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ENERGY

1-9-80 - 31-12-80

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Hansard

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(x2)

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

I do not have particulars of all power stations in the Republic, but the position at Escom's power stations is as follows:

- (a) All Escom's power stations are not equipped with electro-static precipitators, but all Escom's coal fired power stations are equipped with equipment for the removal of particulate matter from flue gas.

The following Escom power stations are not equipped with electro-static precipitators:

- (1) West Bank: East London.
- (2) Colenso: Colenso, Natal.
- (3) Ingagane: near Newcastle, Natal. Two of the five boilers at this station do not have electro-static precipitators.
- (4) Umgeni: near Pinetown, Natal.
- (5) Klip: near Vereeniging.
- (6) Komati: situated between Bethal and Middelburg, Transvaal. Electro-static precipitators are presently being installed at this station.
- (7) Vaal: south of Vereeniging.
- (8) Vierfontein: south of the Vaal River at Orkney.
- (9) Wilge: north of Oogies, Transvaal.
- (10) Hex River: near Worcester, Cape Province.
- (11) Salt River: Paarden Island, Cape Town.

All these power stations are, however, equipped with mechanical dust collectors. The combined capacity of all the above power stations is 3315 megawatt, which is about 22 percent

of the total capacity of all Escom's power stations.

- (b) Escom's coal fired power stations can be divided into two groups, namely those with chain grate boilers and those with pulverized coal fired boilers. The flue gasses from chain grate boilers normally contain low concentrations of particulate matter and it is therefore normal practice to install mechanical dust collectors on this type of boiler. A satisfactory control of particulate matter emission levels is obtained through the use of these mechanical dust collectors.

All of the above-named power stations, except for Komati, Ingagane and Wilge, are small and older chain grate power stations and it is not the intention to install additional dust collection equipment at these stations. All pulverized fuel fired power stations which have been built since 1964 are equipped with electro-static precipitators because the dust burdens in the flue gas from this type of boiler are normally higher than for chain grate boilers. Two of the older pulverized fuel fired stations, namely Taaibos and Highveld, have already been retrofitted with electro-static precipitators. The installation of electro-static precipitators at Komati power station has already started and plans for the installation of electro-static precipitators on two boilers at Ingagane are being finalized. Both these projects will be completed by 1984. Wilge power station is a small and older pulverized fuel power station and no plans exist to install electro-static precipitators at this station.

TUESDAY, 10 JUNE 1980

†Indicates translated version.
Han. 17 Q.C. 857 10/6/80
For written reply: (55)

Power stations: electro-static precipitators

692. Mr. N. B. WOOD asked the Minister of Mineral and Energy Affairs:

Whether all power stations in the Republic have been fitted with electro-static precipitators for reducing ash fall-out; if not, (a) where are the power stations without precipitators situated and (b) when is it expected that all power stations will be so equipped?

9/6/80

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Debate :

Electricity Amendment Bill

See Hansard 17 Cls 8576-8583

29/5/80

(SS)

Electricity Amendment Bill

See S. Hansard 10 cols. 2087-2091,

29/5/80

53

Electricity amendment Bill

2nd Reading

See S. Hansard 10 cols 2087-2091

15 (809) Ethanol from cassava (55)
28/5/80
*10. Mr. N. B. WOOD asked the Minister
of Industries:

(a) When is the building of the plant to produce ethanol from cassava expected to commence, (b) what is the estimated capital cost of the venture and (c) how many jobs is it expected to provide for (i) Whites and (ii) Blacks?

†The MINISTER OF INDUSTRIES:

(a) Investigations into the matter have not as yet progressed to the extent that decisions could be taken in connection therewith;

(b) and (c) fall away.

14/3/80

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State Oil Fund Amendment Bill

See. S. Hansard 8 col 1726 →

14/6/80

State Oil Fund amendment Bill
and reading

See S. Hansard 8 Cols. 1726-1736

12(747) 9/5/80 Maize/grain sorghum: production of ethanol (55)

*5. Dr. W. D. KOTZÉ asked the Minister of Agriculture and Fisheries:†

- (1) Whether any companies have conducted negotiations with the Maize Board with a view to maize and/or grain sorghum being made available for the production of ethanol; if so, what was the result of the negotiations; if not.
- (2) whether the Maize Board will bring it to the attention of producers of ethanol that it will make these products available for this purpose?

†The DEPUTY MINISTER OF AGRICULTURE AND FISHERIES:

- (1) Yes. Representatives of various concerns have already had discussions with the administration of the Maize Board in this regard. Discussions with the Maize Board itself will take place on 20 May 1980. The Government as well as the Maize Board still have to take certain decisions in principle before finality can be reached regarding quantities and prices.
- (2) Falls away.

1/5/80

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State Oil Fund Amendment
Bill (2nd Reading)

See Hansard II, cols 5335 - 5366.

9(572) Petrol/diesel: levies 55
16/4/80
*8. Mr. N. B. WOOD asked the Minister of Industries:

- (1) Whether he has received representations to reduce the amount of levies payable on (a) petrol and (b) diesel; if so, what decision has been reached;
- (2) whether a possible continuation of the present lower prices for crude oil was taken into account in coming to the decision, if not, why not?

†The MINISTER OF AGRICULTURE AND FISHERIES (for the Minister of Industries):

- (1)(a) and (b) and (2) Representations in regard to the high prices of petroleum products are received from time to time. As the amount of the levies are

directly related to the price of crude oil over which the South African Government has no control, there is nothing that the Government can do to alleviate the position.

I may add, however, that following on increases in the official selling price of crude oil as announced by the OPEC subsequent to the imposition of the equalization levy, those increases of more than 6 c/l have been cushioned by a commensurate reduction in the levy instead of increasing the prices of petroleum products still further.

Carbofix/carbogel technique

*9. Mr. N. B. WOOD asked the Minister of Mineral and Energy Affairs:

- (1) Whether he has access to details of the carbofix/carbogel technique or process involving production of fuel from powdered coal; if so,
- (2) whether the process has been assessed in relation to South African conditions; if so, with what results?

The MINISTER OF AGRICULTURE AND FISHERIES (for the Minister of Mineral and Energy Affairs):

- (1) No. At this stage I am only familiar with a press report in this regard. Specialized magazines and journals are being scrutinized continuously with a view to new processes. If details become available of the particular process to which the question refers, the relative research institutions of the State will naturally carry out full further investigations.

- (2) Falls away.

9(571)

Petrol/alcohol

16/4/53

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*6. Mr. N. B. WOOD asked the Minister of Commerce and Consumer Affairs:

- (1) Whether it is intended to market a blend of petrol and alcohol; if so,
- (2) whether such sale will be through existing petrol stations on (a) a country-wide basis or (b) a selected local basis;
- (3) (a) what progress has been made in this regard to date and (b) when is such a blend expected to be available?

The MINISTER OF AGRICULTURE AND FISHERIES (for the Minister of Commerce and Consumer Affairs):

- (1) Yes
- (2) (a) and (b) Sales would be effected

through existing petrol stations in the form of petrol through pumps, currently in use to supply premium grade petrol. The mixture would initially not be marketed on a country-wide basis but only in a limited geographical area, namely, the Reef.

- (3) (a) and (b) Arrangements for the marketing of such a blend have already progressed to the extent that it is anticipated that such a blend would be distributed as from the third quarter of this year in the above-mentioned marketing area.

Hansard 2 Quert Col 429

21/3/80

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Koeberg nuclear power station

400. Mr. T. ARONSON asked the Minister of Industries:

Whether there has been a re-assessment of the costs of the first and second phases of the Koeberg nuclear power station; if so, what is the cost of each phase based on current prices?

The MINISTER OF INDUSTRIES:

During 1979 ESCOM exercised certain further options which increased the joint

basic estimated contract price for the first and second phases of the station by R30 million, to a total of R1 018 million. According to ESCOM price escalations and additional cost increases which were brought about by parity adjustments, the import levy and sales tax will still increase the expenditure on the main contract for both phases by R580 million. Compared with the previous year this figure is unchanged as the estimated price escalation is neutralized by the lower import levy.

Based on 1980 cost levels it is now estimated that R1 598 million will be spent on the main contract of which R828 million will be on the construction of the power station and the first reactor and R770 million on the second reactor. In addition it is still expected that the estimated expenditure on items common to

both reactors, such as the water cooling system, quality assurance, consultancy fees, insurance, licensing fees, spares and building facilities will amount to R250 million.

Hansard 6 Question Cols 3674/368

14/3/80

Solar heating

*5. Mr. N. B. WOOD asked the Minister of Mineral and Energy Affairs:

- (1) Whether he has received representations to subsidize installations for solar heating in (a) homes, (b) schools and (c) industries; if so, (i) from whom and (ii) with what results; if not,
- (2) whether he will consider the possibility of such subsidies?

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

(1)(a), (b) and (c) Yes. The representations were in respect of general application in buildings and not for homes, schools or industries specifically.

(i) The Building Industries Federation (South Africa), the National Building Research Institute, a manufacturer of solar water heaters and private individuals.

(ii) After investigation of the matter it was referred to the Energy Policy Committee which decided that the granting of subsidies for solar water heaters could not be justified at present.

(2) No, in the light of the decision referred to in (1)(ii).

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Hansard 6 Quest Col. 344

12/3/80

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Fuel-efficient light motor vehicles

*10. Mr. N. B. WOOD asked the Minister of Industries:

Whether he will consider waiving the conditions of the local content programme in respect of fuel-efficient light motor vehicles until such time as local production can be undertaken?

†The MINISTER OF INDUSTRIES:

The present local content scheme favours light motor vehicles and a large proportion of production is within that range. Their relative fuel efficiency is satisfactory and the provisions of the scheme do not permit special accommodation for vehicles with an even better fuel efficiency factor.

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COMMENCEMENT OF OIL PRODUCTION BY SASOL 2

(Statement)

*The MINISTER OF INDUSTRIES: Mr. Speaker, I am delighted to be able to announce today that Sasol has now commenced with the production of its first oil at Sasol 2.

For South Africa this event represents an important milestone on the way to greater independence from imported crude oil.

The achievement of this goal is peculiar to South Africa because nowhere else in the world is oil being produced successfully from coal on a commercial scale.

The results of the experience of more than 25 years of research and development of the original Sasol 1 process has been incorporated in the design of the Secunda project. At present there is no other proven process of this nature available anywhere else in the world.

The fact that production of oil has now commenced at Sasol 2 does not mean that the project is now in full production. The oil that is now being produced is not being refined, and it will still take a few months before the first marketable products will become available for stockpiling and distribution. The oil-producing unit which has now come into operation is but one of seven similar units at Sasol 2. The other units will progressively come into operation at regular intervals in the course of the next two years. It is anticipated that all the units will be operative at the end of 1981, by which time full production at the plant will be possible.

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Gallagher

Y, 5 MARCH 1980

It is encouraging to hear that the production of the plant has been completed according to schedule. The cost of the Sasol 2 factory and the plant was estimated at R2 500 million in 1975. It is expected that the cost will be four and a half years less than within this estimate. This is a result of the project which will hardly be anywhere else in the world. Without the dedication of the workers and the excellent management of the workers at all levels, this achievement would not have been possible. It is appropriate to express thanks and appreciation to the management, and in particular to Mr. J. H. Stegman, Managing Director of Sasol Limited and Dr. A. H. H. Stegman, General Manager of Sasol Limited, whose capable guidance has made this possible.

Hansard

5(280) Sasol II
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234. Mr. T. ARONSON asked the Minister of Industries:

- (1) (a) What is the latest estimate of the total cost of Sasol II and (b) when is it expected to be completed;
- (2) what is the latest estimated total cost of establishing townships and housing for Sasol II;
- (3) what is the latest estimated saving in net outlay of foreign exchange for each of (a) the 10 years after completion of Sasol II and (b) the past 10 years in respect of Sasol I?

The MINISTER OF INDUSTRIES:

- (1) (a) R2 458 million excluding township development and housing, interest during construction and working capital plus R45 million general sales tax; and
(b) during 1980;
- (2) R69 million; and
- (3) (a) and (b) the saving in foreign exchange relates to the production capacity of Sasol II and information of this nature cannot be disclosed in terms of section 4 of the Petroleum Products Act, 1977 (Act 120 of 1977).

Sasol III

238. Mr. T. ARONSON asked the Minister of Industries:

- (1) (a) What is the latest estimate of the total cost of Sasol III and (b) when is it expected to be completed;
- (2) what is the latest estimated total cost of establishing townships and of housing for Sasol III;
- (3) what is the latest estimated saving in net outlay of foreign exchange for each of the 10 years after completion of Sasol III?

The MINISTER OF INDUSTRIES:

- (1) (a) R3 276 million excluding township development and housing, interest during construction and working capital;
(b) it is expected that the first phase will be completed during the first half of 1982;
- (2) R80 million; and
- (3) the saving in foreign exchange relates to the production capacity of Sasol III and information of this nature cannot be disclosed in terms of section 4 of

Hansard

285

MONDAY, 3 M

Cabora Bassa Scheme

5(285) 3.3.80 (55)
258. Mr. T. ARONSON asked the Minister of Industries:

- (1) (a) What power has been supplied to the Republic by the Cabora Bassa Scheme since his reply to Question No. 376 on 7 March 1979 and (b) (i) at what cost and (ii) over what period was the power supplied;
- (2) whether he will make a statement on the matter?

The MINISTER OF INDUSTRIES:

- (1) (a) 10 610,42 GWh (Giga-watt per hour)
- (b) (i) R37 056 368,76; and
(ii) 29 January 1979 to 23 January 1980;
- (2) no.

Hansard

3 MARCH 1980

286

Re-cycling of lubricating oil

5(289) 3-3-80
298. Dr. Z. J. DE BEER asked the Minister of Industries:

- (a) What quantity of lubricating oil was re-cycled for re-use during 1979 and
- (b) what was the estimated saving in foreign exchange resulting from such re-cycling?

The MINISTER OF INDUSTRIES:

- (a) and (b) The re-cycling of used lubricating oil is entirely a private sector activity. The information called for is consequently not available in my Department of Industries.

SPAR 3/9/65
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'Shortfall likely' in electrification plan

By Craig Charney

Despite the highly-publicised Soweto electrification project, most local black families remain without electricity, and the present plans are likely to fall far short of the goal of giving each an electrified home by 1985.

This was the message of a market research report on the Electrification of black households recently issued by Bates Wells Kennedy.

In Johannesburg, 14,6 percent of black families had electricity in 1979, leaving 174 000 families without. On the Reef, only 46,7 percent had electricity, leaving a further 140 000 families relying on candles and coal stoves.

In more than 11 regions across the nation, an average of 26,9 percent of black families lived in electrified homes.

The lowest proportions were reported in Durban — 4,3 percent — and in the Western Cape townships outside the Cape Peninsula, where virtually no black families had electricity.

The highest figures were in Kimberley (90,7 percent) and Pretoria (85,5 percent).

"To clear the backlog, which the Government has announced as its intention, will require building an average of 120 000 new housing units with electricity, and supplying electricity to a further 47 000 existing houses each year until 1985," the report concluded.

"At least 400 000 to 500 000 (houses) would be needed to alleviate the current situation."

Escom gag on chimney probe

Staff Reporter

THE cause of the partial collapse of a 278m chimney at the Matla power station near Kriel, in the Eastern Transvaal, is still a mystery — and Escom has asked the contracting companies not to release details of their investigation.

"It's very much a mystery", a spokesman for the chimney's builders, Futurus Construction, said yesterday. "At this stage there's no indication what the problem was. This type of accident is very unusual."

A man died and at least eight were injured when one of the chimney's three flues cracked and tumbled hundreds of metres last Wednesday.

The spokesman said engineers were still trying to find ways of entering the chimney safely in order to inspect its insides. As a "routine measure" an independent firm of consulting engineers has also been called in to check the chimney's design.

"The real problem", said a spokesman for the design contractors, Ove Arup & Partners, "is that there is no obvious reason for the accident.

"The design isn't in doubt,

and several outside experts have been called in to conduct tests. All one can say is that we don't know the cause yet."

Meanwhile, Escom officials are said to have asked the project's contractors at a meeting last week not to release details of the probe into the accident.

Yesterday, however, two contractors said Escom should "clear the air" and keep the public informed of efforts to find the cause.

"I believe Escom should call a Press conference and explain the problems and procedures involved," said one. "At the moment people are in the dark, and they should explain clearly by bringing in experts, and with pictures and diagrams.

"I know we'd be happy to go along."

Another contractor said: "Although Escom is the client and the ball is in their court, it may be a good idea to clear the air and tell people what is going on."

Mr Boet Uys, Escom's public relations officer, would only say: "The investigation is still in progress. When we have something to say we'll do so in a statement to Sapa."

4/9/80 ARCMS
Sasol 2
plane fuel
(55)
'before'
1982'

AVIATION kerosene made from coal or oil shale is the crude oil alternative of the future, according to Boeing Aircraft Company. But in South Africa, it is the not-very-distant future, say Sasol 2.

According to Boeing's engineering vice-president, Mr Bob Withington, in a booklet on the subject being widely distributed at the Farnborough Air Show, four to six percent of fuel used worldwide could be synthetic.

Research by the aircraft manufacturer's research department shows 'synthetic fuels made from coal and oil shale are the only practical alternatives in terms of availability, cost and efficient use of energy resources.

INTEGRATION

'They can be integrated into existing production and distribution systems and are compatible with contemporary airplanes.'

Mr Withington added: 'The airplane can't tell the difference between synthetic fuel and petroleum fuel.'

Mr Clarence Keyter, public-relations officer at Sasol, said Secunda, already producing base-oil and petrol, would also produce aviation kerosene before 1982.

This would be available to all aircraft refuelling in South Africa.

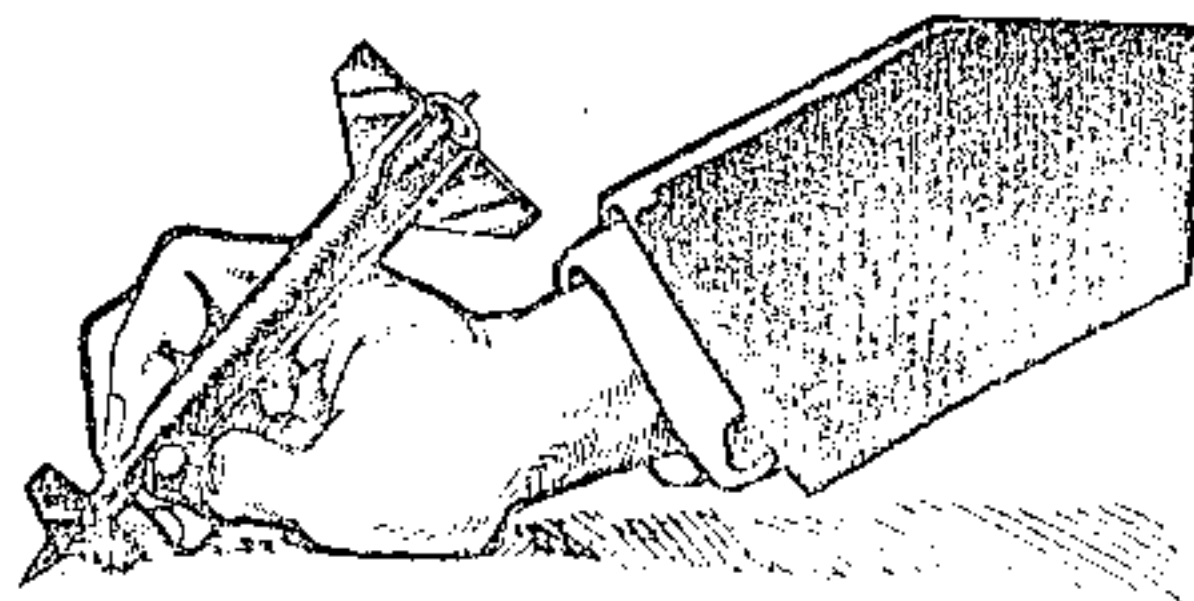
nuclear technology to other countries to reduce the risk of proliferation after India successfully exploded a bomb in 1974.

Third World countries say these restrictions contravene the treaty and are really a cynical attempt to preserve the rich countries' lucrative monopoly of enrichment, reprocessing and other advanced nuclear technologies under the guise of stopping proliferation.

To prove their point, they say the nuclear exporting countries forget their anti-proliferation pledges when it suits them. Germany has sold sensitive nuclear technology to the Argentine and Brazil for substantial sums of money even though these countries have refused to sign the NPT and are believed interested in developing nuclear weapons.

Third World countries claimed bitterly at the conference that SA and Israel, which have also not signed the NPT, already have secret nuclear weapons, or could build them quickly, using technology supplied with a nod and a wink by sympathisers in the West.

By causing the NPT review conference to fail, the Third World countries and their allies hoped to focus world opinion on their grievances and increase political pressure on the industrial nuclear powers to keep their side of the original bargain.



For their part, western and eastern industrial countries played down the importance of the disagreement, stressing that all signatories still support the treaty and its aims. "No one is threatening to leave the treaty and there won't be a rush to build arms," one diplomat said.

Yet their attitude may be too sanguine. Nuclear disarmament and non proliferation have now joined the long list of contentious subjects which divide industrial and developing countries. As a result the treaty has lost credibility.

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It is imperative that the

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NUCLEAR WEAPONS (55) Mushroom cloud

FM 12/9/80

The second five-yearly conference called to review the working of the 1970 Nuclear Non-Proliferation Treaty — the only international agreement which seeks to halt the spread of nuclear weapons — broke up in Geneva last weekend in instructive but worrying disagreement.

A powerful group of Third World countries, led by Mexico and Yugoslavia but with support from Sweden, prevented the conference from issuing a final communique or formally adopting planned improvements in anti-proliferation safeguards to protest what they see as the nuclear powers' hypocritical interpretation of the treaty.

Under the 1970 treaty, three signatories, the US, Britain and the Soviet Union, are allowed to have nuclear weapons. But they promise to negotiate a speedy end to the arms race including a comprehensive test ban treaty and to make nuclear supplies readily available to the rest of the world for peaceful purposes. The other 111 countries which have signed the treaty renounce nuclear weapons and agree to open all their nuclear plants to inspection by the Vienna-based International Atomic Energy Agency to prevent cheating.

But 10 years after the treaty came into force, Third World countries argue that the industrial nuclear powers have not kept their side of the bargain. The superpowers have bigger and more powerful nuclear arsenals than ever. Salt II is unratified by the US Senate and nuclear testing continues.

Meanwhile, the industrial nuclear powers, both western and eastern bloc, agreed two years ago in their secret London nuclear suppliers group to "exercise restraint" in exporting so-called dangerous

ibility to show integrity and

product which provides value

in the processes of management

Manager must ensure that he

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W/also
Springs R.O.M.
gas link
is in the
pipeline

Staff Reporter

A R27-MILLION gas transmission pipeline is to be built from the Sasol Two complex to Springs on the East Rand.

This was revealed yesterday by Mr George Botha, manager of SA Gas Distribution Corporation Ltd (Gascor).

Mr Botha said the pipeline would be 95km long, with a diameter of 762mm.

"The new pipeline will minimise the risk of gas supply interruptions resulting from either production or transmission failures," he said.

Gascor currently supplies pipeline gas to about 600 customers, including the Johannesburg Municipality, and serves the industrial complex of the entire Witwatersrand and Vaal Triangle.

Established in 1964, the gas distributors have already replaced 95% of the petroleum fuels used for industrial heating in its area.

The estimated cost of the total project will be R27-million. The new pipeline will link up with the existing transmission network in Springs. Contractors will be appointed shortly.

COURSES AND PROSPECTS

University or technikon

By John Allen

South Africa's diverse range of universities is expected to have to cater for well over 100 000 students from many different language and cultural groups by the end of this century.

Every year thousands of places are open to new students at many universities which have widely-different characteristics and offer a huge range of courses.

The Commission of Inquiry into Universities which sat several years ago estimated that in the next two or three decades university facilities at present reserved mainly for whites would have to be doubled to cope with growth in student

numbers

That estimate was based on predictions of future white student numbers: growth to accommodate black student numbers will have to be much faster, say educationists.

Examples of growing universities in the Transvaal and neighbouring Bophuthatwana are:

● Rand Afrikaans University, the growth of which has exceeded all expectations since it was established 12 years ago.

● The University of Bophuthatwana, which opened this year and which plans eventually to admit about 5 000 students.

● The University of the Witwatersrand, which is expected to admit about 21 000 students of all races by the year 2000.

Prospective students in the Transvaal have the most concentrated

network of universities in South Africa at which to study.

Apart from RAU, Wits and the new campus at Mmabatho, there is the University of Pretoria, the Potchefstroom University for Christian Higher Education, the University of the North at Sovenga and the black medical university, Medunsa, at Ga-Rankuwa.

Despite the wide range of possibilities for students of all races, experts warn that school-leavers should seriously consider alternatives such as technikons, particularly if they are wanting career-orientated education.

Too many students who are unsuitable go to university, sometimes in search of status.

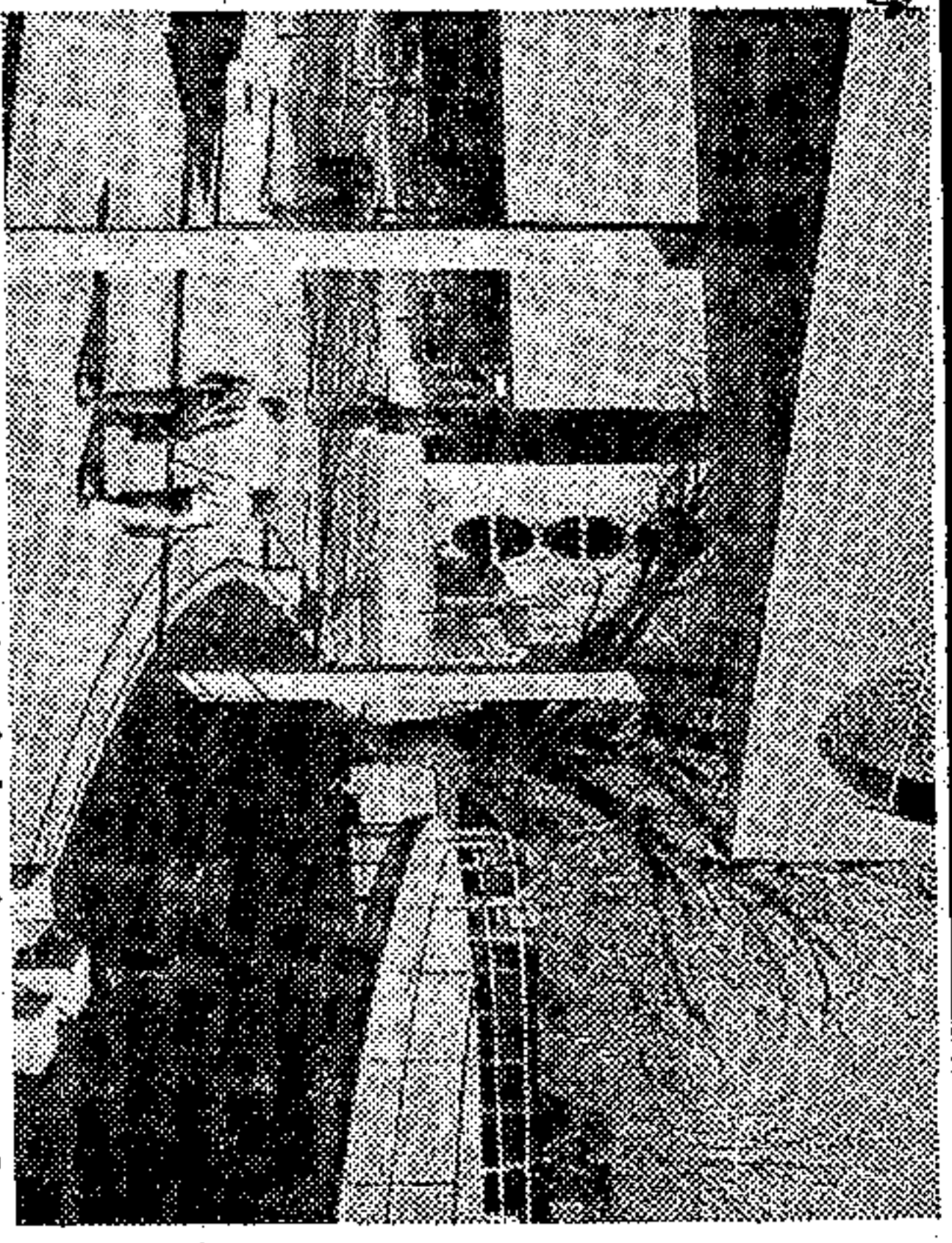
If you do decide to go to university, consider attending the pre-

university schools which many institutions have set up in a bid to help students adjust to university life.

Wits has launched an effort to take "positive steps" to help students from "deprived communities" to enter the university and be given a realistic chance to succeed in their studies.

Special lectures are provided for potential students of all races to help them choose their subjects. The university is trying to boost the number of bursaries and the amount of accommodation for black students.

Part-time courses for students who cannot af-



Glimpse of Potchefstroom University's centre square — a meeting place for students in between lectures (and sometimes during lectures as well).

ford full-time study are being expanded and the university is going beyond a consideration of matric exam results in selecting students.

Personal tutors are now being provided to ad-

vise students whose home language is neither English nor Afrikaans. Programmes to help upgrade students' competency in English and improve reading and study skills are being offered.

Handwritten notes:
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Wits
5/11/80

Cut-rate petrol may be halted

17/9/80

55 STAR

Trek Petroleum is to enforce their contract with the Pick 'n Pay Hypermarket in Port Elizabeth to prevent them selling cut-price petrol.

In a statement today the managing director of Trek, Mr Donald Masson, said action would be taken against the hypermarket for selling petrol at a price lower than their contract stipulated.

He said a "valid contract" existed between the parties in which it was stipulated petrol could only be sold at prices determined by either "an approved authority" or by Trek.

The hypermarket in Boksburg will be able to continue selling petrol 1c cheaper, and there are reports that it is considering selling it 2c

cheaper.

A spokesman for Trek said today the Boksburg hypermarket won a court case several years ago which enabled them to sell cheaper petrol.

But, he said, Trek would continue with its action against the Port Elizabeth outlet, in spite of the result of the earlier court case.

Govt does not decide minimum petrol prices

on Resale Price Maintenance in terms of Government Notice R1033, of June 25, 1969, was granted in respect of petrol. This means that the oil companies are free to determine and enforce fixed prices for petrol.

"As far as the profit margin of service stations is concerned it is being controlled on a very strict basis on account of the vitally important role of fuel as a source of energy and as a cost factor in the country's economy.

"This profit margin has been established at a level which does not give average service stations in the country any leeway for price reductions.

"A further factor which must be borne in mind is the fact that it is still essential to conserve as much fuel as possible.

The sale of fuel by any individual service station in a specific area at prices which are lower than the ruling prices in that area may lead to a situation where motorists travel unnecessary distances to the relevant filling station with a view to having petrol at the reduced price and in this process they use more fuel than what is really essential," — Dr Van der Merwe said. — Sapa.

POLITICAL comment in this issue by Allister Sparks, Benjamin Pagnard, John Ryan, Lin Mingo, Maria Schaefer, illustrated by Peter Denholt, headlines and sub editing by Paul Holroyd, cartoons by Bob Connolly, all of 121 Main Street Johannesburg

commodity". Dr Van der Merwe said he wished to highlight the following aspects connected with the price of petrol.

"The maximum selling price of fuel is determined from time to time in terms of a standing arrangement between the Government, the oil companies and the service station industry. These prices differ from area to area according to the transport costs involved in the supply of fuel and such maximum selling prices may not be exceeded.

"The Government does not determine minimum selling prices.

"However, it is true that exemption from the prohibition

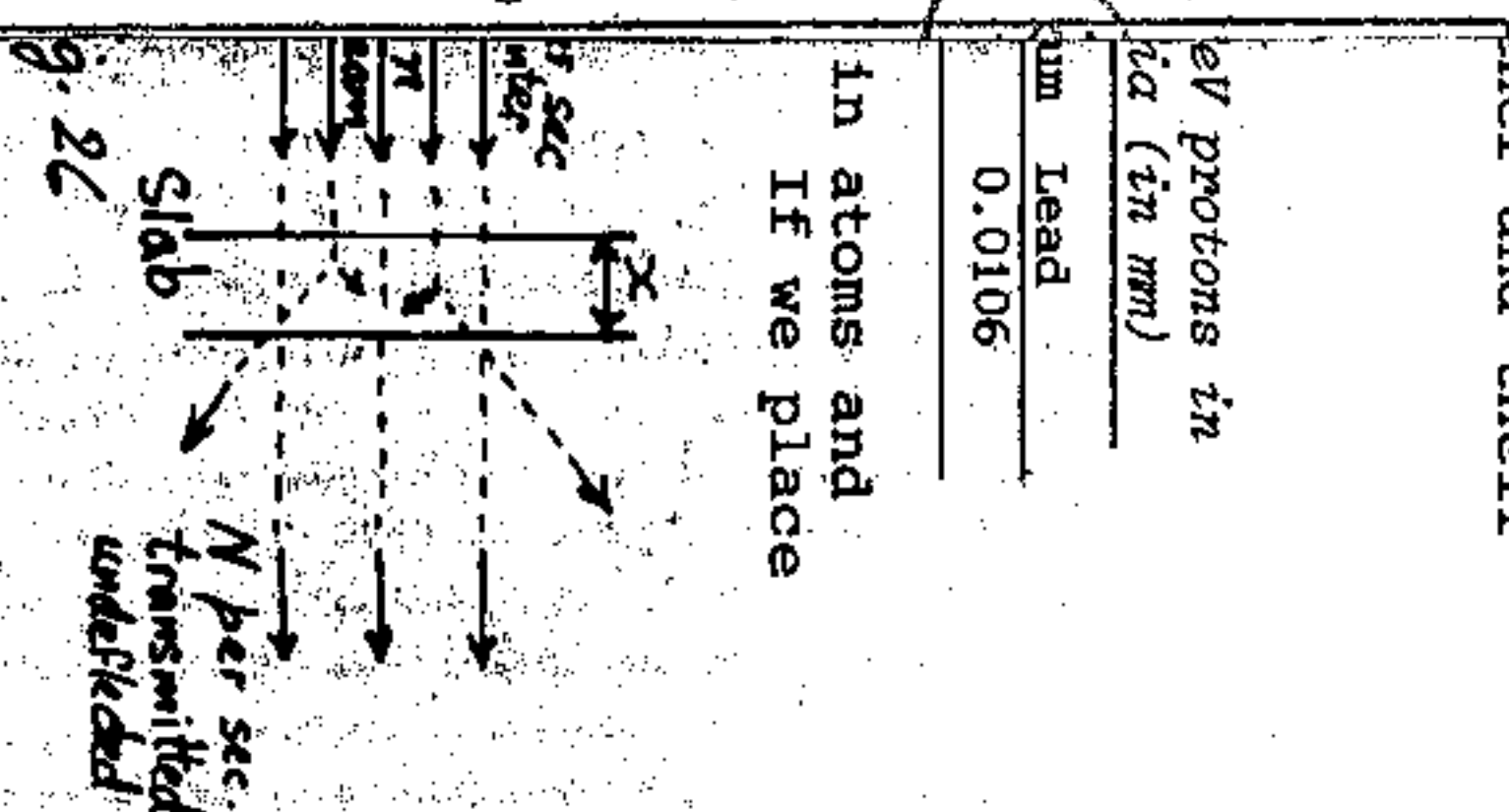
THE Minister of Industries and of Commerce and Consumer Affairs, Dr Schalk van der Merwe, said in Pretoria yesterday that the profit margin on the sale of petrol was fixed in such a way that it did not give the average service station in South Africa the leeway for price reductions.

Dr Van der Merwe reacted in a statement to Press reports that a hypermarket in Port Elizabeth would sell petrol to motorists as from today at 2c per litre less than the ruling price in that area.

Dr Van der Merwe said he wished to stress that it was the sole responsibility of the oil companies to maintain fixed prices "for this strategic

increases, as the particle penetrates deeper into the medium. The density of energy decreases as $1/r^2$.

energy to the resulting charged recoil nucleus, or a nuclear reaction which usually leads to the emission of charged particles or gamma rays. Thus the secondary particles resulting from neutron interactions in matter are often charged particles and these particles then interact with the matter as described in (a). Hydrogenous media such as wax, water or plastic are of particular interest because a neutron can lose any fraction (0-100%) of its kinetic energy in a



When a nuclear

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single elastic collision with a proton. The maximum nuclear recoil energy E_{max} resulting from elastic scattering of neutrons (of mass m_n and energy E) on a nucleus of mass m_N is given by

$$E_{max} = 4m_n m_N E / (m_n + m_N)^2 \quad (34)$$

Thus E_{max}/E is much smaller for heavy nuclei than for hydrogen.

(e) Gamma rays

The three most important effects in the interaction of gamma rays with matter are the photoelectric effect (described in section 2.1), the Compton effect (section 2.1, p.5) and pair production (section 2.3, p.8). Energy is transferred from the incident gamma photon to a photoelectron, a Compton electron or an electron-positron pair respectively. These charged secondary particles then interact with the medium as described in (a). As in the case of neutrons, the interaction of gammas with matter is a statistical process and is governed by an exponential absorption law of the form given by eq.(33) but with α representing the gamma ray absorption coefficient. This coefficient can, in turn be considered as the sum of components α_{PE} , α_C and α_{pp} , corresponding to the photo-, Compton and pair effects. Thus

$$\alpha = \alpha_{PE} + \alpha_C + \alpha_{pp} \quad (35)$$

The absorption coefficients are largest for the heaviest elements (e.g. lead) and α_{PE} usually dominates for gamma energies below 0.5 MeV, α_{pp} for energies above ~ 10 MeV and α_C for energies around 1 MeV.

A convenient measure for gamma interaction calculations is the half-thickness, analogous to the half-life in radioactivity. This is defined as the thickness $x_{1/2}$ of the particular medium required to reduce the fraction N/N_0 (eq.(33)) to one half for a particular gamma energy.

$$\text{Thus } N/N_0 = \frac{1}{2} = \exp(-\alpha x_{1/2}) \quad (36)$$

Some values of $x_{1/2}$ are given below (in mm)

Energy	Lead	Concrete
1 MeV	9.0	47.0
5 MeV	14.5	100.0

Cut-price petrol - despite threat

Star 18/9/60
55
Buck

By Mike Derry

The Port Elizabeth Hypermarket will continue to sell cut-price petrol in defiance of threatened action by its suppliers, Trek Petroleum.

Managing director of Pick 'n Pay, Mr Ig Ferreira has called on other petrol retailers to defy the oil companies and drop their prices too.

The clash between Trek and Pick 'n Pay developed this week when the Hypermarket announced it would sell petrol for 2 cents a litre less than the ruling price in that area.

ENCOURAGED

Mr Donald Masson, managing director of Trek, immediately issued a statement that action would be taken against Pick 'n Pay for selling petrol at a price lower than their contract stipulated.

Mr Ferreira said today the Hypermarket would do everything possible to continue selling cheaper petrol.

"The big oil companies make huge profits, and it is about time some of

these got passed on to the man in the street," he said.

"It would be good to see if this move encourages more people with some guts to follow us," he said.

Mr Ferreira said he was encouraged by a statement by the Minister of Industries and of Commerce and Consumer Affairs, Dr Schalk van der Merwe, that the Government determined maximum, not minimum selling prices.

"In 1975, when we tried the same thing with the Boksburg Hypermarket, a Government spokesman said the price was fixed and that was that. Now they seem to be saying it's fine if we sell for less than the maximum."

In 1975, Pick 'n Pay won a court action against Trek allowing the Boksburg Hypermarket to sell petrol for one cent less than the fixed price.

But Mr Ferreira said today there were no plans to drop the petrol price at the Boksburg Hypermarket even more.

"The two Hypermarkets have a totally different overheads structure," he said.

increases, as the particle penetrates deeper into the medium. The density of energy deposited $(-dE/dx)$ is therefore highest at the end of the range (Fig. 25).
Relatively heavy particles such as the p or α are not significantly deflected in their collisions with the much lighter electrons in matter and the maximum energy lost per collision is only a tiny fraction of the p or α energy. These heavy particles therefore retain their original directions throughout the slowing down process.

where α is the neutron interaction coefficient of the slab and depends on neutron energy and on the species and density of nuclei in the slab.
The neutron-nucleus interaction is either a nuclear scattering process, in which the neutron transfers some of its energy to the resulting (charged) recoil nucleus, or a nuclear reaction which usually leads to the emission of charged particles or gamma rays. Thus the secondary particles resulting from neutron interactions in matter are often charged particles and these particles then interact with the matter as described in (a). Hydrogenous media such as wax, water or plastic are of particular interest because a neutron can lose any fraction (0-100%) of its kinetic energy in a

$N = N_0 \exp(-\alpha x)$ (33)
Fig. 2c
SIAD

transmitted undeflected

single elastic collision with a proton. The maximum nuclear recoil energy E_{max} resulting from elastic scattering of neutrons (of mass m_n and energy E) on a nucleus of mass m_N is given by

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Opec oil output plunges

55

ROOM

19/9/80

NEW YORK. — Oil production by the Organisation of Petroleum Exporting Countries fell to its lowest level in 4 1/2 years in June amid "crumbling world oil demand" following an 18-month price spiral, the Petroleum Intelligence Weekly said.

The widely followed trade newsletter said output by the 13-nation cartel fell to 27 300 000 barrels daily in June, the lowest since Opec produced 26 700 000 barrels a day in January 1976. A barrel contains 159 litres.

For the first half of 1980, Opec production averaged 28 400 000 barrels a day, well below the 30-million-barrels-a-day level maintained for several years before, the newsletter said.

Iran's daily production of crude oil is averaging slightly lower than 2-million, its logical level, the Iranian Oil Ministry said.

In a report for the Persian Year ended last March 20, the first full year following the Islamic revolution, the ministry said daily output averaged 3 450 000 barrels, of which 2 650 000 were exported, the official Paris news agency quoted the report as saying.

Refined petroleum products equivalent to 250 000 barrels of crude a day were also exported, it said.

The ministry said 1-million barrels of crude are now being refined a day, which is 97 000 barrels more than the crude intake of two years ago, despite the departure of more than 1 200 foreign managers and technicians following the revo-

lution and some sabotage of oil and gas pipelines.

Work has resumed on several important projects and the second unit at the Isfahan refinery is expected to become operational in a month, following the start up at the first unit last winter.

Work on gas and oil pipelines is also progressing well, the ministry noted. — Sapa Reuter.

The coal age cometh to the West — again

EVER since the Opec cartel first exercised its considerable leverage seven years ago, people have been talking about the developed world having to enter a "second coal age" to maintain anything like its existing level of industrial activity.

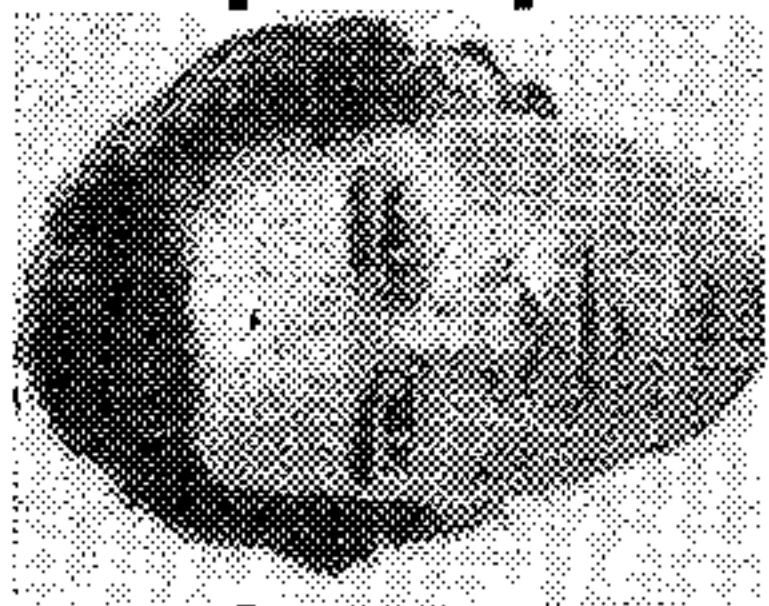
All available evidence indicates that the second coal age has now begun, and South Africa stands happily poised to provide the raw material for the coming international regression to the energy source of the original industrial revolution 110 years ago.

One authoritative estimate suggests that South African coal exports will increase by at least 20% a year for the next five years.

This is a complete turnaround for our coal-exporting prospects from the infinitely bleaker outlook which prevailed as recently as 1972, when any thought of large-scale exporting of coal was considered an eccentric/daydream and not taken seriously at all.

The industrial West has fast woken up to the political uncertainty of Opec oil, and the in-

Simon Willson



Down to business

creasing expense of North Sea and Gulf or Mexico alternatives, and forward supply contracts for South African steam coal are now being signed in a frenzy.

The world market price for a ton of steam coal has risen 60% over the last nine months to average about \$28 (R21) for present forward contracts. But the demand is so great that contracts for 1981 supplies are expected to go as high as \$55 (R41) before this year is out.

There are only two big coal-shipping terminals in the southern hemisphere capable of handling increased exports of the

scale likely to be demanded within the decade. One is Haypoint in Australia, and the other is our own Richards Bay.

Richards Bay is better placed geographically than Haypoint to supply the major markets of Western Europe and the eastern seaboard of the United States, and can look forward to fielding most of the bigger contracts on the way from these two sources.

Accordingly, the Government has advanced the completion date of the planned R230-million expansion of Richards Bay's facilities by two years, and the terminal's handling ca-

capacity will rise from 24-million tons a year to 44-million tons by mid-1984.

Richards Bay is also one of the few coal terminals in the world which can accommodate giant bulk carriers which, after becoming almost obsolete as they were laid up during the oil price quintupling and subsequent underconsumption glut of the mid-1970s, are now back in fashion and being built again in the world's shipyards.

France is a good example of a western industrial country whose oil imports are becoming prohibitively expensive and whose ambitious nuclear energy programme is being obstructed by the back-to-nature environmentalist political parties which are currently strangely powerful on mainland Europe.

If oil and the atom cannot, for their various respective reasons, be depended upon to keep the Gallic nation's cogs turning, the obvious recourse is coal.

French shipowners have just ordered five 140 000-ton bulk carriers worth R200-million

from Japan, where with typical Oriental anticipation shipbuilding was not allowed to decline during the bulk carrier slump.

These vessels will be ready by the end of next year and have been purpose-built for shipping coal to Le Havre from Richards Bay.

France has tripled its imports of South African coal in the last three years, and will increase the quantity still more once the carriers are in operation.

The United States is currently South Africa's biggest coal importer, taking 1-million tons a year. America's drive for energy independence seems likely to restrict greater coal imports from this country, and other markets are sure to overtake the limited US demand.

The biggest potential is in the fast-growing countries of the Far East, which are geographically closer to Haypoint but have in the past expressed reservations about depending on Australia for energy because of the current unpredictable militancy of Australian organised labour.

Countries such as Japan, South Korea and Taiwan are well stocked-up with their own bulk carriers, and will be looking towards Richards Bay for more reliable supplies of coal.

American figures put potential Far East demand for South African coal at spectacular levels: Japan, the estimates say, could be importing 60-million tons of steam coal within 10 years, Taiwan could need 35-million tons and South Korea 15-million tons.

On this showing, prospects could hardly be better — but the surprising thing is that, in fact, they probably will be.

How? Consider this: the coal price is doubling and Richards Bay is selling all the coal it can handle while the West is sliding into cyclical recession.

The demand for South African coal when the world's major economic powers come out of the trough and back onto the upward curve is almost limitless.

Since the South African economy seems to be booming and troughing contrarily in

relation to the industrial West, soaring coal exports during a downturn in the domestic economy will be a most welcome contracyclical influence.

The remaining question is what the stirring export performance — likely to be worth R800-million to us next year and R2 500-million by 1986 — will do to the domestic price of coal. The answer is that the more we export, the cheaper — in real terms — our coal is likely to be for us.

This is because a good export price will effectively be subsidising our government-controlled local price, and keeping coal mines' investments in new mines and equipment up, and their profit margins healthy.

This will constitute important insulation from the inflationary shocks still to come, as the price of the coal that goes to make steel and generate electricity in this country will be lower and will rise less quickly than in the rest of the world's coal-consuming countries.

55

20/9/80

(55) (100)
Govt will
not stall
on 'Escom',
21/9/80

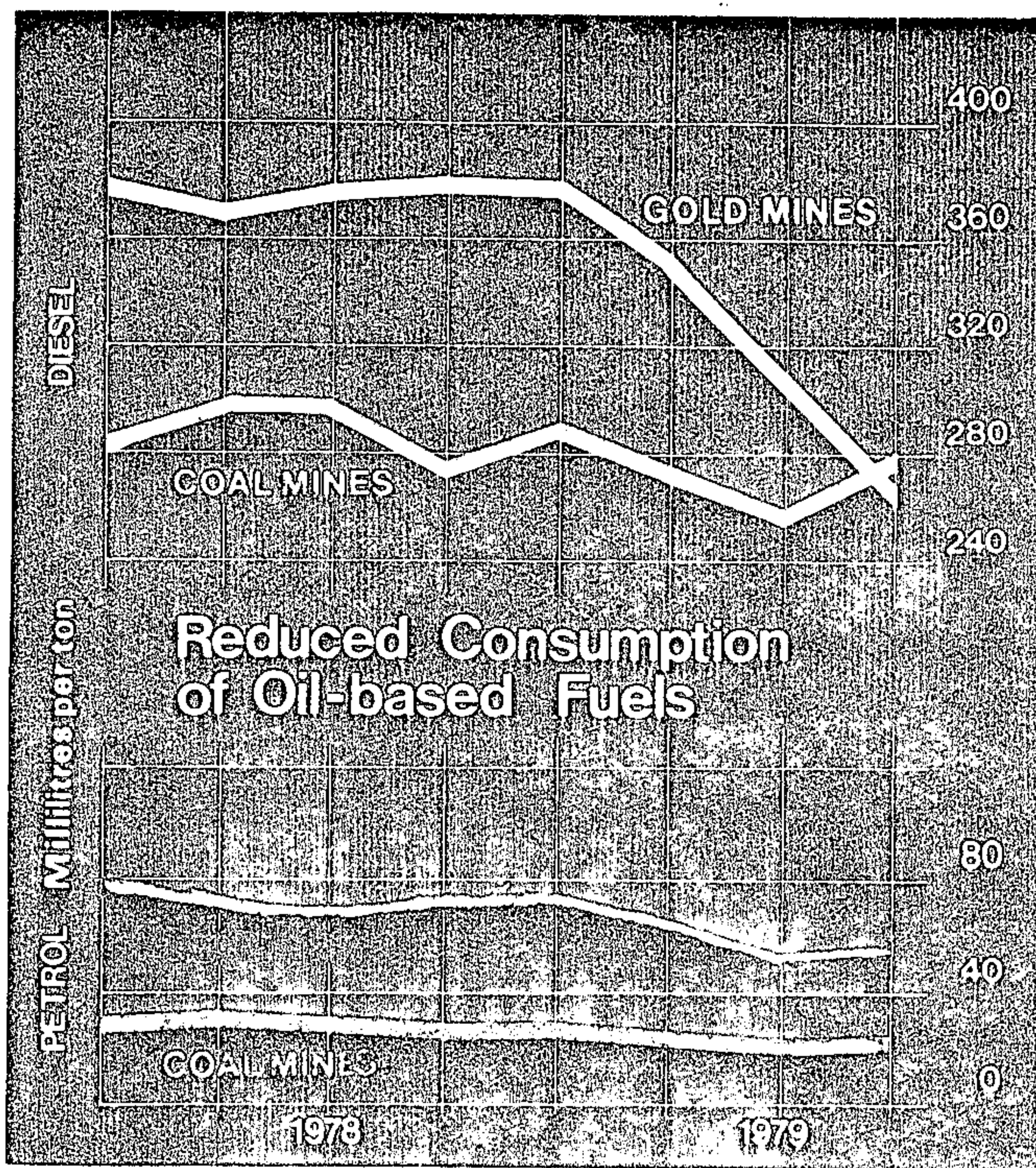
DURBAN. — The Government would not hesitate to undertake a general productivity study of Escom, if necessary, the Minister of Energy Affairs, Mr F W de Klerk, said yesterday.

Addressing delegates at the Natal National Party Congress on a motion requesting such an investigation, he said he would shortly be receiving a report of a productivity study undertaken by Escom itself.

Mr De Klerk said that if, after studying this report, it appeared that a general productivity study was necessary, the Government would not hesitate to carry out the study in collaboration with Escom. It had to be done in an orderly way, he said.

He appealed to people to be more sympathetic towards Escom, which had extraordinary problems in supplying electricity, not only to the areas where there was a great demand, but also to other places where the demand was less. — Sapa.

(Reports by Andy Braid and Claude le Roux
37 Trust Buildings, Gardiner Street, Durban)



Mining industry saves on fuel consumption

By IAN THOMAS
Mining Editor

SOUTH Africa's mining industry has made increasingly substantial yearly fuel savings since the 1973 oil crisis, says the Chamber of Mines.

Last year, gold mines reduced diesel fuel and petrol consumption per ton of ore mined by an average 15% over 1978, the Chamber says in its latest bulletin.

Collieries reduced petrol consumption by 26% and diesel by 5% per ton mined during the

same period.

The industry adopted fuel conservation measures soon after the oil crisis, and the real improvement in diesel and petrol use since then has been substantial, the Chamber says.

The savings have been achieved despite unprecedented growth in the industry, especially in the coal sector where increasing mechanisation and expanding open-cast mining have presented difficulties in effecting savings.

Transport rationalisation, in

particular a switch from using diesel locomotives to electric or battery-powered locomotives underground and to steam locomotives on surface has been one of the main saving methods.

This trend is expected to continue, and will cover introduction of conveyors and other systems to replace large diesel trucks used in open-cast operations.

Diesel-fired furnaces have been adapted to other fuels at considerable cost.

Little relief on the oil market

CRUDE oil stocks outside the Communist bloc are now at a record level of 5-billion barrels — enough to last for 100 days. The chairman of Shell, Mr Peter Baxendell, said in London on Thursday that Opec members were expected to agree on common price levels when they meet in Bagdad in November. Saudi Arabia might then decide to cut its production of crude oil by 1-million barrels a day or more. Other Opec or non-Opec members might do the same, and this could lead to fears of crude shortages developing. Such fears could boost prices, says Sue Cameron of the Financial Times.

At midnight on July 4, UK petrol prices dropped by around 1c a litre — to the great delight, but almost total bafflement of the average British motorist.

Only a year earlier, he had been forced to wait in line for hours outside his local garage, praying that the pumps would not run dry before he reached them while simultaneously cursing the unprecedented heights that petrol prices had attained.

Between the middle of February and the beginning of July last year, average pump prices soared by 40%.

In the US, the panic over petrol supplies reached such proportions that some gasoline-hungry motorists chose to ride shotgun down the long queues that formed outside the pumps — latterday highwaymen demanding: "Petrol or your life."

Yet today the famine that faced consumers appears to have become a feast. Not only is petrol available in cut-price abundance all over Western Europe, but the market for other oil products is also weakening rapidly.

Demand and prices have fallen so sharply that major oil companies like Shell, British Petroleum and Esso now openly admit they are finding it cheaper to buy products on the Rotterdam spot market than to make them by processing crude through their own refineries.

The abrupt turn-around seems at first sight to lack both rhyme and reason — for there has been no major drop in world crude prices. But the most pressing question in the minds of most oil product customers — whether they be motorists buying petrol or industrialists purchasing fuel oil to power their plants — is whether or not the good times are going to last.

The evidence suggests that any heartfelt sighs of relief on the part of consumers could well be premature. The chances are that the pendulum will swing the other way with perverse speed.

Mr Baxendell said that the reason the major oil companies were continuing to stock up on crude — in spite of the fall in demand for oil products — was that they did not want to "prejudice" their supply contracts with producing countries in case there might be another shortage.

If they ended their contracts with the producing countries now or cut back the amount of oil they were buying on contract, they might not be able to boost supplies later when they needed to do so.

Just as turmoil in Iran precipitated last year's oil crisis, so could action later this year by Middle East crude producers — notably Saudi Arabia — lead to a firming up of the oil products market this winter.

There are a number of reasons for the present softness of the market but chief among them is the recession that is taking its toll in both Europe and the US.

Demand for products such as fuel oil has dropped away as manufacturers have been forced to reduce output, close plants and pare down their distribution networks. Meanwhile individuals have also been feeling the pinch and have been cutting down on petrol and heating oil.

BP oil and Shell say that overall demand for oil products in the UK has dropped by around 15% compared with last year. The picture is much the same on the continent except that demand there has fallen at a slightly lower rate.

Most of the major oil companies have now mothballed some of their older refining capacity in Europe and other plants are being treated to lengthy maintenance programmes. Industry experts believe that even when business starts to pick up again,

some of the less economic refineries will stay shut.

Some products have been hit harder by reduced demand and falling prices than others.

Fuel oil has suffered the biggest drop in demand and in price of all the oil products. It is estimated that demand has fallen by around 30% in most European countries and there is little hope of it picking up substantially in either the short or the longer term.

Naphtha, the most important of the petrochemical industry's raw materials, has fallen even further than fuel oil and seems set to continue its downward spiral.

The Iranian revolution last year led to a flight from oil and oil products and to redoubled efforts to save energy in all its forms.

But the oil industry is extremely sceptical about the claims made by some of the "save-it" campaigners.

Plunging prices may be good news for consumers — but they are a real headache for the oil industry.

Lower prices are clearly a result of reduced demand but the oil companies believe there is another factor in the equation.

They say that since last year many of the big oil-producing countries have been selling more of their crude through government-to-government deals instead of offering it to the oil companies.

Shell estimates that the amount of crude going through government-to-government deals has risen by 3-million barrels a day in the past 18 months. The sellers in these deals tend not to charge the premiums on their crude prices that they demand when selling to the oil majors.

One country that has been selling more of its crude through government-to-government deals is Saudi Arabia, which is not only the biggest of the Middle East producers but also a pricing moderate. Saudi crude prices are still around 4 dollars a barrel lower than most comparable Middle Eastern oils.

The major oil companies maintain that some of this comparatively cheap crude has been refined and has then found its way on to the spot market. Hence the unrealistically low prices being charged for some oil products at Rotterdam — or so the majors would argue. They argue that spot prices have fallen rather faster than contract prices.

Yet however attractive spot market prices may be, the quantity of oil and oil products passing through Rotterdam is comparatively tiny. Between 5% and 10% at a generous estimate. If spot prices fall so low that the oil majors themselves find it cheaper to buy there than to refine their own crude — which is what is now happening — then sooner or later Rotterdam will be unable to meet their needs. And spot prices will start to rise again.

There are plenty of events on the cards that would all result in a return to higher prices — on the spot market and on contract for oil products.

It would take only a small hiccup in Middle East politics to send a shudder through the entire market. Once oil companies and oil product consumers got wind of another crude shortage, prices would rise fast.

There is also the prospect of Saudi Arabia raising its oil price or else cutting back its production. The kingdom is maintaining its present high crude output of 9.5-million barrels a day in an attempt to influence the pricing hawks within the Organisation of Petroleum Exporting Countries. What the Saudi authorities would like to see is a more cohesive and moderate pricing structure within Opec.

But at the next Opec strategy meeting in November, Saudi Arabia may have to make some concessions to reach its objective. The most likely possibilities are a reduction in crude output or a rise in the current Saudi marker price from 28 dollars a barrel to nearer 32 dollars a barrel. Either would be enough to firm up prices in the oil products market.

This would imply a return to the kind of regular and dramatic increase in oil product prices that hit the West last year. But it would put an end to the present downward slide in the prices of gas oil, naphtha and petrol.

Less gloom on Opec's imports

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RDM 23/9/80

IT has become a pundit's platitude to predict that the milestone of the Opec surplus will be heavier and harder to dislodge this time round than it was after the first oil shock in 1973.

The shake-up in Iran has reduced the phenomenal propensity to import shown by the Islamic world in 1974-75. And the producer countries' resistance has stiffened to any repeat of the fall in the real price of oil which also occurred during that period.

All the same, it is worthwhile recalling how closely the present consensus view on the durability of the petrodollar surplus resembles the conventional wisdom of 1975.

The economic soothsayers were confounded last time by Opec's ability to spend its oil revenues — and they could well be proved wrong again.

Already, there have been a few indications of how the twin impact of recession in the West (coupled with improved oil conservation) and increased import demand from Opec might help to whittle away the surplus.

The West German Bundesbank, not normally known for any starry eyed fondness for building castles in the air, has

been particularly optimistic of late about the prospects for boosting German exports to Opec.

And the OECD, while sticking to its forecast of a surplus of some \$115 000-million this year, is predicting a fairly sharp drop in 1981, with a number of the more populous Opec members expected to be approaching current account balance within about 12 months.

Nobody expects that the 1974-75 surge of exports to Opec will be exactly repeated.

The OECD, for instance, is predicting that sales to the oil states will rise by roughly 20% in real terms in 1980.

This is the year-on-year growth rate that was actually chalked up in the first quarter

when, as the chart shows, the OECD's deficit with Opec was roughly double that of the first quarter last year.

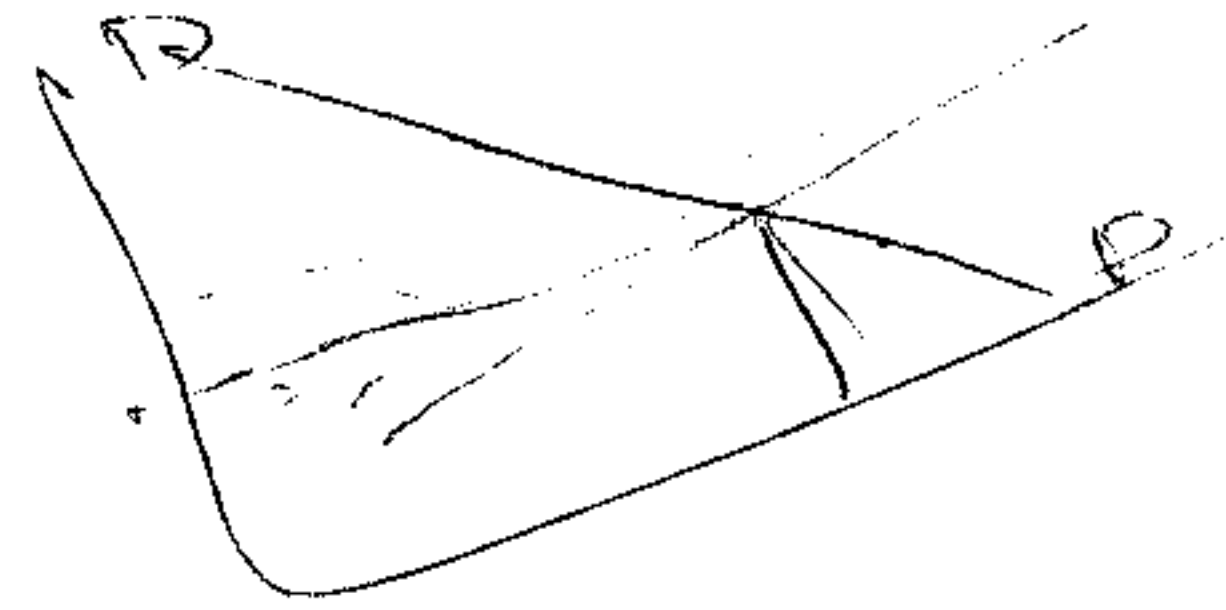
None the less, the Bundesbank at least is doing its best to prove that the OECD is erring on the side of caution.

Its July report warns that reducing the Opec surplus will not be as easy as last time, but says that the West's export chances should not be underestimated: "The oil exporters' ability to absorb imports is greater than often supposed."

Officials have been making great play of the fact that German exports to Opec, after growing at an annual rate of over 20% in the first five months of the year, were up 40% in June.

And Dr Helmut Schlesinger, the bank's vice governor — who as the Bundesbank's chief economist was the man responsible for Dr Emminger's prediction back in 1975 — has questioned whether there is such a large distinction between the import potential of the large-population and small-population oil states.

After all, a recent Bank of England study has shown that the populous "high absorbers" within Opec increased their import volumes by an average 13% a year between 1974 and 1979 — while the annual import growth rate for the select group of "low absorbers" led by Saudi Arabia was more than twice as high at 31%. — Financial Times.



Opec's 'slow poison' formula

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RCM
23/9/80

LONDON. — Opec is considering a new formula to govern future oil price increases which, it suggests, would spare the consumer sudden shocks like the 140% rise experienced in the past 18 months.

But Western oil industry executives say they are not yet persuaded that the proposed formula would achieve anything other than possibly making oil even more expensive in the 1980s than it might otherwise have been.

The proposed formula would have the 13 members of the Organisation of Petroleum Exporting Countries make regular, quarterly increases in the price of their crude, which accounts for 90% of the volume entering world trade.

The increases would in part be indexed to Western inflation and economic growth and to fluctuations in a basket of the United States dollar and eight other major currencies.

Gradually, oil prices would also be put up to the level of costs for alternative energy sources.

The Saudi Arabian Oil Minister, Sheikh Ahmed Zaki Yama-

ni, would like an Opec summit to be held in Baghdad in November to approve the formula so that it would be ready for introduction next year.

Sheikh Yamani has told journalists it would mean reasonable increases in real terms which consumers could forecast with some accuracy.

Opec would see the real value of its oil maintained.

Western oil industry analysts say this would be fine, so long as oil supply and demand were roughly balanced. But what happens if there is a shortage of oil?

The last shortage occurred early last year, after Iranian exports slumped at the time of the fall of the Shah.

Analysts recall that then, Opec hawks ignored the organisation's price ceilings, which Opec statutes give it no powers to enforce, and led a scramble to charge whatever a panic-stricken market would bear.

Mr Peter Baxendell, vice-chairman of the managing directors' committee of the Royal Dutch/Shell oil group, said: "I can see no evidence yet in the new formula of any safeguards from the consumer point of view."

"There would seem to be a danger the formula would be overtaken by market forces."

If that should be the case, analysts point out, all the formula is likely to accomplish is to buoy up prices when the market is slack, so that the take-off point for the next shortage-induced spurt is that much higher than it might otherwise have been.

Industry sources said some Opec Ministers also have their doubts about the proposed formula. Their concern is with what might happen to the floor price in time of glut. Then, possibly, undercutting by some exporters would lead prices down.

Analysts say the answer to both consumer and Opec worries may lie with Saudi Arabia. It has the capacity to turn the tap up or down, using its huge output — now about one-third of Opec's 27-million barrels a day — to balance supply and demand. — Sapa-Reuters.

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Coal
mining

on show

By IAN THOMAS / 30
Mining Editor

DEVELOPMENTS in South Africa's fast growing coal industry will be featured at the Electric and Mining Exhibition, the third largest of its kind in the world, to be held at Milner Park showground, Johannesburg from September 15-19.

Mining equipment firms from Britain, West Germany, France and the United States will be exhibiting colliery equipment in a bid to win orders from leading South African mining houses.

Among the more than 400 companies represented will be those of the Association of British Mining Equipment Companies (Abmec).

Their members cover the fields of surface plant for the beneficiation of minerals, winding engines, head-gear, shaft furnishings, heavy electrical installations, coal-getting machinery, and ventilation systems.

An Abmec spokesman said yesterday many new health and safety measures were being developed at the British Mining Research and Development Establishment at Bretby in central Britain, and details of these would be available at the exhibition.

Abmec will be demonstrating a Simslin dust monitor, which has been developed to monitor respirable airborne dust in mines and quarries.

Filtration equipment will be on show of particular interest for the recovery of gold and uranium.

THE Secretary of Transport, Mr A B Eksteen, has announced wide-ranging plans to streamline the commuting patterns of all South Africans to save fuel — from credit cards on buses to specialised lift clubs and city cycle paths.

He said the Government has embarked on a series of projects aimed at dragging people away from their cars.

About R4,5-million is to be spent on making alternative modes of transport more attractive to commuters.

Speaking at the Rand Afrikaans University in Johannesburg this week, Mr Eksteen also said the Government would introduce duties, levies and taxes on fuel and vehicles to steer the country's transport development in the right direction.

The projects he announced include:

- High technology trolley buses,
- Cycle paths in cities and towns,
- Bus services to high-income areas with high car ownership,
- Specialised lift clubs,
- Public transport credit card facilities, and
- Greater bus standardisation.

"The National Transport Commission, with the approval of the Minister (of Transport) has agreed to a number of demonstration projects which it is believed will

Big plans to curb over use of fuel

1027
24/9/80
55

promote certain of the necessary changes in directions that will be required in the Republic in the decade ahead," he said.

"These demonstration projects are being financed by a 60 percent grant from the Urban Transport Fund."

He said the high fuel price and availability of fuel had focused attention on the trolley bus. Two single and five double decker trolley buses incorporating the latest technology were being built.

These would initially operate on the Hillbrow-Forest Hills route in Johannesburg, and if successful, would be encouraged in other cities in South Africa.

The provision of safe cycle paths would encourage greater use of the bicycle among school children, and possibly also for daily commuting to work and universities.

Electricity

shock:

Escom

tariffs rise

STAR
25/9/80

55

228

5. List the Po System:

Tutorial

By Michael Chester,
Financial Editor

Escom has given warning that average increases of at least 5,5 percent and perhaps as high as 8,5 percent will soon hit electricity bills.

The announcement comes less than three months after an average increase in tariffs of 7,3 percent that clouded household budgets from July 1.

Mr I D van der Walt, senior general manager at Escom, disclosed in Johannesburg yesterday that the new round of higher prices will be introduced on January 1.

The impact on homeowner bills and the ripple effect on costs of virtually all items because of higher business costs, are bound to reawaken controversy about Escom's own multi-million spending on its lavish new headquarters at Megawatt Park on the outskirts of Johannesburg.

The new tariffs will be based on an average rise of 5,5 percent decided on by Escom — plus the repercussions of higher prices for the coal that Escom uses in its power stations.

Mr van der Walt hoped

that the additional tariff increase caused by coal costs would be held to 3 percent "at most."

Leaving the coal complications aside and taking the basic 5,5 percent increase alone into account, electricity bills in the Witwatersrand and Free State regions will go up 5,4 percent in the New Year.

Worst hit will be the Western Cape, with 6,5 percent increases, followed by the Eastern Cape with 6,5 percent on bills.

The lowest increase will be in the Northern Cape — 4,4 percent.

Escom used the argument that 1981 will be the third consecutive year that average tariff increases have been "comparatively small and considerably below the current inflation rate."

Mr van der Walt said "Regular but reasonably modest increases at the beginning of each year are more advantageous to the consumer than irregular double-digit increases introduced at longer periods."

● Page 93: Escom plan goes ahead.

6. List the Poir System:

Tutorial

Electricity tariff rise not such a big shock

26.9.80 (55)

Re:

By HOWARD PREECE
Financial Editor

THE average 8.5% hike in Escom's electricity tariffs for next year is remarkably restrained — cold comfort though that might seem to all those who will be paying more for their power.

Inflation is now running in the 12% to 14% range, as it did in 1979, and is highly unlikely to fall below that in 1981.

Re: T

Against that, Escom's general effective tariff rise was 6.1% in 1979, about 10% this year (effective only from July 1)

and 8.5% expected for 1981.

This will mean that for three years Escom has managed to hold its tariff rises well below the rate of inflation.

When it is accepted that Escom itself is subject to all the pressures from this general inflation in the economy, both for wages and for its essential raw materials, notably coal, this is quite an achievement.

Although Escom may seem to be fuelling inflation it is also decelerating it.

Of course, that is not the whole story. Escom has monop-

oly privileges and it may well have abused those in the past at the expense of the consumer.

It has also benefitted greatly — as have virtually all private companies — from the economic upsurge with all the bonus effects for profits.

Escom would have fared poorly indeed if it could not have taken advantage of that.

But this much must still be said: when your rent doubles that is a shock, when your electricity bill goes up 8.5%, that is modest enough these days.

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... facilitate a fair comparison with leasing the most rapid method of depreciation allowed by the Receiver of Revenue should be used. Furthermore depreciation in this context includes the investment and initial allowances.

Re: Term 5: The riskiness of this flow is likely to be equal to that of Term 3 thus the same discount factor is suggested. This stream is the tax shield arising from the tax deductibility of the interest on an equivalent (the displaced) loan.

The general approach will now be applied to the problem in MAN. 530 which follows.

STAR 26/9/80 (55)

SA to sell Sasol processes to America

By Jean Moon
South Africa is to sell its oil from coal know-how to the United States Government.

It was revealed today that a deal has been struck between Sasol and the United States Department of Energy to cover the design work on synthetic projects in America.

The American Government will be spending R77-million on research work,

and the lion's share—R46-million—is to be spent on projects with which Sasol is involved either as consultants or potential licensors.

While Sasol will not reveal the amount which it and other companies involved in the joint venture will be receiving the consultancy fee on a normal commercial basis could amount to many millions of rands. But if

the deal is on a licensing basis, the amount would be substantially more.

Despite extensive research and development work it is recognised that as yet, Sasol technology is the only proven commercial route to coal gasification and subsequent liquefaction.

Sasol will act as consultant and co-licensor at the gasification plant to be built in North Dakota.

Although on a slightly smaller scale, this plant will contain about two-thirds of the production units of Sasol Two.

A Japanese consortium in Australia intends to proceed with the construction of a demonstration plant in the state of Victoria based on the direct liquefaction technology developed by Sasol in its pilot plant at Sasolburg.

High ranking American

public representatives visited Sasol One, Two and Three in January this year in an intensive search for alternate energy.

Last year, five big international consortiums representing investments of billions of rands applied for patents to Sasol, the only company in the world converting coal into petrol.

The skilled manpower shortage, which could have held up production of Sasol Two, has been tackled by the training of 10 000 unskilled labourers.

Until now R29,3m has been spent on training of construction and operating personnel for Sasol Two. By 1983, it is estimated that the training programme for Sasol Two and Three will cost R63m.

By Jaap Boekkool

The first published results of local uranium enrichment — once hailed as South Africa's most spectacular postwar scientific achievement — are hardly spectacular.

The Uranium Enrichment Corporation's pilot plant at Valindaba started 10 years ago to exploit the enrichment discovery made 14 years ago.

It will have to work another five years before turning out enough nuclear fuel to fill one railway truck a year.

And the corporation's entire effort, plus that giant futuristic multi-chimneyed factory in the Bush belt, will go to feed one relatively small nuclear power station, Koeberg, near Cape Town.

It is unlikely that Ucor will be able to produce enough enriched uranium for other nuclear installations, such as the Safari 1 reactor, which cannot get essential fuel from America.

So Ucor, into which the Government has sunk huge amounts of money, is somewhat like Sasol 1 which, worked at a loss,

Hardly an enriching experience . . .

STX
29/9/80
55

but showed eventual promise.

Since there has been no word on Ucor's financial viability for years, some nuclear experts openly speculate that the 50 tons of enriched uranium to be produced could be the country's most expensive fuel.

This concerns Escom, which will run the Koeberg station, for if Koeberg's fuel is costlier than enriched uranium from America (which South Africa, for political reasons, is unlikely to get) Escom will run Koeberg at a loss — and electricity rates will again go up.

The Ucor process, from its first discovery by Dr W L Grant to pilot production by 1985 almost

two decades in the making, has the potential to become a major income earner, says a new Ucor booklet.

Reason is that last year South Africa earned about R500-million from uranium exports. By improving the product, or enriching it, this figure could be enhanced.

Though top secret, Ucor's publication describes the basics of its enrichment process.

To turn ordinary uranium into nuclear fuel the percentage of the "hot" uranium 235 molecule must be increased from 0,7 percent to 3,25 percent.

The uranium, combined with hydrogen gas, is given a spindrier treatment.

This drives the lighter U235 molecules out. By repeating the treatment in large batteries of spindriers and compressors to drive the gas around them, the percentage of U235 molecules rises.

Translating other details of the published Ucor process, Professor A M Meyer, professor of nuclear physics at Portchester University, said: "The compressors in the process are basically pumps which drive the gas round the centrifuge. Heat exchangers, basically coolers like car radiators, are necessary to remove the heat from gas compression as you find in a bicycle pump.

"The process takes place in cascades, repeated, like the action of a tandem bicycle or cascading water. Ucor claims a new helicon cascading technique but this, and other details of the process have me in the dark."

Professor Friedel Sellshop, nuclear scientist at Wits University, says his guess is that there are a number of technical and scientific secrets and innovations in the process.

SA's enriched uranium breakthrough will bring power to

555
MAR 29/9/80

By Jaap Boekkooi

South Africa will within five years produce 50 tons of enriched uranium a year through a unique space-age battery of gigantic "spindryers" similar in principle to those in home washing machines.

The ultra-secret enrichment process — once claimed to be the cheapest in the world — has been

partly revealed for the first time in a public document published by the Uranium Enrichment Corporation at Valindaba, near Hartbeespoort Dam.

The process is not radically new. It is a variation of the centrifuge system experimented with in several European countries over many years.

From the first details provided by Ucor it appears, according to one leading nuclear scientist,

Professor Friedel Schop of Wits University, that the spindrying method of uranium enrichment could be used in principle to manufacture materials for a nuclear bomb — "but very slowly and at enormous cost in money, time and manpower."

The 50 tons of enriched uranium, coming out of the Valindaba spindrier batteries by the middle '80s are destined to travel

to Cape Town as fuel for the Koeberg nuclear power station, due to start operating on January 1, 1983.

Ucor's entire design capacity will barely be enough to keep the R2 000-million Koeberg project going. An Escom spokesman confirmed today that Koeberg's consumption would be 48 tons of enriched uranium a year, about two big lorry loads.

South Africa is unlikely to get uranium from its contracted supplier, the United States, as long as it refuses to sign the international Nuclear Non-Proliferation Treaty which requires this country to pledge not to make nuclear arms, and open its nuclear operations to international inspection.

Amid rumours of an organised spy campaign to crack the Ucor enrichment

ment process, including spy pictures taken from the American Ambassador's private plane over Valindaba, the country's nuclear authorities have opted for strict secrecy.

Although Ucor has admitted the spindrier method of enrichment, and given a simple description of how the uranium carried in hydrogen gas spins round to separate the "hot" molecules of Uranium 235, it has gone to

Koeberg

extraordinary lengths to stop anybody guessing what goes on at Valindaba.

The new Ucor publication says to preserve top secrecy Ucor itself developed the tooling machines which were in turn used by Ucor to manufacture the elements which went into the huge spindryer machines.

● Page 17: Hardly an enriching experience.

Escom tariffs differ

55
ROOM
1/10/82

PORT ELIZABETH. — It was virtually impossible to introduce a uniform Escom tariff structure for the whole country, the Minister of Environmental Planning and Energy, Mr F W de Klerk, said in Port Elizabeth yesterday.

Addressing the Cape Congress of the National Party he said the principle of a differential tariff system for Escom rates had been built into its structure.

This system had to be used because of the cost involved in supplying electricity to rural areas.

The Jacobs Commission had studied the possibility of subsidies. An announcement was recently made regarding subsidies for municipalities with diesel-powered power stations.

— Sapa.

Decisions in court

Retailers encounter strong opposition if they try selling petrol below the standard price. . .

● Brits garage owner Mr H van der Merwe cut prices in 1975. His suppliers threatened to discontinue supplies. He took the matter to the Supreme Court as a test case and won with costs.

● Pick 'n Pay Boksburg Hypermarket cut prices by two cents a litre five years ago. Trek Petroleum cut off supplies. The matter went to court and because of a loophole in the contract, Pick 'n Pay won the case.

● Recently at the Port Elizabeth Hypermarket, Trek threatened to take action against Pick 'n Pay for selling petrol at discount prices. Mr Raymond Ackerman, chairman of the company, says the contract is not watertight.

Price cutting and petrol

b/10/1980
STAR

SS

A hypermarket chain recently cut petrol prices at a Port Elizabeth store. Its supplier immediately swooped, threatening to take legal action — which it had done before at the hypermarket's Boksburg sister

store five years previously and lost. MARGARET WHIBLEY of Fair Deal investigates the feasibility of petrol price cutting.

Petrol is the only product exempted from the prohibition on resale price maintenance. This gives the oil giants the right to enforce minimum selling prices.

They do not allow price cutting and the petrol market is therefore totally non-competitive.

Mr Raymond Ackerman, chairman of Pick 'n Pay, said: "Legally there is no earthly reason why one should not cut fuel prices. We should not be denied the right to cut prices and save the consumer money. We are approaching the Government and asking them to withdraw resale price maintenance on petrol because price fixing by the oil companies is inflationary and amounts to exploitation."

Price cutting is possible — Pick 'n Pay have been cutting prices at their Boksburg Hypermarket for five years.

POSSIBLE

Mr J Botha, managing director of the Hypermarket, said when they started selling petrol for two cents less than the normal price five years ago, sales went up between 60 and 70 per cent. The Hypermarket sells 500 000 litres of petrol a month.

A spokesman for British Petroleum (BP) said: "If Pick 'n Pay can cut prices it must be possible."

A Brits garage owner, Mr Hendrik van der Merwe, has been selling petrol at 1,5 cents less than the normal price since February last year. This month he increased the gap to three cents a litre. (See accompanying story).

The official garage profit margin is 3,51 cents a litre — a seven percent profit margin. Low garage profit margins have always been given as a reason for the lack of competition in the petrol market.

Mr Ackerman said: "Regarding garage profit margins — garage owners do not tell that they get huge grants from the suppliers, if the garage site is good, which covers pump costs and so on. If they sell a lot of petrol they get huge discounts, therefore petrol is not the low profit-margin item it appears to be."

Mr Malcolm Winderley, spokesman for Total, denied Mr Ackerman's allegation. "I don't understand what he's getting at."

A spokesman for Shell Oil said: "Those dealers involved in the traditional service station business require the existing margin to maintain a balanced business."

Although price cutting of petrol is possible, the Controller of Petroleum Products does not feel it is advisable.

In a statement to the Star he said price cutting was not regarded as advisable in the light of fuel supplies, since service stations selling petrol below the normal ruling prices tended to attract motorists from beyond

the area — with a consequential increase in petrol consumption in the country.

"It could well be against the motorists' own interests. If they have to use more petrol to reach service stations, this would offset any saving they would achieve by buying cheaper petrol," the Controller said. Mr Ackerman said: "Price cutting does not encourage extravagance. It helps curb inflation."

Mr J van Huyssteen, spokesman for the Motor Industries Federation, (MIF) told The Star he was not prepared to comment.

A spokesman for Shell said that there could be no question of the oil companies making excessive profits on petrol because their profitability was investigated from time to

time by the Government. He refused to release figures of profits made on other petroleum products that do not fall under the same rigid control.

Mr J C Hennis, then Minister of Economic Affairs, said in a Press statement in April last year, that oil company profit levels were lower than those normally accepted by the Government as reasonable for price control purposes. Oil companies would not say what is regarded as an acceptable profit as this was "confidential information."

INCOME

However, the annual report of Trek Petroleum — suppliers to Pick 'n Pay — reveals that net income after tax has been climbing steadily over the past five years. In 1975 it was R21 million; in 1976 — R3,3 million; in 1977 —

— R3,9 million; in 1978 — R4,7 million; and finally a dramatic jump in 1979 to R6,4 million.

In other words their profit trebled in four years.

Trek refused to comment.

It was not possible to obtain the company reports of other oil companies as they are overseas-based.

Trek Petroleum is at present taking action against Pick 'n Pay for

selling cheaper petrol at their Port Elizabeth hypermarket.

Total energy self-sufficiency is the aim of the Government. Indigenous coal supplies almost 80 percent of South Africa's energy requirements.

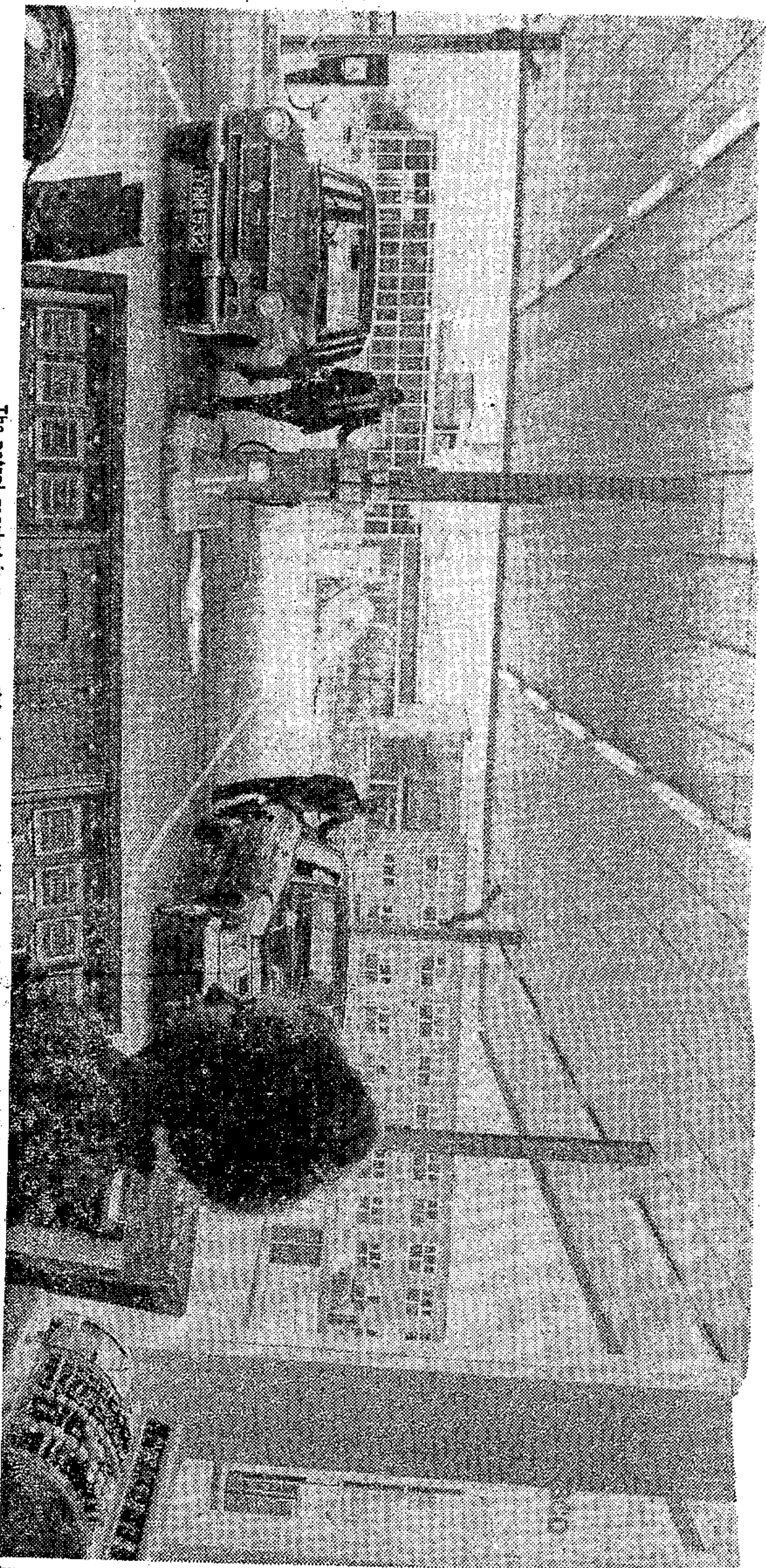
CRUDE

Petrol companies were not prepared to predict whether or not total self-sufficiency would affect prices. The Petroleum

Controller was similarly undecided:

"It is the objective of the Government to render the country as self-sufficient as possible. However, it is impossible to say whether the attainment of the objective would have the effect of increasing the costs of the country's energy. It all depends on the costs of imported crude oil and the availability of such oil in the international market."

The petrol market is non-competitive because the oil giants do not allow price cutting.



Gulf war is a severe blow for Opec solidarity

RDM 10/10/80

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Own Correspondent

LONDON. — The war between Iran and Iraq has struck a severe, perhaps a crippling blow, to the limited solidarity of the oil producers.

The severity of the conflict now taking place in the oil fields north of the Persian Gulf have made the Organisation of Petroleum Exporting Countries look increasingly irrelevant. For the first time in the Middle East, countries are seeing their oil industries being demolished, their oil regions occupied.

During the past decade, Opec has benefited from war and revolution.

Opec has never been able to operate as a classic cartel by limiting production to secure higher prices. The two occasions when prices boomed in the 1970s were the direct consequence of the Arab-Israeli war in 1973 and the Iranian revolution in 1978.

Until the fall of the Shah, Iran was Opec's largest exporter of oil after Saudi Arabia with Iraq in third place. For all the animosities between Baghdad and Teheran in 1974-75, when the two countries were on the brink of war because of the Shah's support for Iraq's rebel Kurds, both were still prepared to play by the rules of the Opec

game. The mutual benefits to both were too great to be cast aside.

Now, however, Opec is in disarray. The meeting of Oil Ministers in London planned for later this month has been cancelled and it is unlikely that the Baghdad summit, scheduled for early November, will go ahead.

Even before the war, Iran had shown by its spoiling tactics in Vienna earlier this month that politics, not oil, was uppermost in the minds of its leaders.

The elaborate pricing plan painfully negotiated by Sheik Ahmed Zaki Yamani, Saudi Arabia's Oil Minister, foundered in the face of Iranian resistance. The bonds of solidarity built up over the last decade have been broken.

Even Colonel Muammar Gaddafi's Libya, for all its radical rhetoric, has in the past grudgingly gone along with Opec decisions: Ayatollah Ruhollah Khomeini, who has publicly implied that he considers oil wealth as something of a poisoned gift, has no such intention.

The war is all the more serious for Opec because of its impact on Saudi Arabia. Its own high production and the cutbacks by other states such

as Kuwait and Libya during the past few years have increased the proportion of Opec oil that it produces.

By increasing its production to 10.4-million barrels a day out of Opec's total daily production of about 24.5-million barrels a day — 42% of the total — in the fourth quarter of the year, the Saudis inevitably increase their influence among Opec states still producing oil.

This gives Saudi Arabia overwhelming leverage within Opec. But how far is the kingdom's leadership prepared to exercise this influence?

The war has faced it with the unpleasant prospect of having to choose between the two most powerful states of the Gulf. A triumphant Iraq is only a shade more welcome in Riyadh than a victorious Iran.

The situation has now become so serious for the Saudis and the smaller Gulf oil producers that their attitudes within Opec will be determined almost entirely by the political needs of their own survival. The states of the eastern Gulf have a combined population of less than 10-million: Iran and Iraq together have 47-million.

The future of Opec is thus being determined by a war between its two most powerful

members. Saudi Arabia seems certain to be a loser in the context of Gulf policies, whatever its oil production levels.

Aware of its own military vulnerability, this inclines the Saudi leadership to two divergent and contradictory policies. On the one hand the Saudis need to maintain their alliance with the United States, a recent symbol of which was the request from Riyadh for surveillance aircraft. But having witnessed the fall of the Shah, the kingdom is by no means sure that its American insurance policy is sufficient security.

In the wake of the war now being fought, assuming that Iraq is not heavily defeated, the Saudis will have to listen even more carefully to Baghdad's views on oil production levels and prices. Given the extent of the damage to Iraq's economy, and its oil industry in particular, it could seek the maintenance of high prices and a cut in Saudi production levels.

Opec's careful plans, worked out during the past couple of years, to link the price of oil to the condition of the industrial economies as a whole, and thus to introduce greater predictability into price increases, have become largely irrelevant.

Fuel issues

FM 10/10/80

Will SA's first atomic power station, Koeberg, have its initial charge of nuclear fuel in good time to enable it to come on stream on due date? Atomic Energy Board President Dr Wynand de Villiers still holds out hope that the US will meet its original nuclear fuel supply commitment.

As background to the present situation, it should be explained that it was originally intended that the initial charge of enriched uranium was to have been supplied from the US. The actual fuel elements were to have been fabricated in France.

Subsequently, the problem of SA's non-signature of the nuclear non-proliferation treaty apparently complicated matters. Notwithstanding, it still seems quite premature to speculate that SA will be forced into fabricating its own nuclear fuel elements for use at Koeberg, although the Uranium Enrichment Corporation of SA (Ucor) has said specifically that it is building a commercial scale enrichment plant with a capacity which will, in the course of time, "be adequate to meet SA's demands."

In reply to a series of questions on the nuclear fuel issue addressed to the SA Atomic Energy Board by the FM, De Villiers said "that no final decision regarding this matter has yet been taken. Negotiations regarding the entire fuel supply situation for Koeberg are still in progress between all the parties concerned.

"Pending the outcome of these negotiations, any attempt to answer the remainder of the questions would be nothing more than an academic exercise."

Ucor Chairman Dr Ampie Roux explains that Ucor had decided in February 1978 to build the plant now under construction to meet local needs. If nuclear fuel for Koeberg was, when the time came, acquired from abroad, then Ucor would obviously have a supply available for export. He emphasises that the 1978 decision to build a plant to meet SA's own requirements was accompanied by a readiness to contemplate the eventual construction of additional enrichment capacity to meet possible export demand. But this decision would only be taken after completion of the plant now under construction — expected for the mid-Eighties.

As indicated earlier, uranium enrichment is only the first stage in the manufacture of nuclear fuel. A second, technically sophisticated stage is also involved — the incorporation of the enriched uranium in correctly designed rods capable of

meeting the exacting operating requirements for a nuclear power plant.

Even if an adequate charge of enriched uranium is available in good time to meet Koeberg's schedule, the issue of fuel element fabrication remains somewhat obscure. But De Villiers has intimated that SA could probably make its own fuel elements if it had to, although the economics of establishing a fuel element plant merely to supply Koeberg would hardly be favourable.

idly as possible by substituting other fuels.

Virtually all SA's electricity is coal-generated at present. Coal and (increasingly) nuclear energy will provide power in the future, with a very modest contribution from hydroelectricity, especially pumped storage.

● Strong action is necessary to reduce the non-feedstock use of oil.

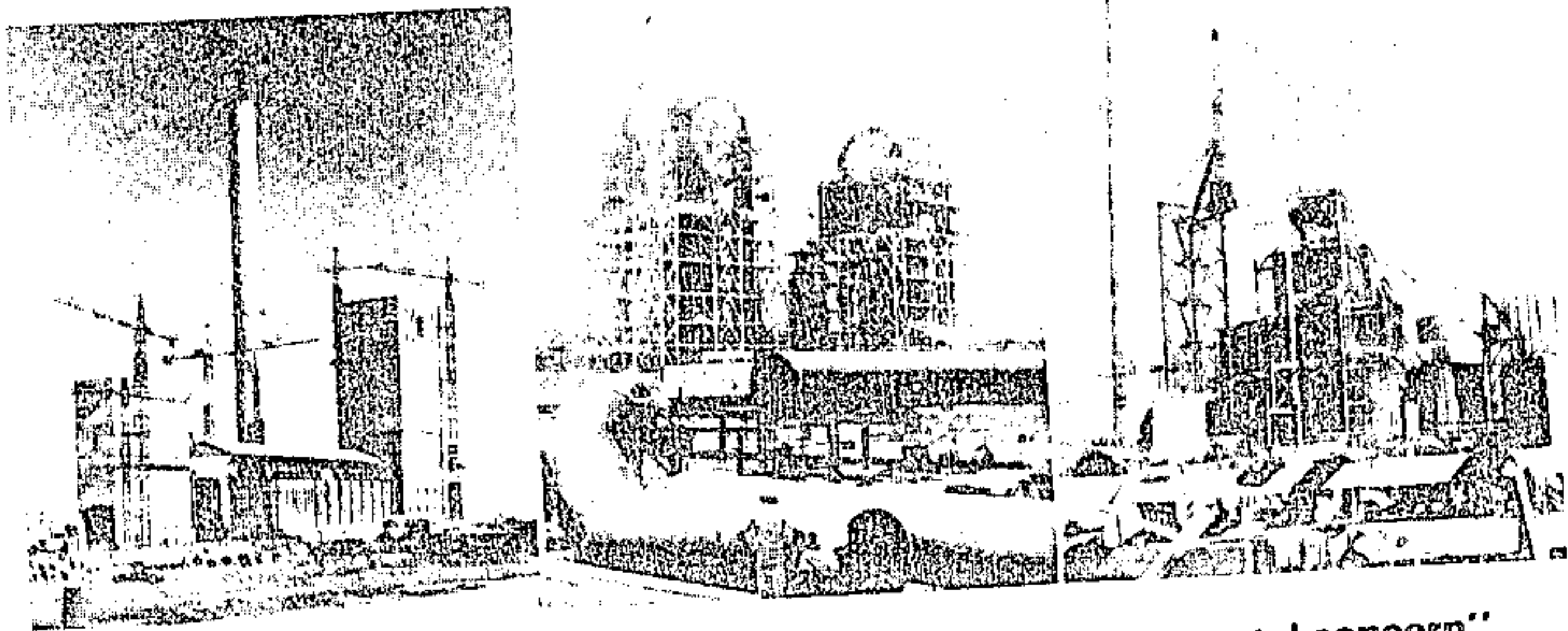
With the local relative prices strongly favouring coal (SA must pay a very high price for oil products obtained internationally) such a trend is under way without needing much official encouragement.

● The use of oil for space heating (heating homes, offices and factories) should be reduced as much as possible, either by using other fuels or by converting to electricity generated from sources other than oil.

SA has, of course, a much lower need for space heating than the cold countries of the northern hemisphere. But what need there is, has always mostly been supplied by coal or by (coal-generated) electricity.

● In the transport sector, substantial oil savings can result through continuing increases in fuel efficiency.

High petrol prices are bringing about this result, with South Africans swinging strongly to smaller and more fuel-efficient



"Coal mining . . . expanding export potential and environmental concern"

cars. (The demise of Chrysler SA resulted from this as much as any other cause.)

● All countries not having reduced speed limits should consider imposing them and enforcing them.

SA has a maximum national limit of 90km/hour, as well as greatly reduced hours during which petrol may be sold.

● Stronger actions are required to expand coal production and those countries with the potentiality should be prepared to expand greatly their export potential. Long-term contracts are needed to stimulate the confidence to develop new mines. Positive

action is needed to deal with environmental considerations.

SA has one of the world's fastest growing coal industries, while export capacity at Richards Bay will go up to 44 Mt/year sooner than planned. Eskom does provide long-term contracts to its suppliers, and, for economic reasons, locates its new power stations mostly far from major centres. This policy, incidentally, reduces the proportion of the population exposed to pollution. In addition, Eskom is spending increasing amounts on emission control.

● Early action is required to accelerate the development and commer-

ENERGY POLICY

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Virtuous SA

FM 17/10/80

SA emerges with a model energy policy, if criteria laid down by the Organisation for Economic Co-operation and Development (OECD) are any guide. The OECD Observer for July 1980 sets forth an analysis by the International Energy Agency Secretariat of how countries can strengthen their energy policies. Not all of these criteria are applicable to SA for one reason or another, but where they are applicable, SA must be awarded close to full marks for following these economically rational but politically unpopular measures.

Those criteria applicable to SA are as follows:

● Efforts should be made to reduce oil-fired electricity generation as rap-

cialisation of new energy technologies, particularly in the fields of conservation and liquid and gaseous fuels.

Sasol operates the world's only commercial scale synthetic liquid fuel plants. SA could well achieve another synthetic fuel first if the plans of AECI and others to manufacture and market methanol as a diesel substitute go ahead as hoped.

● Greater efforts must be made to accomplish projected nuclear programmes and to create an atmosphere in which discussion of nuclear issues can take place in an objective and balanced way.

The anti-nuclear lobby in SA has very little influence on policy. Eskom's nuclear power programme is likely to go ahead as planned. The relative cost of nuclear power and of additional coal-fired capacity will be the limiting factor on the rate of growth of nuclear kilowattage, rather than irrational objections based on greatly exaggerated fears about safety.

Restrictions on petrol could be eased soon

STAT
20/10/80
55

By Deon Delpont and
Mike Derry

Petrol restrictions — on weekend sales or speed limits — could soon be eased.

The chairman of Sasol, Mr D P de Villiers, yesterday called for changes in the Government's fuel policy — and the Minister of Mineral and Energy Affairs, Mr de Klerk, said today points made by Mr de Villiers were being considered.

Mr de Villiers said on SABC-TV last night the imbalance between the use of diesel and petrol in South Africa would necessitate adjustments to the Government's fuel policy.

"We are able to import crude oil for our needs, but we are gradually getting to the stage where the requirements for diesel oil are influencing the quantity of crude oil we import and that will mean we will be producing more petrol than we are using," he said.

"This could lead to a situation where the Government will have to think seriously about the lifting of certain petrol restrictions. I do not know whether this will be on speed or weekend consumption," he said.

Mr De Villiers said today the position was fast being reached where there would be a petrol surplus.

Diesel consumption had

grown by six percent a year for the past four or five years while petrol consumption had shown no growth.

Mr de Villiers suggested diesel consumption could be dampened by the phasing out of lighter vehicles using diesel.

Mr de Klerk said today he was kept regularly informed about the fuel situation and that existing saving measures would be reviewed if circumstances warranted any change in the best interests of South Africa.

He added he was considering representations from various sources.

"The facts mentioned by Mr de Villiers obviously form part of the background against which any decision will be taken and will, therefore, receive proper consideration," Mr de Klerk said.

Mr Theo Swart, president of the Motor Industries Federation, said Mr de Villiers's comments supported his call for higher speed limits in South Africa.

He said the MIF would continue to press for an 120 km/h speed limit on freeways.

But he said the MIF did not support a change in petrol selling hours.

Mr Swart continued Mr de Villiers' call to slow down petrol consumption.

CURB ON PETROL MAY BE EASED

ARGUS
20/10/80
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Argus Correspondent

JOHANNESBURG. – Restrictions on petrol-saving – on weekend sales or speed limits – could now be eased. This possibility has emerged following a call by the chairman of Sasol, Dr D P de Villiers, for changes in the Government's fuel policy.

- 3. Apart from ...
- 4. A lot of ...
- 5. If there is ...
- 6. Although I ...

Consumption

This could lead to a situation where the Government will have to think seriously about the lifting of certain petrol restrictions. I do not know whether this will be in speed or weekend consumption, he said.

In an interview today Dr de Villiers said the position was fast being reached where there was a surplus of petrol. Diesel consumption had grown by six percent a year for the past four or five years while petrol consumption had shown no growth.

Diesel

Dr de Villiers suggested diesel consumption could be dampened by the phasing out of lighter vehicles using diesel.

In a statement today, the Minister of Mineral and Energy Affairs, Mr de Klerk, said he was regu-

(Continued on Page 3, col 6)

We look forward
Best wishes,
Lindy
LINDY WILSON.

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Responding to the call, the Minister of Mineral and Energy Affairs, Mr P W de Klerk, said the points made by Dr de Villiers were being considered. In an interview last night, Dr de Villiers said the imbalance between the use of diesel and petrol in South Africa would necessitate adjustments to the Government's fuel policy. 'We are able to import crude oil for our needs, but we are gradually getting to the stage where the requirements for diesel oil are influencing the quantity of crude oil we import and that will mean we will be producing more petrol than we are using,' he said.

umber 24th at 9.00

Please bring /

BUT IT IS ALSO TRUE THAT AN ORGANISATION
SUCH AS THIS TO A CERTAIN EXTENT REFLECTS

Australia hope of Sasol plant

JOHANNESBURG. — The chairman of Sasol, Dr D P de Villiers, said in an interview that the corporation was conducting a feasibility study for Australian companies in Queensland into applying the Sasol process at synthetic fuel plants.

He said this was being done with the approval of the Australian Government.

Tests were being carried out on a large scale with Australian coal to determine whether it could be used effectively in the Sasol process. If the tests were positive, it was almost certain that a plant would be built in Australia.

Dr de Villiers said the imbalance between the use of diesel and petrol in South Africa would demand adjustments in the Government's fuel policy.

He said changes in the present system of restriction should be considered.

'We are able to import crude oil for our needs, but we are gradually getting to the stage where the requirements for diesel oil is influencing the quantity of crude oil we import and that will mean we will be producing more petrol than we are using.'

'This could lead to a situation where the Government will have to think seriously about the lifting of certain petrol restrictions. I do not know whether this will be on assumption.'

He said at the same time it would be wise to do something to dampen the country's consumption of diesel. — Sapa

SOUTH AFRICAN ECONOMIES
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TODAY FOR IDEOLOGICALLY MOTIVATED PERSONS,
ORGANISATIONS AND GOVERNMENTS TO IMPAIR OR

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WHICH UNDERMINES THE PRINCIPLES OF MULTI=
LATERAL AND NON-DISCRIMINATORY INTERNATIONAL
TRADE AND ECONOMIC CO-OPERATION WHICH SHOULD
BE DICTATED BY ECONOMIC CONSIDERATIONS ONLY.
THE SOUTH AFRICAN GOVERNMENT FIRMLY BELIEVES
THAT THIS APPROACH OFFERS THE BEST PROSPECTS
FOR AN EXPANSION OF TRADE BETWEEN COUNTRIES
AND FOR THE PRODUCTIVE UTILISATION OF WORLD
RESOURCES IN THE BEST INTEREST OF THE
INHABITANTS OF ALL COUNTRIES.

THIS SITUATION IS REFRESHINGLY DIFFERENT

FROM THE REGRETTABLE TENDENCY IN THE WORLD

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THE ECONOMIC AND TRADE RELATIONS WHICH THE

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Soekor 55 RDM 22/12/80 gas find

THE Southern Oil Exploration Corp. (pty), Soekor, has found gas in a borehole off the Cape coast but it is too early to say whether the gas was economically exploitable, Mineral and Energy Affairs Minister, Mr Frederik de Klerk said yesterday.

This was the ninth time signs of gas had been found in Soekor's prospecting area.

S Africa on way to joining energy exporters

JOHANNESBURG—With the rise in Richards Bay coal exports to 44-million tons in 1985, from the present 24-million, South Africa will be well on the way to becoming a net exporter of energy, joining the small number of nations in that category.

According to Mr F W de Klerk, the Minister of Minerals and Energy Affairs, South Africa at present needs to import only 25 (percent) of its energy needs.

With the opening of Sasol 111 in 1983-84 to reduce oil imports and the expansion of coal exports in 1985, and the continuing export of uranium, South Africa should be a net exporter of energy after 1985.

Although the Railways' official target is for the 44-million tons in 1985-86, unofficially it is working on a programme with the mines to increase exports gradually to 27-million tons in 1981, 28-million tons in 1982 with further increases in 1983-85.

After 1985, coal exports at a rate of 44-million tons a year will earn the country R1 500-million estimated on an export price of 48 dollars a ton fob Richards Bay.

Exports

In the meantime, hundreds of millions of rands will be invested to expand export production, creating work for many thousands of men.

