HOUSE OF ASSEMBLY

Wednesday 1 October 1986

ESTIMATES COMMITTEE B

Chairperson:
Ms D.L. Gayler

Members:
The Hon. P.B. Arnold
The Hon. E.R. Goldsworthy
Mr R.J. Gregory
Mr G.M. Gunn
Mr D.J. Robertson
The Hon. J.W. Slater

The Committee met at 11 a.m.

The CHAIRPERSON: If the Minister undertakes to supply information at a later date, it must be in a form suitable for insertion in *Hansard* and submitted to *Hansard* no later than Friday 31 October. I propose to allow the lead speaker for the Opposition and the Minister to each make an opening statement if they wish, which should be around 10 minutes but no longer than 15. I will take a flexible approach to calling the asking of questions, based on about three questions per member, alternating sides. A member will also be allowed to ask a brief supplementary question before we switch to the next member.

Subject to the convenience of the Committee, a member who is not a member of the Committee but who wishes to ask a question will be permitted to do so, once a line of questioning on an item has been exhausted by the Committee. Indications in advance to me as Chairperson would be appreciated.

Questions should be based on lines of expenditure as revealed in the estimates of payments papers. However, reference may also be made to other documents including the Program Estimates, the Auditor-General's Report, etc. Questions are to be directed to the Minister and not to his advisers but, of course, the Minister may refer questions to advisers for response.

Mines and Energy, $18 961 000

Witness:
The Hon. R.G. Payne, Minister of Mines and Energy.

Departmental Advisers:
Mr R.K. Johns, Director-General.
Mr T.R. Watts, Deputy Director-General.
Mr A.R. Marrett, Acting Director, Administration and Finance.
Mr P.R. Hill, Director, Mining.
Dr C.D. Branch, Director, Resources.
Mr L.W. Owens, Acting Director, Energy.
Mr R. Bos, Senior Accountant.

The CHAIRPERSON: I declare the proposed expenditure open for examination.

The Hon. E.R. GOLDSWORTHY: At least we have a full day today to examine the mines and energy vote. Yesterday was a complete fiasco with the Deputy Premier who, for some reason or another, has a great number of portfolios and the Committee was asked to examine police, emergency services, the CFS, the MFS, rescue operations, the whole environment from 3 p.m., and the E&WS Department was examined after dinner last night. That makes a complete farce of these Committee hearings. We have the whole day to examine mines and energy, so I am pleased about that. I wrote to the Deputy Premier and suggested that his vote could be spread over a couple of days, but he declined that request. He would rather allow 20 minutes for discussion of the CFS and like matters and that is what happened yesterday, so do not blame us. It is a complete farce.

Mr Gregory interjecting:

The CHAIRPERSON: Order! I ask the member for Florey not to interject during the opening statement.

The Hon. E.R. GOLDSWORTHY: It would be quite possible for the Minister to allow at least half a day to the E&WS by going into the next day and cutting back in other areas. I notice that we are not sitting on the second Friday, anyway.

After looking through this year's budget for mines and energy, I have come to the inescapable conclusion that the Government cannot be accused of being too precipitate in its decision making. As I read the agency overview, which gives rise to a large number of questions, there are a lot of issues that were mentioned last year which I thought would have been cleaned up in a relatively short space of time but which are still around due to Government indecision.

As an example, I mention two or three cases. Last year I read with interest that an inquiry was to be conducted into tariffs and energy pricing. I remember that just 12 months ago I asked some questions and made some observations about that inquiry, but I notice that that committee is still continuing. It is hoped that it will conclude those investigations, but it has been continuing now for 18 months.

I still eagerly await the result of what is happening at Amdel. A proposal was put forward a long time ago that Amdel should become a public company and that the Government would hand it over. After innumerable inquiries which all came up with the same answer that it would be a good move to get the taxpayers out of Amdel, there is still no decision. I was told a week or two ago that the latest inquiry advised that the proposal put forward by Amdel was a sound one, but the Government is too timid to make a decision. I understand that there is a union problem at Amdel and that a handful of public servants have gummed up the works for about 18 months.

The Government is not noted for being decisive in a number of these matters. One does not really have to observe that it has not yet resolved the uranium question. Every time that that question is raised, there are problems within the Labor Party. I look forward to inquiring of Ministers and departmental officers what is happening in several of these areas.

The CHAIRPERSON: I invite the Minister to make his opening statement.

The Hon. R.G. Payne: I should like to offer my commendation to the officers of the Department of Mines and Energy for the excellent way in which they have coped with a number of major activities of considerable size in the department. The Roxby Downs project, which is now under way, has been handled in an intelligent and sensitive way for quite a time, and that has resulted in that major project, with Government support, being an actuality.

The liquids recovery scheme is also a major project. The department's involvement and the work of the officers concerned has been of considerable value to the people of South Australia and to the producers. That speaks highly of the department. I wanted to mention those aspects of the

department's work because it is commendable that, at a time of some economic restraint, the department has tackled the need to curtail expenditure wherever possible without harming services. Balancing cuts and allowing for increased activity at Roxby Downs has been done in the correct spirit.

The Deputy Leader of the Opposition said that the Government has been somewhat tardy in taking some decisions, and cited an area in the agency overview—the inquiry into energy tariffs in South Australia which was instituted by the Government. At least we set up an inquiry and got it under way. That is more than what happened when he was the Minister of Mines and Energy during the Opposition's brief experience of Government. Setting up an inquiry and proscribing what it can do by limiting the time available does not seem all that sensible, but that is apparently what the Government was expected to do.

The initial parts of the inquiry were open to the public. A considerable number of meetings were held. There was no predetermined action by the Government or the Chairman, Dr Messenger, to limit public access and to prevent them from advancing their views on an important topic in the daily lives of the community in South Australia, whether at domestic or industrial level. I make no apologies. The inquiry is proceeding on a timetable which one could expect in the circumstances. The initial report has been provided to the Government, and there will be a final report in due course relating to the implementation of any recommendations, subject to any Government action in the area.

The Deputy Leader also mentioned his view that, in relation to the future of Amdel, the Government was being too timid, to use his words, and said that, in general, the Government was too timid. I point out that apparently we were not too timid to get 27 seats at the last election; we were not perceived to be timid by the electors, anyway, who returned you, Madam Chair, and 26 other Labor members to the Parliament in this State in a way which indicated that the projected policies and the viewpoint of the then Opposition (now the Government) was the viewpoint of the electors of South Australia.

No doubt during the course of the day there will be an opportunity for questions by members of the Committee. Accordingly, I do not wish to take up a great deal of further time except to say that I think it would be fair to say, in view of the original criticism read into the record by the Deputy Leader regarding time available for the examination of portfolios under this system of Estimates Committee review, that the procedures that apply here are largely those architected, engineered and put into place by the Government of which he was a member.

The Hon. E.R. GOLDSWORTHY: I do not retract anything that I said earlier; this Government has been noted for its indecision, certainly in this area. I turn to the subject of Roxby Downs. This has become the Government's baby after it fought tooth and nail to defeat it. A report which was disturbing to me appeared in the *Sunday Mail* the week before last. The article was headed 'Roxby signs its first deal' and at the tail end stated the following:

> Meanwhile, the State Government is considering tighter radiation control measures at the mine.

What is that all about?

The Hon. R.G. Payne: I believe that the Deputy Leader is referring to an article written by Mr Randall Ashbourne.

The Hon. E.R. GOLDSWORTHY: That is the one.

The Hon. R.G. Payne: I mention that so that I am sure that I am talking about the same article. What I think is being referred to here is the proposed amendment of the Radiation Protection Act, which has been under way for some time. That Act was introduced during the early 1980s (I cannot remember the exact date). Anybody who is a member of Parliament will understand that changes may need to be made to that Act. At the present time there are proposals which relate to amending the wording of the Act in a way to provide for greater clarification of the Act. They have not as yet been finally approved. In due course they will be presented to the House by way of an amending Bill. I do not understand the special concern expressed by the Deputy Leader, based on a newspaper report that I am sure he would agree is not always accurate in its content.

The Hon. E.R. GOLDSWORTHY: That answer is far from satisfactory. Is the Minister saying that the newspaper report is inaccurate? I did not know whether it was inaccurate or not. He has not said that it is inaccurate. Concerns have been expressed to me about this matter. I do not think that it is fair to name the person, but somebody intimately involved with the Roxby Downs venture (a person who is very senior indeed) has expressed grave concern about this matter. There is the statement, and the Minister has said that changes are contemplated to the radiation control legislation.

The fact is that the previous Liberal Government brought in that legislation. It was tough and it was meant to be. The radiation control clauses in the Roxby indenture are tough. The joint venturers have to observe two codes, both of which are of world repute. They are both tough codes, and the joint venturers were enjoined in the indenture to do better than that. There is a clause which provides that they must aim to keep radiation to an absolute minimum. I wanted to question this newspaper report, and the doubts that I had were reinforced by a statement made to me about what was going on in Government behind the scenes at the moment. The Minister has confirmed that something is going on with the Radiation Control Act. Just what changes are contemplated, leading to this sort of report?

The Hon. R.G. Payne: It is perhaps superfluous to point out that, with respect to changes to the Act referred to, I am not the Minister who is responsible for the carriage of that legislation. I would have thought that that would be reasonably apparent to the Deputy Leader, who has been in the position that I occupy at present. My understanding of the proposed changes is this: they simply provide clarification in the area. There is no requirement to go beyond that which is contained already in the indenture, with respect to the standards to which the Deputy Leader has referred. So, I do not really understand his concern and I suggest to the Deputy Leader that one does not have to take literally everything that is contained in newspaper reports.

The Hon. E.R. GOLDSWORTHY: Let the Minister say bluntly that that newspaper report is incorrect. It says that the Government is considering tighter radiation control measures at the mine. Is that quite false?

The Hon. R.G. Payne: My understanding of the newspaper report is that the Government is not considering that which is stated.

Mr GREGORY: I understand that a drilling program to investigate the clay and sand resources at Golden Grove has now been completed. What were the results and how might a future development assist proposals for the Golden Grove development?

The Hon. R.G. Payne: A program was undertaken to try to define the limits of the clay resources in that area before too much alienation of the land in the area had occurred. All members would realise that, in the past, because of the way that the community has developed, reasonable quantities of resources have not always been provided for ahead of time. Some information is available and I call on Dr Branch to provide further details to the Committee.

Dr Branch: We undertook the survey because the sand and clay resources available for the urban development of Adelaide are rather restricted. Only three such deposits are well known—one in the Maslins Beach area, another at Gawler, and the third is at Golden Grove, just east of the road and over the way from where the Golden Grove development is taking place at present. Hence, it is essential that we know the size of the resource, the way in which it may be utilised and for how long and, ultimately, how to rehabilitate the area so that it may be used for other purposes in the longer term.

As a consequence, the department has drilled 62 moderately shallow drill holes amounting to a total of 2 391 metres over an area in which three companies have commercial interests in the clay and sand reserves. Because of that the cost of this survey was shared between those commercial enterprises and the Government. It is our task, as a Government organisation, to go ahead and assess the meaning of that drilling which, if I may say, was very successfully completed using a new drilling rig. I saw it operating a few months ago; it is small, portable and has no environmental impact. It takes out clay and sand samples on a churn drill which are then bagged and ultimately seived, and they will be analysed finally in the Amdel laboratories.

Even at this preliminary stage we can now say that the reserves of white clay are much greater than previously expected. I remind the Committee that white clay is a major resource for the pale bricks that are very popular in the Adelaide region. We are pleased to have found that additional resource. We also now know the areas where that resource occurs, both aerially and in depth, and also where there are suitable sand deposits for cement manufacture in the future. We are now at a point where we can go ahead and plan with authority the next possibly 20 years or more development of the resources in that area.

Mr GREGORY: I understand that the department conducted an excursion that involved geologists from various mineral exploration companies in the Tarcoola area. What was this excursion for?

The Hon. R.G. Payne: Among the functions of the department is to provide information to prospective persons who may wish to invest, take out leases in the State or carry out exploration. My understanding is that the department has knowledge already of a number of different minerals that are not perhaps commonly associated with the Tarcoola area. Most of us have heard, since South Australia has been underway, that 'Tarcoola' and 'gold' have been somewhat synonomous without it being a major strike area. However there has been production of gold in this area over a long time. In addition, the possibility of other minerals occurs in the area. Geological knowledge from the department was made available on this field trip. Doctor Branch can provide more detail of who was on the trip, the outcome of it and so on.

Dr Branch: I was on the trip. The reason why this preparation and trip was so important is that the Tarcoola region, as the Minister correctly said, is known to contain gold deposits. It also contains the Wilgena Hill and Mount Christie iron ore deposits and, as such, has analogies with the Kalgoorlie region of Western Australia; but between Tarcoola and Kalgoorlie is a great deal of the rest of Australia, which covers much of the underlying information we may otherwise use to correlate the areas. Because of this, and recognising the economic importance of the Tarcoola region, the department has carried out a geological mapping program for several years. The geologist who has been on the program completed the map, and it was ultimately published in a coloured sheet earlier this calendar year. We believe these sorts of geological maps are excellent information packages, since they portray a great deal of data both of the surface and subsurface to those who are able to interpret them.

But there is still nothing quite like going out yourself under the guidance of the person who prepared the map in the first place, looking at the rocks and being told about their significance. That is what took place here. For a week the geologist in charge of the mapping, along with some other members of the department, accompanied members of several mining interests in Australia on a tour around the region for five days, stopping at various outcrops, discussing, explaining and often arguing about what we were looking at.

In particular, I may say that it was tremendous having people from international companies who could look at rocks and say, 'I have seen something like this in Alaska or somewhere in Central Africa or in South America', and bringing that international information together to help us solve some of our problem areas here in South Australia. Ultimately, the purpose of the map program and this explanatory tour were successfully completed and, as a consequence, one company has taken up ground north-east of Tarcoola for further exploration.

The Hon. R.G. Payne: I would assume that on the actual excursion there were some geologists, anyway, similar to those whom I have met over the years during which I have been the Minister, because I noted that Dr Branch pointed out that there was some disagreement and discussion about what was being observed in relation to the specimens at the time.

Mr GREGORY: There has been a further discovery of gypsum on Eyre Peninsula. Are these discoveries significant and, if so, is it proposed to mine those deposits?

The Hon. R.G. Payne: My understanding of the discoveries of gypsum on Eyre Peninsula is that they are significant to an extent which always has to be qualified by market possibilities. I think members will be—

Mr Gunn interjecting:

The CHAIRPERSON: Order! The member for Eyre will have an opportunity to ask his questions.

The Hon. R.G. Payne: I am surprised that the member concerned is not anxious to have mentioned some of the resources of the State with which he has an association. He says he knows where they are, and so on.

Mr GUNN: It is not my electorate.

The CHAIRPERSON: Order! I would ask members of the Committee to come to order.

The Hon. R.G. Payne: My own familiarity with gypsum deposits in the west of this State extends to some which are located in the electorate of the member for Eyre. Accordingly, I ask Dr Branch whether he can throw further light on this discovery which has been mentioned by the member for Florey.

Dr Branch: There are in fact several well known deposits of gypsum in the Eyre Peninsula region, some of which are being developed. But there has been international interest in extending those resources for the last few years and, as a consequence of that, we now have two deposits, one at Streaky Bay and one in the Middleback Ranges, which are well advanced towards development.

The Streaky Bay deposit is aimed at an export market in Asia, whereas the Middleback deposit is planned to supply a new plaster factory to be built in Whyalla. Hopefully, that will increase employment in that region. Elsewhere on Eyre Peninsula about seven or so small gypsum deposits have been found, and some of these will be exploited for local agricultural uses.

The Hon. E.R. GOLDSWORTHY: I wonder whether the Minister could give us a report on just where we are with the petrochemical plant. It was first mooted in 1973 and has been regurgitated at every State election thereafter, including 1979, when the then Minister Hudson threw it up. It brought forward an editorial in 1979 which described him as a 'tired old hoofer playing the same act over again'. That was the election in which the Liberal Party got the highest vote ever recorded for any political Party in South Australia.

It was not recorded in our majority, though, because of the electoral system. I only mentioned that because the Minister was bragging about the Labor Party's win last year—

Members interjecting:

The CHAIRPERSON: Order!

The Hon. E.R. GOLDSWORTHY: One never knows, does one? The last thing I read about the petrochemical plant was some further optimistic noises from the current Minister about that plant. What stage has been reached?

The Hon. R.G. Payne: With your permission, Madam Chair, I will only briefly respond on electoral matters to the Deputy Leader, and point out that—for once—he and I seem to be in agreement. I think that the forecasting of what is going to happen in elections is fraught with danger.

The CHAIRPERSON: It is also of dubious relevance to the Mines and Energy proposed estimates.

The Hon. R.G. Payne: I think that the Deputy Leader was referring to the members who sit in the middle of the Chamber in these sessions and to those who sit at the side; that was probably the significance. In relation to the petrochemical plant, at the moment it is not making a great deal of headway, and I am sure that would be apparent to all members. There is the situation with regard to world markets and the feedstock, which is related to natural gas and hydrocarbons generally; the whole of the oil scene is in a state of turmoil worldwide, and at the last discussions I had with principals of the Japanese company concerned—Asahi—they were to further examine their position in relation to this matter.

In respect of other Government action, of course, members would recall that, during the passage of the Natural Gas (Interim Supply) Bill last year through both Chambers of the Parliament of South Australia, part of that legislation further reserved certain gas and feedstock supplies in relation to their future use for a possible petrochemical plant, so that area is still in the same situation in which it has been for a number of years.

Members interjecting:

The CHAIRPERSON: Order! The Minister is answering the question.

The Hon. R.G. Payne: I do not quarrel if the Deputy Leader wants to take that view. I point out that the reservation still applies and is to be used in accordance with the needs of the Government at the time when it actually is to be used.

I have given the answer: the petrochemical project at the moment is not proceeding at a rapid pace, nor is it totally dormant, either. The principals concerned have undertaken to further review their situation, and that is where the matter lies.

The Hon. E.R. GOLDSWORTHY: How many people are there in the Asahi Office in Adelaide now? Has there been any change in the number of personnel whom the principals have in South Australia?

The Hon. R.G. Payne: There has been a reduction in the number of personnel concerned. There is now only one person in Adelaide looking at the interests of the company concerned, on a part-time basis.

The Hon. E.R. GOLDSWORTHY: The Minister obviously was not aware of that fact. The company is doing absolutely nothing now in South Australia. It has withdrawn people from its office, and the Minister still thinks progress is being made! Does the Minister honestly believe that that thing is ever going to be a goer?

The Hon. R.G. Payne: I do not know why the former Minister asks a current Minister whether he honestly has a belief about anything. I always give honest answers in Parliament, so there is no need to put any special prefix to the question or to a request for an answer. My answer to that is that any project that has survived for the very period outlined by the honourable member must have some merit, or it would have gone under long ago. I invite the honourable member to give consideration to what I have just pointed out to him. Clearly any project of this nature will proceed only when it has advantages for all the parties concerned. Are those advantages clear-cut enough to have the project proceed tomorrow? We all know the answer to that—they are not. That is why it will not proceed tomorrow. I would say that it still has a chance of proceeding and I therefore give that answer.

The Hon. J.W. SLATER: At page 503 of the Program Estimates reference is made to rehabilitation of flowing bores in the Great Artesian Basin. Will the commitment by the joint venturers (Western Mining Corporation and BP Australia) to proceed with the development of the Roxby Downs project result in more water being extracted from the Great Artesian Basin? I believe that the extraction of water to date was likely to give an indication of the permissible safe yield of that field. Did this occur and what are the results?

The Hon. R.G. Payne: The commitment to the Roxby Downs project will result in more water being extracted from the Great Artesian Basin than at the present time. However, experience from the observations of the existing flowing well (GAB 6) at well field A suggests that the water extracted will be derived from a reduction in the amount of water lost by upward leakage over a large area around well field A. Members will recall that well field A is that from which the initial supply is being taken. Current indications are that the estimate of the availability of 15 megalitres per day (which was based on computer modelling) is still valid. The draw down which developed in the first year of observation has not changed greatly, and that indicates that a steady state situation exists in which the current flow of 1.4 megalitres per day is derived from leakage and is having no impact on the overall water balance of the basin. I think that that answer illustrates something which the Government was at some pains to emphasise during 1985 when there were suggestions that an undue draw down would operate to the detriment of the basin with respect to the Roxby Downs project. Figures were then given which would suggest that the total amount of water to be drawn was such that it would not have a harmful effect on the basin continuation.

The Hon. J.W. SLATER: As a supplementary question, referring again to page 503 of the yellow book, it mentions rehabilitation of flowing bores in the Great Artesian Basin. Could the Minister advise of the success which is also referred to on that page and the uncontrolled flowing bores in that basin which, under the program 'Underground water' is shown to have cost $250 000. One of the original purposes of this work was to stop undue waste from these flowing bores and of course to ensure the long-term viability of the basin itself. Is there any indication that the rehabilitation

work is a success and is ensuring that the objective is being reached?

The Hon. R.G. Payne: I think the short answer is 'Yes'; there is an indication of success. I advise the Committee that the Director-General has just brought to my attention an article headed 'The Great Artesian Basin well rehabilitation' which was prepared for the Water Resources Council and which contains some very interesting information together with some excellent photographs of bores before and after rehabilitation. I will make that available to the Committee. The two photographs on the back page of that publication depict a bore before and after rehabilitation. They graphically illustrate some of the matters raised by the honourable member. The work that is continuing in controlling uncontrolled flowing bores in the artesian basin is an ongoing process aimed at conserving not only water but also aquifer pressure, a matter to which we referred earlier. Many of the bores that were previously uncontrolled are now controlled and are allowed to flow for pastoral use, as one would expect, or to maintain those wetlands which support a wildlife population which is considered to be of environmental significance. At some sites where it has been necessary to abandon rather than to rehabilitate bores, wastage of water has stopped completely and aquifer pressures have recovered. At rehabilitated sites the degree of conservation of water depends on the local pastoralists for wise use of the controlled flows and some of the intended benefit will not be realised until the existing open drain distribution systems associated with the rehabilitated wells have been converted to pipeline network.

The wastage associated with drains is estimated to be in excess of 90 per cent of all well flows. I am sure that it would be interesting to take into account that a former Minister of Water Resources is present in the Chamber and I think that he would observe the same analogy in relation to irrigation practices with respect to open drain irrigating and possible losses there, in comparison with piped irrigation and savings that can be made. I understand that there are still a large number of uncontrolled bores and it is not yet possible to detect a regional recovery of water levels, but some evidence from the monitoring of levels at the Roxby Downs well field suggests that the basin may be responding to rehabilitation.

The Hon. J.W. SLATER: I refer to page 504 of the Program Estimates and in particular fuel and energy resources. Could the Minister indicate the magnitude of increases in electricity and gas tariffs in South Australia this year, particularly since January 1986, and how do they compare with price increases in other States?

The Hon. R.G. Payne: I can understand the reluctance of the Deputy Leader of the Opposition to listen to some of these figures, because they are reasonably favourable to South Australia. Electricity Tariff increases in Australia since January 1986 have been as follows: in South Australia, there has been no increase this year, and there was—

The Hon. E.R. GOLDSWORTHY: What about the 2 per cent reduction?

The Hon. R.G. Payne: I was not about to forget last year's 2 per cent reduction. In New South Wales, there was a 5.5 per cent increase from 1 January; in Victoria, in the August to October period, there was an increase of 6.2 per cent, in Queensland, as of 15 February, there was a 3 per cent increase—that might surprise the member for Kavel; in Western Australia, as of June, there was a 12 per cent increase; in Tasmania, since 16 July, a 13 per cent increase applies. We probably all find that latter figure a little surprising in view of what we understand about the economics of hydroelectric generation. It seems a fairly steep increase.

In respect of gas, in South Australia, taking account of alterations on 1 January and in August this year, there has been a 6.6 per cent increase; in New South Wales there has not yet been any announced change; in Victoria there has been a 6.9 per cent increase from 15 September; in Queensland there has been a 9 per cent increase since 10 February; in Western Australia there has been a 12.1 per cent increase from 18 June. South Australia is not particularly competitive in off peak electricity rates. That is one of the matters being addressed by the tariff review committee, but the State is generally comparable in other tariffs.

The Hon. E.R. GOLDSWORTHY: How are we going with the uranium enrichment project? It has been around for quite a long time and for about as long as the petrochemical plant. The Minister says that the petrochemical plant is not dead. The uranium project has been around since 1973 when the Dunstan Government was fired up about it. All members know that Brian Kehoe and Jack Parry, among others, were frequent visitors to the State to talk about this great project. We could have had it in the bag but for the procrastination and vacillation of the Labor Party. Is the project dead or is the Government still monitoring what is going on? Some people were still involved last year but not much has happened except that the Labor Party has decided to sell more uranium than it contemplated selling 12 months ago.

The Hon. R.G. Payne: The Government has no plans for uranium enrichment in South Australia.

The Hon. E.R. GOLDSWORTHY: So the Government has no people monitoring the situation and there is no contact with the Urenco centre?

The Hon. R.G. Payne: That is not what I said in reply to the previous question. I said that the Government has no plans for a uranium enrichment plant in South Australia. It is Government policy to remain as fully informed about all aspects of the nuclear fuel cycle as possible. There is a uranium advisory committee chaired by Mr Ron Wilmshurst which provides quarterly information reports for the Government through the Minister of Mines and Energy concerning all aspects of the nuclear fuel cycle.

The Hon. E.R. GOLDSWORTHY: Too hot to handle.

The CHAIRPERSON: Does the Deputy Leader of the Opposition have a third question?

The Hon. E.R. GOLDSWORTHY: I have had only one.

The CHAIRPERSON: I beg your pardon. Do you have a third?

The Hon. E.R. GOLDSWORTHY: I shall return to electricity. Are we to have a tariff increase this year and, if so, how much? The Minister must have a pretty close liaison with ETSA now that it is under Government control. I was hoping that a man from ETSA would be here because I have a few queries about its policies that I should have liked to put to him. Will there be a tariff increase or is the Minister saying in that bragging statement about the interstate figures, that we can expect no increase?

