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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

Volume 7 - P.M. Session

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BEFORE BOARD MEMBERS:

- | | |
|------------------|---------------|
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Renee Marx

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APPEARANCES:

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

TRANSCRIBER:

Doug Ayers Reporting Services

1 (Proceedings resumed at 3:15 p.m.)

2 YEC PANEL RESPONDS TO UNDERTAKINGS:

3 THE CHAIR: Mr. Landry.

4 MR. LANDRY: Thank you, Madam Chair,
5 I would like to apologize for being a little tardy
6 in getting this information, but I think we now
7 have answers to all of the undertakings that are
8 still on the record.

9 So, I will would go from my list, and, of
10 course, we don't have transcript page numbers, but
11 the first two were requests, or undertakings, for
12 Mr. Buonaguro, and the first one related to
13 questions arising out of Exhibit B-22 that was
14 filed this morning, which was a response to an
15 undertaking, and it dealt with the issue of certain
16 costs, as I recall it, on a yearly basis, but, in
17 any event, Mr. Osler is going to deal with that
18 one.

19 A MR. OSLER: There is also a
20 question he had about secondary sales, and I will
21 deal with the two together.

22 MR. LANDRY: In fact, what we can do
23 is, because the second undertaking, which will show
24 up in the record, does deal with the issue of when
25 you take into account secondary sales, how does
26 that affect the analysis, so those were actually

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1 two separate undertakings, but I think Mr. Osler
2 can answer both of them, perhaps. I hope.
3 A Madam Chair, dealing with them in the order in
4 which they arose, the first question sort of
5 generically asked for, well, give me a percentage
6 rate effect, if I got it right, like you have given
7 for the other projects, for this Carmacks-Stewart
8 project, on rates, like in the earlier years, or
9 something like that, because you have done this for
10 the Mirrlees, and you have done it for other
11 things. Is it 2 percent, 3 percent, what is the
12 effect?

13 Generally speaking, we have not gotten into
14 rate analysis, at all, in terms of rate impacts,
15 because we have assumed that the -- not assumed,
16 the Corporation's policy position on this project
17 has been it will not be developed unless -- if it
18 has any adverse effect on rates. So the bottom
19 line is, it will not make rates go up if it is
20 developed.

21 In terms of, in the spirit of the question,
22 though, so given, say, Stage 1, a development of
23 the type that was talked about in Exhibit B-22, and
24 talking about the first full year of operations,
25 the effect on revenue requirement of the type of
26 midpoint capital costs we were talking about today,

1 in these exhibits, for Stage 1, depreciation, rate
2 base return, would be in the order of magnitude of
3 \$2 million.

4 Ignoring anything else other than just what
5 was in the exhibit, the revenues that we were
6 talking about in that exhibit, with all of the
7 limitations that are talked about there, in Stage
8 1, was about 3 million, in the first year, from the
9 mine, and 325,000 revenue, from cost savings from
10 Pelly Crossing. So you can see that there is a
11 positive, just from those types of hypothetical
12 numbers, but there is a positive benefit, and if
13 you translate it into a percent on revenue
14 requirement, and using the numbers we have used in
15 this submission, it would be in the order of
16 magnitude of 2 percent; 2 percent or a bit higher.

17 Generally, I want to emphasize, and that gets
18 me into the secondary sales issue, that, with the
19 Carmacks-Stewart, we are at a stage of planning and
20 decision-making assessments, but given the nature
21 of this project and the commitment I just
22 underlined, that has been there from the beginning,
23 the question comes down, very definitely, to the
24 final arrangements. At one time, we thought with
25 Yukon Government would be the focus; in this case,
26 now, it will be with the mines, as to how this

1 project translates into a situation for the Board
2 to review in a PPA.

3 And things we have deliberately not put
4 forward evidence on include effects on secondary
5 sales, because they would get into a lot of
6 estimating issues, and effects on fuel and
7 operating costs for what happens on the system,
8 because they get into other types of complexities,
9 and they also may be covered off in how we
10 negotiate PPA arrangements.

11 I would tell you that, if you are interested
12 in exploring those things, you should review
13 evidence which was filed, for separate reasons, in
14 Appendix C of Exhibit B-1, where there were
15 detailed tables put in year-by-year, sort of way
16 back a year ago January, last year, when the
17 analysis was being done, of base load and peaking
18 diesel generation on the WAF system, with and
19 without the mines with 10 megawatts, which was the
20 Minto and Carmacks Copper mines. You should review
21 Table C-2, which is the situation without the
22 mines, Table C-3, the situation with the mines, and
23 you will notice that base load diesel requirements
24 emerge, as well as significant peaking
25 requirements, and the effect of Aishihik turbine on
26 moderating that. You should review Exhibit C-7,

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1 which talks about the effect of the
2 Carmacks-Stewart connection, on top of all of those
3 things.

4 So there is a lot of complexities in that area
5 that, really, we have to deal with in negotiation,
6 in PPAs, to make sure that the ratepayers are held
7 harmless, in order to meet the basic commitment
8 that the Corporation has made from the beginning,
9 if this project is going to be developed.

