

The Institute of
Petroleum



PETROLEUM REVIEW

IP Week

Malcolm Rifkind
addresses the
Annual Dinner
Chevron's Kenneth
Derr brings a
'Letter from
America'

Germany

Details of new
business
opportunities by
Hans-Georg Pohl

Lubricants

Mr El Williamson
looks at lubricants
in the 1990s

Turkey

Problems and
prospects by
Juliette Rossant



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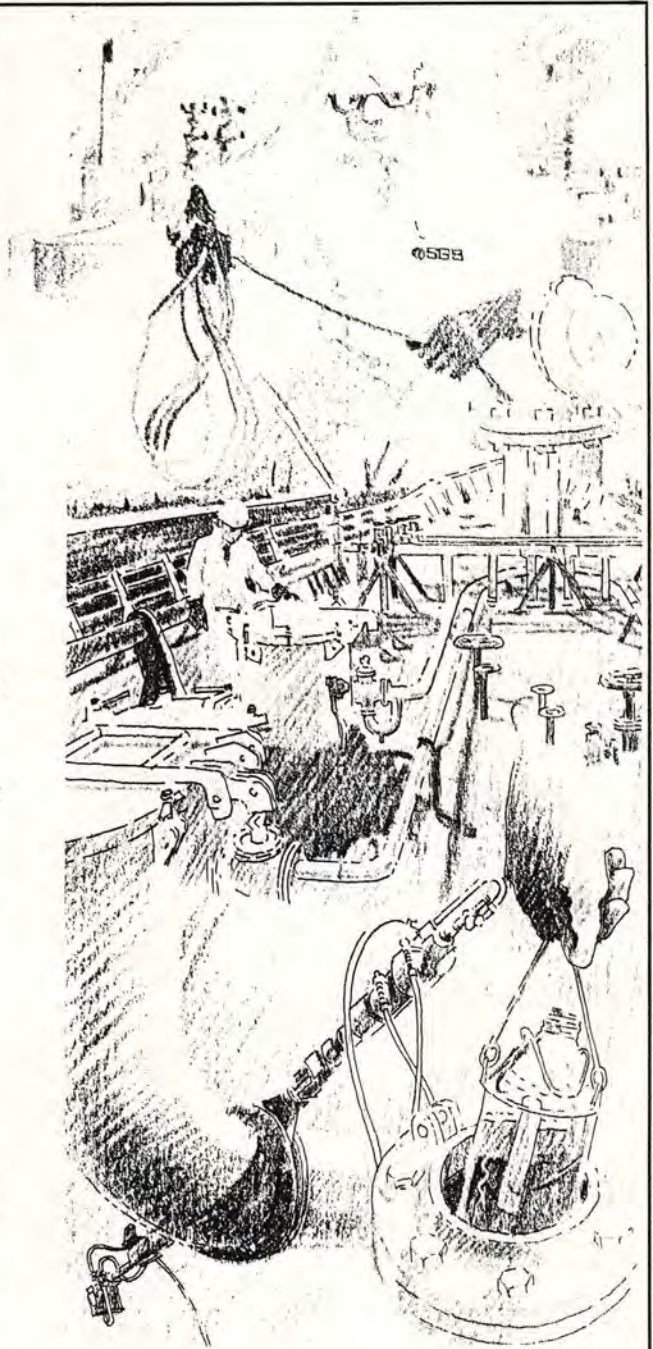
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Cover photo of IP Annual Dinner at Grosvenor House, London. Photo by Jon Whitbourne.

21 January

Russia expects oil output to fall to 405.5m tonnes in 1992 from 462.3m tonnes in 1991.

22 January

BP has chartered a second offshore accommodation unit to help catch up on the project schedule for the £1.3bn Miller oil and gas development in the UK North Sea.

23 January

The Star Pegasus, a new North Sea supply vessel, built for Aberdeen-based Star Offshore was launched at the Port Glasgow yard of Ferguson Shipbuilders.

24 January

Fuel made from sugar beet and wheat will be used by a bus company in the northern Dutch city of Groningen in a trial lasting three years.

A new Scandinavian offshore engineering and project management giant is to be launched when Aker Engineering and Norwegian Petroleum Consultants join forces. The company will retain the Aker Engineering name and become a wholly-owned subsidiary within the Aker Group.

Harsh conditions in Britain and the cost of establishing its petrol station development arm in Spain has left motor retailer DC Cook with opening half profits of £107,000 against £350,000 pre-tax.

World oil demand reached a peak of 66.4m barrels a day last year after a modest 0.7 percent rise on the 1990 levels, according to PIW. Powergen is to build a £40m terminal at Liverpool's Gladstone Docks capable of handling 5m tonnes of imported coal a year.

Norsk Hydro is to take a \$387m special charge against its 1991 fourth quarter accounts. The charge will cover the costs of restructuring and asset write-downs associated with the agriculture and magnesium divisions.

Petro-Canada, the partly privatised Canadian oil company, plans to stem losses in its downstream business by selling or closing one-third of its service stations and withdrawing almost a third of its refining capacity.

British Petroleum is to make substantial job cuts in its group headquarters staff as part of a cost-cutting drive.

25 January

Norway's total petroleum output in the first 11 months of last year increased by 9.54 percent to around 106.7m tonnes of oil,

equivalent according to the latest figures from the Norwegian Petroleum Directorate.

The Australian Petroleum Exploration Association has called for government action to help encourage oil industry investment and boost exploration and development in Australia after a 40 percent decline in drilling activity last year.

Sonat, the US energy services company, has reported a slump in fourth quarter earnings after inclusion of a \$12m charge for costs associated with an early retirement programme and an aborted pipeline project.

Eastern Electricity has bought a stake in Barking Power after the collapse of negotiations for a joint venture with Mobil at Coryton, Essex.

27 January

Malta is negotiating production-sharing contracts in preparation for a new exploration campaign in southern Mediterranean waters, according to Prime Minister Adward Adami.

Privatised UK power generators will be forced to sell sites, in addition to redundant plant, under licence changes being finalised by the electricity industry regulator.

The International Petroleum Exchange launched an unleaded gasoline futures contract in a bid to attract new users to the derivatives product.

Rendel Palmer and Triton has begun inspection of one of Kuwait's main oil exporting jet-ties, at Mina-Al-Ahmadi south terminal, just 14 days after submitting a bid.

The Piper Alpha Families' and Survivors' Association has abandoned plans to prosecute rig owner Occidental privately for culpable homicide.

US demand for petroleum products will increase this year as the economy recovers and prices decline, according to a survey for *Oil and Gas Journal*.

28 January

Aberdeen's RGIT Survival Centre has taken steps to eliminate travel and accommodation costs for trainees coming from Central Scotland to its Dundee training base by introducing a free daily bus service.

The International Association of Independent Tanker Owners has called for changes to US legislation to make cargo owners equally responsible with vessel operators under the terms of the Oil Pollution Act.

Iran's parliament set a target of \$19.8bn for oil and gas revenues for the year from 21 March.

29 January

Amsterdam's municipal council plans to produce electricity from biological waste collected by the city's refuse department.

Norway's three main oil companies are to explore opportunities for possible cooperation with the National Iranian Oil Corporation over petroleum exploration and production, following a visit to Iran by Norwegian oil and energy minister Finn Kristensen.

A partnership between US companies Marathon, McDermott International and Japan's Mitsui has won the battle to develop huge oil and gas reserves in the Sakhalin Island area in the North Pacific.

30 January

Vietnam has agreed in principle to grant oil exploration concessions for five attractive offshore blocks to companies from Europe, Japan and South Korea.

Carin Energy's US subsidiary has paid \$1.2m cash for a 64 percent controlling stake in Omni Exploration, a publicly quoted US oil and gas company.

3 February

UK independent Premier has reached agreement with a second Russian republic to explore for oil and gas with protocols covering offshore acreage in the Caspian Sea and onshore territory in Kalmykia.

The creation of a gas pipeline link between Britain and the Continent moved a stage further when the UK government relaxed restrictions on the import of gas from Norway.

Consolidated profits at Petrofina, Belgium's largest industrial group, slipped by nearly 25 percent in 1991, from BFr21.7bn to BFr16.3bn.

5 February

Iraq cancelled plans to meet in Vienna for a second round of talks to clear the way for the resumption of Iraqi oil exports.

Canada's Imperial Oil has unveiled a reorganisation which includes the closure of about 1,000 retail outlets, unspecified cuts in refining capacity and a 12 percent reduction in its 14,000 strong workforce.

Phillips Petroleum has announced an oil and gas find in block 2/4 in the Norwegian sector of the North Sea. The discovery is located within five miles of the Tor platform.

6 February

Chevron has confirmed a major gas discovery in block 861 in federal outer continental shelf waters offshore Mississippi.

11 February

One man died and three others were injured after an explosion and fire at the BP Chemicals complex in Grangemouth, Scotland.

13 February

Total Oil Marine, Euroil Exploration and Monument Exploration and Production have clubbed together to acquire Pentex's 6 percent stake in the UK/Dutch Markham field.

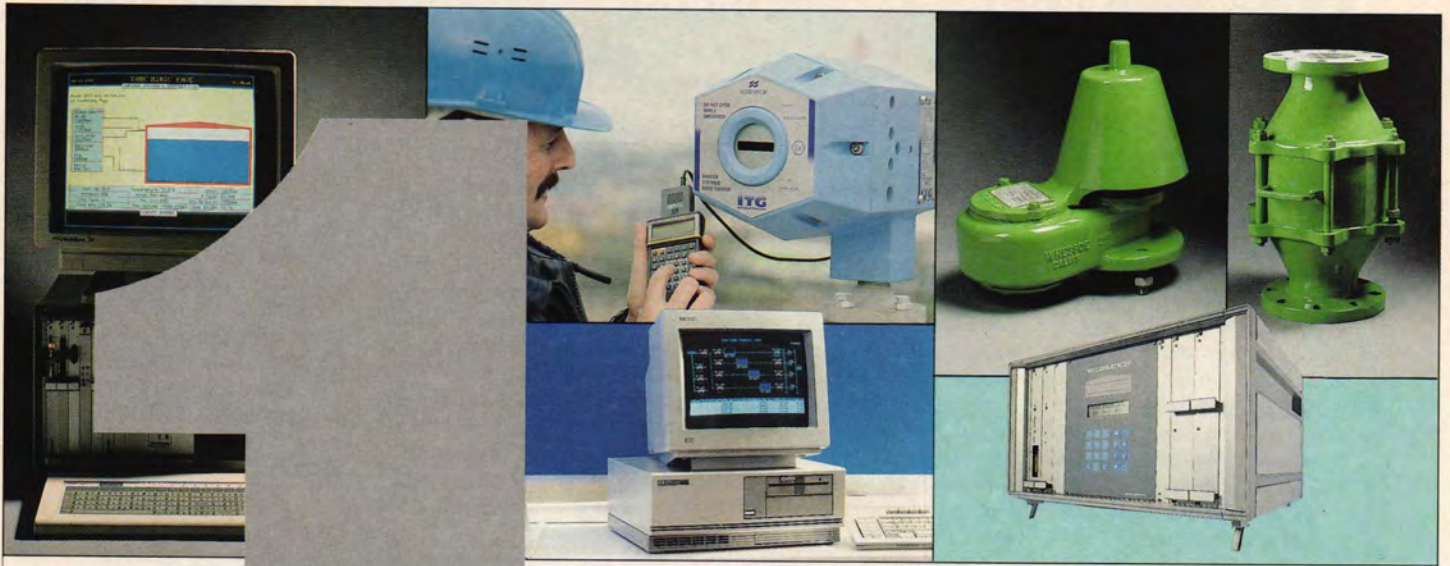
Obituary — Wanda Jablonski

Wanda Jablonski was a true professional and a leading figure in the field of oil journalism. She thrived on hard work and at times seemed to almost court controversy. Her stories were to the point, never less than the truth but always objective. Her style may, on occasions, have lost her the friendship of some, but never their respect.

Wanda managed to obtain exclusive interviews with a great many leaders in my part of the world. Not an easy task as a female reporter but one which she approached with her normal tenacity and courage. The story of her audiences with such notable leaders as the late King Saud and the late Sheikh Shakhboub of Abu Dhabi are of immense historical interest. She also established lasting friendships with numerous top oil industry executives and oil officials in the Middle East and elsewhere.

Wanda Jablonski was a true pioneer. She was at the pinnacle of her career and will be remembered, respected and sadly missed by all in the world of oil journalism.

His Excellency Sheikh Ahmed Zaki Yamani



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Labour Party oil and gas policy

Addressing a meeting at the Institute of Petroleum on 22 January, Frank Doran MP, Labour Party energy spokesman with special responsibility for the oil and gas industry, confirmed the broad principles which his party would apply to the management of North Sea oil and gas resources, if it formed the next UK government.

The aim would be 'to manage the national asset of our oil and gas reserves for the long-term benefit of the United Kingdom, by developing the maximum recovery of hydrocarbons, by developing a strong UK-based industry and technology and, above all, by preserving the safety of those who work in the industry and conserving our natural environment'.

He undertook to maintain the tax system more or less in its present form. However, he did see the need for incentives to encourage the maximum recovery of oil and gas from the North Sea and was

considering various options for changes in Petroleum Revenue Tax and royalty payments. He had set out these options in a recent paper and comments from all interested parties would be most welcome.

On the subject of health and safety, Mr Doran said that it was clear to him that operators now take safety very seriously but he added that there was no room for complacency.

Turning to the gas industry, Mr Doran said: 'Our broad principles apply just as much to the UK gas resources as they do to its oil. We want to maximise recovery and ensure that our resources are fully exploited... We are in favour of more competition in the gas industry but we want to know more about the consequences of each step'.

He stressed that the Labour Party is not convinced of the need for substantial increases in gas fuelled electricity generation. There were serious questions that needed to be

addressed concerning conservation and energy efficiency, the impact on UK gas reserves of exports of gas and of increased electricity generation by gas and the impact on indigenous gas producers of increased gas imports.

He praised the British offshore technology industry, emphasising the opportunities that could open up worldwide, based on experience gained in the North Sea.

On the downstream sector of the industry, Mr Doran proposed to implement the recommendation of the last Monopolies and Mergers Commission report that systematic monitoring of the downstream industry should take place. Further details will be announced before the General Election to be held later this year.

In conclusion, he stressed that if the Labour Party forms the next UK government, it will continue to work 'closely and productively' with the oil and gas industry.

Russian energy and private enterprise

Russia will produce enough oil to supply its own energy needs in 1992 but may not be able to provide the necessary energy requirements for the other former Soviet republics.

This was the view put forward by the president of the Moscow Oil Exchange, Mr Ivan Gubenko, in an Energy Economics Group discussion meeting at the Institute of Petroleum. Mr Gubenko, speaking through an interpreter, explained that moves were already well under way for the development of private enterprise in the oil industry and this had been underlined by the setting up of the Moscow Oil Exchange and a private oil company, Nipec, over the last few months.

The Moscow Oil Exchange was formed last September by a consortium of companies involved in the production, refining, distribution and sup-

port services to provide a means to market oil and products for local consumption as well as export.

The companies decided to trade the oil themselves when, according to Mr Gubenko, 'it became more profitable to produce mineral water than oil'. There are now more than 200 traders in the exchange and they are hoping to introduce a futures market later this year.

Oil is traded in Roubles within the Commonwealth of Independent States and in US dollars for export. A trading company has been set up to handle auxiliary equipment and supplies.

Mr Gubenko, who has been involved in the oil industry in Russia for 40 years, was instrumental in setting up the first private oil company in Russia. The company, Nipec, was formed by raising 3,000,000

Roubles capital amongst the population of the Tyumen province in the east of the Urals and those involved in the exploitation of the province's gas and oil reserves. Some 20 percent of the share capital has been set aside for state and institutional investors.

At present the company produces a small amount of oil — 200–300 tonnes per day — from three small fields and it is negotiating to buy several other fields in the area.

Dr Igor Labrovsky, who also spoke at the meeting, said that Western interests should understand that the Russian people were somewhat suspicious of their intentions and would not allow themselves to be anything but partners in the development of oil and gas industries and that there were some quite successful private enterprises already established in the former Soviet Union.

Egyptian exploration

A three-company consortium led by Phillips Petroleum Company North Sinai has signed an agreement with the Minister of Petroleum and Mineral Resources and the Egyptian General Petroleum Corporation to explore for and produce hydrocarbons in an 870,000-acre area. The area is designated Block A, Offshore North Sinai Area, located in the Mediterranean Sea.

Indonesian award

Enterprise Oil has been awarded the North West Natuna II production sharing contract as operator and sole licensee.

The licence area which covers 5,675 sq km is located in the prospective oil producing province of the Natuna Sea, approximately 200 km to the north-east of Natuna Island. This award expands Enterprise's Indonesian portfolio to a total of six production sharing contracts, three of which are operated.

HSE study contract

The Health and Safety Executive have appointed Aberdeen University's Offshore Study Group to carry out an independent research study into the working of the Offshore Installations (Safety Representatives and Safety Committees) Regulations 1989.

The research study will be an in-depth examination of the way the regulations have worked in practice, taking the views of a typical sample of those people actually involved in their operation, including safety representatives, offshore installation managers and individual members of the workforce.

Wyth Farm award

Wyth Farm, BP Exploration's onshore oilfield development at Poole Harbour, Dorset has been awarded a Royal Society of Arts Better Environment Award for Industry.

Britannia agreement

Britain's Kilda/Lapworth gas condensate discovery, re-named Britannia, has moved closer to development following the signing of an historic agreement between 12 co-venturers.

The agreement provides, for the first time in the UK North Sea, for two companies to share the duties of field operator — Chevron UK Limited and Conoco (UK) Limited.

The innovative approach to development aims to overcome the additional complexities of bringing into production a reservoir that spans five blocks and involves 12 co-venturers.

The field, which is 130 miles north-east of Aberdeen, contains in the region of 2.5 to 3 trillion cubic feet of re-coverable gas and 150 to 200 million barrels of recoverable condensate. It is planned to enter production in 1997 and peak production could reach 750 million standard cubic feet of gas per day with a field life up to 30 years.

Under the Joint Planning Agreement (JPA) the 12 companies have agreed to share costs and field data, carry out joint studies and appraisal and prepare a budget and plan



for field development.

Britannia development coordinators, Mr Derek Brown of Conoco and Mr Jean Camy of Chevron, said: 'This agreement brings together the 12 co-venturers in a forum in which they can all participate in decisions about field development'.

Chevron and Conoco jointly will provide staff for the project which will include a number of secondments between the companies. Specific development and production responsibilities will be shared. Chevron will be responsible for geophysics/geology, reservoir engineering, drilling and equity determination. Conoco will handle conceptual and preliminary engineering, safety management, production operations and commercial activities including transportation and marketing.

Kinetica gas transport agreement with National Power

Kinetica Limited, the independent natural gas transportation and marketing company, and National Power have signed a major agreement on gas deliveries to a new power station on Humberside.

The long term contract provides for the transportation by pipeline of gas from the terminal operated by Conoco (UK) Limited at Theddlethorpe, Lincolnshire, to the combined cycle gas turbine power station currently being built by National Power at Killingholme.

Gas will be delivered to National Power through Kinetica's 51 kilometre Theddlethorpe to Killingholme pipeline which is nearing completion. Kinetica also is planning to join its system to the British Gas national transmission network by a pipeline link to be built at Thornton Curtis, South Humberside.

Mr Keith McNair, National Power's fuel management director, said: 'This unique agreement with Kinetica to deliver gas to our new Killingholme power station will ensure flexibility and increase our gas supply options during the operating life of the station'.

'Disastrous' OPEC meeting fails to stabilise prices

Oil prices fell below \$18 a barrel when the recent OPEC meeting failed to cut production by as much as the markets were expecting.

The deal, reached after five days of tough negotiations, agreed cutbacks of around 1.2 million barrels per day (mbd) to 22.98 mbd.

The agreement was immediately put in jeopardy when the Saudi oil minister, Hisham Nazer, expressed dissatisfaction about his country's allocation. The kingdom is reluctant to reduce its output below eight mbd — the level it achieved when it took up a large part of the slack caused by the loss of supplies from Kuwait and Iraq as a result of the Gulf War.

Iranian officials also expressed doubts as to whether the planned production cuts would be enough to lift world oil prices. Oil Minister Gholamreza Aqazadeh maintained that the agreement was only enough to 'keep the present situation'.

Brent crude traded at around \$18.40 before the announcement; it subsequently slipped to \$17.50-\$17.60.

One senior Dutch oil analyst described the meeting as 'disastrous'. Prices are now lower than companies can comfortably cover — for instance, BP announced at the launch of its annual report that it had tested all its operations against a price of \$18 per barrel.

UK gas imports agreed

Colin Moynihan, Junior Energy Minister has sanctioned an import deal agreed between National Power and Statoil to buy 2.2 billion cubic metres of gas a year. Statoil can also import a supply of gas to provide power for one independent electricity generation project.

The Norwegian imports will help ease supply constraints in the UK market particularly in gas for power generation. This was criticised by Frank Dobson, Shadow Energy Secretary

who said that the government had encouraged the 'dash for gas' by giving in to the selfish demands of the privatised electricity companies instead of telling them to consider Britain's long-term interests.

The Department of Energy has reversed its position on gas imports since it vetoed the attempt by British Gas to import Norwegian gas in 1985. Mr Moynihan said, however, that the department would still require importers to submit individual deals for approval.

Czech service stations

Conoco has signed an agreement with Benzina, the Czech Republic's state-owned sole distributor and retailer of petroleum products, to lease and operate 13 service stations. The contract, which includes an option to purchase the stations after privatisation, covers sites located throughout the Czech Republic.

Benzina currently is selling into private ownership a major part of its network of 700 service stations. In the first phase of privatisation Benzina will lease and eventually sell up to half of its outlets to western oil companies of

which nine, including Conoco, have signed lease agreements.

'These are new markets for us which offer important opportunities,' said Mr David O'Kem, Conoco's Vice President, Refining and Marketing, Europe. 'The opening of our Prague and Warsaw offices last year helped us towards this significant first step in our pursuit of new business interests. Our long term aim is to have an integrated refining and marketing operation throughout the area contributing to its economic and industrial growth.'

The Annual Dinner — 'the high point in the Institute's year'

The Right Honourable Malcolm Rifkind QC MP, Secretary of State for Transport, Department of Transport, proposed the toast to the Institute of Petroleum at its Annual Dinner held in London last month. In his speech he talked of pollution and the worthwhile efforts from many quarters to tackle the problem. He praised the oil companies which have contributed to road safety and referred to the emerging movement aimed at securing independence for Scotland and the associated ramifications for the oil industry in the North Sea.

