NOVEMBER 1993

The Institute of Petroleum

PETROLEUM REVIEW

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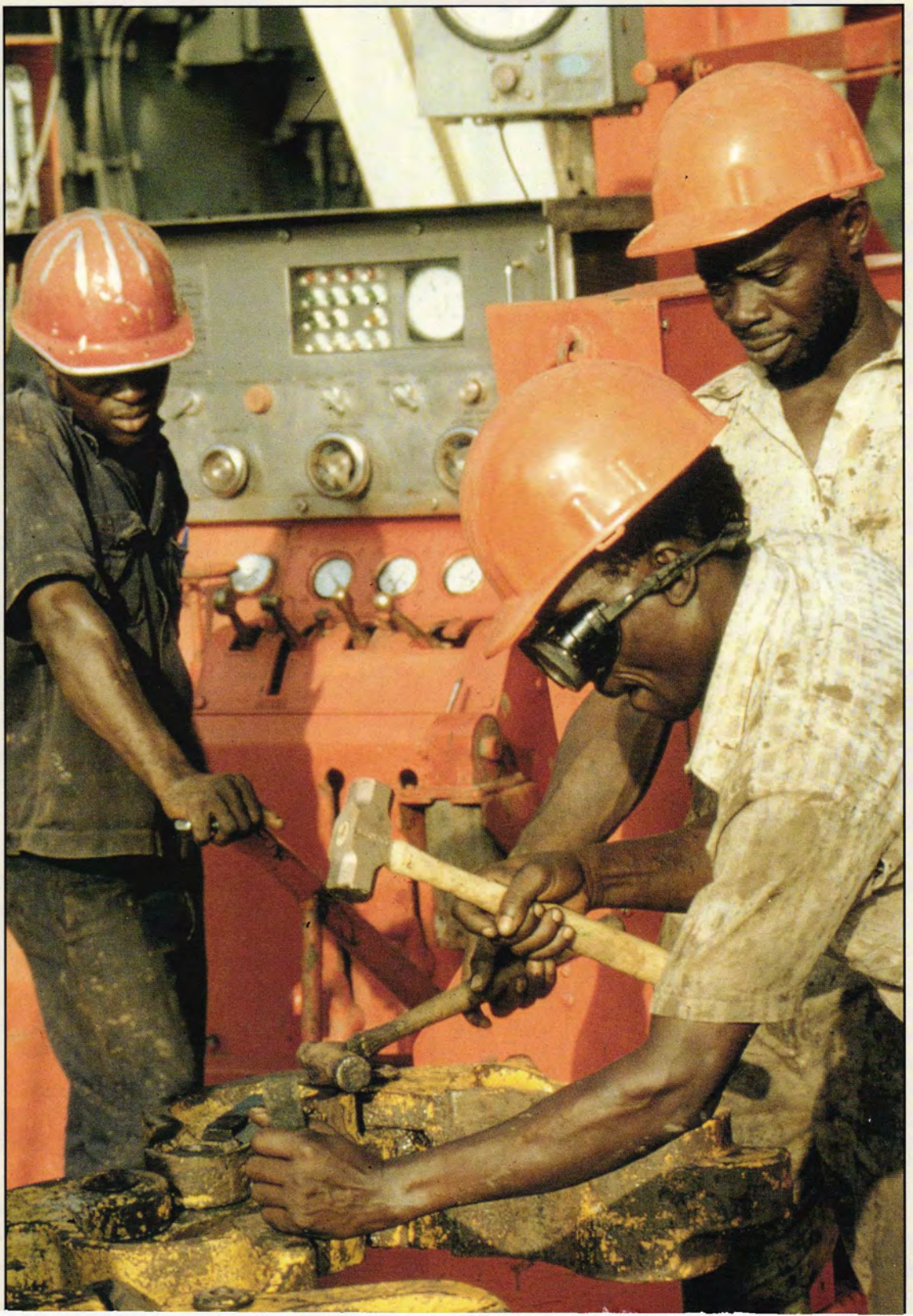

NOTICE INVITING OFFERS FOR THE DEVELOPMENT OF DISCOVERED OIL AND GAS FIELDS IN INDIA 1993

ANNOUNCEMENT

The Government of India invites offers from technically and financially capable companies to participate in the development of medium sized and small sized oil/gas fields in India. 8 medium sized and 33 small sized fields are on offer. The medium sized fields would be developed in joint ventures between the companies and Oil and Natural Gas Commission (ONGC)/Oil India Limited (OIL) while the small sized fields would be developed by companies on their own, with no participation by ONGC/OIL. Companies may bid for one or more fields, singly or in association with other companies.

SIGNIFICANT FEATURES

- Signature/production bonuses payable by companies
- All statutory levies, including royalty, cess, etc. payable
- First right of refusal to Government of India in respect of purchase of crude oil produced
- International market price for oil purchased by Government of India.
- Preferential treatment to companies taking up exploration blocks
- Flexibility in negotiations

AVAILABILITY OF INFORMATION

Information dockets and data packages giving detailed information pertaining to the fields included in this offer are available on payment. Data can also be examined at New Delhi. Companies interested in inspecting data or obtaining further information may contact:

Mr. R.N. Desai,
Head, EXCOM Group,
ONGC, 7th Floor, Bank of Baroda Building,
Parliament Street, New Delhi-110 001, INDIA.
Telephone : 3715291/3317205/602703/602351
Telex : 031-65184, 031-66262, Facsimile : 3316413

Offers should be submitted not later than **3.00 P.M.** on **Thursday, 31st March, 1994,** in sealed envelopes marked **"Confidential" "Development of Oil and Gas Fields"** and addressed to :

Director General of Hydrocarbons,
Ministry of Petroleum and Natural Gas,
2nd Floor, Shastri Bhavan, Dr. Rajendra Prasad Marg,
New Delhi-110 001, INDIA

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Cover photo – Drilling operations in Senegal. Photograph by Tullow Oil

. . . news in brief

27 September
BP and Statoil have announced a 25 percent saving in development costs on the North Sea Hyde field as a result of the 'risk and reward' relationship with contractors.

The Western Australian government has chosen the Goldfields Gas Transmission consortium to carry out a full feasibility study into proposals for a natural gas pipeline from the North West Shelf gasfields to Kalgoorlie. *(See Petroleum Review, October 1993.)*

28 September
Shell has awarded Kvaerner the feasibility study contract for a new generation of unmanned, low-maintenance North Sea platforms. Shell's concept, known as Limited Access Wellhead (LAW), is a platform which will require no permanent heli-deck, life support or personnel protection facilities.

Single Buoy Moorings and JP Kenny have won a US$160m contract from the Ukrainian government for the design and construction of a major new Black Sea oil terminal.

UK Energy Minister Tim Eggar led a trade mission representing over 30 British energy companies to Kazakhstan.

A gas pipeline explosion by a busy road near Caracas, Venezuela, has killed 51 people. The pipe was punctured by telephone company workers installing cables.

29 September
OPEC agreed a six-month output deal of 24.5m b/d from 1 October in an attempt to halt a sharp downward slide in oil prices. Kuwait was persuaded to reduce its quota demand from 2.16m b/d to 2m b/d, while Saudi Arabia agreed to freeze production at 8m b/d.

Brabant Petroleum has been awarded an out-of-round exploration licence adjacent to its existing licence on the Isle of Wight.

1 October
Sonatrach declared *force majeure* after an explosion and fire at the Algerian port of Arzew killed three people and damaged a pipeline.

2 October
The Caister and Murdoch fields, operated by Total and Conoco respectively, have come on stream. The gas is coming from the Carboniferous formations in the southern North Sea which are being seen as the next major UK source. Production is expected to reach a peak of about 300 million cu ft per day in 1994.

4 October
Amerada Hess is to shed 11 percent of its 1,000-strong UK workforce. The cuts, which are expected to be confined to onshore staff, are the result of the PRT changes and the increasing maturity of the UK North Sea.

5 October
Shell and BP are to go ahead with the $1.2bn first phase development of the Mars field, the largest find in the Gulf of Mexico for 20 years.

6 October
Ernst & Young announced it is to open an office in Baku. It claims to be the first western accountancy firm to operate in Azerbaijan.

Texaco has announced that the Orwell field in the North Sea has exceeded the four billion cubic feet mark.

Iraq has called off talks over an early re-entry into the international oil market. The UN offer of a one-off sale of $1.6bn worth of oil was rejected, said Iraqi officials, because the country's aim is now the total lifting of sanctions.

Powergen is to sell three redundant coal-fired power stations, with a joint capacity of over 1,300 MW, to China.

7 October
British Gas has inaugurated its £492m Miskar gas field off the coast of Tunisia. Completion of the project should enable the country to become self-sufficient in the supply of natural gas.

A former Shell procurement manager and an AMEC executive have each been sentenced to 12 months in prison for corruption over a North Sea oil rig contract. Mr Francis Hemsworth and Mr John Napier pleaded guilty to two counts of taking and offering bribes for confidential information about an accommodation vessel for use on the Gannet oil project.

Mr Jens Stoltenberg, 34, has become the new Norwegian minister of industry and energy.

8 October
The China National Petroleum Corporation has set up a joint venture in Hong Kong with Japan's Mitsubishi Corporation in order to carry out upstream activities in China, southeast Asia and central Asia.

OMV has begun the transport of natural gas from Norway to Austria under the Troll gas sales contract.

11 October
Amoco has purchased 10 UK North Sea blocks, covering a total of 87,000 acres, from Sun Oil.

The South Korean firm, Hyundai Heavy Industries, has clinched a $220m pipeline deal with Oil Natural Gas Corp of India. The contract is to build 250km of underwater piping to transport natural gas from the Western Sea of India to the Hazira industrial complex, north of Bombay.

OPEC earnings dropped 19 percent in the third quarter of this year, compared with the same quarter of 1992, according to the *Petrostrategies Review.*

An investigation is underway after Mr Roy Hazlehurst, formerly of Oiltools Offshore Services, was killed in an industrial accident in the Congo.

12 October
The Japanese firms, Osaka Gas, Teikoku Oil and Sumitomo, have formed a joint venture to work with the Austrialian firm, Santos. The venture, Bonaparte Gas and Oil, has been set up to develop the Petrel and Tern gas fields off northern Austrialia.

Poland has announced its second licensing round for 27 onshore exploration and production blocks. The closing date is 12 April 1994.

AOC International has been awarded the hook-up contract for Total's Dunbar platform.

13 October
The Government of Dubai has set up a holding company, worth $27.2m, to attract joint venture petroleum projects.

14 October
Norwegian budget forecasts have predicted an 11 percent rise in crude oil production in 1994. Gas sales are also predicted to increase by two billion cubic metres to 28bn cu m next year.

Mobil has suspended operations in southeast Turkey after continued Kurdish violence towards its staff.

17 October
Shell has moved further into the Spanish fuels retail market, with the purchase of a five percent stake in the logistics group, CLH. A Repsol subsidiary, the group owns and operates the country's fuel storage and distribution infrastructure.

18 October
Mobil Chemical is to develop a new $35m plant at the port of Amsterdam. The new facility will make ester basestocks for synthetic lubricants.

Statoil has awarded three contracts worth NKr2bn for work on the Sleipner West field in the Norwegian North Sea. Aker Stord will construct a gas process module, Kvaerner Egersund will build a carbon dioxide process module and Kvaerner Installation will modify the Sleipner A platform.

19 October
Mr David Varney, Managing Director of Shell UK Downstream Oil and new President Elect of the IP, has attacked EC environmental policy for its harmful effects on the oil refining industry. Opening an Institute conference, he warned that the present approach appeared to be 'a series of uncoordinated measures... pursued without pausing to learn the lessons of one before rushing to the next'. *(See page 502).*

New acting chief for NNPC

The Nigerian National Petroleum Corporation (NNPC), now without a Board and beset by fraud scandals, has appointed a new Acting Group Managing Director to steer it through the difficult times ahead.

Mr Chamberlain Oyibu replaces Mr Edmund Daukoru, who was suspended from his post as head of the NNPC last month following allegations of fraud.

Chief O O Okwara, Group Executive Director in charge of finance and accounts, was also suspended, together with both the Corporate Secretary and the Manager of External Payments.

The interim government's decision in September to dissolve the boards of the NNPC has left a 'temporary vacuum' at the top of the organisation, according to an industry source. Mr Oyibu, together with the NNPC's Executive Group Committee, is currently acting in place of the Board.

Meanwhile, a reshuffle has taken place at the NNPC's London office. General Manager Dr Taiwo Idemudia (interviewed by *Petroleum Review*, October issue) is to take up a position at NNPC headquarters. As *Petroleum Review* went to press, his replacement had not yet been announced.

Elf and Fina in service station swap

Elf and Fina are to swap almost 50 UK service stations, in a bid to strengthen their respective networks.

Elf will be relinquishing 46 of its sites in the northeast of England and Yorkshire in exchange for 45 Fina sites, situated predominantly in the northwest of England and Staffordshire.

Both companies have said the agreement, signed last month, will strengthen their networks in areas where they each have well-established supply logistics.

BP sells Orimulsion stake

British Petroleum is to sell its 50 percent stake in BP Bitor, ending its involvement with the marketing of Orimulsion.

Petroleos de Venezuela (PdVSA), the state-owned company which already owns 50 percent of the firm, will take over complete control from 31 January 1994.

A BP spokesman told *Petroleum Review* the withdrawal was in order to concentrate on the company's core activities of oil exploration, production and refining. 'Orimulsion isn't our business,' he said.

He stressed, however, that BP would be retaining strong links with Venezuela.

Orimulsion has been branded 'the world's dirtiest fuel' by critics and last year the Pollution Inspectorate (HMIP) refused National Power permission to burn it at Pembroke power station without first fitting expensive clean-up equipment.

However, BP insisted the environmental issue was not a major factor in the sale. 'It was certainly not a lead decision,' said a spokesman. He pointed to the fact that in August Powergen was granted permission to burn the fuel at Richborough on the Kent coast and Ince B in Merseyside.

Bitor is contracted to deliver 1.3 million tonnes of Orimulsion a year to Powergen over the next three years.

The stake in BP Bitor, which has already changed its name to Bitor Europe, is estimated by analysts to have been sold for $5 million.

Orimulsion is a 70-30 percent bitumen in water emulsion produced from the world's largest natural bitumen deposits in the Orinoco belt of Venezuela. It has a sulphur content of about 2.7 percent wt.

The joint venture was set up in 1989. Orimulsion was then being heralded as a breakthrough fuel, easy to transport and burn and undercutting both coal and heavy fuel oil.

Unions call for international talks over safety at Karachaganak

Union leaders concerned by health and safety issues on the Karachaganak field development are calling for international talks.

The northwest Kazakhstan field is alleged to be located in a nuclear testing area, the scene of several 'peaceful nuclear explosions' between 1962 and 1984.

British Gas and Agip won the right to negotiate with Kazakhstan over the oil and gas field, one of the largest in the world, in July 1992. They are currently in talks with the authorities, and a provisional agreement is expected by the end of the year.

In response to fears over the effects of testing, British Gas began an environmental study of the field last year and union leaders believe this is now complete. However, according to Mr Roger Spiller of the Manufacturing, Science and Finance Union (MSF), British Gas appears reluctant to disclose details of the study until a contract with Kazakhstan has been confirmed.

As a result, union leaders representing British Gas and Agip workers are arranging talks and are hoping that representatives of the Kazakh oil workers' union will join them.

According to Mr Spiller, Karachaganak could be one of the most dangerous fields in the world. 'The underground testing site is not too far away and diseases endemic to the area include cholera, typhus and bubonic plague.'

A British Gas spokesman declined to comment on Mr Spiller's allegations.

Independents claim free-market gas will 'cut household bills'

Opening up domestic gas supply to competition would cut household bills, according to a new report sponsored by 12 independent suppliers.

The study, which has also been endorsed by the regulator Ofgas, claims that a free market would cut UK domestic gas bills by £470 million a year, or an average of £26 per household.

Accusing British Gas of producing 'alarmist' figures, the independents have rejected its claims that domestic competition would cause some household bills to double.

The 12 companies involved, which include Utilicorp, Amerada Hess and Total Gas, are hoping their report will encourage the government to opt for an earlier date for full competition. They are suggesting October 1996, whereas the Monopolies and Mergers Commission (MMC) Report recommends the turn of the century at the earliest.

UK inquiry underway into Kuwait's BP tax deal

UK Chancellor of the Exchequer, Kenneth Clarke, has announced an inquiry into allegations that Kuwait misled the British government during the purchase of a stake in BP.

The allegations centre around the claim, by a former senior Kuwaiti official, that the true buyer of the $1.7 billion stake was not the Kuwait Investment Office (KIO) as the UK authorities were led to believe, but the state-owned oil company, Kuwait Petroleum Corporation (KPC).

As an arm of the government, the KIO qualifies for tax-free status in Britain. This meant that Kuwait received more than £600 million in tax refunds. The KPC, however, enjoys no such sovereign immunity.

According to the *Financial Times*, documentary evidence exists to show that the KIO has managed the KPC's funds for the past 10 years. The purchase of the BP stake, totalling 21.7 percent of the company, was made in late 1987 and early 1988.

Other KIO officials are said to have since come forward to corroborate the allegations.

Kuwait, which is now involved in high-level talks with the UK authorities, has strongly denied the allegations.

In a statement released immediately after the allegations were made, the Kuwait Investment Authority, the country's main financial agency, said: 'The State of Kuwait never had the intention to mislead the British authorities. In view of the seriousness of the matter and the fact that it took place over five years ago (we) shall make a review of the historical background prior to making any further comments.'

Amoco's investment plans for southern North Sea

Following a new agreement with British Gas, this year's changes in the UK fiscal regime and the liberalisation of the gas market in recent years, Amoco (UK) Exploration Co., with its co-venturers, intends to spend some £160 million over the next two years in the southern North Sea gas fields.

The company has recently renegotiated its contract with British Gas to the benefit of all concerned. The original contract covered the field life of the Indefatigable field, with all gas being sold to British Gas at a price fixed at the start in 1971 and subsequently raised. Without the new contract, declining output would not have allowed new investment to boost output and extend the field's life.

British Gas will itself now be able to buy more gas; at the same time it has allowed Amoco to sell gas over an agreed threshold to the open market, providing welcome investment opportunities for the producing companies. This is considered an 'innovative' deal, benefiting all parties concerned as well as the consumer.

Mr Mike Ambrose, Commercial Manager, Amoco, said, 'The recontracting agreement between the Amoco group and British Gas provides an enhanced economic framework which encourages new investment on our part, which will extend field life and provides British Gas with additional volumes of gas. It is a significant and valuable step forward for all parties concerned.'

The new contract will enable new investment to be made in Indefatigable and adjacent small discoveries which would otherwise have been uneconomic and can now be tied in to existing facilities.

A key project will be a major modification to the central compression facilities, costing £37 million. This will reverse the decline in output from Indefatigable and make possible the export to shore of wet gas. This project is scheduled for completion in 1995. The life of the field will be extended by three years and reserves boosted by 36 percent.

At the same time Amoco and its partners are proposing to develop four adjacent gas fields as satellites to the original field. They are Baird, Davy, Bessemer and Beaufort.

With government approval, it is hoped to bring Baird on stream within months of its discovery – by the end of this year.

A relatively new platform design, called AMOS, is planned for the other three fields. This is a single legged platform with minimal facilities and not normally manned. According to Amoco's Don Nelsen, Construction Manager, this novel platform would be 35 percent cheaper to build than a conventional design.

Kuwaiti executive resigns

Mr Abdulrazaq Mulla Hussein, deputy chairman of the Kuwait Petroleum Corporation, has resigned.

Kuwaiti newspapers have suggested his departure is the result of a difference of opinion with Oil Minister Mr Ali al-Baghli over management strategy.

Mr al-Baghli took up his position after last year's elections. He is the first Oil Minister to also hold in a seat in the country's National Assembly.

ENI plans to sell as one entity

Ambitious new plans to sell ENI off as one entity would create one of the largest oil companies in the world.

The plans, which are still at a very early stage, involve the merger and privatisation of all the company's oil, gas and engineering subsidiaries. Agip and Agip-Petroli would therefore be kept together with both the Snam gas interests and the engineering firms, Saipem and Snamprogetti.

'We are still just studying the possibility', said an ENI spokeswoman, 'but we are now working in that direction.'

This is a change in policy from the company's original proposal to sell off separate operating companies and one which is likely to find more favour with potential investors. It would provide quality gas investment opportunities in Europe and have the added advantage of offering the market a company with a strong upstream bent.

The chemicals subsidiary, Enichem, would not be included in the package and there are no plans as yet for its privatisation. Given the uncertainties surrounding the European chemical sector, this move is also likely to be welcomed by investors.

Such a major rethink will inevitably result in further delays in the privatisation timetable. The ENI spokeswoman said it could be as much as two years before the company comes to the market.

ENI still plans to keep a stake in the planned privatisations. 'We will not be going out completely', said the spokeswoman, ' but we have yet to decide how much to put on the market'.

One possibility is that the government will retain the right to veto moves made by any of the privatised energy companies for up to five years.

Saudi oil minister renews attack on carbon tax

The Saudi Arabian Oil Minister, Sheikh Hisham Nazer, has warned of a dramatic decline in Gulf exports to Europe should the EC's proposed carbon tax ever be implemented.

Adding his voice to the chorus of opposition from producing countries, Sheikh Nazer said the tax would have negative consequences on oil demand, as well as on investment and trade relations between the Middle East and Europe. 'Our calculation is that the Gulf Cooperation Council's oil exports to the EC would decline in the year 2000 by 450,000 barrels a day...and our cumulative oil revenues by $17 billion.'

Calling for 'reciprocal security' between the Middle East and Europe, he said the greatest concern amongst producers now was uncertainty surrounding oil demand. This was due to 'excessive and discriminatory regulations and taxation' in consuming countries, based upon 'opaque energy security and environmental grounds.

'Why tax oil to prevent the emission of carbon dioxide', he said, 'when you are burning coal which has more carbon dioxide than oil?' He denied there was evidence to support the notion that the oil industry was affecting the environment.

Addressing the Arab-British Chamber of Commerce, Sheikh Nazer went on to express confidence, albeit somewhat guardedly, in OPEC's latest production agreement. Asked whether countries would adhere to the new 24.5m b/d ceiling *(see page 490),* he said most were far more satisfied with their share this time around. 'I would say the impulse to over-produce would not be as strong as before.' He also hinted that his country's share of the quota would rise at the next OPEC output deal, saying 'the Resolution states that those who have contributed this time will be compensated the next'.

The minister then went on to reject firmly a suggestion from the audience that countries such as Nigeria should be given higher quotas because of their large populations. 'We're not UNESCO', he replied, 'we're OPEC'.

He confirmed that Saudi Aramco would reach a capacity of approximately 9.6m b/d by the end of 1993, in preparation for hitting the 10m target some time next year. But he emphasised that his country would continue to 'tie production to demand'.

In a spirited defence of Saudi Arabia's economic situation, he said it had one of the best infrastructures and economic programmes in the world. 'Income right now is not as great as it used to be but...to try to magnify what is happening in my country is simply not true.'

Sheikh Hisham Nazer presenting the Euro-Arab lecture

Save gains record number of sites

Britain's largest independent petrol retailer has purchased 17 stations from Texaco, bringing its total number of sites up to 168.

