PETROLEUM REVIEW

IP THE INSTITUTE OF PETROLEUM

June 1995

Offshore Technology Conference
Signs of optimism evident in Houston

West of Shetland
An analysis of developments

Iran
Implications of the US ban on trade

Supplies for the forces
How the army fuels the front line

SmartRadar:
The Next Generation.

Using radar tank-gauging equipment used to be a complex task. Parabolic and horn antennas were oversized and difficult to work with. And regular adjustments were necessary to compensate for drift.

That was before the arrival of the ENRAF SmartRadar with digital planar technology (DPT). Originally developed for satellite use, DPT enables the SmartRadar to adjust automatically to conditions that can distort measurement readings. As a result, you get level accuracy to within 1 mm (0.04").

Compact and easy to install, the SmartRadar can relay data to any field location desired or directly to your desk in the central control room. Digitally. Now all you need to do is sit back, relax and count the stars.

ENRAF
DELFT INSTRUMENTS

ENRAF

The Tank Gauging People.

Call or fax for a free demonstration or brochure:

Delft, the Netherlands	Houston, USA	Solingen, Germany	Gagny, France	Singapore	St. Albans, U.K.
Tel +31-15-698600	Tel +1-713-4434291	Tel +49-212-58750	Tel +33-1-45091443	Tel +65-7694857	Tel +44-1-727-843376
Fax +31-15-619574	Fax +1-713-4436776	Fax +49-212-587549	Fax +33-1-45092287	Fax +65-7694348	Fax +44-1-727-842185

PETROLEUM REVIEW

JUNE 1995 VOLUME 49 NUMBER 581 • £8.00 • SUBSCRIPTIONS (INLAND) £85.00 (OVERSEAS) £100.00

EDITORIAL

Editor: Carol Reader
Deputy Editor: Susannah Cardy
Production Editor: Emma Parsons
61 New Cavendish Street, London W1M 8AR
Telephone: (0171) 467 7100
Fax: (0171) 255 1472

ADVERTISING

Alison James
Anne Marie Fox
Classified: Elaine Smith
Landmark Publishing Services
8 Garrick Street
London
WC2 9BH
Tel: 0171 240 4700
Fax: 0171 240 4771

PUBLISHERS

Published Monthly by
INSTITUTE OF PETROLEUM
A charitable company limited by guarantee

Director General: Ian Ward

61 New Cavendish Street, London W1M 8AR
Telephone: (0171) 467 7100
Fax: (0171) 255 1472

IP THE INSTITUTE OF PETROLEUM

For details of subscriptions, please apply to Anne Poynter at the Institute of Petroleum
Tel: 0171 467 7124

Printed by Eyre & Spottiswoode Ltd, London and Margate.

US MAIL: Petroleum Review (ISSN 0020-3076 USPS 006997) is published monthly for US$165 per year. Second class postage paid at Middlesex, New Jersey. Postmaster: send address changes to C&C Mailers International, PO Box 177, Middlesex, New Jersey 08846, USA.

ABC BUSINESS PRESS ISSN 0020-3076
MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

CONTENTS

COVER PHOTO
Sovereign Explorer during appraisal drilling. Photo by British Petroleum

NEWS IN BRIEF

21 April
Conoco has terminated contracts with two Jet service station operators and sacked nine tanker drivers after an investigation revealed that 4-star petrol sold at the two sites had been mixed with unleaded fuel.

24 April
British Coal has confirmed plans to sell off British Fuels by the end of the autumn.

25 April
An amendment to the UK Gas Bill, which would have split Transco off from British Gas and made it a wholly-owned subsidiary, has been thrown out.

Egypt and Israel have agreed in principle to build a gas pipeline between the offshore fields east of the Nile Delta and Israel.

26 April
Iraq has granted Russia the right to develop two of its largest fields. Russian sources claim that the southern fields of north Rumeila and western Kurna are capable of producing 60m tonnes of oil a year, which is equivalent to 20 percent of Russia's total output.

Tanker oil spills in 1994 were at their lowest for eight years, according to the International Tanker Owners Pollution Federation.

27 April
Agip's plans for developing the central North Sea Thelma oilfield have been given the green light by UK Energy Minister Richard Page.

The start-up date for BP's North Sea Andrew field has been brought forward once again. Originally expected to come onstream in January 1997, the project was brought forward three months and has now been re-scheduled for July 1996.

AOC International has won a £6m hook-up and commissioning contract for British Gas' Armada platform in the North Sea.

A massive gas pipeline explosion in the wastelands of Komi in northern Russia sent a column of fire hundreds of feet up into the air. No-one was hurt in the blaze, which nevertheless sent shockwaves around the world. Gazprom later admitted there had been 34 pipeline 'incidents' in 1994, a quarter of which were caused by corroded pipes.

28 April
An EPA rule making ethanol compulsory in certain US fuels has been overturned by a Washington appeals court. EPA policy not only required high percentages of oygenates all year round in certain cities but also insisted that at least 30 percent of the oxygenate be derived from ethanol. However, the appeal judges ruled that the Agency could not insist upon the inclusion of ethanol.

A gas explosion in the South Korean city of Taegu has killed over 100 people. The blast was caused by a leaking main at an underground building site.

Panalpina has launched a direct shipping service between Aberdeen and Nigeria, in response to growing trade links.

The Colombian government claims to have exposed a plot by the National Liberation Army guerilla group to attack BP-operated oil installations.

Chevron has called upon Statoil to initiate a final redetermination of equity on the Statfjord field, which straddles the UK/Norwegian median line. SInce the last redetermination result in 1991, Chevron claims new data has been acquired which reveals 'numerous and substantial discrepancies from previous interpretations'.

Simon Engineering has agreed the sale of the exploration and geophysical service operations of its Simon Petroleum Technology offshoot to a management team backed by Montagu Private Equity.

29 April
The Ukrainian oil company, Poltava Petroleum, has received an $8m loan from the European Bank for Reconstruction and Development.

Britain's offshore workforce dropped by 7,000 last year to just over 27,000, according to the DTI's latest energy report. The government attributed the sharp decline to the 'unusually high number of large fields' under development in 1993.

30 April
Qatar has received a $2bn loan from a group of Japanese banks and government agencies to help construct a LNG plant.

Petronas has signed a joint venture deal with the Philippine National Oil Company to explore for oil and gas in the southern Philippines.

1 May
Scottish Enterprise has established a new company in Baku to help Scottish companies bid for work in Azerbaijan.

British Gas plans to construct a LNG plant in Trinidad moved a step closer when Cabot agreed to purchase 60 percent of the output. The plant would produce 400m cu ft of LNG per day.

British Gas is to interview around 11,000 staff at its public gas supply division in order to assess their suitability for handling customers. The exercise is designed to both cut down on staff and to respond to fierce criticism over falling standards of service.

Quadrant Gas has acquired Gas-Direct in a mutually agreed takeover. Gas-Direct will continue to operate with its staff and brand name from its Dorking offices.

Mobil is to shed 4,700 jobs from its administrative, support and downstream sectors worldwide. The radical shake-up will save more than $1bn a year.

Colombian oil workers employed by Ecopetrol have threatened widespread strike action if demands for a 30 percent wage increase are not met. The government has set an 18 percent limit on rises for public workers in an attempt to control inflation.

The price of Brent futures rose to a high of $19.35 a barrel, compared with a first quarter average of less than $17, in response to President Clinton's trade embargo on Iran.

2 May
Enron Oil & Gas and Chieftan have acquired all of Sante Fe International's interests in the Gulf of Mexico for undisclosed terms.

Shipping has ceased to be Kvaerner's core business, following a strategic review of the company's future. The group has confirmed it will move away from direct ownership of vessels, towards holding shares in shipping businesses.

Petrobras plans to invest $1bn in new offshore production systems in order to double Brazil's oil output by 2003.

3 May
Halliburton Energy Services and Global Industries have formed an alliance, known as Total Abandonment Services, which will offer a complete package of abandonment services for the Gulf of Mexico.

Brazilian oilworkers went on strike to demand a 23.6 percent pay rise. Production was halted at nine out of 30 wells in the Campos Basin.

Kvaerner is to set up a joint venture engineering company in Indonesia with local company, PT Bakrie & Brothers.

A major alliance has been set up to strengthen business links between the world's oil capitals. World Energy Cities (WEC) was formed by Aberdeen, Calgary, Houston, Perth, Stavanger and Vung Tau.

4 May
YPF President José Estenssoro was killed in an aircraft crash in Ecuador. He had been head of the company since 1990.

The Davy and Bessemer platforms were installed in the North Sea 60 miles off Great Yarmouth. Both facilities are AMOSS designs and weigh over 1,000 tonnes each.

Thailand has commissioned the US firm International Response Corporation to set up waste reception and recycling facilities for the oil industry along the country's east coast. The move is part of the country's efforts to meet the requirements of the Marpol Convention.

NEWS IN BRIEF

5 May

The US Department of Energy plans to reduce its workforce by 4,000, according to Energy Secretary Hazel O'Leary.

ARCO has received approval from the UK DTI to develop the North Sea Trent and Tyne gas fields.

The merger of Shell's oil trading and shipping activities is expected to cut costs by 15-20 percent, according to President of the new company, Paul Skinner.

8 May

Electric cars may pose more of an environmental hazard than petrol-driven vehicles, according to new research from the Carnegie Mellon University in Pittsburgh. The scientists have found that the processes needed to produce enough lead for large-scale production of car batteries would expose thousands of people to unacceptably high levels of lead pollution.

The World Bank has raised a $99m loan to help finance the emergency operation needed to contain Russia's devastating Komi oil spill. The total cost of the project is estimated to be $140m.

9 May

Texaco has been given the green light by the UK government to develop the £290m Erskine gas and condensate field in the central North Sea. Amoco's separate proposal for the modification of the Lomond platform to allow processing of Erskine production was also approved.

Cairn Energy and Midlands Power have signed a Memorandum of Understanding to appraise and potentially develop the Semutang gas field in Bangladesh for power generation.

First oil production from the Elang and Kakatua discoveries in the Timor Gap between Australia and Indonesia is scheduled for 1997, according to Petroz exploration manager Al Haydock. A commercial decision to proceed with the development is expected in the third quarter of this year.

The state-owned Hindustan shipyard claims it is being overlooked by India's Oil and Natural Gas Commission when it comes to placing orders for offshore construction work, according to a report in *Lloyd's List*. Hindustan officials claim the offshore platform yard is under threat because contracts are going to private and multi-national companies.

Aker has won board approval for a major re-organisation of its business into two separate operating companies. The parent Aker A/S company will handle the embarrassing Sleipner A lawsuit.

10 May

Shell has set up a new joint venture company with a local firm in northern Vietnam which will store, bottle and distribute LPG throughout the region.

PdVSA is to publish a new administrative framework for development of the country's oil industry within the next two months, according to company president Luis Giusti. The guidelines will include a new set of tax rates for different sectors of the oil industry.

Texaco has signed an agreement with the Ecuadoran government to clean up environmental damage in the Amazon forest. The deal, which Texaco refers to as 'social compensation', will involve treating polluted water and contaminated production sites, as well as carrying out re-afforestation.

11 May

CATS will be handling over 1.2bn cu ft of gas per day in 1997, following the conclusion of two new agreements by operator Amoco. The latest contracts are with Texaco and BP, for the transportation of gas from the Erskine and Andrew fields respectively.

12 May

Verdicts of unlawful killing have been recorded on the four British victims of the tanker disaster of June 1993, in which the BP oil tanker, *British Trent*, was hit by Hong-Kong owned bulk carrier, *Western Winner*. An inquest at Poole in Dorset heard how the crew of the *Western Winner* took photographs of the victims as they struggled in the water and made no attempt to rescue them. A total of nine men died in the crash.

A consortium has been created in Moscow between Exxon, Rosneft and Sodeco and a local company to develop the $15bn Sakhalin-1 oil and gas field on Sakhalin Island. A final production-sharing agreement is expected on 29 June.

13 May

The IMO's International Convention on Oil Pollution Preparedness, Response and Co-operation, which requires oil rigs, tankers and terminals to have emergency response plans, has come into force.

14 May

The EC has proposed a new set of rules for member states wishing to introduce an energy tax to reduce CO_2 emissions. The medium-term target for the tax rate is $10 a barrel of oil but, following opposition from Britain last year, the rules are no longer compulsory.

15 May

Amec Process and Energy has secured the contract for topside completion on the North Sea Britannia field.

Shell has signed a production-sharing contract with the Indian government and ONGC for the exploration of 11,000 sq kms onshore in Rajasthan.

A Labour amendment to the Gas Bill, which would have given Ofgas the power to regulate excessive salaries and bonuses at British Gas, was defeated in the House of Commons by 271 to 234 votes.

Sir Ian Wood, chairman of the John Wood Group, has urged the UK government to ensure Norway complies with the terms of the EU Public Utilities Directive, which requires all participants to advertise major contracts in the EU Journal. Sir Ian claims that British companies face 'a totally lop-sided playing-field' when bidding for work in Norway.

The installation of Elf Enterprise Caledonia's Claymore accommodation platform was completed after eight days. The work was carried out by Saipem UK, using the heavy lift vessel, M7000.

16 May

First gas has come ashore from the Miskar field, 120km off the Tunisian coast. The field, in which British Gas holds a 100 percent interest, makes Tunisia self-sufficient in future natural gas supplies.

Iran has backed Russia by claiming veto rights over oil developments in the Caspian Sea. Deputy Foreign Minister Abbas Maliki said treaties between the two countries, which date back to 1921 and 1940, require all states surrounding the Caspian to approve energy projects in the sea.

Between 10 and 15 percent of ENI will be sold off in the autumn, according to the Italian Prime Minister Lamberto Dini.

Industry Minister Tim Eggar has warned British Gas it will not be allowed to 'walk away' from long-standing contracts with major gas producers once the UK domestic gas market is deregulated.

17 May

British Gas was forced to switch venues for its annual meeting on 31 May, after over 6,000 shareholders notified the company that they wished to attend. The contentious event will now take place at Docklands London Arena and not the Barbican Centre.

18 May

Exploration licences have been awarded for all 26 of the West of Shetland blocks applied for in the 16th offshore licensing round. The process has been 'fast-tracked' to allow companies to make the most of the summer weather.

Proposals from Mobil for the development of the Galahad gas field in the southern North Sea have been approved by the UK government.

19 May

A judge sitting at the Court of Sessions in Edinburgh ordered that one of the Greenpeace protesters occupying the Brent Spar oil rig *(see Newsdesk)* be ejected from the installation. However, Lord Johnston said he could take no action against the other 11 demonstrators because he did not know their names.

EC re-examines working hours offshore

Oil company executives across Europe will be answering a series of searching questions on working hours and shifts offshore over the coming weeks .

The aim of the EC questionnaire – due to hit oil company desks as *Petroleum Review* went to press – is to review the exclusion of offshore workers from the Working Time Directive.

Drawn up by an independent company on behalf of the Commission, the questions have been subject to consultation, during which many concerns over detailed wording have been ironed out. However, industry sources in Britain are still uneasy.

'This questionnaire has been brought forward on health and safety grounds, yet there's not one question on health and safety in the whole document,' said one.

If offshore workers were to be brought within the current terms of the Working Time Directive, UKOOA believes health and safety standards would suffer.

'It's not so much the 48-hour week we are concerned about as the maximum eight-hour night shift,' said a spokesman. 'This would mean extra accommodation, extra helicopter flights and extra hazards.'

The stipulation that workers must work no more than 12 consecutive days would also cause major problems for the UK industry.

Sources believe the questionnaire is a genuine attempt by the EC to find out more about working conditions offshore but are concerned at the Commission's apparent keenness to change the current status quo.

One compromise being discussed in Brussels, but again finding little favour in Britain, would allow trade unions and employers to negotiate their own working time.

The questionnaire has already been piloted in both the Netherlands and Denmark and the EC hopes to have a full report based on its findings finalised by the end of July.

Meanwhile, the UK government has asked the European Court of Justice to overturn the EC's decision to treat working time as a health and safety issue, rather than placing it under the Social Chapter, which allows Britain to opt out.

Brent Spar 'sets no precedent'

Disposal of the Brent Spar loading buoy in the 6,000 metre-deep waters of the Atlantic does not set a precedent for other North Sea facilities, according to Shell.

Reacting to claims by Greenpeace that, as the first offshore facility to apply for a UK licence to dump in deep waters, Brent Spar would encourage similar disposal plans for other facilities, Shell said that the Spar was an 'unusual installation'.

'It is likely to be used in very few other cases involving redundant facilities,' said a spokesman.

A three-week occupation of the platform by Greenpeace ended on 23 May when Shell officials stormed the rig.

Heidrun reserves larger than expected

At the christening of the giant Heidrun platform in Norway last month, Conoco made clear its reluctance to relinquish operatorship once production begins in mid-August.

Asked whether he found it 'satisfying' that Statoil would soon take over the helm, Conoco President Constantine Nicandros replied bluntly: 'No, but that's the law'.

Statoil President Harald Norvik was quick to point out in response that Norwegian policy would be changing with this year's 15th Licensing Round.

'There won't be any conditions like (those governing) Heidrun,' he said, admitting that 'It's very hard to have those kinds of rules'.

The first floating production facility in the world to be built entirely from concrete and weighing a massive 220,000 tons, Heidrun will be installed just 70 miles south of the Arctic Circle on 26 June.

Heidrun is due to be installed in late June

It has been a particularly innovative venture which, according to Mr Nicandros, 'makes all of us stand a little taller'. 'World first' innovations include the tension leg platform constructed of lightweight aggregate concrete, a titanium drilling riser and a direct loading system.

But Heidrun has had its problems: tow-out has been delayed; Aker is currently seeking $85 million in compensation for cost-overruns; and the high acid content of the oil means it is likely to command a lower price than Brent blend. Then to top it all, last month one of the tethers dropped to the sea bed as it was being towed to site.(As *Petroleum Review* went to press, the retrieved tether was being inspected for damage and a spare was under construction at HiFab's Nigg Bay yard.)

Nevertheless, Mr Nicandros believes the overall project cost will come within five percent of the original budget which he said was 'pretty darn good'.

Moreover, although recoverable reserves are still officially at 750 million barrels of oil and 1.6 trillion cubic feet of natural gas, new reservoir models have revealed that the true figure for oil could be somewhat higher. Statoil is also looking to increase the plateau rate from 220,000 to 250,000 b/d.

Over 70 percent of the project was handled by the Norwegian oil industry and both Mr Nicandros and Mr Norvik congratulated Norway on its competitiveness and technology, claiming it was 'at the forefront of the world'.

Oil will be transported to shore by a direct tanker shuttle loading system, eliminating the need for storage facilities, while natural gas will initially be reinjected. However, the gas will later be used to feed a methanol plant currently under construction in mid-Norway. Statoil is also planning to build an adjacent power plant, which would be fuelled from the gas cap.

Elf to sell its Dutch service station network

Elf Aquitaine says it is in 'exclusive negotiations' with Mobil for the sale of its network of 72 service stations in the Netherlands.

Elf's Dutch network represents a less than two percent share of the country's distribution market and is judged by the group to be too limited in size to yield adequate returns.

Elf's poised pull-out in Holland follows the sale of its distribution networks in Belgium and Luxembourg (86 outlets in total) to Shell last month. 'Our strategy is to withdraw from countries where our market share is too weak and concentrate on developing our strong points in order to improve profitability,' said Elf Chairman Philippe Jaffré.

This policy forms part of an on-going programme to shed 'non-core' financial and industrial assets. This generated an income of FFr6 billion in 1994.

In Britain, where Elf has a market share of just under four percent, the group is actively looking to sign a partnership agreement by the end of 1995. If the company fails to forge an alliance, a withdrawal from the UK retail market is a strong possibility *(Petroleum Review, May 1995).*

The situation in Germany is rather different. Elf has a very strong retailing position there, with a network of 960 stations and almost 20 percent of the market. Elf has a good foothold in Spain too, via a sizeable shareholding in Cepsa, which operates a network of 1,145 outlets.

Europe turning its back on gasoline

Gasoline demand in Europe will slump dramatically over the next 15 years, according to a new report, despite the fact that car ownership is set to soar.

The economic consultancy Wefa Energy predicts that demand for petrol in the major EU countries will decline by a massive 25 percent by 2010 as more and more new cars are fitted with diesel engines.

By the turn of the century, one in three showroom cars will run on diesel, says the report, and by 2005 diesel will account for over half the total motor fuel demand in Europe's major economies.

Improvements in fuel efficiency and the increasing consumption of alternative fuels such as LPG and CNG will also contribute to the decline in gasoline demand.

The report warns that European refiners must find long-term export outlets if they are to avoid permanently depressed margins.

Car ownership may be soaring but the demand is for diesel engines

OPEC partners expected to stand by Iran

Fellow OPEC members are likely to reassure Iran at this month's conference that they will not take advantage of the recent US trade embargo against Tehran.

'There may be a small temptation for the large producers to make up the temporary shortage,' said Dr Manouchehr Takin of the Centre for Global Energy Studies (CGES), 'but they have observed their quotas for so long now that we do not believe they will be swayed'.

Dr Takin dismissed recent press predictions of major supply disruptions and price fluctuations as US companies search to replace the Iranian crude they have lost. 'Disruptions will be short-lived,' he said. 'We are only talking about 300,000-400,000 b/d of crude and the likes of Mobil and Exxon will have been preparing for this eventuality for some time.'

Nevertheless, Iran has been taking no chances. Last month, Oil Minister Gholamreza Agazadeh sent out a strong warning to other OPEC members, saying 'Nobody has a right to take advantage of changed market conditions'. He also ordered a one-week surge in oil output to 4.1 million b/d – 500,000 b/d above the country's quota – in a demonstration of Iran's production strength and has suggested that its quota should be permanently increased.

