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YUKON UTILITIES BOARD

YUKON ENERGY CORPORATION 20 YEAR RESOURCE PLAN

APPLICATION TO THE YUKON UTILITIES BOARD

Held at Gold Rush Inn

Whitehorse, Yukon

November 16th, 2006

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Page 431 - 507

BEFORE BOARD MEMBERS:

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APPEARANCES:

Yukon Energy Corporation	John Landry
	David Morrison
	Cam Osler
City of Whitehorse	Wayne Tuck
Utilities Consumers' Group	Michael Buonaguro
	Ron Rondeau
Yukon Conservation Society	J.P. Pinard

TRANSCRIBER:

Doug Ayers Reporting Services

Preliminary Matters

1 (Proceedings resumed at 9:05 a.m.)

2 THE CHAIR: Ms. Marx, are you aware
3 of any matters before the Board, before we
4 proceed?

5 MS. MARX: Yes, I understand
6 Mr. Landry has one matter to deal with.

7 THE CHAIR: Mr. Landry.

8 MR. LANDRY: Madam Chair, what I
9 believe to be the last undertaking that, at least,
10 is still on the record, and it comes from pages 239
11 to 249 of the transcript, a preamble and then
12 ultimately a question.

13 It relates to an undertaking in respect of
14 information on the Carmacks-Stewart line; more
15 specifically, a question for annual numbers and
16 related matters.

17 So Mr. Osler is ready to provide a response to
18 that, and the written response has already, I
19 believe, been handed out.

20 THE CHAIR: Please proceed.

21 YECL PANEL RESUMES:

22 A MR. OSLER: Madam Chair, the
23 information request flowed from Exhibit B-16, the
24 economics on the Carmacks-Stewart project, the
25 update on pages, I guess, 9 through 12 of that
26 exhibit, and it asked for information which, in

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1 this piece of paper, is provided on pages 2 and 3,
2 Schedules 2 and 3, and I will deal with it briefly
3 in terms of the detail.

4 On the first page, just for everybody's
5 convenience, I have summarized what is in the
6 exhibit on one page in terms of the overall
7 economics, and where these numbers fit in under the
8 three different cost ranges we are currently using
9 for the project; the low cost being the 2005 cost
10 range that we had back in the original filing,
11 adapted only for the line as we now have it in the
12 application to YESAB, the midpoint and high cost
13 reflecting the concerns about possible cost
14 escalations due to the tight labour markets and
15 tight construction markets, and the midpoint of
16 those being the ones that I focused on in the
17 Exhibit B-16 analysis. But to make it clear,
18 I made three columns in the page. The only thing
19 that varies between the three columns is those
20 costs, everything else is the same,
21 column-by-column.

22 So the issue that we were asked to give more
23 detail on is the net ratepayer benefits portion,
24 because it comes from a present value calculation
25 that assumes what is happening over a series of
26 years, and people wanted to see the detail.

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1 So on this page, the summary of the numbers
2 for the Minto mine net revenues that we are
3 assuming, 12.5 million present value, Pelly
4 Crossing 2.3, and the Carmacks Copper is down near
5 the bottom at 11.5, and the interconnection cost
6 savings at 10 million.

7 There will be slight variations between the
8 numbers here and in Exhibit B-16, simply because of
9 cleaning the thing up, as we put it into one set of
10 tables, rather than putting together disparate
11 pieces of analysis, but it comes to the same
12 general totals and conclusions, absent a few
13 decimal places.

14 Schedule 2, then -- and I would emphasize for
15 anybody that is reading the summary, which is said
16 in the text, all of this analysis, as I was asked
17 the question yesterday, and I answered it, assumes
18 nothing with respect to Minto or Carmacks Copper
19 mine contributions to the Carmacks-Stewart line,
20 and that is stated clearly on the first page, no
21 net capital contribution assumed from Minto or
22 Carmacks Copper mines, because we wanted to make no
23 presumption about the outcomes of a PPA. So, read
24 the overall project net benefits at the bottom of
25 the page with that caveat clearly in mind, please.

26 Now, the focus of the question was on what are

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1 the annual distributions of loads and things that
2 you were assuming in your estimates for the
3 ratepayer benefits. Schedule 2 directly addresses
4 that, provides the detail behind the calculations.
5 If I just turn to it, under Minto mine, it shows
6 that we have assumed a certain volume of annual
7 energy. We started in October 2008, which is one
8 quarter of that year, assuming that the lines start
9 production -- delivery at that time, it goes for 8
10 1/2 years. It is assuming a sale price rate of 9.3
11 cents that doesn't escalate. The numbers come out
12 to be, as they are shown, year-by-year and,
13 therefore, in dollars. The present value of which,
14 going back to 2005, is 15.282 million. The
15 flexible term note, extra cost, that YEC is
16 incurring, because of this new load, is then
17 reduced, and the net benefit to ratepayers is
18 12.484 million.

19 The present value of that flexible term note
20 is done exactly the same way using 1.7 cents as the
21 constant cost, in which case, there never would be
22 any escalation because the number would not change
23 in any event, regardless of what inflation is
24 doing, or rates are doing.

25 The same approach is shown for Pelly Crossing,
26 but it is a different issue. Pelly Crossing, you

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1 are saving diesel, you are not getting rates. So
2 there is a bald assumption that 20 cents is the
3 overall saving in diesel cost.

4 I would say, because we are calling these
5 ratepayer benefits, we are trying to get at the
6 incremental benefit to the ratepayers in terms of
7 income less extra costs associated with this extra
8 sale from the WAF grid. So, since we are using
9 surplus hydro resources, we effectively get extra
10 revenue with no incremental cost, is the assumption
11 underlying here, other than the flexible term note
12 increased cost. If we are putting the power
13 through to Pelly Crossing, the assumption is, the
14 system is saving the diesel costs that the system
15 is incurring right now in serving Pelly, and it is
16 not incurring any incremental costs worth talking
17 about. Probably, the diesel cost is slightly
18 higher than that. I did not get into the 1.7 cents
19 issue, it is not a big number in this case,
20 anyway.

21 Carmacks Copper, the assumptions were made a
22 long time ago, they are subject to updating, but we
23 have not done that at the moment. We know that
24 when Carmacks Copper comes on the system, we will
25 also be incurring extra diesel use. We know that
26 that will take up the surplus hydro, probably to

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1 its full extent, for some years. So, there is some
2 benefit from selling the extra surplus hydro, there
3 is some incremental cost due to the diesel, we
4 hadn't had the opportunity to ever try and estimate
5 those carefully, so we have estimated an overall
6 average five cents, with two percent escalation,
7 was what was done a long time ago.

8 We have taken off from that number, which
9 assumes 48 million kilowatt hours of sales to the
10 Carmacks Copper mine, starting again in October of
11 2008, going for eight years. We have taken off,
12 from that present value number, the flexible term
13 note costs. In this instance, the Carmacks Copper
14 mine is enough to bring the flexible term note to
15 its full 7 percent interest after about half of the
16 sales. So we hit the maximum of the impact of the
17 flexible term note, and the numbers reflect that.

18 The final column is the interconnection cost
19 savings estimate for energy and capacity. The
20 capacity number is fairly straightforward, an
21 assumption of 5.6 megawatts of capacity available
22 by 2012, at a million dollars a megawatt diesel
23 cost savings. But the energy one assumes saving --
24 an estimate process of how much diesel fuel are we
25 saving on the WAF system by having access to the 15
26 gigawatt hours, or so, of surplus hydro on the

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1 Mayo-Dawson system. It assumes both mines are in
2 operation, was the assumption of the estimate. In
3 the filing, the estimate dated way back to the
4 January initial filing, it was 4.7 million present
5 value.

6 Schedule 3 shows the detail of a calculation
7 that is summarized on Schedule 2, so passing to
8 Schedule 3. The estimating approach looked at the
9 systems -- the WAF system with and without access
10 to the interconnected system, and looked at the
11 estimating of how much diesel generation would
12 change for the case with no Carmacks-Stewart line
13 versus the case with the Carmacks-Stewart line. It
14 looked separately at what we call peaking diesel,
15 and base load diesel, just summarized here. But
16 Appendix C in the initial filing showed this type
17 of analysis for other examples.

18 Assuming, again, that the interconnection
19 happened in 2009, one year later than getting the
20 service to Minto and Pelly Crossing, which is an
21 update, it wasn't there in the initial analysis,
22 and assuming it happened in October, you can carry
23 forward -- you see the results of doing the
24 analysis, carrying it forward under the assumptions
25 listed on the page for diesel prices, and
26 efficiencies for peaking diesel, and base load

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1 diesel, and diesel O & M.

2 The number we come up with in this estimating
3 process, for fuel cost savings, fuel O & M savings,
4 and secondary sales that would not have otherwise
5 been feasible, is slightly higher, 5.8 million,
6 than the initial estimate shown back in January of
7 last year, of 4.7 million. The differences include
8 some offsetting things. We found that when we were
9 reviewing it last night, that we had missed some of
10 the peaking diesel benefits in the initial
11 analysis, so that there was a correction that
12 increased it. On the other hand, I wanted to show
13 it updated, to show the date start now as 2009, and
14 not 2008 that was shown earlier. So it is updated
15 in that respect. It still, though, assumes, just
16 because of the time available, the mine loads that
17 were assumed in January, which is a far lower mine
18 load for Minto, at 14 million kilowatt hours than
19 we are using today. I just did not feel
20 comfortable trying to go through that level of
21 adjustment in trying to track this for you for this
22 morning. So it is, if anything, showing a slightly
23 lower mine effect than would be the case in a full
24 analysis. But it does show the underlying
25 analysis.

26 On the very first page, going back to the

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1 beginning, you will see that in the assessments
2 that we have given you before, in Exhibit B-16, we
3 simply assumed \$10 million, rather than trying to
4 fine tune whether it is 10.5 or 11.5 or something
5 else. The numbers in that Schedule 3 and Schedule
6 2 are showing 11.4 million, if you want to add them
7 up, but I am more comfortable with just saying it
8 is still an approximation, at this stage, and 10
9 million is as good an approximation as anything.

