



Legislative Assembly of Manitoba

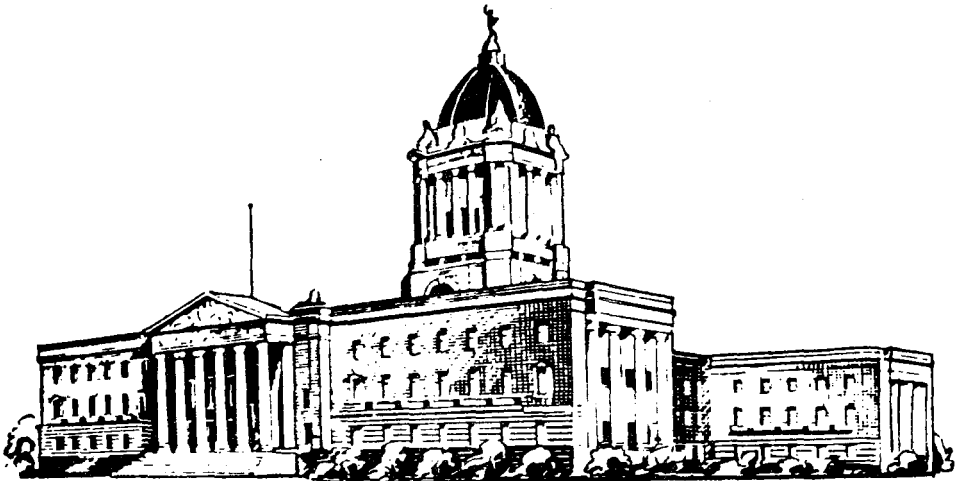
HEARING OF THE STANDING COMMITTEE

ON

PUBLIC UTILITIES AND NATURAL RESOURCES

CHAIRMAN

**Mr. Harry Shafransky
Constituency of Radisson**



TUESDAY, April 12, 1977, 10:00 a.m.

TIME: 10:15 a.m.

CHAIRMAN: Mr. Harry Shafranksy.

MR. CHAIRMAN: Order please. We have a quorum. We can proceed. Mr. Lyon you were asking questions at the last meeting. I might indicate that we do have the next date scheduled for the 19th of April. This coming Thursday it is intended to proceed with the Manitoba Public Insurance Corporation. The Public Accounts Committee, I understand, has been cancelled for Thursday and we shall deal with the Manitoba Public Insurance Corporation. Mr. Lyon.

MR. LYON: Thank you, Mr. Chairman. Just one note for the record before we begin. I realize we are on a holiday weekend but, unless I am mistaken, the transcript from last Thursday's hearing has not as yet been distributed and . . .

MR. CHAIRMAN: That is true. There has been a delay. The Queen's Printer was not in full operation yesterday as you understand, therefore, the transcripts are not available. They might be later on today. I have no idea at this time.

MR. LYON: But hopefully the transcripts . . .

MR. CHAIRMAN: There has also been another problem that because of the inserts that have been requested to be put in, those tables and so on, they have not been particularly geared in that respect to do it immediately so there is a slight technical problem but it will be coming out and they will be overcoming that at the Queen's Printer.

MR. LYON: I would hope, Sir, that you would use your good offices to ensure that we have the transcript from Thursday's hearing and today's hearing available for us on the 19th.

MR. CHAIRMAN: Well, I shall speak to the Speaker and see what he can do about this.

MR. LYON: Thank you, Mr. Chairman.

MR. CHAIRMAN: Mr. Lyon, you may proceed.

MR. LYON: Thank you. Mr. Bateman when we left off, we were discussing some questions that had arisen with respect to differences in cost of the Jenpeg power station and the Lake Winnipeg control works as they appeared in the prospectuses of last year dated December 1, 1976 and June 24, 1976. Am I correct in my recollection that there was to be a reconciliation provided or was that just done verbally by Mr. McKean?

MR. BATEMAN: I thought that at the time we had provided a satisfactory answer between Mr. McKean and Mr. Harris Wilson. However, if there are further questions you would like for clarification we can undertake to produce something that would clarify the difference.

MR. LYON: Well, I could have done this adding myself and I can do it during the course of one of your answers perhaps, but as I understood Mr. McKean, the overall figure for the control works and Jenpeg is the same assuming a 25 percent escalation in cost. Is that correct as between the two?

MR. CHAIRMAN: Mr. McKean.

MR. McKEAN: Mr. Chairman, between the two prospectuses, the total went up from \$260 million roughly to \$285 million. That was a revised estimate prepared last fall between the two prospectuses, I think if you look at the June one and the December one, between those two prospectuses. We do a complete revision of all our future planning in the fall and that took place between the two prospectuses.

MR. LYON: I'll just add these quickly to see if my mathematics is up to yours, Mr. McKean.

MR. McKEAN: Talking round figures . . .

MR. LYON: I doubt it. So that in the prospectus of June 24, 1976, we were showing a combined cost for the two projects of \$259.9 million and then in the December prospectus, we are showing a combined cost of the two projects of \$285.1 million.

MR. McKEAN: That is right.

MR. LYON: Now, have we further updates on those figures with respect to the two projects, what would be the costs as we sit here today?

MR. McKEAN: That estimate in December is the latest estimate we have. We ordinarily update our financial plan once a year and we do it in the fall for many reasons. Basic in our financial plan we revise load forecast which we ordinarily do not do until after the winter season and so the estimate you saw in that December is our latest revised financial plan at the present moment.

MR. LYON: \$285 million. Now would that include the cost over-runs, whatever they may be, on the installation of the Russian turbines?

MR. McKEAN: It is a re-estimate based upon what we knew about the turbines. I think if you want to get into the detailed estimate of it, I would maybe suggest Mr. Wilson is better equipped to talk about the details of the estimate.

MR. LYON: I'll come to that in just a moment, then. Mr. Chairman, could Mr. McKean or Mr. Bateman or anyone else they suggest indicate to us the basis upon which the cost of Jenpeg is ascribed at \$159 million in . . .

MR. BATEMAN: That prospectus, doesn't it say \$259?

Public Utilities
Tuesday, April 12, 1977

MR. McKEAN: No, he's talking about the first part . . .

MR. BATEMAN: Oh, I see. Oh, the first part. All right. That's the station itself.

MR. LYON: The station itself, Mr. Chairman, \$159 million as shown on the prospectus of December 1st, 1976. Why would the cost of the control works be severed or separated from that cost when you are ascribing the total cost of Jenpeg?

MR. McKEAN: I think I could answer that. As far as the project is concerned we estimate on a project basis but it has been traditional in prospectuses to break down those two figures and it was done of a very rough basis prior to last summer. But last summer we had to make a basic decision of what we were going to transfer into service. In other words, because the control works were finished last summer we reviewed what should be transferred into service based upon the cost of the control works and the rest was left to be generation which is still incomplete. So the review that was made last summer was quite significant to our accounting process. In other words, the amount shown as the control works was the amount that was transferred to operating account effective last August when the control works were finished. So the review that was made between those prospectuses it had much more significance to our accounting process. Prior to that, we took the total project and on a very rough basis it was allocated so that . . .

MR. LYON: But we're talking, as I understand it and I haven't had the advantage of being at Jenpeg, I have flown over it, we are talking essentially though, are we not, about one structure?

MR. McKEAN: Yes. The \$160 million we're showing there is the cost of the generating station. Everything else is deemed to be what was needed for Lake Winnipeg control, the channels, the diking, the . . .

MR. BATEMAN: Perhaps, Mr. Chairman, I should clarify Mr. Lyon's comment about one structure. The Jenpeg station is a complete structure in itself. Adjacent to it is a regulating structure which consists of a number of gates that are used presently to control the outflow of water from Lake Winnipeg. So that structure that's controlling the outflow of water from Lake Winnipeg, via the west channel of the Nelson and all of the associated channels and dikes and so on to contain the water, is part of the regulation of Lake Winnipeg.

MR. LYON: Am I correct in my assumption, Mr. Bateman through the Chairman, that you could have Lake Winnipeg control without Jenpeg but you couldn't have Jenpeg without Lake Winnipeg control of some sort?

MR. BATEMAN: That is basically correct. You could have built the regulation of Lake Winnipeg structures without providing any generation but it is such a valuable source of energy that the decision in the light of the information available when that decision was made determined that it was an economic thing to do to provide power at Jenpeg.

MR. LYON: I am just getting to the question, though, as to why when you were ascribing the costs of the Jenpeg generation station that the cost of the control works does not form a bigger part of that cost ascribed in the prospectus to the generating station itself. In other words, you can't have the generating station without the control works.

MR. BATEMAN: I am not quite clear on what you are driving at. You are saying that — correct me if I am wrong, Mr. Lyon — you are saying if you can't have the generation without the control works then why don't you charge more for the generation? Is that what you are saying?

MR. LYON: Are the control works not an implicit part of the cost of the generation?

MR. BATEMAN: Well, if you look at the estimates of actual costs of construction of the various works, you will find that once you get into the direct costs of the structures themselves, they represent about 50 percent of the actual cost of doing the job. The indirect costs such as the airstrip, the roads, the camp, all of the facilities, the infrastructure, represents a very significant part of the cost — 50 percent. Now how do you divide that between the generating plant and the regulation program? It is an arbitrary decision. It is felt by the accountants and the engineers who prepared that recommendation that it is a reasonable compromise division of costs and if Mr. McKean would like to comment on that, I would be quite happy to have his comments.

MR. CHAIRMAN: Mr. McKean.

MR. McKEAN: Yes. I agree and I think I mentioned the other day there is a number of ways you can do this. I will not pretend that this is the only way you can do it. I think what is very significant is that by doing it this way we were transferring more costs to operating last summer. I think accountants are conservative ordinarily and I have got to . . .

MR. LYON: Small "c" Mr. McKean. For your own protection.

MR. McKEAN: Better correct that. But in general we had to assess what were we going to transfer to operating account last August when the control works were finished and it was deemed to be — I think I was very strong in my own recommendation that we would transfer everything to operating except that which should be directly called generation and that was important in that split. In actual fact that was done and the printing of the prospectus followed what our decision was.

MR. BATEMAN: You might say, Mr. McKean, that when you refer to that as "our decision", this was a recommendation to the Board and it was the Board's decision that that was the way the costs would be divided.

MR. McKEAN: That's right.

MR. LYON: A layman wanting to compute out the cost per kilowatt though on a gross basis, you wouldn't argue if he were to compute that cost by considering the total cost of the project at \$285 million or would you argue?

MR. McKEAN: I would argue because I think you have got to . . . the generation decision was made after the control decision had been made and certainly the control structure was necessary for the control works. Now, you always have the problem after you build something you find out that it is useful for something else and I agree the control structure as far as the control works is identical to the spillway as far as generation is concerned. In my limited technical knowledge, I know of no way that you can split it.

MR. BATEMAN: One additional point though, Mr. Lyon, I think that is a very important point and that is that in the control structures, the reason for those control structures are to control the water in the Nelson River to give it to us when it is most valuable from the load curve point of view of the Manitoba system. In other words, we want the releases in the winter time when we can make maximum use of it at the Lower Nelson River plants and that is the value of the Nelson. If you take and spread the regulation of the Nelson River as represented by those control structures over the cost of the plants on the Lower Nelson and the energy produced from them, you will find it represents a relatively small amount per kilowatt hour.

