# PETROLEUM REVIEW

IP THE INSTITUTE OF PETROLEUM

*December 1995*

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The range of options for a UK distributor

**Argentina**
New lease of life from privatisation

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# PETROLEUM REVIEW

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**COVER PHOTO**
Leaking oil in Nigeria
Photo by Sara Leigh-Lewis. Courtesy of EPL

# NEWS IN BRIEF

**19 October**

**Clyde Petroleum has raised its** interest in block 13/28a containing the Ross oilfield by 11.9 percent for a net price of $5.3m. The acquisition of Elf Enterprise Caledonia's 18.25 percent stake and the sale of a smaller interest to Lasmo adds some 3-4m barrels to Clyde's reserve base.

**20 October**

**Phillips Petroleum has bought** Amerada Hess' 1.76 percent share in the Britannia gasfield, bringing the company's total interest in the field to 6.78 percent. Phillips has also purchased Amerada's exploration acreage interests in blocks 16/27b and 16/26.

**Victoria Petroleum and Santos** have completed a farm-in agreement relating to the drilling of the Spider-1 exploration well in the offshore Carnarvon Basin EP 315 in Western Australia. Santos is to contribute to the drilling costs to earn a 25 percent interest in the permit.

**21 October**

**Tamil Tigers have blown up Sri** Lanka's two main oil storage sites in the suburbs of the capital city Colombo. Over 25 people are reported to have died in the ensuing gun battles between the bombers and security forces.

**Iran has discovered a large gas** field in south-west Bushehr province with estimated reserves of 8 tcf.

**J Sainsbury and Tesco have** begun a petrol price war with promises to cut the price of unleaded fuel to under 50 pence per litre. In response, Esso has pledged it will not be undercut and has launched a 'Pricewatch' promotion in the north-east of England and central Scotland in which it plans to match the lowest price of any competitor. If successful, the scheme may be extended nationwide.

**23 October**

**Kuwait has announced the** discovery of a new oilfield in the west of the emirate in a region where high-quality oil has not been found previously. The field is estimated to have reserves of up to 350m barrels.

**24 October**

**Amerada Hess has awarded** Kvaerner National a contract for the provision of six subsea trees and associated wellhead equipment for the Duward and Dauntless fields.

**Saga Petroleum has upgraded** proven and probable oil reserves on the Snorre field from 1.025m barrels to 1.128m barrels. The increase in recoverable reserves is the result of greater operating efficiencies, say Saga, and will extend Snorre's economic life. Additional reserves have also been identified in the southern part of the field.

**Soekor, the South African state-**owned exploration company, has received government approval to develop the country's first offshore oilfield. The small EB-T field is located some 140km south-west of Mossel Bay. Recovery estimates are 13.4m barrels.

**Elf Aquitaine is to cancel its** involvement in the planned Shanghai Pudong oil refinery. However, the company still plans to invest over FFr2bn in China before the year 2000 in a bid to triple sales in the country.

**Union Texas Petroleum has** announced a 1995 third quarter net income of $12m versus $15m in the same period in 1994. Higher exploration costs, increased expense and lower LNG sales volumes and prices in Indonesia were responsible for the drop in earnings states the company.

**Total has signed an agreement** with Asamera, the wholly owned subsidiary of Gulf Canada Resources, which assigns the French oil company a 30 percent stake in the South Jambi B production sharing contract area in South Sumatra.

**The University of Dundee's** Centre for Petroleum & Mineral Law & Policy has won a £233,000 contract, under the European Commission's Tacis programme, to advise the Ukrainian government on electricity and international transit law as well as laws relating to the extraction of oil and gas.

**25 October**

**British World Airlines has** secured a £55m contract from Shell UK Exploration and Production for the transport of oil workers between Aberdeen and Sumburgh in the Shetland Islands.

**Total has completed the acquisi-**tion of Ranger Oil (Netherlands), a wholly owned subsidiary of Ranger Oil (UK). The company owns a 5.25 percent stake in Dutch blocks J3b/J6 which contain part of the Markham gas field. Total also plans to acquire Ranger Oil (UK)'s 2.5 percent stake in Block 49/5a, also part of Markham.

**Occidental Petroleum is to** consolidate its worldwide oil and gas operations into a single operating company based at its headquarters in Bakersfield, California. The move is expected to save the company some $100m per year.

**26 October**

**Norsk Hydro has discovered** new hydrocarbon reserves just north of the Sleipner oilfield in block 15/5, says the Norwegian Petroleum Directorate. Exploration well 15/5-5, drilled to a depth of 2,619m below sea level, flowed at a rate of 600 cu m of oil per day and 3,800 cu m of gas.

**Pertamina has signed a fresh** $6bn LNG supply contract with Taiwan's Chinese Petroleum Corporation.

**Statoil reports a NOK4.5bn** profit after tax for the first nine months of 1995, up some NOK 700m from the same period last year.

**27 October**

**Enterprise Oil has abandoned** drilling operations south of the Indian Ocean islands of the Seychelles after finding no oil.

**29 October**

**A British-Dutch salvage attempt** has been mounted off the South Wales port of Milford Haven after the Norwegian-flag tanker *Borga* ran onto rocks. Vessels were called in to lighten the 112,180 tonne cargo of North Sea crude destined for the adjacent Texaco refinery.

**30 October**

**Elf Aquitaine is to join forces** with Electricité de France in order to develop electricity generation projects in international markets. The somewhat unusual joint venture between a private company and public sector group aims to capitalise on increasing demand for electricity and the liberalisation of European energy markets.

**Victoria Petroleum plans to** begin a four-well continuous drilling programme from the first week of November through December in the 'highly prospective' offshore Carnarvon and Bowen/Surat Basins.

**Engen, the South African oil** and gas company, has posted a R300m drop in net income in the first eight months of 1995 to R116m. Restructuring costs, increased financing costs, an eight-year low in refining margins and post-commissioning difficulties at the company's Durban refinery contributed to the loss, states Engen.

**31 October**

**Aviva Petroleum has announced** that its Colombian subsidiary Neo Energy is to begin drilling the Palmera #1 exploration well in December. The well will be located some seven miles north-east of the company's Miraflor field on the Santana Block.

**1 November**

**Occidental Petroleum has sold** its agricultural chemicals business to a subsidiary of Potash Corporation of Saskatchewan Inc for some $286m. Proceeds from the sale will be used in the oil company's debt-reduction programme.

**Moldova's parliament has** approved a scheme to privatise the country's natural gas industry. The state plans, however, to retain an 80 percent stake in the Moldova Gaz monopoly.

**The offshore support vessel *Irish*** *Sea Pioneer* was officially named at Langton Dock in Merseyside today. The Halliburton-owned vessel will provide offshore services to BHP Petroleum's £1bn Liverpool Bay project.

# NEWS IN BRIEF

**2 November**

**BP has announced that it has** agreed in principle to sell its refining and marketing interests in the north-east United States to the Tosco Corporation. BP said it expects proceeds of $235m for the assets and crude and product inventories. In addition, it will participate in future profits, in the event that market conditions improve over the next five years, up to a cumulative $50m.

**Select Facilities Management** Ltd has been awarded a facilities contract for a further five Esso fuel distribution terminals following a successful pilot contract at Esso's West London terminal at Heathrow.

**Pogo Producing Company has** announced two gas discoveries on two company-operated Gulf of Mexico blocks in which it holds a 50 percent working interest. The High Island A-451#1 well tested 10.3 mcuft of gas per day and first production is scheduled for December. The second well at Main Pass Block 131 encountered a net 61 feet of gas and condensate bearing sands. The field is due on-stream in the second half of 1996.

**The Mobil-operated Galahad** gas field, which straddles North Sea Blocks 48/12a and 48/13b off the Norfolk coast, has flowed first gas. Reserves are estimated at 153 bncuft of gas and production is expected to flow at an initial plateau rate of 70 mcuft/d.

**3 November**

**Nederlandse Aardolie Maatschappij** (NAM) is to spend some Fls3bn in a bid to maintain pressure at gas fields throughout the northern Netherlands. The company plans to spend the money over the next 15 years, focusing on the Slochteran onshore gas fields and is considering setting up a special consortium to carry out the large-scale project.

**AOC International's Canadian** subsidiary has secured a C$120m contract to provide operations and engineering support for the Hibernia platform in Newfoundland. The five-year, alliance style contract will be undertaken by AOC Brown & Root Canada Ltd, a consortium formed by AOC Canada, Brown & Root, Shawmont Newfoundland and BFL Consultants.

**Germanischer Lloyd has set up** a new classification company for the UK offshore industry following its recent purchase of 50 percent of the Offshore Certification Bureau. The new company, known as OCBGL, is based in London.

**4 November**

**Babcock King-Wilkinson and** Malaysian Resources Corporation have established a Kuala Lumpur-based joint venture engineering company to serve the consultancy, project management, engineering design, procurement, construction and commissioning needs of the oil, gas and petrochemical industries in the Far East.

**6 November**

**Amerada Hess plans to undercut** British Gas prices by 15 percent next April when 500,000 consumers in the south-west of England are allowed to choose their gas supplier as part of the 'opening-up' of the UK gas market (see page 534).

**7 November**

**Nigeria's Port Harcourt oil** refinery was closed at the weekend for urgent repairs to damaged equipment. Although the official explanation was sabotage, the shutdown follows a series of operational errors in the refineries owned by the Nigerian National Petroleum Corporation.

**British Petroleum produced a** replacement cost profit of £532m before exceptional items in the third quarter of 1995 compared with £415m in the corresponding period last year.

**8 November**

**UK-based Kelvin International** Services and The Sodexho Group and Universal Ogden from the US have established a joint venture services and facilities management company, Allied Support, to service remote oil and gas industry sites in the CIS.

**9 November**

**Mozambique has signed a** million-dollar agreement with Houston-based Enron Corporation to develop the Pande natural gas field in the southern province of Inhambane.

**Singapore Petroleum Company** and Dovechem Holdings have agreed on a $4.96m joint venture to construct an oil product storage terminal in China. The 40,000 cu m terminal will be built in the Shenzhen Economic Zone in Guangdong.

**Amoco Norway has announced** that it hopes to quadruple reserve estimates for its Valhall and Hod oilfields from its original 1992 estimates when Valhall first began production to some 1bn barrels.

**Allseas Marine Contractors** has been awarded a contract by Centana Gathering Company for the installation of two pipelines in the Gulf of Mexico. The first is a 48km, 20-inch pipeline running between MP164 and MP225 and the second a 12-inch, 9km tie-in between MP225 and MP223.

**10 November**

**Lasmo is to sell its 1 percent** stake in the Forties field to BP and its 15 percent stake in Beatrice and related fields to Britoil, a wholly owned subsidiary of BP.

**A compromise Bill that brings** closer to an end the United States' 22-year ban on Alaskan North Slope crude exports has been passed by the US House of Representatives.

**Rockwater has been awarded a** £30m engineering, procurement, installation and commissioning contract to supply two flowline bundles connecting Agip's Thelma manifold to the Tiffany platform. The project represents the longest tie-back of a subsea field to a platform using the bundle method in the North Sea to date.

**Ranger Oil reports that its oil and** gas revenues increased by 32 percent to $137.6m in the first nine months of 1995 from the $104.4m turnover recorded in 1994.

**13 November**

**British Gas is pulling out of the** Charter Mark, the consumer service standard introduced under the UK Government's Citizens' Charter scheme. The move comes after growing speculation that the company would be stripped of the award by the Government due to the rising number of complaints about standards of service.

**Pogo Producing Company and its** partners, Rutherford–Moran Oil Corporation and The Sophonpanich Co Ltd, in the Tantawan area of Block B8/32 in the Gulf of Thailand have signed a 30-year agreement with The Petroleum Authority of Thailand to supply natural gas to the country. Initial minimum daily contract quantities (DCQ) during the first year will be 75 Mmcuft/d, rising to 85 Mmcuft/d in the second year. Mutual agreement on reserves will be negotiated as and when the DCQ exceeds 125 Mmcuft/d.

**Raytheon Engineers & Constructors** has been awarded an engineering services contract as part of an extra-heavy oil upgrading project in Venezuela by the Conoco/ Maraven joint venture. The $6m project includes the construction of extensive production and gathering facilities in the Zuata region of central Venezuela, a 210-km pipeline to José on the north coast, heavy crude processing and upgrading facilities at José as well as handling, loading and shipping facilities.

**14 November**

**Participants in Australia's North** West Shelf Project have signed agreements with Japanese purchasers for the sale of an additional 500,000 tonnes per year of LNG. The deals, which come into effect from April 1996, bring the total value of Australia's LNG sales to Japan next year to A$1.76bn.

**Amoco Egypt, operator of the** Ras El Barr concession offshore Egypt, has discovered a gas field in the Mediterranean Sea. The discovery well, Seth-1, encountered over 375 feet of gas pay in seven zones. Tests in the field's lowermost Pliocene sandstones yielded flow rates of 28 mcuft of gas and 486 barrels of condensate per day.

**15 November**

**Dana Petroleum reports that** proven and probable reserves of the Sortymskoye oil field in Western Siberia, in which it has a 30 percent stake, have been estimated at 57.3m barrels. A further 20m barrels of possible reserves have also been identified.

**Spanish oil group Repsol has** recorded a 32 percent rise in net profits from Pta69.4m to Pta92m for the first nine months of 1995. Repsol said that the increase reflected sharp earnings growth in the group's gas and chemical businesses.

# New Amoco developments better by design

The start-up of Amoco's Davy and Bessemer North Sea gas fields in mid-October, just 18 months after work began, heralds improved economics for marginal offshore field developments.

Located over 45 miles off the Norfolk coast, the fields use an innovative Amoco platform design that the operator claims not only substantially reduces platform weight and improves construction time but also lowers both capital and operating costs. It is the first time the 'Amoco Minimum Offshore Supporting Structure' (AMOSS) design has been used in UK waters and the move is expected to open up the possibility of other North Sea fields using a similar design.

Simplification of the topsides design and greater use of fibre reinforced plastic has enabled each platform to weigh in at just 1,050 tonnes, some two-thirds less than conventional designs. The lighter weight has also facilitated the use of a central supporting column instead of the traditional, more costly and construction schedule-consuming steel-and-brace design.

The Davy and Bessemer gas fields use Amoco's lightweight and cost-saving AMOSS platform design

The simplified approach has also produced another innovation – the use of wind power to generate electricity. Early next year, after developmental drilling is complete, two wind turbines installed on each platform will provide up to 12 kW of electricity sufficient for normal unmanned operations. Amoco states that the use of wind power will further reduce overall costs while enhancing environmental performance by cutting diesel exhausts by as much as 75 percent.

'Davy and Bessemer represent a new approach to offshore development,' says Kent Davis, Amoco's Southern North Sea Asset Manager. 'The AMOSS stuctures are light, efficient and capable of production line assembly for future applications. They are an excellent example of how the offshore industry is applying new ideas to develop North Sea reserves and extend the life of existing installations and systems. That is the essence of CRINE (Cost Reduction Initiative for the New Era) and the result will enhance the economic development of new oil and gas fields well into the next century.'

Located in Blocks 49/30A and 49/23E, respectively, the Davy and Bessemer platforms are over 63 metres tall and stand in a water depth of some 30 metres. The fields are expected to produce up to 220 million cubic feet of gas per day through two separate pipelines running first to the existing Amoco-operated Indefatigable 49/23A platform and then on to the Amoco-operated natural gas terminal at Bacton in Norfolk.

Other equity participants in the Davy field are Amerada Hess (27.78 percent) and British Gas Exploration and Production (E&P) (50 percent) while Bessemer co-venturers are British Gas E&P (30.77 percent), Amerada Hess (23.08 percent) and Enterprise Oil (15.38 percent).

# Progress made in Khariaga

Mr Chernomyrdin, Prime Minister of the Russian Federation signed a governmental decree approving a production-sharing contract on the Khariaga oilfield last month.

Signed in April 1992 and already approved by the local authorities, the Total contract covers the development and production of several geological layers of the field which is located in the Timan Pechora basin, one of Russia's main oil producing regions, some 60km north of the Arctic Circle. Production could reach around 50,000 barrels per day and two stages of development are planned. Investments represent around $300 million for the first stage and $500 million for the second.

The signature of the governmental decree is an important step toward implementation of the contract. However, validation by the parliament of the Russian Federation as well as the parliament of the autonomous territory of Nenets in which the field is located is still required. A long-term transport contract must also be signed.

Total says that it wishes to keep a 50 percent stake in the field and plans to look for partners. The company is also involved in the provision of enhanced recovery tertiary processes at the Romashkino oilfield, in the Republic of Tatarstan.

# Amoco and OPAB set to test Latvian waters

Amoco and Swedish co-venturer Oljieprospektering AB recently signed an agreement with the Latvian government to explore for oil in Latvian waters. Both oil companies have a 45 percent stake in the 'Dalders' project, with Latvia holding the remaining 10 percent interest with an option to increase its stake to 20 percent.

It has been calculated that, in any production phase, Latvia will receive between 40 and 50 percent of profits from royalties, taxation and other benefits. Implementation of the agreement is dependent on the approval of the Latvian Parliament, The Saeima, and on the resolution of the question of demarcation of the maritime border between Latvia and Lithuania.

It is envisaged that the first exploration well, costing between seven and nine million US dollars, might be drilled in the second half of 1996. It will be drilled to a depth of some 1,600 metres using a semi-submersible rig capable of coping with the deep 120 metre water depth and difficult weather conditions found in this region of the Baltic Sea. Up to sixty wells may be drilled during development.

## Protests fail to halt Nigerian LNG project

Shell and its partners are to go ahead with plans to construct a $4 billion liquefied natural gas plant at Bonny in the Niger Delta, despite widespread international protests after the execution of Mr Ken Saro-Wiwa and eight other human rights activists in November.

Shell owns a 24 percent stake in Nigeria LNG Ltd, the second largest share after the Nigerian National Petroleum Corporation with a 49 percent share; Elf (15 percent) and Agip (10 percent), which are also local oil producers, are the other participants.

The International Finance Corporation pulled out last month due to 'macro-economic considerations'. but this was only a small shareholding – 2 percent.

Though financial agreements have still to be finalised, the partners appear set on proceeding with the project which should benefit the local economy and bring revenue to the government – but not until 2007. LNG exports to Spain, France, Italy and Turkey have already been negotiated.

According to a Shell spokesman, it is hoped to sign the plant's construction contracts before the end of this year in order to keep on schedule.

The project will create more than 6,000 jobs on-site and significant levels of secondary employment in the Niger Delta region during the four-year construction period, as well as significant numbers of jobs subsequently.

Furthermore the company has stated that detailed environmental impact assessments have already been carried out. It is expected that the plant will make a major contribution to environmental improvements in the region through the utilisation of substantial quantities of gas that are currently flared.

Mr Dick van den Broek, a director of Shell International, said 'There have been suggestions that the project should be deferred or cancelled because of recent events in Nigeria. But you have to be clear who would be hurt. You don't necesarily affect the present government because the revenues will not start flowing on this project until early next century. The people of the Niger Delta would certainly suffer.'

## Biotechnology and petroleum refining

The UK Department of Trade and Industry has launced a £10 million, four-year 'Biotechnology Means Business (BMB) Initiative' that aims to increase awareness of biotechnology and its potential use in industrial processes across a range of sectors, including petroleum refining.

According to the DTI, research has revealed that while many companies could increase profits and improve their competitive advantage through the application of biotechnological measures many remain unaware of the opportunities available.

The BMB initiative offers information and technical advice, including a free-phone helpline backed by a technical support service, seminars and workshops. Trade associations will be heavily involved throughout the programme's lifespan in order to ensure that the needs of individual industrial sectors are met.

Those interested in more information should ring the BMB Helpline on 0800 432100.

## Whessoe Varec system wins industry commendation

**Maitland Hyslop (centre), Sales Director of Whessoe Varec, the Newton Aycliffe, Co Durham-based instrumentation and control company, accepts a commendation in the 'Measurement for Manufacturing Excellence' category of the UK metrology awards from Dr Richard Brook of the judging panel (left) and Sir Rannulph Fiennes (right).**

**The company won the commendation for its Advanced Inventory Management (AIM) system which integrates level, mass and temperature measurment tasks and controls the flow of oil and related products through input and output pumps and valves, a range of radar, servo and displacement gauges and a dependancy modelling tool to provide an easy-to-use and cost-effective method of performing complex risk analysis operations.**

**'Whessoe's AIM system represents an ideal example of an application with significant cost savings for the petrochemical industry,' said the judges.**

## Calls for lower vehicle fuel duty

The UK government says it has no plans to reduce excise duty on natural gas as a vehicle fuel until further research on the environmental benefits of a variety of alternative fuels has been conducted.

Following hot on the heels of a report from the House of Lords Committee on Sustainable Development which recognised the benefits of natural gas vehicles and called on the government to encourage their adoption in the United Kingdom, the decision was met with disappointment by many in the gas sector.

'At present, tax on natural gas as a vehicle fuel is fixed at 404 percent of the European Union (EU) permitted minimum,' said the House of Lords Committee report. 'The government should cut duty drastically as other Member States have done. Without such action, the undisputed environmental benefits which could be derived from its use, particularly by buses and taxis, will not be realised.'

Another report from the House of Commons Environment Committee on volatile organic compounds also pointed to the environmental benefits of natural gas as a vehicle fuel and called for road fuel duty to be set at the EU minimum.

In response to the government's comments, the President of the Natural Gas Vehicle Association, Lord Brabazon of Tara, said, 'Instead of grasping the nettle and implementing the Committees' recommendations, which are supported by much weight of opinion from other bodies, the government seems more concerned to avoid appearing to favour particular fuels or technologies, in spite of the abundant benefits attainable.'

Meanwhile the government states that it is still reviewing the use of fiscal incentives to promote cleaner petroleum fuels, particularly if an alternative formulation was shown to be environmentally preferable.

## Petrotechnik on the UPP with petrol stations

John Gummer, UK Secretary of State for the Environment, opened PetroTechnik's new design, administration and distribution facilities in Needham Market, Suffolk on 27 October.

