Petroleum review

JANUARY 2001

Fabrication

- Europe's yards face a bleak future

Europe

- Strategic alliances target onshore prospects

US

- Business as usual for US oil under new government

Environment

- Global oil spill response*ability*

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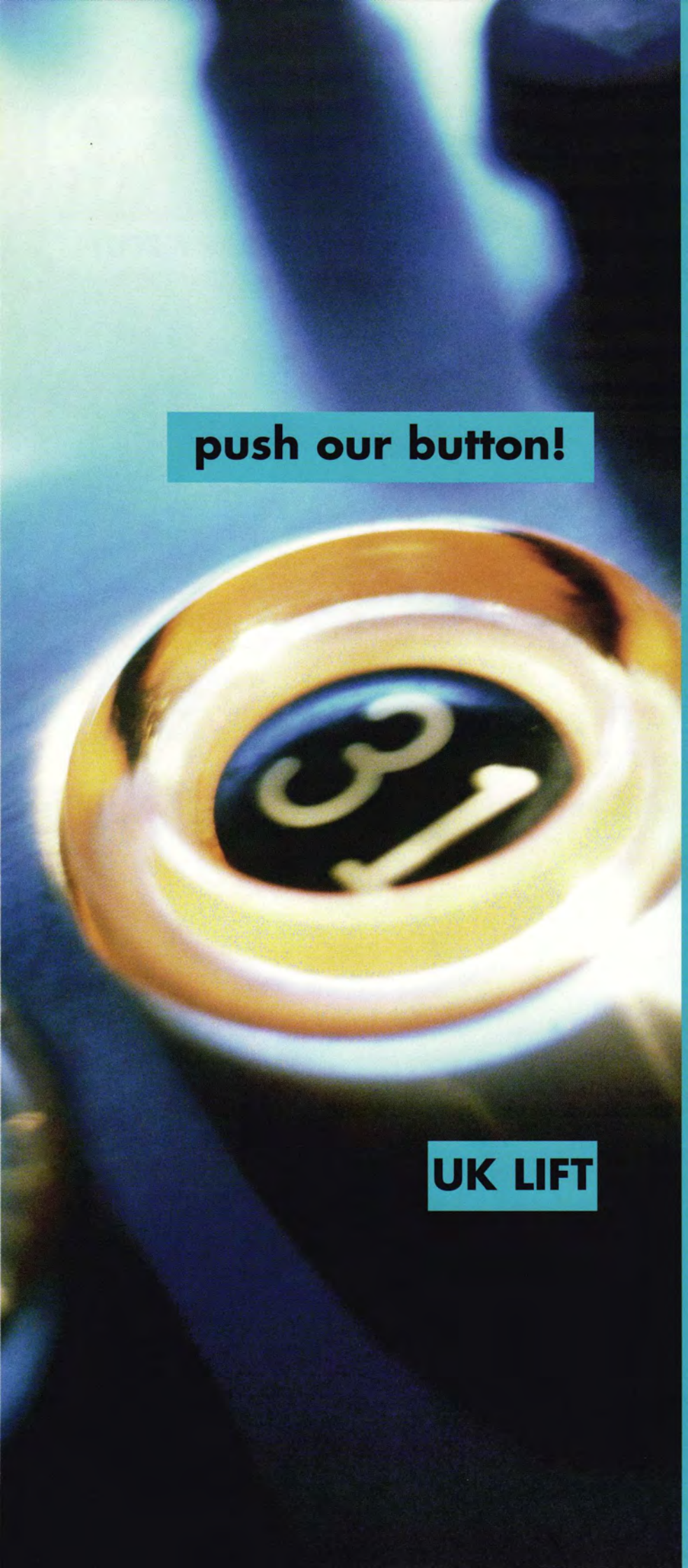

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Petroleum review

JANUARY 2001 VOLUME 55 NUMBER 648
£14.00• SUBSCRIPTIONS (INLAND) £165.00 (OVERSEAS) £190.00

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SUBSCRIPTIONS

Subscription Enquiries: Portland Press
Tel: +44 (0)1206 796351 Fax: +44 (0)1206 799331
Printed by The Thanet Press Ltd, Margate

US MAIL: *Petroleum Review* (ISSN 0020-3076 USPS 006997) is published monthly by the Institute of Petroleum and is available Periodical Postage Paid at Middlesex, New Jersey.

Postmaster: send address changes to *Petroleum Review*
c/o PO Box 177, Middlesex, New Jersey 08846, USA.

ABC AUDIT BUREAU OF CIRCULATIONS BUSINESS PRESS

ISSN 0020-3076

MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

ABBREVIATIONS

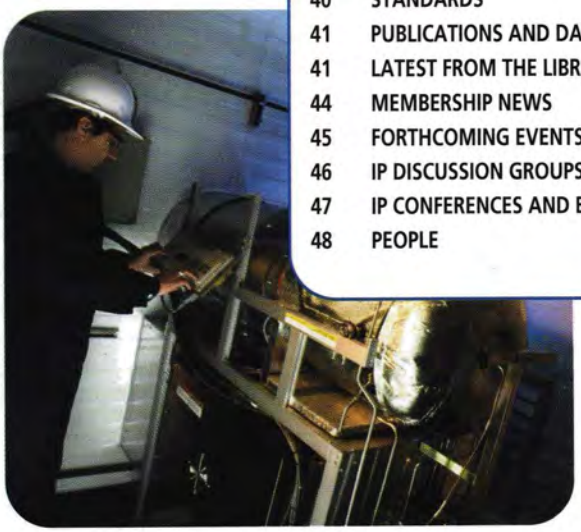
The following are used throughout *Petroleum Review*:

mn	= million (10^6)	kW	= kilowatts (10^3)
bn	= billion (10^9)	MW	= megawatts (10^6)
tn	= trillion (10^{12})	GW	= gigawatts (10^9)
cf	= cubic feet	kWh	= kilowatt hour
cm	= cubic metres	km	= kilometre
boe	= barrels of oil equivalent	sq km	= square kilometres
		b/d	= barrels/day
t/y	= tonnes/year	t/d	= tonnes/day

No single letter abbreviations are used. Abbreviations go together eg. 100mn cf/y = 100 million cubic feet per year.

Front cover: OSRL's L382 Hercules plane used in dispersing spraying operations and transporting vital oil spill equipment

inside...



news

special features

features

regulars

ROUNDUP From the Editor

Facing reality by increasing E&P spend

For the last three months oil prices have strengthened, driven higher by a combination of low stocks, Middle East political instability and fears about the potential consequences of a cold Northern Hemisphere winter.

Over recent weeks prices have stabilised in the low to mid $30s as it became clear that the Middle East – particularly Israel/Palestine – was unstable... but in a relatively stable and predictable way.

Saddam Hussein then chose to test western resolve about sanctions with the crude blackmail of threatening to shut down Iraqi oil exports. Much to everyone's surprise, prices, instead of spiking to $40 or even $50, started to slide.

The reason was simple. Faced with the prospect of a successful blackmail and the collapse of sanctions, western governments gained the resolve to plausibly threaten to release strategic stocks. The US made clear it would release oil from the Strategic Petroleum Reserve (SPR), while the International Energy Agency (IEA) – set up precisely to address potential supply shortfalls – indicated it would coordinate the release of strategic stocks to make up any shortfall.

Somewhat less plausibly, Saudi Arabia announced that it would expand production to make up any supply shortfall from Iraq. Less plausible, because the small print indicated 'within 90 days,' suggesting that short-term Saudi production is flat out.

Overall the effect is that two out of three price supporting concerns – low stocks and Middle East instability – have been largely neutralised. This leaves only fears about the weather to boost prices. Weather is notoriously unpredictable, but so far the Northern Hemisphere winter has been mild. The US has recorded only one short-lived cold spell, while the UK has suffered the wettest autumn since the invention of the rain gauge. Most of Europe has enjoyed mild weather and Moscow remained snowfree into December.

The betting is starting to move against the severe winter scenario. It is no surprise to hear that the big hedge finds are starting to lock in their price gains by liquidating their holdings. Oil prices appear to be heading down into Opec's $22–28/b preferred range aided by the first hints of economic slowdown in the developed world.

Political upheaval, severe weather or a major logistical breakdown could disrupt this price weakening scenario, but every week that passes take us closer to March when the pressure really comes off the system.

The probability that oil prices will ease back does not mean that supply pressures are over. There remains a lack of new capacity to offset the decline of the older fields. The multi-billion dollar investments in the Gulf of Mexico will give the US two to three years of stable, rather than declining, production.

In the UK sector of the North Sea, production is now running around 10% below year earlier levels, with very limited amounts of new production due onstream in the next 18 months.

Similarly, the fact that the Interconnector pipeline is being used to import gas into the UK from the Continent suggests that the 'gas bubble' was much smaller and much shorter-lived than most expected.

The international oil companies are already responding to the stimulus of high oil prices and a paucity of new projects by expanding their E&P spend. According to the analysts at Salomon Smith Barney, the third quarter marks the inflexion point in the major oil companies' capital expenditures. They suggest that the 3Q2000 saw significant upstream capital expenditure growth for the first time since 1997. They note that the 24% increase in E&P spend in the third quarter followed a 19% decline in the first quarter and a 9% decline in the second quarter. Interestingly, the third quarter gains were very uneven. In terms of E&P expenditure by the oil majors, Texaco led (+62.9%) followed by BP (+47.4%) and Conoco (+44.9%).

In sharp contrast, Shell and ExxonMobil's E&P expenditures continued to decline by 5.5% and 2.4% respectively. Salomon Smith Barney sees a significant turning point in which the oil majors move the emphasis from cost reduction to volume growth. If this is so, and the other majors join in the investment boom, it should help to address supply concerns.

Two notes of caution should be added to this improving scene. First, in the first nine months of 2000, E&P expenditures were still 2% below year earlier levels. Second, the countries of the Middle East may have enormous volumes of undeveloped oil, but as of now the international oil industry has little direct involvement in its development. And this despite the fact that the vast bulk of Middle East production comes from fields found and developed long ago.

Chris Skrebowski

e world

The UK Government has launched a package to make it easier for the oil and gas industry to apply for DTI consent to drill oil and gas wells. The Well Operations and Notification System (WONS) is a 'one stop shop' electronic transaction system held exclusively on the DTI Internet site at **www.og.dti.gov.uk** The introduction of WONS means the DTI can give consent to a programme of activities on a particular well, so replacing the need for operators to apply for separate consents during the drilling process. It should benefit the industry by cutting paperwork and allowing licence operators to make online applications for consent and then monitor their progress.

A new web portal has been launched dedicated to professionals working in marine science and technology. **MarineScienceandtechnology.com** is split into seven core services including news, directories, an information centre, a discussion forum, careers, e-market and events.

safety4industry.com came online at the end of November 2000. It is a free and permanent information and commerce resource for health and safety, featuring a series of conferences, comprehensive information from risk management to legislation, states the company.

Certa, the UK provider of environmental insurance, has launched its new website, at **www.certa.com** The site is aimed at anyone involved in contaminated or brownfield sites. Information provided includes events, news and case studies.

Oceanspace is a free online marine science and ocean technology newsletter. To sign up to the publication, visit **www.oceanspace.net**

Calling all IP website surfers!

The redevelopment of the IP website **(www.petroleum.co.uk)** is now well under way. We are looking for volunteers to test the new site prior to its launch during IP Week in February. Can you help?

If you are interested in testing the new-look site and providing feedback, please contact us at e: **betatester@petroleum.co.uk** Please include details of your full name, occupation and organisation (if applicable). *(See ad on p46)*

In Brief

UK

***Venture Production Company has** announced that it has entered into a definitive agreement to acquire Phillips Petroleum's interests in UKCS blocks 48/10a, 49/11a and 49/6a containing the A-fields, located in the southern sector of the North Sea. The interests being acquired include the producing Audrey (13.45% unitised interest), Ann (42.22%) and Alison (42.22%) gas fields.*

***BP is reported to be planning to bring** its North Sea Hoton gas field onstream in late 2001. The field, which is expected to produce some 40mn cf/d of gas, is to be tied back to the existing West Sole system.*

***BP is reported to be looking at a** pipeline to Sullom Voe terminal in the Shetland Isles as its preferred oil export solution for the 250mn barrel Clair South development on the UK Atlantic Margin, rather than an offshore loading and shuttle tanker arrangement.*

Europe

***Statoil is reported to have indicated** that it will close down the North Sea Yme oil field in mid-2001.*

***Repsol YPF is reported to have made a** new offshore oil discovery in the Mediterranean Sea offshore Tarragona, Spain. The Barracuda well is to be immediately put into production via the nearby Casablanca platform. Together with 1999's Chipirion well, Barracuda will help push output from Casablanca to between 15,000 and 20,000 b/d from the current 4,000 b/d.*

***Statoil has reportedly stated that up to** 80% of Norwegian gas sales for 1999–2000, approximately 12bn cm, will be used to improve recovery from Norwegian offshore fields. Norsk Hydro's Grane development will receive the major share of the gas which is to be injected into the reservoir.*

***Statoil has reportedly found an estimated** 60mn barrels of oil with its Falcon wildcat well, located 20 km northeast of the Norne field.*

***Norway's Gas Supply Committee has** received 10 applications for the right to make additional gas deliveries under existing gas sales contracts. Applicants include Statoil for Kristin*

Flexibility in the Faroes

Herálvur Joensen, Director General of the Faroese Ministry of Petroleum, has stated that the Faroese Government is prepared to look flexibly at the needs of oil companies that are undertaking exploration and drilling in the area. In addition, he said that his government is determined to ensure such endeavours produce the maximum long-term benefits for the population.

Speaking at the recent 2000 Conoco lecture at Heriot-Watt University, Edinburgh, Joensen outlined the challenges and opportunities involved in extracting oil and gas from recently licensed blocks, and the way the Faroese proposed to ensure prudent and appropriate exploration and exploitation of hydrocarbon resources.

The Faroese have no plans for a national oil company, he said; instead they prefer a licence tax regime, under which the Faroese people secure a suitable remuneration. Joensen also stressed that the Faroese are determined to ensure that their business assumes a more active role than just playing host to the international oil industry.

This policy includes a requirement for licensees to service their offshore installations through a Faroese harbour and to conduct crew changes through a Faroese airport, thus providing Faroese business with a competitive edge. Joensen also spoke of the eastern part of the Faroese shelf and the UK west of Shetland becoming one petroleum province. 'The fact that the UK and Faroese sectors are separate jurisdictions should not prevent us from keeping costs at a minimum, nor prevent the exploitation of minor petroleum accumulations which do not justify stand-alone developments. The somewhat protectionist Faroese policies on involvement should not be taken to imply an unwillingness to discuss cross-boundary development solutions. Faroese decision makers are indeed aware of the fact that possible gas finds in the Faroese sector may not be commercial unless they can be linked to a pipeline, which brings the gas to the UK or the Continent.'

Keith enters production

BHP has announced that production has begun from the Keith oil field. The field was developed by re-using a suspended appraisal well, 9/8a-14, which was tied back 7 km to the Bruce Western Area Development (WAD), and through this to the main Bruce production facility.

This single well accessed around 15mn boe of proved and probable reserves (4.8mn boe net to BHP) for a total capital expenditure of approximately A$62mn.

Initial daily production is approximately 15,000 barrels of oil and 15mn cf of gas, with the average rate during the first year expected to be about 8,000 b/d.

BHP holds a 31.83% operated interest in the Keith field, with partners BP Exploration (34.83%), TotalFinaElf (25%) and Marubeni Oil and Gas (UK) (8.33%).

North Sea development

Pilot, the UK offshore oil and gas development government–industry partnership has reportedly stated that it has launched a plan to help develop 42 small-scale oil and gas discoveries in six clusters in the North Sea. The clusters are Binney, Rivers, Quad 21 South, Amy/Argo, Selkirk and Beechnut. The projects are estimated to hold reserves in the region of 600mn boe.

Pilot has appointed Amerada Hess, Conoco, Marathon, Shell and the DTI to outline ways of developing the discoveries.

There are an estimated 300 small gas and oil discoveries still not fully developed in the North Sea with Wood, Solan/Strathmore, Kestrel and Kessog identified as the most likely for future exploitation.

World's largest expandable sand screen

Weatherford International reports that its Completion Systems Division has successfully completed what is claimed to be the world's longest expandable sand screen (ESS) installation for Shell's southern North Sea Brigantine gas field. A total of 4,000 ft of 4-inch diameter, 230-micron filter ESS was installed and expanded in the 6-inch horizontal section of the Brigantine 'B' gas producing well with a total depth of 15,046 ft MD.

According to Shell, initial well clean-up data showed production performance some 30% above expectation following the installation.

A second well in the development – Brigantine A – is due to be completed in January 2001. The reservoir section of this well will be up to 7,000 ft and will be similarly completed with ESS. A further two wells are planned later in 2001, both of which will require sand exclusion.

Japan to develop Iranian oil field

Japan has been given preferential rights on the world's largest undeveloped oil field in Iran. The deal, the value of which is confidential, will ensure that certain Japanese companies have rights in the Azadegan field – believed to contain 26mn barrels of oil in place and could produce 400,000 b/d (about 7% of Japan's daily demand). A formal contract is expected to be signed next year.

Japan plans to form a consortium of private and semi-governmental oil exploration companies, trading houses and oil refiners – including Indonesia Petroleum and Japan Petroleum Exploration – to negotiate exclusively with National Iranian Oil Company (NIOC) regarding development of Azadegan.

The deal is part of a broader effort by the two nations to expand bilateral economic relations, confirmed in discussions between Japanese Prime Minister, Yoshiro Mori, and Iranian President, Mohammed Khatami, in early November 2000.

Russian joint venture

Sibir Energy has announced that it has reached an agreement (in principle) with Sibneft to establish a joint venture to develop joint stock oil company Yugraneft's oil fields, which comprise the southern part of the Pribskoye and Palanovskoye fields. Yugraneft also has a co-venture interest in the Kammenoye field. The three fields combined are expected to produce 2.1bn boe. Initial production from the Palyanovskoye field is currently running at approximately 1,500 b/d.

Under the terms of the agreement, Sibneft will provide finance on commercial terms to fund the entire development of the fields and will also provide technical and operational resources to Yugraneft on cost-effective terms. Sibir and Sibneft will then split production equally.

Green light for Bhit

The Pakistan Government has given the go-ahead for the full-scale development of the 1tn cf Bhit gas field. The first phase of development is expected to cost $260mn. First gas is slated for end-2002, building to a plateau production rate of 235mn cf/d of gas by early 2003. A gas sales agreement has already been signed with the Sui Southern Gas Company.

Field partners are Lasmo (40%, operator), Kirthar Pakistan (40%, a subsidiary of Premier Oil and Shell), and Oil & Development Corporation (20%).

Aussie licensing round

The Australian Petroleum Production and Exploration Association (APPEA) recently reported that 42 areas are currently being considered for Australia's 2001 offshore petroleum acreage release.

The areas are the Money Shoal Basin, offshore the Northern Territory; Petrel Sub-basin, offshore Northern Territory and Western Australia; Vulcan Sub-basin, adjacent to Cartier and Ashmore Islands; Browse Basin, the Dampier Sub-basin, Barrow Sub-basin, and Houtman/Abrolhos Sub-basins – all located offshore Western Australia; Sorrel and Otway Basins, offshore Victoria and Tasmania; and the Gippsland Basin, offshore Victoria.

BHP sells Buffalo stake

BHP is to sell its 50% stake in the Timor Sea Buffalo oil field to InterOil for $21mn. The sale is subject to the pre-emptive rights of BHP's joint venture partner Nexen Petroleum to acquire the asset, and formal government approvals. The field is located in production licences WA-19L and WA-21-L, and came onstream in December 1999.