Expansions to existing mines and the opening of new mines are expected to call for a high degree of mechanisation, which will not create as many jobs as in older coal mines, but the expansion will greatly boost the mining equipment industries and their labour forces.

By 1980, even if Richards Bay exports do not rise above 44-million tons a year, earnings, it is estimated, could amount to about R2 600-million a year, based on a fob price of between 70 and 75 dollars a ton.

The export of coal at 44-million tons a year will have an oil equivalent of about 600 000 barrels a day.

A decision has to be taken by the Government on expansion beyond 44-million tons after 1990.

Allocation

The industry confidently expects that the Minerals Bureau study of reserves and consumption will justify the Government in increasing the export allocation by 1990 to possibly 65-million tons a year, which could earn about R3 800-million a year.

Ten exporters hold allocations making up the 44-million tons a year of coal which will be shipped through Richards Bay from 1985. Annual alloca-

tions will be:

Amcoal 6-million tons (semi), Gencor 6-million (semi), BP Coal SA 5 500 000 (semi), TCOA 10-million (semi), Natal Associated Collieries 2-million (semi), Total Oil 2 500 000 (semi), Anthracite Producers' Association 2 500 000 (semi), Shell 5 500 000 (semi), Barlow Rand (TCL) 2 500 000 (semi) and Kwa Ngoma 1 500 000.

How will these companies meet their allocations?

Expansion

Trans-Natal Coal Corporation, the coal arm of Gencor, is spending R350-million on expansion, at a rate of R60-million to R80-million a year over the next five years.

Mr George Clark, chairman of Trans-Natal says: 'To take advantage of our export allocation our development will primarily be brown fields, meaning expansion of existing mines. There will also be some green fields expansion, meaning the opening of new mining capacity.'

'We shall open a new mine near Nongoma to fulfil the allocation of 1 500 000 tons of anthracite.'

'Ermelo Mines is our main steam coal export mine and the probability is that we shall expand operations there and it is possible that Optimum colliery, which supplies Hendrina power station, will be expanded for export. There will be additional employment but it will not be huge.'

Ermelo mine

Mr I J Sims, chairman of BP Southern Africa, said BP has had one-third or 1-million tons of the Ermelo Mine's 1979 quota and will expand on its own accord in the Middelburg area to meet its 5 000 000-ton export allocation in 1985.

It will continue to take its one-third share of the Ermelo output.

He said: 'To expand in the Middelburg area BP will exploit coal reserves on the farm Hartbeestfontein, about 22 km north-east of Middelburg, which have been held by the company for some years, as well as reserves owned by Witbank colliery.'

Kanhym Investments has the right to part participate

to the extent of some 7 percent and has indicated its intention to exercise this right.

'Rand Mines, which will handle the expansion, is preparing a mine design study for an opencast mine. Its subsidiary, Witbank Colliery, will in exchange for the coal reserves it will make available, acquire the right to subscribe for 5 (percent) of the capital needed for the project.'

'The project is expected to begin production in 1981 and to create about 1 000 jobs. All workers will be paid above the Unisa SLL level.'

'BP is a partner in Ermelo Mines and is also a partner, with Kanhym, in the Eikeboom Colliery in the Middelburg area, which produces for the South African market.'

Mr Graham Boustred, chairman of Amcoal, which has the same 1985 allocation as Gencor, says Amcoal has not yet decided whether it will open a new mine.

'We have the capability of a substantial amount of brown fields expansion,' he said.

Employment

'We have not yet decided whether we will go all brown fields (expansion of existing capacity) or whether we will open some green fields as well. There will be a substantial increase in employment.'

Shell Coal this year is exporting nearly 5-million tons of coal from Rietspruit Colliery, in which it is a partner with Transvaal Consolidated Lands. It is also exporting coal which it buys from Amcoal's Kleinkopje mine.

In 1985, Shell's allocation will be 5 500 000 tons and Transvaal Consolidated Lands' allocation 2 500 000 tons.

The exports from Rietspruit will then cover TCL's allocation and the bulk of Shell's allocation and Shell will continue to draw on coal from Kleinkopje.

COMMENT: Although BP Coal has issued no figures on its new mine, one can assume that its capacity will be between 4-million and 4 500 000 tons a year at full production. By any world standards this is a big mine and the capital investment will be large depending on the depth of the mine.

Survey aims to add appeal to bus travel

By SEAN O'CONNOR
City Editor

COMPREHENSIVE surveys have been launched in Randburg to test new approaches to public transport.

They are part of a transport demonstration project of national importance, and are supported by the Department of Transport.

The Randburg surveys are being conducted by the National Institute for Transport and Road Research (NITRR) — a branch of the Council for Scientific and Industrial Research — with the prime aim of making transport services more appealing to the public.

One survey — to establish the "journey patterns" of Randburg bus commuters — has been completed. The NITRR reported there was more than a 90% response to ques-

tionnaires given to passengers. A second survey, involving distributing questionnaires to 25 000 households in Randburg, was launched this week.

Mr Paul Browning, a transport consultant advising the NITRR on bus matters, said yesterday that the survey of householders aimed to reach people who do not commute on buses.

The survey will try to establish the journey patterns of people who do not use buses, and find out what would make a bus service more attractive to the public.

Mr Browning said this would make it possible to conduct surveys in the future to keep up to date with the views of the public on transport services.

"It is our hope that the demonstration projects will make transport services more

appealing to people," he said.

The surveys are being conducted on the eve of the introduction of the first phase of a new Randburg bus network, which will comprise six internal routes and a fast service to Johannesburg.

The services, from about 8.30am to 4.30pm, begin on November 24.

And, in an unprecedented campaign in South Africa to launch a new bus service, the Randburg Town Council plans to make the public aware of the new transport network by holding a day of entertainment in the Randburg Mall on the weekend before it begins.

The public relations officer for the Randburg Town Council, Mr Alex Daniel, said yesterday that it was envisaged that leading entertainment personalities would be invited to the launching campaign.

Mr Jan Morton, a transport consultant to the NITRR, said yesterday that in the first survey to establish "journey patterns" of commuters, questionnaires were handed out to commuters on buses travelling between Randburg and Johannesburg. This revealed where they boarded and alighted from buses.

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11/18/80 (65)

Nations importing 10% less oil in 1980

LONDON. — Recession, abnormal weather and energy-saving, induced by high Opec prices, have cut the oil imports of major industrialized countries by close to 10% in 1980, government statistics indicate.

The US Department of Energy is predicting that the United States, the biggest importer, will have bought 17% less foreign oil in 1980 than in 1979.

Imports by Japan have declined and in the summer were about 10% below 1979 levels.

Tokyo oil analysts predict that Japan will import an average of 5.02-million barrels a day during 1980, the lowest level for four years.

West German oil imports in January-September were down nearly 8% on the same nine months of 1979, and French imports for the nine months were down 6.4%.

Britain became self-sufficient in oil this summer and is turning into an exporter. Oil use has been running about 7% below 1979 levels.

Oil industry sources say the worldwide fall in demand during 1980 is expected to be around 6%.

Total output by the Organization of Petroleum Exporting countries fell in August to just over 27-million barrels a day, the lowest level since 1973.

The fall in demand and high oil stocks partly account for the absence of panic buying of oil following the interruption of Iraqi and Iranian exports by the Gulf War. — Sapa-Reuters.

Searching for a policy

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FM 7/11/80

SA refining and marketing subsidiaries of major oil multinationals are expected to seek a series of discussions with government to obtain clarity on their future standing in the domestic oil market.

After five years of almost no growth in the petrol market, consumption has moved up nearly 4% this year, while sales of gas oil (diesel fuel) have increased at nearly twice that rate, emphasising once again the fundamental imbalance in the pattern of demand for each barrel of imported crude oil.

To balance such distortions in the cut of the barrel by maximising yields of middle distillate to the technical limit of about 35%, SA's oil procurement agencies confine their efforts to high-premium light crudes from whatever source.

The pattern is unlikely to change — even after the country achieves 50% self-reliance on coal-based liquid fuels in about four years' time. For despite technological advances achieved by Sasol scientists in the past 24 months, there are barriers of cost and know-how beyond which they cannot stretch the yield of diesel per ton of coal processed.

Because of the relative inflexibility of coal as a source of liquid fuel, this means that existing imbalances will persist. They would only be corrected by imports of refined gas oil or by additional volumes of crude oil. At the same time, unavoidable surpluses of petrol could either be burnt off by lengthening pump trading hours or raising speed limits, or both, or by exporting.

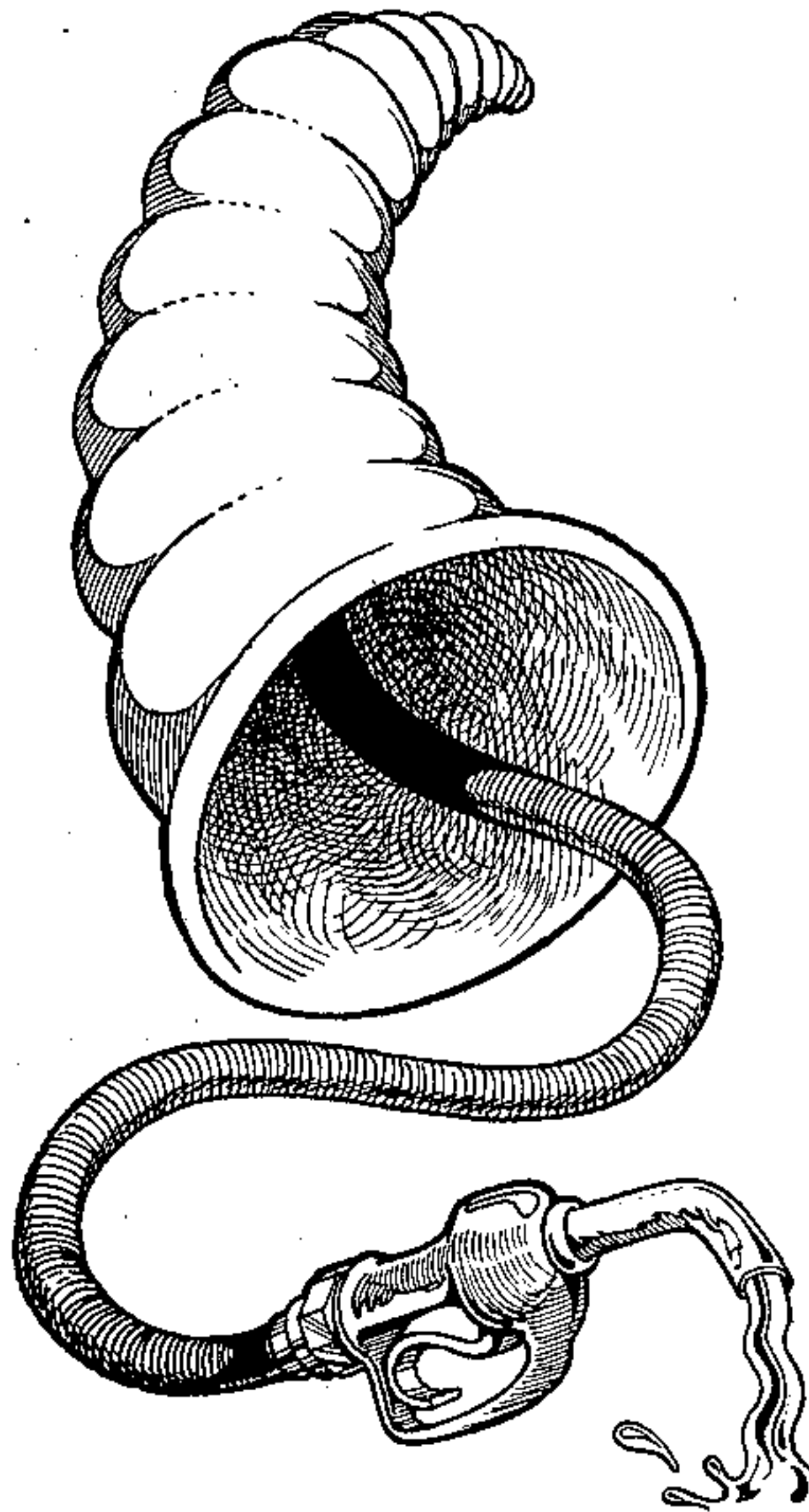
From a balance of payments point of view, the ideal situation would be to limit crude oil imports to the absolute minimum required to satisfy domestic essential demand for gas oil and to export surplus petrol. In practice, it works out rather differently.

Higher speeds?

Easier trading hours, by increasing availability 10% to 66 hours, would probably boost petrol sales about 5%. Lifting speed clamps by a like degree to 100 km/h would produce a quantum leap in consumption (and road fatalities) and result in an imbalance weighted towards petrol which, arguably, could be restored to equilibrium by a further price increase across the board and then allowing a rebate on the consumption of diesel, aviation kerosene and illuminating paraffin.

However, none of these alternatives is as attractive as the export option. Spokesmen for Sasol and government have stressed this repeatedly — even in public.

But there are clear limits to the extent that SA coastal refineries can export their way out of trouble. Worldwide, crude oil



refineries are operating way below capacity, and nowhere more so than in Africa, South America and the Far East, the most likely markets for SA petrol exports. Cost is another inhibiting factor. Although the law has been changed to exempt crude oil refiners from payment of state oil fund levies on refined products "jobbed" for the export market, heavy premiums riding on crude earmarked for SA processing wipes out their competitive edge on foreign markets.

Another problem is ocean transport. Because of the international switch away from "source" refineries to "market" refineries (because it is safer and cheaper to carry crude oil to major markets) the availability of refined product carriers has fallen sharply in recent years. These are small, expensive tankers that are uneconomic on long hauls.

The Africa option for SA petrol exports is neither attractive nor promising. Total BLS consumption is probably not a great deal more than that of a busy platteland town and district like Kroonstad.

Zimbabwe seems a likely prospect for the medium term, at least until the 20 000-barrel-a-day Feruka refinery at Umtali is recommissioned and the Lonrho pipeline to Beira is pumping once again in, say, two years' time. But even that market could dry up overnight if Zimbabwe decid-

ed to switch from SA to Mozambique sources of refined product.

Zambia has its own crude oil refinery; it also has severe economic problems and, consequently, is not a likely importer of the refined product. Zaire is not a likely prospect either; what it does not refine itself it would import from neighbouring Angola at a fraction of the cost of getting supplies from SA coastal refineries.

Finally, while so much uncertainty persists in regard to the country's political relations with black states in southern and central Africa, the latter are unlikely to commit themselves to petroleum supply arrangements with refineries located here.

Constraints on exports and imminent structural changes in the domestic oil industry have given rise to some uneasiness about the economic future of SA crude oil refineries in general and the coastal refineries in particular. Total installed capacity is in excess of 500 000 barrels a day. Current throughput is a secret, but is unlikely to exceed 60%, given present buoyant economic conditions.

What seems to be happening here is that non-Sasol refiners are subtly being relegated to the position of "swings" producers; that is, in view of government policy preference in the market being given to the disposal of Sasol products (both coal and crude oil-based), with the coastal refineries supplying the balance of domestic requirements on the one hand, and trying to balance distortions in the pattern of demand on the other.

Low throughputs

By 1985 the three Sasols and Natref could be supplying more than 50% of domestic demand for liquid fuels, if government projections prove correct. This implies a minimum theoretical cut of 50% in coastal refinery throughputs. Actual throughputs might, in effect, not exceed 40%-45% of existing capacity because it will continue to be in the national interest to keep a tight lid on consumption. At the same time, strict price control will be exercised by government, so normal competition to improve refinery throughputs is effectively ruled out.

Unofficial government thinking seems to indicate that the oil multinationals will be expected to offset the erosion of their primary (refining) activities by strengthening their downstream (marketing and distribution) operations. That makes sense so far as it goes, but in the nature of the SA oil business it does not go far enough.

Local oil company profits derive from two sources, at least one of which is controlled by government: a refinery mar-

Koeberg could be a ^{STAR 8/11/80} saboteurs' target (5)

Own Correspondent

CAPE TOWN—The possibility of the Koeberg nuclear-power station being the target of saboteurs or a missile from a submarine could not be overlooked because nuclear power needed a stable political system to be safe, Professor Jan Giliomee, Associate Professor in Entomology at the University of Stellenbosch, said last night.

The public had been informed that Koeberg could withstand being hit by a Boeing 747 but they had not been told of measures to protect it from attack.

Professor Giliomee, who this year acted as spokesman for a pressure group opposed to nuclear power said at a meeting of the

Engineers' Association of South Africa in Cape Town last night.

ETST called the meeting in view of mounting public opposition to Koeberg, which is about 28 km from the city. In the wake of the Three Mile Island incident at Harrisburg in the United States last year, opposition to the Cape based nuclear plant reached a peak, but at last night's meeting, Professor Giliomee appeared to have toned down his vociferous condemnation of the scheme.

He expressed concern about where nuclear waste would be stored, saying it was "not the right thing" to look for solutions only when problems arose.

Throughout the world there were no good an-

swers to the final disposal of waste materials.

People living in areas surrounding Koeberg would live under stress and fear. They would have to know what to do in case of an accident, which he said was "too ghastly to contemplate."

The danger also existed people operating the nuclear plant could become over-confident and negligent and there was therefore always a possibility of a major accident when up to 6000 people could die.

Mr Peter Spencer the project manager at Koeberg admitted that risk to the public was far greater in a nuclear plant accident than from a coal power station, but stringent safety measures were adhered to at a nuclear power plant.

Energy crisis fuels ETVI economic boom

1978
18/11/80

By Kevin Murray

Hundreds of millions of rands are being poured into the Eastern Transvaal in an economic boom fuelled by the world's energy crisis.

Both the Highveld and Lowveld regions are caught up in a period of runaway expansion as industrialists and businessmen announce plans for new mines, power stations,

ethanol and methanol plants, heavy industries and vast shopping complexes.

Authorities there say the boom has been created by a need to employ alternative energy sources as oil prices soar and supplies dwindle.

New coal mines, a power station and a methanol plant — all multi-million rand projects —

are being mooted for the Highveld region around Middelburg and Witbank.

A R1 000-million ethanol-from-sugar plant is planned for the Komati-poort area in the Lowveld, and a R25-million ethanol-from-casava plant is being mooted for Hoedspruit.

Population figures in the three main towns in the area — Witbank, Mid-

delburg and Nelspruit — are expected to double within the next 10 years.

The Highveld region is highly attractive to industrialists because of the coal and water supplies, its proximity to the Reef, major ports and labour markets, and already highly-developed municipal infrastructures.

It was last year declared a strategic economic

growth area by the Government.

Authorities in the Lowveld say the region's importance as an agricultural centre, its tourist attractions, gold resources and strategic value as a border area are behind its boom period.

● The Star publishes an in-depth look at the region on Pages B6 and B7 in today's special section.

Motor men unhappy with ban on speed

STAR
19/4/80
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By David Breier
Pretoria Bureau

Overwhelming disappointment has greeted the Cabinet's decision to retain the 90 km/h speed limit.

Motoring organisations expressed disappointment at yesterday's announcement by Mr de Klerk, Minister of Mineral and Energy Affairs, that the hoped-for increase had

not been granted.

Mr Hannes Rall, managing director of Rondalia, said he was "very unhappy" that a speed of 120 km/h had not been allowed on highways such as the Ben Schoeman Highway between Johannesburg and Pretoria.

He said a car cruising at 120 km/h used hardly any more fuel than one travel-

ling at 90 km/h.

Mr Theo Swart, president of the Motor Industries Federation, who inaugurated the campaign to increase speed limits, said he was "extremely unhappy" at the decision.

He said the higher speed limit would increase productivity and would reduce traffic congestion on inter-city freeways.

Mr Hennie Kleynhans, a spokesman for the Automobile Association, said the decision was "a bit of a let down" after high hopes had been raised by previous ministerial statements.

He added however that fatalities on the road would inevitably increase at a higher speed limit.

The AA supported a 120 km/h limit on freeways and a 100 km/h limit on selected single carriage-way open roads, he said.

Mr de Klerk's statement yesterday made it clear that the Cabinet feared the effects of possible sanctions on fuel supplies.

He said that for strategic reasons South Africans should retain maximum independence from overseas supplies of fuel on which it was now largely dependent.

Among the reasons for rejecting the increase was the insecurity and variability of the supply of crude oil which was still continuing worldwide, aggravated by the Iran/Iraq conflict.

The Cabinet would look at the matter at a later date, and he predicted that February next year would be the earliest time for a reassessment.

He appealed to the public to adhere to the 90 km/h limit, and called on them to exercise "economic patriotism."

OIL **55** FM 21/11/80
Marginal markets

The price of the world's most important grade of crude oil — Saudi light — is now hovering at around \$40 a barrel on the key Rotterdam spot market, which accounts for only 5% of world oil turnover, but possesses a far greater influence on the overall world market than its physical size suggests.

By comparison, the official price of Saudi light is some \$10 a barrel lower — a discrepancy which to many seasoned observers suggests that Opec may soon seek to consolidate free market gains into official price rises. After all, some oil states are bound to argue at Opec's next oil Ministers' meeting in Bali, Indonesia next month, that the price of any commodity is fixed at the margin — and there are few markets as marginal as that for spot oil in Rotterdam.

The latest sharp increase on the Rotterdam market, a product of a 5% reduction in world exports stemming from a 5 Mt delivery drop with the continuing war between Iraq and Iran, means that Saudi light, the traditional cornerstone of Opec pricing policy, is now some \$3 or \$4 more expensive than the official prices of premium quality North African crude. That is a situation which such hawks as Libya and Algeria may not be willing to entertain for too long, perhaps not much beyond the Bali meeting.

Paradoxically, the West, for the moment, is not short of oil — primarily due to recession. In Britain, for instance, energy demand is more than 10% below consumption levels of a year ago. More-

over, the Paris-based International Energy Agency (IEA), which groups most Western nations with the thorny exception of France, last month decided that member nations should run down current burgeoning oil stocks, instead of trying to maintain them at current levels by bidding for loose cargoes in Rotterdam.

Interestingly, the West's stocks at the start of the Iran-Iraq conflict amounted to almost 500 Mt compared to just below 400 Mt at the onset of the Iranian revolution.

The IEA's decision to head off the possibility of panic buying in Rotterdam was last week endorsed by Saudi oil Minister Sheik Yamani, who warned that such activities on the spot market could force Opec to follow the lead of free market prices. However, apart from international oil speculators and oil companies and other corporate institutions which feel they are vulnerable in the current political climate in the Middle East, there is a number of governments which feel they should take aggressive steps to secure longer-term supplies.

Chief among these is the French government, which last week instructed oil companies to increase their obligatory stocks from 90 days to the equivalent of 115 days consumption, a reflection of the fact that, in percentage terms, France was more dependent than most on the supplies from Iraq. Many believe that

France and other countries could be frantic bidders in the Rotterdam oil pirhana pond in coming weeks should the Iran-Iraq conflict continue. The effect could be to force spot prices to new highs.

Meanwhile, in London, a trade association has now been formally constituted to run the recently established International Petroleum Exchange (IPE), a new market initially designed to trade oil product futures contracts.

If the market takes off, benzine, bunker oil and naphtha futures and perhaps even crude oil futures could be introduced in quick succession. One of the aims of the IPE, argue its proponents, is that futures trading will allow those who are interested in oil products to lock in sale or delivery prices several months in advance by taking out the appropriate forward contracts. In so doing, those who are backing the market believe it may help to iron out the wild fluctuations associated with the Rotterdam spot market, which also handles oil products as well as the key raw material itself.

Coal shortage could cripple Cape Town

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28/1/80

Own Correspondent

CAPE TOWN. — Essential industries in Cape Town could face closure unless railway rolling stock can be found to keep the city supplied with coal.

Cape Town has suffered a coal shortage since midwinter.

While a spokesman for the Transvaal Coal Owners' Association (TCOA) says he cannot get the trucks he needs to move coal to Cape Town and other parts of the country, South African Railways say coal traffic to the city is normal.

City businessmen said yesterday they were faced with closure unless there was an improvement in supply.

Mr K Lloyd, managing director of Capgas, said: "We are living a hand-to-mouth existence. We don't have a ton in stock and have had to scrounge coal."

"We have been assured by the mines that they can produce the coal. The problem appears to be with the railways."

"As a gas plant we run a continuous process. If we run out of coal we will have to turn off gas to 2 000 customers and it will be six weeks before we can start up again."

A spokesman for TCOA said: "It is a miracle we got through last winter and we have to build up the stockpile at the power stations to higher levels than last year if we are not going to run into trouble next winter."

"Last week was the best we have had for some time. We requested enough trucks to move 370 000 tons and received trucks to move 337 417 tons."

"We usually move 40 000 tons of coal by road weekly, but this is up to 78 000 tons at present, some of which we have had to move as far as the Cape."

"The railways were caught with their pants down. They catered for a 'nominal' growth in traffic this year and there has been an 18% growth rate."

"We have a million tons of coal on the ground at the collieries. The problem is to get it to the consumers."

A spokesman for South African Railways said: "We were in a tight spot this winter, with the increase in demand for coal 12% higher than expected."

"This was coupled with the upswing in the economy and the flu epidemic, which affected us badly."

"But we are not the only people with problems. We have weekly meetings with other parties who are having difficulty in the production of certain types of coal."

However, the spokesman said that, except for some "operating problems" 14 days ago, things were back to normal, with enough traffic for clients in Cape Town.

Mr Jack Roos, director of the Cape Chamber of Industries, said: "We were told the problem was congestion up north."

"The position is improving, but we are not out of the woods."

"Any disruption could have serious consequences because we are such a great distance from the coalfields."

Coal shortage could curb industry

Staff Reporter

ESSENTIAL industries in Cape Town could face closure unless railway rolling stock can be found to keep the City, which has suffered a coal shortage since mid-winter, supplied with coal.

While a spokesman for the Transvaal Coal Owners' Association (TCOA) says he cannot get the trucks he needs to move the coal to Cape Town and other parts of the country, South African Railways say coal traffic to the City is normal.

City businessmen yesterday told the Cape Times they were faced with closure unless there was an improvement in the supply situation.

Mr K Lloyd, managing director of Capegas, said: "We are living a hand-to-mouth existence — we don't have a ton of coal in our stock and the situation has been going on for weeks.

"We have been assured by the mines that they can produce the coal. The problem appears to be with the railways."

A spokesman for the TCOA said: "It is a miracle we got through last winter and we have to build up the stockpile at the power stations to higher levels than last year if we are not going to run into trouble next winter.

Pants down

"Last week was the best week we have had for some time. We requested enough trucks to move 370 000 tons and received trucks to move 337 417 tons.

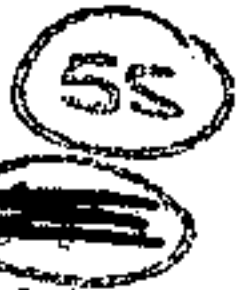
"The Railways were caught with their pants down. They catered for a 'nominal' growth in traffic this year and there has been an 18 percent growth rate."

A spokesman for the SAR said: "We were in a tight spot this winter, with the increase in demand for coal 12 percent higher than expected. This was coupled with the upswing in the economy and the flu epidemic which affected us badly."

"But we are not the only people with problems. We have weekly meetings with other parties who are having difficulty in the production of certain types of coal."

However, except for some "operating problems 14 days ago, things are back to normal with enough traffic to clients in Cape Town".

ENERGY FM 28/11/80
Getting bedded



An estimated 1 Mt of coal mined in SA is discarded annually because it is of such low grade — with an ash content of 30% and more — that it cannot economically be used, says Peter Hancocks, consumer technical services manager of the Transvaal Coal Owners' Association.

In addition, there is another 850 000 t of "duff" coal (small-sized coal discarded in the screening process) which is going to waste every year.

Both types of coal (which are piling up at an alarming rate on huge dumps in the Witbank-Middelburg area, combusting spontaneously and polluting the atmosphere) could easily be burned in fluidised bed boilers, a 50-year-old technology which has attracted renewed interest since the 1973 oil crisis.

Several companies are now prepared to quote for fluidised bed boilers in SA, including Foster Wheeler, Babcock & Wil-

cox and, most recently, Energy Equipment SA, which is part of Industrial Furnace Fuels.

So far, however, only one such boiler has been installed in SA. The trouble, says Hancocks, is that people are cautious about switching to a new technology, especially as the capital cost of a fluidised bed boiler is 50%-75% more than that of a conventional boiler, except in very large sizes. But as fluidised bed boilers can burn coal with an ash content of more than 65%, he is adamant that the technology holds great promise.

Moreover, adds Energy Equipment MD Richard van Niekerk, running costs of a fluidised bed boiler are likely to be lower because of the lower cost of waste coal. Any price would be a subject of negotiation, but high-ash coal would probably have to be in the R2-R3/t range in the Witbank area to be viable, though railage could make even this unacceptably high for users a long distance from the dumps.

(The normal price of coal is around R10-R12 at the pithead, which may be bumped up to R40/t when railage is included to places as far afield as Cape Town.)

Thermal efficiency is around 80%, says Van Niekerk, and the boiler has great flexibility, as it can burn almost any combustible waste, including wood, sawdust or refuse.

The principle of the fluidised bed is that pre-heated air is introduced into a bed of sand, followed by the introduction of coal (or other fuel), creating an agitated mixture of air, sand and particles of coal which behaves rather like a fluid. In this suspended state, the coal burns more efficiently because it is in intimate contact with the air.

Another advantage is that sulphur emission can be reduced by introducing limestone into the bed, which means higher sulphur coals can be used.

"If someone is using coal at the moment, there are not really any immediate benefits in switching to a fluidised bed because of the higher capital cost," says Van Niekerk. "But for somebody who is putting in a new boiler, or using liquid fuel, or who has a waste product he can burn, then there are definite advantages. It is also attractive to people who are close to dumps of unsaleable waste coal or duff."

Typical applications for hot gas fluidised bed furnaces are paint-drying ovens in the motor industry and kiln operations in ceramics or cement industries.

There is
no coal
crisis
— SAR

ppm
29/11/65
(65)

CAPE TOWN. — Essential industries in Cape Town could face closure unless railway rolling stock can be found to keep the city supplied with coal, according to a survey by a Cape Town newspaper.

Cape Town has suffered a coal shortage since mid-winter.

But SAR says things are back to normal.

A spokesman for the Transvaal Coal Owners Association said he could not get the trucks he needed to move coal to Cape Town and other parts of the country. South African Railways says coal traffic to the city is normal.

Yesterday businessmen told the newspaper they were faced with closure unless there was an improvement in the supply situation.

The managing director of Cape Gas, Mr K Lloyd said: "We are living a hand-to-mouth existence. We don't have a ton of coal in our stock and this situation has been going on for weeks."

A spokesman for SAR said: "We were in a tight spot this winter with the increase in the demand for coal 12% higher than we expected."

"But except for some operating problems 14 days ago, things are now back to normal." — Sapa.

Cabora

power to

SA cut

2/8
55
STAR
10/12/80

LISBON — Power supplies to South Africa from Mozambique's huge hydro-electric dam at Cabora Bassa have been cut due to a break in high tension lines running through a guerilla war zone.

A spokesman in Lisbon for the Portuguese-owned company which operates the dam told Reuters that power supplies were interrupted last Saturday about 600 km south of Cabora Bassa in central Mozambique.

The spokesman would not confirm that the lines had been sabotaged, but said: "Everything indicates that the lines were cut due to damage by military weapons." — Sapa-Reuter.

for the period

18 495
2 408
2 500
4 906

71 490
13 587
2 500
16 087

DEAL SALES (PTY) LIMITED

INCOME STATEMENT FOR THE

NINE MONTHS ENDED

31 DECEMBER 1979

Net income before sharing or crediting the items

Listed below

Add: profit on sales of listed investments

Less: write-down of existing holding

Add: profit on sale of land and buildings

Less: interest on loan

depreciation

directors emoluments:

for services as directors

for other services

Lease of delivery van

Auditors fees

Write down of listed investments

Net loss before tax

Taxation (Note 2)

Transfer to non-distributable reserve

Accumulated loss at 31 December 1979

Notes:

1. Turnover consists of retail sales

2. No tax has been provided for as the company ended 31 December 1979.

3. No depreciation is provided for land and

Trying to save oil

55

The Electricity Supply Commission (Escom) is experimenting with a new power generation procedure that could save the utility up to 80m t of oil a year, a top Escom official claims.

"If we are successful in our efforts now, we will be moving away from liquid fuels in almost all of our new plants," chief mechanical engineer Alex Ham says.

The experimental process, undertaken in conjunction with Steinmuller, involves blowing pulverised, finely ground coal into an approximately 1.5 m burner at a controlled rate to ignite with gas, sparking the massive boilers that generate electricity. Escom plans to begin testing the novel ignition machinery in January at its Kriel plant in the eastern Transvaal.

The power authority currently uses about 80m t (64 000 t) of fuel oil a year at a cost of about R400/t in its 25 plants. The oil-ignited process is currently employed in 21 of these plants. With the projected 7% to 10% a year growth in installed capacity for electrical production, Ham expects the demand for electricity to leap from the present peak of 14 000 MW to an estimated 25 000 MW peak demand by 1987.

The utility presently consumes 40m t of coal a year, and SA's abundant reserves enable Escom to undertake experimental programme. Yet Ham in charge of the research, concedes that

domestic supplies available are inferior in quality to other types elsewhere.

"We had some Americans here recently," Ham says, "and they were doubtful about this project because our coal does not have the combustion reactivity that their coal has."

If the Kriel project proves successful, Ham expects to start converting existing plants from oil-ignited powered systems to the pulverised coal-igniting process. He says that in five years Escom could save 40m t of oil a year and in 10 years, with projected increases in demand, could conserve a whopping 80m t/year.

"These are very optimistic projections," Ham concedes. "But if it works, just think of it — we could free Sasol from a tremendous drag on its supplies, reduce our dependence on imported oil, and keep the price of oil from rising as fast as it would otherwise. It's fantastic."

"But we do have problems," Ham continues, "because we have less ability to adapt existing machinery. Much of the older equipment does not lend itself to changing. They could not be converted because it would not be economically viable and would cost an enormous amount of money. It just wouldn't work."

Some 35% of Escom's existing plant capacity, representing a generating capability of 6 000 MW, could be converted. These machines are centred primarily in the eastern Transvaal, although their produced power would be fed into the nationwide Escom system.

"We're thinking in terms of 10 years before this programme could completely replace oil. The older plants would have to be phased out and the newer ones converted systematically to avoid disruptions," Ham says.

The new process could potentially keep Escom's prices from rising as fast as they have in recent years, Escom spokesman Jan Roux claims. Following the 1967 Soweto riots and the global oil crisis in the early Seventies, foreign investors insisted

Escom accumulate its capital for expansion internally. As a result, Roux says, the capital development fund had to come from SA consumers, and hence the massive price surges from 1976 to 1978.

"We've passed the worst of the increases. Now we're expecting to keep well within the inflation rate," Roux insists. "And if the coal injection programme works, we could do even better."

Escom is also investigating the use of previously rejected coal lost in the washing procedure that mines do to coal for export. This contains at least a 30% ash content and could be utilised in future plants.

But Adriaan Pretorius, director of engineering and manufacturing at International Combustion, says such a move would "be a backward step. Not only is this bad for the equipment but it makes operational costs more expensive in the short-term."

Nevertheless, Ham is insistent that the programmes can be accomplished. "I'm an optimist. It's so incredibly important to the country. SA has achieved so much in the past, and I'm convinced we can do it again. We won't give up."

of Tuts

Data

Code

Nuclear energy: The winter of despair

55

When the nuclear reactor at Three Mile Island in the heart of America went awry on March 29 last year, the Great Nuclear Debate took a giant step upward. At least nine reactor orders were cancelled: the public opinion polls showed that for the first time the anti-nuclear section of the American population was virtually as large as the pro-nuclear section. The *No Nuke* demonstrations went into orbit, throughout the Western industrial nations. The Governor of New Jersey solemnly announced that "the nuclear future has come to an end, right now".

Most of the world's 22 nuclear equipped countries — in fact probably all, but some are not given to public disclosure — promptly re-revised the already oft-revised safety controls.

During the six critical days, rumour and fear ran riot, world-wide. A scientist in Brazil woke up to a newspaper poster proclaiming "Hydrogen Bomb Drops on New York". A doomsday sect in Australia trebled its membership. About a hundred thousand people fled from the immediate surroundings of Three Mile Island.

The mighty US nuclear safety machine turned out to have flaws which would have spelt big trouble for even a village fire brigade. It took three days for the emergency crew to arrive, and then they were badly hampered by having to operate through an overloaded public phone system.

But after six days the reactor began to cool. So did public tempers. Less than two years later, Three Mile Island is used as much or more as an argument for nuclear power as it is against.

"At TMI", runs the line of the pro-nuke lobby, "everything that could possibly go wrong did go wrong, and still it all came to a happy end. So what are all those scare stories for?"

True. Some of the anti-nuke crowd (both sides use 'nuke' now — perhaps partly because Americans can't pronounce 'nuclear'; it comes out as 'noocewler') had almost welcomed TMI as the big bust-up

The vexing link

ABOVE: An American anti-nuke symbol which depicts the crux of the problem facing the nuclear energy industry: opponents claim that nuclear energy and nuclear war are linked to each other, and to the destruction of man.

which was about to finally put paid to all future nuclear activity. But it didn't happen. No-one was killed, or even hurt. The mushroom clouds of popular imagination did not envelop the atmosphere. The cows still give milk. The grass still grows. And the local shops now even have a thriving tourist industry, with picture postcards of the hulk of the ruined reactor and T-shirts with slogans

like "Happiness is a cool reactor".

The Kemeny commission of enquiry found that the worst effect on the locals was mental stress. The only visible loser, so far, is the Metropolitan Edison company, which will end up paying some R400 000 000 to clear out the ten million-odd litres of radioactive water left washing around the reactor building.

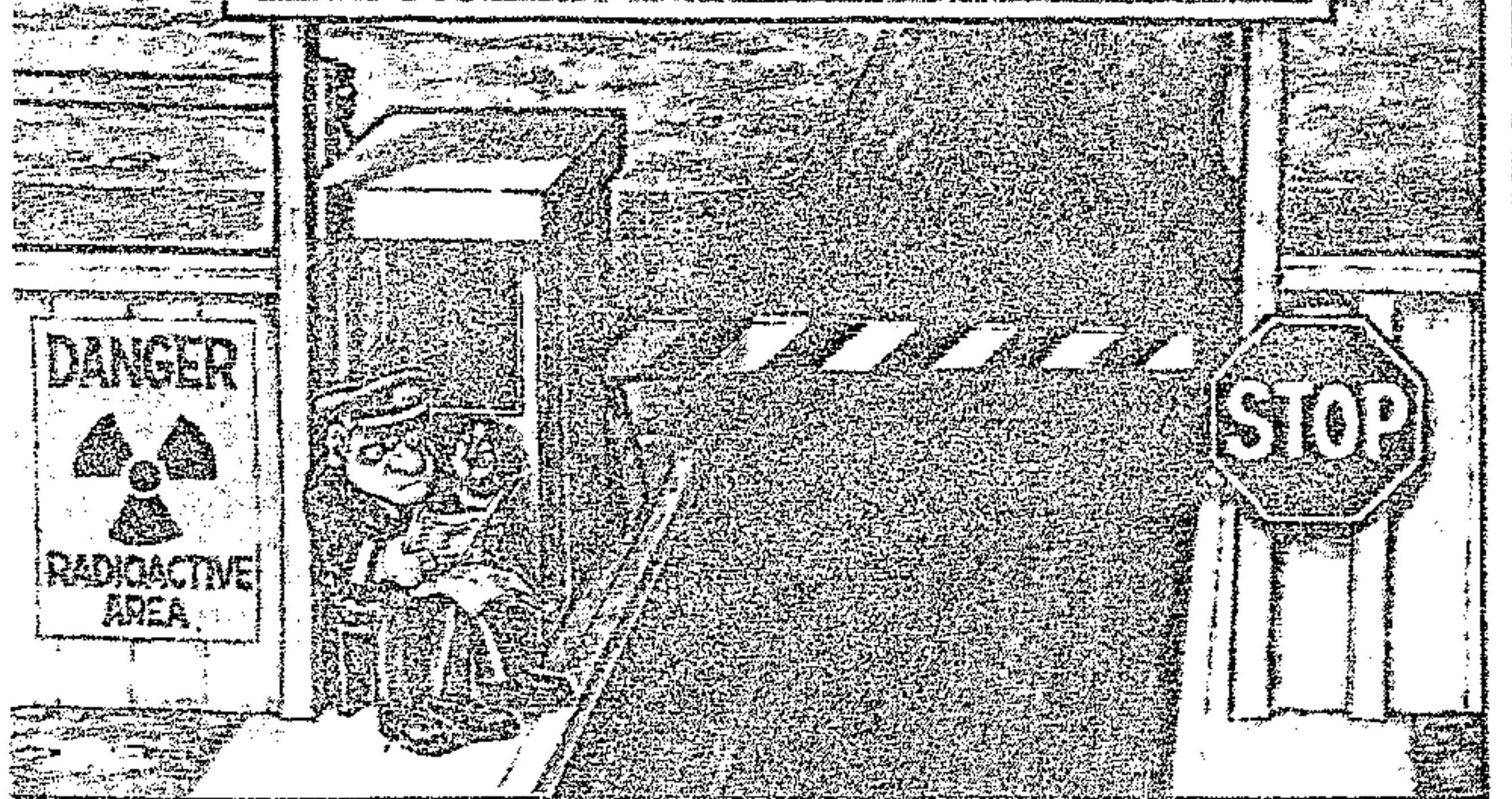
But is it the end? That's where the real scare of nuclear energy comes in. Those ten million litres of water don't *look* any different to the water that comes out of the kitchen tap. The same goes for the air. The air around any reactor looks, feels and smells as good as any other air any other place (and a lot better than the air around a coal plant). How different it actually is, and how much damage the difference might do, is the crux of the issue.

Could it be that cancer will become rife in the area in 30 or 40 years time? Could it be that future generations of Pennsylvanians will be born armless or legless? The answer in each case is: almost certainly no. But there is just that tiny scientific doubt, and there has been so much contrary propaganda that it is easy to sympathise with the common and reluctant verdict: a verdict summed up by one of those prophets of our times, the T-shirt manufacturer: "I survived Three Mile Island — I think."

TM I did for nuclear controversy what Elvis Presley did for rock-n-roll: put it on the map. Not that TMI was either the first or the worst of reactor accidents — far from it — but the spirit of the times had ripened. TMI gatecrashed the barriers of public consciousness, and catapulted such terms as *meltdown* and *hydrogen bubble* into the top rank of the English lexicon's chamber of horrors.

What it did not do was what it is most often assumed to have done — cast the

U.S. GOVERNMENT
NUCLEAR WASTE DUMP
 LUMINOUS FLATS, NEVADA



Mutation gone wild

LEFT. Three eyes, three arms, three legs . . . genetic mutation gone wild. A standard anti-nuke propoganda tactic, but remote from reality. Not even bomb-blast levels of radiation have produced such dramatic deformities, and reactor levels do not seem, so far, to have had any harmful genetic effects.

35

loom large.

In the West as a whole, the state of play stands at a half-time draw which satisfies no-one. Nuclear proponents decry the decline, and some of them argue that it has already gone so far that there is no way that the energy demand of the 1990s will be met. The opponents denounce the continued operation of existing reactors, and claim that each further day is dooming more people to become victims of the mass cancer deaths which are yet to come.

But even if the scoreboard stands at a neutral one-all, there is no doubt about who's playing into the wind. The industry, for the moment, seems to be able to do nothing right.

Part of this is its own fault. Practically ever since the nuclear energy action consisted of a pint-sized reactor in a converted Chicago squash court, the nuclear authorities have been promising

PLEASE TURN OVER

industry onto troubled waters. It couldn't, since the industry was already there.

Since 1973, the springtime of nuclear exuberance, the nukes have had their backs to the wall. Reactor orders have dwindled (In '73 there were 41 in the US alone; by 1980 there were 9 in the entire Western world.) The US programme, once planned to have 800 nukes in operation by the end of the century now has 72 on stream, 86 on order, and a dim prospect of getting much more.

Ever more stringent safety regulations have pushed up construction costs and construction time dramatically. A medium sized reactor (producing 1 000 megawatts, or around 1½ million horsepower in the old language) now costs upwards of R1 400 000 000 and takes 12 years to build.

The industry has trouble finding sites for new reactors. The silent majority of nuclear supporters becomes less silent and less of a majority when the source is likely to be placed next door. Assorted provinces, states, counties and local authorities have slapped bans on nuclear activity or transport of nuclear materials through their territory. Nuclear bigshots complain they can no longer attract the top talent to the industry. In the US, all new plant licensing is frozen (to the mighty ire of the nuclear establishment, which argues that it is senseless to stop the newest and safest reactors from operating while allowing the older ones to keep going.)

Above all, the Fast Breeder Reactor, the Great White Hope of the nuclear industry, is flat on the canvas and all but KOed under a barrage of technical, social and political blows.

The proximate causes of the industry's troubles are varied, but most trace back to a single root: vocal and vehement public opposition.

Of the Western democracies, only France is pursuing its nuclear programme at full tilt. Not that there's no opposition in France, but the government takes no notice. In Russia, there's no opposition to nuclear energy or anything else. In

those Third World countries which have embarked on the nuclear route there's no opposition either - partly for the same reason and partly because where people are fetching their water from the river they tend to place a lot higher premium on the need for power than do people who already have electric toothbrushes and electric carving knives and 220 volt guilt complexes. And where people are dying of starvation the statistical probabilities of radiation injury do not

Cosmic babalaas

NUCLEAR fission produces around 100 radioactive substances; all of them man-made and none known to nature (which does however have 51 others of its own).

All 151 have an unfriendly propensity to bully around other molecules with which they come in contact, and to change their shape.

Most are also toxic; that is, chemically poisonous like engine oil or rat-tex.

The gases among them inevitably end up loosed into the atmosphere.

(Lately, there's been a mammoth dispute as to whether TMI's clean-up workers should be allowed to vent some 50 000 curies of krypton and xenon into the air, which leaves nuclear professionals in some wonderment since the two uranium re-processing plants in Europe - Windscale and Cap le Hague - each vent 4 300 curies of the same gases every day with no particular commotion and, so far, no hard evidence of harmful effects.)

The liquids and solids get disposed of otherwise. Thousands of tons have

been dumped at sea, where many of their containers have rotted and many others are surely going to rot a long, long time before the radioactivity has decayed.

The industry is working on various alternative methods of disposal, such as depositing them in underground burial chambers, vitrified in a glass compound. Some nuclear spokesmen claim that there are dozens of adequate ways to dispose of the wastes and that the current fuss and bother about the matter is merely a question of finding the most practical and economical way. But that seems a bit of a stretch of the imagination. The fact is that no truly satisfactory disposal method has yet been proved.

Nuclear critics argue that to employ nuclear power now in the hope that a way of getting rid of its hangovers will be found in the future is like taking a certain but slow-acting poison in the hope that an antidote is discovered before it kills you.

What they neglect to discuss is what you should do if that poison is the only thing available to keep you from starving. ■

CONTINUED

that everything is entirely safe. Then after each new accident, or incident or unscheduled outage, as the authorities prefer to call them, they tighten up the safety systems and say: See, now it's really safe.

The anti-nukes, whose attention-getting abilities make the industry spokesmen look like a Salvation Army band competing with a heavyweight championship, make good use of this. And even better use of the barbed trap which the industry is unavoidably caught in. The more it talks of all its extensive protective systems the more fear is generated for this unknown force from which such vast protection is needed.

Of late, the anti-nukes have been able to add two self-fulfilling prophecies to their armoury as well.

Nuclear energy has been proved a waste, they say, since it is only providing

a marginal portion of total energy supply — around 5% in the US — and has no hope of getting anywhere near 40% by the turn of the century which was the target in Nixon days, or even the 25% projected in the early Carter years. And it is argued that public fear is now so great that it is in itself a reason for calling a halt, even though that public fear is largely implanted by the same people who now use it as a cause.

Whether or not it need be there, the public fear certainly exists, and is a substantial factor in its own right. Some nuclear stations are close to major cities — the Indian Point triple-reactor in New York has 16 million people within a 45km radius — and there are regulatory officials who fear that more people could be killed in the rush through hysteria at even an unfounded accident rumour than could ever be killed by a reactor itself.

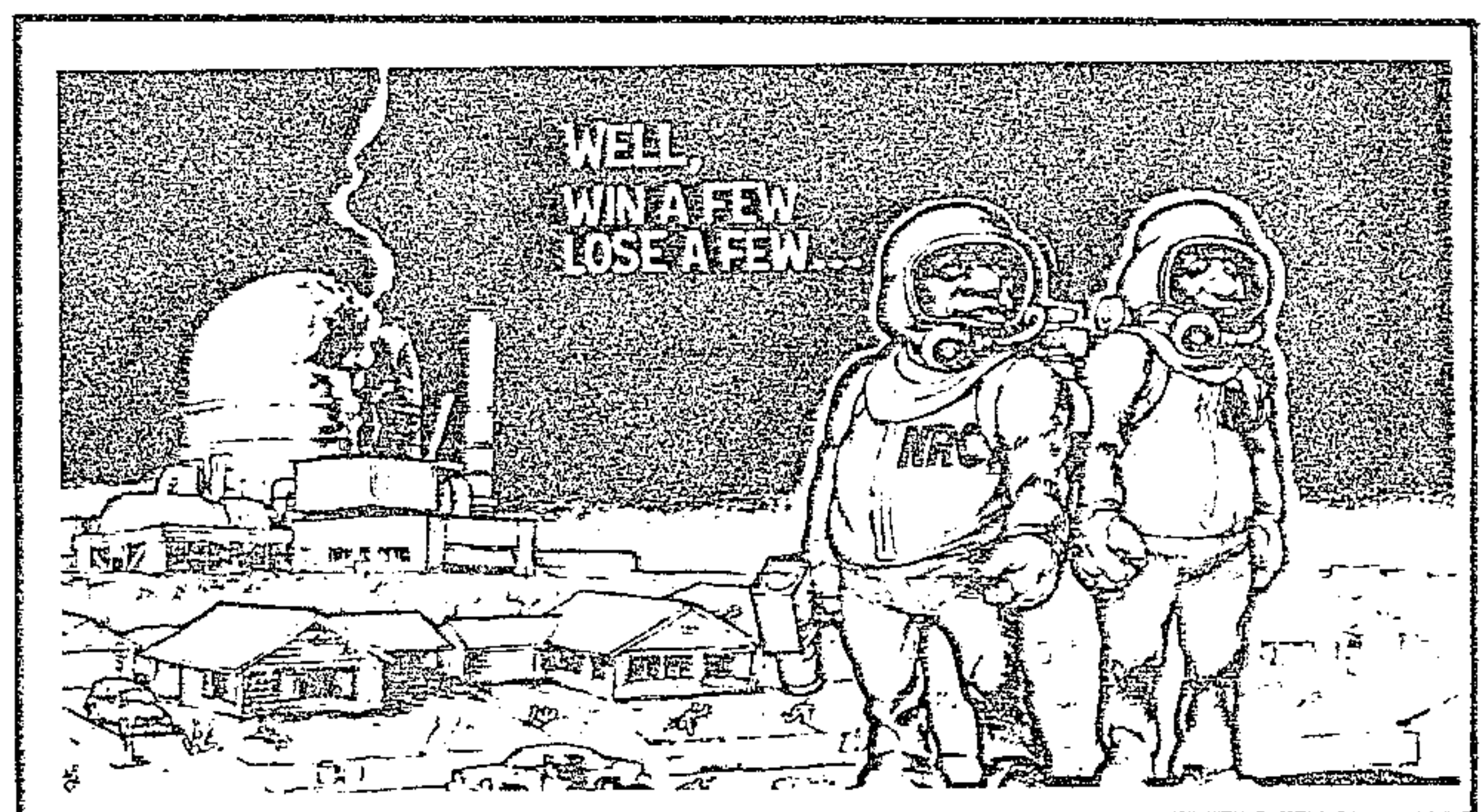
But what if the rumour was true? Would they need to run . . . ?

terror tales are the hardest fought, and probably the most important, it is the doom-and-disaster side which grips public imagination. *Everybody knows* that radiation is creating cancer epidemics. *Everybody knows* that meltdowns have come within an ace of obliterating entire cities. *Everybody knows* that undiscoverable wastes are turning land and sea into invisible launching pads for the devastation of humanity.

Seek the hard evidence, though, and you're apt to find you're hanging your hat on pegs of plasticine.

Most of what *everybody knows* shrinks under scrutiny to "everybody's heard it said . . ." The demonstrations of destruction hinge on projections of what *might* happen, with a distinct shortage of substantiation from the history of what *has* happened.

Waiting for the big one



It hasn't happened yet: can it ever happen?

NUCLEAR proponents fall into two camps: the out-and-out enthusiasts, and the reluctant no-option faction which believes that nuclear energy is a last resort whose time has come.

The one lot says there is no danger; the other that the dangers are outweighed by the benefits.

Either way, the nuclear case rests on a single fundamental assumption: that more energy is needed and that there is no other feasible way of providing it.

In contrast, the anti-nuke heads of argument are enough to fill a book

(and have in fact filled several). Nonetheless, the principal allegations fit into five recurring themes:

- *that routine reactor radiation kills;
 - *that a nuclear accident will not only kill, but kill immediately and enormously;
 - *that the radioactive wastes are destroying the earth;
 - *that nuclear power is a Big Oil/Big Government conspiracy to keep the energy supply in profit-making hands;
 - *and that a nuclear economy is an inevitable prelude to a nuclear war.
- Although the political aspects of the

What has happened is scarcely idyllic, and is gloomy enough to cast serious doubts on the integrity of the all-out praise-singers who treat nuclear power as a Godsend. But it hardly discloses a case for consigning it to the outer darkness.

Take radiation. It has indeed killed, despite the standard but false assertion from nuclear propagandists that not a single death can be attributed to peaceful nuclear activities. A few people have been killed in reactor radiation accidents, a few others have been saved by speedy bone marrow transplants, and, although it is impossible to detect the source of any individual cancer, enough nuclear workers and uranium miners have shown a sufficiently abnormal increase in cancer rates for the finger to be pointed without much hesitation at their mode of employment.

Callous as it may sound: the pattern is good by any industrial standards, and positively outstanding in comparison with coal mining's track record. Moreover, most of that damage was done in the earlier and more rough-and-ready era of nuclear activity. Limits have since been tightened over and again to the point where the maximum dose a nuclear worker *ought* to be exposed to has come down to what a Koeberg health physicist graphically puts at "two thirds of boggerall".

It may just be that that two thirds still has a harmful effect, and it may be that the *ought* is not always identical with the *does*. But neither possibility so far reveals anything like an open-and-shut case for the claim that normal reactor activities are exacting an immoral toll.

Although there is still some argument as to whether there is a 'threshold' level below which radiation does no damage, the weight of current opinion is to assume that all radiation, no matter how low, does cause damage. The real question now is whether that damage is anything more than purely theoretical. If it is, various categories of people — including air hostesses, people who watch a lot of colour TV, and Brazilians — should show high cancer rates. All

The plutonium factor

PLUTONIUM'S name is only the first thing about it that is apt to strike a chill.

There are other and better reasons why it has become the crux and the symbol of what a large corps of people don't like about nuclear power.

Such as that it is the stuff that is used to make The Bomb, that it is the biggest single radioactive product of the fission process, that it is highly poisonous ("twenty thousand times more toxic than the venom of the cobra," says Stellenbosch university's professor Jan Gilomee, applying perhaps a little dramatic licence); and that it has veritably startling staying powers.

Plutonium's radioactive half-life is 24 000 years. Not that it's of great

personal concern to anyone except believers in re-incarnation, but that doesn't mean it's all gone in 48 000 years. With each successive half-life, half the remaining radioactivity decays, so plutonium remains dangerous for around a quarter of a million years.

Plutonium has become a chief buzzword of disapproval in anti-nuke circles, which come up with such staple slogans as "a single radioactive cell causes a fatal case of cancer" (which is true, in the same way that it's true to say that a single car causes a fatal crash), and "a piece of plutonium the size of an orange can kill the entire world". Which is also true; although the slogan-bearers sometimes forebear to mention such salient riders as that it's difficult to envisage an

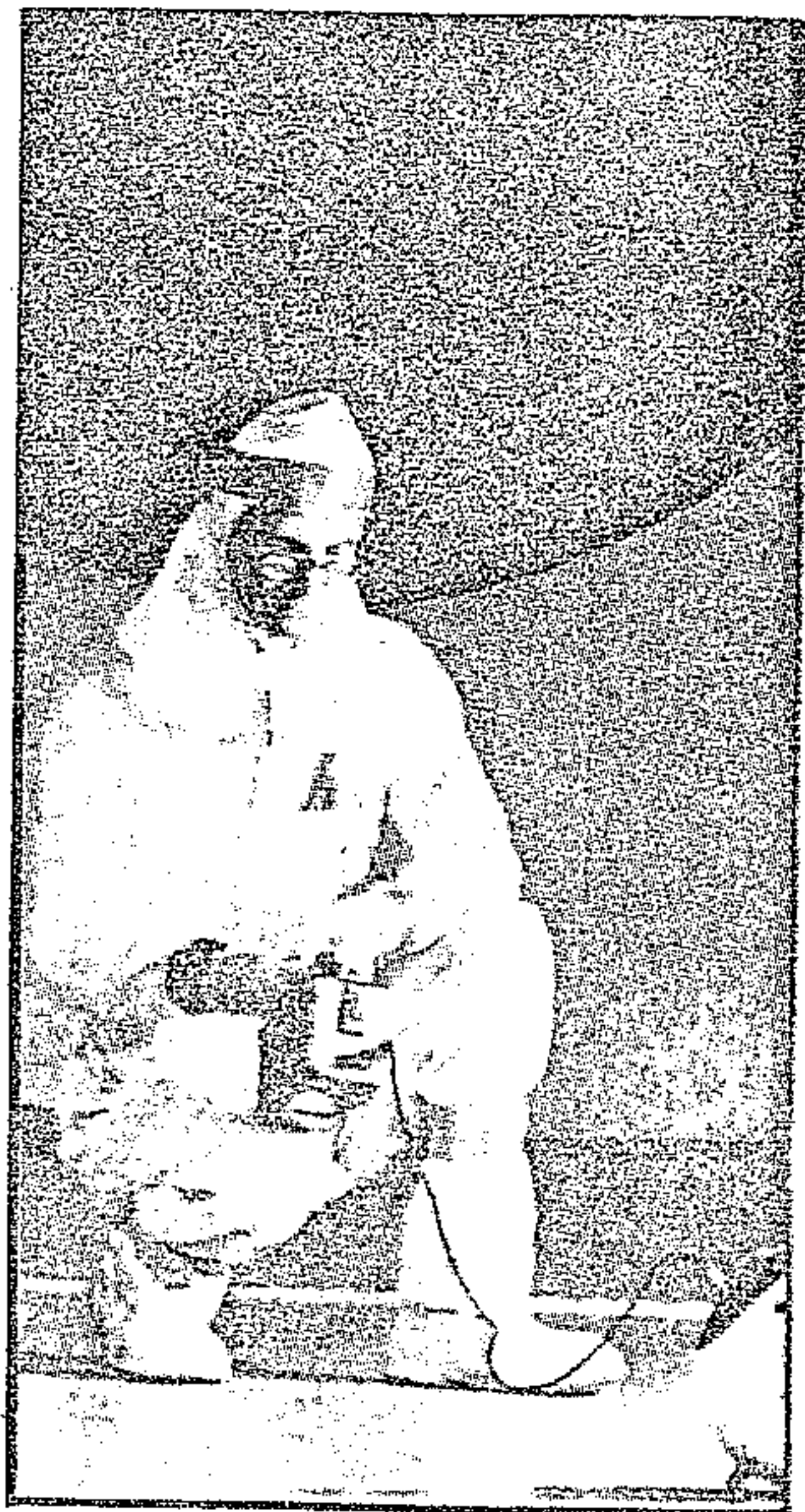
orange being cut into some four billion pieces and each piece then inserted into a human's lungs; that plutonium is a solid and can only be vaporised by a nuclear bomb explosion; and that more than six tons of vaporised plutonium has been floating about the atmosphere for the last twenty years, as a result of the misbegotten bomb tests of the fifties, with no ascertainable effects to date.

It's clearly established that it wouldn't be wise to keep plutonium in the bathroom cupboard; and the world would be a purer one without it. But it is still to manifest the horrific consequences that are claimed for it.

receive as much radiation as most nuclear workers, and very much more than anyone living near a normally operating nuclear plant. So far there is no evidence that those low levels have caused damage.

Critics point out that cancer may take 30 years or more to materialise, and genetic mutations several generations; so the whirlwind already sown may yet have to be reaped. But Britain's notorious Windscale accident, which released around a thousand times as much radiation as Three Mile Island, has now had 23 years to start manifesting its consequences and has wholly failed to do so.

Perversely, even the bombings of Hiroshima and Nagasaki speak against nuclear energy only in the most muted terms - despite what they say about nuclear war. The immediate and short term deaths and mutant births were catastrophic, but subsequent damage has been limited to a leukaemia increase up to around a rate equivalent to that of heavy smokers - and the radiation level the bombs released compares to even the worst possible reactor accident in much the same proportion as a shock from an overhead powerline compares to a shock from a penlite battery.



In search of control

A NUCLEAR worker measuring radiation levels. The industry concedes that uncontrolled nuclear reaction is dangerous, and goes to astonishing lengths to try to re-assure the public that it is being effectively controlled. One result of their efforts is that they have themselves contributed to the public awe of the power of the chain reaction.

armours, and has discovered plenty in earlier 'fail-safe' nuclear stations. But it has never yet managed to discover all the chinks together at any one time; and one very definite result of the critical spotlight permanently focussed on the industry is that the safety systems do in fact get steadily closer to foolproof. Two recent innovations - the Emergency Core Cooling System and the 'core-catcher' - come very, very close to offering a total guarantee that a major accident cannot happen; but not close enough for absolute certainty, and for understandable reasons no-one is volunteering to conduct a full-scale test run.

Even the infamous radioactive wastes which have been leaking from containers stashed liberally around both earth and sea - and particularly from Hanford, the main storage point in the US - have not yet shown any measurable ill effects at Hanford or anywhere else.

However, what has, or has not, happened is only a half-answer in the nuclear game. The stakes are high - by a long way the highest man has ever played for, and even if the signs so far are mainly pointed in a consoling direction, they are so hedged around with question marks and uncertainties that it is legitimate not to be satisfied with them. Given the size of the possible consequences and the extraordinary durability of their leftovers, the period of observation has been just too short and too flimsy for certainty.

One of the few things that is certain is that no matter how much evidence accumulates that radiation is manageable, that catastrophic accidents can't happen or that the wastes can be disposed of; it is going to be a very long time before the debate loses its fury.

PLEASE TURN OVER

CONTINUED

The debate is a cock-eyed one in any case. For the nuclear supporters, time offers the only hope of victory. For the other side, a big accident would offer spectacular vindication, and no amount of narrow escapes or disasterless accidents can conclusively disprove the allegations that they're all leading up to the Big One.

But time would reduce the impact of those allegations. If the deaths and the mutations keep on failing to make their appearance conspicuous; if the long-promised Big One doesn't take place, nuclear energy will settle in just as steam and electricity — both in their day condemned as the advance guard of the apocalypse — have settled in. And for right or wrong any subsequent rise in cancer rates will be generally regarded as just another hazard of modern life — but one, unlike all others, which the dissidents have no opportunity of escaping.

It could be a long process though, and in the meantime each cancer case, each mongol baby, and even each poor crop will create a little more suspicion, as to just what toll the constantly increasing sum of radiation is taking. (Koeberg's chief engineer has a newspaper cutting saying that milk production in the area has declined. He's keeping it to show the people who will blame Koeberg once it has started operations.)

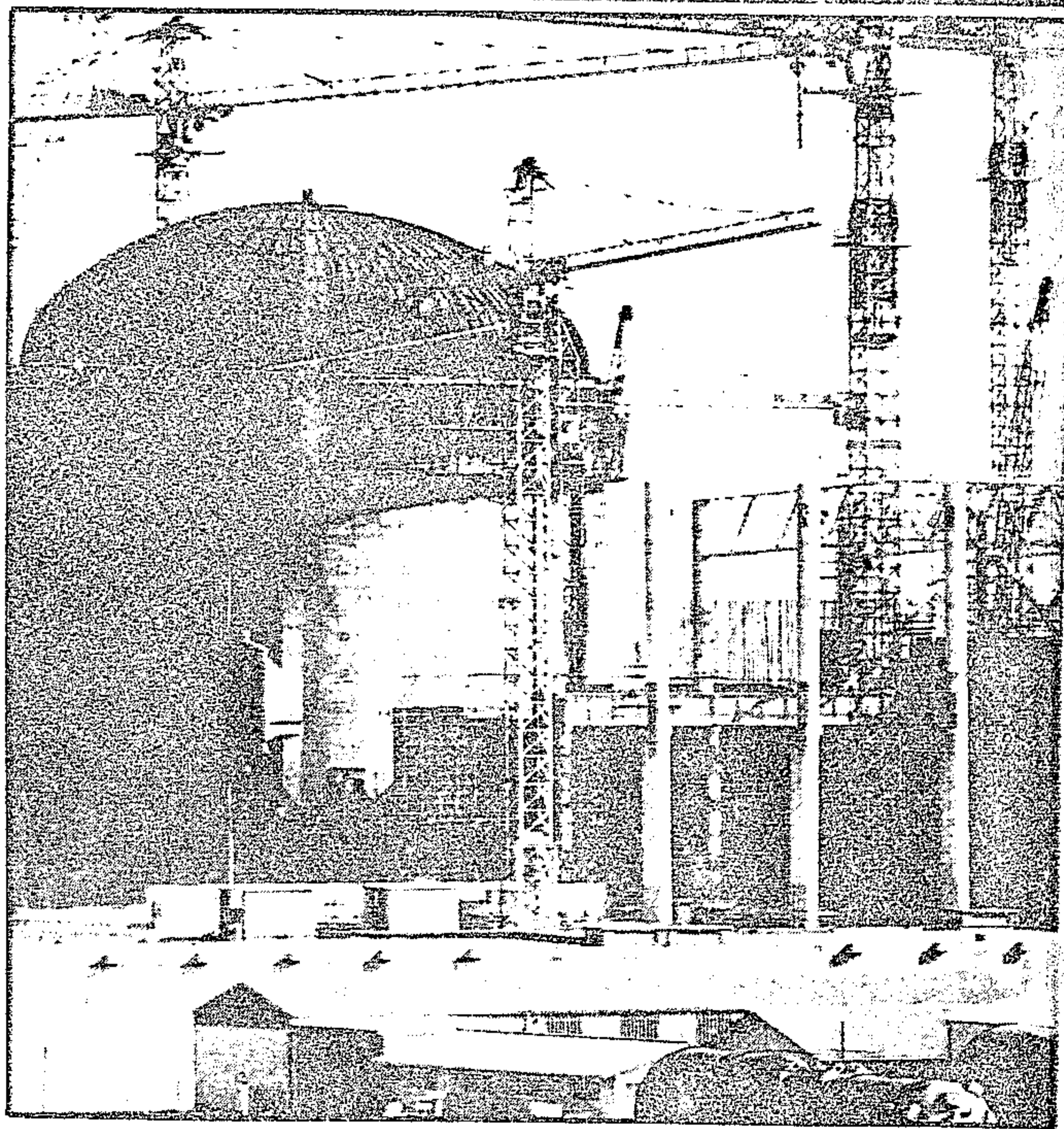
That the Big One should happen at all is unlikely, to put it mildly. Even the most dire of the rational anti-nuke projections (by the US Union of Concerned Scientists) estimates a probability of one in 30 000 000. But the possibility is still theoretically there, and that, in the eyes of many, is the fatal flaw in the whole nuclear effort. If it does happen, it is argued, then public opinion will force every remaining reactor to an instant close.

True, it's not hard to see a major accident changing the whole sociological face of the Western world, and it would take a brave man to offer the reassurance that the next accident was thirty million statistical years away.

But would it put an end to the industry . . . ? Even after the fridges stopped working, the public transport system folded up, the lifts in high-rise buildings were wired closed . . . ?

For years, the governments and the universities of the world have been producing studies of what the consequences of the 'worst credible accident' might be, and coming to wildly varying conclusions.

Finally, in 1973, the US government commissioned a blockbuster, the safety study to end all safety studies. Two years and some four million dollars later the results appeared: as the Rasmussen Report, known in the trade by its publication number, WASH 1400.



The report contained two crucial features. It said that the worst credible accident would cause 3 300 quick deaths, 45 000 cancer cases, 5 100 genetic defects, and \$ 14 billion damage.

It also said that the likelihood of it happening was one in three billion reactor years.

As it turned out, Professor Rasmussen did not put an end to conflicting estimates. Instead he stimulated a revival.

One unintended service he did perform was to become a kind of instant litmus test as to who was who in the nuclear debate. The opponents quoted his damage figures with alacrity, and rather mumbled their lines when it came to his likelihood projection. The supporters did exactly the opposite.

Another service was that he became a prime target for denunciation all round. In anti-nuke circles he was condemned as a hired whitewasher of the nuclear establishment, and his methods were attacked in particular by a California team under Professor Harold Lewis, who became a sudden idol of the anti-nukes in recognition.

Largely in response to a chain of mathematical criticism started by Lewis, WASH 1400 was eventually formally ditched by the nuclear authorities, to the rapture of the opposition. In the meantime, however, Lewis had announced that the anti-nukes had read matters all wrong. In fact his complaint against Rasmussen was that Rasmussen had been too pessimistic. "I don't have

the figures", said Lewis. "No-one has the figures. It may be there is no way to get the figures." What he knew, he claimed, was that Rasmussen had piled worsts upon worsts beyond the point of possibility, and that Rasmussen's 'worst credible accident' was in fact incredible.

The upshot is that there is now no major official idea as to what might happen at the worst extreme, or how likely it is. The anti-nukes have effectively sold that as a success; which it is, but from the point of view of common sense rather than just the opposition cause. Statistical projections are risky at the best times, altogether outlandish once they get up to levels of millionths and billionths, and fall apart under the kind of layman's perspective presented by a hitchhiker near Koeberg. The chances of anything under the sun are one in two, he says, affirming that he is unconcerned about living in the shadow of Koeberg: "either it happens or it doesn't".

Well, if it happens, what happens?

For a start: what does not happen is a nuclear explosion. The industry has laboured long and hard, with the legacy of Hiroshima stacking all the cards against it, to get that point across. It is just as impossible for a thermal reactor — the

Koeberg going up

KOEBERG, South Africa's first nuclear power station, will start operation in 1982. Its twin 920-megawatt reactors will add 10 per cent to South Africa's electricity stock — more than the whole supply amounted to 25 years ago.

normal type — to explode like a nuclear warhead as it is for a cucumber to do so. Not even the wildest critics dispute that any longer, although the industry's spokesmen point out that it is still a standard cause of concern in public requests for information.

What can happen is that a cloud of radioactive dust escapes from the reactor and drifts into the atmosphere. In the 'worst possible' case, this would be from a meltdown, or what the industry terms a 'whole core accident', through which the radioactive core overheats, burns its way through the reactor vessel and the floor of the containment building, and on into the earth — perhaps hitting the water table and blowing the roof off the containment building with the resulting pressure of steam and hydrogen.

However it is by no means certain that a meltdown would have that effect. It is more likely to merely splatter out on the containment building floor like a glob of any other molten metal would. That would certainly make the plant inaccessible and possibly permanently inoperative, but need cause no more injury than a series of apoplexies among the executives of the operating company.

The one thing that a meltdown definitely will not do is the 'China

Syndrome', by which the core is imagined to be able to plough down forever, releasing who knows what fearsome forces from the innermost bowels of the earth. It is physically impossible for the fission reaction to keep on taking place once the core has fallen out of shape, so it is bound to lose its heat once it leaves the reactor. By the time it hits the containment floor, which in most cases consists of about two metres of concrete and steel, its temperature will be around 2 000 degrees C, and cooling fast.

Short of the worst possible accident, there are umpteen ways in which matters can conceivably go wrong and end up with additional radiation spread into the atmosphere. The smallest, and most common, accidents may add insignificant amounts, but the fact remains that part of that radiation stays active for years to come and joins up with the next 'insignificant release', and the next, and the next...

Inbetween the two extremes, and depending on where the reactor is and which way the wind is blowing, releases may contaminate people, animals, farmlands, buildings, and oceans to infinitely varying degrees.

All of which is harsh and very unpleasant, but has to be weighed against the even harsher fact that if the world wants energy, a price has to be paid. Whether it gets it through coal, gas, oil, or nuclear power, which are the only practical options as yet open, that price is necessarily payable in lives and environment.

Which begs the question of whether the world *does* want more energy...

PLEASE TURN OVER

We know everything about radiation -except what matters

SCIENCE knows an enormous amount about radiation: the length of different waves; how long they live; which ones change which atoms which way... It has even invented a whole new vocabulary to measure it. Rads, rems, curies, roentgens.

What science doesn't know about radiation... is what is most worth knowing.

It doesn't know what effect radiation has. It causes cancer, true, but where, and how much? It could be that all cancer is caused by radiation. Or perhaps half, or a tenth, or hardly any. It could be that the symptoms of old age are in fact a result of prolonged exposure to radiation. It could be that all or most malformed babies are the result of radiation damage carried by the mother, perhaps originating centuries back. It could also be that radiation is what causes evolution, or causes genius.

In particular we don't know whether constantly increasing low levels of man-made radiation in the atmosphere are having any practical effect on man or his environment — or whether at some future stage the effect will begin to be felt.

So far, the proportion of man-made radiation is tiny. For all of history, man has been exposed to natural radiation, which was probably higher in stone-age times than it is now.

Modern man's average dose varies from around 100 millirems a year at sea level to around 130 at high altitudes. In some places, like Colorado and parts of Brazil, those levels are doubled or more.

Barring accidents, a nuclear reactor only adds 5 millirems or less per year, and most of that is confined to its immediate environment (Koeberg, with two reactors, will add up to 10). A person gets more than that from a flight to Europe, or from watching TV twice a week, and up to a hundred times as much from an X-ray.

Critics ask what would be done if the actual emissions did start to trickle over the limit. Would the powers that be just shut up shop, or what? Fair enough. With a few thousand million rand tied up in the operation, the kind of bland reassurances given by the nuclear establishment ("safety will come first" is the theme song of SA's atomic energy boss, Dr Wynand de Villiers) might slip somewhat in practice.

In any case, there's still that very large volume of what we don't know. Like: how much of that small extra intake stays on in the body, to be added to next year's small intake and the years after's...? And how much bigger is each successive year's own new dose? And above all: when, if ever, will it start to show demonstrable effects? ■

The police state and the cloak of morality

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And therein lies a set of conflicting human values which makes most of the traditional social disputes look straightforward.

At one level, it's a matter of attitudes towards authority — a conflict between those whose inclination is to believe that the authorities know best, and those who believe that if the rulers are doing it there must be something sinister in it.

Question radiation danger levels, and the stock reply from the pro-nukes is: "If there was anything wrong, the government wouldn't allow it". Point to the absence of firm evidence of damage and the anti-nukes reply that the government is obviously suppressing that evidence. The anti-nukes automatically believe that the plutonium which has gone missing from the nuclear fuel cycle (somewhere between 1% and 0.001% depending on whose figures you choose to believe) has been abstracted by government for weapons purposes. The pro-nukes believe it is a function of routine accounting errors.

There's a conflict of lifestyles; between those who argue for a return to a



gentler form of life and a revival of humanitarian values, and those who want more of the kind of progress the 20th century has known best — economic growth. Religion, the supernatural, and man's concept of how big or small a part he has in nature all come in to it. There are those who believe that we've tampered enough with the environment, and fear that nuclear energy is pushing man's presumption over the edge, and there are those who are riding high on a kind of scientific opium trip induced by what nuclear science does for man's ego. (Nuclear pioneer Enrico Fermi is reputed to have told critics: "Don't bother me with your scruples: the thing is superb physics.")

It's a conflict of expectations. There are those who take it as their right to be able to push buttons or turn switches for everything from neon lights to electric banana peelers, or to look forward to having those buttons and switches in their grasp in the future. And there are those who believe they have already taken too much from the technological christmas tree.

The anti-nukes scorn the establishment's 'science-will-fix-it' promises that a surefire method of disposing of wastes is just round the corner. In their turn, the anti-nukes blithely assume that solar energy is about to become viable — and the establishment laughs this off as wishful thinking. The patterns of predictability have smaller symptoms too: wander around Koeberg and you'll be offered a cigarette in nearly every office; call on the opposition and as often as not you find yourself face-to-face with a 'thank you for not smoking' paperweight.

The greenhouse problem

ONE of the oddest sidelights of the energy quandary is the theory that the carbon dioxide which is given off by burning coal is creating a 'hedge' around the earth's atmosphere.

This hedge, the theory runs, allows the sun's rays in, but interferes with the earth's heat bouncing back out again — in the same way that the glass roof of a greenhouse retains heat inside.

Ultimately, the Greenhouse Effect could heat up the overall temperature enough to melt the polar ice caps. This would raise sea level by metres or tens of metres, with unhappy consequences for coastline dwellers.

In fact, the earth's temperature has dropped, very slightly, since reaching a peak in the 1940's. This may disprove the Greenhouse theory. But it may also suggest that the ash which is

produced by that same coal-burning process is neutralising the effect by obstructing the sun's downward rays.

The latter is more generally accepted, and the marvellous ability of the two effects to cancel one another out would be a great solace were it not for Catch 22.

The carbon dioxide is very much longer-lived than the ash particles. So if the rate of coal burning diminishes, all the built-up carbon dioxide will still be there to exert its effect, but the supply of ash particles will no longer be there to hide it.

Which leaves the possibility that after the day arrives when coal-burning is a thing of the past, and maybe coal itself is a thing of the past, man may have to find something else to burn in order to keep the level of ash in the atmosphere high enough to prevent the Greenhouse Effect. ■

Above all, it's a political conflict.

Nuclear opposition has become perhaps the biggest single platform in the liberal/left package deal of the Western world, and the cry of *No Nukes* a password of moral respectability.

The construction of the platform runs something like this:

Plank one says that much less energy is needed than officialdom alleges, and that governments overstate the needs in order to boost the getting-and-spending ethic.

Plank two says that the nuclear effort is a plot to keep profits running into the tills of the mega-corporations, and from there to the government as tax. Whereas



British cartoon headlined "Exercise in double morality".

solar energy, which is presumed to be democratic and less susceptible to centralised control, would benefit the public instead of the corporations. Ralph Nader, among others, argues that the solar prospects are being underplayed for this reason. We should not have to "wait until Exxon owns the wind or the utilities (electricity supply companies) can put a meter on the sun" before solar energy is properly explored, says Nader.

Plank three is that it is irresponsible to have so dangerous a toy as nuclear energy in the hands of private enterprise.

Plank four is the warning that a plutonium economy leads inevitably to a choice between dictatorship and nuclear anarchy, since plutonium cannot be safeguarded adequately without a police state; and that it ultimately ends in nuclear war, since the spread of plutonium is bound to leave some in armongering hands even if it isn't intended to. It is often claimed, too, that nuclear energy is really a cover-up for the real purpose of acquiring nuclear military capacity.

(55)

Those arguments offer a set of moral positions which are easy to identify with, and several nuclear supporters are concerned that they have come to be seen as grasping ogres who are suppressing the title man's interests for the sake of commercial gain.

US Senator James McClure complains that the opposition has "wrapped itself in the cloak of morality", and laments the supporters' inability to put across the idea that the provision of power is also a moral need. He points out that the opposition movement is led by moneyed intellectuals, and goes on to claim that their real motivation is to stop economic progress in order to keep their privileges exclusive.

More commonly, nuclear proponents ascribe directly political motives to the opposition. "Their real aim", says Bernard Oliver, vice-president of the Hewlett Packard corporation "is to

subvert the West by prohibiting it from providing for its own energy needs."

The claim that private control leads to slippery safety standards (which does not apply to South Africa) is fortified by Three Mile Island itself, as well as some previous accidents. TMI 2, the faulty reactor, was pressed into service on December 29, 1978, despite enough teething problems to have given many of its staff the heebie jeebies. "If your lights blow every time you turn the toaster on, you call an electrician", one of its staff

told Time magazine. It later turned out that the owners had saved over R20 million in tax rebates and depreciation allowances by commissioning the reactor before the end of the year.

But the problem is not confined to capitalist greed. The only serious nuclear accident to date took place at Knyshtrym in Russia in 1958. Very little is known about it, and in fact nothing at all was known to the West until nearly 20 years afterwards, but it is generally believed

PLEASE TURN OVER

Supernuke on the skids

THE atom's friends and the atom's foes agree on one thing: that without the Fast Breeder Reactor (FBR), nuclear energy is a lost cause.

The present generation of reactors - "thermal" reactors - is making hefty inroads into the world's supply of uranium; and left to itself would exhaust the reasonably accessible stock some time between 1995 and 2020.

So in steps a wondrous solution - the FBR, known to the irreverent as Supernuke. Two of the FBR's special features are that it feeds on the plutonium manufactured by thermal reactors and that it not only creates power with what otherwise would be an awkward waste, it also uses it to breed more plutonium and fuel itself on and on forever, like some ghostly supercharged camel eternally re-chewing its own regurgitated cud. With a full complement of FBR's, the life expectancy of uranium would extend by more than 2 000 years.

Unfortunately, those aren't its only special features. Among the others are such complications as that it is cooled by liquid sodium, which reacts violently with air; and that it may be theoretically able to explode as a nuclear bomb. It is also generally bedevilled by a host of technical problems.

Moreover, the FBR occupies a special place in the seventh hell of anti-nuke outrage, largely because it is widely (but wrongly) believed to bring plutonium a step closer to becoming weapons-grade material.

The outcome is that only one of the world's five FBRs is in anything like successful operation. (That one, in France, is appropriately named Phoenix).

The FBR's fans argue that it does more to solve the plutonium problem than to aggravate it. Wherever an FBR replaces a thermal reactor, it actually reduces the quantity of plutonium wandering around. An average sized FBR would take 31 years to produce enough to fuel a new FBR, whereas a thermal reactor would produce the same amount of plutonium in 17 years.

Dr Walter Marshall, of the British AEA, outlines an idyllic result. The most advanced countries develop FBRs, and an interest in buying plutonium from the middling-advanced with thermal reactors, who can demand a high enough price for their plutonium to make it worth their while not to set up rival FBRs, and the least advanced don't have a huge fight on their hands to get hold of the remaining coal which the big boys would be hogging otherwise.

CONTINUED

that it was the aftermath of sloppy procedures at a military base working in haste to offer Stalin a bomb for his 70th birthday several years earlier.

In theory, nuclear installations are closely inspected by the International Atomic Energy Agency, and the industry makes much of the fact that it is uniquely highly regulated. But there is plenty of doubt as to how effective the IAEA's routine control is. In 1976, the IAEA had a budget of \$36 million, of which only \$6 million went to the safeguards division; and there was a staff of 110 to police the world's entire nuclear system.

The other political anti-nuke arguments are open to logical criticism. True, nuclear energy is a long way from 'democratic'. But so are all the forms of power-producing solar energy which so far seem even distantly viable. These would also entail huge capital costs — one proposal is for a solar satellite — and none are any more capable of being rigged up in the back yard at weekends than is a nuclear reactor.

True, plutonium could be injected into water supplies by psychopaths, and could be diverted to weapons use by terrorists or by governments. The threat to pollute water is a staggeringly potent one, even though it would take 30 years or so before any results showed.

And reactor-grade plutonium is still a long way from becoming weapons material. The existing technology for converting it is so large and complex that it is only in reach of a few major governments. Plutonium has in any case been transported around the nations of the industrialised world for the past 35 years, with not much visible evidence of creeping totalitarianism as a result.

How closely nuclear energy is bound up with ulterior military motives is a matter of dispute, and varies from one country to another. Nuclear energy supporters used to argue that the two were totally separate, but India kiboshed that argument in 1976 by exploding a bomb made from uranium supplied by Canada for a power reactor.

In the case of countries like India and Pakistan, whose access to the overall nuclear cycle is limited to their power reactors, there is room for the allegation that the spread of plutonium does contribute to the proliferation of nuclear weapons. But those who argue that South Africa's real purpose in developing Koeberg is to arm itself are ascribing much more than false motives to the government. If that was the intent, other

methods are available for South Africa to produce weapons infinitely more cheaply, efficiently and secretly.

Whereas the secondary political arguments against nuclear energy display flaws, the central one displays nothing less than breathtaking arrogance.

This is the claim that the world does not need a big increase in the energy supply.

Whether or not it is true that countries like the US and the UK are getting near to an energy saturation point, it certainly is not true of the world as a whole, and not true of countries like South Africa.

Nuclear energy supporters take it as axiomatic that more energy means a higher standard of living. Critics, led by American writer Amory Lovins, counter that the world has ensnared itself in a technological whirligig for which it cannot find the stop button. Many go further, to say that human and spiritual values have been lost because of it.

The perspective is one thing in America, where it is standard to lug jerseys around on fine sunny days because excessive air-conditioning makes it too cold for comfort indoors. But there is a certain irony in the sight of people who have had instant access to everything that turns on and off now turning to the third world to say: "well we've tried it and it didn't bring us the great society, so you try something else."

What's wrong with coal?

What's the rush? Why not stick to coal power, especially in a country like South Africa, which has zillions of tons of coal on hand?

The nuclear fever must be for hidden reasons, claim the knowledgeable, and the cynical. Either there is some sort of nuclear fixation, a keeping-up-with-Uncle-Sam mentality, or there is an underlying military purpose.

Maybe, maybe. Who's to know what tunnels of psyche and of strategy lead off the corridors of power? But if there's an underlying military aim, it's lying a long way under. That's not necessarily to assume any great purity of soul; merely that where science is advanced and resources considerable nuclear energy is of only marginal help to nuclear militarisation.

True, the reasons Escom gives for going into Koeberg — such as that it will liberate the Cape from dependence on imported Transvaal power — do not ring with urgent conviction. But then, they aren't meant to. Escom makes it clear that it sees Koeberg as a prudent piece of foresight rather than a compelling immediate need — and it will also save much of the wastage which currently goes into long-distance electricity transmission.

Nuclear power should turn out cheaper — either already or in the near future. In America, according to Consolidated Edison's figures, nuclear powered electricity costs 1.5c per Kilo-watt-hour; coal-powered 2.3c; and oil-powered 4c. The trouble is that it's virtually impossible to work out the figures accurately, since a large part of nuclear costs is veiled by government research expenditure and capital expense on uranium enrichment.

In South Africa, unless Reagan does an about-turn on Carter's refusal to supply processed fuel pellets until SA signs the non-proliferation treaty, Koeberg may have to rely on the limited supply from Valindaba, which is being extended for the purpose, but is still a long way from being able to power Koeberg effectively.

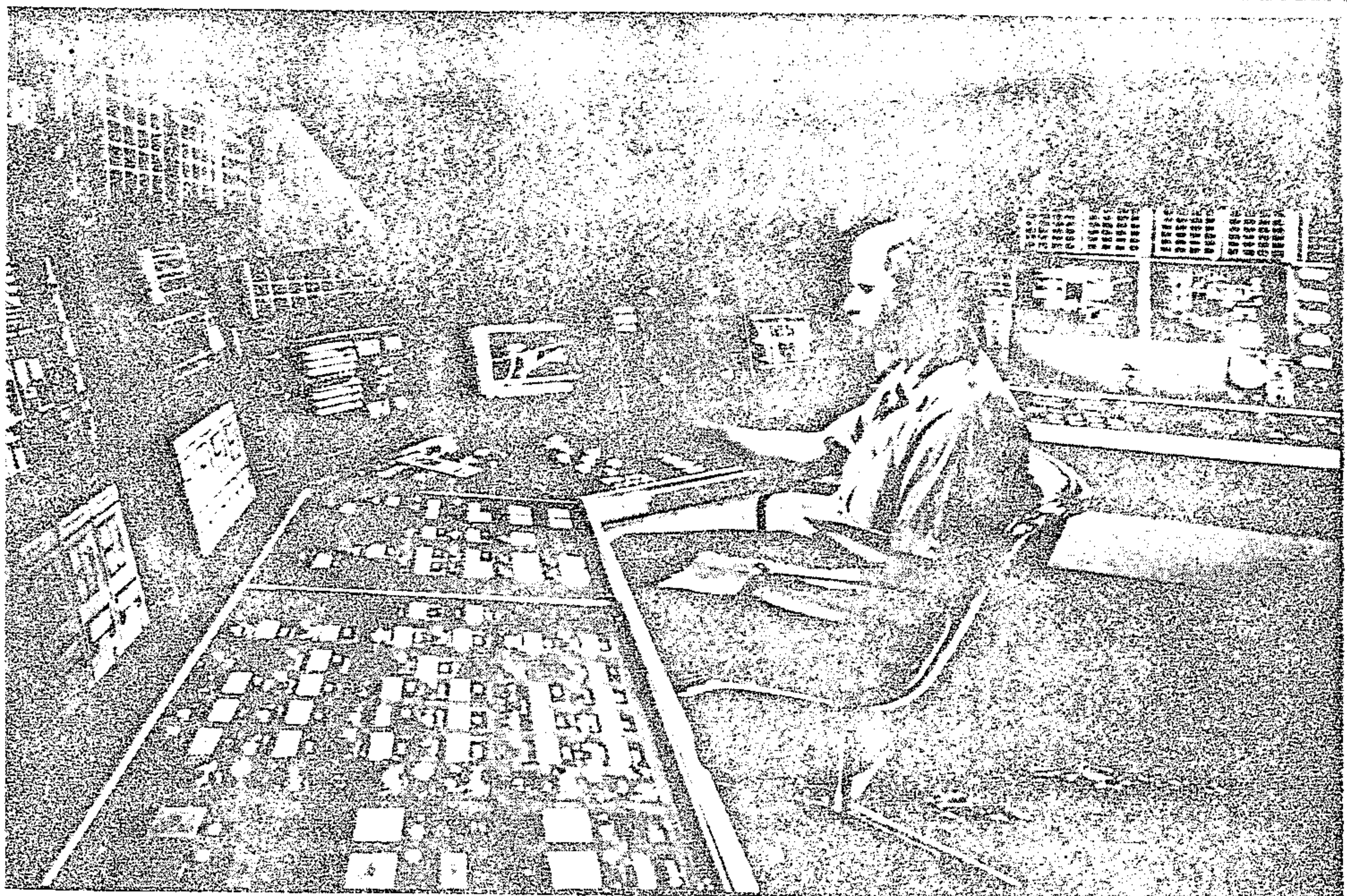
Whatever the actual reasons, there are cogent human and environmental considerations. Nuclear power may yet cause destruction, but coal already has. Literally thousands of people have been killed mining it, and if the victims of black-lung disease are included the figure may be millions.

Coal is king-size pollutant — and a coal station Koeberg's size would burn 16 000 tons a day. It also produces its own output . . . what else but radiation! Coal's radioactive habits have somehow been forgotten in the fu-

ture over nuclear radiation, but they are substantial. General Austin Betts, one-time Pentagon warlord turned nuclear industrialist, calculates that the radioactivity in coal ash is 180 times as much as that which would normally come from a comparable nuclear plant. Either his calculator batteries were running flat or he's on to something that could be big. In any case it seems to be established that depending on the type of coal involved, a coal station directly emits more or less the same quantity of radioactivity as a nuclear station of equivalent power.

And coal is running out. Precisely when it will run out, no-one knows. Some projections allow as much as 200 years; others less than 100.

But the real question, as Sir John Hill, chairman of Britain's Atomic Energy Authority, points out, is not when the last lump of coal, or the last drop of oil, is mined. Both coal and oil are needed for chemical purposes for which there is no substitute, like making plastics and fertilisers. Moreover, there will come a time when mining them is a net energy drain. That is: no matter how high the price and the operating company's profit, the amount of energy required to extract increasingly inaccessible reserves will be greater than the energy those reserves supply.



Let alone the ethics, there are obvious political consequences too. Some soft energy enthusiasts argue that Africa, and South Africa's black townships, provide an ideal foundation for a new direction. Instead of electrifying them, provide solar energy and give the people the satisfaction of being the first to be leapt into the future. The small print, though, would include such clauses as: but preferably get home at midday for your main meal; don't have too many people in your house because they'll use up the bathwater; keep your candles and your paraffin for light; and don't expect a hot bath on dismal days. In the circumstances, it seems a bit much to expect the poor to be entranced about leading a way which the rich might be following in a few decades time.

Population growth in the most advanced nations is slowing, to very near zero in some European countries. But in the rest of the world it is possibly at the highest rate ever, since medical advances have eliminated several long-standing killer diseases but economic advances have not been enough to reduce the bread-winning incentives to have several children. Without nuclear energy, estimates Dr. Walter Marshall of the UK Atomic Energy Authority, then even with the most optimistic energy development from other sources there will still be a 25% decline in energy available per capita over the next 50 years. And most of that loss would inevitably come from the

Star bores

The control room of a thermal reactor. Despite the Star Wars effects, operator boredom is a major problem. Some nuclear authorities have suggested that minor problems should be staged, to keep operators on their toes.

people who have the least to lose.

Even with nuclear power, the third world is at best likely to find itself stuck within a new dependence relationship, but at least is not doomed to be caught on the losing end of a vicious battle for an ever-diminishing supply of energy resources.

And without nuclear power, say nuclear supporters, that's what we're certain to get. With or without nuclear energy, the atom bomb cannot be uninvented. But without nuclear energy there will sooner or later be plenty of incentive to use it. With States scrapping over dwindling energy resources, they won't be inclined to stick to the Queensberry rules - there's the real invitation to nuclear war. And with citizens scrapping over who can use a vacuum cleaner and who can use a power drill - isn't that the real invitation to the police state?

But is it that bad? Well, not for a while yet, and with effective conservation not for a long while. What it boils down to is a race against time - a question of whether solar power comes into its own before the crunch comes . . .

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Wiring up the sun

*I've done it, we've won.
I've invented a light that plugs into the sun.
The light is bright, the sun is strong;
All I need is a cord that's long.*

55

The sun is the ultimate power generator. Pre-installed and set to run without care or maintenance for the next few thousand million years, the energy it sheds over a handful of Highveld farms is ample for the entire continent's power needs.

Understandably, the quest for solar energy is pursued with religious fervour.

On the one hand, there's the noble, benign sun, man's source of cheer and sustenance through the centuries. On the other, a dark villainous process initially devised for the very purpose of

magnifying man's ability to destroy himself: even now so fearsome that it has to be locked behind unearthly barricades where its controllers are driven to ever more frantic efforts to promise it can be kept; plunging everybody into awe and trembling lest it might break out.

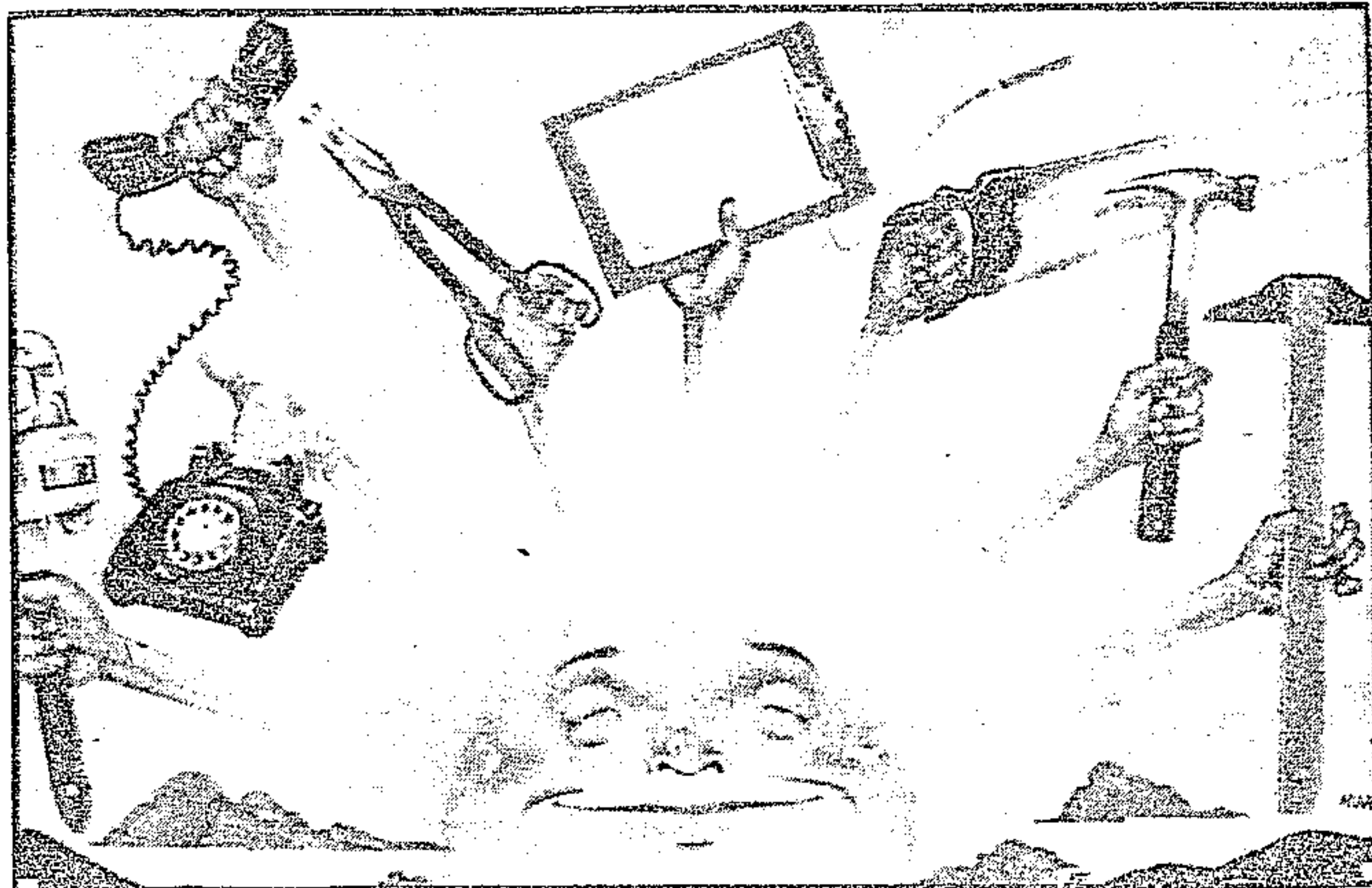
On the one hand, the innocent solar collector, harmlessly perched on a rooftop and quietly gathering sunlight. On the other, grim castles of concrete, guarded night and day by guns and dogs and radar systems...

Emotionally, there's no contest.

There is a snag, though. So far, solar technology is only good at one thing: heating water. (Even then, it tends to offer the hottest water at the wrongest times.)

Soon, it will also be a practical provider of air conditioning; and at a pinch, it can stand in as a substitute for handier ways of cooking food. (Fun for campers, especially when there's a steakhouse nearby for refuge in rain or at night; but not likely to make top of the hit parade around the paddy fields and peasant farms.)

Solar powered electricity does exist, technically, but at enormous cost.



A cheerful image, but it relies on technology that is still out of reach.

Expenses are continually coming down with new scientific advances, but solar electricity is not yet within sight of providing practical power for as much as a transistor radio, let alone a lathe or a drill or a production line.

It may be that solar technology is on the verge of the great breakthrough. It may be that solar energy's equivalent of the silicon chip, which suddenly and cheaply brought the computer into household use, is just round the corner. It may be that the Newton or the Einstein of solar science is even now bent over test-tubes and slide-rules in some obscure laboratory, putting the finishing touches to the most important discovery since the wheel.

None of that is certain. But there are two things which are certain:

*That solar energy, with its affiliated renewable sources such as wind and wave power, offers the only wholly satisfactory energy prospect there is;

*That the overall quantity of official effort put into exploring it can at best be described as token; and at worst, contemptuous.

Government and energy authorities claim that the alternative sources of energy have not reached a stage where more investment would mean greater results. Several of the best brains on earth are working on the issue, they say, and nothing more can yet be done.

It is debatable whether that adequately explains away the derisory sums which

are spent on research. (The British government recently announced with pride that expenditure was up from R1 million in 1975 to R18 million - not much more than 1% of the cost of a single reactor - this year. Germany is up from R5 million to R30 million). Even if it does, the widespread disdain of the existing solar contribution is beyond comprehension. So is the lack of official enthusiasm in promoting public awareness or interest in conservation and solar possibilities.

Even though today's solar technology has only one use, that use is a remarkable one.

Low-level water heating accounts for over 30% of total energy consumption in all societies, and in some societies very well over 30%. And it is a task distinctly unworthy of electric power.

Electricity is a wasteful form of energy at the best of times. It loses power in both production and transmission, and finally delivers somewhere between a half and a quarter of the energy that went into it. Its value is its unique ability to provide flexible high-grade power. It is not a thing to be tossed around lightly. Using electricity to heat bathwater is, in

the standard phrase of the conservationists, like using a cannon to swat houseflies, or a chain-saw to cut butter.

Solar heating can be used effectively in tandem with electricity. The solar unit handles the preliminary work and the current then cuts in to make up any shortfall in temperature (which in domestic application is on fine days usually nil).

The system represents a long-term saving to the householder; and the term need not be all that long. A basic solar unit can now be supplied for less than R200.

Done on a large scale, it could liberate something in the vicinity of a quarter of the existing reservoir of electrical power for more fruitful purposes.

Why isn't it done?

Because the tax structure is unfavourable, suggests Wits University professor Wally Kopp. National Building Research Institute director Dr. T. L. Webb points out that for many local authorities the provision of electricity "is a revenue-earning service, with the result that they are not really interested in saving electricity." The Naderites say simply that is because the guys who make the rules would stop making the money.

Solar energy will, or must, or should, turn out one day to offer man salvation. But it would be a big mistake to rely on

Man-made suns

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MUCH of the magical cure-all mystique which has palled in the case of nuclear fission is now being transferred to the reverse process — nuclear fusion.

A fusion reactor works like a small sun. It has in common with fission the principle of re-structuring atoms, but whereas fission breaks atoms apart to create its energy, fusion joins bits of atoms together, just as the sun does. It could, theoretically, offer the advantages of a controlled, 24-hour-a-day mini-sun with all its energy harnessed and fitted to power demands.

Fusion is often presented as the *real* ultimate source of safe and limitless energy, but it is still a thing of the future.

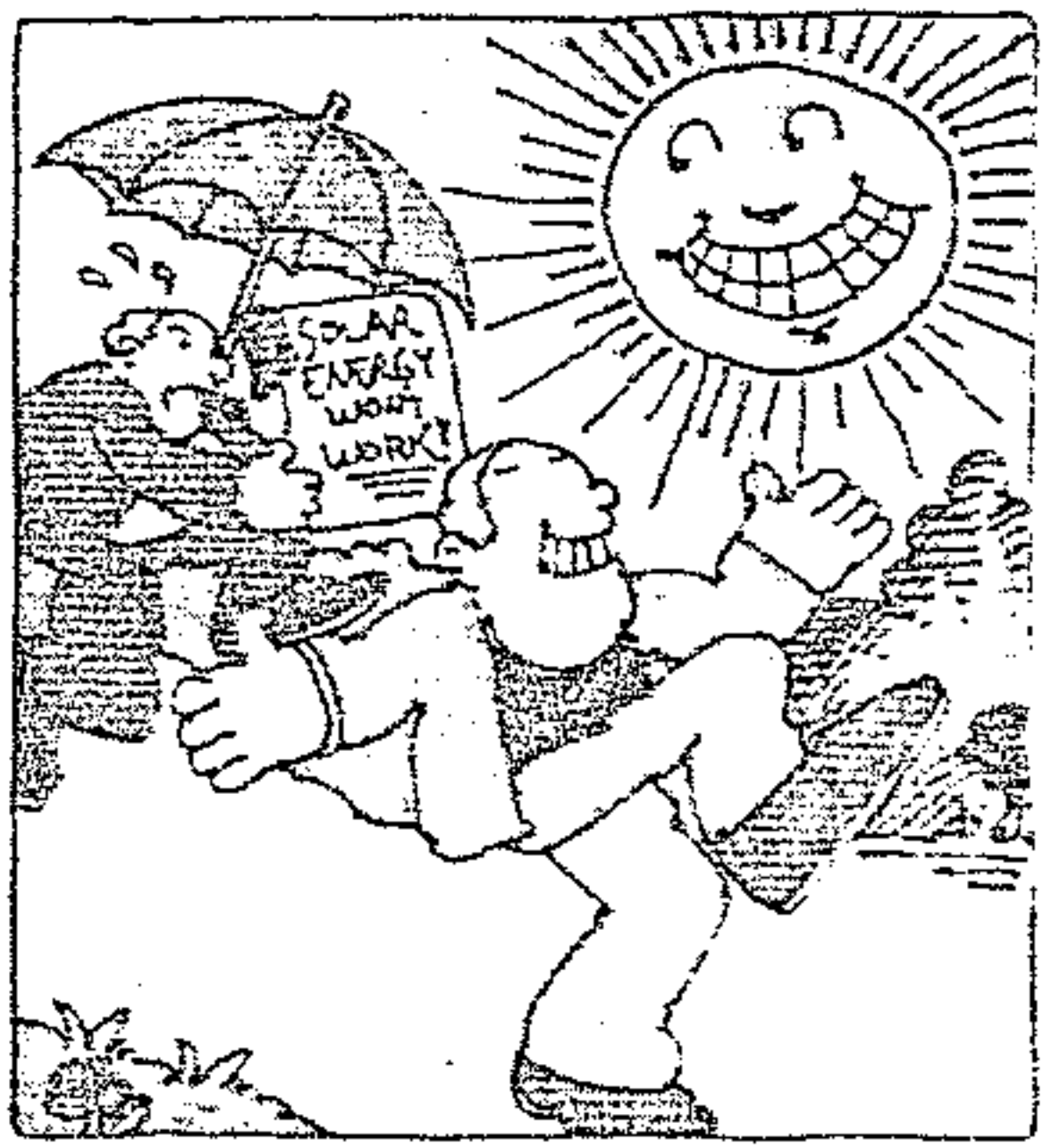
Naturally, there are problems. So far, only one form of fusion reaction is in sight. This is the deuterium-tritium (d-t) reaction. It is the 'easiest' of the three possible reactions to achieve, but is also the least clean and would not put an end to the manufacture of radioactive wastes. It is the other two processes which are truly clean.

Fusion is often believed to need no other fuel than hydrogen, which is abundant as seawater. But this too is only true of the other processes. The d-t reaction feeds on lithium as well, which is no more plentiful than uranium.

