT: Yes. So the -- the
16 main resources challenges are basically staff
17 availability and all those. That aspect has been
18 highlighted by -- by Hydro, and we -- we concur with
19 that. Systemic risks associated with a Manitoba Hydro
20 maturing system, that's again, the fact that they've
21 recently defined a process. That process is in draft
22 form. They -- they haven't fully fleshed out how
23 they're actually going to manage the construction, at
24 least, to -- to date.

25 So we've seen that the process is in

1 place. It's evolving a little bit because of the --
2 the recent enva -- engagement with the civil
3 contractors. So since all that system for the
4 management is not clearly elaborated, there's --
5 there's risks associated with that, that it -- and then
6 -- that it carries through and it has an impact on the
7 cost.

8 MR. MICHAEL ROBERTSON: So I just add
9 to that, that it's -- it's a new system that has not
10 yet been tested.

11 MR. BORIS FICHOT: The -- just -- just
12 a second, here.

13

14 (BRIEF PAUSE)

15

16 MR. BORIS FICHOT: We won't go over why
17 there's schedule risk, whether we'll -- we'll skip over
18 that one.

19 MS. MEGHAN MENZIES: Okay.

20 MR. BORIS FICHOT: Adverse labour
21 productivity, again, there's assumptions in the
22 management reserve that -- which has made allowances
23 for the productivity not being what's expected. The --
24 the detailed content of that is deemed CSI material,
25 but there's reason to believe that the labour

1 productivity assumed may not be as -- as -- may -- may
2 or may not be adequate with the base estimate that
3 they've provided, and they've allowed for some
4 management reserve to deal with that.

5 And then the risk that could cause a
6 year of delay associated with the -- with the stage
7 coffer dam, that's a -- that's a risk that I'll -- I'll
8 highlight here, is that it's a element of the risk
9 that's not categorized in the current estimate. Some
10 of it falls through this whole process.

11 And there's dollars attributed to
12 whether or not Manitoba Hydro will be able to proceed
13 with the whole construction development, and that's a
14 risk that's not quite categorized in the -- in the
15 current estimate, but that is there, and so it's
16 highlighted in this independent report.

17 MS. MEGHAN MENZIES: Okay. Thank you.
18 And I actually want to go back to the systemic risks.
19 So part of what was stated, I believe, on systemic
20 risks, was that the new system has not yet been tested.

21 And I just want to get an understanding
22 of -- of how serious of a risk that is, or how serious
23 of a risk does Knight Piesold see that to be?

24 MR. MICHAEL ROBERTSON: It -- it's an
25 unknown. It -- it's a new process. It's patently very

1 thorough, and so one can give a hundred percent for
2 intent, but to the extent that it hasn't had a
3 practical outworking, we -- you -- you don't have any
4 kind of real experience to say, yes, this is the system
5 that has been shown to work.

6 MS. MEGHAN MENZIES: M-hm. Okay.
7 Thank you. And still on the issue of systemic risks.
8 Previously, you had said that Conawapa has greater
9 systemic risks than Keeyask, and so to -- to what
10 extent are those -- are those systemic risks greater,
11 and -- and can you elaborate on that just slightly?

12 MR. BORIS FICHOT: Just by virtue of
13 the fact that they have a little bit more of
14 appreciation of what the process may be for Keeyask
15 than they do for Conawapa.

16 MR. MICHAEL ROBERTSON: Well -- well,
17 sorry. Actually, I -- I might vary with my colleague,
18 there. In -- in terms of systemic risk, both will be
19 developed according to the same system, so really,
20 there's not much difference in -- in terms of systemic
21 risk. Project-specific risks? Yes, certainly, because
22 Keeyask is better defined, and therefore, Conawapa has
23 more, we would say.

24 But the systemic risk, it's -- it's
25 really the process that's been followed. I guess, in a

1 way, Conawapa will happen if it happens after Keeyask,
2 by which time the system will have been tested. So in
3 a way, I guess you might argue that Conawapa has less
4 systemic risk by the time it goes for development, but
5 it's...

6 MS. MEGHAN MENZIES: Thank you.

7 THE CHAIRPERSON: I have a question
8 with respect to winter concrete. Very specifically,
9 why is it that the -- this contractor would not be
10 pouring concrete during the winter?

11 What -- what's unique about their
12 process?

13 MR. BORIS FICHOT: That -- that'll be
14 CSI.

15 THE CHAIRPERSON: Okay.

16

17 CONTINUED BY MS. MEGHAN MENZIES:

18 MS. MEGHAN MENZIES: All right. So I'd
19 like to move to page 42 of your original report, and
20 specifically at point -- four point six (4.6), where
21 you discuss the contracting methods that were
22 considered. And in particular, I think that these were
23 highlighted in your presentation this morning, and I
24 would like to again highlight the fixed price contract
25 and the cost reimbursable contracts.

1 And so if you could have some patience
2 with me, I would just like to walk through my
3 understanding of these contracts, and if you could help
4 me with that? So first of all, my understanding of a
5 fixed price contract is that generally, the risk falls
6 primarily on the contractor.

7 Is that correct?

8 MR. MICHAEL ROBERTSON: Yes.

9 MS. MEGHAN MENZIES: And often to
10 account for this risk, the cost would be higher.

11 MR. MICHAEL ROBERTSON: Yes, correct.

12 MS. MEGHAN MENZIES: Thank you. And
13 then my understanding with regard to the cost
14 reimbursable contracts is that more risk is likely to
15 be borne by the contracting party.

16 MR. MICHAEL ROBERTSON: Not in essence.
17 The cost reimbursable contract seeks to share risk.

18 MS. MEGHAN MENZIES: Okay. So it would
19 be more --

20 MR. MICHAEL ROBERTSON: In between the
21 two (2) parties in the interests of bringing down the
22 price.

23 MS. MEGHAN MENZIES: All right. And so
24 in that case, the contracting party is bearing more
25 risk than in the fixed price contract, but it's about

1 equal with the contractor.

2 Did that make sense on this?

3 MR. MICHAEL ROBERTSON: Well, there are
4 two (2) contracting parties in each case.

5 MS. MEGHAN MENZIES: Fair enough, yeah.

6 MR. MICHAEL ROBERTSON: In the fixed
7 price contract, essentially, the -- the
8 owner/developer, Manitoba Hydro, has very little risk.

9 MS. MEGHAN MENZIES: M-hm.

10 MR. MICHAEL ROBERTSON: And -- and all
11 the risk is with the contractor, whereas in the cost
12 reimbursable contract, you are sharing those risks. So
13 Manitoba Hydro inherits some risk, takes on some risk
14 as a tradeoff to paying probably a lower price at the
15 end of the day.

16 MS. MEGHAN MENZIES: All right. And
17 the owner and the contractor, then, have about equal
18 risks? Are they -- are they taking on about the same
19 level of risk with the cost reimbursable contracts?

20 MR. MICHAEL ROBERTSON: Depending on
21 which part of the contract you're looking at. No, I --
22 I wouldn't say in general that that is the case. I
23 mentioned that, for example, the document for the civil
24 contract is written in such a way that any -- any or --
25 or the first amount by which the final contract price

1 goes over the agreed target price is absorbed 80
2 percent by the contractor and 20 percent by Manitoba
3 Hydro.

4 MS. MEGHAN MENZIES: Right. Okay.
5 Yes. So it's just -- it's in the drafting of the
6 contract. It's not particular to the type of contract.

7 MR. MICHAEL ROBERTSON: No. It's in
8 the details of the contract.

9 THE CHAIRPERSON: Just to clarify in my
10 own mind, so the first part is the contractor bears 80
11 percent of the -- of the cost of the first portion of
12 the contract --

13 MR. MICHAEL ROBERTSON: Of the -- of
14 the overrun.

15 THE CHAIRPERSON: Overrun. And after
16 that point?

17 MR. MICHAEL ROBERTSON: Well, it -- it
18 reaches a limit, and then there is a -- a second sum of
19 money which is sort of set aside within the contract
20 amount which is shared differently, but I -- I think
21 we're getting into CSI when we're talking those
22 differences in details.

23 THE CHAIRPERSON: So the -- the
24 reference in your presentation to a 80/20 split was in
25 ref -- in -- in relation to that first tranche?

1 MR. MICHAEL ROBERTSON: Yes.

2 THE CHAIRPERSON: Okay.

3

4 CONTINUED BY MS. MEGHAN MENZIES:

5 MS. MEGHAN MENZIES: Thank you. And

6 now I'd like to move to page 40 of your original

7 contract -- sorry, your original report. And here,

8 just at -- if we could go a little bit -- perfect. So

9 here, it states, "KP further believes" -- sorry:

10 "KP has not been able to fully

11 ascertain that these risks have been

12 adequately captured in the

13 contingency calculation."

14 And that was with regard to interface

15 management.

16 Is that correct?

17 MR. BORIS FICHOT: That is correct at

18 the time of writing it.

19 MS. MEGHAN MENZIES: Okay. And -- and

20 has that changed now?

21 MR. BORIS FICHOT: A little bit,

22 because some -- some portion of the -- the interface,

23 especially between some of the electrical/mechanical

24 subs, have been integrated in the GCC contract. So

25 there's a little bit less in that respect, but there's

1 still some very important risks associated with the
2 interfaces.

3 MS. MEGHAN MENZIES: Okay. Thank you.
4 And I think I'll touch on that a little further on.

5

6 (BRIEF PAUSE)

7

8 MS. MEGHAN MENZIES: Okay. If we could
9 go to page 23 of your supplemental report. Sorry,
10 there will be a bit of flipping at this moment.

11

12 (BRIEF PAUSE)

13

14 MS. MEGHAN MENZIES: So if we read --
15 and if we could go down just a little further, Diana.
16 Thank you so much. I read:

17 "A higher contingency based on the
18 P80, as compared to Hydro's use of a
19 P50, would also be recommended for
20 the conservative estimate."

21 So I just want to walk through this for
22 a moment. What I'm getting from this is that Hydro is
23 using a P50, and a conservative position or a
24 conservative estimate would be a higher contingency of
25 -- based on the P80.

1 Can you provide for me, what is Knight
2 Piesold's position? Is it that there should be a
3 conservative estimate here, or is there a number that
4 Knight Piesold is recommending specifically?

5 MR. BORIS FICHOT: We -- we couldn't
6 recommend a specific number. It's very associated with
7 who ultimately is the decision maker and how
8 comfortable are they with the risk that they're taking.
9 So it -- it's within each decision maker to -- to
10 assume how much risk that they want to take. And
11 there's no -- if you look at the standards out there,
12 there's no -- there's no prescribed number that people
13 should be using. There's some recommenda -- different
14 people have differing opinions on what to use.

15 MS. MEGHAN MENZIES: Okay.

16 MR. MICHAEL ROBERTSON: And I suppose
17 the general point though is that it's not -- it's not
18 unduly cons -- the P50 is not unduly conservative. And
19 -- and many would say it's not sufficiently
20 conservative.

21 MS. MEGHAN MENZIES: All right. Thank
22 you.

23 MS. MARILYN KAPITANY: Sorry to
24 interrupt, but your report does say that a higher
25 contingency, based on the P80, would be recommended for

1 the conservative estimate. So it sounds like
2 you're making a recommendation.

3 MR. MICHAEL ROBERTSON: Well, we are if
4 -- if you want to go with a conservative estimate. It
5 -- it's Manitoba Hydro's choice, you know, and I guess
6 ultimately the people of Manitoba, whether they would
7 be more comfortable with a more conservative estimate.
8 And if they -- if they would like that, then we should
9 be using something more like a P80, we believe.

10

11 CONTINUED BY MS. MEGHAN MENZIES:

12 MS. MEGHAN MENZIES: Thank you. And
13 could you provide -- could you provide me with some
14 examples of what the tradeoffs would be between a
15 conservative P80 and Manitoba Hydro's P50?

16 MR. MICHAEL ROBERTSON: Well -- well,
17 there's not really a tradeoff. I mean, there --
18 there's just a -- an appreciation upfront that perhaps
19 the final cost might be nearer what the P80 is -- is
20 indicating than the P50-based estimate that is being
21 put out by Manitoba Hydro now.

22 MS. MEGHAN MENZIES: I guess what I'm
23 hoping to -- to understand is, can you say as -- in as
24 plain language as possible, why would a decision maker
25 want a P80 as opposed to a P50, or the opposite?

1 MR. MICHAEL ROBERTSON: Because he
2 doesn't want to exceed his budget.

3 MS. MEGHAN MENZIES: Okay.

4 MR. MICHAEL ROBERTSON: And he doesn't
5 want egg on his face or what -- whatever.

6 MS. MEGHAN MENZIES: That's a very
7 helpful visual. Thank you very much.

8

9 (BRIEF PAUSE)

10

11 MS. MEGHAN MENZIES: All right. And so
12 I think that for those of us with hard copies, if we
13 could go back to page 40 of your original report. So I
14 think I had directed you there before.

15

16 (BRIEF PAUSE)

17

18 MS. MEGHAN MENZIES: And as I'd gone
19 over before, it says here at that KP identifies
20 interface management by Manitoba Hydro as one of the
21 most important systemic risks associated with the
22 implementation of the Preferred Development Plan,
23 correct?

24 MR. MICHAEL ROBERTSON: Yes.

25 MS. MEGHAN MENZIES: And you had

1 qualified before that there are some -- that there are
2 some uncertainties that are now more certain, but
3 generally, this is still -- would this -- would this
4 still be the most important systemic risk for KP, or
5 for Knight Piesold?

6 MR. MICHAEL ROBERTSON: Probably not.
7 Probably -- I wouldn't say it's the most important
8 systemic risk.

9 MS. MEGHAN MENZIES: Okay. And what
10 would be the most important systemic risk now?

11 MR. MICHAEL ROBERTSON: Essentially,
12 their new process.

13 MS. MEGHAN MENZIES: Thank you. Yes.
14 Okay. But interface management is still a risk that
15 Knight Piesold is concerned with?

16 MR. MICHAEL ROBERTSON: It -- it is a
17 risk. I -- I wouldn't say that we're particularly
18 concerned about it. It's -- it's not different from
19 other developments of this nature.

20 MS. MEGHAN MENZIES: Okay. What I
21 would like to do now is direct you to the response to
22 PUB/KP I-10b. And that'll be up on the screen. Thank
23 you very much, Diana. And so at line 18, it states:

24 "The more the scope of work can be
25 wrapped up and managed by a single

1 responsible entity, the easier the
2 interface management process is and
3 the less likely scopes of work will
4 be difficult to define and administer
5 separately."

6 Can you confirm this?

7 MR. MICHAEL ROBERTSON: Yes.

8 MS. MEGHAN MENZIES: Yes. And so there
9 are two (2) places that I would like to direct you to.
10 First of all, page 2 of your supplemental report; and
11 just a little bit lower. Perfect. It says:

12 "MH's systems are still maturing, and
13 MH has recently included an outsource
14 -- outsourcing some of the
15 construction management as part of
16 their estimate."

17 So is -- does this outsourcing, does
18 this play into the concern of interface management?

19 MR. BORIS FICHOT: In my opinion, yes.

20 MS. MEGHAN MENZIES: Thank you. And so
21 that would then -- that would add to the risk?

22 MR. BORIS FICHOT: Yes.

23 MS. MEGHAN MENZIES: Thank you. And
24 then -- or I don't want to --

25 MR. MICHAEL ROBERTSON: No. I mean, it

1 -- it was a risk. It's -- it's something that's
2 identified. It's been dealt with. It's added to the
3 cost. I'm not sure there's a residual risk associated
4 with essentially using consultants to manage the
5 construction as opposed to in-house. Maybe I better
6 take this offline.

7

8 (BRIEF PAUSE)

9

10 MR. MICHAEL ROBERTSON: Okay. My
11 response stands.

12 MS. MEGHAN MENZIES: Okay. Thank you.
13 And now I would like to direct you to page 46 of your
14 presentation this morning. I'm giving Diana carpal
15 tunnel back there. I apologize. And here, the second
16 bullet states:

17 "Increased costs for the project
18 management as a result of
19 insufficient capacity in MH and
20 consequences -- consequent need to
21 hire consultants."

22 So the hiring of consultants again is
23 that interface management issue, correct?

24 MR. MICHAEL ROBERTSON: Yes. I -- I
25 would say, though, that we're talking now the risks

1 that were perceived in August/September of last year.
2 Subsequent to that, the decision -- at that time, it
3 was perceived there was a risk that they may have to go
4 to consultants --

5 MS. MEGHAN MENZIES: M-hm.

6 MR. MICHAEL ROBERTSON: -- for
7 construction management. That has materialized, and so
8 I would say that that is no longer a major risk in
9 their risk register because it's happened. But
10 again... I mean, what Boris was saying is that it does
11 produce another interface, obviously. But I'm not sure
12 that, within Manitoba Hydro, that people on site
13 reporting back to their people in head office is very
14 different from the engineer -- appointed consulting
15 engineer reporting back to Manitoba Hydro. But I -- I
16 personally don't see that it'll be a significant issue.

17 MS. MEGHAN MENZIES: Okay. Thank you.
18 And I'm soon going to leave the issue of -- of
19 interface management. But as you can see, I'm a dog
20 with a bone right now.

21 So on that issue, you had stated that
22 Manitoba Hydro was mitigating that risk with increase
23 costs?

24 MR. MICHAEL ROBERTSON: With respect to
25 hiring consultants to do the construction management,

1 that ended up -- resulted in an increase cost.

2 MS. MEGHAN MENZIES: Sorry. And
3 previously to that, when we were discussing the issue
4 of interface management, that perhaps an increased
5 contin -- I -- I'm forgetting exactly what you had
6 said.

7 But essentially, that was mitigated by
8 Manitoba Hydro, those risks?

9 MR. BORIS FICHOT: In -- in the very
10 original report, the interface that we had, looking at
11 the information that we had available at the time, the
12 concern was some of the electrical and mechanical
13 scope, because as soon as you chop up all these little,
14 tiny pieces of contracts and they were purchasing the
15 material internally, then you have to subcontract all
16 these different parties to do different pieces of that
17 scope of work. And the you had the general civil
18 contractor on the side doing his own work.

19 Our experience has been that, with all
20 these different parties involved in the project, that
21 there was always scopes of work that were missed and so
22 forth, and that usually led to an increase in cost.

23 Now, in the new signed terms, there's a
24 lot more inclusion of some of these little different
25 elements which reduces the number of interfaces on that

1 front. Where we have a slight different opinion is
2 whether or not, once you go on the management side,
3 because there's a different interface in managing the
4 overall construction, if bringing in another party to
5 the table creates some -- some schedule risk and some -
6 - some overall risk to the project.

7 MR. MICHAEL ROBERTSON: Does that
8 answer?

9 MS. MEGHAN MENZIES: Yes. And I'm --
10 I'm going to leave that for you -- leave that now, so
11 you will all be relieved.

12

13 (BRIEF PAUSE)

14

15 MS. MEGHAN MENZIES: Okay, if we could
16 go to slide 26 of your presentation.

17

18 (BRIEF PAUSE)

19

20 MS. MEGHAN MENZIES: And at the bottom,
21 at the last bullet, it states:

22 "Manitoba Hydro have attributed lack
23 of productivity to difficulties
24 hiring and retaining staff and use of
25 inexperienced staff. And then as a

1 result of the low productivity
2 experience at Wuskwatim, Manitoba
3 Hydro has, for Keeyask and Conawapa,
4 adjusted contracting methods, added
5 staff, and invested in better camp
6 facilities."

7 Do you see that there?

8 MR. MICHAEL ROBERTSON: Yes.

9 MS. MEGHAN MENZIES: Thank you. And
10 then when we had reached slide 33 of your presentation,
11 in discussing the issue of labour retention, I believe
12 that you had expanded on that by stating that the much
13 better camp conditions would assist in mitigating that.

14 Is that correct?

15 MR. MICHAEL ROBERTSON: That is
16 certainly Manitoba Hydro's belief, and it is logical.

17 MS. MEGHAN MENZIES: Okay. Did you
18 have any opportunity prior to today to review the
19 Deloitte report -- the Deloitte report on Wuskwatim?

20 MR. MICHAEL ROBERTSON: Certainly not
21 personally, no.

22 MS. MEGHAN MENZIES: Okay. Well, then
23 I will leave that there.

24

25 (BRIEF PAUSE)

1 MS. MEGHAN MENZIES: I will not leave
2 that there. Just to confirm then, you are not able to
3 confirm or to speak to any of the observations that
4 were made by Deloitte with regard to the camp
5 conditions in Wuskwatim?

6 MR. MICHAEL ROBERTSON: Correct.
7 Everything that we have to say about Wuskwatim was
8 based on what we were given by Manitoba Hydro.

9
10 (BRIEF PAUSE)

11
12 MS. MEGHAN MENZIES: And Manitoba Hydro
13 did not give you the Deloitte report?

14 MR. MICHAEL ROBERTSON: I don't believe
15 so.

16 MS. MEGHAN MENZIES: Thank you.
17 Subject to check, that is all that I will be saying on
18 -- on the Deloitte report.

19
20 (BRIEF PAUSE)

21
22 MS. MEGHAN MENZIES: All right. I have
23 two (2) last areas to touch on, and then I -- then I
24 will be finished with my questioning. The first is a
25 follow-up to the question of Board member Kapitany this

1 morning, and it was related to page 8 of your
2 presentation.

3 And I believe that we had established
4 that -- or you had established that that report is not
5 based on the updated capital cost estimates, correct?

6 MR. MICHAEL ROBERTSON: Correct.

7 MS. MEGHAN MENZIES: And -- but you had
8 also stated that the updated capital cost estimates
9 would not change your conclusions in this report --

10 MR. MICHAEL ROBERTSON: Correct.

11 MS. MEGHAN MENZIES: -- in this table,
12 sorry. In -- in the interests of being as up to
13 date as possible, would you be willing to undertake to
14 update this table with the updated capital cost
15 estimates?

16

17 (BRIEF PAUSE)

18

19 MR. BORIS FICHOT: We -- we could do
20 that. It's -- but we don't think it's really the
21 intent of the table. The -- the overall intent is on a
22 very, very high level. If you pull away from the whole
23 thing, our first impression of any hydro project that
24 we're given, or any renewable project that we're given,
25 is usually we'll just look at, overall, here's how much

1 it costs and what's the bang for the buck on a very,
2 very high level.

3 And we're used to looking at projects
4 and we say, Okay, wind power is between one point five
5 (1.5) and two point five (2.5), or we'll say a hydro
6 project is between two (2) and ten (10). And that's --
7 that's our first gut feel when we -- when we look at
8 any of these projects is, Okay, well this ones around
9 nine (9) in this case. It doesn't matter if it's eight
10 point five (8.5) or it's ten (10), but it's around that
11 number, and that gives us a feel that, Oh this is
12 expensive, or if it's a dollar -- a million dollars per
13 megawatt, Oh, let's -- I'd throw my money in there
14 right away because it looks like it's worthwhile.

15 So that was the overall intent of that
16 table. Whether the number is exact kind of defies the
17 -- the purpose of the impression that we get firsthand
18 of the -- the value of the project. It has a lot of
19 catches to that. There's no attribution -- attributes,
20 for example, of the firmness of the energy or anything
21 like that. That's just overall our impression of the -
22 - kind of where that project ranks in -- as an overall
23 project in the big pool of hydro power resources.

24 It's -- it's on the expensive side
25 comparatively, but that's -- it -- it doesn't give us a

1 better indication than that. But it's not crazy out
2 there either.

3 MR. MICHAEL ROBERTSON: But -- but to
4 be specific, I mean if you take -- for Keeyask you put
5 in six point five (6.5) instead of six point two (6.2),
6 your million dollars per gigawatt hour will now be one
7 point four-seven (1.47) instead of one point four-zero
8 (1.40).

9 MS. MEGHAN MENZIES: Yes.

10 MR. MICHAEL ROBERTSON: It's -- as
11 Boris said, It's not significant. And it's not
12 relevant to whether or not this project is in the
13 ballpark of experience.

14 MS. MEGHAN MENZIES: And that's fair.
15 And with that caveat in mind, would you still be able
16 to undertake to update the table? And we will keep in
17 mind that it's from a high level.

18 MR. CHRISTIAN MONNIN: It seems to me
19 that Mr. Robertson has provided a partial answer to
20 that already by saying that Keeyask would be one point
21 four-seven (1.47). If I can invite him to do the
22 Conawapa calculation right now, we might be able to
23 satisfy the undertaking right now.

24

25 (BRIEF PAUSE)

1 MR. CHRISTIAN MONNIN: He just rightly
2 advised me that Conawapa hasn't changed. So if I
3 understand correctly, the -- the reboot of this table
4 would be with the new capital costs. You would have
5 one point four (1.4), one point four-seven (1.47), and
6 that would be the substance of the changes.

7 MR. MICHAEL ROBERTSON: Well, that's
8 the -- that's the second-last column. The -- the
9 million dollars per gigawatt hour would go from one
10 point four (1.4) to one point four-seven (1.47). The
11 million dollars per megawatt would go from eight point
12 nine (8.9) to nine point three (9.3). That's putting
13 six point five (6.5) in instead of six point two (6.2)
14 for the in-service cost.

15

16 CONTINUED BY MS. MEGHAN MENZIES:

17 MS. MEGHAN MENZIES: Perfect. Well,
18 undertaken now satisfied -- undertaking now satisfied.
19 Thank you very much.

20

21 (BRIEF PAUSE)

22

23 MS. MARILYN KAPITANY: So I thought we
24 also had a -- a change of cost for Conawapa, but maybe
25 that was CSI.

1 So my understanding was that the updates
2 we received per Manitoba Hydro were for both of the
3 generating stations, not just for Keeyask?

4 MR. SVEN HOMBACH: If it's -- if it's
5 of assistance to the panel, it may help to flash up
6 Manitoba Hydro Exhibit 113 for a moment, that deals
7 with the new capital costs.

8

9 (BRIEF PAUSE)

10

11 MR. SVEN HOMBACH: Yeah, the second
12 page of the document shows the updated capital costs.

13

14 (BRIEF PAUSE)

15

16 MR. MICHAEL ROBERTSON: Yes, I -- I see
17 indeed that the Conawapa cost was updated in March
18 2014. So it's now 10.662 billion, where in CEF13 it
19 was ten point four-nine-two (10.492). So that's public
20 record from Manitoba Hydro.

21 THE CHAIRPERSON: Since we're there, we
22 might as well -- can you give us the revised numbers as
23 well for that table, the -- the impact of --

24 MR. MICHAEL ROBERTSON: Oh, right.

25 THE CHAIRPERSON: -- that change?

1 (BRIEF PAUSE)

2

3 MR. BORIS FICHOT: That -- that results
4 in \$7.2 million per megawatt for -- for Conawapa and
5 then one point five-two (1.52) for -- dollars per
6 gigawatt hours.

7

8 CONTINUED BY MS. MEGHAN MENZIES:

9 MS. MEGHAN MENZIES: Thank you. That
10 was impressively quick. And so in drafting this table,
11 did you employ a discount rate?

12 MR. BORIS FICHOT: Yeah, I -- I didn't
13 mention that, but, yeah, these -- we -- we didn't
14 really refer to what years these dollars apply to, so
15 there is -- there may be some differences in these
16 numbers. As I said, the intent is really at a high
17 level, where we -- it doesn't matter if it's 2 percent
18 off. It's what category are we in.

19 MR. MICHAEL ROBERTSON: So strictly
20 speaking, the answer is no.

21 MS. MEGHAN MENZIES: Thank you.

22 MR. MICHAEL ROBERTSON: They're
23 essentially -- inasmuch as they're present day project
24 projects, they're present day costs.

25 MS. MEGHAN MENZIES: Thank you. And

1 we've now reached the last area of questioning. At
2 page 23 of your original report; and if we go down just
3 a little bit. Thank you. Perfect.

4 Knight Piesold states that:

5 "It appears as though expected val --
6 value modelling of -- the expected
7 value modelling of Manitoba Hydro is
8 akin to what KP would call a Monte
9 Carlo simulation."

10 Is that correct?

11 MR. BORIS FICHOT: That's correct.

12 MS. MEGHAN MENZIES: And so could you
13 provide just a little more information or a little more
14 detail on how Manitoba Hydro's process was akin to a
15 Monte Carlo simulation?

16 MR. BORIS FICHOT: It's -- it's
17 essentially the same thing, except that they -- they
18 separate out the subsets of risk into two (2)
19 categories, versus we would just do one (1) general
20 thing where we would categorize all the different risks
21 and put a statistical variation on each of those
22 elements, and then run this through to kind of get a --
23 a statistical distribution of the end costs of the --
24 of the project.

25 They -- they've used an external

1 specialist, and we've now seen the -- the most recent
2 report produced by that specialist, and then they go
3 through an interview process to derive the systemic
4 risk portion, and then the same processes we would be
5 used to for the -- for the rest of the risk.

6 MS. MEGHAN MENZIES: Thank you.

7 And so either separately or all risk
8 factors together, can you speak to how many risk
9 factors were assessed?

10 MR. BORIS FICHOT: We do have a list of
11 those in the material that was provided, but it's quite
12 a number. The -- the systemic risk is, I think, the --
13 the more valuable to review if somebody were to review
14 it, and I believe there was, like, twenty-five (25)
15 assumption factors. I could be wrong on the exact
16 number, but it's around those numbers on the systemic
17 side.

18 MS. MEGHAN MENZIES: Thank you.

19 And are you able to speak to what types
20 of factors were assessed?

21 MR. MICHAEL ROBERTSON: Well, in -- in
22 essence, the -- the cost is broken down into a number
23 of different items, and in this kind of simulation,
24 whatever you call it, you -- you basically assign three
25 (3) valuable -- three (3) values to each of those

1 parameters --

2 MS. MEGHAN MENZIES: M-hm.

3 MR. MICHAEL ROBERTSON: -- which
4 typically are called a reference and a low and a high,
5 and you throw them in the box, and the box combines all
6 possible combinations of -- of those parameters, and it
7 spits out, essentially, a -- an expected value, and it
8 gives you some idea of -- of the range of what it might
9 be in terms of probability --

10 MS. MEGHAN MENZIES: M-hm.

11 MR. MICHAEL ROBERTSON: -- which gives
12 you the P50s and the P80s and that sort of thing.

13 MS. MEGHAN MENZIES: Exactly. Sorry, I
14 wasn't -- I'm not wanting a -- a description of Monte
15 Carlo, but more just what -- what factors -- what risk
16 factors were assessed specifically?

17 MR. MICHAEL ROBERTSON: Not risk
18 factors per se. It -- it's -- it's the -- the possible
19 range of costs of the different parts of the overall
20 cost estimate, so, for instance, the -- the value of
21 concrete.

22 MS. MEGHAN MENZIES: And precisely,
23 that's -- so that's what I'm speaking to. So the value
24 of concrete was one (1).

25 MR. MICHAEL ROBERTSON: Right.

1 MS. MEGHAN MENZIES: Can you speak to
2 any other?

3 MR. MICHAEL ROBERTSON: Well, the other
4 component costs. The earthfill, the -- the turbine
5 generator, the -- the indirect costs. I mean, they're
6 all part of the overall cost makeup.

7 MS. MEGHAN MENZIES: Perfect. And on
8 that note, thank you for your patience. And those are
9 done -- those are my questions for today.

10 THE CHAIRPERSON: Thank you, Ms.
11 Menzies. Now it's your -- your turn, Me. Hacault.

12 MR. ANTOINE HACAULT: Can I just have a
13 five (5) minute break? I'd like to speak to Diana on
14 some of the documents I might be asking her to bring
15 up, and -- and there's going to be one (1) filing when
16 we -- that should be distributed -- or was distributed
17 earlier this morning, will be.

18 THE CHAIRPERSON: So five (5) minutes
19 it is, then.

20

21 --- Upon recessing at 1:35 p.m.

22 --- Upon resuming at 1:42 p.m.

23

24 THE CHAIRPERSON: I think we're ready
25 to resume the proceedings, and I -- we just had

1 documents distributed, so perhaps we should acknowledge
2 them, Ms. Ramage, please?

3 MS. PATTI RAMAGE: Yes. Thank you.
4 Three (3) documents were distributed. The first one on
5 my list is the economic summary tables, assuming flat
6 load growth beyond '22/'23, and that is marked as
7 Exhibit Manitoba Hydro-104-13.

8
9 --- EXHIBIT NO. MH-104-13: Economic summary table
10 assuming flat load growth
11 beyond 2022/2023
12

13 MS. PATTI RAMAGE: Next is a -- a
14 response to a -- to MIPUG Exhibit 21 Question 3, and
15 that -- that would be marked as Exhibit 174.

16
17 --- EXHIBIT NO. MH-174: Response to MIPUG Exhibit
18 21 Question 3
19

20 MS. PATTI RAMAGE: And then lastly,
21 Exhibit 175 is Manitoba Hydro's response to Undertaking
22 number 67, which is a -- a detailed supporting schedule
23 showing the calculations used to arrive at the return
24 on equity shown on page 4 of Manitoba Hydro's Exhibit
25 129.

1 --- EXHIBIT NO. MH-175: Response to Undertaking 67

2

3 MS. PATTI RAMAGE: So those are the
4 three (3) documents.

5 THE CHAIRPERSON: Thank you.. And Me.
6 Hacault, you have a document as well to -- to --

7 MR. ANTOINE HACAULT: Oui, M.
8 President. We have a Volume VIII, which I understand
9 will be marked as MIPUG Exhibit 20-8.

10

11 --- EXHIBIT NO. MIPUG-20-8: Volume VIII

12

13 CROSS-EXAMINATION BY MR. ANTOINE HACAULT:

14 MR. ANTOINE HACAULT: Good afternoon,
15 members of the panel. My name is Antoine Hacault. I
16 act on behalf of Manitoba Industrial Power Users Group.

17 And we'll start on slide 8. With
18 respect to the projects, and let me -- I'll try to
19 explain the context of this -- this particular line of
20 questioning.

21 We have two (2) potential generating
22 stations, Keeyask, which is well underway, and
23 Conawapa, which is a merchant generating station whose
24 construction date -- the earliest in-service date might
25 be 2026.

1 In the context of that, could you, sir,
2 and it doesn't matter who, advise where is Muskrat
3 Falls in its construction project -- process in
4 relation to this estimate?

5 MR. MICHAEL ROBERTSON: My -- I stand
6 to be corrected. My understanding is that Muskrat
7 Falls is well underway. It's under construction. I do
8 not recall when its target in-service date is. I don't
9 know. I know it's ahead of --

10 MR. ANTOINE HACAULT: Can you --

11 MR. MICHAEL ROBERTSON: -- Keeyask.

12 MR. ANTOINE HACAULT: -- can you help
13 this Board understand whether or not the 7.5 billion
14 doll -- sorry, \$6.2 billion number is an estimate prior
15 to awarding the general service -- or civil contract
16 under that particular project?

17 MR. MICHAEL ROBERTSON: I cannot.

18 MR. BORIS FICHOT: The -- the number
19 was taken straight from the similar proceeding they had
20 to this one, where they -- they went through something
21 similar to the NFAT process. So that -- at that stage,
22 they -- they weren't there yet. They -- they have a
23 process where it was Gateway 2 or 3. I don't remember
24 what it was -- but it was at -- at a similar stage in
25 the -- in a process prior to GCC.

1 (BRIEF PAUSE)

2

3 MR. MICHAEL ROBERTSON: I was just
4 confirming with -- with Boris there that at the time
5 that that review took place, they did not have the
6 general civil contract bids in, and therefore, to some
7 extent, they were further behind than we are today on
8 Keeyask.

9 MR. ANTOINE HACAULT: Thank you very
10 much, sir. Now, do you have -- can you give us an
11 answer at this point whether or not -- when this
12 information was put on the record, how far they were
13 away from awarding the general service contracts? Was
14 it two (2) or three (3) years?

15 MR. MICHAEL ROBERTSON: No, not with
16 any accuracy. I can't tell you that answer.

17 MR. ANTOINE HACAULT: Okay. Thank you
18 very much. What about Site C? How close to
19 construction was that \$7.9 billion project?

20 MR. MICHAEL ROBERTSON: The \$7.9
21 billion question. They are planning, my understanding,
22 is to start involving contractors eminently in -- in
23 April or May of this year. I'm sure they will go
24 through a pre-qualification process. I don't imagine
25 that they're going to get any real numbers in the form

1 of bids until -- till next year, but I stand to be
2 corrected. That's just my speculation.

3 MR. ANTOINE HACAULT: But we are
4 talking in Muskrat Falls or Site C for an in-service
5 date which is some ten (10) or twelve (12) years out,
6 are we?

7 MR. MICHAEL ROBERTSON: Site C,
8 probably; Muskrat Falls, maybe somewhat less inasmuch
9 as they've started construction.

10 MR. ANTOINE HACAULT: So Site C, you
11 think that the in-service date might be in the 2026
12 range for the first turbines?

13 MR. MICHAEL ROBERTSON: I don't know.
14 I wouldn't say -- I would suggest probably less.

15 MR. ANTOINE HACAULT: Probably less?
16 Okay. What about La Romaine? That's another one for
17 which we have a capital cost estimate.

18 MR. MICHAEL ROBERTSON: That -- that is
19 -- is well underway. It's -- it's -- it may even be
20 ahead of -- oh, I'm not sure, to be honest. I -- I
21 would say it's -- it's started, so it's ahead of Site
22 C. But where it sits with regard to Muskrat, I don't
23 know.

24 MR. ANTOINE HACAULT: So that capital
25 costs estimate, when was it made in relation to the

1 construction, which is, as you say, underway?

2 MR. MICHAEL ROBERTSON: I don't know.

3 MR. ANTOINE HACAULT: Okay. Just
4 trying to see if we could get some sense of how close
5 the capital cost estimates were to actual definition of
6 the project and -- and costs of the project. With
7 respect --

8 THE CHAIRPERSON: Let's just situate
9 this table in time. This -- this is -- this table
10 dates from what time frame?

11 MR. MICHAEL ROBERTSON: Well, as -- as
12 we said to -- to Meghan, essentially, I think that
13 table is present day over the last three (3) years.
14 Whether the costs have significantly changed for the
15 precise same scope of work in the last three (3) years,
16 I don't know. I -- I think, given again, as Boris
17 says, this is a -- really a ballparking exercise, it --
18 it doesn't stand up to detailed examination.

19

20 CONTINUED BY MR. ANTOINE HACAULT:

21 MR. ANTOINE HACAULT: With respect to
22 the projects that are listed on slide 8, which of these
23 would be built on a merchant basis as opposed to a
24 needs basis for either capacity or energy?

25 MR. MICHAEL ROBERTSON: Well,

1 certainly, Muskrat Falls was -- is being built to serve
2 the people of Newfoundland and Labrador. That's what
3 it's being sold as. Site C, BC Hydro believed that
4 that is needed for internal demand. I -- I imagine the
5 -- the Hydro-Quebec projects would have a large element
6 of export driver; so, by your definition, market plans.
7 I -- I don't know for sure, but I suspect that's the
8 case.

9 Boris...?

10 MR. BORIS FICHOT: Overall, it's not
11 something that can easily be assessed because there's
12 so many side attributes to -- to the value of energy
13 there that a dollar per gigawatt hour never shows. The
14 firmness of the value of energy is -- is something on
15 its own that you can't compare to a renewable energy
16 source output like a wind farm. It -- there's a
17 different value to that energy, and it's -- it's too
18 difficult to -- to evaluate on a simple level.

19 MR. ANTOINE HACAULT: Understood, but
20 the context of my question, sir, was to see, for some
21 of these projects -- there's a theme, at least from our
22 perspective, that the PUB will have to make a decision
23 whether it looks at risk in a different way when a
24 project is constructed for needs of the residents as
25 opposed to an opportunity on export.

1 So I was trying to identify which of the
2 products -- projects that were -- potentially had more
3 opportunity perspective. And you've answered that, Mr.
4 Robertson. You believe that the projects in Quebec
5 might have more kind of an export attribute than
6 Muskrat Falls and Site C, which are being built by the
7 utilities for the needs of the residents in those
8 areas, correct?

9 MR. MICHAEL ROBERTSON: That's my
10 opinion. I -- I might be wrong.

11 MR. ANTOINE HACAULT: Okay. And that
12 leads me to slide 10 of that same presentation. The
13 third bullet down, you make a statement:

14 "Many jurisdictions use higher than
15 P50 estimate to establish consis --
16 contingency [and then in parentheses]
17 (but a significant number of others
18 do not; they use P50)."

19 Did I kind of interpret that correctly,
20 that bullet?

21 MR. BORIS FICHOT: That's correct.

22 MR. ANTOINE HACAULT: Okay. Now, if we
23 go to Exhibit 3-1 at page 24, one of the discussions on
24 that page relates to the use of the P50 by others and
25 the view of Knight Piesold on that particular

1 discussion point.

2 Now, as I read the information under
3 paragraph 2.9.3.3 in the second paragraph, there's a
4 view that perhaps using a P50 might not be appropriate
5 for large projects.

6 Is that correct?

7 MR. MICHAEL ROBERTSON: That is
8 correct.

9 MR. ANTOINE HACAULT: Okay. And
10 there's also, as I understand, the view -- and it's at
11 the very bottom of what we see on this screen; this is
12 in an article that you've quoted -- that the 50 percent
13 probability guideline is not necessarily applied to
14 very large projects or to strategic projects outside
15 the annual capital budget.

16 So that also is one view, correct?

17 MR. MICHAEL ROBERTSON: Yes.

18 MR. ANTOINE HACAULT: So we do see this
19 being used by Manitoba Hydro for capital budgets.

20 Why, in your view, do we have to think
21 about the use that we're making of the budget in
22 deciding whether to use a P50 or, as you had later
23 explained in your slides and the cross-examination of
24 Ms. Menzies, you may, for other purposes, wish to use a
25 different level of probability?

1 MR. MICHAEL ROBERTSON: Well, as -- as
2 we tried to explain, it -- it is very much dependent on
3 the appetite for risk on the -- on behalf of the
4 developer. Manitoba Hydro have chosen to go with the
5 P50 backed up by a management reserve which, to some
6 extent, takes it higher than that, while other
7 jurisdictions will stick with their P50.

8 The argument there is that if you've got
9 a whole suite of large projects, then it -- it makes
10 some sense perhaps to -- to work on the P50 on the
11 whole package. But when it comes to an individual
12 project and you want more reassurance that you're not
13 going to run out of budget, you should probably be
14 working with a higher number than the P50.

15 MR. ANTOINE HACAULT: Now, if we turn
16 to the next page, please, Diana, at the top of the
17 page, this is in Exhibit 3-1, there is a table. And
18 initially, your response to the Chair was that you
19 believed that the contingency amounts were part of CSI.
20 There's two (2) places, one (1) in this report and one
21 (1) in your supplemental, where some of the 'P' values
22 are given.

23 Am I understanding correctly that in
24 this January report the probability values were not yet
25 updated to reflect the award of the contract later in -

1 - and the updated capital costs?

2 MR. MICHAEL ROBERTSON: Correct. That
3 was your initial -- this data came from Manitoba Hydro,
4 and it's based on the initial risk assessment that was
5 done.

6 MR. ANTOINE HACAULT: So I'll take --

7 MR. BORIS FICHOT: Not -- not the
8 numbers that are on the screen. The numbers that are
9 on the screen are from the updated 2014 study.

10 MR. ANTOINE HACAULT: I -- I'll take
11 you to the -- so -- yeah, just to -- there is an
12 updated table in your supplementary report.

13 MR. BORIS FICHOT: Okay.

14 MR. ANTOINE HACAULT: So as of January,
15 when this report is being written, what assumptions, or
16 what are the kind of back -- what's the background? Do
17 we have the 2013 capital update in by this time?
18 Because there was a further update in March of 2014.

19 MR. MICHAEL ROBERTSON: No, the table
20 on the screen in front of us was produced in the
21 January report, at which time the -- the capital cost
22 estimate had not been redone for 2013. As I say,
23 there's data from Manitoba Hydro and it was based on
24 their previous -- essentially, their risk assessment.

25 MR. ANTOINE HACAULT: So I always have

1 a little bit of difficulty understanding probabilities.
2 If I go to P90, does that mean one (1) times -- one (1)
3 time out of ten (10) we're actually going to be higher
4 than 950 million, and the other nine (9) times we hope
5 to be doing better than a \$950 million contingency
6 overrun?

7 MR. MICHAEL ROBERTSON: Well, it --
8 well, it's not the 950 million number. What we're
9 saying is that if you apply a 950 million contingency
10 to your best estimate, that cost is short and you'd be
11 exceeded 10 percent of the time.

12 MR. ANTOINE HACAULT: Okay. So again,
13 that just speaks to the level of tolerance we've seen
14 in other parts of this proceedings, some of the P10 and
15 P90s being used on certainty. Here, one (1)
16 conservative view that Knight Piesold has put forward
17 is that we -- we might want to look at P80. And if we
18 want it to be more conservative, the way would -- we'd
19 have to go is go to a P90.

20 Am I understanding you correctly?

21 MR. MICHAEL ROBERTSON: In principle,
22 correct.

23 MR. ANTOINE HACAULT: Yes. So there
24 was roughly a \$300 million difference between P50 and
25 P80 in the initial filing. And if we go to Exhibit 3-

1 2, at page 23 of 26, at the bottom of the page we have
2 another contingency comparison. This time we haven't
3 included the P90 and the P95. And the P50 has actually
4 gone down from -- from 527 million to 327 million.

5 Now, is that just because of the runs of
6 the Monte Carlo simulation that we get that reduction,
7 or is that something that your company independently
8 assessed?

9 MR. MICHAEL ROBERTSON: No, it's --
10 it's not a result of rerunning the thing, except that
11 at this time you have removed a large measure of
12 uncertainty, because you now have the GCC results. So
13 the capital cost has not gone down, the -- the contract
14 cost went up. But because it's now more firm, the
15 contingency that you need to add to it to get to the
16 P50 is less.

17 MR. ANTOINE HACAULT: Now, and this is
18 something that the Chairman has asked questions
19 about...

20

21 (BRIEF PAUSE)

22

23 MR. MICHAEL ROBERTSON: Yes, sorry.
24 Sorry. Boris was just clarifying, yes, they -- they
25 are reruns from the model. But the essential

1 difference is that the model parameters have been
2 changed.

3 MR. ANTOINE HACAULT: Now, if we go
4 from P50 to P80 on this revised calculation, we
5 subtract from six ninety-one (691) the three twenty-
6 seven (327) and come to -- in the range of 360 to \$70
7 million difference between those two (2) probabilities,
8 correct?

9 MR. MICHAEL ROBERTSON: M-hm, yes.

10 MR. ANTOINE HACAULT: And before, the
11 range was -- we would subtract if we -- I don't know if
12 you still have handy, Diane (sic), page 25 of the prior
13 exhibit, from the P80, 848 million, we would subtract
14 the 527 million. So we actually have a little bit
15 smaller of a range.

16 One of the questions the Chair, and
17 quite frankly I nothing, when we introduced some
18 certainty with respect to the contract, why are we
19 seeing such a wide range at the P80 continue to exist,
20 and in fact, get a bit wider?

21 MR. MICHAEL ROBERTSON: Well,
22 essentially, if you look at it graphically, it's a
23 flatter curve with a lower peak, but are more extended.
24 So your -- your limits are wider, so the differences
25 between your centre point and any chosen point are

1 greater. So you -- as you say, it's three (3) -- three
2 sixty (360) difference now, and it was three twenty
3 (320) difference.

4 That comes out in the math, and -- and
5 in the readjusted factors that you put into re-running
6 the model. But it is still -- the P80 at six ninety-
7 one (691) is still less than it was at eight forty-
8 eight (848). It's just a different shape of
9 distribution that comes mathematically out of the
10 exercise.

11 MR. ANTOINE HACAULT: And, sir, would
12 you be able to provide us with the probability value on
13 Table 9.1 of Exhibit 3.2 for the probability points of
14 P90 and P95?

15 MR. MICHAEL ROBERTSON: Manitoba Hydro
16 might be able to, but I don't have the data.

17 MR. BORIS FICHOT: We actually do have
18 the data, but I don't know if we can share it, so. I -
19 - I don't have it with me.

20 MR. MICHAEL ROBERTSON: I -- I don't
21 have it with me either.

22 MR. ANTOINE HACAULT: Okay. Well, my
23 request, as long as it's not commercially sensitive
24 information, and I don't see why it would be if we
25 already have one (1) table, is to update Table 9.1 in

1 Exhibit 3.2 -- or 3-2 to also include the P90 value and
2 the P95 values.

3 Do I have that undertaking, subject to
4 availability of information?

5 MR. CHRISTIAN MONNIN: Yes, we
6 undertake to do that, subject to the availability of
7 information.

8
9 --- UNDERTAKING NO. 117: Knight Piesold to update
10 Table 9.1 in Exhibit 3-2 to
11 include the P90 value and
12 the P95 values
13

14 CONTINUED BY MR. ANTOINE HACAULT:

15 MR. ANTOINE HACAULT: If I go back to
16 the executive summary of Exhibit 3.1, it's Roman
17 numeral II of IV, and one of the issues that's
18 discussed in that executive summary is the issue of
19 indirect costs, which, as I understand it, contribute
20 about one-third of the total costs of the project.

21 Am I right, that it's about one-third
22 (1/3) of the cost of the project?

23 MR. MICHAEL ROBERTSON: You are
24 correctly stating that Manitoba Hydro have told us
25 that.

1 MR. ANTOINE HACAULT: And one of the
2 issues that was raised was that -- I'm looking at the
3 bottom of the first paragraph under Item 2:

4 "KP would have liked to see more
5 Hydro documentation of the indirect
6 cost."

7 Why would it have wanted to see that?

8 MR. MICHAEL ROBERTSON: So that we
9 could offer an opinion as to whether or not they had
10 been well-documented and covered the requisite
11 territory.

12 MR. ANTOINE HACAULT: Is it just the
13 question of well-documenting? How are you bil -- able
14 to assess whether or not the estimate of indirect costs
15 have been reasonably assessed if you don't have the
16 detail to make that examination, sir?

17 MR. BORIS FICHOT: We -- we had some
18 level of comfort with a -- a first level -- level of
19 breakdown of the cost estimate they'd given us, as well
20 as some of the -- some of the contracts that were in
21 place that kind of fit under that category. But the
22 detailed, detailed breakdown and a documentation of
23 those indirect costs would have been desirable to -- to
24 firm up those numbers.

25 But at the same time, in terms of the

1 limited scope that we can do -- go, there's only so
2 many levels of detail that we can go into.