10 MR. LANDRY: I understand that
11 Mr. Rondeau has indicated, and unfortunately I just
12 do not have it in front of me here, that the
13 reference that I gave earlier, to B-22, should be
14 B-23, just so the record is clear. But in any
15 event, I think it will come from the transcript,
16 because counsel for UCG would have referenced it,
17 and that is the one we were responding to.

18 Okay, the next one that I have on my list,
19 Madam Chair, was a request for a correction to the
20 attachment to YUB-YEC-2-14, and it is Attachment
21 Number 1, and I think Mr. Campbell will provide
22 that information.

23 A MR. CAMPBELL: Thank you. Yes, there
24 certainly is a correction, as I pointed out this
25 morning. The January the 24th, 2006, 0:100 hours
26 reading should be 3096, or 3,096 kilowatts, instead

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1 of 6,157 kilowatts. In our review, we did find one
2 other typo as well, and that is back on August
3 18th, 2005, at 19:00 hours, the reading should be
4 3,048 kilowatts instead of 30,478 kilowatts.

5 MR. LANDRY: Madam Chair, the next
6 one I have is an undertaking that Ms. Marx
7 requested, which was the list of dispatching order
8 for the diesels, and Mr. Campbell, I think, is
9 going to deal with that.

10 A There is a handout for this. I thought it was much
11 easier handing out the dispatch table than trying
12 to explain it. So if I could explain the table
13 very briefly, the table lists the diesel generating
14 units on the WAF grid in the preferred order that
15 they would be dispatched, or operated, by our
16 system operators. So the stacking order, the
17 Number 1 unit would be the unit first on, the
18 Number 2 unit second on, and so on. So, indicating
19 WD7 is one of the newer CAT 3600 modules at
20 Whitehorse, that would be the first unit lost by
21 virtue of its fuel efficiency, lower maintenance
22 cost, lower lube oil costs and so on. The actual
23 dispatch is done on the line loss adjusted cost per
24 kilowatt hour on the right-hand side. I would note
25 that, under the current standby back-up operation,
26 we are not actually making a line loss adjustment

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1 for the location, it is assumed they are run
2 primarily in a back-up mode, so the unit in the
3 community, or the nearest location to where it is
4 needed, would be the one run, to some extent.

5 As well, there are a couple of manual
6 adjustments made, out of a pure economic dispatch
7 order, that, again, simply reflect the current
8 operation today, primarily as a standby back-up
9 mode.

10 MR. LANDRY: The last -- is that
11 finished?

12 A Yes. Of relevance may be the types of numbers, and
13 they do reflect the numbers that Mr. Morrison was
14 talking about, and other people of the panel, that,
15 effectively, the operating costs of the diesels
16 today are between 20 and 25 cents a kilowatt hour,
17 excluding the original capital cost.

18 MR. LANDRY: I wonder if you could
19 mark that as the next exhibit, Madam Chair.

20 THE CHAIR: That would be B-23, so
21 marked.

22 EXHIBIT NO. B-23:

23 DISPATCH TABLE.

24 MR. LANDRY: The last undertaking,
25 as I have it at least, is, again, an undertaking
26 requested by Ms. Marx, and it relates to impacts --

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1 rate impacts for each of the projects. The
2 projects I had listed were the Mirrlees, the
3 Carmacks-Stewart line, Aishihik Number 3 Turbine,
4 and also the Aishihik twinning, and I think
5 Mr. Bowman has a handout to deal with this.

6 A MR. BOWMAN: The undertaking was
7 requested in reference to the update -- or the
8 summary document, and a chart therein that showed
9 the residential non-government bills for Yukon
10 compared to other places, and we were asked to look
11 at a bill comparison that fit that type of context
12 related to the projects, so what would be the
13 impacts on the bills paid by residential
14 non-government customers as a result of the
15 projects proposed in the Resource Plan.

16 As you can well appreciate, the Resource Plan
17 looks at overall utility system costs, and, as they
18 change with various projects, there is a lot of
19 things that happen between the utility's cost, and
20 its revenue requirement, and its ultimate bills
21 that relate to cost of service, and revenue cost
22 coverage ratios and a number of other things, rate
23 rebalancings, as well as different riders that
24 occur. So it is not -- one cannot perfectly
25 correlate between the two.

26 What we have done, though, is we have taken

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1 the context of a bill, for Yukon, for our
2 non-government residential customer which, absent
3 GST and absent Rider F, which is a special rider
4 solely to do with the price of diesel fuel, would
5 be \$126.45 a month before one gets into government
6 subsidies, so ignoring the RSF subsidies. And
7 looking at the overall type of revenue requirement
8 impacts of the projects proposed, we have taken
9 those simple percentages that arise on the revenue
10 requirement, applied that to that bill, to give an
11 idea of the order of magnitude we are talking about
12 with regard to bill changes that would occur to
13 residential non-government customers.