The weak dollar means that talk of a new pricing mechanism is also likely to be high on the agenda at the 19 June meeting. However, any change is extremely unlikely. According to the CGES, 'Studies during the early 1970s failed to devise a solution even at a time when OPEC exercised a great deal of control over the official price of oil.'

'Technology drives North Sea success'

Technical progress is the main driver behind the North Sea's improved competitiveness, according to energy consultants Smith Rea.

Cost reductions and new contracting practices, heralded by the CRINE initiative as major factors in recent North Sea successes, actually come a poor second, according to the group's latest report.

'Without technical progress, much of the resource base of the North Sea would have remained unexploitable at almost any conceivable combination of cost and price.'

The report also predicts that this new offshore technology could have major repercussions for OPEC if it were to be extended to the rest of the world. 'If this happens, OPEC's ability to control the world oil price may never return.'

Floating petrol station

Charringtons recently transported a 300-ton fuel supply barge from Goole to Plymouth by road.

Equivalent to the width of three cars and 86 feet long, the 'Elsie May' is one of the largest loads ever to be carried on Devon's roads. A former coal barge, she will replace Charrington's existing floating petrol station serving boats and leisure craft in the Salcombe estuary.

NEWSDESK

Turkmenistan set to benefit from Turkish/Iranian deal

The announcement by Turkish and Iranian energy ministers of a new $20 billion, 20-year oil and gas agreement just days after President Bill Clinton's call for a trade and investment embargo against Iran is likely to cause consternation, not only in Washington, but in Ankara.

On 4 May, Iranian Oil & Gas Minister Gholamreza Aghazadeh announced at the end of a three-day visit to Turkey that Iran would supply some 4 million tonnes (80,000 b/d) of crude oil to Turkey in 1995, the same level as last year, with an option to raise the level to 5 million tonnes (100,000 b/d). More importantly, Mr Aghazadeh said Turkey had agreed to import 2 billion cubic metres (bcm) of natural gas from Iran in 1998 under an agreement which provided for Iranian supplies to Turkey to increase by 2bcm a year to a level of 10bcm/y in 2002. Turkish Energy Minister Veysel Atasoy said the gas would be brought to Iran via a pipeline to be built from Tabriz to Ankara.

Turkish President Suleyman Demirel initially signed an agreement on possible gas deliveries last July. However, there are strong elements in the Turkish government which wish to keep their distance from Iran in order to safeguard Turkey's prospects of becoming the principal outlet for crude oil from Azerbaijan and Kazakhstan. The Foreign Ministry and the Prime Minister's office, which between them have taken responsibility for promoting a Turkish terminal for a Caspian pipeline, have largely been cut out of the gas deal with Iran.

It may be significant that President Demirel, of whom Mr Atasoy is a close associate, is now on extremely bad terms with Prime Minister Tansu Ciller and the Foreign Ministry in general, both of whom have recently conducted intense negotiations with the United States on the pipeline issue and the now-completed extrication of Turkish forces from northern Iraq.

Iran has said that the gas line to Ankara would be part of an overall project to enable Turkmenistan to sell its gas to European markets by pipeline through both Iran and Turkey. 'We have agreed on the feasibility of the project and on construction of a pipeline,' said Mr Aghazadeh.

From an Iranian perspective, the advantage of the current scheme is that is is well within Iran's ability to extend existing Iranian-built local gas delivery systems in north-eastern Iran across the border into Turkey. Once Iran has any foothold in the Turkish market, it will be in a position to arrange either a swap arrangement by which it imports Turkmenistan gas in the Iranian northeast, whilst exporting its own gas to Turkey, or alternatively it could offer Turkmenistan a direct pipeline link to Turkey by means of its existing gas infrastructure and some limited new connections.

How such a line will be funded remains open to question. The US government is mandated by Congress not only to refuse to fund international projects involving Iran but also to lobby actively in the World Bank and the European Bank against international funding for such projects.

Texaco shakes up UK network

The Texaco logo is set to become a less familiar sight around Britain following the company's announcement of an extensive shake-out in its retail network.

Approximately 15 percent of its 560 company-owned outlets are to be exchanged or sold in an attempt to focus operations in a corridor broadly bound by Preston, Leeds, Maidstone, Bournemouth and Bristol.

Dealer-run sites are also under threat. 'Those that are outside the new preferred marketing area or which do not support Texaco brand objectives in terms of facilities, product offerings and customer service will not be reviewed,' said a spokesperson.

Although shrinkage seems inevitable, the company claims the re-structuring will not necessarily mean a reduction in its overall number of sites. 'Because we are exchanging and not just selling, we may lose sites, we may end up with the same number of sites, or we may even gain sites,' said the spokesperson.

A buyer has yet to be announced for the 80 or so company-owned stations earmarked for disposal but sources suggest the Frost Group as the most likely recipient.

Britannia contract condemned

A group of six MPs from the north of Britain have condemned a decision by Conoco and Chevron to award the Britannia field contract to the Dragados yard near Cadiz in Spain.

They claim hundreds of British jobs have been put in jeopardy as a result.

Sainsbury's launches 'city' fuel

British hypermarkets continue to take the initiative when it comes to marketing new fuels with the launch of Sainsbury's new 'City Diesel'.

The company claims the new fuel produces 40 percent less particulate emissions, almost 30 percent less smoke and 'offers significant reductions on all other diesel pollutants'.

Cross-subsidies will reduce its cost to only 2p per litre more than the company's existing diesel.

Earlier this year Tesco launched a new grade of unleaded petrol guaranteed to contain no more than one percent benzene.

'All refineries should undertake BS7750'

Guidelines produced by the IP for oil refineries implementing BS7750 are so clear they leave companies 'no excuse but to take the environmental initiative'.

According to Professional, Environmental & Caring Services, which recently gained accreditation for BS7750, the guidelines take refiners through the process step-by-step.

The company is one of 10 which are now accredited by the UK Department of Trade and Industry for BS7750 environmental certification.

Mr Peter Scott of Professional, Environmental & Caring Services receiving BS7750 accreditation from Mr Michael Heseltine

Change management – the business challenge for the 21st century

By David Varney, Managing Director, Shell UK Downstream Oil and President of the Institute of Petroleum

Mr Varney gave the following address to members and guests of the IP London Branch at its April meeting.

He said:

'Change can damage your economic health' is a warning that Jeremiahs have offered throughout history and is a growing chorus today. It is true that over the past 200 years the march of technological and commercial change has substantially destroyed many occupations – from hand-loom weaving in early 19th century Britain to deep-coal mining in the late 20th. Also it has hugely increased consumer choice, provided many new employment opportunities and transformed standards of living. As each new technology has emerged, our fear of its adverse consequences has overwhelmed our ability to describe the possibilities it unleashes.

The process, which we call progress, has been largely driven by competitive business. It is the unique feature of free-market capitalism that it demands constant experimentation with new and improved processes and products – and the substitution of those that exist by others that prove more efficient, beneficial or pleasing to the customers. Business needs to change to survive.

David Varney, Managing Director, Shell UK Downstream Oil and IP President

How to manage change

How to manage this change is naturally a commonplace of business discussion. But does that just mean reducing the inefficiencies of existing structures to meet today's competitive challenges? Or does it mean transforming an enterprise to fit it for future business conditions?

Few businesses survive for long. The average life is only a few decades. Achieving even this in the future will, I believe, require a willingness constantly to challenge fundamental assumptions about customers, competitors, technologies, processes, organisation and purpose – what Peter Drucker calls the 'theory of the business'.

Most organisations embody their 'theory of the business' deep inside the daily routines of the organisation which bring order and security to its members. Indeed, specific parts of the organisation are concerned to see that the 'theory' is implemented without question. Few organisations have been successful in debating and challenging it. I know from experience that even exposing part of the 'theory' can invoke powerful reaction. But survival requires learning to live with productive reasoning which questions existing ways of doing things. Too often defenders of the status quo have sealed their organisation's fate by resisting this challenge.

Today, the pace and extent of change is ever more pressing. I will discuss why this is, both generally and for the petroleum industry, before considering how we might be able to achieve the flexibility and creativity necessary to meet such challenges.

There are many reasons why the pressures for change are growing. These are some:

- governments are liberalising their economies and exposing all businesses to the full rigours of competition,
- industrialising countries increasingly provide a competitive challenge to today's developed economies,
- the information revolution is transforming every aspect of business,
- the pace of scientific and technological development is accelerating,
- environmental concerns press governments to take measures which may have significant economic impact – intended and unintended,
- and, finally, business people are becoming more adept at managing change.

Last month the 472 metre-high concrete and steel platform was towed from Stavanger to the Troll field. (Photo courtesy of Norske Shell)

Economic liberalisation has transformed the business playing field. Think of the effect in Britain alone of the privatisation of state monopolies, 'Big Bang' in the City, and the Single European Market. Internationally, the impact has been even more profound – economic revolution in former Communist states like Russia and, much more successfully, China, a switch to encouraging rather than barring inward investment by many countries, and regional and global agreements to free trade.

Partly because of such changes, many developing countries, particularly in East Asia, have been able to achieve rapid industrialisation and sustained high levels of economic growth. China, South Korea, Thailand, Taiwan, and Singapore were all able to achieve real annual GDP growth in excess of 7 percent throughout the 1980s – compared with our own 2.7 percent in that booming decade.

Rapid Asian growth has continued in the 1990s and the region now accounts for more than one-third of the world's fixed investment. Shell long-range planning scenarios suggest that the economies of East Asian countries, with their rapidly expanding populations, could grow six-fold by 2020. Including Japan, these countries now account for a quarter of world output on a purchasing power parity basis. By 2020 it could be 40 percent.

A developing world offers, of course, new market opportunities as well as competition. The real value of British imports from the six small Asian 'tigers' grew by 60 percent in the 10 years to 1992. But so did our exports to them. By the beginning of next century the East Asian market could compare in size to Western Europe's.

Information revolution

The 'information revolution', based on the twin pillars of computing and telecommunications, is likely to change society as fundamentally as the industrial revolution in the 18th and 19th centuries. The impact may be even greater for two reasons. One is the sheer pace of development. The second is its pervasiveness. As an enabling technology which can transform every economic and social activity, the impact of information technology (IT) is likely to be even greater than, say, the invention of steam power or internal combustion.

The globalisation of capital markets – where huge sums can flow around the world in seconds, into and out of currencies, countries and companies – is already an indication of how such advances can not only change business activities but also challenge governments. For companies, it means having their performance constantly judged against the international best.

But it is not only money that is more portable. By simplifying and standardising processes, and reducing the need for specialised skills, computers lower barriers to competition and ease the transfer of work. We tend to focus on trade figures but foreign direct investment by companies, building plant near their overseas customers, is increasingly important. Such investment provides a return to the home country – a rise in overseas investment earnings has strengthened Britain's balance of payments – but few jobs.

With the power of telecommunications, work can often be done as easily 5,000 miles away as next door. Your local travel agent making flight bookings on a computer screen may not even be aware that the transaction is being processed by the airline's central reservation department in India – where qualified labour is much cheaper.

Information technology has been used to make companies more efficient in many ways. I believe the process has just begun. At first IT systems had to be designed by computer specialists. They didn't have the business understanding, or the user the understanding of computers, to conceive their true potential to change how things are done. Now,

people of every discipline have the knowledge of IT to think creatively about how its powers can be used to improve their work. At the same time, the IT is becoming more user friendly allowing more employees to share its use.

The analytical and data processing power of computers contributes to the increasing pace of scientific and technological advance. To take just one example of how such advances may affect business, in an area of great interest to the petroleum industry, the Ford chairman, Alex Trotman, believes that 'new technologies such as advanced electronics, ultra-light materials, computer-aided design and a host of others could change cars more radically in the next 10 to 20 years than in the last 100.' There is little doubt that such change would include very much improved fuel efficiency.

I am optimistic – and present evidence gives me good reason to be – that technological innovation will enable us to tackle the environmental consequences of population growth and increasing material consumption. However, I am pessimistic that some governments – unwilling to think through the scientific, social and economic complexities – may enact measures which will inhibit the commercial drive on which we all depend.

Finally, as I said, we are getting more adept at managing change. Many new business techniques have enabled companies to cut costs, increase efficiency, improve quality and speed innovation. In an increasingly open global market-place their competitors must match them or go under.

Facing competitive pressures

Before I turn to discussing the response to such competitive pressures, let me look at the specific challenges facing the petroleum industry. We are well used to coping with change, as a glance at the past 50 years reminds us.

Post-war rebuilding and economic growth in the 'never had it so good years' led to rapidly increasing oil consumption. The number of cars on British roads grew tenfold between 1950, when there were 13 British refineries with 11 million tonnes of capacity, and 1974, when there were 22 with 140 million tonnes. The 1970s oil shocks brought an abrupt change of course. High oil prices enabled new reserves in Alaska and the North Sea to be developed but consumption fell, and in Western Europe has never returned to pre-1973 levels. The number of refineries in Britain has fallen back to 13, with under 100 million tonnes of capacity. In the mid-1980s, the upstream industry faced another abrupt change as oil prices collapsed.

Unfortunately, we cannot now see calmer waters ahead. Indeed the barometer is falling and the map shows whirlpools, rapids and dangerous shoals.

Oil prices are now a third of their 1985 value in real terms. But the upstream industry has managed to cut its costs sufficiently to allow continuing development of increasingly expensive reserves in mature basins such as the North Sea. Indeed, the North Sea, far from declining, has a new lease of life with record oil and gas production – the result of technological advances and a renewed focus on efficient operations.

And, despite low prices, the industry continues to extend its reach. In the 1970s, North Sea water depths of 150 metres stretched our abilities. Shell Oil recently announced its third ultra deep-water development in the Gulf of Mexico – Ram Powell in nearly 1,000 metres of water. In the United Kingdom, the Foinaven field is being developed in 500 metres of water to the west of Shetland.

But maintaining production from mature North Sea fields will be increasingly challenging, as will recovering remaining reserves in small accumulations. The industry must also cope with the transformation of the British gas market. This offers new opportunities but is a hugely complex change which must be got right or it will damage the value of existing offshore assets and discourage future investment.

Downstream oil products businesses in Western Europe face low refining margins, increasingly competitive markets and higher fuel taxes. In Britain, and some other countries, new competitors have taken advantage of changing social patterns in an increasingly car-based society to compete with national oil marketers in prime sites.

The burden of environmental expenditure continues to grow. The quality of environmental debate remains poor and damaging measures are still promoted with little scientific or economic analysis. However, initiatives like the joint research programme by the European oil and automobile industries, in conjunction with the European Commission, into ways of improving air quality may lead to more rational policies.

Where are we going?

That is where we are now - but where are we going?

Global figures suggest that oil consumption is growing slowly and gas consumption only moderately. But they are distorted by collapsing oil and gas demand in the Former Soviet Union. Developing countries are consuming growing amounts of oil, particularly in Asia, while demand for gas is increasing in most parts of the world.

'We are well used to coping with change'

If we look forward to a world of expanding populations, economic development and increasing material consumption – including much greater car use in developing countries – we can expect continuing growth in demand for energy. The world could require between 30 and 70 percent more energy in 25 years time. In this time-scale, such additional demand can only be supplied by fossil fuels.

It will be several decades before new renewable resources are sufficiently developed to take a substantial share of consumption, or advancing technology enables us radically to improve energy efficiency. So this industry faces the very considerable challenge of delivering much greater supplies of oil and gas in the first half of next century.

Growth in demand will, of course, largely take place in developing countries. In the industrialised economies, energy consumption is likely to grow much more slowly. So there will be two different patterns to the industry – rapid expansion in developing industries but low-growth and maturity in OECD countries. Today, we can see refinery

construction booming in developing countries but almost none in Western Europe or North America.

The European petroleum industry will have to maintain its facilities, adjust to changing patterns of supply and demand, and fund growing environmental demands in a market offering little growth and only slim margins. Competition for capital will increase with the need to fund so much new production, refining and distribution facilities elsewhere. The pressures on the industry will be even fiercer and only the most effective companies can hope to prosper.

'A company that cannot achieve change won't survive'

Companies in both the upstream and downstream sectors have already reduced their costs a great deal. Shell UK's oil product unit distribution costs, for example, have been halved in five years. A key aspect of this has been marked reductions in staffing levels. In 1980, Shell UK employed 20,000 people, in 1991, 12,000 and today under 8,000.

But as I indicated at the beginning, reducing inefficiencies and cutting costs will not in themselves be an adequate solution. There is a need for much more fundamental change in the way we do things – for questioning every assumption about the way we do our business.

The term 'learning organisation' is often used but the psychologist Chris Argyris makes an important distinction between 'single-loop' and 'double-loop' learning. The first merely finds what is wrong and fixes it. The second reflects on the 'whys' – such as 'why was it broken', 'why was it not fixed before', 'why do we do it that way', 'why do we do it at all'?

How can we develop the capacity to do this? Traditionally senior managers had the power to ask such questions and told the rest what to do. Unfortunately, the complexities of modern businesses are far beyond such an approach – it is impossible for a distant manager to imagine how particular operations can be improved. Only those directly responsible can do that. Nor can a cumbersome corporate bureaucracy respond sufficiently quickly, flexibly or sensitively to rapidly changing conditions.

So organisations are becoming flatter, less hierarchical. Decision-making is being devolved. Individual staff are no longer required just to carry out instructions but to take responsibility for improving their own work. Most find this a liberating, motivating change. But it is not always easy. Challenging assumptions about how things are done doesn't just mean how others do things but how we do things ourselves.

We are conditioned to be defensive and, at a time of job insecurity, there is always a tendency to keep our heads down and avoid the difficult, challenging questions. The problem is that change is not just an option – a company that cannot achieve it won't survive. Nor is it possible to wait until the signs of disaster are clear. By then it is too late. The commitment of people to fundamental change has to be built when existing approaches appear still successful.

As organisations become more flexible, relationships become more fluid. People are increasingly working in project teams, across organisational boundaries and for many clients. Management is about orchestrating their efforts – guiding and integrating, rather than directing.

But strategic direction and operational standards still have to be maintained. Global communication means that lapses by any part of an organisation can damage the reputation of the whole. And, the financial liabilities of failure can be severe – think of *Exxon Valdez*. Those responsible for managing financial market operations have recently had cause to ponder the appropriate balance between trading flexibility and prudent business controls. Organisations place their survival in doubt when they overlook the fundamental need for business controls.

Effective communications is clearly the key. But it is a paradox that as the means of communication become simpler, actual communication becomes more difficult. It is easy for important messages to be lost in the noise of the ever-growing deluge of information – and for much effort to be wasted in managing the flow. Ensuring that devolved organisations share a common perspective, sense of purpose, values – a culture – requires constant effort.

Need for motivation

I see this as one of the most difficult challenges facing management. When we started our efficiency drive in my own organisation, our 'theory of the business' suggested that by treating those leaving the organisation well we would reassure those who stayed. We discovered that while this removed a source of potential dissatisfaction it did little to motivate. Some people have argued for a vision statement as a means of motivation. I am dubious that a series of platitudinous bromides invested with the sanctity of eternal truth will have much impact on those who have recently experienced the emotional upheaval of a complete reorganisation. We must establish a worthwhile bond between the organisation and its employees based on the new realities.

In the new world, individual employees will have to shoulder greater responsibility for their own destiny than our previous 'theory of the business' assumed. We will have to rethink many of the human relations policies which denied them much of this responsibility. Appreciating the inadequacy of the status quo will be a vital step in building the new relationship.

So as organisations increasingly value short-term flexibility, they also paradoxically value continuing relationships that strengthen mutual understanding – with customers, suppliers, contractors and employees. To say that employees are no longer guaranteed career-long employment – if that was ever the case – is not to say that all working relationships will be short-term.

The important point is what I said at the beginning. Change creates as well as destroys. New opportunities displace old ones. The pressure on companies, in this industry and others, to cut costs will not diminish but those who wish to survive will have to do a good deal more than that. They will have to transform themselves, extend their capabilities, grasp new opportunities – like the tadpole, which lives only in water, becoming a frog, which can also live on land and even leap in the air. Their ability to do so will depend on having people with the qualities to make it happen.

West of Shetland and Orkney oil development: setting the scene

By Norman J Smith, Managing Director, Smith Rea Energy Analysts Limited

A considerable amount has been learnt about the petroleum geology of the area west of Shetland and west of Orkney as well as the Hebrides since the first well was spudded by Esso in 1972. In all about 120 wells had been drilled by the end of the end of 1994 and extensive seismic has been shot. Drilling activity has recently been stepped up considerably.

It is clear that at least seven potentially proliferous basin areas exist west of the Shetlands, Orkneys and Hebrides. So far three of these basins have yielded potentially significant discoveries. The Faroe Basin appears to be the most prolific with the Clair, Foinaven and Schiehallion discoveries. The Solan Basin is home to the Amerada's Solan/Strathmore discovery and the West Shetland Basin has produced the Victory field.

At this stage it appears that the area holds a significant part of UK'S undeveloped oil reserves. The estimate of 5.3 billion barrels is equivalent to about 20 percent of the mid-range estimate of remaining and 'possibly to be discovered' reserves in the 1994 Brown Book. It is substantially higher than the 3.5 billion barrels mentioned by Mr Tim Eggar last November but his estimate did not include the Hebridean and Rockall areas.