All three reactions require mind-bending temperatures. The d-t reaction occurs at 100 million degrees celsius; the other two at 3 000 million.

Impossible as it sounds, five countries — including South Africa — have achieved a 'stable plasma' condition, in which a d-t reaction can take place. All of them have worked on variations of a Russian device known as Tokamak, which uses a magnetic field to hold the hot plasma in place (South Africa's Tokamak has been given the indigenous nickname 'Tokoloshe' in recognition of what the SA Journal of Science describes as its "complex and sometimes even inconsistent behaviour").

Fusion research is marked by a unique level of international co-operation, and some of its scientists believe that practical fusion power generation may be on the cards by the beginning of the next century.



that day being tomorrow, or even the day after. In the meantime it has a much greater role than it has been credited — as does energy conservation.

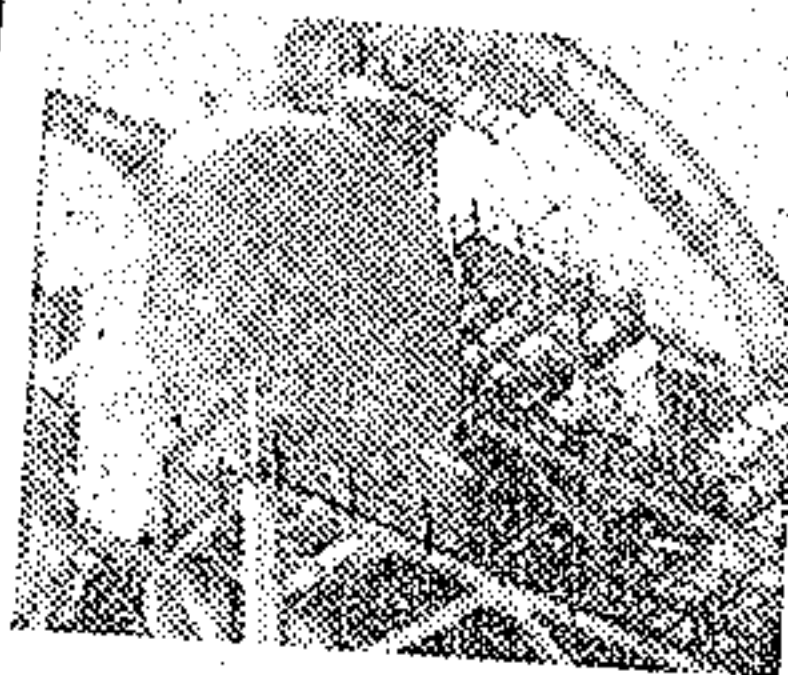
Even with the best possible use of both, *and* of coal, *and* of nuclear power, there is still room for doubt as to whether the world will become a better place over the next half-century or so in terms of that scale of measurement which the vast majority of its human inhabitants consider most important.

The nuclear dangers remain unresolved, and it is not beyond the bounds of possibility that the verdict of the next millenium may be bitter towards the captains and the kings of the late twentieth century: they who crossed their fingers and delivered the future into the ineradicable grip of a force they weren't sure could be kept tame.

But it's not hard to imagine the verdict of the next generation if it should turn out that they hesitated too long.

CHRISTMAS
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TIME YOUR
FRIENDS WILL
APPRECIATE GIFT
SUBSCRIPTIONS TO
FRONTLINE

SASOL



hit by ^{S. TIMES}
~~14/1/83~~
 shortage
 of ⁶⁵ ~~2/3~~



SKILL

By DAVID JACKSON

SOUTH AFRICA is halfway to self-sufficiency in fuel — thanks to its oil-from-coal technology.

But now there's a snag. There just isn't the skilled manpower to run a fourth Sasol plant.

In common with other key industries, Sasol is being hit by the dearth of top technical personnel.

Strategists believe that the looming prospect of oil sanctions against South Africa and soaring crude-oil prices may force the Government to go ahead with a Sasol 4 project. But the manpower shortage is a critical factor.

While big South African firms such as Sasol have had some success in recruiting qualified staff from overseas on short-term contracts, skilled manpower remains a pressing priority.

High on the wanted list are technical boffins such as chemical and electrical engineers.

A Sasol spokesman said this week: "We do need these qualified people desperately. There are no plans for a Sasol 4. We are fully committed as far as manpower and finance is concerned."

Sasol 2 is expected to be in full production by the end of 1981. Sasol 3, now under construction, is expected to come "on stream" by 1982/83.

Sasol's spokesman told the Sunday Times this week: "South Africa's shortage of skilled manpower has been aggravated by the recent upturn in the economy."

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manpower has been aggravated by the recent upturn in the economy.

Manpower challenge

"Sasol faces a major challenge in finding and training the necessary skilled manpower to complete the construction of Sasol 3.

"An even more formidable task is the recruitment and training of personnel required at all levels for the operation of Sasol 3."

Overseas recruitment of technical staff has partly solved the problem — but not nearly enough to meet the demand.

And some foreign contract workers find difficulty in adapting to South African conditions.

Sasol said this week it had been fairly successful in overseas recruitment, mainly in Britain and in Israel.

More than 100 people had started work at Sasol, while a "few hundred more" had accepted offers and were on their way.

While admitting to the manpower problems, Sasol says it is confident of meeting all its target dates in the ambitious R6 000-million programme.

Said the Sasol spokesman: "We achieved considerable success in the manpower field on the Sasol 2 project."

Training programmes

"In the process of its construction we trained nearly 10 000 previously unskilled labourers as fully skilled workers and many thousands more as semi-skilled workers.

"Many of these people were absorbed into the economy after completing their jobs at Secunda."

The total cost of training programmes for Sasol 2 and 3 (construction and operations) up to 1983 had been estimated at R63-million.

Training programmes had also been speeded up and extended.

At the Sasol 1 works, on-the-job and classroom training programmes has been considerably extended "so that the shortfall of fully qualified personnel will be eliminated in the shortest possible time," the spokesman said.

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Tense Opec to raise oil price

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15/12/70

BALI — In an atmosphere embittered by the war between Iran and Iraq, the 13 nations of Opec were today moving towards a higher price for their oil, which meets half the needs of the non-communist world.

But the question at the talks on the Indonesian island of Bali — the first full-scale meeting since the war began — is whether the price rise will be a controlled reaction to the 14 percent loss of Opec exports from its two warring founder members.

The alternative is a free-for-all, pitting Opec's "hawks" like Libya and Algeria against the producing power of Saudi Arabia, which has increased its output to 40 percent of Opec's total to help stabilise the world's economy.

Early this morning, a six-nation committee comprising Iraq, Iran, Indonesia, Venezuela, Libya and Saudi Arabia decided to leave the Gulf war and the imprisonment of Iran's Oil Minister by Iraq off the agenda for today's full meeting.

STRATEGY

The committee was a saw a compromise solution after an informal dinner for all the delegations last night which almost led to blows between Iraq and Iranian delegates.

It remains to be seen to what extent Opec's political tensions affect the discussion on prices, but a price rise seems inevitable.

The path of control was spelled out yesterday by Venezuela's Dr Humberto Calderon Berti in a call for introduction of the organisation's long-term strategy.

Dr Calderon envisaged a two or three percent rise in the real price of oil over the next year by a quarterly index of Western currency fluctuations, inflation and economic growth.

INFLATION

But in actual terms, the price rise would be around 15 percent through the expectation of 13 percent industrial world inflation, two percent fall in the value of the dollar, and nil growth in members' gross domestic product.

The Algerian Minister, Mr Belkacem Nabi called for a 15 percent increase "to combat inflation." — The Guardian-Sapa-Reuter-AFP.

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Has a degree in Operations Research from Tilburg, Holland. He has been with Shell International for 10 years and worked for that company as an international consultant in several countries around the world. His experience includes the design and development of systems for financial management, ma

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CURRICULUM VITAE

Opec oil rise: SA to wait and see

17/12/80
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By Mike Derry

Petrol companies in South Africa have adopted a "wait and see" policy on yesterday's announcement of a 10 percent increase by the Opec oil ministers to a maximum price of 41 dollars a barrel.

Spokesmen for the major oil companies pointed out today that the price of petrol in this country is controlled by the Government.

They said they would have to wait for a Government decision.

The Opec price increase would not necessarily affect South Africa whose oil is bought on the spot market.

A price increase in this country would also depend on the state of the Stabilisation Fund, one spokesman said.

The impact of the increase would undoubtedly be felt in South Africa, the deputy director-general of the Department of Mineral and Energy Affairs, Dr D C Neethling, said in Pretoria today. But he was not prepared to comment on when or how a new pricing formula could affect the South African situation.

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Oil Ministers Agree On 10% Rise

R.D.M.
12/12/80
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THE world's major oil exporters raised minimum and maximum price levels yesterday in a formula likely to lead to an average 10% increase.

The new levels were announced by the Secretary-General of the Organisation of Petroleum Exporting Countries, Mr Rene Ortiz, at the end of an often stormy two-day meeting of Opec's Oil Ministers in Bali, Indonesia.

The source of South Africa's oil is a closely-guarded secret, but the increases threaten to eventually ripple through to local consumer prices, reports ROB MEINTJES. "The consumer will end up having to pay higher prices at some stage," an oil company executive said last night.

But Mr Merton Dagut, deputy general manager and chief economist of Nedbank, said he did not think the increase was big enough to warrant price rises at petrol pumps in South Africa.

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The fuel price is Government-controlled, but official spokesmen were not available yesterday for comment on the likelihood of fuel price increases.

Saudi Arabia, the world's biggest oil exporter, has already announced a \$2 per barrel increase to \$32, which will become the marker, or benchmark, price under the new formula.

A second tier sets a limit of \$36 a barrel for crudes of similar quality to Saudi light, mainly from the Gulf region, while producers of premium quality oil can set their prices at up to \$41 a barrel.

The new accord appears to leave the Saudis free to move higher than \$32, which is what

\$41 a barrel.

The new accord appears to leave the Saudis free to move higher than \$32, which is what other Opec want in order to avoid being undercut when supplies are plentiful.

Oil analysts attending the conference said that if all members raised prices to their average Opec price of \$32,20 per barrel.

However, the Venezuelan Oil Minister, Dr Humberto Calderon Berti, said he doubted producers would raise their prices to the limit.

He predicted the North African producers, whose crude oil is considered the best and who had been getting \$37 per barrel, would not go higher than \$40 per barrel.

Dr Calderon also said consumption was likely to drop.

"I think consumption is going to be reduced a little, which is good for everybody, maybe 2-3 million barrels per day for 1981, 1% less than 1980 consumption for the industrialised countries."

No time limit was set for the new price rises, but Dr Calderon said he expected them to take effect on January 1, 1981.

The speed of the Opec agreement was a surprise, coming only hours after the Iran-Iraq war threatened to scuttle proceedings.

At the opening ceremony, the Iraqis attempted to dramatise the three-month war by placing a large portrait of the captured Iranian Oil Minister, Mr Mohammad Javad Tondguyan, on his empty chair.

But the oil envoys avoided a debate on the war that could have split the 20-year-old cartel and confined the Iraqis to making a statement on it as the last item yesterday.

"If we try to involve political issues in our organisation, I am sure we will not survive," said Mr Mana Saeed Otaiba, Oil Minister for the United Arab Emirates.

The Indonesian Oil Minister and new Opec president, Dr Subroto, said the next meeting of Oil Ministers would be held in Geneva, Switzerland, in May.

"We haven't said anything about how long this price will prevail and this of course will depend on the general demand and supply situation and will be reviewed if necessary from time to time."

The oil company executive said price increases by oil-producing countries inevitably had an impact on all oil purchases, including those made by South Africa, wherever the country obtained its oil.

How soon the effect of the Opec increases would be felt depended on oil stocks in storage facilities, obtainable at prices which applied before the increases.

Mr Dagut said Europe, faced with a fairly large oil price increase (in terms of their currency) and a severe winter, would have to find dollars to pay for the oil deficits. This meant Europe would be even more likely to go in for "sluggish" economic conditions, providing a soft market for non-gold exports from South Africa. — Sapa-Reuters, UPI.

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BRAAMFONTEIN

Nato war plans take in the Cape oil route

Own Correspondent

BRUSSELS. — The Secretary-General of the North Atlantic Treaty Organisation, Dr Joseph Luns, says the 15-nation alliance has made contingency plans to defend the Cape oil route in time of war.

The disclosure came after Nato defence and foreign Ministers had discussed the critical situations over Poland, the Iraq-Iran war (with its threat to Western oil supplies) and the Soviet intervention in Afghanistan.

Dr Luns was asked by an interviewer if Nato's members were actively involved in action to safeguard the routes used by tankers carrying Middle Eastern oil to Western Europe, Japan and the United States.

With the Soviet submarine and surface naval presence strengthening in the Indian Ocean and South Atlantic there has been heightening concern in allied and pro-Western capitals, since Russia's thrust into Afghanistan a year ago, that the oil routes may be in peril.

The Soviet Union, through President Leonid Brezhnev, has consistently denied any intention to interfere with those sealanes.

In reply, Dr Luns, once Holland's Foreign Minister, said:

"Let me remind you of the fact that, as soon as there were to be a war, the frontiers (of Nato) would fall, so we would have to take measures outside the Nato area too.

"Second, we (Nato) have made contingency plans to defend the Cape route in time of war — but without having any contact with the countries of Southern Africa, or indeed of Africa."

The implications of Dr Luns's statement are far-reaching.

They appear to go a considerable way towards meeting South Africa's long-standing quest for Western guarantees and support in what is perceived to be a shared interest in keeping the oil lanes open.

South Africa would prefer a formal treaty or some other arrangement that would identify its security interests with those of the allies, but because of the political embarrassment this would cause in Africa and Asia for the Western powers, the allies have always declined to formalise their co-operation.

At the same time, the South African authorities are fully aware that the next best thing to formal co-operation would be an informal understanding. This appears to have been achieved, judging by Dr Luns's statement.

The geographic area of Nato's shared defence responsibilities ends in the south at the Tropic of Cancer, but allied military planners at Supreme Headquarters, Allied Powers, Europe (Shape), near Brussels, have come to realise more and more that their security has

global dimensions.

Accordingly, some member-nations with global commitments to defend, like the United States, France and Britain, have included these regions in their planning.

US air and sea staging facilities in Diego Garcia, Kenya, Somalia and Egypt are just one reflection of this, and the Americans keep Shape fully informed of what is being done.

Dr Luns put it in these terms: "As an alliance, we're not equipped — not meant to be equipped — to deal with outside crises, because we are focused on the defence of Western Europe, America and Canada against the threat coming from the Soviet Union and its allies.

He ruled out as unrealistic any idea of extending Nato's formal frontiers.

To do so, he explained, would be dangerous, because it would mean denuding allied defences in Europe or increasing defence spending.

Dr Luns's statement that Nato's boundaries would simply fade away in time of war, while obvious, has rarely (if ever) been said before by anyone in authority.

Furthermore, his acknowledgement that the Cape route is included in Nato's preparedness plans appears to be the first official admission that something like a military umbrella will cover parts of South Africa.

The Secretary-General's emphasis that contingency planning has taken place "without any contact with the countries of Southern Africa" caused his interviewer to ask if he had discussed these matters with South Africa's Foreign Minister, Mr Botha, during their meeting in Brussels last month.

"No, not at all, Nato was not even mentioned," he replied.

However, it seemed possible that they could have talked about the new perils posed by the Soviet presence in South-west Asia and by the Gulf war, as they affect the oil routes, without mentioning Nato as such.

One topic which preoccupied some delegates, including the Americans, related to South African expectations of a new phase of co-operation with Washington when the President-elect, Mr Ronald Reagan, takes office.

The belief, not only in Pretoria, seems to be that a Reagan administration would be ready, discreetly, to make more effective use of South Africa's oft-repeated readiness to collaborate, although this would not mean that Mr Reagan would dilute his professed antipathy towards apartheid.

It would mean rather that Washington's criticisms could well be muted, and that on major issues, whether political or military, the Americans would rely on quiet diplomacy.

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US slates Opec oil price increase

RDM
18/12/80
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WASHINGTON. — The White House says that Opec's decision to boost oil prices by about 10% makes a mockery of recent strides the United States and its allies have made in energy conservation.

"We do not consider these prices to be justified, particularly in light of the good record not only of the United States, but also of industrialised democracies and the industrialised world in general, in restraining demand," said presidential spokesman Mr Jody Powell.

The US Energy Secretary, Mr Charles Duncan, said the increase was "unwarranted, damaging and disappointing". And State Department spokesman Mr John Trattner lamented that higher oil prices would hurt poor countries the most.

Mr Trattner, holding out hope that Opec members might not take advantage of the full announced increase in the current surplus market, praised Saudi Arabia for its moderate stance.

Saudi Arabia, Opec's dominant producer and the top US supplier, set the tone for the Opec Ministers' agreement on Tuesday in Bali, Indonesia, to raise prices by between \$2 and \$4 a barrel.

If all Opec members take the full increase and US oil prices rise by \$4 a barrel in response,

oil analysts said Americans would pay 7c a gallon more for their heating oil and gasoline.

Mr Powell said the hikes were unjustified because US oil imports were running "about 25% below what they were for the same period a year ago and our demand is between 4 and 5% lower than a year ago".

"You've had increased conservation and production that has resulted in a very dramatic decrease in the pressure the American imports put upon the international oil supply and demand situation," he said.

Mr Duncan said in a statement: "The fragility of today's worldwide economic conditions make this price rise particularly damaging."

The move comes at a time of high world oil stockpiles, sagging consumption and a new agreement by the 21 consuming nations of the International Energy Agency to reduce their demand on the world oil market by 10% in the first quarter of 1981.

"The industrialised nations and the international oil companies have shown considerable restraint in spot market purchases, despite the uncertainties caused by the prolonged hostilities between Iran and Iraq," he concluded. "Accordingly, these increases are not warranted by market conditions." — UPI.

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No early SA petrol price hike likely

RDM 18/12/80 55 244

Own Correspondent

CAPE TOWN. — Price hikes by the world's major oil exporters, effective from January 1, will not necessarily be passed on in the form of higher petrol costs in South Africa at an early date.

"Any increase in the price of liquid fuel would be terribly inflationary and if we can avoid an increase we will," the Chief Director of Energy, Dr Dirk Neethling, said in Pretoria yesterday.

He was commenting on Tuesday's decision by the Organisation of Petroleum Exporting Countries (Opec) to raise crude oil price levels by 10%.

"The Opec price rise does not have to be passed on in its entirety or even at all," said Dr Neethling. It was far too early to say if and when petrol prices here would have to be adjusted. "We have a lot of homework to do before we can make any decision."

It is understood the slate reflecting the current state of the complex pricing formula between the Government and

the oil companies is pretty well in equilibrium. It is not unusual for the companies to be in a position of under-recovery for considerable lengths of time before a price increase is approved.

Industry sources yesterday maintained they would bet against a petrol price rise in the near future. They noted that the Minister of Energy Affairs, Mr F W de Klerk, had tacitly admitted the relatively easier petrol position recently with an assurance that the Government would keep the possibility of an increase in the speed limit under consideration. And the Minister of Finance, Senator Owen Horwood, has again begun emphasising the dangers to the economy posed by an inflation rate now running at about 13,5%.

Until recently, at least, the equalisation fund, established to cushion the country from the affects of erratic movements in crude oil prices, was known to be in slight surplus. Reliable Government sources have disclosed that it might have been

possible even to reduce prices by about half a cent a litre, but this would reduce the cushion against rises such as the one just announced by Opec.

The price South Africa pays for petrol is based on a mix of those charged by Opec, spot prices charged by world oil brokers for non-contracted cargoes and official government selling prices of the producing countries. Every item in the mix has gone up in price during the past four months, a process which would probably dictate an immediate price rise on purely technical considerations.

But Government and industry sources believe the need to contain inflation, coupled with the political sensitivity of the petrol price, almost rules out an early increase — although the basic price, excluding transport adjustments for inland markets, has now remained unchanged since the 41% leap in June, 1979.

UPI reports that Saudi Arabian Oil Minister Sheik Ahmed Zaki Yamani says the price of oil could well reach R40 per

barrel next year if the Gulf war continues and Western nations keep stockpiling.

In an interview with the Swiss weekly newspaper *Weltwoche*, Sheik Yamani criticised US, French and Japanese plans to increase their oil reserves.

"You will have to pay for this if this trend is not stopped," he said in the interview, held before the Opec ministerial meeting on Bali.

Asked to explain his recent statement that the world is on the edge of a new oil crisis, Sheik Yamani said this will come about "if nothing is done, meaning if the oil companies and governments really don't reduce their oil stocks".

The sheik rejected the notion that the war between Iran and Iraq has crippled Opec and said it had only interfered with some of its activities.

But he conceded that Opec's long-term programme to index oil prices and open a dialogue with the industrialised nations has been "put off for a limited time" because of the war.

and its own kind of people who live there.

The best way to start is to get a group of people together to help you on such a project. You can work with the help of your History Society or through your Cultural Society. This is the reason such bodies exist at your school. If there isn't such a society, then start one. This could be part of an awareness programme at your school.

The group working on such a project need not be large. A group of five or six people is enough. It would also be a good idea to establish contact with your typing teacher or typing students, as what you publish would look better typed.

First you should go to a library and ask the librarian if there is anything written about your area. There will probably be very little,

Airlines will pass on higher fuel costs

By Richard Paris,
Air Correspondent

The travelling public could not expect airlines to absorb the reported 10 percent increase in oil prices agreed to by Opec leaders, airline chiefs in Johannesburg said yesterday.

A spokesman for South African Airways said the airline was not in a position to comment until the International Air Transport Association (Iata) has discussed the situation, but the marketing manager for British Airways, Mr Bob Wraith, said there would be no question of airlines increasing fares immediately after the Opec price rise came into effect on January 1.

"Iata turned down a proposal that airlines be able to introduce a 'trigger mechanism' into their price structures whereby increases would not lag behind oil price rises as they do at present," he said.

Mr Wraith said price increases would have to receive Iata and State approval and this could delay a rise until the beginning of April.

ADVERSE EFFECTS

And, he said, if increases were as high as 10 percent, only about three to four percent of this would reflect the higher fuel prices as most airlines' fuel bills constituted about one-third of their total operating costs.

The chairman of the Association of South African Travel Agents, Mr Eberhard Genrich, told The Star that any further increases in air fares for internal or international routes out of the Republic would have an adverse effect on travel.

Mr Genrich said he hoped airlines would absorb the higher fuel costs. However, he said, at worst, a rise in fares of three percent was the most airlines could justify.

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SLIPPERY SLOPES

FM 19/12/80

With the Iranian and Iraqi armies still shooting it out down in the oil fields, Western energy ministers drew up a plan in Paris last week to stop the interruption in supplies from pushing world oil prices higher.

The 20 member countries of the International Energy Agency agreed to cut their purchases of oil on the world market by 10% during the first quarter of 1981, drawing supplies from their still-high oil stocks instead. France, the only major Western oil consumer outside the IEA, will respect the plan which has also been approved by the European Common market.

Instead of importing an estimated 264 Mt between January and March, the IEA countries and France now plan to buy only 238 Mt, reducing their stocks by 26 Mt. In addition, countries with plentiful oil reserves, like Germany, stand ready to share them with those whose stocks are low, like Turkey and Greece.

Although only a fraction of the world's oil supplies are traded on the spot market, booming prices were used by Opex as justification for raising official prices after the Iranian revolution last year when consumers were madly scrambling for oil at any price. IEA countries are determined to avoid repeating that mistake over the war between Iran and Iraq.

So far, the spot market appears impressed by the IEA plan. Prices remained in line with official Opec levels, or slightly below, while turnover was reported thin. But by March, many countries' stocks will be approaching the psychologically important 90 days level. IEA officials say privately that if the war is not over by then, Western countries will have to think seriously about rationing.

Saudis insist: We'll stick to 'low' oil price

RDM 22/12/80

35

BEIRUT. — Saudi Arabia intends to stick to its new oil price of \$32 (about R24) a barrel for at least six more months — and will resist pressure to trim its daily production, a leading Middle East economic publication said yesterday.

The weekly An-Nahar Arab Report and Memo, a Beirut-based newsletter, quoted "sources close to the Saudi delegation" at this month's Opec meeting in Bali, Indonesia, as denying that any upward creepage in Saudi oil prices is in sight.

Saudi Arabia agreed to raise its marker price by \$2 a barrel, but the \$32 figure is still the lowest among the 13 Opec members.

According to the newsletter, the Algerian Oil Minister, Mr Belkacem Nabi, "had the feel-

ing that the price of Saudi crude would creep upwards towards \$35 before the June meeting".

But the publication quoted sources close to the Saudi delegation as saying that the Saudi Oil Minister, Sheikh Ahmed Zaki Yamani, "was determined to make the \$32 price stick until at least June, and that no reduction in Saudi Arabia's current output of around 10 million barrels a day should be expected".

The Saudis have been under pressure this year from other Opec members, particularly other Arabs, for a substantial increase in prices and a reduction of one million to two million barrels a day.

Saudi Arabia provides the United States with an estimated 23% of its petroleum

imports, and any price increase or production cut would rapidly be felt on the American retail market.

According to the Kuwaiti Oil Minister, Sheikh Ali Khalifa al Sabah, the Bali delegates decided that while the official marker price matches the Saudi figure of \$32, "anyone can deem the marker price to be at any level between \$32 and \$36".

The likely outcome, Sheikh Ali explained to the newsletter, "is that a lot of countries will go up to deeming the marker crude at \$35, others will not move, and some will move between \$32 and \$35".

The Bali meeting also decided that the maximum permitted differential is \$5 a barrel — meaning the highest official price an Opec member may charge is now \$41 a barrel. — UPI.

Soekor probes SA's biggest oil find

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RDM
23/12/80

MOSSEL BAY. — Soekor has struck gas and oil near Mossel Bay in a "significantly higher quantity" than anywhere else in South Africa so far.

A statement yesterday said Soekor was evaluating a gas find 80km south of Mossel Bay.

Test flows were at 11-million cubic feet of gas a day, and about 200 barrels of gas condensate — light oil.

The other two zones will be

tested in the next fortnight.

Although the gas produced is less than the Plettenberg bay find, only a tenth of the new reservoir has been tested.

Although the find is significantly larger than any previously in this country, the size of the field must be established and follow-up wells sunk before further speculation on economic viability. — Sapa.

Oil and gas find looks even better

24/12/82
S.M.C.
53

By Andrew Walker

The "black gold" of Mossel Bay looks even more significant as Soekor continues its tests on the oil and gas find.

But South Africa is a long way from leaving its fuel problems behind with the strike about 80 km south of the coast. The gas deposits

could be more important than the oil.

Oil experts believe the high yield of gas shown in the initial tests could, if the field is large enough, lay the foundation of a methanol-from-gas industry. This could go a long way towards solving South Africa's diesel difficulties.

Methanol to produce a

blend petrol similar to that being used on the Rand is seen as a major alternative source of fuel at the coast, particularly for heavy vehicles.

CHECK WELLS

"Transporting blended fuels from the Rand to the coast is not economical, but using gas to produce methanol at the coast is an exciting prospect," says an expert.

Initial tests at the strike show that gas may be found in far greater quantities than oil once the full extent of the field has been discovered. This process is likely to take up to a year as wells are dug to determine its extent.

The find consists of three porous layers of hydrocarbon-bearing sandstone. The first layer has been tested and preliminary tests have been carried out on the second and larger layer.

From the first layer, test results indicated possible gas production worth about R33 000 a day and gas condensate — a very light oil — worth about R7 500 a day.

HIGH HOPES

At present there is no market for vast quantities of gas in South Africa.

Speaking of testing on the second layer, Dr P J van Zyl, Soekor's managing director, said today:

"It looks very promising from initial tests, but it will be several days before we have final results."

Dr van Zyl emphasised that it was "far too early" to say South Africa has found a viable economic fuel source but hopes are high.

KDM 24/12/80

Oil, gas find is better than first thought

Own Correspondent

CAPE TOWN. — Further details on Soekor's gas find off Mossel Bay indicate that it is a major breakthrough in the 12-year-long search for oil in South Africa.

Soekor yesterday confirmed that the well, FA-2, situated 80km south of Mossel Bay, would already be an economic discovery if it were situated on land, and international oil company sources value its initial test production at about R13 500 000 a year.

The State-backed oil exploration group said no stimulation had been required to produce the test figures released on Monday. The figures, which relate to the first of three porous layers of hydro carbon-bearing sandstone, indicated gas production worth about R33 000 a day (about R12-million a year) and gas condensate production, or very light oil production, of about R7 500 a day (about R2 700 000 a year).

Both figures were based on current values and the finds could be expected to increase in value substantially with time.

After years of dashed hopes and accusations that either the Press or Soekor was putting too bright a face on the country's oil search, the latest discovery is believed to be a basis for the real thing — commercially viable gas, and oil production from

wells on South African territory.

The 200 barrels a day flow of gas condensate — very light crude — compares, for example, with an average production of United States on-shore wells of three barrels a day.

Regarding the test figure of 11 million cubic feet a day, international oil sources said a discovery of one million cubic feet a day would be viable on land.

Oil sources in Cape Town believed it was "jolly good that they have some promising signs", but like everyone else in the industry they maintained it was still early days.

The rate of production in the case of FA-2, however, is not as important as the cost of production, and this remains the big question.

Soekor is now testing the second zone and expects figures on this and the third zone to be available "hopefully in two weeks".

Once additional seismic information has been completed to determine the size of the promising structure, Soekor will embark on more drilling to determine the extent and uniformity of the reservoir.

If the field continues to test like FA-2, South Africa will have a major discovery, but the process is likely to take a year to 18 months to complete.

ENERGY

2/1/81 — 27/11/81

NO BONANZA (53)

PM 2/1/81

Soekor's latest oil strike — 200 barrels per day of light condensate near Mossel Bay — affords encouragement to press on with the search. But this sort of production level, even if augmented with additional output from layers of sandstone not yet tested, is not the stuff of which major discoveries are made.

Prolific wells in areas like the Middle East and the North Sea can each produce in the region of 10 000 to 20 000 barrels per day.

It should also be appreciated that off-shore oil is inherently much more expensive to locate and develop than on-shore oil. So many small, but adequately profitable on-shore fields would never be developed if discovered off-shore, especially in deep water.

On the other hand, Soekor may one day decide for strategic reasons to develop a possible future off-shore discovery, which would not at the time warrant exploitation in purely commercial terms.

But even looked at in that light, the latest discovery does not excite.

Call on Govt to cut price of petrol

RDM 6/1/81

~~244~~.55

By GERALD REILLY
Pretoria Bureau

THE Automobile Association has called on the Government to reduce the price of petrol by cutting the big tax take from fuel.

And yesterday Government sources said they were confident that in spite of the average rise of 10% in crude oil prices, there would be no need for a local price rise for at least six months.

They declined to comment on the possibility of a reduced petrol price, although it was conceded this would make a major contribution to damping down inflation.

The AA's director of public relations, Mr Hennie Kleynhans, said that before the Budget, the Government should urgently review the costs elements making up the retail price of petrol.

"Surely, in its current strong financial position, the Government could consider reducing the big tax on fuel, and make a major contribution to combating inflation, which some economists warn could be 20% by the middle of the year."

Mr Kleynhans said that since the start of the climb in 1973, petrol had increased in price by a massive 422%.

"There is no other commodity price rise during the past

seven years to match this."

South Africa had stockpiled a two-year supply of oil, according to a statement by the then Minister of Industry and Commerce, Dr Schalk van der Merwe, last year.

"So in the view of the AA there are compelling reasons not only why the price of fuel should not be raised, but why it should be reduced," Mr Kleynhans said.

The director of the Motor Industries Federation, Mr Janie van Huyssteen, said the 10% Opec increase would boost the official price to a point close to prices being asked on the spot market.

"But there is a surplus of crude at present, mainly because of a switch from oil to coal on a substantial scale in the major oil-burning countries."

Unless something unforeseen happened, therefore, it was likely crude would be increased in price again before the middle of the year.

The fall-off in production because of the Iran-Iraq conflict had been compensated for by stepped-up production in other oil-producing countries.

Other sources said the huge petrol price rise in South Africa in June 1979 was big enough to absorb further rises in crude prices.

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1st, 2nd and 3rd major courses.

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For the best final year student.

S A Read

Osbourn Prize

For the best work in fourth

year.

D H Pryce Lewis

John Perry Prize

For the best work in

third year.

R A van Rosenfeld.

More gas than oil in Soekor find

Soekor announced yesterday that the results of tests carried out in borehole F-A2, 90 km south of Mossel Bay, indicated gas rather than oil potential, and were by far the best that had been attained during the oil search so far.

The statement said the gas production rate was comparable to that which would be regarded as "good" elsewhere in the world.

However, it would take at least a year before it could be determined whether this deposit was of economic significance.

Three gas-bearing zones occurring between depths of 2 602 m and 2 703 m and with a combined thickness of 72 m had been tested.

The best total production rate achieved was 1 58 m-cubic metres of gas and 1 200 barrels of natural gas liquid or light oil a day.

This rate of flow can be regarded as comparable to that which can be achieved under realistic production conditions and cannot be compared with the theoretical maximum open-flow potential.

STAR
10/1/81
55

Soekor's new Cape find 'more gas than oil'

RDM
10/1/81

SS

THE results of tests carried out in the Soekor borehole 90km south of Mossel Bay have indicated a gas rather than oil potential — and are by far the best attained so far in the search for oil, the corporation announced yesterday.

A statement said the gas production rate was comparable to that which would be regarded as "good" elsewhere in the world, Sapa reports.

However, it would take at least a year before it could be determined whether the deposit was of economic significance.

The corporation had tested three gas-bearing zones between 2 602m and 2 703 m, with a combined thickness of 72m.

"The best total production rate achieved was 56 million cubic feet (1.58-million cubic metres) of gas, and 1 200 barrels (or about 145 metric tons) of natural gas liquid or light oil a day.

"This rate of flow can be regarded as comparable to that which can be achieved under realistic production conditions, and cannot be compared with the theoretical maximum open-flow potential which, in accordance with international practice, has been quoted in the past for some South African wells, such as those off Plettenberg Bay."

The statement said analytical results concerning the composition of the gases and liquids would be available only in a few weeks' time.

"The results of this well are by far the best that have been attained during the oil search so far, and the gas production

rate is comparable to that which would be regarded as 'good' elsewhere in the world.

"However, one borehole, no matter how promising the result may seem, cannot prove a commercial deposit, and the next important step will be to determine the reserves and the possible daily production rate.

"This can only be done by drilling more wells, and no conclusions can be drawn either way until these have been completed.

"To ensure that the maximum amount of information is obtained from this well and that this is applied in the planning of the next well, Soekor will continue with its normal programme and drill one or two wells elsewhere before returning to the area for the drilling of follow-up wells.

"The next hole will be approximately 50km east of F-A2. The F-A2 structure will be studied in the greatest detail.

A Rand Daily Mail reporter writes that last March the Government allocated another R37-million to step up Soekor's oil search.

Earlier last year Soekor indicated the possibility of establishing a massive gas-to-methanol conversion plant on a semi-submersible platform moored far out at sea.

The problems facing the project at that stage included the small demand for methanol products in South Africa, and the relatively small amounts of gas known to exist off the coast. The latter problem could be solved by the latest development — depending on the extent of the gas field.

Computer designs the ideal ship

WM
15/1/81
55

ALTHOUGH the prospect of an ultimate oil shortage and the spiralling price of conventional bunker fuel has prompted shipowners to think about switching over to coal-fired ships, there are a number of problems which have to be faced.

A coal-burning steamship requires between two-and-a-half and three times as much coal as an equivalent sized diesel ship needs oil.

A coal-burning ship is likely to be more expensive in capital cost and its routes will be limited by the availability of coal.

Then there is the question of optimum speed. Mr John Willimas, technical manager of British Shipbuilders, writing in a recent edition of the *British Shipbuilders* magazine, explains that a basic precept of ship transport economics is that the optimum speed for a ship's operation occurs when running costs are about half the total costs, including capital charges.

Therefore, while the most economic speed for a ship burning oil seems to be in the region of 12 to 13 knots, with the help of a cheap fuel such as coal, the most economic speed should be considerably faster.

But, this advantage is offset to a certain extent by the situation in which, if a ship is to be speeded up, it has to be designed with finer lines — thus altering basic cost.

To sort out the many variables of ship design, such as range, speed and deadweight size, state-owned British Shipbuilders have developed a computer programme for the preliminary design of coal-burning ships. Their economic evaluation in comparison with their diesel-burning counterparts

was also examined with the help of computers.

After extensive research, British Shipbuilders has come out with outline designs for coal-fired ships ranging from 76 000-dwt to 10 500-dwt.

A good example of one of these designs for a modern-coal-fired steamship is the 76 000-dwt bulk carrier developed by Sunderland Shipbuilders. This vessel is a new version of Sunderland's successful series-built Panamax diesel-powered bulkers.

The new version has a ser-

vice speed of 13.5 knots, a length of 230 m, a draught of 14.8 m and carries about 80 000 tons of cargo. The coal bunkers hold about 6 200 tons and there is provision for around 200 tons of diesel oil to start the initial boiler, for emergency steaming and for standby diesel alternator operation.

Estimated coal consumption is about 150 tons every 24 hours.

The ship is intended for normal operation and to operate on coal at all times, including in port.

Annual meeting of Institute

THE annual general meeting of the Natal Branch of the South African Institute of Marine Engineers and Naval Architects will take place at the Royal Hotel on Wednesday, January 22.

Nominations received for Item 7 of the agenda which covers new committee members are: Honorary secretary — M Jackson; committee members — I Lloyd, CA Timms, S Colvin, A McKenzie, P Atkinson, R Norman, R Halliday and R Jenkins. Of these nominees Mr Norman and Mr Halliday are not eligible for re-election, Mr Jenkins and Mr Lloyd are already elected members, and Mr Timms has

not agreed to accept nomination. The number of nominees remaining corresponds to the number of vacancies, so voting will not be required.

The formal part of the evening will be followed by a supper and a film. One of the highlights of the evening will be the presentation of a certificate to Mr R L Routley-Gunner, the branch's oldest member. Mr Routley-Gunner will be 100 on January 20.

The evening is open to guests and members, and those wishing to attend should contact the honorary secretary, Mr Mel Jackson. The meeting begins at 5.30 p.m.

FM 16/1/81

SA's already formidable reputation as a front-runner in energy innovation will be strengthened by a conference to be held at the University of Cape Town from January 28-30. Organised by UCT's Energy Research Institute under the direction of Professor Richard Dutkiewicz, the conference will cover one of the most encouraging lines of current energy development — fluidised bed combustion.

The concept of the fluidised bed is simplicity itself once the principle is understood. If a pulverised fuel like coal is placed on a perforated grid through which an upward stream of air is blown, it will, at high enough air stream velocities, form a suspended, turbulent mass which behaves rather like a fluid.

The ordinary process of combustion and heat transfer to heat water for power generation can be carried on in a fluidised bed very efficiently. Not only that, but there are other important advantages over conventional boilers. Pollution caused by the sulphur content of the coal can easily be controlled *in situ* by the addition of limestone to the fluidised bed — a far simpler and cheaper measure than tacking on a

desulphuriser to scrub sulphur dioxide from flue gases.

But the greatest potential advantage of the fluidised bed is its capability of burning fuels of very low quality, like coal with an ash content of over 35% — currently regarded as unusable with conventional power station technology.

Although the Petrick Commission refused to divulge the quantities of SA coal with an ash content over 35%, the quantities may safely be regarded as enormous. So the eventual adoption of fluidised bed combustion for power generation will have the effect of greatly extending the already long life of SA's coal resource.

The UCT conference has drawn reputable speakers from all over the world, to deal with the advanced engineering aspects of fluidised bed combustion, now being actively pursued all over the industrial world (with the principle itself long since proven). Dutkiewicz himself has suggested that the technology will be ripe for large-scale adoption in the Nineties. Plausibly, Eskom power stations being erected more than 10 years hence will all use the fluidised bed in place of conventional boilers.

Argus 20/1/81 (SS) ~~20~~

No publication of news about oil tanker

Political Staff
 THE Government has refused permission for the publication in South Africa of news reports about action taken by a Western government to stop the voyage of an oil tanker and about alleged circumstances surrounding this move.
 The reports, which have been published abroad, were submitted by The Argus to the office of the

Minister of Mineral and Energy Affairs; Mr F W de Klerk, with a request for comment by the Minister and for permission to publish.
 A spokesman in the Minister's office said today Mr de Klerk had declined to comment and had pointed out that publication of the reports could be an offence.
 In terms of the Petroleum Products Act of 1979

it is an offence to publish certain information about petroleum products or about negotiations regarding them, without the permission of the Minister concerned or the Controller of Petroleum Products.

- For the best work in
John Perry Prize
 D H Pryce Lewis
 year.
 For the best work in fourth
Osbourn Prize
 S A Read
 For the best final year student.
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FINE ART & ARCHITECTURE

ARCHITECTURE

WEDNESDAY, 28 JANUARY 1981

†Indicates translated version.

For oral reply:

Hansard 1 Quest. Col 1
Nuclear Non-proliferation Treaty

28/1/81 55 (254)

*1. Mr. N. B. WOOD asked the Minister of Foreign Affairs and Information:

Whether a decision has been taken in regard to the signing of the Nuclear Non-proliferation Treaty; if so, what decision; if not, when is it expected that a decision will be taken?

The MINISTER OF FOREIGN AFFAIRS AND INFORMATION:

No. The matter is still under consideration.

Talk of Sasol 4 ^{STAR} 29/1/81

Sasol managing director Mr Joe Stegman said planning of the construction of another Sasol oil-from-coal plant on the scale of Sasol 2 and 3 can be started by 1985.

He told the Sigma "Strategy 80" Conference he would like to see other South African companies starting production of oil-from-coal and sharing the heavy capital burden before Sasol.

At present, at least four South African companies — AECI, Sentrachem, Anglovaal and Gencor in co-operation with Trans Natal — are pursuing research into alternate liquid fuels.

He noted that planning for a new Sasol plant will only get underway when specialised manpower is released from the Sasol 2 and 3 projects.

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D H Pryce Lewis

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Cape Provincial Institute

ARCHITECTURE

SA leads talks on new coal technology

STAR
29/1/81

55

215

By Rob Soutter

A conference on fluidised bed combustion — a revolutionary method of utilising poor quality coal and other wastes for energy — is being held in Cape Town this week.

The three-day conference, which began yesterday, is being organised by Professor R K Dutkiewicz, of the University of Cape Town's Energy Research Institute.

Described by Mr Peter Kaplan, a leading British design engineer as "probably the most important conference on fluidised bed technology yet held in the world," it will be attended by delegates from most of the world's industrialised countries.

Mr Kaplan said the process had been largely theoretical until the oil crisis created a need in the industrialised nations for an alternative to oil-based energy systems.

"As with the birth of any radical technology, there have been problems — but none has proved insurmountable," he said.

"In Europe, the process is felt to have great potential, because of the high efficiency, wide range of fuels and extremely large field of applications."

Significance

Mr Kaplan, one of the British delegates, is also one of the pioneers of fluidised bed combustion, who saw the potential of the technique before the energy crisis hit Europe.

"Because of South Africa's position, having to rely on coal as the foundation of any future energy policy because of the vulnerability and high price of oil supplies, a far-sighted industrial sector could grab a lead in the race to perfect this technology," he said.

"This could be of inestimable value to the country.

"Without doubt, this process will become of major significance, and South Africa should cash in on the opportunity now."

He said: "The world is looking to this country in many of the fields of coal utilisation, and it is not inconceivable that fluidised bed technology will evolve in South Africa to the point where it is re-exported back to the countries of origin, because local conditions favour the process.

"The conference is being held in South Africa because of these peculiar local conditions, such as the large reserves of poor quality coal and the high wastage, the move away from oil-based technology and the basic commitment to coal," he said.

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ARCHITECTURE

FINE ART & ARCHITECTURE

Way found

to use low grade ore

A new process deriving energy from coal, called fluidised bed combustion, could effectively increase South Africa's limited coal reserves, by using poor quality ore which is usually dumped or left unmined.

"The fluidised bed combustor can be used for gas, power and heating applications, and operates at a higher combustion efficiency than conventional oil or coal-fired equipment," said Mr George Hall, a director of Energy Equipment, local specialists in fluidised bed techniques.

These systems can be operated at a high efficiency even when burning coal with a high ash content, or coal which is too small for use in other power systems.

According to Professor R K Dutkiewicz, of the University of Cape Town's Energy Research Institute, South Africa has extractable reserves of about 75 000-million tons of coal.

This is coal with an ash content of less than 35 percent.

Few conventional coal-burning systems can efficiently burn ore with a higher ash content.

Reserves

But the fluidised bed process can burn coal with an ash content of up to 50 percent.

South Africa has immense reserves of this low grade coal, which is not mined because there is no demand for it.

"The more applications which can be turned over to the fluidised bed technique, the more high grade ore can be conserved, and South Africa's coal reserves effectively increased," said Mr Hunt.

"This would mean a longer life for the coal industry."

In addition, industrial, municipal and agricultural waste such as mealie cobs, peanut husks or even sewage

sludge can be used as fuels with this technique.

The principle of the fluidised bed system is based on the fact that above a certain velocity, the passage of a gas through a bed of finely divided particles can cause the material to act as a fluid.

Application

The bed, made from a stable substance like sand, forms an ideal environment, for the combustion of a wide range of fuels, when ventilated and heated to a certain temperature.

The rest of the process is determined by the application. For example, the combustion can be pressurised and channeled through the steam turbine to generate power.

Alternatively, the heat from the combustion may be used to dry animal feedstuffs, such as lucerne.

Pollution risks can be lowered with this system, according to Mr Hunt.

If fuels with a high sulphur content are burned, the addition of lime or dolomite to the process can limit the sulphur dioxide emissions in the exhaust to stringent levels.

Besides having a wide range of possible fuels to choose from, these fuels should be relatively inexpensive.

"The low quality ore which is not mined can be used, as can the dumps laid down over the years which have not yet caught fire," he said.



Last week France finally declared its complete independence from the US in civil nuclear engineering — an event likely to be of more than passing interest to countries like SA, which has difficulty getting foreign help for its nuclear programmes.

After building pressurised water reactors for the past eight years under licence from Westinghouse, France said it is terminating the agreement two years ahead of schedule because it has mastered the technology and no longer needs assistance. "The PWR has been Frenchified," Industry and Energy Minister Andre Giraud told a press conference.

France has already developed its own uranium enrichment and reprocessing technology as an offshoot of its military nuclear programme. Now it has added to these achievements the ability to build its own version of the world's most proven and successful nuclear power reactor as well as the freedom to export it without the US government permission needed when it was using American patents. "We have recovered complete export freedom," Giraud said.

In recent years, France has acquired a reputation as a freewheeling nuclear exporter ready to sell in sensitive areas of the world and to supply so-called dangerous nuclear technologies many other countries fear will encourage the spread of nuclear weapons.

Although the US stopped France selling reprocessing technology to South Korea, it could not prevent France giving considerable assistance to both Pakistan and Iraq's supposedly peaceful nuclear programmes which many observers suspect are intended to develop an "Islamic" atomic bomb.

The Iranian revolution led to cancellation of the Shah's contract for two French civil nuclear power stations. But France has high hopes of landing a similar order from China now that it has broken free of the US.

France has already sold one power reactor to SA. As the pressures of the world recession mounts, France may now be more willing — and better equipped — to provide additional nuclear assistance in this and other politically controversial parts of the world.

- (5) el
- (4) ma
- (3) tc
- (2) ma
- (1) ma

7. Assumptions seeks to budget

- (5) the amounts of commodities that a consumer will buy at given prices
- (4) combinations of goods which yield a consumer equal amounts of satisfaction
- (3) the price ratio between one good and another which rate differently in the consumers schedule of preferences
- (2) a consumer's preferences for any two goods
- (1) combinations of goods which a consumer would prefer to any other

6. An indifference curve indicates, other things remaining the same,

- (5) only (c) is correct
- (4) only (b) is correct
- (3) only (a) is correct
- (2) (a) and (c) are both correct
- (1) (a) and (b) are both correct
- (c) increase with the level of output
- (b) when expressed as an average, do not change with output
- (a) are fixed only in the short period

5. The fixed costs of a firm

New international interest

International oil companies are showing a new interest in SA oil prospects since the latest natural gas and oil discovery by Southern Oil Exploration Corporation (Soekor) off Mossel Bay last month. The FM understands foreign companies are sounding out the possibilities of renewed participation in the SA oil search, but shares in any future joint ventures with Soekor will not be cheap.

Says Dr Piet van Zijl, Soekor's MD: "The latest find is the culmination of 15 years of costly exploration, most of which we have financed ourselves. Any party joining us now will benefit from this, which implies that it will pay a premium for its participation."

This is a change in attitude since the early days of the offshore oil search when Soekor granted concessions to drill for oil in designated areas around the coast with full rights to exploit any finds commercially.

Generous tax concessions attracted a number of foreign consortia such as Superior, US Natural Resources, Placid and Chevron from the US and Aquitaine from France. A juicy tax prize was offered to the first to discover crude oil: a 50% rebate on taxes payable on oil profits for the life of the field, after recovery of all capex, and a 50% rebate on gas profits for the first 10 years of production.

This turned the first years of drilling into a race which nobody won. For after spending R90m on sinking a disappointingly large number of dry holes, all prospectors except Superior and US Natural Resources relinquished their concessions. Since then Soekor has soldiered on alone and has built up a good picture of the offshore geology based on seismic surveys and a total of 48 boreholes sunk so far.

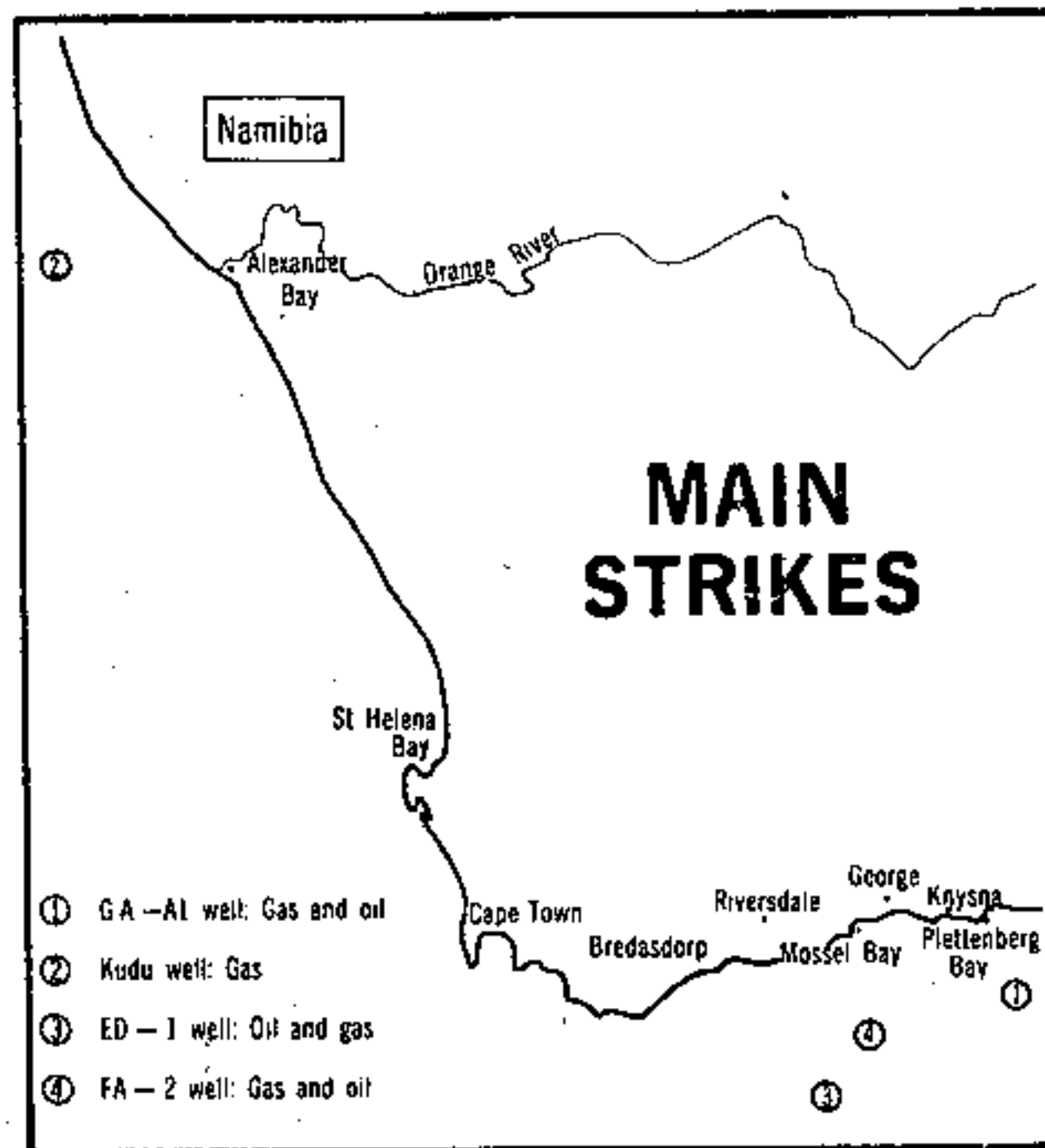
As one Soekor executive puts it, "When we first started drilling we were working in the dark. Now we have a far better idea of where to drill."

The figures bear him out, for of the 24 boreholes sunk between 1969 and 1977, only three had gas shows and one a gas and oil show. By contrast nine of the 24 boreholes put down since 1977 have yielded gas and/or oil shows, and the latest is the most promising yet.

In all there have been four wells which have yielded what the company describes as "promising" oil or gas shows. The first was struck in 1969 by the drill ship Glomar Sirte operated by the Superior consortium in its concession 80km off Plettenberg Bay. This well, the Ga-A1, happened to be the first ever sunk at sea off the SA coast. It yielded mainly gas and some oil

condensate which could be commercially exploitable if more similar finds are made in the area. Superior still owns the concession, and it is no doubt waiting for more information from Soekor's ongoing exploration and further oil price increases before taking further action.

The second promising find, in 1974, was also a gas show in the Kudu well sunk by the semi-submersible drill rig Sedco 135 some 120 km off the Namibia coast just north of the Orange river mouth. It is a so-called "dry" gas consisting of 98%



methane under exceptionally high pressure. Technical difficulties in handling the high pressure gas and uncertainty about the future of Namibia have postponed further investigation.

The third promising find, in 1978, was the first oil show and the first proof that oil-bearing sandstone exists under the sea off the SA coast. Drilled by the Sedco K rig 120 km south of Mossel Bay the E-D1 well yielded gas and a thick, grease-like oil, which flows only if heated.

The latest find, also by the Sedco K, is in the F-A2 well, 90 km south of Mossel Bay. It yielded mainly "wet" gas containing higher hydrocarbons and 40% methane together with a natural gas liquid or light oil. Soekor's tests indicate that it would produce 1,58m m³ of gas and 1 200 barrels of oil a day under realistic production conditions.

By world standards this is a good output for one well. But it will be commercially viable only if the underground gas/oil reservoir feeding the well is big enough to maintain the rate of flow for a minimum period and supply similar wells in the same area. Soekor should know this in

about a year's time when it has analysed all the data from the well and sunk further wells in the same area.

At the same time it will continue to explore other promising sites as part of its objective systematically to locate SA's oil reserves. The tempo of drilling is increasing now that there is a sufficiently large body of data to pinpoint fairly reliable prospect leads with good chances of success.

Soekor's drilling is carried out by two ultra-modern semi-submersible drill rigs, the Sedco K and the Sedco 135. Costing R60 000 a day each to run, each rig has mass of 12 000 t and floats on four 27m footings which remain 10m below the water surface. This minimises movement caused by wave action and allows it to drill to 8 000 m under the sea bed in a maximum water depth of 300 m, in all but the heaviest weather. At present one is operating off the west coast somewhere between Cape Town and the Orange River and the other about 50 km east of the FA-2 well which yielded the latest oil and gas show. These rigs should be joined by a similar vessel in 1982.

Over the five year period ending in 1985 government's grant of R424m to Soekor will be more than double what it has given over the entire period between 1969 and 1980.

So far government's contribution to the national oil search through Soekor has been R184,6m. A further R89,7m has been chipped in by private consortia to bring the total expenditure on exploration for oil to R274,3m. Soekor spent some R37,5m on exploration on land until 1974 when it concluded that there is virtually no possibility of finding oil there in economic quantities. It has spent the remaining R147,1m on offshore exploration.

Soekor shares are owned by the IDC and Sasol on an equal basis, but Sasol shareholders can expect no immediate benefits in the event of a major oil strike. For the company's first objective will probably be to repay the government grants it has received over the years for exploration.

Firm may drill for gas in Fish Hoek dunes

Staff Reporters

An application to investigate the possibility of drilling for gas in the sand dunes of Fish Hoek has been received by the Town Council, which has agreed in principle, subject to a full discussion with the applicant, Coal Oil Industries.

Coal Oil Industries have asked the council for an option to discuss the time limit and depth of drilling to be allowed, and for a mutual agreement stipulating the protection of

South African interests in the project.

The council would like to establish whether the sand dunes referred to are those on the beach or farther up the valley and have agreed, "only in principle, as requested".

Mr T D Freeman of Coal Oil Industries told the Cape Times in an interview from Johannesburg that he did not want to comment on the matter until he had held discussions with the Town Council.

D H Pryce Lewis

year.

For the best work in fourth
Osbourn Prize

S A Read

For the best final year student.
General J B M Hertzog Prize

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ARCHITECTURE

FINE ART & ARCHITECTURE

SA is far behind in 'power'

S.A. Indus. WK
3/2/81
55

FEARS of labour boycotts, strikes and general unrest in South Africa has prompted the country's industries to turn to a higher level of mechanisation.

As South Africa industrialises there is a propensity for the use and conversion of energy to become more mechanised. This implies the transmission of power in the various combinations of torque and speed to either linear actuators or rotary traction applications.

It is thus very clear that hydraulics are going to play a very prominent role for various reasons.

Hydraulics are flexible and possess tangible systems unlike electricity which is more complicated and cumbersome.

Easier

Old fashioned mechanical systems cannot normally operate at the high temperatures and pressures commonly used in hydraulics and as a result provide lower

levels of performance.

Hydraulics are easier to use and harder to abuse. For example, the changing of gears in heavy vehicles by hydraulic transmission is much simpler and safer. Wear and tear costs are greatly minimised.

By John van der Meer

Maintenance in the industrial world is turning to modular operations as opposed to "on-the-job" repairs. The trend is towards throw away units instead of repairing them — this is both time and money saving.

But South Africa has been lagging behind because the country's industries have not yet had the needs for hydraulics on a large scale as has been the case in Europe and the United States where technology is well advanced.

Labour problems in the country over the last 10 years — boycotts of labour from Malawi, Soweto riots and

wildcat strikes — are steadily increasing and has created a fear, in that the situation could worsen.

A spokesman from Duneb Hydraulics said: "Another reason why the trend is towards hydraulics transmission is that people are not prepared anymore to flog themselves to death. As a result workloads should be mechanised, smooth to control and easy to work with."

Demand

"South Africa's socio/economic structure has in the past not demanded the skills and trained personnel necessary for the manufacture of hydraulic equipment," the spokesman said.

All sophisticated equipment is imported and in many cases modified to suit South African conditions.

"In most cases the application of hydraulic components has to be adopted to South African conditions resulting

in technological and operational problems.

"We require development expertise locally. But this requires a high level of indigenous engineering know how with particular emphasis on operating conditions and performance needs under high levels of temperature and abuse."

Arduous

The duty requirement in South Africa for hydraulics tends to be more arduous than abroad. More has to be put into design thus making operational use simpler.

The mining industry is by far the largest user of hydraulics, mainly because of the size of the industry. Another aspect for the use of hydraulics in mining is the fact that miners are not prepared to face the discomforts experienced nowadays due to the depths mining has reached.

Agriculture too is making huge inroads into the hydraulic market and the country's massive sugar industry is turning more and more to hydraulics for its operations in all fields of the industry.

Asked whether the increasing use of hydraulics in the booming South African industry would not create unemployment, the spokesman for Duneb Hydraulics said that more skills, interest and increase in competition would provide for improved service, quality and generally higher standards — thus creating more employment.

N-plant waste from Koeberg safe — Minister

ARGUS 4/2/81

(S)55

Naked
racism
in debate,
says PFP

Parliamentary Staff

THE public could rest assured that extremely strict guidelines would be adhered to when it came to the disposal of nuclear waste from the Koeberg Nuclear power station, Mr F W de Klerk, Minister of Mineral and Energy Affairs, told the Assembly yesterday.

Replying to the second reading debate on the Atomic Energy Amendment Bill, Mr de Klerk said the problem of disposal of nuclear waste was receiving attention from experts all round the world.

'Many excellent minds are centred on finding final solutions — but the public can rest assured that the interim solutions we have are very safe,' he said.

The question of plans to deal with nuclear waste from the Koeberg plant was raised by Mr Nigel Wood (NRP, Berea).

Mr Wood said the disposal of radioactive nuclear waste was an emotional question. The public had a limited understanding of the consequences of poisoning from such waste.

Nuclear waste was not the type of waste which would break down in a few years — some substances could still be active after 30 000 years.

'MAIN CONCERN VOLUME'

There had been advances in devising methods for the safer disposal of these waste substances, but the main concern was the volume, which was increasing alarmingly. There was still insufficient knowledge concerning the best places and methods for such waste to be contained.

Mr Wood said accidents had occurred as a result of the careless disposal of nuclear waste and with the coming into operation of the Koeberg plant imminent, the public should know what plans the Department of Mineral and Energy Affairs had made to deal with the problem.

The Bill was taken through all its stages yesterday with the support of the Opposition.

Parliamentary Staff

MR Tian van der Merwe (PFP, Green Point) accused National Party members in the Assembly yesterday of introducing 'naked racism' into the debate on the Sectional Titles Amendment Bill.

He was reacting to questions asked during the debate by Nationalist speakers on whether Progressive Federal Party members were in favour of racially mixed accommodation in blocks of flats.

The issue was raised by Mr Z P le Roux (NP, Pretoria West) who said Mr Alf Widman (PFP, Hillbrow) had applied for coloureds to be accommodated in a block of flats where whites were living.

SCHOOLS

Mr le Roux said the voters were entitled to know whether it was PFP policy that coloured and white people should share the same block of flats. And could blacks also share the block? he asked.

Later in the debate, Mr A T van der Walt (NP, Bellville) continued this line of questioning and wanted to know whether PFP members were also in favour of racially mixed schools.

Answers 2 Ques. Col 50 **Koeberg reactors** **(55)**

*19. Mr. I. F. A. DE VILLIERS asked the Minister of Mineral and Energy Affairs:

6/2/81
Whether any contract has been entered into for the reprocessing of radio-active spent fuel elements from the Koeberg reactors; if so, (a) who are the parties to the contract and (b) what are the terms thereof; if not, how are the spent fuel elements to be disposed of?

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

- No.
- Point (a): Falls away.
- Point (b): Falls away.

In regard to the disposal of spent fuel elements, provision has been made for the short-term storage of spent fuel elements under water in a pool inside the reactor containment building. After a suitable cooling period they will be despatched overseas for reprocessing.

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Sasol: fourth plant

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*9. Mr. N. B. WOOD asked the Minister of Mineral and Energy Affairs:

Whether a decision has been taken in principle to build a fourth Sasol plant?

†The MINISTER OF POSTS AND TELECOMMUNICATIONS (for the Minister of Mineral and Energy Affairs):

No.

Handwritten: 3 Ques 01 98
Sasol II/Sasol III

Handwritten: 55
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*10. Mr. N. B. WOOD asked the Minister of Mineral and Energy Affairs:

(1) What amount has been expended to date on construction at Sasol II and Sasol III;

(2) whether this amount is higher or lower than the amount budgeted for?

WEDNESDAY, 1

99

The MINISTER OF POSTS AND TELECOMMUNICATIONS (for the Minister of Mineral and Energy Affairs):

(1) Sasol II.
The final cost of construction of the project is still estimated at R2 503 million i.e. the original estimated figure set up in October 1975.
The actual expenditure up to the end of January 1981 amounts to R2 345 million.

Sasol III.
The final cost of construction of the project is still estimated at R3 276 million i.e. the original estimated figure set up in January 1979.
The actual expenditure up to the end of January 1981 amounts to R1 672 million.

(2) Falls away.

But first it must persuade SA to treble the price it now pays for Mozambican electricity. And then it must convince Escom to increase by half again its Mozambican electricity imports — which is in itself something of an academic issue, since the power lines that carry the existing supply were sabotaged by anti-Frelimo guerrillas in December last year and have not yet been repaired!

The extraordinary task of persuasive diplomacy that Maputo has set itself is the result of a complex combination of national aspiration and recent history. The original plans for Cabora Bassa dam provided for the possible extension of generating facilities on the north bank of the Zambesi, the better to make use of the 50 milliards cubic metres of water stored in the dam.

Right now, electricity is generated only on the south bank, where five sets produce a total of about 1 400 MW of alternating current. All of this is relayed to SA after being converted to direct current, which is cheaper to transport, and reconverted to AC at the Apollo station near Pretoria. A minute portion is then sent back to Mozambique and the rest fed into the Escom power grid in SA. So Maputo's dependence on Escom is substantial.

Mozambican president Samora Machel decided last year to proceed with the construction of a north bank station. Its

CHEM

the first year student
ing the highest average

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CABORA BASSA FM 13/2/81
Cost of expansion

The government of Mozambique has initiated a series of moves that it hopes will result in the construction of a new hydro power station at Cabora Bassa dam.

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total output would be about 1 200 Mw, all of which, he decided, would be reserved for Mozambique and its "brother countries."

But good intentions do not always match economic realities, and Machel accordingly faces a formidable array of ideological and practical problems, many of them stamped with the flavour of Catch-22.

Firstly, the needs of brother countries like Zambia and Tanzania, and of Mozambique itself, are too small to make them prospective customers of any note. Zimbabwe has indicated that it might be a buyer for about a quarter of the north bank output. But if Maputo wants to avoid the Escom connection and achieve electrical independence as it clearly wishes to, it must find other customers. And they simply do not exist.

Maputo also wants the north bank facility to be independent of Portugal, which currently runs Cabora Bassa jointly with Mozambique through a company called HCB. But before it can achieve that, it must buy out the Portuguese stake in HCB by clearing a \$1 000m debt left over from the original construction of the dam.

And Escom, of course, lies at the junction of all these strands. It is now paying for Cabora Bassa electricity about \$0,004/kWh, which is less than a quarter of the average world price. This is the



Mozambique's Machel... good intentions but tough realities

result of the original contract fixing the price for 35 years in Portuguese escudos, which have since devalued.

France and Germany have indicated their willingness to participate in the financing of the north bank project. But Portugal, through HCB, will remain the ultimate guarantor. So preliminary French studies present this gloomy picture:

□ If Maputo wants to retain its independence in the project it must negotiate a collateral arrangement with Portugal separate from HCB.

□ It must accept that Escom is the only practical customer for north bank power and adjust its desire for total autonomy accordingly.

□ It must then persuade Escom to buy the extra electricity, and then at a price *treble* that which it currently pays.

□ And it must accept that feeding the power into its own network, if and when its domestic demand warrants it, will demand the pre-construction of that network, which does not exist right now. And the cost of that alone will equal the cost of the north bank power station!

Neither Escom nor the SA Foreign Affairs Department have received any overtures from Maputo. And Maputo is not prepared to discuss the matter. But with SA/Mozambique relations somewhat strained by the SADF strike at the ANC two weeks ago, and with the north bank feasibility studies only recently completed (if on schedule), the Mozambicans may well lie low for a while.

Should negotiations ever begin with the multifarious parties involved, Maputo must be given credit for its optimism. And if the new station is ever built, it will be for Machel a diplomatic and economic coup, and perhaps a surprise as well.

Petrol

RDM 14/2/81

curbs

(55)

to stay

Political Staff

CAPE TOWN. — The Government has said it will not relax restrictions on petrol sales and it has been strongly criticised by the New Republic Party's spokesman on energy, Mr Nigel Wood.

The Minister of Mineral and Energy Affairs, Mr F W de Klerk, told Mr Wood at question time yesterday that relaxing petrol restrictions had been considered but that it had been decided not to extend selling hours.

Later Mr Wood said he could not understand why motorists were still being "penalised". "Nobody denies that we have a petrol surplus — even to the extent of exporting it," he said.

"People who suspect they have been conned are highly unlikely to co-operate with ongoing efforts from all sides to conserve fuel," he said.

Ecoplan to probe Soweto electrical wiring row

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Controversy surrounding the electrical wiring of Soweto houses is to be investigated by Ecoplan, the controlling organisation responsible for the overall electrification project.

A large number of complaints has recently been received by The Star because of the quality of electrical installation.

The chief director of Ecoplan, Mr G H Marais, said yesterday he was concerned about the complaints and that he wanted to meet the contractors to ascertain their problems.

"If it appears they are not doing a good job I will take such necessary action as is within my power. I will not let people down," he said.

He explained that the electrification scheme was the largest in the world, and it was therefore inevitable that faults would occur.

The original contract specified that pipes containing the electrical wires should be installed on (rather than in) walls, and below (rather than above) ceilings.

The patients' willingness to pay should enable a more satisfactory solution for all to be found, without excessive cost to the Council.

APPENDIX III

A. Inverness Clinic in Inverness D.O. Area

In a stock farming area similar to most of that covered by Inverness D.O. a clinic was being run by a group of farmers and local residents. As private accounts were available, the cost of this clinic facility was known. It also provided an interesting contrast to the D.O. clinic in the Valley.

The clinic was set up 17 years ago. A farmer's wife gathered a committee to run the clinic and money was collected locally to construct and equip a building. The clinic had a treatment room, a small labour room, with two beds and accommodation for the patient. It provided maternity and ENT services, treatment of minor ailments, child welfare clinics, dispensing of contraceptives and also of birth control pills. The clinic was dealing with 15 and family planning.

Some of what was regarded as "shoddy workmanship" was, therefore, simply compliance with the terms of the contract.

Mr Vernon Raath, general manager of the Installation Division of Industrial Electrical (one of the major contractors handling house wiring) was, however, adamant that his firm's work was of a high standard.

All the work was checked by the firm's own inspectors, and by both the West Rand Administration Board (Wrab) and Ecoplan.

Houses whose tenants had complained to The Star of bad workmanship were not among those contracted to Industrial Electrical.

Said Mr Raath: "The people of Soweto know that we welcome their complaints, and that we do not tolerate shoddy workmanship. Unfortunately, we receive a great many complaints about installations that are not ours, which we re-direct."

Industrial Electrical had sub-contracted to four black-owned firms to promote black development,

and supervised the work done by these smaller agencies. None of the houses whose owners had complained to The Star had been wired by the black firms.

The head of Livanos Brothers Electrical (the other main contractor for house wiring), Mr Costa Livanos, said his firm employed white workmen to do the wiring.

He had not sub-contracted.

He challenged anyone to inspect his work, which he said had been approved by Wrab.

There is no service when the nurse is away, but she often works at night. Deliveries may take place in the labour room or she may be called to home deliveries - though many still occur without trained supervision. The nurse also attends sick patients at home (e.g. to give daily injections).

Farmers are encouraged to fetch the nurse for routine visits to the houses of labourers by co-operation in kind in their interest.

The primary aim of the clinic is to give advice to farmers on which over 2000 are for the district's safety, and this is reflected in the number of visits. Most of the visits are for advice on the use of fertilizers, and the use of insecticides for pest control. Some of the visits are for advice on the use of insecticides for pest control. Some of the visits are for advice on the use of insecticides for pest control.

The clinic has a treatment room, a small labour room, with two beds and accommodation for the patient. It provides maternity and ENT services, treatment of minor ailments, child welfare clinics, dispensing of contraceptives and also of birth control pills. The clinic was dealing with 15 and family planning.

Cabora Bassa hydro-electric power station

11. Mr. C. W. EGLIN asked the Minister of Mineral and Energy Affairs:

Hans 4 Ques 153 (55)
(1) Whether electricity supplies to South Africa from the Cabora Bassa hydro-electric power station have been interrupted; if so, (a) when and (b) what was the cause;

18/18
(2) whether any steps have been taken to restore supplies; if so, (a) what steps and (b) with what result?

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

(1) Yes.

(a) Interruptions occurred from time to time since power was received from Cabora Bassa.

(b) The firm Hidroelectrica de Cahora Bassa, the Mocambique supply authority, is responsible to service the equipment and maintain the lines situated in the Mocambique area and ESCOM is therefore not always aware of the exact causes of specific interruptions in that area. The interruptions are the result of various factors such as faults in the equipment, faults on or damages to transmission lines, weather conditions, etc.

(2) As it is the responsibility of the firm to provide for maintenance as far as

the international border, ESCOM is not necessarily acquainted with the different steps taken to restore the interruptions. Rather serious interruptions occurred recently but the power supply has now been restored partially.

Escom appeals for economy by consumers

STB 19/2/78
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By Andrew Walker

The exceptional growth of the economy is creating demands for electricity that could be difficult to meet, says Escom.

In a statement released yesterday the Electricity Supply Commission appealed to consumers to use electricity sparingly at peak periods this winter.

Peak times were 8 am to midday and 5 pm to 9 pm the statement said.

"Although Escom does

not expect serious problems in providing electricity during the period ahead, circumstances could cause a reduction in the quality of supply," said the statement.

A spokesman said that Escom was trying to ensure that the quality of its service would be maintained.

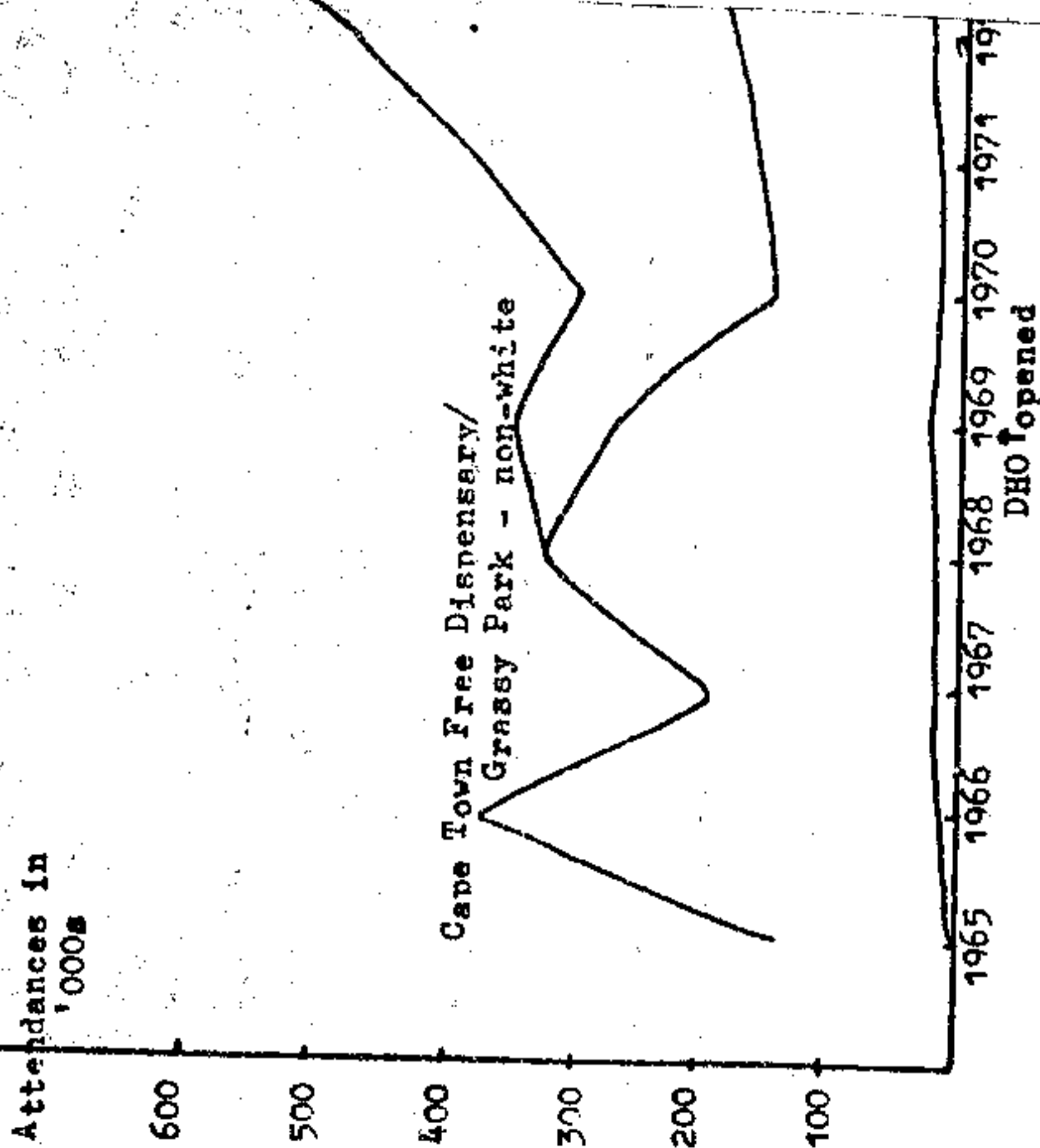
Escom hoped some large consumers would agree to shed part of

their load during peak periods, he said.

Escom also planned to commission four new generating sets at various power stations this year, the spokesman added.

Maintenance work was being rationalised further to improve the availability of equipment, and close liaison between Escom and its major consumers had been established, the spokesman said.

GRAPH 3 (42) NON INFECTIONOUS OUTPATIENT ATTENDANCES 1965-1975
Cape Town Free Dispensary/Grassy Park Health Centre and Day Hospitals Organisation



(43) Average length of stay

It would be expected that the Day Hospitals would have two opposing effects on the average length of stay of inpatients.

On the one hand, the average length of stay would be reduced by the availability of domiciliary care and the proximity of the Day Hospitals to the patients' homes. Secondly, patients suffering from diseases which respond well to early diagnosis and treatment - pneumonia, gastro-enteritis, might be admitted to hospital at an earlier stage of their illness and do not require such lengthy inpatient stay as they would if they had not attended a Day Hospital before advanced

ESCOM POWER **Strained capacity** **55**
 A combination of circumstances will strain Escom's power supply to the limit during the coming winter, leading to its latest exhortation to its customers to use power sparingly during peak periods in the coming months. Between May and September 1981, Escom expects maximum demand to rise to at least 15 000 MW. There may be a threat to the "quality of supply," and large consumers have agreed to the voluntary shedding of load if "serious imbalances occur."

Apart from the unexpectedly high growth rate experienced by the SA economy during 1980, current unsettled conditions in western Mozambique "create the possibility that the supply from Cabora Bassa may not be available continuously during this period."

Another contributing factor has been "the change from scarce and expensive liquid fuels to cheaper electricity."

Escom's vast and continuing expansion programme will undoubtedly catch up with the demand, given time. And the current tariff structure and the degree of self-financing already achieved support the view that tariff increases over and above reasonable COL adjustments should not be required to support the gigantic increase in physical capacity dictated by present conditions.

But one question can legitimately be asked: is SA drifting (through the best of intentions) towards the US position, where too many bodies exercise a veto over energy planning?

An excess of zeal over environmental protection (through hitting at power generating capacity) could have damaging effects on SA's ability to provide new jobs.

keep a patient in hospital for as short a time as possible in order to reduce the psychological effect of the stay in hospital particularly among children, and to keep the cost to the patient as low as possible (although daily tariffs are reduced for long-term patients.) At Red Cross, it appears that the rate of decrease has been more rapid since 1969. The behaviour of the average length of stay at Woodstock Hospital is very erratic.

From these figures, therefore, it is not possible to draw firm conclusions on the effect of the Day Hospitals on the length of stay of patients. Other factors may have been more important in reducing this stay, and the average figure may conceal the effects.

Minister, can he exclude the possibility that such a development could take place if the deposits come within the ambit of his reply?

The MINISTER: Mr. Speaker, we must first make sure whether we have sufficient of a basic commodity before we can take any decisions whatsoever. Once we have a commodity in sufficient quantities, all alternatives will obviously be fully investigated. One of the alternatives is the one mentioned by the hon. member for Berea.

Mossel Bay: gas-find

*3. Mr. N. B. WOOD asked the Minister of Mineral and Energy Affairs:

- (1) Whether the construction of plants or refineries using the gas found near Mossel Bay (a) is being planned or (b) has been considered; if so,
- (2) whether any decision has been reached in this regard; if so, (a) what is the nature of the decision, (b) what major products are to be produced, (c) when is it envisaged that work can commence and (d) what is the estimated capital cost?

†The MINISTER OF MINERAL AND ENERGY AFFAIRS:

- (1) (a) and (b) For the same reasons as mentioned in the reply to Question 2 of 20 February 1981, the answer is no.
- (2) (a), (b), (c) and (d) Fall away.

Mossel Bay: gas-find

Trans 4 Ques Col 177 (55)
 *2. Mr. N. B. WOOD asked the Minister of Mineral and Energy Affairs:

- 20/2/81*
- (1) Whether consideration has been given to the possibility of using the gas-find off Mossel Bay in a gas-fired power station; if so,
 - (2) whether any decision has been reached in this regard; if so, what is the (a) nature of the decision, (b) earliest date on which the project could commence and (c) estimated power output of such a plant?

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

- (1) No, because promising gas appearances have to be proven by further surveys and drilling work before definitive decisions can be taken with regard to the different uses of the gas.
- (2) (a), (b) and (c) Fall away.

Mr. N. B. WOOD: Mr. Speaker, arising out of the reply given by the hon. the

Govt 'not ready for gas power'

CT 21/2/81
HOUSE OF ASSEMBLY.

The government had not, at this stage, given consideration to the possibility of using the gas found off Mossel Bay in a gas-fired power station, the Minister of Mineral and Energy Affairs, Mr F W de Klerk, said yesterday.

(55) Replying to a question by Mr Nigel Wood (NRP, Berea) he said a promising gas find had to be proven before any decisions could be taken.

Consequently there were no plans to construct plants or refineries in the Mossel Bay area. — Sapa

Price of petrol will 'inevitably' go up soon on Witwatersrand

By GERALD REILLY
Pretoria Bureau

THE petrol price on the Rand is likely to rise to 55c a litre from April 1, the director of the Motor Industries Federation, Mr Jannie van Huysteen, said yesterday.

He said the increase of 10,6% in pipeline charges for petrol — 0,34c a litre — plus the additional GST, made a price adjustment virtually inevitable.

However, the oil companies had to work out the effect of the increase in the 31 grid areas, and details of any adjustments would only be made known later.

The current petrol price is made up of wholesale price plus landing and refining costs 18,99c, railage 3,7c, equalisation fund 16,75c, customs and excise 9,341c, dealers mark up 3,51c and current GST 2,1c.

Economists said yesterday that although the expected in-

crease would be just over half a cent a litre it would nevertheless effect the cost structure of virtually all goods manufactured and sold in South Africa.

The claimed, too, there was a "lot of fat" on the current petrol price of 54,4c a litre and the Government should absorb the higher pipeline tariffs.

The Automobile Association's director of publicity, Mr Hennie Kleynhans, said the Government should absorb the increased pipeline rate by cutting back on its huge revenue from fuel.

Pipeline profits exceeded R100-million a year, and the Government could at least afford to maintain current prices.

Motoring costs had spiralled during the past few years.

Any new fuel price rise, he said, would add significantly to the costs in all sectors of the economy, and raise pressure on prices.

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Professor George Menzies Prize
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CHEMICAL

Escom: electrical energy

71. Mr. N. B. WOOD asked the Minister
of Mineral and Energy Affairs:

What total quantity of electrical energy
was generated at Escom installations in
the Republic in 1980?

The MINISTER OF MINERAL AND
ENERGY AFFAIRS:

88 576,8 million kW.h.

141. Mr. I. F. A. DE VILLIERS asked the Minister of Mineral and Energy Affairs:

- (1) What amount was spent in 1980 on prospecting for (a) oil and (b) gas (i) on land and (ii) at sea;
- (2) whether any (a) oil and (b) gas was discovered (i) on land and (ii) at sea in that year; if so, in what quantity in respect of each discovery?

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

FEBRUARY 1981

260

(1) (a) (i) R65 000.

(ii) R52.8 million.

(b)(i) and (ii) No money was spent on land or at sea for the sole purpose of prospecting for gas. The prospecting for oil was the main target throughout.

(2) (a) and (b)

(i) No oil or gas was discovered on land.

(ii) Yes, traces of oil and gas in most of the boreholes which were sunk at sea during 1980 were found. The best results yet achieved in the South African oil search were when gas and light oil were discovered in borehole F-A2 in 1980. Test results at this borehole indicates a yield capacity of 1.58 million cubic metres of gas and 145 metric tons (1 200 barrels) of condensate (light oil) per day.

Koeberg nuclear power station

*241. Mr. T. ARONSON asked the Minister of Mineral and Energy Affairs:

Whether there has been a re-assessment of the costs of the first and second phases of the Koeberg nuclear power station since his reply to Question No. 400 on 21 March 1980; if so, what is the cost of each phase based on current prices?

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

Yes, first phase R792 million, second phase R718 million.

The aforementioned figures show a decrease compared to those given in the reply to Question No. 400 of 21 March, 1980. This is due to the abolition of the import levy and the omission of certain contingency items that are no longer considered to be necessary. At the same time there was a relatively small increase of R12 million in respect of the two phases together as a result of further options that were exercised. In addition to the foregoing amounts, it is estimated that a cost of R282 million will have to be incurred in respect of items considered common to both reactors.

Koeberg nuclear power station

2/12/81
*S. Mr. N. B. WOOD asked the Minister of Mineral and Energy Affairs:

Whether plans for the insurance of the Koeberg nuclear power station against possible accident or failure have been finalized; if so, what is the total indemnity covering (a) persons and (b) property; if not, when is it expected that the matter will be finalized?

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

Yes, plans for the insurance of the Koeberg nuclear power station against possible accident or failure are well advanced and are expected to be finalized within the next few months; it must in any event be finalized before a licence is issued permitting nuclear hazard material to be brought on to the Koeberg site. In terms of the provisions of the Nuclear Installations (Licensing and Security) Act (No. 43 of 1963) the licensee (ESCOM) is totally liable for all nuclear damage to persons and property (including the loss of use of property). There is no limit to the quantum of this liability. It is nevertheless only required of the licensee to provide security for up to R10 000 000 to the satisfaction of the Minister of Mineral and Energy Affairs after consultation with the Minister of Finance (Article 6 of the said Act refers). The actual amount to be provided as security by any installation is determined after due consideration of the nature of such an installation.

In cases where claims due to nuclear damage exceed the amount of security or seem to exceed the amount, the licensee must inform the Minister thereof immediately, after which the Minister tables a report to Parliament recommending that Parliament vote the necessary funds to cover the amount exceeding the security (Article 8 of the said Act refers).

Search
RDY 27/2/81
for oil (SS)
cost R53m

Political Staff

THE ASSEMBLY. — South Africa spent more than R53-million in the search for oil last year, striking nothing more rewarding than some gas and light oil.

This information was given to Parliament yesterday by the Minister of Mineral and Energy Affairs, Mr F W de Klerk.

He said R52 800 000 had been spent in offshore drilling, with traces of oil and gas found in most boreholes.

A further R65 000 had been spent on the search on land, with no success.

The best results yet achieved in years of drilling were when gas and light oil were discovered in a borehole last year.

"Test results at this borehole indicate a yield capacity of 1,58 million cubic metres of gas and 145 metric tons (1 200 barrels) of condensate (light oil) a day," Mr De Klerk told Mr Derick de Villiers (PFP Constantia).

The official jigsaw

55 FM 27/2/81

Last year's consolidation of the energy portfolio was long overdue, as energy policy-making was straddled awkwardly across quite a few government depart-

ments. One of these — the Department of Finance — still retains its influence through its control of the purse strings. Now energy policy is centralised

in the new Ministry of Mineral and Energy Affairs headed by Frederick de Klerk, with Director-General, Sarel du Plessis, as permanent head of the Department.

The line of command then splits into the separate Branches of Mineral Affairs — effectively the old Department of Mines — and Energy. Dr Dirk Neethling is Chief Director of the Energy Branch, which deals essentially with energy availability and energy planning, while the Minerals Affairs Branch administers all the mining functions of government. The two branches share a common secretariat.

Under the system prevailing from 1973 to 1980, energy policy was controlled at Cabinet level by an Energy Policy Sub-Committee. This sub-committee included all the Ministers whose departments were then concerned with energy policy management.

Apart from the government departments involved, there was — after 1973 — a further input from the Energy Policy Committee (EPC), an advisory body set up in the wake of the first oil crisis.

The EPC has thus far preserved its earlier format, although its recommendations obviously no longer go to a Cabinet sub-committee, but to the new energy supremo, De Klerk. And there does seem to be general recognition of the pressing need to reconstitute the EPC to provide formal recognition of the interests of the private sector, and possibly even the consumer.

Such a move would accord with the new emphasis in official economic manage-



Frederick de Klerk . . . energy supremo

ment on allowing freer rein to market forces.

Quite clearly, vital aspects of energy policy could not begin to function, even now, without intense informal collaboration with the oil companies and the coal industry. But more formal recognition of this vital role could only do good.

amendment authorised the government to prescribe the amount of levies and the products to which levies applied. The Act also provided that the levies were to be paid into the Equalisation Fund. The Equalisation Fund was placed, in turn, under the control of the Strategic Fuel Fund Association (SSF) set up under the same amending act. The SSF finances the purchase and stockpiling of crude oil.

Further amendments in 1979 and 1980 provided for specific exemptions from the levies imposed, for example to permit the export of refined products to increase use of local refinery capacity.

The Petroleum Products Act No 120 of 1977 established the power to promulgate measures directed at the saving and price determination of petroleum products, as well as the prohibition on the publication of certain information concerning petroleum products. The current fuel conservation measures and the regulations providing for the recycling of used lubricating oil, have been promulgated under this Act. Another important topic dealt with is the system of restrictions on the number of petrol service stations.

The Section also has responsibility for investigating applications for increases in coal prices at production and retail levels, and the producers' prices of anthracite and coke. It also administers the rationalisation scheme for coal distribution. By

means of the Coal Allocation Committee, it endeavours to identify bottlenecks in the distribution of coal and to take the appropriate remedial actions. The Section also handles coal exports.

The Energy Branch also has within its jurisdiction the Electricity Control Board, set up under the Electricity Act to oversee the generation and supply of electricity. The Energy Branch is responsible for the execution of the government's policies regarding Escom. The issues involved include approval of Escom's borrowing powers, its loan agreements and its appropriations for the Reserve Fund and Capital Development Fund. The supply of electricity by Escom to places outside the Republic also requires approval.

The second section of the Energy Branch, Energy Planning, is mainly concerned with energy economic analysis. This line of research is aimed at supply and demand, present and future. Policy matters, like the current proposals to make liquid fuels from methanol and ethanol, are mainly dealt with by this section. Another significant part of this section is Energy Data & Information Systems, in charge of computer-based econometric studies.

Apart from its long-standing commitment to electricity production through Escom, the SA government has made a very heavy commitment to energy production,

The logic of combining mining and energy in the new department is not too difficult to discern. The two major indigenous energy sources — coal and uranium — form the obvious links. Grafted on to this common area are the aspects of energy policy, connected with synthetic fuels and the supply of imported crude oil, as well as demand management to take account of supply limitations.

The most important regulatory functions of the Energy Branch are carried out by the Section for Energy Availability, and are largely determined by a series of statutes which provide the skeleton for SA energy policy. The Liquid Fuel and Oil Act No 49 of 1947 provided the legal framework for the establishment of Sasol, through setting up a Liquid Fuel and Oil Industry Advisory Board.

The State Oil Fund Act No 38 of 1977 provided originally for the creation of the State Oil Fund (SOF), to be controlled by the SOF Association (Pty) Ltd and into which certain proportions of the customs and excise duty on LPG, petrol and other fuels were to be paid. The SOF was to be used mainly for the manufacture of liquid fuels from coal, their marketing and the financing of related activities, and was the arm through which government has financed Sasol.

In 1979 this Act was amended to provide for a levy on petroleum products. The

prospecting and research. Sasol is the world's only commercial scale synthetic oil plant and represents a massive order of capital commitment. The Atomic Energy Board runs nuclear research and development and the licensing of nuclear power plants in SA, while the commercial exploitation of local uranium enrichment facilities has been hived off to Ucor (Uranium Enrichment Corporation). Soekor is the oil and gas prospecting arm, now consolidating its activities off-shore, with recent encouraging results.

Government exercises its ultimate control over these public bodies in a variety of ways, depending on the precise nature of their individual charters. That control will, in future, obviously be exercised on the advice of the new department.

Some important issues require attention within the revamped structure, like the supply of crude oil from abroad and the expansion of the supply of locally produced synthetic fuels. There are also the related questions of pricing of petrol and diesel fuel. Then there are the issues relating to the sufficiency of SA's coal resources which bear on domestic coal pricing and the permissible level of exports.

Formal participation by the private sector in the decision-making machinery should therefore not be too long delayed.

Salem ruling reserved

CT. 28/2/81
55

LONDON. — Legal submissions are continuing in the London High Court case brought by the Shell Oil Company against a Lloyds insurance syndicate over the loss of the cargo of the oil tanker Salem, and hearings are expected to end soon. Judgment will be reserved.

The Salem, carrying crude oil belonging to Shell International, was allegedly scuttled off the West African coast in January 1980 after off-loading most of its oil at Durban.

South Africa's official oil-purchasing agency paid Shell R25 m as compensation for part of the cargo. Shell is now claiming R43.2-million from the insurance syndicate.

Mr John Hobhouse QC, for the syndicate, said the Salem's cargo was lost as the result of a fraud against which Shell was not insured.

He told Mr Justice Mustill he was not claiming the purchasing agency had been an initial party to the conspiracy, but added: "Whether at some stage they closed their eyes to some part of the transaction is a matter for speculation."

Agreed facts put before the court stated that a number of individuals conspired to sell the cargo to the agency. One of the men named is Mr Frederick Soudan, owner of the Oxford shipping Company, which owned the Salem. — Sapa

S. Times (55)

Petrol rise on horizon

By John Spira

1/3/81

SOUTH Africa will have to brace itself for a petrol price hike before the end of the year, according to Donald Masson, managing director of Trek Beleggings.

For obvious reasons, he said, the increase would not materialise before the general election.

"But thereafter there can be no doubt that the cost of petrol will rise."

It is a development which will give the country's already high inflation rate a sharp up-

ward twist because of the wide ramifications for the whole economy.

Mr Masson pointed out that the last price increase took place 18 months ago. Though the hike was substantial the oil industry is now under-recovering against its market margins. In the intervening period the price of crude leapt by about 40%.

"Accordingly, the price at the pump will have to go up," he said.

Mr Masson's comments followed his release of Trek's re-

sults for the year to December 31 1980.

The group earned taxed attributable profits of R10.6-million — 63% up on the previous year's figure. Turnover was 26% higher at R245.7-million.

Per share earnings gained 65% to 52.8c and a final dividend of 15c (9c) has been declared to raise the total for the year to 20c (15c).

Mr Masson envisaged much the same level of earnings in 1981 "because several unusual factors boosted our 1980 figures".

These included a sharp rise in the fuel oil price and lower costs.

The dividend is now covered 2.6 times by earnings — a figure which Mr Masson sees falling in the years ahead, in line with Trek's objective of raising dividends by between 15% and 20% over the next five years.

Petrol price rise set for next month

RD 3/3/81

55

~~24/4~~

By GERALD REILLY
Pretoria Bureau

THE price of petrol is virtually certain to rise by at least half a cent a litre to 55c from the beginning of next month.

And, according to oil company sources and the director of the Motor Industries Federation, Mr Jannie van Huyssteen, there could be another and bigger rise from July.

The April 1 rise is a direct result of the Railway Budget in which pipeline charges to the Rand were raised by 0,45c/l.

The adjustment would include GST of 0,45c.

Mr Van Huyssteen pointed out that the Opec countries were due to meet in June, and an upward adjustment in crude oil prices is expected.

This would probably have to be passed on to consumers.

Another factor likely to affect the July expected increase was retail and oil company margins.

These were adjusted accord-

ing to an agreed formula and the higher price of crude would reduce the already thin margins.

The current petrol price has remained at 54,4c/l since June 1979.

It is made up of the wholesale price plus landing and refining costs, railage 3,7c, equalisation fund 16,75c (this is used for Sasol development), customs and excise 9,341c, dealers' mark up 3,51c and current GST 2,1c.

Meanwhile opposition spokesman and the AA have appealed to the Government to absorb any further fuel price rises by reducing its big fuel pipeline profits, which exceed R100-million a year.

One oil company executive said the industry was now under-recovering on the agreed average margin, and would have to be compensated.

Economists have stressed the effects of fuel price rises on the prices of all commodities and services.

Trench diggers walk out on Thebehali

By CHARLES
MOGALE

SOWETO Council chairman Mr David Thebehali's electricity job bonanza went sour on Friday when about 60 trench diggers — mostly women — went on strike.

The diggers refused to work and instead took a bus from Diepkloof of Jabulani to confront Mr Thebehali at his chambers. Mr Thebehali and his deputy, Mr John Makhaya, were told by the strikers that the chairman's promise of R50,50 per week was not kept.

The diggers demanded the immediate resignation of the white supervisor, Mr Bernard Crutchurfield, who had reduced payment from R8,10 a day to R5,00.

Mr Crutchurfield was also accused of telling the workers he did not want anyone of them to earn more than R50 per fortnight, and had started giving them less work to achieve his aim.



The women who dig electricity trenches in Soweto went on strike and marched to the Jabulani Civic Centre. Here they are being addressed by Mr David Thebehali and other community councillors.

The confrontation with Mr Thebehali, which was staged near the foyer of the chambers, reached a climax when the women yelled at Mr Crutchurfield; "We don't want you. We want Mr Ken (back)."

Mediator Mr Thebehali told the strikers his council would ensure that the payments are raised as promised and more work will be created.

Replying to the allegations, Mr Crutchurfield

told the workers that he could not provide work because there was none.

"Had it not been for the rain, maybe I would have jobs for you. As it is, many machines were broken and if we let you go on digging trenches when the situation is like this, we may have to get you to clean the trenches at a later stage," he said.

The low payments were due to most of the workers "idling."

When the workers yelled that he resign, Mr Crutchurfield countered via Mr Thebehali; "Now they want to do our work for us."

It was agreed that the striking workers begin work this morning, but the discussions ended on a sour note when Mr Crutchurfield threw his parting message; "Should I find anyone of you away from her trench at any moment, she's fired!"

55

SOWETAN 9/5/81

263

285

CT 12/3/81
Soekor
to hire
new rigs

Industrial Reporter

SOEKOR, the State-backed oil-exploration undertaking, has negotiated a contract for the long-term hire of two new off-shore drilling rigs specifically designed for South African conditions.

The company said in a statement yesterday that the move had been necessitated by a world-wide shortage of rigs, which had in turn caused rapidly escalating hire charges and reluctance on the part of owners to enter into long-term agreements.

Soekor had decided to negotiate a contract for the rigs with an international drilling group and the units would be built for delivery late next year or early 1983.

"Both units will be of the most modern design and capable of operating in water depths of up to, and with minor additions, in excess of 500 metres in very severe weather and sea conditions."

A Soekor spokesman said there was speculation that the rigs, costing about R80 million, were to be built in Japan.

RDM 12/3/81 (55) (2/60)

Soekor order two new oil rigs for coastal search

TWO large offshore oil rigs, able to operate in depths in excess of 500m, are to be built for Soekor's oil search off the South African coast.

A spokesman for Soekor said in Johannesburg yesterday that a worldwide shortage of offshore drilling units had resulted in escalating hire charges and a reluctance on the part of rig owners to enter into long-term agreements.

"In order to ensure continuity in the search for oil off South Africa, after considering various alternatives, Soekor has negotiated a contract with an international drilling contractor for the long-term hire of two drilling units which will

be built for delivery late in 1982 or early 1983," the spokesman said.

Although he would not say where the rigs would be built, it is understood that the two units will be assembled in a Japanese shipyard.

"Both units will be of the most modern design and capable of operating in water depths of up to, and with minor additions, in excess of 500m in very severe water and sea conditions," the spokesman said.

He added that the rigs would be adapted to suit South African conditions "and this will lead to great operational advantages".

Mr Nigel Wood, the NRP

spokesman on energy said the news was most welcome.

"The latest drilling results announced earlier this year indicate highly promising signs, which are worth pursuing further even at high costs.

"There seems to be very likelihood of a significant oil strike in the Mossel Bay area. This would revolutionise the economy of the Eastern Cape and the Republic as a whole, and make every rand spent to date, very worth while," Mr Wood said.

Meanwhile, it is believed that a third rig, the Sedco J, was to have arrived in South African waters later this year, but is at present on hire off the Ivory Coast. — Sapa

Police put an end to Kriel riot

By **LEN KALANE** ⁵⁵
EASTERN Transvaal police are investigating the cause of the riot at the Kriel power station when 300 employees went on the rampage on Wednesday night, damaging cars and buildings.

The workers plundered a bar in the compound and set cars alight.

Brigadier J Smith, divisional CID officer for the Eastern Transvaal said: "Everything is back to normal at the compound. We don't know why those people went on the rampage. We are still investigating."

TEARGAS

Scores of riot police were called to the compound and teargas was used to disperse the angry mob.

No shots were fired.

Brigadier Smith said rioting began in the compound and the group stoned buildings and broke many of the windows.

Expensive equipment was smashed and the bar, which serves the employ-

ees in the compound, was plundered and the liquor stolen. ^{3/3/81} *Sowetan*

Other buildings were set alight and two cars belonging to Kriel power station employees were set alight and destroyed.

The sleeping quarters in the compound were wrecked and damage estimated at R15 000 was caused to the premises according to Brigadier Smith.

A spokesman for Escom said the rioting began at about 8.15 p.m. and a large group of dissatisfied people went on the rampage.

The spokesman could not say what the cause for the dissatisfaction was but said it was being investigated.

The Escom spokesman confirmed that the police were still present at the Kriel compound but everything had returned to normal.

The spokesman said the exact damage had not yet been estimated but described it as "fair".

45 injured
 as bus overtakes
 16/3/81

Forty-five people were injured, many seriously, when a transport bus carrying power station employees from a shopping trip left a gravel road in the eastern Transvaal.

The employees, all from the Matla Power Station, were returning from a shopping trip to Evander on Saturday afternoon when the accident occurred.

A police spokesman said the bus had apparently gone into a corner too fast on the Trichardt-Kriel road. The bus, from Highveld United Transport, left the road and overturned and many people were trapped in the wreckage.

The spokesman said many were seriously injured and taken to various hospitals in the area according to the nature of their injuries.

At the Matla Power Station, Mr J B C du Preez (28), an employee, was killed instantly when a heavy steel plate which was being hoisted by crane gave way and fell on him.

The table below
 living in the 117
 available per pers

11) Area.
 and during school
 built shack, in wh
 The 15 houses w

cording to square metres
 bution of the people

include the worker-
 ple lived at weekends

Number of rooms	Number of Houses	Average number of people in house:
1	15	3,4
2	3	4
3	4	4
4	2	8
5	3	4
6	3	3
7	3	3,4
8	3	5,0
9	3	5,7
10	3	6,2
11	3	6,3

TABLE 23

Distribution of houses according to number of rooms, average number of people living in each type of house.

Number of rooms Number of Houses Average number of people in house:
 during week during school at weekends and holidays

1) Number of rooms.
 The number of rooms in a house is related to its total area, but more important, it serves as a measure of privacy.

SA joins

North Sea

oil search

WCH
55

Argus
16/3/81

Argus Bureau

LONDON. — The award of a share of a licence to prospect for oil in the North Sea to a South African oil company is certain to produce a strong reaction from the Organisation of African Unity, led by Nigeria.

The licence was granted by the British Department of Energy recently, but its implications have only just come to light.

The award of the part licence to Unilon Oil Exploration of South Africa is now sure to cause considerable embarrass-

ment to the British Government during the visit to London of Nigerian President Shagari this week.

Oil-rich Nigeria is pushing for an oil embargo against South Africa.

Unilon Oil Exploration is a subsidiary of the South African Federale Mynbou group. It holds a 10 percent stake in a North Sea consortium, managed by Gulf Oil, which has been granted rights to a block 250 km north-east of the Scottish coast.

Test drilling is to begin this year.

If oil is found and exploited Unilon would own 10 percent of the field's output.

Although companies are not allowed to export oil to South Africa, there is no restriction against supplying non-British oil.

Farmers now grow cane — for fuel and security

RDM 17/3/81

~~35000~~

~~254~~

55

LYDENBURG. — Farmers in the remote Onderberg region, near South Africa's border with Mozambique, believe that sugar cane could help to solve the problems of border security and fuel shortages.

To prove their point, they are seeking Government aid to expand cane production.

The Government is seeking to halt infiltration from Mozambique by guerrillas of the banned African National Congress — as it made clear in January when South African troops made a lightning strike against three houses described as ANC headquarters in a suburb of the capital, Maputo.

However, infiltration into this largely undeveloped area is

easy, and the border is marked only by a simple fence.

One answer, the Government believes, is further settlement and development of the Onderberg, which boasts almost ideal growing conditions. But its traditional crops of cotton and vegetables are barely profitable.

Soaring fuel costs have affected vegetable crops, which must be transported about 400km to markets.

Local farmers believe the answer lies in sugar cane, already the major crop for ones such as Mr Jan Lourens and his son, who have 1 000 hectares of their 10 000 hectares under cane.

In the last season, Onderberg

farmers delivered a record 1 600 000 tons to the local sugar mill.

Cane is not cheap to produce, because it needs overhead irrigation. Mr Lourens puts his water bill at R7 000 a month.

To deal with that problem — with the aid of the British Tate and Lyle Corporation — farmers have drawn up extensive plans for a second mill and are seeking Government backing.

As an added incentive to the Government, the project calls for the mill to crush two million tons of cane a year — half for sugar, and half for ethanol — an important consideration in South Africa.

Mr Lourens is confident that despite its price tag of R140-

million, the mill is a sound proposition, providing it can get a guaranteed annual quota of 100 000 tons.

The overall project — mill, irrigation canal and railway spur — would cost about R350-million. It will eventually provide 10 000 to 20 000 jobs, 95% of them for blacks.

The question of jobs and better housing for blacks preoccupies many farmers in the area.

"As we develop, so must they," says Mr Lourens. "As we pushed forward with clearing the land and building our farms, I think we neglected them. Now we must go back and clear up these matters."

— Sapa-Reuter:

Rioting Escom workers destroy cars and bar

By Mike Cohen
Crime Reporter

Buildings were damaged, cars set alight and a bar plundered when 800 workers at the Kriel power station in the Eastern Transvaal went on the rampage last night.