The Frost Group made the acquisitions, worth £4.5 million, for its principal subsidiary, Save Service Stations. It expects to make further acquisitions by the end of the year.

Located largely in the northwest of England, the stations will undergo a £2 million refurbishment and upgrading programme. Each will have a 'corner shop', in line with other Save stations.

This is the largest acquisition by Frost since going public two years ago.

'Whilst site prices are still significantly lower than three years ago', said Chairman James Frost, 'there are indications of greater buying interest and some firmness of prices'.

Britannia first gas delay

Gas production from the Britannia field has been put back a year to the end of 1998. Joint field operators, Chevron and Conoco, have said they need more time in which to reduce development costs and concentrate on additional commercial outlets.

The field contains approximately 2.5 trillion cubic feet of recoverable gas and up to 200 million barrels of recoverable condensate and natural gas liquids. Peak production could reach 700m standard cubic feet of sales gas per day and up to 50,000 barrels of condensate per day, with a field life of up to 30 years.

Interconnector moves a stage nearer

Plans to build a £290 million gas pipeline linking Britain with the Continental grid have moved on a stage, after initial market testing this summer revealed strong interest in the project.

The seven-partner project team has taken over a floor at British Gas premises in Marble Arch, London, in order to start on more detailed technical and commercial studies.

The team, which currently numbers 15, now has a Technical Director, Mr Chris Marchant of British Gas, and a Commercial Director, BP's Paul Reed. Both directors will report to a Steering Group made up of representatives of all the sponsors.

Even when allowance is made for double-counting, the sponsors believe that demand for capacity in the Interconnector reaches the original preliminary design of 15 bn cubic metres a year.

The final decision on whether or not the project goes ahead is expected next summer.

Middle East gas production to soar

Gas production in the Middle East is set to increase twentyfold by the year 2010, according to UK energy consultants, Gaffney Cline and Associates.

Annual exports are expected to rise from 120 bn cu ft to 2.6 trillion cu ft. Much of the extra demand is expected to come from the Far East, where the annual liquefied natural gas supply shortfall is expected to reach 41 million tonnes by the year 2010.

Oil companies to pool knowledge on tanker safety

The world's leading oil companies can now exchange vital information on tanker safety.

In an unprecedented move, the 34 members of the Oil Companies International Marine Forum (OCIMF) have agreed to pool their individual tanker inspection reports.

The information, which is available via a central database, can also be accessed by other charterers, terminal operators, port and canal authorities and government agencies. The reports will not, however, be open to classification societies, protection and indemnity clubs or insurance underwriters. Nor will safety ratings from individual operators be disclosed.

The tanker operator has 14 days in which to submit any comments on a report. After that, it is released to all those taking part in the programme.

OCIMF Chairman Gerhard Kurz, stressed that the aim of the Ship Inspection Report (SIRE) programme was not to create a blacklist of substandard vessels, but simply to exchange factual information.

'The reports do not contain an overall tanker rating nor any indication of tanker acceptability in the view of the inspecting company.' It will be up to charterers to make their own judgements based on the facts before them. Mr Gerhard admitted, however, that unsafe ships could be forced out of trade.

Launched following a spate of tanker spills last year, the programme will encourage tanker owners to pay greater attention to safety. Oil companies are particularly worried by the number of investors without any maritime experience who are now buying up tankers.

The initiative is also designed to avoid several oil companies carrying out inspections on the same tanker. 'SIRE should help to alleviate this duplication of effort and waste of limited resources and the unnecessary burden it places on tanker crews.'

Mr Gerhard Kurz

The scheme is not without its critics, however. Mr Paul Slater, Chairman of the First International Financial Corporation, believes it should be made available to a far wider range of professions.

Mr Slater, who has developed his own maritime safety information system, known as the Global Authority for Ship Standards, said the decision went against the 'new spirit of transparency in shipping'.

The OCIMF said the decision to restrict access was made after detailed legal research.

'Why has HSE ignored Lord Cullen's views?'

Proposals for tougher safety rules to prevent offshore fire and explosion and improve emergency response have caused concern and some confusion within the industry.

While welcoming the goal-setting style of the draft regulations themselves and the fact that many of the industry's points have been taken into account, UKOOA has nevertheless taken issue with the accompanying Approved Code of Practice (ACoP).

Attacking its length, the Association claims the ACoP goes against Lord Cullen's recommendation that the Regulations be supported only by non-mandatory guidance. 'It is not clear why the Health and Safety Executive (HSE) have chosen to ignore his views ...Companies prefer guidance which allows flexibility in the selection of safety precautions.'

A spokesman for HSE, however, insisted that an ACoP *was* non-mandatory guidance. 'The breach of a provision of an ACoP is not necessarily a breach of the regulations it is supporting, if the company can prove it has complied with the regulations in another way.'

UKOOA is currently spearheading a comprehensive consultation programme within the industry before submitting a formal response before the 3 December 1993 deadline.

•HSC/E publications are no longer available from HMSO. Instead, free publications can be obtained from HSE Books (0787 881165) and priced publications through either HSE Books, Dillons or Rymans.

Gryphon flows in record time

The Gryphon field has reached first oil, after being completed in record time.

The £265 million 'fast-track' development, 200 miles northeast of Aberdeen, received government approval less than 10 months ago.

It is operated by Kerr-McGee on behalf of a four-company partnership. Kerr-McGee has 25 percent, Clyde Petroleum 35 percent, Santa Fe Exploration 25 percent and Aran Energy 15 percent.

Production is expected to total approximately 96 million barrels of oil over the next 15-20 years, with peak production estimated at a rate of 50,000 barrels a day by mid-1994.

The field is being produced using the first purpose-built, permanently-moored, production storage ship of its type in the North Sea. The vessel can store up to 525,000 barrels of crude and produce 60,000 barrels a day.

Gryphon's 850 foot production storage ship

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Libya awaits its fate

By John Roberts

Libya is the hobbled giant, one of the few remaining oil economies still capable of producing huge financial surpluses but whose prospects remain shackled by the political actions of its leader, Colonel Muammar al-Qadhafi. Ever since the UN Security Council passed Resolution 748 in April 1992 (*see page 499*), the Libyan oil industry has had to operate under the shadow of partial sanctions and in the fear that these might be tightened. While a full embargo on Libyan oil sales has always seemed unlikely, for the last three months there has been the prospect of tougher sanctions of some kind being imposed. As *Petroleum Review* went to press, the final outcome of the continuing debate inside and outside the Security Council was unknown.

Libyan oil has only had a short history. But it is a lively one. Oil was first produced in 1961, yet by 1969 output had risen to no less than 3.1 million barrels a day (mb/d), just 100,000 b/d less than Saudi Arabia. At this stage, Libya also exported three times as much crude to the United States as Saudi Arabia. But the coup that brought Colonel Qadhafi to power in September 1969 changed the direction of oil policy; a policy stressing the volume of production was replaced by one favouring high unit earnings and the maximisation of revenues over an extended time-scale.

Initially Libya also moved towards a policy of securing at least a 50 percent stake in oil concessions and participation; in practice, this rose to almost 75 percent following the withdrawal of the majors holding pre-1969 concessions. Although the new revolutionary authorities were undoubtedly successful in securing their ownership objectives, output fell almost immediately. Thus the first full year of revolutionary rule, 1970, saw Libyan oil production peak at 3.2 mb/d. It then fell steadily to 1.48 mb/d in 1975, recovered to reach 2.09 mb/d in 1979 and then began slipping again, to reach a nadir of 0.97 mb/d in 1987 as OPEC instituted a production-cutting regime in order to sustain oil prices. Since then, and largely as a result of the Kuwait crisis, output has recovered to around 1.5 mb/d.

From the start, the oil industry was dominated by US companies – the result of the July 1954 visit to the United States by the then royalist Prime Minister Mustapha Ben Halim. Successful lobbying had secured a place for US independents, as well as the majors, and the Libyan oil industry began a long tradition of dependence on US technology.

In 1974, under the historic Exploration and Production Sharing Agreement known as EPSA-1, Agip agreed to take only 19 percent equity, much less than the 50 percent sought by the US companies. With an Occidental partnership also succumbing to Libyan pressure, and accepting just 49 percent, the way was set for Libya's National Oil Corporation (NOC) to take principal ownership of the country's resources. When most of the big US companies then pulled out, rather than accept too small an equity stake, it became clear that it was the Agip accord, rather than the Occidental deal, that was to be the model for future Libyan deals.

But the US independents thrived. Conoco, Amerada Hess and Marathon were all, together with Shell, involved in the Oasis group. Occidental was active in two major concessions. Then in 1986, in response to terrorist attacks in Rome and Berlin, the Reagan administration imposed unilateral US sanctions on Libya. The US sanctions included the termination of all US activity in the Libyan oilfields although, to prevent them being nationalised, the five US companies then active in Libya – Occidental, Conoco, Amerada Hess, Marathon and W.R. Grace – were allowed to keep legal title to their concessions. In effect, NOC took over the operation of the abandoned wells,

helped in some cases by US oil service company personnel who stayed on in defiance of their president's orders.

Initially, the sanctions had a greater impact on the United States than on Libya. The five US companies were estimated to be losing around $600 million a year, whilst lost US exports to Libya meant the overall impact on US trade was much worse. LIbya began suffering, though in part this was due to lack of cash caused by the oil price crash of 1985/6. And while Washington imposed sanctions for political reasons, Tripoli suddenly found itself also subject to financial sanctions from Moscow, as Soviet leader Mikhail Gorbachev suspended all arms deliveries for a while until Libya started paying back some of its Soviet debt.

Tripoli sought to use the freeze on US company operations and the desire of the American companies to return to Libya, to persuade first the Reagan administration and then the Bush administration to lift sanctions. It failed. Gradually the Libyans found that they, too, were suffering. There was reduced pressure in such major fields as Sarir and Bu'Attifel and NOC became increasingly dependent on water and gas injection to maintain output. A shortage of technical skills was reported, and mothballed capacity – essentially the difference between the high production levels of 1969/70 and the low levels of the mid-to-late 1980s – came to be seen as being beyond repair.

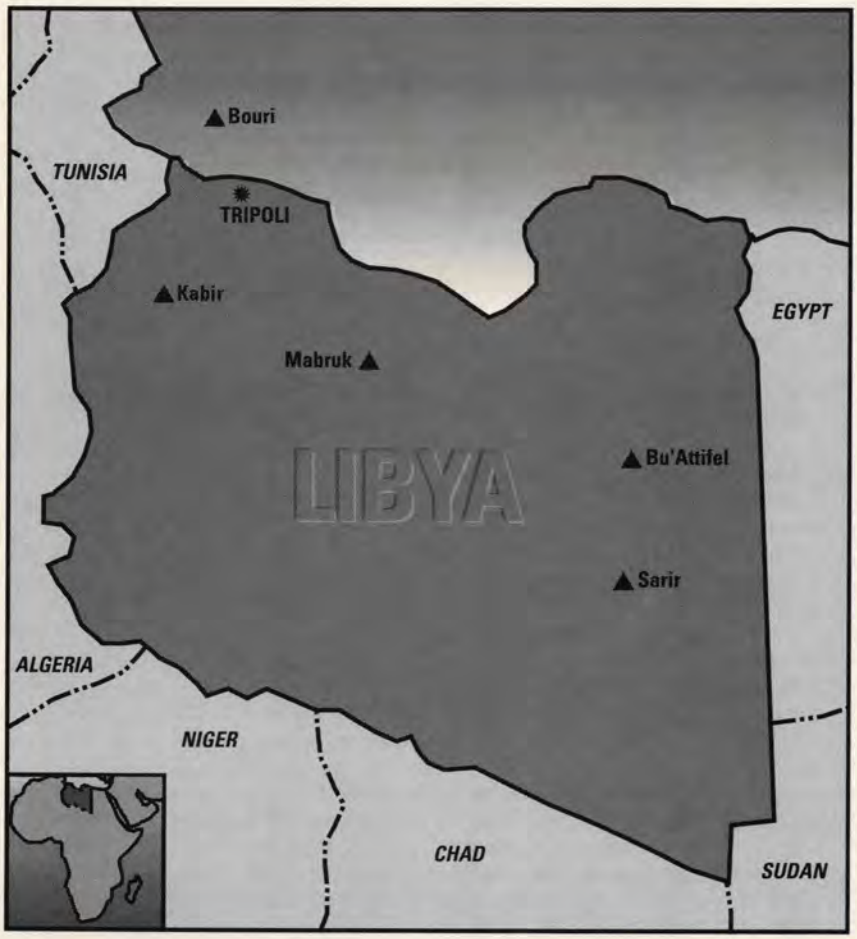
To secure new energy sources, a third round of exploration and production-sharing agreements was launched in 1988, known as EPSA-3. Royal Dutch Shell and Petrofina were among the first to sign up, whilst early this year Total signed an EPSA-3 agreement for the Mabruk field in the Sirte basin, which has estimated recoverable reserves of 1.0 billion barrels. Mabruk had been discovered in the 1960s but not developed because of difficult geological conditions and consequent high costs.

In general, Libyan oil development has remained from 1986 until now in a kind of limbo, although there are some signs that this is changing. European companies have been reluctant to move in on former US concessions so long as the Libyan-US dispute is still outstanding. Tripoli would like to see the US companies return, perhaps in the form of their overseas subsidiaries.

The most intriguing indications that Libya is really suffering from sanctions and may be becoming desperate to attract increased Western expertise stems from its negotiations with Agip. In May 1992, Libyan Oil Secretary Abdallah al-Badri said that talks with Agip included the amendment of the old EPSA-1 accord to make it more economically attractive to the Italians. Libya is now reported to have agreed that Agip's equity in the offshore Bouri and onshore Bu'Attifel fields will jump to 30 percent. At present, Western companies overall secure 25.4 percent of the gross share of Libyan crude oil production.

Mr Al-Badri's announcement can be taken as a direct response to the initial imposition of UN sanctions a month earlier. He accompanied his comments on Agip with the disclosure that not only had Libya conducted tests to show it still possessed a sustainable capacity of 1.7 mb/d but that it was embarking on a programme to raise sustainable oil production capacity to more than 2.0 mb/d by 1994. Much of the planned increase in Libyan output is to come from two fields, Sarir and Masla, held by the local Arabian Gulf Oil Company (Agoco). Water injection programmes are intended to raise output at the two fields by 300,000 b/d. Agoco was last reported to have produced at a rate of 420,000 b/d in 1989.

Ever since it brought the Bouri field on stream in August 1988, Agip has been producing at Bouri and Bu'Attifel at around 285,000 b/d. When the latest negotiations began in 1992, the aim was to take production up to 400,000 b/d by around 1996. Now the goal is reported to be to take output up to around 440,000 b/d, with the siting of three or four new platforms and the drilling of new wells at Bouri to take output there from around 85,000 b/d to 150,000 b/d. Although 30,000 b/d development of the eastern end of the field has been in the works for some time, plans for further growth have only just been disclosed and remain subject to a planned feasibility study. The Libyan negotiations with Agip for Bu'Attifel include proposals for output to be increased by around 90,000 b/d, while a further 25,000 b/d in condensate (and 300 mcf of dry gas) would also be produced.



The remaining foreign companies in Libya (including those which are not active as a result of US sanctions) still constitute an interesting collection. According to OPEC records, Occidental and its associates have between them a 49 percent stake in one concessionary area and a 19 percent stake in another; the Oasis group has a 40.83 percent stake; Glesenberg a 17.10 percent stake; Elf-Aquitaine a 15 percent stake in developing the Elmehraga field; and Grace Petroleum a 12 percent stake. Wintershall has a major interest in at least one concession and Lasmo is involved in another.

Most of Libya's onshore oil is situated in the Sirte basin. But in May NOC signed a production-sharing agreement with the Canadian-owned International Petroleum Libya covering some 12,000 sq km of Cyrenaica. In the southwest, Romania's Rompetrol has the concession for NC115 in the Murzuk basin, the oil from which is intended to go to a planned, but often postponed, new refinery at Sebha. NC115 has recoverable reserves of 2.0 billion barrels and a development programme aimed at yielding 75,000 b/d is currently under way. But this summer has seen delays in awarding pipeline works contracts and it is not clear when the field will come on stream. Near the Tunisian border, Agoco's Kabir field is the site for a 10,000 b/d development programme.

With a population of barely three million, Libya has only modest domestic needs, leaving the bulk of its oil for export. The IEA reported that in 1992, Libya exported 1.34 mb/d of crude oil, product and feedstock to Europe. More than 40 percent of this went to Italy, which took 575,100 b/d; Germany took 251,400 b/d and Spain 152,200 b/d. Libya has substantial downstream interest in Italy and significant interest in Germany and Spain (see page 499). In addition to this, France took 84,700 b/d and Turkey 61,600 b/d. Refined products accounted for 10 percent of Libyan oil exports to Europe, with both the United Kingdom and Denmark purchasing product but no crude.

Oil, oil products and gas routinely account for 95-97 percent of all Libyan exports. These slipped from $10.7 billion in 1991 to $9.7 billion in 1992 but with imports also falling from $5.9 billion to $5.3 billion as a consequence of UN sanctions, the country's healthy trade surplus was scarcely affected.

A sanctions-dominated future

For Libya, much depends on whether fresh sanctions are imposed or not. Foreign Affairs Secretary Omar Mustapha al-Muntasser, speaking in Malaysia earlier this year, said that 'If the EC decides to adopt sanctions against us, we'll be hurt badly.' He was referring specifically to downstream projects, rather than to an outright oil embargo. Mr Muntasser went on to say that the ASEAN countries and Hong Kong were being considered for alternative downstream projects. Whether this is really feasible in the current political and financial climate remains doubtful. NOC is also reported to be suffering from budgetary problems as a result of existing Western constraints and further sanctions would make even Far Eastern ventures highly problematical.

Libya has already acknowledged that it is paying a high cost in terms of UN sanctions. A senior government official said in August 1992 that in the space of just three and a half months, from the introduction of the UN embargo on 15 April 1992 to the end of July that year, sanctions had cost the country no less than $4.62 billion. This level of $1.2 billion a month appears to be somewhat inflated, particularly since the principal example used to support it concerned the inability of Libya to import key fertilisers and animal feedstock as a result of the air embargo. A more accurate estimate would appear to be around $100 million a month on imports – these slipped by $605 million in 1992, whereas they had been expected to increase – with perhaps a further $50-100 million a month in costs to service income.

The original sanctions were fairly limited. But they did constitute a logistical irritant since they meant that people and supplies bound by air for Libya would have to switch to ships in Tunisia or Malta for the last leg of their journey to Tripoli or Benghazi.

The proposed second tranche of sanctions is altogether more severe. Although the Libyan government is thought to have moved its financial assets into accounts that are beyond the reach of any attempted Western enforcement of the UN financial sanctions, these could still make it hard for Libya to conduct its normal overseas oil operations. The various overseas arms of the government and NOC, such as the UK-based Umm al-Jawaby Oil Services company and various Oilinvest and Tamoil offshoots would find it hard to operate normally if their bank accounts were frozen. In anticipation of a possible tightening of sanctions, Umm al-Jawaby was reported to have asked its suppliers to complete their shipments to Libya before the end of August.

Evasive action

At the end of September Oilinvest, the Libyan-owned holding company, took action to keep the business and operations of its European subsidiaries outside the scope of any tighter sanctions that the UN Security Council might impose. It announced that a controlling majority participation in Oilinvest (Netherlands) BV had been acquired by a group of private investors, consisting of long-time partners of the Oilinvest group. Because these investors, previously minority partners, had become increasingly alarmed concerning the fate of their investments, they proposed to Oilinvest that they should take over control of the group by the injection of new capital.

As a result of these moves, Libya retains a 45 percent share and the other 55 percent share belongs to a group of partners that includes, among others, the Armani group,the Montanari group, the Triboldi family and Mr J Eggert.

At the same time the Oilinvest group sold a controlling interest in its transportation affiliate, Tamoil Transport SA, to the Montanari group and a controlling interest in its petrochemical and chemical affiliate, Chempetrol Overseas Ltd, to the Triboldi group.

The Oilinvest group was set up in 1988 by a number of Libyan financial institutions as a refining, marketing and distribution group with refineries in Italy, Switzerland and Germany and distribution networks, under the Tamoil and other trade names, in many European countries through local subsidiaries and affiliates. Tamoil owns the 105,000 b/d Cremona refinery and some 2,000 service stations in Italy and has been negotiating to purchase the 45,000 b/d oil refinery in Mantua and other assets of the Cameli group, now in the process of liquidation. Oilinvest Espana has been engaged in negotiations with Spain's Compania Logistica de Hidrocarburos and is also planning to set up 200 service stations. Using the Tamoil name, Oilinvest has been negotiating to

acquire 400 petrol stations in the Hamburg area and has a 67 percent stake in an 80,000 b/d refinery in Hamburg, while it is also involved in developing Switzerland's 72,000 b/d Collombey refinery.

These projects could be threatened if tighter sanctions were to be imposed, perhaps restricting Libyan cash transfers.

In Libya itself, there will be question marks concerning the future of several major projects. The $130 million second phase of the major Ras Lanuf Petrochemical, originally awarded to the Bosnian-based Yugoslav firm Energoinvest, was cancelled earlier this year on the grounds of non-performance. Officially, a revised contract is due to be awarded soon; but this project might well have to be put on hold if bidders decide they will face problems bringing in key components.

Since 748 was passed in April, relatively few energy-related projects have been approved. There has been a prequalification round for a project to revamp the Marsa al Brega LNG plant, intended to enable the plant to produce low and normal calorie LNG rather than the high calorie LNG produced since the plant was first opened in 1971. But no firm decision is likely to be taken until the sanctions issue is clarified. There will also be further delays in the much-postponed construction of the $200 million, 20,000 b/d refinery in the southern oasis town of Sebha.

Already the political uncertainties have had a significant impact on Libyan energy development. Agip, which holds the concession for the giant offshore block NC-41, is reported to have slowed down work on developing the block's gas reserves as a result of existing and anticipated UN sanctions. Under a 1990 agreement, Agip was to produce some eight to 10 bcm a year, the bulk of which would eventually be exported by pipeline to Italy. The stated goal is joint Italian-Libyan development of the field but this remains in doubt so long as the Lockerbie/UTA sanctions issue remains unresolved.

One consequence of the Lockerbie sanctions dispute is likely to be further reliance on joint projects with Arab neighbours. In February 1992, Libya announced plans to set up with Egypt a 50-50 joint venture, for maintenance and repair of refinery and petrochemical plant equipment. That this was intended primarily to boost Libya's own abilities in these sanctions-threatened sectors was confirmed in an announcement by Mr al-Badri that the new venture would operate primarily in Libya.

There will, of course, be considerable incentives for companies seeking to bypass sanctions. The international oil service industry remains depressed and there may well be mavericks who would choose to defy UN sanctions. But it is both expertise and equipment that Libya currently requires, and both of these are likely to remain in short supply so long as the fundamental tensions between Tripoli and a trio of western capitals, Washington, London and Paris, remain unresolved. ■

Libya and UN sanctions

Under UN Security Council Resolution 748, adopted on 31 March 1992, weapons sales to Libya are prohibited as are international aircraft flights and the sale of aviation equipment. The sanctions were imposed because of the Libyan government's failure to hand over to either the United States or Britain two alleged Libyan terrorists, Abdelbaset Ali Mohmed Al-Megrahi and Al-Amin Khalifa Fhimah. The two are accused of involvement in the 21 December 1988 bombing of Pan Am flight 103 over Lockerbie, Scotland, in which 270 people died. Libya has said repeatedly that it wants the men to surrender themselves voluntarily – but that it is up to the men themselves, and not the government, to take that decision.