14 So what this table does is, it deals with each
15 of the -- it deals with the Aishihik Third Turbine,
16 as well as the three projects proposed to deal with
17 capacity shortfalls, or the three projects noted as
18 options to deal with capacity shortfalls in the
19 Resource Plan.

20 In regards to the Aishihik Third Turbine, as
21 requested, this deals with the assumption you build
22 the Aishihik Third Turbine absent all other
23 projects, so simply that turbine, or not, and with
24 the base case load and no mine loads. That would
25 lead to, and it is consistent with what is shown in
26 chapter 4, a rate impact of about 1.86 percent, as

1 of the time it came into service, which is assumed
2 in this as at 2009; a 1.86 percent overall change
3 on the level of utility costs. And flowing that
4 1.86 percent through to a bill in a linear way, a
5 bill of \$126.46 a month, the monthly bill impact on
6 residential customers would be about \$2.35 at the
7 outset of the project.

8 Now, what I have also done to show how these
9 different projects change differently over time, as
10 Mr. Osler noted when the undertaking was requested,
11 I have taken one other date further out in time to
12 show the impact at that point in time, and this is
13 in regards to the Aishihik Third Turbine. It
14 emphasizes that the impact of the Aishihik Third
15 Turbine, on bills, turns around, by that point in
16 time, and is a factor that leads to a reduction in
17 bills, compared to not having the project, of 2.54
18 percent, which would equate to \$3.21 per month.
19 And that all comes out of Appendix C, and it is
20 Table C-1 in Appendix C, the basic case of the
21 Aishihik Third Turbine. Those numbers change a bit
22 as you add mines, or as you add the different
23 projects.

24 The other three projects are grouped together
25 because they are -- unlike the Aishihik Third
26 Turbine, they are not projects that are proposed to

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1 be pursued for cost saving or for -- based on the
2 opportunity they provide. They are projects that
3 are proposed to be pursued in order to provide the
4 needed capacity on the system, and in effect, if
5 one is going to meet the capacity criteria, you
6 have to deal with one of these three, primarily.

7 They have been largely benchmarked to
8 approximately the same capacity contribution,
9 although the Aishihik second transmission line is a
10 little trickier to do that with. But just to go
11 through it, if one is looking at what we call the
12 Whitehorse Diesel Replacement, so installing new
13 diesels in Whitehorse, and in this case it would be
14 installing 18.7 megawatts of new diesel, which is
15 the amount required by 2012, this assumes it would
16 be installed over the period about 2007 to 2010, as
17 the shortfalls arose. And when you look at the
18 depreciation and return costs related to those,
19 compared to current bills, the rate impact would be
20 about 4.79 percent, or about \$6.06 per month, for
21 residential customer bills.

22 Over time, that rate impact goes down because
23 you depreciate the units. So looking simply at
24 2020, with no inflation on the bills, or anything,
25 still using at \$126.45 per month bill, the rate
26 impact would have dropped to about 3.35 percent due

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1 to depreciation on the units by that point. So the
2 bill impact would be down to \$4.24 per month. And
3 those are not a cumulative increase, those are the
4 overall impact at that time.

5 In comparison, the Mirrlees Life Extension,
6 which is based on -- it is using 8.7 million here,
7 because it rolls in the Faro unit. We had been
8 talking 6.4 for the three Whitehorse, plus a
9 comparable cost for the Faro, which would put it at
10 2.3 at the planning level estimates. So 8.7
11 million for 19 megawatts, very similar to the
12 Whitehorse diesel replacement scenario. And the
13 bill impacts are, likewise, shown; 2.62 percent
14 over the period that they come into service, which
15 is \$3.31 per month, declining over time, and by
16 2020 it would be about 1.84 percent, or \$2.33 per
17 month.

18 The Aishihik second transmission line, looking
19 solely at the capital cost impacts, which are the
20 bulk of what arises, is an option to -- a third
21 option compared to the two we went through. The
22 amount of capacity it provides, as noted in the
23 bottom in italics there, depends on the particular
24 scenario one is under, whether you are being driven
25 by the N-1, or the LOLE scenario, and whether you
26 have built the Aishihik Third Turbine already, or

1 not.

2 We were asked to do this based on each project
3 individually, so I noted what it would be if you
4 had not built Aishihik Third Turbine. But that the
5 highest capacity it provides, in a planning
6 context, is if you built the Aishihik Third
7 Turbine, and you are still, otherwise, being driven
8 by the N-1 criteria, in which case it is 22
9 megawatts.

10 Putting that line into service at the cost
11 estimates that were in the Resource Plan as filed
12 in January, of 16 to \$19 million, would have a rate
13 impact of 4.63 percent as of the time it comes into
14 service, or about \$5.85 a month, and as you
15 depreciate the line similarly to the others, it
16 would come down. It doesn't depreciate quite as
17 fast as diesels, transmission lines have a bit of a
18 longer life, so it depreciates down to about 3.68
19 percent, or \$4.65 a month.