The sale is part of BHP's drive to concentrate its petroleum activities 'around high value growth strategies in deepwater exploration and development, gas commercialisation and gaining access to discovered resources in North Africa and the Middle East.'

Norwegian production figures released

Petroleum production on Norway's Continental Shelf in October 2000 totalled 20.7mn cmoe (cubic metres of oil equivalent). Oil production accounted for 15.5mn cmoe; marketable gas approximately 4.3mn cmoe; and NGLs and condensate production 0.8mn cmoe. The average daily production was about 3,150,000 barrels of oil; 109,300 barrels of NGLs and approximately 109,100 barrels of condensate. Total production by early December had reached 195,800mn cmoe, comprising 149,500mn cmoe of condensate; approximately 7,400mn cmoe of NGLs and 39,000mn cmoe of marketable gas.

In Brief

(with a first delivery date of 2005), Norsk Hydro for the Øseberg Delta Project (2002), BP for the Skarv field (2004–2006) and ExxonMobil for Sigyn (2002). Norway is committed to deliver a total of 1,460bn cm of gas under long-term contracts from 2001–2009.

North America

BP has selected J Ray McDermott and *Heerema Marine Contractors to provide $1bn in fabrication and installation services for its deepwater projects in the Gulf of Mexico – Mad Dog, Holstein, Crazy Horse and Atlantis.*

Phillips Petroleum is planning to sell its *Zama Canadian oil and gas property as part of a strategy to shift its focus to richer prospects around the globe. Zama, located in the northwestern corner of Alberta, is expected to fetch more than $500mn.*

Anadarko Petroleum and Phillips *Alaska have announced that the Alpine field located on Alaska's North Slope has started production. The field is expected to produce 80,000 b/d by the end of the year. Gross recoverable reserves are estimated at 429mn barrels. Alpine is said to be the largest onshore field discovered in the US for more than 10 years.*

TotalFinaElf, Pioneer Natural Resources, *Marathon Oil, BP, Total Exploration Production and Mariner Energy have agreed to jointly build an extra-deep natural gas gathering pipeline in the Gulf of Mexico that will allow them to develop the Aconcagua, King's Peak and Camden Hills fields. According to TotalFinaElf, the system's operator, the Canyon Express gathering system will be the deepest ever at 7,200 ft below the surface. The pipeline will have a capacity of 500mn cf/d of gas and will be commissioned in 2002.*

Middle East

General Abdel-Aziz al-Turki, Secretary *General of the Organisation of Arab Petroleum Exporting Countries (OAPEC) has been quoted as saying that Arab oil producers earned $104bn – a record high over the past 18 years – in 1999, and had proved oil reserves put at 636bn barrels (or 63% of global resources).*

Iran has claimed that it has discovered *a new oil field, Darian, located off its Persian Gulf coast. Reports suggest that the field could produce 3,000 b/d.*

In Brief

Russia & Central Asia

New-found offshore gas reserves in *Ob'-Tazovskaya Guba in the Arctic Kara Sea, located just north of the Yamburg fields, means this area will remain the prime producing region for Gazprom along with the Nadym-Pur-Taz region (also in Western Siberia) until 2010, according to the company's Rem Vyakhirev.*

A third exploration well drilled at the *Shakh-Deniz field offshore Azerbaijan is understood to have found only salt water. 'This is a disappointing result, as reserve levels may now be regarded as too low to make export to Turkey a commercially viable proposition,' comments UFG. 'Shakh-Deniz was originally thought to be the major natural gas reservoir in the Caspian Basin, with estimated reserves of 1tn cm.'*

Asia-Pacific

The Indian Government is expected to *be inviting bids for oil exploration in 25 blocks – eight in the deepwaters offshore India, eight in shallow waters, and nine onshore – in its second round of licensing.*

Sinopec has been given the green light *by the Chinese authorities to develop the A Cooperation Zone West of Chengdao field, in the northeast Bohai Sea, with US Energy Development Company. Proven oil reserves are put at 54.4mn tonnes, of which some 23.6mn tonnes is recoverable.*

A shipbuilding complex is to be constructed *near Freemantle to serve the North West Shelf oil and gas industry, at a cost of A$200mn. The contract follows the recent start of work on another base at Dampier, near the large LNG complex. The two projects confirm the view that the area is set to become one of the world's leading producers of oil and gas.*

PetroVietnam has reportedly signed *a $581.9mn contract with a BP Amoco/Statoil alliance to build a pipeline to carry gas ashore from the Lan Tay and Lan Do gas fields in the Nam Con Son Basin, located off the country's southern coast. The project is currently awaiting governmental approval.*

Premier Oil has made a discovery in its *Pangkah Block in East Java, Indonesia. The Sidayu-1 well has found a 250 ft*

Life after gas for East Anglian energy industry

There will be life after gas for the energy industry in the Eastern Region, according to the vision offered by Dr Simon Gerrard, Deputy Director of the Centre for Environmental Risk at the University of East Anglia, writes *Brian Warshaw*. Speaking to members of the East Anglian Branch of the Institute of Petroleum on the subject of sustainability of the oil and gas industry in the Southern North Sea (SNS) in the changing environmental agenda, he said that the region was facing up to the problems created by the hydrocarbon industry and the finite nature of natural gas.

Gas field development in the SNS employs 14% of the region's capital investment and produces 3.5% of the country's GDP, as well as providing employment for 20,000 people, stated Dr Gerrard. It is predicted that the UK's demand for energy will grow at an annual 0.5% until 2020, and that the proportion of gas will increase from 38% in 1998, to 55%. However, unfortunately for Great Yarmouth – which, since the 1960s has played a leading role in meeting the country's gas requirements – the largest fields in the SNS have already been developed, with 38 gas fields currently flowing into three reception terminals at Bacton.

It was, said Dr Gerrard, the mature nature of the SNS that now provided the opportunities for the 500 specialist companies that operated within the region. Development of small gas fields will present them with the opportunity to show innovative approaches, as would the requirement to extract the final uneconomic gas from existing fields. He said he believed that through selective decommissioning and recommissioning, an offshore infrastructure could become an asset rather than a liability. Environmentally and financially, the re-use of platforms, process equipment and pipelines, was the best option, but this would require new thinking and present technical challenges. New methods of lifting and transporting topsides and jackets had to be designed. Platform refurbishment offered the potential to even out the seasonal employment that the region suffered from, while imaginative forms of brokerage to sell the facilities, would create new business opportunities.

Since 1996, when a local consortium failed to win the contract to decommission the Shell Leman BK platform, an informal community alliance of operators, main contractors, small companies, and port and local authorities, together with the University had been formed. Working with the local members of Parliament it has helped to change the attitude of the UK Department of Industry towards recommissioning, and, through it, the Treasury, whereby tax benefits that were previously only available for decommissioning can now be claimed for the re-use of platforms.

Currently the University is developing a virtual reality database for platforms, whereby a potential buyer, anywhere in the world, can type in a specification and effectively walk through a potential structure without leaving their office. Dr Gerrard also reported that thought was being applied to finding a solution for the many redundant pipelines, which in the North Sea would be subject to vigorous changes in the seabed and become a hazard.

The aim of the research was to work in partnership with business and industry. To this end, Dr Gerrard said they were also looking at solutions for energy beyond gas. By 2010, 10% of electrical generation must be from renewable sources, he said, and the region was ideally suited for offshore wind farms, with an estimated potential for 50,000 GW hours. However, he reported that problems remain as to how the electricity could be brought to the shore, although it might be used offshore to electrolyse seawater to generate hydrogen, which could be transported ashore by pipeline.

Dr Gerrard expressed his belief that the future of the region's energy industry would be sustainable through the working partnership of business and the universities; by exporting know-how, and focusing on the transition to low carbon and renewable energy sources.

NEWS Upstream

Woodside and Phillips announce Timor Sea deal

Woodside and Phillips Petroleum have announced an in-principle agreement to pursue cooperative development of their Timor Sea gas resources. Phillips operates the Bayu-Undan venture and Woodside the Greater Sunrise project.

The companies believe that these fields can meet the long term requirements of a large customer base in Darwin, including Nabalco's Gove alumina refinery, Methanex's proposed synthetic gas plant, the NT Power and Water Authority, and a potential LNG processing plant. Cooperation will facilitate the best use of upstream capital investment, thereby enhancing the development of the two fields.

The in-principle agreement also offers the potential for the delivery of large volumes of gas into the eastern and southern Australian states, where the gas market is reliant upon declining reserves.

Drilling success for Enterprise oil in Norway

Enterprise Oil has announced the completion of testing on the Gamma well, drilled in block 7019/1. This well concludes Enterprise's Norwegian drilling programme in 2000.

Six out of the seven completed wells in the 2000 programme have been successful in encountering hydrocarbons. The wells at Snadd, Svale, Delta, Goliath, Falk and Gamma have all encountered hydrocarbons. Snadd, Svale and Falk have all underlined the potential of the Skarv–Idun–Norne trend. Svale and Falk may prove accessible through tie-backs to Norne or ultimately as stand-alone developments. Goliath and Gamma have emphasised the prospectivity of the encouragement for further exploration of the region, reports Enterprise.

Pierre Jungels, Chief Executive, commented: 'We are pleased with our successful drilling programme in Norway 2000. Our business in the country now produces more than 100,000 boe/d and these discoveries suggest our portfolio has the potential to deliver an exciting future in the region.'

UK offshore industry cuts through red tape

Companies involved in the offshore industry will soon have fewer forms to fill in when importing goods for subsequent use offshore, the UK's Customs & Excise announced today. Changes to End Use Relief laws – through which offshore operators can obtain either relief from duty or favourable duty rates on equipment imported from outside the European Community (EC) – will help reduce red tape and keep goods moving.

The new system comes into effect on 1 January 2001. Changes include: ● New simpler forms for requesting End Use authorisations. ● More flexibility to give disposal time extensions. ● Ability to grant retrospective authorisations. ● New authorisation and code numbers from 1 January 2001. ● Single authorisation covering more than one EC country.

Conoco adds to UK North Sea reserves

Conoco has announced that two appraisal wells drilled in the UK central North Sea have confirmed discoveries which when developed could yield estimated gross reserves of more than 100mn boe. The company is now evaluating the discoveries, one consisting mainly of crude oil and the other of natural gas, with the intention of aggressive development leading to production in late 2003 or early 2004.

Development will add significantly to Conoco's existing holdings in the strategically important area around the Britannia gas condensate field, the largest in the UK, in which the company already has the majority equity interest of 51%.

The oil discovery, known currently as Kappa, also has a small natural gas cap. The find was made in block 15/29b and extends into block 21/4a-North. Kappa lies only 25 km from the Britannia production platform and 20 km from the Chevron-operated Alba oil field in which Conoco holds the largest equity interest of 13%. The Kappa appraisal well flowed at a restricted rate of 1,400 b/d. The reservoir quality is good and it is expected that each Kappa production well could deliver up to 20,000 b/d.

The natural gas discovery, which was made in 1985 in block 21/3a, lies 42 km from Britannia and 37.4 km from Alba. It flowed at a rate of 20mn cf/d of gas through a 44/46-inch choke. It is expected that, once developed, the field will have a peak production rate of between 100mn and 200mn cf/d of natural gas.

In Brief

oil payzone in the Kujung Unit 1 limestone formation in a structure adjacent to the company's Ujing Pangkah discovery.

***Gaz de France reportedly has plans to** invest approximately $50mn in India over the next three years. French President, Pierre Gadonneix, stated that Gaz de France had already spent $6mn in development costs and that the current market for natural gas in India, estimated at 22bn cm/y, is likely to double, or even triple over the next few years.*

***PetroChina is reported to have discovered** a major gas field in the Inner Mongolia Autonomous Region, northern China. Combined proven and probable reserves are put at 200bn cm of gas.*

Africa

***A $369mn engineering, procurement** and construction contract has been awarded to a Japanese consortium of Itochu Corporation together with JGC Corporation for the supply of three gas boosting compressor stations at Algeria's Hassi R'Mel field, writes* Stella Zenkovich.

***Statoil has reported a significant oil** discovery in its deepwater Ekoli field in Nigeria, lying in oil prospecting lease (OPL) 217 and straddling OPL 216 which is held by Texaco, reports* Stella Zenkovich.

***Ugandan Presidential aspirant Nasser** Ntege claims to have secured $3.6bn of funds from Saudi investors to drill for oil in Uganda.*

***Repsol YPF has discovered oil in the A-**1 well in exploration block NC-186 of the Murzuq Basin, located in the Sahara Desert some 800 km south of Tripoli, Libya. Tests have produced 2,500 b/d of oil.*

***BP and Shell have announced an oil** discovery located offshore Angola. The Paladio find is the fourth exploration well BP has drilled in block 18 and the fourth successive discovery. The well tested at 3,980 b/d of 31° API oil.*

***Eni of Italy is planning to invest $1bn** in Nigeria as part of a move to expand global oil production from 1mn to 1.8mn b/d, according to Chairman Gian Maria Gros-Pietro, recently speaking at a press conference in Bonny, Niger Delta.*

In Brief

UK

***Tullow has announced proposals to** domicile the company in the UK by establishing a new UK incorporated holding company for Tullow and its subsidiaries. The new company will also be called Tullow Oil.*

***It is rumoured that BP is developing a** $17.1bn bid for BG International.*

Europe

***Emergency European Union oil supplies** have been sent to Serbia following the fall of President Milosovic, writes* Keith Nuthall. *Brussels is to deliver 16,800 tonnes of diesel and 63,600 tonnes of heavy oil to local governments, as well as 3,400 tonnes of diesel and 17,200 tonnes of heavy oil to power plants and coal mines.*

***TotalFinaElf has reported consolidated** sales for 3Q2000 of 30.9bn euros, compared with 20.1bn euros for 3Q1999, an increase of 54%.*

***Dow Jones, Earth Satellite Corporation** and Nordpool are to deliver their European electricity market data through Fame Energy's data aggregation and data quality service, SIS. The service consolidates and delivers over 40 global energy market data sources and covers oil, gas, petrochemicals, power and weather in a single feed.*

North America

***Imperial Oil and Mobil Oil Canada** have announced a partnership which is claimed will save about $40mn/y by sharing services and forging joint ventures for new projects, writes* Monica Dobie. *Both companies will remain separate entities but will combine specialist and technical services in some areas. Also, Mobil Canada will change its name to ExxonMobil Canada.*

***Questar has reportedly agreed to sell** working interests in a number of its Oklahoma and northern Texas oil and gas producing properties and gas-gathering systems to Chesapeake Energy for $27mn.*

***Pogo Producing has agreed to buy** Noric Corp – parent of North Centric Oil – for a reported $630mn in cash and $120mn of debt. The deal is sub-*

Impact of carbon controls on energy sector

Wood Mackenzie recently published the results of its survey of oil, gas and power companies, *Carbon Controls and Business 2000.* The survey is designed to establish the extent to which energy companies believe that emerging carbon controls will affect their business performance, and the responses which companies are making to them.

This publication coincided with the start of the COP 6 climate negotiations in The Hague in November 2000.

The survey found that the majority of companies do not expect a high cost compliance with Kyoto targets. Most expected abatement costs to be less than $10 per tonne of CO_2. If so, the overall cost of Kyoto compliance to industrialised countries will be around $1bn–$5bn/y in 2010 – only about $1–$5 per capita/y. Therefore, Wood Mackenzie concludes, COP 6 negotiations in the Hague should not fail for fear of costly implementation in Kyoto.

For energy companies, a key indicator of the extent to which their business performance will be affected by future carbon controls is their view of the market price of CO_2 permits in an international emissions trade market. If the costs of reducing emissions are high, this will be reflected in a high permit price.

Recent forecasts of future permit prices vary dramatically. The average forecast is $27/t CO_2, with a maximum of around $70. The Wood Mackenzie survey showed that 65% of participants believed that the market price of CO_2 permits would be less than $10/t. Only 5% believed that it might exceed $20/t.

Other survey findings show that:

- Emissions trading is the most popular tool for dealing with carbon emissions;
- There has been little material response to emerging carbon controls because the issue is seen as making only a short-term impact on business;
- The issue is expected to affect the five-year business strategy of most companies; and finally,
- European participants have been significantly more proactive than US companies in responding to the issue.

Shell launches takeover bid for Woodside

Shell Australia Investments has announced an offer for Woodside Petroleum shares. The offer comprises of a cash offer of A$14.80 per share and a one-call option over one Woodside share, exercisable at A$14.80, if the merger proposal is approved by Woodside shareholders.

Shell also intends to offer Woodside a portfolio of assets valued at between A$6.3bn and A$7.3bn. The offer includes Shell's interests in the North West Shelf Project, Laminaria-Corallina and Greater Gorgon among others, and a 20% interest in the Brutus development project in the Gulf of Mexico. The merger would increase Shell's interest in Woodside from 34.3% to 56% – assuming all call options are subsequently exercised.

Slight rise in Russian gas output

Figures released in December 2000 suggest that Russian gas production had slightly risen in the first 11 months of 2000. Production was just over 532bn cm against just under this figure for the same time period in 1999.

According to UFG, while production has been stable for Russia as a whole, Gazprom production is likely to fall by at least 25bn cm this year while that of Itera and other independent producers is likely to increase by a similar amount.

Total Russian gas exports had increased by 15% by early December – the largest increase being on the Druzhba pipeline to Central Europe, in which volumes increased by 17%. The pipeline usually has spare capacity.

Russian companies, according to UFG, are clearly seeking to maximise exports to all destinations while prices are high and more exports have typically been squeezed through the pipeline system than has been the case in the past. Transit volumes for Azerbaijan and Kazakhstan also increased, but the volumes are relatively small.

Lukoil's Russian reserves on the up

Lukoil reports that its total Russian reserves are expected to rise by a record 53.3mn tonnes (400mn barrels) of oil and 8bn cm of gas by the close of the year. The company states that 2000 has seen a 'considerable improvement' in well stock maintenance. Compared with 1999, the number of new wells put into production in this past year rose by 35%, restoration of idle wells increased by 31%, well workovers rose by 45% and the number of operations aimed at optimising well operations increased by 63%. Total oil production by the close of 2000 is forecast to reach 77.4mn tonnes and refining throughput 31.3mn tonnes (including the company's refineries in East Europe).

Looking ahead, Lukoil states that 'given the projected reduction of international oil prices,' its main objective for 2001 will be the 'development of additional measures for maintaining the stong results achieved in 2000. Profits before tax for 2000 are expected to reach R75bn compared with R33bn in 1999. Plans include a major cost cutting programme across all its business sectors and the 'conservative and efficient use of all resources.'

The company also reports that it plans to further expand its marketing subsidiaries' presence in the regional markets of the North Western region, Kaliningrad, Orenburg, Samara and Sverdlovsk regions, and the Republics of Tatarstan, Bashkortostan and Udmurtia in 2001. It is also to invest some R180mn in the 'technical upgrade' of the company's R&D interests.

EU's growing energy dependence

'A more coherent and responsible real energy policy' is called for in a Green Paper on energy supply security recently issued by the EU Commission, writes *Fred Thackeray*. The Paper is, in effect, a follow-up to a report issued one year ago. This was reviewed in an article in *Petroleum Review* (February 2000) which noted that it was issued in response to a call by the EU Energy Council made in May 1996 for 'an in-depth examination of EU gas security.'

The newly issued Paper in fact covers a much wider field than gas security. It is intended 'to launch a wide-ranging and innovative discussion to establish a long-term energy strategy to reconcile the uninterrupted availability of energy on the market at a price accessible for the well-being of citizens and smooth operation of the economy whilst respecting environmental concerns.'