The issue remained unresolved at the time that Petroleum Review was going to press.

The United States, France and Britain on 13 August issued Libya with an ultimatum saying they would introduce new sanctions to freeze the Libyan government's overseas financial assets and to block the supply of oilfield and refinery equipment to Libya unless the Lockerbie suspects were handed over by 1 October. They demanded compliance with both resolution 748 and with the earlier resolution 731 which called on Libya to commit itself concretely and definitely to a cessation of all forms of terrorist action and all assistance to terrorist groups – and to surrender the Lockerbie suspects and to cooperate with the British and French authorities investigating the bombing of Pan Am 103 and the 1989 bombing of the French flight UTA 772 over Chad, in which 170 passengers were killed.

The August ultimatum prompted Libya to arrange for two prominent Scottish lawyers to join the legal defence team for Messrs Megrahi and Fhimah but it did not lead to their actual handover to either the Scottish or US police. The French Embassy in London said in September that sanctions would remain in place until four LIbyan suspects accused of involvement in the UTA bombing were also brought to trial. 'The suspects accused of the bombing of the French plane have to be handed over as well as the Lockerbie accused,' an embassy spokesman declared. Foreign Office sources also say that UN sanctions apply to both bombings.

One problem is that one of the French arrest warrants is for Abdullah Senoussi, a very senior Libyan security official commonly described as a brother-in-law of Colonel Qadhafi. The other arrest warrants were issued for Abdallah Elazragh, a former diplomat in the Congo Republic and for two members of the Libyan special services, Ibrahim Naeli and Muabah Arras. Libya has offered compensation to the families of those who died in both explosions.

There have been several diplomatic attempts to resolve the dispute. Egypt's President Hosni Mubarak and UN Secretary General Boutros Boutros Ghali have both held talks with Libyan leaders in order to persuade them to hand over the Lockerbie suspects. However, Colonel Qadhafi's response has been brusque. 'These medieval decisions are outdated,' he said in September. 'The language of warnings, threats and ultimatums is absolutely unacceptable.'

Although there is considerable support in the United States for oil sanctions that would seek to prevent LIbya exporting its crude and products, there is strong opposition in Europe to such a measure, particularly in Italy. Another major US ally opposed to an embargo is Turkey, whose contractors are still owed some $600 million by Libya and which wants Tripoli to continue paying this off under a 1992 oil-for-debt agreement with Ankara.

Indigenous energy finally makes its mark in Jordan

By John Cranfield

Jordan's sole refinery at Zarqa is more than adequate to meet demand. But the need to switch away from imported oil is now urgent if the nation's economy is not to suffer.

For a country bordered by two of the world's major oil producers – Iraq and Saudi Arabia – Jordan is incredibly unlucky. For it is bordered by the parts of those countries that have, until very recently, never shown positive signs of hydrocarbons. The same has long been true of Jordan itself. Now the luck seems to be changing. Gas has been found in sufficient volume that it could provide at least 15 percent of the country's energy needs. Oil, too, has shown its presence. And peace with Israel will help, allowing cutback military budgets to be switched to the build-up of basic infrastructure. And outside investors always prefer a peaceful environment.

Energy picture

Over recent years, Jordan's energy demand has averaged some 60,000 b/d oil equivalent. Until a couple of years ago that was all provided by imports and all in the form of oil. But, whereas 20 years ago the product slate was split more or less evenly between gasoline, kerosene, gasoil and fuel oil, since the mid-1980s the percentage of fuel oil has been shooting upwards. Today, around 40 percent of all energy demand is met by fuel oil, reflecting the rapid growth in electricity generation as living standards, commerce and industrialisation have all climbed. The somewhat antiquated Zarqa refinery is thus ideal for Jordan's particular needs, while its diet of Mid-East crude is also perfect. But with a breakthrough in the search for indigenous energy, all that is about to change.

Electricity demand

The rapid rise in electricity demand partly stems from the fact that national electrification is the most cost-effective way to raise living standards. Industrialisation is possible, commerce improves and work results. Gas never entered the reckoning. And the concentration of population around Amman and in the Jordan valley meant that the grid does not cover vast desert tracts. Isolated villages are served by portable energy or local grids.

Tapline closure

Bulk oil for Zarqa arrived via Tapline from Saudi Arabia until Tapline was closed because of the situation in Lebanon. Replacement supplies were trucked from Iraq. Saudi supplies resumed in 1990 after trade sanctions against Iraq largely cut off all energy supplies to Jordan. But, with Jordan opposing military action, the Saudi flow lasted only a month and Jordan saw itself grinding to a halt. For the past 30 months therefore, Jordan has been partly reliant on trucked oil from Iraq and partly on what it can

buy on the spot market and ship in to Aqaba, for onward road transit to Zarqa. Costs are high – over $400 million/year – and supply security is fragile.

Gas to the rescue

The discovery of gas at Risha, near the Iraq border, has thus proved timely. When Risha-3 tested 15 MMcfd in mid-1987, plans were immediately put in train for the building of a power station and electricity transmission line to Amman.

A gas grid was considered but rapidly ruled out: the volume was too small; unit costs would be too high; and the existing electricity grid took energy to where it was most needed. A modular power plant was designed, with the first two 30-MW gas turbines being started up in May 1989, linked to Amman by a 220-km transmission line.

This first phase was reckoned to provide 15 percent of the country's electricity needs and cut fuel-oil demand by 10 percent.

'So far, discoveries have kept up only with growth'

Risha was found by state-owned Natural Resources Authority (NRA) in its quest for further oil after testing 400 b/d in 1984 at nearby Hamzah. Today, that field makes a 650 b/d contribution, from just two wells. Still unclear is whether Risha is one large complex structure or a series of separate reservoirs. When Risha-6 also flowed gas, Jordan Electricity Authority immediately put in train plans to double the size of the power plant. Two oil-fired gas turbines were to be moved from Amman power station and converted to gas. This phase got under way late in 1989 just as Risha-16 found more gas. By 1990, reserves were put at 400 Bcf. Then came Risha-18 and -20, each testing around 18 MMcfd.

Search widens

The Gulf War played havoc with development. Expansion of the power plant is still incomplete. However, earlier this year a $380 million development plan was agreed with eight donor countries and nine international bodies. This will widen the gas search and pay for a $75 million pipeline to move gas to Zarqa for industrial use. The timing seems perfect. Just four months later, South Korea's Hanbo came up with a gas find on its concession alongside Risha. Its size is said to be similar.

Oil find

Just a few days later, NRA found oil near the Dead Sea. No results have been released, pending well completion and assessment. Though volume is low, quality is good, say local officials, who intend to release details in the New Year.

But every little helps, especially since energy demand is officially estimated to rise to 80,000b/d (oe) by end-decade.

So far, disocveries have kept up only with growth. With luck the $380 million will better that. ■

IP Council appoints President Elect

The Institute of Petroleum Council, meeting on 7 September, appointed David R Varney, Managing Director, Shell UK Ltd, as President-Elect of the Institute with the intention of nominating him for election as President at the next Annual General Meeting to be held in June next year.

David Varney, 47, was born and educated in London. In 1968 he completed a BSc in Chemistry at the University of Surrey and went on to obtain a Masters degree in Business Administration at Manchester University in 1971.

Mr Varney joined the Shell Refining Company in London as a personnel assistant in 1968 moving to the East African area coordination of Shell International Petroleum Company three years later.

In 1974 he transferred to the Shell Company of Australia as Strategic Planning Manager and subsequently became Islands Manager responsible for the management of Shell's marketing companies in the South Pacific.

From the southern hemisphere he then moved north to The Hague, joining Shell International Petroleum Maatschappij as European Products Trading Manager and later Business Development Director for Shell Coal International.

After a short spell as Trading Manager for Shell UK Oil he moved back to Shell International Petroleum where for four years from 1983 he was Area Co-ordinator for Australia, Brunei, Pacific Islands, Philippines and New Zealand.

From London he moved to Sweden where he spent three years as Managing Director of AB Svenska Shell, before returning again to London as Head of Marketing, Branding and Product Development for Shell International Petroleum.

Since December 1991 he has been a Managing Director of Shell UK Ltd, responsible for downstream activities covering oil marketing, distribution, supply, refining and trading.

He is a Fellow of the Institute of Petroleum and the Institute of Personnel Management. In January 1992 he was elected Vice President of the Institute of Petroleum. In March 1993 he was elected President of the UK Petroleum Industry Association (UKPIA).

Mr Varney and his wife Patricia have a daughter and a son. ■

New IP Honorary Treasurer

At the same meeting on 7 September, the IP Council appointed **David Sharp**, Controller of Esso UK plc, as Honorary Treasurer to replace Robin McLean who has taken early retirement from Texaco Ltd on health grounds.

During his career with Esso, starting in 1969, he has worked in a wide range of jobs both in the United Kingdom and the United States. He was appointed to his current position in 1992. In this job he has responsibility for the accounting functions of both upstream and downstream organisations.

Beware – changes ahead in transport of dangerous goods

By Neil Potter

'A nightmare of ambiguity and confusion exists. It really is like trying to hit a moving target' is how one oil company executive involved in the movement of petroleum products sums up the present position with regard to proposed changes in regulations covering the transport of dangerous goods. These involve, to mention but a few organisations, the United Nations, the European Commission, and in this country, the Departments of Transport and Environment and the Health and Safety Executive.

'Harmonisation' is the goal at the end of the road. Unfortunately the road appears to be not very straight. There are signposts but to some they appear to be pointing in different directions.

The ultimate object is to improve safety and to permit the carriage of goods throughout the European Community with the minimum of restrictions.

But, as if it is not difficult enough to comprehend the tortuous language of 'Brussels Speak', the underlying concern in industry is what will the cost be to implement the changes.

At the moment, in this current state of uncertainty, the simple answer is that no one knows. But at least the Department of Transport and the HSE are striving to minimise the effects.

Confusing harmonisation

Confusion about the current state of affairs stems from the fact that there are UK regulations, EC regulations and UN Recommendations. And they are all undergoing revision and change, are inter-related but with differing possible timetables.

This is what Roderick Allison of the HSE told a recent IBC Technical Services conference in London:

'We are trying in the UK to harmonise our national regulations with the international modal agreements. For some years now we have been moving towards harmonising our regulations for the classification, packaging and labelling of dangerous goods for carriage by road with the UN Recommendations, and have been committed to harmonising our requirements with the European ADR agreement once it is aligned with the UN.

'That involves both revising our domestic regulations and participating in the international negotiations on ADR and on the UN Recommendations. And at the same time we are participating in the harmonisation of ADR, RID (the European rail agreement) and the other modal agreements with the UN.'

Now the EC is preparing a Directive aimed at defining uniform conditions to govern the safe transport of dangerous goods by road in member states and to establish the bases, for further harmonisation of provisions governing the transport of dangerous goods. This is based on the provisions of ADR.

The HSC has launched a major consultation exercise on proposed revisions. It has issued two documents, one for carriage by rail (CDG Rail) and one for classification, packaging and labelling of goods carried by road

or rail (CPLDG). Responses were required by last month.

A third consultative document will be issued later this year or early next – 'Proposals for the Carriage of Dangerous Goods by Road Regulations' (CDG Road). These regulations will revise the present 'Road Tanker' regulations to align them with ADR from January 1995.

Stop or go?

The problem facing the HSE and the Department of Transport is whether to go ahead now with their own proposals for harmonisation or wait until the terms of the ADR Directive have been finalised.

As Mr Allison put it, 'Since the changes needed for harmonisation do not have major safety implications, the most important factor is, which course would minimise the costs to British industry? There is obviously a case for waiting as long as we can. But, as against that, a very important provision in the draft ADR Directive is the one which would allow prior domestic regulations to stand unchanged where they implemented harmonisation with the UN Recommendations.

'That could help to reduce transitional costs, because aligning with the UN Recommendations would mean less change for us than moving closer to ADR and then moving back towards the UN as ADR is itself aligned with the UN. We shall want to take advantage of this concession. But to do so, we have got to make our next move towards the UN recommendations before the ADR Directive comes into force.'

One man who probably knows more than anyone else about this maze of regulations and proposals is Lance Grainger, head of the dangerous goods branch of the UK Department of Transport and chairman of the UN Economic Committee of Experts on the Transport of Dangerous Goods. He told the conference that much time and effort has been spent in recent years in adapting the complex texts of the established RID/ADR rules to reflect the current UN recommendations and thus to achieve parity with the sea and air rules.

'With existing resources, it is now expected that this work will finally be complete by January 1, 1997,' he added. 'That may still seem remote but it will be the successful culmination of much devoted work to achieve multimodal harmony worldwide from a basis of many varying starting points'.

European route

On the other hand a final draft of the EC proposals has been prepared and will be submitted to the European Commission for adoption as a formal proposal to the Council of Ministers (Transport). This will then be published in the Official Journal and sent to the Economic and Social Committee and European Parliament for their views. It is expected

that the draft will be accepted for discussion in the Council Transport Working Group under the Belgian Presidency on 29-30 November.

In June next year agreement could be reached under the Greek Presidency with implementation on 1 January 1995.

Mr Grainger said, 'This timetable, in my view, is a good thing. We have nothing to gain by procrastinating.'

Fate of national regs.

The Department of Transport's policy is written around the application in the United Kingdom of the UN Recommendations. These cover the basic questions of identification, classification, packaging, labelling and consignment procedures. These are published biennially in the 'Orange Book'. However, the decisions reached by the UN experts last December are not yet available for public examination.

It is known that in the listing and classification the number of UN entries for petroleum products will be reduced. For example, the UN Number 1270 will disappear and be replaced. The exempting flash point limit value will differ from that currently specified in existing UK regulations. The tank container provisions in Chapter 12 of the Orange Book will be updated.

Paragraphs 3 and 4 of Article 6 of the EC Draft are of vital interest to road transport. These provide for an exemption for an unlimited period for vehicles, cylinders and tanks constructed in accordance with national regulations in force at the time of entry into force of the Directive, provided that they are used for national transport only. It says, 'Given the investment in such equipment, this should be allowed to continue, provided that it remains safe, to the end of its economic life.' Paragraph 4 additionally allows member states to continue to construct and use equipment which satis-fies provisions in national law until harmonised standards for such equipment are developed and incorporated by reference in the Annexes to this proposal but no later than 31 December 1998. Any equipment constructed after the entry into force of this Directive but before 31 December 1998 may also continue to be used for an indefinite period'.

Article IV in the Draft allows member states to retain national standards where these national rules are compatible with the multimodal UN Recommendations on the Transport of Dangerous Goods, with which the ADR is gradually being harmonised. So this state of events will have a temporary character.

Article 7 states that vehicles registered in third countries may perform international transport of dangerous goods on the territory of the Community in so far as they comply with the provisions of the ADR.

This raises the whole question of inspections. For since 1 January ports are regarded as frontiers and thus, in EC terms, do not exist. Considerable thought is being given as to how and where checks can be carried out. The

Commission is drafting a proposal aimed at introducing standard procedures in all member states for the inspection of vehicles carrying dangerous goods by road and the enforcement of the relevant dangerous goods legislation.

This is seen as a means of ensuring compliance with dangerous goods legislation and preventing abuses,which might have the effect of producing distortions of competition.

Rail issues

Proposals for an EC Directive on carriage of dangerous goods by rail are likely to follow the proposed ADR Directive and will be based on RID, bringing it into the UK domestic regulations.

The transport of dangerous goods is governed by British Rail's non-statutory conditions of acceptance. With privatisation that will no longer be acceptable. The HSC has recommended, and the government accepted, that statutory regulations will be required. A consultative document has been published and the HSC has proposed the regulations should be in force by 1 January next year. Basically these give regulatory force to the existing requirements. Wherever possible the CGD Rail Regulations will be in line with the relevant international agreements and encompass the requirements of RID.

Then there is the Channel Tunnel. Mr Allison said, 'It is perfectly possible to envisage through trains between GB and any part of the EC, or other parts of Europe. So there is going to be a need of compatibility between the railway safety regimes in GB, France and perhaps, in due course, the regimes of other countries too.

'This has limited effects on the transport of dangerous goods, because few dangerous goods will be carried through the tunnel – nuclear fuels, petroleum and other flammable products, and substances which are or could become toxic – are excluded. Nevertheless, the tunnel may be of increasing significance to rail regulation in general in future years; and it could in a sense affect the road as well as the rail regime, because the freight trains will include shuttles carrying loaded HGVs'.

An added factor to this confusion is the UK government's policy of deregulation. The HSC has set up a Review which is examining all aspects of the health and safety regulatory process, and every single set of health and safety regulations to see whether it is still needed, and, if it is, whether it can be reduced or simplified. Industry is fully involved in this Review through seven task groups. It is the aim to complete the review by 1 April 1994.

More and more

As if all these were not enough, Mr Allison warned of the possibility that other EC proposals will emerge, not connected with harmonisation. 'For example, a proposed directive on Risk Prevention Officers has been canvassed in the past. As far as we in the UK could see, its only effect would be to raise industry's costs with no commensurate increase in safety. We can only hope, and try to secure, that it remains in limbo.'

But David Bowe MEP suggested that one scenario as to the future of this Directive could be for the German Presidency, in the second half of 1994, to bring it back to the negotiating table. 'It will probably need to undergo a significant redraft', he said, 'and the German Presidency could orientate the text more along the lines of their own Risk Prevention Officer legislation.'

There are two other proposals being worked on by the Commission. A draft proposal for a Council directive harmonising the training of drivers of vehicles carrying dangerous goods by road and a draft proposal for a Council regulation on uniform procedures with regard to checks on the transport of dangerous goods by road. But these are in the early stages of drafting and are not expected to be before the European Parliament in the near future.

The Commission has proposed a new Directive on the Control of Major Accident Hazards Involving Dangerous Substances (COMAH). But this seems to have become bogged down in the EC bureaucracy. The HSE thinks that around 18 months will be allowed for the introduction of regulations to implement the Directive.

The transport of dangerous substances is excluded from the scope and it is thought that overnight stops at motorway services, haulage depots are unlikely to be subject to the Directive. But this relates to goods in transit. When dangerous goods are held in sufficient quantities, in between separate journeys, it is expected that the Directive will apply.

The EC Directive on the Trans-frontier Shipment of Hazardous Waste has been implemented in the United Kingdom. But this Directive is to be replaced by the Council Regulation of the Supervision and Control of Shipment of Waste within, into and out of the European Community, which is due to come into force in May 1994.

Then there are the proposals for Council Directives on the control of volatile organic compound emissions from the storage of gasoline and its distribution from terminals to service stations and into the customer's vehicle. The Institute of Petroleum has organised a conference on 25 November at which the implications will be discussed (see inside back cover page). ■

Copies of the papers from the IBC conference can be purchased from:
IBC Technical Services,
Gilmoora House,
57/61 Mortimer Street, London
W1N 7TD.Tel: (071) 637 4383.

Putting the environment first

By Susannah Cardy

It is four years since a corroded pipe linking the Shell Stanlow refinery with the Tranmere oil terminal polluted a 20 kilometre stretch of the River Mersey. Now Shell speaks out about its efforts to ensure that history never repeats itself.

It was every oil company's nightmare. In 1989, 150 tonnes of thick Venezuelan crude seeped into the Mersey from a fractured Shell pipeline. An attempt by company staff to flush out the pipe resulted in a spectacular 'gush' of oil and the loss of another seven tonnes. Endless pictures of gum-booted emergency workers shovelling black clumps of oil from the banks of the river flashed across the media. Six months later Shell hit the headlines again, with a record £1 million fine under the Control of Pollution Act.

The timing of the spill did nothing to help: the launch of the National Rivers Authority (NRA), anxious to flex its political muscle over a newly-privatised water industry, came just days later; while images of the Exxon Valdez disaster still loomed large in the public mind.

For many of the other oil companies, it was a case of 'there but for the grace of God go I'. After the spill, staff at Stanlow were inundated with phone calls, not just from the press, but from their opposites in other firms. 'They were anxious – they wanted to know what had happened, what action we were going to take,' said an industry source. Parts of the UK refining industry, relentlessly squeezed by rising costs and intensive competition, had slipped into a breakdown maintenance philosophy. If something was up and running, it just kept on being used.

'We learnt the harsh consequences of that method when this pipeline fractured – it was buried so nobody could see it was corroded,' said Mr Dominic Boot.

Mr Boot, Chief Executive at Stanlow, was brought over from the Netherlands after the spill to turn things around. If the environment was treated as a damage limitation exercise across the industry, it was nevertheless Shell who was in the spotlight – who had to be seen to be putting matters right.

The 12-inch, 10km long pipeline at the centre of all this furore was built in 1972, before the advent of intelligent 'pigs'. Shell spent £2 million putting the pipe to rights. Each sharp-angled bend had to be 'modified' so that it could accommodate the new high-tech inspection equipment. It was also fitted with sophisticated leak

detectors, along with all the other pipes on site. These devices alert staff to the loss of less than a litre of oil.

It was money well spent. The new equipment, combined with extra vigilance on the part of operators, resulted in the detection of other badly-corroded pipelines. 'We found a number of leaks that were waiting to happen,' said Mr Boot.

'Their fathers and grandfathers always came home with dirty boots and dirty fingernails, smelling of oil...'

Much of Stanlow's success in putting its house in order, however, comes down to changes which cost virtually nothing. Since the plant has been in operation for over 70 years, many of its operators are now second, even third generation. 'Their fathers and grandfathers always came home with dirty boots and dirty fingernails, smelling of oil,' he commented. The new broom believed he had to persuade this new generation that it could be clean.

Mr Boot soon had his employees scouring the 1,600 acre site for rubbish, armed with endless plastic bags. He introduced a new five-sided quality logo, with one side representing the 'environment', bringing it up to a level with 'safety', 'reliability', 'costs' and 'people'. He even arranged for large, glossy pictures of Stanlow's wildlife to be displayed in the reception area. Gimmicky and superficial such techniques may be, but Mr Boot is convinced that raising awareness and changing perceptions at grassroots level is a vital first step towards improving the environment.

As his Public Affairs Manager, Mr Harold Bardsley, put it, 'It's the guy working at three a.m. on a wet Sunday morning who's got to behave environmentally-correctly.'

It was often simply a case of changing dyed-in-the-wool habits. If he saw a flare, Mr Boot would immediately call the control room to ask why. 'At first they thought I was nuts because that had never happened before.' Flaring is now almost eradicated at Stanlow.

The refinery at night

'It's the guy working at three a.m. on a wet Sunday morning who's got to behave environmentally-correctly.'

Stanlow covers 1600 acres

Higher up the scale, a member of the management team was made responsible for the environment, reporting back to the weekly managers' meeting. Stanlow's environmental group, originally set up solely to liaise with the pollution inspectorate (HMIP) and the NRA, was now given the task of actually monitoring and setting its own targets for the environment. 'Previously we had not looked at the environment as something that could create that sort of damage to our reputation. We had to bring awareness up to a much higher level in the organisation, to get the environment on the agenda of people who think in terms of pressures, temperatures, oil and profit.'

Mr Boot firmly believes that the techniques used for managing the environment are exactly the same as those for managing every aspect of the plant. 'A plant that has a good production record tends to have a good safety record and a good environmental record too. Where you find bad housekeeping, if you dig deeper you'll find bad cost-control, bad training and so on.'