10 So dealing with the exhibit that was, as
11 requested, the key -- I guess Mr. Bowman is
12 pointing out to me that there is -- on the first
13 page, it says "Overall Stage 2 Net Benefits
14 (Costs)", there's the typo, those should all be
15 negatives, 3 million negatives, 5.2 million
16 negatives, 7.5, if you just correct the very first
17 page of the exhibit.

18 Under Stage 2, Pelly Crossing to Stewart
19 Crossing, "Overall Stage 2 Net Benefits", it says
20 3, and it looks as though it is a positive number;
21 it should have brackets around it, it is a
22 negative. It is a cost. The midpoint is negative
23 5.2, and the high cost is negative 7.5.

24 The exhibit then is complete, Madam Chair, in
25 terms of the details requested on the annual
26 numbers, and the summary is just provided for

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1 convenience on the first page.

2 THE CHAIR: Thank you, Mr. Osler.

3 I note that that is Exhibit B-22, so marked.

4 EXHIBIT NO. B-22:

5 SCHEDULE 1- SUMMARY OF

6 CARMACKS-STEWART UPDATE PROJECT

7 ECONOMICS.

8 MR. LANDRY: Thank you, Madam Chair,

9 those are all of our preliminary matters.

10 THE CHAIR: Thank you, Mr. Landry.

11 MR. BUONAGURO: I am pretty sure that
12 was my undertaking. I have two things that jump to
13 mind, and perhaps this was not clear in the
14 original question. And maybe it is best if I do an
15 example.

16 In the original Resource Plan, which I guess
17 is Exhibit B-1, at chapter 4, page 57, at the top
18 of the page, and this is an example, you talk about
19 the Aishihik second transmission line, and you do a
20 little calculation that tells you what the annual
21 -- what the annual costs are and then what the
22 rate impact is in terms of percentages. And on the
23 previous page, when you talk about the
24 Carmacks-Stewart interconnection, you do not do
25 that calculation because you have assumed a YTG
26 funding which will negate the full cost. And what

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1 I was looking for in this -- this, I think, if I
2 understand you correctly, is part of what I was
3 asking. The second part is the annual -- how the
4 costs will be treated annually as well, so that
5 they can be balanced against the annual benefits.

6 So I guess it would be something like, if the
7 total costs of the project is estimated at --
8 I guess your midpoint estimate is \$35 million, you
9 would do a calculation at 50 years depreciation,
10 plus the average cost of capital, with the
11 resulting annual costs of X, which would be the
12 annual cost to ratepayers, and I would like that
13 calculation as well.

14 A MR. OSLER: Okay. That is a
15 different -- I must admit that is a different -- we
16 have never done that even in our exhibits as
17 provided, or any summaries of it. Let me think, if
18 I could, and get back to you as to whether we can
19 do it usefully. I think we can. It is just that
20 it is not something that is sitting in a file
21 pulled together that way.

22 In general, I can tell you that, looking at
23 this type of analysis, the overall effects will be,
24 as long as what we are showing here, relatively,
25 are positive, it will probably be positive near the
26 outset, but I want to check that. The issue that

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1 I have always been concerned about is, what happens
2 when the mines stop operating, and what steps have
3 we taken to write down the costs during that time
4 period, which is sort of a rate analysis more than
5 a project approach issue, so that we don't -- we
6 don't have an adverse ongoing impact after the
7 mines have lived their life as forecast.

8 So that is something we have not gotten into
9 discussion at all, and it is something that we have
10 not put our minds to in terms of math, but we have
11 talked about internally. Subject to that caveat,
12 and just checking with Mr. Bowman as to what is
13 feasible, I will get back to you with something, or
14 with an explanation as to why I cannot.

15 Q All right, thank you.

16 And the second part, it is -- I guess I could
17 relate to this, I may be sneaking in a question
18 that I should have asked yesterday, but I hope you
19 do not mind, you talk about these savings with
20 respect to secondary sales, and it occurred to me,
21 and you may be in the evidence and I just cannot
22 find it or cannot understand it, it occurred to me
23 that there might be, with the mines on the system,
24 there might be displaced secondary sales, so that,
25 even though you are gaining benefits from selling
26 energy to the mines, you might be losing secondary

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1 sales customers that get bumped off at some point,
2 depending on how much secondary energy is
3 available. And I just want to know if that is
4 accounted for in the ratepayer benefits. It may be
5 in this table, I do not know.

6 A In some of our analysis, it has been accounted
7 for. In the ones you have got here, it is not
8 being addressed because of some of the complexities
9 of trying to deal with the issue. But it is
10 something that, in a refined analysis, we would
11 want to take into account. If you look at Appendix
12 C dealing with Aishihik Third Turbine, it is not
13 treated at all, because of the issues of the
14 complexities. We showed it in this table here,
15 because the initial assessment had it in, clearly,
16 in the footnote on page 4-23 of B-1, and so to get
17 comparability we had to deal with it. And
18 secondly, I was advised that the complexities, when
19 you are dealing with the interconnection in this
20 regard, are not the same as when we are just
21 dealing with extending Carmacks up to the
22 individual mines.

23 But it is a fair point, and let me undertake
24 to review what we do know about that from our
25 internal thinking, and get back to you on that
26 point, probably more orally than with a bunch of

Preliminary Matters

1 numbers and tables.

2 Q Great, thank you very much.

3 THE CHAIR: Ms. Marx, are you
4 prepared to proceed with your cross-examination?

5 MS. MARX: Thank you, yes.

6 YEC PANEL FURTHER EXAMINED BY MS. MARX:

7 Q MS. MARX: Mr. Bowman, yesterday
8 when we were talking, I was left with the
9 impression that you have factored in the mine loads
10 in your calculation of the LOLE. Is that correct?

11 A MR. BOWMAN: Yes, when you are
12 looking at the LOLE calculation, and the analysis
13 of the entire system, you would look at all loads
14 on the system, which includes the mine loads, and
15 that is consistent with the way Dr. Billinton dealt
16 with the system in his second report filed in
17 response to YUB Question 1, the first round
18 interrogatories, where Yukon Energy asked him to
19 take what had he done in his first report, looking
20 to the system today, and apply it to the system as
21 it existed when the Faro mine was on, and he showed
22 the impacts with the Faro mine associated with the
23 LOLE calculation. And, as a result of that, and
24 further discussion, what has been adopted by Yukon
25 Energy is a criteria that says the LOLE will apply
26 to all loads on the system, whereas the N-1 would

YEC Panel
Marx (Ex.)

1 apply to all those loads who do not have their own
2 back-up, their own ability to supply their own
3 power in emergency situation, which, for the
4 purposes of calculation, means all loads, less the
5 mines.

6 Q You know, I thought the same would have applied to
7 the LOLE, that, since the mine loads are
8 interruptible, that you would not factor that in to
9 the LOLE either.

10 A Well, let me be really clear. The mines are not
11 contemplated to be provided with interruptible
12 power, in the sense that we talk about
13 interruptible rates in other jurisdictions, or
14 secondary power here, or something of that nature.

15 Q Fair enough.

16 A The service to the mines is intended to be a firm
17 service that Yukon Energy would provide. It would
18 provide in all hours of the year, as able to
19 provide it, whether from hydro or from diesel, to a
20 utility standard, including to a standard that
21 would mean a LOLE of two hours per year.

22 The comment about interrupting the mines goes
23 more to when you have turned your mind over from
24 design of the system, to what does one have to do
25 when we hit those emergency situations. And when
26 we hit the emergency situations, and you know the

YEC Panel
Marx (Ex.)

1 mines have their back-up, and they can keep
2 themselves from freezing, Yukon Energy would turn
3 its attention to keeping other people from freezing
4 in the dark, as opposed to the mines, who can do
5 that for themselves. But it doesn't go into the
6 criteria type of analysis which says, in providing
7 service to the mines, the system will be able to
8 provide them with utility grade firm service
9 meeting an LOLE of two hours per year, or better.

10 Q Aren't you designing the system to meet the
11 requirements, not specifically to the mines? Like,
12 you are not designing the system to meet the load
13 requirement of the mines because, as you say, you
14 know, in an emergency situation, you can curtail
15 the power to the mines to try to serve other
16 customers.

17 A No, that is not quite correct. The system would be
18 designed -- let me go back a step. The system has
19 always been designed, under the previous criteria,
20 to incorporate the mine loads. The calculation
21 that was done in the past, on the deterministic
22 criteria, always looked at all loads, including the
23 mines. The '96 GRA, for example, if you looked at
24 the peaks and measurement of the criteria, always
25 had the Faro mine in at about 25 megawatts, at that
26 time, in terms of determining the adequacy of the

YEC Panel
Marx (Ex.)

1 system. So it has always been a component of
2 planning the system. The LOLE criteria continues
3 that approach, that the system will be planned to
4 ensure reliable service to all customers, including
5 the mines.

6 The only variation today is that Yukon Energy
7 is proposing to add this additional, more stringent
8 at the present time, particularly more stringent
9 with regard to Whitehorse or retail loads, N-1
10 criteria, that says, even if I have designed my
11 system to provide utility grade power at a
12 long-term average of two hours per year, I want to
13 also be attentive to the impact that can arise from
14 a lengthy outage of the Aishihik line, which is
15 what the N-1 criteria is meant to address. And it
16 goes to ensuring that the -- that, in looking at
17 the LOLE criteria, and the long-run averages,
18 coming up with two hours per year, one has not
19 ignored that there is a situation where you would
20 want to be better protected than that, relating to
21 long outages that can arise with the Aishihik
22 line.

23 And just in case it is not clear in the
24 information that has been filed, the N-1 criteria,
25 which looks to the failure of the Aishihik line, as
26 experienced on January 29th, it is a very important

1 example in terms of emphasizing that this can
2 happen, it does happen, it has happened during
3 winter, it looks to what you will do in that
4 situation. The N-1 criteria does not provide any
5 guarantees; as a matter of fact, you are basically
6 guaranteed the opposite, that if the line, as the
7 system is currently designed, goes out, or you lose
8 Aishihik, you will have an outage. It loses simply
9 too much generation for the system to be able to
10 absorb. So when the Aishihik line goes down, under
11 any of the criteria, and in the absence of a second
12 line, you will have an outage. The point is, if
13 that line stays down, what can you do to get the
14 lights back on? And the N-1 criteria is designed
15 to say, if the lines stays down, I am going to have
16 enough megawatts this side of Aishihik to be able
17 to restore power up to my expected peak load.