It is a lengthy document, requiring careful analysis to assess its full implications, but key features may be highlighted as follows:

- A long-term energy strategy will be needed in five main fields:
  (1) 'Stop the waste' by developing policies requiring 'a genuine change in consumer behaviour.'
  (2) 'A truly alternative transport policy' to revitalise the railways and reorganise the road transport sector. On current trends, transport emissions would be up 40% by 2010.
  (3) 'Development of new and renewable energies to double their share of energy use from 6% to 12%'. Under current conditions they will stagnate at around 10% in 10 years time.
  (4) Maintain a 'relative' independence of energy supply. Analysis is needed of 'the medium-term contribution of nuclear power. A minimum production base for Community coal reserves may also be needed.'
  (5) Examine ways of strengthening the European oil stock mechanism and consider extending it to natural gas.
- 'Today, Member States bring different solutions for common problems.' But, the Paper asks: 'Does not Europe's increasingly integrated internal market, where decisions in one country impact the others, call for a consistent and coordinated policy at Community level ?'
- 'Should not the whole issue of energy taxation be re-examined taking account of energy and environmental objectives?'

At this early stage of the wide-ranging energy debate that the Commission has now initiated, two quotes may be singled out as of special interest to the international oil and gas industry. 'The fight against global warming aims initially,' the Paper says, 'at the consumption of fossil energy.' And, it says elsewhere: 'Seeing that nuclear energy is one of the elements in the debate on tackling climate change and energy autonomy, how can the Community find a solution to the problem of nuclear waste, reinforcing nuclear safety and developing research into reactors of the future, in particular fusion technology?

Perhaps the French – with 50 nuclear reactors and 70% of their electricity from nuclear sources – have had it right all along?

In Brief

ject to US Federal Trade Commission (FTC) approval and is expected to close 1Q2001. The deal will boost Pogo's reserves by 63%.

Russia & Central Asia

***Gazprom has announced plans to** export 135bn cm of gas to Europe in 2001, reports UFG. This is 3.6% lower than the previously announced target of 140bn cm, but is still 4.7% higher than in 2000. The slowdown in export growth is attributed to delays in the construction of the Yamal–Europe pipeline across Poland.*

***Yukos reportedly has plans to buy a** 65% share in the East Siberian Oil and Gas Company (VSNK) of which it currently owns 20%. Yukos is aiming to expand business in East Siberia by buying new production assets for exports of crude oil to China and South East Asia. The company also plans to increase oil production to 75mn–80mn tly by 2005.*

***Getty Petroleum has entered into** negotiations with another prospective buyer, United Refining Company (URC), despite being currently taken over by Lukoil. URC's bid is believed to be 15% higher than Lukoil's. However, Lukoil own 60% of Getty's shares and is entitled to a $5mn break-up fee.*

Asia-Pacific

***Eni, the Italian oil and gas company,** has launched a A$127mn take-over bid for Australian company Petroz. Petroz holds 8.25% of the $1.5bn Bayu-Undan development located in the Timor Sea.*

Latin America

***Foster Wheeler has announced plans** to modify its corporate structure so that the company's legal domicile will effectively be changed from New York to Bermuda.*

Africa

***Consultant KPMG is to audit the** Angolan oil industry – tarnished by corruption allegations – under a 30-month contract, writes* Stella Zenkovich. *Some 32% of the contract costs are to be funded by the World Bank.*

In Brief

UK

BP Amoco is reported to be opening *200 outlets under the name of the new BP Connect brand. Plans are to bring the Internet to the forecourt in a £140mn redevelopment programme. E-Kiosks in the shops will allow drivers to monitor traffic, map out routes and check the weather – free of charge.*

Repsol YPF has announced the sale of *Repsol UK's fuel retail and commercial business, Repsol Petroleum Limited, to the Sutton Oil Group. Repsol Petroleum will be renamed Anglo Petroleum and trade under that name.*

Europe

The European Parliament has sup- *ported European Commission proposals to end the preferential treatment given by European law to aircraft fuel, regarding the levying of excise duties, allowing Member States to tax fuel for domestic and intra-EU flights.*

Petroplus has announced its intention *to invest $25mn in its Antwerp refinery in order to produce ultra low sulfur diesel (ULSD).*

It has been reported that BP France is *to take over the aviation fuel assets held by TotalFinaElf at Toulouse and Lyon airports in southern France.*

The Interconnector gas pipeline that *links the UK with Europe has reversed its flow to start importing gas into Britain, it has been reported. The Bacton to Zeebrugge Interconector usually exports up to 20bn cmly of UK gas to continental Europe, but recent price rises in the UK prompted a decision to reverse flows and start importing European gas.*

It has been announced that Statoil and *KOC Holdings have signed a partnership agreement to establish a joint venture to market natural gas in Turkey.*

Eni of Italy has reportedly signed a *24-year contract with Gaz de France to supply 2bn cmly of natural gas, from 2004.*

North America

ShipIQ and Pepex have announced a *strategic partnership that is claimed will revolutionise the way in which physical oil is traded and shipped*

NEWS Downstream

European exemption on waste oil duty

An exemption on the levying of excise duty on waste oils reused as fuel in Germany, Austria, Belgium, Spain, Finland, France, Ireland, Italy, Luxembourg, Portugal and the UK, will be scrapped on New Year's Day if EU Ministers back proposed reforms by the European Commission, writes *Keith Nuthall.*

The move is part of a package of changes suggested by Brussels to excise duty exemptions in the EU. These include extensions of the exemptions for five years and two years, phasing them out over two years and immediate abolition.

Other proposals for an end to exemptions in two years' time, include a differential rate in France and the Netherlands on diesel and all fuels in Italy or commercial vehicles, exemptions for air navigation fuel in Belgium, Denmark, Finland, France, Ireland, Italy, Portugal, Sweden and the UK, and for private pleasure craft in Belgium, Finland, France, Ireland and the UK. The remaining exemptions cover a large number of fuels and applications, varying from country to country.

Round-the-clock 'white' tanker service

P&O Trans European – one of the UK's main providers of third-party logistics services – has launched a new national fleet of unbranded, or 'white', petroleum tankers that are reported to 'work around-the-clock to deliver optimum service and flexible cost benefits to oil company customers.'

According to Peter Steventon, General Manager for P&O Trans European, the service is a 'bit like an office building that is a fixed cost being used by other businesses through the night. This means the building is fully utilised at all times and the owner's costs are shared.'

The neutral-liveried service allows for a 'pay as you go' utilisation where customers can meet weekly peaks in their businesses by supplementing their existing tankers with white fleet vehicles. Each of the vehicles, strategically positioned across the UK, will work up to 14 shifts per week, using three drivers per vehicle.

Additional services are also offered, including supply chain consultancy, daily stock reconciliation, terminal management from all collection points, daily delivered quantity confirmation and performance monitoring.

Clean vehicle funding in the UK

The UK Government will be providing £69mn over the next three years in support of cleaner vehicle programmes according to UK Deputy Prime Minister, John Prescott, speaking at the recent International Climate Change Conference in The Hague. The funding will be split as follows:

- £30mn for the Powershift programme which aims to create a substantial market for clean fuels in the UK (ie vehicles powered by LPG, natural gas and electricity);
- £30mn to expand Clean Up – a cleaner vehicles programme which aims to tackle pollution from urban vehicles such as buses and taxis, and;
- £9mn to support the introduction of technologies such as hybrid and fuel cell vehicles.

Prescott said: 'The package that I am announcing today confirms the commitment in our 10-year transport plan to accelerate the take-up of cleaner fuels and cleaner, more fuel-efficient vehicles'.

Argentinian power deal

TotalFinaElf has agreed with AES Corporation to acquire all of Gener's power generation and transmission assets in Argentina should AES be successful in its proposed bid for the majority of the capital of Gener. The proposed purchase comprises:

- a 63.9% interest in Central Puerto;
- a 100% stake in the TermoAndes power plant and its associated electric power line InterAndes; and
- a 70% interest in Hidroneuquen, which holds a 59% stake in the Piedra del Aguila power plant.

The total purchase price is $612mn.

STOP PRESS:

Please note that the table of UK Deliveries into Consumption that usually appears at the end of the News section will next appear in our February issue as the data was not available when *Petroleum Review* went to press.

NEWS Downstream

BP unveils cleaner gasoline technology

BP has announced an advance in desulfurisation technology that is claimed to have the potential to significantly reduce the cost of producing low sulfur gasolines to meet current and future environmental legislation.

The Olefinic Alkylation of Thiophenic Sulfur (OATS) process produces gasoline blendstocks containing less than 10 ppm of sulfur, significantly below the current levels required by legislation, states BP. It does this while consuming only low amounts of hydrogen and without significantly reducing the octane rating, the most important influence on the performance of a petrol engine.

Current typical gasoline sulfur concentrations around the world are in the order of several parts per million. Federal requirements in the US dictate that average gasoline sulfur levels must be lower than 120 ppm and mostly below 30 ppm by 2006.

In Europe, EU legislation will reduce gasoline sulfur levels to below 50 ppm by 2005. The UK is already introducing tax incentives for 50 ppm sulfur gasoline and Germany intends to introduce incentives for 10 ppm sulfur gasoline in 2003.

Typically, 90% of the sulfur found in gasoline comes from the naphtha stream produced by fluid catalytic crackers at refineries. Over 90% of the sulfur in this stream is contained in compounds called thiophenes.

Thiophenes are ring-structure organic sulfur compounds that have boiling points around 85°C. The basis of the OATS process is the conversion of these thiophenes to higher boiling compounds that can be readily removed from the gasoline stream.

The conventional method of removing thiophenes from the streams is hydrotreatment, reacting with hydrogen, which both consumes expensive hydrogen and also results in considerable loss of octane rating.

The OATS process instead facilitates the separation of the thiophenes by catalytically causing them to react with olefins present in the naphtha to produce heavier compounds with boiling points above 200°C. The higher boiling sulfur fraction is readily removed by fractionation and added to the diesel refinery stream where the sulfur can then be removed by conventional hydrotreatment as gasoline octane rating is then no longer a consideration. In total between 1% and 4% of the OATS feed is separated to join the diesel stream, the rest becoming desulfurised gasoline.

The basic OATS process, together with some other refinements, removes 99.5% of sulfur compounds from the gasoline stream with an octane rating loss of only 0 to 2 octane numbers, compared with a typical loss of 6 to 10 numbers through hydrotreatment, states BP. The process was developed in the US at a cost of $10mn and will soon be tested at a commercial scale. A large-scale, 6,000 b/d trial has already been carried out at the Bayern oil refinery in Bavaria, Germany; a joint venture between BP, Agip and Veba.

Smaller-scale trials are also underway at BP's Texas City refinery. If the trials are successful up to seven units using OATS could be installed in BP's refineries before 2003.

WEC tackles pollution issues

The World Energy Council (WEC) reports that pollution continues to grow and predicts that, by the end of 2000, global emissions will surpass 33bn tonnes of anthropogenic carbon dioxide (CO_2).

The Council has established a Pilot Programme for industry-led, international collaboration in reducing the emissions by at least 1bn tonnes of CO_2 or its equivalent by 2005. The Pilot Programme's target represents approximately 3% of total man-made emissions for that year, or about 4% of total CO_2 emissions from the worldwide production and use of fossil fuels.

An interactive electronic database has been developed to register, sort and manage the greenhouse gas (GHG) reduction projects. Using WEC's global network of Member Committees, energy industry and government contacts, nearly 500 projects have now been identified in more than 70 countries, suggesting possible GHG reductions of more than 850mn tonnes of CO_2 by the year 2005. The database can be accessed on WEC's Global Energy Information System – **www.worldenergy.org**

WEC's work on generating plant performance indicators, trend analysis and benchmarking focuses on practical measures which help power plant operators achieve optimum performance by improving plant management practices. Taking into consideration the performance improvements achieved at power plants around the world, it is estimated that if the average level of performance for power plants worldwide were to reach the same level, savings of approximately $80bn/y could be achieved and in addition, GHG emissions worldwide could be reduced by 1bn tonnes of CO_2 per year.

In Brief

worldwide. Pepex will market and utilise ShipIQ's online chartering service as its exclusive online partner for fixing ships and delivering physical oil.

Middle East

***Jubail United Petrochemical Company** (JUPC) has signed a letter of intent to appoint Fluor Daniel Arabia as the programme management services contractor for its new petrochemical complex to be built in Jubail Industrial City. The complex is expected to come onstream in 2H2004 and will have production capacities of 1mn t/y of ethylene, 460,000 t/y of ethylene glycol (EG), 400,000 t/y of high density polythene (HDPE) and 100,000 t/y of linear alpha olefins (LAO).*

Russia and Central Asia

***It has been reported that Ukraine has** now agreed to guarantee the accrued debt of $1.4bn and to classify future payments to Russia as sovereign debt. In return, Russia has agreed to allow the transit of 30bn cm of gas from Turkmenistan and will also allow the restructuring of past debts over a 10-year period.*

***Chevron is understood to have signed** a lubes marketing agreement with Petrolube, which has begun to build a dealership network in the European zone of Russia.*

***The Caspian Pipeline Consortium (CPC)** has reportedly completed the construction of a 990-km pipeline from Western Kazakhstan to Novorossiysk. The CPC is also understood to be on track to complete, by autumn 2001, a new export terminal located at Novorossiysk in the Black Sea.*

Asia-Pacific

***Gaz de France is reportedly continuing** with plans to acquire 10% equity in Petronet LNG (India), despite the fact that the National Thermal Power Corporation (NTPC) has pulled out of the scheme.*

Latin America

***Briggs Marine Environmental Services** has secured a contract worth $100mn from Petrobras. A network of nine oil spill response centres throughout Brazil are to be built.*

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Facing a bleak future

An excess of fabrication capacity in Europe, coupled with the oil companies' restrained pace of development plus focus on smaller, marginal developments, means that intense competition and more yard closures are inevitable, writes *Kim Jackson.*

Two decks destined for the Clara field in the Adriatic Sea, under construction in Intermare's Arbatax yard

The much beleaguered UK fabrication sector continues to struggle with the fact that there is far more construction capacity than work. According to Iain Bell, Chief Executive of the UK Offshore Contractors' Association (OCA): 'Current UK levels are at their lowest level ever and are likely to decline even further. We are facing a UK market which has steadily fallen from an average requirement of 10mn man-hours during 1996–1998 to 6mn in 1999, and down to around 4mn in 2000. I have no comparative figures for Europe, but as far as I am aware the yards there are facing a similar predicament.'

Looking ahead, Bell does not envisage the UK yards reaching full capacity at any point in the future. 'There are serious doubts as to the future of the Barmac yards at Ardersier and Nigg. In addition, Kvaerner has publicly stated its intention to divest itself of its yards in the UK and Norway. In light of this, we may see only two survive in the foreseeable future. The only trend developing in the sector at the moment is work around marginal and deepwater fields which centres on subsea technology. That type of work will serve the smaller fabricators rather than larger fabrication yards.'

'Internationally, the UK fabrication industry is not too competitive due to transport cost, domestic construction preferences and currency strengths. The yards outside Europe – in the Far East and Middle East – are winning most of the big projects where there is no strong domestic construction capability.' *Neil Rosie, Marketing Manager, UiE*

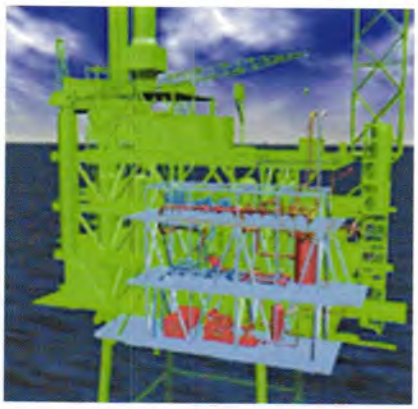
Emptying UK order books

Of the UK's three largest yards, Ardersier emptied mid-year following the sailaway of the Captain B subsea template and the earlier completion of the two Terra Nova modules. The other Barmac yard at Nigg completed the delayed Elgin/Franklin platform shortly thereafter and was left facing a rather bleak future with no major contracts on its books – a situation that has yet to change.

The Nigg yard was put on a care and maintenance basis after the sailaway of the Elgin/Franklin developments PUQ. Commenting on future prospects at the time – when Clair was being touted as the next 'major' project in the offing – Don Wright, Managing Director of Barmac, said: 'Even Clair is not the panacea the sector needs... it would get lost in a yard the size of Nigg and would not create the number of jobs required to keep a yard this big economic, let alone support our sister yard, Ardesier.'

The third major facility in the UK,

Heerema Tønsberg delivered the Heimdal riser platform in April 2000



Schematic of Norsk Hydro's Tune platform

Kvaerner's Methil yard, completed the Captain B jacket in mid-2000 and the Snorre B semisubmersible centre section, soon followed by the integrated deck for Captain B. By August, the only work it had remaining on its books was the small jacket for Phillip's Jade field, due for completion by early 2001. Employment in the yard fell from 1,000 workers in mid-2000 to just 150 workers and 50 staff for the Jade project and future prospects look bleak.

The smaller platform and module yards are in similar straits. Amec's Wallsend yard has only recently been reopened after being mothballed following the April 2000 departure of the Shearwater deck. The Lewis Offshore facility in Stornoway, Orkney, has gone into receivership, while Kvaerner's Teesside yard has been sold. Heerema's Hartlepool yard is understood to be virtually empty and the UiE yard on Clydebank has effectively been mothballed with no orders on its books at present.

In an innovative approach to keep workers employed, some fabricators have been selling their skills to other yards. For example, in early 2000, Aker McNulty loaned labour to Ireland's Harland & Wolff Belfast yard, which was working on two drillships for Global Marine. The Irish fabricator has been beset with ongoing financial difficulties and legal problems relating to this project however, and is still seeking

Operator	Field*	Work	Delivery
UNITED KINGDOM:			
Amec Process & Energy Wallsend			
ExxonMobil	Skene	2,500-tonnes gas compression module for installation on Beryl 'A' platform	
Consafe			
Diamond	*Ocean Nomad*	living quarters extension and refurbishment	mid-2001
Santa Fe/BP	Dada Gorgud Azerbaijan*	upgrade project	end-2000
Kvaerner Oil and Gas Methil			
Phillips	Jade	jacket	early 2001
KYE	Brigantine	minimum facilities jacket	–
THE NETHERLANDS:			
Grootint			
Wintershall Noordzee	L8-P4	deck	2000
Mercon Steel Structures			
Transcanada	K9 AB	150-tonnes compressor skid	Jan 2001
Elf Petroland	K1A	950-tonnes satellite topsides (EPC contract)	Jun 2001
SWEDEN:			
Emtunga			
Esso Norge	Ringhorne	1,300-tonnes living quarters	Oct 2001
CTOC	Cakerawala Malaysia–Thailand JDA*	1,000-tonnes living quarters	Mar 2001
NORWAY:			
Aker Stord			
BP	Valhall	8,500-tonnes topsides	Aug 2002
Saga	Snorre B	18,700-tonnes topsides for floating production unit	May 2001
Norsk Hydro	Grane	5,500-tonnes drilling module	May 2003
Aker Verdal			
Statoil	Kvitebjørn	jacket and piles	Aug 2002
BP	Valhall	4,000-tonnes jacket	July 2002
Norsk Hydro	Grane	17,500-tonnes steel jacket	March 2003
Heerema Tønsberg			
Esso Norge	Ringhorne	11,000-tonnes platform (EPIC contract)	May 2002
Statoil	Kvitebjørn	4,000-tonnes drilling module	Dec 2002
Kvaerner Egersund			
Norsk Hydro	Grane	production module contract	–
Leirvik Sveis			
Statoil	Kvitebjørn	1,200-tonnes living quarters and helideck in aluminium	May 2002
ABB Haugesund			
Statoil	Gullfaks A	modification of 450-tonnes unit	Apr 2001
Norsk Hydro	Fram Vest	1,000-tonnes module	Apr 2001
BP	Valhall Nord/Syd	two 1,000-tonnes wellhead platforms	Jul 2001
Statoil	Sleipner C	8,000-tonnes topsides	Jul 2001
Norsk Hydro	Tune	1,000-tonnes module	Dec 2002
FINLAND			
Aker Finnyard			
Vastar Resources	Horn Mn'tn, Gulf of Mexico*	spar floating production platform	–
ITALY:			
Intermare Sarda			
Agip	Foukanda and Mwafi West Africa*	two 1,500-tonnes production decks	2Q2001
BELGIUM:			
Bluewater			
Bluewater	Blake/Ross FPSO	Modification of 1,400-tonnes topsides	3Q2001

** North Sea fields unless otherwise indicated*

Current workload at European fabrication yards

payment of the outstanding bill on the completed drillship *Glomar Jack Ryan*. In November 2000, a UK High Court Judge overturned an earlier arbitration award stating that the buyer of the drillship must pay Harland & Wolff more than $27mn. Despite taking possession of the vessel in August, Global alleged that there were a number of items which needed rectifying by the fabricator before it could be deemed to be in a deliverable state. Harland & Wolff contends that the vessel was ready for delivery apart from items that were the responsibility of the owner. The dispute looks likely to run for a while longer, during which time the axe hovers over the heads of some 500 Harland & Wolff workers.

