YUKON UTILITIES BOARD

IN THE MATTER OF
the *Public Utilities Act*
Revised Statutes of Yukon, 2002, c. 186, as amended

and

AN APPLICATION BY YUKON ENERGY CORPORATION FOR AN ENERGY PROJECT CERTIFICATE AND AN ENERGY OPERATION CERTIFICATE REGARDING THE PROPOSED MAYO HYDRO ENHANCEMENT PROJECT (MAYO B)

P R O C E E D I N G S

Volume 2
April 7, 2010

Whitehorse, Yukon

Proceedings taken at hearing held at the Yukon Inn, 4220 4th Avenue, Whitehorse, Yukon.

Volume 2

April 7, 2010, 2010

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THE CHAIR: Good morning. I'll just remind people that we'll plan to have a break around 10:30 this morning, we'll see where we are, and then another break at 3:45. I believe the lunch break is planned for about 12/12:30. So we'll pick up where we left off yesterday. Mr. Landry? 09:12

MR. LANDRY: Yes. We have an undertaking that we would like to put onto the record.

THE CHAIR: Okay, yes.

D. MORRISON, C. OSLER (For Yukon Energy Corporation), previously affirmed, undertaking responses:

Q. MR. LANDRY: So Mr. Osler.

A. MR. OSLER: Thank you. Good morning.

At page 85 of the transcript there was an undertaking to advise what the accumulated AFUDC on deferred costs is for Mayo B to the end of 2009. I'm advised by Yukon 09:13
Energy that 165,098, $165,098, is the accumulated AFUDC to December 31, 2009, including previous fiscal years, including also any other items that would be, for the purposes of our budgeting, called AFUDC; although they may be called different things internally.

I'm also advised that 103,951 of that amount is included in the total cumulative costs provided in the updated UCG 1 YEC 5 (i) of 7.441 million to the end of December 2009. The balance was booked in 2010 but actually applied to 2009. 09:14

MR. LANDRY: Thank you.

THE CHAIR: So that completes the undertakings?

MR. LANDRY: As far as we know, Mr. Chair, that completes the undertakings that were given yesterday.

So if there is something somebody expects otherwise, I'm sure we'll hear about it.

THE CHAIR: Okay. Thank you very much. So I'll turn it back to UCG, and you can -- just the vice-chair has reminded me, are there any other preliminary matters that need to be raised?

Okay, that's great. So I'll turn it back to Mr. Buonaguro.

MR. BUONAGURO CROSS-EXAMINES THE PANEL:

MR. BUONAGURO: Thank you, Mr. Chair. I can tell you that I did what I said I was going to do and diligently went through my cross based on what I heard yesterday, through the transcript, and have drastically reduced the scope of my cross-examination. I can't guarantee it's going to be in the one-hour range. 09:14

A. MR. MORRISON: You promised. You promised.

MR. BUONAGURO: That was a forecast based on various assumptions but --

A. MR. MORRISON: Now, you would hold me to my forecast. 09:15

MR. BUONAGURO: Thankfully I'm a lawyer and I don't have to be held to things like that. But I can tell you it is much reduced. If it goes much over an hour, it's only because we're getting such fulsome answers.

THE CHAIR: Thanks very much. We

appreciate that.

Q. MR. BUONAGURO: I would like to pick up with something that we spent quite a bit of time with yesterday. It's the risk that YEC is taking on with respect to Carmacks Copper or a Carmacks Copper-like load that we talked about yesterday in terms of forgiving rather than deferring amounts related to that load assumption. Okay? And just a small point. It occurred to me that we might be able to quantify that in dollar terms based on the projected loads that are used in your tables and the projected costs per kilowatt hour that you're assuming for that load. Am I right? Can we quantify the value of that assumption of risk in that way? 09:16

A. MR. OSLER: In general, given the appropriate set of assumptions, a number would be calculated that would document the difference with and without the Carmacks Copper load. It wouldn't necessarily cover all the possible ways that the world could unfold, but it would document the value. It would be calculated on a year-by-year basis the way we were talking about it yesterday, and if one was an economist you could be attempted into trying to present value it. 09:16

The more you get into the assumptions and try and get it down to one number, the more you've got to be careful. It may not reflect how the world unfolds.

Q. I think it would be properly characterised as a cap,

based on what we discussed, because it assumes zero load over those six years, and things may happen such that you do get some load, for example, even if it's on Carmacks.

A. MR. OSLER: That thought was going through my head, that it probably would be characterised as an upper number, and it might in fact need to -- it might in fact unfold to be a lower number, particularly if you're doing it in present-value terms.

Q. Okay. Perhaps I could get another undertaking to do a calculation in that way, whether you do it on a year-by-year basis or whether you do it present value, just to get a sense of the scope of what that assumption of risk is for the company, with any qualifiers that you may have to explain it -- 09:17

A. MR. OSLER: Could I clarify whether this would meet your requirement? In YUB-25 in the Excel sheets that everybody has there are two tabs. One is the base case, and one is the case without the Carmacks Copper load, which was the basis for Figure 4. For the purposes that you're asking, would it be sufficient to give you the numbers that we were talking about at, say, an 11 -cent cap, just summarize on one piece of paper the difference that appears in those numbers between those two cases for the 11-cent cap case? 09:18

Q. I think so, because I think what you're telling me is

that that represents the increase in the amounts in those six years that has to be accounted for in terms of running risk.

A. MR. OSLER: Right.

Q. I think so. As long as that's in the explanation when you give the undertaking, I think that would do it.

A. MR. OSLER: We will find a way to get that summarized on one sheet of paper and bring it back to you.

Q. Thank you. Thank you very much.

UNDERTAKING - TO SUMMARIZE THE DIFFERENCE THAT APPEARS IN THE NUMBERS AS REFERENCED IN YUB-25 BETWEEN THE BASE CASE AND THE CASE WITHOUT THE CARMACKS COPPER LOAD USING THE 11-CENT CAP CASE, AS DISCUSSED

09:18

Q. MR. BUONAGURO: Another clarification question that had arisen just this very morning, and I thought it would be easier to just ask the question and have you describe what's going on here. I'm looking at YUB-21. There's an original and a revised Table 1 on that page.

A. MR. MORRISON: Sorry, could you just repeat the reference?

09:19

Q. No. 21. And there's two copies. You actually have to look at both copies, of the revised Table 1.

A. MR. MORRISON: Okay.

Q. Now, the first question, there's obviously a difference

in Table 1 between the original and the revised answer. Could you explain what drove the difference? I apologize if it's in the record somewhere, but I thought it would just be easier if we did it this way.

A. MR. OSLER: It was addressed I think in the cover letter. Well, I can't find the cover letter.

Q. Just generally.

A. MR. OSLER: There was an error in I think the first year -- well, I'm trying to remember which one we're talking about. 09:21

Oh, okay. In the cover letter of March 29th, the explanation for each of the corrections that were made, this is 21 and YUB-30 (a) and (c). And for Table 1 of YUB-21 it's corrected because the area analysis incorrectly included some secondary energy in some years. What that means is that in the modelling it has to allocate the energy between being firm or secondary, and it inadvertently included some of what we think should be properly called secondary as firm, and in the correction it took it out. The result is that the numbers in the revision are all slightly down, I think, if I remember correctly. 09:22

The Mayo B -- the Mayo A column where you see in the revised number Mayo B with Mayo Lake enhanced storage of 13.7, it was 14.7 before. And similarly all the way through the table the numbers for the cases with Mayo B are

now slightly lower and the percentages for the capacity factor are similarly slightly lower. It's a small tweak that somebody uncovered and made a correction for.

Q. All right. Thank you. As you've been talking, my second question I think I've resolved in my head. So I'm not going to pursue that. Thank you very much.

I'll be making references in this part of my cross to some of the interrogatory answers. I'm going to read out the relevant part. If you think you need to see the whole question just look it up, but I think for the most part I'm going to be able to give you enough that -- it's mostly to set up the questions so you understand where I'm coming from. 09:24

So in UCG No. 2, one of the things in the response that the YEC says is this proceeding is not to review in exhaustive detail or make determinations related to the environmental or socio-economic effects of the Mayo B project. And related to that, would YEC agree that it would be within the YUB's authority to provide an interim decision on the proposed Mayo B project and then follow up with a final decision after the YESAB decisions are issued? 09:24

MR. LANDRY: Mr. Chair, I'm not sure where my friend is going with that, but that sounds like a legal question to me and not appropriately put to the panel. So, first of all, I'm not sure I agree with that comment, but it

seems to me it's a legal question, not something that's properly put to this panel.

MR. BUONAGURO: If it helps, I'm happy to get a legal answer from Mr. Landry. If he has a position on it, he might as well put it on the record now.

MR. LANDRY: Mr. Chair, I see no reason for me to give a legal answer to a question from my friend. If my friend wants to raise it at some point in time, I suppose that's up to him in argument.

THE CHAIR: Would you restate the question for us, please? 09:25

MR. BUONAGURO: Yes. Does YEC agree that it would be within the YUB's authority to provide an interim decision on the proposed Mayo B project and then follow up with a final decision after the YESAB decisions are issued? And I could put it another way which I think would be more appropriate for the panel to answer. It's would the panel or YEC be able to operate under such a regime where you get an interim decision that foresees it having to come back based on what the YESAB decision is? 09:26

A. MR. MORRISON: Mr. Chair, I'll help both my counsel and Mr. Buonaguro. I'm not going to answer that question. I am not a lawyer, and I don't know, and I'm not getting into an argument about what's in the YUB Act and what's the powers of the Board. Thank you.

THE CHAIR: Thank you, Mr. Morrison. I'm not sure we're prepared to answer that question.
MR. BUONAGURO: That's fine.
THE CHAIR: Any comments?
UNIDENTIFIED SPEAKER: Yes.
THE CHAIR: Can you go to the mike, please?
MS. BENTIVEGNA: Mr. Chairman, sorry, before anybody else from the floor makes comments, we're in a process. Mr. Buonaguro is cross-examining. I think the witness has answered. If Mr. Buonaguro wants to pursue it or wants a ruling, that's different, but I don't think it would be appropriate to get comments from an observer. 09:26
THE CHAIR: That's good advice. Thank you very much.
MR. BUONAGURO: If I may, it depends on what he's going to say. If he's -- if he has something to say about the appropriateness of, for example, Mr. Landry providing a legal answer now, then he should be able to make that submission, I would suggest. If he's just piping in on the cross-examination, obviously I would agree with Board counsel. I don't know what he's going to say. I was going to say maybe he should identify himself because I actually don't know who it is. 09:27
MS. BENTIVEGNA: I don't think it's

appropriate. Mr. Buonaguro has the YEC panel, and that's who the questions or any comments should come from.
THE CHAIR: Yes. I'll turn it back to you. You have an answer to the question or you should --
MR. BUONAGURO: I --
THE CHAIR: -- perhaps make a motion.
MR. BUONAGURO: Sorry. I'm sorry.
Mr. Morrison has answered that --
A. MR. MORRISON: I'm not going to answer.
MR. BUONAGURO: -- he's not going to answer. 09:28
THE CHAIR: Right.
MR. BUONAGURO: And I think Mr. Landry has said he would prefer -- if he was going to make any submission on this he would do it presumably in reply or in anticipation of my raising the issue. I think the Board has indicated that it's not asking that question for me at this point, and I think the Board is saying that it's content to hear that in argument. Do I understand that correctly?
THE CHAIR: Yes, that's correct.
MR. BUONAGURO: On that basis, I'm happy to 09:28 leave it until argument.
Q. Now, I have a series of questions having to do with line losses and how they affect or don't affect your analysis, and perhaps it would be simplest to just ask the question generally. And we can make reference to the various

scenarios that arise under YUB No. 25, the schedules. But can you explain to me to what extent line losses are accounted for in the analysis, and if not accounted for, why not -- i.e., is it because they're not a problem, and why that isn't a problem -- and if they are, how they are accounted for?

A. MR. OSLER: They are accounted for. In the forecasts of the grid loads, they're really loads and losses. They're the amount of generation required to meet the customer requirements. So the losses are the difference between the amount of generation forecast and the actual sales forecast to different customer groups. The difference between those two is what we call losses in the system, which includes station service losses as well as line losses.

So they are part of the analysis in building up a forecast for generation in the same way they would be in a GRA. The numbers are stated in the application as to what line losses or losses are assumed for WAF loads, Mayo Dawson loads, and in various industrial loads. I don't have them at my fingertips, but they are -- they're in the application and they've been used in responses to questions about line losses.

09:30

09:30

Q. Okay. And generally speaking, and I'm getting this from, well, for example -- I don't have the reference, forgive me, but it's my understanding from the 20-year

Resource Plan was that, for example, the YUB determined that hydro generation in the Mayo Dawson grid was not to assume supply of WAF loads due to losses --

A. MR. OSLER: I'm sorry, I can't hear you.

A. MR. MORRISON: I didn't hear that.

Q. I apologize. The YUB determined that hydro generation in the Mayo Dawson grid was not assumed to supply WAF loads due to line losses. That was a comment from the Resource Plan. It's just the concept I'm trying to understand and whether it's a problem here, that the location of the line loads, which, in part, drive this project, in relation to where the Mayo B generation is actually occurring and the line losses between those two points, can you describe how that's accounted for specifically or whether it's a problem? 09:31

A. MR. OSLER: Well, in terms of questions from the YUB staff on the extent to which we adjust the line losses for specific mine locations or specific distributions of generation among various units, the answer was no, we don't have that capability to get specific to different scenarios. The system doesn't allow that at the moment. 09:32

What we had used for -- I'll just give them for the record, because I found them. For the Whitehorse stage at Faro nonindustrial loads net of Fish Lake and -- we used back in the Resource Plan 7.7 percent. I think more recently we've used 7 percent for line losses.

In the Mayo Dawson, we used 27.8 percent in the Carmacks-Stewart hearing and the Resource Plan. We used 27.8 percent in this application.

And for the various mine loads, in the Resource Plan, earlier hearings, I think we used 12.7 percent across the board for each one of the different mines, and I would have to find -- it's probably in Schedule "D" what we've used in this one.

So we've stated what the assumptions are before in the earlier hearings and in this hearing. They're there. The ability to model them or play differences with them, no, we do a line loss assessment. For a cost of service study, we get into it by classes and everything along with YCL. 09:33

For the general-purpose GRAs, we have the answer between the overall generation and the overall sales and the amount of metered losses in between. But to break it out by classes or more distinct is actually a major undertaking when you're doing a cost of service to get numbers that are useful. 09:34

Q. Thank you. Okay. I think I'll leave it at that. Thank you very much.

I have a specific question, the same question for the Carmacks-Stewart Transmission Project Phase 2 and the Aishihik Third Turbine, and maybe I can relate it back to the

YUB No. 25 table. My assumption is that the impacts of those are included in your assumption for generation?

A. MR. OSLER: Yes. The committed generation as well as existing, which we use as the case without Mayo B, includes Aishihik Third Turbine and the Carmacks-Stewart connected grid.

Q. Okay. And can you give me an idea of what the cost -- the annual cost for those two projects are, because my understanding is that they're not in rate base right now, for example, because they weren't there in time for the last GRA; is that correct? 09:35

A. MR. OSLER: Carmacks-Stewart Stage 1 is certainly in --

Q. Yes, my question is with respect to Part 2.

A. MR. OSLER: Yes. The Aishihik Third Turbine was always planned to come in in 2010, so it would not have been part of the rate base for the test year 2009, and certainly the Carmacks-Stewart Stage 2 is not part of the rate base for 2009.

Q. What I'm looking for, if you look at YUB No. 25, and you've done a breakdown of the costs of Mayo B, you have OM&A, depreciation. You have that sort of summary about the annual costs that would incur if you put it in rate base. I'm looking for a similar analysis for those two projects. 09:36

A. MR. OSLER: I don't have a similar analysis

for either one of the other two projects and I don't have it at my fingertips anything more than I'm going to say.

On the case of Carmacks-Stewart Stage 2, the budget is 40 million and the contributions of no cost capital are 40 million, so at the moment the expectation is there will be no capital-related costs charged to ratepayers. I have no idea of what the operating costs would be off the top of my head, but they would be the same type of cost range as one talked about, I presume, for Carmacks-Stewart Stage 1. It's a bit of a shorter line. 09:36

In the case of the Aishihik Third Turbine, I have no update what the costs are like. There was a $5 million contribution to be reduced from those costs and it's in addition to an existing facility. So it's operating costs in the near term would not be a big deal I wouldn't think, but I don't have anything more that I can help you with than that. I don't have anything more recent in my information on Aishihik Third Turbine than we discussed in the hearing.

Q. Thank you. Perhaps you can -- you mentioned the OM&A with respect to the Part 2. You said the Carmacks-Stewart 09:37 Part 2 project would probably be something in the neighbourhood of what was contemplated or is in existence for part 1. Can you --

A. MR. OSLER: I don't recall the numbers we had for Stage 1, what the O&M would have been. I'm just

saying I don't think there's any new information one could get on that beyond what would have been talked about way back.

Q. Perhaps we can do that by way of undertaking. I'm just looking for an estimate of what the revenue requirement impact of those two would be put forward. It can be an estimate. You can qualify it, like you said, but just to get an idea going forward that in the midst of this spending and these project proposals, what else in terms of major projects is occurring at the same time, particularly since Part 2 is actually associated? 09:38

A. MR. MORRISON: Mr. Chair, I'm not sure why we would do an undertaking to provide that. It's not related to the purposes of the hearing. It's not a GRA we're having right now. Those are information items that we would be happy to provide at that time, but we're just looking for numbers that have no particular application to what we're talking about right now.

And so the answer would be no.

THE CHAIR: No, that you're not prepared to -- 09:38

A. MR. MORRISON: No, I'm not prepared to do an undertaking on that.

MR. LANDRY: Well, let me also just put it a little different than the way Mr. Morrison has put it.

This is not a proceeding about Carmacks-Stewart Stage 2 nor is it a proceeding about Aishihik No. 3. So on that basis alone, not only for this question and other questions, it's not relevant to this proceeding and therefore should not have to be produced.

THE CHAIR: Can I take a second, please?

Mr. Buonaguro, do you want to provide some more information?

MR. BUONAGURO: Sure. I could make the following comment, particularly with respect to 09:40
Carmacks-Stewart Transmission Project Part 2. It is tied into the analysis of the Mayo B. The two are presented together in terms of the federal funding. The two are presented together as providing benefits in the sense that Mayo B provides benefits because of Part 2 of the Carmacks-Stewart Transmission Project.

Why we want it, why we think it's useful, there are costs going forward related to Part 2 which are also going to impact on rates at the same time that these rates -- the rate impacts from Mayo B are being mitigated and 09:40
we're trying to find out what the trade-off is in terms of what the total impact of the two projects together are going to be because, quite frankly, part of the justification from Mayo B is Part 2. Part of the justification for Part 2 is the ability to take advantage of part B, so they are

interconnected.

I would say that I'm not looking for a firm number, I'm trying to get a matter of scope. I understand what Mr. Osler has kindly provided, which is the capital part of it. The equity return and debt return presumably would be zero and what we're really looking for is an estimate of what the additional OM&A costs are for that project. It's not quite as clear, I would agree, with the Aishihik Third Turbine, which I don't think is presented in the same interconnected way with the ability of Mayo B to provide 09:41
benefits to the Yukon, but again, I think it's a very simple calculation and we're just looking, quite frankly, what's coming down the road in terms of rate impacts and put that -- provide that as context as to what it is that we are doing in terms of mitigating rate impacts in this particular case.

THE CHAIR: Although Mr. Osler did provide some generalities, that's not sufficient for what you're looking for?

MR. BUONAGURO: Well, I mean I probably could track down the numbers if I had a handle on everything, but I 09:41
thought it would be much simpler for the company to do it. Usually it is.

THE CHAIR: Mr. Landry, did you want to say something?

MR. LANDRY: Two things I'd say. First of

all, it seems from what Mr. Buonaguro is saying that he understands at least with respect to Aishihik No. 3 that it's not relevant to this proceeding, but YEC is here to answer any question that the Board feels is relevant and useful for its deliberations. However, in respect to Carmacks-Stewart Stage 2, this proceeding is not about that part of the so-called legacy project and although it seems innocuous in the sense of the question answered, it's on a principle basis that questions relating to that, and especially costs and how they're going to drive rates, are more appropriate and more related to a GRA, not to this proceeding. 09:42

THE CHAIR: Can we take a few-minute recess just so we could consider this?

MR. BUONAGURO: Sure. If it helps, that's sort of a distinct part. I mean, I could continue and the Board could consider it over the break. We don't have to stop -- for my purposes I'm happy to continue and have a determination on that later. It will either produce the undertaking or not -- or it won't.

THE CHAIR: Okay. That would be our -- 09:43

A. MR. MORRISON: Mr. Chair, if I could help on a practical side of this. We're talking about producing this number by today? That's not going to happen. That's impossible. Even though Mr. Buonaguro says he just wants a range or we don't have to be too fussy, I'm not putting

something on the record like that. I'm just not going to do that. So if you're going to get a number, you're going to get the right number and I'm not going to be able to do that today. That just needs more work.

So the practicalities are you can ask for it and we can take an undertaking, but it will take a number of days to get it, and that's not going to fit into this proceeding. So practically we can argue about whether we should or shouldn't produce the number, but I'm not going to produce a number that's just well, maybe it's this because we'll get held to it and, you know, as much as he smiles and says oh, you know, it's okay and we don't want to worry too much, I'm not going to do that. 09:44

MS. BENTIVEGNA: Mr. Chairman, sorry, just to be clear on what the panel is ruling on. Mr. Buonaguro, maybe if you can clarify, are you asking for the number of the Carmacks-Stewart -- the O&M for the Carmacks-Stewart Phase 1, that number, what it was in the 2009, 2008/2009 GRA or are you asking for a specific number of what YEC believes is going to be the O&M for the Stage 2? 09:45

MR. BUONAGURO: The reference to part 1 is only included because that was provided as a possible proxy for what the Part 2 impact would be. If that's the answer, that's the answer.

With respect to Mr. Morrison's comments, first

I would like to say that my smiles weren't on the record until he pointed them out. Second, I think that if they want to take the time to produce it and it's going to take a few days, I think that's actually acceptable. I can refer to the impacts, whatever they are, in my argument, if I choose to, and then the answer will come out when the answer comes out. It depends on what the Board does in terms of considering those impacts as a result of what I say.

So I can refer the impacts in my oral argument and if the intent of the Board is to rule within a week or two and they give the answer before that, then they can take a look at the impacts when they get them. I don't need the number to make my argument. I think that's the point that Mr. Morrison is pointing out. But again, the Board is, I think, reserving a ruling on that until the break. 09:46

THE CHAIR: Yes. We'll reserve -- we'll look at the issue at the break and we'll get back to you. So if you want to proceed.

MR. BUONAGURO: Thank you.

Q. In response to CW-1, the company put in as attachments the November 2008 newsletter and at page 4 of that newsletter, one of the things that Yukon Energy says is that Yukon Energy expects to need additional renewable power to help minimize the use of diesel to generate electricity, and that -- and I guess a general sense we got from the 09:46

application is that the focus was on renewable generation and we were wondering about the other side of that, which is the demand side solutions. We were wondering if you could comment on YEC's review of demand side options for dealing with diesel generation offsets, and particularly I would expect, and perhaps you can comment on, the ability to reduce demand at mine level loads, which I would assume have a fairly high capacity for taking advantage of demand control.

Is that a specific thing that the company has turned its mind to and do you have any comments on it? 09:47

A. MR. OSLER: Mr. Morrison will talk about what the company has been thinking about on the broader subject, but the rate schedule 39 that was developed and approved includes specifically provision for the option -- for the customer to opt for reducing its winter peak load. There's a very specific provision. So far the customer hasn't taken up that option, but that's fairly innovative on the question of an industrial --

Any industrial customer in the Yukon that comes on will have that option so that if they want to save 09:48 **some money by reducing their demand charge by making some commitments as to how they manage the peak winter load, that's there.**

Beyond that I'm not aware of what else we could possibly do to provide incentives in a rate sense for

major industrial customers for the peak period, but I'll let Mr. Morrison deal with the broader question of Yukon Energy looking at demand side management options as well as renewable energy options, keeping in mind that what we've always said, which is major increments to load are the type that Yukon has to plan for when dealing with industrials is not going to be solved by any form of demand side management other than telling industrial they're not welcome. There are versions of that that can sometimes surface, but other than that, you've got to hook up a large amount of load. 09:49

Demand side management is something to do when you have the diesel back and you're trying to get all loads to be reduced as much as you can through appropriate demand side management techniques.