3 MR. ANTOINE HACAULT: So are you able
4 to give me any sense as to the extent to which your
5 ability to provide your opinion was impaired as a
6 result of not having the documentation to the level
7 that you would have liked to have it?

8 MR. MICHAEL ROBERTSON: I -- I think
9 what we can honestly say is what we have said, i.e.,
10 that we -- we saw a lot of data on the direct costs and
11 can confirm that that has been handled well and in good
12 detail. We cannot say quite the same about the
13 indirect costs for whatever reason.

14 MR. ANTOINE HACAULT: So trying to
15 search some kind of a -- a suggestion or a fairness
16 issue that I might be able to suggest to you. You've
17 got about a third of the costs which you believe you
18 don't have in -- enough information about.

19 Are you satisfied that, for example,
20 that's adequately dealt with in the contingency
21 allowance?

22 MR. MICHAEL ROBERTSON: Ultimately, if
23 -- if you were going to hang me on my answer, I would
24 say no. We -- we would have liked to have seen more
25 detail, as -- as we say; we didn't. We -- we therefore

1 cannot offer the same degree of confidence as we can on
2 the direct costs.

3 MR. ANTOINE HACAULT: Okay. On the
4 issue of confidence, and I'll get into some of the
5 details, Conawapa now has projected in-service dates
6 which might be deferred to 2031.

7 Were you aware of that, sir? Depending
8 on the level of DSM being introduced.

9 MR. BORIS FICHOT: We -- we didn't look
10 further into Conawapa after issuing the first report.
11 Our additional scope of work really just covered
12 Keeyask.

13 MR. ANTOINE HACAULT: Okay. Diana,
14 could you bring up Exhibit 104-1? It'll show us the
15 in-service dates under the various DSM plans.

16 And, gentlemen, as you can perhaps see
17 in the middle of the page, there's Level 2 DSM, which
18 is the level of DSM that we've been discussing in this
19 hearing as being achievable, somewhere between Level 1
20 and Level 2. As you can see, the new resources and
21 dates, at the very bottom of the screen, we have a date
22 2031 for Conawapa.

23 Do you see that, sir?

24 MR. MICHAEL ROBERTSON: Yes.

25 MR. ANTOINE HACAULT: Now, is this a

1 limitation with respect to your report, that your
2 analysis and your comments relate to the estimate with
3 an in-service date for Conawapa of 2026?

4 Is that a limitation to your report?

5 MR. MICHAEL ROBERTSON: I would say no.

6 MR. ANTOINE HACAULT: Okay.

7 MR. MICHAEL ROBERTSON: If -- if only,
8 because as Boris says, the focus certainly of the
9 second report has been specifically Keeyask. On --
10 Conawapa is -- is a long way away. I mean, some --
11 many things will change before then.

12 MR. ANTOINE HACAULT: And perhaps I
13 didn't word my question correctly when I said, "a
14 limitation to your report."

15 If there's a deferral of Conawapa from
16 2026 to 2031, have you considered in your report
17 whether or not your comments on the soundness and
18 accuracy of the estimates, as it relates to Conawapa,
19 can still be relied on?

20 MR. MICHAEL ROBERTSON: I -- I don't
21 think I can answer that question.

22 MR. ANTOINE HACAULT: So you're
23 uncertain as to whether or not we -- that would be
24 MIPUG and this Board -- can rely on your conclusions
25 with respect to Conawapa estimates and the reasonable

1 of those -- reasonableness of those estimates if the
2 construction date is pushed to 2031?

3 You can't comment on that?

4 MR. MICHAEL ROBERTSON: Sorry. Boris
5 is itching to say something as well. But we are not
6 expressing an opinion on the total in-service cost of
7 Conawapa and whether or not Manitoba Hydro have got
8 that even in the right ballpark.

9 MR. ANTOINE HACAULT: That's useful. I
10 hadn't understood that there was that limitation with
11 respect --

12 MR. BORIS FICHOT: I would put in the
13 context --

14 MR. ANTOINE HACAULT: -- to Conawapa.

15 MR. BORIS FICHOT: -- of the economic
16 analysis specifically. So we -- we looked at the
17 capital costs as they were presented and have our
18 opinion on the capital costs. But we don't look into
19 the change of in-service dates as affecting it.

20 So we don't look at the -- beyond the
21 immediate calculation of the amortization as it's
22 portrayed, whether there's a delay, that wasn't part of
23 our scope of work in terms of what we look at.

24 MR. ANTOINE HACAULT: I want to
25 understand that a bit better, because in your report --

1 and I had a line of questioning on this; I maybe can
2 jump to it -- you had some comments on the escalation
3 of prices if the -- for the two (2) projects, and
4 whether or not you thought Manitoba Hydro's view of
5 escalation costs was reasonable.

6 Can I simply, for Conawapa, apply your
7 view of escalation, which I think was three (3) point
8 something percent, to the Conawapa estimates and -- and
9 change those from 2026 to 2031?

10 MR. MICHAEL ROBERTSON: If -- if you
11 wish. Discounted back to present day, it's a long way
12 ahead. It's not an exercise that, as Boris says, is --
13 is within our scope.

14 MR. ANTOINE HACAULT: Now, if we can go
15 to slide 18, you had mentioned, and perhaps I just
16 didn't see it in your report, you've got what I would
17 consider, firstly, the capital cost of a CCGT at 1.3
18 million.

19 Then you've done some for the other
20 types of units, correct?

21 MR. MICHAEL ROBERTSON: That's correct.

22 MR. ANTOINE HACAULT: And that was
23 basically looking as to whether or not the reference
24 value assigned by Manitoba Hydro to this -- these units
25 were appropriate?

1 MR. MICHAEL ROBERTSON: Correct.

2 MR. ANTOINE HACAULT: Now, I didn't see
3 any analysis as to whether or not the lows and highs
4 with respect to those units were appropriate.

5 MR. MICHAEL ROBERTSON: And that's
6 because we didn't do it.

7 MR. ANTOINE HACAULT: Okay.

8 MR. MICHAEL ROBERTSON: So we -- we
9 were not asked to do it. We were asked to comment on
10 Manitoba Hydro's capital costs and operating and
11 maintenance cost estimates for these alternative energy
12 generation.

13 MR. ANTOINE HACAULT: And in addition
14 not to commenting on whether Manitoba Hydro chose an
15 appropriate high to stress test the plan, you also
16 didn't address, sir, whether or not the reference
17 capital costs might go down between now and, say, for
18 example if we go back to Exhibit 104-1, the first in-
19 service of one (1) of these units would -- under Plan 2
20 would be 2042.

21 Do you see that under Plan 1-2, under
22 the CCGT, we have the year 2042?

23 MR. MICHAEL ROBERTSON: Yes.

24 MR. ANTOINE HACAULT: You didn't make
25 any assessment, sir, as to whether or not what Hydro

1 was using as a ref value for that first unit to be in
2 service, whether that ref value was something that was
3 appropriate.

4 You just did a current day value,
5 correct?

6 MR. MICHAEL ROBERTSON: Correct.

7 MR. ANTOINE HACAULT: And is the same
8 true with respect to the SCGTs, the first of which
9 would be in 2031?

10 You didn't assess, sir, whether or not
11 the reference value was something that could be
12 reasonably expected in 2031, as used by Manitoba Hydro?

13 MR. MICHAEL ROBERTSON: No.

14

15 (BRIEF PAUSE)

16

17 MR. ANTOINE HACAULT: And just to make
18 it clear, you didn't assess the reasonableness of any
19 numbers that were used for SCGTs any time thereafter?
20 That's after 2031.

21 MR. MICHAEL ROBERTSON: No.

22 MR. ANTOINE HACAULT: Now, with respect
23 to...

24

25 (BRIEF PAUSE)

1 MR. ANTOINE HACAULT: The next subject
2 was -- we've heard in addition to the contingency
3 reserve, which we've had some discussion about, whether
4 or not the management reserve was appropriate and
5 whether its been fully disclosed. So in Exhibit 3.1 at
6 -- it's Roman number I of IV; it's, I believe, the last
7 item. There's discussion about the management reserve.
8 And in -- it's about the middle of the page that's
9 being shown on the screen, there's some words in
10 parentheses, "Not fully disclosed."

11 What did you feel you needed more with
12 respect to the description of management reserve to be
13 able to assess whether or not that was an appropriate
14 amount --

15 MR. CHRISTIAN MONNIN: Sorry, Mr.
16 Hacaault, you're referring to management reserve, but if
17 I'm reading the sentence correctly it's -- it refers to
18 labour reserve.

19

20 CONTINUED BY MR. ANTOINE HACAULT:

21 MR. ANTOINE HACAULT: Just wait.

22

23 (BRIEF PAUSE)

24

25 MR. BORIS FICHOT: We -- we can

1 probably address that question, just understanding that
2 the management reserve is the addition of labour
3 reserve and escalation reserve, so it's probably labour
4 reserve. We weren't given, at -- at the time of
5 writing the first report, the -- the details of how
6 about -- how they came about the labour reserve, and
7 now we -- we have a better indication of how that was
8 calculated. And that -- that's where we go into CSI
9 material, in terms of how they came about the labour
10 reserve.

11 MR. ANTOINE HACAULT: Okay.

12 MR. BORIS FICHOT: So they've --
13 they've made some assumptions about productivity in
14 their comparison, and that -- those lead them to
15 believe that the labour reserve is 'X' dollars --

16 MR. ANTOINE HACAULT: Yes.

17 MR. BORIS FICHOT: -- the two (2)
18 estimates.

19 MR. ANTOINE HACAULT: And one of the
20 comments was that the assumption was that the -- there
21 would not be a repeat of the inefficiencies encountered
22 at Wuskwatim in the new estimates.

23 Is that correct?

24 MR. BORIS FICHOT: That is an allowance
25 for that experience.

1 MR. ANTOINE HACAULT: But it's not as
2 high as what was experienced as -- at the Wuskwatim
3 project, correct?

4 MR. BORIS FICHOT: We'll go into CSI
5 material if we talk about it.

6 MR. ANTOINE HACAULT: Okay. There is
7 the -- the comment in -- in this report that the labour
8 reserve for the new estimates was lower than the
9 experience. And this is at page 4 of 4 in the -- in
10 this index.

11 MR. BORIS FICHOT: That is correct.

12 MR. ANTOINE HACAULT: The very last
13 sentence on -- on the slide here of the second
14 paragraph under Item 9:

15 "The cost estimate rates, however, do
16 not incorporate the actual Wuskwatim
17 productivity rates, and Hydro has
18 made the general assumption that the
19 labour conditions will not be as bad
20 during the construction of Keeyask
21 and Conawapa, because they plan to
22 offer better labour conditions."

23 MR. BORIS FICHOT: That's correct.

24 MR. ANTOINE HACAULT: So was Knight
25 Piesold able to assess whether or not, based on

1 experience of other projects, this assumption was a
2 sound one?

3 MR. BORIS FICHOT: No.

4 MR. ANTOINE HACAULT: Was Knight
5 Piesold able to assess in any way whether or not this
6 assumption, that labour conditions would not be as bad,
7 was a sound one?

8 MR. MICHAEL ROBERTSON: Beyond the
9 observation that they are going to offer better labour
10 conditions, and logically, that should improve the
11 situation, I cannot comment.

12 MR. ANTOINE HACAULT: Okay.

13

14 (BRIEF PAUSE)

15

16 MR. ANTOINE HACAULT: If we go to page
17 6 of 73 in this document, or there's a -- there's a
18 section called 'Gaps', and Knight Piesold explains that
19 it provided its best efforts in answering the PUB
20 inquiries, but it notes three (3) gaps in its ability
21 to answer the questions that were asked by this Board.

22 Now, firstly, and -- and I'll deal with
23 each point, does the first point affect the conclusion?
24 And if so, which one?

25 MR. BORIS FICHOT: The -- the first

1 point dealing with the methodology, numerical breakdown
2 of the systemic risk calculation, we have had more
3 recently, as a result of the -- the whole reevaluation
4 of the GCC tenderers being able to -- to view a
5 document produced by a -- by a third party, they're
6 detailing some of the methodology behind the numbers.
7 So we've got more confidence that there's some rigour
8 to -- to calculating those numbers.

9 MR. ANTOINE HACAULT: So is that still
10 a gap? And --

11 MR. BORIS FICHOT: I -- I would say
12 that's no longer a gap in terms of our appreciation of
13 whether or not they've done a good job in -- in coming
14 up with a -- with a number.

15 MR. ANTOINE HACAULT: Okay. So I can
16 strike that one off as a gap. The second one at --
17 listed there is contingency determination on the
18 indirects.

19 Does that affect your conclusion? If
20 so, what? And does it continue to be a concern?

21 MR. MICHAEL ROBERTSON: It -- it's --
22 there is a remaining risk, we believe, that -- that the
23 quantification of that risk we -- we cannot in any way
24 verify, because we don't have the details.

25 MR. ANTOINE HACAULT: So it does

1 continue to be a concern as compared to the fli --
2 first bullet, which is now dealt with, correct?

3 MR. MICHAEL ROBERTSON: I would say so.

4 MR. ANTOINE HACAULT: And what about
5 the last one? And does it continue to be a gap? It is
6 a justification for not using the Hydro escalation
7 factor estimated.

8 MR. MICHAEL ROBERTSON: Yes, that is
9 still a gap, and that is CSI.

10 MR. ANTOINE HACAULT: Okay. Now...

11

12 (BRIEF PAUSE)

13

14 MR. ANTOINE HACAULT: I had a line of
15 questioning with respect to the class estimates on
16 Conawapa, and that's been clarified, because as I
17 understand it now, we've revised it from a Class 2 to a
18 Class 3, correct?

19 MR. MICHAEL ROBERTSON: Yes.

20 MR. ANTOINE HACAULT: And, sir, how
21 does this Board deal with the challenge of determining
22 what a ref cost is, a low cost, and a high cost for a
23 plant like Conawapa, assuming DSM 2, would have an in-
24 service date starting -- that's the first turbine --
25 out of 2031?

1 MR. MICHAEL ROBERTSON: With great
2 difficulty.

3 MR. ANTOINE HACAULT: Now, that leads
4 me to the discussion of escalation reserve at page --

5 THE CHAIRPERSON: Just a second, Me.
6 Hacaault, s'il vous plait.

7

8 (BRIEF PAUSE)

9

10 MR. CHRISTIAN MONNIN: Merci. Now,
11 just to advise Mr. Hacaault and -- and the balance of
12 the room that we've been advised that under the gap
13 section of M. Hacaault's canvassing questions on the --
14 we touched upon the justification for not using the
15 hydro escalation factor estimated. That -- and the
16 answer that was provided, that that would sway into
17 CSI. And -- and we determined that that's not the
18 case.

19 And therefore, M. Hacaault can return on
20 that subject and ask questions.

21 MR. MICHAEL ROBERTSON: In which case
22 the
23 ----answer is that we still see it as a gap. We
24 haven't seen the justification and we think it's a
25 risk.

1 CONTINUED BY MR. ANTOINE HACAULT:

2 MR. ANTOINE HACAULT: Thank you very
3 much for that. And just to get a little bit more
4 detail on that, at page 23 -- or 27, 2-7, of the
5 report. At the bottom of the page there's some
6 discussion with respect to the escalation rate and the
7 comparison to Muskrat Falls. Now, is there any reason
8 why Muskrat Falls was chosen?

9 Is it just because you had the data for
10 Muskrat Falls to compare?

11 MR. BORIS FICHOT: That's correct. We
12 thought it was al -- along the same magnitudes and we
13 had corresponding periods, so we -- we just showed that
14 this is what they use, this is what we thought they
15 calculated, and this is what the two point five (2.5)
16 looks like.

17 MR. ANTOINE HACAULT: And with respect
18 to Muskrat Falls, am I correct in interpreting this
19 paragraph that your understanding is that they used a
20 rate of about 3.4 percent as an escalation rate in --
21 when compared to Manitoba Hydro at 2.5 percent?

22 MR. BORIS FICHOT: Yes, it's -- but
23 it's our understanding that they calculate a hydro
24 power escalation factor of three point one (3.1). At
25 least from the report, that's our understanding.

1 MR. ANTOINE HACAULT: Could -- could
2 you explain that? Sorry. What's the distinction
3 between the 3.4 percent and the three point one (3.1)?
4 Not that it's a huge amount, but I've learned that the
5 small percentage on billions of dollars can make a
6 little bit of a difference.

7

8 (BRIEF PAUSE)

9

10 MR. BORIS FICHOT: I believe there's a
11 -- a portion of the official submission that discusses
12 those numbers, and that's what we're referring to. I'm
13 advised that it -- it would be an undertaking to go and
14 dig that out and show it.

15 MR. ANTOINE HACAULT: You're not too
16 sure what the difference is between the 3.4 percent
17 number and the 3.1 percent number --

18 MR. BORIS FICHOT: Oh, that's -- that's
19 the -- basically, they would go and solicit and look at
20 their act -- exact quantities of material that they
21 anticipate, look at what all these different market
22 studies would project the price of different
23 commodities to be, and then bring all these aggregate
24 numbers to an index, which is, in Muskrat Falls, three
25 point four (3.4), and which I understand in the

1 Manitoba Hydro case to be three point one (3.1).

2 So you -- they -- they do a -- a
3 detailed study where they look at the commodities that
4 they expect to have to use, get labour -- get market
5 studies for the different materials, copper, steel, and
6 so forth, and then bring it back to a composite index.
7 And that's what Muskrat Falls has done.

8 And they -- they have different
9 quantities. So they -- they would get a different
10 number as a result of that -- of that evaluation.

11 MR. ANTOINE HACAULT: So is it the
12 opinion of Knight Piesold that an appropriate
13 escalation rate should be 3.1 percent? I believe that
14 number is referenced in your --

15 MR. BORIS FICHOT: Yes.

16 MR. ANTOINE HACAULT: -- supplemental
17 report.

18 MR. BORIS FICHOT: Yes. We believe
19 that might be more appropriate, especially when you're
20 talking about management reserve and -- and a pool of
21 money that you're setting aside for that purpose in
22 case the escalation occurs.

23

24 (BRIEF PAUSE)

25

1 MR. ANTOINE HACAULT: Now, the other
2 thing that occurred in the updates -- and this is in
3 our book of documents at page 5. There was a re-
4 weighting of the high capital costs, low capital costs,
5 and reference costs.

6 Is that your understanding also, sir?

7 MR. BORIS FICHOT: That's my
8 understanding, although our scope of work does not
9 cover the economic analysis and these -- these
10 alternative analyses. So the -- the relationship
11 between our review of the capital cost estimate and
12 these numbers is not straightforward, as you're --
13 you're deducting a number of things that were
14 considered in the economic analysis that we didn't
15 necessarily look at.

16 MR. ANTOINE HACAULT: And I'm not
17 trying to get you to answer things --

18 MR. BORIS FICHOT: Yeah.

19 MR. ANTOINE HACAULT: -- about the
20 economic analysis, sir. But there was some discussion
21 in your report with respect to the probabilities of
22 certain values, certain construction values, and it's
23 in that context that I was going to ask a couple
24 questions.

25 If we flip back to the previous page,

1 page 4, and it's at the very bottom of that page.
2 There's a table, and there's a range of values with the
3 high and low probabilities. And that's why I
4 referenced that previous number, so we could come back
5 to this table and understand what 'low' meant.

6 We've assigned a 20 percent value to the
7 low, a 60 percent value to the ref, and a 20 percent
8 value of probability to the high. And there's the
9 swings that we were looking at when I started the
10 cross-examination for the P80s, P90s, et cetera.

11 With respect to the swing, is it the
12 view that we should use an expected value or is the
13 range, for example for Conawapa26 because that's what
14 you looked at, appropriate from the ref to the high
15 because we looked at the change from P50 to -- to P80?

16 MR. BORIS FICHOT: That's where we
17 can't really draw a relationship between what we've
18 evaluated and the statistical numbers that they've
19 attributed to these different buckets. What we have
20 looked at is the statistical variation around the
21 contingency, as well as the -- the thinking behind the
22 number used to come up with the management reserve.

23 And we don't have a good understanding
24 because it wasn't part of our work to take that
25 information and relate it back to this economic

1 uncertainty analysis. And there's a jump there.
2 There's something that needs to be analyzed but we
3 haven't looked at that because that's not part of our
4 scope of work.

5 MR. ANTOINE HACAULT: Okay.

6 MR. BORIS FICHOT: But what we have
7 looked at is statistical variation around the
8 contingency numbers, and the justification around the
9 management reserve, and whether or not it's high or
10 low.

11 MR. ANTOINE HACAULT: Diana, if we
12 could go to Exhibit 161. I just want to try and better
13 understand what you weren't looking at and weren't
14 doing then. If we look -- actually, it would be page 2
15 of 3, please.

16 You may recall, sir, when we were
17 looking at contingency amounts; and this was the first
18 table. I'm asking you to kind of stretch your memory.
19 When we were doing -- first let's look on this table.
20 Under the point estimate, there's another heading,
21 'Contingency'. And the ref contingency is point five
22 three (.53), and the high contingency is point five
23 three (.53).

24 Now, if we can kind of keep that number
25 in our minds for a little bit and quickly revert back

1 to page 25 of Exhibit 3-1.

2 So we were looking, and in Exhibit 161
3 under the contingency, we had both for the ref and the
4 high a contingency reserve of point five-three (.53),
5 and that corresponds to the P50 of 523 million.

6 Are you following me so far, sir?

7 MR. MICHAEL ROBERTSON: Yeah.

8 MR. BORIS FICHOT: This table.

9 MR. ANTOINE HACAULT: Yeah. Now, if I
10 understood your evidence correctly, if we were going to
11 attribute a more conservative number, we'd go to either
12 the P80 or P90 and put that, because we'd have more
13 certainty that our high costs -- it wouldn't come
14 higher than what that number is.

15 Is that correct?

16 MR. BORIS FICHOT: That's correct.

17 MR. ANTOINE HACAULT: So although I
18 know you can't comment on why Manitoba Hydro chose to
19 keep -- keep it at \$.53 billion, you would agree with
20 me that the point five-three (.53), if it's kept
21 constant, does not give us a higher certainty that
22 you'll come in within the agreed numbers.

23 MR. MICHAEL ROBERTSON: I -- I think,
24 probably, we -- we should just repeat what Boris said.
25 I mean, we -- we were not part of the economic analysis

1 at all, and so we're really not in a position to make
2 sensible commentary on it.

3 The other point I would make is that the
4 process that we've followed in our reporting related
5 specifically to the probability that the -- that the
6 estimate that we're given of 6.5 billion for Keeyask is
7 sensible and -- and a probability distribution around
8 where those values might be.

9 This other process that -- that you're
10 looking at was one that was used to compare all the
11 different alternatives, and -- and essentially support
12 the -- the PDP, and -- and we had no part in that, so
13 it --

14 MR. ANTOINE HACAULT: Yeah.

15 MR. MICHAEL ROBERTSON: -- it would be
16 inappropriate for us to comment on that.

17 MR. ANTOINE HACAULT: I'm not asking
18 you to comment on why Hydro chose it, but I'm just -- I
19 just wanted to confirm that, if we keep -- kept the
20 number at the same, it wouldn't reflect this different
21 'P' value that you've talked about.

22 MR. MICHAEL ROBERTSON: That's a
23 logical conclusion.

24 MR. ANTOINE HACAULT: Okay. And if we
25 go back to Exhibit 161, because I don't just want to

1 dwell on one when I see a difference, and the update,
2 if we continued along that line, we see that they've
3 chosen a -- a different number this time under the
4 reference number, but this time, they didn't choose to
5 keep the three (3) -- point three-one (.31) consistent
6 across the different -- different scenarios.

7 MR. MICHAEL ROBERTSON: I see that.

8 MR. ANTOINE HACAULT: Okay.

9

10 (BRIEF PAUSE)

11

12 MR. ANTOINE HACAULT: Diana, if you go
13 to page 2, please, of our book of documents? Now, this
14 is not a Manitoba Hydro document. It's a document that
15 was created by the consultants hired by MIPUG. If we
16 can make a little bit smaller so we can see the -- all
17 the writing?

18 I had just gone to the -- the different
19 ranges and the different probabilities, and you've
20 indicated you can't comment on that.

21 Had you done any S-curves for the
22 probabilities that you speak of in your report, sir?

23 MR. MICHAEL ROBERTSON: No.

24 MR. ANTOINE HACAULT: Okay.

25

1 (BRIEF PAUSE)

2

3 MR. ANTOINE HACAULT: Okay. I don't
4 think I can ask you any other questions about that. If
5 I could just have thirty (30) seconds to check my
6 notes? And then I believe I'm finished. But I'd just
7 like to have an opportunity to double check my notes.

8 THE CHAIRPERSON: Agreed.

9

10 (BRIEF PAUSE)

11

12 CONTINUED BY MR. ANTOINE HACAULT:

13 MR. ANTOINE HACAULT: Just one (1)
14 question, page 12 of Exhibit 3 -- 3-1. Diana, could
15 you bring that up, please. And under the heading,
16 "Intended use of cost estimate," and 2.4.1.3 there's a
17 paragraph, and I'll quote it.

18 "It is important to note that the PUB
19 and Manitoba Hydro are making
20 different uses of the same cost
21 estimate [in parentheses] (with a
22 specific level of prove -- project
23 definition) [closed parentheses] and
24 as a result may have a different
25 perspective on risks and accounting

1 for uncertainty which are built into
2 the relevant contingency and
3 reserves."

4 Can you just expand on why you think
5 that there's different uses being made of the same cost
6 estimate?

7 MR. BORIS FICHOT: It -- it was in the
8 context if you're making decisions with -- where you
9 have a large number of pools with different projects,
10 it'll have a 50 percent chance of going over or under.
11 It's a different decision-making context than if you're
12 deciding on a single project.

13 MR. MICHAEL ROBERTSON: And it's also
14 the appetite for risk that we've been discussing. You
15 know, the PUB may look at it very differently from
16 Manitoba Hydro.

17 MR. ANTOINE HACAULT: Thank you. Those
18 are all my questions.

19 THE CHAIRPERSON: I think it would be
20 an appropriate time to take a break. Let's take ten
21 (10). Thank you.

22

23 --- Upon recessing at 2:45 p.m.

24 --- Upon resuming at 3:00 p.m.

25

1 THE CHAIRPERSON: I believe that
2 everybody's in position to resume the proceedings. So
3 I will turn the microphone over to you, Ms. Van
4 Iderstine, sorry.

5

6 CROSS-EXAMINATION BY MS. HELGA VAN IDERSTINE:

7 MS. HELGA VAN IDERSTINE: Thank you
8 very much. I would like to start by saying this may be
9 a bit disjointed because we've been adding and
10 subtracting and I have all these coloured points on
11 here, and I'm not really sure I'm supposed to be
12 watching the -- the orange or the green.

13 But I have to say a couple thank-yous.
14 First of all, Ms. Bowen will appreciate me thanking you
15 for -- because I've been bugging him since I started
16 working on this for definitions, and so I will be
17 coming back to definitions, but I was delighted to see
18 them in your -- in your presentation.

19 And the second thing is I love the
20 photographs. I was try -- I was -- I kept saying, I
21 want to see pictures of the project. And here it is
22 right on the front of their presentation. So thank you
23 very much for that. Well...

24 MR. MICHAEL ROBERTSON: I have to say
25 that is your photograph.

1 MS. HELGA VAN IDERSTINE: Regardless, I
2 haven't seen it often enough. So what I'm going to do
3 and what I'd appreciate you doing is keeping handy the
4 two (2) reports that you've written and that are in --
5 in evidence and on the record. And, as well, I've got
6 a book of author -- or documents which I'll be
7 referring to. But other than that, I think that is
8 about it.

9 So just in general terms, I'd like to
10 ask you a few questions, some -- a bit about some
11 experience issues and expertise that goes into
12 producing this type of report. And as I was reviewing
13 your materials, I noticed, of course, that KP has been
14 involved in providing construction advice and quality
15 control advice for construction of hydroelectric
16 projects in the past.

17 Is that right?

18 MR. MICHAEL ROBERTSON: That's correct.

19 MS. HELGA VAN IDERSTINE: And you have
20 had some expertise in wind power generation, as well?

21 MR. MICHAEL ROBERTSON: That's correct.

22 MS. HELGA VAN IDERSTINE: But with
23 respect to the wind power gen -- generation, have you
24 done any wind power generation in Manitoba?

25 MR. MICHAEL ROBERTSON: No.

1 MS. HELGA VAN IDERSTINE: And as I
2 understood from the report you prepared, the way you
3 compiled the information was -- on the wind issue was
4 to do a literature review primarily?

5 MR. BORIS FICHOT: I -- I would rel --
6 I would also say that we relied heavily on Garrad
7 Hassan's opinion in the published a report for Manitoba
8 Hydro.

9 MS. HELGA VAN IDERSTINE: Thank you
10 very much. And so when the PUB commissioned you to do
11 a review that -- of Manitoba Hydro's plans, you felt
12 that it was within your expertise to do so?

13 MR. MICHAEL ROBERTSON: In general,
14 yes.

15 MS. HELGA VAN IDERSTINE: And that's
16 because you and your team have expertise in cost
17 estimating?

18 MR. MICHAEL ROBERTSON: Correct.

19 MS. HELGA VAN IDERSTINE: And as I
20 understand it, there was about six (6) of you involved
21 in this project.

22 Is that right?

23 MR. MICHAEL ROBERTSON: Up to.

24 MS. HELGA VAN IDERSTINE: And would
25 you, Mr. Robertson, have -- be the person who has the

1 most expertise?

2 MR. MICHAEL ROBERTSON: Yes, I would
3 believe so. And -- and I'm certainly responsible for
4 the collective viewpoint that's expressed.

5 MS. HELGA VAN IDERSTINE: And as I
6 understand it, the area of cost estimating and quality
7 control risk management is a very specialized area?

8 MR. MICHAEL ROBERTSON: It can be in
9 the detail.

10 MS. HELGA VAN IDERSTINE: Which
11 requires both experience in cost estimating, education,
12 and training?

13 MR. MICHAEL ROBERTSON: Correct.

14 MS. HELGA VAN IDERSTINE: All of which
15 you obviously have?

16 MR. MICHAEL ROBERTSON: Obviously.

17 MS. HELGA VAN IDERSTINE: So -- and in
18 your dealings with the Manitoba Hydro staff, as I
19 understand it, you dealt with a number of the staff in
20 obtaining information from them and understanding what
21 was going on in their development of this project?

22 MR. MICHAEL ROBERTSON: Yes.

23 MS. HELGA VAN IDERSTINE: And would it
24 be fair to say that many of them also had expertise in
25 these areas?

1 MR. MICHAEL ROBERTSON: Absolutely.

2 MS. HELGA VAN IDERSTINE: And in
3 addition to the internal expertise that Manitoba Hydro
4 had, they also went to external persons and companies
5 to obtain further expertise to ensure that the -- their
6 processes and estimating was as good as it could be?

7 MR. MICHAEL ROBERTSON: Yes.

8 MS. HELGA VAN IDERSTINE: And one of
9 those would be a company called Validation Estimating?

10 MR. MICHAEL ROBERTSON: Yes.

11 MS. HELGA VAN IDERSTINE: And a fellow
12 named John Hollmann?

13 MR. MICHAEL ROBERTSON: I don't know
14 him.

15 MS. HELGA VAN IDERSTINE: But that's
16 Validation Estimating.

17 MR. MICHAEL ROBERTSON: Okay.

18 MS. HELGA VAN IDERSTINE: Do you know
19 that -- whether he -- do you know of, or have you been
20 read any of the reports he's written?

21 MR. MICHAEL ROBERTSON: We have.

22 MS. HELGA VAN IDERSTINE: Would you --
23 do you know whether or not he is -- would be considered
24 one of the experts in this area?

25 MR. MICHAEL ROBERTSON: I -- I would

1 say he -- he is, if only by virtue of the fact that
2 Manitoba Hydro elected to employ him.

3 MS. HELGA VAN IDERSTINE: Okay. One of
4 the things that occurred to me as I listened to your
5 evidence is that all of this expertise that you've
6 gained is something beyond -- and with all due respect
7 to the engineers in this room, it's something beyond
8 that you would get just simply as just having an
9 engineering degree?

10 MR. MICHAEL ROBERTSON: Oh, absolutely.

11 MS. HELGA VAN IDERSTINE: And so the
12 information you reviewed and all of the data that you
13 collected, it's something which -- that you take, you
14 put together, and you have to utilize your judgment as
15 well in putting -- coming up to a conclusion?

16 MR. MICHAEL ROBERTSON: Yes.

17 MS. HELGA VAN IDERSTINE: And that
18 judgment is based on expertise and experience?

19 MR. MICHAEL ROBERTSON: Yes.

20 MS. HELGA VAN IDERSTINE: And again,
21 you'd agree that there's people within Manitoba Hydro
22 who have that expertise and judgment as well?

23 MR. MICHAEL ROBERTSON: I have no
24 doubt.

25 MS. HELGA VAN IDERSTINE: And I don't

1 want to belabour this point, but it's not just as
2 simple as pulling out some spread -- and I -- I -- with
3 all due respect to the accountants in the room -- who
4 may be in the room, it's not just reading a
5 spreadsheet?

6 MR. MICHAEL ROBERTSON: No.

7 MS. HELGA VAN IDERSTINE: Well, that's
8 something I can't do either, so I'm all... So in the
9 scope of your -- I want to address a few things on the
10 scope of your work.

11 You've outlined in your documentation,
12 and I appreciate it very much, all the documents that
13 you reviewed to the extent you could; but I also gather
14 that beyond that, there were conversations you had with
15 people from Manitoba Hydro?

16 MR. MICHAEL ROBERTSON: Yes.

17 MS. HELGA VAN IDERSTINE: To obtain
18 information?

19 MR. MICHAEL ROBERTSON: Yes.

20 MS. HELGA VAN IDERSTINE: There was
21 emails that you would have had with people from
22 Manitoba Hydro?

23 MR. MICHAEL ROBERTSON: M-hm.

24 MS. HELGA VAN IDERSTINE: There were
25 meet -- teleconferences you had with people from

1 Manitoba Hydro?

2 MR. MICHAEL ROBERTSON: Yes.

3 MS. HELGA VAN IDERSTINE: And all of
4 that gets incorporated into your report.

5 Is that right?

6 MR. MICHAEL ROBERTSON: Yes.

7 MS. HELGA VAN IDERSTINE: Now, one (1)
8 of the things -- and I'm sorry, Mr. Hombach, I probably
9 should have addressed this earlier -- is I understood
10 that there was a presentation you reci -- had with the
11 PUB in September?

12 It was -- it was an IR that you answered
13 and you identified that there was a September 17th meet
14 -- presentation and a slide deck?

15 MR. BORIS FICHOT: Yes, that's when we
16 were first given the scope of work.

17 MS. HELGA VAN IDERSTINE: Okay. Was
18 there any -- Mr. Hombach, is that available to be
19 provided somewhere?

20 MR. SVEN HOMBACH: Sorry, this is which
21 slide deck?

22 MS. HELGA VAN IDERSTINE: The
23 presentation from September 17th, and the September
24 18th slide deck.

25 MR. SVEN HOMBACH: That's Manitoba

1 Hydro's presentation?

2 MS. HELGA VAN IDERSTINE: I don't know.

3 MR. BORIS FICHOT: The -- the --

4 MS. HELGA VAN IDERSTINE: The --

5 MR. BORIS FICHOT: -- yeah, the only

6 listed reference was the -- when we first came to -- to

7 work for the PUB, there was a series of presentations,

8 and I believe there was a IR that asked for them, and

9 we don't know if that's disclosable. We leave it to --

10 we left it to the PUB to disclose it if it's --

11 MR. SVEN HOMBACH: I take --

12 MR. BORIS FICHOT: -- supposed to be

13 disclosed.

14 MR. SVEN HOMBACH: -- I take that under

15 advisement, Ms. Iderstine, and we can have an offline

16 discussion.

17 MS. HELGA VAN IDERSTINE: Thank you.

18

19 CONTINUED BY MS. HELGA VAN IDERSTINE:

20 MS. HELGA VAN IDERSTINE: Now, in broad

21 general terms, can we describe the first report that

22 you prepared as being one (1) that addressed processes

23 for estimating construction costs and the overall

24 project execution plan?

25 MR. BORIS FICHOT: To -- to the state

1 of our knowledge at that time --

2 MS. HELGA VAN IDERSTINE: Yeah.

3 MR. BORIS FICHOT: -- so we had a
4 certain amount of time to review information. At that
5 -- at that end date, we -- we had to reach those
6 conclusions.

7 MS. HELGA VAN IDERSTINE: And --

8 MR. MICHAEL ROBERTSON: And -- and,
9 sorry, if I may interrupt. Some of that was revisited
10 with the more detailed questions that were asked in the
11 second scope.

12 MS. HELGA VAN IDERSTINE: Yes. And --
13 and I was just trying to draw a distinction that the
14 first one was -- was planning and the project execution
15 plans, and the second report, you -- was after you had
16 the -- some firmer numbers and were able to then, in
17 the second report, deal with more of the execution
18 plans as opposed to the planning process, per se.

19 MR. MICHAEL ROBERTSON: With -- with
20 some overlap.

21 MS. HELGA VAN IDERSTINE: Okay.

22 MR. MICHAEL ROBERTSON: And -- and also
23 with the singular focus in the second lot of Keeyask.

24 MS. HELGA VAN IDERSTINE: Right. In
25 one (1) of the IRs that you responded to from the

1 Public Utilities Board, it was 1031A, that's at Tab 1
2 of the book of documents, you commented that, "Hydro
3 was generally very" -- it's about halfway down the
4 answer.

5 "Hydro was generally very cooperative
6 with KP's review, but full disclosure
7 of all information was never
8 forthcoming, as Hydro is rightfully
9 protective of their commercially
10 sensitive information, and the
11 information often required internal
12 screening and processing."

13 So a couple questions on that.

14 First of all, after that time, I
15 understand you were then provided with information
16 about the general civil contract?

17 MR. MICHAEL ROBERTSON: Correct.

18 MS. HELGA VAN IDERSTINE: In fact, as I
19 understand it from Manitoba Hydro, that on February
20 27th, that within two (2) days of the Board approving
21 the Keeyask GCC, they were having conversations with
22 you about it?

23 MR. MICHAEL ROBERTSON: Correct.

24 MS. HELGA VAN IDERSTINE: And on March
25 5th, a day after the executive committee reviews of the

1 corresponding impacts, they were providing you with
2 some information on the NFAT references, and they met
3 with you on a teleconference call about the updated
4 capital costs for both Keeyask and Conawapa?

5 MR. MICHAEL ROBERTSON: March 5th does
6 sound like the date we had that call, yes.

7 MS. HELGA VAN IDERSTINE: And they
8 provided confidential information to you relating to
9 the development of the estimate, development of the
10 project contingency, and the development of the labour
11 reserves?

12 MR. MICHAEL ROBERTSON: Yes.

13 MS. HELGA VAN IDERSTINE: So it would
14 be fair to say that now, the concern that was addressed
15 in that response has generally been addressed?

16 MR. MICHAEL ROBERTSON: Generally, with
17 some exceptions.

18 MS. HELGA VAN IDERSTINE: The
19 exceptions, I -- I think you talked about earlier with
20 some of the detail, that you -- is that what you're
21 referring to?

22 MR. MICHAEL ROBERTSON: Well,
23 particularly the indirects.

24 MS. HELGA VAN IDERSTINE: Oh. But
25 nevertheless, you were still able to, by January 13th

1 or 17th, I think maybe this date of the report was, you
2 were able to come -- complete the report with -- within
3 the scope of the work from the first project, despite
4 not yet having the GCC at that point.

5 MR. MICHAEL ROBERTSON: Well, we did,
6 because that was the deadline, but we had to make a
7 comment that we couldn't really fully answer some of
8 the questions until we had that data.

9 MS. HELGA VAN IDERSTINE: And that's
10 identified in the places in your report as gaps, and
11 that sort of thing?

12 MR. MICHAEL ROBERTSON: Or comments
13 that, you know, when -- when we get the GCC data, we
14 will be in a better position to comment on those.

15 MS. HELGA VAN IDERSTINE: Would it be
16 fair to say that you draw on your -- drew on your
17 abilities from your experience and training to be able
18 to pull out salient details from the huge amount of
19 information that was available and selectively identify
20 the information that you required?

21 MR. MICHAEL ROBERTSON: Yes.

22 MS. HELGA VAN IDERSTINE: So that you
23 didn't feel you had to read every single detail in
24 order to come up with your opinion?

25 MR. MICHAEL ROBERTSON: Well, first it

1 was not possible to read everything that's posted on
2 the -- on the website, but yes, I -- I believe that we
3 were able to get what we needed to come to our
4 opinions.

5 MR. BORIS FICHOT: I'll -- I'll just
6 add that sometimes even if you don't review the
7 information, it's nice to have a little checkbox to
8 say, Yes, they have indeed prepared a document that
9 describes this. You don't necessarily need to go
10 through the details, but to know that it exists and has
11 been prepared does give some comfort in -- in the
12 numbers.

13 MS. HELGA VAN IDERSTINE: And what
14 you're saying there is -- is, in terms of the process,
15 you want to know that Manitoba Hydro's thought about it
16 and considered it and has the backup. Much the way
17 when I do my income tax, the income tax return, they
18 don't always ask for all the information. They just
19 want to know I've got it.

20 MR. MICHAEL ROBERTSON: Yes.

21 MS. HELGA VAN IDERSTINE: And I -- I
22 think you may have answered that in -- if you look at
23 Tab 2, you know, there was a -- an IR asked of you,
24 PUB/KP I-021a. And you were asked about some of the
25 difficulties obtaining information, and you commented

1 that:

2 "The difficulties stem from obtaining
3 the right level of information
4 without being either overwhelmed or
5 receiving too little."

6 And then you went on to say that:

7 "Hydro had retained rights not to
8 share all the information available
9 and only wishes to release enough
10 information to be convincing without
11 revealing details inside commercially
12 sensitive information."

13 Do you see that?

14 MR. MICHAEL ROBERTSON: I do.

15 MS. HELGA VAN IDERSTINE: And that
16 reflects what your thinking was, I take it, about the -
17 - obtaining the information and the level of detail you
18 needed?

19 MR. MICHAEL ROBERTSON: At -- at that
20 time, yes.

21 MS. HELGA VAN IDERSTINE: We'll talk
22 about this a little bit later, but I -- I take it from
23 that comment in that IR that you understood from
24 Manitoba Hydro and appreciated their need to keep some
25 information confidential.

1 MR. MICHAEL ROBERTSON: Yes.

2 MS. HELGA VAN IDERSTINE: And that
3 would be because, if that information got out in any
4 public way, it could drive up the costs associated with
5 the project?

6 MR. MICHAEL ROBERTSON: Conceivably.

7 MS. HELGA VAN IDERSTINE: It might harm
8 the relationship with some of their contractors?

9 MR. MICHAEL ROBERTSON: Possibly.

10 MS. HELGA VAN IDERSTINE: And you
11 didn't need -- as we've talked about, you didn't need
12 every single detail in order to feel confident enough
13 to put your stamp on the first -- first and then the
14 second report?

15 MR. MICHAEL ROBERTSON: I -- I think
16 the -- the overall tone of the conclusions of the first
17 report were that what we're seeing is good. But
18 really, at the end of the day, we need to see a lot
19 more very significant stuff before we can provide a
20 good opinion back to the -- to the Board.

21 MS. HELGA VAN IDERSTINE: And that's
22 what you got for the second report?

23 MR. MICHAEL ROBERTSON: Correct.

24 MS. HELGA VAN IDERSTINE: Okay. So I
25 just want to talk about the estimating process for

1 Keeyask and Conawapa a little bit

2 And would it be fair to say that there,
3 fairly similar processes were applied in Manitoba Hydro
4 with respect to both of those?

5 MR. MICHAEL ROBERTSON: For the two (2)
6 projects?

7 MS. HELGA VAN IDERSTINE: Yes.

8 MR. MICHAEL ROBERTSON: It would appear
9 so.

10 MS. HELGA VAN IDERSTINE: And to the
11 extent that the Keeyask process is similar to the
12 Conawapa one, we can have some confidence in the
13 estimates with Conawapa, given the lack of development
14 of that process?

15 MR. MICHAEL ROBERTSON: Yes.

16 MS. HELGA VAN IDERSTINE: And you would
17 anticipate, I would take it -- well, first of all, you
18 saw and comment on the fact that Manitoba Hydro has
19 learned from the experience they had with Wuskwatim?

20 MR. MICHAEL ROBERTSON: I believe so.

21 MS. HELGA VAN IDERSTINE: And you would
22 expect, based on what you've seen of the Manitoba Hydro
23 staff, that they would take any other learning points
24 they get from Keeyask and apply that to Conawapa when
25 they go to build that?

1 MR. MICHAEL ROBERTSON: You would
2 logically assume that.

3 MS. HELGA VAN IDERSTINE: Nothing you
4 saw or discussed within Manitoba Hydro would suggest
5 that they wouldn't be doing that kind of constant
6 learning and appro -- improvements in their practices?

7 MR. MICHAEL ROBERTSON: No.

8 MS. HELGA VAN IDERSTINE: Now, as we've
9 gone through, you were advised about the -- you were
10 part -- saw the process leading up to the awarding of
11 the GCC. And when I say that, one of things I
12 understand you were aware of and you had some
13 discussions about was the fact that Manitoba Hydro
14 qualifi -- pre-qualified four (4) bidders for their
15 project.

16 Is that right?

17 MR. MICHAEL ROBERTSON: To be honest, I
18 don't recall that directly, but it's a sensible thing
19 to do and it's a very typical thing to do.

20 MS. HELGA VAN IDERSTINE: And these
21 were all builders that were experienced in building
22 large sim -- similar, large-scale, hydroelectric-type
23 projects?

24 MR. MICHAEL ROBERTSON: yes.

25 MS. HELGA VAN IDERSTINE: And they've

1 been described -- and -- and you described Manitoba
2 Hydro as being diligent in their internal comparisons
3 between the four (4) GCC tenders, their engineers,
4 estimates, and the independent third-party estimate.

5 Is that --

6 MR. MICHAEL ROBERTSON: Correct.

7 MS. HELGA VAN IDERSTINE: And you'll
8 recall that after that due diligence, they selected a
9 company called -- the acro -- the acronym BBE?

10 MR. MICHAEL ROBERTSON: I am aware of
11 that.

12 MS. HELGA VAN IDERSTINE: And did you
13 know that one (1) of the main partners in BBE, being
14 Bechtel, was involved in the building of Limestone?

15 MR. MICHAEL ROBERTSON: I do.

16 MS. HELGA VAN IDERSTINE: And that
17 would suggest that they are, therefore, familiar with
18 both the geography and complexity of the project
19 they're undertaking?

20 MR. MICHAEL ROBERTSON: Correct, it
21 does suggest that.

22 MS. HELGA VAN IDERSTINE: Now, we've --
23 you talked this morning a couple times about the early
24 contractor involvement process which was being used.

25 Do you recall that?

1 MR. MICHAEL ROBERTSON: Yes.

2 MS. HELGA VAN IDERSTINE: And as I
3 understand, that the early contractor involvement in
4 the -- is used in projects in the expectation that it
5 may mitigate some of the project costs?

6 MR. MICHAEL ROBERTSON: It'll mitigate
7 the -- the project risks, which should -- should come
8 up with a better defined cost, amongst other things.

9 MS. HELGA VAN IDERSTINE: Will optimize
10 and bring as much certainty to the process as possible?

11 MR. MICHAEL ROBERTSON: Yes.

12 MS. HELGA VAN IDERSTINE: And the hope
13 is that they will bring -- they can -- they will bring
14 their knowledge to the process to help improve the
15 processes and the ultimate execution of the project?

16 MR. MICHAEL ROBERTSON: Correct.

17 MS. HELGA VAN IDERSTINE: And it
18 provides opportunities to identify and share risk?

19 MR. MICHAEL ROBERTSON: Correct.

20 MS. HELGA VAN IDERSTINE: And that
21 includes the geotechnical conditions, a scheduled
22 design, input costs, and contract conditions?

23 MR. MICHAEL ROBERTSON: Yes.

24 MS. HELGA VAN IDERSTINE: And I take it
25 that would be an example of how Manitoba Hydro is

1 working to eliminate as much risk as they can in this -
2 - in this project?

3 MR. MICHAEL ROBERTSON: Yes.

4 MS. HELGA VAN IDERSTINE: And I think -
5 - I think you mentioned, but if you didn't, then I'll
6 raise it right now, that about -- with the GCC in
7 place, about 80 percent of all the project costs have
8 now been defined?

9 MR. MICHAEL ROBERTSON: That's the
10 statement made by Hydro.

11 MS. HELGA VAN IDERSTINE: Well, Mr.
12 Bowen's correcting me. The project contract costs, so
13 I don't...

14 MR. MICHAEL ROBERTSON: But it's not a
15 state -- not a statement that we originated.

16 MS. HELGA VAN IDERSTINE: Okay. And
17 that would give you, again, a fairly strong level of
18 certainty with respect to the costs that you're talking
19 about in the estimates and the ultimate cost?

20 MR. MICHAEL ROBERTSON: Certainly as
21 far as the direct costs are concerned.

22 MS. HELGA VAN IDERSTINE: Now,
23 returning to those definitions that I like so much. So
24 I wanted to make sure that when we're talking about the
25 estimates, that we're talking about the capital cost

1 estimates.

2 And I think it's been interchangeably
3 used with the term 'point estimate'?

4 MR. MICHAEL ROBERTSON: Well, there --
5 there are a number of terms along the line of that
6 chart. They -- they are different parts of the capital
7 costs. I mean, they -- they talk about in-service.
8 They talk about point. They talk about base. So,
9 yeah, you've got to be specific.

10 MS. HELGA VAN IDERSTINE: Yes. So if
11 we can look over to Tab 4 of the -- of the book of
12 documents that I provided to you. Mr. Bowen provided
13 these definitions for the panel in Exhibit 95 at the --
14 maybe in Exhibit 95; I'm forgetting the number. The
15 presentation that was done on the first day, and this
16 is from page 94.

17 So if you look at the definition of
18 'estimate', would you agree with that -- that
19 definition?

20

21 (BRIEF PAUSE)

22

23 MR. MICHAEL ROBERTSON: Essentially.

24 MS. HELGA VAN IDERSTINE: And so that
25 would be the calculation of a range of costs to

1 complete the project based on a set of assumptions.
2 The critical assumptions include the project scope,
3 level of defin -- definition, schedule, and in-service
4 date?