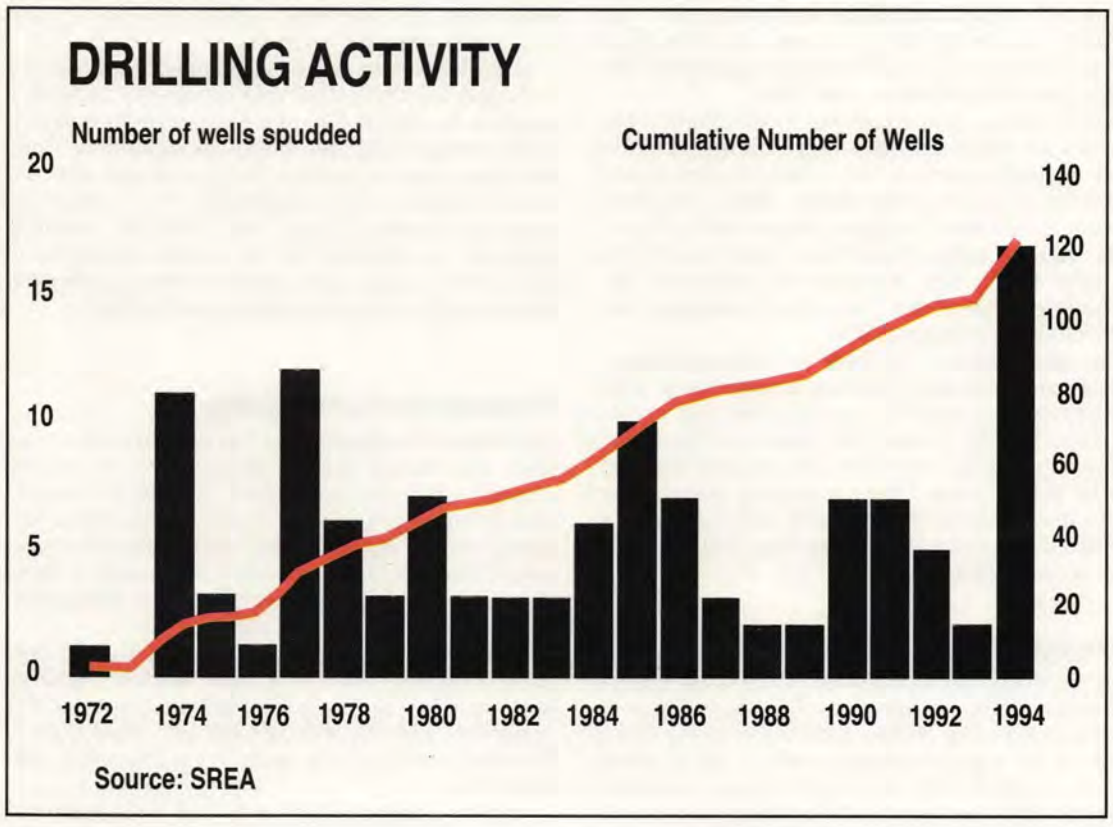
Whilst a consensus is emerging in respect of possible oil reserves, this is not yet true of gas reserves, although these might also turn out to be significant. It is fair to say that the remoteness and the lack of infrastructure have not encouraged a rigorous search for gas so far.

Discoveries

There have been five significant discoveries declared in the area, four oil and one gas. There have also been a number of smaller hydrocarbon shows, particularly gas shows in the north of the area. It is also worth noting that nearly a third of the wells drilled to date remain tight, including the 1994 BP well in block 204/22, which is rumoured to be a large gas/condensate discovery.

Oil discoveries are medium in size, with recoverable reserves ranges from 100 to 500 million barrels. This range is considered to be typical for the area, although future discoveries as large as 1,000 million barrels cannot be excluded. In due course, it would be surprising if fields with less than 100 million barrels were not to be discovered serving as future satellites but the search for the foreseeable future is for large targets.

Despite the lack of infrastructure these discoveries are not as remote as many people think. They are all closer to Aberdeen and Peterhead than most of the Northern North Sea fields. The 204/205 discoveries are as close to the Flotta and



Sullom Voe terminals as the existing feeder fields.

Foinaven and Schiehallion lie on the bank of the continental shelf in water depths which are 2-3 times that typically encountered on the UK Continental Shelf and twice that on the Norwegian Continental Shelf but the other three are on the shelf in 150 metres indicating that the area is not universally deep.

'Within 10 years production could be 500,000 – 1,000,000 barrels a day'

At 500 metres, the water depth is beyond the depth of the deepest bottom supported structures, such as piled steel platforms and concrete gravity based platforms. For this reason the use of floating production systems (FPSs) has been mooted for some time along with the possibility of Tension Leg Platforms, if sufficient reserves are discovered. As 500 metres is also well beyond the current maximum diving depth, installation and maintenance of subsea facilities will be diverless. The deepwater depths will inevitably raise the risk of adding significant cost to development, construction and operation and so will encourage operators to seek more innovative solutions.

The extent and shallow nature of the discovered reservoirs indicate that a number of drilling sites will be required. Compared with the North Sea, the reservoirs are considered to be low energy with heavy crudes with moderate well productivity expected and so there is likely to be significant use of horizontal wells as well as water injection, gas lift and possible early production systems, at an early stage of development.

Metocean environment

Wind and wave conditions are severe but not uniquely so in a North Sea context. Wind strength and wave height are significantly higher than the central but not the northern North Sea.

There are two special features. Firstly, there is the continuous exposure to a high energy oceanic swell. Secondly, there are more severe currents and colder temperatures in the deeper water. Block 204 appears to combine Draugen-style waves with currents slightly higher than those notorious in the southern North Sea. A particular feature of the deep-water areas is the presence of separate currents following different paths.

The indications are that there are still many uncertainties and technical hurdles to overcome with respect to these conditions but that they will not be insurmountable. Clearly BP feels satisfied that Foinaven's flexible risers and shipshaped facilities will be able to cope. Other authorities believe that semi-submersible technology will only need minor modification but that Tension Leg Platforms may face more severe problems.

Development

With the likely mix of reservoir size, characteristics and water depth, medium size oil fields are likely to be developed using FPSOs, particularly in the initial stages of the region's development as the learning curve is climbed. With no integral storage, semi-submersible FPSs are less likely, although some still believe that mono-hulls may prove to have their limitations in this environment. Export will be with shuttle tankers, either to a nearby trans-shipment terminal or direct to a refinery terminal. Foinaven is of course an example.

A medium-size field in the shallower water may justify a fixed structure if it incorporates a drilling facility, thus reducing the mobile drilling/workover costs. Whilst exporting with shuttle tankers, such a facility is more likely to be a gravity-based structure than a steel platform, which is potentially more costly and lacks topside flexibility and integral storage.

Any larger fields, producing at high levels but still below pipeline levels may justify fixed or tethered systems, particularly if drilling facilities are included. It is interesting to note that BP has commissioned a number of studies of production facilities including concrete spars (with storage), steel and concrete TLPs, mini TLPs (which may include a drilling TLP), compliant towers, concrete semi-submersibles and FPSOs.

Fields which are relatively close to each other may offer opportunities to share processing facilities and/or export facilities. Sharing of processing facilities will depend on the subsea tie-back distances possible and technology, but it should be noted that the current unboosted tie-back limit in the North Sea for oil is 22 kilometres. The sharing of shuttle tankers may only offer small savings if at all. Sharing an export pipeline will depend on having critical mass of production in a cluster, which is considered to be at least 300,000 barrels/day which could either be one to two large fields or four to five medium-sized fields. This of course assumes miscibility, if more than one field is involved. Should several fields be needed to justify a pipeline, one platform in shallower water will probably be called upon to perform a gathering role, one which will most likely be combined with a production function.

Gas discoveries will be developed with fixed or tethered facilities and will obviously require a pipeline for export but very large reserves and/or a large increase in gas prices will be required to justify the long route to market. If large discoveries are made or prices rise substantially, such a pipeline might go to either FLAGS, the Frigg line, assuming capacity, or even direct to the Scottish mainland. In any of these cases a site on the Orkney or Shetland Islands might serve as a compression location.

Development philosophy

The West of Shetland region has opened up at a time when the industry is going through a period of great change, which has particularly affected the way in which fields are developed. Consequently field development in this region is likely to differ from the traditional North Sea methods both as a result of these changes but also because of the unique characteristics of the West of Shetland region.

As we are seeing already, extended well tests (EWTs) are being used as a lower risk field appraisal tool – one has already taken place on Foinaven. It is considered that this will continue as a trend West of Shetland, with perhaps some being effectively self-financing.

Another concept which may well be prevalent in

the higher risk areas such as the West of Shetland is the use of early production systems (EPSs). Again this is a way of lowering risk and/or producing early cashflow by using, or preferably hiring, a production facility for a few years prior to full development. To some extent an EPS concept is being used on Foinaven as the FPSO is being hired for the first few years.

Phased development is not a novel concept but with a change in government policy, it is likely to become more common, particularly in higher risk areas. Again Foinaven is being developed in phases and others such as Clair and any deeper water finds may follow suit.

As mentioned above, hiring or contractor finance could be an integral part of EPSs but as a trend may extend further to full field developments and even permanent infrastructure. Of course this may not be confined to the West of Shetland.

Lastly, it is considered that, given the uncertainty and the risks associated with this deeper water region, there is probably going to be a greater degree of collaboration and joint development than was the case in the North Sea. As an early example of this, together with Foster Wheeler, Smith Rea undertook a study of the pros and cons of joint development approaches for the 10 major operators in the region. The companies are continuing to consult with one another.

OIL RESERVES ESTIMATES

Foinaven	**250-500 mmbbls**
Schiehallion	**250-500 mmbbls**
Solan/Strathmore	**100-250 mmbbls**
Clair	**150-300 mmbbls**
Subtotal (mid-point)	**1,150 mmbbls**
Undiscovered Reserves	**4,125 mmbbls**
Total Initial Recoverable	**5,275 mmbbls**

Source: SREA/Curlew

Economics

The economics of the area have changed dramatically since the abolition of Petroleum Revenue Tax on new fields but have also been helped by the sustained cost-cutting pressures over the last few years and technology advances such as those in 3D seismic acquisition and processing, horizontal drilling and off-loading systems.

BP has said that the finding and development costs of Foinaven will be $4-5 per barrel and may reduce in the second phase, which compares with rather than exceeds similar recent figures in the North Sea.

In our publication *Britain's northwest oil and gas frontier* we examined a range of development options for a model medium-size field in this area. All but the compliant tower option produced capex figures below $5 per barrel and the EPS option was below $4 per barrel.

At a $14 oil price the monohull FPSO yielded the best profitability, with an IRR of about 15-20 percent and we found that the effects of the EPS increases it by about 5 percent. Though too much reliance should not be placed on such calculations, they point strongly to the view that the combination of sizeable reserves with current technology will lead to acceptable levels of profitability despite the difficult environment, indifferent crude qualities and low oil price.

Conclusion

Much could still go wrong, not least a failure to maintain drilling success but if the present mood of optimism proves justified, much of UKCS exploration and development activity over the next 15 years will be on the Atlantic margin. Within 10 years production could be 500,000-1,000,000 b/d. A great deal of money will have to be spent, perhaps $15-20 billion to achieve this.

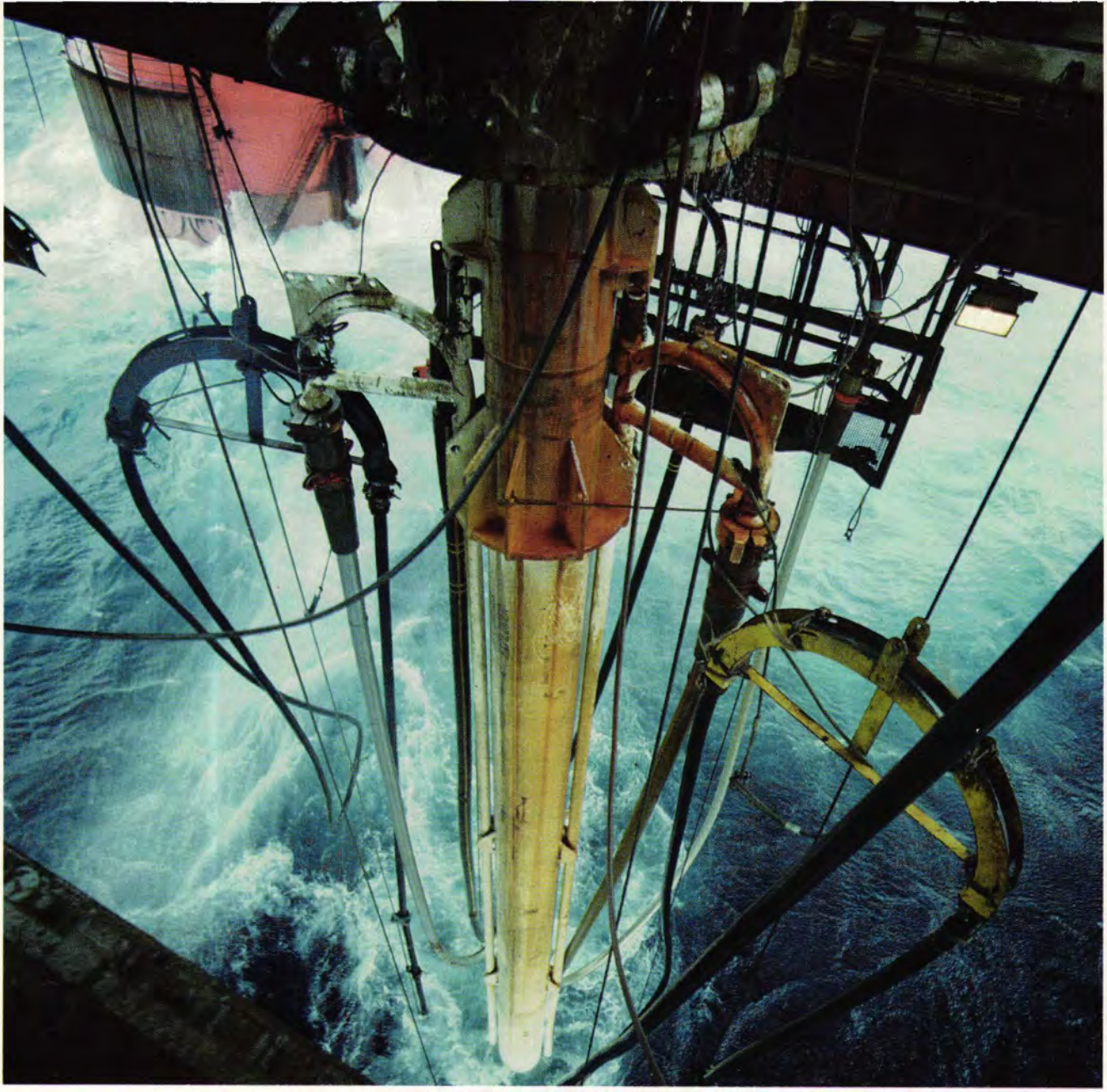
This is an edited version of a paper first given at a conference organised by the IP and Smith Rea Energy Analysts Ltd

Foinaven Phase 1

BP Exploration announced last month that it intends to award a five-year contract to the Flotta Oil Terminal in Orkney for the provision of transhipment services for the Foinaven Phase 1 development. The contract involves handling the output of the Foinaven field which will be offloaded from the Floating Production Storage and Offtake (FPSO) vessel *Petrojarl IV* and transported to port by shuttle tanker where it will be discharged into storage.

This ends speculation concerning the landing point of the new oil. It means that the Sullom Voe terminal on Shetland has lost out to the smaller terminal on Flotta Island which is operated by Elf.

Foinaven, 190 kilometres northwest of Orkney, is being developed in two stages. Production, scheduled to begin next spring, will reach a maximum of 85,000 barrels per day.



Contractors help BP realise fast-track vision

By Ghislane Hubbard

Britain's first offshore oil development in the deep and treacherous waters of the Atlantic will be worth a substantial £550 million over the next five years to contractors led by the McDermott Golar-Nor Consortium.

Onboard semi-submersible rig 'Sovereign Explorer' drilling in the Foinaven field, west of Shetland

The contract to provide the subsea and floating production system for the first phase of BP's Foinaven project in the West of Shetland was won by the consortium last summer. Annex B approval followed last November.

McDermott's task is to carry out the project management, design, engineering, procurement and installation of the subsea and topsides facilities for Foinaven Phase 1. This will involve subsea wells completed on the seabed producing oil through flexible flowlines into a floating production, storage and offloading system.

The floating production storage and offtake (FPSO) vessel, Petrojarl IV is being provided by Golar-Nor Offshore and will be stationed permanently in the field, while shuttle tankers remove the crude oil. Golar-Nor, which developed the concept, will also be responsible for operating the vessel, currently being rebuilt at Astano's shipyard in Spain.

As a subcontractor to Astano, McDermott's Ardesier yard has built the £6 million 1,600 tonne rotating turret, which will enable the vessel to remain operational in all weathers and was scheduled to sail for Spain at the end of last month.

The integrated teams are now hard at work to

meet the fast-track schedule, culminating in first oil by early 1996. More than a third of the scope has already been completed, with all the equipment on order and fabrication swinging into action at construction yards. Most of the process equipment, worth some £40 million, is being assembled into pre-fabricated units in the United Kingdom.

Fresh thinking and innovation have made the goal of first oil in early 1996 - just three and a half years after the Foinaven prospect was discovered - a tangible possibility.

Normally, floating production systems take two years to realise. This time a solution has been found which not only saves money but enables delivery in a mere 15 months.

Radical approach

It is not so much the technology that is ground-breaking as the approach. Foinaven represents an extension of the existing boundaries of technology rather than a leap in the dark.

Innovation comes from the way techniques and tools are sourced, applied and adopted, not from the development of new ones. A commitment to parallel engineering, which overlaps the traditional phases of appraisal, pre-project work and construction is the key.

At the heart of the radical new philosophy is partnership. It involves rethinking and redefining the critical relationships between the operator, the contractor and suppliers.

Everyone wants success and shares common goals. Once this has been accepted, it becomes possible to do away with the traditional, time-consuming approach where almost every activity has to be 'shadowed' by the operator and every decision hampered by red tape.

Normally, BP would provide the tendering companies with a detailed design specification and ask them to supply a time and cost for construction.

In Foinaven's case, the operator simply described the desired business outcome, based on required oil production rates and margins per barrel, and asked for the best solution.

BP shared its business goals and objectives with the tendering companies throughout the process, so the Consortium had a thorough understanding of its requirements from the start.

The pre-project phase for Foinaven took just eight months instead of the normal two years, thanks to running appraisal, pre-project and project phases in parallel.

The new relationship has also opened the way for new contractual arrangements, where the risks and rewards are shared. The lease payment for the floating production system, which will be tied into the oil production rate, is a perfect illustration.

'Foinaven is a first for the McDermott Golar-Nor Consortium and the oil industry,' said Jim Law, Project Director from McDermott. 'Never before have we had to engineer for such deep waters and severe weather and never before have we had to work at such a fast pace.'

The key to success, according to Mr Law, is people rather than technology.

'My single biggest challenge is bringing people together in teams that understand each other and can work well together. The important words here are communication, co-ordination and interface management.'

Creating an integrated group with team spirit and a clear sense of identity is no easy matter, particularly as people from BP, McDermott, Golar-Nor and Astano are spread over diverse locations, from London to Aberdeen, Teesside, Trondheim in Norway and El Ferol in northern Spain.

'We have had to throw out the old rule book to minimise bureaucracy without jeopardising safety and quality,' said Mr Law.

'The McDermott Golar-Nor Interface with BP is excellent, with their members on our teams joining us as equals and being thoroughly supportive. The importance of the right attitude and behaviour extends to our suppliers – and we take these attributes into account during tender evaluation.'

'At the heart of the radical new philosophy is partnership'

Sharing gains and risks

The new approach can be seen clearly in the ground-breaking agreement forged between the organisation delivering Foinaven's subsea facilities to put their heads together to solve technical and commercial challenges. This is the first time

Drilling rig 'Ocean Guardian' and tanker 'Vigdis Knutsen' during extended well test of the Foinaven field. (Photographs by British Petroleum)

that all the contractors involved in a North Sea subsea production facility have agreed to work in this way.

The companies in the Subsea Alliance, as it is known – BP, McDermott and all its operating subsidiaries, and the major contractors for subsea equipment (Cooper Oil Tools, GEC Marconi, Coflexip, Alcatel and the Fuel Subsea Offshore Alliance) - will all benefit if cost reductions can be identified, sharing the resulting gains equally. They will also share the risks.

'The Subsea Alliance has already identified a number of cost savings'

'This represents a new way of working which encourages everyone to co-operate to solve problems and identify cost-savings,' said Bob Charters, Subsea Engineering Manager.

A similar, though less formal, approach has been adopted by the process topsides team, which is working closely with the vendors of the pre-assembled units to ensure the equipment is ready in time for delivery this summer.

Traditionally, vendors are kept at arms length, with their design documentation reviewed in the client's offices and sent back with any necessary comments.

Emphasis on teamwork

This time, in keeping with the project's emphasis on teamwork, McDermott's engineers are spending more time than ever before in vendors' offices and worksites, reviewing documentation in situ.

This close contact not only saves time and enables glitches to be dealt with on the spot, it also opens up lines of communication, helping vendors to feel part of the team.

'It gives us a much better feel for what their problems might be,' said Mick Herbert, who looks after all the package engineering for McDermott. 'It also enables us to guide contractors, working side-by-side, for instance, with any who may be new to such extensive packages.'

Partnering is paying off. The Subsea Alliance, formed in January, has already identified a number of cost-savings, which will result in increased profits for all involved provided they can be maintained.

Making the new approach work is undoubtedly a novel experience for everyone concerned, and the change in attitude is evident not just at headquarters but also at the yards of the individual contractors.

As Mr Charters puts it: 'They are beginning to think collectively, looking beyond their own workscopes to address wider issues.'

