Standing Committee on the Alberta Heritage Savings Trust Fund Act

10:02 a.m.
[Chairman: Mr. Ady]

MR. CHAIRMAN: I would like to call the meeting to order and to welcome the Minister of Energy, the Hon. Rick Orman. Just by way of information, the minister has responsibility for funding by the Alberta heritage savings trust fund of the Lloydminster biprovincial upgrader, renewable energy research, and Syncrude, and the OSLO project received money from the heritage fund in the last year.

It would not be appropriate to direct questions to the minister on the debentures pertaining to Nova Corporation because that falls under the Treasurer, and the Treasurer has already appeared before us. Any questions pertaining to Alberta Energy should pertain to the energy side as opposed to the investment side because the minister is not responsible for the investment of that. The Treasurer would be the appropriate person to accept questions on that.

Mr. Minister, we invite you to introduce the people that you have with you from your department so that they'll be recorded in *Hansard*. Then if you'd like to take approximately 10 minutes to give overview comments, and following that we'll entertain questions from the committee.

MR. ORMAN: Thank you very much, Mr. Chairman. It's indeed a pleasure and honour to be before the heritage trust fund committee. I have with me today three individuals. The first, on my far left, is Rick Luhning, who is a member of the Alberta Oil Sands Technology and Research Authority and is also vice-chairman and executive director. On my immediate left is Tom Collins, who is senior Assistant Deputy Minister of Energy and Forestry, Lands and Wildlife; we share administrative responsibilities with Forestry, Lands and Wildlife. On my right is Myron Kanik, who is Deputy Minister of the Department of Energy.

The discussion today will be related to the energy investments and expenditures of the heritage fund for 1991-92. I should say at the outset, Mr. Chairman, that Dr. Luhning is not here because the Alberta Oil Sands Technology and Research Authority has had any investments in the last two years from this committee, but in that there was a substantial investment over the years prior to that, he is here to answer questions. I'd ask Dr. Luhning to bring the committee up to date with regard to commercialization plans for AOSTRA experimental projects. That was an issue of substantial interest over the last couple of years, and in that they have made progress, I thought it was appropriate that we report in any case.

In 1991-92 there was a total of $975,000 invested for energy initiatives through the capital projects division. All of this expenditure, albeit modest, was for the southwest Alberta renewable energy initiative. This initiative has really gained momentum, Mr. Chairman, over the last year or so. I'd like to highlight that this $3 million, three-year initiative does not focus only on the aspect of renewable energy such as wind or solar, but it also has been involved in promoting energy resources such as industrial energy conservation and methane recovery from landfills. So there is a range of issues and initiatives under this particular program. It is a very comprehensive program, and it is the only one of its kind. I know that many of the members of this committee and many of the members of the Legislature have taken an interest in this initiative and have visited it over the last year. It is unique, and it is different. It is breaking ground, and we're very proud of the success that we've had. The southwest region was the recipient of this commitment from the heritage fund for $3 million over three years. This $3 million has attracted approximately $34 million of investment. So as you can see, the leverage of the heritage fund investment to the total investment by the private sector, in addition, is quite significant and just points fundamentally to the success of this program.

The program works through its association with the electrical customers who are bearing a cost of an incentive that is extended to the developers through the small power research and development program. So it is right to acknowledge the modest amount that Albertans are paying on their electrical bills to support renewable energy, and I believe that those Albertans that are not aware that they are doing that certainly would support it for all the right reasons.

The largest of the programs under SWAREI, as we refer to it, is an outstanding example of the leverage that I have spoken of. The project that I refer to is a 9.9 megawatt, wind-powered electricity generating facility that I had the pleasure of announcing this year. Its total cost is $17.5 million, and $17.1 million was from outside investors.

Other projects that were undertaken during this budget year of 1991-92 are as follows. Work began on a 1.5 megawatt wind power plant. It was worth $2 million, and $1.4 million was provided by the private sector. This project is demonstrating an exciting concept called vertical access wind turbines. This has been developed in Canada by Adecon Energy Systems. Initially when we discussed this program at this committee, we talked about research. We talked about the uncertainty as to whether or not we were going to realize some advantage from our investment in this particular area. Many, not in this committee, Mr. Chairman, but many people have criticized the types of projects that are proceeding under SWAREI, and I am here today to say that it's not simply a testing or development program. These projects over the course of this program, over the three years, will be fully functional energy generating facilities, and they'll be using the best technology available anywhere.

In addition to our investments in research and development in the commercialization, we built in conjunction a Renewable Energy Information Centre, which opened in October 1990. The purpose of that was really to allow people to learn more about renewable energy. If the heritage fund or the incentive offered through the electrical system were to be acceptable to Albertans, we thought it was important that they understand what was going on, so we've opened an information centre in Pincher Creek. They have handled literally hundreds of inquiries from Albertans and people passing through southwestern Alberta wanting to know more about this province's commitment and success with renewable energy technology.

Mr. Chairman, in the first two years of the initiative 11 projects received $1.3 million in support, and it has spurred activity in an area of the province that was in need of an economic boost. As a matter of fact, the original decision to proceed with the southwest Alberta renewable energy initiative was as much based on the desire to open up an economic opportunity for that part of the province as to explore research and development in renewable energy. We have been able to accomplish both very nicely, thank you very much.

10:12

Mr. Chairman, I'd like to turn for a moment now to the trust fund's investments in other energy-related projects. On March 31, 1992, our investment in Syncrude totaled $518 million, and our return has exceeded $1 billion as at March 31, 1992. The Alberta Energy Company investment was $175 million. The heritage fund holds 36 percent of that company, and the market value is $259 million. We also hold a convertible debenture in Nova totaling $150 million. The total investment is $175 million. The market value of the

convertible debenture is $131 million, and the other $25 million of common shares has a market value of $23 million. The OSLO project in 1991-92 saw the completion of the engineering studies to basically support and assist in the decision-making process as to whether or not to proceed with the $5 billion, 80,000-barrels-a-day crude oil mining and processing facility.

Mr. Chairman, there has been no commitment on behalf of the OSLO partners to construct the project at this stage. I don't see it happening in the near future. The nature of the cash flows in the industry, the difficulties in returns on investment that we're seeing in the oil and gas sector, the restructuring, the mergers, and the acquisitions have all been capital-intensive, and the write-downs that the industry has taken over the last couple of years for investment decisions they made in the late '70s and early '80s really affect their ability to proceed with a project of this magnitude.

The primary aspect of our interest and support for the OSLO project comes under the heading of security of supply. We must look at our history in this country and the American example of relying on offshore supplies for crude oil and the impact that has on the security of supply issue. It is not my desire, having a responsibility for energy resources in this province or as a citizen of Canada, to sometime in the future be held hostage to crude oil supplies offshore from the Persian Gulf or, for that matter, the North Sea. We have to look beyond the pure economics and consider our investments in these types of projects on a strategic basis just as well and just as important as looking at them from an investment point of view and a return on an investment.

This brings me to the Lloydminster biprovincial upgrader. It was 90 percent complete at the end of March 1992. We've already reached a million barrels of synthetic crude oil production, and the official start-up is scheduled for November 1992. So it is through the workup stage right now. The capacity to produce 46,000 barrels of synthetic crude oil is I think a significant commitment by this committee to continue to look at ways to upgrade our conventional crude oil supplies and to continue to deal with our reduction in light sweet crude production. We are on a decline in Alberta; we're losing close to 5 percent a year in our production from conventional sources. Again, this type of a project is very important to the future of our province to continue to be a significant producer of hydrocarbons.

Mr. Chairman, it is of significant note that the project, which falls in the category of a megaproject, was completed with 97 percent Canadian engineering content. At the same time, the work force peaked in December 1991 at about 3,700 workers on site, and that was 100 percent Canadian.