5 You actually have to say a word.

6 MR. MICHAEL ROBERTSON: Yes.

7 MS. HELGA VAN IDERSTINE: Thank you.

8 Now, you would take this budget -- or this estimate,
9 excuse me; that's where I'm getting in trouble.

10 You take this estimate, and you would
11 use it to establish what's been called the control
12 budget of the project cost?

13 MR. MICHAEL ROBERTSON: Forgive me, I -
14 - I need to read this.

15 MS. HELGA VAN IDERSTINE: Yeah.

16

17 (BRIEF PAUSE)

18

19 MR. MICHAEL ROBERTSON: I -- I think
20 that is a statement of Manitoba Hydro's process.

21 MS. HELGA VAN IDERSTINE: I don't want
22 to -- I'm not suggesting -- it -- what I would -- what
23 I would like to hear from you is if you've got any
24 concerns about that being the definition, because one
25 of the concerns, as we've talked about a moment ago, is

1 making sure that when we're talking about the estimates
2 and we're talking about a control budget, that we're
3 talking about two (2) separate things and why they
4 might be different.

5 And in your report when you start adding
6 things like escalation and things like that, that's
7 where we're going to get to the control budget, right?
8 We start with the estimate, and then we add some things
9 to get to the control budget.

10 Is that right?

11 MR. MICHAEL ROBERTSON: Well, you start
12 with the point estimate.

13 MS. HELGA VAN IDERSTINE: Yes.

14 MR. MICHAEL ROBERTSON: And then you
15 add a bunch of things and you get a base -- well, you
16 then add uncertainty and you get a base cost. Then you
17 multiply that by interest and inflation, then you add
18 money spent to date, and you get what is called an in-
19 service cost. Now, I would say to some extent those
20 are all estimates.

21 MS. HELGA VAN IDERSTINE: Okay.

22 MR. MICHAEL ROBERTSON: Generically.

23 MS. HELGA VAN IDERSTINE: Mr. Bowen had
24 used the term 'control budget' to talk about the budget
25 as -- once it's been approved, and it being the

1 benchmark for measuring project cost performance. Is
2 that --

3 MR. MICHAEL ROBERTSON: If -- if he so
4 chooses.

5 MS. HELGA VAN IDERSTINE: Well, this is
6 actually an important distinction. So I want to make
7 sure that we under -- we're both talking about the same
8 thing, that -- let me maybe to do it this way...

9

10 (BRIEF PAUSE)

11

12 MS. HELGA VAN IDERSTINE: So if we --
13 if you turn over to Tab 8.

14

15 (BRIEF PAUSE)

16

17 MS. HELGA VAN IDERSTINE: And you'll
18 see that we've -- there was a point estimate at the
19 beginning of the three point three-six (3.36). And if
20 you come down to the bottom, a total in service, number
21 of six point five (6.5). The six point five (6.5) is
22 what I'm talking about as being the control budget.

23 Can we agree on that?

24 MR. MICHAEL ROBERTSON: If -- if that's
25 the way you want to set up your management system, yes.

1 (BRIEF PAUSE)

2

3 MS. HELGA VAN IDERSTINE: And in order
4 to get to that \$6.5 billion, Manitoba Hydro included a
5 contingency of a P50 value, as well as labour and
6 escalation management reserves.

7 Is that what your understanding was?

8 MR. MICHAEL ROBERTSON: Yes.

9 MS. HELGA VAN IDERSTINE: And by doing
10 so, by both adding the contingency -- the P50 value and
11 the labour and escalation management reserves, would
12 you agree that that pushes Manitoba Hydro over a P50
13 value?

14 MR. MICHAEL ROBERTSON: Big picture,
15 yes. Because as I mentioned in my presentation, the --
16 the contingency quote -- quote typically on a project
17 includes the issues which Manitoba Hydro has chosen to
18 deal with separately under the term 'management
19 reserve'. So if you added those sums of money into the
20 contingency, into one (1) contingency, it would
21 represent, effectively, something greater than P50.

22 MS. HELGA VAN IDERSTINE: And if you
23 look over to page 24 of the book of documents, you'll
24 see what's identified, or called, "Keeyask Low,
25 Reference, and High." And this is what we've been

1 calling the NFAT analysis.

2 Did anyone talk to you about that at all
3 at any time during your -- your processes?

4 MR. MICHAEL ROBERTSON: Not really,
5 except the talking that was done was by me asking for
6 details of it, which -- which I don't believe we ever
7 got.

8 MS. HELGA VAN IDERSTINE: You didn't
9 get, or you didn't get information that enabled you to
10 understand that process?

11 MR. MICHAEL ROBERTSON: We -- can we
12 take this offline?

13 MS. HELGA VAN IDERSTINE: Yeah.

14

15 (BRIEF PAUSE)

16

17 MS. HELGA VAN IDERSTINE: Oh, I'm
18 sorry. Yeah, please go ahead, Mr. Robertson.

19 MR. MICHAEL ROBERTSON: I was -- I was
20 just going to say that it -- you know, going back to
21 some of the discussions we've had earlier today, this
22 whole process of low/reference/high in the economic
23 analysis is more properly part of the whole development
24 alternatives decision, and it is not directly relevant
25 to what we were asked to do. The reason I was asking

1 for it was really to get some measure of how high
2 Manitoba Hydro thinks the price might go above the 6.5
3 billion expected in-service costs that they are now
4 forecasting.

5 MS. HELGA VAN IDERSTINE: Okay. Thank
6 you.

7 MR. MICHAEL ROBERTSON: And I didn't
8 get that answer.

9 MS. HELGA VAN IDERSTINE: Okay. Thank
10 you. The -- looking at -- just -- I'm going to stop
11 here so I don't forget. I should have mark --
12 requested and marked that the book of documents be
13 marked as the next exhibit, Exhibit Manitoba Hydro 173.

14 MR. KURT SIMONSEN: Correct, thank you.

15

16 --- EXHIBIT NO. MH-173: Book of documents

17

18 THE CHAIRPERSON: Could I -- I'm sorry,
19 could I intervene here? I just wanted to clarify
20 something in my mind because I -- you indicated that --
21 correct me if I'm wrong, please. You indicated that
22 the inclusion of management reserve along with
23 contingency would address your concerns around
24 establishing contingency at P50.

25 Now, did I hear you wrong? I mean, I --

1 I understood you, and at least I under -- I interpreted
2 your report as indicating that contingency at a P80
3 level would -- would indicate a higher number exclusive
4 of any consideration of the management reserve.

5 MR. MICHAEL ROBERTSON: It would.

6 THE CHAIRPERSON: Okay. So we're in
7 agreement on that point. In other words, a more
8 conservative assessment of contingency would -- would
9 be addressed separately from any concerns you might
10 have around the management reserve.

11 MR. MICHAEL ROBERTSON: Well, they're -
12 - they're both aimed at quantifying possible
13 uncertainty. Uncertainty; not possible uncertainty.
14 Whether you chose to break that up into two (2) packets
15 and label them differently is up to you.

16 Effectively though, if your contingency,
17 quote/quote, is based on a P50 assessment and you
18 separately have a separate allowance for other
19 uncertainties, if you were to add them together and put
20 them all into a contingency box, it would effectively
21 be higher than P50.

22 I'm not prepared to say that the amount
23 of the management reserve that has been quantified by
24 Manitoba Hydro added to Manitoba Hydro's P50
25 contingency would be the same as a P80 contingency.

1 I'm just saying it would be higher than P50.

2 THE CHAIRPERSON: So they are, to some
3 extent, correlated.

4 MR. MICHAEL ROBERTSON: Yes.

5

6 CONTINUED BY MS. HELGA VAN IDERSTINE:

7 MS. HELGA VAN IDERSTINE: And as you
8 said this morning, part of the decision making around
9 what 'P' value you use is the decision maker's appetite
10 for risk.

11 MR. MICHAEL ROBERTSON: Correct.

12 MS. HELGA VAN IDERSTINE: So one of the
13 -- again, one of the IRs that was -- you answered,
14 MH/KPI-010 at -- reproduced it at Tab 6, you were asked
15 about other projects that used different 'P' values,
16 and I'd like to talk a little bit about these.

17 MR. MICHAEL ROBERTSON: Okay.

18 MS. HELGA VAN IDERSTINE: So if you
19 look down to Quebec-Hydro, one -- a little further down
20 -- you'll see -- and it goes over onto the second page
21 -- that Quebec-Hydro uses a P50.

22 Is that right?

23 MR. BORIS FICHOT: So we're told, yes.

24 MS. HELGA VAN IDERSTINE: And BC Hydro
25 uses a P50 estimate but carries a reserve equal to the

1 difference between P50 and P90?

2 MR. BORIS FICHOT: That's what we were
3 told, yes.

4 MR. MICHAEL ROBERTSON: Well, and --
5 and we have experienced that --

6 MS. HELGA VAN IDERSTINE: And as I
7 understood from your report, you weren't able to
8 identify any standards that outlined a correct level of
9 contingency for these reserves.

10 MR. BORIS FICHOT: That's correct.

11 MR. MICHAEL ROBERTSON: No, it's --
12 it's subjective.

13 MS. HELGA VAN IDERSTINE: And what
14 interested me about some of the information provided in
15 this report is if you look at what was asked here and -
16 - so in this IR is what the recommendation was for the
17 'P' value, and then the positives and negatives of the
18 approach.

19 And so if you look at the United States
20 Army Corps of Army of -- United States Army Corps of
21 Engineers, which is the first item, you'll see that
22 they use a P80 for cost contingency calculation.

23 And can you just elaborate a little bit
24 for me why -- the positive -- the positives of this
25 approach and the negatives of this approach?

1 MR. MICHAEL ROBERTSON: Boris...?

2 MR. BORIS FICHOT: I'd have to jog my
3 memory there in terms of what the article actually
4 said, but -- oh, as -- as stated there, the -- the
5 positive side of using a P80 is that you're more likely
6 to be within your budget.

7 And the negative side of using a P80 is
8 that you're -- you're more risk averse and therefore
9 you're -- you're more pessimistic about what the likely
10 outcome might be.

11 MS. HELGA VAN IDERSTINE: And -- and
12 the language you use is -- you say they're more likely
13 to be spent, meaning -- I take it meaning the money's
14 more likely to get spent.

15 MR. BORIS FICHOT: That's -- that's
16 correct. That's the impression: If the money's in the
17 pool, we'll find something to spend it on.

18 MS. HELGA VAN IDERSTINE: Yeah. That's
19 what I thought you were getting at.

20

21 (BRIEF PAUSE)

22

23 MR. MICHAEL ROBERTSON: So that --
24 that's what the US Army Corp of Engineers stated. I'm
25 not sure I totally agreed that it's more likely to be

1 spent.

2 MS. HELGA VAN IDERSTINE: It doesn't
3 appear to me that any of these organizations are using
4 both a 'P' value and a management reserve, are they?

5 MR. MICHAEL ROBERTSON: Well, I -- I
6 guess Hydro, BC Hydro. Between their P50 and their
7 P90, you might call that a management reserve. A
8 "project reserve" they call it.

9 MS. HELGA VAN IDERSTINE: Okay. So
10 they've got a 'P' val -- 'P' value -- a -- a P50 value,
11 and then they add to it in some capacity to come up,
12 right?

13 MR. BORIS FICHOT: We -- we wouldn't be
14 able to actually answer that question, I think. We'd
15 have to look into it.

16 MR. MICHAEL ROBERTSON: Well, I -- I
17 mean, I -- I do have direct experience of one (1)
18 project we did for -- for BC Hydro where the -- the
19 budget that we were all working to essentially was the
20 P90 budget, included this allowance.

21 MS. HELGA VAN IDERSTINE: And I -- the
22 language you just used was that the budget you were
23 working to was to -- to the P90 level. So that would
24 be the goal that you set -- setting a target that you
25 think is reasonable to meet the budget under.

1 MR. MICHAEL ROBERTSON: Probably not
2 reasonable, but more like you better not go over it.

3 MS. HELGA VAN IDERSTINE: So if I were
4 to say that the -- a controlled budget was trying to
5 set a -- a benchmark for performance that's rea -- that
6 is reasonable without being either too high or too low,
7 that would be another way -- another reason why
8 somebody might set a lower 'P' value.

9 MR. MICHAEL ROBERTSON: If -- if that's
10 your stated intent, yes.

11 MS. HELGA VAN IDERSTINE: Because the
12 concern in those cases would be, if you set it too
13 high, there might be a tendency to build to that higher
14 cost.

15 MR. MICHAEL ROBERTSON: I would not
16 agree with that.

17 MS. HELGA VAN IDERSTINE: But certainly
18 if you set it too low, you're going to exceed the
19 budget.

20 MR. MICHAEL ROBERTSON: You're more
21 likely to. Let's take something offline here.

22

23 (BRIEF PAUSE)

24

25 MS. HELGA VAN IDERSTINE: Sorry. Are

1 you ready to start again?

2 MR. MICHAEL ROBERTSON: Well, I mean, I
3 -- I -- Boris was essentially saying, you know, your
4 ability to manage your budget is a different issue from
5 whether or not that budget's set at the right level.

6 MS. HELGA VAN IDERSTINE: So I'm going
7 to change topics a little bit at the moment. I wanted
8 to talk about some of the items that you identified in
9 your second report, and specifically the items that
10 we've identified at -- and put in as document 3.3 or 3-
11 3. Yes, that's the one. Thank you very much.

12 Now, as I understand that, just from the
13 comment, you -- you highlighted some key risks which
14 you describe as being confirmed by validation
15 estimating. So that would be information then that you
16 obtained from validation estimating, or is it
17 information that you identified separately?

18 MR. BORIS FICHOT: At least we
19 concurred with their opinion on those.

20 MS. HELGA VAN IDERSTINE: So one (1) of
21 the things we talked about earlier was that validation
22 estimating was somebody with whom Manitoba Hydro's been
23 working.

24 MR. MICHAEL ROBERTSON: Yes.

25 MS. HELGA VAN IDERSTINE: So a -- fair

1 to say that Manitoba Hydro is aware of these concerns?

2 MR. MICHAEL ROBERTSON: They -- they
3 gave us those, probably, yes.

4 MS. HELGA VAN IDERSTINE: I was -- I
5 was going to say before -- before they saw it in your
6 report, I mean.

7 MR. MICHAEL ROBERTSON: Yes.

8 MS. HELGA VAN IDERSTINE: Thank you.

9 MR. MICHAEL ROBERTSON: Sorry, Boris
10 would like to say something.

11 MR. BORIS FICHOT: I -- I'd add that
12 you guys provided us with a complete risk register for
13 Keeyask and a lot of these overlap with each other, and
14 there's -- there is a process by which you identify
15 risks, and...

16 MS. HELGA VAN IDERSTINE: And I -- as I
17 think you commented earlier, you thought that they were
18 doing a good job in creating that register, and -- and
19 monitoring that. Is that right?

20 MR. MICHAEL ROBERTSON: Yes.

21 MS. HELGA VAN IDERSTINE: Thank you.
22 Now, so back to validation estimating. So Manitoba
23 Hydro would be aware of these issues, and would it be
24 fair to say that they're working to address these
25 issues?

1 MR. MICHAEL ROBERTSON: At the end of
2 the day, we understand that they are addressing the
3 issues through the provision of the contingency and
4 management reserve.

5 MS. HELGA VAN IDERSTINE: So in terms
6 of the resource challenges, if I understood you
7 correctly, that concern related to the fact that you
8 thought -- there was a concern, at least in September
9 2013, that Manitoba Hydro might not be able to staff
10 the onsite construction team with all Manitoba Hydro
11 employees?

12 MR. MICHAEL ROBERTSON: Correct.

13 MS. HELGA VAN IDERSTINE: And this --
14 so this is an issue of the number of people that they
15 might be able to -- to hire, and -- or have in place,
16 as opposed to the quality of their knowledge?

17 MR. MICHAEL ROBERTSON: Correct.

18 MS. HELGA VAN IDERSTINE: And I know
19 you had a lot of meetings with Manitoba Hydro, and they
20 provided you with a lot of information, but do you
21 recall them advising you in one (1) of your discussions
22 that they were aware of the risk, that it was included
23 in the risk register, and they've addressed it in their
24 current capital cost update by including a budget for
25 external consultants?

1 MR. MICHAEL ROBERTSON: Yes.

2 MS. HELGA VAN IDERSTINE: And that
3 would effectively mitigate that risk?

4 MR. MICHAEL ROBERTSON: Correct, and I
5 think we said that this morning.

6 MS. HELGA VAN IDERSTINE: And in terms
7 of the sys --

8 MR. MICHAEL ROBERTSON: Sorry.

9

10 (BRIEF PAUSE)

11

12 MR. MICHAEL ROBERTSON: Yes, I -- I
13 mean, it's -- it's -- it was highlighted by you in
14 September that this was a risk that needed mitigation,
15 and you have mitigated it. It's cost you more, but the
16 risk itself has been reduced.

17 MS. HELGA VAN IDERSTINE: And it's been
18 -- and -- and it's now included their budget?

19 MR. MICHAEL ROBERTSON: Correct. We
20 understand so.

21 MS. HELGA VAN IDERSTINE: One (1) of
22 the other areas that you identified is the systemic
23 risks associated with their maturing system, and you've
24 talked a bit about it. It's a system to monitor
25 controls.

1 Is that right?

2 MR. MICHAEL ROBERTSON: It's -- it's
3 essentially to monitor the -- the whole performance of
4 the project going forward.

5 MS. HELGA VAN IDERSTINE: So I -- I've
6 got it described here as, "To monitor and control
7 actual costs and forecasts." That would be...?

8 MR. MICHAEL ROBERTSON: And schedule
9 and everything else.

10 MS. HELGA VAN IDERSTINE: It's a way of
11 monetizing the maturity of the project, and at the --
12 at the time, the contingency was calculated by asking
13 some key questions of the staff on an ongoing basis?

14 MR. MICHAEL ROBERTSON: Are -- are you
15 talking now about the internal Manitoba Hydro process,
16 or what --

17 MS. HELGA VAN IDERSTINE: Yes.

18 MR. MICHAEL ROBERTSON: -- validation
19 estimating did?

20 MS. HELGA VAN IDERSTINE: Validation
21 estimating did that to establish that.

22 MR. MICHAEL ROBERTSON: As we
23 understand, that they'd talked to the staff in order to
24 provide some measure of uncertainty related to the
25 systemic risks of Manitoba Hydro's process.

1 MS. HELGA VAN IDERSTINE: And did you
2 do anything independent of validation estimating?

3 MR. MICHAEL ROBERTSON: No.

4 MS. HELGA VAN IDERSTINE: So again,
5 something that Manitoba Hydro is aware of. Now, this
6 process -- this -- that you've talked about, and
7 described as a new system, was that your impression,
8 that it was a new system, or is it one that they've had
9 in place, and they're making enhancements and
10 improvements to?

11 MR. MICHAEL ROBERTSON: No, we were
12 very explicitly told that it was a new system, and that
13 the -- it is different from the process that was used
14 from Wuskwatim, and details were given of various parts
15 of the change.

16 And -- and the statement's quite often
17 made that it was very difficult to compare old
18 estimates for Keeyask with new ones, because
19 essentially, the boxes have all been resorted, and
20 they're being managed differently.

21 And so -- and -- and some of the
22 questions we asked, we -- the reply was that there were
23 some things that were still being developed, and that
24 they couldn't get -- share them with us. Okay?

25

1 (BRIEF PAUSE)

2

3 MS. HELGA VAN IDERSTINE: Sorry, I'm
4 trying to think how I can address this without giving
5 evidence, so -- and I -- I think I better just leave
6 it, because I think that maybe there is a -- a
7 miscommunication somewhere along the way. In any
8 event, a -- along with the other systems, it's more --
9 something that Mari -- Manitoba Hydro is working with.
10 They're continuing to monitor, and they're trying to
11 improve on it.

12 MR. MICHAEL ROBERTSON: Yes, that is
13 apparent.

14 MS. HELGA VAN IDERSTINE: Now, one (1)
15 of the other issues that you identify in here is the
16 concern about a potential deferral due to the stage 1
17 cofferdam delay as being a potential risk?

18 MR. MICHAEL ROBERTSON: Yes.

19 MS. HELGA VAN IDERSTINE: And if I
20 understood you earlier, the driver for that deferral
21 would be due of -- some kind of reason for a deferral
22 in construction from starting on July -- in July?

23 MR. MICHAEL ROBERTSON: There is a risk
24 that something will come along that will prevent
25 Manitoba Hydro from starting construction in July.

1 MS. HELGA VAN IDERSTINE: For example,
2 inability to get regulatory approval?

3 MR. MICHAEL ROBERTSON: Correct.

4 MS. HELGA VAN IDERSTINE: And if that
5 was the case, did -- were you aware that Manitoba Hydro
6 has identified that that would cost somewhere around
7 \$250 million to the project?

8 MR. MICHAEL ROBERTSON: I am aware of
9 that. I don't see it included in any of the
10 contingencies or management reserves.

11 MS. HELGA VAN IDERSTINE: Okay. And
12 would you agree that that -- the inclusion of that in a
13 management reserve at this stage would be a question of
14 judgment as opposed -- dependent on whether or not the
15 project is, in -- in fact -- goes forward? So
16 including it in a -- in a management reserve may not be
17 the appro -- or a -- a contingency may not be the
18 appropriate place for it, but you should be aware of
19 it?

20 MR. MICHAEL ROBERTSON: I wouldn't put
21 it in a different box from the other risks.

22 MS. HELGA VAN IDERSTINE: Would you
23 agree that the change in scope, if it was a --

24 MR. MICHAEL ROBERTSON: No. It -- it's
25 a risk. It's a schedule risk.

1 MS. HELGA VAN IDERSTINE: Now, the
2 reason I was identifying -- talking about it a little
3 bit was -- and I -- am I -- talking earlier about the
4 NFAT is because if you look over to that Tab 8 again,
5 one (1) of the things that has -- that may not be
6 apparent to you, looking over at page 24, when
7 establishing the low, reference, and high, that that
8 risk is something that's included in that NFAT
9 analysis? And I'm -- I'm not sure that you were aware
10 of that, just given what our discussion was earlier.

11 MR. MICHAEL ROBERTSON: I think my
12 reaction would be -- I have said that's irrelevant.

13 MS. HELGA VAN IDERSTINE: Okay.

14 MR. MICHAEL ROBERTSON: Because in
15 terms of what we were asked to do, and -- and this will
16 come out tomorrow in CSI.

17 MS. HELGA VAN IDERSTINE: Okay.

18 MR. MICHAEL ROBERTSON: We -- we'd been
19 asked by the PUB to provide the expected in-service
20 cost of this project. We -- we feel that we should
21 also indicate -- give some indication or some -- wave a
22 few flags about where it may end up.

23 MS. HELGA VAN IDERSTINE: Yeah, I -- I
24 think, actually, we're talking about the same thing,
25 that the -- the analysis done, and the -- the scope of

1 the project for Manitoba Hydro in establishing what
2 we've been calling the control budget was to -- to plan
3 for an in-service date of two (2) -- 2019, and so
4 that's where their direction is. If you assume that,
5 then you wouldn't include, I take it, the -- that risk
6 of delay of -- of starting, because of regulatory
7 processes, because that would assume an in-service date
8 of 2020.

9 MR. MICHAEL ROBERTSON: Which will lead
10 to extra costs.

11 MS. HELGA VAN IDERSTINE: Yes. And I
12 think we're both saying the same thing. It's just a
13 question of where you put it.

14 MR. MICHAEL ROBERTSON: Well, to some
15 extent in what we've seen, apart from this table, it's
16 a question of if you've put it.

17 MS. HELGA VAN IDERSTINE: Sorry, the
18 table we're looking to is the NFAT table --

19 MR. MICHAEL ROBERTSON: Page 24.

20 MS. HELGA VAN IDERSTINE: Yeah. And --
21 and --

22 MR. MICHAEL ROBERTSON: I mean, for --
23 for where we're coming from, we see the 6.5 billion.
24 We don't see anything else. And the 6.5 billion does
25 not include what we perceive to be a significant risk.

1 MS. HELGA VAN IDERSTINE: So looking at
2 -- another area, again, that's part of the NFAT
3 analysis -- I may be getting it confused between the
4 NFAT analysis and the way you've approached the -- the
5 contingencies, is your discussion of escalation. And
6 as you commented, Manitoba Hydro used a 2.5 percent
7 inflation factor in their estimate.

8 Do you recall that?

9 MR. MICHAEL ROBERTSON: We understand
10 that they used one point nine (1.9), being CPI in their
11 point estimate.

12 MS. HELGA VAN IDERSTINE: Yes.

13 MR. MICHAEL ROBERTSON: And that in
14 their escalation reserve they have bumped that up to
15 two point five (2.5).

16 MS. HELGA VAN IDERSTINE: Sorry, I --
17 now, I'm -- thank you for correcting me, because as I
18 said at the outset that the definitions is where the --
19 the details sometimes is problematic.

20 MR. MICHAEL ROBERTSON: M-hm.

21 MS. HELGA VAN IDERSTINE: So they used
22 a two point five (2.5) inflation factor in their
23 escalation reserve and their estimate.

24 And you suggested they should have used
25 a 3.1 percent?

1 MR. MICHAEL ROBERTSON: We're
2 suggesting, based on evidence of escalation of hydro
3 pro -- projects, and we gave the example of Muskrat
4 Falls, that two point five (2.5) is probably not
5 adequate and that it would be more like three point one
6 (3.1) or three point four (3.4).

7 And in fact, the number of three point
8 one (3.1) resulted as a back calculation of the two (2)
9 data points which we were given by Manitoba Hydro,
10 which was the one point nine (1.9) CPI and the two
11 point five (2.5). And two point five (2.5) was stated
12 as the average of -- average escalation for hydro power
13 projects and the CPI.

14 So you can work backwards and say, Well,
15 oh, that means that they think the hydro power projects
16 are three point one (3.1).

17 MS. HELGA VAN IDERSTINE: Did you know
18 that they used a -- a variety of different interest
19 calculations in the NFAT analysis? Escalation, sorry.
20 Excuse me.

21 MR. MICHAEL ROBERTSON: No.

22 MS. HELGA VAN IDERSTINE: Do you know
23 what BC Hydro uses as an escalation factor?

24 MR. MICHAEL ROBERTSON: No.

25 MS. HELGA VAN IDERSTINE: Now, you have

1 commented on some of the things that Manitoba Hydro --
2 or you have commented -- or you're aware that Manitoba
3 Hydro has used a number of things to mitigate some of
4 the risks of the project.

5 And would you agree that some of those
6 include per -- the use of performance bonds, liquidated
7 damages, letters of credit with respect to the contract
8 with the GCC?

9 MR. MICHAEL ROBERTSON: Yes, we've been
10 given details of -- of some of those details. It is
11 though a very standard procedure, and I wouldn't say
12 that those are measures which deal specifically with
13 the specific risks for Keeyask.

14 MS. HELGA VAN IDERSTINE: And you've
15 concluded that the approach to the con -- construction
16 risk management is industry standard and cons --
17 consistent with best practices?

18 MR. MICHAEL ROBERTSON: Yes.

19 MS. HELGA VAN IDERSTINE: Now, one (1)
20 of the things you've referred to is Manitoba Hydro's
21 experience with Wuskwatim?

22 MR. MICHAEL ROBERTSON: Yes.

23 MS. HELGA VAN IDERSTINE: Now, in
24 earlier testimony we'd heard that there was a 10 to 13
25 percent increase from the point of awarding the GCC

1 contract in Wuskwatim to project completion.

2 Was that infor -- information ever
3 provided to you?

4 MR. MICHAEL ROBERTSON: I don't recall
5 that particular data. But all of the information that
6 we are quoting on Wuskwatim and lessons learned from it
7 have come directly from Manitoba Hydro.

8 MS. HELGA VAN IDERSTINE: Would you
9 call the time frame in which Wuskwatim was built an
10 escalation super cycle?

11 MR. MICHAEL ROBERTSON: I don't think
12 I'd want to go there.

13 MS. HELGA VAN IDERSTINE: Okay. Again,
14 going back to Tab 8. And looking at that first page,
15 you'll see the cont -- Keeyask control budget is \$6.5
16 billion?

17 MR. MICHAEL ROBERTSON: I see that.

18 MS. HELGA VAN IDERSTINE: Towards the
19 bottom of the page.

20 And if you look at the numbers under the
21 point estimate, you'll see contingency management
22 reserve, labour reserve, and escalation reserve?

23 MR. MICHAEL ROBERTSON: Yes.

24 MS. HELGA VAN IDERSTINE: And those
25 total approximately \$600 million?

1 MR. MICHAEL ROBERTSON: Seven hundred
2 (700), yeah.

3 MS. HELGA VAN IDERSTINE: So looking --
4 if you took 6.5 billion and took the \$700 million off,
5 that you'd come down to about 5.7 billion?

6 MR. MICHAEL ROBERTSON: Five point
7 eight (5.8), yes. Your math is correct.

8 MS. HELGA VAN IDERSTINE: Which would
9 suggest that that cost would -- would go up about 10
10 percent. That's about a 10 percent -- that 600 million
11 is about 10 percent of the entire cost of the project?

12 MR. MICHAEL ROBERTSON: Yes.

13 MS. HELGA VAN IDERSTINE: Which would
14 similar, again, to the increase in price between
15 Wuskwatim after the -- the GCC was awarded and the
16 project was completed?

17 MR. MICHAEL ROBERTSON: If you -- if
18 you say so. I don't have that data.

19 MS. HELGA VAN IDERSTINE: I just want
20 to turn to one (1) other topic. In your report with
21 respect to wind, you commented on the wind costs and
22 suggested that those construction costs are likely to
23 decrease.

24 Do you recall that?

25 MR. MICHAEL ROBERTSON: Yes.

1 MS. HELGA VAN IDERSTINE: And one of
2 the citations you referred to support that was the EIA
3 reports from the -- which are, as I understand it, and
4 they're at Tab 8 -- or, sorry, Tab 7, the US Energy
5 Information Administration?

6 MR. MICHAEL ROBERTSON: Boris will talk
7 to this.

8 MR. BORIS FICHOT: Yeah. Did we use it
9 as a reference? Yes.

10 MS. HELGA VAN IDERSTINE: Yes. And if
11 you look at Tab 7, we've given you the cover page from
12 the April 2013 report, and on the opposite side of the
13 page the overnight cost comparison with 2010 estimates
14 from that report.

15 Do you see that?

16

17 (BRIEF PAUSE)

18

19 MS. HELGA VAN IDERSTINE: I think we've
20 highlighted it so you can find it.

21 MR. BORIS FICHOT: Okay, I see it.

22 MS. HELGA VAN IDERSTINE: And that --
23 would that be the onshore wind cost that you were using
24 and suggesting there had been a 10 percent -- or 13
25 percent decrease in cost between 2013 -- or 2010 --

1 yeah, 2010 to '13?

2 MR. BORIS FICHOT: To justify the
3 decrease?

4 MS. HELGA VAN IDERSTINE: Yes.

5 MR. BORIS FICHOT: No, it's a different
6 source.

7 MS. HELGA VAN IDERSTINE: Maybe check
8 the next -- try the -- try the next one. It might be
9 the one you were using, updated capital cost estimates
10 for electricity generation plants, again, November
11 2010.

12 MR. BORIS FICHOT: Just give me maybe
13 one (1) second here to look through our report to see
14 where --

15 MS. HELGA VAN IDERSTINE: Okay.

16 MR. BORIS FICHOT: -- it was coming
17 from.

18

19 (BRIEF PAUSE)

20

21 MR. BORIS FICHOT: Sorry, we've just
22 quoted -- we've looked at a number of sources, and I'm
23 just trying to get the -- the original one. The -- the
24 basis for our reduction was a DOE document.

25 MS. HELGA VAN IDERSTINE: And that's

1 the Department of Energy again from the United -- US
2 government?

3 MR. BORIS FICHOT: That's correct.

4 MS. HELGA VAN IDERSTINE: You do refer,
5 however, in your report to the Energy Information
6 Administration?

7 MR. BORIS FICHOT: That's likely.

8 MS. HELGA VAN IDERSTINE: So you were
9 looking at these reports in some form of capacity?

10 MR. BORIS FICHOT: That's correct.

11 MS. HELGA VAN IDERSTINE: So looking at
12 this one, using the onshore wind cost there, it does
13 demonstrate -- and I don't want to be proving your
14 point too hard -- but that there was -- appears to have
15 been a 13 percent decrease between 2010 to 2013.

16 Is that what it shows?

17 MR. BORIS FICHOT: Yes.

18 MS. HELGA VAN IDERSTINE: And if you
19 look over to the estimates for electricity, again for
20 November 2010, and that's again from the US Energy
21 Information Administration, they also provide a
22 comparison of costs this time between -- for wind and a
23 bunch of other resources that demonstrate a change --
24 the changes in costs.

25 And do you see that there was a change

1 in costs between 2010 to 2011 with a 21 percent
2 increase there?

3 MR. BORIS FICHOT: Okay.

4 MS. HELGA VAN IDERSTINE: So at least
5 between 2010 to 2011 there appears to have been an
6 increase in cost, not a decrease in cost?

7 MR. BORIS FICHOT: From what these guys
8 compiled, yes.

9 MS. HELGA VAN IDERSTINE: So another --
10 some -- somebody else is obtaining liter -- obtaining
11 information from the industry in the US, which is where
12 I understand you got your information from.

13 Is that right?

14 MR. BORIS FICHOT: Yes, we -- we looked
15 at a number of sources. If I -- I'll just go straight
16 to the point in terms -- I think I feel like I know
17 where this is going, and to me the analysis for why we
18 came up with the capital cost estimate for wind was
19 relatively simple.

20 We based most of the assessment at the
21 end of the day on the Garrad Hassan report, which was
22 done professionally Manitoba Hydro -- Manitoba
23 specific, and came up with a capital cost. The
24 documentation that we had that's in the slide deck
25 shows that for specifically the equipment -- and we're

1 not talking about context because what's difficult with
2 the overall study is that you've got different regional
3 effects that enter into consideration.

4 So you go back to the Garrad Hassan one,
5 which is Manitoba Hydro -- Manitoba specific. And then
6 you look at what they think the cost is going to be and
7 you ratio what the specific wind turbine generator is
8 going to cost. And the trend overall has been that the
9 equipment piece, not the rest of it, but the equipment
10 piece which constitutes the majority of the cost, has
11 decreased. And that's the basis for our -- our
12 explanation of the decrease.

13 MS. HELGA VAN IDERSTINE: Thank you for
14 clarifying that for me, because I did want to raise
15 that issue.

16 What you were talking about in your
17 slide presentation and the -- the slide you gave with
18 the graph on it, which was slide number --

19 MR. BORIS FICHOT: Seventeen (17).

20 MS. HELGA VAN IDERSTINE: Thank you
21 very much.

22 That is a graph demonstrating the costs
23 of wind equipment, turbines and towers?

24 MR. BORIS FICHOT: That's correct.

25 MS. HELGA VAN IDERSTINE: It doesn't

1 include the costs of the foundations, the road access,
2 the transmission hook up, any of that?

3 MR. BORIS FICHOT: It doesn't include
4 any of that.

5 MS. HELGA VAN IDERSTINE: So it's not a
6 direct comparison then to the numbers that Manitoba
7 Hydro was using of twenty-two hundred (2,200).

8 MR. BORIS FICHOT: It -- it comp --

9 MS. HELGA VAN IDERSTINE: Or twenty-
10 four hundred (2,400) --

11 MR. BORIS FICHOT: -- we're -- we're
12 just talking about the equipment portion. The -- the
13 overall twenty-two hundred (2,200) includes all those
14 elements that you mentioned.

15 MS. HELGA VAN IDERSTINE: Right. So --
16 so, yes, you're showing a decrease there, but you
17 haven't accounted for labour or any of those other
18 items in this, correct?

19 MR. MICHAEL ROBERTSON: Well -- well,
20 perhaps if -- if I can intervene here. I mean, if you
21 look at that chart we're saying in January '09 maybe
22 the equipment cost was fifteen hundred dollars (\$1,500)
23 a kilowatt, and since then there has been a steady
24 decline in costs. And so in January '13, it's eleven
25 hundred dollars (\$1,100) a kilowatt for the turbine.

1 MS. HELGA VAN IDERSTINE: Yes.

2 MR. MICHAEL ROBERTSON: And that's
3 maybe 75 percent of the cost.

4 MS. HELGA VAN IDERSTINE: And do you
5 know that the -- often the turbines come in somewhere
6 around -- in Texas and have to be shipped north, which
7 would include an additional cost then?

8 MR. MICHAEL ROBERTSON: But the Garrad
9 Hassan report was talking about Manitoba.

10 MR. BORIS FICHOT: Yeah.

11 MS. HELGA VAN IDERSTINE: So looking --

12 MR. BORIS FICHOT: We -- we just -- we
13 -- it was very simple. We didn't include anything
14 else. We just went the equipment piece cost less, and
15 we ratioed it to what the -- what the work -- what the
16 breakdown structure showed us in the Manitoba context.

17 MS. HELGA VAN IDERSTINE: So I just
18 want to close this off by taking you to that last page
19 of the -- of the report that we put in at Tab 7 at page
20 19, just because it does seem to demonstrate that
21 although there was an increase -- that the increase --
22 total overnight costs on the -- that's the fifth column
23 -- would demonstrate that in 2008 you have a cost of
24 two thousand and eighty-nine (2,089).

25 It then had a significant increase into

1 2009, to two -- two thousand five hundred and thirty-
2 eight (2,538). And then you see some -- a decrease in
3 2000 -- to two thousand five hundred and thirty-three
4 (2,533) in 2010. A de -- a decrease in 2011 to twenty-
5 two fourteen (2,214). And, yes, a decrease in 2012 to
6 two thousand two hundred and thirteen (2,213).

7 But they're all still costs that are
8 higher than the 2010 year. So there are some -- and
9 there -- anomalies, obviously, in these numbers.

10 MR. BORIS FICHOT: I'd have to look
11 into what the context of what those numbers correspond
12 to.

13 MS. HELGA VAN IDERSTINE: Thank you
14 very much. Those are my questions.

15

16 (BRIEF PAUSE)

17

18 THE CHAIRPERSON: I think we're ready
19 for your questions now, Mr. Hombach.

20 MR. SVEN HOMBACH: Okay. Thank you,
21 Mr. Chairman. Demonstrating what I've learned today,
22 my point estimate is about twenty (20) minutes, but I
23 may need ten (10) minutes as a contingency.

24

25 CROSS-EXAMINATION BY MR. SVEN HOMBACH:

1 MR. SVEN HOMBACH: Good afternoon. My
2 name is Sven Hombach. I act as counsel to the Public
3 Utilities Board. And I appreciate that a lot of the
4 comments we've heard today were somewhat general,
5 because a lot of the specifics with respect to the
6 contract are CSI. We'll have an opportunity to explore
7 those tomorrow.

8 So my questions are going to be at a
9 fairly high level to -- to get a better understanding
10 of what the systemic risks are, and on a higher level
11 how to mitigate it so that the CSI session can be put
12 into context.

13 Before we get started, I did circulate
14 on the weekend a Volume VI of Board counsel's book of
15 documents. I would like to have that entered as PUB
16 Exhibit 58-6, and I'll be referring to the document.
17 At that point I'd ask Ms. Villegas to just put it up on
18 screen.

19

20 --- EXHIBIT NO. PUB-58-6: Volume VI of Board
21 counsel's book of documents

22

23 CONTINUED BY MR. SVEN HOMBACH:

24 MR. SVEN HOMBACH: Hearing all this
25 talk about a P50 contingency, can you provide me with a

1 general understanding of how many P50 projects in the
2 past twenty (20) years you've actually seen come in on
3 or under budget?

4 MR. MICHAEL ROBERTSON: Short answer,
5 no.

6 MR. SVEN HOMBACH: But you've seen
7 some?

8 MR. MICHAEL ROBERTSON: I would have to
9 -- I mean, that's a very specific question. I would
10 have to check that indeed the budget was set at P50 and
11 compare it to what it ended up at.

12 MR. SVEN HOMBACH: Okay.

13 MR. MICHAEL ROBERTSON: I mean, in many
14 ways the budget is not set at P50.

15 MR. SVEN HOMBACH: Well, appreciating
16 the comment that we heard from you on Ms. Van
17 Iderstine's question, it takes years to gain the
18 experience in -- in cost estimating. I, unfortunately,
19 didn't have the opportunity to get years of experience.
20 I've got some general high-level literature in this
21 book of documents. And Tab 1 of the book of documents
22 is a paper by a gentleman named Bent Flyvbjerg from the
23 Said Business School at Oxford entitled, "Delusion and
24 Deception in Large Infrastructure Projects, Two (2)
25 Models for Explaining and Preventing Executive

1 Disaster."

2 And I assume you haven't had an
3 opportunity to -- to read it, but I want to take you to
4 a specific section to determine if -- if you agree with
5 the way he describes risk. So maybe we can go to page
6 26 of the document. And let's scroll down to the
7 bottom half of the page.

8 There's a discussion in the -- in the
9 middle of the page that states that:

10 "In fact, during the tender bidders
11 can act opportunistically by
12 assessing the probability that
13 compensation is possible after the
14 construction state has been
15 initiated. If compensation is
16 possible, bidders will bid the lowest
17 possible value in order to win the
18 tender. The winning bidder will be
19 typically the bidder who most
20 underestimates the true cost of the
21 project. We call this the 'winner's
22 blessing'. After the project has
23 been initiated, the initial low price
24 will be compensated through
25 overpricing the expected scope

1 increases, which the experienced
2 bidders know are almost certain.
3 When compensation is not possible,
4 there is less chance that the bidding
5 price is artificially low."

6 So do you generally agree with this
7 analysis?

8 MR. MICHAEL ROBERTSON: It's -- it's an
9 oft voiced fear. And it's -- it's obviously based
10 sensibly. There -- there are jurisdictions which, for
11 this very reason, do not award the contract to the
12 lowest bidder. I mean, I understand that in Germany,
13 for instance, they will award the contract to -- public
14 service contracts to the bidder closest to the average,
15 rather than the lowest. So the bidder next lowest --
16 lower than the -- than the average of all the bids.

17 If you have a contractor that goes into
18 a tender looking for loopholes and planing to exploit
19 them later, yes, there are contractors who do that and
20 there is a risk that that will happen. And the defence
21 is that you have a well-defined project. You have a
22 very good contract document. You have suitable
23 measures to address change.

24 MR. SVEN HOMBACH: So in your view
25 then, is the primary way of addressing this issue, a,

1 for lack of a better word, bulletproof contract?

2 MR. MICHAEL ROBERTSON: As -- as good a
3 contract as you can. And in -- in this case the -- the
4 whole process of the early contractor involvement
5 should contribute to reducing the risk of this
6 happening.

7 MR. SVEN HOMBACH: And generally
8 speaking, that would mean what? Placing quantity risk
9 or pricing -- placing escalation risk to a large extent
10 with the contractor?

11 MR. MICHAEL ROBERTSON: Well, not
12 escalation risk. That's something outside of the
13 control of all the parties, and there is a management
14 reserve for that. But -- sorry, what was your other
15 example?

16 MR. SVEN HOMBACH: Quantity risk.

17 MR. MICHAEL ROBERTSON: Quantity risk.
18 Quantity risk is -- is there. And -- and to the extent
19 that Manitoba Hydro is working with a contractor in a
20 target price, but unit price contract, yes, there is
21 some risk to -- to Manitoba Hydro. And -- and the
22 defence there is that they have advanced the design to
23 a level where the quantification of those quantities
24 should be good. And they have done a significant
25 amount of investigation of the foundations to -- to

1 mitigate that risk.

2 MR. SVEN HOMBACH: Okay. If we could
3 go to Knight Piesold Exhibit 2. That's Knight Piesold
4 Second Round Information Requests to Manitoba Hydro,
5 page 6.

6

7 (BRIEF PAUSE)

8

9 MR. SVEN HOMBACH: That is a chart that
10 you're no doubt familiar with?

11 MR. MICHAEL ROBERTSON: In principle.

12 MR. SVEN HOMBACH: And what that shows
13 is generally you have your point estimate, you apply
14 your escalation to go to P50.

15 And generally, the probability of under-
16 or overruns are following some type of a bell curve?

17 MR. MICHAEL ROBERTSON: Yes. Just a --
18 a slight correction there. The -- you add the
19 contingency to the point estimate to get to P50.

20 MR. SVEN HOMBACH: Right.

21 MR. MICHAEL ROBERTSON: I -- I don't
22 think it's quite what you said.

23 MR. SVEN HOMBACH: I -- I thought it's
24 what I said, but I appreciate the correction. Thank
25 you.

1 If we could go to Tab 2 of Volume VI of
2 Board counsel's book of documents, page 47, that is
3 another paper published by somebody at Said Business
4 School at Oxford, a gentleman names Atif Ansar,
5 entitled, "Should We Build More Large Dams? The Actual
6 Costs of Hydro Power Megaproject Development." And you
7 may have heard about it. This paper was in the news a
8 little while ago.

9 And I just want to take you to page 51
10 of the book of documents. That suggests that, for
11 large dams, you're not dealing with a classical bell
12 curve. You've got a -- a long tail where your P90
13 probability of overruns can be fairly high.

14 Is that something that you've seen in
15 your experience as well?

16 MR. MICHAEL ROBERTSON: Personally, no,
17 although there is very well-documented evidence of this
18 happening with a large -- number of large megaprojects
19 throughout the world.

20 MR. SVEN HOMBACH: But the conclusion
21 of this paper is that, on average, for large dams, the
22 final tally is 96 percent over budget. But it doesn't
23 state whether that's a Class 1, 2, 3, 4, or 5 estimate.

24 MR. MICHAEL ROBERTSON: Well -- well, I
25 -- I don't think it matters what the designated class

1 of the estimate was, but it is certainly not my
2 experience that, on average, the projects that
3 certainly we've been involved with go 96 percent over
4 budget.

5 MR. SVEN HOMBACH: So let me then take
6 you to the third document in the book of documents.
7 It's Tab 3, page 63. There's been reference to Mr.
8 Hollmann before, and just so that I can be clear, was
9 Mr. Hollmann a -- a person retained by you, or is it
10 your understanding that he was a Manitoba Hydro
11 consultant?

12 MR. BORIS FICHOT: We -- we just
13 reviewed one (1) report that was supplied to us that
14 was authored by -- by him.

15 MR. SVEN HOMBACH: You just reviewed a
16 paper, but you didn't consult with him and --

17 MR. BORIS FICHOT: No.

18 MR. SVEN HOMBACH: Have you reviewed
19 the paper that we're looking at, which is entitled
20 "Variability in Accuracy Ranges: A Case Study in the
21 Canadian Hydro Power Industry"?

22 MR. BORIS FICHOT: I haven't. It looks
23 like it's dated 20 -- 2014.

24 MR. SVEN HOMBACH: It is quite a recent
25 paper from the AACE International Technical Conference.

1 And AACE is Association for the Advancement of Cost
2 Engineering.

3 Do I have that right?

4 MR. BORIS FICHOT: Correct.

5 MR. SVEN HOMBACH: Okay. Let's go to
6 page 65 of the book of documents, two (2) pages in, and
7 scroll to the bottom. That is a chart from AACE RP
8 69R12.

9 And 'RP' stands for recommended practice
10 under AACE, correct?

11 MR. BORIS FICHOT: Yes, that's correct.

12 MR. SVEN HOMBACH: And this shows the
13 percentage of project definition for the different
14 classes, starting in Class 1 on the right and then
15 moving to Class 5 on the left?

16 MR. BORIS FICHOT: That -- that is the
17 -- the documented standard, yeah, by -- by AACE -- by
18 AACE.

19 MR. SVEN HOMBACH: And if I heard you
20 correctly this morning, you testified that you now
21 think that with systemic risk, the Keeyask
22 Infrastructure Project, the Keeyask Generating Station
23 Project, and the Conawapa Project are all Class 3?

24 MR. BORIS FICHOT: That -- that's
25 correct.

1 MR. SVEN HOMBACH: So that would be
2 somewhere on the left side, where you'd have a project
3 definition between 20 to 80 percent?

4 MR. BORIS FICHOT: According to this
5 graph, yes.

6 MR. SVEN HOMBACH: Where, generally
7 speaking, taking into the account -- taking into
8 account the systemic risk, would you see the Keeyask
9 Generating Station Project?

10

11 (BRIEF PAUSE)

12

13 MR. MICHAEL ROBERTSON: What we said
14 this morning was that in the first report, you will
15 notice that we deemed Manitoba Hydro's classification
16 of Class 3 for certainly the Keeyask -- two (2) Keeyask
17 projects to be unnecessarily pessimistic, and that
18 given the level of project definition, if you use that
19 as the variable, with the amount of information that --
20 that was to hand and the number of contracts that had
21 actually been led, they would be better classified in
22 the system as Class 2 and Class 1.

23 In the discussion this morning, we
24 advised that, because of the reapprecion --
25 reappreciation of system risk by -- by the independent

1 risk assessment people, we -- we believed that it would
2 be appropriate to -- to put the projects back into
3 Class 3. And -- and essentially, the -- the reasoning
4 is just that there are significant systemic risks
5 remaining that -- as -- as we believe.

6 MR. SVEN HOMBACH: Let's go to page 68
7 of the book of document, and scroll down onto the page.
8 Now, the -- the -- again, this is a paper that looks at
9 the Canadian hydro power industry, and it ultimately
10 concludes, and you can see that in the table on the
11 screen in front of you, that for a Class 3 estimate,
12 the suggested contingency on a P50 probability is 24
13 percent, on a P90 probability, it's 63 percent, and on
14 a P10, or 10 percent probability, it would actually be
15 a -- a negative 1 percent.

16 You -- you follow the reasoning on this
17 chart?

18 MR. MICHAEL ROBERTSON: I -- I follow
19 the data.

20 MR. SVEN HOMBACH: Do you have any
21 reason to disagree with those general percentages?

22 MR. MICHAEL ROBERTSON: No. I don't.
23 I equally don't confirm or otherwise comment on them.
24 It's -- it's their interpretation of the data that
25 they've chosen to use.

