Page 1

(9:00 a.m.)

CHAIRMAN:

Q. Ms. Henley Andrews, how are you this morning?

HENLEY ANDREWS, Q.C.:

Q. Fine thank you, ready to roll.

CHAIRMAN:

Q. Do we have any preliminary matters?

MR. KENNEDY:

Q. No, Chair, there's no preliminary matters.

CHAIRMAN:

Q. Thank you, Mr. Kennedy. So if you're ready to roll as you say, Ms. Henley Andrews, let's go.

CROSS-EXAMINATION BY JANET HENLEY ANDREWS, Q.C. (CONT'D)

HENLEY ANDREWS, Q.C.:

Q. Good morning. Mr. Haynes, yesterday there were two undertakings given and I understand from your counsel that you have the answers to both of those. So I'll just ask you the question and you can give the answer. When unit number 7 was installed at Bay D'Espoir, how many years was it to be depreciated?

MR. HAYNES:

A. You mean the initial installation or what we're proposing.

Q. No, the one that's there now.

Page 2

A. The existing exciter was installed when the end (phonetic) was installed, it was written off over the life of the plant which is approximately 50 years.

Q. 50 years?

A. For the initial installation, yes.

Q. And is that the exciter that's being replaced?

A. The exciter that's being replaced, that information is contained at IC-15.

Q. Yes.

A. And, basically, the exciter is being written off over a 13 year period which is basically the remaining useful life of the plant. I should not say useful life of the plant, I'm sure it's going to be useful well beyond another 13 years.

Q. No, now you're talking about the proposed new one, right?

A. Yes.

Q. I'm talking about the one that's there right now.

A. The one that was installed originally was in installed in 1977 and the Hydro plant was depreciated over a 50 year period.

Q. 50 years. You were also going to check out

Page 3

why the number on page B-9 has changed from 3,200 barrels of oil per day at Holyrood.

A. Yes. There were two factors involved in that change. When the original number was generated a couple of years ago it was based on full supply elevation at the structure, and also based on 615 kilowatt hours per barrel. I guess when we were reviewing this basically we went with a three year average elevation on the upstream structure. And we revised the efficiency factor to 625 as proposed in our upcoming GRA. So it's a refinement.

Q. I'd like to go back to the exciter B-5, the proposal at B-5 and I understand that since yesterday appendix G, Tab 1 from the 2003 Capital Budget is now available on the screen. How much capacity is affected by exciter number 7 at Bay D'Espoir?

A. 150 megawatts.

Q. Now if you look at section 2, 2.1 of the report that's on the screen, this report which was done in 2000 indicated that the performance of the exciter over the previous five years could be described as excellent.

A. It's good performance, yes.

Page 4

Q. Well, the report says excellent.

A. Okay.

Q. And if I look at the very first page of the report it's prepared by Generation Engineering.

A. Yes.

Q. And that is your department?

A. Yes.

Q. Now, that report outlines the service history of exciter number 7.

A. That's correct.

Q. And, basically, there was one forced outage on October 23rd of 1997.

A. When this report was generated. There have been others since.

Q. I'll get to the later things. If you look at page B-15 of the 2003 Capital Budget Application which should also be available, that's the submission with respect to the engineering portion of the project from last year?

A. Yes -

MR. KENNEDY::

Q. It's the 2003 Capital Budget file.

GREENE, Q.C.:

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Q. Section B of that, Mr. O'Reilly.
HENLEY ANDREWS, Q.C.:
Q. Page B-15 of the application.
GREENE, Q.C.:
Q. It's not in that particular report, it's section B to the application, and project B-16 of section B.
HENLEY ANDREWS, Q.C.:
Q. Do you have that? No. Okay, we're getting there. See I can't read the screen, so I'm relying on the hard copies. If you look at page B-15 under "Operating Experience" -
A. Yes.
Q. You need to scroll down, Mr. O'Reilly. Thank you. It indicates that the most recent repair on the exciter was a fan failure in September of 2000.
A. Yes.
Q. And that resulted in a unit trip.
A. Yes.
Q. If you look at page B-5 and 6 of the current application or particularly, B-5 under "Operating Experience", again, the indication is the most recent repair on the exciter is the fan failure in September of 2000.

Page 6

A. 2000, yes.
Q. So, basically, since 1995 with respect to the unit number 7 exciter, there was a unit trip in 1997 and a unit trip in 2000.
A. That's possibly correct. I'm not sure if there have been other trips for other reasons.
Q. Well this is Hydro's evidence.
A. Yes it is, but that is based on the exciter. There are other things that cause units to trip besides exciters.
Q. No, no, we're focused on the exciter for the purpose of the capital project?
A. Yes.
Q. If we go back to that 2000 report, Mr. O'Reilly, and in particular if look at page 6 of that report, section 3.1 discusses unit number 7.
A. Yes.
Q. Now units 1 through 6 were replaced in the period from 1995 to 1998.
A. I believe.
Q. And they're the same types of exciters?
A. No.
Q. But they perform the same function?
A. Yes.

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Q. And if you go back to page 2 of the same report, it says that "The original excitation systems for these units were replaced due to age, the limited supply of critical spare parts in stores inventory and a limited product support from the original equipment manufacturer."
A. Yes.
Q. Were any of the six exciters that were replaced, the same type of exciter as the one on unit number 7?
A. No.
Q. So there were no spare parts that could be -
A. I can't state specifically there were absolutely no cards but basically the exciters on units numbered 1 to 6 are an earlier vintage. They are Silcomatic Mark III and number 7 is a Silcomatic Mark IV. And usually with those changes in products from the vendor there's a significant change in design. I doubt that there's any card interchangeability.
Q. But you don't know?
A. Not for sure, but I doubt it very much.
Q. Back to page 6, there's a reference to the

Page 8

parts that General Electric has identified as obsolete and no longer manufacture?
A. Yes.
Q. And the first item is a field temp simulation card.
A. Yes.
Q. Or something like that. Now, the reference in the paragraph after that is that Hydro doesn't have a spare field temp simulation card, but it does have a spare over voltage suppression card, correct?
A. Yes, that's correct.
Q. What does it mean in the next sentence when it says that "General Electric will offer a return and repair option for the obsolete cards"?
A. It means that they will attempt to repair it if they can get the sub component parts from some manufacturer. But they have no guarantees, there's no express warranty that would actually--that they would guarantee, you know, a substitutable part.
Q. It then goes on to say that "General Electric will continue to provide technical support on the", what I understand to be the unit 7

Page 9

exciter in the near future, but they can't guarantee parts availability.

A. No.

Q. In the following paragraph where it says, "In the event that cards become obsolete, re-engineering may be required", what does that mean?

A. It means that you identify the mis--the example that's used there is for power supply for a Silcomatic I Exciter, I and II exciter. You go back and you go back to a General Electric, presumably, or some other vendor and say you need a power supply which meets this specification. And they would actually go and design a power supply or a component for your particular application. And our experience has not been all that great with re-engineering some of these components. $20,000, I've heard numbers as high as $100,000 for some specific cards. If you get back down a specific card that you insert into a card rack, you know, you have to go back and do the function. Most of it's propriety information. You can't necessarily get it from somebody else. You have to go back to

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GE. Their practice is to recall some retired individual and bring it back and start from scratch to do it.

Q. My question is has Hydro investigated the cost of a re-engineered field temp sim card?

A. No, we have not, but that is only one of many cards that we would have to do that same thing for.

Q. But the only parts that are identified as obsolete and no longer manufactured are these two up above, the field temp sim card and the over voltage suppression card.

A. At the time of writing that report, that's correct.

Q. Well there's nothing in the justification that's contained in your 2004 Capital Budget to indicate that there's anything else that's obsolete.

A. No, there's not, but the support for the product has diminished. I don't have any particular record from a manufacturer that corresponds with engineering of M (phonetic) basically from the supplier. His understanding is there is very little support left for the Silcomatic Mark IV. There is

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some, but there's no assurances. One of the reasons that Newfoundland and Labrador Hydro proposed replacing these critical components is that if we do get a failure that we cannot manage, then basically we have no alternative. We cannot enter into emergency purchase contracts from somebody else to replace 150 megawatts of power. We don't have any interconnect capability. One of the things that we take great pain I, you know, would suggest, is to ensure that these machines are reliable. We don't have the option to replace this energy.

Q. Well, I'm going to get there as a matter of fact, but I take it that your evidence is that the equivalent of the field temp sim cards and over volt suppression cards from the units that have been replaced would not be appropriate because they were different exciters?

A. That's correct.

Q. Have you attempted to get a spare field temp card?

A. From other sources?

Q. Yes.

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A. I don't think so but I cannot affirmatively answer that particular question.

Q. You're still getting technical support from General Electric?

A. In as far as they can provide it but there's no assurance of replacement components. When an exciter fails, if you have a major fail in the exciter, it's not uncommon to lose a lot more than just one or two cards. So, you know, it's not just a single card that we're looking at, it's the whole system. We want sustained vendor support to ensure that we have long term reliability of the product.

Q. Well, I'd like you to take a look at the February 10, 2000 e-mail which is attached to that appendix, to that report from, and it's from Rose Howlett. It's dated February 10, 2000 and it's 8:19:05 a.m. and it's addressed to Glen Winsor. Yes, that's the right one. At the time of that e-mail, was there--so in 2000, Hydro would have been aware that there were two cards which were no longer available?

A. Yes.

Q. Do you know if there was any attempt at that time to acquire those cards from other

Page 13

sources?
A. I don't think there was, I cannot say for sure but I would suggest that if we are going to buy those from other sources, we are buying some product or some retired equipment from some other vendor who has already decided that this particular equipment is obsolete and no longer worth keeping in service. So we are buying an aged component which I would suggest would not be as reliable as a new one, has no assurance of working, and our experience when we've done this--we've done this on other systems by the way, for EMS system and other things, we have bought equipment from other utilities that has been retired from service and our experience has been mediocre. It's not been stellar by any stretch.
Q. If you look at the last paragraph of that e-mail -
A. Yes.
Q. It indicates that possibly after review of the cost of stocking enough components for a five year period, you may want to consider contacting Paul Martin for a quote on a replacement exciter. Did Hydro investigate

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the cost of stocking enough components for a five year period?
A. Some components are unavailable, so, you know, if you stock up, you know, several thousand dollars worth of components or a hundred thousand dollars worth of components and there's a card or two that you cannot get or you have a limited number of spares that are available, it really doesn't buy us a lot in the long run.
Q. Then that assumes that the filed temp sim card in particular was not available from another source.
A. Yes, or that there may only one spare of others.
Q. And you do have a spare of the over voltage suppression card?
A. At that time we did and I suspect we still do, yes.
Q. The field temp simulator card that's in the unit at the present time, is that the original card?
A. I really have no idea. If it was a suggested spare by the manufacturer on purchase of the unit we would have in all likelihood bought

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the recommended spare parts which would imply we've used one, but I'd have to go--have to have somebody go back to 34 years of records, 35 years, I'm sorry, to 1977 when, you know, it was installed, to determine that. The records may or may not be available.
Q. And you do have a spare over volt suppression card?
A. As I said, yes.
Q. Do you know whether the original over volt suppression card has been replaced in unit number 7 over its life?
A. I do not know that information.
Q. If we go to page 8 of the report it indicates that the technical lifetime of the General Electric Silcomatic I Static Exciter was 30 years?
A. Yes, it states that.
Q. Which from 1997 would be 2007.
A. Yes.
Q. Which from 1977 would be 2007.
A. Yes.
Q. And then it says, "Most static exciter electronic components are expected to have a service life of 20 to 25 years."

Page 16

A. Yes.
Q. "And that in most cases the components can remain in service beyond their expected service life."
A. Yes.
Q. So if you had a card in the beginning and a spare, then it would imply that you should get the full 30 years out of the exciter.
A. Possibly, I really--that's supposition, that's a--that would be an observation.
Q. So when you look at the next paragraph of the report where it says that the average service life of the Bay D'Espoir and Holyrood static exciters is used as an optimum number for predicting the service life, then in those circumstances, Bay D'Espoir unit number 7 would be replaced in 2004.
A. Yes.
Q. But the contrary is also true, isn't that right, which is that if the average service life is not the optimum number, then 2004 wouldn't be the right time.
A. Taking the year for when it replaces, I mean it's--I wouldn't suggest that somebody went down and said the average life is 25 years or

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27 years, therefore we have to replace it. I mean you have to look at the risk of having that machine, if that particular exciter failed and its unavailability as it states in the last sentence of the first paragraph, "The exposure to the risk of failure and extended down time should be understood." We need to avoid that. We do not have any alternate supplies of power and energy and any loss of a hydraulic plant forces more fuel consumption at Holyrood and so on. We can't go and buy it from Hydro Quebec or Nova Scotia Power.

Q. Well, the electronic is now 25 years old, correct?

A. 26 years old, I assume, 1977.

Q. And it hasn't failed yet.

A. I could not say whether components have not failed. I mean there's been a couple of failures there of certain things.

Q. Now, there's a reference in your project proposal to lengthy outage.

A. To lengthy outage, yes.

Q. And it's on page B-6.

A. Yes.

Q. The second paragraph it says that, "If parts

Page 18

were to fail and spares were not available, it could result in a lengthy outage."

A. Yes.

Q. What do you mean by lengthy outage?

A. If the parts were unavailable, we can't operate the exciter. Basically, there are certain things you can operate the exciter without. You can lose a component. You can lose one thyristor and you can continue to operate. If you lose a control card, you can't operate. If you don't have a spare, then we have to either find a card, reverse engineer or replace the exciter. And replacing the exciter is a long-term deliverable item because it's specifically designed for that specific generator. It's not--the Exciter on Unit No. 7 is not the same as the Exciter on Unit No. 1 to 6. It has different voltages and different current capabilities. It's designed for the specific generator that was installed.

Q. But you've already had approved, the engineering.

A. Yes, to do the specification and to go down through and basically prepare the

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specifications so that we can be in a position to award for delivery during our maintenance season in 2004.

Q. And if a card had to be re-engineered, how long would you expect the outage to be?

A. I could not say that, that would depend on the card that failed, it would depend on the availability of resources by GE or whomever.

Q. Well let's go at it a different way and that is that if it failed and you were to replace the exciter -

A. Yes.

Q. And assuming that you had to start the engineering at that point, how long would it take to--would it be a year?

A. I would suggest that if you were prepared to go to tender or direct order without going to tender, it would probably be in the period of six months, if the particular factory had a space available on the shop floor. You know that is also a matter of availability of shop space to fabricate that supply.

Q. So roughly six months.

A. I would suggest six months but basically we allow--our plan would be to enter a contract

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early in 2004 and to install this, you know, before September or October, typically if there's any maintenance.

Q. And if you were to get a card re-engineered, it would be less than six months?

A. That depends on the availability of parts, components and people. And that would -

Q. Have you had cards for other things re-engineered in the past?

A. They did have a power supply card which I believe was stated there, redone. I think that was in the report you already referred me to. I don't know if it said the time frame.

Q. And I'm not necessarily referring now to this particular exciter, I'm talking about any time you may have had, would it be normally less than six months?

A. I can't say. It depends on the card, it depends on whether its exciter, the Governor, a computer. It's wide open. And if you were to go back and take that approach you would probably want to go back and re-engineer all the cards to ensure that you have a long term supply of spares.

Q. And if the exciter was out of commission due

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to the failure of a card, the one I guess that can't be replaced at the present time, that would result in 150 megawatts out of service?

A. That's correct.

Q. Now I'd like you to go to Hydro's general rate application, this year's one, 2003 one, and your own evidence. Table 8 which is at page 37.