18 Without the N-1 criteria, you may have a
19 system that is planned, that does not have enough
20 megawatts this side of the Aishihik line, to keep
21 the lights on in Whitehorse, or in the remainder of
22 the system. And that is what that criteria does.
23 It is about how to deal with it, if an event
24 occurs, and to deal with that type of restoration.

25 Q Mr. Bowman, in Table 3.5 of the Resource Plan, page
26 3-24 -- do you have that?

YEC Panel
Marx (Ex.)

- 1 A Yes.
- 2 Q Under LOLE criteria, the column "Peak (WAF-Wide
3 Including Loads Served By Fish Lake)", does that
4 include the mine loads?
- 5 A Well, no, it does not include the mine loads,
6 because this table is solely based on the loads as
7 they exist today, and the base case forecast. And
8 under the base case forecast, we do not have any
9 mine loads. There are no mines on the system
10 today, and there are no mines included in the base
11 case forecast. You will not see mine loads start
12 to show up until you either get into a few of the
13 higher load forecast scenarios in chapter 4 and, in
14 particular, in chapter 5.
- 15 Q All right. Can I have you turn to YUB-YEC-2-14,
16 particularly Attachment 1. In that IR, YEC was
17 asked for the load on the Mayo-Dawson grid. When
18 I look at Attachment 1, I just have a few questions
19 for clarification. The heading of Attachment 1
20 says, "Hourly WAF Generation". Should that be "MD
21 Generation"?
- 22 A Attachment 1 to this IR was an Excel file, that I
23 am afraid I do not actually have with me, it is on
24 my computer, but I can certainly look into that,
25 and let you know.
- 26 A MR. OSLER: Does anybody have a

- 1 copy in the room?
- 2 Q I have a copy of the first page, but that's all.
- 3 A Mr. Campbell could probably tell, just by looking
4 at the page.
- 5 A MR. CAMPBELL: Yes, I can verify that
6 this is Mayo -- sorry, the Mayo-Dawson grid, and
7 those are in kilowatts, so the loads were just over
8 two megawatts, in that range there.
- 9 Q Are those figures in that attachment, are they just
10 for Mayo hydro, or is Mayo diesel included in
11 that?
- 12 A Those are the actual hourly grid, total grid
13 generation numbers, so they would include any
14 diesel that was on the system. The Mayo diesel has
15 rarely been run. I mean, there is 5.4 megawatts of
16 hydro capacity, so the diesels would only be run in
17 a back-up mode. We have not used diesel on that
18 grid, since the line has been built, for peaking
19 use, except for planned outages and events like
20 that.
- 21 Q And I know you do not have the chart in front of
22 you, but I noted that, in terms of peak generation,
23 this attachment showed 6,157 kilowatt peak, January
24 24, 2006, I think it was at hour 0:00. Compared to
25 the other figures, the generation figures on that
26 attachment, that seemed to be significantly

YEC Panel
Marx (Ex.)

1 higher. Does that -- do you know if that number is
2 correct, or whether it is a typo, a mistake?

3 A That is a typo. We can provide you the correct
4 number. The peak, I believe, we have seen on that
5 system, is around 4.6, 4.7 megawatts. There is no
6 way that we would have hit six megawatts, yes.

7 Q Okay. So if you could provide that corrected
8 number to us?

9 A Yes.

10 Q Thank you. Now, in terms of the expansion
11 sequences that YEC looked at to meet the capacity
12 required under the planning criteria, the response
13 to YUB-YEC-1-10 left me with the impression that
14 YEC only looked at one sequence. Is that correct?

15 A MR. MORRISON: Ms. Marx, perhaps, are
16 you just, in general, asking that, or is there
17 something specific here you might refer us to?

18 Q Just in general.

19 A MR. BOWMAN: The response that you
20 have got, 1-10, sets out, at the second page, a
21 chart similar to the others that we were looking at
22 yesterday in terms of the megawatts -- the
23 shortfalls and the megawatts being secured from
24 different projects. In regards to most of the
25 near-term projects, there is not a lot of options
26 in terms of sequence, because of the types of

YEC Panel
Marx (Ex.)

1 shortfalls one is seeing. So if you go through the
2 analysis, starting today, looking at when your
3 shortfalls arise, and what options are available to
4 you, for example, by 2007 this would have been
5 showing reasonably substantial shortfalls. There
6 would be no option, for example, to put in place an
7 Aishihik second transmission line by 2007. You
8 could not get it designed and built.

9 In order to deal with the 2007 shortfalls,
10 then, you are looking at projects that can be put
11 in place in that timeframe, and the Resource Plan
12 in that regard, looked at Marsh Lake as a project
13 that could be put in place quickly, and the
14 Mirrlees Life Extension, that, in any event, needed
15 to be done by that time because the first unit was
16 going to be scheduled for retirement at that --
17 once you had done those, the only other project
18 included in the Resource Plan main proposal that
19 relates to the capacity shortfalls, is the
20 Carmacks-Stewart transmission line. And as Mr.
21 Osler set out, that project has limits on how
22 quickly you can get it into place. All the
23 incentives are there to get it into place as
24 quickly as possible in order to capture the
25 opportunities related to serving the Minto mine.
26 But, for example, you would not have an option to

1 solve the 2007 shortfall by building that line, you
2 could not get it built.

3 The fourth project, the Aishihik Third
4 Turbine, is being scheduled for whenever it makes
5 sense, economically, to avoid peaking diesel. So
6 in regards to the projects that were there, it
7 wasn't that one could, sort of, set out a number of
8 sequences that each solved the problem, and then
9 choose between them. Once you go through
10 chronologically, you are really left with a limited
11 number of choices in each year to make the whole
12 thing work. Maybe a long answer to say there were
13 no alternative sequences considered, it was
14 necessary to move with this set of sequences.

15 A MR. OSLER: If I could just add
16 another perspective on it. In larger systems, you
17 would look at a varied sequence analysis and, in
18 that sense, it would appear we did not do it, if
19 you put it simply. On the other hand, working on
20 the projects, I can tell you, we went through all
21 sorts of sequence gyrations over the last year and
22 a half, at a level that I would not want to bore
23 you with going through the details.

24 In the end, the point that Mr. Bowman is
25 making, is what emerges, is you have got a limited
26 portfolio of options, and timing is driving

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1 everything with a new capacity criteria, and a need
2 to get caught up when we are losing Mirrlees
3 diesels over the next several years. I think that
4 is a fairly -- in my experience, a fairly usual
5 situation to face, and there is a surplus on the
6 system, so, unless the load goes up with a new
7 industrial situation, there is not any energy issue
8 that we are looking at.

9 So at one level, it is true to say that we did
10 not do sequence analysis, in the strict sense of
11 laying out a series of present values and looking
12 at. In another sense, we went through a lot of it,
13 in terms of trying to find out what might work, and
14 what was available, and we have just done it again,
15 as recently as the update, in saying, I am sorry,
16 the Marsh Lake project is not working, but we found
17 an opportunity at Faro. So it has been driven by
18 the factors that have been talked about, it doesn't
19 mean people were not sitting around, worrying about
20 sequencing, how to do things, but, in the end, when
21 we worked our way through it, we had a limited set
22 of options, and a very clear set of priorities.

23 Q YEC has provided the capital costs of the projects
24 it plans to proceed with. And I assume that is in
25 2006 dollars, that that has been provided?

26 A MR. MORRISON: No, I think it is 2005

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1 dollars, and I think that is clear in -- I think we
2 have noted that in some of the information.

3 Q Pardon me. What escalation rates would you use if
4 you were to put those costs in different years?

5 A MR. OSLER: You would have to, in
6 our judgment, do it almost project-by-project,
7 depending on what the things are that are affecting
8 the cost escalations. The Carmacks-Stewart
9 project, we provided, in the update, a fair amount
10 of information, the essence of which says, the 2005
11 dollar numbers are subject to labour market and
12 construction materials forces that could make the
13 2005 estimate range over a fairly wide range, say
14 from 30 to \$40 million. So rather than treating
15 that as a cost escalation problem, it is treated as
16 an uncertainty as to what the base number really
17 is, which I think, professionally, is an
18 appropriate way to think about the problem.

19 If you have the right assessment of what the
20 market conditions are when you have to build it,
21 there will be an escalation process, of a normal
22 type of what are the escalations you should provide
23 for from going from 2005 to the in-service date of,
24 say, October 2008. We have done that, in the most
25 recent internal work, and I could -- we are taking
26 numbers that were close to 3 percent, or something,

1 a year, 2 and a half to 3 percent, and you have to
2 include interest during construction at the
3 corporation's cost of capital, weighted average
4 cost of capital.

5 In the case of Carmacks-Stewart, we have given
6 it a footnote in the update that says, we think
7 that escalation would be 10 to 15 percent from the
8 2005 numbers, if you have the assessment correct as
9 to what the market condition is, within that range
10 of 30 to 40 million. So the in-service costs would
11 be 10 to 15 percent higher than the equivalent 2005
12 dollar number for Carmacks-Stewart. That is in the
13 update.

14 If we were looking at a diesel, the issues
15 would be quite different, and they would come down
16 to assessments of costs of parts, and more local
17 labour, and things like that. They probably would
18 be in a different type of situation entirely, they
19 would take place over a little bit shorter time
20 period, they do not involve the regulatory cost
21 issues, and a delay of timing issues.

22 I am told that the estimates in those type of
23 cases would be much more clear, once you had a
24 price on a new diesel, most of the costs would be
25 locked in by the price, and there probably would
26 not be much escalation issues that people would be

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1 worried about, but there would be some escalations
2 to do with local labour and stuff, and they would
3 be whatever the local market rates would be. In
4 the case of the Marsh, it was all to do with
5 regulatory costs, so the escalation factor was not
6 really addressed at all, it wouldn't be addressed.
7 It is more a question of what is it going to cost
8 to get this thing licensed, which is a high level
9 of uncertainty.