The trust fund's investment in the upgrader was $221 million at March 31, 1992. This project, much like the Syncrude project, Mr. Chairman, has a two-pronged approach: one is to develop strategic assets in this province that speak to our long-term objectives, and secondly, to create economic activity -- direct and indirect job creation. This project is a textbook example of how projects can be built with Canadian content at a very high level. Many employment opportunities are well documented. We have the member of the Legislature for Lloydminster here, and he above all is a witness to the significant impact that a project like this can have on the various regions of our province. Again, trust fund dollars achieved a leverage for investment, maximizing benefits and minimizing expenditures. The trust fund was also instrumental in advancing research and development for conventional oil, oil sands, and renewable energy, and the expenditures will help secure Alberta's energy future for Albertans.

Mr. Chairman, those are my opening comments. I'd be pleased to take any questions from members of the committee. I would, however, like to ask Dr. Luhning if he would brief the committee on the very important issue of moving research and development into the commercialization stage. Then maybe we could ask some questions around our department's responsibilities with regard to the stewardship of trust fund investments.

MR. CHAIRMAN: Dr. Luhning, there was a keen interest on the part of our committee when we visited AOSTRA two years ago, and I'm sure they're interested in what progress has been made since then. So we'd be happy to have you take a few minutes to bring us up to date on where the project is at today.

DR. LUHNING: I'd be very pleased to do that. AOSTRA is very pleased that the committee was able to visit our Underground Test Facility project at Fort McMurray. We've made some very good progress on that project since the time you visited. Around the time that you visited we were just ending the first phase of the development, which was actually two projects going on simultaneously at the UTF. One was what's called a twin well SAGD process -- that's steam assisted gravity drainage process -- which involves drilling, as you'll recall, two horizontal wells from the tunnels upwards into the oil sands and horizontally along the bottom of the oil sands, steaming the top well and producing from the bottom well. The second experiment that was just concluding at that time was the demonstration, a first actual field test of the Chevron patented HAS-drive process, which involved a single horizontal well drilled from the shaft, a vertical injector, and production from a second horizontal well. We're happy to report that both those experiments were very successful. Chevron, on the basis of that result out of UTF, have now got themselves involved and farmed into a very substantial oil sands lease from Texaco, and they have drilled a commercial length HAS-drive type experiment, which is ongoing.

10:22

At the UTF what we have done is drilled three sets of commercial length horizontal twin wells. They have a horizontal length of 500 metres out of a total length of 600 metres. They were successfully drilled and completed. We have actually steamed the wells for a period of time up to the limited capacity of the surface facilities available, and all of the results to that date of that steaming fell exactly onto our predictions of production. Based on those results, the nine industry partners, ourselves, with input from the federal government, decided to proceed with expanding the surface facilities to handle the 2,000-barrels-a-day anticipated production. Those facilities are in the process of completion and will be commissioned during November.

During the time since you visited, we've done two studies: one with Syncrude and one with Suncor. These studies were to compare directly with Syncrude the economics involved with the UTF type twin well process with the conventional hot water surface mining technology and look at a variety of scenarios: different scales, different locations, expansion of the current plant, and building of new surface mining facilities on a green field basis. The bottom line of those studies indicated that on a green field basis it then looks like the twin well process, if it does prove out in this next phase of operation, has the potential to produce bitumen cheaper than a new surface mining operation using the hot water process. That equates to something in the range of about $6 to $8 per barrel at about a 30,000 to 40,000-barrels-per-day operation. As I say, that was confirmed both times with Syncrude and with Suncor.

Also, since you visited a couple of years ago, we've had some other success in bringing some offshore investment into the project. Japex of Japan have joined the project as an equity participant, are now a full participant, and paid their amount of cost to catch up with

the other participants in the project. We have also had China National Petroleum Corporation join on the same basis as a full-equity participant, and they are paying their share, 8 and one-third percent of costs, along with the other participants and have paid the catch-up costs.

So I think the story on the UTF side is quite an exciting story. The partners -- the nine industry participants, the federal government, and others -- have joined with us in a commercialization task force, and we're working through the economics and scenarios that will be involved in an expansion beyond 2,000 barrels a day to something like about 30,000 barrels a day, looking at markets, looking at pipelines and infrastructure that will be required.

One other thing I should point out is that we have concluded an arrangement with Syncrude to purchase bitumen from the UTF. Also, as a consequence of that purchase agreement, Syncrude are becoming an associate member in the project, and they will be participating to some degree on this commercialization task force. We think that's very encouraging, because they of course would be a very good possibility for the marketing of the bitumen in the area. So I think that in that area, on the in situ side, we're moving ahead very well.

One other sort of major step that we've taken in another area -- as you'll recall, about 10 percent only of the oil sands is amenable to surface mining, and that's the route that the current commercial projects in Fort McMurray take -- is that over the past 15 years, with heritage fund support for a number of those years, we have developed a process with UMATAC Industrial Processes. It's a rotating kiln type of an operation that is amenable to surface-mined oil sands that does not produce some of the environmental problems that are associated with the current hot water process. Also, our economic calculations indicate that when you combine the Taciuk processor with an upgrading scheme, there is the potential to have a favourable economic scenario compared to combined mining and the current hot water process combined with full upgrading. What we have done based on that is to construct in Calgary a 60-barrels-per-day processor aimed at proving out some of these concepts to a greater degree on surface-mineable oil sands and also to put in place a fairly aggressive program on proving out the upgrading type of processes that would combine with the Taciuk processor.

MR. TAYLOR: Sorry. What kind of processor?

DR. LUHNING: Sorry. It's called the Taciuk processor.

MR. TAYLOR: How do you spell that?

DR. LUHNING: T-a-c-i-u-k. It's named after William Taciuk, who is the inventor.

MR. TAYLOR: That's not the way Ukrainians pronounce it. I'm sorry; I lost it there. I'm familiar with the other one.

DR. LUHNING: Yeah. I've been calling it the UMATAC processor, the Taciuk processor. The names are interchangeable.

The Energy department was good enough to assign to AOSTRA a surface-mineable area where we could build a prototype scale of this operation, perhaps in the 5,000-barrel range. We have again started a task force with industry. Twenty-one companies have expressed an interest in our attending the meetings. The idea would be to direct the experimentation in conjunction with industry and AOSTRA over about the next two years, carry out a commercialization and economic study to determine and nail down the viability and the attractiveness to move to the next step, which could be a 5,000-barrels-a-day operation. So in Athabasca we've made some pretty good progress.

In other areas, as you'll recall, one of the major commercial results from the heritage fund investment in AOSTRA was the Shell Peace River in situ recovery project at Peace River. Shell is a participant in our UTF project and is well versed in the merits of the twin well process. We are now working with Shell with regard to testing a prototype scale operation using the twin well process drilled from the surface; that would be adjacent to the commercial operation in Peace River. Shell's independent estimates indicate that there is a high potential attraction in economics and rate of recovery, et cetera, to apply the twin well process at Peace River.

I guess I'd just like to point out why the rate of production is maybe important. In Canada today the average production from an oil well, based on CPA numbers, the Canadian Petroleum Association, is 30 barrels per day. There are about 40,000 conventional oil wells; they make an average of about 30 barrels per day oil production. In the U.S. there are about 600,000 oil wells, and they make an average of about 12 barrels per day. A Saudi Arabian well, just to put it in perspective, averages about 6,500 barrels per day. The twin wells that are drilled at UTF and would be mirrored at Peace River, when they are up to full production, are anticipated to make somewhere about 650 barrels per day oil production. That's about 20 times the average well production rate in Alberta and about one-tenth of what a well in Saudi Arabia would produce. So the merit of the horizontal well technology with regard to efficiency and productivity is probably pointed out by the comparison of those numbers.

10:32

In the other areas, on the enhanced oil recovery side, I should point out that the mix of the production of oil in Canada is important. Today about 30 percent of Canada's oil production, mainly out of Alberta, comes from oil sands and heavy oil production. A further 10 percent of the production comes from enhanced oil recovery methods, mainly micellar, flood-type operations. So if you put those two numbers together, approaching 50 percent, or half, of Canada's oil is coming from oil sands, heavy oil, and enhanced oil recovery. That coupled with the 5 percent decline per year that's ongoing in the conventional resource area, factoring in new finds that are to come, points out that the future of the oil industry in Alberta in particular is going to be tied to oil sands, heavy oil, and enhanced oil recovery, the technology the heritage fund has invested in funding with AOSTRA over a number of years.