HUTCHINGS, Q.C.:

Q. Which volume would that be?

HENLEY ANDREWS, Q.C.:

Q. I think it's Volume 1, that's what I'm looking at.

CHAIRMAN:

Q. Would you give us the reference again, Ms. Henley Andrews, it's the -

HENLEY ANDREWS, Q.C.:

Q. Yes, it's Volume 1 of this year's general rate application.

CHAIRMAN:

Q. Yes.

HENLEY ANDREWS, Q.C.:

Q. It's Tab 8 on page 37. Do you have that there? Yes, okay, that's fine. If you look at that table, Hydro is projected to have

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surplus capacity for meeting its peak until what year?

A. I guess 2009 we show a--I believe we show a-- I'm sorry, that's the energy balance.

Q. Yes, that's the energy balance and the actual peaking capacity would be when?

A. I'm sorry, I'm -

Q. Never mind. So right now Hydro has 150 extra megawatts.

A. We plan a system based on loss of load expectation.

Q. Yes.

A. And basically the generation is added or purchase contracts with whomever are entered into as required to ensure that we have that. That covers off a certain probability of failure of equipment that we can basically-- that we can supply our firm load and backstop basically any other load that we buy because there's no assurances, I guess, that they're going to be there. And if we were to change the reliability or the availability of any machines that we presently have, we would have to go back and reconsider that.

Q. No, no, and I realize that. I'm not going to

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get into a loss of load expectation discussion but what I'm saying to you is that if you lost 150 megawatts at Bay D'Espoir for a year -

A. Yes.

Q. Customers would not have their power affected.

A. I couldn't agree with that because if you knew that you were going to have 150 megawatts unavailable for one year, you have a higher-- you're still going to continue with the failure of probabilities of the other units and you will likely have other interruptions through the year because you're already starting off knowing that you're 150 megawatts shy. Now that can happen, obviously, if we have a major unit failure. But this is one that we think that we can prevent by being proactive on a replacement of aging and unsupported components.

Q. But in answer to my question, if you look at the loss of load hours and you look at your own information in table 8 with respect to the capability of your system, right now in 2003 and also in 2004 and 2005, your LOLH is much higher than your target.

A. Yes, but if you were to regenerate that table

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with 150 megawatts removed, that number would change.

Q. It would change. And the table would change. But are you suggesting to me that it would change to the degree that you'd have a problem with that target in 2005?

A. 150 megawatts is a significant load on our system. I really can't--obviously I can't regenerate that table, that's not my capability or expertise at all. But 150 megawatts out of our system is a significant load, if you operate that way for a year and you have, you know, a failure at Holyrood, we will be in a difficult situation to meet customers' expectation of load.

Q. So can you tell me that it would be a problem in 2005?

A. Not without regenerating that particular table, I can't do that. It's not the way that we plan, it's not the utility practice to plan and operate a system that way. The load forecast is based on weather, you know, there's some normalization done, there are cold days, there are unexpected increases in load, it's a probabilistic thing but it takes

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into consideration many factors.
Q. Let's just look at Tab 8 again for a minute. Your forecast peak in 2004 is 1,602 megawatts.
A. Yes.
Q. And your net capacity in 2004 is 1919.
A. Yes.
Q. So there is a 317 megawatt surplus in capacity to meet peak in 2004.
A. And a loss of load expectation -
Q. That's right.
A. - of 1.1 hours.
Q. Now the first time that--when you go onto 2005, your peak only increases by five megawatts.
A. That's the forecast increase, yes.
Q. And for 2006, it increases by another six megawatts. So you're not forecasting any great increases in your peak requirements over the next number of years.
A. No, it's a gradual, modest increase in load.
Q. Has Hydro evaluated the cost of obtaining a re-engineered replacement card?
A. I believe I answered that, I don't think we have.
Q. So let's move on to the Governor Controls at

Page 26

Cat Arm, which is B-10. Now if we look at the project justification, it says that the Governor on unit 2 at Cat Arm is the original equipment put in service in 1984.
A. That's correct.
Q. And it serves to regulate the speed of the generating unit and the Governor Controls are analogue electronic type that's been manufactured since 1974. "And the replacement is required due to the manufacturer's decision to discontinue repair or replacement of electronic cards by the end of 2004."
A. Yes.
Q. Does Hydro have replacement electronic cards?
A. We have some.
Q. When did Hydro become aware that the manufacturer was going to discontinue the repair or replacement of the cards?
A. Just one second. If you refer back to the report that you were referring to before, I don't know the page number, but it's a letter from--it's an e-mail to Glen Winsor regarding the Cat Arm Exciters from Derek Monk and basically says, "Basically, the availability of spares for the BBC Exciters at Cat Arm are

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nil. I was in contact with my colleagues in Switzerland at the time. At the time, 1983, the exciters were designed and built by BBC in Switzerland" -
Q. I'm sorry, I haven't found it yet, where are we?
A. It's an e-mail dated February 24, 2000 to Glen Winsor from -
Q. Okay, just one second.
A. ABB. It's following the section in that particular report where it talks about the Cat Arm exciters.
Q. February -
A. 24th.
Q. Okay.
A. And according to this, I guess, the previous page, we did purchase spares sometime prior to 2000, additional spares.
Q. Yes.
A. And that particular--I don't know when we were informed that there were no more spares available, but basically there is no support available for those particular units at all. The company has basically disappeared, it's been bought by ABB.

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Q. And the recommendation that's contained in that e-mail in the third paragraph is that "it's suggested to eventually upgrade the two Cat Arm exciters to more recently technology."
A. That's correct.
Q. Does Hydro have spare parts for this, for the Governor Controls at Cat Arm?
A. I'm sure we have some spare parts but we have fairly significant failure history. We've had three failures since the writing of this report and two control cards that we used since that particular time and there are no spares available, that's speed, set point and operating limit. We had two failures in 2002 and one in 2003.
Q. But if you look at the report that we've just been talking about it said that the Governor Controls for one unit should be replaced in 2004 is what you suggest as a preventive measure to ensure supply of spare parts is available beyond 2004 for the remaining unit.
A. Um-hm.
Q. Correct?
Q. If you look at page B-11?
A. Of this year's proposal? Which paragraph, I'm

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sorry?
Q. B-11, the very first paragraph in this year's Capital Budget.
A. Yes.
Q. It says that the report recommended that the Governor Controls for one unit should be replaced in 2004?
A. Yes.
Q. Now, there's a planned outage of that unit in 2004?
A. Typically there's a planned outage for all machines, at least once a year for -
Q. Okay, so there'd also be a planned outage for that unit in 2005?
A. Yes.
Q. Will the work to replace the Governor Controls extend the planned outage beyond the norm?
A. It depends on how much work is done up front and how much can be done when the machine is energized, when workers can get in and do certain preliminary work. It depends on the availability. That particular plan is not laid out as yet.
Q. But in the normal course of doing this kind of work to replace something, like the Governor

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Controls during a regular planned outage?
A. Typically it would extend the outage by some degree, not necessarily, it depends on the machine, it depends on the pre-packaging by the vendor and the amount of re-use of cabinets and so on. But this is the control section only, so there may be some increase, it may be a week or two.
Q. So these Governor Controls or for Unit No. 2, they've been in place for 19 years?
A. Well since the commissioning of the plant.
Q. Well it says it's in service since 1984 and this is 2003, so that's roughly 19 years. Do you know when the manufacturer decided to discontinue manufacturing spare parts?
A. I'm not sure of the date.
Q. Is that something that Hydro would generally receive information from its suppliers?
A. It often depends on the supplier. On some suppliers, they have a very good record of letting the customer know what their long-term--Westinghouse, for instance, or Emerson Controls basically have a very good system in place, if you will, to advise the users of their equipment when their equipment is not

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going to be supported and they have kind of a time frame of continuous support after they stop making. Not all vendors have it, in this particular case that vendor was--their produce line was bought by somebody else and discontinued.
Q. Now, what's your experience been with ABB?
A. ABB haven't been bad, but we don't always know. They have a myriad of components and most vendors are trying to improve that, but they certainly don't have a great track record yet.
Q. So do you know whether with respect to the Governor Controls for Unit 2 at Cat Arm, whether you did receive any notification from -
A. I don't know offhand, no.
Q. Now if we look at the 2004 Capital Budget and we go to Appendix G--in Section G, Appendix 1, page 5. Actually, we'll go to page 4 first. And if you look at 4A, the third paragraph in that section says that "Hydro has a good supply of spare parts for the Governor Controls"?
A. Yes.

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Q. And if you look at the service history, there have been four cards and three power supplies replaced since 1990?
A. Yes.
Q. And are those the repairs to the Governor Controls that you've been talking about? You said that there have been a number of failures?
A. No, there have been failures since this report was written. We've had three; two in 2002 and one in just June of this year, which have used, you know -
Q. This report says June of 2001, so you've had three failures since then?
A. We have had three failures in 2002 and thus far in 2003.
Q. Three in 2002.
A. No, two in 2002; one in 2003.
Q. Now, there's no mention of those additional--well there's a mention in B-10, there's a mention of a card repair on Unit 2 being the replacement of the seed (phonetic) set point control card on July 3rd of 2002.
A. Yes.
Q. But there's no reference in that to a second

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incident -
A. The second incident took place in October of '02 and in June of '03.
Q. And were they on Unit 2 Governor Controls?
A. Yes, they were on Unit 2.
Q. Because when I look at the service history, page 5 of 15 on that report that's attached--that we were just talking about.
A. Yes.
Q. Most of the problems, well as a matter of fact, six of the seven problems occurred on Unit 1?
A. That's correct.
Q. And so the question that I had was why would you have chosen replacing the Governor Controls on Unit 2?
A. Unit No. 2 basically is scheduled out next year to replace both the Exciter and the Governor Controls. I think the spare parts will become available will be available. I don't know any particular reason why they chose Unit No. 2, except the Governor was out and the Exciter are both slated repair for one outage, as opposed to two separate outages.
Q. It's just that, you know -

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A. The most -
Q. To a person who is not familiar with the technical side of it, it just seemed odd that the Governor Controls would be replaced on the unit that's had the least trouble with the Governor Controls.
A. Yes, but, you know, as the page 5 indicates too that the last problem was on Unit No. 2. All the prior problems were 1995 and prior.
Q. Yeah, but look at what the problem was. The second needle doesn't cut in until the first is 100 percent. That doesn't--that, to me, isn't quite the same as a defective power supply and there's a lot--there's power supply replaced twice -
A. Yes.
Q. For Unit No. 1. Anyway, I just raise the question because it just struck me as odd.
A. It's the opinion of the generation engineer and the plant personnel that the one to do first was No. 2. I don't take exception to their recommendation.
Q. Now if we look at page 7--no, sorry, it's a wrong reference. So does Hydro still have spares for both units?

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A. We have some spares, I don't know the actual quantities.
Q. The question is that if Hydro still has spares for both units, why is it considered necessary to replace the Governor Controls now?
A. Because there is little future support. The long-term replacement of the long-term--the opportunity or I guess the life unit getting replacement parts if we use one is diminished and we need these machines. We need them to be available and reliable and we had three failures in the last couple of years and I mean, that's--one could assume that that's a little bit indicative of, you know, more ongoing problems, if you will.
Q. But the average service life that would be expected of these exciters, including the Governor Controls, was 25 years, right?
A. Yes, that would also assume some form of reliable vendor support which is non-existent for this particular unit.
Q. But that would have meant that they be in service until 2011?
A. Yes. One of the things that Hydro, in all these particular proposals, one of the things

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that we do talk about is the increase risk of spill if the unit is not available and that is a significant cost because basically all the incremental energy from all of these Hydro plants is not free, but it is very, very low kilowatt hour rate. The alternative is to burn fuel obviously at Holyrood, which is significantly incremental rate.
Q. Now in terms of the vendor support, the proposal in that report that we've been looking at is that one set of Governor Controls be replaced and that the one that's removed then be used for spare parts for the other one?
A. Yes, for some period of time which maybe a year, it maybe two years, it depends.
Q. Does Hydro at the present time have any plan to replace the second set of Governor Controls?
A. It's on the horizon. I believe it says in one of the reports there that there was an anticipated time, but I mean, we have not submitted, obviously, our 2005 Capital Budget, but it will be reviewed. It may or may not be there when we prepare that--when we do that

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review.
Q. Now, presumably if spare parts can be obtained from this Governor Control System to be used on the other, then Hydro has internal resources who can take care of the repairs? You're not anticipating difficulty getting the repairs done?
A. If we have the spare components.
Q. Yes.
A. If we have the spare cards, but we do not--we don't get down to board level and replace specific components on cards to any great degree, particularly with these -
Q. No, but I'm saying that as long as you have the spare parts -
A. If it's determined that we have an adequate supply of spare parts, then that will be reviewed and will be a factor in the decision whether we put forward in future years replacement of the second Governor.
Q. Now you got a quote from Sulzer Hydro on replacement of the Governor Controls?
A. When they did their preliminary estimates they had quotes--no, not Sulzer. Sulzer no longer do that, I don't believe. We have quotes in

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the report that are quotes from--and I can't speak to the nuance of these systems, but Atlas H mod (phonetic), Atlas HC, and Micronet HC, there are three systems that were reviewed as potential replacements and the estimate that was put forward was based on what they thought would be an appropriate replacement system that meets the needs of that particular Governor.
Q. Now if you look at one of the attachments to that report, and it's in Appendix D, the first page and it's dated July 26, 2000?
A. Yes.
Q. And from Keith Pomeroy to Rick Legg (sic.) of Hydro?
A. Rick Leggo, yes.
Q. Okay, sorry. And it says, "we've prepared a budget offer which we'll send by courier with some literature about the DTL Governor System and a reference list. And the basics of the budgets in Canadian dollars are design, program and supply to DTL 595 digital Governors, including installation and commissioning and documentation, $150,000.00 per lot."

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A. It says, yes.
Q. See that?
A. Yes, I'm sorry.
Q. So he says that it would be $150,000.00 each, is that how you interpret that?
A. Well it says two Governors, so I'm really uncertain. I would have--that sounds like a reasonable number for the Governor Controls, but -
Q. And it says, "this includes about $25,000.00 for the field work portion"?
A. Yes.
Q. "And we've assumed that the old ETRs would be removed from the panel by yourselves"?
A. Uh-hm.
Q. And that the installation and the commissioning is about ten days and delivery is approximately ten weeks after clarification of the technical details.
A. Yes.
Q. Have you obtained any recent estimates of those costs?
A. I cannot--I would assume that when the Capital Budget was put forward that the engineering group would review those numbers and see if

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they're still a rationale and appropriate number. It will--obviously when we go to tender, it will be what it will be.
Q. But you don't know?
A. I don't know specifically. We would often take a number that we had and we would escalate it based on escalation factors and do it. Sometimes it was a confirmation with the vendors these are still a reasonable number to work with. We would go to tender in any case and award to the most appropriate vendor.
Q. Now if you go to page 12 of--sorry, wrong page. If you go to page 14 and 15 of the report, which is the condition assessment that we're referring to?
A. Yes.
Q. The technology that Hydro is proposing, do you know whether you investigated or has anyone in your department investigated its potential for early obsolescence?
A. I'm sorry?
Q. Well, I mean, one of the problems we seem to be having on a lot of these projects is that equipment that originally has a predicted time frame of, you know, 20 years, 25 years, 30

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years, the manufacturer discontinues or gives notice that it won't--it is no longer manufacturing spare parts, so I'm just asking that if you look at this report from 2000 and you look at what Hydro is currently proposing, is one of the things that you do to investigate how current what your proposal is?

A. That depends. It happens, sometimes I think in response to one of the questions by the PUB was along the lines of how much do we expect if we looked at, you know, looking for a longer period of time. But if we go to a vendor for an electronic component and say--and we demand 20 or 25 years of support, we will pay a heavy price up front. Basically we anticipate at least 10 years of vendor support and being assured of spare parts. And a lot of vendors will go a lot longer, particularly if it's not electronic components. Once it goes to electronic, that support horizon is diminished.