The Hon. R.G. Payne: I was not bragging but simply stating the facts. The Deputy Leader's question was asked a few days ago in the House of Assembly. I said then that it is that time of the year when these matters are customarily considered. I also said that ETSA had put forward some proposals for discussion and that discussions are under way. An announcement will be made in due course.

The Hon. E.R. GOLDSWORTHY: This is worse than drawing teeth.

Mr ROBERTSON: The management branch of the Minister's department has been most obliging when people near the Linwood quarry have had problems with blasting. I have every appreciation for their efforts in seeing people

and talking to them. What steps are being taken by the Department of Mines and Energy to ensure that vibration and air blast from quarries do not damage nearby residences?

The Hon. R.G. Payne: The department has a very upfront role in these matters and continually endeavours to ensure that the operation of quarries, especially in metropolitan areas such as Linwood, is what the public deserve. We endeavour to provide sensible operating practices which are fair to operators and to residents. With respect to machinery, it might be helpful if I ask Mr Peter Hill, Director of Mining, to give some information.

Mr Hill: During the past three years, the mining branch has been building up equipment for monitoring blasts. We have bought about $30 000 worth of equipment. We are monitoring to the Australian standard for air blasts, which is Australian standard 2187.

During the past year 81 blasts were monitored and the pressure responses graphed. We have answered a number of queries from residents in the Hills area about different blasts and have made information available to them.

The Hon. R.G. Payne: I add that this is an area where a number of complaints are raised; some of those complaints from time to time reach the Minister. I recall with wry amusement that only recently a complaint reached me, secondhand admittedly, which referred to blasting at midnight and at other times which I thought were probably not correct. When the particular allegation was checked out it was found to be not so.

Mr ROBERTSON: In light of the assurances given, and the fact that machinery is in place to ensure that ground vibration and air blast does not damage surrounding buildings, I assume that the same guarantee can be given about the safety of the mine workings of the old Worthing mine adjacent to the Reynella quarry and, more particularly, the chimney on the hill near the Worthing mine which, as the Minister would realise, is a historic site and the subject of an inquiry by the Department of Environment and Planning. I presume that the same guarantees can be given about the safety of those structures, given that they are now approaching 130 years old.

The Hon. R.G. Payne: I think that it is reasonable to record the great interest that the honourable member has exhibited in the Wheal Worthing area to, I think, the benefit of the future mining heritage of the State. I point out he had this interest in this area before he became a member—I know this as a personal fact.

I do not suggest that I am an expert in relation to the effects of blasting, vibration, earth shock tremor, and so on, related to some of the older type structures that I have seen at Wheal Worthing. My experience in explosives relates to an earlier time during the Second World War when I was involved in ensuring that what we were trying to explode was completely demolished, so I will hand over to the Director of Mining who may be able to provide more up to date information on the effect of blasting.

Mr Hill: The chimney at the Worthing mine is a fairly high structure. Most of the noticeable blast from a quarry firing tends to be in the form of air blast. A chimney is a rounded structure so the blast tends to pass around it fairly easily. The biggest damage that can be done to a chimney comes from ground vibration when the base of the chimney moves. With the blasts that are occurring at that quarry the ground movement is almost negligible, so it is not a problem.

The CHAIRPERSON: I believe that I may have overlooked the fact that the member for Chaffey had a supplementary question on that matter.

The Hon. P.B. ARNOLD: I was seeking a layman's explanation of what is the actual standard which was referred to in answer to the first question asked. It was said we operate to the accepted standard: what does that mean in layman's terms?

The Hon. R.G. Payne: I would be delighted to have a layman's explanation, too, of what AS2187 says.

Mr Hill: This is really a standard that lays down measurements of movement: if movement is below the standard it is unlikely that damage will occur.

Mr ROBERTSON: My next question relates also to quarrying and blasting. Under the Mines and Works Development Act in relation to the blasting pattern pursued in quarries, how much power does the department have to dictate the way in which a resource is quarried? For example, if there is danger that a development might be damaged by blasting at a particular time and it is hoped that the area will not later be subject to blast damage, would it be possible under the Mines and Works Development Act to dictate a pattern of exploitation of resource so that areas least likely to be damaged are quarried first.

The Hon. R.G. Payne: I think that the short answer to that, if we do not use the word 'dictate', is that could a workable program of development be worked out I would be happy to give the answer as yes. I ask Mr Hill to give more detail as to the procedure which applies in relation to that matter. This is to meet the requirement both of historical buildings in an area that it might be unwise to develop in a way which might cause visual pollution, or dust menace if another mining development program were followed. I think that Mr Hill will be able to give more detail about the machinery that applies.

Mr Hill: Under the Mining Act there is a development program which any quarry developer puts forward and which is approved by the State Mining Engineer. During the approval process discussions take place with the quarry operator on how he intends to mine the resource within his lease and an agreed procedure about which faces are to go at which time, size of blast and whether any mounding is necessary for sound or visual screening are covered by the development program.

Mr ROBERTSON: We have discussed the implication of blasting and its relationship to nearby residents, but what steps are being taken by the department to ensure that employees are provided with adequate protection against hearing loss during blasting?

The Hon. R.G. Payne: Once again the answer to that question is that protection is provided for employees operating a quarry as well as, for example, that protection which can apply to nearby residents, which is the situation in the honourable member's own area. Noisy and dusty operations can have an effect on the work force as well as on nearby residents. Mr Hill will probably be delighted to outline the kinds of things actually done in relation to such matters.

Mr Hill: Protection from noise is reasonably easy to provide. There have been great forward steps in designing equipment, both in the form of air protectors and sound protection in cabins of diesel equipment, that have greatly reduced the danger to mine workers.

The Hon. P.B. ARNOLD: What is really known about the Great Artesian Basin? Is it made up of totally ancient or fossil water, is there any known recharge of the artesian basin, or are there only theories held that it is rechargeable? The Minister mentioned earlier that, with uncontrolled bores having been capped, the pressure is building up again. Is that the result of just a balancing out or is it the result of their being an actual recharge?

The Hon. R.G. Payne: The honourable member has raised a very worthwhile question. Initially, before calling on the Director-General to provide some additional information, I would say to the Committee that this topic has also interested me for a number of years. All I have been able to learn so far is that a great deal of work has been done on the Great Artesian Basin but that a great deal more work is needed, so that the process of replenishment can be fully understood. I was particularly interested in the honourable member's reference to fossil water in the basin and I have read of another approach, referring to the water contained in the Great Artesian Basin as being a mineral resource, because of the way that it has arrived there, how long it has been there, and the enormous quantity that is contained there now. Clearly, the resource is of such significance to Australia, let alone that part of it that affects our State, that more work needs to be done. I understand that a treatise has been done on this subject in recent years. I cannot remember the name of the person who did the work, although the Director-General might know.

Mr Johns: There is no mystery attached to recharge to the Great Artesian Basin. It has been established for a long time. The aquifers are exposed around the eastern margins of the Great Dividing Range and the recharge to the basin occurs in Queensland, with little or no recharge occurring over the basin itself. Water that falls locally might serve to recharge the very shallowest of aquifers but would certainly have no impact on the major aquifer, the pressure aquifer that has developed so largely over the basin.

There are many uncertainties and unknowns related to withdrawal and leakage between aquifers, but, recognising the size of the basin, the thickness of the aquifer and the amount of water that is contained therein, one can envisage no prejudice to the basin through withdrawals of the sort that we see for pastoral supply or mining development. Nevertheless, there is no reason to ignore wastage, and that problem is being corrected now through repair and control of bores at the surface.

The Hon. P.B. ARNOLD: If the basin is recharged from the western side of the Great Dividing Range, is the water that is being withdrawn from the basin now comparatively new water or is it still very old water? Is there any information about how long it takes water to reach, say, the centre of the Great Artesian Basin from its point of introduction into the basin?

The Hon. R.G. Payne: I recall that in the treatise to which I referred earlier there was a discussion on the alleged migratory velocity attained by the water as it travelled in the basin from the east in a south-westerly direction. In annual terms I think it maintained that it travels a distance of considerably less than a metre. Therefore, one can deduce that it would take quite a long time to travel the entire distance of the basin. Having ventured that far into the area of hydrolics, I now ask the Director-General to provide additional information to the Committee.

Mr Johns: The name of the person who wrote the paper to which the Minister referred is Dr Habermahl, who is attached to the Bureau of Mineral Resources in Canberra. Quite a deal of work has been and is being done on age dating of the waters of the Great Artesian Basin through isotopic determination, and so on. I can assure the Committee that they are ancient waters. I suppose that, geologically speaking, one might regard them as being extremely young, but from a layman's understanding of time they are quite old. I do not have the relevant figures at my fingertips, but the water would be tens of thousands of years old. There is no question that the movement of water through the basin is extremely slow. A drive is attached to the water and there is a natural outlet around the western margin, and this is evidenced in a whole raft of mound springs distributed around the western margin.

The Hon. P.B. ARNOLD: I suppose what it amounts to is that, having capped some of the free flowing bores it provides some basis of calculation as to what can be effectively drawn from the basin without causing a real problem as far as depletion is concerned, as that is what will be critical in the long term as additional mining ventures need considerable quantities of processing water.

The Hon. R.G. Payne: I understand that for a maximum operation we would be talking about 33 megalitres. If I can recall accurately, that was the figure pertaining to use at the mine. That figure is considerably less than the amount lost through wastage currently flowing to waste from all sources within the Great Artesian Basin. I understand that at present, nominally anyway, the basin retains its potentiometric pressure, so one assumes that, provided the mining work does not exceed the amount of draw-off about which I have been talking, at least the basin will not come to any harm from the activity associated with Roxby Downs. The Director-General may wish to comment further.

Mr Johns: We have made some measurement of flows and some estimates of natural discharges and of waste of water. There is no question that the amount of water that is just flowing naturally and through wastage of wells that exist in that part of the basin far and away exceeds any withdrawals that are proposed for the project at Roxby Downs.

Mr GREGORY: Will the Minister advise the Committee of the initiatives undertaken by the Department of Mines and Energy in relation to assistance in the development of opal fields?

The Hon. R.G. Payne: The department provides a number of services to the opal fields which certainly assist them in relation to development. For instance, the department maintains inspectors and other personnel at the actual fields to assist in the orderly organising, registration of claims, and so on. In addition, the department provides an inspectorial function which ensures that legitimate claims are upheld and recorded correctly and that where, for example, work requirements are not complied with, involving incorrect pegging of claims, and so on, the ground involved is not held out of access to people who have a legitimate right to work it, unless circumstances are such that it is being operated in accordance with the requirements of any permit or lease granted.

With respect to the honourable member's question, I am not sure whether he is referring to the fact that the department might come forward with some funding in respect of subsidised drilling. Considerable credit should be given to the former Government, in office between 1979 and 1982, which provided subsidies for the drilling program, which led to further finds and discoveries of opal at Coober Pedy. Since that time, approaches have been made to me as present Minister on whether the Government can provide some funding which can similarly assist in that way. What subsequently took place could best be described as a misunderstanding between some members of the association at Coober Pedy and the Minister's office, in relation to what was promised and what was not promised.

The Coober Pedy Miners and Progress Association at Coober Pedy wanted to collect funding from interested people in that region—local business people, drillers, and others—which they wanted my department to at least match. I saw merit in the proposal and we had some discussions. However, unfortunately, the discussion went off the rails and no further progress was made. I have since had further

meetings with the people at Coober Pedy. There has been a change in the office holders in the Coober Pedy Miners and Progress Association, and I believe that we will be able to come to an arrangement to the benefit of the opal industry in South Australia.

Mr GREGORY: I believe that the department was associated with an opal and jade display in the casino foyer earlier this year. Was that a Government initiative and what were the associated costs and resultant public interest?

The Hon. R.G. Payne: In March this year a fascinating and exciting exhibition of opal and jade was held in the foyer area of the casino. I remember holding an opal specimen there which I was told was worth half a million dollars. It was exciting to hold that piece of opal, which had great natural beauty. I noticed that the persons responsible for its safety did not move too far from me while I was enjoying holding it, for the cameras, and so on. It was a magnificent specimen. Overall, the display contained everything from raw specimens right through to finished products of jewellery, and so on. It was an excellent exhibition. It was an initiative not of the department but of the Gemstone Advisory Committee. That committee was set up by an initiative of the present Government. The committee is doing a great job for the opal industry. The President and Secretary of that body are officers of the department, and they function in a way that is very beneficial to the opal industry. They have the trust and support of people in the industry who are on that committee.

Costs incurred by the Government were mainly as a result of the security involved. One of the snags in staging a jewellery or valuable artefact exhibition is that the bringing together of a costly collection of material may prove to be attractive to people who do not wish to pay for such items, and so security is required. Government costs were of the order of $25 000 to $26 000, mainly for 24 hour round-the-clock security and in provision of some of the display cases which, incidentally, were commented on favourably by viewers of the exhibition. I consider that it was money extremely well spent by the State in promoting South Australia's opal and jade. I think that there would be no quarrel with that expenditure. Graham Robertson, in the jade industry, told me and other people that the industry regarded it as being a very successful exhibition.

Mr GREGORY: Can the Minister provide the committee with details of housing that will be available in the Roxby township for the police and Department of Mines and Energy health and safety inspectors?

The Hon. R.G. Payne: In relation to housing to be provided for Government employees working at Roxby Downs, 120 houses will be provided in the first batch. Seven will be available for State Government offices—two for the police, two for the Hospitals Department, one for the mines inspector, one for the mines scientific officer, and one for the Education Department. Further houses will be made available in the next batch for the council, teaching, St John ambulance and nursing staff. The present plan is for 517 houses to be provided by June 1988, with accommodation for 330 single people in the Roxby township. Further, 186 caravans will be provided. Houses will be mainly three or four bedroom dwellings.

Mr GREGORY: Are the houses being sited to take into account the sun—similar to the design and layout of the township of Leigh Creek South?

The Hon. R.G. Payne: I can personally vouch for the fact that they will be sited in a suitable fashion, consistent with conservation of energy and the principle of low energy housing designed for the environment. I visited the area recently. Most of the earth-moving required for the first batch of houses has been completed. I must say that I commend the joint venturers and the engineer, specifically allocated to the task of providing the first lot of houses and, in particular, in relation to the construction of the initial stages of the township, for the sympathetic way that the houses have been sited, as well as the other facilities provided in the area. The country in this area is surprisingly different from that which one normally associates with the dead heart of Australia's centre, which is flat and arid country.

The scene for the township, as anyone who has seen the EIS would know, is described as swale country, and it is just that. However, I would have called it dune country. The way in which the housing has been sited for a minimum intrusion of earth-moving and destruction (and there has been some necessary destruction of trees existing in the area) was worthwhile seeing. I know that some members of the House who accompanied me on that trip had discussions with the joint venturers' engineer and were very favourably impressed with the way in which what one might call the normal energy requirements for that area were taken into account. In addition, the environmental and/or aesthetic effects were also met to a very large degree. I venture to say that once the township gets to the stage of being part-constructed and occupied there will be a queue of people willing to work and live in the area in the kind of housing that is to be provided.

The Hon. P.B. ARNOLD: In relation to the impact of mining on ground water, in the South-East there is a new proposal being put forward by Western Mining in relation to Kingston. What, fundamentally, is the difference in the procedure it is putting forward and how will that reduce the impact on South-East ground water and combined aquifers?

The Hon. R.G. Payne: I think that the member for Chaffey is referring to the fact that the initial proposal that came forward from Western Mining for the provision of a mine and power station at Kingston SE related to a mining project which included massive dewatering measures. This led to much concern in the South-East with various groups, together with local government bodies, putting forward representations to the press and the Government of their concerns and fears about what might occur to the ground water resources in the area should the massive pumping arrangements take place. Having been familiar with this country I can understand the concerns about the need for water for primary production, and so on.

It was argued that the effect on the ground water in the area would not be permanent and serious. However, that was not something that was easy to get over to the local landholders in a way which they were prepared to accept. The second proposal that came forward from Western Mining was a dredging operation to recover the coal for the power station. An earlier proposal talked about cutter suction dredges and other machinery of that nature. Since they were just that—dredges—they were floating and there was no need for the massive dewatering that would accompany an open cut type of mining operation, so that the coal could actually be mined.

I am pleased that the member for Murray-Mallee is not here, because at this Committee last year he was putting forward the view that the dredges would sink in the mud. It did not get through to him that they would actually be floating on the water. As we have all seen, tin and gold dredges in other countries seem to float all right. That was a misunderstanding he had at the time. The dredging proposal has a number of interesting features that could be of assistance to the South Australian scene if it were to pro-

ceed. The dredges themselves are fairly massive steel structures—figures like 19 000 tonnes come to mind—and the construction of three was mooted in one proposal, and that would be of great fillip to heavy engineering in this State. Overall the proposal had a number of interesting features, but at present it is in the bracket of being a further submission in relation to the provision of coal for a power station at Kingston, which is to be reviewed. The original review that was conducted by the committee which I set up at that time and which was endorsed by Cabinet decided that Lochiel and Sedan were the preferred two projects to further be evaluated. That is presently the position.

The Hon. P.B. ARNOLD: That system of mining would not run the same risk of the mixing of the aquifers if the existing water tables remained constant.

The Hon. R.G. Payne: The Director-General has volunteered to give that information. My understanding is, after reading earlier submissions, that the argument is that it would prevent that.

Mr Johns: Two aquifers are involved at the Kingston site: the deep pressure aquifer, which is below the coal, and the shallow surface aquifer, which is a non-pressure acquifer. By virtue of the proposal to introduce dredging as a recovery method, the aquifers would remain separated. There is an aquiclude below the coal—a clay layer—which would provide separation, recognising of course that there is upward leakage between the aquifers naturally. A consequence of any withdrawal of water in the existing regime implies that there is leakage of water from one aquifer to another, anyway. To say that there will be no leakage or mixing is not right.

However, one also would have to say that the amount of mixing is very restricted. One would also have to add that the water in that area, contrary to some views, is really not among the highest quality waters in the South-East.

The Hon. P.B. ARNOLD: In relation to bores that were sunk for irrigation or domestic purposes, some of the older bores, if they were not put down correctly, could cause leakage between aquifers, and that could also occur with old bore casings that had rusted out. This was regarded as a serious problem. That is not a question, just the basis of what I was trying to get at.

The Hon. R.G. Payne: In the same spirit, my understanding is that there was an occasion at Robe where the drilling of a bore led to the possible problem outlined by the member for Chaffey, and this led to a subsequent need to drill a further bore which did not suffer the defects which develoed during the drilling of the first one.

Mr ROBERTSON: I have several questions I would like to address to the matters outlined on page 504 of the document, on the subject of gas pricing. My first question relates to the recent legislation to peg gas prices and I would ask the Minister what effect that legislation has had on the exploration for gas in South Australia, bearing in mind that the 1982 gas price arbitration was supposed to have provided a fillip for exploration and seems to me only to have lined the pockets of Santos shareholders.

I point to the fact that, following that arbitration, there was something like a threefold increase in the price of gas, and I wonder whether the Minister has any observation about the new idea of pegging gas prices as opposed to the idea of charging gas at world parity oil prices as opposed to the opportunity cost of the resource.

The Hon. R.G. Payne: The short answer is that I have a lot of ideas about what the price of gas ought to be in South Australia, but I think it was wise of the honourable member, in raising the matter, to refer to the fact that the need for exploration is a function which must be taken into account in considering any pricing regime which might apply to natural gas in South Australia. I refer to the rationale that the Government employed in setting the present pricing system for natural gas in South Australia. That rationale is that a figure (which was arrived at in 1982 suitably inflated to allow for the period which transpired during the agreement which had been entered into by the previous Government or that three-year period) would then apply until the result of an arbitration which took place as a function of the arrangements between the producers and AGL in New South Wales.

I think that the honourable member would be aware that that arbitration is currently in progress and has been for some time. That is par for the course: previous arbitrations have occupied many months of the arbitration process before any final ruling seems to be given. My understanding is that it is likely that we will not have an arbitrated price from the present arbitration prior to December. I suppose that that could be argued to have a bearing on exploration, for example, because the price—until there is a change which applies—is the $1.5166 which is currently paid by South Australia, and the price which applies in New South Wales which, I think, in the third year is $1.01, and a couple of decimal points on the end, for the same quantity; that is per gigajoule of gas.

In fairness to the producers I would like to say that they have indicated that the prices which prevail are such that they can put forward a reasonable exploration program in terms of expenditure, and that both the number of wells they have undertaken to drill and the expenditure they have undertaken to make have up to now, anyway, been carried out. In respect of this, there was an announcement only yesterday, I think, of the results of Bagundi well, which was one of the wells drilled as a gas target, primarily, in the Cooper Basin. That is inside the subject area and is one of the number of wells specified to be drilled this year.

The honourable member also talked about the matters which, I think he would agree, are related to oil pricing and whether a gas price should relate to that. My argument, if I were asked to put forward my view, is that a resource belongs to the people of this State, is located in a very remote area and has only one possible market. Those should be some of the guiding factors which relate to the price.

They should also take into account what is a fair and reasonable return for people who have invested money in order to market the resource, and what is fair and reasonable in relation to providing for further finds of that resource.

Mr ROBERTSON: I would have to agree that pricing ought to be related to the opportunity cost of the resource plus a percentage rather than to the world parity price for oil, to which I understand the 1982 arbitration related. I understand that was a virtually unique decision, because other gas fields in other parts of the world are not tied to world parity oil prices, and we seem to have been taken for a bit of a ride on that.

In relation to that arbitration, I ask whether the arbitrator was from the industry in Queensland and whether, in fact, two companies which are Bjelke-Petersen companies, Transoil and Oilmin, gained quite considerably from that arbitration.

The Hon. R.G. Payne: The honourable member is being very tempting, but, as I have no direct knowledge of the matters he has raised, I cannot add to what he has put forward to the Committee by way of assertion. I would point out that it is often said that arbitrators, after doing a big job, change their postal address to Bermuda, but I do not know whether that applies in this matter either. All I can say is that there was an arbitration: the previous Gov-

ernment chose to meet what was essentially a difficult scene—and I have never said other than that—by way of an agreement which it argued took into account exploration needs, the need for greater finds for the State, and so on, and of which I was critical in opposition as having been for too long a period. That is, it was my belief that it was unrealistic to sign up for three years. Perhaps I would have had less disagreement with two years.

The Hon. E.R. GOLDSWORTHY: Are you talking about the $1.82?

The Hon. R.G. Payne: I am talking about what used to be referred to as the Goldsworthy agreement, and I was at some pains not to use the term, because one can get too historical at times. It seemed to me—and I think I have been vindicated to that extent—that it was an overly long period. The Government subsequently chose to meet that scene by negotiation over a long period, was not able to make headway and, in the interests of the people, brought to the Parliament, which endorsed its course of action, a solution to the problem, at least for the present.

That is where we are now. I suppose I am saying wistfully that I have no knowledge as to the matters raised by the honourable member as to who may or may not have gained a special benefit from the arbitration referred to.

Mr ROBERTSON: My third question again relates to that price agreement in 1982 and, mindful of the fact that the vastly inflated price of gas was able to flow through into electricity—and roughly 90 per cent of the electricity is generated from the Cooper Basin gas, anyway—also to flow into water prices through the medium of electicity used in pumping water from the Murray; also to flow through to STA fares, bearing in mind that trams are operated electrically and there is obviously an imposition on the cost of running the STA if we have an increase in electricity fees: bearing in mind all of that would the Minister care to speculate on whether the former Minister—who was in the seat during that arbitration—saw the decision as more of a rather clever political time bomb or whether he was to run for the next three years, as already mentioned, or whether in fact he was more concerned about the welfare of consumers in South Australia who had to put up with additional gas, electricity, water prices and additional STA fares?

The Hon. E.R. GOLDSWORTHY: You're a real pain in the neck.

The Hon. R.G. Payne: It is my understanding that when we are sitting as members in the House of Assembly or the Legislative Council (not having been a councillor and having no desire ever to be one) that, when making speeches or giving answers, except perhaps in Address in Reply or a grievance debate, we are somewhat constrained in speculating.

The Hon. E.R. GOLDSWORTHY: The member for Bright reckons that judges are crook and that I'm crook.

The CHAIRPERSON: Order!

The Hon. E.R. GOLDSWORTHY: You should have climbed out of the gutter earlier in your career. You're a pain in the neck.

Mr Robertson interjecting:

The CHAIRPERSON: I call both sides to order.

The Hon. E.R. GOLDSWORTHY: Ask people who were in the negotiations—they all thought that it was a good deal. You came in at the eleventh hour and you think you know what it's all about.

The CHAIRPERSON: Order! That will be sufficient.

Mr GUNN: I rise on a point of order! I ask the member for Bright to apologise and to withdraw the improper imputation that he made in relation to the former Deputy Premier. I ask for an unqualified apology or withdrawal because, if we want to go down the track that has been taken by the member for Bright, we are quite capable of doing so. I can start throwing just as much as he can. It will not do this Parliament, the standing of members of this Parliament or this debate any good. Some members who have been in Parliament for a long time have long memories and we can throw as much as anyone else.

The CHAIRPERSON: Would you please come to your point of order?

Mr GUNN: I ask the member for Bright to withdraw without qualification the improper imputation he made against the member for Kavel. My understanding of Standing Orders is that it is out of order to make improper imputations about another member in this Parliament.

The CHAIRPERSON: It is up to the member for Kavel to seek withdrawal if he so wishes.

The Hon. E.R. GOLDSWORTHY: If I heard correctly the member for Bright alleged that the arbitrator was no good, that he was dishonest and that in fact there was something to be gained by interests in Queensland, which of course is absurd.

The CHAIRPERSON: We are discussing a point of order on the very last question raised by the member for Bright. Would the member for Kavel direct his attention to that?