MR. LYON: Now, the question arose I think at the last meeting, Mr. Bateman, about . . . I believe your statement was to the effect — I am just going from my own notes because I don't have the transcript — that the energizing of the Nelson River plant will cost more than Jenpeg?

MR. BATEMAN: That is according to our present estimates, yes. That is due to, of course, the inflation that we are experiencing.

MR. LYON: Now, you are speaking about Long Spruce?

MR. BATEMAN: No, I am talking about Limestone.

MR. LYON: Limestone? In the prospectus of December 1, 1976, you show the estimated cost per kilowatt of Jenpeg at \$1,263 and the estimated cost of Limestone per kilowatt at \$1,035.00.

MR. BATEMAN: Yes, a cost per kilowatt is not the only criteria. It is the amount of energy that each plant produces and the mills per kilowatt hour. But what we are saying is that the cost in energy from Limestone in mills per kilowatt hour will be more than the cost of energy from Jenpeg.

MR. LYON: Well, if the cost per kilowatt hour is not so significant, why do we show it in the prospectus?

MR. BATEMAN: Because that is the way financial people want it.

MR. LYON: Well, will they not be a bit disconcerted when they read — as indeed they do read — that you are saying that in effect the estimated cost per kilowatt shown in the prospectus of December, that the cost of Limestone is actually going to be higher?

MR. BATEMAN: No, we are not misrepresenting anything, Mr. Lyon.

MR. LYON: I am not suggesting you are but I am just wondering how you reconcile this one for a lay mind?

MR. BATEMAN: Well, I'll ask Mr. McKean who is a chartered accountant to comment on that then.

MR. McKEAN: Yes, I think we're hitting at a very confusing thing. I agree with you that it can be confusing. It's the same argument that we listened to about the demand and energy costs for two sessions here. One is the kilowatt is the demand and the energy is, of course, the energy cost. I think both are important; you can't say one is unimportant and one is more important. You may have raised a good point here that perhaps we should put both of them in but so far in general what is in a prospectus is quite often the result of recommendations from our advisors in New York as these are prospectuses in the market. I guess you could always argue more should be there; I would argue this is not misleading at all. But I think you have got to consider that both are important; the capacity and also the energy. I think, from what I have learned from my planning colleagues, is that in our system energy has tended to become at least equally important as capacity if not more so. Mr. Tishinski over there waved and nodded his head so he is not disagreeing with me too much. I'm out of my field when I talk planning so . . .

MR. LYON: How do you go about computing the cost in mills per kWh as between Jenpeg and Limestone?

MR. BATEMAN: Well that's a very simple piece of arithmetic' Mr. Lyon. You take the annual charges on the plant as represented by the fixed charges and you know what the annual energy produced from the plant is and you divide the two and then you come to mills per kWh.

MR. LYON: That includes transmission costs as well, does it?

MR. BATEMAN: No, not necessarily includes transmission costs but if you added the fixed costs of the transmission system in, then that would likewise turn out to be mills per kWh including transmission. Now, of course, you must appreciate that this is a variable condition. It varies from year to year depending upon the river flow conditions. When you have an abundance of flow you have a much lower cost in mills per kWh than when you have a low flow. Because you have less water, you have the same fixed costs. Although the important point to remember in hydraulic system design and

Public Utilities
Tuesday, April 12, 1977

construction costs are that when the plant is built those are the costs. From then on the interest is on the declining balance. It's depreciated over the life of the plant so each year you pay less interest on the declining balance of the undepreciated part of the plant. So that at the end of 65 years you could argue that the cost of power from those plants will be so insignificant in that day as to be one of the most valuable components that we have in the system.

MR. LYON: What is the acknowledged definition of the term "nameplate rating"?

MR. BATEMAN: Nameplate rating is just that. It's the ability of the unit. It's the designed ability of the unit to produce its rated capability under the design conditions.

MR. LYON: And what will the nameplate rating of Jenpeg be?

MR. BATEMAN: Jenpeg nameplate rating is 168,000 kilowatts.

MR. LYON: 168,000. How do you relate that, again for a non-engineer, into megawatts? What would the nameplate rating in Jenpeg be?

MR. BATEMAN: If you want it in megawatts it's 168 megawatts. A megawatt is a thousand kilowatts.

MR. LYON: Right, 168, that's the nameplate rating of Jenpeg.

MR. BATEMAN: 168,000 kilowatts or 168 megawatts.

MR. LYON: What will the nameplate rating of Long Spruce be?

MR. BATEMAN: Long Spruce; I believe the nameplate rating of Long Spruce is 980 megawatts.

MR. LYON: And of Limestone?

MR. BATEMAN: Limestone is 1,170 megawatts. That will change slightly as the river is developed further downstream. The Conawapa head conditions will change the Limestone capacity slightly.

MR. LYON: The nameplate rating on Jenpeg, will that vary at all, the nameplate rating, will it be as firm or the average capacity of it be as firm as, say, in Long Spruce or Limestone? Is there not a problem on Jenpeg with the head of water falling as the flow increases, and so on?

MR. BATEMAN: Yes, that's the characteristic of the Nelson River in the reach above Jenpeg, that because we will want to take out the most water in the wintertime when the water will be most valuable to the Manitoba system, the ice conditions and attenuation, if you like, of head in that reach of river above Jenpeg will result in, at that increased flow, a lower capacity of the Jenpeg plant and it will be compensated for. It will have a good efficiency because it is a variable pitch runner plant. In other words, we can change the pitch of the runner to take the most energy out of the water and with the corresponding head that is available depending upon the flow and ice conditions, and so on.

MR. LYON: Then, Mr. Bateman, what do you estimate the average capacity of Jenpeg as being?

MR. BATEMAN: Well I'll tell you better after we have run it for a winter or two, but our conservative engineers are estimating that Jenpeg will produce a reliable or firm winter capability of something in the order of 128 megawatts.

MR. LYON: What do you estimate the average capacity or firm average of Long Spruce to be?

MR. BATEMAN: Long Spruce, at the 980 megawatt figure and providing we can maintain the head conditions on that plant, in other words if we're drawing more energy out of the river than is flowing into that plant, then we will have a dropping head, and we will have a decreasing availability of capacity. Now I don't know what the specific figure would be but the power goes down as the head to the three-quarter power, I believe, and I could perhaps call upon one of my engineers to give us that information. But on the same basis we have operating experience with Kettle Rapids this last two or three years now, and this year particularly when the flow in the Nelson has been less than previous winters, we have drawn the forebay of the Kettle plant to produce energy over the peak demand periods of the day, or even during a weekly cycle, and raising it again on the week-end, by purchasing low-cost energy from our U.S. neighbours.

I think that if you were to ask me what the situation is on the Winnipeg River I'd have to tell you that at Great Falls, for example, the plant that was built back in 1923, as the flow in the Winnipeg River rises so does the head on that plant go down. It's not a new phenomenon to Jenpeg. It's a phenomenon that's common to all reaches of the river. It depends on how much money you want to pay to get ideal head conditions.

At Slave Falls, for example, the head on the Slave Falls plant drops on occasion as much as 50 percent due to flow conditions in the river.

MR. LYON: Can you give me a figure for the average capacity of Long Spruce and Limestone?

MR. BATEMAN: A winter capacity?

MR. LYON: Average capacity.

MR. BATEMAN: Well so far you could say the average capacity is nameplate rating. Now if you took the nameplate rating at Jenpeg and you have been using what we have called a winter capability figure of \$12 a kilowatt, if you took the cost on the nameplate rating the same as other plants then the cost per kilowatt at Jenpeg would be considerably less.

MR. LYON: But what you're saying though is that the average capacity of Limestone and Long Spruce will approximate the nameplate rating whereas the average capacity of Jenpeg will drop roughly 40 megawatts from the nameplate rating.

Public Utilities
Tuesday, April 12, 1977

MR. BATEMAN: It could. I would, again, advise waiting until we have had some operating experience on the regulation channels above the Jenpeg plant and all the way back to Lake Winnipeg. Don't forget that there are more than 70-odd miles, in fact it's longer than 70 miles, of water channels that connect Lake Winnipeg to the Cross Lake with Jenpeg at the end just before you fall into Cross Lake. That is a very complex hydraulic problem. I told you last week that the design criteria were one thing. To actually get to achieve those design criteria, we will know after we have operated under a few winters and we were getting some excellent experience this last winter with ice conditions and very low elevations on Lake Winnipeg. There are very few elevation flow measurements taken on Lake Winnipeg at the low range of elevations that we have experienced this last winter. In the entire history of records on that lake, there is a very meagre supply of information available in the lower range of the rating curves.

MR. LYON: Well then to come back to the point that we started at, the estimated costs per kilowatt of \$1,263 shown on the prospectus of December 1st, 1976; that estimated cost, I take it, is based on the nameplate rating not based on the average . . .

MR. BATEMAN: No, that's based on what our conservative engineers have assumed would be the dependable rating under the most adverse winter flow conditions.

MR. LYON: About 76 percent, then, of the nameplate rating.

MR. BATEMAN: 128 megawatts, or 126, whatever it is.

MR. LYON: The low amount was used to compute that cost.

MR. BATEMAN: Which inflates the cost per kilowatt from what would be the normal nameplate rating to this dependable flow rating would give us a much higher cost per kilowatt, in excess of \$1,200.00.

MR. LYON: Would the computation of the mills per kWh change on Limestone if we exported power in the summer months? In other words, if we operated . . .

MR. BATEMAN: I'm sorry, would you repeat your question?

MR. LYON: Would the rate or the computation of the mills per kWh change on Limestone if we had a market for export in the summer months, from that plant?

MR. BATEMAN: I don't know what export would have to do with it.

MR. LYON: Well, utilizing it year-round to maximum efficiency. In other words, we reach our peak in the winter; the Americans reach their peak in the summer. If we were exporting to meet . . .

MR. BATEMAN: But then you can't export if you haven't got water.

MR. LYON: Right.

MR. BATEMAN: Our experience has been that you could export and get lower revenue in the summertime than we get in the wintertime from our exports. The energy market that we're exporting into gives us a better return per kWh. As an example, last February we were getting 5.4 cents a kWh for our energy that we exported to the American market. Now, if you haven't got water you can't export but we were able to buy energy at 1.1 cents a kWh overnight and put it into those ponds, like Lake Winnipeg, Grand Rapids, Stevens Lake, and so on, and sell it back the next day at a mark-up of four to one. That is one of the advantages of having regulation of Lake Winnipeg or regulation of your hydro resources.

MR. LYON: Another apparent anomaly that might appear as such to a layman occurs on Page 10 of the prospectus of December 1, 1976, on the statistical information which is provided by Hydro to the potential investors. If you look at the second table on electric sales, it shows that for the twelve months ended September 30, 1976' electric sales to residential and farm would be 3,041,000 kWh.

MR. BATEMAN: I'm sorry I haven't got that information.

MR. LYON: On Page 10 of the prospectus of December . . .

MR. BATEMAN: Oh, Page 10, I'm sorry.

MR. LYON: The second table from the top.

MR. BATEMAN: And your question, Mr. Lyon, relates to . . .