1 MR. SVEN HOMBACH: Well, the reason I'm
2 asking you, sir, is that My Friend, Ms. Van Iderstine,
3 took you through some of the probabilities, as did Mr.
4 Hacaault. And I just wanted to have an opportunity to
5 put those into context. Could I ask you, Ms. Villegas,
6 to put Manitoba Hydro Exhibit 161 on the screen,
7 please? And I believe we have to go three (3) pages
8 in.

9

10 (BRIEF PAUSE)

11

12 MR. SVEN HOMBACH: Sorry, two (2) pages
13 and the previous page. Do you recall Ms. Van Iderstine
14 taking you through this chart?

15 MR. MICHAEL ROBERTSON: I do, yes.

16 MR. SVEN HOMBACH: And on the right, we
17 see the current update for Keeyask. This is on the
18 second page of Manitoba Hydro Exhibit 161, and there's
19 a \$310 million contingency for the P50. You see that?

20 MR. MICHAEL ROBERTSON: I do.

21 MR. SVEN HOMBACH: And the point
22 estimate is 3.36 million -- sorry, billion?

23 MR. MICHAEL ROBERTSON: Yes.

24 MR. SVEN HOMBACH: If my basic lawyer
25 math is correct, that's only about 9.2 percent, so

1 significantly less than the suggestion in the Hollmann
2 paper of 24 percent. Are you comfortable with a 9.2
3 percent contingency?

4 MR. MICHAEL ROBERTSON: I -- I think
5 the question, really, is not how the nine point two
6 (9.2), which is a derived number, fits into the AACE
7 classification system. I think it's more -- well,
8 there's a philosophy around whether you're using P50 or
9 some other number.

10 And then given that, this is really
11 being superceded by the -- the detailed risk analysis
12 that has been done by the consultants, out of which has
13 come the number there for contingency to get to P50.

14 So I -- I think what I'm saying is that
15 the -- the reference that produced this is now
16 background noise to Keeyask.

17 MR. SVEN HOMBACH: Well, the -- the
18 understanding that I'm trying to get is how you
19 reconcile the fairly clear project definition for
20 Keeyask on the one (1) hand with a systemic risk that
21 you discussed this morning. And if you're then saying
22 it's a P3 estimate, but the contingency can actually be
23 relatively low, can you explain that without actually
24 delving into the details of the risk and engaging the
25 panel in CSI?

1 MR. MICHAEL ROBERTSON: Sorry, you --
2 you mean a Class 3 estimate --

3 MR. SVEN HOMBACH: Yes.

4 MR. MICHAEL ROBERTSON: -- not -- not a
5 P3 estimate?

6 MR. SVEN HOMBACH: Sorry, yes.

7 MR. MICHAEL ROBERTSON: Well, I -- I --
8 as I say, to -- to be honest, I -- I don't think it's
9 relevant. You know, we've -- when -- when you're in
10 the early stages of -- of cost estimating, and -- and
11 project appreciation, those are good guidelines.
12 They're useful. They help you put things in boxes and
13 -- and assign a sensible contingency or a provision for
14 uncertainty to the process at any particular time in
15 that process.

16 I think once you've got as far as -- as
17 Manitoba Hydro has with Keeyask, you -- you've got to
18 look at -- at what you've -- you've specifically got
19 there. You've got to look at your processes. You --
20 you've got to have a really good appreciation of the --
21 of the risks, both systemic and project-specific, and
22 you respond accordingly in terms of making provision
23 for what might happen.

24 MR. SVEN HOMBACH: Now, before we move
25 away from this page, Ms. Van Iderstine engaged you in a

1 discussion about the management reserve, and whether
2 that's usually part of the contingency.

3 Again, by my math, if we simply add the
4 labour reserve to the contingency on a P50 basis, we
5 get to 14.8 percent. If we also include the escalation
6 reserve, we get to 17.6 percent, so still less than the
7 24 percent suggested in the Hollmann paper, but closer.

8 The escalation reserve that you see
9 here, is that a reserve in case Manitoba Hydro's 2.5
10 percent escalation is not sufficient, or is this
11 supposed to be the escalation period?

12 MR. MICHAEL ROBERTSON: That -- my
13 understanding is that that is an allowance for the
14 difference between CPI at one point nine (1.9) and 2.5
15 percent.

16 MR. SVEN HOMBACH: Okay. So would you
17 contin -- would you consider both of these items,
18 labour reserve and the escalation reserve, to be part
19 of the contingency, and just be a contingency by a
20 different name?

21 MR. MICHAEL ROBERTSON: Not
22 necessarily. It just goes to how you want to define
23 that allowance.

24 MR. SVEN HOMBACH: Let's go over one
25 (1) page and have a look at the Conawapa numbers. Now,

1 you also said Conawapa is a -- a Class 3 estimate?

2 MR. BORIS FICHOT: Sorry, just a
3 second.

4

5 (BRIEF PAUSE)

6

7 MR. MICHAEL ROBERTSON: I mean, just to
8 support what I was saying earlier in -- in that I -- I
9 don't think that this is an appropriate document with
10 respect that we should be looking at any longer,
11 because we've moved beyond it. We -- we do not know
12 how these numbers were put together.

13 MR. SVEN HOMBACH: I appreciate that
14 qualification, but I -- I still want to ask you on
15 Conawapa as well, because on Keeyask, you indicated
16 that Keeyask is well-defined and you -- you indicated
17 Manitoba Hydro seems to have an appreciation of what
18 the specific risks are?

19 MR. MICHAEL ROBERTSON: M-hm.

20 MR. SVEN HOMBACH: Does that hold true
21 for Conawapa as well, or is Conawapa not as defined, in
22 your view?

23 MR. MICHAEL ROBERTSON: I don't know,
24 because we have not been given the same level of detail
25 as we have for Keeyask, particularly in the second

1 report and the second round of questions, which were
2 aimed specifically at Keeyask, and which we therefore
3 asked Manitoba Hydro to provide us details for.

4 We didn't ask them to provide similar
5 details for Conawapa. I would expect the -- the level
6 of definition to be somewhat lower for Conawapa. I
7 would expect the process, the systemic risks to be
8 pretty much the same. That's probably all I could say.

9 MR. SVEN HOMBACH: Well, again, let's
10 go to the Conawapa P50 contingency on this page, which,
11 based on the most recent cost update, is 460 million.

12 You see that?

13 MR. MICHAEL ROBERTSON: The
14 contingency, yes.

15 MR. SVEN HOMBACH: Compared to a point
16 estimate of 4.93 billion?

17 MR. MICHAEL ROBERTSON: Yes.

18 MR. SVEN HOMBACH: And again, by my
19 math, that is 9.3 percent, so significantly less than
20 the suggestion in the Hollmann paper of 24 percent?

21 MR. MICHAEL ROBERTSON: Yeah.

22 MR. SVEN HOMBACH: Would that cause you
23 any cause for concern at all, or do you believe that
24 that is a realistic estimate?

25 MR. MICHAEL ROBERTSON: Not at all,

1 because I'm not going to hang my hat on what's shown on
2 this table.

3 THE CHAIRPERSON: We -- I need to
4 clarify something in my mind, because I -- I think
5 where -- where we're getting into -- we're -- we're
6 getting confused is we heard from Power Engineers last
7 week that typically, the labour reserve and escalation
8 reserve were part of the contingency. Here we've seen
9 them split out, and I guess where the confusion's
10 arising in our minds is, when we talk about modifying
11 the probability from P50 to P90, are we talking about
12 the collective modification of contingency management,
13 labour, and escalation to the P90 level, or are we
14 talking separately, specifically, the contingency as
15 defined here?

16 MR. MICHAEL ROBERTSON: Well, as -- as
17 I -- as I tried to indicate, we would typically combine
18 all of this into one (1) provision for uncertainty,
19 which would be contingency, quote/quote, and all of
20 these would be factors within that contingency
21 allowance.

22 And I did also make the point that if
23 you were to add what is provided for here in terms of
24 reserves to what is stated to be the contingency, then
25 you would be getting a contingency, in my normal

1 practice, which is obviously significantly greater than
2 P50, but I -- I'm not really in the position to put a
3 number to that.

4 MR. SVEN HOMBACH: So just to briefly
5 follow up on the Chairman's point, if we do actually
6 add in the labour reserve and the escalation reserve,
7 we get to a P50 contingency of about 1.13 billion for
8 Conawapa, which would be about 22.9 percent? That's --

9 MR. MICHAEL ROBERTSON: You -- you
10 would get a contingency, but not a P50 contingency.

11 MR. SVEN HOMBACH: Well, that's based
12 on the reference contingency. Is it your understanding
13 that in this chart, the reference contingency is a P50?

14 MR. MICHAEL ROBERTSON: For those items
15 that were included in the analysis that -- that
16 produced that, but it didn't include all the items. It
17 didn't include the items that are in the reserve.

18 MR. SVEN HOMBACH: The items that are
19 in the management reserve itself?

20 MR. MICHAEL ROBERTSON: Correct. So --
21 so if you add point three-six (.36) and point three-one
22 (.31) to point four-six (.46), really, you do not have
23 any longer an overall P50 contingency.

24 MR. SVEN HOMBACH: Because you're
25 stating that the contingency of point four-six (.46),

1 that's the P50?

2 MR. MICHAEL ROBERTSON: For those items
3 that are included in that analysis.

4 MR. SVEN HOMBACH: Okay. When one
5 develops a P50 contingency for a project, is it your
6 understanding that the overall number that is given,
7 including what Manitoba Hydro here calls the management
8 reserve, would be lumped into the P50?

9 MR. MICHAEL ROBERTSON: That would be
10 my normal practice, but that is not the way Manitoba
11 Hydro has chosen to do it. I mean, to -- to some
12 extent, it's -- this is semantics. It's -- it's really
13 what allowance has been made for uncertainty, and is
14 the amount appropriate.

15 MR. SVEN HOMBACH: Well, it's relevant,
16 though, because if -- if, when you add the labour
17 reserve and the escalation reserve, you don't have a
18 P50 anymore, then you're basically -- you're left with
19 a higher probability, correct?

20 MR. MICHAEL ROBERTSON: Right.

21 MR. SVEN HOMBACH: And if we do the
22 math, adding those three (3), that's about 1.13
23 billion. It indicates in the right-most column that
24 the high estimate is about one point five six (1.56),
25 so pre -- we're presumably looking at something like a

1 P70, P75?

2 MR. MICHAEL ROBERTSON: I wouldn't put
3 a number to it, but it's higher than P50.

4 MR. SVEN HOMBACH: Somewhere in that
5 ballpark.

6 MR. MICHAEL ROBERTSON: It's higher
7 than P50.

8 MR. SVEN HOMBACH: Yeah.

9 MR. BORIS FICHOT: I'm just going to
10 add a -- a small point to this is that, when we're
11 talking about the contingency, that is -- that is
12 statistically derived. So we can talk about P50s and
13 P80s.

14 But when we're talking about the labour
15 reserve and escalation reserve, those are subjective-
16 based quantities. They have no statistical basis to
17 them. They -- they're -- they're a judgment call that
18 we make on what are some of the things that can happen,
19 and as a result we come up with a number.

20 So one is subjective, which is the
21 management reserve, and one has a statistical basis.
22 And those -- there's no link to it.

23 The way we have seen traditionally, and
24 it seems like power engineers have seen traditionally,
25 is you qualify all these elements statistically, and

1 then you roll them up and come up with one (1) number
2 based on the statistics.

3 But in this case, contingency has
4 statistical basis, but management reserve doesn't. And
5 there's a little bit of a -- I feel like there's a
6 little bit of a mix there.

7 MR. SVEN HOMBACH: Did you actually
8 examine the statistical analysis for either of the two
9 (2) projects?

10 MR. BORIS FICHOT: No. That's far
11 beyond what -- what we could do. We -- we observe --
12 we -- we read the validation estimating report that had
13 results that showed statistical distributions. And
14 we've seen Manitoba Hydro's justification behind the --
15 the labour reserve and why they came up with the labour
16 reserve that they came up with.

17 MR. SVEN HOMBACH: And are you
18 satisfied that the statistical distributions are
19 accurate? Or perhaps I should say reasonably,
20 appreciating that accuracy can only --

21 MR. BORIS FICHOT: To -- to the -- to
22 the extent that they went to a specialized firm who
23 does this, they produced a document, they ran models,
24 they had input from Manitoba Hydro staff that went into
25 this to come up with this distribution.

1 So there's a process. It's documented.
2 We can't check the nitty-gritty of that, and they've
3 given an output that has a distribution to it.

4 MR. SVEN HOMBACH: Okay. Thank you,
5 Mr. Chairman. I don't have any further questions to
6 this panel in the public session.

7 THE CHAIRPERSON: I wonder if there's
8 any other business to attend to before we adjourn for
9 the day.

10 Ms. Ramage...?

11 We're not getting anything from the
12 Intervenors.

13 MR. SVEN HOMBACH: Mr. Chairman, in the
14 -- in the meantime, if I briefly may, I would like to
15 remind members of the public that the morning session
16 tomorrow is reserved for CSI. So it's not going to be
17 available to the public.

18 The public session with respect to
19 Typlan, the independent expert speaking to
20 socioeconomic issues, is scheduled to come in after the
21 lunch break.

22 THE CHAIRPERSON: I think that
23 completes today's business. Me. Monnin, have you --
24 no. That completes today's business, so we'll adjourn
25 for the day, and we'll see each other again at nine

1 o'clock, those of you who are eligible to consider CSI.

2 Thank you. Have a good evening, everyone.

3

4 (PANEL RETIRES)

5

6 --- Upon adjourning at 4:31 p.m.

7

8 Certified Correct,

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13 Cheryl Lavigne, Ms.

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\$.2 6721:22	6702:10	1,220	6905:24	6910:15
\$.53 6854:19	6708:13	6721:21	6907:9,10,	6913:24
\$1 6721:5	6709:25	1,314 6721:5	11 6908:24	13th 6678:12
\$1,100	6710:20	1.13 6934:7	6915:23	6684:4,8
6913:25	6712:10	6935:22	6926:14	6685:14
\$1,500	6727:14,19	1.3 6715:13	10.492	6690:19
6913:22	6738:23	6838:17	6811:19	6870:25
\$1,800	6741:15	1.4	10.662	14 6675:24
6714:16	6762:2,5,1	6810:5,10	6811:18	6707:1
6715:8	8 6764:7	1.40 6809:8	10:35 6748:3	6751:1
\$2,100	6768:25	1.43	10:48 6748:4	14.8 6930:5
6714:12	6771:18	6720:17,23	1031A 6869:1	15
6715:2	6773:7	1.47	104-1	6695:13,17
\$20 6715:21	6783:19	6809:7,21	6835:14	6708:1
\$250 6900:7	6813:19	6810:5,10	6839:18	6744:11
\$3.50	6815:24	1.5 6808:5	11 6697:25	15th 6681:14
6715:22	6816:15	1.52 6812:5	6703:5	16 6714:4
\$300 6828:24	6826:20,21	1.56 6935:24	6704:1	161 6853:12
\$310 6927:19	6828:2,15	1.771 6726:1	6720:24	6854:2
\$40 6714:21	6831:25	1.88 6720:24	6748:22	6855:25
\$55 6714:23	6835:19	1.9 6903:10	11:15	6927:6,18
\$6.2 6819:14	6839:19	6904:10	6767:21	17 6714:24
\$6.30	6857:13	6930:14	11:46	6751:23
6715:24	6866:7	1/2 6691:22	6767:22	6912:19
\$6.5 6757:20	6867:22	6720:24	113 6811:6	17.6 6930:6
6884:4	6868:25	1/3 6705:4	117 6679:3	173 6886:13
6906:15	6869:1	6709:14	6832:9	174 6817:15
\$600 6906:25	6877:13	6832:22	12 6691:20	175 6817:21
\$7.2 6812:4	6884:20	1:00	6705:5	17th
\$7.9	6891:17	6784:9,10,	6821:5	6866:13,23
6820:19,20	6893:20	11	6857:14	6871:1
\$70 6830:6	6895:21	1:35 6816:21	1-2 6839:21	18 6715:10
\$700 6907:4	6896:21	1:42 6816:22	12:05	6799:23
\$950 6828:5	6899:14,16	10 6702:9	6784:13	6838:15
<u>0</u>	6901:5	6747:24	12:45	18th 6696:23
09 6718:13	6905:19	6763:18	6681:20	6866:24
6913:21	6907:20	6767:14,15	6785:3	19 6716:2
<u>1</u>	6909:13	,18	12:54	6914:20
	6917:21	6772:22	6784:14	1970s
	6922:23	6777:19	129 6817:25	6722:15
	6923:13	6808:6,10	12th 6680:13	1973 6719:25
	6924:14	6821:5	13 6706:2	1974 6721:21
	6925:22	6824:12	6905:24	1979 6721:13
	6926:15	6828:3,11	6908:24	1992 6719:25
	6928:20			
	6930:25			
	6933:18			
	6937:1			
	1,000			
	6753:23			
	1,010			

6720:16	6875:5	2000 6915:3	6827:9,18	6829:1
	6882:3		6923:23	6848:4
<u>2</u>	6887:14	2007 6727:13		
2 6685:11	6902:3	2008 6914:23	2019 6735:20	24 6699:18
6690:15	6904:8	2009 6702:13	6736:12,21	6720:16
6694:2	6917:24	6715:3	,24 6902:3	6824:23
6695:11,25	6921:3	6717:25	2020 6724:11	6884:23
6698:6,24	6922:1,23	6718:2	6902:8	6901:6
6699:2,22	6924:6	6734:14	2021 6734:8	6902:19
6700:14,25	6925:16,22	6915:1	6735:18	6926:12
6701:15	6927:12	2010 6702:14	6736:23	6928:2
6702:20	6937:9	6718:14,18	2022/2023	6930:7
6703:5	2,089	6908:13,25	6678:14	6932:20
6704:1	6914:24	6909:1,11	6817:11	240 6721:21
6705:20	2,100 6715:9	6910:15,20	2026 6818:25	24th 6680:11
6717:10	2,200	6911:1,5	6821:11	25 6721:11
6720:23	6913:7,13	6915:4,8	6836:3,16	6767:19
6731:9	2,213 6915:6	2011 6718:21	6838:9	6814:14
6733:17	2,214 6915:5	6911:1,5	2031	6830:12
6736:22	2,400	6915:4	6835:6,22	6854:1
6737:17	6913:10	2012 6702:15	6836:16	26 6721:25
6743:24	2,533 6915:4	6718:21	6837:2	6804:16
6762:2	2,538 6915:2	6915:5	6838:9	6829:1
6764:1,4,1	2.2 6720:22	2013 6678:10	6840:9,12,	6918:6
4 6772:16	6769:7	6683:21,25	20 6846:25	27 6723:4
6773:15	2.4.1.3	6685:14	204 6752:12	6848:4
6779:16	6857:16	6690:18	2042	2-7 6848:4
6782:2	2.5 6808:5	6717:25	6839:20,22	27th 6869:20
6784:5	6848:15,21	6718:3	20-8 6818:9	28 6724:12
6791:21	6903:6,15,	6744:21	20th 6678:10	29 6725:7
6792:4	22	6827:17,22	6683:21,25	2s 6773:1
6800:9,10	6904:4,11	6895:9	6685:14	
6806:23	6930:9,14	6908:12,25	6690:18	<u>3</u>
6808:6	2.9.3.3	6910:15	21 6678:15	3 6678:16
6812:17	6825:3	2014 6675:24	6717:5	6691:21
6813:18	2:45 6858:23	6678:3,5,1	6756:22	6697:2
6818:21	20	2	6817:14,18	6705:5
6819:23	6695:13,17	6680:11,13	6911:1	6716:23
6820:14	6716:10	6682:13,18	22 6715:25	6717:9,18
6826:20	6717:1,19	,21,24	6717:22,23	6719:25
6829:1	6752:12	6684:4,8	6774:13,18	6725:15,23
6830:7	6793:2	6685:15	22.9 6934:8	6732:4,16
6833:3	6852:6,7	6690:19	22/'23	6733:12
6835:17,20	6915:22	6696:23,25	6817:6	6744:8
6838:3	6917:2	6718:3	23 6719:2	6748:23
6839:19	6923:23	6734:7	6757:17	6772:17,18
6842:17	6925:3	6757:20	6795:9	6773:7,21
6846:17,23		6758:1	6813:2	6774:8
6853:14		6768:18,21		6777:25
6856:13		6769:2		
6860:4		6811:18		
6869:20				
6872:23				

6778:19,22 6780:2,11, 13,21,22,2 5 6781:12,17 6782:11 6784:4 6814:25 6817:4,14, 18 6818:4 6819:23 6820:14 6822:13,15 6828:25 6831:1 6838:7 6844:20 6846:18 6853:15 6856:5 6857:14 6893:10,11 6922:23 6923:7 6924:23 6925:16 6926:3,11 6927:7 6929:2 6931:1 6935:22 3.1 6832:16 6841:5 6848:24 6849:3,17 6850:1,13 6903:25 6904:6,8,1 6 3.2 6831:13 6832:1 3.3 6893:10 3.36 6883:19 6927:22 3.4 6848:20 6849:3,16, 25 6904:6 3:00 6858:24 30 6726:7 6857:5	31 6726:9,18 6856:5 6934:22 3-1 6682:14 6824:23 6826:17 6854:1 6857:14 32 6726:20 3-2 6679:4 6682:21 6832:1,10 320 6831:3 327 6829:4 6830:6 33 6727:10 6805:10 330 6675:22 34 6704:11 6728:14 35 6714:22 6730:17 6768:13 36 6731:19 6934:21 360 6830:6 6831:2 37 6732:14 38 6733:15 39 6734:1 6747:15 <hr/> 4 <hr/> 4 6683:16 6697:11 6714:4 6715:12 6716:9 6717:10 6718:10,11 6727:17 6728:16 6734:2 6737:5 6744:14 6770:11 6817:24	6843:9 6852:1 6876:14 6877:3 6880:11 6922:23 4.6 6718:2 6790:20 4.93 6932:16 4:31 6939:6 40 6705:16 6723:6 6735:2 6794:6 6798:13 400 6675:22 41 6737:3 6740:2 42 6707:3 6740:2 6790:19 43 6740:24 44 6688:10 6741:20 45 6743:23 46 6744:18 6801:13 6934:22,25 460 6932:11 47 6726:11 6745:20 6922:2 49 6748:10 <hr/> 5 <hr/> 5 6683:22 6698:25 6716:10,24 6717:9 6718:11 6721:15 6735:3 6740:2 6741:17,18 6743:14 6744:15 6752:10	6769:24 6770:10 6771:24 6786:6 6816:13,18 6851:3 6922:23 6924:15 5.7 6907:5 5.8 6907:7 50 6699:15,17 6714:9 6749:17 6825:12 6858:10 508 6721:12 51 6750:18 6922:9 52 6751:17 523 6854:5 527 6829:4 6830:14 53 6715:11 6752:16 6754:11 6853:22,23 6854:4,20 54 6754:15 55 6716:2 6755:18 56 6756:17 57 6716:2 6757:12 58 6716:19 58-6 6916:16 59 6717:17 5A 6691:12 5B 6688:4 5th 6869:25 6870:5 <hr/> 6 <hr/> 6 6684:5 6699:20	6717:22 6754:15 6844:17 6861:20 6888:14 6921:5 6.2 6718:2 6809:5 6810:13 6.5 6761:7 6809:5 6810:13 6855:6 6883:21 6886:2 6902:23,24 6907:4 6.9 6721:8 60 6718:1 6723:9,12 6852:7 600 6907:10 61 6718:6 63 6923:7 6926:13 64 6720:2 65 6720:15 6924:6 66 6722:12 6723:5,22 6675 6675:25 6678 6677:3 6679 6677:4 6682 6678:3,5 6683 6678:7,8,1 0 6684 6678:12 6685 6677:9 6695 6677:10 67 6678:17 6724:6,13 6817:22 6818:1
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6768 6677:11	6906:14	6923:3	6871:2,17	6732:10
68 6725:20	6908:4	98 6753:17	6872:3	6755:1
6926:6	8.5 6808:10	988 6725:25	6889:7	6857:25
6817	8.9 6721:8		6891:14	accuracy
6678:14,16	6810:12	<hr/>	6895:9,15	6729:4
6818 6677:12	80 6744:6,20	<hr/> A <hr/>	absolutely	6773:23
6678:17,18	6750:9	a.m 6680:1	6736:4	6779:2
6832 6679:5	6793:1,10	6748:3,4	6863:1	6820:16
6859 6677:13	6879:7	6767:21,22	6864:10	6836:18
6886 6678:19	6925:3	AACE 6769:16	absorbed	6923:20
691 6830:5	80/20	6779:9	6793:1	6937:20
6831:7	6793:24	6781:16	accept	accurate
6915 6677:14	848 6830:13	6784:4	6690:4	6729:6
6916 6678:21	6831:8	6923:25	6694:16,23	6937:19
6939 6675:25	8th 6696:25	6924:1,7,1	6695:1	accurately
6677:16		0,17,18	accepted	6747:9
69R12 6924:8	<hr/>	6928:6	6693:13	achievable
	9	AACE's	access	6835:19
<hr/>	9 6686:8,11	6769:18	6704:4,13	achieved
7	6687:8	Aberfeldie	6709:17	6758:2
7 6700:16	6688:3	6689:19	6726:20	acknowledge
6719:2	6695:22	abilities	6913:1	6768:12
6908:4,11	6697:3,4,7	6871:17	accommodatio	6817:1
6914:19	6700:8	ability	n 6702:5	acknowledged
7.5 6819:13	6701:25	6764:5	accord	6749:13
70 6726:21	6719:1	6834:5	6713:6	acro 6877:9
6744:5	6725:6	6844:20	accordance	acronym
700 6907:2	6729:16	6893:4	6685:12,13	6707:21
73 6844:17	6744:21	able 6701:9	6690:16,17	6877:9
75 6914:3	6769:2	6706:12	6713:7	across
79 6726:1	6808:9	6734:24	according	6856:6
	6828:4	6740:10,19	6693:15	act
	6843:14	6743:13	6775:20	6732:5,12
	9.1 6679:3	6763:2	6780:22	6818:16
	6831:13,25	6764:3	6789:19	6849:20
	6832:10	6782:16	6925:4	6916:2
	9.2 6927:25	6786:10	accordingly	6918:11
	6928:2,6	6788:12	6733:3	activities
8 6686:9	9.3 6810:12	6794:10	6929:22	6698:23
6687:12	6932:19	6806:2	account	6704:15
6691:12	9:02 6680:1	6809:15,22	6791:10	6735:11
6695:23	9001 6752:21	6814:19	6925:7,8	6741:6
6721:25	94 6880:16	6831:12,16	accountants	6746:15
6730:16	95	6833:13	6865:3	6754:25
6762:13	6880:13,14	6834:3,16	accounted	activity
6763:25	950	6841:13	6749:13	6752:8
6807:1	6828:4,8,9	6843:25	6913:17	actual
6818:17	96 6922:22	6844:5	accounting	6687:23
6822:22		6845:4		
6883:13		6868:16		
6901:4		6870:25		

6726:4	6934:6,21	adequacy	6847:11	6890:25
6732:9	6935:16	6697:18	advised	agreement
6756:19	6936:10	adequate	6680:13	6695:1
6777:2	added 6698:6	6788:2	6681:16,23	6724:14,18
6822:5	6718:23	6904:5	6688:21	6746:23
6843:16	6723:1	adequately	6695:10,15	6887:7
6897:7	6726:12	6794:12	6767:12	agreements
6922:5	6747:11	6834:20	6768:10	6728:9
actually	6801:2	adjourn	6810:2	ahead
6713:19	6805:4	6938:8,24	6847:12	6726:22
6762:21	6884:19	adjourning	6849:13	6739:18
6766:15	6887:24	6939:6	6876:9	6819:9
6779:13	adding	adjusted	6925:24	6821:20,21
6786:23	6700:20	6722:25	advisement	6838:12
6788:18	6721:1	6755:23	6867:15	6885:18
6789:17	6755:23	6805:4	advising	aimed
6828:3	6859:9	administer	6895:21	6887:12
6829:3	6882:5	6800:4	advocate	6932:2
6830:14	6884:10	Administrati	6688:18,22	akin
6831:17	6935:22	on 6908:5	affect	6813:8,14
6853:14	addition	6910:6,21	6844:23	al 6848:12
6881:5	6839:13	administrati	6845:19	Alaska
6883:6	6841:2	ve 6702:4	affecting	6764:14
6890:3	6842:2	advanced	6837:19	alert
6891:14	6863:3	6726:24	Affirmed	6694:12
6901:24	additional	6920:22	6677:8	alignment
6917:2	6680:22	Advancement	6684:25	6727:24
6925:21	6835:11	6769:8	afford	alliances
6926:14	6914:7	6924:1	6761:3	6733:24
6928:22,23	address	advances	afternoon	Allied
6934:5	6712:5	6775:7	6785:7,14,	6724:20
6937:7	6767:14	advancing	15 6818:14	allocate
actuals	6839:16	6726:22	6916:1	6756:7
6755:14	6842:1	6727:6	age 6722:18	allocated
add 6691:8	6865:9	6737:9	6849:23	6732:24
6692:14,15	6886:23	adverse	aggressive	6755:14
6698:12	6894:24	6728:9	6734:22	allot 6764:9
6700:18,22	6899:4	6746:23	6766:18	allowance
6758:14	6919:23	6787:20	ago 6764:8	6698:6
6767:13	addressed	advice	6881:25	6699:20,22
6787:8	6746:6	6860:14,15	6922:8	6757:25
6800:21	6866:9	advisable	agreed	6834:21
6829:15	6867:22	6730:14	6750:5	6842:24
6872:6	6870:14,15	advise	6785:8	6887:18
6882:8,15,	6887:9	6695:8	6793:1	6891:20
16,17	6895:23	6819:2	6854:22	6930:13,23
6887:19	addressing	adds 6718:7	6857:8	6933:21
6891:11	6895:2			
6894:11	6919:25			
6921:18				
6930:3				
6933:23				

6935:13	6900:8	6928:11	answered	6839:2,7,1
allowances	6901:3	6934:15	6824:3	3,24
6698:7,25	ambiguous	6935:3	6866:12	6840:7,17,
6700:14,18	6765:5	6937:8	6872:22	22
6702:16	American	analyze	6888:13	6841:1,20,
6757:24	6761:20	6719:8	answering	21
6787:22	ammunition	6722:1	6844:19	6842:11,16
allowed	6766:8	analyzed	anticipate	,19
6788:3	amongst	6853:2	6713:18	6843:1,6,1
allows	6878:8	and/or	6766:16	2,24
6727:7	amortization	6700:4	6849:21	6844:4,12,
allude	6837:21	6702:8	6875:17	16
6696:13	amount	6722:22	anticipated	6845:9,15,
alluded	6756:9	6745:10	6708:5	25
6704:22	6764:20	6746:16	6712:25	6846:4,10,
6728:24	6792:25	Anderson	6713:21	14,20
allusion	6793:20	6676:19	6724:24	6847:3
6710:4	6841:14	Anecdotally	anticipates	6848:1,2,1
alone	6849:4	6763:23	6734:6	7
6720:25	6868:4	anniversaire	Antoine	6849:1,15
6721:1,17	6871:18	6768:15	6676:16	6850:11,16
already	6887:22	annual	6677:12	6851:1,16,
6723:25	6920:25	6701:18	6693:25	19
6734:10	6925:19	6825:15	6816:12	6853:5,11
6768:22	6935:14	anomalies	6818:7,13,	6854:9,17
6809:20	amounts	6915:9	14,15	6855:14,17
6831:25	6732:24	Ansar	6819:10,12	,24
alterative	6751:12	6922:4	6820:9,17	6856:8,12,
6851:10	6826:19	anser	6821:3,10,	24
alternative	6853:17	6745:12	15,24	6857:3,12,
6707:8	analyses	answer	6822:3,20,	13 6858:17
6839:11	6851:10	6698:23	21 6823:19	anybody
alternatives	analysis	6712:13	6824:11,22	6703:4
6675:8	6680:12	6742:21	6825:9,18	6726:15
6685:6	6692:25	6743:13	6826:15	anymore
6690:9	6693:8	6769:14	6827:6,10,	6935:18
6855:11	6706:7	6804:8	14,25	anyone
6885:24	6778:13	6809:19	6828:12,23	6885:2
am	6836:2	6812:20	6829:17	anything
6688:8	6837:16	6820:11,16	6830:3,10	6711:7
6697:7,23	6839:3	6834:23	6831:11,22	6744:11
6735:21,25	6851:9,14,	6836:21	6832:14,15	6808:20
6770:6,20	20 6853:1	6844:21	6833:1,12	6898:2
6772:11	6854:25	6847:16,23	6834:3,14	6902:24
6826:23	6885:1,23	6851:17	6835:3,13,	6914:13
6828:20	6901:9,25	6869:4	25	6938:11
6832:21	6903:3,4	6871:7	6836:6,12,	anywhere
6848:18	6904:19	6886:8	22	6754:12
6877:10	6911:17	6891:14	6837:9,14,	apart
	6919:7	6917:4	24	6688:23
			6838:14,22	6762:22

6902:15	6860:3	6769:15	6863:24	6714:5
apologies	6865:12	6771:2,21	6903:2	6716:11
6696:24	6916:3	6784:7	areas 6686:2	6732:12
apologize	6921:24	6825:4	6691:6	6833:14
6801:15	6931:13	6838:25	6806:23	6840:10,18
apology	appreciated	6839:4,15	6824:8	6841:13
6720:13	6873:24	6840:3	6862:25	6843:25
apparent	appreciating	6841:4,13	6896:22	6844:5
6707:15	6917:15	6850:12,19	aren't	assessed
6745:20	6937:20	6852:14	6759:25	6741:21
6899:13	appreciation	6858:20	argue 6766:9	6814:9,20
6901:6	6746:2	6900:18	6790:3	6815:16
Apparently	6773:17,19	6931:9	argument	6823:11
6768:12	6778:2	6935:14	6826:8	6829:8
appear	6779:4,6	appropriateness	arising	6833:15
6875:8	6783:11,16	6711:17	6933:10	assessing
6891:3	6789:14	6750:22	Army 6889:20	6918:12
APPEARANCES	6845:12	approval	6890:24	assessment
6676:1	6929:11,20	6739:18	arrangement	6687:4
appears	6931:17	6900:2	6751:24	6716:24
6740:22	appro 6876:6	approvals	arrangements	6719:16
6745:25	6900:17	6709:2	6728:8	6725:1,2,9
6746:1	approach	approve	arrive	6740:18
6770:9	6687:22	6709:7	6817:23	6743:16
6813:5	6702:13	approved	article	6757:10
6910:14	6731:3	6882:25	6825:12	6827:4,24
6911:5	6733:2,10	approving	6890:3	6839:25
appetite	6737:5,7	6869:20	artificially	6887:8,17
6826:3	6754:17	approximatel	6919:5	6911:20
6858:14	6765:21	y 6705:4	ascertain	6926:1
6888:9	6889:18,25	6714:20	6794:11	assessments
applied	6905:15	6717:1	aside 6700:3	6692:3
6825:13	approached	6721:14	6759:8	6745:6
6875:3	6903:4	6750:9	6793:19	Asset
apply	appropriate	6906:25	6850:21	6716:25
6729:20	6707:16,25	April	aspect	assi 6737:21
6812:14	6711:14,23	6675:24	6690:19	assign
6828:9	,25	6678:5	6786:17	6814:24
6838:6	6713:13	6680:13	aspects	6929:13
6875:24	6714:17,21	6681:14	6685:15	assigned
6921:13	6715:2,8,1	6682:21,24	6783:12	6838:24
appointed	4 6716:4	6696:24	assess	6852:6
6681:10	6733:11	6768:21	6686:15	assignments
6802:14	6737:7	6820:23	6697:13	6737:21
appreciate	6747:21	6908:12	6699:14	assist
6777:5	6749:4	area 6760:1	6704:2	6685:5
6785:22	6751:11,16	6813:1	6705:6	6690:8
6859:14	6752:25	6862:6,7		6805:13
	6753:7			assistance
	6756:1			

6738:22	6717:6,18	6852:19	6919:14,16	backpack
6811:5	assuming	attributes	6922:21	6763:25
associated	6678:13	6808:19	6923:2	backup
6699:3	6817:5,10	6823:12	averse	6710:17
6704:9	6846:23	attribution	6890:8	6778:7
6709:2,12	assumption	6808:19	avoid 6727:4	6872:16
6720:8	6714:20	audiences	award 6729:7	backwards
6735:1	6735:1,19	6755:20	6746:12	6904:14
6744:22	6771:21	August/	6826:25	bad 6843:19
6745:14	6814:15	September	6919:11,13	6844:6
6747:5	6842:20	6744:21	awarded	balance
6749:20	6843:18	6802:1	6732:22	6735:6
6764:20	6844:1,6	author	6738:13	6751:12
6773:23	assumptions	6860:6	6781:19,22	6847:11
6786:19	6716:4	authored	6907:15	ball 6779:8
6787:5	6787:21	6923:14	awarding	ballpark
6788:6	6827:15	Authority	6819:15	6701:1,21,
6795:1	6842:13	6691:22	6820:13	22 6703:23
6796:6	6881:1,2	authorizatio	6876:10	6721:22
6798:21	assurance	n 6706:8	6905:25	6809:13
6801:3	6687:20	6732:1	aware	6837:8
6874:4	6751:2,5,1	6732:1	6703:17	6936:5
6896:23	9 6752:2	authorizatio	6835:7	ballparking
Associates	6753:3,9	ns 6755:6	6876:12	6721:4
6680:12,16	6754:4	authors	6877:10	6759:3
Associating	Atif 6922:4	6685:24	6894:1,23	6822:17
6724:19	attach	availability	6895:22	bang 6808:1
association	6706:18	6699:11	6898:5	Barber
6768:9	attempted	6757:11	6900:5,8,1	6681:21
6769:7	6749:9	6767:7	8 6901:9	6784:10
6777:2	attend	6786:17	6905:2	6785:2,3,6
6924:1	6938:8	6832:4,6	awareness	bars 6709:5
assume	attendance	available	6742:8	base 6698:9
6771:3	6681:24	6703:20	away 6807:22	6700:19,20
6796:10	attitude	6719:17	6808:14	6788:2
6876:2	6765:24	6752:9	6820:13	6880:8
6902:4,7	attractive	6753:5	6929:25	6882:15,16
6918:2	6723:19	6803:11		based
assumed	attribulated	6866:18		6702:12,15
6700:5	6722:20	6871:19	B	6711:5
6714:10	attribute	6873:8	bachelor's	6712:20
6715:12,20	6824:5	6938:17	6691:18	6726:4
6716:19,23	attributed	Avenue	backed	6732:23
,25 6717:8	6854:11	6675:22	6706:2	6737:22
6718:25	attributed	average	6826:5	6741:16
6734:23	6722:21	6701:18	background	6749:2
6746:4	6778:15,16	6722:18	6827:16	6768:18
6766:10	6788:11	6904:12	6928:16	6781:13
6788:1	6804:22			
assumes				

6795:17,25	6877:9,13	6937:14	6926:5	6899:5
6796:25	BC	Bel 6675:16	6927:7	6916:9
6806:8	6689:17,19	6784:19	6932:23	6920:1
6807:5	6706:22	belabour	believed	6925:21
6827:4,23	6758:22,25	6865:1	6781:13	beyond
6843:25	6823:3	belief	6823:3	6678:14
6864:18	6888:24	6805:16	6826:19	6817:6,11
6875:22	6891:6,18	believe	6926:1	6837:20
6881:1	6904:23	6680:4	believes	6844:8
6887:17	bearing	6688:17	6751:10	6864:6,7
6904:2	6791:24	6702:10,25	6794:9	6865:14
6911:20	bears	6703:21	bell 6921:16	6931:11
6919:9	6793:10	6706:24	6922:11	6937:11
6932:11	became	6707:25	benchmark	bid 6707:6
6934:11	6703:20	6708:4	6883:1	6723:25
6936:16	Bechtel	6711:21	6892:5	6727:12,14
6937:2	6877:14	6713:16	benefit	6733:8
baseline	becomes	6714:15	6750:3,8	6737:15
6732:6	6717:3	6715:19	6767:2	6778:21
basic	Bedford	6726:13	benefits	6918:16
6728:16	6676:7	6729:5,10	6702:2	bidder
6734:20	bedroom	6734:25	6726:23	6918:18,19
6738:11	6765:2	6737:6	Bent 6917:22	6919:12,14
6927:24	beg 6747:18	6739:20,25	best 6698:5	,15
basically	begin 6680:4	6740:9	6751:24	bidders
6716:7	6768:7	6748:6	6761:10	6725:1
6724:15	beginning	6751:14	6828:10	6876:14
6727:14	6770:15	6753:6	6844:19	6918:10,16
6737:16	6786:2	6757:4	6905:17	6919:2
6745:9	6883:19	6760:9,24	better	bidding
6754:3	begins	6767:24	6718:15	6919:4
6755:11	6785:13	6787:25	6723:1	bids 6708:11
6763:10	behalf	6788:19	6727:18,21	6727:17
6786:16	6681:18,23	6797:9	6728:6	6731:4
6814:24	6685:3	6805:11	6745:24	6748:16
6838:23	6690:6	6806:14	6772:4	6749:6
6849:19	6693:25	6807:3	6781:19	6757:10
6935:18	6694:4	6814:14	6789:22	6761:4
basing	6695:9	6824:4	6801:5	6820:6
6766:24	6818:16	6834:17	6805:5,13	6821:1
basis 6708:3	6826:3	6841:6	6809:1	6919:16
6713:3,4	behind	6842:15	6828:5	bigger
6745:6	6701:8	6845:22	6837:25	6710:16
6822:23,24	6713:4	6849:10	6842:7	biggest
6897:13	6726:2	6850:13,18	6843:22	6730:8
6909:24	6820:7	6857:6	6844:9	bil 6833:13
6912:11	6845:6	6859:1	6853:12	Bill 6681:23
6930:4	6852:21	6862:3	6871:14	billion
6936:16,21		6867:8	6878:8	6701:16
6937:4		6875:20	6892:2	
BBE		6885:6		

6718:2,3	6873:22	bonus 6727:6	6802:10	4
6720:17,22	6875:1	book	6803:9	6912:19,24
,23,25	6888:16	6678:19,21	6807:19	6913:3,8,1
6726:1	6889:23	6851:3	6809:11	1
6757:20	6893:7	6856:13	6812:3,12	6914:10,12
6761:7	6896:24	6860:6	6813:11,16	6915:10
6811:18	6901:3	6869:2	6814:10	6923:12,17
6819:13,14	6937:5,6	6880:11	6819:18	,22
6820:19,21	blessing	6884:23	6820:4	6924:4,11,
6854:19	6918:22	6886:12,16	6822:16	16,24
6855:6	blue 6696:12	6916:14,21	6823:9,10	6925:4
6884:4	BNA 6724:24	6917:21	6824:21	6931:2
6886:3	Board	6922:2,10	6827:7,13	6936:9
6902:23,24	6675:3,14,	6923:6	6829:24	6937:10,21
6906:16	15,16,17,2	6924:6	6831:17	borne
6907:4,5	1 6676:2	6926:7	6833:17	6791:15
6927:22	6678:20	Boris 6677:8	6835:9	borrowed
6932:16	6680:14	6684:25	6836:8	6700:21
6934:7	6685:5	6690:13,23	6837:4,12,	bottom
6935:23	6686:2,9	6691:2,9,1	15 6838:12	6696:21
billions	6690:4,8	7 6692:15	6841:25	6718:17
6849:5	6693:13	6696:15	6842:12,17	6804:20
bills	6730:11	6712:19	,24	6825:11
6756:24	6768:5	6713:16	6843:4,11,	6829:1
birthday	6806:25	6736:6	23	6833:3
6768:15	6819:13	6738:7	6844:3,25	6835:21
6784:22	6836:24	6739:3	6845:11	6848:5
bit 6718:4	6844:21	6742:22,23	6848:11,22	6852:1
6739:7	6846:21	6743:10	6849:10,18	6883:20
6745:13	6869:1,20	6745:11,19	6850:15,18	6906:19
6765:5	6874:20	6758:11,14	6851:7,18	6918:7
6768:19	6916:3,14,	,19	6852:16	6924:7
6771:22	20 6922:2	6763:7,19	6853:6	bottom-up
6777:14	Board's	6764:12	6854:8,16,	6702:13
6778:2	6680:21	6770:7,13,	24 6858:7	bound
6783:16	6681:2,4	18 6771:6	6861:5	6746:17
6786:8,9	Bob 6676:2	6773:3,16,	6866:15	Bowen
6787:1	bond 6751:2	20	6867:3,5,1	6736:19,20
6789:13	bonding	6774:9,11	2,25	6859:14
6794:8,21,	6687:19	6775:3,13	6868:3	6880:12
25 6795:10	6750:20,23	6776:3,9,2	6872:5	6882:23
6800:11	,25	2	6888:23	Bowen's
6813:3	bonds 6905:6	6778:1,23	6889:2,10	6879:12
6828:1	bone 6802:20	6782:23	6890:1,2,1	box 6771:25
6830:14,20	bonjour	6783:9,14	5 6891:13	6815:5
6837:25	6682:6,7	6786:15	6893:3,18	6887:20
6848:3	bonne	6787:11,16	6894:9,11	6900:21
6849:6	6768:5,15	,20	6908:6,8,2	boxes
6853:25		6789:12	1	6743:14
6856:16		6790:13	6909:2,5,1	6898:19
6859:9		6794:17,21	2,16,21	
6860:10		6796:5	6910:3,7,1	
		6800:19,22	0,17	
			6911:3,7,1	

6929:12	6847:8	6852:19	6757:9	6848:15
Boyd 6676:6	6849:8	budget	6822:23	6897:12
branch	6850:24	6720:17	6823:1	calculating
6768:8	6856:10	6732:7,11	6824:6	6845:8
break	6857:1,10	6755:16	6858:1	calculation
6681:22	6880:21	6756:1	6906:9	6794:13
6747:21	6881:17	6761:22	bulk 6693:2	6809:22
6784:7	6883:10,15	6798:2	bullet	6830:4
6785:7	6884:1	6825:15,21	6801:16	6837:21
6816:13	6885:15	6826:13	6804:21	6845:2
6858:20	6890:21	6881:8,12	6824:13,20	6880:25
6887:14	6892:23	6882:2,7,9	6846:2	6889:22
6938:21	6896:10	,24	bulletproof	6904:8
breakdown	6899:1	6883:22	6920:1	calculations
6708:6	6908:17	6890:6	bullets	6817:23
6726:8	6909:19	6891:19,20	6786:6,8	6904:19
6732:2	6915:16	,22,25	bumped	camp
6755:11	6921:7	6892:4,19	6903:14	6723:1,19
6833:19,22	6925:11	6893:4	bunch	6727:21
6845:1	6927:10	6895:24	6763:24	6728:6
6914:16	6931:5	6896:18	6882:15	6805:5,13
BRIEF 6703:7	briefly	6902:2	6910:23	6806:4
6714:1	6934:4	6906:15	bunk 6763:25	camps
6736:9	6938:14	6917:3,10,	6764:14	6709:17
6739:23	bring	14 6922:22	Burntwood	6764:13
6742:16	6698:10	6923:4	6724:13	campsites
6743:8	6816:14	budgets	business	6704:4,13
6759:16	6835:14	6825:19	6688:10	Canada
6769:4	6849:23	budget's	6917:23	6701:3,12
6773:9	6850:6	6893:5	6922:3	6703:1
6775:17	6857:15	bugging	6938:8,23,	6722:7,18
6777:21	6878:10,13	6859:15	24	6723:5,18
6779:21	bringing	build 6707:6	buy 6766:6	6746:8
6786:13	6766:5	6733:8	Byron	6762:14
6787:14	6791:21	6875:25	6676:11	6765:5
6795:6,12	6804:4	6892:13	Canada's	6768:9
6798:9,16	British	6922:5	Canadian	6724:7
6801:8	6688:9,25	builders	CAC 6676:11	6923:21
6804:13,18	6689:11	6876:21	6680:18	6926:9
6805:25	6701:6	building	6693:21	canvassing
6806:10,20	6723:15	6726:25	cake 6784:18	6847:13
6807:17	6738:7,25	6876:21	calculate	capacity
6809:25	6761:19	6877:14	6713:1,2	6701:17
6810:21	broad	builds	6848:23	6720:10
6811:9,14	6867:20	6698:2	calculated	6721:5,13,
6812:1	broken	built	6712:20	21 6726:25
6820:1	6771:24	6700:17	6842:8	6738:18,25
6829:21	6814:22	6709:4		
6840:15,25	buck 6808:1	6739:5,10		
6841:23	buckets	6752:13,14		
6844:14				
6846:12				

6744:24	6794:12	6703:15	6767:1	Chairman's
6801:19	care 6691:8	6779:8	6789:21	6934:5
6822:24	6692:14	6812:18	6805:16,20	Chairperson
6891:11	careful	6833:21	6823:1	6675:13
6910:9	6728:9	cater 6700:3	6836:8	6680:3
capital	Carlo	6712:11	6862:3	6682:5
6681:11	6813:9,15	cause	6879:20	6684:18
6686:7,12,	6815:15	6710:13	6892:17	6693:17,23
18,25	6829:6	6767:8	6923:1,3	6694:3,8,1
6687:25	carpal	6778:22	6925:16	7,24
6697:14,21	6801:14	6788:5	certainty	6706:16
6698:20	carried	6932:22,23	6770:4,10,	6708:20
6700:21	6784:1	caution	16	6709:9,25
6701:2,9,1	carries	6709:6	6772:13,18	6710:12
6,17	6726:8	caveat	6778:16	6711:12
6702:6,10	6747:7	6809:15	6781:20	6712:15
6703:9,11,	6787:6	CCGT 6838:17	6784:3	6713:8,23
18 6711:16	6888:25	6839:22	6828:15	6729:19,24
6712:1,6	case 6699:8	CEF03	6830:18	6735:17
6713:10,14	6710:10	6725:25	6854:13,21	6736:14
6714:6,10,	6728:17	CEF12 6726:1	6878:10	6737:1
11	6760:4,25	CEF13	6879:18	6738:4
6715:12,18	6778:24	6811:18	Certificate	6747:16,20
6716:4	6791:24	centerline	6677:16	,23 6748:6
6717:23,24	6792:4,22	6760:19	Certified	6753:8
6722:17	6808:9	centre	6939:8	6758:5,13,
6731:3	6823:8	6830:25	cetera	16,20
6737:7	6847:18,21	certain	6720:21	6759:4,7,1
6757:14,19	6850:1,22	6685:15	6731:1	4
6764:20	6900:5	6690:19	6748:19	6767:9,17,
6807:5,8,1	6920:3	6749:21	6852:10	24
4 6810:4	6923:20	6753:19	CGSP	6777:12,23
6811:7,12	6930:9	6770:21	6780:10,25	6778:20
6821:17,24	6937:3	6771:4,9,1	Chair	6780:19,24
6822:5	cases	5 6772:8	6680:14	6784:6,16,
6825:15,19	6759:23	6799:2	6690:3	23 6785:8
6827:1,17,	6892:12	6851:22	6693:12	6790:7,15
21 6829:13	catches	6868:4	6713:25	6793:9,15,
6837:17,18	6808:19	6919:2	6738:2	23 6794:2
6838:17	categories	certainly	6826:18	6811:21,25
6839:10,17	6741:22	6710:25	6830:16	6816:10,18
6851:4,11	6813:19	6720:9	Chairman	,24 6818:5
6870:4	categorize	6735:15	6681:8,22	6822:8
6879:25	6813:20	6738:21	6682:2	6847:5
6880:6	categorized	6739:1	6758:3	6857:8
6895:24	6773:1	6750:7	6767:11	6858:19
6909:9	6788:9,14	6756:16	6785:1	6859:1
6911:18,23	category	6763:13,18	6829:18	6886:18
Capra			6915:21	6887:6
6680:11,16			6938:5,13	6888:2
,19				6915:18
captured				6933:3
				6938:7,22