IP President B R R Butler OBE replied to the Minister's toast, welcoming everyone to the dinner. He outlined how the Institute was proposing to meet the challenges of 1992 'with some new thinking and new initiatives of its own'.

Replying to the toast of 'The Guests', Dr P H Jungels CBE, Past President, the Institute of Petroleum and Executive Director, Supply, Refining and Marketing, Petrofina SA, entertained the diners with stories about the peculiarities of living and working in Brussels, before putting forward a more serious message.

Mr Rifkind said:

Mr President, Ladies and Gentlemen, it is obviously an enormous privilege and honour to be invited to address this illustrious gathering this evening. Indeed I may say that with the General Election in the offing it is a rare opportunity to speak to a gathering which is almost as large as my majority.

May I, Mr President, thank you for your tremendous hospitality this evening. It is most impressive to be able to propose the health of the Institute of Petroleum, an institute which is actually older than the Department of Transport. You are, I believe, an organisation founded in 1913 — almost 80 years ago. I don't know if you have had as many Presidents of your Institute as there have been Ministers of Transport — I was reminded recently that I am the eighth Minister of Transport in the last 12 years.

I would like to pay a very sincere tribute to the Institute for what it has achieved over the years, because you have developed a degree of professionalism, respect for standards and an example not only within your industry

but also to the wider community. As a mere politician, I am very impressed by your professionalism. Robert Louis Stevenson who was one of my erstwhile constituents before my time once remarked that politics is perhaps the only profession for which no training is thought to be necessary. In your case that is not an assumption that you have made and I salute the Institute for what it has achieved.

I suppose in the transport world we have a particular claim to your attention because we are your main clients, your main customers; some 44 percent of all your production ends up being used for one mode of transport or another; that is something which has grown tremendously over the years. When Her Majesty the Queen came to the throne, only 14 out of every 100 households in this country had the use of a motor car; today it has gone up to 66 out of every 100 and it is still growing. Therefore whether it is the motor car or the lorry or the train or whatever mode of transport, energy has increasingly been in demand and petroleum, diesel and other products of your industry have both in this country and throughout the world been quite

literally vital to the way in which the economy functions.

It's also an issue which has had a significant political content and politicians have involved themselves at their risk. I think it was George Bernard Shaw who once remarked, 'What Englishman will give his mind to politics as long as he can afford to keep a motor car?' That is something which I think also applies to the Scots and the Welsh. So there is a problem and we who have responsibility for transport need to keep in close contact with you in the oil industry whose destiny is so intertwined with that of the well-being of the country as a whole.

Now clearly the issues that your industry and the society in which we live are grappling with are issues of profound significance, because transport is often referred to in terms of the congestion which it can sometimes create.

However, increasingly in recent years, we've all become conscious that the problems of pollution also require our attention, our thoughts and our scrutiny. Pollution did not begin with the motor car — a letter written to

1992



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(L to R) Mr Rifkind, Mr WSH Laidlaw, Managing Director, Amerada Hess Ltd, Mr BRR Butler OBE, President, Institute of Petroleum, Mr CM Smith, Managing Director, Chevron UK Ltd and IP President-Elect.

The Times in 1975 by John Sparrow, Warden of All Souls who died fairly recently, referred to 'that indefatigable and unsavoury engine of pollution', by which he meant a dog!

So one must not assume that pollution has only one source or that your industry has a particular responsibility. However, we know that the real issues at the present time do have a particular connection with the need to reconcile the tremendous contribution made to the prosperity of our country and of the world as a whole through transport, through the motor vehicle, through the lorry, the car and the other modes of transport, the aircraft and so-forth, and at the same time seeking to minimise the enormous potential threat to our global environment that pollution can represent.

Now in recent years, there have been some remarkable developments which show what can be achieved. Take for example that extraordinary switch from leaded to unleaded petrol. By fiscal means, the Chancellor of the Exchequer a few years ago, changed the whole custom of the nation almost overnight. In 1988, only four years ago, only one percent of motorists used unleaded petrol; the figure is now 40 percent and increasing every month and every year.

At the end of this year, the requirement for catalytic converters will come into effect, with the result that for all new vehicles that are manufactured, at least 75 percent of the hydrocarbons, the carbon monoxide and the nitrous oxides will all be removed through the

use of these three-way catalytic converters. That is a tremendous step forward and something which has very profound implications for the battle against pollution.

We recently introduced, as part of the MOT test, a check on emissions so that when your vehicle is being tested after its three-year period it will not only be tested for its mechanical proficiency but also whether the pollution



Dr PH Jungels CBE, IP Past President and Executive Director, Supply, Refining and Marketing, Petrofina SA.

that it causes is greater than that which is acceptable for a vehicle of that kind. If it is greater, then it will not get its MOT certificate until that matter is repaired. Very often, the repair that will be required will simply be a small matter of fine-tuning the engine which will not only meet the requirements in terms of pollution but will also enable the motorist to get more miles to the gallon and therefore better value for money.

These are important developments but we all know that they are not going



(L to R) Sir John Cullen, Chairman, Health and Safety Commission, Mr DR Varney, Managing Director, Shell UK Oil, Mr AEH Williams, former Director General, Institute of Petroleum.

to be sufficient in themselves; for example, virtually none of these deals effectively with the problem of carbon dioxide and that clearly is something which transport has a particular responsibility for. Some 20 percent of all the carbon dioxide emissions in the United Kingdom come from transport, particularly from the motor car. Therefore it is crucially necessary to achieve the degree of improvement in fuel efficiency — that is the only way of making a significant impact on this particular problem.

I am advised that it ought to be possible over the next 10–15 years to achieve an improvement of fuel efficiency of between 40 and 50 percent. I don't know if that will be achieved; what I do know is that it will only be through a combination of consumer pressure, perhaps regulatory means, perhaps fiscal means, perhaps a combination, both nationally and internationally that we can achieve that kind of transformation, because those who are responsible for the manufacture of our vehicles need to receive signals from the public and from governments and from international organisations if these changes are going to be carried out to the degree that is required.

The prize to be won is an enormously valuable prize. We have all learnt almost to take for granted the extraordinary liberty and mobility that the motor car represents. This mobility and liberty is not only valuable in personal terms but also instrumental in the quality of life and the prosperity of the vast majority of people in our country and in the developed world.

If it is a problem and a challenge for Western Europe, then the problems that it represents for Russia, for Eastern Europe, for the Third World, are even more daunting and even more of a challenge.

That is one area where your interests as an industry and our interests as a Department of Transport are closely interconnected and intertwined.

I would also like to point out the very important way in which many oil companies are helping to improve road safety. A large number of oil companies have been involved; BP, for example, has staff visiting 400 primary schools and assisting in road safety; Texaco adopted that splendid slogan 'a child should be seen and not hurt', a slogan that has helped to publicise road safety measures.

Through the combined efforts of companies like these two and many others represented here this evening, and government action and public opinion, extraordinary progress has



The Rt Hon Malcolm Rifkind MP, Secretary of State for Transport, Department of Transport.

been made. It is not often realised that the United Kingdom today has the best record anywhere in the European Community and probably the best in the world when it comes to road safety. Fewer people die on our roads than in almost any other country in the world. There are fewer people killed on our roads today than at any time since 1948, despite the fact that in 1948 there were only four million vehicles on our roads and today there are some 24 million. Despite that huge increase, to be able to say that road safety has become such an integral part of our approach to traffic and transport matters is a tribute to the British motorist; it is a tribute to many companies here who have identified with that campaign; it's a tribute to those initiatives such as our drink-driving campaigns, our seat-belt requirements and our various other regulatory matters, the combined effect of which has been positively dramatic.

I turn now to one final theme — one which I think is going to dominate much of our thoughts over the next few

months and perhaps for the next few years. The oil industry inevitably gets caught up both here and abroad with the great political debates of the day. You are as aware of that as I am. Here at home it also has a political dimension and that is particularly true in the part of the world where I come from — in Scotland — because there is a great constitutional debate, we are told, taking place, and we are all aware that oil plays a part in that particular debate.

Now between Scotland and England I am conscious of the fact that there are both enormous similarities and just occasional differences. The issues that we face at the moment are very profound because it is no exaggeration to say that for the first time in any of our lifetimes the very existence of the United Kingdom is a political issue. A significant percentage of the people of Scotland, if the opinion polls are to be believed, would like to bring that union to an end. Perhaps there are others south of the border who take a similar view. It is worth addressing the significance of that because the factors



(L to R) Professor E Ronald Oxburgh FRS, Chief Scientific Adviser, Ministry of Defence, Professor Ken J Packer FRS, Chief Research Associate, BP Research, Professor Sir Sam Edwards FRS, Cavendish Professor of Physics, Cambridge.



Mr Ian Ward, Director General, The Institute of Petroleum.

that brought the Act of Union 250 years ago, are as relevant today in my view as they were at that time. They were factors that led England to conclude that its own internal security, its authority in the world and the peace of the realm would all benefit from union with its northern neighbour, and these were factors equally relevant to Scotland. But on top of that there was a perception in Scotland at that time that the poor country would benefit from the access to trade, the increased economic opportunities that union with its southern neighbour would provide.

Although I say that those factors are as relevant today as they were then, there is an additional dimension relevant to your industry which is nowadays brought into the equation. There is no serious dispute that given the high level of public expenditure in Scotland and the lower tax base that currently exists, it would not be possible for a separate Scottish government to maintain the traditional levels of expenditure without swingeing increases in tax. The Scottish Nationalists argue that that is not a correct assumption because they assume that Scotland would have the whole benefit of all the revenues from the oil of the North Sea. It is my suggestion that such a presumption on their part is firstly selfish, secondly misguided and thirdly incredibly short-sighted.

It is selfish because I do not believe anyone could seriously dispute that if the bulk of the oil in question had been found off the coast of England or Wales

rather than off Scotland, Nationalists would have been the first to squeal if the benefits of that oil had not been made available to all the citizens of the United Kingdom. Indeed if it had not been the case, Mr Sillars or Mr Salmond would have been the first to

whip themselves up into a lather of indignation.

Secondly, it is extraordinarily misguided, because the assumption is that if this kingdom were to fragment and disintegrate, it would be a simple matter for the oil revenue to be transferred



(L to R) Mr K Derr, Chairman and Chief Executive Officer, Chevron Corporation, Mr EH Demeure de Lespaul, Managing Director and Chief Executive, Fina plc, Mr JC Hill, President, Petroleum Products Division, Phillips Petroleum Co. Europe-Africa.



Mr Basil Butler OBE, President, The Institute of Petroleum.

to a new Scottish state; the reality is that far from it being a simple matter, the disintegration of the United Kingdom would lead inevitably to long bitter years of negotiation and indecision. I have no doubt that England would expect a substantial share of these revenues. The Shetland Islands would have their views on the subject and it would be years before matters would be resolved.

Thirdly, it would also be incredibly short-sighted. Because whatever view you take about the likely length of time that these oil revenues will continue — 30, 40 or 50 years — frankly it doesn't matter. The idea that you disintegrate a United Kingdom which has survived and flourished for a quarter of a millennium because it may provide some immediate, short-term benefit for one or two generations is an incredibly avaricious, selfish and short-sighted view.

I conclude simply by saying that we have been able to experience over the last few years an extraordinary transformation in Europe, that makes the last two or three years perhaps the most historic since the French Revolution in 1789. We have been privileged to see Europe changing before our very eyes, to see Europe gradually trying to build itself as an integrated whole. I do not believe that you build a united Europe by destroying a United Kingdom. The oil industry has, over the last 30 or 40 years, shown itself able to make a massive contribution to the national prosperity of this kingdom; it has shown itself able to cope with the

extraordinary physical challenges that the North Sea represents; it has been recognised throughout the world as an example of technology, innovation, professionalism and high standards that have made the realisation of this potential something that we have all been able to enjoy. It is on that basis that I salute your industry, I salute the Institute for the contribution that it has made.

The President

At this time last year we were at the height of the Kuwait crisis. The Foreign Secretary gave us at our dinner last February his opinions on the current situation and his views on the outcome. His forecasts were well borne out with the successful liberation of Kuwait at little cost to the Allies. This was followed by the astonishing international operation to extinguish the well fires in Kuwait. This was accomplished more quickly than many of us had expected and without the environmental disaster so confidently predicted by some of the so-called experts.

Last February, the industry was in a crisis; this year it is again, though in a different form. But the industry is always in some form of crisis and we should, perhaps, consider chaos as a norm for us. But there are some new threats that we have to face and here your Institute and other bodies have parts to play.

But now let me warmly welcome all of you to this dinner which marks perhaps, the high point of the Institute's year. To many of the 1,500 people here tonight, and the further thousand who wanted to be with us whom we had to turn away for lack of room, this dinner represents perhaps their only experience of the Institute's activities. This is a pity, because the Institute does so much more than organising good dinners. Although I trust this will be an enjoyable evening and a great opportunity for people to meet on a social basis, it represents a very small part of the work of the IP. As perhaps, never before, the Institute has a vital role to play; it must continue to inform governments and the public as well as its members, of the critical issues facing the industry and it must further the principles of self-regulation of the oil industry which, in its quiet way, it has been engaged in for the past 79 years.

One of the things that really impressed me on becoming President of the IP nearly two years ago was the wealth of experience and talent on which it can draw, not only from its own staff, but also from the world

outside and particularly from the companies who give of their people's time so generously. It seemed to me and to the Management Committee and Council that we should therefore be able to make an even greater contribution to the well-being of the industry if we face up to the new challenges. We are an organisation set up in 1913 to meet the problems of the day and evolution of our role has been continuous. Now we have an influential and assertive European Community dabbling in the oil industry without any great expertise or knowledge of what has gone before. The work that the Institute has done over the past 79 years together with that done by our friends in API and ASTM — the American Society for Testing Materials — is not well known in Brussels and who's fault is that. It is clearly ours.

I do not believe that we can merely wring our hands at what is going on and complain that nobody listens to us, but we must, ourselves, be more assertive and get involved. The industry may find itself very disadvantaged if its Institute fails to meet the challenges of 1992 with some new thinking and new initiatives of its own.

Accordingly, the Management Committee last year set itself the task of thinking through what it is the Institute is trying to be and what it is trying to do. We, like any organisation nowadays, need some form of mission and strategy, and I am happy to tell you that these are now emerging and will be fully aired at the Annual General Meeting in June.



Mr JD Rimmington CB, Director General, Health and Safety Executive.

At the same time, we have been taking a look at the Articles of the Institute which were drawn up in 1913, have served us well but are now in need of revision. We were fortunate in being able to ask Ted Williams, who retired in September 1991, to take on this task. Ted was for five very successful years the Director General of the Institute and has an unmatched knowledge of the impossibility of making it work under the present rules. We shall be bringing revisions to the AGM which we hope you will be able to support.

Let me take this opportunity to thank, publically, Ted Williams for his splendid work as Director General over a period of five years. Let me also welcome his successor Ian Ward who has thrown himself into the complicated and varied work of the Institute with enthusiasm. We wish him the greatest good fortune. We have lost a number of stalwarts from the Council during the year — Gordon Forsyth, Michael Cooper, Ted Fergusson and Peter Osler. I would like to thank all of them for their service to the IP over the years.

I would like to mention briefly one or two other aspects of the IP. Firstly, we have continued the process of greater involvement in the exploration and production part of the industry by creating an Upstream Committee to match the one for the Downstream interests. Secondly, thanks to the efforts of our hard-working Membership Committee, the Institute is growing and we now have over 7,000 individual members and 400 companies who are members. This is good but not good enough when you consider the size of the industry in the UK — let alone the rest of the world from where we continue to draw some members. I would like to see a membership of at least 10,000 within three years.

We have produced a large range of Standards and Codes of Practice for which the IP is justly well known, and over the past 12 months we have had as always, a very successful series of conferences and seminars. We are co-sponsoring a conference on the Petroleum Geology of North West Europe. And finally, we are spreading our wings geographically and, besides Dublin, we now have an overseas branch in Malta and, soon I hope, in Holland where we have many members. There is going to be an exploratory meeting in Rotterdam on 17 March to see whether we have sufficient support to form a branch. I very much want to see us more strongly represented in continental Europe so that we may better influence affairs in Brussels.



Mr Clive Jones, Deputy Director-General, Directorate-General for Energy, Commission of the European Communities.

There are many other events I could comment on but I know the President is required to keep it fairly short. Let me just say, however, that the Institute is very much alive and well and, unlike most of the industry it serves, it is solvent, thanks largely to our excellent staff and to the efforts of the Management Committee and Council who have given me such tremendous support. I am grateful to them all. I am getting out of the way in June when my term of office comes to an end and I would like to wish all good fortune to my successor, Charles Smith.

This year has not been easy. On Friday evening, our third speaker for tonight, David Gore-Booth, had to phone me to say that he was urgently required in Washington on government business and could not be with us. I am therefore very indebted to Pierre Jungels for coming to our rescue and agreeing to speak tonight. Many of you will remember Pierre as a very distinguished President of this Institute a few years ago.

There are so many guests here tonight that I cannot name them all, but we are indeed honoured to have Mr Rifkind with us and Mr Pierre Jungels. Welcome also to Mr Kenneth Derr, Chairman and CEO of the Chevron Corporation who spoke to us so excellently at a lunch occasion yesterday. We are sorry that our own Energy Minister Mr Colin Moynihan could not be with us tonight but we welcome members of his department and all the Good and the Great of the UK oil and gas industry who are here tonight. We welcome them all.

Dr Pierre Jungels:

Ever since I have moved to Brussels, I have been amazed at the hyperactivity of the European Commission and its unfortunate habit of publishing a whole array of silly proposals which have no chance whatsoever of passing the hurdle of serious scrutiny, let alone the Council of Ministers, but nevertheless appear in the press and give endless ammunition to the anti-Europeans.

This is what most people call the democratic deficit of Europe.

Even more damaging, this disregard for proper consultation gives rise to a serious loss of credibility in the first instance and could lead to wholesale disregard of community rules and regulations when it is convenient to do so.

In the extreme reactions that come out in the United Kingdom about the European Community there is often an element of bad faith such as when a prominent UK politician joked about the 144 translators you need for any meeting of the 12. He should have said 64, not 144 since three countries have no language of their own, but more important I suspect he knew that most working sessions of the community are only done in two languages.

We, in the oil industry, are going to be swamped in environmental legislations which will affect the quality of the product we sell as well as the emissions to the air, the rivers and the soil that we are permitted.

Concawe is working on the investments required by the refining and the marketing part of the oil industry to satisfy what is being proposed for 1996 and the numbers are closer to \$200 billion than \$100 billion. That alone should stop a lot of us from sleeping but that could only be the beginning.

In some circles of the Commission there is a strong anti-oil bias which serves the interest of the agricultural lobby and biofuels, the nuclear lobby and electric cars, and the environmental lobby which I would call the 'purify the world before the doom of the year 2000' lobby.

I have no quarrel with any lobby but it stands to reason that industrial investment requires time for planning, construction and pay-out which means that we need a stable goal to aim for.

My nightmare is rules that change all the time with new ones being invented as fast as some scientist dreams up his latest picagram per ton horror story.

This nightmare is stopping me from sleeping and I would guess a lot of you as well.

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'Countries everywhere are interested in oil development — except the United States'

Mr Kenneth T Derr, Chairman and Chief Executive Officer, Chevron Corporation, was the guest of honour at a special IP luncheon, held at the Dorchester Hotel in London during IP Week last month. Calling his address 'Letter from America', he talked of his optimism for his native United States and the American oil industry, despite the existence of various problems. He elaborated on the effect of the recession on the US oil industry and questioned the actual need for the increasing regulation being imposed on oil operations. However, he now saw a 'glimmer of hope' that dialogue may replace confrontation in the development of environmental regulations. In conclusion, he welcomed the opportunities now opening up in many parts of the world — with the exception perhaps of the United States.



Mr Kenneth Derr addresses the lunch.

He said in part:

I want to start this 'Letter from America' by emphasising that I am optimistic about the future of our country and American industry. But I would be less than candid if I didn't admit that we have got some serious problems.

Let's start by looking at the US economy. The recession began in mid-1990 and we had negative growth through the first quarter of 1991. We thought we were coming out of the recession... but then the numbers started down again and currently we are basically flat.

One bright spot, however — it is interesting to compare this recession with the one in 1982 that was much more severe. Back then we had an unemployment rate of 11 percent, inflation of 5 percent and a prime interest rate of 16.5 percent. Currently unemployment is 7 percent, inflation is only 3 percent and the prime is 6.5 percent, quite a difference from 1982. Today's figures would have looked very good to the economists in 1982.

The problem is confidence. Consumers seem to be much more alarmed. Nine out of 10 say the recession is the nation's top problem and seven in 10 think things are getting worse rather than better. Everyone seems to be waiting for someone else to start the recovery.

California, my home state, has historically been the strongest part of the US economy. In fact, the state is about 14 percent of the entire US economy. But now it's struggling. Problems with defence, agriculture and real estate have pushed unemployment to above 8 percent. California's problems will make it more difficult for the United States to get out of the slump.

However, we are forecasting improvement — probably no growth this quarter in the United States but a real recovery beginning in second quarter and, hopefully, getting into full gear by the third quarter.

Clearly, the economy has put George Bush in trouble. On the other hand, the Democrats are having a difficult time finding a viable candidate — and I would predict that Mr Bush will be re-elected.

US oil industry

The recession has affected the US oil industry. The long recession reduced gasoline demand in the United States by more than 1 percent last year. Natural gas prices are lower than at any time in memory (\$1.05/mcf). And refining margins have been poor for some time.



(L to R) Mr Ian Ward, IP Director General, Mr Charles Smith, Managing Director, Chevron UK Ltd and President-Elect, Institute of Petroleum, Mr David Varney, Managing Director, Shell UK Oil.

Oil production is at the lowest level in 30 years and it continues to fall. Drilling is at a record low. Today, we have fewer than 700 rigs working; in 1984 we had more than 4,500.

Over the last month, one by one, US companies have been reporting significantly lower profits and terrible earnings in their US operations, saved only by generally robust earnings in their international operations.

One by one, US companies are getting the message that there are better opportunities elsewhere. So, there has been a very definite shift in 1992 budgets towards international ventures.

In the late 1970s and early 1980s we were spending about three quarters of our upstream budgets in the United States. Last year US expenditures were less than half. And this year they're headed for the one-third mark.