The Hon. E.R. GOLDSWORTHY: He then suggested that I was doing something improper. I do not care very much whether or not he withdraws it. I want to get the record straight. That deal was endorsed by the Gas Company, the Electricity Trust, the major gas user (Adelaide Brighton Cement) and all the interests who were concerned about this increase in gas prices.

The CHAIRPERSON: Order! Please sit down. I have a comment to make about your point of order. Either you are on a point of order requesting withdrawal or you are not. You are not entitled to not mind either way. Are you requesting a withdrawal?

The Hon. E.R. GOLDSWORTHY: I do not care whether or not he withdraws it. I just think that he is a pain in the neck.

The Hon. R.G. Payne: I was asked to speculate on what may or may not have happened or what was in the mind of the former Minister at the time that the previous pricing arrangements came into effect. I think in the answer that I gave to the previous question I said that I understood the rationale put forward by the previous Minister in relation to the agreement that he entered into on behalf of the Government. I believe I said also that I disagreed with the fact that it was to prevail for a period of three years and that arguments that I had against what he had done would have been lessened considerably if it had been for a lesser period. My rationale was that it is very hard to forecast what inflation will apply in three years time.

I do not resile from what I said in the previous answer. I suppose it is true to say that the cost of energy is reflected in other charges which apply in the State. The pumping of water is something that has to be paid for and I am speaking now of the Engineering and Water Supply Department pumping massive amounts of water in relation to this State's supply and I think that that was referred to. I do not think that I could certify to any action taken by the former Minister except that he would have done it in the interests of the people of South Australia as he and his Government saw it at that time. I qualify that remark by saying that it was done at a time when a State election was about to occur. That used to happen every three years, anyway. What happens in the third year is in the shadow of an election. At least in my case, under the present regime, thankfully it will not happen until year four.

Mr GUNN: As a supplementary question not asked by the member for Florey, in relation to the development of those important gypsum deposits on Eyre Peninsula, particularly the ones at Sceale Bay, which is south-east of Streaky Bay, can the Minister or his officers advise whether a lease has been granted and whether there is likely to be development of those resources? Considerable interest has been generated around the Streaky Bay area in relation to these deposits, because many people believe that the deep water that is at Sceale Bay could be developed to create a harbour to ship the gypsum out. It could be used also for shipping out grain. Can the Minister recall that I raised this matter briefly last year in relation to the deposits? Is there any update? There is a committee at Streaky Bay which is attempting to create interest and have this project go ahead. If the Minister wishes, I can give further information.

The Minister would be aware also that deposits in the area are perhaps some of the best in the world and that they have been successfully developed in the interests of the local community, providing some long-term employment and, hopefully, if these deposits could be developed, employment as well as these extra facilities may be provided.

The Hon. R.G. Payne: My understanding is that the deposits in that vicinity would be aimed at export markets in Asia. I think in answer to an earlier question it was pointed out that the Middleback deposits hopefully would supply a plaster factory in Whyalla and that would be an activity which we would all be pleased to see being developed in Whyalla. The information that I have suggests that there have been significant discoveries elsewhere on Eyre Peninsula at seven sites and the economic potential of some of these sites has been realised only recently following reappraisal by departmental geologists. I do not have them enumerated by name, but four of those seven sites are expected to supply local farmers with agricultural grade gypsum. We could look at that as being an Australian market. The others are being further investigated for export markets. I do not know whether that is really helpful, because it is not specific to Sceale Bay, but that is the overall picture as the department sees it.

Mr GUNN: If the Minister or his department have any further information, could that be provided for incorporation in *Hansard*? The deep sea port committee has written to most members of Parliament and I think that it would like to have a considered answer on this matter. Could the Minister have his officers look at that question?

The Hon. R.G. Payne: Yes, I undertake to do that.

[*Sitting suspended from 1 to 2 p.m.*]

The CHAIRPERSON: I call the member for Eyre to ask his third question.

The Hon. R.G. Payne: The member for Eyre was worried about the character of gypsum leases in the Sceale Bay area and we can provide a little more information which might be helpful to him.

Mr Johns: In response to the question about tenure, I am able to advise that claims were pegged on Sceale Bay and that an application was made for retention leases. They have been granted, which is a reflection of the fact that they have not been able to secure markets for their product. The leases will have been running for about 12 months now.

We are aware of the widespread interest in gypsum and have given a great deal of attention to assessment of gypsum throughout the State, including the Eyre Peninsula. We are aware of the interest of a local group to secure a deep sea port at Sceale Bay. We know there is potential for shipping gypsum out of that centre. There are enormous deposits of high grade gypsum elsewhere on the Eyre Peninsula, not least of which are the Lake Macdonald deposits. There is a fair bit of competition to secure export markets in South-East Asia from Western Australia, and I believe that there are deposits in Thailand.

Mr GUNN: I should like to ask about a uranium enrichment plant. Earlier in my time here, there was much discussion about Port Pirie being a likely site, but there was an article in the *Advertiser* on 4 September which ran the headline:

'Pirie to get uranium enrichment plant', says trade union leader.

That was news to me. This is a matter of continuing interest and controversy in the community and people appear to be shifting stances on it. Does the Government have any proposals under consideration? The article said that the Minister had said that the Government is not considering it, but Mr Wyman of the Amalgamated Metal Workers' Union said he had reason to believe an enrichment plant was proposed for Port Pirie, but did not expect it to be admitted by either WMC or the Government. That is an interesting statement. He made these comments about the investmeant of $600 million at Olympic Dam. Can the Minister give an explanation, as the public are interested to know the Government's stance? Its stance keeps changing. The Commonwealth Government is now allowing uranium to be exported again. With such a change of policy, it may be feasible to reconsider the plant for Port Pirie as the likely rundown of the smelting operation could be disastrous.

The CHAIRPERSON: I believe that the Minister answered the same question twice this morning. Would he like to add to his answers?

The Hon. R.G. Payne: I have not altered my stance since this morning, so the answer is the same. I am not aware of any plans that the Government would have for enrichment at Port Pirie or why Mr Wyman would have said what he did.

The Hon. J.W. SLATER: I should like to ask about targets and objectives concerning underground water exploration, assessment and protection. As to the hydrological investigations associated with the proposed Woolpunda groundwater interception scheme and implementation of a six to nine-month trial, what form will the trial take and what is its likely effect?

The Hon. R.G. Payne: Studies by the Engineering and Water Supply Department have shown a significant increase in the salinity of the Murray River between Overland Corner and Waikerie, and this increase is due to the influx of saline groundwater through the river banks. The proposed interception scheme would involve installation of pumping wells adjacent to the river bank to prevent the groundwater gaining access to the river. I guess that this is a *modus operandi* applied elsewhere to prevent salt water entering the river.

The trial is designed to pump groundwater from a tube well about 500 metres from the Murray River near the Woolpunda pumping station and to dispose of the water via a 100 mm PVC pipeline into two disposal tube wells 2 km from the production tube well. The hydraulic response from this pumping will be observed in a series of observation wells strategically located around the production well.

The honourable member has referred to the length of the trial. It is proposed to operate the trial scheme initially for a continuous period of three to six months. Operations could then be semi-continuous for the remaining period of the trial to allow testing of pumping equipment and to further assess the potential water quality problems. The saline groundwater is being disposed of into drainage wells so as not to increase the salinity of the Murray River. It is

unlikely that any changes in water salinity—a decrease—will be observed in the river in the immediate vicinity of the pumping well. That would be a matter of scale. This is purely a trial on which the final design of a salt interception scheme can be formulated.

The Hon. J.W. SLATER: I know that the Department of Mines and Energy works closely with the E&WS Department. What cooperation is there between the two on the Woolpunda groundwater interception scheme? I take it that it is a joint effort.

The Hon. R.G. Payne: I have no direct knowledge of that. I am aware that there are cooperative efforts. Dr Branch will rescue us with some information.

Dr Branch: The Woolpunda scheme is essentially a joint program between the Department of Mines and Energy and the E&WS Department. As in many other matters involving groundwater, the Department of Mines and Energy's responsibility is to carry out fundamental studies on the movement and location of groundwater. Once those technical details have been determined, the E&WS Department is responsible for carrying out engineering works to take forward any proposals such as a town water supply.

As for the Woolpunda scheme, the two departments are cooperating on the design of the means by which to overcome the excess salt water in the Murray River between Waikerie and Overland Corner. The Department of Mines and Energy will carry out the first test to see whether the engineering scheme proposed by the E&WS Department is feasible. If it is, it will drill out a lot more of the interception tube wells and pump salt water from the Murray to evaporation points to the north.

As a sign of the degree of cooperation involved, the costs incurred by the Department of Mines and Energy in this service refer only to the salaries of the staff involved; all other costs, both of transport and accommodation for officers drilling, and so forth are recharged to the E&WS Department. I understand that a considerable proportion of that cost is ultimately recharged to the Commonwealth Government, because matters dealing with the Murray River are, in fact, of both Commonwealth and three State concern.

The Hon. J.W. SLATER: At page 502 of the program papers there is reference to safety in the work place, and the policy area mentions protection of persons' rights and property. What assistance does the Minister provide to other Government departments and semi-government organisations in relation to matters related to the use of explosives! Will he give some examples of that cooperation between Government departments and semi-government organisations?

The Hon. R.G. Payne: The assistance provided by the department to other Government departments and semi-government organisations in this area is wide and considerable. We have a blasting and explosives section which consists of a mining engineer, senior blasting supervisor and two blasting supervisors. Part of their duty is to provide advice and assistance to other Government and semi-government agencies. To give examples to the Committee, during 1985-86 they provided the following assistance: removal of overhanging rock for the Department of Lands in the South-East; blasting a boat ramp channel for the District Council of Franklin Harbour; blasting concrete piles for the Department of Marine and Harbors at West Lakes; opening a jammed explosives magazine door for the Department of Labour; designing and monitoring blasts for the Happy Valley filtration plant for the Engineering and Water Supply Department; blasting and sealing an old mine working for the Department of Environment and Planning; advice and assistance to the Department of Labour on testing spontaneous explosive chemicals; advice on the use of explosives to clear weed from Bool Lagoon for the Department of Environment and Planning; and advise on proposed blasting in the Hummock Hill quarry for the corporation of the City of Whyalla; monitoring of vibration caused by pile driving for the Department of Housing and Construction and for the Engineering and Water Supply Department; and conducting courses on the safe and efficient use of explosives for ETSA, the police, E&WS Department and the Highways Department. It can be seen from those examples that a wide ranging amount of advice and assistance is provided.

The Hon. E.R. GOLDSWORTHY: I have some questions about ETSA. If one looks at ETSA's annual report part of it is given over to minimising bushfire risk and costs to ETSA, hence to the users of electricity, because of insurance, or any amount that cannot be covered by insurance. Unless this was also an incorrect press statement, the Minister is reported as saying that, in effect, he thinks that the people who live in the hills should pick up the tab for the cost of undergrounding. I was pleased to see the next day that the Premier was not quite so forthcoming about this matter. Was that a correct report of the Minister's view, and does he endorse one of the options put forward in ETSA's annual report tabled last week?

The Hon. R.G. Payne: The press report to which the Deputy Leader refers was reasonably accurate. I do not recall it quoting me quite so directly, but I will not argue about that because I have a view on the matter that I am prepared to put to the Committee. It seems to me that the people to whom the trust was referring in the bushfire risk areas ought not expect that a total solution to their problem, should be paid for by everybody except them. That is my view on the matter.

That does not necessarily mean that I am saying that they should pay all the costs involved. In fact, that is not the trust's view. It has put forward a view that it would be prepared to meet 50 per cent of the cost. Before one gets too carried away with that, members should appreciate that it simply means that all consumers who are customers of the trust would be footing that 50 per cent cost spread over all those consumers. What the trust then said—and I tend to support this view—is that those who stand to benefit from a measure ought to be contributors to the cost of the measure. That is all that I am saying. If I was quoted in any other way, then that is not what I intended.

The Hon. E.R. GOLDSWORTHY: That is a bit clearer. I will now quote the relevant section from the trust's report, which states:

> The question becomes more complicated when one considers who should bear the costs [of undergrounding]. Should it be the person who derives the benefit, or should it be the general community? A specific example would be 'should the person who chooses to live in the Adelaide Hills have his choice subsidised in any way by others in the community?'

That is a completely simplistic statement of the situation—so simplistic, in fact, that it is wrong. Families have been living in the hills for generations and people have lived there for the whole of their lives. If it was the policy of a previous Government or ETSA to reticulate power throughout the hills overhead, that was their decision. If, now, they decide that they will change the ground rules and put those power lines underground it is pretty rough to expect people who have lived there all their lives to suddenly foot the bill for 50 per cent of the cost of undergrounding ETSA's reticulation system.

If we are talking about people who choose to go to live in the hills now and we subscribe to the view—which I do not, by the way—that by putting power installations from

the mains in the street into a house underground, that is a different kettle of fish. The Government has implemented a policy saying that all such connections should be underground. That is fair enough for people who now choose to live in the hills. However, we are talking about a policy that will affect people who have lived there all their lives who did not set the ground rules. This instrumentality set the ground rules and now it wants to change them.

This nonsense about being subsidised by general ETSA users is equivalent to asking how we can compensate hills dwellers for subsidising STA services to metropolitan Adelaide. There is give and take. City water rates subsidise country water rates: that is part of a policy to get water through the country.

The Hon. J.W. SLATER: They all pay a common rate.

The Hon. E.R. GOLDSWORTHY: That is the point I am getting at. The city subsidises the country in respect of water rates. The country subsidises the city in respect of STA fares, so to use the simple argument that the user pays and therefore people who use electricity in the hills should pay for undergrounding is absolutely absurd. It will be unfair if the Government and ETSA suddenly decide to change the ground rules and say to people that they will have to pay 50 per cent of the cost of undergrounding the electricity reticulation system the trust put there at its discretion.

The CHAIRPERSON: Would the Deputy Leader come to his question?

The Hon. E.R. GOLDSWORTHY: It is a long explanation. I do not think that Standing Orders limit an explanation. Is the Minister satisfied with the efforts that the Government is taking to reduce the fuel hazard, which is one of the things alluded to in the ETSA report, particularly in the hills face zone which, we are told, is kept in its pristine state for the enjoyment of people in metropolitan Adelaide who wish to sit on their back verandahs and gaze at that wilderness? That is where the big bushfire danger comes from. If the hills face zone was cleaned up and we put houses and trees on the land we would greatly reduce the danger to people living in the hills. Is the Minister satisfied that everything that should be done is being done in relation to some of the other avenues mentioned in the trust's report, particularly in relation to the land that the Government controls, because I am darn sure I am not?

The Hon. R.G. Payne: The Deputy Leader raised a number of matters in finalising the question. I am anxious to correct the way in which he presented what I said. I did not say that the people who will benefit from an improved safety aspect of electricity distribution, which is what we are talking about, should pay 50 per cent of the cost. I said that they ought not expect the benefit without making a contribution to the cost. I want to get that quite clear. I then said that ETSA has announced that it is prepared to meet 50 per cent. I did not say how the other 50 per cent was to be covered, nor did I apportion it directly to the consumers. I want to get that clear.

The Deputy Leader then asked whether I was satisfied that every effort had been made with respect to ground cover, as I understood him, in the hills face area and conjured up a picture of metropolitan people sitting on their verandahs looking at the hills face zone.

The Hon. E.R. Goldsworthy interjecting:

The CHAIRPERSON: Order!

The Hon. R.G. Payne: First, I do not believe that one can see much of the ground cover from metropolitan verandahs. One might be able to see the foliage of the treetops.

The Hon. E.R. Goldsworthy interjecting:

The CHAIRPERSON: Order!

The Hon. R.G. Payne: I do not think one can see much ground cover, which could be said to be part of the difficulty not only in the hills face zone but in many high fire risk areas. It is not a matter of drawing geographic boundaries, allocating ownership or whatever. There are high fire risk areas and something needs to be done, or we could again have a 1983 Ash Wednesday scene.

The Hon. E.R. Goldsworthy interjecting:

The CHAIRPERSON: Order! The Deputy Leader is repeatedly interjecting. I remind him that the Committee is operating under the same rules as a Committee of the Whole of the House, and the Deputy Leader knows the consequences. I would ask him not to interject.

The Hon. R.G. Payne: The Deputy Leader specifically used the term 'hills face zone' but I suggest it would be fairer to refer to high fire risk areas generally. They are being addressed, as they should be, by the Bushfire Advisory Council, which has been set up to operate in this area and to make recommendations to the Government. One presumes, in due course, that those recommendations will come forward and that the Government will make a decision on those on which it desires to act. Of course, that council is made up of a representative group of citizens within the community, including local government, owners, ETSA, the CFS, and so on. Therefore, we would expect balanced, reasoned recommendations to come from that group in due course.

The Hon. E.R. GOLDSWORTHY: I hope it does not take as long as it did to fix the tariffs; that has been going on for two years. We could have another Ash Wednesday this summer.

The Hon. R.G. Payne: I think we fixed the tariffs last year, and made a 4 per cent reduction.

The CHAIRPERSON: Order! Does the Deputy Leader have another question?

The Hon. E.R. GOLDSWORTHY: My word. What is the Minister's view about the announcement of the General Manager of ETSA that ETSA will cut off power (and this is in the report) on high fire risk days, and that power could be off for several days because ETSA has to check all the lines before turning it back on? Does the Minister intend to give the trust immunity against prosecution from people who suffer economic loss as a result of ETSA cutting off power for days? I understand that there are cold stores in the Adelaide hills that store large quantities of fruit and chicken, besides household losses with deep freezers, and so on. There would be considerable economic loss to some people if power was cut off for days. In implementing that policy, will the Government give immunity from prosecution to the trust? I am sure that ETSA will be prosecuted if power was cut off, just as it was for starting the bushfires.

The Hon. R.G. Payne: I would ask the Deputy Leader to consider some balance in this matter. What is contained in the annual report of ETSA is a reference to what could be the situation on cataclysmic days such as Ash Wednesday. The matter of the disconnection of power (what I would call selective switching, that is, switching off) is a recognised worldwide method of dealing with safety requirements in electrical distribution. The annual report refers to the difficulties with respect to insurance cover. The current insurance cover that the trust has been able to obtain is $100 million cover for one week, of which the first $20 million has to be picked up by the trust. In effect, on one day of any possible degree of fire intensity, as occurred on Ash Wednesday, the total insurance cover that the trust could call on under the present arrangement would be $80 million. Very rightly, ETSA, in its annual report, has drawn the

attention of everyone in South Australia to the situation it is facing.

The trust does not have funds of its own, and the Deputy Leader knows that. The trust is a vehicle which operates to provide electricity to the citizens of the State and charges the citizens of the State for that supply in a way which allows the functioning of the trust as a viable organisation. That is all the trust is. It has no magical access to funds so it can say that people will not have to pay for this, that or the other. It has a duty to provide, as far as possible, safety at times of an unusual combination of circumstances as we know occurred on Ash Wednesday. We know that bushfires occur regularly in our State, but that day was a cataclysmic day where a number of circumstances came together. In my opinion, if the trust did not have contingency plans to disconnect power, it would be guilty of negligence in that area alone.

There is a need to provide for safety. Secondly, the lines themselves, when energised, can be caused to come to the ground because of a fire if the power is on. Is the argument that the trust should not switch off the power in that circumstance either? I know that it is not. What we need in this situation is some reasonable thinking, and the trust was simply trying to draw the picture of what I would say is our worst case seen, where major disconnection could be necessary. That is not to say that some disconnection will not be carried out on a more frequent basis than it is now.

It has occurred, as I understand it, because there are some automatic switching systems which are connected in the distribution circuit which switch off when electrical hazards which cause disconnection of load occur. I know that it is fair of the Deputy Leader to raise the question of what will happen to people who have the possibility of spoilage—and he referred to cool stores, chicken places and similar areas. He said, 'Is the Minister saying that they are not to be given any consideration?' I am not saying that at all. In fact, the annual report is from ETSA, not from me. It is presented to the Parliament. It is not my property; it is the property of the Parliament. I am the person deputed to lay it on the table. As well as my having the chance to read it, every member of the public of South Australia is entitled to know what is in it, and it has had that airing. I think that the trust quite rightly drew attention to what it sees as a difficult scene. That is not to say that that is the course that the Government will follow.

Mr GREGORY: What are the 1986 and predicted 1987 levels of petroleum exploration in South Australia and how does this compare with previous years? I refer to page 145 of the estimates of payment.

The Hon. R.G. Payne: As I understood it, the honourable member has asked what is being done to encourage petroleum exploration in South Australia. The Department of Mines and Energy maintains a complete catalogue of all available geophysical data acquired by operators within a petroleum exploration licence. As these data become open file, they are made available to interested companies at a nominal rate to cover copying costs. The department is currently reviewing the Petroleum Act and regulations with the intention of amending data released so as to make those kinds of data available much sooner after their acquisition.

Data packages on prospective basins are prepared by the department, highlighting the potential of a particular region. The department acquires its own data also in basins where it is felt that a small survey may improve the potential of the area. These new data are made available to the industry as soon as they are processed. For example, in the collection of these data in the Stansbury Basin offshore between Kangaroo Island and Yorke Peninsula, the DME negotiated with GSI to obtain some 300-odd kilometres of marine seismic data at a very competitive rate. The proviso was that GSI could sell the data to interested parties for two years, after which they would become open file. If my memory serves me correctly, GSI were doing some other work, particularly in the gulf and basin area, at the time and, by arrangement with my department on a funding basis, these additional data were collected whilst the vessel was in the area.

Mr Watts: I think the Minister has covered it pretty well. I can perhaps mention just a couple of things: the general geological survey role of the department is the mandate to geophysically and geologically map the State, and this also provides a valuable infrastructure for petroleum explorers.

Mr GREGORY: Can the Minister tell the Committee what the National Centre for Petroleum Exploration is designed to achieve and where it will be located? I refer to page 505.

The Hon. R.G. Payne: The National Centre for Petroleum Exploration is a concept, as I understand it, of members of the petroleum industry in South Australia together with other interested persons and particular interested persons in my department. The concept is to have a centre of excellence, (I think that would be the correct term) which would be based at the University of Adelaide and, in order to get sufficient funding for such a concept, meetings were held with the interested persons at the University of Adelaide.

In the event, there were some obvious difficulties about obtaining the funding because, during the initial stages of the concept, industry nominal commitments had to be qualified—I think that would be the fair way of putting it— by events which were happening in the oil and gas world in parallel with this proposal to set up the centre. In simple terms, the tightening of the funds was due to the downturn in the oil pricing in the industry, which had an effect in South Australia in relation to the Cooper Basin.

The amounts which people in industry might have been prepared to commit to such a centre naturally began to be somewhat curtailed and reduced in respect of what people might have thought was able to be gained by way of promises to support such a centre. The Deputy Director-General, Mr Watts, has been heavily involved with this concept and has, I believe, a very great commitment to seeing such a centre come into being. The State Government, in view of its tightened financial circumstances, took the view that at this stage we could only go as far as a one-off funding proposal and, accordingly, as can be seen from the documents we are studying in the budget, an amount of $150 000 has been funded and is up for consideration in the vote we are now looking at.

I would ask the Deputy Director-General to amplify what I have already said, because he would be in possession of more detail with respect to possible industry commitment and so on, and any timing which is now likely to apply in view of the straitened circumstances I have been outlining.

Mr Watts: The need for a National Centre for Petroleum Exploration grew out of the fact that there is no recognised centre in Australia to provide professional training for petroleum geologists and geophysicists. To do this, companies had to undergo expensive in-house training regimes or recruit overseas. This centre was set up to remedy that need, and it received at an early stage the support of the Commonwealth Tertiary Education Commission, which pledged $150 000 per year for three years and, as the Minister pointed out, initial fairly generous pledges of support were given by the petroleum industry.

The first courses started in February this year and that coincided with a collapse in the world oil prices so that the funding from industry was very much reduced from an

anticipated $500 000. The current level of pledges is of the order of $150 000 for the first two years. This led the Government to recognise the importance of this centre.

I point out that Adelaide, because of its very large indigenous oil industry, is an entirely appropriate location for such a centre. Adelaide can make a contribution towards assisting in the setting up and running of this centre. As the Minister said, the centre is located at the University of Adelaide, but it has been emphasised from the start that this is very much a joint venture between the three tertiary institutions in Adelaide, which would include also the Flinders University and the South Australian Institute of Technology. They all participate in the management of the centre and provide teaching staff and courses. The centre has been in operation for six months and it has enrolled 14 students for the 1985 year. It provides Masters courses (MSc) but, as far as the industry and the department is concerned, more importantly it provides undergraduate training in geology and petroleum geophysics so that third and fourth year undergraduate students of those three tertiary institutions can take courses at the national centre and obtain credit for their degrees.

Mr GUNN: Could the Minister explain whether the Government has had an opportunity to examine the Pitjantjatjara legislation with a view to introducing amendments to make it easier particularly for exploration to take place in a very large part of South Australia? Has the Government entered into discussions with the Pitjantjatjara council in relation to this matter? If those discussions fail, will it proceed to introduce what in anyone's understanding will have to be reasonable amendments to put that area of land on a similar basis to the Maralinga lands?

The Hon. R.G. Payne: I have had discussions with the representatives of the Pitjantjatjara people, but I have not had discussions with them in relation to legislation, because my view is still that which I expressed at previous hearings of the Committee in earlier years, that is, that I am not willing to mandatorily alter historic legislation. The legislation was battled out over a number of years between different Governments of this State and the Pitjantjatjara people. It resulted in them being given certain rights with respect to their land. It seems unfair and not applicable to the circumstances to change the situation because, to use simple terminology, the whitefellows have second thoughts or whatever.

If the honourable member could say that access to the area is not happening, then perhaps (and I say only 'perhaps') he might have some reason for putting forward the proposition but, in point of fact, access to the area has already been gained and is taking place with respect to the consortium arrangement involving the Pitjantjatjara people and the proponents concerned (companies such as Amoco) which was announced by the Government late last year. That arrangement for entry to the lands for exploration is still extant and visits and presence on the lands of people from the consortium have been taking place. I have put forward that practical ways of entry to the land for the purposes of this State already exist in the current legislation. That legislation is being used in the current arrangement and is working.