20 The notes at the bottom set out, for those who
21 are interested in the mathematics, how these are
22 calculated, based on the assumption that \$360,000
23 in revenue requirement reflects 1 percent overall
24 change in the system costs. We did not go on and
25 try to put this into the graph format, in part
26 because the graph, as there, already has -- plus we

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1 didn't have enough time -- in part, because the
2 graph there has these other factors, like Rider Fs
3 and rate stabilization funds in it, so it would
4 have been a little bit harder to disassemble that
5 and, in part, because these type of numbers would
6 be -- they would be hard even to show up in the
7 graph, in terms of that level.

8 But overall, on a bill of \$126 a month, you
9 can see the various impacts. And it underlines the
10 point that has been made, that although the
11 Aishihik second transmission line, in particular,
12 has very specific benefits, it's the cost
13 comparison to the Mirrlees that has been driving
14 the recommendation in the Resource Plan -- the
15 proposed projects.

16 A MR. OSLER: Just to add, before the
17 question arises, the Carmacks-Stewart line is not
18 on this sheet, because of these points I raised a
19 few minutes ago in answering the earlier question,
20 which we knew would come first. So the answer to
21 do with the Carmacks-Stewart is on the record. It
22 is not to be developed if it has any adverse effect
23 on rates, and we don't want to get into, beyond
24 what have I said, into trying to estimate the
25 outcomes of all of the complexities that I was just
26 talking about.

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1 MR. LANDRY: Madam Chair, can we
2 mark that as the next exhibit, which, I guess, is
3 B-24.

4 THE CHAIR: So marked.

5 EXHIBIT NO. D-24:
6 HANDOUT RELATED TO RATE IMPACTS FOR
7 EACH PROJECT.

8 MR. LANDRY: And just for the
9 record, I did find the exhibit that we were
10 referring to earlier this morning, it was B-22,
11 actually.

12 Now, the last item, I understand there is a
13 connection, Madam Chair, to something, to some
14 information provided relating to the rewind of
15 Aishihik Number 1 and Aishihik Number 2, that Mr.
16 Campbell would like to make, so ... Mr. Campbell.

17 A MR. CAMPBELL: Thank you, yes. The
18 correction relates to the information that the
19 company provided, I think on page 402 to 405 on the
20 transcript, and it is with regard to the discussion
21 on the Aishihik rewinding the units, and the
22 potential re-rating of the units. There is some
23 confusion. I wanted to clarify exactly for the
24 record what the actual improvements were,
25 electrically, and what the potential is
26 mechanically.

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1 First, we were incorrect when we said that the
2 rewinding of AH1 did not result with an increase in
3 the capacity rating. Second, we wanted to clarify
4 what we meant when we said that the work done on
5 AH2 somehow provided for an increase in capacity
6 that we did not get when we rewound AH1.

7 On the first issue, in fact, Yukon Energy, we
8 were able to get mechanical capacity increase as a
9 result of rewinding AH1. It was a modest increase,
10 as we reported in one of the IRs, that we now feel
11 that that unit is capable of 15.4 megawatts.

12 In relation to the second unit, AH2 has not
13 resulted, as yet, in an additional mechanical
14 capacity rating above that of AH1, for the reasons
15 that we spoke of yesterday, and the fact that we
16 have not recommissioned the mechanical side of the
17 units at this point in time. There is work under
18 way between now and the spring, where we do hope to
19 be able to recommission that unit, potentially as
20 much as 1 to 2 megawatts higher than the 15.4
21 megawatt rating that we now have a mechanical
22 rating for, for Unit 1.

23 With respect to why the difference, AH1 was
24 rewound by the original equipment manufacturer,
25 General Electric. And, in fact, when their work
26 was done, we did ask the manufacturer to scope the

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1 work to give us the maximum capacity that they
2 would be able to achieve. And, in fact, that was
3 done. When the work was done two years later. For
4 the second unit, the work was awarded to a
5 different vendor who, in fact, was able to
6 guarantee a higher rating, electrical rating, of
7 the unit. And we feel while, electrically,
8 potentially there is 1 to 2 more megawatts
9 available electrically, right now on that unit, if
10 we are able to achieve it mechanically, then we
11 will at that point be able to recommission Unit 2
12 as high as 17 to 17 and a half megawatts. Of
13 course, that mechanical increased rating is not
14 possible with the first unit because, again,
15 electrically, the vendor, when the rewind was done,
16 was only able to guarantee it up to the 15.4
17 megawatts rating.

18 MR. LANDRY: Just to follow up a
19 couple of questions so that the record is clear,
20 Madam Chair, if I may, with Mr. Campbell.

21 THE CHAIR: I beg your pardon?

22 MR. LANDRY: Just a couple of
23 follow-up questions to make sure the record is
24 clear on this point.

25 AH1, at this moment in time, has what
26 mechanical capacity rating?

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1 A 15.4 megawatts.

2 MR. LANDRY: And AH2, what

3 mechanical capacity rating --

4 A Effectively the same, 15.4 megawatts.

5 MR. LANDRY: So that adds up to the

6 30.8 megawatts that's in the Resource Plan?