However, percentages tend to mask the real significance of the shift. Lets look at actual expenditures on exploration in the United States.

US companies spent \$21 billion on US exploration in 1984. By 1990 that had fallen to about \$7 billion. This year it may not even reach \$5 billion. That's a great deal of lost investment and lost jobs for a country concerned about a recession and its future security.

Lack of access

Clearly, the industry is also being hurt from a lack of opportunity — or maybe I should say a surplus of drilling bans.

America is a mature exploration province, true enough. However, onshore some 700 million acres of promising land is off-limits to explora-

tion. Offshore most of the west coast and virtually the entire east coast are off-limits.

I'm not sure that's too smart for a nation nearly as large as the United Kingdom and Europe combined, that already imports half the oil it needs and relies on petroleum for 98 percent of its transportation fuels.

Over-regulation

Frankly, we have a problem with over-zealous regulation. As I mentioned, US-based companies will this year spend something like \$5 billion in America on exploration. However, we will be forced by ever-increasing regulations to spend over twice that amount on environmental compliance.

I want to make one point very clear — many of these regulations are necessary and should be considered a reasonable cost of doing business.

But there's another point I want to make equally clear — many regulations are politically motivated, go way too far and fail to consider economic impacts.

For me, it is instructive to compare the *Exxon Valdez* incident with the much more serious tragedy at *Piper Alpha*. As you may know, the uproar in the United States over the *Valdez* accident was the main contributor to closing much of the offshore to drilling, closing some excellent prospects in Alaska and creating a huge anti-oil sentiment with the public and lawmakers.

However, with the terrible loss of life at *Piper Alpha*, you might expect a much more emotional response.



(L to R) Mr Alan Lodge, IP Technical Manager (Upstream and Environment), and Dr Alan Sefton, Director of Operations, Offshore Safety Division, Health and Safety Executive.

Instead, the inquiry that followed produced a sensible and measured response — after listening carefully to the industry.

Subsequently, the regulatory authorities have worked together in a constructive fashion with industry to bring about important improvements in safety. They shunned the adversarial role and instead sought solutions to the problem rather than scapegoats and publicity. Nobody seriously questioned the value of North Sea production.

Clean Air Act

Frankly, we in the US industry worry that America — where, admittedly, we tend to overdo things — is crippling itself with illogical decisions that are not supported by solid science or common sense.

I'm thinking right now about another major concern facing America this year — an update of the Clean Air Act. The cost-to-benefit ratio of some sections doesn't look very good.

First of all the air in most of America is very good. All American cities except Los Angeles meet federal standards 98 percent of the time. The air today is cleaner — by a large measure — than it was 10 years ago.

Secondly the new rules will cost the petroleum industry alone something like \$25 billion in the next three to five years.

And perhaps, it will help your perspective on this \$25 billion figure to know that the total investment by the federal government in medical research for all disease (cancer, AIDS,

heart attacks, mental retardation) is about \$7 billion.

National Energy Strategy

However, for a lot of us in the industry, probably the most frustrating event in recent memory was the failure of the National Energy Strategy. I don't suppose the United Kingdom and Europe followed this in great detail but the idea of a co-ordinated policy was proposed by President Bush three years ago, got tremendous support from the Department of Energy and passed the Senate Energy Committee last spring

when the memories of 'Desert Storm' were still fresh.

It was a broad bill, involving conservation, alternative fuels, regulatory reform for nuclear energy and natural gas.

However, it did have one very controversial part. It would have allowed for the development of the Arctic National Wildlife Refuge (ANWR) on the coastal plain of Alaska. ANWR is perhaps America's last hope for a huge (4-5) billion barrel oil discovery but also a sacred cow for certain powerful environmental lobbying groups.

To make a sad story short, the Congress of the United States failed even to debate the bill that would have authorised the country's first National Energy Strategy. It was killed on a technical rule because it was just too controversial.

Now, ironically it appears we'll get a bill. Following the President's State of the Union address, the Democrats have decided to pass an Energy Bill but eliminate controversy by excluding ANWR and CAFE automotive standards.

You'll understand why we in the United States find some irony in seeing the Congress worry about a \$41 billion trade deficit with Japan, while they are indifferent to a \$55 billion trade deficit for imported oil.

Glimmer of hope

I started my remarks by claiming to be an optimist, and now I have to deliver on that promise. First, there is some



(Centre) Mr R Patrick Thompson, President, New York Mercantile Exchange with Members of the NYMEX Board — (L to R) Mr Philip V Moss, Mr Stanley H Levin, Mr Albert Helmig and Mr A George Gero.



(Left) HE Dr Francisco Kerdel-Vegas CBE, the Venezuelan Ambassador, and Dr Joaquin Tredinick, President, BITOR SA.

evidence that the general public is starting to understand that not every environmental regulation is needed. Even in California, public opinion polls are showing that more and more people want to have both a strong economy and a clean environment.

Some of our lawmakers may be getting the message. In President Bush's recent State of the Union speech he instituted a 90-day moratorium on new regulations as part of his plans to help the economy and he directed that every group in the federal government 'review all regulations, old and new, to stop the ones that will hurt growth and speed up those that will help growth.'

There is even a glimmer of hope that dialogue may replace confrontation in

the development of environmental regulations.

One sign is the recently formed President's Commission on Environmental Quality, a group established by President Bush that brings together leaders from business, environmental and conservation groups and the universities.

I am privileged to be on the Commission. Our task is to find what is called 'an entirely new way of thinking' that seeks both environmental quality and sustained economic growth. We have guiding principles that include 'harnessing the power of the marketplace,' 'managing for environmental quality' and 'fostering cooperative partnerships.' I think we may see some exciting results.



(L to R) Mr P Davies, Manager Planning Strategic Response, Shell UK Oil, Ms Fran Morrison, Manager Media Relations, Shell UK Oil and Mr Ian Fotheringham, Hon. Secretary, Institute of Petroleum.

The philosophy of constructive dialogue is beginning to show up in some concrete programmes as well. For instance, our Environmental Protection Agency recently tried an interesting experiment — they asked industry to voluntarily reduce 17 chemical wastes by 33 percent this year, increasing that reduction to 50 percent by 1995.

The response very encouraging. Half of the 600 companies contacted agreed to this new programme, and — I'm proud to say — that included 17 oil companies.

That brings me to my greatest source of optimism — which is the petroleum industry itself. We have seen some very tough times in the past and always found a way to adapt.

In three months we will celebrate the 60th anniversary of the big oil discoveries in Bahrain Island and Saudi Arabia by the Standard Oil Company of California — events that transformed the company and changed the entire world oil industry.

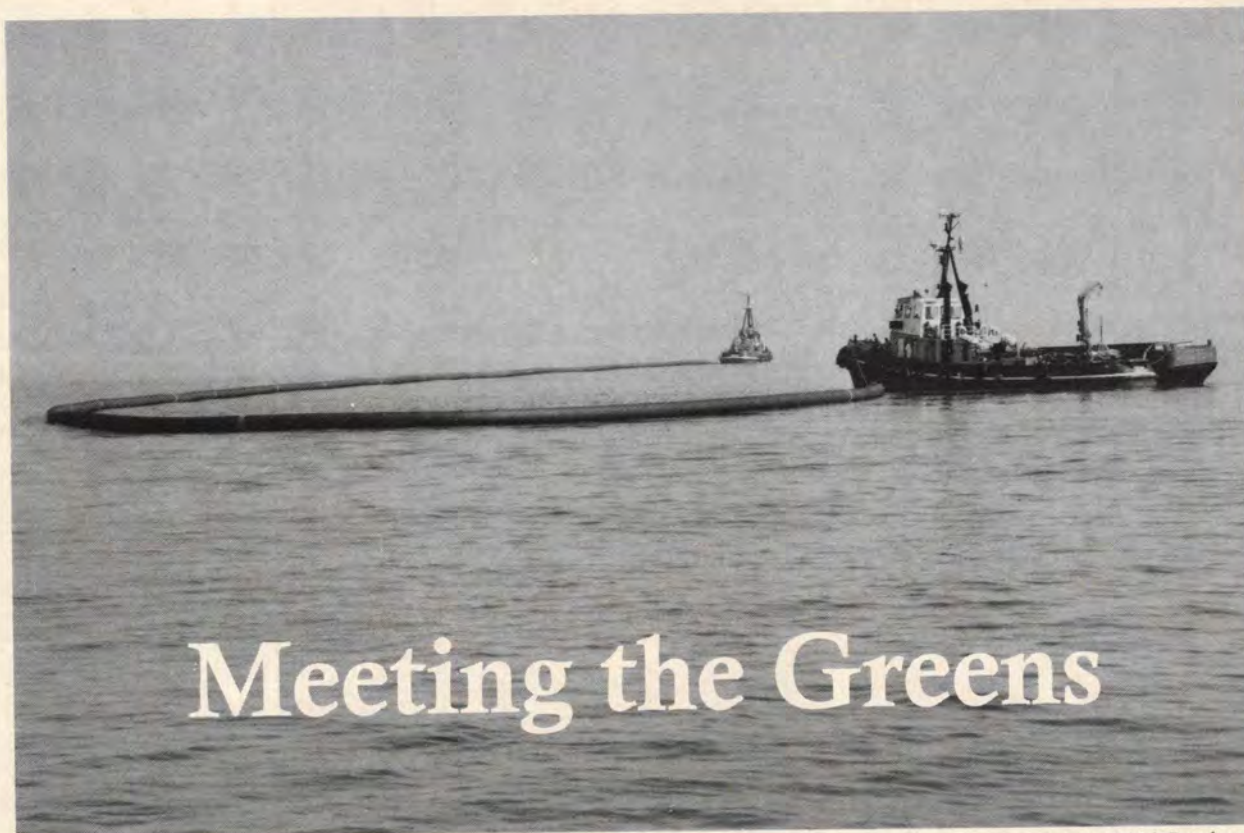
Just since I've been in the business since the 1960s we have lived through the dramatic change when US oil production was pro-rated and imports were restricted — which is pretty hard to believe today.

Then, during the 1970s we saw the loss of most of our important foreign concessions. Then the energy crisis of the 1970s that drove prices up by 1,000 percent, the crazy price controls in the United States, the windfall profits tax and the terrible price crash of 1986.

However, where there is change and problems, there is also opportunity. Today, the world is opening up once again. The amazing events in Russia and Eastern Europe are the beginning of a new era for the whole world and perhaps for the energy industry that can fuel progress.

Another set of opportunities are those same countries that took us over in the 1970s — now they are interested in bringing us back. Many of us are having discussions with countries such as Venezuela and Kuwait. And there are important joint ventures being formed in the downstream with producing countries. In fact, countries everywhere, from Albania to Papua New Guinea, are interested in oil development — everyone, I guess that is, except the United States.

As I close this 'Letter from America', I might just add this postscript. The world petroleum industry may be on the verge of unparalleled opportunity and what you are going to see over the next year and beyond is a lot more international competition from US companies. ■



Meeting the Greens

photo by British Petroleum

BP took a gamble when it invited more than 40 environmentalists and other interested parties to a forum on the company's activities world-wide in the health, safety and environmental field. Discussions centred around the issues raised in BP's 'New Horizons 1991' and the company's plans for the future.

A senior BP manager has told an environmental forum that the company does not think that the idea of a 'carbon tax' is right and that it is coming up with its own non-tax alternatives it hopes politicians will feel are more practical.

The head of European public affairs for BP Oil Europe, Mr John Gore, was replying to a question from Professor John Stopford of the London Business School. He added that the likelihood of the tax being imposed in Europe was slim as the EC would not impose it without similar moves being made in the United States and Japan. 'The problem is a global one. It would be a cold day in the United States before it accepts a carbon tax.'

Dr Anne-Marie Warris, a senior engineer with Lloyds Register, pressed BP on its plans to solve environmental global warming in view of its opposition to the concept of a carbon tax.

The forum was told that there was a need to understand what models were being used to assess global warming

and to bring industry bodies together but that a major impact on tackling this issue would be increased energy efficiency.

Sustainable

In his opening address BP's head of health, safety and environment (HSE), Mr Klaus Kohlhase, laid out the company's management policy and examined some of the wider issues that affect the company's approach to HSE management, including public pressure, sustainable development, the accelerated cost of compliance and the global nature of many of the pollution issues.

'Good HSE,' he said, 'was an integral part of profitable business management. Safe and healthy operations, products that can be used safely, progressive improvement in environmental performance and respect for the interests of neighbours and the world at large are all part of the company's policy.'

A large section of the discussion

centred on the problem of fuel and car pollution and some of the possible short-term solutions including cleaner fuels and technological design.

In an address by Mr Bernard Bulkin, BP's head of oil research, attention was drawn to the impact of fitting catalytic converters to motor cars and some of the shortcomings of such systems.

Some 80 percent of journeys made in Britain are under cold start conditions — short journeys where catalytic converters are unable to reach an optimum operating temperature. Further technological development of catalysts and major engine modifications could go some way to dealing with the problem, although better and smarter electronics and modifications to fuel are also being investigated to help minimise emissions.

Mr Brian Sanderson, BP Chemicals Director, outlined the charter adopted by the chemical industry about setting, monitoring and measuring standards. He said that the programme of openness was demonstrating to the world

outside that the chemical industry is a responsible one and that there was much work being done with local communities in explaining what they do.

Targets

Mr James Ross, BP Director with responsibility for HSE, told the forum that BP does use targets when setting their HSE performance but that not all the targets were yet in place and some were still being developed, while others that are in place have not been operational long enough for any meaningful measurements to be made.

He maintained that BP is committed to review areas where compliance is not taking place and stressed that the company 'will not become an environmental concern. BP is about making a profit'. The company will continue to study and define trade-offs between HSE choices and options and would welcome help from other organisations.

While admitting that he didn't have 'the slightest idea' where BP would be in the year 2092, he stressed that the company would continue to do what it did best, 'We will not jump into areas where we have no expertise.' ■

Feedback

Sir Hugh Rossi MP, chairman of the Commons Select Committee on the Environment.

'I thought it was an extremely useful exercise and was impressed by a very good presentation. I don't think anyone could have been anything but impressed. Some of their ideas represent very forward thinking. I would hopefully be able to attend future presentations.'

Wyn Griffiths MP, Labour spokesman on the Environment.

'It was a very helpful meeting, allowing BP to explain what it was doing and allowed the participants the opportunity of taking up particular issues with the company. There was a good exchange of views and those who have issues they want to raise with the company now know exactly whom to contact. I would certainly attend future meetings if available.'

Professor David Bellamy, Conservation Foundation

'It was a very positive outpouring of information. One can only

take what one was given. Looking on the nasty side of things, one can only wonder what green skeletons there are in BP's new coat of arms. Having known BP for quite some time, one has to say their house is being put in order. It is all happening, I enjoyed it and it was a great thing for BP to do. Now they or some petroleum company has got to take the big step.

'Petroleum is the biggest industry in the world. It has the greatest effect on the world's economy. If they can start selling their product as really green, campaigning to make people use less in the first world, so there is a spare capacity for the East European and Third World countries where they desperately need it to solve their problems, then they will be really green. I think that is the challenge now. The industry is in some ways leading the green movement. They haven't joined the bandwagon, they have seen that their survival depends on it.

The right moves from the oil industry could really start solving world environmental problems. So I enjoyed the meeting.'



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Germany: reunification and new business opportunities

By Hans-Georg Pohl, Chairman of Deutsche Shell

The collapse of the communist system in Eastern Europe, particularly in the Soviet Union, has far-reaching effects politically, economically and socially. Marked change is likely, especially as the west helps to settle economic problems. Nowhere is this seen more dramatically than in Germany, reunited after more than 40 years.

As recently as 1989 East German first secretary Erich Honecker was saying the Berlin Wall would stand for another 50 to 100 years. Only a few months later, his countrymen were leaving for Czechoslovakia and Hungary, where pressure built up to such an extent that the Austro-Hungarian border was opened in September and East Germans crossed over.

Two months later East Germany began to demolish the wall and in the first free and secret elections a few months later the Communist Party (SED) suffered a heavy defeat. A form of economic and social union with West Germany was established on 1 July 1990 but politically the two remained separate countries. Talks between the two Germanies together with the United Kingdom, France, the Soviet Union and the United States, led to a final agreement on unification on 3 October 1990.

Six new federal states were created (Figure 1), there was an all-German election in December 1990 and finally in June 1991 the decision was taken to move the capital from Bonn to Berlin within the next 10 years.

Form of government

The government of Germany takes the form of a representative democracy. It

is a federal republic with a central government (Bund) and 16 states (Länder), each with its own parliament. This structure is guaranteed by a system of balanced legislative power, with local, domestic issues handled in the states and national and international issues in the Bund.

The federal government has two chambers — a lower house (Bundes-

tag) and an upper (Bundesrat). The Bundestag is directly elected by a combination of majority vote and proportional representation. On the left of the political spectrum are the SPD (Social Democrats) plus the greens and the PDS (former communist SED), and on the right the Christian Democrats (CDU/CSU) plus the Free Democrats (FDP).



Figure 1: Reunified Germany: population in the Länder

The Lander, depending on their size, send three to five representatives to the Bundesrat and each state votes as a block. The Bundesrat has an important influence on legislation with its ability to block certain laws which the federal government would like to introduce; they can also initiate legislation. There is a SPD majority in the Lander, so there is a delicate balance between the Bundesrat and the Bundestag.

One of the major issues in public debate today is the so-called 'asylum problem'. Reunification brought a widespread sense of national solidarity but no upsurge in nationalism. Today's average German is far more open-minded and cosmopolitan than he was 20 or 30 years ago and sudden outbreaks of irrationality and aggression against guest workers and asylum seekers are exceptional. A survey has found extreme right neo-Nazis to be educationally below average and economically disadvantaged, living in areas of high unemployment and with housing problems, looking for somebody to blame and getting a kick out of vandalism. A Deutsche Shell study of young people revealed that 85 percent were totally against nationalism, racism and violence against asylum seekers — and only 2 percent in west Germany and 3 percent in east Germany supported neo-Nazism.

Two types of people seek asylum — those leaving a country for political or economic reasons. Under the German constitution those suffering political persecution will always find asylum but it is likely that immigration procedures will become stricter.

Cost of reunification

Germany is today 45 percent bigger in land area, 25 percent in population but only 11 percent in GNP than the former West Germany. The task of merging two very different political, economic and social systems is perhaps the country's greatest challenge since World War II. But compared with eastern Europe's other reformed countries, east Germany is benefiting by integration into the powerful west German market economy, with massive financial help, and by gaining automatic membership of the European Community (EC).

There are several burdens connected with unification. There is, of course, a huge financial burden, being paid for partly by a mid-year increase in oil tax, rises in other consumer taxes and a 7.5 percent surcharge on income tax. The capital market is very tight because of high state borrowings. Unemployment

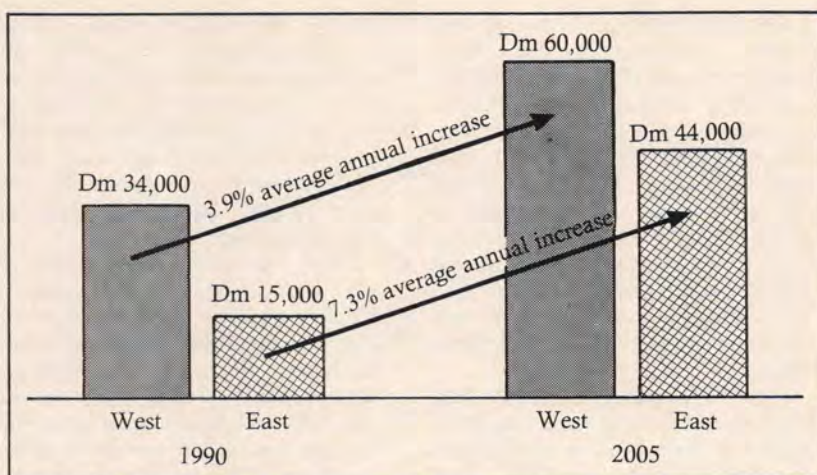


Figure 2: Economic development; east and west Germany compared GNP/capita (1985)

in eastern Germany — 12 percent, plus another 12 percent of workers on short time, and both expected to rise — is another big problem. In the country as a whole, it seems likely that unemployment will be contained at 7–9 percent in the years to come.

West German industry, however, is working to full capacity to meet the east's high demand for consumer goods and unemployment is low des-

'Demand for oil and gas has increased'

pite 400,000 resettlers in 1990. The immediate effect is seen in the balance of payments. Imports are up — benefiting other states, particularly in Europe — and exports down, partly as a result of industry trying to satisfy east German needs. Demand for oil and gas has increased, and by early in the next century east Germany is likely to have some of the highest technological standards in Europe.

Despite the much greater increases in land area and population, the GNP of the 'new' Germany is only 11 percent higher than that of the former West Germany, reflecting the ineffectiveness of the East German economy. At Dm15,000 East Germany's GNP per head was barely half that of West Germany's Dm34,000. The main reason was the difference in economic structure — a free economy in contrast to a planned economy. Further, about 60 percent of west Germans are working in service industries and but only 25 percent of east Germans. The same number of people are working in agriculture and forestry in east and

west Germany but west Germany's total population is four times bigger. There are 25 percent more women working in east Germany than in west Germany.

The problems

West Germany after World War II achieved a very sound mix of big, medium and small businesses, which is one reason why its economy is strong and robust: it now has some two million companies. East Germany started after the war with 24,000 industrial enterprises, now down to 3,400 very big, almost unmanageable, industrial complexes.

As a result of more than 40 years of political indoctrination, the working morale of the typical East German used to be low. Deutsche Shell had some experience of this following the fall of the Berlin Wall when a number of East Germans sought employment in their refineries. Some succeeded, others decided to quit as they found the workload too high.

East Germans are not used to working a solid eight-hour day. They are having to learn to decide for themselves, to take risks and responsibility. There is a productivity gap and they have to learn how a market economy operates and what is meant by financial control and balance sheets. Logistics are poor, real management did not exist, capital has to be brought in and there is an environmental crisis. East Germany was named 'German Democratic Republic', but in reality the people had to live under a very strict form of communism, which finally resulted in the complete destruction of working morale; personal opinions and initiatives were not allowed — and these are just what are needed now.

The structure of industry is old-fashioned, comparable to that of West Germany in the 1950s and very much oriented towards the east bloc. Manufacturing technology is poor, with a few exceptions; product quality also used to be poor. There was no real competition and the condition of plants is usually very bad. Given competition then management ensures that plants are properly maintained; that was lacking in East Germany so there has to be a period of intense adaptation.