Mr Boot is emphatic that simply throwing money at the environment is not the answer. The cost of pipeline modification after the spill was a drop in the ocean compared with some of the cash outlays Stanlow will have to make in the future if it is to comply with increasingly stringent environmental legislation.

The plant is already set to spend up to £75 million on a major two-phase water treatment project. This involves the installation of an enormous number of pipes to collect possibly contaminated surface run-off water which can then be passed through a separation process. While the initial £35 million phase has been 'extremely successful' and substantial cost savings are now expected on phase two, Mr Boot is far less happy about equally large expenditures that loom on the horizon.

'The European industry, for example, is spending $4 billion on removal of sulphur from gas oil, SO_2 removal is also going to be very costly. These figures are horrendous...we are being forced to invest enormous sums of money without there being clear proof of the relationship between the expenditure and the actual damage to the environment.'

'We are being forced to invest enormous sums of money without clear proof of the relationship between expenditure and environmental damage'

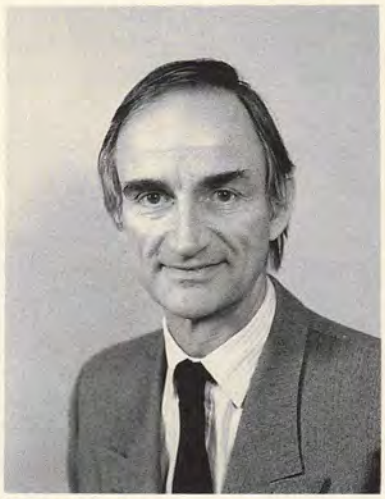
In contrast, there can be no doubting the cost-effectiveness of the environmental measures taken in the last four years. Smoking and flaring have both been cut dramatically; water-borne oil loss has dropped 75 percent, while the measure of chemicals in the water flow that leaves the plant is down by 60 percent.

The buzzword amongst management at Stanlow is now 'hydrocarbon-tight'. Mr Boot admits that realistically this is probably an unattainable goal but he is pleased with their current environmental performance, which has 'reduced the chance of accidents from perhaps one in a thousand to one in a million.

'If I compare Stanlow with a Swiss refinery, then there's still an enormous backlog of course – a lot to be done – but if I compare Stanlow now with Stanlow three years ago, then yes, I can demonstrate that we really have improved tremendously.' ■

Another fundamental change made after the spill was to focus far more operator attention on pipelines. As with flaring, it was not so much a matter of costs as a change in attitudes. 'Pipelines tend to be a forgotten group of equipment. Engineering attention is focused on the more obvious dangers – a pump that rotates at high speeds, or a vessel that contains high pressures.'

This has now changed. A pipeline inspection group, with BS5750 accreditation, was set up after the spill to register, maintain and regularly inspect all the pipelines on site. 'We also insisted that every pipeline be used for conditions that meet the original design specifications, something that had not always been the case.'



Mr Dominic Boot

'If I compare Stanlow now with Stanlow three years ago, then yes, we really have improved tremendously.'

IP THE INSTITUTE OF PETROLEUM

. . . DATES FOR YOUR DIARY

IP THE INSTITUTE OF PETROLEUM

Tuesday 16 November 1993
5.00 p.m. for 5.30 p.m.

'Business & the Environment – A Government Perspective'

By Neil Sanders
Environmental Protection & Industry Division, Department of Environment Energy Efficiency Office

Organised by Environment Discussion Group.

IP Contact: John Phipps.

Monday 22 November 1993
5.00 p.m. for 5.30 p.m.

Automotive Fuels for Europe – Reformulation or Rethink?

By Roger Hutcheson
CONCAWE

Organised by Energy Economics Group.

IP Contact: Pauline Ashby.

Tuesday 30 November 1993
5.00 p.m. for 5.30 p.m.

'Changing a Safety Culture – A Holistic Approach'

Speaker – Dr Brian Toft
Sedgwick UK Limited

Organised by E & P Discussion Group.

IP Contact: Sjoerd Schuyleman.

Wednesday 8 December 1993
5.00 p.m. for 5.30 p.m.

'Trends in Industrial Boiler Firing'

Implications for Fuel Oil and Gas Consumption

Speaker – John Cheshire
Senior Fellow, Scientific Policy Research Unit, Sussex University

Organised by Energy Economics Group.

IP Contact: Pauline Ashby.

FUTURE MEETINGS

Date	*Title*	*Group*	*Contact*
9 December	IFEG AGM and Wine & Cheese Party	IFEG	Catherine Cosgrove

All meetings are held at the Institute of Petroleum. Please tell the IP contact if you plan to attend any of these free meetings. Tel: (071) 636 1004. Fax: (071) 255 1472.

West African prospects still look good

By David Buckman

Despite patchy drilling and the exit of a number of key searchers, West Africa remains an attractive long-term prospect for explorers and producers. Several countries are trying to tempt in searchers with more attractive terms and there are bids to revive sagging production. Although the area has proven reserves of around 140 Tcf, geographical and logistical problems and a lack of money and markets have restrained gas use.

For the foreseeable future 10 countries look like being the action areas. They can broadly be divided into three significant oil producers – Nigeria, Angola and Gabon, each able to tap well over 250,000 b/d (barrels a day) – and seven states where output is more modest: Congo, Cameroon, Zaire, Benin, Ivory Coast, Equatorial Guinea and Senegal.

Nigeria

Nigeria dominates West African oil but political problems plague smooth development. Output in 1992 was around 1.9 million b/d, and government set a target of 2.5 million b/d by mid-1993, with a vigorous exploration drive to achieve reserves of 25 billion barrels (bbl) by 1995. But late in 1992 Nigeria said that it would bring its oil output into line with an OPEC allocation of 1.85 million b/d early in the New Year, requiring a cut in production. Exploration successes in the last few years have seen remaining and recoverable reserves lifted 4 billion bbl to 20 billion bbl. A restraint on further development is the financial situation of Nigerian National Petroleum Corporation (NNPC). Its majority-partner status in the top half-dozen producer groups has meant that whereas in 1993 planned expenditure by these groups would have been greatly enhanced, government cuts in NNPC expenditure undermined full achievement of aims.

Shell, the largest operator, with a capacity of around 1 million b/d, has several fields appraised for development or under review. The number two producer, Mobil, has even more ambitious exploitation plans, which will lift its capacity from about 350,000 b/d late in 1992 to some 500,000 b/d. The third largest producer, Chevron, with a capacity of 350,000 b/d early in 1993, had by then earmarked five fields for exploitation, to add almost 100,000 b/d of new crude. Other developments could follow.

Mobil's big leap forward took place at the end of last year when the $1 billion Oso condensate project off southeast Nigeria loaded its first shipment at the company's Qua Iboe terminal. The development encompassed 21 wells, eight platforms, a single point mooring and over 200 km of offshore lines, three dedicated storage tanks and Qua Iboe loading facilities. Peak output will be 100,000 b/d.

Gas testing the Diam Niadio East discovery. Pictured is Mr Tim O'Hanlon, Tullow's Operation Manager in Senegal.

A few weeks later Elf began output from the Afia oilfield, about 60 km offshore, the first of four fields – the others are Odudu, Ime and Edikan – to be tapped by January 1994. From a total reserve of 150 million bbl production should reach 60,000 b/d by end-1994. Four production platforms have been called for, with 40 wells and a shared treatment platform, oil being evacuated through the floating storage unit (FSU) Nielstor. Prior to the four fields, Elf accounted for about five percent of Nigeria's output.

Veteran producer Phillips, working onshore in the Niger Delta with Agip and NNPC, is using a phased approach to developing the Ogbainbiri field, found in 1989. Phase one output, from four wells, is expected to begin in 1994. Phase two development, of deeper oil and gas condensate reservoirs, could begin as early as 1996. Phillips lately began construction of the Obiafu-Obrikom gas liquids extraction plant near Port Harcourt to provide feedstocks to a petrochemicals plant. Phillips has also made a supply agreement with Nigeria

Development drilling at Olende, Gabon

Elf's Tchibouela platform in Congo

LNG to provide gas for Nigeria's projected LNG export project. Reappointment of all six NNPC-appointed directors by government late last year hindered finalisation of $2.3 billion of loans needed for construction. In May it was announced that government planned to cut NNPC's interest in the project from 60 percent to 49 percent. Cost is now put at $4.5 billion and it is unlikely to be on stream before first-half 1998.

Nigeria's attempts to trim wasteful gas flaring have proved abysmal. Over 75 percent of natural gas and almost 90 percent of associated gas is flared – up to 2.5 billion cf/d – with minute local usage. The latest idea is for Nigeria to start supplying gas through a pipeline network to Benin, Togo and Ghana by 1996.

Angola

War is the uneasy background to West Africa's second biggest oil producer Angola. For the government a major morale shock was the seizure in May of the strategic northern oil town of Soyo by Unita rebels. Unita said that although it had taken Soyo it would avoid targets 'not directly involved in the conflict'. Speaking in London a few weeks later Albina Africano, Angola's energy minister, said that Unita had destroyed oil storage facilities and had shot at platforms offshore. Since January onshore oil output of 30,000 b/d had been stopped and 60,000 b/d of marine production had now had to cease because of destruction in Soyo. But she was confident the offshore output could be resumed within months if marine storage could be expanded. Western oil companies had been given military guarantees that they would be protected as effectively as possible.

The government remains optimistic in the long term. Output has recently been about 450,000 b/d, 100,000 b/d short of capacity, but it is hoped to boost production to almost 700,000 b/d by 1997. Major producers Chevron and Elf are reported to have $1.5 billion of expansion plans between them and Ms Africano says that over $1 billion will be invested by Western companies in exploration. Deepwater acreage is attracting attention. A year ago Elf and state company Sonangol signed an agreement for block 17, and Exxon joined Shell to explore deepwater block 16, where four wells in up to 1,800 ft of water are planned. BP, Agip, Chevron and Total have all been in the queue for deepwater acreage.

Further finds continue to be made in proven producing areas. In 1991 Ranger with partners won block 4 in the lower Congo sedimentary basin, which contains the bulk of Angola's producing fields. Some 1,500 km of seismic followed in 1992 and in August 1993 well 4/23-1, 50 km offshore, tested 4,600 b/d of 28° API crude . Already 3-D seismic has been shot over several other drillable structures identified and the next well is due early next year.

With such Western interest Angola can be choosy about who develops its oil. Thus it has just cancelled a contract awarded in 1992 to Ghana National Petroleum Corporation (GNPC) for the exploration, production, development and sale of petroleum in Angola. GNPC was to have focused on two fields in block 4, with two wells in 1992. Officials said that they expected up to 10,000 b/d from the wells. But when it cancelled GNPC's contract in August the government said that it had 'over-estimated the ability of GNPC'. Now government would be better off dealing with specialists. Relatively low operating costs and a proven reserve of around 2.35 billion bbl should ensure such specialists are available.

One important development taking place offshore is phased exploitation of Elf's Cobo field, found in 1989 in block 3, licence 3/85. Early in 1993 Elf awarded an engineering contract to Technip for development of Cobo, the COB Pl production and processing platform to be installed about 200 km northwest of Luanda. Production will be sent to the Palanca field. The Technip unit will be able to handle 150,000 b/d and deck installation is due end-1995.

Keep an eye on the development of Angolan gas, so far little-exploited.

Sonangol has been studying how best to utilise gas from fields in shallow water. Among options being mulled are production of fertiliser, methanol and MTBE using gas from blocks B and C, where Chevron, the operator, is helping with a feasibility study. Sonangol wants to avoid flaring.

Gabon

Gabon shows how a heavily oil-based economy can be transformed by the coming on stream of a major onshore field, Rabi-Kounga, but there are still ways that the petroleum scene in the country can be improved. In 1992 oil output was 294,000 b/d, fractionally down on the year before, but the coming on stream of two more reservoirs and continued development of more wells and the tapping of satellites at Rabi-Kounga are optimistic trends.

After peaking at 230,000 b/d in the mid-1970s Gabon's output had declined for a decade until Shell found Rabi-Kounga, with reserves of at least 600 million bbl. It went on stream early in 1989 in tough jungle terrain and built up to 145,000 b/d in 1992, with 170,000 b/d in view for this year. Nearby the Coucal and Echira fields have been tied in, Avocette to follow. Fluor Daniel was given a study late last year from Shell to look at phase two development at Rabi.

Elf, which has an interest in Rabi and continues to acquire promising acreage, is also busy offshore. It

brought East Pelican field on stream last year,with Hylia and Vanneau to follow in 1993. Commissioning a Western Geophysical survey of the Port Gentil area last year, it commented that 'there are still discoveries of between 10-20 million tons of crude to be made'. National proved reserves are 700 million bbl.

Operators dropped to single figures in 1992 as a number pulled out, disappointed by search results. The government has been attempting to hone up terms following an audit by Coopers & Lybrand. In 1991 Gabon threw open 12 deepwater frontier regions under a fifth licence round which had eased terms. Eight offers were made. A sixth round – seven onshore and six near-offshore tracts – was offered in October 1992, and four licences have lately been awarded.

Congo

The Congo saw production average 175,000 b/d in 1992, up about 18 percent on 1991, and reserves were lifted to 725 million bbl. One big development here is Elf's N'Kossa field. In 1992 sources in the state firm Hydro-Congo suggested that development of N'Kossa would lift output nationally to 260,000 b/d after development over three years. Large volumes of associated gas will be reinjected to assist reported recoverable reserves production of 300 million bbl. Recently Bouygues and ETPM won a contract to build two drilling platforms for delivery in 1995 and Bouygues gained an order for a concrete barge production centre. Agip plans to develop its Kitina field for startup in 1997. Kitina Marine 2 found 13,500 b/d.

Cameroon

Another country that is planning to improve terms for explorers is offshore producer Cameroon. In 1992 a licence round for northern marine areas was delayed but an invitation to bid has lately been under preparation. Cameroon can do with increased exploration. In 1992 oil output was just over 135,000 b/d, 15,000 b/d down on the previous year. Reserves are estimated at around 325 million bbl. There is potential for gas exploitation if markets can be found, present demand being minuscule. Reserves are almost 4 Tcf and a project for an LNG export plant at Kribi continues to gather dust.

Phillips is planning a well in 1994 on acreage acquired in 1992. It shares the Sanaga II permit – three adjoining blocks out to over 1,500 ft of water depth – 50:50 with Fina Exploration Cameroon.

Pecten continues development of the Mokoko and Abana fields, in a bid to keep output at 30,000 b/d. Elf, which has a number of working deals with Pecten and the state oil firm Société Nationale des Hydrocarbures, and which has traditionally accounted for about two-thirds of Cameroon's oil output, expects that production from the Bakassi and Barombi fields will partly offset decline elsewhere. Britain's Kelt Energy, which lately took over Total's 50 percent stake in five marine concessions including the 3,000-b/d Moudi Victoria field, also hopes to enhance output.

Zaire

Africa's second biggest country, Zaire, in 1992 tapped about 27,000 b/d of oil, marginally down on the previous year. Chevron, which works in northern waters, tells us that it is currently producing from seven reservoirs and in 1992 tapped 19,400 b/d, now believed to be down slightly. Recently the company brought in the Western Oceanic rig Apollo IV with a firm 1993 programme in the Motoba and Libwa fields of five workovers and one infill well. Plans for 1994 are still under review. Chevron is still evaluating development options in Motoba, Libwa and Mibale fields. Horizontal drilling is reckoned to have potential.

A disappointment for Zaire was the poor response by overseas companies to an offer of acreage a few years ago in the inaccessible and huge Cuvette basin, northeast of Kinshasa. Geophysical studies by Exploration Consultants were said to have greatly enhanced prospects in an area where Esso Exploration, about 10 years ago, drilled several wells.

Benin

Industry experts have long held out hopes for Benin's small offshore sector if serious exploration proceeds. The country remains a producer because of the tiny Seme oilfield close to shore and to the border with Nigeria, where almost all drilling has been concentrated. Seme was developed by Saga Petroleum in 1984, and since then it has had a chequered history, with changing ownership. The 1985 peak output of 9,000 b/d has slumped by over 50 percent, although Gustavson Associates say that deeper zone prospects could lift production. Meanwhile, the Energy Ministry seeks privatisation of Seme and is offering a batch of offshore and onshore blocks.

Ivory Coast, Equatorial Guinea and Senegal

The three remaining West African producers, Ivory Coast, Equatorial Guinea and Senegal, are well worth watching. Ivory Coast remains a producer through the Exxon/Shell Belier field, whose pipeline to Abidjan area in 1992 carried a much-depleted 1,250 b/d of crude. Until 1986 Ivory Coast had two oilfields on stream, until Phillips walked away from the Espoir field in 1988 'due to declining production and weak prices'. Now there are some hopes that some 10 million bbl of recoverable reserves near the Belier platform can be exploited. In April Exxon/Shell signed a deal with the state oil firm Petroci to maintain Belier facilities until mid-1995. Petroci is also hoping that 60-70 million bbl of recoverable reserves in Espoir area might be developed. Gustavson Associates has been brought in as adviser.

Another group with hopes offshore is led by America's Global Natural Resources. The Panther and Lion fields lie in block CI-11, where oil and gas was found at commercial rates in the 1980s. Drilling was due at time of writing, with the hope that 10,000 b/d could be produced in the first half of next year.

A French-led group has been granted a 19-year contract to exploit the Foxtrot gas field, offshore west of Abidjan, where reserves are about 550 Bcf. By end-1995 70 MMcfd of output could commence for power generation.

Equatorial Guinea was launched as a condensate producer by Walter International in 1991, with the Alba field off Bioko Island. Output is about 4,500 b/d. Now interested companies can by the end of this year apply for 13,000 sq km of available acreage on and offshore in this least-explored area of the West African salt basin.

Finally, Senegal, already a modest producer of oil and gas onshore through the efforts of Ireland's Tullow Oil, has hopes of becoming an offshore producer, too. Unocal has lately put down two wells in a new programme and Edward Callan Interests has promised to drill in one of the world's most promising and unpredictable areas. ■

FORTHCOMING EVENTS

November

1st
London: '2nd Annual Negotiating Contracts in the 'New' UK Gas Industry'. Details: Helen Williamson, IBC Legal Studies and Services Limited, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

2nd
London: 'Successful Contract Negotiations in the UK Electricity Industry' – Using the Law to your Advantage in the Competitive Market. Details: IBC Legal Studies and Services Limited, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

2nd-3rd
London: 'Oil and Gas Agreements'. Details: Langham Oil Conferences Ltd., 37 Main Street, Queniborough, Leicester LE7 3DB.
Tel: (0664) 424776.
Fax: (0664) 424832.

2nd-4th
London: 'NAV 93' – The Tenth Annual Conference of the Royal Institute of Navigation. Details: Royal Institute of Navigation, 1 Kensington Gore, London SW7 2AT.
Tel: (071) 589 5021.
Fax: (071) 823 8671.

2nd-4th
Aberdeen: 'Subtech '93'. Details: SUT, PSTI House, Exploration Drive, Offshore Technology Park, Bridge of Don, Aberdeen AB23 8GX.
Tel: (0224) 823637.
Fax: (0224) 820236.

3rd-4th
Brussels: '1993 European Autumn Gas Conference'. Details: Overview Conferences, 82 Rivington Street, London EC2A 3AY.
Tel: (071) 613 0087.
Fax: (071) 613 0094.

4th
London: 'New Developments in Tank Calibration and Meter Proving'. Details: Caroline Little, The Institute of Petroleum.

4th-5th
New Orleans: 'Offshore Applications of Dynamic Pile Measurements and Analysis' and 'Workshops on Wave Equation Analysis for Conductor and Jacket Pile Installations. Details: Jay Berger, 5398 Manhattan Circle, Suite 220, Boulder, Colorado 80303 U.S.A.
Tel: (303) 494 0702.
Fax: (303) 494 5027.

4th-5th
London: 'Oil Pollution – Claims, Liability & Environmental Concerns'. Details: Athina Peters, IBC Legal Studies and Services Ltd., Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

4th-6th
Athens, Greece: 'Aerion '93' – International Exhibition/Workshop on Efficient Natural Gas Equipment and Materials. Details: LDK Consultants, Athens.
Tel: 010 30 1 862 9660.
Fax: 010 30 1 861 7681.

8th-10th
Cranfield, Bedford: 'The Design and Validation of Automatic Sampling Systems'. Details: Short Course Administrator, Department of Fluid Engineering & Instrumentation, School of Mechanical Engineering, Cranfield Institute of Technology, Bedford MK43 0AL.
Tel: (0234) 754766.
Fax: (0234) 750728.

8th-12th
Houston, Texas: 'Drilling Solids Control'. Details: Oil & Gas Consultants International Inc., 4554 South Harvard Avenue, P O Box 35448, Tulsa, Oklahoma 74153-0448, USA.
Tel: (918) 742-7057.
Fax: (918) 742-2272.

9th-11th
Warwick: 'Managing Deport and Storage Operations'. Details: Christine Lavelle, Petroleum Training Federation, Suite 1, Morley House, 314-322 Regent Street, London W1R 5AB.
Tel: (071) 255 2335.
Fax: (071) 255 1828.

10th
London: 'Best Practices for Improved Oil Recovery'. Details: Nadia Ellis, IBC Technical Services Ltd., Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

10th-11th
London: 'International Petroleum Exchange Induction Course'. Details: Nick Maggs, IPE Training Manager, The International Petroleum Exchange of London Limited, International House, 1 St. Katherine's Way, London E1 9UN.
Tel: (071) 481 0643.
Fax: (071) 481 8485.

10th-11th
London: 'Exploration Software 93'. Details: Kate Hunnisett, Exhibition Administrator, Exploration Software 93, Themedia Ltd., P O Box 2, Chipping Norton, Oxon OX7 5QX.
Tel: (0608) 84 700.
Fax: (0608) 84 796.

11th
London: 'The Myths and Realities of N/SVQs'. Details: Caroline Little, The Institute of Petroleum.

11th-12th
Vienna: 'Transmission and Distribution of Gas in the Emerging Markets of Central and Eastern Europe'. Details: Monique Quant, IBC Financial Focus Ltd., 57/61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 323 4298.

13th-16th
Saigon, Vietnam: 'Saigon Oil and Gas Expo 93'. Details: C P Ltd., Rm. 2801, Tung Wai Commercial Bldg., 109 Gloucester Road, Wanchai, Hong Kong.
Tel: (852) 511 7427.
Fax: (852) 5119692.

14th-18th
Abu Dhabi: 'Legal and Commercial Factors in Gas Contract Negotiations'. Details: Ms J Butterworth, The College of Petroleum and Energy Studies, Sun Alliance House, New Inn Hall Street, Oxford OX1 2QD.
Tel: (0865) 250521.
Fax: (0865) 791474.

14th-19th
Moreton-in-Marsh: 'Fire Safety Course'. Details: Rose Warwick, Course Bookings Manager, The Fire Service College, Moreton-in-Marsh, Gloucestershire GL56 0RH.
Tel: (0608) 52196.
Fax: (0608) 51788.

15th-17th
London: 'Subsea Engineering'. Details: Sarah Peace, IBC Technical Services Ltd., Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

FORTHCOMING EVENTS

15th-18th
Cranfield, Bedford: 'Instrumentation Systems for Engineers in the Process Industries'. Details: Short Course Administrator, Department of Fluid Engineering & Instrumentation, School of Mechanical Engineering, Cranfield Institute of Technology, Bedford MK43 0AL.
Tel: (0234) 754766.
Fax: (0234) 750728.