Chair's 6779:13	characterist ic 6729:3	6700:12 6707:22 6747:3 6826:4 6830:25 6848:8 6856:3 6884:17 6926:25 6935:11	6733:8,15 6734:15 6735:8 6738:14 6746:12 6750:1 6751:3 6752:14 6753:1 6754:16,21 6756:25 6760:12 6766:4 6782:5 6787:2 6792:23 6803:17 6819:15 6820:6 6869:16	22,25 6781:12,15 ,17 6782:2,11 6846:15,17 ,18 6922:23,25 6924:14,15 ,23 6925:16,22 6926:3,11 6929:2 6931:1
challenge 6846:21	characterist ics 6728:16 6771:1	Christian 6676:24 6677:10 6682:7,20 6683:1,13, 20 6684:1,12, 20 6685:2,10, 19 6686:1 6688:1 6689:5 6690:2,14, 24 6691:4,10 6692:10 6693:11 6695:6,7 6696:13 6809:18 6810:1 6832:5 6841:15 6847:10	6755:1 6756:25 6760:12 6766:4 6782:5 6787:2 6792:23 6803:17 6819:15 6820:6 6869:16	classes 6769:24 6770:3 6771:24 6924:14
challenges 6786:11,16 6895:6	chart 6715:14 6716:7 6744:7 6880:6 6913:21 6921:9 6924:7 6926:17 6927:14 6934:13	charts 6743:24	claims 6765:25	classical 6922:11
chance 6858:10 6919:4	check 6732:5,9 6736:13 6755:24 6806:17 6857:5,7 6909:7 6917:10 6938:2	check 6732:5,9 6736:13 6755:24 6806:17 6857:5,7 6909:7 6917:10 6938:2	clarificatio n 6782:15	classificati on 6769:19 6772:5 6777:16,17 ,24 6781:5 6782:1 6784:4 6925:15 6928:7
change 6706:8,9 6731:25 6732:1,13 6755:5 6763:23 6773:24 6779:2 6807:9 6810:24 6811:25 6836:11 6837:19 6838:9 6852:15 6893:7 6898:15 6900:23 6910:23,25 6919:23	checkbox 6872:7	checkbox 6872:7	clarified 6846:16	classified 6771:9 6772:16 6774:8 6780:11 6781:12 6925:21
changed 6794:20 6810:2 6822:14 6830:2	Cheryl 6939:13	choice 6797:5	clarify 6736:15 6762:1 6777:15 6793:9 6886:19 6933:4	classified 6771:9 6772:16 6774:8 6780:11 6781:12 6925:21
changes 6697:10 6703:21 6727:10,19 ,23 6748:19 6749:19 6755:16 6756:2 6810:6 6910:24	choices 6707:16 6749:4	circulate 6916:13	clarifying 6829:24 6912:14	classify 6778:19,22 6779:15 6782:10
changing 6718:25 6779:3	choose 6856:4	circulated 6683:7	clarity 6702:18	class 6770:10,11 ,16 6771:5,12, 20 6772:12,17 ,18 6773:1,7,2 1 6774:8 6777:16,24 6778:19,22 6779:1,16 6780:2,11,
Chant 6757:1	chooses 6883:4	citations 6908:2	class 6770:10,11 ,16 6771:5,12, 20 6772:12,17 ,18 6773:1,7,2 1 6774:8 6777:16,24 6778:19,22 6779:1,16 6780:2,11,	clear 6762:16 6840:18 6923:8 6928:19
	chop 6803:13	civil 6687:21 6688:9 6691:17 6707:11,19 ,20 6708:9 6722:6 6723:5 6724:22 6727:9 6729:7 6730:7	clarified 6846:16	clearly 6721:9 6742:19
	chose 6839:14 6854:18 6855:18 6887:14	circulated 6683:7	clarifying 6829:24 6912:14	classifying 6771:2
	chosen	citations 6908:2	clarity 6702:18	clear 6762:16 6840:18 6923:8 6928:19
		civil 6687:21 6688:9 6691:17 6707:11,19 ,20 6708:9 6722:6 6723:5 6724:22 6727:9 6729:7 6730:7	class 6770:10,11 ,16 6771:5,12, 20 6772:12,17 ,18 6773:1,7,2 1 6774:8 6777:16,24 6778:19,22 6779:1,16 6780:2,11,	clearly 6721:9 6742:19

6743:15	6862:4	6716:8	6905:1,2	6829:7
6745:13	6933:12	6758:5	6907:21	6863:9
6749:24	Colorado	6845:13	commenting	6877:9
6783:15	6691:19,22	6859:17	6839:14	comparative
6784:2	coloured	6864:15	comments	6693:8
6787:4	6859:10	6902:23	6694:21	6714:13
clientele	Columbia	6909:16	6729:20	comparatively
6689:7	6688:25	commencing	6836:2,17	6808:25
6692:12	6689:11	6680:1	6838:2	compare
6693:2	6701:6	commensurate	6842:20	6719:12
clients	6723:15	6702:25	6871:12	6721:7
6692:17,18	6738:7,25	comment	6916:4	6756:19
6693:5	6761:19	6686:5,12,14,21	commercial	6823:15
climate	column	6687:15,16,19,22	6689:10,25	6848:10
6761:1	6680:10	6694:18	6705:11	6855:10
close	6726:12	6696:10	6716:16	6898:17
6820:18	6772:24	6702:20	commercially	6917:11
6822:4	6810:8	6719:20	6831:23	compared
6914:18	6914:22	6731:1	6869:9	6687:23
closed	6935:23	6734:20	6873:11	6701:13
6857:23	combinations	6736:7	commissioned	6732:23
closely	6815:6	6740:11,16,25	6721:20	6776:1
6764:19	combine	6748:13,19	6861:10	6783:3
closer	6933:17	6750:22	commissioning	6795:18
6930:7	combined	6751:21	6705:10	6846:1
closest	6714:7	6754:17	6716:15	6848:21
6919:14	6715:11	6758:21	committee	6932:15
co	6716:17	6760:3	6869:25	comparing
6685:23	6717:6	6763:5	commodities	6701:1
6688:3	combined-cycle	6837:3	6849:23	6756:24
6691:12	6686:20,23	6839:9	6850:3	6776:16
co-authored	combines	6843:7	commodity	comparison
6691:2	6815:5	6844:11	6725:22	6757:5
coffer	comes	6854:18	common	6829:2
6734:24	6736:20,24	6855:16,18	6751:24	6842:14
6735:14	6747:13	6856:20	communication	6848:7
6788:7	6766:8	6871:7,14	6706:10	6908:13
cofferdam	6826:11	6873:23	6742:4	6910:22
6899:17	6831:4,9	6875:18	communities	6913:6
colleague	comfort	6893:13	6738:10	comparisons
6779:24	6833:18	6917:16	comp	6877:2
6789:17	6872:11	6926:23	6913:8	compensated
collected	comfortable	commentary	companies	6918:24
6864:13	6796:8	6855:2	6689:12,13,14	compensation
collection	6797:7	commented	6863:4	6746:17
6738:23	6928:2	6869:2	company	6918:13,15
collective	coming	6872:25	6757:1	6919:3
6724:18		6894:17	6761:20	competent
		6903:6		6749:14,24

competition 6722:6 6723:4	6729:10,11 6752:25	6837:7,14 6838:6,8 6843:21 6846:16,23 6870:4 6875:1,12, 13,24 6924:23 6930:25 6931:1,15, 21 6932:5,6,1 0 6934:8	6864:15 6922:20	confidential ly 6741:2
competitive 6717:4 6723:19,20 6731:4 6737:15,25 6738:5,15	comprised 6687:12		conclusions 6702:9 6807:9 6836:24 6868:6 6874:16	confirm 6769:17 6774:21 6775:2 6800:6 6806:2,3 6834:11 6855:19 6926:23
compiled 6861:3 6911:8	comprises 6698:3 6705:20 6732:6		concrete 6720:21 6753:18,23 6764:6,8 6790:8,10 6815:21,24	confirmed 6708:10 6734:19 6779:14 6786:4 6893:14
complete 6708:7 6734:7 6736:4 6871:2 6881:1 6894:12	Cona 6775:21	Conawapa26 6852:13	concur 6786:18	confirming 6779:24 6820:4
completed 6720:16 6721:13 6735:22 6757:16 6907:16	Conawapa 6686:13,15 ,17 6697:15 6699:8 6701:14,21 6702:14 6703:14 6704:5 6705:12 6718:11 6719:13 6720:2 6721:9 6722:25 6726:3,13 6728:17 6729:22 6730:10 6745:21 6772:25 6773:15 6774:7 6775:22 6776:2,19 6777:1,8 6778:6 6782:21 6789:8,15, 22 6790:1,3 6805:3 6809:22 6810:2,24 6811:17 6812:4 6818:23 6835:5,10, 22 6836:3,10, 15,18,25	concern 6745:23 6767:8 6785:19 6800:18 6803:12 6845:20 6846:1 6870:14 6892:12 6895:7,8 6899:16 6932:23	concurred 6893:19	
completes 6938:23,24		concerned 6799:15,18 6879:21	conditions 6699:9 6727:21 6728:6 6745:2 6764:12 6805:13 6806:5 6843:19,22 6844:6,10 6878:21,22	confirms 6749:2 6753:2 6757:18
completion 6735:18 6906:1		concerns 6881:24,25 6886:23 6887:9 6894:1	conduct 6685:5 6690:9	conform 6752:19
complexity 6741:24 6877:18			conducted 6691:6	conforming 6752:2
comply 6724:23			conference 6755:4 6923:25	confused 6777:14 6903:3 6933:6
component 6687:17 6719:19,20 6816:4			confidence 6778:8 6781:7 6835:1,4 6845:7 6875:12	confusion's 6933:9
components 6719:4,8,1 4 6730:23 6735:3 6748:13		concluded 6711:20 6905:15	confident 6874:12	cons 6796:18 6905:16
composite 6850:6		concludes 6926:10	confidential 6681:15 6870:8 6873:25	consequence 6746:22
comprehensiv e		conclusion 6703:22 6844:23 6845:19 6855:23		consequences 6746:16 6801:20
				consequent 6744:25 6801:20
				conservative 6714:18 6795:20,23 ,24

6796:3,18, 20 6797:1,4,7 ,15 6828:16,18 6854:11 6887:8 consider 6838:17 6930:17 6939:1 consideratio n 6887:4 6912:3 considered 6707:2 6733:14 6758:15 6771:1 6790:22 6836:16 6851:14 6863:23 6872:16 consis 6824:15 consistent 6708:4 6731:17 6856:5 6905:17 consistently 6706:1 constant 6854:21 6876:5 constitutes 6912:10 contract 6733:20 constraints 6722:10 6724:13 construct 6707:5 constructabi lity 6699:11	6733:22 constructed 6823:24 construction 6681:11 6686:6,14, 16,21 6687:1,5,6 ,15,18,23 6692:4,19 6704:3,18, 19 6705:7,10, 24 6706:24 6707:11,23 6713:13 6716:12,15 6717:7,19 6719:4,24 6722:13 6724:8 6725:9,11, 16,17 6727:10,20 6728:4 6731:5,7,1 6,24 6733:18,20 6734:7 6737:13 6738:12,20 6740:4,14, 15,24 6744:10,16 6745:1,5 6746:18 6747:2,4,8 6750:19 6751:4,20, 25 6752:6 6756:18 6759:20 6761:1 6762:3,9,1 2 6763:13,14 6765:7 6783:21 6786:23 6788:13 6800:15 6801:5 6802:7,25	6804:4 6818:24 6819:3,7 6820:19 6821:9 6822:1 6837:2 6843:20 6851:22 6860:14,15 6867:23 6895:10 6899:22,25 6905:15 6907:22 6918:14 consult 6923:16 consultant 6681:10 6706:6,9 6923:11 consultants 6704:16 6706:11 6745:1 6750:1 6759:23 6801:4,21, 22 6802:4,25 6856:15 6895:25 6928:12 consulting 6692:2,16 6702:4 6731:23 6802:14 consumer 6688:18,21 Consumers 6768:9 cont 6906:15 contact 6711:2 6732:19 6792:21 contacts	6733:13 contain 6696:6 content 6697:1 6787:24 CONTENTS 6677:1 context 6703:12 6818:19 6819:1 6823:20 6837:13 6851:23 6858:8,11 6912:1 6914:16 6915:11 6916:12 6927:5 contin 6803:5 6930:17 contingencie s 6900:10 6903:5 contingency 6698:7 6699:2,14, 21 6700:11 6702:22 6728:13 6731:25 6732:13,24 ,25 6740:15 6741:12,15 6745:10 6747:11 6749:15,21 6755:7,9,1 4 6756:6,7 6757:22 6758:9 6794:13 6795:17,24 6796:25 6824:16 6826:19 6828:5,9	6829:2,15 6834:20 6841:2 6845:17 6852:21 6853:8,17, 21,22 6854:3,4 6858:2 6870:10 6884:5,10, 16,20 6886:23,24 6887:2,8,1 6,20,25 6889:9,22 6895:3 6897:12 6900:17 6906:21 6915:23 6916:25 6921:19 6926:12 6927:19 6928:3,13, 22 6929:13 6930:2,4,1 9 6932:10,14 6933:8,12, 14,19,20,2 4,25 6934:7,10, 12,13,23,2 5 6935:5 6936:11 6937:3 continue 6748:7 6830:19 6845:20 6846:1,5 continued 6779:11 6782:13 6785:11 6790:17 6794:4 6797:11 6810:16 6812:8 6822:20
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

6832:14	24,25	6756:25	6782:5	6754:19
6841:20	6793:6,8,1	6761:19	6790:25	6896:25
6848:1	2,19	6763:15	6791:3,14	conversation
6856:2	6794:7,24	6765:21,25	6792:19	s 6865:14
6857:12	6819:15	6766:5,21	6803:14	6869:21
6867:19	6820:6	6767:3,5	6820:13	convey
6888:6	6826:25	6790:9	6833:20	6710:8
6916:23	6829:13	6791:6	6919:14	convincing
continues	6830:18	6792:1,11,	6925:20	6873:10
6726:9	6869:16	17	contractual	cooperative
continuing	6878:22	6793:2,10	6722:9	6869:5
6726:19	6879:12	6803:18	6724:12	coordinator
6899:10	6905:7	6877:24	contribute	6680:20
contract	6906:1	6878:3	6832:19	6681:1
6687:21	6916:6	6919:17	6920:5	6732:18
6707:4,9,1	6919:11,13	6920:4,10,	contribution	copies
0,17,19,20	,22	19	s 6696:15	6696:9
6708:9	6920:1,3,2	contractors	6734:18	6731:21
6710:20,22	0	6709:2	6739:6	6741:2
6711:10	contracted	6724:20	contributors	6752:10
6717:8	6742:14	6725:1	6724:16	6798:12
6724:22	6762:22	6737:8,20	control	copper
6727:13,18	contracting	6747:4	6685:21	6850:5
,23 6730:7	6686:16,22	6748:16	6687:20	copy 6696:12
6731:23,24	6705:8	6749:6	6691:1	6741:11,12
6732:20,22	6707:1	6787:3	6696:17	6752:11
,25	6716:13	6820:22	6706:6	co-reviewers
6733:15,16	6719:24	6874:8	6731:1	6685:24
,19 6735:8	6722:25	6919:19	6751:19	Corey
6740:13	6763:1,2	contractor's	6752:1	6676:22
6743:3	6765:18	6723:25	6753:2,10,	corner
6746:12	6785:20	6733:20	12,20	6696:22
6747:12	6790:21	6746:14	6767:7	6744:7
6748:11,21	6791:15,24	6752:17,19	6860:15	Corp 6890:24
6749:23	6792:4	contracts	6862:7	corporate
6750:1,2	6805:4	6687:14	6881:11	6706:3
6751:9	contractor	6707:3,10,	6882:2,7,9	Corps
6752:13,15	6707:21,23	13,14,16	,24	6889:20
,17	6727:9	6710:25	6883:22	correct
6753:1,12	6729:7	6730:20	6897:6	6685:8,17
6754:14,16	6733:17	6731:20	6902:2	6690:12,13
,21	6734:15	6732:8	6906:15	,22,23
6755:16	6737:12	6733:5	6920:13	6729:23,24
6756:5,8	6739:15	6737:14,17	controlled	6739:3
6762:23,25	6742:20	,19	6892:4	6754:9
6766:1,4	6746:19	6738:12	controlling	6769:9,11,
6778:21	6747:5	6748:23	6742:4	25
6781:22	6750:3,7,1	6749:3,4,5	controls	
6790:24	0 6751:25	,7,8,17	6731:23,24	
6791:5,17,	6752:21	6751:9	6732:8,18	
25	6753:3,13,	6762:24		
6792:7,12,	14 6754:1	6781:18,22		

6770:6,12, 13,18,20 6772:12 6773:2,4 6775:3,10, 21 6776:1,3 6780:23 6783:8 6791:7,11 6794:16,17 6798:23 6801:23 6805:14 6806:6 6807:5,6,1 0 6813:10,11 6824:8,21 6825:6,8,1 6 6827:2 6828:22 6830:8 6838:20,21 6839:1 6840:5,6 6842:23 6843:3,11, 23 6846:2,18 6848:11,18 6854:15,16 6860:18,21 6861:18 6862:13 6869:17,23 6874:23 6877:6,20 6878:16,19 6886:14,21 6888:11 6889:8,10 6890:16 6895:12,17 6896:4,19 6900:3 6907:7 6910:3,10 6912:24 6913:18 6924:4,10, 11,25 6927:25 6934:20	6935:19 6939:8 corrected 6819:6 6821:2 correcting 6879:12 6903:17 correction 6921:18,24 corrections 6696:19 correctly 6810:3 6824:19 6826:23 6828:20 6832:24 6836:13 6841:17 6854:10 6895:7 6924:20 correlated 6888:3 correspond 6915:11 correspondin g 6848:13 6870:1 corresponds 6854:5 cost 6681:11 6686:13,19 ,24 6687:25 6697:15,21 6698:3,9,1 3 6699:16 6700:17,19 ,20,23,25 6701:2,16, 17 6702:10 6703:18 6706:5 6707:8 6708:3,18 6709:10 6711:2	6714:6,10, 11,20 6715:13 6717:4 6718:6,14, 17,18 6719:4 6720:17,25 6721:2,5,1 2,15,16,18 ,21,24 6723:24 6725:25 6726:4,8 6727:25 6728:14,15 6729:4 6730:5,8 6731:6,22 6732:2 6734:3,15 6740:4 6745:4 6746:25 6747:6,14 6748:18 6749:5,8,1 0 6750:23 6754:20 6755:25 6756:6,10 6757:14,19 6759:22 6760:2 6761:7 6762:6 6763:3 6767:6 6769:8,19 6770:4,16 6771:16 6787:7 6790:25 6791:10,13 ,17 6792:11,19 6793:11 6797:19 6801:3 6803:1,22 6807:5,8,1 4 6810:14,24 6811:17	6814:22 6815:20 6816:6 6821:17 6822:5 6827:21 6828:10 6829:13,14 6832:22 6833:6,19 6837:6 6838:17 6839:11 6843:15 6846:22 6851:11 6857:16,20 6858:5 6861:16 6862:6,11 6878:8 6879:19,25 6881:12 6882:16,19 6883:1 6889:22 6892:14 6895:24 6896:15 6900:6 6901:20 6907:9,11 6908:13,23 ,25 6909:9 6910:12 6911:6,18, 23 6912:6,8,1 0 6913:22 6914:3,7,1 4,23 6917:18 6918:20 6924:1 6929:10 6932:11 cost- effective 6748:15 cost- reimbursab le 6707:18	6727:18 costs 6686:7,14 6687:1,4,6 6698:4,15, 19,20,21 6700:4 6701:10,25 6702:1,4,1 8,25 6704:3,5,7 ,12,23,24 6705:1,2,3 6709:11,19 ,20 6710:17 6711:16 6712:22 6714:19 6715:3,18, 20 6716:4,5 6718:8 6719:9,13, 18,19 6720:12,19 6721:1 6722:3,4 6725:11,17 ,20 6728:4,13 6729:12,13 6730:8 6731:4 6732:9,11 6737:7,25 6738:11,12 6744:22,23 6749:13,19 6751:22 6754:11 6756:3,16 6757:11 6762:3,23 6763:4 6765:15 6778:6 6783:18 6801:17 6802:23 6808:1 6810:4 6811:7,12
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

6812:24	6859:13	6744:13	6895:24	6730:14
6813:23	6869:13	6881:2	6927:17	6738:1,22
6815:19	6877:23	critically	curriculum	6754:3,5
6816:4,5	course	6685:15	6688:2	6762:10
6821:25	6860:13	6690:19	6691:11	6765:5
6822:6,14	cover	6756:17	cursor	6827:3,23
6827:1	6747:10,12	cross	6715:15	6831:16,18
6832:19,20	6851:9	6694:12	curve	6834:10
6833:14,23	6908:11	6785:4	6830:23	6848:9
6834:10,13	covered	cross-	6921:16	6864:12
,17 6835:2	6687:9	examinatio	6922:12	6871:8,13
6837:17,18	6833:10	n	customer	6904:9
6838:5	6835:11	6677:11,12	6742:2	6906:5
6839:10,17	CPI	,13,14	cycle 6714:7	6907:18
6851:4,5	6699:23,25	6767:12	6715:11	6926:19,24
6854:13	6711:17	6768:3	6716:17	date 6697:8
6867:23	6712:7,8,1	6818:13	6717:6	6698:9,10,
6870:4	3	6825:23	6906:10	11,12
6874:4	6713:2,7,1	6852:10		6700:22
6878:5,22	2,14,19,22	6859:6		6705:2
6879:7,12,	6903:10	6915:25		6725:24
18,21	6904:10,13	CSI 6681:15	<hr/> D <hr/>	6735:18,20
6880:7,25	6930:14	6695:14,25	dam 6689:20	6736:24
6886:3	craft	6696:6,11,	6734:24	6755:24
6897:7	6724:15	21 6697:1	6735:23	6758:1
6902:10	6728:3	6758:15,18	6760:19	6786:24
6907:21,22	6745:3	6782:24	6788:7	6807:13
6910:22,24	crash	6783:3	damage	6818:24
6911:1	6785:13	6785:20,23	6687:19	6819:8
6912:22	crazy 6809:1	,24	6750:21	6821:5,11
6913:1,24	CRC 6707:9	6787:24	damages	6835:21
6914:22	6727:16	6790:14	6751:15	6836:3
6915:7	created	6793:21	6905:7	6837:2
6922:6	6705:14	6810:25	dams	6846:24
Council	6856:15	6826:19	6688:12,14	6868:5
6724:20	creates	6842:8	6692:18	6870:6
counsel	6804:5	6843:4	6719:10	6871:1
6676:2	creating	6846:9	6730:24	6881:4
6680:18	6894:18	6847:17	6735:14	6882:18
6683:2	credentials	6901:16	6922:5,11,	6902:3,7
6767:13,15	6694:22	6916:6,11	21	dated
6916:2	credible	6928:25	dark 6744:12	6678:3,4,9
counsel's	6728:16,18	6938:16	dashboard	,11
6678:20	credit	6939:1	6755:21	6682:12,17
6916:14,21	critical	cubic	dashboards	,24
6922:2	6751:5	6753:23	6706:7	6683:21,24
countries	6905:7	current	6755:19	6684:4,7
6689:4		6729:5	data 6697:7	6685:14
couple		6740:5	6711:24	6690:18
6739:5		6788:9,15	6714:14	6923:23
6761:10		6840:4		dates 6718:7
6851:23				6822:10

6835:5,15, 21 6837:19	6728:8 6751:23 6801:2 6834:20 6846:2 6862:19	6912:11 deducting 6755:23 6851:13 deem 6715:23 deemed 6714:17 6715:13 6716:4 6723:2 6734:22 6737:25 6744:4,12, 13 6752:24 6781:24 6787:24 6925:15 deems 6733:10 deeper 6778:3 defence 6919:20 6920:22 deferral 6836:15 6899:16,20 ,21 deferred 6835:6 defies 6808:16 defin 6881:3 define 6756:20 6800:4 6930:22 defined 6743:2 6744:1,8 6749:19 6767:1 6772:4 6784:2 6786:21 6789:22 6878:8 6879:8	6931:21 6933:15 definite 6730:13 definition 6718:16 6772:1 6778:9,16 6779:4 6781:14,16 ,20,25 6784:3 6822:5 6823:6 6857:23 6880:17,19 6881:3,24 6924:13 6925:3,18 6928:19 6932:6 definitions 6859:16,17 6879:23 6880:13 6903:18 degree 6688:9 6691:18,19 6747:10 6772:1 6778:9 6835:1 6864:9 delay 6699:10 6718:7 6725:23 6757:25 6788:6 6837:22 6899:17 6902:6 delayed 6758:25 6759:8,12 delighted 6859:17 deliver 6734:11	6785:7 delivery 6699:10 6733:23 Deloitte 6805:19 6806:4,13, 18 Delusion 6917:23 delved 6778:3 delving 6928:24 demand 6717:12 6723:10 6823:4 demobilizati on 6736:5 demonstrate 6910:13,23 6914:20,23 demonstratin g 6912:22 6915:21 density 6753:16 department 6691:24 6910:1 dependencies 6742:1 dependent 6826:2 6900:14 depending 6717:11 6792:20 6835:7 depends 6738:18 derive 6814:3 derived 6928:6
Dave 6736:19,20 6737:3	decade 6722:19 Deception 6917:24 deciding 6825:22 6858:12 decision 6757:21 6796:7,9 6797:24 6802:2 6823:22 6885:24 6888:8,9 decision- making 6858:11 decisions 6858:8 deck 6678:8 6683:14,18 6697:22 6866:14,21 ,24 6911:24 decline 6722:16 6762:9,16 6913:24 decrease 6907:23 6908:25 6909:3 6910:15 6911:6 6912:12 6913:16 6915:2,4,5 decreased 6722:14 6763:11 6781:4	deem 6715:23 deemed 6714:17 6715:13 6716:4 6723:2 6734:22 6737:25 6744:4,12, 13 6752:24 6781:24 6787:24 6925:15 deems 6733:10 deeper 6778:3 defence 6919:20 6920:22 deferral 6836:15 6899:16,20 ,21 deferred 6835:6 defies 6808:16 defin 6881:3 define 6756:20 6800:4 6930:22 defined 6743:2 6744:1,8 6749:19 6767:1 6772:4 6784:2 6786:21 6789:22 6878:8 6879:8	6931:21 6933:15 definite 6730:13 definition 6718:16 6772:1 6778:9,16 6779:4 6781:14,16 ,20,25 6784:3 6822:5 6823:6 6857:23 6880:17,19 6881:3,24 6924:13 6925:3,18 6928:19 6932:6 definitions 6859:16,17 6879:23 6880:13 6903:18 degree 6688:9 6691:18,19 6747:10 6772:1 6778:9 6835:1 6864:9 delay 6699:10 6718:7 6725:23 6757:25 6788:6 6837:22 6899:17 6902:6 delayed 6758:25 6759:8,12 delighted 6859:17 deliver 6734:11	6785:7 delivery 6699:10 6733:23 Deloitte 6805:19 6806:4,13, 18 Delusion 6917:23 delved 6778:3 delving 6928:24 demand 6717:12 6723:10 6823:4 demobilizati on 6736:5 demonstrate 6910:13,23 6914:20,23 demonstratin g 6912:22 6915:21 density 6753:16 department 6691:24 6910:1 dependencies 6742:1 dependent 6826:2 6900:14 depending 6717:11 6792:20 6835:7 depends 6738:18 derive 6814:3 derived 6928:6

6936:12	6833:23	6708:11,14	6826:4	6689:2
describe	despite	6715:11	development	difference
6686:2	6706:14,17	6717:2,13	6675:10	6713:1,12
6688:5	6740:20	6722:12	6685:7,16	6789:20
6689:6	6871:3	6723:5	6687:7	6828:24
6691:13	detail	6724:13	6688:12	6830:1,7
6732:4	6686:7	6726:2	6690:11,20	6831:2,3
6867:21	6699:19	6733:13,19	6701:7	6849:6,16
6893:14	6700:8	6734:2	6708:1	6856:1
described	6728:1	6737:5	6717:7,15,	6889:1
6708:5	6729:13	6739:13,15	18 6724:9	6930:14
6778:14	6741:6	6744:21	6725:12	differences
6877:1	6746:24	6748:23	6728:5,7	6719:23
6897:6	6752:6	6753:5	6746:22	6756:20,21
6898:7	6813:14	6755:4	6774:24	6793:22
describes	6833:16	6793:8,22	6775:7	6812:15
6705:17	6834:2,12,	6835:5	6776:15	6830:24
6872:9	25 6848:4	6842:5	6788:13	different
6918:5	6862:9	6845:24	6790:4	6700:5
description	6870:20	6871:18	6798:22	6701:23
6678:2	6871:23	6872:10	6862:21	6707:7,16
6679:2	6873:17	6873:11	6870:9,10	6710:13
6691:5	6874:12	6885:6	6875:13	6713:9
6692:11	6874:12	6898:14	6885:23	6721:9
6746:19	6931:24	6903:19	6922:6	6740:6
6786:8	detailed	6905:10	developments	6751:8
6815:14	6689:18	6928:24	6688:24	6760:17
6841:12	6692:4	6932:3,5	6689:15	6764:2,7
design	6697:10	determinatio	6708:5	6766:9,20,
6702:12	6702:12	n 6845:17	6799:19	25 6769:24
6705:8	6708:7	determine	develops	6771:1
6707:6,23	6718:6,14,	6918:4	6935:5	6796:13
6716:14	18 6719:1	determined	Diana	6799:18
6718:16	6725:20	6847:17	6795:15	6802:14
6728:22	6731:9,20	determining	6799:23	6803:16,20
6733:21	6732:3,16	6846:21	6801:14	,24
6737:9	6734:13	develop	6816:13	6804:1,3
6742:7	6737:12	6775:9	6826:16	6813:20
6878:22	6752:24	developed	6835:13	6814:23
6920:22	6787:24	6701:11,13	6853:11	6815:19
designated	6817:22	6716:20,22	6856:12	6823:17,23
6922:25	6822:18	6717:3,15	6857:14	6825:25
designed	6833:22	6770:21	Diane	6831:8
6733:8	6850:3	6771:3,19	6830:12	6849:21,22
6748:15	6868:10	6775:8,22	dictate	6850:5,8,9
6749:5	6928:11	6776:5	6744:8	6852:19
designer	detailing	6789:19	dictates	6855:11,20
6746:7	6741:9	6898:23	6713:5	6856:3,6,1
desirable	details	developer	6760:22	8,19
	6704:11	6709:19	diesel	6857:20,24
	6705:16	6727:7		6858:5,9,1
	6707:3			1 6880:6

6882:4	direct	6867:9	6859:9	6923:6
6888:15	6687:3	disclose	distinction	6926:7
6893:4	6698:4,15	6867:10	6753:9	6931:9
6898:13	6700:6	disclosed	6849:2	6937:23
6900:21	6702:18	6841:5,10	6868:13	documentatio
6904:18	6707:9	6867:13	6883:6	n 6728:21
6909:5	6719:9	disclosure	distributed	6833:5,22
6912:2	6720:25	6869:6	6816:16	6834:6
6924:13	6722:3	discount	6817:1,4	6865:11
6930:20	6737:19	6812:11	distribution	6911:24
differently	6745:22	Discounted	6813:23	documented
6700:14	6769:1	6838:11	6831:9	6722:14
6793:20	6778:5	discuss	6855:7	6740:8
6858:15	6785:15	6712:2	6937:25	6753:25
6887:15	6799:21	6774:14	6938:3	6778:7
6898:20	6800:9	6790:21	distribution	6924:17
differing	6801:13	discussed	s	6938:1
6796:14	6834:10	6747:14	6937:13,18	documenting
difficult	6835:2	6785:21	divided	6753:21
6740:3	6879:21	6832:18	6701:18	documents
6800:4	6891:17	6876:4	6732:17	6678:19,21
6823:18	6913:6	6928:21	division	6682:11
6898:17	direct-cost	discusses	6706:10	6683:6
6912:1	6728:23	6849:11	6744:10	6687:17
difficulties	directed	discussing	6752:7	6695:24
6722:21	6798:14	6803:3	divisions	6708:4
6725:3	directing	6805:11	6738:20	6731:21
6727:4	6769:13	6835:18	DNCs 6707:10	6741:3
6804:23	direction	6858:14	6738:5	6748:11,14
6872:25	6902:4	discussion	document	,21
6873:2	directly	6711:15	6683:6	6749:23
difficulty	6680:25	6825:1	6732:3	6753:13,22
6743:4	6681:3	6841:3,7	6752:24	6816:14
6828:1	6698:15	6847:4	6753:2	6817:1,4
6847:2	6736:15	6848:6	6765:22	6818:4
diffuse	6743:13	6851:20	6766:1,23	6851:3
6766:8	6876:18	6867:16	6777:13	6856:13
dig 6763:9	6885:24	6901:10	6785:14	6860:6
6849:14	6906:7	6903:5	6792:23	6865:12
dikes	director	6918:8	6811:12	6869:2
6719:10	6681:2	6925:23	6818:6	6880:12
6730:24	direct-point	6930:1	6844:17	6884:23
diligence	6728:17	discussions	6845:5	6886:12,16
6692:6,8,2	disagree	6824:23	6856:14	6916:15,21
1,22	6926:21	6876:13	6872:8	6917:21
6877:8	Disaster	6885:21	6893:10	6922:2,10
diligent	6918:1	6895:21	6909:24	6923:6
6757:5	disclosable	disjointed	6916:16	6924:6
6877:2			6918:6	DOE 6909:24
			6919:22	dog 6802:19

doll 6819:14	6746:17	DSM	early	6725:2
dollar	6864:24	6835:8,15,	6707:21	6884:21
6808:12	6921:10	17,18	6732:20	6887:16,20
6823:13	Douglas	6846:23	6733:16,17	6896:3
dollars	6676:7	due	6735:5	effectiveness
6701:16,18	DR 6759:18	6692:6,8,2	6738:13	s 6731:2
6714:11,16	6761:25	1,22	6750:2	6737:4
,21,23	6764:11,18	6718:14	6761:21	6740:3,19
6715:1,7,2	6765:4,11,	6722:15	6766:5,6	6741:1
1,24,25	14,17	6864:6	6877:23	6751:21
6721:16	draft	6865:3	6878:3	6754:18
6758:9	6706:15,17	6877:8	6920:4	effects
6788:11	6735:14	6899:16,21	6929:10	6700:21
6808:12	6740:21	duplicated	earth	6728:9
6809:6	6786:21	6729:14	6753:16	6746:23
6810:9,11	drafting	during	earthfill	6912:3
6812:5,14	6732:20	6694:12	6720:21	effort
6842:15	6793:5	6725:22	6816:4	6705:23
6849:5	6812:10	6726:16	ease 6697:24	6731:16
6913:22,25	dramatically	6740:15	easier	efforts
domain	6762:13	6747:8	6800:1	6844:19
6713:20	6765:8	6790:10	easily	egg 6798:5
dominated	draw 6753:8	6843:20	6823:11	EIA 6908:2
6762:14	6756:6	6885:3	Eastern	eight 6686:9
6765:6	6852:17	6918:10	6723:18	6687:12
done 6684:3	6868:13	dwell 6856:1	ECI 6708:12	6695:23
6689:20	6871:16		6728:2	6721:7
6692:7	drawings	E	6733:9	6730:16
6746:8	6739:16	earlier	economic	6762:13
6751:3	6748:21	6683:1	6678:13	6763:25
6754:6	drawn	6704:22	6817:5,9	6808:9
6760:10,15	6741:14	6709:9	6837:15	6810:11
6764:2	6749:24	6728:7	6851:9,14,	6831:7,8
6766:3	drew 6871:16	6750:2	20 6852:25	6907:7
6783:15,22	drill	6754:23	6854:25	6915:2
,24 6816:9	6760:18	6757:9	6885:22	eighteen
6827:5	drive 6874:4	6758:21	economies	6714:16
6838:19	driven	6783:10	6764:25	6715:7
6845:13	6743:21	6816:17	editorial	eighty
6850:7	6765:9	6866:9	6680:10	6744:20
6856:21	6783:18	6870:19	education	eighty-nine
6860:24	driver	6885:21	6862:11	6914:24
6880:15	6823:6	6893:21	effective	either
6885:5	6899:20	6894:17	6741:8	6751:1
6901:25	dropped	6899:20	6749:6	6809:2
6911:22	6715:3	6901:3,10	effectively	6814:7
6920:24	drove 6782:7	6905:24	6709:4	6822:24
6928:12		6931:8	6718:10	6831:21
double		earliest		6854:11
6857:7		6818:24		
doubt				

6865:8	6914:14	6929:25	ensure	equally
6873:4	elsewhere	engagement	6705:25	6926:23
6892:6	6703:1	6726:21	6720:11	equipment
6937:8	6761:24	6727:8	6729:13	6687:18
elaborate	email	6738:10	6731:17	6698:17
6778:10	6680:15,17	6787:2	6733:19	6702:7
6789:11	,21	engaging	6734:10	6707:18
6889:23	emails	6928:24	6863:5	6726:5
elaborated	6696:12	engineer	ensures	6733:7
6787:4	6865:21	6688:9	6733:2	6734:10
elected	embankment	6691:18	enter 6912:3	6735:7
6699:13	6692:19	6707:4	entered	6737:16
6864:2	eminently	6740:13	6916:15	6738:24
electric	6820:22	6752:1	entire	6750:20
6688:24	employ	6753:4	6742:23,24	6751:7
electrical	6812:11	6763:14	6907:11	6911:25
6735:7	6864:2	6802:14,15	entirely	6912:9,23
6803:12	employed	engineering	6707:25	6913:12,22
electrical/	6746:6	6689:14,18	6753:7	6914:14
mechanical	employees	,22	entities	equity
6794:23	6722:17	6698:22	6689:10	6817:24
electricity	6895:11	6704:14	6692:7	era 6763:24
6693:7	employment	6705:9	entitled	erroneously
6909:10	6726:24	6706:6,11	6917:23	6696:22
6910:19	enabled	6716:14	6922:5	escalate
element	6885:9	6728:10,19	6923:19	6720:23
6788:8	encompassed	6731:22	entity	6762:7
6823:5	6743:16	6760:12	6691:23	escalated
elements	encountered	6769:8	6800:1	6712:7,8
6803:25	6842:21	6778:8	enva 6787:2	6757:2
6813:22	energy	6783:12	environment	escalating
6913:14	6701:18	6864:9	6704:15	6713:6
6936:25	6717:14,21	6924:2	6719:24	escalation
elephant	6808:20	engineers	6723:20	6698:11
6759:19	6822:24	6688:21	environmenta	6699:23,25
eleven	6823:12,14	6708:16,23	1 6698:22	6700:21
6720:24	,15,17	6749:25	6702:5	6711:16,18
6913:24	6839:11	6778:4	6720:7	6712:12,17
eligible	6908:4	6864:7	6738:22	,23,25
6939:1	6910:1,5,2	6877:3	6746:14,18	6713:19,21
eliminate	0	6936:24	,21	6718:8,24
6760:8	enga 6726:20	engineer's	EPC 6707:4	6725:23
6879:1	engaged	6757:2,6	6717:8	6727:25
else 6703:4	6720:5	Engineers	equal	6728:12
6739:16	6733:17	6889:21	6776:24	6731:6
6897:9	6738:14	6890:24	6792:1,17	6740:4
6902:24	6743:5	6933:6	6888:25	6745:2
6911:10		enhancements		6757:25
		6898:9		6762:3
				6838:2,5,7

6842:3	6782:7	6769:19	estimates	6894:22
6846:6	6792:7	6770:5	6686:13,19	6897:19,21
6847:4,15	6799:11	6773:23	6687:23	6898:2
6848:6,20,	6801:4	6778:5	6697:15,21	6917:18
24	6803:7	6788:2,9,1	6700:25	6929:10
6850:13,22	6812:23	5	6701:2	6937:12
6882:6	6813:17	6795:20,24	6702:10	estimation
6884:6,11	6815:7	6796:3	6703:10,11	6702:12
6903:5,14,	6822:12	6797:1,4,7	,13 6714:6	estimator's
23	6827:24	,20	6718:11,15	6757:1
6904:2,12,	6830:22	6800:16	,17 6720:2	et 6720:21
19,23	6855:11	6815:20	6723:24	6731:1
6906:10,22	6880:23	6819:4,14	6726:4	6748:19
6920:9,12	6891:19	6821:17,25	6728:23,24	6852:10
6921:14	6893:3	6824:15	6729:5	
6930:5,8,1	6897:3	6827:22	6747:1	evaluate
0,11,18	6898:19	6828:10	6755:22	6823:18
6933:7,13	6926:3	6833:14,19	6756:19	evaluated
6934:6	establish	6836:2	6770:17	6852:18
6935:17	6702:22	6843:15	6771:16	evaluating
6936:15	6824:15	6851:11	6807:5,8,1	6741:7
escalations	6881:11	6853:20	5 6822:5	evaluation
6754:20	6897:21	6855:6	6836:18,25	6850:10
especially	established	6857:16,21	6837:1	evening
6738:11	6807:3,4	6858:6	6838:8	6695:10
6778:11	establishing	6870:9	6839:11	6939:2
6794:23	6732:6	6877:4	6842:18,22	event
6850:19	6886:24	6880:3,18	6843:8	6765:11
essence	6901:7	6881:8,10	6846:15	6899:8
6791:16	6902:1	6882:8,12	6875:13	everybody
6814:22	establishmen	6883:18	6877:4	6764:3
essential	t 6766:7	6888:25	6879:19,25	everybody's
6703:22	estimate	6903:7,11,	6880:1	6859:2
6829:25	6698:3,5	23 6906:21	6882:1,20	everyone
essentially	6699:1,24	6911:18	6898:18	6680:24
6698:4	6700:6,18	6915:22	6908:13	6939:2
6707:6	6702:21	6921:13,19	6909:9	everything
6708:10	6705:4	6922:23	6910:19	6692:2
6712:5	6708:3	6923:1	estimating	6739:16
6714:25	6718:19	6926:11	6702:11	6806:7
6717:24	6720:22	6927:22	6729:15	6872:1
6718:21	6728:15,18	6928:22	6742:4	6897:9
6729:5	6729:4,9,1	6929:2,5	6778:12	evidence
6730:2	0 6730:5	6931:1	6780:1	6680:15
6733:7,8	6732:23	6932:16,24	6782:4	6681:9
6743:24	6733:3	6935:24	6786:5	6682:1
6753:12	6734:15	estimated	6861:17	6693:14
6754:12	6756:3	6698:2	6862:6,11	6694:16
6757:18	6757:1,2,6	6702:25	6863:6,9,1	6712:6
6767:5	,7 6759:22	6703:18	6 6867:23	
6779:24	6761:10	6747:9	6874:25	
6780:3		6846:7	6893:15,16	
		6847:15	,22	

6727:22	6735:4	6881:9	6839:18	6761:7
6753:14	6753:15	6904:20	6841:5	6766:20
6762:16	6755:21	execute	6853:12	6787:23
6854:10	6756:4	6740:13	6854:1,2	6813:5,6
6860:5	6757:23	execution	6855:25	6815:7
6864:5	6762:11	6705:15	6857:14	6840:12
6899:5	6783:19	6708:18	6880:13,14	6852:12
6904:2	6792:23	6731:11,20	6886:13,16	6886:3
6922:17	6808:20	6732:21	6916:16,20	6901:19
evolving	6834:19	6734:2,3	6921:3	6918:25
6787:1	6839:18	6752:5,11	6927:6,18	expecting
exact	6852:13	6867:24	Exhibits	6753:14
6808:16	6878:25	6868:14,17	6677:3	6784:9
6814:15	6900:1	6878:15	6678:1	expects
6849:20	6920:15	executive	exist	6764:3
exactly	examples	6680:11	6772:13	expenditure
6735:25	6797:14	6681:2	6830:19	6686:25
6742:19	excavation	6832:16,18	existing	6706:24
6766:16	6720:20	6869:25	6709:5	6717:23,24
6772:10	6735:14	6917:25	6716:21	6755:22
6803:5	exceed	exercise	exists	expenses
6815:13	6798:2	6714:18	6872:10	6702:3
examination	6892:18	6715:7	expand	6704:16,25
6681:18	exceeded	6759:3	6782:16,18	expensive
6785:5	6828:11	6782:4	6858:4	6689:3
6822:18	except	6822:17	expanded	6710:5
6833:16	6749:7	6831:10	6698:23	6727:15
Examination-	6813:17	6838:12	6805:12	6808:12,24
in-chief	6829:10	exercises	expect	experience
6677:10	6885:5	6714:13	6695:12,16	6688:6,11
6695:6	exception	6678:2,6,1	6724:10	6689:15
examine	6734:23	5 6679:4	6746:9	6691:21
6937:8	exceptions	6682:17,23	6764:13	6700:7,8,1
examined	6870:17,19	6683:8,10,	6765:25	0,11
6700:8	excess	11,18,24	6850:4	6710:10
6733:1	6699:25	6684:7	6875:22	6718:22
6738:6	excessive	6688:3	6932:5,7	6725:13,19
6746:24	6751:14	6691:12	expectation	6726:19
examining	exclude	6811:6	6745:18	6735:15
6713:25	6705:2	6817:7,9,1	6758:18	6737:22
6777:13	excluding	4,15,17,21	6878:4	6751:4
6778:12	6714:12	,24	expected	6789:4
example	exclusive	6818:1,9,1	6687:24	6803:19
6698:20	6887:3	1 6824:23	6698:13	6805:2
6699:8	excuse	6826:17	6700:20	6809:13
6707:17	6695:19	6828:25	6725:21	6842:25
6718:1	6747:16	6830:13	6736:23	6843:9
6720:15		6831:13	6745:17	6844:1
6728:6		6832:1,10,	6755:25	6860:11
6733:5		16 6835:14	6757:14,19	6862:11
				6864:18

6871:17	explains	6742:5	factor	6791:5
6875:19	6844:18	6813:25	6711:25	6819:3,7
6891:17	explanation	6863:4	6712:16,17	6821:4,8
6905:21	6726:10	6895:25	6761:1	6823:1
6917:18,19	6786:9	externally	6846:7	6824:6
6922:15	6912:12	6783:22	6847:15	6848:7,8,1
6923:2	explicitly	6726:8	6848:24	0,18
experienced	6898:12	extra	6903:7,22	6849:24
6722:19,24	exploit	6730:16	6904:23	6850:7
6727:4	6919:18	6902:10	factored	6904:4
6729:15	explore	<hr/>	6723:24,25	familiar
6746:7	6916:6	<hr/> F <hr/>	6724:2	6877:17
6747:4	explored	face	factors	6921:10
6749:25	6728:1	6776:2,5,1	6686:24	farm 6823:16
6763:16	export	1,24	6718:5	farms
6843:2	6823:6,25	6798:5	6722:16	6716:22
6876:21	6824:5	faced 6746:3	6814:8,9,1	fear 6739:14
6889:5	expressed	facilities	5,20	6919:9
6919:1	6862:4	6686:20,23	6815:15,16	February
experiences	expressing	6714:8	,18 6831:5	6696:23
6761:23	6837:6	6716:18	6933:20	6869:19
expert	expressly	6723:2	fair 6774:2	feeding
6680:12	6724:23	6746:7	6775:15	6710:16
6681:10	6739:12	6805:6	6776:12	feel 6769:14
6690:4	6754:12	facility	6792:5	6785:25
6694:23	extended	6717:19	6809:14	6808:7,11
6695:2	6830:23	6730:23	6862:24	6841:11
6938:19	extensive	6735:3	6871:16	6871:23
expertise	6746:8	facing	6875:2	6874:12
6728:20	extent	6776:16,18	6893:25	6901:20
6860:11,20	6749:21	fact 6706:14	6894:24	6911:16
6861:12,16	6765:20	6708:21	fairly	6937:5
6862:1,24	6781:21	6709:10	6778:9,10	fellow
6863:3,5	6786:10	6710:3,5	6875:3	6863:11
6864:5,18,	6789:2,10	6711:2	6879:17	felt 6730:12
22	6820:7	6712:12	6916:9	6861:11
experts	6826:6	6724:2	6922:13	fete 6768:15
6693:14	6834:4	6740:21	6928:19	Fichot
6694:2,6,1	6865:13	6743:13	fairness	6677:8
6 6863:24	6875:11	6759:20	6834:15	6682:10
explain	6882:19	6786:20	fall 6703:14	6684:15,25
6759:9	6888:3	6789:13	6742:14	6685:23
6818:19	6902:15	6830:20	6743:6	6690:5,6,1
6826:2	6920:9,18	6864:1	falls	3,14,23
6849:2	6935:12	6869:18	6688:20	6691:2,9,1
6928:23	6937:22	6875:18	6701:4	0,17
explained	external	6876:13	6713:21	6692:10,15
6825:23	6702:4	6895:7	6745:17	6693:12,13
Explaining		6900:15	6758:23	6695:2
6917:25		6904:7	6788:10	
		6918:10		