There is, however, a positive side. GNP in east Germany is expected to grow from Dm15,000 per head in 1990 to Dm44,000 in the year 2005. Good industrial sites are available, there is the manpower with good basic skills — east Germany shares with the west to a large extent the same standards of technical education and the same sort of apprenticeship. Demand is high, so somebody who produces goods in east Germany can sell them there. There is generous state support — in 1991 alone about Dm150 billion went from west to east Germany — and private capital is also available.

Investing in the east

One organisation that looms large in the process of reunifying Germany is the Treuhandgesellschaft — a holding company which when set up took responsibility for 8,000 east German enterprises and about four million employees. It is of a size never previously known in the western world, and it is a holding company with a distinct difference. Most try to get bigger — this one tries to get smaller by privatising these companies. In those terms it is reasonably successful, having sold, by the end of September 1991, 3,800 of the 8,000 enterprises. However, its staff is growing — it started in August 1990 with 170, it now has more than 3,000.

The Treuhandgesellschaft began with huge problems — poor communications in east Germany, an administration that did not work, over-staffing in many enterprises and environmental liabilities. It was difficult to staff the Treuhandgesellschaft. High employment in west Germany made staff difficult to recruit, so it drew heavily on retired people, many of them former Shell people. And its success has led to it being blamed for selling some companies too fast and too cheaply — and selling others too slowly and damaging east German development. Among the financial incentives for investing in east Germany are investment grants of 12

percent from the government (falling to eight percent in July 1992), an allowance of 50 percent on top of normal depreciation within five years and various grants and subsidies of up to 23 percent from the region or states. There is further aid from the EC and other support systems dedicated to helping economic recovery.

There are enough people with a good basic education in east Germany and enough money, land and work to keep the population busy for years rebuilding the country. However, unemployment is still high as the process of adaptation takes time. But the basic ingredients are there and the economy should take off in due course. It is reasonable to expect GNP in west Germany to continue to grow at an

average of 3.9 percent a year but in east Germany it is likely to grow by about 7.3 percent (Figure 2). Even so, a significant gap will remain for some time and, unless this is closed soon, many more east Germans will move to west Germany.

Primary energy consumption in west Germany is expected to remain constant over the next five years. In east Germany, however, despite the unexpected growth in the economy, it is expected to decline as industry adopts more efficient usage of energy, moving away from lignite towards hydrocarbons (nuclear plants have been shut down for safety reasons). Deutsche Shell is in the oil and gas businesses, so this prospect offers a good business opportunity. ■

The Shell position

Deutsche Shell has been operating in Germany since 1902. It is currently engaged in almost all sectors of Group activities except coal mining and metals (there is a metals operation in Germany but it is under direct Billiton control). In terms of net income before tax, Deutsche Shell was slightly behind Esso in 1990; in previous years it was ahead. Looking at the business sectors, Deutsche Shell leads the oil and natural gas markets with Esso. In base chemicals Deutsche Shell is strong in, for instance, aromatics, but in polymers, it is small by comparison with the big three, Bayer, BASF and Hoechst.

To meet the expanded German market, Deutsche Shell is planning to develop in oil, gas and chemicals. Germany is the third biggest oil consumer in the world, and 30 percent of product demand still has to be imported. Following reunification Germany has become very dependent on Russian crude, mainly as a result of pipeline links with east German refineries, and 38 percent of gas supplies also come from Russia. The poor technical state of Russian oil production facilities and gas pipelines has led to some concern, and plans for pipelines to carry crude into east Germany from the North Sea, the Baltic and the Mediterranean are being developed.

Among Deutsche Shell's main projects are proposals to rejuvenate Harburg refinery (which got back its

traditional market area) and build a product pipeline from Harburg into east Germany. The company would like to build more than 200 service stations in east Germany and establish a market share to match that in west Germany. At one time there were 48,000 service stations in west Germany — now down to 18,000. In east Germany there are just 1,200 service stations, each with a great number of cars constantly queuing up.

In natural gas, a business in which demand is expected to double in the next 15 years, Deutsche Shell will be seeking to match in east Germany the market share it enjoys in the west. It is involved in building two pipelines to supply gas from the west into east Germany and thus reduce dependence on Russian supplies.

Deutsche Shell is also seeking opportunities for growth in chemicals. A successful selling organisation has been established in east Germany. Discussions are under way with the Treuhandgesellschaft to acquire a cracker, and there is a longer-term interest in downstream investment, possibly in polyethylene or polypropylene plants.

Despite the difficulties of adaptation, there is enormous scope for growth in east Germany. West Germany — and Western Europe as a whole — will benefit from this process of modernisation. East German industry will need gas, oil and chemicals.

Acknowledgement

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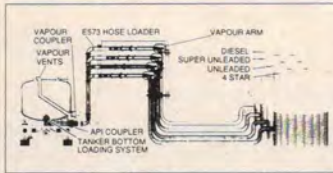
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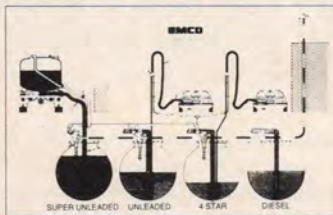


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Turkey's strategic position affects future

By Juliette Rossant

A host of problems are holding back significant expansion in Turkey's petroleum sector. The difficult geology of Turkey's southeast area, the growing threat of terrorism and political instability have led foreign oil companies to a 'wait and see' attitude. Even the huge licence holders of the Black Sea basin are eager for clarity in the government's privatisation plans as well as for new legislation before they commit themselves further.

Despite the general pessimism that Turkey has meagre potential, there are some indicators and commentators who believe Turkey deserves a second look. The Zagros-Bitlis trend in the southeast which extends southward into Iraq and Iran is the site of most of the major oilfields. The discovery of the Karakus field in 1989 significantly upgraded Turkey's potential recoverable reserves. The field has recoverable reserves in excess of 200 million barrels and now produces over 40,000b/d. New finds in 1991 by Turkiye Petrolleri AO (TPAO) include Bakacak, Takaris and Ikize in the Adyaman area near Karakus.

Karakus is spawning new interest in Turkey's oil prospects including one consulting company, Ankara Business Centre (ABC), which advises newcomers to Turkey. 'Turkey is potentially an oil exporting country,' says Sadun Cancar of Tur-Kan Petrol, who believes that exploration has only scratched the surface of Turkey's potential. Only 27 exploratory wells were drilled in 1991 — half the number of the previous year. Currently, domestic production accounts for only 20 percent of consumption, totalling 22,074,707 metric tons.

Gulf War

The Gulf War had a dramatic impact on the oil industry in Turkey. Oil supply was drastically curtailed after the decision by the Turkish government to close down the twin pipelines to Yumurtalik which carry Iraqi crude to the Mediterranean. The pipelines were not only a source of crude for the Turkish economy but generated a significant amount of income from rent. Despite rising pressure from both Iraqi

government officials and some Turkish businessmen to re-open the pipeline, the Turkish government is holding fast to the UN embargo.

One positive result of the Gulf War was a gift of \$1 billion worth of free oil from Saudi Arabia. The rest of Turkey's domestic consumption was met by suppliers on the spot market. The United Arab Emirates and Syria also helped to make up the loss of Iraqi oil.

A secondary result of the Gulf War is an increase in smuggling of diesel fuel across the Iraqi border at Habur. Diesel fuel in Iraq sells for about TL400 a litre (£0.05 a litre). Trucks are allowed to carry fuel back from Iraq when they deliver humanitarian aid such as food and medicine. However, the low quality diesel fuel is being dumped on the Turkish market at TL1,400–2,000 at petrol stations all the way to Istanbul. Normally, Turkish diesel fuel sells retail for TL3,100 a litre. Government estimates for the amount of smuggled diesel is approximately one million tons in the last three months, and petroleum company executives estimate that smuggled diesel fuel makes up more than 20 percent of the diesel fuel sold in Turkey. The Minister of Energy estimates that \$100 million in taxes and funds is also being lost on a yearly basis.

More importantly, the Gulf War exacerbated already difficult conditions in the southeast region which is under emergency rule. The government has been fighting a separatist insurgency led by the PKK, the Marxist-Leninist Kurdish Workers Party, since 1984. The build-up of army, gendarme and police units to an estimated 200,000 troops in the southeast during the Gulf crisis and the ensuing war created

increased tension in the area and unease among foreign oil companies. For example, Neste-Oy which was drilling at Idil near the Syrian and Iraqi borders suspended operations for six months. Others, like Mobil and Shell, continued operations with extraordinary security measures. Additional problems arose for some fields distant from a main town with the imposition of curfews greatly limiting emergency operations and servicing of the sites.

Terrorism

There have been eight or nine incidents involving attacks by the PKK on oil installations or vehicles; however, many of these have not been reported in the Turkish press and are denied by government officials. One foreign company executive criticised the GDPA, the General Directorate of the Petroleum Affairs. 'There is a blinkered approach to the PKK, and a belief that it is not their job. They need to address certain problems, like carrying around explosives.' His company was not bidding for licences near the Cudi Mountains, the centre of PKK activities, two years ago, now everything east of Diyarbakir is off limits. 'If the whole southeast area is no go, the oil industry will be brought to a halt. Therefore, there needs to be a reaction (by the government),' said the executive.

The most significant terrorist attack occurred at Neste-Oy's Idil well in July 1991. The government had placed between 38 and 50 gendarmes to guard the rig and Neste-Oy was feeding and housing them. The government, according to company officials, insisted on the gendarmes as a deterrent to the PKK guerrillas operating in the area. The rig area was hit with five anti tank

mortars on 21 July and an additional 800 rounds of ammunition were fired at the camp. No one was killed or hurt and severe damage was restricted to vehicles. Drilling was suspended for only one night and the season was completed. However, Neste-Oy is not planning on returning to explore its two other licences for one year to wait for improved political stability in the southeast. They will return with assurances from the government that their operating areas are safe.

The new Minister of Energy, Ersin Faralyali, believes that the situation is getting better with the Kurds in the southeast giving their support to the central government, 'We cannot give assurances to petroleum companies. We see it as an international terrorism problem,' says Mr Faralyali. However, reports in the local press of increased activity by the PKK and large operations by the government in the south-

ing new technology to deal with the extreme depth, the presence of corroding hydrogen sulphide and the soft sea bed. New amendments expected this year will outline regulations for exploration outside the 12-mile limit. Texaco with Enterprise Oil are also exploring the Black Sea.

Privatisation

Particularly troubling to BP and other companies who have formed joint ventures with TPAO is the government's privatisation plans. The push to privatise has included Petrol Ofisi and Tupras, the distribution and refining subsidiaries of TPAO, which went on the block in 1990. Industry executives are anxious as to whether TPAO itself will also be put on the block under the new coalition government elected late last year. Mr Faralyali suggested that it would be a candidate. The new head of

generated from a new discovery. Therefore low producing wells and fields considered marginal elsewhere in the world can be very profitable.

A new draft bill is likely to be introduced in the Parliament soon to address the status of the Black Sea exploration. Other areas that have caused problems for the foreign companies are expected to be covered by the new regulations. Most concerns are about what is remittable under the petroleum law and such problems from Mobil Oil as the erosion in the exchange rate between US\$ and TL which may increase the burden of the petroleum right holders.

Other foreign companies are looking for an extension of licence period. Under the present law, a company needs to begin drilling on its oldest licence within three years. Many companies have had to apply for extensions because of the disruption of operations by the PKK. Also, the extension of licence and drilling periods is subject to approval by the Council of Ministers rather than the Ministry of Energy causing great bureaucratic delays. The Turkish government is, on the whole, eager to encourage foreign investment and looks likely to remedy these bureaucratic problems soon.

Even if Turkey's already favourable petroleum law is amended, foreign companies may not rush in to explore. A reputation as a difficult place to work with meagre rewards does not compare well to the more exciting possibilities of its neighbours — especially Turkish-speaking Azerbaijan.

Perhaps some of the interest in the Soviet republics will rub off on Turkey but chances are the boom will be elsewhere. ■

'Smuggled diesel fuel makes up more than 20 percent of the diesel fuel sold in Turkey'

east have not calmed executives' fears.

Most foreign companies refuse to work alongside gendarmes who, they believe, are the main target of the PKK attacks. Locals from the economically depressed southeast region are hired for each team therefore, stress foreign company officials, foreigners are rarely the direct targets. However, last summer two separate groups of foreign tourists were abducted by the PKK and later released fuelling concerns among expatriate employees.

As a result of both the difficulties in exploring Turkey and preferential laws, state-owned TPAO is the leader in terms of number of licences held, exploration and production. A total of 57 exploration licences were granted in 1991, of which 34 went to TPAO. The company also had a 77.80 percent share in production which totalled 4,449,399 metric tons of crude from 670 wells. Karakus field, operated solely by TPAO, continues to lead producing 96 percent of TPAO's 65,000b/d. There was a 19.72 percent increase in production in 1991.

Last year's most important deal was a joint venture between TPAO and BP for deep water exploration in the Black Sea. Two wells will be drilled in 1994 at approximately 2,000 and 2,500 metres after survey work is completed. Much of the work depends on develop-

TPAO, according to Mr Faralyali, is Okan Ozdemir who will be replacing Ozer Altan.

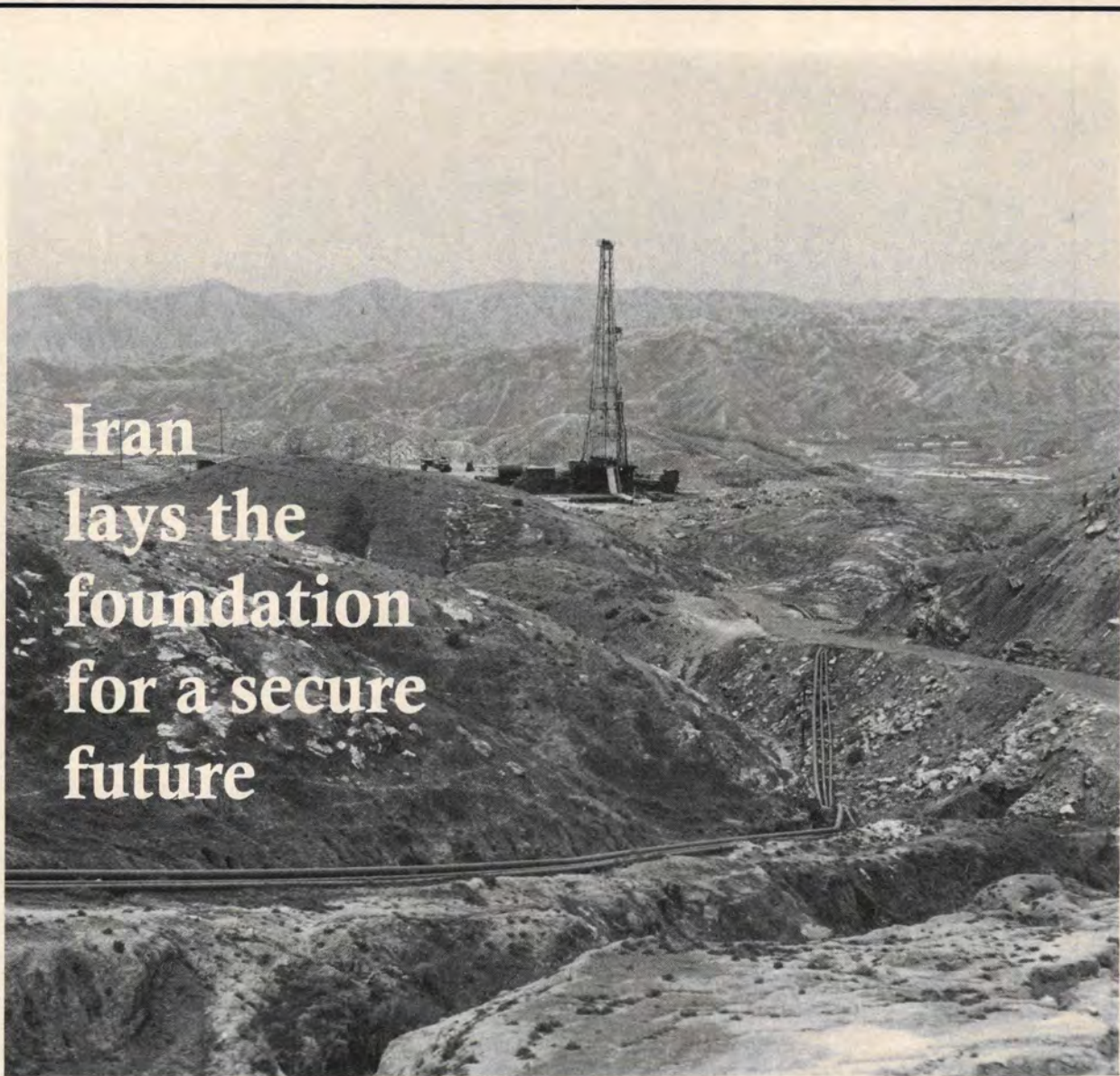
Turkey's petroleum law includes provision for the repatriation of all exploration expenditures correctly registered with the GDPA, at the Turkish Lira exchange rate prevailing at the time of importing the capital. But the repatriation of the registered capital can only be made from oil revenues

The effect on test methodology of the proposed change in AVTUR anti-icing inhibitor

The anti-icing inhibitor currently used in AVTUR, ethylene glycol monomethyl ether, is to be withdrawn by September 1992.

It will be replaced by diethylene glycol monomethyl ether. Of the four procedures given in IP 277 only the GC method will be applicable to fuels where a mixture of these additives is present. In addition it has not been established if the other procedures are applicable to the diethylene glycol based inhibitor.

A MOD DQA/TS HPLC procedure which has been used for the determination of both additives is to be considered by ST-G-2A as an alternative for IP 227.



Iran lays the foundation for a secure future

By John Cranfield

When the First Gulf War — between Iraq and Iran — ended in 1988 after eight years of brutal conflict, Iran's oil industry was a total shambles. Production and refining capacity had been so cut back by bombing and shelling that the industry was not even able to supply local needs. Product imports took most of the earning from crude exports, leaving little surplus revenue for rebuilding. But, by staying well out

of the Second Gulf War — between Iraq and Kuwait — Iran's politicians made a wise decision. That, and the industry's determination to rebuild as far as possible without outside help, soon brought the country back to self-sufficiency.

With a highly pragmatic government now installed in Tehran, Iran is unlikely to follow the path laid down by the Shah in the 1970s. Then, crude output was forever being boosted in a race for supremacy with Saudi Arabia. Power politics were behind this move

and probably caused more harm than good. Many fields were over-produced, reservoirs were damaged and the resulting remedial work has been costly. It has also been another burden to be shouldered by the National Iranian Oil Company (NIOC), already having enough to contend with restoring Iraqi-inflicted damage. On the bright side, however, the enforced shutdown had a beneficial effect in that it allowed reservoirs to recover.

Building a secure base

Today, the emphasis is on building up a sustainable production capacity, based on what fields will tolerate with good reservoir-engineering practice. Any notion of a race with the Saudis —

which Iran almost certainly could never win — is totally at odds with present-day thinking. Pragmatism has also shown itself in other ways. The latest Gulf War removed around 4 million barrels per day from world supplies, allowing Iran to boost exports. At the same time prices rose, enabling Tehran to earn more. That in turn has meant that cash is once more available to employ overseas expertise where that has proved to be of value. For, although NIOC has built up an impressive core of in-house expertise, it cannot do everything and certainly not all at once. So, once more, western contractors are being called upon, while western oil companies' know-how is once more valued. However, any faint hope that equity stakes in oil production may once more be offered can be totally dispelled.

When the Iraq-Iran conflict ended, Iranian crude output was just over 2.2 million b/d, compared with well over 5 million b/d in the late 1970s. Two years of rebuilding saw output climb back over 3 million b/d, with a new peak of 3.52 million b/d being attained just as UN forces were driving Iraqi troops out of Kuwait. Although that figure has not been achieved since, the downturn is due more to demand fluctuation than to any lack of capacity. Local demand has been rising by leaps and bounds — from around 700,000 b/d in the mid- to late-1980s, it is now some 1 million b/d. The quest for higher output can thus be seen more as a move to sustain export levels rather than markedly raise them, though the latter aim is by no means ignored.

But what is aimed at and what can be achieved are not necessarily the same. At the beginning of 1991, the Oil Ministry was predicting a sustainable production capacity of 4.5 million b/d by 1995, with exports of 3.5 million b/d. By September 1991, Oil Minister Gholamreza Aqazedah was predicting 5 million b/d capacity by March 1993, yet soon after modified his view to 4.5 million b/d by 1993. Local demand is seen as remaining constant, given the large inroads being made by gas into the household, industrial and commercial markets.

Drilling boom

Boosting output requires substantial new drilling. Last September, the Oil Minister stated that 42 crews were already at work, their target being the drilling of 270 new wells. Since then, 17 further rigs have been bought. While the majority of crews are currently working on production wells and workovers, exploration continues.

Three appraisal holes are being drilled by Italy's Saipem and TPL to investigate the extent of the South Pars gasfield offshore. Should the \$37-million appraisal programme confirm the field as expected, a \$1.3-billion development plan is proposed.

Mention of the offshore sector is apposite. For, in general, swifter development is possible there than in the mountainous Iranian interior. Although many platforms and much related hardware were damaged or destroyed in the conflict with Iraq, repairs have been swiftly undertaken and by early 1991 output was running at 300,000 b/d. While this is only half the pre-war level, it is fast being increased, with the ultimate target being 1 million b/d by the end of the decade. That target is feasible from existing fields, not all of which had been developed at the start of hostilities. But far more potential remains.

In September 1991, Japan Petroleum Exploration Co Ltd signed a letter of intent with NIOC under which it would take on exploration and development covering an area of 3,600sq km in the northern part of the Strait of Hormuz, off Bandar Abbas. Light oil and gas have already been found in the area by Mobil before the 1979 revolution. Estimates put reserves so far found at 500-700

million bbl. Now Japex will run 2,000km of new seismic, followed by six wells. That stage will cost \$100 million and is due to start in the middle of this year, assuming the formal deal is signed in March as planned. If this work confirms that development is worthwhile, present plans foresee a further investment of \$1.5 billion to develop production of 80-90,000 b/d, with first oil flowing in 1997.

At that stage, NIOC would become operator, though Japex would be entitled to 60 percent of output. The deal is thus an apparent production-sharing one, though it might be more accurate to say that Iran will be making repayment in kind for Japanese upfront investment. Even so, the Japex deal is significant in that it is the first time an outside oil company has been permitted to take an interest in Iranian oil since the 1970s. Now a similar deal is being discussed with Total.