Q. Are there other systems besides the type of Governor Controls that you're looking at?

A. For that particular unit you mean?

Q. Yes.

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A. Well we have in here a proposal on the Exciter as well, which is basically the same issue, vendor obsolescence by ABB or (unintelligible), I'm not sure now, whichever the supplier was.

Q. What would be the expected remaining life of the Governor Controls on Unit 1 as a result of replacing Unit 2 and getting the spares?

A. I can't answer that questions. That's a judgment that I would have to leave to people who operate and maintain the plants.

Q. So when looking at the cost of this project, you haven't assessed the cost benefits on the Unit 2 Governor Controls?

A. We basically looked at Unit No. 1, all the spare parts that would be retrievable from that would be kept, obviously, for spares for Governor No. 2, but there would have had to have been an assessment done then on the number of spares that are available, the failure rates, the anticipated, you know, the consequences of not being able to repair the unit on time to a consideration, but not necessarily affecting the calculation would be the value of spill water around the structure

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because we can't turbine the water.

Q. And have you--what's the cost of doing nothing?

A. The cost of doing nothing is basically just to increase--you pay a higher risk of failure and unavailability to meet customer load and obviously the cost of generating through Holyrood, for instance.

Q. And have you projected what your maintenance costs would be expected to be?

A. Not specifically no, not that I'm aware of.

Q. Now if we go to B-12, that's the Exciter at Cat Arm?

A. That's correct.

Q. And that's a 518.5--well, $518,500.00 project?

A. Yes.

Q. And you're proposing to replace the Static Exciter Unit 2 with ABB Unitrol F Model?

A. That's correct.

Q. If we go to the 2003 Capital Budget, Appendix G which we've referred to before, Tab 1, and in particular go to page 5. This report was done in 2000?

A. I believe that's correct.

Q. And with respect to the Cat Arm Units, those

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Exciters were installed in 1984?

A. With the original plant, yes.

Q. And the performance of the Exciters over the last five years is described as excellent.

A. Yes, and a very few failures.

Q. And there has been, according to your current submission, only one problem since that time and that was in September of 2001 when the field breaker repeatedly open and closed? That's under "Operating Experience" on page B-12?

A. Yes.

Q. And that has been repaired?

A. Yes.

Q. And do you know what the cost was to repair it?

A. I'm sorry, I don't know if I answered--no, I don't know the cost to repair the breaker.

Q. Do you know how long it took to repair?

A. No, I don't offhand.

Q. Do you know if the unit was out of service for any period of time as a result of that repair?

A. It would have been out of service long enough to effect the repair, however long that took.

Q. Hydro acquired spare parts in 1999 for those

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two Exciters, is that correct? If you look at page 8 of--page 7 of the report, the 2000 report, Section 3.3.

A. Of the--which report, I'm sorry?

Q. In the 2003 Capital Budget Hearing, Section G, Tab 1.

A. Yes. Page?

Q. Page seven.

A. Yes.

Q. So, you can see that in Section 3.3, the second paragraph, Hydro generation, procured spare parts in 1999 for the exciters.

A. Yes.

Q. And are those spare parts still in inventory?

A. They would have to be.

Q. So, both of these exciters were expected to be in service until 2011, isn't that right?

A. On average, I guess, that's what we've agreed, yes.

Q. And Unit No. 1 was replaced in 2002.

A. Yes.

Q. And that too would have generated spare parts, isn't that correct?

A. Yes, that's correct.

Q. Has Hydro explored any other options?

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A. You mean than replacing the exciters?

Q. Yes.

A. Such as? We would have to have an exciter, obviously.

Q. Have you looked at the cost associated, the maintenance cost associated with keeping the existing exciter?

A. No, we haven't specifically, we've only talked about it in generality, basically you increase your spares, you increase your training and your troubleshooting costs are doubled and there's a limited number of staff there and we do have some desire to have a minimum number of different types, but there's not specific dollar value assigned. There obviously is an increase in training, orientation, troubleshooting expertise required for each different type.

Q. Okay, but Hydro procured spare parts for both exciters in 1999.

A. Yes.

Q. And Hydro procured, effectively got additional spare parts since 2002 as a result of the replacement of the first Cat Arm exciter.

A. That's the logical assumption, yes.

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Q. So, the maintenance capability is there, isn't it?

A. Yes, but diminishing from the point of view of--I mean, often when you get into, you know, any significant problems on these machines, you will also ask for vendor support. If we cannot resolve the problem ourselves, if it's not just a card swap, you know, we often will bring in the vendor and that service and availability is diminished greatly.

Q. But it's still there?

A. They'll make the best effort.

Q. So, what's the cost of doing nothing for 2004?

A. The cost of doing nothing?

Q. Yes.

A. It would just be--carry on with the maintenance that we're doing right now and accept a higher risk of unavailability if parts do fail or if there's a major failure, you have to replace multiple cards.

Q. Well, now, there's not a big risk of unavailability in parts given what you must have in store based on our previous discussion to the parts for both in 1999 -

A. They should be there, yes.

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Q. Now, if we go on to B14 which is the upgrades of controls of the spherical valve No. 3 at Bay D'Espoir, that's 183,000.

A. Yes.

Q. And three of the six systems have already been upgraded?

A. One was done this year for a total of three, yes.

Q. Now, if you look at page B14 under operating experience, it says, this generating unit which is unit number 3 typically operates for 5500 hours each year.

A. Yes.

Q. And by my math, that is 229 out of 365 days?

A. Well, it would be done on hours, not days. Units are started and stopped, basically they could be started and stopped two or three times a day depending on where the customer load is going, so.

Q. Is there a particular time of year when this unit would be used more than other times?

A. Usually in the wintertime. In the summertime, basically the load is down and it stays up a fair bit because our attempts are to shut down Holyrood and minimize field use as soon as

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possible and then basically run from Holyrood. It moves around, but in the winter, we'd like to have all machines available to meet peak load, that's our prime goal.

Q. Now, it says that there's 28 maintenance events for this control system in the last five years.

A. Yes.

Q. And I noted that in 2003 when we were dealing with the system for the unit 1, there'd been 36 maintenance events in five years. So, this one -

A. For that particular one that was proposed last year, yes.

Q. That's right. So, this one has a somewhat better performance than that.

A. Yes.

Q. The other two units at Bay D'Espoir as shown as being scheduled for future years, is their maintenance history any better than for this unit?

A. I don't specifically know. I know that just since the report was done, we've have two other failures on unit number 3 and we've had one failure on unit number 5, but to respond

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to how many failures we've had on number 5 and number 6, I can't answer. That's detail I don't have.

Q. Who manufactured this system?

A. I have no idea who manufactured the original system. The system's been changed to a, I think, PLC controlled and we were replacing the valves and the piping. I don't know a particular vendor, it was probably supplied by GE at the time or Dominion Bridge, probably, but the new system is basically PLC controlled and replacing the piping and the valving.

(10:15 a.m.)

Q. So, if you look at the project justification, is says the control system for spherical valve number 3 is obsolete and unreliable. When did it become obsolete?

A. I don't know when it became obsolete.

Q. Because on most of your other projects, when there's a reference to something being obsolete, there's specific detail with respect to the manufacturer's support and parts.

A. It's usually a much smaller--larger piece of equipment whereby we have a specific vendor who sold a package, this basically is pipes,

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valves and control systems and so. It was probably put together from sources from several different vendors to actually make that.

Q. Now, it says, replacement parts have to be reverse engineered and custom made.

A. Um-hm.

Q. Who actually does that work? Is that done internally at Hydro or is that sourced?

A. No, we would usually go to some source. I mean, Bay D'Espoir does have some capability to do certain things within the machine shop and so on, but typically for something like that, they would go back out and get some shops elsewhere to do that.

Q. Okay. Now, if we look at the bottom of that page, it says, the failure of the existing control system can result in the following events.

A. Yes.

Q. And it says, single unit outage, 75 megawatts, due to the spherical valve not operating, with loss of generation and an extended outage. So, with the problems, the maintenance events that have occurred in the last five years, has

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that occurred?

A. Yes, when we have a maintenance event in the spherical valves, the valve--the unit would not be operating. It depends on whether it cannot open or it cannot close for the number of units that would be shut down.

Q. Okay. Now, with respect to B, on any of those outages, did you deal with a unit runaway condition?

A. I can't answer that question, I don't know.

Q. Now, how common is a unit runaway condition?

A. It's a rare condition. One that we avoid at any expense because usually there's other damage. You're hitting design speeds and when we commission a machine, we usually test it once and we don't ever want to go there again.

Q. Okay. So, when was the last time that you can recall a unit runaway condition?

A. I don't know of any runaway condition in Bay D'Espoir. He would have been operated to critical speed or tested usually to that particular speed during commissioning and that would be a worse case event where basically we have no control over the water going to the unit.

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Q. So, you don't know of any since 1967?
A. I'm not aware.
Q. And on option C, the loss of all six units in powerhouse number one, if the spherical valve or the seals fail while the door is open for maintenance resulting in flooding with potential for loss of life. Are the spherical valves and the seals inspected?
A. Yes.
Q. How often are they inspected?
A. They would be done at least on the annual inspection.
Q. So, if there's a seal showing sign of wear, then presumably it can be replaced?
A. I would think, yes.
Q. So, have you ever had this type of thing occur?
A. The seal is--what the control system does, the valve closes and the seals come in to actually stop the flow of water. So, it's not a static piece of equipment, basically--I don't remember if it's there, whatever, but basically I think there's water that goes into some kind of a thing that actually expands it so there's not discharge. If you are working

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on one machine--in Bay D'Espoir you have two generators on one penstock. So, in the powerhouse there are these two large five or six foot diameter valves which basically allow you to isolate the machine. We provide, obviously--the work permit system, we have to ensure the employees a safe working environment, the isolation is done and we rely on the control system to close that.
Q. Yes.
A. Because the other machine can be operated and if you open the scroll cage doors and if the valve were to let go or the control system were to fail, the water would come in and would actually flood that particular area and possibly the powerhouse. It would be a possible, but rare, hopefully never to happen, event.
Q. Okay. And it certainly hasn't happened in the past?
A. No, we've had floods in the powerhouse. We've actually flooded the powerhouse or portions of the powerhouses before, but not to the extent of that particular event there.
Q. Okay. And as you indicated, you've had 28

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problems with this unit in, 28 maintenance events for this control system and there were more than that for the previous control system, but none of them resulted in these types of very serious problems?
A. No, they would result in unavailability of the unit, but not necessarily in a catastrophic loss, maybe some more fuel at Holyrood or less efficient operation.
Q. Now, if we go on to B16--I only have a couple of questions on this one, but if--I notice that there was again, a difference between what's in the 2004 Capital Budget on this item and what had been in the 2003 to some extent. So, the 2003 at B20. In the 2003 Capital Budget, it said that corrective maintenance costs on this machine for the past three years have been $27,000.00 excluding preventative maintenance and routine maintenance costs. And in the current one it says, the corrective maintenance costs on the machine have been averaging $9,000.00 annually. What were the maintenance costs on this machine in 2002?
A. I don't know the specific number, I would say that since February of this year, maintenance

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costs have been roughly $11,000.00. I did not specifically ask the question, what were 2002 number, but it's still an ongoing issue. And since mid February, it's been roughly $11,000.00.
Q. And what would be the anticipated maintenance costs per year for a new loader excluding preventative maintenance and routine maintenance?
A. I would think 2 or $3,000.00 a year. I mean, if it's operated and taken care of, there should not be any major breakdown.
Q. Okay. Would the proposed new loader have any additional features?
A. Not that I'm aware of, it's just a direct replacement for what we have which is used fairly extensively for all the Hydro plants.
Q. Okay. Have you looked at contracting out the services of a loader?
A. We've contracted from Bay D'Espoir various things at different times. This particular unit is used in all the powerhouses and basically it's on an as required basis. It's used for, you know, dyke repair, dam repair, finger drains, it's used for a limited amount

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of snowclearing in small areas. It's basically used on a very, very frequent basis and there was not specific evaluation done. So, it would be very unlikely that the, for the amount of requirement to have for that machine, it would be cost effective to lease and we need it available for any dyke or dam event that comes up on a short-term notice.

Q. Do you know how many hours of use there are on this?

A. I did not ask that question. I do--I was sure that it's a very heavily used machine. It's used, you know, if not daily, it's used, you know, weekly.

Q. Now, if we go to B17, that's upgrading the control system at Holyrood and your proposal is for 1.5 million dollars in 2004 with an expectation that you'll be looking for another million in 2005, right?

A. Yes.

Q. For a total of 2.5 million?

A. Yes.

Q. The first paragraph says that there's obsolete distributed control systems on each of the three units?

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A. Yes.

Q. Now, am I correct--because when I go back and forth between the reports, there's some slightly different terminology that if a report refers to stage one, then it's referring to units one and two. And if it refers to stage two, it's looking at unit three.

A. Yes.

Q. Okay. Now, units one and two are WDPF level 6.

A. Yes.

Q. And they were installed in 1988?

A. Yes.

Q. And unit number three is WDPF level 7 and it was installed in 1992.

A. That's correct.

Q. Now, there was $476,000.00 spent on units one and two in 2000? Let me refer you to PU-19, 1999/2000 and I think that Mr. O'Rielly has that on the system and if he doesn't, I have copies. If we go to the generation budget -

MR. O'RIELLY:

Q. There appears to be five pages in the document, Ms. Greene. (Inaudible) supporting

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documents.

HENLEY ANDREWS, Q.C.:

Q. Okay. So, you don't have the attachments.

MR. O'RIELLY:

Q. It doesn't appear that way.

HENLEY ANDREWS, Q.C.:

Q. Well then, it's a good thing I have a copy.

CHAIRMAN:

Q. Would this be a good point to break, Ms. Henley Andrews?

HENLEY ANDREWS, Q.C.:

Q. Yes, this would be a really good point to break.

CHAIRMAN:

Q. Okay, we'll be back in 15 minutes.

(BREAK - 10:27 A.M.)

(RESUME - 10:45 a.m.)

CHAIRMAN:

Q. Ready to continue?

HENLEY ANDREWS, Q.C.:

Q. Yes, Mr. Chairman. I had just referred to PU-19, 1999-2000, Mr. Haynes.

MR. HAYNES:

A. Yes.

Q. And do you have that in front of you there

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now?

A. Yes, I believe.

Q. If you go to page A-5, you can see in line 3 under thermal plant construction projects, purchase and install distributed processing units for Unit 1 and 2 WDPF system, Holyrood.

A. Yes.

Q. Four hundred and seventy-six thousand dollars?

A. Um-hm.

Q. And was this done as part of the 2000 budget?

A. Yes.

Q. Are those the same units that you are planning to replace now?

A. They are part of the system. They were actually additions to enhance the system for additional control points and additional memory. It's not a--the overall system will be replaced, yes.