A. MR. MORRISON: Mr. Chair, I'll talk about a couple of things, and first of all, as everyone in this room is aware, both utilities, Yukon Energy and Yukon Electric, following a Board direction are involved in a process to bring back demand side management policy or program to this Board, and in that same regard, our efforts are a cooperative 09:50 effort with the Yukon government where we've been working with them through the IPP and net metering programs that are being developed as well.

So, you know, specifically that's where we've turned our attention, is to looking at what demand side

management should look like and how we might go forward.

Having said that, and I realize it's not demand side management, but part of the program in terms of looking at this question of how do we get rid of diesel either on the margins or as base load over time, we've talked about quite extensively I think both at the last GRA and many times publicly about the Atlin storage, Marsh Lake, the Gladstone Diversion projects as enhancements to the system, and through this process of both capacity planning and resource planning and system planning, we've looked at 09:51
this -- we have and we have talked about many times this priority that we have about getting -- enhancing our existing assets, getting as much out of them as we can in order to provide, you know, additional renewable generation instead of looking to the diesels, to bring them on line to meet system loads.

What we probably haven't talked about as much is the efforts that we have internally been looking at to see what we can also get at an operational level out of these same existing assets. So as an example, when we looked at -- 09:52
this would be about three years ago when we first started this, but as part of our regular maintenance program we had to rewind the generators at Aishihik. We did one one year and the second one the following year. When we rewound them, we rewound them at a higher capacity because thinking that as

we go down the road and look at these assets, that doesn't necessarily give us the ability just by rewinding the generators to get more energy out of the system, but we have taken the second step in that process and we're looking at re-runnering the turbines that we have in each of our facilities.

If we re-runner a turbine and there is economics around that and there are -- there would definitely have to be benefits to doing that in terms of getting additional capacity. 09:53

So when we rewind the generators, if we re-runner, we'd have to rewind. So when we did it as part of our normal maintenance, they're there in place at the moment, and when we decide or not decide, you know, we have that ability to squeeze some extra gigawatt hours out of each of the facilities.

So as an example we have some analysis that's just being completed on the Whitehorse turbines. I don't know what the answer is, whether there's economics there or not, but we have looked at the turbines. We are now in a 09:53 position to sit down and run some numbers and see whether or not we can squeeze some more efficiency out of that.

Now, the efficiency is can you get more -- can you get turbines that use water more efficiently, and within our system particularly, Whitehorse No. 3, the turbine there,

it is a bit of a water hog. It uses a lot of water to get the output that we get out of it. So that one may show as something that we can do, but in addition to that, we're also looking at, from an internal point of view what can we do in terms of line losses. Are there some technologies out there that will reduce line losses. Those will also give us some additional kilowatt hours.

So those are the efforts that we're concentrating on at the moment and we'll work through the DSM program and, you know, come back once we've got something as we've been requested to do by the Board. 09:54

Q. Thank you for that. If I can go back to demand response and something that Mr. Osler was telling me about. You mentioned rate 39 and that there are certain incentives built into rate 39 for companies that take advantage of reducing their load. Looking at YUB-25 and the forecasts for the three mines that are included in the scenarios, I'm assuming that that assumes those projected loads, they assume that none of the mines are taking advantage of those particular measures? 09:55

A. MR. OSLER: They don't get into that. We're talking about demand peaks. The numbers that you'll see in YUB-25 are energy numbers. I wouldn't expect that a company is talking about reducing its production. It's talking about managing its peak so that for a bit of -- for a

right incentive it manages the peak it sends out during a cold period of the year. I would expect its overall planned operations for the year would be basically unchanged in terms of its energy consumption, so.

Q. Okay. So if I can jump in. My understanding, then, is that the incentives you're talking about relate more to -- probably relate more to shifting load as opposed to eliminating overall consumption?

A. MR. OSLER: Peak shaving is essentially what it's called, and that's what it relates to, yes. 09:56

Q. Okay. Thank you. So, then, that would mean that the load forecasts that are embedded here, based on that particular incentive regime, may not change.

A. MR. OSLER: No.

Q. But because they're incentives if they did take advantage of those particular measures, that would mean that the revenue that you receive from those companies in relation to that energy consumption would be reduced, would it not?

A. MR. OSLER: Somewhat, yes. Presumably it would also have some benefit to the company. That's the reason for putting it in there, in terms of saving peak requirements. So where we come out of that wash I'm not going to try and predict here. 09:56

Q. Okay. So (a), there's incentives that they could take advantage of within the schedule. I assume that the schedule

proceeds into the near future or something like it.

A. MR. OSLER: Hmm-hmm.

Q. (B), that would not necessarily reduce their total energy so that the -- that their forecasts here may remain stable despite those --

A. MR. OSLER: Yeah. Let me -- my mind is getting into gear.

Q. I'm glad to have done that.

A. MR. OSLER: The other thing that -- well, I don't have the schedules with me because I wasn't thinking this was a rate hearing, but effectively Rate Schedule 39, going back to the Faro mine in the '90s, we have in there the ability to -- and we would use it, in principle, Yukon Energy would use it, to create when diesel is on the margin a two-part rate structure, where the top 10 percent is charged at the -- at least at the same rate as the residential run-out rate is, and if the run-out rate is done according to the principles used then, it would reflect diesel incremental costs, so that the Faro mine had -- its top 10 percent of its load was charged at the cost of diesel. So if they increase their load or they decrease their load, they got the full costs or they got the full benefit in terms of the incremental costs they were imposing on the system.

So that's already in place, and it's been used before, and it would be used again. So in terms of rate and

09:57

09:58

price incentives, we have a peak shaving incentive that was not there before and we have a marginal pricing incentive that gives the mine full incentive to optimize its operations at all times of the year that would be implemented when diesel is on the margin.

So industrial customers in Yukon have been treated in a way that gives them full incentives to conserve and optimize their operations, and all we've done with the Rate Schedule 39, the most recent one, is add the peak shaving to what was already there before for energy. 09:59

Q. Thank you. So what I understand -- if I could summarize what you're saying, there are these -- there is this incentive we call the peak shaving incentive. I think you would agree that that may reduce the revenue from those companies but you expected there would be offsetting benefits to YEC --

A. MR. OSLER: Right.

Q. -- particularly in terms of your peak requirements, presumably. And I think you would agree that there is no analysis of how that plays out, on the record. So I don't 09:59 think you turned your mind to this particular quirk until I raised it.

A. MR. OSLER: There's no analysis on this record. When we did the PPA for the Minto hearing, we justified the proposal at that time, and it was, you know --

the basic concept of these types of measures is that everybody benefits. The customer benefits, and the utility benefits. We would benefit how? By not having to run the same period of peaking diesel or having to plan the same capacity as we otherwise would have had. So we get savings that way.

When you charge somebody the incremental cost of diesel for energy -- and this was actually fundamental to a deal worked out to correct a contract with the Faro mine in the early '90s -- it essentially means the ratepayers are not at risk because the mine's load goes up compared to forecast; and, secondly, it means that we're not fussing if the mine load goes down compared to forecast because we're going to save the diesel. 10:00

So when you get enough diesel in the system that you can set a rate like that, it works pretty well for both parties.

Q. Just one more question with respect to the mine forecasts that are in this. Are there any particular assumptions with respect to the overall efficiency of the companies; i.e., presumably there may be a range of mine operations, some that are more efficient than others, depending on what specific measures they take with respect to energy consumption. Is there any type of analysis like that, or is it simply the mine tells us -- based on the information 10:00

we get from the mine, this is their projected load?
A. MR. OSLER: It's essentially the latter. And keeping in mind that most mine operations I've seen here and elsewhere, this is not the first issue in the team's mind in the mine. This is the detail compared to all of the other problems they're trying to solve when they're developing something. So it's hard to get numbers. And the numbers always have a pretty good dispersion index around them, if you were going to get analytical as to how accurate they are.
So somebody going to the next level you're talking about, you're talking about a mine that's well established and everybody has got some time to sit down and think about how to gauge how efficient their preparations are. That would happen in Manitoba with Inco operations or something like that, and they become very efficient because they want to save money like everybody else. 10:01
Q. So something like the Minto -- a mine like Minto after a few years operation might start to sharpen their pencils with respect to their energy consumption and see where they could save some money? 10:02
A. MR. OSLER: It might, but, I mean, you've got mines that are -- that have got a thousand things on their mind in terms of expansion, reserves, operational issues, et cetera. They're not -- and they're not planned to run for 40 years. They're planned to run for, you know, 10,

15 years, or 5 years. So I wouldn't hold out that you would get a lot of time and attention on that type of detail you're talking about from that type of operation. They will do their best to save money, but they won't be having a lot of time to do a lot of analysis.

Q. Thank you.

This is the part where I'm confirming the questions off I crossed off I actually don't want answers -- have you answer. So I'm just taking a little time here.

In UCG No. 27 at page 3 of that response, YEC states: 10:03

> "In the longer term, future economic development opportunities in Yukon may well be foregone if the supply of cost effective renewable hydro generation such as Mayo B is not developed to displace reliance on diesel generation."

A. MR. OSLER: Sorry, which part of 27?

Q. It's page 3, lines 18 to 21. 10:03

A. MR. OSLER: Sorry, which line? 18 to 21?

Q. Yes, 18 to 21. The question is simply this: Are there any concrete examples of that having happened in the Yukon where specific opportunity was foregone?

A. MR. OSLER: Sorry, can I just be really

careful? Because we have a 27 revised, and I think you've read from the original one.

Q. I think I have.

A. MR. OSLER: Okay.

Q. Sorry about that.

A. MR. OSLER: So for everybody, what we're talking about is part (d), and in the revised version I think your sentences are 31 to 44.

Q. Okay.

A. MR. OSLER: You started "In the longer term, future economic development opportunities"? 10:04

Q. Yes.

A. MR. OSLER: Okay. Now --

Q. Thank you for that. I apologize.

A. MR. OSLER: Okay, thank you.

Q. And then the question was just whether you have any concrete examples of that having happened to date in the Yukon.

A. MR. MORRISON: Mr. Chair, I wouldn't say that we necessarily have specific examples, but let's use the generality that it's clear that the operating costs of diesel, if we're looking at that as an alternative to renewable hydro or connecting to the grid, are significantly different than the industrial rate. So if we look at 10 cents -- 10-point-something cents as the industrial rate and 10:05

we look at -- we've used 25 cents here. My guess, if somebody was doing it on their own, it would be 30-plus cents, because you would have to build in capital and operating costs and so on.

So there will be -- and it's our understanding that in general terms there are, you know, resource development customers whose energy costs are in the neighbourhood of 30 percent of their total operating costs. So if you look at operating costs that are three times higher because -- or, excuse me, the electrical costs are three times higher because you're using diesel, that's a significant impact on the economics of any development or any business. 10:06

So this is simply our understanding from engaging with industrial customers and other significant customers that there is a significant difference and that there may be -- that if there isn't hydro or grid power available that it may well impact their decision on whether they can go ahead or not. So I don't have -- you know, I can't name customers but -- and I don't think I would, but that's our understanding. 10:06

Q. Okay. Just to summarize the scenario you're talking about, you're talking about the difference between, for example, a mine having to do its own onsite generation, diesel generation, versus being connected to the grid and

taking advantage of the industrial rate?
A. MR. MORRISON: Yes, that would be the scenario.
Q. You're saying that that scenario is so obvious in terms of the economics for the company that you can -- you're projecting that faced with that choice, having to -- that onsite diesel generation may drive a customer away.
A. MR. MORRISON: Let me be really clear. I mean, I think it's obvious to all of us if you could connect -- if you can connect and you can get the grid rate and it's renewable, that that's obviously better. What I'm trying to say as well, and I think I'm agreeing with you, is that there are customers, potential customers, there whose economics will say they must get that rate or else they won't be able to go ahead. 10:07
Q. Okay, thank you.
In UCG No. 5 -- in this one I think I'm reading from the original but I think there's a revised version.
A. MR. OSLER: There is. 10:08
Q. So I'm going to pull up my revised version to make sure I give you the right reference.
The quote I'm looking for -- on the original is at page 3, lines 16 to 18, and I'll read it to you. I think -- it's very short. YEC states:

"As noted, such costs are well within the range of current B.C. hydro development project costs to ratepayers."

So that's in the original.

A. MR. MORRISON: Where in the original, Mr. Buonaguro?

Q. It's at page 3 of the original.

MR. LANDRY: Page 3 of the revised at line 16 to 18, to help. 10:09

MR. BUONAGURO: Right. Thank you very much.

Q. So "As noted, such costs --" sorry, the whole paragraph starts:

"Contributions towards the project provided by Canada and YDC, have materially reduced the LCOE to within or below 8 to 10 cents per kilowatt hour levelized cost target range. As noted, such costs are well within the range of current B.C. hydro development project costs to ratepayers." 10:09

So in terms of -- in terms of comparing it to similar projects in the case of B.C. Hydro, do you have any information with respect to a comparison between the YEC's base operating costs per customer versus B.C. Hydro's base

operating costs per customer?

A. MR. OSLER: We're talking here about the -- just so we get the comparison correct, the comparison in the answer is relating to the -- what B.C. Hydro pays IPPs to provide green energy, and the reference to YUB-27 (c) is a more updated reference to the same information.

The question, as I understand it, was not relating to what does B.C. Hydro pay to get green energy, but how much do major industrial customers in British Columbia pay compared to ones in the Yukon. Is that -- did I hear you correctly? 10:10

Q. Well, the comparison is made -- I think part of what this answer says to me is you're saying that 8 to 10 cents per kilowatt hour is reasonable because that's what B.C. pays for green energy. I think that was pretty clear in the answer.

I'm following up with trying to find out if the basic cost per customer for hydro is also similar so that there's the same gap between what's normal and what they're paying for green. That's -- and if you don't think that 10:11 that's relevant, I'm happy to hear why not.

A. MR. OSLER: Well, rather than debate that, let me see if I can get you an answer to the question. I can't give you a strict numerical comparison, but I can give you the following that are pretty important. Major

industrial customers south in southern Canada are served by utilities that are connected generally to the grid, North American grid, and their rate structures, therefore, are radically lower than anything in the Yukon because they don't have a whole bunch of issues that we have, both in terms of scale, in terms of ability to sell surplus, in order to -- buying power if they need to from other sources, et cetera.

B.C. is in the lower end of the range of utilities, along with Manitoba, Québec, because they have a large base of hydro. They call them heritage assets. And 10:12
the government has directed in B.C. that the heritage assets will continue to be provided to the customers at cost but that new assets, of course, will have to be paid for too, which is not that radical an idea despite all the politics around it.

And industrial customers in British Columbia get the benefit of the heritage assets in their rates as well as the two-part rates, what they call stepped rates there, for charging them incremental costs on the margin for the upper level, the top 10 percent. I think in the Yukon we 10:12
developed that concept in the mid '90s. They developed it in British Columbia about ten years later.

So their basic cost, being a large customer in British Columbia, is a lot lower, not because the incremental costs are 10 or 11 cents but because the heritage costs

constitute the bulk of their costs, and they're just a lot lower than here.

Yukon is a lot lower than other places in the north because it has heritage costs developed -- through earlier mine developments, Whitehorse, Aishihik, and Mayo. But we were trying to get, through this policy approach, the Government of Canada to give Yukoners the same basic cost range for new incremental power through government grant as British Columbians had in British Columbia. That was the essence of the policy proposal. 10:13

Q. Thank you.

In UCG No. 5 we were asking about a comparison of the capital costs per megawatt hour of hydro generation versus the capital cost for a megawatt of diesel generation unit. First your response is it's not meaningful, and in the second you gave us an estimate based on a prior assessment. I think something in the order of one -- I can't remember now. You did give us an estimate in the revised. It's not important for the purpose of this question.

I just wanted to explore with you a little 10:14
more why it wouldn't be relevant, and I think it starts with -- and I think this is in the revised answer, it has to do with the fuel costs as being a major difference between the two. Can you perhaps give me more of an answer as to why that type of comparison is not relevant?

A. MR. OSLER: The question you're looking for, the answer is on page 5 of the revised, lines 14 to 18, just so that it's on the record in terms of what we came back with.

The fundamental point that -- as to relevance is that if you're looking at the suite of options to supply energy versus capacity, you look at a string of options, which diesel is at one extreme, and you look at the capital costs, you look at their operating costs. And if you had a perfect set of choices, a large enough market, et cetera, you would say in principle "I want to supply my peak energy" meaning in an annual sense energy that's -- I think in Ontario we used to define it as 10 percent to 15 percent capacity factor or load factor over the year for the piece of equipment. It wasn't used that much, but it was used during peaks or emergencies. The ideal characteristics for that type of equipment is a low capital cost and a high operating cost because you usually spend an awful lot of money if you try to make the equipment more efficient. 10:15

So diesel, gas, things like that get used, or used to get used, for meeting those needs. But if I've got the option to develop something that could be used for a base load, 60, 70 percent capacity factor or better, at least over 45 percent, over the year, and I can make use of all of that capital efficiently over the year, then I can probably afford 10:16

to spend the capital as long as I've got a long life to that equipment. And in that case my operating costs are quite low, but my capital is very high.

We were talking in our application about Mayo B to serve a base load energy type of requirement, not a peaking requirement. So the whole focus of our analysis was on displacing diesel energy costs, not diesel capital costs. We didn't even take into account the capital costs of the diesel we were talking about. The 26 cents, there's nothing in it for capital for diesel because it was a small number, 10:17
it wasn't really the focus of our attention. We're replacing that diesel with a very capital expensive piece of equipment and we want to find out if it's worth it.

We know the capital cost per kilowatt hour or megawatt hour is astronomically higher than it would be for diesel by definition. The diesel cost, though, you don't assess it in terms of 10 million kilowatt hours or something. You don't assess it based on the capital, you assess it on the fuel and the operating costs you're going to have to incur, and that's the only point we were trying to make. 10:17

We're dealing with lots of different people talking about this stuff. That type of comparison can get people thinking who don't have the time to sit and think through this stuff, you know, holy mackerel, what is Yukon Energy doing? You could buy this much cheaper.

Anybody in this room knows what we're doing and we all need help trying to get through to other people that aren't in this room what it is, and we just didn't think the capital cost comparison was very helpful in that regard.

Q. Thank you very much.

MR. BUONAGURO: Sorry, sir. Was the break at 10:30?

THE CHAIR: Yes, if that's fine.

Q. MR. BUONAGURO: In UCG No. 20 on page 2, line 6 to 7. So the question -- this is at part B. So the question at part (b) was: 10:19

> "Please provide illustrations from other jurisdictions where this method of mitigation has been used in the past."

And it related to a quote from the application which talked about -- specifically about the unit costs ceiling target. And the response was:

> "The Yukon experience is the relevant precedent. YEC is not aware of similar recent practice in other jurisdictions." 10:19

I think maybe the answer isn't what we expected, and it's a function of how we framed it, so I apologize for that.

Can you tell me whether YEC is aware of any

other jurisdictions where the government has stepped in to subsidize projects in order to mitigate impacts on ratepayers? So in a more general sense where the relevant provincial or the federal government has stepped in to provide this level of funding in order to mitigate rate impact.

A. MR. OSLER: Well, in a general sense I'm not -- to make the comparison useful, it would have to be for new development as distinct from general subsidy or assistance, such as equalisation and things like that. 10:20

So I'm assuming your question is relating to has the Government of Canada, for example, stepped to the plate to really make a major difference to the feasibility of a new capital intensive development to the type we're talking about here.

Recently I'm not up on it, other than whatever they're doing through green infrastructure proposals, and we mentioned yesterday that they're looking at funding contribution to the transmission line in northwestern B.C., but in my home province of Manitoba, the entire northern 10:20 **development of hydro in Manitoba is a directly result of the federal government stepping up and purchasing, paying for, and owning the HBDC transmission which was pioneering technology in that era in the '60s and leasing it back to Manitoba Hydro in what could only be called very generous**

long-term terms such that the ratepayers didn't have to pay for much of it in the near term and it eventually got paid for in the long run. That development would never have occurred without Manitoba getting the benefit of the federal contribution. I think there was a nuclear development in New Brunswick that was similar and probably in Québec.

So when I was much younger, these things were more prevalent than I've noticed more recently, but they have been done before and they've been critical to the ability to develop a new level of resource development. 10:21

Q. Thank you for that. Yesterday we were talking a bit about -- it came up in terms of our discussion about mine loads and if Carmacks wasn't in, there might be somebody else. And at the transcript yesterday at 164 there was a discussion about YEC talking to several mines --

A. MR. MORRISON: Yes.

Q. -- on an ongoing basis trying to determine whether there's going to be future load, presumably. I would like to know, and this relates to -- in terms of -- the terms of reference from the Minister. One of the things that we're 10:22 looking at is risks and, in particular, changes to general economic market or financial conditions. In dealing with the prospect of mine loads, are you able to give us any comment on the current economic outlook for mining operations in the Yukon? Is that something that you can --

A. MR. MORRISON: Well, that's not something that I'm particularly qualified to do. I can give, anecdotally, that there seems to be a relatively high level of mining activity.

I was at the annual Cordilleran Roundup in Vancouver. There seems to be great excitement. There's certainly a number of mining customers that are in and out of our office from time to time, none of which are, I would classify, in a stage that we would be seriously talking to them about providing load, but who keep telling us that, you know, they're going to advance their projects and they're going to require load. 10:23

You know, this is a big part of the conundrum and the question that we have, you know, and Mayo B is a really good example of that. You know, we have -- you know, there's a very small jurisdiction, and as we've talked about earlier, you know, we're not connected to a southern grid. We don't have that luxury of saying "okay, well, we don't really have to worry because we can always just -- you know, we can buy ourselves time and we can buy ourselves an option of saying, well, we'll just buy power out of the grid." 10:24

This is a real -- this is a very, very, very difficult balancing act of trying to judge when and how we are going to supply load growth in the territory, not just -- not just from mining customers but from all kinds of

customers.

You know, we look at in addition to the industrial development side of the equation, we spend quite a bit of time looking at what the Yukon government is doing, what the City of Whitehorse is doing, where we think private development is going.

To just give you an example, I mean, the lower bench in Porter Creek is supposed to have several thousand residents in there. Well, is it going to go ahead? Is it not going to go ahead? When's it going to go ahead? How 10:24
quickly when they make those lots available are they going to develop those lots? When are we going to get customers?

Our friends at Yukon Electric have the same dilemma. They're monitoring these things the same time as we are. You know, we sit kind of right on the edge because we don't have a big surplus and, as you've heard, we have virtually no surplus anymore. We're building Mayo B. We're very clear in our application Mayo B is only the start. There are other initiatives that we've got going, but when is something like, you know, Underworld or Victoria Gold or 10:25
Northern Free Gold or -- there's numerous other mining projects out there. When are they going to get serious? We tell them to stay in touch with us because we need long lead times.

So trying to develop another project, where is

the economics? Can we balance that? Do we have a customer? Do we not have a customer? But the downside is, as very clearly outlined here, when we look at that infamous Table 25 -- or YUB-25, you know, if we're not exactly balanced and can actually develop projects, renewable projects, to meet loads going forward at exactly that time, you know, 15, $20 million a year in diesel, really easy to happen, really simple to happen.

And so this whole issue of trying to keep ahold of that is what we try to spend a lot of time with. We don't look at, you know, the industry as a whole, how vibrant is it, but we try to look at where are the possibilities of customers that are going to impact us. 10:26

You look out there, and we've been told Carmacks Copper Group has another property called Casino, and Casino is 150 megawatt load. 150 megawatts. Twice what we have in hydro right now. Now, we don't have any ability to deal with that, you know, in terms of projects, but, you know, they keep saying they're going forward. Are they going forward? I don't know. Are they ever going to develop the property? I don't know. You know, it's a 10-year, probably 15-year project that they've got in front of them. So we'll keep looking at it and we'll keep trying to figure out how we deal with these things, but right now I would say that the mining activity level that we deal with is as high as it's 10:27

been in the last six or seven years.

A. MR. OSLER: I would just add one thing. One of the things that you look for in these activities is the developments that would go for 20 years or more, like the one he was just talking about, because they will have to -- a development like that is going to be looking very seriously at the options I was just stringing out in terms of energy and how to do them because they've got a long enough time horizon to pay for some capital.