7 A Yes, that is correct.

8 MR. LANDRY: Madam Chair, those are

9 all of the responses and/or corrections, and as we

10 indicated, if there are any questions arising out

11 of those, we are more than happy to have the panel

12 answer them.

13 THE CHAIR: Thank you.

14 Mr. Buonaguro, it looks like you have some

15 questions.

16 MR. BUONAGURO: Thank you.

17 YEC PANEL CROSS-EXAMINED ON UNDERTAKINGS BY

18 MR. BUONAGURO:

19 Q MR. BUONAGURO: My first question, I

20 think the answer was, for the first year of

21 operation, the equivalent revenue requirement for

22 the Carmacks-Stewart transmission line was

23 \$2 million, or approximated at \$2 million?

24 A MR. OSLER: About \$2 million, as

25 just declining balance, yes.

26 Q And what about year two to the life of the line?

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Buonaguro (Cr-ex.)

1 A It is over 50 years, and the numbers go down as the
2 way it would have done for the Mayo-Dawson. We
3 have not bothered throwing out that type of
4 analysis, but it goes -- by the time it gets to the
5 end of its life, it is zero, and it is linear.

6 Q Can you give me the numbers for the -- you gave me
7 numbers -- or, sorry, the benefits that you
8 projected were, I think, were to 2025 for the
9 benefits of the system. Could you project that
10 \$2 million out to 2025 so I have the matching?

11 A I could get you the Stage 1 cost, that we have
12 here, done the way we have just described it. We
13 will file that, out to 2021 if you like.

14 Q It sort of begs the question of what happens to
15 Stage 2.

16 A Well, no, but --

17 Q I guess Stage 2 gets rolled in later and starts
18 later?

19 A Stage 2 costs, when they occur, would have the
20 effect that those costs have on the revenue, and be
21 net of any contributions from government,
22 et cetera.

23 So the point of view of a rate effect, what I
24 am trying to get across, is that the Corporation's
25 commitment is not going to develop the project if
26 there is an adverse rate effect. And I am not able

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Buonaguro (Cr-ex.)

1 to help you as to the extent to which there would
2 be a positive rate effect. And so the exercise in
3 the end, I am not very -- I cannot be helpful to
4 you at this point in time. I can give you the
5 stream of numbers you asked for as the costs, to
6 tell you the hurdle that is there, and I could do
7 the same with any other stream of numbers you
8 want. But all it does is tell you what we have to
9 make sure we find benefits for to offset it.

10 Q And that is actually precisely why I asked the
11 question. I would like to know, on a yearly basis,
12 what hurdle it is that you have to overcome, in
13 terms of accruing benefits, in order to offset
14 them. You have identified exactly why I have asked
15 the question.

16 A We can provide -- we will file that as -- after the
17 hearing is over, we will provide that.

18 Q And can you do that for Stage 2 as well --

19 A We will --

20 Q -- based on your projected or preferred start date?

21 A We will take the numbers that were in the exhibit
22 I filed this morning, there is a Stage 2 set of
23 costs, and we will assume they start in 2009, and
24 we will do the same things to them. But I won't
25 get into trying to discuss revenues or benefits or
26 anything. It will just be the costs. It won't be

1 a rate impact effectively.

2 Q I understand what you are saying, and I understand
3 the qualifier. And as I understand, the qualifier
4 is -- we want negate the effect that you are asking
5 me to illustrate, I understand that. But I want to
6 know what it is that you are trying to negate,
7 either through government funding or through
8 benefits in your lines. I understand that, thank
9 you.

10 A I am also saying that the project just won't be
11 developed unless the Board of Directors of Yukon
12 Energy is confident that these costs will be
13 offset, period.

14 Q That is fine.

15 The only second question I would have,
16 actually, would be with respect to Ms. Marx's
17 undertaking, but maybe I will let her -- if she has
18 any questions on Undertaking 12.

19 MS. MARX: On which undertaking?

20 Q MR. BUONAGURO: It has to do with the
21 fact that the Carmacks-Stewart line isn't included
22 in this. It is a different way of asking the same
23 question, I guess. And illustrating what would be
24 the monthly bill impact, for the Carmacks-Stewart
25 line, on Undertaking 12, basically adding it in,
26 and understanding that you are trying to negate

1 that through various means.

2 A MR. OSLER: It will be zero or
3 negative, or it won't be developed.

4 Q Right. And I asked the question for the same
5 reason. I want to know what it is that you are
6 overcoming, what bill impact you are trying to
7 negate through government funding or through mine
8 profits or --

9 A I think you have asked me a question that,
10 technically, I can answer. If you get me into a
11 rate impact table, the answer will be zero or less,
12 or it won't be developed.

13 MR. BUONAGURO: I take it I won't get
14 anything more than that.

15 THE CHAIR: Is that the extent of
16 your questioning.

17 MR. BUONAGURO: Yes, thank you.

18 THE CHAIR: Ms. Marx?

19 MS. MARX: I actually do not have
20 any follow-up, thank you.

21 THE CHAIR: Mr. Landry?

22 MR. LANDRY: Madam Chair, I have a
23 number of questions in redirect, and I have a
24 number of notes on them, so just give me a second
25 on each one so I can make it clear for the record.

