

[Chairman: Mr. Kowalski]

[2 p.m.]

MR. CHAIRMAN: Good afternoon, ladies and gentlemen, and welcome to another meeting of the Standing Committee on the Alberta Heritage Savings Trust Fund Act. This afternoon we have with us the Hon. John Zaozirny, Minister of Energy and Natural Resources.

If all members would refer to pages 12 and 13 of the annual report of the Alberta Heritage Savings Trust Fund, you'll note that there are some projects identified as being administered by the Department of Energy and Natural Resources. While there are four listed, there are only three that come under the direct portfolio responsibility of Mr. Zaozirny. They are the Alberta Oil Sands Technology and Research Authority, the Alberta Reforestation Nursery, and the Maintaining Our Forests project.

The fourth item listed is the Grazing Reserves Development project, which comes under the administrative responsibility of the Hon. Don Sparrow, Associate Minister of Public Lands and Wildlife. Mr. Sparrow will be appearing before the committee tomorrow morning. So in terms of the discussion this afternoon, the three items I've already identified are the ones that come directly under Mr. Zaozirny's portfolio responsibility.

Mr. Zaozirny, welcome. If you would like to introduce the gentlemen with you, please do so. If you have any opening comments, please make them. Then we'll go through questions from the committee.

MR. ZAOZIRNY: Thank you very much, Mr. Chairman and members of the committee. I'd like to introduce two gentlemen who in fact attended these same hearings with me last year. On my right we have Mr. Fred McDougall, the Deputy Minister of renewable resources of the department, and on my left we have Mr. Maurice Carrigy, the vice-chairman of the Alberta Oil Sands Technology Research Authority.

Mr. Chairman, I recall that last year I provided some opening remarks which focussed on the mandate of AOSTRA, and talked about the forestry programs which are administered by the Department of Energy and Natural Resources. Having done that on that occasion, I thought I would not make opening remarks of such a general nature on this occasion. However, for those members who might not yet be aware, I should bring to the attention of the committee a couple of important developments, if you will, with respect to these projects.

First of all, on September 4 we announced the appointment of our new chairman of AOSTRA, Mr. Reg Humphreys, who has a very distinguished record in the energy industry and an extensive familiarity with AOSTRA and its mandate. We're delighted to have Mr. Humphreys on board as our new chairman, and we know he will serve the province, and AOSTRA in particular, in a very effective way.

With respect to the fine reforestation nursery facility at Pine Ridge, which I believe members of the committee have had an opportunity to view, on August 30 of this year we were able to announce the milestone of the one hundred millionth tree seedling being shipped by the nursery. I think it's a marvellous record of achievement at that facility and certainly want to highlight that to members of the committee.

With those very brief remarks, Mr. Chairman, we'd be pleased to receive questions from committee members and endeavour to respond to them.

MRS. CRIPPS: Mr. Chairman, first I'd like to say that I support the Alberta Reforestation and the Maintaining Our Forests programs, because I think they're crucial to the long-term viability of the forest industry and the overall economic health of this province. I guess the question I'd like to ask is, where are we at in the goal of 100 percent reforestation of the forested areas that we want to reforest?

MR. ZAOZIRNY: Perhaps I could respond in the broad context of the question, Mr. Chairman, and invite Mr. McDougall to fill in some additional detail. Under our existing regime, we are able to ensure that reforestation does in fact occur in those forested areas of the province that are harvested. That occurs either by industry meeting that obligation on its own or by having the Alberta Forest Service ensure, by way of a fee arrangement, that that reforestation does occur. So in the overall, with respect to areas of the province that are harvested, our reforesting is occurring in a very direct and complete way.

The areas where that has not been the case are those areas of the province where, for example, we have a forest lost as a result of forest fires or other natural phenomena such as insect infestation, although members will recall that we had a very specific program to address the pine bark beetle infestation.

So the short answer is that in those areas of the province where harvesting is occurring, reforestation is taking place. In fact the Maintaining Our Forests program was initiated in large measure to meet the need in other areas of forest loss, through natural and other causes, apart from harvesting.

With those comments, perhaps I could invite Mr. McDougall to supplement.

MR. McDOUGALL: I really don't have much to add to that; it's a complete answer. The MOF program was of course designed to cover off losses other than those associated with timber harvesting, and has proceeded to do that with a fair measure of success. Because of the very large fire losses during 1980, 1981, and 1982, we're not keeping current with actual acreage loss, but a lot of those fire areas will restock naturally. So the deficit is not as severe as one would assume, for example, just by comparing area burned to area reforested under MOF. About 50 percent of the burned areas do come back naturally. Aside from those severe burns, we are generally keeping current.

MRS. CRIPPS: Thank you. I'd like to say that I've been keeping track of the efficiency of your initial attack crews in stopping forest fires before they start, and I'd certainly like to commend you on that. It's been a tremendous program in the last two years and has proved its usefulness this year when it's been so dry.

From there I'd like to go to conventional oil. Only 30 percent of conventional oil is extracted under normal procedures. I'd like to know what AOSTRA is

doing in enhanced recovery and if there are any new, exciting experiments under way.

MR. ZAOZIRNY: Mr. Chairman, perhaps I could respond in a similar fashion as to the earlier question by offering an overall response and then inviting Mr. Carrigy to supplement with more detail. As to the AOSTRA involvement per se in enhanced oil recovery, the one specific project that comes to mind is the Vikor carbon dioxide enhanced recovery pilot project which is under way. Last year when we appeared before the committee, I believe we made mention of the fact that the project was going to be undertaken, and we can report to you that in fact it has been undertaken. That is a very exciting new area of enhanced recovery of our conventional oil reserves.