Scores of riot police were called to the compound and tear gas was used to disperse the angry mob. No shots were fired.

Brigadier J Smith, Divisional CID officer for the Eastern Transvaal, said today rioting began in the compound last night and the group stoned buildings and broke many windows.

Expensive equipment was smashed and the bar which serves the employees in the compound, was plundered and liquor stolen.

FIRES

Other buildings were set on fire and two cars belonging to Kriel power station employees were set alight and destroyed.

The sleeping quarters in the compound was wrecked and damage estimated at R15 000 was caused to the premises, according to Brigadier Smith.

A spokesman for Escom said today the rioting be-

gan at about 8.15 pm when a large group of workers went on the rampage.

The spokesman could not say what the cause was but said it was being investigated.

TEAR GAS

The rioting lasted for almost five hours until riot police were called to restore order. Tear gas canisters were fired into the crowd to force them to disperse.

The crowd then scaled the security fences to escape the tear smoke and gathered in the veld nearby.

The Escom spokesman said the police were still present at the Kriel compound but everything had returned to normal.

Brigadier Smith said no one was injured and that everything was quiet early this morning.

Pressure on coal price

SPM
8/3/81

PRESSURE is rising within the coal industry for South Africa's coal exports to be made more expensive, so that this country's increasing coal extraction costs can be met without penalising domestic coal consumers.

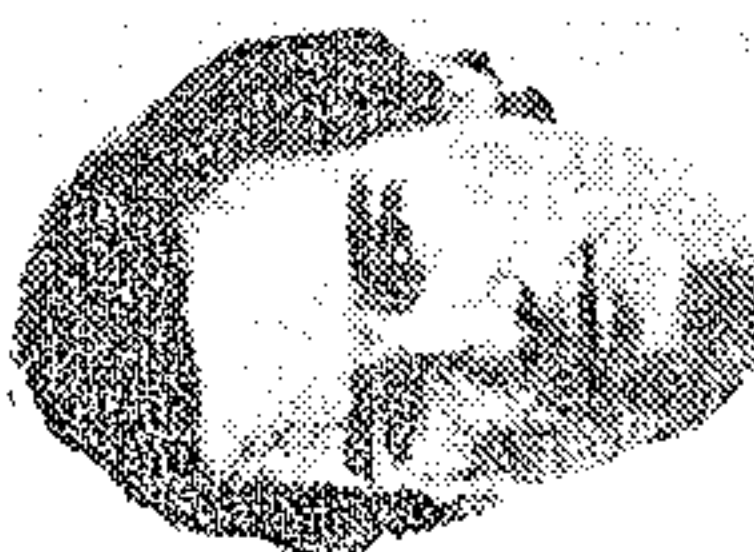
Despite the high reserve estimates of our coal resources, the process of extracting the stuff from the ground is not getting any cheaper.

Costs are rising not only with the 15% inflation rate and the skilled labour shortage, but also with the built-in inevitability of having mined the easiest seams first and leaving the more difficult ones until later.

If the domestic market is not to bear the growth-stunting brunt of funding the more advanced extraction technology required to maintain current output levels, then the export market must.

The latest call for a higher export price for South African coal has come from Gencor, whose coal division general manager came out in support of the move at last week's Saffo energy exports conference*.

The logic of the strategy is quite penetrating, the only variable being the exact extent of South Africa's proven recoverable coal reserves, and the proportion of annual production which can be exported without



Simon Willson

Down to business

neglecting domestic requirements.

Gencor, in common with most of the rest of the South African coal industry, emphasises the closeness of the relationship between the general coal price and the rate of extraction of the resource.

As the easier and more accessible seams are worked out, attention switches to the trickier seams, and mining costs rise appreciably.

Higher extraction rates can be achieved only by more expensive mining methods, the argument runs, but more expensive mining methods have to be justified by higher sales revenue from existing output.

The coal industry contends that the domestic coal market has never supported the price increases necessary for investment in more advanced extraction technology, and the evi-

generation and its contribution to the growth rate, the control of the domestic coal price is imperative as a policy instrument in the present go-for-growth economic strategy of the Government.

The industry now wants another way to increase prices and raise revenues, and the obvious means is the export market.

There could hardly be a more propitious time for loading revenue-raising onto the export market. Oil's upward price gymnastics and its intermittent, politically schizophrenic supply profile have driven the energy importers of the West and Far East back to coal.

South Africa's revenues from coal exports have risen from R37 300 000 in 1975 (a year before export-bound coal was routed through Richards Bay) to R637-million last year.

Now Richards Bay throughput is to be escalated to 44-million tons a year by 1986, by which time estimated earnings will have topped R2 000-million.

Demand is stable and the markets large; the ideal revenue-raising opportunity, the coal industry exclaims.

The price differences between the domestic and export coal markets is pronounced, peaking at R6.50 a B grade ton in 1978 and falling back to R4.60 last year.

conducted as long as three years ago showed that the average extraction rate per South African coal seam had improved from 48% during 1968 to 63% in 1978.

What better indication, the coal industry is asking, of the value and feasibility of future increases in the real export price?

South African Coal Exports — the issues at Stake: S P Ellis.

back to R4.60 last year. This differential, inadequate as it may have been from the industry's point of view, still had a direct influence on the percentage extraction.

The combination of greater valuation of coal reserves and the viability of improved technology has resulted in real improvements in coal recovery.

A Chamber of Mines survey

	Exports			"B" Grade		Difference (R/ton)
	Million tons	Mine realisation f.o.r. (R/ton)	Inland price f.o.r. (R/ton)			
1974	1.2	5,50	2,70			2,80
1975	1.5	7,70	4,10			3,60
1976	3.5	9,50	5,70			3,80
1977	8.1	12,10	6,80			5,30
1978	10.3	14,00	7,50			6,50
1979	16.7	14,20	8,60			5,60
1980	22.5	14,20	9,60			4,60
1981	23.6	16,40	10,70			5,70

S. Tribune 22/3/81

Oil from coal is here to stay

55 ~~200~~

Basic technology won't change in near future

By JACK BRICKHILL Finance Editor

OIL from coal a la Sasol is here to stay at least for this decade.

Caught on the wrong foot are large chemical and mining groups in South Africa which are dragging their feet on the oil from coal issue because they believe new, more economical and more efficient American technology will replace Sasol technology. Sasol still offers the only commercially viable proposition in the world.

The companies have not responded to an invitation recently from Sasol managing director Joe Stegmann to start producing oil from coal and share in the heavy capital burden — and

no doubt profits. Sasol's pretax profit for the half year ended December rose by 63 percent to R141-million.

Stegmann says the basic technology is unlikely to change before planning for the next plant in South Africa — Sasol 4 — starts, probably in 1985.

However big adaptations to the process are possible depending on the range of products required.

Stegmann says: "Like the Americans we are all hopeful that in the future improvements in efficiency and economy of oil from coal processes will be achieved.



Stegmann . . . an invitation

However all indications are that improvements, though very welcome of course, will not be dramatic and will not have a large impact on the oil from coal indus-

try."

So much for the huge sums being dished out for research overseas. Indeed the United States will spend R45 million, the lion's share of its energy research money, on buying Sasol know-how. The Australians are also deeply involved in the Sasol technology.

Stegmann says comparisons are made with reports of cheaper processes but the general experience is that, with increased research effort and the spending of money on more detailed engineering, unforeseen problems arise. This leads

to more effort and capital which decreases efficiency and increases cost.

"We do not want to comment on the plans of other South African companies contemplating coalbased synthetic fuel projects.

"We are clearly on record that we would like to see other groups enter this field preferably even before we can start with the planning of our next project, regardless of the technology they may want to use," he says.

There are several possibilities for the siting of Sasol 4. Coal availability and water resources are the main factors involved in the siting of these large projects.

CT 25/3/81 (55) ~~155~~ (55)

Emergency trial at Koeberg

Staff Reporter

ESCOM will carry out its first full-scale emergency exercise, involving the co-operation of local authority services, police, army units and helicopters, on the site of the Koeberg nuclear power station early today.

The four-hour exercise is expected to end about noon. A spokesman for Escom said yes-

terday that the exercise would be the "first of many."

An official Escom statement described it as "a training exercise undertaken in and around the Koeberg power station construction site".

"It is part of a development of Koeberg emergency plans for the power station which must ultimately be approved by and demonstrated to the satisfac-

tion of the Atomic Energy Board," the statement said.

The first of several emergency planning exercises to be undertaken this year, it was aimed at testing communications and liaison with supporting emergency services from local authorities. Included would be fire brigade units, helicopters, army and police vehicles.

Petrol price can be cut claim ^{DD} (55)

DURBAN — Petrol could be sold at weekends and its price cut by 20 per cent, the New Republic Party said yesterday in its election manifesto.

Outlining a plan of action against inflation, the manifesto said crippling price increases could be checked, people could afford red meat, transport facilities could be improved, and tax-deductible bond repayments could put a home within the reach of the average citizen.

"There should be neither poverty nor want in this rich land of opportunity," it said.

The party also promised to look after teachers, nurses, policemen and servicemen but did not go into detail.

It said also that the present Republic had failed to meet the challenges of the 80s and the time had come for a 'New Republic' in which all the peoples of South Africa — white, brown and black, could control their own destiny.

Its vision for a New Republic was based on a Federal-Confederal policy through a confederation formed between the Republic, the homelands and other Southern African states and a federation of the four groups in the 'common' area of the Republic.

This would eliminate domination because in the confederation no state could be forced to do anything against its will and in the federation each group elected its own parliament to control affairs such as pensions, education, culture, health and local government.

The National Party was in chaos, it was seeking a blank cheque for 'secret' policies and did not cater for the aspirations of the urban black.

The PFP policy would result in one man one vote, majority rule and whites being outnumbered in every region.

(News by O. Pollok, 12 Devonshire Place, Durban.)

The third and last major criticism that I wish to borrow from Illich is that health care workers tend to expropriate the power and the responsibility of the individual to heal himself. As health care workers they insist that people become patients and come to them for every illness and that

DD 26/3/81 (55) ~~2/4/81~~
Koeberg stages big emergency exercise

An official Escom statement read: "The training exercise forms part of the development of Koeberg's emergency plans for the power station which will ultimately have to be demonstrated to the satisfaction of, and approved by, the Atomic Energy Board." — SAPA.

CAPE TOWN — Escom carried out its first full-scale emergency exercise on the site of the Koeberg nuclear power station near Cape Town early yesterday.

The exercise, lasting several hours, involved local authorities, police, army units and helicopters.

A spokesman for Escom said that communication and liaison with the supporting emergency services had been "fine."

Among the simulated disasters on the site were fires and a release of radio activity, he said.

The exercise was the "first of many" to be undertaken on and around the nuclear power station site, about 30 km from here.

...t competition from amateurs such the road, and they are horrified cs being available for sale in ost turned mutual self help and if not criminal offences. The lity for health and illness has e workers tend to regard pain, e train workers that even tell

What do we need to do?

There is no simple easy solution to the health problems of South Africa. Perhaps, despite all that I have said, what we really need to do in this country is to double the numbers of doctors and nurses. But before we do this I think we need to look again at our health problems and to learn what we can both from our visible failures and from Illich's criticisms.

What are the major health problems in South Africa? What is their incidence or prevalence? How serious are they in terms of morbidity and mortality? Are they either preventable or amenable to treatment? How expensive will this prevention or treatment be? How concerned is the community about them? As David Morley points out¹² the answers to these last five questions can be used to determine priorities.

If we look at our society as a whole we might come up with a list of medical priorities such as:

- Gastroenteritis
- Pneumonia
- Measles
- Malnutrition
- Tuberculosis
- Hypertension and strokes
- Heart attacks
- Obesity

All of these visible failures of our health care system are common and if we are to deal with them we must make much more efficient use of all our health care workers. All of those working in or for or under the health care system are seen within their local communities as having some medical knowledge, and we must build on this. All our health care workers must be taught more about the prevention and treatment of our major health problems, and their knowledge and skills must be continually updated by means of regular refresher courses. The first four priorities on the list above are all major killers in our society and yet they are easy to either

Search for nuclear plant site in E Cape

PORT ELIZABETH — The Electricity Supply Commission (Escom) is looking at the possibility of siting a nuclear power station in the Eastern Cape. But investigations are at an early stage.

Speaking from Johannesburg, the Escom public relations officer, Mr Boet Uys, said he could neither confirm or deny that South Africa's second nuclear power station would be built in the Eastern Cape.

That a possible site was being considered, emerged from yesterday's annual meeting of the Coordinating Council for Nature Conservation in

the Eastern Cape.

Escom has asked the council to comment on environmental considerations of the siting.

The area being considered stretches from Port Alfred to the Tsitsikamma River.

In a memorandum submitted to Escom and tabled at the council's meeting here, the area from Seal Point to the Tsitsikamma River is described as "probably the least sensitive area" along the Eastern Cape coast.

From Johannesburg, Mr Uys said Escom was always investigating sites for nuclear as well as coal power stations and bodies concerned with conservation as well as local authorities were consulted.

A coastal site was important because water was needed to cool the nuclear power stations. A nuclear power station took between 10 to 12 years from the planning stage to completion. Matters considered

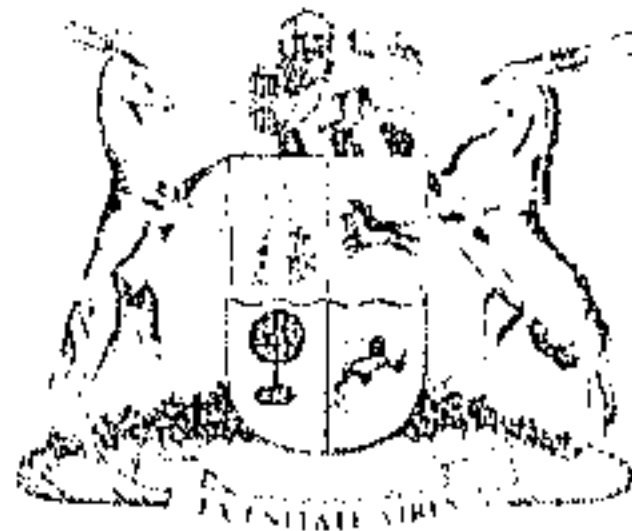
when looking at sites were the suitability of the ground for the massive structure, the location of lines linked to the national grid and possible environmental effects.

The nature conservation council's chairman, Dr Anton McLachlan, said Escom was looking for a site of about two square kilometres. The transmission lines would need a piece of ground with a width of 1½ km. For about 300 m out to sea the temperature would rise by

9C. "There is only one area that is not super-sensitive. That is between Seal Point and the Tsitsikamma River which is not an ideal site."

Dr McLachlan emphasised the preliminary nature of the memorandum and said Escom had not yet responded to it.

The memorandum said that among the aspects to be borne in mind were estuaries, of which the Kowie, Kariega, Bushmans, Sundays, Swartkops, Gamtoos and Kromme were the most important and sensitive to disturbance. — DDC.



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55

Vol. 188]

KAAPSTAD, 25 FEBRUARIE 1981
CAPE TOWN, 25 FEBRUARY 1981

[No. 7428

KANTOOR VAN DIE EERSTE MINISTER

OFFICE OF THE PRIME MINISTER

No. 343.

25 Februarie 1981.

No. 343.

25 February 1981.

Hierby word bekend gemaak dat die Staatspresident sy goedkeuring gegee het aan die onderstaande Wet wat hierby ter algemene inligting gepubliseer word:—

It is hereby notified that the State President has assented to the following Act which is hereby published for general information:—

No. 7 van 1981: Wysigingswet op Atoomkrag, 1981.

No. 7 of 1981: Atomic Energy Amendment Act, 1981.

CT 27/3/81

E Cape nuclear power probe

Own Correspondent

PORT ELIZABETH. — Escom is looking at the possibility of siting a nuclear power station in the Eastern Cape. But investigations are at an early stage.

Speaking from Johannesburg, the Escom public relations officer, Mr Boet Uys, said he could neither confirm nor deny that South Africa's second nuclear power station would be built in the Eastern Cape.

That a possible site was being considered, emerged from a meeting this week of the Coordinating Council for Nature Conservation in the Eastern Cape.

The area being considered stretches from Port Alfred to the Tsitsikamma River.

Investigating sites

Mr Uys said Escom was always investigating sites for nuclear as well as coal power stations and bodies concerned with conservation as well as local authorities were consulted.

He said it was not possible to say whether a power station built in the Eastern Cape would be nuclear fuelled. He did, however, say that coal fired stations were normally built at the pithead.

Aspects that Escom was keeping in mind were that:

- Estuaries, of which the Kowie, Kariega, Bushmans, Sundays, Swartkops, Gamtoos and Kromme are the most important, were sensitive to disturbance;
- Proclaimed marine reserves should be avoided at all costs;
- Enclosed bays, like estuaries, were sheltered waters which might fulfil an important nursery function and were more sensitive than enclosed coasts;
- Construction works in areas of large scale sand movement might interfere with transport systems;
- In areas of reduced water turbulence hot water might not be rapidly dissipated;
- Areas of scarce or unique vegetation should be avoided;
- Shifting dunes were extremely sensitive;
- Construction should not destroy the aesthetic value of an area.

2c rise

Augus 27/3/81

in petrol

price

likely

55

~~247~~

Transport Reporter

PETROL could cost another two cents a litre at the pumps from Wednesday.

Oil companies could face an increase of six cents but the extra four cents would be absorbed by the equalisation fund.

Reliable petrol industry sources today confirmed speculation that the Minister of Mineral and Energy Affairs, Mr F W de Klerk, might announce the increase officially on Tuesday evening after the weekly Cabinet meeting.

The Automobile Association's public relations director, Mr Hennie Kleynhans, said that if this was so — and he had been aware that the oil companies had been complaining of under-recovery for some time — it would be a blow to the motorist and efforts to control inflation.

'It is a well-known fact that regardless of any

(Continued on Page 3, col 3)

Augus 27/3/81 (55)
Petrol = ~~247~~

(Continued from page 1)

appeals to commerce to pass on only that portion of their increase in costs that the fuel price increases cause, they invariably pass on far more than their actual transport costs.

'I want to call on the Government to make known the structure of petrol pricing so that the layman can see how it is split up. The way it is treated at the moment, it is almost classified information.

'If you add to the two cents a litre, the additional price that the Railways charges will add on the same date, it will make a 2½c/litre increase on the Reef, which is considerable.'

BUDGET

Industry source revealed that the increase would not have any percentage in it for the petrol retailer and that there was a strong possibility that a further increase would be announced in the main budget later this year to come into effect on July 1.

Mr de Klerk said earlier this month while announcing the speed limit increase to 100 km/h that this did not mean that the price of petrol would not necessarily go up.

However, he qualified that, in answer to a further question during the Press conference, by saying that there were no applications for petrol price increases on his desk at that time.

Big future seen^{RBM} for oil^{27/3/81} from⁸⁵ coal

VAST quantities of coal, possibly more than 7 000-million tons a year, will have to be used by the year 2030 to make liquid fuels as a substitute for oil, says an international energy study published yesterday in London.

The report, by the Austrian-based International Institute for Applied Systems Analysis, estimates that world production will continue rising until about 2015, when it will peak at 28-30 000-million barrels a year, compared to 20 000-million barrels in 1975.

In spite of this rise, rapidly increasing quantities of coal will need to be processed to meet growing demand for liquid fuels, particularly for transport and chemicals feedstock.

By 2030 some 7 000-million to 13 000-million tons of coal might be needed a year for all energy uses, compared with less than 3 000-million tons now. More than half of it would be used for liquefaction.

The report is the outcome of a seven-year study of future energy demands. The study involved more than 140 scientists from 20 countries. It foresees two major transitions in energy supplies in the next century.

The first will be from relatively cheap and clean conventional sources of oil and gas to more expensive and dirtier unconventional ones. The second will not be completed until late next century.

It estimates that over the next 50 years world energy consumption will grow to between 24 640-million tons of coal equivalent and 39 270-million tons of coal equivalent, depending on the rate of economic growth. This is roughly three to four times the current level.

Oil's share in the primary energy market will fall from 47% in 1975 to 19% to 22% by 2030. However, world oil production will still be higher than in 1975 — 26-35 000-million barrels a year compared with 20 000-million.

But oil production will come increasingly from unconventional sources such as tar sands, oil shale, heavy crude and advanced recovery techniques.
Energy in a Finite World,
Vol. 1, IIASA, Harper and Row, £12.50.

Petrol price to rise on April 1

ROM 28/3/81 55 24/4

By GERALD REILLY
Pretoria Bureau

THE PRICE of petrol will be increased throughout the country — except in coastal areas — on Wednesday.

As predicted in the Rand Daily Mail, the increases will range between 0,2c a litre to 1c a litre in some of the more inaccessible of the 30 petrol grids, the director of the Motor Industries Federation, Mr Janie van Huyssteen, said yesterday.

On the Witwatersrand the price will go up by 0,5c a litre for premium fuel to 55c a litre.

The increase is a result of the increases in pipeline and road tanker tariffs of more than 10% announced in the Railways mini-Budget last month.

Mr Van Huyssteen said retailers and oil company profit margins would remain unaltered for the time being.

He said a further increase in fuel prices later in the year was possible if the OPEC countries at their mid-year meeting decided on a higher basic crude price.

This would also have to take into account a readjustment of margins.

A break down of the current price shows that the wholesale price, including producers' price and refining costs, is 18,999c; equalisation fund 16,7c; Customs and excise 9,341c; retailer margins 3,51c; GST 2,1c and railage 3,7c.

From a Government source it was learnt that the price of other commodities, specially where rail tariffs are a major

cost factor, such as coal and cement, would also have to be adjusted soon after April 1.

The petrol price rise is the first of these.

Economists said last night the railway tariffs would become a significant factor in price rises during the next four or five months.

Soon after the General Election a further range of administered prices will rise which could send the current 16% inflation rate reeling towards 20%, they said.

These included the basic foods — maize and maize products, all dairy products, and later a bread price rise.

Meanwhile, Government sources denied reports that oil companies are to be given a 6c a litre increase and that this would mean a 2c a litre increase in the price of petrol.

Sasol

Four

ahoy!

5 Times

2/3/81



By John Spira

CAPITAL spending topping R1 000-million will see the first three Sasols contributing up to 60% of South Africa's oil and petroleum needs by 1985. And plans for Sasol Four are moving ahead.

This is among the comments contained in London's New Standard after an interview by the newspaper with Finance Minister Owen Horwood.

Mr Horwood is quoted as saying: "When Sasol 2 comes to full production by the end of 1981, we'll be 30% self-sufficient."

Which is good news for trade balances, he says.

The New Standard adds:

"South Africa won't disclose production figures, but word is that something like 75 000 of the 250 000 barrels of liquid fuel the country is consuming each day could come from Sasol by the year end.

"Security on Sasol is tight. Costs of production are under wraps in case the secret sources of the oil the country has to buy overseas should use them as a bargaining tool in fixing prices."

The newspaper also reports that Sasol has been snapping up farms near Sasol 1, and only lack of technicians to run it now inhibits a start on "yet another of those huge sci-fi-like complexes which are rapidly bridging the country's liquid fuels energy gap".

According to the New Standard, Sasol hopes to have enough South Africans by 1987 to offset the current critical shortage of skilled personnel.

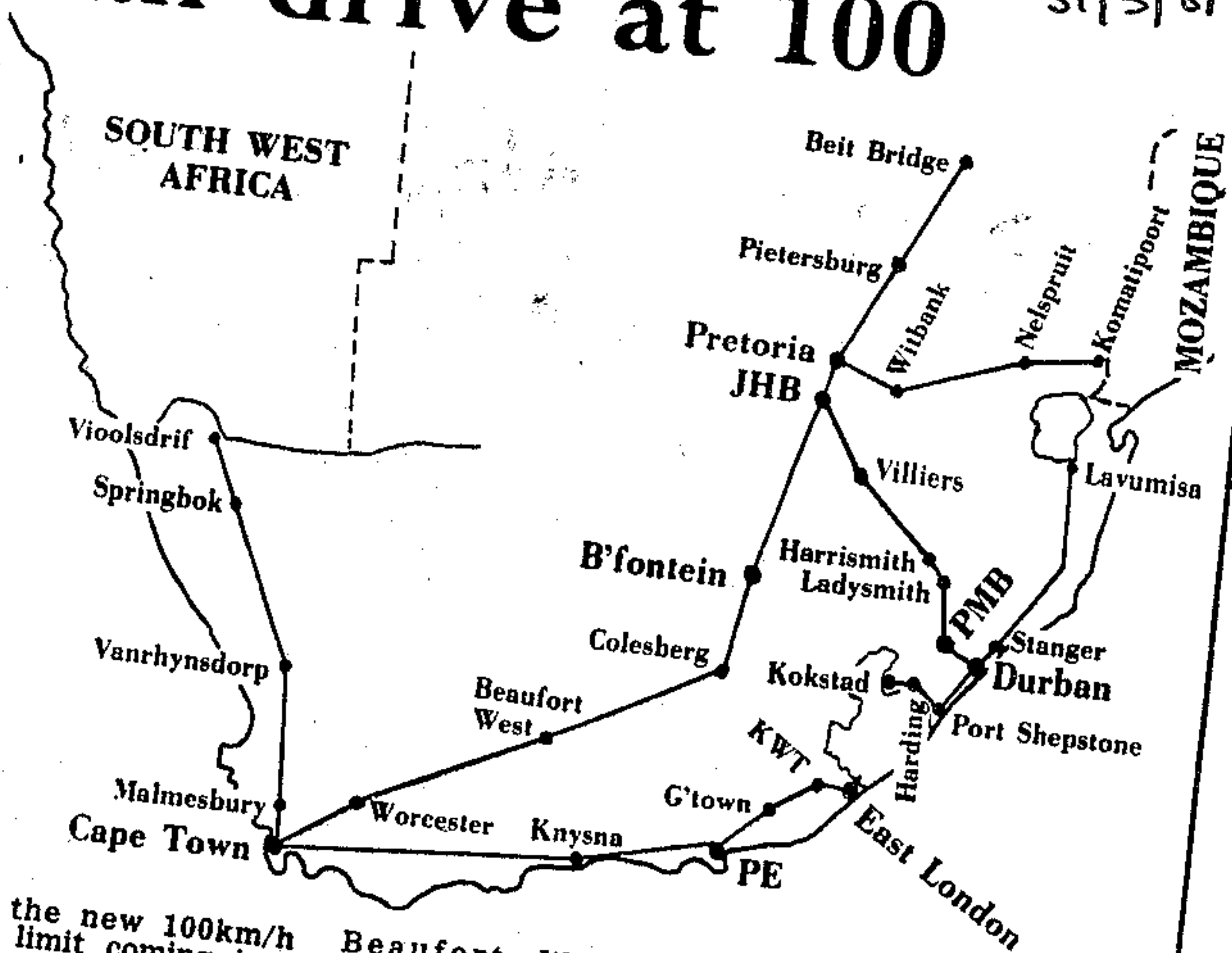
"So while advanced planning for Sasol 4 is already taking place — the plant is almost certainly going to be at Sasolburg rather than Secunda — production won't start for several years yet.

"Sasol officials say that 'with any luck, we'll have a Sasol 4 within the decade'. Meanwhile, they're 50% finished on Sasol 3 and will be in full production in 1984."

Roads where you can drive at 100

DD 55

31/3/81



With the new 100km/h speed limit coming into force tomorrow on some national roads, it's obviously an opportune time to spell out exactly on which roads you can travel at the higher speed. The roads, detailed on this map, are:

The national N1 road from Beit Bridge to Cape Town via Pietersburg, Pretoria, Johannesburg, Bloemfontein, Colesberg,

Beaufort West and Worcester.

The N2 national road from Cape Town to Lavumisa on the Swaziland border via Knysna, Port Elizabeth, Grahamstown, King William's Town, East London as far as Kei Bridge, Kokstad, Harding, Port Shepstone, Durban and Stanger.

NOTE THAT THE SPEED LIMIT THROUGH TRANSKEI IS STILL 90km/h.

The N3 national road from Johannesburg to Durban via Villiers, Harrismith, Ladysmith and Pietermaritzburg.

The N4 national road from Pretoria to Komatipoort via Witbank and Nelspruit.

The N7 national road from Cape Town to Vioolsdrif on the South West African border via

Malmesbury, Vanrhynsdorp and Springbok.

What it means to East London and Border motorists is that you can travel at 100km/h between Port Elizabeth and East London, **PROVIDED** you go via Grahamstown and King William's Town; between East London and King William's Town; and between East London and Kei Bridge.

It is important to note that the speed limit on the coastal road from East London via Port Alfred to Port Elizabeth remains at 90km/h to the point where this route joins the Grahamstown-Port Elizabeth road.

Similarly the route to the north from East London via Queenstown has a 90km/h limit from King William's Town to Bloemfontein.

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- 31 Don Pinnock
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- 27 Marc Best
- 26 L.C.G. DouwesDekker



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Vol. 190]

PRETORIA, 1 APRIL 1981

[No. 7539

GOVERNMENT NOTICES

DEPARTMENT OF MINERAL AND ENERGY AFFAIRS

No. R. 742

1 April 1981

**PETROLEUM PRODUCTS ACT, 1977
 REGULATIONS IN RESPECT OF THE SAVING
 OF PETROLEUM PRODUCTS**

The Minister of Mineral and Energy Affairs has, in terms of sections 2 and 5 of the Petroleum Products Act, 1977 (Act 120 of 1977), promulgated the regulations in the Schedule hereto.

SCHEDULE

1. In these regulations any word or expression defined in the Petroleum Products Act, No. 120 of 1977 (hereafter referred to as the Act), shall bear the meaning so assigned to it and, unless the context otherwise indicates—

1.1 "Avgas" means fuel prepared for use in an aircraft reciprocating engine; (1.1)

1.2 "Avtur" means fuel prepared for use in an aircraft gas turbine engine; (1.2)

1.3 "big consumer" means any person who carries on a business or service undertaking and who normally purchases petrol or diesel oil in quantities of 210 ℓ or more, exclusively for productive purposes, and includes a bona fide farmer; (1.9)

1.4 "bulk consumer" means any person who exclusively for his own productive purposes receives petrol directly from a wholesale distributor, as defined in regulation 1.22 into an underground tank, or receives diesel oil directly from a wholesale distributor into an underground or a surface tank; (1.14)

1.5 "commercial bank" means any commercial bank registered as such in terms of the Banks Act, 1965 (Act 23 of 1965); (1.10)

1.6 "customer own collection point" means a supply point where a customer may obtain petrol or diesel oil in bulk quantities, i.e. in 210 ℓ drum lots; (1.12)

1.7 "declaration" means the declaration prescribed in Annexure D to these regulations; (1.22)

588—A

GOEWERMENTSKENNISGEWINGS

DEPARTEMENT VAN MINERAAL- EN ENERGIESAKE

No. R. 742

1 April 1981

**WET OP PETROLEUMPRODUKTE, 1977
 REGULASIES TER BESPARING VAN
 PETROLEUMPRODUKTE**

Die Minister van Mineraal- en Energiesake het kragtens artikels 2 en 5 van die Wet op Petroleumprodukte, 1977 (Wet 120 van 1977), die regulasies in die Bylae hierby uitgevaardig.

BYLAE

1. In hierdie regulasies het 'n woord of uitdrukking wat in die Wet op Petroleumprodukte, No. 120 van 1977 (hierna die Wet genoem), omskryf is, die betekenis wat aldus daaraan geheg is en tensy uit die samehang anders blyk, beteken—

1.1 "Avgas" brandstof wat voorberei is vir gebruik in 'n lugvaartuigsuiermotor; (1.1)

1.2 "Avtur" brandstof wat voorberei is vir gebruik in 'n lugvaartuiggasturbinemotor; (1.2)

1.3 "betaling in kontant"—(1.14)

1.3.1 betaling met banknote wat deur die Suid-Afrikaanse Reserwebank ingevolge die bepalings van die Wet op die Suid-Afrikaanse Reserwebank, 1944 (Wet 29 van 1944), uitgereik is of met munte wat ingevolge die bepalings van die Wet op die Suid-Afrikaanse Munt en Munte, 1964 (Wet 78 van 1964), deur die Minister van Finansies laat vervaardig en uitgereik is; of

1.3.2 betaling per tjek wat nie vooruitgedateer is nie en wat op 'n lopende rekening by 'n handelsbank getrek is; of

1.3.3 betaling per reisigertjek; of

1.3.4 betaling met 'n posorder of 'n poswissel; of

1.3.5 betaling met 'n dokument wat—

1.3.5.1 op aanvraag betaalbaar is;

1.3.5.2 by enige handelsbank gedeponeer kan word; en

7539—1

Petrol pipelines show R430-m profit

(35)
JTB
2/1/57

Consumer Reporter

South Africa's petrol pipeline profits over the past four years have been nearly R437-million.

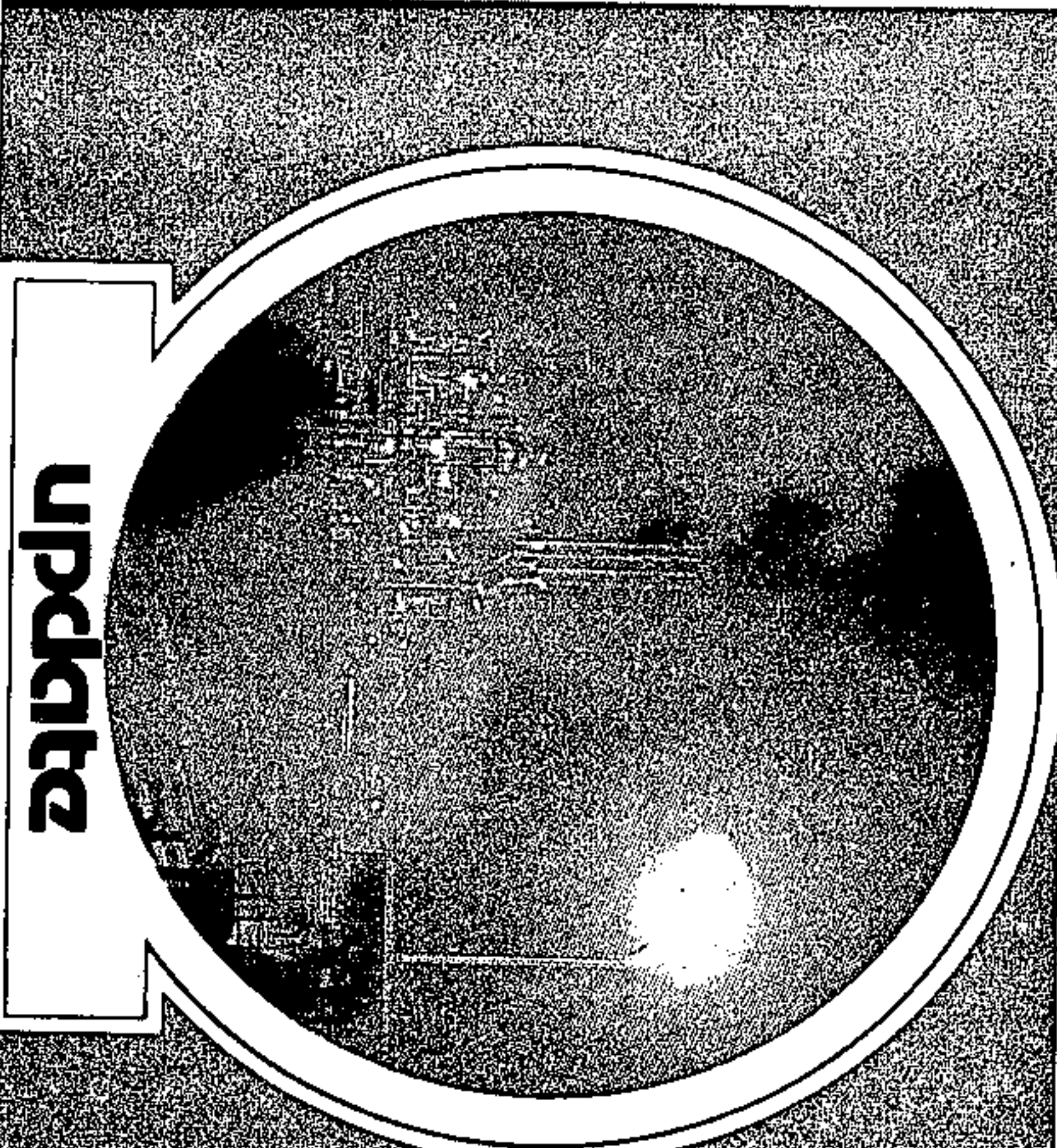
In spite of this, pipeline tariffs were increased yesterday, resulting in a 0.6c rise in the price of petrol on the Witwatersrand.

A South African Railway spokesman said the pipeline revenue was used to offset high losses on the Railways' passenger-

train and bus services — which ran at R440-million last year. This year's loss is estimated at R485-million.

In spite of the pipeline profits, the SA Railways and Harbours had an overall deficit of R67-million last financial year.

The four pipelines from the harbours to inland areas cost just more than R100-million to build.



Update

Oil Shortage Affects Transportation and Manufacturing

By Madden Cole

South Africans will have to face the fact that the era of cheap and abundant energy is a thing of the past and that the country is still a considerable way from total energy independence.

"There are no miracles just waiting around the corner to bring back the days of inexpensive motoring and it is also highly improbable that some imminent breakthrough will give us a short-cut to energy self-sufficiency," Mr JA Stegmann, the managing director of Sasol Ltd said.

For countries not actively pursuing a policy of energy independence the outlook in the short and medium term was gloomy. It must be assumed in general that there would be no substantial surpluses and that prices would continue to increase in real terms.

Sasol chief sounds warning of possible diesel crisis ahead

"By the middle of this decade Sasol will be the largest producer of motor fuels in the South African market, but a great deal more can be done before the end of the decade to increase indigenous production of liquid fuels.

For the time being, Sasol will not be able to tackle the construction of another plant on the scale of Sasol Two or Sasol Three but by the middle of the decade we may well be in a position to start planning such a project, as more and more sophisticated manpower is released from the present projects.

The way is open however,

for other companies to enter the field of oil-from-coal production in the mean time, and in the South African context that would be a positive development as far as I am concerned.

Although there is no doubt that large additions to our indigenous production of liquid fuels can only come by way of further oil-from-coal plants, we should not discount the contribution which can be made through smaller projects such as the manufacture of alcohols from agricultural raw materials or coal.

There are a number of practical considerations which need to be taken into

account when deciding on a programme for the production of alcohols as supplementary fuels if it is to make a real contribution to the reduction of oil imports.

In striving towards energy independence, the country would have to find ways and means of stretching its diesel supplies as far as possible, Mr Stegmann pointed out.

"Not only will diesel be a more critical fuel in times of emergency because its consumption cannot be cut as readily as petrol, but even in normal circumstances, diesel consumption in South Africa has tended to grow at a con-

siderably faster rate than petrol consumption."

Petrol consumption increased by 13 percent between 1971 and 1980, while diesel increased by 60 percent in the same period.

The application too of alcohol blends is not as straight forward in diesel engines and considerable research may be necessary.

Although it is possible to introduce engines that would operate on pure alcohol in the form of either ethanol or methanol, it would involve a major changeover in road transport fleets.

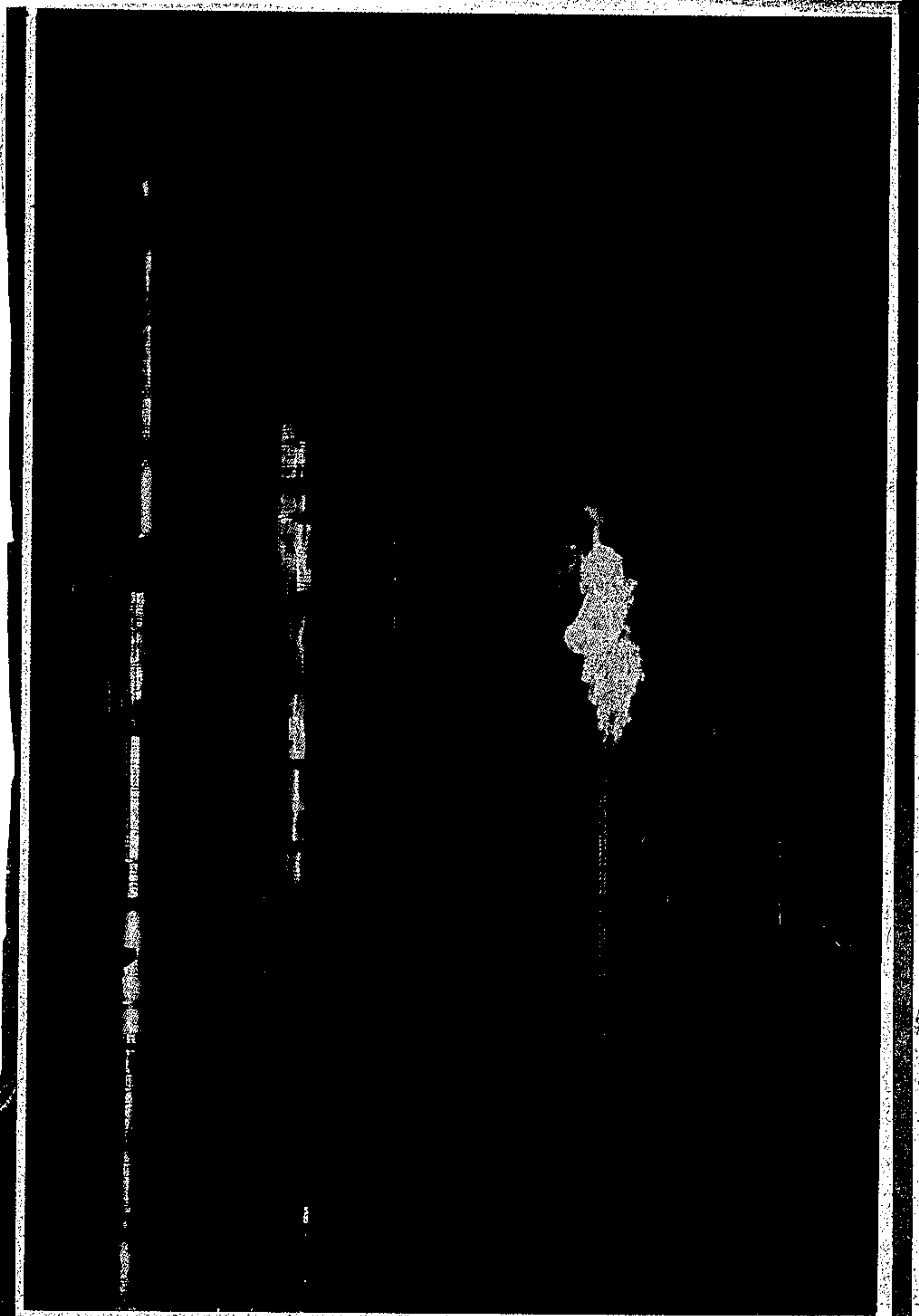
"The overall energy

economics of alcohol production from agricultural sources can be quite poor and in some cases the overall energy consumption will exceed the eventual energy output," Mr Stegmann said.

In spite of these obstacles, methanol and ethanol would assume increasing importance over the years in the search for liquid fuel substitutes for petroleum in transport applications.

"But the mainstay of our petroleum substitution programme should continue to be the production of oil-from-coal," Mr Stegmann said.

SA Industrial
7/4/81
55



Buring bright at Sasol. Although fuel produced from alcohol will become increasingly important in the future, the mainstay of SA's petroleum substitutes will continue to be the production of oil-from-coal.



Success stories

Fm 10/4/81

Two important industrial countries — Japan and France — have continued to tackle energy problems with some vigour and success.

Japan's target for oil imports in fiscal 1981 will be lowered to 5.2m-5.3m barrels per day (mbd) from the 1980 target of 5.4 mbd, according to the Ministry of International Trade and Industry. At a meeting of various authorities held during June last year, increases from the 1980 base of 5.4 mbd were set at 3%-4% a year until fiscal 1985, when oil imports were to reach 6.3 mbd.

Energy savings were brought about by government action, favourable weather and slow growth in energy-intensive industries: 1980 imports actually fell short of their target, reaching only 5.04 mbd.

The government hopes to reduce Japan's reliance on oil from its present 73% of total energy supplies to 50% in 1990. If the plan succeeds, coal will then provide 17.6%, nuclear energy 10.9%, natural gas 10.1% and hydro-electricity 4.6%. There

will also be a contribution of 6.8% from unconventional sources — coal gasification, biomass (waste organic material) and solar energy.

France's 1980 oil imports (at 110.2 Mt or 2.26 mbd) fell in volume by 12.5% from 126 Mt (2.59 mbd) in 1979, according to official data. The decline was attributable to official conservation efforts coupled with a drop in industrial output in the second half of the year. Oil imports were well below the target of 117 Mt (2.40 mbd) set in agreement with the EEC.

Figures show that French oil consumption fell by 6.5%, with the switch to nuclear electricity achieving a reduction of over 17% in the consumption of heavy oil at French power stations during 1980.

Did the US oil majors get into the action ahead of Minorco?

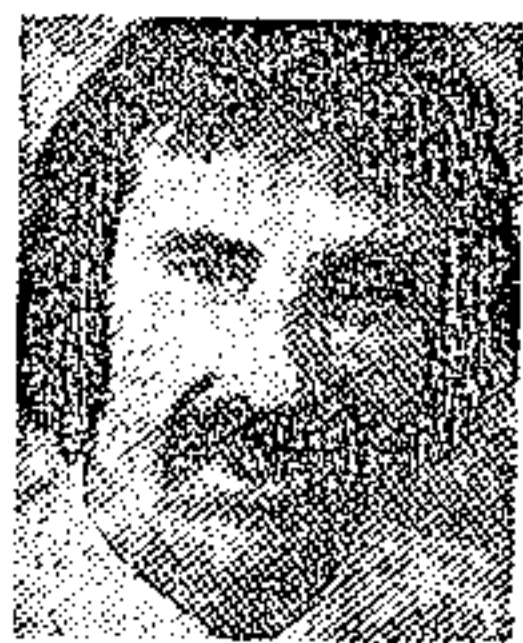
Far-reaching proposals were outlined more than a month ago for transforming Minorco into a considerably larger and, one assumes, more aggressive buyer but, contrary to some forecasts, the share price has remained below 1700c and there has been no significant turnover in the shares.

Several analysts at that time thought that there would be firming in the share price — at most to 2000 from the current 1600, although it did reach 1700 a week ago.

They believed that institutions would move in timeously and buy blocks for long-term investment.

Several analysts now believe that the reason for the apparent lack of turnover may lie in the dramatic shake-up stalking Wall Street as oil companies bid and counterbid for the major US mining companies. Some went as far to add that Minorco should have moved in ahead of this shake-up and made acquisitions.

Such a view is, I think, unreasonable. Firstly the amounts being offered far outstretch Minorco's own resources and as borrowing goes, Minorco is simply not rated very highly — a factor taken into account when the restructuring was proposed.



GEOFF SHUTTLEWORTH comments on the mineral mania sweeping Wall Street and suggestions that the newly restructured Minorco — the Anglo/De Beer, offshore operation — may have been pipped on the post by US oil majors.

Besides the problem of trying to match bids such as Socal's 4000-million US dollar offer in cash and stock for the remaining 80 percent of Amax or Sohio's billion-dollar offer for Kennecott — the US's two largest mining companies — there is the question of anti-trust laws.

Anglo has run foul of such legislation in the past. Minorco's chief asset — a 27 percent stake in Engelhardt Minerals and Chemicals — this week undertook to split its uninteresting mining operations from the very lucrative Philipp Brothers. The reason for the move seems unclear at this stage though rationalisation might well be the major factor.

US speculation about the Minorco proposals revolve around Minorco expanding its asset and share-capital base still further and to attract enough borrowing powers

to go for the larger acquisitions. After the proposals were effected Anglo and De Beers holding in Minorco rose to its present 66 percent. If these two fail to take up their rights in full this will not mean that control slides to below 50 percent — a justifiable consideration considering the current mania on Wall Street.

Engelhardt turned in sparkling results last year whereas some of the US mining companies currently being sought have had dismal recent track records because of low base-metal prices.

One such case is the Fluor Corp offer for St Joe Minerals. Originally St Joe was prepared to liquidate the company before agreeing to a bid by Seagram of 2100-million US dollars. This bid has now been topped by Fluor.

The sentiment on Wall Street has driven other share prices far beyond their normal trading ranges. For example Newmont (also one of the supposed Minorco acquisition targets) delivered a statement to the NYSE that it could offer no explanation for the rise in its share price to more than 63 dollars from slightly less than 40 dollars.

Some brokers believe that Minorco may have been pipped on the post by these developments on Wall Street. They say that Minorco, under careful Anglo De Beers financial patronage, will now never match some of the bids being made. If this is true, then Minorco is likely to steer a more intricate path such as that pursued by Charter following its reconstruction.

At the Press conference held to announce the restructuring proposals, Mr Harry Oppenheimer would not elaborate on where Minorco was going shopping or what it had in mind. In fact he implied that no shopping list had been drawn up at that stage — difficult to believe though this seems.

Most US commentators still favour acquisition targets such as Newmont, Phelps Dodge, but not Amax anymore.

They also believe that Minorco will endeavour to beef up its oil interest which are presently chiefly represented by its interests in Trend International through Minorco and its block in the North Sea through its Charter holding.

There have been no significant announcements to date but Cons Gold, in which Minorco has taken more than the 28.9 percent stake previously held by Anglo and De Beers, indicated in its most recent annual report that it would try to diversify away from its dependence on gold through its Gold Fields of South Africa holding.

OPPORTUNITIES

Mr Oppenheimer did say at the Press briefing that Minorco's area of interest would be North America and South America. North America (including Canada) is wide open to possibilities. However, when commenting on the South American prospects most people talk of a venture into Brazil's developing gold-mining industry.

This would tie in with Mr Oppenheimer's view that Minorco would be looking at natural resources and energy opportunities. Minorco already has a 20 percent stake in Ambrasil.

Coalmining is believed to be an area of considerable interest. This view is probably underpinned by the Charter buy into Alexander Shands. Some doubt this saying Minorco has no direct or indirect interest in coalmining — but neither did Charter before its restructuring.

Great things are obviously expected of Minorco in the not-too-distant future. Its prospective yield is below 2 percent (historic 1 percent) and institutions are bound to top up with the shares as they come on the market.

Analysts believe that small investors will continue to part with the shares as the prospect of a large rights issue daunts them taking a long-term view.

However, until Minorco announces its first acquisitions the share price is likely to remain below 1800 for the foreseeable future.

11/4/71

Shipping Reporter

SOUTH AFRICA is on the brink of making what could prove to be a promising discovery in its 14-year search for oil.

The American off-shore rig, Sedco K, is said to be set to break through the dome of a giant cavern under the seabed 48 miles south of Mossel Bay — a subterranean void which, it is believed, may contain exploitable quantities of oil.

An informed source said the rig was due to make the breakthrough within the next 48 hours, but a Soekor spokesman said: 'I am sorry, I cannot confirm or deny your queries.'

ABOVE DOME

The Sedco K has drilled a number of exploratory holes off the Southern Cape coast in the past few years and is now believed to be above the dome of the undersea cavern.

This belief is supported by figures released by Soekor which show that the present hole is the shallowest yet drilled by the rig.

The Soekor official said the rig has drilled to a depth of about 2 400 m 'and we expect to have something to announce soon.'

ANALYSIS

Any breakthrough into a cavern in the seabed would have to be followed up with a perforation programme and complete analysis before any official statement was made, he said.

'This means that anything we have to say will be said only about the middle of next month.'

SA on the brink of promising oil find

Angus
14/4/81
55

The Sedco K has found methane gas and higher grade hydrocarbons in every well it has drilled in the surrounding area.

ENCOURAGING

At the last hole — about 35 miles to the west — the rig made what was considered to be the most encouraging find of the off-shore search when it struck a pocket with a daily yield of 1.6-million cu m of gas and 1 200 barrels of oil.

Both could be produced under normal pressure.

The thickness of the rock crust at this point is 72 m

and the breakthrough was made at 2 602 m.

The cavern was found to be 101 m from top to bottom.

The French undersea oil firm Foramer has been involved in the present project and holds a 30 per cent interest in the concession area.

Foramer are specialists in developing underwater production heads and laying undersea pipelines.

Foramer representatives flew to South Africa about six weeks ago and held top-level talks with Soekor and other executives involved in the search for oil.

US puts nuclear squeeze on SA

school

STAR 22/4/81
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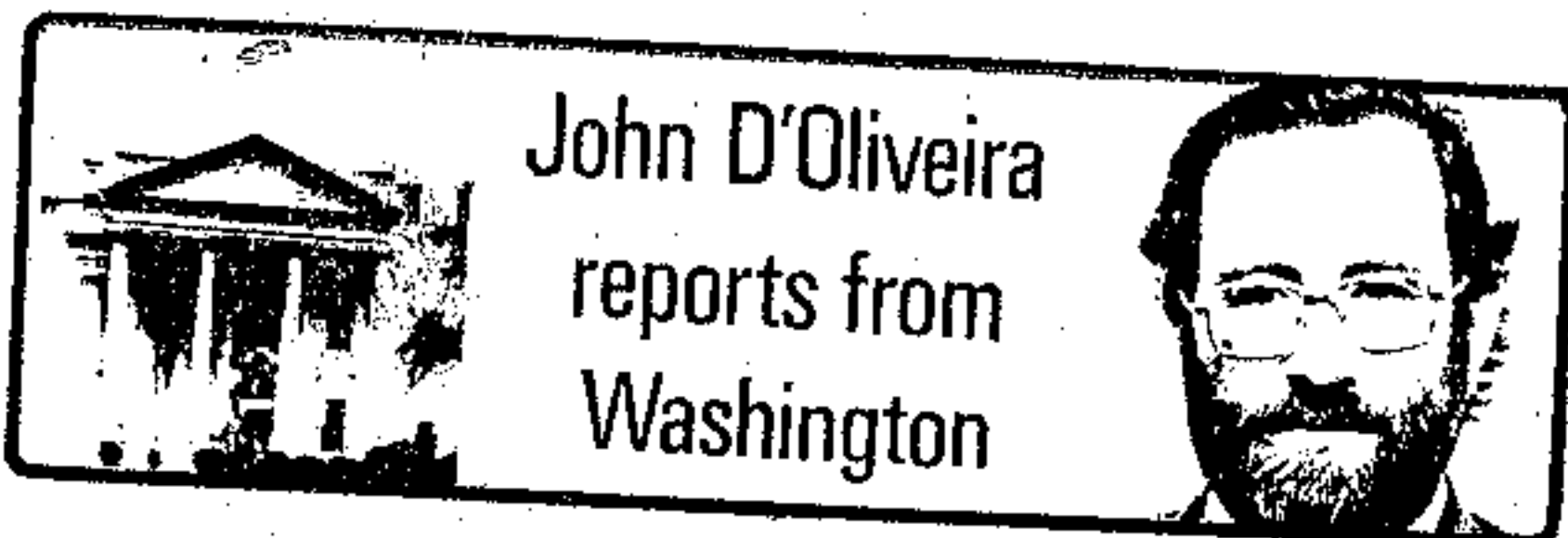
South Africa is apparently involved in an expensive deadlock with America over the enriched nuclear fuel for its Koeberg power station.

If the deadlock is not resolved, this could have profound implications for the nuclear power station near Cape Town.

The deadlock is that, on the one hand, Escom is contracted to supply certain quantities of material to the Doe's Oak Ridge, Tennessee, processing plant by May 31 — or be liable to a penalty of between 16.9-million and 77.6-million dollars.

On the other hand, even if South Africa does meet its contractual obligations to supply uranium for enrichment, the US 1978 Nuclear Non-proliferation Act would prevent the export of the enriched fuel to Koeberg.

In terms of the Act, no enriched uranium can be exported to a "non-nuclear country" like South Africa unless that State maintains International Atomic Energy Agency safeguards in respect of all its peaceful nuclear activities.



John D'Oliveira reports from Washington

South Africa appears to be held to ransom for millions of dollars in a legal "Catch-22" trap devised by the US Carter Administration — and now being considered by President Reagan's State Department.

The trap is due to be sprung within six weeks, but negotiations between the two countries continue. The "Catch-22" is a contract overridden by a law which indirectly attempts to force South Africa to reveal atomic development secrets.

Failure to meet US demands could lead to the withholding of US-enriched fuel for Koeberg nuclear power station.

Balked

While South Africa applies the IAEA safeguards to the Koeberg power station and the Safari research reactors, it has balked at accepting as yet unspecified safeguards for its nuclear fuel enrichment pilot plant — for fear of revealing details of the secret enrichment process.

So Escom appears to have been placed in a "Catch-22" situation. As things now stand, if it does not supply the feedstock in time, it is liable to severe penalties. If it does, it will not be able to use enriched uranium worth more than 60-million dollars.

The administration is apparently trying to find a way out of the deadlock.

But the State Department confirmed today that "the longstanding position of the United States Government has been and continues to be that we would be prepared to supply nuclear reactor fuel to South Africa if that country adhered to the Non-Proliferation Treaty and accepted IAEA safeguards on all its nuclear facilities."

Which means that the Reagan administration has not departed from the

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22/4/81

US puts nuclear squeeze on SA over Koeberg

51/11/81
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Continued from page 1

Carter administration's policy in respect of nuclear "co-operation" with South Africa.

Today's statement makes it clear that American action on applications for licensing exports of enriched uranium for Koeberg (together with fuel for the Safari reactors at Pelindaba as well as "certain other components" for Koeberg) continues to depend on whether South Africa signs the NPT and accepts the IAEA safeguards.

Mr Jan H Smith, chairman of Escom, said the contract to supply South Africa with nuclear fuel was signed with the United States Department of Energy in 1974.

"This enabled us to carry on and build Koeberg," he said.

No decision has yet been taken about building a further nuclear power station, Mr Smith added. "We have been looking at sites all along the coastline for several years."

Quite clearly, one of the objectives of the exercise is to pressure South Africa into signing the NPT and accepting the International Agency safeguards for all its nuclear installations — including the enriched pilot plant.

While South Africa fully accepts the principle of safeguards designed to keep nuclear development for peaceful purposes only, she balks at including her secret enrichment process for fear of making public too much information.

In fact, no specific safeguards exist which could be applied to the enrichment pilot plant and South Africa has argued that it cannot agree to, in

effect, buying a safeguard "pig in a poke."

The legislation which created this dilemma for South Africa was applied by the Carter Administration. But what about the Reagan men?

I asked the State Department under what conditions the United States would be willing to supply nuclear fuel to South Africa and I was told:

"Specifically we sought (South African) agreement to adhere to the NPT and to accept safeguards on all their nuclear facilities and have indicated to South Africa that resumption of peaceful nuclear relations with us would depend on their co-operation."

The official statement repeated this stance as "basic United States strategy in dealing with South Africa on nuclear matters" and added: "We are presently engaged in serious, active diplomatic efforts towards that goal."

CAPABILITIES

"South Africa has most if not all of the technical and material capabilities to develop nuclear weapons. Our efforts to have South Africa sign the NPT could not succeed if we supported a resolution which would prevent us from co-operating with South Africa in the field of nuclear technology."

"We have not concluded that nuclear sanctions against South Africa would advance our basic goal — to secure South Africa's agreement to adhere to the NPT and to accept safeguards on all its nuclear facilities."

Asked to comment on this today, the South African Minister of Mineral and Energy Affairs, Mr F W de Klerk, said:

"Negotiations are in process and there is discussion between contracting parties, though we have no concrete give."

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of the Doctoral Programme, Wharton School,
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SA ^{Simon 2314181} can produce
55 own nuclear fuel

By Anthony Duigan

South Africa will eventually be able to supply its own nuclear fuel for the Koeberg power station if the United States continues not to honour a 1974 contract to supply enriched uranium for the reactor.

This is clear from undertakings by Dr Ampie Roux, chairman of the Uranium Enrichment Corporation, and Escom, which will control the Koeberg plant.

The Star's Washington correspondent, John D'Oliveira, reported yesterday that South Africa was deadlocked with the United States over the supply of enriched uranium for Koeberg.

The deadlock centres on a 1974 contract signed with the US Department of Energy.

In terms of this contract South Africa was to supply certain quantities of uranium to the US for enrichment and was to get back enriched fuel for Koeberg.

But in terms of the US

1978 Nuclear Non-Proliferation Act, no enriched uranium can be exported to South Africa, a "non-nuclear nation."

Escom went ahead with Koeberg on the understanding that it would be fired by US fuel.

If South Africa's negotiations for enriched uranium from the US broke down it could produce its own fuel if instructed to do so by the Government, Dr Roux told the SABC some time ago.

Negotiations between South Africa and the US over the contract are continuing, the Minister of Mineral and Energy Affairs, Mr de Klerk, said yesterday.

The US has adopted the standpoint that South Africa must adhere to the Non-Proliferation Treaty — obviously a move to get South Africa to sign the treaty and accept the international agency safeguards for all its nuclear installations.

South Africa accepts the principle of the safeguards but balks at letting out details of its secret enrichment process.

MAP 3

DISTRIBUTION OF POPULATION IN TSOLO DISTRICT

More huge rigs for SA oil hunt

Nov 23/4/81

By Bill Goddard

TWO giant drilling rigs are being built in Japan to be used in oil exploration off South Africa — a 15-year search which has cost R275-million.

This was confirmed today by the managing director of Soekor, Dr P J van Zijl.

The rigs cost R75-million each, with the first due

to be used late next year and the other early in 1983.

The rigs will be able to operate in water depths of up to 500 metres.

Dr van Zijl said there was a worldwide shortage of rigs and hire charges were rising.

'No decision has yet been taken as to the future of the Sedco K and Sedco 708, which have been exploring off South African coast for the past few years,' he said.

His organisation, backed by the Government had not yet decided whether

the charter contracts on two American rigs would be renewed when they lapsed.

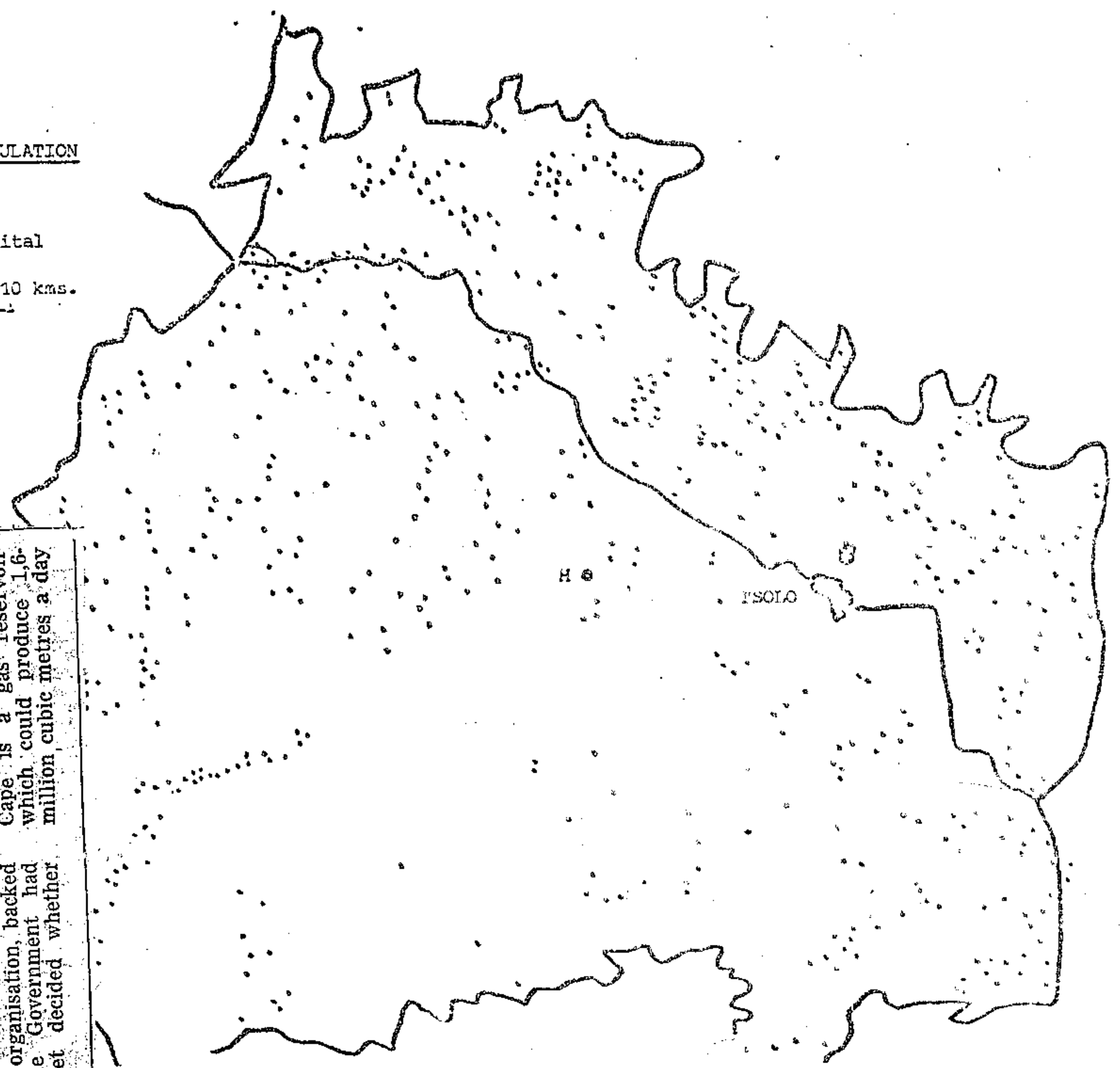
One of the most valuable finds off the Southern Cape is a gas reservoir which could produce 1,6-million cubic metres a day

with an annual value of R80-million.

The importance of this find 45 miles off Mossel Bay can be gauged from the peak daily production of 7,3-million cubic metres from 19 holes in the West Sole field in the North Sea.

ospital

10 Kas.



Staffing:

- 1) Senior Medical Officer of Health - based at Headquarters - Administrative leader of preventive services.
- 2) Two Senior Medical Officers in charge of TB and Malaria/Bilharzia Control units, respectively.
- 3) Two Medical Officers (one Malaria Control and one Bilharzia Control) and Family Planning Services.

Bilharzia and Malaria Control Units

The Malaria Control Programme was started in 1961 with the appointment of JOD and also the use of BHC as a means of insecticide resistance control. The programme was successful in the control of malaria in the country.

SA can go it alone in N-fuel

Argus 23/4/79
55

Argus Correspondent

JOHANNESBURG. — South Africa will eventually be able to supply its own nuclear fuel for Koeberg power station.

This is clear from undertakings given by Dr Ampie Roux, chairman of Uranium Enrichment Corporation, and Escom, which will control the Koeberg plant.

Yesterday the Argus Washington correspondent, John d'Oliveira, reported that South Africa was deadlocked with the United States over the supply of enriched uranium for Koeberg.

The deadlock is on a 1974 contract signed with the United States Department of Energy. In terms of this contract South Africa was to supply uranium to the United States for enrichment and in return was to get enriched fuel for Koeberg.

But in terms of the United States 1978 Nuclear Non-proliferation Act no enriched uranium can be exported to South Africa, a 'non-nuclear nation.'

NEGOTIATIONS

If South Africa's negotiations for enriched uranium from the United States broke down, it could produce its own fuel, Dr Roux told the SABC some time ago.

But negotiations between South Africa and the United States over the contract are continuing, the Minister of Mineral and Energy Affairs, Mr F W de Klerk, said yesterday.

The United States has adopted the standpoint that South Africa must adhere to the non-proliferation treaty — obviously a move to get South Africa to sign the treaty and accept the international agency safeguards for all its nuclear installations.

South Africa accepts the principle of the safeguards, but banks at revealing details of her secret enrichment process.

determine as to whether they are indigenous or imported.

Blood film examinations, mosquito identification, and most of the technical work involved in the Malaria Control Unit is done at the Health Office.

The Bilharzia Control Unit is mainly concerned with the spraying of rivers, canals, streams, and dams where vector snails Physopsis and Bioglyphalaria are found.

In rural areas the molluscicide Bayluscide is used for spraying while in the sugar estates Molluscicide Proscor is used and is

bought by the companies.

The treatment of falciparum cases of bilharzia is by the use of Salarsol which is done mainly at the Health Office under the supervision of the medical officer.

Health Inspection

Health Inspection is an important activity of the Health Unit. The Health Inspection Officer has been in charge of health education of staff. Argus 1979 which was the Health Education Officer's report for the year 1978. The Health Education Officer reported that the Health Education Officer has been in charge of health education of staff.

for enrolled nurses, Public Health orientation refresher courses for hospital nurses and in the training of Health Assistants.

In collaboration with Public Health and P.F.P. a seminar on family health was held for 35 public health nurses. In collaboration with the Home Economics Department of the Ministry of Agriculture and the University College of Botswana and Swaziland a workshop on planning and production of family life educational teaching aids was held for 33 participants. A workshop on photography was held and two film strips on MCH/FP and on the use of letrines were developed.

59 schools were surveyed to find out the status of health education instruction in primary schools. The Unit was able to teach 300 teachers at the teacher training centre.

The health education unit continues to work very closely with the Curriculum Unit of the Ministry of Education. In an attempt to co-ordinate the efforts of different agencies involved with schools, the establishment of a National School

Petrol price rise expected from July

Own Correspondent

PRETORIA. — The introduction of a substantial petrol price increase, at the latest from the beginning of July, is considered certain.

Motor industry executives differ in their assessment of the extent of the increase. It could be between 2 and 4 cents a litre.

Petrol was last raised in price in July 1979 — by a huge 14,7 cents a litre.

Representations from oil companies for higher margins have been with the Minister of Mineral and Energy Affairs, Mr F W de Klerk, and, according to Mr De Klerk, they are now being processed.

The minister has emphasized that it remains firm government policy to delay price adjustments for as long as possible. However, it is clear that the oil companies have a strong case for an early adjustment.

In Pretoria yesterday, the managing director of Trek Petroleum, Mr Don Masson, said oil companies were under-recovering to a serious extent and the need for a price adjustment was obviously desperate.

The last adjustment, except for a minor one which was not passed on to consumers, was in July, 1979.

Asked to what extent he thought the petrol price would be affected by the coming adjustment, Mr Masson said

there were a number of alternatives facing the government.

The increase could be passed on to the consumer or it could be borne by the government, or it could be met by a combination of the two.

Mr Masson said the oil companies could no longer absorb crude oil price rises.

He agreed that the government was likely to wait for the outcome of the mid-year meeting of Opec countries before making a price adjustment.

The director of the Motor Industries Federation, Mr Jannie van Huyssteen, said it could be accepted that the margins of petrol retailers — determined by an agreed formula — would have to be

raised when the adjustment was made.

The publicity director of the Automobile Association, Mr Hennie Kleynhans, said the price rise would probably take place from July.

He said it was not necessary for the increase to be loaded on to the currently high fuel price. Some of the fat on the constituents of the price could be trimmed to accommodate the adjustment.

A breakdown of the current price shows it is made up of the wholesale price — including producers' price and refining costs — 18,999 cents; Equalization fund 16,7 cents; Customs and excise 9,341 cents; Retailer margins 3,51 cents; GST 2,1 cents and railage 3,7 cents.

STEAM-TURBINE GENERATORS

R300m project for SA?

55 266

Government is said to be considering proposals for building local facilities costing R300m to make steam-turbine electric generator sets for Escom.

The apparent reason for the move is to take another step closer to self-sufficiency in the vital energy field. The cost of such a programme would rival that of the Atlantis Diesel Engine factory, another government move aimed at achieving self-sufficiency.

At the time of going to press neither Escom nor the other parties said to be involved was able to comment on several reports to this effect received by the FM.

Apparently one contender is Westinghouse. This giant US power company is said to have assembled a technical and financial package with Federale Volksbeleggings or Sanlam.

Another is British General Electric (GE), which already has some local manufacturing capability and has been a steady supplier to Escom of turbine generators from its British facilities. GE in SA is 50% owned by Barlows.

A third contender is said to be the Swiss company Brown Boveri which has some local manufacture done for it by Vecor.

The deal would be the biggest prize on world markets for any company with the capital and know-how to make these highly complex items, which cost at least R60m apiece.

The reason for this is that it is estimated that SA will be buying about half of the turbine generator sets sold on the untied world market over the next 12 years, and overseas manufacturers are said to be operating at only about 50% capacity.

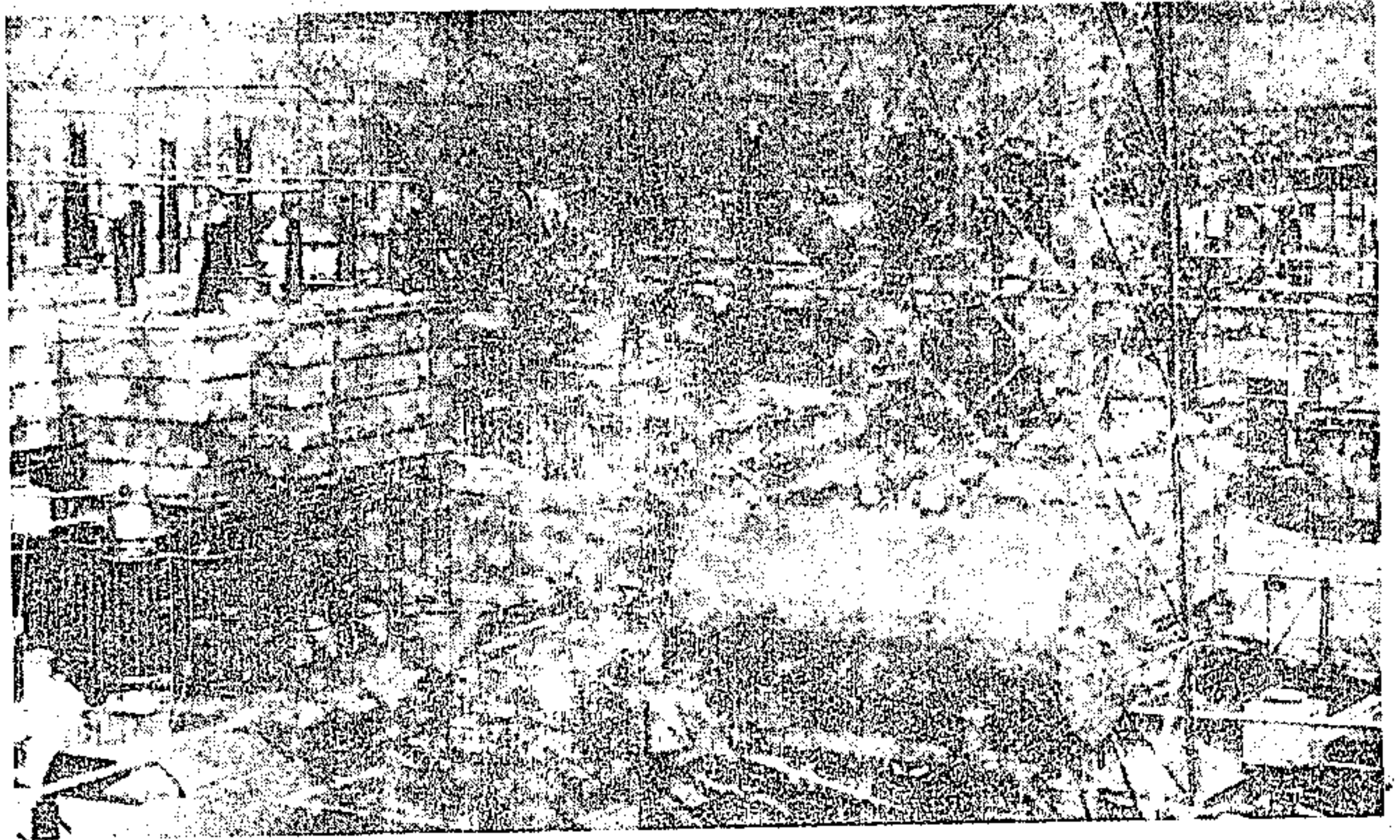
SA will increase electrical generating capacity at the rate of about 2 700 MW a year over this period.

This will work out to an annual expenditure of about R250m on turbine generator sets, R500m on boilers and R250m on civil engineering and power station ancillary equipment.

This is needed to supply the consumption growth of about 10% a year. By contrast, electricity consumption has actually been declining in the recession-hit, developed countries such as the US and UK. Even in Germany, consumption is barely growing.

The benefits of such a deal to the SA economy are, however, doubtful. One executive in one of the companies said to be involved, points out that it would be highly inflationary, because many of Escom's purchases from abroad are tied to low interest financing agreements.

"Manufacturing countries with negli-



SA power station . . . to be powered by Westinghouse or British General Electric?

ble home markets are giving Escom loans at interest rates well below their own domestic rates to provide employment," he says.

"Local manufacture would in some cases effectively double the costs over a 20-year payback period."

Local manufacture would exacerbate SA's skilled labour shortage with inflationary effects on wages. And an influx of foreign workers would put more pressure on the housing shortage.

Another added expense would be the extra research and development costs which would have to be passed on through Escom to consumers of electricity.

An industry insider estimates that at present 50% of the cost of this type of equipment is absorbed by these expenses. The percentage would undoubtedly increase with local manufacture.

Quality control is another headache. There is very little room for mistakes in a market which will be absorbing four to six new items only a year. Turbines are expected to have a life span of about 30 years with a 75% utilisation.

As one insider says, this requires a reliability equivalent to that of a car which will last for 900 years. And a faulty turbine blade could not only wreck the generator set itself but also cause havoc in a power station costing billions.

The final decision on the project will probably be made at cabinet level as the fear of embargoes must be the main — if not the only — argument in favour of local manufacture.

But even the strategic argument is not irrefutable as quality problems may be a bigger menace to supply than embargoes. And it is rumoured that for purely business reasons, Escom's GM Jan Smith is dead set against the idea.

Let us hope that government's obsession with self-sufficiency will be moderated by Smith's sound judgment.

CONTRACT HASSLES

FM

24/4/81

55

The long-standing differences between SA and the US over uranium enrichment took an unexpected turn this week. It was disclosed that the enrichment contract between Escom and the US Department of Energy (DOE) contains a penalty clause. The FM learned that this requires Escom to take delivery within the US on August 31.

Despite this, there is a simple way for Escom to keep the contract alive and leave open the possibility of eventual delivery of the enriched fuel — intended as the initial charge for the reactors at the Koeberg nuclear power plant (FM October 10).

The procedure involves taking delivery of the enriched fuel from the DOE at Oak Ridge, Tennessee, on due date — August 31 1981, and then making use of a nuclear fuel storage facility at Portsmouth, Ohio. At least one other country — Spain — has already done so.

Under the contract, Escom must deliver the "feed" uranium (that is unenriched or natural uranium) to the DOE 90 days before the August 31 deadline. Failure to accept delivery of the finished product of enriched uranium on due date would expose Escom to payment of a "termination charge" of 58.6% of the processing fee of \$28.75m, amounting to \$16.85m.

Under US law, the possibilities of Escom obtaining an export licence for

the enriched uranium in time are very small, even if SA should agree to the requirements of the Nuclear Non-Proliferation Treaty. Even in the changed political climate in Washington, attitudes to SA remain such that the chances of obtaining Congressional approval are slender.

Under certain conditions, SA could take some of these issues to the World Court. Politics considered, though, it hardly seems likely that SA would ever want to avail itself of this right. It is far more likely that SA would opt to continue bilateral negotiations.

An informed view in Washington holds that SA will meet its contractual obligations to the letter, and continue negotiating on the sensitive political and technical issues at stake.

This view is entirely consistent with SA's past attitudes to international contractual and other obligations. It seems plausible, too, that the view will be reached here that the risk of having a consignment of enriched uranium in the US held hostage to future developments is small.

But there could be room for Escom (under American law) to invoke the doctrine of frustration of contract.

The enrichment contract was entered into in 1974 and it was only subsequently that the US passed laws which imposed (for political reasons) further requirements.

ENERGY (55) FM 24/4/81
Return to coal?

SA's Unicorn Lines is evaluating the economics of a return to coal-fired ships, said chairman and MD Murray Grindrod in a speech to the SA Institute of Marine Engineers and Naval Architects recently.

The economic pressure to take this move flows, obviously, from the relative cheapness of SA coal compared with oil.

But the decision to revert to coal-firing will not be taken incautiously, because of the uncertainties built into the situation. The variables involved are the following:

- The price of a diesel vessel.
- The price of an equivalent coal burning vessel (currently around 25% more than that of a diesel ship).
- The percentage of time spent steaming (which increases the ratio of fuel costs

towards capital costs, and so tilts the scales more towards coal-firing, because of the lower fuel cost).

- Changes in speed (which also influence fuel consumption).
- The future cost curves of the preferred grades of fuel oil.
- The future cost of coal.

Grindrod noted that fuel costs will amount to 16,9% of revenue in 1981, even after the company has effected economies by substituting lower grades of fuel than those for which their ships were designed. But for the fleet's container ships, which have the highest ratio of sea time to port time, the fuel cost increases to 18,4% of revenue.

The painful impact of the oil shock is demonstrated by the fact that Unicorn's fuel costs were only about 4% of revenue in 1972, before the rise in the oil price.

Unicorn's difficulty in arriving at a decision to switch to coal firing is aggravated by the uncertainty about the likely relative movements in coal and oil prices. On the other hand, the penalty of 25% in capital cost for a coal fired ship is fairly definite.

Of course, there are continuing costs

deriving from the higher capital cost of coal firing — like depreciation and insurance. These amount to about 24,5% of revenue. The reasonably assured potential fuel cost savings from switching to coal would have to provide an adequate margin over these increments to justify the commitment.

Unicorn, in its latest exercises, has worked on the basis of an fob cost for coal at Durban of R32/t (of 28MJ/kg) and R182/t for a representative grade of fuel oil.

**DEPARTMENT OF MINERAL AND ENERGY
AFFAIRS**

No. R. 856

24 April 1981

PETROLEUM PRODUCTS ACT, 1977

**REGULATIONS IN RESPECT OF THE SAVING
OF PETROLEUM PRODUCTS**

The Minister of Mineral and Energy Affairs has, in terms of sections 2 and 5 of the Petroleum Products Act, 1977 (Act 120 of 1977), made the regulations in the Schedule.

SCHEDULE

Regulation 3 of Government Notice R. 742 of 1 April 1981 is hereby amended by the insertion at the end of the said regulation 3, of the following words:

“Provided that the provisions of this regulation shall not apply during the period 18h00 on Wednesday 29 April 1981 to 07h00 on Thursday 30 April 1981.”

**DEPARTEMENT VAN MINERAAL- EN
ENERGIESAKE**

No. R. 856

24 April 1981

WET OP PETROLEUMPRODUKTE, 1977

**REGULASIES TER BESPARING VAN
PETROLEUMPRODUKTE**

Die Minister van Mineraal- en Energiesake het kragtens artikels 2 en 5 van die Wet op Petroleumprodukte, 1977 (Wet 120 van 1977), die regulasies in die Bylae uitgevaardig.

BYLAE

Regulasie 3 van Goewermentskennisgewing R. 742 van 1 April 1981, word hierby gewysig deur aan die einde van gemelde regulasie 3 die volgende woorde in te voeg:

“Met dien verstande dat die bepalings van hierdie regulasie nie van toepassing sal wees nie, gedurende die periode 18h00 op Woensdag 29 April 1981 tot 07h00 op Donderdag 30 April 1981.”

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Official list of recognized industrial diseases

Appendix A

Description of disease	Description of Occupation
Ankylostomiasis (Hookworm) in workmen. Other than Asiatics or Natives.	Mining carried on Underground
Anthrax	The handling of wool, hair, bristles, hides and skins. Work in connection with animals insected with anthrax loading, unloading or transport of goods.
Arsenical poisoning.	Any work involving the use handling or use of Chromic and chrome salts or other materials containing chromic acids or chrome salts as a constituent.
Cyanide rash.	The handling of cyanide or any work involving the use of cyanide.

Appendix A Continued.

Description of Disease	Description of Occupation
Pathological manifestations due to radium and other radioactive substance or X-rays.	Any work involving the use or exposure to the action of radium or other radioactive substances or X-rays.
Phosphorus poisoning	Any work involving the use of phosphorus or its preparations or compounds.
Primary epitheliomatous cancer of the skin.	Any work involving the handling or use of tar, pitch bitumen mineral oil or paraffin
Silicosis, asbestosis or other fibrosis of the lungs caused by mineral dust.	Any occupation (other than in a dusty atmosphere' as defined in the Pneumoconiosis Act 1956) in which workmen are exposed to the inhalation of Silica dust, asbestos dust or other mineral dust.

Petrol rise seems certain

RDM 24/4/81
55
2/4

By GERALD REILLY
Pretoria Bureau

A SUBSTANTIAL petrol price hike, at the latest from the beginning of July, is considered certain.

Motor industry executives differ in their assessment of the extent of the increase. It could be between two and four cents a litre.

The petrol price was last raised in July 1979 — by 14,7 cents a litre.

Representations from oil companies for higher margins have been with the Minister of Mineral and Energy Affairs, Mr F W de Klerk and, according to Mr De Klerk, they are now being processed. In Pretoria yesterday the managing director of Trek Petroleum, Mr Don Masson, said the need for a price adjustment was obviously urgent and desperate.

The increase could be passed onto the consumer, it could be borne by the Government, or it could be met by a combination of the two, he said.

Mr Masson said the oil companies could no longer absorb crude oil price rises.

He agreed that the Government was likely to wait for the outcome of the mid-year meeting of Opec countries before making a price adjustment.

The director of the Motor Industries Federation, Mr Jannie van Huyssteen, said it could be accepted that the margins of petrol retailers — determined by an agreed formula — would have to be raised when the adjustment was made.

The publicity director of the Automobile Association, Mr Hennie Kleynhans, said the price hike would probably take place from July.

He stressed it was not necessary for the increase to be loaded onto the currently high fuel price. Some of the fat on the constituents of the price could be trimmed to accommodate the adjustment.

Hydrocarbons poisoning by the

Manganese poisoning

Mercury poisoning or its sequelae

contact with the halogen derivatives of hydrocarbons.

Any work involving the use or handling of, or exposure to fumes, dust or vapour of manganese or a compound of or substance containing manganese

Any work involving the use of mercury or its preparations or compounds.

T.N.Y. poisoning

Any work involving the

packing or trinitrotoluol

dir 2,; Joe Leng.

Continued/.....

the underdevelopment of the society as a whole".²⁵

This process of differentiation was accelerated by specific government legislation and also by the restrictions which, while they applied to all blacks, tended to affect the poorest most quickly.

Discussing the class of successful farmers that

Solar power for exchange

Science Reporter

THE Post Office has opted for sun power at Betty's Bay, where it claims the largest solar energy system in Southern Africa has been installed to power the telephone exchange.

According to a statement released yesterday by the deputy Postmaster-General for Telecommunications, Mr Rudie Raath, the system contains 122 solar panels measuring 120 square metres. Additional energy from a windcharger is also planned as an alternative source of power.

The installation will be used for research purposes aimed at the introduction of similar systems in remote areas where mains power is not available. At present such areas are served by diesel generators.

Mr Raath said Betty's Bay was chosen because of the marked differences between its

winter and summer weather conditions. He added that a similar system would be installed soon at New Bethesda, near Graaff-Reinet. Future microwave towers would also contain provision for solar energy as an alternate power source.

● Adoption by the Post Office of solar power techniques follows that of the Ermelo municipality, which has installed a 160 square meter solar water heating system in the town's new abattoir. The installation, expected to slash annual energy costs, will produce 10 000 litres of water at 47 degrees C over the normal eight-hour shift.

The Solar Energy Society of Southern African reports in its latest newsletter that sun power for the drying of tobacco and the testing of swimming pool covers is now in use in Zimbabwe.

Edward ... in East Africa: the pattern he describes is equally

applicable to the South African reserves. "The

indigenous bourgeoisie emerged initially on a regional basis, within each area this group was recruited from the rich peasant families which had been able to afford secondary education; this generation was then able to move into positions in the bureaucracy, the co-operative movement and petty trade. It then became the leadership

with the system of farming-on-the-half".²¹

"Tomlinson records (p. 84) that in 1938 a scheme for the subsidised purchase of ploughs, harrows, planters and cultivators by black farmers was introduced 'and considerable use was made of it until it was discontinued in 1947'. Among those who objected to such schemes was former Prime Minister Strijdom who complained in Parliament that, 'If the Government went on in this way, blacks would soon cease to be labourers and become farmers, with disastrous effects on white farming, where the problem of markets was already serious'".²²

Colin Bundy has shown that between the 1830s and the end of the century a class of black peasant farmers emerged and then declined, who, in their heyday, were generally at least as good as white farmers of that period and in many instances, better.²³ Farming in black areas only degenerated to its present condition as restrictions were placed on blacks, and whites were provided with more services. Bundy cites²⁴ the main factors against black farmers as:

- 1) Lack of land
- 2) New goods to buy "which gradually became necessary to subsistence", i.e. captured market.
- 3) Disadvantageous terms of peasant/trader relationship
- 4) Relative ease of access of white farmers to the market.
- 5) There being no investment in black areas (lack of credit and capital).

The early period when some blacks became good farmers was a period of rapid class differentiation. "(The) success of a large stratum of peasants is not only compatible with, but it is a predictable feature of,

SA now making its own nuclear fuel

supply the fuel from local sources."

"The Uranium Enrichment Corporation (UCOR) had succeeded in producing a limited quantity of 45 percent enriched uranium for manufacture into fuel elements," Mr De Klerk said.

A uranium enrichment of 45 percent with the 235 isotope was the minimum that could be utilised. As only a limited quantity could be produced at this stage, Safari-1 would be operated provisionally at a quarter of its normal capacity of 20 megawatt.

The locally-produced fuel would be subject to IAEA safeguards and inspection. — Sapa

The research reactor Safari-1 would in future be operated with South African-produced fuel elements, the Minister for Mineral and Energy Affairs, Mr F W de Klerk, said in a statement in Pretoria last night.

He said that, for international political reasons, it had not been possible to obtain nuclear fuel for Safari-1 since 1976.

The country could not afford curtailment of the Atomic Energy Board's research programme and production of radio isotopes for medical use.

As a result "it was decided that a serious attempt should be made to

primary on secondary and even tertiary industry: these changes have meant both modifications in the structure of capital, and an enormous increase in the size of the proletariat. Changes have also resulted (b) from the changing social situation of people, due both to mobility within a social structure and to general changes in life-style concomitant on an increasing standard of living. This second kind of change is obviously far less easy to measure. There is still, for example, heated debate about whether or not workers in most developed countries have become embourgeoised. It is both difficult to establish a benchmark and also to lay down criteria of significance in trying to decide whether and what changes of this kind have taken place.

Once more speaking broadly, and ignoring the distinction between town and country, we can distinguish roughly between five different 'classes' (using the term 'class' in its traditional sense to mean a number of people all having the same relationship to the means of production).

1. Capitalists who have large investments. However, those with investments in different sectors have to be distinguished since their interests as regards Black labour may be differentially structured.
2. Self-employed Whites, whether they are working farmers or owners of small businesses, between which two groups there is probably a considerable amount of mobility.
3. Employed Whites, which is a very wide category, covering both blue- and white-collar workers, but whom we shall nevertheless describe as 'White working class'.
4. Black workers predominantly dependent on wage-labour.
5. Those African rural-dwellers who are still predominantly dependent for their income on their own farming activities. (This group cannot be considered further within the framework of this volume).

The above classification is obviously imprecise in definition and entirely leaves out some groups, such as the Black 'middle-class'. Furthermore, we recognise that the whole question of boundaries between groups poses enormous problems. The groups that have been isolated are those which present themselves, albeit tentatively, as the more significant aggregates of people within the context of our broad topic. Our subdivision, however, will be reassessed in the final chapter. We consider it legitimate to distinguish between a White working class and a Black working class because White and Black workers have different kinds of access to and control over the means of production via franchise rights. In the following discussion we shall attempt to delineate more accurately the patterns within these classes.

5.1. Capitalists

Early capital investment in South Africa was overwhelmingly in mining. The mining industry had two significant characteristics. Firstly, it was export-oriented, and so had no interest in the development of an internal market. Secondly, it required a very large amount of cheap labour and relatively unskilled labour. It had a motive, therefore, for keeping wages down, and, when more sophisticated techniques might have made wage increases possible, it had no positive motive for wanting wage increases. Control of labour was greatly facilitated by the early emergence on the gold mines of a recruiting monopoly and a collective agreement not to pay above a certain maximum *average* wage. This prevented the competitive determination of African wage rates through a free interplay of supply and demand, and had a pervasive effect through the whole range of African wages.

In analysing the changing capital structure in South Africa and in particular the growing predominance of industrial manufacturing capital, we need to investigate, firstly, its labour needs, and secondly its market needs.

fit for work or as unfit. He can certify that you are dead and suitable as an organ donor, or that you are alive but critically ill and suitable as an organ recipient. He can swear that you are sane and fit to hang for murder or he can certify you as insane and in need of medical treatment for the same action. He can pass you as fit to fight and kill others or as unfit and not worth having in the army. He can certify that all your children are fit for school or school

RPM 29/4/81
 SA now making own reactor fuel

produced a limited quantity of 45% enriched uranium, he said. It was processed and made into fuel elements by the AEB.

"As was already reported to the International Nuclear Fuel Evaluation Study Group, in which 66 countries and five international organisations participated, the AEB launched a development programme with a view to mastering the technology for the production of fuel elements of the lowest possible enrichment suitable for the operation of Safari-I."

According to the trilateral safeguards agreement between South Africa, the United States and the International Atomic Energy Agency (IAEA), in terms of which the US sold Safari-I to South Africa, the reactor will remain under IAEA safeguards.

Pretoria Bureau

THE Atomic Energy Board's research reactor, Safari-I, will in future be operated on locally-produced fuel elements, the Minister of Energy and Mineral Affairs, Mr F W de Klerk, said in a statement last night.

"For international political reasons, it was not possible for South Africa to obtain nuclear fuel for Safari-I," he said.

"Because of this, and because South Africa could not afford to curtail the research programme — particularly production of radioisotopes for medical application, which was almost entirely dependent on Safari-I — it was decided a serious attempt be made to supply fuel from local sources."

The Uranium Enrichment Corporation (Ucor) recently

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tests, x-rays and the like. He also finds it safer and easier to diagnose illness rather than health. If a patient comes with 'flu which will get better by itself and be relieved to some extent by aspirin, it is still safer and easier to diagnose pneumonia and to prescribe an expensive antibiotic as well as aspirin. The antibiotic will probably not harm the patient directly and anyway it will be

impossible to prove that it was unnecessary.

The third aspect of the increasing medicalization of life can be termed the preventive bandwagon. A bandwagon that is rolling out of control is dangerous. The danger here is that healthy people are turned into potential patients. One of the chief tools in preventive medicine is to place people into risk categories. Different categories of people are prone to different diseases and so one can concentrate on looking for the likely diseases in that category of person. Thus the young get some diseases more commonly than others, while the old get different diseases. Blacks die from some things and whites from others. The unborn baby faces certain hazards while the newborn baby faces others. These categories are very useful to doctors looking at patients because the patient's category sets off a train of suspicion in the doctor's mind. But unfortunately everyone is in one or more risk categories because everyone is either young or old or black or white or urban or rural or female or male. Publicly categorizing people into risk groups and advocating screening programs and self examination and early detection may serve merely to increase the unhealthy preoccupation of individuals and of society with disease. In the same way annual medical check-ups may increase the morbid curiosity of people by turning them into patients with little or no demonstrable advantage. In short a preventive disease hunt may produce an epidemic of ^{of} diagnoses and an explosion of anxiety with no tangible beneficial effect on health.

Trek looks at two projects

RDM
30/4/81
53

By SIMON WILLSON

HIGH LIQUIDITY at Trek following its record profit in 1980 has enabled the company to look at diversification into two projects in related energy fields.

Preliminary details of the two projects could emerge after a board meeting scheduled for May 21.

In his annual review the chairman, Mr George Clark, gives no details of the projects, but says they might contribute to increased results when the influences which made last year so profitable no longer apply.

Mr Clark mentions cites for transitory influences from last year which helped to boost the company's performance.

The Iran-Iraq war resulted in a world-wide fuel shortage in the fourth quarter, which enabled the company to increase revenue from its surplus fuel-oil sales, which usually go at depressed prices.

After the July 1979 SA petrol price increase there was a period

of temporary over-recovery for the company in the landed cost of its petrol.

The improved liquidity situation and higher cash flow which resulted reduced the company's interest payments.

The results of Chemico, Trek's re-refining subsidiary, were particularly good. Production capacity is still in surplus because of a shortage of used oil, and additional used oil is to be sought from new upgrading facilities at Chamdor, which should increase the yield by 15%.

Chemico is benefiting from a large assessed loss, but Mr Clark expects the re-refinery will soon reach the tax-aving stage.

But last year's favourable influences will not necessarily be repeated, Mr Clark says, and a dramatic increase in profits for 1981 is "doubtful".

Taxed profits for the oil company, a Gencor subsidiary, were up 63.5% over 1979's output at R10 628 000. Earnings a share were up at 52.8c from 32c.

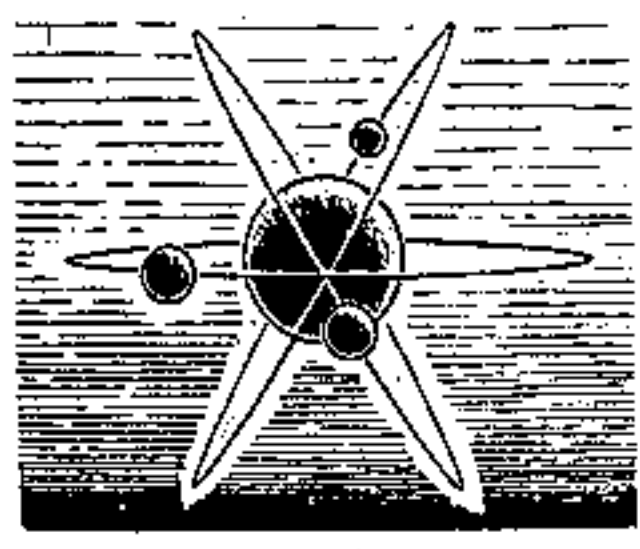
Dividends, covered 2.6 times, increased from 13c to 20c.

COMMENT: This is the first time Trek's profits have topped R10-million, but growth over the current financial year is not expected to match 1980-81's 63.5%.

Trek says it is under-recovering on all its products in the new financial year and will need to reinstate its approved marketing margins.

SS FM 11/5/81

Nearing breaking point



On May 14 the foreign ministers of the US and SA will meet to review some important and sensitive issues. Coincidentally, Escom's deadline for the delivery of the first consignment of feed uranium to the US Department of Energy's (DoE) Oak Ridge enrichment plant will then be a scant two weeks away. And the US and SA will, it seems, be as far apart as ever on the conditions upon which the enriched uranium can be re-exported (to France, for fabrication into fuel rods for the Koeberg nuclear power plant).

According to an informed SA source, it seems unlikely now that American political feeling will permit the achievement of the necessary legal procedures to enable Escom to meet its deadline for supply of power from Koeberg 1 (December 1982). An Escom spokesman claims, however, that an American change of heart at this stage could result in only a slight delay.

If SA fails to satisfy America's latest

set of requirements for the export of enriched uranium and negotiations finally collapse, there could be a considerable delay in the supply of some 1800 MW of power from the Koeberg plant. There would also be a considerable delay in financial return to Escom from its heavy capital commitment to nuclear power (nearing R2 billion at the latest estimate).

Delay is all that it can be, however. Atomic Energy Board president, Wynand de Villiers, has already acknowledged (FM October 10 1980) that SA itself can overcome the obstacles of international refusal to supply enriched uranium for Koeberg. It can even fabricate its own fuel rods, given the local outlay of enough time and money.

In fact, the Uranium Enrichment Corporation (Ucor) has already made a substantial commitment to a local enrichment capability, employing SA's own enrichment process. Come what may in dealings with America, Ucor should be in a position to supply sufficient enriched uranium — derived from locally mined raw materials — for SA's own needs by the mid 1980s at the latest.

Ucor's Valindaba commitment, and the examples of Sasol and Armscor, are sufficient evidence of SA's motivation and capacity to overcome the effect of international isolation when the need arises.

In this context, the financial penalties to which Escom would become exposed for non-compliance with the terms of its contract with the DoE are of relatively little importance. It seems likely, however, (and this is also the opinion of a DoE spokesman quoted by McGraw-Hill's *Nucleonics Week*) that Escom will avoid litigation in the US courts on the basis of frustration of contract.

Instead, Escom is more likely to supply feed uranium to the US according to the agreed schedule, take delivery of consignments of the enriched end-product on due date, and store them at the DoE complex at Portsmouth, Ohio. If negotiations finally fail and an export licence is denied, the enriched uranium could eventually be sold on the US market at the prices then prevailing.

What are the reasons for the deadlock between SA and the US over nuclear energy? Essentially, current US policy is intended to prevent the spread of nuclear technology to countries which have not yet developed nuclear weapons. SA, on the other hand, feels, quite reasonably, hard done by because the US has in effect repudiated the original terms of the legally binding contract between the US government's Energy Resources & Development Agency (Erda) and Escom, made in 1974.

There are two diplomatic weapons available to the US in achieving its nuclear policy aims. One is to insist that SA adhere to the provisions of the Non-proliferation Treaty (NPT) under the supervision of the International Atomic Energy Agency (IAEA). The second is to require compliance with a similar, but even more onerous, instrument of domestic legislation — the Nuclear Non-proliferation Act (NNPA).

According to the SA source, even before the passage of the NNPA in 1978, SA had conceded two additional restraints as a pre-condition for the supply of enriched uranium. These included (over and above the undertaking that the nuclear fuel would be supplied under IAEA safeguards) that the spent fuel would not be reprocessed in SA and that any plutonium produced through reprocessing would be stored outside SA.

But the US then passed the NNPA and has since sought to tie SA to the tighter controls required by that Act. These go very far, and would even involve the use of nuclear propulsion for naval ships, potential nuclear materials like zirconium (used for cladding fuel rods) and any

NON-PROLIFERATION — US DILEMMA

The influential US think-tank, Atomic Industrial Forum, of Washington DC, has formulated a basis for US policy on nuclear proliferation. In so doing, it hits squarely at the grave weaknesses in US decision-making which have emerged in the late 1970s.

The AIF's analysis:

"An effective non-proliferation policy must be part of, and consistent with, the overall foreign policy of the US. It must include means for meeting the pressing energy requirements of the world and recognise the consequences for the US in failing to do so. Serious proliferation threats must be dealt with promptly and effectively. Nuclear power programmes which present no proliferation threat should not be penalised in the doctrinaire pursuit of a policy of non-discrimination.

"Non-proliferation policy should support the productive contribution which nuclear energy can make within a framework of responsible and broadly accepted safeguards. Further, if the policy is to be successful, it must apply the most important non-proliferation lesson of the past 25 years: US leadership, in development and application of peaceful nuclear uses and in nuclear cooperation and trade, is central to achieving this country's non-proliferation goals.

"The nuclear policies adopted by this country in the late 1970s have been seriously deficient in all of these respects, weakening both our domestic programme and our international leadership. We now have the opportunity for constructive change. Unless we act on it, we shall forfeit the opportunity to regain US leadership and thwart our non-proliferation goals. . .

"The reliability of US political and supply commitments and the predictability and timeliness of US export actions are cardinal elements of an effective non-proliferation policy."

Amongst other policy improvements, the AIF suggests that the US should:

- Avoid unilateral retroactive conditions on US bilateral commitments and supply arrangements(!);
- Reduce to the necessary minimum case-by-case US export actions. Provide for life-of-reactor fuel licencing for countries meeting safeguards and non-proliferation commitments;
- Establish workable criteria for spent fuel transfers; and
- Assign to the Department of State the nuclear export licencing functions now performed by the Nuclear Regulatory Commission.

NUCLEAR BREAKTHROUGH

equipment for use in enrichment procedures (like centrifuges).

It is feared by many that, whatever concessions are made, SA will never be able to satisfy the US, while the obligations of the NNPA last for 25 years, with renewal procedures thereafter. SA could end up bound hand and foot, with America in possession of details of the SA enrichment process and of the identity of customers for SA's uranium. It is not inconceivable that SA would be told that it could not itself enrich uranium at all.

This analysis would suggest that SA has been nothing but a supplicant in its nuclear dealings with the US. Yet, despite the apparent disparity in bargaining power, the US also has a great deal to lose through continued mismanagement of its nuclear relationship with SA.

An influential American "think-tank," the Atomic Industrial Forum (AIF), last month produced a strong indictment of US nuclear policy in the late 1970s (See box on previous page). The AIF says that US non-proliferation policies have failed on many counts in recent years and urgently require revision.

The stated goals of US policy are to prevent the proliferation of nuclear weapons while continuing to promote the peaceful use of nuclear power. Unfortunately for America's policy-makers, there is a disparity between US will and means where the spread of nuclear technology is concerned.

In the present context, a punitive refusal by the US to allow SA to get its enriched uranium — in contempt of solemn contractual obligations assumed by an arm of the Federal government — will not necessarily discourage SA from keeping its nuclear weapons option open. And America's own credibility as a reliable nuclear partner will suffer another heavy blow. This view is forcefully expressed by the AIF.

To the extent that legalism is relevant, it is important to emphasise that SA itself has behaved with the utmost meticulousness in regard to all its international obligations, including those related to nuclear fuel supply.

SA has in the past given the assurance

Energy Minister Frederick de Klerk has announced a major advance in nuclear technology. The Uranium Enrichment Corporation (Ucor) has produced sufficient uranium enriched to the extent of 45% uranium 235 to run the Safari-1 research reactor at one quarter of capacity. The enriched uranium has been fabricated into fuel elements suitable for the reactor by the Atomic Energy Board itself.

SA will now be able to produce all the medical and research radio-isotopes needed locally. The degree of enrichment is the minimum needed for operation of the reactor (using present-day fuel element technology) which will remain under International Atomic Energy Agency (IAEA) safeguards. These safeguards were established in terms of the trilateral safeguards agreement between SA, the US and the IAEA.

Natural uranium contains only around 1% of the active isotope uranium 235. Nuclear fuel suitable for pressurised water reactors (like those being installed at Koeberg) requires enrichment to around 3%. So Ucor has demonstrated in principle the feasibility of local production of enriched uranium for the Koeberg power plant.

On the other hand, there has been no suggestion from any quarter that France would refuse to manufacture the fuel elements needed for Koeberg (as originally undertaken).

Atomic Energy Board president Dr Wynand de Villiers explains that the type of fuel element required for Koeberg is technically far more difficult to produce than those now made for Safari-1. The Koeberg reactors will operate at much higher temperatures and under high pressure. And the quantity of fuel required will be very much greater.