The company is the world-wide supplier of a UPP polyethylene pipe system used in the construction of service stations. Developed as an alternative to traditional steel piping which is prone to corrosion and fracturing and subsequent leakage of product, the UPP system is environment-friendly and corrosion-resistant. The pipe's flexibility also eliminates the need for many fittings associated with other steel and glass fibre pipe systems and helps protect against fracture through ground movements.

Quicker to install than traditional piping systems, the UPP system is also said to offer a substantially increased service lifetime and less maintenance downtime which, in turn, helps produce significant operating cost savings.

## British Gas Belfast deal in the pipeline

British Gas has awarded a £11.5 million pipelay contract to the Alfred McAlpine/Brown and Root joint venture, the first to be awarded under a £150m project to develop a natural gas industry in Northern Ireland.

The joint venture will lay a gas transmission pipeline from the Ballylumford power station on Islandmagee to Torytown, south of Carrickfergus, enabling delivery of natural gas to industrial and domestic consumers in the Greater Belfast area.

Total British Gas investment in the venture is estimated at some £450 million and includes the cost of buying and converting the Ballylumford plant and the construction of an undersea gas pipeline. The project is also being partly supported by the European Union.

'We hope to supply the first customers in late 1996,' says Peter Chester, Chief Executive of British Gas subsidiary Premier Energy. 'Bringing a new fuel to the area will increase competition in energy and help push prices down.'

## Air pollution has small effect on asthma

A report, published by the UK Department of Health in October, revealed that most of the currently available evidence proves that the link between air pollution and asthma is much less definate than had been suggested.

Entitled *'Asthma and Outdoor Air Pollution'*, the report from the Committee on the Medical Effects of Air Pollutants states that, contrary to generally accepted belief, most asthma sufferers should be unaffected by exposure to high levels of non-biological air pollutants, such as occur from time to time in the United Kingdom. Attacks are more likely to be caused by other factors such as infections and allergens.

In addition, the initiation of asthma is not caused by outdoor air pollution. While acknowledging that the incidence of the disease has increased rapidly over the past 30 years, this is unlikely to be the result of changes in air pollution, according to the researchers, who were led by Professor Stephen Holgate, Clinical Professor of Immunopharmacology, University of Southampton.

Dr Kenneth Calman, Chief Medical Officer, said, 'Air pollution remains a problem'. He added that further research was necessary to look into other possible contributory factors for asthma incidence such as diet, westernisation, urban living, allergens in the home and parental smoking.

## UK natural gas joint venture to take on BG market stronghold

Seeboard and Amoco have launched a new natural gas marketing joint venture that is set to challenge British Gas' dominant position in the £6 billion UK domestic gas industry. The companies hope to corner some 10 percent of the market by 2003 and anticipate price cuts of at least 10 percent over the intervening five year period.

Competition in the supply of domestic gas in the UK is being introduced on a phased basis through a series of deregulation measures. At present, the market for supply of gas to commercial premises and only the largest of domestic customers is open to competition. However, some 500,000 gas consumers in Cornwall, Devon and Somerset will enter the open market from April 1996 and a further 1.5 million domestic gas customers in Sussex, Kent, Dorset and Avon from April 1997. The entire UK gas market will be open to competition from April 1998.

# DATES FOR YOUR DIARY

IP THE INSTITUTE OF PETROLEUM

Exploration and Production Discussion Group

## A Review of the Old Year and Predictions for the New

**Thursday 11 January, tea at 17.00 for 17.30, until 19.00**

**By Steve Sasanow, Subsea Engineering News**

*IP contact: Sjoerd Schuyleman*

IP THE INSTITUTE OF PETROLEUM

Environment Discussion Group

## 'Biotechnology Means Business'

**Thursday 18 January, tea at 17.00 for 17.30, until 19.00**

**By a speaker from the DTI**

*IP contact: Jenny Sandrock*

IP THE INSTITUTE OF PETROLEUM

East Anglia Branch

## Inaugural Meeting

**Thursday 18 January, 18.00 for 18.30**

The inaugural meeting of the IP East Anglia Branch will be held at the Nelson Hotel, Prince of Wales Road, Norwich (5 minutes walk from Norwich BR station – abundant parking). Members from Norfolk, Suffolk, Cambridgeshire or North Essex are invited to attend.

*IP contact: Jenny Sandrock*

IP THE INSTITUTE OF PETROLEUM

London Branch

## 'Back to Basics – Refining for Petroleum Products'

**Tuesday 23 January 1996, tea at 17.15 for 18.00**

**By Mr J Christy,**
**Technology Manager,**
**Shell Haven Refinery**

In refining, crude oil is converted into a range of transport fuels, heating fuels and speciality products which have become an indispensible part of modern life. John Christy will outline the complex processes involved and how refineries have adapted to the decline in industrial fuels and the increase in demand for transport fuels. The impact of product quality changes brought about by environmental concerns will be reviewed. Finally, he will discuss some of the current pressures on refining and the problems faced by refiners in Europe.

*Light refreshments will be available afterwards. Enquiries: Mrs E Walker, Hon Secretary, London Branch. Tel : 01926 404768 or Mr J M Wood at the Institute, Tel: 0171 467 7128*

**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: 0171 467 7100 Fax: 0171 255 1472**

## Totalgaz up a gear with new tankers

Totalgaz has taken delivery of two new articulated road tankers. The vehicles join the company's LPG delivery fleet, leased in from Tank Freight, which primarily serves the agricultural and commercial sectors of Totalgaz' operations from as far north as Lancashire to Suffolk in the south.

'The new vehicles are just a small part of our commitment to developing and supporting the Totalgaz business in the UK,' says Ian Marsh, Totalgaz Sheffied bulk sales supervisor.

Colin Lond and David Smith (left) of Tank Freight hand over two new LPG tankers to Chris La Banca and Ian Marsh of Totalgaz

## Turkmenistan signs pipeline deal

Unocal Corporation and Saudi Arabia's Delta Oil Company have signed an agreement with the Turkmenistan government that could open new markets for Turkmenistan's natural gas reserves and provide an export terminal on the Indian Ocean for oil from Turkmenistan and the surrounding region.

Under the agreement, Unocal would have the right to buy up to 700 billion cubic metres of natural gas from specific, certified and dedicated reserves at the Afghanistan border, transport it to Pakistan and market it. The project could encompass construction of a 1,300-km gas pipeline from Turkmenistan through Afghanistan to Pakistan, which would carry up to 2 billion cubic feet of gas per day, and the development of marketing outlets in Pakistan, including the construction of gas-fired electricity generating plants.

'This is a long-term transportation and marketing agreement,' said John F Imle Jr, President of Unocal, 'and could bring important economic benefits to the region.' Turkmenistan would gain significant revenues from the sale of natural gas while Afghanistan would receive transit fees and tariff revenues from the pipeline, perhaps payable in the form of gas supply, power generation and related infrastructure improvements. Pakistan would gain access to new energy resources to power its growing economy.

A number of obstacles may hamper the development however. Not only is the current situation in Afghanistan volatile with various warring factions controlling pockets of territory, there is also the problem of competition from producers in the Gulf. Iran and Qatar both have large reserves and are looking to build pipelines to Pakistan, while Oman is involved in a project to pipe gas to India.

## Reducing geological risk with seismic and satellite technologies

Professor Sir Ron Oxburgh, Rector of Imperial College and former Chief Scientific Adviser to the Ministry of Defense, addressed the worlds of business, politics, science and finance at The Geological Society's Sir Peter Kent Lecture on 2 November. The theme of his speech was 'Managing Geological Risk'.

Focusing initially on 'commercial risk', using the world of mineral and hydrocarbon exploration to illustrate his argument, Professor Oxburgh stated that the key to risk reduction in complex commercial projects is the qualification and quantification of uncertainty earlier on in the programme than has traditionally been the case.

He cited BP's exploitation of the Foinaven field between the Orkney and Faroe Islands as a good example of this strategy. Risks in the project have been managed within a business plan that is to compress the interval between initial exploration and production to around three and a half years – less than half the industry norm.

The project involved a process analagous to that known as 'concurrent production' in the manufacturing sector in which a series of processes that were traditionally regarded as sequential were carried out partly in parallel.

The processes both depended on, and made affordable, an expensive seismic campaign to image the target strata and their pore-fluids in exceptionally high resolution 3D detail. This has made it possible to drill high precision wells with complex configuratons designed to permit recovery of some 50 percent of the oil present compared to the 25-30 percent normally recovered.

Professor Oxburgh then addressed the issue of 'natural hazards'. As the world's population expands there is growing pressure for people to live in and use areas of known geological risk. Furthermore, as society becomes more sophisticated and urbanised, ever more complex systems are concentrating precious resources into smaller centres.

Thus, in the event of a geological risk becoming a reality, the financial and human cost can be phenomenal – you need only look at the recent Kobe earthquake which killed some 5,500 Japanese and had insured losses of over £100 billion to see the truth in such a statement.

Professor Oxburgh maintained that increased investment in monitoring systems is required both to isolate such areas of risk and facilitate better risk management. He pointed in particular to the potential benefits to be accrued by using synthetic aperture radar (SAR) images from satellites some 500 miles from the surface of the earth which can highlight movements in the earth's crust of less than 1 inch – essentially allowing scientists 'to see the earth breathe'. Such small surface distortions are often the precursor to a wide range of potentially destructive natural phenomena.

'If this technology's promise is fulfilled, major losses could be mitigated in vulnerable zones and nugatory expenditure on precautions avoided in others,' said Professor Oxburgh.

However, the technique is relatively new and, as yet, unproven. Only time will tell whether private or public agencies can be convinced that the potential cost benefits to be accrued from SAR imagery, in both financial and human terms, outweight the initial large capital investment required for further study of such techniques.

# Gas benefits from Middle East peace process

By John Roberts

*The four core countries in the Middle East peace process – Egypt, Israel, Jordan and the Palestine National Authority – are currently negotiating a project to bring Egyptian gas northwards by means of a 438 km pipeline from Port Said to Haifa.*

The project is both important in its own right and as the potential backbone of a gas distribution system which its proponents envisage will bring gas from as far afield as Saudi Arabia, the Gulf and Central Asia to serve European and Mediterranean needs.

At the Middle East Economic Summit in Amman from 29 to 31 October, senior officials from Italy's energy giant ENI spoke of their confidence in the original project to supply gas to Israel and its neighbours – a scheme which is in direct competition with a plan by Enron for an LNG plant in Qatar to serve Israel and Jordan – and of their dreams to extend the gasline northwards to Turkey.

In documents describing the 'Peace Pipeline', as ENI terms the Port Said-Haifa gasline, ENI says that 'While crucial contractual details remain to be settled at the time of writing, it is considered a foregone conclusion that the project will be implemented.' Since ENI has, together with the Egyptian General Petroleum Company (EGPC) been a principal promoter of the project and since much of the gas to flow north would be produced at fields developed by ENI's Agip subsidiary, such determined optimism is natural. But others, notably Enron, are not so sure. Moreover, there are good reasons for believing that, while the pipeline will be built, it may take longer than expected to reach agreement on those 'crucial contractual details.'

*'There is certainly a substantial market for gas in both Israel and Palestine'*

Those problems refer mainly to pricing but also to throughput. Egyptian Oil Minister Hamdi al-Banbi (in a recent interview with the *Middle East Economic Survey*) disclosed during the run-up to the Amman summit that there was already a wide gap between Egyptian and Israeli perceptions of the price of gas to be shipped through the system. EGPC wants Israel at least to match the price it has to pay its foreign partners for their share of gas, together with remuneration to producers: in effect, this would entail a well-head price of around $2.50 per million BTU, to which Israel would be expected to add the costs of transport and servicing the system. Israel is reported to be considering a price of $2.50 as well – but at the border.

Meanwhile Mr al-Banbi says that because Israel still needs to settle with potential customers both the nature of its intended national grid and the volumes it will require, he does not believe the Israeli authorities will be ready to sign a formal gas supply agreement with Egypt until the end of 1996.

The two countries are envisaging a sale-and-purchase agreement for some 4.0 to 6.0 billion cubic metres a year (bcm/y) of gas. While the Haifa line would account for much of the project, there would also be spurs to serve the Palestinian territories – Gaza and the West Bank – and Jordan. Israeli presentations to the Amman conference noted that the country's energy demand was rising rapidly, with electricity demand expected to double between 1995 and 2000.

## Level of gas reserves?

One surprising element is that although energy was one of the key themes highlighted for extensive discussion at the Amman summit by the event's organisers, The World Economic Forum, the Egyptians themselves sought to play down the gas project. It was not mentioned in any of the glossy project lists prepared by Cairo to help secure public and private sector project finance. Moreover, even though it is continuing to negotiate with a number of outside parties concerning possible gas exports, some Egyptian officials remain worried about the extent of the country's gas reserves.

In the first place, Egypt still needs final confirmation that it possesses sufficient proven reserves to guarantee supply through the line for the next 20 or 25 years. Secondly, it has to consider its own longer-term energy supply interests, not least because it is becoming increasingly hard to maintain oil production at recent average levels.

Moreover, at Amman itself, Mr al-Banbi fur-

nished Jordan with the draft of a proposed agreement under which Egypt would provide direct gas export to Jordanian customers via a proposed 420-km pipeline from Port Said to the Gulf of Aqaba. This line would deliver between 250 and 500 million cubic feet per day (cf/d), equivalent to around 2.65 to 5.3 bcm/y, making it a project on much the same scale as the 'peace pipeline' project to supply gas to both Jordan and Israel, and to the energy-starved Palestinians as well.

Yet Israel remains confident the original project will go ahead. Its foreign ministry told participants in Amman that 'The Israeli government is scheduled to publish a tender document in the coming months for implementation of parts of the Israeli section of the project,' and that 'similar action is expected on the part of the Egyptian government.'

*'The Levante scheme envisages a two-stage extension northwards from Haifa'*

## Substantial market

There is certainly a substantial market for gas in both Israel and Palestine. In a massive tome entitled *Development Options for Cooperation*, the Israeli government noted that energy demand in Israel was soaring with electricity demand expected to double between 1995 and 2002.

The potential market for natural gas would range from combined cycle power stations to conversion of existing fuel oil power stations to gas and as feedstock for new petrochemical industries. While environmental factors clearly favoured a switch to gas, the Israeli government noted 'As the market for gas will come at the expense of other fossil fuels, its relative price will be an important determinant. Obviously, the lower its relative price, the higher the incentive to convert facilities and build new ones based on natural gas.'

*'We are confident this pipeline will become real in the very near future'*

In Palestine, according to a four-volume project study produced by the Palestine National Authority, natural gas is seen as the major fuel for electricity generation over the next 190 years. In addition, current requirements for 93,000 tpy of LPG are likely to soar to 185,000 tpy in 10 years' time. The Palestinians estimate that the Peace Pipeline, which would serve the Palestinian territories via spurs to Gaza City and Jericho, would take around 32 months to complete.

## Levante Project

The Peace Pipeline project clearly has some very important backers, not least because both ENI/Agip and Amoco want to see the gas produced from their fields off Port Said piped northwards. But it is less clear that the more grandiose ambitions for a northwards extension – what ENI calls the Levante Project – will soon come to fruition.

The Levante scheme envisages a two-stage extension northwards from Haifa. Initially, this would go to a terminal at Iskenderun, on Turkey's Mediterranean coast. This would constitute what ENI calls 'the regional phase' and would, the Italians hope, become operational by the year 2003.

It would then be followed by 'the European phase', a project to extend the line northwards into Europe. Relatively little attention is paid to this second phase, not least because, ENI announced in Amman, 'We believe that a pipeline link between Turkey and Europe will develop anyhow, not necessarily in connection with the Levante Gas project.' However, the Italians added, 'In order to evaluate the commercial viability of the latter, the hypothesis was made that it would be extended to reach the European market in Slovakia.'

At the main presentation on the Levante Project, Roberto Piattoli, Chairman of SNAMProgetti, declared: 'We are confident this pipeline will become real in the very near future.... It is a visionary yet realistic proposal for new transmission systems from North Africa, the Middle East and Central Asia to consumer centres in the Mediterranean and, longer-term, to Western Europe.'

The projected line would be capable of both receiving and delivering gas at five points along the system. A new terminal at Iskenderun would allow the project to receive gas from Northern and Central Asia.

At this stage, Mr Piattoli argued, Egypt would be able to act as a swing producer for the system, ensuring regularity of supply as further producers were added to the system. In the long run, as its own supplies diminished, Egypt would be able to offer storage facilities for gas from other contributors to the system. 'Egypt's gas is not sufficient to meet demand throughout the lifespan of the project,' Mr Piattoli acknowledged. 'But it is sufficient to get the project started.'

Egypt and Turkey would constitute the twin hubs of the system, receiving gas from the outside world and dispatching it to the region. And once the system was extended northwards, that would, he said, 'open the door to the start of gas exports from the Gulf to Europe in around the year 2010.'

## Other pipeline projects

The Levante Gas Project's advocates note that, while the Israeli government has been negotiating to purchase gas from Egypt, the Israeli private sector is involved in a consortium with Russia's Gazprom, Turkey's Botas and TransCanada to consider an 8.0 bcm/y extension of the Russian gas pipeline system from the Turkish capital of Ankara southwards to Turkey's Mediterranean Coast and thence to Cyprus and Israel.

ENI notes that this project 'very closely resembles one of the alternatives explored under the

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Levante gas project.' In this context it proposes that the Levante line should be capable of operating in both directions to include the possibility of supplying Russian gas southwards to Israel, even though it would normally expect the line in its initial phase to be transporting gas in the opposite direction: northwards to Turkey. In general, it saw no contradiction between the two schemes.

*'Gas projects are basically risk investments'*

As regards interconnections with Gulf producers, the Levante Project expects an early link-up with newly discovered gasfields in northwestern Saudi Arabia. ENI, together with Japan's Chiyoda Corporation and The United Nations Industrial Development Organisation, is also specifically promoting a link between the gas-producing nations of the Gulf and the Eastern Mediterranean by way of Iran and southern Turkey.

This proposal, known as the Middle East Gas Loop, currently foresees a 6,900 km four-segment gasline running from Iran's Indian Ocean port at Chah Bahar along the Iranian coast to the Strait of Hormuz. Here it would split, with one line proceeding along Iran's Gulf coast to the Kangan gasfields and the other crossing the strait to enter Oman or the UAE at the Musandam Peninsula, and thence proceeding via Abu Dhabi, Qatar and the North Field back to Iran at Kangan. It would then use the line of the existing IGAT system to go north towards Tehran before heading west to Iskenderun.

'The loop route design would provide access to multiple sources of natural gas existing all over the region, including Turkmenistan, and assure in this way some security and stability of long-term gas supply to consumers,' Naji Abi-Aad, a consultant at France's Observatoire Méditerranéen de L'Energie, told the Amman summit. He added that the Omani gas terminal at Bimmah would also be connected to the system, which would serve to ensure there were always sufficient supplies to meet LNG demand in Asia, to be supplied by the UAE, Qatar and Oman, and piped gas demand in Europe and the Eastern Mediterranean. Costs were put at around $10 billion for the Chah Behar-Iskenderun system. There would, of course, then need to be a separate connecting line to take gas up to Europe from Iskenderun. Mr Abi-Aad estimated that the northern pipeline along the Iranian coast and the more southerly loop on the Arab side of the Gulf would each carry about 28 bcm/y of gas.

At a meeting where the positive side of projects was consistently stressed, Mr Abi-Aad added an element of practical caution. It would, he argued, 'most probably' be necessary to ensure that additional volumes would be available for the system from the Gulf countries before extending the regional gasline system north from Israel. In the mid-1980s, just as the extent of its discoveries in the North Field was being revealed, Qatar looked briefly at the idea of a gasline to western Europe and even signed an agreement with Turkey for a joint feasibility study concerning construction of a 4,900 km line through Saudi Arabia, Iraq and Syria to Turkey and the European gas network. But at Amman, when asked to comment on such proposals, Qatari Energy Minister Abdulla bin Hamad al-Attiya displayed no immediate interest in such schemes. 'This is right for the next era,' was all he would say.

Mr Abi-Aad, too, was wary about the prospects for such schemes. He noted that 'Gas projects are basically risk investments. Unfortunately, although a final peace in the Middle East between the Arabs and Israel will surely shift the perception of political risk in the area, it will not be able to eliminate all of the factors of conflict and instability within the producing countries or the transit states.' Nor, he added, would such a peace necessarily eliminate 'the interstate rivalries and disputes in the region which, together with the Arab-Israeli issue, have been behind the shutdown of many oil export pipelines in the Middle East.'

# New Cargo Retention Clause

*In April 1994, following a review of the 'Cargo Retention Clauses' currently used in charter parties, the IP PM-L4 (B) committee (Industry Oil Loss Control Initiative) comprising 15 representatives of oil companies, invited delegates from Intertanko, IFIA (International Federation of Inspection Agencies) and outside consultants to discuss the various forms of 'Cargo Retention Clauses' in use in the industry.*

One important principle set out at the meeting was the commitment to rationalise and consolidate the requirements for invoking the 'Cargo Retention Clause' and to promote a uniform clause with the aim of reducing the burden placed upon the cargo surveyors in making subjective determinations on the nature of the material remaining in the ship's tanks after completion of discharge.

A step towards this goal was introduced by IFIA to critically review the requirements embedded in the majority of these clauses. Specifically, IFIA brought forward proposals for debate on the words 'reachable/pumpable free-flowing' etcand major technical issues concerning the quantification and qualification of ROB.

Discussions among the above groups have resulted in the following wording for the 'Cargo Retention Clause'. This is recommended by most of the parties involved in the discussions for use in the majority of situations. It should be noted that Intertanko expressed reservations regarding certain details of the wording of the clause.

## Cargo Retention Clause

In the event that any cargo remaining on board upon completion of discharge is liquid*, as determined by an Independent Surveyor, Charterer shall have the right to deduct from freight, when deemed reasonable, the value of this liquid equal to the FOB port of loading value of such cargo plus freight due with respect thereto.

Unless otherwise stated in the Charter Party only liquid remaining from the current cargo shall be used for the activation of this clause and therefore allowance should be given to any measured/reported liquid volume on board the vessel prior to loading, as determined by an Independent Surveyor.