6696:15	6851:7,18	6713:8	6857:6	6793:10,11
6712:19	6852:16	6714:15		,25
6713:16	6853:6	6715:7	firm 6692:16	6800:10
6738:7	6854:8,16	6721:7	6728:19	6806:24
6742:23	6858:7	figured	6829:14	6807:23
6743:10	6861:5	6768:14	6833:24	6808:7
6745:11	6866:15	filed 6683:8	6937:22	6817:4
6758:11,14	6867:3,5,1	6685:11	firmer	6821:12
,19	2,25	6688:2	6868:16	6833:3,18
6763:19	6868:3	6690:16	firmness	6835:10
6764:12	6872:5	6691:11	6808:20	6839:18
6768:6	6888:23	filing	6823:14	6840:1,8
6770:7,13,	6889:2,10	6682:11	firms	6842:5
18 6771:6	6890:2,15	6816:15	6692:23	6844:23,25
6773:3,16,	6891:13	6828:25	first	6846:2,24
20	6893:18	filings	6682:13	6853:17,19
6774:9,11	6894:11	6685:16	6686:8,11	6859:14
6775:3,13	6908:8,21	6690:21	6687:8,10	6866:16
6776:3,9,2	6909:2,5,1	final	6692:20	6867:6,21
2	2,16,21	6685:25	6695:22	6868:14
6778:1,23	6910:3,7,1	6696:18	6697:4,7,2	6869:14
6782:23	6911:3,7,1	6699:16	5 6700:24	6871:3,25
6783:9,14	4	6700:20	6704:17	6874:13,16
6786:15	6912:19,24	6736:3	6717:25	6875:17
6787:11,16	6913:3,8,1	6744:16	6718:18	6880:15
,20	1	6754:10	6720:4,5	6889:21
6789:12	6914:10,12	6755:25	6721:4	6906:14
6790:13	6915:10	6792:25	6722:8,11	6925:14
6794:17,21	6923:12,17	6797:19	6724:5,16,	firsthand
6796:5	,22	6922:22	25	6764:17
6800:19,22	6924:4,11,	finalize	6726:20,21	6808:17
6803:9	16,24	6733:18	,23	firstly
6807:19	6925:4	finalized	6727:1,5	6714:9
6812:3,12	6931:2	6706:21,25	6729:17	6838:17
6813:11,16	6936:9	6755:3	6730:4,16	6844:22
6814:10	6937:10,21	finally	6731:8	first-stage
6819:18	fields	6687:24	6736:2,12,	6734:23
6823:10	6692:2	6728:11	20,23,24	fit 6833:21
6824:21	fifteen	6737:23	6738:10,18	fits 6772:5
6827:7,13	6695:13,17	6757:12	,20	6928:6
6831:17	6744:11	financial	6745:12,15	five 6716:24
6833:17	6913:22	6727:1	6746:23	6717:9
6835:9	fifth	6746:11,13	6759:3	6718:10
6837:12,15	6914:22	6754:25	6762:8	6721:15
6841:25	fifty	finding	6763:7	6741:17,18
6842:12,17	6715:22	6743:4	6768:7	6743:14
,24	fifty-five	finished	6769:1	6769:24
6843:4,11,	6714:23	6740:1	6778:3	6771:24
23	figure	6806:24	6780:13,21	6786:6
6844:3,25	6709:14		6781:10	6808:4,5,1
6845:11			6785:14	0 6809:5
6848:11,22			6791:4	
6849:10,18			6792:25	
6850:15,18				

6810:13	6836:8	fortunate	6695:15	6912:4
6816:13,18	6868:23	6761:23	6927:2	6914:8
6848:15	follow-up	forty	front	gas
6853:21,22	6806:25	6714:21	6692:25	6686:19,20
6883:21	force 6720:8	6723:6	6804:1	,22,23
6903:15,22	forecast	6831:7	6827:20	6714:7,8
6904:4,11	6717:25	forty-four	6859:22	6715:10
6907:6	6755:15	6688:10	6926:11	6716:17,18
6915:1,3	forecasting	forward	full 6685:24	6717:5,6
6935:24	6886:4	6784:1	6869:6	gates
five-three	forecasts	6828:16	fully	6730:25
6854:4,20	6686:25	6897:4	6752:20	Gateway
five-two	6717:24	6900:15	6786:22	6819:23
6812:5	6897:7	foundation	6794:10	gather
fixed	forget	6699:9	6841:5,10	6865:13
6711:10	6886:11	foundations	6871:7	GCC 6707:21
6733:7	forgetting	6913:1	funding	6711:3
6749:7	6803:5	6920:25	6742:2	6734:19
6761:22	6880:14	four-nine-	funds 6755:6	6735:12
6790:24	forgive	two	future	6737:16
6791:5,25	6706:23	6811:19	6717:21	6757:6
6792:6	6881:13	four-seven	6755:22	6778:21
fixed-price	forgiveness	6809:7,21		6794:24
6707:3,17	6768:23	6810:5,10	<hr/>	6819:25
flag 6783:25	form 6705:3	four-six	G	6829:12
6785:21	6706:15,18	6934:22,25	GAC 6676:13	6845:4
flags	6786:22	fourteen	6681:24	6869:21
6761:11	6820:25	6915:5	gain 6783:16	6871:4,13
6901:22	6910:9	four-zero	6917:17	6876:11
flash 6811:5	formatted	6809:7	gained	6877:3
flat 6678:14	6695:21	FPC 6707:4	6725:13,19	6879:6
6817:5,10	forming	frame	6726:19	6905:8,25
flatter	6697:20	6716:23	6864:6	6907:15
6830:23	6733:24	6717:8,18	Gange	gen 6860:23
fleshed	forms	6822:10	6676:13	general
6786:22	6733:13	6906:9	6681:23	6692:12
fli 6846:1	6735:14	framework	Gantt 6709:5	6696:9
flip 6851:25	6748:23	6720:5	gap	6697:20
flipping	forth	frankly	6845:10,12	6704:15,20
6795:10	6768:20,24	6830:17	,16	,24 6708:9
fly 6742:21	6803:22	free 6680:9	6846:5,9	6719:22
Flyvbjerg	6850:6	6769:14	6847:12,23	6724:22
6917:22	forthcoming	6785:25	gaps	6727:8
focus 6686:2	6869:8	Friday	6844:18,20	6729:7
6691:6	FortisBC	6680:8	6871:10	6730:7
6692:17	6689:21	Friend	Garrad	6733:15
6727:8			6861:6	6734:15,20
			6911:21	6735:8
				6746:12
				6750:1,25
				6752:14

6753:1	6733:6	George	6721:5,15,	6830:22
6754:21	6734:14	6676:18	22 6733:13	great 6847:1
6756:25	6735:23	6694:5	6808:11	greater
6766:3	6748:25	geotechnical	6815:8,11	6723:10
6775:6,14	6772:24,25	6689:14	giving	6744:4
6781:16	6773:13,15	6746:9	6693:14	6750:8
6782:5	6775:22,23	6878:21	6764:16	6757:24
6792:22	6779:15	Germany	6801:14	6789:8,10
6796:17	6780:6	6919:12	6899:4	6831:1
6803:17	6782:20,21	gets 6866:4	glad 6785:13	6884:21
6813:19	6811:3	getting	global	6934:1
6819:15	6818:21,23	6766:6	6741:17	green
6820:6,13	6924:22	6793:21	go-ahead	6859:12
6843:18	6925:9	6795:22	6762:6	green-field
6860:9	generation	6881:9	goal 6891:24	6692:3
6861:13	6689:2	6890:19	gone 6718:2	grey 6744:12
6867:21	6698:16	6903:3	6763:23	grinch
6869:16	6744:10	6933:5,6,2	6798:18	6784:17
6916:4	6752:6	5 6938:11	6829:4,13	ground
6917:1,20	6782:21	gigawatt	6856:18	6760:13
6926:21	6839:12	6809:6	6876:9	6766:15
generally	6860:20,23	6810:9	gorilla	grounds
6688:6	,24	6812:6	6759:19	6761:8
6689:6,7	6909:10	6823:13	Gosselin	Group
6691:14	generator	given	6675:13	6818:16
6740:22	6735:4	6699:16	gotten	grow 6724:10
6750:7	6752:13,17	6726:10	6775:20	growth
6769:13	6781:23	6730:15	government	6678:14
6776:18,20	6816:5	6741:2	6910:2	6817:6,10
6791:5	6912:7	6762:6	government-	GS 6704:6
6799:3	generators	6771:5	utility-	6719:13
6869:3,5	6719:12	6806:8	run 6710:3	GSP 6780:25
6870:15,16	6721:17	6807:24	graduated	guess 6709:6
6919:6	6730:25	6822:16	6688:11	6718:18
6920:7	generic	6826:22	Grant	6739:10
6921:13,15	6717:19	6833:19	6675:17	6761:25
6925:6	6769:19	6842:4	6759:18	6762:18
generating	Generically	6855:6	6761:25	6782:19
6686:13,15	6882:22	6866:16	6764:11,18	6789:25
,17	gentleman	6875:13	6765:4,11,	6790:3
6687:2,14	6917:22	6898:14	14,17	6797:5,22
6697:16,17	6922:4	6901:10	graph	6891:6
6705:12,13	gentlemen	6904:9	6912:18,22	6933:9
,19	6695:20	6905:10	6925:5	guideline
6707:18	6835:16	6908:11	graphic	6705:17
6719:6	genuine	6925:18	6698:1	6731:11
6720:21	6745:23	6928:10	graphically	6825:13
6723:8	geography	6931:24		
6726:23	6877:18	6935:6		
6728:22		6938:3		
6729:21		gives		
6730:21				
6731:13				

guidelines	20,21	6860:3	6853:20	18,24
6781:16	6842:11,16	hang 6834:23	6857:15	6871:9,15,
6929:11	,19	6933:1	hear 6693:18	22
gut 6808:7	6843:1,6,1	happen	6694:9	6872:13,21
guy 6764:6,7	2,24	6790:1	6710:21	6873:15,21
guys 6763:24	6844:4,12,	6919:20	6881:23	6874:2,7,1
6764:15	16	6929:23	6886:25	0,21,24
6894:12	6845:9,15,	6936:18	heard 6691:4	6875:7,10,
6911:7	25	happened	6692:11	16,21
	6846:4,10,	6736:5	6745:6	6876:3,8,2
	14,20	6781:10	6781:6	0,25
	6847:3,6,1	6802:9	6841:2	6877:7,12,
habit	1,19	happens	6905:24	16,22
6759:21	6848:1,2,1	6766:25	6916:4	6878:2,9,1
	7	6790:1	6917:16	2,17,20,24
Hacault	6849:1,15	happy 6724:4	6922:7	6879:4,11,
6676:16	6850:11,16	6768:14	6924:19	16,22
6677:12	6851:1,16,	hard 6696:12	6933:6	6880:10,24
6693:24,25	19	6798:12	hearing	6881:7,15,
6694:3	6853:5,11	6910:14	6681:19	21
6816:11,12	6854:9,17	harm 6874:7	6835:19	6882:13,21
6818:6,7,1	6855:14,17	Hassan	6916:24	,23
3,14,15	,24	6911:21	heavily	6883:5,12,
6819:10,12	6856:8,12,	6912:4	6861:6	17
6820:9,17	24	6914:9	heavy 6728:4	6884:3,9,2
6821:3,10,	6857:3,12,	Hassan's	HELD 6675:20	2
15,24	13 6858:17	6861:7	Helga 6676:8	6885:8,13,
6822:3,20,	6927:4	hat 6933:1	6677:13	17
21 6823:19	Hacault's	haven't	6681:17	6886:5,9
6824:11,22	6847:13	6708:24	6694:10	6888:6,7,1
6825:9,18	half 6681:13	6754:8	6859:6,7	2,18,24
6826:15	6691:21	6786:22	6860:1,19,	6889:6,13
6827:6,10,	6726:17	6829:2	22	6890:11,18
14,25	6918:7	6847:24	6861:1,9,1	6891:2,9,2
6828:12,23	halfway	6853:3	5,19,24	1
6829:17	6711:9	6860:2	6862:5,10,	6892:3,11,
6830:3,10	6740:1	6913:17	14,17,23	17,25
6831:11,22	6869:3	6918:2	6863:2,8,1	6893:6,20,
6832:14,15	hand 6744:7	6923:22	1,15,18,22	25
6833:1,12	6925:20	having	6864:3,11,	6894:4,8,1
6834:3,14	6928:20	6778:21	17,20,25	6,21
6835:3,13,	6681:17	6784:22	6865:7,17,	6895:5,13,
25	handled	6834:6	20,24	18
6836:6,12,	6751:15	6864:8	6866:3,7,1	6896:2,6,1
22	6834:11	6869:21	7,22	7,21
6837:9,14,	hands-on	6871:4	6867:2,4,1	6897:5,10,
24	6724:14	head 6802:13	7,19,20	17,20
6838:14,22	handy	heading	6868:2,7,1	6898:1,4
6839:2,7,1	6830:12		2,21,24	6899:3,14,
3,24			6869:18,24	19
6840:7,17,			6870:7,13,	6900:1,4,1
22				1,22
6841:1,16,				6901:1,13,
				17,23

6902:11,17 ,20 6903:1,12, 16,21 6904:17,22 ,25 6905:14,19 ,23 6906:8,13, 18,24 6907:3,8,1 3,19 6908:1,10, 19,22 6909:4,7,1 5,25 6910:4,8,1 1,18 6911:4,9 6912:13,20 ,25 6913:5,9,1 5 6914:1,4,1 1,17 6915:13 help 6771:25 6791:3 6811:5 6819:12 6878:14 6929:12 helpful 6798:7 helping 6733:18,22 ,23 here's 6807:25 he's 6766:10 6863:20 high 6701:21 6703:15,23 6705:16 6729:3 6744:5 6752:5 6753:10 6760:20 6807:22 6808:2	6809:17 6812:16 6815:4 6839:15 6843:2 6846:22 6851:4 6852:3,8,1 4 6853:9,22 6854:4,13 6884:25 6886:1 6892:6,13 6901:7 6916:9 6922:13 6935:24 higher 6702:21 6709:22 6710:17 6712:8,12 6713:21 6718:24 6745:2 6757:22 6770:16 6772:19 6791:10 6795:17,24 6796:24 6824:14 6826:6,14 6828:3 6854:14,21 6887:3,21 6888:1 6892:13 6915:8 6916:10 6935:19 6936:3,6 high-level 6687:4 6725:8 6731:11 6917:20 highlight 6778:24 6788:8 6790:24	highlighted 6782:6 6786:4,18 6788:16 6790:23 6893:13 6896:13 6908:20 high-quality 6728:15 highs 6839:3 Hill 6688:3 6691:12 hire 6738:24 6744:25 6801:21 6895:15 hired 6856:15 hiring 6722:9,22 6724:12 6725:3 6801:22 6802:25 6804:24 historical 6687:1 6712:6 6715:17 6719:3 6761:14 historically 6707:12 hold 6763:2 6931:20 holdup 6765:15 hold-up 6762:23 hole 6765:24 holes 6760:18 Hollmann 6863:12 6923:8,9 6928:1 6930:7	6932:20 Hombach 6676:3 6677:14 6680:5 6681:6,7 6682:6 6694:18,20 ,25 6695:10,16 6767:11 6784:24,25 6811:4,11 6866:8,18, 20,25 6867:11,14 6915:19,20 ,25 6916:1,2,2 3,24 6917:6,12, 15 6919:24 6920:7,16 6921:2,9,1 2,20,23 6922:20 6923:5,15, 18,24 6924:5,12, 19 6925:1,6 6926:6,20 6927:1,12, 16,21,24 6928:17 6929:3,6,2 4 6930:16,24 6931:13,20 6932:9,15, 18,22 6934:4,11, 18,24 6935:4,15, 21 6936:4,8 6937:7,17 6938:4,13 home 6764:4 hone 6783:11 honest 6735:25	6742:20 6821:20 6876:17 6929:8 honestly 6834:9 hook 6913:2 hope 6828:4 6878:12 hopefully 6766:1 hoping 6786:2 6797:23 hour 6695:12,13 6715:22 6809:6 6810:9 6823:13 hours 6812:6 house 6711:9 houses 6719:11 housing 6762:15 6765:7 huge 6849:4 6871:18 Hugh 6675:17 6759:18 6761:25 6764:11,18 6765:4,11, 14,17 hundred 6714:11,16 6715:1,7,9 6789:1 6907:1 6913:7,10, 13,22,25 6915:1,3,6 hydraulic 6719:5 hydro 6675:7 6676:5
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

6681:16,19	6740:19	6848:21,23	6937:24	6887:24
6683:2	6741:3	6850:1	Hydro-104-13	6893:22
6687:16	6742:1,3	6854:18	6817:7	6897:25
6688:13,14	6743:2,22	6855:18	hydroelectri	6905:20
,24	6744:25	6856:14	c 6860:15	6925:15
6689:1,16,	6745:8,24	6857:19	hydroelectri	6930:9
17 6690:1	6746:7	6858:16	c-type	6937:14
6691:23	6747:3,7	6861:8	6876:22	<hr/>
6692:1,3,7	6748:12,17	6862:18	Hydro-Quebec	I
,21,22,24	6749:3,9,2	6863:3	6823:5	i.e 6699:15
6693:8	5 6750:6,8	6864:2,21	Hydro's	6727:7
6694:9	6751:5,8,1	6865:15,22	6675:9	6744:19
6696:3,11	1,13,15,24	6866:1	6685:7,16	6755:25
6697:21	6752:2,4,9	6869:2,5,8	6686:5	6834:9
6698:2	6755:4,8	,19	6687:6	I-021a
6699:4,13	6756:23	6873:7,24	6690:10,20	6872:24
6700:12,15	6757:4	6875:3,18,	6697:13	I-10b
6701:12	6759:23	22	6700:25	6799:22
6702:18	6760:9	6876:4,13	6702:11	I'd 6680:6
6703:1,20	6766:3	6877:2	6704:2	6681:19
6704:21,23	6767:2	6878:25	6705:6	6693:18
6705:3,14,	6777:16	6879:10	6714:5,20	6747:23
23	6780:2	6884:4,12,	6715:15	6777:6
6706:3,13,	6781:11	17	6716:3,11	6778:18,24
22,23	6786:18,19	6886:2,13	6717:23	6783:11
6707:2,15	6788:12	6887:24	6722:1	6785:14
6708:15,18	6792:8,13	6888:24	6730:18	6790:18
,22 6709:7	6793:3	6891:6,18	6731:10	6794:6
6710:11	6795:22	6894:1,23	6732:10	6798:18
6711:3	6797:21	6895:9,10,	6734:18	6808:13
6712:9,17,	6798:20	19 6897:15	6739:11	6816:13
23 6713:15	6802:12,15	6898:5	6740:3,24	6857:6
6714:10	,22 6803:8	6899:9,25	6742:11	6860:3,9
6715:12	6804:22	6900:5	6751:18	6888:16
6716:19	6805:3	6902:1	6754:13	6890:2
6717:2,7,1	6806:8,12	6903:6	6755:1	6894:11
4,17	6807:23	6904:2,9,1	6756:18	6906:12
6719:18	6808:5,23	2,15,23	6757:19	6915:10
6720:4,18	6811:2,6,2	6905:1,3	6780:3	6916:17
6722:20,24	0 6813:7	6906:7	6781:25	idea 6695:18
6723:15,18	6823:3	6911:22	6795:18	6766:5,23
6724:17,19	6825:19	6912:5	6797:5,15	6815:8
,20	6826:4	6913:7	6805:16	identified
6726:10	6827:3,23	6920:19,21	6813:14	6764:23
6727:8,11	6831:15	6921:4	6817:21,24	6801:2
6728:20	6832:24	6922:6	6838:4	6866:13
6731:14	6833:5	6923:10,21	6839:10	6871:10
6732:18	6837:7	6926:9	6861:11	6884:24
6733:14	6838:24	6927:6,18	6867:1	6893:8,10,
6734:3,6	6839:14,25	6929:17	6872:15	17 6896:22
6736:15	6840:12	6931:17	6881:20	6900:6
6737:6,20,	6843:17	6932:3		
25 6738:6	6846:6	6935:7,11		
6739:6,18	6847:15			

identifies	6877:7,12, 16,22	3,19	6711:13,19	6893:6
6798:19	6878:2,9,1	6908:1,10, 19,22	6712:13,15	6899:3
identify	2,17,20,24	6909:4,7,1	6713:11	6901:9
6770:4	6879:4,11, 16,22	5,25	6742:20	6903:17
6824:1	6880:10,24	6910:4,8,1	6743:10	6909:22
6871:19	6881:7,15, 21	1,18	6758:16	6927:1
6878:18	6882:13,21 ,23	6911:4,9	6759:18	6928:14,18
6889:8	6883:5,12, 17	6912:13,20 ,25	6760:3	6933:1
6894:14	6884:3,9,2 2	6913:5,9,1 5	6762:15,18	6934:2
6899:15	6885:8,13, 17	6914:1,4,1 1,17	6763:20	6936:9
identifying	6886:5,9	6915:13	6764:21,22	imagine
6737:11	6888:6,7,1 2,18,24	6927:2,13	6765:14	6820:24
6741:7	6889:6,13	6929:25	6767:14	6823:4
6901:2	6890:11,18	Iderstine's	6768:21	immediate
Iderstine	6891:2,9,2 1	6917:17	6771:22	6837:21
6676:8	6892:3,11, 17,25	IEC 6676:24	6774:4,20	immediately
6677:13	6893:6,20, 25	6677:6	6775:21	6684:15
6681:17	6894:4,8,1 6,21	6684:23	6776:13	impact
6683:2	6895:5,13, 18	II 6678:6	6777:13	6709:8
6694:10,18	6896:2,6,1 7,21	6683:6,10	6779:23	6741:22
6859:4,6,7	6897:5,10, 17,20	6785:16	6780:10	6743:25
6860:1,19, 22	6898:1,4	6832:17	6783:2	6744:2,6
6861:1,9,1 5,19,24	6899:3,14, 19	III 6678:6	6785:12,25	6787:6
6862:5,10, 14,17,23	6900:1,4,1 1,22	6683:6,10	6786:2,6	6811:23
6863:2,8,1 1,15,18,22	6901:1,13, 17,23	I'll 6692:15	6795:22	impacted
6864:3,11, 17,20,25	6902:11,17 ,20	6702:19	6797:22	6708:24
6865:7,17, 20,24	6903:1,12, 16,21	6714:19	6801:3,14	6709:1
6866:3,7,1 7,22	6904:17,22 ,25	6729:17	6802:11,18 ,19 6803:5	impacts
6867:2,4,1 5,17,19,20	6905:14,19 ,23	6758:14	6804:9,10	6746:15
6868:2,7,1 2,21,24	6906:8,13, 18,24	6768:25	6815:14,23	6747:10
6869:18,24	6907:3,8,1	6769:13,15	6820:23	6870:1
6870:7,13, 18,24		6784:24	6821:20	impaired
6871:9,15, 22		6788:7	6833:2	6834:5
6872:13,21		6795:4	6841:17	implement
6873:15,21		6818:18	6849:12	6704:10
6874:2,7,1 0,21,24		6827:6,10	6851:16	implementati
6875:7,10, 16,21		6835:4	6853:18	on 6692:5
6876:3,8,2 0,25		6844:22	6855:17,18	6708:2
		6857:17	6857:6	6732:7
		6860:6	6859:11	6741:19
		6872:5	6860:2	6798:22
		6879:5	6862:3	implications
		6911:15	6865:8	6726:13
		6916:16	6866:8	6749:18
		I'm 6688:9	6880:14	6750:23
		6691:17	6881:9,22	implicit
		6695:21,24	6883:22	6781:25
			6885:17	important
			6886:10,18 ,21	
			6887:22	
			6888:1	
			6890:24	

6706:4	6832:1,11	6728:12	6762:12	6887:2
6756:15	6881:2	6803:24	indeed	indication
6795:1	6902:5,25	6886:22	6753:21	6809:1
6798:21	6905:6	6900:12	6754:2	6842:7
6799:4,7,1	6913:1,3	income	6811:17	6901:21
0 6857:18	6914:7,13	6872:17	6872:8	indicators
6883:6	6930:5	incomplete	6917:10	6734:5
importation	6934:16,17	6762:25	independent	indirect
6723:17	included	6765:18	6681:10	6686:14
impression	6699:24	incompleted	6689:10,24	6687:4
6807:23	6707:3	6763:1	6693:3	6698:4,19
6808:17,21	6708:8	incorporate	6708:16,22	6702:19
6890:16	6724:23	6757:22	6709:22	6704:3,7,1
6898:7	6734:14	6843:16	6716:22	9 6705:1,3
impressively	6749:20	incorporated	6738:9	6709:10
6812:10	6755:21	6733:21	6756:25	6722:4
improve	6800:13	6866:4	6757:7	6746:25
6727:24	6829:3	incorporates	6761:18	6816:5
6844:10	6884:4	6757:24	6779:8	6832:19
6878:14	6891:20	incorporatio	6788:16	6833:5,14,
6899:11	6895:22	n 6734:11	6877:4	23 6834:13
improvements	6896:18	increase	6898:2	indirect-
6876:6	6900:9	6703:17,21	6925:25	cost
6898:10	6901:8	independentl	6938:19	6728:24
inability	6934:15	y 6829:7	index	indirects
6900:2	6935:3	6720:6	6712:20,23	6845:18
INAC 6692:21	includes	6726:2	6843:10	6870:23
inappropriat	6699:2,22	6746:25	6849:24	individual
e 6855:16	6700:11	6802:22	6850:6	6719:19
inasmuch	6704:12	6803:1,22	indicate	6733:5
6812:23	6708:2	6905:25	6781:17	6826:11
6821:8	6729:11	6907:14	6887:3	Industrial
incentive	6735:14	6911:2,6	6901:21	6818:16
6767:4	6742:3	6914:21,25	6933:17	industry
incidently	6752:7	increased	indicated	6707:12
6784:4	6878:21	6726:24	6683:3	6715:5
inclement	6884:17	6744:23	6711:21,24	6722:14
6747:10	6913:13	6745:4	6735:18	6759:24,25
inclined	including	6762:5	6758:7,23,	6762:10
6778:19	6697:17	6801:17	24 6759:7	6765:7
include	6704:3,13,	6803:4	6785:1	6905:16
6679:4	16 6716:24	increases	6856:20	6911:11
6702:1	6719:9	6686:24	6886:20,21	6923:21
6704:8	6724:16	6718:6	6931:15,16	6926:9
6708:21	6725:13	6748:18	indicates	inefficienci
6720:1	6742:1	6749:8,10,	6935:23	es 6842:21
6722:16	6751:11	12 6919:1	indicating	inexperience
6734:17	6895:24	increasing	6797:20	d 6722:23
	6900:16	6687:3		6745:3
	6935:7	6722:2,3		
	inclusion			
	6702:16			

6804:25	6727:6	6757:14,19	6794:24	internal
inflation	6731:12	6810:14	integration	6702:3,4
6711:25	6738:11	6818:24	6728:10	6704:23
6755:23	6748:25	6819:8	intelligence	6709:19
6882:17	6773:12	6821:4,11	6742:5	6713:5
6903:7,22	6780:15	6835:5,15	Intended	6732:8
infor 6906:2	6917:24	6836:3	6857:16	6737:24
information	6924:22	6837:6,19	intent	6757:5
6696:2,10	inherent	6880:7	6752:20	6823:4
6703:11,20	6774:24	6881:3	6770:7,8	6863:3
6704:21	inherits	6886:3	6789:2	6869:11
6719:17	6792:13	6901:19	6807:21	6877:2
6721:12,18	in-house	6902:3,7	6808:15	6897:15
,23	6716:20	inside	6812:16	internally
6755:20	6783:22	6873:11	6892:10	6783:24
6766:13,14	6801:5	inspecting	inter 6756:9	6803:15
6803:11	initial	6754:4	interchangea	international
6813:13	6680:12	inspection	bly 6880:2	l 6725:22
6820:12	6702:2,13	6752:23	interest	6752:20
6825:2	6738:9	installation	6698:11	6753:17
6831:24	6750:5	6733:6	6700:21	6761:20
6832:4,7	6766:7	instance	6718:8,25	6769:7
6834:18	6827:3,4	6709:3	6882:17	6923:25
6852:25	6828:25	6738:21	6904:18	international
6861:3	6918:23	6772:16	interested	lly
6862:20	initially	6781:23	6889:14	6769:18
6864:12	6720:9	6815:20	interesting	interpret
6865:18	6727:12	6919:13	6764:18	6824:19
6868:4	6735:12	instances	6751:13	interpretati
6869:7,10,	6750:7	6713:17	6791:21	on 6926:24
11,15	6767:2	instead	6807:12	interpreted
6870:2,8	6826:18	6736:15	interface	6887:1
6871:19,20	initiated	6784:4	6735:9	interpreting
6872:7,18,	6918:15,23	6809:5,7	6794:14,22	6848:18
25	input	6810:13	6798:20	interrupt
6873:3,8,1	6707:22	instructed	6799:14	6796:24
0,12,17,25	6708:14	6680:20	6800:2,18	6868:9
6874:3	6739:11	insufficient	6801:23	interval
6885:9	6750:3	6738:1	6802:11,19	6736:22
6889:14	6878:22	6744:24	6803:4,10	intervene
6893:15,17	6937:24	6801:19	6804:3	6886:19
6895:20	inquiries	insurance	interfaces	6913:20
6906:2,5	6844:20	6702:3	6741:24	Intervenors
6908:5	in-service	6704:17	6795:2	6693:18
6910:5,21	6698:2,13	6751:14	6803:25	6938:12
6911:11,12	6700:17,23	intake	interim	interview
6921:4	6718:7	6730:25	6756:12	6814:3
6925:19	6725:24	integrated		introduce
infrastructu	6735:19			
re 6698:21	6756:3,10			
6704:13,20				
6726:22				

6680:5	6889:16	item 6730:8	23	6847:24
6682:3	irregardless	6755:25	6765:5,6	6848:22,23
introduced	6779:1	6833:3	6766:23,25	6849:4
6830:17	irrelevant	6841:7	6767:1,2,6	6851:22
6835:8	6901:12	6843:14	,14	6852:1
invest	irrigation	6889:21	6769:15	6853:9
6692:24	6688:13	items	6771:5	6854:20
invested	IRs 6696:5	6699:10	6773:21	6856:14
6723:1	6868:25	6704:8	6776:9	6858:11,13
6805:5	6888:13	6734:9	6777:2	6864:7,13
investigatio	ism 6771:19	6735:4	6778:1	6865:1,4
n 6920:25	isn't 6739:5	6743:6	6779:3	6867:10
investigatio	6760:21	6755:12	6784:6	6869:3
ns 6746:9	ISO 6752:21	6787:1,9	6788:8,15,	6872:7
6760:15	issue 6738:2	6789:24	24,25	6876:18,19
investment	6739:20	6790:5	6791:25	6879:14
6692:23	6747:13	6793:5,6,7	6796:6,9,1	6880:2
invite	6762:8	6797:5	7,19	6882:25
6809:21	6764:19	6799:7,18	6801:1,2	6889:11,12
involved	6789:7	6802:9	6807:20	6890:25
6688:23	6801:23	6808:9,10,	6809:1,10,	6896:13,15
6698:17	6802:16,18	12,14,24	11,17	,17,18,24
6701:5	,21 6803:3	6811:4,18	6812:17,18	6897:2,10
6723:16	6805:11	6813:16	6814:11,16	6899:8
6733:18	6832:18	6815:18	6816:11	6900:24,25
6739:1	6834:16	6819:7,9	6821:19,21	6902:12,15
6761:18	6835:4	6823:3,10,	6825:10	6909:5
6803:20	6861:3	17	6827:4	6913:5,24
6860:14	6893:4	6828:8	6829:9,10,	6919:8,9
6861:20	6895:14	6830:22	14	6921:22,23
6877:14	6912:15	6831:1,8,2	3	6923:7,23
6923:3	6919:25	6832:16,21	6837:21	6926:13,24
involvement	issues	6838:11,12	6841:6,8,1	6928:7,22
6707:22	6733:22	6842:3	6843:1	6929:8
6733:16	6735:9	6845:21		6935:12,15
6750:2	6744:22			6936:3,6
6877:24	6762:2			6938:1,16
6878:3	6832:17			IV 6832:17
6920:4	6833:2			6841:6
involves	6860:11			I've 6680:19
6750:2	6884:17			6681:16
involving	6894:23,25			6688:23
6820:22	6895:3			6689:20
IR 6774:4	6899:15			6691:20,21
6866:12	6938:20			,25
6867:8	issuing			6692:2,6,7
6872:23	6835:10			,20
6873:23	itching			6728:24
	6837:5			6761:6
				6762:10
				6763:21
				6764:13,17
				6766:12,22

6767:12	6766:21,22	6705:13,15	6924:21,22	13
6775:20	6771:22	,19,20	6925:8,16	6689:7,13
6849:4	6838:2	6708:8,17	6927:17	6690:7,15,
6859:15	6853:1	6709:12	6928:16,20	18
6860:5	jumping	6718:2,9	6929:17	6691:7,15,
6872:19	6768:19,24	6719:13	6931:15,16	25
6897:5	jurisdiction	6720:2	,25 6932:2	6692:12,15
6915:21	s 6702:21	6721:8	Keeyask's	6693:15
6917:20	6714:15	6722:25	6723:10	6695:9
<hr/>	6824:14	6726:3,13	Kettle	6696:5,16
J	6826:7	6727:3,21,	6719:7	6700:10
<hr/>	6919:10	24 6728:17	6721:20	6706:12
January		6729:22		6707:14
6678:11	justificatio	6730:9,10,	key 6717:21	6720:19
6680:11	n 6687:3	21 6731:12	6734:5	6723:16
6684:4,8	6846:6	6734:13	6786:4	6729:1
6685:14	6847:14,24	6741:13	6893:13	6733:10
6690:18	6853:8	6745:21	6897:13	6734:20
6730:4	6937:14	6748:13,24		6735:15
6734:8	justificatio	,25 6749:4	KG 6780:24	6738:1
6768:18	ns 6722:2	6751:20	KGS-Acres	6746:3
6826:24	justify	6755:2	6718:15	6749:2,23
6827:14,21	6713:5	6757:15	6757:3	6751:10
6870:25	6909:2	6759:13	KGSP 6705:19	6752:9
6913:21,24		6772:24	6780:10	6753:6
Jennifer		6775:23	6781:21	6756:23
6676:9		6776:1,4,2	6782:8	6757:18
Jessica	<hr/>	0		6785:5
6676:21	Kapitany	6777:7,9,2	Kiewit	6788:23
job 6760:15	6675:14	4 6778:6	6761:20	6796:1,4
6764:16	6703:9,24	6779:15	6763:15	6799:5,15
6766:3	6710:19	6780:5,15	kilowatt	6813:4
6845:13	6711:11	6782:19	6714:12,16	6824:25
6894:18	6739:4	6789:9,14,	,21	6828:16
jobs 6722:8	6742:10,13	22 6790:1	6715:8,21,	6832:9
6724:5	,25	6805:3	22,25	6843:24
jog 6890:2	6745:12	6809:4,20	6913:23,25	6844:4,18
John 6863:12	6781:2	6811:3	kilowatts	6850:12
joint	6784:21	6818:22	6715:25	6921:3
6727:1,5	6796:23	6819:11	KIP 6704:20	knowledge
judgment	6806:25	6820:8	6705:18	6733:21
6703:13	6810:23	6835:12	6773:7	6783:23
6864:14,18	Keeyask	6836:9	6780:24	6868:1
,22	6686:13,15	6843:20	6781:18	6878:14
6900:14	,17	6855:6	6782:8	6895:16
6936:17	6687:14,17	6868:23	Knight	known 6698:8
July	,25	6869:21	6677:6	6699:14
6734:7,25	6697:16	6870:4	6679:3	6707:4,5
6899:22,25	6699:7	6875:1,11,	6681:9,12,	6723:23
jump 6718:20	6701:7,13,	24 6884:24	18 6682:1	6735:6
	20 6702:14	6894:13	6684:23	6777:8
	6703:14	6898:18	6685:3,10,	KP 6678:9,11
	6704:6,19	6905:13		
		6906:15		

6682:13	6698:17	6695:20	6681:22	6786:24
6683:15,16	6700:2,4	Laliberte	6817:20	6823:21
,21,22,24	6720:12	6680:15,18	later 6702:6	6848:25
6684:5,7	6722:5,11,	,22	6732:11	6887:1
6688:7	13,17,19	language	6734:25	6893:18
6755:21	6723:9,10,	6797:24	6743:17	6895:8
6777:16,24	13,17,21	6890:12	6744:17	6911:4
6780:22	6724:15	6891:22	6749:22	leave
6794:9,10	6725:3,21	large	6766:8	6802:18
6798:19	6726:5	6688:12	6825:22	6804:10
6799:4	6728:3,5,1	6707:11	6826:25	6805:23
6813:8	3 6732:8	6713:13	6873:22	6806:1
6833:4	6733:24	6722:6	6919:19	6867:9
6860:13	6738:23	6723:4	Lavigne	6899:5
KP-3-1	6742:14	6725:1	6939:13	led 6686:24
6678:3	6743:4,5	6746:7	Law	6746:25
6682:17	6744:22	6759:20	6760:19,22	6803:22
KP-3-2	6757:10,24	6762:3	lawyer	6925:21
6678:4,7	6762:9,11,	6823:5	6765:23	left-hand
6682:23	17	6825:5,14	6927:24	6769:23
6683:4,11	6763:11,22	6826:9	layout	Lemoine
KP-3-3	6764:19	6829:11	6728:21	6680:20
6678:6	6767:7	6858:9	le 6768:5	6681:1
6683:8,10	6787:20,25	6876:22	lead 6734:9	less 6699:16
6785:15	6805:11	6917:24	6746:15	6720:25
KP-4 6678:8	6841:18	6920:9	6842:14	6737:10
6683:18	6842:2,3,6	6922:5,11,	6902:9	6753:17,18
KP-5 6678:9	,9,15	18,21	leading	6761:9
6683:24	6843:7,19,	largely	6745:2,4	6770:10
KP-6 6678:11	22	6761:3	6876:10	6775:22
6684:7	6844:6,9	large-scale	leads	6777:7
KP's 6869:6	6850:4	6876:22	6732:11	6781:7
KURT 6682:15	6870:10	Larry	6735:4	6790:3
6684:10	6884:5,11	6675:15	6824:12	6794:25
6886:14	6906:22	last 6680:8	6847:3	6800:3
	6913:17	6706:16	learned	6821:8,14,
	6930:4,18	6758:6	6735:10	15 6829:16
	6933:7,13	6762:13	6745:22	6831:7
	6934:6	6763:18	6849:4	6914:14
	6935:16	6802:1	6875:19	6919:4
L	6936:14	6804:21	6906:6	6928:1
La	6937:15	6806:23	6915:21	6930:6
6680:11,16	Labrador	6813:1	learning	6932:19
,19	6688:19	6822:13,15	6875:23	lesson
6701:11	6823:2	6841:6	6876:6	6735:9
6821:16	lack 6720:9	6843:12	least	lessons
label	6722:21	6846:5	6722:19	6745:22
6887:15	6804:22	6914:18	6728:25	6906:6
labelled	6875:13	6933:6	let's	
6696:22	6920:1	lastly		6767:17
6697:5	ladies			
labour				

6808:13	6834:2	6750:21	6856:16	lost
6822:8	life 6716:25	6751:15	6872:7	6718:10,11
6853:19	light 6726:3	6905:6	6873:5,22	lot
6858:20	6782:9	list	6875:1	6689:13,20
6892:21	6783:20	6677:3,4	6888:16,19	6692:16
6918:6	likelihood	6678:1	6889:23	6738:21,25
6924:5	6712:11	6679:1	6893:7	6759:20
6926:6	likely	6743:11	6901:2	6761:17
6930:24	6723:11	6814:10	6922:8	6764:9
6932:9	6729:6	6817:5	6937:5,6	6766:8
letter	6753:6	listed	live 6764:1	6773:21
6751:4	6770:22	6780:21	load 6678:14	6776:25
letters	6771:4,5,9	6822:22	6817:6,10	6778:7,14
6905:7	,20	6845:17	local	6781:18
level	6776:2,5	6867:6	6738:10	6783:9,10
6699:15	6791:14	listened	location	6803:24
6705:17	6800:3	6864:4	6722:7	6808:18
6722:15	6890:5,9,1	liter	6723:22,23	6834:10
6744:9	2,14,25	6911:10	locations	6868:23
6752:5	6892:21	literature	6689:2	6874:18
6753:10	6907:22	6861:4	logical	6894:13
6770:4	6910:7	6917:20	6761:5	6895:19,20
6778:15	Limestone	litigation	6805:16	6916:3,5
6781:4,14	6719:7	6704:15	6855:23	love 6859:19
6784:2,3	6720:8,15	litigious	logically	low 6722:23
6792:19	6877:14	6765:21	6716:6	6744:15,17
6807:22	limit	little	6844:10	6760:21
6808:2	6793:18	6718:4	6876:2	6805:1
6809:17	limitation	6721:11	long 6703:2	6815:4
6812:17	6836:1,4,1	6745:13	6709:7	6846:22
6823:18	4 6837:10	6768:19	6719:7	6851:4
6825:25	limited	6770:15	6721:11	6852:3,5,7
6828:13	6834:1	6774:19	6734:9	6853:10
6833:18	limits	6777:14	6735:3	6884:24
6834:6	6830:24	6778:2	6831:23	6892:6,18
6835:8,17,	line 6712:5	6785:25	6836:10	6901:7
18,19,20	6773:21	6787:1	6838:11	6918:23
6857:22	6799:23	6789:13	6922:12	6919:5
6873:3,17	6818:19	6792:8	longer	6928:23
6879:17	6838:1	6794:8,21,	6783:16	low/
6881:3	6846:14	25	6802:8	reference/
6887:3	6856:2	6795:4,15	6845:12	high
6889:8	6880:5	6800:11	6931:10	6885:22
6891:23	lines	6803:13,24	6934:23	lower 6687:2
6893:5	6695:22	6813:3,13	look-ahead	6691:22
6916:9,10	link 6936:22	6828:1	6741:15	6716:7
6920:23	liquidated	6830:14	loopholes	6719:5
6925:18	6687:19	6848:3	6766:21	6725:21
6931:24		6849:6	6919:18	6770:15
6932:5		6853:25		6771:4,12,
6933:13				20
levels				

6772:4,17	6686:18	management	6794:15	6694:9
6778:15	maintenance	6686:6,16,	6798:20	6696:11
6781:15	6686:12,19	21	6799:14	6697:13,21
6784:2,3	6697:14	6687:5,13,	6800:2,15,	6698:2
6792:14	6701:25	15,22	18	6699:4,13
6800:11	6702:6,24	6691:20	6801:18,23	6700:12,14
6830:23	6715:20	6697:18	6802:7,19,	,25
6843:8	6839:11	6698:8,22	25 6803:4	6702:11,18
6892:8	major	6699:21	6804:2	6704:2,21,
6919:16	6687:17	6700:2,12	6826:5	23
6932:6	6693:4	6704:14,24	6841:4,7,1	6705:3,6,1
lowest	6702:14	6705:7,17	2,16	4,23
6918:16	6714:12	6706:5,9,1	6842:2	6706:3,22,
6919:12,15	6719:8,21	3,21	6850:20	23
lows 6839:3	6730:22	6708:19	6852:22	6707:2,15
lump 6707:13	6733:18	6709:18,19	6853:9	6708:14,22
lumped	6735:2	,20	6862:7	6709:7
6935:8	6737:17	6712:10	6883:25	6710:11
lunch 6784:7	6744:18	6713:2	6884:6,11,	6711:3
6938:21	6748:13	6716:12	18 6886:22	6712:9,17
	6760:12	6718:8,22	6887:4,10,	6713:15
	6764:4,5	6724:19	23	6714:5,10,
	6783:25	6725:10,16	6891:4,7	19
	6802:8	6727:11,20	6895:4	6715:12,15
machine	majority	6728:10,12	6900:10,13	6716:3,11,
6710:16	6912:10	6729:1	,16	19,21
madam	maker	6730:19	6905:16	6717:2,7,1
6680:20	6757:22	6731:2,8,1	6906:21	4,17,23
6681:1	6796:7,9	8,22,25	6920:13	6719:18
6744:23	6797:24	6732:1,3,1	6930:1	6720:4,10,
magnitude	maker's	2,15	6933:12	18
6776:10	6888:9	6733:2	6934:19	6722:1,20,
6777:2	makeup	6734:4	6935:7	24 6723:18
magnitudes	6728:23	6737:5,12,	6936:21	6724:17,21
6776:16	6730:8	24	6937:4	6726:10
6848:12	6816:6	6740:14,15	managing	6727:7,11
main 6687:10	manage	,25	6706:10	6730:18
6707:19,20	6699:6	6741:4,9,1	6731:5	6731:10,14
6726:15	6705:18	2,21	6737:11	6732:10,18
6733:7,19	6731:11,15	6742:3	6740:4	6733:14,25
6738:14	6745:24	6744:24	6755:9	6734:6,18
6752:8	6786:23	6745:1,10,	6804:3	6736:14
6760:11	6801:4	25 6746:18	Manitoba	6737:6,20,
6766:4	6893:4	6749:15,21	6675:3,7,9	24
6786:16	managed	6752:4,10,	,23 6676:5	6739:6,11,
6877:13	6700:14	12,18,19,2	6681:16,18	18
mainly	6706:1	1	6685:4,6,1	6740:3,19,
6692:1	6754:22	6754:17,19	5 6686:5	24 6741:3
6722:15	6799:25	6756:15	6687:6,16	6742:1,3,1
maintenan	6898:20	6757:23	6690:1,7,1	1
		6758:17	0,20	6743:2,21
		6783:17,21	6691:23	6744:25
		6787:4,22	6693:21	6745:8,24
		6788:4		6747:3,7

6748:12,17	6866:1,25	6811:17	6695:24	6812:15
6749:3,9,2	6869:19	6827:18	6698:17	6820:23
5 6750:6,8	6872:15	6869:24	6712:22	6821:19
6751:5,7,1	6873:24	6870:5	6850:5	6825:24
1,13,15,18	6875:3,18,	Mari 6899:9	6860:13	6853:16
6752:2,4,9	22	Marilyn	math 6831:4	6857:24
6754:13	6876:4,13	6675:14	6907:7	6858:15
6755:1,4,8	6877:1	6703:9,24	6927:25	6859:8
6756:18,22	6878:25	6710:19	6930:3	6865:4
6757:4,19	6881:20	6711:11	6932:19	6868:9
6760:9	6884:4,12,	6739:4	6935:22	6872:22
6766:3	17	6742:10,13	mathematical	6878:5
6767:2	6886:2,13	,25	ly 6831:9	6900:16,17
6768:8	6887:24	6745:12	matin 6768:5	6901:5,22
6780:2,3	6893:22	6781:2	matrix	6903:3
6781:11,25	6894:1,22	6784:21	6743:25	6915:23
6786:19	6895:9,10,	6796:23	6769:20	6922:7
6788:12	19	6810:23	matter	6938:14
6792:8,13	6897:15,25	mark 6886:11	6735:22	maybe 6763:8
6793:2	6898:5	marked	6762:24	6783:25
6797:5,6,1	6899:9,25	6817:6,15	6767:13	6801:5
5,21	6900:5	6818:9	6808:9	6810:24
6798:20	6902:1	6886:12,13	6812:17	6821:8
6802:12,15	6903:6	market	6819:2	6838:1
,22 6803:8	6904:9	6727:25	matters	6871:1
6804:22	6905:1,2,2	6728:3	6681:11	6880:14
6805:2,16	0 6906:7	6742:5	6922:25	6883:8
6806:8,12	6911:22	6745:2	maturing	6899:6
6811:2,6,2	6912:5	6823:6	6786:20	6909:7,12
0	6913:6	6849:21	6800:12	6913:21
6813:7,14	6914:9,16	6850:4	6896:23	6914:3
6817:7,21,	6920:19,21	Marla 6676:6	maturity	6918:5
24 6818:16	6921:4	master's	6781:14	McGill
6825:19	6923:10	6691:18	6897:11	6691:18
6826:4	6925:15	material	maximize	mean 6758:8
6827:3,23	6927:6,18	6726:5	6750:3	6760:21,23
6831:15	6929:17	6756:24	may 6694:13	6761:9,17
6832:24	6930:9	6758:15	6711:22	6762:24
6837:7	6931:17	6763:21	6737:25	6763:8
6838:4,24	6932:3	6778:3,7	6746:15	6771:6
6839:10,14	6935:7,10	6787:24	6748:17	6781:6,7
6840:12	6937:14,24	6803:15	6761:23	6797:17
6848:21	manner	6814:11	6762:6,14,	6800:25
6850:1	6715:6	6842:9	25 6765:21	6802:10
6854:18	6749:14	6843:5	6767:13	6809:4
6856:14	6751:16	6849:20	6788:1,2	6816:5
6857:19	manufactured	materialized	6789:14	6828:2
6858:16	6751:7	6802:7	6802:3	6836:10
6860:24	March 6678:3	materials	6811:5	6854:25
6861:7,11	6682:12,18			6880:7
6862:18	6757:20			6886:25
6863:3	6769:2			6891:17
6864:2,21				
6865:15,22				