15th-19th
Oxford: 'Financial Management and Control of Oil and Refined Products – Supply and Transportation'. 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.

15th-19th
Lagos, Nigeria: '11th Annual International Conference of The Nigerian Association of Petroleum Explorationists. Details: NAPE Secretariat, 3rd Floor, 66 Campbell Street, P.M.B. 12598, Lagos, Nigeria.
Tel: (234) 1 631833.
Fax: (234) 1 618120.

16th-17th
London: 'Cogeneration – Advances in Technology' – Third Annual Two-Day Conference. Details: Jane Worman, IBC Technical Services Limited, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

16th-18th
Philadelphia: 'Marine Fuels: Specifications, Testing, Purchase and Use' – Standards Technology Training Course. Details: Kristina Falkenstein, ASTM, 1916 Race Street, Philadelphia, PA 19103.
Tel: (215) 299 5480.
Fax: (215) 299 5470.

16th-18th
Edinburgh: '9th European Payments 93' – EFTPoS & Home Services. Details: SETG c/o Meeting Makers, 50 Richmond Street, Glasgow G1 1XP.
Tel: (041) 553 1930.
Fax: (041) 552 0511.

16th-18th
London: 'Traded Options – Phase III' (Advanced Workshop). Details: Nick Maggs, IPE Training Manager, The International Petroleum Exchange of London Limited, International House, 1 St. Katherine's Way, London E1 9UN.
Tel: (071) 481 0643.
Fax: (071) 481 8485.

17th
London: 'Engineering Competence – Through Occupational Standards & Vocational Qualifications. Details: Claire Armstrong, NCITO, 5 George Lane, Royston, Herts SG8 9AR.
Tel: (0763) 247285.
Fax: (0763) 247302.

18th
London: 'The Information Centre of the 1990's – Changes, Challenges and Choices'. Details: Caroline Little, The Institute of Petroleum.

21st-26th
Moreton-in-Marsh: 'Advanced Fire Safety Course'. Details: Rose Warwick, The Fire Service College, Moreton-in-Marsh, Gloucestershire GL56 0RH.
Tel: (0608) 52196.
Fax: (0608) 51788.

22nd-26th
Cranfield, Bedford: 'Introduction to Fluid Dynamics'. Details: Short Course Administrator, Department of Fluid Engineering & Instrumentation, School of Mechanical Engineering, Cranfield Institute of Technology, Bedford MK43 0AL.
Tel: (0234) 754766.
Fax: (0234) 750728.

23rd-24th
London: 'Induction Course in Offshore Engineering'. Details: BPP Technical Services Ltd., 2 Tavistock Place, London WC1H 9RA.
Tel: (071) 837 6362.
Fax: (071) 837 0822.

23rd-24th
Stavanger, Norway: 'APC 1993 Offshore Northern Seas' – The sixth International ONS Advanced Projects Conference. Details: The International ONS Advanced Projects Conference 1993, P O Box 175, N-4001, Stavanger, Norway.
Tel: +47 4 53 55 45/46.
Fax: +47 4 55 22 70.

23rd-24th
Singapore: 'Energy Developments in Asia – Balancing Explosive Growth with Environmental Demands'. Details: IBC Technical Services Ltd., 545 Orchard Road, #12-01, Far East Shopping Centre, Singapore 0923.
Tel: (65) 732 1970.
Fax: (65) 733 5087

23rd-25th
London: 'EEBF '93' – East European Business Fair. Details: East-West Business Events Ltd., 26 Danbury Street, London N18 JU.
Tel: (071) 454 1985.
Fax: (071) 454 1986.

23rd-25th
London: 'Deep Water Clastic Depositional Systems'. Details: The Administrative Secretary, JAPEC, c/o The Geological Society, Burlington House, Piccadilly, London W1V 0JU.
Tel: (071) 434 9944.
Fax: (071) 439 8975.

23rd-26th
Melbourne, Australia: 'Offshore Australia' – The 2nd Australian International Oil, Gas & Petrochemical Exhibition and Conference. Details: Will Martin, Overseas Exhibition Services Ltd., 11 Manchester Square, London W1M 5AB.
Tel: (071) 486 1951.
Fax: (071) 486 8773.

24th
London: 'Introduction to International Offshore Oil and Gas Subsea Engineering Seminar'. Details: Gareth Edwards, I Mech E, 1 Birdcage Walk, London SW1H 9JJ.
Tel: (071) 222 7899.
Fax: (071) 222 4557.

24th
Aberdeen: 'Developing Trends in Environmental Risk Assessment'. Details: The Safety and Reliability Society, North of Scotland Branch, Mr M P Turpin (UEOO/33), Shell UK Exploration and Production, 1 Altens Farm Road, Nigg, Aberdeen AB9 2HY.
Tel: (0224) 883 7982.
(Franc Sutcliffe)

24th-25th
London: 'The Downstream Oil and Gas Sector of the Former Soviet Union – Investing in the Refining Industry'. Details: Business Seminars International Ltd., Ockham House, Hurst Green, East Sussex TN19 7QE.
Tel: (071) 490 3774.
Fax: (0580) 860304.

25th-26th
London: 'Advanced Offshore Engineering'. Details: BPP Technical Services Ltd., 2 Tavistock Place, London WC1H 9RA.
Tel: (071) 837 6362.
Fax: (071) 837 0822.

FORTHCOMING EVENTS

25th-26th
Aberdeen: 'The Practicalities of Benchmarking for Continuous Improvement in the Oil and Gas Industry. Details: The 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.

25th
London: 'Practical Implementation of EC Gasoline Vapour Emission Control – Directives Conference and Exhibition'. Details: Caroline Little, The Institute of Petroleum.

25th-26th
London: 'Advances in Environmental Impact Assessment'. Details: Liz Kinniment, IBC Technical Services Ltd., Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

29th-30th
London: 'Towed Pipeline Design and Engineering'. Details: BPP Technical Services Ltd., 2 Tavistock Place, London WC1H 9RA.
Tel: (071) 837 6362.
Fax: (071) 837 0822.

29th-30th
Cape Town: 'Sub-Saharan Oil & Minerals'. Details: Europe Energy Environment Limited, 49 Hay's Mews, Mayfair, London W1X 7RT.
Tel: (071) 493 4918.
Fax: (071) 355 1415.

Nov 30th-Dec 1st
London: 'Negotiating with Russians – 2 day intensive residential training course. Details: Business Seminars International Ltd., Ockham House, Hurst Green, East Sussex TN19 7QE.
Tel: (071) 490 3774.
Fax: (0580) 860304.

Nov 30th-Dec 3rd
Moscow: 'Oil and Gas Framework Agreement' – Direct-Sales Trade Show and Conference. Details: Detlef Decker, U.S. Russia Business Council, 1701 Pennsylvania Avenue, NW Suite 650, Washington, DC 20006.
Tel: (202) 956-7671.
Fax: (201) 956-7674.

December

1st-2nd
London: 'Contract Strategy for the Design and Construction of Submarine Pipelines'. Details: BPP Technical Services Ltd., 2 Tavistock Place, London WC1H 9RA.
Tel: (071) 837 6362.
Fax: (071) 837 0822.

2nd-3rd
London: 'Inspection of Structural Composites'. Details: BPP Technical Services Ltd., 2 Tavistock Place, London WC1H 9RA.
Tel: (071) 837 6362.
Fax: (071) 837 0822.

5th-10th
Moreton-in-Marsh: 'Handling of Emergencies in the Petroleum Industry'. Details: Rose Warwick, Course Bookings Manager, The Fire Service College, Moreton-in-Marsh, Gloucestershire GL56 0RH.
Tel: (0608) 52196.
Fax: (0608) 51788.

6th
London: 'Environmental Economics'. Details: Liz Kinniment, IBC Technical Services Ltd., Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

6th-7th
London: 'Port State Control – New Solution or New Problem?'. Details: Athina Peters, IBC Legal Studies and Services Limited, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

6th-7th
London: 'The 8th International Energy Conference – Emerging Structures in Energy Industries'. Details: The Energy Conference, The Conference Dept., Chatham House, 10 St James's Square, London SW1Y 4LE.
Tel: (071) 957 5700.
Fax: (071) 957 5710.

6th-7th
London: '3rd Annual UK & European Gas Price, Supply and Demand Conference'. Details: Monique Quant, IBC Financial Focus Ltd., 57/61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 323 4298.

Isomerisation comes to Coryton

By Geoffrey Mayhew

Ahead of schedule, under budget, and using cost and time-saving techniques borrowed from the installation of North Sea oil platforms, Mobil has added a light virgin naphtha isomerisation unit to its Coryton refinery in Essex. The £90 million project which came on stream in two stages in September and October will increase the refinery's unleaded gasoline capacity from 50 percent to 80 percent.

The 'isom' unit, as it is called, can produce 14,000 barrels a day of high octane feedstock composed of iso-pentane and iso-hexane which will be mixed with the other blending stocks in the manufacture of unleaded gasoline. Progressively, the benzene in the finished gasoline will be reduced from 3 to 1 percent.

'The 'isom' technical development represents a significant step in achieving anticipated European environmental standards for cleaner burning gasoline,' said Mr Paul Maslin, Assistant Refinery Manager and Project Venture Manager.

'In 1990 we saw the time had come to decide the type of isomerisation unit we should have at Coryton, and to plan the target date to bring it on stream. From that moment a large number of scientific, technical civil engineering, mechanical engineering and financial objectives were established to meet the deadline of end-1993. These objectives had to fit together like pieces in a jigsaw that we were certain was going to come out right.

'It led to the creation of two company teams of specialists, these being the Mobil Project Task Force and the Mobil Venture Team, in addition to those of the contractors.

'The most important decision concerning project philosophy was to maximise modular construction in the form of Vendor Assembled Units (VAUs), Pre-Assembled Units (PAUs), and Pre-Assembled Pipe Racks (PARs). We were influenced to adopt this technique because of its success in cost and efficiency in North Sea offshore work, and our own previous, but limited, experience at Coryton. It has brought us considerable benefits and helped us to finish ahead of target.'

Processing facilities

Isomerisation units of different configurations have been installed elsewhere to convert low octane feedstock into higher octane components – it is a proved and developed technique. Mobil's first objective was to decide the formula that would be best in meeting anticipated quality requirements for its gasoline pool.

The 'isom' they have installed combines three separate processing facilities:

- a Dehexaniser Column (Dehex) ;
- an Isomerisation Unit (UOP Penex™ * unit) ; and
- a Molecular Sieve Separation Unit (UOP Molex™ * unit).

The process design for the Dehex was carried out by Mobil Research and Development Corporation (USA), the technology for the Penex™ and the Molex™ being licensed from UOP Process International Incorporated. The detailed engineering, procurement and construction management was carried out by Foster Wheeler Energy Ltd.

Without the 'isom' process, the C_5 lighter naphtha fractions from the upper part of the crude oil distillation unit would be blended directly into finished gasoline and the C_6 + heavier fraction would be fed to the adjacent CCR ^{SM}* Platforming™* process unit (the reformer).

With the 'isom' unit, the C_5/C_6 fractions, together with the remaining naphtha, will be fed to a pre-treater unit where sulphur and other contaminants will be removed. The feedstock will then pass to the Dehex tower where the C_5/C_6 stream is removed and sent to the Penex™. There, the low octane pentane and hexane molecules undergo an equilibrium reaction in the presence of a catalyst to produce increased volumes of the higher octane material, iso-pentane and iso-hexane.

The product is then passed to the Molex™, which is the first to become operational in a UK refinery. Here, the higher octane iso components are separated from the lower octane components by molecular sieve adsorption. The heart of this process is the UOP patented rotary valve, some six feet square, solely manufactured in the United States. This valve allows the feed and extraction points for the adsorption process to be continuously adjusted.

The high octane substances pass to storage tanks for blending with other refinery streams to make unleaded gasoline; the other low octane material is recycled to the Penex™ to undergo further reaction and conversion. (For a technical description of the 'isom' see next page).

'Competitive tendering also proved to be a valuable decision,' said Mr Maslin. 'Fabricom, a Belgian yard at Antwerp, was selected for the manufacture and assembly of the PAUs and PARs, with some components also being supplied from Holland, Germany and Italy as well as the United Kingdom. Additionally, VAUs were manufactured in Holland and Germany.

'As is typical in the building of many North Sea units, our modules were made under cover and in controlled conditions in their yard at Antwerp, and shipped via Rotterdam to Coryton.

'One factor which played an important part in the decision to maximise modularisation was the existence of Coryton's construction jetty on the Thames. This enabled us to have the largest ready-made units delivered direct into the refinery without causing the traffic problems of bringing them in by road.'

The chosen site for the 'isom' unit was that of the redundant No. 2 crude distillation unit, nearly 40 years old. Approximately, the site is the size of two football pitches. After it was cleared between October 1991 and February 1992 two metres of the whole surface was removed and backfilled with gravel.

'This clean site made it easier to sink the 721 steel piles and it also provided rapid drainage,' commented Mr Maslin.'

The civil engineers completed their work last December. By then the site was covered in a concrete apron in which were the foundation holes for the VAUs and the concrete plinths, the foot-prints upon which the feet of the pre-assembled modules would be placed.

Beneath this apron were the many ducts for power cables from the power sub-station being built as part of the project on an adjacent site, and the instrumentation cables for the control headquarters of the 'isom', also on that plot.

Tight installation schedule

The first large load of components arrived at the construction jetty at the end of November 1992. A temporary delay occurred as the barge remained moored at Gravesend, waiting for a change of wind – the southerley winds could have blown the barge onto the jetty.

'One reason why we had to be strict about this deadline for arrival by sea was the need to order a 1,200 tonne mobile crane to handle the biggest units,' explained Mr Maslin.

'There was only one crane of this type available in the time frame in the United Kingdom. At a definite date, upon which the work of many would depend, the crane would be required to lift the Dehex from a temporary place to its operational site. The crane would then be moved to another position to raise and install the other two large columns, the raffinate and extract columns.

'It would then be further moved to assist the transportation and lifting of the modules arriving from Fabricom. In the early days of the work the crane was scheduled to be available to use during a window of time, which happens in North Sea operations, but we had to firm up and narrow that window as the time got nearer.'

With the arrival of the first barge came the Dehex, 62.3 metres long, 5.1 metres in diameter and weighing 360 tonnes, and the raffinate column, weighing 250 tonnes.

This was followed by a second delivery of processing vessels in mid-January 1993. In late January came the first pre-assembled units and piperacks weighing over 1,300 tonnes. The last module delivery was made in mid-February, the heaviest of which was 221 tonnes, the longest length 30 metres and the greatest height 23 metres. Altogether the modules weighed some 2,400 tonnes, bringing a total movement of 3,300 tonnes across the Coryton construction jetty.

The piperacks were manufactured under cover in one piece in the Antwerp yard in order to test their function. To make transportation by sea practical, they were then cut into three components, each 50 metres long, 30 metres wide and 15 metres tall, and brought to Coryton by barge. It was not possible for these pieces to pass under the refinery's piperack, because of their bulk. They were lifted over by the giant crane. All who could turned out to watch.

A barge load of giant units

Before each of these lifts the transporter driver had to reverse carefully to place his vehicle in the ideal position for the lift. The preparations and calculations for the operation took many man hours, but each hoist took only a few minutes.

The overhead air coolers were fabricated in the United Kingdom and moved to a laydown area at Tilbury port, where the inlet and outlet piping manifolds were added to complete the total assembly. The whole was then tested before being dismantled into large components for road transportation to Coryton and re-assembly on site.

A storage area for the giant components was made north of the 'isom' plot. The 62.3 metres long Dehex was placed horizontally so that it could be externally dressed with platforms, ladders, pipework, instrumentation, lights, etc. This increased its erection weight to 440 tonnes.

In mid-January this year the tower was ready, as planned, for the lift. During four hours the crane swung it slowly to the adjoining 'isom' plot and the Dehex was lowered, with laser guidance, on to its prepared foundation. The placing was required to be exact.

The crane was next moved to the 'isom' plot in order to hoist the other columns into place. Then the

Transporting a prefabricated section within the refinery

modules were lifted and lowered onto their precise footprints.

'Again the clean site, now a large concrete floor with many units standing on it but as yet unconnected, was helpful to the engineers,' said Mr Maslin. 'Among the items to be connected was the piperun to the newly built flarestack, 350 ft high. Representatives of the local community were kept fully informed about the 'isom' development. They were shown where the new stack would be and told that it would replace one of the two existing stacks.'

Visually the 'isom' unit has little extra impact on the outward appearance of the refinery. Indeed, there are now two fewer chimneys than before.

Start-up

The start-up brings into operation a number of additional safety and environmental features. For instance, noise prevention has been applied to all equipment. All pumps have double seals in order to minimise atmospheric emissions and there are two safety valves on each vessel, allowing one to be removed for inspection and overhaul without a shutdown, thereby increasing plant safety and minimising unnecessary releases.

Water contamination prevention meets all present and anticipated EC regulations, and are within the Mobil international technical codes, which are stricter than local law.

When the mechanical engineers were approaching completion of their work, Foster Wheeler Energy Ltd and the Mobil Project Task Force handed over to the Mobil Venture Team. Previously the MVT had the role of trouble-shooter in keeping the complex operation to its time-table and considered matters which might affect the project's scope, like market changes.

Now they became the team which would commission the 'isom'. Many refinery craftsmen and process operators worked with it as they would be the skilled staff who will continue to maintain and operate the unit when it came on stream.

'Everyone who has been involved liked this job,' said Mr Maslin. 'The interdependence of their work and the work of other people was crystal clear, and that helped to make it a success.' ■

*** UOP Process International Incorporated trademark**

Isomerisation techn

The naphtha from pre-treater units is routed into the Dehex feed drum, which provides surge capacity between the units. The naphtha is partly vaporised before entering the Dehex.

The Dehex is a multi-trayed column which uses high pressure steam and medium pressure steam in exchangers as the reboiling mediums.

The overhead stream leaves the column under pressure control and enters a fin-fan condenser where it is fully condensed before entering the overhead accumulator. Some of the overhead product is returned to the column as reflux and the rest is pumped through a cooler to the Penex™ unit. The bottom stream is returned to the CCR.

The C_5C_6 stream contains a mix of iso and normal C_5s and iso and normal C_6s.

Isomerisation involves converting the low octane normals to their higher octane isomers. This is accomplished by passing feed over a fixed catalyst bed in the presence of hydrogen. The hydrogen is continuously recycled around the reactor circuit. Because it is an equilibrium reaction less than 100 percent conversion of the normals is achieved.

The maximum octane of the product is obtained by separating the unconverted normals using a molecular sieve and recycling them back to the reactor. This separation occurs because of the difference in physical shape between the iso and normal molecules.

Within the Penex™ the fresh feed from the Dehex is mixed with a recycle stream of normal C5/C6 material from the Molex™ unit. This is passed through a feed coalescer and molecular sieve driers before entering the surge drum.

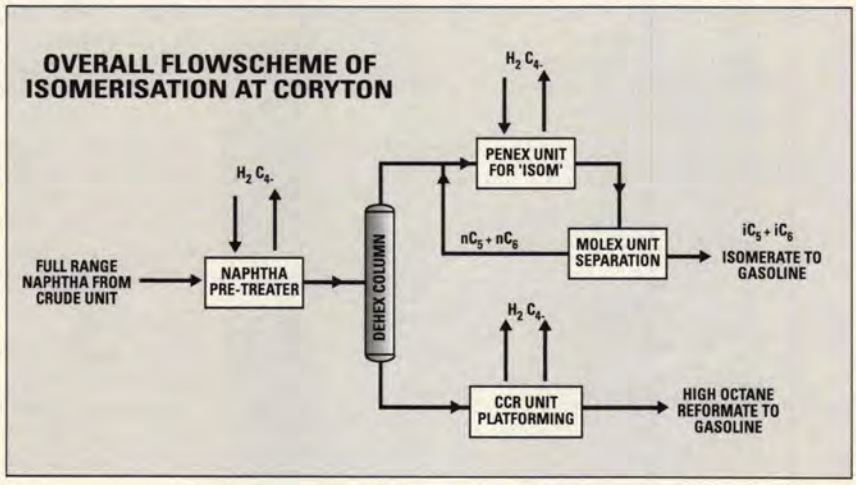
Hydrogen rich gas from the CCR is used to maintain pressure on the drum. The combined unit feed is pumped into the reactor circuit where it is mixed with hydrogen recycle gas.

A chloriding agent is pumped into the feed stream. The mixture is partly vaporised in feed/effluent exchangers and then further vaporised in a high pressure steam heater.

It enters the first reactor at a controlled temperature depending on the activity of the catalyst and the type of crude run.

Partly cooled in the feed/effluent exchanger, the effluent passes through a second reactor. It is cooled and then condensed in a fin-fan and routed to a product separator. Here the hydrogen-rich gas is flashed off and sent to the recycle gas compressors to be returned to the reactor circuit where it mixes with fresh feed.

The pressure in the separator is maintained by bringing in hydrogen-



ology used at Coryton refinery

rich gas from the CCR.

Liquid from the product separator is pressured through a feed/effluent exchanger and into the stabiliser column. The overhead stream from the column is partly condensed in a fin-fan and a water-cooled exchanger before entering the overhead accumulator. All liquid from this drum is returned to the column as reflux.

The offgas from the accumulator is routed to the caustic scrubber and to the fuel gas system.

The bottom product is pressured out through a feed/effluent exchanger and pumped into the Molex™ unit.

The feed for the Molex™ passes into a rotary valve, a mechanical device for distributing feeds into and product streams out of an adsorbent chamber containing separate packed beds of molecular sieve. As the feed flows down the chamber, the normal C_5/C_6s are adsorbed by the molecular sieve. The iso C_5/C_6s remaining in the liquid and the nC_4 displaced from the pores of the molecular sieve during normal C_5/C_6 adsorption leave the chamber via the rotary valve and become the raffinate stream.

The points at which all streams are connected to the chamber are progressively moved down the vessel by the rotary valve in order to carry out the adsorption in a continuous manner.

The normal C_5/C_6s are removed from the chamber by introducing a desorbment stream of butane into the beds previously in feed service. The desorbent washes off the normal C_5/C_6s and returns to the rotary valve as the extract stream, staying there as a fixed inventory and continuously recycled.

The raffinate stream leaves the rotary valve and enters the raffinate mixing drum, and is then routed to the raffinate column, which is reboiled using medium pressure steam.

A butane stream is taken overhead from the column and is fully condensed in a fin-fan exchanger before passing to the overhead accumulator. The reflux is returned to the column and excess butane pumped to storage.

A liquid sidedraw of butane is also taken from the raffinate column and this is routed to a desorbent surge drum. The bottom raffinate product is pumped through an exchanger where it is partly cooled before being routed to product storage via a fin-fan cooler.

The extract stream from the rotary valve is routed to the extract mixing drum before entering the extract column, reboiled by medium pressure steam.