So, you know, you look at those types of developments equivalent to the Faro development earlier a little bit differently than you look at the Mintos or even the Carmacks Coppers, which is consistent with what we said in the resource plan. 10:28

I just note -- I forgot in the answer I had given you earlier about the Manitoba experience. We actually documented it in UCG 20, page 3 of 3. So if anybody is interested, it was in one of the answers. I apologize. I had forgotten that we had given you that.

Q. I apologize for having forgotten. Thank you very much. 10:28

MR. BUONAGURO: That might be a good time to break. I can review what I have left. I think I'm over two-thirds of the way through, so I'm almost done. I thought it might be a good time to break and I can confirm with my client a couple of things.

THE CHAIR: Yes, we can take a break now. Thank you.

(ADJOURNMENT)

THE CHAIR: During the break, the Board has considered the question that was raised by UCG with regards to the O&M costs of the CSTP No. 2, and the Board has decided that these costs are relevant to the terms of reference for this proceeding. However, the Board is of the view that as there are no detailed O&M costs, that is acceptable -- however, the Board is of the view that since there is no O&M costs that are detailed that it is acceptable to the Board that the YEC answer the following question with regard to these costs. 10:57

So the question is: Would YEC reasonably expect the O&M cost for the CSTP Stage 2 to be significantly different than those for the CSTP Stage 1 on a dollar per kilometre line basis; and if there is a significant difference, could you please explain the reasons why you would expect that significant difference.

Does anybody require me to repeat the question? 10:57

A. MR. MORRISON: In a material sense of looking at line costs per kilometre, we can answer, subject to check, that we don't think there should be what they call a material difference, particularly in the next decade or so of the

costs given what we know about the terrain and the nature of the line.

I think people do not totally understand that in the Stage 2 the big part -- a very big part of the costs, close to half, is for the substation at Stewart Crossing, which we -- you know, it's a major substation development in contrast to the proportion of the first Stage 1 budget that went to substation work.

So overall Carmacks-Stewart Stage 2 is not just a question of operating costs per kilometre for a line. 10:59
It's a question of understanding whether the component in the substation would make a big difference to the operating costs. And we can undertake to find out whether we can give you anything useful on that but in the context of something we can find out today as distinct from something more exhaustive. Actually I think the order of magnitude of what you're looking for, if I'm hearing you correctly, is in that type of -- if we can get the answer that useful to you today, it's probably the right type of answer that we can give at this stage in our knowledge. Beyond that, we would have to 10:59
be doing a lot of work to get more refined, and I don't hear from your question that that's what you're after.

THE CHAIR: No. We're looking for orders of magnitude.

A. MR. OSLER: Right. So if we could proceed

on that basis, Mr. Chairman, we'll check with Yukon Energy staff and get back to you after the next break as to whether we have anything more to add to what I said.

THE CHAIR: That's acceptable, if you would take that undertaking.

A. MR. OSLER: Yes.

A. MR. MORRISON: Yes, thanks.

UNDERTAKING - IF THERE IS MORE TO ADD TO THE ANSWER GIVEN IN RELATION TO THE LINE COSTS PER KILOMETRE DISCUSSION, TO ADVISE 10:58

THE CHAIR: You can proceed again, Mr. Buonaguro.

MR. BUONAGURO: Thank you very much.

Q. In response to YUB No. 15 at page 2, line 18, Mr. Morrison is quoted as stating that industrial customers are firm customers. That's all I'm referring to from that undertaking, but if you would like to check, be my guest. And I wanted to just briefly explore with you whether there's any benefits or utility in that scenario where interruptible 11:01 power would be provided to industrial customers at a cheaper rate for certain of their processes; i.e., is there any benefits -- or potential benefits from a scheme where some of their power for certain processes that could be interruptible based on their operating requirements were provided on that

basis?

A. MR. MORRISON: Mr. Chair, I think if we recall back to discussions yesterday and to previous discussions and to the application, it's fairly clear that we don't have interruptible power available. And if we have -- or we have very little available. And if we have very little available, the amount that could be used by an industrial customer would be insignificant. So it's not a question of whether or not we could make that available at a lower cost. We have not made that available, and we don't have the power to make that available to them. 11:02

Q. I see. So are you saying that based on the current generation and the current base load requirements it wouldn't be feasible?

A. MR. MORRISON: Well, what I'm saying, and I think we talked about that yesterday, is based on both what we have available currently and what we have available once Mayo B comes on line, there is not a significant amount of industrial power available -- or a secondary amount of sales available for industrial customers. So we have hardly -- we are already reducing the amount that our existing customers are getting. So I'm not sure where we're going on that. 11:02

A. MR. OSLER: We had the particular rate option for Minto for secondary power that they haven't taken up yet. So if the essence of your question is looking at the

industrial operations as we know them, are there some components of their load that they would be amenable to talking about on an interruptible type of rate to serve the load. The bottom line is that Minto showed us that they had one particular possibility, which they haven't taken up.

Generally speaking, with other mine customers, in my experience elsewhere, bigger operations than here, which means that they probably have more capability to think about this type of stuff, they're not all that keen about it because it tends to interrupt their way of doing business and 11:03
they're more focussed on their way of doing business. But if they're big enough, they'll look for places where heat energy might be safe in terms of interruptible options. But it's not easily done in the mining industry would be a generalised comment, until you get mills maybe. It might help give you some loads.

And again it requires thinking it through, analyzing it. You've got to have your alternative there. You can't interrupt your operations. They're not going to stop the operation because they want to get interrupted. 11:04
Most mining customers I've seen, if you've got interruptible power that's really going to be firm, they would love to have it at a lower rate. As soon as they hear it's going to be interrupted, they don't want it anymore. So you don't really want to get mixed up in that, I don't think.

Q. Thank you very much. This is a little piece of my cross that's left over from -- I think most of this was covered by my friend on behalf of the City of Whitehorse and has to do with costs within the 120 million, and it's a very specific question. When I read through the transcript I wasn't quite sure if there was answered or not, so I'm going to ask it.

The internal YEC staff-related costs associated with the Mayo B project, are they separately tracked and included in the overall $120 million price tag or are they -- or, alternatively, are they just -- are they not 11:05
separately tracked and then you're recovering them as part of your other revenue requirement?

A. MR. MORRISON: Well, the YEC staff costs for all purposes are tracked. So we allocate -- time is allocated to capital, O&M, and projects, so the time allocated and the costs allocated to the Mayo B project from a staffing point of view are separately tracked, yes, and they're allocated to the project based on time allocation.

But let me be clear. There are also provisions for what we call overhead and admin items that 11:06
aren't -- specifically overhead that isn't a separate tracking in a sense. As you can see here, there's a percentage that's assigned to ES&G as well.

Q. I see.

A. MR. OSLER: Just to answer your question

about is it in the budget, the answer is yes too, that there are estimates in the budget under -- there are actual costs to date in planning. There are estimates under owners' costs that's distinct from Kiewit costs and contractor cost during construction for the amount of staff time as well as ES&G percentage applied to all costs.

Q. Okay.

A. MR. OSLER: So they're tracked and it's in the budget.

Q. Okay. I'm going to struggle through this. So does that include time that's been spent to date? 11:07

A. MR. MORRISON: Yes.

Q. And for that internal -- for that -- for those internal costs which are being allocated to the project, my understanding would be that the salaries, for example, for those people, are already being recovered through rates, are they not?

A. MR. MORRISON: Well, there's two issues here. One is yes, those salaries are being recovered through rates. People's time that's allocated to capital projects is recovered through the capital project, right, and that's exactly how this is dealt with as well. 11:07

A. MR. OSLER: If you're looking at a GRA, the staff's salary costs are all allocated out of their labour costs. They're allocated out to different budgets in doing

the GRA. At a very high level they're allocated between operation and capital, and capital would include deferred costs.

So work to date that was budgeted and planned would have been in the last GRA part of those deferred costs that we all talked about. Probably a small item, but they would be in there, which means that the staff salary costs that you assumed are all in the budget being paid are all actually being allocated out to capital operation, et cetera in that year and they probably reflect fairly what was going on at that time period relative to what we're talking about today. Those costs will then get recovered later on as part of capital and they'll be charged out over the history of the project. 11:08

So it doesn't give you the opportunity to play games in the sense of double count. There can be variances between what you expected and what took place, yes, on all accounts, but it is -- 100 percent has to be allocated somewhere again, not I get to get 150.

Q. Thank you. That helps quite a bit. So my understanding is that explicit in the general rate application, which provides rates, your staff -- internal staff costs are split between OM&A and capital, and then within capital, they're split between capital for the year and deferred capital, and as long as the split year to year is generally the same, the 11:09

amount of deferred salary -- sorry, the amount of salary, which is attributed to capital, which is deferred, is about the same year over year, you're not over or undercollecting with respect to having done this project?

A. MR. OSLER: Or as long as you have a test year and they're similar to what was expected as with all other elements of forecasting, it's okay. If you don't have a rate case for a long, long time period, you're going to get discrepancies all over the place -- this will be one of them -- if the capital spending goes through a big surge or a big withdrawal, but if you have rate cases relatively frequently, this is not a big issue. 11:09

Q. I see. So, for example, it would be a big problem if in your 2009 rate case you had no deferred -- you had no deferred capital projects and therefore no salaries attributable to deferred capital projects, but that's not the case. You had a level of deferred capital projects which had salary attributed to it?

A. MR. OSLER: Which was quite material, if you remember. 11:10

Q. I don't remember exactly. Thank you very much for the answer.

I see my cross coming to an abrupt halt, so I just want to make sure I haven't missed anything.

Well, it appears that I actually cut some

stuff during the break and that's stopped it. Thank you very much. That concludes my cross-examination.

THE CHAIR: Thank you very much. So we'll proceed to Yukon Conservation Society. We'll just take a few minutes to allow people to displace themselves.

We'll just get your nameplates, and then once you signal to me that you're ready to go, I'll let you proceed.

MS. WRIGHT CROSS-EXAMINES THE PANEL:

MS. WRIGHT: Okay. Can you hear me? 11:13

THE CHAIR: Yes. You can proceed, Ms. Wright. You may want to introduce yourself.

MS. WRIGHT: Okay. I'm Sally Wright from the Yukon Conservation Society.

MR. PINARD: And I'm J.P. Pinard from the Yukon Conservation Society.

MS. WRIGHT: We're going to share the mic. We're both going to be asking questions. We're just going to start off just to clear the air before we start our questions about this application. 11:14

YCS notes that in YEC's opening statement on page 2, YEC takes issue with some alleged statements that are being attributed to YCS and others, and YCS would like to know who these others are that we are being -- and I just wanted to have that clarification.

A. MR. MORRISON: Well, Mr. Chair, all I would say in that regard is that it's a polite terminology. There's been news reports of other people saying -- or raising the issue, so I'll leave it at that.

Q. Okay. There are some phrases in quotation marks. YCS would like YEC to provide the sources of these quoted phrases that are being attributed to YCS. And YCS would also like to see the whole article so we can see the context in which these short quoted phrases are being used in.

A. MR. MORRISON: Is that a question, Mr. Chair? 11:15

THE CHAIR: Maybe you could rephrase that to clarify that that's a question.

MS. WRIGHT: Yes. I would like to know where the source of these quotes are.

THE CHAIR: Can you identify the quotes, the source of the quotes or the document? Are you referring to the opening statement?

MS. WRIGHT: Sorry. It's on page 2.

THE CHAIR: Of the opening statement.

MS. WRIGHT: Yes. On the opening 11:15 statement, sorry. And at the bottom of the page.

THE CHAIR: Just for people's information, that's Exhibit B8.

MS. WRIGHT: Oh, sorry. I could read the whole passage? Would you like me to read the whole passage

or just the --
THE CHAIR: I think it would be useful to read the passage or the relevant passages, whatever you think --
Q. MS. WRIGHT: Sure. It said:
"In this regard YCS and others have suggested that Yukon Energy is sidestepping the regulatory process --"
This is in quotes,
"-- dodging the regulators", 11:16
in quotes,
"and placing undue pressure on the YUB to 'rubberstamp' this project."
THE CHAIR: So could you ask -- rephrase -- what is the question relating to that quote.
MS. WRIGHT: I would like the specific sources of these quoted statements.
THE CHAIR: Okay, thank you.
A. MR. MORRISON: Well, we'll certainly have a look and if they are in fact quotes, we'll provide them. 11:16
THE CHAIR: So that's an undertaking?
A. MR. MORRISON: Sure, yes.
MS. WRIGHT: Okay.
A. MR. MORRISON: I just want to clarify if in fact they are quotes.

MS. WRIGHT: Well, we just assumed since they were in quotations they were actual quotes.

A. MR. MORRISON: Not a good idea to assume, but we'll look at it, Mr. Chair.

MS. WRIGHT: Okay.

UNDERTAKING - TO CONFIRM THAT THE QUOTES ON PAGE 2 OF THE YEC OPENING STATEMENT ARE ACTUAL QUOTES, AND IF SO, TO PROVIDE THE SOURCE THOSE QUOTES THAT ARE BEING ATTRIBUTED TO YCS

11:15

Q. MS. WRIGHT: And just as a clarification, YCS wants the YUB to understand that YCS submitted our concerns in that letter as an active and engaged intervenor trying to be conscientious of our role and responsibility in this process.

So if we look at Exhibit B2. It's the City of Whitehorse 1.5, Table 1 about the Mayo B capital cost estimate breakdown, and I know yesterday there was some clarification on -- that YEC gave, but I just wanted to make sure I heard correctly.

11:18

Could YEC please tell us which budget item which would include the mitigations for fish habitat of these costs?

A. MR. OSLER: They would be included under the construction contractor, et cetera package under owner

contingencies. It's provided for under the 1.25 million. It would be part of that.

Q. Okay, thank you. Could YEC please describe the mitigations which it is proposing to protect or enhance fish habitat and how much is it going to cost?

A. MR. OSLER: The YEC application, YESAB's submission set out primary mitigations being the increase in the minimum flow from Wareham, which is currently 2.8 CMS, increase through 5 CMS in winter, 6 in summer, as well as increase to flows -- minimum flows during rearing season downstream in zone 1, a new level of 11 CMS. That was the primary mitigation in the application. 11:19

YEC also identified the rearing channel option for rearing enhancement, habitat replacement if required, and the YESAB draft screening report has recommended that that particular mitigation measure in addition become part of the project.

Those are the two primary elements dealing with fish and fish habitat mitigation relating to Mayo B.

Q. Okay. And that is for the -- but that is not any possible mitigations that could happen with a further environmental licensing of Mayo Lake; is that correct? 11:20

A. MR. OSLER: It has nothing to do with the Mayo Lake. That is a separate project that would be brought forward after the Mayo B and the YESAB process is concluded

and the current studies that are planned for this summer have been concluded.

Q. Is that included in the environmental at the bottom here, the 1.5 million, environmental licensing of Mayo Lake?

A. MR. OSLER: The 1.5 million is a current budget for the process of -- of establishing permitting for Mayo Lake. It primarily focussed on the studies and regulatory costs. If there were some additional mitigations required as part of that project, they would be addressed in that context and the budget presumably would either have to be amended or adequate to deal with it. It hasn't been broken out. 11:21

The mitigations that have been planned so far for Mayo Lake don't seem to incorporate any big capital expenditures, such as a rearing channel or anything else. They would be more operating mitigation measures over the life of the project, so they'd become part of operations rather than capital. So it wouldn't affect this type of a budget.

Q. Okay. Thank you. And you said the salmon rearing channel is about how much? Sorry. 11:22

A. MR. OSLER: I didn't.

Q. Oh, sorry.

A. MR. OSLER: I said it was included -- it would be accounted for under the owner contingency budgets as

one of the items. In round numbers it's somewhere around $300,000 is the estimate at the moment. It could be a little but less or a little bit more, but it's in that order of magnitude.

Q. Okay, thanks.

MR. PINARD CROSS-EXAMINES THE PANEL:

Q. My series of questions are -- there's two sets of questions here. The first series are on wind, and then the other one will be on the energy production of Mayo B. So I'll start with the wind questions first. 11:23

THE CHAIR: Mr. Pinard, could you just bring your microphone a little bit closer --

MR. PINARD: Sure.

THE CHARI: -- I'm having trouble hearing.

MR. PINARD: Okay.

Q. As a preamble, in Exhibit "A" the Minister cover letter to the Mayo B application --

MS. WRIGHT: A1.

MR. PINARD: A1, is it?

Q. Yes, A1. There's a statement in there that says: (as read) 11:23

> "What if any alternatives to Mayo B might be advisable given reasonable load assumptions and risk assessment?"

So this is the line of thought in my questioning. So my

first question is -- to YEC is: When has YEC begun studying the wind energy potential in the Yukon.

A. MR. OSLER: Well, YEC has been studying the wind energy potential in the Yukon for quite a few years, and I don't have a date, but we have been looking at different wind projects for as long as I've been in the chair I'm in and for a number of years prior to that. So 10, 15 years.

Q. Okay. I believe it was since the early '90s that I'm aware of. In particular, when was the data gathered for Mt. Sumanik? 11:24

A. MR. MORRISON: I think we started Mt. Sumanik about a year or so ago.

Q. The wind measurements?

A. MR. MORRISON: Well, maybe you should be a little more particular in your question. I'm not sure what you're asking me.

Q. When did you start measuring the wind climate on Mt. Sumanik?

A. MR. MORRISON: 2001 to 2002, somewhere in there, my recollection. 11:24

Q. Okay. So has YEC produced a report on the prefeasibility study for Mt. Sumanik?

A. MR. MORRISON: Yes, we have.

Q. And you've completed it?

A. MR. MORRISON: No, we haven't.

Q. Okay. There's Exhibit B2. That's in the consolidated response for everyone. In the section YUB-YEC-1-30 (a), that's page 35 in that whole document, or the 35th page I should say. Lines 4 to 5 it says here that of these -- there are various studies that were done that were being questioned here, and one of those was, it said here, wind at $30,000. And it says also that it was for development of -- "develop long-term monitoring plan and assess results of prefeasibility work completed in 2008."

A. MR. MORRISON: Yes. 11:26

Q. So what was that prefeasibility work for?

A. MR. MORRISON: I'm not sure, -- again maybe you could be clear. Do you want to know what the $30,000 was for, or would you like to know what it was referring to in the study of a prefeasibility?

Q. Yes.

A. MR. MORRISON: Which?

Q. Well, you have it written in this section, but this is part of all these ongoing -- there was a question about these prefeasibility studies that -- 11:26

A. MR. MORRISON: Let me try to be helpful. Mr. Chair. We have been doing wind studies for quite a while. We have an active site, and we've talked about this at previous hearings on Ferry Hill, which is just at Stewart Crossing. So it's a site that's very close to the Mayo

Dawson line and with a connection of the grids will be very close to the interconnected grid.

We, a few years ago, started a project called Mt. Sumanik. We did some work on it. We've been gathering some wind data on Mt. Sumanik. We have a study that was completed. We haven't completed the subsequent work that has to get done on that study, and, you know, that will take, you know, quite some time.

But just as we've talked previously about the various stages of planning for hydro projects or geothermal projects or wind projects, they go through various stages. And the analysis of the site itself, the wind regime on the site, the measurement of wind over a period of years is all part of what we have to do to look at a wind project on Mt. Sumanik or anyplace else. And they go through -- they go through prefeasibility stages, they go through preliminary design stages, they go through feasibility assessments, none of which is a short period of time, none of which is -- all of which are costly maybe is a better way to say it. 11:27

So we're going through a series of steps looking at this project that we have on Mt. Sumanik. We've spent some money on the study. We've spent some money looking at next steps. We will continue to advance that, but it will be some time before we have a project or even a decision on a project whether or not there is one there or 11:28

not, and we will just keep following the steps that we normally follow in the development and assessment of any project.

Q. Okay. Now, with $30,000 being spent on a prefeasibility study, usually when I'm being asked to produce something usually I'm required to produce a report and especially for that amount of money. There must be a report that was completed in 2008.

A. MR. MORRISON: We have -- and as you well know, as everyone well knows, we have a report on Mt. Sumanik, and so let me answer the question that's coming: No, we're not providing it publicly. It's a specific proprietary report on a specific site that ratepayers have paid for and is and will be used for the benefit of ratepayers in the development of a site or the decision not to develop a site, which is not at a stage yet, as I clearly -- as I just indicated, we're not there. 11:29

So we are not prepared to put that information out there at this point to -- for others to look at. It's not a complete assessment of anything. It is one step in the stage. It's commercial -- from my perspective it's commercially valuable information for Yukon Energy, and we will at some point, produce the report. We will, at some point, as we advance this project and come before this Board and make a decision as to whether or not we're going to do 11:29

it -- and if we are, this Board will see, as will everyone else, see that report, but we are not prepared to release it at this point in time.

Q. Okay. Well, let's go back to the letter that Minister Horne had written. It asks here to look at alternatives to Mayo B and therefore we see Mt. Sumanik as being an alternative to the Mayo B, and we understand that you've produced a prefeasibility report. So how can we look at any alternatives of Mayo B if you cannot produce that report? You have a report from Mayo B, understandably. You're presenting it in front of us, intervenors and the Board included. 11:30

A. MR. MORRISON: Sure. Mr. Chair, it's fairly simple from our point of view, and it goes back to the points I've been talking about. When we looked at -- and we've got a business case here, and everybody's seen the numbers, and we've been talking about, you know, what the loads are, when we're going to require additional capacity on the system, and including, in the case of Mayo B, additional energy on the system, and that's 2012. 11:31

And from our perspective, and I don't see how you look at it any other way, the only project that was ready to advance was Mayo B. So when -- let's look at the example when we were made aware that there were Federal funds available to apply for, in terms of a green energy project

that could be advanced and built and completed in the time period basically, you know, mid 2009 to 2012, the only project that is in a go-forward ready stage is Mayo B.

Wind is not in that same stage. It's not -- this is not a debate about whether it's wind or Mayo B. It's about what's available and what can be built, and we do not have the level of information on wind that we would -- that would be required in order to advance a project and be able to sit in front of this Board and justify a project that we are going to spend significant ratepayer dollars on. 11:32

So it's not a -- this isn't an argument about is it Mt. Sumanik or is it Mayo B. It's simply, from our point of view, what we can advance based on what we were -- had shelf ready, and that was Mayo B.

So even if we wanted to build wind today, even if that was what we were advancing, we don't have enough information. We haven't completed the steps in the process as you would require us to do, and we can't advance it.

Now, that doesn't mean to say that we're not advancing wind, and we've talked to you at length about the 11:33 various options that we have trying to meet future load growth in this territory. And we've talked specifically about wind. We've talked specifically about Atlin, Marsh, and Gladstone, and we all again know that we've spent a considerable amount of money looking at geothermal options

because we need a basket, and we need have these options available to us to look at these varying scenarios that are going to come forward in terms of new load growth. So what can we build, when can we build it; it's all part of that same assessment. What do we have ready today to meet the requirements of today and tomorrow?

So this isn't a debate, in our mind, about wind or not wind. Wind is part of the options. Wind, as we have told many people, and including the Conservation Society, it is part of the package. We'll assess it, and it's still got to have the economics, and it's still got to meet all the tests that every other project does. We need to gather the information. When we have the information, we'll make decisions and advance the projects.

11:34

Q. There was a wind farm that was just recently completed about 1600 kilometres at the other end of the Alaska highway here, and they completed it within two years. That wind farm was built at a cost of about $2 million per megawatt, and here we assume that we would probably be looking at somewhere around $4 million per megawatt to build a wind farm on Sumanik. Now, would you think that that is an economic -- a fair estimate on our part?

11:34

A. MR. MORRISON: Well, Mr. Chairman, we don't make economic assessment based on that kind of information. I would like you to think back to the answer that Mr. Osler

gave our friends from the Utilities Consumer Group a few minutes ago. You cannot assess -- you cannot assess options, energy options, based on what it cost per megawatt to buy it. Because if that was the case, we would buy diesel. Diesel is cheaper than anything on a per megawatt cost of installed capacity. That's not how we make decisions.

We don't line them all up and say what's the cheapest to build and then make a decision. That's comparing apples and oranges and grapes and watermelons. That's not how you do it. 11:35

So you look at the capital cost; you look at the operating cost; you look at the output. So all of these things do not tell us "Well, somebody down the road built a wind farm for $2 million a megawatt so we should go out and do that." That's not how we do things, and nobody, doing proper analysis and proper study of things, looks at it that way.

So what's the output of a wind farm compared to a hydro project? Well, when we line them all up and look at what the best options are, we line them up and say what's 11:36 the best for the ratepayer, what fits the system, what's the requirements in terms of dispatchable load or non-dispatchable load, can we deal with -- do we have an operability issue? What in terms of a final cost of a kilowatt hour is the -- what's the final cost in terms -- in

kilowatt hour costs for ratepayers? How is that going to -- is it going to impact rates or not impact rates? How many gigawatt hours of output do we get from a project?