So the initial success with fuel element fabrication (significant though it is) does not mean that SA is at present anywhere near being able to manufacture fuel elements for Koeberg.

In the IAF's view, one last point remains to be made — concerning uranium enrichment. If SA can enrich uranium to 45%, it can, in principle, enrich it further to weapons grade. This point will not be lost on overseas strategic analysts, although SA has made clear that its nuclear programme is intended for peaceful purposes.

that its nuclear programme is directed solely at the peaceful applications of nuclear energy. But there is so much at stake, politically and strategically, that it is not at all clear that SA will — or should — permit the issue of nuclear weapons capability to be decided by the cost of failure to receive nuclear fuel for Koeberg on due date.

It is not in America's interests effectively to make SA a nuclear outlaw. In so doing, it would create a situation where the only limitations on SA's nuclear freedom of action would be money and the local availability of nuclear skills and technologies. And political isolation can only enhance SA's feeling of peril and the corresponding pressure to preserve the

military nuclear option.

Whatever Washington's view of SA's internal policies may be, therefore, it will do no good to allow its own policies to be decided in breach of legal contract by the emotive pressures of the Organisation for African Unity and the United States' own black lobby.

So, if the two foreign ministers address this issue (as good sense argues they must) the very least they should do is to arrange an extension of time for Escom to deliver feed uranium to the DoE and for the DoE to deliver enriched uranium, as contracted, in its turn. Such a move would enable negotiations on the substantive problems to proceed in a calmer atmosphere.

8. Increase in Outside Shareholders' Interest

Equity of Lad Ltd at	30.6.04	30.6.05	Share capital	50 000
Unappropriated profit	13 000	28 000	Share Premium	5 000
Profit for the year	15 000	45 000	Share capital	50 000
20%	83 000	128 000	Unappropriated profit	13 000
∴ Increase in minority share	R 9 000	R 25 600	Profit for the year	15 000
20%	16 600	45 000	Share Premium	5 000
∴ Increase in minority share	R 9 000	R 25 600	Share capital	50 000

CSIR report on diesel fuel labelled as 'suspect'

By James Clarke

An official report to the Government that sunflower seed diesel fuel is not a proposition for South Africa has been described as "suspect."

The report, by the Council for Scientific and Industrial Research (CSIR), is based on data supplied to it by the oil seed industry. The industry stands to lose profits if farmers used sunflower oil for their tractors and machinery.

MISLED

Says the Rural Trust, a new Sandton-based national organisation which looks at the problems of small farmers: "The CSIR has been misled.

"South Africa can run its farms on sunflower oil — and with the addition of a chemical it could run trucks and buses on sunflower oil too."

Mr Vic Allen, director of the Rural Trust and a

farming and business consultant, says the oil import bill could be reduced considerably.

"Farming costs could also be reduced. A by-product of sunflower diesel oil presses would be a high protein cake of great nutritional value to livestock and to humans.

"The widespread production by small farmers of cattle cake could hurt the oil seed industry. But the production would benefit everybody else, including the national economy."

The report was issued by the CSIR's group for techno-economic studies and it was, according to a spokesman for the CSIR, based on data supplied by the industry.

Was it biased?

"It was an objective assessment of the figures supplied by the industry. We believe there are still a lot of technical problems to overcome and quite a few economic

ones," said Dr Johan Rheinhardt, head of a group behind the report.

"I can't say that the CSIR is heavily involved in researching sunflower diesel oil but at least three groups are involved in looking at the engineering, chemical and food factors."

CO-ORDINATIONS

"Most definitely we are not saying that sunflower diesel oil is out of the question.

"What I personally would like to see is a co-ordinated programme. At the moment various parties are offering views and data and there is no co-ordination."

Mr Allen is convinced that the report has had a negative effect.

"We must be careful that no vested interests, however powerful, are allowed to prevent the options being publicly considered. But this is precisely what is happening."

SA can fuel Koeberg's nuclear plant

RD 45/5/81 (SF)

Own Correspondent

CAPE TOWN. — South Africa has the technical knowhow to supply the country's first nuclear power station with enriched uranium fuel at a competitive price in spite of threatened embargoes by overseas sources.

But nobody is saying when this will happen or who will carry the "hot potato" of wastes from the spent fuel.

That's the gist of a statement given to the SABC at the weekend by Dr Ample Roux, chairman of the Uranium Enrichment Corporation, who made it clear that South Africa could go it alone if necessary and produce the 50 tons of enriched uranium required annually to keep Koeberg operating.

He added that this could be achieved economically as soon as the corporation's production plant was completed. The plant could also supply the Atomic Energy Board's experimental reactor at Pelindaba. He gave no hint of a completion date and was not available for comment yesterday on where and how the spent wastes would be stored.

Mr Boet Uys, Escom's public relations officer, yesterday gave a blanket no comment to questions posed on cost and availability of the fuel in time for the proposed commissioning of Koeberg in December next year.

South Africa is deadlocked with the United States in a Catch 22 situation over a 1974

contract with the US Department of Energy which binds South Africa to supply the US with raw uranium in return for enriched fuel. The catch arises from the terms of the US Nuclear Non-Proliferation Act of 1978, which says no enriched uranium can be exported to a "non-nuclear nation" such as South Africa.

South Africa can only become acceptable as a receiver of enriched fuel if it applies International Atomic Energy Agency (IAEA) safeguards to all peaceful nuclear activities. These safeguards are already applied to both Koeberg and the Pelindaba research reactor — but the as yet unspecified safeguards for the nuclear fuel plant have not been accepted as this might involve disclosure of the secret enrichment process.

According to a Washington source, the contract requires South Africa to supply material to a processing plant at Doe's Oak Ridge, Tennessee, by May 31 or face penalties of up to R63m. The US State Department has gone on record as saying it would supply enriched fuel to South Africa if she signs the Non-Proliferation Treaty and accepts all full-scale IAEA safeguards.

The irony is that no specific safeguards have been drawn up for South Africa's fuel enrichment plants. South Africa's attitude is that until it is placed fully in the picture, it cannot accept the position.

We can supply the fuel, but who will remove the waste

S/S/8/1 By Bob Moly

SOUTH AFRICA has the technical knowhow to supply the country's first nuclear power station with enriched uranium fuel at a competitive price in spite of threatened embargoes by overseas sources.

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Mr Boet Uys, Escorp public relations officer, yesterday gave a blanket no comment to questions posed by the Cape Times on cost and availability of the fuel in time for the proposed commissioning of Koeberg

in December 1982.

At present South Africa is deadlocked with the United States in a Catch 22 situation over a 1974 contract with the US Department of Energy which binds the Republic to supply the US with raw uranium in return for enriched fuel. The catch arises from the terms of the US Nuclear Non-Proliferation Act of 1978 which says that no enriched uranium can be exported to a "non-nuclear nation" such as South Africa.

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According to a Washington source, the contract requires South Africa to supply material to a processing plant at Doe's Oak Ridge, Tennessee, by May 31 or face penalties of up to R69m. The US State Department has gone on record as saying that it would supply enriched fuel to South Africa if that country signs the Non-Proliferation Treaty

and accepts full-scope IAEA safeguards on all its nuclear facilities.

The irony is that no specific safeguards have yet been drawn up for South Africa's fuel enrichment plants. The Republic's attitude is that until it is placed fully in the picture it cannot accept the position blindfold. The enrichment process is a valuable commercial asset and could be a major profit-earner for any competing foreign company.

More importantly, from the point of view of conservationists, is what will happen to the residual wastes if boycotts or embargoes force reprocessing of the spent fuel rods in

the Republic.

In a report supplied to the Town City Council in 1979, Escorp said that it had contracted enriched uranium covering fuel loading and five reloadings of the two reactors.

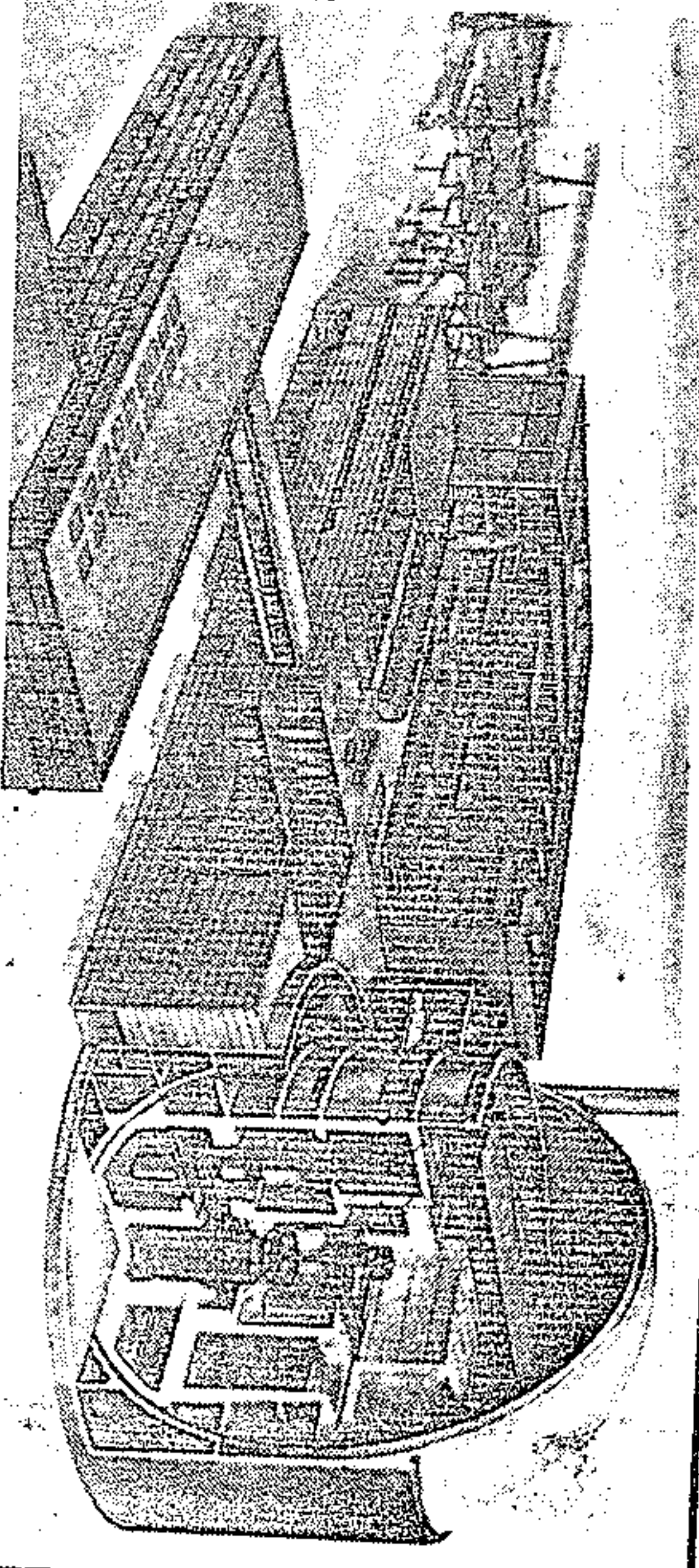
The station would produce 11 tonnes of waste annually which, when placed in radiation-proof containers, would weigh about 350 tonnes. All of this would be disposed of in South Africa. Spent fuel elements (which contain high-level wastes) would be stored under water on site until sent for reprocessing.

Waste?

the Republic.

In a report supplied to the Cape Town City Council in 1979 Escorp said that it had contracts for enriched uranium covering the initial fuel loading and five reloadings of the two reactors.

The station would produce 11 tonnes of waste annually which, when placed in radiation-proof containers, would weigh about 350 tonnes. All of this would be disposed of in South Africa. Spent fuel elements (which contain high-level wastes) would be stored under water on site until sent for reprocessing.



This diagram shows a typical nuclear power station layout. The reactor core lies in the upright cylindrical object, centre of the dome. This generates heat to power steam turbines, left of the dome. The turbines turn giant alternators, producing electrical energy.

★ The Cape Times, Tuesday, May 5, 1981

Power for Vosloorus

By MZIKAYISE EDOM

A R1,5-million electricity master plan, to be completed within the next five years, has been introduced in Vosloorus, Boksburg by the local community council.

Mr Fanyana Mahlangu, chairman of the Vosloorus Community Council, said yesterday that the first phase of the plan will be completed by the end of this month and the remaining four phases within the next five years.

"At present we are still reinforcing our present electricity current and in our second phase, we will start electrifying Dindela section and the new houses in Rest in Peace and Rockville," he said.

Mr Mahlangu said the residents will pay back the R1-million loan over a period of 24 years.

2/3
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SWEET
7/5/78

Undermining synfuel?

energy view

If the oil glut engineered by Saudi Arabia achieves its aim of restoring a unified pricing system at Opec's May 25 meeting, the chances are good that posted prices could settle at \$35-\$40 a barrel for benchmark Arabian light crude.

If that happens, it would mean that the real price of crude oil in the second half of 1981 will be lower than during the second half of 1979.

Spot cargoes of Middle East crude are obtainable at \$35-\$36 a barrel compared with \$41-\$42 towards the end of last year. The Saudis are maintaining the glut by pumping up to 10.3m barrels per day (b/d), despite the fact that the Iranians are producing little more than 1m b/d. Next year they hope to increase liftings to 2.5m b/d, driven by the same fear that has prompted the Saudi move: that excessive prices will hasten the development of crude oil substitutes and leave them sitting on massive untapped resources.

If the real price of offshore crude stabilises at mid-1979 levels, there are clearly grounds for a general review of the domestic energy pricing policy. And that could involve some new thinking on the Sasol programme of oil from coal.

The basis of the local price structure since the early Sixties has been the "import parity" of 93 octane petrol. To arrive at an in-bond landed cost the following price components are taken into account:

- The fob value, which comprises a four-companies' average of producing a litre of petrol, based upon the average costs of Shell, BP and Mobil in Singapore, and that of Caltex in Bahrain;
- The weighted average of ocean freight to SA ports from Bahrain and Singapore;
- Marine and war risk insurance;
- Ocean loss; and
- Landing charges levied by SAR & H.

To this notional price are added excise duty and various levies, plus a government-approved profit margin for the oil companies. This sets the basic coastal price.

To monitor the oil majors' profit and loss situation, a cumulative industry "slate" is maintained by testing compan-

ies' operating results against import parity plus agreed margin. This forms the basis of negotiations between government and the oil companies for price increases, which usually follow within a few months of increases in Opec posted or reference prices.

This procedure sets the pace for Sasol synthetic fuels prices. In other words, Sasol prices "follow" the international oil price.

It has been hoped and even expected that high Opec-set monopoly oil prices, combined with a rebate of 3.6c/l in local excise, would continue to sweeten investment projects for producing synthetic fuels. And Sasol chairman David de Villiers has said that the level of protection could go higher if government felt this necessary to assist local synfuel projects.

Two-way stretch?

But what would happen if the cost of local inputs in synfuel facilities were to accelerate faster than offshore reference prices of crude? According to the Sasol prospectus, government's commitment to follow international reference prices means not only up but down.

If heavyweight crude oil producers with huge reserves threatened by an accelerated investment drive to alternative sources of energy, continue to "engineer" gluts in order to maintain the preference for crude oil over other forms of energy, then the real price of offshore oil will continue to fall. By comparison the cost of coal feedstock for Sasols 1-3 would rise because the SA inflation rate remains persistently higher than the rate at which Opec hawks would be able to raise the price of crude.

According to Sasol's annual report, 3 Mt of coal mined at its Bosjespruit mine was debited to Sasol 2 at cost. Yet capex in Bosjespruit represents nearly 25% of capital employed. In the current financial year, with production from the mine more than doubling, the price charged to Sasol 2 has been raised to include a profit.

So, if the price of crude stabilises over the next 12 months, there are grounds for

assuming that Sasol's oil-from-coal activities (accounting for 60% of net profits last year) could move into a cost squeeze. This conclusion supposes, of course that the promises of government and Sasol's undertaking in its prospectus (to follow posted crude prices) are adhered to.

This generally anticipated development should be a signal to get out the slide-rules and determine what would be the most efficient thing to do in the event of a crude price standstill. For strategic and other reasons there can be no question of calling a halt to Sasol's current capex programme. Modules of Sasol 2 are already in production and Sasol 3 should come on-stream in three or four year's time. When Sasols 1-3 are running they will produce 47% of the country's liquid fuel requirements at 1978 levels of consumption.

But before non-Sasol corporations go plunging into synfuel projects, it might be wise to reflect that in the present situation it would be advisable to export coal rather than burn it in what remains an inefficient method of producing automotive fuel.

Crude oil remains the most efficient and flexible source of energy. The country's crude oil refineries are running well below capacity. The efficient thing to do would be to export more coal — which would look after the balance of payments — while increased refinery throughputs would stabilise unit costs and pump prices would stand still.

SA is a world leader in synfuel processing. No one can take that away. But there is no reason why the swing to substitute fuels should not be interrupted if cheaper, more efficient sources present themselves. In SA's particular circumstances, it would be easy to mobilise the resources to offset the cost by exporting coal.

This would amount to a kind of energy swap in which SA would be getting the better deal. It's a possibility worth investigating once the international crude oil supply position becomes clearer and if the Saudis win the day in Geneva in a fortnight's time.

Soekor EDM 8/5/81 moves rig

(55)

SOUTHERN Oil Exploration (Pty) — Soekor — says tests on its FA 5 borehole, 90 km south of Mossel Bay showed only 120 000 m³ of gas and 120 barrels of light oil a day.

This is well below the results last December from FA 2, 80 km south of Mossel Bay, which tested 11-million cubic feet of gas and 200 barrels of very light crude daily. However, the latest tests are important as they indicate where the western edge of the gas- and oil-bearing formation is.

The latest test area is only 8 m wide against a combined width of 72 m at the zone tested in December.

The drilling rig is being moved about 6 km north-east.

It will need several more boreholes and about 18 months before the extent and economic potential of the gas- and oilfield can be determined.

The amount of oil tested last December was significantly higher than any tested before. The gas last December was far less than that found in the Plettenberg Bay field. — Reuter.

SA may lose millions in deadlocked nuclear deal

ST 1876
B/S/18
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By John D'Oliveira,
The Star Bureau

WASHINGTON—A potentially expensive deadlock still stands between the South African Electricity Supply Commission and the American Department of Energy over enriched fuel for the Koeberg power station.

Escom has now written to the DOE seeking assurances that it will get an export permit for the enriched fuel the DOE will process out of 300 000 kg of uranium ore Escom must deliver to the DOE by the end of this month.

A DOE spokesman has confirmed this — and added that the reply

which Escom would shortly receive would say that no such assurances could be given.

In terms of a 1974 contract, the DOE will enrich South African uranium for the Koeberg power station.

The contract calls for the first delivery of South African uranium by May 31. If the delivery is not made, the DOE will "re-examine its position" and Escom could be liable to a penalty of between 16.9-million dollars if the May delivery is terminated and 77.6-million dollars if the entire contract is terminated.

But America's 1978 Nuclear Non-proliferation

Act prevents the export of nuclear source material to any country which has not placed all its nuclear operations under International Atomic Energy Agency safeguards.

It is possible that Escom will try to keep the contract alive by delivering the feedstock, paying for the processing and then storing the enriched fuel in the United States while attempts are made to resolve the licence issue.

● Dr Ampie Roux, chairman of the Uranium Enrichment Corporation, said a few days ago that South Africa could enrich enough uranium to supply Koeberg.

FM HOPE FOR OIL

8/5/81

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Soekor's latest strike of gas and gas condensate (light oil) in its F-A5 well keeps alive the hope that commercially viable deposits exist off the SA coast.

The well was sunk 2,5 km west of the F-A2 well which, in December, yielded the most promising gas and oil find since SA offshore exploration began.

The new well has a potential output of 120 000 m³ of gas and 120 barrels of light oil a day. This is chickenfeed by international standards and about 10% of the production potential of the F-A2 well. But it establishes that the field is at least moderately sized and indicates its western extremity.

Another half dozen wells will have to be sunk to determine the remaining extremities before Soekor can decide if it is worth exploiting. This should take at least another 18 months.

The next well, the F-A6, will be sunk 3,5 km north of the F-A2. It should reach the expected level of the field within the next three months.

FM 15th May 81

Shortage looms ahead

A major shortage of electricity is a near certainty within the next year or two. And because of the long period — eight to 10 years — required to plan, build and commission even the first unit of new thermal (coal-fired) power stations, there is not a great deal that can be done to avoid it.

The two biggest reasons for the looming crisis are constraints at Cabora Bassa and Koeberg. Both are tragic cases of political circumstances paralysing brilliant technological achievements.

At present no electricity is flowing from Cabora Bassa. Both power lines have been broken through sabotage — apparently by anti-Frelimo guerrillas operating in north-west Mozambique. There is no real technical problem with repairing the two smashed pylons — an Escom spokesman claims they could do it "in 36 hours" despite the rough terrain.

The real problem is that the area through which the pylons pass has become an effective "no-go" area for Mozambique government forces, at least for the present. It is true that the line has been broken before and then repaired, so there is no reason to assume that the supply is lost for all time. But as things stand, there is a shortfall of a minimum 1 425 MW, which is the agreed base load supplied by Cabora Bassa to the Escom grid. Under certain load circumstances, Escom may draw additional supplies above the quantity of 1 425 MW.

Escom's misfortunes over Koeberg

have been thoroughly chronicled (FM May 1). Now, the accession of a socialist to the presidency of France seems to have administered the coup de grace to SA's hopes of getting nuclear fuel in time to commission Koeberg on schedule. SA now seems unlikely ever to get nuclear fuel from any Western country (see box).

Koeberg 1 (rated at 922 MW) was scheduled for completion at the end of 1982, and should have been feeding power into the grid in 1983. Koeberg 2 was to have been commissioned a year later.

Rapid economic growth and a less than optimal rate of commissioning of thermal stations, coupled with the shortfall from Cabora Bassa, have already strained Escom's capacity to its ceiling. This winter could, if at all severe, present serious problems.

If, come 1984, there is still a serious loss of supply from Cabora Bassa, and the two Koeberg reactors stand idle for want of nuclear fuel, there could be a deficit, from these two sources alone, of 3 200 MW of electrical power. This quantity is about 90% of the combined rated capacity of two of Escom's thermal giants like Tutuka and Lethabo.

According to Escom's 1979 annual report, planned capacity for the end of 1984 was to have been a little less than 26 000 MW. A combined loss of Cabora Bassa and both Koeberg reactors would, therefore, represent a deficit of over 12.5%, or one eighth.

If economic growth continues to exceed expectations and if the rate at which growth in demand for electricity continues to exceed growth in gnp, the problem will be aggravated. Deficits of 15% or more at peak period are a far from negligible contingency by 1984, although bad troubles could occur as early as the coming winter.

SA's problem is aggravated by the local characteristics of demand for electricity. Because mining is such a power hungry activity, demand for electricity remains high around the clock, whereas in many industrial countries comparatively little power is used at night. This pattern makes for high load factors and consequently more efficient use of generating capacity. True, higher efficiency makes for lower costs per unit of power sent out. But it also makes for trouble when capacity is strained, as it already is. And future strains could be much worse.

In the worst case, mining and industry could have to suffer substantial losses of output during peak periods when domestic demands, which are highly cyclical, are at their highest.

As matters stand, Escom has already piloted SA through one potentially dangerous winter during 1980. This largely un-sung achievement required a skilfully crafted programme of planned load-shedding to distribute losses in power fairly and efficiently among major consumers to avoid unplanned and uncontrolled blackouts.

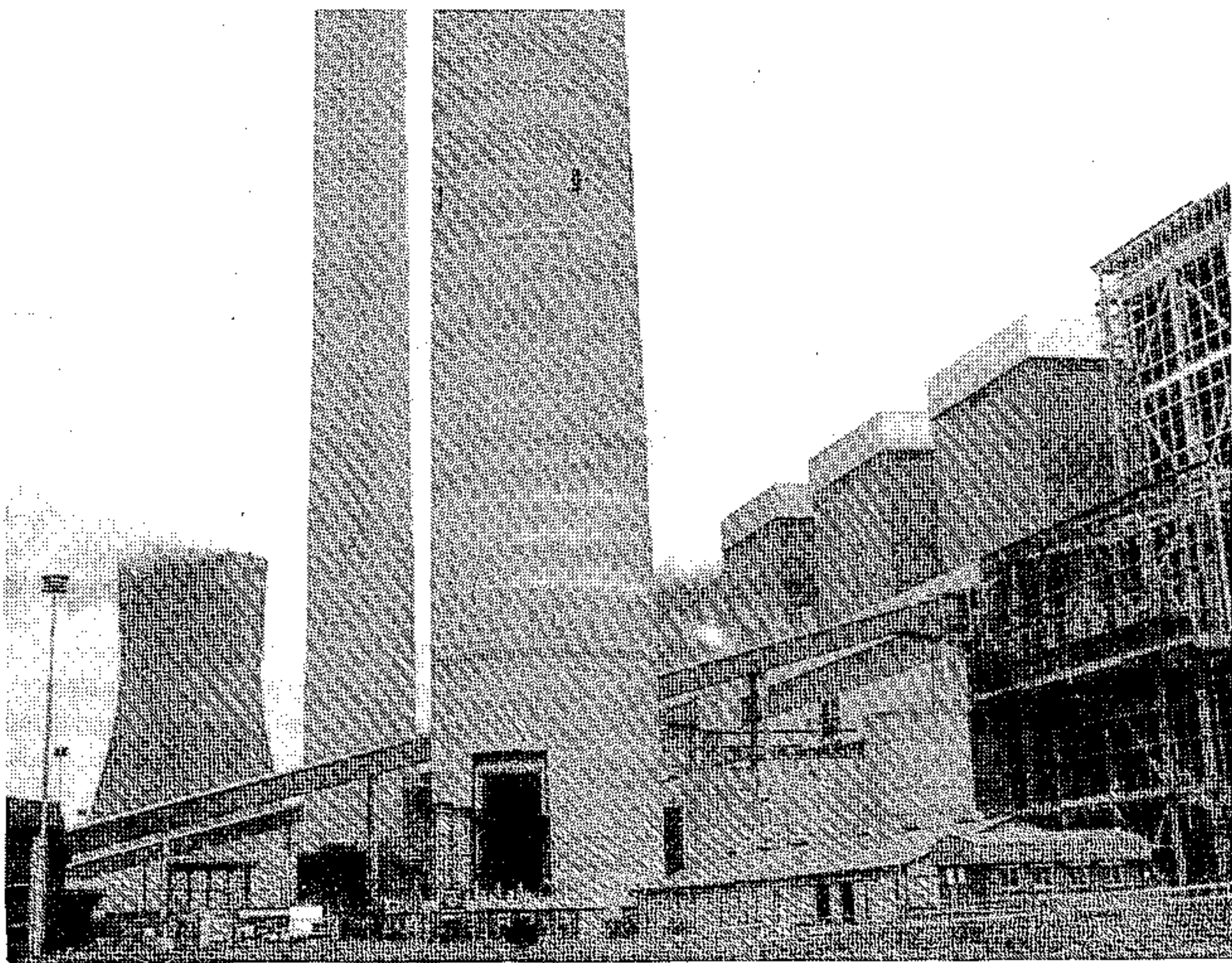
The coming winter will once again test these techniques. But even if they are successful, there could be an economic price to pay in lost output.

Escom is also straining every nerve to advance, wherever possible, the commissioning dates for the major thermal stations at present under construction. The latest projections call for Duvha's 2 400 MW to come in between 1980 and 1984; Matla's 1 800 MW between 1979 and 1983; Lethabo's 1 800 MW between 1985 and 1987; and Tutuka's 1 800 MW between 1985 and 1986.

There is also 1 000 MW of pumped storage hydro-power from Drakensberg, which should be fully commissioned next year. This tranche of capacity will help carry the peaks.

It can be assumed that all possible additions to supply are being canvassed, but realism argues that not too much can be expected. It is significant that there is no hope of recommissioning old and obsolete thermal capacity for the simple reason that this has already been done. An ancient of days like the Klip River station, which should have been closed a generation ago, is still going strong.

In defence of Escom it should be said



Duvha power station . . . these big thermals take years to build

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END OF THE ROAD?

The recognised authority on all matters atomic — McGraw Hill's *Nucleonics Week* — claims (under the by-line "Rob Lauffer") that the US has told SA to get its enrichment done elsewhere. The report appears in the issue of May 5 and is attributed to "knowledgeable sources" in Washington.

Nucleonics Week reports the US has suggested to SA that even if the two sides could agree on safeguards, "the bureaucratic and political tangle in the US would be such that deliveries could not be made in time for the scheduled loading" of Koeberg 1.

The US has suggested, it appears, that SA "look elsewhere." According to the report, the US-SA negotiations intensified a month ago when teams from both countries met "in a third country." It seems the South Africans gave the impression that they expected America's non-proliferation policy to be much more relaxed under Reagan than under Carter. The US strongly disabused SA of that notion.

Writing before the French election, *Nucleonics Week* says that France is the next most likely supplier. But the French are not expected to deal unless SA signs the Non-Proliferation Treaty or agrees to acceptable safeguards.

It can now be assumed the chances of socialist France supplying nuclear fuel to SA on any terms are meagre indeed.

that the financial stringency of the mid-Seventies hampered expansion. There was also, at the time, what many quarters regard as an excessive and even obsessional concern for the environment in the eastern Transvaal, which restricted the number of new thermal stations which could be located there. There was another, very important, restraining factor operative at the time — the belief in some

circles that an over-ambitious Eskom was eager to expand far more rapidly than a prudent policy on reserve capacity would require. This sentiment was indeed echoed by the Board of Trade itself in its widely publicised 1978 report dealing with the issue.

In view of the rigidity of supply, about all that can be done now is to contain demand. And it is no overstatement to say

that SA as a whole is not in any way psychologically mobilised to meet the possible demands of this looming crisis. And it will be a crisis which will hit everyone — the consumer, mining, industry and transport.

There is, on the side of government, an uneasy silence over impending events. It is very difficult indeed to avoid the impression that the silence has been, at least to an extent, deliberate. There seems to have been a desperate hope that the political problems over Koeberg would somehow be solved in time — a hope which now appears forlorn. And the political angle to the Cabora Bassa situation is delicate and complicated, so the less said about that the better, too.

All this is more the pity, as SA has a newly reconstructed administrative structure for energy planning (F/M February 27). It is time for government to be frank, to warn of difficulties and risks well in advance. Government needs to prepare and present contingency plans, capable of achieving a measured response to the levels of risk ahead. To meet the possible counter-accusation of alarmism is simple: no prudent captain puts off life-boat drill until the ship actually starts to sink.

And the threat is no mere hypothesis. The power shortage will occur. Only its extent is really in question.

Soweto residents are upset by power cuts

55 9/23 Sowetan 20/5/81

THE Soweto electrification project has gone sour for some who complain about constant power failures and the Soweto Council's failure to speed up the upgrading of the present system.

Dobsonville residents have also complained about lengthy blackouts in the township which they claim sometimes last for up to four days. The residents say they have been experiencing power cuts for many years but things had turned from "bad to worse" lately.

Orlando West residents said blackouts occurred two to three times a week — each lasting for up to three days — while in Orlando East residents experienced them about six times a month — each lasting for two days.

They also complained that despite the repeated power failures they had been made to pay accounts for a normal electricity supply. Orlando West and Orlando East are two of the first townships to be electrified in Soweto.

Asked for a comment yesterday, Mr Nico Malan, chief executive officer of the Soweto Council, said he would contact the township's electrical engineer to investigate the matter.

By LEN MASEKO

The Dobsonville Council's chairman, Mr Don Mmesi, said power failure was caused by the digging of trenches and fitting of cables in the township. He said the township's system was being upgraded and "there will be no power failures when the electrification project is over".

An Orlando West resident, Mr Charles Ngema, said a delegation of residents from the township complained to the Johannesburg City Council which used to control electricity in the area but were told the electricity was now controlled by the West Rand Administration Board. He said the board's officials said the township's system was heavily overloaded and something would be done soon to upgrade it.

"The power failure has left us stranded as most of us use electric appliances only in their homes. The most sad thing is, food sometimes goes bad because refrigerators go off, and these power cuts occur during the winter when electricity is most needed," said Mr Ngema.

"The Soweto Council has been saying that our system would be upgraded but nothing has been done so



Mr Don Mmesi . . . promises an end to power failures.

far. Why can't they do something about this?" asked Mr Ngema.

Mr Samson Maseko said Orlando West residents in his street last week experienced "the longest power failure we have ever had" lasting for three days. He said they had lodged complaints to the authorities but nothing had been done.

"What is surprising is our electricity bills have not gone down. They are still the same as the ones of the months in which we had no power cuts at all. The voltage in our home is very low, we cannot use a kettle and an iron at the same time

otherwise there will be a blackout. We appeal to the Soweto Council to speed up their upgrading project," said Mr Maseko.

A Dobsonville housewife said: "We have power cuts three times a month in our township — each one sometimes lasts for four days. They usually occur during the weekend. Maybe things will be better after they have upgraded the electricity in our homes."

An Orlando East resident, Miss Virginia Soki, said they experienced power cuts about six times a week. She said each one lasted for about two days.

among problem drinkers are a low frustration
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riority, fearfulness and dependency. Other
include oral dependence, low self-esteem, im-
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KENYA ENERGY FM 22/5/81

The lights dim

A large commercial company and a quasi-state organisation in Kenya are considering switching from oil to coal for their fuel requirements. If their decision is yes, the coal will probably come from SA.

Kenya provides a typical example of the quandary of non-oil producing African states. Last year it spent \$533m on oil imports — edging up towards the equivalent of half the country's foreign exchange earnings. By comparison, the oil bill in 1973 — before any major Opec price hikes — was just over \$50m. The economy is groaning.

Kenya must import four-fifths of its energy requirements. The rest is drawn from hydro-electric stations. Hopes of securing concessionary deals from the notoriously hardnosed Arabs have been slashed; the Kenyans have been wooing the sheikhs without success. Early last year the government quietly granted diplomatic recognition to the PLO, a move it had been stalling since 1977. President Moi has been on shopping trips to Saudi Arabia and Iraq. And gamewardens turn a blind eye to lavish shooting safaris that cater to the sporting whims of Middle East princes even though hunting was banned in Kenya four years ago. Despite all this chumming up, crude is still marketed through the oil companies.

Given Kenya's limited finances, the government has been investigating an array of alternative energy sources. But no single alternative can solve the coming energy crunch. And none can free the country from its dependence on oil. Some 40 000 barrels are used daily, most of it gobbled by the transport sector. The government has been mulling over conservation measures, but it is difficult to see how there can be significant consumption cutbacks. If the services of buses, trains and dilapidated taxis were to be curtailed, the country would be paralysed.

Dry wells

Neither can Kenya count on finding oil in commercial quantities. Internal test wells have proved dry. A consortium led by Cities Service of Tulsa, Oklahoma, plans to drill an offshore test well later this year, but industry sources say chances are not promising.

Government planners are also stymied by the industrial sector's future power requirements. Eighty-five percent of the

EUROPE ON SHOW

The Republic of China's first-ever European Products Exhibition attracted more than 200 000 visitors and traders from 13 countries who signed on-the-spot orders for more than \$1.45m. Another \$13.5m was under negotiation as the show ended last Sunday.

Trade between Taiwan and Europe has increased 12.5 times over the past 10 years to total almost \$5 billion in 1980. West Germany is Taiwan's major trading partner followed by the UK, Holland, Italy, France, Belgium and Switzerland. Officials at the show predicted that this year's European two-way trade would rise to \$6 billion.

Last year, Taiwan's trade with Europe accounted for 13% of its overall trade, and exports to Europe rose 34%. At the show's opening, Economic Minister Chang Kwang-shih said: "We need to import tremendous amounts of various products ranging from consumer goods to sophisticated equipment and machinery. . . We certainly welcome a closer relationship with EEC nations and look to European countries as important sources of goods and services."

H K Shao, director general of the Board of Foreign Trade, said the government plans to hold similar exhibitions every two or three years, and that a products exhibition of Central and South American nations will also be held in Taipei later this year.

nation's electricity is drawn from the Tana River, but demand will outstrip supply in the next decade or so. Kenya

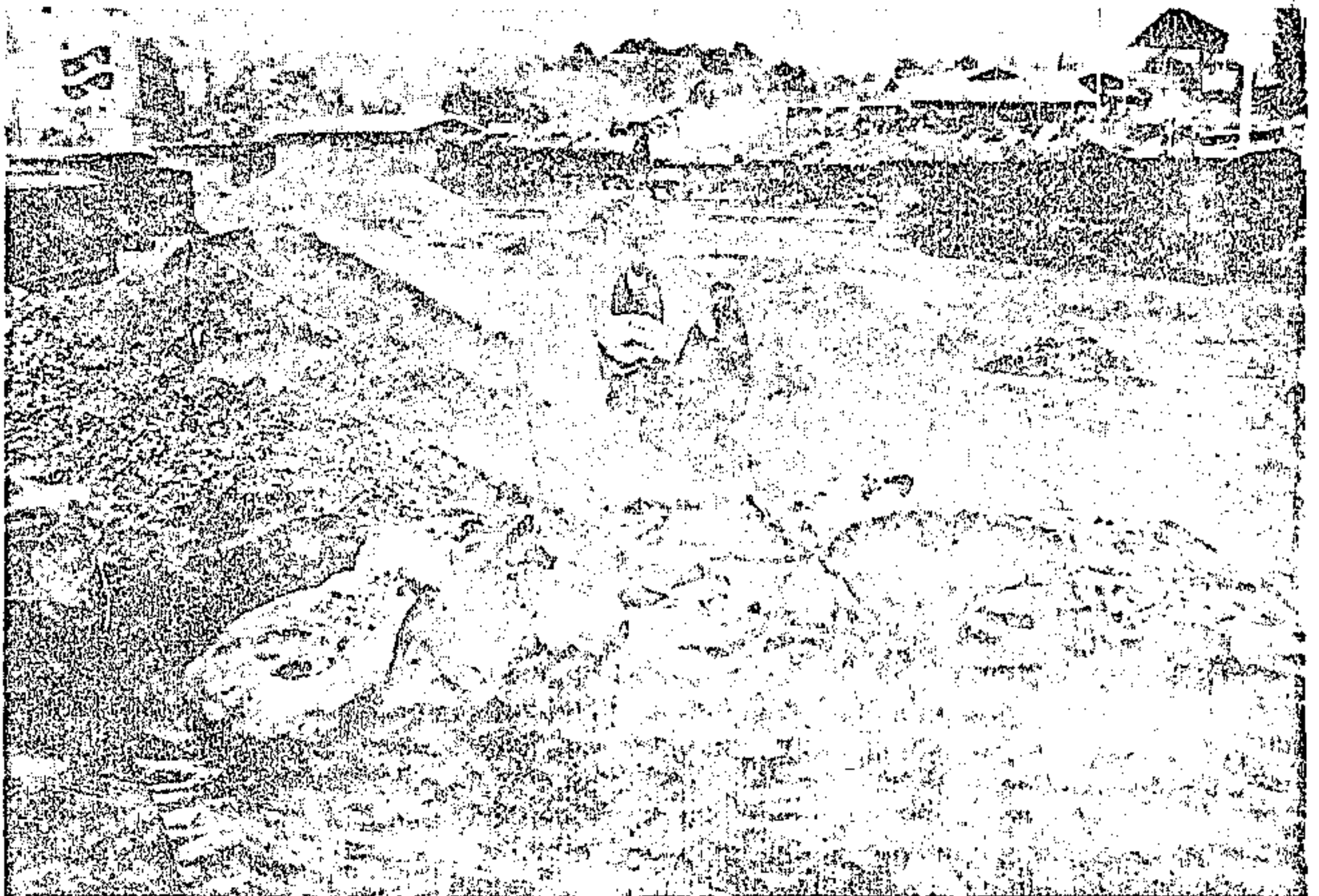
only burns up 300 MW annually, a small amount by SA standards, but consumption is growing by 8% each year. By the turn of the century the country will need anything up to 1 200 MW.

If Kenya fosters intermediate industry such as steel mills — as many planners hope — the demands will be even higher. More large hydro-electric stations are scheduled for development, and geothermal energy is being tapped from the floor of the Rift Valley. But this still leaves a gap of 300 MW to be filled by 2000 AD.

Promoting coal

The government is seeking salvation in coal and nuclear power. The East African Power and Lighting Company, which markets the nation's electricity, is promoting coal by drawing up a feasibility study for a coal-fired plant near Mombasa. Some private companies are toying with the idea as well. The East African Portland Cement Company and its sister operation at Maburi, both associates of the British Blue Circle Industries, are gauging the value of firing their factories with coal. Should coal become a fuel of Kenya's future, it is very probable it would have to be imported from SA, despite the OAU's trade embargo.

Then there is nuclear fuel, an idea first mooted last August when a delegation of West German energy experts assessed Kenya's energy requirements. Accompanying the team was a representative of Kraftwerk Union. This West German company manufactures nuclear water reactors with a capacity of 600 MW and upwards. As most developing countries cannot absorb 600 MW into their system, the company is considering a new line of smaller 200 MW reactors, tailored to the needs of the Third World.



SA coal . . . wanted in Kenya?

Petrol price poser for the Govt

RDM 23/5/81

24/4 (55)

By GERALD REILLY
Pretoria Bureau

EITHER the Government will have to absorb increased price margins to be granted to oil companies, or the price of petrol will have to go up — probably towards the end of next month, according to Pretoria sources.

The extent of any increase could be influenced by the outcome of the mid-year meeting of the Organisation of Petroleum Exporting Countries (Opec) starting in Geneva on Monday.

The price of petrol was last raised in June 1979 by about 30% — by 14,7c/l. It is understood that if the increase is passed on to the consumer the price would rise by as much as 2c/l.

At the higher price, petrol retailers would also be entitled to an adjustment in margins.

Some sources believe it likely Opec will agree to a price freeze in Geneva because of a world over-supply — mainly due to a big increase in Saudi Arabian production — but a rise in the

price of crude is possible.

Claiming "under-recovery", some weeks ago South African oil companies asked the Minister of Mineral and Energy Affairs, Mr F W de Klerk, for higher margins. He said the application was being processed.

Oil company executives claim the need for increases is urgent. They say these could be passed on to the consumer directly, or fully or partly absorbed by the Government.

The Progressive Federal Party's spokesman on finance, Mr Harry Schwarz, warned that a fuel price rise "at this delicate stage in combating inflation could have extremely serious economic consequences".

Fuel was a cost factor throughout commerce and industry and its effect on the price spiral would be immediate and distressing.

There was still "some fat" on the huge price increase in 1979, and the Government could afford to absorb the cost of the relief it intended giving the oil companies, Mr Schwarz said.

Trans-Natal buys more coal rights

RDM 27/5/81

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By ADAM PAYNE

TRANS-NATAL Coal Corporation has bought more mineral rights on the Springbok Flats where it is studying the economics of starting South Africa's first oil-from-coal liquefaction industry.

Trans-Natal already holds the rights to about 1 000-million tons of coal on the Flats.

The seller of the rights on two farms, over which Trans-Natal had an option, was Waverley Gold Mines whose shares have recently been firm on the Johannesburg Stock Exchange.

Waverley has sold the mineral rights and the rights to subscription in any future venture over 1 712 ha on the farms Volspruit 606 KS and Wellington 460 KR to Trans-Natal for a total of R856 000.

The purchase of these mineral rights indicates that Trans-Natal is satisfied that coal exists on the farms.

The purchase is part of a long-term consolidation of holdings and it does not signal any new move in the study of the oil liquefaction project which, if adopted, will entail mining on a large scale to supply coal to a liquefaction plant with which Sentrachem will be concerned.

Coal from Springbok Flats has been used in pilot plant

liquefaction tests in the US.

The next stage could be a pilot plant test in South Africa but no decision has yet been taken on this.

Figures published in London on the project show that annual production could move up to 18-million to 20-million barrels of fuel — principally diesel — a year, processed from between 5-million and 6-million tons of coal.

Since diesel fuel is in short supply the launching of such an industry would place South Africa well on the road to self-sufficiency. The Gencor-Sentrachem plant would supplement Sasol and not compete with it.

According to the London report, minimum expenditure on the project is likely to be no less than R1 500-million.

A feature of the project is that uranium is found in significant quantities in parts of the Springbok coal field.

It would not be viable if exploited alone but could be a useful addition to the exploitation of coal.

Announcing the sale of the rights over 1 712 ha to Trans-Natal, Waverley Gold Mines says the mineral rights over the remaining areas of the farms — 900 ha on Volspruit and 1 445 ha on Wellington — are being retained by Waverley.

The payment by Trans-Natal is made up of R469 000 for the purchase of the mineral rights and R387 000 for the waiver by Waverley of the right to subscribe for 7½% of the working capital of any company formed to exploit the mineral rights, pro rata to the areas covered by these rights.

In terms of an agreement made in May 1976 Trans-Natal had the right to purchase certain mineral rights on the two farms at a price of R150 a hectare.

A clause in the agreement provided for escalation in the price paid linked to the consumer price index.

To the date of the agreement this month the escalation represents a price of R274 a hectare equivalent to the R469 000 paid. The balance of R387 000 is for the waiver of the subscription rights.

In terms of a long-standing "Turning to Account" agreement between Waverley, Carrig Diamonds and Tanks Oil and Platinum Holdings, Carrigs and Tanks will each receive R167 937 with the balance of R520 125 being retained by Waverley. This represents 29c a Waverley share.

Waverley says it will inform shareholders as to how these funds will be used.

Soweto boost for Gallo

Deputy Financial Editor

THE electrification of Soweto should provide "a major boost" for the music and home appliance industries, says Mr Tony Bloom, chairman of Gallo, in his annual report.

Mr Bloom says the electrification of Soweto "will undoubtedly be a precedent for other areas" and sees this as one reason for exciting long-term growth for his company.

Mr Bloom is also hopeful for Gallo's new "single" tape cassette, counting on it to "open up new markets . . . And contribute to profits almost immediately".

Gallo intends to make its presence felt in the booming video market.

"Prospects for the group are encouraging."

Last year sales on an annualised basis grew 136%, and earnings a share 41%.

These figures do not include acquisition RPM, which has warranted that it will add 8c a share to earnings this year, and include MFP for only six of the nine months on which Gallo reported last year.

MFP, Mr Bloom says, will give Gallo improved access to large volume retailers.

Mr Bloom contends that Gallo's dividend cover of 2 is adequate "given the group's strong balance sheet and its modest anticipated future capital requirements".

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INFLATING PETRICK

FM 5/6/81

SS ~~SECRET~~
The Department of Mineral and Energy Affairs has upped its estimate of SA's bituminous coal reserves by a third — to 110 Mt. from the amount of 81 Mt proposed in the Petrick Report. Extractable reserves, in terms of current mining economics, more than double — to 51 000 Mt. from Petrick's 25 000 Mt.

The new estimate is high enough to justify reasonable hopes of an increase in the eventual ceiling for coal exports from 44 Mt/year to a possible 60 Mt or even more.

Minister of Mineral and Energy Affairs Frederik de Klerk announced the sharply increased reserve figure in a speech delivered at the opening of the Matla Coal Mine on May 15. He reaffirmed SA's "absolute confidence in and commitment to coal as our primary energy source." De Klerk emphasised that the new figure was a "conservative minimum." So a further improvement can actually be expected as inferred reserves located between existing deposits are proved and added to the total.

And further technological improvements can also increase the currently accepted extraction percentage. It can be assumed that De Klerk was referring to encouraging developments like large-scale fluidised bed boilers which could one day permit the use of high ash coal currently excluded from assessments of reserves.

De Klerk urged the industry to give urgent attention to the concurrent extraction of varying types of coal from individual coal mines or even from entire coalfields. In other words, mines could produce steam coal for power stations, export grade coal and reject coal — from which, for example, methanol could be made. Selective mining of this sort is of great impor-

tance in maximising reserve utilisation.

Earnest attention should be given to the possibility of separating an exportable fraction from coal produced by "captive" power station mines as well as to the further washing and upgrading of reject coal, both for the local and export markets.

The Department has also completed a 40-year projection of internal coal demand, with assistance from specific large coal-consuming sectors. Conceding the inescapable hazards associated with such long-term forecasting, De Klerk claimed it was necessary to make the assessment notwithstanding, in order to provide the best possible foundation for major policy decisions. The forecast will be updated "on a continuous basis."

Coal consumption for electricity consumption, which represented nearly 64% of the total during 1979, will reach 160 Mt (or 64%) by the year 2000 and 510 Mt (or 69%) by 2020.

Synthetic fuels and chemicals will, under "crisis-free conditions," represent about 20% of coal demand both in 2000 and 2020. But should SA, for "political, strategic or economic reasons," decide to become more self-sufficient, the demand for coal would be significantly increased.

The demand for metallurgical coal (taking account of the development of form-coke and steel-making by direct reduction) is expected to grow at about 4.8% a year and will claim a constant 8% of total demand from 1980 onwards.

The industrial and commercial sector should exhibit a relatively modest average growth rate of 4% a year. The demand for coal by the household, transport and mining sectors will decrease in absolute terms.

Coal demand should increase at an

average annual rate of some 5.8% a year, with total domestic demand reaching some 250 Mt by 2000 and "an almost incredible 740 Mt" by 2020. These figures represent a cumulative demand of more than 12 000 Mt over the period.

Planning beyond 2020 is extremely difficult because of the long time horizon. But although coal demand will not terminate at that time, alternative energy resources like nuclear breeder reactors and even fusion reactors will play an increasing role.

Turning to the issue of exports, De Klerk noted the great interest being shown by the industry in further expansion. But decisions to permit expansion in exports could be taken only after scrupulous examination. However, De Klerk assured the industry that a decision must be taken soon, as additional exports could not be made possible without the establishment of further production capacity and infrastructure. He hoped that it would be possible for the government to announce its decision within the next three months to eliminate further uncertainty.

Judging from past experience, reserve assessments are likely to turn out rather low with the passage of time. And so are assessments of domestic demand. Consequently, there is no need for government to agonise too much over 10 Mt, 20 Mt or even 30 Mt of additional annual coal exports. Such amounts — over a 40-year time horizon — will almost certainly turn out small beer alongside cumulative domestic consumption. And the element of cross-subsidy implied in high export prices will help to compensate the coal mining industry for having to operate under the constraint of a controlled domestic price. So there is little to lose and much to gain by high exports.

Mobil oils for Koeberg

MOBIL OIL SOUTH AFRICA (PTY) LTD will supply the lubricating oils and greases for South Africa's first nuclear power station at Koeberg having been awarded the tender by Escom.

In making this announcement, Mobil's sales director, Mr J A "Tony" Kilcullen, stated that the contract was for 10 years.

Mobil's experience and expertise in the field of nuclear power station lubrication is well known. In the United States 42 nuclear power plants, producing some 31 616 megawatts of power — on completion the Koeberg nuclear power station will be able to generate 1 844 megawatts of power — are lubricated by this company.

In France, where the expansion of nuclear energy has been dramatic with an increase from 4.23 percent of the total generated power in 1969 to 20 percent in 1980 and projected 70 percent in 1990, Mobil's achievements have been even more spectacular with nine of the existing and new stations having been awarded to them. This equates to nearly 70 percent of the total plant built and under construction.

Mr Kilcullen stated that Mobil's research activities in the nuclear energy sector dated back to the 1950's when the industrialization of nuclear energy started.

The research was carried out in the Industrial Research Laboratories in Plainsboro, USA, and at the reactor in Harwell, Britain.

Oil glut may stave off SA petrol blow

By GERALD REILLY, Pretoria Bureau

THE world oil surplus could save South African motorists another steep rise in the fuel price if it persists as expected, Pretoria sources say.

Representatives of two of the world's largest crude oil producers — Venezuela and Saudi Arabia — are to meet in Geneva later this week to discuss the surplus.

And Saudi Arabia, which admits to stepping up production to create a glut of 2-million to 3-million barrels a day, was a step closer last night to imposing its pricing policy on world producers.

This follows a week during which several producers began trimming their charges.

Saudi Arabia, largest producer in the Organisation of Petroleum Exporting Countries, wants to pressure the other 12 Opec countries into adopting a unified price near its own price and a pricing system calling for planned, incremental rises.

The Saudi tactics of keeping production high and its prices the lowest in Opec at \$32 a barrel have begun to put its fellow oil producers' backs to the wall.

Later this week price reductions are expected to be announced by British North Sea oil interests and other Opec members, including the high-priced African producers, according to overseas reports.

Meanwhile the Government is still "processing" the claims of South African oil companies for bigger profit margins.

The claims are based on and justified by a "recovery-fixing formula" agreed by the Government and the oil companies.

Senior oil company executives say in terms of the formula the companies have been "unrecovering" for months and an adjustment is overdue.

But it is pointed out that although South Africa has to buy its oil on the spot market, where the price is buffeted by

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65

supply and demand, there would be substantial financial benefits — although not immediate enough — if a firm decision is taken to reduce the price of crude.

Against this background it will be unnecessary for the Government to raise the price of petrol to compensate oil companies for higher costs.

But even if South Africa's oil import costs are unaffected by developments on the international market, economists say there is still substantial fat on the big 15c/ℓ price rise imposed in June 1979 and that the Government could afford to absorb any relief given the oil companies.

After their mid-year meeting in Geneva earlier this month the 13 Opec countries agreed to freeze prices until the end of the year.

Most are in favour of a big cutback in production to drain away surplus supplies and justify a further price rise.

Saudia Arabia, however, is opposed to production cuts and higher prices because of the impact this would have on the already depressed economies of the industrialised countries.

Ecuador, a small Opec member, and Mexico, a non-member, have already cut crude prices, UPI reports.

Qatar has stopped charging a premium on its official price of \$37.23 a barrel, and Iraq has lowered its pipeline tariff on oil exports to the Mediterranean, effectively cutting its price by 57c a barrel to \$36.93.

Oil industry sources in Kuala Lumpur told Sapa-Reuter yesterday that Malaysia's State oil company, Petronas, had cut crude oil prices for the second successive month — this time by \$0.70c a barrel, retroactive to June 1.

The price of Malaysian crude now ranges from \$38.10 to \$39.90 a barrel.

Cut demands for power, warns Escom

By BEV MORTIMER

THE message from the Weather Bureau is that while daytime weather conditions are expected to improve over most parts of the country, overnight temperatures will still be cold.

And as mid-winter approaches consumers are expected to increase their demands for electricity.

But Escom has warned it has an insufficient capacity to meet the demand.

Yesterday Escom's public relations officer, Mr Boet Uys, said the demand for electricity had escalated to such an extent that Escom was faced with the dilemma of not being able to match supply and demand.

"Over the past 30 years our growth rate has been more than 8%.

"The maximum demand of the Escom system last year was 13 668 megawatts, but last Friday it was already 14 043 megawatts at 11am in the morning — and we haven't reached mid-winter yet," he said.

The reasons for this growth in demand were:

- More consumers were switching to electricity rather than use oil and diesel;
 - Electricity was cheaper;
 - Because of the ever-present growth and demand Escom was forced to delay planned maintenance on highly sophisticated equipment. This meant pressure was placed on equipment which would consequently malfunction, causing a loss of supply;
 - Escom was forced because of high demand to take equipment into service at a rapid rate. Consequently teething troubles which occurred were not sorted out properly; and
 - Escom imported from Cabora Bassa, but this supply was interrupted because of sabotage to lines in Mozambique in the first week of April. Consequently this supply was not available to South Africa.
- Mr Buys repeated an earlier appeal to consumers to use electricity sparingly.
- "The response so far from industry, mines, commerce municipalities and householders has been extremely positive — they have tried to save on their use of electricity."

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(18) From Table A2 and South African Statistics 1974. [54]

Improved security urged for PE power

Municipal Reporter

SECURITY measures at Port Elizabeth's major substations are likely to be stepped up as a result of the sabotage of a substation in Durban recently.

The City Electrical Engineer, Mr C E Adams, in a report before the Port Elizabeth City Council's Utilities Committee later today, has recommended that additional security measures be applied to major substations to ensure the continuous flow of electricity to the city.

Mr Adams recommends that R150 000 be provided in the draft capital programme to be spent over three years.

Mr Adams, in substantiating his recommendation, says that "as a result of the perpetration of acts of sabotage by subversive elements" which caused disruption of electricity services on a large scale, it was considered "essential" to apply additional security measures to prevent or minimise the effect of such acts.

"The measures proposed would include the installation of sophisticated systems designed to prevent unauthorised entry, and to alert departmental staff or security authorities to the presence of intruders."

In another report the Chief Fire Officer, Mr G B Estment, has recommended that provincial authority be obtained to incur additional expenditure — estimated at R275 a month — for security guards to protect ambulances and equipment once the new ambulance station is completed.

Another report before the committee has indicated that the Electricity Control Board did not intend to force the takeover of rural electrification schemes by Escom and that Escom had no intention of initiating the takeover.

It was feared that the board regarded Escom as the ultimate responsibility for rural electrification, but the board has ensured that any local authority which properly manages a rural network need have no fear of the board insisting on an Escom takeover of the network.

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any form of collaboration. There is nothing better, or quite as relevant, that our present mental health teams, with their Western orientation of training, have to offer to the tradition-bound man in terms of psychotherapy.

Koeberg N-delay report leaked

Argus
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Argus Bureau

WASHINGTON. — The scheduled start-up of the Koeberg nuclear power station near Cape Town may be seriously delayed at great cost, according to a confidential document which has been given to journalists in Washington.

The document is a four-page statement of South Africa's position in its wrangle with the United States over supplies of nuclear fuel.

It was made available by Mr Randall Robinson, director of the black lobby group Transafrica, as one of several papers which have mysteriously leaked from the United States State Department.

Mr Robinson declines to name his source beyond saying that it was not a State Department employee. The authenticity of the papers has not been disputed by the State Department.

Details of the document on nuclear matters, which is dated May 14 when Foreign Minister Mr Pik Botha was in Washington, have been published in

American and British newspapers.

Under a sub-heading, 'The present position,' the secret document says: Koeberg is scheduled for initial fuel loading in March 1982 and as no firm undertaking for the supply of enriched uranium could as yet be obtained, the chances are that the scheduled start-up of Koeberg would be seriously delayed at great cost to South Africa.'

SUSPENDED

Supplies of enriched uranium were suspended by the United States because of South Africa's refusal to sign the nuclear non-proliferation treaty and to agree to full-scope international safeguards.

The leaked document, which is thought to have been handed to top United States officials by Mr Botha during his talks here, asks the Americans to give an undertaking that export permits will now be issued for such supplies.

Explaining the South African stand on the treaty, the document makes clear that the Government wants to keep potential attackers nervous about South Africa's nuclear capabilities.

It says: 'South Africa's nuclear programmes are geared to the peaceful application of nuclear energy and at no time has she tested a nuclear device.'

The latter part of sentence is seen as a veiled reference to the mysterious 'flashes' which United States spy satellites have spotted over the South Atlantic.

However, the document adds: 'It must be realised that South Africa is threatened by the USSR and its associates and by certain African countries with Soviet support and encouragement.'

● 'Secret leaker Crocker'
— Page 15.

priest, they will traditional services.

5.4. As demonstrated, the mental health workers in South Africa, especially those without medical training, are relatively powerless in the eyes of a great part of the community they serve. This subordinate role they take in relationship to the healer-priest, can be reversed only by developing better-adapted techniques in mental health practice. This object can only be realised by research consciously orientated towards the establishment of mental health programmes and techniques specifically

Until now the emphasis in our mental health services has mainly been curative. In rural areas malnutrition through ignorance is still a problem. In the cities the burden of Westernisation and concomitant alienation is taking its toll in alcohol psychosomatic diseases. To counteract this the in our services is in effect shifting towards integrated, comprehensive, community-centred health and health care service. This policy is clearly reflected in the new Health Act which Africa adopted in April of this year (1976).

The Secretary for Health, Dr J de Beer (1976) the foundations for this transition. He pointed out so as to

5.3. As indicated in the previous paragraphs, now changing our attitudes to the indigenous practitioner.

Though we realise that a great number of Black patients in our care are also receiving the attention of the traditional practitioner, many of us unfortunately still choose to oppose and reject them in principle. (Editorial 1976) Of course, we realise that the approach dictated by our rigorous scientific medical framework leaves no room for consultation with the diviner-priests. But by establishing communication with the responsible people in this field, we can at least indirectly involve them. Thus we can offer an important unofficial psychotherapeutic support to our patients, instead of repudiating

Power failures cost them money

By LEN MASEKO

THERE IS growing resentment among Soweto shopkeepers occupying a block of shops in Meadowlands at the constant power failures which they said were affecting their businesses.

The shopkeepers, who use electricity in their Zone 5 shops, said the power cuts led to some foodstuffs getting spoiled.

An owner of a butchery in the block said his business was suffering more than the other shops.

Yesterday, Mr G H Brothy, chief executive officer of the Diepmeadow Council, said the shopkeepers should report the matter to their township manager immediately. He said he would get in touch with the Electricity Department to find out the cause of the blackouts.

A butcher in the block, Mr Elijah Radebe, said his business experienced a power failure twice a week — each one lasting more than three hours. He said the power cuts caused havoc in his business and this was worrying him.

“My business is affected by this more than the others because I am selling meat and dairy products which need to be stored in a refrigerator all the time. You can imagine what effect this will have on my business eventually,” said Mr Radebe.

A grocer, Mrs Lindiwe Mbatsana, said the power cuts caused a standstill in her shop as she used electric appliances.

She said her cash register and two refrigerators could not be used when there was a power cut. This caused confusion in her shop.

• Meanwhile, residents in Orlando West and Orlando East said they still experienced repeated power failures despite their complaints to the authorities. They said the lights went off twice last week.

The residents in the townships first complained about lengthy blackouts early last month which they said sometimes lasted up to three days. The residents said the blackouts surprised them — sometimes striking during the night when most homes needed electricity for cooking and other household needs.

The residents have called for the upgrading of the townships' system immediately. They also complained that despite the repeated power failures they were made to pay accounts for normal electricity supply.

The Soweto Council said then it was investigating the complaints.



Mrs Lindiwe Mbatsana . . . blackouts cause a standstill in her grocery shop.

Koeberg Alert warns of 'latent neutron bomb'

By BOB MOLLOY

KOEBERG Alert, the South African anti-nuclear lobby, warned yesterday that the Israeli air strike on Iraqi nuclear power facilities had shown Cape Town that Koeberg was "a latent neutron bomb" awaiting detonation by a hostile power.

If a nuclear reactor at Koe-

berg were attacked and damaged after being in operation for one year, it could release more radioactivity than 100 Hiroshima-type bombs, the statement said.

The full statement, released by the acting chairman of the group, Professor A. Abramowitz, said that in the light of the Israeli raid "Koeberg Alert was concerned about the consequences of a military operation against a similar installation in this country.

"After a year's operation, the 90 tonnes of fuel in a Koeberg-size reactor would contain more radioactivity than several hundred Hiroshima-type atomic bombs and probably more radioactivity than the largest nuclear weapon we know today.

'Catastrophe'

"In the event of a breach of the containment under these circumstances there would be a catastrophe of incalculable proportions. In other words this would be tantamount to a latent neutron bomb awaiting detonation by a hostile power."

Professor Abramowitz said this possibility was reinforced by the Israeli statement that they had purposely attacked the Iraqi plant before it had begun to operate in order to avoid the release of a cloud of radioactivity over Bagdad.

"Koeberg Alert calls on the authorities to clarify the position with respect to our own installation, especially for the benefit of residents of Atlantis and Cape Town."

Asked to comment on the statement, Mr Boet Uys, senior public relations officer for Eskom, said Koeberg reactors had been designed with a three-metre thick containment vessel. United States studies had shown that such a vessel could withstand "quite a major attack".

He referred all queries on radioactivity levels to the Atomic Energy Board.

A board official in Pretoria said no experts were available for comment.

Kwa Mashu unhappy about Escom power 'cuts'

Mercury Reporter

A LOCALISED electrical fault which caused two blackouts in two days in Section D in Kwa Mashu prompted residents to ask Escom whether they were being given a fair deal in the power cut roster.

Section D had failures on Monday and Tuesday morning this week.

Mr John Fletcher, Durban's deputy city electrical engineer, said he knew of only one of the

cuts — the one on Tuesday morning experienced by other residential areas as well.

'All I can presume is that the failure on Monday must have been a local fault, in all probability an overload at a sub-station,' Mr Fletcher said.

He said it was unlikely that Kwa Mashu would be used as a 'shedding' area because it was classified as industrial and therefore one of the last to be cut.

GENERAL NEWS

More plants needed, says Sasol chief

It was this very real fear that the 'flu would return within months which played a large part in prompting certain improvements and reforms soon after it had faded. Relief - operations and house-to-house visits

CAPE TOWN. - Several additional Sasol plants, with a production capacity equal to that of Sasol 2 or Sasol 3, would have to be built before the end of the decade to maintain the required proportion of local to imported fuel, Mr J A Stegmann, managing director of Sasol, said in Cape Town yesterday.

By 1984/85, when Sasol 2 and 3 were in full production, a large percentage of South Africa's fuel would be produced from coal, he told the School of Management Association at the University of Cape Town.

However, because fuel consumption rose annually, the relative contribution of local fuel would decrease rapidly if more such factories were not built.

Those plants would not have to correspond to existing ones

in every respect and could include new developments - new plants could be designed to produce petrol and diesel as well as methanol.

Mr Stegmann said the factories should not only be built by Sasol and appealed to the private sector to construct plants for manufacturing synthetic fuels.

Sasol would not consider building a similar plant before 1985, particularly in view of the current shortage of trained manpower.

However, Sasol would be prepared to consider further projects in the second half of the decade and was confident that plans for another plant would then be approved.

The contribution which ethanol and methanol could make would be valuable, but at best would make only a modest con-

tribution to the increasing demand for fuel.

The production of these types of fuel should not be encouraged unless they could compete economically with Sasol plants in full production.

Once Sasol 2 and 3 were in commercial production, the State would reduce "its participation by selling off shares to private investors.

"This will allow Sasol to retain the private sector character which it assumed last year," he said.

"The entrepreneurship of the State will have been handsomely rewarded not only by the receipts from the sale of shares, but also from the profitable and valuable holdings which it retains."

It was out of the question for the two plants with an end-of-job cost of almost R6 000-million (which includes the associated coal mine) to be completed without direct equity participation by the State.

"The advent of Sasol 2 was a major factor contributing to the upswing in the economy. Sasol 11 took up practically all of the workshop capacity for fabrication of equipment for the process industries which otherwise would have been faced with very thin order books," he said. - Sapa.

of the 'flu in Cape Town and the number of deaths from it. These figures compare unfavourably with the other major South African towns, most of which were hit by the 'flu after Cape Town.

	WHITES	COLOUREDS	AFRICANS
Population of Cape Town and suburbs.	104,175 (1918)	92,429 (1911)	2,966 (1911)
Number of Cases Reported in Cape Town and suburbs, 1 August 1918-30 November 1918	48,830	72,282	1,608

Number of Deaths from Epidemic Influenza and its complications in Cape Town and suburbs 1 August 1918-30 November 1918

1,455 4,222 664

Demographically however, the Spanish 'flu did not mean just the loss of these 5,000 lives in Cape Town. Since, unusually, most of the victims were between 20 and 45 years old²⁸, and thus young parents, one must also include in the final toll an unknown number of children never born.

This danger to families, which the 'flu can describe by the loss of their breadwinners for the flood of new life insurance policies extended after the epidemic.

One insurance Company after another report commenting on a 5% increase over sums as

1910, the Chairman of the Southern Life Association observed:

"It is, in our opinion all too good that the public should have been impressed by the lesson of this severe experience to the extent of making provision as never before against the risks of death. It is possible that we may have to face visitations in the future of a similar nature"

so clearly illustrated and towards the end of 1919 a Tanga was

ed to give slum-children seaside holidays in the fresh air. 49 The

following year the Cape Times asserted:

Question 4 a

We find various groups of people in our society who differ with skill and potential. Some are doctors, where a lot of skill is required and they get a high salary. Others again, more potential is needed and they ~~don't~~ work more with their hands and usually don't get such a high pay. Some don't even work and yet ~~earn~~ ~~over~~ income. Then we have a last

WORLD OIL

Could Opec crack?

(55) FM 12/6/81

The industrial nations are enjoying a barely remembered experience — a soggy world oil market in which exporters are competing with each other in cutting prices, rather than hiking them. This is an astonishing reversal, but its deeper implications, especially for SA, are by no means obvious.

The most immediate (and tantalising) question is whether Opec as a whole is in the process of losing control of the market, with the end result of a collapse of the cartel and a restoration of the oil market of the Sixties. This would mean a world oil market characterised by competitive conditions and cheap oil — a total reversal of the market situation of the last eight years.

The answer to this question lies — at least for the moment — with Saudi Arabia, which produces some 40% of Opec's output. And simple reference to the published utterances of the Saudis (and of others close to them) discloses that the present oil glut of 2-3mbd (million barrels per day) is, so to speak, an "inside job." Saudi Arabia has continued to produce oil at the record level of 10.3mbd in calculated pursuit of its stated goal of asserting primacy in the cartel.

This goal implies hammering the oil market with massive quantities of Saudi

oil until the hawks capitulate to reality. Dr Mana Saeed al-Oteiba, United Arab Emirates oil minister, who is very close to the Saudis, said recently that he wants a price freeze for 18 months.

He suggested that price unity within the cartel may be achieved by the end of 1982, with the Saudi price going to \$36, while other prices come down. (There never has been a single world oil price, because of differences in quality and location of different sources, but the disparities of recent months have far exceeded "normal" differentials.)

Once the short-term goal has been achieved, Opec will have no choice but to fall in with the Saudis' longer term plan — a 2%-3% annual increase in real oil prices. This programme requires oil prices to rise at the inflation rate plus 2%-3%, with possible further increments to off-set future depreciation of the dollar against other major

currencies.

The Saudis are rational enough to know that their own interests are best served by oil prices that are merely extortionate rather than positively ruinous, because their oil reserves are so much greater (relative even to current output) than those of many of the hawks. So they are concerned more than, say, Algeria, whose reserves could run out in a decade, with permanent damage to the world oil market caused by excessive prices.

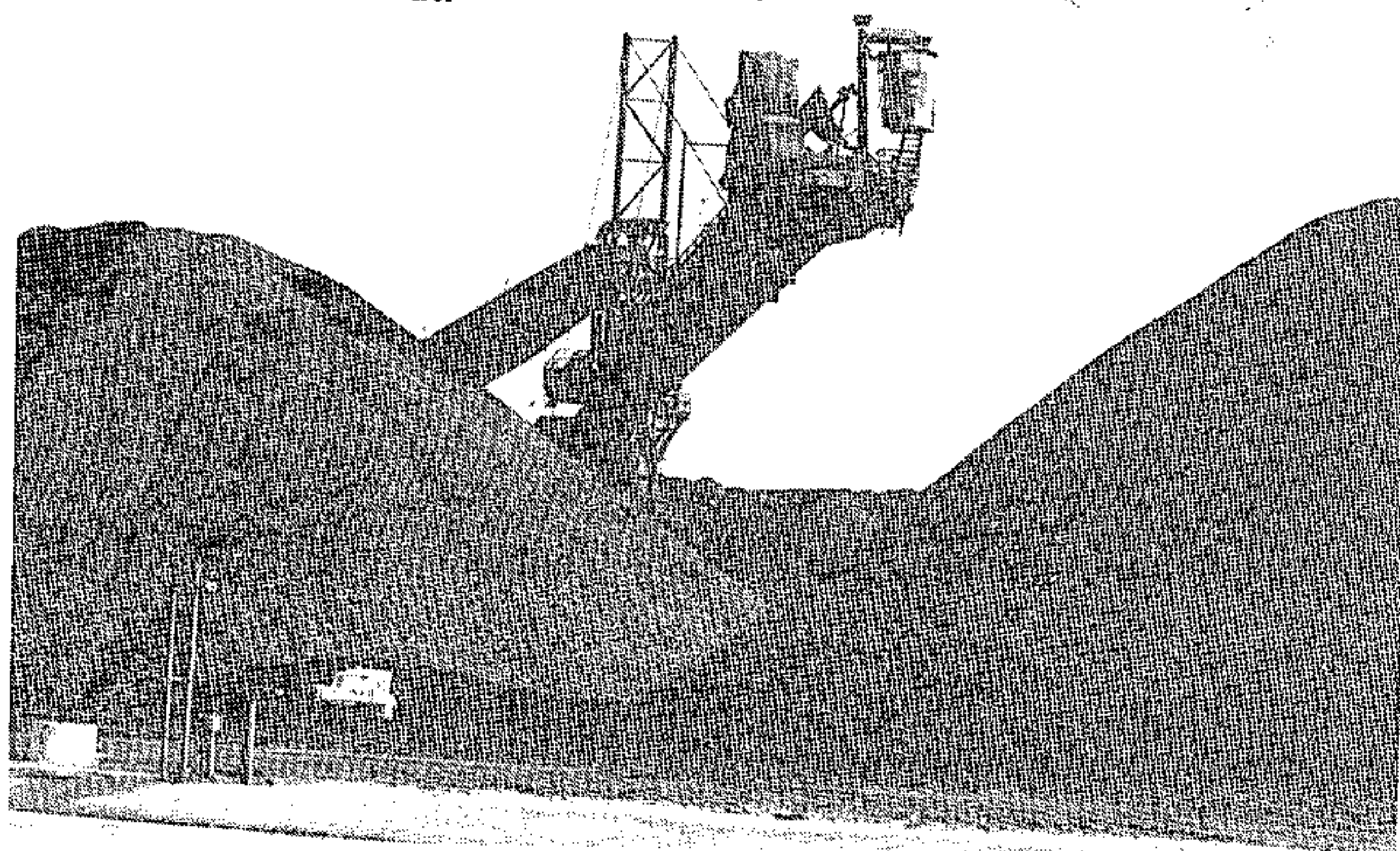
Notably, the US, long hooked on cheap



money was in currency.

It depends largely on the ways that the worker requires when doing a job. Obviously the more hours of work, the higher his pay. From this results are larger

output for the factory and an increase in commodities. This is the ~~new~~ Physical Marginal Product, the extra unit of output we get from adding a extra unit of production, keeping the other factors constant.



SA's coal exports . . . will they be undermined by cheap oil?

oil, has begun to conserve oil vigorously. The switch to smaller cars is the most important, but not the only indicator of the new trend. So American oil imports are sharply off. The rest of the industrial world is also using less oil, partly through conservation and partly through switching to coal. There is also the rise of the non-Opec exporters, like Mexico, Britain and Norway.

Last year's high prices came about largely because of panic in the oil-consuming countries over Iran's troubles of 1979 to 1980. How excessive that price movement truly was can be seen from recent estimates by Shell. In 1978, Opec exported 27.9mbd, and generated revenue of \$115.8 billion for the year. In 1980 Opec exported only 24.7mbd, but received \$272.1 billion. These appalling figures put a "moderate" price of \$36 or even \$32/barrel into better perspective.

And lower average prices, plus a recovery from world recession, will boost demand for oil despite conservation efforts. On the other side of the ledger, new producers like Mexico could push for an even larger market share, and there could be jostling within Opec's own ranks if war-hampered Iran and Iraq (currently jointly producing at a much-diminished 2.3mbd) patch up their differences and launch a production drive to recover their earlier status. This factor could add per-

haps 3mbd to the amount to be accommodated in the market structure over a fairly short time.

Once a unified price (whether it is \$36 or \$32) is attained, Opec and Saudi Arabia in particular, will still (within fairly wide limits) have the ability to maintain prices at those levels through slashing output. The Saudis have claimed that they could cover their import needs by producing only 6mbd (some 4mbd less than at present). Even this is probably an understatement. Other members, like Kuwait, could also cut back. So the discretionary producers (those with small populations and therefore modest import bills) could jointly make cuts, if necessary, in the range of 5-7mbd, from current Opec output of perhaps 24.5mbd.

And because of large foreign currency holdings accumulated during the fat years, it is not unreasonable to suspect that at least two cartel members — Kuwait and Saudi Arabia — could actually suspend production altogether on a temporary basis without feeling the draught. Whether they would go so far would depend naturally on political factors too.

Here a word is in order about political price tags (like tilts against Israel) often "required" by the Saudis for a given direction in oil marketing. A coldly objective view suggests that the Saudis do what their economic interest requires. If they

can dupe western countries into conceding political advantages in exchange for what the Saudis would have done anyway, so much the better.

So the probable outcome is a victory for Saudi Arabia, which would leave oil prices relatively stable in real terms for some time to come, at a base level significantly lower than the current average.

Where do these possible upheavals leave SA? It would be a very facile view to argue that a weaker world oil market means automatic advantage for SA merely because it is a substantial oil importer. The first point is the difficult to quantify but very real trade-off between oil and gold prices.

A drop in SA's oil costs of \$5/barrel might save as much R500m on our import bill. But this represents the amount by which foreign currency earnings would drop if gold came off by a mere \$30/ounce. So lower oil prices might well leave SA worse off on this count alone, if diminished inflationary expectations and lower Opec currency surpluses (of which a proportion would be invested in gold) knock the gold market too heavily.

Then there is SA's heavy commitment to alternative energy sources. Sasol's economics are favoured by higher world oil prices, and lower prices will create a dilemma for government over how much protection to maintain for Sasol's high cost output. The same goes for other possible fuels, like methanol.

And SA's coal exports, currently on a rising tack, are founded on the high cost and uncertain availability of oil exports from the Middle East. Then there is uranium, currently hit by a collapse in the construction of nuclear power plants. Stable oil prices would hardly work to reverse this state of affairs.

On the credit side, a sustained expansion in world economic activity founded on some sort of stability in oil prices would benefit SA's non-gold exports as a whole.

One last thought: it is not likely that the SA government will dare to allow its long-term energy strategies to be diverted by short-term factors. Over the next thirty to forty years oil will become scarce for good, and the permanent value of investment in alternatives — even at costs higher than those of short term oil acquisition — will be fully revealed.

meanwhile the major league KLERK, SAID THIS WEEK

Van 13/6/83 (55)

Koeberg cracks watched

Own Correspondent

CAPE TOWN. — Both overseas and local scientists are "extensively" monitoring the lower support raft of the Koeberg nuclear power station following the development of cracks in the concrete.

An Escom spokesman said this week that everything was taken seriously in matters such as this.

He quoted a civil engineer on the site as saying: "We believe the structural integrity of the lower raft is intact and that these hairline cracks are due to shrinkage along construction joints."

The hairline cracks did not seem to be growing and were being treated, the spokesman said.

He said the lower rail developed cracks some time ago and the situation was being monitored by top structural experts.

The cracks were in a concrete floor 2m thick, 90m wide and 155m long. This structure rested on 6m of cement covering 2,8 hectare which in turn rested on bedrock.

The whole structure was strengthened with heavily reinforced steel rods and was an "extremely robust construction".

Work was unlikely to be interrupted on the nuclear plant, scheduled to go into operation in December 1982, the spokesman said.

If the cracks in the support beam got worse some remedial action would have to be taken, but it was extremely unlikely this would seriously delay the opening date.

many of the patients who at present go to general practitioners, "witchdoctors", homeopaths and other practitioners for their primary medical care.

-3-

What is important to note is that to determine manpower

Neither comparative ratios could give reliable results. All requirements are guesses, hers.

How we have?

many doctors and nurses we never end and try and look at

ica had 13 347 doctors on the
ves a population to doctor
if one excludes 1088 doctors
resses in 1975, and another 624
years,⁴ the ratio moves up to

Even so a ratio that is only four times that of Western

Europe does not seem too bad. However the maldistribution of doctors in this country is appalling. In 1962 Professor

-4-

Snyman⁵ gave South African population to doctor ratios as varying from 600 : 1 in Durban

(190 : 1 for whites in Durban)

to 40 000 : 1 elsewhere in the country.

Fifteen years later the variation in ratios was reported to be largely unchanged.⁶

The numbers of medical students are being increased rapidly but the numbers of doctors are not rising correspondingly.

In the six years from 1970 to 1975 (quiet years politically) it is estimated that 14% of all our medical graduates and 50% of those from Wits and U.C.T. left the country permanently.⁴

During the course of 1975 despite the fact that 469 new doctors graduated and another 178 immigrated into the country, the net gain of doctors to the country was only 111.⁷ During 1977 the country had a net loss of 152 doctors.⁷ Of the doctors remaining 20% practise as specialists⁵ so that counting on even an extra 1000 doctors working in primary health care in the next five years seems unrealistic.

B. Nurses

In 1973 there were 36 931 registered nurses in South Africa, but 37% of these were listed as not practising.⁸ This leaves us 23 266 nurses and a population to nurse ratio of 1100 : 1, five times the Swedish figure. Even if all these nurses were working in hospital wards, allowing for twenty-four hour cover, when on duty each registered nurse would be responsible for 33 beds. Teaching hospitals may consider themselves to be short of nurses but compared to this national "average"

prevent or treat. The skills required to diagnose and treat any of these four conditions can be taught to almost anybody quite quickly. If all our hospital cleaners, pharmaceutical representatives, ambulance drivers, nurses, clerks, physiotherapists and doctors knew how to prevent and recognise and treat these four conditions (things that could be taught and re-emphasised in one week every year) then our childhood mortality rates would drop dramatically. The other four priorities are all rather more difficult to deal with, but major preventive programs mounted by all our health care workers could certainly reduce the prevalence of these conditions and the associated morbidity.

But if we are going to use all our health care workers more efficiently then we must also revise the initial training and insist on on-going training of those with most skills, the doctors and the nurses. Firstly they must be given training that is relevant to the health problems of South Africa, and secondly these workers must learn to share their knowledge and their skills with other members of the health care team. They must learn to work together with other team members and they must learn to delegate without ordering other people around. Finally they must learn to work with and to listen to their patients and other members of the community and to come to joint decisions with them.

This brings us back to a point that is central to any understanding of Illich's criticisms. When we ask, "What do we need to do?" the answer is that the first thing that we

need to do is to realise that society and not from health care preconceived ideas and vested are members of society and must as citizens. It is important to factual knowledge that they have more or less valuable than those

Besides drawing attention to the health care system and what we must also try and increase the of some of the less visible effects. We must encourage society to use discourage self-centredness and including health. Pharmaceutical forms of advertising, needs to be consumer society that can only fail to buy more luxuries, drink more drugs is a sick and selfish society. We must try and persuade society for deciding on priorities and finally. It is not for doctors to decide resources should be devoted to training what proportion to providing water squatter camps. Doctors may have matter but they can give factual either, and it is society that must decision. Society must decide who

Nuclear plant 'not a neutron bomb'

Own Correspondent

CAPE TOWN. — A successful attack on the Koeberg nuclear power station could in no way be compared with the devastating effects of a neutron bomb or other nuclear weapon, says the president of the Atomic Energy Board, Dr J W L de Villiers.

Dr De Villiers was replying to a warning by the Koeberg Alert group that the Israeli air

strike on Iraqi nuclear power facilities had shown Cape Town that Koeberg was "a latent neutron bomb" awaiting detonation by a hostile power.

In a statement, he said that in regard to the possible hazard arising from leakage of radioactive material from Koeberg there clearly were potential risks associated with military attacks on the plant — as there were with other accidents.

Such risks had to be taken

into account in assessing the acceptability of the plant and the associated protective and precautionary measures, he said.

"To cause a serious hazard to Atlantis or Cape Town by a military attack on Koeberg power station would require, in addition to the attack itself, an extremely unlikely combination of adverse circumstances to bring about the subsequent widespread dispersion of the

radioactive material.

"Even a successful attack, whilst it would clearly be serious, could in no way be compared with the devastating effects of a neutron bomb or other nuclear weapon," he said.

If the object of a military attack was to do maximum harm, then far more devastating results would be achieved with a direct attack on Cape Town, he added.

Escom appeals for drop in peak demand

Staff Reporter

ESCOM has appealed to the public to reduce consumption of electricity during peak afternoon and evening periods — 8am to midday, and 5pm to 9pm.

The commission issued a statement on Sunday saying it was making the appeal to consumers "in their own, and in the national interest".

It said the electricity supply from Cabora Bassa in Mozambique had yet to be restored following serious damage to the power supply lines in the Manica province early in April.

Coupled with a growing demand for Escom power, this could mean available supplies were not at present adequate.

"Consumers are requested on a countrywide rotating basis to cut their electricity load on the Escom system during peak periods," the statement said.

Last year, Escom foresaw the possibility of record demands this winter.

It said in February it would do everything in its power to maintain the quality of its supply.

The statement said that on Tuesday night last week the peak demand broke all previous records when 14 445MW were recorded.

The latest increase in record demand alone equals the maximum demand of a city such as Johannesburg and is almost twice that of Cape Town.

Among steps being taken by Escom to ensure its service is maintained are an agreement with large consumers on voluntary shedding of load, a plan to commission four large new generating sets at various power stations during 1981 and an intensification of its campaign to recruit qualified technical staff locally and overseas.

In the past decade Escom has been operating on reserve margins below accepted international standards, because of a high growth in demand for electricity.

CT 16/6/81

Atom chief challenged by Koeberg Alert

Staff Reporter

THE KOEBERG Alert group has challenged Dr Wynand de Villiers, president of the Atomic Energy Board, to prove his allegations that its recent statement on the implications of the Israeli nuclear reactor attack was "irresponsible".

Last week Koeberg Alert voiced its concern about the consequences of a military operation against a similar nuclear installation in this country.

Dr De Villiers denounced the statement as "irresponsible" and "unjustifiable scaremongering".

Koeberg Alert has responded by releasing a further statement, which said the allegations made against it were very serious.

"If he will re-read our statement and say where and how we have been in error we will retract it and issue a public apology. If not we in turn expect an apology from Dr De Villiers," the statement said.

"What seems to be disputed is the possible effects of breach of the containment of a Koeberg-size reactor as a result of enemy bombardment.

"Koeberg Alert said it would be a catastrophe of incalculable proportions, and it stands by every word of that sentence.

"At no point did Koeberg Alert state that the Koeberg reactors were unable to withstand such an attack. Indeed it put this as a question to the authorities," the statement said.

Star 16/6/81 (55)

Sunflower oil a full diesel substitute

Farming Correspondent

Sunflower oil has now become a full substitute for diesel fuel.

The Prime Minister climbed aboard a trailer towed by a sunflower oil-powered tractor in Pretoria yesterday and was driven through the grounds of the Division of Agricultural Engineering of the Department of Agriculture.

The occasion marked a breakthrough by the Division of Agricultural Engineering in Silverton,

which had completed fuel tests on two Deutz tractors with standard production engines. In no way had the engines been specially adapted to operate on sunflower oil.

The tractors were powered by engines with pre-combustion chambers — the type of diesel engine most commonly used in commerce and industry.

CHEAPER

Agricultural diesel tractors mostly use direct-injection engines without pre-combustion chambers. They are somewhat cheaper on fuel but cause

more pollution as the combustion is not complete. In this case substituting unrefined sunflower oil for diesel caused some coking of the injectors.

The experts at Silverton have now developed a sunflower fuel which can be used in place of diesel with very little injector wear. Refining the sunflower oil would make the direct injection tractors independent of imported diesel fuel.

The tractors fitted with pre-combustion chambers will now be subjected to tests under farm condi-

tions. On the test bench they have each completed the equivalent of three years of service under farm conditions, or 2 300 running hours, without any detrimental effects.

SUNFLOWERS

In times of diesel shortage or boycott, South African tractor wheels could keep moving by switching to sunflower oil, the Minister of Agriculture, Mr du Plessis, said. In times of crisis, refining sunflower oil on an industrial scale could easily be arranged and sufficient stocks could also be built up in time.

90% of those seasonally involved in the pre-thinning and packing operations were drawn from the farm itself, as were 34,5% of those thinning (16,6% of this group was made up of children resident of the farm - of all cases investigated, table grape thinning was the only seasonal activity in which children were involved.)

While in the Hex River Valley the number of seasonally active dependents, excluding the children employed for thinning, exceeded the total number of workers permanently employed (683 women and 649 permanent workers), in Elgin seasonally active dependents numbered less than fifty percent of the permanent work-force (362 women compared with 771 permanent workers.) However if we compare the number of active dependents with the number of permanent workers continuously resident on the farms (i.e. exclude permanent migrants) then active dependents comprise the equivalent of 90% of the permanent resident labour force. In the Hex River Valley where proportionately far fewer migrants are permanently employed than in Elgin, excluding the migrants hardly affects these proportions (they rise from 105% to 120%). Thus we see that the number of dependents relative to permanent workers depends on farmer's decision as to whether to employ African migrants or 'Coloured' workers. As a result of migrant labour legislation only if he chooses to work with 'Coloured' staff will dependents accompany his permanent labour force. Thus he must choose between employing largely African migrants, possibly at a lower wage

few weeks because Iran and Iraq were sellers. The countries need prices.

By SIMON WILLSON
Industrial Reporter

RECORD electricity sales could not prevent Escom losing R98-million in the year to December.

According to the commission's annual report released today, electricity sales rose 8.6% and revenue reached an all-time high of R243-million.

But slackening second-half demand left the commission with a loss of R98-million at the year end.

The deficit, incurred during South Africa's record economic boom year, is the principal feature of the report.

Escom's chairman, Mr Jan Smith, says in the report that the electricity sales growth rate during the first half of 1980 was 10%.

"In the second half of the year, however, while the boom continued unabatedly, the growth rate slowed somewhat when the recession in certain overseas countries began to affect a number of electricity-intensive industries serving the export markets," Mr Smith says.

Sales in 1980 totalled 87 539 million kilowatt hours (kWh), and revenue amounted to R1 772-million.

Charges against revenue, however, totalled R1 870-million, leaving a higher-than-budgeted deficit of R98-million which, offset by the R80-million surplus from 1979, left a net deficit of R18-million.

Higher-than-expected sales in 1978 and 1979 resulted in surpluses, and price increases scheduled for January 1980 were put back to July, eating into the surpluses.

But second-half sales in 1980 fell below expectations, and with the forced running of technically obsolete plant to meet

prices.

Escom's 1980 sales record

and a R98m loss

7.5% compared to its 1980 level of 7.5%.

Increased industrialisation in South Africa is one of the reasons for the country's greater electricity consumption, Mr Smith says.

Evidence of the industrial sector's swing to being electricity-intensive was the fact that more than half of the electricity consumed in South Africa was now used in industry and commerce.

"Escom's sales over the past number of years have registered a slow but marked shift from mining, as its biggest sales category, to the industrial sector."

Another factor behind Mr Smith's bullish consumption forecast is the continuation of the swing from oil-based energy sources to electricity.

A third is the increasing economic activity of the black population. "Coupled with the electrification of black towns and areas and the enhanced and more electricity-sensitive lifestyle this will bring about, further Escom growth will result."

Escom's senior general manager, Mr I D Van der Walt, records the commission's switch in its approach to project financing through local financing sources.

"Instead of arranging finance when payments for local project commitments had to be made, Escom decided to ensure the availability of finance at a much earlier stage.

"Consequently, facilities linked to the payment schedules in contracts were arranged. Hence project financing will be available when needed, yet remain flexible enough to ensure that the most advantageous form of financing can be chosen."

ESCOM

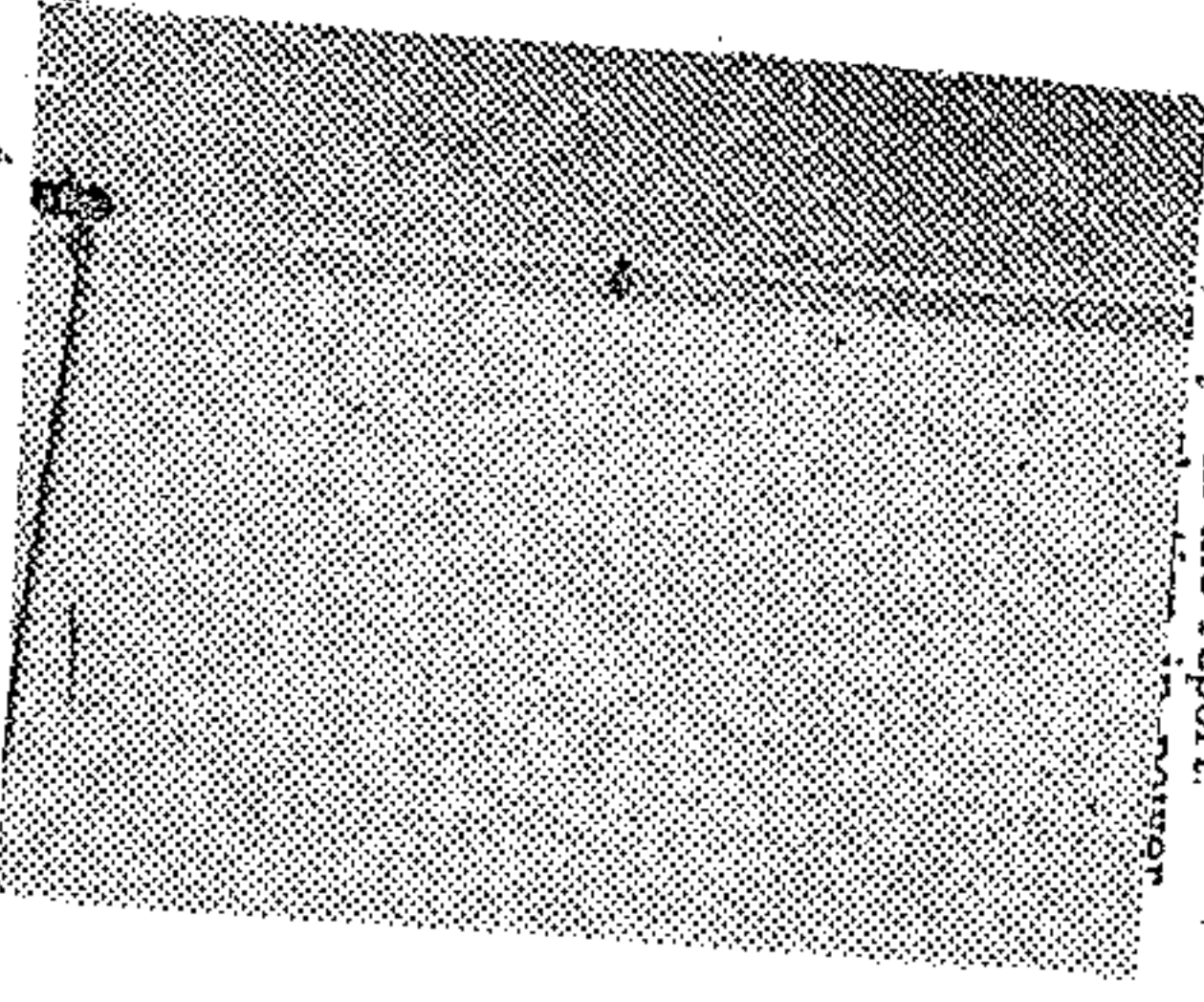
USES MORE COAL

COAL-FIRED energy from Escom's power stations increased by 10.5% last year over the coal-sourced electricity generated in 1979.

Escom's annual report says coal-burning power stations met 88.5% of the gross energy demand on the commission's power system in 1980, as 8.1% more coal was burnt than in the previous year.

Coal consumption by the power stations was 46.8-million tons last year, and supplies remained at a "satisfactory" level throughout the year, Escom's senior general manager, Mr I D Van der Walt, says in the report.

exchange manager.



Coal consumption by the power stations was 46,8-million tons last year, and supplies remained at a "satisfactory" level throughout the year, Escom's senior general manager, Mr I D Van der Walt, says in the report.

"The 50% reduction in power import from Cabora Bassa from mid-June to the end of September, and the subsequent total loss during December 1980, as well as problems at newly-commissioned plant, placed an extra burden on all coal-fired power stations."

Escom's higher merit stations had to burn 3,9-million tons (9,7%) more coal and the lower merit stations 500 000 tons (21%) more than planned.

The average cost of coal consumed in Escom power stations during 1980 increased to R8,12 a ton, 16,7% higher than in 1979.

The big new collieries most recently brought into production achieved the following outputs during 1980: Kriel 8,5-million tons; Matla 2,6-million tons and Duvha 1,8-million tons.

The report says each of these collieries is expected to produce between 8-million and 10-million tons a year at full production.

It adds that Escom is exploring ways to enable its new power stations to consume lower quality coal and improve its capability of burning the country's prime source of energy.

Power station projects on schedule

Industrial Reporter

CONSTRUCTION of Escom's six new power stations is on schedule and, in the case of the Duvha station, completion dates have been advanced by up to seven months to cope with increased load requirements.

The commission's annual report says plant with a generating capacity of 2 400 megawatts (MW), as against 1 600 MW in 1979, was taken into service last year. Escom's total generating capacity is now 18 349 MW.

Erection of the first pump-turbine in the Drakensberg pumped-storage scheme is complete, and two dams were completed. The scheme's first commercial service output is on schedule for mid-year.

Commissioning dates at the Matla power station near Bethal have not been affected by the collapse of the chimney flue in

August last year. Three sets of 600 MW each are in production and the remaining three should be going by 1983.

After a year's delay on its first set, Duvha is ahead of programme and set 3 will be ready two months ahead of timetable. Completion dates for sets 4, 5 and 6 have been brought forward by three, six and seven months respectively.

Civil works at Koeberg, on the coast 30 km north of Cape Town, will be finished by the end of the year. The first cooling-water tests are due in mid-year.

A reactor pressure vessel for the station's first set was delivered some months late after small defects were found between the base metal and the cladding of the vessel. The delay has been absorbed by a rearrangement of the construction sequence.

(7)

(8) King 11.1

(9) Mr. P.J. Loubser Argus 10.7.

(10) Illich "Medical Nemesis".

also be delaying their visit to a doctor with advanced pathology set in, with the associated higher cost of curing than, increased morbidity and possible death. The possibility also exists that the existence of convenient relatively cheap (from the patients' point of view - 50c if correct income concealed) medical care, has led to some social iatrogenesis (10) - a reduced inclination and ability for self-care so that trivial complaints 'are taken to the doctor' for professional care.

(1.3) The method of the paper

The method of the paper is to examine the theory of cost benefit analysis, to consider the logical foundations of the technique particularly the flaws in the compensation principle and the conflict between efficiency and equity considerations. Apart from the foundations in welfare economics, the emphasis is on application of the technique in the health sector. This work makes no pretence at being original but draws from an extensive literature on the pure theoretical aspects, and on the application to health programmes.

The figures for capital costs, direct operating costs, average cost per patient, attendances, average length of stay and those relating to maternity are taken from published reports or calculated from records kept by individual hospitals for their own purposes.

Information on indirect objective costs - transport costs and waiting times - and on subjective elements were collected by means of a survey of 1 000 patients, half at Groote Schuur Outpatient Department, and half at five Day Hospitals selected as representative of the different sized Day Hospitals that exist on the Cape flats. Results are at the 5% significance level. There is very little published work on the structure and staffing of the health system in the Cape Peninsula so a great deal of information is the result of personal investigation and discussion with those responsible for writing these services.

Footnotes:

- (1) Cape of Good Hope Province - Estimates of Additional Expenditure to be defrayed from the local funds for the year ending March 1950 and 'Ann. Cr.', 1977.
- (2) See Feldstein Ch.1.
- (3) See for example Dick
- (4) Ferster in "Measuring for Management". N.P.H.T.
- (5) Gruer p.390.
- (6) Narock (1974) p.1053.
- (7) Bryant p.116

55 21/6/82

Switching on to the 90s... Escom's R40 000-m booster plan

ESCOM is set on a R40 000 million expansion programme to meet a soaring demand for electricity.

In the next 15 years, South Africa will be generating 57 000 megawatts — the same amount of electricity that Britain is presently generating to serve England and Wales.

The seven power stations Escom is now building — including the nuclear station at Koeberg — will increase Escom's generating capacity by 10 644 megawatts. This will take South Africa's total generating capacity to about 27 000 megawatts, 30 000 short of the target.

Working on the same average, this means that Escom will have to build

By DAVE McDERMOTT
an extra 15 to 20 power stations to achieve an output of 57 000 megawatts.

An Escom source said it cost between R6 000 and R7 000 to install one kilowatt of generating capacity. At present prices an average coal fire power station will cost between R1 800 million and R2 100 million.

Total costs of establishing the new power stations will therefore be in the region of R40 000 million.

Electricity now accounts for just over 20 percent of South Africa's total net energy usage. It will increase to 40 percent by the end of the century. Developments in Escom are closely

linked with the coal mining industry, which is already moving towards opening 15 new mines in the next 10 years. Last year Escom used 46,8 million tons of coal — about 42 percent of South Africa's total sales.

Escom's annual growth rate has averaged around 8,8 percent for the past 30 years and generating capacity has doubled every nine or 10 years.

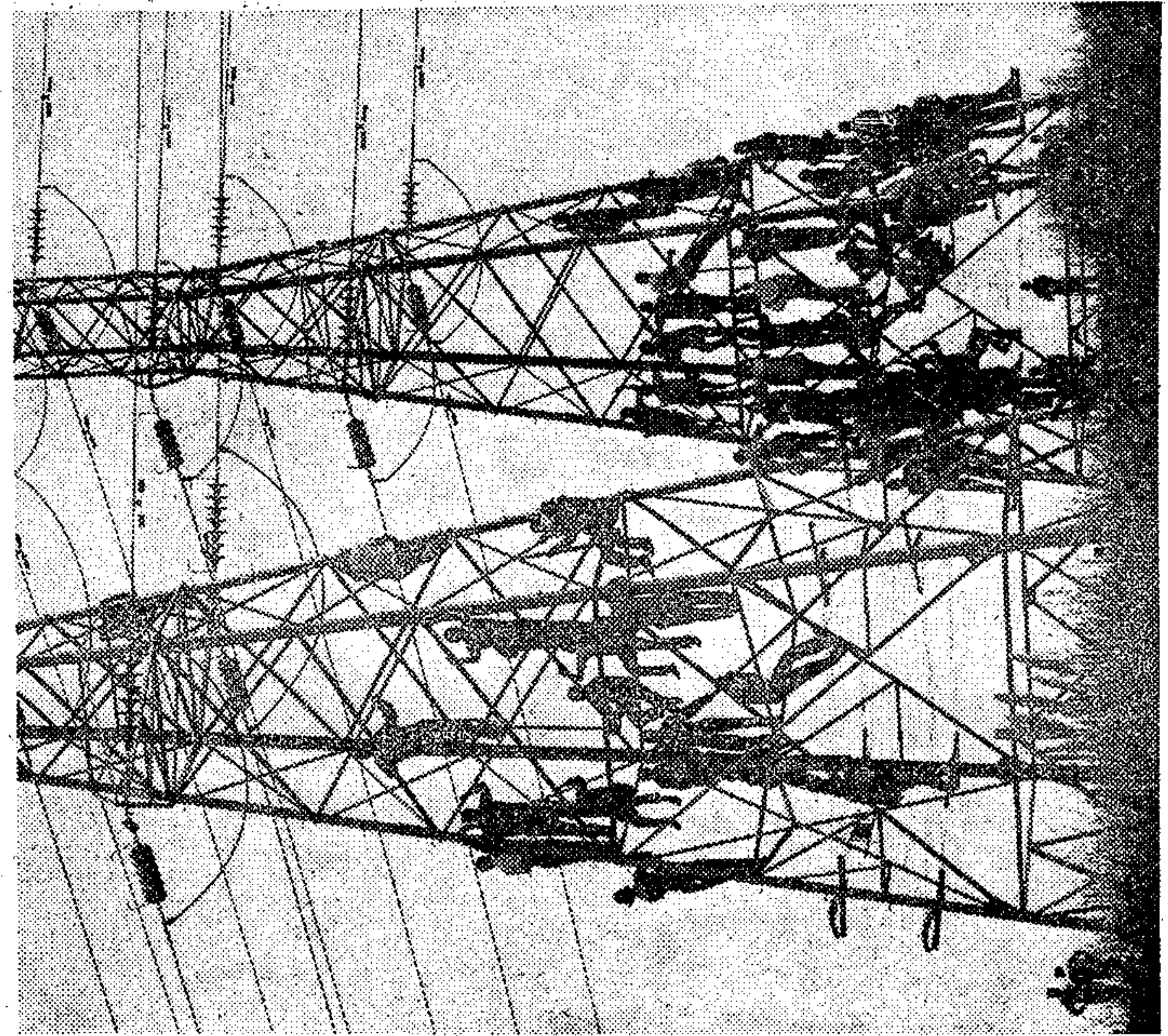
"This, I believe, is similar to what happened in America between 1900 and 1930. It seems to be the pattern in a rapidly developing industrial country," the Escom source said.

He confirmed that Escom's major consumer market lay in industry.

Escom's present development in the construction of seven power stations — Drakensberg, Matla, Duvha, Koeberg, Tutuka, Lethabo and Matimba — is probably only exceeded by France, which has 15 nuclear power stations under construction.

South Africa's peak demand in 1950 was 1 182 megawatts. This has increased to a record level this year of 14 674 megawatts — 1 006 more than the maximum demand last year.

To put this increase into perspective, 1 006 megawatts about equals the maximum demand of a city the size of Johannesburg. The Escom source said he expected the peak demand this winter to exceed 15 000 megawatts.



The power game . . . and the stakes are R40 000-million

Switch- on fee angers dwellers

RESIDENTS from 1800 homes in Soshanguve Section G are required to pay a R6 deposit as a connection fee for their electricity switch on.

Residents in the section were angered when told of this over the weekend by electricians who visited the area to conduct final tests.

Mr W A Bester, Township Manager in charge of the Electricity Department confirmed yesterday that residents were in fact required to pay the amount.

Mr Bester said it was procedure that residents who had their homes electrified for the third time had to complete a contract form undertaking to pay the current, and the connection fee.

Mr A Boon, chief commissioner of the township, said the signing of the contract before switch-on was necessitated by the fact that his administration was engaged in installing electric meters for the entire township.

Most residents approached for the payment of the connection fees, told SOWETAN they thought the electricians were trying to con them.

Mr Bester said residents already visited by electricians should come to his office where they would pay the fee after which their lights would be switched on.

57

[Handwritten mark]

*Mr. A. Boon
18/1/79*

It's 'Timber!' for a deadly giant

By ANTHONY HARDING

ONE windless day in the third week of July, the massive chimney at Matla power station, near Witbank, will crash to the earth like a giant tree.

The 278m high chimney, one of the tallest of its kind in the world, is to be felled with a high-explosive sledgehammer on July 18.

Building operations on the chimney cost a Johannesburg engineering firm R3.3-million, but it was never completed.

On August 26 last year one of its three central flues collapsed, killing two workers and injuring seven others.