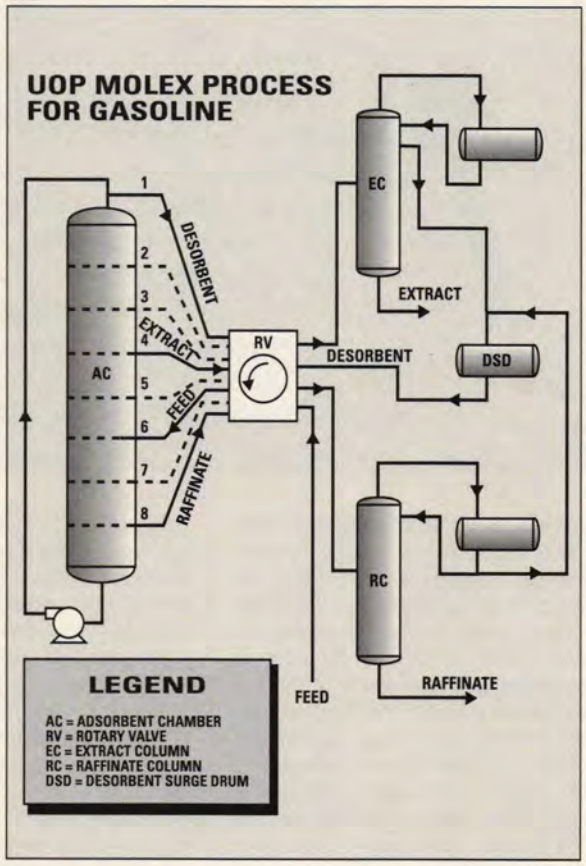
A butane stream is taken overhead and is fully condensed in a fin-fan exchanger before being routed to the overhead accumulator. Reflux is returned to the column and the butane product stream pumped to the desorbent surge drum.

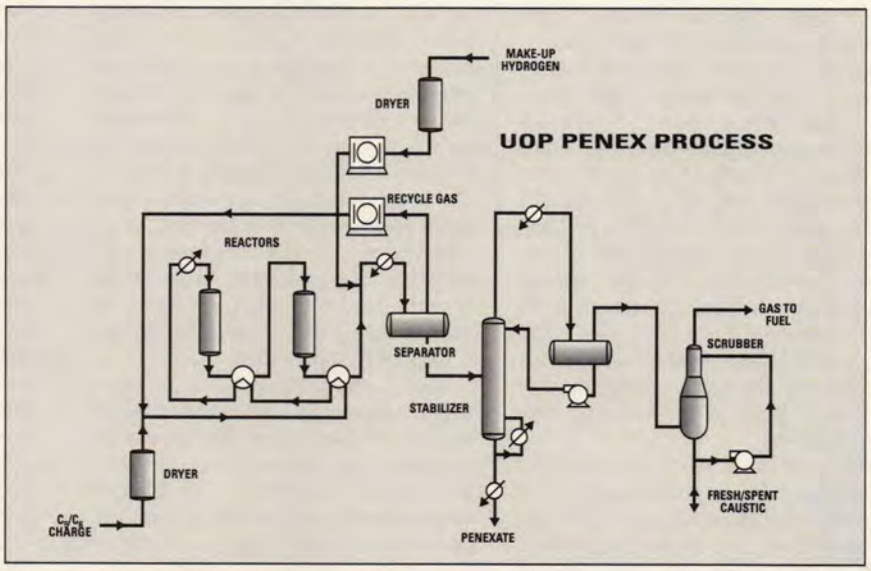
The normal C_5/C_6 bottom product stream from the column is pressured out to a fin-fan cooler before being recycled back to the feed coalescer on the Penex™ unit.

The butane from the desorbent surge drum is pumped through the raffinate column bottoms exchanger where it is preheated before being filtered and returned to the rotary valve. If there is any excess butane in the surge drum, it is pumped away to storage.

The high octane isomers are routed to storage for blending into finished gasoline.

* **UOP Process International Incorporated trademark**





The approach of excise law reform

By Gavin McFarlane, Director of Customs and Excise Services, Titmuss Sainer & Webb

The contribution of the petroleum industries to the national exchequer is immense, particularly when the taxes paid by the actual consumer of their products are taken into account. Apart from the proposed introduction of value added tax (VAT) on domestic fuel, there are the excise duties which have historically generated enormous sums. For the year 1991/92 the total net receipts of Customs and Excise, after repayment of credit for input tax in the field of VAT, were over £6 billion. This represented 43 percent of the total yield from central government taxation for that period. Just over £1 billion was derived from the duties on hydrocarbon oil, a truly massive contribution to the Chancellor's revenue receipts.

Administration and collection of these duties is controlled by some extremely complex legislation, basically the Hydrocarbon Oil Duties Act 1979, the Customs and Excise Management Act of the same year, a panoply of rules and regulations made under the power of the statutes. As many people in the industry are aware, the present system of control is by means of a wide range of criminal offences ranging from major fraud at one end of the scale to a host of minor transgressions of a regulatory nature, for which criminal intent is not normally required as an ingredient.

Major fraud is thankfully very rare, although there have been occasions when groups of employees have involved themselves in schemes to deprive the Commissioners of Customs and Excise of their lawful entitlement to duty. But the greatest risk is of falling foul of regulations and conditions made under subordinate legislation, which have been heavily amended over the years, and which present difficulties of access to those not accustomed to finding their way around the statute books.

Many of these so-called absolute offences relate to breaches of everyday requirements relating to the keeping of records and the making of entries by those engaged in the petroleum industries and related occupations. Thus a producer of petrol substitutes and a dealer in petrol substitutes on which excise duty has not been paid must comply with the following requirements, among others. He must make entry of all premises and buildings which are to be used for any purpose in connection with his business. He must keep on those premises all books and documents connected with his business as producer or dealer which Customs and Excise require. A serially numbered invoice or delivery note must be issued, and unless otherwise required, any affected person must by the due date furnish returns about all petrol substitutes sent out from his premises over the previous period. There is a general duty to produce all books and documents when required to all officials of Customs and Excise, and similarly to supply any information which may be required by such official about the production, receipt or supply of substitutes.

Although compliance is to some extent tiresome under the present regime, it does not really impose an insuperable burden on a well-conducted business. As I have emphasised, these penalties are currently criminal, and in respect of breaches of regulations and requirements they would be imposed by a magistrates court. But in practice it is only in very rare cases that Customs and Excise will prosecute, and then only in a fairly serious case where there have already been a number of warnings.

Change coming

All this is due to change. It is therefore essential that everyone in the petroleum industry who is concerned with excise duty should know about these important alterations, which are undoubtedly going to take place. In October 1990, after it had conducted a review of its excise responsibilities, the Department of Customs and Excise published a strategy for change. It recommended that its officers should visit the excise traders under its control less often and that there should be a shift to an audit-based system of control. Clearly the use of audit techniques to ensure as far as possible that declarations are accurate would cause problems unless a tight system of control were introduced at the same time. It would not serve this new regime if it had to continue to depend on an officer's visit throwing up a breach of a requirement, with eventually at the end of the prosecution process a comparatively

light fine being imposed by a magistrates court.

Accordingly the Department has decided to adopt the kind of scheme which it eventually decided to bring in for VAT. The proposal is to decriminalise the minor regulation offences in excise law, substitute a series of civil penalties in their place and make liability to those civil penalties subject to appeal to a tribunal. Customs and Excise issued a Consultation Paper on 'Decriminalisation and Appeal Procedures in the Excise' last year, followed by a further Consultation Paper on 'Excise Appeals and Civil Penalties' in July. It is likely that draft legislation soon to be introduced will reflect them closely.

An important proposal is the creation of a penalty of civil evasion which would be appealable to an extended tribunal. While the sanction of criminal fraud would be retained for the most serious alleged offences, Customs and Excise would have the option of treating certain kinds of alleged evasion as a civil matter. There is already precedent for this inVAT, where there is a civil penalty of conduct involving dishonesty. There is a cut-off point around £100,000 which is applied and it is likely that the same structure would be applied to alleged civil evasion in excise duty.

The less serious regulatory offences would also become subject to civil penalties and these also would be subject to appeal to tribunal. It seems probable that the VAT tribunal which has operated for the last 20 years would be extended to deal with the new system of excise appeals. In respect of civil evasion, it is proposed that the penalty should be equal to the amount evaded but that this should be subject to mitigation by the Commissioners. It should certainly be subject to mitigation by the tribunal. The penalties for decriminalised civil penalties for regulation offences are to be applied as follows. There will as a starting point be a fixed penalty of £250. If however, the offence is failure to pay excise duty, or failure to furnish excise duty returns or engaging in an excise trade without being authorised to do so, then the figure will be five percent of the duty in question, if greater than £250. In addition, where the offence is failing to keep records, or failure to furnish excise duty returns or failure to pay excise duty and the offence is a continuing one then there will be a penalty of £20 for each day that the failure continues. Thus the potential penalty can in certain circumstances be considerable.

But the sting in the tail is that Customs and Excise propose to move to a system of assessment based on the best judgement of an officer of Customs and Excise. This would replace the present system of collecting duty. Once an assessment has been raised, the burden proving that it is wrong or that it has not been made to the best of the officer's judgement would shift to the assessed trader. That is not all that would shift. The whole basis of administration and collection of excise duty will be put on the same footing as that now operating in VAT, with a similar obligation to furnish returns, pay the sums shown as due on them, with liability to assessment to immediate civil penalty in the event of any failure. It is likely that those provisions will come into force at the beginning of 1995 so those in the petroleum industry who are involved in excise duty matters should follow developments closely. ■

From storage to aircraft – German fuel handling system

By J Grötzbach, AFS Aviation Fuel Services GmbH

A new management philosophy is taking over in numerous companies, triggering off a kind of revolution in the firms involved, which has come to be known as 'lean production' or 'lean management'. It is now also affecting companies in the aviation and oil industries.

An important role in this new management philosophy is being played by the setting up of service companies which provide services covering all aspects of fuel handling - from the refinery, via the storage depot, all the way to the aircraft. Joint ventures in the oil industry and/or the aviation industry are emerging as suitable strategic marketing/supply instruments. In the course of these developments and in line with 'lean thinking', the whole range of operations involved is being handed over more and more to the independently operating units.

One of these companies is AFS Aviation Fuel Services GmbH, Hamburg, founded in 1986, which during the past few years has established organisationally independent stations with varying customer and client structures at the German airports of Frankfurt, Munich, Düsseldorf, Hamburg, Berlin-Schönefeld, Dresden and Leipzig.

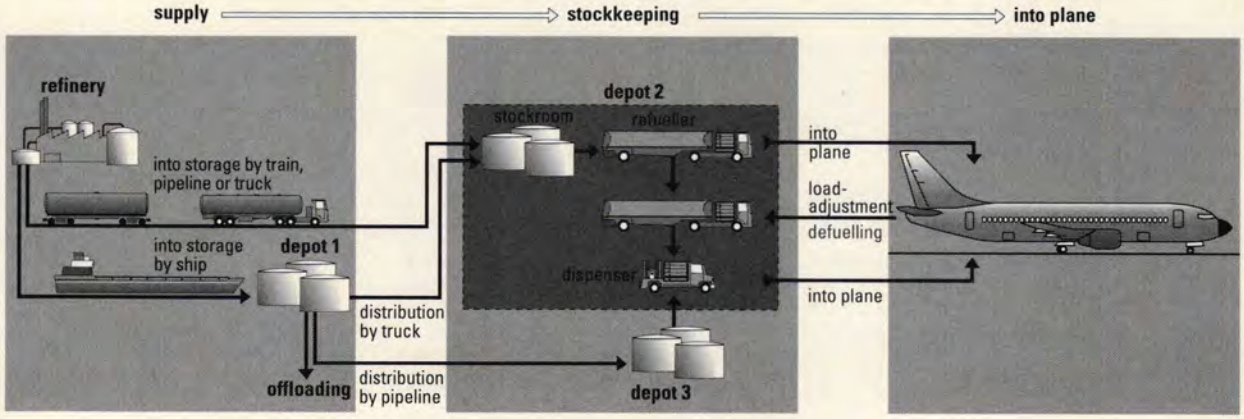
The growing and ever more complex business operations have made it necessary to develop a new concept for a decentralised organisation and information system for the sector's fuel disposition and control, fuel handling and fuel administration - including accounting and invoicing. This concept has been productively applied since the commissioning of the Munich II airport on 17 May 1993 and has since been introduced at all stations managed by AFS.

The objective of the Fuel Handling System (FHS) is an integrated disposition, accounting and information system that continuously accompanies, and correctly documents and invoices, all movements of quantities handled and administered by AFS. This also covers all of the multi-sector and specific-to-sector requirements which lead to a consolidation of competitive potential:

Organisation – FHS adapts quickly and flexibly to changed market conditions,preventing a possible increase of manpower in the administrative sector and/or corresponding adaptation measures for the EDP systems.

FHS supports automated tasks and allows an efficient deployment of staff, along with an acceleration of work processes and operations.

Figure one



The modular structure of FHS makes it possible to have a decentralised allocation of tasks/responsibilities within a company-wide organisation and information system.

Management – FHS provides information relevant to decision-making processes - promptly, of superior quality and excellent clarity/intelligibility, as well as with a high degree of reliability.

Marketing – The information service provided by FHS offers the option of supporting business partners/clients and handling innovative services in a trouble-free manner.

Organisation concept

The typical way into the logistic chain – into which the service company can be integrated with various tasks – starts with a supply point (major tank depot, refinery) and leads via storage facilities (tank farms at airports) into the aircraft, the actual fuelling operation being carried out either by a fueller, or a dispenser which pumps the aviation fuel from a hydrant system. The logistic chain is based on various supply contracts (supplier – service company - airline) which also indicates the requirements for a fuel handling system (**see Figures one and two**).

Fuel disposition

Disposition of personnel and equipment

The most important responsibility of the aviation service station is handling aircraft fuelling – on time and smoothly. To allow operational control to function optimally, all of the information relevant to disposition (up-to-date flight plans, park positions, current availability of personnel and equipment etc.) must be administered clearly, intelligibly and flexibly and must be capable of being translated into specific individual operational orders.

Accruals disposition

The most difficult task for any dispatcher is the optimal coordination of supplies for the various means of transport, such as ships/barges, road tankers, rail tank cars or pipelines, and their harmonization with predicted requirements. The disposition procedures, specifically for each means of transport, and the probable development of stocks must be recorded in detail and translated into clearly intelligible supply plans.

FHS allows all of the necessary planning and control information to be determined on the basis of the existing contracts, thus making it possible to order the probable additional supply quantities for a period of up to 30 days.

The existing transport capacities can then be reallocated, oriented to the clients involved, depending upon requirements.

Contract management

The individual contractual relationships between the supplier/client/customer must be managed and monitored by the service company on a trust basis. It must be ensured thereby that fixed takings-quantities (target quotas) are adhered to and the clients' accrual quantities synchronised in a sensible manner.

Fuel handling

Fuel handling is primarily understood to be the physical handling of the fuel itself (measurement methods, automatic control engineering), the quantitative recording of the movements, as well as the treatment by the authorities within the scope to the quantity accounts. This must also include complete evidence of the most important operational data (e.g. meter readings).

Fuel administration

Stock management

Stock management means the ability

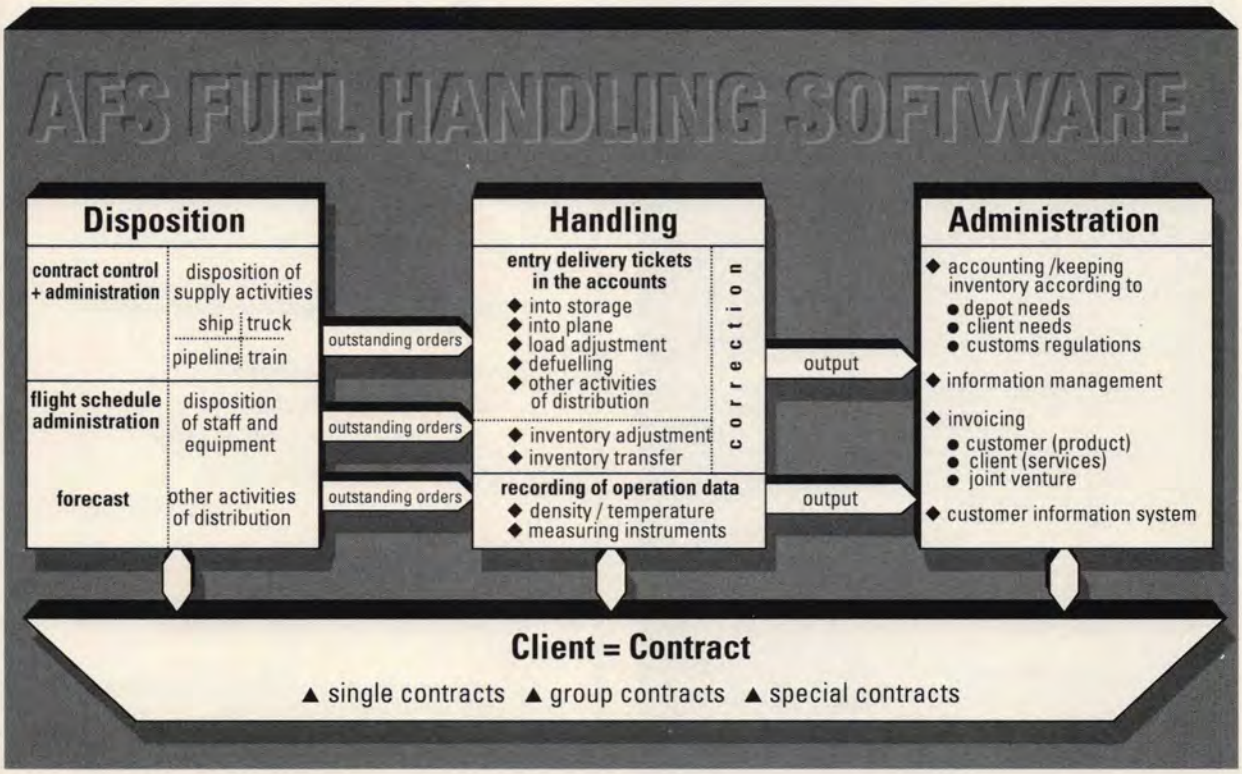


Figure two

to fix the stock level of a product at any given time, namely with various differentiations, such as according to storage point and/or client.

Invoicing
The ever more varied range of services offered and ever greater variety of customers' wishes are being expressed today in a host of different contracts and special conditions.

FHS carries out invoicing, even with the most diverse contractual provisions, quickly and flexibly. The system allows numerous invoice types/categories, charges in terms of value, as well as the various different roles of clients/customers to be taken into consideration.

Information system
Management must be in a position to obtain directly all relevant information on specific-to-client sales quantities/volumes or capacity utilisation, without losing sight of the overall picture. Only in this way can expeditious decisions be made. The FHS information system efficiently covers managements' information requirements within the scope of an operational reporting system with an early warning facility.

Optimal information transfer is made possible by means of data telecommunication between the service company and its business associates/partners, or via on-line networking within closed user groups.

The EDP Concept

FHS has been developed as a client server model, using a highly efficient but economical local PC network (LAN Local Area Network) in the operating system Novell Netware 3.11. A PC' 486/33 Mhz with 32 MB RAM and 500 MB HDD is used for the central processing unit (file/data file server). The multi-user facility, high-level performance, as well as distributed data storage with FHS data integrity were realised on the basis of RDBMS Oracle for Novell Netware 3.11, along with the concomitant development tools. Hardware independence is guaranteed by the possibility of transferring to other hardware platforms. The local networks of the individual stations are integrated into a company-wide information system via WAN (Wide Area Network - ISDN).

Following introduction of the FHS Fuel Handling System, it was possible within a short time to realize the main objectives scheduled in the organisation sector - flexibility, automation, integration - and in management. In addition, it was possible not only to reduce administrative costs but also to improve the quality of the disposition operations, with exceptionally high user acceptance, achieved by means of a specific-to-station configuration of the task-oriented FHS modules. ■

The Euro-card war is coming

By Phil Collomosse, Associate Director, CMG

The lull before the storm

The leading oil companies look set for a European plastic card war in an attempt to establish cross-European brand loyalty in an expanding commercial market.

Several years of recession and the discount economy have created the conditions for the card war. Customers are less likely to be seduced with the promise of cleaner and higher quality fuels; the price sign has become all-powerful to the buying experience.

Many of the oil companies have already embarked on multi-million pound projects to build new Europe-wide card processing systems. Others can be expected to follow before long. The war will be engaged properly when these new systems start to be launched in the near future.

The oil majors have been intensifying their customer loyalty battle in the last few years through the use of mainly nationally-based payment and promotion cards. As business becomes more international and more competitive, the Euro-cards will be a strategic weapon in the contest to strengthen market share.

It is the spread of new technology which has stirred up this market battle and the outcome will almost certainly depend on who makes the best use of new technology. At present it is still anyone's guess who will be the winners and losers.

The largest oil companies are enlisting technology specialists to help them build these systems. CMG is working with a number of them on such projects.

Business drivers

Transport fuel and services are recognised commodities, even allowing for a degree of product differentiation.

The critical factor occupying downstream marketing management is market share. A difference of fractions of a percent could mean millions of pounds in revenue. The development of systems and alliances to protect and enhance market share could be very rewarding.

If a technology investment is spread over an international base, the per site cost is small compared with the potential return. Investments are geared by the large numbers of sites into which solutions could be installed in western and eastern Europe.

CMG, a European IT consultancy company, has developed a focused approach to establishing which technologies will enable the oil companies to provide the functionality to meet defined market needs.

Mr Phil Collomosse

The oil majors are determined to either claw back market share or reduce further loss to the supermarkets and hypermarkets. The pattern varies considerably from one country to another but in different degrees the story is the same right across Europe.

In France the erosion has been particularly severe, with supermarkets and hypermarkets cutting the oil companies' revenues drastically. Recent developments appear to suggest a respite for the oil companies in France as planning permission becomes more restrictive.

In the United Kingdom, the growth of hypermarket fuels market share is clear to see with new forecourts and convenience shops being opened weekly.

The oil companies' strategy in response appears to have two prongs. One is to defend by attacking. While supermarkets and hypermarkets seek to become oil retailers, oil companies will become more and more convenience retailers. The signs of this happening have been unmistakable in the past few years.

The second prong is the more ingenious and flexible use of cards.

There are already signs that card systems are being expanded across Europe. There are now 10 recognised pan-European cards and new and improved cards are being introduced.

An example is the pan-diesel card operated by the consortium known as TEPAR, made up of Texaco, Elf, Petrogal, Agip and Repsol.

For all card providers, the purpose is to win loyalty by one means or another. Cards have proved an important weapon in the hands of the oil companies in a number of ways:

- They appeal to fleet managers because they ease the problem of how drivers pay for their fuel and services. A prime objective for fleet owners is to ease payment and get greater control over expenditure.
- Cards are being used as a promotional tool like stamps or tokens; points accumulated lead to attractive prizes. These cards are often marketed as 'smart cards', although they have no more intelligence in-built than any other conventional plastic card.
- For local accounts, cards are

being increasingly used as a means of rewarding regular local customers.

- More recently Euro-cards are being marketed to offer a range of value-added services, such as the ability to use them for road toll payments or for hotels and motels.

Perhaps an even more important long-term objective is to improve the oil companies' knowledge of their customer base. The increasing use of cards as a method of payment or in promotional campaigns provides oil companies with the opportunity to capture vital demographic information about their customers, information that supermarkets, hypermarkets and other retailers have been accumulating for several years.

Another urgent need is to improve the security of cards, to reduce the amount of card fraud, which has risen alarmingly – around 14 percent of credit card fraud in the United Kingdom is said to occur at service stations.

