JULY 1993

The Institute of Petroleum

PETROLEUM REVIEW

Gas

Mid East gas targets markets in China, India and Pakistan

Indonesia's gas potential

China

With retailing foothold, Shell plans to move into refining

Papua New Guinea

Success after success

Downstream

Update on the role of logistics

Precision Tank Testing

that doesn't drain your resources or your tank

Tanknology precision-tests fuel tanks using advanced technology which does not involve over filling, draining or water filling the tank. This revolution in tank testing is available only through PM Services.

- Fully BASEEFA approved, HSE recognised and independently assessed by ERA Technology Ltd
- Normal testing at around 50% of tank contents
- Rapid, accurate VacuTect testing with minimal site disruption and maximum safety
- 100% tank shell tested, including vent line
- Non-volumetric and unaffected by temperature or vapour pockets
- Over 2000 tanks & installations tested in the UK, nationwide
- Specially trained & qualified operators
- Immediate & positive test result advice
- Full test documentation & reporting

PM Services

A S&C Company

TANKNOLOGY®
TECHNOLOGY FOR TANKS AND THEIR ENVIRONMENT

PM Precision Testing Services,
Westfield Road, Slyfield Industrial Estate, Slyfield Green, Guildford, Surrey GU1 1RR
Tel: (0483) 440211 Fax: (0483) 451891

PETROLEUM REVIEW

July 1993 Volume 47 Number 558 £6.00

Subscription (inland) £65.00 (overseas) £80.00

PUBLISHERS

Published Monthly by

INSTITUTE OF PETROLEUM
A charitable company limited by guarantee

Director General: *Ian Ward*

Membership Services Director: *Roger Sparrow*

61 New Cavendish Street,
London W1M 8AR
Telephone: 071-636 1004. Telex: 264380
Fax: 071-255 1472
For details of membership, including Petroleum Review at no extra cost, please apply to the Membership Department.

Printed by Eyre & Spottiswoode Ltd, London and Margate.

US MAIL: Petroleum Review (ISSN 0020-3076 USPS 006997) is published monthly for US$160 per year. Second class postage paid at Middlesex, New Jersey.
Postmaster: send address changes to C&C Mailers International, PO Box 177, Middlesex, New Jersey 08846, USA.

ABC AUDIT BUREAU OF CIRCULATIONS BUSINESS PRESS

ISSN 0020-3076
MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

Contents

Cover photo – Near Port Moresby, PNG. Photograph by John Waddingham

. . . news in brief

12 May

Sun Oil Britain has agreed a deal to sell its interest in 10 UK North Sea blocks to Amoco (UK) Exploration.

13 May

Saudi Arabia has started work on a huge underground oil storage network, costing up to $6 billion, to serve as a strategic war reserve.

The Russian government has announced the second tender in two years inviting foreign companies to develop offshore oil and gas fields on the continental shelf of the far eastern island of Sakhalin.

Norway announced sweeping reforms to gas policy designed to give foreign oil companies greater influence over their natural gas reserves and to facilitate more efficient gas resource management.

14 May

Austrian Energy company OMV has taken a 50 percent stake in block 10b in the Hadramaut region of Yemen.

15 May

US oil company Phillips Petroleum began production from the Embla field in the Norwegian sector of the North Sea after a five month delay largely due to well completion problems.

Officials overseeing the $900m *Exxon Valdez* oil spill civil settlement voted to spend $38.7m of it to buy and preserve 42,000 acres of coastal Alaska land around Afognak Island's Seal Bay.

Petrofina is to cut further jobs across all sectors and sell BF10bn of assets in an effort to improve profitability.

18 May

Conoco has signed a preliminary agreement with Malaysia's Petronas to build a sour crude refinery in Malaysia.

19 May

First oil began to flow from British Petroleum's £1.5bn Bruce field development 340 km north-east of Aberdeen.

21 May

Iraq claims it will be capable of pumping 3.25 million barrels of crude a day within six months of the UN ban being lifted, although there is no sign of this happening.

Premier Oilfields has acquired exploration rights over 82,000 square kilometres in three provinces of south west China.

Agip has completed a swap of North Sea interests with British Gas as part of a joint rationalisation of UK asset bases. Agip has acquired a 6.77 percent stake in blocks 23/22a, 30/3a and 22/25a covered by licence P111.

China will have to import large quantities of heavy crude oil this year because of an acute domestic shortage according to reports in the *Economic Daily News*.

24 May

Egyptian General Petroleum Corporation said it would spend $22m and sink five wells in the Belayim area of the Gulf of Suez over seven years.

A Japanese consortium, including Mitsubishi, Mitsui and Toyo Engineering, has been awarded a contract to build a 3m tonnes a year oil refinery for India's Mangalore Refinery Petrochemicals.

Repsol confirmed that an explosion at its Bilbao refinery will cost it Ptas1bn in lost output and repairs.

25 May

US oil company Triton Energy has released the results of drilling on the Cusiana and Cupiagua fields in Colombia – Cusiana-3 flowed at 2,590 bpd and 3m cu ft of gas while Buenos Aires-2 flowed at 3,590 bpd and 4.4m cu ft of gas. On the Cupiagua field, Cupiagua-1 confirmed three hydrocarbon zones that flowed at a total of 7,215 bpd and also tested at 19.2m cu ft of gas per day.

26 May

The US government has released a $50m loan to develop four oilfields in Russia's autonomous Nenet region, above the Arctic circle. The loan is to Polar Lights, a partnership between Conoco Inc and the Russian firm Archangelskgeologia.

The Ecuadorian state oil company has reported an 'immense' find of oil in the Amazon jungle.

French oil group Total has concluded the purchase of BP's oil blending plant at Mulheim in the Ruhr.

The European Bank for Reconstruction and Development is to lend $174m to Russia for improving oil production in Western Siberia.

Methane gas, locked inside a council rubbish dump, is to be tapped and turned into electricity after planning permission was granted for a £3m conversion plant at Summerston on Glasgow's north side.

27 May

AOC International of Aberdeen has won a £60m contract to build a new gas processing terminal at Point of Ayr, North Wales for Hamilton Oil.

The High Court has ruled that British Coal can legally shut all ten mines on its original closure list.

British Petroleum has agreed to sell its consumer products division to a management buy-out for £250m.

29 May

Iraq is marking the 21st anniversary of oil nationalisation by opening a new 60km oil products pipeline from Baghdad to Dialah province.

South Africa's Sasol is to split its synthetic fuel and refining operations according to mineral and energy affairs minister George Bartlett.

The International Finance Corporation has approved $350 of debt financing for the construction of a $1.85bn oil refinery in Thailand, to be jointly undertaken by the Petroleum Authority of Thailand and US and Oman concerns.

31 May

South Africa's first venture to convert offshore gas into petrol, Mossgas, has exceeded production forecasts substantially by reaching over 95 percent of design capacity after the first three months of operation, instead of only the 50 percent predicted.

3 June

Kvaerner Process Systems has acquired the UK oil and gas energy company Paladon Engineering for £2.5m.

Britain's North Sea oil and gas firms have won exemption from the controversial EC working time directive which has been seen as a major threat to the offshore industry.

Taiwan's state-owned Chinese Petroleum Corp will cancel a $173m contract awarded to construction firm Brown and Root International over alleged corruption.

An estimated $15m of damage has been done to two oil storage tanks set ablaze at Soyo in Angola, which was captured by Unita rebels.

4 June

BP tanker *British Trent* collided with the bulk carrier *Western Winner* off the Belgian coast resulting in seven fatalities.

Northern Ireland Electricity has been offered for sale by the UK government with a price tag of £362m.

Three of Australia's leading mining companies, Western Mining Corporation, BHP Minerals and Normandy Poseidon, have lodged a proposal to build a A$400m gas pipeline to link Western Australia's gas fields with the state's mineral production centres.

At least six people died and eight were injured in a fire caused by an explosion at AGIP Petroli Mediterranea's refinery in Sicily.

Saudi merger creates new powerhouse

Saudi Arabia's two main oil companies, Samarec and Saudi Aramco, have merged to create the world's largest integrated oil company in the world.

Saudi Aramco is already the world's largest oil producer, currently exporting 8m b/d and with a production capacity of 9m b/d. However, the government is keen to expand its downstream outlets in Europe and Asia, and the addition of Samarec's refining and marketing power will make the new concern a major competitor for oil majors abroad.

Previously the seventh largest refining company in the world, with 1.23m b/d capacity, the merger brings Aramco up to third place, behind Exxon and Shell.

The merger will also help Saudi in its aim to expand its production capacity beyond 10m barrels a day.

The decision was announced by the government on 14 June. An official statement said that Samarec, never formally established by royal decree, had been dissolved and all its domestic refining and distribution facilities merged with Saudi Aramco. Mr Hisham Nazer, the Saudi Oil Minister, has made clear for some time his wish to streamline the industry. It marks a continuing trend amongst OPEC countries to merge their state-owned companies and create fully-integrated concerns.

Reasons cited by industry sources for the merger include Aramco's stronger capabilities in the areas of management, technical expertise and training and its greater access to financial resources.

Aramco will be taking over a workforce of 12,000 from Samarec, three domestically-orientated refineries with a total nameplate capacity of 400,000 b/d, a Kingdom-wide distribution network, and an export availability of some 380,000 b/d of refined products.

The merger is expected to take a year to complete and Samarec's sales contracts will continue to be honoured, the aim being to have 'minimum disruption to other ongoing business.' Two task forces have been set up to manage the merger, headed on the Aramco side by Mr Abd al-Aziz al-Hokail, Executive Vice President for Industrial Relations and Saudi Aramco Affairs. Oil Minister Mr Hisham Nazer will have overall supervision.

Spain connects with Norway

Enagas has completed its link with the European gas network, clearing the way for a regular supply of natural gas from Norway to Spain by October.

A 145km pipeline stretching from the mountain pass of Larrau in the Pyrenees to the Spanish network was completed ahead of schedule, according to the firm's chairman, Mr D Juan C Badosa. However, the official inauguration of the new supply line is due to take place in September by which time the part of the pipeline that crosses French territory will be complete.

Norway will supply Spain with 2,000m m3 a year of natural gas, representing one third of the Spanish market. However, this volume could be doubled without further investment. The Plan Energetico Nacional predicts that natural gas consumption in Spain will more than double by the year 2000 from its present level of 6,000 million m3 to 15,000 million m3.

Tanker collision inquiries underway

At least three separate UK inquiries have been launched to find out why the British Petroleum tanker, *British Trent,* collided with a Panamanian-registered cargo ship off the Belgian coast, with the loss of nine lives.

The crash, which took place despite sophisticated radar equipment on both vessels, left a gaping hole in the port bow of the *British Trent*, causing flames from the 24,000 tonnes of unleaded petrol on board to shoot 100 feet into the air. The cargo ship, *Western Winner*, was not seriously damaged.

The Marine Accident Investigation Board of the Department of Transport is carrying out an official inquiry on behalf of the Bermudan government, under whose flag the *British Trent* was sailing. Both BP and the merchant shipping officers' union, NUMAST, are conducting their own separate investigations.

BP was not prepared to comment on the collision, which took place near to the estuary of the River Shelde. However, the Captain of the *British Trent*, Mr Stanley Montague, said she had reduced speed almost to a stop prior to the crash in order to drop off the pilot. 'We had just commenced to manoeuvre to proceed towards the separation zone when the *Western Winner* struck us and scraped along the entire port side.'

Fourth Engineer, Ross Newing, claimed the crew spent 5-10 minutes trying to extinguish the fire before an order was given to abandon ship, and that this may have cost lives. A BP spokesman subsequently denied this allegation.

There were 12 British officers, 17 crew, five cadets and two wives on board the tanker. The pilot cutter, which had left the vessel minutes earlier turned back and managed to rescue seven of those on board. The remaining staff were forced to jump overboard after fire and smoke began to engulf the ship. The nine who died were burnt to death in the blazing sea around the vessel.

The official inquiry will focus on how a collision could have taken place in a well-monitored shipping lane and when both vessels had sophisticated radar equipment, capable of identifying a large ship with certainty at 15-16 miles. In particular, investigators will have to determine why the *Western Winner* appeared to have been proceeding despite the thick fog and the presence of the *British Trent.*

The collision, coming so soon after the *Braer* disaster, once again raises fears over the safety of ships sailing under 'flags of convenience.' Mr John Prescott, Labour's transport minister, has called for an immediate ban on flagging out any ship carrying hazardous cargo in British waters.

The British Trent shortly after collision

Offshore safety information on a disc

SE has launched an offshore information compact disc, designed to provide subscribers with a range of authoritative information on the industry.

Osh-Offshore uses CD-ROM technology to store the equivalent of 330,000 typewritten pages. Information includes all relevant offshore safety legislation, the full text of the Cullen Report, HSE offshore technology research reports, the Green Book, guidance and advice, and other HSE publications relevant to the industry.

Information is retrieved using a personal computer plus search and retrieval software, the only additional equipment required being a CD-ROM drive unit.

The CD will be regularly updated, initially at quarterly intervals, and a Windows version, including graphics, will be available early in 1994. The system runs on IBM-compatible personal computers with 640K of RAM and 2Mb of free hard disc space.

CATS on stream

Amoco's new 250-mile Central Area Transmission System (CATS) pipeline is now up and running and bringing gas to Enron Power's Teesside power station.

Gas from Everest, one of two fields which are to feed the pipeline, was first diverted into the CATs line on 9 May, while the first of Lomond's four wells was due to be perforated at the end of June. A spokesman for Amoco said a stable throughput of 300m cu ft of gas per day is expected by the end of July. However, the 1.2bn pipeline has the capacity to transport 1.4bn cu ft per day and is therefore available for third-party users.

Lukewarm response to tax changes

The government climb-down on tax relief has not gone far enough for many offshore firms and further concessions could follow.

Bowing to pressure from Conservative backbench MPs, Treasury Secretary Mr Stephen Dorrell announced he would be extending short-term help to companies worst affected by the withdrawal of tax relief on exploration and appraisal wells. Under new amendments tabled to the Finance Bill, he said, the £200 million transitional relief announced in the Budget will be easier to claim. Originally available only for contracts entered into before 16 March, this period has now been extended to the end of 1994.

However, by limiting the relief available to £10 million per company or group, the Treasury has ensured that no new money is actually available in the package.

The move will undoubtedly benefit the small British independents, but other companies are sceptical about whether the changes will have any real impact. A spokeswoman for Amerada Hess, one of the most outspoken critics of the March proposals, said the new amendments were merely a clarification of what had already been announced. 'It's a very, very small step, which will make no real difference whatsoever.'

Dialogue between the government and the oil companies is continuing, with many firms supporting the Watts Amendment. As IP went to press, the Amendment was being discussed in the House but was not expected to be voted in.

Tabled by Mr John Watts, the Conservative chair of the Treasury and Civil Service Committee, it demanded that the reductions in Petroleum Revenue Tax (PRT) be phased in over three years and tax relief be increased to £500m.

Meanwhile, BP's head of European exploration, Mr Chris Gibson-Smith, said the reforms are supported by companies representing 60 percent of UK oil production.

Licences offered for 110 blocks

The government has awarded 110 blocks in the latest offshore licensing round.

Announcing the results in the House, Energy Minister Mr Tim Eggar used the Awards to help play down the oil industry's reaction to the proposed tax changes. The number of applications was the highest for 20 years, he said. 'This provides ample evidence of the high level of continuing interest in UK offshore oil and gas resources.' However, he later admitted that applications for seven blocks had been withdrawn because of the Budget announcement.

A total of 97 applications were received for 128 of the 484 blocks on offer in the three stages of this 14th Round. 33 of the blocks had not been licensed in the past, particular interest being shown in the English Channel, the Solway Firth and the North Channel.

Mr Eggar stressed that environmental issues had been high on his priority list. 'The industry nominated a further 35 highly-sensitive blocks for inclusion in this round but for which satisfactory safeguards could not be agreed, and these blocks were not offered for licensing.'

Successful applicants include British Gas, securing a total of 17 Blocks, Chevron UK, winning its top two applications, and Marathon Oil, picking up two Blocks offshore in Teesside and North Wales.

Kuwaiti/OPEC split threatens oil prices

Kuwait is set to increase its oil production after refusing to sign an agreement with other Opec ministers in Geneva maintaining the current production ceiling of 23.6m barrels a day for the third quarter.

Kuwait's oil minister, Mr Ali Ahmed Al-Baghli, has announced that his country will gradually increase production from 1.6m barrels per day (bpd) to as much as 2.16 bpd by September, although he stressed that Kuwait is not looking to lower prices or flood the market.

The Opec deal represents an implied acceptance of quota excesses, despite the fact that vanishing seasonal swings mean the demand for crude oil this summer is unlikely to rise much.

The majority of delegates in Geneva had been willing to allow Kuwait 160,000 b/d more and leave the rate for all other countries unchanged. However, Iran refused to accept that Kuwait should be allowed special treatment. When Kuwait then rejected the proposed 10 percent increase anyway, Ministers gave up and opted for the rollover.

Oil prices slid back from $18/bbl in response to Kuwait's announcement, but the real effect has yet to be seen. The fact that both Saudi Arabia and Iran are keen to see firmer prices may help the market to stabilise.

European gas link plans unveiled

The seven companies involved in a major new £290m pipeline project which would link Britain with the Continental gas grid are now seeking expressions of interest from potential users.

The favoured option is for a 215km, 36 inch pipeline from Bacton, in Norfolk, to Zeebrugge with an export capacity of 15 bcm of gas per annum, equivalent to a third of Britain's current output. From Zeebrugge, gas could be delivered to other markets via the Belgian gas transmission system. The companies behind the launch are: British Gas, BP, Conoco, Elf, Norsk Hydro and Statoil, together with Distrigaz of Belgium, which joined the sponsor group in April. Pipeline capacity will be open to all potential users.

The driving force behind the plans is the substantial gap between European gas demand and supply which is expected to emerge over the next 20 years. Some estimates suggest that demand on the Continent could rise by more than 50 percent.

Market-testing will last until the end of September and a prospectus is available for interested parties. An Interconnector Study Group, set up last year to look at the feasibility of the project, is monitoring the response. The Chairman is Sir Geoffrey Chipperfield, former Permanent Secretary of the Energy Department. A spokesman for the Group said interest had already been shown in the project, but was not sufficiently strong enough as yet to confirm plans. However, the project received a boost from Energy Minister Mr Tim Eggar at the end of May, when he announced that the government was ready to open up negotiations with the Belgian government 'at the appropriate time'. He said he welcomed the private-sector initiative as 'an important step towards realising the gas trade opportunities this link will provide.'

The seven sponsors believe the link will provide additional investment opportunities in Britain through the acceleration of exploration and production activities in the UK Continental Shelf. European buyers will then be able to access a secure, relatively low-cost resource base. However, there has been some scepticism about the viability of the plan from industry sources, who believe Britain could not compete with Russia's cheaper gas supplies.

Ministers believe the pipeline, which would allow gas to travel in either direction, will keep prices down by allowing Britain access to gas from Continental Europe and Russia.

If sufficient support is gained, construction is expected to go ahead at the end of 1994 and gas could be flowing by October 1997.

Obituary

Robert (Robin) Adam, deputy chairman of General Accident and formerly of British Petroleum, died on May 27 at the age of 70. Joining BP as a young chartered accountant after the war, he soon developed a reputation for financial wizardry and 'thinking big'. During the 1960s and 1970s, he was involved in all major BP negotiations and acquisitions and played a leading role in the company's expansion in North America. In 1981 he was made deputy chairman, before moving to the property company MEPC and then to General Accident, where he became deputy chairman in 1987.