Mr GUNN: The Minister and I could enter into a long discussion and debate on this matter, but I think that perhaps, at this stage, we will agree to differ. I refer to the program to subsidise certain mining activity in the opal fields in order to endeavour to find new fields. Can the Minister advise whether he has provided funds for this exercise and whether agreement has been reached with the so-called 'spokesman' for the opal miners of Coober Pedy? As I understand the situation, some dispute arose between the Minister and his officers and certain spokesmen. As was his wont, the spokesman for those groups rushed to the press on numerous occasions and sought headlines. Those headlines sometimes did not relate to the actual matters which were under discussion. Could the Minister clear the matter up once and for all so that there is no further misunderstanding? Could he also advise what funds are available for this purpose?

The Hon. R.G. Payne: As I indicated earlier in relation to a more general question on opals and the fostering of opal search, there has been some history of misunderstanding. I indicated also that the first subsidised program of modern times was instigated by the Liberal Government in the 1979 to 1982 period. That program was quite successful in opening up access to some new areas. I think late last year, in answer to requests from the Coober Pedy Miners Association in particular, I agreed that perhaps a further program could be implemented where funds would be provided by the miners and those funds would be matched by the Government to a certain limit. In the event, the person to whom the honourable member referred appeared to misunderstand that which had been agreed. He went off to the press and was successful in obtaining large headlines which were not entirely in accordance with the facts.

At a subsequent discussion which took place we were able to iron that matter out and a more clearly understood arrangement was put forward. That was that, subject to budget requirements, up to $20 000 on a matching arrangement could be made available during this current financial year. That arrangement was accepted by the other parties concerned, the officeholders of the Miners Association having changed somewhat at that time. That is the present situation.

Mr GUNN: Have the Government and the department reached any decision with the opal miners about the size of claims? For a long time there has been considerable discussion as to the size of claims. Some people believe that the current claims are not suitable for bulldozing operations such as those taking place at Mintabie. Others from Coober Pedy hold a contrary view. Also, does the Minister believe that there will be any extension to the prospecting area at Mintabie which has proved to be a fairly successful mine?

The Hon. R.G. Payne: Agreement about changes to legislation, especially with regard to claim sizes, has been reached more than once with the miners of Coober Pedy, Andamooka and Mintabie. Disagreement has also been reached sometimes between the same parties. I believe that we now have agreement that there could be some change regarding claim sizes where opal is sought, and preparation of legislation to that end is in place.

Mr ROBERTSON: The energy ideas village is mentioned on page 504 of the yellow book. I admire the way in which public companies, the Department of Mines and Energy, various groups and Woodville council have swung behind the project to make it successful. The village demonstrates how to improve an existing home to make it more energy efficient. I appreciate the work being done by Uniroyal, the South Australian Housing Trust and other groups which have sponsored and promoted low energy projects. What plans does the department have to promote projects such as appear in the village? What help and support can be given to companies such as Uniroyal which set up demonstration villages or houses off their own bat?

The Hon. R.G. Payne: As parliamentarians sometimes do, I shall answer the last question first. When people come forward with proposals, they will be examined by the Gov-

ernment. If they have merit, they may be supported, consistent with the funds available at the time.

As for the Woodville energy ideas village, implicit in the honourable member's question was some minor credit to the department, but we should remember that the idea originated elsewhere. I believe that architects and the Woodville council were involved. Once the idea reached our attention, however, we were extremely enthusiastic and everyone concerned got their act together.

I agree with the honourable member that it is an excellent demonstration project. I have even had the pleasure of meeting people who have told me on a Saturday at the TAB—they have not realised that I have some minor involvement with the project—that it was a good idea and that they were installing some of the improvements in their homes. It is a top grade demonstration project when it works so well.

We have looked at SENRAC—the body which considers experimental energy projects—its funding and what has been achieved. It is healthy to see what has been done every now and again and to establish whether aims have been met. We had a review done by Mr Lew Owens who had the assistance of the acting head of the Energy Department. Something in excess of $3 million has been allocated to SENRAC programs, and they have mostly been useful although not completely successful in terms of achievement on energy matters germane to South Australia. Nevertheless, ideas have been stimulated and theories have been checked out. The review suggests that we should target the scheme more tightly to involve more of the advisory groups so that greater responsibility applies. I am not being critical. It functioned in a certain way and we should now be able to do better.

The type of project to which the honourable member referred might more commonly figure as a SENRAC project than was the case previously. That is a somewhat long winded answer, but the question was general and called for a comprehensive answer.

Mr ROBERTSON: The next line mentions investigation of the procedure to incorporate solar access principles to the process of residential development approvals. How does the department envisage doing that—through the Local Government Act, the Building Act or through the Planning Act? I support the aim but it seems that it will be difficult to implement it. What does the department regard as the easiest way through the maze?

The Hon. R.G. Payne: Solar rights is a complex issue and is not the prerogative of the department. I have here Mr Lew Owens, who has been involved with these matters for some time.

Mr Owens: The Department has progressed consideration of the matter to the stage at which we have developed draft regulations which have been forwarded to the Department of Environment and Planning for its consideration for incorporation in the Planning Act. The suggestion is that it should be introduced through the planning regulations. The matter is now in the hands of the Department of Environment and Planning officers for consideration and progress.

Mr ROBERTSON: Does that include the height of adjacent buildings or of trees in back yards? Have we been able to learn anything from Californian legislation or similar legislation introduced by Ken Gabb the member for Earlwood in New South Wales in 1972?

Mr Owens: South Australia took the lead in Australia in the mid-1970s when it set up the first committee to investigate solar access under Dr Hank den Ouden. The matter has been under hot and cold consideration since. Other States have sometimes made the running and sometimes we have regained the lead.

Suffice it to say that consideration has been given to all of the examples that the honourable member mentioned when preparing present regulations. The suggestion is that it is best handled through the planning regulations rather than through a specific new Act of Parliament. The regulations take account of building access, trees and so on. If a more detailed answer is required I will take that on board and provide a further answer.

The Hon. E.R. GOLDSWORTHY: Does the Minister support the sale of uranium to France?

The Hon. R.G. Payne: It has taken the honourable member quite some time to get to this point. My answer is that as Minister specifically deputed to do all things possible to facilitate Roxby Downs under an indenture agreement, I will carry out my responsibilities under that indenture fully. I do not believe that that necessarily calls on me to have a view supporting or opposing the export of uranium: it requires me to do all the things enumerated in the indenture and that is exactly what I have been doing.

The Hon. E.R. GOLDSWORTHY: Madam Chairperson, is there any requirement for the Minister to answer questions?

The CHAIRPERSON: The Minister determines how he answers questions. Does the honourable member have a further question?

The Hon. E.R. GOLDSWORTHY: I would like to ask the same one, because I did not get an answer. It is baloney for the Minister to come in here and say that he does not have to have a view: of course, he has to have a view. It is ridiculous—

The CHAIRPERSON: If the Deputy Leader does not have a further question right away we can move to another member.

The Hon. E.R. GOLDSWORTHY: Does the Minister support the sale of uranium to Sweden?

The Hon. R.G. Payne: Under the indenture I am required to carry out certain responsibilities. Under that indenture, of which we are all aware, I have done so and will continue to do so as long as I am Minister. The question of whether I support the export of uranium to a given country is not necessarily a thing I have to respond to because I have no control over that aspect of the nuclear fuel cycle in this country—the Federal Government is in control of that area. In fact, earlier today the honourable member alluded to the Federal Government and this, that and the other in respect of uranium.

The CHAIRPERSON: I remind members of the Committee that we are here to consider proposed expenditures as shown in the Estimates. There has been considerable latitude allowed to date, but it might be useful to come back to the expenditure lines.

The Hon. E.R. GOLDSWORTHY: The expenditure line to which I am referring is the one that indicates that the Government is to spend, I think, $150 000 on the development of Roxby Downs. The Government proposes spending considerably more than that on the Roxby development and I am interested to know what result we will get from the expenditure of that money. I am directing these questions along that line because, obviously, if they cannot sell the uranium there will be no Roxby Downs. That is why I thought the last two questions were fairly important, but the Minister has effectively not answered them.

The CHAIRPERSON: Does the Deputy Leader have a further question?

The Hon. E.R. GOLDSWORTHY: I have a lot but was referring to the relevance of my questions to the budget as

you had alluded to that matter. Will the Minister say what impact the new industrial safety legislation will have on mining operations in general, and I suppose Roxby in particular, as that has now become the focus of the Government's attention? A document was circulated from the Chamber of Mines alluding to section 5 of the Act, which seeks to retain control of the inspection of mines with the Department of Mines and Energy. What affect does the Minister believe the new industrial safety legislation will have on mining in South Australia? Where will the authority responsible for the inspection of mines reside?

The Hon. R.G. Payne: I will answer the last part of the question first. The authority will reside where it resides now, with the Chief Inspector of Mines, who is the delegated person. In relation to what effect this will have on the way things work, it will not change the present situation when further amendments are made. With the help of my officers I drew the attention of the relevant Minister to the fact that an inadvertent error had crept into the legislation as currently worded. This was accepted, but is not known to members in the Chamber at this stage. An undertaking has been given to me that the necessary word changes will be made so that the possibility of ambiguity, which was concerning people, will not exist and the power will be where it is now, with the mining inspectors under the Mines and Works Inspection Act.

The Hon. J.W. SLATER: In response to a question I asked earlier relating to Government departments and semi-government organisations involved with the use of explosives, the Minister said that the Department of Mines and Energy conducts courses on the safe and efficient use of explosives. How comprehensive are those courses? Where are they conducted, and how many people are involved?

The Hon. R.G. Payne: The department is the only organisation in South Australia that provides courses on the safe and efficient use of explosives. To illustrate that point, during 1985-86 personnel from the blasting explosives section provided 12 courses, which included practical training and theory. The courses were provided at the following locations: Ardrossan TAFE, 11 participants; Wudinna TAFE, 20 participants; Port Lincoln TAFE, 18 participants; Loxton TAFE, 18 participants; Penola TAFE, 12 participants; Cowell Electric Supply Company, eight participants; Highways Department, Port Augusta, 11 participants; and in metropolitan Adelaide, courses involving the E&WS Department and ETSA, 40 participants. In addition, a very topical sort of course was held in Adelaide for the Police Star Force, at which there were 10 participants. Overall, the courses, as can be seen from those statistics, are available to a wide variety of people who necessarily require correct and safe training in the efficient use of explosives.

The Hon. J.W. SLATER: In relation to explosives, the mining inspectorate issues directions in relation to mines and quarries where health and safety hazards might exist and where operations might cause a nuisance to either persons working at the operation or residents nearby. This relates to page 502 of the Program Estimates. What steps are taken where operators do not take adequate precautions, thus causing a nuisance to other people?

The Hon. R.G. Payne: As was indicated earlier, the department has reasonably strong powers in this area and the department can issue orders prohibiting a mining activity either completely or partially, as required. By way of interest, I refer to some operations that were ordered to cease operating because of hazards or nuisance or failure to comply with requirements. On 1 May 1986, Balhannah Quarry was required to discontinue because of excessive noise. It ceased operations for about one week until the matter had been remedied. In relation to the quarry mentioned by the member for Bright earlier, in February this year excessive dust from mobile plant being used at the quarry was the reason for cessation of operations of that plant. That applied for about two weeks until preventive measures had been taken, as required by departmental inspectors. The Bluff Quarry on Kangaroo Island was required on 17 July to discontinue mining operations because of unsafe plant. That plant is still unsafe at this stage and thus the quarry remains closed.

On 30 September last year, the operators of a sand lease at Port Pirie failed to undertake progressive rehabilitation. Almost universally now, those types of extractive industries are required from commencing operations to consider the rehabilitative aspects related to the operation. Thus, this facilitates rehabilitation of the area from a very early date in the history of the mining activity. At the site in question at Port Pirie this progressive rehabilitation was not undertaken and the operation was directed to cease operating until rehabilitation was completed. At present that operation is still closed.

On 25 May this year it was considered that the operation at the limestone quarry at Curramulka on Yorke Peninsula caused a nuisance by sandblasting on weekends and holidays, and the operators were directed to restrict blasting to periods within the prescribed hours and on weekends only. Therefore, it is clear that the department has some pretty strong powers in this area. That is not a complete list but it illustrates that the department is on the job all the time in response to complaints and queries made, and that it takes the necessary steps where failure to comply occurs.

The Hon. E.R. GOLDSWORTHY: Further to the matter of control of the operation of quarries, I would like some more details, if available, on the Balhannah Quarry. A constituent of mine has been in frequent contact with me about that quarry, and the Department of Environment and Planning has had a fair input in relation to this matter. I gather that it is not simply a matter of the quarry being closed for a week while it fixes up the noise level. This has been a continuing problem, with my constituent ringing my office, and then my secretary or myself making inquiries about the matter, every day or two. Despite that frequent communication, I have lost track of the present position. Can an officer give me an update? I thought the matter would finish up in court, as I understood that the Department of Environment and Planning was going to put some sort of stop notice on the operation and that the company was going to challenge that. I would be grateful for some more details on this matter.

The Hon. R.G. Payne: This matter has been addressed somewhat more specifically by the Director of Mining, and I ask Mr Peter Hill to comment on this matter.

Mr Hill: I am not aware of all the details of what has occurred but, in summary, some aspects of the operation of the quarry were fairly noisy. As the Minister has said, a mines inspector stopped the quarry for a time while certain measures to do with the crushing plant were fixed. The present problem seems to involve the frontend loader, which makes intermittent noise when being used on benches, where the noise is noticeable. There is also the extension of Greenhill Road, which goes through to Balhannah, and quite a bit of traffic noise emanates from that road. Further, the railway from Adelaide to Melbourne is not very far away and there is an increase in noise as trains come out from the tunnel and go down a steep incline towards the Onkaparinga River.

We have had some difficulty in ascertaining what noise comes from the frontend loader, what noise comes from

the fairly heavy traffic on the road and what noise comes from the railway when a train comes out of the tunnel. Presently, the three families which live nearby seem fairly determined to have the quarry closed down. We believe that the quarry operator has complied with all the original restrictions that were put on him by the mines inspector. The saga is continuing.

The Hon. E.R. GOLDSWORTHY: Yes. Some agreement was reached by the Department of Mines and Energy, the Department of Environment and Planning and the operators as to noise levels, before the operation commenced. It is claimed that those conditions are not being met. The Department of Environment and Planning has been brought into the matter fairly extensively, as I understand it, and they have taken noise levels at the site, and all the rest of it. My understanding was that the Department of Environment and Planning was to put some stop to it. Does the Department of Environment and Planning have that authority or does that authority rest with the Minister of Mines?

The Hon. R.G. Payne: My understanding of that area is that, if a mining activity is causing the problem, we would have jurisdiction. Obviously, that is clearly what it is.

The Hon. E.R. GOLDSWORTHY: So the Department of Environment and Planning cannot close the mine.

The Hon. R.G. Payne: I do not think I said that. What I said was that, if a mining activity caused the complaint, we would have jurisdiction. I guess that the Department of Environment and Planning might be able to come up with the air being unhealthy, or something like that; then it might be a different story. That is all I am cautioning.

The Hon. E.R. GOLDSWORTHY: I think the position is—and I am not too clear—that under the Noise Control Act if the noise level exceeds the legal requirement, that gives the department the authority to close it down. In fact, that is what it was going to do but the operator of the quarry was going to challenge that in court. Does the Mines Department know anything about that?

The Hon. R.G. Payne: I think that the Deputy Leader has now offered us the necessary caution. If a court case is pending, then least said soonest mended.

The Hon. E.R. GOLDSWORTHY: What is the purpose of the review of the Energy Division? I commissioned a review when I was Minister, and this was carried out by Ivan Lees just before the 1982 election. Has that report been dusted off or does it have any relevance to this review? If not, what is this review all about?

The Hon. R.G. Payne: The Lees review dates several years ago and does not have any relevance to the item we are now considering. I am not saying that it was not carried out in good faith, but it is not what we are talking about.

The Hon. E.R. GOLDSWORTHY: Is it a different review?

The Hon. R.G. Payne: Yes. This review relates to the setting up of the Energy Planning Executive, and it is to do with the impact of that new arrangement in the State's energy planning relative to the Energy Division. A partial review also took place about two years ago, in relation to servicing the Energy Planning Executive. It really has no greater significance than that. Since some of the persons will be increasingly involved in servicing the Energy Planning Executive, clearly a review of the functions concerned was in order.

Mr GREGORY: Mining equipment used underground at Roxby Downs is powered by diesel engines. What steps have been taken by the Department of Mines and Energy to ensure that employees suffer minimal health risk from exhaust fumes?

The Hon. R.G. Payne: Whenever Roxby Downs or Olympic Dam is mentioned (or the activity of mining) people start thinking about uranium, but there are other possible hazards associated with underground mining activities, that is, the fumes from engine powered equipment that may be used below ground. The situation is this: the permission of the Chief Inspector of Mines is required before any diesel engine may be installed in an underground mine. All engines are pre-tested before approval is granted to ensure that exhaust emissions are within the limits prescribed by the mines and works inspection regulations.

The size of engines used at Olympic Dam vary from 6 kilowatts (that is, chain saw size) to 368 kilowatts (that is, truck engine size). The mines and works inspection regulations prescribe a minimum airflow of 2.36 cubic metres per second or .0316 cubic metres per kilowatt, whichever is the larger, wherever a diesel engine is operated underground. The regulations also prescribe air quality specifications for the mine ventilation. Regular surveys by the Inspector of Mines and personnel from the Occupational Health and Envirionmental Monitoring Section of the department regularly check airflows and air quality in all working places at Olympic Dam. Routine monitoring to date has shown that with approximately 30 diesel engines in the mine the air quality requirements for nitric oxide, carbon dioxide and carbon monoxide are being met with an adequate margin of safety. It is pointed out that the Mining Division, along with Roxby Management Services, has financed and supported Amdel in carrying out an initial investigation into the identification and quantification of carcinogenic polyaromatic hydrocarbons likely to occur in diesel exhausts.

Both these organisations have been further instrumental in nominating Amdel for a Federal Government grant to continue this investigation in more detail. I think that we would all agree that, in relation to what might be in diesel exhausts, this would be a worthwhile grant to be obtained by Amdel to further continue investigations.

Mr GREGORY: Can the Minister tell the Committee what earthquake monitoring is done in South Australia?

The Hon. R.G. Payne: Yes, I can. It is an area which has recently occupied my attention, and involved the department and me as Minister in what I might term a rescue operation in continuing that activity in South Australia on a sensible basis. Some $65 000 is to be expended on this activity in the current financial year. I managed to obtain $30 000 as a new initiative in the budget as an extra amount, and the other $35 000 was obtained by some of the actions which I commended earlier to the Committee this morning—by the restructuring and rearranging of activities within the department to make this additional funding available.

I and relevant officers in my department believe that it is vital that we continue to be involved in the recording of earthquake phenomena in South Australia. Until quite recently, until we were involved in this activity, the University of Adelaide seismology network was the only permanent earthquake monitoring equipment system in South Australia. Some time ago its founder and director at the university, Dr David Sutton, died, and the University of Adelaide indicated that it was unable to provide further support for the network, and that is how my department and I got into the act.

Flinders University was also involved—to a limited extent—to keep things going until we were able to pick it up. Mr Reg Nelson, the officer in our department who, through the Director-General, brought this matter to my attention originally, I believe is an extremely enthusiastic officer who is well aware of the necessity for maintaining this minimum level—and that is all we are able to afford—of activity with respect to earthquakes taking place in South Australia.

He first acquainted me with the fact that Adelaide has the highest earthquake risk of any capital city in Australia, with several damaging earthquakes in the region since the city was established. He said that, if an earthquake similar to the 1954 Darlington carthquake were to occur, with the present city development the results could be disastrous. Obviously, carrying out seismology associated with earthquake recording is not going to prevent one happening, if there is one on the cards (to coin a phrase). However, Reg Nelson maintained to me and I put to Cabinet (and we were able to get this small funding to keep the thing going) that it is vital to get all the information one can so that if any pattern emerges the necessary warning may well be obtained and some degree of forecasting could take place, which could be useful in terms of safety and so on.

Additionally, if we get enough data then we can make sure that earthquake requirements with regard to construction activity in buildings, homes, and so on, are adequate, so that the likely effect of the earthquakes we may well get in our State will be such that buildings will withstand the impact. It is not generally known, but there was a recent quake this year up north which left upfolding of some 0.6 metres. It is clearly evident in photographs Mr Nelson took and showed me. It can be seen extending over some distance, and that was a sizable quake on the Richter scale. It fortunately happened well up north where there was no-one around, really, to be directly affected anyway, other than some stations and people in the vicinity who knew there was a fair sized tremor.

I am not trying to be alarmist at all, and it was in fact in the Musgrave Ranges, so it was fortunate that it was well away from the populated areas. One could point out that an earthquake of the magnitude of 6.2 on the scale, such as occurred in Nicaragua, for example, the same sort of magnitude which occurred in the Musgrave Ranges. I will not add to anyone's alarm by saying how many people in Adelaide it might have killed, and so on. No amount of recording of data can prevent such a happening, but where we are properly prepared, whether we are looking at emergency procedures or whatever, we must take into account the likelihood of the severity of an occurrence.

None of that can be usefully done unless we are carrying out this basic activity of recording, using a range of equipment which is installed throughout the State. I might ask one of my officers to provide a little further elaboration as to the number of these seismology sets we have.

Mr Watts: There are currently 11 seismograph stations scattered around the State. Using this network, approximately 300 earthquakes are observed in South Australia every year.

Mr GREGORY: Can you indicate the magnitude of those?

Mr Watts: All have been less than two, and that is a scale where they are not really felt by anybody. Two or three times each year earthquakes occur which are large enough to be felt only at their epicentre, and this was the case in the Musgrave Ranges. It resulted in the 0.6 metre fault scarp referred to by the Minister.

This extended over a number of miles. It does not sound a lot, but if you put that in a built-up area—through this building, for example—and displaced half of it by 0.6 of a metre you would get a great deal of damage. That was the case in the Mexican earthquake, with that sort of magnitude, and that caused an awful lot of damage. This network is used to look at earthquakes both around Australia and world-wide. For example, we picked up on the equipment on Sunday an earthquake in Greece. That is of particular interest to the Bureau of Mineral Resources in the Federal Government which is also involved in this exercise and providing part funding of $30 000 a year.

The computer used in processing data acquired by the network is currently very much outdated, so we plan to upgrade it over the years. One of the seismographs has just been installed in the reception area of the Department of Mines and Energy building, and we are currently putting up a display explaining all about earthquakes. If members are ever in the vicinity, they are welcome to drop in and see this in operation. One of the main reasons for it is as a risk assessment in designing emergency procedures, with particular reference to building codes.

Mr ROBERTSON: That Musgrave earthquake was in an area that is not as tectonically active as the Mount Lofty Ranges, was it not?

Mr Watts: Yes.

Mr GREGORY: As a supplementary question, you mentioned in your reply that the last one that was measured was an earthquake in Greece and that this was of interest to the Federal Bureau of Mineral Resources. Can you tell the Committee why that was so?

Mr Watts: Our mandate is local and State. We are interested in the State aspects of it, but the Bureau of Mineral Resources is, I suppose, interested nationally and internationally. It is part of an international monitoring network. I suppose that it would have obtained its information from Greek seismographs. I just happened to mention as a matter of interest that we recorded on our equipment a Greek earthquake.

Mr GREGORY: Clause 12 of the Olympic Dam and Stuart Shelf Indenture requires the joint venturers, as far as possible and as far as reasonably economically practical, to use South Australian materials and labour. Are the joint venturers observing the provisions of the indenture and, of the contracts let to date, what percentage has gone to South Australian firms and what is considered a reasonable percentage in similar programs by the Western Australian and Queensland Governments?

The Hon. R.G. Payne: The joint venturers are adhering to the undertaking in the indenture. I think that there is a genuine attempt by the top management to observe the clause 12 provisions that have been referred to. Judging by the level of complaint so far from South Australian suppliers (which has been very minimal), it would tend to support what I have just said. One of the advantages that has flowed from the project so far is that all the design work is being carried out at Greenhill Road rather than, say, in Western Australia or wherever, where Western Mining has very heavy staff set-ups.The work being carried out here would have obvious advantages, because South Australian suppliers have the advantage of being on the spot to talk to the design people and draftsmen as required.

The company is using a computer to feed in contract details and that in itself can be quite useful locally. By way of illustration, I point out that, as at 23 September this year, contracts had been let as follows: the committed amount was $93 million and the committed South Australian content percentage was at least 66 per cent. Cash contracts totalled $31 million, which is 85 per cent South Australian content. At this stage, one would have to stress that that is only a very simple statement. It could well be that in the $93 million some of the contracts are for items that cannot be supplied from South Australian sources anyway. I am sure that members who have been to the mine would know that there are some items, such as the large dump trucks and other things, that are used below ground which are not available from Australian sources, let alone South Australian sources.

As to the second part of the honourable member's question, in Western Australia projects that fall in the range between 65 per cent to 85 per cent Western Australian content are considered satisfactory by that Government, so apparently that is along the same lines as in South Australia. I am told that Queensland does not have any set range, but the Queensland content is looked at critically at the approval stage. I suppose that we have on occasion all heard the Premier of Queensland say, in relation to some big projects, what would happen to a given contract. I suppose that it is not easy to check whether or not that happens.

As Minister, I anticipated well ahead of time that we ought to try to ensure that we were getting the maximum South Australian input from the project, whether it be contract, direct employment, or employment external to the mine, so I sought and received Cabinet approval for the appointment of an officer of South Australian content, if you like. An officer (Mr Suter) was appointed. He is a qualified engineer and he is located in the Department of State Development, where one would expect to find him. His role is to ensure that South Australian content is as high as can be achieved in the project.

The Hon. E.R. GOLDSWORTHY: Can the Minister give an updated cost of the interconnection of the grid to Victoria?