Charterers hereby agree to indemnify Owners against any liability, under this clause, to a Bill of Lading holder resulting from non-delivery of any such cargo in respect of which a deduction from freight is made provided, however, that Charterers shall in no event be liable to indemnify Owners in an amount greater than the amount of the deduction from freight.

Any action of lack of action in accordance with this provision shall be without prejudice to any rights or obligation of the parties.

*Note:
ROB will be considered liquid if:

a) it can be sampled and tests show that it has a dynamic viscosity of less than 600 centipoise by rheometric testing, using a Ferranti, Brookfield or similar viscometer, at the temperature it had when in the ship's tank, or the carriage temperature required by the charter party, whichever is higher.

or

b) it cannot be sampled due to insufficient depth, but in the opinion of the inspector using other means it is judged to be liquid.

# Accounting and taxation implications of oil futures and options contracts

*By Peter Muir and Fiona Gadd, Managers in Arthur Andersen's Financial Markets Practice*

*The rapid development and complexity of futures and options contracts (and derivatives generally) has, in most cases, left regulatory, accounting and tax treatments lagging behind. There have been few specific announcements from the Accounting Standards Board, and little specific tax legislation from authorities in most of the world's major financial centres. It is quite possible, however, that this situation will change as a result of the recent Barings and Daiwa revelations. Until then, the current regulatory reporting framework is limited to a few sets of guiding principles and the use of general fundamental concepts.*

## Accounting treatments

The accounting treatment resulting from entering into oil futures and options contracts often necessitates reference to the four fundamental accounting concepts – prudence, consistency, accruals and going concern – and the need to reflect the substance of any transaction over its legal form. The application of these concepts depends on the purpose for which the original position was taken, ie whether it was for the purpose of a hedge, or for speculative or arbitrage purposes. The accounts of the entity should reflect the economic risks or rewards inherent in that transaction. As will be seen later, the appropriate accounting treatment adopted may have significant tax consequences in many countries, where the tax treatment of profits and losses on such transactions will follow generally accepted accounting principles (GAAP).

The economic risks that the accounting treatment of futures and options transactions seeks to reflect in the accounts can be summarised within the following broad categories:

| | |
|---|---|
| 1 Liquidity risk | The risk that the position cannot be unwound quickly |
| 2 Credit risk | The risk that a counterparty will not pay against in-the-money contracts. This is usually limited as the appropriate clearing house guarantees the trades |
| 3. Basis risk | The risk that an asset whose price is to be hedged may not be exactly the same as the asset underlying the futures and options contract |
| 4. Settlement risk | The risk of non-delivery by a counterparty, where physical delivery is supposed to take place. |

There are some accounting pronouncements in the United Kingdom, United States and, to a degree, France which seek to deal with these issues. In the United Kingdom, for example, FRS5 requires that the accounting treatment of a transaction should reflect its economic substance, rather than being constrained to its legal form. In the United Kingdom ED55 is also relevant; this, if followed, requires that liquid investments carried as current assets in the balance sheet should be shown in the accounts at market value, whereas illiquid investments should be shown at the lower of cost and net realisable value. The question, therefore, can arise as to what constitutes a liquid investment and what constitutes an illiquid investment. Clearly this can sometimes be a 'grey' area.

Accountants and auditors will seek to follow the appropriate treatment after taking into account the following:

1. The nature of the transaction: is it speculative or hedging?
2. The liquidity of the investment.

The above two points have important tax consequences as well, as will be seen later. However, generally for oil futures and options, in liquid markets speculative and arbitrage transactions are marked-to-market at each period-end, with any resulting (but unrealised) profit and loss being taken to the profit and loss account as a result. Similarly, for hedged transactions in liquid markets, either a mark-to-market, or lower of cost or net realisable value accounting approach may be used. On the other hand, for all illiquid transactions, either method of accounting may be used, but this must be prudent. In each case the accounting treatment should reflect the economics of the transaction, hence the use of mark-to-market for speculative transactions.

Similar accounting treatments are applied in other financial markets; for example, in the United States SFAS 80 prescribes that entities (mainly financial institutions) who mark-to-market their inventory positions are also permitted to record futures positions at mark-to-market value. For other entities, the accounting treatment depends on whether the futures contract is being used for speculative or hedging purposes. In a similar vein, the International Accounting Standards Board has issued Exposure Draft ED40 on Financial Instruments, which differentiates trades between:

1. Investing and financing activities
2. Hedging activities
3. 'Operating' activities.

Again the accounting treatment to be followed varies; investing and financing transactions are valued at historic cost, but recognising any decrease in the carrying value immediately unless there is persuasive evidence to the contrary; hedging transactions are accounted for so that the gain/loss is recognised when the corresponding loss/gain from a change in the fair value of the hedged position is recognised; finally, operating transactions are valued at 'fair value', with any changes being recognised in profit and loss statements as soon as they arise ie marked-to-market.

## Taxation considerations

As can be seen above, the accountant has a set of similar guiding principles to follow on the preparation of the financial statements. Even internationally there is much common ground in this respect. However, when it comes to preparing the tax return, some significant differences can appear, depending on where the futures and options activity has been carried on. However, there is some significant common ground between the taxation treatments of such transactions.

As would be expected, there is still very little specific tax legislation in this area, although this situation is changing, especially where current rules could be used to the taxpayer's potential advantage. The French, not surprisingly, have been one of the few countries to introduce specific tax legislation in this area – the majority of derivatives trading by French resident companies is governed mainly by the specific legislation as clarified by the Administrative Comments on 20 April 1988. However, it is interesting to note that as will be seen with the United Kingdom later, these rules specifically do not apply to commodity derivatives trading. By contrast, the Japanese tax authorities have not yet issued an official opinion on the treatment of options transactions. In the United Kingdom, there is some specific legislation but, in the main, generally accepted accounting principles are used (as in Japan) to determine taxable profits from these activities. However, the Taxes Act 1988, and the Capital Gains Act 1992 both contain provisions that are of relevance to futures and options transactions. More ominously, in the last year significant new legislation has been introduced to deal with the taxation treatment of financial instruments. At present, this legislation specifically applies only to certain interest rate and currency derivatives. However, it should be noted that the UK Inland Revenue have the power to extend there rules to cover commodity derivatives should they feel this is required.

As was seen with the accounting treatment of futures and options transactions, in the area of taxation there are two distinctions that need to be made in respect of the taxation treatment, and the timing of taxation of futures and options transactions profits (or losses).

1. Is the transaction of a capital or revenue nature?
2. Is the profit or loss (whatever its nature in (1)) taken, for tax purposes, on a mark-to-market basis, or on a realisation basis (ie the tax deferred until the profit is realised).

Again, in respect of these considerations, there are some similarities between the jurisdictions of the world's major financial market centres.

The Capital versus Revenue basis of taxation has important implications. In Japan, for example, most futures and options gains are included in the revenue income of corporations, or individuals (either as business income, or as miscellaneous income) with the amounts taxed following Japanese generally accepted accounting principles. However, a form of capital profit can be made in circumstances where the property underlying the transaction is of a type that is includible in the inventory of the option holder. In such circumstances, the entire cost of the option must be capitalised. In the event that the option is exercised, no gain or loss is recognised; instead, the cost of the option is added to the purchase cost of the underlying property. If the option is sold or expires, the gain or loss is recognised in the tax year of sale or expiration.

Similarly in Singapore, gains and losses from hedging transactions are taxed/deductible (or not taxed/non deductible) in accordance with the underlying asset or liability. Where the underlying asset is capital in nature, in certain circumstances this may be advantageous to individuals as non-trading capital gains earned by individuals are not subject to tax.

A further example of this distinction as applied in the markets of the Pacific Rim is Hong Kong. In Hong Kong capital gains and 'offshore' profits are not liable to Hong Kong tax. However, Hong Kong sourced profits resulting from a trade or business carried on in the colony are taxable. Although onshore capital profits (determined by the underlying asset) are non-taxable, it is likely to be difficult for a financial institution to argue that profits from futures and options are capital, since any hedging transactions relate to underlying assets that make up part of the trading stock of the business of the financial institution.

On the other hand, non-financial institutions earning onshore profits in the colony may claim that the tax treatment of derivatives used for hedging purposes should match that of the underlying assets. Accordingly, while speculative use of derivatives will be treated as giving rise to taxable profits and deductible losses, on hedging transactions where the underlying assets or liabilities are of capital and long-term nature, no Hong Kong tax will arise, as these will be capital gains. Needless to say, this could be subject to change when the colony is handed back to China in 1997.

Finally, in the United Kingdom, generally accepted Inland Revenue practice and the earlier mentioned legislation leads to the same Capital or Revenue distinction. In effect, transactions in oil futures and options are deemed to be capital in nature unless they are regarded as profits or losses of a trade. This means that the taxation treatment must first be determined by establishing whether a taxpayer's transaction, gives rise to trading profits or losses. This is usually a question of fact and degree, depending on the circumstances of each individual case.

Where a transaction is ancillary to a trading trans-

action then this is a trading profit or loss for tax purposes. Where a transaction is ancillary to a non-trading transaction, the profit or loss is capital in nature. It should be borne in mind that where a futures or options transaction is not clearly ancillary to another transaction, the transaction may be a trading transaction in its own right, and the Inland Revenue will usually take the 'Badges of Trade' into account in such circumstances.

The second consideration, the mark-to market or realisation basis of taxation very much follows UK GAAP. This has been further reinforced by recent tax cases such as Johnston versus Britannia. However, where the transaction is treated for tax purposes as capital in nature any gain or loss is taxed on a realisation basis. For non-corporates, a chargeable gain also has the advantage of the extra personal allowance in this respect. In other cases, eg. speculative trading items (normally taxed as income, normally on a mark-to-market basis) or hedging (where income is taxed in accordance with the underlying asset or liability) the actual amount of income is determined by UK GAAP. A similar situation exists in the United States, however the capital versus revenue rules can be more complex in some circumstances and depend in part on the nature of the contract that the parties have entered into. For corporations in the United States, capital and trading income tax rates are the same, so the distinction has little effect. However, for non-corporates, even the nature of the capital gain (long versus short term) can have significant tax repercussions.

## Conclusions

In general, as seen above, where an individual or company enters into oil futures and options contracts, then depending on the nature of the contract and the residence of the establishment undertaking the contract, there are significant accounting and taxation considerations. Depending on circumstances the timing, and amount of, profit and tax charge can vary a great deal. There are still very few countries that have enacted specific tax legislation in this field, although this situation does appear to be changing. From the accounting perspective, lessons from Barings and Daiwa will help to focus attention, although any pronouncements are more likely to relate to internal control issues rather than accounting issues per se.

*The above is correct to the best of our knowledge and belief as at 6 November 1995. It is, however written as a general guide, so it is recommended that specific professional advice is sought before any action is taken.*

*Arthur Andersen is authorised by the Institute of Chartered Accountants in England and Wales to carry on investment business.*

# *Looking at logistics*

*By Kim Jackson*

*Over recent years, the drive by the oil industry to improve operational efficiencies and cut costs whilst sustaining high levels of safety has gathered pace, particularly in the areas of primary supply, storage and handling and road distribution.*

Recognising the fundamental role that logistics plays in such a business philosophy, the Institute of Petroleum held a conference addressing this topic in October. Entitled *'Safe Logistics in a Changing World'*, the conference focused on the component parts of the total logistics chain, highlighting recent and known future changes to the operating environment and the effects these will have on the efficiency optimisation of the oil sector. A number of the presentations demonstrated that safety remains high on the agenda and that it has not been compromised during the continuing drive to improve efficiency.

## Coastal kick-off

A total of nine papers were presented during the course of the day-long conference which was chaired by Richard Comber, Distribution Manager, Shell UK Ltd Downstream Oil. Delegates first heard from John Watson, European Shipping Co-ordinator of BP Oil, who deftly summarised the changes that have taken place in Europe's coastal shipping operations over the past 25 years in just 25 minutes!

He explained that there has been a significant reduction in the number of coastal tankers needed to meet oil company supply, distribution and refinery demand during this period as the result of exchange deals between the oil companies which provide the participants with local product availability and eliminate the need to ship product from one end of the country to the other. This development has also seen the construction of a few strategic terminals capable of accommodating larger vessels, such as the 6,000 tonne super coasters which are stemmed at Aberdeen.

Meanwhile, emphasis on environmental issues such as pollution, volatile organic compounds (VOCs), ballast water treatment and the cost of the new kit to enable legislative compliance has led to some of the smaller terminals struggling to remain in business, particularly those where throughput is not sufficient to support the investment needed to upgrade facilities.

Based on BP's own experience, Mr Watson stated that the elimination of 'internal barriers', allowing supply and distribution departments to 'unite', the ending of restrictive practices and greater use of contractors has brought significant flexibility and cost reductions to BP's coastal fleet operations in recent years.

He then went on to state that the shipping industry remains 'the poor relation' in Europe and that the playing-field within this sector is still far from level. 'I do not see further improvement until British seafarers can benefit from greater training assistance, relief from National Insurance and income tax,' he said. 'Currently the remuneration available to officers serving on deep-sea vessels is greater due to a tax-free income, consequently the incentive for younger officers to serve on coastal vessels has been eroded. In today's world of safety, quality and environmental issues, this balance has to change in order to retain the current standards of excellence.'

Mr Watson concluded by saying that the drive to improve the cost-effectiveness of coastal operations hinges on the oil companies having integrated supply and distribution systems in conjunction with ship-owners providing sufficient numbers of vessels of the right capacity to meet affreightment needs. Most importantly the marine terminals and ships need to be efficient, environmentally friendly and manned with well-trained and professional staff to enable quick, quality-sensitive turnarounds which minimise delays and enhance safe operations.

## On the right track

Moving to land issues, Julia Clarke from Rail Freight Group/Clarke & Co presented a brief overview of the UK rail privatisation process and its impact on costs, service and safety. The petroleum industry is a high-volume user of the rail distribution network for bulk movements of hazardous goods from often remote production plants as rail offers significant economies of scale compared with road transport. Furthermore, as far as the public is concerned, the large-scale carriage of petroleum products by rail is preferable as this mode of transport is seen to be more environmentally friendly with less emissions and far less intrusive overall than road haulage. Ms Clarke pointed out, however, that no matter how desirable rail transport might be to the petroleum sector, it must compete commercially and find a niche between the competing modes of sea, pipeline and road.

She explained that the commercial history of rail freight has not been very promising. For example, immediately prior to the Railways Act 1993 British Rail's trainload freight business was deliberately shedding substantial freight flows which it claimed were cash negative or did not meet the required rate of return. This was in the context, however, of a grossly inflated cost base and Ms Clarke stated that she expected to see many of these flows of 20-50,000 tonnes a year returning to rail in the future, providing that their *raison d'etre* is still there. She emphasised that the essential point was that the past performance of rail freight is not a good indicator of future potential but, in order to succeed, rail must offer cost-effective and flexible services, including less-than-trainload traffic.

The Railways Act 1993 marked an important stage in the development of the UK rail sector and Ms Clark provided a brief summary of the key features of relevance to freight:

- **Formation of Railtrack** – Railtrack was created as part of the separation of rail operations and infrastructure. Responsible for the management of the rail network on a commercial basis, the maintaining of safety standards, timetabling and investment, the company is due for flotation on the stock market next Spring. Railtrack currently gets its direction from the Secretary of State and operates under licence conditions. Its activities are subject to regulation and will continue to be so, even if privatised.
- **Transfer of BR freight business** – British Rail freight business was transferred to the private sector as a result of The Railways Act 1993. Three trainload freight companies were established – Transrail, Mainline and Loadhaul – as well as Rail Express Systems (RES), which runs trains on behalf of the Post Office, Railfreight Distribution (RfD), which handles Channel Tunnel freight, and Freightliner which is responsible for container traffic.

The timetable for privatisation of these companies varies. Freightliner has been for sale for some time and there are currently three shortlisted bidders, while final bids for Transrail, Mainline and Loadhaul are scheduled for 8 December. According to Ms Clarke, some speculation remains about the reunification of trainload freight under one bidder, possibly the Wisconsin Central Transportation Corporation. Final bids are currently being evaluated for RES, while there is no timetable for privatisation of RfD at present.

- **Open Access** – The Railways Act 1993 gave anyone the right to run trains provided they meet group standards and can demonstrate that they will operate safely. While such open access is a theoretical possibility, Ms Clarke explained that it is not a simple process and there are a number of barriers to entry. These include the lack of secondhand availability of locomotives and the high levels of expense (£1.5-2 million per unit) and lengthy leadtime required for newbuilds, expensive insurance liabilities (all operators must carry £155 million third-party liability) and the lack of access to drivers, route knowledge and driver training. Furthermore, the safety case, which covers all aspects of safety from operational considerations to equipment maintenance and training, is a substantial and time-consuming document to compile and must address several thousand group standards, while access to ancillary facilities and track access must be negotiated and paid for to what is, effectively, the competition.


**Rail privatisation is expected to provide the UK petroleum industry with a cost-effective and flexible freight service.**

Despite these challenges, a number of companies have taken advantage of open access, including National Power for movements of coal to its Drax power station and British Nuclear Fuels which has control of movements of radioactives to and from Sellafield. According to Ms Clarke, there are few others who would wish to make use of open access – perhaps PowerGen, British Steel or groupings of major users such as aggregates companies along the lines of Mendip Rail, a joint venture between Foster Yeoman and ARC.

- **The Regulator** – John Swift is the Regulator appointed to see fair play and to regulate the railway system. His duties are to promote the use of the railways for the carriage of both passengers and goods, to promote competition, efficiency and economy in provision of rail services and to minimise regulation. His functions include the granting of licences for capital investment in rail freight facilities and track access charges, exemptions and licence conditions, the regulation and, if necessary, enforcement of all access agreements and the publishing of information such as track charging regimes for freight.

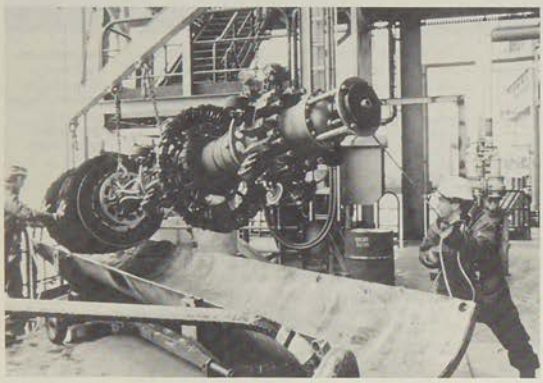
Finally, Ms Clarke addressed the issue of safety. She stated that while the safety requirements for rail transport are more flexible than they have been in the past, they are no less rigorous. 'There is no question of unsafe operators being allowed on the railways,' she said. 'However, the breakup of the railway has led to some insurance issues and risk analysis and management is likely to become increasingly important in this area.'

In conclusion, Ms Clarke reiterated that privatisation and the resulting competition above the tracks will produce cost-effective and flexible services, while regulation should keep operational costs and freight prices under control.

## Management in the pipeline

After coffee, delegates gathered to hear about pipeline integrity management from David Whitman, Project Manager, BPA. Pipeline integrity management is the collective name given to a number of activities put in place by responsible pipeline operators to, at best, prevent and, at worst, minimise product spillage. It represents a large investment in financial and manpower resources and the operator can only decide how much to invest in each of the activities within the pipeline management integrity process after careful consideration and quantification of all the risks and consequences associated with a particular system has been made.

The main aspects of pipeline integrity management can be segregated into activities which should be carried out on a regular basis and those that should be considered as additional requirements. Regular activities include wayleave management, corrosion protection, on-line inspection, pressure testing, leak detection and emergency planning, while additional requirements include reviews of operating and maintenance philosophy, design reviews, pigging programmes, safety audits, surge analysis and procedure reviews. 'The latter additional requirements are particularly relevant following any pipeline modification works or any change to the operating procedures,' said Mr Whitman.



**Pigging programmes are a vital part of pipeline integrity management**

He concluded by saying that each pipeline operator must develop a pipeline integrity management programme designed to meet the individual pipeline system requirements. The programme must be continually reviewed as pipeline conditions change and particularly as the age of the pipeline increases. Activities may be shared with other operators in a bid to drive down operating costs, while subcontracting remains an alternative option.

## A breath of fresh air

A year ago, the European Parliament and Council finally adopted the so-called 'Stage 1 Directive' which mandates vapour emission controls during the storage and handling of motor gasoline (mogas) in the chain from refinery to service station tank. The timetable for the introduction of these measures is dependent on the mogas annual throughput at storage tanks, bottom loading and vapour recovery units at terminals and vapour balancing systems at service stations, and comprises three phases of three years each, starting on 1 January 1996.

Brian Smithers, Environmental Specialist, BP Oil Europe, focused on the problems facing industry as the result of the often unclear or contradictory wording of the Stage 1 Directive in his presentation 'Storage and Handling: The Challenges of Implementation of VOC Emissions Legislation and Cost Minimisation'.

The first of these concerns mogas tankers. Any new tanker will need to have a plate attached specifying the maximum number of loading arms that can be used simultaneously, at a set back pressure in the vapour line, before the compartment pressure relief valves lift. According to Mr Smithers, this requirement challenges both the tanker builders to come up with a specification method and the oil industry to set up a process by which this can be policed in practice. It is also mandated that emissions due to dipping operations will be prevented from new tankers after 1999. This means that the oil industry and the suppliers must work towards a simple alternative to this device. However, the dip stick is the legal measuring device under Weights and Measures legislation, so this will also necessitate a change.

Meanwhile, rail tankers which load at terminals with a vapour recovery unit (VRU) will have to be fitted with a device to permit the pressure in the tanker to be relieved in a controlled way before the loading hatch is opened. This 'depressurisation coupling' is being standardised by CEN. However, the proposed specification results in a device that fouls the UK loading gauge and, thus, rail tankers will have to be fitted with a non-standard coupling and will require a UK derogation.

The 'processes' of storing, loading and unloading mogas at non-refinery terminals are to be regulated as Part B processes under the 1990 Environmental Protection Act (EPA) by Environmental Health Officers (EHOs). According to Mr Smithers, this leads to concern about the consistency of implementation and also raises the question of 'What will be the next processes at terminals to be included under the EPA?'