HM The Queen's Birthday Honours

Dr GJK Acres OBE, Director, Johnson Matthey
T Moore CBE, Chief Executive Officer, Conoco
J Ashcroft MBE, Stores and Transport Supervisor, NW region, British Gas
Capt J Campbell MBE, M Inst Pet, Environmental Health and Safety Superintendent, Texaco
KE Hart MBE, Chief Engineer, Shell Marine Personnel (IOM)
O Manning MBE, Human Resources Executive, Burmah Castrol Trading
PR Race MBE, Engineering Operations Manager, British Gas (Northern)
Mrs AL Seager MBE, senior safety adviser, Shell UK Exploration and Production and UKOOA safety committee

British lab opens on Black Sea

A British laboratory has been set up on the Black Sea in order to boost confidence in the petroleum sampling and analysis techniques used there.

Petrak Ltd, which specialises in the monitoring of crude oil loadings and discharges, has imported the laboratory into the port of Novorossiysk and it is now serving petroleum export points in Russia and the Ukraine.

Doubts over the quality of sampling in the northern ports of the Black Sea mean that trade is delayed for as much as five days while samples are drawn in Lavrion, Greece and then analysed in a local hospital. The *Docksider* laboratory has been set up to fill this market need and stop the delays. Petrak, a British company which recently opened offices in Russia, claims it has the support of all sectors of the Russian petroleum market.

Designed, built and commissioned in Britain, the laboratory's 'state of the art' equipment is said to be capable of handling full analyses of both fuel oil and gas.

The 'Docksider' laboratory on display in Trafalgar Square

The Royal Society of Arts provides an impressive backdrop to the 1927 Institution of Petroleum Technologists photocall. Forerunner to today's Institute, it had already attracted over 300 members.

Then and now – 80 years at the IP

By Susannah Cardy

When, in 1913, Sir Boverton Redwood, Bart, and Mr Arthur Eastlake set up the Institution of Petroleum Technologists in a spare corner of Eastlake's London offices, neither could have envisaged the ball they had set in motion.

This year marks the 80th birthday of the IP. Twenty-nine Founder Members have snowballed into 7,600 individual and more than 350 company members. Yet back in 1913 these two pioneers must have wondered whether oil resources would last beyond their own lifetimes. In 1910, a leading American petroleum geologist had predicted that the world would run dry of oil within the next 25 years.

At the inaugural meeting of the Institution on 5 March 1914, Sir Boverton Redwood, by then the elected President, declared that his aim was to 'establish a hall-mark of proficiency in connection with our profession. I think it will be conceded', he added, 'that this action has been taken none too soon'.

The outbreak of the First World War did little to dent the progress of this up-and-coming body. Unlike many other technical and scientific societies, which felt obliged to shut up shop in order to concentrate on the real task of 'winning the war', the vital role played by petroleum meant that the Institution had every reason to carry on 'business as usual'. Meetings continued to be held regularly, the biggest disruption being the air-raids which occasionally caused members to cut short meetings in favour of a drink at Simpsons in the Strand. The Institution attracted almost 100 new members during this time, bringing the total to 254 by the end of 1918.

The post-war years were to witness major changes in the oil industry; Britain had become 'oil-conscious'. The establishment of BP (then the Anglo-Persian Oil Company) marked the beginning of petroleum refining in Britain. In 1919, crude petroleum accounted for just 0.01 percent of all imported petroleum. By 1938, its share of the total had risen to 22 per cent. The Institution adapted accordingly, changing both its name and its membership.

Originally set up as an exclusive club for petroleum technologists, in 1938 its doors were opened up to all the diverse professions the industry by then required. 'A man who markets oil should be as skilled in his own line as any other technologist,' said the President responsible for these changes, Sir John Cadman. The Institution also became an Institute, reflecting a change of emphasis away from people and towards the industry itself.

The new Institute had barely found its feet when the Second World War intervened, forcing the offices out of London, the library into storage and a general lull in activities. But the post-war era brought with it renewed growth and yet more changes.

A crest and a motto were adopted. The crest depicts the Archaeopteryx, a prehistoric forerunner to the bird believed to have roamed the earth when material which later formed petroleum was being laid down. The motto, 'Strength in Unity', is symbolic of the aims of the IP. *Petroleum Review* was launched as the *Institute of Petroleum Review* in 1947.

By now the Institute had moved to 61 New Cavendish Street, a 'first-rate town house' in the West End designed not by the Adams brothers as many believe but almost certainly by the architect John Johnson. In 1962 individual membership stood at nearly 4,500, by which time there were also 227 member companies.

The next 30 years witnessed both a massive upsurge in oil demand, and a proliferation in the Institute's activities. Via its work on Codes of Practices and Standards and an enormous array of publications, the Institute has played a vital part in self-regulating the industry. Perhaps the key to its success has been its ever-present willingness to adapt. Just as the Council sat down in the 1930s to consider the future direction of the Institute, so it did again in 1992. The resulting mission statement 'to be the most respected independent European-based centre for the advancement of technical knowledge relating to the international oil and gas industry' should serve the Institute well into the 21st century. ■

Institute of Petroleum's Annual General Meeting

The IP Annual General Meeting took place on 15 June, with the President, Charles Smith, in the chair. He was very pleased to report that during 1992 the Institute had successfully formulated a new Mission, Objectives and Strategies. The IP's mission now was:

'To be the most respected independent European-based centre for the advancement of technical knowledge relating to the international oil and gas industry.'

After highlighting successful meetings held during the year, the President praised the Institute for providing a forum for the exchange of views. He hoped that the IP would now expand this role by increasing its involvement in helping the industry to address some of the commercial realities of its operations, in addition to its academic and technical role.

He thanked all those individuals and companies who had supported the work of the Institute in the past year, emphasising the need for commitment from the industry in both financial and human terms. He singled out for mention Geoff Crump, Leonard Rae and David Watts, retiring Members of Council, expressing his grateful appreciation of the contribution they had made.

Mr Smith was re-elected as President for the session 1993-94. Robin McLean was re-elected as Honorary Treasurer and Ian Fotheringham as Honorary Secretary.

Five nominations were put forward for five vacancies as Ordinary Members of Council. The election of four was approved – Messrs Philip Algar, Roger Colomb, James Hargreaves and Dennis Krahn. A fifth, Peter Barlow, was re-elected.

Geoff Cardinal was elected as Additional Member of Council for a term of three years.

The Report of Council was presented by IP Director General Ian Ward and then adopted.

The Accounts were adopted and Ernst & Young were re-appointed as auditors for the coming year.

The meeting also approved, as Special Business, resolutions to adopt a new Memorandum and Articles of Association and new By-Laws of

Charles Smith, IP President and Managing Director, Chevron UK

Ian Ward, IP Director General

the Institute.

The President explained that many members had felt that a review of the existing constitution of the Institute was desirable to bring it up to date and to simplify it. In particular it was thought desirable to make the Council more active in directing IP policy by moving authority 'downstream' where possible. Council would be encouraged to delegate whilst retaining responsibility and control.

Ted Williams, the former Director General of the IP who had been asked by Council to undertake the review, said that 35 years had elapsed since the last full review and that many of the proposed changes were necessary to bring the Institute into line with current practice and to reflect the current role of Honorary Officers and staff.

The principal changes proposed included:

- Three fewer elected Members of Council (there would, however, still be a majority of elected members on Council).
- Discontinuation of the office of Honorary Editor
- Changes in the provisions for President Elect to provide for greater flexibility and a shorter lead time
- A reduction to three in the number of sponsors required for nomination to Council
- Automatic resignation from Council for members absent from four consecutive meetings

Dr Charles Binns, who was Chief Medical officer for BP Oil UK, joined the IP Medical Committee and Advisory Committee on Health in 1979. He has been Chairman of the Epidemiological Study Steering Group and has guided this important study to the final report and presentation at the International Symposium on the Health Effects of Gasoline at Miami in 1991. Since then he has been involved in the development of the protocol for the new work and remains as an emeritus member of the Steering Group. He has been an active member of the IP health committees providing significant professional expert input into IP Codes over many years. Most recently he was involved with updating the new Code of Practice on Occupational Health which will be published later this year.

Mr Reg Clay is Manager of Esso Petroleum's Fawley refinery. He has been Chairman of the Southern Branch since 1985 and during this time has done much to encourage membership of the Institute both amongst local oil industry staff as well as service companies and other local organisations. The facilities made available by Esso for the operation of the Branch are due largely to his intervention. He was the inspiration behind the Southern Branch 'Schools Energy Project' which was well received in Hampshire schools and by the media in 1987. He also promoted the idea of an annual ball for the Southern Branch. Mr Clay has a degree in Chemical Engineering, is a chartered member of the Institution of Chemical Engineering and became a Fellow of the IP in 1975. He takes up a new appointment with Exxon in the United States later this year.

- Provision for Vice-Presidents to complete their three-year term of office even if their term on Council would otherwise have expired
- Provision for Council to set fees and subscriptions
- Clarification of the roles of Honorary Secretary and Director General, a position which had been created since the last revision to the Articles of Association
- Replacement of reference to 'student sections' by reference to 'special interest sections,' reflecting the Institute's success in recent years in developing several special interest discussion groups.

Mr Williams explained that the Charity Commissioners had indicated their approval in principle to the proposed changes and their formal consent would be sought when the resolutions had been approved by the meeting.

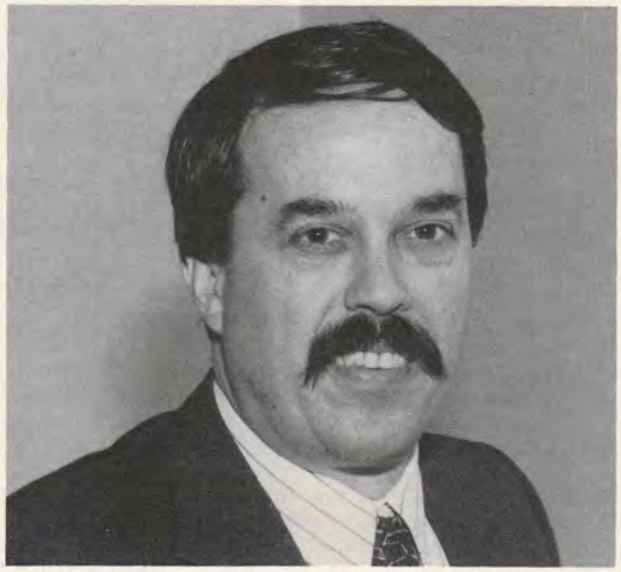
A copy of the new Memorandum, Articles and By-Laws has been placed in the Library of the Institute where it may be examined by members during Library opening hours.

At the close of the meeting, Awards of Council were presented to Dr Charles Binns and Messrs Reg Clay and Ieuan Thomas. Two other Awards of Council, to Dr David Corkhill (consultant and former Chairman and current Treasurer of the Aberdeen Branch) and to Dr Richard Green of BP Exploration Dyce and current Secretary of Aberdeen Branch, will be presented at another occasion in Aberdeen later in the year. ■

Mr Ieuan Thomas of BP Oil Llandarcy Refinery Ltd has given great and loyal service to the South Wales Branch ever since he was elected Secretary in April 1980, serving under six Branch chairmen. He was largely responsible for organising the Branch's lecture programme, annual golf tournaments, social events and visits to places of national or industrial interest. He proved to be an organiser par excellence. Over recent years he encouraged local school participation in Branch activities. For the past three years he has served as a Branches Representative on the Council of the IP.

Philip Algar was elected as an Ordinary Member of Council. A former IP member of staff, he is a freelance journalist, energy consultant and partner in Energy Information Services. He is author of *Managing Industrial Emergencies*, amongst other publications.

Ted Williams, former Director General



Dennis Krahn was elected as an Ordinary Member of Council. He is Petroleum Engineering Director, European Offshore Affairs, International Association of Drilling Contractors.

Asia's growth in oil consumption poses problems

Dr Paul McDonald, Managing Director, Pearl Oil Limited, Hong Kong, outlines the problem of very strong growth in petroleum consumption with which many Asian countries are faced, in an interview with *Petroleum Review*.

Geoffrey Mayhew: How is Asia defined in petroleum terms?
Dr Paul McDonald: In the west is the sub-continent: the lands south of the Himalayas. In oil, the area is dominated by India, a sizeable producer (0.6 million barrels per day) and a consumer (1.3 million bd). India faces a long-term decline in its output while demand increases sharply. An annual growth of 7.7 percent in the demand for refined products in the period to 1995 has been forecast by the government. Much of the implied increase in oil imports will have to be in refined products since India has a shortage of suitable refinery capacity.

Pakistan and Bangladesh have similar problems but reserves of natural gas are now being developed and should alleviate some of their energy difficulties.

South East Asia contains some of Asia's most important oil producers but also the rapidly growing economies of Thailand and Indonesia. Indonesia (1.4 mbd), Malaysia (0.6 mbd) and Brunei (0.2 mbd) are all net exporters but production is more or less static or declining. Meanwhile their economies and populations continue to grow. Recently the Philippines has emerged as an exciting new oil province, following several discoveries of oil and gas and condensate close to the island of Palawan. A much expanded West Linapacan field was recently recommissioned with an output of 15,000 bd. But this is only a start.

If all goes well, the Philippines' output could rise from its present 15,000 bd to more than 200,000 bd by the mid-1990s.

At the hub of this South East Asian region lies the island of Singapore. With five refineries and distillation capacity of 1.1 mbd, it is Asia's main export refining centre. Most of the crude processed there, however, is from the Persian Gulf rather than from nearby producers. The island's large bunker trade provides an outlet for over 200,000 bd of heavy ends but most of the refineries are increasing their already significant upgrading capacity in order to meet Asia's growing demand for white products.

China is a region of its own: a large producer (2.8 mbd) but now an increasing importer (nearly 0.4 mbd). The country remains a net exporter but is likely to lose this status by 1994.

Hong Kong is only a small consumer of oil (0.2 mbd) but a very important service centre for China's oil industry. Many Hong Kong-based firms are active in supplying refined products to China or in participating in exploration and production in the Pearl River Delta and the South China Sea.

The rest of Asia is dominated by three large consumers. Japan (4.3 mbd), South Korea (1.5 mbd) and Taiwan (0.5 mbd). Between them, however, they produce virtually no oil.

Despite the approaching watershed of 1997, does Hong Kong remain the best pivot?
Provided Peking carries out its promise to leave our economic and legal systems alone – yes. We have full confidence in the territory and we shall be staying.

Does growth in Asia also mean challenges?
Yes. Above all, I think, we have got to get our energy consumption under control. Despite new oil production from places like Vietnam, Papua New Guinea and the Philippines, we are becoming increasingly dependent on long-haul imports, particularly from the Persian Gulf.

Could you sum up this challenge?
The most important step in improv-ing Asia's energy security is for those countries that still subsidise oil consumption to decontrol their markets and introduce some element of scarcity pricing. Secondly, Asian countries could do something to open up new energy sources in remoter parts of the continent such as western China.

What is the history of this?
Most Asian domestic oil markets have been heavily influenced by state regulation and often powerful national oil companies. The only place in Asia without either of these is Hong Kong. Fortunately, liberalisation is now spreading rapidly through Asia, though it still has some way to go. Meanwhile, the richer Asian countries are trying to secure energy from abroad in various joint venture arrangements.

Could you give some examples?
The most well-known ones are refinery joint ventures in consuming countries that involve national oil companies from oil exporting countries. Korea's Ssangyong has one with Saudi Aramco and Nippon Oil and Nikko Kyoseki are among two companies looking at the feasibility of a refinery joint venture in Japan – also with the Saudis.

Hong Kong, which consumes very

little oil but has a growing need for electricity, has companies such as Hopewell and China Light and Power investing in power generation joint ventures with mainland China.

Are these deals being put together often?
Yes. Joint venture refineries in particular are very much the flavour of the month.

Where are Asia's refineries?
They are concentrated in Japan (4.7 mbd of capacity), China (2.2 mbd), Korea (1.1 mbd) and Singapore (1.1 mbd) but various other countries, including Indonesia and Malaysia have ambitious plans for new refineries, including export refineries, and new oil exporters, such as Vietnam and PNG, are likely to want new refineries as well.

Is the cost of refurbishment or new building unaffordable?
I don't think there will be any shortage of capital for sensible new refineries with realistic business prospects. The problem is that there are just too many new proposals at present.

Have you views on joint ventures?
Many are being promoted on the grounds that they may improve energy security. I am not sure that this is the case. In respect of oil, Asia's security depends primarily on the operation of a free international market in oil and, more particularly, on the uninterrupted flow of oil from the Persian Gulf. As long as oil continues to be freely traded internationally, importers do not need special arrangements, such as refinery joint ventures.

Indeed, it could be argued that if significant volumes of oil were to become locked up in closed supply arrangements between producers and consumers, most international oil markets would be reduced both in size and efficiency.

The free flow of oil from the Gulf has similarly little to do with refinery joint ventures and much more to do with political and military relations between the Middle East and the United States.

While deregulation in the downstream is happening, it may not be going fast enough?
The main countries where this needs to happen quickly are India and China, where there is much inefficiency in the consumption and transport of energy., The present government of India has bravely stuck to a programme of deregulation, privatisation and currency reform in the face of considerable opposition, both from its own civil service in some instances, and from regional interests. It needs to keep its nerve if India is to meet its growing energy needs.

China is deregulating its markets under pressure from the rapidly-growing economies of the south, especially the areas closest to Hong Kong. Private companies are involved in the supply of petroleum products to China and have even begun to sell products inside China. The downstream nevertheless remains dominated by the state sector, in particular by Sinochem and Sinopec, and both companies are trying to protect their position via new supply and marketing joint ventures. If the Chinese market is to work really efficiently, this oligopoly will have to be broken up.

What about other countries?
Nearly all of Asia is involved in deregulation now. In most cases, this involves the phasing out of subsidies on refined products and the opening up of once protected domestic markets to foreign oil companies. In many cases, the private sector is being encouraged to inject new sources of capital into the state oil sector.

In Thailand, for example, the government is seeking private funds to enable the Petroleum Authority of Thailand (PTT) to undertake an ambitious programme of expansion in both the upstream and downstream sectors. Privatisation of the exploration arm has already begun and refining and distribution looks set to follow. One of PTT's ambitions is to become an international company. In Thailand, as in other parts of Asia, governments are finding that they can no longer finance this kind of expansion. They are also increasingly averse to risking large amounts of capital: hence the desire for private capital.

In the Philippines, the government is seeking private money in order to finance the modernisation of the refining, marketing and distribution sectors. President Ramos recently announced the privatisation of Petron Corporation, the refining and marketing subsidiary of the state-owned Philippine National Oil Company.

Up to two-thirds will be sold off; one-third to Petron employees, dealers and individuals, via a share flotation, and one-third to a strategic partner (probably an integrated major oil company). The role of the latter would be to provide not only capital but also technical and marketing expertise and to improve Petron's access to crude oil supplies, as well.

Are further sell-offs planned?
There is a lively debate over the subject in Taiwan at present. The government is currently selling shares in some state companies to private investors. The idea appears to be to release jut over 50 percent of the equity to private shareholders over a period of time.

This could well be the method adopted for the state-owned Chinese Petroleum Corporation (CPC). Another method would be to sell off specific assets, such as a refinery. Alternatively, CPC could be reconstituted as a holding company, allowing people to invest in individual susbsidiaries.

Are such privatisations likely to be successful?
In most cases, yes. Privatisation in Asia offers some of the best opportunities anywhere for companies and individuals to invest in markets that are both sizeable and growing. Asia's economic growth is likely to surpass that of most other regions in the 1990s, making it a highly desirable petroleum market to be in.

Is there a downside?
The main thing is that Asia continues to deregulate its markets pari passu with privatisation. In most cases, the two do go hand in hand. Some countries, however, are dragging their feet. Deregulation is not happening quickly enough, in my view, in China and Indonesia.

What governs attitudes to deregulation?
Politics, in many cases. Peking, for instance, fears too much capitalism will corrupt the body politic and may try to slow down liberalisation as a result. In India, oil producing areas, such as Assam, fear a loss of control over what they may see as their 'own' energy resources in a deregulated market. In many countries there is a well-founded fear of public unrest if the prices of staples such as kerosine and diesel rise sharply following the phasing out of subsidies.