MR. LYON: The figures in the last column, Mr. Bateman, showing electric sales to residential and farm in Manitoba at 3,041,000 kWh, and then at the bottom of that same table, electric sales extra-provincial 3,053,000 kWh, approximately the same.

MR. BATEMAN: Yes, that's correct.

MR. LYON: Now if you move to the table immediately below that you see that the revenue from these sales is also shown. The revenue from the sales to residential and farm is shown at \$61,170,000 whereas the revenue from the extra-provincial sales, which are approximately the same, is only \$21,455,000.00.

MR. BATEMAN: Don't forget, Mr. Lyon, that that extra-provincial sale largely is . . . Well there are two factors involved. One is a firm contract with Ontario Hydro which is at a low price which expires partially on April 1st, this year. The other factor is that this represents surplus energy when it's available on the Manitoba system, and therefore is interruptible on a moment's notice, whereas the sale of power to our own customers is on a firm basis; we have to supply it when they want it.

I suggest to you, Mr. Lyon, that the \$21 million, if it had not been sold as surplus energy to extra-provincial sources like Saskatchewan, Ontario and the United States, we would have had to charge

Public Utilities
Tuesday, April 12, 1977

our own customers that amount of money. So this represents a saving to our own customers of that amount.

And the other important point about these sales to our domestic customers, we supply them at what is commonly called as a distribution voltage, 110, 220, whereas we provide power to the interconnections east, west, and south at 230,000 volts. There is a big difference in the cost of the equipment between the 230,000 volt transmission system and the sub-transmission, the distribution, the sub-stations, and your backyard distribution, and so on. These all represent a fairly significant cost. And what we look at is the relative cost, and I quoted you some figures earlier, of the cost of producing energy on our own system as opposed to selling it in these extra-provincial markets.

MR. LYON: And, of course, Mr. Bateman, you have the usual contract, I take it, on an export-import basis whereby you average out the cost as between the utility receiving the power and the utility exporting the power. That would account for that disparity in the figures.

MR. BATEMAN: Yes, on surplus power you're exporting into a market. You're displacing power at a higher price so you both benefit by it.

MR. LYON: So what you're saying, in effect, is that notwithstanding the figure for extra-provincial revenues only a third of what it would be, what it would cost residential and farm consumers, that that is still good value for Manitoba Hydro.

MR. BATEMAN: Very definitely.

MR. LYON: Yes.

MR. BATEMAN: It results in lower costs to our own customers.

MR. LYON: What do you say to the layman — not this layman — but to other laymen who say, "Why are you exporting power cheaper than you're selling it to residential and farm people?" I'm sure you run into that question.

MR. BATEMAN: Well, yes, if you look at the average on this particular year — and this year will change — this is overly influenced by the low-price contract to Ontario Hydro. As we work out of that these costs will average out to perhaps higher than we are charging our own customers. The price of energy is going up and we will, I think, do very well in those export markets.

MR. LYON: Well, actually in the Fifth Table on Page 10 of the *Perspectus*, you show the average revenue per kilowatt hour in the different categories. Does that provide any enlightenment for us?

MR. BATEMAN: Would you give me that reference again, Mr. Lyon?

MR. LYON: The Fifth Table on Page 10 of the *Perspectus*, the average revenue per kilowatt hour.

MR. BATEMAN: Yes, that's something that I could relate to. For instance on the extra provincial it's .7 mills' or .07 cents.

MR. LYON: Seventy, well it's hard to say.

MR. BATEMAN: It's hard to say what that is. It's .70 cents, it says, it should be .07 dollars, I guess, 2.01 cents and .7 cents, is it? Just to draw attention to that table, above that line of Extra Provincial Sales — and you'll notice that it has been going up over the years — but you look at the Interruptible Border Fuel Sales which are the line above it, and it represents a much lower rate, and that's of course sold to Manitoba customers. The City Hydro Industry Plant is one such customer. Pine Falls used to be an interruptible sale but they now are on coal completely. There used to be a few others. But that's the comparison.

Looking at the sales extra provincially last year, the twelve months ending March 31st — and I have up-to-date figures here — the total sales this year worked out to 6.9 mills as opposed to 6.4 the year before. If we look at the month of March the sales this year average out at 9.4. Now if we were to look at the United States portion of that the average return from sales to the United States was 29.9 mills or 2.99 cents a kilowatt hour, which compares very favourably with — in fact it's a higher price than the residential and farm rate of 2.01 cents for the 12 months ending September 30th, 1976 which are the figures in that *Perspectus* — but these are year-end figures as of March, 1977.

So in any event I think you have drawn attention to the fact that the *Perspectus* value in this is not only U.S. sales, it is also Canadian sales, and by and large we have received less from our Canadian sales than we have from our U.S. sales, significantly less.

MR. LYON: To put the Jenpeg generating station in context with other plants in the system, am I right in my assumption that the Jenpeg at say 126 megawatts is approximately the same capacity as Great Falls?

MR. BATEMAN: No, Great Falls is about 150 megawatts.

MR. LYON: A little smaller that we have then?

MR. BATEMAN: Well, 132, I'm sorry, at Great Falls, but with the reduced head right now we're operating at about 125-126 megawatts or something like that.

MR. LYON: At Great Falls.

MR. BATEMAN: Yes. At Great Falls, yes.

MR. LYON: And the average capacity would be about that at Great Falls?

MR. BATEMAN: Well, yes, I think you could say the average would be about that right now. We hope to be able to bring that head back up after we do some renovation work at Great Falls within the next few years and get the 132 megawatts or more back out of the system.

MR. LYON: What we have in the estimate of what the costs per kilowatt would be at Great Falls, say, as opposed to Jenpeg. I think Great Falls was built actually when, 1923 or thereabouts.

MR. LYON: Yes, Great Falls is the 1923 plant and of course represents one of the lowest cost energy producers on our system at the present time. McArthur Falls of course, which is the most recent plant on the Winnipeg River, looking at the year it was built, 1953, and it was around \$600 a kilowatt in those years which today would be perhaps closer to \$2,000 a kilowatt. McArthur Falls would represent higher cost capacity in those days than Jenpeg would to the system today.

MR. LYON: Let me get that straight again. McArthur. . .

MR. BATEMAN: Yes, I would say that if McArthur Falls were to be built today it would cost more per kilowatt or per megawatt than would Jenpeg power with all of the regulating structures combined. But it was harnessing a resource. It was the last plant on the Winnipeg River and it was harnessing a resource that in those days was considered an economic thing to do as opposed to burning coal, again because you know what the fixed costs are going to be.

MR. LYON: But McArthur — just to involve ourselves a little bit further in this hypothesis about McArthur — when McArthur was built and came on line, did that result in an increase in hydro rates?

MR. BATEMAN: No, because I think the answer to that is quite easy. We were not experiencing 12 percent inflation or anything like it in those days. It was a very low rate of inflation, one or two percent was extreme, and the cost of money was not 10 percent or nine percent, it was around three and four or five percent. So those are what have changed the cost of doing business today.

Mr. McKean tells me that the money borrowed for McArthur was under three and a half percent.

MR. LYON: Over the last 70 years as Hydro has added to its plant, down through the years through various administrations, we've had periods of inflation before. Surely you're not saying that this is a unique period of inflation such as we've never witnessed before.

MR. BATEMAN: Indeed I am, Mr. Lyon. In fact everybody else in Canada is saying the same thing. The rate of inflation today has caught us in a position with the high costs of money where you cannot build a new plant and have a load increase and absorb the costs. Those days are gone forever. We used to be able to maximize the benefits by a common means of scale. In other words the big Kettle Rapids plant was going to give us low cost power and it does represent some low cost power relative to what we would build tomorrow. Tomorrow the cost of power will be five times as much as the Kettle power will cost.

So you see with a past where we had low growth equal to or greater than the rate of inflation and interest costs, today we have interest costs and inflation greater than the load growth, and even if you had a load growth that was equivalent you would still be faced with higher costs because the incremental costs on the system are what you have to pay; and we haven't gone into marginal pricing which is what has been advocated by some people. Marginal pricing would mean that if your son wanted to set up housekeeping somewhere in a home, then he was going to have to pay the costs of power from the plant that we're going to bring in to provide that service to him. Now that just is not acceptable in a democratic society. You would stifle growth completely with that sort of a philosophy. So we average the cost of power from our more recent expensive plants with those that we have on the system from days gone by.

MR. LYON: Mr. Bateman, either you or Mr. McKean said this morning that Jenpeg was regarded as being a valuable source of energy. I believe you said that and then I believe Mr. McKean said that the generation decision was made after the control decision.

MR. BATEMAN: Yes.

MR. LYON: Would it be possible to pinpoint that from the Minutes of the Board Meeting as to when the decision was made with respect to the going ebb for the Jenpeg plant . . . ?

MR. BATEMAN: Yes, I can tell you that pretty well right now, Mr. Lyon. The recommendation was made in June, I believe, and the board approved the study of Jenpeg as a source of energy, in other words to do some more definitive studies on Jenpeg to determine whether the preliminary planning studies indicated that it was a viable source. Then in, I believe September of that year . . .

MR. LYON: What year are we speaking of, Mr. Bateman?

MR. BATEMAN: 1971, I believe it was. I'll check those figures for you, Mr. Lyon, to confirm the exact date. But I think the board then was presented with a final planning study and the recommendation came from planning that Jenpeg was an economic source of energy, and the board then authorized that we proceed with the generation as well as the regulation project.

MR. LYON: That is over the period June to September, 1971, that . . .

MR. BATEMAN: No, I'm sorry, June to November of 1971. I think the first recommendation was in June of 1971 and in November, 1971. Mr. Arnason, have you got that information? Yes, I'll read you from the Minutes of the year 1971, and this is the month of — it says December 15th, 1971 on the top of this page. The General Manager of Engineering stated that by Minute No. so-and-so, "The Board directed that the control work to Jenpeg were to be designed so as to incorporate facilities for hydro-electric power generation." He stated that, "He had received a recommendation from the Corporation System Planning Department that generating facilities be installed at Jenpeg in conjunction with the control works. Initial power would then be available by 1975 with completion in

Public Utilities
Tuesday, April 12, 1977

1976. This recommendation is based upon the following facts, namely:

1. That Jenpeg is the most economic source of additional power after Kettle Generating Station.
2. Jenpeg could provide an average of one billion kilowatt hours per year; and
3. Savings in construction costs can be realized by proceeding with the construction of this plant, in conjunction with the construction of the Lake Winnipeg Regulation structure.

The number of control gates would be reduced and the cost of providing for a future plant would be eliminated.

4. Engineering specifications and design drawings could proceed without delay and with maximum economy if consideration of alternatives can be eliminated.

5. Cost estimates as of November 1st, 1971 are \$350 per kilowatt based on the 162 megawatts of installed capacity."

MR. LYON: Three hundred and . . . ?

MR. BATEMAN: \$350 per kilowatt.

MR. LYON: Yes.

MR. BATEMAN: "6. If load growth were to exceed the anticipated forecast there is no other generation that can be put in place as quickly as Jenpeg.

7. There is a good prospect for selling any surplus capacity prior to 1978 to one of our neighbouring utilities.

8. A single circuit 230 kV transmission line between Ponton and Jenpeg would be constructed to provide construction power."