I can, and perhaps should, add that above and beyond the AOSTRA work in the area of enhanced oil recovery, there has been a tremendous upsurge in what one might refer to as more traditional enhanced oil recovery techniques, employing in large measure natural gas and natural gas liquids, to significantly increase the recovery of conventional oil. I think it is fair to say again that the reason for this upsurge in enhanced oil recovery work in the province has a lot to do with the section 3.2 royalty provisions that were implemented a couple of years ago and which have been modified since that time. They've now given rise to some 32 specific enhanced oil recovery projects in the province. It's estimated that the capital investment that will occur as a result of those already approved projects is upwards of \$600 million in the next few years alone, with incremental oil production expected in the order of some 600 million barrels of oil. So it's a program that has captured the imagination of industry and, we think, is very important in terms of our province trying to maximize the recovery of our conventional reserves.

With those comments, Mr. Carrigy, perhaps you'd like to supplement on the AOSTRA role.

MR. CARRIGY: I think Mr. Zaozirny has touched on our role, which is really to develop the new technology that the royalties and tax incentives will put into place later on and get the industry to work with. In terms of new things we're looking at right now, he's already mentioned the Vikor project, the CO₂ flood, which is going very well at the present time. In the Pembina field we've made a study of the reservoir itself, and we're trying to work with industry to decide which is the best enhanced oil recovery technology we should use in this particular field. When we come up with an answer, we'll be working with industry to put it into place. We're looking at all the different types of enhanced oil recovery that might be applied, but we're having a little trouble getting industry to take steps on the more venturesome types of technology. They're tending not to spend their money in this particular area. I think they'd rather spend their money on exploration and something that gives them an immediate return.

MRS. CRIPPS: Given that you have proven reserves and are not recovering over 70 percent of them, and that the life expectancy of many of the old fields, Pembina included, is probably another 15 to 20 years without the enhanced recovery, what initiative is

AOSTRA taking to ensure that the more venturesome, as you call them, projects might proceed or that we in fact look far afield at what might seem to be outlandish suggestions but may be quite effective?

MR. CARRIGY: In terms of incentive in money, what we have done in the Vikor project is to put up 75 percent of the costs. This has enabled the project to go ahead. If we had remained at the 50 percent level, I think the people wouldn't have been interested. So we're doing two things: we're putting more money into the projects and we're trying to develop the basic understanding of the reservoir to a point where we can identify which is the right EOR project to use in that particular reservoir. We're doing both those things, but I think it's going to take a while.

The reason that 70 percent of the oil is left there, as you say, is that it's there in a very stable form, and it's very difficult to move. Once you've taken the primary oil out, the fluids you add to take out the extra oil tend to follow the same path. It's very difficult to block those paths that are established and divert them into the finer pores and places where the oil is stuck more rigidly.

MR. ZAOZIRNY: Mr. Chairman, this again pertains to what I've described as the more traditional enhanced oil recovery techniques. We have some examples in this province of oil recovery which is perhaps unparalleled anywhere else in the world. I'm thinking specifically of the Texaco Wizard Lake field. The geology of that particular deposit is such that by employing enhanced oil recovery techniques, they expect to recover something in the order of 90-plus percent of the oil that is in place — I think it's very high; 97 or 98 percent comes to mind. That is a very exceptional situation. As I understand it, it relates to the geology. But obviously to the extent that we can encourage enhanced oil recovery, we wish to do so. It ultimately becomes a question of economics.

MR. GOGO: Minister, with regard to AOSTRA, I'm sure that this year has to be a proud 10th anniversary for you and members of the research authority. It was certainly excellent thinking into the future when this was established just 10 years ago.

Mr. Carrigy, I'd like to comment that Dr. Lorne Hepler from the University of Lethbridge, who has been associated with you for some time, has had a serious heart attack. I hope that's neither because you moved him here to Edmonton with the authority nor indeed because he's such a famous jogger. I would like to commend to you the very excellent way he's kept southern Alberta informed on activities of AOSTRA over the past five years.

Minister, I see you've now grown to a quarter-billion-dollar budget this year, an increase of some \$55 million in 1984 alone. Your primary mandate was oil sands research. Could you indicate to the committee what has been done in the past year, 1984 to date, in terms of new oil sands research? Has something new been done specifically with that additional \$55 million?

MR. ZAOZIRNY: Again on the details I'll have no qualms about calling on Mr. Carrigy. For myself, one

of the projects that has to be mentioned in the context of a very exciting year for AOSTRA is the decision to take the Peace River heavy oil sands project commercial. You will recall the announcement on July 9 that some \$200 million was going to be invested by the Shell organization to take this project to a commercial scale of some 10,000 barrels a day. In the course of doing that, they're going to be examining the feasibility of ultimately moving that to a 40,000 barrel-a-day facility.

Mr. Carrigy, I don't think it's unfair to say that in the absence of the initiative of AOSTRA working hand in hand with the private sector on that project, that simply may well not have occurred. That is precisely the kind of achievement that was contemplated when AOSTRA was established some nine or so years ago. I simply think it's a credit to the people who were involved in government at that time, in about 1974-75, to have had the foresight and the determination to get on with it.

If I might be allowed to make mention of it — and it's very consistent with this goal orientation, this very much result orientation of AOSTRA — I was recently apprised of a task force on federal policies and programs for technology development, which was at least nominally a report to the Hon. Ed Lumley in July 1984. In that report the following was stated:

The most effective research and development we believe is demand driven, where the research is undertaken in response to a clearly defined need.

Then they talk about the Apollo research in the United States as being a clear example of that. In this federal report they go on to say:

The work of AOSTRA has been similarly effective, because the goals of its research effort have, from the start, been clearly defined.

I think that's a very fine commendation.

So in response to the question, Mr. Chairman, I would say that the announcement of the Peace River project was certainly a major achievement in 1984. Earlier on of course, we had the announcement of the project at Wolf Lake, sponsored jointly by the BP and Petro-Canada organizations. Those are examples of two projects which have now moved to the commercial phase.

On the noncommercial side, we've made reference to the implementation of the Vikor carbon dioxide enhanced recovery project. I also make reference to the proposal for a new technology, the so-called shaft and tunnel approach, that is being pursued through AOSTRA. On that one, perhaps I could invite Mr. Carrigy to provide some detail as to where AOSTRA is in terms of getting that project under way.