We have a number of success stories in the enhanced oil recovery area, new technology. We've got two commercial carbon dioxide flood operations in the province, one near Red Deer, one near Lethbridge. We have our anti water coning technology, which we have just licensed on a commercial basis for using on a service-type company basis so it can be applied to any well in the province under licence. In the heavy oil area we've produced a number of very interesting results. Some of the pilots are up to about a million barrels total production.

The other area we have moved into that is not a direct mandate of AOSTRA, and we intend to back away from this as it goes forward, is on the environmental side. The Taciuk processor, which I mentioned earlier, has been licensed to a company in the U.S. called SoilTech. They are using it commercially to clean up contaminated soils, soils contaminated with PCBs, et cetera, very successfully. They've done two sites very successfully and have been favourably looked upon by the U.S. department of environment. There are in the neighbourhood of an additional thousand sites of that nature which the processor would be applicable to. We have given under

licence the rights to UMATAK Industrial Processes to promote the use of that technology on a commercial basis, and of course any revenues would be subject to a licence which would flow back to AOSTRA.

The other area that it has been indicated should become a priority with AOSTRA and where the heritage fund has invested money in the past through AOSTRA is the area of upgrading. I mentioned before that about $6 to $8 would be the bitumen cost from the UTF on a commercial basis at around 30,000 barrels per day. That gets you to bitumen, but in order to move from bitumen to synthetic oil, which would be your main market, the upgrading would have to be added on top of that. At the moment a new stand-alone upgrader for bitumen of a suitable size with an appropriate return on investment, et cetera, would run you something in the neighbourhood of about $12 to $13 per barrel processing cost to move from bitumen to a barrel of synthetic oil for sale. So we're looking at around $6 to $8, plus another $12 to $13. You're looking in the neighbourhood of around the $20, $21, $22 per barrel cost. As you know, that is pretty tight with prices that can be achieved for a sale of synthetic oil in today's current market.

From our viewpoint we feel that a very good thrust on new technology to reduce the cost of upgrading is very important to the future of the oil industry and particularly the oil sands industry in the province. That's an area to which we are devoting quite a bit of attention. We have worked closely with industry over the past years to look at any new technology regardless of its location or country of origin. In fact, I think we've looked at and evaluated most of the promising technologies, although the bulk of these have originated outside Canada and outside Alberta. Our objective now would be to move in a phased and controlled manner toward development of promising technology on the upgrading side, particularly aimed at the bitumen and heavy oil resources, tailored to the Alberta requirements. We're doing that in conjunction with industry, and industry has indicated very strong support for that direction.

That, I think, would be an overview of our commercial operations and the steps we have made since you had the opportunity to visit our site. I'd like to extend an invitation to the heritage fund committee to come and view the operation with the 2,000 barrels per day on stream. Just a quick perspective to put that scale in size. If you look at the production of oil companies listed in the latest *Oilweek* journal, 2,000 barrels per day production is the 47th largest oil company in Canada. That's equivalent production. So what's happening at the UTF is truly a prototype operation, and we're hoping that over the next couple of years we can prove out the technology. In conjunction with the companies in our consortium who have the options for or will have earned an interest in the lease, which contains about 3 billion barrels, we should be in a position to make an informed decision on the next step, which hopefully will be the 30,000 barrels per day operation.

With that, Mr. Chairman, I'd like to turn it back to you.

MR. CHAIRMAN: Thank you very much to both you and the minister for some excellent background on what's happening in the Department of Energy.

I recognize the Member for Edmonton-Beverly, followed by the Member for Lacombe for questions.

MR. EWASIUK: Thank you, Mr. Chairman. It's good to see that your voice is back somewhat.

Welcome to the minister and members of your group. I'm interested in development and research relative to alternative energy, and I'm very impressed. I appreciate the fact that research and development are high-cost factors and it takes a long period of time to develop these things. I noticed that really we haven't spent a great deal of money in that area for research. But my question, first of all, is: when can we expect that the research we are doing will be applied in other parts of the province; that is, starting to use that research developed for practical means and uses throughout the province?

MR. ORMAN: Mr. Chairman, I appreciate the member's comments with regard to his support for an interest in this area. As I've indicated, we've set out on a three-year project, and we are at the end of the second year. We have a recommendation from the independent board that directs the southwest Alberta renewable energy initiative. I have not had a chance to review the report, but I am sure within that report come some recommendations from the committee, from the board of directors as to their future thoughts about this type of project. I expect they'll be seeking an extension of the project in southern Alberta. At the same time I will be looking at exactly what the member suggests or asks: is there application in other parts of the province? I know that the Member for West Yellowhead on various occasions in the Legislature has asked about the possibility of this type of initiative going beyond southwestern Alberta. We'll give that full consideration as we assess the results of this program at the end of the third term.

10:42

MR. EWASIUK: Thank you.

Another question that I think sort of ties into our discussion is the development again of some alternative type of energy. I understand there is -- and I believe it's in Germany; it may be in other areas -- the development of something called hydrogen cells that I think are used primarily in the area of automobile gasoline. Are we looking at anything like that at all in this province, tied in with our research for sustainable energy uses?

MR. ORMAN: We are not in Alberta. I have tried to keep up with alternative energy projects around the world. I met recently with the chairman of SOCAL Edison from California, the utility in southern California, and they are looking at this type of energy development. But in the province there has been nothing under this program other than inventory of information in that regard.

I'm advised that Dr. Luhning has a comment. They may be in the development stages in this regard. Rick?

DR. LUHNING: Yeah. I think your question about hydrogen is a very important question, one that AOSTRA has quite a bit of involvement in because, as you know, when you upgrade bitumen to a salable product, basically what you have to do is change the mixture, the proportion of carbon and hydrogen in the product. Basically, you have to either add hydrogen or remove carbon.

Alberta is the largest producer of hydrogen in Canada; over 60 percent of hydrogen is produced in Alberta, and that is mainly for upgrading of oil and for the fertilizer area. We work very closely with the hydrogen industry council, which was set up to put together consortia to look at the question of hydrogen on a Canadian, Alberta, and worldwide basis. One of the main thrusts we have had some involvement in is looking at the possible usage of surplus hydrogen production at various hydrogen plants in the province with an eye to collecting that surplus production and having it available to use in perhaps a new upgrading plant, because one of the major costs in an upgrading operation is the production of hydrogen. It looks very interesting.

There are also a number of projects going forward that look at reducing the cost of production of hydrogen, mainly through making the hydrogen production operation more efficient. The bulk of hydrogen almost exclusively in Alberta is produced from natural gas.

MR. EWASIUK: Thank you.

I have several more questions, but I guess I'll choose one of them. The Renewable Energy Information Centre obviously sounds like an awfully good idea, but I see it's only located in the southwest. Any chance of it being featured in other parts of the province so it has more exposure and people like myself and other citizens have an opportunity to have a look at this sort of thing and become acquainted with what we're doing and how perhaps other people could utilize the process?

MR. ORMAN: Well, as members of the committee can appreciate, Mr. Chairman, and as I indicated in my remarks, $3 million is really a modest amount in terms of trying to conduct research and development for commercialization of alternative energy sources. So with our allocation of dollars we wanted to make sure the maximum amount of those dollars was invested in project development as opposed to infrastructure of bricks and mortar around support for the project.

As I indicated in my previous comments to the Member for Edmonton-Beverly, Mr. Chairman, we are going to assess the overall applicability of this program expanding beyond the bounds of southern Alberta and to other parts of the province that also may have natural advantages in developing renewable energy initiatives. So it's a little bit premature for me to respond in any definitive way to the member and simply point out, however, that we are in the consideration stage of the recommendations made by the board of directors. That will give us the type of information we need to look at continuing the project in southwestern Alberta as well as the consideration of expanding it outside to other parts of the province.