Massive downstream boost

While the upstream commitment will require an investment of \$5 billion, this pales into insignificance compared with the downstream. Here, \$27.7 billion is the expected cost, spread — as with upstream programmes — over



LPG stripping provides long-term product supplies against which Iran is seeking advance payment as a way of raising investment capital.

five years. It is hoped that this downstream investment will almost all come from foreign sources. That hope alone had dictated a move towards allowing foreign equity in Iranian plants. Also it is a moot point whether Iran has enough skilled personnel to handle expansion on this scale. For the bottom line is a desire to boost petrochemical output from the current 3.5 million tons per year to 9 million tons per year.

Far and away the biggest plan concerns Qeshm Island, on the north side of the Strait of Hormuz. Around 1.2 trillion cubic metres of underdeveloped gas is the draw, with the added attraction of a free-trade zone covering industries based on that gas. All told, some \$10 billion's worth of investment is planned, with a \$6-billion petrochemical complex being the single biggest project. Now a group of Japanese companies led by Kobe Steel has agreed to take a 40 percent equity stake in the planned development. This will eventually produce, among other things, some 600,000 tons per year of methanol, ammonia and urea and is due for start-up in 1995.

One further reason for attracting foreign equity is the already-massive

financial commitment to downstream investment. Typical is the Arak complex, where a 150,000-b/d refinery — costing around \$1 billion — will be closely linked to a petrochemical complex — also costing \$1 billion. Similar sums are being spent on the rebuilding of Abadan refinery and the new plant at Bandar Abbas.

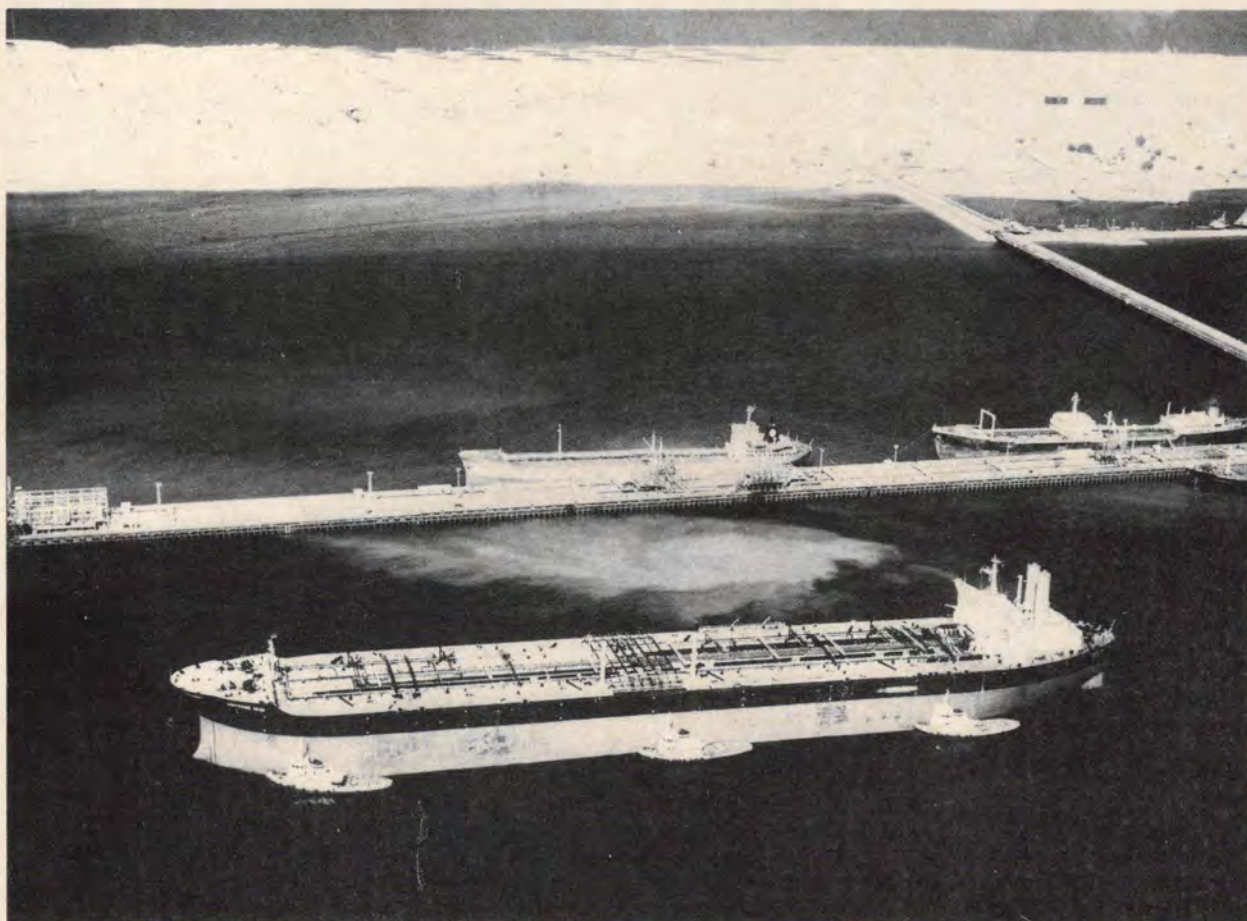
While Qeshm Island plants will serve the export market, local needs are being covered elsewhere. With a burgeoning population and the need to feed it without over-reliance on outside supplies, Iran has a large market for fertilisers. Among the latest developments in this field are a 1,000-ton per day ammonia and 1,500-ton per day urea complex to be built by Kawasaki Heavy Industries. And at Bojnurd, MW Kellogg has been named contractor for a similar complex to be completed in 1994.

Financing

Even with equity stakes on offer, financing problems remain. Iran is still not every finance house's favourite client. Thus, Technip cannot yet take up a \$179-million contract for work at

the Bandar Khomeini petrochemical complex, for which it took on a financing commitment. Cash or even barter payment would obviate the problem but lenders are very wary. One way round this involves advance payment by buyers for crude and/or products. National Petrochemical Co is thus seeking to finance at least part of the Bandar Khomeini rebuilding via long-term sale of LPG, paid for in advance. But that implies a high level of trust.

Another problem is that many members of the Tehran parliament are strongly opposed to foreign borrowing. In that, they are as one with many western oil firms and contractors. Hence the underlying need is for Iran to raise its crude and products output quickly. Money earned in this way can be ploughed back into those developments where foreign equity is either not sought or unlikely to materialise. The result should prove beneficial all round. But it only needs a glut of crude to flood the market once more — as could happen once Kuwait and Iraq come back on stream — and all the carefully-balanced plans currently worked out in Tehran could once more go awry. ■



The key to future investment lies in restoration of export capacity at key ports such as Kharg Island, now being rebuilt.

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ENERGY ECONOMICS GROUP

An evening meeting has been arranged on

Wednesday 18 March 1992 at 5.30 pm

The Hon. David Douglas Home,

Chairman of the Committee for Middle East Trade

will speak on

'One year on — Kuwait and the Gulf countries'

Tea and biscuits will be available from 5.00 pm. For further details please contact: **Mrs J Thompson**, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. **Telephone 071 636 1004.**

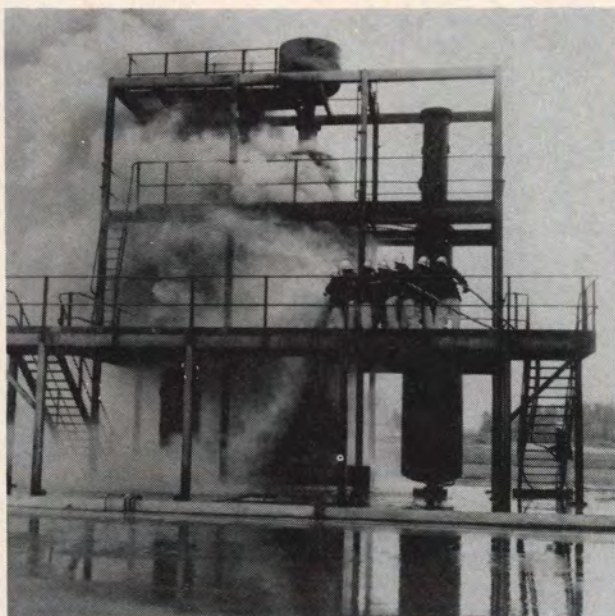
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The lubricants business in the 1990s

by Mr E I Williamson, Director,
The College of Petroleum and Energy Studies

The lubricants business in the 1990s will be affected by several key trends that could result in a re-alignment in the international lube oil market. Environmentalism, increased globalisation, demands for higher oil quality from equipment manufacturers and changes in marketing and distribution patterns will affect worldwide supply and demand balances.

After a long period of slow growth and gradually declining base oil exports from the industrialised world, the business of lubricants blending and marketing showed a strong upturn in the 1980s, leading to new concerns about supply of conventional base oils for the first time since the 1960s.

In order to arrive at the supply/demand balances, we have taken nameplate capacity, assumed that plants are operating at 85 per cent of capacity (a major assumption) and additive make up is seven percent. Then lubrication production could be at 29 million tons (excluding former Soviet Union and China), since there are no constraints on blending plant capacity. Very high viscosity indices (VHVI) and synthetics could push the total to 30 million tons. There are now more than 2000 blending plants worldwide and some (in Europe) are working at less than 50 percent of capacity.

The situation in 1990 is seen to be 'comfortable', with spare capacity in the United States and Europe (but not much) to export to Asia and Africa. However by 1995 the additional capacity closures in the United States (eg Sun Oil) and growth in demand in Europe have eliminated most spare capacity. By 1995 the situation looks tight, as seen in the **Table**, with a one million ton capacity deficit overall and Asia alone short 1.25 million tons.

The growing availability of synthetics and VHVI base oils will be of some assistance. However a more likely outcome is that the industry will build more conventional plants in Asia.

For those with a serious interest in

these balances there have been a number of recent papers on this subject published at the National Petroleum Refiners Association (NPRA) (Texaco) and by BP on VHVI and others. In each the figures vary somewhat but the broad conclusion of a shortage generally and particularly in Asia in the mid to late 1990s remains.

Marketplace trends

The 1960s was the golden age for the sale of lubricants, with prosperity and optimism in most parts of the world, as the rebuilding and recovery from World War II turned into a long-running economic boom from 1960 to 1972. GNP grew at 3-7 percent per annum in most countries in Western Europe, gasoline consumption at 10 percent per annum and plastics (based on ethylene growth) at 12 percent per annum.

However significant changes in lube oil retailing, such as the rise of the Do-It-Yourself (DIY) or take-home oil market, were already in train in the 1960s and in addition engine oil drain intervals were being extended. New products were continuously being introduced and oil companies offered more and more sophisticated services, such as planned maintenance systems, free lubrication surveys and sampling services.

Looking at the trends individually some comments and pointers may be highlighted.

Lubricants demand trends to 1995

The statistics now indicate a stable and

growing rather than a declining lube market overall. What is happening is that real growth is continually being wiped out by technology advances. Hans Vlemmings of Shell and his colleagues analysed 20 years of consumption to 1987 in 80 countries and concluded that GNP was the key influence on lubricants demand. During the 20-year period the OECD countries grew at 2.2 percent and the rest of the developing world at 4.1 percent. The Centrally Planned Economies (CPEs) were not analysed. Thus growth in lubricants demand would primarily be in high GDP countries in the developing world, such as Korea, Taiwan and Thailand, as the demand figures for 1985-90 have shown.

In the 1990s economic growth, as measured by GNP, is likely to be better than in the 1970s and early 1980s, but lubricants demand will not match this exactly. There is no easily transferable linkage; the market-place is too fragmented and dynamic. GDP is the primary indicator and the type of economy is the second indicator for likely lubricant demand growth. The third factor is undoubtedly population and population growth.

In looking forward, we have used 1.5 percent as growth for European lubricants demand to 1995, and only 1 percent for the United States, based on historic trends. We believe (and hope) that the United States will slowly move to longer-drain, higher quality oils, instead of their current 'frequent change' habits, at the consumer level. Asia/Pacific and South America will grow strongly and so will the Middle East as it recovers from war. Africa

will remain economically backward, as (unfortunately) capital and effort flows mainly into Eastern Europe and the former Soviet Union in the early 1990s.

State oil companies

There are now about 100 national oil organisations. Some are small and adopt monopolistic practices in their own countries on retail sales or become involved in the purchase of base oils for the country as a whole, as Noczim have done in Zimbabwe.

The larger more important companies are becoming more like the majors. In Europe Agip, Elf, Repsol, Statoil and Total have been expanding sales in other European countries by acquisitions or internal growth, over the past 15 years, with an acceleration of the trend in the 1980s. The arrival in Europe of Kuwait Petroleum and Petroleos de Venezuela SA may pre-empt further change. Adnoc has bought into CEPESA and Neste Oy recently purchased 50 percent of Nynas from Axel Johnson. Primarily these moves have been to secure outlets for crude oil but the Venezuelan moves have been strategic in the area of naphthenics. This is a dynamic trend, reintegrating the industry, as in the heyday of the majors.

Changes in marketing and distribution

Intense competition has forced marketing innovation on lubricants companies, both in the industrial and retail markets. In the industrial market, companies have provided extensive (and costly) technical services including major lubrication surveys, wear-check reports and planned maintenance systems. In a major analysis done by one of the market leaders, the cost of these services and the sales-engineering teams combined exceeded the added value of the finished lubricants over base oil wholesale values. This is an issue which must be monitored continuously.

Retail marketing has changed, away from the service station and towards the take-home market in the 1970s and now back towards the specialised automobile workshop and the new express oil change facilities. The DIY business swept through Western Europe and the United States in the 1970s, changing the pattern of distribution for retail lubricants away from the garage trade to the 'high street' whether supermarkets, hypermarkets or specialist motorist shops. By 1987 in France, supermarkets and DIY controlled 34 percent of the retail lubricants market. In Germany, the equivalent figure was 23 percent and in the United Kingdom 39 percent.

One of the problems resulting from the increased influence of the DIY market, has been unauthorised disposal of waste oil by individuals. This trend has caused significant concern to governments and environmentalists. There is an EEC Directive (439 7 75) regulating the disposal of waste oils. It has not yet been ratified by all countries but is already having a significant effect in those countries where it is now law. It must eventually cause a loss of business in the 'high street' as more individuals become aware of the pollution caused by unauthorised disposal in drains, etc.

The express oil change idea has taken off strongly in the USA and Canada in the 1990s, Jiffy Lube appear to be the market leader. They were purchased by Pennzoil in 1989, however most express oil change facilities offer a full range of competitive lubricants in addition to their primary promotion brand. This trend has begun in Europe (Belgium — with Elf USA franchises), but does not yet appear to be well established and there is some evidence that it is not very successful.

Mobil are now promoting specialised ('truck-stops' on autoroutes for long-distance lorries in Europe. They hope to raise sales of diesel fuels and diesel lubricants as well as increasing profits from food, sleeping and other facilities.



Lube advertisement

In the United States, Castrol has recently succeeded in selling oil by 'mail' directly to the consumer through advertising in specialist motorists' magazines.

Oil quality, unconventional base oils and synthetics

The issue of volatility has been with us since the mid-1970s, when 10W/50 oils, based on 100 neutral base stocks at the 'front-end' caused significant concern to the German car companies through in-service oil loss. This led to the introduction of 15W/40 oils and thence to 'top-tier' 10W/30 and 10W/40 oils, based on synthetic or VHVI 'front ends', as demanded by the VW 500 Specification.

These synthetic or semi-synthetic oils command premium prices. Something of a 'quality' race has taken place in Europe. Sales are now probably in the 150,000 ton range annually, including Mobil 1 and other full synthetics, plus those oils using synthetic or VHVI components in any magnitude.

The majors (and others) are now positioning themselves for the 1990s and integrating both production and marketing effectively. Shell, BP and now Esso are leading the VHVI race, while Mobil is leading the full synthetics race.

Surprisingly this 'quality' trend is only just starting in the United States with new products from Amoco, Castrol, Quaker State and Sun Oil.

Worldwide Supply/Demand Balance for Lubricants — 1990

(thousands of metric tons)

	USA/ Canada	W/E Europe	Japan/ Asia/ Pacific	Central/ S. America	Middle East	Africa
Supply 92%*	10900	8600	4900	2750	1080	860
Demand	9130	7800	5350	2860	980	1600
Surplus/(Deficit)	+1770	+800	-(450)	-(110)	+100	-(740)

*92% = 85% operating rate + 7% additives

Table

Since the major demand volumes in US retail are 10W/30 and 10W/40, with 5W/30 growing also, it is clear that these 'mainstream' oils are being sold at very low prices (typically \$1.85 per litre at the service station). Tightened volatility controls are expected for these light oils in the 1990s, because of demand from the vehicle manufacturers.

Environmental factor

This major world trend is leading to increased regulation and control, both on plant operations, selection of additives and base oils, labelling/toxicity issues and on fluid disposal. The earliest manifestation of this trend affected polychlorobiphenyls (PCBs), used in switchgear, then polynuclear aromatics (PNAs) came under fire, along with chlorine and phosphorus.

In the 1990s biodegradable oils have become an issue, particularly in Sweden and Germany for outdoor and forest applications (ie waterway hydraulics, earth-moving equipment and chainsaws). New products, based on rapeseed oil and esters, are being launched in Europe. It is felt that high-quality lube esters are more likely to succeed, in the long term, than rapeseed oil (a natural ester). It is expected to remain a specialised market, but also an opportunity for companies to promote a 'green' image.

Recycling is now emerging as an issue in the United States. Experience indicates that this only works in regulated or subsidised situations, as in Germany. Nevertheless, the issue of waste oil disposal will probably force more recycling than has been undertaken for the last decade.

Globalisation

For many years the multinationals have sold their lubricants worldwide. It may be said that marine lubricants are the best existing example of global marketing, followed by aviation lubricants. Similarly the industrial markets have been global, to a lesser extent, through the use of Original Equipment Manufacturer (OEM) representatives, establishing brands in instruction books and through lubrication plates attached to machinery.

In the 1980s attempts have begun to globalise the retail lubricants business through international brand promotion such as Mobil 1, Shell 'Helix', Esso 'Ultra', Castrol GTX (and similar) or Agip Sint 2000. This 'internationalisation' is often resisted by local oil company management often with good reason. Shell promotes 'Gemini' in the United Kingdom



A Belgian 'Jiffy Lube'

rather than 'TMO' or 'Helix'. Esso has 'EX2' in the United Kingdom, instead of 'Ultra'. This brand differentiation is due to price variations in different European countries.

Summary

In the 1980s (and surely also for the 1990s) competition for markets is a main issue for management. This is the driving force behind technical innovation, restructuring, acquisitions and mergers, new marketing methods, new products and globalisation. The external forces are environmentalism and privatisation. With state corporatism being abandoned worldwide, opportunities to penetrate new lubricants markets in Eastern Europe and the former Soviet Union will open up in the 1990s as central planning is abandoned.

Oversupply at the local level remains another major issue, leading to poor profitability in the end-use markets. Hence the innovations in automated blending facilities, to cut both manpower and more particularly, inventory costs. Fortunately it seems that base oil oversupply may be coming to an end in the mid-1990s, yet as we go to press base oil prices are at a new low point!

The future offers more of the same, as insufficient numbers of companies wish to give up. With 1,500 or more lubricants marketers worldwide it will be a tough business to say in — even if the customers for lubricants can be numbered in millions! For the lubricants business the key trends may be summarised as follows:

- Oil quality and performance are the key to higher pricing and product differentiation. There is a growing consensus between the OEMs and oil companies on quality. To a certain extent the traditional

specifying authorities are now seen as a hindrance (eg MVMA versus SAE/ASTM/API).

- As higher oil quality is specified, or is introduced by competitive forces, new VHVI projects will emerge and more synthetics will be used as blending stocks. This will help the tightening base oil supply/demand balance for conventional oils.
- New conventional solvent-refining lube plants will be mainly built in Asia/South America/Middle East. However, the majors will also probably acquire obsolete Eastern European plants and modernise them.
- International trade in lube base oils will fall, in overall volume terms, as nearly industrialised and developing countries achieve self-sufficiency. The 'old' exporters (USA/Europe) will be the losers.
- We do not expect a long-term lube oil shortage. Normal balancing mechanisms (lube distillates fed to catalytic crackers) will continue to keep base oil prices at a level permitting existing plants (sunk capital) to go on running. Prices may not rise to justify recovery of new capital; this is the investment dilemma.
- Environmental issues will continue to affect some additives, Medium Viscosity Index naphthenics, recycled oil projects and the introduction of special 'bio' grades, using rapeseed oil or esters. We expect 'bio' grades to remain a specialist and not a volume market. Re-refining may come back into fashion.
- Ideas and new marketing techniques will continue to emerge, eg condition monitoring, 'express' lube change, 'menu servicing' centres, truck stops and direct oil selling. ■

Enhanced condensate recovery technologies (analytical modelling)

by Professor Pavel Bedrikovetsky, Research Professor of Moscow State Oil and Gas Academy

Condensate recovery at the blowdown of gas-condensate fields is small. This is because of liquid-condensate precipitation during pressure depletion. However, liquid condensate is an important product of gas-condensate fields, and its recovery should be both efficient and economic. So the enhancement of condensate recovery is an important objective for reservoir engineering and practical applications.

The ideas of pressure maintenance developments and 'condensate displacement' for gas-condensate fields were developed in parallel with enhanced oil recovery technologies for oilfields. Technologies of (i) total and partial cycling-processes, (ii) waterflooding, (iii) displacement of retrograde condensate by gases and (iv) solvent slugs, together with different combinations of each of these methods have been developed during the last 30–40 years.

Recovery technologies

We shall distinguish between primary and secondary methods for the maintenance of pressure during recovery from gas-condensate fields. High pressure above the dew-point is only maintained at the very beginning of production or for a short period of blowdown. The objective at the primary stage of enhancement is to maintain field pressure and so prevent condensate precipitation.

The secondary recovery methods are applied after some pressure depletion. The main aim of these methods is the displacement of the retrograde condensate. The gas condensate field can be produced at the same maintained pressure by water flooding, injection of lean or enriched gases, hydrocarbon solvents and their slugs, carbon dioxide, nitrogen, injection of the mixtures of these gases and solvents, use of these mixtures in water alternating gas (WAG) processes, or in combinations with blowdown. The condensate recovery mechanisms of these methods are clearly more complex than simple pressure depletion. During

enhanced condensate recovery, the following processes occur: three-phase displacement, phase transitions, capillary phenomena and complex phase interactions between displaced and injected mixtures. These processes will occur in the naturally heterogeneous reservoirs.