Will the advantages of deregulation gain wider acceptance over time?
Yes, since Asia has the great advantage that its economies are growing strongly, which should help to soften the blow of higher prices.

Does the world crude oil surplus give Asia false signals?
It may encourage the idea that Asia has plenty of time to reform its downstream markets. If so, that would represent a wasted opportunity. Low crude oil prices give Asian countries a chance to raise domestic prices with rather less trauma than if they were to wait for another oil price shock.

Do you think the rest of the world is nervous about what might happen?
If Asia cannot bring its growth of consumption under control, world prices may rise more quickly than anticipated. Asian demand for both middle distillate and fuel oil is already a significant factor in the high prices that were seen for these products earlier this year.

Is the US market particularly affected?
Despite the fact that the US shares the Pacific Ocean with Asia, there is very little oil trade between the US and Asia, compared with what happens in the Atlantic Basin. The US West Coast is an important supplier of low sulphur fuel oil to East Asia. Some Asian countries, such as China, have traditionally supplied motor gasoline to the US but this trade looks set to diminish with reformulation since the aromatic content of Asian gasoline is too high for the new US standards. Some countries, though, may try to supply MTBE to the US. The US, meanwhile, is supplying MTBE to Japan, following its introduction into some gasolines there in late 1991.

Are petroleum storages being increased in Asia?
Given Asian concerns about energy security, there have been a number of recent moves to increase stockpiling levels. In many instances, such as Japan and Korea, government departments are charged with maintaining strategic oil stocks. Japan maintains about 140 days' consumption in government hands. In some cases, oil companies are also obliged to carry high stocks, sometimes under protest. In 1989 the Japanese government reduced the requirement of private companies from 90 days, allowing it to fall to 70 days.

Independent storage is also increasing. Most of this is concentrated in Singapore but high land values there may soon start to discourage further expansion. Expansion is possible, however, on some nearby Indonesian islands and on one, Karimun Kecil, there are already proposals for 10 million barrels of new tankage.

The Philippines has a good opportunity to add to the region's storage capacity by making use of the tank farm at the former US naval base at Subic Bay. One contract has already been signed, leasing 2.4 million barrels of storage capacity to the American company, Coastal. Thailand meanwhile is trying to interest the Japanese in building new storage facilities close to a planned new oil port in the south of the country.

Is this a reflection of the supply problem?
I think it is a more effective way of increasing energy security than setting up refining joint ventures. As far as independent storage is concern-ed, I think increases there will improve the efficiency of the region's oil markets by allowing more independent suppliers and traders to operate in the region.

What will be the situation in 2000?
I am very optimistic about Asia's future and especially Hong Kong's. By 2000 Asia could be the most powerful and dynamic economic region in the world. I am looking forward to being there on 31 December 2000 to celebrate the start of the new Asian century. ■

IP Certificate of Appreciation

Bob Hooks presents Roger Amos (left) with the IP Certificate of Appreciation.

Roger Amos, who recently retired from Esso Petroleum Research, Abingdon, was a member of the Organic Analysis Panel from 1970 and chairman from 1978 to 1990. In 1990 he became chairman of the Analysis Subcommittee, a position he held until this year.

In addition to his IP work, Roger sat on many BSI and CEN committees and was one of the principal UK experts on chromatography.

Mid East gas could ease Asian/Far East energy problems

By David Buckman and John Cranfield

The notion of piping gas from the Middle East to Asia and even further to China would once have seemed economically unrealistic and technically improbable. Now a number of countries in the Gulf area are developing such schemes, with Pakistan, India and China as target markets. Although all three countries have substantial gas reserves, a combined and fast-growing population of over two billion people, energy shortages and the need to develop big fertiliser industries is making them receptive to the idea of long-haul gas imports.

Pakistan

Pakistan has notable, widespread indigenous natural gas and is making concerted efforts to develop new fields and improve the distribution system. A severe deficiency of energy has prompted it to look favourably at the possibility of piped imports. The fertiliser industry is a good example of the ever-increasing need for gas,which looks like stretching available resources for years to come.

The recent coming on stream of Fauji Fertilizer Company's expanded urea plant at Goth Machhi, Rahimyar Khan District, made this complex the country's largest urea producer. The $276 million expansion added 635,000 tonnes a year (t/y), bringing total output capacity to 1.3 million t/y, saving Pakistan over $100 million a year in imports and making the country effectively self-sufficient in urea.

But more plants are needed, and such is the likely market for fertilisers that last year the government offered tax and other incentives to manufacturers in a bid to increase production and cut imports. In addition to a four-year income-tax holiday and duty-free imports of hardware, the government said that new and expanding plants would be assured feedstock gas at existing prices for at least 10 years from startup. Moreover, as evidence of government gas-supply confidence, fertiliser plant operators were assured a supply of gas for fuel for nine months of the year.

India

Gas imports would be a boon to India, facing soaring energy demand but unable to meet it from its own resources. Just over a decade ago India proposed buying 1.5 trillion cubic feet (tcf) of gas from Bangladesh's huge, largely unexploited reserves. That scheme foundered on India's insistence that Bangladesh lay a 320 kilometre line to a terminal near Calcutta.

Since then the situation has worsened. Recently the Ministry of Petroleum and Natural Gas estimated that India will import about 29 million tons of crude and 13.7 million tons of products in 1993-4 at a cost of $6.8 billion. This compares with 29.4 million tons (mt) of crude and 9.8 mt of products in 1992-3, cost $5.8 billion. These estimates are based on the assumption that demand will rise by five percent in the year. Refinery capacity is limited, so there is an increasing dependence on costly product imports, seen to double by the turn of the century. Although domestic oil and gas output could surge by 60 percent by mid-decade to 47 mt, it will barely keep pace with domestic demand, recently 57 mt and projected to hit 103 mt by 2001-2.

The state Oil and Natural Gas Commission (ONGC) hopes that gas output will rise by about 80 percent within three to four years, from about 46 MMcmd to 83 MMcmd. It is driving to boost output in western waters at the Bassein field, augmenting deliverability from 20 MMcmd to 41 MMcmd, part of an ambitious elimination of gas flaring.

Last year India offered 43 oil and gas fields to private developers, to ease the strain on ONGC funds. It also opened a fourth offshore licence round, set up a new Directorate-General of Hydrocarbons to manage resources better and it is trying to interest foreign firms in generating electricity, so far state-dominated.

The government's 1992-97 economic plan calls for 31,000 MW of public sector generating capacity to be added to the existing 78,000 MW.

Even if the public sector had the funds, India would still be in dire need of more power. Increased use of gas – with input from overseas – should help. Although several dozen overseas firms have shown interest in private power stations, few are under way. Enron is planning a $2.6 billion, 1,920 MW LNG-fed power plant at Dabhol, 100 km south of Bombay, which it hopes will be on-line late in 1995. It will benefit from a government

reduction in LNG duty from 105 percent to 15 percent last year.

The government also decided to end the state monopoly in LPG, permitting the private sector to import, bottle and market a fuel which has enormous growth potential. Several firms have plans to join the trade, and port facilities should burgeon in the 1990s. Even so, by 1996-97, domestic output will be only 3.80 mt against a demand of 4.40 mt.

The sub-continent-crossing Hajira-Bijaipur-Jagdishpur (HBJ) gas line which began operating in 1987, spurred development of gas-based industries such as fertiliser manufacture. Before it had even started up, India was mulling a plan for a $7.6 billion, 11,500 km national gas grid, which would heighten demand, a project revived just over a year ago. Already, however, gas-based fertiliser plants along the HBJ line have been urged to look at liquid alternatives to scarce gas.

This is at a time when the eighth five-year plan includes five new fertiliser plants, Bombay is converting to natural gas, New Delhi is considering it and CNG is being piloted for vehicle use.

Piping work for Uran project

Gas Authority of India's Horton spheres at an LPG extraction plant

China

China could make considerable use of imported gas. It is 73 percent dependent on coal for energy, some 20 percent stemming from oil, with other sources including indigenous gas accounting for a few percent each. The world's largest user of coal continues to order new coal-fired power plants but alternatives to this highly polluting fuel, which has caused grave environmental concerns, makes gas a logical alternative.

Goran Lindahl, executive vice-president for Asia and for the power plants business of ASEA Brown Boveri, recently forecast that China/Hong Kong will add 12,000-15,000 MW/year of new power generating capacity for the rest of this decade.

Oil is not a desirable alternative to coal. The newspaper *China Daily* recently forecast that with the domestic economy expanding fast, there was a danger that China could become a net oil importer by the year 2000, reducing a valuable source of foreign exchange. Imports and exports of oil – 120,000 b/d and 460,000 b/d respectively in 1991 – were expected to balance by 1995.

Earlier this year China said that it was ready to allow 100 percent ownership of power stations by foreign interests in an attempt to tackle the energy shortages. Zhou Heliang of the Ministry of Machinery and Electronics said that China would need to invest at least Yuan 50 billion (£6 billion) at 1993 prices in power plants to the year 2000. Power shortages had been especially severe in Shanghai, Beijing and Guangzhou, prompted by an almost 13 percent/year growth rate.

International funds would not cope with power growth needs.

China's own gas industry has a long way to go to develop resources and a national grid. Recently a new government enterprise, China National United Oil and Gas Corporation (Sinoil), was formed – jointly owned by China National Petroleum Corporation and China

Gas Authority of India's Hazira-Bijaipur-Jagdishpur gas trunkline

National Chemicals Import and Export Corporation – to streamline the gas industry. Sinoil will manage China's gas from exploration through to imports and exports. The idea is that gas will complement a fast-growing nuclear and hydro-electric power alternative to coal.

Present production of gas in world terms is still modest, at around 1.50 bcfd. It is likely that only about two percent of probable reserves have been exploited. With industry the main user demanding more, output is projected to rise to about 20 bcm/yr (1.935 bcfd) by mid-decade.

To date, almost half of the gas comes from Sichuan province but new sources, notably offshore fields, are firming up. Last year China brought on stream what it said was its first independently found gas field, Jinzhou 20-2, in the Liaodung Gulf. China has also begun a three-year development of the Pinghu gas and oil field in the East China Sea, and Shanghai has expressed interest in taking supplies. Another big offshore development is Yacheng, off Hainan Island, which will supply gas to Hong Kong and Hainan, where chemical developments are among over 100 projects to be exploited with possible foreign input.

Other sources being developed are coal gas and LPG. In about two years' time, Japanese interests will complete an ammonia-urea plant using feedstock made from gasified coal. Xinhua has reported that a project to develop 3.5 bcm of coal seam gas is to get UN and World Bank funding. Facilities to handle imported LPG are to be increased, with Japanese interests prominent.

Pipeline projects proliferate

Plans to pipe gas to various parts of Asia have been around for some years. But only in the last year or so have they become more than just pipedreams. Earliest on the scene was a late 1980s proposal by Iran. Costed at $11.75 billion, the line would have run 3,300 km to Calcutta. Capacity would have been 36 bcmy with Iran's eastern provinces tapping 10 percent and Pakistan taking 20 percent. But tense relations between India and Pakistan posed a problem. Also, at the time, Afghanistan was planning a pipeline south to an LNG-export terminal on the Pakistani coast, with Pakistan tapping off supplies en route. Civil war killed the Afghan scheme, while the Iran-Calcutta plan seemed too problematical and died.

So, in May 1991, the Iranian and Pakistani governments agreed to jointly study the feasibility of moving two bcmy of Iranian gas to Karachi. At the same time, however, the Pakistani Petroleum Ministry signed a similar memorandum with Crescent Petroleum, then as now pushing for a 1,600 km, mostly offshore, gasline from Qatar to Pakistan. Volume would be less than for the Iranian line, cost put at $3 billion and work was expected to begin between mid-1992 and early 1993. Nothing came of either plan in its original form, largely because potential buyers were not prepared to come forward.

Although India pulled out of the earlier scheme, demand potential there was meanwhile racing ahead. So, in October last year, the Indian government and Gas Authority of India Ltd formally resurrected the plan. Helping was Iran's offer to guarantee supplies, suggesting that Teheran had ways of overcoming the 'Pakistan factor' that so worried New Delhi. However, to be on the safe side, India insisted that Tata Energy Research Institute must study both overland and offshore (thus by-passing Pakistan) routes. Now Japan has expressed interest, since a second stage would extend further east.

The Qatar-Pakistan plan would have seen Crescent buying gas from Qatar General Petroleum Corp (QGPC), then selling on. Nevertheless, QGPC wanted a separate opinion on the scheme's feasibility. Sofregaz was asked to conduct a study and came out, early in 1992, against it. Grounds were technical, water depth in the Gulf of Oman being the main factor. That, said Sofregaz, would make it more economical for Pakistan to import LNG.

Crescent responded by boosting throughput estimates, saying that Dubai and Oman would be supplied en route. However, Dubai has already gained access to more gas and has further offers from Iran and Qatar. And Oman is now a gas seller, not a buyer.

In August 1992, potential buyers in India were also looking to buy LNG. Leading this move was the US/local group planning the new Dabhol power station which would need 3.3 bcmy on its own. In April this year, group leader Enron signed a preliminary deal to lift 2.5 million t/y of LNG from Qatar for 25 years from 1997-98. The same month saw the pipeline scheme resurface, this time with Crescent claiming that studies were complete and that the 48-in line would be open by 1997. Now seen as a common carrier, it would start in Qatar, run to Dubai, cross the Musandam Peninsula and the Strait of Hormuz, then run offshore Iran to Pakistan. Iran was seen as a second supplier, with Dubai and India as further buyers. Firm deals were said to have been signed, both with Pakistan and Qatar.

Now the Qatar scheme has been overtaken by Oman. In March 1993, a memorandum of understanding was signed with Indian Petroleum Minister Satish Sharma. Route of the planned 1,440 km line will be totally offshore, landing on the Indian coast to serve Gujarat and Maharashtra (site of the Dabhol power plant). Volume is not confirmed but early ideas involved 18 bcmy. Cost is put at $5 billion. That, and the likely volume, suggests much greater viability than the Qatar-Pakistan-(India) project. Completion of the 42-in line is targetted for 1997, when Oman could be providing India with 33 percent of its gas needs.

The USSR breakup has further complicated matters. Several of the union's Middle East republics have realised that they have themselves to sell vast gas volumes, a job previously handled by Moscow. Turkmenistan, Uzbekistan and Kyrgyzstan see potential markets in the Indian subcontinent and China. The initial Turkmen plan, in late 1992, was for a $5 billion line through Afghanistan to Pakistan. The Afghan situation precludes this, so thoughts moved to a $12 billion project that would tap gas from Turkmen, Uzbek and Kazakh fields, to supply China with pipeline gas and Japan with LNG, the latter via a plant on the Yellow Sea. Total throughput, which would be boosted by output from untapped reserves in China's remote Tarim Basin, has yet to be firmed up. But the LNG plant would produce 10 million t/y. Overall length would be 6,000 km. Now the Chinese and Turkmen governments have been joined by Mitsubishi to carry out studies.

Uzbekistan and Kyrgyzstan are far behind Turkmenistan in field development, while oil and gas-industry reorganisation is only just beginning. But gas is the main resource and, given their remoteness from western markets, eastern outlets are essential. The Afghan situation currently blocks their best option. But one thing is certain: if Pakistan, India and China can find ways of paying for it, there will be no shortage of gas to be piped to their fuel-starved markets. ■

The Institute of Petroleum

Practical Implementation of EC Gasoline Vapour Emission Control Directives

Thursday 25 November 1993

To be held at
The Cavendish Conference Centre, London

This one-day conference being held on the 25th November 1993 will focus on the requirements of the forthcoming EC Stage 1 and Stage 2 Directives. It will deal with the different options available to achieve compliance with these Directives and the technical aspects of implementing them. The conference is being organised by the IP Vapour Recovery Committee and speakers will be experts from within the oil industry who have practical experience in their subjects. The conference is aimed at personnel both within the oil industry involved in the planning and practical implementation of control measures and authorities involved in the interpretation of legislation and checking compliance.

An Exhibition by Manufacturers will be run in parallel with the Conference at The Institute of Petroleum on Wednesday 24 November from 16.00 to after lunch on Thursday 25 November 1993.

Topics being presented will include :

- Legislative proposals
- Storage tank controls
- Truck loading
- Terminal vapour collection and recovery
- Rail tank car and marine vessel loading
- Saftey issues
- Controls at service stations
  - Stage 1b :Vapour Balancing during Tanker Off-Loading
  - Stage 2 : Car Refuelling Emission Control

For further information, and a copy of the registration form which will be available shortly, please contact ***Caroline Little****, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel: 071 636 1004. Telex: 264380. Fax: 071 255 1472.*

The Institute of Petroleum

Developments in Microbial Control in Metal Working Fluids

Thursday 14 October 1993

To be held at The Institute of Petroleum

It is not difficult to kill or control microbes in MWF; previous IP symposia have addressed chemical (biocide) methods and physical methods (pasteurisation, filtration etc). The traditional objective has been the prevention or delay of spoilage with the spin-off of less MWF product used and less spoiled fluid discharged to waste. Recent initiatives have added new dimensions to this simple concept, namely that microbes may be a health hazard in MWF even when malfunction is not significant and also that toxic chemicals (particularly biocides) in MWF and sludges could be a health or environmental issue when discharged to waste. The overall antimicrobial strategy for MWF must recognise the necessity of a 'cradle to grave' approach which satisfies all health and environmental concerns and regulations.

Speakers from UK and Scandinavia will present papers covering these various topics; MWF users should integrate this knowledge into an acceptable MWF management policy.

A panel discussion at the end of the meeting will give an opportunity for delegates to put their concerns and ideas forward for comment and debate.

Topics to be presented at this Conference will include:

- End user problems
- Formulation trends in metal working fluids
- Potential health hazards in metal working fluids
- Inhalation hazards of microbially contaminated metal working fluids
- Regulatory issues
- Advances in physical methods of decontaminating metal working fluids
- Disposal of metal working fluids pressures on the aquatic environment

For further information, and a copy of the registration form, which will be available shortly, please contact ***Caroline Little****, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel: 071 636 1004. Telex: 264380. Fax: 071 255 1472.*

Shell is going well in China

Filling station in Zhu Hai.

Formula Shell and the Shell logo are becoming better known in China where two more outlets were added to the company's expanding network in February this year.

The present total of Shell filling stations and service stations in South China is 10. They are spread through a number of towns and two are located at the Beijing-Tianjin-Tangu Expressway which was financed by the World Bank..

'The car population is growing steadily and will probably accelerate rapidly in the foreseeable future,' said Robert Young, Director, Hong Kong and Macau for Shell Hong Kong Ltd. 'There is no doubt that the drivers in South China want to put a good quality fill into the tank.'

Mr Young has been in overall charge of the development of Shell's retail business in Hong Kong and China and he was talking to me from his office by telephone (writes Geoffrey Mayhew).

'China is a big market and Shell first went into it 99 years ago,' he said. 'We were out of it for a period but when the opportunity came to return following liberalisation in the late 1970s we were pleased to do so.

'We began with a joint venture company in 1982, our partners were China Merchant whose business dated back to the Ching dynasty, and Chinese Marine Bunkering Company (best known as Chimbusco). The key to success in China is to have the right partners. Shell Hong Kong Ltd had 40 percent of the partnership, the other two had 30 percent each. The Chinese name of the joint venture company is Hua Ying Petroleum Co. Ltd. which can be literally translated as "Company of China and England".

The joint venture company was given the rights to build a depot and marketing rights through its petroleum organisation to sell gasoline, diesel fuel and to provide lubrication and car wash services.

'Other Chinese merchants were also taking advantage of the new opportunities to go back into China and some of these had been our agents in former times. We were asked if we were interested in helping them in the supply and building of stations,' said Mr Young.

'Where we thought this appropriate we supported them by providing equipment, facilities and systems in the building of stations. We use our distribution facilities to supply our agents who have joint ventures with their own partners.

'Today we have seven filling stations and service stations in the Pearl River Delta and one belongs to Hua Ying in Shekou, and we opened a further two in the Tianjin area during February. A service station provides car wash and complete lubrication service in addition to supplying Formula Shell, Shell Formula Diesel and Industrial Diesel. A filling station provides fuel and lubricants for the motorists.