The Hon. R.G. Payne: I can give a general picture. I am perfectly happy to make additional information available, but I think it will probably be of more use if I call on Mr Owens, who has been involved with a lot of that detailed work. I know that there have been changes.

Mr Owens: Regrettably, I do not have a revised figure, mainly because the project has reached the stage where the final detailed engineering is currently being undertaken and, as members are aware, approximately two months ago the three State utilities announced that they had signed the detailed operating agreement, which contains the very comprehensive rules and regulations under which the interconnection will be operated. When that was agreed, that was then appropriate for the detailed engineering phase to be proceeded with and indeed for tenders to be called for construction of the transmission lines and also for the release of the joint Victorian-South Australian environmental impact statement, which document is available for public inspection.

The cost estimates still remain those that were prepared approximately 12 months ago and the project is currently on schedule, with a commencement of operation in the first quarter of 1990. The detailed engineering design already has produced one area of some small saving in the terminal station at Portland, to the extent of $3 million or $4 million, but a total revised cost for the interconnection has not yet been compiled. We will await the conclusion of the detailed engineering design and costings which are currently taking place, but the general indication is that the cost will be within the original estimate, which was produced 12 months ago.

The Hon. R.G. Payne: I am aware that a recosting can be applied to the portion of the cost attributable to ETSA's need to provide the 275 kV line to the South-East in the time span concerned. That was originally related to a certain number of years in which a decision had to be made and a cost allocation made. ETSA would now maintain that it must be brought forward more years because the need for it was put off further in the absence of interconnection. Additional costing now shows that the benefit of interconnection to South Australia is greater because the amortisation of the total cost can take place in a shorter time than was thought at first. That is what I meant when I said that there are some updatings which show greater benefits. I hope to get that detail for the Committee a little later.

The Hon. E.R. GOLDSWORTHY: What is the projected growth in electricity use in South Australia? ETSA's original predictions have not been fulfilled. That has implications for power stations because I understand that projections for growth have been revised downwards fairly significantly.

The Hon. R.G. Payne: I would not suggest that growth has been revised downwards fairly significantly. The Future Electricity Generating Options forecast of two years ago gave a range not all that far away from ETSA's projections. The projection has now come down to a figure which nobody contests—2.5 per cent per year—whereas the range went to 2.8 per cent and 3.3 per cent. The difference might be said to be significant but it is not large. That is one of the first tasks that I am requiring the Energy Planning Executive to address. I am asking it to check out forecasts to see whether they can be further refined for the reasons outlined by the Deputy Leader of the Opposition. It is vital and most cost effective to spend at the correct time.

The Hon. E.R. GOLDSWORTHY: The interconnection is to be finished in about 1990. I guess that the Victorians have revised their power growth demand downwards as well. The phenomenon is not peculiar to South Australia. It is therefore likely to have excess generating capacity. The 275 kV line has been mentioned as a means of taking advantage of opportunity costs when they have a bit to sell. It now seems that they will have plenty to sell. Is it contemplated that the interconnection could contribute to the base load in South Australia? That was never part of the original thinking. Power was to be taken when it was available. I do not know what effect moving to eastern standard time would have but it must have some effect on peak use. If interstate power requirements have been revised downwards, what is the effect on filling fairly large lines with some base load?

The Hon. R.G. Payne: I do not have any figures of any veracity about Victoria but I understand that it will have excess power for some time. The Government does not contemplate using power by way of interconnection except in opportunity exchange, as originally announced. The Deputy Leader mentioned the purchase of block power for base load purposes. Mr Owens may have details about that.

Mr Owens: The observation that Victoria and New South Wales appear to be about to experience vast surplus capacity is correct. Both are bringing new power stations on line although their demand forecasts have been revised down to a level not much greater than that of South Australia— 2.5 per cent. Theirs are about 3 per cent to 3.5 per cent growth.

In response to the observation about interstate surplus capacity, the Governments of Victoria and New South Wales have embarked on a campaign to sell surplus electricity. Victoria is promoting energy intensive industries, and the Electricity Commission in New South Wales has recently received approval to sell electricity direct to industries to use the surplus and cover their high fixed costs.

The implications for interconnection are favourable in that those States should continue to have surplus electricity available for South Australia to purchase, but the economics depend on the purchase being made on the basis of opportunity energy, under which arrangement we pay only for the fuel cost. We make no contribution to the capital cost of their power stations. That means that we can replace our expensive fuel, such as oil, with lower cost electricity from the other States.

If we purchased base load electricity, we would have to pay for the capital component, so the price would increase from 2c to 2.5c per kW/h to about 4c per kW/h. Purchasing

base load would take up a reasonable amount of capacity in the interconnection line and reduce the spare capacity for fuel savings. The line has a capacity of only 500 mW whereas installed capacity in South Australia is about 3 000 mW. Every megawatt dedicated to contract supply is a megawatt less for random opportunity at a lower price. The most economic use of the line for South Australia is to back out of our use of expensive fuels at peak times and to use the 500 megawatts to buy opportunity energy.

It gives one that added security of supply if, for some reason, such as the fire at Torrens Island, or one of the boilers coming down at Northern power station for a short period, power was cut, because there would be an opportunity to obtain power supplies from interstate to prevent industry and domestic consumers in South Australia from not having access to electricity.

The Hon. E.R. GOLDSWORTHY: Does the Minister envisage a situation where despite the problem we have with fuel and future power income to the base load, it would become practical at 4 cents, particularly if the eastern States have surplus power. One might be able to hammer out a deal so that they can cut their losses, in a sense, if South Australia made a contribution. If they are wandering around trying to sell their surplus electricity, I think that the conservationists must be having a fit. If they have this excess capacity and want to sell it, the climate might be right to hammer out some sort of deal which, will balance some of that 500 megawatts. Half of that would replace the whole expense and may be a better deal than having another unit at Port Augusta, for instance. I would hate to be in the hands of the eastern States with their industrial relations record for power supplies; that would be a distinct disadvantage. Is that a possible scene, because it is cheaper to mine coal in Victoria than it is in South Australia?

The Hon. R.G. Payne: I think that the Deputy Leader has, to some extent, answered his own question while asking it when he pointed out that it is not desirable to be in the hands of another State when thinking of industrial relations. My answer to the question whether I envisage that sort of a scene arising is 'No'.

Mr ROBERTSON: I understand from sources in Taiwan that there has been considerable movement lately for Japanese industry to buy Taiwanese coking coal as a replacement for coking coal from New South Wales and Queensland. Bearing in mind that there is a difference between bituminous coal used in power stations and coking coal, I am wondering whether the surplus coking coal might find its way into markets in Australia resulting in coal imported from eastern States being cheaper than the coal we mine here. Also, because of the excess of coal in the eastern States they might be able to provide base load power more cheaply than they presently do in the event of a downturn in their export markets. The price of coal might come down to the point where it will be a viable proposition for us to import coal from the eastern States or the price of base load power might fall to the point where it becomes cheaper to buy it through the 275 kV line.

The Hon. R.G. Payne: My attitude to this matter is that I do not wish to export one job from this State to another State.

The Hon. E.R. Goldsworthy interjecting:

The Hon. R.G. Payne: I do not need any assistance from the Deputy Leader by way of his little asides. I do not wish to preside over my portfolio in a way which exports even one job to another State if that can be avoided. The situation is that the Government is in the business of ensuring that it provides energy to the domestic scene in our State, and to industry, that it is able to pay for, and to be competitive in the overall scene. We are taking, and have taken, steps to provide for that to be an actuality, and for it to continue. In my opinion—and I am Minister at the present time—and I have put it to the Government and had it accepted, the best way for us to do that is to have a range of generating options, which we have got, whereby we make use of local resources. We have two of those: local lignites and coal, as well as gas. We also have an opportunity for an interchange arrangement which would link our network with those of two other States.

It is my view (and the Government has accepted it) and up to this point it has been the view of the Future Energy Action Committee (a view which was made public) that the steps that we have taken are the best that we can take in this scene. The recommendation about importing coal from interstate was specific from that body: it was 'No'. Presumably, some of these matters will be addressed in future by the Energy Planning Executive: that would be well within its charter. Mr Owens will be serving as Executive Officer with that body. I have tried to outline to the Committee my thinking on this area at the policy level, which is Government thinking at the present time.

Mr ROBERTSON: I turn to two programs outlined at page 504 of the program estimates: the wind energy program mentioned in the 1985-86 targets and, in conjunction with that, the remote area energy project, which gets a guernsey for this year, as well. What progress has been made with the wind energy program in the past year and what is proposed for the completion of stage 1 this year? In relation to remote area energy, does the cost of photovoltaics, wind biomass and biogas make them viable alternatives in certain situations? I realise that there is already a tradition in this State of biomass fuels; namely, timber offcuts at Snuggery being used to supplement the ETSA grid, the sugar mills in New South Wales and Queensland use gas as an alternative source of fuel to supplement their regional grids, and I wonder whether there is a potential for the use of biomass fuel or biogas from places such as piggeries and dairies to be pumped into the ETSA grid?

First, is it a viable alternative for people in these areas to generate their own power and, secondly, can the Minister see the sale of that power to the ETSA grid, bearing in mind the fact that the E&WS Department sells electricity generated from methane from the sewage farms at Port Adelaide and Glenelg?

The Hon. R.G. Payne: With respect to the generation of electricity using wind energy as the generating medium, the Government has a clear policy which was enumerated during last year and which it has begun to implement. It is our view that, attractive as it might be to erect a few wind generators around the State—because they look exciting, and so on—there is a proper way to go about these matters. I think I said when being interviewed last year on television that I did not want to be remembered as the Minister responsible for 'Payne's Folly' because a lot of wind generators were erected in the wrong localities, which is what I am leading up to now. Wind energy may have a contribution to make to the State's energy needs but, in order for that contribution to be attained, necessary research work must be done. That work has been in progress for over a year at 30 sites throughout the State: wind data has been collected and recorded for over 12 months.

We said that, secondly, we would marry that data with the known data from the current technology of wind generation machines available throughout the world and see what results that brought. I understand that that process is currently in progress and that when that evaluation is complete we will then be in a position to determine whether we

are justified in going ahead with some trial installations. There have been one or two trial installations in Australia. One of those was in Western Australia, and it is hoped that we will not have to go through some of the headaches that occurred in relation to that installation.

I have no direct knowledge of this, but I was told that one of the problems concerned the leads to the machine. They had allowed for an additional length of lead, some two and a half times, to allow for a rotation, because it was not what might be called a swivel head. However, the thing actually wound itself up about seven times, with somewhat disastrous results to the leads. That might be a fairly simplistic view of the hazards involved in that technology and, of course, there is a bit more to it. At one or two locations in Australia I understand that machines have been damaged due to the ferocity of the wind. On the question of other alternative means, the honourable member mentioned Snuggery. I understand that Snuggery uses a gas turbine.

Mr ROBERTSON: They were burning wood offcuts.

The Hon. R.G. Payne: Yes, but that was found to be unsatisfactory, and at present the installation operates using a gas turbine. Mr Owens might be able to provide some additional information in a moment. I draw to the attention of the Committee the fact that a separate report was issued by the Future Energy Action Committee entitled 'Alternative Energies'. That report examined a number of technologies, ranging from biogas and wind right through to fuel cells, and so on, and provided the best economics that it could produce on the various positions applying at the time. It made some forecasts and suggested that none of the alternative technologies were at a stage where they could be relied on to make any appreciable contribution to our energy needs at an economic rate. That does not mean that we have abandoned them. I have just demonstrated that we are pursuing the wind proposal, for which the committee gave qualified approval and an outline of a program, which we have dressed up but have adhered to. I invite Mr Owens to comment further, as he has been directly concerned with these matters dealt with by the Future Energy Action Committee.

Mr Owens: The Minister is quite correct about the Snuggery power station. It operates with a 75 megawatt (or three lots of 25 megawatts) gas turbine run on diesel liquid fuel, which can be operated from Adelaide without any manning. It is used mainly for peak loading and for voltage control in the South-East. I believe that the honourable member is referring to the Mount Gambier power station, operated not by ETSA but by the Department of Woods and Forests. That power station sells to ETSA electricity that is surplus to its own requirements for steam used for drying timber. According to ETSA's annual report 0.3 per cent of the electricity generated last year was purchased from the Mount Gambier operation of the Woods and Forests Department. In conjunction with ETSA we have considered whether there is any opportunity for expanding generation there. However, there is not, as it is an old plant and there is not a large quantity of surplus timber available. All that can be generated is currently being generated and being sold to ETSA.

In terms of the honourable member's question about the remote areas alternative energies, the Government is currently funding three projects pertaining to that, mainly in the Flinders Ranges—one at Balcanoona, one at Oraparinna and the other in the Gammon Ranges. Through those three projects the Government is attempting to determine the most economical way of generating electricity in areas away from the ETSA grid. Also, through Senrac, the Government is currently funding a major survey of users of energy in the remote areas of the State. That has involved a questionnaire being sent to every landholder and resident of towns and homesteads in the Far North of South Australia to determine their present requirements for diesel generators and whether there are other ways of satisfying that demand. The results of that questionnaire should be available some time later this year.

In terms of the potential use of biomass, a major program was undertaken from about 1980 to 1984 to evaluate the potential for energy production from biomass. A number of reports are available on that. They quantify the possible contribution and the economics involved. As a result of those studies we have only a very limited program currently in operation, and that is looking at growing eucalypts or fast growing trees for firewood production. That project, involving the production of firewood, is currently under way at six sites throughout South Australia.

Mr ROBERTSON: I was referring to bio-gas from dairies, piggeries, and so on.

Mr Owens: One of those projects involved biogas using material from piggeries. There is a test plant at Roseworthy Agricultural College, and the results of the project undertaken there are available.

The Hon. R.G. Payne: Mr Owens mentioned six sites in relation to production of firewood: at 17 Scottish Avenue, Clovelly Park I have endeavoured to install a seventh site, as I have been planting a number of mallee firewood species, which I obtained from the Woods and Forests Department. I am observing their growth on a quarter acre back lot and I hope to report in due course to a subsequent committee the results thereof.

Mr ROBERTSON: My third question relates again to page 504 of the Program Estimates and I refer to the question of remote power supplies. What incentives, if any, are proposed for people who might want to pursue alternative lifestyles and generate their own energy, either by way of wind or any of the other forms? Are any appropriate mechanisms available to people who might loosely be called part of the homestead movement, perhaps wanting to get away and generate their own power supply? Are any incentives available for such undertakings? Further, has the department done anything about providing independent energy sources (other than the obvious diesel source) for people living on, say, the Maralinga or Pitjantjatjara lands or the remote mining and pastoral outposts, which currently rely on a single wire earth return system? Will that system, which I understand is fairly expensive, ultimately be replaced by either photovoltaics or one of the other alternatives that were mentioned earlier?

The Hon. R.G. Payne: I am advised that information is being collected from one or two sites in the area referred to by the honourable member. Members who have followed the matter of wind generation would be aware that throughout we have never specified exactly where the test sites are. That was not simply because we did not want people to know where they were, but because we did not want the sites interfered with unnecessarily by vandals or by people who would seek to damage them. The project has been reasonably successful and we have had pretty good results at the sites concerned.

To date we have not had great involvement, that I am aware of, on Aboriginal homelands. I think there has been more Federal involvement with respect to the supply of power in that area. With regard to those people who might want to adopt alternative lifestyle living, I have sympathy with them. I do not think we have had approaches from any group up to now for assistance, although Mr Owens

might be able to inform the Committee of that. However, I would be willing to look at approaches should they occur.

Mr Owens: The main approaches we would get for that information are directed to the Energy Information Centre, which provides information about independent or stand-alone energy generating systems, including photovoltaics. The department has recently completed a study with Commonwealth Government funding for the installation of a photovoltaic power system at Wilpena as part of the Japanese Government's Nedo project. That work was for electricity supply to the motel and caravan park as an alternative to diesel generators. The Japanese Government was and still is interested in establishing a major photovoltaic demonstration facility somewhere in Australia, and that is under evaluation. However, the study showed that the economics at this time were not attractive and the discussions with the Japanese in Canberra are taking a slower approach than we previously thought.

In relation to the wind program, we have recorders at two Aboriginal homesteads in the far north of the State and we will be evaluating the economics of electricity generation from wind in conjunction with the diesel, so that the wind can back out the use of diesel fuel, but the reliability of the diesel would still be there. We have funded, through a local company (Dunlite), the development of a photovoltaic lighting system. One is currently installed in a North Adelaide primary school and a second unit is about to be installed in a national park to provide security lighting in a toilet/amenities area with the photovoltaic providing charging of batteries and the automatic lighting system coming on at night.

As I indicated previously, we have been working with local inventors and manufacturers at ways of improving the efficiency and reliability of diesel generators. A quite comprehensive approach is being developed towards assisting people who require stand-alone power systems. We would expect that by early next year we would be able to provide reliable and meaningful assistance to those seeking that advice.

The Hon. E.R. GOLDSWORTHY: Last year Dr Messenger was very enthusiastic about the coal gasification study, but when it came to the bottom line he said that any implementation of the scheme was 16 years away. I suppose it is now 15 years away because it is one year later. It seems to me that in terms of any contribution to our power grid we are a long way away from any tangible results coming from that study. Nonetheless, it has been a talking point for the Government and has generated some media reports. Will the Minister or the appropriate officer give us an update on the coal gasification study? I understand some results have come back from Germany.

The Hon. R.G. Payne: The gasification project relating to Wakefield/Bowmans coal (they are the same place) is a phased operation in which the first phase was to be some preliminary testing on a small scale followed by a second phase testing in Germany again of a large quantity of coal, I think involving some 1 000 to 1 200 tonnes. That coal was put together and sent to Morwell recently for drying and making up into half tonne lots, which was part of the deal for shipment to Germany. That step has already taken place. The test rig in Germany requires up to 60 tonnes a day to test the coal further for gasification with the use of oxygen, which will lead to additional possible uses of the end gas product.

It is necessary for further changes to be made to that equipment in Germany because some corrosion and/or fouling has already been found to have taken place, and different materials will be utilised into the test rig; then the testing will take place. An officer from ETSA and the department will be visiting Germany early next year to be part of the actual testing arrangements. The member for Goyder already got in on the prestudy, as I indicated in the House of Assembly the other day. He was visiting the area and I was able to arrange for him to see some of the sites, gear and so on.

The Deputy Leader is correct in reminding us that Dr Messenger last year said that he did not see it as an immediate panacea for the State's future energy needs and that is was some distance away. My own feeling is that, with the results that have been forthcoming and the fact that we have been able to become involved with the West German group concerned, this technology holds a great deal of promise for the future of the State.

It would seem that the only competitor might be another emerging technology. We seem to have gone from being totally dependent on gas and being held, as it were, captive for our electricity generation at prices we have no control over, to another scene where people are queuing up to help us out in our future energy needs. We have achieved something of magnitude in the past three years from the point of view of the State's future.

The Hon. E.R. GOLDSWORTHY: But you do not want to lose the market.

The Hon. R.G. Payne: That is right, and I was saying also that burning coal will continue with circulating fluidized beds. That is the other big prospect, where one has difficult coals containing impurities that are somewhat difficult to handle. It would be of more benefit, rather than getting sketchy information from me about what I recall of the project from the reports I receive from time to time, to invite Mr Owens to put together a more coherent account of where the project stands.

Mr Owens: Officially we are at the end of phase 1 of the project. Indeed, we received the bill for the end of phase 1 yesterday.

The Hon. E.R. GOLDSWORTHY: How much was it?

Mr Owens: It was 76 000 deutschmarks. From memory that is $57 000 Australian, roughly. That represented the end of the phase 1 testing, which was the corrosion test results, which were carried out by a company called Mannesman. That means that 10 tonnes of Wakefield coal has been successfully gasified and the impact of that on the gasifier, in terms of corrosion, evaluated. The results indicated, surprisingly, that the salt content of Bowmans coal, which has been the main problem in terms of its combustion in the pulverised fuel boiler, has no impact whatsoever on the gasifier, and that the one problem area was the sulphur content of Bowmans coal which is higher than any coal that the Germans had previously tested, at 5 per cent.

Those of us who are aware of the chemical industry will know that the chemical industry has handled high sulphur gas compositions for many years, and there are a number of metals and materials available to handle the high sulphur composition. One in particular, MF956, which is a special material, has been recommended for use in the nozzles for injecting the oxygen into the gasifier.

The modifications necessary to the pilot plant will now be carried out so that between November and April of next year the three weeks of testing which is required on the 1 200 tonne sample (to which the Minister referred as now on the waters on its way to Germany) can be carried out during that period. The preliminary results indicate that the gasification technology will be successful. We have not got from the preliminary tests a good feel for the efficiency of conversion, and that will be the main result we are looking for in phase 2. The information resulting from the pilot

plant testing would then be used in phase 3, which is the detailed engineering design and costing.

I think it is correct or appropriate, though, to perhaps correct a misapprehension about the role of the gasification test program. I think that people have assumed that it is solely related to the question of natural gas availability in South Australia. On the contrary, whilst that is one element of the justification for the test program, it is not the main justification, which is to identify a coal based power station technology which will give South Australia low cost electricity in the 1990s and beyond, and the coal gasification combined cycle technology has been identified as a technology which offers us that hope.

It is the most environmentally acceptable of any of the combustion technologies in that all of the sulphur in the coal is recovered for sale as elemental sulphur rather than being disposed of through the stack as sulphur dioxide. It requires less water—about half the amount of fresh water—than a traditional power station requires, and the ash is disposed of as a glass-like slag rather than as the dust-like ash which is produced in a pulverised fuel power station.

Finally, it has an efficiency of some 4 per cent or 5 per cent above the efficiency of conversion in a pulverised fuel power station. It is for those reasons predominantly that we are carrying out this test program, with the additional benefit that the medium BTU gas which is produced can be, if justified, converted into chemicals or synthetic natural gas or liquid fuels. But the main justification is the potential to make use of our own South Australian coals which we cannot use in other applications, and generate low cost electricity.

So, the program is a few months behind schedule but the end of the pilot plant testing is scheduled for around June of next year, when the final report on that stage of testing will be received. We will then make a decision as to whether or not to commit to the third phase—the detailed engineering design and costing.

The Hon. E.R. GOLDSWORTHY: Could I ask the Minister—and, through the Minister, the officer probably—whether this technology is used anywhere in the world at the moment to generate power? As I understand it, in conversion of low grade gas which is then used in the power station (which is the simple explanation of what happens) the coal is converted into low BTU gas and then that is used as a fuel in the powerhouse. Is that done anywhere in the world at the moment?

Mr Owens: The power station concept is combined cycle, which simply means that the gas is first burnt in a gas turbine (turbines are located now at Dry Creek, Mintaro and Snuggery) and the exhaust gas from that goes into a boiler and generates steam, so we have two goes at the fuel, and through that we get a higher conversion of the energy in the gas to electricity.

Combined cycle power stations are in operation in numerous locations throughout the world and have been for 10 or 20 years, but the gasification aspect up front is a recent development and there is, to my knowledge, only one power station in the world which has that technology. That is at a place called Coolwater in the United States, which has a Texaco gasifier gasifying coal and directly linked into the combined cycle power station.

That project is funded through EPRI (the Electric Power Research Institute) in the United States, and its reports independently evaluated indicate that the plant is performing above expectations, and reports from America suggest that this technology is going to be the predominant coal fired technology in the future in the United States.

In terms of the particular gasifier at which we are looking—the Rheinbraun high temperature Winkler gasifier—it is only three weeks ago that UHDE, the company doing the test program for us, commissioned first commercial high temperature Winkler gasifier in a chemical plant in Cologne, where the gas is being used to produce methanol.

The combination of the high temperature Winkler gasifier with the combined cycle power station has not yet been implemented anywhere in the world and we will, therefore, be required to judge not only the performance of the gasifier but also the implications of combining that with a combined cycle power station. But the individual elements have been adopted throughout the world, and we believe that, by the time we are looking at such a power station in South Australia—which is the mid 1990s—there will be a number of examples around the world for us to base our confidence on.

The Hon. R.G. Payne: I would only add one other thing to that excellent dissertation we have just been given. It is my understanding that this process also lends itself to modular construction, which is a very important feature in the provision of power in this way, and I understand also that the modular units might well turn out to be of the order of 100 or 200 megawatts, expressed in electrical terms, which are also a great advantage in a State of our size.

The Hon. E.R. GOLDSWORTHY: Some questions were asked earlier about power for Wilpena. There is a line in the Estimates about studies of alternatives for the outback. I am interested in how that is developing. If one listens to some of the conservationists, we will go full circle and we will go back to the old wind light where the farmers generated their own power. I do not think that the power authorities who are trying to sell their excess power to make more profits fit too comfortably in that scene. The rural community saw it as a real boon when they were able to get rid of their wind light and their batteries. I can recall only too well those days of the 32 volt batteries. Are we heading in that direction? Is that where these investigations are leading us? Can the Minister give a general picture of what is happening in that area?

The Hon. R.G. Payne: I think that this is an area where I would like to give my viewpoint, because it is a flux scene—it never stops. Perhaps officers will comment differently. I can remember a couple of years ago when, as Minister, I was told that the way to go was diesel combined with a synchronous converter using what were known as SCRs, which are commonly called silicon controlled rectifiers. I thought that we had finally arrived at the stage I was at before I entered politics, when we already had silicon controlled rectifiers doing converter duty. My understanding is that a little more thought is now being given to the correct operation of diesel-driven power supplies so that one obtains better economies of running. Diesels operate best if operated at or near full capacity. I am informed now, by way of reading, that there are two diesels, one of which operates at the peak main load times and at other times, by automatic sensing and so on, the smaller diesel takes over, thus achieving the economy of operating the smaller diesel at or near its maximum capacity when the loads are light. I would say that is a fairly recent thought. What it demonstrates is that, in the past, not enough work was done to look at the actual needs in this area.