MR. CHAIRMAN: Thank you.

The Member for Lacombe, followed by Stony Plain.

MR. MOORE: Thanks, Mr. Chairman. I'd like to deal a little with the OSLO project. The concept was an excellent one for development of our resources here. It moved along quite well with co-operation between governments and the private sector, and then it stopped. I'd like to know where it is today. I see we've written off the heritage trust fund's investment in it. Does that mean it's completely dead? Why did we write off that investment? Was there no future in it?

MR. ORMAN: No, Mr. Chairman. I would say it is not because the future is bleak. As I indicated in my opening remarks, the possibility of the project proceeding in the near term in unlikely. As I understand it, accounting principles have dictated that we write off our investment to date that has been involved in the engineering side. We see it as an investment in the research and development side, the engineering side, to determine the viability of the project. I guess you could look at it and say that if we decide to proceed with the OSLO project without doing an engineering study or without investing dollars to determine viability, we may make a bigger mistake by proceeding when the economics aren't there than by investment in research as to economic viability, as we did in the engineering side. Many believe that it's not a matter of if; it's just a matter of when. The when probably is not in the near term, but we've had some valuable insight into this type of project.

Megaprojects around the world are limited in number for a variety of reasons, particularly the capital-intensive nature of the investment. I understand -- it was not my decision, Mr. Chairman -- that the accounting principles associated with this committee dictated that we do take the write-down. But it's not a reflection on the viability of the project necessarily or the future of the project. It's just related to timing and the reporting mechanism.

MR. MOORE: Thanks, Mr. Chairman. I'll propose my supplementals basically in the next question, because they interrelate.

Again on the OSLO one, it is my understanding -- and this is part of my supplemental that I want the minister's view on -- that the OSLO project was far more economically feasible than the Hibernia project and the return on investment was considerably more. I would like verification if that is so. The other part of my supplemental ties right into it. Then how come we're going with Hibernia and not OSLO? Was not OSLO the casualty of political decision-making in Ottawa?

10:52

MR. ORMAN: He's asking the wrong dude, Mr. Chairman. I asked that very same question of the Minister of Energy, Mines and Resources and, for that matter, the Deputy Prime Minister. I'm not sure . . . I was going to say I don't recall the answer, but I think I don't recall it because I didn't get one.

These projects proceed for a variety of reasons. It's the same reason we . . . I don't want to defend the federal government's decision on Hibernia, but they proceed for the same reasons. It's a balance of decision-making: security of supply, the need for economic development in an economically depressed region of the province or the country in this case. But I certainly will underline or at least support the comment made by the member that would suggest this project is far more economic than the Hibernia project, and we've chosen not to go ahead with ours. So I guess that is a reflection on the Hibernia project.

Myron, did you have any particular comments you wanted to make about the two projects?

MR. KANIK: Mr. Chairman, I wouldn't compare the two projects. If you recall, when we signed the OSLO agreement, we committed to two tests for this project. One was that the capital cost of the project on completion of engineering design estimates would be at $4.5 billion in 1988 dollars or less, and the project would have a 5 percent real rate of return. We did not get to the second test of 5 percent real rate of return because in fact based on the new technology we were going to use for OSLO, the Veba process, we failed the capital cost test. The project came in at $5.2 billion and that was obviously higher than the $4.5 billion, which allowed the consortium to put the project on delay.

As to the economics, we still feel confident our economics were good, even at $5.2 billion, but we're in no position to compare it economically against the Hibernia project because we don't have the definitive reservoir parameters they would be using for Hibernia. So it's impossible for us to definitively compare those two, except to say one more thing on the comparison: we do know that the OSLO project would have given us a rate of return with no risk versus Hibernia which is a very, very complex conventional oil reservoir with significant risk. So you would not only have to do the rate of return comparisons; you would have to do the rate of return comparisons after risk and see how the two projects stack up.

MR. CHAIRMAN: Thank you.

The Member for Stony Plain, followed by Bow Valley.

MR. WOLOSHYN: Thank you, Mr. Speaker -- or Mr. Chairman. I'm sorry. I promoted you prematurely this afternoon.

I would like to sincerely welcome the minister today. I know his time is being stretched amongst other activities, and it's very good for him to retain this meeting as a priority.

The topics we've been looking at are all heavy oil related, in addition to your alternative energy, and largely they're coming about because of the fact that our conventional crude production is on a

decline, which would lead us to believe new fields have been exhausted and the old fields are going down. That leads me to ask if there are guidelines in place for in fact shutting down existing fields that are becoming depleted, and what are these guidelines?

MR. ORMAN: I'm not sure I'm with the hon. member, Mr. Chairman.

MR. CHAIRMAN: I'm not sure that's an appropriate question. I don't know how it ties into the investment from the heritage fund. Could you rephrase it so it will, please?

MR. WOLOSHYN: Well, okay. It would tie in in a sense because the reason for the heritage fund going into these is that we are losing conventional crude production regardless, through volumes, dollars, and that is a reality. One of the problems of losing that production is the shutting down of existing fields and/or wells. Now, this is a two-sided thing. As production goes down, we're going to be drying up fields. My concern is twofold. One, who determines when the field is dry? Two, what happens to the infrastructures that are behind it? Do the taxpayers pick it up, or are the companies going to have it? I'll give my third question to you, and that is: is there a contingency fund set aside to ensure that when fields are taken out of production, the infrastructures are gone and the fields are returned as close as possible to their normal states? So there are three things in one there, Mr. Minister.

MR. ORMAN: Okay. There are a couple of aspects to that, Mr. Chairman. The first aspect is that the government of Alberta does not operate any oil fields. The oil fields are operated by the private sector, and as the member knows, in exchange for that right we retain a royalty.

Generally what happens is that a field goes on production decline or the oil in the reservoir is uneconomic to withdraw. The operator of the field or the owner of the field generally suspends operations either by shutting in the field or by just putting the wells in an inactive state. As part of our royalty reform, we are looking at ways we can maximize the recovery of oil from fields that are less than economic at today's prices because they are quite capital intensive and because we believe it's good conservation policy that we encourage as much extraction as possible out of these fields before the industry decides to abandon them or move to other areas. So there is technology. The Alberta Oil Sands Technology and Research Authority has invested substantial amounts of its time and energy and fiscal resources into enhanced recovery mechanisms. That's a big part of AOSTRA.

With regard to the ultimate decision to shut in these fields, there are some fairly tight regulations in place through the Energy Resources Conservation Board that dictate the manner in which abandonment occurs and the recovery of equipment on site or down hole. We have even passed regulations lately regarding orphaned wells, wells an operator will walk away from, and we now have changed the regulations so that the receiver of that company is also responsible for abandonment of orphaned wells. That was a big change we made, because we had a number of them that operators just walked away from.

So I believe that's basically the answer to the question the hon. Member for Stony Plain was getting at, Mr. Chairman. If not, I'd be pleased to elaborate.

MR. WOLOSHYN: Oh, I appreciate the answer. I also appreciate the fact that it was relevant because AOSTRA is involved in it, and that is excellent. I'm very pleased to hear that.

You've answered a second question. I was going to refer to orphaned wells and consolidations and who is responsible, and you're telling me that the new owner of whatever the company is then becomes responsible for the liability of shutting down the wells. I'm pleased to hear that also.

The other one: could you give us a comment on the involvement of AOSTRA in the Acheson field? I understand that that particular field recovery is being handled largely by Gulf Canada Resources and Chevron as a combined effort. I could be mistaken on that. I understand that's a high degree of experimentation as to using gas injection for recovery of the uneconomic oil at the base of the fields. Has there been any involvement by AOSTRA on that?