'The Shell logo is placed so that it can be seen by drivers from a long distance and the word Shell is currently displayed in English and in Chinese characters. However, in order to have a more consistent branding strategy, Shell is moving towards emphasising the use of the pecten together with the word "Shell" only in English.

'There is no doubt that people in South China now recognise the Shell sign and they like the fact that is the logo most recognised in the world, apart from that of Coca Cola.

Shell's Wenjindu filling station.

Oil tanker delivering products.

'We are encouraging people to say "Shell" as in English because there are so many different dialects in China and a common pronunciation, where possible, will be easier for everyone.

'At present only leaded gasoline is on sale but we shall be introducing unleaded as soon as it is necessary. This step is being stimulated by the import into Hong Kong of vehicles which must use unleaded fuel. It is not unusual nowadays to see cars such as Mercedes and BMW in South China appearing not just in the cross border traffic.'

Recruitment and training

The 10 Shell outlets are managed and operated by local people. 'Recruitment and training of personnel of our outlets are crucial to our success in retail business. Staffs and operatives of the outlets are normally recruited by our Chinese partners through the local labour authority. We as the foreign partner assume the management and training task,' said Andy Ku, Guangzhou Oil Manager of Shell China Ltd., who is overseeing Shell's retail business in southern China.

'Before the operation of an outlet, we will assign a team of trainers, including forecourt attendant, supervisor and safety officer, to train up the local operatives. Upon the opening, an experienced supervisor will be assigned to oversee the operation for one to two months. This will then be followed by regular visits which ensure their service are up to Shell standard and reflect the excellence of quality our Shell pecten stands for,' said Mr Ku.

In the respect of training, Mr Young added that safety operation was an indispensable part of the training courses. 'We provide training for them, especially in safety, through courses held in Shenzhen two times a year,' said Mr Young. 'Our aim is to instil the Shell safety culture into everyone who works for Shell in China, as throughout the world.

'During courses the Shell standards are allied to the observance of the local regulations.'

The gasoline Shell retails in South China is produced in Singapore and reaches the outlets and other customers in the region, via two distribution terminals Shell has built on the coast in Shenzhen Special Economic Zone.

The Chinese state-owned gasoline organisation has cooperated with Shell in the establishment of the outlets; at the same time it is a competitor.

Refinery plans

Plans for the building of a refinery at Nanhai to service the Guangdong province are in an advanced state through a feasibility study by Shell and five Chinese partners – China National Petroleum Corporation, China Petrochemical Corporation, China National Offshore Oil Corporation, Guangdong Province and China Merchants Holdings. The Chinese partners and Shell each have a 50 percent share in the Nanhai Oil and Petrochemical Project.

This is one of the largest joint ventures with foreign participation in the People's Republic of China. ■

Geoffrey Mayhew

A frequent form of transport.

A diesel pump at a filling station in China.

Indonesia's plans for Natuna Sea gas

By William Scholes

The long term projections of Liquefied Natural Gas (LNG) demand in the Asia-Pacific indicate that large, new sources of natural gas will be needed to meet increasing regional demands. Expansion of the region's existing LNG plants will be constrained by a decline in gas reserves that traditionally supply these plants.

Indonesia believes it is time to promote the development of giant gas reserves in the Natuna area of the South China Sea. In the Natuna D-Alpha block alone, current reserve estimates are about 250 trillion cubic feet (TCF) of gas in place, with about 45 TCF of recoverable hydrocarbons. This makes development of the Natuna field an essential step in securing a large, long-term and reliable supply of gas for the region.

The development of the Natuna field will be a huge effort, however, in terms of capital cost and other resource requirements, due to the necessity of dealing with high concentrations of corrosive CO2 in the reservoir gas, very large producing rates and the relatively deep water and remote field location.

Indonesia has been the world's premier supplier of LNG since the first shipment left for Japan in 1977. LNG has been the major source of foreign currency, as well as a significant source of energy for continued national economic development. While Indonesia produced 22 million metric tons of LNG in 1991, it will assume even greater prominence in the country's energy economy as industrialisation expands.

Arun and Bontang are two names associated with Indonesian LNG. PT Arun, owned and operated by the Indonesian state-owned oil company, Pertamina and Mobil Oil Indonesia, is located at the northern tip of Sumatra in the province of Aceh. PT Badak at Bontang, East Kalimantan, is a joint venture between Total Indonesie, Unocal, VICO and Pertamina.

Planned in the late 1960s and brought onstream in the 1970s, both plants have undergone constant improvement and expansion. Arun currently operates six LNG production trains, while Bontang's sixth train, which has a capacity of 2.3 million tons/year, built at an estimated cost of about $US637 million, will begin production by the end of this year.

Together, these two liquefaction plants draw upon the vast reserves of gas in adjacent fields developed by Pertamina and its partners.

Gas reserves at Arun and Bontang are 14 and 11 trillion cubic feet (TCF) respectively. In addition, Indonesia has a third major field with enormous reserves awaiting development: Natuna.

New gas must be brought on stream for Indonesia to maintain its position as a top LNG exporter. Pertamina has been negotiating with Exxon Corp. the terms under which Natuna gas can be developed.

Exports

Japan, South Korea and Taiwan have all benefited from Indonesian LNG exports.

Indonesia's LNG Exports

Tonnes (m)	*1991*	*1995*
Japan	18.2	18.5
South Korea	2.0	4.0
Taiwan	1.5	1.5
Total	21.7	24.0

Natuna

In addition, there is a third major field with enormous reserves awaiting development: Natuna. Esso Natuna, a subsidiary of Exxon Corp., has forwarded an investment plan to Pertamina for the liquefaction of natural gas reserves in the East Natuna Sea. The plan, estimated at US$16-19 billion, would involve the construction of six onshore liquefaction plants and facilities to remove and reinject into the ground carbon dioxide associated with the gas.

The project would be the biggest petroleum industry project in the Asia Pacific, far bigger than the proposed development of the ASEAN pipeline project and the Sakhalin Island oil and gas development.

The Natuna gas is contained in Esso's giant L Field, where reserves are in the region of 250 TCF. However, over 80 percent of the gas is carbon dioxide and this put off development since its discovery by Agip 20 years ago.

The field is located in the South China Sea, approximately 225 km northeast of Natuna Island in waters of 145 metres. Natuna Island is about 1,100 km north of Jakarta and about

600 km northeast of Singapore.

The field is an isolated, dome-shaped carbonate structure within the 4,165-km D-Alpha block, where reserve are estimated at about 250 TCF of gas in place, with about 45 TCF of recoverable hydrocarbons.

In 1980 Esso Natuna entered a PSC with Pertamina for the development of the Natuna D-Alpha block. Pertamina has a 50 percent share in the PSC, with Esso in the operator role.

The development of the Natuna field will be a huge effort, however, in terms of capital cost and other resource requirements, because of the necessity of dealing with high concentrations of corrosive in the reservoir gas, very large producing rates and the relatively deep water and remote field location.

Pertamina intends to develop the Natuna gas resource for the LNG market. This new resource will be able to sustain very substantial, very long-term LNG supply commitments, beginning in about the year 2000. In addition to supplying LNG for export, the Natuna field will be able to supply domestic needs.

Gas samples obtained from Natuna tests show an average composition of 71 percent, 28 percent methane and heavier hydrocarbons, and about 0.5 percent nitrogen.

Pertamina and Esso initiated, in 1988, a joint effort to develop a minimum cost field development option for Natuna. This initial option was based on sale of produced gas via pipeline to help meet domestic and regional energy demands. The work was expanded to focus on much larger LNG sales to Asian markets.

Future development

A paper, 'Development of Natuna Gas, Indonesia', was presented at a recent conference in Kuala Lumpur by Ari Samamo (Pertamina LNG projects), Said Djabbar (Pertamina Exploration and Production Directorate), with Hugh H Fuller (Exxon Production Research Co).

They outlined the future development of the field, stating that it would supply 2,400 Mmscfd of hydrocarbon gas as feedstock for over 14 million tons per year of LNG. It would be the largest offshore concentration of gas-producing facilities in the world, treating over 10,400 Mmscfd of raw, reservoir gas.

This development would include 18 structures, six treating platforms, six drilling platforms (each with 36 wells), two quarters platforms and four injection platforms.

A staged concept will be used to develop the offshore field. The size of each unit of production capacity would depend on technical and economic considerations.

Production from each such unit will total approximately 400 Mmscfd of hydrocarbon gas. Initially, offshore facilities would be installed to supply at least 800 Mmscfd of hydrocarbon gas, which would be processed into 4.8 million tons of LNG per year.

Engineering studies indicate that a deck designed to process up to 1,800 Mmscfd of reservoir gas (400 Mmscfd hydrocarbon gas) will be approximately 67 m wide by 113 m long and weigh over 43,000 short tons.

The treating topsides will consist of three decks and will be 20 m in overall height. Two incinerator towers on the top deck would extend almost 100 m above the ocean surface.

Offshore processing of the reservoir gas would use proven cryogenic technology. Raw gas from the reservoir would enter the inlet treating section of the process at approximately 1,200 psia and 90°C.

Oil output

Faced with ever-rising domestic and overseas demand for energy and the need to generate adequate revenue for national economic growth, Indonesia, as the region's second largest energy producer after China, is looking to speed up oil and gas, as well as LNG development.

The area opened for oil and gas development has been enlarged. At the end of 1991, about 1,037,056 sq km was covered by permits for hydrocarbon exploration and production. Geophysical activity has been intense, especially offshore.

In 1991, a total of 115,805 line-km of seismic data was acquired.

At the same time, drilling activity has been on the rise. A total of 308,400 m exploratory wells were drilled in 231 rig-months in 1991 – an increase of 14 percent over the previous year.

At the same time hydrocarbon production increased.

In 1991, crude oil production averaged 1,410,814 b/d, while natural gas production averaged 6,344,549 MCFD.

In 1991, oil companies, mostly PSC contractors, spent nearly US$2.3 billion on exploration and development, of which US$719 million was spent by foreign oil contractors on exploration alone. For 1992, exploration and production budgets were estimated at US$3.7 billion. Pertamina expected PSC companies to increase their spending by 40 percent in 1992.

Pertamina has long sought increased foreign participation in the exploration of the more difficult parts of the country's more than 13,000 islands and offshore regions. But foreign explorers tend to favour the easier and safer areas, generally the western half of the archipelago, drilling for the most part in the 'Golden Belt' of Sumatra, Java and Kalimantan. The Natuna Sea gas development is an example of the riches still to be gleaned in this area. ■

Letter to the Editor

Madam,

I would like to comment on the conference report in the June issue of Petroleum Review. The brief summary of my presentation contains two misleading statements from which I have to disassociate myself.

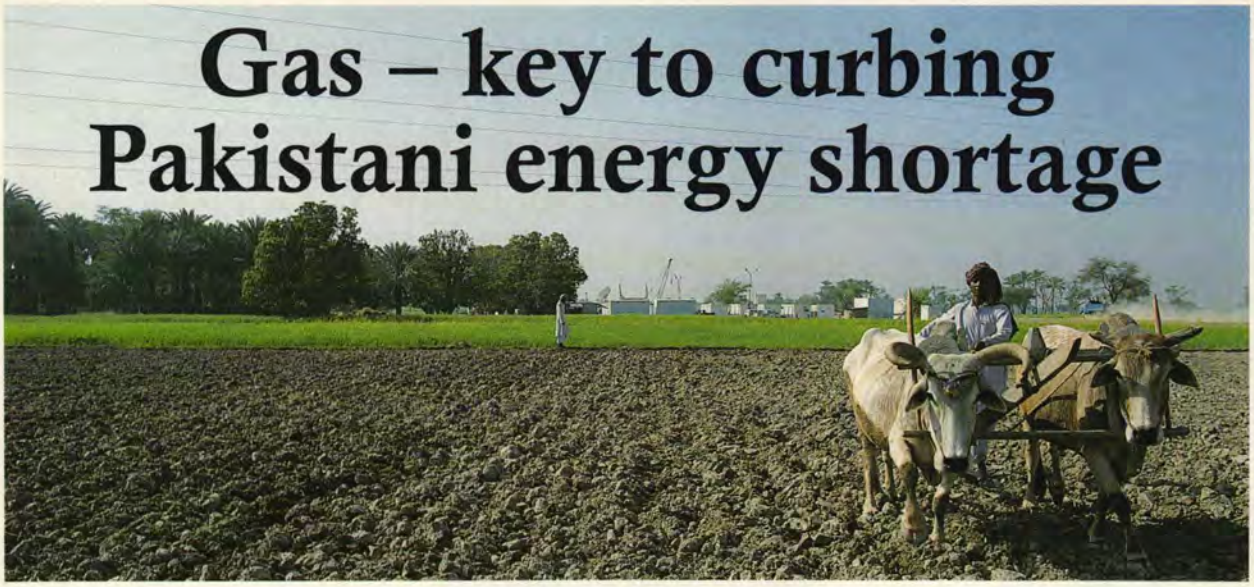
First, European standards will not replace all national standards. The point is simply that where European standards are available, these are required to be used as the basis for contract specifications unless derogations can be justified.

Second, I simply did not say what is reported as a direct quotation. It is in my view likely that there would be at least a couple of legal grounds to justify a derogation from applying a European specification that was inappropriate. Such derogation would however conform precisely with the strict letter of the law derived from the Utilities Directive. Derogation from European specifications is not the same as delaying compliance with the law but is a pragmatic option recognised by the law itself.

Yours sincerely,

G.M. Strawbridge
BSI

Gas – key to curbing Pakistani energy shortage



By David Buckman

Pakistan has ambitious plans to become an industrial power but these are being undermined through a serious energy shortage. At best it will be several years before a notable new supply of electricity is available. Government hopes of a 6.5 percent/year economic expansion through the mid-1990s rest on boosting indigenous supplies of oil, gas and other fuels and imports to span the power gap that has led to cuts inconvenient to both small and large users. Gas will play a key role in easing the situation, and several gas-fired power projects are in mind.

By the middle of 1993 Pakistan's electricity generating capacity has been predicted to reach about 9,350 MW, up from an installed capacity of just over 8,300 MW a year ago. That was around 15 percent below what the country needed, and demand is set to soar to 11,000 MW by 1995. The power tightrope that Pakistan walks is put sharply into focus when the current 10,000 MW of capacity is set against an optimum of about 100,000 MW seen as desirable for a Western economy for a population of 100 million. Pakistan's population approaches 125 million, with a birth rate among the highest in Asia.

Of vital importance now is the Hab River complex, the first of a series of private plants to be built or suggested under the government's restructuring programme. Hab River will transform the energy scene when its oil-fired plant comes on-line in the second half of 1995.

Oil supply

Pakistan's oil output is therefore crucial. It has advanced fast in recent years. In the mid-1970s it was under 6,000 b/d, whereas lately it has been over 60,000 b/d. However, this is still around 5,000 b/d off target and a production potential of approximately 70,000 b/d. Moreover, fast-growing demand means that some 170,000 b/d has to be imported.

Recently Kuwait agreed to supply Pakistan with 60,000 b/d of products for three years beginning in 1993. The agreement is understood to be on a cost-and-freight basis at Gulf prices plus a premium but it adds up to a serious and unwanted drain on a hard-pressed exchequer. Pakistan is striving to bring oilfields on stream but reserves are depleting fast. The just over 150 million bbl available will run out around the end of the century unless new reservoirs are found and fast developed.

A study by the East-West Center has projected that Pakistan must invest $20 billion over the next 10 years into petroleum developments to meet its needs.

About two years ago the Sindh provincial government, in the south, launched a special development plan for oil and gas producing areas, of importance as the province yields about 50 percent of the country's oil and 30 percent of its gas. Most of the oil is located in the Badin and Sanghar districts, whereas gas is scattered.

Shortly after, Asian Development Bank (ADB) approved a $32 million loan for the state-backed Oil & Gas Development Corporation (OGDC)'s development project and installation of surface facilities to handle output from new wells in Lower Sindh, about 150 km east of Karachi. OGDC's aim has been to complete the project by the end of this year, producing 48m bbl of oil and condensate and 57 bcf of gas over 12 years. Cost was estimated at $88 million, including $57 million of foreign currency.

Last year the government said that it would allow OGDC to begin immediate production of 3,000 b/d in the north of the country from the Missa Keswai field for Attock Refinery Ltd's plant. Refining capacity had been raised to 36,500 b/d from 30,500 b/d, with plans for a boost to 48,500 b/d subject to availability of crude. The government decision advanced Missa Keswai production from an initial well by several months, with a development plan to follow completion of a second well. Gas production with the oil is piped to

Qadirpur site.

Mandra to connect with the main Sui Northern gas transmission line.

Also in the north, in Potwar region, Occidental and the government last year formed a joint venture to develop the Balkassar field. The Economic Co-ordination Committee approved a proposal to use water and gas injection to enhance recovery. Balkassar has been tapping only 250 b/d but redevelopment could see this raised to 10,000 b/d.

Problems

The pace of exploration is not as fast as the government would like. Late in 1991, Minister of Petroleum, Chaudhry Nisar Ali Khan, announced a streamlined application system, because companies complained that bureaucracy sometimes held them up for as much as three years. The new measures called for applications to be decided within three months. The government also com-mitted itself to meeting all foreign exchange require-ments of search companies, which had been paid for their share of oil and gas in local currency. Nevertheless, in May last year five operators declared force majeure in their permits because the local authorities had failed to make areas accessible.

Soon the minister said that a new system was planned to expedite and sign agreements through consultation with provincial governments. Despite this there is still company dissatisfaction and several firms are rumoured to be mulling an exit.

Moreover, presentations by the authorities to possible new searchers in Houston and London were poorly attended.

Exploration successes

One area which the government is hoping will produce interesting results is the Bahawalpur and Rahimyar Khan districts in the west. Pakistan Oilfields Ltd (POL) last year sank a first wildcat, Ahmedpur 1, drilled to test the potential of the Jurassic and Cretaceous sediments. POL chief executive Usman Aminuddin calls this region 'the least-explored in Pakistan'. His company's effort, he said, 'may open up a large area for more extensive exploration.'

OGDC has been responsible for about two-thirds of the wells put down in a year recently in Pakistan. Its latest success was with the Buzdar North well, in Hyderabad district, in the south. This tested 1,200 b/d of oil and just over 3 MMcfd of gas. Shortly before that, Union Texas – which has been highly successful in the southern Badin area – found gas with its Nakurji well. This tested gas at 21 MMcfd. OGDC is a 40 percent partner in this play, with Occidental holding 30 percent. By the time that Union Texas signed for Badin II block early in 1992, on Badin I it had found 29 oil and gas fields and 11 of these were on stream. The

country's five-year economic plan for July 1993-June 1998 calls for drilling 50-55 wells a year.

Occidental operates on its own account in the north in Attock district and early this year found gas with Ratana 2, about 100 km from the capital Islamabad. The hole yielded 23 MMcfd plus 938 b/d of 45° API condensate and was additionally significant as it went to 16,400 ft, producing gas from the deepest zone yet in the country. Oxy had success with Ratana 1 in 1991. The company, which has widespread interests and a string of finds, is partnered in the Ratana play by OGDC and the government, 25 percent each, POL and Attock Oil each having 4 percent. A Sui Northern Gas line runs near the Ratana finds.

One operator to watch is Irish independent, Tullow Oil, which believes 'the country holds good potential for significant exploration discoveries and for profitable production of oil and gas.' It says that the government's decision to raise the regulated price of gas from 66 percent to 100 percent of the equivalent fuel oil price has had 'a very positive impact on the economics of gas discoveries.'

Gas self-sufficiency?

Gas is now a key component of Pakistan's energy machine, supplying over a third of national energy needs. Output has been around 1.5 bcfd, and Nisar Ali Khan sees self-sufficiency in 1993. A string of projects now at various stages of development should boost the flow over the next few years, displacing valuable oil-based alternatives. At the present rate of output the national reserve would last until the year 2030 without more being found meanwhile, an unlikely scenario.