Foinaven represents a major step forward for the industry as a whole. The project is creating new standards and will set a precedent for things to come.

Gas Shippers' Claims Validation Agents

Over the past twelve months, discussions have been taking place between British Gas TransCo (the operators of the gas transmission system in Great Britain), and the shippers who will be shipping gas through that system. The product of these discussions will be the Network Code, which will define the responsibilities of TransCo and shippers, and their working relationship.

The Network Code will be in place from 1 October 1995.

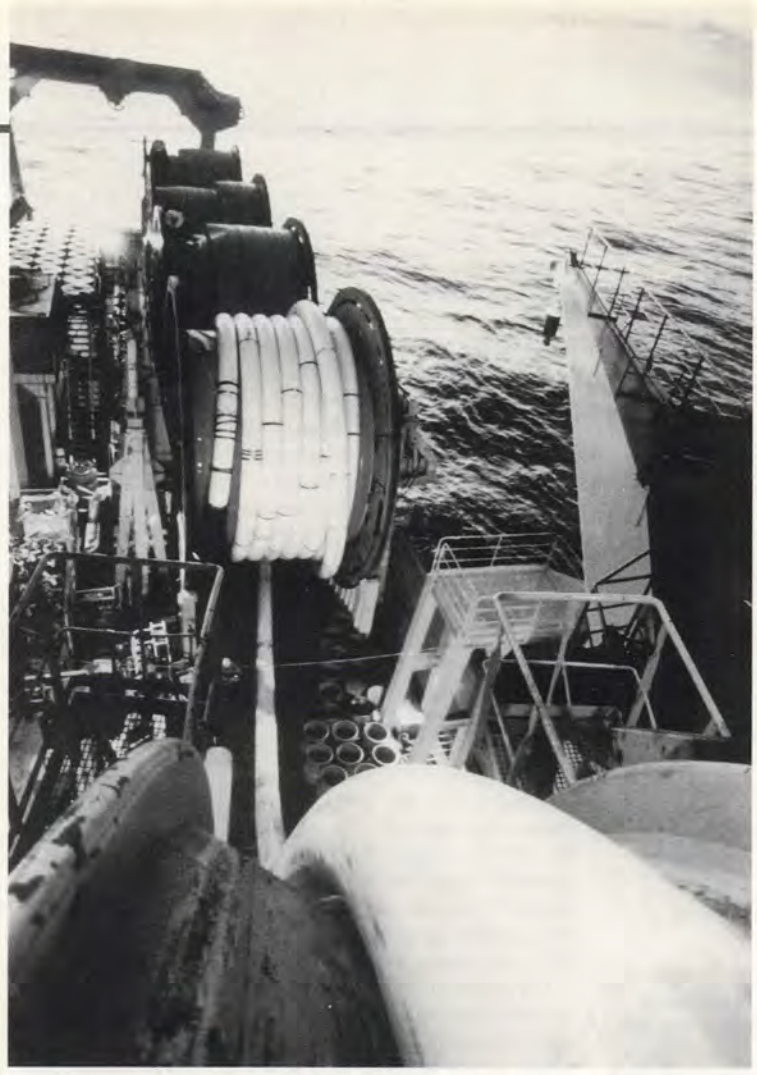
There will be a provision in the Network Code for agents to act on behalf of shippers in order to validate shippers' daily claims to delivered gas at the entry points into the gas transmission system. Agents will be required to reconcile shippers' claimed deliveries to the actual quantity of gas received into the National Transmission System. This validation process will be required for each day throughout the year at each Entry Point. Agents will be required to identify and resolve any discrepancies.

There is now a need to identify potential agents.

Any organisation wishing to obtain further information about the Claims Validation Agents task, and the process that will be used to appoint agents, should contact Pauline Mohamed, secretary to the Gas Shippers Forum, at 25 Montpelier Grove, Kentish Town, London NW5 2XD.

Buoyant OTC reflects new industry optimism

By Philip Algar



Few of the 34,000 visitors to the 1995 Offshore Technology Conference, held in Houston, Texas, can have failed to detect a new spirit of optimism in the upstream sector. Crude oil prices have risen since the last show but realism decrees that new projects must be robust at prices of at least $4 a barrel below current levels. Few operators now rely on high prices to justify new projects. Instead, the emphasis is on new technology, improved management, cost-effectiveness and shorter lead times. Because new projects, some very complex, have proved profitable under this new regime, the entire offshore sector has been encouraged. Dr Ken Forrest, Deputy Director Exports, Oil Supplies Office, capturing the spirit of the show, said that 'For the first time for some years, we can see a greater buoyancy in the worldwide offshore scene.'

The 1995 Offshore Technology Conference, sponsored by 14 professional organisations, with a total membership of 700,000, was the 27th annual event but, as always, it was far more than 'just' a conference, where 280 technical papers were presented at 49 sessions. Delegates were also able to choose which 'topical lunch' to patronise each day. Seven such lunches were organised and both BP and Shell provided senior speakers. Two general sessions were also incorporated in the conference programme, on 'Offshore Potential: Asia Pacific' and 'Future Directions for Deepwater Developments.' An innovation was the incorporation of the concept of 'Active Arenas', within the overall conference programme. This year it was South America, with the emphasis on Brazil and Venezuela.

The associated exhibition attracted more than 1,400 companies, of which about 28 percent came from outside the United States. The total exhibition area utilised was a quarter of a million square feet.

Additionally, for the dozens of journalists from many countries, there were several important press conferences, addressed by oilmen and ministers.

Flexible steel pipe from Coflexip, winner of the 1995 OTC Company Award

The press conferences

Fortune frequently favours OTC by ensuring that a major oil-related story breaks at the beginning of the conference. This year it was President Bill Clinton's decision to ban all US trade with Iran. US Deputy Energy Secretary Bill White discussed key aspects of US energy policy before talking about the trade embargo. Having stressed the value of technology and industry's efforts to cut costs, he argued that some of the job losses in the US oil industry reflected the advance of technology. Oil demand would continue growing and a significant volume would come from the Persian Gulf. Diversification of supplies was important and technology was 'critical' in this quest. Latin America, for example, could play a significant role and the integration of the western hemisphere energy industry could 'materially reduce dependence on the Persian Gulf'.

The US administration was banning all trade with Iran because of the latter's 'unacceptable behaviour.' He claimed that Iran 'had attempted to acquire and is acquiring' weapons of mass destruc-

tion and that they had agents 'combing the world for nuclear materials and weapons.' Iran had channelled money to terrorist organisations intent on undermining Middle Eastern and world peace and Iran was 'arming itself with conventional weapons and advancing forces towards the Strait of Hormuz.'

Subsequently, UK Energy Minister Tim Eggar's measured but unsupportive stance – 'We do not believe that an embargo of this kind is appropriate for this situation in Iran' – drew a very critical comment from an American radio reporter. Mr Eggar fired back immediately. 'You mean we don't agree 100 percent with the US government. That's fine. We are an independent sovereign nation and we take our own views on these issues. I am not aware that we are a state of the Union, which is the implication of your question. US citizens should be aware of the strength of feeling within the UK about the way the US administration receives members of terrorist organisations. We have a different perspective, just as other nations do and there is no harm in making these differences obvious....'

'We can see a greater buoyancy in the worldwide offshore scene'

US Assistant Secretary of the Interior for Land and Minerals Management Bob Armstrong claimed that many regulations had been imposed on the US offshore sector without any scientific justification. The department was trying to persuade people that the industry had a good and improving safety record. Co-operating closely with the people of Santa Barbara, for example, had led to production increasing from 90,000 to 200,000 barrels per day (b/d). No change on the status of the Arctic National Wildlife Refuge was envisaged but he conceded there was pressure to allow access to the industry.

JB Weidler Jnr of Brown & Root won the 1995 OTC Distinguished Achievement Award for Individuals.

Jens Stoltenberg, the Norwegian Minister of Industry and Energy, was bullish on indigenous prospects. Norway was the third largest exporter in the world and production would soon increase to 3 million b/d, at which level it would remain through the decade. Improved recovery rates, up from around 35 percent 10 years ago to some 45 percent now, reflected improved reservoir management, well maintenance and the use of long wells. Gas exports would rise to more than 60 billion cubic metres within 10 years.

Last year saw a record in that more than 60 percent of the wells drilled resulted in discoveries. Total reserves are now estimated at 70 billion barrels of oil equivalent of which 30 percent awaits discovery: only 15 percent of reserves have been produced. He also said that the government may decide against direct state participation in certain licences and that 'Statoil will no longer participate in all licences.' Costs had been cut and some of the latest field development plans had a break-even oil price well below $10 per barrel.

From the platform

The Chairman and Chief Executive of Shell UK, Chris Fay, argued that the revival in the UK sector of the North Sea resulted from a change in focus 'from a pre-occupation with new projects to an emphasis on maximising the life-time value of every asset.' By the early 1990s Shell Expro calculated that its unit operating costs could soon reach levels that would jeopardise production from major fields, partly caused by rising staff levels. Adopting life-cycle asset management was essential. It involved extending the productive life of existing facilities, the effective management of reservoirs to recover as much of the reserves in and around producing fields as possible, and an integrated, flexible and rapid approach to new developments.

In 1992, 13 of the 17 Shell-Esso platforms in the southern sector of the North Sea had permanent crews. By next year, only three of 22 will be manned and in these four years, gas production will double and staff numbers will be halved. Smaller, better organised and more motivated offshore crews were less likely to suffer from the poor communications which were at the root of most accidents.

There was no longer industry talk of widespread field abandonments this century. 'I believe they will be averted for longer than many think,' Dr Fay said. He also maintained that 'an important shift of perspective is to extend our vision from focusing on single, discreet fields to managing all the reservoirs in an area.'

David Brookes, Technical Manager, Atlantic Frontier Programme for BP Exploration, discussing technical challenges to the economic development of the west of Shetlands/Atlantic frontier, said that the Foinaven field was small in comparison to Forties but significant in relation to remaining reserves. The key challenge was provided by the environment and currents, which varied according to the depth, and could change on an hourly basis. BP's cost targets

Part of OTC Exhibition in Houston

were $2 a barrel for finding, $4 for development and $2 for lifting and transportation.

The session on the United Kingdom's 'Cost reduction initiative for the new era' (CRINE) attracted much interest and Dr Forrest told Petroleum Review that 'we British can be very proud of what we are doing in this sphere and we still have a global edge in cost-cutting.' Mr Eggar, aware of the export potential of the concept and of international interest, described the concept as a success story 'which thus far has been set on the UKCS but which has relevance everywhere.' Mike Curtis of BP and chairman of CRINE said that the radical measures adopted would mean that, instead of dying prematurely in the next five years, the North Sea industry would continue for another 25 years. However, Dr Fay regretted that the industry had reached the point where it was necessary to have an initiative to 'get things done' and to make people think in a wider sphere. 'CRINE makes me cringe'. Twenty years ago, specialists and generalists worked together. Now we had 'narrowists.'

Here and there

OTC always sees new initiatives. A new alliance of oil cities, to be known as World Energy Cities, duly obliged. Members are Aberdeen, Calgary, Houston, Perth, Stavanger and Vung Chun in Vietnam. Scottish Enterprise are to establish Scottish Caspian Trade Ltd, in Baku, to assist Scottish companies to win business in Azerbaijan and the Houston Business Centre has been created to help British companies. The centre, established by the International Energy Alliance Association, following a British Gas initiative, will offer practical and technical advice, as well as making available all the office and support services required by businessmen operating abroad.

The 1995 OTC Distinguished Achievement Award for Individuals was won by Jay Weidler of Brown & Root, whilst the company award went to Coflexip of Paris.

The exhibition

A total of 90 companies from the United Kingdom participated in the exhibition: this was easily the biggest number from any of the 33 foreign countries. The consensus view from various bodies was that the quality of visitors was the best ever and this view was endorsed by many UK companies.

Downhole Products (UK) of Aberdeen, showing a new concept for casing centralisation, said that the company had been inundated with enquiries from potential overseas agents. Angus Model Makers, soon impressed by the show, immediately decided to return in 1996. River Don Castings, at OTC for the first time since 1981, said that the quality of visitors had been 'superb' and OTC representation reinforced its European activities. Sondex, a geophysical equipment company from Hampshire, showing a new multi-finger imaging tool which checks casing integrity, said that the company visited four international shows a year and that the 1995 OTC had prompted the best ever response. During the show, two firm orders had been placed and there were at least six very strong new prospects.

IT support for changes in retail business

By David Dick, Oil and Gas Division, Logica UK

The retail business in many European countries is going through a period of considerable change and pressure. Change in the network structure in terms of the size and nature of the retail sites. Pressure to improve or protect margins by encouraging the better use of sites through offering additional services. All these factors place new demands on the information systems needed to support the retail business. This article reviews some of the current business trends and examines the related system implications.

Customer service and card acceptance

When considering the main trends influencing the retail business – resulting in significant growth in IT support requirements – one of the most important issues is the expansion in the number of credit and debit cards requiring support at the site. As more and more cards are accepted at each site, the constraints of old technology card readers become increasingly apparent. It may not be possible to add acceptance of another card throughout the network as quickly as the business would like. Enabling acceptance could even involve physical changes to the card terminal, incurring the additional expense of hardware upgrades and site visits by technicians.

New systems integrating the card terminal, pump controller and POS (Point Of Sale) terminal on a PC platform provide a practical and cost-effective solution to this problem. Their memory, disk and telecommunication capacities remove many of the constraints of previous systems, providing the opportunity to add or amend card schemes electronically by downloading new parameters or software. For smaller sites however the cost of an integrated PC-based system may not be justified.

Pan-European standards

The challenge of managing the introduction of a new card clearly becomes much more complex when approached from a pan-European perspective. Standardising on one supplier of card terminal might help, but the ability of vendors of card terminals to supply and support their products across Europe tends to be limited. In any event, there are no current pan-European standards that cover the authorisation of the major credit, debit and travel and entertainment cards.

Card terminals in each country are, therefore, likely to need different software to support different authorisation protocols. The requirements of the card issuers in this regard, along with the constraints placed on the retailer, vary greatly from one country to another. Consequently the oil retailer on one hand may only need a simple polling system to collect the card transactions in one country, whilst, at the other extreme, there may be a requirement for a sophisticated switch and authorisation system.

There is an increasing move by banking networks across Europe to seek on-line authorisation, even for low-value transactions such as for petrol. This is particularly so in Holland, Belgium, France, Spain and Portugal. In some cases, including systems in the United Kingdom, Holland and Spain, retail terminals are obliged to accommodate several different telephone numbers according to which banking institution is involved in the authorisation process. Yet again, different rules and procedures apply to debit cards than to credit cards, increasing the need for different hardware or software.

Looking ahead, the emergence of Smart cards will have a further impact. France has been first with the dual-purpose Smart card and magnetic stripe card. However, the most common approach at present is the 'electronic purse', where cards are used to store value and then to transfer it to a retailer's terminal. Probably the most advanced scheme of this sort is that in Portugal, with Spain, Belgium and Holland following closely behind. In the United Kingdom the interesting but rather different Mondex system, which can also transfer value over communications lines, is soon to undergo trials in Swindon. In most cases the standards used for these schemes are proprietary to the card-maker and there are three or four key suppliers. As such, until national schemes develop, the retailer must bear the extra costs to support different cards or accept reduced service offerings by limiting the accepted number of cards.

In-house card management

All petrol retailers that issue cards will have their own in-house card management systems to handle applications, issuing, setting up the cardholder agreement and accounting. Traditionally these have been in-house mainframe developed systems. The challenges in this area are those common to most IT programmes these days, namely outsourcing, downsizing and the move towards adopting standardised, scaleable, packaged software. As the migration of applications off the mainframe continues, oil retailers will be increasingly looking for software packages to fill this market niche.

Mondex smart card – coming soon

Shops, convenience stores and truck-stops

The growth of on-site shop and convenience stores is another trend with considerable implications in terms of the required IT systems. At the retail site itself, the point-of-sale has to be able to handle up to several thousand dry-goods items. It may also need to support scanning, automated downloading of prices and a wealth of other function. At the same time, the back-office support needed from systems is becoming ever more complex. Modern systems should be able to support the issuing of purchase orders and the receipt of goods and invoices as well as the daily reconciliation controls. Shrinkage control requires that sales are recorded item by item. Again, PC-based systems help here and can offer facilities, such as itemised receipts, that are increasingly expected by customers.

The dry-goods business in the company-managed network may also need to be managed at head office. Which items should be stocked in which store, managing global purchasing agreements, controlling margins item by item and store by store all require comprehensive systems support. Merchandising systems then need to be integrated with the POS's in the retail sites to enable prices to be downloaded and goods receipts, stocks and margins to be monitored. There is also a growing interest in space planning systems to optimise shop layout and shelf allocation.

The development of 'truckstops' add yet another dimension to the need for systems, handling restaurant management and other services.

Fuel management

As well as diversifying the services provided at sites, more powerful technology in place at the retail site opens up the possibility of better managing the core fuel business due to the availability of better quality data. Information on fuel sales, deliveries and stocks – all derived from tank gauges – can be transmitted to 'head office' and specific planned deliveries can be made, rather than ordering on the basis of estimated stocks and requirements based on previous deliveries to the site.

Telecommunications

In addition to new systems at the retail site and the 'head office', the other ingredient required to support this growth in information travelling around the retail network is cost-effective telecommunications.

Telecommunications availability across Europe is changing, due to increased deregulation and competition, as are the tariffs as the economic structure of telecommunications opens up.

For most retail sites, there is probably insufficient telecommunications traffic to make economical use of leased line services. However, the new Integrated Services Digital Network (ISDN) – the successor to the existing analogue Private Switched Telephone Network (PSTN) services – is now rapidly becoming available throughout Western Europe. ISDN tariffs are currently reducing to the point at which it may well provide high quality, secure, cost-effective connections for carrying both voice and data between sites.

In Eastern Europe, where ISDN is expected to take many years to fully develop, the expanding availability of VSAT (Very Small Aperture Terminal) satellite services offers a real alternative for companies whose operations extend beyond Western Europe.

The fuel retailer operates of one of the largest retail networks of any industry, with large investments in each site. Increasing competition from supermarkets and other retailers are adding to the threats facing the industry. Nevertheless, opportunities exist to win and retain customers, given an understanding of the changing technology, so achieving optimum business advantage, ultimately protecting the bottom line.

Escalating tension over disputed Spratly Islands

By William Scholes

Tension rose last month following the occupation of Mischief Reef by the Chinese. The reef is one of the Spratly Islands, an isolated outpost in the South China Sea. Sovereignty is disputed – not only are they claimed by the Chinese and the Filipinos but also in part by other Asian neighbours. It is understood that currently China occupies seven of the Spratly reefs, the Philippines around 12 and the Vietnamese no less than 27 reefs, while Taiwan has occupied one reef.

Earlier this year the Chinese installed buildings and other facilities on Mischief Reef, provoking a diplomatic protest from the Philippines. Last month journalists being taken on a Filipino boat to inspect alleged fortifications constructed by the Chinese on the reef were involved in a stand-off with two Chinese vessels which tried to block their passage.

'So far China has rejected calls for talks with ASEAN members in order to settle the matter'

Rival claims

This is the latest in a series of incidents arising from rival claims to the territory. Earlier, Australian Foreign Minister Gareth Evans said the reaction of the Association of South East Asian Nations (ASEAN) had been very firm and very clear. 'It's obviously extremely important that this issue of competing territorial claims be resolved diplomatically rather than through the use of force or military might in any way, shape or form,' he stated.

There is speculation that the Chinese may have acted now in order to maintain their historic claims in the South China Sea and to take into account any oil or gas that might be discovered – though they have not made a move for the past eight years. China and Taiwan claim most of the South China Sea. The Chinese engaged in a border war with Vietnam in 1979. They have also clashed twice over the Paracel Islands in 1974 and in a short but bloody naval battle over the Spratlys in 1988.

Chinese reject talks

So far China has rejected calls for talks with ASEAN members in order to settle the matter.

Taiwan has responded by occupying a reef in the northern Spratlys, which is claimed by Vietnam. The Taiwanese are reported to have fired on a Vietnamese freighter which they thought was too close to the reef.

Since then Indonesia has announced increased airforce patrols over parts of the South China Sea. In addition, Indonesian Foreign Ministry officials confirmed that Indonesia has protested to China over Chinese maps claiming part of the Natuna seabed (with its large gas reserves).

This move marks a significant new development because Indonesia is not a claimant to the Spratly Islands and has been trying to act as a mediator between China and other claimant countries.

Oil potential

Vietnam is actively exploring in an area of the South China Sea claimed by China. Exploration rights to the disputed area are supposed to be held by Denver-based Crestone, whose concession was awarded by China and based on the ancient historical right of discovery. The Crestone concession is adjacent to blocks awarded by Vietnam in the Nam Con Son Basin where British Petroleum and Total recently reported discoveries.

China is already committed to major developments in the South China Sea. Atlantic Richfield (ARCO) has a major development with the Yacheng 13-1 offshore gas and oilfield and a 500-mile pipeline to Hong Kong. These are on a fast track, with initial production expected in early 1996.

Whether China's push south means an aggressive approach to future international relations in the area remains to be seen but it is hoped that the current problems can be sorted out by negotiation. The issue is likely to be raised at the ASEAN meeting in July.

RECRUITMENT

The safety challenge – a distribution quiz

The safety record of the oil industry's distribution operations is to be commended, particularly when the innate hazards are considered. Much time and investment has gone into developing sound safety policies, systems and methods of work.
But does this body of safety know-how always percolate through to those actually doing the job? Do they know enough about the products they are handling to recognise where the greatest risks lie and why something that seems like a sensible short-cut could be fatal? Do they operate safety systems fully, on a day-to-day basis? And if an incident should occur, will they take the correct action?