MR. CARRIGY: Thank you, Mr. Zaozirny. Perhaps I might also respond to the question, just to go over the highlights of our past year. Mr. Zaozirny has already mentioned the Shell and BP projects. In the Athabasca deposit, we've also initiated a new project with Amoco and Petro-Canada on a carbon dioxide steam development that actually came out of the Alberta Research Council's work. We're now putting this into the field to be tested in a field situation.

The Union pilot, the one where we're in the carbonate reservoir which underlies the Athabasca deposit, has gone very well during the year, with some encouraging results. But it still needs some

extra few years before we'll be confident to move into a semicommercial stage to enlarge the pilot.

Another area where we've been very active is in a dry retorting process. This is to replace the current hot water process which, as you know, creates some environmental concern with large tailings ponds. So the UMATAC process, in which we are running a five tonne per hour pilot and are extracting oil from mined oil sands, has been successfully completed. AOSTRA has now designed a 90 tonne per hour demonstration plant, and if ongoing assessments of this process continue to be favourable, we'll have a demonstration project built near Fort McMurray. We're talking to the industry on this right now, and I think this will be a big advance towards protecting the environment in this area. The AOSTRA Vikor Resources CO₂ flood has already been mentioned. We've also had a program, a four-pronged attack, I guess, on the Athabasca deposit from the in situ point of view. The Athabasca deposit has proved to be the most difficult to work with in situ because of the very high viscosity of the material, its low temperature, and its low overburden. There are a lot of things about it that have been very difficult for us to develop technology for in situ processes. So we've put in a four-pronged program.

One I've mentioned before is the new steam and additive concept that we're dealing with Amoco on at Gregoire Lake. The second one is the underground test facility, which the minister has just mentioned. This consists of putting down shafts and tunnels and coming in from under the oil sands, heating them from below, and letting the oil drain down. We are now at the point where we have actually signed a contract for the building of those shafts and tunnels, so in the next year we will have the holes in the ground and be ready to take the next step, which is the development of the actual process itself. The contractor is ready to go. Right now we're building a road to the site, and by November of this year we hope that the contractor will be on the job and drilling the shafts.

We're also participating in a pilot that is under way with a company called Canterra. They're using a combined hot water and steam process, well north of Fort McMurray in the Bitumount area, and we're hopeful that that will lead to some advances in the in situ area. So we have these four attacks under way on the Athabasca deposit, and we're hopeful that one of these will lead in the future to a commercial operation.

MR. GOGO: Minister, with regard to the report sent to Mr. Ed Lumley, in view of his fate September 4 one would assume he will be sending it to his Progressive Conservative successor sometime, because I understand there's a great burning of files going on in Ottawa.

Minister, with regard to the rights of technology, I understand AOSTRA is the sole owner in right of the Crown to anything discovered as a result of research at AOSTRA. Your report indicates that this is made available to commercial interests both in Alberta and elsewhere. Could you indicate where "elsewhere" is? Is that technology made available to foreign-owned companies? And under what financial terms?

MR. ZAOZIRNY: Perhaps the first comment that should be made with respect to technology rights —

and we had some discussion of this last year, as I recall — is that it is correct to say that AOSTRA has the ownership of the technology and the complete licensing rights within Canada. At the same time, any company that is involved in the development of a technology with AOSTRA has a right to utilize that technology as well. Once we get outside Canada, that company and its affiliates would have an equal licensing right. But any income, no matter where it comes from, is shared between AOSTRA and that company in a particular instance. That's the overview. I trust I have stated that correctly. I will be corrected if I have missed any aspect of it.

As to your specific query, the treatment of that technology by AOSTRA is on a strictly commercial basis, and in fact that is one of the ways in which some measure of cost recovery has been achieved. To date something in excess of \$10 million in revenue has been received from the sale of technology rights. To my knowledge AOSTRA has not become involved in some discrimination based upon the nationality of a possible acquirer of technology. Mr. Carrigy, perhaps you could elaborate.

MR. CARRIGY: There's not much more I can say except that we own the technology and, as you know, the ownership of technology involves the right to use, the right to license, and several other rights. What we're really trying to do here is to make sure the technology is available to anybody who wants to use it, particularly in Alberta, but anywhere in the world for that matter. By being involved with AOSTRA and our having the ownership, anybody is able to use that technology. The only difficulty they might have is making the payment for it, but we use what we call a fair market value for the technology. If we and the company are unable to agree on this, it's sent to arbitration. So really everybody has the right and can use that technology if they wish to.

MR. GOGO: The final question, Chairman, to Mr. Carrigy. With regard to your scholarship program, I understand that there are existing scholarships at the three Alberta universities, not counting Athabasca U. Has consideration been given to or have you awarded any scholarships at the college level, to our public colleges?

MR. CARRIGY: We haven't awarded any at the college level at the present time. It's been confined to the universities. It's not unreasonable for us to do that, but we haven't had any pressure to do it.

MR. GOGO: Thank you very much.

MR. MARTIN: If we could, Mr. Chairman, I'd like to look ahead with the minister and his people to the future, in terms of the use of the heritage trust fund in his department. I note, as the minister is well aware, that in the white paper the Alberta government said that we:

should be prepared to use the Alberta Heritage Savings Trust Fund or other sources for direct equity participation in oil sands or other major energy projects.

My question to the minister is, what sort of percentages are we looking at when we talk about direct equity? For instance, I think Syncrude is 16.74 percent. I guess I'm asking what sort of ownership

percentages the government might be prepared to look at in, say, future tar sands projects.

MR. ZAOZIRNY: Mr. Chairman, I want to be careful here to ensure that I'm not wandering too far afield, so I'll need your guidance on that to some extent. First of all, this obviously isn't the forum for, nor at this juncture would I outside this forum — comment about the white paper in terms of what government plan of action may or may not arise as a result of that overall process. Clearly it is exactly that, a white paper, which invites the views of Albertans. It puts forward ideas and invites comments of Albertans about those and other ideas. I think that's an entirely appropriate process, and those hearings are under way.