Prospects for the smaller East Anglian yards are looking slightly better with a number of southern North Sea gas accumulations to be developed, including Shell's Skiff field. The oil company awarded the contract for Brigantine's two minimal facilities platforms to KYE of Great Yarmouth in early 2000.

The UK fabrication sector's fortunes have also been hampered by the strong pound which has made bids for overseas projects uncompetitive. Worsening conditions have led many of the yards to diversify away from not only their traditional businesses within the oil and gas sector, but also geographically and into other industrial sectors. Nigg, for example, plans to target smaller southern North Sea projects, developments in the Gulf of Mexico and West Africa, as well as diversifying into nuclear decommissioning, renewable energy projects, IRM (inspection, repair and maintenance), and industrial and marine work.

This diversification trend is also being seen elsewhere in Europe, with a number of fabricators reporting that they are looking to secure onshore oil and gas construction projects as well as civil engineering contracts for the fabrication of bridges etc.

Norwegian fortunes

The current picture in the Norwegian fabrication sector is better than that in the UK. The Norwegian Government has long-ensured that its development programme and fiscal changes tie in with the capacity of its fabrication yards, with only the minimum of work permitted to go overseas. The past year has seen the green light given for the Kvitebjørn, Glitne, Tambar and Huldran fields in the Norwegian sector of the North Sea – all projects involving fairly major fabrication work.

However, it could be that even Norway's fabrication sector may see a slight downturn in fortunes once current orders are completed. Harald Svendsen, Marketing Manager of Heerema Tønsberg, comments that Norwegian capacity will need to halve compared with 1999 levels in order to balance the demand from new prospects on the Norwegian Continental Shelf (NCS) in coming years. He believes that the market is 'increasingly calling for medium-sized contractors with a high degree of flexibility as well as alliances to undertake EPIC contracts.'

'Future prospects could only be described as bleak'

Iain Bell, Chief Executive, UK Offshore Contractors' Association (OCA)

Svendsen also reports that there is no tender activity ongoing for the NCS at present, apart from some concept studies for BP (Valhall), PPCoN (platform/module to boost Ekofisk oil production by 150,000 b/d), Esso (Sigyn subsea development tied back to Sleipner) and Statoil (Kristin floating production facility and Sleipner compression facilities – perhaps resulting in a new round of projects in 2H2001.

Some of the Norwegian fabricators are already diversifying from their domestic base. For example, Aker Maritime recently secured a $125mn contract to deliver a spar production platform to Vastar Resources's Horn Mountain field in the Gulf of Mexico. The company is also understood to have made its first move into the oil and gas production sector with the filing in July 2000 – together with German energy company RWE-DEA – of an application to become a licensee of Norwegian North Sea block 35/3. The two companies plan to develop a gas field on the block – via subsea wells tied back to an onshore processing plant – with first production slated for 2004.

Aker Maritime has also looked at alliancing. Having recently secured the contract to modify Bluewater's *Bleo Holm* FPSO for development of Talisman Energy's Blake field, the company is understood to have signed an agreement with Cammell Laird Holdings for the joint marketing for offshore floating production conversion work. The companies report that their combined skills, experience and facilities will enable turnkey capability to owner and operators of FPUs. Separately, Cammell Laird secured a contract from Coflexip Stena Offshore (CSO) for the conversion of the *CSO Constructor* into a deepwater subsea construction vessel. Work is scheduled to complete in April 2001.

Other developments this past year include the acquisition by ABB of the oil and gas activities, as well as the fabrication facilities, of Umoe, in a bid to target large turnkey projects.

Swedish sector prospects

Looking to the Swedish sector, Klas Wallin of Emtunga, reports that: 'Future market prospects [in Sweden] look much better than last year and we expect to be the successful bidder in a number of projects over the next few years. We are competitive not only in the North Sea, but also in the Far East, West Africa and Gulf of Mexico, as the standards and quality requirements in these areas are now getting closer to North Sea standards.'

Italians target Med projects

The Italian fabrication sector is well placed to target the Mediterranean sector. According to Giancarlo Zizifo of Intermare, future projects in this region include a production platform for Agip Gas' project in block NC41 offshore Libya and a wellhead platform for Elf Aquitaine, also offshore Libya. The company also proposes to target new offshore field developments in West Africa, together with onshore plant modularisation contracts.

Dutch developments

Looking at the Dutch fabrications sector, Maarten Rozemeijer of Mercon Steel Structures, predicts that 2001 and 2002 will be quite busy years – by Dutch standards at least – with Elf Petroland and NAM planning new compression facilities and Transcanada planning a new production and satellite platform. There are also plans to develop offshore windmill parks that could provide additional work for the Dutch fabricators.

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Undisclosed Advised Shell on the disposal of interests in Elgin/Franklin in the UK Advisor Pending	CORRAL PETROLEUM HOLDINGS AB **US$150 million** Structured Term Loan Advisor and Joint Arranger October 2000
Petroplus **€150 million** 10 year non-call senior notes to refinance existing debt related to the acquisition of the Cressier refinery from Shell Co-manager October 2000	**Shell Australia** **A$240 million** Divestment of Barrow Island and Thevenard Island interests, offshore Western Australia to Santos Advisor March 2000
Texaco **Undisclosed** Disposal of interests in the 4th Round Area Fields and THP Fields to Talisman Energy Advisor February and May 2000	**Bonny Gas Transport** **US$160 million** Secured loan debt facility for acquisition of two new-build LNG vessels Arranger November 1999

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The real impact of the mega-mergers

Intense corporate restructuring and consolidation among the majors over the past few years has made it hard to get a grip on the real impact of mergers on the industry. *Richard Krijgsman*, Managing Director of Evaluate Energy (previously Petrocompanies), analyses the data and concludes that mergers have been driven by investor returns and that the impact on energy supply is limited.

First impressions are that Big Oil is getting bigger and that power is being concentrated in the hands of fewer companies. But this would not appear to be the case. By creating a seamless analysis of the past and future performance of today's largest players we are able to assess their real contribution to energy markets and investors over the past 10 years and into the future. Our analysis suggests that the enormous changes have been driven by concerns over investor returns and that the net effect on energy supply has been distinctly limited.

In order to do this analysis we have taken today's majors and created a virtual past by reconstituting the historic performance of their component companies. For example, we have added together Amoco, Arco and BP to assess what their oil and gas production would have been in 1990 if today's BP were in existence at that time. Similarly, for Exxon and Mobil. For the future, we can assess the performance of the four industry leaders (ExxonMobil, Shell, BP and ChevronTexaco) by analysing current consensus forecasts and by using our 'merger tool' to 'create' the new ChevronTexaco.

Focus on financial performance

Analysis of some of the key financial parameters indicate that the majors have been focusing on boosting returns for their investors rather than growing per se over the past 10 years. Key trends (see **Table 1**) include:

- The amount of capital employed by these companies has increased by just 9% over the past 10 years. This has partly reflected significant and consistent write-offs by most companies (Exxon is an exception) and the creation of a multitude of joint ventures accounted for on an equity basis. The effect has been to reduce the denominator in the calculation of return on capital – a metric that, for many companies, has become a crucial benchmark.
- Operating cash flow has improved steadily over the period.
- Capital expenditure (net of divestitures) has hardly budged over the period – the new majors have not been pumping much more capital into the business than they did as separate entities.
- Oil and gas upstream earnings grew by more than a third, despite static production and oil prices being some $1.50 lower on average in the 1995–99 period compared with the previous five years.
- Return on capital (pre-tax) has edged up by 2 percentage points – although they generally fell short of their more ambitious targets, this has been one of the key goals of most of the big companies.
- Market capitalisations have soared. In the summer of 2000, the combined market cap of these companies was almost $800bn compared with just $280bn at the end of 1990.

$bn	Average 1990–94	Average 1995–99	% Chg
Capital employed	248.1	271	+9
Operating cash flow	45.5	55.3	+22
Pre-tax return on capital employed (%)	14.4	16.4	+2
Market capitalisation	298.7	599	+100
Net capital expenditure	30.1	32.3	+7
Oil and gas upstream earnings	13.4	18.0	+34

**Group consists of ExxonMobil, Shell, BP (incl. Amoco and Arco), Chevron and Texaco.*
Historic figures have been created by combining figures of individual companies from the Evaluate Energy database.
Recent figures are based on actual data reported by newly combined entities (eg: ExxonMobil and BP).
Source: Evaluate Energy

Table 1: The new majors* – financial performance

So, financial markets believe the majors are doing something right in terms of consolidation and strategy.

Big efforts yield modest results

Taking the 'new majors' as a whole, and analysing their key operating statistics, the group appears to have been running hard just to generate fairly modest growth over the last decade (see **Table 2** and **Figure 1**).

- At a modest 4% to 5%, growth in crude oil production and proved crude oil reserves has lagged behind overall market growth during the period.
- Oil and gas production together (in boe) has grown by just 5% on average.
- Natural gas reserves have grown only modestly over the period despite concerted efforts by most companies to expand their gas operations.
- Refining capacity has declined in absolute terms.

In the context of the majors' attempt to improve their performance for investors, these trends make sense. Upstream, each company in turn has been aiming to 'high grade' its producing assets and acreage, resulting inevitably in some cutbacks in output. Downstream, most of these companies have been rationing capital spending, rationalising capacity, and maximising throughput. BP, for one, has actively embraced a deficit refining strategy.

But from the perspective of their

	Average 1990–94	Average 1995–99	% Chg
World crude/NGL output (,000 b/d)	9,056	9,445	+4
Oil/NGL/Gas output (,000 boe/d)	13,804	14,475	+5
Total oil/NGL reserves (mn barrels)	37,484	39,564	+5
Total gas reserves (bn cf)	164,162	170,394	+4
Refining capacity (,000 b/d)	16,543	15,811	-4
% of world total			**% pt difference**
World crude/NGL output	13.7	12.8	-1.0
Total oil/NGL reserves	3.7	2.9	-0.8
Total gas reserves	3.5	2.5	-1.0
Refining capacity	22.2	15.6	-6.6

Table 2: The new majors – operating performance

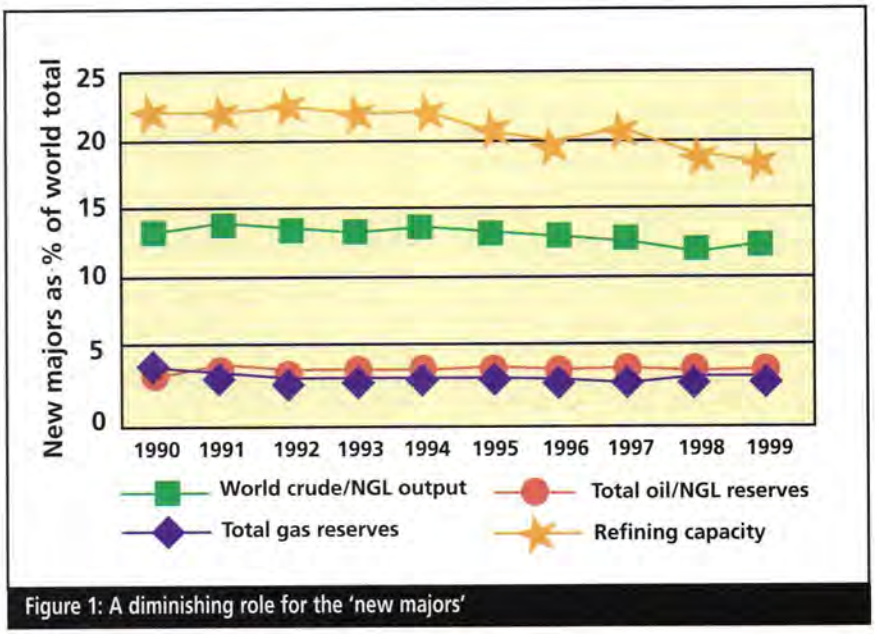
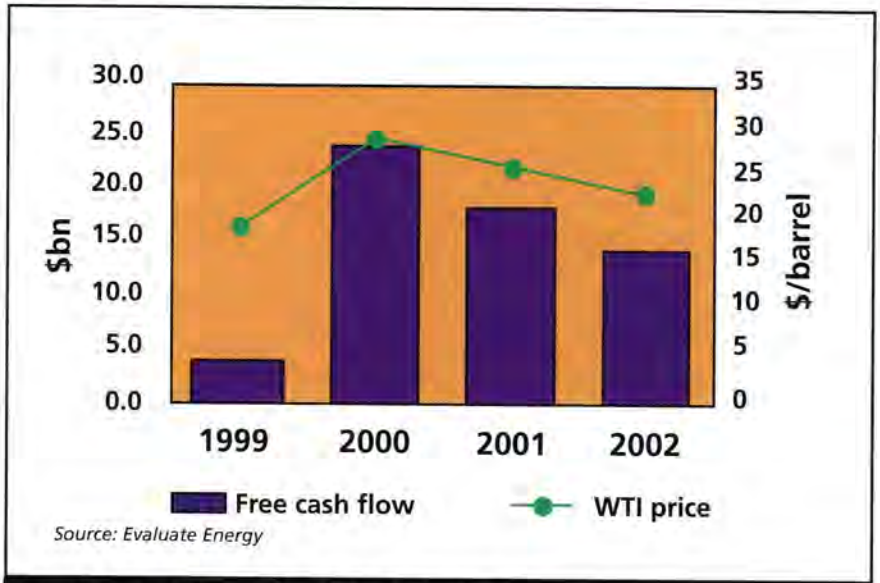


Figure 1: A diminishing role for the 'new majors'

All financial data in US$	ExxonMobil 1999	2002	Av.% growth	Shell Group (RD) 1999	2002	Av.% growth	BP 1999	2002	Av.% growth	ChevronTexaco (est.) 1999	2002	Av.% growth	Total Group 1999	2002	Av.% growth
EBITDA	19,996	32,527	17.6	21,753	28,960	10.0	12,820	20,223	16.4	10,812	16,589	15.3	65,381	98,299	15
Return on av. capital employed (%)	10.3%	15.9%	n/a	11.9%	16.8%	n/a	12.2%	10.6%	n/a	9%	14.5%	n/a	10%	15%	n/a
Total capital expenditure	10,849	13,000	6.2	7,409	9,973	10.4	7,345	13,500	22.5	10,026	9,766	-0.9	35,629	46,239	9
Capital employed	84,445	97,292	4.8	71,709	72,769	0.5	58,107	88,652	15.1	47,067	52,821	5.0	261,327	311,534	10
World crude/NGL output (,000 b/d)	2,517	2,794	3.5	2,268	2,475	2.9	2,061	2,239	2.8	2,012	2,197	3.0	8,858	9,704	4
World gas production (mn cf/d)	10,308	11,373	3.3	8,218	9,798	6.0	6,067	7,568	7.6	4,512	4,633	0.9	29,105	33,371	5
World crude/NGL/Gas output (,000 boe/d)	4,235	4,689	3.5	3,638	4,107	4.1	3,072	3,500	4.4	2,764	2,969	2.4	13,709	15,266	4

Notes:
Return on capital employed is normalised net income plus net interest payable and receivable and financial items divided by average capital employed.
Benchmark oil and gas prices underlying the forecasts are, for WTI, $19.31 in 1999 and $23 in 2002 and for Henry Hub gas $2.27/mn cf in 1999 and $3.68 in 2002.
ChevronTexaco is an estimate based on Evaluate Energy's merger tool.
BP excludes Arco.

Table 3: Financial and operating outlook for new majors



Source: Evaluate Energy

Figure 2: Forecast free cash flow of the 'new majors'

contribution to world energy supply, the role of the majors starts to lose its shine. With world oil and gas reserves, production, and refining capacity all growing steadily over the last decade, the relatively static performance of the new majors has seen their standing in the world supply picture start to slip. Indeed there would appear to be a conflict between the desire of companies to keep their shareholders happy and the pressing need to develop energy resources quickly and efficiently. If a choice has to be made, a publicly quoted company will always choose the former.

Does it matter? If you believe these companies are the custodians of much of the expertise that could underpin optimal development of the energy business, perhaps it does. Is there anything that can be done to reverse the trend? If ingrained attitudes and conventional wisdom towards Big Oil can be suspended long enough to visualise and then capture unlocked synergies in the new operating environment – for example in negotiations between the new majors and certain Opec producers – the answer is 'yes'. But this is going to be a real challenge for both sides of the negotiating table.

A promising future

Based on a consensus of brokers' forecasts during the early autumn of 2000 – a time when many brokers were assuming that current market strength would not be as prolonged or at such a high level – the outlook for the new majors was healthy to say the least (see **Table 3**) These forecasts are built up from a detailed analysis by Evaluate Energy of the most recent brokers' research and are available in its newly launched Forecast Service. The value of the consensus approach is its consistency across the companies, and its consistency in terms of the oil and gas price assumptions underlying the forecasts.

As with all forecasts, they will probably never pan out because management will anticipate many of the challenges and opportunities that such forecasts reveal. Also, it is worth bearing in mind that, judging by past performance, many companies will be incurring significant write-offs in the future and such write-offs (which depress reported earnings) are rarely included in the forecasts.

With these provisos in mind, the forecasts suggest the following:

- Financial performance will improve sharply with earnings before interest, tax and depreciation growing at some 15% per annum for the group as a whole.
- Return on capital for the group could rise to as much as 15% post-tax against just 10% in 1999.
- Capital spending will grow by an average of 9% per annum over the next few years, reflecting healthier balance sheets but also indicating some reticence on the part of senior management to funnel substantial surplus funds into capital projects.
- Capital employed will rise by some 10% on average as the companies boost capital spending levels. This takes no account of the likely write-offs companies will make.
- Operationally, the companies look set to achieve more in a few years than they did during the whole of the last decade, growing oil production by 4% per annum on average and gas production by 5% per year.

Evaluate Energy's analysis of free cash flow (this is cash available after estimated dividends, interest and announced capital spending) shows the new majors potentially generating some $57bn of free cash between 2000 and 2002 (see **Figure 2** and **Table 4**). About half of this amount was clearly earmarked for share repurchases at the time of writing, leaving a lot more to be allocated – either to shareholders (likely), to increased capital spending (less likely) or to further acquisition activity (probably).

The new majors are clearly a potential engine for growth in the industry and the signs are that their financial clout will increase in the next few years. The direction into which they channel these funds will be dictated primarily by the increasingly demanding requirements of their shareholders for a competitive return on their investment. The resulting conflict that this throws up for the global community is perhaps one of the greatest challenges we face.