10 Aishihik Third Turbine is a largely
11 equipment-driven item, but it would be a tendered
12 price. We don't think it would have the same
13 issues as with the Aishihik line, but we have not
14 really sat down and talked about, in detail, how
15 you would do the escalation in that case, at the
16 moment. But we did get a cost update, for the
17 turbine, from the engineers, that is in the
18 original supplementary filing, so that it was an
19 updated 2005 base number that they put together for
20 us.

21 Q Mr. Osler, did you say, near the beginning of your
22 answer, that the escalation rate would be about 3
23 percent per year? Did I hear that correctly?

24 A I said 2 1/2 to 3. And I am looking at a sheet
25 where we did a number, and it was 2 1/2 to 3, and
26 we used -- to get to the 10 to 15 percent number,

1 we are saying that the range would be in that type
2 of a range, and there would be the interest during
3 construction, that is how we came up for the time
4 period between 2005, and the in-service in October
5 2008. It was really based on that type of
6 inflation range, assuming you have the right base
7 number, reflecting the market conditions.

8 Q And what would be the fixed and variable O & M
9 costs for diesel and hydro plants? And I apologize
10 if this information is already in your evidence
11 somewhere.

12 A MR. BOWMAN: We dealt with this, to
13 some extent, at YUB-1-11, and it notes the
14 different projects, and how fixed and variable
15 O & M arises on each of them. I would have to
16 spend a bit of time reviewing this to remember all
17 of the different pieces that go in, but I can see
18 quickly, for example, it discusses Aishihik Third
19 Turbine as annual O & M costs assumed at
20 approximately 1 percent of the total capital cost,
21 or about \$70,000 a year. Carmacks-Stewart line,
22 having very small O & M spending at the outset.
23 Once you have built a new line -- a large part of
24 the O & M in transmission lines is brushing, and
25 also replacement work of things like insulators ...
26 you do not have any of that with a new line. Once

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1 you buy the hardware tightening, the O & M would be
2 quite small.

3 With respect to Marsh Lake, to the extent it
4 is relevant, it was using a standard, reasonably
5 token, rate for O & M, variable O & M for hydro
6 generation, of a half a cent per kilowatt hour. It
7 is a planning number, and it is not necessarily
8 exact by any science, but it is just intended to
9 recognize that you may increase your O & M
10 slightly, to the extent you have to generate with
11 hydro.

12 Mirrlees Life Extension has a fairly more
13 substantive answer there that goes into what it
14 takes to commit to these units, and have them as a
15 core part of your system, that you are planning to
16 rely on for the next 15 to 20 years, as opposed to
17 units that are moving their way towards a planned
18 retirement. So it says that that type of
19 commitment to the units involves some additional
20 costs associated with training for your staff, fuel
21 budgets to exercise the units on a routine basis,
22 and that is all laid out in that response, and that
23 is about page 3 of 5, where that is dealt with.

24 Q And what is the heat rate and fuel heating value
25 for diesel plants? Have you provided that?

26 A We have used two different heat rates for the

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1 purposes of analysis of matters like Mr. Osler went
2 through this morning, where we have a number of
3 kilowatt hours that is turned into a dollars for
4 fuel. In doing that, the modelling is intending to
5 separate between peaking diesel, which is typically
6 not a particularly good heat rate, and base load
7 diesel which gets to a much better heat rate. The
8 peaking diesel, as it is set out in the footnote
9 there, it would be 3.48 kilowatt hours per liter,
10 and the base load diesel as at 3.9 kilowatt hours
11 per liter.

12 A MR. OSLER: And if I could just
13 make it clear for everybody, what we are talking
14 about there is, when we are trying to assess diesel
15 savings new to the projects, we are not building
16 any projects that we are planning to operate. So
17 it has nothing to do with the projects that we are
18 building, it is to do with the diesel we have got
19 on our system, and what would be a good average
20 number to use for peaking operation versus base
21 operation. The 3.9 is meant to be also pretty
22 cautious in the sense that we are trying to not
23 overstate the benefit.

24 Q And you have stated the diesel fuel price that you
25 are using. Do you have a forecast, as well, for
26 the diesel cost?

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1 A MR. BOWMAN: What has been used in
2 the analysis is a diesel fuel price that includes
3 an escalation at a simple 2 percent. However, at
4 Tab 5, page 44, page 5-44, there is a bit of a
5 discussion there about looking forward to 2010, and
6 current market conditions at the time. And at that
7 time, the NYMEX light sweet crude futures to 2010,
8 were in the range of 50 to 55 U.S. per barrel, and
9 that would lead to prices for fuel in the range of
10 21 to 22 cents, in 2010 dollars, or about 20 cents
11 in 2005 dollars, 20 cents per kilowatt generated.

12 And in terms of an update to that, the very
13 recent NYMEX futures, to that same point in time,
14 seemed to reflect more about a range of 65 per
15 barrel, as opposed to the 50 to 55 used in the
16 application. But those type of futures markets
17 only go out a certain number of years with any
18 material trading, so you can get to about 2010,
19 now, with a reasonably active market, that does
20 represent meaningful numbers. Beyond that, the
21 futures markets are quite token. So, all of the
22 long-term planning is based on a simple 2 percent
23 inflation.

24 Q In terms of the dispatching order of your
25 generation, is there -- once hydro is dispatched,
26 does YEC have a specific dispatching order, in

1 terms of the diesel generation?

2 A MR. CAMPBELL: Yes, we do. Would you
3 like me to explain it?

4 Q Yes, please.

5 A We currently stack our diesel units based on four
6 factors, the first factor being the fuel efficiency
7 of each unit is a factor. We look at the fuel
8 price, because it does vary by location. We look
9 at the non-fuel variable costs, which are primarily
10 operator, labour, lubricants, consumables. And we
11 also look at the line loss factor, as well, so
12 location is part of the calculation. And that will
13 give us a stacking order, and then so the units on
14 the top of the list will get dispatched first, that
15 have the lowest hourly operating costs. We also
16 factor in, actually, our overhaul cost, based on
17 the number of hours between overhauls, and we work
18 that down to an hourly number, as well, an hourly
19 cost.

20 Q Mr. Campbell, could you provide that list to us in
21 an undertaking?

22 A Yes.

23 Q Thank you.

24 A MR. OSLER: Just to be clear, you
25 want the list of the units, or the list of the
26 factors?

- 1 Q The dispatching order.
- 2 A The current dispatching order that reflects the
- 3 factors that Mr. Campbell has described?
- 4 Q Yes.
- 5 A Thank you.
- 6 Q Thank you. Now, I would like to ask some questions
- 7 about the Mirrlees Life Extension particularly, and
- 8 it is, I guess, a follow-up to some of the
- 9 questions that Mr. Buonaguro asked you earlier this
- 10 week. If I could have you turn to the report that
- 11 was attached to UCG-YEC-2-42. This is the NTPC and
- 12 GEA report. And specifically page 44 of 95.
- 13 A MR. MORRISON: UCG-42?
- 14 Q Yes.
- 15 A MR. CAMPBELL: Was that page 45?
- 16 Q 44. And I want to go over some of the concerns
- 17 that were expressed in this report about the
- 18 Mirrlees units, and refurbishing them. And if
- 19 I look on page 44, the last paragraph on that page
- 20 -- so I would like to sort of go through,
- 21 point-by-point, on some of these -- there is a
- 22 sentence there that says, "The units are not fuel
- 23 efficient relative to modern diesel units
- 24 especially when operating on light fuel." And
- 25 I would like to know how YEC has considered that,
- 26 or addressed that, in its decision to proceed with

1 the Mirrlees Life Extension?

2 A MR. MORRISON: Well, Ms. Marx, I am
3 not sure if Mr. Campbell can help you in terms of
4 the different efficiency numbers, but I think, just
5 to reiterate some of the points I made yesterday,
6 these units are back-up units, they are not going
7 to run. We are talking about running a unit 100
8 hours a year. The fuel efficiency number is going
9 to be insignificant compared to the difference
10 between -- of half a million dollars a megawatt in
11 cost for new units, which would be more efficient.
12 But Hector, can you perhaps add some fuel
13 efficiency numbers?

14 A MR. CAMPBELL: Sure. We currently
15 rank the three Mirrlees in question, for example.
16 They are ranked on our stacking order at
17 3.7 kilowatt hours per litre of fuel use, of light
18 fuel use. Overhauling the units, we have been
19 advised by the OEM, will increase the fuel
20 efficiency to around 3.9, which is very close to
21 the best that you will get with a brand-new unit of
22 any manufacture.

23 Q Now, Mr. Morrison, you mentioned that these are
24 back-up units, they are not going to run very
25 often, but, presumably, over the year, as the load
26 increases, they would be running more and more

1 often?

2 A MR. MORRISON: Well, in the Plan,
3 there is no -- or the Resource Plan, there is no
4 plan to use the Mirrlees, you know, in any great
5 length of time. I mean, that is why the question
6 here is, if there is peaking diesel at the margin,
7 when do -- and when does that occur, so when do we
8 put Aishihik Third Turbine in, and where are the
9 economics of the Aishihik Third Turbine? And Mr.
10 Osler has a comment or two.

11 A MR. OSLER: You are right, that, as
12 the load grows, particularly if you bring the mines
13 on, there will be more use of diesel, so let's
14 start from there. It doesn't necessarily follow
15 that there will be more use of the Mirrlees beyond
16 the type of level that Mr. Morrison is talking
17 about. If there is concern about these used units,
18 as there is about getting parts and things like
19 that, the basic philosophy the Corporation is
20 taking is they would not be returning them, to the
21 extent they have those concerns, to using them as
22 base load units, even though their design and their
23 efficiencies that we are talking about are very
24 consistent with base load use. They would, if they
25 had those concerns, reserve these units for back-up
26 status. As long as we don't twin the Aishihik

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1 line, there will be the requirement for back-up to
2 reflect that N-1 contingency, unless this system
3 grows to the point that the LOLE becomes dominant.

4 At that point in time, some of the things you
5 are getting at would potentially have a play. Our
6 assessments so far, that might happen for a few
7 years, but not on an ongoing basis, and there are a
8 lot of other units on the system to operate base
9 load, so that these units were not being -- the
10 philosophy was not to have them restored for base
11 load type of use to the extent that there were
12 concerns about availability of parts and things
13 like that.