Quite apart from any focus on the white paper or that process, the member is quite correct. The ownership position of the Alberta government in the Syncrude project is some 16.74 percent, which arises by virtue of an original ownership position taken and a subsequent exercise of a conversion right that was judged to be a prudent business decision to be taken by government.

My own view with respect to the role of government in the development of our heavy oil and oil sands resources in this province is that our first desire and first approach is to see these endeavours initiated by the private sector. I think it should be clear to all that as a matter of philosophy, that is the direction in which our government moves.

The question then arises: are there circumstances where, by virtue of the capital-intensive nature of a particular energy project and its importance to the future of Albertans, it is necessary and appropriate for some government role? For example — and again I don't wish to wander too far afield — we were involved, along with the federal and Saskatchewan governments, in a particular role with the recently announced Lloydminster upgrader project. Why would the government be involved? Because that measure of involvement was necessary to enable the project to proceed, and it was deemed to be of considerable importance to the economic future of the respective provinces and, from the standpoint of the Canadian government, important to Canada as well.

I think the general answer is — and I don't know that I can do much more than answer it in the broader sense, Mr. Chairman — that to the extent that there has been participation in the past by government and that there may in the future, if that's the course that is ultimately followed, I think it would turn upon the need of the particular project and development and its importance to the future economic prospects of Albertans.

MR. MARTIN: Thank you. Mr. Chairman, just to follow up, I recognize that the minister can't predict the exact percentages five years in advance. But obviously, before it went into the white paper, there had been some discussion of how much involvement the government was perhaps prepared to get into, understanding the philosophical nature of the government. Let me come to a specific thing. I know the minister has had some discussions with Petro-Canada about its possible participation in the tar sands. Is one of the things they're looking at — is it asking for equity or money from the heritage trust

fund in some aspect? I expect these are the types of guidelines we're talking about. Using that as an example — I know there are no commitments made — I guess what I'm asking is, is this the type of thing that companies, specifically PetroCan in this case, are asking for?

MR. ZAOZIRNY: Mr. Chairman, if I can take a second run at the member's first question and then try to also respond to the second question. When you ask what percentage a government might become involved in, say, as an equity owner — it doesn't work that way. It's not a situation where you go in with some predetermined notion of what an equity position might be. The way in which these matters unfold is in terms of the requirements to see the project get off the ground, and that stems from an initial assessment as to its economic viability apart from any government role. That kind of economic assessment has to be made. For example, one has to take a look at world crude oil price. One takes a look at the capital cost of building the project, the cost of money, and all those sorts of considerations. If the judgment from the private sector — and I think this must come in the first instance, or ought to come in the first instance — is that we think that with a little bit of help this project makes good economic sense, that might get you into the role of a loan guarantee, as in the instance of the upgrader project where, technically speaking, our government is not providing any direct dollars by way of grant assistance, equity participation, or debt funding. It is providing a backstop to facilitate the financing. In that project it was judged — and, as I say, this assessment came in the first instance from the private-sector sponsor — that with that measure of support by government, the project would produce an appropriate measure of return on investment such that the private sector would proceed with it.

As to any discussions with Petro-Canada, as I've said on other occasions, our only discussions, certainly in my own case, have been of a very general nature. I've had a couple of visits by senior representatives to talk in a general way. I think representatives of Petro-Canada have been quoted publicly as saying that their work is still in something of a preliminary stage. So there has been no specific call by that organization for particular government support in seeing the project get under way. It's my understanding that, among other matters, they would obviously be talking to other possible private-sector participants quite apart from discussions with governments.

MR. MARTIN: Just to follow up with the minister. I appreciate what he's saying, that you would look at each project on its own merits, costs, and all the rest of it. I'm going by the fact that the government is at this point at least considering equity participation; I recognize that that could change after the public hearings. There's a broad range within that. Obviously it can be 100 percent, or the private sector does it all — zero percent. In the case of Syncrude, it's 16.74 percent. It may change from project to project; I recognize that.

I was sort of interested because I think there will be many companies, including PetroCan and any other project, that will be calling on the heritage trust fund. I think one of the things they're going to

ask for is some participation, whether it's equity or loan guarantees or whatever. For us to make some assessment as legislators, if you like — I was trying to find out the sort of guidelines on how far the government would go in equity participation to get something going.

The minister says, and I recognize, that there's a certain philosophy of wanting the private sector to do it. But as he and I know, this is not occurring without government help at this point. I didn't mean to pin down that each one would be 20 percent or 16.74 percent. But just how much commitment to equity participation is the government thinking about at this point? I guess that's what I am trying to get, a general sort of guideline.

MR. ZAOZIRNY: Mr. Chairman, I wish I could be of more assistance to the hon. member. I don't think I can add much more without repeating myself. I can say to members of the committee, and I've stated this publicly on other occasions, that certainly during the last number of months, we've been sitting down with senior representatives of the energy industry who have either leasehold positions in oil sands or an expressed interest in oil sands development and saying to them: surely the time has come when we should be sitting down and taking a good, hard look at the economics of oil sands development.

Sure, we've seen some change in the expectations for world crude oil price. But with inflation receding at the same time, we surely must have seen a significant lowering of the expected costs of these kinds of projects. So we've been encouraging industry to sit down, either individually with respect to their own lease position or jointly with other possible participants, and do that number crunching. We've been saying: please, we think you should be going through that process; then come and sit down to talk with us, because we think getting on with the development of our heavy oil reserves and the oil sands of this province is very important to the future economic prosperity of Alberta. That's exactly the process we've been following in the last number of months, Mr. Chairman.