The minister made his self-sufficiency prediction while inaugurating Union Texas' Bukhari field, good for almost 68 bcf of gas plus over 1.4 million bbl of condensate. The $7 million project was commissioned last year, the sixth gas field to go on stream in Badin since 1988, taking peak output to some 200 MMcfd. Work lately began to provide gas in the region to over a dozen conurbations.

OGDC, Premier Consolidated, Pakistan Petroleum and Burmah Oil Netherlands are busy developing the Qadirpur gas field in the north of Sindh province, 60 km north of Sukkur. Negotiations have been taking place with the recently privatised gas transport firm, Sui Northern Gas Pipelines (SNGP) and the government, to establish terms for sales and pricing respectively. Gaffney Cline & Associates has confirmed recoverable reserves of three tcf and the pipeline company has agreed to provide capacity for production reaching 400 MMcfd.

Lasmo early this year signed a 15-year deal with the government and Sui Southern Gas Company (SSGC) for sale of gas from Kadanwari field, also in Sindh province. The field has estimated reserves of 700 bcf and is due on stream early in 1995. OGDC exercised its right to boost its interest from five percent at the exploration stage to 50 percent. The price fixed was close to that of high-sulphur fuel oil and broke new ground, as previously gas had been regarded merely as a by-product of oil. SSGC is laying a 400-km line to Karachi.

Some established fields are being further developed. Thus about a year ago government approved a project for Mari gas field which calls for raising its productive capacity to 400 MMcfd from 300 Mcfd at a cost of $40 million. The added gas will be used by Fauji Fertilizer at its Goth Machi complex and by Engro Chemical Pakistan in Daharki. Both fertiliser firms are boosting capacity. In December 1991 Engro Chemical signed a 20-year deal for 42 MMcfd of Mari gas as feedstock, deliveries to begin mid-1994.

Another established field being further developed is Dhodak, in Punjab province, where Australian firm Clough Engineering has gained a contract to provide a gas condensate processing plant, due for completion in August next year. OGDC set Dhodak phase two in train last year. It is expected to produce 50 MMcfd of gas, 170 t/d of LPG and 2,500 b/d of condensate. Dhodak should generate for OGDC an income of $50 million/year.

A group of fields in the Sui region, Sindh province, was earmarked for a major SNGP expansion late in 1991. The aim was to add 300 MMcfd from Pirkoh, Loti and other recently found gas. This project involves laying just under 620 km of lines, ranging from 16-30 inches diameter, to upgrade existing systems; laying 323 km of 18-inch line between Qadirpur, Rawan and Lahore, as well as augmenting the supply of Lahore; laying almost 72 km of 16-inch line to move gas to a complex at Kot Addu; installation of 24,000 bhp compression; the building of a 20-MMcfd purification unit; and installation of telecommunications. OGDC last year called bids for supply of materials for Pirkoh phase three development.

Natural gas storage is being investigated in Pakistan by British Gas under a contract secured last year. The $700,000 deal, made with the Ministry of Planning and Development, involves a technical evaluation of potential storage in the depleted Dhulian oilfield in Potwar region.

LPG

Another route for spreading gas use in Pakistan, where no transmission lines are available, is liquefied petroleum gas (LPG). Pakistan State Oil (PSO) has signed a deal with Iranian National Oil Company (INOC) to import LPG from Iran overland to match growing demand, initially 50 tons/month, but this will be increased as needed. This agreement adds to another signed by National Logistic Cell, a private firm, to take 100 tons/month from INOC.

It was concern about the lack of facilities to develop the LPG trade that prompted the government last year to authorise the private sector to import. This followed a decision to double LPG production by 1993 to about 6,600 b/d. The supplies would come mainly from the Dhodak, Badin and Adhi areas. A key factor in the spread of LPG will be a $50 million terminal at the fast-developing Port Qasim, which Pakistan State Oil Company (PSOC), SNGP, Sui Southern Gas Pipelines (SSGP) and Burshane have agreed to build.

Oil facilities

Port Qasim, near Karachi, is to be the site of a major new oil terminal, to cost $80 million, promoted by Fauji Oil Terminal & Distribution Company. Also, Pakistan and NIOC have been studying a 120,000-b/d refinery there. This is one of several such projects being considered, which will be enhanced by the introduction of private and foreign capital.

There has been a serious bottleneck in Pakistan's refining capacity, based on the two Karachi plants and the one Attock unit. Crude has had to be sent abroad for processing and products imported. The Pakistan refineries' total capacity has been under 115,000 b/d but expansions, the first private refinery (Schon Refinery, at Bin Qasim, worth 30,000 b/d initially) and additional joint venture plants with overseas interests could boost capacity to about 400,000 b/d, maybe making exports possible in the long run. ■

FORTHCOMING EVENTS

July

4th
Moreton-in-Marsh: 'Handling of Emergencies in the Petroleum Industry'. Details: Ron Cameron, Marketing Manager, The Fire Service College, Moreton-in-Marsh, Gloucestershire GL56 0RH.
Tel: (0608) 52156.
Fax: (0608) 51788.

5th-6th
Leeds: 'Engine Emissions Measurement'. Details: Miss Julie Charlton, University of Leeds, Dept Fuel and Energy, Leeds LS2 9JT.
Tel: (0532) 332494.
Fax: (0532) 440572.

5th-6th
London: 'Partnering & Closer Working Relationships'. Details: Maria Coghlan, Customer Services Manager, IIR Ltd., Industrial Division, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD.
Tel: (071) 412 0141.
Fax: (071) 412 0145.

5th-7th
Birmingham: 'Applied Groundwater Modelling – Course'. Details: Applied Groundwater Modelling Course, School of Earth Sciences, The University of Birmingham, Edgbaston, Birmingham B15 2TT.
Fax: (021) 414 3971.

6th-7th
Cambridge:
" Atmospheric Dispersion Modelling for Environmental Risk Assessment'. Details: Elaine Hendry, Cambridge Programme for Industry, 1 Trumpington Street, Cambridge CB2 1QA.
Tel: (0223) 332722.
Fax: (0223) 301122.

7th
London: 'How Climate Change will Change your Business'. Details: Conferences Department, Institute of Energy, 18 Devonshire Street, London W1N 2AU.
Tel: (071) 580 0008.
Fax: (071) 580 4420.

7th
London: One day symposium on 'Transport and the Environment'. Details: The Conference Manager, Institute of Water and Environmental Management, 15 John Street, London WC1N 2EB.
Tel: (071) 831 3110.
Fax: (071) 405 4967.

7th
London: 'Petroleum Revenue Tax – The Effects and Implications of the Government's Budget Changes.' Details: Mr Iain Dale, The Waterfront Partnership.
Tel: (071) 730 0430.
Fax: (071) 730 0460.

7th-8th
London: 'Third International Conference on Maritime 'Communications and Control'. Details: Ms Rhian Bufton, Conference Organiser, The Institute of Marine Engineers, 76 Mark Lane, London EC3R 7JN.
Tel: (071) 481 8493.
Fax: (071) 488 1854.

7th-8th
Aberdeen: 'Comparing Practical Strategies for Cost Cutting in Offshore Development'. Details: Maria Coghlan, Customer Services Manager, IIR Ltd., Industrial Division, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD.
Tel: (071) 412 0141.
Fax: (071) 412 0145.

12th-13th
London: 'Cost-Effectiveness, Compliance and Competition in Petroleum Retailing'. Details: IIR Ltd., Industrial Division, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD.
Tel: (071) 412 0141.
Fax: (071) 412 0145.

12th-14th
Oxford: 'New and Alternative Transport Fuels – Technology, Economics and Energy Efficiency'. Details: The Registrar, The College of Petroleum and Energy Studies, Sun Alliance House, New Inn Hall Street, Oxford OX1 2QD.
Tel: (0865) 250521.
Fax: (0865) 791474.

12th-16th
London: 'Advanced Management Seminar Program'. Details: Mrs Julie Chapman, World Petroleum Congresses, 61 New Cavendish Street, London W1M 8AR.
Tel: (071) 636 1004.
Fax: (071) 255 1472.

14th
London: 'Politics of Middle East Oil' - Joint meeting with World Petroleum Congresses. Details: The British Institute of Energy Economics, 37 Woodville Gardens, Ealing, London W5 2ll.
Tel: (081) 997 3707.
Fax: (081) 566 7674.

17th-18th
Paris: Energy Outlook Conference – 'Oil Markets: Strategies for Coping with New Challenges'. Details: Corinne Redonnet, Conference Organiser, DRI/McGraw Hill, Wimbledon Bridge House, 1 Hartfield Road, Wimbledon, London SW19 3RU.
Tel: (081) 545 6212.
Fax: (081) 5456248.

20th
London: 'Prospects for the North Sea' – by Dennis de Wylde, BP. Details: The British Institute of Energy Economics, 37 Woodville Gardens, Ealing, London W5 2ll.
Tel: (081) 997 3707.
Fax: (081) 566 7674.

25th-28th
Moreton-in-Marsh: 'Chemsafe Transport Emergency Response' course. Details: Ron Cameron, Marketing Manager, The Fire Service College, Moreton-in-Marsh, Gloucestershire GL56 0RH.
Tel: (0608) 52156.
Fax: (0608) 51788.

27th-29th
Bali: '16th Annual International Conference of The International Association for Energy Economics'. Details: Irdina A Irawati, Indonesian Institute for Energy Economics (IIEE), c/o REDECON, Gedung Patra Jasa, 1st Floor, Room EFJ Jl. Jend. Gatot Subroto Kav. 32-24 Jakarta 12950, Indonesia.
Tel: (62-21) 511821/511824.
Fax: (62-61) 515133.

August

3rd-5th
Darwin, Australia: 'South East Asia Australia Offshore Conference '93'. Details: IBC Technical Services, 545 Orchard Road, #12-01, Singapore 0923.
Tel: (65) 732 1970.
Fax: (65) 733 5087.

24th-27th
Stavanger, Norway: 'Environment Northern Seas '93'. Details: Mrs C Frimann-Dahl, c/o Norwegian Trade Council, Charles House, 5/11 Lower Regent Street, London SW1Y 4YY.
Tel: (071) 973 0188.
Fax: (071) 973 0189.

Progress in Papua New Guinea

By William A Scholes

The South East Gobe oil project is set to become Papua New Guinea's second petroleum project, following the success of Chevron's Kutubu project. Southern Highlands MP Mr Michael Nali, speaking on behalf of the Mining and Petroleum Minister, Mr Masket Iangalio, told a recent conference that South East Gobe was expected to add 30,000-40,000 barrels of oil a day to Kutubu's daily production of about 140,000 barrels. However, the project will probably not go ahead until next year, as negotiations are still taking place with the 11 partners of two adjoining petroleum prospecting licences.

Barracuda Pty Limited, operator of PPL 56 and a subsidiary MIM Holdings Ltd, estimates the in-place and recoverable reserves at 100 million barrels of oil in place, based on past drilling.

Between 30 and 50 million barrels may ultimately be recoverable. However, as structural complications were expected, it was difficult to estimate both oil-in-place and recoverable oil.

Barracuda is discussing the potential development of the SE Gobe oilfield with Chevron Niugini Pty Ltd, the operator of the adjacent PPL 100 licence, and conducting initial studies to determine the viability of the oilfield. One well flowed at 8,907 barrels of oil a day, a local record.

If these studies establish the commerciality of the latest find, the Petroleum Development Licence and the associated Petroleum Agreement will provide for carried state participation in the project of 22.5 percent, the costs of this being recovered out of future production.

The partners in PPL 56 are Southern Highlands Petroleum (50.5 percent); Barracuda (20 percent); Oil Search Ltd (20 percent); Nomenco PNG Oil Co (7 percent); and Mountain West Exploration Inc (2.5 percent).

Meanwhile the partners in PPL 100 are assessing results of drilling at Gobe 3x, which flowed at a stabilised rate of 1,330 bopd and 1.2 million cubic feet of gas per day during recent drill stem testing.

SE Gobe oilfield would be joined by pipeline to the Kutubu project, which started exporting oil from the marine terminal of the Gulf of Papua a year ago.

The latest estimates of recoverable reserves based on the three widely-spaced drill holes, would make the SE Gobe field commercial, despite its relatively small size. This is because the field lies only 10 km from the pipeline that delivers Kutubu oil to the offshore loading facility.

MIM's petroleum exploration general manager Mr Bob Hall released formal reserves estimates for the SE Gobe oilfield, suggesting that enough oil had been found to press ahead with development already in place for PNG's first commercial oilfield, the giant Kutubu project.

These estimates were immediately interpreted by industry analysts as being on the conservative side. 'By providing these figures, they are already suggesting that the field is commercial. It is now only a matter of determining an overall size,' one analyst said.

Mr Hall said the estimates had been based on limited drilling. Further structural complexities were anticipated, making it difficult to make accurate estimates.

Pandora's box

Mobil Exploration Niugini Inc and its partners in PPL 82 have completed an 892 kilometre marine seismic programme in their prospective Pandora gas field in the Gulf of Papua. The survey follows the grant of a five-year extension of Mobil's licence for the lease in March.

Mobil is the largest holder of oil and gas exploration rights in PNG and is aggressively exploring for hydrocarbons in three onshore and two offshore Petroleum Prospecting Licences (PPLs). PPLs 144, 145 and 146 are located onshore in the northern part of the country and are bisected by the large drainage systems of the Sepik and Ramu rivers.

A company spokesperson said that all geological and geophysical ground investigations in those areas require helicopted and fixed wing support, the operational and cost efficiency of which necessitate close attention to logistical detail. Mobil has a 100 percent interest in each of these and is 18 months into a six-year exploration programme.

Extensive geological work and laboratory analysis of all available data, including interpretation of aerial photographs and satellite imagery, have been completed. A decision to move into a much more expensive two-year seismic acquisition phase must be made by September. Assuming attractive drilling targets are defined, one exploratory well will be drilled in each licence in 1996.

Mobil will be most active in the PPL 82 licence offshore in the Gulf of Papua. Mobil as operator (40 percent) with Japan (PNG) Gas and Oil Company Inc (30 percent) joined this block in 1992, with Ampolex (Pandora Reef) Pty Ltd (10 percent), International Petroleum Ltd (10 percent), Oil Search Ltd (five percent) and Secab Niugini Pty Ltd (five percent).

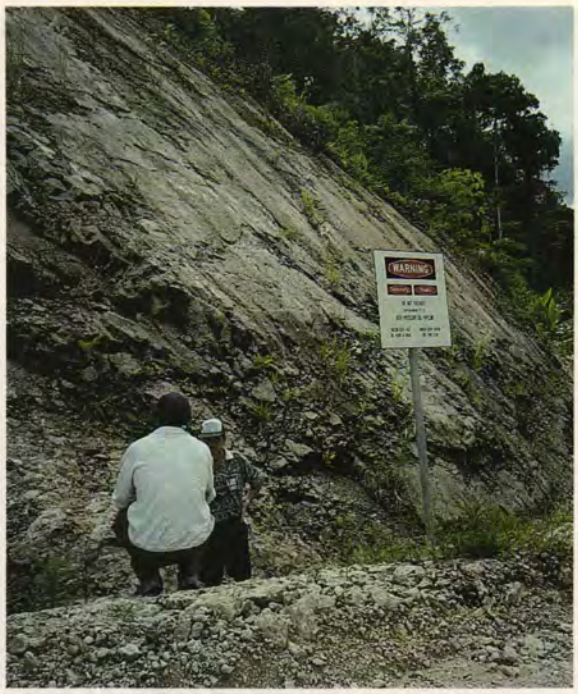
Two natural gas fields have been discovered and hopes of finding additional gas to justify the country's first Liquefied Natural Gas (LNG) development are optimistic.

If the 1993 programme identifies enough gas potential, the venture may elect to drill a wildcat well in 1994. Mobil's most recent acreage addition is PPL 152, which is immediately adjacent to the north of PPL 82.

A joint venture has been formed with Mobil as operator (45 percent), Japan (PNG) Gas and Oil Company Inc (45 percent), International Petroleum Ltd (six percent) and Oil Search Ltd (four percent). A comprehensive geological and geophysical assessment of this block will be completed over a six-year period. Assuming positive results of a preliminary programme, the proposed work includes up to 6,000 kilometres of new seismic data and the drilling of two wildcat wells.

Mobil and part-ners, exploring the Pandora gas field and other reef prospects off the Gulf of Papua, have in mind a commercial LNG processing plant. Recoverable gas reserves are estimated at 4.9 trillion cubic feet (tcf).

The future may lie in the processing of natural gas reserves from several different fields in the Western Highlands, Southern Highlands and the Gulf of Papua. A gathering line that carries gas from all these fields to a single processor on the south coast would enable PNG's total known reserves of natural gas (17 tcf) to be accessed and processed for export.



Good exposure of the thrust fault plane between the Hedinia and Usano structures

Natural gas is seen as the fuel of the future. Environmental constraints and a move to cleaner domestic fuels make it a favoured fuel in industrialised countries. Asian countries are big importers and Japan, Taiwan and Hong Kong are expected to increase their imports.

Hides gas project

BP, which held a 95 percent interest in the Hides gas project in the Southern Highlands, reached agreement with Exxon to allow the latter to farm in to the PPL 138, PDL 1 and PPL 101 oil exploration acreage in the PNG Highlands. On the completion of the Hides-3 well, Exxon will have six months to exercise its option to farm in to a 47.5 percent share of PPL 138/PDL 1 and to acquire all of BP's 21 percent interest in PPL 101 by drilling two further exploration wells.

This is Exxon's third attempt to uncover a major petroleum find in PNG and its return has been welcomed by the government.

In a separate arrangement, BP and Oil Search Limited agreed on a transfer of a 2.5 percent equity interest in PPL 138/PDL 1 from BP to Oil Search on essentially similar terms to the Exxon deal. BP will continue as operator of PDL 1 and PPL 138.

Hides-3 is located 1.9 km east of the Hides-2 and 4.3 km east of Hides-1 gas producing wells drilled in 1987 and 1990 respectively. These wells presently supply gas to the Porgera Joint Venture gold mine for electricity generation. It has already been confirmed that Hides-3 has substantially added to the field's gas reserves.

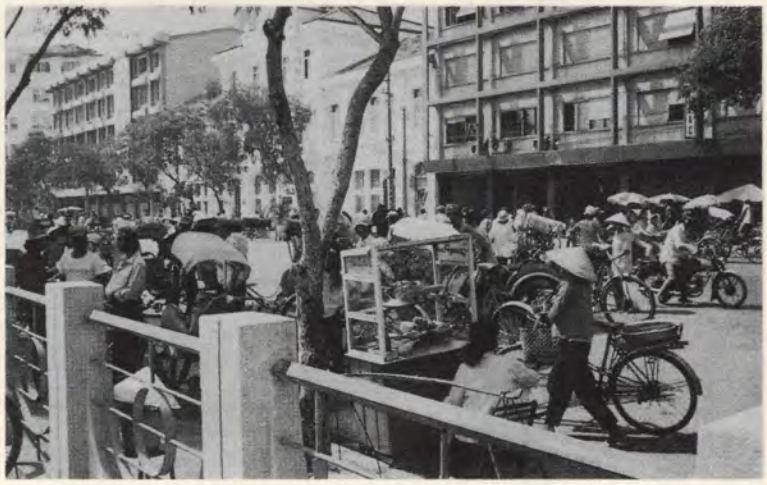
The well reached a depth of 3,194 metres. Preliminary results of wireline logging indicated about 111 metres of Toro sandstone interval, which was gas saturated. Analysts said that more gas at Hides-3 could mean a major breakthrough in PNG's first LNG project. ■

Kutubu project processing plant

Photos by John Waddingham, Imperial College

The practicalities of insurance in Vietnam

By Nicolas Watson, Sedgwick Energy Limited



Article 9 of the Law on Foreign Investment in Vietnam, 1988 states:

'Assets of the joint venture shall be insured by The Vietnam Insurance Company, or by other insurance companies to be mutually agreed upon by both partners'.