This quiz has been produced to help people in distribution operations carry out their own assessment of on-site safety know-how.

Copies of the quiz and details of a new related course on operational safety are available from:- Petroleum Training, Collingham House, Gladstone Road, London, SW19 1QT.

Test your basic safety competence by answering the 20 questions below. For each question, tick the box for the answer which you think is correct. There is only one correct answer to each question, and points are deducted for incorrect answers, so it is better not to guess.

1 *Static electricity is formed by:*

a) Atmospheric conditions ❒
b) Separating charged bodies in a magnetic field ❒
c) Faulty earthing of electrical wiring ❒
d) Rubbing together two dissimilar materials ❒

2 *A static charge on petroleum will <u>not</u> be generated if:*

a) You have sufficient water mixed in the product ❒
b) You filter the product ❒
c) You keep it at rest ❒
d) You keep it sufficiently turbulent ❒

3 *You earth your tank truck to :*

a) Allow any static charge on the tank shell to dissipate ❒
b) Protect it against lightning ❒
c) Stop the product becoming charged while loading ❒
d) Allow any charge on the product to dissipate ❒

4 *Which of the following four steps will <u>not</u> reduce the hazards of static:*

a) Wait for up to 30 minutes before attempting to gauge a large storage tank after filling ❒
b) Wait one minute before withdrawing a loading arm from a loaded compartment ❒
c) Always earth drums before filling ❒
d) Insulate yourself from earth before loading ❒

5 *Which of the following products is the best static accumulator?*

a) Petroleum ❒
b) Kerosene ❒
c) Diesel ❒
d) Gas oil ❒

6 *Who may issue a permit to work?*

a) Any full-time employee ❒
b) Any person familiar with the site ❒
c) Any person with written authority to do so ❒
d) Any member of the site management ❒

7 *If you are 'switch loading', which of the following combinations is so hazardous that it should be avoided?*

a) Petrol into a tank which has held diesel ❒
b) Kerosene into a tank which has held petrol ❒
c) Diesel into a tank which has held kerosene ❒
d) Kerosene into a tank which has held diesel ❒

8 *When delivering petrol to a service station (not a driver controlled delivery), the driver's prime responsibility is:*

a) Keeping attention on the vehicle while delivering ❒
b) Knowing whether there is sufficient space in the tank for the delivery ❒
c) Seeing that the hose is properly connected to the correct tank ❒
d) Making sure that the delivery is going to the correct tank ❒

9 *The provisions of the Health & Safety at Work Act 1974:*

a) Apply to the employer only ❒
b) Apply to the employee only ❒
c) Apply to both employer and employee ❒
d) Have no bearing on the petroleum industry's operations ❒

10 *What injuries need not be reported?*

a) Those that occur while working away from the site ❒
b) Those that occur on site to non-company employees ❒
c) Those that are not connected with the company's work or premises ❒
d) Those which are not severe and require no treatment ❒

11 *If someone has swallowed a small quantity of petrol, should you:*

a) Induce vomiting immediately ❒
b) Give them at least one litre of water to drink ❒
c) Give them a cup of hot, sweet tea ❒
d) Give them a glass of milk ❒

12 *If an unconscious person's throat is blocked due to the tongue falling back, how should you clear the obstruction?*

a) Give them a sharp slap between the shoulder blades ❒
b) Extend their head backwards ❒
c) Push their head forwards ❒
d) Blow down the nose to bypass the mouth ❒

13 *If you have a spillage of 50 litres of gas oil on a road, the main hazard will be:*

a) The product getting into drains and water courses ❒
b) The fire risk ❒
c) The toxic hazard to passers-by ❒
d) The effect on the road surface ❒

14 *If a fire occurs at the vent pipe of a receiving tank you should first:*

a) Evacuate the site immediately because of the danger of explosion ❒
b) Extinguish, using a dry powder extinguisher ❒
c) Stop delivering (and it should go out) ❒
d) Carry on because it is quite safe and will go out when the delivery is complete ❒

15 *What are the three elements of the 'fire triangle'?*

a) Fuel, heat and oxygen ❒
b) Flame, gas and fuel ❒
c) Flame, oxygen and heat ❒
d) Heat, gas and fuel ❒

16 *An inflammable mixture is:*

a) The vapour given off by any petroleum product ❒
b) A mixture of vapour and air which can be set on fire ❒
c) A mixture of vapour and air which is self-igniting ❒
d) A mixture which has a high percentage of petroleum vapour in air ❒

17 *What is the flashpoint of kerosene?*

a) 0°C ❒
b) 21°C ❒
c) 38°C ❒
d) 56°C ❒

18 *What is the highest temperature at which petroleum spirit will <u>not</u> give off a flammable vapour?*

a) About -40°C ❒
b) About -2°C ❒
c) About 12°C ❒
d) About 21°C ❒

19 *Spillage of product on to water represents an immediate hazard because:*

a) It dissolves in water to increase the fire risk ❒
b) It is heavier than water and sinks to the bottom ❒
c) It poisons the water ❒
d) It spreads over a large area on the surface of the water ❒

20 *What is the explosive range for motor spirit?*

a) 1-8 percent ❒
b) 9-18 percent ❒
c) 19-25 percent ❒
d) 26-37 percent ❒

Answers can be found on Page 266

The UK Continental Shelf in 2010: is this the shape of the future?

IP Scenario Planning Workshop,

3 May 1995

If some senior people in the oil and gas industry sat down to discuss the future of the UK offshore industry, what would they expect to see in the next 15 years?

This was the subject of a recent IP workshop, organised by the Exploration and Production Discussion Group.

Participants included Greg Bourne and Peter Duff of BP, David Carr of Esso, Rex Gaisford of Amerada Hess, Alan Gaynor of British Borneo Petroleum Syndicate, Peter Kassler of Shell, Ole-Svein Krakstad of Statoil, John Mitchell of the Royal Institute of International Affairs, Terry Moore of Conoco, Nick Perry of Enron, Sir Hugh Rossi (former MP and Chairman of the House of Commons Environment Committee), Colin Smith of BZW, Sir Ian Wood of the Wood Group and Ian Ward of the Institute of Petroleum. They participated in the workshop, chaired by David Upton of Stirling Reid, in their personal capacities rather than as representatives of their organisations.

The findings have now been published in the form of a series of scenarios, giving four different views of how the UKCS might develop over the next 15 years. The scenarios make some telling points about the effect of external events, demonstrating that the industry must keep its own performance up to high standards if it is to flourish.

ISBN 0-85293-149-2 **Published June 1995**

Price: £24.00 (Overseas £26.00) Discount of 25 per-cent for IP members

This publication can be obtained from the Library, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR

The safety challenge – a distribution quiz

Answers

Score three marks for each correct answer

Deduct 1 mark for each incorrect answer

Pass mark 40 (out of possible 60)

1 d, 2 c, 3 a, 4 d, 5 a, 6 c, 7 b, 8 a, 9 c, 10 c, 11 d, 12 b, 13 a, 14 c, 15 a, 16 b, 17 c, 18 a, 19 d, 20 a.

Who suffers in the economic war between Iran and the United States?

By John Roberts

Iran and the United States are now in a state of economic war with each other and the principal victims are likely to be the energy producing states of the Caspian region.

When President Bill Clinton imposed a total trade embargo on Iran on 30 April, he hoped that it would persuade Iran to adopt more conciliatory approaches to the West and encourage America's European and Japanese allies to impose their own economic sanctions on Tehran. Instead, Tehran retaliated by moving to cement relations with Moscow in a way that directly threatens oil production in the Caspian, whilst Washington's allies studiously avoided worsening their own difficult relations with Iran.

Much of the battleground concerns energy. The bulk of US trade with Iran consists of oil purchases by US majors such as Exxon and Mobil. As a result of earlier trade sanctions against Iran, passed during the 1987 'tanker war' in the Gulf, this oil could not be imported into the United States. But the 1987 legislation did not prevent American oil companies from acting as traders and in recent years they have handled up to one-third of Iranian crude oil exports.

Exxon commented that it would comply with any change in the law concerning trade with Iran, adding that at present its purchases of Iranian crude oil 'typically are in a range of 200,000-300,000 barrels a day.' Most of this is destined for European refineries. Mobil is currently purchasing around 50,000 b/d, mainly for supply to refineries in Japan. The company has commented that, if necessary, 'We will simply use other sources for our Far Eastern supply requirements.' Overall US purchases from Iran are currently believed to be running at around 500,000 b/d.

Since oil is fungible, any initial hiccups in the Iranian export system will not be followed by a significant diminution of Iranian oil revenues. In this sense President Clinton's embargo will not hurt Tehran at all. Where it might suffer, although this would be strictly temporary, is in the matter of imports. The Iranian oil industry has, since the 1950s, tended to operate on American equipment and to American standards. It has therefore been natural for the Iranians to try to secure access to US oilfield equipment. But, as John Lichtblau, the New York analyst, has commented, 'The US isn't unique anymore. We have good equipment, but so do others.'

Moreover, in the short run, the National Iranian Oil Company (NIOC) will, no doubt, resort to alternative methods of importing, arranging for key US components to be purchased by commercial agents in Dubai for re-export across the Gulf.

In drawing up the new regulations, the US government has, at least, learned some lessons from its past mistakes. The new sanctions will still permit foreign subsidiaries of US companies to purchase Iranian crude, so that the United States does not get involved in extensive legal and diplomatic wrangling with the host governments of these subsidiaries. In addition, the parent companies themselves are being given, in effect, 90 days from the passage of enabling legislation through Congress to wind up their existing arrangements for purchasing Iranian crude oil, so long as they first secure specific approval from the US Treasury's Office of Foreign Assets Control (OFAC).

The sanctions only make sense if other trading nations follow suit. US Secretary of State Warren Christopher announced that he was calling on Washington's allies in the Group of Seven major economic powers – Japan, Germany, Britain, France, Italy and Canada – to 'undertake a comprehensive review of their economic ties to Iran.' He acknowledged, at least implicitly, that it was the United States, rather than Iran, that would immediately suffer from the consequences of its new sanctions, but added, 'This is all about American leadership. Will America take the sacrifice, undertake the steps, in order to show the way to other countries'?

A lone path

It is far from clear that America is making much of a sacrifice. It is also becoming increasingly clear that at least its European allies do not wish to make further sacrifices in connection with their already strained relations with Iran. The British Foreign Office has said that 'A full trade embargo is not something we favour.' German Economy Minister Gunther Rexrodt has said, 'We don't believe that a trade embargo is the appropriate instrument for influencing Iran,' whilst France's Alain Juppé, now President Jacques Chirac's Prime Minister, (but then his country's Foreign Minister), said, on 2 May, 'We do not believe in unilateral embargoes,' and that it was precisely because France shared US concerns about Iran that it felt it was necessary to maintain a 'crucial dialogue' with Iran.

It thus looks highly unlikely that there will be any meaningful downturn to Iranian oil supplies to Western Europe in the near future, although it is possible that there will be significant long-term consequences, not least as a result of Tehran's countermeasures in the Caspian region.

Caspian repercussions

On 16 May, Iran's Deputy Foreign Minister Abbas Maliki, addressing a conference in the Kazakh capital of Almaty, indicated that Tehran might now be

prepared to side with Moscow on the vexed issue of communal development of Caspian Sea energy resources. Mr Maliki did not formally approve Russia's argument that the Caspian Sea, apart from a limited coastal zone, constituted a legal condominium embracing the five littoral nations but he did say that the legal regime in the Caspian remained that laid down by the Soviet-Iranian treaties of 1921 and 1940.

'There was, one way or another, a natural community of interest between Iran and Russia on this'

Most external observers consider that these treaties in effect divided the sea into a Soviet-controlled zone and an Iranian-controlled zone. One leading US expert on the subject, the State Department's Glen Race, said when addressing a recent London conference in a private capacity that the US view was that the treaties proved that 'The Soviet Union and Iran established exclusive zones in the Caspian and an international boundary.'

However, in the last year, Moscow has advanced the view that 'The Caspian Sea does not constitute the territory of any state, and presents an international territory, which legal regime is decided by all the Caspian states having equal rights to its utilisation.' This formulation, enunciated in London on 24 February by Alexander Khodakov, Director of the Legal Department at the Russian Foreign Ministry, was specifically said to relate to 'the use of such natural resources as caviar and oil.'

In effect, Russia was challenging the right of the government of Azerbaijan to negotiate exclusive contracts with foreign oil companies for such fields as Chirag, Guneshli and Azeri, which lie some 60-80 miles offshore. At the time that Mr Khodakov made his comments, Azerbaijan and Iran were still negotiating on an offer by Baku to sell Iran a 5 percent stake in the Azerbaijan International Operating Company (AIOC), the consortium put together to develop these fields. But US opposition blocked this deal in April, so Iran has now indicated that it is willing to consider the Russian position, thus seeking to secure for itself through enforced sharing the stake which Washington has sought to prevent it from purchasing.

Thus in Almaty Mr Maliki said, 'We want to compromise with all the countries (of the Caspian). But until there is a new legal regime, the old regime is in effect.' Referring to the AIOC deal, he added, 'I cannot say that contracts are valid or invalid. All the countries must compromise regarding a new regime. But the Russian government has said that the contracts are invalid as far as the Azerbaijan fields are concerned.'

Major test of will

The most important aspect of Mr Maliki's statement is that it has finally turned what appeared to be an obscure legal issue into a major test of political will on the part of three major powers with important interests in the Caspian region. In general, most US diplomats have not taken the Russian position too seriously. They have tended to believe that Russian pressure on Azerbaijan, and on Caucasus states such as Georgia and Armenia in connection with a possible export pipeline from Azerbaijan to Turkey, has amounted to little more than bluster. They have not really believed that Moscow would, in the end, risk its relationship with Washington by blocking either the production or export of Azerbaijani crude.

But Tehran now has little to lose, and much to gain, by stiffening Moscow's spine. The Azerbaijanis have, for some time, considered that their biggest threat comes from Russian-Iranian co-operation. Now that Russian President Boris Yeltsin is under pressure to take a more nationalist line with regard to the West, Washington may have to reassess whether Russia's opposition to the Azerbaijani offshore developments remains essentially vocal, or whether it is more serious.

So far, it is at least arguable that the United States has made a number of serious misjudgments. In the latest trade sanctions against Iran, there is a specific mechanism to enable the US companies involved in the Azerbaijani consortium to deal with Iran. This was put in because one of the better options for disposing of early crude oil output from the Chirag field is via direct sales into the northern Iranian market, or sales of Azerbaijani product to northern Iran. In formal terms, although US companies involved in such business would have to apply to the Treasury's OFAC for a licence to conduct such activity, as one US official has put it, 'Frankly, it is our intention to expeditiously and favourably review such a licence.'

US bluff?

But this small carrot to Iran has not proved sufficient to counter the impact of Washington's latest resurrection of Teddy Roosevelt's Big Stick. Now it is Tehran's turn to see whether Washington is bluffing, or whether its commitment to Caspian development is such that it might yet prove prepared to compromise with Iran.

One US energy official told *Petroleum Review* that since Tehran 'is the only signatory that remains to the Iran-Soviet treaty (of 1921), which is the only treaty still in force governing the Caspian, it can't be dealt out' of whatever game is currently in play. He acknowledged that just because the United States had deprived it of an equity stake in the Azerbaijan consortium, this could not be expected to mean that Iran would forsake the defence of its interests. There was, he acknowledged, 'one way or another, a natural community of interest between Iran and Russia on this.'

The official's views show that there are still those in the US government who understand just what is at stake in the Caspian as a result of the state of economic war between Tehran and Washington. Development, and export to outside markets, of Caspian energy resources was already a difficult enough task before President Clinton announced the latest US sanctions on Tehran. Now the political difficulties, at least, are doubled.

US demand spurs massive Canadian gas play

By John Cranfield

Burgeoning gas demand across the United States has been a godsend to Canada. For although US gas exploration and production has risen rapidly, it still cannot match demand, much of which is in areas remote from traditional gas-producing regions. The result is that around half of all Canadian gas production is now crossing the border. This looks like continuing for years to come, subject to price movements. The situation has led to a boom in exploration and field development across Canada's traditional producing area, Alberta. The spread of infrastructure and easing of market accessability has now spawned a further boom area: northeast British Columbia (BC).

Natural gas processing plant in Caroline, Alberta. Photo by Shell Canada

In 1993, according to National Energy Board (NEB) figures, Canada exported 2.2 trillion cubic feet (Tcf), around 50 percent of total production, and up 10 percent on 1992. In 1994 production totalled 4.89 Tcf, according to Statistics Canada, up 7.9 percent on 1993. Again, around half was destined for US markets. In January this year, Nova Corp. - which handles all gas transmission within Alberta - said that 1994 throughput was 4.1 Tcf for the province and linked flows from BC. The latter's contribution was 744 billion cubic feet (Bcf), a marked hike on 1993's 538 Bcf.

NEB predicts growth, with 2005 output seen as topping 6 Tcfy. But doubts exist on just how long this could continue. Early in 1994, NEB put remaining marketable gas reserves at 67.5 Tcf. The Canadian Association of Petroleum Producers (CAPP) put the figure at 68.6 Tcf, with 1993 output replaced to the tune of 77 percent by new discoveries. In 1992 replacement had been 67 percent. However, BC in particular has vast tracts of virtually unexplored territory and, according to the Canadian Geological Survey, western Canada still has 232 Tcf of conventional gas reserves awaiting discovery. That compares with 229 Tcf already found.

In terms of export volume, 50 percent seems set to be the norm for the future. If NEB's estimate of 6 Tcfy output in 2005 is accurate, it balances well with the Canadian Gas Association (CGA) estimate of 3.1 Tcf for home demand that year. CGA expects the biggest home-demand boost (38 percent) to come from industry, with hefty inroads being made into the current fuel oil and electricity markets. Household demand growth is expected to be much slower as conservation measures and efficiency improvements take effect. Highest domestic growth will be Alberta's 2.5 percent a year, with Manitoba and Saskatchewan showing just 1 percent a year.

All this has led to a massive drilling effort. In 1994, 11,870 wells were put down, totalling 44.9 million feet. For 1995, estimates range from 10,500 to 10,900. However, most of 1994's wells were shallow: average overall was only 3,783 feet, as producers chased incremental production across Alberta that could be brought on stream quickly to take advantage of buoyant markets. In BC, however, well depths range from around 9,500 ft to over 13,000 ft. The cost is around C$5 million per hole but the reward can be out of all proportion to the norm in Alberta: up to 70 MMcfd output per well compared with a maximum around 5 MMcfd in Alberta's shallow fields.

Small can be profitable

According to Nova, Albertan gas production in 1994 totalled 3.356 Tcf. In effect, all gas produced and sold passes through Nova's pipelines since the firm has a 40-year monopoly on gas transmission. But this only begins after gas is processed. Across the province, therefore, processing is mostly handled by producers. The result: 684 plants, many with a capacity that could not cope with a single BC well. In Alberta, however, fields are generally small, shallow, cheap to develop and with short lives. Profits can be made even on the smallest, if overheads can be kept down. For that reason, many big firms have pulled out, while others have concentrated on large fields or processing.

Typical of how a small company can succeed

where a large one has struggled can be found in the northwest of the province. Underdeveloped reserves in the Rainbow Lake area are set to boost output from the current 18 MMcfd to 66 MMcfd over the next couple of years. To set this expansion in train, operator Granisko Resources last autumn began work expanding its process plant from 22 MMcfd capacity to 44 MMcfd. This will cost C$20 million, allowing full development of 38 Bcf of reserves in the immediate vicinity. However, Granisko's own proven reserve base is 90 Bcf and its process plant is one of only two authorised for an area covering 2,200 sq miles. Other producers are already making use of Granisko's facilities and this is expected to continue, resulting in further plant expansion, to 66 MMcfd.

'Around half of all Canadian gas production is now crossing the border'

The current position stems from Granisko's 1993 purchase, from OMV, of a 50 percent stake in the Rainbow Lake field and plant. Gas, known in three horizons, had been largely ignored because of the then-low price. In June 1994, Granisko bought the other 50 percent, from CRI Energy. At the same time, Zama Holdings' neighbouring properties were acquired. The result is a gathering system serving 22 wells, the process plant, a 9.5 mile sales pipeline and a stake in a further 16 mile sales line. The latter hook Rainbow Lake into Nova's transmission system.

Development of the field has been undertaken using the latest techniques, such as 3-D seismic and horizontal completions. The latter in particular have boosted per-well production hugely, turning a marginal field into a very profitable one. Now the same technique is being used on other gas accumulations. Granisko's own output rose from 1.5 MMcfd in January 1994 (when it held a 50 percent stake) to 10 MMcfd in July 1994, with another 4 MMcfd due on stream by year-end. Over the same period, plant throughput rose from 8 MMcfd to 18 MMcfd and was set to hit 22 MMcfd capacity by year-end. Typical of recently reworked wells, now with horizontal sections, are 15-11-111-7W6 testing 2.5 MMcfd, and 12-36-110-8W6, flowing 0.7 MMcfd.

Winter conditions in British Columbia. Photo by Shell Canada

At the other end of the scale, Alberta Natural Gas recently boosted output from its Cochrane processing plant from 1.3 Bcfd to 2.2 Bcfd, at a cost of C$55 million. Also recently completed, and equally indicative of the scale of the province's gas output, was Alberta Energy's expansion at its Suffield storage site. This now holds 80 Bcf and has a drawdown capacity of 1.6 Bcfd, figures that the company now contemplates boosting to 90 Bcf and 1.8 Bcfd. On a smaller scale is CrossAlta's C$80 million store, just opened at Crossfield. This, owned jointly by Amoco, TransCanada Pipelines and Alberta Natural Gas, holds 40 Bcf, with drawdown potential of 500 MMcfd. (Amoco, by the way, owns the province's largest process plants, its two units at Empress having 5.1-Bcfd capacity.)