MR. NELSON: Mr. Chairman, it seems that everybody wants to deal with AOSTRA and oil and what have you. I'd like to deal with some renewable resources. I'd like to start with a comment with regard to the Pine Ridge nursery. The committee was invited to have a look at the activities there recently. From my point of view, and hopefully it's shared by other members, I think the investment in that particular project in terms of dollars has been not a great amount but extremely well invested. I think we should be extremely proud of the people that operate the Pine Ridge Forest Nursery, because it certainly is a commendable operation. I'm sure other jurisdictions would learn something from that operation to enhance their own forestry being done there.

I'm just wondering if there was any possible thought of expanding the investment there from other jurisdictions. I know there's a difficulty with genetics and what have you with growth of the product. But at the same time, is there some manner in which to expand the activities at Pine Ridge because of its usefulness and the future activities that it may involve in enhancing the forests of not

only Alberta but possibly other parts of the country?

MR. ZAOZIRNY: Mr. Chairman, I can only respond to the extent of saying that it's my understanding that the production that has been achieved out of that facility — and I think this underlines what the hon. member was saying — has been even greater than was originally anticipated. As to questions of further expansion, whether that facility itself has the physical characteristics that would permit that, and whether the demand is there, perhaps I could invite the deputy minister to respond more specifically.

MR. McDOUGALL: As you know, we are already providing some basic services relating to forestry for other jurisdictions on a cost-recovery basis. The facility has already resulted in the export of a considerable amount of technology with respect to reforestation. For example, the Spencer Lemaire company, based in Edmonton, which manufactures the basic seedling containers that are used at Pine Ridge, has been successful in developing a fairly active export trade in those. As well, some of the basic equipment that's used at Pine Ridge is now being used in other jurisdictions, so we are achieving some modest amount of export of technology from that and continuing with the development of technology there.

We are providing services to other jurisdictions on a cost-recovery basis. We have cleaned seed from as far away as Texas, for example, and in fact a little from South America. We have also provided services to other provinces. It's possible that we could expand some of the activities such as seed work — seed cleaning, seed services — to other provincial governments on a modest scale, but at this point in time there's been no consideration of any large-scale expansion to accommodate the major needs of any other jurisdiction. We would have a little bit of difficulty in assuming any large-scale new activity of that kind in the current facilities. But to a limited degree we can and are doing it on a cost-recovery basis.

MR. NELSON: Mr. Chairman, during the recent federal campaign, the leader of one of the parties made comments about how one of his priorities might be the activity of reforestation throughout the country. I'm wondering what is being done to have federal people and even the community at large, the public, aware of the activity in Pine Ridge. It's certainly one of the most satisfying investments I've seen from government for many, many years. I think it's a really good news item for the people of the province of Alberta and in fact for the people of Canada. Maybe some of these federal people who have a little bit of narrow tunnel vision should take an example from this and have it enhanced throughout, and also get the people in the province to be more aware of what's happening there.

MR. ZAOZIRNY: Mr. Chairman, I think the hon. member's points are well taken. We accept that counsel. I'm sure that to some modest extent at least, the nursery endeavours to tell its story — not that there's a great deal of funding allocated to that of course; the funding is allocated to the operations of the facility by and large. If I may say so, it's my understanding that the province of Alberta is one of

the best positioned, if not the best positioned, province in terms of overall reforestation. We've read quite a bit recently about the extent of the problems of lack of reforestation elsewhere in our country. I think Albertans are entitled to feel good about the fact that our record in this province is a very fine one.

Fred, maybe I could again invite your supplementary comments.

MR. McDOUGALL: I certainly agree with that. I also agree with Mr. Nelson. In my opinion — and I am biased — there could have been a lot more publicity about the success at Pine Ridge than has been given. Hopefully that could still occur. I know it's the finest facility of its kind in the country, and I believe it is probably the finest facility of its kind in North America. I don't believe Albertans generally recognize that.

MR. NELSON: It may be second to none in the world.

MR. McDOUGALL: It's certainly a world-class facility.

MR. NELSON: Mr. Chairman, just one further question. It's under the item Maintaining Our Forests. It's an area that I'm not overly familiar with. The project's purpose is established in here, but I wonder if we could have a kind of short dissertation or overview of what is happening in that particular area and how those funds are assisting in better developing some of our coniferous products in the forestry area.

MR. ZAOZIRNY: Mr. Chairman, perhaps I can briefly respond and then again invite Mr. McDougall. I think there are essentially four components to the Maintaining Our Forests program in total, one being reforestation, which we've talked about to some extent already, and the gap, if you will, that the reforestation aspect of the Maintaining Our Forests program is intended to fill. Secondly, the tree improvement program is designed to improve the growth and yield in wood quality. There has been some funding of that and an acceleration of our provincial genetics and tree improvement program. We've also had a third component, the wetland improvement trials, which has endeavoured to take a look at converting what would be viewed as nonproductive peat lands into more productive forests. Finally, the stand improvement aspect of the program in fact looks to some thinning to ensure a better growth of those trees which are ultimately commercially harvestable.

Perhaps Mr. McDougall may wish to elaborate to some extent.

MR. McDOUGALL: I don't know just how much detail Mr. Nelson wants to get into. The area of activity under MOF, Maintaining Our Forests, that has had by far and away the most emphasis is the reforestation part of it. It was designed, at least in large measure, to cover off the shortfall that was occurring in terms of stocked area of forest land as a result of oil and gas clearing activities, agricultural expansion and, to some extent, forest fires. In response to an earlier question, we clarified that we've pretty well covered off all those areas with the

exception of forest fire losses, which have not been fully covered in the past, although the improvements to our forest fire-fighting technology are helping to reduce the size of that deficit.

Just to give you some idea, Mr. Nelson, there have been 28 projects funded under MOF. Twenty-one of those have been reforestation projects; six have been thinning projects, where we've gone into generally overdense pine stands. After a fire, lodgepole pine will regenerate in some cases to as many as 2,000 or 3,000 stems per acre, which is far too dense for optimum growth. We've gone in and thinned those down to a few hundred stems per acre and thereby accelerated growth. This can be important in helping to overcome situations in some areas where you have a deficiency in a particular age class.