London-based Evaluate Energy specialises in forecasting, benchmarking, competitor analysis, and M&A analysis for leading oil and gas companies and their advisors. For more information, visit* **www.evaluateenergy.com

	1999	2000	2001	2002	Cumulative 2000-2001
ExxonMobil	(402.3)	9,408.2	6,011.4	5,300.0	20,719.6
Shell Group (RD)	4,044.5	7,328.5	7,692.7	6,180.1	21,201.2
BP	633.7	6,067.9	3,428.1	1,315.3	10,811.4
ChevronTexaco (est.)	(342.6)	1,672.5	1,530.8	1,529.7	4,733.1
Total Group	3,933.3	24,477.1	18,663.0	14,325.2	57,465.3

Source: Evaluate Energy

Table 4: Free cash flow (post dividends, interest and capex) ($mn)

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M&A activity dominated by takeovers

Worldwide mergers and acquisitions (M&As) activity during 2000 appeared to be keeping pace with that seen in 1998 and 1999. However, while activity remained brisk, statistics from *IHS Energy*'s Transaction database*, indicate significant differences between 2000 and the two-year period from 1998 to 1999.

The most obvious differences between M&A activity levels seen in 2000 and 1998–1999 are summarised below:

- In 1998 and 1999, five 'major' company takeovers (called 'mega-mergers') occurred. In 2000 there was only one mega-merger – between Chevron and Texaco, announced in October (see *Petroleum Review*, November 2000). The first mega-merger since TotalFina took over Elf in July 1999, and the first to be conducted in an oil price environment of $35/b, the $35bn deal ranks Chevron Texaco fifth in market capitalisation (behind ExxonMobil, Shell, BP and TotalFinaElf) but fourth in size by reserves.
- Average reserve values in 1998 and 1999 are higher than in 2000, despite a much higher oil price in 2000.
- In 1998 and 1999, the total value of reserves in M&As totalled approximately $100bn. Annualised estimates for 2000 indicate that the value of M&A reserves could reach $50bn, or about half that of previous years (this is based on an anticipated similar number of transactions).
- The oil price has trebled from around $10/b in January 1999 to over $30/b in August 2000.

The year between June 1998 to June 1999 can be designated as the mega-merger period. This extraordinary period was heralded by the takeover of Amoco by BP in August 1998, quickly followed by the takeover of Mobil by Exxon in November 1998, Petrofina by Total in November 1998, Arco by BP Amoco in March 1999, YPF by Repsol in April 1999 and Elf by TotalFina in July 1999. These mega-mergers had a total reserve value of $146bn with an average reserve value of approximately $5.30/boe (see **Table 1**).

Year	Number of transactions	Total reserve value ($bn)	Average value ($/boe)
1997	105	27.2	3.87
1998	165	106.0	5.07
1999	167	101.3	5.30
2000 (to September)	131	39.6	4.87*

** IHS Energy's value for the Chevron Texaco merger is $5.94/boe*

Table 1: Average worldwide reserve values

Company	Reserves value ($ bn)	Date
Amoco	29.8	August 1998
Oryx	3.5	October 1998
Mobil	47.9	November 1998
Ocean Energy	1.9	November 1998
Petrofina	5.3	November 1998
CNG	1.7	February 1999
Arco	29.6	March 1999
Sonat	2.9	March 1999
YPF	15.2	April 1999
Saga	5.5	May 1999
Elf	18.3	May 1999
Monument	0.9	May 1999
PennzEnergy	1.9	May 1999

Table 2: Significant takeovers within the mega-merger period

Oil price driver

This period of takeover activity was the response to a widely-held industry belief that oil prices would remain at the lower end of a $10/b to $15/b price bracket that had persisted since late 1997. However, in reality, the low oil price regime prevailed only until mid-1999, not long after the last major merger. In hindsight, the low oil price pundits were not to know Opec was finally going to be a cartel successful at intentionally controlling supply after 40 years of trying.

The mega-merger was an attempt by majors to maintain company earnings and preserve returns on shareholder funds in a sustained low oil price environment. These goals were to be achieved through cuts in operating costs, creating economies of scale and broadening reserve bases for the combined entity. The major mergers had the effect of creating 'takeover fever' in the general industry, enticing smaller capitalised companies to also merge. In 1998, 27 significant takeovers were reported, and 47 in 1999 (see **Table 2**). This fever persisted into 2000 with 45 takeovers completed by September.

In 2000, we estimate a similar number of M&As will have been done compared with previous years (annualised as at September 2000). However, M&As in 2000 were conducted in a higher oil price environment to those in 1998 and 1999, and most were on a friendly basis rather than a survival basis (see **Table 3**). However, the most acrimonious was perhaps the final purchase of Ranger Oil by Canadian Natural Resources (CNR). The CNR bid followed an earlier, hostile, bid by Petrobank Energy and Resources. CNR played a 'white-knight' role in the takeover process after a concerted search by Ranger to find a more acceptable suitor.

The majority of 2000 M&As were domiciled in North America, unlike the mega-merger period when takeovers were also common in Europe (Petrofina, Elf, Monument, Saga and Hardy) and South

Transaction	Reserves value ($bn)	Implied average reserve value ($/boe)
Union Pacific takeover	7.5	7.90
Arco Alaska assets	5.7	3.00
Altura Energy buyout	3.6	4.24
Renaissance takeover	3.4	6.43
Coastal takeover	2.5	5.70
Santa Fe Snyder takeover	2.5	6.43
Cresta takeover	1.4	4.20
British-Borneo takeover	1.1	4.15
Ranger takeover	1.0	4.97

Table 3: Significant transactions in 2000

Period	Average ($/boe)	Average oil price ($/b)
1Q1998	5.47	14.43
2Q1998	4.60	13.73
3Q1998*	4.99 (4.42)	12.77
4Q1998*	5.16 (5.00)	11.63
1Q1999*	6.26 (5.32)	11.48
2Q1999*	4.97 (5.46)	15.69
3Q1999	4.91	20.47
4Q1999	3.95	24.02
1Q2000	3.77	26.85
2Q2000	6.36	26.77
3Q2000+	5.20	30.61
1998*	5.07 (4.87)	13.12
1999*	5.30 (4.93)	18.04
2000 (to September)+	4.87	27.93

** $/boe values in brackets are exclusive of mega-mergers, Amoco, Petrofina, Mobil, Arco, YPF and Elf.*
+ Incomplete statistics.

Table 4: M&A reserve values versus oil price

America (YPF). There was also an emphasis on Canadian M&A activity (55% of total worldwide transactions to September 2000 compared with 37% in 1998 and 40% in 1999) fuelled by a desire (by both US and Canadian predators) to acquire 'cheap' Canadian gas reserves to supply a burgeoning US market.

Significantly, if the mega-mergers detailed are excluded, then average reserve values are lower (as seen in **Table 4**). This implies that the value of reserves involved in mega-mergers were more than the 'background' average ($4.42/boe to $5.46/boe). In fact, average reserve values for the mega-merger transactions ranged from $4.68/boe to $6.60/boe. This meant that relatively higher reserve values were paid in mega-mergers even in a low oil price regime. This implies that the prevailing oil price at the time of the transactions may not have been the main motive in valuing the reserves. Other factors such as company synergies and corporate strategy were also important.

IHS Energy's worldwide Transaction database currently has 4,700 transactions and covers over 100 countries. Transactions detailed include the purchase of reserves and exploration acreage, farm-ins, takeovers and awards that require signature bonuses. The database covers the period from 1990 to the present. The database is available to subscribers of the Petroleum Economics' online service at* **www.ihsenergy.com

Business as usual for US oil under new government?

It seems safe to predict that, barring the unexpected, the US oil and gas scene will not see much change when the new government takes over in January. It will be many months before a deadlocked Congress and a President whose election is begrudged are in a position to make positive moves that would affect oil and gas exploration and production in the US, reports *Judith Gurney*. For the short term at least, it will be business as usual.

The focus of the industry will remain on the Gulf of Mexico whose deepwaters hold the only substantial promise for new US oil and gas reserves. Although discoveries this past year were not as dramatic as BP's Crazy Horse and Mad Dog 1999 finds, a few new fields with significant reserves were found at depths well over 3,000 ft. These included the Princess field in Mississippi Canyon (discovered by Shell with partners Conoco and ExxonMobil), the Champlain field in Atwater Valley (discovered by Texaco with partner Agip), and the Gunnison field in Garden Banks (discovered by Kerr-McGee).

The relatively low turnouts at the US Minerals Management Service (MMS) auctions of Gulf of Mexico offshore blocks during 2000 – a result likely to continue into the new year – are not proof of reduced interest in the Gulf. In most cases, they reflect the fact that companies have already leased a lot of deepwater acreage which they must explore and develop soon or surrender back to the MMS.

There are currently more than 7,600 active offshore Gulf leases, with 41% of these in water depths of more than 3,000 ft. More than 230 deepwater wells drilled have yielded at least 75 significant discoveries. Ten of these discoveries have reported recoverable reserves in excess of 250mn boe, and the rest are roughly evenly split between those with reserves ranging between 100mn and 150mn boe and those with less than 100mn boe.

Most Gulf of Mexico shallow and deepwater areas have been extensively surveyed and explored, but seismic studies and drilling has just begun in the ultra-deepwater areas, with BHP, Marathon, Unocal, Texaco and Shell currently drilling in the extreme water depths of Walker Ridge and Alaminos Canyon. Activity in these frontier areas is limited by the willingness of companies to undertake the costs and risks of exploring and producing in ultra-deepwaters, as well as by the number of rigs available for such work.

Barring a major collapse of oil prices, the upcoming year will undoubtedly see continued exploration in offshore deepwaters as well as in gas-prone, mature shallow waters. The price level of natural gas has risen dramatically these past months and some 59% of the total number of active rigs in the US and Canada were drilling for gas in October. As **Figure 1** shows, US rig activity increased from 771 in January 2000 to 1,054 by the end of October, with the deepwater rig count increasing from 121 to 151.

Mexico is expected to venture for the first time into the deepwater areas of its portion of the Gulf following the Pemex announcement of plans to drill five deepwater wildcats over the next five to seven years in water depths of 2,000 to 4,500 ft. Mexico and the US recently agreed a settlement over the boundaries of a disputed area in the western gulf and the MMS is expected to offer blocks in the US portion of this area in the 2001 auctions.

New production

Deepwater fields that have recently come onstream include Shell's Europa field in Mississippi Canyon in water depths of 3,900 ft – produced with a subsea system connected to Shell's Mars tension leg platform (TLP), and the Hoover/Diana project of ExxonMobil with partner BP, in water depths of 4,800 feet in East Breaks and Alaminos Canyon – produced by a spar-like deep draft caisson vessel.

The Black Widow field of Mariner Energy, with partner Devon Energy, in water depths of 1,890 ft in Ewing Bank, came onstream in November with a subsea connection to Agip's Morpeth platform. Texaco's Petronius field in 1,730 ft of water in Viosca Knoll has begun operations after a start-up delay of two years due to an installation accident with one section of its complaint tower production system.

Several deepwater fields are currently under appraisal and development. The Typhoon field of Chevron and BHP, which lies in 2,000 ft of water in Green Canyon, is scheduled to come onstream with a subsea system tied back to a mini-TLP in 3Q2001. The Aconcagua field of Elf, with partners Mariner and Pioneer, which lies in 7,000 ft of water in Mississippi Canyon, is due to start production in late 2001 with a subsea system tied back to the Virgo platform. Anadarko's sub-salt Marco Polo field in Green Canyon is also expected to come onstream before the year is over.

Production in late 2001 is also scheduled for Shell's two Garden Banks fields – Oregano and Serrano – both in water depths of around 4,000 ft, to be produced with a subsea system tied back to

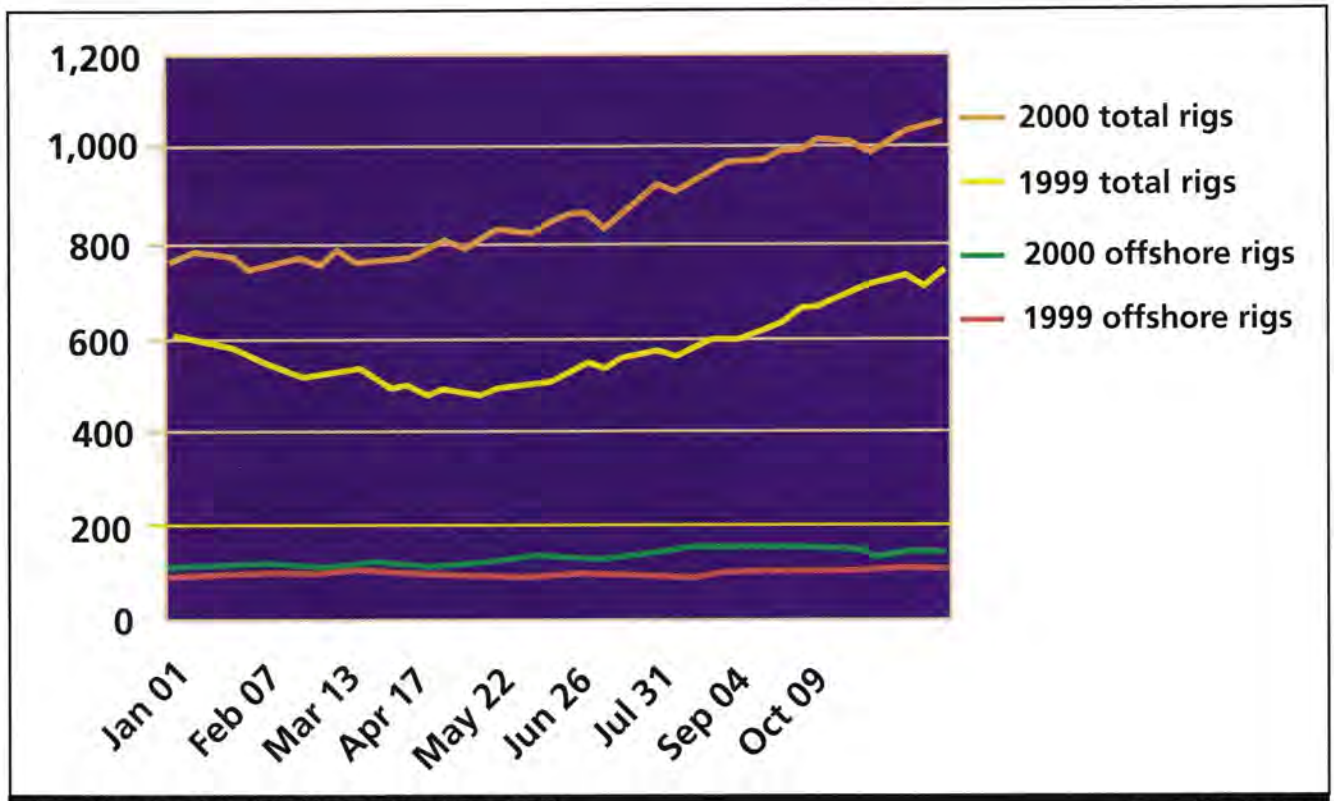

Figure 1: Number of rigs drilled in the US in 1999 and 2000 *Source: Baker Hughes*

the Auger TLP. Vastar has development plans for producing its Mississippi Canyon Horn Mountain field in water depths of 5,400 ft, with a spar. Shell is planning to develop its Brutus Green Canyon field with a TLP.

BP has signed contracts for the construction of spars to produce its Holstein, Mad Dog and Atlantis fields, and is currently evaluating options for the development of its Crazy Horse field. Meanwhile, Shell has announced plans to develop its Mississippi Canyon Na Kika project. This includes five fields discovered by Shell and BP between 1987 and 1997 – the three mainly oil fields of Kepler, Ariel and Hershel, and the two mainly gas fields of Fourier and East Anstey. Output for this project is planned for mid-2003 using a floating production system (FPS) and a subsea system taking output back to an anchored production system. This will be the first floating production vessel in the Gulf but, unlike floating production offloading and storage vessels (FPSOs), it will not store and offload production to tankers. Production from Shell's Coulomb field will be added to the Na Kika project at a later date. All of the Na Kika fields are small, but together they are expected to yield around 300mn boe.

Investment in the industry

Capital spending by oil companies on exploration and development, which fell sharply when oil and gas prices were low, was expected to rise when prices recovered and increased profits were available for this type of investment. However, while some companies have announced larger exploration and development budgets, many continue to hold back.

The expenses involved in mergers and other types of cooperative agreements have undoubtedly affected the size of funds available for exploration and development, but the major reason for caution is concern about the stability of oil and gas prices. This concern is reflected in the US stock market where share values of oil companies remained low while share values of most other companies were rising. The stock market is expecting that the drive to cut costs of offshore and onshore operations will lead to more mergers in the year ahead, as well as outsourcing and drilling partnership arrangements which will involve major and independent oil and service companies.

Unfinished business

There are pending issues regarding the US oil and gas industry which will be carried over into 2001, with their resolution unlikely to be affected by a change of government. These include royalty relief for deepwater production, permission to use FPSOs for the production of oil reserves in the Gulf of Mexico, and the method by which royalties are accessed.

Royalty relief

Although the Deepwater Royalty Relief Act passed by Congress in 1995 – which led to a dramatic increase in the acquisition of deepwater blocks by oil companies – expired in November, the act allowed the MMS to continue the suspension of relief in cases where it felt that this was warranted.

The MMS has issued a proposed rule for limited royalty relief on individual blocks. It intends to allow companies to apply for royalty suspension on deepwater block production on a case-specific basis, but will not issue blanket relief to whole categories of leases at an auction.

Oil companies wanted royalty relief to continue in its present form. They noted that companies have invested more than $35bn for leasing, evaluating, developing and operating deepwater blocks since 1974, when such blocks were first offered in auctions, and suggest that the industry still has not realised a positive annual after-tax cash flow for deepwater operations due to the expenses involved. They suggest that companies will loose interest in gathering expensive seismic and geological data about deepwater areas if they do not know which blocks would be eligible for royalty relief until the MMS announces its decision. The MMS is to hear comments on its proposal before issuing a final rule.