6893:2	6895:19	6792:5,9,1	6812:13	6791:9,12,
6894:6	Megaproject	6 6793:4	mentioned	18,23
6896:13	6922:6	6794:4,5,1	6689:12	6792:5,9,1
6902:22	megaprojects	9	6696:14	6 6793:4
6913:20	6922:18	6795:3,8,1	6701:4	6794:4,5,1
6917:9,13	megawatt	4	6739:4	9
6919:12	6701:17	6796:15,21	6742:10	6795:3,8,1
6920:8	6715:2,13	6797:11,12	6754:23	4
6929:2	6717:19	,22	6762:8	6796:15,21
6931:7	6721:6,16,	6798:3,6,1	6774:16	6797:11,12
6935:11	23 6808:13	1,18,25	6792:23	,22
meaning	6810:11	6799:9,13,	6838:15	6798:3,6,1
6890:13	6812:4	20	6879:5	1,18,25
meaningful	megawatts	6800:8,20,	6884:15	6799:9,13,
6719:16	6721:5,14,	23 6801:12	6913:14	20
means	22	6802:5,17	Menzies	6800:8,20,
6705:17	Meghan	6803:2	6677:11	23 6801:12
6731:13	6677:11	6804:9,15,	6693:19,20	6802:5,17
6904:15	6693:20	20	,24	6803:2
meant	6768:3,4,7	6805:9,17,	6767:25	6804:9,15,
6710:25	6769:6,12,	22	6768:3,4,8	20
6852:5	22	6806:1,12,	6769:6,12,	6805:9,17,
meantime	6770:2,8,1	16,22	22	22
6938:14	4,19,25	6807:7,11	6770:2,8,1	6806:1,12,
measure	6771:8,13,	6809:9,14	4,19,25	16,22
6711:17,22	17	6810:16,17	6771:8,13,	6807:7,11
,23 6740:3	6772:2,6,9	6812:8,9,2	17	6809:9,14
6829:11	,15,21	1,25	6772:2,6,9	6810:16,17
6886:1	6773:5,11,	6813:12	,15,21	6812:8,9,2
6897:24	18	6814:6,18	6773:5,11,	1,25
measures	6774:2,10,	6815:2,10,	18	6813:12
6723:3	12	13,22	6774:2,10,	6814:6,18
6905:12	6775:4,12,	6816:1,7	12	6815:2,10,
6919:23	14,19,25	6822:12	6775:4,12,	13,22
measuring	6776:4,8,1	member	14,19,25	6816:1,7,1
6883:1	2	6675:14,15	6776:4,8,1	1 6825:24
Mecatina	6777:4,10,	,16,17	2	merchant
6701:8	18	6681:3	6777:4,10,	6818:23
mechanical	6779:11,12	6806:25	18	6822:23
6735:7	,19	members	6779:11,12	Merci
6803:12	6780:5,9,1	6681:8	,19	6693:11
mechanical/	4,17	6682:8	6780:5,9,1	6694:3
electrical	6782:13,14	6768:6	4,17	6695:7
6702:7	6783:1,13	6780:20	6781:3	6847:10
meet 6865:25	6785:11,12	6818:15	6782:13,14	mercy
6866:13	6787:19	6938:15	6783:1,13	6765:21
6891:25	6788:17	memory	6785:5,8,1	met
meetings	6789:6	6735:25	1,12	6753:15,22
	6790:6,17,	6853:18	6787:19	6754:2
	18	6890:3	6788:17	6870:2
	6791:9,12,	mention	6789:6	method
	18,23	6680:8	6790:6,17,	
			18	

6711:1	6677:7	0,20	6847:1,21	6890:1,23
methodology	6684:24	6793:7,13,	6854:7,23	6891:5,16
6697:20	6685:9,18,	17 6794:1	6855:15,22	6892:1,9,1
6845:1,6	22 6686:4	6796:16	6856:7,23	5,20
methods	6688:8	6797:3,16	6858:13	6893:2,24
6686:22	6689:9	6798:1,4,2	6859:24	6894:2,7,9
6705:18	6695:19	4	6860:18,21	,20
6707:2	6703:16,25	6799:6,11,	,25	6895:1,12,
6710:20	6706:19	16	6861:13,18	17
6716:13	6708:25	6800:7,25	,23	6896:1,4,8
6723:1	6709:15	6801:10,24	6862:2,8,1	,12,19
6731:14	6710:9,15,	6802:6,24	3,16,22	6897:2,8,1
6733:5	24 6712:4	6804:7	6863:1,7,1	4,18,22
6790:21	6713:24	6805:8,15,	0,13,17,21	6898:3,11
6805:4	6714:3	20	,25	6899:12,18
metres	6729:23	6806:6,14	6864:10,16	,23
6753:23	6730:1	6807:6,10	,19,23	6900:3,8,2
MH 6800:13	6735:24	6809:3,10	6865:6,16,	0,24
6801:19	6736:11,17	6810:7	19,23	6901:11,14
MH/KPI-010	6737:2	6811:16,24	6866:2,6	,18
6888:14	6738:17	6812:19,22	6868:8,19,	6902:9,14,
MH-104-13	6739:9,25	6814:21	22	19,22
6678:13	6742:12,18	6815:3,11,	6869:17,23	6903:9,13,
6817:9	6743:12	17,25	6870:5,12,	20
MH-173	6745:19	6816:3	16,22	6904:1,21,
6678:19	6747:18,22	6819:5,11,	6871:5,12,	24
6886:16	6748:1,9	17	21,25	6905:9,18,
MH-174	6753:11	6820:3,15,	6872:20	22
6678:15	6758:10	20	6873:14,19	6906:4,11,
6817:17	6759:2,5,1	6821:7,13,	6874:1,6,9	17,23
MH-175	0 6760:5	18	,15,23	6907:1,6,1
6678:17	6763:6	6822:2,11,	6875:5,8,1	2,17,25
6818:1	6765:3,10,	25 6824:9	5,20	6908:6
M-hm 6747:22	12,16,19	6825:7,17	6876:1,7,1	6913:19
6771:13	6769:10,21	6826:1	7,24	6914:2,8
6772:2	6770:1,23	6827:2,19	6877:6,10,	6917:4,8,1
6783:13	6771:10,14	6828:7,21	15,20	3 6919:8
6789:6	,23	6829:9,23	6878:1,6,1	6920:2,11,
6792:9	6772:3,7,1	6830:9,21	1,16,19,23	17
6802:5	4,20	6831:15,20	6879:3,9,1	6921:11,17
6815:2,10	6773:6,14	6832:23	4,20	,21
6830:9	6775:11,24	6833:8	6880:4,23	6922:16,24
6865:23	6776:7	6834:8,22	6881:6,13,	6925:13
6903:20	6777:6	6835:24	19	6926:18,22
6931:19	6779:17,23	6836:5,7,2	6882:11,14	6927:15,20
MH's 6800:12	6780:7,12,	0 6837:4	,22	,23 6928:4
Michael	16,23	6838:10,21	6883:3,24	6929:1,4,7
6676:19,25	6781:1,9	6839:1,5,8	6884:8,14	6930:12,21
	6787:8	,23	6885:4,11,	6931:7,19,
	6788:24	6840:6,13,	19 6886:7	23
	6789:16	21 6844:8	6887:5,11	6932:13,17
	6791:8,11,	6845:21	6888:4,11,	,21,25
	16,20	6846:3,8,1	17	6933:16
	6792:3,6,1	9	6889:4,11	6934:9,14,

20	minimize	6761:16	monetizing	6815:14
6935:2,9,2	6735:9	6878:5,6	6897:11	6829:6
0 6936:2,6	6754:20	6896:3	money	month
microphone	minimizing	6905:3	6698:12	6736:22
6784:24	6731:3	6916:11	6700:3,22	months
6859:3	6737:7	6921:1	6705:2	6736:3
middle	mining	mitigated	6709:23	morning
6715:16	6688:14	6744:14	6755:24	6680:3
6835:17	6689:12,14	6760:25	6793:19	6681:7,8,1
6841:8	,15	6803:7	6808:13	4,24
6918:9	6692:17,18	6896:15	6850:21	6683:2
Mike 6691:3	6693:5	mitigating	6882:18	6693:21
6693:3	6724:9	6802:22	6884:19	6695:10,20
Miller	minute	6805:13	money's	6768:5,6
6676:14	6710:20	mitigation	6890:13,16	6774:17
million	6816:13	6704:5	monitor	6785:1,18
6701:18	minutes	6745:9	6706:5	6790:23
6715:13	6695:13,17	6896:14	6896:24	6801:14
6721:6,13,	6747:24	mix 6937:6	6897:3,6	6807:1
15,21,22	6767:14,15	mixture	6899:10	6816:17
6725:25	,18	6733:4	monitoring	6877:23
6808:12	6816:18	MKO 6676:18	6731:23,24	6888:8
6809:6	6915:22,23	6694:4	6741:8	6896:5
6810:9,11	MIPUG	MMF 6676:21	6894:19	6924:20
6812:4	6676:16	6680:18	Monnin	6925:14,23
6828:4,5,8	6678:15	model	6676:24	6928:21
,9,24	6680:18	6829:25	6677:10	6938:15
6829:4	6694:1	6830:1	6682:3,6,7	Moroz 6676:9
6830:7,13,	6817:14,17	6831:6	,20	mostly
14 6838:18	6818:9	modelling	6683:1,13,	6689:24
6854:5	6836:24	6813:6,7	20	6696:11
6900:7	6856:15	models	6684:1,12,	move 6682:8
6906:25	MIPUG-20-8	6917:25	20	6720:14
6907:4,10	6678:18	6937:23	6685:2,10,	6730:1
6927:19,22	6818:11	moderate	19 6686:1	6735:16
6932:11	miscommunica	6744:14	6688:1	6743:23
mind 6777:15	tion	modification	6689:5	6770:15
6793:10	6899:7	6933:12	6690:2,14,	6771:18
6809:15,17	misread	6933:10	24	6774:13,19
6886:20	6710:7,10	modifying	6691:4,10	6790:19
6933:4	misreading	6933:10	6692:10	6794:6
minds	6735:21	moment	6693:11,18	6929:24
6853:25	miss 6760:21	6701:11	6695:4,6,7	moved
6933:10	missed	6795:10,22	6809:18	6931:11
mine 6689:15	6803:21	6811:6	6810:1	moving
6735:16	mitigate	6881:25	6832:5	6697:2
mines	6749:9,10	6893:7	6841:15	6698:25
6689:1,16	6760:8	monde 6768:5	6847:10	6703:4,25
6693:6,10			6938:23	6705:5
			Monte	6706:23
			6813:8,15	

6707:1	6724:9	6717:6	6728:13	O&M
6714:4	nature	6726:11	6933:25	6714:6,19,
6716:10	6762:22	6819:21	6935:10	20
6717:22	6764:24	6870:2	normally	objection
6737:3	6765:1,17,	6885:1	6736:2	6694:5,11
6740:23	18 6799:19	6901:4,8	6751:3	objections
6924:15	nearer	6902:18	north	6693:21
multiply	6797:19	6903:2,4	6699:10	6694:1
6698:11	necessarily	6904:19	6761:20	objectives
6882:17	6773:24	NGCD 6752:11	6764:1	6733:19
Murphy's	6781:6,7	nice 6706:20	6914:6	obliged
6760:19,22	6825:13	6872:7	Northern	6752:22
Muskrat	6851:15	nine	6722:8	observation
6688:19	6872:9	6686:8,11	6724:5,6,1	6716:21
6701:4	6930:22	6687:8	7 6746:8	6719:22
6713:21	necessary	6695:22	note 6696:20	6730:15
6758:23	6724:3	6697:3,7	6705:1	6844:9
6819:2,6	6733:24	6721:8	6785:1,18	observations
6821:4,8,2	6744:9	6729:16	6816:8	6806:3
2 6823:1	negative	6808:9	6857:18	obtain
6824:6	6890:7	6810:12	noted	6699:18
6848:7,8,1	6926:15	6828:4	6756:20	6707:22
0,18	negatives	6903:10	notes	6863:5
6849:24	6889:17,25	6904:10	6844:20	6865:17
6850:7	negotiated	6928:5	6857:6,7	obtained
6904:3	6707:9	6930:14	nothing	6720:18
myself	6737:19	6938:25	6876:3	6893:16
6685:23	neither	ninety	notice	obtaining
<hr/>	6734:17	6831:6	6925:15	6862:20
N	Nelson	ninety-one	noticed	6872:25
Nation	6687:2	6830:5	6860:13	6873:2,17
6704:17	6719:5	nitty-gritty	November	6911:10
6722:8	6724:13	6938:2	6736:20	obviously
6724:5	network	noise	6909:10	6696:15
6726:20,21	6755:10,11	6928:16	6910:20	6703:17
,23	,12	non-	np	6709:16
6727:1,5	nevertheless	competitiv	6676:2,6,7	6760:7
6738:10	6870:25	e 6737:18	,9,13,14,1	6802:11
6746:23	Newfoundland	6738:13	9,21,22	6862:15,16
Nations	6688:18	non-	numeral	6915:9
6692:21	6823:2	conforming	6683:6	6919:9
6720:6	news 6922:7	6754:9	6785:16	6934:1
6724:16	NFAT	Non-fixed	6832:17	occasion
6738:19,20	6680:20,21	6749:17	numerical	6693:9
natural	,25	nonresidenti	6845:1	occur 6738:8
6686:19,22	6681:4,10	al 6724:7	<hr/>	occurred
6714:7	6685:12	normal	O	6725:22
6715:10	6693:16			6851:2
6716:17				
6717:5				

6864:4	6729:25	6882:21	6839:10	6758:7
occurring	6737:3	6886:5,9	operation	6765:1
6744:5	6758:18	6887:6	6686:12,18	6777:25
occurs	6769:17	6888:17	6697:14	6797:25
6850:22	6773:5,18	6891:9	6701:25	6801:5
o'clock	6774:2,12	6898:24	6702:24	6822:23
6939:1	6777:10	6900:11	6705:11	6823:25
offer	6779:17	6901:13,17	6715:20	6868:18
6704:22	6780:9,17	6906:13	6716:16	6895:16
6738:1	6783:1	6908:21	opinion	6900:14
6833:9	6785:12	6909:15	6704:23	opposite
6835:1	6787:19	6911:3	6706:19	6797:25
6843:22	6788:17	6915:20	6738:2	6908:12
6844:9	6789:6	6917:12	6746:4	optimize
offering	6790:15	6921:2	6757:13,21	6878:9
6723:19	6791:18	6924:5	6761:6	options
offhand	6793:4	6930:16	6783:4	6693:9
6711:19	6794:2,19	6935:4	6800:19	orange
office	6795:3,8	6938:4	6804:1	6859:12
6704:16	6796:15	old 6740:6	6824:10	order 6685:5
6802:13	6798:3	6898:17	6833:9	6690:8
official	6799:9,14,20	omission	6834:5	6734:10
6849:11	6801:10,12	6708:13	6837:6,18	6871:24
offline	6802:17	omitted	6850:12	6874:12
6779:18	6804:15	6729:13	6861:7	6884:3
6801:6	6805:17,22	ones 6760:1	6871:24	6897:23
6867:15	6808:4,8	6783:19	6874:20	6918:17
6885:12	6820:17	6808:8	6893:19	organisation
6892:21	6821:16	6898:18	opinions	6764:25
offsite	6822:3	one-third	6696:4	organisation
6704:5	6824:11,22	6705:4	6796:14	al 6783:18
oft 6919:9	6825:9	6709:13	6872:4	organization
oh 6759:10	6827:13	6832:20,21	opportunistic	6743:19
6765:16	6828:12	ongoing	cally	organization
6773:7	6831:22	6897:13	6918:11	al 6741:25
6808:11,13	6835:3,13	online	opportunitie	organization
6811:24	6836:6	6736:1,12,20,21	s 6726:25	s 6891:3
6821:20	6839:7	onshore	6878:18	original
6849:18	6842:11	6908:23	opportunity	6757:2
6864:10	6843:6	6910:12	6805:18	6768:18
6870:24	6844:12	onsite	6823:25	6780:3
6885:17	6845:15	6895:10	6824:3	6783:10
6890:4	6846:10	onto 6888:20	6857:7	6790:19
6904:15	6853:5	6926:7	6916:6	6794:6,7
okay	6855:24	open 6760:14	6917:19	6798:13
6703:4,24	6856:8,24	6766:15	6918:3	6803:10
6714:3	6857:3	operating	6927:4	6813:2
6715:19	6863:17		opposed	6909:23
	6864:3		6709:14	
	6866:17		6713:19	
	6868:21		6757:23	
	6874:24			
	6879:16			

originally 6783:4,6,7	6800:13	6761:15	6830:4	6829:3
originated 6879:15	outsourcing 6800:14,17	6767:6	6852:15	6831:14
Orle 6676:18	outstanding 6761:12	6793:14,15	6854:5	6832:1,11
6694:4,5,8	outworking 6789:3	6828:6	6884:5,10, 12,21	6854:12
others 6680:23	overall 6687:13,21	overruns 6760:2	6886:24	6889:1
6701:13	6714:11	6921:16	6887:17,21 ,24	6891:7,20, 23 6922:12
6702:23	6723:6	6922:13	6888:1,21, 25 6889:1	6926:13
6824:17,24	6730:18	overwhelmed 6873:4	6891:6,10	6933:11,13
otherwise 6707:4	6732:14	owner 6752:1	6916:25	P90s 6828:15
6926:23	6733:10	6754:1	6917:1,10, 14	6852:10
Oui 6818:7	6734:6,21	6792:17	6921:14,19	P95 6679:5
ourselves 6763:9	6739:17	owner/ developer	6926:12	6829:3
outcome 6890:10	6740:18	6792:8	6927:19	6831:14
outline 6778:25	6748:20	owner/ engineer	6928:8,13	6832:2,12
outlined 6743:1	6754:16	6753:13	6930:4	package 6706:9,11
6865:11	6755:13	owners 6689:25	6932:10	6708:8
6889:8	6756:3,10, 11 6778:14	Oxford 6917:23	6933:11	6826:11
outlook 6724:8	6783:20	6922:4	6934:2,7,1 0,13,23	packages 6732:17
out-of- pocket 6751:6	6804:4,6	<hr/> P <hr/>	6935:1,5,8 ,18	packets 6887:14
output 6823:16	6807:21,25	p.m 6784:13,14	6936:3,7	page 6677:2
6938:3	6808:15,21 ,22	<hr/>	P50-based 6797:20	6678:2,6
outright 6763:20	6815:19		P50s 6815:12	6679:2
outset 6719:15	6816:6		6936:12	6683:5,10
6759:1	6823:10		P70 6936:1	6697:23,25
6903:18	6867:23		P75 6936:1	6699:18
outside 6723:13	6874:16		P80 6757:23	6703:5
6735:12	6912:2,8	P10 6828:14	6758:7	6704:11
6767:6	6913:13	6926:14	6795:18,25	6705:16
6825:14	6934:23	P3 6928:22	6796:25	6707:3
6920:12	6935:6	6929:5	6797:9,15, 19,25	6714:9
outsourc	overhead 6754:13,14	P50 6699:14	6828:17,25	6715:11
	overlap 6868:20	6702:21,23	6830:4,13, 19 6831:6	6716:19
	6894:13	6757:23	6852:15	6717:17,22
	overly 6734:22	6758:7	6854:12	6718:1,6
	overnight 6908:13	6795:19,23	6887:2,25	6720:2,15
	6914:22	6796:18	6889:22	6722:12
	overpricing 6918:25	6797:15,25	6890:5,7	6723:5,22
	overrun	6824:15,18 ,24	P80s 6815:12	6724:5,13
		6825:4,22	6852:10	6725:20
		6826:5,7,1 0,14	6936:13	6726:21
		6828:24	P90 6679:4	6731:9
		6829:3,16	6828:2,19	6732:3,16

6748:22	6932:10	6809:19	6860:16	6890:21
6750:18			6917:2	6892:23
6751:1,23	pages	participatio	patently	6896:10
6754:15	6675:25	n 6704:17	6788:25	6899:1
6756:22	6716:2	particular	patience	6908:17
6757:17	6924:6	6688:16	6791:1	6909:19
6769:2	6927:7,12	6698:9	6816:8	6915:16
6772:22,23	panel 6677:6	6737:20	Patti 6676:5	6921:7
6774:13,18	6681:1,3,8	6755:20	6768:12,13	6925:11
6777:19	,11 6682:8	6756:5,8	6817:3,13,	6927:10
6790:19	6684:16,23	6762:7	20 6818:3	6931:5
6794:6	6694:21,22	6770:4	PAUSE 6703:7	paying
6795:9	6695:1	6790:22	6714:1	6751:13
6798:13	6703:3	6793:6	6736:9	6792:14
6800:10	6767:10	6818:19	6739:23	payments
6801:13	6780:20	6819:16	6742:16	6704:17
6807:1	6811:5	6824:25	6743:8	PCAs 6755:17
6811:12	6818:15	6906:5	6759:16	PDCA 6732:5
6813:2	6880:13	6929:14	6769:4	6733:1
6817:24	6928:25	particularly	6773:9	PDP 6855:12
6824:23,24	6938:6	6760:2	6775:17	peak 6715:3
6826:16,17	6939:4	6763:16,17	6777:21	6722:14
6829:1	paper	6799:17	6779:21	6830:23
6830:12	6696:12	6870:23	6786:13	people
6835:17	6917:22	6931:25	6787:14	6689:20
6841:8	6922:3,7,2	parties	6795:6,12	6724:3
6843:9	1	6680:12	6798:9,16	6764:13
6844:16	6923:16,19	6791:21	6801:8	6796:12,14
6847:4	,25 6926:8	6792:4	6804:13,18	6797:6
6848:4,5	6928:2	6803:16,20	6805:25	6802:12,13
6851:3,25	6930:7	6920:13	6806:10,20	6823:2
6852:1	6932:20	partner	6807:17	6864:21
6853:14	paragraph	6727:5	6809:25	6865:15,21
6854:1	6825:3	partners	6810:21	,25
6856:13	6833:3	6727:2	6811:9,14	6895:14
6857:14	6843:14	6877:13	6812:1	6926:1
6880:16	6848:19	partnership	6820:1	PEP 6705:15
6884:23	6857:17	6702:3	6829:21	6706:2,14,
6888:20	parameter	6720:5	6840:15,25	17 6708:17
6901:6	6721:22	party	6841:23	6740:21
6902:19	parameters	6784:22	6844:14	per 6701:16
6906:14,19	6815:1,6	6791:15,24	6846:12	6714:12,16
6908:11,13	6830:1	6804:4	6847:8	,21
6914:18,19	pardon	6845:5	6849:8	6715:2,8,1
6918:5,7,9	6747:19	pass 6753:24	6850:24	3,21,22,25
6921:5	parentheses	6763:3	6856:10	6721:6,16,
6922:2,9	6824:16	passed	6857:1,10	23 6764:20
6923:7	6841:10	6754:7	6880:21	6780:3
6924:6	6857:21,23	past 6760:4	6881:17	6808:12
6926:6,7	partial	6762:4	6883:10,15	6809:6
6927:13,18			6884:1	
6929:25			6885:15	
6930:25				

6810:9,11	percentage	6930:11	6725:17	6796:4
6811:2	6722:17	periods	6744:17	6799:5,15
6812:4,5	6849:5	6732:20	6749:22	6813:4
6815:18	6924:13	6848:13	6764:21	6824:25
6823:13	percentages	permanent	picked	6828:16
6868:18	6926:21	6704:8	6725:4	6832:9
6905:6	perfect	person	6726:16	6843:25
perceive	6772:6	6755:8	6738:3	6844:5,18
6756:15	6794:8	6763:2	picking	6850:12
6902:25	6800:11	6861:25	6757:9	6921:3
perceived	6810:17	6923:9	picture	Piesold's
6717:20	6813:3	personally	6884:14	6685:13
6744:20	6816:7	6692:20	pictures	6700:11
6802:1,3	perform	6735:16	6859:21	6720:19
percent	6745:4	6802:16	piece	6735:15
6699:15,17	performance	6805:21	6912:9,10	6796:2
6720:24	6721:19,24	6922:16	6914:14	pipeline
6723:6,9,1	6732:12	persons	pieces	6724:10
3 6726:1	6734:4,5	6863:4	6803:14,16	places
6744:5	6741:24	perspective	Piesold	6693:6
6750:9	6742:5	6687:1	6677:6	6800:9
6753:17	6745:15,18	6719:3	6679:3	6826:20
6789:1	6747:5	6823:22	6681:9,12,	6871:10
6793:2,11	6751:2	6824:3	18 6682:1	placing
6812:17	6883:1	6857:25	6684:23	6920:8,9
6825:12	6892:5	pessimistic	6685:3,10	plagued
6828:11	6897:3	6890:9	6689:7,13	6760:2
6838:8	6905:6	6925:17	6690:7,15,	plain
6848:20,21	performed	Peter	18	6797:24
6849:3,16,	6693:15	6676:14	6691:7,15,	plait
17 6850:13	performing	Peters	25	6693:24
6852:6,7	6767:5	6676:2	6692:12,16	6847:6
6858:10	perhaps	Petit 6701:8	6693:15	plan 6675:10
6879:7	6729:16	phase	6695:9	6685:7,16
6903:6,25	6736:14	6705:24	6696:5,16	6687:7
6905:25	6771:11	6731:16	6706:12	6690:11,20
6907:10,11	6781:24	6741:18	6707:15	6705:15
6908:24,25	6785:6	6747:8	6723:16	6706:10
6910:15	6797:18	philosophy	6729:1	6708:2
6911:1	6803:4	6928:8	6733:10	6716:12
6914:3	6817:1	photograph	6734:21	6717:16
6922:22	6825:4	6859:25	6738:1	6725:12
6923:3	6826:10	photographs	6746:3	6726:14
6925:3	6835:16	6859:20	6749:2,24	6731:11,21
6926:13,14	6836:12	physical	6751:10	6732:5
,15	6838:15	6762:17	6752:10	6734:2
6927:25	6913:20	pick 6702:19	6753:6	6746:18
6928:2,3	6937:19		6756:23	6752:6,11,
6930:5,6,7	period		6757:18	22 6798:22
,10,15	6725:22		6785:5	6839:15,19
6932:19,20			6788:23	
6934:8				

,21	6769:14,17	6854:4,20	6793:11	post 6680:21
6843:21	6775:21	6855:3	6794:22	posted
6867:24	6784:24	6856:5	6814:4	6681:4
6902:2	6785:9,25	6865:1	6849:11	6872:1
planing	6817:2	6871:4	6913:12	potential
6919:18	6826:16	6880:3,8	portions	6818:21
planned	6853:15	6882:12	6747:11	6899:16,17
6708:24	6856:13	6883:18,19	portrayed	potentially
planning	6857:15	,21 6887:7	6837:22	6824:2
6687:5	6885:18	6903:10,11	posed 6686:7	pouring
6691:20,24	6886:21	,15,22	position	6790:10
6705:22	6927:7	6904:4,5,6	6680:4	power
6725:10,16	plus 6757:25	,7,10,11,1	6681:25	6688:13,14
6727:11,20	point 6698:3	6 6905:25	6758:8	,24
6731:16	6699:1,24	6906:21	6795:23	6689:1,2,1
6732:5	6700:5,17	6907:6	6796:2	0,16
6741:6	6702:17	6910:14	6855:1	6692:1,3,7
6752:8	6705:4	6911:16	6859:2	,8,21,22,2
6820:21	6714:25	6915:22	6871:14	4
6868:14,18	6715:15	6916:17	6934:2	6693:3,8,9
plans	6721:8,15	6921:13,19	positive	6709:22
6686:17	6723:21	6927:21	6889:24	6716:20,22
6705:8	6731:8	6928:5	6890:5	6719:10
6706:10	6734:16	6930:14	positives	6728:20
6709:3	6738:3	6932:15	6889:17,24	6735:23
6739:16	6744:23	6933:22	possibility	6738:9
6752:23	6754:10	6934:5,21,	6700:4	6746:7
6823:6	6757:9	22,25	6712:11	6751:24
6835:15	6761:17	6935:24	possible	6761:18
6861:11	6776:13,14	6936:10	6719:16	6808:4,23
6868:15,18	6785:24	points	6729:12	6848:24
plan's	6790:20	6726:16	6749:12,18	6860:20,23
6686:21	6793:16	6760:20,21	6756:14	,24
plant	6796:17	6831:13	6759:24	6904:12,15
6709:12	6808:4,5,1	6859:10	6760:8,25	6922:6
6720:21	0	6875:23	6767:15	6923:21
6735:6	6809:5,7,2	6904:9	6797:24	6926:9
6846:23	0	policies	6807:13	6933:6
plants	6810:5,10,	6706:3	6815:6,18	6936:24
6709:22	11,12,13	pool 6700:3	6872:1	powerhouse
6909:10	6811:19	6732:25	6878:10	6730:24
play 6783:6	6812:5	6756:7,8	6887:12,13	practical
6800:18	6820:11	6808:23	6918:13,16	6789:3
please	6825:1	6850:20	,17 6919:3	practice
6686:1	6830:25	6890:17	possibly	6752:3
6691:13	6838:7	pools 6858:9	6709:23	6924:9
6694:4,9,2	6844:23	Portage	6785:20	6934:1
5 6712:3	6845:1	6675:22	6786:7	6935:10
6725:8	6848:15,24	portion	6874:9	practices
6759:9	6849:3,25	6695:14		
	6850:1	6755:13		
	6853:20,21			
	,22			

6876:6	6716:3	Press 6680:9	6919:5	6856:19,22
6905:17	6746:2		6920:20	6927:3
pre 6687:22	6755:19	presumably		probability
6935:25	6812:23,24	6935:25	prices	6699:15,17
precise	6822:13	pre-tender	6687:24	6718:23
6822:15	6838:11	6756:18	6711:6	6741:22
precisely	presentation	pretty	6714:24	6743:25
6815:22	6678:8	6688:11	6716:8	6744:2,4
preconstruct	6680:22	6730:10	6727:18	6815:9
ion	6681:21	6763:20	6745:3	6825:13,25
6704:12	6683:14,18	6782:25	6756:19	6826:24
preference	6695:9,11,	6932:8	6761:2	6831:12,13
6737:19	12,15,20	prevailing	6765:7	6852:8
Preferred	6697:10	6727:25	6838:3	6855:5,7
6675:10	6726:17	prevent	pricing	6918:12
6685:7,16	6745:7	6899:24	6920:9	6921:15
6687:6	6756:24	Preventing	primarily	6922:13
6690:10,11	6758:4	6917:25	6688:25	6926:12,13
,20 6708:1	6774:16	previous	6689:9	,14
6717:15	6785:2,7	6728:8	6737:8	6933:11
6725:12	6790:23	6729:19	6758:1	6935:19
6798:22	6793:24	6735:17	6761:19	probably
premiums	6801:14	6758:6	6791:6	6706:20
6751:14	6804:16	6777:13	6861:4	6709:21
preparation	6805:10	6827:24	primary	6723:12
6706:6	6807:2	6851:25	6686:2	6736:12
prepared	6824:12	6852:4	6691:5	6747:21
6685:11,20	6859:18,22	6927:13	6692:17	6765:8
,23	6866:10,14	previously	6704:9	6773:20
6690:15,25	,23 6867:1	6743:20	6919:25	6776:18
6728:18	6880:15	6774:4	principle	6778:18
6748:12	6884:15	6789:8	6733:11	6784:6
6861:2	6912:17	6803:3	6828:21	6792:14
6867:22	presentation	price	6921:11	6799:6,7
6872:8,11	s 6680:25	6707:10	prior 6729:7	6821:8,14,
6887:22	6681:3	6710:21,25	6737:9	15 6826:13
pre-	6867:7	6711:9,10	6805:18	6842:1,3
qualificat	presented	6733:7,9	6819:14,25	6854:24
ion	6837:17	6749:8,17	6830:12	6866:8
6820:24	presenter	6750:4,6	prioritizati	6892:1
pre-	6784:9	6761:22	on 6742:2	6894:3
qualified	presently	6766:7,24,	private	6904:4
6876:14	6706:15,17	25 6790:24	6710:6	6932:8
pres 6706:17	6740:21	6791:5,22,	pro 6904:3	problematic
prescribed	6756:13	25	probabilitie	6903:19
6796:12	President	6792:7,14,	s 6828:1	procedure
present	6682:8	25 6793:1	6830:7	6741:4,12,
	6684:21	6849:22	6851:21	21 6905:11
	6695:8	6886:2	6852:3	procedures
	6818:8	6907:14		6706:13
		6918:23		6711:7
				6745:20

6754:22	6789:14,25	6711:1	6726:6	6733:2
proceed	6790:12	6716:14	6728:4	6734:2,14
6767:12	6799:12	6728:11	6745:16	6735:18
6785:4	6800:2	6730:22	6757:11	6736:4,23
6788:12	6813:14	6731:6,19	6762:9,11,	6739:19
	6814:3	6732:15	12,17	6740:10,13
proceeding	6819:3,21,	6734:9	6763:11,22	,22
6696:9	23,25	6735:2	6764:19	6741:11,12
6819:19	6820:24	6737:4,10	6767:8	,13,16,17,
proceedings	6855:4,9	6740:4	6787:21,23	25 6742:3
6680:5,6	6868:18	6750:20	6788:1	6744:23
6688:17	6872:14	procuring	6804:23	6746:3,5,2
6691:16	6874:25	6707:11	6805:1	2 6748:25
6695:3	6875:11,14	produce	6842:13	6749:1
6747:24	6876:10	6701:19	6843:17	6750:24
6748:7	6877:24	6802:11	products	6752:5,11,
6767:25	6878:10,14	produced	6754:9	22
6784:8,17	6881:20	6687:10	6824:2	6754:17,18
6816:25	6885:10,22	6696:14	professional	6755:5,7
6828:14	6894:14	6724:25	6749:14	6758:22,25
6859:2	6897:15,25	6730:3	professional	6759:8
proceeds	6898:6,13	6757:3	ly 6911:22	6760:13
6717:16	6920:4	6814:2	profile	6762:6,7,2
process	6929:14,15	6827:20	6741:17	1 6764:2
6688:19	6932:7	6845:5	program	6770:9,11,
6699:4	6938:1	6928:15	6713:15	21
6702:11,18	processes	6934:16	project	6771:2,3,1
6706:8,9	6728:11	6937:23		9
6707:22	6729:2	producers	6680:20	6772:1,4,2
6708:12	6740:12	6689:11	6681:1	4,25
6720:7	6754:8,22	6693:4	6687:22	6773:13,15
6727:3,11,	6755:2	6716:23	6697:19	6774:15,24
22 6728:2	6814:4	6738:9	6698:14,22	6775:1,6,2
6731:19	6863:6	producing	6699:6,16	2,23
6732:5,19	6867:22	6696:4	6701:10,19	6776:5,17
6733:9,16	6875:3	6860:12	6704:10,14	6778:9
6737:13,15	6878:15	product	,20,24	6779:4,7,1
6738:13,15	6885:3	6685:25	6705:14,15	5 6780:15
6739:13,17	6902:7	6741:21	,20,24,25	6781:19
6740:5,7,1	6929:19	6744:1	6706:7,8	6782:20,22
4,15,20	processing	productive	6710:4,6,2	6783:17,21
6743:21	6869:12	6763:17	3 6713:13	6784:2
6745:24	procure	6764:5,22,	6718:7,16	6801:17
6749:19	6707:5	23	6723:6	6803:20
6751:11	6748:24	productivity	6724:6,19	6804:6
6753:20	6751:6	6700:4	6725:12	6807:23,24
6754:4	procured	6720:12	6729:1,12	6808:6,18,
6766:11	6735:5	6722:5,11,	6731:10,12	22,23
6772:5	6737:15,18	13,21,24	,13,15,17,	6809:12
6774:25	procurement	6725:21	20,25	6812:23
6784:1	6687:18		6732:1,6,7	6813:24
6786:21,25	6705:9		,11,15,17	6819:3,16
6788:10,25				6820:19
				6822:6

6823:24	6713:6,10	6753:21	6932:3,4	6929:13,22
6826:12	6716:20			6933:18
6832:20,22	6719:19	properly	provided	PUB 6685:5
6843:3	6720:1	6767:5	6683:14	6686:3,5
6849:22	6722:7	6885:23	6696:11	6688:3
6857:22	6723:5,16	proponents	6697:3	6690:8
6858:12	6724:9,17	6720:11	6704:19,21	6691:11
6859:21	6737:17	proposals	6708:3	6823:22
6861:21	6738:6	6686:6	6711:23	6844:19
6862:21	6739:1	6688:20	6712:10	6857:18
6867:24	6758:24	6734:16	6729:1	6858:15
6868:14	6759:21	6756:25	6755:5	6861:10
6870:10	6760:6		6756:23	6866:11
6871:3	6761:14,18	propose	6778:5	6867:7,10
6874:5	6762:3	6682:10	6788:3	6901:19
6876:15	6772:16	6683:7,15,	6809:19	6916:15
6877:18	6780:8	22 6684:13	6814:11	
6878:5,7,1	6781:5,12,	proposed	6844:19	PUB/KP
5	14	6685:7	6847:16	6799:22
6879:2,7,1	6808:3,8	6690:10	6866:19	6872:24
2	6812:24	6745:8	6869:15	
6881:1,2,1	6818:18	proprietary	6870:8	PUB-58-6
2 6883:1	6822:22	6732:10	6880:12	6678:20
6884:16	6823:5,21	protecting	6889:14	6916:20
6891:8,18	6824:2,4	6751:13	6894:12	public
6897:4,11	6825:5,14	protective	6895:20	6675:3,21
6900:7,15	6826:9	6869:9	6906:3	6680:14
6901:20	6838:3	prove	6933:23	6681:13
6902:1	6844:1	6857:22	provides	6685:4
6905:4	6858:9		6731:13	6690:8
6906:1	6860:16	provide	6748:23	6696:1
6907:11,16	6875:6	6687:1,3,4	6751:2,5	6713:20
6918:21,22	6876:23	6691:5	6769:18	6811:19
6919:21	6878:4	6692:11	6878:18	6869:1
6924:13,22	6888:15	6719:3,18,	providing	6874:4
,23	6904:3,13,	21 6721:1	6689:1	6916:2
6925:2,9,1	15	6725:2,6,8	6696:8	6919:13
8 6928:19	6917:1,24	6738:21	6698:18	6938:6,15,
6929:11	6923:2	6739:15	6727:21	17,18
6935:5	6925:17	6751:12	6754:3	published
projected	6926:2	6757:13	6860:14	6680:9
6712:22	6937:9	6786:8	6870:1	6861:7
6835:5	project-	6796:1	province	6922:3
projects	specific	6797:13	6723:7,10,	pull 6807:22
6689:19,23	6699:6	6813:13	13	6871:18
6692:1,7,8	6775:9	6831:12	proving	pulling
,22,23,24	6776:19	6834:5	6910:13	6865:2
6701:1,2,8	6777:7	6874:19	provision	purchasing
,12	6782:7	6897:24	6689:16	6803:14
6703:1,22	6789:21	6901:19	6698:20	purpose
6705:21	6929:21	6910:21	6699:25	6741:4
6706:14	proof	6916:25	6895:3	6752:25
6712:1				

6808:17 6850:21 purposes 6693:14 6695:3 6825:24 pursued 6727:3 push 6785:24 pushed 6837:2 pushes 6884:12 pushing 6785:25 putting 6762:19 6810:12 6864:15 <hr/> Q <hr/> QA 6754:13 QA/QC 6751:19 6752:12,14 6754:11 QC 6752:1 6754:14 Qual 6677:7,8 6684:24,25 qualifi 6876:14 qualificatio n 6677:9 6682:9 6684:14 6685:1 6931:14 qualificatio ns 6684:17 6688:5 6691:14 6693:22 6694:2,14 6742:7 qualified	6694:6,11, 15 6799:1 qualify 6682:4 6936:25 qualifying 6682:9 quality 6687:20 6699:12 6729:4 6741:25 6747:6 6751:18,19 ,25 6752:2,4,8 ,10,12,17, 19,21,22 6753:2,3,9 ,10,12,20 6754:4 6860:14 6862:6 6895:16 quantificati on 6845:23 6920:23 quantified 6887:23 quantify 6758:8 quantifying 6887:12 quantities 6702:12 6711:5 6718:17 6719:21 6720:18 6747:9 6756:24 6766:24 6849:20 6850:9 6920:23 6936:16 quantity 6920:8,16, 17,18	quarter 6784:8,9,1 1 quarterly 6756:12 Quebec 6701:9,11 6824:4 Quebec-Hydro 6888:19,21 question 6678:16 6697:11 6698:24 6700:8 6701:24 6702:9,20 6703:2,5 6704:1 6705:5 6711:14 6712:14 6714:4 6716:9,10 6717:22 6719:1,2 6721:25 6725:4,6,1 5,18 6730:17 6733:1,12 6740:16,23 6742:24 6745:12,16 6747:15 6748:10,23 6749:16 6750:18 6751:17 6756:17 6757:12 6758:20 6762:1,18 6765:13 6779:13 6790:7 6806:25 6817:14,18 6820:21 6823:20 6833:13 6836:13,21	6842:1 6857:14 6891:14 6900:13 6902:13,16 6917:9,17 6928:5 questioning 6806:24 6813:1 6818:20 6838:1 6846:15 Questionnair e 6754:15 questions 6682:9 6684:14 6686:8,10, 11 6687:9,12 6690:5 6694:13 6695:22,23 6697:3,5,8 6703:3,19 6710:1 6729:8,17, 18 6730:2,16 6747:14 6749:15 6754:24 6767:10 6768:1,17 6769:13 6816:9 6829:18 6830:16 6844:21 6847:13,20 6851:24 6857:4 6858:18 6860:10 6868:10 6869:13 6871:8 6897:13 6898:22 6915:14,19 6916:8	6932:1 6938:5 quick 6812:10 quickly 6853:25 quite 6759:24 6762:22 6788:14 6814:11 6830:17 6834:12 6898:16 6921:22 6923:24 quote 6741:5 6763:8,19 6857:17 6884:16 quote/quote 6887:17 6933:19 quoted 6680:10 6696:7,17 6825:12 6909:22 quoting 6697:24 6906:6 <hr/> R <hr/> radically 6701:23 raise 6879:6 6912:14 raised 6833:2 Ramage 6676:5 6768:13 6817:2,3,1 3,20 6818:3 6938:10 ran 6937:23 range
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

6714:22	6793:18	6925:25	6903:8	on 6797:2
6715:24	reaction	reapprecion	6906:4	6889:16
6772:13,17	6901:12	6925:24	6907:24	recommended
,19	readily	reason	6927:13	6714:22
6773:25	6782:25	6710:18	receive	6715:24
6815:8,19	reading	6761:5	6771:20	6769:19
6821:12	6710:1	6766:19	received	6782:1
6830:6,11,	6841:17	6787:25	6680:14	6795:19
15,19	6865:4	6834:13	6727:14,17	6796:25
6852:2,13	readjusted	6848:7	6770:10,11	6924:9
6880:25	6831:5	6885:25	6811:2	recommending
ranges	ready 6748:7	6892:7	receiving	6796:4
6744:8	6767:25	6899:21	6873:5	reconcile
6856:19	6768:22	6901:2	recent	6928:19
6923:20	6816:24	6919:11	6716:6	reconciliati
ranks	6893:1	6926:21	6723:15	on
6808:22	6915:18	6927:1	6763:11	6756:11,14
rapidly	real	reasonable	6787:2	record
6762:5,13	6718:16,18	6703:15	6814:1	6705:22
rate 6812:11	6755:7,23	6715:23	6923:24	6715:17
6848:6,20	6756:14	6717:9	6932:11	6731:15
6850:13	6789:4	6723:2	recently	6761:15
rates	6820:25	6751:12	6762:11	6768:12
6702:13	realistic	6836:25	6768:10	6779:14
6718:25	6932:24	6838:5	6783:20	6811:20
6720:20	really	6891:25	6786:21	6820:12
6726:5	6740:10	6892:2,6	6800:13	6860:5
6843:15,17	6760:13	reasonablene	6845:3	recorded
rather	6762:2	ss 6837:1	recessing	6756:2
6681:2	6766:19	6840:18	6748:3	records
6711:16	6779:3	reasonably	6767:21	6755:16
6782:2	6789:19,25	6766:14	6784:13	recruitment
6919:15	6797:17	6833:15	6816:21	6728:5
ratio	6807:20	6840:12	6858:23	recurring
6722:17	6812:14,16	6937:19	reci 6866:10	6745:6
6912:7	6822:17	reasoning	reclassify	redacted
ratioed	6835:11	6926:3,16	6782:8	6678:3,4
6914:15	6852:17	reassurance	recognize	6682:13,17
rationalize	6855:1	6826:12	6712:9	,21,23
6756:21	6859:11	reboot	recognized	6683:4
re 6675:7	6871:7	6810:3	6728:19	6696:1
6851:3	6874:18	recall	recollect	6769:2
rea 6892:5	6885:4	6710:1	6711:20	redaction
reach 6868:5	6886:1	6712:18	recommend	6683:4
reached	6928:5,10	6735:25	6796:6	redone
6805:10	6929:20	6819:8	recommenda	6827:22
6813:1	6934:2,22	6853:16	6796:13	reduced
reaches	6935:12	6876:18	recommendati	6717:20
	reappreciati	6877:8,25		
	on 6779:25	6895:21		

6775:8	referenced	regard	6691:15	6696:10
6896:16	6697:23	6686:6	6713:14	6836:19
reduces	6850:14	6717:5	6836:2	6861:6
6726:25	6852:4	6723:21	6852:25	relieved
6803:25	references	6730:5	related	6804:11
reducing	6696:7	6752:16	6680:15	rely 6836:24
6716:5	6763:20,21	6753:1	6698:16	relying
6920:5	6870:2	6754:13,14	6705:2	6695:25
reduction	referred	6763:7	6712:21	6723:18
6722:15	6743:20	6785:23	6807:1	6759:23
6829:6	6759:22	6791:13	6855:4	remain
6909:24	6905:20	6794:14	6895:7	6703:13
reevaluation	6908:2	6806:4	6897:24	6746:14
6845:3	referring	6821:22	relates	remaining
ref 6793:25	6725:15	regarding	6692:19	6735:7
6840:1,2	6769:15	6702:10,24	6701:25	6746:10,13
6846:22	6841:16	6721:18,24	6758:21	6747:4
6852:7,14	6849:12	Regardless	6824:24	6749:12
6853:21	6860:7	6860:1	6836:18	6756:8
6854:3	6870:21	regards	relating	6845:22
refer	6916:16	6684:17	6870:8	6926:5
6713:20	refers	regional	relation	remains
6812:14	6736:24	6912:2	6793:25	6756:10
6910:4	6750:25	Regis	6819:4	remediation
reference	6841:17	6675:13	6821:25	6746:16
6685:12	refine	register	relationship	remember
6690:16	6707:23	6741:13	6851:10	6711:19
6697:24	6733:23	6744:19	6852:17	6758:23
6708:21	refined	6755:16	6874:8	6819:23
6709:10	6708:12	6802:9	relatively	remind
6710:2	refinement	6894:12,18	6740:5	6680:24
6711:13,15	6711:8	6895:23	6911:19	6763:9
6720:3	reflect	regular	6928:23	6938:15
6735:21	6745:23	6713:10,14	release	reminder
6748:22	6826:25	regulatory	6873:9	6704:7
6763:8,10,21	6855:20	6720:10	relevance	6733:12
6815:4	reflected	6728:11	6688:16	reminding
6838:23	6743:11	6742:5	relevant	6700:16
6839:16	reflection	6900:2	6732:23	remote
6840:11	6709:18	6902:6	6809:12	6689:2
6851:5	reflects	reimbursable	6858:2	6693:6
6856:4	6778:2	6707:9	6885:24	6709:17
6867:6	6873:16	6711:2	6929:9	6722:7
6884:25	refurbishmen	6790:25	6935:15	6723:22,23
6901:7	ts 6702:8	6791:14,17	reliability	6724:4,6
6908:9	refused	6792:12,19	6741:25	removed
6923:7	6708:15	rel 6861:5	6742:6	6746:12
6928:15		relate	6745:15	6761:3
6934:12,13		6688:6	relied	

6829:11	6726:21	6867:21	6888:14	6728:3
renewable	6729:17	6868:15,17	reputable	reservations
6807:24	6730:4	6871:1,2,1	6712:21	6730:12
6823:15	6731:10	0	6728:19	6773:22
repeat	6732:16	6874:14,17	6746:6,19	reserve
6842:21	6735:3	,22 6882:5	6747:3	6698:8
6854:24	6737:6	6887:2	6750:1	6699:21,24
repeating	6740:2	6889:7,15	6759:23	6700:2,12
6737:23	6741:14	6893:9	request	6712:11
repetition	6748:22	6894:6	6734:16	6713:2
6727:4	6751:1,24	6907:20	6831:23	6718:22
rephrase	6755:21	6908:12,14	requested	6745:10
6742:23,24	6756:22	6909:13	6886:12	6749:21
6770:24	6757:17	6910:5	Requests	6757:24
replacement	6758:12	6911:21	6696:3	6758:17
6689:18,22	6768:18,20	6914:9,19	6921:4	6787:22
replacements	,25	6923:13	required	6788:4
6702:8	6769:2,16	6925:14	6702:8	6826:5
replies	6772:23	6932:1	6704:10	6841:3,4,7
6754:23	6774:13	6937:12	6739:15	,12,16,18
reply 6719:1	6775:20	reported	6751:12	6842:2,3,4
6733:1	6778:12,13	6754:6	6869:11	,6,10,15
6898:22	,25 6783:4	reporting	6871:20	6843:8
report	6785:17	6741:10	requirement	6847:4
6678:3,4	6788:16	6802:13,15	6752:18	6850:20
6680:12	6790:19	6855:4	requirements	6852:22
6682:12,13	6794:7	reports	6687:19,21	6853:9
,17,21,23	6795:9	6685:11,20	6720:11	6854:4
6683:3	6796:24	,23	6724:24	6884:19
6684:3	6798:13	6690:15,25	6741:23	6886:22
6687:10,11	6800:10	6691:3	6750:21	6887:4,10,
6695:23,24	6803:10	6692:25	6751:8,20	23 6888:25
6696:21	6805:19	6695:11,25	6752:13,14	6891:4,7,8
6697:4,23,	6806:13,18	6696:8,14	6753:15,21	6895:4
25 6699:18	6807:4,9	6755:19	6754:2,7	6900:13,16
6704:11	6813:2	6756:12	requires	6903:14,23
6705:16	6814:2	6768:23	6702:7	6906:22
6710:2	6826:20,24	6860:4	6734:2	6920:14
6711:13,15	6827:12,15	6863:20	6862:11	6930:1,4,6
,16	,21	6908:3	requisite	,8,9,18
6713:20	6835:10	6910:9	6833:10	6933:7,8
6714:9	6836:1,4,9	represent	rerunning	6934:6,17,
6715:12	,14,16	6711:25	6829:10	19
6716:3	6837:25	6768:8	re-running	6935:8,17
6718:1	6838:16	6884:21	6831:5	6936:15,21
6720:3	6842:5	represented	reruns	6937:4,15,
6722:13	6843:7	6709:11	6829:25	16
6723:6,23	6848:5,25	representing	research	reserved
6724:25	6850:17	6724:19,21		6681:9,13,
	6851:21	reproduced		15 6938:16
	6856:22			reserves
	6860:12			6697:18
	6861:2,7			
	6866:4			