I guess the trick with managing forests for optimum yield is that you want to have a roughly equivalent area coming mature and ready for harvest each year. Our wild forests of course aren't designed for that nice even flow in many cases. So thinning often makes good sense where you have a gap — to accelerate the growth of younger material to fill the gap in the merchantable flow of acreage. In other words, there are more benefits than just the extra growth achieved. We have six thinning projects. We have only one drainage project, near Slave Lake in the Salter River area, and it's more or less experimental. But I think that gives you some feel for where the emphasis has gone.

MR. R. MOORE: Mr. Chairman, I'd like to hear the minister comment on just one question. In the white paper, forestry and coal were earmarked as having a great potential for growth. Is there a role for heritage trust fund money in an AOSTRA type of program to promote future development of the coal and forestry industries? Do you feel there is a role for that type of research? We have a tremendous resource in coal which we eventually have to look at. Should we be looking at ways and means of developing that now?

MR. ZAOZIRNY: Mr. Chairman, I guess I'd have to start with the same caveat I expressed when a previous member made reference to the white paper. So my remarks are on a broad perspective, without prejudging that process whatsoever. I suppose it's fair to say that in any areas that are near and dear to one's heart — in this case, when you ask a minister if he can use more money in an area that falls within his portfolio responsibility, one usually expects to get an affirmative answer.

Dealing first with the matter of coal development, I would say that, by and large, industry has taken a lead role in a very consistent way in the development of coal reserves in the province. I'm talking about traditional coal utilization. The development of coal reserves has obviously turned on the basis of availability of markets in the first instance and on economic recovery and development of the resource itself.

By the same token, we as a government have in fact initiated a number of undertakings with respect to trying to expand our markets for coal. Most specifically with respect to your question, we've recently established both the coal research centre at Devon, Alberta, which was funded through a separate, joint federal/provincial energy resource and

research fund, and the office of coal research and technology within our jurisdiction. Those two are very complementary initiatives designed to upgrade the resource itself and to research the upgrading and additional uses of the resource. For example, I know that some work has been done in the area of coal slurry pipelining in those areas.

I think it's fair to say that a good measure of work is currently being done with respect to coal research and technology. One is never reticent to accept dollars, because it's a very important resource in this province. I'd be hard pressed to say, no, we wouldn't gratefully accept dollars. I am not making that specific request of the committee of course; I'm responding to a question. On the forestry side, one of the areas we believe is important and has great promise in Alberta is the hardwood resource. Currently there is very modest utilization of that resource. Most recently, there was the opening of the Pelican spruce mills facility at Edson, Alberta, which was again initiated by the private sector. That is an area we as a government are looking at very closely, as far as providing some additional impetus to hardwood research and trying to get on with the development of that resource in the province.

MR. R. MOORE: Mr. Chairman, I'm glad to hear that you're still doing a little research in the hardwood end. I think there is potential there, especially for new varieties. It's my personal opinion that we should be looking at such hardwood varieties as oak. It grows in Alberta; we've seen them growing right in my own constituency. It's one of the well-known hardwood lines that we import exclusively from outside the province. Hopefully our research is directed into this area, into new varieties to introduce to our reforestation.

MR. ALGER: Chairman, when you're held up this long to ask questions, literally all your questions have been answered. But I would like to impose one on the minister, if I may. It's with regard to the Turner Valley oil and gas field. It's a field, Minister, that according to some very significant reservoir people has about 75 percent of the oil still in place. I can't help but wonder if, under those new projects you described earlier in the day, there is any enhancement or style of program that could be offered to that particular group of petroleum people that would help them recover that oil in a more specific manner, keeping in mind that that oil is probably the finest in the province in degree of quality of gravity and so forth. It's almost gasoline when it comes out of the ground, so it takes a small amount of refining to make it an exceptionally fine product. I'm thinking too that in the many millions of dollars we spend in Syncrude and heavy oil projects, surely there are some of these enhancements or incentive programs that could be, let's say, vitalized into that area to get our oil out of the ground a lot cheaper. There must be many, many millions of barrels of oil still in place.

AN HON. MEMBER: No commercials.

MR. ALGER: I didn't mean it as a commercial, Chairman. It was a specific question.

MR. ZAOZIRNY: I think it accomplished a couple of

objectives, Mr. Chairman. The case was very well stated, and it also contained a question. I think the statement of the case was better than the response you're about to receive, because in fact I don't have a sufficient degree of familiarity with that particular field, nor do I claim the technical skills to be able to respond in a detailed way.

What I can say is that there really has been quite a dramatic take-up of the enhanced oil recovery program that's been brought forward and modified in the last year or so. To the extent that that may not have been taken up in any particular part of Alberta, I can only offer a few thoughts as to why that may not have occurred. As Mr. Carrigy was talking about earlier, it may be a situation where the geology is such that your traditional enhanced oil recovery techniques have some difficulty in being effective. As well, it may relate to the circumstances of the particular lessee who's been extracting the resource.

The one guideline that we as a province have imposed, because our royalty relief program is a major catalyst in these developments, is that we have to be satisfied that the people of Alberta will receive in the overall a better return by virtue of having forgone some early royalty revenues, that in the long term we will be better off economically than had the project not gone ahead. So I think the program in and of itself is very fairly developed. That's really as much as I can say in reference to this specific case.

MR. ALGER: Thank you, Minister; that's fine.

MR. ZIP: Mr. Chairman, looking at all these various research programs that have been effected through the heritage trust fund — medical research, forestry research, and all these other areas — I think the public is not well enough informed on what the heritage trust fund does in these areas, and I believe AOSTRA is one of them. With the research and the knowledge gained by AOSTRA over the last 10 years, what would be the major difference in approach to oil sands development if it were starting today rather than when Syncrude started?