Q. Now Hydro, as I understand your proposal, is proposing to use the same supplier, and I'm going to refer to it as Emerson Westinghouse because my understanding is that -

A. That changed hands.

Q. - it was originally Westinghouse and it's now Emerson?

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A. Correct.
Q. Okay. And Hydro is also proposing to go to the Ovation system?
A. Yes.
Q. Mr. O'Reilly, could we go to the Request for Information IC-27? And go to page 1 of the report that's attached, and this report, as I understand it, was prepared by Emerson Westinghouse?
A. On the IC-27, yes, that's correct.
Q. Yes. It's called life cycle planning program sales evaluation and report guide.
A. Yes.
Q. And on the very first page of it, it indicates that it's dated March of 2001?
A. Yes.
Q. Now if we look at the introductory paragraph, the first sentence talks about the goal of their system life cycle program is to help users of WDPF and Ovation systems develop the best short and long term process automation strategies for their plants, correct?
A. Yes.
Q. And in the last sentence, it says "final decisions regarding strategy will need to be

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determined within the greater context of the customer's system functionality requirements, plans for future expansion, budgetary constraints and overall business strategy." Correct?
A. Yes.
Q. If we look at page 2, there is a description of the various terminology that they use with respect to their products?
A. Yes.
Q. Things that are current, things that are active, maintained and then retired. Now page 3 deals specifically with WDPF levels 6 and 7, amongst other things, right? You see down at the bottom of page 3, under the Quick Reference table?
A. Yes.
Q. And there's a reference in that particular one to WDPF 6 and it's shown as maintained, but there's an update later in the material that shows that it's now retired?
A. Yes.
Q. Which was what was expected. And WDPF level 7 was shown in 2001 as maintained, but we understand from the evidence that it is now

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also retired?
A. Yes.
Q. WDPF level 8 was current in 2001, and it's now described as active?
A. Yes.
Q. And if we go to the preceding page, the transition to active status marks the ten-year product support commitment?
A. Yes.
Q. And my understanding is that WDPF level 8 will be supported until 2012?
A. That's likely.
Q. Yes, that's also in -
A. Yes.
Q. - the thing. And the PCH platform at the bottom is now described as maintained. It was active in 2001?
A. That's my understanding.
Q. And again, if we go to the preceding page, active means that it's been functionally replaced by the most current product, but remains available with published pricing, normal lead times and complete support?
A. Um-hm.
Q. So in 2001, when it was active, you could

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still buy it. It just wasn't the most up to date?
A. Just the PCH.
Q. But it's no longer active. It's now still supported until January of 2005, but it's no longer available for purchase?
A. Yes.
Q. So if we look at page 3 again, given the understanding of the ten-year product support commitment expiration date, if level 7 is maintained to January of 2003, then it would have gone to maintained status in January of 1993, correct?
A. I would assume.
Q. Now you only put the Unit 3 system in place in 1992?
A. Yes.
Q. So at that time, it would have been active?
A. I don't know that offhand, but -
Q. But do you know whether, at that time, it was the most up-to-date system?
A. I suspect at that particular time it probably was. Matter of fact, if you don't mind, I wouldn't mind redirecting part of that question to Mr. Downton, who was actually at

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the plant during that time, if his memory can serve him, and I apologize, Eric, but he was a plant engineer at the time and who oversaw this installation. Eric, I'm sorry to put you on the spot. Do you recall if that was the most active at that time?

MR. DOWNTON:

A. I have--no.

MR. HAYNES:

A. Okay. Sorry.

MR. DOWNTON:

A. It was fifteen years.

Q. Okay. Well let's go to -

MR. HAYNES:

A. There would be a desire though, at that particular plant, given the complexity, to have the systems the same, you know, the same--install a system to ease operational maintenance and so on.

Q. Okay. So let's go to Section G of the Application, Appendix 2 or Tab 2, page 1. So that will answer the question for you. If you look at the very first paragraph, the second sentence says "the existing DCS on stage 1 is a Westinghouse distributed processing family

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level 6 system implemented in 1988. The existing DCS on stage 2 is WDPF level 7, implemented in 1992," and it shows "active technology, but was used primarily to maintain consistency with stage 1."

A. That's what it says.

Q. Okay. So it was available for purchase, but was not the most recent product, according to their definition?

A. That would be a reasonable assumption.

Q. Okay.

A. And if you go back to page 2 of the vendor document, it does say "for active products, these products are intended for expansion of existing systems where the need for product consistency outweighs the features, performance, and longer term potential of the current product." So it was a logical approach at the time.

Q. Or you believe it would have been, yes.

A. I believe it was the best, based on the maintenance and the criticality of Holyrood in our generation links.

Q. Now it was roughly a half million dollars, four hundred and seventy-six thousand dollars,

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and in 2000, to purchase and install DPUs for Units 1 and 2 -

A. Additional DPUs for Units 1 and 2.

Q. Okay. But they were obsolete at that time, weren't they?

A. They would have in the--I assume they would have been in the active or maintained product category.

Q. Now -

A. But it was not thought to have--I would assume that it was not thought appropriate to upgrade that whole system at that particular time.

Q. Now when I look at the justification for this project, it says that "the manufacturer has informed Hydro that parts of the DCS are obsolete and the system is no longer supported." So is the whole system obsolete or just parts of it?

A. There are several components of the system. Our plan is to reuse the input/output. If you go to page 3 of the vendor document there that was in the IC-27 -

Q. Yes.

A. - it says that the Q line I/O, input/output stuff, is still a current product. That was

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all part of the installation in 1988 and 1992. That will be retained so that we don't have to go and replacement all that. That is one of the reasons why we think it's--why we obviously think it's preferred to go to the Ovation, because we can reuse all that equipment, as opposed to turfing that out and replacing the whole. So you know, at the end of this particular project, we will have--all this equipment will be on the maintained and current--the maintained, sorry, get the right word here, will be a current product line.

Q. Now -

A. The Ovation will be continued for some period of time.

Q. - if you look at page 4 of the vendor document -

A. Yes.

Q. - that's a discussion of the life cycle evaluation report for Units 1 and 2?

A. Yes.

Q. Up at the top. And it shows that there are ten DPUs, two engineer MMIs, eight operator MMIs, and one HDR?

A. Yes.

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Q. Now with respect to the DPUs, it says "the short term planning recommendation is upgrade to 486 level DPU, and a long term planning recommendation is consider migration to Ovation."
A. Yes.
Q. Have you considered upgrading to the 486 level DPU?
A. I think the 486 is more along the lines of--I just don't remember now. I did read that information. One is an 88; one is a 286 and one is a 486. I don't know if the 486 is a level 8, WDPF level 8. I suspect it is.
Q. Okay. I think it is, okay, but -
A. But it has a very finite time horizon. It's already been classified as a product they will not continue in excess of ten years.
Q. But if you look at it, and you look at WDPF 8, it's currently active, because we just discussed that, and its maintenance support is guaranteed to 2012.
A. Yes.
Q. So it's guaranteed for eight years beyond 2004, correct?
A. Yes.

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Q. And similarly, if you look at the classic engineer MMI, the short term planning recommendation is upgrade to PCH for WEStation engineer's station and a long term planning recommendation is to consider migration to Ovation.
A. Um-hm.
Q. Right?
A. Yes.
Q. And when you look at this page 5, similarly for the operator MMI and the HDR, short term planning--there's a short term planning recommendation and a long term planning recommendation, and the long term is considered migration to Ovation.
A. Um-hm.
Q. Right?
A. Yes.
Q. And what Hydro is proposing to do is to migrate to Ovation?
A. Yes.
Q. Now on WEStation, which is mentioned down below, it says "current support status, current, ten years' support commitment, no expiration date set yet." There's a reference

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to sourcing issues and short term planning recommendations, upgrade to PCI Bios on work station if replacements of S Bios is needed, and no long term planning recommendations." So if we--with respect to units 1 and 2 and 3, has Hydro analyzed the cost of upgrading on the short term planning recommendations rather than migrating?
(11:00 a.m.)
A. What we did, we looked at three options, from a long term costing point of view for this particular project. We looked at the carry on and make the best of it. We looked at moving to the--going to WDPF 8 and we looked at going to Ovation, and going to the Ovation was the long term most economic thing to do, with a fair degree of present worth benefit up until 2020.
Q. So if we look at Option 2 in your analysis -
A. Yes.
Q. - which is, I think, Section D, Tab 2.
A. Page 5.
Q. Yes. Is alternative 2 the upgrade?
A. Alternative 2 is to gradually move to WDPF level 8.

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Q. So gradually move to Level 8?
A. Yes. And if you look in the table of values, you'll see the varying cash flows there and different capital expenditures for the next number of years.
Q. Okay. Now in looking at the gradually migrating to Level 8, do you consider that or is that analysis the same as following the short term planning recommendation?
A. I did not go down to that level of detail or examine that. They put forward an alternative to carry on and make the best of it of moving to WDPF 8 and basically going to a long term maintained system, alternative 3, and the cost analysis that was done clearly indicates that alternative 3--I'm sorry, alternative 1 had a very, very reasonable crossover period and was long term economic. I did not get down and ask the engineer questions on whether he's going to replace this terminal and that terminal.
Q. So you don't know--you can't tell the Board whether any of these options demonstrates the cost of following the manufacturer's short term planning recommendations?

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A. Not down to each individual particular sub-component. That is way down--that's very, very deep.
Q. But I'm not asking you to go down into each individual component. What I'm saying to you is that which of the alternatives, presented on page 5 of Hydro's net present cost analysis, if any, reflects the cost of following the manufacturer's short term planning recommendations?
A. Just one second, please. If you refer to page 4 of the report -
Q. Yes.
A. - that's in Tab 3 and on the first complete paragraph, it is a gradual migration, and basically, there are a number of things in there from the point of view of we're going to have mixed and matched components. There are obviously some savings in training because we can delay that. The parts procurement may not be guaranteed over the life of the expansion, depending on their particular plans. You know, it's not a viable alternative for us to take at Holyrood. We'll spend all our time doing that particular job and then require a

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lot of other resources just keeping track and doing an annual review. It's not--the viable alternative is to move to the Ovation system, which will have long term support by the vendor and assure us of continued good operation of the plant.
Q. Well, the thing is that what you are proposing here is a Capital Budget item for 2004, right?
A. That's correct.
Q. And under the legislation, as we explored yesterday, the Board has to not only be satisfied that it's reasonably necessary, but also that it's the least cost option, correct?
A. And it assures--yes, and it assures reliable operation of the plant.
Q. Okay. Now the manufacturer has made a recommendation, short term planning recommendations and long term planning recommendations, correct?
A. Yes.
Q. And its short term planning recommendation is to upgrade some things to 486 level DPU and other things to PCH or WEStation, correct?
A. Yes.
Q. And can you tell me if alternative two on page

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5 analyzes the cost of following the manufacturer's recommendations for short term planning? And if you can't, that's fine, but I'm asking, can you tell me?
A. I cannot specifically answer that question. I would suggest that the fellow, the engineer who looked at that, reviewed that material and made a considered opinion or judgment on what he thought was the best operating--what was the best capital replacement for the plant. He did look at a gradual migration and it's not economic.
Q. I'm going to ask you to undertake to find out if any of the alternatives that are shown on page 5 reflect the costs of following the manufacturer's short term planning recommendation. (UNDERTAKING) Can you do that?
A. I will attempt to.
Q. And if one of them does, then to let me know which one. Now if we go to page 6 of -
A. Just if you don't mind, what you're asking me to do is particularly, I would suggest that alternative two is the closest to that. You're asking me to be specific to go down and

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go down to each of these subsystems, the manned machine interface, et cetera, et cetera, and specifically ask the question if they were phased in as specifically per pages 4 and 5 of the Westinghouse--or the Emerson document?
Q. Well, I don't know what you have to do to do it. All I'm--my question -
A. We're getting down now to building the box, so I really need to know what I'm -
Q. Okay. Well, what I want an answer to, what I think is a fairly simple question, which is, when you look at the document that you have submitted at Tab 2, which is Hydro's life cycle planning and you look at page 5, somebody did the financial analysis, correct?
A. They did a technical evaluation followed by the financial, yes.
Q. Okay. So all I want to know is do any of those alternatives, were they specifically costed -
A. Okay. I understand.
Q. - using the short term recommendations from the manufacturer?
A. Okay.

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Q. Now if we look at page 6 of the manufacturer's report, and you can see that it talks about the system migration alternatives.
A. Yes.
Q. That's from IC-27, I'm sorry, page 6. So it talks about the fourth--the third bullet is that the migration alternatives are WEStation or Ovation platforms. Do you have that?
A. Yes.
Q. And the fourth bullet under system migration alternatives is to upgrade to WEStation and later upgrade to Ovation, if a gradual migration is desired.
A. Yes.
Q. And then there's a discussion below that of the benefits of upgrading to the WEStation platform, and it talks about the life of the current system being extended and that it does provide a migration path to Ovation, right?
A. Yes.
Q. The Q line I/O was fully supported, whatever that is, and all the various other things that WEStation platform can offer, right?
A. Yes.
Q. Now if WDPF 8 is WEStation, and we believe

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that it is, then there's eight years remaining after 2004, right, because it's being supported to 2012. And as I understand the material, Ovation is expected to have a life of ten to fifteen years?
A. At least, yes.
Q. So we're looking at eight years versus ten to fifteen years?
A. And possibly longer, depending on where they're going. They're still--they are still selling that particular product to new installations.
Q. But now, but you see the thing is that might very well be true, but for the purpose of doing the cost analysis, you have to pick a number of years, right?
A. We've done the -
Q. To do a net present value.
A. - we've done the economic evaluation to 2020, as we normally do most things for Hydro, for the Holyrood plant of late.
Q. Okay. But 2020 is because that's the expected life of the Holyrood plant, right?
A. Well, the plant will last, I'm sure, longer than that, but that is a number that we've

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been using for most things that we're doing now, yes.
Q. Okay. And you would agree that the net present value calculations are affected or do you know whether the net present value calculations are affected by the life that you choose for the individual pieces of equipment?
A. The net present value calculation that we do here, we basically look at the capital cost and the operating maintenance cost throughout the expected life of the product, the thing. The thing that will change mostly, the long term net present value analysis is if you have to spend more money in the future period of time.
Q. Depending on your options?
A. Yes. And if you go to the intermediate level in 2014, they anticipate, and in one case 2010, I don't have the colours thing in front of me, but I think it's the--if you go to alternative two, which is gradual migration, it is anticipated in 2014 you will actually spend a significant piece of net present value dollars to buy you more time. If you go with alternative three, which is expend the life

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and analyze migration annually, which is the worst case, which is, you know, along the lines, I think, of what you're proposing, we have to spend a significant amount of money in 2010 and 2011.
(11:15 a.m.)
Q. Let's go to page 2 now, change direction a little bit and go to page 2 of Section G at number 2, which is your internal report on the life cycle planning alternatives.
A. Yes.
Q. And if we go to the very last paragraph on that page, it talks about existing cabinets, et cetera, preserved when upgrading to level 8 or migrating to Ovation, and it saves equipment and labour costs and reduces outage time. It says "labour related to commissioning I/O terminations can usually match equipment costs. Upgrading or migrating is more cost efficient than implementing a DCS from a different supplier."
A. Yes.
Q. What is the cost of implementing a DCS from a different supplier?
A. I doubt if he actually went and actually

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worked out the detail, because we would have to replace all the I/O cabinets and so on, and that would be--I think basically his experience and what he has there, clearly indicates that that would be just not economic to do. You would have to go back -

Q. So that we don't have -

A. - and field test every input back over, all over again, which for thousands of inputs to the DCS, this would be an inordinate amount of labour on the part of the technicians at the plant and extend the outage a considerable amount of time.

Q. But in terms of the cost of implementing a DCS from a different supplier, we don't have that, do we?

A. We have not evaluated that option. It was clearly in their view, in their experience, it was clearly the most logical route for life extension was to replace it with the Ovation system from the current supplier for reuse of so many common parts.

Q. But if you don't investigate it, then you don't ever know whether your assumptions are correct, do you?

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A. Well, I guess, when we went in 1988, 1992, there used to be a Bailey system, and I guess at that particular time, that particular system was competitive with the vendors.

Q. We know that this technology is changing?

A. Oh yes.

Q. And that's why you're looking at this upgrade in the first place.

A. I would not support going out--what they have proposed makes perfect sense to me, based on my experience, and it makes perfect sense to the engineering department and to the plant operating personnel to take this approach.

Q. How does the Board determine whether it's least cost?

A. We have provided three scenarios to extend the life of the system. This is a least cost.

Q. But you haven't looked at the cost of getting something other than Emerson Westinghouse?

A. In this particular case, no. We don't think it's justified or worth doing.

Q. And at the moment, you don't know whether you've investigated the cost of the short term planning recommendations by Emerson Westinghouse?