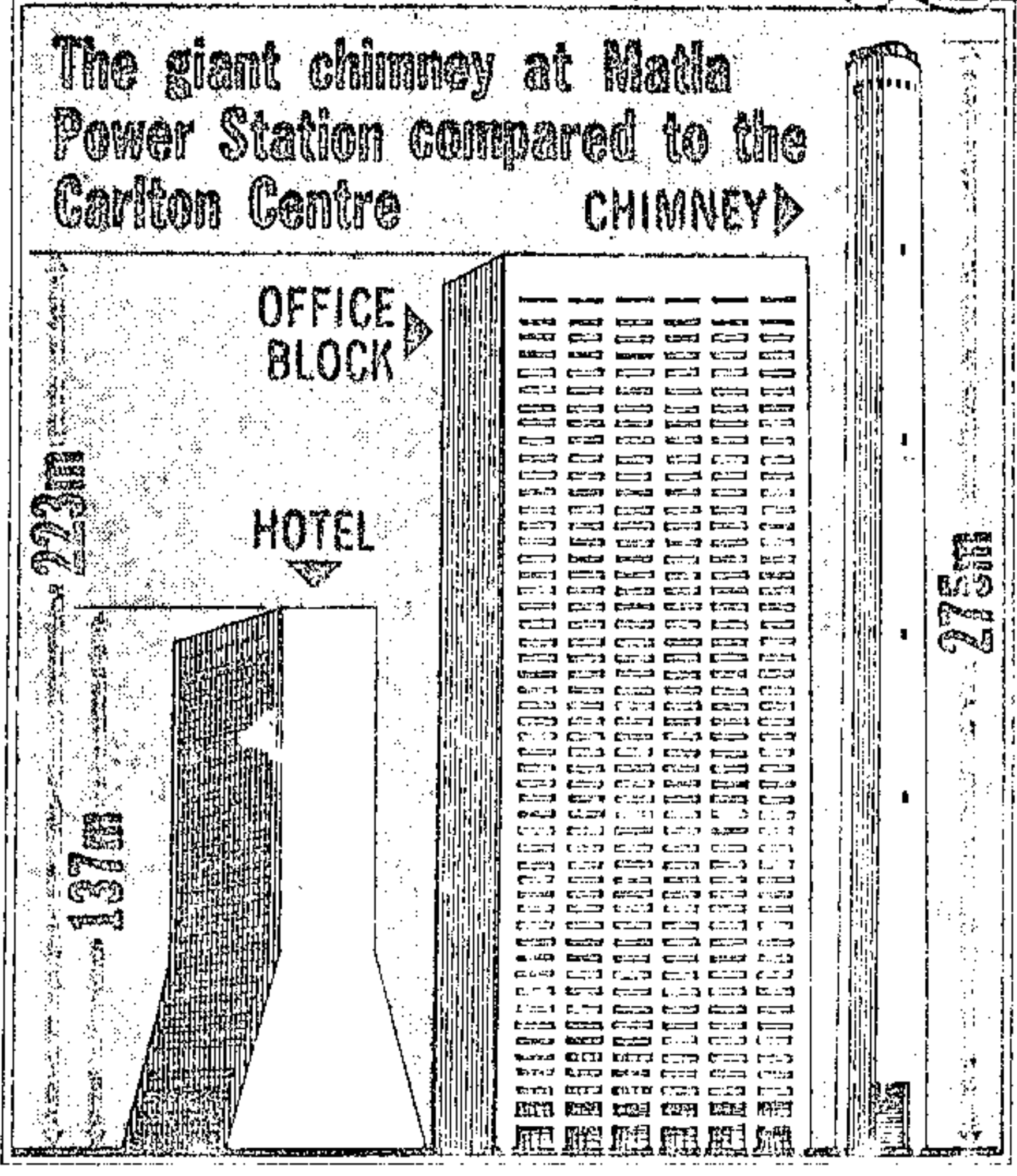
A court of inquiry to probe the incident heard that the flue collapsed as a result of a combination of a poor concrete mix, splitting supports and battering winds.

Now the date has been set for the demolition of the tallest structure of this kind ever to be dynamited.

Steeplejacks from a British engineering firm, which has been contracted for the blast, are busy preparing the site.

An American demolition expert, Mr Jim Rodyke, has been hired to bring the structure down.

See Page 13



The 60-storey Matla chimney, where two workers died when a flue collapsed, will be dynamited next month. The smoke-stack is 138 metres higher than the Carlton Hotel, and about 10 storeys higher than the Carlton Centre block.

Graphics: GAIL IRWIN

Not one of the households boiled water prior to consumption.

The reasons for not boiling water (Table Thirty Nine)

- Did not need to 30%
- Filtered water through muslin 2%
- Why should we? 68%

(17)

(18)

The statistics present a very unsatisfactory situation in the hotel as far as water supply are concerned. Very often the availability of a good water supply is given as the reason for not storing vegetable garden.

7) GENERAL CONCLUSIONS FROM THE RESEARCH

The mother or mothers of the children suffering from malnutrition were asked to provide the constitutents of an adequate diet for their children.

of children

38% of the mothers suffering from malnutrition described what the research team evaluated as an inadequate diet.

62% of the mothers of the children suffering from malnutrition described what the research team evaluated as an adequate diet.

13% of the mothers of the children not suffering from malnutrition described what the research team evaluated as an inadequate diet.

87% of the mothers of the children not suffering from malnutrition described what the research team evaluated as an adequate diet.

These figures indicate that while ignorance about nutrition is a factor in malnutrition; it should be noted that 61% of the mothers of children suffering from malnutrition had adequate knowledge about what constituted a healthy diet. The fact that they quote diet could be related to one or more of the following facts:

- 1) insufficient income to purchase the necessary diet
- 11) the mother may not be the person doing the buying and the cooking
- 111) a fatalistic attitude on the part of the mother whereby she is in possession of the relevant knowledge but is not convinced of the relationship between diet and disease.

Place	Project	Number of Participants interviewed
IDOLOPHU	Communal garden Zenzele Centre (which students helped to build)	3
INKOMO	Dairy Communal garden	12 10
ABALIMI	Communal garden Shearing Shed Emphasis on agriculture (all fields used)	11 (5 members & 9 non-members)
UMTHI	Communal garden	14
UMLAMBO	Communal garden Clinic (Students helped build) Shearing shed	16
AMATHOLE	Creamery and Dairy Crèche Shearing shed	11
IPOYI	Communal garden Unfinished crèche (students helped to build) Money generating projects for poor women Clinic committee (appendixed)	13
IGUSHA	Farmers co-op	6
	Total :	96

There were questionnaires for dairy members and communal garden members. Anyone interviewed with one of these project questionnaires was also interviewed with a general income questionnaire.

I used the questionnaire mainly to avoid subjective generalisation and also to be able to get hold of economic information and fathom out how the projects run. Because there are so few people in projects and I could not interview many who are not involved, I was not aiming at a scientific collation of data, but rather at using the questionnaires to standardise issues raised in conversation and as a way of stimulating discussion. (All interviewing was done in Xhosa).

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2.4 NOTES CONCERNING MY INFORMATION ON THE PROJECTS

1. Amathole Creamery was the only place where I could check the figures people gave me. Generally, their estimates of income were more than twice as high as the actual amount earned over the last year. Over-estimation of profits from the project may be a general trend.
2. Projects fluctuate so wildly over time (also depending on seasonal and market conditions) that it is misleading to take any one time as representative.

3. The people I interviewed are a specific section of the population i.e. those who have decided to get involved in projects. One cannot take them to be a cross-section of the population at large. While I have the income from

SWA oil bonanza is denied

By RICHARD WALKER

NEW YORK — A suspected "ocean of oil" lying under western SWA/Namibia is a major reason South Africa opposes a complete takeover of the territory, asserts an influential conservative columnist Mr William Safire.

The Cuban troops will not leave Angola for the same reason, he further maintained. Citing the suspicions of geologists with Gulf and Texaco, the oil giants, Mr Safire asserted that if victorious, every Swapo leader stood to become an oil baron.

"South Africa may be racist, but it's not crazy," he wrote.

"The Opec nations are worried about a big find in that area, extending into Angola."

However Dr P J van Zijl, managing director of Government sponsored Southern Oil Exploration (Pty) — Soekor — refuted Mr Safire's claims, saying if there was an ocean of oil there "we would have done something about it."

"To our knowledge there is no pool of oil on land or in the sea."

whether she has any or not.

The only really significant differentiation one can make is between those families which have Full Economic Units and the others.

(Most of the families with Full Economic Units I came across have no other source of income than farming). Generally, the FEU families are the most established peasant farmers in the area: they were only allocated the FEU's because they had the most land and stock at the time of survey.

I have made no attempts to analyse the class structure in detail.

Basic divisions I use are:

Professional and business people (shops and transport)

People with access to land

People with no agricultural resources who are generally migrants

One must note the family linkages within the business and professional class and how different sectors support each other at various times.

. / ..

2 000 men of skill

By ZB MOLEFF
THE R204-MILLION electrification of Soweto will require 2000 skilled and semi-skilled workers, Mr David Thebehali, chairman of the Soweto Community Council, said last night.

He was speaking on the "The Electrification of Greater Soweto: Its Socio-Economic Impact" at the University of the Witwatersrand.

Speaking of the work-force required for the electrification scheme which has cost R29-million so far, and scheduled for completion in 1983, Mr Thebehali went on: "These people would be trained in housewiring and distribution skills and would be absorbed into the eventual



David Thebehali

teams to be used for the maintenance and extensions of the completed system".

He also pointed out that a large proportion of the R7 million being spent every month is for the manufacturing of equipment: "This provides employment or training for an estimated 3000 employed elsewhere in the country".

The Greater Soweto electricity undertaking will have an eventual staff complement of about 500 people.

but also the electrical appliance industries and the people employed therein.

Some of the socio-economic advantages of the electrification scheme Mr Thebehali emphasised, are:

- o The resident of Greater Soweto will have his quality of life

- o Job and training opportunities will increase on a national level.

Meanwhile about 200 trench-diggers contracted to the West Rand Administration Board for the electrification of Soweto went on strike on Monday after they were told of a

not registered. They are employed by Industrial Electrical Engineers and Contractors in Selby.

According to the workers, the agreement between them and their employers was that they would each be paid 90 cents per meter dug. This has been reduced by

Petrol to go up

Star
27/6/81
55

Increase in fuel cost is imminent

By Caroline Braun,
Consumer Reporter

The Minister of Mineral and Energy Affairs, Mr F W de Klerk, today told The Star that a petrol price increase was imminent.

Mr de Klerk said he had already determined the new price but would not announce it until he had discussed the matter with the Cabinet, oil companies and various other organisations.

The Minister denied a report in a morning paper that the price of petrol would increase by 5c or 6c on Monday.

The report quoted sources in the motor industry as saying that an announcement to this effect would be made some time during the weekend.

Mr de Klerk said the price would definitely not go up on Monday, as it had to go through various processes before it could be made public.

The new price is expected to be announced within the next two or three weeks.

Local oil companies, who made representations to the Minister in April for a higher petrol price, are believed to have asked for a hefty increase.

Motor industry spokesmen have speculated the price could rise between 2c and 6c a litre.

The last national petrol price increase was in July 1979 when the price rose 14,7c to just over 54c a litre.

On April 1 this year, the price rose 0,6c a litre on the Witwatersrand because of higher pipeline tariffs. The new increase could push the price as high as 60c a litre.

Mr Hennie Kleynhans, public relations director for the Automobile Association, said he hoped the Government had taken a careful look at the price structure of petrol to find a way of absorbing some of the increase without having to pass the full burden on to the consumer.

class and civilization in relation to health of epidemiology in general practice. zation of medical care in South Africa. onship of the general practitioner to social her institutions in South Africa. bject is relevant to the objectives of this ealt with in the next section of this paper. owledge which concerns practice management and the scope of this paper.

Inflation

"A higher petrol price boosts inflation. Transport costs rise, and this affects the price of all commodities," he said.

With a petrol price increase around the corner comes the news that taxi companies have applied to the Road Transport Council for a fare increase.

The companies are believed to have asked for the fare to go up from 60c to 80c a km, and for the waiting fare to increase from R4,50 an hour to R6.

If the increases are approved, a taxi ride that now costs R3,70 will cost about R4,50.

This has been another bad week for the consumer.

The price of cigarettes went up by 3c for 20 and 6c for 30 on Thursday.

discover that ultimately what the sick person and his family seek from the medical care system and the criterion by which quality of care often is measured by the consumer, is kindly and personal care provided by physicians and nurses whom he knows and respects." Similar attitudes emerge from the studies of Ann Cartwright in Britain and Mechanic in the United States.

ever, with urbanisation, there is a growing number of Africans who are abandoning these values and this process can logically be expected to accelerate. At the 1975 Witwatersrand Medical Students Conference

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Table 3 Employment of Economically Active Doctors in 1972

BY Sector of Employment

All Doctors	General Practitioners	Specialists

of Private medical and dental practitioners. An indication of the

relative importance of these services is given in Tables 2 and 3.

the ownership of hospitals and beds is shown in Table 2. State

Hospitals and aided institutions for infectious diseases, and responsibility for the supply of drugs. Bed accommodation is provided largely by private and hospital services is shared by provincial administrations.

While it would appear that the Government has tentatively plumped for methanol, ethanol still has its supporters, including the giant Sentrachem, which has made extensive studies of the subject. Among its arguments, Sentrachem has said that three large ethanol plants could be established in the homelands

- A joint Anglovaal/Caltex study on oil from coal.
- The reproduction of a diesel substitute from plant oils.
- Intensive research programmes for the production of ethanol from cassava by Sentrachem.
- Sentrachem's plans for a multi-million ethanol plant in BophuthaTswana.
- A R400-million methanol project to be run jointly by AECI, Anglo American Coal and Shell SA.

In recent months a number of schemes have been revealed. These include:

In addition, the Government may give further duty reductions to licensed producers for the contribution to the replacement of diesel fuel only.

After all proposals have been submitted the Government will study them and rule on what taxes and duties will be applicable. Alcohol fuels will have uniform excise and other duties as presently applied to Sasol and will in practice have a 4c-a-litre advantage over fuel derived from imported crude oil.

Last February he gave potential producers from 12 to 18 months to submit guidelines for the development of an alcohol-fuel industry. The time limit expires at the end of next month.

THE future of the synthetic fuel industry in South Africa is soon to be decided by the Minister of Mineral and Energy Affairs, Mr F W de Klerk.

METHANOL APPEARS TO HAVE THE EDGE

By Tony Hudson

for around R450-million, providing jobs for up to 150 000 people.

Latest to join the fray is the South African Cane Growers Association at its annual meeting in Durban recently.

Mr John Chance, vice-president of the association, says: "The factor that offers most scope to enable the industry to continue improving its overall efficiency would be for the Government to adjust its fiscal incentives so as to make the production of ethanol from sugar cane economically viable.

"This would provide a huge new market for sugar cane and allow large-scale expansion. Unit costs in the industry could be reduced and this would enable it to offset some of the effects of inflation."

Mr Chance pointed out that such a move would open up vast employment prospects in the industry, provide development opportunities for the homelands and reduce dependence on imported oil supplies and non-renewable coal reserves.

He says that the Government seems wedded only to the oil-from-coal route.

"For some reason or other," he says, "there appears to be a conspiracy against ethanol production, and I cannot understand why this is.

"Facts are twisted and nonsense is sometimes spoken so as to denigrate the production of ethanol. As an example, Sasol and others are often quoted as saying that their synfuel production is the better option because synfuel plants are highly capital-intensive and the bulk of their assets are fixed.

"They say that, even with inflation, cost factors like coal and wages comprise only a small percentage of total costs. It is pointed out, on the other hand, that the costs of sugar cane tend to rise with inflation.

"This argument is completely fallacious," says Mr Chance. "The truth is that high capital cost, in that it is represented by depreciation, also rises from year to year with inflation in the same manner as any other cost.

"I do admit, however, that to choose the capital-intensive option becomes easier when one has access to unlimited capital provided by the Government at low interest rates.

"I venture to suggest that if ethanol production from cane received proportional advantages it would also be commercially viable."

DECISION ON Pretoria's synfuel plans soon

S. Times 28/9/81

JJA WWS

ment of 59 per cent of all doctors and the majority of these were in

private practice; the proportion of specialists in private sector employ-

ment was even larger at 61 per cent. In contrast, 90 per cent of

dentists were in private sector employment (9).

(8) 17 458 beds in 1974. Source: Report of the Secretary for Health, Eastern Cape, 1975, 21 November 1975, RP 26/76, Annexure 7.

(9) Census of Health Services, op.cit., Table 4.1

WOULD you like to buy shares in a company that will earn untold millions making ethanol from sawdust by a new process?

This proposition is being put to prospective investors all over the country by share hawkers raising capital for SA Ethanol Fuels Ltd.

The company is unlisted with little capital and its backers are not well-known pillars of the financial and industrial community. It has published no prospectus or meaningful balance sheet.

The backers of SA Ethanol Fuels are telling prospective share buyers the venture needs a one-off capital investment of only R2 800 000.

On their cost and revenue estimates, once it is in full production, making 120-million litres of ethanol a year, it will earn an operating profit of between R20-million and R40-million a year.

But scientists operating in the field of ethanol fuels say they will be amazed if the company can achieve what it is attempting. They say it will be a world first.

Shares in the company are being sold in terms of Section 141 of the Companies Act.

This means the proceeds of shares sold belong, not to the company, but to a holding company, called Ethanol Investments (Pty). This is wholly owned by the chief backer of the scheme, Mr Ken Buckerfield of Johannesburg.

Mr Buckerfield is aware that legally the proceeds of shares sold are his but he insists that, apart from a 10% commission he is charging to raise capital, all funds so far received — about R400 000 — have gone into development of the company.

Funds are loaned interest free to the public company.

Mr Buckerfield acknowledges that selling the shares under Section 141 puts him in a strong position over minority shareholders, but he says the idea was his and he risked a lot of his own money on the scheme. This entitles him to a commission and to a premium on the shares being sold.

Section 141 of the Companies Act also allows the company to sell shares without publishing a prospectus giving detailed information about the company, its intentions and its directors.

All the company has published is a statement giving the minimum information required in terms of Section 141 (1) of the Companies Act.

The balance sheet in this statement reveals shareholders' funds of less than R4 000 and the income statement shows a loss of R12 418 in the six months to August 1980.

Mr Buckerfield tells potential investors these figures are "hopelessly outdated" and that the balance sheet now looks far more substantial. He says a balance sheet for the period to end February will be out in a fortnight and the statement will soon be updated.

He says he started the venture with "nothing but a promise" and, for this reason, a prospectus would have been a waste of time.

Mr Buckerfield's main partner is Mr Bob Ottignon of Tzaneen, formerly of Durban. He developed the technology.

Mr Buckerfield bought the company from Mr Ottignon and took over its financial



Part of the old Tzaneen power station, which will produce "dirt cheap" steam for the company's production plant. Insets show SAEF's chief backer, Mr Ken Buckerfield, left, and his partner, Mr Ken Ottignon.

WHAT A BREW!

MAKE FUEL AND MILLIONS OUT OF SAWDUST, CLAIM THE BACKERS. AN OFFER YOU CAN'T REFUSE? WELL, THE SCIENTISTS ARE SCEPTICAL...

By DAVID CARTE, Deputy Financial Editor

affairs after Mr Ottignon was found guilty by a Durban court of three contraventions of the Companies Act in December, 1980.

Mr Buckerfield's holding company has 80% of SAEF but intends to reduce this to 51% through the sale of shares.

Asked about his background, Mr Buckerfield said he had been involved in engineering, specifically in steam production and boilers for a long time, even when he was in the Navy. More recently he had been in "financial consulting".

He confirmed that he had

once been a share salesman for Principal Mining, a controversial unlisted company that has accepted shareholders' funds for years and never paid a dividend.

Chemical engineers working in the field told me that the production of ethanol economically by fermenting the cellulose in sawdust has so far not been achieved by many universities, research institutes and multi-billion rand chemical corporations all over the world.

Many have tried, they said, as once this is achieved, any organic waste, from grass to weeds and pine needles, could

be fermented to make cheap fuel. It has been done in laboratories but not economically in large-scale plants.

"I've had professors say it cannot be done," Mr Buckerfield told me, "but we have done it in our pilot plant in Tzaneen. By December or February next year we'll be in production, making 30-million litres of ethanol a year."

Messrs Buckerfield and Ottignon play down the extent of the technological breakthrough, saying it is a variation of the "Schuller Burgess" process developed by the Germans in the Second World War, and that compan-

ies such as Sentrachem and Hulett's at Triangle, Zimbabwe, are already doing it.

But experts say the Germans were not producing ethanol economically from cellulose, and Sentrachem's and Hulett's ethanol is sugar-based. Sucrose and molasses ferment easily but are far more expensive feedstocks than sawdust.

To produce the ethanol, Mr Ottignon reckons, will cost 9c a litre, excluding head office costs. They have been offered 30.1c a litre by an oil company for the product.

This means that when they are producing 120-million

litres a year, they will make an operating profit, before head office expenses, of R45 150 000.

They say Phase 1 of their plant will be ready by December this year or February 1982 to produce ethanol at a rate of 30-million litres a year.

On their cost and revenue estimates, this will make an operating profit of more than R6-million a year.

Phase 1 will finance further expansion of the plant until it can produce 120-million litres a year. This means SA Ethanol Fuels needs only R2 800 000 of capital.

Mr Buckerfield gives a more, conservative estimate of profit than Mr Ottignon. He expects to make 10c a litre, suggesting the pilot plant will make R3 100 000 a year and the completed operation about R21-million a year.

And ethanol, a petrol additive, is not all they can make from sawdust. They say they can make pyrolytic oil, a strategically more important diesel substitute, from sawdust as well.

But this product still has to be tested before it can be sold as a fuel.

Mr Buckerfield employs "about 10" salesmen to sell shares. They seek out wealthy individuals from company share registers and other sources.

Prospects, many of them professional people and farmers, are approached by telephone and invited to hear more at the company's offices in Medical Centre, Johannesburg.

Nearly every week prospective investors are flown up to Tzaneen to inspect the company's pilot plant and production plant under construction.

One of the secrets of the company's expected success, the backers say, is that making ethanol or pyrolytic oil requires vast amounts of energy, and SAEF will be getting this dirt cheap.

It has bought two old power stations, one at Tzaneen and the other at Pietersburg, "for a song". These will be adapted and sawdust-fuelled. Sawdust costs R5 a ton delivered at the site and they have access to more than a million tons, which will last 10 years.

With a group of prospects, I recently visited the plant. It comprises the pilot plant, which is essentially several large interconnected stainless steel vessels, some heated from below by pine fires.

Sieved sawdust, water and acid goes in one end and, the directors assured me, ethanol emerges at the other.

But I did not see ethanol coming directly out of the plant. I saw only a bottle full in the lab. There are also two small experimental pressure ovens, one a digester and the other an oven for the extraction of pyrolytic oil. I was assured both were working and shown certain dirty, evil smelling liquids to prove it.

Alongside the pilot plant is the old Tzaneen power station, which will produce steam for the production plant.

With inside walls half demolished, it looks in a state of hideous disrepair, but there are dozens of men working on it, welding and checking the plate work and converting it to burn sawdust, instead of coal. Silver paint has been



The pilot plant in Tzaneen... sawdust water and acid goes in one end and, the directors assure, ethanol emerges at the other.

lavishly applied.

Mr Buckerfield says SAEF has a staff of 176 blacks and 14 whites. It will eventually employ 500 blacks and 120 whites. The site is certainly a busy one.

"You'd be amazed if you knew how far we've come with the power plant," says Mr Buckerfield. "Technical people who saw it before and after can't get over what we have achieved."

Mr Buckerfield and Mr Otignon showed us a heap of sawdust and pointed out where the Pietersburg power station, now being dismantled, would be erected and

where digestors, fermenting tanks, storage tanks and a spray drier would eventually be located.

The Tzaneen power station, which they had bought for very little, they said, would cost R10-million to replace.

Mr Buckerfield showed me an insurance company's replacement valuation to confirm this. They said the rail siding on to the site was worth R200 000.

Mr Buckerfield said although it would cost only R2 800 000 for Phase 1 to come into production, shareholders were being asked to pay R3 a share, as they had

to pay the full replacement cost of the plant.

Altogether 8-million shares would be issued but this did not mean the company would be capitalised at R24-million because early investors had obtained shares more cheaply.

Mr Buckerfield showed me a letter from an oil company offering to buy the company's ethanol at 30,1c a litre duty free at Tzaneen, as well as a telex from Japanese principals offering to buy all the company can make.

"There is no marketing problem," he said.

He also showed me a letter from a Government depart-

ment saying it had no objection to SAEF making ethanol, so long as it paid the excise duty.

Mr Buckerfield showed me houses being built at Tzaneen, saying these were for the company's white staff.

Altogether 18 houses and 80 townhouses with an "Olympic size" pool and two tennis courts overlooking the Fanie Botha Dam were being built, he said. They would cost R3-million — more than the Phase 1 plant.

He said housing had to be provided to get high quality staff to live in Tzaneen. He said shareholders would not be financing the houses. He would, and SAEF staff would pay rent.

Mr Buckerfield said he could not show me a balance sheet, as it would be ready in a fortnight.

A scientist in the field told me that "in theory" SAEF's technology could work. Ethanol had been produced from cellulose in a laboratory but not commercially.

Even if SAEF's pilot plant did work, he said, he felt the technical problems of the production plant were being underestimated.

"This kind of plant is subject to corrosion and all sorts of technical problems. It needs a big, expensive staff to keep it operating and I know from bitter experience there can be crippling teething troubles. It's certainly no easy matter for backyard chemists."

Mr Buckerfield is undeterred.

"For a long time they have said it couldn't be done. Others in the field are just too cautious. They expect Government guarantees of profit before they start.

"Remember, this is how Louis Luyt started and look where he is today. We intend to prove all our critics wrong, just as he did."

SA in N-deal with Israel, Taiwan, say US officials

The Star Bureau

NEW YORK — The United States Government has begun to examine what it considers may be an "expanding pattern" of nuclear contacts between South Africa, Israel and Taiwan, reports the New York Times.

The newspaper, in a prominent report, says some Intelligence and State Department officials who monitor the flow of nuclear technology and information are convinced that these three countries constitute "the major players in an emerging club of politically isolated nations whose purpose is to help each other to acquire atomic bombs."

As they have become progressively more estranged in the world community, they have been forced to rely on each other for military and intelligence contacts.

But other officials do not believe such a network is emerging and discount the threat it might pose to efforts to limit the spread of nuclear weapons.

DISTURBED

Several officials who have most closely followed the growth of what one termed the "triangular relationship" are disturbed by the following developments:

● Intelligence officials report that Israeli scientists are working in South Africa on nuclear energy programmes that could assist South Africa to acquire the technological expertise to build nuclear weapons.

● Scientists from Taiwan are said to be working on South African projects that would enable South Africa to produce weapon grade uranium.

● South Africa has become a supplier of uranium to both Taiwan and Israel. In exchange for critically important technology and training that

the South African Government is said to be receiving from both countries. Last year, Taiwan signed a six-year contract to obtain 4 000 tons of uranium from South Africa.

● Israel is reported to be assisting Taiwan to develop a rocket that could be used to deliver atomic warheads.

Huge oil firm profits —estimates

Financial Staff

PROFITS of hundreds of millions of rands a year are being made by oil companies in South Africa, according to unofficial estimates.

Accurate figures of sales and profits are not known because international oil companies take a major slice of the market but refuse to disclose profits from South African operations.

But two locally owned companies, Trek and Sasol, have reported impressive profits.

Trek's profit jumped by 63 percent to R10,6-million after paying tax last year. From this it boosted its dividend payout to shareholders by 66 percent. Sales were worth R309-million, a rise of 23 percent.

Trek is spending R20-million to improve its 323 service stations.

SASOL

The Sasol oil-from-coal giant netted profits of R121-million from sales of R1 331-million in its last financial year.

Sasol is committed to spending R5 800-million to build the Sasol 2 and 3 projects which will give a huge boost to output and sales.

Commenting on Sasol's profits, the managing director, Mr J A Stegmann, said in Cape Town earlier this month: 'One has to accept a relatively lower profit potential in early years and a relatively higher profit potential in later years, more than compensating for any initial profit loss.'

Star 30/6/81 (55) (24)

Atomic energy and uranium link-up

The Atomic Energy Board and the Uranium Enrichment Corporation would in future be administered under a single corporate structure, the Minister of Mineral and Energy Affairs, Mr de Klerk, said in Pretoria last night.

Such a corporate structure would be constituted in due course by his department.

The Cabinet decision has been the result of the finding of the committee established last month, under the chairmanship of Mr A J A Roux, to investigate, among other things, whether present

nuclear activities, undertaken with funds, should be restructured for greater efficiency.

Mr de Klerk's statement said that the recommendations of the committee had been adopted with a minimum of qualifications.

The Cabinet had further decided that the existing activities of the AEB and Ucor would be grouped in three separate subsidiaries.

With rationalisation in mind, it had been decided that the extraction metallurgy division of the A E B at the National Institute for Metallur-

gy at Randburg would be transferred to the institute. Negotiations would be initiated with the University of Pretoria to administer the life sciences division of the A E B as a research institute of the university.

The Cabinet would, as soon as possible, nominate a chairman and a number of members to act as a working group of the proposed nuclear-controlling body.

The group would assist the Minister of Mineral and Energy Affairs and the existing managements of the AEB and Ucor with

draft legislation, grouping current nuclear activities under the new structure.

Other recommendations of the Roux committee, such as control over the use of radio-isotopes and licensing of nuclear installations would be considered later, in consultation with Government departments and other organisations concerned.

Until legislation had been enacted by Parliament to achieve the new grouping, the current managements of the AEB and Ucor would function normally, Mr de Klerk said. — SaPa.

E = illiteracy
(The coefficients for labour, infant mortality, and population per doctor differ significantly from zero at least at the 0.02 probability level).

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HEALTH AND RYMER DELIVERED

Alan L. Searles

RYMER DELIVERED - a good or service which increases the productivity of workers. This investment in health or education yields a return in the future. This is a direct benefit to your health, productivity, and a lot of other good things.

HEALTH AND RYMER DELIVERED
GDP of India large, but slow growth rate, so fall per capita income.
GDP - total productive capacity of the country (useful for productivity).
Dependence on health potentially productive in four ways.
A. Increase the number of the types of work that can be performed -
underemployment can be a problem. (often by lowering the death rate increases productivity).
B. It improves the quality of work. Maslow using an econometric model indicates that in agricultural regions of less developed countries endemic malaria reduced the productivity of workers by 30%. Weisbrod et al in an extensive study of the productivity effects of schistosomiasis in St. Lucia (as well as several other parasitic diseases) failed to find any association between the severity of the disease and the fertility of women, the educational achievement of school children and the daily output of workers on a banana plantation. Some observers doubt that schistosomiasis is sufficiently severe on St. Lucia to cause a resultant decline in productivity.

One problem is that many underdeveloped countries are tropical. Very difficult to work hard in hot weather no matter what one's health or nutritional status. Should be possible to focus on this question by examining the performance of poverty school children after installation of a school lunch program. It is hard to control further interaction of other variables.

If non-agricultural situation not so obvious that increased productivity is good, must produce glut on market. However if considering self employed subsistence farmer may well be that could grow more if healthier would be direct benefit. Dependence on nature of the productive process.

C. By clearing otherwise uninhabitable areas it makes possible the use of natural resources that could not otherwise be used.

A secret State Department report entitled "South Africa-United States Nuclear Relations" puts into perspective SA's wish to circumvent US restrictions on the supply of enriched uranium to Pretoria. The document came out of the May 14 meeting in Washington between US Secretary of State Alexander Haig, US Assistant Secretary of State Chester Crocker, SA Foreign Minister Pik Botha, Secretary for Foreign Affairs Brand Fourie and other officials. While Botha and Haig focused on means of working towards a SWA/Namibian settlement, Fourie discussed nuclear co-operation with the Bureau of Oceans and International Environmental and Scientific Affairs Assistant Secretary James Malone.

According to the report, the South Africans asked the US either to agree to grant export permits for enriched uranium to be shipped to France for fabrication for Koeberg's element; or to not insist that France require SA sign the Nuclear Non-Proliferation Treaty (NPT) before delivering fuel for the Koeberg reactors, presumably fabricated from enriched uranium supplied from another source.

A US-SA agreement on the peaceful uses of atomic energy had allowed for the supply of highly enriched uranium from the US, but subsequent refurbishings of the agreement tightened up safeguard clauses on the enriched uranium's use and also required SA to give

assurances to the US on where it sold its supplies of natural uranium. Then, in 1977, SA cancelled an order of enriched uranium for its Pelindaba reactor, even though it had already been paid for, when it became increasingly evident that the Carter administration was reluctant to deliver the fuel on political grounds.

In June 1978, the report says, discussions on nuclear relations between the two countries took place in Pretoria, where the US stipulated that SA sign the NPT and subject all its nuclear facilities to international safeguards. According to the report, SA stated it would observe the principles of the treaty and even indicated that in principle it was not opposed to signing it. But, even if SA did sign the treaty, "the US would find it difficult to provide SA timeously with the enriched uranium for Koeberg." The report did not say why, but pointed out that due to US intervention SA would not be able to obtain fuel from other sources without first signing the treaty.

SA's defence for dragging its heels in signing the treaty is put forward as the fear that a possible threat from Russia and "certain African countries with Soviet support and encouragement" would not be countered by the UN. As a result, SA has not been eager to dispel suspicions that it may have nuclear

weapon capacity, just as Israel has in the past created a climate of speculation around its own capacity to build such weapons.

SA's reluctance to join the non-proliferation club has put the country in a cleft stick. SA is nearing the completion of a uranium enrichment plant at Valindaba capable of producing small quantities of fuel that are 45% enriched with uranium-235. While the Koeberg reactors only require fuel that is 3% enriched, Valindaba cannot yet supply fuel in sufficient quantity, although self-sufficiency for SA's nuclear power industry is its eventual aim.

Also, if SA were to sign the NPT, the Valindaba plant would be subject to inspection by the International Atomic Energy Agency. The South Africans have indicated that this would jeopardise the secrecy of their valuable enrichment process. Valindaba is now able to produce enough enriched uranium to operate the Pelindaba nuclear reactor purchased from the US over 15 years ago. Until this year, when fuel supplies became available from Valindaba, the Pelindaba reactor staggered along on severely reduced operating hours with US enriched uranium hoarded from the pre-Carter days before supplies were cut off.

The State Department report does not include the US reaction to SA's request for nuclear fuel.

(SS) FM 3/7/81

Koeberg is 'at best uneconomic'

By BOB MOLLOY

THE Koeberg nuclear power station was "at best an uneconomic and certainly a risky investment for South Africa" and this would become clearer with time, according to visiting United States energy expert, Mr Jim Harding.

Mr Harding, an economist employed as energy projects director for Friends of the Earth (FOE) Inc, and formerly special adviser to the chairman of the California Energy Commission, said in an interview yesterday that Wall Street bankers were now advising energy supply companies against building more nuclear plants.

"The nuclear power industry in the United States is close to death, not for political but for economic reasons. Costs have been argued ever since the nuclear debate began. At one time nuclear proponents talked of producing electricity so cheaply it wouldn't even be worth metering, now our surveys show that coal plants are 50-60 percent cheaper to build and operate," Mr Harding said.

The survey had covered 47 nuclear plants and 137 coal plants, it ignored problem plants such as Three Mile Island, was evaluated only on capital and fuel costs, and did not take decommissioning costs into account.

Position

There was no reason to suppose that the position in South Africa would be any different.

"A lot of the costs don't get added up when presenting the bill to the consumer. Examples are waste disposal, which comes out of taxes, evacuation and monitoring costs which often are added to local rates, and of course the cost of decommissioning which could be as much as the original cost of building."

"Future costs tended to be discounted. In the case of nuclear power stations we were simply pushing the decommissioning and waste disposal costs onto the next generation and robbing our children.

"They will pay for the errors and get none of the benefits," said Mr Harding.

The nuclear issue had come to a head with the problem of Three Mile Island. This plant was an "economic disaster" which had not been acknowledged by the owning company.

"To do so would drive them into bankruptcy. An indication of the way things are is the fact that the company's stock is worth only 20 percent of book value and there is now very little 'insider' stock held."

The anti-nuclear protest in South Africa was today similar to the American position



Mr Jim Harding

in 1973 when the same government body was responsible for both the development of nuclear power and public safety, a situation which Mr Harding viewed as "a case of having the fox in the henhouse".

Asked to comment on reports of accidental damage and other construction problems in the building of Koeberg, Mr Harding the incidents were "standard for nuclear plants".

Coal plant

"The difference is that in a coal plant when such things cause a breakdown you have a temporary power stoppage. In a nuclear plant you have a catastrophic accident."

The money spent on Koe-

berg could have been more sensibly invested in alternative energy options and on improving the efficiency of present energy use. This would have stimulated local industry, created employment and saved on foreign exchange. It would also have averted the present position where the Republic was dependent on the political goodwill of its nuclear fuel suppliers.

"To say that South Africa is capable of producing its own fuel enrichment process means that you are negating the economics of your original premise for having a nuclear power station in the first place," Mr Harding said.

Asked if there had been any progress in the anti-nuclear campaign, he pointed out that nuclear power proponents had initially planned for at least 1 000 nuclear plants in the United States by the year 2000, with a possibility of 1 800 and a minimum of 800. "We have 74 at present and at most there will be 150. That in itself is an astonishing achievement."

Attitude change

There had been an attitude change in California and utilities were looking at renewable energy sources and going for smaller plant. A 300-megawatt wind energy source would be ready by 1990, a goal which "dwarfed" the expectations of the mid-seventies.

History would judge the nuclear proponents "rather harshly". Most had assuaged their consciences over the manufacture of nuclear weapons with promises of cheap energy which they could never fulfill. "At best, they have been guilty of childish zeal in promoting their cause," Mr Harding said.

● Nuclear power will be the focus of a debate at the University of Cape Town on Monday at which Mr Harding will be the guest speaker. The debate forms part of a two-day congress on energy to which a number of overseas speakers have been invited. The congress has been organized by the International Association of Commerce and Economic Students (AIESEC).

US expert's bleak view on Koeberg

RDM 6/7/81

MS (55)

Own Correspondent

CAPE TOWN. — A visiting United States energy expert, Mr Jim Harding, says the Koeberg nuclear power station is "at best an uneconomic and certainly a risky investment for South Africa" and that this will become clearer with time.

Mr Harding, an economist, is Energy Projects Director of Friends of the Earth (FOE) Inc., and formerly special adviser to the chairman of the California Energy Commission.

He said in an interview in Cape Town that Wall Street bankers were now advising energy supply companies against building more nuclear plants.

"The nuclear power industry in the US is close to death, not for political but for economic reasons. Costs have been argued ever since the nuclear debate began.

"At one time nuclear proponents talked of producing electricity so cheaply it wouldn't be even be worth metering. Now our surveys show that coal plants are 50% to 60% cheaper

to build and operate," Mr Harding said.

One survey had covered 47 nuclear plants and 137 coal plants, ignoring problem plants such as Three Mile Island. The plants were evaluated only on capital and fuel costs, and did not take decommissioning costs into account.

There was no reason to suppose the position in South Africa would be any different.

"A lot of the costs don't get added up when presenting the bill to the consumer. Examples are waste disposal, which comes out of taxes, evacuation and monitoring costs, which often are added to local rates, and of course the cost of decommissioning, which could be as much as the original cost of building."

Future costs tended to be discounted. In the case of nuclear power stations people were simply pushing the decommissioning and waste disposal costs on to the next generation.

The nuclear issue had come to a head with the problem of

Three Mile Island. This plant was an "economic disaster".

Asked to comment on reports of accidental damage and other construction problems in the building of Koeberg, Mr Harding said the incidents were "standard for nuclear plants".

"The difference is that in a coal plant, when such things cause a breakdown you have a temporary power stoppage. In a nuclear plant you have a catastrophic accident."

The money spent on Koeberg could have been more sensibly invested in alternative energy options and on improving the efficiency of present energy use, he said.

This would have stimulated local industry, created employment and saved foreign exchange. It would also have averted the present position, in which South Africa was dependent on the political goodwill of its nuclear fuel suppliers.

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S A Brick Association Prizes

III: No award

II: A R Low Keen

I: N D G Sessions

For the best student in each of the courses of Building Economics I, II and III in the third, fourth & fifth years respectively.

LTA Prizes

P R Swift

Professional Practice.

For the student obtaining the highest marks in

Surveyors' Prize

Cape Chapter of Quantity

The Committee of the Western

P C Key

For the best all-round student in any year of study.

Bell-John Prize

(Continued)

QUANTITY SURVEYING

Govt to look into replacing diesel with sunflower oil

RD 7/7/81 (55)

By ADAM PAYN

FOLLOWING THE 6c a litre rise in diesel fuel prices to 60,3c a litre at the pumps and 44,90c to farmers, the Department of Agriculture is to review the possibilities of using sunflower oil commercially on a great scale to replace diesel.

This could be a boon to the country by saving great sums in foreign exchange and making better use of agricultural potential.

The shortage of diesel in relation to petrol when fuel is produced from crude oil or coal is the driving force, not only in Genmin's move towards the direct liquefaction of coal, but also in the Department of Agriculture's moves to make South African agriculture as self-sufficient as possible in diesel fuel by using oil off the farmers' fields.

Mr J J Bruwer, director of the engineering division of the Department of Agriculture, told me the technology of using

sunflower oil in place of diesel in tractor engines had been proved.

He said: "We can produce on an additional 1 300 000ha of sunflower plants enough oil for our tractors to produce the entire present maize crop of 14-million or 15-million tons, on 4 300 000ha.

"In other words, we have the potential in South Africa to produce enough oil to make the agricultural sector overall 50% to 60% self-sufficient.

"The energy balance is extremely positive. A farmer can produce on one hectare of sunflower field enough sunflower fuel oil to produce 9ha of maize. It is a 10-1 ratio."

He explained that his division had worked on technology that could be applied in the case of a fuel emergency such as a full embargo on the export of crude oil by Arab and other nations to South Africa.

However, the figures he produced show that even without a

crisis, the new higher prices for diesel produced from imported crude oil should make the exploitation of sunflower oil commercially attractive.

Mr Bruwer said: "Our division of agricultural engineering is well advanced in this research. We do not think that ethanol is the right route to follow in an unaltered diesel engine because we have not seen any proved technology in this direction.

"But we have done a lot of research over the last two and a half years on the application of pure sunflower oil in various kinds of engines. There have been two main fields of activity.

"First, for direct injection engines we use sunflower oil which has been through a transesterification process. In that process we use sunflower oil with a little bit of ethyl alcohol with a catalyst to make a sunflower ester. We are at present experimenting with these es-

ters and have obtained extremely good results.

"Secondly, the other approach is to use pure sunflower oil in indirect injection engines. We have achieved a world record in this work. One of two engines has run the equivalent of 2 300 hours, or about three years on pure sunflower oil, with no detrimental effect. But if this engine had been installed in a truck driven at 100km an hour it would have covered a distance of 230 000km.

"This was the first engine ever that has run the equivalent of three years without crude oil."

He added that the industry had up to the present not been at the stage of using sunflower oil commercially in diesel engines because its price was slightly higher than diesel fuel. But since the Minister of Energy and Mineral Affairs, Mr F W de Klerk, had announced new fuel prices the Department of Agriculture would review the situation.

"The farmer produces sunflower seed for R261 a ton or 53c a litre for the oil. That includes his profit. Therefore his production costs would, I am sure, be well below the 44,90c paid for diesel fuel.

"This rise in the diesel price has made us more determined than ever to perfect the technology for using sunflower oil. The economics are pointing that way."

He said that most of the tractors used in South Africa were direct injection engines. Therefore, a slight modification would have to be carried out to make them indirect.

"However, we think we shall be able to solve the problem of sunflower oil with direct injection engines by using the ester route.

"When sunflower oil is used full-scale by the ester route, South African farmers will be able to produce from their own sunflower oil on the field and then make their ester on the farm and apply it in their tractors in the field."

The ester route changes the chemical substance of the sunflower oil. It splits the sunflower molecule up into its three links and uses every one of these fatty acid links. The glycerol is taken out and the different links are used to produce a fluid comparable to a diesel fuel.

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Bell-John Prize
For the best all-round student in any year of study.

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II : A R Low Keen
III : No Award

Koebberg not for prestige--A-Board

April 7/7/81

55

KOEBERG nuclear power station was not being built for prestige purposes but because it was an economic proposition for the Western Cape, the deputy president of South Africa's Atomic Energy Board, Dr J P Hugo, said yesterday.

Harding, energy project director of the Friends of the Earth in the United States.

Nuclear power competed with a 'rather small' electrical energy market and here one had to bear in mind that oil -- which nuclear energy had to replace -- accounted for only about 10 percent of total electrical power in the United States.

The public was entitled to receive, 'a neutral objective assessment of probabilities and magnitudes of all possible risks' from society's professional risk assessors.

Transvaal in my lifetime, Dr Hugo added. He was taking part in a panel discussion at a two-day conference on energy organised by the International Association of Commerce and Economic Students (Aiesec) at the University of Cape Town.

Dr Hugo said European statistics showed that the cost of electricity generated by nuclear energy was 'significantly' lower than that derived from coal and oil and the nuclear industry was the safest in the world.

Dr Whittle said: 'A nuclear plant is safer than driving a car or flying in an aeroplane.'

Even 'Koebberg Alert' would then no longer serve its present function and could eventually disband, he said.

The equivalent would have been a coal-fired plant with similar capacity in the Transvaal, which would have necessitated triple transmission lines to the Western Cape.

Mr Harding, referring to the position in the United States, said: 'Nuclear energy is simply not economically competitive with all the fossil sources of energy.'

Dr Abramovitz said the central issue was whether nuclear power in South Africa served to uphold the basic principles of the free market philosophy.

Apart from the insurance impediment, Koebberg would deserve support if a way could be found of sharing the atom equitably (economically) with all sectors of South Africa's population, Dr Abramovitz concluded.

'I have grave doubts as to whether I will see a nuclear power plant in the Transvaal in my lifetime.'

Speaking against were Dr A Abramovitz, associate professor of psychology of UCT and Mr J

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Commission does not consider source control to be sufficient. It recommends that the

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CHAPTER XIII - Industrial Health Hazards and the Public

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Industrial Health and Industrial Sector - There are a wide variety of mines and factories, etc., in S.A. and S.W.A., but not always many of the same kind.

Industries should unite in seeking to improve industrial health (e.g. Byghalsen in construction industry in Sweden whose aims and objects were to promote health and safety practices, provide industries with training and information, treatment and rehabilitation. It was financed by a levy on employers; in the U.K. where the law provides that industries organise among themselves for safety of workers.)

Commission asserts that it is indisputable that joint efforts by industries themselves and by white trade unions can go a long way to preventing occupational diseases and can assist the Government with proposed legislation on it.

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Pre-employment examination necessary to establish where occupational disease is contracted to ensure fairness towards bodies liable for contributions for compensation.

Management should ensure that places of work are suitable - working conditions e.g. temperature, light and space and reasonable hours.

Management should supply industrial health equipment (ear muffs, etc.) - mark off danger zone on shop floor with necessary notices. Need for education of management and workers - advice, training, publicity, joint committees and research.

Good example in Britain's management drew up health policy binding on worker and employer. (Management must appoint sufficient health staff.)

Co-operation between workers and management. (Management must appoint sufficient health staff.)

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star 7/7/81

Koeberg not safe enough, says expert

Own Correspondent
CAPE TOWN — The threat posed by Koeberg has been spelt out by a visiting American nuclear scientist, who said the power station was not safe enough, it was probably unnecessary and its eventual waste disposal could prove dangerous.
 Mr Jim Harding, former adviser to the California Energy Commission, said the reactor was safer than the one at Three Mile Island but less safe than those of the latest design.
 He said the design did not rule out the possibility of electrical fire.
 This could lead to incorrect instrument readings and the computer would

be unable to control the situation.
 "One of the biggest problems with this design (the Koeberg type) is corrosion of the tubes in steam generators" said Mr Harding.
 This could lead to a cooling accident if, in an emergency, flooding of the reactor core was stalled.
 He said, another unsatisfactory characteristic of Koeberg was its short life-span of seven to eight years.
 "The operators are being almost blindly optimistic in assuming that they can ship the fuel abroad for reprocessing or permanent waste storage without a hitch," he said.

S A Read

General J B M Hertzog Prize
 For the best final year student.

D H Pryce Lewis
 For the best student of Architecture (or Quantity Surveying) in the subject of Professional Practice.

David Haddon Prize
 Miss C Tredgold
 For the best woman student in third year.

Molly Gohl Memorial Prize
 P A Rappoport
 For a student who has satisfactorily completed 1st, 2nd and 3rd major courses.

Helen Gardner Travel Prize
 P F Duncley
 Sixth Year

For the best student in :-
of Architects' Prize
 Cape Provincial Institute

Energy debate queries cost of radiation risk

CT 7/7/81 55

Science Reporter

KOEBERG Alert — the anti-nuclear group in South Africa — could disband if the ordinary free market mechanisms for insurance cover were applied to the Koeberg nuclear power station, the group's chairman, Dr Arnold Abramowitz, told the International Association of Commerce and Economics Students (AIESEC) congress yesterday.

Speaking at the nuclear energy debate, Dr Abramowitz said that the premiums which an industry paid to cover itself against unexpected and costly liability were an indicator of the level of risk, while the fact that the premiums were tied quite closely to the way in which the industry operated served to keep that level to a minimum.

In the case of Koeberg, Escom carried liability to the extent of R10-million and the State was responsible for the remainder. Members of the public would find it difficult, if not impossible, to buy private cover against radiation hazards.

Good reason?

"On the one hand you have to acknowledge as a patriotic citizen that the government wouldn't interfere with the functioning of the free market without good and sufficient reason. On the other hand, if the likelihood of (nuclear catastrophe) is no greater than being hit on the head by a meteorite, why isn't the risk covered in the same conventional way — by the operation of market place insurance?"

The question had never been adequately answered, Dr Abramowitz said.

Dr J P Hugo, deputy president of the Atomic Energy Board, said that in the case of large undertakings it was government policy to provide its own insurance, on the grounds that it was more economic than paying taxpayers' money in the form of premiums to the international pool.

Economic loss

Dr C Whittle, assistant director of the Institute of Energy Analysis in the United States, said that American public utilities were more concerned about insurance against economic loss in the operation of nuclear power stations than that of health hazards. The Three Mile Island accident had proved expensive and utilities had now formed a pool to ensure themselves against future economic problems.

Mr Jim Harding, energy projects director for the Friends of the Earth, said that the American nuclear power industry had a ceiling of R560-million on absolute public liability and after that it was a matter for the State. In his view the ceiling should be raised or eliminated.

The congress chairman, Dr Wolfgang Sassin, said in summing up that a decision for or against nuclear power depended on one's belief or disbelief in the ability of man to control his own environment in an orderly way. Each person would interpret all the evidence on the issue according to his or her view on that point.

Diverse views at energy congress

Science Reporter

CONTRADICTIONARY predictions on the future of energy resources were presented at Tuesday's session of the AISEC energy congress at the University of Cape Town.

Mr Leon Louw, executive director of the Free Market Foundation, told the congress that alternative sources of energy would make the present fossil fuels redundant.

"We should use them as fast as possible, otherwise we may find ourselves left with vast, useless deposits of hydrocarboniferous substances getting in the way of our other endeavours," he said.

Predictions of loss of resources had always been countered by discovery of new sources of energy. Technological advances had greatly increased the estimated energy reserve.

Not so, said Dr W C J van Rensberg, director of the Mining and Mineral Resources Research Institute at the University of Texas.

"We need to discover a new 'North Sea' every year and a new 'Texas' every nine months just to meet the increase in demand," Dr Van Rensberg said.

He quoted figures to show that the world was consuming 22-million barrels of oil annually while discovering only 11-million in the same period. This spelled trouble for the future.

The United States would be dependent on Arab oil for at least the next decade and this would affect its foreign policy. Coal would continue to be the single most important increasing source of energy.

To give some idea of the size of the problem, if the US wished to supply its estimated turn-of-the-century daily requirement of six million barrels of synthetic fuel it would have to build the equivalent of 120 Sasol-size plants at a cost of \$4-billion each.

Gloom, doom predictions for Koeberg

Science Reporter

GLOOM and doom predictions on the future of Koeberg nuclear power station continued to radiate from the International Association of Commerce and Economics Students (AISEC) congress at the University of Cape Town on Tuesday.

Following the Koeberg Alert viewpoint given at a previous session that commercial insurers would have forced economically crippling safety standards on the plant (hence the government take-over of public liability) and the statement by a visiting United States' energy expert, Mr John Harding, that Koeberg was not as safe as the latest designs available, Mr Andre Spier lumped it along with other nuclear plants which the Israeli raid had shown to be "slow-ticking time bombs".

Proliferation

Mr Spier, managing director of Syncom, a private sector policy research organization, said that nuclear proliferation was also a danger.

It was "only a matter of time" before nuclear black-

mailers held a nation or a city to ransom.

The Republic faced a population increase to about 70 million within four decades. This meant that within the next 40 years South Africa would have to create a seven-fold output of energy from all sources in order to have a viable and urbanized society.

The crucial question was whether whites could cope with the problem of leading the majority of the country's people to reasonable levels of affluence as measured against Western standards.

Growth rate

Calculations suggested that this required at least a 10 percent growth rate. This was possible without excessive inflation if the following three conditions were met:

- The cutting of wastage;
- The introduction of new ideas; and
- The de-regulation of the economy. Socialism as a wealth-creating system was a spent force. Only freedom to act, checked by a new responsible business ethic, could create the climate needed for the prosperity required.

By GERALD REILLY
Pretoria Bureau

Koeberg is not a risk — expert

DISASTER preparedness was the order of the day in the modern world, and in the Koeberg situation it was an ultimate insurance, Dr M I Hirsch, of Escom, told the congress of the Medical Association of South Africa in Pretoria yesterday.

Contrary to anti-nuclear opinion it was the least likely of all such preparedness plans to be implemented, and might well never be needed. The likelihood was that the Koeberg nuclear power plant would enjoy a healthy work-

force and equally healthy local communities.

Dr Hirsch said South Africa was embarking on nuclear power generation at a comparatively late stage and had the benefit of 25 years of Western experience — with the accent on hazard prevention and safety — more than in any other major industry. However, anti-nuclear propa-

ganda — it also came from certain quarters in Cape Town — reinforced by the Three Mile Island nuclear power incident, had raised doubts, even within the medical profession, about the wisdom of South Africa building a nuclear plant.

The critical importance of adequate future electricity supplies and the nuclear contribution to it to meet the potential-

ly explosive challenge to raise the standards of living and health of a rapidly growing population in South Africa, was well documented.

Nuclear energy was an emotive subject. There was a blanket fear of all nuclear activity, engendered by the devastating effects of nuclear weapons, including the carcinogenic and genetic mutant effects.

Dr Hirsch said a nuclear plant was not potentially explosive because its 3% uranium enrichment was far too low. Nuclear plants had systems for shutting down the process, and its activity was controllable.

Nuclear power generation was a set routine operation with a potential for incidents significantly less than other nuclear activities.

(55)

The safety precautions built into a modern plant, the training of its personnel as well as international and national controls, was unparalleled in any other industry.

Nuclear power had been generated since 1958, and there were now more than 185 commercial nuclear plants. Yet to date, including the

Three Mile Island experience, there had been no fatalities due to radiation, and no evidence of adverse genetic effects or increased incidence of malignancy among workers.

Nuclear power contribution to human radiation exposure in surrounding communities was less than from some coal-burning plants. The clinical use of X-rays

Surveyors' Prize

For the student obtaining the highest marks in Professional Practice.

P R Swift

LTA Prizes

For the best student in each of the courses of Building Economics I, II and III in the third, fourth & fifth years respectively.

I : N D G Sessions

II : A R Low Keen

III: No award

S A Brick Association Prizes

For the best student in the subject of Building Construction.

C W von Düring

For the second best student in the subject of Building Construction.

K Strong

Student Planners Award

For the student who has shown greatest promise at the end of the first year.

M P Morkei

and other forms of radiation were a much greater risk in the possible long-term genetic adverse effects. "The risk in the widespread expanding use of processes involving radiation in medicine, industry and agriculture pose the real risks and hazards. "We are thus dealing with a comparatively safe and clean industry, whatever the posed theoretical hazards. But it is the one which depends on continuous and strict attention to prevention in detail, which has reached a high degree, and is already traditional," Dr Hirsch said.

OIL

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Import independence

FM 10/7/81

Government's objective is to achieve a level of independence from imported oil of 60%-70% between 1990 and 1995.

According to Bob Scott, chief director of planning of the Department of Mineral and Energy affairs, this level is probably attainable "under non-crisis conditions" by one of the following routes.

- Construction of three more Sasol plants the size of Sasol 2 and 3. After 1995, further similar-sized plants would be required at roughly three-year intervals to maintain 60%-70% independence;
- A lesser number of Sasols with the balance coming from alternative processes producing compatible or petroleum substitute fuels.

Scott, who spoke at the 13th Aiesec economic conference in Cape Town this week, said government was attracted to the latter option because the financial and manpower burden may be less severe than for the proven Sasol route.

(At a conservative estimate, three more Sasols to 1995 would require at least R16 000m and 30 000 skilled workers.)

Apart from the daunting aspects of finance and labour, government is concerned about redressing the increasingly heavy imbalance in the pattern of demand for diesel and petrol.

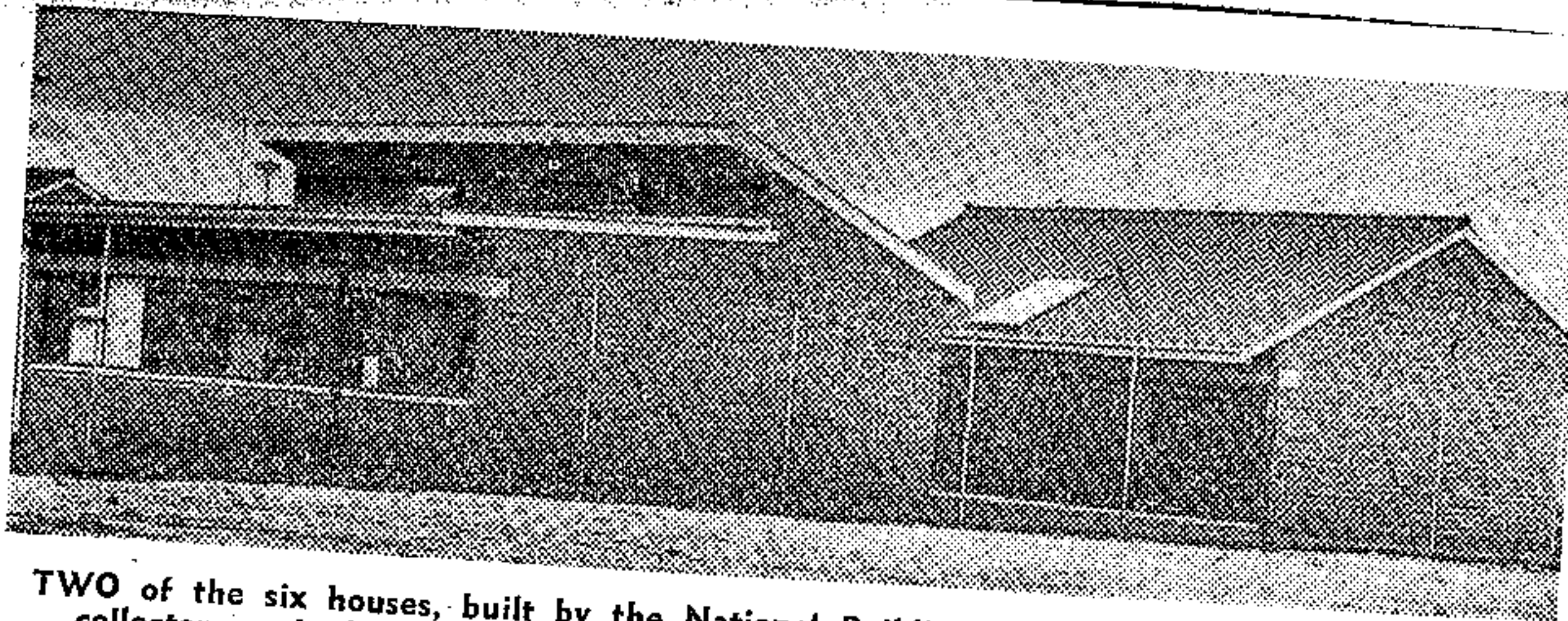
According to Arie Geertsema, Sasol's chief process engineer, it has been possible, at considerable additional expense, to amend the yield structure at Sasols 2 and 3.

He confidently expects the initial petrol/diesel ratio of four to one to be worked down to one to one.

Bob Scott says he is happy with this ratio because it fits in neatly with government plans to balance demand by developing a new light diesel fuel. Plans are afoot, it seems, to draw up new specifications to "stretch" current diesel supplies by blending in petrol to an upper limit of about 20%. Because such a fuel would have a considerably lower flashpoint than conventional gas oil, new specifications will be needed to direct safe storage and usage.

To further balance offtake, Scott advocates a certain amount of "demand manipulation."

He says about 95% of diesel fuel produced is sold at subsidised rates. Only 4.7% of last year's consumption was sold (to filling stations) at the full tax-paid price of 48,16c/ℓ. Bulk consumers in commerce and industry, accounting for nearly 48% of consumption, paid 41,2c/ℓ.



TWO of the six houses, built by the National Building Research Institute with the solar collectors and glazing clearly visible, stands empty and surrounded by barbed wire at Mitchell's Plain.

Energy — study houses at the Plain

55 11/7/81
THE National Building Research Institute of the CSIR are building six houses at Mitchell's Plain as part of their low energy experimental housing project (LEEHP).

Preliminary results from the NBRI's low energy house project in Pretoria show that considerable savings of energy are possible by paying attention to the property thermal performance designs of buildings.

The Mitchell's Plain houses will differ from the institute's Pretoria project in that the whole of the north elevation of at least one of the homes will be utilised for energy collection purposes.

The institute built two houses in Pretoria in 1978, using one as a control, designing it as a typical traditional middle-income home, while building the other to incorporate low energy features and an air space and water heating solar system.

The control house cost R22 000 to build and the low energy home R30 000.

Mr M Johnson, chief technical officer of the NBRI, said that savings on electricity in the low energy house would pay for the extra R8 000 over 20 years allowing for price increases. The first year's saving was in the region of R120, he said.

The number of home owners who could afford to install low-energy features in their home, thereby substantially increasing the initial cost and therefore their mortgage bond repayments, must be limited. A R10 000 increase in the mortgage bond to pay for low energy features for example, would up repayments by more than R100 a month and would take substantial energy savings to justify.

The low-energy homes in Mitchells Plain, however, in contrast to the

Pretoria middle-class houses, are believed to have been designed for a lower standard of living.

The highest cost of electricity in the Western Cape would also affect any study on low energy housing.

The objectives of the NBRI's Pretoria study are to demonstrate firstly that a home constructed from traditional materials using traditional methods, could operate at low levels of energy utilisation without adversely affecting the indoor environment. Secondly the institute hoped to evaluate the long term benefits of different energy saving options.

Approximately 60 per cent of domestic electricity is currently used in heating water and living space in the average home and the LEEHP aims to substantially reduce this.

Sasol looks ahead

Sasol may one day become a major producer of methanol, for the indications are that the world pioneer in petrol-from-coal technology will start shifting the emphasis of its production from conventional synthetic fuels to methanol.

"There is a very attractive economic potential for methanol provided we find the means of using it efficiently in large engines," says Sasol MD Joe Stegmann. "And if there are to be more Sasols, they may produce methanol as well as conventional fuels."

The idea is not new, for during 1979 Sasol considered producing methanol from one of the eight fuel converters planned for Sasol 3. The plan was scrapped, because at the time it was not clear that methanol would work as an extender to, or a substitute for, diesel fuel.

Says Stegmann: "If methanol becomes an acceptable fuel or fuel extender we will be in it as much as anyone else. It will benefit the country because it will increase the range of available fuels."

It has been known for some time that petrol engines run satisfactorily on petrol mixed with about 10% methanol. But producing methanol for this purpose alone is not the long-term solution to the fuel supply problems peculiar to SA.

Favourable excise and railage rates on diesel fuel have caused farmers and industrialists to choose overwhelmingly in favour of diesel-powered vehicles over petrol-powered vehicles.

And the latest fuel price increases have done nothing to reduce the price advantage of diesel fuel. The artificially induced



Sasol's Stegmann . . . thinking about methanol

imbalance in the consumption pattern could mean that the country's refineries may have to produce more petrol than is required in order to satisfy the demand for diesel fuel.

Distribution of the large volumes of synfuels to come from Sasols 2 and 3 has raised some interesting problems. Some of it will go through additional Sasol pumps. But most, with the appropriate additives, will be sold to the oil companies for marketing under their own brand names.

This has necessitated some hard bargaining between Sasol and the oil companies, which will have to cut production of conventional petroleum-based fuels from their own refineries.

There will have to be more Sasols after Sasols 2 and 3 if the country is to achieve the much-discussed target of 70% self-sufficiency in liquid fuels. But Stegmann says financing and trained labour constraints are the main reasons why his company will not consider any further major projects until the middle of the decade.

By that time Sasols 2 and 3 will have been paid for by the considerable, but classified, levies built into fuel prices. Stegmann will not be drawn on the subject, but he is clearly hoping that government maintain these levies for the financing of further Sasols.

He hints that the labour question will be dealt with at length in the next annual report and says that the company has already budgeted a whopping R63m for training of construction and operations workers for Sasols 2 and 3 by 1983.

"Our staff growth has followed an extremely sharp curve, but there is a limit to what even a large organisation like Sasol can do in this field. In the end, there is no substitute for experience which cannot be entirely replaced by classroom and on-the-job training.

POWER CUTS

Cahora dimension

260 SS

FM 17/7/81

Power from Mozambique's Cahora Bassa dam — interrupted by sabotage since April — amounted to under 10% of SA's total usage and is not the only reason for the power shortages. Escom warned years ago that shortages would occur in view of increasing demand (averaging 8,8% a year) unmatched by new power station construction.

However, Escom's power reserves are now only 13% above demand level. This is 12% below the supply/demand ratio normally considered to be "acceptable." Reserve power well in excess of peak demand is needed because some generating sets are always out of action for maintenance or through breakdowns.

The effects of the shortage are being felt in staggered electricity cuts in parts of Johannesburg with possible adverse effects on productivity. Escom says SA does not depend on the Cahora Bassa source to a very large extent, but "one would be grateful to have that. We need

more reserve margin." In fact, if power were flowing from the dam Escom would be fairly close to the acceptable ratio — certainly there would be fewer, if any, power cuts. There is some evidence that Escom's R98m deficit last year (when pylons were also sabotaged) was largely incurred by having to keep obsolete and uneconomic generating sets in operation to help make up for the loss of Cahora Bassa power.

Cahora Bassa supplied Escom with 1 370 MW until the flow was "interrupted." Johannesburg's peak demand on a cold winter's morning is 1 200 MW.

Thus the 10% of power imported from Mozambique is not to be sneezed at; certainly not until the Mutumba, Tutuka and Lethabo stations are completed in about 1986.

According to the Mozambican Information Ministry, five pylons were blown up during April in Manica province, in a remote, mountainous, sparsely populated area near the Zimbabwe border. In a telexed message, Maputo says the company that runs the dam, Hidroelectrica De Cahora Bassa (HCB), will repair the damage "as soon as they are satisfied the area is safe for their technicians."

Security impossible

Highlighting the parlous state of SA-Mozambique relations, the statement adds: "Full security for 900 km of power line only possible when SA stops supporting anti-government rebels. Interesting contradiction in SA government policy here: they need Mozambican electricity, yet support the very groups that cut off that electricity."

SA, of course, denies supporting the Mozambique Resistance Movement (MRM), which, according to some sources, now "controls" large areas of Manica province. Claims of MRM gains along Mozambique's south-western border are given substance by the recent meeting between Samora Machel and Zimbabwe's Robert Mugabe at which a joint campaign against the rebels was reportedly discussed.

Some substantial MRM activity is also implied by the Mozambican statement that it is not "safe" for HCB technicians to go into the area and repair power pylons.

How significant the MRM is, and whether or not Frelimo can in fact go into the affected region, remains to be seen. Over the past two months, however, close consultations between Escom, HCB and Electricidad de Mozambique have been taking place in Johannesburg, according to a reliable source.

It would certainly be ironic if SA-supplied explosives were used to blow up pylons designed to carry electricity to SA. On the other hand, SA's interests might well be served by a strengthening of the MRM.

Energy superplan

STW 19/2/81 (55) Will cost billions

TENS of billions of rand were at stake this week as Government and the private sector began the countdown which will decide the fate of the country's future energy programme.

On Friday, it was revealed to Business Times by Pretoria's Energy Planning and Energy Supply departments that to bring South Africa to 65% self-sufficiency in liquid fuels by about 1990 would require three new Sasol complexes (or equivalent private sector projects) at a cost of at least R16 000-million, and possibly well over R20 000-million.

This compares with less than R10 000-million for the three Sasol plants which will be complete by 1985.

These will bring self-sufficiency to about 40% in that year.

The race is now on to see which of the mammoth private sector consortia working to capture the huge contracts involved will prevail — how the cake will be divided between themselves and Sasol.

Pretoria would like to see most of the new work going to the private sector, both because its own resources are already heavily stretched and because this would comply with the new private enterprise spir-

STATE AND PRIVATE SECTOR IN CRUCIAL TALKS ON NEW FUTURE PROGRAMME

By Stephen Orpen

it which has become official policy.

The private sector groups, by contrast, are keen to co-operate — but only if the risk is no more than moderate and there are prospects of large profits in due course.

Pretoria cannot agree that it should interfere further by helping to reduce the risks or safeguard these profits.

In March last year the Minister of Energy, Mr F W de Klerk, unveiled a comprehensive programme — now drawing to a close — to pull the private sector into the vast

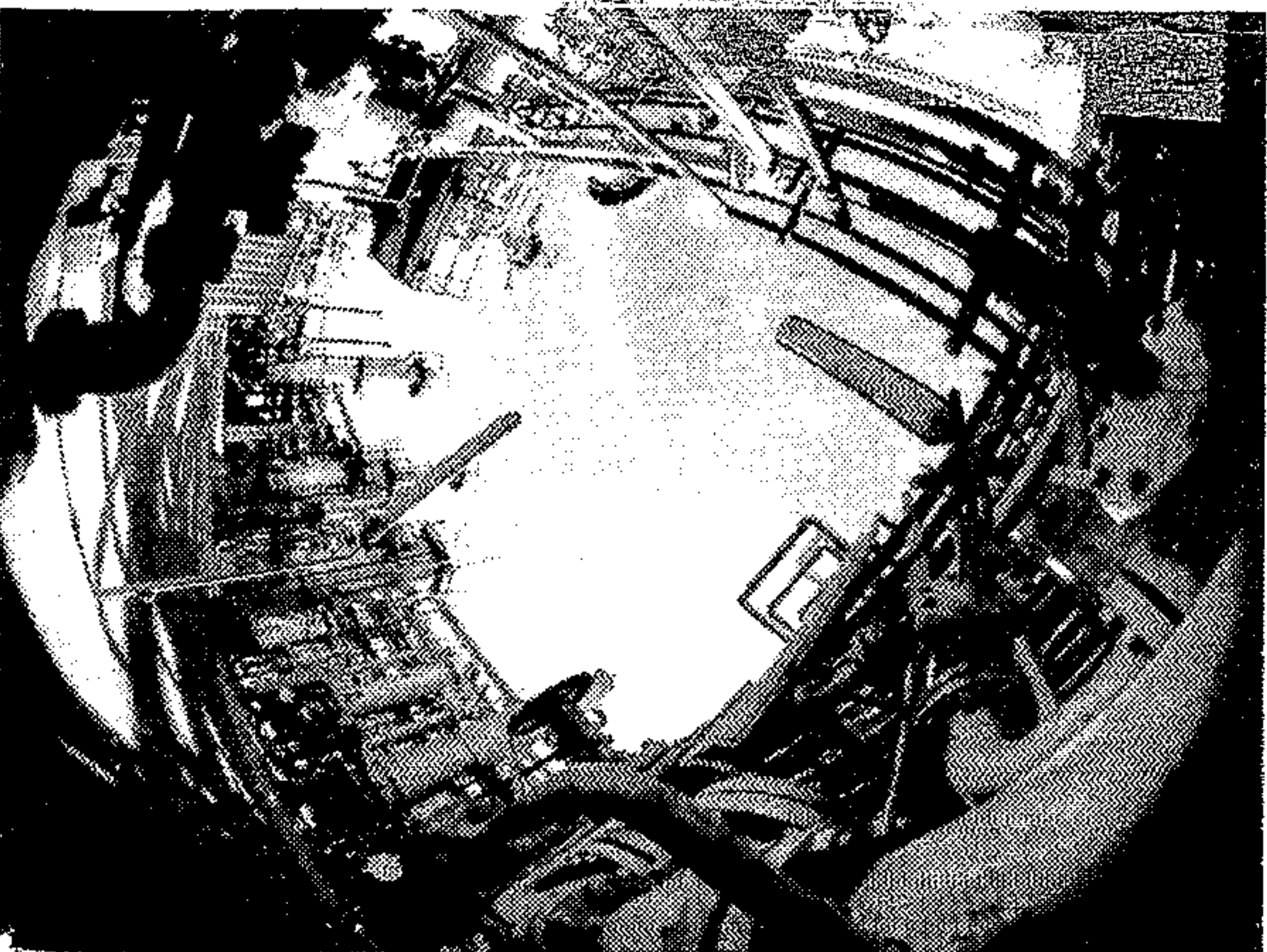
challenge of contributing another 20% "to South Africa's fuel requirements from alcohol and vegetable oils".

The programme included a range of concessions, mainly through tax relief, to entice private sector participation.

However, many in the private sector consortia are no longer happy with these carrots, which they say could be whittled away by changing circumstances and new developments in the international and domestic fuel (and fuel tax and levy) structures.

Last week the Energy Planning department met with the Anglovaal-Caltex consortium

● To Page 3



Energy plan

Shapes up

STW 19/2/81 (55)
From Page 1

for further talks on its "blend route" proposals for the production of methanol to be mixed with petrol.

In this case, comments an energy official in Pretoria, "the cost of the product to the consumer could be much the same as for petrol. We tend to think this has merits not matched by the so-called 'M-100' route favoured by the Anglo American-AECL-Shell combine, which would replace diesel altogether by methanol.

"The snag here is that we may need to pay some 2.5 times as much for the methanol, in energy terms, as for the diesel, given current economics.

"This does NOT mean, however, that we will not consider further proposals by the Anglo-AECL-Shell consortium.

The Gencor-Sentrachem consortium is alone in having chosen the high-technology, direct coal liquefaction route. It's very elegant but has not been widely proved commercially.

Sentrachem is also submitting its own plans for ethanol production from a string of smaller plants using biomass (maize, sorghum, sugar and so on).

Sentrachem says it expects to make further submissions to Pretoria "within weeks." Pretoria says it sees a place for the biomass route.

Whatever happens, it is clear that to reach 100% self-sufficiency will require the spending of at least R60 000-million.

"That may seem astronomical", says a senior Government energy man, "but you should remember that the fossil oil price is still rising by at least 3% a year, even before allowing for extraneous inflation.

"The much-publicised drop in oil prices recently is illusory. Only the US is paying a little less — for the moment. Because of changes in exchange rates and the strong dollar, everyone else is paying much more.

"That's the price of having all oil purchases denominated in dollars ..."

QUANTITY
SURVEYING

(Continued)

Bell-John Prize

For the best all-round student
in any year of study.

P C Key

The Committee of
Cape Chapter of
Surveyors' Prize

For the student
the highest mark
Professional Pra

P R Swift

LTA Prizes

For the best stu
the courses of B
II and III in th
fifth years resp

I : N D G Se

II : A R Low

III: No award

S A Brick Associ

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subject of Build

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For the second b
subject of Build

K Strong

Student Planners

For the student
greatest promise
of the first yea

M P Morkel

URBAN &
REGIONAL
PLANNING

From the Sunday Times,
London

PARIS — France plans to deliver a nuclear reactor to South Africa in the next few days.

President Francois Mitterrand has given the green light even though he knows that delivery of the 900 Mw reactor is sure to infuriate ideologues within the French Socialist Party who are strongly opposed to apartheid.

Aides say the President holds the view that France must honour existing contracts however ideologically objectionable they may be.

And in an effort to bear the order books swiftly so that a fresh policy can be devised he has given instructions for the reactor to be shipped to Cape Town as soon as possible.

Delivery of the reactor completes the controversial R1200-million nuclear deal negotiated by France and South Africa four years ago.

But as the ship carrying the nuclear equipment prepares to sail from the French Mediterranean port of Fos for South Africa, it is becoming clear in Paris that there are compelling economic reasons why the French Government may decide to tread carefully in its dealings with South Africa.

The Government may oppose South Africa over apartheid and Namibia, but it knows France relies on South Africa for a large slice of its strategic minerals, including 60 percent of its titanium, 30 percent of its chrome and as much as 10-million tons of coal.

The Government is averse to any measures which may boost unemployment, now close to 1.8-million.

Reports from Paris said South African Finance Minister Mr Owen Horwood had discussed the matter on his visit to Paris last week.

Mr Horwood denied on his return to South Africa that he had spoken to French Government officials.

The exact date of sailing was uncertain today but it was said to be imminent. Officials at Fos, near Marseille, professed ignorance of the shipment reports. The Star's Own Correspondent in Paris.

SA to get French reactor

29/7/81

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(6)

also be delaying their visit to a doctor until advanced pathology set in, with the associated higher cost of curing them, increased morbidity and possible death. The possibility also exists that the existence of convenient relatively cheap (from the patients' point of view - 50c if correct income concealed) medical care, has led to some social iatrogenesis (10) - a reduced inclination and ability for self-care so that trivial complaints 'are taken to the doctor' for professional care.

(1.3) The method of the paper

The method of the paper is to examine the theory of cost benefit analysis, to consider the logical foundations of the technique particularly the flaws in the compensation principle and the conflict between efficiency

and equity considerations, the economics, the sector. This is an extensive list application to the figures for patient, attendance maternity are taken by individuals

Information on indirect objective costs - transport costs and waiting times - and on subjective elements were collected by means of a survey of 1 000 patients, half at Groote Schuur Outpatient Department, and half at five Day Hospitals selected as representative of the different sized Day Hospitals that exist on the Cape flats. Results are at the 5% significance level. There is very little published work on the structure and staffing of the health system in the Cape Peninsula so a great deal of information is the result of personal investigation and discussion with those responsible for running these services.

Footnotes:

- (1) Cape of Good Hope Province - Estimates of Additional Expenditure to be defrayed from the local funds for the year ending March 1950 and March, 1977.
- (2) See Feldstein Ch.1.
- (3) See for example Dick
- (4) Ferster in "Measuring for Management". N.P.H.T.
- (5) Gruer p.390.
- (6) Nurock (1974) p.1053.
- (7) Bryant p.116

(7)

- (8) King 11.1
- (9) Mr. P.J. Loubser Argus 10.7.78
- (10) Illich "Medical Nemesis".

Second Koeberg reactor due soon

THE SECOND nuclear reactor for the Koeberg power plant is due to arrive in Cape Town in about two months, a spokesman for Eskom says.

The reactor was shipped from the French port of Foz-Sur-Mer at the weekend, renewing protests from the French anti-apartheid committee.

According to the latest edition of the magazine Africa Confidential, the reactor was shipped four months earlier than expected.

PRESSURE

The magazine implied this was because of rising pressure in France to call off contracts between South Africa and companies supplying vital parts for the Koeberg station.

The Eskom spokesman said he was unable to comment on the political problems involved in building the plant. 'We are just doing the job, and are not involved in the politics.'

The Minister of Finance, Mr Owen Horwood, reportedly received an assurance last week that France would honour its Koeberg contract.

PARIS VISIT

Mr Horwood paid a fleeting visit to Paris and is said to have received the assurance from Cruzot-Loire, the company which dispatched the reactor at the weekend.

Mr Horwood was not available today for comment, but it is understood that if France decides not to honour the contract it will have to compensate South Africa to the tune of R1 500-million.

Argus 21/7/81
55 185

SA 'goes it alone'

SA 24/7/81

217 JS

on enriched uranium

South Africa will be able to produce sufficient enriched uranium to supply the entire needs of the Koeberg power station within the next few years, said Dr Ampie Roux, chairman of the Uranium Enrichment Corporation.

Addressing an Associated Scientific and Technical Societies' lecture in Johannesburg, Dr Roux said, it was sad that a respected country such as the United States was prepared to go back on its word as regards the supply of the fuel to this country.

But perhaps, due to the takeover by the Reagan administration, the decision was not final "I only hope they will honour this contract."

Dr Roux noted that the Uranium Enrichment Corporation had struck up a couple of partnerships in the development of the enrichment plant at Pelindaba. These had all been terminated on economic or political grounds, he said.

The first partner had been a German company but after three years of collaboration, it was not prepared to "share the risk" in the building of the plant so South Africa had decided to "go it alone."

A second partner from a country which Dr Roux declined to name pulled out immediately after the riots broke out in Soweto in June, 1976.

In answer to a question, Dr Roux said reasonable demand for enriched uranium throughout the world was about 46 000 tons a year.

Current supply was about 49 000 tons so there would not be much scope for expansion of the market until nuclear programmes which had been temporarily suspended were revived. — David Bamber.

Sasol links with US in cost-slash know-how

RDM
30/7/81

By DAVID CARTE

SASOL is to collaborate with Westinghouse of the US in developing, testing and marketing a new coal gasifier that could slash costs in oil-from-coal technology.

After prolonged negotiations, the two companies have concluded an agreement in terms of which Westinghouse will supply and install the gasifier at Sasol 2, Secunda.

Sasol will provide operating manpower, technical back-up and coal and connect the gasifier to the rest of its plant.

The gasifier, unlike existing ones, is able to use fine coal. This will be the first commercial-sized plant of its kind in the world.

If it is a success, Sasol will be able to use fine coal for the first time in synthetic fuel production.

Modern mining techniques have meant that a greater proportion of coal production emerges as fine coal, so the new gasifier should significantly increase fuel yields a ton of coal.

If the "pressurised fluidised bed coal gasification system" succeeds, Sasol will employ further such gasifiers and, with Westinghouse, will market the gasifier internationally.

Westinghouse has successfully tested a pilot plant using 35 tons of coal a day at Waltz Mill, Philadelphia. It wants Sasol to test a 1 200-ton-a-day plant.

Mr William H Peace, general manager of Westinghouse synthetic fuels, described the agreement as "a unique opportunity to demonstrate the Westinghouse gasification technology on a commercial scale much sooner than it could be done in the US".

"As a result of this project, we will be able to make this very clean and efficient gasification technology available as a practical, commercial product here, in the US and elsewhere much earlier than anybody had hoped.

"We believe it can reduce significantly the costs of producing synthetic fuels from coal."

Mr Malcolm Dyos, Westinghouse manager of the project, said: "Sasol Two is the one place in the world with the huge support facilities needed for such a full-scale demonstration.

"In addition, they have the operating experience, a vital ingredient needed to make any

new gasification technology work in a production environment".

The demonstration unit will be completed in 1983 and once fully operational, it will be acquired for permanent use by Sasol.

Sasol says that when it has been fully demonstrated as a commercial system, "licensing of the gasifier to third parties will take place on the basis of an equal partnership between Westinghouse and Sasol".

Dr John Holmgren, manager, Technology and Operations for the synthetic fuels division, said the Westinghouse technology had been under development since 1970 and had received funding assistance from the US Department of Energy, the Gas Research Institute and other organisations.

Pointers to US slide

WASHINGTON — The US index of leading indicators, which predicts the course of the economy, fell sharply in June for the second consecutive month.

The Commerce Department said the index dropped by 1.3% last month after a 1.5% decline in May.

These were the biggest drops since the 1980 spring recession and supported predictions by Reagan Administration economists that the economy was heading into a sluggish period.

The Government blamed much of the decline in June on a sharp drop in building permits for housing.

The Budget time to wait and

Howard Preece

IN ECONOMICS — as in most sports — timing is the secret.

There is no mysterious art, for example, in raising or lowering taxes. The consequences of either action can, however, be variously beneficial or disastrous, according to their appropriateness.

Many important can be, and now are and when they are suited.

For all that, though, it is still the overture piece of economic

Mr Horwood will link his Budget decision the range of non-Budgetures that he can undertake in conjunction with the

CSIR aims to improve Sasol^{rdm} process^{el/8/85}

Mail Correspondent

THE search is on for improvements to the Sasol oil-from-coal process.

The Council for Scientific and Industrial Research (CSIR) says in its annual report that its chemical engineers are concentrating on developing locally-made catalysts capable of improving the process.

Another CSIR project under way aimed at benefits for the paper industry.

It involved a study into the possibility of using most parts of certain softwood trees rather than just the debarked stem for the production of pulp and paper products.

Turbines

The report said a programme for the development of wind turbines had been successfully launched and a small unit, generating 1kW in a wind speed of 10m/sec, was being developed for a client.

Referring to the exceptionally large catches of tuna off the Cape last year, the report said this had led to a re-evaluation of methods used for catching and handling the fish.

Preliminary results showed that sea frozen fish was generally of high quality, but a tendency towards poor quality was found after as little as two days chilled storage at sea before blast-freezing ashore.

Existing standards for frozen fish might require modifications to cover the special factors involved in tuna processing, said the report, but more research was required before any action could be taken.

UN in dark about SA participation

Mall Correspondent

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6/8/81
rom

NAIROBI. — The United Nations Energy Conference begins in Nairobi next week, but the conference organisation still has no indication whether a South African delegation is coming.

"There is nothing to prevent them coming, of course, and no suggestion of any kind of boycott," a UN official said.

The Israelis will attend, and in fact they have a stand at the open air exhibition of what various countries are doing in the fields of alternate and renewable energy sources.

A kind of energy fairground is taking shape in the grounds of the Kenyatta Conference Centre, where the inventors, the technical men, the world energy experts — and possibly the cranks — are demonstrating their ideas on how the world can escape from the grip of petroleum.

Booths, tents, marquees are springing up in all shapes and colours. Overhead windmills in varied designs spin in the wind. Solar energy devices occupy a great deal of space.

Kenya has solar maize driers, a biogas digester, animal drawn equipment and specimens of fast-growing trees.

The Mexican Institute of Petroleum is mounting a complete outdoors exhibit.

Among the heads of state due to speak at the conference, which begins next Monday, are the Indian Prime Minister, Mrs Indira Gandhi and the Canadian Prime Minister, Mr Pierre Trudeau.

The conference secretary general, Mr Enrique Iglesias, told a Press briefing that the conference would feature the energy plight of the poor Third World countries.

He hoped it would awaken an awareness of the critical energy situation in the developing countries, help them to assess their own renewable energy resources and set up a series of programmes to help the Third World.

The availability of money was vital to the Third World. Mr Iglesias said some R8 000-million a year would be necessary to carry out these programmes.

But the conference is expected to show heavy political undertones.

What are going to be the attitudes of the industrialised world to the developing world's undeniable plight? There is more than a feeling in African countries that the developed nations may want to keep what is left of conventional energy for themselves and leave the poor countries to battle on in the search for new and renewable sources.

Tough talk on energy

FM 14/8/81

The Third World is adopting an increasingly demanding and sometimes even angry stance over what it considers the West's selfish attitude towards the sharing

of technological developments of fuels other than oil, gas and coal.

This viewpoint was evident at the August 10 opening session of the UN conference on new and renewable sources of energy in Nairobi. The emerging theme on the first day was that of the need for industrialised nations to channel money and technology towards Third World energy requirements in order to avert a global economic crisis.

Kenyan President Mr Moi opened the conference on a decidedly aggressive note. He alluded to the "crippling mass poverty" of the less developed nations, where energy shortages are keeping a lid on development. India's Indira Gandhi was equally blunt in her appeal for a new world order based on global co-operation to provide an energy mix that will shift the current heavy reliance on nuclear power and finite fossil fuels such as oil, gas and coal.

The Third World's gripe is a very real one. Their economies are being squeezed in a vice of soaring oil prices on the one hand and inflated import bills for Western goods on the other.

According to the IMF, escalations in the cost of a barrel of oil boosted the incomes of oil-exporting countries by 41% last year. Oil imports cost non-oil-producing developing countries \$62.5 billion. In 1979, the bill was \$44.8 billion. For most of

these countries this accounts for anywhere from one to two thirds of their export earnings. The energy conference coincides with the release of the World Bank's 1981 World Development Report, which serves to underline the deteriorating situation. According to the report, oil constitutes about a quarter of the total value of imports in developing countries. As a result the current account deficit of these non-oil producers is ballooning steadily. Last year it stood at \$70 billion.

Energy alternatives

Given the debatable premise that fossil fuel reserves can no longer be relied upon as the sole energy source, the conference will be examining the financially staggering task of developing fourteen alternative sources of energy. These range from tide power to solar cells. New and renewable sources of energy currently account for about 15% of energy consumption. But the UN boffins do not expect these energy resources to contribute more than a quarter of energy consumption by the turn of the century, even if an action programme is launched.

There are, of course, alternative sources of oil. Tar sands and heavy crude, a more syrupy crude that is expensive to extract, might provide as much as a third of the world's oil supplies by the turn of the century. Deposits are estimated at

475 000 Mt, far greater than the traditional reserves of crude oil.

Ironically, the Third World is a skimpy oil consumer. Energy consumption would need to expand by at least 300% to achieve a reasonable standard of living. But it won't be oil. Almost half the world's population, primarily in the developing countries, relies on wood, charcoal, animal and vegetable waste for their cooking and heating requirements. In order to ensure a future with trees, over two billion people will have to find alternative fuel sources over the next 20 years. Yet to do this will cost developing countries between \$70-\$80 billion every year through to the next century.

Another traditional and valuable source of energy that is unlikely to be phased out is draft animals. In India, approximately 29,000 MW of energy is supplied annually by beasts of burden. Jamaica's Seaga has proposed an international institution to develop alternative energy sources that could be integrated with the international atomic energy agency.

World Bank schemes for an affiliated energy agency have been slowed down by the Reagan's administration's resistance to ploughing more money into the creation of new international bodies. The issue is bound to be a controversial one at the conference, probably antagonising the Third World even further by what will be

interpreted as a reluctance to bail out the less fortunate countries.

In the FM's view, however, thoroughly deserved compassion at the Third World's energy plight should not be permitted to deflect grave objections to the economic logic of the sort expressed in Nairobi.

For a start, the pleas for money should more logically be directed to Saudi Arabia and other Opec members with oil-bloated treasuries.

Then, it is totally mistaken to mix up current economic difficulties with fancy theories about alternative energy. The present reality is that there is no shortage or prospective shortage either of uranium or of coal, which remain the cheapest alternatives to oil. Solar energy and other unconventional sources are mostly still far too expensive for adoption anywhere. Even oil is not scarce — its price has been inflated by a callous and rapacious cartel. Everyone has been hurt by Opec. Ironically, the industrial countries and Third World find themselves in the same boat.

production facilities
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 Business.

On November 11
 multitude of decisions taken

Licensing Branch of the Atomic Energy Board before a decision is made whether a licence should be granted for the operation of the plant and under what conditions such a licence should be issued. The assurance can be given that the planning of safety measures i.r.o. the Koeberg Power Station is extremely effective, even if compared with the highest international standards. It would, however, not be in the national interest to disclose the exact details of these security considerations.

potentially undesirable long term effects. In addition, remedial measures are in hand to seal the cracks and the situation will constantly be kept under surveillance to ensure that no safety hazards arise.

(4) No.

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ssed the mul-

Koeberg: reactors
 14/8/81 Col 53-54
 16. Mr. D. J. N. MALCOMESS asked the Minister of Mineral and Energy Affairs:

STATISTICAL

Annual sales ...
 No. of employees
 Average wage/...
 Wages as a % of ...
 Annual profit before ...

- (1) Whether there are cracks in the concrete foundation on which the Koeberg nuclear reactors are standing; if so, what is their magnitude;
- (2) whether such cracks will affect the operational safety of the reactors; if so, to what extent;
- (3) whether any steps have been or are being taken to rectify the situation; if so, what steps;
- (4) whether he will make a statement on the matter?

1970
 1 300 000
 215
 35 cents
 78%
 R75 000

The MINISTER OF HEALTH, WELFARE AND PENSIONS (for the Minister of Mineral and Energy Affairs):

- (1) Yes, there are some fine cracks in the lower concrete raft which supports the nuclear plant. Cracks such as these are not unexpected in reinforced concrete structures of this size. The cracks are very small, less than half a millimetre wide.
- (2) No.
- (3) Although no corrective measures are necessary, the Atomic Energy Board has, as a result of the very high standard of safety which has been set for the plant, already done extensive investigations the past year to determine whether there could be any

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A. Mendel-

Koeberg: reactors
 14/8/81 Col 52-53
 15. Mr. D. J. N. MALCOMESS asked the Minister of Mineral and Energy Affairs:

Whether the containing of the reactors at Koeberg will be able to withstand an attack designed to smash them which is made by a hostile force?

The MINISTER OF HEALTH, WELFARE AND PENSIONS (for the Minister of Mineral and Energy Affairs):

The risks attached to and consequences of hostile attacks on the Koeberg Power Station together with measures to combat such attacks are matters which have been receiving careful attention since the planning stage of the Koeberg installation. These factors form an important part of the safety assessment conducted by the

Koeberg 'safe' despite cracks

HOUSE OF ASSEMBLY. — Fine cracks had appeared in the lower concrete raft supporting the Koeberg nuclear power plant under construction near Cape Town, the Minister of Mineral and Energy Affairs, Mr F W de Klerk, said yesterday. But he gave an assurance that the planning of safety

measures at the station was extremely effective, even if compared with the highest international standards.

He was replying to questions by Mr John Malcomess (PFP Port Elizabeth Central) on whether the containment of the reactors at Koeberg would be able to withstand an attack designed to smash them by a hostile force.

Mr De Klerk said the cracks were not unexpected in reinforced concrete structures of that size and the cracks were very small, less than half-a-millimetre wide.

He said the cracks would not affect the operational safety of the plan.

"Although no corrective measures are necessary, the Atomic Energy Board has, as a result of the very high standard of safety which has been set for the plant, already done extensive investigations in the past year.

"The risks attached to and consequences of hostile attacks on the Koeberg power station, together with measures to combat such attacks, are matters which have been receiving careful attention since the planning stage of the Koeberg installation.

"These factors form an important part of the safety assessment conducted by the licensing branch of the Atomic Energy Board before a decision is made whether a licence should be granted for the operation of the plant and under what conditions such a licence should be issued.

"The assurance can be given that the planning of safety measures in respect of the Koeberg power station is extremely effective, even if compared with the highest international standards.

"It would, however, not be in the national interest to disclose the exact details of these security considerations," Mr De Klerk said. — Sapa

it has been printing on the output

the @RLU command. one being lost each time. to happen - lines are shifted upwards, with line 1 displayed on the screen, the

Chapter 7): name must be preceded by an .ll be used. To make use of no qualifier is defined the used use on succeeding control

rently assigned to the run:

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Note: The list is abbreviated for demand mode. The full table of contents listing may be obtained by:

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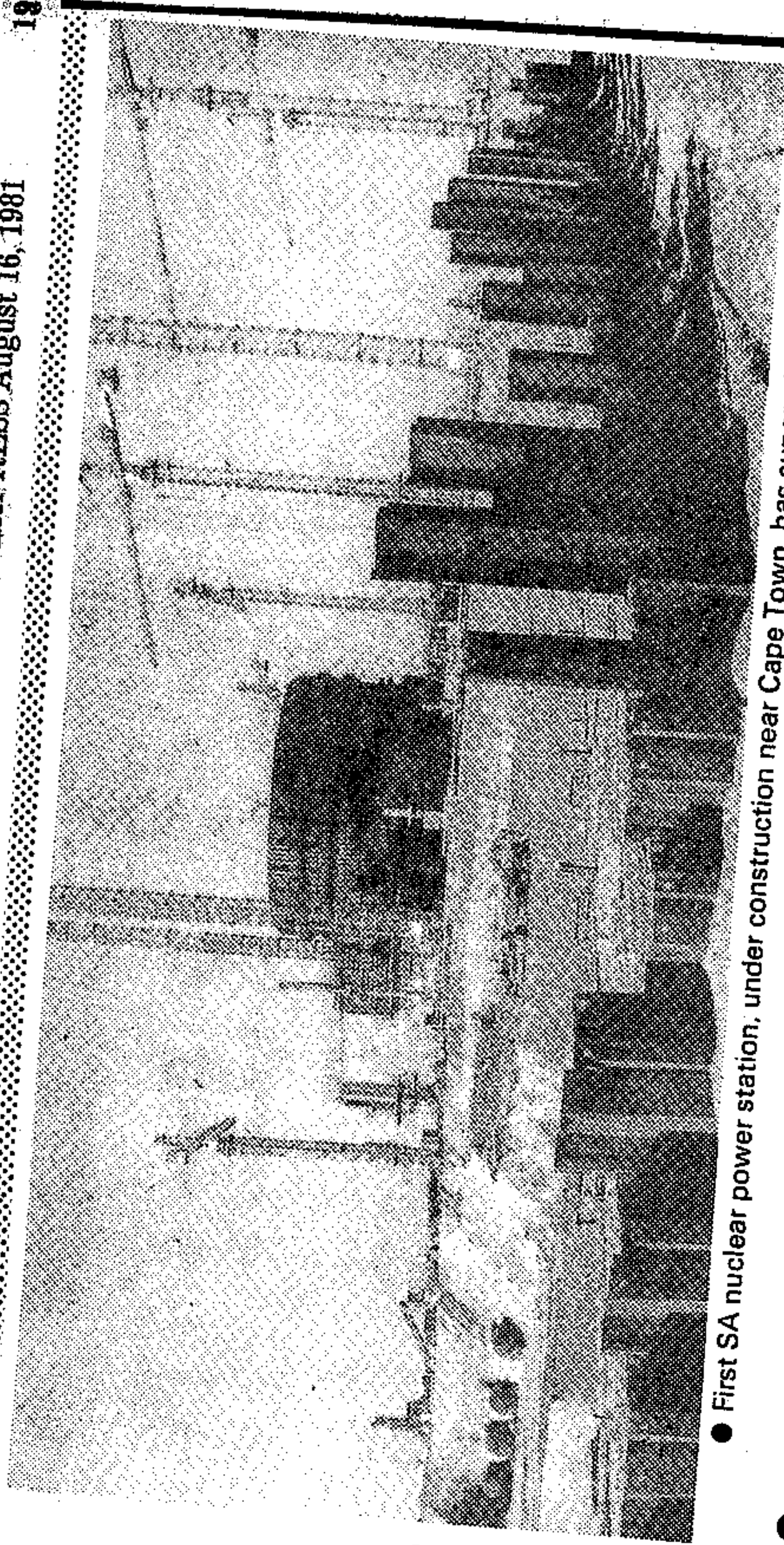
d) list the names

@PRT,TL F1.,F2.,... <CR>

Koeberg may be in 'quake zone— so it's built on rock

S. Express 6/8/81

(5)



• First SA nuclear power station, under construction near Cape Town, has super-strong foundations.

SOUTH AFRICA'S first nuclear power station, at Koeberg in the Cape, is being built with super-strong foundations — because it is close to geophysical fault zones in which an earthquake could happen.

Koeberg Atomic Power Station is situated about 17km from the Sal-danah-Franschoek fault zone and about 80km from the Pikeberg-Wellington fault zone.

Intensive geographical studies have also indicated a remote possibility of the Milnerton-Cape Agulhas fault extending past Milnerton to 8km west of the Koeberg site.

In 1969 an earthquake along the Pikeberg-Wellington fault, known as the "Worcester fault" devastated the Boland towns of Tulbagh, Wolsey and Ceres.

But a scientist at Koeberg said this week that proper precautions were being taken at the site of the Koeberg

BY DESMOND BLOW
Military Correspondent

station and that the chances were 99.9% against a nuclear fall-out (radioactive emissions) as a result of an earthquake, even if it measured as much as seven on the Richter scale.

The measurement of the 1969 earthquake, which occurred 80km away from Koeberg, was 6.3 on the Richter scale — the strongest recorded in South Africa.

Escom claims that minimal damage would have been caused to Koeberg had it stood at the time.

Yet concern has been felt about Koeberg being built in a zone in which there are known geophysical faults.

However, a spokesman for Escom said intensive geophysical studies had been conducted and every even-tuality had been considered.

He said even though the extension of the Milnerton-Cape Agulhas fault zone was uncertain, Escom decided conservatively to assume that it was a "capable" fault and adopted it as the limiting fault zone for the design of Koeberg.

The spokesman said extensive geomagnetic surveys had been conducted both on and off-shore. Sea-borne geophysical investigations were also made in the coastal waters adjacent to Koeberg.

At the Koeberg site, bedrock drillings, ground water location studies, geotechnic investigations, and a subsequent study of the over-burden sands were carried out as part of the geophysical programme.

"As was to be expected, the thorough geological and tectonic investigations of the bedrock revealed the presence of ancient faults which originated about two to five million years ago. Fossil faces made it possible to date the faults with reasonable

accuracy."

The findings of the investigations revealed:

- No earthquake had occurred later than about two to five million years ago in the immediate vicinity of the Koeberg site.

- The rock and sand properties and the seismic acceleration attenuation law obtained by these investigations were important in assisting the Koeberg foundation and plant design.

- The limiting magnitude for an earthquake occurring 8km off-site along the postulate fault zone was conservatively established as 7 on the Richter scale.

- Escom's American soil sciences consultants recommended 6.5 as the highest recording that could be expected.

A compilation of all earthquakes in southern Africa was made from 1695 to 1972 and the fault zones were mapped in the Cape area.

Because it is known that liquefaction of sand takes place under stress,

all overburden was removed down to bedrock and a soil-cement mixture was spread and compacted over the bedrock on which the corner foundation rests.

The buildings have been designed to reduce seismic accelerations and the design verifications for Koeberg are under constant scrutiny by the Atomic Energy Board to ensure that in the event of an earthquake to the magnitude of 7 on the Richter Scale 8km off-shore, Koeberg can be shut down safely.

The Escom spokesman said: "Should a heavy tremor occur at Koeberg, the nuclear plant will be shut down safely in accordance with regulations laid down the Atomic Energy Board."

"If an earthquake of magnitude 7 were to occur in the postulated Milnerton-Cape Agulhas fault 8kms off-shore from Koeberg, we could cope with the accelerations at Koeberg and it would be possible to shut Koeberg down safely."

By Jaap Boekkooi
 South Africa will be able to cut its current oil fuel imports by 80 percent when substitute fuels like Sasol petrol and methanol, plus new conservation techniques come into use all over the country.

This estimate has been made by one of the world's oil giants, Shell International Petroleum, and was reported to this year's Energy Conservation Conference in Berlin.

The optimistic picture of the country's eventual self-sufficiency in transportation fuels is expanded in two reports sub-

mitted to the CSIR's Institute for Transport and Road Research by Dr Ernst Uken, one-time scientific adviser to the Prime Minister, Road Safety Council Director and Energy Adviser to the CSIR.

In his report on the conference Dr Uken says that Shell's prognosis is that South Africa's demand for oil-based fuels used in transport will decline.

It would eventually sink to a level which would stand at about one-fifth of the country's current demand

for imported oil. In an accompanying second report of more than 100 pages, Dr Uken enumerates the major steps the public and private sectors can take to reduce the country's dependence on imported oil, or even to face a total oil boycott.

He concludes that with its oil-from-coal know-how and vast supplies of coal South Africa "is in a good bargaining position to obtain whatever is required in the field of energy."

At the same time he quotes estimates that during the next 18½ years the number of cars and commercial vehicles on the country's roads will increase from nearly 4-million to 10.6-million and that total fuel demand may more than double the present 10 000 megalitres, the equivalent of one 300 000-ton oil tanker a day.

He feels, however, that oil consumption may go down, relative to the increase in road traffic, because of the

manufacture of much more fuel-efficient cars and electric vehicles.

The immediate effect of the Government's oil substitution programme is that the three Sasols will replace some 60 percent of the current demand for imported oil. Plans by the chemical giant AECI for a R450-million methanol-from-coal plant near Witbank, producing 800 000 tons of the fuel, could further alleviate South Africa's dependence on foreign crude by five percent.

Dr Uken sees the future role of ethanol, an agriculturally-based alcohol fuel, as no more than a fuel extender in South Africa.

If the country wanted to grow sugar cane for alcohol motor fuel it would need three-and-a-half times as much land under sugar cane than the current area. To make enough ethanol from maize the present growing area would have to be enlarged by half.

If the country's sugar and mealie farmers turned all their sur-

pluses into ethanol they would save on maize export losses, but the contribution to the total fuel requirements would decrease during this decade from some 12 percent to four percent.

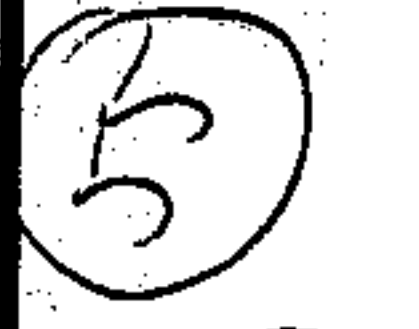
Therefore, concludes Dr Uken, "it appears unlikely that South Africa is going to follow Brazil's approach in marketing pure ethanol cars... the agricultural route will probably remain subordinated to the Sasol process and its likes."

Dr Uken forecasts

Cutting SA's oil fuel imports

Star 17/8/81

that all recent claims emphasise the fact that a 20 percent reduction in fuel consumption in petrol engines can be expected in the very near future, plus a 25 percent saving on short journeys once cold-start improvers come on to the market. Since traffic congestion costs South Africa between R35-million and R77-million a year, according to estimates quoted, and lack of synchronisation in traffic lights could push up fuel consumption between 31 and 51 percent, Dr Uken recommends more synchronisation, a reduction in stop signs left-turn-on-red robots and amber traffic lights in off-peak hours.



Powerful choice to face

By Bob Davis

Nuclear power from within or hydro-electric energy from black Africa — that's South Africa's choice for the 21st century as Escom gears up for the next five decades.

The social, political and economic implications involved are such that the Electricity Supply Commission will be involved only in studying and commenting on the feasibility of projects mooted at the highest government level — but decisions will have to be made in the next 10 years.

Escom itself has refused to comment on either nuclear or hydro-electric power from black Africa apart from confirming that it has the technical know-how to produce electricity from either energy source to drive turbines.

The country's known coal reserves for generating electricity will have been exhausted by the year 2020 but it is known that sites

known to be working on feasibility studies for more pumped storage schemes.

The first of these, situated in the Drakensberg, was brought into partial production this year to help cope with the crisis caused by the interrupted flow of power from Cahora Bassa.