26 YEC PANEL RE-EXAMINED BY MR. LANDRY:

1 Q MR. LANDRY: The first question
2 I have, and I think Mr. Bowman would probably be
3 the appropriate person, given the questioning that
4 he received on the issue of forecasts, the forecast
5 growth, and there was a number of questions from
6 UCG's counsel, and also counsel for the Board, on
7 this issue, and, at the end, you made a comment in
8 response to a question, Mr. Bowman, something to
9 the effect that the load forecast that's in here
10 really does not have a material impact -- and those
11 are my words, not yours -- on the projects that are
12 being proposed here.

13 Do you recall at least those questions that
14 were asked in relation to that?

15 A MR. BOWMAN: Vaguely, yes.

16 Q I know that this was dealt with in the record,
17 somewhere, in terms of forecast. Do you know what
18 IR that was answered, that effectively dealt with
19 that issue?

20 A If I understand the question, the issue is of the
21 load forecast and the extent to which the load
22 forecast is driving or is underlying the need for
23 the projects in the Plan. We dealt with this, to
24 some extent, in UCG Question Number 43. It is
25 actually in a footnote. It is not the most
26 fascinating thing to read on the fly, but I can

1 summarize for you.

2 Q Would you do that, please.

3 A In the period of the Resource Plan, we are talking
4 about facing a capacity shortfall, compared to the
5 criteria that has now been adopted, and reflecting
6 the retirement of the Mirrlees, of 18.7 megawatts.
7 It is a number that has been used a number of
8 times.

9 That 18.7 is the number to 2012. Of that
10 18.7, far and away the driving factor is the
11 adoption of the new capacity criteria and the
12 retirement of the Mirrlees. The only component of
13 that 18.7 that is related to differences in load
14 forecasts between now and 2012, and the extent to
15 which it is 2 versus 2 1/2 versus 1 1/2, is about
16 somewhat less than 25 percent. So in other words,
17 even under the low forecast scenarios, we are
18 talking about shortfalls in the order of
19 15 megawatts; in other words, the entire fleet of
20 Mirrlees that we are talking about. So this goes
21 to my comment earlier, that in many cases, when you
22 are sitting looking at a long-term Resource Plan,
23 and people who follow the utility industry will
24 know this in spades from the '70s and '80s and old
25 NCPC plans, or Ontario Hydro, the Plan really
26 hinges on what rate of growth are you going to

1 assume. And if you have a high rate of growth, you
2 get a completely different development scenario
3 than if you have a low rate of growth. And people
4 spend a lot of time debating that.

5 In this Plan, it is not like that at all.
6 Very little of what is in the Plan, particularly in
7 the near-term projects, relates at all to debating
8 those particular load forecasts.

9 Q Thank you. The second question I have is to
10 Mr. Morrison, and it relates to questioning that
11 you had both from counsel for UCG and the Board
12 counsel, relating to the NCPC report that was done
13 on the Mirrlees. Mr. Morrison?

14 A MR. MORRISON: Yes.

15 Q Since NCPC did its report, you indicated to the
16 Board on a number of occasions that you have done
17 further work with the manufacturer, et cetera.
18 Have you had any other technical people, outside of
19 the company, look at this issue of whether or not
20 the Mirrlees should be appropriately refurbished?

21 A Madam Chair, yes, we have. We have had two
22 additional examinations. We had a consultant,
23 Mr. Mack Brody, who has some 40 years experience,
24 is currently involved in the construction of a
25 large generating plant in Alaska. He has -- I am
26 certainly happy, if it is helpful, to submit his

YEC Panel
Landry (Re-ex.)

1 C.V. for the Board, but let me tell you, I think he
2 has an expertise, in my mind, that we would be hard
3 to find in North America. He is an electrical
4 engineer. He has a strong utility background. He
5 came and looked at the engines for us as well, and
6 the plant. And his view was that there was no
7 reason that these engines could not be
8 refurbished.

9 In addition to that, I understand that we have
10 a report from the Northwest Territories Power
11 Corporation. But we had the former operations
12 manager from the Yellowknife region for Northwest
13 Territories Power Corporation, who has retired, who
14 is a Mirrlees factory-trained mechanic. He was one
15 of the original four Mirrlees mechanics that NCPC
16 hired from the factory in England when we bought
17 the engines. I am trying not to say that I was
18 there when we bought them, and give away my age,
19 because that was 35 years ago. So when we brought
20 these engines out, Mr. Chris Chatwood was one of
21 the mechanics that we brought along. I do not mean
22 it to be humorous, but it is a bit ironic that not
23 only did we have to buy the engines, but we had to
24 hire the mechanics, that came from the factory,
25 along with them. You just could not get a diesel
26 mechanic to work on them. They had to have their

1 own mechanics.