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A. I think we've--I don't--I cannot confirm that, but I would suspect we've covered that off in alternative--in the gradual migration in alternative two and three, particularly number three, where we basically just go along and we extend it as we go, all of which are more expensive than just replacing it with a current supported system used by over sixteen thousand other particular generators.

Q. The net present value calculations, if we go back to page 6 of that report, you can see that option two includes the purchase of used and/or last buy spares.

A. Yes, that's on--this is the vendor's document or our document?

Q. Your document.

A. Page 6?

Q. Page 6.

A. Paragraph?

Q. Paragraph, the first paragraph, "capital costs for alternative two -

A. Okay.

Q. - include the purchase of used and/or last buy spares."

A. Yes.

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Q. And we know that WPDF 8, its status is currently active, so its products are available?

A. Yes.

Q. So you wouldn't be purchasing used and/or last buy spares if you were migrating to that system, right, because the components are still available for purchase? Active is system products that have been functionally replaced by the most current product, but remain available with published pricing, normal lead times and complete support.

A. Okay.

Q. So -

A. They may be new, yes.

Q. And you can see that and in that option for alternative two, it says that between 2004 and 2011, the capital costs are to purchase and install parts of a WDPF level 8 system?

A. Yes.

Q. And that 2015 capital costs is to purchase and install new equipment for stage one and allocate the retired WDPF level 8 equipment as spares for stage two?

A. Yes.

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Q. So that option does not appear to include what the manufacturer has recommended for the short term, does it?
A. Well, I have undertaken to find out that information and get back to you.
Q. And similarly, if you look at alternative three, it includes the purchase again of used and/or last buy spares. So if we go down a little further, on page 6, or actually and even in relation to page 5, you would agree that the net present value calculation includes a lot of assumptions?
A. They always do. We will not know the definitive price for any of this until we go to tender. It's based on engineering judgment, experience, from the people who are doing the work.
Q. Okay. But you would agree that the manufacturer, Emerson Westinghouse, has indicated that you can go to WEStation and then migrate to Ovation?
A. They say that in their documentation, yes.
Q. And that that system provides a migration path?
A. Yes.

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Q. Now if we look at Option one and page 6 of your internal analysis, the fourth paragraph, the last sentence says "an Ovation system, with minor software upgrades, will serve the plant over this time frame," which is until 2020, "unless an foreseeable major technological advancement stops production of compatible components for spare parts," right?
A. Yes.
Q. And the history with Emerson Westinghouse is that that's fairly likely, isn't it?
A. As with any vendor, although they have done a very good job of letting us know when changes are, and they publish it on their web site, so we know what their plans are. We have some assurance that we have, at least, a ten to fifteen year horizon of maintainability. The Holyrood plant basically is a 500 megawatt plant and Hydro is not prepared to dicker and jeopardize the reliability of that plant. It's crucial for Newfoundland and Labrador Hydro to meet its winter peak.
Q. So 2020 is sixteen years from 2004, and if we look at your justification for the project at page B-18, it says that based on the

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information from the vendor, if new technology, would have guaranteed support for ten years and it's expected that with minor software upgrades, it will serve the plant for the next fifteen years?
A. Yes.
Q. Which would bring it to 2019?
A. Yes.
Q. But in your analysis of the alternative, there's no major capital outlay factored in for 2020.
A. No.
Q. I'm going to move on to the Ambient Monitoring System at B-19. Am I correct in interpreting this project as installing fine particulate and NOx and SOx monitoring at the existing Ambient Monitoring stations?
A. Fine particulate and NOx. SOx is already there.
Q. Okay. Now according to the information that's provided on page B-20, there were four permanent Ambient Monitoring stations installed to measure SO2 and total suspended particulates in 1996?
A. Yes.

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Q. Do you know what the cost of that was?
A. Not offhand.
Q. Can you find out? (UNDERTAKING) Because your budgets weren't approved by the Board until 1997. I don't have that information available. Then in 1999 and 2000, opacity meters were installed on the stacks to monitor visible emissions which it says is smoke density of the exit gases?
A. Yes.
Q. Now according to PU-32 in 1998-99, the amount budgeted for 1999 to do that was four hundred and three thousand dollars. But when I looked at the budget for 2000, I couldn't find anything in the 2000 budget to deal with opacity meters. Are you aware of any specific project in 2000?
A. Not offhand, no.
Q. Can you check that as well? (UNDERTAKING) And then in 2002, you got approval, and that's for the 2002 Capital Budget, approval for continuous emission monitoring system for NOx, SO2, CO2 and a variety of things at the stacks, right?
A. That's correct.

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Q. And to manage emissions through the control of the combustion process?
A. Yes.
Q. And that's not yet completed?
A. That is near completion. That was delayed because we were late getting our approval. It will be operational in the fall. The units are shut down at the moment.
Q. And I'm sure you will recall that during the 2002 hearing, the necessity for that was hotly contested?
A. I wouldn't use those words. The justification, it was a justified project.
Q. And that cost eight hundred and one thousand?
A. That's the estimate, yes.
Q. So excluding the 1996 expenditure that you've indicated that you'll get, and you're checking out for 2000, we got four hundred and three thousand in 1999 and eight hundred and one thousand in 2002, and in the 2003 Capital Budget, there is a Mobile Ambient Monitoring station to monitor fine particulate, including NOx?
A. Yes.
Q. Okay. And SOx?

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A. And fine particulate, I believe.
Q. Yes. And the cost of that was a hundred and eighty-four thousand dollars?
A. Yes.
Q. And based upon F-5, four thousand dollars of that has been spent as of May 31st of 2003?
A. I think there's more now. The contract has been awarded, so it's in progress.
Q. So you are in the process of acquiring that Mobile Ambient Monitoring station?
A. Yes. The contract has been awarded.
Q. And the justification for that Mobile Ambient Monitoring station was that it could be moved from place to place to facilitate monitoring those various things at different locations?
A. Over a longer period of time, the intention is to install that at Seal Cove for some--I won't say months, for some years, and if at some point in time, we rationalize that or solve those particular issues, it may be moved to other areas where there's a lot of customer complaints.
Q. Now, if you--in 2003 you also requested and got approval for the cost of $150,000 for a study to investigate technologies to reduce

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air emissions including particulates from the Holyrood thermal plant?
A. Yes.
(11:30 a.m.)
Q. So when I add together the 403,000, 801,000, the 184 and 150,000, then from 1999 to 2003 the Board has approved $1,538,000 for monitoring air quality at Holyrood?
A. Yes. Very small in relation to the $ 100 million worth of fuel that we actually burn.
Q. So now you're proposing an addition 728, 000 for monitoring of fine particulate and other things, the NOx, in particular, at the existing monitoring station?
A. Yes.
Q. So that will bring the total, if you get that approved, the total over five years, just for monitoring, to $2,266,100? Right?
A. I didn't add it up. I assume you're correct.
Q. But you don't have any results yet from the mobile fine particulate monitoring station, correct?
A. No, we don't. And one of the justifications and one of the reasons we need to do all this is that in the Cantox study that was done in

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1997 there was a lot of assumptions made with respect to relationships between SO2 and NO 2 and assumptions made with particulate, and basically these things are to fine tune so we know exactly what we're doing. Because there is no doubt in the next two, five, fifteen years, we will have other Capital Budget proposals to address emission problems. And we don't have the real in situ data, we do not want to be in the position to propose $ 100 million project or 150 or $30 million project to clean up something and not clean up the right thing. We need to address the issues that are apparent.
Q. But -
A. The CEM system, we will know exactly what we discharge into the environment, and these ambient stations, we will know where it falls in the vicinity of the plant and in the outlying areas so we can address it. Most of the emissions we have suggested we have -
Q. But, Mr. Haynes, my question required a very simply answer, which was that you don't have any results yet from the mobile fine particulate and NOx monitoring because it's

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not yet installed, right?
A. I'm sorry?
Q. My question had been do you have any results yet from the mobile unit, the mobile Ambient Monitoring Unit?
A. No, we don't. We had a temporary system installed a few years ago. We had several excursions above the regulations.
Q. Yeah. So you don't have any results from that yet?
A. No. And I don't think we need it to enhance these projects.
Q. And if we--and that mobile system was justified on the basis that it was movable, could be moved from place to place?
A. It could be moved, yes. But it was not envisaged to move it on a monthly or, you know, a quarterly basis. It would be installed in Seal Cove so we'd get a good operating history of how many times we have an inversion, how many times we exceed the air quality regulations in a local area.
Q. Now, when we look at Granite Canal and the power purchase agreements coming on stream, the use of Holyrood is going to decrease for

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the next several years, right?
A. It's insignificant.
Q. Pardon me?
A. It's insignificant. It's a significant amount of energy, but on the whole Holyrood pictures, in the middle of the winter we would run that plant for 500 megawatts with Granite Canal, with these power purchase contracts -
Q. The overall amount of fuel that is going to be burned at Holyrood, based upon your 2003 general rate application, will be significantly less in the next couple of years than it has been in the last couple of years as a result of these two projects?
A. No. I'm sorry, that's not correct. It will be a little bit less because of those projects. It will be significantly less because it's based on average inflow conditions. The last two years we have not had average water situations. The average production in Holyrood in the last two years have been exceptionally high records.
Q. So you're tell me that notwithstanding the document that we looked at earlier, which is your evidence of in the 2003 general rate

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application that--I mean, my understanding with Holyrood is that Holyrood has--is basically operated, not always, but primarily operated to meet peeking capacity?
A. No, that's not really correct. I mean, it's there for peek. We cannot survive peek without the plant.
Q. That's right.
A. But it's an essential part of our generation mix portfolio.
Q. I'm not suggesting that. All I am suggesting to you is that you're bring on how many megawatts at Granite Canal?
A. That's 40 megawatts.
Q. And how many megawatts through the power purchase agreement?
A. It's not--the megawatts won't drive the production at Holyrood; it's the energy capability which will drive the production at Holyrood. But at the--it's 40 megawatts at Granite Canal, it's, I think, 32 at Abitibi and 15 at Corner Brook Pulp and Paper.
Q. Okay. And how many gigawatt hours -
A. I don't recall, it's in Schedule 2, offhand. I don't recall, offhand.

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Q. Well -
A. It's in the GRA and Schedule 2. If I could see that, I could quote the number.
Q. Do you have that there? So we've got--if we look at the average annual energy, based upon Schedule 2, Granite Canal will generate 224 gigawatt hours?
A. Yes.
Q. And the non-utility generation, but we have to back out Starlight because that's already been included in the past, right?
A. Yes.
Q. Pardon? And Rattle Brook. So there'll be an extra 237.2 gigawatt hours from Corner Brook and the Exploits River? Correct?
A. Well, there's approximately less than 500 megawatt hours that will be generated by those.
Q. Gigawatt hours?
A. Gigawatt hours. No--yes, I'm sorry, gigawatt hours.
Q. Gigawatt hours. And that will reduce, to some extent -
A. Yes.
Q. - the need for generation from Holyrood?

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A. It will reduce some of the emissions, yes, on an annual basis. Not necessarily on a daily or weekly or monthly basis, depending on how the plant is utilized.
Q. Now, if we go to page B-21, it says that the current emissions are by and large below the statutory limits?
A. Yes.
Q. And that a health risk assessment report by Cantox in 1999 concluded that further quantification of admissions--of emissions is required?
A. Yes.
Q. And some of that is what was included in the 2003 Capital Budget projects, correct?
A. Being the mobile site?
Q. Yes.
A. Yes, that would provide one point of impingement data.
Q. Then on top of that the 2002 project, which was the continuous emission monitoring system, which is also going to be completed this year?
A. Yes.
Q. At the stacks and the management of the emissions through the control of the

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combustion process, that also, in part, helps to quantify emissions?
A. The total discharge to the environment; not necessarily impingement on the ground level.
Q. That's right. No, not the ground level; I acknowledge that. But it does, nevertheless--that 2002 project on the monitoring system is intended or was intended at the time to monitor emissions at the stacks, but also to allow Hydro to manage the emissions?
A. There is some flexibility, as was stated in that particular justification. The primary justification besides that was economics because we would make the boiler process a little bit more efficient because the operator had immediate feedback as to what the combustion process -
Q. Okay. That's right.
A. - was doing.
Q. So the thing is that that would be you'd manage the emissions through the control of the combustion process?
A. Yes.
Q. And that may or may not have an impact of emissions--on emissions at the ground level,

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right?
A. Well, we won't know that, obviously, until we get X number of years of data or some -
Q. Yeah. But, if you see a big difference in one year, you may see differences or you may not see differences over a short period of time, correct?
A. Because there are so many -
Q. You just don't know yet?
A. There are so many variables.
Q. That's right. So, if we go to IC-28, this was the answer to our question about copies of orders of the Department of Environment requiring that monitoring capability be expanded. The answer is that there hasn't been an order to expand the sites to include NOx and fine particulate?
A. Not a direct order, as such, no.
Q. No. And then there's a reference in a letter dated March 31st of 1999 from Derrick Maddocks?
A. Yes.
Q. Right. And if we go to IC-29, we can see that in that letter there are a number of things discussed, correct?

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A. Yes, there are.
Q. One of them is continuous emissions monitoring?
A. Yes.
Q. And although it says, "We would encourage Hydro to consider this, but we don't view it as a requirement at this time," that has been approved?
A. Yes.
Q. And that will be done?
A. Yes.
Q. And then it says on particulate monitoring they are satisfied with the TSP program operated by Hydro for the past number of years. And then in the next paragraph it says that they'd like the program re-configured to monitor fine particulate?
A. Um-hm.
Q. But you've already put in place the funds for at least one station to monitor fine particulate which is the mobile station, right?
A. One new station, yes.
Q. And if we go to the minutes from the December 11th, 2000 meeting and which is page 4 of 9 of

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IC-29, TL, who I gather is Terry LeDrew?
A. That's correct.
Q. Indicated that Hydro was planning on instituting pollution prevention measures which is the CEM and the particulate screens, and they've already been dealt with?
A. Not the particulate screens.
A. No. Well, the CEM has?
A. CEM, yes.
Q. Before enhancing the existing monitoring equipment. And again, the CEM's, the reducing emissions thing is dealt with. And also advises, on page 5 of 9, that monitors were installed in the stack to monitor effluent opacity, which we've seen as one of the projects?
A. Um-hm.
Q. And that MGL, a fuel additive, is currently being used and is reducing particulate emission. And that trials are planned to evaluate the use of a combustion catalyst to reduce particulate emissions. Has that been done?
A. I'm not certain.
Q. So then when we get to the May 8th, 2002

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meeting the DM and KD, who seem to be described as Ken Dominie and Derrick Maddocks, under Holyrood air emissions noted the need to reduce emissions. And then they talk about-- they go down through discussing the 25,000 tonnes and steps that Hydro has taken in terms of fuel specs related to sulphur, right?
A. Yes.
Q. And when you see on page 7 of 9 that you, I think, yeah, you indicated that the new fuel contract is flexible and you can order any sulphur contract with a premium on 28 days' notice?
A. Yes.
Q. So you can actually give further reductions
A. On SOx only, yes.
Q. Yes, okay. Now, it says down the fourth line from the bottom that there was discussion on air monitoring for fine particulate and NOx. And then two lines down, that Derrick Maddocks suggested one site this year, which is 2002, and two in each of the next two years, but it was only as a suggestion?
A. That's all.
Q. Okay. And the meeting July 5th of 2002 says

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that you distributed a draft brief entitled, "SO2 emissions at Newfoundland and Labrador Hydro's Holyrood Generating Station". And it says a final copy of the brief is attached, but there is no final copy of the brief that's attached.
A. It was attached to the Mines and Energy Department--I'm sorry, the Department of Environment, we did give them a copy. I shouldn't say it was finalized. We had a lot of discussion. All that was done when the Provincial Government were looking at changing the sulphur content that we were allowed to buy from 2.2 percent to 1.8 percent, there was considerable lobbying done by the Industrial Customers and by Newfoundland and Labrador Hydro. And I guess our view is that we don't necessarily disagree that there needs to be change, we just want to be aware of what the cost implications are. And what we were proposing was that maybe--you know, don't tell us what you--don't tell us what we can buy, tell us what you want at the stacks and let us manage that we can do it the most economic way to meet those targets, which may be a

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combination of pollution control equipment on the back end or it maybe just mean simply buying a cleaner fuel.
Q. Okay. So can you provide a copy of that brief? (UNDERTAKING)
A. I don't know if we will have a copy of the final. I'm not sure if it's relevant to this particular application.
Q. I just like--since it's considered to be attached to it, I'd like to have the full record, that's all.
(11:45 a.m.)
A. I'll see if I can find it, and I don't know if I can find it.
Q. Okay.
A. And -
Q. Now, there's nothing in those minutes of the meeting on July 5th, 2002 about fine particulate action, is there?
A. The meetings cover various topics at different times. Sometimes it's SOx, sometimes it's the cap. We used to have a 25,000 tonne cap the Provincial Government Department of Environment want us to reduce over time. And what we were looking at in the report that

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we're doing and the study that we're doing this year is we're trying to look at the whole gambit of pollution and how best to do it, whether it's buying a different quality of fuel, both for the SOx--sulphur content and other content was dry of particulates, whether we should be putting it back in--and give us an order of magnitude of cost. The cost of -

Q. But my question is, is there anything in this minute -

A. On that particular meeting of July 5th?

Q. Yes.

A. No. It's mostly to deal with the priorities and the SOx situation at Holyrood.

Q. Now, when you get to page 2 of that document, which is page 9 of 9 of IC-29, it says it was agreed that the next meeting would be in September, 2002?