In the planning and design of this enhanced condensate recovery, it is necessary to compare the effectiveness of the application of different technologies since the number of options is much greater than for blowdown — for instance, the choice of fluid for injection, injection pressure and rates, slug size etc. It is therefore necessary to have analytical models for the planning and design of enhanced condensate recovery processes. These allow us to calculate quickly the recovery, under different recovery schemes to be compared and the role of different physical and geological phenomena in the extraction process to be estimated and hence the optimal recovery technology to be chosen.

Analytical modelling, in comparison to numerical modelling, allows the

obtaining of solutions to the inverse problem of reservoir characterisation from the data of pilot and laboratory tests.

One-dimensional simulation results

Exact analytical solutions of one-dimensional, two-phase, multi-component displacement problems, (eg FJ Fayers, EL Claridge, PL Bondor, GA Pope, GJ Hirasaki, VM Enton, FM Orr, PG Bedrikovetsky), can be used for (i) comparisons of the displacement coefficient using different injection gases and solvent slugs, (ii) the choice of fluid for injection, (iii) for investigation of hydrodynamic phenomena at displacement. The ternary phase diagram for a gas-condensate system is shown in **Figure 1**. The field mixture is represented by the three pseudo-components — methane C_1 , light hydrocarbons C_{2-4} , and heavy components C_{5+} . The two-phase region is located under the bimodal line; the one-phase region above it. Points A_1 to A_4 correspond to

injected gases with different hydrocarbon contents, point B to the gas-condensate mixture to be displaced. The numbers 1 to 7 correspond to phase and component content in the flow in different displacement zones, shown both in the ternary phase diagram (Figure 1) and the profiles of the condensate distribution along the reservoir (Figure 2).

Profiles of the condensate C_{5+} distribution along the linear reservoir are shown in Figure 2. Curves I, II, III and IV correspond to the injection of fluids A_1 , A_2 , A_3 and A_4 on the ternary phase diagram. In addition, phase and component constants for every mixture, 1 to 7, that appear at the displacement are shown in Figure 1.

At the displacement of any fluid, A_n , one can observe one or two gas-condensate banks behind the zone of movement of the initial fluid B. All the additional condensate recovery is obtained during the production of the content of the gas-condensate banks. Behind the banks only injected gas moves. The initial gas condensate from this zone is displaced into the zone of the flowing banks.

There are four different displacement regimes (1 to 4), for the different initial liquid saturations and injected gases. These are described below:

(1) During the injection of low en-

‘These theoretical results have been verified by . . . laboratory experiments’

riched or lean gas (point A_1 , on Figure 1), the content of the gas-condensate bank corresponds to point 1 on the ternary phase diagram. Here there is a very interesting flow enigma — the saturation of liquid phase 1 in the bank is small, hence the condensate liquid is stationary, but the bank moves along the reservoir. Why? This effect can be observed in laboratory experiments but was discovered following the derivation of exact solutions to analytical models. It occurs because of the phase transitions on the displacement front 1-B and the evaporation on the back from A_1 -1, interphase mass transfer is going on with the mobile gas phase.

(2) With the increase of light hydrocarbon concentrations in the injected gas, A_2 , the liquid phase in the bank 2-3 becomes mobile (regime II).

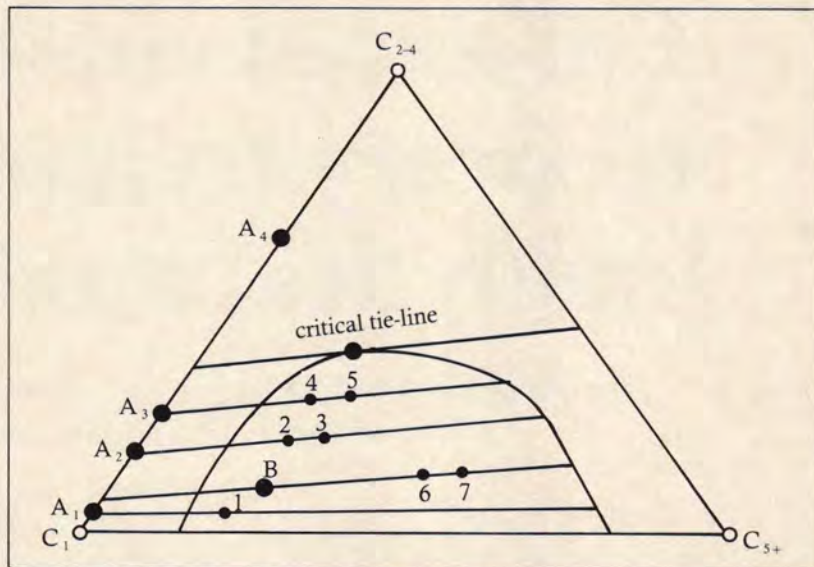


Figure 1: Ternary phase diagram for gas-condensate system.

Behind the first gas condensate bank with the constant hydrocarbon content, 3, there appears the second bank with the hydrocarbon content that varies from 3-2. The content of the banks at the first and second regimes is in thermodynamic equilibrium with the injected gas.

(3) With further enrichment of the injected gas A_3 before the banks, but behind the displacement front, there appears the bank 6 with the high saturation of condensate liquid (regime III) — see Figure 2. The content of this bank is in thermodynamic equilibrium with initial fluid B.

(4) With displacement by rich gas, point A_4 is located above the critical tie line (Figure 1). The second gas condensate bank disappears and liquid saturation in the first bank increases, 7. The velocity of the bank front A_4 -7 becomes equal to the flow velocity. With the injection of rich gas, A_4 , in a quasi piston-like displacement. After one pore volume of gas injection, the

displacement coefficient becomes equal to 1.

These theoretical results have been verified by a number of laboratory experiments as this classification of regimes has helped the interpretation of the data from a range of laboratory studies.

Welge's method for recovery prediction has been generalised for the displacement of retrograde condensate on the basis of these solutions. It allows us to compare the condensate displacement coefficient for different injected gases by simple graphic-analytical techniques.

Three-dimensional analytical models

The pseudo-fractional flow functions approach is used extensively in layer-cake reservoir simulation (e.g. D.N. Dietz, K.H. Coats, F.J. Fayers, A.K. Kurbanor, C.L. Hearn, L.W. Lake). We have focused on multicomponent

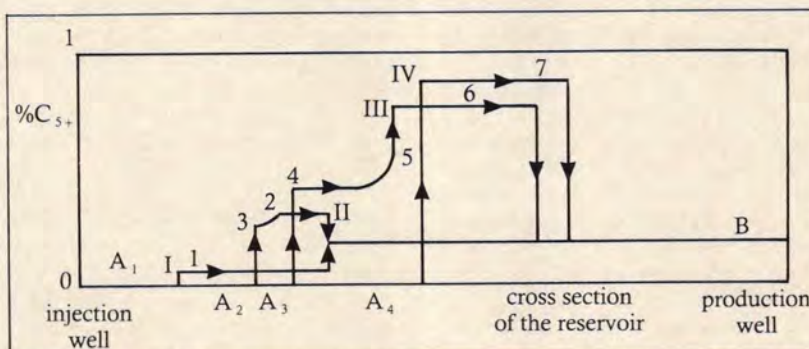


Figure 2: Profiles of the condensate distribution along the reservoir in each of four displacement regimes.



INSTITUTE OF PETROLEUM

**Personnel Education & Training
Discussion Group**

Evening Meeting

Wednesday, 11 March, 1992

5.15 p.m. for 5.45 p.m.

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Where are we going?

By Professor Keith Foster,
Director, Engineering Profession,
The Engineering Council

Staff of member companies, individual members, guests and those interested in the future of the oil industry will be most welcome.

Please let Bob Edmondson at The Institute of Petroleum (tel 071-636 1004) know if you or your colleagues plan to attend.



**Proposed Netherlands Branch
Initial discussion meeting**

To be held on
Tuesday 17 March

at
Engels International Hotel, Rotterdam
at 4 pm

The Institute of Petroleum is anxious to strengthen its existing links with Europe by establishing branches in those countries where it already has a substantial membership. Such branches would offer the opportunity for the exchange of ideas and the development of common standards.

At this meeting a discussion will take place on the feasibility of setting up a Netherlands Branch along the lines of existing IP branches in the United Kingdom and Malta.

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Both IP members and any interested non-members are invited to attend.

For further information, please contact **Mrs Mary Wood, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel: 071-636 1004. Fax: 071-255 1472.**



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**GAS-CONDENSATE RECOVERY
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*The Soviet Experience***

PROF. PAVEL BEDRIKOVETSKY

Research Professor of Moscow State Gubkin Oil & Gas Academy

23 - 25 MARCH 1992

A short course for Reservoir Development Engineers, Experiment and Simulation Specialists, Research Engineers and Project Managers employed in the Planning and Development of Gas-Condensate Fields. 60% of the course material has never been published outside Russia.

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For details of this course please contact:

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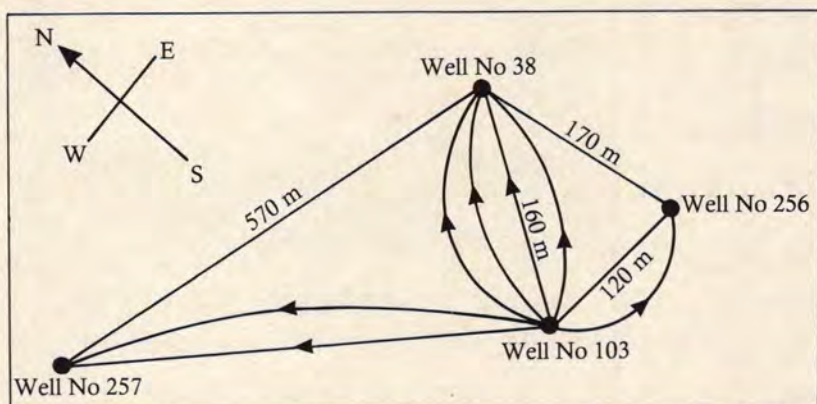


Figure 3: Pilot experiment on Vuktil gas-condensate field (Komi ASSR, Uchta).

multiphase flow in layered-heterogeneous reservoirs dominated by viscous forces. Pseudo-fractional flow theory has been generalised for the displacement of the retrograde condensate by gases and solvents. It allows us to derive an analytical model for the quasi three-dimensional displacement in layer-cake reservoirs.

Pilot experiments were performed in the Vuktil gas-condensate field (Uchta, Komi ASSR) in 1987–88 with the aim of sweeping the retrograde condensate by a hydrocarbon solvent slug. Project planning was performed by the All-Union Institute for Natural Gases (VNIIGAZ) under the scientific supervision of Professor R.M. Ter-Sarkisov. The analytical approach mentioned above was applied to this pilot test in Moscow State Oil & Gas Academy (Professor K.S. Basniev, Professor P.G. Bedrikovetsky, A.A. Shapiro). Starting from the results of analytical simulation, it was decided to use a slug of light hydrocarbons with a size of 10% pore volume. A schematic layout of the pilot test is shown in Figure 3. A solvent slug was injected in the well No. 103 during 150 days at the rate of 246 m³/day and followed by pumping lean gas at the rate of 1–2 × 10⁶ m³/day. The initial condensate saturation, s_{o_0} , was 10–12% pore volume and the field pressure 10MPa.

In 1991 the results of the pilot experiment were interpreted according to a multi-layered representation of the geological model. The three-layered model gave a satisfactory agreement with the pilot experiment data. Results of the inverse problem are shown in the Table. The heterogeneity profile obtained was used for planning future hydrocarbon slug field experiments in the Vuktil field, scheduled for 1992.

Waterflooding

Waterflooding is particularly attractive to operators for offshore gas-condensate fields (water supplies are obviously not scarce). However, it can also be considered for on-shore reservoirs. The advantages of waterflooding compared with other processes for the development of gas-condensate fields are:

- The surface injection pressure required for waterflooding is less than with gas and solvent injection because of the high water density. Therefore, the compressors for injection wells can be of low power and significantly less expensive. This advantage is especially important for deep reservoirs.
- The sweep coefficient in waterflooding is more than with gas and solvent injection because of the high viscosity of the injected water.

However, breakthrough and condensate production occur later.

- As with gas injection described above, waterflooding would be successful in maintaining pressure; hence, if the reservoir pressure is maintained above the dew point, the condensate does not drop out, and thus can be produced completely in gaseous form. Waterflooding should give a lower condensate drop out in comparison with straight depletion processes.
- The waterflood activates a three-phase displacement. The range of saturation for condensate mobility is lower for three-phase flow than for two-phase. The waterflooding displacement coefficient is therefore higher than for the gas processes for the secondary recovery of the retrograde condensate. This advantage is particularly important for less permeable reservoirs.

However, there is a disadvantage — condensate is immiscible with water and condensate in low permeable regions will be cut off from the main displacement front. As the oil saturation in oilfields is much greater than liquid condensate saturation in gas condensate fields, the breakthrough with waterflooding occurs in gas condensate fields much more readily than with oilfields. The liquid condensate then becomes immobile and non-extractable.

Gas-condensate behaviour and recovery with waterflooding usually is predicted by the use of three-phase three-dimensional numerical models of the displacement in heterogeneous reservoirs. The advantages of analytical models, compared with the numerical ones mentioned above, include the possibility of rapid calculations of a great number of variants, exact modelling of the reservoir behaviour without numerical approximation effects, a factor analysis capability and optimisation. Analytical models reduce problem complexity and decrease computing costs. These models can be derived for waterflooding by the use of averaging methods, ideas of pseudofunctions, exact analytical solutions for one-dimensional displacement problems and the application of conformal mappings.

The most effective processes are different combinations of depletion, waterflooding and gas injection.

The properties of layers
(Geological data/Interpretation of pilot experiments results)

Number of layer	Porosity \varnothing , %	Thickness h,m	Permeability k, (μm) ²
1	8/10	30/40	0.01/0.03
2	20/20	19/15	0.10/0.22
3	30/35	6/5	1.00/1.25

Table

Professor Bedrikovetsky is currently an Academic Visitor in the Department of Mineral Resources Engineering at Imperial College, London.



CONSULTANT LIST

Members of the Institute of Petroleum offer consultancy services in a wide range of petroleum industry subjects. A list of consultants in any category will be provided free of charge on application. Currently about 300 members offer 44 different categories within which we can identify other areas of expertise.

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Anyone interested in obtaining this list should contact
Jo Howard-Buxton at the IP. Tel: 071 636 1004

A training framework for the 1990s — the challenge of integration

The Institute of Petroleum Education and Training Committee (IPETC) organised a conference at the Institute in October, with the aim of examining the status and interrelationship of the many new education and training initiatives which were launched in the 1980s, in response to the perceived need for improvements in UK training.

Ian Williamson of The College of Petroleum and Energy Studies gave the opening paper, which analysed the many UK and European initiatives and made the point that the majority were supplier-led. He stressed the need for companies to integrate the various initiatives into a coherent framework, so that employees knew which initiatives the company was willing to support, in order to plan their own 'training contract' with the company. Mention was made of 'EuroPro', the new EC initiative led by Neste Oy, OMV, Phillips and Statoil, where in-company training could be successfully integrated into a flexible system.

John Gregg of Esso Petroleum at Fawley, gave a paper on the use of vocational qualifications and competences for refinery operators. A working party of eight people from Shell, BP, Esso, Conoco and others has been working under the auspices of the Petroleum Training Federation for two days per month for two years on this NVQ project. The result was that the companies felt that they 'owned' the standards, and that actually identifying the competences highlighted the priority training needs. There were other spin-offs, in that the trade unions supported NVQ and also recruitment had improved, as applicants realised that process operators could gain a recognised qualification.

Bill Simpson, Endorsement and VQ Director of the Management Charter Initiative (MCI), on secondment from BP, gave a paper to show how far MCI had progressed since 1988. As the lead body for management it had already set the standards of competence for both the certificate level (NCVQ3) and the Diploma level (NCVQ4) qualifications. About 1000 employers now participate in the MCI partnership, creating something like a revolution in management training. There were also 50 MCI local networks in being. MCI was a driving force for the development of NCVQ levels 4 and 5, the former relating to first-line management and the latter to middle management and professionals (such as Chartered Engineers). Bill expected the 1990s to be a manpower development decade for companies, which would lead to wider recognition of management competences, linked to national qualifications.

Chris Senior, who heads the Continuing Professional Development (CPD) Section of The Engineering Council, spoke about the Council's national initiative to improve the provision of CPD for professional engineers. The Council is also now involved in advising the professional engineering institutions on the way forward with NVQs at levels 4 and 5 and the relationship with their currently endorsed qualifications.

After lunch, Paul Watts, Director of GEC's Management College at Dunchurch, demonstrated how GEC had formed the GEC Education and Training Consortium, which cross-accredited consortium programmes between providers such as GEC itself, polytechnics, universities and business schools, such as Henley - The Management College. He raised some significant questions for consideration — will accreditation of prior learning (APL) be workable? Does cross-accreditation (e.g. like EuroPro) really occur? Should industry collaborate with academia to help develop relevant courses, deliver courses, or assess course work?

Mike Hawes of the British Gas Distance Learning Unit, explained how the Unit worked within British Gas and served the needs of the business units, through close working relation-



Barry Freeman (centre), Manager-Human Resources, Chevron UK Ltd, was the conference chairman at the IP training conference. Ian Williamson (right), Director, The College of Petroleum and Energy Studies and John Gregg (left), Development Supervisor, Esso Petroleum Company Ltd, were two of the speakers.

ships, from the pilot stages, through to the finished product — thus avoiding 'we don't like this' situations. The Unit was started in 1985/6 and is still growing. There is an emphasis on being able to run most of the D/L material on standard business computers like the IBM PC, although workbooks remain important.

The final session at the conference came from Doug Riach of BP Exploration Operating Co Ltd in Aberdeen, who emphasised BP's training strategy, geared to commercial awareness, team building and the provision of wider skills, together with their utilisation in practice. He confirmed that the large number of training initiatives had created a 'training overload', with an illustration of the overload as a huge wave, likely to dump the trainer back on the beach!

Altogether a worthwhile and informative IPETC one-day conference and the fore-runner of others as the Personnel, Education and Training Discussion Group gets under way, with its annual programme of early evening meetings and one-day events, aimed at providing a forum in London for oil and gas industry human resources and training staff.

Diary dates

The Ninth International Conference on Technology and Education 1992: Education 'Sans Frontières' — Paris, 16 to 20 March 1992. Details from European Congress Consultants and Organisers, Rue de l'Abbaye, 27a, B-1050 Brussels, Belgium.

Human Resource Development Week Conference. The Business of Training in 1992. Wembley Exhibition and Conference Centre, 31 March to 2 April 1992. Details from Blenheim Marlborough, 630 Chiswick High Road, London W4 5BG.

Ordinary and National Diplomas

The government has announced further details of its proposals for Ordinary and Advanced Diplomas which had been first mentioned in the previous White Paper 'Education and Training for the 21st Century'. The proposals are part of a collection of measures to increase attainment levels achieved by young people, particularly in the area of vocational education and training.

The purpose of the Ordinary and Advanced Diplomas is to provide a simple method for comparing vocational and academic qualifications by employers, young people themselves, and the providers of further education.

They will do this by 'over-arching'. This means they will become a stamp of quality, based on the existing academic qualifications (primarily GCSEs and A-levels) and vocational qualifications (primarily National Vocational Qualifications and their Scottish equivalent).

The proposal at the moment is that an Ordinary Diploma should be awarded to any young person gaining four

GCSEs or equivalent, including English and Mathematics. The parallel requirement for vocational qualifications is likely to be an NVQ at level 2, provided that there is evidence of attainment in communication and numeracy.

Looking at the Advanced Diplomas, it is intended that this should be taken as evidence of suitability for degree level courses. It would be awarded to young people gaining two A-levels at any grade or an NVQ at level 3. The government is seeking views on whether these attainments would be sufficient in themselves or whether there may be a requirement in general subjects, especially communication and numeracy.

Much still needs to be decided, and the treatment of the many possible combinations of academic and vocational qualifications is an issue which will take some time to resolve.

Copies of the consultative document, and further information, are available from David Slack, The Employment Department, Moorfoot, Sheffield S1 4PQ. Tel: 0742 594490.

Certificate for driver training

The Petroleum Training Federation (PTF) has awarded the 6,000th Renewal Certificate for Driver Training for the Dangerous Substances (Conveyance by Road in Road Tankers and Tank Containers) Regulations 1981.

Every year an average of 600 drivers go through refresher training arranged by the PTF, and 250 through basic training.



Mr Dennis Wakeman (centre), a driver with BP Oil UK Ltd, based in Kent, recently received a special gold 6,000th certificate from Mr Bill Willies (left), the PTF's Training Adviser on Driver Training. Also present was Mr Richard Ayres, General Manager of the Petroleum Employers Council (PEC).

Undergraduates recognise high safety standards

The image of the oil industry has strengthened since last year according to the finding of the MORI poll — 'Attitudes of University Finalists in 1991' in which The Institute of Petroleum participated for the third successive year.

The view that the industry has high safety standards has risen substantially over the last three years with this increase being particularly strong among engineering undergraduates.

Familiarity with the industry is virtually unchanged from previous years with a fifth of all undergraduates knowing more than a fair amount about career opportunities in the oil

industry. Again this year a slightly greater proportion of students (one in four) is more than fairly interested in working in the industry. However, amongst female undergraduates the numbers drop significantly. For graduates in engineering and sciences, the oil industry ranks in their top three or four prospective career targets, amongst the 35 industries or professions surveyed. Finalists are now more likely to associate the oil industry with high safety standards and excellent career opportunities; it is also strongly associated with professionalism, good training and intellectual challenge. However, the financial services and electronics

sectors continue to rank in the highest esteem on most of the above factors, whether judged by engineers alone or all undergraduates.

Careers in the media sector, including journalism, public relations, advertising, etc, still remain the most popular among finalists. The very strong career interest in financial service industries shows little sign of lessening.

This year's survey continues to emphasise the perception that the industry is poor in safeguarding the consumer's interests, but nevertheless has high social status and prestige, albeit still a long way behind the financial sector.

Publications

Continuing Professional Development — A National System. A framework for action to enable all engineers to keep up to date and to develop awareness and skills in commercial and managerial subjects. Available from The Engineering Council, 10 Maltravers Street, London WC2R 3ER.