Mention was made earlier that we have set in train a survey which is obtaining information from all outback areas not on the grid which may have a need for power supplies of varying kinds ranging from farming properties, tourist facilities and so on. When we obtain that information, perhaps the design requirements can be approached in

a proper way. I gave only a general answer, because it has been of some interest to me. When I was in the Regular Army 34 years ago we had reliable diesels operating in the outback and we took them wherever we went. I cannot remember my being without power. Of course, economics were not always a factor that had to be kept in mind. We needed reliable diesels. If I intended to go back into commerce, I would even name the one that we used that did not give any trouble. I will not mention it here, because it is probably unfair to modern diesels. I thought it was worth mentioning because recently the problem has been addressed correctly. Mr Owens has been involved with this problem over a period of time, both in the Energy Division and also in his role with the Future Energy Action Committee. I invite him to bring the Committee up to date as to his thinking on the matter.

Mr Owens: Yes, it is a very complicated area because, given a choice, I think most consumers would prefer to be connected to the ETSA grid and not to have to rely on their diesel generators or any other form of electricity supply. Unfortunately, the cost of extending the mains is very prohibitive and there will always be a large number of consumers whom we simply could not contemplate ever connecting into the ETSA grid because of their remoteness but, if we can put aside the question of what is an acceptable connection policy and simply look at what options people have available to them if they have to supply their own, the evaluation has more or less gone full circle, as has been suggested. Consideration has been given to a lot of these alternative fuel sources such as photovoltaics, wind and others, but people have come back slowly to the realisation that, despite their problems, diesels are still way out in front in terms of cost and, therefore, emphasis is now placed on ways of improving the diesel's operation to make it more efficient, more reliable, quieter and more acceptable to the consumer.

Some of the early results from the survey have surprised us, in that the cost of electricity to some of these people generating their own power is as high as $2.50 per kilowatt hour as opposed to the 8c that consumers pay ETSA. At those sorts of prices per kilowatt hour, there is obviously considerable room for improvement and a role for the Government in helping those people choose their right system. The three systems that we are currently evaluating are as follows: firstly, as referred to by the Minister, diesel parallelling, which is a combination of a small diesel with a large diesel; secondly, a diesel inverter system where the diesel is used to supply the peaks and to operate in conjunction with a battery inverter system where surplus energy goes into the battery and then comes out and is converted from DC into AC. In that area we have a South Australian inventor by the name of John Piechnik, who has a product that we believe will revolutionise the technology of inverters around the world. We have a project where we hope to put his inverter into the field at Oraparinna in the next few months to test it out in a real world situation. Of course that means in that situation the diesel only has to operate for two or three hours a day and the question of reliability and quietness is achieved.

The third technology which appears to offer some hope in terms of economics is a combination of a wind generator and a diesel. We will be evaluating that option later this year when we evaluate the results of the wind survey. Surprisingly, we have found that the wind measurements in the inland areas, whilst not high, are still better than we might have thought, so there is some prospect at, say, places like Coober Pedy of achieving some significant economies of operation by backing up diesel fuel and making use of the solar winds. The other technologies of solar, both photovoltaics and a so-called central tower where the sun is focussed by mirrors onto a boiler, have been costed by us. The New South Wales Government installed one of these systems at White Cliffs, which is now called a white elephant, and its generating costs are of the order of $2 per kilowatt hour.

Improvements are being made, but solar technologies have a long way to go before they achieve prices that we would hope to achieve by the better operation of diesels, which can be operated at about 10c to 15c per kW/h. Our objective is to develop such systems and help people in remote areas to adopt them.

The Hon. E.R. GOLDSWORTHY: I should like to ask about the long-term prognosis of gas supplies from the Cooper Basin. I read a newspaper report last night which suggested that 45 bcf have been found in a new well. That is about half a year's supply for South Australia. The report also said that we have found only 100 bcf during the past five years. That did not seem right.

I should like an account of what gas has been discovered in the past five years. We have some way to go to satisfy the Sydney contracts on the basis of last year's arbitration. What is the Minister's view of long-term supplies from the Cooper Basin? Producers have said that they are satisfied that there will be plenty of gas to see South Australia and New South Wales into the next century, and the Minister has exuded a fair bit of confidence on that score. It seems that we are making haste pretty slowly. I should like an update on the rate of gas discoveries and to know when we can think about writing a contract of our own.

The Hon. R.G. Payne: As a result of the Coles, Nikiforuk and Pennel independent assessment of reserves in the Cooper Basin last year and an update as of March, it is clear that there is a 166 bcf shortfall on the famous schedule A supplies, which are contractually bound to be supplied to New South Wales until 2006. I understand that, since then, there have been some finds which reduce the shortfall.

The sooner AGL accepts that the full schedule quantity is there, the rest will belong to South Australia and contracts can be entered into. I am referring to the subject area—a point which the Deputy Leader of the Opposition understands fully. The adjudication by CNP suggested that a small quantity was available outside the subject area. It would be useful for the State and could be contracted for.

To allow for that and other activity to take place—there is some urgency—in conjunction with establishing the Energy Planning Executive, a gas task force has been formed. Its members are essentially members of the Energy Planning Executive less one member who is Chief General Manager of the State Bank. The members of the task force are Mr Guerin, Mr Johns, Mr Polglase, and Mr Sykes, and the Chief Executive Officer is Dr Messenger, who has a previous association in this area. It is their job to consider matters to which the Deputy Leader referred.

Since our earlier session this year, I have had a meeting with senior people in AGL about future gas supplies for South Australia. I say that so that gas sharing will not come into the discussion. The discussions have been amicable and there is a change in the players. New names are involved. There has been a major restructuring of AGL in New South Wales as a result of Government action and market forces. I am confident that the gas task force will be able to ensure that we have gas beyond the presently assured supply period to about 1991 if we use all of the ethane specified in the interim gas legislation which the House passed last year. As to the rate of finds, expenditure and the success rate, I

invite Mr Watts, the Deputy Director-General, to give any information that he might have.

Mr Watts: The first of April was a benchmark occasion because the independent expert appointed pursuant to the AGL and producers' letter of agreement reported in a legally binding way on the level of reserves available to satisfy schedule A. He reported a shortfall of 166 bcf, which meant that there were no reserves to sell to South Australia. Various reserve estimates have been made, and I have reported some of them to previous committees. It has always been a bit of a problem. We have made limited progress since 1974 in satisfying the 800 bcf requirement of AGL.

An interpretation of the results of independent experts suggests that we have gone from an 800 billion cubic feet (bcf) shortfall in 1975 to a 166 bcf shortfall today. Discoveries during that period have been fairly high. The problem has come from the downgrading of reserves in known fields, which have about balanced the discovery rate.

I turn briefly to the proved and probable reserves on which the independent expert reported, of 2 612 bcf, which relates to a shortfall of 166 bcf previously mentioned. The other categories of reserves currently carried by the producers and ourselves are in the possible and potential categories and are less certain reserves. The possible category within the subject area is currently carried by the producers and the department and amounts to 1 500 bcf plus or minus 300 bcf. In the potential or undiscovered category the figure is 900 bcf.

In the non-subject area the proved and probable reserves are 60 bcf, with possible and potential reserves of 160 bcf and 650 bcf respectively. There is no substantial disagreement between the department and the producers on the possible and potential categories. I turn to the demand estimates for South Australia to the year 2006. We anticipate that we are required to find between 1 300 bcf and 1 600 bcf of gas in addition to the gas reserves under the Natural Gas Act to satisfy South Australian demands. That figure is based on a low demand scenario and a high demand scenario. If present discovery rates are maintained this will require something of the order of 210 to 270 wells costing $300 million to $400 million.

I turn now to the question of discovery rates for the past five years. In 1982 we saw the start of the accelerated gas program, which was part of the 1982 gas pricing agreement on which the producers agreed to spend $55 million on a specified gas exploration program. The department was granted an oversight role in that program to ensure that it was indeed gas orientated. It had three components: wild cat drilling; appraisal drilling; and a tight gas evaluation, in roughly three equal proportions. That program was completed at the end of 1985. It drilled 43 wells and ran 2 556 line-kilometres of seismic at a total cost of $63.2 million, which exceeded the $55 million dedicated to the program.

I think that it was a very successful program. It found 412 bcf of proved and probable sales gas over the three years of the program, which is 435 petajoules. It also found 150 bcf of possible sales gas, which on historical averages 50 per cent of which, with further drilling, will probably turn into proved and probable reserves. It also found 24 million stock tank barrels of condensate and liquid propane gas, which is associated with the gas. It also found 1.6 million stock barrels of oil. After initial negotiations between the department and the producers we worked out a very constructive set of guidelines on how to handle the oil discovery and any unexpected oil discoveries were credited against the program.

Really, the accelerated gas program found 4.6 years supply for South Australia. In terms of proved probable and possible gas, it found a six year supply. The finding cost under the program was 16c a gigajoule. This contrasts with the producers' base program, which was in those years emphatically oil orientated, of a finding cost of over 50c a gigajoule. I think that that was perhaps the most successful gas finding exercise in the Cooper Basin in recent years.

Since the end of the accelerated gas program the gas exploration program has reverted to the ordinary base program of the producers. Since the passage of the Natural Gas Act the producers have shown a greater appetite for gas exploration. The decline of oil prices has made gas exploration more attractive. The target that the producers set themselves from 1986 onwards was to find approximately 160 bcf a year, which replaces the produced gas; that is, the approximate AGL and PASA market. They set themselves that target. In 1986, up until the drilling of the Burgundi 2 well, which was reported in the press yesterday, the Burgundi 1 well and associated Aroona 1 well were drilled under the accelerated gas program. The Burgundi 2 well was an appraisal well designed to prove up the gas established in the initial wells. This will give us a quantity found in South Australia to date of 103 bcf this year. An additional 15 bcf has been found outside the subject area. Therefore, to keep to their target they need to find another 60 bcf to 70 bcf this year.

The Hon. E.R. GOLDSWORTHY: This calendar year?

Mr Watts: Yes. There is a concern with that philosophy of an exploration program that only keeps up with production, and that is very fine if one has a body of gas to sell. Unfortunately, there is still a shortfall on AGL A and that needs to be overcome by finding another 166 bcf of gas. Once we can move to declaring schedule A, which is what we all desire, then they have to discover a block of gas that PASA can buy, a reasonable block of, say, 400 bcf or 500 bcf, which is a reasonable block of gas to buy. That would seem to be a discovery rate of 160 bcf a year, which is still a few years away. Once that block is established, the discovery rate would be more than adequate to keep up with production.

Mr ROBERTSON: Again on the question of coal gasification, what relevance does the technology that is presently being researched for Bowmans have for deposits of coal such as that at Lake Phillipson, which coal, I believe, is of higher grade but is about 800 metres below the surface? Is *in situ* gasification thought to be a viable prospect, in particular for Lake Phillipson and other similar deposits? I understand that there are others in the western portion of the State which might lend themselves to *in situ* gasification, if it can be proved that it works.

The Hon. R.G. Payne: Quite a bit of work has been done throughout the world on *in situ* gasification. This matter was addressed by the Future Energy Action Committee, during the period when it was operating on our behalf. Mr Owens was involved in that, and I am sure that he can provide the Committee with some useful information.

Mr Owens: There are two broad approaches to gasification: one is to gasify in the ground without actually mining the coal—and that is referred to as *in situ* gasification—and the second approach is to mine the coal and then to put it into a gasifier. That is the type of study that we are carrying out on the Bowmans coal in the HTW gasifier. The HTW gasifier is a development from the original Winkler gasifier, developed in Germany in the 1930s. The main advantage of the Winkler gasifier is its suitability for lignite or high moisture coal. That has been its main application, because it is a fluidised bed gasifier. Lignites are very reactive, and they are particularly suited to that type of gasification. There is no reason to expect that Lake Phillipson

coal could not be gasified in such a gasifier. It is lower in moisture. However, we have to partially dry Bowmans coal before feeding it into the fluidised bed.

The main reason that we have progressed with Bowmans coals is that it is likely to be the lowest cost South Australian coal. It is a large deposit of over 2 000 million tonnes. Bowmans is in an area of the State well located in respect of the main electricity load in Adelaide. It has access to seawater for cooling and its environmental problems are few, by contrast with those that have been referred to at, say, Kingston and other places. It would appear that a mine at Bowmans would be a very simple low cost mine and we would expect that the cost of coal from there would be, say, $12 a tonne. The cost of Lake Phillipson coal, when we looked at this matter some three or four years ago, was considerably higher than that—from memory of the order of $50 a tonne.

Mr ROBERTSON: Was that an underground mine?

Mr Owens: No, that was an open-cut mine. For that reason, while technically I assume that it could be gasified, economically it would not be attractive relative to the gasification of Bowmans coal. We have studied underground gasification at Leigh Creek, where a number of studies have been undertaken over the past few years. The indication is that the economics of underground gasification are quite attractive, but one requires very specific geological conditions to enable that to take place, because the gas has to be not only produced underground but also collected, and therefore seepage must not occur up through the covering material, with gas being lost to the atmosphere. Research into deep coal gasification is being undertaken in Brussels. Tests are being conducted some 5 000 metres below the surface. We have always monitored the progress of that research *apropos* its possible long-term implications in the Cooper Basin, where 10 000 million tonnes of coal is located, and where possibly one day coal gasification could be undertaken, using the existing infrastructure of pipes up there. That is a technology that maybe the State can look at 100 years down the track.

Mr ROBERTSON: Referring again to page 504 of the Program Estimates, I refer to the proposed Galaxy Refinery and the study that has been directed towards having a further look at the economics of that refinery. Bearing in mind that, as I understand it, the Galaxy Refinery could possibly use only about 30 per cent of Cooper Basin condensates and also that two Acts have just passed the Parliament to make Petroleum Refiners of Australia at Port Stanvac a little more viable, will the Minister say what he considers are the prospects for another refinery at Whyalla? The idea has been around now for at least three or four years. I am not sure whether the people of Whyalla, while welcoming the prospect of another industrial base at Whyalla with its concomitant employment prospects, and so on, possibly regard this as being a potential white elephant, while I am sure that the people of the southern suburbs are worried about the implications of the Galaxy Refinery on employment at the PRA refinery. In short, what does the department see as being the prospect of success for the Galaxy Refinery, and how long will it take to finish the study?

The Hon. R.G. Payne: First, it needs to be said that the Galaxy Refinery is currently under study by the Industries Development Committee, whose job it is to make a recommendation in respect of that possible project. At that time the Government will be called on to further consider the project. At the beginning of his question the member for Bright said that he thought the Galaxy Refinery would use only about 30 per cent of Cooper Basin condensates. I understand that the present availability is about 14 000 barrels a day and that, initially, the refinery might require 7 500 to 8 000 barrels a day. So, that is not 30 per cent.

However, the important thing to note is that we are in a period of peak production of condensate from the Cooper Basin at this time. At this stage, as far as is known, we are looking at a declining production curve and so a few years down the track Galaxy might well find that the only way it can function would be by using all the available condensate. As I think the honourable member suggested, Port Stanvac is peculiarly geared to handle very nicely Cooper Basin condensate. Therefore, it would appear that there is something of a difficulty there in relation to the operation of the two refineries.

The Government's view takes into account the sorts of things the member for Bright put forward. Some additional employment of a steady nature, such as might be involved in the continuing operation of a refinery at Whyalla, would be a very beneficial industry for that area. The Government also has a view that it would probably not be in the best interests of anyone if, in creating a number of jobs in Whyalla, that same number of jobs was subtracted from the activity elsewhere in the State—say, at the Port Stanvac Refinery. That would simply be a transfer of the employment.

The whole question of the economics of the Galaxy Refinery is one of those things being very closely addressed by the IDC. It has been, over a number of years, looked at by various external authorities, as well as officers of the Departments of Mines and Energy and State Development, and the conclusion has been that it appears difficult for the refinery to be able to operate successfully if one accepts the argument that it has to produce motor spirit at the marginal cost at which it is possible to produce it from Port Stanvac. To do that they would have to be pretty efficient; they would have to get everything going and have all the action coming together. I am not saying that cannot be done, but that is what is required.

Mr Owens has been involved over a period of time and has actually made submissions to the IDC during the current hearings. I think probably, to some extent, we would be usurping the function of the IDC if we went down that track.

Mr ROBERTSON: I have another question, again from page 504 in the yellow book, picking up two things: the proposals for 1986-87 for the home energy advisory service, and also the point about the work on energy budgets for industry. I envisage the home energy advisory service as simply being an adjunct to the kind of work which has already been mentioned at the energy ideas village and the sort of shop front the department has run for a number of years, advising people on energy usage.

I am wondering whether the energy budgets in industry aspect of the proposals for 1986-87 will take on purely an advisory role for industry or whether assessments for industry are proposed to be made and industry penalised in some way for inefficiency. In other words, do the penalties that accrue to industries which operate inefficiently solely lie in the financial area, or is it envisaged to be a little more heavy handed than that in trying to enforce a reasonable sort of energy regimen in industry?

The Hon. R.G. Payne: The Government would never be heavy handed; it is not a role which a Labor Government would take up. There have been other Governments which have been heavy handed in their time, but certainly not a Labor Government. The honourable member asked about the home energy advisory service, and I can advise that that was one of the matters contained in our election policy.

Since that time, we have had a review into the whole area of assistance to people having difficulty meeting their energy accounts, and that is one of the things being addressed by the energy tariff committee and has also had some attention through some work done under the portfolio of the Department of Community Welfare.

Our ultimate policy in this area has not yet been firmed up, and is contingent on the results of the two sorts of areas I have just mentioned, together with any evaluation we may make of the results of those two. The intention, of course, in the case of people who are recipients of low income, is to assist them in order to meet their energy bills. Clearly if they can be reduced in a way which does not cost them, then that is an ongoing benefit which will be helpful to them.

However, whether one can meet the correct group in society to get the best value for the limited funds which would be available is one of those matters which, I believe, will emerge from the results of the report which will be due from the tariff committee as well as the work being done in the Department of Community Welfare. In the meantime, the department has had an ongoing investigatory role in respect of this matter as well.

Mr Owens: We have been coordinating meetings with DCW, ETSA and the Gas Company to look at what options are available for the development of a home energy advisory service. Having regard to the fact that the Government is spending about $5 500 000 a year on the electricity concession scheme, the question needs to be asked whether there is a better way of using that money or, indeed, if there were proposals to expand that concession scheme, whether there is a more effective way of targeting that money towards those who most need that assistance.

The concept of the home energy advisory service would be to go to those households classified as low income or needy and to assist them to either change their operating practices or carry out simple modifications to their houses to reduce their energy consumption, or to improve their level of comfort. There are two schemes operating, one in New South Wales and one in Victoria, and we are monitoring the performance of those. We are looking at how we could implement a pilot scheme in South Australia to judge the effectiveness of different ways of passing on this advice to low income households. We would hope to go to the Government some time probably early next year with some suggestions as to how that might be carried out and the cost of doing so.

In terms of the energy budget levels for industry, at this stage that is only a Commonwealth Government funded project which one of the staff in our division is responsible for running in conjunction with BOMA—the Building Owners and Managers Association. One of our officers is responsible for carrying out this review of energy consumption in commercial buildings throughout South Australia. The information from that will be fed into an energy demand management strategy that ETSA, the Gas Company and ourselves are currently developing. Again, we hope to go back to the Government some time next year with proposals for how that might be carried out.

The Hon. P.B. ARNOLD: There has been considerable discussion about the underground gasification of coal. Can we have a simple explanation of the technology involved in achieving that?

The Hon. R.G. Payne: I think I could give a simple explanation of it but it might not be as accurate and as well done as if we utilised the service of one of the officers with us. What I can say is what has not been said up to now, and it relates to the question earlier raised by the member for Bright when he referred to Lake Phillipson coal. One of the most successful gasification projects I have been able to read about is in the United States, utilising coal that is very difficult to mine in any other way. Very steeply dipping seams and so on actually seem to be of assistance to the gasification technology needed.

I will not try to explain why that is so, because the articles that I have read do not go into that, except to point out that that is one of the features of that technology, if you like, which could mean that steeply dipping seams of good grade coal for gasifying, which would not be mined as coal in the ordinary way, may well be handled by this technology. As to a simple explanation which we all understand, I would be delighted to hand over to Mr Owens, who has had some involvement with this technology.

Mr Owens: The reason that a steeply dipping seam is the preferred type of deposit for underground gasification is that, if the coal seam dips at an angle of 45 degrees, one simply drills a hole down the coal seam to a sufficient depth and then ignites the coal at the bottom of the hole. The coal then progressively burns up towards the surface and the hole that you have drilled down to establish the initial combustion is then also able to be used for recovery of the gas which is produced and taken to the surface through the one hole. The rate of burning is simply controlled by the amount of steam and oxygen injected down the hole for combustion of the coal to produce primarily carbon monoxide and hydrogen. They are able to be burned as a low BTU gas on the surface. As an alternative to the steeply dipping seam, one can simply continue to drill holes into the deposit and to force oxygen down one hole for combustion and to drill another hole in the coal and to force the combustion products up through that hole, so that approach for a flat coal seam requires an ongoing program of drilling holes for the injecting of oxygen and recovery of the products.

The Hon. P.B. ARNOLD: That sounds so easy and simple that I cannot imagine why anyone would want to ever mine coal.

The Hon. R.G. Payne: The hole collapses and the coal falls in on the hole and all sorts of traps occur. My knowledge is based solely on reading, but it is almost exciting to read about attempts to gasify *in situ* and what happens after you have the theory and the lines are drawn on paper. It is not to say that it is not an actively pursued research. Work has been continuing for quite some time in the United Kingdom. In other places such as in America gasification, with further synthesisation taking place occurs at one place, in the United States—I think it is the Texaco project—where conversion to dieseline takes place (and that in itself is quite exciting) from the resultant gas stream. I do not know what the fate of that project is, because I think it was coming on stream in early 1985 and since that time the bottom has fallen out of the oil market, so it is probably not very economic and it might have been put on hold.

The Hon. P.B. ARNOLD: Is gasification as a source or type of fuel significantly less polluting of the atmosphere than, say, the conventional coal burning to fuel a furnace for direct steam production?

The Hon. R.G. Payne: Mr Owens pointed out earlier that above ground gasification is superior to pulverised coal fuel combustion technology in the environmental aspects. For example, if the coal is a sulphur bearing coal, I think he said that there would be total recovery of the sulphur, which can be sold. It does not necessarily improve the economics to a great extent, but it is a saleable commodity to the fertiliser or other industries. My understanding is that the

emissions are greatly reduced, but I am not able to give the total technical description as to why that is so.

The Hon. P.B. ARNOLD: I understand that, particularly in parts of Northern Europe, the conventional coal burning power generation plants created enormous environmental problems with the so-called acid rain. Is there a move away from the conventional coal burning to gasification in order to try and reduce this problem and is the acid rain effect and the so-called greenhouse effect of coal burning power generation plants being looked at seriously as a world-wide problem?

The Hon. R.G. Payne: I suggest that initially it depends on which proponent one talks to as to the viewpoint one receives on how actively it is being pursued, but I remember that Mr Owens pointed out earlier that there is a belief, at least in the United States, that that is where the technology is heading for coal-based generation of electricity. It will not be the ordinary conventional pulverised fuel burning that we know of, but it will indeed be forms of above ground gasification.

Mr Owens: The situation in terms of which power technologies will be adopted in the future is a very complicated one and the answer will vary depending on which country at which one is looking. Obviously, in places like France, it is almost a total nuclear commitment. Germany has imposed very strict regulations with respect to coal burning power stations and it has required a number of existing coal burning power stations to be retro fitted, to install downstream of the boilers systems to recover sulphur and nitrogen oxides. That adds many hundreds of millions of dollars to the capital cost of traditional power stations. In America the environmental regulations have meant that the traditional pulverised fuel technology can be used only in very rare circumstances and certainly requires a very low sulphur coal. That has led to the development of these newer technologies which retain the sulphur in one form or another and which remove the dust and the particulates from the flue gas stream. That is not to say that all power stations in the future will be of one particular technology type. I think what it means is that there will be an increasing development of different types of power stations, some of which will be fluidised bed and the Minister has referred to the circulating fluidised bed which Lurgi is promoting.

The Hon. P.B. ARNOLD: The pollutants to which you referred are the ones that have caused all the damage to the great forests, are they?

Mr Owens: There is a lot of academic dispute as to the cause of that. Some people do not believe that it has anything to do with the power stations. A gasification based power station will still emit large quantities of carbon dioxide, which is the greenhouse effect chemical, and nitrogen oxides. Because of the high temperatures of combustion, the nitrogen does combine with oxygen. It removes the particulates, the dust and the sulphur oxides. Sulphur oxides are associated with the so-called acid rain theories, but so are some of the nitrogen oxides. In Australia the general view is that we do not have a problem with acid rain and that our sparse population and lack of industrialisation in the Southern Hemisphere mean that it is a different order of magnitude from the problems in the Northern Hemisphere and, therefore, we do not have the same justification, but that is not to say that environmental regulations will not impose that on us. That is one of the reasons why we think that this technology needs to be evaluated. It might not be the lowest cost option and then the people and the State have to decide whether they are prepared to pay for the cost of additional environmental controls.

[*Sitting suspended from 6 to 7.30 p.m.*]

The Hon. E.R. GOLDSWORTHY: There is mention on page 496 of the yellow book that there is to be a review and audit of royalty arrangements to maximise the return to the State. What does the Government have in mind?

The Hon. R.G. Payne: Revenues payable to the State are subject to wide variations. In the past year or so, the State collected about $57 million in revenue.

The Hon. E.R. GOLDSWORTHY: That is not the variation.

The Hon. R.G. Payne: No, I shall demonstrate that. In the projected year, the figure is likely to drop by some $27 million. The amount can vary that much because of pricing arrangements. The royalty on gas and oil is defined as 10 per cent of the well head value. An officer is specially deputed to reviewing oil and gas revenues. We got that going about two years ago. The reviews have resulted in additional payments being made.

The idea of a review is to maximise returns to the State without prejudice to exploration for and development of mineral and energy resource projects, and to assure maximum recoveries without resort to high grading.