A. Yes.

Q. Did that meeting occur?

A. We have regular meetings with the Department of Environment.

Q. Okay. So there are no minutes for those?

A. I presume there was nothing in there pertinent to this discussion.

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Q. So what's the cost of doing nothing with respect to fine particulate and NOx monitoring at those stations in 2004?

A. The cost of doing nothing?

Q. Yeah.

A. I guess we will eventually get--we have to negotiate with the Provincial Government an operating certificate for the plant, because we do not meet the current legislation on emissions, on all emissions, so we have to negotiate that with the government. They may--the more information that we have, the better we are able to make a case for rational and logical expenses from the point of view of controlling emissions.

Q. But there is no cost, is there, of doing nothing, because you are at the moment -

A. No, there is no cost except that we have less information to make viable future Capital Budget proposals.

Q. But you still don't have the information, any information, from the projects that were approved in 2002 and 2003, right?

A. No, we don't. But I don't think that's relevant. What we're trying to establish is

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our total environmental footprint at Holyrood plant, which is one of the biggest polluters in the province, subject to many customer--consumer complaints.

Q. Now, your project for 2003, which was the mobile system?

A. Yes.

Q. That was projected to cost $184,000?

A. Yes.

Q. So the cost of an extra one of those or two of those would be less than half of what's proposed here, correct, less than half of $728,000?

A. For one more system.

Q. For one more system it should be roughly $184,000?

A. Yes, for that particular style--for that particular installation I assume that would be a reasonable assumption.

Q. And two of them should be double that?

A. I'm not sure. I don't know. I'd have to go back to the specifics of what's at the existing sites.

Q. Yes.

A. That's a level of detail that I'm really not

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prepared to discuss.

Q. But I'm just talking about if a mobile ambient system for monitoring NOx and fine particulate is $184,000, then two of them should be twice that?

A. Depends, depends on whether we lease the land, whether we rent the land, whether it's our installation, depending on the installation of the tower height. You may do different things for a mobile station than you would for a permanent station.

Q. Okay. The permanent stations, are they on your own land?

A. I'm not quite sure if they're on our property or not. We certainly have it leased, if nothing else. I suspect that we probably own it. There are four sites.

Q. Okay. And the last one--project on the generation project is to upgrade the civil structures in Holyrood?

A. Yes.

Q. And all you're proposing for 2004 is $78,500 for the engineering?

A. Yes.

Q. And stack No. 1 is being done in 2003, right?

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A. As we speak.
Q. Yeah. At a cost of nearly $2 million?
A. Roughly.
Q. Is it going to be completed in 2003?
A. Oh, yes, absolutely.
Q. Now, for the 2003 budget all of the expenses, including the engineering and the work itself will propose to be done in one year, in other words, with a one year project? If you look back at B-32 in the 2003 Capital Budget?
A. Yes.
Q. So for the second stack I noticed that the engineer cost is lower than for the first one. So can I assume that a certain amount of the work done in connection with stack No. 1 can be carried over into the work for stack No. 2?
A. I presume the specification would be largely reusable, because basically it's a different unit, it's a different physical location in the plant. There are a few other things that have to be considered, but by and larger, that's reasonable.
Q. So why can't all the expenditures for stack No. 2 be put in the 2005 Capital Budget since that's the year you plan to do the work?

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A. I'm not exactly sure. I guess presumably they want to have a better planning horizon from the point of view of planning the job, getting better prices, possibly, for the vendor. The sooner we go--you know, the sooner we do the preliminary work and go to tender, not rushing a closing time of tender is usually the better price we'll get.
Q. But you know that the--I mean, you would--the bigger job that you were doing was stack No. 1?
A. I don't know if it was a bigger job there. Comparable job.
Q. Well, the same job?
A. Comparable jobs.
Q. But it had a bigger engineering component?
A. Yes. And it would have been done very early in the year with--and depending on the number of resources we had in the engineering department, what other jobs were on the go, how much time they had to spend at it.
Q. And since you're not planning to do any of the installation of stack No. 2 in 2004, it's just the engineering part, there's no real reason why it couldn't all be done in 2005, is there?

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A. It's better to plan it on a two year basis. You have more time to plan, you can utilize your engineering resources a bit better rather than cramming it all into one year and hiring more temporaries or consulting when we could do it in house. It also depends on the average -
Q. But it's not going to affect reliability if you put it all in 2005, right?
A. As long as it doesn't lengthen the window. It will affect availability if it lengthens the outage window.
Q. But if you could do stack No. 1 in the 2003 capital year, there's nothing peculiar, is there, about stack No. 2 that would make it impossible to do that in the 2005 capital year?
A. Possibly. But you have to look at the whole. These particular stack remediation work is done on a major unit overhaul, which we do each--roughly, at the moment, every six years. No. 6 will be done on a six year--we're calling for a six year overhaul in 2005. At that particular time--for instance, this year, besides doing the stack, we're also doing the

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electro--the hydraulic governor. I'm not sure which particular components on a critical path there right now, but they look at the whole to minimize the outage time. We're trying to assure 75 percent availability of the thermo units.
Q. But again, from what I understand of the project, only $78,500 of it is proposed to be done in 2004?
A. Yes. So we can plan the job, get ready to execute in 2005.
Q. And the maintenance history for stack No. 2 isn't as bad as for stack No. 1, right?
A. That may be, but they're both of the same vintage, they both see approximately the same number of operating hours.
Q. Well, when I look at the report that was done on the two stacks and the information that was contained in the 2003 budget, it certainly seems to indicate that the more urgent one was stack No. 1?
A. That's quite possible.
Q. I'm just about finished with Mr. Haynes, and then Mr. Hutchings would take over. So, I know it's a couple of minutes to 12, but if

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you'd bear with me, it would probably be good if I could finish up my couple of questions. Is that fine, Mr. Chairman?

CHAIRMAN:

Q. How much time do you think you will need, Ms. Henley Andrews?

HENLEY ANDREWS, Q.C.:

Q. I don't expect to be any longer than five minutes.

CHAIRMAN:

Q. Okay.

HENLEY ANDREWS, Q.C.:

Q. Does Hydro expect any improved operational efficiencies as a result of the replacement of the Holyrood control system?

A. There may be some. There were none talked--there were none reflected in the economic evaluation. There'd be--I think they expect some boiler efficiency improvements based on a faster processing and some purchases on that particular system have indicated that, but it's not been quantified or taken into consideration in the economic evaluation. It's a -

Q. So it hasn't been quantified?

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A. No. And it would only make it look better, if anything. It wouldn't be less than we already had.

Q. Now, if we take a look at P.U.B. 9, the answer to the question is that Hydro uses historical prices realized from previous tenders. What do you mean by "historical prices"?

A. If we've done similar work before from recent tenders or evaluations. This is B 9?

Q. Yeah, P.U.B. 9.

A. P.U.B. 9, I'm sorry. Okay. We have a--depending on our capital and operating program, engineering departments and TRO and generation engineering do maintain, you know, a record of what the contracts were, what pricing is for various labour contracts, supply contracts, and it's an engineering judgment what the anticipated cost is.

Q. Okay. Well, how far--when you say you use historical prices, how old a price would you be prepared to use?

A. I'm sure that they would escalate those numbers or if there was any doubt, they would go back for a quick evaluation by a vendor just give them a ball park number. The

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estimates are basically plus or minus ten percent. And the detailed engineering for most projects is not completed until we get approval and we actually get into writing specification and doing the detailed design drawings, etcetera.

(12:00 p.m.)

Q. So could there be a situation where--I mean, what I'm trying to get a handle on is that if you haven't done a particular job for 20 years -

A. Well, I would suggest that they would go back and get some order of magnitude costs from various vendors and then put in a reasonable number.

Q. Okay. And what about if it was ten years?

A. I would suggest they would probably go back and do it then for some rare thing like that, okay. It depends on the item.

Q. Okay. But you're not sure? Who would be the right person to answer that question?

A. Well, that's--I'm quite confident that they would do that. They will look at and use their judgment based on their experience the way the quotations have gone recently and

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decide whether their estimates that they have in their back pocket, for the lack of a better word, are useful, or if they need to get a re--preliminary quotation from a vendor. And that is often ongoing by the engineering department who are conversing with these vendors, I won't say on a daily basis, but quite often, to get an updated price, ball park numbers, and they will put together their best guess. And at the end of the day what will go into the Capital Budget will be what's actually spent to do that particular job. And our track record has not been bad.

Q. In some of the questions that the Industrial Customers posed in their RFI's we asked about hazard identification and assessment study?

A. Yes.

Q. Are you familiar with those concepts?

A. A little. We use it for some health issues, but we do not get into it for a lot of equipment sort of things, but we use it for -

Q. Do you use it for safety?

A. We have not--our target, obviously, is to have zero loss of life. That would be the ideal target. We do not plan a--we do not plan or

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operate our system that we expect that we would cause injury over X number of operating hours. We don't operate that way; we never have, as do most Canadian utilities.

Q. So you don't have any target levels of safety for reliability?

A. Safety for reliability? We have target reliability for generators, we want to make CE -

Q. Okay. So, well, you don't have any target levels of safety?

A. We have a target level of safety that we want all injury--CEA, the Canadian Electrical Association monitor several safety trends, if you will, of Canadian utilities, and we subscribe to that. And basically we want all injury frequency rate--we have a target number for that, which I don't know offhand, but there is a number that we would like to meet or beat; beat, hopefully.

Q. And you don't have--you haven't established target levels for environmental impacts, have you?

A. We have internal target levels for environmental reporting the number of non

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compliancies with respect to our ISO 14,000 program.

Q. But in terms of the establishing a set of targets, that has not yet been done?

A. Can you give me a for instance?

Q. For example, what would be your target with respect--at the present time, with respect to NOx emissions at Holyrood?

A. We don't have a NOx. We have SOx of less than 25,000 tonnes per year for Hydro as a whole, or metric tonnes per year.

Q. Those are my questions. And Mr. Hutchings will follow after the break.

CHAIRMAN:

Q. Okay. We'll break for 15 minutes and come back for Mr. Hutchings.

(12:05 p.m. Break)

(RESUMED AT 12:20 P.M.)

CHAIRMAN:

Q. Mr. Hutchings, are you ready to proceed?

HUTCHINGS, Q.C.:

Q. Yes, thank you, Mr. Chairman. Gentlemen, most of my questions, I think will be directed to Mr. Downton and he will be free to farm them out as he sees fit and give Mr. Haynes a

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little rest after his contributions. Mr. Downton, I want to start with looking at B-59 which is a project entitled "Corporate Applications Environment". In light of the withdrawal of the project that was going to deal with migration from JD Edwards, is it still intended to upgrade the JD Edwards software?

A. Yes, it is.

Q. Okay, so essentially what this project is providing for are for new--for software programs, for updates?

A. Yes, overall, yes. JD Edwards, Showcase, Lotus Notes and 400.

Q. Okay, and looking at the project cost breakdown, we have 30,000 for labour, 352, 000 in engineering and 132,000 in project management. Is this basically an entirely labour project?

A. Yes, pretty much labour, total labour project.

Q. Okay. So there's no actual cost in here for the software?

A. Basically no.

Q. So can you just essentially describe for me then what this project involves? I mean, is

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this simply people loading new software on various machines?

A. Basically in the case of JD Edwards, we will be moving from what JD Edwards calls CUME 12 version of their World software to CUME 14, which is the latest release and what is involved in this particular initiative will be to load test, test with the business and finalize the upgrade from 12 to 14. And likewise for Showcase Strategy, Lotus Notes and O/S 400.

Q. How many people would be involved in this project?

A. Basically in the case of JD Edwards, you'll probably have probably three to four people in IS & T involved and the various business analysts involved and likewise for Showcase Strategy. Lotus Notes will be primarily all IS & T staff and the O/S 400 will be primarily all IS & T staff.

Q. Now the AS 400 Operating System is it not intended to be replacing those machines in total, in the near future?

A. Yes. The operating system still has to be, the purchase of the, I guess, the I series

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services is only for the hardware and the way that IBM works is that the software is separate again and that's why the O/S 400 release is in here.

Q. So you're going to be upgrading the software on the AS 400 in 2004 and when then will that hardware be replaced?

A. In 2004.

Q. Okay, and will the software from the AS 400 be compatible with your new server?

A. Yes, it will.

Q. Okay. So, is there something more involved in this project than simply installing an upgrade for each of these programs on various machines?

A. Well basically installing an upgrade and the upgrade will bring additional functionality and features that we don't currently have now and also provide fixes for current problems that we have now. In particular, the Lotus Notes will provide collaboration functionality, also resolve some issues we have with calendering featuring, also, I guess, improve performance to the end-user and also provide significant administrative tools

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for rolling out of client software, as well as providing from a security perspective, some built in, what we call Spam Software to reduce the impact on unsolicited junk e-mail is having on the organization.

Q. That's probably worth something. How many person hours are involved in this project?

A. I'd have to go back in and generate the detail from the project management and engineering numbers.

Q. I mean, certainly JD Edwards I would understand is a somewhat specialized system, but something like Lotus Notes, I would think that most users of the program themselves could simply install an upgrade on their machine?

A. No, that's not the way it's done. Basically you would take the upgrade, you would basically--you have to ensure that before you do an upgrade that all of the Lotus Notes databases that you currently have are tested and can be migrated to a new version, make any changes if necessary and then basically, again, run that through a test and then deploy the software and that's not done by the

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client, that's done by the system administrators in IS & T.

Q. I mean, don't you have a record of what version of Lotus Notes everybody has at this point?

A. Yes. Now basically everyone is on 5.11.

Q. And, I mean, presumably people are not allowed to change their own at this stage, are they?

A. No. Agreed.

Q. Okay, so I mean, what's involved in finding out what's there now in order to be able to do the upgrade? I mean, you should have all of that at hand.