In order to reduce the impact of the costs of implementing Stage 1 at terminals, strategic decisions will have to be made soon about whether to retain marginal facilities, set up joint ventures, convert all bays to bottom loading, maintain throughput to below the legislative thresholds, and to install VRUs now or just in time to meet the legislative deadlines. At rail loading facilities, major modification will be necessary to convert to vapour collection and Mr Smithers posed the question of whether, in the current pre-rail privatisation climate, these costs will result in rail transport becoming uneconomic with a knock-on effect on the terminal network?

Moving on to service stations, Brian Smithers pointed out that the decision to regulate unloading and storage under the EPA using EHOs has resulted

in duplication of authorities responsible for these facilities and brought widespread condemnation from the industry. 'Implementing Stage 1 under the EPA has had the effect of making storage a 'process' with the consequent requirement to control losses from tank vents between deliveries, ie breathing,' he said. 'As with terminals, the throughput of the smaller sites, and their location, become critical to avoiding or delaying the costs of Stage 1.' Furthermore, the issue of the continuation of split compartment deliveries, which involve dipping operations, remains unresolved. 'If such deliveries are no longer permitted at sites with vapour balancing installed, there will be major impacts on deliveries to small service stations' he said.

In conclusion, Mr Smithers stated that while the current debate between the industries and the regulatory authorities had done much to clarify many areas of uncertainty and removed some obstacles to the smooth implementation of Stage 1, there are still a number of challenges facing not only the oil industry and equipment suppliers but also the regulators.

## Focus on the environment

The afternoon session kicked off with a presentation from Philip Chatfield, Principal Pollution Officer, National Rivers Authority. He explained that 'In order to identify what the future might hold with regard to minimising the impact on the environment of transport related accidents, we need to study the recent past'. A number of major accidents involving the carriage of petroleum products in the last two years indicate that problems remain to be addressed, but it is important to put these incidents into perspective.

Huge volumes of product are moved about the country by road, rail, pipeline and water, and the frequency of spillages is low. A National Rivers Authority (NRA) report on *'Water Pollution Incidents in England and Wales in 1994'* shows that transport related incidents accounted for 7 percent (1,783) out of a total of 25,415. Of these, 14 were major incidents, 13 of which were related to road transport.

Mr Chatfield suggested that there are a number of issues which need to be looked at in order to minimise the risk and consequences of future road related incidents:

- Tanker design including the strength of internal partitions and the design of breather caps and vapour recovery systems
- Road side signs identifying pollution control installations
- Provision of standardised drainage plans for highways
- Standard designs for highway drainage pollution control installations
- Lists of pollution control equipment and locations
- Self help arrangements between the companies and the NRA
- A standardised pollution pack for road tankers.

The second half of the presentation looked at the role of the UK Environment Agency. Established by the Environment Act 1995, the Environment Agency is to take on the duties of Her Majesty's Inspectorate of Pollution (HMIP), the NRA and Waste Regulation Authorities from the 1 April 1996. While, in general, existing legislation covering these three areas will remain in place with a few minor amendments, there will be a greater emphasis on guidance from the government for the direction that the Agency takes.

The principal aim of the Agency will be to discharge its functions to protect or enhance the environment taken as a whole, and to promote sustainable development in line with statutory guidance. 'The government has made it clear that it wants the Agency to work in partnership with industry to maintain and improve the quality of our environment and to develop clear and readily available advice on pollution prevention and control' said Mr Chatfield. 'The challenge for the Agency will be to build on the best practices from each of its component bodies to produce an effective and coherent policy which delivers just this.'


**While recent debate has done much to smooth implementation of the Stage 1 Directive governing vapour emission controls during the storage and handling of mogas, a number of challenges still face the oil industry and its regulators**

## Getting the most out of logistics

Consultant Terry Sear then addressed the issue of logistics optimisation, first summarising the methodology of logistics optimisation using simple 'egg' diagrams to compare and cost alternative logistics chains to supply customers with product from a refinery. Though simple in theory – each customer being assigned the cheapest total logistics route – there are constraints on the system that distort the natural (unconstrained) distribution pattern. 'The problem for the logistics planner is finding the cheapest cost of supplying customers while living within these constraints,' he said.

Outlining the key business issues behind logistics planning, Mr Sear suggested five questions need to be asked by the logistics planner:

- What product quantities should be (a) acquired from own refineries and (b) from third parties?
- Which product exchanges should be arranged?
- Which primary transport routes should be used?
- Which distribution terminals should be used?
- Where should the boundaries of distribution terminals be?

He went on to emphasise the importance of product exchange deals to the logistics chain which in effect create a source nearer to the customer than

**Onboard computers offer road tanker operators a number of financial and operational benefits**

would otherwise be the case, providing savings in primary transport and road transport/terminal costs. 'The creation of another supply source, whether by exchange or direct purchase, has a ripple effect throughout the entire logistics network,' he said. 'The economic viability of terminals may be effected and terminal boundaries will most certainly be altered.'

He concluded his presentation with an explanation of the vital role of computerised planning models to achieve optimisation. Tailored to meet individual customer requirements, such systems rapidly find the optimum logistics solution, taking account of data – customer demand, supply availability, exchange possibilities, costs and constraints – simultaneously to produce clear numerical reports and maps to support decision making (see *Petroleum Review*, February 1995).

## Taking computers on board

Computers remained the topic of discussion in John Morgan's paper. Looking specifically at onboard truck computers (OTCs), he explained that they performed two quite separate functions – first to monitor and control some of the operations on the vehicle itself as well as some external systems at loading gantrys or at customer premises; and secondly to provide an interactive mode whereby the driver can input or extract information relevant to the operation he is carrying out at the time. This information can be handled in a batch mode when the truck returns to the base or there can be direct radio communication allowing two-way data flow in real-time.

Using these capabilities, OTCs offer a number of benefits to the operator. They can monitor various safety functions, such as speed, distance from the vehicle in front and various key physical on the road truck safety parameters, including tyre pressures and lights. Driver hours can also be monitored by an electronic tachograph. Loading and discharge operations can also be supervised and controlled to increase both safety and product integrity.

In addition, OTCs can, in limited areas, help ensure compliance with certain transport legislation, particularly gross vehicle weights and individual axle load regulations. This has obvious additional safety benefits as well as helping the operator to avoid prosecution.

Sophisticated fuel management systems have also come to the fore in recent years in a bid to help reduce operating costs. P&O Roadtanks, for example, claims to have reduced fuel costs by as much as 12 percent through the use of a Leafield-manufactured 'VeMIS' system. OTCs can also record volumes sold, produce invoices for customers, monitor deliveries where the customer is not present and control sealed parcel deliveries, all of which offer value-added service for the customer and reduced costs for the operator.

'It is important to recognise that an OTC is a piece of electronic equipment introduced into a potentially dangerous environment and correct design, certification and installation are very important,' concluded Mr Morgan. 'To avoid proliferation of equipment, OTCs should ideally be modular in construction, allowing new functions to be added easily.'

## Contracting in versus contracting out

The afternoon conference session originally planned was to have been a debate between Steve Bradburn, Managing Director, P&O Roadtanks, and Aidan Dwan, Distribution Manager, Fina plc, on the pros and cons of contracting out of house versus contracting in-house. However, Fina's recent decision to engage the services of a third-party contractor threw the proverbial spanner in the works and proffered a slightly different slant to the joint presentation than was first intended!

Mr Bradburn summarised the financial and operational benefits and strategic advantages to be accrued through the use of a third-party contractor such as P&O Roadtanks. Advising companies not to compromise but to 'go for the full 100 percent' outsourcing of transport requirements, he explained that a contractor can provide flexibility in terms of manpower, vehicle and management resources – there when needed and gone when not, thereby releasing a customer's capital for investment in core business activities. Furthermore, a contractor can provide alternative, flexible distribution solutions in areas such as order taking, routing, scheduling and vehicle specification and maintenance.

Use of a contractor also provides an oil company with greater access to new technologies aimed at improving logistics distribution and communications, all of which may well have been outside the financial budget of an in-house fleet. Furthermore, the use of a pan-European contractor such as P&O

Roadtanks can offer a wider geological perspective and greater control of Europe-wide or global distribution operations.

In conclusion, Mr Bradburn stated that using a contractor, even given all the advantages, 'takes time and commitment and a real desire to make it work'.

Recent developments at Fina led Aidan Dwan to look at both sides of the coin in his presentation which highlighted the points in favour of an in-house distribution fleet whilst providing a coherent explanation for Fina now using a third-party contractor!

He explained that Fina had kept its distribution operations in-house for the past two and a half years because the company felt it had greater control over costs, customer service and quality. However, in reviewing its distribution operations, the company had concluded that it could only maintain an in-house fleet if:

- costs could be managed down
- driver motivation and commitment could be maintained
- competitiveness against the industry could be improved.

The company felt that the effective management required to achieve the above criteria was no longer achievable through unionised collective bargaining within Fina and, thus, decided to move to personal contracts. Fina's unionised workforce was advised of this decision in June and, as a result, balloted in favour of industrial action in August. This led to Fina transferring employment of 125 of its drivers from six depots to United Transport (UK) Ltd in September.

Mr Dwan then went on to discuss the issue of 'safe' logistics. He stated that for many oil companies the logistics chain from the refinery gate to the ultimate consumer is largely if not entirely controlled by a contractor, a fact that raises a number of issues, in particular the contractor's knowledge of the business, transference of the oil company's expertise to the contractor and insurance liability. 'In my opinion there is a longer-term need to ensure true partnership between the oil industry and its contractor partners to ensure cost-effective and environmentally advantageous methods of addressing safety issues,' he concluded.

## Preparing for the worst

Reiterating Mr Dwan's call for safety to be uppermost in the minds of both contractor and oil company, David Upton, Director, Stirling Reid concluded the IP conference with a look at emergency planning in the logistics chain. He explained that as oil companies have increasingly contracted out their distribution operations, there has been a tendency for them to scale down their own emergency response capabilities, working on the principle that the logistics contractor will handle any problems as 'that is what they are paid for'.

'Such a philosophy has often led to there being an "emergency gap"', stated Mr Upton. He cited three reason for this:

- logistics contractors vary in their response capabilities and, because costs are under pressure, there may be little spare capacity to respond
- costs of environmental incidents are rising
- responsibility is shared but often it is not clear exactly who is responsible for what.

He went on to point out that any emergency does not end with the 'putting out of the fire'. The second phase involves the company endeavouring to retain its reputation and profitability. Here the company is on its own with no support from the authorities who are trying to identify blame and recover costs. 'It is this stage of the emergency that hits your bottom line,' said Mr Upton, 'and it is more difficult to anticipate and manage than the incident itself.'


**Fina recently joined a long list of oil companies to contract out its fuel distribution business**

In a bid to help improve emergency preparedness in this climate, his company has suggested five practical steps be employed:

- Sort out expectations at the contract stage
- Ensure all companies involved understand each others' response systems
- Prepare 'bridging documents' to co-ordinate existing response plans
- Plan for recovery as well as disaster response
- Train and practice.

'Using these steps will build up your own confidence,' Mr Upton stated, 'and increase your clients' confidence in you.'

## The final word

The widespread interest in the 'Safe Logistics in a Changing World' conference reflected the key role that logistics plays in the business philosophy of today's oil industry. All the speakers emphasised that safety must not be compromised in the drive to improve operational efficiencies and many of the papers demonstrated that, indeed, safety remains high on the agenda and will continue to do so in the future.

# 'The UK offshore oil and gas industry is one of the greenest around'

*UK Trade and Industry Minister Lord Fraser of Carmyllie detailed the current environmental credentials of the UK offshore industry on 31 October when he presented the Enterprise Oil/Heriot-Watt University Environmental Award to an academic research team monitoring oil pollution in water* *(see page 555).*

### He said in part:

Although recent publicity might suggest otherwise, the UK offshore oil and gas industry has a very good environmental record and is well regulated. The sponsorship by Enterprise of an award such as this shows that the industry is striving to improve still further its already impressive record.

### Pollution sources

As most, if not all of you, will understand, the main potential sources of pollution from offshore installations are:

- Oil – from spills, produced water and drill cuttings;
- Atmospheric emissions – from flaring, exhausts and venting;
- Chemicals – from drilling and production activities.

### Oil pollution

Oil pollution from offshore installation spills is minimal, particularly when compared with other sources of oil. There are no recorded incidents of environmental damage caused by spills from installations on the UK Continental Shelf. In addition to the reports made by installation managers themselves, overflights are carried out on behalf of the Department of Trade and Industry to inspect all oil installations in the North Sea, to verify the frequency and quantities of oil spilled. For example, between April 1994 and March 1995 over 1,839 observations of installations revealed 92 positive detections. That may sound a lot on the face of it but the average spillage at those positive detections was only 11.3 litres of oil, or about 2.5 gallons.

Water is often contained in the oil produced from wells offshore. This water is cleaned before being discharged back into the sea and the statutory limit for oil-in-water is 40 parts per million. A minuscule amount. And most operators manage to reduce the oil-in-water to levels lower even than that.

Oil on drill cuttings has, in the past, been the one type of oil discharge which has given rise to some concern, due to its localised effects on seabed life. These effects have normally been limited to an area within a 500-metre radius of the production facility. Nevertheless, the United Kingdom has implemented a succession of reductions in the allowable oil content of discharged cuttings. For exploration wells this is now 1 percent and the same limit will apply to development drilling from 1 January 1997.

The degree of oil pollution arising from both produced water and drill cuttings will be reduced still further by research and development projects sponsored by oil companies. One of these projects – to improve de-oiling of drill cuttings to below the 1 percent limit – is also being supported by my Oil and Gas Projects and Supplies Office. The Orkney Water Test Centre – part of Heriot-Watt University – has undertaken a major investigative programme called 'Treatment of Water Offshore.' It covers the reduction of contamination by injecting produced water back into the well; on-line monitoring of oil droplets in seawater; and studies of potential toxicity of chemical additives used offshore, all of which have contributed to the minimisation of the impact of chemicals on the offshore environment. This programme too is supported by a number of oil companies. And of course, the photoacoustic detector developed by Heriot-Watt, Napier and Speyside Electronics contributes in a quite obvious and extremely useful way to the programme's objective of monitoring more accurately the presence of oil in seawater (see page 555).

### Atmospheric emissions

Atmospheric emissions are a cause for concern due to their potential as causative agents of global warming, ozone depletion and acid rain. The offshore industry has undertaken studies which estimate UKCS emissions to be less than 3 percent of total UK emissions. And that should be seen alongside the fact that the offshore oil and gas industry produces two-thirds of the UK's primary energy. Moreover the industry has made good progress in eliminating chlorofluorocarbons from its operations and has recently drafted a set of guidelines on atmospheric emissions aimed at minimising avoidable releases.

### Chemicals

Lastly, chemicals are used in varying amounts during both the exploration and production phases offshore and some of these chemicals are discharged into the sea. The Department of Trade and Industry, in conjunction with industry and government colleagues, has for some years been running the Offshore Chemical Notification Scheme. This scheme seeks to regulate the discharge of harmful chemicals to the sea by categorising chemicals into five groups based on their toxicity. Pre-notification of intent to discharge is required for varying tonnages of each group, with higher tonnages being permitted for the less harmful chemicals. This method of direct control

over chemical discharging has successfully provided an incentive to manufacturers and suppliers to bring lower toxicity products onto the market.

The upshot of this review is that the UK offshore oil and gas industry is one of the greenest around.

## Environmental promotion

The protection of the natural environment rightly enjoys a prominent place on the political agenda. However, any measures taken to protect the environment must be based on sound scientific data and analysis. Sadly, emotional arguments are taking precedence in some influential quarters of the environmental movement. It is not enough to have one's heart in the right place; clear thinking, and that means sound science, is also needed.

To present arguments for environmental measures in the manner of a television commercial rather than that of a scientist can do the cause of environmentalism great harm. The selective use of information may be appropriate to the television commercial, where the aim is to convince an audience of a particular point of view which is not necessarily supported by all the known facts. But it is not appropriate to the search for scientific truth, A scientific approach requires neutrality and a willingness to be led by the facts. While there is most definitely a place for environmental promotion, it must be led by environmental science and not the other way around.

## Fate of Brent Spar

The argument over the decommissioning of the Brent Spar is a good case in point. The question was considered scientifically by many distinguished bodies and deep-sea disposal in the Atlantic was identified as the best possible environmental option. Greenpeace, however, adopted the dogmatic and emotional position that deep-sea disposal must, of its nature, be hazardous.

The scientific evidence does not support the Greenpeace position. The independent, objective report by Det Norske Veritas confirms that the government's original approval for the disposal of the Brent Spar was soundly based. Shell will need to study the report before drawing up further proposals for submission to the government. Shell have confirmed that they are still considering all the options. Any alternative solution must address those questions which led us to conclude that deep-sea disposal was the best practicable environmental option. Let there be no doubt that deep-sea disposal is still on the table.

UK policy on decommissioning remains the same. Abandonment programmes will continue to be considered on a case-by-case basis, in the light of a comparative assessment of the alternative options. This will lead us to a sensible conclusion in each case and that conclusion will be reached in the light of rigorous scientific examination. The particular problems associated with the Spar show the importance of a case-by-case study to establish the best practicable environmental option.

## Academic success

Returning now to the reason for today's gathering,the academic excellence demonstrated by the winners of this award. Academic excellence of this sort will be beneficial to the environment but I hope it will also benefit the balance of payments! It is certainly the intent of this project to transform itself from an academic success into a commercial success and it offers an excellent model for others to follow. The competitiveness of our industry depends to a large degree on the strength of our scientific research. This has always been the case and that is why the government placed such emphasis on the further integration of industry and academia in the recent Competitiveness White Paper.

A great deal of the knowledge, expertise and innovative products developed by and with universities and research institutions can be commercialised and eventually exported for profit. This is feasible in most, if not all spheres of scientific enquiry and environmental research presents a considerable opportunity.

It is important to remember that while protecting the environment has costs for society there are benefits too – beyond the obvious one of having a safer and more pleasant environment!

The world market for equipment and services used to measure, prevent, correct or limit environmental damage is now comparable in size to aerospace or pharmaceuticals – about $210 billion currently. It is expected to show strong growth well into the next century, driven by growing awareness of the need for sustainable development. And the UK's environmental industry is doing well. In 1992, exports exceeded imports by 70 percent, although our share of OECD exports is only half that of Germany. Of course, the environmental industry cuts across industrial classifications and applications of environmental knowledge and technology need not be restricted to the offshore oil industry. Diversity in industry, as in nature, is a source of strength.

The Technology Foresight programme has highlighted a myriad of economic opportunities arising from global environmental change, many of which relate directly or indirectly to the oil and gas industry. As governments seek to fulfil their obligations under international agreements on the environment – from global measures such as the Climate Change Convention down to regional measures such as the North Sea Protocol, not to mention various EU directives – new markets and opportunities will open up. Technological innovation will be needed covering process and product modification and redesign. New processes, products and services will be needed as well as better monitoring, and impact assessment. We must all work together to realise these opportunities. Teamwork of the sort demonstrated by Heriot-Watt, Napier and Speyside Electronics will be crucial.

The UK environmental industry's principal strengths currently lie in water and waste treatment; monitoring and instrumentation; and environmental consultancy. I have high hopes that our industry with the help of projects such as this one, will develop and add to those strengths. The potential economic spin-off from having a strong science base cannot be overestimated.

The viability of high-tech, high value industries such as the oil and gas industry, and indeed our prosperity as a nation, depends on the success of our scientific endeavours. We have seen what academia and industry can achieve together. I look forward to further achievements.

# UK drive to cut particulate emissions

*The UK government has promised tougher emission standards for vehicles following last month's publication of two reports calling for a reduction in airborne particulates in order to safeguard public health.*

Studying international data on particulate matter less than 10 microns in diameter, often referred to as $PM_{10}$, the Expert Panel on Air Quality Standards (EPAQS) and the Committee on the Medical Effects of Air Pollutants (COMEAP) found strong evidence that airborne particulates can further impair the health of people already suffering from lung and heart disease and possibly lead to early death. They found no evidence to suggest, however, that UK pollution levels cause healthy people to suffer serious harm.

## Setting a standard

In a bid to reduce the risks to human health, EPAQS has recommended a standard of 50μg/m$^3$ of $PM_{10}$ as a running 24-hour mean. The average urban background level of $PM_{10}$ – primarily derived from emissions from road transport, domestic and commercial heating, industrial combustion, materials handling, construction and quarrying with a secondary contribution from particles formed by sunlight reacting with emissions of sulfur and nitrogen compounds – is 20-30μg/m$^3$.

However, the level recommended by EPAQS is exceeded for about 10 percent of the year at many urban sites in the United Kingdom. Indeed, some statistics suggest that daily concentrations of $PM_{10}$ in London have reached as high as 200μg/m$^3$.

Vehicle emissions, particularly those derived from diesel, are a major contributor to $PM_{10}$. In 1993, they gave rise to some 26 percent of $PM_{10}$ across the country as a whole. In urban areas the proportion is higher. For example, inventory estimates suggest that in Greater London in 1990 some 86 percent of primary emissions were derived solely from vehicle exhausts.

## Plan of action

Although the UK government is backing European moves to reduce particulate emissions, including tighter controls on emissions from diesel lorries, vans and cars which are to be phased in over the next two years and are expected to halve transport fumes by 2005, further measures are necessary to meet the new recommended limit of 50μg/m$^3$. Such steps might include:

- **Alternative fuels** The government is to publish a guide to all known trials of alternative fuels which have taken place in the past five years in a bid to boost their uptake by motorists and industry. Price differentials will further encourage the use of 'cleaner' fuels. Indeed, this has already begun with the Chancellor of the Exchequer increasing the relative tax levied on diesel by equalising the duty on diesel and petrol on a pence per litre basis last year. The November budget is expected to boost diesel fuel duty yet further and at least freeze the duty on natural gas, which already has a lower duty.
- **Traffic management measures** These may include steps to direct traffic away from black spots and to control the speed, volume and type of traffic using particular routes. Such strategies will need to demonstrate that they are not simply displacing the problem but contributing to its reduction.
- **Anti-pollution technologies** The government, local authorities and industry are conducting trials of new vehicle technologies designed to reduce particulate emissions from vehicles, eg particulate traps strapped to the vehicle exhaust.
- **Gas-fired power stations** More gas-fired electricity generation plants, which produce considerably less particulates than their oil or coal-fuelled counterparts, are planned in the United Kingdom over the next six or seven years.
- **Codes of practice** While emissions from necessary construction work are diffuse and difficult to reduce, the government is exploring how 'Codes of Practice' may help to reduce such emissions.
- **Other particulate sources** Limits on pollution from incinerators and factories are to be tightened every four years. The government has also commissioned studies into cutting particulate emissions from quarries and mines.