Do we want to use diesel? No. So the first step is we're not looking at using diesel, but we're looking at other options. I'm just using that illustratively to say when we line all these things up capital cost is one part, operating cost is another part, output is another part, and then we run the economics.

So we certainly don't go out and say "Well, somebody built a hydro project in B.C. for a million dollars a megawatt so we should be able to do that." You have to look at the site, you have to look at the conditions, and you have to assess all of those costs and when we get all those costs we can go forward. 11:37

That's the point I'm trying to make about the other options that we have in front of us. There are no other options that we can answer all of those questions for you and YESAB and the government and the Water Board. We can't answer all of those questions, with the exception of Mayo B. 11:37

MR. PINARD: Mr. Chair, I think it would be in the best interest of ratepayers that YEC produce this report because I believe it does exist, and I believe it has been on the table for a couple of years, and it would be

helpful for us to understand whether Mayo B is prudent at this point. And that's not a question.

A. MR. MORRISON: Mr. Chair, let me be clear about one part of that statement. We have not had the Mt. Sumanik report for a couple of years. We got the Mt. Sumanik report in the latter part of 2009, and it might even have been 2010. So we have not had that for a couple of years.

MR. PINARD: Somehow I don't believe that.

A. MR. MORRISON: Well, Mr. Chair -- 11:38

MS. WRIGHT: Well, he's sworn.

Q. MR. PINARD: In Exhibit 2, which is a consolidated response, YUB-YEC-1-30 (a), that's page 496 in the document, there's line 17 to 19. It says: (as read)

> "Where a new turbine were to be installed, for example under these load conditions, the net contribution to the grid would be basically zero."

And that's talking about wind turbines. And then the next statement on lines 29 to 31 on the same page -- 11:39

THE CHAIR: Sorry, Mr. Pinard, could you just repeat the reference number, please?

MR. PINARD: Sure. YUB-YEC-1-30 (a) in Exhibit B.

THE CHAIR: Which page?

MS. WRIGHT: B2.
MR. PINARD: Yes, Exhibit B2, consolidated responses.
MR. LANDRY: What page?
MS. WRIGHT: 30 (a).
MR. PINARD: YUB-YEC-1-30 (a).
A. MR. MORRISON: What page?
THE CHAIR: What page on that?
MR. PINARD: Well, it's the 496th page in the PDF file. 11:40
A. MR. MORRISON: What page of the exhibit is the question.
THE CHAIR: Or line number. Oh, they're different, sorry.
UNIDENTIFIED SPEAKER: 6 of 7.
UNIDENTIFIED SPEAKER: What line?
MR. PINARD: Line 17 to 19.
A. MR. OSLER: It's been revised. So it's probably lines 26 to 33. I was trying to figure out where wind was coming up in this question. Okay. 11:40
Q. MR. PINARD: So is it the same sentence here where were -- I'll quote it here.
A. MR. OSLER: "Were a new wind turbine to be installed," is that the one --
Q. Yes.

A. MR. OSLER: In the revised it's lines 27, following, on page 6 of 8.

Q. Okay.

A. MR. OSLER: Thank you.

Q. Okay, so we understand. It says: (as read)

"Were a new wind turbine to be installed the net contribution to the grid would be basically zero."

And then there's a next statement, which is probably about ten lines further or probably in the next page now -- 11:41

A. MR. OSLER: Mr. Pinard, just to -- the record shows that -- the sentence before that quote was assuming that we had surplus hydro, so we didn't displace --

Q. That's right.

A. MR. OSLER: -- diesel --

Q. That's right.

A. MR. OSLER: -- if you added wind, then you would have a net effect of zero. It's a very specific sentence for a very specific purpose. It --

Q. Thank you for clarifying that. 11:41

A. MR. OSLER: -- doesn't go much further than that.

Q. Okay. About ten lines further there's a statement there that says: (as read)

"However, due to changes that occur at

other hydro plants, at this load level the net contribution of Mayo B is 28.2 gigawatt hours."

So that -- obviously this is under the 468 gigawatt hour load.

Now, then we looked -- well, let's look at Exhibit B2 again, and in YUB-YEC-1-25 there's -- that's the Attachment 1 actually. That's that table that you've been referring to. And in there there's Fish Lake and wind. And in there you see that there's a line there that shows Fish Lake and wind as being a contribution to the grid. 11:42

Now, my question is that would the Fish Lake and wind not be considered a net contribution to the grid?

A. MR. OSLER: **Okay.**

Q. Under the 468 gigawatt hour load level?

A. MR. OSLER: **The answer is yes, and they are shown in that analysis to be doing that. So we're mixing examples used to demonstrate a concept with case studies done to look at the effects of a very specific project at a very specific load level, okay? To cut to the chase, any project that YEC was to assess today would go through a similar assessment process of looking at the effect of adding that project to these integrated grids and seeing what effect it had on net generation of diesel, whether it was wind or whether it was geothermal or whether it was biomass or any** 11:43

other project option.

Nowadays, after we've developed the models that are here and we have the integrated grid, the same analysis would be conducted for those options.

So it's not enough to have an engineer go out and study and $30,000 is not big in the lexicon of feasibility studies, to go out and study a particular option or something. That's just an early stage in the exercise. We've had tons of studies on Mayo B over the year. We still have to go back to square one, have people go through 11:44
prefeasibility, go through other steps and we've still been learning as we get into the home stretch, other things, and we've spent upwards of $8 million as of the end of last fiscal year doing that before we prepared this application.

So we developed these models or had them developed so we could start to look intelligently at the net contribution, not the gross contribution, of new projects to displace diesel, if that's what we're trying to achieve.

So if wind is going to be assessed, it will be going through the same power benefits model that the Mayo B 11:45
has gone through. If we had an assessment of any one of those options and we assume 468 kilowatt hours of load, they are not dealing with a power system that's in surplus hydro anymore. That's our fundamental testimony. It's a power system that's probably requiring $15 million of diesel

generation unless we find some other alternatives. That's the testimony in 25(b), WAF 25(b).

So it's not a comparison to the situation that exists when we had a surplus, it's a new world with new realities. Any one of the projects that somebody wants to put forward for renewable energy will presumably do something to dent that diesel. The economics question is how effective is it?

The engineering and feasibility questions that come with pure gas to put in a Part 3 Application go way beyond that. Where is your preliminary engineering this Board wants to know. Where is your insurance that you've got some costs? The Board of Directors of YEC wouldn't even be treating a project as a potential protect until it had gone through some tests at the level that you're studies are looking at. Then it's got to go through all the other check lists that are in the Resource Plan. 11:45

So I respectfully suggest the issue is not could wind make an contribution. That's easy, yes. The question is where are we in the process, which Mr. Morrison is trying to explain, and how many more years is it going to be before wind is in the same league, in terms of YEC's understanding of it, rime ice, testing of wind at the right heights, engineering studies, system studies. Is it one year, two years, three years, or five years? It's somewhere 11:46

probably in that range, but that's the relevant question. It isn't ready today, he said that much, and $30,000 tells me in five seconds it's not ready, if that's the study we're all worrying about.

It's got nothing to do with where we're at today in terms of feasible options to look at in comparison to this project which has the funding in place, has the feasibility studies in place, has a contractor in place, and is rushing like mad to get the job done on time to make a benefit by 2012. 11:47

So, you know, if we can discuss what -- when wind might be ready in the same league, it might be interesting evidence for the Board.

Q. In Exhibit B2 again, this time it's YUB-YEC-1-41, and that's on page 528. I don't know what that is in that section. Okay. It's page 2 of 2 in YUB-YEC-1-41. It states here that:

> "The main purpose or indeed for Mayo B project through to 2019 as well as beyond that date as described in the application is to provide a source of economical renewable energy to supplant base load diesel energy generation requirements rather than to provide additional generating capacity for

11:48

reliability purposes."

And that's in -- that's in peak winter load. Now, here are you stating that Mayo B is perhaps not reliable for winter peaking?

A. MR. OSLER: No, we're certainly not saying that. We're just saying we haven't included in the economics the 10 megawatts of added reliability at winter peak that Mayo B will provide. We just haven't bothered to do the cost assessment of it because it would involve getting into the economics of deferral of diesel plant or other options, and we just -- we didn't need to get into that to make the case so we didn't get into it. The evidence in here says it adds 10 megawatts of reliable peak capacity in the middle of winter.

11:49

Q. So you would say that -- okay. So would you say then that the diesels are taking care of the peak loads, however, if Mayo B -- according to your economics?

A. MR. OSLER: Well, we're saying all the way through this that Yukon Energy can supply the energy in the territory and everybody can keep the lights on and we've got lots of diesels to do it, so don't get panicky, it just takes money and greenhouse gases, but if you want to replace that diesel, it takes the steps we're going through.

11:49

If we build Mayo B, it will add its benefit. The reason for doing it is to displace diesel energy, but it

will give you 10 megawatts of added capacity in the middle of winter. We just haven't gone through the exercise of trying to give a dollar value to that extra 10 megawatts of winter peak capacity on top of all the other values. That's all it said.

Q. Okay. My next line of questioning is regarding Mayo B energy generation. If we can turn to -- in Exhibit B2 turn to YUB-YEC-1-37(f). This is probably the answer to (f). So that would be probably on page 5 of 8.

Now, the quote here is: 11:51

> "There is no material specific maximum seasonal output limits on Mayo B outside of installed capacity. As required at any time throughout the year, the combined plant will have the ability to generate approximately 15 megawatt on a regular basis. The output will be below this level."

It says here in bracket "there is not enough water in the system to sustain this output throughout the 11:51 year."

So my question is: How long can Mayo A and B produce 15 megawatts? Is it an hour? A day? A week?

A. MR. OSLER: The graph on the next page demonstrates the seasonality of the expected output of the

two plants at a 468 gigawatt load for the system by -- it's based on a weekly model, which is the power benefits model, and the surge during May/June is just the effects of the freshet. It's based on long-term water averages. That's the best information that exists of sort of variability through the year.

I don't have at my fingertips an analysis as to how variability could work on a daily basis, but when they tell me that they can deal with the peak, that means that they've got the capability to vary the power output during the day to do that. 11:53

Essentially the plant can produce upwards, given the water flow if there was adequate load, the evidence is roughly 41 million kilowatt hours a year, if my memory is correct, if there's no load issue on a long-term average basis.

Q. That's both plants, A and B?

A. MR. OSLER: No, that's the net contribution of B. I would have to get someone to assist me on what the combination of the two would be. 11:53

So --

Q. But that's in the long term?

A. MR. OSLER: That's just a question of saying if load is not an issue, if we were connected to a grid or something and we're just seeing what this plant could

provide in terms of its capability. It's sort of like saying with wind. If you had lots of capability in an interconnected grid, what could the wind farm do? Is it 20 percent? Is it 25 percent? Is it 30 percent? What does rime icing do. If you can sell the stuff anyway, and you got no issue there, that's the question.

What Mayo B is letting us all know is that's not the only question we got to answer. We've also got to deal with how much of that can I use at different loads and if the load isn't 720 million kilowatt hours a year or 11:54
something, which is what the long-term number would have to be to get the maximum of it, it's a little bit less than we actually manage to get out of the facility, again, whether it's wind or anything else.

So in terms of your question, what could we get from Mayo B, to put it at that sort of high level that everybody likes to talk about, I would look at the long term, we've got no load constrictions and talk about what is the water availability. That would be sort of a side-by-side comparison of what is wind like somewhat. 11:54

The question of whether you can realize all that takes a power benefit model and an assessment of load conditions before you can go any further.

Q. Well, looking at that figure that you've referred me to, is this Mayo A -- you would have to add Mayo A on top of Mayo

B in this graph, so you would probably be looking at 11 total, 11 megawatts total average; is that correct?

A. MR. OSLER: Well, it's showing you about --

Q. In the winter?

A. MR. OSLER: In winter it's showing the Mayo A at the bottom just under 2.

Q. Yeah.

A. MR. OSLER: Mayo B upwards of 10.

Q. Okay. So this is not cumulative?

A. MR. OSLER: And secondly, it's averaging over a week. It's not a question of what it can do at the peak period of time when they want to use it during the day. As I say, it's got its limitations because it's a weekly average, but you can deduce from it what you can. 11:55

Q. Okay. So are you saying that -- say, for example, Mayo B in January you're producing an average of what looks like to be about 9 and a half megawatts. Is that something that's actually -- can you actually be sustained throughout the whole month of January?

A. MR. OSLER: Well, probably not. It probably is peaking during the day and pulling off a bit during the night to get the peak capability out of it, but it's very close to the 10 megawatts. It's pretty sustained by comparison to most places. You get to November, it's obviously very sustained. 11:56

But the swing -- I would assume in the modelling that the swing is much greater with the A plant, but again, I would have to go and talk to people about what's behind the detailing.

Q. Okay. Is this -- because it's not producing at the full capacity, it can't produce to full capacity, is this related to the capacity -- the flow capacity of Wareham Lake?

A. MR. OSLER: I'm not sure what you mean by the question.

Q. Are there issues of Wareham Lake draining too quickly if you were to sustain, say, a 9 and a half megawatt hours during the month of January? 11:57

A. MR. OSLER: I think that the way in which I would express it is that it's a function of the water upstream of Wareham and the need to sustain over the period of time the assumed minimum flows as well as the water that you've got stored, so it's a water management rather than something to do with anything more technical than that.

You develop your rules to manage the water so that you meet all the ground rules you've got to meet, and some of them in this case are higher minimum flow requirements than we have today so that the rule curves have to specify meeting those minimum requirements that we're saying we're going to meet. So you got to store enough water to -- retain enough water in Mayo Lake upstream, which is 11:57

basically Mayo Lake more than Wareham for that purpose, and make sure you don't release it too soon.

So it would be a water management issue of that nature that I assume is driving the answer. But again, these are averages of a series of water flow years. So the actual way in which it's managed depends each year on the water conditions of that year. This is a number that comes up that's useful for the purposes of this analysis, but an operator would look at it and say, Here is my rules for this particular water situation. If I've got a flood, I've got one situation. I can go a certain way. If I have a drought, I have another situation. I have to be more careful about how soon I release my water. 11:58

And Mayo Lake essentially, if the extra storage was ever -- is developed there, when it's developed there, it becomes an ability to capture the extra flows during high water years ironically and store it so that this gives the ability to flatten out some of the ability to manage the plant here, but it's not -- it's not a question of drought, it's a question of grabbing water that otherwise would have been spilled and storing it so you can smooth it out a bit downstream at the plant. 11:59

Q. In Exhibit B6, this is -- in B6 YUB-YEC-1-30(a) revised, if you can turn to that?

A. MR. OSLER: 30 (a).

MS. WRIGHT: Revised.

Q. Revised, Part (a).

A. MR. OSLER: Do you have a page?

Q. Yes. Let me find it here. Okay. It's page 4 of 8 and it's under YUB-YEC-1-30(a) revised, and that's under -- the answer of section (a). And there's a line number 19 to 20 -- well, actually I'll start before that. The specific Mayo B assumption is used to derive the values above this. It says here: "The maximum Mayo B plant flow of 19 cubic metres per second corresponds to 10.1 megawatt maximum peak." 12:00

Can you explain how long this flow can be maintained, that 19 cubic metres per second out of Wareham Lake?

A. MR. OSLER: Well, I think the explanation we've just been going through was been dealing with exactly that question. The design assumption for the runs that we were talking about a few minutes ago is 19 CMS. So that means that the capability of the plant in the level we're talking about today is in the order of magnitude 10.1 megawatts. That means that's the design feature. The 12:01 **water -- and that was used for the example we were just running through and looking at the week-by-week analysis. So all the comments I just gave you apply to answering that same question.**

Q. Yes. I was trying to -- I guess my other question was:

What was the maximum flow that comes into Wareham Lake during the winter?

A. MR. OSLER: Well, it all depends on the water that's been stored upstream. It's not a question of sort of -- it varies over the cycles of water flows from the lows to the highs and it varies depending on whether you have Mayo Lake extra storage or not, but the model shows you the effects of the average over all that time period. In any one year it's quite different.

Q. Okay. The same exhibit, and this is the same part, 1-30 (a) revised. Now let's go to part (c), which is two pages further. It's page 6 of 8. Okay. In line 7 to 12 on that page, it says: 12:02

> "Mayo generation system comprising of Mayo B and Mayo A, as well as Mayo Lake storage, once completed will be more flexible resources -- one of the more flexible resources on Yukon Energy's system given the annual storage availability but will not be as flexible as Aishihik, which has storage range that is more of a multiyear nature and a larger relative installed capacity, particularly once the Third Turbine is completed." 12:03

Can you explain what you mean by not as flexible?

A. MR. OSLER: It's the point that was being made, I think, in this paragraph, and it's all part of a discussion trying to understand why -- the thing we call net generation, the displacement of diesel, which is talked about at the top of that page, why does it vary so much at different loads compared to the actual gross generation that we get out of Mayo B, which doesn't vary nearly as much, and the people that were working on this were trying to get 12:04
explanations for that. One of the points they're making is that Aishihik in this system is the only place where really we have multiple year storage of any nature. It's quite severely constrained today compared to what it was 10, 15 years ago. Therefore, in that sense if you can store water, you have more flexibility. There's nothing more complicated in the thought process than that.

I mean, wind is the -- wind and running water, running river water, are two of the examples of something that you can't store, so you either got to use it or you lose 12:04
it. A spill, in the case of water, I'm not sure what word you use with wind, but you lose it if you can't use it.

Storage is the thing that if you can find a way to use -- to store the energy, then you can make a bit more flexible when you would like to use it, namely when you

need it. That's all that's being said here, and Aishihik is all that we've got in that sense. Mayo Lake gives us a bit of storage capability, more so than we get upstream of Whitehorse, so the authors here are saying that Mayo is a bit more flexible than other things on the system.

Fish Lake is just -- Fish Lake is just a run of the river, use it or lose it for all practical purposes by comparison. It's not dispatchable.

And so it's not -- nothing much more complicated than that. 12:05

MR. PINARD: Okay. Mr. Chair, I probably have another 45 minutes of questions. Would it be fine if we took a break now and --

THE CHAIR: No, I would rather you just continue -- if you think it's around 45 minutes we'll just continue and delay the lunch for 15 minutes or so unless you need a break.

MR. PINARD: I could use a break.

THE CHAIR: Do you want to recess for five minutes or do you want to take the -- 12:06

MR. PINARD: It's noon.

THE CHAIR: We wouldn't normally break until 12:30.

MR. PINARD: Okay.

THE CHAIR: So what I was thinking, if

you're -- 45 minutes, we would just continue until you finished your presentation, but --

MR. PINARD: Okay, sure. If you want to continue, then we'll do so.

Q. Moving down a little bit down that page, lines 12 to 14, it says here that:

> "The new Mayo B operation, however, will also have higher minimum flow requirements than the currently existing -- than currently exist at Mayo A, which will set new generation priorities from Mayo plant relative to Whitehorse plant under summer low flow conditions in particular."

Can you explain the need for the higher minimum flow and the higher priority over the Whitehorse Dam?

A. MR. OSLER: Again, yes, I can. The explanation here is all trying to get at understanding why the table on the next page shows some reductions at 468 million kilowatt hours a year load when we introduced Mayo B some reductions in the net generation in Whitehorse and Aishihik. That's really a question of asking the model why did it come up with that answer. What did the model have as an instruction that gave you this answer back, and the key is that the model assigns priorities. Non-dispatchable gets

12:06

12:07

dispatched first. The next priority is minimum flow requirements. So if we change the minimum flow requirements at Mayo, which is what we're doing, we're increasing the minimum flow requirements for fish habitat reasons, we're actually making it better for fish downstream of Wareham than would be the case today in terms of minimum flow assurance all the way down through zones 2 and zone 1. If we're going to do that, that means the model is going to assign generation first to Mayo B until it meets those minimum requirements, and it's going to theoretically, in the 12:08
modelling sense, cut back at Whitehorse where it's just as we're spilling some water because we don't have a minimum flow requirement there. It's the next rank up before we get to storage.

And I know that the sentence got revised into the revision because some of us were asking please explain, despite all the flexibility you have in Aishihik, why Whitehorse is the one that's showing the biggest change in the next table. It's gone down 6 million kilowatt hours. And the answer came back: Well, it's very simple. It's the 12:08
minimum flow requirement. 5 and a half of that 6 reduction is summer flows. And if you've got the loads up in the system, it wouldn't be there at all.

And we get back to that flexibility we're all telling you about at Aishihik as being the key thing, that

the load isn't big enough yet to do that. We got to get the load up before the minimum flow issue doesn't surface in the modelling.

So I've answered why we're doing the minimum flow for fish habitat and why the model then takes that and interprets it the way it does. And the net result of all of that is we don't treat that 6 kilowatt hours as a benefit to Mayo B. We take it away because we would have had it anyway. That's the point. It becomes part of that net generation calculation. 12:09

Q. Okay. The next line in that same page, it says:

> "Consequently, most situations on a new integrated system Mayo generation will be dispatched to a full output level in priority to Aishihik and to the extent where there is excess water on the system under some seasonal or annual situation. The spillage will tend to occur at Aishihik while Mayo's generation will remain at its near full potential." 12:10

And my question is: What is Mayo's full generation potential again and in particular what is Mayo A and Mayo B throughout the year under -- and I'm saying here under this 468 gigawatt load?

A. MR. OSLER: And I think we've answered that together back and forth when we asked -- the other questions you gave me with the seasonal flows and everything else. The best answers that are available on discussing 468 million kilowatt hour grid load, Mayo A and Mayo B capability are sort of demonstrated by those answers. At least it's organized order discussion. I'm not sure I can go any further.

Q. So -- okay.

MS. WRIGHT: Sorry. Does that mean it's -- 12:11
the 41.4 gigawatt hours? Is that --

A. MR. OSLER: No. It means that -- well, what it's telling you here is that Mayo B is actually generating 59 million kilowatt hours on Table 1 of the next page, 59 million kilowatt hours of hydro generation. So if I was an IPP trying to sell power to YEC, I'd be saying I've got 59 million kilowatt hours of generation, pay me for it.

Essentially when we go through the whole exercise, we see that the amount of diesel that is displaced is 28 million, 28.2, because the load is what it is. When we 12:11
talk in the study about how we get the number up to a net generation number, it's much higher, you got to get the load up higher. That's what it comes down to. But this plant will be generating in a gross sense a large amount of power. The model is discussing how much it's really getting net to

diesel generation and the numbers that we've all talked about in terms of doing economic analysis have been the net generation numbers, not the gross numbers.

So you're asking me about gross generation capability. The answer is that it tends to be pretty stable by comparison to the net number and it's up around 38 to -- well, in terms of change in gross generation, it's much closer to 36 to 39, 40 gross generation change at Mayo B -- at Mayo plant, as distinct from the net generation change. It's a much higher set of numbers. 12:12

The 41 number we were using a few minutes ago would only occur if you had loads -- grid loads way up, a much higher level than 468.

Q. So while we're on that, I assume we're on the Table 1 on YUB-YEC-1-21 revised?

THE CHAIR: I think it's 1-30 revised. Is that what you said?

MS. WRIGHT: Maybe I'm looking at a different table. I'm looking at the Table 1 on Exhibit B6. It's the Mayo A and Mayo B output. It's the YUB-21 revised. 12:13

A. MR. OSLER: Oh, you've got 21 revised.

MS. WRIGHT: I'm at kind of -- I'll just ask you a couple of --

A. MR. OSLER: Okay.

Q. Have you got it?

A. MR. OSLER: Yes.

Q. YCS finds this table very confusing, probably more to do with us than anything. Now, YCS was under the impression that Mayo B was to contribute 28.2 gigawatt hours per year in the 468 gigawatt hour grid load level scenario.

A. MR. OSLER: Yeah. And if you have available to you from the same exhibit YUB-30 (a), page 7, another table.

Q. Just a second. We'll get this.

A. MR. OSLER: Have you got this? Table 1 at page 7 here. They're both dealing with that 468 million kilowatt hour load, so we're talking apples and apples here. 12:14

Q. Right.

A. MR. OSLER: And this one for me is easier to understand than the one that you started with because it does get a bit confusing.