MCI in Action. An update on what MCI is doing. Available from Management Charter Initiative, Russell Square House, 10-12 Russell Square, London WC1B 5BZ.

Obituaries

Mick Esdale

It is with great sadness that I have to advise that Mick Esdale, Chairman and major shareholder of Thames Liquid Fuels and its associated companies, Thames Rico and Thames Petroleum (Scotland), died peacefully on 18 January.

Mick was originally involved with his father-in-law in Wholesale Kerosene Distributors, which he subsequently acquired. He founded Thames Liquid Fuels in 1962, Thames Rico in 1975 and Thames Petroleum (Scotland), following the acquisition of Mansfield Petroleum, in 1977.

We shall miss Mick's wise counsel, his tremendous experience of our business and his great interest in all who worked for him.

PJH Lowe

Fred Wilson

It is with great sadness that we report the death after a short illness of Fred Wilson. Fred was one of a band of people on whom organisations like the IP rely so heavily — those prepared to contribute their expertise and devote their time to committees concerned with drafting industry standards and codes of practice. Fred's forte was petrol pumps, electronic metering systems and electronic data transmission. Formerly technical director of Avery-Hardoll, he continued his IP involvement after retirement as the representative of the Petrol Pump Manufacturers Association. Fred served for over 30 years on many IP committees and working groups, actively participating until late 1991. He was Chairman of PM-E, Electronic Security, and as a member of Panel A, Service Stations, played a major role in the 1970s in planning and implementing the metrication and decimalisation of the UK service station network. Fred was awarded a Certificate of Appreciation in recognition of his services to the IP. In addition to IP work, he was a member of various BSI, ISO and CEN committees, most notably Chairman of the BSI committee which recently produced BS 7117 dealing with filling station fuel dispensers.

Fred not only had great technical expertise, he was also a warm, friendly person. He will be greatly missed by his family and by those who knew and worked with him.

Around the Branches

Aberdeen

10 March: 'Operational Experience with Seillean (SWOPS)', Mr John Wright, BP Exploration Operating Company Ltd.

Essex

11 March: 'Eurotunnel, the Channel Tunnel', Mr R Storer, The Channel Tunnel Group Ltd.

20 March: Dinner Dance.

London

10 March: 'Renewable Energy', Professor DT Swift-Hook, King's College, London.

Stanlow

26 March: 'Safety Worldwide', Mr R Pickering, ICI (joint meeting with the IMechE).

Shetland

24 March: 'A Bee for the Sea' — the ship oil production platform.

South Wales

19 March: 'Electricity Generation in the Future', Mr B Count, National Power.

27/29 March: Visit to Goonhilly Tracking Station, Cornwall.

Yorkshire

10 March: 'Power to the People', Mr G Willcox, Senior Engineer, Control Systems National Power, (joint meeting with the Institute of Energy).

20 March: Dinner Dance.

New Collective Members

Lucas Kienzle Instruments Limited, 36 Gravelly Industrial Park, Birmingham B24 8TA. Tel: 021 328 5533.

IP Nominated Representative: Mr R D Edmonds, Technical and Service Manager.

Lucas Kienzle is a company jointly owned by Lucas Automotive and Mannesmann Kienzle. It markets and supports vehicle instrumentation and economy products in the UK heavy commercial vehicle market. It is currently diversifying to include on-board computing systems, fleet management systems and forecourt fuel dispensing control systems in its product range.

Cardiff Law School, University of Wales, PO Box 427, Cardiff CF1 1XD. Tel: 0222 874 000.

IP Nominated Representative: Mr P N Todd, Law Lecturer.

Cardiff Law School, part of the University of Wales, has quite a large throughput of students, at both undergraduate and post-graduate levels. Many of these students study the law of international trade and carriage of goods by sea.

Normandie-Labo SA, BP22, Lillebonne 76170, France. Tel: 35 38 59 59.

IP Nominated Representative: Mr J L Rohaut, Export Manager.

Normandie-Labo is a specialist manufacturer and supplier of oil testing equipment (to IP/ASTM/AFNOR standards) throughout the world. Their core activity is the research and development of fully automatic instruments in collaboration with major oil and chemical companies: automatic distillation, CPPP, flash points, etc. Normandie-Labo is an important manufacturer of petrochemical glassware in France.

Holistic Systems Limited, Park House, 111 Uxbridge Road, Ealing, London W5 5TE. Tel: 081 566 2330.

IP Nominated Representative: Mr M de Havilland, Account Manager, Petrochemical Industry.

Holistic Systems is a private British company with offices in the United States and Australia and distributors in most European countries. Their product HOLOS offers an integrated management information system combining EIS and DSS activities into one seamless system, together with dynamic links to operational data. There are currently around 150 HOLOS installations worldwide including five major oil companies.

DMR Group Ltd, 25 North Row, London W1R 1DJ. Tel: 071 495 4777.

IP Nominated Representative: Mr D West, Associate Director.

DMR is a worldwide consulting group operating in the field of information management and technology, specialising in the petroleum industry, providing effective business solutions aimed at producing strategic advantages for its clients.

New Members

Mr SDD Allen, Chennels, Staceys Farm Road, Elstead, Surrey GU8 6EN

Mrs CD Billeau, Shell UK Exploration & Production, Shell Mex House, Strand, London WC2R 0DX

Mr C Brindle, c/o Marine Navigation Co Ltd, 52 St John's Square, London EC1V 4NH

Ms JA Brooks, Arthur Andersen & Co, 1 Surrey Street, London WC2R 2PS

Mr MN Burchell, Flint Court, Pixham Lane, Dorking, Surrey RH4 1PH

Mr M Castellani, Agip (UK) Limited, 105 Victoria Street, London SW1E 6QU

Mr D Couling, 26 Steeplefield, Eastwood, Leigh-on-Sea, Essex SS9 5XS

Mr OJ Dafitohino, PPQC (PC), WRPC, PO Box 207, Effurun-Warri, Nigeria

Mr FM Davy, Pump & Forecourt Services Ltd, Marmaduke Street, Oldham, Lancs OL9 6DP

Institute News

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- Mr CF Fong, 28 Jalan 51, Kaw 19, Off Jalan SG Putus, Kelang, Selangor, Malaysia
- Mr PJ Fooks, 9 Sovereign Way, Boyatt Wood, Eastleigh, Hants SO5 4SA
- Mr PCM Frazer, Alm 46, Kaatsheuvel, 5172 CW, Netherlands
- Mr PDM Gullett, Axholme Lodge, Newton Way, Woolthorpe-by-Colsterworth, Grantham, Lincs NG33 5NP
- Mrs DE Hall, 19 Oakfield Road, Ashford, Middlesex TW15 1DN
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- Mr J Hollowood, Ministry of Defence, Room 0275, MOD Main Building, Whitehall, London SW14 2HB.
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- Ms IC Kontoyiannis, Motor Oil (Hellas), Corinth Refineries SA, 2 Karageorgi Servias Str, 105-62 Athens, Greece
- Mr JE Lambert, Maxibrite AB Ltd, Mwyndy Cross Ind, Llantrisant, Mid Glam, Wales CF7 8PN
- Mr PJ Lambeth, Mobil Oil Co Ltd, Marketing Engineering, The Clock House, Frogmoor, High Wycombe, Bucks HP13 4UE
- Mr H Lindalen, Askeladdveien 12, 1445 Heer, Norway
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- Mr ET Olushina, 3 Abayomi Street, Lawanson, Surulere, Lagos, Nigeria
- Mr JW Patience, 20 Spring Tyne, Westhill, Aberdeen AB32 6NH
- Mr M Pyer, Perfect, Lambert & Co, 84 Fore Street, Ipswich IP6 9RJ
- Mr TJ Radford, Nuclear Electric, Tribology Group, Berkeley Nuclear Labs, Berkeley, Glos GL13 9PB
- Mr HJ Ridgway, Rusdens, Purfold Wood, Plaistow, West Sussex RH14 0PL
- Mr SP Robinson, Inchcape Insp & Testing Svcs, Caleb Brett House, 734 London Road, West Thurrock, Essex RM16 1HN
- Mr DM Rude, 123 Hamri Street, Ghajnsielem, Gozo GHS-104, Malta
- Mr NR Simons, Bernard Matthews Foods Ltd, Great Witchingham Hall, Norwich, Norfolk NR20 3PD
- Mr MG Steggar, Land Restoration Systems, Unit 10, Camphill Ind Est, West Byfleet, Surrey KT14 6EW
- Mr M Stonefrost, Automobile Association, Lister Point, Sherrington Way, Basingstoke, Hants RG22 4DQ
- Mr RA Struck, 16 Blenheim Court, Stanmore Road, Richmond, Surrey TW9 2DA
- Mr R Taylor, 12 Holbeach Close, Vicarage Park, Hindley Wigan, Lancs WN2 3QX
- Mr SD Taylor, 141 Ranuz Drive, Westcliff-on-Sea, Essex SS0 9JN
- Mr MG Terry, Skillformat Ltd, Centre-Tank-Services, Warwick House, Kingsbury Road, Curdworth, Sutton Coldfield B76 9EE
- Mr RK Thompson, Repsol Petroleum Ltd, Kensington Centre, 66 Hammersmith Road, London W14 8UD
- Mr DM Tocher, Nusteel Structures Ltd, Airport Works, Lympne, Hythe, Kent CT21 4LR
- Mr HBH Trepant, 37 Treadwell Road, Epsom, Surrey KT18 5JP
- Mr RE Vale, Weldrite Eng Ltd, Chalk Cottage, Hatfield Road, Wickham Bishops, Chelmsford, Essex CH8 3LT
- Mr J Van Ruitenburg, Matex Europort BV, Neckerweg 5, Europort rt 3198 LJ, Holland
- Mr NG Voute, Boschzicht Apt N2, Neuhuyskade 2, 2596 XL's Gravenhage, Netherlands
- Mr TF Walsh, Carpe Diem House, Daviot, Inverurie, Aberdeenshire AB51 0HZ
- Mr P Watson, 24 Mulla, Voe, Shetland ZE2 9XQ
- Mr PL Weeks, 9 Wynford Road, Parkstone, Poole, Dorset BH14 8PG
- Mr AR Whatley, 14 Sparrows Mead, Redhill, Surrey RH1 2EJ
- Mr TMH Whitehouse, 32 Wickham Road, Brockley, London SE4 1NY
- Mr J Whyte, 22 Hay Crescent, Peterhead, Aberdeenshire AB42 6HH
- Mr MJ Wilcox, County Natwest Woodmac, Kintore House, 74-77 Queen Street, Edinburgh EH3 7RP
- Mr AC Wilkinson, Lammalco Group, PO Box 5687 Sharjah, UAE
- Mr SC Wu, Blk 20C, 20F, Baguio Villa, Hong Kong

Student Prize Winners

- Mr JS Gomes, Partex-Cps, Av 5 Outubro, 160, 1000 Lisbon, Portugal
- Mr IC Morrish, 106 Maiden Place, Lower Earley, Reading, Berks RG9 3HA

Students

- Mr AS Davison, 19 Kirkdale Way, Acklam, Middlesbrough, Cleveland TS5 7JS
- Mr GC Mattingly, 67 Cedar Road, Portswood, Southampton SO2 7AF
- Mr RNS Shaw, 124 Woodland Lane, Chapel Allerton, Leeds, West Yorkshire LS7 4QG

Deliveries into Consumption

UK deliveries into inland consumption of major petroleum products — Tonnes — December 1991

Products	Dec 1990†	Dec 1991*	Jan-Dec 1990†	Jan-Dec 1991*	% change
Naphtha/LDF	247,410	261,690	3,039,430	3,299,410	9
ATF—Kerosine	474,900	461,750	6,588,570	6,179,470	-6
Motor Spirit	1,951,130	2,010,210	24,312,360	24,021,380	-1
of which unleaded	724,920	867,260	8,255,150	9,868,480	20
Super unleaded	81,470	105,220	925,040	1,171,950	27
Premium unleaded	643,450	762,040	7,330,110	8,696,530	19
Burning Oil	263,130	281,610	2,058,110	2,386,740	16
Derv Fuel	807,350	831,610	10,652,170	10,687,457	0
Gas/Diesel Oil	732,580	681,460	8,045,520	8,025,700	0
Fuel Oil	667,000	1,135,720	11,997,197	12,297,280	3
Lubricating Oil	55,390	52,100	821,863	761,310	-7
Other Products	452,380	495,740	6,083,250	6,691,703	10
Total above	5,651,270	6,211,890	73,375,110	74,350,450	1
Refinery Consumption	527,200	536,650	5,837,520	6,057,590	4
Total all products	6,178,470	6,748,540	79,212,630	80,408,040	2

†Revised *Preliminary

The perils of labelling

By HGE Wilson, Chairman of the IP Occupational Hygiene Subcommittee

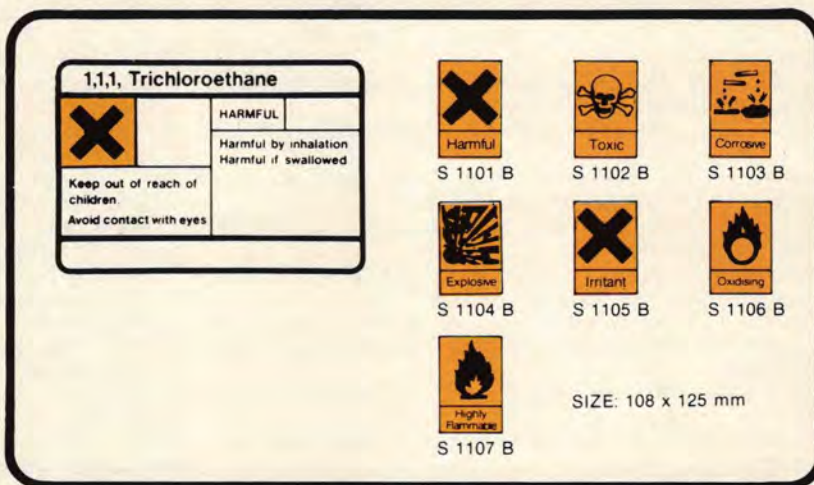
When everybody is somebody, then nobody is anybody . . . The words of W S Gilbert seem singularly appropriate to the current trends in product labelling.

The proliferation of warning symbols and phrases, driven by both real and imagined legislative requirements, leads inevitably to the dilution of their impact and the overlooking of significant hazards.

The problem begins with the nature of existing labels where a basic confusion exists between hazard and risk. If we define 'hazard' as a threat (the harmful effect of exposure to a particular chemical, physical or biological agent), the 'risk' is the chance of harm arising from exposure to that hazard. Thus the hazard of a particular chemical remains the same, irrespective of how much, how often or for how long it is used. As the risk depends on the circumstances of use, it can vary from trivial to substantial for the same substance.

The familiar solvent 1,1,1-trichloroethane (TCE) provides a good example of the distinction — its use in typing correction fluid presents an insignificant risk in most circumstances (very small quantity; occasional use; very short duration of exposure). Compare this with a typical industrial degreasing application where exposures may be frequent and prolonged, the volumes of solvent considerable and the controls less than adequate. In some circumstances, unfortunately not uncommon, the risk to health can be significant.

Both large and small containers carry the same warning labels, for example TCE would have a St Andrew's cross indicating a substance in the 'Harmful' category. Given the definitions of harmful used in the classification, one cannot argue with that but it is important to appreciate that this is a HAZARD warning which provides no indication of the likely RISK to health — this being dependent on the circumstances of use. Unfortunately the problem is exacerbated by the use of the term 'Risk Phrase' to describe the standard hazard warning! Regrettably it is too late to change the terminology but how much better it could have been if the more correct



words 'Hazard Phrase' had been adopted.

It is possible that petrol pumps will one day bear the skull and crossbones 'Toxic' symbol and the R45 'may cause cancer' phrase and, given an extension of current product labelling requirements to include provision for potential waste, we may yet see the words on cans of engine oil . . . 'may cause cancer'. No-one can deny that prolonged and repeated application of used engine oils to the skin of rats and mice will cause some cancers in laboratory tests, nor would one argue that some leukaemias can be caused by exposure to benzene and that benzene is a minor component of motor gasolines. We must accept that the hazard or threat is there but the risk under likely conditions of exposure to these products or their wastes is insignificant. Thus, while a hazard warning 'may cause cancer' would be factually correct, the likelihood of the DIY mechanic developing cancer caused by exposure to used engine oil is negligible.

Conversely, a potent human carcinogen such as bis chloromethyl ether would also carry the identical warning phrase 'may cause cancer'. The risk from relatively trivial exposures to such substances is considerable and stringent controls are necessary to protect potentially

exposed persons.

How can we ensure, given the current labelling requirements, that those hazards which present real risks are properly identified? As it will take some time for labelling requirements to evolve and as some inconsistencies may never be eliminated, it is essential to educate the user to look at both the nature of the hazard and the likely exposure, ie to make an individual assessment of the risk. A clearer understanding of the concepts of hazard and risk should lead to a more appropriate choice of control.

The two basic questions 'What can happen?' (ie what is the hazard?) and 'What is the chance of harm?' (ie what is the risk?) need to be reinforced by a vigorous 'So what?'

It is clearly necessary to recognise that the label tells only part of the story. Its primary purpose is to warn, to alert the user to the threat. Labelling information must be supplemented by the Hazard Data Sheet, proper interpretation of which should lead the user towards control measures appropriate to the particular circumstances of use.

In this way, we may yet see a realistic application of resources to provide controls where they are really needed. Let us hope we are not too late. ■

Twin-dredge for pipeline deburial

Genflo has developed a large capacity dredge with twin suction heads for dredging over long distances during pipeline deburial and trenching.

The company has built the dredge into a sled-type skid, 4 metres wide by 5.5 metres long, fitted with buoyancy tanks. It is dragged along the seabed, the two heads astride the pipeline.

Each 10 in diameter head can handle large quantities of seabed materials, including mud, small boulders or riprap, at rates of 60 to 100 cu.m/hr. The materials can be discharged up to

100 metres away from the worksite. Once in position, the skid can be dragged along the pipeline by tugger winches, all dredging operated entirely from the surface vessel.

The skid's rigid tubular frame also incorporates the dredge's high pressure manifolds, reverse flush valves and has side-bolted inspection hatches which, in the event of blockages, enables operators to inspect the central jet pump.

The dredge, sled and tanks can be assembled on board the work vessel.

Containerised bottom loading gantry

Hydrolec 'Flex-Load' bottom loading facility has been designed to meet the requirements of current petroleum road loading terminals. Using a containerised design concept the 'Flex-Load' is ideal for installation as either a modification or extension to existing loading facilities.

All the required equipment is built into the containers off-site to ease on-site installation. All forms of equipment currently used can be incorporated and installed within the unit, and it is also possible to mount existing equipment with the 'Flex-Load' if required.

A variety of arm configurations are available up to a maximum of six, and as the 'Flex-Load' is containerised, all maintenance can be carried out without having to consider weather conditions. Adaptability is another major feature of this facility, and the full range additive can also be provided by the use of the Hydrolec stackable 'multi-pulse' system which can be incorporated within the Flex-Load unit.

Statoil selects UOP technology for MTBE complex

Statoil has selected UOP to license all the process technology for a world-scale MTBE complex to produce 500,000 metric tons per year of MTBE from butanes derived from the North Sea. The complex, to be built at the gas terminal at Kaarstoe will start production in spring 1995 and will be the first world-scale MTBE plant in Europe.

The UOP technology selected by Statoil includes the Butamer process (for butane isomerisation), the Oleflex process (for isobutane dehydrogenation), the Ethermax process (for MTBE synthesis), the ORU process (for oxygenates removal), and the Huels Complete Saturation process.

Contact List

Bentley Filters	0453-765855
Dräger	0670-352891
Robbins & Myers	0703-650610
Sabre	0252-344141



P&O Roadtanks has specified Drum AD800 computer controlled delivery systems on four new vehicles which recently entered service for Phillips Petroleum Products Ltd.

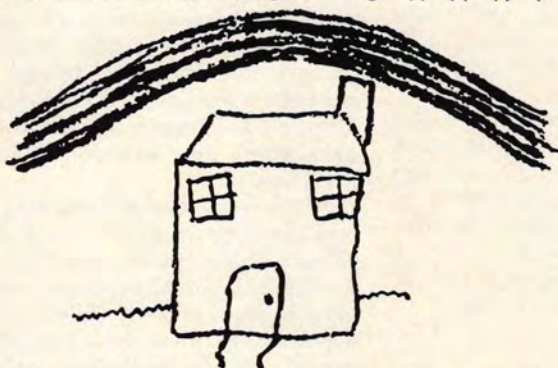
'We have worked closely with Phillips Petroleum in order to match this equipment to their exact requirements and we are confident that this new discharge technology will play an important role in maintaining a first class delivery service for their customers,' said David Mills, commercial manager for P&O Roadtanks.

'Product data is pre-programmed into the computer memory which is located in the cab of the vehicle,' explained David Mills. 'On arrival at the delivery point the driver simply taps in the product codes and the quantity required'.

'Once discharge commences information such as flow rate is fed back to the computer which automatically adjusts the pump speed where necessary in order to deliver the product safely yet with maximum efficiency. The fitting of a pneumatically interlocked manifold system will also reduce the risk of spillage when changing between compartments.'

Rainbow Trust

C H I L D R E N S C H A R I T Y



Family centred care for children with
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R — Cares for terminally ill children
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A — Provides a mobile care team who
stay at the homes and strive to
maintain the family unit with
practical and emotional support.
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families with a full team of carers
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T — The Rainbow Trust
R — Surrey House, 31 Church Street,
U — Leatherhead, Surrey KT22 8EF
S — Tel: 0372 363438
T



THE INSTITUTE OF PETROLEUM

BACKGROUND AND INTRODUCTORY COURSES

INTRODUCTION TO OIL INDUSTRY OPERATIONS

WEDNESDAY 24 JUNE to FRIDAY 26 JUNE 1992

This course is designed as a general introduction to the upstream and downstream activities of the oil industry and may be particularly valuable to companies who do not hold their own in-house induction courses covering these subjects. It is likely to be appropriate for:

Participants from within the oil industry whose experience is limited to one function of the industry and who require a wider perspective of the industry's activities.

Participants from financial institutions, government, other energy industries and the supply and service industries who require to obtain an informed and concise 'bird's eye view' of the oil industry.