A. See, the client software is only a portion of it, the significant portion is to test all of the Lotus Notes databases of which we have between 50 and 70 databases we use for everything from software request applications to other databases to support environmental management throughout the country, policy and procedure manuals are kept on Lotus Notes databases, so all of those databases have to be tested to ensure that they're compatible with the new release of JD Edwards--or Lotus Notes.

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Q. I mean, what could make them non-compatible?

A. Basically there's always feature sets, software changes included in any roll out and I know when we upgraded from 4.6 to 5.11 about two and a half, three years ago, basically the effort in testing of the Lotus Notes database was significant.

Q. And is it on that basis that you've come up with the numbers that are shown for this project now?

A. Yes, yes.

Q. In respect of the JD Edwards System itself and I understand from your latest evidence that or not from the evidence but rather from Ms. Greene's opening remarks on Monday, that the migration project has been essentially withdrawn. What, if any, are the negative impacts of not proceeding with that migration study?

A. The migration really has not stopped in that sense. The migration strategy was to do an audit of the business and the processes that we currently have within the World product, JD Edwards World Product and then to do an assessment on, I guess, JD Edwards new release

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of one World and to do an assessment on what additional improvement from a process perspective we can implement and at the same time, to look at the technology issues that would be entertained as part of the migration and also to do a detailed costing of it. So the impact that, I guess, deferring that particular initiative will have on this, basically they're not related.

(12:30 p.m.)

Q. So what's happened in respect of that JDE Migration Assessment Study is that there's been an external event as a result of which you've chosen not to proceed with the project?

A. Yeah, well I guess what has happened is that Peoplesoft and JD Edwards, I guess, came together and, to form one company, and I guess that put a certain amount of apprehension on the horizon as far as what the future of One World will be. And then, of course, Oracle came in and they basically wanted to buy out Peoplesoft, so right now, it's in a state of flux for 2004.

Q. But these are all things that are totally external to any consideration of what Hydro is

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doing itself, correct? There's nothing to do with Hydro's operations? These are all totally foreign events?

A. That's right, yes. These are all foreign events that we do try to keep informed on, so that we make proper decisions.

Q. But from the point of view of this Board here, looking at whether or not this Migration Assessment Study was necessary in 2004, obviously it wasn't, wouldn't you agree?

A. I'm not sure the -

Q. You're not doing it.

A. I'm not doing it, no.

Q. No, and it has nothing to do with your own operations, nothing has happened within Hydro to make you decide not to do it, correct?

A. I'm not sure what the question is. I guess from our perspective to go and--the real, again, the focus of the Migration Study was to do an assessment on migrating to One World and to do a business and a technology assessment, and based on the uncertainty in that environment at this particular time, we felt it prudent to not move forward with that particular initiative.

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Q. And presumably, you know, in a year's time, perhaps, you know, Peoplesoft and Oracle and everything will have settled down and you will do this study or some sort of study like it?

A. Yes.

Q. Okay, but for 2004, you're going to get along fine without having done that study, correct?

A. Yes.

Q. In respect of the JD Edwards release, I refer you to IC-30, relative to actually each of the four upgrades that are planned, there are attachments that relate to the highlights and the upgrades. Did you have an alternative to either, in respect of JD Edwards specifically in the first instance, not do the update or go to a lower level of update?

A. Well, yes, what we have found is that--and JD Edward encourages its users to not fall any more than two CUME levels behind, primarily because it becomes an issue of getting support for the product. They do support the product, but what we had found is that the support for the current product is better than when you're much further behind in releases. And also there are problems which we currently have

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which, based on our assessment, this upgrade will resolve.

Q. Of the enhancements that are shown here in Attachment 1, are there any of them that would have impelled you to get this release, if there wasn't an issue about simply keeping up to date with a more current release?

A. I guess I should note that the release will effect basically every module that we do have and I didn't go down through all of the detail on the modules, but basically the first one FASTR downloads, account ledger inquiry, depreciation start dates are things that we're looking at. Integrity details for general ledger and accounts payable, those were basically some of the initial ones that I looked at, going down through the upgrade.

Q. There are quite a few of these that -

A. Yeah, there's a 150 of enhancements that CUME 12--or CUME 14 released.

Q. There are quite a few of them that have nothing to do with you at all, right?

A. Oh yeah, well basically that is the way that they roll it out is to fix issues and provide enhancements across a full range of users.

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Q. You'd have no interest, presumably, in administration of 401 ks which don't exist in this country. What are the specific problems that you said you thought you might solve by implementing this release?
A. We're basically having some issues with regards to assets and work management. As far as what is in the system, I don't have the exact details.
Q. And these are the ones dealt with on page 2 in terms of simplification of management of fixed assets?
A. No, that's--sorry, say that again, on page?
Q. Page 2 of the attachment No. 1, talks about simplification of management of fixed assets.
A. Page 2 of Attachment 1?
Q. Yes. Attachment 1 to IC-30.
A. Okay, I've got Attachment 1, and could you read that out?
Q. It's on the screen there under heading "Fixed Assets, simplified management of fixed assets." And then it talks about depreciation and omitting entries and so on.
A. Well we're looking at more along the lines of configuration issues for the assets.

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Q. So what is described in this attachment is not solving the problem that you have relative to asset management, does it?
A. I don't know without doing a detailed analysis on it.
Q. As regards to the Showcase update, are there any of the enhancements from Attachment 2 that are going to provide any specific benefits to Hydro?
A. I guess some of the obvious ones will be more efficient database maintenance. Basically, again, this is an application that runs on the I series or AS 400, a FASTR calculation as far as the S base where we use the cube (phonetic) to support our CAPM Application.
Q. Is there an inadequate turn-around time now on those batch operations?
A. Basically we're looking for improvements to complete the calculations and I guess the issue with most of these products is that if you do not keep current, then basically you'll find that you will not be able to get support from the vendors.
Q. Do each of the first three upgrades have to be installed individually on particular work

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stations or are they simply network installations?
A. JD Edwards, Showcase and Lotus Notes, they basically, from my understanding, they basically will be installed on a server, but they also have implications on client software as well.
Q. Yes, but it doesn't require a visit to each work station to perform a separate installation?
A. Well, the way I would phrase it is each one of those will have an impact on the client PC.
Q. I mean, when you turn on your PC in the morning, you will notice something different after the installation has been done.
A. Yes.
Q. Yes, but that doesn't involve somebody from IS&T physically going to each work station and doing an installation?
A. In some cases yes, and in some cases no.
Q. When you say in some cases, do you mean in respect to certain of the software or in respect to certain of the work stations?
A. Basically some of the software you will find as part of the corporate image and in other

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applications, they are not part of the corporate image, so basically someone would have to go to the desktop and actually load in the new version of software.
Q. Can you determine for me the number of person hours that are contemplated for completion of that project?
A. I can take that as an undertaking, if you want.
Q. Yes, okay, thank you. (UNDERTAKING) Moving on to B-60, this appears to me to be essentially three somewhat related projects combined into one. And I'll deal with them separately. Item 1, unforeseen modification enhancements and additions to software to address required changes and so on, I take it that is essentially an annual allotment?
A. It's an annual allotment for unforeseens, yes.
Q. Okay. And have you been able to identify from your historical experience the right number to attach to that particular cost?
A. Well, typically, it will basically change depending on how we feel what the business will be looking for in a particular instance. I guess, based on our projections for the 2004

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and with the current initiatives in place, working on business process changes, we basically see that the focus for allotment number one, if you want to call it that, would be related to asset and work management and work order routing improvements. And that's consistent with--where other utilities worldwide are focusing for 2003/2004.

Q. So you have particular things in mind to do under this heading of unforeseen modifications at this point?

A. Well, basically, as part of the business process improvement, we do know that we are working on various areas and we basically see the possibility for work to have to be done in those particular areas and I guess then some is really unforeseen.

Q. So, it's not correct to say that all of the items that come under that heading are, in fact, unforeseen; some of them are actually planned.

A. Well, they're unforeseen in a sense that we, based on what we see happening in the business, there are possibilities that some of this may happen and some of it may not happen

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and then there are other foreseens which may come about as part of their regulatory process.

Q. In IC31 you've provided a breakdown of costs for each of the three categories in the proposed project. How did you come up with the breakdown for minor enhancements?

A. I basically made an estimate based on the fact we would be looking at three minor enhancements that we typically done before and the cost of those enhancements will run anywhere from 25 to $40,000.00 each. So, really it's an estimate based on doing three minor enhancements.

Q. Okay. So, where's the allowance for the unforeseen ones then?

A. Well, basically, as far as I'm concerned, in an unforeseen and a minor enhancement, we have to base an unforeseen on something, so we based it on the fact it would be considered the same size as a minor enhancement.

Q. Okay. You identified three minor enhancements that you expect to do anyway.

A. I mean, I identified three, I guess all I'm saying is that whether the three of those take

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place and I have an unforeseen, at this point in time, I really don't know, it's basically all unforeseen.

Q. My concern here, to some extent, is related to potential duplication in that sense that there is an allowance for unforeseen matters of a million dollars in the budget already. What -

A. No, that's not my interpretation of what that million dollars is for. My interpretation, I could be corrected, is that that is for "emergency allocations".

MR. HAYNES:

A. If I could, the million dollars has not been used last year, but basically is for emergency that we don't have time to come back to the regulatory for approval for something about $50,000.00. Things that are below $50,000.00 that come up that we have no choice but to do, we can go ahead and advise the PUB at the next quarterly report or whatever. So, we don't bother them for small amounts. What we've tried to do here is that we know that in the IS & T there's going to be a number which are going to add up to be in excess of 50. So, rather than go with 2 or 3 or 4 or 5 small,

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20, 30, $40,000.00 items and then come back to the Board and see a $200,000.00--that's not appropriate, that's not being upfront and clear with the Board. The million dollars is for things we have no choice, but to move and to act and to commit to meet customer load, et cetera.

Q. So, is this subproject, as I would refer to it, does it show up in every years Capital Budget.

MR. DOWNTON:

A. Basically, it didn't show up in last years Capital Budget primarily because where we got late approval of 2001, it flowed over in 2002. And so basically, I guess, we've resubmitted this particular Capital Budget for 2004 and we look at this as pretty much an annual occurrence.

Q. Is there a separate account maintained in Hydro's records for this particular subproject or is it any costs that are incurred under this just spread out over your IT budget?

A. Well basically, if--as a for instance, if I identified a particular piece of work that I needed to do, say, on work flow for work

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orders, then basically I would cut a work order and track the cost related to that.

Q. Okay. In terms of reporting back to Board as to what you've done, if they choose to approve 85.5 thousand dollars for minor enhancements, how do you report to the Board as to whether that was spent and what it was spent on?

A. Well, basically, I guess in the reporting, I don't think that we report to that level of detail. We report to the level of detail that the monies were expended under the -

MR. HAYNES:

A. Capital job costs.

MR. DOWNTON:

A. - capital job costs.

Q. You'll have one capital job cost presumably for application enhancements, is that correct?

A. Yes.

Q. So, all of this gets lumped in together whether it's the Enterprise Management Software application of some unforeseen modification?

A. Well basically, yes, three of those have been submitted as one capital job cost. I guess that's consistent with what we've done before.

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Q. And there is no methodology in place that will allow the board to look back afterwards and say what was spent on the unforeseen modifications, what was spent on the continuing design of the internet or what was spent on the Enterprise Project Management software?

A. If the Board has a specific question, then that level of detail can be provided.

Q. Enhancements to the internet and intranet, how does the money sought under this particular heading relate to the several other projects that I would regard in generic terms as being enhancements to the intranet or internet including the Evergreen Project, the Secure Remote Access Project, the Centralized Monitoring System, I mean, all of these are enhancements to your intranet or internet, are they not?

A. Basically, with regards to the intranet, what we are looking at in that particular portion is to build additional sites which don't exist right now for different divisions within the Company. And likewise, the internet would be a total redesign of the internet because of

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existing inability to do, we'll say, content management and to deal with some security issues we have.

Q. I mean, how do you decide what's in this project and what, for instance, is in the Secure Remote Access Project?

A. Well, I guess the work that's defined as the, say, $226,200.00 is specific to developing the internet and the intranet.

Q. But equally the Secure Remote Access Project is the same thing, is it not?

A. The Secure Remote Access Project is a security project that we're looking at providing secure access to Hydro's infrastructure.

Q. Um-hm. I mean, you're doing or proposing to do in the 2004 Capital Budget a number of things to you intranet and internet, correct?

A. Yes, and those are dealt under the $226,000.00, yes.

Q. Yes, but one of the other things you're doing is Secure Remote Access.

A. Yes.

Q. And you're also refreshing your servers and software and so on.

A. Yes.

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Q. So, it's a question of transparency in terms of what, from the point of view of a capital project, you're actually doing with your internet or intranet in a given year. And the question is why we get bits and pieces of it in three or four different projects?

A. I don't understand what you mean by getting bits of it in three or four different project. Basically the internet development costs are in this particular capital job costs, the secure access really has nothing to do with "the internet development" as such.

Q. What we're talking about is secure remote access to your internet thought.

A. We're looking at secure remote access to Hydro's infrastructure. Once you get into the infrastructure, whether you go to an internet site or to go a file server, that basically is determined by the level of access that you have and what you want to do.

Q. But I mean, your access is to the internet and intranet, is it not?

A. Yes, well that will be one of the things that you will have access to. You will also--if you come in from, through secure access,

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you'll also have access to JD Edwards or you can have access to Lotus Notes.
Q. Yes, but your access is through the internet, correct?
A. No.
Q. Is it through the intranet?
A. With regards to secure access?
Q. Yes.
A. You basically come in to Hydro's network and once you're on the network, then you decide where you go.
Q. Okay. So, what's Hydro's network? What do you mean when you say Hydro's network?
A. I guess when you come into our "woeful area network" or Y area network. Once you gain access to the network, depending on the level of security that you have and what you've been granted permission to do, you may have permission to go to Hydro's "intranet". You may have capability to go to a particular file drive, if you want to call it that, a common drive where you basically have access to specific information or you can come in and get access to your e-mail or you can go in and start up a word application.

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Q. So, what do you refer to then when you refer to Hydro's intranet?
A. Basically, it's--right now, Hydro's intranet consists of some of Lotus Notes databases. Basically, we've developed an HR site for access to specific HR information. And I guess, on a go forward basis, what we're proposing is to add information for environment and customer service.
Q. And when you refer in this project to internet, are you simply referring to Hydro's external web site?
A. Yes.
Q. Okay. So, that is simply one site and that's what you're talking about here when you say internet?
A. Yes.
Q. Okay, all right. If we can look for a moment at B62, it's a project you call security program centralized log monitoring and analysis system. This, I take it, doesn't relate either to the internet or the Intranet as you define them, is that correct?
A. That's correct.
Q. Okay. Now, this is basically a monitoring

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program to allow you to monitor and log individual user and work station activity?
A. No, not really intended to that degree. What is intended is to access the various security systems on our infrastructure whether it be firewalls, server, security logs from the servers and to bring that together so that we can monitor the security issues related to our infrastructure.
Q. The material supply component for the 2004, is that simply the acquisition of the server?
A. That is basically--I'm not sure of the detail, whether it's the server and/or some software, I can check on that, if you would -
Q. Yes, I'd appreciate it if you would.
(UNDERTAKING). I take it from the description of the project that you've determined that you require a dedicated server for this purpose, is that correct?
(1:00 p.m.)
A. That's what the word says there, I'll basically check to see what is in the material supply.
Q. Did you have any outside advice to the effect that a dedicated server was required to have

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this functionality?
A. Well, from the security perspective, we basically felt it prudent to look at a separate server for security rather than have it laid on top of other existent servers.
Q. Can you explain to me how you reached that conclusion?
A. I guess in discussion amongst, I guess, my management group and the security team, we basically felt that it would be prudent to have the security type of features on a separate server.
Q. Is that somehow related to the sensitivity of the information that's going to be on this particular -
A. The sensitivity of the information that's on that particular server, yes.
Q. Is that more sensitive than anything else you've got?
A. I guess it's an accumulation of a lot of very sensitive data, yes. Is it, at the end of the day, is it more sensitive than other pieces? I guess all I would say is that we're bringing all that information together in one place and we felt that this was the proper way to

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install the software and have it secured.
Q. Have you established a level of priority in terms of the sensitivity of information on particular servers?
A. To that degree, I guess the answer is, no.
Q. Okay.
A. But when it comes to security and the firewalls, we basically take those aspects very seriously and we consider it to be high priority issue.
Q. Um-hm, okay. So, this is not a question of capacity of the server, it's a question of the decision that particular information should be on a separate server from any other information that you have.
A. Yes.
Q. And you're going to get me the breakdown of the material supplies so we can see what's actually being paid for the server here.
A. Yes.
Q. Okay, thank you. B64 then is the secure remote access project that we spoke about earlier. Is this intended to operate by the way of a virtue of private network?
A. Some of it will, it will give you the

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capability to have secure access through VPN, yes, but that's not all of component of this particular project.
Q. There's reference also to the RSA, can you just explain for us what you mean when you say RSA secure ID technology?
A. Well, basically RSA is "a brand name" much the same as IBM or Hewlett Packard and we currently use their technology for secure log in. What it is, it's a token like this and basically, it provides a very distinctive password or number, I should say, which substitute as a password and you have your own dedicated pin to give you much the same reliability as you would if you went to an ATM. So this is what's referred to as a RSA secure ID token.
Q. Okay. So you would need that physical token or you would just use the number from it?
A. No, you have to have the physical token because the password on it changes every minutes.
Q. Okay.
A. And it's synchronized with the passwords of the server that you log on to.