2 But he, most recently, had a look at them.

3 And I think I mentioned yesterday that we have gone
4 to the extent of pulling the cylinders on the unit
5 in Faro and one of the units in Whitehorse. And it
6 was particularly important to me that, because the
7 MAN Diesel folk in Toronto had indicated to us that
8 that was a certain sign, if there was scarring or
9 scoring in those cylinders, that that was a very
10 specific sign that there may be problems. And so
11 we had Mr. Chatwood come up from his home in B.C.,
12 once we pulled these, and he worked with our
13 mechanics, and they looked very thoroughly inside
14 the engine, and his conclusion was clearly that the
15 Mirrlees -- he had no hesitation and he saw no
16 reason why we couldn't go ahead with these
17 overhauls.

18 Q Mr. Morrison, just on the Mirrlees, and there were
19 a number of questions on the January 2006 outage,
20 how did the Mirrlees -- how did they fare in that
21 outage?

22 A Well, they were very important to that outage, you
23 know, it's 11.4 megawatts of capacity, and they all
24 came on, they all ran as expected once they were
25 turned on.

26 Q I want to ask a couple of questions concerning the

1 discussion you had regarding the January 2006 power
2 outage. And I guess the first thing I would like
3 to do, Madam Chair, for the record, given that
4 there were a couple of responses that referred to
5 it, and that is to mark a document that was
6 referred to but it is not on the record as of yet,
7 which is the letter to the Board from Yukon Energy,
8 relating to that outage, which is dated April 11,
9 2006, and my colleague is handing out copies to
10 it. So I would like to mark that for the record,
11 please?

12 THE CHAIR: Yes. Do you have a
13 number? Have you already numbered it?

14 MR. LANDRY: I think it is B-25, if
15 I have that right.

16 THE CHAIR: So marked.

17 MR. LANDRY: Thank you.

18 EXHIBIT NO. B-25:
19 LETTER DATED APRIL 11, 2006, FROM
20 YUKON ENERGY TO YUKON UTILITIES
21 BOARD.

22 Q MR. LANDRY: Now, I do not want to
23 go through this in any detail. I really want to
24 refer Mr. Morrison to an answer that you gave to
25 one of the questions, which indicated that you were
26 able -- Yukon Energy was able to get the power

1 back, and I think the approximation was to 12 or 13
2 hours after the Aishihik line went down. In order
3 to bring that power back, in the 12 or 13 hours,
4 did any of the power that you got back come from
5 the Aishihik line?

6 A MR. MORRISON: No, not originally, the
7 line was out.

8 Q But when you brought it back, what was the power
9 that was used to --

10 A Well, we put the system back on with the hydro
11 plant at Whitehorse, and all of the diesels on the
12 WAF grid, including Faro and the Whitehorse
13 diesels.

14 Q And how long was it before you were able to get the
15 Aishihik line fully back on line. When I say
16 "fully back on line" ... not derated in any
17 manner. How long did that take?

18 A Not derated?

19 Q Right.

20 A Three weeks.

21 Q So it took three weeks in order for the Aishihik
22 line to fully come back on line to the system?

23 A That is correct.

24 Q And during that time, from the time you brought the
25 power back on, 12 or 13 hours after the outage was
26 out, to February 21st, you were able to provide

1 power to all of your customers?

2 A Yes, and that is what I meant when I said that it
3 took us 12 or 13 hours to get the power back on.
4 We had some customers on in about three to four
5 hours. It took us 12 or 13 hours to get all of the
6 customers back onto the system.

7 Q Now, sir, I want to -- given that, I want to give
8 you an assumption, and I would like you to comment
9 on it. I want you to assume that the N-1 criteria
10 is not approved, and you have a similar outage, at
11 a similar time, on the Aishihik line, and that the
12 Mirrlees, which are scheduled for retirement, are
13 retired, and no new capacity is added to the
14 system. How long would it have been before you
15 would have been able to restore power, in such a
16 circumstance, to everybody on the system?

17 A Well, Madam Chair, let me start by saying that if
18 the N-1 criteria isn't there, and we have -- and we
19 lose essentially 11.4 megawatts of diesel because
20 we retire them and we don't replace them, first of
21 all, I don't know how I am going to sleep at night
22 in the winter, because the -- if the N-1 scenario
23 happens, it, essentially, originally means we
24 cannot fully supply the load, period. We would be
25 11 -- let me go back and try to do pretty simple
26 math.

YEC Panel
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1 We have 87 megawatts of capacity on the WAF
2 grid, fully supplied. If we lose the Aishihik line
3 again, either the plant or the line, in totality,
4 we are down to 57 megawatts. In recent years, so
5 within this last couple of years, we have been in
6 the 56 megawatt peak range. Well, that leaves us
7 one extra megawatt, given that everything works,
8 always. But you know, so we are -- basically, we
9 are right at the margin.