So this table shows you the different dispatchable generation sources we have on the left-hand side. Whitehorse plant, Aishihik plant, Mayo, and it breaks out Mayo A and Mayo B and diesel for the total. And the total firm generation that we're talking about is 468. That's what we have to meet? 12:15

Q. Right.

A. MR. OSLER: And you have -- the model runs a case with no Mayo B and another case with Mayo B. So

there's two sets of numbers that follow to the right: One is with Mayo B and the other one is with no Mayo B. And there are just two separate model runs for that 468.

And then the difference is in the far right, which is the number that we all end up talking about without necessarily knowing the two columns that come before it. So you'll see in the difference, the diesel difference, there's 28.2, the number you were just asking me about.

Q. Right.

A. MR. OSLER: So it does happen. It's the difference between having to run 65.7 million kilowatt hours without Mayo B versus 37.5 million kilowatt hours with Mayo B. Do you see the difference? No Mayo B, diesel line, 65.7; with Mayo B, diesel line, firm, 37.5. The difference between those two is the 28.2 that we all talk about. That's called net generation in the way we use the words. Okay. 12:15

Now, there's a couple of points that emerge from that. I keep saying it's not a panacea. We haven't gotten rid of all of the diesel. There's still a fair amount of diesel left for anybody that is interested in renewable -- generation. 12:16

Secondly, and the issue that gets confusing, so how much -- is the question, how much comes from Mayo A versus Mayo B and what's going on? Well, they show you this here. Mayo A with no Mayo B is going to give us about 36.1.

Do you see that?

Q. Yes.

A. MR. OSLER: And Whitehorse was going to give us 249.3 and Aishihik was going to give us 116.9 firm. Okay? So you rerun the model, put Mayo B in, what happens? Well, it really doesn't deal with the detail of Mayo A versus Mayo B so somebody has to come along and assess that. But essentially it does deal with Whitehorse, Aishihik, and Mayo. You walk down just at that level, Whitehorse went down a bit. It went down 6 gigawatts. Aishihik went down 2.6 for the 12:17
reasons we were just talking about in the previous few minutes. Mayo went up in a gross sense 36.8. We were metering how much energy we were producing in Mayo as a plant overall. It went up 36.8, but we only displaced 28.2 because of the loss of generation firm, using the model, at Aishihik and at Whitehorse.

If you get down to Mayo A versus Mayo B, the analysts that worked on this say that really we had 59 gigawatt hours of gross generation if we were running a meter at Mayo B and only 13 at Mayo A in the best that their model 12:18
can assess. So you go over to your other table that you started with. All of this analysis was used by the people that developed this table, but it just isn't as clear to me as when you walk it through here. I can actually see what's going on here. That's why we wanted to make sure we got this

table right.

Q. MS. WRIGHT: Okay, thank you.

Q. MR. PINARD: Okay, let's go just before that particular table that you're referring to. That's in -- we're still in 1-30 revised part (c).

A. MR. OSLER: Right.

Q. I have here page 45. Let me find that. Yeah, that's the same page as that Table 1 that you're referring to, page 7 of 8. You have a statement here that says: "To use a Mayo B specific example at 468 gigawatt hour load level", the response to YUB at whatever that thing is, "indicates that absent Mayo B existing Mayo A plant would generate 36 gigawatt hours a year." That's correct? 12:19

A. MR. OSLER: Right.

Q.

> "With Mayo B under the same scenario, the existing plant would generate 13.7 gigawatt hours, that's the Mayo A plant, and the Mayo B would generate 59.2 gigawatt hours for a total of 72.9 hours from the Mayo complex. This is an increase in generation of 36.8 gigawatt hours; however, due to changes that occur at other hydro plant at this load level, the net contribution of 12:19

Mayo B under this load level is 28.2 gigawatt hours."

Here you're stating that Mayo A will produce 13.7 gigawatt hours and Mayo B will produce 28.2 gigawatt hours; is that correct?

A. MR. OSLER: No. No. We just went through it. What it's saying can be understood looking at the table more easily than it can be by looking at the words printed. It's saying that if I was to take a meter out there and meter how much generation we were getting from Mayo B and Mayo A, read the numbers under firm energy for no Mayo B or with Mayo B, and you would say 59.2 gigawatt hours of Mayo B generation would be what you -- the model says you would meter and you would get 13.7 from Mayo A.

So if I was just relying on somebody to report to me what generation did we get from Mayo A and Mayo B, I would get those numbers reported back to me. And if I -- if you didn't have Mayo B I would get a number reported back to me, if the model is right, of 36.1.

12:20

What the power benefits model says is that's not enough information for you to advise this Board as to what the net benefit of this plant is. We've got to go and see whether -- what changed somewhere else in the system.

12:21

So you would have to phone up the -- you would have to look at the Whitehorse meter generation for firm

generation and the Aishihik; and this model predicts that Whitehorse would have went down 6 and Aishihik would have gone down 2.6. I mean, this is all theoretical because it's all model, but that's what it's saying would happen. Therefore I don't get an additional 36.8 gigawatt hours of useful energy out of met Mayo B, even though the meters tell me I got that much more energy out of Mayo B and Mayo A than we had without Mayo B. I have to take off the reductions in the other two plants.

The net generation concept requires you to have a power benefits model that looks at the whole system and sees what's the net result for your diesel generation requirement, not what's the metered output from the plant that you're proposing. 12:22

Q. Okay. Well, in that case why don't we move to -- and in reference to this same table let's look at the Attachment 1 of YUB-YEC-1-25. I want to draw your attention specifically to -- we'll choose year 2013, the column year 2013, and look down the column where it says with Mayo B and no Mayo B and look at the existing hydro generation under those two scenarios. I choose 2013 because it's close to that 648 gigawatt hour load. 12:23

A. MR. OSLER: 468, I think it was.

Q. Yes, 468 -- well, in this case in 2013 we're looking at around 465, I guess.

A. MR. OSLER: Hmm hmm.
Q. I thought that would be the load at that year.
A. MR. OSLER: Right.
Q. Now, it says -- it shows here with Mayo B the existing hydro has 401.6 gigawatt hours of generation capacity, 401.6 under that 2013 column?
A. MR. OSLER: Just a sec. Yeah. Okay. Yeah.
Q. Okay. Now, does that -- that 401.6 with Mayo B, does that include Mayo A? Is that Whitehorse, Aishihik, and Mayo A? 12:24
A. MR. MORRISON: Well, the 401.6 --
Q. Yes?
A. MR. OSLER: -- is existing hydro, it's not Mayo B.
Q. Existing hydro, that's right, but it's under the with Mayo B budget. Existing hydro wouldn't include Mayo B?
A. MR. OSLER: No, it wouldn't include Mayo B.
Q. So in that section it says with Mayo B under -- on the line underneath that it says existing hydro, and when you look under the column 2013 it says 401.6 gigawatt hours. So just for the sake of argument here, if we were to look at -- if we go down a couple of rows it says here no Mayo B and then it says existing hydro and it's the same number, 401.6 -- 12:25

A. MR. OSLER: Correct.

Q. -- gigawatt hours?

A. MR. OSLER: Right.

Q. Could you explain the difference -- why there's no difference between those two?

A. MR. OSLER: Well, because somebody simplified things for the sake of running this model, I assume. At a very simple level they've showed the same number -- even though the more detailed analysis that we were just going through would go through all the differences I've just done, but in preparing the table for the sake of trying to be helpful to people somebody simplified it and showed the same number and then showed the net difference, which is the key difference that's driving the economics, as a Mayo B net difference to the system. Unfortunately in their attempt to be simple, given this stream of conversation, they make it more complicated. There's nothing more I can say it to that. 12:26

The analysis that was prepared in 30 (a), YUB-30 (a), was intended to try and assist people to deal with these types of questions we're just talking about. The analysis in this table is really intended to just make it very clear what are the assumptions that are driving each one of these cases and the load analysis was included at this level of detail, although it would never have been in the basic modelling that we would do. We would just take the 12:26

basic number, the grid load and work from there. We wouldn't put in all this extra detail. If somebody was trying to be helpful for the purposes of the question you're going at right now, it's not helpful, and it's not accurate in the sense of -- we do not have the same level of existing generation with Mayo B as without it for the reasons we just went through. And I can elaborate if you want, but that's about --

Q. Okay. If we go back to Table 1 under the scenario -- that previous table that we were looking at, in the scenario without Mayo B you have firm capacity from Whitehorse, Aishihik, and Mayo, which in this -- without Mayo B Aishihik is 249 gigawatt hours -- sorry. Whitehorse is 249 gigawatt hours, Aishihik is 116 or 117 gigawatt hours, and then Mayo is 36 gigawatt hours, and then you take the total of that, that adds up to about 402 gigawatt hours? 12:27

A. MR. OSLER: Yeah. It comes very close to the 401 -- 400 and whatever you are seeing here. Given that we are slightly lower than the 468, it's not unreasonable that the number they've shown here may well be -- what would be the case for the generation with without Mayo B. Okay? 12:28

So they probably -- hypothetically, as they say, subject to check, probably the existing hydro number we could both agree when I check the two things may be the right number without Mayo B or they haven't introduced the

complexity that we were just talking about before, as to when you go to the Mayo B case. They haven't bothered to show the the gross generation of Mayo B and then the net -- the reductions that occur in the existing. They just have given you a line that says the net.

The net is not unreasonable. It's right. It's 27.8 for a slightly lower load versus 28.2 when you get to 468. The net I'm very confident is the right number, it's just that they haven't gone through another level of detail, probably because they were driving their minds out trying to keep it simple. 12:29

I would say looking at this the existing hydro number for the no Mayo B case is probably accurate, probably the number you can use, and what's missing is the detail as to what happens to the existing system versus Mayo when we go to the Mayo B case. The end result is accurate and it's consistent with what you're seeing here in terms of the net number, and the net number is the only number that's really driving the economics in YUB-25. That's all that table is about, is the net generation number that drives the assessment of how much is the cost per kilowatt hour. 12:29

We are not calculating cost per kilowatt hour based on gross numbers. It is the key thing to derive from everything we are talking about here. When we say 11-cent per kilowatt hour cap, we're talking net generation, not

gross. It would be a lot lower number gross.

Q. Okay. So in that same Table 1, when we are looking at the existing hydro with Mayo B, it seems odd to me that you would still have that same number of 401.6 gigawatt hours when you have Mayo B included because it seems to me that when you have Mayo B included Mayo A has now been reduced from 36 gigawatt hours to 13.7; and it would seem to me that in the Attachment 1, with the Mayo B, with the existing hydro, that 401.6 gigawatt hours should be lower than that. It should be lower by 36 minus 13.7, shouldn't it? 12:30

A. MR. MORRISON: Mr. Chair, let me see if I can help a little bit. 401 -- to answer the question partly, yes, you could lower 401 and then you just have to increase the number underneath it that says "benefit of Mayo B." So what Mr. Osler is saying is essentially what you have to do is you have to add 401 and 27.8 together, right, but it's -- the 27.8 is a net. So it's a net of taking down Mayo A and adding Mayo B.

So it's -- all we're trying to do is be helpful and yes, you would -- it's puts and takes, but 12:31 **they're going to come out to the same number. Once you do all the puts and takes you're going to come up to 401 plus 27.8.**

A. MR. OSLER: Well, let's just do the calculation from -- because you're right. I've said that

several times. YUB-25 is not showing the same type of information consistently with what we showed in 30 (a) for the reasons that you were talking about. It subsumes it all in the net generation number. We looked at the answer to 30 (a). We showed -- you just showed me that if you added up the hydro under the no Mayo B you come to about 402, which is very close to 401. There's a slight variation.

If you were to add up the existing hydro with Mayo B, I think you'll get a number around 370, 371, something like that. So yes, it's showing -- as we've talked 12:32
about for the last half hour, it's showing that the existing system's generation went down. If you don't take that into account you've got some issues, and the overall generation from Mayo B is 59 megawatt hours -- gigawatt hours, not the number you see here.

I repeat, all that happened is -- if you want to understand this, you should look at 30 (a); don't look at 25 (b), YUB-25.

If you want to understand net generation and its effect on economics, look at YUB-25, because that's what 12:33
it's all about. It's doing the economic calculations with the net generation.

I apologize if -- the analysts on our team that put it here simplified it for the purposes of my answer. Right now they're making your life difficult. But the

answers are relevant for what they are supposed to be doing in 25 (b). They're absolutely accurate. They're giving you the right answers. They're telling you the economics. It's just a description issue.

Q. Yeah, except that you have here net -- Mayo B net benefit to system. So how can Mayo B be 59 when it says here that it's around 27.8?

A. MR. MORRISON: If you looked at 30 (a) -- I'm going back to the question I started with on -- I got started with at 21 revised, YUB-21 revised. At 468 million kilowatt hours a year of a grid load, before we get into all this complexity, we all are saying the net benefit is 28.2; right? Diesel displacement is 28.2 gigawatt hours. That's what we all started the conversation on half an hour ago. And YUB-25 is showing at a slightly lower load. It's 27 something or other. It's consistent. It's accurate. It reflects the model. 12:33

It doesn't tell you how the whole thing works out to get that calculation. If you want to understand that, you've got to go to 30 (a). That's the only place that the explanation is really there. It's not in 25 (b), and it is not helpful, for that question, to look at 25 (b). It's actually misleading. 12:34

THE CHAIR: Mr. Pinard, I'm just wondering if this would be a good time for a break so that you could

consider what you've heard this morning and then reconsider your questions and look at things; would that be helpful? You can go through some of the answers you received.

MR. PINARD: Yes.

THE CHAIR: Would that be helpful?

MR. PINARD: Yes.

THE CHAIR: So we will recess now and we'll resume again at 2:00.

PROCEEDINGS ADJOURNED TO 2:00 P.M.

April 7, 2010

p.m. Session

THE CHAIR: So are there any preliminary matters before we begin back with YCS?

MR. LANDRY: Mr. Chairman, we do have a couple of undertakings that we can provide for the record, but besides that, no.

THE CHAIR: Did you want to supply those now? 14:08

MR. LANDRY: We can, yes.

THE CHAIR: Sure.

D. MORRISON, C. OSLER (For Yukon Energy Corporation), previously affirmed, Undertaking Responses:

MR. LANDRY: Mr. Osler, do you have some undertakings from the record this morning?

A. MR. OSLER: Yes. First of all, the Board had asked the question that I said I would answer it subject to check about the operating costs for Stage 2. Having talked to people, I don't have anything more to add. What I said is fine for the record. 14:09

MR. LANDRY: Okay.

A. MR. OSLER: No. 2 was to UCG. I had an undertaking to deal with some numbers dealing with YUB-25 to provide the net difference in the extra money that would have

to be dealt with through the flexible debt or alternative instrument to bring the costs of power to ratepayers down to the 11-cent number per kilowatt hour for net generation for the Carmacks Copper not being on the system load; the case between the base case and the case with Carmacks Copper off. I can give you those numbers for the record.

I've looked at two cases in this regard: one with Mayo Lake and the other one without Mayo Lake. And I've looked at the fact that the Carmacks Copper load in these cases only deals with a limited number of years, as you would 14:10 expect, 2012 through 2018 inclusive.

And the numbers for the case with Mayo Lake start in 2012 at 1.15 million as the extra amount of relief needed if you lose the Carmacks Copper load. It's the net addition. And that number is essentially at that level, 1.15, or so, million, through 2013, 2014. 2015 it falls a bit to 1.13 million. 2016 to, in round numbers, 1.1 million, and the same number for 2017, in round numbers. In 2018 it falls off to 340,000; .34 million. And after that it doesn't make any difference. 14:11

If we did not have Mayo Lake, the numbers are a bit smaller. They start in 2012 at .84. The next year in round numbers they would be .9. The same in 2014, 2015, 2016, 2017. And in 2018 it would fall to .3 million.

I think that's what we had undertaken to do,

Mr. Chairman.

THE CHAIR: Thank you. So are there any other undertakings that are -- there's one more, is there?

MR. LANDRY: There's one more undertaking, and it relates to the -- it's a YCS undertaking relating to statements that were made in the opening statement, and there is -- the Board may or may not be aware there are a number of press reports that deal with this proceeding, and so we have -- we have a few of them. We're just wanting to make sure they're complete. We will file what we have after our break this afternoon. 14:12

THE CHAIR: Thank you.

Thank you. Well, I'll now turn it back to Yukon Conservation Society, and whoever, Mr. Pinard or ...

MS. WRIGHT: I'll finish this off.

THE CHAIR: Okay, Ms. Wright. Thank you.

MS. WRIGHT: Thank you.

THE CHAIR: Proceed.

MS. WRIGHT CROSS-EXAMINES THE PANEL:

Q. Yeah, there's just two more questions. YCS notes that YEC has already signed a contract with Peter Kiewit? Is it Kiewit? YCS would like to know how much YEC will be on the hook for approximate if Mayo B does not move ahead right now. 14:12

A. MR. MORRISON: Well, there's -- the part -- I think we've already filed that number in a couple of

different places. That's what we've spent to date, and that's what we would be -- those are the costs that we've incurred, and Mr. Osler may have a quick peak and look and see where the reference to that number is, but I think it's in the neighbourhood of 6 or 7 million dollars, but he can be more specific.

A. MR. OSLER: Well, there's different -- the number to the end of 2009, which was on the record in response to a question, I think UCG 5 (i), I believe, 7.4 million. So since that time more money will be spent. 14:13

As a general ground rule that we used way back for the Resource Plan, you could be committing easily 10 percent of the total cost of a project up to the time you make the decision to go forward. So a $120 million project, I wouldn't be surprised to see $12 million at risk if you pulled the plug at the last moment, or more. It will be in that ballpark or more, you know, because people are actually looking at this from the point of view of how the process is unfolding, the funding that is secured, and a whole bunch of other things. So they're assessing all of that in terms of 14:14 the type of monies that are being expended. But one of the problems in larger projects is that it takes a lot of money to get through the planning stage to the decision stage, and when you get to large project numbers, the planning dollars are therefore larger too.

A. MR. MORRISON: But, Mr. Chair, I would like to be clear about this. There's nothing that we're seeing so far, including the YESAB draft screening report, that tells us that there are major obstacles in our way that would prevent the project from going forward.

Q. Okay. I guess the contract is quite complicated because there's been things that have happened prior to the contract being -- the official signing of the contract, which was at the end of March, and how it moves forward, and I'm not really certain how that works. You have them on a retainer? Is that how it works or -- with a contract like that? 14:15

A. MR. OSLER: Well, there is an MOU contract and it's a contract, it's an agreement. They get reimbursed according to the terms of that agreement for the work they're doing, which is to work on looking at the costs and the engineering options and all of those things, which they were doing through the summer and the fall, et cetera. They went to China, along with our other people, to check out the turbine supplier in China, things like that.

When you convert it over to another main contract, it's very simple again. They can recover their costs under the rules and exercise, subject to prior approvals, and if the contract is terminated, then that's all they get paid is their cost to date. The same with the turbine supplier and anybody else. They can get reasonable 14:15

costs and there's arbitration provisions if there's a fight and all that type of stuff.

So it's not like you've locked down the right to get 77.7 million, not at all. It's all subject to getting the permits on time and getting other things. If there's too much of a delay, costs can change radically and people can terminate on both sides. So, you know, it's -- you deal with the realities, you write them into the contract and you protect -- each party protects their interests, but nobody's got any guarantees about anything, about even doing the project until you've got your permits. 14:16

Q. Right. Now, you said turbine. I thought -- is it not two turbines?

A. MR. OSLER: It is, but it's one supplier.

Q. Okay.

A. MR. OSLER: One contract.

Q. I would assume that there would be one supplier for both. And so there's two turbines. Do you have to put in a deposit on the turbines? Is that how these big things happen, or -- like, would it be you order the turbine, you drop the order, your deposit is gone? Is that what -- the way you would do it? 14:17

A. MR. OSLER: Well, there are commercial terms could be analogous to that. It doesn't get discussed that way, but the turbine supplier also had a preliminary

agreement. They worked and got reimbursed according to certain schedules of deliverables to help with design and do certain things. Then they go to their main contract. They get paid based on certain milestones. They're agreed upon in advance, like certain deliverables. And if the project is cancelled, they're entitled to recover costs of I believe 10 percent for work done to date and that's that, up to the point of -- and subject again to arbitration and review if there's a dispute.

So it's -- at one level very simple. It's the same concepts you would have for anywhere else except they are incurring -- if you want to look at it from a fairness point of view, they start incurring costs to put together this machine that we want on time, so they're entitled to get those back, but not at some exorbitant super profit or something because we decided to cancel the contract. That's the rationale. So that's it in a nutshell. 14:18

Q. Okay. Thank you. My final question is referring to the federal green infrastructure. It's Attachment E on Exhibit B1. It's Attachment E, so I don't know what the -- 14:18

A. MR. OSLER: We know what it is.

A. MR. MORRISON: We know what it is.

Q. Okay. In the clause -- I want you to look at one clause, 11.2, revenues from assets.

A. MR. OSLER: Yeah.

Q. Should I just read it out?
A. MR. OSLER: You could --
A. MR. MORRISON: You could ask us a question.
A. MR. OSLER: We've got it in front of us so you can just ask us what the question is you want, or you can read it out.
Q. Well, my interpretation of it is that it doesn't -- if you incur a profit at any time from this project, it's the Canada that gets the -- Canada's first on the list for getting the money. Is that -- 14:19
A. MR. OSLER: Well, let's look at the clause. It's talking about revenue from assets and there are certain exemptions. You'll find when you go through it that the exemptions is used in such a way in the fiscal year and revenues are generated from it which exceed its operating and maintenance expenses and just keeps saying exceeds any reserve fund contributions deemed appropriate for long-term repairs and it also exceeds any rate base depreciation and returns allowed in rates approved by the Yukon Utilities Board required of net contributions. 14:20
So we're entitled to make YUB-approved returns and depreciation, which is all we do as a business anyway. We're not excluded from that. But if you were a private sector company and you came in here and you tried to do something with these types of funds, there are rules here.

Because we're a Crown actually that's not bad, and that's a clause that had to be addressed because we are who we are.

Q. Right.

A. MR. OSLER: So the net rate base and our recovery of depreciation on it and the recovery of return on it is okay. It's not one of those things that leads to money going back to Canada, but if these assess were to be used for some other purpose within the time periods noted here, Canada reserves some recovery rights.

Q. So we're not in fear of this because of making any money on this project since we are a Crown corporation and don't have a -- 14:21

A. MR. OSLER: Well, because we are regulated by the Yukon Utilities Board in regard to the net contributions of the recipient, okay.

Q. Right.

A. MR. OSLER: And the Board isn't going to let us make money on contributions we receive, they always get deducted, so that's okay. The clause, though, affects somebody who -- if we had some ability to sell these assets or do something silly like that and somebody else is going to be making some return on them that wasn't regulated, Canada would have its rights here, both because of disposable of assets, 11.1, as well as 11.2. 14:21

Q. Right. So if we decide to sell Mayo at some point in

our lives as a YEC --

A. MR. OSLER: Well, look at the top of the table. It's for ten years. The clause is effective for ten years. After ten years Canada doesn't claim to have an interest, but I don't think -- okay. The answer to the question is it would be affected accordingly, both 11.1, in terms of disposal of assets, which goes on for a longer time period, and (b). Okay?

Q. Okay. Thank you.

MS. WRIGHT: All right, that's all. 14:22

THE CHAIR: You're all finished?

MS. WRIGHT: Yes.

THE CHAIR: Thank you very much.

I just want to confirm with Mr. Babyn that YECL is not wanting to cross-examine.

MR. BABYN: That's correct.

THE CHAIR: So the next cross-examination will be by YUB staff. So I'll welcome Giuseppa Bentivegna up as well as Duane Ward.

MS. BENTIVEGNA: Thank you, Mr. Chair. Good afternoon, panel. 14:22

A. MR. MORRISON: Good afternoon.

MS. BENTIVEGNA QUESTIONS THE PANEL:

Q. I'll start off with a general question. Now, Mayo B has been described as an opportunity project and my question is:

Is the opportunity in that there's funding available?

A. MR. MORRISON: Well, I would answer the question a little more fully than that. There's a number of opportunities. First of all, we were in the process of looking for a project that we could put into service to meet growing load for -- or load demand on the system and the Mayo B project is an opportunity to meet that question that we were posing to ourselves.

In addition to that, it's an opportunity to acquire federal funds in order to make that opportunity or our need to find additional load economically feasible; and, thirdly, it's an opportunity to meet that growing load through -- in a renewable form and get rid of the diesel that would otherwise be on the system without the Mayo B project.