Then of course after discussion it was "Resolved that the Board do authorize the corporation to proceed with the design and construction of Jenpeg Power Plant to be placed in service according to the most economic schedule, considering both construction costs and revenue from sales of surplus energy."

MR. LYON: I wonder, Mr. Bateman, if we could have a copy of those minutes just for the record of the . . .

MR. BATEMAN: They will appear, I would expect, Mr. Chairman, in the transcript. But there's no reason Mr. Secretary, why we couldn't make a copy of this Minute available.

MR. LYON: Now, you mentioned in there in reading from the Minutes that the estimated cost at the time the Jenpeg was approved by the board — the estimated cost per kilowatt was \$350.00.

MR. BATEMAN: Right.

MR. LYON: And that estimated cost today is now \$1,263.00.

MR. BATEMAN: Well, it's \$900 a kilowatt, on the same basis, on the basis of the nameplate rating which was what that was based upon. It's \$900 a kilowatt or two and a half times which is in line with the experience of other people doing construction in the hydro-electric field, like James Bay, B.C. Hydro.

MR. LYON: Well, that estimate of \$350 was based on the nameplate rating?

MR. BATEMAN: Well, it was based on 162 megawatts.

MR. LYON: Whereas your estimate in the Perspectus is based on the average of . . .

MR. BATEMAN: 126 megawatts.

MR. LYON: Right, yes. And the escalation in costs?

MR. BATEMAN: Well, that's roughly two and a half times since 1971 to . . .

MR. LYON: Since 1971. Could you give us the engineering feasibility study upon which the Lake Winnipeg Regulation was based?

MR. BATEMAN: The engineering feasibility study on which Lake Winnipeg Regulation was based, I can refer you to several reports, the Crippen Report which is — well first of all let's go back to the Programming Board Report which has the results of many many thousands of dollars of engineering consulting service to provide this information — and that the studies there indicate that approximately 2.4 feet of Regulation are required as a range of stage on Lake Winnipeg for the optimum Nelson River design flow.

These further studies also indicate that this range can be achieved within the extremes of stage experienced under the state of nature.

I might say that subsequent engineering proved that that wasn't exactly the case.

MR. LYON: That's the Programming Board of . . .

MR. BATEMAN: 1967.

MR. LYON: . . . 1967.

MR. BATEMAN: Yes. Considerable additional storage and so on. So that's the first significant engineering study that was done to look at the economics of Lake Winnipeg Regulation. The previous one as I mentioned earlier had indicated that Lake Winnipeg would not be economic until you could put — that is the Regulation of Lake Winnipeg would not be economic as a flood control device only until you could put power to help share those costs.

Well, subsequent to that study another engineering report was done by Crippen — G. Crippen and Associates Limited, Consulting Engineers of North Vancouver, B.C.

MR. LYON: The date of that report is . . . ?

MR. BATEMAN: That report is January, 1970.

MR. LYON: January, 1970.

MR. BATEMAN: Yes, and they went through a significant job here in Chapter 10 where they conclude and I'll just refer to those conclusions. "Steady results indicate that regulation of Lake Winnipeg would produce major power benefits and possibly also minor resource benefits. The power benefits arise partly from the provision of storage in the lake to augment dry period flows and partly as a result of overcoming the severe regulations during periods of low lake levels and under winter ice conditions. The total power benefits attributable to Lake Winnipeg Regulation depend on the amount of water that will eventually be diverted from the Churchill River, the location of the diversion and the amount of storage economically obtainable with the diversion scheme."

And I could go on reading that but I am sure that it is available to you.

MR. LYON: We have a copy of that, thanks. That is the Crippen Report of 1970 and the Programming Report of 1967.

MR. BATEMAN: 1967, yes. And then there is also a subsequent report of the Task Force which also concluded that Lake Winnipeg was a viably economic proposition. There are also other documents that we could refer back to, papers and so on that have been attributed to other people. For instance, Mr. Stephens in talking to the general session of the 80th Annual General and Professional Meeting of the Engineering Institute of Canada at the Royal Alexander Hotel in Winnipeg made some comments about the important aspects of Lake Winnipeg Regulation as being part of the development of the Nelson system. He said, "The third element of the Phase One projects and that Phase One being what were referred to in the Programming Board Report as Phase One, that is the control of Lake Winnipeg, the diversion of the Churchill River, the building of the Kettle Rapids plant and the transmission system from the North."

He says, "That I had mentioned earlier," — and I am quoting from his paper, "I had mentioned earlier, that Lake Winnipeg can be regulated in order to bring about a marked improvement in the flows of the Nelson but in a manner which would permit us to stay well within the natural range of stage which has occurred on this lake. The most critical water supply condition with which we are required to contend in connection with the full development of the Nelson-Churchill power complex is that which would arise under low water conditions on Lake Winnipeg during and under deep winter conditions. This, you will appreciate, is a situation which could arise at the end of a long, dry period. Under deep winter conditions, we would, of course, be affected on two counts. In the first place, this would be a period during which our load and energy requirements would be high. It would also be a period when ice depths would be greatest and channel outlet capacities at their minimum. One disadvantageous feature of the outlet conditions where the Nelson heads out of Lake Winnipeg is to be found in the fact that Playgreen Lake immediately below the outlet is a large shallow lake with a rock floor extending for approximately 60 miles. A combination of winter ice conditions on this lake and of low levels on Lake Winnipeg would, under natural conditions, very markedly reduce the flows available to the Nelson."

And then he goes on to talk about three basic methods through which this problem could be coped with. He talks about channel enlargement and so on and he also talks about a pumping station as one of the . . . but he says, "The timing of the Lake Winnipeg control works like that of the Churchill River diversion, has not yet been finally decided upon but will depend in part upon lead times as well as the dates upon which the full development of Kettle Rapids is required."

And, at that time, it was just prior . . . well it was May 26 25th, 1966 which was two months after the agreement had been signed with Ottawa.

MR. LYON: Referring to the Crippen Report which you have in your hand, was there not a constraint placed on the Crippen engineers with respect to the amount of storage that would be maintained in Southern Indian Lake at 850 feet?

MR. BATEMAN: The policy of the government of the day was to not disregard the resource benefits of that area which was to be flooded and consequently, while Crippen didn't have that constriction placed upon their study because they were studying Lake Winnipeg and they turned up some positive values because of the improvement in the reduction of levels of Lake Winnipeg, the Underwood-McLellan Report had to assess the values of resources that would be flooded up to and including the higher levels that we were looking at previously.

MR. LYON: But didn't Crippen say in that report, Mr. Bateman, when they were referring to the alternative assumptions that were made by Manitoba Hydro, the third assumption — I can give you the page, it's in Chapter 6 — the third assumption was: "The maximum Churchill River diversion and development sequence including the CRD of 30,000 cfs maximum flow, it was 68,000 cfs months storage eight foot range on Southern Indian Lake." I am quoting from the report. "This is the maximum storage possible within the natural historic range of water levels on Southern Indian Lake."

And then this paragraph — "Since consideration of additional storage on Southern Indian Lake was specifically excluded from the studies, and as no alternative storages have been proven economically feasible, this represents the maximum CRD case."

Public Utilities
Tuesday, April 12, 1977

Now, you answered the question by saying that the government had made a determination with respect to resource values in relation to CRD. Are you saying, in effect, that the government made the determination that no more than 850 feet could be put on Southern Indian Lake?

MR. BATEMAN: No, the government didn't say 850; the government said consider the resource benefits. We considered the resource benefits and out of those many hundreds of thousands of dollars worth of engineering consulting services, the . . .

MR. LYON: But Crippen, in effect, was operating under that same constraint of 850 feet.

MR. BATEMAN: Well, let's read the terms of reference for the Crippen study. They were commissioned by the Honourable the Minister of Mines and Natural Resources to conduct physical and economic feasibility studies of the regulation of Lake Winnipeg as a multi-purpose reservoir. The terms of reference as detailed in the engineering agreement are as follows:

1. As a first stage in a comprehensive plan to develop Lake Winnipeg as a multi-purpose reservoir, enquire into and report upon the following:

(a) Production of additional firm power in the Nelson River.

(b) Control of periodic flooding of lands bordering on Lake Winnipeg for the benefit of recreation, agriculture and other uses, and

(c) Improvement of navigation; all in a manner which will not cause the recorded natural levels of Lake Winnipeg to be exceeded if the inflows remain similar to those on record.

Then, prepare and submit a benefit cost analysis of any scheme of regulation considered feasible as a result of enquiries referred to in Paragraph 1. The benefit cost ratio for hydro-electric purposes to be established for the most economical combination of gated structure and pumping plant for the regulated flows to be established in consultation with Manitoba Hydro.

Since the decision must be made early in 1970 regarding the next addition to the Manitoba Hydro system to meet the load demand predicted for the winter of 1973-74, a report on Lake Winnipeg Regulation was requested for submission before the end of January 1970. The total time available for the studies including the preparation of the report was approximately four months from the authorization to proceed which was given on October 2, 1969.

Now, they describe the previous studies and the description of study data and the various watersheds and so on. Then, if you want to look at the system studies that were done by Manitoba Hydro in conjunction with Crippen in this report, you will find that there were a number of sequences studied which include fairly high storage on South Indian Lake.

MR. LYON: But not exceeding 850 I suggest.

MR. BATEMAN: I think we will find that they did exceed 850. How else could we evaluate the resources at that level?

MR. LYON: Precisely.

MR. BATEMAN: I can find the right page here if you will bear with me a minute or two.

MR. LYON: Chapter 10 might be helpful, Mr. Bateman, where the magic figure 850 comes in again in paragraph two of the recommendations in Chapter 10.

MR. BATEMAN: Well, I have the volume which associates with this which includes all the system studies which I could refer to to dig out the question you are raising but . . .

MR. LYON: As I have it — and you can double-check my quotation — the report dated January 31, 1970 recommends in Chapter 10, Recommendation 2, that "The power system economic analysis performed by Manitoba Hydro . . ." — which you were just speaking about — indicates that a diversion of the Churchill River would still be required with eight feet of storage up to 850 feet in Southern Indian Lake which, in concert with Lake Winnipeg Regulation "would provide attractive power benefits when considered as added either before or after Lake Winnipeg Regulation." That's a paraphrase except for the quotations I have given from it.

MR. BATEMAN: I read you the terms of reference of this report. The power studies were done by Manitoba Hydro and the power studies did subsequently get integrated into the system work that we were doing, it led up to the Task Force Report. They do, in the Task Force, show the relative value of the two bodies for storage, Lake Winnipeg and South Indian Lake.

MR. LYON: One point I am trying to get at is, where does this figure of 850 feet on Southern Indian Lake, where did it come from?

MR. BATEMAN: Well, I think the 850 was a . . .

MR. LYON: Was that a hydro generated figure or was that a government generated figure or was that a Cass-Beggs generated figure?

MR. BATEMAN: No, I think it was an Underwood-McLellan generated figure.

MR. LYON: No, the Underwood-McLellan Report in January of 1970 recommended a range of storage, as I recall, between 852 and 854.

MR. BATEMAN: Well, you're thinking of the Systems Studies Report of Underwood-McLellan, not the main engineering reports that constituted five volumes of very expensive resource data.

MR. LYON: Well, I am talking about the 1970 report.