It too is scheduled for completion in 1983. Power from Cahora Bassa is likely to be restored in the near future, following consultation between Escom, Electricidad de Mozambique and Hidro Electricidad de Cahora Bassa but South Africa may be regarded as a prospective market for

other hydro-electric schemes in black Africa.

A prospective power station on the Zambezi in Mozambique, using Swedish backing and know-how is said to have South Africa in mind as a market and engineering sources have said that power can also be generated on the upper Orange River in Botswana where South Africa's Department of Water Affairs is engaged in feasibility studies for the building of a dam.

Conservative estimates have put the generating capacity of rivers in Africa south of the equator at more than 50 000 mW.

Escom sources have declined to say whether feasibility studies done at that time are still valid or whether an Eastern Cape site then mooted now falls within Transkei.

Industry sources have confirmed, however, that the last of the coal-fired power stations will be built between now and the end of the century — it could be one a year in the 1990s to cope with escalating demand.

Koerber itself comes on stream in 1983 and Escom engineers are

in the industry have indicated that it would be feasible to extend the high-voltage grids of South Africa, Zambia, Zimbabwe and Mozambique to form a pan-African grid to include Zaire, Malawi and Tanzania — all within a decade.

Engineering feasibility and political implications are clearly at variance, however, which is no doubt why the only certainty is that coal-fired power stations are being built at places like Duvha, Matla and Lehabo while the engineers wait for the politicians to settle the weighty matters of international co-operation into the next century.

These bargaining positions and swayed the conservatives and swayed the conservatives.

These bargaining positions and swayed the conservatives.

These bargaining positions and swayed the conservatives.

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the Cape Malay Association therefore concluded with Cape Town, was for him

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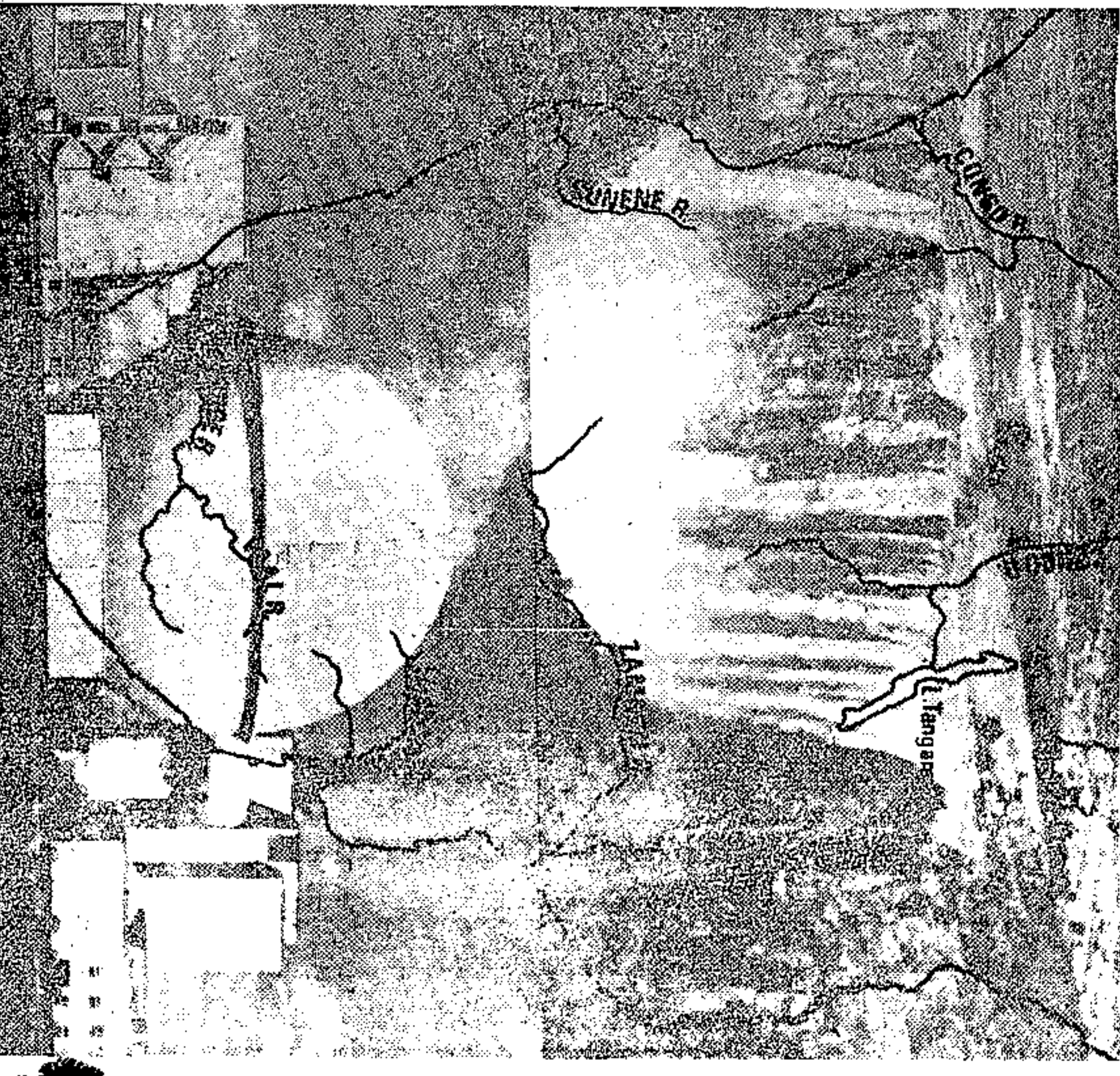
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Soekor gears up for new deep-sea oil drills

By Bob Davis

Oil production from deep-sea areas will become viable by the mid '80s and South Africa's Oil Exploration Corporation (Soekor) is gearing up to take advantage of this.

Conventional offshore platforms can produce oil in waters up to about 275m and engineers have been experimenting with deep-sea production for a number of years. According to overseas sources, two new designs have come off the drawing board and should be working by 1984.

Exxon engineers are producing a guyed tower and Conoco de-

signers are at work on a tension-leg platform, both of which would be capable of production off the South African coast in the event of an oil find.

To date, Soekor has been limited in its drilling operations by its two submersible rigs which are capable of drilling in depths of 275m and perhaps slightly deeper but less than 300 m.

The corporation expects delivery on a lease basis of two new drilling rigs capable of working in water depths of up to 500 m however and a spokes-

man said, "We then plan to drill in certain places we would like to look at."

Delivery of the two rigs is expected late next year and early in 1983 respectively.

"We will then be able to expand our search area," the spokesman said.

Oil industry sources say about 40 percent of the world's undiscovered oil is under the oceans — totalling some 340 000-million barrels.

The problem is that oil production platforms must be much more stable than drill-

ing rigs.

Stability is achieved by standing the platforms on the sea bed, which limits operating depth to a theoretical depth of 275m.

Oil company engineers have the option of floating the production platforms in waters which are deeper than the theoretical limits, finding new ways to build and stabilise them or putting most of the equipment on the floor with only flexible pipes to bring the oil to the surface.

Exxon engineers have overcome the problem by building a guyed

tower platform in the Gulf of Mexico where production will take place at a depth of 370m.

The platform will rest on legs but will be stabilised by running cables from the platform to concrete anchors on the sea bed.

Oil company sources are sceptical of the tower being a viability in stormy waters, however, and Conoco engineers in the North Sea have opted for a floating platform.

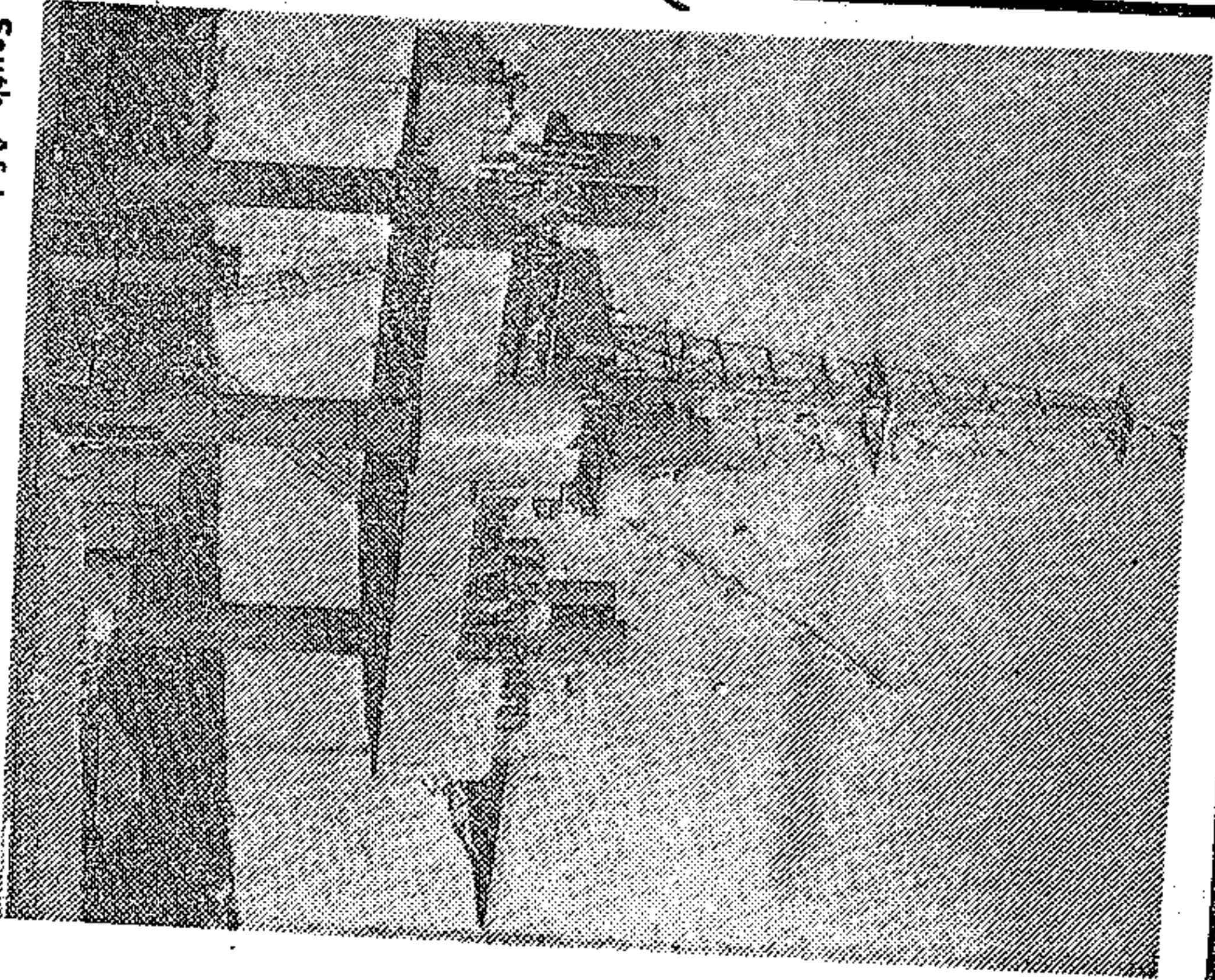
The first one is to go into operation on the Hutton field in 1983. It is anchored to the

sea floor by flexible tubes.

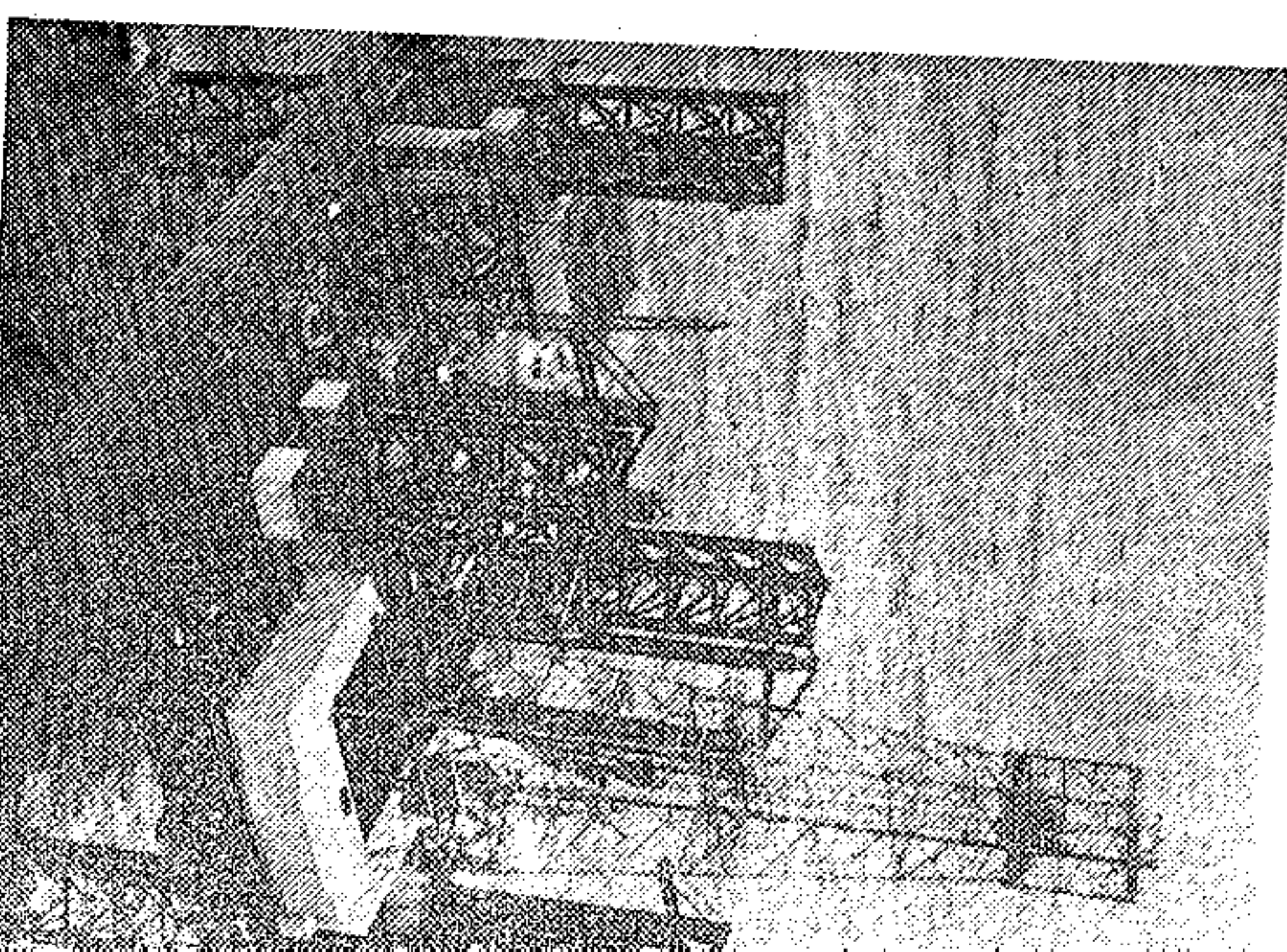
Vertical tension prevents the platform from swaying sideways to the extent of damaging pipes running from the well on the sea bed.

The first of the floating platforms will operate in only 160m but Conoco engineers are confident it will be able to cope with oil from a well under 800m of water.

Soekor sources were unwilling to say in which areas the new drilling rigs will be used, but said the new production platforms were being watched with great interest because of the stormy conditions of the Cape coast.



South African-constructed, this jack-up oil drilling rig is working in the Gulf of Mexico. Its limit of operation is about 77 m of sea-depth.



Another jack-up oil rig, the Orion, designed for North Sea operations. New techniques are aimed at creating rigs that can operate in much greater sea-depths.

Koeberg nuclear power station
How 3 21/8/81 CA 131-132 (55)
*14. Mr. R. R. HULLEY asked the Minister of Mineral and Energy Affairs:

Whether any earth tremor could crack the structure of the Koeberg nuclear power station so as to cause the release of radiation; if so, what would have to be the intensity of such tremor, as measured on the Richter Scale?

The MINISTER OF MINERAL AND ENERGY AFFAIRS:

Yes, depending on the distance of the earthquake's epicentre from the Koeberg Plant as well as the intensity of the tremor. Theoretically it is possible that an earthquake with epicentre closer than 8 km to the site and the abnormal high recording of more than 7 on the Richter Scale, might lead to a release of radio-activity. The occurrence of such an earthquake is however extremely improbable in the vicinity of the Koeberg Plant, taking cognizance of the seismicity of the area which,

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It was at the time ist groups in Sout the abovementioned the new adventure undertaken by the Cape Town Socialists would not be their last.

nation of all commun- Communist Party that and it seemed that

The Aftermath

After the final amalgamation Communist Party of South Afr political' members of the or ticipate in 'parliamentary p 'Communist Propaganda Group' and Brown were its members. 14 ganda tactics of the League a important document on May Day, 1921, under the title of 'The Defence Force'. It was headed 'Leaflet No. 1' and called on young South African soldiers to fight the class war against the only enemy, the capitalist class. 158 The activities of the group continued until the end of 1921, when it merged with the United Communist Party. 159

AUGUST 1981

132

compared to world standards, is a zone with a very low risk. No earthquake of such nature has ever been recorded in the RSA. The highest recording ever in S.A. has shown a reading of 6,3 on the Richter Scale for which provision has in fact been made in the safeguarding of Koeberg. The specific locality of the Koeberg Plant has furthermore been determined with due consideration of the geological structure of the area which makes a serious earth tremor highly improbable within a radius of 8 km.

United - to par- d holds propa- host

This was the final episode in the four year history of the existence of the Industrial Socialist League and the Cape Town Communist Party. Incorporated within the 'United Communist Party

Koeberg safety limits

HOUSE OF ASSEMBLY.

An earth tremor with an epicentre closer than 8km from the Koeberg nuclear power station and measuring more than seven on the Richter scale, could crack the structure of the plant and cause a release of radiation.

This was disclosed here yesterday by the Minister of Mineral and Energy Affairs, Mr F W de Klerk, in reply to a question by Mr Roger Hulley (PFP Constantia).

Mr De Klerk said that while it was theoretically possible that an earthquake with an epicentre closer to the site than 8km and an abnormally high recording of more than seven on the Richter scale might lead to the release of radio activity, such a quake was highly improbable in the vicinity of Koeberg.

Taking cognisance of the seismicity of the area, it was a zone with very low risk by world standards.

"No earthquake of such nature has ever been recorded in South Africa. The highest recording ever has shown a reading of 6.3 on the Richter scale, for which provision has in fact been made in the safeguarding of Koeberg."

The specific locality of the Koeberg plant has furthermore been determined with due consideration of the geological structure of the area which makes a series of earth tremor highly improbable within a radius of 8km," Mr De Klerk said.

Sapa

Term

Page

Reference

Term

Implied Type Declaration

Incrementation Parameter,

in DO-implied list

in DO statement

Initialization Statement

see DATA
statement

Initial Line of Statement

Initial Parameter,

in DO-implied list

in DO statement

Input Device(s),

logical unit number of

Input List

Input Statement(s),

auxiliary

Integer Type,

constants

conversion of I/O data

memory requirements

Intrinsic Functions,

inline machine coding of

I/O List

K

Keyword,

use as symbolic name

L

Label, Statement

see statement
label

Labeled Common Block,

see COMMON
statement

Initialization of

subprogram
see block data

Language(s), Programming,

assembly

FORTRAN

machine

1.2.1

1.2.3

1.2.2

1.2

Reference

Logical Assignment Statement

4.3

4-4

Logical Expression,

limited

8.2.2

3-10

Logical IF Statement,

in sample program

5.3.2

5-11

Logical Operators

3.4.1

3-10

Logical Statement Function

8.2.2

8-8

Logical Type,

constant

2.5.1, 2.5.1.5

2-11, 2-13

field descriptor

6.3.3.3

6-16

memory requirements

Table 2-4

2-11

Int Number in I/O Statement

6.2.1

6-2

of statements in

program,

2.2.1

2-1

aphson Method,

putation of cube root

8.5.2.2

8-21

table Statements

2.2.2

2-5

Data,

data,

3.4.1

3-10

computer

1.2.1

1-2

System

1.5, 1.5.2

1-7, 1-9

see symbolic
name

Managing file storage - what the Computing Service does

Obviously mass storage devices cannot be one hundred percent reliable - files stored on them can be lost or corrupted. Also users may accidentally corrupt or delete their own files. So there has to be some sort of backup of mass storage files on another medium. There also has to be a mechanism for dealing with the inevitable overflow of files from the mass storage devices. The UNIVAC executive system provides this mechanism. When there is insufficient available space on mass storage an algorithm (using information from the Master File Directory) decides which files should be 'rolled out' to make space available on mass storage. The term 'roll out' suggests that a tape is loaded and the files copied on to it. In fact this doesn't usually happen because on our system the backup of files is done on tapes and there is no need to make another copy of the file if a current backup copy of it already exists on tape.

Obviously there cannot be a continuously up to date backup of all files. The Computing Service attempts to provide backup that is not more than 24 hours out of date (60 hours at week-ends). This only applies to files on 'fixed' disc - files on removable disc are backed up less often and user files stored on drum are not backed up at all.

Each night Monday to Thursday and at about midday on Saturday a program called SAVPAR is run. This program searches the Master File Directory for (fixed disc) files which have been updated or created that day and causes a copy of each such file to be written on a tape. It also notes the name of the tape and the date in the Master File Directory. Typically SAVPAR makes copies of time SAVPAR wants to make a copy of a file in the Master File Directory. For these files the copy is made from the disc. This includes those files the name of the tape and notes the name of the tape and typically SAVPAR copies 4600 all on mass storage simultaneously. SAVPAR tapes are kept available. SAVPAR tapes are used again.) SAVPAR tapes second last SAVALL.

In addition to ensuring backup program file before copying non-current copies of elements of space (on disc and on tape) to make many update copies of their own files.

In order to prevent the Master File Directory from becoming too large and to limit the time taken and number of files assigned for more than 30 days (near mid-month) by a procedure 'removed' is made on a special directory is deleted. REMOVE tap 1100 files are removed each month on request of a user - see 'Recovery'.

Another way the number of files which storage used and played the severity of storage used by each department calculates the amount of storage which storage about possible

BRIEFCASE

Sasolburg trial run a success

First trial runs at African Catalysts R5-million plant at Sasolburg have been a success.

The plant - a joint venture between Suedchemie of Germany, the Industrial Development Corporation and Sasol - will produce catalysts for the oil-from-coal process which until now have had to be imported.

At the trial run was Dr C Hofstadt, chairman of African Catalysts and a member of the board of management of Suedchemie, who was "delighted" with the rapid progress in the construction of the plant.

One of the main feedstocks for African Catalysts is being supplied locally by the giant Hoechst South Africa group.

This feedstock will be supplied primarily from the new Hoechst poly-phosphoric acid plant in Krugersdorp.

The managing director of Hoechst SA, Mr A L Baltzer says work on the Krugersdorp plant is making good progress and will be in full operation during 1982. The plant represents an investment of about R5-million.

holders to one file per file. In contrast to the system for restricting is distinctly friendly. Each department for the Computing Service is sent a friendly warning Limits are negotiable!

se are ever loaded again year. Typically about entry in the Master file A copy of each file he system. This is done L, files which have not coming too large and to

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Koeberg gas will hit city, study finds

Argus 28/8/81

Argus Correspondent

JOHANNESBURG. — When the Koeberg nuclear power station begins operating, any reactor gas leak could cause an atomic cloud to head for Cape Town via a zigzag route over the Atlantic.

This has been found by scientists of the Atomic Energy Board after a three-year study in which monitors, sensors, balloons, tracer sampling and computer models were used to trace the dispersal of hypothetical leaks of radioactive gas from Koeberg.

One of the models for which balloons were used indicates that gas released from Koeberg first travels west out to sea.

The gas then moves north for a few kilometres, touches land, and then makes an about-turn and is carried south to hit the Cape Town metropolitan area crossing the coastline south of Melkbosstrand.

The study also shows that even during the Cape's prevailing weather with south-easterly and north-westerly winds, a whole set of weather conditions might reverse the trend of poisonous Koeberg gas being merely blown out to sea. This was the original presumption of Koeberg's planners.

CAN PUSH

These conditions include gradient winds, wind sheer (layers of wind blowing in different directions), layer transfers, and land and sea breezes, all of which can push atomic cloud into the direction of densely populated areas.

In one model run the prevailing winds were in northerly directions, from north-east to north-west, but tracer materials monitored showed that leakage from Koeberg could reach the Cape Town area with a 'potential of creating high concentrations if a release should occur'.

The three scientists who led the study, Dr Dannie van As, director of the isotopes and radiation division at Pelindaba, Mr Chris Norden and Mr Piet Botha, believe the release of radioactive gas from Koeberg into a land breeze is particularly risky.

OUT TO SEA

The land breeze layer would move any leakage out over the sea towards Robben Island first.

Then an increasing north-westerly direction of the surface winds south of Robben Island would return the atomic cloud to land over greater Cape Town, they report in Nuclear Active, the Atomic Energy Board magazine.

This danger is especially acute at night when a land breeze mostly occurs, they say.

In a series of weather maps of the Cape they show that winds around Cape Town tend to blow in all directions at different levels, and no firm conclusions could, therefore, be drawn.

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CHAPTER C
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Janet Hodgson

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The Saudis take command

A decade of rising oil prices came to an end in Geneva last week. Ministers from the 13-nation Organisation of Petroleum Exporting Countries (Opec) failed to agree on a strategy for dealing with the downward pressures the world oil glut is placing on prices.

Sheikh Ahmed Zaki Yamani, Oil Minister of Saudi Arabia — whose high production level is largely responsible for the glut — said his country plans to continue selling its oil at the relatively low price of \$32 a barrel into 1982.

As a result, he predicted, other higher-priced producers will be forced to slash their prices or go out of business. The weighted average price of oil in the world, which Yamani estimated at about \$34/barrel, will decline moderately during the remainder of this year, giving some relief to recession-shocked economies.

As a gesture to his colleagues, Yamani said Saudi Arabia will reduce production 10% next month from 10m bpd to 9m bpd and thereafter review production policy on a monthly basis, announcing any change in output rates at the end of the month in which they are made. But Yamani emphasised that next month's cut will not correct the imbalance between supply and demand.

With oil companies destocking, and in the face of the expected slowdown in the US economy, Saudi Arabia's only commitment, he said, was to defend its \$32/barrel price.

Earlier, Nigeria had told the meeting that if Opec could not agree on a new unitary pricing system and back it up with appropriate production cuts, it would be forced to slash its official price of \$41/barrel, perhaps down to within some \$2.50 of the Saudi price, which traditionally acts as a benchmark for Opec's pricing structure.

Nigerian output has fallen from 2m bpd in January to barely 400 000 bpd today, and no tanking loadings are scheduled for the second half of August. Foreign exchange reserves are now down to under six months' imports and the country, with an impoverished population of 80m to feed, "faces a choice between cutting prices or going broke," in the words of one oil company executive.

Algeria and Libya, which also traditionally charge about \$41/barrel for their oil, emphatically denied that they will cut prices if Nigeria comes down. But while Libya, with a population of only 3m and huge foreign exchange reserves, can probably afford to suspend sales and live on its capital for a while, this will be much

harder for Algeria with its population of some 19m and ambitious development plans to finance. Kuwait and the Gulf Emirates pointedly refused to make any commitment whatsoever about future prices.

Last week's meeting was in fact called by Nigeria in the hope that the 21-year-old producers' cartel could agree on a more realistic pricing arrangement in the face of the glut. A year ago, when the Iraqi-Iranian war sent consumers scrambling for oil, a free-for-all developed in the



Saudi Arabia's Yamani . . . king of the castle

world market with Opec producers gaily throwing their agreed price lists out of the window and charging whatever they could get for their oil.

At its Bali meeting last December, Opec sought to legitimise this state of anarchy by agreeing a flexible pricing system that effectively allowed members to charge whatever they like between Saudi Arabia's low \$32 rate and the top \$41 demanded by the African producers. Officially, this price bracket is being maintained, but on the assumption that its flexibility will now allow states to reduce, not raise, their prices, while still making the unconvincing claim that Opec, not the market, is setting prices.

All the evidence suggests that last week's meeting was originally expected by many delegates to produce a new

unitary pricing agreement that would squeeze the present wide band closer together and make Opec's claim to manage the oil market a lot more convincing. Sheikh Yamani said he had only come because he believed all members were prepared to accept his plan for a new unitary pricing system. This would set a new benchmark price of \$34 for Saudi crude (a rise of \$2/barrel) and allow a \$3 "differential," or premium, for the higher-priced African producers, effectively setting a new top price of \$37 for the most superior quality oils.

Once fixed at these levels, oil prices would be frozen until the end of 1982 under the Saudi plan. By then Saudi Arabia would hope to have general agreement on a new long-term Opec pricing strategy that would link the price of oil to inflation and currency movements, effectively eliminating the sharp, random price jumps of the past decade.

Political influences

The proposed Saudi pricing formula, Yamani said, would have kept the average price of oil in the world constant because while Saudi Arabia upped its price \$2, other producers would have cut theirs by up to \$4/barrel. If it had been adopted (or if it is adopted in the future), Yamani said Saudi Arabia is prepared to regulate its production to make sure the prices stick, thus re-establishing Opec's ability to control the price of oil.

In practice, however, oil prices are a political virility symbol for many Opec countries. Venezuela said it was politically impossible for the government to reduce the \$36 price — at which it currently sells a limited quantity of oil of equivalent quality to Saudi Arabia's — down to \$34/barrel as the Saudi formula demanded. Libya and Algeria, both radical Arab states, could not bring themselves to reduce their official prices at the behest of the conservative Saudi monarchy.

A compromise formula put forward would have fixed a new price bracket between \$35 to \$39-\$40 (the upper limit was never clearly defined). But Saudi Arabia refused to accept this and make it stick by cutting output because it would have produced a small overall increase in the average cost of oil.

With last week's agreement to disagree, Saudi Arabia has now emerged as the unqualified master of Opec, ready to use its muscle as the world's biggest exporter with the largest known reserves to impose its will on the rest of the cartel.

Saudi Arabia's position is strengthened

LIQUID GAS FM 28/8/81

Money to burn

55

The abolition of the 4,1c/l excise duty on liquid petroleum gas (LPG) in this year's Budget should provide some relief to Sasol and oil refineries which are swimming in it.

The concession keeps LPG well below the price of petrol and dieselene, and will boost LPG-powered vehicles like fork-lift trucks.

Campers and picnickers will be encouraged to head for the great outdoors, as the retail price of a 3 kg LPG cylinder will come down from around R3 to R2,79.

Government could have gone even further to stimulate demand by abolishing the LPG levy, the proceeds of which go to the State Oil Fund which provides, inter alia, capital for financing new Sasols.

Oil refineries are currently obliged to

produce more LPG than necessary because they have to tailor their product range to fit in with the Sasol production. This results in an increased proportion of LPG by-product.

As it cannot be stored in great quantities, the excess gas is burnt off as refinery fuel, which is generally more expensive.

Sasol's LPG by-product is reconverted into a starting feedstock.

There would be some merit in using LPG as a fuel in modified petrol engines for it is cheaper than petrol and energy content is only slightly lower. It is, for instance, used in some London and Melbourne taxis. But it requires carburettor modification costing R600-R1 000/vehicle, and heavy, bulky containers which fill the boot of an average car.

Another LPG problem is that it cannot be blended with coal gas which is produced by Gaskor and the Johannesburg municipality. This relatively cheap fuel, on which there is no excise duty, is fed to domestic and industrial consumers by a pipeline network from Sasolburg to the PWV.

Coal gas consists of methane, hydrogen and carbon monoxide while LPG consists of butane and butene gases.

Sasol will be producing vast quantities of by-product LPG when Sasols 2 and 3 come on stream. At that stage, there will probably be justification for erecting

special plant to convert it into chemical feedstocks. And Sasol refineries could well become a profitable outlet for the surplus.

DEPARTEMENT VAN MINERAAL- EN
ENERGIESAKE

No. R. 1829 28 Augustus 1981
WET OP PETROLEUMPRODUKTE, 1977

Die Minister van Mineraal- en Energiesake het, kragtens artikel 2 van die Wet op Petroleumprodukte, 1977 (Wet 120 van 1977), die regulasies uitgevaardig in die Bylae hierby.

BYLAE

1. In hierdie regulasies het enige uitdrukking waaraan 'n betekenis in die Wet geheg is, daardie betekenis en tensy dit uit die samehang anders blyk, beteken—

“groothandelsverspreider” enigeen van die ondergenoemde maatskappye:

B.P. Suidelike Afrika (Edms.) Bpk.;
B.P. South West Ltd;
Caltex Oil (S.A.) (Pty) Ltd;
Caltex Oil (S.W.A.) (Pty) Ltd;
Esso Standard South Africa (Pty) Ltd;
Mobil-Olie Suidelike Afrika (Edms.) Bpk.;
Mobil-Olie Suidwes-Afrika (Edms.) Bpk.;
Natal Cane By-Products Ltd;
Sasol Bemerkingsmaatskappy Bpk.;
Shell Suid-Afrika (Edms.) Bpk.;
Shell Olie Suidwes-Afrika (Edms.) Bpk.;
South African Torbanite Mining and Refining Company Ltd;
Total Suid-Afrika (Edms.) Bpk.;
Total Suidwes-Afrika (Edms.) Bpk.;
Trek Petroleum (Edms.) Bpk.;
Sonarep (South Africa) (Pty) Ltd.

“petroleumprodukmengsel” 'n mengsel van alkohol tot 'n maksimum van 12% met petrol of met enige ander petroleumproduk, welke mengsel aan die S.A.B.S. spesifikasie voldoen;

DEPARTMENT OF MINERAL AND ENERGY
AFFAIRS

No. R. 1829 28 August 1981
PETROLEUM PRODUCTS ACT, 1977

The Minister of Mineral and Energy Affairs has, in terms of section 2 of the Petroleum Products Act, 1977 (Act 120 of 1977), promulgated the regulations in the Schedule hereto.

SCHEDULE

1. In these regulations any expression to which a meaning has been assigned in the Act should have that meaning and unless the context otherwise indicates—

“petroleum product mixture” means a mixture of alcohol to a maximum of 12% with petrol or with any other petroleum product, which mixture complies with the S.A.B.S. specification;

“S.A.B.S. specification” means the South African Bureau of Standards' Standard Specification for Petrol (Metric Units) No. S.A.B.S. 299-1972 as amended from time to time;

“wholesale distributor” means any of the following companies:

B.P. Southern Africa (Pty) Ltd;
B.P. South West Ltd;
Caltex Oil (S.A.) (Pty) Ltd;
Caltex Oil (S.W.A.) (Pty) Ltd;
Esso Standard South Africa (Pty) Ltd;
Mobil Oil Southern Africa (Pty) Ltd;
Mobil Oil South West Africa (Pty) Ltd;
Natal Cane By-Products Ltd;
Sasol Marketing Company Ltd;
Shell South Africa (Pty) Ltd;
Shell Oil South West Africa Ltd;
South Africa Torbanite Mining and Refining Company Ltd;

their social problems and the support of the local Muslim clergy.

GOVERNMENT GAZETTE, 28 AUGUST 1981

No. 7741 27

“S.A.B.S. spesifikasie” die Suid-Afrikaanse Buro vir Standaarde se Standaardspesifikasie vir Petrol (Metrieke Eenhede) No. SABS 299-1972 soos gewysig van tyd tot tyd.

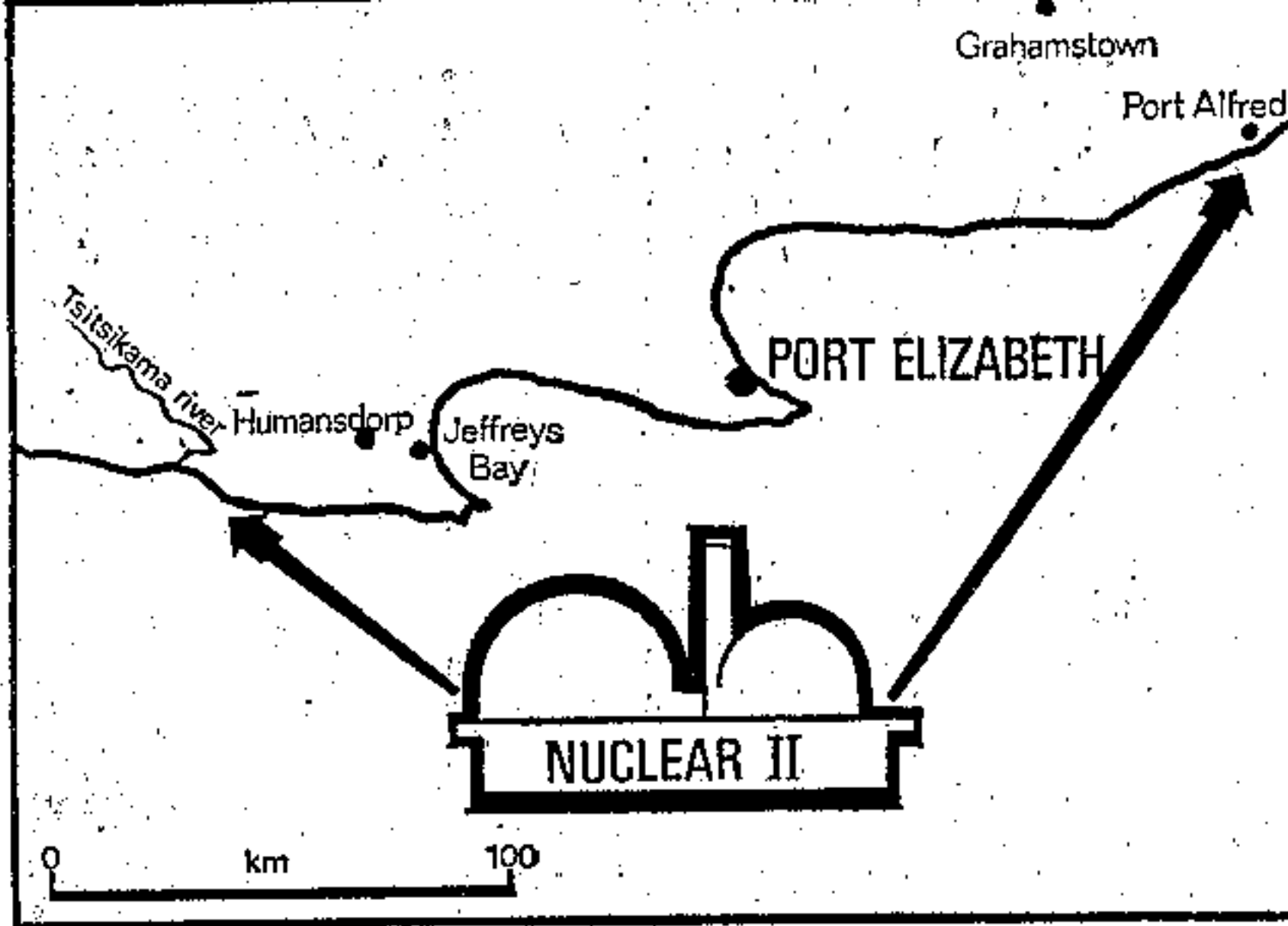
2. Enige groothandelsverspreider wat kragtens 'n ooreenkoms verplig is om petrol aan enige ander persoon (hieronder na verwys as ‘die koper’) te voorsien, is ondanks enige andersluidende bepaling in sodanige ooreenkoms geregtig om 'n petroleumprodukmengsel aan die koper te voorsien ter voldoening aan sy verpligting om petrol ingevolge sodanige ooreenkoms te voorsien.

3. 'n Groothandelsverspreider wat kragtens regulasie 2 'n petroleumprodukmengsel voorsien het, of aangebied het en in staat was om sodanige mengsel te voorsien, word nie op grond daarvan vir kontrakbreuk aangespreek nie.

Total South Africa (Pty) Ltd;
Total South West Africa (Pty) Ltd;
Trek Petroleum (Pty) Ltd;
Sonarep (South Africa) (Pty) Ltd.

2. Any wholesale distributor who is bound by an agreement to supply petrol to any other person (hereinafter referred to as ‘the buyer’) shall, notwithstanding any other contrary provision in such agreement, be entitled to supply a petroleum product mixture to the buyer in compliance with his obligation to supply petrol in terms of such agreement.

3. A wholesale distributor who, in terms of regulation 2, supplied or offered to supply and was able to supply such a mixture shall not, on such grounds, be liable for breach of contract.



THE area between the arrows is under investigation for the siting of the next nuclear power station.

Another 'Koeberg' for Cape coast

Argus 31/8/81 (55)

By Graham Ferreira
Environment Reporter

SOUTH AFRICA'S second nuclear power station will be situated between the Kowie River and the Tsitsikama River on the east coast, probably west of Cape St Francis.

This follows a request by Escom to the Co-ordinating Council for Nature Conservation in the Eastern Cape to comment on possible sites for the second atomic power station between Port Alfred at the Kowie River mouth, and the mouth of the Tsitsikama River.

Dr T Wooldridge of the CCNCEC told The Argus that an extensive report had been submitted to Escom.

SITE

If the advice of the CCNCEC is followed as seems likely the probable site would be west of Cape St Francis between Jeffreys Bay and Plettenberg Bay.

Dr Wooldridge said the reasons for the CCNCEC's recommendation was that the area had a small population, and an open coastline with strong currents necessary to dispel the outfall plume from the power station.

Areas to be avoided were sheltered bays, such as Algoa Bay and Francis Bay, and highly populated areas such as the coast near Port Elizabeth.

A further consideration was that a corridor of

about a kilometre wide was necessary to link the power lines from the station with the national grid.

'We recommended that the site should not be near rare or sensitive vegetation types or climax vegetation. The corridor necessary for the power lines from the station should not run through such areas as it would destroy much of the natural vegetation.'

'The coast west of Cape St Francis is the least sensitive of the area under consideration in our opinion,' said Dr Wooldridge.

Besides giving its recommendations on the site to Escom, the CCNCEC also asked for a full environment impact study before a final decision was taken.

'It is common knowledge that most environmentalists are not happy with the Koeberg site.'

'We are not passing judgment on the desirability of a second nuclear power station but we decided to try to get the best deal possible for our area from an environmental point of view, and are thus co-operating to the full with Escom.'

The public relations officer for Escom, Mr Boet Uys, today confirmed that sites for power stations were being investigated.

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Koeberg: Council 'misled'

1992/31/8/1

(5)

THE City Council and Cape Town may have been 'shamefully misled' by assurances given about the Koeberg nuclear power station, according to Dr Arnold Abramowitz, acting chairman of Koeberg Alert.

He was responding today to the finding of three scientists of the Atomic Energy Board that any reactor gas leak could cause an atomic cloud to head for Cape Town via a zigzag route over the Atlantic.

The scientists, Dr Danie van As, director of the isotopes and radiation division at Pelendaba, Mr Chris Norden and Mr Piet Rosta, believe the release of radioactive gas from Koeberg into a land breeze would be particularly risky.

GREATER RISK

One experiment showed that poisonous gas could reach Cape Town with a 'potential of creating high concentrations if a release should occur.'

Dr Abramowitz said the findings should be carefully scrutinised. But Cape Town will be at far greater risk in the event of a reactor leak than we have thus far been led to believe.

'We have been repeatedly told by Eskom and the Atomic Energy Board that emergency planning, including mass evacuation of residents, is necessary only within a few kilometres around Koeberg, and does not include metropolitan Cape Town.'

'The new findings indicate that a radiological emergency could affect hundreds of thousands of citizens who may have



Dr Arnold Abramowitz

trustingly assumed that they would be harmless.'

He called on Eskom to clarify its position about past reassurances and to say how it intended responding to the new findings.

Dr Abramowitz said that Capetonians had cause to protest bitterly at the false security info which they had been lulled.

NO COMMENT

In its report to the City Council in October 1979, he said, Eskom had given a firm indication that preliminary meteorological research had been completed.

'This assurance has now apparently been given the lie by the finding of the Atomic Energy Board scientists.'

The research findings were published in Nuclear Action, the Atomic Energy Board magazine.

A spokesman for Koeberg said today he did not want to comment until he had studied the report and the Koeberg Alert statement.

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"Mr Southey, the Secretary, sent us to Port Elizabeth by a mule cart which conveyed the Governor's goods. The local magistrate took us to a hotel. We stayed there for a few days. Then a ship from Port Natal (Durban) arrived. We boarded it and came to Cape Town. The voyage took three days. On the third day we landed. We arrived just when the Governor was preparing to go to Bokone (north). He left when we were already in Cape Town.

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Split among the atoms

South Africa's Electricity Supply Commission and the United States Department of Energy have partially resolved the expensive deadlock over fuel for the Koeberg power station.

In terms of a 1974 contract worth — ultimately — billions of dollars, Escom is contracted to supply the Doe's Oak Ridge, Tennessee, processing plant with successive consignments of 300 000 kilograms of uranium ore.

Each consignment will be worth about 30-million dollars and the processing will add another 28-million dollars to the value of the ore.

Unfortunately for Escom, the United States' 1978 Nuclear Non-proliferation Act prohibits the United States government from providing an export licence for the enriched fuel because South Africa does not apply International Atomic Energy Agency safeguards to all its nuclear facilities.

Thus Escom faced a catch 22 situation — and the possibility of penalties

Escom has partly resolved the problem of acquiring fuel for the Koeberg power station, but a full solution could still be a long way off. John D'Oliveira, of The Star's Washington Bureau, reports.

of 16.9-million dollars (if the first delivery did not take place) and 77.6-million dollars (if the entire contract was scrapped).

The thorny issue was discussed when South African Foreign Minister Pik Botha visited America in May and it was decided that the deadline for the supply of the fuel feedstock would be extended to August 31.

A spokesman for the Department of Energy has confirmed that Escom had agreed to abide by the contract and supply the ore.

The next day the Doe will provide Escom with 50 000 kilograms of enriched uranium.

However, the Doe has agreed not to invoice Escom for the enrichment fee until the export licence issue is settled — one way or another,

SS
The key to the entire problem is the South African Government's refusal to place its nuclear fuel enrichment installation at Valindaba under IAEA safeguards for fear that this might compromise the secrecy of the process.

In an effort to resolve the problem, the Americans have said they would negotiate with South Africa and try to show South Africa that IAEA safeguards can be applied to Valindaba without disclosing any secrets.

However, while this relieves the immediate pressure, the problem appears to be a long way from a full solution.

Even if South Africa and the United States can work out satisfactory safeguards for Valindaba (and thus meet the requirements of the 1978 legislation), current

United States policy precludes the supply of nuclear fuel to any country which has not signed the Nuclear Non-proliferation Treaty.

This policy was laid down by the Carter administration and accepted by the Reagan administration.

It is possible, though believed unlikely at this stage, that the administration might retreat on the policy aspect and allow the export of the fuel if South Africa can meet the requirements of the Nuclear Non-proliferation Act.

not be hit by the section as it was then worded. The 1959 amendment were intended inter alia to bring such transactions within the net of the section and based on the decision in Smith's case (supra) the amendment has achieved this result.

Risk of atomic cloud over Cape Town very real

By Jaap Boekkool

When South Africa's first nuclear power station, Koeberg, starts operating, any reactor gas leak could cause an atomic cloud to head via a zig-zag route over the Atlantic for Cape Town.

This has been found in a three-year study by scientists of the Atomic Energy Board in which monitors, sensors, balloons, tracer sampling and computer models were used to trace the dispersal of hypothetical leaks of radioactive gas from Koeberg.

One of the tests in which balloons were used, indicates that gas released from Koeberg would first travel west out to sea, then north for a few kilometres, touch land, then make an about-turn and carry south to hit the Cape Town metropolitan area crossing the coast line south of Melkbosstrand.

The study also shows that even during the Cape's prevailing weather with SSE and NW winds, a whole set of weather conditions might reverse the trend of poisonous gas being blown out to sea, which was the original presumption of Koeberg's planners.

These conditions include gradient winds, wind shear (layers of wind blowing in different directions), layer transfers, plus land and sea breezes, all of which could push an atomic cloud in the direction of densely populated areas.

In one test run the prevailing winds were in a northerly direction, from NE to NW, but tracer materials monitored showed that leakage from Koeberg could reach the Cape Town area with a "potential of creating high concentrations if a release should occur."

The three scientists who led the study, Dr Dannie van As, Director of the Isotopes and Radiation Division at Pelindaba, Mr Chris Norden and Mr Piet Botha, indicate that the release of radioactive gas from Koeberg into a land breeze is particularly risky.

The land breeze layer would move any leakage out over the sea towards Robben Island first. Then the north-westerly direction of surface winds south of Robben Island would return the atomic cloud to sweep greater Cape Town, they report in "Nuclear Active," the Atomic Energy Board magazine.

This danger is heightened at night when land breezes mostly occur, they say.

In a series of weather maps of the Cape Province they show that winds around Cape Town tend to blow in all directions at different levels, and that therefore no firm conclusions could be drawn.

For their study they used many balloon flights, masts equipped with sensors, telemetry, air samplers and an indium aerosol as tracer.

not be hit by the section as it was then worded. The 1959 amendment were intended inter alia to bring such transactions within the net of the section and based on the decision in Smith's case (supra) the amendment has achieved this result.

Koeberg: City public 'misled'

Staff Reporter

THE acting chairman of Koeberg Alert, Dr Arnold Abramowitz, said yesterday that Capetonians would "gradually realize what they had let themselves in for in allowing a nuclear power station to be sited on their doorstep".

"It would seem that the chickens are indeed coming home to roost. This is dramatized by the urgency of the recommendation to the city council to install an independent monitoring system."

In a statement issued at the weekend in response to the Atomic Energy Board report of wind patterns over the Peninsula, Dr Abramowitz said that the research study indicated that the city council and the public may have been "shamefully misled by our nuclear power establishment".

This was because such information should have been sought before the decision was taken to site Koeberg so close to the City. In its environmental impact report to the city council in 1977 Escom said that all necessary meteorological research had

been completed.

"That assurance has now apparently been given the lie by the published findings of Atomic Energy Board scientists who have been working on the problem for the last three years," said Dr Abramowitz.

The findings deserved careful scrutiny by experts, but even at this stage it was impossible to escape the conclusion that Cape Town was at far greater risk in the event of a reactor leak than the public had been led to expect.

Escom and the AEB had repeatedly said emergency planning was only for the immediate area surrounding Koeberg.

"The new findings indicate that a radiological emergency could affect hundreds of thousands of citizens who may have trustingly assumed that they would be immune."

Koeberg Alert believed that the public had "cause to protest bitterly at the false sense of security into which they had been lulled" and called on Escom to clarify its position on previous assurances and to state how they intended responding to the new situation.

Six radiation monitors planned

By BOB MOLLOY

THE grim reality of the potential radiation menace from Koeberg appears in the latest Executive Committee recommendation which calls for radiation detectors based in electrical substations ringing the City and linked by telephone cable to the City's civil defence control room.

The system, aimed at detecting atmospheric radiation, will operate independently of the radiation monitors operated by Escom on sites around Koeberg. The capital cost is estimated at almost R25 000.

Earlier this year Escom refused a request by the city council to subsidize the cost of an independent system.

The council's Executive Committee considers the installation of such urgent ne-

cessity that it has recommended that no application be made for the remission of sales tax on the purchase of the equipment, as this could delay matters.

The recommendation covers the installation of monitors at six points around the City. These are to be fitted in existing electrical substations and will automatically transmit an alarm to the City's civil defence control room if any rise in atmospheric radiation is detected.

The Amenities and Health Committee, in forwarding the recommendation to Escom, said the Medical Officer of Health was "anxious to proceed immediately with the scheme so that it can be in operation well before the Koeberg Station comes on stream".

City council aware of 'wind vagaries'

THE Cape Town City Council had long been aware of "wind vagaries" that might carry radioactive gas from the Koeberg nuclear power station to the City and had taken this into account in its emergency planning, the acting Medical Officer of Health, Dr Alec Chaimowitz, said yesterday.

Dr Chaimowitz was commenting on a study recently released by scientists of the Atomic Energy Board which found that a reactor gas leak could, under certain weather conditions, raise radiation levels in the central City area even when opposing ground-level winds were blowing.

The study, by the director of AEB's isotope and radiation division, Dr Danie van

As, said that in a three-year monitoring period, a number of diverse patterns had shown up, some of which bore no relation to the usual wind currents. In one case, balloons released at Koeberg had travelled westward out to sea, then northward to touch the coast again before circling south to come ashore at Cape Town.

"We have always been aware that under certain conditions these patterns existed. The air pollution survey commissioned by the council merely confirmed the details and this present study supports it," Dr Chaimowitz said.

He added that emergency planning had been based on all the probabilities associated with the Koeberg power station.

Site for new nuclear station?

THE Cape Province's second nuclear power-station, long foreshadowed in Escom provisional planning, may be sited between Jeffreys Bay and Plettenberg Bay if a recommendation by the Co-ordinating Council for Nature Conservation in the Eastern Cape (CCNCEC) is accepted.

This is the best possible

site from the point of view of conservation — according to a report submitted to Escom by the CCNCEC. The area has a small population, an open coastline which would not impede the dispersal of the station's marine effluents, and the least sensitive vegetation, the report said.

Shock over electricity bills

By LEN MASEKO

SCORES of Soweto residents are shocked over the high electricity bills - some up to R121 - which they have received and others have threatened not to pay.



Mrs Constance Manana

the bills reflected a "computer error" and said the accounts could be for a two-month electricity consumption.

"We have solved our computer problems after a full-scale investigation launched by the council last month.

COMPLAINTS

"The residents should make sure that the bills do not include the arrears of the previous month, in some cases an account for two months," Mr Malan said.



Mrs Constance Mfeka

A resident, Mrs Constance Mfeka, said: "I could not believe my eyes when I received a bill of R121 for last month's electricity consumption. And, mind you, I use very few electrical appliances.

"They cannot make the bill rise this high. I have always lodged complaints to the superintendent about this but nothing has been done up to now."

Mrs Constance Manana, of Rockville, said she had received a bill of R87 for last month. She used to pay



Mrs Julia Malati

a maximum of R5 for a month's electricity and "I cannot understand why we are made to pay so much while the present system has not been upgraded".

"I use few electrical appliances - a kettle and a refrigerator - and these cannot make a bill go up as high as R87. Another problem is the present electricity system does not allow one to use two appliances simultaneously," Mrs Manana said.

Mrs Julia Malati said she had received a bill of R105 for July and said she would not pay it unless something was done to investigate electricity accounts.

She said she used to pay an electricity bill of R2 monthly and, she said, her accounts began to fluctuate after the electricity in the townships was taken over by the Soweto Council.

The residents said they used to pay a maximum of R7 in electricity bills for one month before Soweto Council took over in the townships. They complained that the electricity accounts had shot up "but nothing has been done to improve the present system."

The Soweto Council's chief executive officer, Mr Nico Malan, advised residents to pay the average electricity account - about R30 - and query the rest with their township managers.

He said he did not think

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Degree/Diploma/Certificate for which you are registered (e.g. B.A., B.Sc.) B.COMM II

Subject..... ECONOMICS II
(to be copied from the heading on the Examination Paper)

Paper No..... Paper I : Section A.
(to be copied from the heading on the Examination Paper)

NOTE CAREFULLY

1. Enter at the top of each page and in column (1) of the block on this cover the number of the question you are answering.
2. Blue or black ink must be used for written answers. The use of a ball point pen is acceptable. Red or green ink may be used only for underlining, emphasis or for diagrams, for which pencil may also be used.
3. Names must be printed on each separate sheet (e.g. graph paper) where sheets additional to examination book(s) are used.
4. Do not write in the left hand margin.

WARNING

1. No books, notes, pieces of paper or other material may be brought into the examination room unless candidates are so instructed.
2. Candidates are not to communicate with other candidates or with any person except the invigilator.
3. No part of an answer book is to be torn out.
4. All answer books must be handed to the commissioner or to an invigilator before leaving the examination.

Any dishonesty will render the candidate liable to disqualification and to possible exclusion from the University

Council aware of nuclear risk

Mail Correspondent

THE Cape Town City Council had long been aware of "wind vagaries" that might carry radioactive gas from the Koeberg nuclear power station to the city and had taken this into account in its emergency planning, the acting medical officer of health, Dr Alec Chaimowitz, said yesterday.

Dr Chaimowitz was commenting on a study recently released by scientists of the Atomic Energy Board which found that a reactor gas leak could, under certain weather conditions, raise radiation levels in the central city area even when opposing ground-level winds were blowing.

Wind currents

The study said that in a three-year monitoring period a number of diverse patterns had shown up, some of which bore no relation to the usual wind currents. In one case, balloons released at Koeberg had travelled westwards out to sea, then northwards to touch the coast again before ending south to come ashore at Cape Town.

The latest recommendations of the city's executive committee call for radiation detectors based in electrical substations, ringing the city and linked by telephone cable to the city's civil defence control room.

The system, aimed at detecting atmospheric radiation, will operate independently of the radiation monitors operated by Escom on sites around Koeberg.

1000000

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R208-m for electricity

Copyright: Univer BC/VA

HOUSE OF ASSEMBLY -
An extensive R150 million programme to update basic services in Soweto was at present underway, the Minister of Co-operation and Development, Dr Piet Koornhof, said yesterday.

Soweto *2/23*
Speaking in committee on his vote, he said the Government had so far ploughed more than R400 million into the development of Soweto.

53 *2/19/81*
Existing basic services were being updated while certain access roads were being tarred.

HOUSES

The electrification of Soweto was underway and 15 000 houses were already in different stages of wiring. This ambitious project would cost about R208 million.

Updating of Soweto's basic services was made possible by a R150 million Government - guaranteed loan to the black Community Councils, which included the Community Council of Soweto.

14. What major issues related to the project were not studied, and why? Discuss the theoretical importance of these issues within the area of study.
13. Choose one aspect of the research project which you have participated in and outline why you see it as important. Relate this aspect to other issues studied in the project.
12. Briefly describe, and evaluate, the use of Video techniques as a method of social analysis. Use examples from a project that you have participated in.
- In a separate book, answer TWO of the following questions.

Simon Burton
Bill Cowan

SECTION D: Video Research Project

SOCIOLOGY (INDUSTRIAL): COURSE II (continued)

Magnificent role of Sasol as 'oil well' of nation

wins the prize

Judges congratulate Sasol

The Star Business Award for outstanding achievement in the mining/energy sector has been won by Sasol.

The panel of judges congratulated the synthetic-fuel producer for leading the world in fuel-from-coal technology.

They noted that Sasol was a continuing national venture of great benefit economically and sociologically.

Sasol provided employment for thousands of people directly and many more indirectly through the industries which had grown from its requirements and those estimated by using by-products.

Not only was there the strategic aspect of fuel production but also the affect this had on national sociological advancement.

Another factor influencing the judges decision was Sasol's success on

the Johannesburg Stock Exchange to expand operations.
The money will mainly be used to build Sasol 3 next to Sasol 2 at Secunda.

This will provide much of the growth for investors' earnings in Sasol which owns the entire equity in Sasol 1 and half of the share capitals of Sasol 2 and Sasol 3.

Criteria for the award, constructed to give equal opportunity to the private and public sector, were:

- Contribution to the national wellbeing as a whole, whether on a purely economic or sociological level.
- Contribution to the mining-and-energy sector in the broadest sense.
- Contribution to the organisation concerned. — David Bamber.

1969	100,0	11,1	20,9
1977	100,0	45,6	

Source: U S Department of Commerce, Survey of Current Business

Note: (D) denotes suppression to avoid disclosure of data

By David Bamber

The flames leap from towering stacks as the world's leading synthetic-fuel producer, Sasol, continues its bid to make South Africa independent of imported fuel.

It began many years ago when oil was abundant and the world was busy reconstructing countries ravaged and torn by tanks, mortars and bombs during World War 2.

A mere two years after the dust had settled in 1947, legislation was passed for the establishment of an industry to produce oil from coal.

In 1950, the South African Coal, Oil and Gas Corporation (now Sasol 1) was registered in terms of the provisions of the Companies' Act as an ordinary company with a profit motive.

The State provided the capital investment required for establishment of the industry in the form of share capital through the Industrial Development Corporation.

development Corporation (IDC).

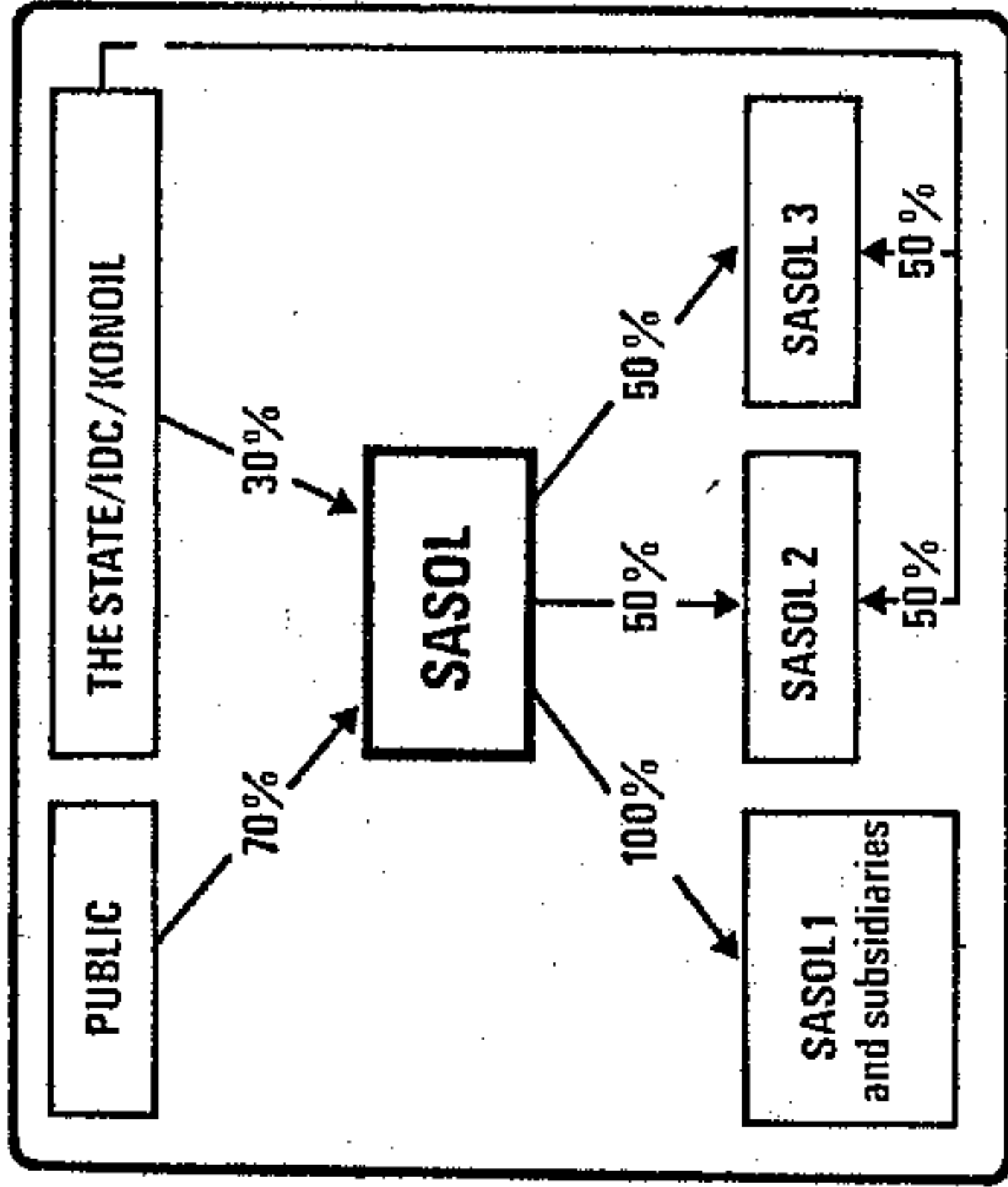
Five years later Sasol stepped into economic history when "the fuel of the future" issued forth from South Africa's own "oil well".

Scepticism

The world greeted the news with scepticism. After all, there was plenty of oil around. The war, which had swallowed fuel, was over and oil would flow freely and cheaply.

Surely it would be unwise to manufacture a synthetic fuel when nature provided the real thing?

How times have changed. Industrialised countries are being held to ransom by petroleum-exporting countries (Opec), costs have spiralled upwards and world oil reserves are declining at an alarming rate.



The public's share in the "fuel of the future".

Corporation (Gascor) for the distribution of industrial gas to industries in the Southern Transvaal.

and economic feasibility of an extensive second installation for large-scale production of fuel from coal was undertaken.

Wide range

In this way Sasol 1, with its wide range of products, developed into the pivot of the national chemical industry and this resulted in the establishment of an extensive petro-chemical industry at Sasolburg.

The decision to go ahead with Sasol 2 was taken a year later. Shaft-sinking at Sasol's Bosjespruit Colliery started towards the end of 1975 and the construction of Sasol 2 started early in 1976 at Secunda, Eastern Transvaal.

A new milestone was reached in 1966 when it was decided that Sasol was to undertake the refining of crude oil. This resulted in the formation of National Petroleum Refineries of South Africa (Natref) at Sasolburg in 1969.

Following the revolution in Iran — until then South Africa's major supplier of crude oil — the Government decided to expand Sasol further by erecting Sasol 3, adjoining Sasol 2.

Suddenly the world is faced with an oil crisis and the challenge to find alternative sources of fuel supply has become a reality — a challenge taken up by Sasol 25 years ago.

So, after more than a quarter of a century's commercial application of oil-from-coal technology, Sasol is the world leader in this field.

Implemented

Since completion of the first plant at Sasolburg in 1955 several improvement and expansion programmes have been implemented.

In 1964 Sasol 1 started producing butadiene and styrene for the manufacture of synthetic rubber. The same year saw the start of the synthetic manufacturing of ammonia for the large-scale production of nitrogenous fertilisers.

A year later the first naphtha cracker of Sasol 1 went into operation to produce ethylene — of the most important raw materials in the chemical industry.

Sasol has kept pace with the increasing demand for its products through the years and in 1964 established the South African Gas Distribution

In November 1973, following the start of the Opec oil crisis, a study to determine the technical



Sasol's managing director, Mr J A Stegmann—steering South Africa to independence from imported fuel.

The enormous success of Sasol is now being shared with the investment public.

This was prompted by the Government's decision to proceed with Sasol 3. Up to that time the State had effectively held all the shares in the Sasol group.

Uninhibited

With the rate of expenditure on Sasol 2 close to its peak, there was a need for totally uninhibited thinking about the sources of finance for this additional mammoth project, estimated to cost R3 276-million.

Once it was recognised that initial participation of private investors could be structured largely around the profitable operations of Sasol 1, it was possible to devise a practical scheme whereby these investors would effectively provide R525-million towards the construction costs of Sasol 3.

JSE scramble

Growth potential would be provided by Sasol 2 and Sasol 3, each of which, as it reached an acceptable profit level, would become a wholly-owned subsidiary of the parent company.

The introduction of private shareholders was an instant success as investors scrambled to obtain shares in the largest listing on the Johannesburg Stock Exchange to that date.

The private issue to institutional investors was fully subscribed and the public issue was oversubscribed a whopping 31 times.

Enviably

This remarkable vote of confidence in the future of Sasol has led to the public holding no less than 70 percent of the shares in the holding company which, in turn, owns the entire capital of Sasol 1 and currently holds half of the equity of Sasol 2 and Sasol 3.

Sasol has contributed substantially to the national wellbeing, directly and indirectly, and, above all, from the business point of view has achieved an enviable profit trend over the past decade.

Another
 eight ^{Star} 3/9/8
 Sasols ⁵⁵
 for SA?



Sasol 2 . . . already at full capacity.

By Jaap Boekkool

The Government may build another eight giant Sasol-type plants to make oil from coal to ensure the country's transport fuel supplies during the next few decades.

This is the implication of a speech made to the Johannesburg Junior Afrikaanse Sakekamer by the Director-General of Mineral and Energy Affairs, Mr S J P du Plessis.

Mr du Plessis said that South Africa, which now uses some 80-million tons of coal a year, would mine 740-million by the year 2020 for local consumption.

Some 20 percent of this enormous amount of coal would be used between the years 2000 and 2020 to manufacture synthetic fuels, on condition the world remained free of oil crises and South Africa could obtain crude oil at acceptable prices.

Since the present Sasol 2 and Sasol 3 plants at full capacity, will each convert 13,75-million tons of coal a year, more than eight similar plants, whether they produce petrol or methanol motor fuels, are to be needed to come up to Mr du Plessis' estimate of future synthetic fuel

production.

Mr du Plessis had another surprise up his sleeve when he addressed the Afrikaner businessmen: his estimate of South Africa's exploitable coal reserves is almost double that of previous estimates.

The authoritative Petric Commission into coal and related affairs a few years ago found the country had some 20 000-million tons of exploitable coal reserves. But today, said Mr du Plessis, these reserves are now estimated at 51 000 million tons which could be economically mined.

Of this vast amount South Africa mines only 0,16 percent each year at present, but compounded increases in consumption, and in exports, will soon double this figure.

South Africa's total proven, but not yet economically mineable coal reserves have also increased during the last few years, from the Petrick Commission's estimate of 80 000-million tons to Mr du Plessis' estimate of 110 000-million.

This was one of the reasons, mentioned by the Director-General, why the Government is now doing a study on the application of measures which will further the conversion from petroleum products to coal.

Other energy-saving actions now contemplated by the Government were an investigation into the suitability of daylight saving time, and other energy sources like the sun.

Dr du Plessis said that with the uncertainty of the gold price "alternatives in the mineral field to serve as buffers against falling gold prices" would come into focus.

Eventually South Africa would earn more foreign exchange from other finished, and unfinished, mineral products than from gold, and without harm to the economy.

Although these borings extended across seams and cracks in the rock, no indication of displacement could be found along the borings. This proved conclusively that no disturbance of the bedrock had occurred since that time.

(2) Yes: In this connection please refer to my reply of 21 August 1981 to question 14.

(3) (a) The site studies were done by the Bernard Price Institute of the University of the Witwatersrand, the Geological Survey of the Department of Mineral and Energy Affairs, Escom itself and well-known American Consultants (Dames and Moore) who are most experienced in these matters.

(b) (i) The investigations included the following: Geological surveys assisted by an extensive drilling programme; and Seismic, Soil Science and Hydrological studies.

(ii) These investigations proved without exception that the Koeberg site is situated in a geological and hydrologically stable area of low seismicity.

Koeberg nuclear power station

*11. Mr. R. R. HULLEY asked the Minister of Mineral and Energy Affairs:

Handwritten: Hans S Q C 291 53

(1) Whether any evidence exists that the Koeberg nuclear power station site and its immediate environs might be subject to movement resulting from (a) underground (i) faults, (ii) fissures, (iii) cracks, (iv) quakes, (v) swelling, (vi) shrinkage and (vii) subsidence and (b) any other causes; if so,

(2) whether such movement could damage the structure of the power station so as to cause the release of radiation; *Handwritten: 4/9/81*

(3) (a) what studies have been conducted into the underground characteristics of the Koeberg nuclear power station site and its environs and (b) what (i) was the nature of and (ii) were the findings arrived at in such studies?

†The MINISTER OF MINERAL AND ENERGY AFFAIRS:

(1) No: The excavations for the foundations of the Koeberg Power Station exposed some 30 000 square metres of bedrock. The bedrock was found to be penetrated by small borings in which small marine animals lived more than a half million years ago.

PFP man calls for N 'watchdog'

ANSWER 5/9/81 55
Parliamentary Staff

A CALL for the establishment of an independent 'nuclear watchdog' comprised of experts from the Western Cape's three universities and local authorities was made in the Assembly yesterday by Mr Roger Hulley (PRP, Constantia).

Speaking during the debate on the Mineral and Energy Affairs vote, Mr Hulley said such a body could help bring 'calm and rationality to the Koeberg debate.' It could objectively evaluate the assurances given by the Atomic Energy Board.

Mr Hulley said he was not an 'anti-nuke freak,' but in the case of Koeberg he had reservations.

The main questions surrounding the Koeberg nuclear power station, due to be commissioned by the end of next year were:

- How the Atomic Energy Board — a single body — could successfully fulfil the two conflicting functions of promoting nuclear power, and effectively monitoring the safety of nuclear power.
- How the nuclear waste from the plant was to be treated.
- The risks to the Cape Town metropolitan complex — a recently published meteorological report indicated that wind could bring a radiation cloud towards the Peninsula if radiation were ever released.
- What caused the reported cracks in the Koeberg structure, and what the consequences could be.
- What effective emergency planning had been under-

taken to minimise the consequences of a release of radiation.

- Whether the Government had assured itself of reliable and continuous sources of nuclear fuel.

The question of nuclear fuel was also raised by Mr John Malcomness (PFP, Port Elizabeth Central).

While South Africa continues to discriminate on the grounds of colour, the supply of enriched uranium for power stations will always have a question mark hanging over it, he said.

It would be unwise to invest in more nuclear energy facilities until the raw material could be supplied from within the country.

(News report by F Esterhuysen and R Parker, 122, St George's Street, Cape Town.)

CT 5/9/81

MP wants Koeberg monitor

Political Correspondent
HOUSE OF ASSEMBLY.

The Progressive Federal Party's member for Constantia, Mr Roger Hulley, called yesterday for an independent public watchdog authority to monitor the safety of the Koeberg nuclear power station.

He said during debate on the Mineral and Energy Affairs Portfolio that there was a great deal of public concern about issues such as plant safety, emergency planning in the event of an accident, and waste disposal.

Mr Hulley suggested the appointment of an independent authority, comprised of experts from the three West-

ern Cape universities and local authorities in the area.

Such a body could evaluate objectively public fears on the one hand and official assurances on the other, without compromising the State by the release of classified or sensitive information.

Mr Hulley said he was not "an anti-nuke freak", but regarded nuclear power as a legitimate energy option provided it was managed and controlled with necessary safety-consciousness.

The Western Cape's energy requirements might have been served better if the vast investment in Koeberg had been put into wind or solar

energy generation, coupled to pump storage schemes.

But the situation now was that a 922 megawatt nuclear power station was due to be commissioned by the end of next year uncomfortably close to Cape Town and important public questions needed answering.

These included how the Atomic Energy Board could fulfil the conflicting requirements of promoting nuclear energy and monitoring the safety of nuclear power, disposal of poisonous wastes, the risks of radiation release to Cape Town, and emergency planning for this contingency, and the supply of nuclear fuel.

The nuclear leak threat . . .

Can Cape Town cope?

S. Tribune 6/9/81

WIND STUDY BLOWS UP NEW RISE IN CITY FEARS

55

Tribune Reporter

SPOKESMEN for the Atomic Energy Board and Escom refused to comment this week on whether evacuation plans had been drawn up for Cape Town to cope with a radiation leak at the Koeberg nuclear power station.

The fears of many Capetonians about the effect of a possible nuclear mishap at Koeberg on their city have been increased by an AEB study of wind conditions around the site.

This showed that in some circumstances, the winds would blow radioactive gases from Koeberg to Cape Town and could concentrate them there, once a mishap had caused them to escape from the plant.

The study by Dr Danie van As, director of the isotopes and radiation division at Pelindaba, Mr Chris Norden, and Mr Piet Botha — all AEB scientists — has been reported in the board's magazine "Nuclear Active".

In their article they say it is essential to know the effects of air movements around the plant "in order to cater for the remote eventuality of an accidental release".

The work was carried out over the last three years — long after the decision to site Koeberg so near the populous peninsula.

The project is still going on.

The acting chairman of the anti-Koeberg group, Koeberg Alert, Dr Arnold Abramowitz — senior psychology lecturer at the University of Cape Town — said this week: "This is the sort of thing Capetonians have the right to protest bitterly about — that the siting should have been decided when the knowledge of all environmental factors in-

involved was incomplete.

"Escom has said in the past emergency planning is necessary only for a few kilometres around Koeberg and that all the necessary meteorological research was carried out years ago.

"Now we find something which they couldn't have known about, which could threaten the whole of greater Cape Town and even necessitate its evacuation.

"The big question now is to find out what plans there are for the mass evacuation of people in the path of a radioactive cloud and what Escom's response is to the AEB findings."

The Sunday Tribune this week put certain questions about the AEB findings and emergency planning to a spokesman for the board, but received the reply that the president, Dr Wynand de Villiers, was away, and so there could be no comment this week.

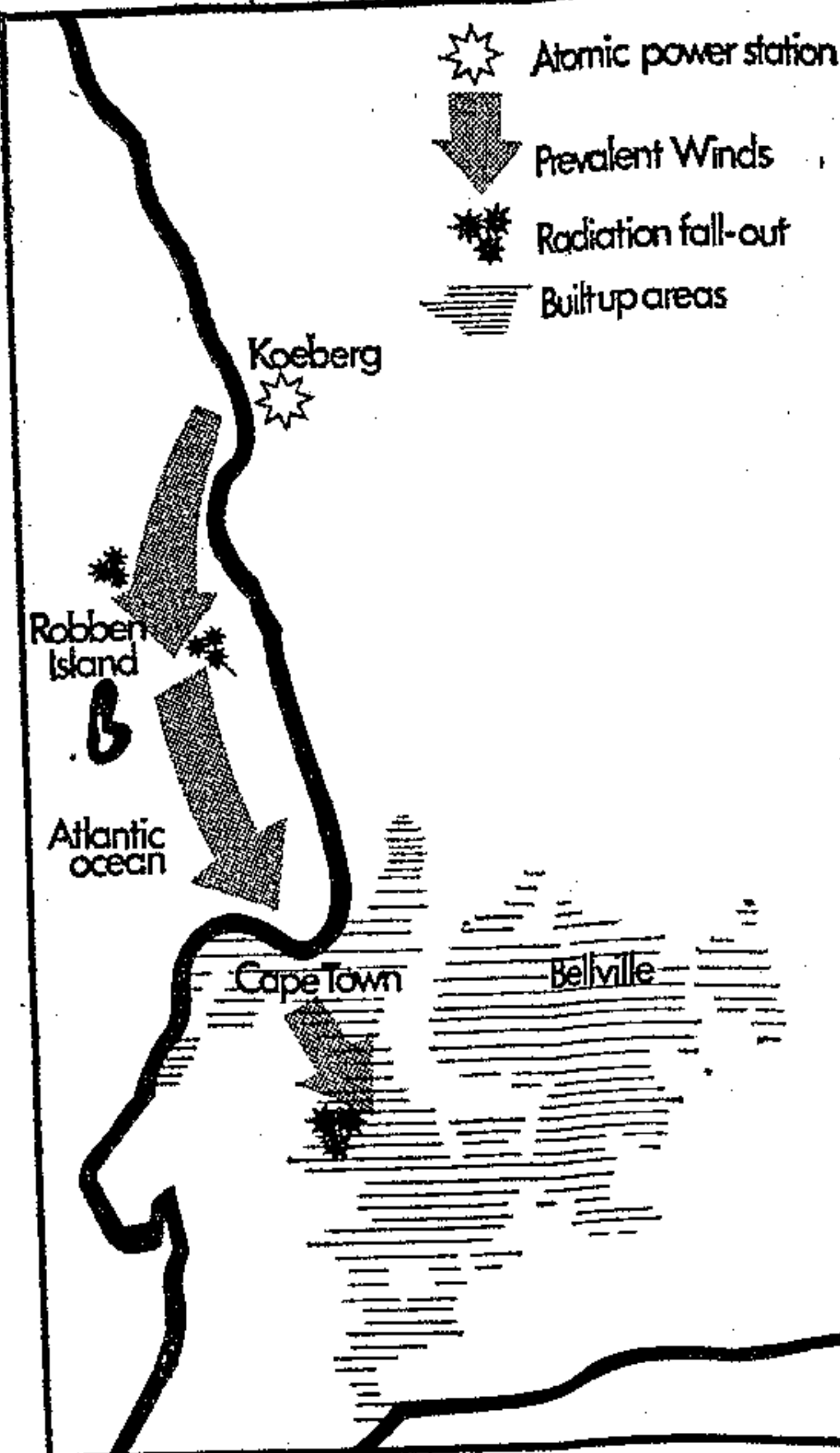
The executive committee of the Cape Town City Council, meanwhile, has recommended the installation of a ring of radiation monitors around the city which would operate independently of those operated by Escom.

The AEB study makes it clear that calculating the effects of the winds in the Koeberg area is extremely complicated and much work still needs to be done.

Various anomalies had been found which were difficult to explain.

The scientists say that with a north-wester blowing and a typical nocturnal land breeze "a plume of airborne effluent for Koeberg into the land breeze layer would move out over the sea towards Robben Island, to be returned to land in the Cape Town area by the increasing NW component of the surface winds south of Robben Island."

Rare conditions of this nature "have the potential of creating high concentrations if a release should occur".



WIND studies show that radioactive gases which could escape from Koeberg would be blown direct to Cape Town in the event of a mishap.

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EAST LONDON — A R3 million ethanol plant, which will be used to produce "gasohol" when combined with petrol, is being planned as an extension to the Langenberg canning factory here, according to a report in a Cape Town business journal.

The Cape Business News quotes the technical director of Langenberg, Mr Jan Lombaard, as saying the ethanol development will be an extension to the existing canning factory.

The report says the plant will have a capacity of three million litres of ethanol a year and will generate about R1 million a year at full production.

Apart from the ethanol, which will be a by-product of pineapples at the canning plant, the new plant will produce 3500 tons of animal feed to provide a further revenue source worth about R250 000 a year.

An additional estimated revenue of R250 000 will be generated by the production of carbon dioxide gas.

Mr Lombaard is reported by the magazine to have said the working costs of the plant will be about R500 000 a year.

Attempts to contact Mr Lombaard to confirm the report were unsuccessful yesterday and local executives of Langenberg were

not prepared to comment.

The business journal report said ethanol produced at the Langenberg plant would be marketed as a mixer with petrol to produce gasohol, which is already being sold on the Reef in conjunction with an unnamed oil company.

The report stated that to streamline production, maize would also be used to produce the ethanol using the pineapple waste as a by-product.

The magazine says that via its articles, the project would be a good story, covering not only production but also finance and marketing.

Referring to the news report, the former Mr Bond said that he was "absolutely delighted" to hear of the plans.

"We are expecting a lot to happen here shortly and this is an exciting announcement and I see it as a fore-runner to what lies ahead," Mr Spring said.

"It augurs well for the future and any display of confidence by existing companies is welcomed and we will support and assist in the kind of development as far as is possible." — RPP

interest could be for doing this would counting policies.

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Card: ethanol plant augurs well for future

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EAST LONDON — The idea of an ethanol plant in the region was nothing new, but it was "very pleasing" to learn that the Langeberg Co-operative was actively planning a plant.

This was said yesterday by the city council's Industrial Affairs portfolio chairman, Mr Donald Card.

"The idea has been mooted before and I am very pleased to hear that Langeberg is looking into it," he said.

"Any development for East London is great and this is a particularly pleasing development.

"It should be noted that many of our existing industries are now expanding or completing expansions and I think this is a remarkable feature of our industrial development.

"We have major expansions underway at SATV, the Frame Group, CDA and now Langeberg.

"This shows that our local industry has confidence for the future," Mr Card said. — DDR

Agus 11/9/81

By TOS WENTZEL Political Correspondent

THE Minister of Mineral and Energy Affairs, Mr F de Klerk, last night gave the assurance that the Koeberg nuclear power station was based on sound design and that strict safety precautions were being taken.

Speaking against the background of a controversy over the power station which has lately been raised in Parliament on several occasions, Mr de Klerk said he had come to two basic conclusions:

● Every possible precaution had been taken and would be taken to make Koeberg one of the safest nuclear power stations in the world;

● The risks involved were within acceptable limits in terms of accepted world standards.

Speaking at a meeting of a Gardens branch of the National Party, Mr de Klerk said the safety aspect of Koeberg seemed to be a source of constant worry to many people.

The Koeberg nuclear power plants, Units 1 and 2, would be pressurised, light-water moderated reactors, called PWRs, each capable of generat-

ing approximately 900 Mw. These units would be designed, manufactured, constructed and commissioned by a French consortium of industrial firms, which were well-established in building PWRs.

Escom's decision to award the contract to a French consortium was guided, among other things, by the commitment of the French to a large-scale nuclear power programme, which was formulated for PWRs similar to those at Koeberg, well before the construction of the Koeberg site was started.

The PWR technology was of Westinghouse (US) origin, modified by the French for their large-scale programme. Design problems were thus being eliminated and teething difficulties of these reactors eliminated.

Before Unit 1 of Koeberg began operation, experience gained with setting up of a licensing

branch, the Atomic Energy Board had appointed a nuclear safety advisory committee under the chairmanship of an independent chairman.

The committee was composed of representatives of the private and public sectors and scrutinised the entire project.

● Additional safety precautions were; the implementation of post-Three Mile Island actions; the issuing of safety bulletins to instil safety awareness and intensive operator training programmes.

Each phase of the design, construction, commissioning and operation of the Koeberg units 1 and 2 would be subjected to conditions satisfying the Atomic Energy Board's licensing criteria to ensure the safety and health of the public.

Escom started an information centre four years ago at the Koeberg site to supply the public with full information on the project.

Last year 12 000 people visited the site.

Lectures were given to various learned societies and public groups by Escom staff.

Mr de Klerk said that, in spite of all these assurances questions were still being asked. He dealt with some of the had recently come to the fore.

The objectivity of the Atomic Energy Board was being questioned.

Critics were asking how the board could fulfil two conflicting functions — promoting nuclear power and of monitoring the safety of nuclear installations.

The AEB was the only organisation in the country which had enough suitably qualified engineers and scientists with the ability to do the involved investigations

which were necessary in order to judge the safety of a nuclear power station.

In order to ensure that their task would be done in an objective and thorough way it was served by the nuclear safety advisory committee.

This was the watchdog over the AEB.

He was also at present considering steps to ensure that the credibility of the AEB as an objective control mechanism should be put beyond any doubt.

Mr de Klerk said a report in The Argus on August 28 had created the impression that new information about wind patterns had come to light which entailed

great danger to Cape Town.

He said he had certain facts to give.

It had never been alleged that wind-borne radio activity would not reach Cape Town.

The safety of a nuclear power station did not depend on the direction from which the wind blew but on safe design, construction, erection, the way it was run and the reliability of safety systems in order to prevent the release of radio active material.

'Koeberg is an important factor in our energy strategy and offers tremendous advantages to the Western Cape.' The AEB had, under contract from Escom,

KOEBERG

only in the direction of Cape Town for 15 to 20 percent of the time, mainly in winter.

As a result of the rapid dispersion in strong winds the maximum concentration of radio-activity was found approximately 2 km from Koeberg during such conditions and such concentrations would be much weaker at Cape Town.

In only 5 percent of cases where radio-activity could be blown back from a westerly direction could this be blown back to Cape Town over a relatively long period.

There was no proof that there was any increase in the winds converging on Cape Town.

From a weather point of view Koeberg was therefore a good choice.

Mr de Klerk also gave the assurance that emergency procedures in the unlikely event of an accident were sound. There was no limit to the area in which such measures could be applied.

since 1970 undertaken investigations of the Koeberg terrain in order to ascertain:

● The concentration levels of refuse which may be released into the sea;

● The safe release levels of radio-active gases during the normal running of the plant;

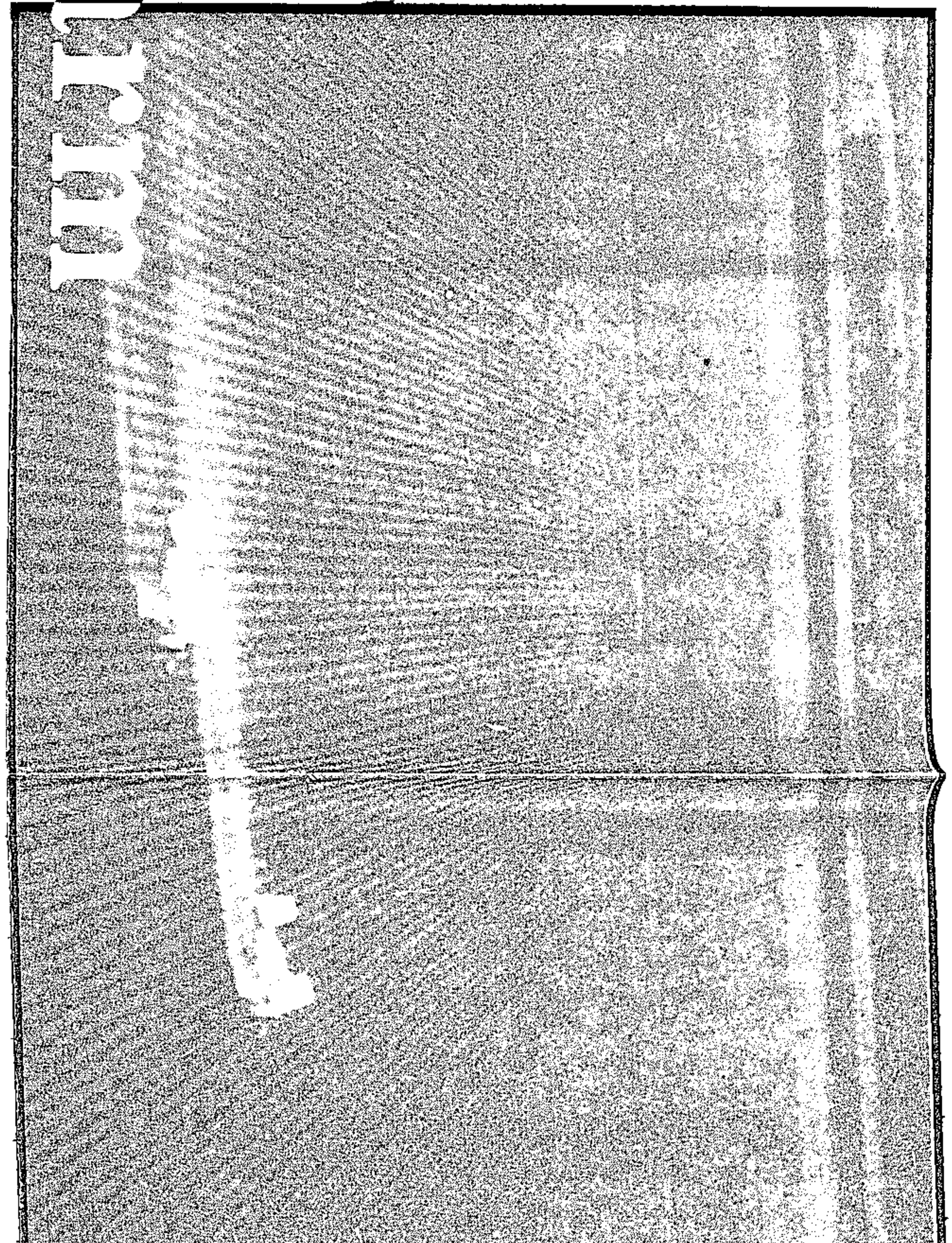
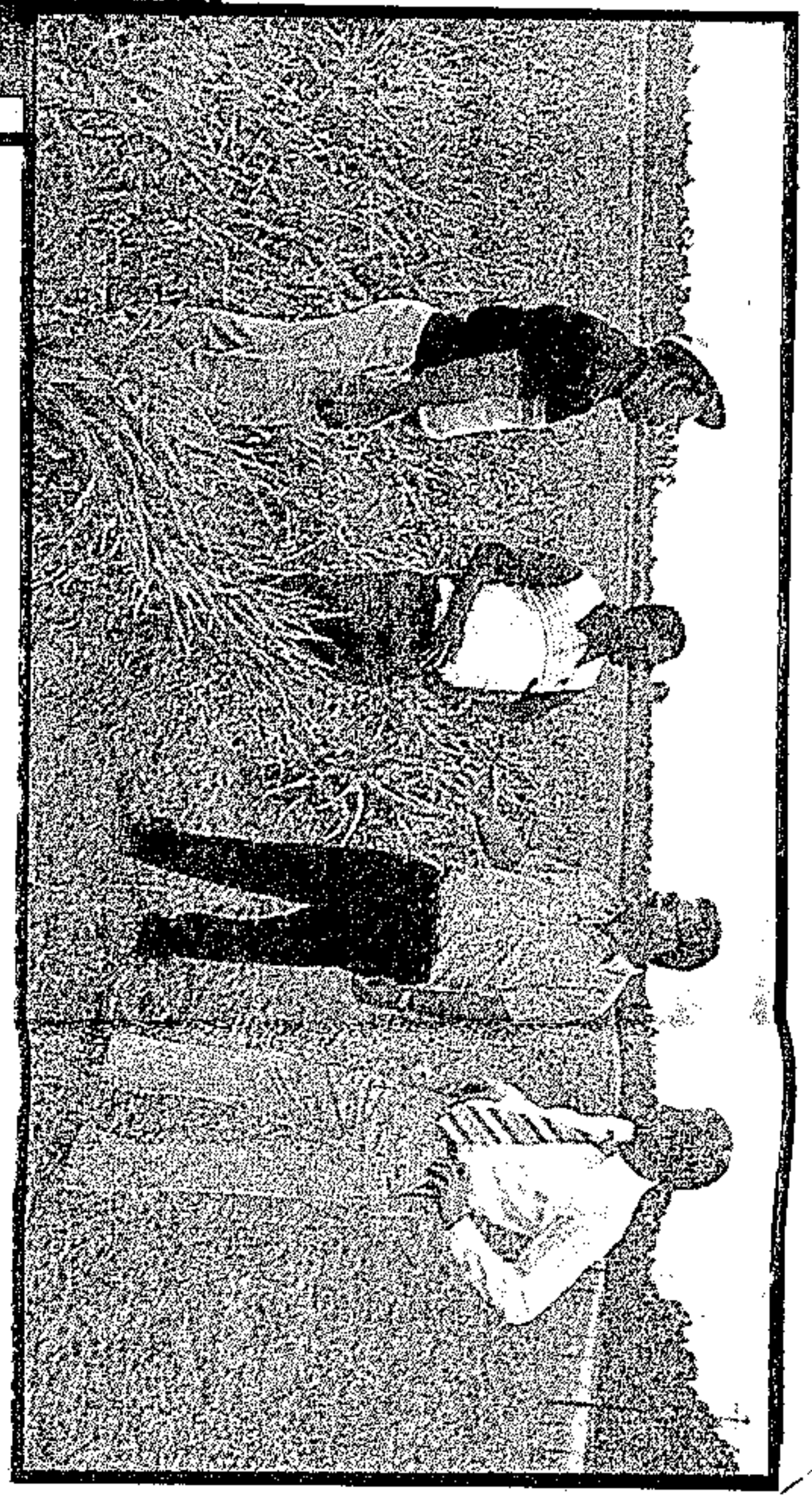
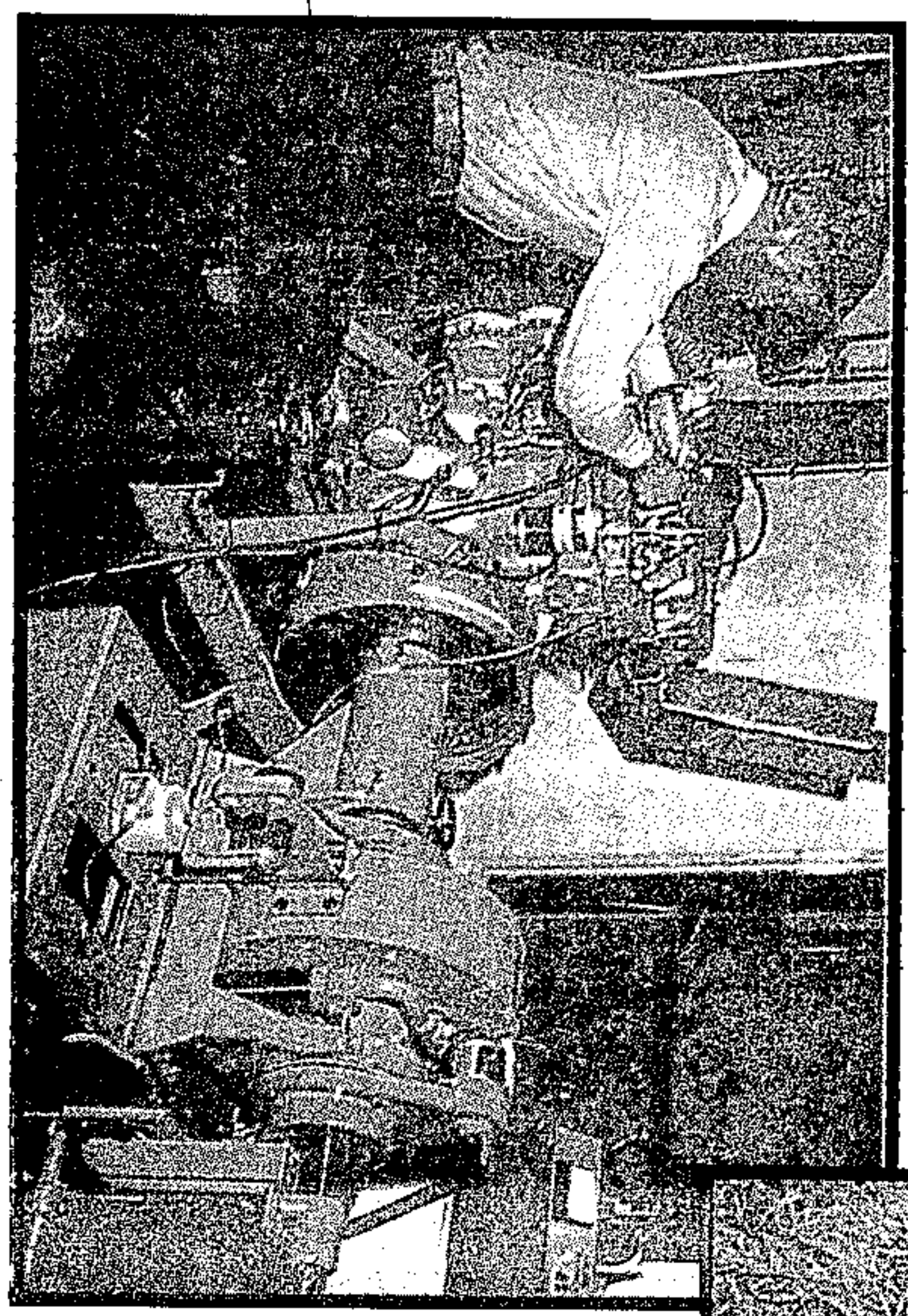
● The results and influence of accidental release of radioactive material in the atmosphere;

● Levels of radioactivity in the environment to serve as reference before the power station started.

The studies had shown that strong winds which occurred for 60 to 70 percent of the time blew

Farm communes like this one, right, in Bophuthatswana would feed ethanol plants. Below, testing an engine running on ethanol fuel at the CSIR in Pretoria

Fuel



Maize crop spraying... farm surpluses could yield more fuel.

ST Sta 11/9/81

from the farm

Master plan to produce ethanol from agricultural surpluses

By MIKE HOLMES
A major chemical group is seeking government support for a master plan that it says would make South Africa even more self-sufficient in fuel — and ultimately provide hundreds of thousands of jobs in rural areas.

The group proposes using farm surpluses in as many as 20 ethanol manufacturing plants that could yield 20 percent of the country's liquid fuel requirements each year.

The 20 modules would do much more than produce hundreds of millions of rands' worth of ethanol annually, says senior general manager, Dr R E Robinson. By-products will boost the national output of animal feeds by more than four million tons a year and red meat production by 640 000 tons.

Dr Robinson believes that agricultural development on a massive scale offers the best hope of coming to grips with the region's most urgent problem — unemployment.

South Africa produces ten million tons or more of maize each year, but uses only about six million tons. The surplus is exported at a loss.

Experts have indicated that the annual sugar cane crop of around 20 million tons could be doubled. Yet the sugar industry operates within a strict international quota system. Similar problems restrict the optimum use of other crops.

Dr Robinson visualises up to 20 agrochemical complexes in different areas. Each would consist of a central processing plant surrounded by Israeli-type farm communes. The communes could be run along the lines of a project in the Moolfontein and Sheila areas of Bophuthatswana.

(There, he says, an experiment in black land ownership, scientific farming and co-operative planning between white and black farmers and agricultural officials is yielding dramatic results. Dry-land maize production of 2.5 to 3.0 tons/hectare — equal to the average in the Republic — has been achieved. Income per family, after deduction of living and farming expenses, has risen to between R2 500 and R6 000).

What could be achieved, he asks, if this project was emulated a hundredfold in the underdeveloped areas?

The huge investment needed to get such a programme moving could be justified by the broad-ranging yields of the proposed agrochemical complexes.

"Many products could be derived from these agrochemical raw materials such as timber for houses and firewood for heating, cotton for clothing, oils for paints and varnishes. But the most important, is ethanol," says Dr Robinson.

"Various crops are under consideration for fermentation plants to manufacture ethanol. Of immediate importance are maize, sugar cane and sorghum and, at a slightly later stage, cassava.

A typical module would produce about 100 000 tons of ethanol a year from 300 000 tons of maize.

In agricultural terms, the central ethanol plant would have to be surrounded by 100 000 to 150 000 hectares of maize-growing area," he says.

The company owning the ethanol plant would negotiate for raw materials with the farming community surrounding it. In co-operation with the State marketing authorities.

In essence, supply contracts would involve a guaranteed price. Sales to one ethanol plant would amount to more than R30-million a year at current prices.

"With firm contracts of this magnitude, I see no difficulty in raising capital from industry and government to provide loans to the farmers for the purchase of machinery, fertilisers and other requirements," says Dr Robinson.

The government would have to give an assurance that the ethanol would be fed into the country's liquid fuel pipeline. The selling price would have to give an adequate return, at least keeping pace with inflation. This would assure the farmer of a price for his product that would also rise with inflation.

"Each module would provide DIRECT agricultural employment to some 3 000 farmer families and to probably 200 to 300 workers in the ethanol plant itself."

A by-product of maize fermentation is high-protein, known as dried grain and so (DfG). Added roughage, such as fodder, it would be valuable animal feed. This feed would be sold at a secondary price.



new kind of plant

Stay 11/9/78
55
● From Page 1

mutton, beef or pork, either through feedlots or as a supplement to natural grazing.

At least another 2 000 families could be supported by this secondary farming.

This is still not the end of the possibilities. For every ton of ethanol produced, one ton of carbon dioxide is usually dispersed into the atmosphere.

A limited amount of this carbon dioxide could be used for freezing vegetables, poultry and other perishables. Much more could be used to cultivate algae.

Dr Robinson added: "By means of some more ingenious chemistry, the oxygen the algae produce can be used to obtain ammonium nitrate from atmospheric nitrogen. This ammonium nitrate will not only give nitrogen for the algae to synthesise proteins, it can also be used as a fertiliser for the farmers."

Furthermore, the algae could be fed into the fermentation system. Carbohydrates in the algae could then be converted into additional ethanol. Proteins in the algae cells would be precipitated with the residue and could be added to the normal DDGS by-product.

A much simpler use for the algae would be to feed fish. Some fish, like the silver carp, are known to grow exceptionally well on algae.

He says 100 000 tons of carbon dioxide annually from the fermentation process could yield 50 000 tons of algae. The algae could conceivably produce 100 000 tons of fish worth more than R20 million. The entire algae project and its spin-offs could provide another 2 000 to 3 000 jobs.

Many thousands of extra jobs would become available for support personnel such as shopkeepers, schoolteachers and technical

instructors, mechanics, salesmen and public servants. Overall, a single complex would give "a decent living for some 40 000 families."

Twenty complexes throughout the region, based on a variety of raw materials, could produce two million tons of ethanol a year, worth upwards of R625-million in today's money. Animal feeds, meat and other by-products would earn similar sums.

At full production the 20 complexes would offer jobs for 800 000 people.

He concedes that a great deal of work has still to be done — notably relating to fuel policy, land ownership and education.

A big advantage is that the concept can be started in a small way and expanded by stages.

The cardinal questions are: will the government approve ethanol for blending into existing fuels? And will it devise a pricing-marketing for-

proposition?

Sentrachem group managing director Mr Dave Marlow says it has been the government's stance that if it is to support ethanol production, that support should leave the Treasury no worse off than before. The upshot, he says, is that the duty concession offered on ethanol does not make for a viable project.

In the group's own newspaper in July, a senior company spokesman says it has been the government's stance that if it is to support ethanol production, that support should leave the Treasury no worse off than before. The upshot, he says, is that the duty concession offered on ethanol does not yet make for a viable project.

"You will find that the authorities in those countries where gasohol is used in pure or blended form, have made concessions considerably in excess of what we have been offered."

● Dr Robinson's concept was first set out in a Gold Medal address to the South African Chemical Institute two years ago.)

low company profitable company started making losses in 1972, but it is felt that the problems should have been brought to the attention of management as far back as 1968, for in that year the company earned less than its cost of equity funds. This suggests that management do not place enough emphasis on the cost of equity funds and perhaps full disclosure in the income statement would ensure that the relevant information is brought to the notice of users and other interested parties. It would surely enable shareholders to see how efficient management is running their company and could

**Northern
Natal
could get
Sasol 4**

Financial Editor

SASOL 4 could well be built on the coalfields of Northern Natal, according to the Director-General of Mineral and Energy Affairs, Dr S J P du Plessis.

All that it required was an entrepreneur to furnish the capital.

No Sasol spokesman was available yesterday to comment on this view but previously they have indicated that the Sasol programme is fully committed to completing the second and third plants.

The company cannot spare skilled staff to start on another unit, and additionally the heavy financial burden of at least R5 000-million makes it difficult to contemplate further plants.

Sasol expects to be busy until at least 1985 on existing projects.

Dr du Plessis said that for strategic reasons it might be necessary to build further Sasol plants round the country.

He said that the country was consuming 80-million tons of coal a year at present but in 40 years would be mining 740-million tons.

Sasol 2 and 3 would use about 13,75 million tons of coal at full capacity.

September 15, 1981 3

Ethanol: Firm to decide

Industrial Reporter

A DECISION on plans for a R3-million ethanol plant for the production of gasohol at East London is to be taken by Langeberg Co-op at a board meeting on December 1st.

Confirming this yesterday, the group's technical director, Mr Jan Lombaard, said he hoped the board would approve the project at that time.

Envisaged capacity of the plant, an extension to the existing cannery in the city, is three million litres of ethanol a year, basically from pineapple wastes, but also from maize during the pineapple off-season. It would also produce about 3 500 tons of animal feed and carbon dioxide gas.

The ethanol would be marketed as a mixer with petrol to produce gasohol.

Viability studies for the project are well advanced.

TC Land has hopes for Escom contract

and is looking for all of RMP Props

By JOHN MULCANY

TRANSVAAL Consolidated Land and Exploration (TCL) has a reasonable chance of acquiring the coal supply contract for a new Escom power station, says chairman Mr Tony Petersen.