MR. ZAOZIRNY: Mr. Chairman, I have to call on Mr. Carrigy for the technical assessment, but my brief response would be that it's our belief that had the AOSTRA program, which allowed pilot projects to occur at Peace River and Wolf Lake — certainly in the case of the former and likely in the case of the latter — not been in place, the development today would simply not be occurring. Clearly, through that pilot project approach, one is able to test technology and to satisfy oneself as much as can be done about the overall economic viability of a particular project and projects. So in a general way, I see the benefits of the AOSTRA program in terms of both an overall dramatic increase in our tested knowledge of oil sands in particular, and these specific examples that can be cited as instances where, had it not been for AOSTRA, we simply wouldn't have those developments.

Mr. Carrigy.

MR. CARRIGY: Thank you. In terms of, say, Syncrude or a megaproject that size, if it were being started today, I think the difference would be that we now have a choice. We have a choice in geographical areas. We have a choice of four deposits where we

only had a choice of one at that time. So we've been able to have geographic choices. We can start in the Peace River, we can start at Cold Lake, or we can start at Athabasca. We've been able to geographically distribute both the economic advantages and perhaps the benefits to the community. That's one thing we have now that we didn't have when Syncrude was started.

In the Athabasca deposit itself, I think we have a choice of technologies that we didn't have when we started. We had only one technology really, and that was the hot water process. Within a year or two, I think we'll have a choice of a retorting process, a dry process, and the hot water process. So we'll have choices that we didn't have, and that's because of the money that has been spent by the Heritage Savings Trust Fund on AOSTRA. With the help of the industry, we've now been able to get enough technology developed to really spread our money around the province, when before we were more or less confined to the mining area of the Athabasca deposit.

MR. ZIP: I'm again wondering. If AOSTRA didn't exist, wouldn't the private sector have taken up that work out of necessity, because the resource is there, just like reservoir engineering and secondary recovery? A lot has been done by the private sector in the development of reservoir engineering technology and understanding, and of course the recovery of reserves. Similarly, as companies develop their experience in that field, maybe they would do it anyway.

MR. CARRIGY: I don't think they would have done it to the same extent and within the time frame we're looking at. Eventually they would have gotten to the point we are now, but it may have been 20 years from now rather than right now. I think the companies have been very appreciative of the money we have been able to put into research. They've been able to bring their research forward in time. I think one of the biggest benefits of the AOSTRA program is that we've been able to bring that time frame forward. We have choices now that we wouldn't have had for another 20 years.

MR. ZIP: Thank you.

MR. GOGO: Minister, we've been talking about the Oil Sands Technology and Research Authority. I guess the operative words are "oil" and "research", yet we know that a substantial source of our revenue in Alberta is from natural gas. It seems to me that there would be, and I guess there presently is, a fair amount of activity with regard to stripping the gas of many by-products prior to it leaving Alberta, even though it results in a lower Btu equivalent for fuel purposes. Is there any activity at all in AOSTRA with regard to research into natural gas? If there isn't, is it your view that there would be room within their mandate for looking at research into by-products of natural gas?

MR. ZAOZIRNY: Mr. Chairman, my understanding is that at the present time that is not an area being pursued by AOSTRA. Relatedly, I believe their mandate as it currently stands is confined to heavy oil, oil sands, and enhanced oil recovery. Mr. Carrigy

is nodding; it looks like I've got it right.

The question about whether one should broaden one's horizon, in this instance on the natural gas side, is a fair one. I tend to the view that with any organization, some care should be exercised so as not to spread oneself so thin that one's efforts are diffused and little can be accomplished on any particular front. I'm speaking in a broad sense. To the extent that there is a broadening of a mandate of any organization, I suppose that is always a potential danger.

Relatedly, on the natural gas side I think there is a good deal of work that has been done by industry in terms of natural gas utilization. As a matter of fact mention has been made of the white paper, and in a couple of instances it puts forth some ideas about additional ways in which natural gas can be utilized. In the area of natural gas liquids, I think the industry has done a commendable job. I'm not aware of any specific calls for needed additional research into various facets of natural gas and gas by-products.

Mr. Carrigy, any thoughts on that matter?

MR. CARRIGY: I can't elaborate much more on what you said. I think you've said pretty well what my own feelings are, that natural gas is a pretty common substance and a lot of research is being done outside the province. We have felt we should concentrate on those resources that are native to the province and in which nobody else is going to do the research for us. In terms of the integration of all the energy we have — coal, oil sands, natural gas — taking advantage of each one and some synergism when we join them all together are what we would look at in terms of oil sands. How can natural gas be utilized to add more energy to the total picture by being used with, say, coal and the oil sands to make something unique within the province? We're taking a pretty serious look at that. It's something that's fairly long term, but we think it might have some benefits in the long term.

MR. GOGO: The reason I asked the question, Minister — I fully recognize the tolerance of the chairman. If one cannot ask a question within the context of the heritage fund, one cannot ask the supplementary. Therefore the supplementary, Minister: could you indicate to the committee what either your hopes or perceived successes are with increasing the export of our natural gas to America?

MR. ZAOZIRNY: That's a very skillful entree, Mr. Chairman. I can respond briefly again, notwithstanding the fact that the question may go beyond these specific projects, because it's an important question. Last year when we met, I was queried about natural gas exports. There was great concern at that time about the possibility of some legislative action in the United States that would move to abrogate contracts. The fact is that we were able to report a year later that such has not been the case. That's been very important.

Equally important, by industry working with the producing provinces and the federal government, we've seen the announcement by the federal government of a more flexible natural gas export policy. With that more flexible policy in place and the ability of our natural gas sellers to compete in the very large and diverse markets in the United

States, we may well see an ability to sell more natural gas than was previously the case under the old, rigid, essentially one-price system. I think the answer to that question will become clearer in the next few months, because our sellers are hard at work right now in the United States endeavouring to develop new sales.

Looking beyond the immediate term, we continue to be optimistic about our prospects for expanded natural gas sales in the mid-1980s and beyond, as the current deliverability surplus in the United States tails off. We feel very optimistic in the overall about natural gas export sales. In the more near term, certainly the arrival of a more market-oriented export policy is going to be of real assistance in trying to expand those sales sooner rather than later.