14:24

Q. Thank you. Now, the questions that follow all are clarifications from -- mainly from the Board's information requests. So my first question I want to refer you to YUB-7 (h). I'm looking at pages 3 of 4 line -- starting at line 22 and YEC has stated that:

> "With regard to line losses it's not possible in the Yukon to prepare long-term planning load models. They differentiate line losses by a particular loading over a period of time."

14:25

Do you see that statement?

A. MR. MORRISON: Yes.

A. MR. OSLER: Yes.

Q. All right. Do you have long-term planning models that look at line losses?

A. MR. MORRISON: Well, we -- I think just to clarify what we're trying to say here is we do not have the sophistication to look at line losses by customer, which is the reference to loading here. We do not have sophisticated line loss models. We have line loss models based on our 14:26
experience, as Mr. Osler mentioned earlier, between generation and sales, so we know what they are in a given line or a given system, but we do not have particular line loss model planning.

Q. All right. And if I remember from your testimony, that you're using a simple formula, correct me if I'm wrong, with regards to energy produced minus the sales would give you the losses?

A. MR. OSLER: That would be -- I think I was trying to be helpful. That's what the losses are all about 14:27
and they get measured that way from time to time so there's crosschecks on what is actually going on.

As we responded to YUB-1, we have specific percentages based on experience that are used for different elements of the forecasting model. The nonindustrial sales

on WAF, the nonindustrial sales on Mayo Dawson have different percentages based on the experience on those two grids to date, and there were different numbers used for certain industrials. And I think in this current filing we used 12.7 percent for Minto and Carmacks Copper and 15.2 percent for Alexco. I presume, without personally having great knowledge of this, that the Alexco difference reflects experience on the Mayo Dawson system with respect to that part of the history.

So people are using experience in providing 14:27
numbers for forecasting that they think are reasonable, but it's not so much a modeled exercise. I think that's the point we're trying to get across. So we couldn't respond to the question in terms of going to a model and doing an analysis that would be remotely useful.

Q. Now, with what you've just explained, the percentages. So you said you're going by history. Now, can you just give me a little bit more as to what -- well, are there assumptions in that for planning purposes as to what you expect line losses to be when you say, for example, 12.7 for 14:28
one of the mines, what goes into that? Is it just over the period of time that you've noted this using that -- well, if I can refer to it as the simple model that you're trying to help us with or how is it determined?

A. MR. OSLER: I personally would have to get

more information to go beyond what I'm going to say if you need more. I know that in the planning for the Carmacks-Stewart line, the engineers that were retained did certain system models for the planning purposes of the line and they would have provided some estimates in that, I assume, from what I've been told, of line losses. So dealing with Minto and places like that we would have had some assistance beyond our past experience to do what might be reasonable to expect for the loads and the design of the line. 14:29

So in dealing with the new mines on the new grids, I would have to say that the history has been amplified or expanded upon by that type of information.

With respect to the existing systems, I assume, from what I've heard, that these are historically based numbers based on loads that are in the realm of where we are right now. I know when we did it historically in the '90s with Faro mine, we certainly looked at the experience going to the Faro mine on the WAF grids of the different loads, the different line losses. But we also for the 14:30 purpose of a cost of service study, which is usually tied in with the main GRA stuff, we did jointly, YCL, YECL, a proper analysis of losses and distributed them to the different customer classes and the different situations. So there was a more sophisticated review that took place on a more regular

basis than has been the experience in the last decade.

The experience that has gone into the recent Phase 2 work is the most recent that has happened, and it is still subject to review by the Board and still subject to some internal discussions, frankly, as to its usefulness.

When I say history, I'm saying history in the context of historically we had the advantage of that type of work every so many years, two or three years. Recently we've just had it done even after, frankly, this was prepared, but I don't think it would modify from what I've been told asking people anything we've said in here for planning purposes. 14:30

Q. Okay. Thank you. Now, turning to the economic analysis of line losses, and I'm referring to YUB-20, the answers to (e), (f), and (g). That's on page 3 of 3. And it's line -- starting at line 6, where YEC states:

> "Further, as compared with other YEC major generation, Mayo B generation is either closer to or not notably farther than the major new industrial loads that are included in the load forecast. For example, Alexco or Carmacks Copper." 14:32

Now, over a given distance, are losses higher over a 69 kV line or over a 138 kV line?

A. MR. OSLER: You're asking two not engineers

to get into something. I suppose that one of the ways of answering is it depends on the load.

A. MR. MORRISON: And it does.

Q. All right. But is there any -- are you aware of any information as to whether generally a 69 kV line is subject to more line losses than the 138 kV line?

A. MR. OSLER: Generally you would assume that your losses tend to go down as your voltage for the line goes up, all other things being equal. The only thing that one would want to caveat that about is line losses are also very much affected by the loading of the line. 14:33

A. MR. MORRISON: I think, just to try to be helpful, if this is an area that you have a -- you would like a more specific answer, we can undertake to do something in that regard, but I don't think Mr. Osler and I are engineer enough to really give you a more specific answer.

Q. If that would be useful --

A. MR. MORRISON: Okay.

Q. -- to get at least an idea.

A. MR. MORRISON: Yes. We will give you a general idea of line losses in a 69 kV and a 138 kV and with some scenarios around them. 14:33

Q. Yes, please.

A. MR. OSLER: Let's put it very much in the context though, if we can, of the question that you are

focussing on. The statement is made here that implies the distance is the only factor and the question is making the point that they're different lines serving those distances.

So looking at the question in that context and not some general theory context, let's undertake to see if we can give you a more useful answer than what's here, taking into account the voltage of the lines and not just the distance.

Q. Certainly. Because what the -- the questions around this, the point that -- or the information that we're seeking is whether losses are greater by -- you know, greater if the cost of the line -- what the cost of the losses are, if I can put it that way, so that then one can look at the type of line since the Mayo B is going into the Carmacks-Stewart Stage 2. 14:34

A. MR. OSLER: Yes.

Q. So in that scenario.

A. MR. OSLER: Let's just observe a couple of things, though, to sort of cut to the chase. The Alexco mine, whether it's served by Mayo B or anybody else, has got to go through the same ultimate 69 kV line. So let's not get too fussed up about Alexco, if that's okay with you. I think distance is the key there. And Alexco is one of the new mines we're talking about. 14:35

So Mayo B is purely closer, and there's no

great voltage issue to get upset about there. I think the key is Carmacks Copper.

A. MR. MORRISON: The same thing.

A. MR. OSLER: Well, let me -- let us go away and think about the distance and the voltage issues and the loss issues to take power from Mayo B versus somewhere else.

Ultimately the point, though, is that this is not something -- we're being quite transparent. This is not something that people have spent any energy on -- fair point -- because ultimately we're looking at the issue of -- 14:35

the alternative is running some diesel versus this. We know where the economics lie, and we just haven't put our brain to answering this yet.

So I think I caveat everything we're saying on that, but we can get you a more useful answer from somebody else than we can give you here, but we'll focus, if you don't mind, on Carmacks Copper, that load.

Q. That's fine. Thank you.

UNDERTAKING - FOCUSSING ON CARMACKS, COPPER TO ADVISE WHETHER YEC IS AWARE OF ANY INFORMATION AS TO WHETHER A 69 KV LINE IS SUBJECT TO MORE LINE LOSSES THAN THE 138 KV LINE 14:32

Q. MS. BENTIVEGNA: Now, turning to YUB-21, page 2 of that answer. And I'm focussing in on -- beginning at line

19, and it states:

"For 2012 to 2016, firm grid loads as reviewed in the reference Table 1 as required to be served from dispatchable generation increase from 456 gigawatt hours in 2012 to about 495 gigawatt hours in 2016, and are therefore generally in a range approximating the 468 gigawatt hour grid load level that has been modeled in detail." 14:37

Now, how is the level of that 468 gigawatt hour determined?

A. MR. OSLER: It was determined some considerable time ago based on the numbers that people at that time thought were applicable, I presume, for around 2012 in the numbers they were looking at. And given that we've come a long way since the time that models were first run, we've stuck with the two main cases that were run way back, 468 and 575, rather than modifying them just because we've come up with some variations.

Because, frankly, there are, I think -- we are now over -- well, I can tell you that well over 200 cases have been run using the power benefits model, and it's nice to have a few things that are consistent for comparison purposes so we can keep track of the variables. There's nothing more to it than that, to the best of my knowledge. 14:38

The forecasts that we've used in this application were developed shortly before the application was filed, but the power benefits model has been run with these sort of base reference points for a long, long time before that in order to get assessments of various things.

So it was just for consistently internally, and it still fell within the range of the numbers, but it wasn't bang on, and we didn't rerun the model for that purpose.

Q. Okay. And what was the sensitivity of the model? 14:38

A. MR. OSLER: To the variations in load?

Q. Yes.

A. MR. OSLER: The best description of that is demonstrated, if I can remember it correctly -- yeah. Your answer to YUB-30 (a) revised, page 3 of 8, there's a diagram there. That diagram, as the text explains, is really taking three reference points and extrapolating in between them. The three reference points are the case -- two of which are the cases that I just gave you, the 468 case and the 575 case, and we ran another one of these at 417, I believe, more 14:39 **recently to model something at a lower case.**

It shows you the extent to which the existing system and the Mayo B tend to vary in terms of contribution to displacing diesel depending on the load, even though the units are all there.

Various explanations on the next page as to how the maximum values were derived for the outer limits of that, which go up to almost 800 million kilowatt hours. I think the upper limits we talked about in the text are about 720.

So although this looks graphically straightforward, we didn't run a model for anything like all those cases. The model was run for three case. Extrapolations were made to the outer limit based on the analysis to the next page, and extrapolations were made in the ranges we're talking about to show it. 14:40

That shows you the basic sensitivity of the system as we know it today for different loads, and it essentially told us the numbers we'd been using in the Carmacks-Stewart filing era were okay when the loads got to be high enough for the moment. Below that level, the generation was actually generating less useful energy that we had been assuming, and above that level it was generating more useful energy than we were assuming.

Q. All right, thank you. Now, if I can take you to YUB-20, the answer to part (a) of that question. Now, it's on page 1, line -- starting at line 36 at the bottom of the page and onto the next page, where it states: 14:41

> "The Mayo B project is being commissioned onto an integrated system

where the Mayo Dawson and Whitehorse-Aishihik-Faro systems are already connected earlier via the Carmacks-Stewart Transmission Project Stage 2. If the integrated system were required to operate without Mayo B, it is not clear which diesel units, or at what location, would be operated differently. Such decisions would need to be made by system operators in an ongoing manner reflecting loads, particular water conditions, line losses considerations, and other diesel generation related factors (such as unit efficiency and non-fuel costs such as overhauls)." 14:42

Now, my question there is: The Whitehorse-Aishihik-Faro and the Mayo Dawson systems are expected to be integrated and operationalized and I believe you stated by the fall of 2010; is that correct? 14:42

A. MR. OSLER: I think we said in the answers here by -- I think we said February 2011, certainly early 2011, depending on which text we're looking at, but the best information we have at the moment is that it will be by February 2011.

Q. All right. Now, will there be a change in the economic dispatch units at that time?

A. MR. OSLER: They will be reevaluated from the point of view of decision making to make sure they're consistent with the opportunities that are now there. Whether that will lead to a change will depend on what the conditions were at the time, I presume.

A. MR. MORRISON: That's exactly the case. The dispatch of units will depend exactly on what the situation is on the day that they're required, taking into consideration all of those other factors that were mentioned in there. 14:43

Q. Right. But will it change from the way it's done now or will it remain the same, now considering you have an integrated -- the two systems are integrated?

A. MR. MORRISON: By virtue of the fact the system is integrated something will change, but it will depend on -- I mean, maybe nothing changes in one sense because, whether the system is integrated or not, depending on the situation, they may dispatch it a certain way. 14:44

So it really depends on what the situation is that requires the diesel, and those are decisions made by system operators when they look at the water and the load required and where it's required and what's available. All of those are -- you know, they're decisions that all happen

at that point in time.

A. MR. OSLER: In terms of prioritization rules to make decisions, probably would be a fair amount of similarity. They just get applied now in the context of a new set of opportunities. So if there is now available hydro that can be moved from WAF to Mayo Dawson because we're running Alexco up there, it's not so much that they're changing the rules, they just have hydro available rather than running diesel.

Whether the stacking order when you put the two together in the two systems of the diesels would vary, I can't comment, but it will have to be done in a logical manner, the same as it is done now but from the point view of the total system. 14:44

You would also take into account that you don't want to move energy over long distances, as they take it into account right now. They're stacking order assessments. It isn't just the fuel costs. It's the anticipated losses associated with the use of the unit in Faro versus Whitehorse. I'm sure that the stacking order would be adapted with that in mind. 14:45

So it would follow the same concepts. It would have to be adapted for the circumstances as they then applied, for where the loads were and how much surplus there was of hydro that could be used or moved around, that type of

thing.

Q. Thank you. Now, back to YUB-20, your answer to question (d), and there I'm starting at line 28, and you state:

> "Yukon Energy has insufficient specific experience with respect to the actual CSTP line outage history to be able to determine outage frequency probabilities based on its own data."

Is it correct to assume that YEC has data with respect to outage history of both the Whitehorse-Aishihik-Faro and the Mayo Dawson as isolated systems? 14:46

A. MR. MORRISON: Yes.

Q. And how do both systems compare to one another for purposes of outages?

A. MR. MORRISON: Mr. Chair, I would have to get that information. I don't have that at my fingertips, but I can certainly agree to get that for you.

Q. Certainly. Thank you.

A. MR. MORRISON: Okay.

A. MR. OSLER: I'll check whether it's already in the record somewhere. We'll check that. 14:47

Q. All right. Thank you.

UNDERTAKING - TO ADVISE HOW THE WHITEHORSE-AISHIHIK-FARO AND THE MAYO DAWSON SYSTEMS COMPARE TO ONE ANOTHER

FOR PURPOSES OF OUTAGES OR, ALTERNATIVELY, POINT OUT WHETHER IT IS ALREADY IN THE RECORD

Q. MS. BENTIVEGNA: Now, still on the question about line losses, but system losses this time, not line losses; I correct myself. Back to YUB-1 at page 1 of your response. Actually -- yes, starting at page 1 at the bottom, line 35, and then on to the next page.

All right. Now, the portion I want you to focus on is it states: 14:48

> "With respect to line losses, all gross generation requirements are forecast to include line losses (7% for retail loads on WAF and 27% for retail loads on MD, as per the 2009 GRA). Mine loads are forecast inclusive of losses assumed at 12.7% (Minto and Carmacks Copper, where relevant) and 15.2% (Alexco)."

Now, how are the losses forecast for the industrial loads? 14:48 There's been some discussion of this, but if you wouldn't mind reiterating.

A. MR. OSLER: I think it's -- I went back to this question when we were talking earlier to get my mind back on the numbers. So I'll repeat. The line losses for

particular connections to -- through the new Carmacks-Stewart grid, to the best of my knowledge, were informed a bit by the engineering studies that had looked at system options and issues and line losses with respect to the new installations.

In the case of Alexco, I'm assuming that it's based on actual history of the line, its experience going up to that area through Keno -- to Keno. So I don't have -- that's not anything new than what I said before. It's the same answer.

I just noticed we do have outages by grid in response to YECL of No. 17. At page 6 of 7 there's a graph, and there are a bunch of information there. So for the moment I'll just say I think the information you're looking for is there. We'll talk to some people, but I think it's part of the record. 14:49

Q. All right. Thank you. Can you focus in now on that 27 percent allocated for losses for retail loads in the Mayo Dawson area?

A. MR. OSLER: Right.

Q. Would that suggest that loads served by energy from the Mayo B project will have higher losses associated with their service than loads served by energy from generation located closer to the load once the Carmacks-Stewart Transmission Project Stage 2 is complete? 14:50

A. MR. OSLER: If I -- I think what it

suggests is that to take power from Mayo today over to Mayo Dawson -- over to Dawson has a fairly high line loss, and I don't suspect there would be much difference in the future, unless there's some other information we don't have in front of us here, to supply that load at Dawson using energy, whether it comes from Mayo or somewhere else in the system.

Mayo would be closer than if you had to haul it up the Mayo Dawson line to supply growth at Dawson, but I'm not sure that anybody would do that per se. You know, there's already a way of serving that load from Mayo with the existing facility. So I'm not sure that the world would change a lot. It tells me that that line is connecting the two as fairly high losses to go that distance, and I think that's not a -- not news. It's been known for a while that it had that characteristic to it. 14:51

It would also tell us that if we started to run diesels we would be looking at the diesels in Dawson to minimize line losses, that type of thing. It informs you of various choices that you would need to think through if you're going to have to make some choices to minimize how much diesel you're running. 14:52

Q. All right. Now, has YEC then done any studies to compare system losses with Mayo B project in place versus Mayo B not in place with an existing diesel scenario through to 2019?

A. MR. OSLER: I think the answer we've been giving you is no. We really have not tried to assess the sensitivity of line losses -- system losses to the choice of Mayo versus diesel. We're not denying that there could be some interesting information there. It just wasn't a priority and did not get addressed.

Q. Thank you. Now, turning to YUB-21, page 2, and starting at line 26, and YEC stated:

> "In preparing separately the assessment below, overall Mayo plant generation it is necessary to assign the system wide secondary energy to each individual plant. As a result, while the analysis helps to explain 'gross' versus 'net' generation and the relative utilization of Mayo A versus Mayo B, the overall plant results are difficult to compare with the Application's IS model net generation assessments without specific reference to both firm and secondary loads."

14:53

14:54

I'm sorry, are you having trouble finding it?

MR. LANDRY: It's line 31 of the revised.

A. MR. OSLER: Okay, got you. Okay.

Q. MS. BENTIVEGNA: All right. Now, I was

wondering whether either of you could expand that answer, especially with respect to the assignment of secondary energy system wide?

A. MR. OSLER: Not very usefully, I'm afraid. I think that secondary energy -- the explanations that have been given to me on the secondary energy part of the modelling is that first of all it was something that was introduced relatively late because the question arose if we're going to provide this to people -- you know, there are surplus energy around that could be called secondary -- we're going to get asked about how does this change, can anybody give any useful analysis of it, and they did some analysis under conservative assumptions; don't overreach yourself.

They've said all the way along, though, that the modelling raises issues about assigning where the secondary is actually occurring because there's all sorts of issues about how you might interpret that. So they wanted us to be very cautious about it.

Having said all that, I think the basic message that I should transmit is that we don't have a lot of more information on this, if any, and it isn't something we put a -- it's not having a big effect on the overall answers. There is some extra secondary, but we're very cautious about trying to ascribe exact quantity, let alone how you would explain it. We had enough trouble explaining the firm, as

14:55

14:55

you've noticed, in terms of Mayo A versus Mayo B and everything else, but secondary, I think, is just caution and it shouldn't go any further. I don't think I could go and ask anybody to give me anything useful to help you go further.

Q. All right, thank you. Now, if I can take you to YUB-7 and the answer to question (h). Mayo A, and it would be on page 3, starting at line 19, where it's stated:

> "Also the considerations as to diesel stacking will be required to consider the full integrated system once the CSTP Stage 2 is completed, which also provides for the possibility for diesel generation at locations such as Dawson and Faro for overall grid support where such generation may aid in minimizing losses."

Now, can you please explain what's meant by that statement, especially the last portion of the statement with respect to the grid support and minimizing of losses? 14:57

A. MR. OSLER: Well, part of the -- there's a footnote there that does mention some of the stacking order information. Part of the answer is dealing with what I said earlier, that if you're running the integrated grid, you review it to see whether or not there are any options, and if

you are running a diesel scenario you would look at the options of running the diesels closer to the load in order to cut down the losses, which we were talking about earlier. I think part of what is being said there is that point.

But you've also got a -- if you're going to run a grid you've got to maintain its stability and sometimes that requires maintaining some generation at various parts separate from the load in that area just to maintain the stability of the grid. So you have to keep that in mind as well. I suspect that that's all that's being mentioned here. 14:58

There isn't a massive load over at Faro, but we do have residually a fair amount of diesel generation capability there, so the question is when does it make sense to use it. If we're supplying mines in the Carmacks Copper area, Faro isn't that far away, so it's an option when you compare it to Whitehorse and whether we have any diesels at Minto and all that type of stuff. They would all be taken into account in the point of view of both keeping a stable grid and minimizing the line losses.

I don't know whether I should -- there's much more that I could add to it than that. The stacking questions are sort of dealt with a bit in the footnote. I guess we talked a bit about it when we were dealing with Carmacks-Stewart as well. 14:59

Q. Just to follow up on that stacking order, will YEC need

to consider grid support and loss minimization in the stacking order and dispatch of diesel generation units for operational purposes to reduce -- and will that reduce the claimed diesel displacement benefits for Mayo B based on YEC's economic planning model?

A. MR. OSLER: I presume that, overall, the question you're posing is whether or not if we optimize the systems for the diesel only case could we reduce the line losses and therefore reduce the amount of diesel we're assuming, and if we don't at Mayo B, certainly -- and even with Mayo B, we're going to be running a fair amount of diesel if you look at the numbers, if the Carmacks Copper mine is there until we generate some more renewable. There will certainly be all the efforts made that can reasonably be made to optimize using all of the factors that you and I are talking about. 15:01

From the modelling point of view at the moment, I would just say that the people that have been doing it have conscientiously tried from the model stage to reflect what makes sense rather than inflate it. It's always subject to potential improvements, you know, looking at the way you and I are talking about it, but at the moment I'm not aware of any particular improvements that are sort of leaping out to make a big difference, material difference to the analysis we're presenting, but I can -- I don't know whether there's 15:01

anything useful I could add to it, but maybe at the break I could check whether there's anything I could add to what I'm saying from talking to the people who run the systems. That might help explain why there isn't really any material gain in a diesel-only system that we're somehow ignoring by the modelling we're doing.

I do get the point of your question, I just don't know whether I can give you any better answer than that one.

Q. The focus is more on that the need for Mayo B has been to displace diesel, so that's the point of the question is -- 15:02

A. MR. OSLER: Yes.

Q. -- if you're optimizing the system with diesel, then does it fall out that you won't be displacing as much diesel as you believe will be by the Mayo B if Mayo B is to be approved.

A. MR. OSLER: And I will undertake to get someone to just talk me through whether or not there's any basis that I could say something more useful than I'm saying at the moment to help you on that very specific question. 15:03

Q. All right.

A. MR. OSLER: I don't believe that our estimates of diesel requirements without Mayo B are inflated, but you've got a good question. Let me check it out, please.

Q. All right, thank you.

UNDERTAKING - TO CONFIRM WHETHER IF YEC IS OPTIMIZING THE SYSTEM WITH DIESEL, DOES IT THEN FALL OUT THAT YEC WON'T BE DISPLACING AS MUCH DIESEL AS YEC BELIEVED IT WILL BE BY THE MAYO B IF MAYO B IS TO BE APPROVED

Q. MS. BENTIVEGNA: Now, looking at YUB-6 at page 2, starting at line 6. It's with regards to the issue of generation planning. Now, YEC states:

"Given the changes brought about by the completion of CSTP Stage 2, Yukon Energy does not yet have the capability to model the full integrated grid in a manner that prevents calculation of an LOLE value. As part of the 5-year update to the 2006 Resource Plan, Yukon Energy will be updating the LOLE model later in 2010 to handle the full integrated grid." 15:04

And I believe you confirmed that in your testimony as well. 15:04

"There's no expectation that the LOLE value upon connection will exceed the two hours per year target, particularly as the LOLE calculation typically

benefit from increased diversity in the complement of generating units on a system."

Now, that last sentence in the statement I've just read, can you explain why you believe that the LOLE of the combined system will not exceed the planning target of two hours per year?

A. MR. OSLER: I can't explain it beyond what is written here. The people who worked on this had familiarity with the LOLE modelling and they gave the rationale as to why that's their expectation because I think the increased diversity will tend to offset other factors, but the proof will be in redoing the model and seeing what the answer is. That's something that people are committing to work on so that it's available before we reappear in a GRA at least. 15:05

Q. All right. Thank you. Now, in that statement, is it referring to 2012 or up to 2012, like when you'll be running the model or does it go beyond 2012?

A. MR. OSLER: I'm sorry, I'm not sure I get the question. 15:06

Q. Sorry?

A. MR. OSLER: I didn't quite get the question.

Q. When you say you'll be rerunning the model for the

LOLE --

A. MR. OSLER: Right.

Q. -- for the GRA, now, is it going to be referring to 2012, like from 2010 to 2012, or 2011 to 2012, or will it go beyond 2012?