One factor working against expansion of Alberta's gas production used to be the high sulphur content of many fields. With the province already one of the world's largest sulphur producers and with prices depressed, gas with high sulphur content was often best left in the ground. Tackling that problem has been a job for the majors, Shell Canada in particular putting in a lot of money: C$1 billion to date. Now its Caroline gas-processing plant is working at capacity, two years after start-up. Gas output is around 100 MMcfd, contributing about 18 percent of the plant's income. NGLs chip in with 23 percent, from 28,000 b/d, while sulphur - at 4,000 tonnes a day – provides the rest. This in turn means that more and more high sulphur gas is now economically producible.

Mountain-top bonanza

In contrast to Alberta, BC's gas potential is only now being exploited on anything like a large scale. Remoteness was long the main reason, compounded by difficult terrain and the deeper drilling required. Gas was first found in 1951, but the breakthrough came in 1964 when the Monkman Pass/Grizzly Valley play was discovered. By that time an intra-provincial pipeline had been laid from northern BC to markets around Vancouver. Able to handle 500 MMcfd, the line mostly served small fields in the Fort St. John area. Today, the main pipeline outlet, owned by Westcoast Energy, handles 2 Bcfd, with the market extending down into the northwest United States. As in Alberta, Westcoast has a pipeline monopoly, in this case extending to processing.

The result is a small number of large process plants. At the beginning of 1994, Westcoast process capacity was 2.14 Bcfd, out of a total BC capacity of 2.85 Bcfd (the balance being made up of mostly smaller plants predating Westcoast's monopoly grant). In November, Westcoast added 220 MMcfd to its Pine River plant, previously rated at 190 MMcfd, in a C$300 million project. Other plans are for replacement of the old 78-MMcfd Aitken Creek plant with a new 320 MMcfd unit, and for a new C$672 million, 400 MMcfd plant at Tumbler Ridge, to come on stream in November 1997. Overall, including the December 1994 purchase of the 60-MMcfd Buckinghorse plant near Fort Nelson from a group of producers, Westcoast plans to spend at least C$1.1 billion over the next two years on processing. A further C$500 million is already earmarked for the two years after that.

Most BC process plants are along the Peace River, reflecting the field trend until recently. Now, however, new plays remote from that area are coming to

Pipeline building across Alberta and British Columbia is big business

the fore. The new Tumbler Ridge plant will serve the Monkman Pass area, in remote mountains to the south, while other new plays are in full swing to the north. And much of the recent gas is finding outlets across the border into the Albertan system. Thus, Nova has just gained NEB approval for a 56 km line from its Alberta network to Home Oil's Kahntah field in BC. Costing C$13.6 million, the line opened in April. A further inter-provincial link has been forged between Nova and Westcoast, 1994 seeing 25 Bcf of BC gas flowing via Gordondale into Alberta. This will rise to 160 Bcfy by 1999, providing a useful second outlet to markets in the United States and eastern Canada.

Within BC, Westcoast is expanding its network of pipelines to link in more fields, a C$74 million investment now nearing completion. This covers laterals from its Fort Nelson line into the North and South Shekilie areas, additional compression and looping of existing Helmet and Pesh lines. Other expansions cover the Fort St. John area, allowing, for instance, Ranger to boost output from its Pink Mountain field from just 4 MMcfd to 20 MMcfd with more to come. A similar boost has come from Czar Resources, now using horizontal completions on its Helmet gasfield. In its first year, the field averaged 4.7 MMcfd from one well but this had tested 18.75 MMcfd and was reckoned good for a sustained 10 MMcfd, given an outlet. Now further drilling has raised field potential even higher.

Many of these fields follow the existing pattern: small but numerous nearby structures. The Monkman Pass trend is different. In recent months, Talisman Energy has firmed up its 1989 discovery on the trend that threw up the 1964 find. The latest hole, Sukunka d-28-I/93-P-4 tested up to 50 MMcfd. Earlier holes drilled by the company, which is partnered by Shell Canada and Ocelot Energy, tested at rates between 18 MMcfd and 73 MMcfd. Through 1994, output from the fields on the trend was hiked from 85 MMcfd to 150 MMcfd, held back by limited outlets.

This year, Talisman plans to drill up to 12 holes in the area, besides taking part in holes put down by others. According to Shell Canada, a further three wells will be put on stream this year and another three in 1996. This follows Westcoast's expansion at Pine River. But full-scale development of the fields will have to await construction of the Tumbler Ridge plant. In fact, Tumbler Ridge is likely to run at full capacity almost from the day it opens. Other operators and partners are scouring the area, including Amoco, Esso, Numac, Sceptre and Texaco. Over 25 rigs are active, out of 34 for the whole province. And that could be just the beginning. Monkman Pass is already reckoned to be one of the two largest gas finds made in North America in the last 20 years, with reserves estimated at 10 Tcf. Even so, it is reckoned that only 17 percent of British Columbia's potential gas reserves have been found.

Drivers' hours – a lawyers paradise?

By Owen Thomas, Manager, Road Transport Law, Freight Transport Association

The European Union drivers' hours rules, which have become something of a cause celebre because of their complexity and frequent lack of clear definition, apply directly to most drivers of heavy goods vehicles in the United Kingdom. The regulation in question – 3820/85 – only dates back 10 years but hours legislation has in fact been in place within the Union for much longer, as the initial regulation was agreed in 1969.

Since then, apart from a major revision of the rules in the mid-1980s, there have been a number of significant court rulings which have affected the manner in which the hours rules, and the related regulation on the use of tachographs, are applied and interpreted. And, against the background of the general Working Time Directive which the British government has of course challenged in the European Court of Justice, the Commission have resurrected once again the possibility of specific working time limits applying to goods vehicle drivers. At present only indirect limitations, arising from the daily and weekly rest requirements, are in force.

The important Court rulings over the last year or so cover a number of practical areas.

'The European Court turned its attention to the legal definition of "day" and "daily working period"'

Daily work

Following its lengthy landmark judgement on the vexed question of continuous driving and breaks at the end of 1993, the European Court recently turned its attention to the legal definitions of 'day' and 'daily working period' under European Union regulations.

Its judgement this time, in cases involving a Belgian and a Dutch company, largely confirm existing interpretations, although they also seem to create at least one fresh anomaly.

The Court ruled that references in the regulations to a period of 24 hours mean any period of 24 hours beginning at the start of a driver's duty after a daily or weekly rest period. This 24-hour period may happen to coincide precisely with a calendar day, but whether it does or not is of no consequence in law. A driver might work a 12-hour day, take a 14-hour rest period, and thus start work for a second time 26 hours later. The second period of 24 hours is counted from the time when his extended rest finishes.

The judgements also confirm that a driver's period of work includes driving time and other breaks, and that it runs from the end of one rest period to the start of another.

Split rest periods

The anomaly in the judgements is to do with split daily rest periods. The regulations allow rest to be taken in two or three separate periods during the 24-hour period with one of these periods at least eight hours long. Though this eight-hour rest is likely to be taken at the end of a rest period, this is not specifically required by the regulations. The judgements, however, make it clear that the longest part of a split rest period must be taken at the end of the day. They refer to calculations being linked to the start and end of the eight-hour rest period. Drivers who take split breaks in which the eight-hour part is not at the end are, therefore, in breach of the law.

Weekly rest

On the question of when a weekly rest period must be started, the European Court agreed entirely with the way in which this requirement has been interpreted in the United Kingdom for many years. The start of weekly rest can be no later than six 24-hour periods after a driver started that week's duty.

Activating the tachograph

The judgements refer several times to a driver 'activating the tachograph' as the dividing line between the end of a rest period and the start of a period of work or a 24-hour period. A literal interpretation of this phrase would create problems for drivers who, quite legitimately, do not operate a tachograph immediately when they start work because they are involved in other activities which are manually recorded then or later. A driver might, for example, book on and then do other work until his vehicle is available. A sensible application of the judgement is that the phrase 'activating the tachograph' in this context means finishing rest and starting work.

Safety exemptions

The European Court has not yet ruled whether breaches of hours regulations to ensure the safety of

people, vehicles or loads are permissable only when they are unforeseen, or whether such breaches may be planned. It is not yet clear when a ruling on this issue can be expected.

Tachograph charts

There is still some confusion relating to the requirement for drivers to have with them charts not only for the previous driving days in the current week but also for the last driving day prior to that. Since the obvious purpose of this requirement is to check on weekly rest, it seems nonsensical to suggest that a driver who returns from a fortnight's holiday, or a month's sick leave, should have with him in the cab a chart which covers his last driving day before his break from work. But this is what a 1992 judgement of the European Court effectively says. This decision seems to conflict with the requirement that charts should be handed in within 21 days but there is a 'special reasons' defence which would presumably apply here.

Other employment

A recent High Court ruling dealt with whether overtime for a driver's employer should be recorded on his tachograph chart. Not surprisingly, the Justices' conclusion was that the regulation made it clear that all other periods of work, in addition to actual driving time, should be recorded.

The judgement also touched on another issue. It was suggested that if the driver was free to decide whether or not he worked overtime, this meant that if he chose to work he was, in terms of EU Regulation 3820/85 'freely disposing of his time' – in effect, resting rather than working. The Justices rejected this argument. They accepted that at the moment the decision was taken to work overtime the driver might have been a free agent, but from that moment he came under the control and direction of his employers and was not therefore free to dispose of his time. I believe that this gives a clear indication of the way in which a Court would look at the case of a driver who takes up any other paid employment.

'These complex regulations will continue to exercise the minds of the legal profession'

There seems little doubt that these complex regulations, which are clearly intended to legislate for social as well as road safety issues, will continue to exercise the minds of the legal profession – as well as transport managers and drivers – for many years to come.

Fuelling the front line

By Susannah Cardy

A 60 kilometre pipeline is laid down in a matter of weeks. It doesn't have planning permission, telemetric devices or motorised valves and it's not exactly leak-free either. But when you're sending fuel to the front line, there's precious little time for civilian niceties.

The Gulf War may only have lasted for 100 hours on the ground but the British army alone still managed to consume 8,000 cubic metres of fuel.

Supplying the front line with constant reserves of uncontaminated fuel is one of those backstage activities of war which barely gets a mention in the media. Yet it's as crucial an area of logistics as troop movements themselves.

In the British army, this vital task falls to 220 petroleum operators, based at West Moors in deepest Dorset – now the army's only remaining fuel supply depot in Europe. 'You cannot afford to have any bottlenecks or breaks when you're supplying fuel to the operating units,' explains Lieutenant Colonel Phil Taylorson, who runs the centre. 'Our job is to create a seamless supply chain from national industry, through to military hands and ultimately to the front line.'

Lt. Col. Taylorson likens the petroleum operator to that legendary inventor of fantastical contraptions, Heath Robinson. 'Sometimes we arrive in a war zone and discover that abandoned fuel facilities are available. But sometimes they're not. And then we must be prepared to establish an instant storage system with the aid of little more than a Meccano kit.'

'Leap-frogging' across the desert

And this is only the start of operations. Once tanks and bunded areas have been set up, fuel must begin to flow towards the front line. In the Gulf War, this was achieved partly by the construction of a 60 km plastic pipeline. 'Slapped down' by the Royal Engineers out of pieces of equipment from different countries and run by the petroleum operators, the pipe had serious interface problems and leaked in

Helicopters filling up in the Falklands

several places. Nevertheless, had war become protracted, this basic piece of equipment would have become a lifeline for the troops. There were even plans afoot to 'leap-frog' fuel across the desert. 'We looked seriously at the possibility of building a tank farm, pumping up-country and then simply uplifting the tanks, moving them to the end of the pipeline and starting all over again,' said Lt Col. Taylorson.

Bosnia presented a rather different challenge to the flat sands of the Gulf. Rougher terrain, lack of security and, perhaps above all, a constant shift in the warring zone meant that a pipeline simply wasn't a feasible option. All fuel, therefore, had to be transported by road tanker. There are two types of regiments involved here: General Support, which move the fuel from the landing-point and establish new bulk re-fuelling sites further up-country; and Close Support, which ferry the fuel from these forward sites to the front line.

The forward sites can be constructed in as little as six hours and will often service both the land army and the RAF. 'You might have one section where bulk fuel tankers can fill up, another for convoy refuelling and a third for servicing helicopters,' said Lt Col. Taylorson. Re-fuelling, however, can be a hazardous occupation. At one Falklands site, soldiers found themselves filling up helicopters just 50 yards from a suspected minefield.

Meeting Iraqi forces

A chance meeting with the enemy is another ever-present threat. Warrant Officer Tom Plunkett once found himself sandwiched between Iraqi forces and a squadron of Allied tankers while serving out in the Gulf. 'Our convoy of bulk refuellers put their collective foot down and escaped unscathed but it's not something I'd encourage anyone to experience; especially since they don't have to aim directly at you, but simply at a rather large container of petrol behind you.'

'Complete storage sites are set up with little more than a Meccano kit'

At the very heart of the fighting, bulk re-fuellers become redundant and only a jerrycan will do. One-fifth of the total bulk fuel requirements of any force must be siphoned into these cans. 'If you've got a gun tank operating on an auxiliary engine, you must be very quiet and sneaky-beaky,' explained Lt. Col. Taylorson. 'The last thing you want is some great vehicle driving up beside you.'

'They don't have to aim directly at you, just at a rather large container of petrol behind you'

The total amount of fuel required by the army, Royal Navy and RAF combined is staggering. A Vulcan bomber taking off from the Ascension Islands for the Falklands, for example, had to be refuelled by three different Hercules air-

Convoy refuelling in the Gulf

craft on the way there and another three on the way back. 'People just don't appreciate what's involved,' said Lt Col. Taylorson. 'To avoid the Vulcan stalling, both aircraft had to soar up to a great height and literally fall out of the sky in order to marry together - and this happened six times every mission!'

And it's not just all-out warfare that consumes fuel. Troops must become familiar with the geography of a potential war zone the minute they arrive. 'As soon as the Allied brigades turned up in the Gulf, for example, they began practising like mad in the desert.'

'This is real Heath Robinson stuff'

Operational losses are another nightmare for the Royal Logistics Corp. In the Falklands, a large amount of petroleum equipment went down when the *Atlantic Conveyor* was sunk. Many fabric tanks were also lost when they slid off floating barges. 'The upshot of all this was that when the first soldiers reached the beaches there was very little petroleum equipment,' said Lt Col. Taylorson, 'and certainly not the amount considered necessary to support operations'.

West Moors trains army personnel to cope with these sorts of situations. The depot has a fire-fighting area, pipeline facilities, a lake with a floating barge, bunded areas, a testing laboratory etc. According to Lt Col. Taylorson, a wind of change is now sweeping the centre. A vital supply point for the British Army since World War II, West Moors is now in discussions with both the Royal Navy and the RAF over a possible merger of their facilities. At the same time, and in line with the government's general push towards privatisation, it is undergoing a rigorous period of market-testing.

But in other ways petroleum operations in the army have changed very little over the years. High-tech equipment brings with it added complications – complications which the army can ill-afford in the field. The Gulf War pipeline was up-and-running in a matter of weeks; the civilian version would probably have taken 18 months to complete. 'Simplicity is the key,' according to Lt Col. Taylorson. He points enthusiastically towards the rough-and-ready pipeline which snakes for 45km around the West Moor site. 'This is real Heath Robinson equipment,' he says again. 'And then try it multi-product.... Great stuff!'

A field fuel farm in Bosnia

IP INFORMATION SERVICE NEWS

The library team (clockwise): Marie Gomes, Lyn Nevin, Margaret Whellams, Liliana El Minyawi, Deborah Ansell and Catherine Cosgrove

LIBRARY INFORMATION SERVICES

Hours

Visitors welcome 9.30 am to 5 pm
Telephone enquiries 10.00 am to 5 pm
Monday to Friday except Bank Holidays

STAFF CONTACT LIST

Library holdings, services and use of library
– *Margaret Whellams, Assistant Librarian 0171 467 7112*

Periodicals and sales of IP publications
– *Liliana El-Minyawi, Library Assistant 0171 467 7113*

Online searches, information queries, statistical information – *Lyn Nevin 0171 467 7114* and *Deborah Ansell 071 467 7115, Information Officers*

Head of Department – *Catherine Cosgrove 0171 467 7111*

IP Statistical Service subscriptions /IFEG
– *Lyn Nevin 0171 467 7114*

Desk Research

Do you ever need information on companies, statistics, oil industry operations? Journal articles? Recent or historical press cuttings? Are you too busy to do your own research? Need it within days? The Library & Information Service can carry out the research for you. Research will be carried out by members of staff with experience in information retrieval for the oil and gas industry. The charges are £40 per hour/£20 per half hour plus photocopy charges (members), £80 per hour/£40 per half hour plus photocopy charges (non members).

Please contact Lyn Nevin (0171 467 7114) or Deborah Ansell (0171 467 7115)

IP Statistics Service

Statistics for *Inland demand for petroleum products* in UK, Scotland and Northern Ireland in the first quarter of 1995 will be published shortly. If you subscribe to the IPSTAT Service you will receive these press releases as soon as they are available.

You will also receive the following items on a quarterly basis:

- **Annual booklet including end-use analysis of petroleum products**
- **10 Year Cumulation of UK Petroleum Statistics**
- **World Oil Statistics booklet - includes production, reserves, refining capacities**
- **Statistics Card - quick reference UK and world statistics, conversion factors, etc.**
- **Oil Data Sheets - 20 information sheets providing valuable facts and figures including statistics, prices, useful addresses, etc. Updated sheets sent with every mailing.**
- **IP Publications Catalogue**
- **IP Statistics Ring Binder**

Price: £45 UK & Europe, £50 other destinations.

For an application form or further information contact Lyn Nevin (0171 467 7114)

We lend books

Individual members and employees of Corporate members can borrow any non-reference items from the IP Library. We will lend up to three books at a time for up to three weeks. If you cannot collect them in person, we will send them out by post. We ask only that you refund the cost of postage.

Amongst our most borrowed items are *Petroleum refinery process economics* by Robert E Maples, *Petroleum refining for the nontechnical person* by William L Leffler, *Trading in oil futures* by Sally Clubley and various API standards. Our subject coverage ranges across the entire petroleum industry from geology to safety at petrol stations.

To borrow books please contact Margaret Whellams (0171 467 7112)

Books for disposal

The library has a number of surplus books for disposal which are either not relevant to our collection or duplicates. Please feel free to come and browse.

For more information contact Margaret Whellams (0171 467 7112)

Elf adopts new computer system to boost competitiveness

The petrol prices at today's pumps vary more than ever before. It is one of the most demand driven, competitive market-places in the United Kingdom. Naturally, setting the right competitive prices can make all the difference between losing and making a profit. With a massive 75 percent of the revenues going directly to the government in the way of taxes, the right price at the pump can be anything from as little as 0.2 pence per litre difference.

That's why Elf decided some three years ago that they needed even greater control over the prices they were setting at their outlets. They wanted to create a link with their station network via computer to track prices daily – and so be able to make any necessary changes within 24 hours

Elf Oil UK Limited is responsible for the Elf Group's UK refining and marketing activities. The division has grown substantially in the last five years following the successful acquisition of the UK refining and marketing activities of Amoco and Heron. Today, Elf Oil's interests in the United Kingdom are spread over 500 retail sites which include Europe's largest selling service station – Clacket Lane on the M25 motorway.

At the time of the decision to track prices more carefully, Elf's central computer resource consisted of a large IBM mainframe. Although more than adequate for existing needs, Elf needed to implement a client server system to gain additional flexibility to help them stay ahead in the market-place. This would create the hardware base for the communications operations they want for the future.

After considering how such a department should be run, the board of Elf UK decided on an outsourced facilities managed system, taking the view that their core business is not computer sys-

tems management. They prepared an invitation to tender document which was issued to selected suppliers. Ultimately, they chose CMG.

The new system utilises an IBM RS/6000, which is connected by a Videotex system to all the petrol stations owned by Elf. Inbetween, there lies a system of nodes linked to the CMG computer via an X25 network operated by France Telecom. Each station has a Videotex monitor, supplied by Alcatel.

Elf considers the data and agrees any necessary price changes – a process which involves looking at each grade of petrol at every station in the network. The information is finally collated within 24 hours, ready to be transmitted back to CMG, again in a single file. That information is, in turn, picked up by the petrol stations when they call in once more to give their next returns. This two-way exchange of information enables Elf to market their petrol in light of competitive information and competitor discounts.

These facilities management capabilities helped Elf Oil UK concentrate on the central issue of maintaining optimum prices at the pumps. It also allowed Elf Oil UK to press on quickly with the next stage of their plan to create demand driven prices for their commercially sold petroleum products.

Products sold commercially, either to other independent retailers or for other uses, generates a significant proportion of an oil company's revenue. However, maintaining a competitive price structure with bulk sales can be as difficult as in the retail environment. The oil and financial markets are highly volatile. Information from these markets, together with other relevant data, is gathered to form Elf's commercial price mechanism. Elf chose a new system which would assist in optimising their selling prices.

To achieve this, a model was created which uses market, cost and customer information to calculate the required data. Using a LAN, Elf sales staff develop and quote prices, and collect and store sales information for transfer to Elf UK's IBM mainframe for processing. The system also offers portable links using Xcellenet software which allows Elf sales staff in the field the same access as their deskbound colleagues.