It refers only to assets of the joint venture, and not to liabilities of any kind or to expenses such as cost of well control and redrilling expenses, or to consequential losses such as business interruption or loss of charter hire. However, liabilities and cost of control usually have been insured with Baoviet, along with any drilling equipment and supplies owned by the oil companies or for which they have assumed responsibility.

No mention is made of insurances of contractors or sub-contractors although, no doubt, the Article would apply to any joint-venture contractor or sub-contractor.

This insurance regulation, then, appears reasonable and flexible. It does not carry any menace of bitter haggling over insurance which could hinder or even jeopardise a joint-venture operation and it seems that, so far, insurance has not caused any serious problems since the first of the new round of contracts with Petrovietnam was signed in 1987-88.

Insurances for offshore exploration operations can be summarised thus:

- Seismic surveying
- Third-party liability
- Loss of data
- Drilling equipment, consumables etc. in transit, in store ashore and in use on the drilling unit
- Cost of well control and related coverages such as re-drilling expenses, seepage and pollution liabilities, clean-up and containment costs.

How offshore insurances are arranged

The usual procedure is that Baoviet issues its oil company client a policy (or policies) for 100 percent for whichever risks are required to be insured, subject to the client's existing reinsurance arrangements, whether through commercial market insurers or a captive insurance company. Rates and conditions generally correspond to those of the oil company's worldwide programme.

Sometimes, a company's existing insurance programme does not specify individual rates or premiums for risks such as cost of control or third-party liabilities; non-adjustable lump-sum premiums based on projected activities for the year may already have been paid. In these circumstances, current market indications may be sought to establish the premium to be applied to the Vietnam operation.

Usually, when Baoviet accepts the risk, it will negotiate with the client a retention of between 10-20 percent and reinsure the balance to the client's existing market. Baoviet then reinsures this retention under a quota-share, or proportional, reinsurance facility which has been underwritten in London for the last four years. Baoviet thus retains for its own net account a part of each risk it writes.

This is the usual procedure. However, there have been instances when none of the insurances has been placed with Baoviet, and others when Baoviet has retained nothing but has reinsured 100 percent of the risk back to the original programme.

Offshore business is transacted at Baoviet's head office in Hanoi which is where most of the initial negotiations take place. Staff of the Joint-Venture and International Co-operation Department often travel to other centres such as Ho Chi Minh City, Vung Tau and Da Nang to discuss insurance matters with oil company representatives.

Local insurances

In discussing insurance in Vietnam, we should not overlook what may be described as local, or domestic, insurances. They include:

- Third-party liability
- Automobile liability
- Passenger liability (for land transportation)

- Employee personal accident
- Office contents
- Cash (on premises and in transit).

Some of these are compulsory for foreign companies operating in Vietnam and all may be placed with Baoviet.

Compulsory insurances

According to information provided by Baoviet these are currently as follows:

- Third-party liability, minimum limits varying according to the nature of the business or activity insured. Minimum limits for shore-based activities, for example, range from US$25,000 to US$500,000 any one occurrence.
- The minimum requirement for any activity involving the risk of offshore oil or gas pollution is US$25,000,000.
- Automobile liability (in respect of owned vehicles and vehicles hired on a long-term basis) for minimum limits of US$1,500 per person for death and bodily injury and US$10,000 any one occurrence for property damage.
- Passenger liability, with a minimum limit of US$1,500 per passenger and US$10,000 per driver.
- Employee personal accident, the sum insured for each local employee being negotiable, but subject to a minimum top benefit of US$8,000.

In addition to these, the Vietnam Labour Law requires each company in that country to pay 10 percent of its total payroll each month to a national social security insurance scheme which pays benefits following such misfortunes as illness and occupational diseases. This scheme is administered by the Labour and War Invalids and Social Ministry, and not by Baoviet.

All insurances effected by foreign companies must be paid for in hard currency.

Insurance market review

At this point, it is worthwhile referring back to the offshore insurances which, it is hoped, will extend in time to include platform construction and installation and oilfield operating insurances, and examining the London market, which is likely to remain a major reinsurer of Baoviet.

The announcement at the end of April of the Lloyd's business plan served as a reminder that the London insurance market is going through an extremely difficult time. Unfortunately for the offshore oil and gas industry, results in the marine and energy markets have been especially bad.

The seriousness of the situation is well illustrated by Lloyd's global results in all classes of business for the years 1988-90:

1988 £510 million loss
1989 £2,063 million loss
1990 £2,800 million estimated loss.

A much reduced loss of about £1,000 million is forecast for 1991 and a small profit is anticipated for 1992.

Although there were warnings of these disastrous results, the energy market was slow to react. This was due in part to Lloyd's three-year accounting procedure, which means the final audited results are not usually known until about three and a half years after a particular underwriting year has begun.

There were some modest rate increases on renewals in the marine sector between 1989 and the early part of 1991 but these did little more than keep up with inflation. However, from mid-1991 onwards, underwriting attitudes showed a marked change.

Rates rose by as much as 25 percent for business with a good record and by considerably more for that with a poor loss history. Deductibles and excesses – the initial amounts of claims which have to be borne by the assureds themselves – were increased and the scope of coverage was examined more closely and, in some cases, reduced.

The process has continued in the marine energy market ever since, with the result that, for some classes of offshore energy business, rates and conditions are approaching the levels of 12 or so years ago. Seen in this light, steps taken by the market may not seem particularly drastic, but they are extreme when compared with the 'soft' era of the 1980s.

The problem is significantly greater than merely one of rating, because we have seen a reduction in direct underwriting capacity resulting, in part, from more expensive reinsurance and from the fact that since 1991 at least 35 insurance companies, together with a number of Lloyd's syndicates, either have withdrawn from underwriting or have modified significantly their underwriting policy.

The lesson has not been lost on the marine energy markets outside London, particularly those of Scandinavia and the United States, which have followed London's example.

The previous paragraphs have referred to the marine market – that section of the market which writes the offshore, or upstream, risks. The non-marine energy market, which will come into more prominence in Vietnam as downstream activities – refining and petrochemical production – are developed, has enjoyed more stability. However, there are increasing signs that the non-marine markets are going to suffer similar changes. Already, capacity is shortening and where there is a capacity shortfall, there will be pressures on rates. The rating changes are not led so directly by specific non-marine energy loss experience, but by competitive pressure for limited capacity and the overall upward trend in catastrophe insurance rating.

There have been serious onshore losses, including the Norco refinery fire in 1988, the US$1,300 million Phillips loss at Pasadena in 1989 and the Total La Méde refinery loss in 1992 but the market somehow has escaped the severity of loss and the extremes of competition experienced by its marine counterpart, and thus the need for emergency measures.

All this has a direct bearing on the insurances of exploration and production activities offshore Vietnam, just as it does anywhere else in the world. Wherever such insurances are placed originally, it is usual for much of the risk to come to rest in London. Thus, eventually, London direct and reinsurance terms influence world energy insurance. This is true in Vietnam as it is in most other energy sector countries.

Conclusion

This paper is intended to show how insurances are arranged currently. However, if this topic were to be raised in 12 months' time, there could be some significant differences.

The Vietnamese Ministry of Finance has completed the fifth revision of the draft Vietnam Insurance Law to be presented to the National Assembly. It is hoped that the law will become effective in 1994. The factors outlined above will change but – for the moment, at least – it is not possible to say whether the changes will be fundamental or superficial for the oil industry and its insurance needs. ■

The role of logistics within the downstream sector

By Colin Harvey, General Manager Trading,
Supply & Distribution, Shell UK Limited Downstream Oil

Over the past decade we have already witnessed considerable cost savings derived from logistics in the downstream sector. But if ever a business was born to run and not to stand still, it is logistics. As competition continues to bite throughout the downstream sector and environmental legislation makes itself felt, the need to optimise efficiency still further – at every stage from primary supply, through storage and handling to road distribution – has never been more pressing.

If oil is the lifeblood of the national economy, then the pipelines, terminals and tankers we operate are its arteries – pumping product ceaselessly round the country, day and night. The health – or profitability – of our businesses, and those of our customers, depends on delivery which is rapid and reliable, efficient and cost-effective.

For many of the UK integrated downstream companies, total distribution costs represent some 20 percent of the controllable non-hydrocarbon costs. That can rise to up to 80-90 percent of the controllable costs in the case of stand-alone marketing activities. The importance of these figures is reflected in the economy at large, where the transport sector represents some 7-8 percent of GDP.

One must say that logistics link the refinery through the primary supply and terminal network to the final customer not only in a physical sense but also in organisational and business process terms. Logistics, therefore, are at the heart of any downstream operating company. If communication and co-operation between refineries, the supply chain and the marketing divisions are second-rate, then your overall business performance is likely to be similar.

And not only is the logistics chain one of the most vital areas of the oil industry. It is also one of the most keenly competitive – where rapid change is the norm and operators who stand still, stumble.

Within this context, we are witnessing two main trends – the changing nature of the infrastructure and the weighty impact of environmental legislation.

Infrastructure

At the refinery stage, we are continuing to see a widespread exchange of base product between companies, which is then differentiated by adding brand specific additive packages. This process brings very substantial cost savings, with an interestingly-poised customer/competitor relationship – a relationship increasingly common within the industry, as joint ventures continue to crop up on all sides.

This applies to pipelines, which remain the most cost-effective way of moving oil inland second only to not moving it at all because of exchange agreements. More often than not, the capital cost of pipelines calls for ownership and operation as joint ventures. Different equity, usage and supply positions of individual companies have to be balanced to ensure fair access and no preferential treatment for any one particular company.

We are also seeing a gradual reduction in the use of water and rail transport to distribute product around the United Kingdom. This is partly due to the improvement in the road network, partly from economies of scale and partly the change in the duty point of product, not to mention recent step changes in some rail freight tariffs. As a result, a number of the smaller terminals round the country, which were previously supplied in this way, have closed and this trend will continue. Although to some extent these developments might seem inevitable, we should not forget the considerable advantages both water and rail transport offer in environmental terms.

In any event, a dramatically improved road network now means that road transport is increasingly used to move product over longer distances – particularly for final delivery. Indeed, within the United Kingdom as a whole, road transport today accounts for 63 percent of the total tonne/miles of goods carried. The oil industry's investment in pipelines and other forms of primary supply means that the corresponding figure for oil products is very significantly less.

Massive productivity gains have been made in the transportation of petroleum products by road over the past 10 years. The volume of oil product delivered by road has increased by some 23 percent, while the number of tanker drivers has been reduced from over 10,000 to approximately 5,000.

Many of these tankers belong to fleets sub-contracted by the major players – another growing feature of the business. But whatever company crest the product makes its journey under, the customer at the final destination is only interested in one thing – fast, reliable and responsive service at very competitive prices. That is where the competitive edge lies.

Environmental issues

The second significant trend is the effect of environmental considerations on the logistics business. The oil industry, of course, is no stranger

to the constraints and challenges environmental legislation brings. At every stage of our operations, we are in the spotlight. And nowhere is that more true than in the distribution of product. The public might not get within 200 miles of a drilling platform but they are unlikely not to see a road tanker, a terminal or the laying of underground pipelines at some time or other.

The challenge for us all is to ensure that we fulfil our environmental responsibilities not just to the letter of the law but to the highest possible standards. That said, any legislation passed must be considered and well-balanced if it is to be effective and ensure the industry continues to maintain a secure logistics network so essential for the efficient running of the country.

The ability to respond adequately and contain any emergency must be integral to the supply and distribution activities. With some 70 million tonnes of oil product being moved around the United Kingdom, in consignments as small as 10 tonnes, it is only realistic to acknowledge that the occasional accident or spillage will occur. But we must have the ability to respond and minimise the environmental and safety impact.

One 'environmental' effect we have already seen is the closure of some smaller terminals and the running of others as joint enterprises. Environmental spend is, after all, probably the major capital call on the oil logistics business. Many terminal operators faced with escalating capital expenditure for bottom loading and vapour recovery, for example – not to mention the requirements around the corner – have realised that future operating costs and capital requirements can be best minimised by joint venture or throughputting arrangements. The industry is increasingly finding that overall margins in the downstream oil business are insufficient to fund the capital programmes necessary to meet environmental legislation.

Clearly the environment is an issue which will continue to ride high on our agenda for many years to come. But there are a number of others that will need to be addressed – such as legislation to allow the use of 44 tonne vehicles, concerns over the security of long-term rail freight contracts after privatisation, marginal costing of oil freight for railways and sensible regulations on the hours of work. The continued improvement in the efficiency of oil logistics depends greatly on the outcome of such issues.

New technology

As we look to the future, I see technology playing an increasingly vital role in the logistics process. We only have to look at what has been achieved in high street retailing, where the advanced integration of information systems has revolutionised the logistics systems of the best retail chains. Many companies outside the oil industry have achieved excellence and competitive advantage through fundamentally changing the structure and management of their supply chains. In the motor industry, for example, 'just in time' purchasing techniques have significantly reduced working capital requirements.

Clearly, there is immense potential out there. In the logistics business, there is no blueprint, no one single way of doing things which can transform costs and service levels overnight. Success requires a series of carefully considered individual initiatives, integrated within an overall strategy.

As the downstream oil sector becomes ever tougher, with margins falling and a focus on customer service as never before, it is the logistics chain, more than any other area of our business, which holds the key to greater cost competitiveness. ■

This paper was presented at a recent IP Conference, 'Improving Oil Industry Cost Competitiveness through the Logistics Chain'.

Proteus signs up Transfleet tankers

The independent motor spirit, fuel oil and heating oil company, Proteus Petroleum Ltd., has signed a substantial purchase and hire-back agreement with Transfleet Services Ltd., a company which provides management services to a number of suppliers in the United Kingdom.

Under the agreement, Transfleet Services, a joint venture between Lex Service plc and Lombard North Central plc, purchased Proteus' tanker fleet based at Grays, Tottenham and Bristol, hiring them back in an arrangement which provides substantial tax savings and other financial benefits.

At the same time Proteus has increased its commercial vehicle fleet by contract hiring a new tractor unit from Transfleet Services Ltd.

This is by no means the first of this type of contract – other companies have stopped operating their own tankers and entered similar contractual arrangements. Proteus drivers have kept their jobs, transferring to Transfleet, while the company logo is now seen on the Transfleet tankers.

Terry Irwin, Marketing Director of Transfleet Services Ltd., told *Petroleum Review* that his company would maintain and operate the tanker fleet from its nationwide network of 30 depots. The company has a sophisticated computer system which has been custom-built to run fleets of vehicles, to keep individual vehicle records and to serve both Transfleet and customers' needs. This enables staff to work out routes, reduce mileage etc – all in the interest of efficiency. When a vehicle is off the road, the company would supply a replacement at no extra charge, recover the broken-down vehicle and carry out emergency repairs. Proteus will thus be able to lower their costs and improve their customer service.

Commenting on the deal, Ron Haacke, Managing Director of Proteus, said, 'Our business is in the bulk supply of motor spirit and heating fuels at highly competitive prices to a chain of 150 service stations in the south of England, plus its commercial and domestic oil business.

'We were concerned at the high level of costs associated with the operation of our fleet in-house together with the overheads involved in employing specialists to manage the fleet and this provoked us into contacting Transfleet.

'After studying the finds of the subsequent research, we concluded that the real cost of operating our own fleet could not be justified as an internal overhead when the money employed could be used more profitably elsewhere in our business.

'The money released by the contract hire agreement is being used to carry out additional site developments and to improve the infrastructure of our existing service stations for the benefit of our operators and customers.

'Under the agreement, we are continuing to employ our own drivers and to specify our own delivery schedules but we have the benefit of Transfleet's efficiency in vehicle operation and maintenance which has resulted in greatly increased effectiveness of our commercial vehicle fleet overall.'

Mr Irwin said, 'This is an example of a service company that has recognised that its priority should be to concentrate on applying its expertise to the benefit of its service station operators and their customers, while leaving a specialist company to achieve the most economical management of Proteus Petroleum's commercial vehicle fleet.'

Proteus was launched in 1989, starting with 50 outlets. While the original aim, according to Mr Haacke, was to reach 200 sites as fast as possible, the UK economic climate of the last two years has thwarted these expansion plans – outlets presently number 150. Last year the company signed contracts to supply 36 new service stations and it hopes to double this growth this year. The target is still 200 sites. By utilising the vehicle management services of Transfleet, the move frees up capital which can be devoted to the expansion of the business. ■

Carol Reader

One of Proteus Petroleum's tanker fleet delivering at Smylie's Garage, Tottenham, N15, under its new purchase and hire back agreement with Transfleet Services Ltd.

The Institute of Petroleum

Economics of Refining Conference

What the Environment Is Costing the European Refining Industry

Tuesday 19 October 1993

To be held at The Cavendish Conference Centre, London

This conference is the latest in the series on the Economics of Refining, which are held every two years and attract very large audiences.

This year, the Institute takes a cold hard look at the frightening costs associated with the increasingly stringent European regulations being pressed forward in the name of the environment. Initially our industry must find the money to pay for the changes, but eventually the general public will have to pay in increased product prices – so to what extent is it all really necessary?

The 1993 IP Economics of Refining Conference will include the latest papers on modern technology to ease some of the problems and a concrete example of very large sums of money already committed to a major environmental upgrade.

Topics to be presented will include :

EC environmental legisation and the European oil industry

New technologies for efficient refining in the environmentally conscious 1990s

Achieving refining profitability while improving environmental performance

Technological options for the clean & cost effective use of heavy residues

New catalyst and process developments in residuum upgrading

Upgrading Shell's Pernis refinery for improved environmental performance

For further information, and a copy of the registration form which should be available at the end of July, please contact **Caroline Little**, Conference Officer, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR, UK. Telephone: 071 636 1004. Telex: 264380. Fax: 071 255 1472.

Maui number one in New Zealand

By William A Scholes

The great Maui gas field dominates New Zealand's energy supply, with the country's economic future linked to the field's development. It is encouraging that the majority owner in the Maui joint venture, Fletcher Challenge Petroleum (FCL), has reported the identification of 11 prospects around the field's flanks.

The Maui partners may have struck oil with their first Maui B wells – an added bonus of up to five million barrels. Encouraging news was a thicker-than-expected oil rim on the edge of the lower Maui B lobe, about 50 kilometres off Oaonui. This was confirmed recently by Maui joint venture general manager Renny Snell. It has been known for several years that the lower lobe of the giant Maui field contained oil as well as gas but the drilling of the B wells is really the first opportunity to determine whether it will be economic to dedicate any of those wells to oil recovery and to modifying the B platform to cope with the extra hydrocarbons. If viable, this will be an added bonus.

'There are indications of a reasonable oil rim in one of the four wells drilled so far...it's thicker than expected,' said Wayne Thomson, general manager of FCL subsidiary, Petrocorp Exploration.

Work is well underway on the fourth of eight wells planned for the Maui B production platform. Drilling operations are expected to be completed by August. 'Once the fourth well had been drilled to a depth of about 3,000 and completed as a producer, oil and gas would start flowing to shore via the A platform 15 km away,' said Mr Snell.

Shell-Todd Oil Services Ltd (STOS) had also been testing the new facilities on the A platform – which were added to cope with the heavier hydrocarbons from the Maui B field so there would be no surprises when the richer, different specification B gas flowed.

STOS is operator of the field on behalf of the Maui partners – Fletcher Challenge Petroleum Investments Ltd, Shell (Petroleum Mining) Co Ltd and Todd Petroleum Mining Co Ltd.

Kupe

The next offshore project will be the Kupe Field in PML 38146, where new operator Western Mining Corporation (NZ) Ltd (WMC) is evaluating development options. This geologically complex field was discovered in 1986, drilling up-dip of a show in a 1975 well, and further delineated by TCPL Petroleum's four appraisal wells and reconnaissance 3D seismic survey.