11:02

DR. LUHNING: Thank you. That's a good question. Our AOSTRA technology that I referred to earlier is called anti water coning technology. It's one that involves the injection of gas to alleviate and reduce the amount of water production that comes with oil, and it's particularly applicable in fields that have underlying water. We developed this technology in conjunction with the Alberta Energy Company and Westcoast Petroleum in the Suffield area in the southern part of the province. In that area the wells typically have a problem where they become uneconomic for oil production after a relatively short period of time. The use of this gas-plus-additive injection technology greatly increases the length of time the wells can produce, in essence in the neighbourhood of doubling the production. It will be applied to about 120 to 150 wells that are in that field.

The second major one that we've been doing with regard to gas injection is in a project with Gulf at Big Valley. This is an interesting and rather typical type of reservoir that's in the province. It's a carbonate reservoir. It has gas and oil in between gas and underlying with water. The project that we've been doing there for about half a decade now with Gulf involves the injection of a gas. In this case it was nitrogen that was injected at the oil/water interface. The result of the experiment, which is sort of coming to fruition now, is that the injection of the gas has reduced the encroachment of water, oil production has increased, and also the pressurization effect has kept the gas production at above the rate which would have been anticipated had nothing been done.

So those are the couple of areas of technology development that AOSTRA's been involved in with the gas injection. As I mentioned earlier, we have also just a week ago announced a licence that we have given to a service company in Calgary that will be able to provide the gas and additive treatments on a serviced, company type basis to any company in North America -- the licence covers North America -- that wishes to have the process tested. These gas-injection type approaches are very popular because they are economic at today's oil prices. In the Suffield area it looks like about $3 a barrel is the cost for an incremental production of a barrel of oil using that particular technology.

MR. WOLOSHYN: Thank you very much. My final question on this topic would be just a matter of clarification from the minister. Energy determines the royalties and whatnot for the field. The companies determine if they want to pump or not at any particular time, but ERCB has the final decision as to when a well is shut down or permanently taken out of production. Is that correct?

MR. ORMAN: No, Mr. Chairman. The producer would make an application to the board to abandon a well, but they make it based on the economics. The economics of a well will change with oil prices. A well may not be economic to proceed with enhanced oil recovery or just regular recovery at $20 a barrel, but if the price goes to $30,

they'll go back in and stimulate the well because at $30 it's economic. At the same time, if the economics change with regard to the amount of royalty that is being taken from a barrel of oil recovered, then it makes it more economic. That's what we're assessing in our royalty reform: should there be another regime of royalty on hard-to-recover oil to create the activity and to promote good conservation? Because under the existing royalty regime and under the existing price, it would not be economic. So that's part of our assessment on royalty reform.

MR. CHAIRMAN: Thank you.

The Member for Bow Valley, followed by Edmonton-Calder.

MR. MUSGROVE: Mr. Chairman, I was quite interested in this southwest Alberta renewable energy initiative. Actually, several years ago there was a corporation formed called the wind generation group, I believe, in southwestern Alberta. They met with me and several other members of this government several times in conjunction with the marketing of their product. It would appear at that time like these were all individually owned generators, and they were able to market their product at a fair price of what they actually then consumed back out of the grid, but any excess they generated was at some price that was unaffordable. So if we're to encourage this type of generation, I was wondering if that problem with the marketing of their product has been solved.

MR. ORMAN: Mr. Chairman, maybe for clarification, the member is talking electricity that is generated from renewable energy sources and the ability of that operator to connect the electricity into the grid. Our small power research and development program is not part of the heritage fund but is referred to because in the southwest renewable energy initiative there is an allocation to those renewable energy projects through that program. It's simply an incentive for renewable energy projects to proceed, because they can't compete with the existing coal-fired power generation facilities on a stand-alone basis. The coal-fired power generation facilities can generate electricity at a price substantially less than renewable energy initiatives. So we have worked out an incentive or a subsidy for renewable energy to be able to get up off the ground, and 125 megawatts has been allocated under the small power producers program.

I don't know whether the Member for Bow Valley's talking about a project that has capacity under that program or not, but they can make application. We are now actually up to the limit of our allocation under that program, and we would have to extend it with the utilities to make room for more projects. If the project owner cannot produce the electricity in competition with the cost of generating electricity through coal-fired power generation and he's not on this program, there is no way to help him get into the grid.

MR. MUSGROVE: Well, in my discussion with the small producers they indicated that they can produce at the same cost as thermal generation less the capital cost. In other words, they would put up the capital cost themselves and still be able to sell electricity into the grid at the same price as thermal generation. The only problem they've run into was that through -- I don't know -- some type of regulation that is currently in effect with all the large generation units, they can sell into the grid the amount of power that they consume back out of the grid at the same price as the other generation units get, but whatever they produce in excess of what they use themselves then is at a much lower price. They're telling me that this is unfair competition that they have with the larger generation companies.

MR. ORMAN: This is a very interesting discussion, Mr. Chairman. I'm not sure that it relates to the heritage fund. Let me simply say that the incentive amount -- is it 5 and a half cents?

MR. KANIK: It's 5.2 cents.

11:12

MR. ORMAN: The 5.2 cents incentive amount that goes to the alternative energy producers is in fact in recognition of the capital cost that they are not being obliged to pay for. The bottom line is: the capital is there; somebody has to pay for it. What we have to do is look at incremental power demand over and above the existing infrastructure and see whether or not we can generate electricity in this province in ways other than capital-intensive projects such as Genesee and Sheerness and so on. What we are in the process of doing is allowing for natural gas to be able to fire incremental power demand, because it is less capital intensive than coal and a cleaner burning fossil fuel. But the question is: is that the most appropriate use of natural gas? So we are looking at other ways.

I know that the point the Member for Bow Valley makes is really the reason we got into the small power research and development program: to allow for alternative energy. The only way we could accommodate more is to expand the capacity from the utilities, and of course they pass the costs on to Albertans. The extent to which Albertans are willing to pay more for their power to accommodate alternative energy is really the question. We don't know their upper limits, frankly. As a matter of fact, I don't believe the majority of Albertans are aware that they are paying for the alternative energy initiatives in this province.

MR. CHAIRMAN: Hon. member, you're just on the verge of not being within the guidelines of what's appropriate for the heritage fund to consider.

MR. MUSGROVE: Actually, Mr. Chairman, what I'm saying is that if we're investing heritage trust fund money into these experiments, we should know all the answers. If we were inclined to try and get a nonrenewable resource as a part of our energy system, then we should know all the answers, even the marketing answer. That's the point or the question I was trying to get across: has the marketing part of it been . . .

MR. CHAIRMAN: He's answered that as best he can. Do you have a final supplementary that falls within the parameters?

MR. MUSGROVE: No, this is fine.

MR. CHAIRMAN: Okay, you're finished. All right. Thank you.

Edmonton-Calder, followed by Lloydminster.

MS MJOLSNESS: Thank you, Mr. Chairman. It stated in the annual report on page 16 that approximately $100 million has been spent on technology to deal with the environmental concerns with respect to the Syncrude project. Now, I'm assuming that Alberta taxpayers are paying approximately $16 million of that based on the percentage that they have in the project, but I may be wrong on that figure. I know from personal experience, as well as talking to people, that there are some very serious environmental concerns in the area of Fort McMurray, such as air pollution; there are concerns about the tailings ponds. I'm just wondering if the minister could expand a bit on some of the initiatives that are being undertaken to deal with some of these environmental concerns.

MR. ORMAN: A very good question, Mr. Chairman. Not only with Syncrude but with Suncor are we continuing to insist that their environmental responsibilities are very significant. For that reason and because we are an equity owner in Syncrude, we feel a responsibility to also continue to participate in environmental related research around tailings ponds and air quality. I'd like to ask Dr. Luhning to again come into the conversation, because it is through AOSTRA that we are conducting our research on ways in which we can mitigate the impact of tailings ponds and potentially eliminate them over the long term.