MR. BATEMAN: Yes, I am talking about the 1970 report too. This Underwood-McLellan report that you refer to was — and I have a copy of it here too — questioned by the engineers of Manitoba

Public Utilities
Tuesday, April 12, 1977

Hydro and also questioned by the engineers of Underwood-McLellan.

MR. LYON: I am still trying to get at the point though, Mr. Bateman, where was the decision made that the maximum storage on Southern Indian Lake would be 850 feet?

MR. BATEMAN: Well, the maximum storage on Southern Indian Lake, we applied for a license for 850 but we haven't got 850; we've got 847.

MR. ENNS: I wish the hell I would have given it at 869.

MR. BATEMAN: Well, I would agree with you, Mr. Enns. If you had given us the licence perhaps we would have been arguing about something else.

MR. ENNS: That's right.

MR. LYON: You would still have preferred to go ahead professionally with the high level diversion, is that what you are saying, Mr. Bateman.

MR. BATEMAN: No, I am saying that at that point in time, Mr. Lyon, I was very concerned about the integrity of power supply to the citizens of Manitoba. I still am and with the scheme that we had thought would provide that, subsequent years, of course, the load growth exceeded by a significant margin those which we had contemplated.

MR. LYON: But you can't tell us where the figure of 850 feet came from.

MR. BATEMAN: I am sure I can but maybe I could ask Mr. Goodwin if he can review his memory a bit better than mine.

MR. CHAIRMAN: Mr. Goodwin.

MR. LYON: Well, if not today, at a subsequent . . .

MR. CHAIRMAN: Well, Mr. Goodwin is available right now. Mr. Goodwin.

MR. GOODWIN: My memory says, I think, that during 1971-72 reviews of the Underwood-McLellan Report and reviews of certain other possible ways of diverting the Churchill River including pumping, including diversions at other locations, were completed in about mid-1972 I believe. We realized that the appropriate way to make the diversion was by the, what we have referred to as the 850 diversion, that the optimum level through adding resource costs to the construction costs led to elevation 850. And this information is basically in the Underwood-McLellan Report and that was the recommendation made to the Manitoba Hydro Board.

MR. CHAIRMAN: Thank you, Mr. Goodwin.

MR. LYON: Mr. Bateman, the other day you described the report to the Minister of Mines and Natural Resources dated 9 September 1969 made by David Cass-Beggs as a "simple little document" which was only one of a number of documents that Hydro had to consider in the course of its developments from 1969 onwards. I put it to you then and I put it to you again today, is it not a fact that the summary of appropriate actions that Mr. Cass-Beggs included in that report of 9 September 1969 still forms the basis of the development that Manitoba Hydro has undertaken over the last nine years, eight years?

MR. BATEMAN: No, Mr. Lyon, that is not correct. I think if you were to read this report with your legal training you would come to that conclusion also. I think that if you look at the conclusions of that report and I happened to just dig it out of the library this morning and have a quick look at it myself, I must admit I hadn't read it for some years, but basically I think it does do what I said it did — it reviews the problem and the problem was that we hadn't got a licence for South Indian Lake and Mr. Enns has explained why we haven't got a license but — or we didn't have a licence in those days. But this report also raises a very interesting question, you know, that because the Programming Board studies had been based on four components of Phase One, this report says and I am going to quote, "It is suggested that the abandonment or postponement of either the diversion or the regulation of Lake Winnipeg or the substitution of an alternative diversion may require the consent of the Government of Canada. The question is to whether the existence of the agreement obligates Manitoba to grant any necessary licences should also be considered. It should be noted, however, that the total agreement is subject to the voting by Parliament and the Legislature of the necessary funds."

I'll go on to another quote over the page. "It has been observed that from a purely technical point of view the high level diversion appears to be an excellent proposal for power at minimum cost provided the cost of the project does not have to bear the full cost of potential benefits from the natural resource that may be destroyed or deferred." It goes on to talk about whose responsibility and it says, "it can be it should be to consider the resource values' argued," and I'm quoting again from the report.

"It can be argued that this was the responsibility of the Government of the Province rather than that of Manitoba Hydro." Now I suggest to you, Mr. Chairman, that Manitoba Hydro conducted itself in a proper manner when the government took over the custodianship of the resources which they were responsible for. They would not grant a licence that would deplete those resources. Manitoba Hydro is not a policy making body, the government is the policy making body, and we were then obliged to provide a solution to this rather interesting engineering problem within the policies laid down by the government.

Of course it goes on to talk about — and I'm quoting again from this Mr. Cass-Beggs report of

September, 1969, and he says: "Power at the lowest available cost." This is the subject on Page 22 that I'm quoting from. "It is suggested therefore that it is not proper to present the problem as a potential loss to Hydro as a threatened increase in the cost of power, or as a failure to produce power at the lowest possible cost. These opportunities never really existed.

"The fundamental obligation is to divert water from the Churchill to provide storage, but to do so without adversely affecting the interests of other people in the resources involved. At most there was an opportunity for a saving in cost if no other interest existed; or if it was of such a magnitude and form that it could be properly estimated and fully compensated from the saving to be anticipated. Moreover such compensation would involve, not only meeting the claims of those who would suffer immediate damage, but ensuring that the long term interests of the people of the province were not adversely affected.

Once it is determined that such a procedure is impossible the particular project must be dismissed, and the only proper cost comparisons between those between projects that conform to the principles involved in the multiple use of resources."

Then he goes on to outline some of the more important policies. But that is the key issue. The key issue was, would Manitoba Hydro be permitted to ignore the resources? And the answer to that was, "No." And when they were properly evaluated, as Mr. Goodwin says, in the period following the 1970 period, through 1971-72 before the licence was granted for Churchill River Diversion — and there was a great variety of opinion among civil servants who were affected by these resources — that we were granted a licence for 847.

MR. LYON: You mentioned the other day, Mr. Bateman, that in the hearings with respect to South Indian Lake licence for the diversion, the hearing that took place in the spring or January of 1969, that even at that time — and I'm going by memory because I haven't got the transcripts in front of me — even at that time you were saying that . . .

MR. BATEMAN: There weren't any transcripts.

MR. LYON: I'm talking about last Thursday, Mr. Chairman.

MR. BATEMAN: You said in 1969 — in the spring of 1969 — there weren't any transcripts.

MR. CHAIRMAN: No, he's referring to the . . .

MR. LYON: Mr. Chairman, I'm talking about the hearings before the Water Commission in 1969.

MR. BATEMAN: They weren't before the Water Commission, were they Mr. Lyon? They were before the Director of Water Resources as provided in the Act.

MR. LYON: That's right. Just by way of apropos of nothing, Mr. Chairman, I did come across the transcript of the hearings before this committee in 1966 where the late Mr. Stevens made his first submission with respect to Manitoba Hydro or the Churchill-Nelson development. I have those in my files. I consider it so inconsequential I didn't even bring them. But they do exist, if you want to see a copy I'll be happy to have them to show them.

MR. CHAIRMAN: The Chairman's remarks were that they do exist. I have seen that fact too.

MR. LYON: Yes. By the way, Mr. Bateman, you were going to undertake to — or somebody from Hydro was going to undertake to see if any other transcripts of these committee hearings do exist. . .

MR. BATEMAN: I will report to you on that, Mr. Chairman, and the committee.

MR. LYON: But in those 1969 hearings before Mr. Weber, the Director of Water Control at that time, you were still of the opinion that Lake Winnipeg Regulation if done at all would be done sometime in the future. Is that correct?

MR. BATEMAN: I haven't reviewed the transcripts of that hearing myself, but my recollection of that hearing was that it was primarily relating to Churchill River Diversion.

MR. LYON: Yes. But Lake Winnipeg came up because of course it had been part of the program in 1966 and then had been abandoned in 1967-68.

MR. BATEMAN: Not abandoned, Mr. Lyon.

MR. LYON: Well, the priority had been abandoned.

MR. BATEMAN: The timing had been changed.

MR. LYON: Well, that's another way of saying that the priority had been altered. Is 'abandoned' too strong a verb? But I recall yoursaying last week — and I'm sorry I can't give you your direct quotation — that you were looking at it for say 1978 or something like that.

Do you recall this item from your testimony before Mr. Weber — this is the transcript that I have since seen — on Page 25 of that transcript and I'm reading from the bottom of the page, and this is evidence that you were giving, Mr. Bateman, on the . . .

The following evidence given by Mr. Kristjanson who was then Assistant General Manager of Administration — I'll give you the date of it — January 27th, 1969. The hearing, I take it, was held in the Norquay Building at 10:10 a.m. January 27th, 1969.

MR. BATEMAN: Are you quoting now from Page . . .

MR. LYON: Page 25.

MR. BATEMAN: I haven't got that document with me.

MR. LYON: I'll be happy to show it to you. I'll just read to you from it.

Public Utilities
Tuesday, April 12, 1977

MR. CHAIRMAN: Mr. Lyon, those are not transcripts related directly right here to the committee. That was another matter dealing with the Churchill River Diversion in 19 . . . ?

MR. LYON: With the Churchill River Diversion, Mr. Chairman, in 1969.

MR. CHAIRMAN: At what time in 1969?

MR. LYON: January 27th.

MR. CHAIRMAN: In 1969.

MR. LYON: Yes, and Mr. Bateman was giving evidence at that time before Mr. Weber.

MR. CHAIRMAN: So I still state that it was not before this committee — the Public Utilities Committee — at any particular time.

MR. LYON: No.

MR. CHAIRMAN: Okay.

MR. LYON: I never suggested it was. You were describing in the middle of the page the first days of the Nelson development consisting of four essential elements and this is the same page that's conceived by the Programming Board, then you proceeded to enumerate them 1, 2, 3 and 4.

Development of Kettle, construction of the transmission facility between Kettle and southern Manitoba; construction of the necessary facilities through which the levels of Lake Winnipeg out flows can be regulated, that was No. 3.

4. The putting in place of the necessary construction projects to divert substantial portions of the flows of the Churchill into the Nelson River.

Those are quick summaries of the four points. Then to quote directly:

"To date, only No. 1 and No. 2 of these four elements, namely the construction of the Kettle Generating Station and the putting in place of the necessary transmission facilities have been definitely committed and scheduled for an in-service date of the fall of 1971.

Item No. 3, the Regulation of Lake Winnipeg may play a part in providing for Manitoba's future energy requirements. But of course this regulation is presently under review by the Manitoba Water Commission and Manitoba Hydro," this is your statement, Mr. Bateman. "Manitoba Hydro have indicated to that commission that we do not require Lake Winnipeg regulated until approximately 10 years from now at the earliest."

MR. BATEMAN: Well, approximately 10 years would put it in 1978 or 1979. Our official letter went to the Water Commission, it said 1978. That can be documented and produced here. Well, approximately 10 years, I don't quarrel with that.

MR. LYON: No' and this substantiates what we were saying in the previous meeting, that in January of 1969 that was your view, that was the view of Manitoba Hydro.

MR. BATEMAN: Yes, but you must remember that hindsight is a great vision, and hindsight now says that we were wrong in saying that at that time, because we could not foresee what the load was going to do in the Manitoba system.