Even with this exploration, the extent of individual reservoirs and the conditions of the hydrocarbons, and hence a full understanding of the ultimate likely recoverable reserves of the field, are still not completely known. Identified possible reserves have been reported as comprising 155 billion cu m of gas and 92 million barrels of liquids.

These possible reserves significantly exceed the proven reserves, which have been assessed as being sufficient to proceed with development planning, 61 billion cu m of gas and 35 million barrels of liquids.

The development timetable for Kupe is related to gas demand: New Zealand's needs are met by Maui currently which is likely to decrease during the next 20 years.

Following its acquisition of a 40 percent interest in the licence last year, WMC has been evaluating the feasibility of developing Kupe gas located 35 km offshore Taranaki in the South Taranaki Bight. Interests in PML 38146 are: WMC (Operator) 40 percent, Norcen International Ltd 20 percent, New Zealand Oil and Gas (NZOG) Group 16.5 percent, Minister of Energy 11 percent, Shoseki Oil Development Co of Taranaki Ltd 10 percent and Delta Petroleum Ltd 2.5 percent.

It has long been recognised that a low cost method of development would be required for the Kupe field because of the relatively small proven reserves. Initially, WMC evaluated the feasibility of a gas-recycling project using a submarine concrete storage tank to store stripped liquids offshore. An offshore tanker mooring was proposed to export produced liquids. Gas sales to onshore customers were expected to commence in the late-1990s.

Detailed technical studies by WMC indicated that installation of an oil pipeline to shore is the preferred means of handling liquids. This option opens up the possibility of synergies with the existing Taranaki petroleum infrastructure.

A development involving both gas and oil pipelines to shore would create the opportunity to sell gas commencing in the mid-1990s. A

project involving primary depletion of gas has been identified that ranks favourably with gas recycling options.

WMC has conducted a seabed survey on a possible pipeline route between the Kupe field and the Taranaki coast. Completion of feasibility studies and selection of a development option is expected shortly. First production from the project is expected in 1995.

Exploration activity

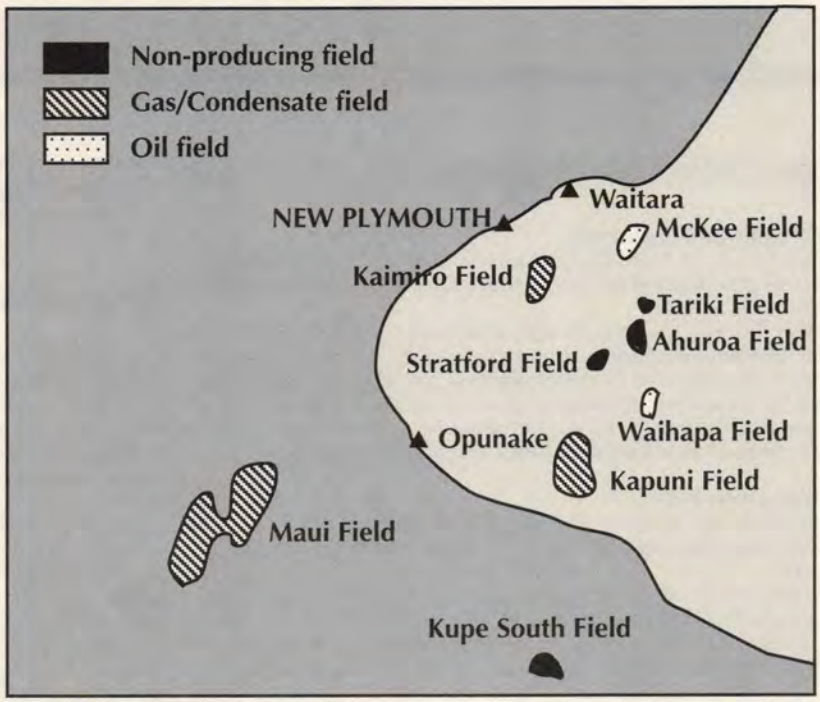
Oil exploration in Taranaki – New Zealand's only oil producing region – is surging ahead with more than 20 wells either being drilled or planned for 1993. Last year only eight wells were drilled in the region – four onshore, two Maui B wells and two others off Taranaki.

The key to the year's energetic exploration activities are the shallow Mt Messenger-Moki sandstones which cover much of the region and from which the commercial Ngatoro field and now the Wingrove discovery flow. The shallow wells, down to a target depth of about 2,000 metres, take less time and cost less than conventional wells, which usually target the deeper Kapuni formations. Shallow wells can be completed for $NZ1.5-2 million and in three weeks compared to conventional cost of $NZ3-4 million and six weeks.

There are also a comparatively large number of wells either being tested or about to be tested. Production testing has started at the wildcat discovery Wingrove-1 well, south east of Stratford in prospecting licence PPL 38083 and at the nearby Ngaere-1 appraisal well in mining licence PML 38141.

Ngaere-1, located about 1.5 kilometres from the northern boundary of Waihapa, tested at 4,200 barrels a day. The Ngatoro-3 and 4 appraisal wells, south of Inglewood in licence PPL 38706, have been completed and operator NZOG and its partners are waiting for the necessary equipment before starting production testing there.

The participants were so confident of Ngaere-1's potential to produce that they had pre-laid a pipeline connecting it to the new Waihapa production station. The pipeline effectively brought the well into production from day one, allowing no transition from testing to permanent production. This also avoided the need to flare, as the associated gas was being coming-led with that of Waihapa gas for use by the Stratford power station.



Oil and gas fields of New Zealand.

The Waihapa station had been designed to process up to 12,000 barrels of oil a day and was producing 7,200 barrels a day prior to Ngaere-1 being brought on line. Mr Thompson said the positive result from Ngaere-1 reinforces the view of the Waihapa Joint Venture that there is significant potential to produce oil and gas from the Ngaere licence area.

New Zealand's two most active oil exploration companies were awarded five of the six new licences in the Taranaki Basin – Petrocorp Exploration Ltd and NZOG.

Relative newcomer, Cultus Petroleum NL, was granted PEP 38413, in between the southern NZOG and Petrocorp permits and over the previously drilled Maui-4 and Moki-1 sub-commercial oil discoveries. ■

Institute News

New Collective Members

EWI Engineers & Consultants
Electrowatt House, North Street, Horsham, West Sussex RH12 1RF
IP Nominated Representative: Mr A R Peel, Business Development Manager, Oil & Gas

EWI (formerly known as Electrowatt Engineering Services UK Ltd and a subsidiary of EWI Engineers & Consultants, Zurich) is a leading independent company of consulting engineers, providing comprehensive technical, management and engineering services to the energy industries. EWI is recognised in the oil and gas sector for its safety engineering, safety management and advanced engineering analysis capability.

Radius Systems Ltd.
Wykeland House, 47 Queen Street, Hull HU1 1UU
IP Nominated Representative: Mr T D Raynor, Sales Manager – Fuels Division

Radius Systems Ltd is a subsidiary of Radius plc, offering computerised fuel and oil distribution systems, on a Unix platform, aimed at the major oil companies in the United Kingdom and Europe. The 'Fueltrader' package is based on the industry standard, Informix 4GL.

Spectrasyne Ltd.
3 The Ringway Centre, Edison Road, Basingstoke, Hampshire RG21 2YH.
IP Nominated Representative: Mrs J T M Moncrieff, Technical Director.

Spectrasyne Ltd specialises in environmental monitoring for the oil industry and was formed in 1992 as a management buy-out from BP Research. The company's mobile environmental monitoring unit undertakes laser-based DIAL measurements, enabling direct quantification of VOC mass emissions. In addition, Spectrasyne offers on-line flue gas monitoring, providing routine compliance testing and, with its special gas chromatography package, more specialised combustion diagnostics.

Minton, Treharne & Davies Ltd
Merton House, Croescadarn Close, Pentwyn, Cardiff CF2 7HE
IP Nominated Representative: Mr John Minton, Managing Director

Minton, Treharne & Davies Ltd is a consultancy and test house. Its main activities are:

- *consultancy* - investigation and advice regarding shipment of bulk oil, petrochemicals and coal/other bulk solids, control of quantity and quality, shortage and contamination, fires and explosions, industrial and marine environmental contamination, and
- laboratory investigations
- chemical and physical analysis of oils, petrochemicals, waters, gases, metals, soils, coal etc.

Benevolent Fund

The Institute of Petroleum Benevolent Fund was established as a separate fund, with independent finances, in 1958. In 1986 a new Trust Deed constituted the Fund as a charity under English law. Previously it was maintained by the Institute.

The Fund exists to provide financial and other help to present or former members of the Institute of Petroleum and their families and dependent relatives who are in financial need.

The Management Trustees are the President, the Honorary Treasurer, the Honorary Secretary and the Director General of the Institute for the time being. In addition, there are two General Trustees who are currently long-standing members of the Institute with experience of its operations and its membership.

Applications for support are dealt with as and when received. When considered appropriate, a visit is made to the person making the application. The General and Management Trustees meet annually to review the finances of the Benevolent Fund.

In 1992, income from investments, interest on deposits and donations and legacies totalled £8,244. Expenditure on grants, audit fee and sundry expenses totalled £2,602. There was therefore £5,642 new money available for investment. Taking investments at market value the net assets of the Benevolent Fund at 31 December 1992 totalled £105,612. The auditors are Ernst & Young.

Applications for assistance are invited from members, former members, the families and dependent relatives of members, former members and deceased members who are in need. Please draw this notice to their attention.

Deaths

We regret to announce the deaths of the following members:-

	Born
R E Adlington, Cirencester, Glos	1902
R Battye, Esher, Surrey	1926
F B Bowring, Tunbridge Wells, Kent	1914

UK Deliveries into Consumption April 1992 (tonnes)

Products	*†Apr 1992*	**Apr 1993*	*†Jan-Apr 1992*	**Jan-Apr 1993*	*% change*
Naphtha/LDF	310,092.0	163,007.0	1,171,917.0	1,051,546.0	-10
ATF – Kerosene	517,828.0	539,511.0	1,995,669.0	1,964,921.0	-2
Motor Spirit	2,043,910.0	1,947,470.0	7,789,409.0	7,517,891.0	-3
of which unleaded	936,725.0	1,008,338.0	3,494,839.0	3,823,077.0	9
of which Super unleaded	120,450.0	120,024.0	435,051.0	463,708.0	7
Premium unleaded	816,275.0	888,314.0	3,059,788.0	3,359,369.0	10
Burning Oil	240,938.0	201,066.0	1,030,566.0	1,037,006.0	1
Derv Fuel	914,095.0	935,000.0	3,593,692.0	3,791,088.0	5
Gas/Diesel Oil	676,071.0	587,992.0	2,874,492.0	2,808,894.0	-2
Fuel Oil	982,046.0	779,170.0	4,133,556.0	3,601,910.0	-13
Lubricating Oil	60,204.0	63,376.0	254,154.0	255,053.0	0
Other Products	524,545.0	559,638.0	2,243,126.0	2,393,786.0	7
Total above	**6,269,729.0**	**5,776,230.0**	**25,086,581.0**	**24,422,095.0**	**-3**
Refinery Consumption	494,804.0	492,942.0	1,978,076.0	2,043,994.0	3
Total all products	**6,764,533.0**	**6,269,172.0**	**27,064,657.0**	**26,466,089.0**	**-2**

*† Revised with adjustments * Preliminary n/a Not Available*

Institute News

	Born
D A Dixon, Beverley, North Humberside	1927
D G Johnstone, Emsworth, Hants	1925
D Mathys, Epsom, Surrey	1947
A A Rafiee, London	1923
K Reiser, Richmond, Surrey	1920
H W Smith, Harpenden, Herts	1905
A R Yousef, London	1931

New Members

Dr P K Banerjee, Bitumat Co Ltd, PO Box 7487, Dammam 31462, Saudi Arabia
Mr B J Bannon, 4 Rose Bank Road, Childwall, Liverpool
Mr A D Barker, Dussek Campbell Ltd, Thames Road, Crayford, Dartford, Kent DA1 4QJ
Mr R C Barley, 34 Chantry Road, Kempston, Bedford MK42 7QU
Mr K Basey, Ken Basey Engineering Services, 14 Mearns Street, Aberdeen AB1 2AT
Mr J W S Bentley, Engen (UK) Ltd, 138/142 The Strand, London WC2R 1HH
Mr P J Blackford, Rapleys, Godwin House, George Street, Huntingdon, Cambs PE18 6NA
Mr P Blunsden, Texaco Ltd, Pembroke Refinery, Pembroke, Dyfed SA71 5SJ
Mr G P B Bradley, Irish Shell Ltd., Shell House, Beach Hill, Clonskeagh, Dublin 4, Ireland
Mr D M Corbett, 144 Chesterfield Avenue, Benfleet, Essex SS7 3HW
Mr F W R Deans, Nomis Shipping Ltd, 186 Albert Quay, Aberdeen AB1 2QA
Mr A K Dhar, Indian Oil Corpn., Scope Complex, COREX., 7 Institutional Area, Lodhi Road, N. Delhi 110003 India
Dr R Dhimitri, Rr.Asim Vokshi, Pall.104, Shk.2, NR.11 Tirana, Albania
Dr M Dunk, Mobil Oil Co Ltd, The Clock House, Frogmoor, High Wycombe, Bucks HP13 4DB
Mr S T Eades, 7 St Bartholomews Road, Stourport, Worcs DY13 0AJ
Mr R Etchingham, Petrogas Group Ltd, Petrogas House, 250-252 Sarsfield Road, Inchicore, Dublin, Ireland
Mr L Fox, 37 Bradgate Road, Markfield, Leicester LE67 9SQ
Mr K Fraser, North Sea Well Control, Engineering (NORWELL), 329 North Deeside Road, Cults, Aberdeen AB1 9TH
Mr N Frend, 56 Nevendon Road, Wickford, Essex SS12 0NF
Mr P Fusaro, 20 Harwood Avenue, White Plains, New York 10603, USA
Mr A F Grattan, Jet Research Centre, Howe Moss Av., Kirkhill Ind Estate, Aberdeen AB2 0GP
Mr A Gray, Oceanscan Ltd, Denmore Road, Bridge of Don, Aberdeen AB23 8JW
Mr J E Hampton, Hampco Ltd, Wood International Centre, Craigshaw Drive, West Tullos, Aberdeen AB1 4AG
Mr E Harrison, Harrison Drilling & Production Services Ltd., PO Box 128, Unit 3, Minto Drive, Altens, Aberdeen AB1 4LW
Mr K J Haulihan, Thornton House, Vicarage Lane, Kingsthorpe, Northampton NN2 6QS
Mr A S Hayes, Heatherways, Distillery Road, Fettercairn, Laurencekirk, Kincardineshire AB30 1YB
Mr D I Holland, 18 Merlin Close, Thornhill, Cardiff CF4 9AN
Mr J R Hornsby, 5 Saffron Close, Horndon-on-the-Hill, Stanford-le-Hope, Essex SS17 8PL
Mr I Hunter, 42 Desswood Place, Aberdeen AB2 4DG
Mr M Kendall, IBS Ltd., Westgate, Aldridge, Walsall WS9 8EX
Mr P M King, 50 Mortimer Road, East Ham, London E6 3QW
Mr G Lambton, Lloyd's Register, 11 Golden Square, Aberdeen AB1 1RB
Mr G Lhonnejx, VSB., Kruisschansweg 1, B-2040 Antwerp, Belgium
Mr R J Lovelock, Rose Cottage, White Street, Easterton, Devizes, Wilts SN10 4NZ
Mr C P Malins, Prestaroy Ltd, 27 Wellheads Ind. Centre, Dyce, Aberdeen AB2 0GA
Mr T E Masson, Guardian P.T.S. Ltd, Dales Industrial Estate, Peterhead, Aberdeenshire AB42 7TF
Mr Y S Matashi, NNPC., Carrier House, 1-9 Warwick Row, London SW1E 5BL
Mr T McCabe, Hazell Engineering Ltd, 46 Marischal Street, Aberdeen AB1 2AL
Mr H Miranda, PO Box 395, Kenmore 4069, Queensland, Australia
Mrs A M Napthine, 10 Holly Cottages, Eastbridge, Leiston, Suffolk IP16 4SN
Mr R V Nuttall, Shaffer, Denmore Road, Denmore Ind Estate, Bridge of Don, Aberdeen AB23 8JW
Mr B O Olatunji, 10a Leytonstone Road, Stratford, London E15 1SE
Mr P D Paul, 30 Winchester Close, Enfield, Middx EN1 2ES
Mr R Pegg, 14 Willowbrook Close, Broughton Astley, Leicester LE9 6HF
Mr C W Pollard, 82 Ely Close, Stevenage, Hertfordshire SG1 4NP
Mr J C Pond, Clifford Chance, 200 Aldersgate Street, London EC1A 4JJ
Mr M J Raeburn, Oilfield Aviation, Robertswells, Whiterashes, Aberdeen AB2 0QX
Mr D C Reynolds, 40 Quilter Road, Felixstowe, Suffolk IP11 7JJ
Mr J Robson, Roplex Engineering Ltd, Unit 1, St Margarets Lane, Titchfield, Fareham, Hants PO14 4BG
Mr P C Sexton, Petrogas Group Ltd., Petrogas House, 250-252 Sarsfield Road, Inchicore, Dublin, Ireland
Mr A J Simpson, 89 Osborne Place, Aberdeen AB2 4DD
Mr C S Smith, Hoare Govett, 4 Broadgate, London EC2M 7LE
Mr P S Stock, Clifford Chance, 18th Floor, Dubai World Trade Centre, PO Box 9380, Dubai, United Arab Emirates
Mr M Subramaniam, No.24 USJ 3/3l, Subang Jaya 47600, Selangor, Malaysia
Mr F Suntook, BSGi., The Research Works, Barley Mow Passage, London W4 4PH
Captain J B H Swain, 46 Wildwood Drive, Port Moody, B.C, V3H 4M6, Canada
Mr D R Taylor, Noble Drilling (UK) Ltd, Farburn Industrial Estate, Dyce, Aberdeen AB2 0HG
Mr C F Terry, 24 The Cheveralls, Dunstable, Beds LU6 3NH
Mr A M Thomas, 42 Caswell Road, Caswell, Swansea SA3 4SD
Mr B M Walters, CMG (UK) Ltd, Telford House, Tothill Street, London SW1H 9NB
Mr F J Ward, 11 Meadow Mount, Churchtown, Dublin 16, Ireland
Miss S E Wilford, 1 Rose Cottage, Hill House Hill, Liphook, Hants GU30 7PX
Mr T L Wink, 13 Rosia House, Naval Hospital Road, Gibralter
Mr D H Withey, 3 Selborne Road, Park Hill, Croydon, Surrey CRO 5JQ
Mr M A Wright, Ingram Cactus Ltd, Wellheads Crescent, Dyce Ind Park, Dyce, Aberdeen AB2 0GA

Students

Mr J F Cassidy, 14 Cromwell Court, Farrer Street, Kempston, Bedford MK14 8JH
Mr B G Delves, Wharley Close, Wharley End, Cranfield, Bedford MK43 0AH
Mr S Jackson, Treloweth, School Hill, Mevagissey, Cornwall PL25 6TH
Miss V J Trembath, 2 Irwin Road, Onslow Village, Guildford, Surrey GU2 5PP

Student prize winner

Mr G D McLaren, Limervay, East Moulin Road, Pitlochry, Perthshire PH16 5ER

Safety suits

Trellchem HPS (high performance suit).

Two new, re-usable, single-skin, gas-tight suits, designed to provide protection against the majority of hazardous chemicals in commercial use, while being flexible, lightweight and comfortable to wear, have been developed by Trelleborg Industri AB. Both suits, the Trellchem HPS (high performance suit) and the Trellchem VPS (vapour protection suit) meet and exceed the requirements of the American standard National Fire Protection Association 1991, including its flammability and abrasion-resistance tests, and also meet the German VFDB 0801 requirements. In both cases, these multi-use suits qualify for the standards without the need for an additional over garment to provide effective protection against hazardous chemicals in liquid, vapour, gaseous and solid forms that are encountered in industrial application as well as by fire and rescue services, and defence personnel working on land-based and offshore installations.