A. MR. OSLER: I guess the short answer is I don't know, but it would be useful to -- it should at least look at the system if Mayo B is going forward with Mayo B. Otherwise it would just lead to a bunch of questions. And beyond that point I'll have to see what it's like when we're doing the work, as to whether there's some particular benefit to looking at some scenarios beyond a particular load.

I think it would be more characterised as not a year as a load case or situations like that and if it made sense while people are busy putting their minds to it to look at a variety of scenarios so that we can answer some questions on it. I'm sure that would be done because it's cost-effective and it helps everybody in their planning.

15:07

Q. Right. Would you be looking -- maybe a better characterisation would have been to a point in time versus a period of time, or you still don't know at this point?

15:07

A. MR. OSLER: I think my suggestion would be it hasn't been laid down yet. It's to be looked at when we get through a few of these other things, but my suggestion would be that we should look at a range of conditions that

look to be useful for a period of time that we are looking at in the future, which would include the completion of not only Carmacks-Stewart, but the next generations, some of the load options we're talking about and things like that so that it's useful in the context of a range of questions that we will get asked and we should have advice on when we're doing planning, as distinct from one set of conditions, one particular year or one particular set of assumptions.

When you've got somebody available, Mr. Billington or his team's capability, let's get the most that we can in terms of looking at the alternatives. That would be my advice, but we haven't done it yet, so we'll see what happens when it gets done. 15:08

Q. All right, thank you. Now, although you don't have the LOLE model, can YEC advise as to when additional generation capacity or generating capacity for reliability purposes to meet load demand is needed?

A. MR. MORRISON: The information that we gave you in responses to question 11, YUB-11, at least showed the current N minus 1 criteria going into the future. So based on that information and the way we currently do things, the N minus 1 test doesn't seem to be generating a shortage for some considerable period of time. 15:09

The LOLE test, therefore, would be fairly important. We do know from the Resource Planning that we

would expect with Carmacks Copper, if I remember correctly, being added that the break -- the point of which you tip from the N minus 1 being determinative to the LOLE being determinative would probably be expected to occur and so this may not be the determinative test; it may be the LOLE test. So we would need to see the results of that.

If we were to change the N minus 1 test to include industrials, which we're not advocating, the answer to No. 12 indicated that we would have a shortage even with Mayo B starting right away. So we're not advocating that 15:10
because of the rationales we've laid out. So I'm assuming that we would be focussing on the answers to No. 11 and we would be looking to see whether the LOLE test would change the picture here.

This particular model assumed that -- did not include Minto diesels for the reasons given, but did include the refurbishment of the various Mirrlees.

So obviously one of the questions that would be asked is whether the Mirrlees refurbishment schedule should be adapted if we have an extra 10 megawatts at Mayo B 15:11
and also if we have some other factors that are assumed here.

So we've discussed that in the last GRA, the timing of when the last refurbishments might usefully be done, and to me this table shows the underlying issues that we were discussing in the GRA in that context, even without

Mayo B. But essentially if you add Carmacks Copper or somebody like that, it does not change the N minus 1 calculation process, you have to go to the LOLE. So that's why the LOLE becomes important as more industrials are added.

Q. All right. Is there a reason why YEC didn't choose to model the LOLE of the combined system prior to applying for Mayo B?

A. MR. MORRISON: Plain and simply, time. You know, we are -- you know, we have a million things on our plate and that's just one of the things on the list that, as Mr. Osler said, we are going to do, we just haven't had the time to do it. 15:12

A. MR. OSLER: From the point of view of the basic economics of the submission to the Board of Directors and everything else is that there are benefits to Mayo B from its capacity additions, but we weren't ascribing any economics to it. So it wasn't something we were relying on to justify the need or to justify the project so it didn't get priority in terms of the related work. Other things that were critical got the priority. That's the answer. 15:13

Q. Now, going to the issue of load growth. In YUB-35 (c), page 2, starting close to the bottom of the page at line 25. Now, the middle of that line where it states:

> "... that by 2012 the combined Minto, Carmacks Copper and Keno Hill loads

(along with other projected WAF/MD firm loads, including added Faro reclamation loads but excluding secondary loads) would require over 70 gigawatts per hour of new generation beyond that which could be provided under long-term average water flows by the current WAF/MD hydro generation capability together with Aishihik Third Turbine and the completed CSTP Stage 2." 15:14

Now, based on that statement, with the addition of Mayo B, would there still be a requirement for incremental diesel generation?

A. MR. OSLER: In 2012?

Q. Yes.

A. MR. OSLER: Yes. The answers that we've been giving you in YUB-25 shows it in the detailed numbers. There still is material diesel generation projected with Carmacks Copper and with Mayo B, and we can get you -- the table that everybody keeps looking at shows that without 15:15 **Mayo B, 2012, you're talking about 57 million kilowatt hours of diesel. With Mayo B, we're talking about 30.6 million kilowatt hours of diesel. So it's still immaterial.**

If you go out to the time period when the mines aren't there, it's also still -- there still is diesel.

No, there is very minimal diesel. It shows virtually none in this particular model, but I'm not sure that's accurate. But as you go forward, it comes back again.

So the answers compared to the time period we were before the Board before have been modified in terms of load forecasts as well as the generation capability of the system. There's been evolving knowledge, and certainly when we went to sort of comparisons of what we said in Carmacks-Stewart Part 3 hearing and what we're saying today about loads and we did some comparisons internally just to be 15:16
prepared, it looks as though the undertakings we took in the GRA are somewhere in between in terms of information base, and it's evolved a bit since then.

We have those comparisons if anybody wants them for 2012, 2015, just because we wanted to see them ourselves. How much did the load change; how much did the supply change.

Q. Okay. Thank you. Now, I just had a couple of questions, just general questions, on the YESAB review. Now, first of all, has YEC undertaken a recent costing of the 15:17
YESAB approval requirements?

A. MR. OSLER: Is the question whether coming out of the YESAB process we've seen any material costing changes to our budgets?

Q. No. The other way, the cost, if you have any recent

numbers of cost for actually getting the YESAB approval, regulatory. Or let me rephrase it. From the draft document that you've now seen coming out of the YESAB process, have you seen any incremental costs to the project that you need to consider?

A. MR. OSLER: Yes, and I talked about it earlier today. It's not a surprise because we had suggested it as a mitigation alternative, but it wasn't formally in our committed activities, and that's the salmon rearing channel recommendation, which was a mitigation option we had put forward, and YESAB has now recommended it in their draft.

I said earlier today that the cost implications of that, in round numbers, are about $300,000, plus or minus, say, 50, and our budgeting process that we showed the numbers in CW-5, that would be covered under the contingency under the construction.

So it was anticipated in the budgeting process, but technically it wasn't a committed cost, and if it becomes a recommendation, it will therefore become a committed cost and show up as such and reduce that contingency. So it doesn't change the $120 million budget. There's nothing we saw -- as I said in the opening comments, Exhibit B8, I believe, there's nothing we saw in there that would lead us to believe that we have any changes to the overall budget or to the overall schedule.

15:19

15:19

Q. Thank you. When in the YESAB approval -- or the review process, it talks about socio-economic aspects of the Mayo B project. Can you elaborate a bit on what socio-economic impacts they're looking at in that review?

A. MR. OSLER: Without it in front of me, the scope of what they commented on ranged from material to do with the economic impacts as reflected in YEC's filings in this application, which they quoted, so the impacts of this project on rates and other things, saving of diesel, because those are all -- have got socio-economic impact dimensions, 15:20 **through to concerns and questions about the effect of having a major construction development close to another community and the relationship between that process and the community, working with the First Nation, the liaison activities back and forth. Those were other areas. Drug and alcohol policy in the camp was a specific comment, which was following through on a recommendation that we had anyway.**

So they ranged over the -- I would say the traditional gambit of socio-economic issues, which would include raw economics, social, family/community life type of 15:21 **issues that relate to a development, focussed predominantly on construction in this case. Any infrastructure services issues because of being close to another community, and if you were to put some of your wastes in their facilities, have you talked to them about that, are you going to work with**

them, to labour and employment and business opportunities for First Nation and other people in the Yukon, just as a gambit of issues as I recall them.

They were all within the realm of things that we had talked about in our submission, things that we're working on with NND and the local community or things that we have in our construction contract with Kiewit where Kiewit is obligated to live by all the commitments that YEC made in its submissions to the YESAB on these and other matters.

Q. All right, thank you. Now, there's been discussion in this proceeding, but I want to follow up a little bit on the question of alternatives to Mayo B. Now, looking at the Marsh Lake winter storage, and I'm referring to your response to YUB-8, question (a) on page 2. It's page 25, and it's line 31 down at the bottom. Projects currently being considered as part of feasibility and planning activities include the Gladstone diversion project, up to 18 gigawatts hour per year; small scale Atlin winter storage project, up to 18 gigawatt hours per year; Marsh Lake fall/winter storage project, up to 7.7 gigawatt hours per year. 15:22 15:23

Now, in the three-plus years since the Marsh Lake fall/winter storage project was discussed in YEC's 20-year Resource Plan, what progress, if any, has been made to further the project?

A. MR. MORRISON: Sadly to say, Mr. Chairman, not

very much. These are -- so just to -- maybe we need some historical perspective around it. We put the project in the Resource Plan, and we started doing some work on it. We encountered a significant amount of opposition to the project, and we took the project off the table as a potential project. We were back in front of this Board sometime after that, and this Board said "Please do not take this project off the table. This is a viable project."

Subsequent to that, we re-established our efforts on that project. We started -- I just have to make 15:24
sure that my memory is correct here. We started looking at it a year ago again. We have done a little bit of work. We have had in the past six months or actually probably even shorter than that we have -- there are several things that have happened.

Last -- later on in the year, before freezing, so I would say August/September, if you can give me that kind of leeway, we went out to Marsh Lake. We put some piezometers in the ground along the Army Beach area. The piezometers -- we're going to need at least a year worth of 15:25
data, and the piezometers are in there because one of the issues that we're trying to assess as part of that project is what's the relationship between rises in the lake level and rises in the groundwater, and that's a significant issue, particularly in that Army Beach area.

Again, subsequent to doing that, and we've had meetings in Carcross, Tagish, Marsh Lake all to do with this same project and the Atlin project. We've had a couple of meetings in Atlin. We've had I would say two in Atlin and one more here. The project -- we have engaged consultants. We have AECOM. The local firm of AECOM were engaged a little over a year ago. They are doing -- starting their work. They require two years of baseline environmental work, and that two years will start this summer. So we're two years, at least, away from filing an application, if we could, on 15:26
that project. And we haven't looked at the results of this environmental baseline work, so we don't know what these are yet.

And that's the same process that is -- so if I can talk about them collectively, if it helps, we're in the same process with Atlin. So we will be starting environmental baseline work in Atlin this year. We went down and had a look at the icing of the Atlin river, but that was an observing mission rather than collecting scientific data. So that work, the environmental baseline -- and it's the 15:27
same -- just to be clear, the same company, AECOM, has -- through a tender process, is the successful company. They're doing all of the work on Gladstone, Atlin, and Marsh. So they're doing it as a collective piece. So we'll start our two years of environmental baseline in Atlin this summer.

Gladstone is a little bit farther ahead. We did a full summer of environmental assessment and a baseline work last summer. So that's the summer of 2009. We need to do some more work on that. We are working in each of these projects very closely with the local community because they all require very significant regulatory approvals, and they all have, I would say to you, a significant built-in negativity to them from the local community's perspective. So we're trying to work through those things.

So far we've been able to advance those projects even further than I would have thought in this time frame. These are very slow-going projects. There's a large community of people that are impacted in the sense of, you know, the water is going to be at a different level. We don't know what the extent of those impacts are. And I use "impact" not in a negative word but just as a descriptive word. And the amount of data that we need to collect in order to specifically answer questions is significant. 15:28

So subsequent to -- as an example, subsequent to the public meetings that we've been having, I mentioned that we originally put, last fall, piezometers out on the Army Beach area. We have since then committed to putting piezometers in at least two or three other locations. One I believe in the Constabulary Beach area, one out at Tagish, around the California Beach, and I think there's another one, 15:29

I just can't remember.

But this is all from -- as part of this -- you know, our knowledge of the lake system is not extensive from a scientific point of view. We certainly know how the water comes in and out and how we operate it, but there's been people living on those lakes for a long time, and we want to and intend to incorporate that local knowledge into the work we're doing. So that that's been helpful if we get additional data because people have said "Well, look there's some groundwater problems in this area and this area." You know, that's helpful from our perspective. 15:29

But -- it may have been a bit of a long-winded answer to your question, but that's where those projects sit today.

Q. Okay.

A. MR. OSLER: I just add one thing. When we looked at these projects and ended up with Mayo B, it was because we thought it would probably take awhile to get them to a stage where we could proceed with them, and I think the experience is demonstrating that, although it's going better than Mr. Morrison expected, that indeed it's taking time. But the good news part of it is if it works, if this being patient gets the information needed to deal with regulatory and actually come out with success, these are not projects that take a long time to build. They can be done relatively 15:30

quickly. They're not expensive projects. We're not talking about anybody saying "Geez, this is very expensive." These are very efficient projects, and they're focussed on winter energy in each case.

So that -- the key is to get regulatory approval. Each one has got their own unique little stamp and until you've got regulatory approval, you've got nothing. But once you've got that, you've got a very nice project.

And you look at our numbers in the forecast we've got right now, they would fit in quite nicely to -- by 15:31
2013 or something like that, '14, into helping with the situation with diesel.

A. MR. MORRISON: Mr. Chairman, if I might, just before we move on, just one very quick point that I think is worth making.

This is -- and I'm not suggesting that the question suggested this, but just so that everybody is very clear about this, we don't -- we didn't look at this as Mayo B and/or Marsh, Atlin, and Gladstone. Let's all be very clear: It's Mayo B and Marsh, Atlin, and Gladstone. We need 15:31
them all. And we need them -- we need the Marsh, Atlin, Gladstone as quick as we can get them in complement to Mayo B.

But the numbers that we're talking about, we -- you know, again it's this tricky little "when do we get

load" issue. So if you say do I need it by 2012, well, if we get Carmacks Copper by 2012, we need them by 2012. If we get a year's grace with Carmacks Copper kind of taking an extra year, well, we need them -- you know, we've got a year's grace, and we can get them a year later.

But we need to have Mayo B plus additional resource renewable developments in order to meet the loads would be our forecast. It's not "or." It's "and."

Q. And when do you think -- knowing you need to do the environmental information gathering and the regulatory, when do you think those projects might be ready to bring forward? 15:32

A. MR. OSLER: Well, so -- just to try to give you some perspective around that, I don't have the definitive answer, but let's say if we talk about Marsh Lake as an example and we do two years of environmental baseline data starting this year, that's this year, 2010, and 2011. Then we've got to look at the data. Then we've got to look at a whole range of other issues and can we go or not go. And then we would have to file an environmental application. And our experience at major project levels with that is it's about a year. So, you know, we're talking at least three years and maybe longer. 15:33

Q. All right. Thank you.

A. MR. OSLER: And that answer would apply at least to the other two. Gladstone is most advanced but a

diversion would require a YESAB executive committee review so -- and Atlin is the schedule, but it's an across borders issue. So it's -- I don't think you could see it any earlier that what we've talked about, and, for all sorts of reasons, unfortunately, it could be later.

Q. All right. Thank you. In your application at page 33 it's stated that:

> "... no greenfield hydro options are currently competitive with available hydro enhancement projects such as Mayo B in terms of cost and timing."

15:34

Now, does that statement give equal weight to cost and timing or does timing take on a greater weight in the determination?

A. MR. MORRISON: Well, let me try it this way: I'm not sure if it's a greater weight or which one is a greater weight, but they're both significant weights; let's say that. And I say that because the preliminary costs that we've seen for potential projects, and they're very preliminary costs, are very expensive. You know, are they the same as Mayo B in range? Maybe not, but they're -- you know, they're certainly very, very expensive.

15:35

And we have -- on the cost side, we also have a transmission factor that we have to build in. Depending on where they are, and I would say to you that the ones that we've looked at most seriously would need not only

generation, a greenfield generation project, they need transmission, and significant transmission.

So those are, from a cost perspective, adding the transmission on to the top of it does push it up into the very, very expensive -- very expensive per kilowatt hour kind of range.

Timing is a serious factor, though. We don't know, because we haven't built a greenfield project in a lot of years, but based on our current knowledge and timing of what it's taken to do the smaller, say, brownfield projects, such as Mayo B as we're going through now, we, you know, roughly, with the little information we have now, think we're probably in, you know, kind of a six to ten-year range for a greenfield project. 15:36

Now, depends on whether it's small or big, where it is, you know, the impacts that would be resulting from that. So, you know, there's a lot of -- as we talked about this morning, none of these projects are anywhere near shelf ready in the sense that we've done prefeasibility, we have a very good idea of what the environmental baseline is. We're not advanced to any of those stages. 15:37

So all of that means that that work yet has to be done. The licensing has to be done; the design. We're numerous years away. And the best, I guess, guesstimate that I would say to you at this time is small, maybe on the lower

end of the six to ten years, and large, very much in that ten-year range we would think.

A. MR. OSLER: And we're talking there about hydro. Essentially our reviews indicated we had that type of -- we had no pot of gold sitting there with a particular site near the transmission line, something like that. It's just a question of time. Unfortunately, that is not the scenario in the Yukon.

So, thus, one does take seriously looking at geothermal; one takes seriously looking at wind; one takes 15:38
seriously looking at any other options to see that for sure you're well informed as to your menus and taking into account maybe some of these things will have to evolve in different stages. Some other projects may come sooner than the bigger hydro ones because they cab be done sooner and at similar costs with less risks.

So when somebody -- we know the menu for the short term. We just went through it a few minutes ago. But the next stage at the moment I think it's safe to say Yukon Energy is looking at a range of different possibilities as to 15:38
what might be the top three or four -- two or three candidates.

A. MR. MORRISON: Yeah, and I just -- again, not to belabour the point, but I would say to you this, that the planning and the options that we have in order to meet

forecast loads as we go forward is something that occupies our time almost daily, because daily there is something that's either coming on or going off or maybe "daily" is maybe too much of a -- you know, at least weekly.

It's something that we have our sights clearly set. We're clearly focused on our Resource Plan. We're clearly staying within that range of possibilities, and we're moving forward. But there's -- we have our eye on either side of that. Is there a new option? Is there a better way of doing, you know, a hydro project that we've looked at that we have in our sights. Do we have enough wind data to go ahead with a wind project? What have we found on geothermal? And we -- it is a big part of what we do; trying to figure out how we will deal with all these issues on a week-in/week-out basis. 15:39

Q. Thank you. Now, I note in YUB-26 (f) that you state -- this is a cost question. I don't think you need to -- but you're welcome to refer to it. It says:

> "All costs related to Board processes for review of this project will be subject to Board approval and will comply with Board directives." 15:40

Now, my question is: Does YEC plan to capitalize the cost for this Part 3 proceeding?

A. MR. OSLER: It's -- subject to the Board's

direction, but it's in the budget as a part of the capital costs in the answer to CW-5. So we certainly have considered the possibility that it would be treated that way. That isn't the way it was treated in the past, so we're open to whatever way works. From the budgeting point of view, we wanted to sort of try and see if we could bring it into the envelope of the costs of the project rather than something totally separate.

Q. Okay.

A. MR. OSLER: If it wasn't capitalized as part of the project costs, I'm presume the normal rules would be that it would be amortized over the life of the asset. So I'm not sure why they don't get to the same result one way or the other. 15:41

Q. All right. And if it's part of the capital costs, will YEC be using the Board scale for costs -- for all the costs associated with this proceeding?

A. MR. OSLER: With this proceeding?

Q. Yes.

A. MR. MORRISON: Yes. We've assumed that that was the rules. 15:41

Q. All right. Just checking.

A. MR. MORRISON: Okay.

THE CHAIR: Would this be an appropriate time to take a brief break?

MS. BENTIVEGNA: I've only got two more questions, Mr. Chair, and I think they're fairly quick, and then I'll be done.

THE CHAIR: Can we take a break? We have a --

MS. BENTIVEGNA: Sure.

THE CHAIR: Thanks. We'll be back in 15 minutes.

(ADJOURNMENT)

THE CHAIR: So before we resume, are there any preliminary matters? 16:07

MR. LANDRY: Mr. Chairman, first of all, we apologize for being a few minutes late. We were trying to follow up with the undertakings for this afternoon, and we do have, I believe, answers to all of the undertakings.

YEC PANEL UNDERTAKING RESPONSES:

MR. LANDRY: The first undertaking, it's just going to be a filing, Mr. Chairman. It relates to the undertaking given to YCS relating to the suggestions referred to on page 2 of the opening, which is Exhibit B8. The 16:08 suggestions that were referred to on that page arise from a newspaper article and an interview -- or a radio news clip, both of which we have copies of, and what we would suggest we do is file both as one exhibit, the next exhibit, which I believe is B9.

THE CHAIR: Sheena, could you confirm that the next exhibit is B9?

MS. SMART: It is.

MR. LANDRY: And we do have additional copies for people in the room too.

THE CHAIR: Okay. Thank you.

MR. LANDRY: So, Mr. Chairman, we'll mark that as Exhibit B9?

THE CHAIR: Ms. Smart, you've confirmed that is Exhibit B9? I believe we've checked here. It's B9. 16:09

MS. SMART: It is, yes.

MR. LANDRY: Thank you.

EXHIBIT B9 - DOCUMENT RESPONDING TO UNDERTAKING GIVEN WITH RESPECT TO QUOTES IN RELATION TO THE YCS

MR. LANDRY: And, Mr. Chairman, the panel have the answers to the balance of the undertakings, so I'll turn it over to them.

THE CHAIR: Okay.

A. MR. OSLER: First, just to confirm that we think we've met the undertaking to do with losses on the two grids that we were asked with respect to, I believe, YUB-20, I believe (d), by reference to YECL-YEC-1-17 page 6 of 8 where the outages caused by grid are given in a graph. So we're assuming we've dealt with that undertaking. 16:09

Second, there were two different questions. I'll deal with them as two different undertakings. One, we were talking with respect to YUB-20 (e), (f), and (g), I believe, and the question arose about the implication for losses if you were to take power from Mayo B to Carmacks Copper versus other parts of the system to Carmacks Copper.

Essentially I'm advised that when we get into the losses we're talking about fixed and variable, and the fixes losses are not affected by what we're talking about in this choice. 16:11

So the variable losses are affected by the voltage. The higher the voltage in the range of 69 to 138 does materially reduce the loss. The distance, the distance increases the loss. The level of the load on the line can make some differences as well.

We have about up to 50 kilometres, if we're coming out of Mayo B, at 69 kV, and the rest of it is at 138 kV, the same as the WAF grid. So we're not -- we have the extra loss from the lower voltage for a very defined distance, which isn't that great. 16:11

The distances between taking that power in terms of hydro generation from Mayo versus Aishihik, which would be the practical alternative, are quite material. Order of magnitude distance from Aishihik to Carmacks Copper, say 400 kilometres; order of magnitude distance from Mayo to

Carmacks Copper, perhaps 150, in that range, plus the other 50.

So people advising me say they think the losses would be probably less coming out of Mayo, all factors considered, but it's not a -- it does have to take account of all the factors we just went through and isn't just a question of distance.

So that's that one.

And then we had a broader discussion, I think in reference to YUB-7, about the extent to which the 16:12
diesel-only case could be optimized to reduce its losses and therefore the amount of loss of energy that we're saving in diesel by running Mayo B, you know, is it being overstated, if I can put it that way. We haven't done the in-depth analysis, so it's more a question of looking at the factors that could come into play.

And, in principle, the in-depth -- the way in which this system is worked on, just so everybody is looking at the number of losses the same way, I think an important point has to be made is that the big difference that you see 16:13
when we look at the 7 percent versus the 27 percent loss up at Mayo Dawson, just for starters, is that we are comparing a bit of apples and oranges here.

On the WAF system essentially YEC is a bulk supplier. So we're seeing essentially transmission losses

and station service losses for a fairly efficient system running on the hydro, predominantly, at the moment. But when we go to Mayo Dawson, YEC is the predominant retail generator -- retail supplier in Dawson. It is the supplier in Dawson.

So you're seeing a combination of transmission losses -- station losses, because in Yukon, unlike some other jurisdictions, losses include the losses in the stations, and distribution losses in Mayo -- in Dawson and Mayo, but in Dawson in particular, which could be untold -- you know, in the order of magnitude of 10 percent. 16:14

So we are comparing apples and oranges to some extent when we look at the so-called loss numbers for the two systems in the analysis we've given you.