MR. LYON: Well, I suggest with respect, Mr. Bateman, that the change in view had less to do with hindsight and with load than it did with Mr. Cass-Beggs. Just let me quote to you from what Mr. Cass-Beggs said on the 9th of September, 1969, only eight short months after the statement of yours before Mr. Weber. This is on Page one of Mr. Cass-Beggs report to the Minister of Mines and Natural Resources, at the bottom of the page, I'm quoting:

"The conclusion is reached," says Mr. Cass-Beggs, "that times still permit the revision of the program to omit the high level diversion and that the most desirable alternative would be the control of the Nelson River at the outlet of Lake Winnipeg, combined with a more acceptable diversion from the Churchill. However, steps should be taken to advance the specification and design of a suitable thermal station as backup in the event that the control works cannot be completed in time."

That's one of the opening paragraphs of his synopsis. Then if you turn over to Page 30 — and I won't presume to read all of this into the record, Mr. Chairman — but on Page 30 of that same document is a summary of appropriate action that Mr. Cass-Beggs made to the government of the day on the 9th of September, 1969, in which he recommended directly counter to what Mr. Bateman and Hydro had been saying up until July of 1969, that Lake Winnipeg Regulation should be moved up and given a priority either superseding that of CRD or at least the equivalent of that of CRD.

You know the question, Mr. Bateman, is, is that not a fact? Is that not the fact that the fundamental planning of Hydro changed as a result flowing first of all from Mr. Cass-Beggs' report to the government on the 9th of September, 1969?

MR. BATEMAN: Well, the record is your reading. It indicates that it was a change in magnitude of planning, but I want you to understand, Mr. Lyon, that Manitoba Hydro at no time said we would not regulate Lake Winnipeg. We said we could defer it.

Looking at what happened in the system in 1968-69 we started taking off with increases in load. At the year end in these hearings that you are referring to were taking place in January of 1969, as of March that year we had a ten and a half percent increase in load.

The following March we had a 12.1 percent increase in load on the annual basis. In 1970-71 we had an 11.0 percent increase in load, and in 1971-72 a 9.7 percent increase in load. The next year it dropped down to 5.7, but in 1973-74 an 11.4 percent; and thank goodness we've had some modest

increases since then.

But there is no way that we could have deferred Lake Winnipeg as long as we were contemplating back in 1969 with load increases such as I have quoted to you. The system just would not hold together. I'd like to assure you, Mr. Chairman, and gentlemen of the committee that one of the most important things facing Manitoba Hydro and the citizens of Manitoba today is the adequacy of the water supply for the production of power next winter.

If this drought continues and this very low humidity that we experienced this weekend, and the continuation of evaporation that last summer was very significant, if this continues on into the summer then we are going to be hard put to meet our power demands next winter with Lake Winnipeg and the Churchill River Diversion at full capacity. Now that's as simple as that. There is no way that you can design this system sitting around this boardroom table talking about what should have been done. What we have done is what should have been done. We're going to be able to supply the power.

If we had decided on a high level diversion and no Lake Winnipeg, we would not have been able to meet the firm power demands.

MR. LYON: Is that with the proposal to build the four generating stations on the Burntwood, you're still saying that there would not have been sufficient power today?

MR. BATEMAN: I am saying there would not have been sufficient power.

MR. LYON: What engineering studies have you got to back up the decision to build the Jenpeg Generating Station?

MR. BATEMAN: We have engineering reports internally to Manitoba Hydro. That work was done by Manitoba Hydro professional engineers.

MR. LYON: What was the date of that work, Mr. Bateman?

MR. BATEMAN: We quoted the year. I think it was 1971 when that work was done. Also I might say if I am correct, Mr. Chairman, that at the time we were considering that internally this committee was meeting late in the year that year, and the reports on which that decision was made, were made public to this committee in 1971.

MR. LYON: And when was the decision made — did we get the answer to this — if so I don't recall it, I don't have it marked here. When was the decision made to proceed with Lake Winnipeg Regulation?

MR. BATEMAN: The decision to proceed with Lake Winnipeg Regulation, I'd have to check the board minutes for that. But we can do that and provide you with that information.

MR. LYON: Well, would it be safe to say that it was made sometime in the summer, July or thereabouts of 1970?

MR. BATEMAN: My recollection would be June of 1970. I could be wrong on that date but we will check that date in the board minutes.

MR. LYON: And you still prefer to describe Mr. Cass-Beggs' report of 1969, 9th of September, as a simple little document that had no fundamental effect on hydro planning?

MR. BATEMAN: This document, Mr. Chairman, and gentlemen of the committee is no more than a review of the reports that had been made up to this time. It doesn't include the Crippen Report, it doesn't include the Underwood Report, it's a review of the Programming Board basic engineering studies which stand very high. It just comments on the alternatives that were open to the government, that's all it does.

MR. LYON: But it suggested firmly that Lake Winnipeg Regulation be proceeded with immediately.

MR. BATEMAN: On the basis — I read some qualifying comments about things that should be considered also in that report.

MR. LYON: But that, in fact, was done, was it not, Mr. Bateman?

MR. BATEMAN: All of those things that were under constant review at that time related to whether it was opportunes for Manitoba Hydro to sit back and allow the integrity of the power system to suffer, or should we move on with something that would ensure that we at least could provide some load to our customers. That's what we had to decide.

MR. LYON: Were you not vitally concerned at that time about the delay in proceeding with the Churchill River Diversion?

MR. BATEMAN: Yes, I was. I was also party to a recommendation to ensure that we had some thermal backup on this system in order to be able to provide our loads if Lake Winnipeg was not completed in time or Churchill River diversion licence wasn't forthcoming.

MR. LYON: Your concern then was to meet peak loads in, as I recall, 1973-1974.

MR. BATEMAN: Not peak load. The energy requirement.

MR. LYON: The energy requirement of 1973-1974.

MR. BATEMAN: Of 1973-1974 and 1974-1975.

MR. LYON: So, in effect, Hydro proceeded with Lake Winnipeg regulations in 1971 or thereabouts, 1971-1972.

MR. BATEMAN: Knowing that Lake Winnipeg regulation and the Churchill River Diversion were part and parcel of the overall program to regulate the Nelson River and provide energy for

Public Utilities
Tuesday, April 12, 1977

Manitobans, we proceeded with Lake Winnipeg because we knew we could get a licence for that. The reports were positive. It had a favourable benefit to cost ratio, and that's what we proceeded with, with an additional recommendation that we have some thermal backup. The Board, in its wisdom, decided at that time not to accept the recommendation for thermal generation when they proceeded with this Lake Winnipeg.

MR. LYON: What actually happened in 1973-1974 in that season' was Lake Winnipeg regulation in operation?

MR. BATEMAN: Lake Winnipeg regulation was in operation partially in 1974. We were very fortunate that we had adequate and abundant flows. Mother nature was in a wet cycle.

MR. LYON: What period in 1974 did it first come into operation?

MR. BATEMAN: The Ominawin Channel, I guess, was part of the first. The gated structure was perhaps as early as anything, the Ominawin Channel next, Eight Mile channel, and last year the Two Mile channel.

MR. LYON: So it really came into full operation, that is the regulation portion of it.

MR. BATEMAN: Actually the full operation was August or September, August last year, 1976, which was unfortunately part way through very intense drought.

MR. LYON: And CRD, when did the first water flow down the CRD?

MR. BATEMAN: Last September 1 of 1976.

MR. LYON: September 1 of 1976. So the concern about the 1973-1974 period, first of all, about any shortage to meet the energy requirement really did not materialize.

MR. BATEMAN: It was there, with the load we were supplying, if we had not had these flood conditions, we would have been short of power.

MR. LYON: But that's assuming that CRD were not in operation. But if CRD had been in operation say, in 1973-1974, what change would that have made in terms of your generating capacity. I am talking about 29 to 30,000 CFS.

MR. BATEMAN: If we'd had 29 to 30,000 CFS out of Churchill River Diversion, it would have been about the equivalent of what we got from Lake Winnipeg last winter. And we had an additional 10,000 from the Churchill River Diversion last winter, over and above the additional water we were able to pull out of Lake Winnipeg. And then, we had to buy power over the two interconnecting transmission lines. If we had not gone ahead with Lake Winnipeg and Long Spruce, we would not have had surplus power which we sold to Ontario Hydro out of the Long Spruce plant. We would not then, have been able to negotiate the second 230 kV interconnection with the United States. And consequently, we would not have been able to buy sufficient energy last winter over the single U.S. interconnection that we had. So I say, Mr. Lyon, that we would have been short last winter had we not had Lake Winnipeg Regulation and partial Churchill River Diversion.

MR. LYON: When did Hydro abandon the consideration of the generating plants — the four sites — on the Burntwood River on the diversion routes?

MR. BATEMAN: We had never abandoned the four plants on the Burntwood River. It's no use building those plants until you have a licence to divert the water. And it's no use building those plants until you know that you've got the water from that diversion. And it's no use building those plants which are going to flood half of northern Manitoba. You know you've got to make sure that you evaluate the resources again relating to the cost of flooding and the cost of power and the cost of the structures. So that is where we are at the present time.

We are finished with the design of the First Rapids plant. We're not finished with the design, we're finished with the field exploration work. We've got a small group doing some design work on that First Rapids plant. We are currently evaluating the best method of developing the other power potential on the Burntwood River, and those plants will all come into existence, I would wager, before the eighties are out.

MR. LYON: Before the eighties are out?

MR. BATEMAN: Before the eighties are out. They are not large plants you know. They represent each one of them a plant roughly Seven Sisters or larger, in that order.

MR. LYON: In that original conception am I wrong in assuming that they were designed, generally speaking, to meet the growth in load as they came on stream.

MR. BATEMAN: Yes, that's correct, at six percent. But I've just read to you that we had not six percent but we had ten and a half, 12.1, 11 and so on. But we would have been forced to build something else or buy some capacity.

MR. LYON: But that was always part of the consideration that you have that alternative.

MR. BATEMAN: No, you don't always have that alternative.

MR. LYON: Through your interconnections to buy or to start working . . .

MR. BATEMAN: You can't always assure that you can buy through interconnections, Mr. Lyon. You have to contract for it. If you want a firm power purchase you have to contract for it far enough in advance so that somebody else can put some generation plant in.

We've been fortunate this last winter to be able to buy from the United States. We were not able to buy from Saskatchewan.

Public Utilities
Tuesday, April 12, 1977

MR. LYON: The 1970 study sequence of Underwood & McLellan you are familiar with the different components that went into that, that is the study sequence from say 1975 to 1987.

MR. BATEMAN: I'm very familiar with that report.

MR. LYON: Right. Well that envisaged the Churchill diversion coming on stream in 1975 at a cost of about \$126 million?

MR. BATEMAN: I thought I brought a copy of it down. Which page are you referring to, Mr. Lyon?

MR. LYON: I'm just referring to the summary of those.

MR. BATEMAN: The summary of that report. Whose summary is it?

MR. LYON: Mr. Spafford's summary.

MR. BATEMAN: Is it a part of the report?

MR. LYON: I'm not sure if it is or not.

MR. BATEMAN: Well, then I am sorry, I haven't got the document you are referring to. The report was not wholly Mr. Spafford's.

MR. LYON: Could I just ask one question in the interim. My understanding is that when the Lake Winnipeg Regulation proposal was placed before the board of Hydro in the summer of 1970, was the board unanimous in accepting that recommendation?