MR. GOGO: Chairman, I've been successful so far. Perhaps one final small supplementary. Minister, I think the committee is aware but could you advise me — as I understand the policy of the National Energy Board and the previous federal government, gas exports from Alberta to the United States could not go at a price lower than Toronto city gate price, which is the price leaving Alberta plus the freight to Toronto. The present policy is that natural gas exports will not be sold at a price lower than the Toronto city gate. Is that accurate?

MR. ZAOZIRNY: That is the policy that was enunciated by the Minister of Energy, Mines and Resources. That is the case. That is the one area where the recommendations of a joint task force of the federal, British Columbia, and Alberta officials were not accepted by the federal cabinet. The judgment of the officials of the three governments, and certainly the position of industry and the governments of the producing provinces, has been that, given the fact that there are some 2,000 miles difference from the Alberta border to the Toronto area, we as a nation are penalizing ourselves in a very severe way if we impose that added transportation cost on sales that might occur anywhere in the United States, even if they might be in a state as adjacent to Alberta as, say, Montana. It's simply that we're penalizing ourselves in a serious way when one takes into account that transportation factor.

The recommendation made by the task force, and very much supported by the industry and the producing provinces' governments, was that that comparison of Canadian and American price ought to be made at the point of export. So if you're talking about a sale into Montana, let's compare it with the price at which Canadians can purchase that gas at the adjacent border point. If it's a sale just south of Manitoba, let's look at it at that point. We felt that that was the most practical way to approach the problem. That was the one area of policy that was not included in the export package. It limits our abilities to negotiate sales to some extent. Obviously it's an area that will be discussed further.

Having said all that, the new policy by and large does provide a much greater opportunity for sales than was the case previously under the one-price system.

MR. ALGER: Mr. Chairman, I feel it's only fair to wax a little historic on you for the benefit of the

committee; that is, to say that the Turner Valley field, if I may get back to that again, is an extremely hard field to drill. For one thing it's severely faulted and you have to go to 9,000 or 10,000 feet for production. I think the question to Mr. Carrigy is: has the research we have financed through the fund developed anything that would encourage the oilman to, for one thing, do some infill drilling? Could he not go to 20-acre spacing or even 10 to get back at the product that I think is withheld to quite a degree if 75 percent of it is still in place? Could that knowledge of the fund research money we've already spent not involve those people a little more heavily, so in very short order indeed we might improve the revenue of the fund?

MR. CARRIGY: I think the specific objective you're looking at would have to be achieved by geological knowledge of the reservoir itself — whether infill drilling would in fact improve the productivity and the ultimate overall recovery. One thing we've been looking at that seems quite promising is to go to horizontal drilling, drilling from the surface vertically and then going horizontal. That would perhaps take some of the place of infill drilling. We would get to parts of the reservoir that wouldn't be drained by a vertical well. That's one thing we're looking at right now, and we're dealing with one company on this. Hopefully, if we can identify a reservoir that would benefit from this deviated well to the horizontal, we'll have a trial.

We've been trying for a year now to pick a reservoir that would be suitable. We've had some studies made; we're looking at mathematical modelling of it. But so far we need an industry partner with an oil field that would benefit from this particular method. As soon as we get one, we're ready to put up the money to make that trial. I think that's one thing that certainly addresses the question you've asked. Infill drilling in itself may not give you more oil ultimately, but it may give it to you quicker. That's one of the advantages of infill drilling.

MR. ALGER: I neglected to tell you, Chairman, that the reason we're not getting the oil out of the ground the way we used to is that when they originally drilled the field, they burned so much of it off uselessly to get what little distillate they could recover. It continued even after the discovery of crude oil in 1937, for two or three years. Hence the field hasn't pressured up like it should have; otherwise there would be no problem.

MR. CHAIRMAN: Thank you very much, Mr. Alger.

Will there be additional questions forthcoming from committee members? If there are none, Mr. Zaozirny, thank you once again for appearing before this committee as a witness, and thank you to the gentlemen with you. If all goes well, we'll see you one year hence.

Just to repeat for committee members, tomorrow morning we have the Hon. Don Sparrow, Associate Minister of Public Lands and Wildlife, with respect to grazing reserves development. Then our schedule calls for first cut, I guess, introduction of recommendations. Members, for the most part I think we'll follow the same type of approach we had last year. For those members who wish to notify

their committee members and the chairman that they want to have a motion or recommendation read into the record, we'll go through that tomorrow morning.

Miss Conroy has a bit of information with respect to that overview of Kananaskis Country on September 20. Essentially all members will arrive in Calgary on the evening of the 19th. We'll depart about 8 o'clock in the morning, visit the Elbow corridor area in the morning, and visit the Mount Kidd recreational vehicle park and various facilities including the William Watson Lodge in the afternoon. We should be back in Calgary at approximately 6 o'clock, so those who have to depart north and south from there will be able to catch airplanes and the like. If there's any change whatsoever in your itinerary, would you let Miss Conroy know as quickly as possible.

Next week our only meeting is the one on the 20th in Kananaskis. On Monday, September 24, we'll have the Hon. Lou Hyndman as a witness; on Tuesday, September 25, Premier Peter Lougheed. On Wednesday, September 26, we'll continue with the discussion of recommendations, and one member of Executive Council, the Hon. Mary LeMessurier, has requested an opportunity to submit a recommendation; on Thursday, September 27, the Hon. Bill Payne, Minister without Portfolio.

So I bid you good afternoon.

MR. MARTIN: Just to confirm — you want the recommendations in tomorrow?

MR. CHAIRMAN: That's the first opportunity. There will still be time later. But for the benefit of all committee members — you don't have to have a great explanation of them — that would give everybody an opportunity to do some thinking for a week to 10 days.

[The committee adjourned at 3:22 p.m.]