10 So if you are asking me how we deal with the
11 scenario of losing a further 11 megawatts, until
12 such time as that Aishihik line could come up, or
13 could be brought back on in full service, we would
14 be 11 megawatts, 10 or 11 megawatts short, and
15 would be in a series -- and very significant
16 rolling black-outs in the system for the entire
17 period of time that line was down. We would not be
18 able to supply. And that would be a serious issue,
19 from our perspective. It would be an almost
20 impossible situation, over time, in terms of trying
21 to operate that system over any length of time.

22 I think, you know, from our perspective, given
23 that we have lost a line a couple of times, and you
24 know you could take -- you could take the position
25 that, well, you know, if you play the odds, well,
26 we have already lost it, so you know, are the

1 chances smaller that you will lose it again?
2 Having gone through that scenario, I do not think
3 it would be -- it certainly would not be
4 responsible, on our part, to put ourselves in that
5 position, and I think it would be a horrendously
6 difficult situation for us all to face every
7 winter, knowing that we did not have enough
8 capacity to meet that inevitability.

9 Q I would like to turn now to -- I think it will be
10 Mr. Bowman that might be able to respond to this
11 question, and this was a question that effectively
12 arose out of an answer that Dr. Billinton gave to
13 Board counsel, and it relates -- I will give the
14 transcript reference -- at least I think I am going
15 to be able to give the transcript reference. Yes,
16 it is transcript page 369, and it was questions in
17 relation to Figure 2.4, which was from Dr.
18 Billinton's report, in YUB-1-1, and Figure 2.4 was
19 at page 15 of 60.

20 And Mr. Bowman, maybe can you help me here.
21 If you could get that in front of you. The
22 question was -- and I am reading from line 9.
23 Counsel was looking at, or discussing the graph
24 that was there, showing peak, and it says:

25 "Question: Now, am I correct to assume
26 from that, that the load is at or

1 above .9 of the peak only for a very
2 short period of time?

3 Answer: That is true. In most systems,
4 that is the case."

5 And it arises out of that answer, Mr. Bowman.

6 And I guess what I am wondering about is, in your
7 experience, from a planning context, even though
8 the peak is only for a short period of time, what
9 do -- how do you understand that the utilities, for
10 example, in North America, deal with that issue?
11 How do they capacity-plan for that issue?

12 A MR. BOWMAN: Mr. Landry, I can speak
13 to a couple of cases. I certainly have not done
14 surveys of the type Dr. Billinton has. I do note
15 that he went on to say that the NERC criteria,
16 which is used throughout North America, does deal
17 with the peak, not the peak most of the time. It
18 is focused on the 100 percent peak, not just the 90
19 percent, for example. I also note that these
20 graphs are somewhat -- can be a bit misleading. It
21 is correct to say that it is not much of the year
22 that you are above 90 percent of the value. But
23 not much of the year, when you have 8,700 hours a
24 year, this graph -- that point is probably about
25 200 hours of the year that you are above that. So
26 it is not much of 8,760, but it is not 20 minutes

1 either. It is a fairly substantial amount of time,
2 over the course of a winter, that you are up in
3 that range.

4 Having reviewed the types of planning that is
5 done in the jurisdictions where I have worked,
6 Newfoundland, Manitoba, and, in particular,
7 Northwest Territories where I was involved in the
8 same hearing Dr. Billinton was referencing, in each
9 case, you are talking about "the peak", not "the
10 peak less some factor", because it doesn't happen
11 very often. In fact, in Northwest Territories, it
12 is based off "the peak" plus 5 percent for
13 uncertainty, load forecast uncertainty.

14 Q Are you aware of any jurisdiction in North America
15 that capacity-plans below the peak?

16 A No. And we did, as part of the workshop Dr.
17 Billinton mentioned, we did talk about whether one
18 -- whereas Northwest Territories used 105, to me,
19 I come from a mathematical background, so 105 is
20 just a number, and 95 is as good a number. But
21 I can relay that the professionals in reliability
22 planning, at the workshop, were not in agreement.
23 100 percent is the peak, not some ratio of it in
24 order to derate it. That is a peak you know you
25 are going to expect to need to serve, especially
26 where it is one you have experienced, that is the

1 one that you plan to.

2 MR. LANDRY: Madam Chair, those are
3 all of the questions in redirect.

4 THE CHAIR: Thank you. I guess at
5 this point we can excuse the panel.

6 Are there any other parties that have any
7 other matters before the Board? In which case, I
8 believe that concludes our hearing, and we will
9 look for written argument to be provided to the
10 Board by November 24th, with written reply argument
11 by December the 21st.

12 I thank all parties for their participation --
13 December the 1st.

14 MR. LANDRY: I was hoping.

15 THE CHAIR: And I thank all parties
16 for their participation, and we look forward to
17 your written argument. We will adjourn now.

18 (Proceedings concluded at 4:10 p.m.)

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REPORTER'S CERTIFICATION

I, the undersigned, hereby state that the foregoing pages 1 through 546 were taken down by shorthand and transcribed to the best of our skill and ability.

DATED at the City of Whitehorse, Yukon Territory, this 16th day of November, A.D., 2006.

Doug Ayers,
Court Reporter

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