The oil companies, like the banks, are continuously studying new ideas for combating fraud. An example of a new technology emerging in the market is two-dimensional bar-coding, referred to as Portable Data Files (PDFs). These bar codes are capable of carrying the holder's encoded photograph to allow a cashier to authenticate a customer's card.

Conclusion

The changing retail environment in Europe will bring new challenges and opportunities in areas not yet foreseen. The winners in this competitive market-place will be those companies that are already re-positioning their European focus, building adaptable systems using low-cost technologies.

Whatever the future holds, the Euro-customer will be hearing and seeing more enticing messages from the oil companies – an era of card marketing has only just begun. ■

BS EN 228

1993 specification for unleaded petrol (gasoline) for motor vehicles

BSI has informed the IP that the UK National annexes NC (normative) and NB (normative) in the above EN are to be revised.

This is in order to:

1 Amend the label requirements for retail pumps in annex NB 'Pump marking requirements'.

2 Correct the following errors in annex NC 'RON and MON requirements for regular grade'. These being:

a) References to the wrong year date of the test methods to be used to determine RON and MON given in tables NC 1, NC 2 and NC 3;

b) Incorrect sign in the equation given in 'NC 3 Interpretation of single RON and MON test result: testing margin at the recipient.'

The draft national annexes, which will incorporate the above changes, are being prepared and will be available for public comment, from BSI, before the end of the year.

For further information , please contact ***John Phipps*** *at the Institute of Petroleum on ☎ (071) 636 1004.*

Revised requirements for the drafting of IP Test Methods

One of the aims of the Test Method Standardization Committee is 'that IP methods remain in the forefront of international methodology, both in terms of their content and their overall technical integrity'.

With this aim in view and because the Institute has a policy of adopting ISO and EN test methods as replacements for existing IP methods, the Standardization Committee has decided to publish new and revised test methods conforming to ISO drafting requirements – as set out in IEC/ISO Directives 1989 Part 3 – Drafting and Presentation of International Standards.

The practical effects of this decision are:

1 The decimal full stop will no longer be used and will be replaced by the decimal comma, thus 3.142 will in future read 3,142;

2 The symbol L for litre will no longer be used and will be replaced by the symbol l;

3 The abbreviation log for logarithm will no longer be used and will be replaced by lg.

Items 2 and 3 are easily achieved by computer processing and the necessary editorial changes will be incorporated into the 1994 edition of the IP Test Method Book. The change to the decimal comma is less straightforward but the aim is to revise all methods, in this respect, in time for the 1995 edition.

With regard to existing IP test methods, these will, over a period of time, be rewritten in ISO format. However, it is recognized that such a workload could put an unacceptable strain on the limited resources of many of the panels and therefore the priority for such work will be given to those test methods called up in specifications.

IFEG

The Information Centre of the 1990s – Changes, Challenges and Choices

Thursday 18 November 1993
A one day conference with exhibits at
The Institute of Petroleum

The 1990s have presented the information scene with some very real new challenges. The oil and energy industries, facing cut-backs and restructuring, have had to adapt their information services to a new climate, where the emphasis is on providing an efficient service with minimum resources. Reliance on external services has become predominant along with the trend towards a 'Virtual Library' whereby information gathering and redistribution to users is achieved electronically.

This conference seeks to illustrate how employ-ment within the information sector has changed in response to the differing requirements, and how individual companies have faced and responded to the challenges. Presentations will include a number of oil company case studies.

The afternoon session provides an opportunity for suppliers of external services to explain how they can assist organisations in meeting these changing needs to greatest effect.

The meeting will be of interest to information professionals, managers, planners, suppliers of information services and technology.

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

IP THE INSTITUTE OF PETROLEUM

Guidelines for Health Surveillance and Biological Monitoring for Occupational Exposure to Benzene

The guidelines give advice on when it is appropriate to establish health surveillance and biological monitoring for occupational exposure to benzene.

The guidance interprets the requirements of the U.K. COSHH regulations and makes recommendations on those procedures which satisfy the criteria for valid health surveillance.

The guidance will be of use to occupational health professionals who have responsibility for implementing health surveillance and to those managers who have responsibility for Safety, Health and Environment activities.

This document is available from the Institute of Petroleum at a price of £16.00. (Members £12.00) (Overseas £18.00) ISBN 0 85293 131 X

IP THE INSTITUTE OF PETROLEUM

London Branch

Commercial Engineering

A Career Opportunity for Petroleum Engineers

By Mr E A Blair, President, Hamilton Oil Co Ltd

To be held at 5.30p.m. on Tuesday 9 November 1993, at the Royal School of Mines, Imperial College, Prince Consort Road (near the Albert Hall)

Ed Blair has extensive experience in the oil industry, especially in the exploration and production sector. As the UKCS approaches maturity, many of the smaller fields will require unitization, gas marketing and sharing of infrastructures. The presentation will address these developments and the petroleum engineering skills which are best suited to accomplish the commercial activities.

The meeting is preceded by tea and biscuits at 5.00 p.m. and is followed by light refreshments.

Enquiries: Mrs E Walker, Hon Secretary, London Branch. Tel: (0926) 404257.

IP Information Service News

Library/Information Department

Times of Service

Visitors welcome: 9.30 a.m. to 5.00 p.m.
Telephone queries: 10.00 a.m. to 5.00 p.m.
Monday to Friday (except Bank Holidays).

Library/Information – staff contact list

Loans and Periodicals	Liliana El-Minyawi, *Library Assistant*
Library holdings and use of Library	Margaret Whellams, *Assistant Librarian*
Online searches, information queries, statistical information	Lyn Nevin and Julia Clark, *Information Officers*; Catherine Cosgrove, *Head of Department*
IP Statistical Service subscriptions	Julia Clark
IFEG	Catherine Cosgrove

IFEG

News

The Information Centre of the 1990's Changes, Challenges and Choices

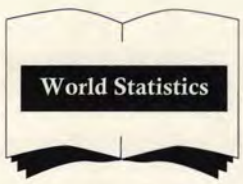
Institute of Petroleum

Conference - 18 November 1993

There is still time to register for what should be a very interesting conference. In these days of cut-backs and restructuring, librarians and information workers cannot afford to sit back and 'hope it does not happen to us'.

This conference will show how various organisations have tackled the challenges of providing library and information services within the constraints of today's economic climate, and will demonstrate various external sources which are available to facilitate or enhance the services provided.

If you are interested in attending this conference, please contact Caroline Little on 071-636 1004.



World Statistics 1993 is now available and can be obtained by contacting any member of Library/Information Staff.

This booklet is sent automatically to subscribers to our IP Statistics Service.

Subscribers also receive, amongst other items, our updated Oil Data Sheets; and Quarterly Press Releases giving Deliveries into Consumption of Petroleum Products.

For more information contact Julia Clark or Lyn Nevin

Selected additions to Library Stock

This list represents only a fraction of the additions to Library stock since the last Information Service News in July. Most of the items, other than directories, are available for loan to IP members. Please note all the items were published in 1993.

Directories/Statistics

FT guide to North sea operators and participants. Longmans.
International Petroleum Encyclopedia 1993. PennWell.
Offshore buyers' guide. Hull City Council, Sep 1993.
Software directory for the offshore industry. The Marine Technology Directorate.
Europalub Lubricants statistics. Centre Professionel des Lubrifiants.

Forecasts

Forecasts of upstream petroleum activity and expenditure UK and worldwide 1993 - 1997. Scottish Enterprise.
Oil and gas prospects 1993 update. Grampian Regional Council.
Prospects for the world offshore oil and gas industry 1993 - 1995. Mackay Consultants.

Economics/Business/Policy

Energy for tomorrow's world The realities, the real options and the agenda for achievement. World Energy Council.
Fuels for electricity supply after the UK coal review. University of Surrey.
Indicators of crude-oil production costs: The Gulf versus non-OPEC sources. ICEED.
International crude oil prices: Major time series from the 1960s to 1991. Middle East Economic Survey.
Oil markets and prices: The Brent market and the formulation of world oil prices. Oxford Institute for Energy Studies. By: Horsnell P, Mabro R.
Oil trade politics and prospects. By: Hartshorn J E. Cambridge University Press.
Renewable energy resources: Opportunities and constraints 1990 - 2020. WEC.

Law/Taxation

Environmental law: A practical handbook. Chancery Law Publishing.
North Sea oil taxation: The development of the North Sea tax system. The Institute of Fiscal Studies.

Environment

Energy investments and the environment. World Bank.
Fate and effects of marine oil pollution in UK waters: With a perspective on IP sponsored research: A report to the Institute of Petroleum. By: Baker, J M. May 1993.
Proceedings 1993 international oil spill conference. American Petroleum Institute

Upstream

Subsea International '93: Low cost subsea production systems: Papers presented at a conference. Society for Underwater Technology.
OTC 93: Proceedings of 25th annual offshore technology conference.
Petroleum Geology of Northwest Europe: Proceedings of the 4th conference. Geological Society.

Standards

1993 Annual book of ASTM standards Section 5 Petroleum products, lubricants and fossil fuels. Volume 05.05 Gaseous fuels, coal and coke.

. . . people

Texaco has appointed **Ms Janet Stoner**, above, as General Manager, Producing Operations, located in Aberdeen. She will be responsible for all Texaco's producing operations in the UK North Sea. Ms Stoner replaces **Mr Jim Rowalt** who moves to Texaco's Midland division (Midland, Texas) where he will assume responsibility for producing and drilling operations.

Mr Bob Worlidge has been appointed Managing Director of John Brown company, CJB Developments Ltd., Portsmouth. He will be responsible for enhancing the company's defence and industrial business areas.

FMC have appointed **Dr William Barton,** above, as Manufacturing Director for its Process Additives Division in Manchester. He is returning to the UK after having been based in Massachusetts.

Ms Annick Mallen has been appointed Director of the French Technology Press Bureau (FTPB) replacing Mr Patrick Taillandier. She previously held the post of Deputy Director of the Service des Bureaux de Presse ACTIM in Paris.

Elf have appointed **Mr John Bryce** as Manager of the Elf Enterprise Consortium's oil handling terminal at Flotta island (Orkney).

Cairn have announced three new appointments. **Mr J Munro M Sutherland**, formerly Finance Director has been made Senior Vice President, Chief Financial Officer and Treasurer of Cairn Energy USA Inc and non-executive Director of Cairn Energy PLC. **Ms Agnes Macleod**, below, has been appointed Finance Director and her previous position of Company Secretary is being filled by **Mr Hew R Dundas**, who will also continue as Legal Manager of Cairn.

Mr John Sexton joins PM Forecourt Services as Manager of its activities in the Republic of Ireland. He will be responsible for both forecourt service and installation and equipment sales throughout the republic. **Mr Paul Malizewski**, who has been acting as caretaker Manager for the whole of Ireland, will now concentrate his activities on PM Forecourt Services' Northern Ireland operations in Belfast.

The Health and Safety Commission has appointed **Mr Frank Davies** CBE, O St J, as its new Chairman. The HSC have also reappointed **Mr John Rimington** CB as Director General of the Health and Safety Executive (HSE) until the normal date for his retirement, in June 1995.

The Robert Gordon University, Aberdeen, have honoured two Offshore Industry experts. **Ms Rhona Flin** and **Mr Dan Kirkwood** have each been awarded the title of Professor. Professor Rhona Flin is Director of the University's Business Research Unit and Professor Daniel Kirkwood Senior Lecturer in the School of Mechanical and Offshore Engineering.

National Economic Research Associates (N/E/R/A) have appointed **Mr Paul Hunt** and **Mr Bob Grabham** as special advisers in their gas practice. Both men were previously Senior Economists with pipeline consultants Penspen.

Mr Glen Peters, partner, above, has been appointed head of the oil and gas team for Price Waterhouse. The team has a spread of skills from audit and business to tax and consultancy services in the oil and gas sector.

Mr David Pitt has joined AC Edwards plc as General Sales Manager. He will report directly to Sales and Marketing Director, Mr Peter Franklin.

The Board of the International Petroleum Exchange (IPE) has appointed **Mr Trevor Christmas** as Director of Business Development.

Mr Stuart Howell, below, BP Oil UK Retail Manager, is to retire after 30 years service. He joined BP in 1963 after service in the Merchant Navy. Mr Howell will continue to work within the petrol industry. He will coordinate petrol industry views on deregulation for the Department of Trade and Industry and intends developing his own consultancy service.

Mr Erkki Rajulin has been appointed Director of Business Development at ICL Edacom. He will be responsible for securing contracts with ICL operating companies based in Europe and strengthening the ties between ICL Edacom's UK and Finnish offices which joined forces in March this year.

Mr James E Perrella has been elected as Chairman and Chief Executive of Ingersoll-Rand. He succeeds Mr Theodore H Black, Chairman since October 1988, who plans to retire but will continue as a member of the Board of Directors.

AEG's UK Engineering Division has appointed **Mr Robert H Miller** as Director of Systems Sales. Mr Miller will be responsible for developing further specialist 'design and build' business and introducing complementary products and services from other AEG divisions.

Ms Clare Spottiswoode, above, has joined OFGAS as Director General taking over from **Sir James McKinnon**. Ms Spottiswoode will serve for a term of five years.

Mr Peter Nolan has joined LASMO plc as Group General Manager – Exploration. He will also be a member of the Group Operating Committee.

Choosing the right tender

The Computer Management Group, CMG, is marketing a system developed for Powergen, which is designed to speed up and improve the procurement process.

Called the 'Intelligent Contracts Management System', it uses both rule-based and neural networks in its decision-making. Assistance in the compilation of tender lists, contract documentation and evaluation of tenders is provided by 'intelligent' modules. The system is able to analyse tenders, highlighting areas of concern such as arithmetical errors and 'bid weighting'. It recommends courses of action, including which bid to accept.

Powergen are already using the system at a number of their power stations and claim that automation of the administration tasks surrounding tendering has allowed data to be analysed in hours as opposed to weeks. The system ensures staff work where their skills can be used most effectively.

CMG claim that the system has uses in both the upstream and downstream sectors of the oil industry, from the building and maintenance of drilling platforms to the building, maintenance and refurbishment of refineries or forecourts.

The package can be customised to suit each organisation.

It now takes Powergen less time to choose the right tender

Slam it shut

A new, compact Monoblock slam shut unit has been introduced by Alpha Controls. Required wherever actuated valves need to close and protect a supply line from pressure surges, it has dimensions of just 170mm x 222mm x 115mm.

The design of the unit allows the sensing pressure to gradually rise over longer periods of time without causing any leakage across the ports. This ensures that it will not switch to close the main valve until the exact pre-set trip pressure has been reached. The accuracy of switching is guaranteed with a repeatability factor of 0.5 percent.

All components, including sensing valve, filter, regulator and relief valve, are integrated in one block which can be mounted directly onto the actuator via an adapter plate.

The integration of all the components within the unit eliminates the need for pipe connections and thus potential leaks.

A visual indicator displays the status of the unit and manual reset is only possible once the pressure has decayed to a specified level. A removable manual override facility, however, is available for commissioning and servicing.

By simply changing the sensing head, the same unit can cover five standard sensing pressures, ranging from 3 to 45 bar (44 to 660 PSI) although lower pressure ranges are possible.

Typical applications are within gas distribution stations. Alternatively, the unit can be used as a line break system and can also be made in stainless steel for offshore applications.

New slam shut unit

Speeding up 3D seismic

A live test has demonstrated for the first time how high speed digital satellite communications can provide time and cost savings in 3D seismic surveying for offshore oil and gas, claim ABB Nera.

The test showed how data from detailed 3D soundwave surveys can be successfully transmitted via satellite from a seismic survey vessel to an onshore processing site.

This can then allow specialist onshore personnel to begin the lengthy quality assessment and processing of survey information immediately, even before the vessel which acquired it has come back to port. 'Valuable days and even weeks can be shaved off the turnaround of 3D seismic projects.'

If any data needs to be recollected, it can be fed straight back, allowing a vessel to re-run that part of the survey while still in the same vicinity. This avoids sending expensively equipped vessels, often costing up to £100,000 per day to keep at sea, back to a survey site once they have moved on.

The test involved using ABB Nera satellite equipment to transmit 3D seismic data from the *Svitzer Magellan* survey vessel in the Barents Sea to the Stavanger processing site of Marest A/S.

SCS and Nowsco team up

ISIS (Integrated Subsea Isolation Systems) has been launched to provide a new approach to the growing international market for subsea pipeline isolation and intervention.

The Aberdeen-based company is a joint venture between Stolt Comex Seaway and Nowsco Pipeline Services, experts in subsea pipeline intervention/repair and intervention technology respectively.

The joint venture approach involves the use of remotely-controlled packer 'pigs', which isolate a section of pipeline while maintaining pressure and preventing water ingress. The technique is a cost-effective alternative to the traditional method of shutting down and evacuating the line, which can result in the loss of weeks of production.

The joint venture, with support from the European Commission, has recently embarked on a major development programme to further refine the communications, tracking and positioning systems to enable remote operations to be conducted at mid-line locations.

Protecting Syrian tanks

With a contract value of some £260,000, coatings from Jotun Paints are being used for the protection of storage tanks constructed during Phases II and III of the Syrian Al Furat Omar project.

During the second phase, brine tanks and associated pipework were treated internally with Baltoflake glassflake-reinforced polyester coating, or with the solvent-free epoxy coal-tar formulation, Navitar AS.

Baltoflake is highly-resistant, designed for the protection of steel structures. It is quick-drying and gives thicknesses of up to 1,500 microns in a single coat.

Navitar AS offers corrosion protection for both submerged steel structures and for steel and concrete structures underground.

Externally, Jotamastic 87 Aluminium high-solids epoxy coating was applied. This is designed to overcome the preparation and recoating problems of pure epoxies. It is said to require minimal pre-treatment, will adhere to hand-prepared rusty surfaces and can be applied in a single coat to give dry-film thicknesses of up to 400 microns.

A top coat of white Hardtop HB, designed to give a high-grade finish in aggressive atmospheres, was then applied.

New coat of paint for Syrian storage tanks

Altogether, a total of 50,000 litres of the company's paints were supplied for this phase.

For the lining of tanks in Phase III, Chemflake glassflake-reinforced vinyl ester coating was supplied. This offers protection against corrosion and chemicals in exceptionally aggressive environments.

The Al Furat Petroleum Company is a joint venture between Shell and the Syrian Petroleum Company.

Vacuum extraction

Biotal, an environmental company specialising in land and groundwater contamination, is now offering vacuum extraction technology to the UK market.

A specific technique for the removal of contamination from land and groundwater, it can be operated in-situ. This avoids having to excavate the contamination and therefore the expense of potential demolition work. The process, claims the company, will also take care of any possible volatile emissions that could emanate from the ground.

Examples of compounds which lend themselves readily to vacuum extraction are the light petroleum spirits, benzene, toluene, ethyl benzene, xylene and volatile chlorinated hydrocarbons.

It is expected that these new treatments will be of interest to oil storage depots, refineries, petrol stations, motor vehicle workshops, underground storage tanks and any other industrial situation where volatile organic compounds may have found their way into a contamination profile.

Guidance for shell boilers

A new guidance booklet has been published on shell boilers. 'Guidance for Examination of Boiler Endplate to Furnace and Shell-Welded Joints' was prepared at the invitation of the Health and Safety Executive (HSE) by a working group comprising of representatives of HSE, Associated Offices Technical Committee (AOTC) and the Independent Engineering Insurers Committee (IEIC).

Their brief was to review the 1984 HSE Guidance Note PM36 'Welded defect acceptance levels for in-service non-destructive examination of set-in endplate to furnace and shell connections of shell boilers'.

The recommendations apply to the welded joints at set-in and set-on endplates of furnace and shell connections. Advice is given on the detection of in-service cracking emanating from the waterside of the weld and from buried defects within the weld, together with the frequency at which tests should be carried out. The subject of preparation, ultrasonic examination, assessment of defects and repairs, are addressed, based on the collective experience gained by Inspection Bodies.

The recommendations have the support of HSE as the replacement for GN PM36, now out of print. They are available from the AOTC.

Wellingtons go to war

The photo below shows Red Adair and his team dousing Kuwaiti oilfield fires. They are wearing Vredestein 's Hevea Purofort Safety Wellingtons, now available to a wide range of UK industrial users.

The boot is manufactured from a special Hevea polyurethane foam compound, composed of microscopic air bubbles. Designed to be light and strong, it also has a new shock-absorbent heel, increased ankle protection and a more ergonomically-designed steel reinforced toe.

The award-winning photo was taken in 1991 by a camera team from the French magazine *'Le Figaro'*.

Red Adair and his team fighting fire in Kuwait

Gas drying control at Mobil's Beryl Alpha

Eurotherm Process Automation has supplied a new automation system for the gas dehydration and glycol regeneration processes on Mobil's Beryl Alpha platform.

Network 6000 combines advanced continuous and sequence control functions in one package to provide operational control, plant monitoring, shutdown, operator interaction and alarm monitoring for the platform's two glycol regeneration skids. The control system is also skid-mounted and was fully tested onshore before delivery.

A major feature is a new, sophisticated drying control algorithm that takes account of the heat transfer coefficient of glycol at different temperatures to control heat flux and so minimise glycol degradation.

The sub-system hardware consists of Eurotherm Process Automation T100 intelligent I/0 systems with several hundred mixed analogue and digital I/O channels, supervised locally by T1000 industrially-hardened graphical operator stations. Final control of the electrical heaters in the glycol boilers is achieved using the company's advanced power controllers. Communications between the sub-systems is via the company's fast peer to peer network (LIN).

New control system for gas drying on Beryl Alpha

The project is one of the latest in a number of sub-systems forming part of the platform-wide Network 6,000 integrated automation and information system being implemented on Beryl Alpha.

Tank testing service

A new precision tank testing service is now available in the UK and Europe.

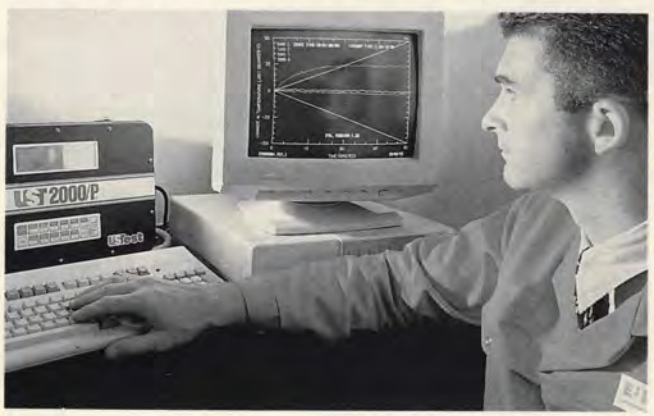
The UST 2000 System from EuroTest Environmental Technology is a computerised volumetric underfill system that utilises patented ultrasonic technology to test the wetted portion of an underground storage tank.

With the introduction of additional test equipment, which is presently undergoing examination at a recognised UK testing lab, the system is said to be able to test 100 percent of a petroleum storage tank.

Engineers from EuroTest monitor the testing process on site to ensure reliable data collection and reporting. The results are collated through proprietary software and can be made available to the site manager immediately.

'Forecourt managers want to know quickly if there is a potential for a safety or environmental problem,' said Steve Richards, one of the firm's site engineers. 'Eliminating unnecessary worry is important.'