14 A MR. CAMPBELL: The one point I would
15 add, and it will become apparent when we file the
16 stacking order, the Mirrlees have never been high
17 on the stacking order, so if they are the fifth
18 unit run out of 12 units, you would have to be
19 running maybe 10 or more megawatts diesel, already,
20 before you would be starting those units, except in
21 an emergency situation.

22 Q Can you remind me what you indicated to
23 Mr. Buonaguro in terms of the expected life that
24 you would see from the Mirrlees units? I know you
25 indicated that you were expecting it would be
26 longer because they would not be used on a regular

1 basis.

2 A MR. MORRISON: Well, I am not sure if
3 we have a year number, perhaps Mr. Bowman can
4 remind me, but the proposal here is to do a
5 12,000-hour overhaul, so that the refurbishment
6 should last -- those engines should, and all
7 indication is, that there is no reason why we
8 cannot utilize them for 12,000 hours. So if, as
9 Mr. Campbell and Mr. Osler just pointed out, they
10 are low down in the stacking order, we are not
11 using them as base load, and they are being run as
12 a back-up, and they will be -- and we do run them a
13 few hours every month, regardless of the situation,
14 and we run all of our diesels every month just to
15 make sure they still operate, and exercise them, if
16 our estimate is 200 hours a year, 200 into 12,000
17 hours is, you know, a lot of years. So did we have
18 -- Patrick, we don't have a number, I don't
19 think.

20 A MR. BOWMAN: There is nothing
21 quantitative, analytically, that one can look at
22 these and say how many years it would last. You
23 start to use the numbers like Mr. Morrison is
24 talking about, you end up with something like 60 to
25 120 years, or something, before they are going to
26 hour out on the type of use that is planned.

1 Surely, that is not a meaningful number for this
2 analysis.

3 The point would be, though, they are viewed as
4 a permanent unit. They are being put in place not
5 for a few years, not for five to ten years, but as
6 a permanent solution that will deal with it within
7 the planning horizon.

8 Q So if you are looking at it as a permanent
9 solution, might it not make more sense to get new
10 diesel units, that would have an even longer life
11 expectancy than the Mirrlees units, and be more
12 fuel efficient and perhaps more environmentally --
13 it would not have the same environmental concerns?

14 A MR. MORRISON: I am not sure what
15 environmental concerns you are talking about, in
16 the sense that they are going to have diesel
17 emissions.

18 Q I am referring to the ones referenced in the
19 report, about leaking oil and fuel, et cetera.

20 A I want to be very clear about this, because I do
21 not want anybody to have the misconception that
22 these are environmental concerns that are outside
23 of the plant. I mean, they leak oil, they leak oil
24 into a bucket in the plant, they do not leak oil
25 outside of the plant.

26 Q Have you done environmental assessments around the

1 plant?

2 A Yes, we have.

3 Q When was the last time you had one of those done?

4 A We have a very current environmental assessment,
5 because there was a fuel spill that occurred in the
6 plant prior to the Yukon Government acquiring the
7 assets. It was an NCPC fuel spill, and it has been
8 -- it was cleaned up last year. It is a 20-year
9 oil spill, it is an issue that we have with the
10 federal government, and we have advanced it. But
11 we have no environmental issues, no oil spills
12 around the plant, no fuel spills, in recent years.
13 And I think the environmental -- the issue of the
14 oil leaking is an operational issue. It means that
15 the units need fair constant attention from the
16 operators. So I just want to be very clear, we
17 don't have an environmental issue outside of the
18 plant itself.

19 I just want to go back to your question,
20 though, in terms of the economics, and perhaps
21 Mr. Bowman would provide the detail, but when we
22 looked at the question, and we looked very hard at
23 the question -- the very question you have raised
24 is, if the units are going to be in a back-up
25 situation, are they going to move to a base load at
26 some point, or not; should we be spending, and can

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1 we justify spending, \$1 million, in round numbers,
2 a megawatt to put new units in to be a back-up
3 situation?

4 And our conclusion was that the justification
5 was there for refurbishing the units, spending that
6 kind of money, but not for the kind of dollars
7 required to buy new units. But I think Mr. Bowman
8 has done some further work on that, and he would be
9 happy to add to that.

10 A MR. BOWMAN: Well, I actually do not
11 have much to add, except to make the point that, no
12 matter what system you are talking about, whether
13 you are talking little old Yukon, or a big system
14 like Manitoba, where I come from, you are always
15 going to have units that are not operating most of
16 the time. They provide your back-up, they provide
17 the reliability that Dr. Billinton was talking
18 about.

19 On Yukon's system, there are always going to
20 be diesel units on the WAF that almost never run.
21 That was true when the Faro mine was around, that
22 is going to be true if the new mines come on, that
23 is true today. All it is, is matter of picking
24 which units.

25 At this point, working on the Mirrlees, and
26 putting them in the stacking order, as Mr. Campbell

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1 talked about, or perhaps even lower than they are
2 today, they would be the units that almost never
3 run. Were you to go out and buy new units, you
4 might get something that is modern, easy to fix,
5 easy to get parts, you like to overhaul more often
6 than you like to overhaul the others, and as a
7 result -- and more fuel efficient, and it might
8 bump it to the top of the stacking order, but all
9 it is doing is taking other units that are equally
10 modern and useful on the system today, and bumping
11 them to the ones that will sit around most of the
12 time.

13 So there is no disadvantage to having the
14 Mirrlees be the units that are the ones that are
15 sitting there as back-up, compared to taking units
16 today that are in the middle of the stacking order
17 and bumping them to the bottom, there is no
18 particular advantage to that.

19 Q Mr. Morrison, I would just like to go back to what
20 we were talking about before, about environmental
21 testing around the site. Now, I don't know what
22 the site looks like, and I don't know where this
23 oil spill was, but perhaps you can help me out
24 here, because I am wondering, was the oil spill
25 just in one spot, has the soil all around that site
26 been tested, or was it just in that specific spot,

1 when there was that oil spill, that that area was
2 tested?

3 A MR. MORRISON: There were several test
4 sites, and there was quite -- it is a very well
5 defined area, so it was done by, you know, a
6 geotechnical firm. They did a number of these.
7 There have been a couple of them cleaned up over
8 the years. This was the last one. I think it is a
9 pretty -- I think what we have gone through gives
10 us quite a bit of assurance, quite a bit of
11 comfort, that there are not any others out there,
12 we have gone through a pretty extensive program.

13 Q I just want to make sure I understand. Has the
14 environmental testing that you have undergone, has
15 it only been in response to a specific spill?

16 A It was in response to a specific spill, and we did
17 other testing in addition to that, yes. But it was
18 an old spill that we knew about, or we found out
19 about.

20 A MR. CAMPBELL: Perhaps if I could add
21 a bit, Yukon Energy does have a very comprehensive
22 environmental management system, and part of that
23 system, for example, requires environmental audits
24 be conducted every five years, and we have
25 certainly been doing that on all of our
26 facilities.

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1 The issue in the oil spill mentioned here
2 relates to the fact that these Mirrlees engines are
3 not oil-tight, but the sumps, for example, in the
4 diesel plant, do collect to an area, they are not
5 just discharged to the river, or anything else,
6 they are collected, and so -- and that is the means
7 that we ensure we don't release these substances to
8 the river, or to the environment.

9 The spill that Mr. Morrison was talking about
10 was a spill that occurred prior to Yukon Energy's
11 ownership of the facilities, a fuel spill, and, in
12 fact, Yukon Energy has gone back and done site
13 assessment on all of -- I think, now, all of our
14 diesel plants that were formerly owned by NCPC.

15 Q In the report that I have been referring to, it
16 states that, if these units are rebuilt, YEC will
17 have spent upwards of 8.2 million and not
18 significantly improved its present-day position,
19 nor be in any better position to meet future load
20 growth within the WAF system.

21 Now, I know YEC indicated that, I believe it
22 was in the Resource Plan, the original filing, that
23 your estimate was 6.4 million. Is that still your
24 current estimate?

25 A MR. BOWMAN: The numbers that you
26 are referring to are probably best organized in the

1 supplementary materials that were filed with the
2 Resource Plan at page S-1-4.

3 Q I think that's where I saw that number. So that is
4 still the current estimate?

5 A What I am saying is that that is the planning
6 estimate that YEC used for the 6.4 million, and it
7 is set against the NCPC 8.2 budget that comes out
8 -- or 8.1 here, it says, that comes out of the
9 NCPC report, and you can see where the various
10 things line up, and the level of contingencies and,
11 as a matter of fact, different things that YEC has
12 included in its scope of work compared to that
13 assumed by NCPC. The 6.4 million, though, is a
14 planning level estimate, which is different than a
15 project budget. The project budgets, first of all,
16 would not necessarily view this as one project, it
17 would view many of these individual work tasks as
18 individual budgets, and they are developed as part
19 of a business planning process that happens in each
20 year's capital plan.

21 So, at a planning level estimate, 6.4 remains
22 the number that has been used.

23 Q One more question about one of the comments in the
24 report, and this one says, "These units require
25 constant attention and maintenance. This is not
26 likely to change significantly after the rebuild."

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1 Now, I know you have indicated that you have
2 talked to the manufacturer about availability of
3 parts and service, et cetera, but I am wondering
4 what assurance you have that the units are not
5 going to require constant attention, or significant
6 attention and maintenance, after the rebuild?

7 A MR. MORRISON: Well, the units, in
8 some ways, are going to require constant attention
9 in that, when and if they are running, they need --
10 you know, we have an operator in the plant --
11 regardless of that, there is an operator in the
12 plant, and these units tend to be a little more
13 finnickier than others, so they need somebody
14 watching them a little bit more. But we already
15 have somebody there, regardless of that fact, so
16 there is an operator in the plant.

17 Are they going to require more attention?
18 They should require no more attention than they
19 normally do, and once they are overhauled, they
20 should act as if they were a 12,000-hour overhaul
21 engine, no different to any other.