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Q. I think we discussed at the last hearing, the issue of your web server being outside the firewall. Will this project correct that situation?
A. I don't know. I will have to check that detail.
Q. Okay. I'd appreciate if you could get that answer for me. (UNDERTAKING) The new material that's in this project for thirty-five thousand dollars, do you know what that is?
A. Primarily some of the costs will be additional secure ID tokens and some of the additional cost have yet to be defined.
Q. Is there an intent to have a separate server for this as well?
A. No. Basically we currently have a server that provides or runs the secure ID software. The intent of this particular program is really to evaluate, design and implement products to provide secure methods of accessing information. And this is one of the, again, this token type technology is one of the aspects we're looking at.
Q. Okay. So, you're going to get me, again, a breakdown of the material supply here -

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A. Yes.
Q. - so we can see what's involved. We'll move then to B66. Okay. The end user and Server Evergreen Program, this is described as a second year of a five-year program and I believe there was a project in 2003 Capital Budget for 8 or $900,000.00 which was basically similar sorts of things, correct?
A. Yes.
Q. Do we have an estimate of the total cost of the five year project?
A. In as far as our five year plan, Hydro's five year capital plan, we would have that.
Q. Do you know what that number is?
A. Yes.
Q. Can you tell me?
A. Well, I don't know it to tell you now, no.
Q. No, okay. Can you get that number for me? (UNDERTAKING)
A. Yes.
Q. Yes, okay. I'm trying to get a handle, I guess, on exactly what is to be replaced under this particular project. There's discussion about moving to thin client devices and so on. In respect of the two point eight million

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dollars that we're dealing with here, I mean, do we have an indication of what portion of it will relate to thin client devices and what will relate to desktops or laptops?

A. The desktop, I guess what I call the desktop portion, again is to replace two hundred and twenty units, and there are approximately one-third, one-third and one-third of per laptop, desktop and thin client devices. So that basically those costs will cover the supply and install of those particular end user devices.

Q. Okay. So -

A. So that's the desktop portion.

Q. Well, you say two hundred and twenty devices, one-third laptops, one-third desktops and one-third thin clients.

A. Yes, so roughly seventy something, seventy, seventy.

Q. Yes, okay. And what type of thin client devices are you contemplating acquiring?

A. We're basically--I think it's called Neoware.

Q. Neoware?

A. Neoware, N-E-O-W-A-R-E.

Q. And what can that do?

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A. Basically, in very simplistic terms, the Neoware device is a dumb terminal. Basically all of the applications run on the server. What you basically get for it is a screen very similar say to the one in front of you, plus a keyboard, and a box probably about twice the size of the Bible, in the sense of that's the physical size of the Neoware box. All it provides is the ability to communicate with the server. Again, all the intelligence is on the server. That's where all the software runs and the Neoware box just provides the information refresh back and forth to the screen from the server.

Q. And what are you paying for one of those?

A. I don't know the exact number, somewhere in the order of maybe twelve to fifteen hundred.

Q. Twelve to fifteen hundred dollars per terminal?

A. Yes. I can confirm those numbers.

Q. Okay. Well, you can get back to me in the morning and let me know if that is, in fact, the right number. (UNDERTAKING) Have you looked at any competitive devices, other than Neoware?

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A. Yes. We did look at one other device. I don't know the name of it, but we did look at one other device.

Q. And what led you to conclude that Neoware was the way to go?

A. Basically we had looked at what we have seen in the industry and plus the testing that we had done on the particular device to ensure compatibility.

Q. So was the other device that you looked at incompatible with your system?

A. I don't know that level of detail.

Q. Okay. Do you know how the price of the other device compared to the Neoware device?

A. From what I understand, I don't think that there was any cost difference, any significant cost difference.

Q. And you only looked at one other alternative device?

A. I'll confirm that. (UNDERTAKING)

Q. Okay. All right. Do you know the model number or type of Neoware device that you're talking about?

A. No.

Q. Can you confirm that for us? (UNDERTAKING)

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A. Yes.

Q. Okay. In respect of the desktop devices, what is the plan for what's going to be acquired to replace desktop devices?

A. You mean what kind of desktop units they're going to be?

Q. Yes.

A. Basically, they will be IBM desktops.

Q. IBM, and what models?

A. I don't deal with that level of detail.

Q. Okay. All right. But you can get that for us, can you? (UNDERTAKING)

A. Yes.

Q. Yes, okay. Do you know the price of those?

A. I'll get the estimate of that as well. (UNDERTAKING)

Q. Okay. All right. And have you--who is responsible for making the decision basically as to what type of desktop device is going to be acquired?

A. Basically from mobile end user perspective, we go to tender to basically get costs, to get the best competitive cost for the end user infrastructure.

Q. Okay. But I mean, when you go to tender, are

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you going to tender for an IBM device or are you going to tender for a PC?
A. When we went to tender, we went to tender for basically desktop devices, which met certain specifications, and I guess, the award, the last award was to IBM, based on cost.
Q. Okay. I take it you'll be issuing another tender now, in the event that this project is approved?
(1:15 p.m.)
A. No. Basically we have a tender now that the-- we're on the--the last time we went to tender was for a five-year program, and so we're basically picking up years four and five options on that particular tender.
Q. Okay. I thought we were in now the second year of a five-year program.
A. We are, but I guess the thing is, when we started the initial Evergreen refresh, it was back in 2000. That was, yes, it was year three. So this would be--so I guess all I'm saying is that we're just continuing with the same tender for the purchase of the desktop equipment.
Q. So this is basically a standing order type of

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thing you have now?
A. Yes.
Q. Okay. And does that apply both to the Neoware as well?
A. I believe it does, but I'll check on that.
Q. Okay. The simplest thing might simply be to provide the standing order contract that you have, (UNDERTAKING) given that it should specify the numbers that are -
A. I'll provide the information I think is appropriate to answer your question.
Q. Okay. In respect of the laptops then, are you committed to a standing order for those as well?
A. Yes.
Q. Okay. And with whom?
A. Basically it's with IBM.
Q. Okay. Do you know what specific laptops you'll be acquiring?
A. No, because they usually change every six months, so it's hard to keep track of exact model number.
Q. Okay. Do you know which was the last ones that you got?
A. No.

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Q. Okay. I take it you can get that information for me?
A. Yes. (UNDERTAKING)
Q. Yes, okay. Together with the cost per unit that are associated with those?
A. Yes. (UNDERTAKING)
Q. Yes, okay. Have the specifications for either of these three types of devices changed since you gave your standing order three years ago?
A. I would suspect that they have.
Q. And you have that capability under your arrangement that you can change the specs?
A. Yes.
Q. I take it you can't hold the price if you change the specs, can you?
A. Basically there is a formula in there for best holding price and there's also--we basically look at the best practices put forward by Gartner as to what the configuration of the end user device should be. So we basically look at that on a consistent basis and, if need be, we'll apply the new standard to whatever infrastructure we're bringing in.
Q. You said best practices put forward by whom?
A. By Gartner Group. They're probably the

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largest IT analyst company in the world. They basically publish best practices standards for this type of application.
Q. And your contract is for the acquisition of devices that are consistent with Gartner's Group, Gartner Group's best practices?
A. Well, we basically look at their recommendations and we basically look at our own requirements and make the best decision.
Q. So do you have the ability to access this type of device now outside of this five-year arrangement with your supplier?
A. I mean, what type of device?
Q. The laptops, the desktops or the thin client devices.
A. Do we have the -
Q. Can you go to somebody else and look for a better deal?
A. I guess if we felt that there was a better deal, then, I guess, we would not have to continue with the Evergreen Program.
Q. I'm not so much concerning with the Evergreen Program as your contractual -
A. Or I shouldn't say the--as far as the entering into the second--to the last two years of the

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contract.
Q. So you have an option to get out of that contract?
A. Yes.
Q. Okay. When did you last survey the market to see whether or not the prices you were getting were the least cost to you?
A. I would say that we looked at within the last number of months.
Q. Okay. And who within the organization would have done that?
A. Mr. Nichols would have done that.
Q. What's his position?
A. He's the manager of technology planning and project delivery.
Q. And is that a continuing obligation of his to check every few months on the prices of devices of this -
A. It's a continuing obligation. Every time we're going to refresh or to purchase, then he will basically have a look at the costing for different pieces of infrastructure.
Q. Are these purchases spread out over the year or are they all done at once?
A. We will--I guess as we go from office to

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office, depending on what the implementation schedule specifies, we may buy them all at once or we may buy them in specific allotments. It really depends on what the implementation schedule specifies and what makes sense, because typically, we don't want to have "ninety units" when we're only ready to install forty-five now.
Q. So Mr. Nichols would do some sort of survey at any point where there were any significant number of units to be acquired? Is that--am I understanding this right? I just want you to explain to me how it works.
A. Well, basically, we have the--again, we have the standing order with, if you want to call it that, with IBM, and then he will basically assess what other things he sees in the market.
Q. Did you have to give IBM a commitment to any specific number of units in order to get this arrangement?
A. When we entered into the--or when we went out, I guess, just think in '99 or 2000, I think it was 2000, we went out for a complete refresh of Hydro's infrastructure over three years.

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So of course, that would be an initial commitment of approximately say eight hundred and fifty units over three years, and then there was options in there for two additional years, so that we could continue with the IBM product if we so choose.
Q. So the eight hundred and fifty units you refer to over three years, what proportion of Hydro's total assets in that category does that represent?
A. Basically, that will represent we'll say virtually a hundred percent of the desktops.
Q. And did that program proceed so that everything was replaced in that three-year period?
A. Yes, that was replaced in--when was it? I'm just trying to think what year this is.
Q. It was 2003 when I got up this morning.
A. Yes, I know that. I have so -
Q. I know we've been here a long time.
A. I have so many budgets and so many time frames, I got to work backwards to figure out when I should have started. So basically, that refresh program ended in 2002.
Q. So the devices that are planned to be replaced

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in 2003 and 2004 would all be -
A. Three years old.
Q. - three years old or less?
A. Three years old.
Q. Okay. So three years, every three years the devices are replaced?
A. Every three years, they were replaced based on first refresh, I guess, based on what we submitted to the Board last year. What we are proposing for "the Neoware boxes" or the thin client boxes, the refresh in future on that will be five years. The refresh on traditional desktop in future will be four years, and based on, again, the practices and what we see in the industry, refresh on laptops will be at three years.
Q. Okay. In establishing these refresh periods, are you considering solely the functionality of the device?
A. No, we're basically looking at, I guess, what we've seen in best practices from if you keep the device any longer, what is your incurred costs and also what are--so the best practices look at not just functionality. They look at if you keep it any longer than this, then it's

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really not the right decision for you. So basically, we use Gartner's best practices as far as refreshing end user infrastructure.

Q. Is that best practice policy reduced to writing somewhere?

A. There are a series of Gartner best practices.

Q. And do you have those available to you?

A. Yes, we have those available.

Q. Okay. I'd like an undertaking that they be produced, so that we can have a look.

(UNDERTAKING)

GREENE, Q.C.:

Q. With respect to the refresh program?

HUTCHINGS, Q.C.:

Q. Yes.

GREENE, Q.C.:

Q. Because there are--Gartner provides on numerous topics in the IT industry.

HUTCHINGS, Q.C.:

Q. Yes. No, no, understand that.

GREENE, Q.C.:

Q. We'll have to see. I'm not sure if there's a copyright issue or whatever. I'm not going to be sure until I actually see the actual documents.

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HUTCHINGS, Q.C.:

Q. I understand. In respect of the market surveys that Mr. Nichols does, would there be written reports in respect of those?

A. Probably not.

Q. Probably not?

A. No.

Q. So would they be--would those reports be made to you verbally or who would he pass them on to?

A. He would just do an analysis and we'd have a discussion. Typically, we do not--we may not go out and formal analysis of it, at this particular point, in the middle of the contract with IBM, and Mr. Nichols has been working in this area for twenty odd years and he has a very good understanding of what the pricing is in this particular area.

Q. I think, Mr. Chair, that might be the convenient time to break for the day.

CHAIRMAN:

Q. Okay, Mr. Hutchings. I think Mr. Kennedy may have spoken with you in connection with tomorrow's hours.

HUTCHINGS, Q.C.:

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Q. Yes.

CHAIRMAN:

Q. And it looks as if we might sit starting at the usual time, at 9:00, and going until I think 12:30, we'll break for lunch, and come back and sit until 4:00. So I just thought I'd let you know that, in case you wanted to make any plans.

HUTCHINGS, Q.C.:

Q. That's very helpful.

GREENE, Q.C.:

Q. And reconvening after lunch is at 2:00, is it?

HENLEY ANDREWS, Q.C.:

Q. Or 1:30?

GREENE, Q.C.:

Q. Or 1:30? You didn't mention reconvening.

CHAIRMAN:

Q. Well -

GREENE, Q.C.:

Q. In the afternoon.

CHAIRMAN:

Q. If you're going to pick up any time, I think we're going to have to reconvene at 1:30.

GREENE, Q.C.:

Q. That's fine.

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CHAIRMAN:

Q. Otherwise, the lengthened day becomes a little--well -

GREENE, Q.C.:

Q. Yes, exactly.

HUTCHINGS, Q.C.:

Q. Not much lengthened.

CHAIRMAN:

Q. Anyway, we will try and do that tomorrow and possibly on Friday, if it's necessary, but we'll take stock of that and see how far we get tomorrow. Thank you.

HUTCHINGS, Q.C.:

Q. Thank you, Mr. Chairman.

ADJOURNED AT 1:30 P.M. TO 9:00 A.M. JULY 9, 2003

CERTIFICATE

I, Judy Moss, hereby certify that the foregoing is a true and correct transcript in the matter of Newfoundland and Labrador Hydro, 2004 Capital Budget Application, heard before the Board of Commissioners of Public Utilities, Prince Charles Building, St. John's, Newfoundland and Labrador on the 8th day of July, A.D., 2003 and was transcribed by me to the best of my ability by means of a sound apparatus.

Dated at St. John's, Newfoundland and Labrador this 8th day of July, A.D., 2003

Judy Moss