Topics to be covered during the three days will include:

Changing Perspectives in the International Oil Industry
Basic Concepts of Drilling
Petroleum Production
Supply
Refining

Petrochemicals
Research Activities in the Oil Industry
Introduction to Marketing and Distribution
The Retail Market

This is a self-contained course but is followed by:

INTRODUCTION TO PETROLEUM ECONOMICS

MONDAY 29 JUNE to WEDNESDAY 1 JULY 1992

This course is designed as a general introduction to the economics of the oil industry and may be particularly valuable to companies who do not hold their own in-house induction courses covering this subject. It is likely to be appropriate for:

Participants from within the oil industry whose experience is limited to one function of the industry and who require a broader perspective of the economic factors affecting the industry.

Participants from financial institutions, government, other energy industries and the supply and service industries who require to obtain an informed and concise introduction to the economic and commercial background to the industry.

For copies of the registration forms for both courses which will be available shortly, please contact Caroline Little, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR, UK. Telephone: 071-636 1004. Telex: 264380. Fax: 071-255 1472.



Mr Orval Brannan, above, has been appointed Corporate Vice President of Western Atlas, Litton's Houston-based oilfield services subsidiary, and President of Western Geophysical, a division of Western Atlas. Mr Brannan succeeds **Mr Neal Cramer** who has retired.

The offshore engineering consultancy Intec-Gibb, the joint-venture established last year by Sir Alexander Gibb and Partners Ltd and Intec Engineering of the United States, has started UK operations with the appointment of **Mr Stan Derby** as Director, Marine Systems.

Mr RJ Criswell, below, has been appointed Managing Director of Amoco (UK) Exploration Company. He succeeds **Mr Charles Carr Jr**, who is retiring. Mr Criswell has held the post of Deputy Managing Director of the UK company since March 1991. Previously he was Vice President, planning and administration, for Amoco Production Company in Chicago.



Petroleum Review March 1992

A reorganisation of upstream management at Texaco Ltd will see all the company's drilling and production operations concentrating in Aberdeen. The reorganisation will see Production Operations General Manager **Mr Jim Rowalt** relocate to Aberdeen and **Mr Howard Brain** appointed Drilling Services General Manager. The three other upstream general managers will be based in London — **Mr Don Bennett**, General Manager Asset Development, **Mr Simon Cheifetz**, General Manager of Strategic Business Analysis and **Mr Donnie Macdonald**, General Manager, Exploration Opportunities. Former Aberdeen District Manager, **Mr Chris Sherwood**, takes on the role of Transition Team Manager and will oversee the change-over period before taking up a new management assignment in Texaco.

Nabor Industries Inc have appointed **Mr Larry Heidt** as the President designate of Nabors' North Sea subsidiary, Loffland Nabors UK Ltd. Mr Heidt will be replacing **Mr William Windsor** who will be retiring shortly after 35 years with the company. Prior to joining Loffland Nabors, Mr Heidt had been Executive Vice President of Noble Drilling Corporation.

Sceptre Resources Limited has announced the appointment of **Mr Grant Billing** as President and Chief Executive of the company. Mr Billing was formerly Executive Vice President and Chief Operating Officer of North Canadian Oils Limited.

Engineering and technology firm, Zentech International Limited, has appointed **Mr Derek Levey** as Principal Consultant. His main roles will be as project manager and to promote the company's products and services to particularly the offshore market.

Mr Andrew Bogle, previously Strategic Planning Manager with Cookson Group Plc, has been appointed Head of Gas Supply/Demand Management in British Gas reporting to the Director of Strategic Planning.

Calder Limited, the manufacturers of high pressure pumping equipment have appointed **Mr Michael Whittingham** as Sales Chief with responsibility for industrial products.

Mr CAJ Herkstroter has been appointed President of Royal Dutch Petroleum Company. He succeeds **Mr LC van Wachem** who is retiring. **Mr MA van den Bergh** will take over as Managing Director of the company from Mr Herkstroter.

Shell Expro Managing Director **Dr Chris Fay** has been elected 1992 President of the UK Offshore Operators' Association. **Mr David Harding**, former Head of BP Exploration's north-west European operation, was elected to the post in December, but had to step down on being put in charge of the company's Colombian interests shortly afterwards.

Mr Alan Wegener has joined the Society of Petroleum Engineers as Exhibits Event Manager. Mr Wegener will be responsible for the management of SPE's Offshore Technology Conference in May in addition to similar responsibilities for a number of other SPE meetings.

Chem Systems Limited has appointed **Mr John Philpot** as Managing Director. He takes over from **Mr Alan Plaistowe** who established the European operation in 1966 and will remain Chairman of Chem Systems Limited. Chem Systems have also elected the following Principals to the firm: **Mr Robert Bryant**, Chem Systems Ltd (London), **Mr Joseph Coote**, Chem Systems Inc. (New York), **Mr Terry le Roux**, Chem Systems East Asia Ltd. (Bangkok) and **Mr Yukio Murakami**, Chem Systems Japan Ltd (Tokyo).

Amendola Engineering of Birmingham has launched a new Special Projects Division. The new division is aimed at meeting the firefighting equipment needs of large contractors for refinery, offshore and specialised industrial applications. The Special Projects Division will be headed by Commercial Manager, **Mr Steve Ferreday**.

Mr Emery Farkas, Vice President of the Construction Products Division of WR Grace and Company, has been elected to a one-year term as Chairman of the American Society for Testing and Materials.

Correction: **Professor Thomas Wälde** was appointed Executive Director and Professor of Petroleum, Mineral and International Investment Law at the University of Dundee's Centre for Petroleum and Mineral Law and Policy.



Mr Richard Dawe, above, a Fellow of the Institute of Petroleum, has recently been promoted to Reader in Reservoir Physics in the Department of Mineral Resources Engineering, Imperial College. Previously he was Senior Lecturer in Petroleum Engineering.

Mr Stuart Bottomley has joined the Board of Richmond Oil and Gas Plc as a Non-Executive Director. The company has also appointed **Mr P Smittle** as Chief Financial Officer. Mr Smittle has over 18 years experience in the financial management of oil and gas companies.

Brisco Engineering Ltd has appointed **Mr Peter Smith**, below, as Managing Director of its Great Yarmouth and Aberdeen operations. Mr Smith is a mechanical engineer and sales and marketing specialist, and has extensive senior management experience both in the United Kingdom and mainland Europe. He succeeds **Mr Barrie Heywood**, who reverts to the role of Chairman in the new organisation.



FORTHCOMING EVENTS

March

9th-13th

Edinburgh: Course on 'Production Logging'. Details: Tom Inglis, Centre for Continuing Education, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS. Tel: (031) 451 3014. Fax: (031) 451 3005.

10th

London: Conference on 'What's New in Lube Oils'. Details: Miss Caroline Little, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel: (071) 636 1004. Fax: (071) 255 1472

12th

London: 'Gaspower 92 — Plugging into the future'. Details: Overview Conferences, 82 Rivington Street, London, EC2A 3AY. Tel: (071) 613 0087. Tel: (071) 613 0094.

12th-13th

London: Conference on 'Achieving Maximum Topside Safety through Design and Modification'. Details: IIR Ltd, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

16th-20th

Oxford: Course on 'Introduction to Oilfield Exploration and Production'. Details: The College of Petroleum and Energy Studies, Sun Alliance House, New Inn Hall Street, Oxford OX1 2QD. Tel: (0865) 250521. Fax: (0865) 791474.

17th-19th

Chislehurst: Course on 'Safety of Electrical Equipment in Potentially Explosive Atmospheres'. Details: Sira Communications Limited,

South Hill, Chislehurst, Kent BR7 5EH. Tel: (081) 467 2636. Fax: (081) 467 7258.

19th-20th

Aberdeen: Course on 'North Sea Risk Analysis'. Details: DCA Consultants Ltd, Haughend Farm, By Dunning, Perthshire PH2 9BX. Tel: (0764) 846664. Fax: (0764) 846665.

19th-20th

Harrogate: 'Blastclean 92'. Details: Katie Lye, IBC Technical Services Ltd, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 631 3214.

20th

Dundee: Seminar on 'UK Offshore Safety Law'. Details: Mrs Moira McKinlay, Centre for Petroleum and Mineral Law and Policy, The University of Dundee, Dundee DD1 4HN. Tel: (0382) 23181. Fax: (0382) 22578.

23rd-24th

Aberdeen: Conference on 'Achieving Total Quality Offshore'. Details: IIR Ltd, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

23rd-24th

Amsterdam, The Netherlands: Conference on 'Maintenance of Storage Tanks'. Details: Institute for International Research, World Trade Center, Strawinskyaan 331, 1077 XX Amsterdam. Tel: (020) 6756366. Fax: (020) 6756441.

23rd-26th

Amsterdam, The Netherlands: Course on 'Fundamentals of Applied Process Engineering'. Details: The Center for Professional Advancement, Box H, East Brunswick, New Jersey 08816-0257. Tel: (908)

238 1600. Fax: (908) 238 9113.

24th-26th

Coventry: Conference co-sponsored by the IP on 'Pipeline Systems'. Details: Mr David Crow, BHR Group Limited, Cranfield, Bedford. Tel: (0234) 750422. Fax: (0234) 750074.

24th-27th

Montrose: 'Offshore Basic Fire Course'. Details: Course Booking Unit, Offshore Fire Training Centre Ltd, Forties Road, Montrose, Angus DD10 9ET. Tel: (0674) 72230. Fax: (0674) 77335.

26th

London: Mr Robert Horton, Chairman of British Petroleum Plc will speak at a meeting of the British Institute of Energy Economics. Details: Mrs M Scanlan, BIEE, 37 Woodville Gardens, Ealing, London W5 2LL. Tel: (081) 997 3707. Fax: (081) 566 7674.

26th-27th

Solihull: Petroleum Training Federation conference on 'Implications of New Regulations'. Details: Petroleum Training Federation, Room 326, 162-168 Regent Street, London W1R 5TB. Tel: (071) 439 2632. Fax: (071) 287 5483.

26th-27th

London: Conference on 'Redefining International Standards and Practices'. Details: IIR Ltd, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

29th-1st April

London: '4th Conference on Petroleum Geology of NW Europe'. Details: Conference Associates and Services Ltd, Congress House, 55 New Cavendish

Street, London W1M 7RE. Tel (071) 486 0531. Fax: (071) 935 7559.

30th-3rd April

Oxford: Course on 'Government and the Oil Industry: Relationships and Regulations'. Details: The College of Petroleum and Energy Studies, Sun Alliance House, New Inn Hall Street, Oxford OX1 2QD. Tel: (0865) 250521. Fax: (0865) 791474.

31st-1st April

Milan, Italy: 'The Third European and Middle Eastern Pipeline Rehabilitation Seminar'. Details: Susan Carradice, Pipeline Integrity Management, The Pipeline Centre, Farrington Road, Rossendale Road Industrial Estate, Burnley, Lancashire BB11 5SW. Tel: (0282) 415323. Fax: (0282) 415326.

April

1st-2nd

London: Conference on 'Integrated Pollution Control — The Lessons Learnt'. Details: Amanda Wright, IBC Technical Services Ltd, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD. Tel: (071) 637 4393. Fax: (071) 631 3214.

1st-3rd

Strasbourg, France: Conference on 'The Rational Use of Energy and the Environmental Benefits'. Details: Conference Office, Watt Committee on Energy, Savoy Hill House, Savoy Hill, London WC2R 0BU. Tel: (071) 379 6875. Fax: (071) 497 9315.

6th

London: Conference on 'Risk Assessment of Major Accidents to the Environment'. Details: IBC Technical Services Ltd, Gilmoora House, 57-61

FORTHCOMING EVENTS

Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 631 3214.

6th-7th

Tokyo: 'Pacific Insiders — Headquarters Management Briefings'. Top level intensive management strategies conference. Details: Jean Etherton, Summerhill, Little Common, Stanmore, Middlesex HA7 3SZ. Tel: (081) 954 7302. Fax: (081) 954 1703.

6th-10th

Leeds: Short Course on 'Diesel Particulates'. Details: Sheila Speedy, Department of Continuing Professional Education, Continuing Education Building, Springfield Mount, Leeds LS2 9NG. Tel: (0532) 333226. Fax: (0532) 333240.

7th

Bromley: Conference on 'New Technology for Environmental Gas Monitoring'. Details: Sira Communications Limited, South Hill, Chislehurst, Kent BR7 5EH. Tel: (081) 467 2636. Fax: (081) 467 7258.

7th-8th

London: Conference on 'Energy Prospects: Post-Soviet Republics and Eastern Europe'. Details: Mary Hogan, Conference Coordinator, PlanEcon Inc, 1111 Fourteenth Street, NW Suite 801, Washington, DC 20005, USA. Tel: (202) 898 0471. Fax: (202) 898 0445.

7th-10th

Exeter: Course on 'Cleaner Production and Waste Minimisation'. Details: Debbie Hockham, The Institution of Chemical Engineers, Davis Building, 165 Railway Terrace, Rugby CV21 2HQ. Tel: (0780) 578214.

7th-10th

Lagos, Nigeria: 'First Exhibition for Oil, Gas and

Petroleum'. Details: Carolyn Anderson, Project Manager, Glahe International Group Ltd, Woodcroft, Bures Hamlet, Suffolk CO8 5DU. Tel: (0787) 228086. Fax: (0787) 228164.

9th-10th

London: Course on 'Refinery Loss Control'. Details: Natalie Cox, IBC Technical Services Ltd, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 631 3214.

12th

Moreton-in-Marsh: Course on 'Chemsafe Transport Emergency Response'. Details: Ron Cameron, Marketing Manager, The Fire Service College, Moreton-in-Marsh, Gloucestershire GL56 0RH. Tel: (0608) 52156. Fax: (0608) 51788.

13th-14th

London: 'Pacific Petroleum Insiders — Headquarters Management Briefings'. Top level intensive management studies conference. Details: Jean Etherton, Summerhill, Little Common, Stanmore, Middlesex HA7 3SZ. Tel: (081) 954 7302. Fax: (081) 954 1703.

13th-17th

Edinburgh: Course on 'Reservoir Modelling'. Details: Tom Inglis, Centre for Continuing Education, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS. Tel: (031) 451 3014. Fax: (031) 451 3005.

15th

Warley: Course on 'Safety in the Petroleum Retailing Environment — Managing Safety'. Details: The Practice Administrator, QST, 5 St Andrew Street, Hertford SG14 1HZ. Tel: (0992) 501440. Fax: (0992) 500354.

22nd

Leicester: 'Workshop 92 —

Environmental Audits/ Impact Assessments'. Details: Neil Allen, Flexible Learning Systems, Leicester Polytechnic (Technology) Ltd, Eric Wood Building, Gateway Street, Leicester LE2 7DP. Tel: (0533) 577660.

27th-29th

Southampton: 'Oil Spill Familiarisation Course'. Details: The Oil Spill Service Centre, Lower William Street, Northam, Southampton, Hampshire. Tel: (0703) 331551. Fax: (0703) 331972.

28th

Dubai: 'Britain in the Gulf 92'. Details: International Conferences and Exhibitions Ltd, 51-53 High Street, Kings Langley, Herts WD4 9HU. Tel: (0923) 261988. Fax: (0923) 261669.

28th-29th

London: Conference on 'Oil and Gas Economics, Finance and Management'. Details: Society of Petroleum Engineers, 4 Mandeville Place, London W1M 5LA. Tel: (071) 487 4250. Fax: (071) 487 4229.

28th-30th

Birmingham: 'Control and Instrumentation 92'. Details: MGB Exhibitions Ltd, Marlowe House, 109 Station Road, Sidcup, Kent DA15 7ET. Tel: (081) 302 8585. Fax: (081) 302 7205.

29th-30th

London: Conference, co-sponsored by the IP, on 'Subsea Control and Data Acquisition'. Details: Institute of Measurement and Control, 87 Gower Street, London WC1E 6AA. Tel: (071) 387 4949. Fax: (071) 388 8431.



4th Conference on Petroleum Geology of NW Europe

will be held at the Barbican Centre, London

29 March to 1 April 1992

A one-day Registration Fee of £195.00 (inc VAT) has been introduced which will include:

- Attendance at the Technical Sessions on one day
- Entry to the Trade and Technical Exhibition
- Conference Documentation
- Lunch
- Coffee and tea
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LONDON W1M 7RE

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Fax: 071-935 7559

**One Day and Three Day
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Senior Technical Officer

The United Kingdom Petroleum Industry Association is seeking a Senior Technical Officer to assist the Directors in their technical, administrative and representational work vis-à-vis the Government, other industries, the media and the public.

UKPTA is a Trade Association representing major oil companies operating in the downstream sector in the UK. It is active across the whole oil downstream, including manufacturing, supply and distribution, product quality, environment, health and safety and statistics. There are close links with the European PIA and sister organisations elsewhere in Europe.

The successful candidate will be a graduate, most probably in a technical discipline or economics, and will have a minimum of five years' experience in the downstream oil industry, preferably more and preferably in a variety of roles. He or she will be a good communicator, possess proven analytic skills and good familiarity with PCs.

Remuneration will be negotiable in the range of £25,000-£30,000 p.a. depending on experience.

Applications should be addressed to

**Box M.C.R. Petroleum Review, The Institute of Petroleum,
61 New Cavendish Street, London W1M 8AR.**

EXPLORATION AND PRODUCTION DISCUSSION GROUP

The next meeting of the E&P Discussion Group will be held at the Institute on **Thursday, 19 March 1992** starting at 5.30 pm. (Tea and biscuits will be available from 5.00 pm.)

The technology and project financing of a co-generation – gas/electricity power station

Speakers **Mr R Stone**, Finance Director and **Mr E Ratcliffe**, Site Technical Director, Lakeland Power Ltd

If you would like to attend this meeting please contact **Mr A E Lodge**, Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel: 071-636 1004.

ENVIRONMENT DISCUSSION GROUP

The next meeting of the Environment Discussion Group will be held at the Institute on **Tuesday, 24 March 1992** starting at 5.30 pm. (Tea and biscuits will be available from 5.00 pm.)

Atmospheric emissions from Norwegian E&P activities. The OLF environmental programme – operational and taxation aspects

Speaker: **Mr Peter J Tronslin**, Director
The Norwegian Oil Industry Association (OLF)

If you would like to attend this meeting please contact **Mr A E Lodge**, Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel: 071-636 1004.

INSTITUTE OF PETROLEUM – LONDON BRANCH

The next meeting of the London Branch will be on
Tuesday, 10 March 1992

at the Royal School of Mines, Imperial College,
at 17.30 hours.

The speaker will be Professor Donald Swift-Hook.
His talk is entitled:

'RENEWABLE ENERGY'

The first part of the talk will be a broad review of the various renewable energies currently being developed. In the second part of the talk, wind power will be considered in greater detail.

The meeting is preceded by tea and biscuits at 17.00 hours and will be followed by light refreshments.

GASOLINE *The Contract* **JANUARY 27th** *The Launch* **TRADING** *The Opportunity*



The International Petroleum Exchange of London launched its new unleaded gasoline futures contract on Monday 27th January. The contract has been researched and designed through close consultation with the industry to create a market where producers, traders and users worldwide will benefit from transparent pricing for the future delivery of unleaded gasoline in Europe.

In Europe, refinery production of gasoline typically constitutes around one third of total output. The importance of gasoline to the oil industry is exceeded only by its significance to the industrialized world. The new market place for gasoline futures will offer the flexibility to trade small lots, unprecedented price transparency and will ensure performance as the London Clearing House guarantees every trade.

The contract will offer users the opportunity to make or take delivery of unleaded premium gasoline in Amsterdam, Rotterdam and Antwerp during the second half of the delivery month. The basis of the IPE contract broadly reflects the German DIN specification for premium unleaded gasoline, making it applicable to the wider European market place.

For further details of the contract, please contact Alban Brindle at the IPE.

The following members have undertaken to support IPE's unleaded gasoline futures contract as designated brokers. In this capacity they will man the trading pit and provide the following contacts:

Cargill Investor Services Ltd	(0) 71 283 0596	contact Andrew Cross
Credit Lyonnais Rouse Ltd	(0) 71 638 0312	contact Tony Machacek
Dean Witter Futures Ltd	(0) 71 480 8500	contact Mark Seccombe
GNI Ltd	(0) 71 403 1194	contact Charles Austen
Refco Overseas Ltd	(0) 71 488 3232	contact David Fawn
Lehman Brothers Ltd	(0) 71 601 0011	contact Wayne Piasio
Trafalgar Commodities Ltd	(0) 71 283 6402	contact Robert Cole



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The International Petroleum Exchange of London Limited
International House, 1 St Katharine's Way, London E1 9UN England
Telephone (0) 71 481 0643 Facsimile (0) 71 481 8485

11 West 42nd Street, New York, NY 10036 USA
Telephone: 212 764 1748 Facsimile: 212 921 1298

The IPE is a recognised Investment Exchange under the UK Financial Services Act and its contracts are cleared and guaranteed by the London Clearing House.



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14 acres fully serviced and hard covered with a range of portakabin, office / mess rooms.

STORAGE AREAS

750m sq covered areas devoted to storage and control of materials in addition to open storage areas as required.

MOBILE EQUIPMENT

Mobile cranes, fork lift trucks, sideloaders, heavy duty transporters and lorries.
Comprehensive range of welding equipment.

PAINTING

Paint bay located in construction yard
36m x 14.5m x 10m high.

OFFICE ACCOMMODATION

Client office facilities of the highest standard.

PLANNING

Computer network for contract planning, production progress control and reporting.
Quality Assurance Support.

DOCK ACCESS

A new private route is being constructed between the construction yard and Immingham Dock enabling S.H.E.F.S. to transport modules up to 2000 tonnes direct to the quayside some 1 kilometre away.

South Humberside Engineering and Fabrication Services Limited, the Immingham based engineering company, has been awarded the BS. 5750 Part 2 and ISO 9002 Quality Assurance Certificate of Approval.

S.H.E.F.S. Quality Management System is applicable to prefabrication, assembly and Project Management of structural steelwork and piping for process plant applications, general machining and assembly to customer specification.

This international recognition of Quality is the culmination of many years work in improving the companies working practices and procedures, and follows an in depth audit by Lloyds Register of Quality Assurance, in December 1991.

S.H.E.F.S. compete in the international market for contracts in the oil, gas and petro-chemical industries where the clients demand the assurance that the standards and quality of work specified are achieved. S.H.E.F.S. range of work include modular units, pipe racks, cryogenic cold boxes, pressure vessels to BS. 5500 and ASME VIII, steelwork and pipework fabrication, supported by in house machining facilities.

South Humberside Engineering and Fabrication Services Limited

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