## Reaction from industry

Many have welcomed the report recommendations and the UK government's response. Dr Michael Frend, Director General of the UK Petroleum Industry Association (UKPIA), for example, said that the oil industry fully supported the government's intention to control particulate levels through a combination of measures in consultation with industry, local authorities and voluntary groups and pointed to the work already undertaken by the oil sector to reduce emissions. For example, some £300 million has been spent on reducing the sulfur content of diesel from 0.2 to 0.05 percent – which, in turn, would cut particulate emissions by over 10 percent – by October 1996.

Dr Frend stated, however, that larger reductions will come from the development of advanced vehicle and engine technology while in the short-term impressive improvements could be achieved through better and more stringently enforced vehicle inspection and maintenance programmes.

**Kim Jackson**

# *The development of a photoacoustic instrument for the monitoring of oil and other hydrocarbons in water*

*By Dr Hugh MacKenzie, Heriot-Watt University, Dr David Binnie, Napier University, and Speyside Electronics*

During the operation of offshore production platforms, marine contamination can occur from leakage, spillage and from the overboard discharge of process water. For every 100 tonnes of oil extracted from North Sea reservoirs, 130 tonnes of contaminated process water are discharged overboard and the current protocol limits the oil content of discharged water to 40 parts per million (ppm) averaged over a calendar month. Thus with North Sea production approaching 100 million tonnes per annum, an annual contamination of some 4,000 tonnes of oil per annum could be discharged overboard from production platforms. This situation is replicated in most offshore facilities worldwide and represents a global threat to sensitive marine environments.

The present methods for the detection of oil in discharge water are based either on chemical analysis of intermittent samples or bypass pipelines with instrumentation to detect either dissolved or dispersed hydrocarbons by a variety of optical techniques including absorption, scattering and fluorescence. Tests have shown that no single instrument entirely meets either present needs or satisfies the requirements of the future more stringent legislation which may limit total hydrocarbon content to 30 ppm or even less.

## Novel system

To meet this need and to develop a new generation of systems for environmental monitoring, a completely novel type of in-line instrumentation is being developed. The instrument has been designed primarily for the monitoring of oil in process water but will also serve in oil detection in the open sea and in the detection of oil and other pollutants in rivers, estuaries, lochs and sewage.

The principal aim of this research was to develop a commercial instrument based on pulsed laser photoacoustic spectroscopy to meet the environmental, legislative and technical challenge. For brevity this is referred to as the PAM system (Photo Acoustic Monitoring).

**This project which uses the latest in telecommunications technology to improve pollution control in the North Sea oil industry is the first winner of the Enterprise Oil and Heriot-Watt University Environmental Award, which was presented last month by Trade and Industry Minister Lord Fraser of Carmyllie.**

**The development of the winning sensor was funded by The Marine Technology Directorate, Shell Expro, Nigg, and The Paul Instrument Fund. The research team hope that the sensor will go into production within the next two years. The £25,000 Enterprise Oil award will support and accelerate this development.**

The main technical advantages are as follows:

(i) Detection of dissolved and dispersed hydrocarbons

(ii) Continuous readout of hydrocarbon concentrations

(iii) Immunity to the presence of sand and other optical scatterers in the water

(iv) Measurements which are independent of flow rates and turbulence.

*'A completely novel type of in-line instrumentation is being developed'*

In addition, the research is looking for new applications of the PAM technique in other water monitoring activities such as algae in water and heavy metals in water. Other configurations of the measuring head would allow measurement in sewage outlets, rivers and estuaries.

The researchers aim to develop this technology via a partnership with industry into a commercially viable product. The basis of a working partnership has already been established between Heriot-Watt University, Napier University and Speyside Electronics Ltd.

### Photoacoustic monitoring

When a short pulse of laser light is absorbed by the C-H bonds of a hydrocarbon molecule, the absorbed energy produces microscopic heating which in turn causes rapid thermal expansion. This process can be detected via the pressure wave which propagates from the interaction region and can be measured with a suitable piezoelectric detector. The conversion of light into sound is called the photoacoustic process and has been known in various forms in spectroscopy for many years. It involves a complex energy conversion sequence which depends on physical parameters including specific heat, thermal expansion and velocity of sound and it is the inclusion of physical processes which can make the photoacoustic process dramatically more sensitive than conventional spectroscopy. Since the photoacoustic process is an energy conversion sequence, it is not constrained by directional properties as in conventional optical systems. As a consequence there is considerable flexibility in the positioning of the acoustic detector and almost complete immunity to the presence of optical scattering. In the same way, as will be discussed later, both dissolved and dispersed components of crude oil can be systematically detected since the scattering and refractive effects within the emulsified components do not detract from the detection of the dissolved components. The acoustic signal is in the ultrasound region and is thus immune to normal mechanical noise. Also, since each measurement is completed in a few millionths of a second it is not affected by flow rates or turbulence.

*'It will make a very considerable impact on preventative monitoring'*

In practice, the laser pulse is generated via a diode laser and is delivered to the measuring head by a fibre optic link with miniaturised optics bonded on. The resultant acoustic wave is detected by highly specified ceramic piezoelectric elements and the signal is amplified by custom-built miniature electronics within the detector head. The signal is then digitised and logged into a neural data processing system which incorporates the calibration data and the resultant analysis is transmitted to a display screen as a ppm measurement.

## *'A commitment to improve'*

**Speaking on the theme of 'A commitment to improve – health, safety and the environment in the offshore oil and gas industry', Heinz Rothermund, Managing Director, Shell Exploration and Production, made the following remarks as part of the Institute of Petroleum Lecture in Glasgow at the end of October.**

On the environmental side let me focus on efforts to reduce the amount of oil discharged into the sea. The industry has already made considerable strides with this – and is pursuing more.

One source of this is the water produced from the wells. Mature fields inevitably produce increasing amounts of water – British offshore fields now produce 25 percent more water than oil. New technology to improve the cleaning of this water is being developed. Shell Expro has recently installed a hydrocyclone on one of its platforms and this is proving effective in further reducing the amount of remaining oil – below what are already very low levels. Beyond such 'end-of-pipe' solutions, Shell researchers are part of an industry project to develop a device which would separate the water and oil in the reservoir and thus reduce the amount brought to the surface by 90 percent.

More oil comes from the disposal of well cuttings contaminated with oil-based drilling muds. The industry is committed to phasing out such discharges and this is being pursued in a number of ways. Operational practices are being changed and new non-oil muds are being developed. In our northern fields, which are distant from the shore, we are testing devices to grind up contaminated cuttings and re-inject them into the ground. In our closer southern fields, cuttings are being brought onshore for disposal.

At present such cuttings are disposed of in landfill. However, this just moves pollution from sea to land. So we are investigating a system for cleaning the material. The ability to re-use the oil and salt from the cuttings, to save transport costs and – possibly – to sell the inert material would help to make this economic.

The industry has been able to reduce the oil discharged into the sea by two-thirds over the past decade. The average amount of oil lost annually through spills in the first five years of the 1990s is less than a quarter what it was in the previous five years.

## Performance results

(a) **Dissolved hydrocarbons:** Photoacoustic measurements of dissolved hydrocarbons in aqueous solutions, including benzene, pentane, methanol and toluene have been demonstrated in the range 0 - 100 ppm with an accuracy of + 5 percent.

(b) **Dispersed hydrocarbons:** Crude oil emulsions have been measured in the range 0-1,000 ppm. The oil samples are from various North Sea sources and again the measurements have an accuracy of + 5 percent.

(c) **Mixtures of dissolved and dispersed hydrocarbons:** Unlike most conventional technologies, the photoacoustic response from mixed samples of dissolved and dispersed hydrocarbons has been shown to be additive. We have demonstrated that the photoacoustic response to a varying benzene concentration in the presence of a 60 ppm crude oil emulsion is not affected by the presence of the emulsion. The comparison of expected and measured total response to benzene and crude oil mixes then the sum of the expected individual responses.

(d) **Scattering in photoacoustics:** A further unique feature of photoacoustics is the high immunity to scattering. We have investigated the effect on spectra of scattering particle concentrations up to 1,000 ppm. The scatterers increase the radius of the interaction region but decrease the length, thus the interaction volume remains substantially unaltered. Since photoacoustics is an energy-driven process and not intensity dependent, the effect of scatterers is minimal and the spectral response in unaffected.

## Development potential

The global market for this type of instrumentation is estimated at £100 million; the North Sea market is £8.5 million and at present the UK share of this market is £2 million per annum. This comparatively small share is primarily because of the technical limitations of existing instrumentation which measures either dissolved or dispersed oil components in bypass systems.

The introduction of a simple in-line system which measures all hydrocarbons in the process water and which, in addition, is virtually maintenance-free would make a considerable impact in this marketplace. The photoacoustic monitor is unique, both in its principle and in performance, and from initial reactions within the industry, it will make a very considerable impact on preventative monitoring with good prospects for wider application.

## Conclusion

In summary, a detector has thus been devised which can detect both dissolved and dispersed oil products, has a high immunity to scattering and because of its rugged design can operate in-line and in harsh environments with a detection sensitivity of a few ppm throughout a wide range of operations.

# The PETA training alliance

By Kim Jackson

*The momentum of political upheaval across the globe in recent years and the implementation of restructuring, privatisation and deregulation programmes has led to the creation of a world-wide demand for petroleum education and training as oil and gas companies strive to meet the demands of today's safety, quality and cost-conscious international market-place.*

A new grouping, known as The Petroleum Education and Training Alliance (PETA), was forged this April in order to meet the challenge. Comprising nine members from UK universities, oil and gas colleges and specialist training organisations with overall co-ordination by The British Council, PETA provides an all-encompassing service for the international oil and gas industry, offering British expertise in exploration, oilfield development, gas exploitation and marketing, supply, distribution, refining, petrochemicals and other areas of petroleum management, technology and economics and even training in the use of 'professional English' for the industry.

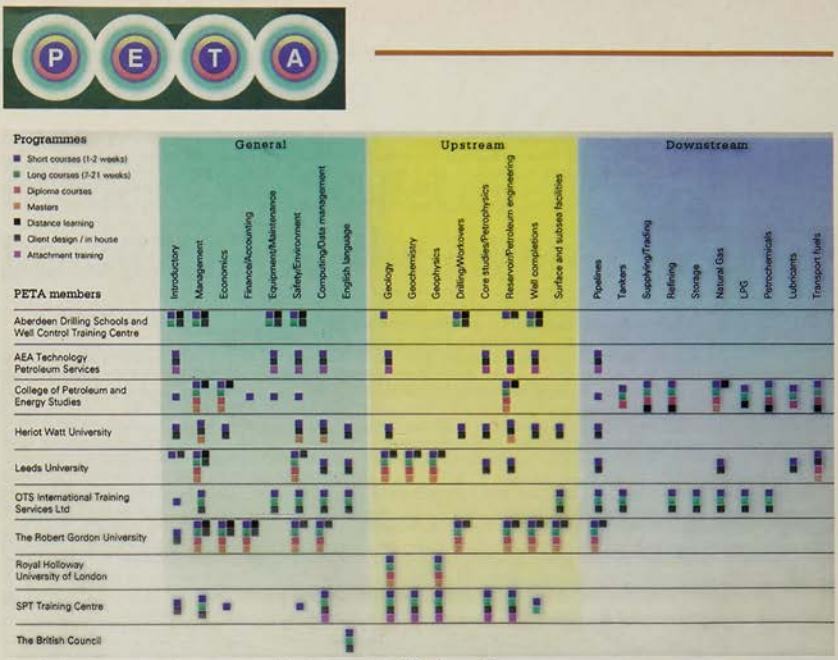
**Professor Derek Fairhead (left) Managing Director of Leeds University's Geophysics Exploration Technology company and Dr Graham Stewart, Director of the University's MSc Geophysics programme**

## Tailored training solutions

PETA's mission statement is the provision of 'a comprehensive, responsive and innovative service which makes it easier for the client to access the skills and knowledge required to move their business forward'. This simple statement belies the complexity of supplying such a service as the needs of individual oil and gas companies vary widely, embracing:

- the development of staff at all levels
- the enhancement of oil and gas industry business management skills
- developing an understanding of new petroleum technologies and operating techniques
- the development of in-company training schemes
- training to maintain and improve existing infrastructures efficiently and safely.

Work hinges on the preparation of tailored training projects which best fit an individual client's needs. Solutions may include distance learning, in-company programmes delivered on home ground, project-based learning or competence-based diploma programmes. There is also a range of mod-




ular diploma or masters degree courses leading to formal qualifications, most of which are UK-based but some can be 'exported'.

## Benefits all round

Not only the oil and gas companies benefit from the service offered by PETA. The members too have accrued a significant marketing advantage by joining forces. 'Most of the UK providers of petroleum education and training are small, relative to the size of oil and gas companies, and do not have the resources, either in terms of finance or manpower, to cover the many countries where the British Council has offices,' says David Sanderson, PETA Co-ordinator at The British Council. 'Furthermore, many of them specialise in specific areas and by co-operating can provide the multi-disciplinary training required by many large clients.

'By joining PETA, members not only have access to one another's skills and expertise but also to increased marketing capabilities through The British Council's international network of offices,' Mr Sanderson said. The British Council has some 229 offices in over 100 countries, each of which has specialist knowledge of its domestic market and the driving forces behind it. Each office can provide information on PETA'S services and has available a comprehensive 176-page guide to the courses offered (see **Table 1**).

Initial consultations regarding training and educational requirements and resources are free, while further face-to-face discussions are encouraged throughout all the stages of putting a solution together. The British Council also has the support of government agencies such as the Department of Trade and Industry and the Offshore Supplies Office and has contacts within the European Union and various embassies.

## PETA at work

PETA's founding members have long been aware of the problems associated with serving the international oil and gas industry and were quick to recognise that an alliance offered the chance of meeting these problems head-on.

Simon Petroleum Technology (SPT) Training Centre, for example, had often found it necessary to form 'sporadic alliances' in order to fulfil the multi-disciplinary training requirements of its customers. 'Becoming a member of PETA has significantly simplified this process by allowing us to offer a complete spectrum of training and education services to the oil and gas sector on an international basis,' says Dr Chris Burgess, manager of SPT Training Centre. 'This is a two-way process with additional business spin-offs resulting from PETA members marketing our expertise as part of their training services.'

SPT already has a number of PETA-initiated projects in the pipeline. These include the development of a management training package for a major South American national oil company aimed at bringing it in line with other oil and gas operations that have undergone structural reorganisation in recent years. In addition, there is a plan for a cost-effective, fast-track training programme for PdVSA in Venezuela. This latter project will involve the retraining of chemists and mathematicians in the fields of geology and geochemistry. There is also the possibility of a training project with a major oil company in Ecuador in the near future. 'We are also looking at bringing PETA's expertise to bear in the electricity generation sector,' says Dr Burgess.

Leeds University, too, felt that PETA's objectives 'fitted in' with its overall marketing strategy. 'The university had already forged an international profile,

**Table 1. A summary of the courses available from PETA**

having conducted a number of geological and geophysical field projects overseas over the years, and was keen to extend its services yet further through PETA,' comments Neville Breedon, Consulting and Training Manager, Department of Earth Sciences.

Once again, PETA membership has already proffered business opportunities for the university. Of particular interest is a project in Colombia – at the contractual stage as *Petroleum Review* went to press - where PETA has been asked to develop a postgraduate and masters level geophysics programme of study at the Universidad Naçional in Bogota. The project is being conducted with the support of BP Exploration which had identified the need for such training. BP has funded the initial feasibility study and will also consider part-funding the training of Universidad Naçional staff in a combination of UK-based and in-country courses. In this way, it is hoped that the project will become self-sustaining.

The College of Petroleum and Energy Studies (CPS), which has already attracted some 2,000 oil and gas clients from over 130 countries, also decided to join PETA. Ian Williamson, CPS Director, says that the market has now grown so wide geographically that a single company simply cannot be everywhere. 'We believe that the support of The British Council network of local offices will be a key factor in follow-up from missions and oil and gas shows.'

Recently CPS has been involved in Russia and Kazakhstan, as well as Vietnam and China. 'PETA is proving to be an especially useful alliance when we bid for European Union or UK government AID projects which are the most valuable sources of funds to support training projects in the vast Russian, Kazakh and soon to be developed Azerbaijan oilfields.' says Mr Williamson.

## The road ahead

It is still too early to establish how successful the PETA initiative will be. However, the initial signs are promising – some 18 projects are currently in the pipeline and more are on the way.

According to Mr Sanderson, there are no plans to expand the alliance as yet. 'Although we fully expect other companies will wish to join the initiative in the future as it builds business, it will be a year or more before we think of expansion,' he says. 'We need time to learn how to work together and to consolidate leads into contracts. It is vitally important that we create a partnership operating with "well-oiled machinery" before going to the next stage and are confident of doing just that in the near future.'

**IP conference held on 18 October 1995**

# *Biodegradable petroleum products and the environment*

*This full-day symposium attracted 40 delegates, from five countries, a disappointing number considering the importance of this topic to the petroleum industry.*

Those who attended heard from Professor Colin Ratledge probably one of the best lectures on microbiological processes (entitled 'Pathways of Biodegradation'), which has ever been presented. The next two speakers, Harry Painter and Dr Nigel Battersby, expertly addressed the topic of 'Biodegradability Tests for Surfactants and for Petroleum Products.' Although much progress has been made towards developing and standardising test methods, it was apparent that different methods yield results which are not always comparable and that all methods have been devised for single substances, not the complex mixtures which are found in many petroleum formulations. It was also clear that some of the biodegradation mechanisms described by Professor Ratledge would not be detected by current test methods, with the result that some substances would be wrongly categorised as recalcitrant.

In the afternoon Ruediger Lillie's paper on 'Soil Remediation' was something of an eye-opener to most delegates as he described successful practical applications of this technology in Germany which have been carried out since the early 1980s. A variety of configurations have been utilised; they all have in common the use of 'tailor-made' consortia of biodegradative micro-organisms and of nutrients.

This positive aspect of biodegradation was in contrast to the presentations of Dr Joachim Koenig and Ted Hill. Dr Koenig described work which has been carried out to investigate the increased susceptibility of 'green' biodiesel to biodeterioration (equals spoilage) in storage and use. Increased susceptibility to microbial spoilage in use is likely to be a consequence of making other petroleum products biodegradable. Strategies for temporary and/or reversible anti-microbial measures to counteract microbial spoilage were described by Mr Hill. Some of these strategies have been tried and proved in other industries but are still largely ignored in the petroleum industry.

In summary this was undoubtedly a timely symposium with much technical content not readily available elsewhere. It could be the first of a series, as much work still has to be done in producing biodegradation tests suitable for complex formulations and more relevant to natural biodegradative mechanisms. At the same time the consequences of using and storing biodegradable products have not been fully appreciated; the current 'stone-age bucket microbiology' anti-spoilage strategies are long over-due for an upgrade.

The meeting was ably chaired by Duncan King who also first outlined environmentally responsive technology and finally reviewed the day's papers and discussion.

**EC Hill,**
**Chairman, IP Microbiology Committee**

# *Jane Carter Memorial Prize*

The British Institute of Energy Economics, the International Association for Energy Economics and the Association for the Conservation of Energy have jointly established an essay prize in memory of Jane Carter, former Chair and Vice-President of the BIEE, President of the IAEE and Head of Energy Conservation Division in the UK Department of Energy.

The prize of US$400 will be offered annually, for ten years, for an essay of sufficiently high quality on a specific aspect of energy efficiency and conservation. The aim is to encourage new thinking on energy conservation policy. The emphasis of the essay should therefore be on policy – rather than scientific or technical aspect – of the subject. The broad area of the essays will be defined each year by the three institutions.

The competition is open to men and women under the age of 35. Essays should be not more than 8,000 words long. The winning essays will be considered for publication in a range of energy journals and a summary will be published in the IAEE Newsletter.

Essays for the 1995/6 award should be on an aspect of energy efficiency poilicy in the European Union. It could deal either with policy in the Union as a whole or in individual member states. Essays should be submitted in English, in triplicate and in typed form, by 30 April 1996 to Mary Scanlan, Adminsitrative Secretary, BIEE, 37 Woodville Gardens, Ealing, London W5 2LL, United Kingdom. Each essay should include a 150 word summary, the name, address and age of the author should be on a separate sheet which can be detached from the essay, which will be judged anonymously. Manuscripts will not be returned.

# *End to restrictive practices in lubricant sales*

*A new European Commission Regulation on car distribution has been welcomed by lubricant suppliers, in particular by the European Union of Independent Lubricant Manufacturers (UEIL).*

The regulation (1475/95), adopted on 28 June and in force from 1 October, introduces important changes which are designed to stimulate competition in the car sector, to strengthen the functioning of the single market in cars and bring back into balance the varying interests of all those involved in car distribution – manufacturers, dealers, manufacturers of spare parts and suppliers to independent repairers and consumers.

The part of the Regulation that was most interesting for the 200 UEIL delegates at their recent conference in Brussels was an accompanying explanatory guide which stated:

'Oils and other liquids are not considered as "spare parts" under the Regulation. Consequently, dealers are free to get those products wherever they wish and the car manufacturer cannot justify restrictions imposed on its dealers with regard to the sourcing of such products.... If they do so, they will automatically lose the benefit of the group exemption'.

This means that car manufacturers can no longer specify/recommend their own brand products or those of any nominated supplier – practices which now become illegal under the EU competition rules.

In particular, the following practices are likely to be unlawful under EU competition law:

- Loss of warranty unless 'recommended' lubricants are used
- 'Aggregation' of spare parts and other products into dealers' bonus schemes
- 'Aggregation' of brand fluids/lubricants into dealers' service programmes.