DR. LUHNING: Thank you. The question is a very good one, and it involves both economics of operation and the environmental aspect. On the sulphur question, the amount of sulphur that's emitted by the plants -- Suncor and Syncrude of course are carefully regulated by their permits for operating and I understand are required to stay within those guidelines to continue operating. The other aspect that was brought up was the tailings pond part of it. The tailings pond is an outgrowth of the technology that's used at both Suncor and Syncrude, the hot water recovery technology where the mined oil sands are in essence frothed with hot water so that the bitumen floats and the sand sinks. As an outgrowth of doing that, the hot water causes the clays in the oil sands to be put into a suspension that for reasonable periods of time just does not settle. Now, the thrust that AOSTRA has had since the beginning is to come up with new processes that would be more environmentally friendly; i.e., to either come up with a method that would break the clay/water suspensions that are impounded at Suncor and Syncrude or to come up with economically competitive processes that would not produce the tailings in the first place.

Dealing first with what's happening on the tailings pond, clay/water suspension part of it, this is an intriguing problem that's easy to solve in the kitchen sink but very difficult to solve on a commercial-type basis. One of the barriers to solving it has been the basic understanding of these clay/water suspensions and why they stay in suspension for such a long period of time. What has happened just very recently, over the last three years, is that AOSTRA, with Syncrude, Suncor, Alberta Research Council, CANMET, and the environment department, have put together a consortium in which we're going back to the very basic science that's involved with why these suspensions stay in place for as long as they do and what type of things you can do to build on that knowledge to cause them to separate in an economic fashion.

Besides that particular initiative, for the previous years AOSTRA had worked with a number of companies that would look at methods to break the suspension by putting the clay/water suspensions through various processes. There are a number of those that are attractive but do have a question mark with regard to economic viability.

On the side of developing processes that will modify the clay/water suspensions such that they would settle more quickly, AOSTRA's done a lot of work with a wide variety of processes. Some of these processes would be solvent extraction type processes, which would use a solvent instead of water to extract the bitumen. Others of those types of processes have been using different temperatures: cold water floatation methods that still produce a sludge, but it's a sludge or a fine tailings, a clay/water suspension tailings, that would settle more rapidly, in a number of years rather that a number of maybe decades or tens of decades type of thing. Those are looking promising, but again there is a question mark on economic viability.

The one that I had mentioned earlier in some of my opening remarks or first remarks I made was the AOSTRA Taciuk processor, which is a process that does not use water. What it does, under a high temperature in a rotating kiln-type apparatus, is vapourize the bitumen from the sands and produce a dry tailings such that you do not have any wet tailings produced at all. This is the advantage, of course, of not getting the clay/water suspension and also is an advantage because you can start to put the mined and extracted material back into the original hole much more quickly than you can with the process that has the sludge. With this water/clay suspension you have to wait till you've mined a certain area, are able to close it off, and then start filling it with the clay/water sludge amounts.

So we've been quite aggressive in that area. It's an industry problem and one that's very well recognized. With the Taciuk processor, as I mentioned earlier, it looks like there may be a strong economic benefit as well as an environmental benefit to go that direction. It simplifies your mining program somewhat. It simplifies the extraction and upgrading process because the AOSTRA Taciuk process does produce a partially upgraded product instead of producing straight bitumen. When you combine the mining, extraction, and upgrading processes, it looks like there's an economic potential, an economic incentive to look seriously at that process for the future and into a prototype scale operation. As I mentioned earlier, we've just kicked off a joint industry study with ourselves and 21 companies that have expressed an interest, and over the next couple of years we'll be looking at that very seriously. That would be a nice fit because it would potentially have the possibility of a more environmentally friendly process and one that would be more economically viable.

11:22

MR. CHAIRMAN: Just before you proceed, I have still quite a large number of members who are anxious to get in questions to the people that are here today. So if members would keep their preambles as concise as they could and if those who respond could just shrink them down a little so that we can give everyone an opportunity to at least get a question in.

Please proceed.

MS MJOLSNESS: Thank you, Mr. Chairman. I appreciate the explanation. I realize that research is ongoing and takes time, but it seems to me, though, that we're spending a substantial amount of money in this area and yet there are still some serious problems, especially with the sulphur dioxide emissions. I'm just wondering -- this is a judgment call, I guess -- is there real progress being made? Are we getting value for the money that we're investing in this area?

MR. ORMAN: Mr. Chairman, just let me make a comment about page 16, under Financial Assets. The reference to the $100 million that Syncrude has spent: I don't want to have anyone led to the conclusion that those are heritage fund dollars that have been spent. Okay?

MR. CHAIRMAN: You're off base just a little bit. We'll let it go with a brief answer.

MR. ORMAN: Let me say that we have a substantial investment in this area. It has substantial economic impact. As the preamble to this column says:

> Syncrude generates 16,000 direct and indirect jobs annually in Canada and $1 billion in spending for the Canadian economy.

So on the economic side they are making a substantial investment in jobs and spending.

On the other side there are some challenges on the environmental side, and they're well recognized. I wouldn't say they are insoluble, Mr. Chairman, but in fact there's going to be significantly more research to be able to deal with the environmental concerns associated with the tailings ponds.

This section that the member refers to is on reforestation and reclamation of the land that is mined, which I think is extremely important. On a generic basis we have put in place an agreement with Suncor where we have told them that they must, by a term certain, deal with their SO_2 emissions or they will not have their licence renewed by the Minister of the Environment. We have to see a plan. That plan has been put in place, and it's a reflection of our commitment to deal with the concerns the hon. member has. She is not the only one; other members of the Legislature and people in the area are really concerned about it, particularly the native groups. So it is something that we have to take seriously and are. We are moving as fast as we possibly can, but the technology is just not there to solve all the problems associated with oil sands development at the current time.

MS MJOLSNESS: Okay. My final supplementary, then, is just for clarification. Does your department do monitoring? You're saying that you're setting out certain expectations. I'm wondering if your department monitors it all, or is that simply left up to the Department of the Environment?

MR. ORMAN: The Department of the Environment has the responsibility for air quality and water quality and on a regular basis conducts tests on oil sands plants. They have to live within the limits of their licence. In their licence they have limits with regard to air quality and water quality. If they don't live within those limits, then they run the risk of having their licence pulled.

MR. CHAIRMAN: The Member for Lloydminster, followed by Calgary-Fish Creek.

MR. CHERRY: Thanks, Mr. Chairman, and good morning, gentlemen.

I just want to go back to the upgrader question, on the original investment in the upgrader and then the overruns we have seen. I guess my question would be: with the differential the way it is today, will it make a return back to the owners of the plant?

MR. ORMAN: Mr. Chairman, the biprovincial upgrader falls under the category I referred to earlier as meeting a series of agenda items with regard to governments. The first is that these projects are located in an area of the province where they are in close proximity to natural resources that would be feedstock for these projects. The second is that there is a commitment by all levels of government to participate in these projects to meet the objective of upgrading our natural resources, in this case nonrenewable natural resources. Thirdly, the economic impact and stimulus to the economy of this size of project are quite significant and therefore are worthy of consideration and support.

The project has a series of uncertainties related to the forecasting. I'm just looking for a piece of paper, Mr. Chairman, that shows the unforeseen changes from the date the project was forecasted to the date it was completed that were really beyond our control. We are not happy that this project is in cost overrun, quite obviously, but there are significant events beyond the control of the project owners that impact the rate of return and cost overruns. The first is that the rate of exchange for the Canadian dollar was forecast to be 75 cents, and it ended up being 82 cents. In that procurement from U.S. suppliers was significant for the project, the exchange rate of the dollar has a big impact, a negative impact on the rate of return. The inflation rate was almost 2 percentage points higher in actual terms than was forecast. Sulphur prices were higher, and higher diluent premiums occurred in 1988 than were forecast. All had an impact on the rate of return of the project, on the cost overruns, and it was despite the best forecasts available.

This project will over the long term, as was Syncrude, be demonstrated to be a significant economic initiative of the government and will make over the years a significant economic contribution. It may not look like it's economic today. We may have had to take some write-downs associated with it because of the cost overruns and because of the margin between heavy oil and light sweet crude oil, which is about $5 U.S. now, and it has been as high as $8 or $9 or $10. As simple math tells you, the greater the differential between heavy and light, the greater the economics for the project. The closer the value of light and heavy, the lesser the economics; lesser viability occurs. So that is beyond our control. The differential between light and heavy crude oil as a commodity is beyond our control. That's on the short term, Mr. Chairman, and I believe in the long term this will prove to be a very important project.