FPSOs

A final MMS Environment Impact Statement for the use of FPSOs in the Gulf of Mexico to produce deepwater fields is due to be issued in February. It is expected to conclude that there is no

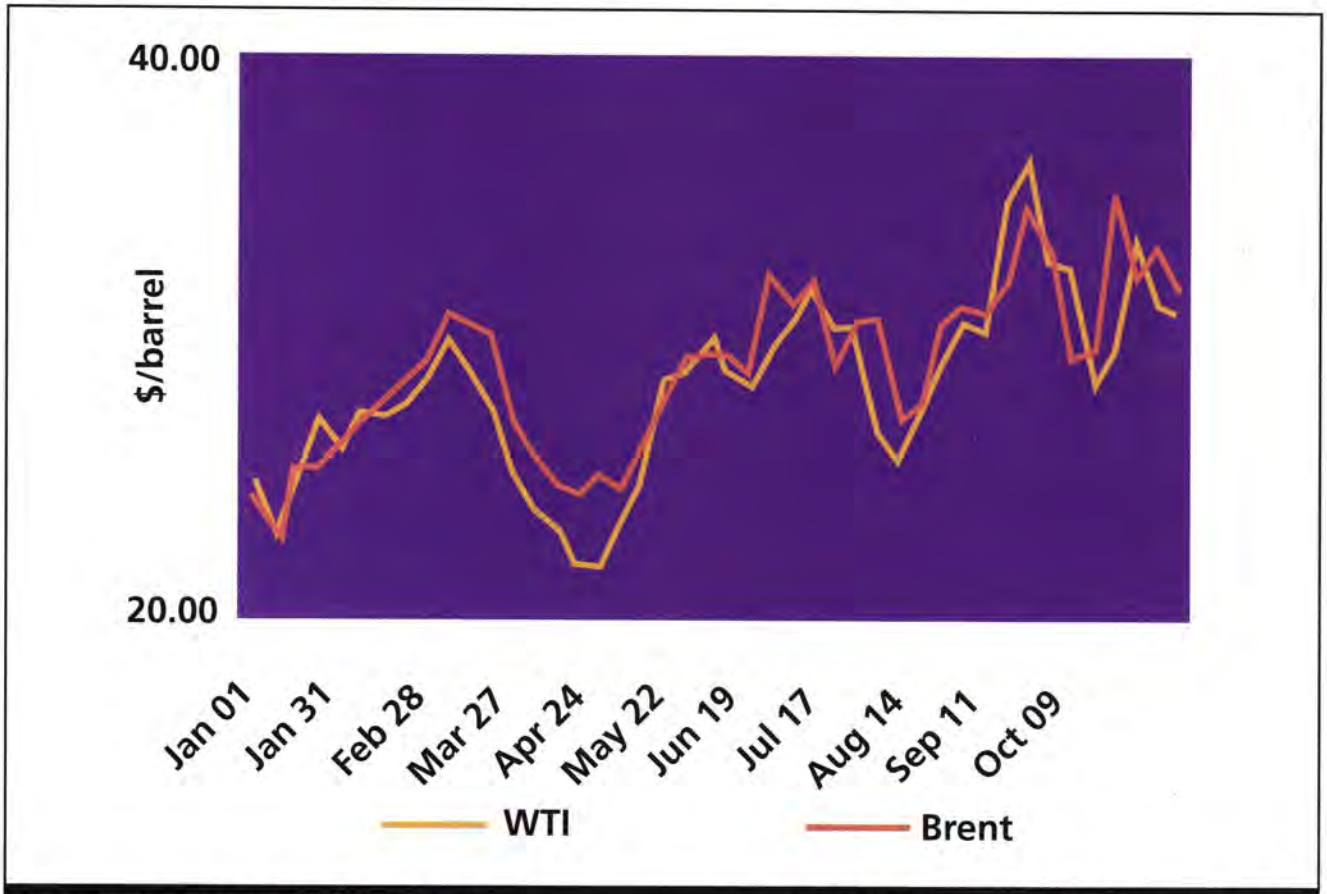

Figure 2: Spot crude prices for WTI & Brent in 2000 Source: Oil & Gas Journal, DOE Weekly Petroleum Status Report

greater oil spill risk for FPSOs than for any other deepwater development systems, thus opening the door for a company to apply for FPSO use in producing a given field.

The US Coast Guard, which also has the authority to oversee safety operations in the Gulf of Mexico waters, has announced that it will consider FPSOs as ships, and as such, will require them to have double hulls. Presumably it will not insist that they also have double bottoms as there is no danger of a FPSO running aground.

Royalty reform

The dispute between the oil industry and the MMS over royalty reform is expected to continue well into the year to come. Last March, after four years' of discussions and four draft rules, the MMS issued its final royalty reform rule dealing with how producers calculate cash royalties on production from federally controlled onshore, but not offshore, blocks.

The MMS says that royalties must be calculated in terms of spot-market prices rather than prices at the wellhead, and the industry is expected to continue to try to find ways to dispute the MMS ruling.

Pollution regulations

The US Environmental Protection Agency (EPA) was established to administer the terms of 1990 Clean Air Act and it has little leeway to alter its policies drastically once a new government comes to power, although it can postpone and modify decisions. It is reasonable to expect that EPA current policies, such as reducing and perhaps ending the use of MTBE in reformulated gasoline, requiring sulfur emissions reductions in vehicles, and stricter emission controls for electric utilities will continue.

It is also important to realise that many pollution controls come from state rather than federal regulations.

More uncertain areas

One reason for assuming that it will be business as usual for the US oil and gas industry in the short-term is that the Presidential Candidates, in their drive to win votes, promised changes that Presidents do not have the power to do without the support of Congress.

There are, however, circumstances under which a President can act on his own. A President – including Clinton while he remains in office – for example, can declare the Arctic National Wildlife Refuge (ANWR) in Alaska a National Monument. This theoretically could prevent the future production of Alaska oil and gas reserves in its coastal plain, estimated as between 5.7bn and 16bn barrels of recoverable oil.

The new President could also relax executive restrictions on oil and gas activity in areas currently off limits, but Congress could ensure that its restrictions remain in place. A President could relax restrictions on oil company dealings with Iran and Libya but, once again, Congress has the power to ensure that this does not happen.

There are, however, circumstances that could arise after the swearing in of a new government that could seriously effect the oil industry.

- If the new government was unable to restrain an escalated conflict between Palestinians and Israelis, and major Arab oil producers cut back on their oil production as a result, thereby affecting US oil supplies and prices.
- If a deadlocked federal government was a cause of stock market decline with severe repercussions for the economy, including the oil and gas industry.
- If severe winter conditions led to shortages and high prices for heating oil and natural gas and the new government was unable to do anything constructive to ease the situation.

Nothing, therefore, is engraved in stone.

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Strategic alliances target onshore prospects

Recently, smaller domestic exploration companies have joined forces with Canadian independents to bid for prospective landward licences onshore the UK and France. *Priscilla Ross* reviews the region's E&P history and assesses its future potential.

A minor boom in exploration activity within the onshore sedimentary basins of the established sedimentary basins of the UK and France was driven by the discovery of two significant oil fields at Wytch Farm, onshore the UK, and Villeperdue, onshore France in the 1980s. However, fiscal changes and the fact that subsequent discoveries were not of a similar magnitude led to the withdrawal of larger companies from these areas. The latest post-1995 upsurge in exploration activity has been dominated by two groups – smaller local exploration companies and transatlantic independents.

Initially, the transatlantic – mostly Canadian juniors – understandably tended to concentrate on maximising cash-flow by well workovers, horizontal side-tracks and in-fill drilling; leaving large tracks of prospective acreage under-explored.

More recently, smaller domestic exploration companies have been joining forces with the Canadian independents to bid for prospective landward licences onshore the UK and France.

UK awards

At the end of July 2000, UK Energy Minister Helen Liddell awarded 37 licences to 21 companies for onshore oil and gas exploration in England, Wales and Scotland in the 9th UK Landward Round of Licensing. The round attracted 57 applications from 30 companies for a total of 141 blocks. Over 60 blocks contain mines, gas and coalbed methane reserves.

Companies applying for licences were: Altaquest Energy Corp, Altwood Petroleum, Black Rock Resources (UK), Bow Valley Petroleum (UK), Cirque Energy (UK), Coalgas (UK), Coastal Oil and Gas, Courage Energy (UK), Edinburgh Oil and Gas, Egdon Resources, Emerald Resources, GeoMet (UK), Independent Energy Resource, Italmin Exploration, Lepco, Magellan Petroleum, Midmar Energy Onshore, Mustang Oil, Northern Petroleum, Roc Oil (UK), Stag Energy, Star Energy, Sterling Resources (UK), Technology Investment and Exploration, Wessex Exploration, and YCI Resources.

Liddell said at the time: 'The UK's onshore oil and gas industry has a strong future, as shown by the high level of interest in this round. The areas covered by the awards range from Scotland to southern England and include acreage never previously considered for oil and gas exploration. It is encouraging to see licences going to new applicants from both the UK and overseas.

One of the successful bidders was Egdon Resources, which, with its joint venture partners, was awarded 27 blocks or part blocks covering an area of 2,034 sq km – accounting for almost 50% of the conventional oil and gas exploration awards (excluding coal-methane resources). 'These licence awards are of great significance to Egdon. The company now has interests in three of the principal hydrocarbon producing areas of the onshore UK – the Wessex, Weald and Cleveland Basins.' said Andrew Hindle, Joint Managing Director of Egdon. 'All the new and existing licences are close to producing fields and several contain existing oil and gas discoveries.'

In the Weald Basin, Egdon has a third working interest in the PEDL069 licence that is operated by Sterling Resources UK. The licence is located in the western part of the Weald Basin, to the west and structurally up-dip of the Stockbridge and Goodworth oil fields. Both were discovered in the 1980s and produce from the Great Oolite reservoir, a Jurassic age carbonate. Further Jurassic reservoir objectives have been identified in an east–west structural trend on an oil migration route from Stockbridge/Goodworth. Initial work will include the reprocessing of existing seismic data to define prospectivity further.

The single block PEDL 070 located adjacent to PEDL069 is operated by Pentex, which also operates the nearby

IMC Geophysics vibrator trucks operating along Dorset lanes

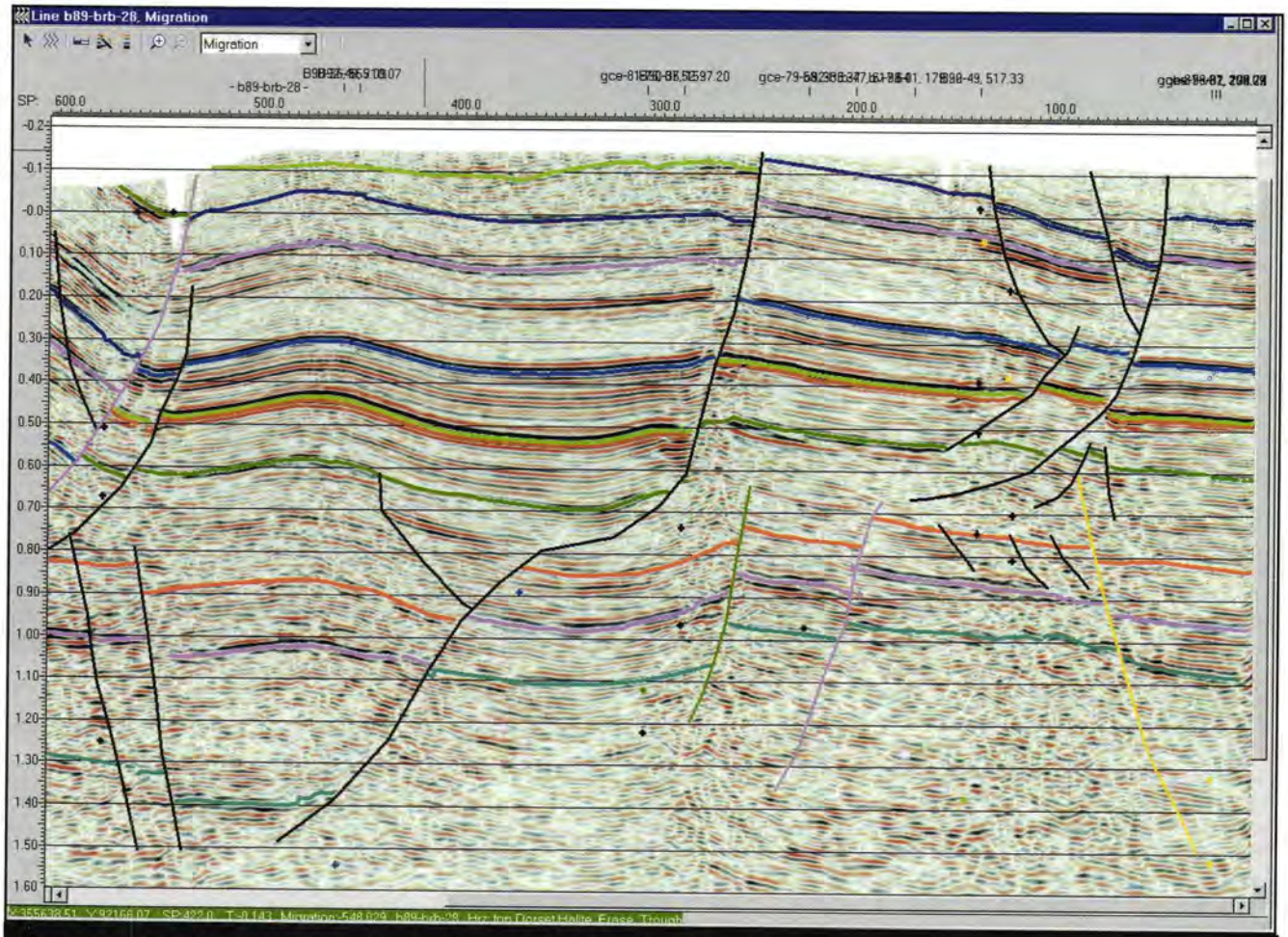

Figure 1: A modern 1990's seismic line showing the structural style in part of west Dorset.

Stockbridge and Goodworth oil fields. The block contains two Great Oolite oil discoveries drilled in the 1980s with oil columns of 40 metres and 27 metres. 'These accumulations will be re-evaluated to assess the commercial impact of horizontal drilling and completion techniques currently being successfully employed by Pentex in the Stockbridge and Goodworth fields,' stated Hindle.

In the Cleveland Basin, Egdon has interests in the licences PEDL068 and PEPL071. PEDL068 is operated by Sterling Resources and contains three known gas discoveries. The Kirkleatham structure was tested by two wells in the mid-1940s with barefoot unstimulated testing producing gas in both wells from the Permian Zechstein carbonates. The existing seismic shows potential to apply horizontal drilling and improved completion techniques up-dip of both existing wells in areas of increased faulting and fracturing. The Ralph Cross structure drilled in 1966 is reported to have flowed at a rate of 3mn cf/d from the Zechstein Carbonates. Gas was also discovered in the Haverton Hills-1 well. Drilled for salt in 1891, the well blew out and ignited gas down the wooden derrick.

Existing seismic is to be reprocessed and new 2D seismic acquired to reappraise these structures and to define an appraisal drilling location. Egdon has a 45% interest and acts as operator of the PEDL071 licence, with partners Sterling Resources and Lepco.

The primary target is the Lower Permian Rotliegendes sandstone which is productive at the Caythorpe gas field where flow rates of 10mn cf/d were achieved. The licence surrounds the Caythorpe field and the Marishes discovery that tested gas from Zechstein Carbonates.

Ten exploration wells have been drilled in the licence, with hydrocarbon indications in five. The partners plan to reprocess the existing seismic data to redefine prospects with a view to acquiring further seismic.

'Technological advances over the past decade have resulted in the commercial development of several UK onshore discoveries previously deemed sub-marginal. Hence Egdon and its partners may be in a position to add possible reserves to those at Waddock Cross on its PL090 licence,' said Abbott. PL090 is operated by the Calgary-based Bow Valley Energy. Possible and probable reserves at Waddock Cross are put at 7mn barrels.

Egdon's other Wessex licence is PEDL048, which is also operated by Bow Valley – acquired in the 8th Licensing Round. Together with PL090 and 9th round award PEDL072 they cover all of the western and central parts of the prominent feature known as the Central Wessex High which was the focus for oil migrating from the major oil kitchen to the south.

Egdon's licences are on-trend and up-dip of the 450mn-plus barrel Wytch Farm field, the most prolific producer of all onshore oil fields discovered in Western Europe to date. Wytch Farm is the UK's most abundant source of easily accessible oil supply. British Gas was forced to sell its share in Wytch Farm during the first tranche of the Thatcher Administration's privatisation moves. This was also the impetus for the establishment of several junior UK independents such as Carless Capel, Clyde, Goal and Tricentrol, none of whom have survived the subsequent propensity of the industry to consolidate.

Attempts to discover analogues to Wytch Farm, both on and offshore have proved disappointing and abortive

with many of the exploration wells not even recording oil shows. This is the unresolved oil migration mystery which, if unravelled, could give onshore UK oil production a new lease of commercial life.

The Sherwood structure at Wytch Farm is full to spill point. 'Attempts to discover oil up-dip of the structure have not proved successful to date,' explained Hindle. Egdon and partners have reinterpreted well data and previous seismic over the entire Wessex Basin and this has led the company to conclude that all previous wells in the area were drilled either off-structure or in petroleum-migration shadows. 'In some cases velocity conversion problems resulted in wells testing phantom highs but in reality were poorly located.'

The Bow Valley Energy led consortium has identified a dozen sizeable Sherwood closures with reserve potential of a collective 300mn barrels. None of the closures have yet stood the test of the drill bit – however, three closures are now ready to drill subject to the granting of full planning permission.

Egdon's Woolcombe Farm prospect has the potential for 50mn barrels and the plan is to drill in 1Q2001. Success with Woolcombe Farm would confirm the validity of the migration theory, greatly improving the probability of similar finds in the other dozen mapped Sherwood prospects which collectively, according to Egdon and Bow Valley, have reserve potential the equivalent of Wytch Farm – around 1bn barrels.

French prospects

No less prospective but at an earlier stage of evaluation is the Paris Basin. Vermilion is a mid-size international oil and gas exploration and production company and the third largest producer of crude in France. It has two Paris Basin onshore prospects. Success in the larger field alone, Vexin, could double the company's reserves. Vexin lies on trend with seven producing fields, including the Esso-operated Chaunoy field (90mn barrels of oil). This field went into production in 1983 and remains one of the largest fields in France. Vermilion estimates potential oil in place of 256mn barrels for Vexin.

In 1999 Vermilion, Egdon and Bow Valley were invited by the French Ministry to enter into a joint venture on the Chante Merle licence. The Paris Basin contains more than 60 fields with aggregate reserves of over 450mn barrels, principally in Jurassic (Dogger) and Triassic (Keuper, analogous to the Sherwood) reservoirs. Chante Merle is less than 15 miles northwest of Villeperdue (75mn barrels of oil) and of comparable size according to Egdon. It has the potential to contain at least 30mn barrels recoverable in the Dogger reservoir.

Egdon management reviewing the readings on their interpretation workstation (Left: Andrew Hindle, Right: Mark Abbott)

The Chaunoy (Keuper) and Villeperdue (Dogger) fields, which together account for 35% of the 450mn reserves total, sparked an exploration boom in the 1980s which dwindled at the end of the decade as larger companies which had dominated the play had a corporate strategy rethink. As in the UK, there has been a recent revitalisation sparked by Calgary-based companies led by Vermilion. Infrastructure is readily available. Even a 1mn barrel discovery can be a commercial proposition and there are several fields of this size already in production.

The northern part of the Paris Basin missed out on the boom years post-1974, accounting for only 3% of wells drilled, partly due to the haphazard distribution of acreage and a lack of success attributed to velocity ambiguities resulting from the existence of overlying Tertiary sediments of variable occurrence and thickness. The Liassic age shales, which are the source rock of the Paris Basin fields, are mature for oil generation. Egdon has a joint venture with Bow Valley as the operator on the St Jean aux Bois licence and on Chante Merle with Vermilion as operator, and both have prominent nose features identified but yet to be tested by the drill bit.

In the longer term there could be significant potential in pre-Triassic formations; in particular Egdon considers that reservoirs below the Keuper in the Chante Merle blocks could be gas-bearing, sourced from carboniferous coals. Evaluation of the prospectivity is at an early stage but a number of leads have been identified principally in the Dogger which could have significant potential. There is a commitment well on the Chante Merle licence, provisionally scheduled for 2003. Vermilion will take on the role as operator when an exploration well is drilled. Drilling on the other blocks will be conditional on results from reprocessing of existing seismic and a further 2D survey across the whole acreage, planned for 2001.

Renewed interest

In the 1980s the discoveries of Wytch Farm onshore the UK and Villeperdue onshore France created interest in these exploration plays – but encouraging discoveries were unsustainable and larger companies withdrew. Post-1995, only transatlantic independents and emergent smaller local companies were left. For them, favourable prospect sizes, political stability in the UK and France, and favourable fiscal terms combined with improvements in technology made these two oil exploration patches worthy of further investigation.

State of the art computer software systems to analyse oil migration patterns and to predict where trapping might occur are now positioning these companies in highly prospective onshore plays – at a time when hydrocarbon prices are skyrocketing and demand is growing despite Opec production continuing to expand and tension rising in the Middle East.