I am sure that Mr Watts can explain the method of recovery, the abandonment pressure, the bubble point and other technical terms, as he is much more erudite. It is possible to rip off a well to get a fast return, but the total return will be prejudiced if that happens. Such factors are encompassed in the item concerned.

The Hon. E.R. GOLDSWORTHY: That did not throw much light on the subject. Perhaps I should rephrase the question. Is any change to the basic royalty structure contemplated?

The Hon. R.G. Payne: No. I am sorry. I overlooked that part of the question. That is not contemplated at the moment.

The Hon. E.R. GOLDSWORTHY: That is all we want. This might be one for the accountants. There is mention of finalising the in-house computing capability. What is that for? How will it help?

The Hon. R.G. Payne: I regret to advise that that is a matter for the Deputy Director-General. There is sizeable expenditure on the computing facility. With your permission, Madam Chairperson, I shall call on the Deputy Director-General to reply.

Mr Watts: This refers to a geotechnical computer system which is in the final phase of being installed. It brings to fruition perhaps five years of planning to acquire an essential computer capability, especially in respect of oil, gas and coal. We are required to run sophisticated programs chiefly in the realm of petroleum engineering, reservoir engineering, coal reserve assessments and large number crunching exercises in geophysics and seismic work, which is also related to gas exploration and therefore gas supply problems in South Australia.

Another purpose of the computer is to maximise and conserve oil and gas resources to prevent high grading and to maximise the royalty revenue to the State. The idea is to optimise the recovery of resources for the benefit of everyone.

It is possible to suck an oil field very quickly and recover only a small proportion of the available oil or to adopt appropriate management practices involving pretty sophisticated technical procedures which increase the amount of oil recovered. That is especially important in regard to gas supplies. Another purpose is the assessment of alternative fuel supplies, such as for the new coal field selection process. Five years ago, South Australia had only four simple dry gas fields in production. Four years later it has a liquids

and oil industry with more than 50 multi-pool, multi-zone fields on stream, which requires pretty sophisticated technical capability on a computer. These services have in large part been provided by consultants until now. This ability provided by consultants has been transferred largely in-house by the acquisition of a technical computer.

There are computers that are orientated towards business type applications, and computers that are specific to the sort of technical application that we require. This is the type that we are getting. Costs are fairly high, but will largely be financed by not spending money for consultation. The budget for this year will be $1.7 million in round figures for both hardware and softwear. The softwear will include not only a capability in the oil, gas, coal and geophysics area, but a geographic information system which will enable us to computerise all our licence files. Down the track the computer will have a capability for Roxby Downs applications such as mine ventilation and even reserve studies.

We are looking at a budget this year of $1.7 million partly funded from loan funds ($600 000) and partly from the oil and gas divisions contingency consultancy funds. In 1987-88, and the next four years after this year, we are estimating expenses of $400 000. The net effect of this should yield savings overall on the consultancy and computer budget of approximately $100 000 a year. In a technical department like the Mines Department it is a must, if you like, that we acquire such a system, and very great efforts have been put into the tendering process and into evaluating all the systems and hardware. This should dramatically upgrade our capabilities, especially in the critical energy resource areas, and down the track certainly in the Roxby Downs area and other areas.

The Hon. E.R. GOLDSWORTHY: The Minister's recent announcement about exploration was made at the Chamber of Mines annual luncheon. As I understood it, the Minister said that there had been amendments to the Act to ensure that before any new national park was proclaimed the Mines Department would be consulted. I do not think that the announcement went much further than that, other than to request the Federal Government to consult before heritage listing, and so on. In terms of State law, it was to be written into law that before any new national park was dedicated it would be a requirement that consultations be undertaken. We did that as a matter of course in Government, which may be of interest to the Committee.

We did that administratively, and I was pleased to notice that the present Government will follow that course. Would the Minister expand on the concept of the multiple use of existing parks? There has been the recent controversy over the Kakadu National Park. I think Ranger and that park, from memory, is something like 160 000 square kilometres of which the Ranger operation, a very large operation, took 6 square kilometres.

The view seems to be gaining acceptance, in my view fortunately, that such a thing as the multiple use of parks is possible without destroying the basic concept of a national park. It seemed that the Minister's announcement was that there is a recognition that there is a diminishing opportunity to explore and to find metals and minerals which may help this nation's dire economic problems.

It seems to me that as those problems accelerate, as they undoubtedly will, then that realisation of a balance of what seems to be in the public interest will throw into greater relief this very question. By way of further explanation, I read an interesting account of a speech given by the new Director of the Department of Environment and Planning about multiple use of the parks in the Hills face zone where he was seeking to justify the Government's initial support for the chair lift and towers to go up through the national park. I think that he had a very hard time of it at the Conservation Council because, as I understand, it contravenes about 50 precepts set down in the Hills face zone regulations. I simply illustrate the fact that this idea of multiple use is something where the Government has put its toe in the water.

Will the Minister expand or clarify his speech to the annual dinner because my only memory is what I heard and read the next day in the paper. It seems to me that the Government was moving in the right direction and that the map that accompanied the newspaper report seemed to have been handed out with the Minister's press release. I think it reinforces the fact that there is precious little of the State where mining companies can in fact have a go to explore and find out just what the public does own below the surface. Is there any proposition looming such as this idea of multiple use of parks which I for one wholeheatedly support, not because I am not interested in national parks but because I am interested in a sensible balance of competing interests when I think the overall judgment has to be in favour of the public good. Of course, one of the pressing matters at the moment is our need to generate export income.

The Hon. R.G. Payne: What I said on the occasion in question referred to future land development proposals. I think, on reflection, that the Deputy Leader would recall that I made that clear. What I said on that occasion was that, as a general policy, no Government decisions should be made to limit or deny access for exploration or production over any area without careful review and consideration of any existing subsurface rights, as well as the mineral potential of the area. This is to be ascertained via consultation with the South Australian Department of Mines and Energy. That, of course, has the force of Cabinet, it is not just the Minister saying it, as the Deputy Leader well knows, so clearly that has application to all the portfolios concerned.

I went on to say that for the Government to consider the principle of multiple land use to reconcile as and where appropriate any conflicting aims between conservation, Aboriginal land rights, agricultural interests and subsurface resource exploration and development. I also said that any Cabinet submission which contained a proposal involving limitations on access to land for petroleum or mineral resource exploration or development was to include a discussion of the alternative surface and subsurface land use options.

The Hon. E.R. GOLDSWORTHY: You did not go on to talk about established parks.

The Hon. R.G. Payne: No, I said in my opening remarks, in answer to this question, what I announced on that day applied from that day to future proposals regarding land development. The existing situation is already covered, in that for the kinds of activity to be undertaken that the Deputy Leader says he would like to see would require a resolution of both Houses of Parliament.

Mr GREGORY: What provisions have been made for shopping facilities in the new town of Roxby Downs, or will residents be required to travel to Andamooka, Woomera or Port Augusta for supplies?

The Hon. R.G. Payne: A major shopping centre development plan has been accepted by the joint venturers. Contracts are expected to be let soon. A large delicatessan is to be ready when the first stage of 120 houses has been completed. It is expected that contracts will be let soon for a tavern and a motel, initially with 50 units, but with a further expansion of up to another 50 units. Further, there will be

a major supermarket, specialty shops to be let on a rental basis, ancillary roads, and major car parks. In relation to the specialty shops to be let on a rental basis, I understand that some consideration has been given to having residences constructed as part of the shops. This would be done on the basis that in a town such as Roxby Downs, which will be catering for a special group of people, there could be some value in having the owners of the smaller shops, anyway, occupying residences built as part of the shops.

It is also expected that contracts will be let for ancillary roads and major car parks which, of course, is a necessary adjunct to the shops. The honourable member referred to the possibility of some shoppers going to Andamooka, Woomera, or wherever to obtain a range of goods or supplies. However, I think it is more likely that people from Woomera and Andamooka might go to Roxby, as it is intended that Roxby will grow to a town of 3 000 people. Facilities will be augmented as required and thus we might almost, dare I say it, have a metropolis in the north, arising amidst the swale country, to which I referred earlier, to which shoppers would be attracted.

Mr GREGORY: What is the purpose of the geotechnical computer system referred to at page 505 of the Program Estimates? When will it be installed, and at what cost?

The Hon. R.G. Payne: That question was answered a little while ago in response to a question from the Deputy Leader concerning the lines relating to overview.

The CHAIRPERSON: A long exposition on the computer system was given earlier. Perhaps the member for Florey could refer to the *Hansard* report later.

Mr GREGORY: Will there be sufficient water at Roxby Downs to provide grassed areas for children to play on and for other recreational purposes?

The Hon. R.G. Payne: I understand that there will certainly be enough water supplied for the purposes referred to. The indenture provides that maximum use of reclaimed water is to be made in relation to the operation of the joint ventures and as part of the whole project. In addition, water supplies will be provided for fire fighting, as will be potable water for domestic purposes. The amount of water to be available for domestic purposes per head of population will be somewhat larger than the amount applying to Leigh Creek South, for example. I am advised that 1 000 litres per person per day is the amount provided for. I think everyone would agree that that is a reasonable amount of water to allow. I expect that that would be sufficient to provide for grassed areas around homes, for example. In relation to public or semi-public areas, children's playgrounds, or whatever, I am sure that provision for those areas will be catered for. Further, I understand that use will be made of effluent water and that recovery will be made in that area. That water will be available for use on things like the golf course.

Mr GREGORY: Would that water be used for playing fields for cricket and football, for example?

The Hon. R.G. Payne: I am not in a position to give an exact answer to that. I have listed the various types of water supply that will be available. I do not believe that it will be a problem at all. I indicate that I can make available to the Committee for incorporation in *Hansard* a detailed answer relating to the actual quantities of water to be available for individual use, playing field purposes, etc. I am sure that that information can be obtained. I assure the Committee that I do not expect there to be any shortage of water in the area.

The CHAIRPERSON: It would be appreciated if the additional information could be provided by 31 October.

Mr GUNN: Does the Government intend to upgrade or improve the gold battery facilities currently available? To my knowledge only one such facility is operating, and that is at Peterborough where, in recent years, some work has been carried out. Because of the higher price for gold and interest in the area are there any plans to improve the facilities or do anything with the old battery at Glenloth, which I understand is in reasonable condition?

The Hon. R.G. Payne: I am not aware of any specific plan to do anything other than continue with the upgrading of the Peterborough battery at a relatively slow rate, which is what has been taking place over the past two or three years. I am sure the honourable member knows this. Remedial work has been undertaken in relation to the buildings that comprise the battery area. It would be fair to say that work has been carried out concerning the safety of the operator when smelting is taking place. It was rather an *ad hoc* arrangement previously, and I know that the Mining Division has looked at it and certain steps have been taken to make it safer for the operator to do the limited smelting that takes place.

I guess that the difficulty is that the throughput in the battery is such that we are talking about a loss operation. I know that should not be the only consideration that applies because, for example, in relation to the Peterborough battery, there is the heritage aspect to consider, if nothing else. South Australia has a gold history, strangely enough, that is not really recognised in Australia's mining history by many people. We have not been a large supplier of gold but we have a history of it right from the early days. It occurs in many places and there has always been that tantalising amount that has kept interest going without there being the major finds and activities that have taken place in Victoria and Western Australia, for example.

We need to have a battery available. The department would agree that I said so fairly strongly a couple of years ago and was responsible for some of the small works that I have been talking about at Peterborough. I am not familiar with the Glenloth battery and would prefer to take that question on notice.

Mr Johns: Gold production last year amounted to 3 831 grams, the value of which was $42 000. That is not a lot of gold. It is very hard to justify spending any real money to upgrade anything under those circumstances. We bear in mind a continuing interest in the Glenloth battery. It is not really in a workable condition at present and there is no justification for doing anything about it.

Mr GUNN: For some time some members have been receiving correspondence and reports from people involved in the evaluation of the Winntina coal deposit, which has attracted attention for some time. Are assessments by the department still taking place on this deposit? Claims have been made in this area and I am interested to know whether the Government believes there is potential for future development. In particular, what is the quality of coal in these deposits, compared with Lochiel or Sedan?

The Hon. R.G. Payne: I have seen figures which suggest that Winntina coal has a higher heat coefficient and certain other properties which would in any coal ranking, rank it higher than some of the other coals which are the subject of proposals to provide the next increment of power for South Australia. That would suggest that it is in itself a pretty reasonable sort of coal; that is what the figures I have seen indicate. I understand there are certain difficulties in relation to the mining of the coal, such as transport costs, if it is transported to a power station that is not located nearby. The FEAC committee had access to a great deal of expertise, analysed all the proposals and decided that two

sites were to be preferred for further study. Winntina was not one of those sites.

However, because the proponents of the Winntina coal resource said that they were able to do refinements of their proposal and figures that would make the proposition more acceptable in terms of coal cost, the Government made clear that they, and for that matter Kingston (another resource that did not get a guernsey the first time around), were at liberty to make further submissions if they so desired, and that the Government would look at those submissions. I am aware of a further submission in relation to Kingston, which we talked about earlier today. However, I am a bit confused about Winntina, and I am not sure whether we have received a further submission. Certainly, there is the likelihood of getting a submission about it because of what has been said publicly and elsewhere. We received a further submission from a fifth group, Cyprus Coal, relating to a deposit at Weedina, which is in the general vicinity and which could be said to be part of the same geological deposition area. Its proposal was evaluated by similar expert people in the department and so on. The figures put forward and certain other concerns about the amount of drilling and proving that had taken place were such that it was ruled out automatically. One might argue that that may well apply to Winntina also.

Mr Johns: The coal that occurs in the Arkaringa basin, of which the Weedina and Winntina deposits form part, are extremely large. I do not think we would have to be very imaginative to believe that one of these days we will be doing something with that resource. It really is a large deposit of coal running into thousands of millions of tonnes. It is as high a grade of coal as we have identified to date and has much better quality in terms of heat value, moisture content and so on than any of the other coals—far ahead of the lignites in Leigh Creek, for instance. That will be reviewed along with the other deposits in due course.

Mr GUNN: It is extremely deep.

Mr Johns: Yes, and there is no infrastructure except for a railway line. For the moment it really cannot rate on what is being provided on the reports which have been published with regard to evaluation and comparison of all the various options. It does not rate among the top ones at the moment.

Mr GUNN: At the time this Government came to office there was considerable controversy and discussion about the Honeymoon and Beverley uranium deposits. I wonder, in view of the new policy announced by Prime Minister Hawke, whether the State Government has given any further thought to allowing these two projects to develop if there are any willing participants?

The Hon. R.G. Payne: I must say it has been something of a change in relation to Estimates Committees of the last few years to have got this far in the day's proceedings, to 8.11 p.m., before hearing the words 'Honeymoon and Beverley', so on that score alone I think that the member for Eyre is to be congratulated in his control in choosing the topic of this question. I do not know of any change at Federal Government level which says that anything other than Ranger, Nabarlek and Roxby Downs are entitled to be involved in the mining of uranium and/or whatever happens to it after that. It would seem that Honeymoon and Beverley, quite correctly under the existing policy will remain in that area. I can say this much about Beverley as distinct from Honeymoon: I have been told by a former principal of Beverley that the Government saved Beverley quite a lot of money and disappointment. Perhaps, because of the reserve exhibited by the honourable member, I will just leave the situation there in respect of Beverley.

The CHAIRPERSON: Especially since it has nought to do with the Program Estimates before us.

The Hon. J.W. SLATER: I want to draw the attention of the Minister to ETSA's report for the year ended 30 June 1986. On page 14, under the heading 'Public safety' it states:

> During the year there were three accidents in which hot air balloons collided with overhead mains.

It goes on to say that the safety aspects of all types of sport aviation, such as hang-gliders and ultralight aircraft, are of great concern. It also indicates that posters, leaflets and so on have been produced to advise of the hazards. I find that rather intriguing. I did not realise that we had three hot air balloons in South Australia. Do we have a continuing safety problem with those sorts of things? It is a minimal activity and I am rather surprised, as I said, to know of three accidents occurring with overhead lines. Is it likely to be a continuing problem or just a one-off situation?

The Hon. R.G. Payne: Far be it from me to profess to be an expert on hot air, let alone hot air balloons. I recall that there was an event this year where there were, probably, 12 to 15 hot air balloons in South Australia. It was around the time of the equestrian events, because I was in the Barossa. I can recall it as a colourful sight to see the multi-coloured balloons ascending, descending or just travelling, but I did not personally see any in contact with power lines.

One of the radio stations was operating from one of the balloons, and indicating on radio how they were descending at a rapid rate and coming down in areas which looked a bit worrying. Clearly, it can be a very pleasant and exciting sport, but there needs to be care—as in many of these activities—with respect to overhead mains. The article indicates that there were no untoward effects, apparently—or it would have received greater mention.

I think the trust is drawing attention to the fact that it is concerned about public safety in areas other than just bushfires or whatever, because under the same heading there is a reference to its providing information on the planting of suitable trees in relation to power lines, as distinct from those which we have all come to learn are unsuitable.

The Hon. E.R. GOLDSWORTHY: I was very interested in the Minister's answer to the question on Honeymoon and Beverley. I really did not have it on my list, because we have canvassed that pretty exhaustively over the past two or three years. The Minister's answer was far from satisfactory. He suggested that it is the Federal Government's responsibility to say yea or nay to Honeymoon or Beverley, but that is just not so. The South Australian Government decided not to give them a production licence, and the Federal Government is the proud owner of a shed full of uranium they bought from Queensland Mines because it was not allowed to sell it to France. So, the Minister's answer was far from correct. The fact is that the proprietors have a retention lease which was granted by the Government, and that is the *status quo*. Has that changed?

The Hon. R.G. Payne: I do not recall in my previous answer suggesting that the *status quo* had changed whatsoever. I simply said that I was informed by a senior principal from Beverley that, clearly, the action of the Government had saved them money.

The Hon. E.R. GOLDSWORTHY: That is not what I am contesting. The Minister said it was the Federal Government—

The CHAIRPERSON: Order! The Minister will continue his answer.

The Hon. R.G. Payne: I am putting that forward simply to acquaint the Committee with a fact in respect of Honeymoon. I am not putting that type of answer forward—

The Hon. E.R. GOLDSWORTHY: I am not questioning that.

The Hon. R.G. Payne: I am the Minister who stood in the Parliament and said that Honeymoon and Beverley would not proceed. I am not resiling from that whatsoever. I am perfectly happy to say now, in this Committee, as the Minister still in office, that they did not proceed then and they will not proceed now: end of story. I think it was quite in order for me to point out that our Federal policy is not dissimilar in that it provides for a limited number of uranium prospects to proceed in Australia, and amongst those was neither Honeymoon nor Beverley. That is all I am suggesting was put forward.

The Hon. E.R. GOLDSWORTHY: The Government just cannot continue to hide behind the Federal—

The CHAIRPERSON: If the Deputy Leader does not have any questions I will move on.

The Hon. E.R. GOLDSWORTHY: I have plenty of questions.

The CHAIRPERSON: Will the Deputy Leader get to them, please?

The Hon. E.R. GOLDSWORTHY: I have not quite finished with the question of national parks. I was following the possibility of exploration. The Minister suggested that it required a joint resolution of both Houses. I do not recall a joint resolution of both Houses when the Minister took the decision, to his credit, to do some exploration in the Flinders National Park. I am not talking about mining the parks: I am talking about trying to find out what is below the surface. Did the Minister's announcement go any way down the track towards attempting to find out what is below the surface in some of our parks, which may be of interest now to explorers and ought to be of interest to the Government? I think the point has been made pretty clearly that, as geological knowledge increases, areas which may not have been thought prospective many years ago are now of interest geologically.

Really, that is what I was getting at. I do not think that it requires a joint resolution of both Houses to undertake some exploration activity. If I am wrong about that, I would like to know, because I do not recall any joint resolution of the Houses of Parliament when the present Government undertook to try and find out what was in the Flinders Range National Park.

The Hon. R.G. Payne: Obviously, I misunderstood the honourable member. He referred to the fact that we needed activities to rescue our overseas debt position and get exports and so on. I assumed that he was talking about actual activity that would produce a product, so I am sorry—it was that to which I was referring. The situation is as he surmises. Cabinet, on my volition, agreed that a limited amount of exploration activity should take place in the Flinders Range area in support of the possibility of lead zinc finds for future supplies for Port Pirie, so obviously I misunderstood the honourable member.

The Hon. E.R. GOLDSWORTHY: Will you do any more of it?

The Hon. R.G. Payne: I think that if the need arose I am prepared to say to this Committee that, in a given case, I am prepared to take a proposal to Cabinet. I think I have demonstrated that: I did it once before and, whilst on that topic, any proposal of that nature (and I have none before me at the moment) that I take to Cabinet would be done in exactly the same way—I did it 100 per cent openly and I made clear to everybody in South Australia by continued public pronouncements the scale of the activity proposed and the ability for people to supervise and have a look at what actually took place. It was kept under the control of the departmental officers concerned and the results were published on a progressive basis. If all of that were done, if a specific proposal arose I would have no qualms in approaching Cabinet again on that basis. Whether or not Cabinet would agree would be up to Cabinet at that time.

The Hon. E.R. GOLDSWORTHY: I applaud the Minister for doing it. The Conservation Council would have berated me if I, as a member of the Liberal Party, had thought of it, but a Labor Minister has got away with it and I congratulate him. I think it was a good move. Unfortunately, we have had this controversy involving Kakadu, which is a cloud—

The CHAIRPERSON: We are not here to discuss Kakadu or the Conservation Council. Would the Deputy Leader come to his next question?

The Hon. E.R. GOLDSWORTHY: That was a preamble to congratulate the Minister. I do not do that often, and I think he was pleased. I turn now to the gas price arbitration. Does the department, the Minister or any officer have any update on that arbitration? With your leave and the concurrence of the Chair I will just briefly explain. The gas price in arbitration and the Bill which passed through Parliament last year mean that the South Australian price will be fixed at that arbitrated price, so in terms of the end price it means quite a lot to South Australia. The Minister would no doubt have his ear to the ground in relation to this question. Could the Minister give an update as to the progress of that arbitration? Although we are affected very dramatically by it, I know that, officially, we are not parties to that arbitration, but I think that we would be interested in getting an update fairly regularly. At what stage is the arbitration?

The Hon. R.G. Payne: The simple answer is that the arbitration is in progress. I have been given to understand (and I choose these words carefully, because that is all the veracity that I can give them) that a result may well be out by Christmas. I cannot say any more than that, because that is all the information that I have in my possession. I should add that it will not be before Christmas, so it is obviously intended that it will continue for some time yet.

Mr GREGORY: I refer to pressurised fluidised beds in power stations. I am interested in the sulphur and nitric acid that comes out of power stations. It has been suggested in overseas publications that the development of a fluidised bed in power stations can increase the amount of heat that is in the chamber, that it can reduce the oxides and nitrogen sulphur oxides considerably and that it uses less coal. It is suggested also that, properly managed and with the addition of some limestone, there is little or no emission. Could the Minister enlighten the Committee as to what is happening with the development of fluidised beds and whether South Australia is involved in any of that work? What will be the likely outcome of it?

The Hon. R.G. Payne: This is an area in which I am extremely interested and about which I have done quite a deal of reading, so much so that I have dropped fluidised beds and I am a great believer in circulating fluidised beds, which have a number of advantages which, as far as I can see, fluidised beds do not have. However, I think that the Committee warrants better information than my regurgitation of what I have been able to read. I ask Mr Owens to come forward and give us a technical dissertation on the advantages and disadvantages of a fluidised bed and/or a circulating fluidised bed.

Mr Owens: The concept of a fluidised bed, for those members who are not aware, is simply that the coal is injected into a vessel or a cylinder and is held in suspension by the flow of air or oxygen up from the bottom of the

vessel to hold that particle in suspension in the fluidised bed whilst it burns. Whilst it burns, it gives out heat and radiation which is used to heat pipes around the edge of the cylinder which contain water which is converted to steam and that steam is used to generate electricity through a turbo generator. A normal fluidised bed reactor is at atmospheric pressure and the problems with that for South Australian coals are that it has to be run at a very high temperature to ensure combustion and with South Australian coal that results in problems with ash forming a glassy slag and preventing the heat transfer to the water tubes. One possible development away from that is a pressurised fluidised bed which enables the reaction to be carried out more efficiently at higher pressure so that the vessel can be smaller, the temperature can be slightly lower and one can still achieve the conversion of coal energy into steam.

The Hon. R.G. Payne: But circulating is best, is it not?

Mr Owens: That is exactly what I am coming to. The problem with that and the test work that has been done on South Australian coal is that it still results in a slag or a glassy ash forming across the top of the reactor and eventually growing in so that the vessel blocks itself off. The boiler then has to be shut down and someone has to get in there with jackhammers or explosives to remove the material.

Circulating fluidised beds operate at much lower temperatures, such that this glassy material is not formed; it does not form a molten slag and it can operate at lower temperatures, because the coal does not have to be held in the vessel while it is totally combusted. The material is taken out of the top of the boiler and circulated around. It is collected through a cyclone and put back into the bottom of the boiler, so by circulating a number of times through the boiler it can be eventually converted totally from coal into gas and heat.

It is cooled down as it leaves the top of the circulating bed. A normal pulverised fuel boiler functions at between 1 200 °C and 1 300 °C, but a fluidised bed operates at 1 000 °C and a circulating fluidised bed operates at 800 °C. The lower temperature reduces many of the problems. It is possible to inject limestone with the coal into the bed to absorb sulphur. It forms calcium sulphate, which is taken with the slag and ash from the bottom of the bed—instead of going out into the atmosphere as sulphur dioxide. The potential benefits of fluidised beds for South Australian coal have been known for some time. Early test work with atmospheric and pressurised fluidised beds proved unsuccessful and the present test work is considering the application of a circulating fluidised bed.

Mr GREGORY: The Minister said that the Electricity Trust purchased power from the Woods and Forests Department. How much of it was purchased from Nangwarry and from Mount Gambier?