22 A MR. BOWMAN: The only comment
23 I would add is that, in the update, where the Plan
24 is slightly revised to add the Faro Mirrlees as the
25 first unit, followed by the others, it notes that,
26 by the time all of the estimating is done for the

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1 Faro Mirrlees, it may be that the better option, at
2 the same cost, but offering some other advantages,
3 is to use the Faro Mirrlees concept, but actually
4 use two new EMD units, or two used EMD units. And
5 one of the reasons it cites for that is, the
6 situation at Faro is quite a bit different than
7 Whitehorse. In Faro, there is only a part-time
8 operator, and the Mirrlees are somewhat finnick
9 while operating, as Mr. Morrison set out. They are
10 older units, they have less of the technology
11 associated with operating the unit, compared to the
12 EMD. So they do not operate -- the unattended
13 situation in Faro may be a relevant factor in
14 deciding between the Mirrlees and used EMDs on an
15 otherwise roughly equivalent basis.

16 In Whitehorse it is not the same situation,
17 the degree of attention and the people available to
18 deal with Whitehorse is entirely different than
19 Faro, which doesn't have full-time staff.

20 Q Can I take it from what you have said, Mr. Bowman,
21 that the Mirrlees unit at Faro, the intention is
22 that that unit will stay there, it would not be
23 moved to the Whitehorse diesel plant; is that
24 correct?

25 A Correct.

26 Q Could I ask you to turn to page 8 of the overview

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1 of the Resource Plan? There is chart there that
2 shows the residential electricity bills in
3 comparison to Yukon's bill. And what I am
4 wondering, it provides this on a thousand kilowatt
5 hour per month basis for residential customers.
6 Could YEC provide, I guess similar to this chart,
7 just for Yukon, but broken down into the impact for
8 each project; like for the Mirrlees project, for
9 the Carmacks-Stewart project --

10 A MR. MORRISON: The rate impact?

11 Q Yes.

12 A In cents per kilowatt hour?

13 Q Yes.

14 A MR. OSLER: The mind boggles at two
15 different levels. One is the idea of a chart --

16 Q However you would like to provide the information.

17 A There are other ways to come at this question,
18 I have not seen it quite done this way before, but
19 ... could we provide an estimate, on one piece of
20 paper, showing the rate impacts, as we have
21 discussed them, for each one of the projects we are
22 talking about? And the answer is yes, we can
23 summarize, on one piece of paper, what we know
24 about the rate impacts. They may vary -- they will
25 vary for different years, and under different
26 mixtures of the project. We have done this, in

1 detail, in Appendix C, for the Aishihik Third
2 Turbine being added to the system, with or without
3 Marsh Lake, and with or without the
4 Carmacks-Stewart and Marsh Lake, and we are -- in
5 fact, I just got some updates of that, so we could
6 use this as an opportunity to provide them to you.

7 But on the other hand, I have listed some of
8 the concerns I have about trying to do this type of
9 thing, at the moment, for Carmacks-Stewart. So we
10 have different levels of comfort about doing it,
11 depending on the projects, and they do vary a lot,
12 depending on the year and the situation we are
13 looking at.

14 Let us, without the fear of trying to put it
15 into a nice little picture like this, which I do
16 not think we have any real chance of doing for you,
17 try to put on one page, in simple terms, what the
18 rate impacts that we are estimating here for these
19 projects, on a comparable level, so people can see
20 them.

21 Q Okay. And just to be clear, that would include the
22 Mirrlees, the Carmacks-Stewart line, the Aishihik
23 Third Turbine -- and I think I am missing
24 something. And could you also -- for comparison
25 sake, could you also provide that for what the cost
26 would be if you did go ahead with the Aishihik --

1 twinning of the Aishihik line?

2 A MR. MORRISON: In addition to the
3 Mirrlees?

4 Q Yes.

5 A Okay, just to be clear.

6 Q Because I am looking for the individual impacts,
7 right; the impact of proceeding with the Mirrlees,
8 the impact of proceeding with the Carmacks-Stewart,
9 et cetera.

10 A MR. OSLER: I think we can do what
11 we have just agreed to do. Because the twinning of
12 the line is a simple capacity benefit provision, it
13 is not changing the energy relationships at all, so
14 it doesn't tend to have some of the other
15 complications, when we are doing the third turbine,
16 and things like that.

17 The third turbine's benefits will depend on
18 whether you have the twinning, or do not have the
19 twinning, for example. So those type of things are
20 complicated. But when we are looking at just
21 building the third -- we can show you what I think
22 you are looking for, and then you can ask us some
23 more questions when we give it to you, so as to get
24 it clear.

25 Q All right.

26 A They do vary over the life of the projects, as

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1 others have asked us questions, you know, the rate
2 impacts go down for some projects over time, that
3 type of thing.

4 MS. MARX: Madam Chair, I do have
5 a few more questions, but perhaps might be -- now
6 might be a good time to take a short break.

7 THE CHAIR: We will take a
8 15-minute break and come back at 25 to 11:00.

9 (Proceedings adjourned at 10:20 a.m.)

10 (Proceedings resumed at 10:50 a.m.)

11 THE CHAIR: Ms. Marx, are you aware
12 of any matters before the Board?

13 MS. MARX: Yes, Madam Chair.

14 I spoke over the break with Mr. Landry,
15 regarding the undertakings that I have asked for
16 this morning, and those responses. And what we
17 propose is that, once I have completed my
18 questioning and the Board has completed their
19 questioning, that we adjourn, and then come back
20 this afternoon around about 3 o'clock, and by then
21 YEC will be able to have the responses to the
22 undertakings. And if I have any follow-up, I can
23 ask that at that time. And Mr. Landry would do his
24 redirect following that. And that is what
25 I suggest.

26 THE CHAIR: That is fine, on that

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1 basis, we will look to reconvene at 3 o'clock.

2 And, Ms. Marx, would you like to proceed with
3 the rest of your cross-examination?

4 MS. MARX: Thank you.

5 Q MS. MARX: Another follow-up with
6 respect to the Mirrlees Life Extension that we were
7 discussing before the break, you indicated, I
8 believe it was yourself, Mr. Morrison, that you
9 have had discussions with the supplier, and you are
10 confident that you will be able to get the parts
11 and to get the service. I would just like to
12 follow up on that in terms of what assurances do
13 you have? You have obviously spoken to the
14 supplier, but what assurance can you provide to the
15 Board that there are not going to be any issues,
16 long term, with that?

17 A MR. MORRISON: Well, we have done a
18 number of things, and over the period of, you know,
19 12 months or more, where we have been, you know,
20 analyzing and scrutinizing this question, we have
21 had a number of meetings with the manufacturer of
22 the engine. We have had our operations department
23 people, we have had some of our consultants, as
24 well, meet with them and talk to them about their
25 parts and where these parts are, and whether or not
26 they would be continuing to service this engine

1 model.

2 And, finally, after a series of these
3 assurances and after receiving a written
4 confirmation from the manufacturer -- let me just
5 back up.

6 The Mirrlees engines are manufactured in
7 England. And the company that owns the Mirrlees
8 factory, now, is called MAN Diesel, and they are a
9 very large diesel manufacturer. They are a large
10 international manufacturer of diesel engines. As
11 I said, we have met with them several times. I
12 have gone to -- finally, I went to Toronto to meet
13 with them myself because I wanted to be personally
14 satisfied that they could supply these parts. We
15 had a long extensive meeting about where they have
16 parts, how they would supply them. There are
17 several hundred of these engines, alone, in North
18 America, that are in operation. There are quite a
19 few of them in and around the Toronto area. These
20 engines are used extensively by not only power
21 generators, but they are also large ship engines,
22 which is another major use for them. B.C. Ferries
23 has a fleet with several of these engines in it.

24 And, finally, the managing director of the
25 Mirrlees plant, in Stockport, England, provided a
26 letter giving us their assurance that they were, in

1 fact, continuing to service these engines, and that
2 parts would be readily available. So we have
3 indicated, I believe it is in the supplemental
4 materials, S-1-2, that there is a letter of
5 assurance from MAN and that they would continue to
6 provide these parts well into the future.

7 Q All right, thank you.

8 I would like to ask some questions about the
9 Aishihik Third Turbine. Would you re-runner the
10 existing two turbines prior to adding the third
11 turbine?

12 A MR. BOWMAN: The plan, as it is laid
13 out in the Resource Plan, doesn't link the two, and
14 doesn't contemplate re-running the existing two
15 units before the third turbine.

16 In terms of that plant, the two projects do
17 somewhat different things. They would both play a
18 role to enhance the maximum capacity to the plant,
19 but one of the key reasons the Aishihik Third
20 Turbine is looked at over the years is that it
21 provides a different size unit, it gives you a lot
22 of operational dispatch benefits, whereas
23 re-running the existing units would not give that
24 same option. So if you have a 7 megawatt unit and
25 the two existing units are 15, and you only need a
26 portion of Aishihik's output, the third turbine

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1 would give you the option of putting on a unit at a
2 high point in its efficiency curve, as opposed to
3 having to run a big unit at a low load.
4 Re-runnering doesn't do that for you.

5 The other comment on the re-runnering is, as a
6 result of Aishihik Third Turbine giving you that
7 flexibility and allowing you to dispatch the water
8 better, it is viewed as not only giving you
9 capacity but an increase to the long-term average
10 energy output of Aishihik.

11 The information that has been received to
12 date, about re-runnering the existing units, is it
13 would not improve the efficiency. It may improve
14 the capacity but would not materially improve the
15 efficiency. So the energy benefit that comes from
16 the third turbine would not be the same in terms of
17 re-runnering.

18 And the last comment on the re-runnering is,
19 the units that are in there have been -- there's an
20 initial letter from the manufacturer, who says that
21 it could be re-runnered to deal with a greater
22 capacity, but it deals only with the units
23 specifically. There are a number of other
24 ancillary components that would have to be looked
25 at quite extensively to make sure that the plant
26 could actually handle that. Mr. Campbell was

1 talking earlier about wicket gate openings and
2 thrust bearings and a bunch of other components
3 that would have to be looked at in some detail to
4 make sure that the re-runnering could work. And it
5 is not a quick or cheap exercise to do all of that
6 assessment. So re-runnering is not necessarily
7 presumed to be ahead of the third turbine. If
8 anything, the third turbine would be done first,
9 and re-runnering is sort of being reviewed as time
10 goes on.