This change will affect dealers who have faced pressure from a number of motor manufacturers to use own-brand or recommended lubricants. In recent years the UEIL has carried out a vigorous campaign against these and other restrictive practices. In particular, it wanted to stop vehicle manufacturers from nominating lubricant brands. In future the dealer's ability to choose their supplier will be backed by EC law.

Dirk Jongert, President of the Competition Committee of UEIL, told the Brussels conference that this clarification of the EC Regulation would give the distributor 'total freedom in the buying and selling of lubricants.'

Nevertheless some cynics commented that it remains to be seen how many dealers observe the letter of the new law – and how soon. For its part, the UEIL intends to conduct a publicity campaign to ensure the widest knowledge of the details of the EC Directive.

## Demand pattern

The full implementation of this Directive could affect the supply pattern of automotive lubricants across Europe. These represent 57 percent of the total EU market for lubricants, while industrial lubricants account for 43 percent, according to figures presented to the conference by Jean-Claude Dufour, Secretary General of EUROPALUB.

In recent years inland consumption of lubricants in the EC countries has declined. Various factors have all had a depressing effect on demand – the recession, reduced oil change intervals, engine developments, technical improvements to lubricants.

## Environmental factors

One of the themes running through the conference was concern for the environment – how to collect and recycle waste oils, and even how to recycle used packaging. According to Eberhard Becker, a German company is developing a process to recycle empty lubricant packaging which should be stripped of all paper and thoroughly cleaned before being recycled into plastic granules for re-use, just like the process for returning and recycling empty baked bean cans.

On the collection and recycling of used oils, Renato Schieppati of Viscolube, Vice-President of the Groupement Européen de l'Industrie de la Régénération, described the European industry's praiseworthy efforts to collect and re-use waste oils – though the level of achievement does vary from one country to another. He estimated 1995 EC lubricating oil consumption at 5.2 million tonnes of which 45 percent will be consumed or burnt during use. Some 2.8 million tonnes will remain as waste oil of which 57 percent will be collected. This sounds impressive until one realises that 1.2 million tonnes remain unaccounted for and may well be burnt illegally on site or dumped somehow in the environment.

Of the 1.6 million tonnes of used oil that is collected, over half is burnt as fuel or 'eliminated', leaving the rest to be re-refined. The actual recovery of lubricating oil is around 470,000 tonnes – which represents a mere 7 percent of total lube demand. However, given the demand for environmentally friendly lubes and EC guidance, this figure should grow considerably in the near future.

**Carol Reader**

IP
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# Minimising the Impact of Decommissioning

## Thursday 22 February 1996

**To be held at the Cavendish Conference Centre, London**

**This IP conference is jointly sponsored by The Offshore Engineering Society and The Centre for Petroleum and Mineral Law at Dundee University**

Decommissioning has become a contentious issue with governments and the industry at a critical stage in a programme to prevent international bodies like the London Convention, the OSPAR Commission or the EU from agreeing a total ban or moratorium on disposal at sea. The results of the House of Lords Standing Committee on Science & Technology will also have concluded its hearings by the time of this conference which will concentrate on the technical issues affecting the decommissioning of offshore installations. These will be presented in a worldwide context with a wide range of speakers chosen to cover topics of greatest interest.

The conference will be chaired by Mr Alex Wilson, Head of Oil & Gas Office, Department of Trade and Industry in Aberdeen.

*Topics to be covered will include:*

- The Global Context
- The Impact of Legislation
- The Impact on the Environment
- The Impact of Cost and Safety
- The Impact of Technology
- The Impact on the Sea-Bed
- A Practical Guide to the Legal and Insurance Issues
- Case Studies on Decommissioning

*A copy of the programme and registration form will be available shortly from Conference Department, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR UK Telephone: 0171 467 7100 Fax: 0171 255 1472*

IP
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# Oil and Gas in the Global Economy

## The Outlook to the Millennium

## Monday 19 February 1996

**To be held at the Cavendish Conference Centre, London**

The conference will provide an authoritative view of the vital global, political, economic and environmental issues, forming the background to the business and investment decisions that need to be taken, determining the shape of the industry to the year 2000 and beyond.

*Topics on the following subjects will be presented:*

- An overview from a major player
- The North American perspective
- The role of an emerging giant
- Financing the future and the Asia Pacific share
- Environmental factors – the European Union posture
- The established players – where now?
- Making it flow – a trader's vision

*For a copy of the registration form, please contact Conference Department, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR UK Telephone: 0171 467 7100 Fax: 0171 255 1472*

# *Argentina – privatisation gives a new lease of life*

*By John Cranfield*

*Lifting the heavy hand of bureaucracy has rejuvenated the Argentine oil and gas industry. Both upstream and downstream, new investment is pouring in. The country is once again a net exporter of oil, while gas is set to become the big foreign-exchange earner of future decades. Privatisation can be seen to work. Yet it is only three years since the process began. That is not to say that the process is complete. The state still holds stakes – generally about 20 percent – in oil company Yacimientos Petroliferos Fiscales (YPF) and the various gas-transmission and distribution firms split off from the old Gas del Estado (GdE). Now moves are afoot to cut government holdings further. All-out sale in one tranche would have given the financial markets severe indigestion. Many shares were given to employees, while 13 percent of YPF was given to provincial governments in lieu of unpaid royalties.*

Oil and gas were treated differently during privatisation. GdE had had a monopoly over transmission and distribution. By splitting it up into two transmission companies and eight distributors, the government demolished overall monopoly. But local distribution monopolies continue. By privatising electricity and gas at the same time, the energy ministry hoped to see competition developing between fuels. Only time will tell whether this works out, especially as several major investors are now involved in both gas and electricity supply to the same market. The government may continue to fine-tune regulation to ensure that there is no excessive concentration leading to new absolute monopolies.

## Utilities regroup

By their very nature, trade sales depend on the available wealth of a limited number of buyers. For instance, when the government sold off 70 percent of Transportadora de Gas del Sur (TGS), the four buyers each took a 17.5 percent stake, with Enron as operator. But the sale of Distribuidora de Gas Metropolitana (Gas Metro), where 70 percent was also sold, led to four local firms being partnered by British Gas, which has a 41 percent stake. One partner is Gas Argentina which, through a complex financial deal, is part-owned by Spain's state-controlled electricity utility Endesa. Dominant partner in Distribuidora de Gas Buenos Aires Norte (BAN) is Spain's largely state-controlled Gas Natural. Gas Argentina also holds a sizeable slice of BAN equity. Some months after the gas sell-off, British Gas acquired a 45 percent stake in Central Dock Sud, a power company operating in the same part of the capital. Dock Sud is a major buyer of gas from Gas Metro. A concentration of utility control in the capital is thus emerging.

Likewise, the original privatisation of Transportadora de Gas del Norte (TGN) saw three firms taking on a joint 70 percent, operator Nova having 16 percent. When, late in 1994, the government wanted to float the rest of its holding, the private-investor market was sated and there were no offers. Flotation was dropped in mid-1995, followed by a trade sale to CMS Energy which now holds 25 percent. Earlier, CMS had acquired a 51 percent stake in power generator Centrales Termicas Mendoza and has since taken a 39 percent stake in a power-generation venture that will provide electricity to two YPF refineries, process steam to one of them, and surplus power to the local grid.

The ownership structure and final shape of the gas industry is thus still in a state of flux. There is little doubt, however, that privatisation has seen a welcome advance in investment. And gas is clearly seen as the preferred fuel for internal Argentine use. The new 150-MW power plant to supply YPF refineries, for instance, will be gas-fired. And CMS is spending $125 million on converting the 382-MW Mendoza plant to gas.

## Export growth

Now TGN is talking with the government of Brazil's Rio Grande do Sul state about gas supply to a

planned 300-MW power plant at Uruguiana on the border. That would require a new 415-km pipeline, with gas supplies from YPF, who are is also involved in the talks. First stage in the plan would be extension of an existing TGN line, from Parana to the Uruguay border 256 km away. Gas would be supplied to Uruguay's Usinas Termicas del Estado (UTE) for power-station use.

Stage 2 would see extension to Uruguiana, where the planned station would take 2.5 MMcmd, the same volume being supplied to UTE. A further 100,000 cmd could go to Argentina's Entre Rios Province along the way. The pipeline would cost $90 million.

Although talks are still under way, the project could come to nought. For Canada's Alberta Energy and US firm Panhandle Eastern have teamed up to look at the feasibility of moving gas from fields in Argentina's Salta Province across Formosa, Chaco, Corrientes, Missiones and Santa Fe provinces into Entre Rios. Extension later could take gas into Paraguay, Uruguay and southern Brazil. Ample gas is said to be available, but the $1billion cost means that TGN's project might suit Entre Rios, Uruguay and Brazil better.

This would lead to a continuation of growth patterns that have prevailed since privatisation. TGN's current throughput of 26.95 MMcmd is 20 percent above the level on privatisation, gas going to 10 major buyers. That is twice the number secured at privatisation, when the government handed over five take-or-pay deals with distribution firms. These run for 10 years from late 1992. Early last year, however, distributors were given the freedom to buy gas from any source in Argentina and this has in effect opened up competition between the two transmission firms.

TGS is also planning major expansion. When formed, the company operated two lines from Neuquen to move 37 MMcmd towards Buenos Aires, with the San Martin line from Tierra del Fuego shifting a further 15.5 MMcmd. The latter has since been expanded to 16.7 MMcmd via a $37million project, with $82 million being spent on boosting Neuquen capacity to 45 MMcmd. Now TGS plans a further $1billion expansion, the six-stage project taking 10 years and ultimately doubling throughput from Tierra del Fuego. By staging the work, TGS expects the project will be largely self-financing.

That more capacity is needed everywhere is shown by YPF's latest plan for Neuquen. Proyecto Mega, now being designed and costed by Snamprogetti, would involve an extra 42.6 MMcmd of gas being processed locally, with 70,000 b/d of recovered NGL being piped 600 km to Bahia Blanca. There, a fractionator would produce ethane for local petrochemical use, LPG and natural gasoline. Dry gas would have to find a market, both within Argentina and across the Andes in Chile.

Competition is intense, with two systems being given the go-ahead. The shorter and cheaper line at 464 km and $350 million, is that planned by GasAndes. Gas will originate from Neuquen, TGN expanding its existing line from Loma de la Lata to La Mora at a cost of $90 million. This involves both looping and the installation of more compression. Initial GasAndes take will be 3.5 MMcmd, rising to 10 MMcmd over five years. The competing line, to be run by TransGas, will cost $689 million and run 1,200 km, with 17 MMcmd capacity. Supply deals have secured TransGas 71 Bcm of gas over 25 years, from YPF, Astra, Eridas, San Jorge and Pluspetrol. These two lines alone will add 27 MMcmd offtake from Neuquen fields, still leaving a sizeable volume from Proyecto Mega to find a market.

**Considerable investment in new pipelines is planned**

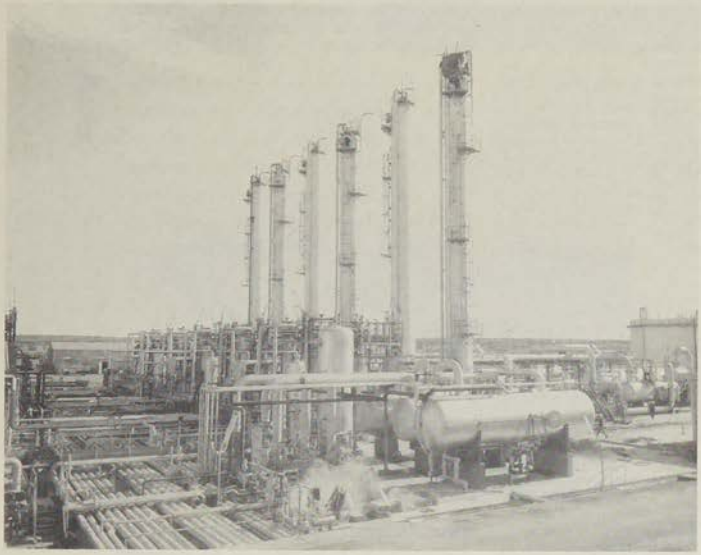
## Exploration and production boom

The impetus for expansion in gas use and export comes from the certain knowledge that this is one of the country's really major assets. Last year, output was 22.22 Bcm, from reserves put at 516.66 Bcm. Consumption was 24.29 Bcm, the balance being accounted for by Bolivian imports. And almost alone amongst South American countries, Argentina has a fully-developed residential grid. As a result, demand is more or less equally split between the residential/commercial sector, industry, power generation and other uses such as petrochemicals. The result has been a 300 percent growth in consumption over the past 20 years, the rate steadying at around 5 percent per year since privatisation. Before that, fits and starts were the norm.

At today's demand, reserves are good for around 23 years. Considering that vast areas of the country have hardly been explored, the potential for more remains high. So exploration continues apace. For instance, the Claramеco Basin south of Buenos Aires covers some 40,000 sq km onshore. It extends into the Atlantic and has been drilled just once, potential

source rocks being located. Now Bridas is running seismic over two blocks acquired in the last licensing round.

Among new developments is Petrolera Santa Fe's Sierra Chata field in the Neuquen Basin. Found in 1993 and started up mid-1995, the field has 10 wells and a process plant rated at 3 MMcmd. Delivery to the transmission grid needed the laying of a 74 km pipeline to the south. Further developments are planned for what is said to be a significant new gas province. Mid-1995 also saw Total test a hefty 1.65 MMcmd gas and 750 b/d condensate from its Aries e-2 hole on the Cuenca Marina Austral block off Tierra del Fuego. A second hole in the Carina field is now under way, hopefully to confirm what is thought to be the largest gasfield in the Austral Basin.



**Gas treatment plant at Pico Truncado**

That much more is expected, both in gas and oil discoveries, was made clear earlier this year, when YPF announced future plans. Unlike the trade sales that privatised the gas industry, a stock-market flotation was used to switch TFE into the private sector. The company is thus subservient to the wishes of no one major shareholder. The result has been the sale of $2 billion's worth of peripheral assets, from drilling, seismic and related service-type operations right through to housing, an airline and even supermarkets. At the same time the workforce was slashed from 52,000 to just 5,800. Streamlining the remainder of its upstream and downstream activities has allowed a concentration on those core activities where potential is still seen. A more active exploration programme is one of them.

The 10-year spending plan announced earlier this year will cost some $27 billion for Argentina as a whole. YPF expects to put up some $15 billion. This should allow oil production to be raised from the 710,000 b/d at end-1994 to over 1 million b/d by 2000, while gas output would rise from 1994's 76.7 MMcmd to 139.2 MMcmd. In the Austral Basin, new oil and gas reserves could come to 200 million bbl oil and 99 Bcm gas, with the Golfo San Jorge Basin yielding 1.1 billion bbl oil. Another 1.1 billion bbl oil and 128 Bcm gas is expected from the Neuquen Basin, the Northwest Basin could add 500 million bbl oil and 298 Bcm gas, and even the small Cuyana Basin could add 60 million bbl of oil.

Basins so far virtually untouched by the drill could chip in 1.3 billion bbl oil and 28 Bcm gas. In all, YPF expects around 100 new fields to be found, such is the vast area of untapped territory.

## Downstream upgrading

Downstream, YPF expects $3.7 billion to be spent on new pipelines up to 2004, including a new crude line from Neuquen to the coast. Some $900 million will go on refinery upgrading and expansion, a similar amount on products-transport systems, with $1 billion being spent on modernising service stations to European or North American standards.

Overall refining capacity is 665,000 b/d, spread over a dozen plants. Most of the smaller units are basic, serving remote markets. YPF's La Plata and Lujan de Cuyo, Esso's Campana and Shell's Buenos Aires plants thus account for 560,000 b/d. With local demand at 420,000 b/d, product export is thus important. Earlier this year, YPF contracted Foster Wheeler to add isomerisation and alkylation units at Lujon de Cuyo and isomerisation and coking plants at La Plata, all for completion next year. Cost is $110 million. Esso is spending $260 million on its whole downstream operation, the refineries getting upgrades and a boost to unleaded-gasoline production.

With these developments keeping refining ahead of the game, the next sector to receive major attention will be petrochemicals. Already the government has begun moves to offload its interests – which tend to be complex – and the private sector is looking to new investment. But that probably will not develop fully until the new ownership pattern is clear, possibly next year.

# PUBLICATIONS

## *Loss Prevention in the Oil and Gas Industry – Improving Safety in the Low Cost Environment*

*Editor: C P A Thompson (Mechanical Engineering Publications Ltd, Northgate Avenue, Bury St Edmunds, Suffolk IP32 6BW) 234 pages. ISBN 0 85298 975 X. Price (inclusive of p&p): £64.*

A compilation of the papers presented at the 5th International Conference on Loss Prevention in the Oil and Gas Industry held in Aberdeen on 11-13 September 1995, this publication examines the key issues of management, research and development, technology, engineering and operational aspects of loss prevention which are of concern to all those involved in the safe and cost-effective extraction and transport of oil and gas.

## *The Development of European Gas Markets – Environmental, Economic and Political Perspectives*

*Javier Estrada, Arild Moe and Kåre Dahl Martinsen (John Wiley & Sons, Baffins Lane, Chichester, West Sussex PO19 1UD) 375 pages. ISBN 0 471 96012 8. Price: £50.*

With the present uncertainty as to whether the gas industry will take advantage of the obvious market opportunities that are opening up driven by 'external forces' such as interfuel competition, environmental imperatives and new trends in European economic policies, this volume takes a close look at the European gas industry at this time of change and analyses how the process may develop and the possible implications for the gas industry.

## *Shipboard Petroleum Surveys – A Guide to Good Practice*

*Anthony Severn (Anchorage Press Ltd, 9 King Street, Twickenham TW1 3SD) 56 pages. ISBN 0 9516627 6 7. Price (inclusive of p&p): £45 (paperback).*

This guidebook explains how good shipboard survey practice can significantly reduce the risk of shortage or contamination claims arising from loading or discharging crude oil and petroleum products. A range of quantitative and qualitative monitoring and recording techniques is recommended which should ensure that potential loss or contamination problems are identified at an early stage and can be remedied cost-effectively. Aimed at ship's officers, cargo surveyors and all others involved in monitoring cargo operations, this publication is designed to be used in conjunction with standard industry guidelines and procedures, including the IP's 'Petroleum Measurement Manual'.

## *The Russian Natural Gas 'Bubble' – Consequences for European Gas Markets*

*Jonathan P Stern (The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1Y 4LE) 91 pages. ISBN 0 905031 92 X. Price: £12.50 (paperback).*

This report looks at the availability of Russian gas for export into Europe up to 2010. Contrary to conventional wisdom, the author suggests that a 'bubble' of low cost gas, arising from reduced internal demand and exports to former Soviet republics, will allow Russian exports to Europe to be doubled over the next 15 years without any significant contribution from new gas deposits, other than satellites of fields currently in production. Such an availability of low cost gas is expected to provide an impetus for gas-to-gas competition and general liberalisation of European gas markets.

## *Predicting $CO_2$ Corrosion in the Oil and Gas Industry*

*European Federation of Corrosion Publications, Number 13 (The Institute of Materials, 1 Carlton House Terrace, London SW1Y 5DB) 173 pages. ISBN 0 901716 58 8. Price: £50.*

Despite systematic attempts to analyse $CO_2$ corrosion and develop predictive models it is still not a fully understood phenomenon and there is much argument on the engineering use of such models in the oil and gas industry. Furthermore, the models do not take into account the increasingly harsh environments seen in deep wells and take little account of the hydrodynamic parameters, leading to conservative designs. Recognising the importance of this topic, a Working Group was set up within the European Federation of Corrosion (EFC) Oil & Gas Working Party to address aspects of $CO_2$ corrosion. This publication incorporates the resulting technical papers presented at the $CO_2$ Session of the 1993 EFC Conference in Barcelona together with a number of additional invited key papers.

## *The Politics of Coal's Decline – The Industry in Western Europe*

*Mike Parker (The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1Y 4LE) 76 pages. ISBN 1 85383 248 0. Price: £12.95 (paperback).*

Examining the future prospects for Western Europe's hard coal industry, this publication concludes that the long trend of decline experienced by this sector shows no sign of reversing. The author shows how the manner and rate of this decline will continue to be determined as much by political as by economic factors, including the politics of environmental controls and market liberalisation where developments have been increasingly unfavourable to coal.

## *All about Pigging*

*Jim Cordell and Hershel Vanzant (On-Stream Systems Ltd, PO Box 66, Cirencester, Gloucestershire GL7 1ZF or Hershel Vanzant & Associates, 1412 N Choctaw Place, Claremore, Oklahoma 74017, USA) 250 pages. ISBN 0 952644800. Price (inclusive of p&p): £97 (within the UK); US$155 (within the US); £112/US$179 (airmail, elsewhere in the world).*

This loose-leaf format publication is an engineering reference manual on pipeline pigging rather than a book although it does contain some amusing narratives. Covering pigging in water, products, gas and crude oil pipelines as well as in-plant piping systems, it is intended to be a day-to-day working tool for anyone involved in pipeline design, construction, operation or maintenance. The manual features numerous tables, drawings, diagrams and photographs and also includes a comprehensive buyers guide.

## *Review and Outlook for the World Oil Market*

*Shane S Streifel (The World Bank, 1818 H Street, NW, Washington, DC 20433, USA) 157 pages. ISBN 0 8213 3443 3. Price: US$10.95 (paperback).*

Report 301 of the World Bank Discussion Papers examines historical trends in world oil and energy markets and provides a long-term outlook for oil demand, supply and prices to the year 2010. It also focuses on the overly pessimistic view of non-OPEC supplies and the resulting implications for higher oil prices. The study concludes that significantly higher or lower oil prices are less likely than a continuance of recent prices in real terms over the forecast period.

# TECHNICAL REPORT

## Refining & Marketing

HS(G)41 Replacement technical guidance is under review in IP committees. The HSE has conducted trials of the new Safety Risk Assessment at over 100 locations, with owners and regulators carrying out parallel assessments to check levels of agreement and the effective working of the process. A draft Environmental Risk Assessment to complement the HSE safety risk assessment, developed by the IP, is currently under review. It will be incorporated in industry's Technical Guidance replacing HS(G)41.

*Performance Specification for Petroleum Filling Station Underground Pipework Systems* has been published. A launch meeting involving contributing regulators and suppliers will be held in December.