The system, which was first developed in the United States, is capable of testing up to six underground petroleum storage tanks simultaneously.



UST's new precision tank-testing service

Lightweight fireproofing

Textron Specialty Materials (TSM) have introduced the Chartek IV Fireproofing and HK-1 mesh reinforcement system, described by the manufacturer as the new generation of passive fire protection. It has been developed in response to an industry demand for a lighter weight material which is easier to apply but which provides the same benefits of longevity and protection against severe fire exposure as the existing Chartek materials.

A proprietary-filled resin system, the product has a low specific gravity. This, coupled with its mechanical and physical properties, is said to result in weight and cost-savings of up to 30 percent in comparison with similar materials.

The mesh reinforcement system is a hybrid-knit which requires no pinning or welding. This reduces application time, 'resulting in a more cost-effective choice for fire protection'.

Contacts

Jotun-Henry Clark	071-481 2741
Biotal	0222 766716
Vredestein (UK)	0933 677770
Associated Offices Technical Committee	061-839 7038
CMG Computer Management Group	071-233 0288
ABB Nera	081-686 5701
Stolt Comex Seaway	0224 698895
Alpha Controls	0753 655000
Eurotherm Process Automation	0903 205277
EuroTest Environmental Technology	081-974 6490
Textron Specialty Materials	508/452 8961

Institute News

Awards of IP Certificates of Appreciation

From left to right: Mr Terry Dicken, Miss Paula Higgs (IP Technical Assistant) and Mr Peter Moore.

Peter Moore

Peter Moore was presented with the IP Certificate of Appreciation by Terry Dicken, the Chairman of the Cutting Oils Panel, on 8 October.

Peter joined the Cutting Oils Panel ST C-5 in 1953. In 1978 he was appointed Chairman, a position he held until 1993, a remarkable achievement. As well as his work for the IP in test method standardisation, he was also very active in the IP Midlands Branch where he served on the committee for a number of years.

Peter was also very involved in the work of the British Lubricants Federation where he sat on a number of working groups and committees.

Brian Swift

Brian Swift was presented with the IP Certificate of Appreciation by Paul Ratcliffe, Chairman of the Lubricants and Grease Sub-committee, on 27 September

Brian, who worked for British Steel, joined the Lubricants Physico-Chemical Test Panel ST C-4 and the Grease General Test Panel ST D-1 in 1984. He was appointed Chairman of ST C-4 and Secretary of ST D-1 in 1989. He held these positions until his retirement due to ill health in 1991. In addition to his IP work he sat on various BSI committees dealing with test methods and product specifications.

Scottish Inter-Branch Golf Tournament

The Blyth McNaughton Trophy

The Sixth Annual Scottish inter-branch tournament took place at the regular venue of Crieff Golf Club on a less than sunny day in August.

Six teams took part representing branches from Aberdeen, East of Scotland and West of Scotland. Unfortunately, Shetland Branch was unable to compete.

This year the honours went to Aberdeen. The strategic advantage of fielding two teams for the first time was too big a challenge for the regular three teams from Glasgow!

John McKinnell of the Aberdeen Branch displays the Blyth McNaughton Trophy.

John McKinnell captained the winning Aberdeen team whose other members were George Innes, Frances Keenan, Boyd Wright, Graham Armstrong and Elliott Murray amassing 209 Stableford points. Edinburgh were runners-up with 205 points. Aberdeen's second team of Ramsay Spence, George Gill, Chris Crayston, Carl McAndrew, Jim McPherson and Ian Stuart came a credible fourth out of six.

Our thanks go to Bill Beeton who organised the event as the Captain of the previous winners.

New Collective Members

ICL (Oil Industry Group), Observatory House, Windsor Road, Slough SL1 2EY.

IP Nominated Representative: Mr S Van Bogaert, Marketing Executive

ICL provides 'Information Technology & Business Application' solutions and services for the oil industry, in close collaboration with specialist partners.

Lindsey Morden International, Matheson House, 142 Minories, London EC3N 1QL

IP Nominated Representataive: Mr P Thornber, Managing Director

Lindsey Morden International, a subsidiary of the Morden and Helwig Group of Canada, is an international loss adjusters, dealing in major incidents and catastrophies, worldwide.

UK Deliveries into Consumption (tonnes)

Products	*†Aug 1992*	**Aug 1993*	*†Jan-Aug 1992*	**Jan-Aug 1993*	*% Change*
Naphtha/LDF	285,949.0	286,327.0	2,193,574.0	2,115,001.0	-4
ATF – Kerosene	664,648.0	707,610.0	4,524,353.0	4,698,784.0	4
Petrol	1,950,333.0	1,965,061.0	15,867,980.0	15,375,133.0	-3
of which unleaded	922,421.0	1,044,169.0	7,280,069.0	7,971,249.0	9
of which Super unleaded	118,760.0	120,100.0	917,946.0	946,904.0	3
Premium unleaded	803,661.0	924,069.0	6,362,123.0	7,024,345.0	10
Burning Oil	136,815.0	164,322.0	1,497,445.0	1,582,916.0	6
Derv Fuel	859,457.0	950,450.0	7,239,464.0	7,661,890.0	6
Gas/Diesel Oil	559,355.0	571,646.0	5,117,922.0	4,983,054.0	-3
Fuel Oil	796,718.0	765,537.0	7,425,767.0	6,937,345.0	-7
Lubricating Oil	58,853.0	59,672.0	511,448.0	508,037.0	-1
Other Products	573,918.0	648,586.0	4,576,768.0	4,832,813.0	6
Total above	**5,886,046.0**	**6,119,211.0**	**48,954,721.0**	**48,694,973.0**	**-1**
Refinery Consumption	528,563.0	548,490.0	4,013,869.0	4,180,690.0	4
Total all products	**6,414,609.0**	**6,667,701.0**	**52,968,590.0**	**52,875,663.0**	**0**

*† Revised with adjustments *Preliminary*

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Lovell White Durrant, 65 Holborn Viaduct, London EC1A 2DY
IP Nominated Representative: Mr A Higginson, Energy Group Member

Lovell White Durrant is an international law firm covering all aspects of petroleum law, including exploration and production of oil and gas, crude oil supply and trading, including futures and options on and off market, and natural gas and LNG sale and transportation agreements.

LICconsult (UK) Ltd., LIC House, Leybourne Terrace, Stockton-on-Tees, Cleveland TS18 1JP.
IP Nominated Representative: Mr C Holden, Managing Director

LICconsult supplies computer systems for the energy and process industries, offering products for use in design, operation and maintenance. On-line systems are interfaced to SCADA/DCS and include pipeline leak detection, data supervision and planning and control. Standard software is available for pipeline networks, ie new design, improvements, safety analysis and capacity studies.

New Members

Mr R L Abel, Conoco (UK) Ltd, Park House, 116 Park Street, London W1Y 4NN
Dr M Al-Chalabi, Petrotech Consultancy, 25 Prince Consort Drive, Ascot, Berks SL5 8AW
Miss E M Allan, Enterprise Oil plc, Victoria Tower, 62 Market Street, Aberdeen AB1 2PJ
Mr C S Allen, 42 Riverside Drive, Stonehaven, Kincardineshire AB3 2GP
Mr P Atkins, Wincanton Transport, Beacon Hill Ind Estate, Botany Way, Purfleet, Essex RM16 1SR
Mr M Baddeley, 22 Collens Road, Harpenden, Herts AL5 2AJ
Mr R Bakre, 97 The Heights, Northolt, Middlesex UB5 4BS
Mr T J Beasant, DMR Groep B.V., Harderwijkweg 7, 2803 PW Gouda, Netherlands
Mr B Bjarnason, Iceland Drilling Co Ltd, Grensasvegur 11, 108 Reykjavik, Iceland
Mr C A Black, Petroleum Engineering Services, Howe Moss Av., Kirkhill Ind Estate, Dyce, Aberdeen, AB2 0GP
Mr D N Bliss, 11 Bubblestone Road, Otford, Sevenoaks, Kent TN14 5PN
Mr O Bob-Alonge, Crown Year Ltd, 20 Alexandra Road, Hull, North Humberside HU5 2NS
Mr L Boswell-Saul, Upper Bohemia, Chequers Inn Road, Rookley, Isle of Wight, PO38 3LZ
Mr A P Botha, ABV Rock Group KB, PO Box 89426., Riyadh 11682, Kingdom of Saudi Arabia, Saudi Arabi
Mr J P Boyd, 6 Lemonfield Avenue, Holywood, Co Down, Northern Ireland BT18 9NG
Mr A C Burke, 5 Gerrard Close, Aspull, Wigan, Lancs WN2 2SU
Mr S J P Burke, RME., 158 Weoley Castle Road, Castle Square, Weoley Castle, Birmingham B29 5QL
Mr I Cameron, Spencer & Partners, Darpen House, Citadel Place, Tinworth Street, London SE11 5EH
Mr F W Carmichael, Eperon Petroleum Ltd, 11 Elvaston Place, London SW7 5QG
Mr A N Chandaria, Thika Wax Works Ltd, PO Box 30185, Nairobi, Kenya
Mr G W Chandler, 1 The Hedgerows, Chells Manor, Stevenage, Herts SG2 7DQ
Dr J M Cohen, Shell Todd Oil Services Ltd, Private Bag, New Plymouth, New Zealand
Mr M J Colville, Brown & Root Environmental, Thorncroft Manor, Dorking Road, Leatherhead, Surrey KT22 8JB
Mr P C Conti, 23 St Georges Square, London SW1V 2HX
Mr A E Costain, 36 Alderley Road, Hoylake, Wirral, Merseyside L47 2BA
Mr J F Davies, The Grange, Horton Green, Malpas, Cheshire SY14 7EX
Mr R Davison, Morgan Moore Eng Ltd, Units 2 & 3, Altec Centre, Minto Drive, Altens, Aberdeen AB1 4LW
Mr B M A Detmar, Conoco (UK) Ltd, Rubislaw House, Anderson Drive, Aberdeen AB2 4AZ
Grp Capt R Dixon, Ministry of Defence, DD Pet CG (RAF) Room 0277, Main Building, Whitehall, London SW1A 2HB
Mr F Downes, High Barn, Flint Hall Farm, West Wycombe, High Wycombe, Bucks HP14 4ES
Mr C Dudgeon, Offshore, Technology Management Ltd, Brook House, 229/243 Shepherds, Bush Road, London W6 7AN
Mr J C Esam, Charringtons, Charringtons House, Bishop's Stortford, Herts CM23 2EW
Mr L Esquerdeiro, 36 Sykes Drive, Staines, Middx TW18 1TA
Mr C Farries, 38 Garden Farm, West Mersea, Colchester, Essex CO5 8ES
Mr D G Farrow, 51 Ashburton Avenue, Croydon, Surrey CRO 7JG
Mr D W Fleming, The Information Consultancy, 22 St Peters Road, Newtonhill, Stonehaven, Kincardineshire AB3 2RG
Mr F J Fleming, (Oilfield, & Eng Div) Bin Desmal Trading &, Import, PO Box 3595, Abu Dhabi, United Arab Emirates
Mr C A Forbes, Laurelbank, Station Road, Turriff, Aberdeenshire AB53 7ER
Mr D N L Fox, Mole End, New Road, Sandhurst, Camberley, Surrey, GU17 8EF
Mr J D French, 14 Housman Road, Street, Somerset, BA16 0SD
Mr K A Frost, Cairngrassie Croft, Cammachmore, Stonehaven, Aberdeen AB3 2NY
Mr T M Gaynor, 73 Riverside Drive, Aberdeen, AB1 7LE
Mr I G Geddes, Digital Equipment, 34 Albyn Place, Aberdeen AB1 1YN
Mr R J Geddes, GT Consultants (UK) Ltd, Margery Wood, Margery Lane, Lower Kingswood, Tadworth, Surrey KT20 7AY
Mr D Gray, 16 Merkland Road East, Aberdeen AB2 1PR
Mr R L Grey, Leyshon Grey Associates, 4 The Old Forge, Bonvilston, Cardiff CF5 6JH
Mr C Hancer, 67 Cornwall Road, Haringey, London N15 5AS
Dr B Hayton, Longroyd, Little Humby, Grantham, Lincolnshire NG33 4HW
Mr M K Hedges, Ardblair, 3 Inchgarth Road, Cults, Aberdeen AB1 9NB
Mr J C Holdsworth, 14 Red House Drive, Sonning Common, Reading, Berkshire RG1 1LX
Mr N Hollier, Pinegrove, Sir Paul Boffa Avenue, Paola, PLA 19, Malta
Mr K W Ibrahim, Lubricants & Special Products, BP Middle East Ltd, PO Box 1699., Dubai, United Arab Emirates
Mr M Ireland, 9 Irvine Court, 100 Whitfield Street, London W1P 5RW
Mr J R James, Ashby Cottage, Markinch, Glenrothes, Fife KY7 6NS
Mr F M C King, 13 Clovelly Court, Alexandra Road, Epsom, Surrey KT17 4BX
Dr J C Lanfermeijer, 17 Avenue de l'Annonciade, Monaco
Mr J H Learmonth, Over Anguston, Peterculter, Aberdeen AB1 0PQ
Mr K Lees, 388 Perth Road, Dundee DD2 1EN
Mr B Loder, Aries Offshore Ltd, 78 Queens Road, Aberdeen AB1 6YE
Ir E B Loke, Shell Malaysia Trading Sdn Bhd, Central Area Office (MKTC), Damansara Heights, PO Box 11027, 50732 Kuala Lumpur, Malaysia
Mr P Lunt, Training &, Technology Transfer, 1 Pelham Court, Broadfield, Crawley, West Sussex RH11 9AZ
Ms J G MacKenzie, Saudi Petroleum Overseas Ltd, Berkeley Square Hse., Berkeley Sq, London W1X 5LE
Mr M B Manyatshe, Engen Marketing, P O Box 35, Cape Town, 8000, South Africa
Mr T Marshall, Lynton Lodge, Winchester Road, Waltham Chase, Southampton SO3 2LG
Mr A D Maunder, 19 Fernbrook Road, Caversham, Reading, Berks RG4 7HG
Mr C J McIntosh, 4 Broadhaven Road, Old Portlethen, Aberdeen AB1 4QR
Mr A McKay, Shell Intn'l Petroleum Maatschappij. APG/2., PDO, PO Box 81., MAF, Muscat, Sultanate of Oman
Mr P J McLoughlin, RME., 158 Weoley Castle Road, Castle Square, Weoley Castle, Birmingham B29 5QL
Mr A Michaelides, CYMA Petroleum Ltd, 87 Sunnyside Road, London N19 3SL
Mr K G Narum, Statoil Norge AS, Boxx 1176 Sentrum, N-0107 Oslo, Norway
Mrs L A Nevin, Flat 22 Knight House, Huntsman Street, London SE17 1QN
Mr J M Nicholson, Netherbrae, 11 Lindsaylands Road, Biggar, Lanarkshire ML12 6EQ
Mr P Paridis, Protopapadaki 21, Rentis, Piraeus, Greece
Mr D M Parks, Diver Training School, 5 Camperdown Terrace, Exmouth, Devon, EX8 1EJ
Mr R Patel, 72 Ashness Gardens, Greenford, Middlesex UB6 0RP
Mr G Picton-Turbervill, Ashurst Morris Crisp, Broadwalk House, 5

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Appold Street, London EC2A 2HA
Mr W D Powell, Salans Hertzfeld & Heilbronn, 103 Mount Street, London W1Y 5HE
Mr T W Preece, Edelweiss, Torryburn, Kintore, Inverurie, Aberdeenshire AB51 0UY
Mr H B Pressman, 413 Leyland Lane, Leyland, Preston PR5 3AA
Mr J S Price, Daiwa Europe Ltd, 5 King William Street, London EC4N 7AX
Mrs S I Price, Bunker Oil Dept, Nichimen Corpn., London Branch, Latham House, 16 Minories, London EC3N 1EY
Mr D J Prout, 39 New Road, Aston Clinton, Aylesbury, Bucks HP22 5JD
Dr K S Pun, 3 Mortimer Road, Kensal Rise, London NW10 5QR
Mr B L Ramsay, 32 Roundway, Camberley, Surrey GU15 1NS
Mr S A Q Razvi, Pakistan State Oil Co Ltd, 9th Floor Dawood Centre, PO Box No 3983 M.T.Khan Road, Karachi 75530, Pakistan
Mr H E W Rees, Ledwood Construction Ltd, Waterloo Industrial Estate, Pembroke Dock, Dyfed SA72 4RR
Mrs D D Resley, British Gas E & P, 100 Thames Valley Park Drive, Reading RG6 1PT
Mr E V H Rham, 69A Prince of Wales Mansions, Prince of Wales Drive, London SW11 4BJ
Mr S F Rhodes, Rivendell, The Muirs, Rhynie, Huntly, Aberdeenshire AB54 4HD
Ms S C Richardson, RSL Environment Ltd, Spring Lodge, 172 Chester Road, Helbsy, Cheshire WA6 0AR
Mr J C Rigby, Via Bernina 49, 20033 Desio (MI), Italy
Flt Lt J P Saddington, 44 Heddon Way, St Ives, Huntingdon, Cambs PE17 6HT
Mr Z Saidon, Shell Malaysia Trading, Bangunan Shell, Bk.Damansara., PO Box 11027, 50732 Kuala Lumpur, Malaysia
Mr L Sarin, 31 Knoll Crescent, Northwood, Middx HA6 1HH
Mr K J Scade, 9 Binghill Park, Milltimber, Aberdeen, AB1 0EE
Mr D W Schaz, Bismarck-Str. 87, 26382 Wilhelmshaven, Germany
Mr D Sharp, Esso UK plc, Esso House, Ermyn Way, Leatherhead, Surrey KT22 8UX
Ms P R Sheppard, European Energy Information, McKinsey & Co Inc, 1 Jermyn Street, London SW1Y 4UY
Mr M Shubrook, 196 Amyand Park Road, TWICKENHAM, Middx, WT1 3HY
Mr J K Siddle, Bowring Marsh & McLennan, Bowring Building, Tower Place, London EC3P 3BE
Mr G Sim, Aberdeen College, School of Science & Technology, Gallowgate, Aberdeen AB9 1DN
Mr M K Simmons, Mr Simmons, 5 Pixholme Grove, Dorking, Surrey RH4 1PJ
Mr R V Simons, Perth House, Soulbury Road, Leighton Buzzard, Beds LU7 7RN
Mr O Standal, Statoil Norge AS, Box 1176 Sentrum, N-0107 Oslo, Norway
Ms M J Stern, Marion Stern Associates, 3 Oakhill Park Mews, Hampstead, London NW3 7LH

Student

Mr A A McCulloch, Mr McCulloch, 5 Machan Avenue, Larkhall, Lanarkshire ML9 2HE

Student Prize Winner

Mr J J Hailstone, Mr Hailstone, 38 Menelik Road, London NW2 3RH

Around the Branches

Aberdeen
9 November: 'Offshore Safety Regimes in Norway & Canada', Mr E C Brown.
26 November: Annual Dinner.
14 December: 'Policing the North Sea', Dr Ian Oliver, Chief Constable.

Edinburgh and SE Scotland
23 November: Annual Student Lecture 'The Future of Oil Exploration', Mr C Gibson-Smith, BP Exploration, Heriot-Watt University.
9 December: 'Advances in Pipeline Design', Mr G T Harker, BP Engineering, Heriot-Watt University.

Essex
10 November: Ladies Evening. 'Chocolate', Mrs C French of Thorntons Chocolates plc.

Humber
25 November: International Safety Rating System. Det Norske Veritas. Speaker to be confirmed.

Irish
11 November: Annual dinner.
25 November: Evening Meeting, IEI.

London
9 November: 'The Changing Requirements of the Petroleum Engineer', Ed Blair, President, Hamilton Oil Co. Ltd.

Malta
9-11 November: 'Clean Seas 93'.
17 December: Christmas Function.

Midlands
17 November: 'Manufacture of Lubricating Greases', Mr John Cliffe of Ironsides.

North-East
9 November: 'On the River Tees', speaker from the National Rivers Authority.

Northern
17 November: 'Biodegradable Oils' by J Baggott – Shell UK Ltd.
26 November: Annual Dinner Dance.

Shetland
5 November: Annual Dinner.

South Wales
16 November: 'Tanker Safety in UK Waters', Captain J Phillips – P & O Tankships. Gulf Oil Refinery, Milford.

ASSISTANT EDITOR

Blackwell Energy Research

Blackwell Energy Research is a division of Blackwell Publishers dedicated to independent research in the field of energy economics, and effective dissemination of energy information to a professional market. Publications include *Oil and Energy Trends*, the UK's definitive source for energy economic data.

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Blackwell Publishers, 108 Cowley Road,
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BLACKWELL Publishers

SENIOR ENERGY ECONOMISTS OIL REFINING AND PETROCHEMICAL INDUSTRIES

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We are now initiating a major project and therefore seeking talented individuals with a sound knowledge of oil refining and petrochemical economics. Ideally with a European perspective. Suitable candidates could join on either a full or part-time basis and should have:

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Downstream Petroleum Company

Engineer required within the retail site construction area of the petroleum industry. Ideally aged between 28-35, preferably with some experience in this field.

Qualifications preferred include OTC/HTC in building studies or other recognised civil engineering qualification.

Based at home, considerable travel throughout the UK is envisaged, together with some time spent away from home.

Competitive salary and benefits include company car, contributory pension scheme and free health insurance.

Apply Box No. CR November
Petroleum Review
61 New Cavendish Street
London W1M 8AR

Closing date: 12 November 1993

IP

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 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.

Presentations will be based on operational experience and will include:

1. A comparison of the options for control of emissions from above-ground storage tanks.
2. Road tanker vapour collection system design.
3. Vapour collection systems at road loading terminals – the options available.
4. Systems available to permit vapour collection for rail and marine loading.
5. Safety issues including ignition propagation within vapour piping systems.
6. Options for the design of Stage 1b installations.
7. The Stage 2 systems available and experience of their use in Europe and the United States.

For further information, and a copy of the registration form, 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.***

IP

THE INSTITUTE
OF PETROLEUM

THE FIFTH OIL MEASUREMENT CONFERENCE

New Developments in Tank Calibration & Meter Proving

Thursday 4 November 1993

To be held at
The Institute of Petroleum

Attention is increasingly focused on quality management and measurement accuracy in the drive to reduce oil loss and increase operating efficiency. It is therefore an appropriate time to hold a conference to review tank calibration and meter proving. Accurate tank calibration is a pre-requisite for the accuracy of all methods of tank gauging, including automatic tank gauging systems, while traceability in meter proving is fundamental to the relationship between readings obtained in proving and International standards of measurement.

This one day conference is divided into two sessions, with an introductory paper by the National Engineering Laboratory on measurement traceability.

Topics to be presented include:

- Measurement traceability from international standards of mass and length through to field equipment
- Review of tank calibration techniques, including new technologies and a comparison of the accuracy and cost of various methods, plus new moves to standardise tank recalibration frequency
- Latest developments in tank calibration, especially electro-optical methods and their various applications
- A tank operator's perspective of what is sought in tank calibration and calibration services
- Analysis of large data base of offshore and jetty meter provings and the lessons to be learned
- The role of a Weights and Measures Laboratory in meter calibration
- Norwegian methods of the calibration of small volume provers
- Central proving – used in many countries; why not in the United Kingdom?

For further information, and a copy of the registration form, 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.***