11:32

I recall that the cost overruns for the Syncrude project were almost double the original cost, maybe even higher. Now we see it's starting to pay a very significant amount of royalties, in excess of $1 billion, and so just because you've had cost overruns is not a reflection on the long-term viability of a project that will run for 30 or 40 years.

MR. CHERRY: A supplementary, Mr. Chairman. I just want to ask the minister regarding the taxation of the project. Yesterday I asked the Treasurer a question regarding the taxation and the split between the rural municipality and the city. I believe that eventually it will come down to arbitration on behalf of the governments, but it appears to me, and I've had a couple of meetings with the RM also, that they're being not what I would call fair in the judgment they're giving there. Have you any thoughts on that?

MR. CHAIRMAN: That question hardly falls within your venue, but if you want to give a very brief answer. You're really stretching it, hon. member.

MR. ORMAN: The hon. member though, Mr. Chairman, brings up a point that has affected the rate of return of the project, and that is unanticipated levies by the municipality in Saskatchewan, by the government of Saskatchewan on the project in the municipality that have affected the rate of return. They levied taxes that were unanticipated and that in fact were promised not to occur during this project. I think the hon. member gets to that point. That affects rate of return of the project.

The second point, I guess, is that if we had it to do over, maybe we should have built it in Alberta. I guess that's hindsight, Mr. Chairman, but they do have a relevancy on the rate of return. The manner in which we recover it or that we deal with it I think is beyond the purview of this committee, but it is a point that needs to be brought forward when we talk about the economics of the biprovincial upgrader.

MR. CHAIRMAN: I guess you legitimized it.

Hon. member, do you have a final supplementary?

MR. CHERRY: Thank you. No.

MR. CHAIRMAN: Thank you.

The Member for Calgary-Fish Creek, followed by Ponoka-Rimbey.

MR. PAYNE: Thank you, Mr. Chairman. I have two questions today, and both have to do with the work of AOSTRA. I was interested in Dr. Luhning's remark earlier today with respect to what he called a commercialization task force. I wondered if the minister could share with the members of the committee this morning what policy direction or objectives or criteria he may or may not have set with respect to that commercialization task force.

MR. ORMAN: Mr. Chairman, when I took over the responsibilities for this portfolio including the Alberta Oil Sands Technology and Research Authority, we had a discussion at Treasury Board that related to the magnitude of dollars, almost 500 million of heritage fund dollars, that had been invested in research and development in AOSTRA and the fact that this has occurred over a period of some 15 years and that it was about time we reduced the research and development and induced the commercialization of the investment. Bill Yurko, the chairman, and I have had over the last couple of years a number of conversations in this regard, and it was one of the reasons why we have significantly reduced the amount of dollars we recommend for AOSTRA so that the focus can get back from investment to commercialization. So as a result of my direction to the chairman in that regard, there has been a redoubling of the efforts in that connection, and I think appropriately so. When dollars are tight, as they are in the province of Alberta, I think we have to reassess where our priorities are, and with regard to AOSTRA we don't want to dislodge their total research capabilities or interest in research or joint venturing in research but to refocus on the commercialization side.

Rick, did you have any additional comments on that?

DR. LUHNING: I guess the task force I referred to specifically was on the UTF project. The makeup of that task force is the participants who have and are gaining an equity or gaining an interest in the lease, who have and through their participation are gaining the use rights to the technology developed, and the other stakeholders who have got a very strong interest in the project and can give us some guidance on the best way to proceed. The Alberta Petroleum Marketing Commission, for example, is helping us in looking at areas where we could sell the production. The Environment department is advising and helping the task force on areas that should be given special attention, et cetera.

MR. PAYNE: Thank you. Mr. Chairman, when the committee met with the minister and his departmental people a year ago, you may recall that Mr. Yurko spoke to his concern about the shift from heritage funding to GRF funding. Just to refresh the minister's recollection, maybe I could just read one sentence from Mr. Yurko's comments at that time.

> We are now totally on GRF funding, and it's caused a considerable amount of difficulty because we can't commit projects on a long-term basis, which we could before, and many of our projects are two-, three-, four-, and five-year projects.

With another year's experience under our belt since Mr. Yurko made those comments, can the minister indicate whether the concern that Mr. Yurko raised at that time has been validated or not?

MR. ORMAN: That's a point of view that is held by Mr. Yurko. It simply comes down to the availability of dollars. Like other departments and other agencies of government, everybody's had to rein in their spending, and AOSTRA is not unlike any other agency or department of government, although, to his credit, Mr. Yurko sees himself as different because he's so committed to his responsibilities. So I wouldn't be able to speak for him with regard to your question, but I simply say that AOSTRA continues to do an excellent job within the allocation of resources from general revenue. As members know, AOSTRA had a significant cash-on-hand situation from unspent dollars that had been allocated and not invested over a certain number of years, so he has been asked to draw on those, and that's why we see dramatic decreases in the total dollars that will show up on a budget line. It's not that he's spending less; it's just that in the agency they are drawing on surplus cash. They'll be close to being flat pretty soon, but we didn't feel it was appropriate that AOSTRA have $24 million or $25 million in the bank when we were trying to match revenues/expenditures overall as a government.

MR. PAYNE: Mr. Chairman, actually I did have a third question, and it has to do with the Lloydminster upgrader as opposed to AOSTRA. I apologize if in fact the question was raised previously by the Member for Lloydminster in those few moments I was out. It has to do with the question of overruns. Now, I did overhear the minister speak to the causes and speak to his regret with respect to those overruns, but my question has more to do with the government of Saskatchewan's response to those overruns and the subsequent write-down that was caused by those overruns. Is the minister in a position today to clarify the Saskatchewan government's involvement in the resolution of that matter?

11:42

MR. ORMAN: Mr. Chairman, I met on separate occasions, as did officials from my department, with officials from the province of Saskatchewan. We had a change in commitment to the project with the change in government in Saskatchewan. There were some commitments that were made in the agreement and some moral commitments with regard to the handling of cost overruns made by the government of the province of Saskatchewan that were not lived up to when the government changed. The partners -- Husky, Alberta, Saskatchewan, and the federal government -- realized at the outset of the project that there was not a provision for cost overruns, but in the interests of time and the interests of proceeding and signing the agreement and getting it under way, there was an agreement by all the parties, the Premiers and the chairman of Nova, as a matter of fact, who had said: look, we don't have time nor do we need a commitment on the sharing of cost overruns in the event that they occur; we're all committed to the project, and we all have a moral commitment to live up to the cost overruns. The current government of Saskatchewan saw fit not to live up to the commitments made by the previous government. I don't make any particular subjective comment in that regard. It's simply a fact of life; it happened and it created difficulty.

We have come to a resolution as to how it will be handled. It is quite complex, but suffice to say that we have a mechanism in place. The project is under way. It's behind us now, and our best interests are associated with maximizing the ability of that project to produce synthetic crude oil.

MR. CHAIRMAN: Thank you.

The Member for Ponoka-Rimbey, followed by Westlock-Sturgeon, followed by Edmonton-Meadowlark.

MR. JONSON: Yes, Mr. Chairman. I realize others want on the list. I just have the one question with respect to I think our overall policy when it comes to research and technology. It's my understanding that normally the experts feel that sometimes governments are negligent in not making a long enough term commitment to a research project and that they would say there should be a minimum commitment of seven to 10 years in terms of being able to follow through various types of new technologies and developments. Certainly in the case of AOSTRA the commitment of the

government has been long and substantial, and I think it would be a normal reaction of members of the Legislature to perhaps become a bit impatient now in that we were told about private-sector involvement yet there is not a great deal in the way of substantial return as yet on an ongoing investment which looks like it might be in for another two or three or five years. I would like to ask: what is the situation with respect to the government eventually being able to see some return on its investment in this particular project?