Georges Bitterlin at Elf has overseen the implementation of both price control systems. 'Competition from hypermarkets and alternative petroleum suppliers is more intense today than ever. For companies such as Elf, that means having to become more inventive to stay ahead. Achieving success through correct pricing in the short term is not enough – you must also understand *why* you have achieved it,' Mr Bitterlin said.

He continued, 'The computing services which CMG has delivered has allowed us to stay ahead – by providing us with the relevant information when it's needed and by helping us concentrate on the issues and not get side-tracked with concerns about the technology.

'Elf is continuing to look at ways of evolving its IT systems to help it stay competitive in what remains a cut-throat market. But the company has kept sight of its goals and that means taking into account the full cost in management time of introducing new office systems'.

TECHNICAL REPORT

Upstream

A new BSI panel has been established under PSE/17 to co-ordinate the UK and European input into the ISO working group dealing with certification and inspection. The first meeting was held at the Institute in February. A new panel dealing with the technical specifications and safe operation of coiled tubing is also being formed. The intention is not to duplicate the work already done by the API 5 Task Group but to focus and co-ordinate input to a new work item proposal to be submitted to ISO.

Contracts have now been put in to place for IP funding of two delegates who will provide UK representation at International Standardization meetings of ISO/TC67/SC3 on Drilling Fluids and Cements and ISO/TC67/SC6/WG8 meetings on Heat Transfer Equipment.

The final report on the Non-Routine Case and the draft Guideline Document for the study into Subsea Drilling Envelopes was completed by W S Atkins in February. The total cost of the study was £138,000 to which a contribution of £37,000 has now been received from the Health & Safety Executive. The guideline document is currently being printed.

A joint industry meeting of consultants involved in validation work on computer modelling packages for Tube & Shell Heat Exchanger safety was held at the IP in February. It was decided to form a Task Group to scope out and guide future research work. The Task Group met at the IP later to review the 'Shock Tube' experiment which is to be carried out and funded by the HSE within the next three months. Further meetings were held at HSE (Buxton) where the experiment design and costs were discussed.

Refining & Marketing

All working groups involved with the replacement of HS(G)41 have begun the development of revised guidance for service stations. New HSE draft risk assessment guidance is currently being tested on existing service stations.

A contract has been agreed for the IP funding of a delegate to provide UK representation on CEN/TC221/WG6 Tank Gauging Systems at Service Stations.

The new document, Guidelines for the Identification and Control of Hazards during the Proving of Road Loading Gantry Meters, is being checked before issue to HSE for comment prior to publication.

Discussions are in progress with DOE and HMIP on the detailed technical guidance to be attached to UK vapour emissions legislation. This is based on submissions made jointly with UKPIA.

Trial evaluations are in hand of the spreadsheet developed from the QRA study of detonation arresters for vapour collection systems.

The Electrostatic Hazards Working Group has met and a draft document is being prepared that covers the origins and control of electrostatic hazards in the downstream sector of the industry.

The IP Product Identification System has been revised to include a new identifier for super unleaded petrol. The revision is now going through the approval process.

The Model Safe Loading Pass Scheme has been published.

The Aviation Filter Monitor Code of Practice has been published.

Measurement

The Guide to Recommended Measurement Practice for Compliance with the Requirements of HMCE Notice 179 was published in March.

The new document PMM Part XIX: General Guidance on Density, Sediment and Water Content Test Methods was issued for ballot. Responses have been evaluated but a decision on one aspect is deferred until opinions are taken at the forthcoming Water-in-Oil Measurement Workshop.

The ballot of Guidelines for Loss Control at Refineries has closed and ballot responses are being evaluated.

Contracts have been agreed for IP funding of delegates to provide UK representation on ISO TC28/SC3/WG6 & 7 Levels and Temperature, and ISO TC28/SC2,SC3 and SC6 Dynamic, Static and Cargo Measurement.

Environment

In conjunction with the ACH Committee a workshop on `Air quality standards - measurements and compliance' has been organised for 15 June. This workshop will address aspects of air pollutant measurements and air quality standard compliance for both the United Kingdom and Europe.

The Oil Dispersants Sub-committee has prepared a response to the MAFF document `UK Review of Oil Dispersants'. A presentation on oil dispersant use and the IP's comments will be made to MAFF.

Health

The Benzene Conference originally scheduled for 5 June has been deferred because of a revised schedule for the completion of the work of the study groups involved in the IP Epidemiology Study.

Guidelines for the declassification of tankage which has been used in leaded service are nearing completion.

Sections of the revised IP Tank Cleaning Safety Code that concern the health aspects of tank entry and the use of gas detectors are being re-examined by different groups.

Test Methods

The following new or revised methods are being prepared for the 1996 IP Test Method Book:

IP 177 Determination of neutralisation number - potentiometric titration method

IP 309 Determination of cold filter plugging point of distillate fuels.

Determination of relative volatility of automotive lubricating oils by isothermal thermogravimetry

Determination of oxidation stability of inhibited mineral oils (the TOST test)

Determination of aromatic hydrocarbon types in diesel fuels and petroleum distillates by high performance liquid chromatography with refractive index detection

Determination of simulated filter plugging point (SFPP) of distillate fuels

Determination of filterability of diesel fuels - AGELFI method

Determination of the composition of liquefied petroleum gases - gas chromatography method.

The IP will be represented at CEN, ISO and ASTM Test Method meetings in May/June 1995.

John Hayes,Technical Director

Preventing pipeline stress

Flexible pipelines and cables can suffer damage from overbending if unsupported over a long span. A pipeline bending restrictor, manufactured by CRP Marine, was specified by Sonsub International of Houston for the Amoco Luihua 11-1 development, in order to ensure permanent protection for dynamic risers and subsea power cables.

This new product can also stop long-term pipeline failure by preventing unseen weakening of the pipe material. Typical locations could be at wellhead connections, J-tube exits or connections to rigid flowlines.

The restrictor comprises a series of interlocking half rings fastened together around the pipe. Made in a tough, semi-rigid polyurethane elastomer, the rings do not restrict pipe bending until a pre-determined minimum bend radius is reached.

The restrictor elements then lock and further bending loads are transferred to the restrictor, not the pipe itself. The elements are fastened together with corrosion-resistant materials.

The pipeline bending restrictor at work on the Luihua 11-1 development

Reflex action for seismic

Reflex is the name of an innovative software product designed to help oil companies and their contractors make 'significant improvements in the speed and efficiency of 2D and 3D marine seismic surveys'.

The product, introduced by Concept Systems of Edinburgh, offers rapid onboard binning and attribute analysis during a survey and is designed to ensure costly seismic infills (repeat sailings across the same area) are kept to a minimum. Its software incorporates a remote 'viewer' capability which, via a satellite link, allows an onshore interpreter to collaborate fully on the offshore infill decisions.

The system was developed in response to an industry call for reduced seismic acquisition costs and improved quality of data, particularly in complex 3D surveys.

The product utilises seismic attribute and positioning data from multiple sources and in various formats including UKOOA P1/90. Its features are designed to allow very fast interactive analysis of acquired data and thus can quickly predict the amount of data still to be acquired to allow adequate coverage.

Diesel assistance

Dieseline, the diesel fuel card purchasing facility, has launched Dieseline Assistance in conjunction with Green Flag (National Breakdown).

Every customer will gain free membership of Dieseline Assistance automatically. Each live card will give its authorised user access to national roadside assistance.

The new scheme also guarantees payment for work on any vehicle up to £250, (£105 is the average roadside assistance charge for a truck).

The card already offers customers the facilities of over 600 diesel fuel sites in Britain at one national price.

New family of bits

The Smith Diamond product line of Smith International has introduced a new family of polycrystalline diamond compact (PDC) bits. Named PDC Plus™, the 'Plus' acronym reflects new designs in the four areas that affect PDC performance the most: plurality, load balancing, unsymmetrical blade placement and spiral blades.

All the bits in the range share a common design concept – a parabolic profile and spiral blades; these and other features are modified as needed. The bits are designed for medium-soft to medium formations and are available in 7 7/8-inch (200mm) through 12 1/4-inch (311mm) sizes, in four different bit types: M55, M60, M65 and M70.

The PDC Plus™ bit

Range of retail consumables

A 'total package' for the petrol retail industry

PM Services, Avery Berkel's specialist supplier of forecourt equipment, has launched Genuine Parts, a range of consumable goods aimed at the retail and commercial petroleum markets.

The range includes printer ribbons, paper rolls and inks for all makes of receipt printer, cash register or EPoS terminal, and for tank gauge systems and fuel management systems. All products in the range are fully guaranteed and delivered promptly by recorded courier despatch to anywhere in the United Kingdom. A delivery charge is not levied on larger orders, and easy payment options are available.

Automatic flare ignition

A newly developed automatic flare ignition system has been developed, with the aim of reducing the amount of gas flared off from oil platforms.

The system has been designed by the Norwegian companies Raufoss Technology, Techno Consult and Restech Norway, on commission from Statoil. The system involves a gun which fires a projectile through the air to ignite the gas at the top of the flare-stack. The design can also be used on land-based installations.

The imposition of CO_2 duty on flare-stack emissions in the Norwegian sector of the North Sea forced Statoil to find ways of reducing flare-off time. Gas will now only be flared off when there is an operational need for it and this new ignition system simplifies the re-ignition process.

The 20 mm compressed air-operated gun fires an ignition projectile against a deflection plate set at an angle under the flare-tip. When the ignition projectile hits the plate, it explodes and sends a shower of hot sparks through the gas cloud. The sparks burn for several seconds at a temperature of some thousands of degrees centrigrade, and so provide a reliable source of ignition.

The system is now installed and operational on both the Gullfaks A and C platforms.

Testing the new Norwegian system

Takes the biscuit

Chelsea has announced the launch of BISCUIT, which stands for Benthic In-situ Sediment Carousel European Integrated Technology. This is a pan-European marine technology research venture led by Chelsea Environmental and funded under Euromar.

BISCUIT will be a one metre high x two metre diameter seabed-mounted chamber for in-situ integrated measurements of sedimentological, chemical and biological processes. It has an annular flume open at the base so that when it is deployed by a survey vessel an area of undisturbed sediment is sealed from the surrounding water.

A rotating top plate applies controlled and known shear stresses to the internal water column such that natural bed shear stresses are applied to the sediment.

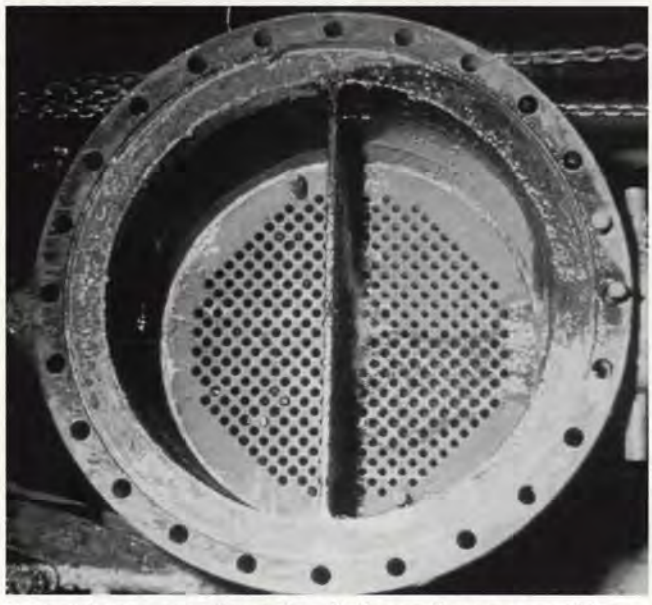
Part of the research will involve measuring chemical fluxes across the water/seabed interface. There will also be research into a means of measuring oxygen demand by a controlled oxygen balance system to mimic the natural demand under the changing conditions experienced by the sediment.

New advanced scale inhibitor

Betz Ltd claims to have made a major advance in calcium carbonate scale control for industrial cooling water systems.

This has been made possible by the development of the Betz patented AEC (Alkyl Epoxy Carbonate) scale inhibitor. This non-phosphorus, organic calcium carbonate inhibitor provides scale control by retaining calcium carbonate solubility at increased system calcium concentration and system pH.

As a result, the company has developed a range of highly successful 'Continuum AEC Programmes' containing this new inhibitor. Betz claims it can now provide customers with superior corrosion and deposition control over the alkaline pH range of 7.8 and above. This means that acid feed to the cooling tower can be reduced or in some cases completely eliminated, minimising exposure of plant personnel to acid.



Heat exchanger operating under alkaline cooling water conditions

Contaminant screening in minutes

Millipore has brought out the Envirogard™ Immunoassay Test Kit, designed to screen numerous samples in the time of a single chromatography run.

These kits allow 16 samples to be screened in the field in less than one hour or 44 samples to be screened in the laboratory, in less than two hours.

The tests employ immunoassay technology to indicate the presence of contaminants with a single colour change. It is the same technology that has been used for over 30 years to diagnose infectious diseases and other conditions.

Draeger offers new environmental tests

Draeger has expanded its environmental business to include several new tests and services.

Aimed particularly at small and medium-sized companies, the services available are: compressed air purity testing; COSHH and occupational monitoring; emissions monitoring; risk assessments and safety audits; land testing; and water quality testing.

BP standardises Euro forecourts

BP Oil Europe has standardised the management of its European forecourt retail automation activities using relational database management system technology from Informix.

The new Informix-based system – known as RAP (Retail Automation Project) – is based on Solus, a modular single dataflow system which will perform management tasks to support both wet and dry stock. These tasks include: stock replenishment, pricing, local account processing, point-of-sale (POS) interface and reconciliation, and site invoice matching. It will reduce the time that forecourt managers spend undertaking reporting and control activities and provide them with more time to execute other aspects of their business.

The system currently supports over 500 sites across five European countries: the United Kingdom, Germany, Portugal, Spain and the Netherlands.

Forecourt managers will be able to use BP's central management and decision-support system, Merchant, which provides pricing and ranging updates and consolidates sales data from the company's marketing headquarters in each country. They are also able to select which RAP modules to adopt in order to satisfy their individual business needs.

Brass compression fittings

Serto has introduced a new range of plated brass compression fittings. These are designed to offer the cost advantages of brass but with increased corrosion-resistance.

The chemical nickel plating covers both internal and external surfaces, making the fittings suitable for use with a wide range of fluid and gas media.

The new fittings also feature the Serto jointing method which requires zero clearance and permits radial assembly and dismantling and therefore avoids the risk of 'springing' pipework.

With traditional compression fittings, the tube passes through the ferrule so that the end protrudes. The Serto connection system uses a different technology whereby the tube is inserted into the fitting but, instead of passing through the ferrule, it caps the end of the tube to form a butt stop. The flat face of the ferrule provides the interface between the body of the fitting and the ferrule which gives a high performance connection, permitting radial assembly or dismantling.

Computerised personnel tracking

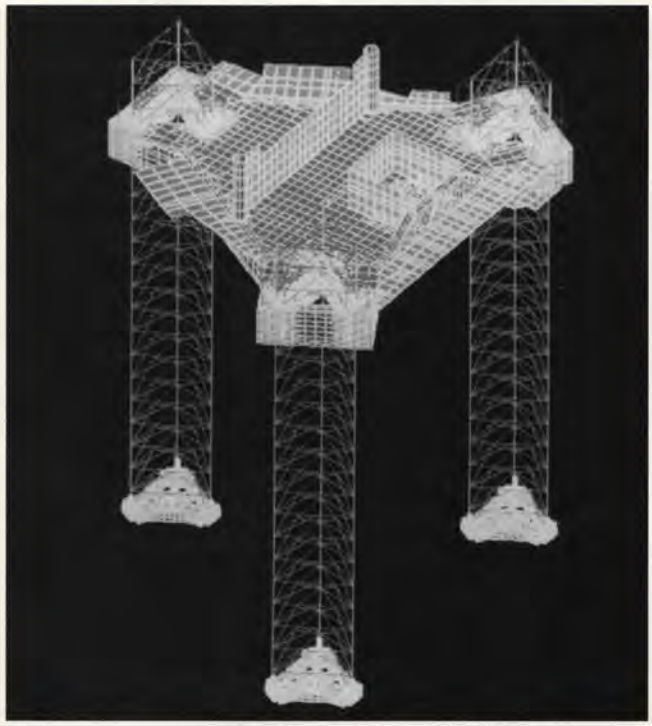
When the Piper Alpha tragedy occurred, precise information on personnel numbers and the specific location of individuals aboard the operation was unknown. In response to this situation, Salem Automation has announced a 'computer-based solution'.

The POB 2000 uses credit card-size identity tags based on passive transceivers to accurately track each individually named person's movements and their precise locations by means of strategically sited, certified antennae. Personnel can even be tracked while embarking from helicopters.

Information is then networked simultaneously to a platform-based computer system and by VHF radio signals to onshore mainframe facilities running logistics software packages.

The system can also be configured to provide alarm status, covering areas and modules where unauthorised entry is restricted. And the system has an historical database feature, useful for accurate time-billing.

New global software initiative



Oceanos graphic output: jack-up TPG 500 structural model

The latest releases of advanced software for the engineering design and validation of large marine structures are now available worldwide from a new Bureau Veritas company.

Bureau Veritas Software & Systems is offering a series of four state-of-the-art programmes in an integrated suite known as Oceanos – Online Control, Engineering & Analysis of Offshore Systems.

The four products are: Isymost, an interactive graphic modeller from French engineering software provider Caltec; NSO, a structural design package from BV and Caltec; Diodore, a hydrodynamics programme from BV and specialists Principia; and Ariane, a BV software for the design of mooring systems.

CONTACTS

CRP Marine	01695 24343
Concept Systems	0131 557 5595
Dieseline	01242 229400
Smith International	001 713 443 3370
PM Services	01922 616900
Raufoss A/S Norway	00 47 61 15 25 38
Chelsea Environmental	0181 941 0044
Betz	01606 593477
Millipore	01923 813365
Draeger	01670 352891
Informix Software	0181 818 1000
Serto UK	01483 440560
Salem Automation	01709 363955
Bureau Veritas	00 33 1 4291 5377

FORTHCOMING EVENTS

June

5th-6th
London: 'Oil Project Finance'. Details: IBC Financial Focus Ltd, 57-61 Mortimer Street, London W1N 8JX.
Tel: 0171 637 4383
Fax: 0171 323 4298

5th-7th
Netherlands: 'Pipeline Pigging Conference'. Details: The Conference Organiser, Pipes & Pipelines International, PO Box 21, Beaconsfield, Bucks HP9 1NS.
Tel: 01494 675139
Fax: 01494 670155

5th-8th
Houston: 'ASME Turbo Expo '95 – Land, Sea & Air'. Details: ASME International Gas Turbine Institute, 5801 Peachtree Dunwoody Road, Suite 100, Atlanta, Georgia 30342 USA.
Tel: 404 847 0072
Fax: 404 847 0151/843 2517

6th-7th
Worcestershire: 'Legislation, the Environment and Trenchless Technology'. Details: CIWEM Conferences, 15 John Street, London WC1N 2EB.
Tel: 0171 831 3110
Fax: 0171 405 4967

6th-8th
Birmingham: 'Eurochem 1995'. Details: Sharon Clark/Frances Knox, Jane Howard PR.
Tel: 0171 622 5549

7th-9th
Cannes: 'Multiphase '95'. Details: Ms Catherine Cox, Multiphase 95, BHR Group Ltd, Cranfield, Bedford MK43 0AJ.
Tel: 01234 750422
Fax: 01234 750074

7th-9th
Singapore: 'Marichem Asia '95'. Details: Lies Blom, Glen House, 200/208 Tottenham Court Road, London W1P 9LA.
Tel: 0171 436 9774
Fax: 0171 436 5694

8th
London: 'Advances in Subsea Electrics and Electronics'. Details: Knighton Enterprises Ltd, 2 Marlborough St, Faringdon, Oxon SN7 7JP.
Tel: 01367 242525
Fax: 01367 241125

11th-16th
The Hague: '5th International Offshore and Polar Engineering Conference'. Details: ISOPE, PO Box 1107, Golden, Colorado 80402-1107. USA.
Fax: (1) 303 420 3760

12th-13th
Newcastle upon Tyne: 'The Gas Industry – Global Growth'. Details: The Institution of Gas Engineers, 21 Portland Place, London W1N 3AF.
Tel: 0171 636 6603
Fax: 0171 636 6602

12th
London: 'Measurement of Water in Oil Workshop'. Details: Caroline Little, The Institute of Petroleum.

12th-14th
London: 'Sulphur Seminar'. Details: TPA. Inc., 9101 LBJ Freeway, LB2, Dallas, TX 75243 USA.
Tel: 214 669 2908
Fax: 214 234 1954

13th-14th
London: 'Oil Markets: Any Chance of a Price Recovery? When?'. Details: DRI Europe, Wimbledon Bridge House, 1 Hartfield Road, Wimbledon, London SW19 3RU.
Tel: 0181 543 1234
Fax: 0181 545 6248

13th-14th
London: '1st International Conference on the Exploration and Production of Oil and Gas in the Former Soviet Union'. Details: Philippa Giles, Adam Smith Institute, 11-13 Charterhouse Buildings, London EC1M 7AN.
Tel: 0171 490 3774
Fax: 0171 490 2362

14th-15th
London: 'Petroleum Trading and International Law'. Details: Abacus International, 214 Inchbonnie Road, South Woodham Ferrars, Essex CM3 5WU.
Tel: 01245 328340
Fax: 01245 323429

14th-15th
Aberdeen: 'Preventing Oil Discharge from Drilling Operations – The Options'. Details: Nadia Ross/Helen Smith, IBC Technical Services Ltd, Gilmoora House, 57-61 Mortimer Street, London W1N 8JX.
Tel: 0171 453 2130/2128
Fax: 0171 631 3214

14th-15th
London: 'Electricity: Strategic Responses to Competition'. Details: AIC Conferences Ltd, 2nd Floor, 100 Hatton Garden, London EC1N 8NX.
Tel: 0171 242 1548
Fax: 0171 242 1508

15th
London: 'Air Quality Standards – Compliance Workshop'. Details: Caroline Little, The Institute of Petroleum.