11 A MR. CAMPBELL: I could add perhaps a
12 little bit. Mr. Bowman is correct. The current
13 plan would be to proceed with the third turbine
14 first. The plan of the Corporation would be to,
15 number one, next year, of course, complete the
16 review of the capacity increases available, now,
17 strictly as a result of the generator rewindings.
18 The plan for next year, as well, is also to begin
19 the engineering assessment of the re-runnering
20 potential and trade-offs.

21 As you increase the capacity of a unit,
22 depending on what output you run the unit in most
23 of the time, you may actually lose efficiency but
24 have more capacity. So it is not a simple
25 exercise, but it is one that the Corporation is
26 planning to do next year.

- 1 Q All right. In Figure 4.15 on page 5-54 of the
2 application -- and I do not think you necessarily
3 need to turn this up -- it shows the construction
4 period for the Aishihik Third Turbine to be
5 approximately one and three-quarter years. How
6 much lead time is required to order and receive the
7 turbine?
- 8 A Yes, our present plan at the moment, it would
9 require 24 months lead time, from sort of a go
10 decision point to an in-service date.
- 11 Q And within that construction timeline, when is the
12 turbine required? Is it required right at the
13 beginning?
- 14 A Well, the major part would be the delivery of the
15 turbine, and it would be arriving on site within a
16 couple of months. I mean it is a relatively short
17 commissioning period and construction period.
18 I would think, in the order of four months, you
19 would have to have the turbine on site. You could
20 do the internal excavation required to place the
21 unit and everything would be ordered, but it is a
22 relatively short construction time frame.
- 23 Q All right. And once the Aishihik Third Turbine is
24 up and running, does that hasten the need for the
25 second Aishihik transmission line? Does that
26 increase the need for it?

1 A MR. BOWMAN: Well, it would not --
2 we don't talk about the Aishihik second
3 transmission line as a concept of what is needed,
4 given what is on the other end. It is an
5 opportunity to increase the extent to which the
6 rest of the grid can rely on Aishihik. The need
7 for the line, or the need for an alternative means
8 of capacity, is being driven by criteria that look
9 at what is installed on this end of the line, if
10 anything, and it is looking at the Mirrlees
11 retirements and the loads on this end of the line.
12 That is how "need", as a concept, would be
13 defined.

14 The opportunity on this project to do the
15 second transmission line, though, the benefits of
16 doing the project, are materially enhanced to the
17 extent that a third turbine is in service as
18 opposed to not in service, which I think is
19 probably more of where you were asking. I just
20 wanted to be clear about the "need" concept.

21 Q Thank you. Would government funding be available
22 for the Aishihik second transmission line?

23 A MR. MORRISON: I am not sure
24 whether -- it's not an issue that I think we have
25 looked at, at the moment. I am not sure I could --
26 there is no basis to assume that, no. I am not

1 sure I could give you much more than that. We have
2 not looked at it. I am not sure if there is or
3 there isn't, but there is no basis to assume there
4 should be.

5 Q With the Carmacks-Stewart line, did you know up
6 front that there was a basis for government
7 funding?

8 A Well, no, I think we looked at the line a little
9 differently. When we looked initially at the
10 Carmacks-Stewart line, we did not have mines, we
11 did not have mining customers. We looked at it as
12 what we would call an infrastructure project that
13 made a lot of sense, but, in the initial
14 examination, did not have a lot of economics. And
15 what we were trying to do by talking to government
16 about providing funding, was protect ratepayers
17 from any impacts.

18 In the initial stages of that project, we did
19 not really have any kind of assurance that we were
20 going to have customers who would be there to pay
21 for or help pay for both through the buying of
22 power and a contribution to the construction of the
23 line, so we did not want ratepayers being impacted,
24 so we felt strongly that somebody should help
25 mitigate that risk. And we went to government, and
26 they did, as you can see, and we provided in the

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1 Plan, they provided \$450,000 for us to go out and
2 prepare our initial YESAB filing, and that was, in
3 our mind, a way of trying to mitigate the risk.
4 And Cam is going to add a little.

5 A MR. OSLER: We did get some funding
6 on Carmacks-Stewart. We would not be here today
7 with the Carmacks-Stewart project without the
8 Stage 1 funding that we received. We would not
9 have proceeded to begin the whole work last fall,
10 get into the new year, get to the point of an MOU
11 or anything else, without the initial government
12 funding commitment made. So we would have just
13 stopped dead. That was the instructions.

14 I think that, in Yukon, you have to appreciate
15 that, as long as I have been coming here, since the
16 '80s, there has been talk about trying to put
17 together the two grids. There is a point of view,
18 among some people in Yukon, the Mayo-Dawson project
19 did not really do the job, you have to complete the
20 two grids. There are economic development
21 opportunities and other opportunities for people
22 that live in that region that prompt the concept
23 the government, if it has a bunch of new
24 infrastructure monies, which did occur at that
25 time, might put them to this use.

26 I would suggest to you that the concept of

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1 Aishihik twinning would have a different type of
2 reception as being -- this is purely a utility
3 concept, and if it makes sense, it should be dealt
4 with as a utility, it doesn't provide economic
5 benefits or local benefits to some local
6 communities. It doesn't promote the development of
7 new mines. So I would suggest that it is difficult
8 enough to get money for the Carmacks-Stewart
9 project, I would not hold out that I know of a
10 basis for doing it on the Aishihik twinning
11 project.

12 Q All right. I would like to talk to you now,
13 briefly, about the Marsh Lake storage project, and
14 I know you have had some discussions about why it
15 isn't proceeding. I just have one or two follow-up
16 questions on that.

17 A MR. MORRISON: Certainly.

18 Q On page 4-18 of the Resource Plan, and I will read
19 this paragraph to you, it states:

20 "The project involves seeking changes to
21 the Whitehorse Rapids water licence to
22 allow Yukon Energy to reduce the amount
23 of water releases from Marsh Lake in
24 non-flood years from August 15th to the
25 end of September to allow that water to
26 be used instead during the peak winter

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1 generation period. In all cases, the
2 water levels would remain within the lake
3 level limits currently experienced (i.e.,
4 the peak controlled level would be below
5 the natural high water levels experienced
6 in the lake). Basically no new physical
7 works are expected to be required for
8 this project."

9 So my question is, given that, from what YEC
10 has indicated, the lake levels under the Marsh Lake
11 project wouldn't be any higher than would naturally
12 be experienced, I am unclear as to why you would
13 not proceed with it, and made that decision not
14 to.

15 A MR. MORRISON: I think for a lot of
16 people, and particularly people who do not live on
17 the lake, and do not take that to me being flip
18 with your question, it is somewhat difficult to
19 understand this. And initially, I think, it was
20 very difficult for us to understand it. Because
21 when we looked at a 20-year spectrum of water
22 levels on Marsh Lake, there is a period of time --
23 We have an operating limit, we wanted to move it up
24 a foot, and even that foot did not get to the high
25 water levels, or to the natural highs that the lake
26 experiences in something like 7 or 8 of 20 years.

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1 And maybe Mr. Campbell might correct me if I am out
2 a year or two there, but it is something like
3 that. I mean, there is a period of time when the
4 lake experiences low water levels, it experiences
5 normal highs, and then when it experiences
6 extraordinary water levels, or high water levels.

7 I can tell you from experience that I, on a
8 regular basis, have to explain to people that I do
9 not control the water level on Marsh Lake, and the
10 people at Marsh Lake don't believe me, because,
11 when the water is high, there are a number of
12 residences, cottages and houses along the lake that
13 are impacted by that high water. There are a lot
14 of properties on Marsh Lake that are built within
15 the floodplain, the natural floodplain of the
16 lake. They are built too close to the edge of the
17 lake. So it seems like a simple problem; it seems
18 like, you know, it is a straightforward issue. But
19 you raised, I think, at the beginning of your
20 question, the real issue that presents us with
21 quite a bit of concern, is the risk associated with
22 amending our Whitehorse water licence for the
23 Whitehorse project. We have, I think, 17 years
24 left on that licence. There is a great deal of
25 risk about opening that licence.

26 The big issue for us was the mitigation that

1 we may have to do. And when we have said no
2 physical works, we meant no physical works in our
3 plant, but it became fairly evident that there may
4 have to be some mitigative measures in some of
5 these areas, because we have to find a way to stop
6 the wave and the icing impacts of the water hitting
7 the shoreline. Mr. Osler tells me I should explain
8 that a little bit.

9 During the fall of the year, when the water is
10 at its highest, the lake has a north-south
11 direction, and you get a lot of wave action churned
12 up by wind coming down the lake. And this is a
13 very large water body. It is a large lake system.
14 So that the impact of that is this water, the wave
15 action and the wind hitting the shoreline, and
16 that's where some of these issues are around the
17 concerns of residents about the water level coming
18 up even higher than it is now.

19 So when we looked at the mitigative measures,
20 we also looked at the risk around accepting
21 responsibility for mitigation. We felt we had some
22 very significant possible exposure in that area.
23 We looked at the actual, very concerted and very
24 definitive, opinion of a large number of the
25 residents around the lake, that this was a fight to
26 the finish for them, they were prepared to battle

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1 us all the way from beginning to end. And when we
2 looked back at our experience of relicensing
3 Aishihik and thought about those costs, and having
4 to deal with the Water Board, only, back then, we
5 did not have to deal with this YESAB process that
6 is now in place, yes, we may not have had to spend
7 millions of dollars on physical plant, but we felt
8 we would end up spending millions and millions of
9 dollars, an unknown quantity, on regulatory
10 processes. In addition to that, we felt that the
11 timing would take us well out of the time when we
12 really wanted Marsh Lake as a preferred project.
13 So we felt that we would be in the regulatory
14 process for several years.

15 Q When you were looking at the project, did you not
16 anticipate what the regulatory time frame might be?

17 A We were very clear about what the regulatory time
18 frame possibly is, and, under the YESAB process, it
19 is as much as three years. To be very clear with
20 you, we looked at it the very same way we looked at
21 Carmacks-Stewart. And in Carmacks-Stewart, we set
22 some benchmarks, sort of some watersheds. If we
23 could not have concluded a memorandum of
24 understanding with the Northern Tutchone First
25 Nations, we were not going one step farther on
26 Carmacks-Stewart, because we would have been in the

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1 exact same situation. We would have been fighting
2 a group of communities along the route who, very
3 specifically in the Carmacks-Stewart case, where we
4 had to go through settlement lands that they have
5 control over, and if they did not want the project,
6 all that was, was just throwing money into a
7 regulatory process that would have taken us out of
8 the time frame that we need to get that project
9 done in.