MR. ORMAN: Are you talking about AOSTRA?

MR. JONSON: AOSTRA and its linkup with the private sector and so on, which has been mentioned earlier.

DR. LUHNING: I can speak to that, if you wish.

It depends on how you wish to quantify the return on investment. If you take the narrow approach and say AOSTRA's only return on investment is the sale of technology, we've done relatively well in that area. But I think you have to look at the wider question and incomes that are coming to the province out of its investment through AOSTRA. There's this booklet that we will attempt to distribute later that goes through our commercial success to date and lists the commercial projects that have come out of AOSTRA's investment with the industry. When we add up the number of jobs that are currently ongoing in the province, as we've done just recently in response to the research overview initiative that's under way in the province, and factor in the amount of jobs that are ongoing because of AOSTRA's current investment and those jobs that are in place from the technology we've commercialized, there are close to 650 jobs in the province that are going out of AOSTRA's investment. The bulk of the money that is invested, the largest proportion of it, goes into salaries, which of course are taxable. There's a return to the province that way. Out of the oil production, et cetera, there are other returns to the province.

So I think in order to fairly judge the impact of AOSTRA and the result of the investment of the heritage fund moneys over the years, you have to look at the wider question of the total effect and benefit that has come through that investment, rather than just a narrow look at the return on technology sales and the returns that are coming from the repayment provisions that are in our investment contracts with the industry.

MR. CHAIRMAN: The Member for Westlock-Sturgeon.

MR. TAYLOR: Yes. It's a bit of a tack on to the hon. member's, back to the same thing on foreign investment, foreign partners. Am I to take it, then, that the foreign investments pay their pro rata share of the experiment, that there's no leverage, and that we're not asking them to pay a little more than their percentage of the thing in order to get the advantage of the technology? I'm just wondering: how do you decide a foreign investor gets in? If you have no technology you're selling or anything, what are they getting? Or do they get an exclusive right on what comes out of the thing? What are they getting when they put up the money?

DR. LUHNING: To answer that, your point relates to the two foreign investors that have recently come into, I believe, the UTF project: Japex and China National Petroleum Corporation. The terms under which a new partner can enter the project were set in advance with the original industry participants. So there are late entry penalties which ratchet up and increase as time goes by and on the particular element of the project that you're in. An investor that comes in late, after a phase of the project is finished, for the first phase is subject to paying double for that amount of the phase as a minimum that an ongoing investor would have paid. Also, in an ongoing phase such as the phase we're in now, every year there's a penalty that increases. The longer you sit on the fence, the more it's going to cost to come into the project. So it's an economic or a dollar decision to come into the project.

Both Japan and China, the China National Petroleum Corporation, paid those penalties in full, paid their catch-up amounts on it. My understanding is that they're very happy with what they're receiving. They do not receive an exclusive right on the use of the technology. Ownership of the technology is with AOSTRA, and those companies that are in the project have the nonexclusive right to use the technology in their operations worldwide.

MR. TAYLOR: The second then. I'll move fairly quickly. It's so interesting. As an old mining engineer I could ask here all day, but I'm not going to get another chance.

I noticed you mentioned 30,000 barrels of oil per day you get up in the mining end; you get about $8 a barrel. Is that an optimum? Would you have to start a new project? In other words, can you put a mine in that would get a hundred thousand barrels a day and get it down to $4? Or does that peak out? Is that [inaudible] that you reach?

DR. LUHNING: If you look at the economies of scale, they of course drop as you go up. With the current shaft arrangement that we have at the UTF, the bulk of the benefit is achieved at about 30,000 barrels a day. We want to look at that as the point. Can you do it a hundred thousand barrels a day? In the area, not on the AOSTRA lease but in the surrounding leases there, the same geological pod, there is plenty of room for a hundred thousand barrel a day operation.

MR. TAYLOR: The last one, Mr. Chairman, moving along fast, is back to the minister. About the upgrader: I think it's a great thing that's going there and you're doing a reasonably economical job out of what we can get together, but one thing that bothers me is the assured supply. I have a feeling that if that spread gets as large as we'd like to have it to make lots of money in the upgrader, you'll get a lot of people upgrading at the wellhead rather than transporting it to the upgrader. What have you done to make sure the upgrader will get the supply that's necessary to keep it going if in fact, either technology or spread, they decide to upgrade at the wellhead rather than transport it to the upgrader?

11:52

MR. ORMAN: Well, I think the hon. member makes a valid point. If the spreads were $12, $15, you are going to see more upgrading at the wellhead than you would shipping it to the upgrader, but a lot of producers that have heavy oil are not in the business of upgrading. If they can move it through this facility and find a market for it at current projected prices, then they're going to do that. That would be, I would expect, on an anticipated significantly higher spread, even double the spread that exists today to have any concern whatsoever. I'm not even sure that would then bring down the costs of the upgrader in terms of their operations, which would make it more economical for them to be able to offer a better price for bitumen. So I think the marketplace would work. I think the upgrader will always be competitive.

MR. CHAIRMAN: Thank you.

The Member for Edmonton-Meadowlark.

MR. MITCHELL: Thank you, Mr. Chairman. I would like to begin by thanking Ponoka-Rimbey for limiting his questions so that I might have a chance to ask several questions.

My questions concern the experimental wind energy project.

MR. TAYLOR: Talking about the leadership campaign again?

MR. MITCHELL: For some of those guys it's not experimental, as I'm sure it's not for this minister.

MR. CHAIRMAN: Order.

MR. MITCHELL: Sorry.

I wonder whether the minister could indicate what percentage of the 125 megawatts of power that have been allocated to small power producers is taken up by clean alternative energy production such as wind and solar energy.

MR. ORMAN: Under the southwest renewable energy initiative 23 megawatts of the 125 megawatts have been allocated.

MR. MITCHELL: Okay. What provisions have been made or is the minister considering for growth in that portion or for overall growth in the 125 megawatt allocation should solar and wind energy pressures increase?

MR. ORMAN: Mr. Chairman, I did answer that question at the beginning of the estimates. Simply to recap, the southwest Alberta renewable energy initiative board of directors has forwarded a report with a series of recommendations that I have not as yet reviewed. Within that report I'm sure they will make comment about the future viability of expansion for this initiative, and from that we will be able to determine the applicability of this type of project elsewhere in the province, as was asked by other members. It may be that through the success of SWAREI we will be able to look at locating the same type of project in other parts of the province to accomplish the same end.

MR. MITCHELL: Has the minister considered the possibility of a differential pricing regime that would pay more to alternative power producers who utilize clean power production techniques versus those who utilize techniques which continue to pollute, as in the difference between solar and wood chips?

MR. ORMAN: No, I haven't given that consideration. I think the consideration we would give is increasing the total overall allocation under the Alberta small power research and development program to increase above and beyond the 125 megawatts that has been allocated into the electrical grid, but to create a differential in avoided cost or incentive: I haven't given any consideration to that.

MR. CHAIRMAN: Thank you.

The committee only has about three minutes left, which isn't really enough time to carry a full set of questions through. Consequently, I believe we should conclude the meeting.

I'd like to thank the minister and those who have accompanied him today. The Chair allowed some latitude in the opening remarks today because in the view of the Chair there was exceptionally good information given by both the minister and Dr. Luhning of things of very keen interest to the committee, and we appreciate their being so pointed and informative. Again we thank you for appearing.

For those who may have been a little late, they can pick up the opening remarks in *Hansard* and avail themselves of that information, which I'm sure they'll find interesting.

The Chair would entertain a motion for adjournment as soon as I advise you that this afternoon we'll reconvene at 2 p.m., when the Hon. Peter Trynchy, the minister of Occupational Health and Safety, will appear before the committee.

The Member for Bow Valley.

MR. MUSGROVE: I move we adjourn.

MR. CHAIRMAN: Thank you. All in favour? Carried.

[The committee adjourned at 11:58 a.m.]