Discussions have been concluded with DoE and HMIP on the details of the Secretary of State's Guidance for Terminals and Service Stations to be issued as part of the UK legislation of the VOC Directive. A sensible pragmatic approach has been achieved.

Aviation Committee is in discussion with API on collaboration on R&D work on filtration matters in 1996. Work has started on updating the Airports Safety Code.

The Aviation R&D project on the effects of fuel chemistry on filter performance has been completed. The project for development of the stopple device for airport hydrant systems has been cancelled.

The Area Classification Working Group has proposed replacing the calculation method in the Code during 1996 and the expansion of the guidance to include LPG operations.

Work has started on drafting guidance on the assessment of competency of electrical contractors.

*The Bottom Loading/Vapour Recovery/Overfill Protection Code* has been published. An addendum will be issued as soon as agreement has been reached with manufacturers on recommended maximum pressure drop in the truck vapour collection equipment.

*Guidelines for the Identification and Control of Hazards during the Proving of Road Loading Gantry Meters* has been published.

Unanimous support has been received from UK refineries and major companies' distribution/marketing operations for a proposal from the Safety Committee to develop a specialist NVQ for safety practitioners in the downstream oil industry. The scheme, endorsed in principle by PESC and the Department of Employment, is expected to be developed in 1996.

## Upstream

IP staff attended the ISO/TC 67 Plenary and AG 3 Planning and Liaison meeting in Berlin in September. This covered 'Materials Equipment and Offshore Structures'. New work item proposals such as the acceptance of development of an ISO Standard based on NACE specifications for sour service, the issues on certification and inspection principles and an API/US-led industry needs assessment were debated. Many issues remain to be resolved.

The IP hosted its second successful ISO/TC 67 Standards Training Workshop.

Experimental work on the HSE-funded 'Shock Tube' experiment is nearing completion. A draft report is expected by year-end.

An IP contract has now been placed with AEA Technology for a theoretical modelling study based on their experience with similar experimental work for the nuclear industry. The results will be used to validate the modelling work to assess the safety of exchangers.

*Guidelines for Routine and Non-Routine Subsea Operations from Floating Vessels* was successfully launched at the Offshore Europe '95 Exhibition & Conference held in Aberdeen in September.

## Health

The IP case-control study which examines the possible association between leukaemia and low-level benzene exposure has been completed. A successful conference which presented the results in the context of other work was held at the Royal College of Physicians. Consideration is now being given to further epidemiological studies using the IP database.

The national experts on particulate air pollution who attended the IP workshop in June have commented on a summary document being developed by the organising committee. The IP document will be complementary to the recently published EPAQ report on particulates.

Progress has been made on a document providing guidance on the declassification of tanks previously in leaded service. In addition the updating of tank entry sections of the revised Tank Cleaning Code has continued.

## Environment

At a well-attended IP workshop on 'Air Quality Standards - Measurements and Compliance' a number of action items for the IP were identified. These included the setting up of an IP sub-committee or advisory group on air quality. In addition the IP will become more involved, via BSI, with the development of international/European standards for the sampling and measurement of air pollutants.

The Land Contamination Sub-committee is continuing its work on the production of the Code of Practice for the Investigation and Remediation of Retail Sites. Other areas being addressed by this sub-committee in conjunction with the Downstream Operation Committee are the development of guidelines for the Environmental Risk Assessment of Retail Sites and a replacement for Chapter 7 of the document being prepared by CIRIA for the NRA – *Containment Systems to Prevent Pollution from Industrial Incidents.*

## Measurement

*Guide to Hydrocarbon Loss Accounting and Control in Petroleum Refinery Operations* has been published. This is believed to be the first publication anywhere of guidance on this subject.

The new document *PMM Part II, Tank Calibration: Section 7: Code of Practice for the Calibration of Horizontal Cylindrical Tanks at Service Stations,* has been issued for ballot.

## Microbiology

A successful conference on 'Biodegradable Petroleum Products and the Environment' was held in October. A need to develop a test method for checking the vulnerability of products to biodegradation was identified. This matter will be dealt with by a joint IP DIN group chaired by the IP.

*The Code of Practice for Metalworking Fluids,* completely revised, is now available.

## Test Methods

A list of new and updated standards for the 1996 edition of IP Standard Methods for analysis and testing of petroleum and related products has been prepared and will be published in a future issue of *Petroleum Review.*

**John Hayes, Technical Director**

## CDS delivers a helping hand to fuel distributors

The fuel distribution business faces a number of problems relating to the scheduling and control of delivery tankers due to random customer order patterns and the need for rapid delivery.

'The Deliverer', Computer Design Systems' new in-cab transaction processing software package, has been designed with these difficulties in mind. The system offers the road tanker operator greater flexibility of fleet utilisation and related cost savings by facilitating the scheduling of a vehicle while it is on the road and processing the delivery transaction at the point-of-sale, thereby eliminating the need for the driver to return to base just to collect documentation.

The package comprises POS software for an ACS Data 'TouchPC' handheld computer, a printer and digital phone which transmits and receives transactions via the GSM telephone network. The vital link is the control software managing the communications gateway between the host computer and the distribution fleet. The system runs on a standard windows PC and can operate with any computer system.

Butler Fuels, a subsidiary of Fina, which undertook pilot trials in the Bristol area, reports that it plans to extend use of the Deliverer system to other areas of its fuel distribution operation.

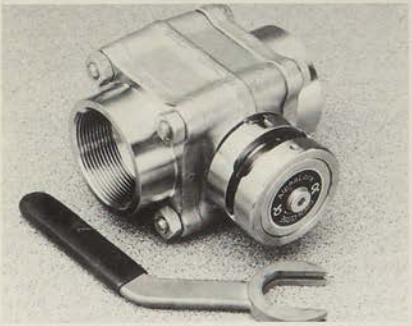
## Added security for LPG handling

Alpha Process Controls have developed a new safety lock to ensure ball valves used in LPG transport and distribution are secured. Known as 'AlphaLock', the safety lock can be fitted to standard ball valves used on road tanker discharge points and bulk delivery hoses.

According to the manufacturer, AlphaLock offers improved safety features over existing systems, including a removable locking handle that ensures operation by authorised personnel only and protects the user from 'cold' burns.

The stainless steel device is compact and streamlined to facilitate easy retrofitting of existing ball valves without the need for a major strip down. Its quick operation allows rapid closure of a valve in the event of an emergency.

AlphaLock requires no routine maintenance and is said to help extend valve life by reducing stress on the valve gland seal. The system is also suitable for use with a range of hazardous liquids and gases in the chemical, petrochemical, oil and gas industries and has been approved to the ISO 9002 quality assurance standard.



AlphaLock offers added security in the distribution of hazardous liquids and gases

## QED sheds a light on road tanker overspill protection

Quest Engineering & Design (QED) has launched a new optic probe for overfill prevention when loading road tankers. Developed as a replacement to QED's thermistor sensors, the new probe's thermistor tip can be simply removed and screwed into the probe stem.

The probe works on the principle of refracted infra red light and allows the system to give an 'instant permissive' provided that all conditions are safe. In the unlikely event of a malfunction, the probe gives the control system a static output which is recognised as an unsafe condition, initiating shutdown and preventing overspill.

## Less smoke and more miles to the gallon from new fuel

**Mobil introduced its new, reformulated diesel fuel, 'Cleanerburn Diesel Plus', to UK petrol station forecourts this October. Laboratory and road test results showed that the new product gives an immediate and sustained reduction in smoke, particulate and other engine emissions while offering better power and fuel economy.**

**In tests, black smoke emissions were reduced by an average of 20 percent and up to 60 percent in a significant number of cases when compared with conventional diesel fuels. Particulate emissions fell by an average of 15 percent and up to 30 percent in some cases. Engine power and fuel economy were shown to increase by up to 3 percent. Tests on the only other diesel fuel currently available in the UK for which reduced smoke and particulate emissions claims have been made produced a loss of power and high fuel consumption in comparison with Cleanerburn Diesel Plus, states Mobil.**

**The new fuel contains a package of multifunctional additives, including a detergent additive said to improve fuel economy through cleaner engine fuel systems, an additive to reduce foaming to permit cleaner, faster and more complete refuelling compared with conventional diesel fuels and an anti-waxing additive which provides cold weather protection down to -18°C.**

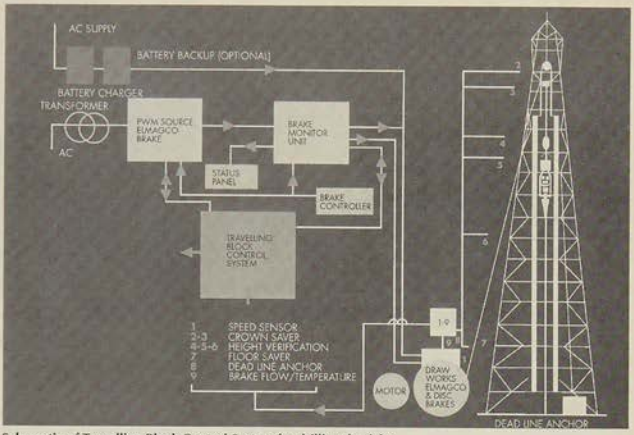
## Integrated emergency stopping system for drilling derricks

The Bauteil Division of Cegelec Projects has developed an integrated emergency stopping system for drilling derricks. The 'Travelling Block Control System' (TBCS) acts both as a safety protection system to prevent damage to the drilling system components and as a safety device for the drill crew.

The system comprises a central processing computer, interfacing cards, field mounted transducers and proximity sensors, interconnecting wiring and a display unit which provides a simple set-up procedure for the driller. The system can be configured to meet the requirements of any drilling system currently in use.

TBCS also incorporates an alarm system that draws the driller's attention to any errors which may exist in the system and provides a warning if emergency braking is about to take place.

The system works on the principle that if the driller does not brake, hence reducing the block velocity, then the eddy current brake is energised. A block continuing with a velocity greater than the 'by-pass' velocity energises the band brake and the TBCS acts as a dead man's handle. Once commissioned, the system will determine the difference between a normal tripping operation and one that may cause damage.




Schematic of Travelling Block Control System for drilling derricks

## New pump makes light of offshore pumping applications

A new range of pumps specifically designed to make light work of pumping in harsh offshore environments has recently been launched by Mono Pumps.

Available as single, four, six and eight stage models, the new 'P' range vertical pumps can handle pressures up to 36 bar. The single stage pump can handle flow rates of up to 200m³/h while the four stage pump operates up to 140m³/h and the six and eight stage to 58m³/h.

Mono Pumps' 'P' pump

The pumps are manufactured in carbon, stainless steel, duplex and super duplex steel and are suitable for a range of offshore applications, including open and closed drains, separator feeds, knock-out drum feeds, solids control duties and produced water final separation feeds.

Capable of handling low shear and low emulsification and abrasive materials as well as high viscosity fluids such as blowdown sludges, the pumps feature Mono Pump's flexishaft drive design which provides a single component link between the rotary motion of the drive shaft and the eccentric motion of the helical rotor.

## Crossgate link for radio systems

**For those working in remote locations of the world, eg. oilfield and surveying personnel, two-way radio provides the main means of communication between base and distant stations or vehicles. However, there are often situations where it is impossible to link one radio system with another.**

**In a bid to eliminate this problem, South Midlands Communications has developed a microprocessor controlled crossgate system, 'SMC XGATE3', which is capable of patching in almost any form of radio to provide full communications links for a wide variety of applications, including VHF handheld or base station to aircraft through to long distance communication for remote stations, vehicles or personnel.**

**Operation modes can be tailored with HF, VHF, UHF, microwave and landline units to meet customer requirements.**

## BASEEFA approval for Amot switches

Amot Controls' range of explosion-proof temperature and pressure switches recently received BASEEFA certification for up to 55°C, some 15°C higher than the industry norm.

The '4250 Series' provides snap switch action at set points on engine and compressor coolant systems, process control points, lubrication systems and alarm systems in hazardous duty locations.

The switches provide precise and reliable operation largely unaffected by changes in ambient conditions and are available for sensing dual temperature levels, dual pressure levels and a combination of pressure and temperature in one switch. They have a pressure range of 5-250 psi and temperature range of 16-118°C.

# TECHNOLOGY NEWS

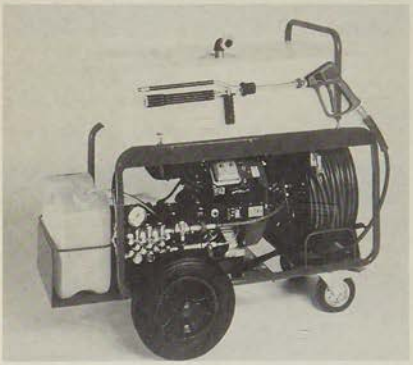
## Mobile high pressure fire extinguisher

Preussag Fire Protection Ltd has developed a new mobile, self-contained, ultra-high pressure fire extinguishing unit for rapid emergency response in industrial, petrochemical, automotive and airport installations which require high extinguishing capabilities with almost zero water damage and no environmental effect.

The 'UHP 250' unit uses high pressure, atomised water mist to achieve the required rapid extinguishing capability and offers an optional AFFF foam system.

A petrol engine driven pump produces water pressures of up to 250 bar. The resulting atomised water mist has a high heat absorption factor and, when applied to flames, most of the mist is flashed to steam and the fire extinguished. The low volume of water required to operate the system results in minimal water damage with no run-off of contaminated water as experienced when using conventional hose streams.

In addition to the self-contained mobile model, Preussag's UHP 250 extinguishing unit is also available for vehicle mounting. Two options are offered: one with the water supply provided by an integral water tank, the other with the water supplied from the vehicle's tank.



Preussag's UHP250 mobile high pressure extinguishing unit

## High temperature control fluid first from Houghton

**As North Sea exploration moves into high pressure reservoirs there are indications that future oilfield development will see gas and oil wells with flowing well temperatures in the range of 130-200+°C.**

**With this in mind, Houghton Vaughan has developed a water-based control fluid capable of providing thermal stability at temperatures of up to 300°C.**

**The company claims that 'Aqualink HT220' is the only control fluid currently on the market capable of coping with such high temperature conditions. In comparison, other water-based and synthetic hydrocarbon fluids have been shown in tests to degrade into slugdes and solids at temperatures of between 90 and 130°C. Following such degradation there is the potential risk that the control fluids will block hydraulic lines.**

## Landmark adds windows option for 3D seismics interpretation

**Landmark Graphics Corp has expanded its 'Geographix' product line for geology, petrophysics and engineering applications with 'SeisVision', a Windows NT-based 3D seismics interpretation package.**

**SeisVision's Window-based interface includes features for easy data loading, viewing and picking horizons in a variety of modes, fault interpretation and depth conversion, among other functions. Integrated mapping allows quick creation of presentation maps throughout the interpretation process.**

**The user-friendly Windows setup has minimal support requirements and includes on-line help, minimal mouse clicks to access functions and a wide range of drag-and-drop features. A single 'navigator' window for each project provides a central focus for displaying seismic panels, wells and the current state of the active horizon. Additional associated windows can be created for other activities such as navigating around the data volume through a seismic window highlighted in the navigator window.**

## On-site microbial test for fuels

ECHA Microbiology Ltd has successfully applied for a UK government SMART award to develop and refine a new basic technology for quantitatively detecting microorganisms in industrial fuel samples. The grant will finance some 75 percent of the research and development necessary to develop the new concept to a marketable product.

In recent years there has been an increase in microbial problems in fuels, part of this increase is the result of a number of large shipments of contaminated fuel to European terminals and from there through distribution systems to end-users. Indeed, the problem is such that contracts to purchase fuel often contain clauses defining the acceptable numbers of microorganisms as not more than 1,000 per litre.

Microbiological tests on fuel can be carried out at only a few competent laboratories and, at present, there is no other test procedure equivalent to that developed by ECHA.

The new technology is potentially applicable to other on-site microbiological test kits and to some conventional laboratory procedures. Working prototypes have been developed and patent applications made. The new test is expected to be on the market in 1996.

## CONTACTS

| | |
|---|---|
| Computer Design Systems | 0161 832 9251 |
| Alpha Process Controls | 0191 586 2366 |
| Quest Engineering & Design | 0115 961 6162 |
| Mobil Oil Company | 01908 853000 |
| Cegelec Projects | 01788 563563 |
| Mono Pumps | 0161 339 9000 |
| South Midlands Communications | 01703 255111 |
| Amot Controls | 01284 762222 |
| Preussag Fire Protection | 0181 832 2000 |
| Landmark Graphics | 00 1 713 560 1487 |
| ICL Edacom | 01279 647000 |
| Houghton Vaughan | 0121 359 6100 |
| ECHA Microbiology | 01222 496321 |

# INSTITUTE NEWS

## NEW MEMBERS

Mr M A Aghnami, 11 Whitehall Lodge, Pages Lane, London, N10 1NY.
Dr M Alkassar, 2 Raddington Road, North Kensington, London, W10 5TF.
Mr S A Barnett, 7 Migvie Avenue, Kingswells, Aberdeen, AB1 8GF.
Ms R S Beaver, Flat 5 Spencer House, 39 Spencer Road, Grove Park, Chiswick, London, W4 3ST.
Mr R J Berryman, Vale Consultancy, 7 Tirrold Way, Wantage, Oxon, OX12 7DL.
Mr K S Bharj, 44 Hawthorn Drive, North Harrow, Middx, HA2 7NX.
Miss H Birtwistle, Jardine Insurance Brokers, Jardine House, 6 Crutched Friars, London, EC3N 2HT.
Mr J Boulton, 30 Spire Avenue, Whitstable, Kent, CT5 3DS.
Mr P D Brindley, 65A Sudbury Avenue, Wembley, Middx, HA0 3AW.
Mr R L Brown, Flat 11, 29 Bramham Gardens, London, SW5 0HE.
Mr R K Connon, Chevron UK Ltd, Ninian House, Crawpeel Road, Altens, Aberdeen AB1 4LG.
Mr D J Coppack, Drummie, Butts Ash Lane, Hythe, Southampton, SO45 3QY.
Mrs E A Crabtree, The Coach House, Kinmundy, Newmachar, Aberdeen, AB2 0US.
Mr P A Cusack, 4 Chatelet Close, Horley, Surrey, RH6 7JD.
Mr E J Denham, SAP (UK) Ltd, No 7 New Square, Bedfont Lakes, Feltham, Middx, TW14 8HA.
Mr C Doyle, Doyle Offshore, 1 Connell Street, Cork, Ireland.
Mr M El Derini, Arab Petroleum Pipelines Company, 431 Al-Geish Avenue, Loran, Alexandria, Egypt.
Mr G Fazakerley, 23 London Road, Brentwood, Essex, CM14 4QW.
Mr K Fleming, Bin Desmal Group, Hamdan Street, PO Box 3595, Abu Dhabi, UAE.
Mr M Foster, Alcan International Ltd, Southam Road, Banbury, Oxon, OX16 7SP.
Mr G G Foster, Alfons Haar Ltd, Unit 6 Apex Way, Dewsbury Road, Leeds, LS11 5LN.
Mr H M Gammon, Gammon Technical Products Inc, 2300 Highway 34, PO Box 400, Manasquan, NJ 08736, USA.
Mr P A Gardner, 24 Vaughan Avenue, Hendon, London, NW4 4HU.
Mr B S Gill, 35 The Straits Saston, Portland, Weymouth, Dorset, DT5 1HG.
Mr D Hamelberg, 63A Regent Road, Wilberforce, Freetown, Sierra Leone.
Dr C J Hamilton, Lurgi (UK) Ltd, Duke's Court, Duke Street, Woking, Surrey, GU21 5BH.
Mr J F Head, 28 Park Gate, Mount Avenue, Ealing, London, W5 1PX.
Mr M J Hickey, Kingston Technical Resources Ltd, 2A London Road, Kingston-upon-Thames, Surrey, KT2 6SN.
Mr B Ineson, Alfons Haar Ltd, Unit 6 Apex Way, Dewsbury Road, Leeds, LS11 5LN.
Miss K G Jackson, 12 Lancaster Road, Walthamstow, London, E17 6AJ.
Mr M A Jones, Flat 2, 20 Egliston Road, London, SW15 1AL.
Mr N Kassem, Oiltest Inc, Mid Atlantic Corporate Center, 100 Grove Road, Thorofare NJ 08086, USA.
Dr M L Keeley, Brook House, 3 Waterloo Road, Leighton Buzzard, Beds, LU7 7NR.
Mr J D Kirby, Beech House, Reepham Road, Foulsham, Norfolk, NR20 5PP.
Mr I R Macfarlane, 19 Tecoma Crescent, Platteklоof Ext 2, Parrow 7500, South Africa.
Dr T Martin, Trident Consultants Ltd, 58 Bridge Street, Aberdeen, AB1 2JN.
Mr F Martin, 9 Goodwood, Parkside, Killingworth, Newcastle upon Tyne, NE12 0LR.
Mr R G Meads, 12 Cumberland Walk, Tunbridge Wells, Kent, TN1 1UJ.
Mr Y Melitz, 60 Lyttelton Court, Lyttelton Road, London, N2 0ED.
Miss K M Olney, Schroders Investment Banking, 120 Cheapside, London, EC2V 6DS.
Mr H Paver, BHP Petroleum, Devonshire House, Piccadilly, London, W1X 6AQ.
Mr B C Pazzard, 75 Avalon Road, Earley, Reading, Berks, RG6 7NR.
Mr P J Redman, 2 Faris Barn Drive, Woodham, Addlestone, Surrey, KT15 3DZ.
Miss P Ryan, JKX Oil & Gas plc, JKX House, Eastgate Court, High Street, Guildford Surrey, GU1 3DF.
Miss H E Shennan, Adam Smith Institute, 11-13 Charterhouse Bldgs, London, EC1M 7AN.
Mr M Shwket, Oil Test Inc, Aldene Industrial Park, 109 Aldene Road Building # 3, Roselle, NJ 07203 USA.
Mr G Singh, 30 Bray Court, Bray, Berkshire, SL6 2DR.
Dr N Skillen, Atlantic Power & Gas, Salvesen Tower, Blaikies Quay, Aberdeen, AB1 2PW
Mr M D Stuart, 66 Erskine Hill, Polmont, Stirlingshire, FK2 0UQ.
Dr S-Q Sun, Carbonates International Ltd, 93-99 Upper Richmond Road, London, SW15 2TG.
Dr M Thompson, Mecon Ltd, 9 Cottenham Road, Histon, Cambs, CB4 4ES.
Mr G A Tidmarsh, Bank Cottage, Little Honeyboro, Milford Haven, Dyfed, SA73 1QU.
Mr M J Walker, 55 Grizedale, Sutton Park, Hull, HU7 4AY.
Mr J Watling, Land & Marine Products, Kingsley House, Old Park Farm, Kingsley, Hampshire, GU35 9LU.
Mr A Whittock, Hoare Govett Securities Ltd, 4 Broadgate, London, EC2M 7LE.
Mr H C-S Williams, 2 Mackenzie Place, Old Aberdeen, Aberdeen, AB2 3EG.
Mr K Winters, Aircraft Fuel Supply BV, PO Box 75650, Amsterdam Airport Schiphol, Netherlands.