MR. BATEMAN: I'm sorry, would you repeat that? I was not a member of the board you know, when that report was submitted.

MR. LYON: You were Director of System Planning at the time.

MR. BATEMAN: In 1970 I was Director of System Planning, yes. So I was not a member in attendance at the board meeting. So you are asking me to quote on something or to refer to something that I was not there.

MR. LYON: Fine. Maybe I could ask you to check through Mr. Funnell then, my understanding is that Mr. D.L. Campbell who is a member of the board did not vote for Lake Winnipeg Regulation in the summer of 1970.

MR. BATEMAN: Well, we can check the Minutes and determine whether he voted or not.

MR. LYON: Now, from the summary I've seen of the 1970 study sequence, Churchill diversion would come on stream 1975, at a cost of \$126 million. We're talking in terms of 1975 dollars. Wuskwatim which was to have been the first plant was it not, on the diversion route, would have come on stream in 1976 at a cost of \$130 million.

MR. BATEMAN: Well, I would like to refer to the sequences of study that were outlined in that report and check whether that is indeed the correct sequence. May I ask, Mr. Lyon, if the information you are reading from has anything to do with this report at all or whether it's the more recent work that Mr. Spafford did for the Free Press?

MR. LYON: It has to do with the updated work that Mr. Spafford did. I'm just getting a copy which we can refer to, Mr. Bateman. A copy of which I understand was shown to the Premier and undoubtedly found its way to your desk.

MR. BATEMAN: No, I don't recall having seen Mr. Spafford's comments.

MR. LYON: While we're waiting for that copy to appear, Mr. Bateman, where did the name "Jenpeg" come from?

A MEMBER: Jennie and Peggy.

MR. BATEMAN: Well the resource people who were doing the water resource studies in the fifties I believe named that site after two secretaries from the Water Resource Branch. I have never seen that documented but that's what I understand is the hearsay story of the origination of that name.

A MEMBER: Jennie and Peggy.

MR. LYON: When was the name decided upon, Mr. Bateman?

MR. BATEMAN: Well it dates back into the early fifties when the water resource — well maybe even earlier than that, I don't know — it may have arisen in the Lakes Winnipeg and Manitoba Flood Control Board study report which was tabled in 1958. That's where I first ran into it, Jenpeg as a power site when I was Liaison Engineer for Manitoba Hydro to the Lake Winnipeg and Manitoba Study Board. I was providing some input to that study board on power developments.

MR. LYON: And you say the engineering work with respect to the Jenpeg station was done internally by Hydro, 1970-71 or thereabouts?

MR. BATEMAN: Yes, we put a crew into the field to get the badly needed engineering data that had not been obtained in the Flood Study Board report of the fifties, because the 1960 studies indicated a pumping scheme. They had not evaluated the depths of water and depths of overburden on channel locations and so on. So we put a few crews in to determine all of that basic engineering data in 1970, from which the design proceeded. Some of that same group that were involved in those early studies proceeded through with the design of Lake Winnipeg.

MR. LYON: Have you, Mr. Bateman, had any discussions with Mr. Spafford with respect to the comparisons of development sequence costs that he has been concerning himself with over the past number of years?

MR. BATEMAN: When Mr. Spafford was engaged as a consultant to Manitoba Hydro I had a discussion with him. The last discussion I had with Mr. Spafford was in Halifax when I was

Public Utilities
Tuesday, April 12, 1977

commenting upon a paper that he delivered to the Engineering Institute of Canada.

MR. LYON: And that would be what . . .

MR. BATEMAN: Last fall sometime.

MR. LYON: I see.

MR. BATEMAN: Last October I think it was.

MR. LYON: Mr. Spafford I take it is acknowledged by you and by others in Hydro as being competent in his field of expertise as a systems' engineer.

MR. BATEMAN: I wouldn't acknowledge him as a systems' engineer. That was one of the points I was making in my discussion of his paper. But I would acknowledge Mr. Spafford as a hydraulic engineer, but not as a system engineer.

MR. LYON: Was it not a fact that in the sixties that he was approached by the late Mr. Stevens to become Director of Systems Planning for Manitoba Hydro?

MR. BATEMAN: If he was it's new to me. I didn't know that. In the sixties you say?

MR. LYON: In the sixties.

MR. BATEMAN: No, I would say that was probably — I don't know mind you — but I would speculate that there were other people within Manitoba Hydro who were — I'd use the word "more" competent in the system planning concepts. Now he may have been approached for a job in hydraulic. As a matter of fact in the sixties I approached him myself to come and work on a consulting basis with Underwood & McLellan for some additional studies of the Burntwood which we wanted done, right after I became Director of System Planning.

MR. LYON: And you became Director of Systems Planning in what year, Mr. Bateman?

MR. BATEMAN: May of 1967.

MR. LYON: May of 1967.

A MEMBER: Those were eventless years.

MR. LYON: I showed you, Mr. Bateman, a document that has been prepared by Mr. Spafford outlining his comparison development sequence costs, 1975 to 1987. The document there is dated April 26th, 1976 and it purports to show the values in 1975 dollars.

MR. BATEMAN: You are showing me that report now?

MR. LYON: Yes. I just indicate, Mr. Chairman, . . .

MR. BATEMAN: It's a one-page report.

MR. LYON: Well, it's not a report, it's a comparative sheet. Now looking at that Column one . . .

MR. BATEMAN: Could I refer this to Mr. Goodwin? Have you seen this before, Mr. Goodwin?

MR. GOODWIN: Yes, I have seen that document.

MR. BATEMAN: Well since Mr. Goodwin has seen this document before perhaps he could answer the questions you have on it.

MR. LYON: Fine.

MR. CHAIRMAN: Mr. Goodwin.

MR. LYON: Mr. Goodwin, I'm sorry. Looking at the second column of components with the development year shown on the lefthand side from 1975 through to 1987, assuming 1975 dollars, would you take any objection to the projects and the dates at which they would come on line with respect to the 1970 study sequence, or the costs?

MR. GOODWIN: Mr. Chairman, with the reservation that Mr. Bateman has expressed of the practicality of installing any generation on the Burntwood until the water situation has been resolved. Otherwise the sequence of development suggested here is practical.

MR. LYON: Subject only to the licence being obtained for CRD?

MR. GOODWIN: Assuming there is any water in the river to operate the generating stations, then those generating stations in that order can very likely be constructed.

MR. LYON: And we are presuming of course that this Churchill diversion that is spoken of coming on line in 1975 would have been the diversion as envisioned in the Underwood-McLellan report of 1970 with a maximum capacity of what, 29,000 or 30,000 cfs?

MR. GOODWIN: Yes.

MR. LYON: With a storage level 852 to 854?

MR. GOODWIN: Again I would refer to Mr. Bateman's reservation, that was not in the main Underwood-McLellan report. It is in a subsidiary systems studies report.

MR. LYON: Well, this report as I understand it, Mr. Goodwin, you are more familiar than I am because you have perused all of the reports, but this report, as I understood it, was a refinement of the original high-level diversion concept to the point where you can still have the CRD, you could still have your four sites on the Burntwood or on the diversion route, but you could do all this by maintaining a storage level of, say, 852 to 854, rather than 850 as called for in the licence. Are those assumptions correct?

MR. BATEMAN: On the basis of the assumptions you have made, they are valid for 850 or 847 as they are for 869. You could still build four plants on the Burntwood or five plants on the Burntwood.

Public Utilities
Tuesday, April 12, 1977

You will still get all of the Churchill River water that you are permitted by licence to divert. There is only so much water in a year in the Churchill River. You are going to get all of that out under the present scheme. The only difference is that we are going to get more of it out in the summertime and less in the wintertime and the wintertime has very severe ice problems which may have pose problems that we don't even know about yet, although we know a lot more now than we did when that information was prepared. And I think Mr. Spafford, if he is keeping up to date on problems relating to the development of our hydraulic resources in this province, will be the first one to tell you and your colleagues about the problems relating to development of the route of the diversion and the ice associated with those. We have engaged engineers from the country who are most knowledgeable in ice formations and we have had some very significant additional information than that which we had back in 1969.

So the only difference between what you are relating to those three reports had the comment in Mr. Spafford and Mr. Howard's report that Lake Winnipeg could be deferred. Indefinitely I believe is what they said.

MR. LYON: To 1993 at the earliest, if my memory serves.

MR. BATEMAN: Yes, but that . . . if you want to go into the technical analysis of this report, I will be very happy to do that with you. I have received comments from the principles of Underwood-McLellan about the deficiencies of that report which I have never made public, but I will be happy, if you want to go into them, I will be happy to go into them.

MR. LYON: Sure. Could we move to the second, the current sequence, Mr. Goodwin, and just for comparison purposes see if you would agree that they represent an accurate depiction of what the current sequence of development on the Churchill-Nelson-Lake Winnipeg is? First of all, Lake Winnipeg regulation and Jenpeg?

MR. GOODWIN: Lake Winnipeg regulation and Jenpeg to 1975 is perhaps not quite accurate, but relatively so. Churchill diversion in 1976

MR. LYON: \$260 million, that is in 1975 dollars, of course.

MR. GOODWIN: . . . realizing that these are discounted figures, that the future expenses are discounted through 1975 value, yes.

MR. LYON: Right. The Churchill diversion \$187 million, 1976.

MR. GOODWIN: I would think that is probably correct.

MR. LYON: Long Spruce, \$414 million, 1977.

MR. GOODWIN: I think that the Limestone Station in 1983 is certainly not certain. The cost in 1975 dollars is probably correct. Similarly, Conawapa is certainly not in any way planned at this time and cost estimates would not be firm.

MR. LYON: So it is off into the future?

MR. GOODWIN: Yes.

MR. LYON: And the transmission and conversion costs shown in Column 5, \$55 million, Churchill diversion, \$349 million for 1977, and then ultimately down the line about 1984, \$349 million?

MR. GOODWIN: I don't recognize those figures, Mr. Chairman, and I don't know where they have come from.

MR. CHAIRMAN: Yes, I would like to know what particular reports or studies that are being quoted and referred to. For the benefit of the other members of the committee, if we could again identify the author and whether this is one of the official documents that has been made available to Manitoba Hydro or for someone else. I would like to ask you, Mr. Lyon' since you have that information. I think the other members of the committee would like to know and it should be put on the record.

MR. LYON: No objection, Mr. Chairman, to having photocopies made of that document that Mr. Goodwin was reading from so that we can all be

MR. CHAIRMAN: Still, I don't understand the relevance of those figures as we are dealing with the annual report.

MR. LYON: Well, we can overcome that problem, Mr. Chairman, if the committee agrees to have Mr. Spafford come forward and explain them to

MR. CHAIRMAN: Mr. Lyon, you know the procedure of the annual report. Any corporation that reports to this committee, we have the Chairman giving the annual report and members of the committee ask questions on the annual report.

MR. BATEMAN: I might suggest, Mr. Chairman, that this is not dealing with the annual report of Manitoba Hydro.

MR. CHAIRMAN: That is what I am trying to ascertain as to how the relevance of this comes in.