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Tuesday: 20 February

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Thursday: 22 February

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For a copy of the complete programme of events, please contact:

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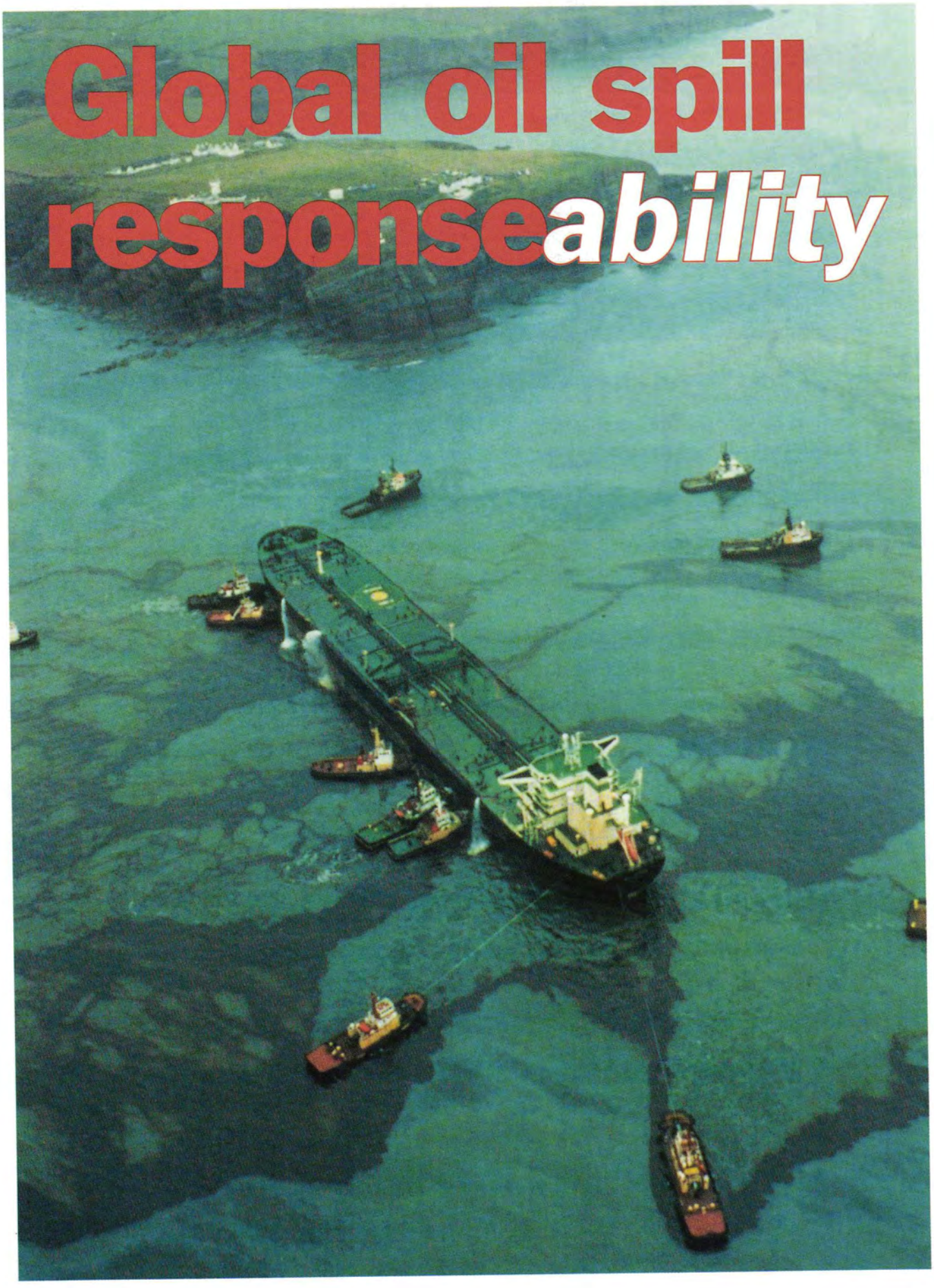
Global oil spill responseability



Oil Spill Response Ltd's (OSRL) 3.5-acre site at the port of Southampton boasts the world's largest international stockpile of Tier 3 oil spill response equipment. The company is on call 24 hours a day, 365 days a year, and claims to be capable of attending an incident anywhere in the world. *Petroleum Review* talked to *Archie Smith*, Chief Executive and Director, OSRL, and *Mike Payne*, Chairman, OSRL, and Manager-Health, Safety, Environmental & Quality, Enterprise Oil, to find out more about the company and the key drivers in the global oil spill response market.

Left: *Sea Empress* spill, Milford Haven, 1996
Right: OSRL base, Southampton

Q: When and why was OSRL set up?

A – *AS:* We were originally established by BP in 1980 to investigate the effects of oil on water and to develop appropriate gathering techniques following the *Torrey Canyon* incident. As more companies joined the effort, Oil Spill Response became a limited company in 1985. We are a cooperative of some 27 oil companies, owned and operated on a non-profit making basis by the industry for the industry. Each member company pays an annual subscription – the size of which reflects the size of the individual company – and each member company has a Director on the OSRL Board. In the event of an oil spill, the company whose spill it is pays an extra sum of money to use our equipment and expertise. We also provide our services to third parties.

Although we are obviously here to provide a global oil spill response service, it is important to emphasise that we want to generate *awareness* and *create better preparedness* to help oil companies avoid incidents in the first place and, if they do happen, to minimise the impact. That is key issue here – not making money.

Q: What happens in the first instance when your services are called upon?

A – *AS:* The first thing we need to establish once we receive the initial telephone call is who the company is, what type of oil has been spilt, when it happened, how much has been spilt and where it is located. Our response staff is then mobilised and sent to the spill site where they will coordinate the clean up operation. OSRL has its own broker, who can charter an aircraft anywhere in the world. We also own a Hercules, which is capable of carrying 21 tonnes of equipment, including our specially developed ADDS (airborne dispersant delivery system) pack [see front cover]. While OSRL staff are being mobilised, the oil company at the spill site sorts out local requirements – such as boats, cranage, transport for OSRL staff to the oil spill site from the nearest airport – so that all is assembled for our staff once they get there. Our team can then coordinate the appropriate containment and clean-up plan of action.

Q: Were you involved in the response to the *Erika* incident?

A – *AS:* Yes, we were. We immediately mobilised our heavy shoreline protection equipment but, unfortunately, because the weather was so atrocious only a limited amount could be deployed. We were also involved in lighter shoreline protection once the oil reached shore. Since then, we have been involved in providing technical advice on the clean-up and recovery process. In fact, we still have a man down there, coordinating the final stages of this process.

Q: What other incidents has OSRL recently attended?

A – *AS:* Following on from *Erika*, we responded to an emergency in Brazil – Petrobras had a fuel oil spill coming from an underwater pipeline in Guanabara Bay, an environmentally sensitive mangrove area beside Rio de Janeiro. We chartered a 707 plane, loaded it with 17 tonnes of equipment in pre-packed, palletised containers,

Sunken barge off Sharjah, UAE, 1999

and flew a team of people down to Brazil within 24 hours. A shoreline and aerial survey of the Bay was conducted and protective booms were placed across the waterway inlets in the Bay to safeguard the mangroves. Our team then coordinated the efforts of some 1,600 local volunteers to carry out an intensive clean-up of the shoreline affected by oil deposits that had already reached land.

While attending the oil spill in Guanabara Bay, OSRL was also asked to provide technical advice on a spill in the Amazon River near the city of Belem, where a barge with heavy fuel oil had sunk. We provided assistance with containment and offered recovery advice during the salvage operation.

Following that, there was a spill in the Middle East where a barge went down. Again, we shifted equipment from Southampton to the Middle East in a very short space of time. More recently, in October 2000, we attended a major spill offshore Singapore – where we sent people down to assist our alliance partner East Asia Response Ltd (EARL). At the same time as that, one of our shareholder companies had an incident in Madeira – we flew our Hercules with equipment, and sent people on commercial aircraft. At this time, we were also responding to a small spill in the Cameroons.

So, in October, we had spill responses operating in four countries, on three continents, and we had training courses running in both the Middle East and Nigeria.

Q: That's quite a lot of incidents to be attending at one time – just how big is the OSRL team?

A – *AS:* The total team is about 42 strong, including myself and Mike. We have 30 response staff, with a team of about 12 attending a 'typical' major incident. As you can see, we are quite a small team. However, the thing to remember is that we are using the *expertise* of our staff to help lead a team of local people.

MP: As an example, if there was a spill on the coast of the UK, you would have one of our people acting as the Beachmaster, working with the local council on the clean-up operation. In the case of *Erika*, we currently have one man down there with a landrover, keeping an eye on the equipment, making sure it is in the right place at the right time. There are lots of local contractors at the scene and labour is not an issue – our man is providing the technical expertise at the operational level.

Q: Have you been involved in any unusual incidents?

A – *MP:* Each incident is unusual in as much as each almost always results in a significant environmental threat that is peculiar to the site – special features that OSRL has to be sensitive to. If you take the *Sea Empress* spill for example, it was in an area where there were commercial fishing interests at risk, it was also an area with a lot of tourist interests and related businesses were threatened, and there were also a number of SSCI (Sites of Special Scientific Interest) areas in danger that required specific protection.

AS: Although Mike is right, there have been a few projects that have been slightly out of the ordinary. For example, there used to be a whaling station operating out of Grytviken harbour, South Georgia, in the South Atlantic. The site closed down in the 1920s – the people literally abandoned it, walking away and leaving the whaling boats. South Georgia is a UK dependency and we were recently asked to advise on how to safely remove the oil from three of the whaling vessels that had started leaking. We plan to complete the project in 2001.

We have also surveyed a ship sunk offshore Iceland in the last days of the Second World War and are providing advice on how to remove oil from the vessel. We are not acting in a salvage capacity – but are there to ensure that any methods the salvors use minimise the impact to the environment and, that if there is a spill during the salvage operation, we can contain it and prevent any further damage to the surrounding environment.

Q: Could you outline some of the most recent new developments at OSRL?

A – *MP:* We are a global response organisation and it is important that we can get to wherever we need to be as quickly as possible. Clearly, if we only operated out of Southampton, then getting to the other side of the world would take considerable time. We therefore built an alliance with East

Asia Response Ltd (EARL) of Singapore in order to improve our performance globally. Any of our members has the benefit of being able to expect a response from either Southampton or Singapore. Both organisations have Hercules aircraft on permanent standby, and both own and operate an ADDS (airborne dispersant delivery system) pack as well as numerous other Tier 3 response equipment.

We are currently in the process of building that alliance approach on a worldwide basis and are in discussions with many of the other oil spill contractors. The recently announced relationship with Briggs [see *Petroleum Review*, November 2000] and the way in which we service the North Sea is part of this alliancing process. The two organisations operate small, rapid response aircraft that provide an early wave of dispersant spraying. A surveillance aircraft is also available, with Hercules back-up from OSRL. Combined, we can offer a very fast response via a very flexible system. We want to encourage other contractors to work with us this way, rather than competing which isn't in the industry's best interests.

We also get involved in technical developments. We have a technical committee that benefits from other cooperatives sending members – for example, Clean Carribean, CEDRE in France, NOFO in Norway and MSRC in the US have all contributed to the debate. We are not only looking at new equipment developments, but also at developing strategies to respond in a better way to particular types of incident.

One of the considerations at the moment is to look at the way in which chemical spills might be responded to – establishing whether the particular skills that OSRL has may be suitable for chemical spills. There is currently no organisation that attends such incidents in the same comprehensive way in which OSRL services the oil industry.

The logistics issue is also very important – getting where we need to be more quickly and more cost-effectively. The development of our self-contained offloading rig, which is designed to fit onboard any large commercial aircraft and offload equipment at remote locations, was part of this drive.

AS: As part of the logistics issue, we have specifically designed our spill response equipment to fit in modularised packs for shipping on pallet stations in the belly freight cargo spaces on conventional passenger and cargo aircraft. This allows us to ship equipment far more cost-effectively than chartering an aircraft at a cost of some £120,000. It also allows us to send individual units according to the level of response required.

MP: We are also currently developing a palletised modular version of the ADDS pack on our Hercules. The modularised 'Nimbus' unit can be shipped in pieces by a conventional cargo aircraft and constructed on site, then operated from a regionally-sourced Hercules. Ground and flight testing are scheduled for the early part of next year. The development cost is around £500,000.

Nimbus will help improve our response service. It will allow dispersant spray operations to commence much earlier than with current equipment – a factor that is particularly important in dispersant application as dispersant effectiveness on crude oil deteriorates with the passage of time.

AS: Our Southamption base also offers test tanks – the only ones in UK – where manufacturers can test their new kit. So, as you can see, we are involved quite heavily with product development.

Q: What have been the major driving forces and what future developments do you anticipate in the oil spill response sector?

A – *MP:* I think the essential development over the past five years has been the way the management process has become more sophisticated. We have contingency plans in place well ahead of time, developed in a very detailed way by a combination of OSRL staff and oil company personnel, and which have been tested thoroughly to make sure that it all works and that every one taking part knows what they are doing.

AS: The major driver is improved preparedness. Effective response relies on contingency planning, training and regular exercises. We spend most of our time training, planning and exercising with the oil companies – some 4,000 man days on 80 courses in 15 countries so far this year.

Q: What regulatory restrictions are there on your operations?

A – *MP:* There are some regulatory constraints on where we can use particular dispersants – these are constantly under development and tend to reflect the way in which industry uses chemicals in general. We always have to be up to speed with what is the best dispersant to use and whether it is chemically acceptable. Usually it is the operating oil company that is responsible for ensuring that the right dispersant is used, but, since OSRL operates on behalf of the oil companies, it too shares that responsibility.

Some of the things that we have done have been stimulated by changes in regulations. The North Sea is perhaps a good example, where oil spill regulations changed at beginning of 2000. Our relationship with Briggs developed largely in response to satisfying these changed regulations which required more prescription in terms of the speed of response and the level of surveillance deemed necessary.

Q: Are there any pending regulatory changes that are set to impact your operations?

A – *MP:* There is a whole trail of regulations in the UK – OPRC (Oil Pollution Preparedness, Reporting and Cooperation Convention (1990) and IPEPC – that will require us to properly understand the combined effects of the impacts we create by dealing with an oil spill. For example, it will not be enough to be conscious only of the way in which dispersant chemicals might impact the scene, but we also need to understand the longer-term effects of oil within the water column as well.

Q: You have already indicated that OSRL is involved in training as well as providing a global Tier 3 oil spill response service and developing new equipment. What else does your company do?

A – *AS:* We recently developed a Tier 2 UK Response Network in direct response to the changes in the UK's OPRC legislation for ports, harbours and oil handling facilities. We also offer an inshore response service for coastlines, estuaries and rivers, as well as onshore coverage – where the approach is slightly different as, unlike oil on water, oil on land doesn't spread... if it does spread, it is usually via a water course, travelling underground.

We also deal with onshore pipelines. For example, a few years ago the Caspian Pipeline Consortium (CPC) wanted to renovate an old Russian oil pipeline which linked Baku to the Black Sea, via Georgia. We travelled the full length of the pipeline, checking every location, helping set up contingency plans, and dealing with any spills during the renovation process. The whole project took 18 months to complete.

Q: What does the future hold for OSRL?

A – *MP:* We will continue to look at ways to develop our core expertise to respond to demand. Although we haven't had this debate in-house as yet, I can see the way in which the recent flood events are changing circumstances – you are now likely to have during the winter vast tracts of land that will be covered with water contaminated with oil and many other things. In time, there may be demand for OSRL expertise to deal with this contaminated water – in terms of planning the way a response plan is handled and coordinating the response teams. I envisage that this core expertise will have many other applications in the future.

A little spark in the offing

As petroleum and electricity markets coalesce, an exciting technology that straddles both energy forms is emerging. *Gordon Cope* examines microturbines and their impact.

At an oil site near Wainwright, Alberta, a technician tends to an ungainly contraption that appears to be a large keg of ale with a flue pipe at one end and an electrical cord at the other. It is, in fact, a microturbine, capable of generating enough electricity to power several well pumps. 'The wells contain non-fuel spec solution gas that was traditionally flared,' says Terry Becker, a Senior Electrical Engineer for the Power Group with PanCanadian Energy Services (which is a division of PanCanadian Petroleum). 'Microturbines reduce the amount of flaring by converting some of the raw gas into electricity.'

Microturbines represent the leading edge in 'distributed generation', a revolution that is sweeping the electricity sector. If they deliver what they promise, they may ring the death knell for the 'Gigasaur,' the immense electrical generating facilities that currently dot the landscape.

For the last century, the vast majority of power used in North America and Europe has been generated at large, isolated facilities – hydroelectric dams, coal-fired generators, nuclear plants – and distributed by high-voltage transmission lines. *The Power Report*, a publication of the American-based Gilder Group, notes that the US power grid alone has about 15,000 plants with 760,000 MW of capacity, and delivers approximately 3tn kWh per year.

The advantages of such a system include reliability and cost-effectiveness. The North American grid delivers power for as little as two cents/kWh, and operates at 99.9% reliability, or roughly eight hours of outages annually for the typical consumer.

Distributed generation, on the other hand, relies on a large number of small power sources located relatively close to their consumption points. The generators are generally in the order of 1 kW to 100 kW output (100 kW would supply the approximate energy needs for a 30-unit flat). *The Power Report* reckons that there is already some 80,000 MW of non-utility, stand-by generating capacity, most of which is in the form of diesel-generator sets. 'Already a $5bn global market, we say it will be $30bn in five years,' notes the report.

While distributed generation is still a tiny portion of the trillion-dollar sector, its impressive growth rate is being spurred by four factors – deregulation, reliability, environmental concerns and efficiency.

Recently, *The Economist* noted that the UK, Scandinavia and New Zealand have already completed deregulation of their domestic electricity sectors. Approximately half of American states are legislating deregulation of their electricity systems to encourage competition. In Canada, the provinces of Ontario and Alberta have initiated auction schemes to similar ends. The monopolies that characterise regional generation are thus being forced to cede market share and transmission-line access to independent competitors.

Many high-tech sectors are also discovering that traditional power grid reliability, measured at 99.9% (or 'three-nines' as it is colloquially known), is insufficient. Dot-com and telecommunications companies require upwards of 'six-nines'– 99.9999% reliability, or less than 30 seconds outage a year. To achieve that level of performance, they are purchasing back-up forms of generation that can deliver power in a pinch.

The Kyoto Protocol, an international agreement that limits the amount of greenhouse gas emissions, is also beginning to make itself felt. Large, coal-fired generators are seen as major contributors to greenhouse gas emissions and alternatives are being sought in order to meet agreed-upon targets.

Finally, the efficiencies, or ability of various new forms of power generation to convert fuel into electrical energy, are approaching the performance of large electrical plants. Some can now deliver power for as little as four cents/kW.

Alternative generating systems

Various types of alternative generating systems have emerged to exploit the distributed generation market. The most ubiquitous system is the combination of reciprocating engine and generator, or gen-set, in which a diesel or petrol-fired reciprocating engine turns a generator. It relies on proven technology, good efficiency and widespread sales and maintenance systems.

Other systems, including solar power, wind power and fuel cells, have various drawbacks that limit their effectiveness. Solar and wind power only work when the sun is out or the wind is blowing, and fuel cells rely on hydrogen, a source of energy with an undeveloped distribution system.

One technology however – the microturbine – has a chance to rival gen-sets in the distributed generation field. The Gas Research Institute recently published a study on the growth potential for microturbines over the next decade. It predicts that the market will be worth between $2.4bn and $2.8bn by 2010.

A microturbine consists of a single shaft on which a compressor and turbine wheel are mounted. It also supports the electrical generator alternator rotor. There is only one rotating part, and no gearbox.