He did not elaborate, but said in an interview yesterday that from information available to the group there was a possibility of adding a new Escom contract to the agreement it already has — through Witbank Colliery — for coal supplies to the Duvha power station.

Construction of Duvha power station is expected to be com-

pleted in 1984 and coal deliveries will increase as each of the generating sets is commissioned.

Escom recently announced its decision to build two new power stations, the first at Matimba near Ellisras in the Northern Transvaal, and the second, "power station C" at an undisclosed site.

He was also confident that the group's coal export allocation would be raised because the infrastructure has already been developed and Rand Mines had an established record as an exporter.

Mr Petersen said that TCL,

after making the offer to Rand Mines Properties shareholders in accordance with the Companies Act, would now welcome the opportunity of taking out all of the minority shareholding.

He said the original intention was to transfer control of RMP to TC Lands from Barlow Rand, because of the property company's growing mining interests.

Subsequently TC Lands had warmed to the idea of bringing RMP in to the fold as a wholly-owned subsidiary, and if acceptance was received to take TC Lands holding up to 90% the company would exercise its

rights to acquire the remaining 10% of RMP's shares.

TCL's rationale in wanting the whole of RMP was that the future development of the gold interests — expansion of the sands retreatment scheme and possibly underground mining later — would require substantial capital.

It would be much easier to move funds from TCL into a wholly-owned subsidiary than to approach minority shareholders to participate in further development.

From RMP's point of view the substantial capital required would dilute earnings for some time to come, and dividends would suffer, while shareholders electing to accept the TCL would be assured of dividend growth.

"The TC Lands dividend pattern has been established, and the rate of increase should continue."

He said TCL's high dividend cover in the past has allowed the group a significant ploughback rate, and to maintain dividend growth the cover could be cut without difficulty.

Initially TCL shareholders will have to bear the costs of RMP's expansion, but only to the extent of reduced earnings, as dividends will not be affected.

TCL offered one TCL share for seven RMP shares to Barlow Rand, which was accepted by Barlows, and the same offer or an alternative of one TCL share plus 840c for eight RMP shares was made to minorities. Barlows has 60.1% of RMP.

The offer closes on Friday, but Mr Petersen said it was too early to give any indication of the extent of acceptance. He did say, however, that all of the acceptances received to date were for the "one-for-seven" option, and that no shareholders had yet opted for cash.

Mr Petersen said in accepting the offer and becoming TCL shareholders, RMP shareholders would not be giving up their interest in gold, but would have an interest, through TCL, in Harmony, Blyvooruitzicht, ERPM and Durban Deep.

Harmony, Durban Deep and ERPM reacted very quickly to movements in the gold price, and this would be reflected in TCL's earnings and dividends.

He said these mines could "take off" with a higher gold price, and believed this would eventually happen. "Our mines are big, and low grade, and when the gold price moves up the percentage rise in the marginal mines is much greater than for the low cost producers."

The benefits of TCL's expansion of its coal interests have been building up over some time, said Mr Petersen, and will continue growing.

Earnings for the current year, ending September 30, will not show substantial growth, but next year, with improved earnings from coal and gold expected to begin moving upward, profit growth should be better.

Mr Petersen said that while TCL would like to take out all of RMP's minorities, the group would accept the situation if there were not enough acceptances for the offer. "We did not expect to take 100% of Rand Mines Properties at the outset, so will not be disappointed if it does not become a subsidiary."

There were very few institutional investors in RMP, said Mr Petersen, and while there were some shareholders with "significant" parcels of shares, they had not been canvassed to support the offer.

Escom Contract

20m 11/16

ESCOM has awarded a R300-million contract for six 600-MW turbine generators to a German-French consortium, Man-Alsthom Atlantique SA.

The generators are for Escom's Matimba power station now under construction in the north western Transvaal, and financing will be through foreign loans and export credits, but Escom did not elaborate.

Escom last month awarded the French-German consortium Stein Industrie-EVT (Sieva) and

Combustion Inc of the US boiler contracts worth R700-million each. — Reuter

Star 16/9/81
Soekor's offshore rig
follows up oil find (55)

Own Correspondent

MOSSEL BAY — Soekor's giant offshore oil rig is being moved to another site on the "F" structure off Mossel Bay.

Last December promising quantities of oil and gas were released from the structure and Soekor has since been mapping out its boundaries and trying to determine the content of this hydro-carbon "reservoir."

Fears that Govt may increase petrol tax

2/1/81
12/1/81
17/1/81

By GERALD REILLY

MOTOR industry executives fear that the Government is considering increasing its tax take from petrol sales to supplement the depleted road fund.

Pretoria sources pointed out yesterday that roads were considered an important part of the country's defence system.

A deterioration in the high priority road building and maintenance programme would therefore not be tolerated for long, they said.

Speaking during the Transport vote in Parliament earlier this week, Minister of Transport Mr Hendrik Schoeman said reduced revenue, with costs soaring at 25% a year, had forced the National Transport Commission to make substantial cutbacks and postpone some major road construction projects.

As a solution to the finance problem, Mr Schoeman suggested the possibility of toll roads - a possibility now being investigated.

He also mentioned the petrol tax as another possible way of boosting the National Road Fund.

Compensation

Motor industry sources said it was not known how much was taken from motorists to feed the road fund. But of the 61c a litre paid for petrol on the Rand, 18c was taken for the Equalisation Fund and 9,341c in customs and excise duties.

The purpose of the Equalisation Fund is to provide funds to compensate for fluctuating fuel import prices. The Sasol levy and the Road Fund also gets a share of the 18c.

The public relations director of the AA Mr Hennie Kleynhans said the AA would forthrightly oppose any effort to increase the petrol price to boost the road fund.

Since 1973 the motorist had been made to bear the full impact of the higher fuel costs. He was already making a huge contribution to road building through huge levies and taxes on petrol.

"The motorist is being exploited to the hilt. It is about time the building of roads was funded from general revenue," Mr Kleynhans added.

Research Bureau
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5.3 Evaluation of Proposals

The proposal of capitalising interest imputed on equity funds is essentially an economic one. Economists speak of three factors of production - natural resources, labour and capital - and associate a cost to each (rent, wages and interest). Capital here includes all capital, whether debt or equity, and therefore a cost must be incurred for

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16. Mr. D. J. N. MALCOMESS asked
the Minister of Mineral and Energy Affairs:

18/9/81

Whether the containment shell of the reactors at the Koeberg nuclear power station will be able to withstand the impact of a 747 Boeing crashing into it?

†The MINISTER OF FOREIGN AFFAIRS AND INFORMATION (for the Minister of Mineral and Energy Affairs):

In the safety assessment of Koeberg an attempt was made to distinguish between substantial safety risks and possible events which can be regarded as highly improbable. In respect of the first-mentioned, full studies have been undertaken and the necessary provision is made in the safety assessment of the plant. The risk of any aircraft crashing into the containment building and causing damage to safety related equipment, let alone the possible release of radio-activity, is estimated by Escom at less than 1 in 100 million per year. Hence, specific studies to determine the effects of such highly improbable occurrence are not warranted. I wish to emphasise, in general however, that the secondary containment structure by nature of the design thereof can withstand relatively high impact stresses.

Mr. D. J. N. MALCOMESS: Mr. Speaker, arising out of the hon. the Minister's reply, I should like to ask him whether he is aware of the fact that this particular situation is utilized as a design standard for containment shells in overseas nuclear stations.

The MINISTER: I am sure that my colleague dealing with these matters will be aware of it.

†Mr. B. W. B. PAGE: Mr. Speaker; further arising out of the hon. the Minister's reply, may I ask what will happen if a windmill falls onto this thing? [Interjections.]

†The MINISTER: Mr. Speaker, it will cause a terrible mess. It will be the largest eggbeater I have ever heard of. [Interjections.]

give added assurance against supply cuts to Gaskor clients.

The 96 km-long utility will link Sasol Two in Secunda to a system already feeding the Reef and Vaal Triangle with gas produced by Sasol One in Sasolburg. It will allow interruptions to production at either Sasol plant to be made good by the other.

This is good news for users as gas storage facilities are prohibitively expensive, and existing facilities serve more to smooth out supplies during peak demand periods.

The R22m pipeline will take only 15 months to complete. At the same time, a 41 km, 30 cm branch line is being laid between Benoni and Olifantsfontein. It will cost R4m and will be completed next April.

By then Gaskor customers will be served by a 577 km pipeline complex, (replacement value R350m — See diagram).

Some 367 km is large diameter transmission piping carrying a pressure of 2 000 kpa, and 210 km is distribution piping which works at 600 kpa.

Pipes are electrolytically protected to prevent corrosion. Sacrificial anodes are buried at certain spots and the pipes are regularly checked for leaks.

Gaskor gas consists of about 46% hydrogen, 27% methane, 14% carbon monoxide and 2% higher hydrocarbons. It is used mainly as a clean-burning fuel for industrial heating. However, three buyers take its hydrogen component as a chemical feedstock, while still burning the rest as fuel.

Depending on quantities used, it costs R3.22-R6.10/gigajoule if bought as fuel, and somewhat more as feedstock. LPG prices are R14.21-R43.56/gigajoule, and prices for gas oil, heavy fuel oil and coal are R10.99, R5.27 and 90c.

Coal is undoubtedly the cheapest fuel per unit of energy, but in many industrial applications it is less convenient and more expensive to use than gas.

Added volumes through the new pipeline will go more to meeting increasing demand from existing customers than to new business. For the bulk of the potential market in the PWV area within economical reach of the Sasol plants has already switched to Gaskor gas.

Some 54% of sales goes to customers who converted from petroleum products and 46% to converts from coal.

In this area, the present breakdown of

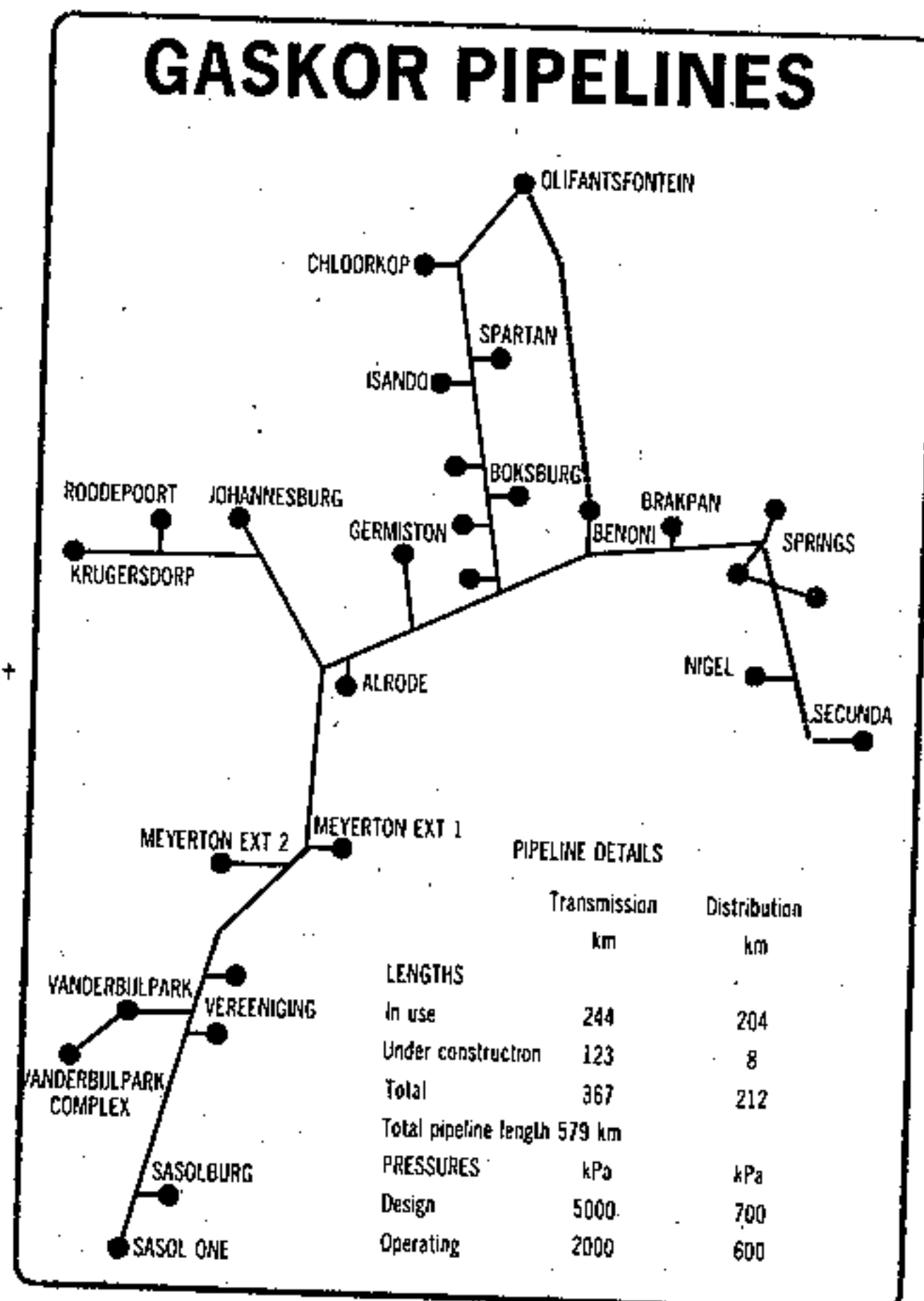
GASKOR fm 18/9/81

Burning brighter

SS

The new pipeline between Secunda and Springs, to be completed in December, will

GASKOR PIPELINES



industrial heating fuels is coal — 47%; Gaskor gas — 38%; producer gas from the user's own gasifiers — 11%; and electricity — 1%.

Petroleum and other fuels account for a mere 3%.

Sales have been growing at an average of 8% a year.

Gaskor will not name any of its 600 customers, but it is well known that Johannesburg Municipality relies heavily on Gaskor to supplement its own production of coal gas for industrial and domestic users.

The IDC and Sasol One each own 50% of Gaskor shares.

The next ten years

The nationwide power cuts last week are a foretaste of what's in store over the next decade — unless the 1 400 MW electricity supply from Mozambique's Cahora Bassa is restored to the national grid.

Ironically, this depends largely on the Mozambique National Resistance Movement, which regularly sabotages the 1 500 km Cahora powerline, and is said to receive SA support.

Escom now has a theoretical total generating capacity of around 18 000 MW to cope with peak demand approaching 15 000 MW. This gives a margin of 20% spare capacity, which is well below international standards which specify a leeway of at least 28%.

The situation is exacerbated by the fact that several Escom generators have just been commissioned and have teething problems. Others are old and ready for retirement. (FM July 31.)

Without the Cahora power, electricity demand will continue to trail supply by an uncomfortably close margin until 1991 at least, even though capacity will be more than doubled in this period.

Plant capable of churning out some 19 144 MW will be commissioned. It includes 3 600 MW each from Letabo, Tutuka, Matimba and the recently announced Station C; an additional 1 200 MW each from the 3 600 MW Matla and Duhva, which are still being commissioned; 1 844 MW from the Koeberg nuke and 500 MW from the Drakensberg pump storage scheme.

There is still a question mark over the supply of nuclear fuel for Koeberg which

will require French and US co-operation. But SA could well be able to make its own within the next few years. If overseas supplies are not forthcoming, production of sufficient quantities of SA nuclear fuel could delay the commissioning of Koeberg which will put further strain on capacity. The cost of the locally-produced fuel would also be very high.

In the next few years Escom will have to decommission 865 MW capacity of old plant at Klip power station near Vereeniging, and the Salt River, Hex River and Colenso stations.

In spite of its vast expansion scheme, which will cost more than R30 000m, and give Escom a total capacity of 37 144 MW, spare generating capacity will be only 15% — even lower than it is now. For by that time demand should be 32 215 MW.

It is thus highly likely that Escom will announce yet another brace of power stations in the next two years: a 3 600 MW coal-fired station, costing R2 000m in present day money, and a 2 000 MW nuclear-fuelled station costing R4 325m. If this happens, spare generating capacity will reach more comfortable levels at the start of the next decade.

The coal-fired station will probably be in the Transvaal or OFS Highveld, close to the country's main coal supplies and energy markets, and the nuke in the eastern Cape, far from the nearest coal fields.

At the same time, decisions will probably be taken on two more pump storage schemes: one in the western Cape and one on the Tugela River in KwaZulu.

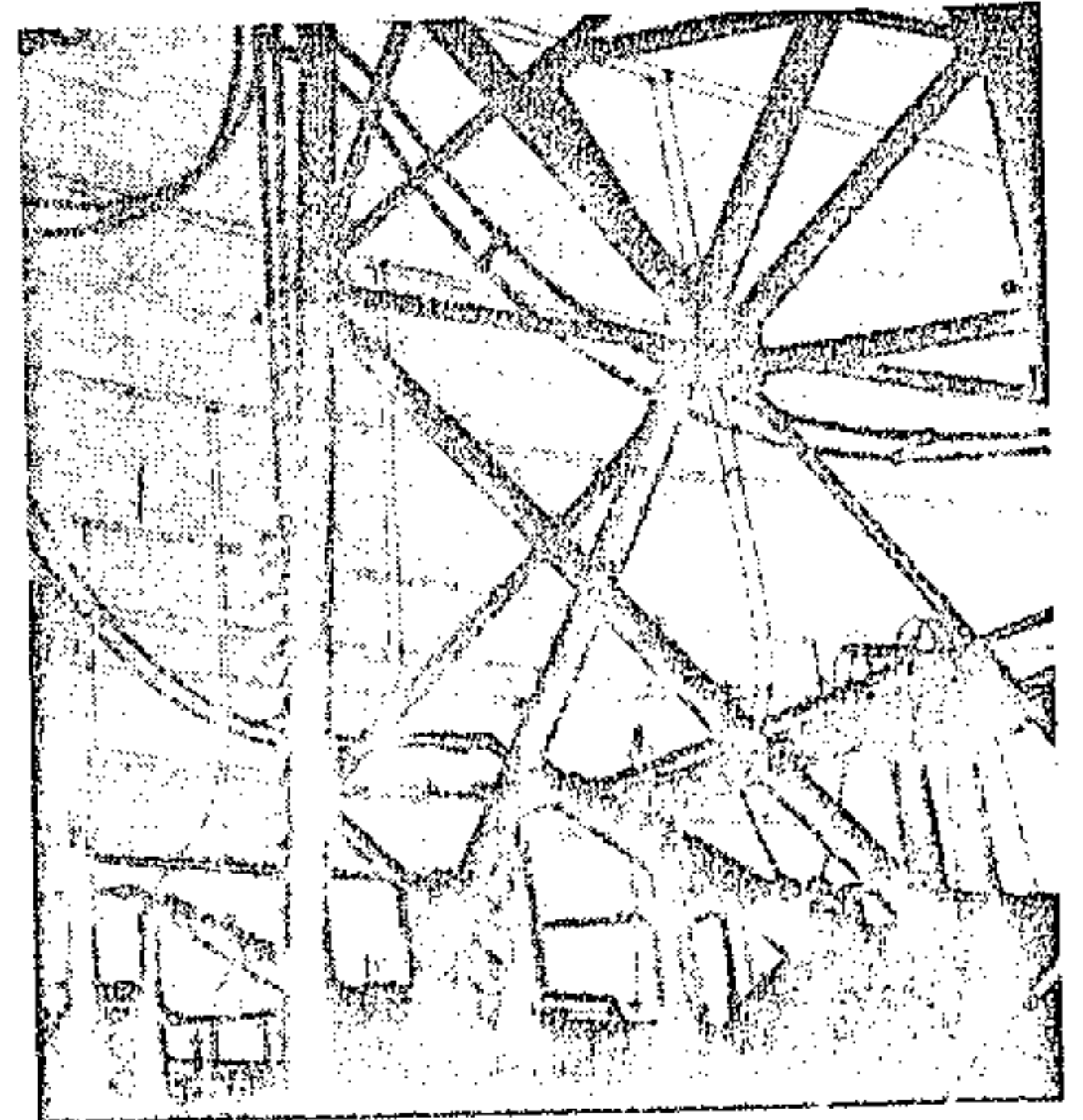
Pump storage schemes are essential to optimise Escom's generation mix even though they account for only a small proportion of its total capacity. Their main function is to supply power generated by water turbines at peak demand periods.

During slack demand periods spare power from the national grid is used to pump the same water into high level reservoirs where it is ready to drive the water turbines again when the extra power is needed.

This is a relatively costly business, and for every kWh generated in this way, 1,33 kWh is consumed from the grid for the pumping. But it is much cheaper than installing additional coal or nuclear power stations to cater for high demand which occurs only about 30% of the time.

Coal and nuclear stations, known in the business as base load plants, have to run for at least 80% of the time to be viable.

Escom also has two straight hydro-electric stations — at the HF Verwoerd and Van der Kloof dams. The turbines are driven by water flowing naturally into the dams,



Escom transformers ... working overtime

and it is not recycled as in pump storage schemes. As the country is short of water, the turbines cannot be used all the time and are usually switched on only during peaks.

Gas turbines are also used during peak demand and the Johannesburg municipality operates five sets which produce 180 MW. They have a very low capital cost of about R150/kW compared with about R900/kW for steam plants. But running costs are about 15c/kWh against 2,5c/kWh for steam. Optimum utilisation is thus less than 1,5% or about 100 hours/year.

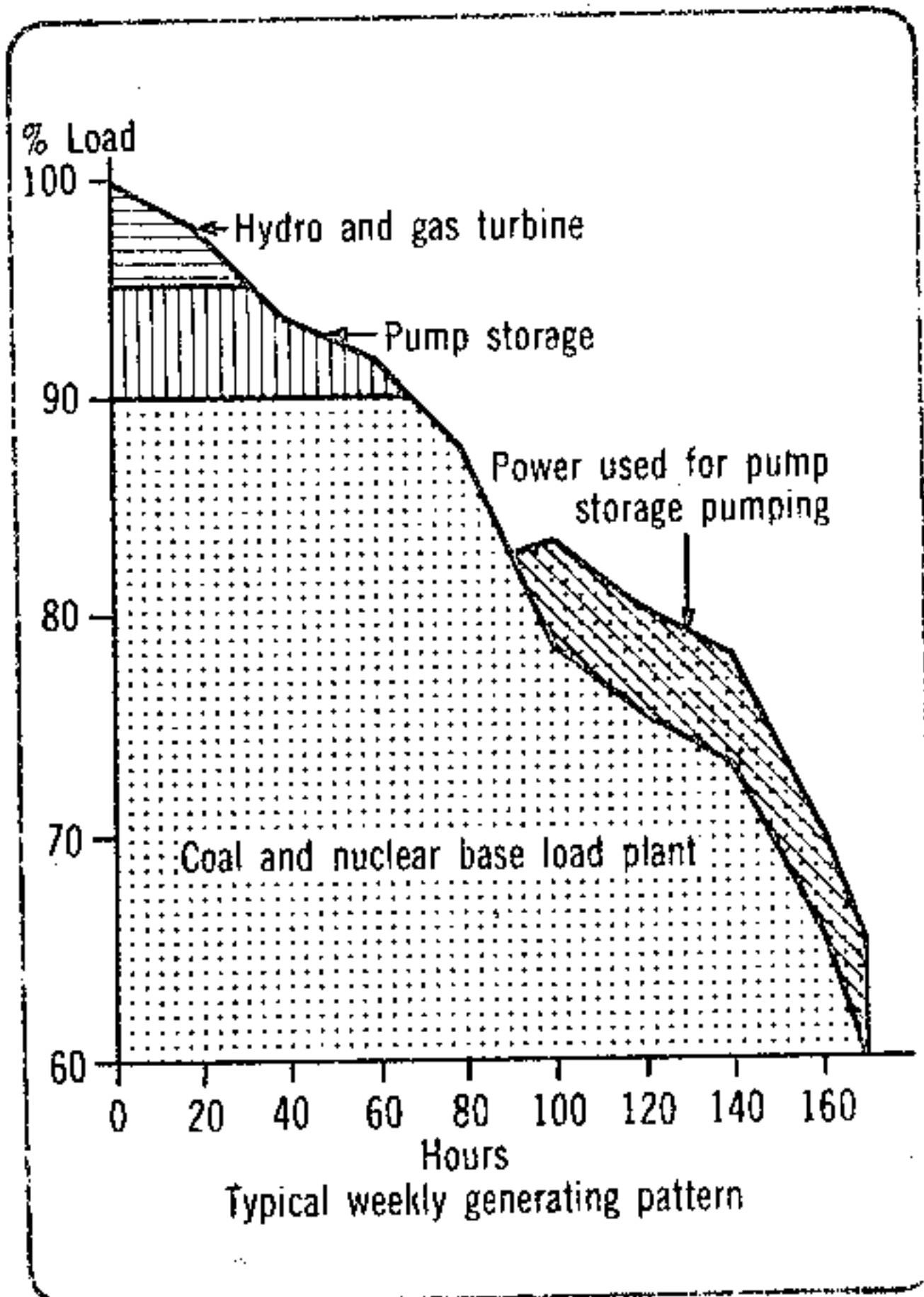
This would fit in very well with Johannesburg's peaky demand pattern if Escom could supply an adequate base load, but these units will have to be used increasingly over the next few years.

By next winter, Johannesburg municipality will have installed the first phase of a load-shedding scheme which will reduce the need for general power cuts. Costing R15m, the load control system will enable the authorities to switch off more than 100 000 domestic and industrial water heaters by means of a signal sent through the system.

When it is fully operative in five years, it will be able to cut demand by as much as 300 MW. As it is unlikely to be used for more than an hour a day, inconvenience to consumers will be minimal while power savings will be significant.

Escom should come close to achieving its optimum generating mix in 1991. By then 80% of its capacity will be from coal-fired plant; 10% from nuclear; 4% from conventional hydro; 4% from pump storage schemes and 2% from gas turbine plant.

Electricity will then account for 32,2% of the country's energy consumption against 23,7% this year.



Minister's assurance on Koeberg safety

HOUSE OF ASSEMBLY. —

The chances of an aircraft crashing into the Koeberg nuclear plant and causing the release of radioactivity was one in 100-million a year, the Minister of Mineral and Energy Affairs, Mr F W de Klerk, said yesterday.

He was replying to a question by Mr John Malcomess (PFP Port Elizabeth Central) who asked whether the containment shell of the reactors at the power station would be able to withstand the impact of a 747 Boeing crashing into it.

"In the safety assessment of Koeberg, an attempt was made to distinguish between substantial safety risks and possible events which can be regarded as highly improbable. In respect of the first mentioned, full studies have been undertaken.

"The risk of any aircraft crashing into the containment building and causing

damage to safety-related equipment, let alone the release of radioactivity, is estimated by Escom at less than one in 100-million per year.

"Hence, specific studies to determine the effects of such highly improbable occurrences are not warranted.

Arising out of the reply, Mr Malcomess rose to ask if the minister was aware of the fact that such a provision was built into the buildings of similar plants in Europe.

Mr Brian Page (NRP Umhlanga) then asked the minister what the effect would be if a windmill crashed into the plant.

The Minister of Foreign Affairs, Mr Pik Botha, speaking on behalf of Mr De Klerk replied: "I think it will be quite a mess. It will certainly be the biggest eggbeater I have ever seen." — Sapa

CSIR teams

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By Jaap Boekkooi

In a major energy development the CSIR has designed a national fuel gas plan, using local waste materials only, which could cut South Africa's oil imports by 10 percent within four years.

The semi-official scientific organisation says that its gas plan can later replace half of the country's liquid fuel requirements.

This, says one of the council's publications, can make the country "virtually self-sufficient with respect to petroleum oil imports."

The fuel gas, on which a team of boffins from the CSIR's timber research institute has been working for two years, can be made from just about any surplus vegetable waste: mealie cobs, sunflower husks, sawdust, timber waste, peanut shells or bagasse.

Moreover, it can make engines, now operating on expensive diesel fuel at 49c a litre (for farmers) to 61c, run for as little as three cents a litre equivalent, rising to only six cents a litre in urban areas.

SURVEY

With this information a survey of farmers has shown that 85 percent want to convert their stationary engines, such as pumps, generators,

compressors and tractors to the fuel gas method.

Another development is that in three months the CSIR will demonstrate a tractor that runs purely on waste mealie cobs, or on a mixture of conventional fuel and farm waste.

The biggest potential for the use of fuel gas, officially called producer gas, is in stationary engines, which guzzle 20 percent of all liquid fuel, especially scarce diesel oil.

The leader of the CSIR's producer gas research team, Mr Tom Gore, says the gas, which has 77 percent of the calorific value of petrol, can replace 90 percent of all diesel fuels in South Africa.

Mr Gore says a study shows that South Africa's timber waste for fuel gas production is immense. It now stands at more than eight million tons a year, with a future potential of almost 20 million tons, while a country such as West Germany managed only 4.5-million tons.

DISCARDED

In addition there is available a mountain of mealie cobs of some two-million tons, these are now discarded but could fuel generators, pumps and tractors.

One ton of air-dried timber waste or mealie cobs could produce gas to the equivalent of almost 400 l of petrol, or 350 l of diesel. In the case of mealie cobs the raw material is free, while the dried timber material would cost 6,5c for a litre.

Nuclear capacity to grow 9%, says Uranium Institute

By ADAM PAYNE

THE Uranium Institute, of which South Africa is a member, foresees an average 9% growth a year in installed nuclear capacity through to 1995.

This is the institute's "most probable" scenario for growth in installed nuclear capacity. It would result in nearly 450 Gw of nuclear generated power by 1995 — a more than threefold increase over the current total.

The institute, which held its annual London symposium at the beginning of this month, considers the estimate modest, and includes two other, less probable, projections.

This first, based solely on nuclear units operating or committed, predicts 7% capacity growth a year on average. The other high-growth forecast predicts 11% annual growth on the basis of improved economic conditions and greater public acceptance of nuclear power.

Under the most probable estimate, the uranium demand would rise from the current 28 000 tons a year to 42 000 tons in 1985 and 70 000 tons in 1995.

Mr Andrew Clements, of the British Civil Uranium Procurement Organisation, said what was possibly surprising was the length of time for which a substantial proportion of requirements is already committed.

"Even in 1990 something like one-half of the requirements has already been contracted for," he said. "This is bound to have a very significant effect on the uranium market, at least for new entrants to production during the next 10 years."

Meanwhile, the Australian Trade and Resources Minister, Mr Doug Anthony, says his government is remaining firm on a floor price policy for exports, in spite of pressure from some producers to change it.

Because existing contracts contain the floor price — \$30/lb escalated from January 1980 — it would be political dynamite to lower the floor price to please Queensland producers, a uranium source told NuclearFuel.

Producers with existing contracts, such as Energy Resources of Australia, had a vested interest not to let the price change because it would be under pressure from existing customers to change their contracts, said this source.

Pressure to change the policy has increased as the market price has dropped to about \$24 a lb or \$6 less than the floor price set by the government.

Mr Barry Lloyd, marketing manager of Australia's Pancontinental Mining, told the Uranium Institute symposium that his company has recently urged a lowering of Australia's \$30/lb floor price.

He said: "It is clear that current spot prices are insufficient to cover even direct operating costs for a major part of the Western world's uranium supply industry."

"These price levels are inadequate to provide the incentives needed to ensure the timely development of the new production facilities which will be required between 1985 and 1990. The market's supplies are out of phase with its longer-term requirements."

Mr Lloyd said that during the present time of low demand and low prices, operating costs had risen in line with inflation, leaving only the lower-cost producers able to supply the market.

"The aspect of most concern to producers in this situation is that the current spot price is determined by the attitude and requirements of stockists, rather than the economics of production."

According to the institute's calculations, demand after 1985 will progressively open the way for a rise in production capacity during the late 1980s or early 1990s.

COMMENT: As the Australians are complaining that a price of about \$24 a lb is too low for profit, their costs must be exceedingly high — assuming their grade is as high as reported, averaging about 3lb/ton.

If they cannot make a profit at \$30/lb with a grade of 3lb/ton their costs must be in the region of \$90 a ton mined, milled and recovered.

This compares with a figure of R4 a ton for uranium recovery in South Africa after the ore has been mined and milled for gold production, with uranium as a by-product.

However, South African grades are so low, with the best at about 0.3lb/ton, that costs a lb rise to about R13.2/lb for the highest-grade producers.

When the grade is only 0.2lb/ton then the cost rises to about R20/lb. Therefore a price of \$30/lb is still attractive for such producers. The problem is to sell it in a dull market

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Function:

5.3.1. Arithmetic IF Statement

The IF statements are the decision-making elements of FORTRAN. The test specified in the IF statement may modify the normal sequence of execution. FORTRAN provides two IF statements: the arithmetic IF statement and the logical IF statement.

5.3. IF STATEMENTS

**'Racial
policy to
blame for
costly fuel'**
24/9/81
26925

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Parliamentary Staff
THE high cost of fuel in South Africa could be ascribed to the country's political and racial policies, Mr Ray Swart (GFP Berea) told the Assembly yesterday.
Speaking during the third reading debate on the Railways budget, Mr Swart said that time and again the Minister of Transport, Mr Hendrik Schoeman, had blamed the high cost of fuel as the reason for increasing passenger fares.
"We looked to the cause of these high fuel costs and have suggested that if we had political policies which were more acceptable to the free world, these costs would not be so excessive," he said.
Despite the international fuel crisis and the fact that the free world generally had been hard hit by the crisis, the situation of South Africa in this regard was worse than in other countries.
"What is the reason for this if it is not our racial and political policies?" he said.
To deny this was "nonsense" — political circumstances operated against South Africa in regard to the price of the fuel it acquired.

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SUMMARY.

It is a meaningful return on an investments that purports to make the equity method superior to the cost method. Total consolidation is considered to be incompatible with the premise of an investment in the net assets of an associate. Annual financial statements should at all times remain articulated while additional disclosures should be supplementary in form.

Does E Cape need second Koeberg?

NUCLEAR power has been a source of controversy in many of the world's most advanced countries for many years — from time to time, in certain places, the most hotly debated topic.

The controversy still continues in countries which have lived with nuclear power and, even there, most people are at a loss to make up their minds. Fresh facts are continually emerging. There are some convincing-sounding arguments on both sides.

Escom is now looking at the Eastern Cape as a possible site for South Africa's second

nuclear power station, which would serve the industrial and domestic needs of the Port Elizabeth region and places farther afield.

Bearing in mind the close call at Three Mile Island in Pennsylvania recently, are the risks too high to take? Or are they being over-stated? Does nuclear energy really offer cheap power safely, or are there hidden costs?

It's a topic the Eastern Cape is going to be debating a long time if Escom decide to go ahead with a nuclear power station in the area. Where do the arguments begin?

Nobody really has an answer to

Economic need to the waste problem

Use nuclear power

THE case for a nuclear power station is argued by Mr Edgar Crews, a farmer who could find himself living in the shadow of one, and he submitted a resolution in favour to last month's Eastern Cape Agricultural Union Congress.

The grounds for his argument are mainly economic ones. They are:

In 1950, Escom sent out 7 000 million kilowatt hours (kWh) of electricity. In 1960, 17 000 million kWh — up 139%. In 1970, 37 000 million kWh — up 116%; and in 1980, 83 000 million kWh — up 150%.

In just 30 years, consumption of power from Escom increased 1 000%.

At the end of 1950, the total power station generating capacity was 1 290 watts (W).

At the end of 1980, this had been thrust to 17 339W — an increase of 1 244%. There were 24 generating stations, several of which were obsolete, but useful as peak stations. Two were not yet completed.

On this basis by the year 1990, Escom will need to increase its generating capacity by 26 000 megawatts to 43 000MW, and by the year 2000, to over 107 000MW.

At the end of December, 1980, Escom already had on order coal-fired stations with a capacity of 8 800MW. The Koeberg nuclear power station is to produce nearly 2 000MW. Thus between now and the year 2000, Escom will have to commission new generating

uranium metal, and if all the 22 plants needed by the year 2000 were nuclear plants (clearly an impossibility), they would use less than half of the uranium production of the year 1980.

As regards safety, it must be understood that nuclear reactors do not explode. Danger lies in the possible accidental release of radioactive matter into the atmosphere. In this connection the Atomic Energy Board has laid down standards based on the principles:

• The risks associated with nuclear stations should not add significantly to the total risks to which society is exposed.

• These risks should compare favourably with those associated with other major industrial enterprises.

• Some allowance must be

On the other hand, the exporters of coal through Richards Bay are receiving about R50 a ton *FOB*, the railage cost from the Transvaal being about R10 a ton. During the year ended March 1981, some 27Mt of coal was shipped through Richards Bay, which would give R1 350 million as earnings. Plans to boost coal exports through Richards Bay to 60Mt a year will raise earnings to R3 000 million a year.

Turning to uranium, the Atomic Energy Board calculated that, at January 1, 1981, South Africa had uranium metal resources recoverable at costs of less than \$130 a kilogram to the amount of 531 000 tons. In 1980, 21 gold/uranium mines produced 6 146 tons of uranium metal, which is about 90% of the total production.

Dr A J A Roux, chairman of the Uranium Enrichment Corporation of South Africa Ltd, has stated that, whereas a 1 000MW fossil-fuelled plant consumes more than 2Mt of fuel a year, a nuclear plant of the same size needs about 30 tons of uranium metal.

Thus a 3 600MW nuclear plant would use 108 tons of

made for the possibility that in 40 years' time at the end of the station's life, society may be demanding higher safety standards than at present.

The operation of an atomic power station is clean. It does not contaminate the atmosphere. The waste products are negligible, and in spite of the outcry about their disposal, this is regarded as a minor matter of no danger.

On the other hand, a 1 000MW coal-fired station emits around 10Mt of carbon dioxide a year, and several hundred thousand tons of sulphur dioxide, nitrogen oxides and fine ashes.

Already the atmosphere in the vicinity of the operating "multi-megawatt" stations in the Transvaal is heavily contaminated, and on a still day

can be seen from a great distance. If 22 additional coal fired plants are to be built, what will be the position?

One of the biggest obstacles in the establishment of atomic plants is the reaction of authorities to the big capital cost of their construction. There are two important angles to this question.

The first is that, whereas the capital cost of a coal-fired station is low relative to that of an atomic plant, the annual cost of coal is very high, and this will inevitably escalate over the life of the plant due to inflation. On the other hand the cost of the uranium metal is low.

A 1 000MW station with a 60% load, taking the cost of uranium at R130 a kilogram, has a uranium cost of less than 0.1c a unit.

THE case against a nuclear power station is argued by Mrs Hille Sieckmann, already living close to one being built at Cape Town and she makes her views known through Koeberg Alert (named after the power station).

The grounds of her arguments are mainly ones of safety.

The whole thing is that nobody really has the answer to the waste problem.

In Germany, they have stopped the licences of 14 plants because they don't know where to go with their waste.

The waste they produce has got to be guarded over the centuries.

They have tried submerging them in deep troughs in the sea, but these containers are leaking already. This has happened off the coast of Japan and Canada.

Waste can be hijacked. A whole city can be held to ransom.

If a reactor goes on stream and is hit by a terrorist attack the devastation would be far, far greater than that caused by an atom bomb.

So, without a nuclear war we would have a nuclear bomb right at our door step — a bomb with the power to unleash terrible devastation.

We saw how the Israelis hit the Iraqi power station. We wouldn't want that to happen with a power station on stream near one of our major cities. South Africa would be a sitting duck.

There is also the threat of earthquake. There is the threat of leaks — there has been another

leak at Three Mile Island in Pennsylvania, where the nuclear power station came within minutes of blowing up a few months ago.

People try to use the argument that nuclear power is cheap. This is the greatest lie of all.

The lifetime of a nuclear power station is between 30 and 40 years and, at the present rate, the demolition would cost R2 000 million. When you take all these costs into account, nuclear power is not cheap at all.

Coal, as a source of energy, should only be looked at as a bridging technology until we have developed solar or wind resources and, until that time, coal should not be exported.

We should go for renewable resources. If all the investments that have been poured into nuclear resources had been poured into solar energy research we would be there already.

Every new house should instal solar panels. This would cut down on the consumption of electricity.

In Germany, they also use industrial warmth for domestic heating.

Eighty per cent of the domestic heating for the town of Flensburg is provided by industrial warmth.

There are lots of things one can do.

People also try to use the argument that background radiation is so little it doesn't matter.

What they don't tell us is that with any leak you can inhale just one atom and it will cause cancer immediately.

stations with a capacity of some 80 000MW.

The largest coal-fired stations being built have a capacity of 3 600MW. Thus 22 power stations of that size will need to be built.

Taking the increase of 116% in the '70s as a factor, Escom's coal consumption can be expected to increase to 100 megatons (million tons = Mt) in 1990, and 216Mt in the year 2000 if Escom confines its nuclear power generation to the station at Koeberg and continues to erect only coal-fired stations.

Our coal deposits are being used as a source of:

• Energy through the generation of electricity.

• Petroleum products through the Sasol plants.

• Energy through burning by industry and households.

• Chemical products arising out of the production of petroleum products and other ways.

• International exchange through exports.

• Energy for rail transport, this being a decreasing amount.

In 1980, the average cost of coal consumed in the Escom power stations was R8,12 a ton. The present plant of Escom requires coal of reasonable quality, and efforts are being made to consume lower quality coal.

Nuclear power in the Eastern Cape

Further, the waste emanating from a Koeberg-type power reactor over a 30-year lifespan could be stored in an average-sized room.

“THE possibility of a nuclear power site being established on a site in the Eastern Cape is an emotive subject and it is easy to be carried away in a wave of anti-nuclear feeling.

Obviously anyone in their right mind would be opposed to nuclear bombs and warlike uses of nuclear fission, but for the last 30 years nuclear fission has been used peacefully and to the great advantage of many people.

I have been to Hiroshima and visited the Atomic Bomb Museum. I have seen the horrors resulting from such an explosion. The peaceful use of nuclear fission is not to be confused with these explosions and their results.

In the Eastern Cape a second Koeberg must be placed so as to minimise danger to the larger population centres.

The decision must be taken only after consultation with the local authorities concerned whether or not the site is under the control of that local authority.

I would propose that a study group be formed by the Atomic Energy Board on which should sit three nominees of the municipalities of Port Elizabeth, Uitenhage and Grahamstown and one nominee of the coastal divisional councils of the Eastern Cape.

I am making the assumption that the site will be on the coast between Port Elizabeth and the Fish River Mouth as this would have the best economic results for Port Elizabeth and East London.

The second major factor is the present cost of electricity

THE possibility of a nuclear power station being sited in the Eastern Cape is provoking public debate on the pros and cons of nuclear power. In this article, Mr JOHN MALCOMES, the PFP MP for Port Elizabeth Central and chief spokesmen for his party on energy matters, tells why he believes such a development would be to the benefit of the area, and under what conditions it should be established.

It is no longer necessary to have huge volumes of water and high drops to power these turbines and there are today many “low head” turbines which are both efficient and cost-effective.

Hydro-electric power is acknowledged to be the cheapest power available, and Canada, which extensively uses this form of energy, has one of the least expensive rates in the world.

In the Eastern Cape, the Orange-Fish River scheme could be a far greater source of power.

In addition, areas west of Port Elizabeth, where the municipality draws the bulk of its water supply, could also be used to generate power.

Finally, there is the alternative of the nuclear power station. The measure of our need for cheaper power in the Eastern Cape is such that if studies show that there are economic advantages with no reasonable alternatives, then the benefits are likely to be greater than the potential danger.

Let us look at some facts:

- Worldwide, nuclear power stations have been operating for more than 30 years, yet there has been not one death or serious injury due to radiation and no significant escape of radio-activity from any plant. At Three-Mile Island almost everything that could go wrong, did go wrong, yet the radio-activity was contained.

There are more than 300 nuclear power stations in the world and the UK, West Germany, Belgium, Sweden and Switzerland generate about 25% of the power from nuclear sources. France, which is providing our technology at Koeberg, is ahead of this figure.

When we consider population density in Europe, compared with the Eastern Cape and the degree therefore of safety factor designed and built into nuclear stations from which we benefit, then surely we must gain ease of mind from the fact that so many nuclear plants have been constructed in these countries.

In the Soviet Union and Eastern Europe, by the end of this decade there will be 100 nuclear power stations.

Waste disposal has been the subject of many studies and the conclusion reached that methods exist whereby in the short and long term, radiation leakage will not, and has not, caused any dangerous problems.

Further, the waste emanating from a Koeberg-type power reactor over a 30-year lifespan could be stored in an average-sized room.

- I have recently visited Koeberg and was most impressed by the safety factors built into the plant. The massive concrete base, the containment shell, and the three separate water systems provide a safety margin which would make the man who wears a belt and braces look reckless by comparison.

One water system is in contact with the fuel rods and is heated to 300C. This then is circulated through a second system to create steam which drives the turbines which in turn cooled by the third system.

The water of the third system is drawn from and returned to the sea. The other two systems recirculate constantly.

In conclusion, I believe that a nuclear power station could be of advantage to the Eastern Cape provided that it is correctly sited.

The overall success records of these stations would enable one to sleep peacefully.

I do, however, believe that we need an Eastern Cape power lobby. The function of this lobby should be pro hydro-electric rather than anti-nuclear.

It should try to accomplish two things — the maximisation of power generation from water sources and the correct siting of a possible nuclear station.”

Post 3/10/81 (55)

Ethanol: Sugar industry seeks

DURBAN — The sugar industry is unlikely to expand widely unless the government backs an ethanol from sugar cane programme, says Mr L Gordon-Hughes, vice-chairman of the SA Cane Growers Association.

He was speaking at the Durban Chamber of Commerce Symposium on Natal-kwaZulu. He said the findings of the Government committee of inquiry into the sugar in-

Star 5/10/81
State backing JJ
project was at the planning stage, but the cost could be R25-million, he said. No final decision had been made yet, he added.

industry would not lead to a large scale expansion of cane areas.

"Unless the production of ethanol from sugar cane is encouraged by the Government, large-scale expansion of the industry is unlikely at this stage," he said.

And the government would have to offer an ethanol programme the same financial support as enjoyed by Sasol for such

a project to be attractive to the sugar industry, Mr Gordon-Hughes said.

Mr Gordon-Hughes also said the sugar industry was planning to substantially expand its storage capacity, which would provide greater production and marketing flexibility.

"At present the three silos at Maydon Wharf provide storage capacity of 520 000 tons," he told the symposium. The

project was at the planning stage, but the cost could be R25-million, he said. No final decision had been made yet, he added.

Developing the two points after his address, Mr Gordon-Hughes said the industry needed upwards of 150 000 tons more storage capacity. The export committee of the South African Sugar Association was looking into the issue and would report to the association's council.

Escom's ^{5/10/81} Tugela project

Own Correspondent

DURBAN — Escom was looking into the establishment of a huge pump-storage power station complex near the mouth of the Tugela River, Mr H E Wohlberg, Escom regional manager, said in Durban.

Speaking at the Durban Chamber of Commerce 125th anniversary symposium on the Natal/kwa-Zulu region, he said the complex, if approved, would be similar in principle to the Drakensberg scheme — but it would have a higher power output.

No figures were available but it would probably cost more than the Drakensberg scheme's R400-million. It would be commissioned by about 1989.

TWO DAMS

The site presently under scrutiny was at Mvumase, 30 km from the Tugela mouth.

Two dams would be needed, one above and one below the power station. Hydro-electric power would be generated from the upper dam and the water used would be stored in the lower dam. This water would be pumped back at times of low power use.

New oil deal should hold

The Opec oil pricing agreement is a world event of both political and economic significance. If it holds — as it should — it will help to stabilise prices and create a more favourable climate for eventual renewed economic growth in the industrialised countries.

But the agreement will not erase all economic problems connected with oil, and it will not resolve the basic and intractable political tensions of the Middle East. So the new equilibrium remains vulnerable in a number of ways.

The agreement also has very specific implications for two countries — Israel and SA — which find themselves in special circumstances, politically and economically.

The main lines of the price agreement are clear enough. The new reference price for the agreement — for (Saudi) "Arabian light crude" — is to be \$34 per barrel until the end of 1982. Prices for other countries' crude will be related to the reference price, as in the past, through appropriate discounts or premiums for quality and location.

According to the OECD, the overall effect of the new price structure — which includes an increase in \$2 per barrel by the Saudis themselves — will be an average increase of only some 50c per barrel, or less than one percent.

□ Broadly speaking, Opec oil prices will now lie in a band between \$34 and \$38. Other exporters, like Mexico and the UK, will have to align their prices accordingly.

Even before the price alignment, though, the currency-weighted oil price had been forced upwards by the dollar's current strength, and this effect will persist while the dollar remains firm. This factor has to be allowed for in all analyses.

Output distribution

The agreement will result in important shifts in the distribution of output within the cartel. Saudi Arabia has already announced that its output — deliberately expanded for a while to 10.3m barrels per day to curb the "hawks" — will shortly be cut back from its present 9m bpd to 8.5m bpd.

The Saudis have the muscle to influence the market both on the downside and the upside. They have already accumulated foreign assets of as much as \$150 billion, they are running a foreign trade surplus of as much as \$60 billion, and they probably could increase output well above 10m bpd if really necessary.

At the moment, "normal" market conditions are grossly distorted. Western countries have been drawing down stocks — at a time of recession and high interest rates — accumulated during the panic generated by the Iraqi-Iranian war (FM October 23).

If the war drags on and Western economies revive, the oil market will tighten drastically and take the pressure off Opec. But if this movement should go so far as to induce new upward pressures on the oil price, the Saudis have only to open the tap again.

Conceivably, the Iraqis and Iranians could patch up a peace and rehabilitate their oil export facilities. This currently unlikely (but inherently plausible) contingency would release several millions more daily barrels onto world markets.

Short of allowing the cartel to collapse, the Saudis would then be forced to take the brunt of market cuts. But the Saudi oil



Libya's Gaddafi ... visibly humiliated by Saudis

minister Sheikh Yamani is to be believed when he claims that this could be done without financial strain.

As matters now stand, producers like Libya and Nigeria — whose sales were savagely eroded by their obstinate insistence on charging higher prices than the market would bear — should regain market share. But the hammering they have recently taken ought to have made it clear that they will enjoy their revival largely at the grace of the Saudis.

Some of the hawks — like Nigeria — were clinging to the illusion of prices approaching \$40 per barrel because of their desperate need for revenue. But a perennial trouble-

maker like Gaddafi's Libya would enjoy more than adequate surpluses even with oil prices at \$30 per barrel.

Demonstrably, for the Libyas of this world, high oil prices represent both a means of hurting the hated West directly and the means of providing the wherewithall for buying weapons and financing terrorism and insurrection.

So the price agreement represents a direct and visible political humiliation of Gaddafi, and one which he is very likely to want to avenge. The Libyan leader's acknowledged capacity for mischief, therefore, will be one of the factors working to undermine the stability of the agreement.

Sadat's assassination had blatant support from Gaddafi, and can be regarded as a measure of the Libyan leader's capacity for causing trouble within the Arab world. The Saudi regime itself is certainly not broadly based enough to feel invulnerable to Gaddafi's brand of subversion.

Political turmoil

And, as the example of Iran shows, the possession of vast oil revenues is no armour against political turmoil. To the contrary, in the special circumstances of the Arab world, economic development can aggravate instability.

Nevertheless, Saudi Arabia has augmented its already considerable world influence. The ratification of the sale of the Awacs airborne radar system in the face of the best efforts of the Israeli lobby is very relevant, as a measure of the price the US feels it must pay for Saudi moderation.

But it is a measure of Saudi diplomatic skills to be able, yet again, to exact a price for doing what is in any event economically in Saudi interests. Conversely, Israel's political position has been discernibly weakened.

For SA, the implications are rather different, and economic rather than political. A working arrangement between Saudi Arabia and the US to maintain relative oil price stability and world economic equilibrium must greatly lessen the prospects for another period of runaway gold prices.

But this prospect should not be regarded necessarily as harmful. Transient speculative peaks in gold have done harm to SA as well as good, and a strong case can be made for the proposition that SA's interests are better served by stable gold prices founded on fabrication demand, increasing modestly in real terms.

And "low absorbers" in Opec, like Saudi Arabia, will continue to enjoy vast foreign currency surpluses even under the new price structure, which is "moderate" only

by reference to a short period of runaway prices in the period 1979-81. So it would be entirely wrong to discount the Middle East as a future absorber of gold.

It can also be too easily forgotten that SA has important foreign trade interests other than gold. If a period of stability in oil prices helps to promote a period of renewed world economic growth, the prospects in the long run for SA's other exports — like base metals — will be enhanced.

As for coal, world prices are still low enough in relation to oil to avoid any real threat to SA's exports.

The drop in US oil imports to around the level of 3mbd (from a high of over 8mbd in the mid-1970s) shows that real oil prices are still high enough to induce long-term substitutions. And it is this type of long-term change (including a switch to coal-fired power stations) which is ensuring the stability of SA's coal export markets.

ELECTRICITY (55)

SA's cheap sparks

FM 6/11/81

A report published by the Energy Research Institute of the University of Cape Town shows that the cost of electricity in SA is among the cheapest in the world. Only Norway, Iceland, Canada, New Zealand and Turkey have electricity cheaper than SA's.

This survey covered 53 electricity undertakings in 34 countries and showed a price range of 0,8 cents/kWh for Norway to over 8 cents/kWh for Bermuda and Paraguay.

In SA the electricity price, allowing for inflation, has not changed significantly since 1950. SA has also had a very high annual growth rate, which averaged 9% pa over the period 1950 to 1979 and 8,9% over the period 1974-1979. Only nine of the 53 utilities considered had a higher growth rate than SA. The fastest growing utility in the period 1974-1979 was a Spanish utility which grew at a rate of 20,1%.

1979 COSTS OF A NUMBER OF SELECTED UTILITIES

Average Selling Price of Electricity	Electricity Utility
cents/kWh	
0,77	Norway
0,88	Iceland
1,42	Canada
1,86	Turkey
1,90	South Africa
2,58	Spain
2,60	Australia
3,16	New Zealand
3,28	Taiwan
3,83	Israel
4,08	Austria
4,33	Italy
4,95	UK
5,04	Japan
5,41	West Germany
5,71	Switzerland
7,79	USA (East Coast)
8,86	Paraguay

Kentucky coal successfully tested at Sasol plant

The Star Bureau

NEW YORK — High sulphur coal from western Kentucky has been successfully gasified in tests at the Sasol plant at Sasolburg, officials of the Kentucky Department of Energy announced in Lexington.

The positive results from two rounds of testing already completed mean a proposed 4,000-million dollars fuels complex in western Kentucky using Sasol technology is apparently one step closer to reality.

William Sturgill, secretary of energy and agriculture for the state of Kentucky, said the tests showed that Kentucky coal is a "suitable feed-

stock" for Sasol technology.

The South African process would be used by the Tri-State Synfuels Company, a joint venture of Texas Eastern Corporation of Houston, Texas, and Texas Gas Transmission Corporation of Ownesboro, Kentucky.

Tri-state is only one of several synfuel projects being proposed in the coal-rich state, but officials indicate it is one of the most promising.

The administration of Kentucky, Governor John Y. Brown, apparently views the Sasol process as the most commercially

feasible of any modes of technology for producing synthetic fuels from coal.

This view was backed up with a 4-million dollars grant from the state, which paid for mining 22,000 tons of Kentucky coal, shipping it by ocean freighter to Durban and modifying a gasifier at the Sasol plant for the tests.

Earlier this year, Tri-State and the US-Energy Department signed an agreement calling for the two to split the 45-million dollar design costs for the proposed plant.

A spokesman said the plant's "design phase"

should be completed within 18 months and then a decision would be made whether to build the plant.

Under current plans, a plant using Sasol technology would consume about 30,000 tons of Kentucky coal a day to produce the equivalent of 50,000 barrels of fuel.

It would employ up to 3,000 workers once completed, an average of 7,500 during construction, and could be operational by 1987, spokesmen say.

The project has attracted critics, including locally based environmental activists and at least one anti-apartheid religious group based in New York City.

842 6/10/87
New oil
recycling
plant

The Durol Oil Company, a subsidiary of Castrol South Africa, is speeding up its recycled oil operations to meet growing vehicle demand—it is installing a R250,000 German-designed thermal cracker unit — said to be the first of its kind in this country.

Regarded as the most advanced technique in the re-refining of oil and an extension of the Meinken process, the unit has been installed at Durol's plant at Rosslyn near Pretoria.

The managing director, Mr. Hilton Cowan, says: "The new high-temperature unit will speed up our whole re-refining process and substantially increase output."

Mr. Cowan said annual production had increased by more than 400 percent in the past three years.

"This re-refined oil is indistinguishable from the 'new' oil sold under the various brand names," says Mr. Cowan. — Sapa.

Bonn guarantees R341-m for 2nd SA power scheme

Star 8/10/89

(SS) (L)

From the Financial Times

BONN — West Germany took another step yesterday towards easing its tight export credit-guarantee policy towards South Africa, apparently in an effort to secure jobs in Germany's engineering sector.

Officials said that the Bonn Cabinet had decided to provide credit guarantees for R341-million worth of turbine and generator delivery to a South African coal-fired

power station project outside Pretoria.

The Cabinet also guaranteed credits last July for German companies seeking a share in the big Matimba coal-fired power station project in the north-western Transvaal.

Since November 1977, export guarantees for business with South Africa were granted only for individual orders not exceeding a certain amount, though exceptions could be made under special circumstances at Cabinet level.

This essentially political decision partly reflected

Bonn's sensitivity to charges that it was collaborating in major deals — above all in the nuclear field — with South Africa. Bonn denied that there was any such nuclear collaboration.

The precarious state of the power-engineering sector — hit by the logjam in the commissioning of domestic nuclear power stations — has now clearly influenced the Cabinet move.

Consortium

The Cabinet is ready to guarantee lofty export credits to South Africa — amounts that cover the Matimba project and the latest turbine and generator delivery.

It is not immediately clear which companies were involved in the latest application for credit guarantees.

The Matimba project, however, was won by a consortium of MAN and Alstom and Atlantique of France.

Guarantees

The July Cabinet decision to grant credit guarantees for the Matimba project may well have contributed to the German-French winning of the order. The contract was announced two months after Bonn had given the go-ahead for credit guarantees.

New bid to end Koeberg deadlock

By John D'Olivetra

WASHINGTON — An American team will shortly visit South Africa as part of the Reagan Administration's continued efforts to persuade South Africa to apply International Atomic Energy Agency (IAEA) safeguards to all its nuclear installations.

This would open the way for the resolution of the expensive deadlock over the enrichment of fuel for South Africa's Koeberg nuclear power station.

In terms of a 1974 contract worth ultimately billions of rands, South Africa's Electricity Supply Commission and the American Department of Energy agreed to enrich successive consignments of 300 000 kg of uranium ore.

The enriched ore would then have been sent to France for fabrication into the fuel rods needed for Koeberg power station.

Each consignment would have been worth about R26 million while the processing would have added another R24-million to its value.

But the United States 1978 Nuclear Non-proliferation Act prohibited the US Government from exporting nuclear fuel to any country which did not apply the full IAEA safeguards to all its nuclear installations.

At the same time the Reagan Administration has confirmed a Carter

US doubts about safeguards at South Africa's nuclear installations have led to an expensive deadlock over the enrichment of fuel for Koeberg nuclear power station. Next week an American team arrives to attempt to solve the problem.

Administration policy decision not to allow the export of fuel to any country which has not signed the international nuclear non-proliferation treaty.

Thus Escom faced the prospect of either supplying millions of kilograms to America without any guarantee that it could ever take the enriched fuel out of the country — or of paying penalties of R14.5-million if the first delivery did not take place or R70-million if the entire contract were scrapped.

After top-level discussions it was agreed that Escom would deliver the first supply of fuel but not pay for its enrichment until the question of the export licence had been resolved.

At the same time, both the Reagan Administration and the South African Government would do what they could to resolve the safeguards issue.

South Africa currently applies full IAEA safeguards to Koeberg power station and to its Pelindaba installation.

But jealously guarding the secrecy of its unique enrichment process, it has balked at anything which might reveal details of the Pelindaba process.

In August a group of South African technical experts, representing the Atomic Energy Board, toured the United States uranium enrichment plant at Portsmouth, Ohio to see how procedures could be applied which would prevent any enriched fuel from being

diverted to weapons use — without compromising the secrets of the process.

It was confirmed yesterday by a spokesman from the Department of Energy that a counterpart team from the United States would visit South Africa within the next 10 days to advise how a safeguards inspection regime might work at Pelindaba.

It is not certain how much access the United States officials will be given to Pelindaba — but the fact that they are going to South Africa is seen in Washington as a hopeful sign that progress might be made towards South African acceptance of IAEA safeguards for Pelindaba and possibly South African acceptance of the nuclear non-proliferation treaty.

While the Reagan Administration might alter the policy requirement on the nuclear non-proliferation treaty, it cannot alter the requirements of the law on safeguards.

So South Africa cannot reclaim its expensive enriched uranium unless agreement can be reached on the safeguards issue, at least.

It is understood that Koeberg should be loaded with fuel sometime next year.

There is also some speculation that South Africa might find the enriched uranium for the fuel rods "somewhere in Europe" and that the embargoed South African fuel in America will be sold in world markets "for a bargain price."

NUCLEAR FUEL

Escom wins through 55 FM 13/11/81

Escom has solved its problem of acquiring enriched uranium for fabrication of nuclear fuel to load the Koeberg I reactor on schedule. This news was released by Framatome (the French nuclear company in charge of the construction contract) after a long period of cliff-hanging suspense.

The problem arose in the first place because of American fears about the proliferation of nuclear weapons, which led to a change of policy on exporting enriched uranium. The effect was to prevent the US from fulfilling its original contractual obligations to supply enriched uranium to France for fabrication into fuel rods for Koeberg.

That problem, in turn, threatened to compound SA's looming shortage of electric power in the 1980s and to cost Escom untold millions through the likely delay in commissioning Koeberg (FM May 1 and 15).

A spokesman for Framatome in Paris told the FM: "Koeberg I will be in operation at the end of 1982. That means that the fuel rods will be ready for loading in June or

July." As far as Framatome is aware, Escom has already obtained, or is about to obtain, the enriched uranium which will be fabricated into fuel rods by Framatome in terms of its contract.

Said Framatome: "We are about to begin fabrication of the first fuel elements." Escom, reported the Framatome spokesman, has stated "affirmatively" that the enriched uranium will arrive within the next few days, although he could not personally confirm that it had already arrived.

But Framatome refused to disclose the source of the uranium — hardly surprising in the light of the political sensitivity of the issue of supplying enriched uranium to SA.

Escom has contented itself merely with saying that there is an "undertone of confidence" that the fuel issue will be solved, and that it has always felt that confidence.

The Reagan administration has been chafing under the constraints on foreign nuclear policy imposed by the previous administration. The London *Financial Times*

reports that US Vice-President George Bush hinted during a recent tour of Brazil that the US government was considering changes in US non-proliferation policy and law. If these changes could be achieved, they might well improve relations between America and many of its former nuclear customers.

Part of such a change, reports the FT, might be to deprive the Nuclear Regulatory Commission of the power it currently enjoys to approve the export of nuclear materials. The Reagan administration would prefer this function to be given to the State Department (which is, of course, directly under presidential control).

The proposed changes also include a change to the Nuclear Non-Proliferation Act to exclude from its operation contracts entered into before its enactment. This proposal has a direct bearing on the dispute between the US and SA, as the original contract preceded the passage of the US

Act.

Another proposal is to eliminate the present sanctions on sale of nuclear material to non-nuclear weapon states believed to be building a bomb. But the Senate recently passed an amendment specifically cutting off US aid to any previously non-nuclear country which exploded a nuclear bomb.

The FT says the proposed changes in US policy were also hinted at during the recent visit to SA of US nuclear officials.

All these proposals are reportedly contained in a "confidential internal document."

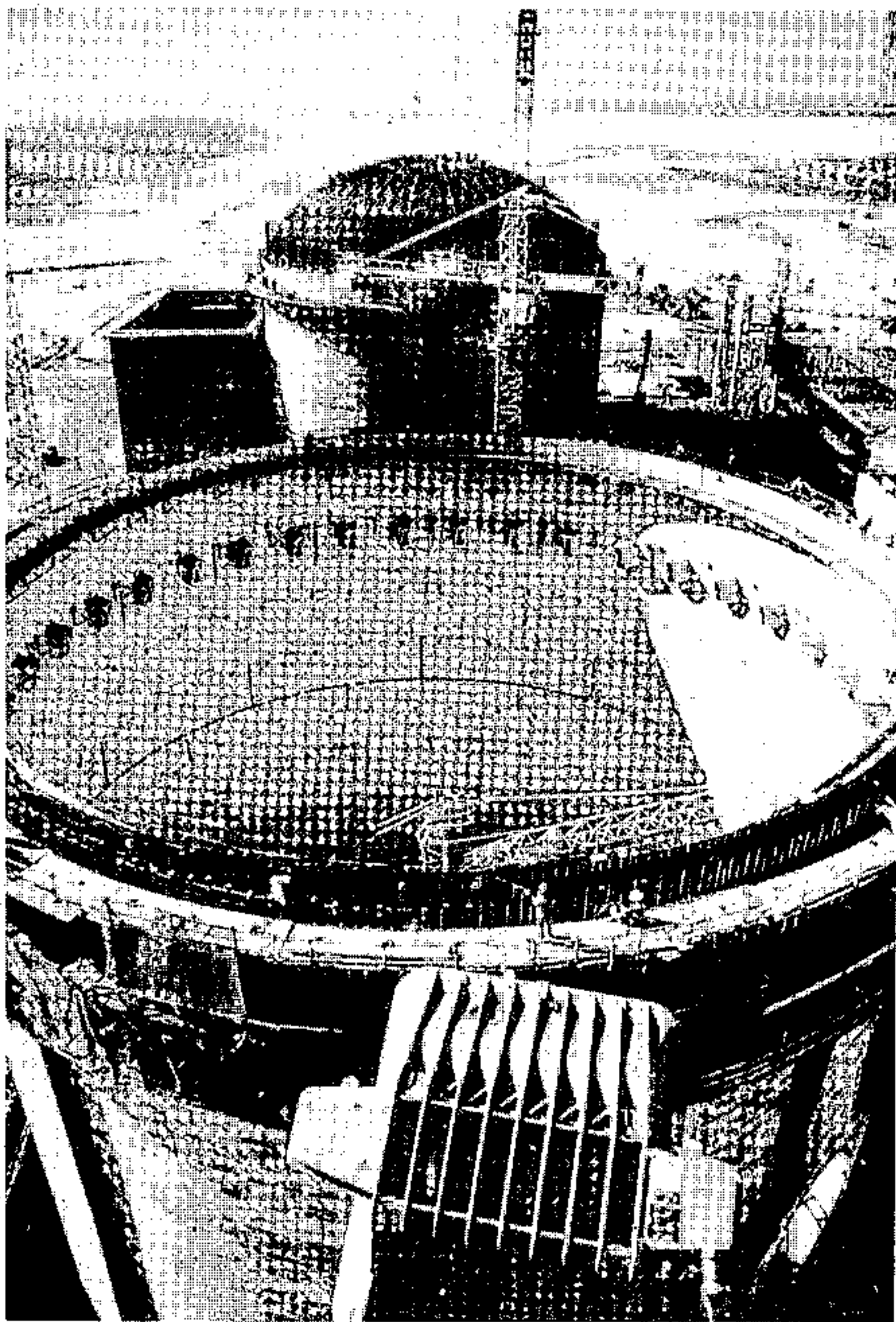
But there must be an undoubted question mark over congressional willingness to approve changes of this sort, especially if they carry implications for the supply of fuel to politically sensitive areas like SA.

In the FM's opinion, it is nevertheless most unlikely, despite US official sympathy, that the enriched uranium about to be fabricated into fuel rods has actually been delivered from the US itself.

However, the cutbacks in many nuclear power programmes have undoubtedly left a surplus of enriched uranium floating around the world, with many willing sellers and at least one very determined buyer — Escom.

This dramatic conclusion to a highly-charged issue is a tribute to the logic of SA's case for obtaining nuclear fuel. There never was the slightest risk that spent fuel from Koeberg would be diverted for military purposes.

But the economic harm if the fuel had not been available would have been considerable, and its heaviest impact would, as ever, have fallen on the economically most vulnerable segment of the population — SA's blacks. This result — except to a minority of committed ideologues — could not have been conducive to any desired developments in SA or to any sensible ends of US foreign policy.



Koeberg under construction ... will not stand idle

US nuclear moves could aid Koeberg

By John D'Oliveira
The Star Bureau

WASHINGTON — The Reagan administration is planning to relax US laws aimed at slowing the spread of nuclear weapons abroad.

If the proposals become reality, this could solve the deadlock over the supply of enriched nuclear fuel for South Africa's Koeberg power station.

The Washington Post reported that the administration's nuclear policy-makers would meet next week to consider proposals aimed at:

- The transfer to the State Department of the export licensing functions of the Nuclear Regulatory commission, a check on executive decisions in the nuclear field.

- The repeal of laws which prevent US nuclear exports to countries moving towards the production of nuclear weapons.

- Weakening laws requiring countries without nuclear weapons — such as South Africa — to permit curbs before US nuclear material can be exported to them.

This week a team of US safeguards experts will visit South Africa to examine how international safeguards can be applied to the Valindaba nuclear enrichment plant.

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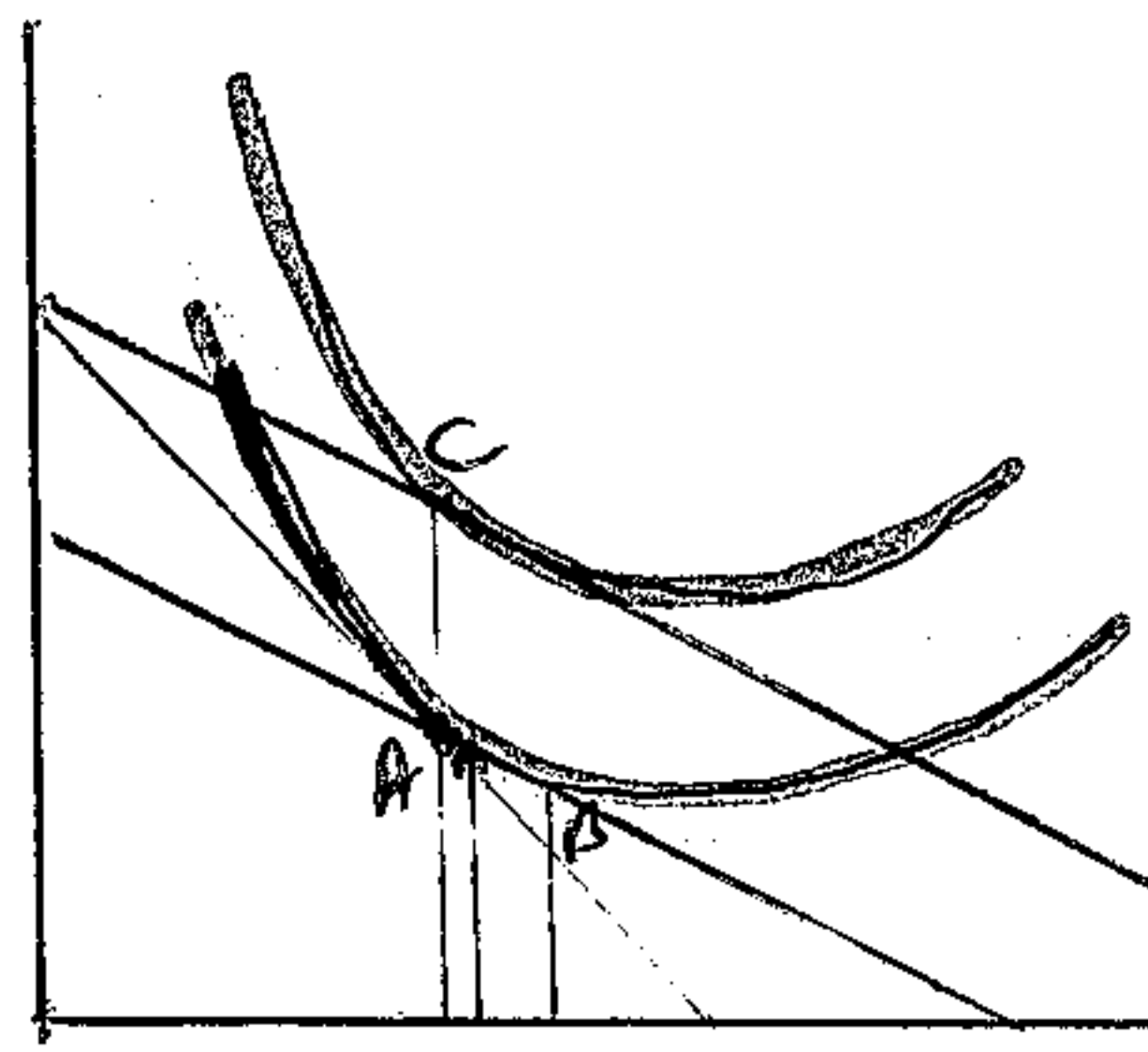
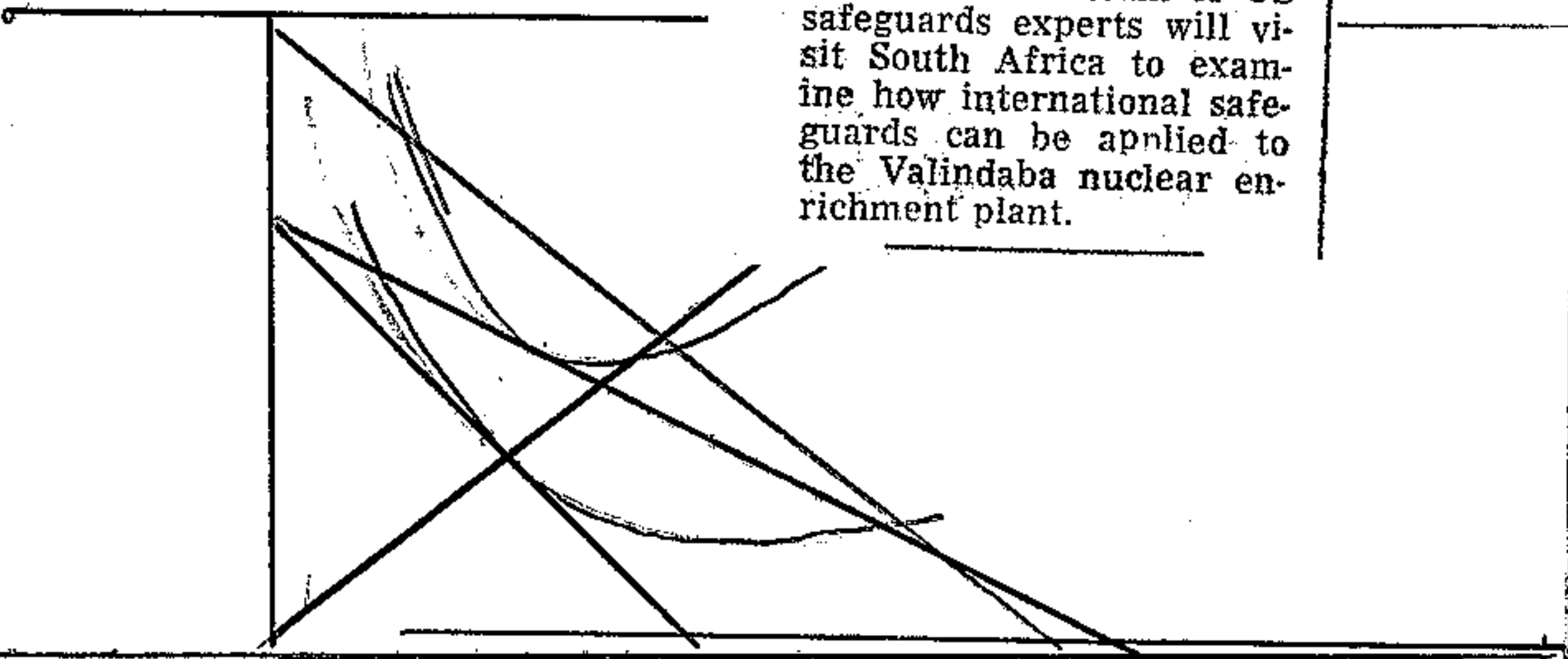
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the next a res ma of A and

to not be in the for good. Here one will code of the good can be based a decrease in good doesn't increase both goods.



Here we have a positive ~~substitution~~ effect yet a negative income effect and therefore an overall negative effect showing that this is an inferior good

US boost for SA's N-power future

RPT 21-10-81

By DON MARSHALL

NEW hopes for enriched fuel for South Africa's first nuclear power plant — Koeberg I — were raised last night by the news that four visiting United States nuclear specialists will begin talks with South African officials today.

The discussions at the Union Buildings, involving US and South African government and Atomic Energy Board executives, are in contrast to official US policy for the past six years over nuclear co-operation with South Africa.

Since 1975, the US has consistently refused to supply South Africa the enriched uranium it requires for Koeberg I and II because of Pretoria's insistence that it will not sign the Nuclear Non-Proliferation Treaty.

Last night the AEB's president, Dr Wynand de Villiers, would say only that the Americans were here for talks on "safeguards" at uranium enrichment facilities.

US sources say, however, that the team will visit the top secret pilot uranium enrichment plant at Valindaba, near Hartheespoort Dam — and that this signals a new mood of confidence between the two countries.

Officials of both sides were reluctant to give details of the duration and itinerary of the visit last night.

But in a short statement, the Director-General of Foreign Affairs, Dr Brand Fourie, confirmed the presence of the team in Pretoria, adding that a preliminary meeting would be held this morning.

Safeguards

Dr Fourie said the group had defined safeguards for various types of uranium enrichment establishments in many parts of the world.

"They are here for similar study discussions with us."

The Washington team is: Dr George Menzel, chief of the Nuclear Safeguards and Technical Division of the Arms Control and Disarmament Agency; Dr John Boright, Deputy Assistant Secretary (acting), Nuclear Energy and Energy Technical Affairs of the Department of State; Mr Leonard Brenner, assistant to the director, Office of Safeguards and Security of the Department of Energy; and Mr James Bradbury, director, Operations Analysis and Planning, Union Carbide (Nuclear Division).

South African officials were reluctant to concede any hopes of the talks leading to the lifting of the ban on the export of enriched uranium to South Africa.

An independent source said, however, that the talks were a continuation of discussions held between representatives of the two countries in the US in August.

Tour

A South African delegation visited Washington from August 25 to August 27 for "technical discussions" and a tour of the gas centrifuge enrichment plant under construction at Portsmouth, Ohio.

The discussions are said to have focused on enrichment plant safeguards and providing both sides with technical information.

The Americans have held similar talks with other countries which have developed their own uranium enrichment techniques.

RICHARD WALKER reports from New York that the US appears to be about to drop its insistence that the Valindaba plant be placed under "full scope safeguard" as part of its demand that Pretoria signs the Non-Proliferation Treaty.

Supply

With US nuclear policy under a fullscale review and the Reagan Administration displaying a greatly eased attitude, the prospect has grown for the nuclear supply agreement to be reactivated without South Africa having to sign the treaty.

Last week Vice-President George Bush announced a "special case exemption" to allow Brazil, another non-signatory, to buy reactor fuel.

Meanwhile it has been disclosed that Escom, which will operate the Koeberg plant, made a delivery of yellow cake (raw uranium) to the Oak Ridge Facility in Tennessee at the end of August.

According to a 1974 contract, South Africa was to provide raw uranium for enrichment to Oak Ridge, for subsequent processing into Koeberg's vital fuel rods in France.

The French are reported to have become a "little more than just anxious" over the US ban.

South Africa negotiated what is known as a "turnkey" contract with the French consortium building the R2 000-million Koeberg power plant — a final lump sum is withheld until the plant produces electricity.

Star 2/10/81
No decision taken on nuclear fuel supplies

No decision would be made on the supply of nuclear fuel to South Africa during the current visit of US nuclear officials to Pretoria, Mr Brand Fourie, Director-General, of Foreign Affairs, said in the capital today. Along with officials of the SA Atomic Energy Board and the Uranium Corporation, Mr Fourie had talks with four Americans this morning. "This is purely a study-tour on safeguards for uranium enrichment establishments," he said. The American group is to visit nuclear installations near Pretoria.—Sapa.

UCT

SKLDMAN	STD8-9	1	5	9
	STD10	1	5	5
	NONE	1	5	5
	SUBA-2	5	5	1
	STD3-5	5	4	12
	STD6-7	15	1	2
	STD8-9	1	0	0
	STD10	14	15	14
LONONMAN	NONE	14	15	15
	SUBA-2	0	3	15
	STD3-5	12	1	1
	STD6-7	1	2	2
	STD8-9	14	14	14
	STD10	5	1	1
SEMI	NONE	3	0	0
	SUBA-2	14	14	14
	STD3-5	1	0	0
	STD6-7	0	2	2
	STD8-9	2	3	14
	STD10	14	14	14
UNSKL	NONE	14	14	14
	SUBA-2	1	1	1
	STD3-5	0	0	0
	STD6-7	2	3	13
	STD8-9	15	13	13
	STD10	15	15	15
EXC	NONE	2	2	3
	SUBA-2	12	13	13
	STD3-5	4	4	12
	STD6-7	14	14	13
	STD8-9	2	3	3
	STD10	3	3	3
PRO	NONE	3	3	3
	SUBA-2	14	14	14
	STD3-5	6	8	8
	STD6-7	15	15	15
	STD8-9	1	1	1
	STD10	13	13	13
CLC	NONE	1	1	1
	SUBA-2	4	4	4
	STD3-5	16	16	16
	STD6-7	2	2	2
	STD8-9	15	15	15
	STD10	1	1	1
BCT	NONE	1	1	1
	SUBA-2	4	4	4
	STD3-5	16	16	16
	STD6-7	2	2	2
	STD8-9	15	15	15
	STD10	1	1	1
SKLDMAN	NONE	1	1	13

US nuclear team in top Pretoria talks

RP11 22-10-81

(55)

By GERALD REILLY

TALKS between a team of United States nuclear safeguard experts and the president of the SA Atomic Energy Board, Dr Wynand de Villiers, and other SA nuclear authorities started in Pretoria yesterday.

Earlier they had discussions with the director general of the Department of Foreign Affairs, Dr Brand Fourie, and officials of the Atomic Energy Board and the Uranium Corporation at the Union Buildings.

And according to the New York magazine, Nucleonics Week, the talks are the first outward signs that South Africa is actively examining the possibility of modifying its safeguard standards to obtain enriched uranium for the Koeberg nuclear station.

However Dr Brand Fourie said yesterday no decision would be taken on the supply of nuclear fuel to South Africa during the visit of the US experts.

It was purely a study tour on safeguards for various types of uranium enrichment establishments throughout the world, Dr Fourie said.

US team

The US team is: Dr George Menzel, chief of the nuclear safeguards and technical division of the Arms Control and Disarmament Agency; Dr John Boright, acting deputy assistant secretary of the Nuclear Energy and Energy Technical Affairs Department; Mr Leonard Brenner, assistant to the director, Office of Safeguards and Security, of the Department of Energy; and Mr James Bradbury, director, Operations Analysis and Planning, Union Carbide (nuclear division). No statement was issued after yesterday's discussions at Pelindaba. They will be continued today.

According to Nucleonics Week, a group of South Africans,

described as non-policymakers, toured the Portsmith, Ohio, enrichment plant in August with the aim of determining precisely how safeguards inspections would be carried out at a full-scale enrichment facility.

The US team is composed of safeguards experts from the Arms Control Disarmament Agency and other US agencies, though also not at a policymaking level.

South African scientists claim to have developed a unique enrichment process which would eventually give the nation full enrichment capability. However, no foreigner had been acknowledged to have seen the pilot enrichment plant at Pelindaba, the magazine said.

Safeguards

Sources told Nucleonics Week that the exchange of the technical teams was the necessary forerunner to acceptance by South Africa of the full-scope safeguards required by the US Nuclear Nonproliferation Act in order for US-enriched uranium to be supplied to Koeberg.

These sources said that while US law required full-scope safeguards, US policy towards South Africa demanded that it sign the non-proliferation treaty as well to permit US nuclear exports.

The magazine said Koeberg-1 was supposed to be loaded with fuel some time next year, and this created an extremely tight decision schedule if South Africa was to avoid a delay in operation of the plant.

If no accommodation with the US was forthcoming, South Africa could, according to speculation in New York, purchase enriched uranium possibly in Europe where there was excess material and ship it to France for fabrication.

MILTON RUSSELL

A bear trap in oil?

55

FM

23/10/81



Dr Milton Russell is a Senior Fellow at the Centre for Energy Policy Research at Resources for the Future, a Washington DC-based non-profit research institution studying energy and natural resources.

FM: Which recent world energy developments most affect SA?

Russell: Coal exports are certainly of great significance. The increase in the world demand for coal has — in the short term at least — exceeded the port and rail capacity of the major exporting countries, the US, SA and Australia, while the strife in Poland has left it unable to export significant quantities for some months.

The significant questions for the three major Western exporters are whether the growth in coal demand will persist and at what speed rail and port facilities can be built up.

In the US itself, there is substantial excess coal mining capacity. The only limits to exports are the railways and ports, which are being extended in many areas in the expectation of continued growth in world demand.

What uses will be found for the increased coal exports?

The increase in world demand for coal will be largely a function of growth in the demand for electricity because — in the long term — most of the coal will be used in generating plants. Growth in demand for electricity is very largely dependent on growth in gnp.

In the US, oil is already being backed out of the electricity business, leaving not too much scope for further substitution by coal. Coal is a cheaper source of power than oil; thus a small increase or decrease in the oil price is unlikely to affect coal's competitive position much.

There is, though, still some response at the margin because the more rapidly oil prices rise, the more willing one is to scrap existing non-obsolete generating plant and swing over to coal-fired plant.

Similar directions of change, but not to the same extent, are found in Europe.

Except for France, which relies more on nuclear power, most of the additional electricity capacity will be coal-fired. Will the world uranium market remain depressed?

For the short run, yes. We are all familiar with the reasons for the depressed state of uranium markets — the very slow rate of development of the nuclear industry in the US, in Europe and around the world, due only in part to concerns about environmental issues and safety.

In the US, at any rate, I do not see that those concerns have been substantially mitigated. Therefore I do not see a resurgence in demand for new nuclear power plant for some time. But, unlike some, I am optimistic about our ability to complete, license and operate those nuclear plants now under construction. This achievement would double existing US nuclear capacity over the next decade.

The increase in the ability to produce uranium in the US, Australia and SA appears to have overshot the absorptive capacity of the market in much the same way as the coincident increase in the capacity to produce coal may overshoot the market.

What is current feeling in the US about the Sasol process?

I can only report at second hand the current feeling — that the Sasol plant is producing a wide range of products at brisk rates, but that it is uneconomic largely because of the brute force approach involved in its technology. Consequently, the Sasol process is unlikely to be competitive either with oil at world prices or with other synthetic routes from coal except in the peculiar SA situation.

Where is the world oil market going?

One of the most serious problems for observers and policymakers is the tendency for fads about world oil to become commanding. At present the fad is that there is a glut in the world oil market — which I regard as potentially as disruptive a misreading as the view, held six months to a year ago, that we were heading immediately for another major rise in oil prices.

It seems to me that there has been a fundamental shift in the world oil mar-

kets in the last few years towards substantially lower demand and lower Opec output. It is unlikely that Opec will ever lift as much oil as it did in 1977 and 1978.

This has occasioned a fundamental change in the longer run outlook for oil — the higher oil prices of the last few years have lengthened the era of production of relatively low cost conventional crude. At one time we could look forward to the end of this century as being the period of peak oil production. That turning point has been put off by perhaps a decade or so because of the higher prices we have had recently.

But these developments and changes do not diminish the opportunity for mischief in the Middle East and elsewhere. The prospect remains high that there will be significant disruption of oil supplies in the near term, with serious impacts on the world economy.

Also, many observers of world oil markets have failed to recognise the significance of swings in inventories of crude oil and petroleum products. A decline in secondary stocks is in progress, and it is showing up in declines in final product demand for oil.

The reduction in demand is thus more apparent than real, reflecting to some extent reductions in inventories of secondary stocks attributable to high carrying costs — as a result of current interest rates. We are also seeing reductions in inventories of primary stocks — crude oil held by the companies.

But just as destocking today is partly caused by fears of lower prices based on the view that there is going to be a glut on the world oil market, a shift in expectations about world oil prices — perhaps because of new fears about the Middle East — will just as quickly lead to inventory building again. This reversal would result in a renewed period of substantial shortage and rapidly rising prices.

So current assessments that world oil is in a prolonged period of quiescence and glut could prove as fallacious as the view last year that the world oil market was so tight that by the spring of 1981 prices would be much higher. And the consequent destocking could leave us dangerously unprepared for future disruptions.

Quiz on Koeberg halted

ARBUS 29.10.81
55

PERSISTENT questions on the safety of the Koeberg nuclear power plant at a seminar on Cape Town's air pollution problems left discussion leaders tongue-tied yesterday.

Midway through the seminar the National Association for Clean Air announced that it would hold a separate conference on Koeberg and invite the Atomic Energy Board and Escom and asked the delegates not to ask any further questions on Koeberg.

Earlier the chairman of the association, Dr C Keen, said little was known about the air movement around greater Cape Town because of its unique position.

NEW FACTS

When Koeberg was chosen for the nuclear plant information about the peculiar wind movements around Cape Town was not available, Dr Keen said in reply to a question.

'Twelve to 15 years ago, when the plans for Koeberg started, they thought they knew all about the airflow. Six years ago new facts came to light when research was done.'

In reply to a question from the floor, Professor R K Dutkiewicz said that from the observations by the Atomic Energy Board and Escom, 'there was nothing to be feared.'

Oil search SS 5/11/81 chance, say

THE search for oil in South African waters was making good progress and there was a "reasonable possibility" that economically viable gas and light oil reserves would be found, said Sasol's chairman, Mr D P de Villiers, yesterday.

Speaking at a congress of the Regional Development Association in Middelburg, he said: "With the current standard of Soekor know-how, it hopes for further successes in the southern sea territories.

"Judging by the nature of the geological structures present, the finding of oil is a reasonable possibility."

Soekor felt that successes it had achieved on the structures where it had drilled indicated a good chance of finding viable gas or oil reserves.

During the past few weeks, two drills had been working in the South Coast area, Mr De Villiers said.

The drilling programme with the two drills would continue until January next year.

In 1983, three drills would be used in South African waters.

Improved

Mr de Villiers said Soekor had improved its drilling techniques considerably. It was now possible to drill a 2 000m borehole in less than three weeks — a job that had taken between seven and eight weeks previously.

Turning to coal, he said that more and better exploration programmes, larger investments and improved mining methods had led to a dramatic change in South Africa's coal reserve position.

"In 1975 the Patrick Commission estimated our in situ coal reserves at 81 000-million tons and recoverable reserves at 25 000-million tons.

"Today, these figures are respectively 110 000-million tons and 51 000-million tons," Mr De Villiers said.

Compared to the rest of the world, the South African energy situation was favourable. South Africa was dependent on crude oil for only about 20% of its energy needs.

Boycotts

In spite of great progress in the energy field, several aspects of the South African energy situation were still "strategically delicate".

"In spite of boycotts, we still have many oil friends. Bandyng about information about international transactions, especially if the information proves to be wrong, creates the danger of severe embarrassment.

"If we wish to keep our wheels rolling in South Africa, colossal capital investments will still have to be made.

"Erroneous and provocative information about investors in the energy industry does not augur well for our country's energy future," he said. — Sapa.

'Built-in safety' at Koeberg

Staff Reporter

Argus 10/11/81
55

SAFETY factors for the R2 300-million Koeberg nuclear power station were based on an MCA (most credible accident), the head of Escom's chemistry department at Koeberg, Mr Dries van Schalkwyk, said in Cape Town last night.

He told a meeting of the Oranjezicht Ratepayers' Association at the City Hall that the whole power station had built-in safety levels which could withstand the worst possible accident such as a complete break in the primary water circuit.

He explained that the nuclear component of the power station was housed in a building built on a concrete 'nuclear island' anchored to rock which had not moved for 40 million years.

EARTHQUAKE

The building could withstand an earthquake measuring seven on the Richter scale which would destroy the rest of the power station and probably three-quarters of the Western Cape.

Mr van Schalkwyk disclosed that Escom staff had been collecting samples of soil, milk, eggs and vegetables from the area surrounding the power station to determine its natural radiation.

Once the plant was in operation the monitoring would continue to ensure these levels did not rise.

NATURAL

A nuclear power station would not be allowed to add more than one milliren of radiation to the atmosphere. Natural radiation in the Western Cape was about 80 millirems and this figure rose to about 130 to 190 in Johannesburg.

Regular TV watchers were exposed to about 10 millirems a year. Medical X-rays — one or two a year — added 35 and nuclear fallout from exploded nuclear devices an extra nine.

The biggest safety factor at Koeberg was the training received by the staff, especially the plant's operators who had to undertake stringent theoretical as well as practical training and pass examinations before being issued with a licence by the Atomic Energy Board, he said.

Escom finds enough nuclear fuel to 'fire up' first Koeberg plant

Argus 12/11/81
55

Argus Bureau

WASHINGTON. — South Africa has come up with enough enriched uranium to launch the Koeberg nuclear power plant on schedule, according to a report by The Washington Post's correspondent in South Africa.

Framatome, a French company helping to set up the Koeberg project, says Escom has given it a supply of low-enriched uranium hexafluoride.

Jacques Gossens, spokesman for Framatome, confirmed from Paris his company was preparing to transform the material into fuel elements for the first Koeberg plant.

The Washington Post report said Escom chairman Jan Smith would not comment 'until things are finalised' — but added that 'some sort of state-

ment' would be made soon.

South Africa has been barred from using American enriched uranium, as it originally hoped, because it rejects international safeguards on its nuclear programme.

Without that fuel, the scheduled launching of the Koeberg station was threatened with delays costing as much as R1-million a day.

A senior State Department official in Washington said: "That does not solve their main problem with us — their contract, under which they have a big obligation."

Under a multimillion-rand contract that extends into the 1990s, Escom must regularly deliver raw uranium to the United States for enrichment or face large penalty fees.

As things stand, how-

ever, South Africa cannot get the export permit to ship the enriched material back.

The Washington Post says it is not known whether South Africa has obtained just enough fuel to 'fire up' the first Koeberg plant or a long-term supply.

Some observers have suggested that South Africa enriched the fuel itself in a small pilot plant set up in 1975, but others say it has not had the time to process the relatively large amount required.

'South Africa may have acquired the fuel from some country whose nuclear power plants have fuel to spare or from a country that has enrichment capacity,' including France, the Soviet Union, China and the British Dutch-West German group called Urenco.

Koeberg: Escom to receive ⁽⁵⁵⁾ uranium

Argus Correspondent

PARIS. — South Africa's electricity Supply Commission (Escom) has told the French builders of its first nuclear power station that it expects to have the low-enrichment uranium fuel necessary for the plant, in spite of the United States embargo.

Framatome, the French producer of nuclear pressure vessels, said here that it had received an assurance from Escom, but it had not yet received the fuel.

The contract between the South Africans and a French consortium, which dates back to 1976, stipulates that the South Africans will provide the enriched uranium for Framatome to transform into fuel elements.

Pretoria's access to enriched fuel from the US was cut off the same year under an embargo imposed because of its failure to sign the nuclear non-proliferation treaty.

Framatome indicated it expected to receive the fuel in the next few weeks. It denied it had supplied the South Africans with the enriched fuel in the Americans' stead.

The first of the twin reactors, Koeberg-1 is to go on stream at the end of next year, and Koeberg-2 a year later.

CAHORA POWER TO SA FLOWING AGAIN

Argus 14/11/81

218 (55)

SOUTH AFRICA'S electricity power link with Mozambique has been quietly switched on again after an eight-month interruption by anti-Frelimo sabotage attacks.

Power has been flowing for about three weeks from the giant Cahora Bassa hydro-electric dam in northern Mozambique to Escom's Apollo sub-station east of Pretoria.

And it means the utility corporation can get down to 'much needed' line maintenance, says an Escom spokesman.

Power exports from Cahora Bassa (previously called Cabora Bassa) were cut in April this year when guerrillas allegedly of the Mozambique Resistance Movement (MRM) blew up transmission pylons.

But even earlier, occasional attacks on installations in Mozambique had meant an erratic power flow southward from the dam.

LITTLE EFFECT

Escom drew up to 10 percent of the country's electricity needs from the Portuguese-built hydro-electric dam. Without it the utility managed to meet last winter's domestic demand only with difficulty.

High power costs in South Africa have been partly blamed on loss of

Weekend Argus Reporter

the Cahora power but an Escom spokesman says the switch-on will have little effect on South African consumers.

It's a very small percentage, says public relations officer Mr Boet Uys. And the amount of power drawn from Mozambique will decrease as Escom's generating capacity increases.

But resumption of the flow, he says, 'has this benefit, that it gives us the chance to do much-needed maintenance to our equipment.'

Since the middle of 1980 anti-Frelimo guerrilla activity has kept the Cahora Bassa powerlines open for little more than three months, with the revenue loss estimated at about R50-million.

REVENUE

Portugal relies on revenue earned from South Africa's power purchase to pay off foreign loans raised to finance the dam, built when Lisbon ruled Mozambique.

About three months ago, reports from Lisbon said the MRM was negotiating with South African and Portuguese representatives to end attacks against the Cahora Bassa complex.

Mr Uys said this week: 'One can never guarantee any power supply. But I am sure both parties (the South African and Mozambican governments) are doing their utmost to keep things going. That is what we are in the business for.'

EXPANSION

Sabotage against Cahora Bassa also forces Mozambique to import power from South Africa.

Escom has embarked on a plant expansion programme seen as one of the world's largest for a single utility.

Units for Koeberg

arrive

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in city

ARGUS 18.11.87

Shipping Reporter

MOST of the major parts for the second nuclear-powered generating unit at Cape Town's controversial R2 250-million Koeberg power station have arrived from France in the 4 997-ton French freighter Internavis 2.

Port officials say the ship will spend about four days discharging the 1 200-ton consignment, which include the reactor (276 tons), stator (334 tons), rotor (175 tons), rotor alternator (194 tons), upper part casing (50 tons) and lower part casing (49 tons).

The equipment is being off-loaded in the harbour's container terminal with the Internavis 2 making use of its own heavy-lift derricks.

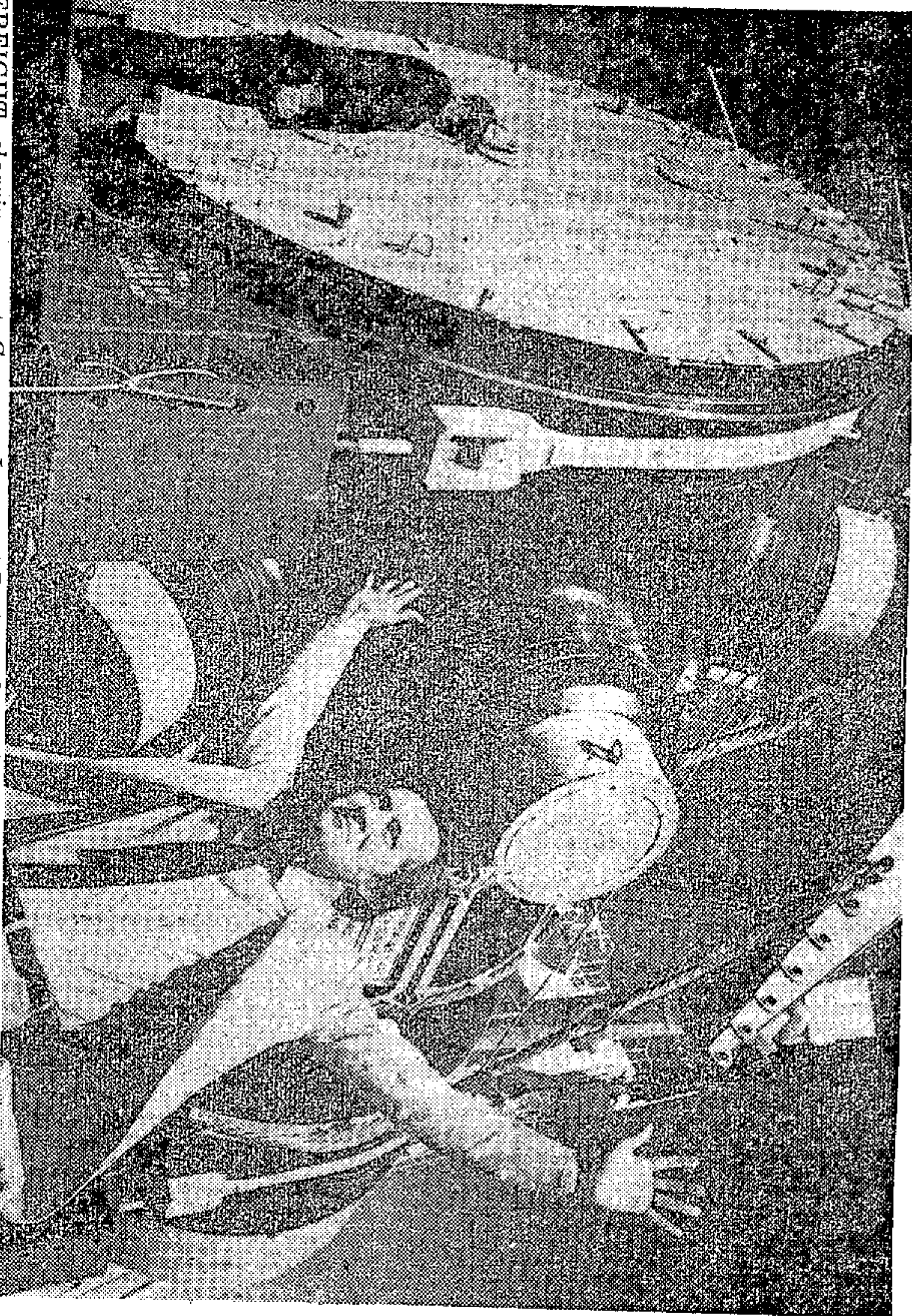
TRAILERS

The parts are being loaded on to special low-bed trailers for the 20 km journey to the power station site near Melkbos.

Escom officials said the giant turbine, which will measure about 50 m in length when it is assembled, will push out 920 megawatts of electricity — the same as its sister-unit which is already being assembled at the station and is due to come on line by the end of next year.

The turbine units are believed to have cost about one third of the total expenditure on the project.

FREIGHT clearing agent Georges Laurent-Badin cheerfully holds his hands up in imitation of a traffic cop as one of the parts of the Koeberg power station's second giant nuclear powered generator is off-loaded from a ship in the Cape Town harbour today. Nearly 1 200 tons of the turbine arrived from France aboard the Internavis II.



Uranium: Koeberg to get 18-month supply

ARGUS 25/11/81

Argus Correspondent

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JOHANNESBURG. — South Africa's only nuclear power station, Koeberg, will have enough enriched uranium for 18 months when Escom's mystery deal with an unnamed country is completed.

In an official statement by its Foreign Office, France announced last night that the enriched uranium was not of French origin. The uranium is being processed into the necessary fuel rods, used in nuclear power stations, by the French firm, Framatome.

Previously an official of Framatome, Mr Jacques Goosens, had added to the mystery by saying the en-

(Continued on Page 3, col 2)

Uranium for SA 55

(Continued from Page 1)

riched uranium had come from South Africa. A report that it had been bought from communist China through a Swiss intermediary has also been denied.

Because of delays in nuclear power programmes in many countries, enriched uranium is now for sale on the world spot market, unlike years ago when the supply was strictly controlled.

Escom declined to comment on last night's French statement, but reiterated that the enriched uranium came neither from France, the United States nor South Africa and was subject to international control.

The Argus correspondent in Paris reports that Spain could be the mystery supplier of enriched uranium for the Koeberg nuclear plant which is now being processed in France.

Spain sent the fuel to France for treatment into pellets for fuelling the reactors after it ran into delays and financial problems with its own atomic programme, sources believe.

(See Page 15)

Joint US-Sasol gas plant in use by 1983

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STAR
25/11/81

Own Correspondent

The commercial-scale fine-coal gasification plant being put up at Secunda as a joint venture by the US-based Westinghouse Electric Corporation and Sasol should be in operation by 1983, Sasol said in a statement.

Sasol, as world leader in oil-from-coal technology, was an obvious choice for a partnership which promises to benefit both parties — Westinghouse can try out its system much faster than would otherwise be possible and Sasol hopes to find a use for excess fine coal from its Bosjeespruit mine and elsewhere.

Opportunity

Mr William H Peace, general manager of the Westinghouse synthetic fuels division, described the agreement with Sasol as a rare opportunity of demonstrating Westinghouse's technology on a commercial scale much sooner than it could otherwise have done.

"As a result of this project, we will be able to make this clean and efficient gasification technology available as a practical

commercial product in the United States and elsewhere much earlier than anyone had hoped.

"We believe it can reduce significantly the costs of producing synthetic fuels from coal."

Successful

Speaking for Sasol, Dr A H Stander, senior general manager and joint managing director of Sasol 2, said his company looked forward to the successful commercialisation and demonstration of the Westinghouse process.

Sasol's main purpose in co-operating with Westinghouse was to help to establish a system capable of handling the fine coal produced in many South African mines — a system which could ensure optimum use being made of coal resources.

Mr John D Holmgren, technology and operations

manager for the synthetic fuels division, said the Westinghouse technology had been under development since 1970 and had received financial assistance from the US Government, the Gas Research Institute and other organisations.

"Its competitive advantages include the ability to use many types of coal, plus high system efficiency and low water use.

The gasifier has undergone more than 7000 hours of operation at a 35-ton-a-day pilot plant in Pennsylvania, meeting all Government environmental standards for air and water purity."

The Westinghouse plant at Secunda will gasify 1200 tons of coal a day, with Sasol getting the benefit of the gas produced and licensing rights for third parties, in which it will get a half share.

The French speak

FM 27/11/81

The French Ministry for External Affairs has announced that SA obtained enriched uranium for Koeberg "on the international market." The enriched uranium — amounting to 70-76 t — will be processed into fuel rods under an existing agreement by the French contractors, Framatome — one-third owned by the French government.

The Ministry spokesman said that there were no plans for any further agreement between the French company and SA. "France has concluded no new agreement with SA on the enriching of uranium necessary for Escom to satisfy its contractual obligations."

"The US initially was supposed to ensure this enriching service but revised its decision after legislative changes."

The statement pointed out that SA has not signed the Nuclear Non-Proliferation treaty, but that the Koeberg power reactors are subject to inspection by the International Atomic Energy Agency.

Framatome announced recently (FM November 13) that the initial loading of fuel for Koeberg I would take place next June as scheduled, thus ending a long period of uncertainty over the supply of nuclear fuel for SA's first nuclear power station.