MR. LYON: Well, Mr. Chairman, first of all on the point of Mr. Spafford. Mr. Spafford is available to the committee, if the committee would like to hear him make the comparisons that we have on the sheet in front of us, of the 1970 study sequence and the current sequence, to show where the extra capitalization has come in to the developments that Manitoba Hydro is making under its current sequence of development. I think that is very germane to this committee's considerations. It is very germane to the people of Manitoba.

Public Utilities
Tuesday, April 12, 1977

MR. BATEMAN: I think, Mr. Chairman, if we were to carry this study on through a few more years, you would find that the alternative sequence proposed by this sheet . . . and if Mr. Spafford is the author, then I am sure that for the full development of the Nelson, since these are lower-cost projects on the Burntwood, assumed to be lower-cost projects on the Burntwood, that the longer you leave such projects as Lake Winnipeg and the Limestone plant and so on, the more costly they would be. So I think the difference in cost would erode. At least I would be surprised if that wasn't the case.

MR. LYON: Just on that point, Mr. Bateman, to clear up something that has been bothering me and perhaps other members of the committee, you made the comment, the other day I believe it was, that it was good business on the part of Manitoba Hydro to be putting these very expensive plants on the lower Nelson in place now rather than in accordance with the sequence which was Manitoba Hydro's sequence up until 1969, because it would cost more to build them in the future. Does that theory of yours take into account at all the cost of money?

MR. BATEMAN: It certainly does.

MR. LYON: Is that not something akin to saying to anyone around the table today that with inflation being what it is and so on, and you need a new car, you had better go out and buy five new cars and store four of them in the garage until you need them because if you go to buy them five years down the line, it is going to cost you an awful lot more money?

MR. BATEMAN: Well, let's look at that. What does a car do, Mr. Lyon? Does a car produce energy or does it consume energy? So the analogy you have used I couldn't accept because the car consumes energy. Consequently I would not recommend buying any more than you need. As a matter of fact in the inflation we are in, the best procedure is to defer any expenditure you can until you have to make it. But in the case of an energy-producing facility such as the Nelson River plant, it is true that the sooner it is built, the lower cost the energy that it produces. But I would not, as a corollary to that, recommend that we go out and build hydro plants sooner than we need them. These plants that we are talking about on the Nelson River were built to meet Manitoba's firm load requirements. That is our job, to provide for the firm energy of this province.

MR. LYON: But we come back always to the point, Mr. Bateman, always to the point, that the sequence of development was changed fundamentally in 1969 — for what reason?

MR. BATEMAN: Mr. Lyon, that I think, is an obvious reason.

MR. LYON: Well, it may be obvious to you, Mr. Bateman, but we have been trying to get at it for the last number of years and haven't yet had an answer.

MR. BATEMAN: Well, maybe we could paint it very simply that if you had remained in power, we might have had a different sequence. But the fact is that Manitoba Hydro is not a policy-making body. It respects the policy-making body, the elected representatives.

MR. LYON: That is precisely the point. And you are saying

MR. CHAIRMAN: Mr. Lyon, that is precisely the point. There was a change in policy. If you wish to argue that argument, you can bring that argument up in the Committee. You can get up in a number of ways to discuss that item. I don't see how you should try to get Mr. Bateman involved in a discussion which is a matter of policy.

MR. LYON: Mr. Chairman, with respect, Mr. Bateman and I are finally coming to an agreement of minds on this problem. I would think that you could have deduced that.

What you are saying in effect, Mr. Bateman, is that there was, with the change of government in 1969, a change of policy that was enforced on Manitoba Hydro.

MR. BATEMAN: As regard the valuation of resources, yes.

MR. LYON: And the sequential development of the Churchill-Nelson which were a result thereof?

MR. BATEMAN: No, not the sequential development.

MR. CHAIRMAN: Mr. Lyon, would you allow Mr. Bateman to answer the question?

MR. LYON: We are doing quite fine, Mr. Chairman.

MR. CHAIRMAN: Yes, but before he could answer the question, Mr. Lyon, you are already trying to indicate your version of the answer.

MR. LYON: Mr. Chairman, with respect, I have the fullest confidence in Mr. Bateman's ability to handle himself with me or anybody else

MR. CHAIRMAN: Thank you, Mr. Lyon. Would you proceed with your questions?

MR. BATEMAN: Mr. Chairman, if I may be permitted, I was going to say again with all due respect to Mr. Lyon, that if we spent more time worrying about the report and what we are going to do than what we have done, I think we would be more productive.

MR. LYON: Well, Mr. Chairman, referring then to the comparison of development sequence costs, back again to Mr. Goodwin, do you agree with those figures in columns number one, two, three, four, and under the current sequence and the cost thereof with the exception of Conawapa which you put your caveat on?

MR. GOODWIN: I believe these are a reasonable estimate in 1975 costs on those projects.

MR. LYON: Transmission and conversion costs would be common to both sequences although you are not prepared to pass a comment upon those figures?

MR. GOODWIN: They are in the right order.

Public Utilities
Tuesday, April 12, 1977

MR. LYON: In the right order. What about the figures in the next columns relating to the annual capital retirement cost, new components in millions of dollars?

MR. CHAIRMAN: Mr. Lyon, I still would like to know what material you are referring to.

MR. LYON: It is in front of the witness.

MR. CHAIRMAN: It is in front of you, not in front of me, it is not in front of any other member of this committee.

MR. LYON: I would be quite happy to adjourn for five minutes and have copies of it made.

MR. CHAIRMAN: I am not quite happy to adjourn. You can identify the particular document you are referring to and we will see what kind of hypothetical situation you are talking about.

MR. LYON: Mr. Chairman, I am quite prepared to have Mr. Spafford come and explain the document.

MR. CHAIRMAN: You are referring to a document prepared by Mr. Spafford?

MR. LYON: Right.

MR. CHAIRMAN: Mr. Goodwin.

MR. GOODWIN: Mr. Chairman, with regard to a comparison of between what might have been done under certain conditions and what has actually been done, I have not checked these figures. I don't consider them valid because I don't consider that the two sequences of development are comparable.

MR. LYON: In what sense . . .

MR. GOODWIN: The current sequence is what is being undertaken.

MR. LYON: Right.

MR. GOODWIN: The 1970 study sequence as referred to on this page does not represent a practical form of system development, and I furthermore don't believe that the cost estimates there can be realistic.

MR. LYON: Why do you say that the 1970 study sequence does not represent a practical?

MR. GOODWIN: We could not, even in 1976, have embarked upon a development of the Rat-Burntwood system because we cannot be sure of having the water available, and we do not know the environmental situation there.

Environmental studies have been completed on the Nelson, but the situation on the Burntwood River involves federal land at Nelson House and there is no agreement yet to the taking of that federal land even for the Churchill River Diversion let alone for the Wuskwatim site which is identified in this report.

MR. LYON: What caused the delay in those settlements, Mr. Goodwin?

MR. GOODWIN: It's a long process of negotiation.

MR. CHAIRMAN: This particular report that we are referring was not prepared from Manitoba Hydro, was it Mr. Goodwin or Mr. Bateman?

MR. BATEMAN: No.

MR. LYON: A long process of settlements you say, Mr. Goodwin, but was it not a fact that this process of settlement was almost completed in 1969?

MR. GOODWIN: I'm not aware of any negotiation with the Department of Indian Affairs in 1969.

MR. CHAIRMAN: Mr. Bateman.

MR. BATEMAN: Mr. Chairman, I'd like to comment on Mr. Lyon's observation. I think that hits the point right on the head. It describes the lack of engineering information that the person you are now holding up as an alternative sequence, the lack of information that he had and that we had in 1969 and 1970 about the route of that diversion water and the effects it would have upon the downstream areas below Notigi. There's just no way we could have completed any earlier than we are currently attempting to complete those negotiations, those mitigation works. You probably have seen recently where we signed agreements with the Nelson House Band for the clearing of their reservation land and the repair of certain facilities such as roads and so on that will have to be raised.

Originally you know the concept was a very simple one. That problem was going to be contained with a weir. But that weir, we didn't have sufficient hydraulic engineering information about the diversion route. That is the point, and no way could we have proceeded with these other developments until those problems were solved.

MR. LYON: But isn't it a fact, Mr. Bateman, that in 1969 following the receipt of Mr. Cass-Beggs' report you suspended all of the considerations on the CRD energy sites because of the recommendation that was contained in here to proceed with Lake Winnipeg.

MR. BATEMAN: No. No. I can show you, Mr. Lyon, that we spent large amounts of money on additional engineering studies on the diversion route after Mr. Cass-Beggs entered the scene. And throughout the years we've been spending money almost every year. We've spent significant dollars on field investigation of the Burntwood River, additional studies on alternate methods of developing that power, but also significant dollars on the mitigations that have to be carried out, the mitigation works that had to be carried out on the route of the diversion. There is no way, despite what Manitoba Hydro said in 1969 or whenever it was, about the delay of Lake Winnipeg, there is no way that we could have delayed Lake Winnipeg until the date we had suggested with this rate of increase in load

Public Utilities
Tuesday, April 12, 1977

and those problems that we have come upon in the last few years on the Churchill River Diversion. We would have been faced with a brown-out in this area.

MR. LYON: In effect, Mr. Bateman, the Underwood-McLellan report of 1970 showed you the way.

MR. BATEMAN: I don't agree with you, Mr. Lyon, it didn't show us the way.

MR. LYON: Was that report accepted by the senior engineering staff of Manitoba Hydro or was it rejected only by Mr. Cass-Beggs?

MR. BATEMAN: It was rejected by the senior engineering staff of Manitoba Hydro. It was rejected by the senior engineering staff of Underwood-McLellan as well.

MR. LYON: Was that based though on what you described earlier and quite properly as the fact that the government was changing . . .

MR. BATEMAN: No, it has nothing to do with the government.

MR. LYON: . . . the attitude of Hydro with respect to the sequence of development?

MR. BATEMAN: No, it has nothing at all to do with government. It is strictly an engineering matter. This report put the data on six month blocks. This was a very ambitious method of studying linear programming; a very ambitious method of studying the variables associated with a hydraulic system. The report itself, says that because the results are so flat, there are many solutions. This isn't the only solution that they came forward with. There are many solutions. Now that's what the report says, but the report also points out the limitations of six month quantum of data.

Now we can't operate this system on the basis of six month's production of energy. They have to know what they are going to get from week to week. They can't say that if they have an average flow over this six month period of that, that it'll supply the needs of the system. It won't. You've got to narrow it down by week by week in the final analysis. The period of maximum demand you must meet the energy requirements from the resources you have on a weekly basis. No way could you do that from this report. That report does not bear the judgment of the senior engineering staff of Manitoba Hydro or the subsequent review that was made of it by the Underwood-McLellan firm.

MR. LYON: I put it to you again. What has that to do with the arbitrary restriction that was placed by some unknown person — we haven't got that person or persons yet — of 850 feet of storage on Southern Indian Lake.

MR. BATEMAN: Well, if you dig out the other five volumes of this same Underwood report, which contains all the resourcedata and it costs something in the order of \$800,000 to acquire, that report or volumes of that report is what contains the data upon which the 850 elevation is arrived at. That plus the value of power to Manitoba.

MR. CHAIRMAN: Order please. The time for the Committee to rise has come. The Committee will meet on April 19th. Committee Rise. Mr. Lyon you're still on the list.