Obviously, no matter what we do, we're still going to incur the distribution losses in Dawson. So that's not the issue. And we're still going to incur station service losses. And some of the diesel units they don't have low station losses. They can be in order -- up to 5 percent range. 16:14

The question then comes down to if we're optimizing it how would we move the energy around. We would certainly look at options if we still had diesels at Minto, if we can run the load closer to the unit -- if we can run the generator closer to the unit it can save losses. We

don't want to be spending diesel to send it over a line somewhere.

We have a much of diesels though at Faro. No matter where we send that energy it's going to go through losses.

If we run the diesels in Whitehorse, it's good for serving the load here, but if it's going to be used to serve load anywhere else it's going to go through losses.

If we go up to the Mayo Dawson system, the mine loads and the extra loads we've got are, as I said 16:15
earlier, essentially close -- you know, Alexco, close to Mayo. So it's not a question of optimizing. If we have to start running diesels to serve any of that load, the diesels to some extent are at Mayo, but they're also over at Dawson, so we could actually run into the problem in reverse if we're not careful.

So, you know, bottom line when people go through it quickly, yes, we would look at optimizing our modelling in the long run so that we break out this factor more than we do at the moment, but we don't think there's any 16:16
material issue of overstating the diesel requirement for the diesel options at the moment in a material sense that would adjust the overall assessments we're doing of the cost benefit assessment.

We do appreciate, though, that refinements are

a good thing to think about going forward, and we will move in that direction so that we separate out the load from the loss issues so that it's a bit easier for people to answer questions in the future.

That's it.

THE CHAIR: Thank you. So, Ms. Bentivegna, if you want to continue.

MS. BENTIVEGNA: Yes, thanks, Mr. Chair.

MS. BENTIVEGNA QUESTIONS THE PANEL:

Q. Can I take you back to that Table 1 that is in CW-5 (a). It was the subject of discussion when the City of Whitehorse was cross-examining. 16:16

A. MR. OSLER: Yes.

Q. All right. Now, you'll note that there's an item, 19.53 million, in estimated and direct costs?

A. MR. OSLER: Yes.

Q. And can you explain what would be considered or what's included in indirect costs?

A. MR. OSLER: In Kiewit's estimates they classified costs that directly related to the various functions. You see they are components of the work and then they classified their indirects as other costs, if incurred by them, in what I would generally call site-related costs. They're not general in administration overheads because that's a different factor entirely. So they are relating to 16:17

the project and the site, but they're indirect.

Camp costs and all of the related issues to do with mob. and demob. of the camp. Some of the commodity acquisition costs are built into the indirects as distinct from the actual issues in installation and stuff. Fuel I think is in there as well.

I could have -- I don't have it in front of me. I could find out very quickly in terms of a list, but it's those types of things and the generic definition of it is the way I described it to you. It's not overall 16:18
administrative overheads or anything like that because that's a fixed 6.61 percent for J&A, and that's specified, it's not open for discussion.

Q. Yes. It would be useful if we could find out, seeing the amount of the costs. If we could find out what that includes and what's defined as indirect costs.

A. MR. OSLER: It's not a large number of items, I think I probably touched on the biggest ones, but I will undertake to get you any more information that I could in the items that are covered under there. Thank you. 16:19

Q. Thank you.

UNDERTAKING - TO EXPLAIN WHAT WOULD BE CONSIDERED OR INCLUDED IN INDIRECT COSTS FOUND IN TABLE 1 CW-5 (A)

Q. MS. BENTIVEGNA: Now, the target maximum of the

contract is 85.4 million. Now, what happens if the price is less? I know you mentioned that then it would be 50/50, 50 to the contractor and 50 to YEC, but would that mean that the YDC contribution would be reduced? What I'm getting at is will it go -- will the 50 percent, and correct me if I'm wrong on the 50 percent, that would go to YEC, would that reduce the amount -- the 36 -- I think it's 36.5 million, that will go into rate base?

A. MR. OSLER: Okay. First step, correct, 50 percent. The second step, we answered a question from CW, I believe, on the implications of plus and minus cost increases and we commented in there on the second part of what you're getting at. And if somebody can remember where that question is I will use it to elaborate, but there is a -- there is a band of cost reduction that will not affect reducing the 50 percent because our eligible costs as a percentage -- our eligible costs overall are much more than was assumed when we went to the submission. 16:20

One of the biggest factors there is that when we were preparing the application we were still working on AFUDC, which is a noneligible cost of more like 5 or 6 or $7 million versus the financing arrangements we put together and reduced it. So we reduced noneligible costs, which gave us more latitude on eligible costs. 16:20

So we have some room and it's more than enough

room to -- I think in the answer we talked about a 10 percent reduction. I think the answer -- which one?

MS. KELLGREN: CW-13, I believe.

A. MR. OSLER: Thank you. Rather than speculate, let me just look.

Okay. On CW-13, on page 3 of 4, I'll just read because it will be quicker.

"Cost decreases at 10% will not necessarily result in all of the cost decrease going to YEC net rate base, 16:21
i.e., the net benefit to --"

MS. BENTIVEGNA: Mr. Osler, can you slow down?

A. MR. OSLER: Yes, I can. I'll start again.

"Cost decreases at 10% will not necessarily result in all of the cost decrease going to YEC net rate base, i.e., the net benefit to YEC rate base will be reduced to the extent that the Federal Funding contribution is reduced due to its cap at 50% of eligible 16:22
costs. Table 1 assumes ..."

And the Table 1 is a different Table 1 in this case.

"... assumes that Federal Funding is reduced by $3 million (implies that about half of the overall cost decrease

results in a reduction of eligible costs below $106.7 million)."

Which is the effective number assumed to get the amount that we've got.

Now, we were talking there about a 10 percent reduction in the overall cost, so we were talking about 12 million. So I would say that we were fairly comfortable that if we manage to save money within any ambit of the 7.7 million contingencies we're pretty safe for most of the distance and if we lose a bit of contribution at the tail end of it we'll still be happy. It won't be a big issue. We've got latitude, and this is the best answer for understanding how much. 16:23

Q. Okay. But you've just told me it will reduce the federal contribution by the savings. So will any of the savings go to reduce the amount that's going to be contributed by rate base?

A. MR. OSLER: Yes. Sorry. To start from the beginning, if we -- the point of this question that was asked of us is that if we spend more money than 120 it's going to affect us going to rate base and if we spend less it's going to go to rate base. Unfortunately it's pretty heavily levered so we don't want to go more. And the extent to which we manage to reduce the 36.5 million will be tempered by the thing that you and I were just talking about, the extent to 16:23

which it's offset by any reduced contribution by Canada. If it's offset, then some of the benefit will go to Canada and not to the ratepayers, but until it's offset it all goes to ratepayers, period.

Q. Yes. Just to add on to that, because one of the portion is coming from YDC. Is anything -- would any of the savings reduce the YDC contribution?

A. MR. OSLER: I'm under -- I have no idea that it would, no.

Q. Okay. 16:24

A. MR. OSLER: It's not tied in the same way to any percentage of eligible costs or anything.

Q. Okay, thank you. Can I just follow up again if the costs exceed the 120 million budget. Now, will the overexpenditure of the amount, will that be added to the amount -- that you'll ask to be added to the amount that will go into rate base?

A. MR. MORRISON: Mr. Chairman, when we get to that point we will look at that, as you will, based on whether those costs were prudently incurred, and if so we 16:25 **will be looking for them to be added into rate base.**

Q. All right. Thank you. Now, when we looked at the Excel model that was provided in YUB-25, part (b), all those -- the spreadsheets with all the little numbers. I don't know if Mr. Morrison will be able to see it or not.

A. MR. MORRISON: I can't see them either.
Q. It's not specific to the numbers there. For Mayo B, how were the O&M costs determined?
A. MR. OSLER: They were determined by looking at long-term averages that made sense by YEC looking at its anticipated incremental staffing and requirements for the plant, an assumption that there would be a major overhaul once every ten years and spreading that cost over ten years starting from year 1 and -- generally based on YEC's experience, but taking into account this is not a greenfield 16:26
site, this is a site that's already got operations and people at the site. So how much would they increase their operating cost to deal with it. There's probably a bit more information somewhere in one of the footnotes, but ...
I'm sorry, I can't find it quickly. When I do find it I'll let you know where it is just as an undertaking. There is a bit more explanation than I gave.
Q. All right.
UNDERTAKING - TO EXPLAIN HOW THE O&M COSTS WERE DETERMINED FOR MAYO B. 16:27
Q. MS. BENTIVEGNA: Are you aware if -- you've mentioned the major overhauls for periodically every ten years I believe you said.
A. MR. OSLER: That's correct.
Q. Would there be other type -- based on experience that

YEC already has with that type of project, would there be any other reinvestments that are foreseen in the O&M costs for any other major type of maintenance that would be needed?

A. MR. MORRISON: Not foreseen, no. What these numbers will include is our experience with, you know, this size of a turbine and this size of a plant and what we generally look at in terms of regular, you know, checks and maintenance, and the major is the standard of the ten years again is based on the use of the unit over a period of time.

So I can't think of, you know, in the short term any major reinvestment as you call it. You're talking about major capital at that point. 16:28

Q. Yes?

A. MR. MORRISON: I can't think of any other major issue, but Mr. Osler has some other information.

A. MR. OSLER: Well, I'm just -- I finally found the footnote. It's at page 30 of the application, No. 44. It explains how the 360,000 a year in 2012 dollars includes insurance, regular maintenance, non-labour, and any added regular labour, plus .1 million per year allowance for periodic maintenance overhaul, which is approximately 1 million every 10 years. 16:29

We also note in footnote 45 that the average life assumption of 65 years of course is an amalgamation of various lives and the observation that lives are being

extended by some of the utilities in the Crown sector dealing with these types of projects.

I think going beyond the first 10 to 20 to 30 years there will be other types of costs due to the life of the assets and things like that that we have not dealt with and wouldn't materially change any of the analysis that we're doing from a present value point of view or rate impacts in the next 10 or 15 or 20 years, which is our focus. But to be technical, in the 65-year life the answer is yes, there will be various other costs not into the future, but they don't affect the decision making today. 16:30

Q. All right, thank you. Thank you, gentlemen.

MS. BENTIVEGNA: Those are my questions, Mr. Chair.

THE CHAIR: Thank you very much. Just before I turn it back to Mr. Landry for an opportunity for any redirect, I would just like to poll the Board to see if they have any questions that they want to pose to the witnesses.

MS. WOODLAND: I don't have any. 16:30

THE CHAIR: And I have none. So I'll turn it back to Mr. Landry, if he -- oh, sorry.

MS. KELLGREN: Sorry, Mr. Chairman. There are just two corrections I would like to make for the record, if at all possible. I noticed them in my review of the

transcripts, just very quickly.
THE CHAIR: Sure.
MS. KELLGREN: Thank you. I don't imagine either of these are objectionable, I just want to make sure it's clear for everyone.
The first is at page 58, line 11. I noticed there the panel was going through an analysis of capacity. Line 11. And you'll see there that you said "that should give us 24," but if you do the math that appears to be incorrect. I think it was probably 59, if you look at the capacity. I just wanted to ensure we're clear on that. 16:31
THE CHAIR: Could you just repeat the page number, please?
MS. KELLGREN: Of course. It's page 58 at line 11.
THE CHAIR: Thank you.
MS. KELLGREN: Is that correct?
A. MR. MORRISON: You're talking about the No. 70 being -- should be 59?
MS. KELLGREN: Yes. Approximately. Not 24. I think 24 makes the analysis incorrect. 16:31
A. MR. MORRISON: I think you're right.
MS. KELLGREN: Okay, thank you. And then just one other correction for the record. Page 74, line 4 it says FERC, F-E-R-C in capital letters. I believe that should

say firm.

A. MR. OSLER: Which line, sorry?

MS. KELLGREN: Line 4, page 74. That says FERC. I think that should probably just say firm.

A. MR. OSLER: Yes.

MS. KELLGREN: Thank you.

THE CHAIR: Thank you. So I'll turn it back to Mr. Landry, if he will give YEC an opportunity for any redirect.

MR. LANDRY: Mr. Chairman, we have no redirect. 16:32

THE CHAIR: All right. So that will allow us then to move to -- the panel can be excused then. Thank you.

A. MR. MORRISON: Thank you.

(THE PANEL STANDS DOWN)

THE CHAIR: So that will give us the opportunity now for the Yukon Conservation Society to sit its witness panel once the panel has vacated that area. We'll just take a couple of seconds here. 16:33

We can proceed to swear them in.

J. PINARD, S. WRIGHT (For the Yukon Conservation Society), affirmed, testified:

THE CHAIR: All right, you can begin.

A. MS. WRIGHT: Well, we're not really voiced

in the way things go here because we're just a small environmental group of 300 members, and I suppose we are probably of the -- grassroots would be where we come from. A lot of this -- a lot of these proceedings are very -- are very remote to many people in the Yukon, most of them being the ratepayers who are affected by these projects, as well as taxpayers in this particular project.

And so when -- it takes a long time to understand even the language. I think most people here will understand that it's a very foreign kind of concept to address these things. 16:36

THE CHAIR: Ms. Wright, I want to make sure that your evidence gets adopted. Did somebody speak to you about that?

A. MS. WRIGHT: Well, we assumed that this had already been adopted; or is that true?

THE CHAIR: No. I believe that there's a more formal process in terms of adopting the evidence. Do you want to speak to that, vice chair?

MR. LAKING: It would be useful if you would adopt that evidence as your evidence and make yourself available for questioning on it so that it came on the record as that. It's been submitted as an evidence so far, but adopt it as your evidence. 16:37

A. MS. WRIGHT: Oh, okay. Thank you.

MR. LAKING: You're sort of making an opening statement now.

A. MS. WRIGHT: Sure.

THE CHAIR: So if you do that first and then you could proceed to your opening statement.

A. MS. WRIGHT: Okay.

THE CHAIR: Okay, thank you.

A. MS. WRIGHT: Sorry. We submitted this -- it's -- I think it is C5-4.

MS. SMART: It is. 16:37

A. MS. WRIGHT: On March 16th, 2010.

MS. BENTIVEGNA: Do you adopt it as your evidence?

A. MS. WRIGHT: Yes, I do.

MS. BENTIVEGNA: All right. As well as the IR responses?

A. MS. WRIGHT: There was a follow-up of -- there was an information request done by the YUB, and we responded to that; and that is C5-5.

THE CHAIR: And you adopt that as well? 16:38

A. MS. WRIGHT: Yes.

THE CHAIR: Okay.

MR. LAKING: There you go.

THE CHAIR: There you go. It wasn't that hard after all. So you can proceed with your opening

statement -- or continue on from your opening statement.

A. MS. WRIGHT: I'm unsure whether I'm supposed to read it all out, sir. I'm not really sure, or just -- I'm not really sure how I'm supposed to --

THE CHAIR: If you have an opening statement, you can read it into the record. That's fine.

A. MS. WRIGHT: Yeah. I don't really have an opening statement.

THE CHAIR: Okay.

MR. LAKING: It's not necessary. 16:39

THE CHAIR: No.

A. MS. WRIGHT: Okay, good. But I also did want to reiterate that we're not lawyers here so we're not really sure about the process, and we really try. We're not really trying to -- it's more enthusiasm than -- and ignorance than malice.

THE CHAIR: Well, if it's any comfort, it's new to me too.

A. MS. WRIGHT: Okay, thank you.

I just -- I would like to address this media thing. Can I do that? 16:39

THE CHAIR: Yes.

A. MS. WRIGHT: YEC has provided the things that we asked for, these two media interviews in which they quote -- sorry. In the opening statement on page 2 I will

read this again, the challenges to the Board's review. It says:

> "Recently, Yukon Conservation Society and others have raised concerns in the media and with the YUB regarding the timing of the YUB review process - noting that this review is being undertaken before the YESAB process has been completed and final permits issued, and suggesting that YEC has surprised parties by proceeding to finalize a Mayo B construction contract at this time. In this regard, YCS and others have suggested that Yukon Energy is 'sidestepping the regulatory process,' 'dodging the regulators' and placing undue pressure on the YUB to 'rubberstamp' this project."

16:40

And then going on further, that "Yukon Energy fundamentally takes issue with any such suggestions ..." and then saying:

16:41

> "It is simply inappropriate for parties such as YCS who are a formal intervenor in this process to make such statements that totally fail to reflect the record

filed in this proceeding as well as in the YESAB proceeding."

We have been provided with these, thank you, in context. The "rubberstamping" was made according to the "YEC dodging regulatory authorities: Critics" by Chuck Tobin in the *Whitehorse Star*. I don't have a date, but I believe the rubberstamping was referred to as a -- it was an NDP member of government that suggested this. I think it is at the top of the second page. That is a politician. That was not us.

When YEC says YCS and others and makes these quotes, we have a problem with that. That's all. 16:42

And then the second page on -- the CBC AM news. Now Rifkind is Lewis Rifkind from YCS. He's our media guy. The only quote I can -- the reporter says something but the quote that I get from Lewis Rifkind is that -- it says here in the middle:

"That until the boards get their rulings and their recommendations we just don't know and you can't pre-suppose what their decisions will be." 16:43

I'm not a lawyer. I'm just looking at the language. We were very conscious when we put forward this question -- this letter to you that we just wanted your direction.

We wanted -- we were surprised. I wake up Monday morning, I get surprised when I hear the media. We all do. We were surprised because we thought -- because we were in the middle of this process and we were engaged and excited about opportunities to put forward our argument and our ideas for how this could go forward, and that is why we -- when we heard "Oh, things aren't moving ahead and we don't have our opportunity to put in our two cents worth before they move along ..."

Oh, the signing of the contracts. That's what 16:44
we heard in the news. Sorry. And so -- and that's why we were surprised, but we didn't go to the media, we went to you, and the media picked it up off of the website. So we want it to be clear that we were not trying to move around that process and we wanted to do it in the most appropriate way as possible, and we knew it was you that had to make that decision, and that is why we did that.

YCS contributes to a lot of these types of reviews and we take our role very seriously and we don't want to be looked at as being disrespectful of the process, and 16:45
it's very important that the general public doesn't think we're a bunch of yahoos out of place.

We would like -- I'm not sure what we want. I think we want some kind of attraction of -- I can't say I like being called ill informed, but I'm not really sure what

to ask for other than can we have some acknowledgment that this was not a malicious act on our part and we did not directly say these quoted -- these quoted things.

THE CHAIR: I guess what we were just -- I think the record -- your conversation that you just had right now reflects your position on that. So it's on the record for these hearings.

A. MS. WRIGHT: Okay.

THE CHAIR: So I think that's important.

A. MS. WRIGHT: Okay. 16:46

THE CHAIR: Okay. We take under advisement your comments.

A. MS. WRIGHT: Okay.

THE CHAIR: So we are aware of those now.

A. MS. WRIGHT: Okay. Thank you.

The key in our evidence is that we have a few points and we are very cognizant of the risks to aquatic habitat in the Mayo Lake and Mayo River. We do understand that the YESAB process has gone through and we are at the final stages and it is -- the application has -- the issues 16:47 **that we have are being addressed in the application, but we -- and we have gotten some feedback on how much it's going to cost. So I think that was our concerns, that those costs were not -- had not been seen or we could not see it in the budget sheets and now we see it.**

Our next evidence was about the present Yukon Energy mix is a risky, as in very heavily hydro. On page 2 of our evidence, the initial evidence, we talk about how there are -- what happens if there is drought and what happens with climate change. How do these flows change. We see in this chart that was provided by the YEC. So YUB-47, Figure 1 it shows the hydro inflows available for outflows. And when you look at this particular chart you can see that of all the different there are some trends, and long-term trends; and we are concerned that if there are some trends 16:49
that maybe -- Aishihik and Mayo are in very similar water regimes. That if there is a long-term drought or changes in the climate that those two systems that are land-based systems as opposed to glacial, that there's a risk in water availability on those systems. So when your energy mix is heavily hydro, you are putting all your eggs in one basket, and that is one of our concerns.

We are also -- we have -- a heavy part of our evidence is to do with wind energy as an alternative, and JP is our expert witness, I suppose that's what you call it, and 16:50
we took it upon our -- we tried to be proactive and provide a case study of a potential wind farm and we have presented that to here. We used -- the information that we used was comparing with real projects on the ground that had very similar -- what would you say? Well, access to -- we used

two projects. One was on Kodiak Island, which is quite remote, and then our other was down just on the other -- in Dawson Creek, which is a recent -- which is a recent project too.

We used those projects and that idea just as the most -- the cheapest and most -- you use a case study and move forward with that; and you make some assumptions, it's true, but we wanted to put it out there because we have not seen anything from YEC that gives us any kind of meaningful idea of what they imagine could be the potential for wind energy in the Yukon. And JP is available for any questions about wind energy. 16:52

On the note of some alternatives other than wind, there's small IPPs or small hydro. There's a possibility of a small hydro at the Faro mine, which I thought was so innovative when I saw the project and I thought "Wow, it's sort of cool. It's not big, but it's something. They got to deal with that water somehow and why not make some power off of it." It's sort of neat.

Demand side management as well. There's places in the States that are meeting all their future load demands by demand side management. This is a real opportunity. We call it megawatts. And if you don't have to make it, if you conserve it, it's a real -- it's a fantastic idea and it really needs to be aggressively looked at. 16:53

All the new buildings that are going up here need to be -- need to be really more efficient -- and it speaks to the ratepayer too. If YDC can co-put some funds -- not always being -- making new supply going in and just reducing the load and the growth.

We also -- some people might think that this is kind of bizarre, but there is times of the year where solar is a real option up here, particularly in the time of March when actually waters are low in the hydro system, and there's a lot of sun out there this time of year. I know because I have a solar system and it's cooking. 16:54

And that's -- I think that's the sort of outline of what we -- what we're putting forward and we welcome any questions about our ...

THE CHAIR: Thank you very much.

So YEC, do you want to cross-examine the witness?

MR. LANDRY: We have no questions, Mr. Chairman.

THE CHAIR: Okay. Thank you very much. 16:55

So YECL -- just going by the list here. YECL, do you have any questions of the witness?

MR. BABYN: No, we don't, Mr. Chair.

THE CHAIR: For the City of Whitehorse, do you have any questions for the witness?

MS. KELLGREN: I apologize to my friend. I told Mr. Landry earlier that I didn't. I do just have one quick clarification question in going over your evidence.

MS. KELLGREN CROSS-EXAMINES THE PANEL:

Q. Is there any indication that similar federal funding would be available for this wind generation that you're speaking of?

A. MR. PINARD: Likely not, judging by how the federal government has been. In the past, about a decade and a half, the federal government had an eco -- a program called the eco energy for wind energy. Well, it was for renewable in general, but this eco energy program, specifically for wind, was a 1 cent per kilowatt hour production incentive, and this government today has cancelled it as of last year. So we don't foresee any new funding as far as related to wind.

As far as the green infrastructure fund, I'm not aware that any -- well, there may be, but I haven't been aware that any of that green infrastructure fund has been dedicated to wind projects so far. 16:56

MS. KELLGREN: Thank you.

A. MS. WRIGHT: But I also think that it is a green infrastructure project. It would have been -- if it had been ready at the time, at a certain point, I suppose, it would have been accepted as a -- it's infrastructure and it's

green and I don't see why it wouldn't have been accepted. It's just the timing. It was the proposal -- the proposal was not presented to them at the time when they came calling with some money. There was no -- nothing on the table to be presented.

MS. KELLGREN: Okay, thank you.

THE CHAIR: So I'll call upon -- do the Utilities Consumer Group have any questions?

MR. BUONAGURO: No, thank you.

THE CHAIR: Thank you. Do the YUB counsel have any questions? 16:57

MS. BENTIVEGNA: No, thank you.

THE CHAIR: Thank you. And does the Board have any questions? Thank you.

I guess -- I don't know how you do this, but you're allowed to redirect -- the opportunity for redirect, but I don't think you have anybody to deal with so I can excuse you, if that's -- as witnesses.

A. MS. WRIGHT: Okay. Thank you very much.

THE CHAIR: Thank you very much for coming. 16:58

(THE PANEL STANDS DOWN)

THE CHAIR: So I guess the next stage of this hearing is the applicants to give the arguments, but I think given the time of the day, it's almost 5:00, this might

be a good time to take a recess until tomorrow and then we'll hear the arguments tomorrow, if that seems acceptable; and we'll start at 9:00 again. Thank you.

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