15th-16th
Helsinki: 'Restructuring of the Nordic Electrcicty Industry'. Details: IBC Financial Focus Ltd, 57-61 Mortimer Street, London England W1N 8JX.
Tel: 0171 637 4383
Fax: 0171 323 4298

19th-20th
Pembroke: 'Terminal Operation and Static Measurement', Details: Abacus International, 214 Inchbonnie Road, South Woodham Ferrars, Essex CM3 5WU.
Tel: 01245 328340
Fax: 01245 323429

19th-20th
London: 'Piping Fabrication, Inspection and Repair'. Details: Mark Wasmuth, Information Centre, 389 Chiswick High Road, London W4 4AL.
Tel: 0181 996 7467
Fax: 0181 996 7048

19th-23rd
Rio de Janeiro: 'Environtech '95/Eco Urbs '95', PO Box 2432, 20001-970 Rio de Janeiro, Brazil.
Tel: 21 221 0155
Fax: 21 262 5946/551 1893

20th
Indianapolis: 'Fire Resistance of Industrial Oils'. Details: Dr George Totten, Union Carbide Corp., 777 Old Saw Mill River Road, Tarrytown, NY, 10591 USA.
Tel: 914 789 2519
Fax: 914 789 2123
e-mail: GETotten@AOL.COM

20th
Aberdeen: 'Offshore Noise and Vibration'. Details: IMarE Conferences Department, The Institute of Marine Engineers, 76 Mark Lane, London EC3R 7JN.
Tel: 0171 481 8493
Fax: 0171 488 1854

21st-22nd
Pembroke: 'Flow Metering and Meter Proving'. Details: Abacus International, 214 Inchbonnie Road, South Woodham Ferrars, Essex CM3 5WU.
Tel: 01245 328 340
Fax: 01245 323429

21st-23rd
London: 'Introduction to Oil Industry Operations Course'. Details: Caroline Little, The Institute of Petroleum.

FORTHCOMING EVENTS

21st-22nd
Derby: 'Accident Investigation'. Details: Link Associates, Aspen Drive, Raynesway, Derby, DE21 7SG.
Tel: 01332 677066
Fax: 01332 679609

21st-23rd
London: 'Piping System Design'. Details: Mark Wasmuth, Information Centre, 389 Chiswick High Road, London W4 4AL.
Tel: 0181 996 7467
Fax: 0181 996 7373

25th-13th July
France: 'Petroleum Management - Executive Session'. Details: R A Baker, IFP/ENSPM-FI, 232 avenue Napoléon Bonaparte, Rueil-Malmaison, France.
Tel: 1 47 52 71 36
Fax: 1 47 52 70 66

26th-28th
London: 'Introduction to Petroleum Economics Course'. Details: Caroline Little, The Institute of Petroleum.

27th-28th
London: 'Best Practices for Improved Oil Recovery'. Details: Nadia Ross, IBC Technical Services Ltd, 57-61 Mortimer Street, London W1N 8JX.
Tel: 0171 637 4383
Fax: 0171 631 3214

27th-28th
Budapest: '1995 Central/East European Gas Conference'. Details: Overview Conferences, 82 Rivington Street, London EC2A 3AY.
Tel: 0171 613 0087
Fax: 0171 613 0094

29th-30th
Cannes: '1995 European Oil Refining Conference and Exhibition'. Details: Edward Bradfield, WEFA Ltd, Mappin House, 4 Winsley Street, London W1N 7AR.
Tel: 0171 631 0757
Fax: 0171 631 0754

IP THE INSTITUTE OF PETROLEUM

Call for Papers

Facilities Abandonment

A second conference on Facilities Abandonment will be held on Thursday 16 February 1996 as part of IP Week. This will be a follow-up to the successful conference on the same subject which was organised by the Institute of Petroleum in February this year.

Titles and an abstract (300 words) should be sent to Sjoerd Schuyleman, Technical Manager Upstream, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR by 31 September 1995.

29th-30th
London: 'Oil and Gas Acquisitions and Disposals'. Details: Langham Oil Conferences Ltd, 37 Main Street, Queniborough, Leicester LE7 3DB.
Tel: 01509 881022
Fax: 01509 881576

29th-30th
London: '1st International Chemical Tanker Conference –Continuing Specialist Market or Bulk Sector?'. Details: Holly Neilson, The Conference Division, Lloyd's of London Press Ltd, One Singer Street, London EC2A 4LQ.
Tel: 0171 250 1500
Fax: 0171 253 9907

July

3rd-7th
Edinburgh: 'PVT and Phase Behaviour of Reservoir Fluids'. Details: Tom Inglis, Director of Continuing Education, Heriot-Watt University, Riccarton, Edinburgh EH14 4AS.
Tel: 0131 451 3014/5
Fax: 0131 451 3005
Telex: 727918

3rd-6th
Birmingham: 'LNG 11'. Details: Nelton Exhibitions Ltd, Nelton House, 46a High Street, Gravesend, Kent DA11 0AY.
Tel: 01474 536535
Fax: 01474 536552

4th-6th
Cannes: 'Undersea Defence Technology'. Details: Gillian Shinar, UDT 95 Conference, Nexus Events, Warwick House, Azalea Drive, Swanley, Kent BR8 8HY.
Tel: 01322 660070
Fax: 01322 661257

6th-7th
Budapest: 'Restructuring & Privatisation of the Electricity Industries in Central and Eastern Europe'. Details: IBC Financial Focus Ltd, Gilmoora House, 57-61 Mortimer Street, London. W1N 8JX.
Tel: 0171 637 4383
Fax: 0171 323 4298

10th-11th
Manchester: 'Freight Transport and the Environment'. Details: Chris Kaighin, Department of Continuing Education, Lancaster University, Storey Institute, Meeting House Lane, Lancaster LA1 1TH.
Tel: 01524 849494
Fax: 01524 849499

'Standard Methods for Analysis and Testing of Petroleum and Related Products' – 1995 edition

Correction to IP 15/95
Petroleum products – Determination of pour point

Figure 1 replacement

The Institute of Petroleum has been notified by the Central Secretariat of the International Organization for Standardization (ISO) that Figure 1 of ISO 3016: 1994 was incorrectly reproduced when the standard was published last year. The test thermometer in Figure 1 was erroneously positioned such that the bulb rested on the bottom of the test jar. ISO have subsequently reprinted ISO 3016 in its entirety to include a corrected Figure 1. However, the text of ISO 3016 remains unaltered.

ISO 3016: 1994 has been implemented by the IP as IP 15/95. Therefore Figure 1 of IP 15 of the 1995 edition of 'Standard Methods for Analysis and Testing of Petroleum and Related Products' is incorrect.

Please contact Jo Howard-Buxton at the IP for a copy of the corrected Figure 1. Tel: 0171 467 7126

INSTITUTE NEWS

NEW MEMBERS

Mr H J Bone, 95 Miller Drive, Fareham, Hants, PO16 7LS.
Mr A C Bruns, Cooper Oil Tools, 205 Holland Park Avenue, London, W11 7XB.
Mr S C Burman, Lindsey Oil Refinery, Killingholme, Grimsby, South Humberside, DN40 3LW.
Mr A T J Chaplin, BOC Gases, Engineering Centre, 30 Priestley Road, Guildford, Surrey, GU2 5YH.
Mr P V J Coveney, Glebe House, 150 Whitton Road, Twickenham, Middx, TW1 1DE.
Mr J Davis, 99 Nightingale Lane, Bromley, Kent, BR1 2SG.
Mr L Determan, Dorpsdyk 41B, Vierpolders, 3237 LB, Netherlands.
Mr J H C Fear, 18 Greenham Walk, St Johns, Woking, Surrey, GU21 3HB.
Mr I K Ford, TR Oil Services Ltd.,46 Europa Business Park, Bird Hall Lane,Cheadle Heath, Stockport, Cheshire SK3 OXA.
Miss A Hemming, Department of the Environment, B363 Romney House, 43 Marsham Street, London, SW1P 3PY.
Mr G J Hunt, OATS Ltd, 8 Monument Close, Wellington, Somerset, TA21 9AL .
Mr P C Jones, 35 Reynolds Lane, Tunbridge Wells, Kent, TN4 9XJ.
Mr J G Mathiers, 49 Cherryton Drive, Clackmannan, FK10 4RA.
Miss M Mistry, Millipore (UK) Ltd, The Boulevard, Blackmoor Lane, Watford, Herts, WD1 8YW.
Dr C I Morgan, Ridgeway Environmental Management, Ty Gwaun, Ridgeway, Lamphey, Pembroke, SA71 5PB.
Mr C J O'Gorman, Dai-Ichi Kangyo Bank, DKB House, 24 King William Street, London, EC4V 9DB.
Dr R Pagett, The Environmental Management & Training Company, Huntersbrook House, Hoggs Lane, Purton, Wiltshire, SN5 9HQ.
Mr I M Poulter, Ian Poulter Design Practice, Milroy House, Sayers Lane, Tenterden, Kent, TN30 6BW.
Mr F W Rohmer, Amid & Hollander Raffinaderij bv, Sextantweg 10, Amsterdam, 1042 AH, Netherlands.
Mr D Rose, AUPEC, Department of Economics, 35 Camperdown Road, Aberdeen.
Mr M Runharn, Andersen Consulting, 2, Arundel Street,, London.
Mr R Selwa, Snamprogetti Ltd, Denburn House, 20 Union Terrace, Aberdeen, AB1 1NN.
Mr H M Sharman, Incoteco (Denmark) ApS, Toldbodvej 12, Hals, DK-9370, Denmark.
Mr B Shevlin, 1 Herons Court, Old Avenue, Weybridge, Surrey KT13 OPL.
Mr P Stilwell, Moscow Narodny Bank Ltd, 18 Nightingale Close, Winchester, Hants, S022 5QA.
Mr L C Tolosa, Flat 11 Rivercourt, 1 Trinity Street, Oxford, OX1 1TQ.
Mr P Tranter, Sedco Forex Drilling Services, Craigshaw Road, West Tullos Ind. Estate, Aberdeen.
Mr D Vukovitz, CSO Company, PO Box 907/6, 1386 Budapest 62, Hungary.
Mr M K Ward, Wood Group Engineering Ltd, Asset Engineering Alliance, Wood Group Alliance Centre, Greenwell Road, Aberdeen, AB1 4AX.
Mr P A Williams, Shell UK Oil Downstream, York Street, Hursley, Leeds, LS10 lQS.
Mr S Yamaguchi, SGS Far East Ltd, Chiyoda Research Park, 3-13 Moriya-cho, Kanagawa-ku Yokohama, ZIP 221 Japan.

STUDENTS

Mr S Chung, CCLT.SOM, Cranfield University, Cranfield, Bedford, MK43 0AL.
Mr R S Marks, 14 Kemsing House, Weston Street, Bermondsey, London, SE1 4BX.

DEATHS

We regret to announce the death of:

	Born
Dr Schnurmann	1904

NEW FELLOWS

Mr J Hayes
Mr Hayes, who is a Chartered Engineer, graduated from Durham University in 1963 with a degree in Chemical Engineering. As Technical Director, he is responsible for all technical activities of the Institute of Petroleum.

Mr R V Taylor
Mr Taylor is the IP's Finance Officer. He has served the IP with enthusiam and maintained the accounts of the Institute and the World Petroleum Congresses to the highest standard.

Around the Branches

London Branch
8 June: Annual visit, Gilbarco Petrol Pump manufacturer, Basildon

Southern Branch
13 June: Visit to Heathrow Airport Airside Operations

Yorkshire Branch
14 June: Golf Tournament

Midlands Branch
23 June: Visit to Astley Vineyard, Nr Stourport on Severn, Worcs

South Wales Branch
1 July: Sport with a difference

APPOINTMENTS

UNIVERSITY OF CAMBRIDGE
Department of Engineering

Research Professorship in Petroleum Engineering

Applications are invited for appointment to the Research Professorship of Petroleum Engineering. The General Board hope soon to be in a position to appoint to this new Research Professorship, which will be an unestablished post in the University for a five-year period with the possibility of renewal; the starting date is negotiable. The Research Professorship is supported by the Cambridge University Engineering Department Jafar Fund for teaching and research in those aspects of petroleum engineering that relate to the exploration for and production of petroleum oil and gas before the refining process and any associated or derivative engineering activity. The successful applicant will have a record of excellence in research in one or more of these aspects of petroleum engineering as well as relevant industrial experience.

The present salary, which is under review, is £37,968 a year.

Further information may be obtained from the Head of the Department of Engineering (Professor A.N.Broers), Trumpington Street, Cambridge, CB2 1PZ, to whom applications should be made in writing (ten copies) together with the names of two referees, so as to reach him not later than 31 August 1995.

The University follows an equal opportunities policy.

The University aims to achieve the highest quality in teaching and research.

IP
THE INSTITUTE OF PETROLEUM

Petroleum Review Index 1994

Copies are now available from

The Library
The Institute of Petroleum,
61 New Cavendish Street,
London W1M 8AR
Tel: 0171 467 7100 Fax: 0171 255 1472

UK Deliveries into Consumption (tonnes)

Products	*†Mar 1994*	**Mar 1995*	*†Jan-Mar 1994*	**Jan-Mar 1995*	*% Change*
Naphtha/LDF	235,398	275,485	785,441	894,575	14
ATF – Kerosene	548,843	549,491	1,547,858	1,568,564	1
Petrol	2,010,137	1,911,824	5,463,132	5,197,487	-5
of which unleaded	1,128,346	1,173,589	3,044,785	3,169,365	4
of which Super unleaded	125,103	90,244	336,183	243,978	-27
Premium unleaded	1,003,243	1,083,345	2,708,602	2,925,387	8
Burning Oil	466,762	345,534	1,119,088	948,150	-15
Derv Fuel	1,153,237	1,230,490	3,038,931	3,235,045	6
Gas/Diesel Oil	767,192	750,243	2,170,110	2,093,214	-4
Fuel Oil	863,867	755,908	2,589,747	2,428,648	-6
Lubricating Oil	69,463	83,503	192,531	220,818	15
Other Products	780,004	800,525	1,995,060	2,138,923	7
Total above	**6,894,903**	**6,703,003**	**18,901,898**	**18,725,424**	**-1**
Refinery Consumption	516,575	534,430	1,561,801	1,585,536	2
Total all products	**7,411,478**	**7,237,433**	**20,463,699**	**20,310,960**	**-1**

*† Revised with adjustments *preliminary*

PEOPLE

Jenny Bacon is to take over as director general of the Health and Safety Executive when John Rimington retires at the end of June. She is the first female to hold the position, which carries the rank of permanent secretary and responsibility for 4,500 staff. She has worked for the civil service for 27 years and helped prepare the Health and Safety at Work Act 1974 and currently holds the position of deputy director general of the HSE.

Jim Hill of Phillips Petroleum Company Europe-Africa retired at the end of May 1995. Following his retirement Phillips' upstream and downstream divisions will merge under the leadership of A W (Allyn) Risley, Chairman and Managing Director, Phillips Petroleum Company UK Ltd.

Janet Stoner of Texaco is leaving her job as Production General Manager in Aberdeen for a new job in the United States. She is swapping the challenges of the North Sea to become Vice-President Exploration and Production for the Latin American/West Africa Division., Texaco Inc.

BP has appointed Peter Sutherland as its Deputy Chairman. Mr Sutherland , who stepped down as the head of the World Trade Organisation, has become a non-executive director, and will beome BP's remuneration committee chairman, taking over from Lord Ashburton in July. David Simon, the current group Chief Executive and Deputy Chairman, takes over the chairmanship. John Browne, current head of BP Exploration, will take over from Mr Simon as Chief Executive.

The Board of the 'Shell' Transport and Trading Company plc regrets to announce that Sir John Swire, who has been a non-executive director for the past five years, has submitted his resignation with effect from 13 April 1995.

Ernst & Young Energy Services have announced the appointment of Katrina Heathcote (above) and Neil Humphreys (below) to its management consulting team in London. Both consultants are oil industry specialists. They closely follow the appointment of Michael Horder as head of Energy Consulting and head of E&Y Energy Services .

The Computer Management Group has strengthened its commercial division with two new appointments. Karl Matsell (above) is promoted to associate director, while Sue Harding (below), previously responsible for customer care within Esso, now takes responsibility for sales and marketing in the commercial division.

Two new members have been appointed to the Board of Scottish Enterprise. They are Ms Celia Urquhart, Chief Executive of CU Developments and Sir Ian Wood, Chairman and Managing Director of the John Wood Group plc.

Graham Miller, Operations Director, William Younger & Company Ltd, has been elected President of the Freight Transport Association. He succeeds Angus Clark, who is Distribution Director, J Sainsbury plc.

Wayne H Gross has been named Managing Director of the International Gas Turbine Institute of the American Society of Mechanical Engineers (ASME International).

Ms Kimberly Ives has been appointed Finance Director at Arco British Ltd (ABL). She previously held the post of Profit Planning Operations Manager in Los Angeles and will be taking over from Phoebe Wood who has been appointed Vice President Business Development of Vastar Resources Inc in Houston.

The Franklin Medal, an annual award for contributions in the field of safety goes to Ken Palmer ex-Fire Research Station, Hertfordshire, for his extensive research into fire explosion hazards, detection and extinction, combustion products and re-development of contaminated land. He is a member of the IP Safety Sub-Committee.

Conoco has announced the formation of a new subsidiary company, Conoco Exploration Production Europe Ltd. Mr Roger Abel (above), currently Vice-President for upstream operations in Europe will become Chairman of the new company. The company also announced that Dr George E Watkins (below) will become Chairman and Managing Director of Conoco (UK) Ltd of which he is currently Chief Executive.

What do you want?

At International Trade & Exhibitions we like to think that our exhibitions and conferences are tailor made environments in which you can conduct business. However, we realise that our exhibitors and visitors are the people that have made the ITE exhibitions what they are today. That's why we ask, *"what do you want?"*

You've told us that as an exhibitor you want a trouble free environment in which to conduct business and to meet visitors that you can do business with. As a visitor you want to see the latest products, services and technology from the international and national oil, gas and related industries under one roof. We do our best to deliver.

What sets us apart from the others is that we spend a lot of effort working on your behalf to provide what you want. Look what we provide: Trouble free, cost effective, dedicated marketing forum • Technical services department • Full range of modular stands • Computerised registration system • Exhibitor and visitor pre-registration • Exhibitor Club Lounge • Targeted visitor promotion • International and local advertising • Press conferences • Ministerial delegations • Catering facilities • Dedicated promotion visits to regional countries • Exhibitor and visitor market research • Press, travel, freight and translation services • Ministerial support.

All our shows are set in the world's most rapidly expanding markets, and are enjoying unprecedented attention from the international oil and gas industry. If you want to participate in, or visit any of our exhibitions, please complete and return the reply slip below.

INTERNATIONAL TRADE & EXHIBITIONS LTD
Byron House, 112A Shirland Road, London W9 2EQ, UK
Tel: +44 (171) 286 9720 Fax: +44 (171) 286 0177

Please send me details on: ☐ *Visiting* ☐ *Exhibiting*

☐ MIOGE – MOSCOW INTERNATIONAL OIL & GAS EXHIBITION
☐ KIOGE – KAZAKHSTAN INTERNATIONAL OIL & GAS EXHIBITION
☐ SOPEC – SAUDI INTERNATIONAL OIL & GAS EXHIBITION
☐ OGI – OIL & GAS INDIA
☐ PGI – POWER GENERATION INDIA
☐ KAZMIN – KAZAKHSTAN MINING EXHIBITION
☐ VIOGE – VIETNAM INTERNATIONAL OIL & GAS EXHIBITION
☐ CIOGE – CHINESE INTERNATIONAL OIL & GAS EXHIBITION
☐ ITE OIL & GAS CONFERENCES

NAME: .....

COMPANY: .....

ADDRESS: .....

.....

TEL: ..... FAX: .....

IP

THE INSTITUTE OF PETROLEUM

Introduction to Oil Industry Operations

Wednesday 21 June – Friday 23 June 1995

This course is designed as a general introduction to the whole range of oil industry operations from the search for oil and gas to the delivery of products to the customer. It will include an appreciation of the principal functions of the different parts of the petroleum industry and the inter-relationship between them. It is likely to be appropriate for:

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

- Participants from financial and commercial institutions, other energy industries, analysts, suppliers, service companies and contractors; and government organisations who need an informed 'birds eye view' of the oil industry.

Topics to be covered during three days will include:

Changing Perspectives in the International Oil Industry

Petrochemicals

Basic Concepts of Drilling

How Technology Serves the Business

Marine Transportation

Exploration for Oil and Gas

Petroleum Production

Introduction to Marketing/Distribution/Retail Markets

Supply

Refining

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

Introduction to Petroleum Economics

Monday 26 June – Wednesday 28 June 1995

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

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

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

Topics to be covered during the three days will include:

Geopolitics of Oil

OPEC/Middle East

Asia and Pacific Region

Eastern Europe and the Former Soviet Union

North America

North Sea Basin

The Oil Markets

Crude Oil Markets

Product Markets

Oil Price Information

Oil Futures Market

Oil Supply and Price – the Outlook

Structure of the Oil Industry

Development of Major Oil Companies

The National Oil Companies

For copies of the registration forms for both courses please contact The Conference Department, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel: 0171 467 7100 Fax: 0171 255 1472