The Hon. R.G. Payne: I shall answer that question on notice. There is no mention of it in the annual report, so it must be a small quantity. It does not rate in the pie chart, but I am not saying that it does not happen.

Mr Owens: Total purchases from other organisations amounted to about 14 000gW/h, which is 0.3 per cent or 0.4 per cent, but that includes some purchases from Victoria at the border and some other minor generators. I undertake to get that information.

Mr GREGORY: Will fluidised beds stop emissions of nitrous oxide or is that not a problem with South Australian coal?

Mr Owens: All combustion produces nitrogen oxides but the quantity is more or less in proportion to the temperature of the combustion. The conversion of nitrogen in the air to nitrogen oxide is proportionate to the temperature. Less is produced at lower temperatures. Circulating fluidised beds would therefore be expected to produce the least amount of nitrogen oxides. There are other ways in which to control nitrogen oxides. For example, one can inject steam and water into the combustion process, or modify the design of the burners.

Mr ROBERTSON: What about limestone?

Mr Owens: Limestone affects only sulphur.

Mr GREGORY: A method of suspending coal in water so that it can be pumped has recently been developed. Is it envisaged that, when we get round to using South Australian coal, we will inject it into boilers, using that method?

The Hon. R.G. Payne: I think that the honourable member is referring to coal slurry pumping, which is used in some overseas countries and has led to some unforeseen problems. I have seen reports about it. The Committee will be delighted to know that Mr Owens has some knowledge of this subject as well, so I shall ask him to pass it on.

Mr Owens: The major work on coal liquid slurries overseas has been broken into two broad areas. One is coal water and the other is coal liquid in terms of oil or methanol. All of the work has been based on the use of steaming or coking coal—high quality coal—and on the prospect of replacing high value oil with lower cost coal, therefore saving on the cost of the fuel.

There have been successes and failures. Several companies now market the technology to produce these slurries, and there is considerable research on the prospect of coal methanol for fuelling existing oil fired power stations. We have done a reasonable amount of research on using local coal in slurries.

To produce a slurry, one has to pulverise coal and make it fine. The problem with our coal is that they are lignites and are 50 per cent to 60 per cent water, so we must increase their water content by about 200 per cent to make them into a pumpable liquid slurry, and when the mixture reaches the boilers, it cannot be burnt because it has too much water in it. Secondly, hard coal such as that produced in New South Wales and Queensland retains its strength in water whereas the lignites break down into a clay-like mucky mess and it is difficult to separate the coal from the water.

Tests at the Institute of Technology have not proved particularly successful and the only projects there are considering washing South Australian coals to remove the salt to produce a fuel which can be used by industry in boilers. At the Adelaide University chemical engineering department, we have research on high temperature, high pressure treatment of South Australian coals to remove the water. Our coal can then be treated like the harder coal from New South Wales.

The Hon. E.R. GOLDSWORTHY: Amdel came to see me during the middle of last year saying that legislation had been prepared and that it wanted to become a public company. That action has been stalled, as I understand it, because a handful of people who are members of the Public Service Association did not like the proposal. I further understand that there have been a number of inquiries, one of which has just reported, again, that the matter should proceed. I ask the Minister whether the matter is drawing to a conclusion and will proceed, or whether there will be no change?

The Hon. R.G. Payne: The question of legislation does not enter into the matter at this stage. The Deputy Leader is correct in saying that there has been an inquiry, or whatever it was, about what should be done. I think that he said there had been more than one such inquiry, and it is fair to say that that is true. I had a low cost evaluation

of a proposal prepared late last year. Without being critical of the consultant concerned, I found that I got what I contracted for—a low cost evaluation that I was unable to use in the way in which I had hoped I could use it.

The Hon. E.R. GOLDSWORTHY: How will the Minister get around the Public Service union's objections?

The Hon. R.G. Payne: There have been a number of claims and counterclaims about what should be or could be the salvation of AMDEL. We do not need to canvass those. It is clear that it has difficulties ahead of it because of its large involvement in the minerals world and the necessity for it to get sufficient work to enable it to expand and become more viable. Members would know that it already operates on a Government guaranteed overdraft for its funding. I then sought from Cabinet, and was granted, permission to have a review conducted of the proposal and the counter proposals.

The Hon. E.R. GOLDSWORTHY: Whose were the counter proposals?

The Hon. R.G. Payne: Submissions came direct from AMDEL, there was a counter proposal from the Public Service Association and associated groups, and there were exhortations to me from groups in the industry saying that this should be done or that should be done about AMDEL. I had a review carried out, a draft of which I saw about 10 days ago. Because of the high degree of cooperation I received from both the PSA and the associated union group among the work force at AMDEL, and from AMDEL itself, and because that degree of cooperation with the appointed consultant was necessary, I believe that all parties are entitled to review the draft recommendations with the consultant. That is in progress, I presume, at this very moment. That is what is happening and it is expected to conclude in the next few days. At that time I will have a recommendation to present to Cabinet.

The Hon. E.R. GOLDSWORTHY: The budget papers mention significant expenditure on resource development at page 496 saying that 'significant expenditures are necessary on resource development studies and testing'. Can the Minister give more detail on that matter?

The Hon. R.G. Payne: This relates to energy supplies, so Mr Owens will answer the question.

Mr Owens: I can answer half of the question and Mr Watts will answer the other half with respect to gas reserve resource evaluation. The main areas of review of energy resources in the energy area are related to the Bowmans coal testing. In the current year there is $150 000 allocated for analysis of coal samples recovered from a drilling program at the Bowmans deposit earlier this year. That information is being put into the gasification test program with an undertaking being given for a more detailed mining study later this year. We are also spending $30 000 on wind resource evaluation with a report to go to Government later this year.

The third area involves the coal review group, which is undertaking a valuation of various proposals from Western Mining Corporation, Cyprus Coal and possibly Meekatharra Minerals on the Wintinna deposit. We are presently carrying out a review of the Kingston deposit and, as the Minister has indicated, we have already commented on the Cyprus coal proposal. They are the major expenditures on resource evaluation in the energy area. I believe that the reference there is primarily related to the evaluation of the gas reserve area, which the Deputy Director-General is better equipped to comment on.

The Hon. R.G. Payne: I invite Mr Watts to comment on that matter.

Mr Watts: This matter primarily refers to our ongoing use of consultants, which goes back to 1982. Initially, in the context of gas supplies and providing the department with expertise in disciplines in which it had no capability; notably, computer applications, reservoir engineering, petrophysics, petroleum engineering and development geology. That is an ongoing project, although I mentioned previously that a proportion of that budget will be transferred in-house to be taken over by the in-house computer facility.

The other part of the consultancy was in relation to the liquids scheme, which the Government got off the ground two or three years ago and in relation to which the department again required large bodies of expertise, especially in the realm of conservation, maximisation and optimisation of resources, development of production regulations, and so on. The figures for those two lines referred to are listed as follows: the figures for the 1986-87 recurrent budget are $339 000 for natural gas development, production and transportation and $962 000 for exploration, development and the oil liquids consultancy.

The Hon. E.R. GOLDSWORTHY: I refer to page 498 of the Program Estimates and the reference to lpg and petroleum transport subsidies. What is that for? Last year an expenditure of $10 million was proposed; actual expenditure was $2.661 million; and this year an amount of $2 million is proposed. There is a big variation in the figures. What is it all about?

Mr Marrett: Those figures refer to two subsidies that have been paid under Commonwealth Government legislation, namely, the Petroleum Products Act and the Liquefied Petroleum Gas Grants Act. That legislation covers petroleum products, subsidies and liquefied petroleum gas subsidies. The figures referred to of $10 million proposed in 1985-86, with actual expenditure being $2.661 million, do not really form part of the State's recurrent budget. Under Commonwealth legislation a grant was given to the State, which was allocated via the Department of Mines and Energy. However, the Commonwealth lowered the level of the grant. In 1985-86 the department budgeted for a figure of $10 million but, in fact, as shown on page 498, expenditure turned out to be only $2.6 million. The level of payments has fallen and proposed expenditure for 1986-87 is some $2 million.

The Hon. E.R. GOLDSWORTHY: I take it that the Treasury did not actually get the $10 million from the Federal Government, but they do not usually hand out money like that. So, a grant was made.

Mr Marrett: It could be described more as an advance, which is taken back. It really refers to a differential relating to transport costs between country and metropolitan outlets.

The Hon. E.R. GOLDSWORTHY: In relation to the line 'Oil/Liquids—Development/Production/Transport' I note that it is proposed to spend this year the best part of $1 million. Last year some $500 000 was allocated with actual expenditure being $173 000. What is this all about? I do not understand what that allocation is for, or the variations involved.

Mr Watts: This relates to the oil consultancy, which I referred to in a previous answer. The oil/liquids—development/production/transport consultancy service has been ongoing now for a couple of years.

The Hon. E.R. GOLDSWORTHY: Is that $1 million really for the computer then?

Mr Watts: Yes, it was planned that the computer would be in place last financial year. There were delays in getting it on board and getting all the documentation prepared, the

tender documents, and so on. So, part of the funds were carried over to this financial year and will be spent in 1986-87. The computer is due on board in a few weeks. So, it is a carry-over figure.

The Hon. E.R. GOLDSWORTHY: The line does not refer to a computer, and that could have been made clear in the Program Estimates.

Mr Watts: A large element of the oil/liquids—development/production/transport consultancy program is for computer applications run by consultants. So, a portion can be reassigned in-house for the computer. This relates partly to the line referred to and partly to the line above, namely, 'Natural Gas—Development/Production/Transport', which is the other consultancy line.

The Hon. E.R. GOLDSWORTHY: If the computer had been referred to I would not have had to ask these questions.

The Hon. R.G. Payne: I am sure that the Deputy Leader would know that in relation to the way that accounts or statements are prepared those required by Treasury relate to the way that Treasury runs its accounts.

Mr ROBERTSON: By way of preface to a question, I make the observation that when flying to London in 1977 I noticed that in the Persian Gulf region of the world, roughly between the Pakistan border and the Mediterranean, many gas flares were burning. I considered an approximate calorific value in trying to work out how much oil was being flared and I came to the conclusion that a good deal more energy was being flared in the Middle East than the total amount of energy being used by Australia at that time—relating to all forms of energy. The amount involved must have approached almost the level of total insolation from the Australian continent. It represented a huge amount of waste. I ask this question because I note that on page 505 options for the use of methane have been identified in the past financial year.

Further down it indicates that ethane is to be used as a fluid in the enhanced oil recovery scheme at the Tirrawarra field. Given that it has been used in that sense in the oil enhancement program, are there other potential uses for ethane, and how much ethane is still flared?

The Hon. R.G. Payne: The Deputy Director-General has wide experience in world oil fields including the North Sea, Libya and the Persian Gulf. He may be able to give first-hand information on some of those flares.

Mr Watts: It is very true that in the Middle East and Indonesia large quantities of natural gas are flared. They are associated with the oil production and have no market. It is a real waste of a resource. The Saudi Arabians are developing markets now, so I think the problem is going away. We do not allow that wasting in South Australia. No ethane is flared. Ethane, apart from for the EOR (enhanced oil recovery) scheme and the petrochemical scheme if it ever gets off the ground, is produced as part of the gas stream along with other gas liquids, and it is stored underground at Moomba.

Under the terms of the Stony Point indenture ethane was not to be flared or, at that stage, to be used for town gas. We wanted it reserved for other uses, maybe the petrochemical scheme and the EOR scheme which has emerged. As reservoirs deplete the pressure declines and the secondary recovery technique is to repressure the reservoirs up. Ethane has chemical characteristics that make it an excellent thing for pumping down the reservoir to force more oil up and increase the recovery. This is being instituted in Tirrawarra and should lead to the recovery of an extra 20 million barrels of oil which, even at present depressed prices, is worth $600 million or so.

The Hon. R.G. Payne: Our share is $60 million, less whatever expenses can be charged against 10 per cent of the well head value as defined.

Mr Watts: I emphasise that one pumps ethane down, but it is not lost. Ethane drives the oil up and then comes back. It will start coming back at Tirrawarra, in 1989 from memory, at which time we hopefully will have developed another use for it. It can be used as town gas (sales gas). It has a high heating value so one needs less of it. It will boil your egg faster than normal town gas. The fundamental objective of the department is in the realm of conservation and the preservation of waste. We are pretty fussy about flaring off.

Mr ROBERTSON: On page 507 there is a reference, under the 1985-86 specific targets and objectives, to the mapping and paper which was produced on a series of mafic dyke swarms. To the outsider to be surrounded by a swarm of mafic dykes sounds a completely horrifying and horrendous prospect. I wanted to ask about the how, where and why of the mafic dyke swarm: where are they, what is their origin geologically, what can they hope to tell us in geological and mineralogical terms, and what possible use would this exploration be to the location of future mineral resources in this State?

Dr Branch: I am glad this question has been asked, because it relates to a global jigsaw puzzle whereby, millions of years in the past, we believe that all the continents of the world were once joined together in a giant mass called Pangaea which ultimately broke up to form a southern land mass, of which we were part in Australia, called Gondwanaland and, ultimately, Gondwanaland broke up some millions of years ago and Antarctica drifted off to the south, India to the north-west, New Zealand to the south-east—all quite exciting.

The pieces, these parts of plates, became the continents that we know today. This is the concept of continental drift whereby our present-day continents were once part of this great big mass. In ancient times, many hundreds and even thousands of millions of years ago, initial fractures through the primitive land masses were filled by molten rock coming from below, which formed dyke swarms—dykes being vertical masses of igneous rock which solidified near the surface of the earth and often erupted to the surface to give rise to lava flows and the things we see down in the South-East. Many of those lava flows and volcanoes in the Mount Gambier region and over the border in Victoria are fed from below by these dykes and the molten material which travelled through them.

When the continents were all joined together in these very primitive land masses, these dyke swarms were all continuous from one continent mass to another, and as the breakup occurred so they have all been twisted and turned, and now we can use these ancient dyke swarms as a means of trying to reassemble this ancient jigsaw puzzle. The reason for doing this is that, in cases like India, we know that there are certain geological provinces which contain precious metals and diamonds and we can make a prognosis that once upon a time that part of India was adjacent to the Kimberleys. That, in fact, was part of the exploration technology used by CRA in exploring for diamonds in the Kimberleys region: not because they believed that there were diamonds in the Kimberleys region but because they knew they were in existence in India and that once upon a time India was adjacent to the Kimberleys.

That applies all around Australia and the rest of the world, so there is a world-wide interest in this matter, and I am very pleased to be able to say that one of the geologists in the department is the key leader for Australia in the

preparation of maps showing these dyke swarms in Australia, and he has been invited overseas to participate in international conferences to present the Australian point of view at that level.

Mr ROBERTSON: I thought that exposition would have done credit to David Bellamy: I sat here rapt. I have a subsidiary question related to plates coming together and moving apart. Given the geological concept of lineaments, which would have Mount Isa and Broken Hill on the same lineament, and given that, presumably, Roxby belongs to another one, has that work been taken to a point where the companies in this State or the DME itself are looking at other places on the Roxby lineament for similar mineralisation?

Mr Johns: The application of lineament studies, I suppose, was triggered very much by the availability of Landsat data whereby satellites were used to transmit data on the earth and, with enhancement techniques, provided a medium whereby large areas could be studied, and it was in part the application of that technology, used in conjunction with other theories or ideas of ore occurrence and so on which helped to focus attention on the Stuart Shelf region initially by Western Mining and which led ultimately to the discovery of the Olympic Dam deposit.

The department has undertaken studies of its own and the mining companies in general are applying these things. I suppose that, when it pays off as in the case of something like Roxby Downs, one can see some positive outcome for the efforts that have been put into it. On the other hand, there have been many similar studies conducted which have led to nothing. Sometimes this modelling and theorising leads to positive outcomes, but I suppose, like mineral exploration in general, more often than not it really does not lead to anything.

Mr ROBERTSON: Again referring to page 507 and this year's program 1986-87 specific targets and objectives, the last item mentions the completion of a palynostratigraphic study of the Barossa Valley Basin. Has that been done purely for academic reasons, or is there any thought that perhaps the Barossa Valley Basin may have some hyrdocarbon potential?

Mr Johns: The study in the Barossa Valley is related to water resource. I suppose there are few places in the State that do not have problems with ground water and the maintenance of quality. The studies referred to on page 507 are a part of the establishment of aquifers and a correlation of the various sedimentary units in the Barossa Valley. It really has a very practical application to the study of ground water availability and withdrawal and so on, so it is very much an economic and practical study that is being undertaken.

The Hon. E.R. GOLDSWORTHY: On page 502 mention is made of a review of the petroleum regulations having been completed and that the rewritten regulations are currently being vetted. What is envisaged with the review of the regulations and what changes are contemplated?

The Hon. R.G. Payne: My understanding is that for quite some time the regulations had not been reviewed and the area is a dynamic area rather than a static area.

Mr Watts: The current petroleum regulations are dated 1969, so a modernisation and an updating of them was obviously in order. That has taken a lot longer than we anticipated, largely because of the need for new production regulations, again concerning conservation and maximisation of the resource. It was necessary to do a lot of research into how they handled this overseas, specifically in Canada. It is fairly technically complex and we are getting there. We are still a few weeks away from a final draft which will then be, as is the custom, circulated to industry, to APEA and to the drilling organisations for their comment and input before regulations are introduced. In fact, the Cooper Basin producers have already sighted and commented on preliminary versions. One of the key features of this is that the new regulations will release technical data at an earlier date. In Australia it has been a tradition to hold such data confidential for many years, which is not the modern practice, and the release of that data forms the grease or the lubricant for future exploration activity. In general, it is a thorough modernisation, including metrication. The oil patch is a little old-fashioned. It operates in acres, feet and inches and our regulations reflect that. In fact, the Cooper Basin still operates under that system. Hopefully, these regulations will be finalised by the end of the year.

The Hon. E.R. GOLDSWORTHY: What is the attitude of the Department of Mines and Energy and the Minister to this mini-oil refinery at Stony Point?

The Hon. R.G Payne: It seems to me that we referred to that matter earlier. I take it that we are talking about the proposed Galaxy refinery. I pointed out at that time that the matter was the subject of an IDC proposal, which is a committee of Parliament. I do not suggest that means that we cannot talk about it at all, but I outlined earlier our attitude, which was that, if the activity could go ahead and provide additional employment in the Whyalla area on the basis of not simply transferring jobs from the Stanvac refinery, as it were, which would have a loss of activity, to the northern area, then the Government would see that as a worthwhile addition to the employment base in the State. There are several economic and other considerations to be met. They are being addressed by the IDC.

The Hon. E.R. GOLDSWORTHY: The Department of Mines and Energy gets an honourable mention in the Auditor-General's Report in the following terms under the heading 'Audit Findings and Comments':

> Weaknesses in internal control procedures designed to ensure integrity of the pay-roll were commented on in the previous report. Weaknesses evident again in 1986 were—
> - lack of independent check of input data;
> - delays in reconciling with the bank account;
> - lack of evidence of checks to ensure accuracy and completeness of computer processing.
>
> Other matters raised with the department included timeliness of banking and follow-up of outstanding debtors.

Perhaps the Minister would like to comment.

The Hon. R.G. Payne: I am tempted to remind the Committee of what the Hon. Des Corcoran used to say, 'It is the bank's problem to ensure that I have enough money to write out the cheques for.'

The Hon. E.R. GOLDSWORTHY: What about the integrity of the pay-roll?

The Hon. R.G. Payne: I am not suggesting that that is how the department conducts its accounting operations. This is an opportunity for Mr Bos, who has been sitting here patiently for most of the day, to provide some information.

Mr Bos: The audit queries related to relatively minor difficulties in internal control which arose during periods of annual leave combined with one or two absences of employees in the accounting area. As a result, we had to make some compromises in checking—in arrears in one or two cases. In banking, we had to compromise a little on banking a little less frequently than would otherwise have been the case.

We have discussed these matters with the auditors and given undertakings to ensure that there will be better back-up staff available. We have done some recruiting. We are

fairly satisfied, as are the auditors, that these problems will not recur.

The Hon. E.R. GOLDSWORTHY: What is the MARKAL energy model?

The Hon. R.G. Payne: It is a computer model which I once had Dr Messenger explain to me, but about halfway through the explanation I forgot why I asked him to explain it. It is some form of energy computer and I call on Mr Owens to explain.

Mr Owens: I cannot remember what the letters stand for but they relate to a computer based model of energy systems developed by the International Energy Agency overseas which the CSIRO adapted to Australia some three years ago. We have had a joint research program with the CSIRO to describe the total South Australian energy system to enable us to do broad scenario evaluations of options for developing the South Australian energy system. For those who understand technical terms, this is a linear programming model which optimises the overall costs of the economic system looking at the minimum cost for development across the broad spectrum of petroleum, electricity and gas. It also enables us to look at the broad interrelationship between those three sectors. It is a scenario evaluation technique.

Mr ROBERTSON: At page 507 of the program papers there is reference to drilling programs that are either partially completed or are to be carried out in the Eromanga, Officer and Eucla basins. As they are the sorts of environments being looked at and are geologically different, can the Minister say what minerological or hydrocarbons potential each of those basins has and how far we have gone towards exploiting them?

The Hon. R.G. Payne: I invite the Deputy Director General to bring us up to date on that matter.

Mr Watts: The Eromanga Basin is, in fact, the Great Artesian Basin, more or less, and overlies the Cooper Basin in a large area in the north-east. It is part of the Delhi-Santos acreage and is the site of most of the oil discoveries in recent years, so drilling activities have been intense. The original oil discovery in the Cooper Basin was made in 1965 at Tirrawarra in the Cooper Basin, but from 1978 onwards the whole rash of oil discoveries that have come in South Australia have been in the Eromanga Basin, which lies over the top of the Cooper Basin at Strzelecki, Dullingari and about 40 places. Eromanga it is the largest onshore oil province in Australia and extends into Queensland.

Mr ROBERTSON: And Jackson?

Mr Watts: Yes. There is the Big Lake gas field, which is a permean gasfield, and it has recently discovered oil in the overlying Eromanga Basin. It is the same with the Gidgealpa gas field; there is a small oil field in the Eromanga Basin overlying it. That is a thoroughly explored basin. In the Officer Basin the department, as part of its efforts to encourage petroleum exploration, undertook a basin study which proceeded for a number of years culminating in 1978 when we did some drilling. It culminated in a report to the APEA conference which way encouraging for the oil industry so it began seeking oil licences in the area.

Unfortunately, that exploration has been somewhat delayed because it coincided with Pitjantjatjara Land Rights Act. Recently, a consortium of Amoco, Crusader and the Pitjantjatjara was put together. I think that the Minister mentioned this previously. It was to undertake petroleum exploration in that area. Again, unfortunately, just as the exploration program was due to get under way there was the collapse in oil prices.

So, there has been a pause in getting that program under way. There has been very little recent petroleum exploration in the Eucla Basin, on the Great Australian Bight coast. The basin is not perceived as being a very prospective one. Over the years the department has done some stratagraphic work, and I think in the 1960s some petroleum exploration work was done. Recently a petroleum exploration licence 33 was granted to a consortium led by Median Oil, and it included a number of other companies, in Southern Cross Exploration. The permit is for five years; the consortium will not undertake a very extensive exploration program. Basically, it is considered to be very much a wildcat area. The consortium will be undertaking a recognisance, which is a normal procedure in what we call virgin basins. Information is built up slowly, recognisance work is undertaken, and then specific targets are defined.

The Hon. E.R. GOLDSWORTHY: Reference was made in the budget papers to upgrading the Energy Information Centre. What has happened in that respect?

Mr Owens: Recently, we completed a major review of energy information activities in South Australia, looking at not just the EIC but also ETSA and Gas Company activities in the area. As a result of that work we have highlighted areas where improvements could be undertaken. Within the available budget for this year we have authorised expenditure of about $7 000 for the purposes of upgrading a number of the displays at the EIC. We are currently producing a new series of brochures on South Australia's energy resources. Some 14 brochures will be produced as part of a new drive in the education and schools area. We will incorporate a number of new displays in the EIC caravan for use in country areas and metropolitan shopping centres, developing a general thrust in the areas of energy labelling, information for rural town residents, and a general upgrading in the schools area. That will all be done within the existing budget allocation for this year.

The Hon. E.R. GOLDSWORTHY: I am continually asked by my constituents living on the Murray Plains about the proposed power station at Sedan. Can the Minister indicate when a decision is likely to be made as to the location of the next power station. First, Lochiel and Sedan were considered, and now there has been another look at Kingston. When will a decision be made? I keep telling my constituents that it will not be for a while, I gather, but I would like to be more precise about this matter.

The Hon. R.G. Payne: A further review is under way. The Government announced, as the Deputy Leader indicated, the two preferred sites, Lochiel and Sedan. They can be subject to further evaluation. In fact, if I remember the report correctly, at that time Sedan was given, on a grading system, a higher rating than Lochiel. Mention was made that further drilling, proving and things of that nature were necessary at Lochiel, and in that respect it was a bit behind the Sedan project.

Since then the scene has changed somewhat to where probably there has been a slippage overall—and this is my opinion more than anyone else's, but I am sure it will be confirmed by officers—of probably 12 to 18 months in the time when we will need to have a local lignite up and running to maybe now 1994 or 1995, as distinct from earlier in the decade. That has meant that the pace of evaluation and so on has slowed somewhat, but the relative grading of Sedan and Lochiel has not, at this stage, suffered in any way because Kingston and/or Winntina have come up with additional information and proposals. I do not think I can be any more precise than that at this stage.

The Hon. E.R. GOLDSWORTHY: Assuming that the power station was required in 1995, what lead time is needed?

The Hon. R.G. Payne: I think we would need to make the decision by late 1988.

The CHAIRPERSON: There being no further questions, I declare the examination of the vote completed.

Works and Services—Department of Mines and Energy, $15 400 000—Examination declared completed.

ADJOURNMENT

At 9.53 p.m. the Committee adjourned until Thursday 2 October at 11 a.m.