Trellchem VPS (vapour protection suit).

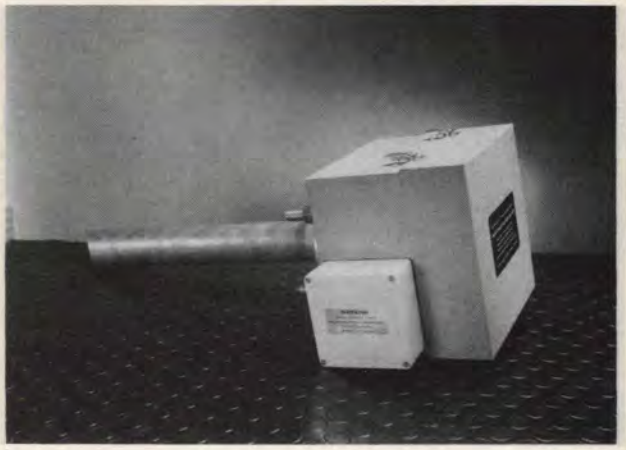
Gas analysis

Servomex has introduced the model 1295 heated sample probe designed for use with extractive sampling systems where the gases to be analysed must be kept above their dewpoint. The filter probe can be used with samples containing corrosive elements, water vapour, dusts and aerosols in applications such as flue gas desulphurisation systems, waste incinerators, fluid catalytic crackers, coke hoppers and reactors.

The assembly consists of the heated probe head a sample tube with support. In the heated probe head, a replaceable borosilicate glass fibre filter element with organic binder retains 99 percent of 0.6 micron particles. The filter is protected in a stainless steel housing environmentally sealed to IP65 standards and electrically heated at around 200 °C.

Servomex offers a choice of stainless steel and Hastelloy probes for temperatures up to 750 °C and a ceramic probe for temperatures to 1600 °C. The hot HC1 version of the 1295 and a ceramic probe for temperatures to 1600 °C. The hot HC1 version of the 1295 probe contains a heated chest inserted between the probe head and the mounting flanges.

The probe assembly can be installed either horizontally or vertically and is designed for mounting directly to a standard 150lb raised face stainless steel flange.



Servomex 1295 heated filter probe for gas analysis.

ROV mateable connector

A new series of ROV (remotely operated vehicle) mateable connectors are now offered by Hawke Connection Systems using the proven Lockheed Challenger Marine Single Pin multi-contact inserts. Due to the non-orientation facility, these connectors enable an ROV operator to successfully achieve a high quality under-water contact with ease. Hawke can also offer a choice of mechanisms for locking the connector system, suited to diver or ROV operation.

The female insert is contained within an oil filled, dynamically compensated bladder which incorporates the Lockheed patented 'Sphincter Muscle'. This enables all mating and unmating operations to be carried out in the oil, thereby allowing for a high integrity in the connection and resistance to water ingress.

All female inserts are protected by a double sealing barrier to prevent water incursion and to clean the male insert on entry. This also prevents oil from being released by the connector into the environment.

A Hawke mateable connector.

The comparison between ROCOL 1PX1 durable barrier coating against other coatings after 300 hrs ASTM B117 Salt Spray Test.

Resistant coating

Rocol 1PX1 coating system provides a durable barrier coating which is bonded to the surface of the component being treated. The coating has been engineered to provide the highest degree of protection against corrosion and wear and has been specifically formulated for harsh environments. It is also suitable for use over a wide temperature range.

During the 1PX1 coating process an inert, durable barrier layer is bonded to the surface of the substrate. This barrier is resistant to corrosion and chemical attack and prevents electrochemical (galvanic) corrosion. The coating also provides a realistic alternative to coatings which contain cadmium, chromium and other toxic substances.

Environmental guard for piping

A device for protecting free-vent rupture disc piping and safety relief valve outlets from the effects of rain, insects or birds is now available from Allison Engineering Ltd.

This is the `Enviro-Gard' pipe cover, manufactured by Continental Disc Corporation and constructed from a new PTFE-coated glassfibre-impregnated fabric. In high visibility blue, it provides indication of pressure relief as any over-pressure blows the cover from the pipe end.

The new guard, which has the ability to withstand temperatures up to 260 °C, also prevents snow, ice or rain from accumulating in an open piping configuration. A further feature is it remains attached by a retrieval rope, thus making the guard a re-usable pipe and cover.

PC based SCADA systems

Whessoe Varec have announced two new PC based supervisory control and data acquisition software packages specially optimised for inventory management and product movement control in medium and small tank farms. The systems are designated TCIM and Tankview.

TCIM, designed for oil terminals and other medium size tank farms, collects information serially from Whessoe Varec gauges, interfaces with most PLCs and distributed I/O systems for valve and other control and provides sophisticated operator information and control via colour graphic screens.

Both live plant data and historic information is presented via up to 98 configurable animated mimic diagrams plus tabular data, histograms, trend graphs and printed reports. Statistical process control (SPC) data can be derived automatically and presented via X and R charts, median histograms and scatter diagrams. Scanning for alarms and logging of data to disk is carried out continuously in background mode. Networked operator stations communicate via Ethernet or other commer-cial network protocols. Host computer interface is available for both DOS based systems and UNIX based systems using TCP/IP either directly or via modem. TCIM fully exploits 386/486 technology and sophisticated memory management to provide exceptionally fast operation.

Tankview, designed for depots and other smaller scale tank farms, provides similar facilities to TCIM but with more limited display and networking options.

Thomas the tanker

A radically new, tough and super safe tanker has been built by Australian manufacturer Hockney for the Transport Development Group (TDG). The new tank design is known as `THOMAS' (Tank Having Optimum Mass and Stability). It features a low centre of gravity, improved crash resistance and aerodynamic design.

The new tank has been developed in response to specific concerns about the safe carriage of dangerous goods, such as petroleum spirit. The entire tank shell is nested within a cage of hollow bars designed to absorb rollover impacts, as well as front and rear crash crumple zones.

The unique Thomas shape is claimed to be a theoretical optimum that enables the centre of gravity to be lowered by 240 millimetres, giving typical height of 2.8 metres, fully laden. Experience of testing and full operations in Australia has shown the design to be 45 percent less susceptible to rollover than conventional tanks.

Other innovative features of the Thomas tank include fully enclosed valves and hoses, full anti-lock braking system, aerodynamic skirts to suppress spray and overall net reduction in drag of about 20 percent.

TDG's specialist bulk liquids and gases business, Linkman Tankers' managing director, Peter O'Keefe, who is current Chairman of the Institute of Logistics and Distribution Management, comments: 'We set out to find the world's safest tank and I believe we have it in the Hockney design. Its remarkable features represent the current state-of-the-art and with the increasing demand for quality and safety from manufacturers and distributors of hazardous goods, innovation and technical excellence are essential requirements for our industry'.

45,000 litre version of the 'THOMAS' tank in the livery of Australian haulier Universal Transport Operations.

Triscan's 'Kisskey' in use.

Secure vehicle management

Triscan have introduced a new vehicle management system designed to offer high security and ease of use.

The 'kisskey' system is centred around an on board processor, intended to pick up mileage automatically. It has a touch pad conveniently positioned for the driver in the cab. When fuel is required, a driver specific 'kisskey' has to be touched onto the pad, picking up the vehicle ID and the current mileage. In order to draw fuel the driver must 'kiss' the key onto a similar pad, mounted on a fuel island controller adjacent to the pumps, within a pre-set specified time, typically 20-30 seconds.

The 'kisskey' can store limits of fuel and other parameters designed to make fuel totally secure. One optional extra available on the system is vehicle immobilisation which automatically comes into play when the driver leaves the vehicle and can only be overridden when a valid 'kisskey' is touched against the vehicle pad.

Vehicle utilisation is also available so that a transport manager can tell when a vehicle has been moved anytime within the past few weeks.

Navigation and positioning integration

A new marine control system (MCS) is Halliburton Geophysical Services'(HGS) solution to the integration of all navigation and positioning for marine seismic operations, including on-board navigation processing and a QA workstation. The system is due to be used for the first time in the North Sea by the *Sea Star* on a Quadrant 24 survey offshore Norway, towing three 4500 m seismic streamers. MCS is scheduled to become standard for HGS vessels.

Based on a flexible network architecture with modular software, MCS uses IBM RS 6000 RISC machines and was developed with Unix, Motif and X-Windows. The MCS is operationally much simpler than conventional navigation/control systems and includes a host of innovative features to support its claim to be a fully integrated navigation system.

HGS's seismic vessel R/V *Sea Star* makes its way through Tower Bridge, London.

Passive fire protection

A new passive fire protection system, AIC Iso Fire-Pro, designed specifically for use by the oil and petrochemical industries is available from AIC Fire Protection Limited.

The Iso Fire-Pro system consists of flexible high temperature insulating covers made from a unique and revolutionary material, says the company, with the entire system designed for easy and rapid installation and removal.

Mr Chris Foster, Sales Director at AIC, explained: 'In the event of a severe hydrocarbon fire in a critical offshore area, it is imperative that any inventory flows are shut down quickly, effectively and for as long as possible.

'When the Iso Fire-Pro system underwent full-scale jet fire testing at Spadeadam in Cumbria, structural integrity of the protected equipment and the system itself was maintained, despite exposure to temperatures of more than 1100 °C. The temperatures achieved and the protection maintained ably demonstrated that the system would work effectively during a real incident.'

AIC Fire-Pro consists of a new material which in its 'raw' state is pliable and easy to manoeuvre but, when exposed to fire, changes its molecular structure.

As the structure changes, the material hardens and forms a barrier between the insulating 'duvet' underneath and the actuator or other equipment it is protecting.

Contacts

Halliburton Geophysical Services	0234 273820
Hawke Cable Glands Limited	
c/o IAS Marketing & Communication plc	0625 434343
AIC Fire Protection Ltd	0889 575700
Triscan	0254 682111
Servomex	0883 744544
Trelleborg Industri AB	+46 410 510 00
Rocol Limited	0532 866511
Transport Development Group Plc	071 222 7411
Allison Engineering Ltd	0268 526161
Whessoe Varec	0325 30110

. . . people

Ms Patricia Horsfall, above, has been appointed Managing Director, Oryx U.K. Energy Company. Ms Horsfall, formerly Director Exploration Technology for Oryx, succeeds **Mr Richard Standaert** who has returned to Dallas headquarters to assume his new duties as General Manager, Offshore Gulf of Mexico.

IMI Bailey Birkett Ltd. has appointed **Mr Rod Dalgleish** as Sales and Marketing Director. Mr Dalgleish was previously Sales and Marketing Director of Dowty Seals Ltd.

The Institution of Mechanical Engineers (IMechE) has appointed **Dr Richard Andrew Pike** as Secretary and Director General. He succeeds **Mr Ron Mellor** who retired in December 1992 after five and a half years' service. Dr Pike takes up the position on 1 September 1993.

Dr John T Gallagher, below, formerly Crude Oil Supply and Trading Manager within ICI (C&P) Oil and Petrochemicals Business, and more recently with BSI Quality Assurance has set up a new, Middlesbrough based company, Gallagher Business Consultancies.

Mr A P (Tony) Johnson has been appointed by Mobil Oil Company Limited as their new manager at the Coryton Refinery in Essex. Mr Johnson succeeds **Dr Volker Mayweg** who will become Vice-President, Manufacturing, Mobil Europe Limited.

Schlumberger Technologies Retail Petroleum Systems have appointed **Mr Patrick Forsythe** as General Manager, Sales & Service, of their RPS Dunclare Division. Mr Forsythe arrives from Singapore where he was Marketing Manager for the Far East Region of Schlumberger Dowell.

Stratamodel Inc. have appointed **Mr Martin D Estill**, above, as Managing Director of Asia Pacific operations. Mr Estill will be based in Singapore and responsible for all business development in the region.

Professor Colin Robinson has been given the award of 'Energy Economist of the Year' by the British Institute of Energy Economics at their presentation on 15 June. Also awarded was **Mr Gerard McCloskey** as 'Energy Journalist of the Year'.

Goal Petroleum have appointed **Mr Alan Ravenscroft** as a Director.

Van Ommeren Tank Terminals have made several appointments recently. **Mr Ben Vree**, has been appointed Managing Director of Van Ommeren Tank Terminal Singapore Pte Ltd. He succeeds **Mr Paul Dekker** who has held this position for the past five years and has now been appointed Managing Director of the business unit Inland Tank Shipping of Van Ommeren NV, Rotterdam. **Mr Hans P Feringa** succeeds Mr Vree with his appointment as Commercial Manager of Van Ommeren Tank Terminal Botlek BV, Rotterdam and **Mr Michiel van Ravenstein** has been appointed Director Business Development Asia with Van Ommeren Tank Terminals Asia.

British Gas has appointed **Mr Harry Moulson** as Managing Director of its national transmission system and **Mr Tom Gorman** as National Marketing Manager, Natural Gas Vehicles. Mr Moulson succeeds **Mr Donald Young** who retires in July and Mr Gorman takes over from **Mr Keith Nelson** who has become Head of Industrial and Commercial Contracts at British Gas Headquarters.

Mr Hashim Jamal al-Lail has succeeded **Mr Tariq al-Hawthan** as Director of Petronal, the London-based affiliate of Samarec.

Sir Anthony Cleaver is to take on the Chairmanship of the United Kingdom Atomic Energy Authority (UKAEA) on the retirement of **Mr John Maltby** who has served his three-year term. Sir Anthony is also part-time chairman of IBM UK.

Dr John Wilson has been appointed to the Board of Hardy Oil & Gas plc as an Executive Director.

Mr Keith Fitton has been appointed the Director of the Centre for International Briefing.

Druck Limited have transferred **Mr Wayne Bishop** to their US subsidiary, Druck Inc. of Connecticut in response to the marked upturn in business experienced by the company there.

Mr Colin Rutherford, above, has been appointed to the post of Business Development Manager for Linkman Tankers.

Mr Joe C Duncan has been appointed as Technical Director for Pipeline Induction Heat Ltd. He was formerly Technical Director of Balmoral Webco.

AOC International has expanded and strengthened its senior management team following the recent flotation of its parent company, OGC International plc. Pictured below – **Mr John Hyslop** becomes Executive Chairman, **Mr Tadg Slattery** takes over as Managing Director, **Mr Douglas Gill** remains as Finance Director, **Mr David Odling** becomes Sales and Commercial Director and **Mr Alan Sumner** becomes Project Services Director of the Aberdeen-headquartered company. Also appointed are **Mr Jim McCallum** as Director for Major Projects and **Mr Gerry Ward** as Director for Modifications and Maintenance. **Mr Gordon Shepherd** is appointed Company Secretary.

. . . appointments/consultants

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.

UKPIA 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 :

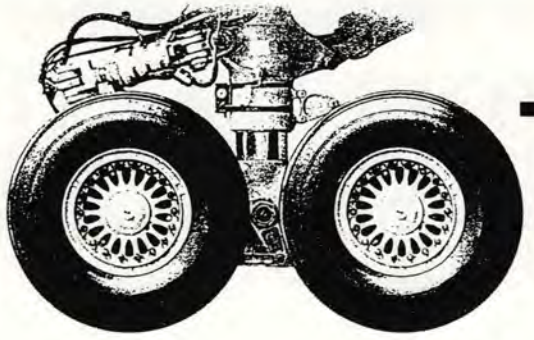
Box M.C.R. Petroleum Review, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR.

1993 Conferences

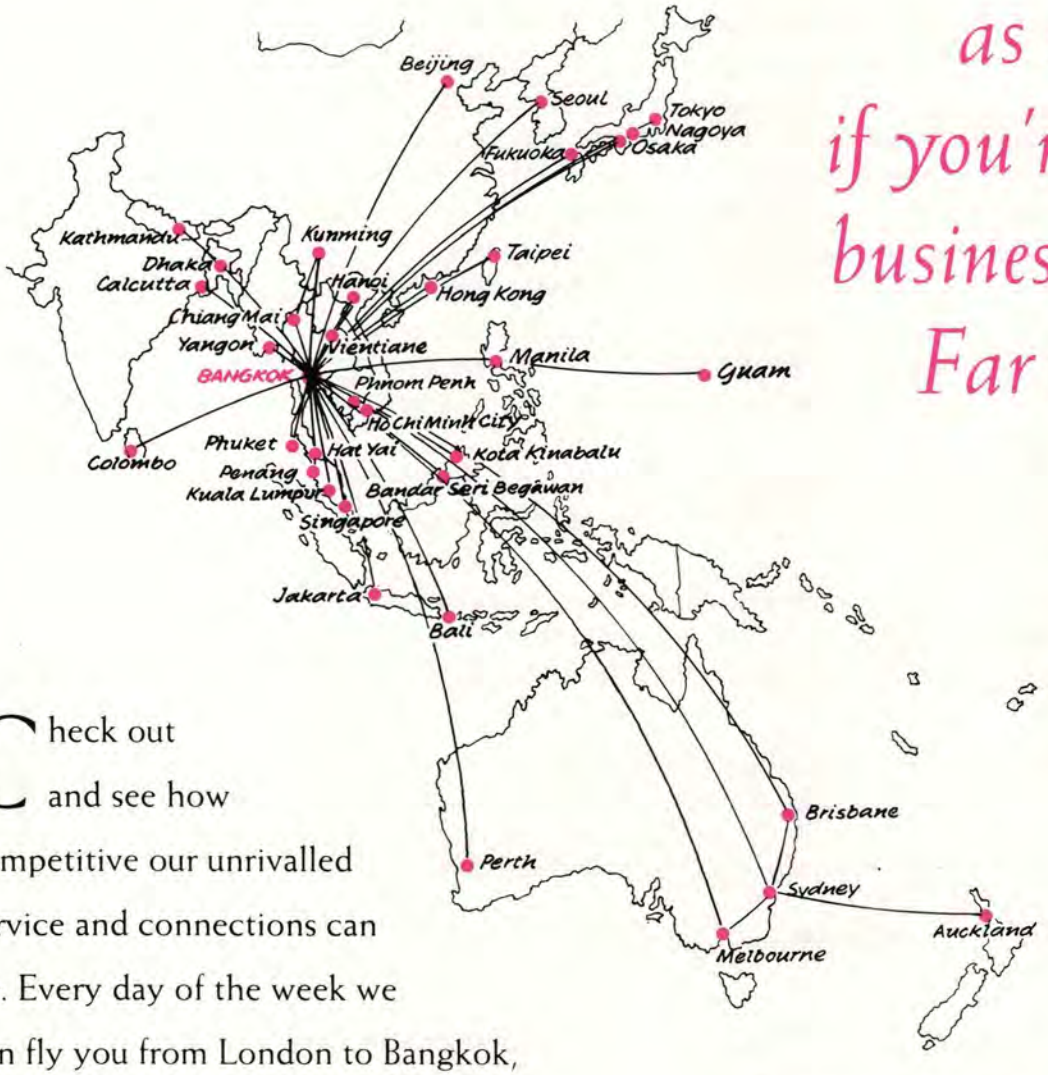
October 14	Developments in Microbial Control in Metal-Working Fluids – Conference
October 19	What the Environment is Costing the European Refining Industry
November 4	New Developments in Tank Calibration and Meter Proving – Conference
November 11	The Myths and Realities of N/SVQs
November 18	The Information Centre of the 1990's Changes, Challenges and Choices – Conference
November 25	Practical Implementation of EC Gasoline Vapour Emission Control Directives – Conference and Exhibition

*For further information, 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.*

SMOOTH



as silk
if you're doing
business in the
Far East



Check out and see how competitive our unrivalled service and connections can be. Every day of the week we can fly you from London to Bangkok, then on to 30 major destinations throughout the Orient and Australasia. Smoothly, reliably and without changing airlines. Welcome news if you've enjoyed legendary Thai hospitality and the spacious comfort of our wide bodied jets.

Just call your Travel agent or Thai direct on (London) 071-499 9113 or (Manchester) 061-831 7861.

Thai
Smooth as silk.