10 And Marsh Lake is very similar. We went out
11 and said -- so in Carmacks, not only did we say We
12 are not going to proceed even with doing a YESAB
13 application, and doing the work, until we get a
14 memorandum of understanding, which we got, we said
15 to the First Nations, and we are not going to file
16 that, we are going to go no further on this project
17 unless we can absolutely agree on a routing because
18 we need to minimize the length of time we are in a
19 regulatory process and minimize the cost of that.
20 And we have got that. And when we got agreement
21 from the three Northern Tutchone First Nations, we
22 filed our YESAB application, not before.

23 So when we looked at Marsh Lake, we said okay,
24 let's go see if we can find some support for this.
25 And as I said, we held community meetings, we went
26 to Carcross, we went to Tagish, we went to Marsh

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1 Lake. We thought things were okay. We went back
2 to Marsh Lake with some consultants. And it was
3 very clear to us, and subsequent to that we talked
4 to a number of residents out there, it was very
5 clear to us that we were not going to get any
6 support. All this was going to do was mire us in a
7 long, costly, regulatory process, and it's a
8 one-and-a-half megawatt project. Yes, it is a
9 valuable one-and-a-half megawatts, but right now we
10 just did not think we could get there.

11 Q Is it something that you would consider in the
12 future, down the road?

13 A Well, I think in the immediate future it is not
14 something -- I mean, and I do not again mean this,
15 you know, to be flip about it, but we are a really
16 small organization. What we have in front of us is
17 about our limits. And to kind of say, well, all
18 right, we are now going to turn ourselves to these
19 projects, and run back and forth on Marsh Lake, I
20 am not adverse to looking at it again, you know, in
21 a little while, but I do not think the climate is
22 there in the near-term for us to do it, and I think
23 I would rather put our efforts into doing something
24 we think we can get done.

25 Q All right. Exhibit B-22 that you filed this
26 morning, regarding the Carmacks-Stewart line, there

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1 is a note that "no net capital contribution is
2 assumed from Minto or Carmacks Copper (no
3 presumption re PPA)". My question is, you have got
4 the negotiations ongoing right now with the Minto
5 mine for a power purchase arrangement. In the
6 absence of the Board knowing what arrangement might
7 be arrived at with the Minto mine, how do you see
8 the Board being able to proceed with a decision on
9 a Carmacks-Stewart line?

10 A I am going to let Mr. Osler give you the main of
11 this discussion, but, I mean, to be illustrative,
12 what we are trying to show here is that, absent any
13 of that, this is a good project. I mean, it
14 provides net benefits for ratepayers, for the
15 system. At the midpoint, pretty decent net
16 benefits in terms of quantity of millions of
17 dollars. Certainly at the low end, I do not think
18 we are going to pretend to anybody that we can pull
19 off the low end at this point in time. We have
20 been clear about that. But even at the high cost,
21 you know, there is some benefits to the system.

22 We are trying also, I think, here, to not
23 prejudice some negotiations that we are in the
24 middle of, but clearly we understand that those
25 benefits that we negotiate will add to the
26 enhancement of this project as a good project. So

1 that is what we are trying to -- you know, in some
2 ways, we would absolutely have preferred to have
3 completed the negotiations on the power purchase
4 agreement before we got to this hearing. We made
5 every effort to do that. We just have not been
6 able to get an agreement with our customer. And we
7 continue to do that. But I think, just in general,
8 we see it as a good project. It is showing as a
9 good project. The contribution from the mining
10 customer, in any form, just makes it a better
11 project.

12 Mr. Osler, I am sure, has a couple of words.

13 A MR. OSLER: Your question, in
14 respect, was how could the Board proceed to give a
15 recommendation based on the absence of a PPA, if
16 I can get the point?

17 Q Essentially, yes.

18 A And we have tried to provide an information base
19 that shows a range of issues, and the approach we
20 are taking to those issues, including the PPA, such
21 that the Board could recommend the project
22 positively to the government, subject to perhaps
23 some terms and conditions, or milestones being
24 achieved, on schedule or on cost ranges or on any
25 of the issues that would be called uncertain at
26 this time. And we are trying to set a model as to

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1 how a Board could effectively review these matters
2 without waiting until everything is all resolved,
3 trying to step in at the last moment when it would
4 just delay the project. And this is a very, very
5 time sensitive project. And there will be others
6 in the future that are of that nature.

7 So we are trying to learn how to do this as
8 well as deal with the exact problem. And this is
9 not just us, it is the Board and it is government
10 and everybody. Ultimately the Government Minister
11 has to issue an OIC before we can build this
12 project, if we had everything else in place.

13 We have done a letter of intent with the Minto
14 mine. The Minto mine has provided, publicly,
15 feasibility study results that summarize the costs
16 that they would save, based on that letter of
17 intent, with the grid power. We have quoted those
18 in the Exhibit B-16. We have said that they
19 reported that they thought they could get up to \$4
20 million a year savings, based on the letter of
21 intent with Yukon Energy, and they could save up to
22 \$19 million, present value, discounted at 7 1/2
23 percent, and we pointed that that was a slightly
24 different 7 1/2 percent type of analysis than ours,
25 but it is a very positive number, those are big
26 numbers.

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Marx (Ex.)

1 If it would assist the Board, we can provide
2 worksheets that show the assumptions under which
3 that feasibility study assessment was made, and the
4 update we have done to that based on the update
5 that is in front of you today, the mid point cost
6 range that we have in front of us today, the 9.3
7 cents that I am using in this analysis today.

8 I can tell you that the answer is that, rather
9 than them saving, present value, 19 million, it is
10 only 15 million. And that the savings are not
11 quite 4 million, they are 3.87.

12 Q But these are all savings to the Minto mine?

13 A They are savings to the Minto mine, based on the
14 letter of intent approach that we did agree on, and
15 that, therefore, you can see from this worksheet
16 what effects that meant in terms of their
17 contributions, their payments and their rebates, if
18 you are interested.

19 The point is that Yukon Energy will not
20 proceed with a project unless there is a PPA. That
21 is the statement that has been made several times.
22 So the Corporation will not proceed with a project
23 unless the net benefits for Stage 1, with Minto
24 only, are higher than what you are seeing here as
25 reflected by the effect of the PPA on its
26 contributions towards the Carmacks-Stewart

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1 project. And so we are trying to provide a
2 framework within which the Board can give clear
3 guidance to the government as to what is required
4 in order for a positive final decision to be
5 rendered, both in terms of process, if necessary,
6 but keeping in mind very clearly the schedule
7 requirements. Not much good for us to get
8 approvals if it is too late. But also in terms of
9 what is prudent and reasonable and who should do
10 what, before one goes ahead with an endeavour like
11 this. If the government needs the advice, the
12 Board of Directors of Yukon Energy certainly wants
13 it, we would all appreciate it, and we are trying
14 to find the best ways to put this information
15 together for you, given the practicalities that we
16 are still in the middle of negotiation. But I
17 obviously do not want any mine to think that Yukon
18 Energy is committed, come hell or high water, to
19 build this project subject to a few approvals.
20 That is not the attitude of the Corporation. It
21 has to be a PPA that reflects the types of things
22 we had in the arrangements.

23 MS. MARX: All right. Thank you,
24 gentlemen, that concludes my questions, subject to
25 any follow-up on the undertaking responses this
26 afternoon.

1 A Thank you.

2 THE CHAIR: Thank you, Ms. Marx.

3 I will ask if the Board has any questions at
4 this time?

5 MR. PHILLIPS: I have a question.

6 YEC PANEL EXAMINED BY THE BOARD:

7 Q MR. PHILLIPS: Could we refer to
8 UCG-YEC-2-42, Attachment 1.

9 The engineer that wrote the report on the
10 Mirrlees said that, for security reasons, in other
11 words, he wanted the power plant unit separated
12 from the hydro station where you -- the cooling
13 system should be changed to radiators from what
14 currently exists now. I believe there is some sort
15 of line that goes down to the hydro station. And
16 the reason for that, he said, was flooding or fire,
17 and I guess you could also add maybe a seismic
18 event. So he wanted the hydro station separated
19 from the diesel plant.

20 A MR. MORRISON: Yes.

21 Q Could you please comment?

22 A Certainly. Madam Chair, we have -- within the
23 plans included in the Mirrlees refurbishment, there
24 are some auxiliary items that need to be fixed in
25 the plant, as well, that are part of this
26 refurbishment, and that issue is being addressed as

1 part of that, and we will changing the cooling
2 system for these units, not just the Mirrlees, but
3 all of the units in the plant.

4 Q Okay, thank you.

5 THE CHAIR: Any more questions from
6 the Board?

7 Q MR. MORRIS: Mr. Morrison, I have
8 one question. It is a follow-up to a question you
9 asked yesterday, and I have not seen the
10 transcript, so I would just like to hear your
11 answer again.

12 Due to the residential growth in Whitehorse,
13 and I realize this is YECL, but do you see it as
14 contributing significantly to load growth?

15 A MR. MORRISON: Madam Chair, we see
16 residential load growth continuing at a fairly high
17 rate, and "fairly high" meaning high, in the last
18 few years, levels. We don't see -- and I think if
19 we look to the Plan, we don't see that being a huge
20 impact on the system over time. It is industrial
21 customers, or larger customers, that will really
22 impact the system over time. These growths will
23 incrementally chip away at the surpluses and
24 incrementally increase our peaks because they will
25 continue to happen. And I think, in response to
26 Ms. Marx yesterday, I indicated that we feel

1 strongly that these higher than normal 2 to 3
2 percent rate increases are going to continue for
3 some time.

4 Q Thank you.

5 THE CHAIR: Any further questions
6 from the Board?

7 There do not appear to be any further
8 questions at this time, so we will adjourn and
9 reconvene at 3 o'clock.

10 (Proceedings adjourned at 11:12 a.m.)

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