6700:6	6836:1,25	6800:1	retaining	6754:16
6728:12	6837:11	6862:3	6722:22	6756:18
6749:15	6839:4	rest 6735:5	6725:3	6805:18
6858:3	6840:8,22	6814:5	6804:24	6814:13
6870:11	6841:12	6912:9	retention	6820:5
6884:6,11	6846:15	result	6728:6	6851:11
6889:9	6848:6,17	6700:7	6805:11	6861:4,11
6900:10	6851:21	6722:23	RETIRES	6868:4
6933:24	6852:11	6727:12	6939:4	6869:6
residential	6860:23	6744:24	retrieve	6872:6
6762:14	6864:6	6745:22	6732:9	reviewed
6765:6	6865:3	6764:10	retrospect	6688:20
residents	6875:4	6778:18	6778:11	6778:4
6823:24	6879:18	6779:3	return	6864:12
6824:7	6905:7	6801:18	6817:23	6865:13
residual	6907:21	6805:1	6847:19	6923:13,15
6801:3	6916:5	6829:10	6872:17	,18
resorted	6931:10	6834:6	returning	reviewing
6898:19	6938:18	6845:3	6879:23	6860:12
resource	respective	6850:10	revealed	reviews
6688:12	6693:16	6857:24	6730:5,6	6708:15
6705:25	respol	6936:19	revealing	6869:25
6716:24	6753:4	resulted	6873:11	revise
6717:21	respond	6727:23	revert	6761:8
6724:9	6929:22	6803:1	6853:25	revised
6731:17	responded	6904:8	review	6703:10,12
6786:11	6774:3	results	6675:9	6811:22
6895:6	6868:25	6702:15	6681:11	6830:4
resources	responding	6730:6	6685:6,15	6846:17
6691:19	6741:7	6753:25	6687:18,21	revision
6693:7	response	6812:3	,24	6696:23,24
6699:11	6678:15,17	6829:12	6689:20	6755:16
6742:1	6744:9	6937:13	6690:9,19	6757:20
6743:2	6785:23	resume	6697:13	revisions
6786:16	6799:21	6747:24	6701:5	6696:18
6808:23	6801:11	6767:25	6704:2	6755:15
6835:20	6817:14,17	6816:25	6705:6	revisited
6910:23	6817:14,17	6859:2	6708:22	6868:9
respect	,21 6818:1	resuming	6714:5	RFP 6734:15
6681:25	6826:18	6748:4	6716:11	Richard
6722:4	6870:15	6767:22	6717:23	6675:16
6738:5	responses	6784:8,14	6727:23	6784:19
6758:22	6696:5	6816:22	6730:18	rightfully
6771:11	responsibili	6858:24	6739:13	6869:8
6779:9	ty 6685:25	retained	6740:24	right-hand
6790:8	6753:3,4	6681:17	6748:11	6696:22
6794:25	responsible	6685:4	6750:19	rightly
6802:24	6732:19	6690:7	6751:18	6810:1
6818:18	6751:25	6873:7		
6822:7,21	6752:1	6923:9		
6830:18	6755:8			

right-most 6935:23	6813:18 6814:4,5,7 ,8,12	6761:12,16 6774:15,23 6775:7,9	6690:3,4 6691:3,5 6692:11	6792:3,6,1 0,20 6793:7,13,
rights 6873:7	6815:15,17 6823:23	6776:2,6,1 1,15,17,19	6693:3,13 6695:2,8,1 9	17 6794:1 6796:16 6797:3,16
rigour 6720:7 6845:7	6826:3 6827:4,24 6845:2,22, 23 6847:25	6777:7 6782:6,7,8 ,17,18	6703:16,25 6706:19 6708:20,25	6798:1,4,2 4 6799:6,11,
rising 6765:8	6858:14 6862:7	6783:6,18 6785:19	6709:15 6710:9,15, 24 6712:4	16 6800:7,25 6801:10,24
risk 6687:15 6707:24 6728:1 6731:25 6735:1 6737:8 6740:13,14 ,25 6741:3,8,1 0,13,14,17 ,18,20 6743:5,15, 16,20 6744:1,8,9 ,13,19 6745:14,25 6746:11,20 6747:7,8 6749:11 6758:1 6760:24 6761:3 6774:15 6778:13,14 ,15 6779:7,25 6787:17 6788:5,7,8 ,14,22,23 6789:18,21 ,24 6790:4 6791:5,10, 14,17,25 6792:8,11, 13,19 6796:8,10 6799:4,8,1 0,14,17 6800:21 6801:1,3 6802:3,8,9 ,22 6804:5,6	6878:18 6879:1 6888:10 6890:8 6894:12 6895:22,23 6896:3,14, 16 6899:17,23 6900:25 6901:8 6902:5,25 6905:16 6918:5 6919:20 6920:5,8,9 ,12,16,17, 18,21 6921:1 6924:21 6925:8,25 6926:1 6928:11,20 ,24	6786:4,10, 19 6787:5 6788:18,20 6789:7,9,1 0,21 6792:12,18 6794:11 6795:1 6798:21 6801:25 6803:8 6813:20 6857:25 6878:7 6893:13 6894:15 6896:23 6897:25 6900:21 6905:4,13 6916:10 6926:4 6929:21 6931:18 6932:7	6713:24 6714:3 6729:23 6730:1 6735:24 6736:11,17 6737:2 6738:17 6739:9,25 6742:12,18 6743:12 6745:19 6747:17,18 ,22 6748:1,8,9 6753:11 6758:10 6759:2,5,1 0 6760:5 6763:6 6765:3,10, 12,16,19 6768:6 6769:10,21 6770:1,23 6771:10,14 ,23 6772:3,7,1 4,20 6773:6,14 6775:11,24 6776:7 6777:6 6779:17,23 6780:7,12, 16,23 6781:1,9 6787:8 6788:24 6789:16 6791:8,11, 16,20	6802:6,24 6804:7 6805:8,15, 20 6806:6,14 6807:6,10 6809:3,10, 19 6810:7 6811:16,24 6812:19,22 6814:21 6815:3,11, 17,25 6816:3 6819:5,11, 17 6820:3,15, 20 6821:7,13, 18 6822:2,11, 25 6824:4,9 6825:7,17 6826:1 6827:2,19 6828:7,21 6829:9,23 6830:9,21 6831:15,20 6832:23 6833:8 6834:8,22 6835:24 6836:5,7,2 0 6837:4 6838:10,21 6839:1,5,8 ,23 6840:6,13, 21 6844:8 6845:21
	risk-averse 6757:21	River 6687:2 6691:22 6719:5		
	risks 6699:3,7,2 2 6727:1 6731:7 6737:11 6741:16,18 ,20 6742:20 6743:1 6744:3,18 6745:9 6746:2,5,1 0,13,14 6747:5 6749:9,12, 20 6760:8	road 6738:12 6913:1 roads 6704:4,13 Robertson 6677:7 6682:9 6684:14,24 6685:2,9,1 8,22 6686:4 6688:2,8 6689:6,9		

6846:3,8,1 9 6847:1,21 6854:7,23 6855:15,22 6856:7,23 6858:13 6859:24 6860:18,21 ,25 6861:13,18 ,23,25 6862:2,8,1 3,16,22 6863:1,7,1 0,13,17,21 ,25 6864:10,16 ,19,23 6865:6,16, 19,23 6866:2,6 6868:8,19, 22 6869:17,23 6870:5,12, 16,22 6871:5,12, 21,25 6872:20 6873:14,19 6874:1,6,9 ,15,23 6875:5,8,1 5,20 6876:1,7,1 7,24 6877:6,10, 15,20 6878:1,6,1 1,16,19,23 6879:3,9,1 4,20 6880:4,23 6881:6,13, 19 6882:11,14 ,22 6883:3,24 6884:8,14 6885:4,11, 18,19 6886:7 6887:5,11	6888:4,11, 17 6889:4,11 6890:1,23 6891:5,16 6892:1,9,1 5,20 6893:2,24 6894:2,7,9 ,20 6895:1,12, 17 6896:1,4,8 ,12,19 6897:2,8,1 4,18,22 6898:3,11 6899:12,18 ,23 6900:3,8,2 0,24 6901:11,14 ,18 6902:9,14, 19,22 6903:9,13, 20 6904:1,21, 24 6905:9,18, 22 6906:4,11, 17,23 6907:1,6,1 2,17,25 6908:6 6913:19 6914:2,8 6917:4,8,1 3 6919:8 6920:2,11, 17 6921:11,17 ,21 6922:16,24 6925:13 6926:18,22 6927:15,20 ,23 6928:4 6929:1,4,7 6930:12,21 6931:7,19, 23 6932:13,17	,21,25 6933:16 6934:9,14, 20 6935:2,9,2 0 6936:2,6 rock 6760:20,21 roll 6937:1 Romaine 6701:11 6821:16 Roman 6683:5 6785:16 6832:16 6841:6 room 6681:19 6759:19 6764:1,3,1 4,17 6847:12 6864:7 6865:3,4 rotation 6764:8 rotations 6724:2 roughly 6828:24 round 6921:4 6932:1 rows 6780:13 RP 6924:7,9 run 6813:22 6826:13 runs 6829:5 <hr/> S <hr/> S1 6697:5 6725:18 6730:17 S2 6733:1 6740:17,23 6749:16 S3 6747:15 6748:10	S4 6750:18 S5 6751:17 S7 6725:5 6729:8 6747:14 6756:17 S8 6697:5 6729:8 6747:15 6749:16 6757:12 safety 6689:20 6742:6 salaries 6702:2 salient 6871:18 SAP 6732:9 6754:25 6755:12 satisfied 6694:21 6810:18 6834:19 6937:18 satisfy 6728:15 6729:4 6809:23 Saturday 6680:13 Saunders 6676:21 saw 6743:2 6781:11 6834:10 6875:18 6876:4,10 6894:5 scale 6764:25 scatter 6715:17 scenarios 6856:6 SCGTs	6840:8,19 schedule 6686:16,21 6705:7 6706:5 6707:24 6708:2,7,1 0,11,18,19 ,21,23 6709:8 6716:12 6721:18,24 6731:22 6732:3,6,1 1 6733:3,23 6734:1,4,6 ,20,21 6739:6,11 6740:22 6741:15,16 6748:19 6749:18,19 ,20 6756:15 6757:25 6766:18 6787:17 6804:5 6817:22 6881:3 6897:8 6900:25 scheduled 6681:12 6735:12 6878:21 6938:20 schedules 6708:2,4,1 3 6734:13,17 scheduling 6687:13 6728:7 6730:19 6734:3 6742:4 6747:6 schemes 6688:13,15
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

School	6918:6	6857:5	6875:22	6696:8
6917:23	6924:7		6902:15	6800:5
6922:4	6926:7	Secretary	6917:2,6	6814:7
scientific	S-curves	6682:12	6922:14	6884:18
6713:3,17	6856:21	6684:13	6933:8	6887:9,18
scope	se 6815:18	section	6936:23,24	6893:17
6678:9,11	6868:18	6752:10	6937:14	6933:14
6683:21,24	search	6844:18	selected	September
6684:2,7	6834:15	6847:13	6733:16	6678:10
6685:13	second	6918:4	6877:8	6683:21,25
6686:8	6686:9	sector	selectively	6685:14
6687:11	6687:11	6762:15	6871:19	6690:18
6697:2	6694:25	secure	semantics	6866:11,13
6706:11	6695:23	6733:23	6935:12	,23 6895:8
6799:24	6697:4,9	6748:15	sense	sequence
6803:13,17	6700:1	6749:5	6712:16	6736:2
6822:15	6701:24	securing	6760:1	series
6834:1	6703:19	6731:4	6763:3	6760:18
6835:11	6707:8	seeing	6781:8	6867:7
6837:23	6712:3	6830:19	6792:2	serious
6838:13	6730:2	6874:17	6822:4	6706:24
6851:8	6732:16	seeks	6826:10	6788:22
6853:4	6744:7	6791:17	6834:4	seriously
6865:9,10	6765:13	seem 6759:21	sensible	6759:21
6866:16	6779:18	6762:4,16	6704:21	serve 6823:1
6868:11	6787:12	6914:20	6730:15	serves
6871:3	6793:18	seems 6740:8	6740:9	6705:22,24
6881:2	6801:15	6760:1,4	6761:9	6731:15
6900:23	6811:11	6761:14	6855:2,7	service
6901:25	6825:3	6763:1	6876:18	6687:25
6918:25	6836:9	6809:18	6929:13	6703:18
scopes	6843:13	6931:17	sensibly	6721:2
6685:13	6845:16	6936:24	6919:10	6736:25
6690:17	6847:5	seen 6706:4	sensitive	6819:15
6693:16	6859:19	6707:14	6831:23	6820:13
6800:3	6868:11,15	6731:21	6869:10	6839:19
6803:21	,17,23	6738:8,16	6873:12	6840:2
score	6874:14,22	6749:3,23	sent	6846:24
6744:6,20	6888:20	6760:24	6680:17,25	6882:19
screen	6893:9	6761:24	sentence	6883:20
6799:22	6909:13	6763:18,22	6841:17	6919:14
6825:11	6921:4	6764:17	6843:13	services
6827:8,9,2	6927:18	6765:7	separate	6698:21
0 6835:21	6931:3,25	6778:21	6696:8	6702:5
6841:9	6932:1	6786:25	6772:16	6704:14
6916:18	second-last	6814:1	6813:18	session
6926:11	6810:8	6828:13	6882:3	6681:14,15
6927:6	Secondly	6834:24	6887:18	6916:11
screening	6775:6	6847:24	separately	
6869:12	seconds	6860:2		
scroll				

6938:6,15, 18	6764:21	6776:25	6814:23	6844:11
sets 6684:2	showed	6782:9,17	6829:6	six 6715:24
6724:14	6721:4	6802:16	Singh 6681:2	6721:8
setting	6777:15	6809:11	single	6790:20
6850:21	6848:13	6824:17	6730:7	6809:5
6891:24	6914:16	6874:19	6755:8	6810:13
seven 6830:6	6937:13	6902:25	6799:25	6830:5
6907:1	showing	6914:25	6858:12	6831:6
Seventeen	6817:23	6920:24	6871:23	6861:20
6912:19	6913:16	6926:4	6874:12	6883:21
shape 6831:8	shown 6726:2	significantl	singular	6935:24
share	6739:12	y 6715:4	6734:22	sixty 6831:2
6727:25	6754:12	6716:5	6868:23	skill
6791:17	6785:3	6724:10	sir 6765:13	6722:15
6831:18	6789:5	6740:6	6819:1	skilled
6873:8	6817:24	6822:14	6820:10	6763:16
6878:18	6841:9	6928:1	6823:20	skip 6787:17
6898:24	6933:1	6932:19	6831:11	slated
shared	shows 6698:1	6934:1	6833:16	6701:19
6750:6	6714:24	s'il 6693:24	6835:7,23	slide 6678:8
6793:20	6716:7	6847:6	6839:16,25	6683:14,18
sharing	6718:1	sim 6876:22	6840:10	6697:2,11,
6707:24	6741:14	similar	6846:20	22 6698:25
6737:8,11	6743:24	6688:19	6851:6,20	6699:20
6749:10,11	6762:10	6691:23	6853:16	6700:16
6792:12	6785:6	6701:2,7	6854:6	6701:24
sheets	6811:12	6703:1	6856:22	6702:9
6706:11	6823:13	6819:19,21	6927:2	6704:1
Shefman	6910:16	,24	site 6698:20	6705:5
6676:22	6911:25	6875:3,11	6701:6	6706:2
shift	6921:12	6876:22	6704:12,14	6707:1
6718:13	6924:12	6907:14	,16	6708:1
6764:5	sic 6830:12	6932:4	6709:16	6714:4,14,
shipped	signed	similarly	6734:11	24 6715:10
6914:6	6803:23	6724:6	6751:3,7	6716:2,10
short	significance	SIMONSEN	6759:10	6717:5,23
6828:10	6706:18	6682:15	6802:12	6719:2
6917:4	significant	6684:10	6820:18	6720:16
shortages	6702:22	6886:14	6821:4,7,1	6721:11,25
6722:5,12,	6709:4	simple	0,21	6723:4
19	6715:6	6823:18	6823:3	6724:12
shorter	6718:5	6865:2	6824:6	6725:6
6717:10	6719:23	6911:19	sites 6724:4	6726:3,7,8
shot 6709:5	6720:6	6914:13	6763:14	,9,18,20
shovel	6723:17	simply	sits 6821:22	6727:10
	6737:14	6838:6	situate	6728:9,14
	6739:8	6864:8	6822:8	6729:19
	6746:5,10,	6930:3	situation	6730:17
	11 6755:10	simulation	6723:11,20	6731:19
	6756:20	6813:9,15		6732:14
				6733:15

6734:1	6732:10	6796:23	6712:21	6741:13
6735:2,17	solar	6803:2	6909:22	6750:9
6736:6	6686:20,23	6807:12	6911:15	6782:19,21
6737:3	6714:8	6815:13	Southeast	6790:8,20
6740:1,2,2	6716:2,5,1	6819:14	6689:19	6796:4
3 6741:20	8	6829:23,24	speak	6815:16
6743:23	6717:17,20	6837:4	6767:16	6836:9
6744:18	sold 6823:3	6841:15	6806:3	6837:16
6745:20	Soldier	6849:2	6814:8,19	6855:5
6747:15	6675:15	6859:4	6816:1,13	6893:9
6748:10	solicit	6866:8,20	6856:22	6905:12
6749:17	6849:19	6868:9	speaking	6911:25
6750:18	somebody	6885:18	6812:20	6929:18
6751:17	6814:13	6886:18	6815:23	6932:2
6752:16	6892:8	6892:25	6920:8	6933:14
6754:11	6893:22	6894:9	6925:7	specifics
6755:18	6911:10	6896:8	6938:19	6916:5
6756:17	6922:3	6902:17	speaks	specified
6757:12	somehow	6903:16	6828:13	6752:5
6758:6	6781:8	6904:19	special	specify
6804:16	someone's	6908:4	6700:3	6753:22
6805:10	6768:11	6909:21	6768:11	speculation
6818:17	somewhat	6920:14	specialist	6821:2
6822:22	6701:8	6927:12,22	6814:1,2	spend
6824:12	6738:18	6929:1,6	specialized	6709:23
6838:15	6821:8	6931:2	6778:13	6890:17
6843:13	6916:4	sort 6710:2	6862:7	spent
6866:14,21	6932:6	6738:23	6937:22	6698:12
,24	somewhere	6762:18	specific	6700:22
6911:24	6835:19	6793:19	6699:7,22	6705:2
6912:17,18	6866:19	6815:12	6709:16	6755:24
slides	6899:7	6871:11	6737:21	6882:18
6825:23	6900:6	sorts	6741:16,18	6890:13,14
slight	6914:5	6762:24	6756:21	6891:1
6804:1	6925:2	sound	6774:15	spillways
6921:18	6936:4	6735:16	6776:6	6719:10
slightly	sorry	6844:2,7	6796:6	6730:24
6759:12	6690:10	6870:6	6809:4	spirit
6789:11	6712:13	soundness	6857:22	6752:20
slow 6770:15	6737:24	6836:17	6880:9	spits 6815:7
small 6849:5	6742:9	sounds	6905:13	split
6936:10	6747:15	6797:1	6911:23	6700:13
smaller	6749:10	sour 6712:21	6912:5,7	6793:24
6830:15	6758:16	source	6917:9	6933:9
6856:16	6759:11	6711:24	6918:4	spread
smart	6781:2	6717:15	6931:18	6865:2
6765:23	6789:17	6823:16	specifically	spreadsheet
socioeconomi	6794:7,9	6909:6	6688:4,6	6865:5
c 6938:20	6795:9	sources	6691:14	
software			6723:8	

Spruce	6729:2	6802:21	6728:22	strength
6719:7	6742:7	6807:8	6729:21	6753:18
6721:11	6754:23	6890:4,24	6811:3	stress
staff	6759:24,25	6892:10	6818:22	6839:15
6705:25	6796:11	6904:11	statistical	stretch
6722:22,23	6889:8	6933:24	6813:21,23	6853:18
6723:1	stands	statement	6852:18,20	strictly
6724:2	6801:11	6680:6	6853:7	6812:19
6731:17	6924:9	6824:13	6936:16,21	strike
6742:2,11	start	6879:10,15	6937:4,8,1	6845:16
6743:2	6700:17	6881:20	3,18	strong
6763:16	6758:1	statements	statisticall	6879:17
6764:9	6818:17	6730:13	y 6744:1	structure
6786:16	6820:22	statement's	6936:12,25	6723:8
6804:24,25	6859:8	6898:16	statistics	6755:12
6805:5	6882:5,8,1	states	6937:2	6914:16
6862:18,19	1 6893:1	6708:17	steady	structured
6875:23	started	6794:9	6913:23	6729:12
6895:9	6681:23	6799:23	steel 6850:5	structures
6897:13,23	6735:23	6801:16	stem 6873:2	6698:18
6937:24	6821:9,21	6804:21	step 6684:16	6704:9
stage 6701:7	6852:9	6889:19,20	6767:15	6708:6
6703:4	6859:15	6918:9	6771:18	studies
6744:14,15	6916:13	stating	stewing	6778:8
,16 6746:4	starting	6805:12	6736:15	6849:22
6788:6	6693:19	6832:24	stick	6850:5
6819:21,24	6698:3	6934:25	6768:25	stuff
6899:16	6734:7,24	station	6826:7	6763:25
6900:13	6786:11	6686:14	stop 6783:2	6874:19
stages	6846:24	6687:15	6886:10	subcontract
6929:10	6899:22,25	6697:16,17	straight	6803:15
stakeholders	6902:6	6698:16	6819:19	subcontracto
6742:6	6924:14	6705:12,13	6911:15	rs 6733:25
stamp	startup	6726:23	straightforw	subject
6874:13	6705:10	6730:21	ard	6806:17
stand 6819:5	start-up	6731:13	6851:12	6832:3,6
6821:1	6716:15	6734:14	strategic	6841:1
6822:18	STAT 6765:5	6749:1	6825:14	6847:20
standard	state	6772:25	strategies	subjective
6706:5,6,8	6691:19	6773:13,15	6728:5	6777:3
6708:19	6776:23	6775:22,23	strategy	6889:12
6713:5	6867:25	6779:15	6687:13,16	6936:15,20
6734:4	6879:15	6818:23	6730:19	submission
6741:10	6918:14	6924:22	6731:9	6780:4
6752:7,11	6922:23	6925:9	6732:15	6849:11
6753:17	stated	stations	6740:25	submit
6905:11,16	6705:3	6686:15,17	6745:25	
6924:17	6753:15	6687:2		
standards	6783:10	6719:6		
6706:3	6788:19			

6682:10	6903:24	supplement	6762:15	6924:5,12,
submittals	6907:22	6678:4	6763:20	19
6726:11	6926:12	6682:23	6768:16,21	6925:1,6
subs 6794:24	6930:7	supplemental	,22	6926:6,20
subsequent	suggesting	6682:20	6777:14	6927:1,12,
6736:21	6881:22	6683:3	6780:19	16,21,24
6802:2	6904:2	6731:10	6785:23	6928:17
subsequently	6908:24	6768:20	6801:3	6929:3,6,2
6785:6	suggestion	6785:16	6802:11	4
subsets	6785:4	6795:9	6820:23	6930:16,24
6813:18	6834:15	6800:10	6821:20	6931:13,20
substance	6928:1	6826:21	6823:7	6932:9,15,
6810:6	6932:20	6850:16	6849:16	18,22
subtract	suggests	supplementar	6859:11	6934:4,11,
6830:5,11,	6708:23	y 6684:2,3	6879:24	18,24
13	6922:10	6827:12	6882:1	6935:4,15,
subtracting	suitable	supplied	6883:7	21
6859:10	6747:3	6923:13	6890:25	6936:4,8
successfully	6754:8	suppliers	6901:9	6937:7,17
6704:10	6919:22	6733:25	surmise	6938:4,13
successive	suitably	6737:9	6774:6	sway 6847:16
6686:25	6729:15	6748:16	surmising	swear
6747:1	suite 6826:9	6749:6	6765:8	6684:18
suffered	suited	supply	surprises	swing
6725:23	6751:9	6693:7,10	6724:1	6852:11
sufficient	sum 6707:13	6707:12	6760:16	swings
6729:13	6793:18	6733:6	survey	6852:9
6754:5	summarize	6735:5,8	6738:23	Sworn 6677:7
6930:10	6774:7	6737:16	suspect	6684:24
sufficiently	summary	support	6765:6	sys 6896:7
6714:18	6678:13	6723:14	6823:7	syste
6796:19	6680:11	6855:11	Sven 6676:3	6776:18
sugar	6756:23	6908:2	6677:14	system
6785:13	6817:5,9	6931:8	6681:7	6699:5
suggest	6832:16,18	supporting	6694:20	6752:18,19
6681:21	sums 6884:19	6817:22	6767:11	,21 6755:1
6682:2	super	suppose	6784:25	6775:7
6684:4	6906:10	6796:16	6811:4,11	6786:20
6690:5	superceded	supposed	6866:20,25	6787:3,9
6747:23	6928:11	6859:11	6867:11,14	6788:20
6771:19	supervising	6867:12	6915:20,25	6789:4,19
6821:14	6763:14	6930:11	6916:1,2,2	6790:2
6834:16	supervision	sure 6711:13	3,24	6883:25
6876:4	6685:20	6736:19	6917:6,12,	6896:23,24
6877:17,21	6690:25	6742:18,21	15 6919:24	6898:7,8,1
6907:9	6692:4	,25	6920:7,16	2
suggested	6696:17	6743:10	6921:2,9,1	6925:22,25
		6754:5	2,20,23	6928:7
			6922:20	systemic
			6923:5,15,	6699:3
			18,24	

6743:20	6701:3	6873:21	25 6793:1	tender
6774:15,23	6702:1	6874:25	6819:8	6687:23,24
6776:2,18,	6703:12	6880:7,8	6891:24	6708:8
25 6778:14	6717:25	6882:24	6920:20	6730:7
6779:25	6718:9	6885:2	target-price	6745:3
6782:6,8,1	6720:14	6888:16	6727:23	6756:19
7 6783:5,6	6726:9,14,	6893:8	tax 6872:17	6757:8
6785:19	18 6758:23	6908:6	team 6729:15	6918:10,18
6786:19	6769:7,18,	6916:25	6740:13	6919:18
6788:18,19	23 6770:20	6933:10	6752:23	tenderers
6789:7,9,1	6772:11	6936:12	6861:16	6708:9
0,18,20,24	6773:3,7	talked	6895:10	6734:19
6790:4	6777:15	6743:3	technical	6757:8
6798:21	6804:5	6855:21	6741:23	6845:4
6799:4,8,1	6807:11,14	6870:19	6746:5,10	tendering
0	,21	6874:11	6923:25	6687:14
6814:3,12,	6808:16	6877:23	technique	6730:20
16 6845:2	6809:16	6881:25	6707:24	6731:9
6896:22	6810:3	6893:21	techniques	6732:14
6897:25	6811:23	6896:24	6705:18	6733:4
6916:10	6812:10	6897:23	6731:14	6734:1
6924:21	6817:9	6898:6	technology	6737:4
6925:8	6822:9,13	talking	6741:23	tenders
6926:4	6826:17	6697:7	6764:24	6724:22,23
6928:20	6827:12,19	6699:9	teleconferen	6756:4
6929:21	6831:13,25	6730:10	ce 6870:3	6757:6
6932:7	6832:10	6743:18,19	teleconferen	6761:2
systems	6852:2,5	6776:10	ces	6877:3
6745:21	6853:18,19	6793:21	templates	term 6765:15
6800:12	6854:8	6801:25	6741:10	6880:3
6899:8	6902:15,18	6821:4	temporary	6882:24
systemwide	6926:10	6850:20	6704:8	6884:18
6755:1	6933:2	6879:18,24	ten 6747:24	terms
	tables	,25	6763:18	6685:12
	6817:5	6882:1,2,3	6767:14,15	6689:18
	tail 6922:12	6883:7,22	,18	6690:16
	tailings	6885:5	6808:6,10	6715:18,19
	6692:18	6897:15	6811:19	6718:16
	tailored	6901:2,3,2	6821:5	6724:14
	6733:5	4	6828:3	6725:20
	6755:19	6912:1,16	6858:20	6728:14
	taking	6913:12	6915:23	6738:22
	6681:25	6914:9	tend 6760:11	6740:12
	6792:18	6933:11,14	6761:14	6746:16
	6796:8	6936:11,14	tendency	6747:2,6
	6914:18	tally	6892:13	6750:25
	6925:7	6922:22		6753:14
	6927:14	target		6758:9
	talk 6696:25	6711:6,8		6759:22
table 6677:1	6729:8	6733:9		6761:2
6678:13	6843:5	6750:4,6		6762:21
6679:3		6766:7,24,		

6767:6	6690:2	6894:8,21	6810:7,8,1	6911:24
6771:16	6693:17,20	6903:17	2 6811:19	6912:11,24
6776:10	,23	6912:13,20	6813:11	6914:2,22
6789:18,20	6694:6,8,1	6915:13,20	6815:23	6917:9
6803:23	7,24	6921:24	6821:2,16	6920:12
6815:9	6711:11	6938:4	6823:2,7	6921:3
6833:25	6713:23	6939:2	6824:9,21	6922:23
6837:23	6737:1,2	thanking	6832:17	6924:11,24
6842:9	6748:1	6859:14	6834:20	6927:25
6845:12	6768:4	Thanks	6837:9	6930:2
6860:9	6769:22	6694:16	6838:21	6932:8
6867:21	6770:9,19	6745:19	6839:5	6934:8,11
6872:14	6772:9,10,	thank-yous	6840:20	6935:1,22
6880:5	21	6859:13	6841:8	6937:10
6890:3	6774:12,19	that'll	6842:8	theme
6895:5	6775:4,12,	6790:13	6843:23	6823:21
6896:6	15 6776:8	6799:22	6845:12	themes
6901:15	6777:4,11	that's	6846:16,24	6745:5
6911:16	6779:12	6684:4	6847:17	themselves
6929:22	6780:17	6697:24	6848:11,25	6708:15
6933:23	6782:14	6709:21	6849:12,18	thereafter
terribly	6784:11,18	6715:15	6850:7	6736:22
6759:25	,19,20,21,	6716:9	6851:7	6840:19
territory	25 6788:17	6724:7	6852:3,13,	therefore
6782:25	6789:7	6725:4	16 6853:3	6712:8
6833:11	6790:6	6726:17	6854:16	6715:6
test 6839:15	6791:12	6744:16,17	6855:22	6723:24
tested	6794:5	6751:23	6860:18,21	6763:17
6740:9	6795:3,16	6757:17	6861:15	6782:1,9
6787:10	6796:21	6759:5	6862:4	6784:2,3
6788:20	6797:12	6764:4,18	6863:15	6789:22
6790:2	6798:7	6765:8	6865:7	6820:6
testified	6799:13,22	6766:17	6866:15,25	6834:25
6924:20	6800:20,23	6767:9	6867:9	6847:19
testimony	6801:12	6769:10	6869:1	6877:17
6905:24	6802:17	6770:7,8,1	6871:9	6890:8
testing	6805:9	3,18	6872:1	6932:2
6705:11	6806:16	6772:9	6874:21	there's
6716:16	6810:19	6773:4,12	6879:9	6683:20
6752:23	6812:9,21,	6776:3	6881:9	6699:17
tests	25 6813:3	6777:10,18	6882:6	6711:12
6753:24	6814:6,18	6783:25	6883:24	6738:24,25
6754:5	6816:8,10	6785:16	6889:2,10	6739:10
Texas 6914:6	6817:3	6786:20	6890:15,16	6740:16
thank 6681:5	6818:5	6788:7,9,1	,18,24	6760:16
6682:5	6820:9,17	3,14	6892:5,9	6762:1,15,
6684:10,12	6848:2	6789:25	6893:11	25 6763:3
,21 6688:1	6858:17,21	6798:6	6901:8,12	6764:8
6689:5	6859:7,22	6801:1	6902:4	6767:4,13
	6861:9	6808:6,7,2	6903:2	6773:25
	6867:17	1,25	6907:10	6777:1,8
	6881:7	6809:14	6909:25	
	6886:5,9,1		6910:3,7,1	
	4 6893:11		0,20	

6778:14	6776:16	6877:4	6778:19	totally
6786:6	6786:23	thirteen	6783:3	6890:25
6787:4,5,1	6796:8	6915:6	6805:18	touch 6795:4
7,21,25	6812:22,23	thirty	6816:9	6806:23
6788:11	,24 6816:5	6715:24	6820:7	touched
6789:20	6820:25	6857:5	6885:21	6847:14
6794:25	6845:5	6915:1	6915:21	tout 6768:5
6796:11,12	6877:19	thirty-five	6916:4	towards
,13	6887:11,12	6714:22	today's	6694:14
6797:17,18	6890:12	6768:13	6680:4	6772:17,18
6801:3	6894:24	thirty-three	6688:17	6906:18
6803:23	6898:9,20	6915:3	6938:23,24	towers
6804:3	6899:10	Tho 6758:11	tolerance	6912:23
6808:19	6908:4	thorough	6828:13	track
6816:15	6915:7	6702:11	tomorrow	6759:12
6823:11,16	6929:12	6740:8	6681:14	tracked
,21	6936:17	6760:15	6697:1	6734:5
6825:3,10	they've	6789:1	6901:16	6755:15
6826:20	6712:7,20	thoroughness	6916:7	tractor
6827:23	6713:3,4	6748:20	6938:16	6764:22
6834:1	6715:20	thousand	tone 6874:16	trade 6707:5
6835:17	6760:15	6914:24	tool 6706:21	tradeoff
6836:15	6761:21	6915:1,3,6	tools	6792:14
6837:22	6771:24	three-one	6705:18	6797:17
6841:7,9	6786:20	6856:5	6724:14	tradeoffs
6844:17	6788:3	6934:21	6731:14	6797:14
6845:7	6813:25	three-six	top 6728:13	traditional
6848:5	6821:9	6883:19	6741:17	6707:11
6849:10	6842:12,13	6934:21	6744:6	6711:1
6852:2,8	6845:13	throughout	6774:1	6721:6
6853:1,2,2	6852:18	6745:6	6786:3	traditionall
0 6857:16	6856:2	6922:19	6826:16	y
6858:5	6876:25	throw	topic	6936:23,24
6864:21	6891:10	6808:13	6907:20	training
6894:14	6895:23	6815:5	topics	6702:2
6918:8	6898:8	till 6821:1	6893:7	6726:24
6923:7	6926:25	tiny 6803:14	total	6742:7
6927:18	6938:2	today 6680:6	6698:13	6862:12
6928:8	thick	6681:9,13,	6706:4	6871:17
6936:22	6762:24	20,25	6719:18	tranche
6937:5	third	6683:15	6720:17	6793:25
6938:1,7	6709:11	6698:10,12	6731:22	TransAlta
they'd	6723:21	6720:22	6732:2	6689:21,22
6833:19	6726:11	6721:17	6744:6,19	transcript
6897:23	6729:3	6745:7	6832:20	6677:16
they're	6752:7	6768:7,11,	6837:6	6680:9
6707:6	6824:13	14,17	6883:20	
6713:6	6834:17		6906:25	
6715:19,23	6845:5		6914:22	
6740:7	6923:6			
6755:3	third-party			
6760:6	6757:7			
6761:22				

transfer 6755:6	tube 6735:14	twenty-five 6767:18 6814:14	uncertain 6836:23	6878:3 6885:10 6893:12
transmission 6714:12 6913:2	tune 6750:8		uncertaintie s 6699:1,7	6895:2 6896:20 6897:23 6903:9 6908:3 6911:12 6919:12
tunnel 6801:15	turbine 6707:18 6717:11 6721:17 6733:6 6735:4 6752:13,16 6781:23 6816:4 6846:24 6912:7 6913:25	twenty-one 6714:11 6715:1,9	6760:7 6799:2 6887:19	
travel 6704:16		twenty-two 6715:25 6913:7,13	uncertainty 6698:7 6700:18 6702:16 6737:10 6779:7 6829:12 6853:1 6858:1 6882:16 6887:13 6897:24 6929:14 6933:18 6935:13	understandin g 6712:20 6770:3,6 6772:12 6788:21 6791:3,4,1 3 6811:1 6819:6 6820:21 6826:23 6828:1,20 6842:1 6848:19,23 ,25 6851:6,8 6852:23 6862:20 6884:7 6916:9 6917:1 6923:10 6928:18 6930:13 6934:12 6935:6
tren 6706:7		type 6689:7 6710:22,23 6764:9 6783:18 6793:6 6860:12 6921:16		
trend 6706:7 6714:24 6912:8		types 6699:2 6720:20 6776:15,17 6814:19 6838:20	underestimat es 6918:20	
tried 6766:12 6826:2 6933:17	turbines 6686:20,23 6714:8,25 6715:11 6716:18 6717:6 6719:11 6730:25 6821:12 6912:23 6914:5	typical 6720:19 6876:19	underline 6775:14	
trip 6739:19		typically 6693:6 6748:24 6751:7 6753:22 6815:4 6884:16 6918:19 6933:7,17	underlying 6783:17	
trouble 6746:20 6881:9	turn 6682:3 6714:19 6766:17 6784:24 6816:11 6826:15 6859:3 6883:13 6907:20	Typlan 6938:19	underneath 6720:15	
true 6756:16 6840:8 6918:20 6931:20	turning 6768:13	<hr/> U <hr/>	understand 6700:13 6713:12 6717:2,14 6737:21 6797:23 6810:3 6818:8 6819:13 6825:10 6832:19 6837:25 6846:17 6849:25 6852:5 6853:13 6861:20 6862:6,19 6869:15,19 6876:12	
try 6701:1 6720:14 6768:25 6818:18 6853:12 6859:20 6909:8	twelve 6691:20 6821:5	ultimate 6747:13 6878:15 6879:19		understood 6777:23 6823:19 6837:10 6854:10 6861:2 6866:9 6873:23 6887:1 6889:7 6895:6 6899:20
trying 6710:8 6711:20 6712:16 6713:11,12 6764:11 6771:18 6772:10 6776:13 6822:4 6824:1 6834:14 6851:17 6868:13 6892:4 6899:4,10 6909:23 6928:18	twenty 6695:13,17 6715:20 6717:1 6830:5 6831:2 6913:9 6915:4,22 6917:2	ultimately 6713:9 6796:7 6797:6 6834:22 6926:9		undertake 6713:15 6737:20 6807:13 6809:16

6832:6	6736:3,12, 20,23,25	2 6870:3	utilize	6814:25
undertaken	6840:1	6909:9	6864:14	6826:21,24
6688:7	6920:20	updates	utilizing	6832:2,12
6691:15	United	6696:19	6707:21	6851:22
6705:23	6889:19,20	6697:9	<hr/>	6852:2
6713:10	6910:1	6702:14	<hr/> v <hr/>	6855:8
6714:13	unit-price	6811:1	val 6813:5	6888:15
6782:4,5	6727:13	6851:2	6891:10	Van 6676:8
6810:18	units	upfront	validating	6677:13
undertaking	6736:1,21	6797:18	6778:12	6681:17
6678:17	6838:20,24	upgrades	6780:1	6683:2
6809:23	6839:4,19	6702:7	6782:3	6694:10,17
6810:18	unknown	upon 6680:1	validation	6859:3,6,7
6817:21	6788:25	6696:11	6786:5	6860:1,19,22
6818:1	unknowns	6698:23	6863:9,16	6861:1,9,15,19,24
6832:3,9	6747:12	6748:3,4	6893:14,16	6862:5,10,14,17,23
6849:13	unnecessaril	6759:23	6894:22	6863:2,8,11,15,18,22
6877:19	y 6925:17	6767:21,22	6897:18,20	6864:3,11,17,20,25
Undertakings	unredacted	6784:13,14	6898:2	6865:7,17,20,24
6677:4	6678:6	6816:21,22	6937:12	6866:3,7,17,22
6679:1	6683:5,10	6847:14	valuable	6867:2,4,17,19,20
underway	unusual	6858:23,24	6814:13,25	6868:2,7,12,21,24
6734:10	6709:13	6939:6	value 6679:5	6869:18,24
6818:22	6738:5	useful	6702:21	6870:7,13,18,24
6819:7	UPC 6707:10	6837:9	6732:23	6871:9,15,22
6821:19	update	6929:12	6753:19	6872:13,21
6822:1	6679:3	Users	6766:20	6873:15,21
unduly	6713:15	6818:16	6808:18	6874:2,7,10,21,24
6766:18	6718:14	usually	6813:6,7	6875:7,10,16,21
6796:18	6807:14	6700:11	6815:7,20,23	6876:3,8,20,25
unfortunatel	6809:16	6710:22	6823:12,14	6877:7,12,16,22
y 6701:9	6827:17,18	6738:11	,17	6878:2,9,12,17,20,24
6917:18	6831:25	6764:23	6831:12	6879:4,11,16,22
unidentified	6832:9	6803:22	6832:1,11	6880:10,24
6758:22	6856:1	6807:25	6838:24	6881:7,15,21
union	6895:24	6930:2	6840:1,2,4	
6722:18	6927:17	utilities	,11	
unions	6932:11	6675:3,21	6852:6,7,8	
6724:21	updated	6680:14	,12	
unique	6718:14	6685:5	6855:21	
6710:11	6726:4	6689:25	6884:5,10,13	
6774:25	6733:3	6690:8	6889:17	
6790:11	6785:16	6693:4	6891:4,10	
unit 6702:13	6807:5,8,14	6711:22	6892:8	
6707:10	6811:12,17	6824:7	6918:17	
6710:21,25	6826:25	6869:1	values	
6711:6,9	6827:1,9,1	6916:3	6679:5	
6720:19		utility		
6733:8		6713:10		

6882:13,21 ,23 6883:5,12, 17 6884:3,9,2 2 6885:8,13, 17 6886:5,9 6888:6,7,1 2,18,24 6889:6,13 6890:11,18 6891:2,9,2 1 6892:3,11, 17,25 6893:6,20, 25 6894:4,8,1 6,21 6895:5,13, 18 6896:2,6,1 7,21 6897:5,10, 17,20 6898:1,4 6899:3,14, 19 6900:1,4,1 1,22 6901:1,13, 17,23 6902:11,17 ,20 6903:1,12, 16,21 6904:17,22 ,25 6905:14,19 ,23 6906:8,13, 18,24 6907:3,8,1 3,19 6908:1,10, 19,22 6909:4,7,1 5,25 6910:4,8,1 1,18 6911:4,9 6912:13,20	,25 6913:5,9,1 5 6914:1,4,1 1,17 6915:13 6917:16 6927:2,13 6929:25 Variability 6923:20 variable 6925:19 variation 6711:4 6712:24 6767:3 6813:21 6852:20 6853:7 Variations 6750:5 variety 6904:18 various 6707:2 6733:13 6736:1 6752:23 6835:15 6898:14 vary 6789:17 venture 6727:1,5 ventures 6782:24 venturing 6783:2 verify 6845:24 version 6696:21 versions 6696:1,17, 18 versus 6777:16	6813:19 VI 6678:20 6916:14,20 6922:1 view 6824:25 6825:4,10, 16,20 6828:16 6838:4,7 6845:4 6852:12 6919:24 6931:22 viewpoint 6862:4 VIII 6678:18 6818:8,11 Villegas 6768:24 6916:17 6927:5 virtue 6789:12 6864:1 visual 6798:7 vitae 6688:2 6691:11 voiced 6919:9 Volume 6678:18,20 6818:8,11 6916:14,20 6922:1 vous 6693:24 6847:6 vulnerable 6748:18 6749:8 <hr/> W <hr/> wages 6702:1 6723:19 wait 6730:14 6841:21 walk 6786:7	6791:2 6795:21 wasn't 6745:16 6815:14 6837:22 6852:24 watching 6859:12 water 6688:12 6691:19 wave 6901:21 wavelength 6780:21 waving 6761:10 ways 6771:25 6917:14 wealth 6728:19 weather 6699:10 6742:6 6747:10 weather's 6766:15 website 6680:21 6681:4 6872:2 we'd 6702:17 6725:17 6828:18 6854:11,12 6891:14 6901:18 6905:24 week 6764:7,8,1 5 6933:7 weekend 6916:14 weeks 6764:4 weighting 6851:4	Weinstein 6676:25 welcome 6681:19 we'll 6692:24 6693:8 6695:1 6749:22 6787:17 6807:25 6808:5 6818:17 6843:4 6873:21 6890:17 6916:6 6938:24,25 well-defined 6919:21 6931:16 well- documented 6728:22,25 6729:2 6740:20 6833:10 6922:17 well- documentin g 6833:13 we're 6696:8 6701:9 6714:3 6715:1 6730:9 6740:10 6743:13,18 ,19 6748:6,9 6761:10 6767:24 6782:24 6793:21 6799:17 6801:25 6807:24 6808:3 6811:21 6816:24 6825:21
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

6828:3,8	6909:21,22	6922:23	6910:12,22	6686:3,8
6849:12	6916:4	6928:8	6911:18	6687:12
6855:1,6	6923:3	6930:1	6912:7,23	6688:7,13,17
6874:17	6929:9	whilst	winner's	6689:8,20
6879:24,25	6931:11	6715:1	6918:21	6690:17
6882:1,2,7	6933:8	whole	winning	6691:6,15
6883:7	6937:14	6743:16	6918:18	6692:12,18
6887:6	whatever	6745:24	Winnipeg	6693:4,5,15,16
6888:23	6710:18	6747:13	6675:23	6697:2
6901:24	6779:8	6766:5,10,23	6680:9	6698:16
6902:12,18	6798:5	6784:1	winter	6704:18,19
,23 6904:1	6814:24	6788:10,13	6790:8,10	6706:8,11
6911:25	6834:13	6807:22	wish 6680:23	6708:6
6913:11,21	whereas	6826:9,11	6696:19	6720:20
6915:18	6716:21	6845:3	6825:24	6725:4
6923:19	6792:11	6885:22,23	6838:11	6726:22
6933:5	whereby	6897:3	wishes	6727:7
6935:25	6718:22	6920:4	6873:9	6732:16,17
6936:10,14	wherever	whom 6893:22	witnessed	6735:22
6938:11	6769:14	who's	6725:21	6737:21
we've	whether	6684:14	witnesses	6738:19
6689:3,17	6694:15,22	whose	6677:9	6751:3
6715:13	6703:14	6818:23	6680:19	6755:11
6738:8	6709:1,4	wide 6830:19	6682:4	6757:15
6739:1	6783:24	wider	6684:19	6764:10
6746:23	6787:17	6830:20,24	6685:1	6765:22
6760:24	6788:12	William	6694:6,13,22,23	6789:5
6765:7	6797:6	6676:13	6695:2	6799:24
6778:2,4	6804:2	Williams	6768:1	6800:3
6786:25	6808:16	6676:11	wonder	6803:17,18,21
6813:1	6809:12	willing	6938:7	6822:15
6814:1	6819:13	6807:13	wondered	6826:10
6828:13	6820:11	win 6918:17	6743:5	6835:11
6835:18	6822:14	wind	wonderful	6837:23
6841:2,3	6823:23	6686:19,22	6784:18	6851:8
6845:7	6825:22	6692:8	wondering	6852:24
6846:17	6833:9,14	6693:9	6759:18	6853:4
6847:12	6836:17,23	6714:7,9,25	6760:3	6865:10
6852:6,17	6837:7,22	6716:17,19	6762:21	6866:16
6855:4	6838:4,23	,20,22	6765:14	6867:7
6858:14	6839:3,14,16,25	6717:3	6767:14	6871:3
6859:9	6840:2,10	6808:4	6786:7	6904:14
6874:11	6841:3,5,13	6823:16	work	6914:15
6876:8	3 6843:25	6860:20,23	6678:9,11	worked
6877:22	6844:5	,24 6861:3	6683:21,24	6689:3,17
6881:25	6845:13	6907:21	6684:2,7	6691:21,23,25
6883:18	6853:9	6908:23	6685:14	6692:2,6,20
6884:25	6863:19,23			0 6764:13
6885:21	6887:14			6766:10
6893:10	6893:5			
6902:2,15	6900:14			
6905:9				
6908:11,19				

worker 6764:20	written 6766:2 6792:24 6827:15 6860:4 6863:20	XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX 6750:15,16 XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX 6750:12 XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XX 6750:13,14	6760:14 6774:7 6824:3 6825:12 6826:8 6834:16 6838:16,19 6855:21 6856:19 6860:4 6864:5 6865:11 6875:22 6880:9 6881:23 6896:23 6898:6 6902:16 6903:4 6905:14,20 6912:2 6917:2,6 6922:12,14 6929:16,17 ,18,19,20	
workers 6722:18 6724:16				
workforce 6723:7 6745:3	wrong 6759:21 6760:12 6775:21 6776:21 6814:15 6824:10 6886:21,25			
working 6692:1 6735:19 6756:13 6826:14 6859:16 6879:1 6891:19,23 6893:23 6894:24 6899:9 6920:19	wrote 6779:1 6783:4 Wuskwatim 6700:7 6701:14 6702:15 6718:21 6720:1 6722:24 6723:7 6725:14,19 ,20 6726:20 6727:5,12, 13 6735:10 6737:22 6745:22 6805:2,19 6806:5,7 6842:22 6843:2,16 6875:19 6898:14 6905:21 6906:1,6,9 6907:15			
works 6692:16 6707:12,19 ,20 6712:6 6733:8 6734:12 6738:14 6748:24 6751:4 6752:15 6753:1 6769:16		<hr/> Y <hr/>		
world 6689:1,4,1 1 6922:19		yardstick 6721:4		
worse 6723:11		yardsticks 6701:15		
worthwhile 6808:14		yellow 6697:22		
wrapped 6735:8,13 6799:25	<hr/> X <hr/>	yesterday 6695:10		
write 6692:24 6765:22	XXXXXXXXXXXX XXXXXXXXXXXX 6750:17 XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX XXXXXXX 6750:11 XXXXXXXXXXXX	yet 6714:17 6740:9 6785:3 6787:10 6788:20 6819:22 6826:24 6871:4		
writing 6794:18 6842:5 6856:17		you'll 6734:25 6760:19 6854:22 6877:7 6883:17 6884:23 6888:20 6889:21 6906:15,21		
		you've 6692:11 6738:2,3,6		