## STUDENT PRIZEWINNERS

Mr T F Brice, 67 Royal Hill, London SE10 8SE.
Mr O J Whitfield, 11 Wells House Road, Ealing, London NW10 6ED.

## STUDENTS

Mr I A Cowie, 63 Picardy Court, Rose Street, Aberdeen, AB1 1UG.
Mr A Hill, Flat 32 Seabraes Hall, Seabraes Court, Dundee, DD1 4LS.
Miss B A Ireland, 28 Springfield, Dundee, DD1 4JE.
Mr A I M Smith, 8 Irene Barclay House, 152 Eversholt Street, London, NW1 1BL.
Mr A D Ward, 1 Northcote Road, Portswood, Southampton, S017 3AH.

## NEW FELLOW

**Mr Hormoz Naficy**

Mr Naficy obtained both his BA and MA in Economics from the University of Rhode Island, USA. He worked first in the Iranian Ministry of Economy and later in the Ministry of Industry and Mines. In 1981 he joined the oil industry in the United Kingdom and held several posts with Murphy Eastern Oil Company. He left Murphy Oil in 1987 to establish the London-based oil and gas consultancy, Hydrocarbons Venture Limited, and has been its Managing Director since.

## NEW COLLECTIVES

Interline UK Limited
Pace House, Hanley Street
Aston
Birmingham
B19 3SP
*IP Nominated representative:* Mr C Williamson, Director
Interline UK Ltd is involved in the re-refining of waste oils to produce recycled fuels, bitumen and re-refined base lubricating oil.

Cuffe Harrell & Associates Ltd
The Old Dairy
The Green
Godstone
Surrey
*IP Nominated representative:* Mr C M Cuffe, Managing Director
Cuffe Harrell & Associates Limited are a consultancy involved in the audit of joint ventures (direct and general administrative costs), construction works, project management and controls, and vendor audit. They also perform internal control and systems audit, including peer review and training. Assistance in compliance with Cadbury, Treadway and COSO etc, ISO 9000 and quality assurance, manual preparation and system implementation.

# INSTITUTE NEWS

Stefan Radwanski of ABB Vetco Gray is 1995 UK Oil Industry Golf Champion

**M J Loxley**

*Petroleum Review* has been asked to help trace Mr M J Loxley, an IP member who has lost touch with the Institute.

An old student friend wishes to invite him to a planned 50-year reunion at the University of Birmingham. If anyone knows his address, please contact:

*Mr Michael Gardiner, FInstPet,*
*77 Finchley Lane,*
*Hendon,*
*London*
*NW4 1BY*

**CHANGE OF DATE**

**The West of Scotland Branch has announced that the dinner to be held on the 7 March 1996 will now be held on the 28 March 1996.**

**AROUND THE BRANCHES**

| | |
|---|---|
| | **ABERDEEN** |
| **14 December:** | *The Abandonment of Large North Sea Oil Platforms*<br>Tim Watson, North West Hutton Resource Group Amoco (UK) Exploration Company |
| | **NETHERLANDS** |
| **14 December** | Social visit by one of the local breweries followed by a gathering at a 'Dutch Cafe'. |
| | **YORKSHIRE** |
| **9 December:** | Chairman's Dinner |



## UK Deliveries into Consumption (tonnes)

| *Products* | †Sep1994 | *Sep 1995 | †Jan-Sep 1994 | *Jan-Sep 1995 | % Change |
|---|---|---|---|---|---|
| Naphtha/LDF | 156,487 | 218,774 | 2,043,554 | 2,131,726 | 4 |
| ATF – Kerosene | 679,043 | 727,555 | 5,571,678 | 5,762,698 | 3 |
| Petrol | 1,903,437 | 1,771,203 | 17,028,871 | 16,184,831 | -5 |
| of which unleaded | 1,123,271 | 1,120,336 | 9,706,859 | 10,019,839 | 3 |
| of which Super unleaded | 117,258 | 73,901 | 1,059,231 | 717,098 | -32 |
| Premium unleaded | 1,006,013 | 1,046,435 | 8,647,628 | 9,302,741 | 8 |
| Burning Oil | 201,047 | 215,671 | 1,899,976 | 1,915,392 | 1 |
| Derv Fuel | 1,141,251 | 1,132,122 | 9,460,353 | 9,906,171 | 5 |
| Gas/Diesel Oil | 625,089 | 560,643 | 5,652,400 | 5,384,073 | -5 |
| Fuel Oil | 742,493 | 522,686 | 6,849,518 | 6,011,868 | -12 |
| Lubricating Oil | 70,948 | 74,589 | 602,720 | 674,379 | 12 |
| Other Products | 760,981 | 698,419 | 6,403,785 | 6,535,502 | 2 |
| **Total above** | **6,280,776** | **5,921,662** | **55,512,855** | **54,506,640** | **-2** |
| Refinery Consumption | 484,268 | 562,678 | 4,667,025 | 4,778,172 | 2 |
| **Total all products** | **6,765,044** | **6,484,340** | **60,179,880** | **59,284,812** | **-1** |

† Revised with adjustments *preliminary **NB:** *The 1995 figures for lubricating oil are significantly higher than those reported in 1994. This is the result of the introduction of a new reporting format, which aims to achieve greater accuracy.*

# PEOPLE

Brown & Root has announced a number of senior management changes due to take place in Europe and Africa. **Dan Stover** has been appointed general manager of Brown & Root Energy Services Europe and Africa. With responsiblity for OPEX, Mr Stover will be based in Aberdeen. He joins from Marathon Oil Company where he was production manager. **Chas Charles**, who currently manages OPEX, is to take over responsibility for CAPEX services related to field development. **Malcolm Dorricott** will move from CAPEX to focus on construction activities in the Former Soviet Union. **Steve Brown** joins from BP Exploration, where he was Andrew operations manager, to pursue the company's commitment to its Contract to Produce strategy. **Norman Chambers**, managing director of Brown & Root Energy Services Europe & Africa, has relocated from Aberdeen to the company's headquarters in London.

**Rachael Baillie** has been appointed as Finance and Administration Manager for RTD (UK) with overall responsiblity for all financial and administration control systems. Ms Baillie comes from Lasmo where she was a senior member of the London based operational finance team and will be based at the company's Aberdeen Headquarters.

**Dr W John Lee**, Executive Vice-President of S.A. Holditch & Associates, Inc, has been selected to receive the John Franklin Carll Award from the Society of Petroleum Engineers (SPE) this year. Mr Lee has also been elected to the Board of Directors of SPE for a three year term as Director-at-Large, beginning October 1996. Over the next year, he will serve as director-elect, attending meetings of the Board of Directors in preparation for serving in his new position.

**Reynolds Tankers Ltd has appointed *Gerry McManus*, BE, MBA, to the board. Mr McManus was previouly Marketing Director of Irish Shell. Prior to this he worked in the Irish Refining Company, Whitegate. He is currently Chairman of the Irish branch of the Institute of Petroleum.**

The International Petroleum Exchange has been informed by its Chairman, **Mr Phil Lynch**, that he will be leaving Lehman Brothers at the end of this year. Mr Lynch was re-elected unanimously in July 1995 to be Chairman for a further year, after which he was due to retire from the Board. He will continue as Chairman until he departs Lehman Brothers.

Alan Cobham Engineering has appointed **Colin Murton** to the post of Business Development Manager responsible for the oil and gas markets. Mr Murton has previously worked with BP and Serck Baker and has specific expertise in membrane filtration which will complement the company's capability in liquid/liquid and solids separation.

Hardy Oil & Gas plc has announced the appointment to the Board of **John van der Welle** as Finance Director. Mr van der Welle joins Hardy from Enterprise Oil, where he was Group Treasurer and succeeds **Anthony Whyatt**, who has been Finance Director of the company since 1991.

**Brian Evans** has been named vice president of Western Hemisphere Sales for Raytheon Engineers & Constructors' Hydrocarbons Group, which is headquartered in Houston. Mr Evans will be responsible for all sales and commercial activities for Raytheon in North America, South America and the Caribbean Basin. Mr Evans was previouly commercial vice president for Raytheon Engineers & Constructors and has more than 18 years of experience in the worldwide hydrocarbons industry.

The Health and Safety Comission (HSC) has appointed **Roderick Allison** as the third member of the corporate body, the Health and Safety Executive (HSE). Mr Allison is currently Chief Executive of HSE's Offshore Safety Division, and will continue in this post. He joined the HSE in 1989 as Director of Special Hazards Division.

International Energy Consultants Oceanic announces the appointment of **Sam G C Phillips** as Managing Director. Based in London Mr Phillips will be responsible for the worldwide activities of Oceanic.

***Colin Allison* (above), formerly Managing Director of Jordan-Kent Metering Systems will take on the role of Managing Director of Rotork Instruments. *Graham Moores*, formerly with Honeywell and Moore, has also been appointed Sales Director.**

**Conoco (UK) Ltd, has appointed two new general managers. *Mr Roger S. Ramshaw* (above) succeeds *Mr Gary Merriman* as General Manager, Extraction. Mr Merriman has transferred to Indonesia as President and General Manager, Conoco Indonesia Inc., Jakarta. *Mr Glen Y S Bishop* (below) succeeds *Mr Pat Meyer* as General Manager, Business Development. Mr Meyer is returning to the United States as General Manager, Gas Processing and Engineering, Natural Gas and Gas Products in Houston, Texas. Mr Ramshaw and Mr Bishop will be based in the company's head office, in Aberdeen.**

Enterprise Oil has appointed **Keith Henry** to its Board as a non-executive director. Mr Henry is Chief Executive of National Power plc and has previously been Chief Executive of Brown & Root Ltd. He is a past member of the Oil and Gas Projects and Supplies Office and of the Advisory Council on Science and Technology.

# PEOPLE

**ICL Edacom has promoted *Rebecca Carter* to the position of Marketing Executive. Ms Carter is now responsible for publicising ICL Edacom's range of point of sale terminals, PC's and back office systems and peripherals. She will also be responsible for advertising, exhibitions and for providing sales support for large contracts. Rebecca has over 7 years' experience in the petrol retail industry.**

Western Geophysical Senior Vice President, **Denby Auble** will assume dual responsibilities for technology and Western Hemisphere operations. Currently senior vice president for EAME operations, Mr Auble will relocate to Houston. Senior Vice President, **Bill Schrom** will transfer to London and assume Mr Auble's responsibilities.

Chevron Corporation has announced that Vice Chairman and Director **J. Dennis Bonney** will retire at the end of the year, after 35 years service. Mr Bonney has been a member of Chevron's board of directors since January 1986 and a vice chairman since 1987.

Exal, the well surveying and downhole data acquisition section of the Expro Group, has appointed **Dr Robert Hurle** as Fluids Technical Advisor. Dr Hurle has spent over seven years in the fluid testing area with BP and, most recently, at Core Laboratories.

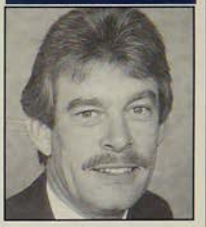
**Lawrason Thomas**, vice-chairman of Amoco Corporation will retire from his position at the beginning of 1996. **James Fligg**, who will become senior executive vice-president for strategic planning and international business development has taken over most of his duties. His present role as senior executive VP, chemicals sector will be taken over by **Enrique Sosa**, who has recently joined Amoco from Dow Chemicals.

**George Dembroski** has been elected Director of Murphy Oil Corporation, Arizona. He is vice-chairman and director of RBC Dominion Securities where he also serves as chairman of the audit committee.

**Ken Maddock** has moved from Honeywell's European Industrial Controls headquarters in Brussels to become European Vice President of Fisher Rosemount's Industrial Controls business based in The Netherlands.

***Dr Furkan Ramzan* has joined McDermott Marine Construction Ltd as Technology Manager in the Wembley-based Development Group where he will lead the Technology programme. Dr Ramzan has more than 18 years experience of engineering, development and computer programming in the offshore oil and gas industry, and is a member of the Offshore Supply Office's Technology Board.**

**Pumptronics has taken on two new members of staff for their management team. *Jonathan Coombes* (above) has been recruited as National Account Manager. He joined the company from tank gauge manufacturer PetroVend. *Arthur Plumpton* (below), previously a Field Sales Manager for MPS-Micrelec, has joined as the National Sales**



AOC International has appointed two new directors to the board. **Gordon Shepherd** will add responsibility for corporate planning to his existing duties as Financial Controller, and **Gary Wigg** who will look after the contractor's onshore activities.

Park Brown International has created a specialist Human Resource Development division. Leading the firm's new service is **Aileen Gibb** who joins the Board of Park Brown International after spending more than 14 years working for a number of oil service companies in the field of personnel and training.

**Iain Tulloch** of Hay and Co has taken on the chairmanship of Shetland Oil Industries Group for the next two years, and JP Knight (Caledonian) managing director **David Offin** now heads up Cromarty Industries Group.

**Mr Francis Valeri** has recently been appointed as General Manager of Eurecat SA. He is due to replace **Dr Georges Berrebi** as President and chairman of the company at the beginning of next year.

Repsol Board of Directors has announced several management changes and the retirement of **José Luis Díaz Fernández** from its Refining and Marketing sector. Mr Díaz will retire at the end of the year and will be replaced by Repsol's current vice-chairman **Guzmán Solana**. **Antonio González-Adalid**, President of Repsol Exploración, has been appointed President of Repsol Química and **Juan Sancho Rof**, President of Petrolnor and CLH, assumes the presidency of Repsol Butano. **Miguel Angel Remón**, Director of Planning and Control for Repsol S.A., will take on maximum responsibility within the company for Natural Gas and Technology Areas.

**Richard du Moulin** has been appointed Chairman-designate of the Council of the International Association of Independent Tanker Owners – Intertanko. He will take over from **Miles A. Kulukundis** after next year's meeting in Hong Kong. Mr du Moulin who is vice-chairman of Intertanko, has been a member of Intertanko's executive committee since 1991. He has also been chairman of Intertanko's public relations committee since it was established.

# FORTHCOMING EVENTS

## December

**3rd-5th**
**London:** 'Combustion and Emissions Control'. Details: Conference Administrator, The Institute of Energy, Davis Building, 165-189 Railway Terrace, Rugby CV21 3HQ.
Tel: 01788 578214
Fax: 01788 577182

**4th**
**London: 'Oil Loss Accounting Workshop'. Details: Caroline Little, The Institute of Petroleum.**

**4th-5th**
**London:** 'The Changing Politics of International Energy Investment'. Details: The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1Y 4LE.
Tel: 0171 957 5700
Fax: 0171 321 2045

**4th-5th**
**London:** 'Planning Profitable Strategies in The UK Domestic Energy Market'. Details: Euroforum, 45 Beech Street, London EC2Y 8AD.
Tel: 0171 793 1230
Fax: 0171 793 8544

**4th-8th**
**Beijing:** "95 China International Resources Recycling Equipment & Techniques Exhibition'. Details: Business & Industrial Trade Fairs Ltd, 18/F First Pacific Bank Centre, 56 Gloucester Road, Wanchai, Hong Kong.
Tel: 852 2865 2633
Fax: 852 2866 1770

**5th**
**Singapore:** 'Trading & Hedging the Asian Barrel'. Details: Ms Sharmeela Binwani, 151a Thomson Road, Goldhill Centre, Singapore 1130.
Tel: 65 356 0960
Fax: 65 356 0962

**5th-6th**
**London:** 'Floating Production Systems'. Details: IBC Technical Services, 57-61 Mortimer Street, London W1N 8JX.
Tel: 0171 453 2128
Fax: 0171 631 3214

**5th-6th**
**Rome:** 'The Refining Industry in the Former Soviet Union'. Details: Business Seminars International, Sussex House, High Street, Battle, East Sussex TN33 0AL.
Tel: 0171 490 3774
Fax: 01424 77334

**6th**
**London:** 'Reservoir Characterisation Process and the Use of Novel Interpretation and Modelling Techniques'. Details: Department of Earth Sciences, University of Leeds, Leeds, LS2 9JT.
Tel: 0113 233 5243
Fax: 0113 233 5259

**6th-7th**
**Kent:** 'Developing best-practice techniques for pressure movement'. Details: Sira Test & Certification Ltd, South Hill, Chislehurst, Kent, BR7 5EH.
Tel: 0181 467 2636
Fax: 0181 295 3005

**6th-7th**
**London:** 'Oil and Gas Agreements'. Details: Langham Oil Conferences Ltd, 37 Main Street, Queniborough, Leicester LE7 3DB.
Tel: 01509 881022
Fax: 01509 881576

**6th-9th**
**Jakarta:** 'Oil & Gas Technology Indonesia'. Details: Overseas Exhibition Services Ltd, 11 Manchester Square, London, W1M 5AB.
Tel: 0171 486 1951
Fax: 0171 486 8773

**7th-8th**
**London:** 'Managing Liabilities in the Offshore Oil and Gas Industry'. Details: IBC Legal Studies and Services Ltd, 57-61 Mortimer Street, London W1N 8JX.
Tel: 0171 637 4383
Fax: 0171 631 3214

**10th-11th**
**Oman:** 'Terminal Operation and Static Measurement'. Details: Abacus International, 214 Inchbonnie Road, South Woodham Ferrars, Essex CM3 5WU.
Tel: 01245 328340
Fax: 01245 323429

**10th-11th**
**Tehran:** 'Oil and Gas Prospects in the Caspian Region'. Details: The Institute for International Energy Studies, PO Box 19395, Tehran, Iran.
Tel: 98 21 225 76 33
Fax: 98 21 222 01 49

**11th-12th**
**Warwick:** 'The UK Energy Experience: A Model or a Warning?'. Details: The British Institute of Energy Economics, c/o Ms Carol Henderson, Shell UK Ltd, Shell-Mex House, Strand, London WC2R 0DX.
Tel: 0171 257 7887
Fax: 0171 257 7874

**11th-12th**
**London:** 'The Outlook for Natural Gas'. Details: FT Conferences, 102-108 Clerkenwell Road, London EC1M 5SA.
Tel: 0171 814 9770
Fax: 0171 873 3975/3969

**11th-13th**
**Paris:** 'The Deepwater Pipeline Technology Congress '95'. Details: C.I. Communications, 14 Bowden Street, London SE11 4DS.
Tel: 0171 582 2423
Fax: 0171 793 8544

**12th-13th**
**London:** 'Subsea 95'. Details: Themedia Ltd, PO Box 2, Chipping Norton, Oxon OX7 5QX.
Tel: 01608 684888
Fax: 01608 684796

**12th-13th**
**Oman:** 'Flow Metering and Meter Proving'. Details: Abacus International, 214 Inchbonnie Road, South Woodham Ferrars, Essex CM3 5WU.
Tel: 01245 328340
Fax: 01245 323429

**12th-13th**
**London:** 'Offshore Structures – Hazards, Safety and Engineering'. Details: Janine Stook, ERA Technology Ltd, Cleeve Road, Leatherhead, Surrey KT22 7SA.
Tel: 01372 367000
Fax: 01372 377927

**14th-15th**
**London:** '5th Annual Conference, UK & European Gas: Price, Supply & Demand'. Details: John Bridges, Bookings Department, IBC Financial Focus, 57-61 Mortimer Street, London, England W1N 8JX.
Tel: 0171 637 4383
Fax: 0171 323 4298

**14th-15th**
**London:** 'Metha Motion '95: European Conference & Exhibition on Natural Gas Vehicles'. Details: Europoint Technology Conference Organisers, PO Box 344, NL–3840 AH, Harderwijk, The Netherlands.
Tel: 31 341 413197
Fax: 31 341 425614

## January 1996

**16th-18th**
**Bahrain:** 'Middle East Petroleum and Gas Conference 1996'. Details: Ms Sharmeela Binwani, 151a Thomson Road, Goldhill Centre, Singapore 1130.
Tel: 65 356 0960
Fax: 65 356 0962

**22nd-23rd**
**London:** 'Bulk Liquid Storage Tanks'. Details: IIR Ltd, 6th Floor, 29 Bressenden Place, London, SW1E 5DR.
Tel: 0171 915 5055
Fax: 0171 915 5056

**29th-31st**
**Singapore:** 'Annual Fuels and Lubes Asia Conference'. Details: Vicky Villena-Denton, Fuels and Lubes International, PO Box 1200, MCPO, 1252 Makati, Metro Manila, Philippines.
Tel: 632 807-0807
Fax: 632 807 5490

IP
THE INSTITUTE OF PETROLEUM

# Code of Practice for Metalworking Fluids

This Code of Practice gives general recommendations covering all aspects of handling fluids used as lubricants or coolants in metalworking processes. These processes may be metal removal by cutting or abrasion, and metal forming by punching, deep drawing, ironing, power spinning, wire drawing, forging (hot and cold), extrusion, stamping and rolling (hot and cold).

The aims of the code are:

- to promote the most effective and economic use of metalworking fluids;
- to promote good working conditions and hygiene standards;
- to minimise health hazards from occupational exposure to metalworking fluids and recommend sound precautionary protective measures;
- to minimise environmental pollution by advocating means of reclamation and safe disposal.

Specific sections deal with plant and equipment, storage, mixing and dispensing, methods of application, quality control, microbial contamination, health hazards, reconditioning, reclamation and disposal.

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