There are currently four major microturbine manufacturers – Capstone Turbine Corporation, Elliott Energy Systems, Honeywell Power Systems and Turbec, a joint venture between ABB and Volvo.

Capstone, founded in 1988, was the first company to develop a commercial product on microturbine technology. 'We had three big goals: lower emissions, lower cost and high reliability,' explains Keith Field, the Director of Communications for Capstone Turbine.

In order to achieve its goals, Capstone essentially scaled-down a jet engine. The device runs on a variety of liquids and gas fuels, which are compressed and injected into a continuous combustion chamber. There, the fuel is burned at 1,600°F, and the gas passed through a turbine wheel that rotates at 96,000 rpm. A permanent magnet generator, built into the rotating shaft, generates 30 kW of electricity, enough to power a 10-unit flat.

Watt's the advantage?

At first glance, the traditional gen-set, which costs around $12,000, has a price advantage over the Capstone microturbine, which sells for $25,000. 'When compared with a reciprocating engine system, the Capstone microturbine is twice as expensive to purchase in terms of cost per kilowatt, but it is much

cheaper to operate,' comments Field. 'We recommend you change the air and fuel filter after 8,000 hours of operation (11 months).'

The microturbine also produces electricity at competitive rates. When capital and maintenance costs are factored over the 40,000-hour (five-year) life of the device, the cost of power hovers in the four to five cent per kW range, approximately the same as residential consumer rates.

Microturbine technology is also much lower in emissions. 'Capstone is the world's cleanest combustion process,' claims Field. 'We guarantee 9 ppm or less of NO_X emissions. It's 75% cleaner than a compressed natural gas reciprocating engine. Diesel engines are over 1,000 ppm.'

The efficiency of a microturbine (27%) is less than a reciprocating engine (35%) or coal-fired plant (35%), but the excess heat and exhaust gases generated by the microturbine can easily be harnessed. 'When you add in the heat, it's 70% efficiency, and when you utilise the exhaust, it's 90%,' says Field.

So far, two commercial markets for microturbines have emerged – transportation and resource recovery.

Originally, the Capstone microturbine was envisioned as part of a hybrid electric vehicle, or HEV. In an HEV, the wheels are driven by battery-powered electric motors. The microturbine extends the range of the vehicle by burning natural gas and replenishing the batteries. 'So far, Capstone has shipped 150 units around the world,' says Field. 'The units are installed in buses and sold to city transportation departments.'

The second market, that of resource recovery, focuses on waste gases from various sources, including land fills and oil fields.

Landfills generate unwanted gases as their organic contents decompose. Recently, the city of Los Angeles tested a Capstone microturbine at its Puente Hills site, where a mixture of methane and hydrogen sulfide was emanating. 'They compressed the gas and injected it for 2,000 hours and tested it for emissions,' notes Field. 'We had 1.3 ppm NO_X.'

The oil and gas sector has also proven a fertile market, with over 75 units purchased. 'There's a need for remote operators to have power on site,' explains Field. 'The microturbine can take casing or wellhead gases directly and use them as onsite fuel. It also effectively destroys harmful gases, such as H_2S [hydrogen sulfide].'

During the mid-1990s, solution gas flaring had become an issue in the Canadian oil patch. At the time, approximately 5,500 flares around the province were burning off almost 1.7bn cm of solution gas every year. Open pipe flares burn with maximum efficiency only when weather conditions are ideal and the methane is pure, however. Impurities in the gas, such as benzene, toluene and xylene, reduce combustion efficiencies.

Production Operations Foreman James Hennig starts one of two Capstone MicroTurbines™ installed by PanCanadian in October 1999 at the Wainwright oil field in east central Alberta.

Microturbines represented a solution to several problems. They generated useful electricity, were relatively inexpensive when compared with running power lines over distance, and burned raw solution gas with as much as 7% H_2S, with negligible emissions.

In 1997, PanCanadian began working with Capstone, testing several field prototypes on raw solution gas for efficiency, reliability and emissions. 'Reducing flaring was part of the rational – we were seeking out additional methods of being environmentally friendly,' says PanCanadian's Becker. 'But we wanted to move from preliminary field testing to full commercial application.'

The oil company identified four main applications: reducing flare gas; stand-alone prime power; stranded gas production (taking the commodity to market as electricity instead of gas); and providing power quality and reliability to facilities.

PanCanadian purchased seven microturbines. In addition to the field site near Wainwright, Alberta, the company operates a second set of microturbines at the Brooks gas field. There, the units offset electrical costs to the site by burning solution gas to supply power to the cooling fans (that help increase the shaft power to the main compressors).

It also has a third set at the Pelican Lake heavy oil field in Northern Alberta, where the microturbines act as a stand-alone power source, burning solution gas in order to power the pumps that draw the oil to the surface. 'Stand alone power production was chosen as a more cost effective and reliable solution over the cost of having distribution wires constructed into the site,' comments Becker.

In all three situations, PanCanadian is pleased with the performance, reliability and efficiency of the units. 'We have plans to purchase more microturbines,' says Becker. 'We are continually looking for additional applications. Manufacturers need to get sales volumes up to get prices down, however.'

So far, Capstone has delivered almost 400 units. In order to achieve manufacturing economies-of-scale, it must move beyond transportation and resource applications, and into major opportunities with manufacturing, telecommunications and Internet companies (where power quality and relia-

A PanCanadian operator stops to check two Capstone MicroTurbines™ installed in October 2000 at the company's Wainwright oil field. The turbines burn about 9,000 cf/d of natural gas, generating about 28 kW of electricity, sufficient to power the rotary oil well pumps seen in the background.

bility are advantages), and distributed power supply (where surplus power is cycled into the regional power grid).

Electrical resistance

For that to happen, however, manufacturers must overcome a tangle of regulations and technical restrictions that have arisen during the growth of the electrical sector over the last century.

Most generation facilities and transportation grids fall within regional and municipal jurisdiction and control. 'The downside is that there are a lot of rules and regulations when you apply for grid interconnection,' notes Field. 'There are 1,500 different utilities in the United States, and you have to go to each and ask for requirements for interconnection. Many of the regulations are outmoded.'

For instance, a power supplier needs 'protective relay functionality'. 'Let's say someone drives into a telephone pole, and a local portion of the grid goes down,' explains Field. 'You need protection against power coming back down the line from your generator when they're trying to fix it.' Traditionally, protective relay functionality has been provided by a separate, expensive piece of hardware, but Capstone has built it right into its unit. 'But the regulations say you still need that hardware.'

PanCanadian, which is looking to connect its surplus energy up to the regional power grid and has run into similar problems, is confident that the issues will be resolved within the year. 'The industry, both stakeholders and distribution companies, are working together to make the process easier,' says Becker. 'We are making progress.'

Ultimately, microturbines may find their most important market not in developed countries, but in Third World jurisdictions. Non-government organisations (NGOs) and private operators are examining the potential to finance and build micropower operations in areas where there is insufficient, or non-existent, power grids.

In a recent paper, Dr Ake Almgren, CEO of Capstone, noted that the Three Gorges hydro development in China will take $60bn and 17 years to create 18,000 MW of power, at a capital cost of $3,300/kW. That same output could be achieved with about 630,000 Capstone systems. 'In such quantities it would cost less than $400/kW (at a capital cost of $7.3bn),' notes Almgren. 'Too bad microturbines were not available in 1992, when Three Gorges was ratified.'

Petroleum review 2001 Features List

If you would like to submit an article to be considered for publication in Petroleum Review, please make sure it reaches us no later than the first of the month preceding the issue date – for example, by 1 February for the March issue.
Please send copy to *Petroleum Review*, 61 New Cavendish Street, London W1M 8AR.

February

- Latest developments in the Middle East
- Industry financing
- New oil and gas development concepts

March

- Seismic and geological data interpretation
- IP Week report
- Caspian overview
- *Retail Marketing Survey*

April

- Oil and gas developments in Russia & Eastern Europe
- Latest developments in company management
- Fuels distribution

May

- Pipeline survey
- Alternative fuels
- Oil and gas developments in Africa
- Lifetime Learning update

June

- Oil and gas trading: recent developments
- Latest drilling technology
- Current industry research
- Oil and gas developments in the Caribbean and Latin America

July

- Environment/Climate change
- Refining developments and new projects
- Gas developments – LNG, GTL etc

August

- Bulk storage and terminals
- Latest oil and gas developments in North America
- Reserves/Enhanced recovery update

September

- North Sea/Atlantic Margin fields survey
- Subsea and deepwater update
- Industry regulation – latest developments

October

- Latest oil and gas developments onshore Europe
- Decommissioning update
- Aviation developments

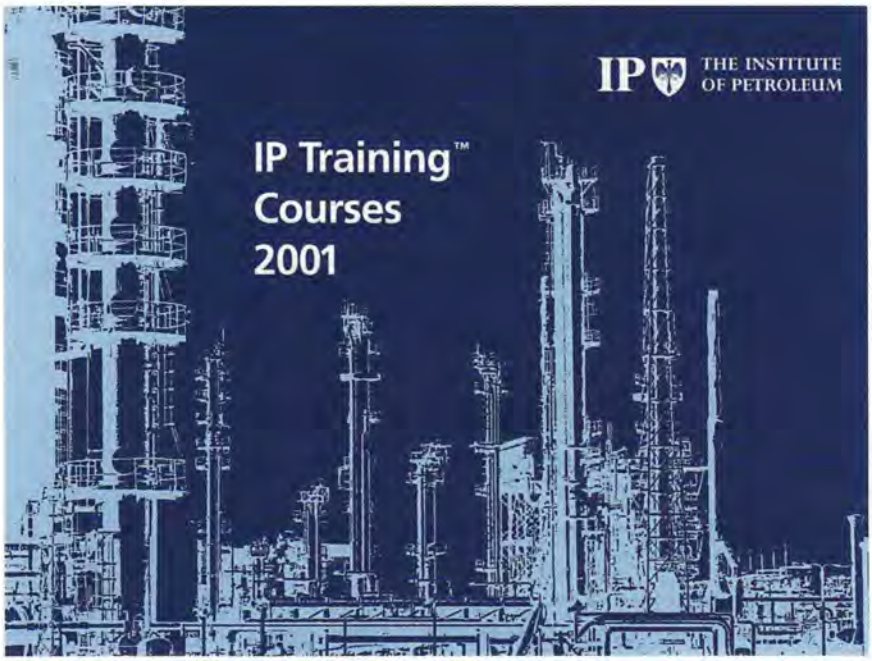
November

- Latest developments in Asia-Pacific
- Lubes and greases
- Gas-to-power update
- IP Awards 2001

December

- Australasian oil and gas developments
- E-commerce in the oil and gas industry
- Crude and products shipping

While it is our intention to adhere to this plan we reserve the right to change it in the light of new developments



More courses, more delegates, more countries...

One word sums up the activities of the Institute of Petroleum's Training Department in 2000 – hectic, writes *Nick Wilkinson*, IP Training Business Manager.

Looking forward to 2001 and the training courses planned for it, we are proud to announce an even greater range of courses to be offered and look forward to a challenging and rewarding year ahead.

New training courses

Following the successful launch of the portfolio of short training courses in 1999, the size of the programme was doubled in 2000. A number of entirely new courses were introduced and additional training partners recruited. These have been selected on the basis of their reputations for delivering quality training, with specific relevance to the oil and gas industry and the needs of its personnel.

The new courses include: Aviation Jet Fuel, Maritime Jurisdiction and Boundary Disputes, Environmental Risk Management, and the Introduction to Lubricants – organised in association with DERA, IBRU, Cordah, and Ward Associates, respectively. These new courses proved highly successful with many of the sessions filled to capacity.

All of the existing and established courses will be run again in 2001. In addition, four new courses have been added. These are: Refining - Advanced Process Control; Benchmarking - Financial Performance Management in the Oil Business; Cultural Awareness - Managing Cultural Differences; and Intorduction to Lubricants.

The suite of Trading Courses, directed by John Dobson of Invincible Energy and assisted by Daniel Carr of Nymex, proved incredibly successful. So much so that it has been necessary to secure larger teaching rooms and additional accommodation at the Moller Centre, Cambridge, in order to cope with the growing number of delegates. This we hope will avoid the introduction of 'waiting lists' for those wishing to join the courses.

The quite extraordinary demand for all the IP's training courses means that we strongly recommend that delegates register as early as possible to avoid disappointment.

Global reach of a global business

Extended visits undertaken by IP training personnel to a number of Middle and Far East countries in 2000 have contributed to the overall success of the training programme by forging closer links with key users of the courses.

As the success of our courses has become more widely known, we have attracted a record number of delegates from all over the globe. Recent attendees have included those from: Argentina, Brazil, Colombia, Australia, the US, Canada, Kenya, Indonesia, Cambodia, Malaysia, Thailand, countries all around the Mediterranean,

'The International Boundaries Research Unit (IBRU) at the University of Durham has been delighted to begin a collaboration with IP training in 2000. We fully expect our relationship to be strengthened in the future with an increased number of co-hosted events. The IP provides IBRU with important exposure and contacts for its continued success.'

the Scandinavian countries, Latvia, Eire and most Middle East countries.

Further representations are planned for 2001, in such countries as Algeria, Chile and Mexico.

For 2001

The new IP Training Courses 2001 brochure was published last September and is now available in full colour.

The IP's stated objective is to maximise the use of e-technology and associated systems whenever possible. In order to facilitate the dissemination of information and speed the secure delivery of all our training related matter we will make increasing use of the website (**www.petroleum.co.uk**) for course information, the despatching of invoices and for course joining instructions to delegates.

'Cordah is proud to be a training partner with The Institute of Petroleum. We value the relationship greatly, and are delighted with the potential project opportunities that have arisen. Cordah looks forward to a long and rewarding association with The Institute.'

For the first time, the very popular 'Introduction to Oil Industry Operations' course will be run in June and then repeated in the Autumn to catch, amongst others, the industry's new starters.

The full 2001 calendar is summarised opposite.

A word of thanks

The IP would like to take this opportunity to thank all of its training partners and guest speakers for their help in making the past year such a success and for delivering tangible skills to their audiences.

In addition, our thanks go to all the delegates who supported us in 2000, especially to those who travelled thousands of miles to be with us.

For information on all IP Training Courses, please contact:
Nick Wilkinson, IP Training Business Manager on:
Tel: + 44 (0)20 7467 7151
Fax: + 44 (0)20 7255 1472
e: **nwilkinson@petroleum.co.uk**
www.petroleum.co.uk

IP Training Courses 2001

Managing Cultural Differences	15–17 January
Advanced Process Control	23–26 January
Financial Performance Management in the Oil Industry	7–9 February
Investment Profitability Studies in the Petroleum Industry	27 February–2 March
Aviation Jet Fuel	19–21 March
Economics of the Oil Supply Chain	26–30 March
Gas Markets in Transition – The Regulatory, Commercial and Power Issues	1–6 April
Trading Oil on the International Markets	23–27 April
Fundamentals of Petroleum Refining Processes	8–11 May
Price Risk Management in the Oil Industry	21–25 May
Environmental Risk Management	30 May–1 June
Arranging and Managing Service Contracts in the Petroleum Industry – an Introduction for Managers	4–5 June
US SEC and FASB Accounting and Reporting Requirements for Oil and Gas Enterprises	5–6 June
Basic Accounting and Financial Reporting for Upstream Oil and Gas Activities under UK Standards	7–8 June
Accounting for International Petroleum Contracts: Production Sharing and Risk Service Contracts and Joint Operating Agreements	11–13 June
Custody Transfer of Crude Oil – Trading and Loss Control Issues	14–15 June
Introduction to Oil Industry Operations	20–22 June
Introduction to Petroleum Economics	25–27 June
Gas Markets in Transition – The Regulatory, Commercial and Power Issues	9–14 September
Economics of the Oil Supply Chain	15–19 October
Introduction to Lubricants	18–19 October
Trading Oil on the International Markets	22–26 October
Planning and Economics of Refinery Operations	23–26 October
Price Risk Management in the Oil Industry	26–30 November
Custody Transfer of Crude Oil – Trading and Loss Control Issues	13–14 December

Sulfur workshop makes recommendations

A Sulfur Workshop was held at the Institute of Petroleum's London headquarters on 25 October 2000. It was well attended, with some 30 representatives from the CEN TC 19 WG 27 Sulfur Working Group and the IP ST G-5 Sulfur Panel, plus invited presenters and other guests.

Short presentations were made on:

- European automotive fuels specification with respect to sulfur for 2003/5
- Determination of the sulfur content using:
  - wavelength dispersive X-ray fluorescence;
  - energy dispersive X-ray fluorescence;
  - ultraviolet fluorescence; and
  - microcoulometry
- Reference material for validating sulfur test methods
- CEN TC 19 WG 27 activities and future actions

Discussion sessions followed each presentation. The workshop concluded with a general discussion session during which a number of recommendations were agreed and action items identified for both CEN TC 19 WG 27 and the IP Sulfur Panel. These were as follows:

a) The four test methods for use in 2005 that should be worked on are: microcoulometry; wavelength dispersive X-ray fluorescence with an external standard and wavelength dispersive X-ray fluorescence with an internal standard; energy dispersive X-ray fluorescence; and ultraviolet fluorescence.

b) The choice of the test methods must be based on performance and not cost.

c) When determining sulfur in the 1 ppm to 30 ppm region there is a risk that the result can be affected by contamination of the sample. For this reason test methods for determining sulfur at this level should contain guidance on critical aspects of sampling, sample handling and testing procedures.

d) There is a requirement for either Sulfur Certified Reference Materials, produced by an interlaboratory testing schedule using one or more of the recommended test methods, or materials with an absolute sulfur value determined using a primary technique.

e) It is vitally important that when the test methods come up for ballot within Europe, the sulfur experts from the respective countries ensure that their National Body (responsible for voting) is aware of the views of the WG 27. Also, that the National Body must know the identity of their country's representative on WG 27.

Jeff Pym, Director General of the Institute of Petroleum, recently presented a Certificate of Appreciation to Terry Fabb, formerly of the UK's Refined Bitumen Association, for his work on bitumen test method standardisation.

NEW Publications

Behind the Mask – Regulating Health and Safety in Britain's Offshore Oil and Gas Industry*

John Paterson (Ashgate Publishing, Gower House, Croft Road, Aldershot, Hampshire GU11 3HR, UK). ISBN 0 7546 2042 5. 374 pages. Price: £60.

Informed by autopoiesis theory, this study takes seriously the notion of an empirical field constituted by diverse communicative systems and thus traces the development of the industry along a series of dimensions, including management, engineering, politics and regulations. Adapting cognitive mapping, the publication offers graphic demonstrations of the resultant constructive misunderstandings of regulatory and scientific signals to provide an alternative perspective on the nature of risk.

Analyser Systems – A Guide to Maintenance Management**

(The Engineering Equipment and Materials Users Association, 45 Beech Street, London EC2Y 8AD, UK) Price: £60.

This guideline is designed to define the best practices in the maintenance of online analysers. It has been written mainly by user experts and includes helpful advice from approved vendors in the field. Advice is given on analytical measurements of process variables which significantly contribute to the safety of personnel and the environment whilst providing asset protection and profit maximisation. Topics covered include performance targeting, failure modes and reliability, and performance monitoring.

**Held in IP Library*

*** Due to arrive in IP Library*

Save It – TGD video**

(The video can be obtained free of charge by telephoning the EEBPP helpdesk on: 0800 585 794 or by logging on to **www.energy-efficiency.gov.uk***)*

TDG, (one of Europe's largest logistics groups), in conjunction with the DETR's Energy Efficiency Best Practice Programme (EEBPP), the University of Huddersfield and Ocicat, has produced a video highlighting the way in which a programme of best practice can enhance fuel efficiency across the transport industry. The video is aimed at drivers and operators. It looks at fuel efficiency in the context of vehicle maintenance, vehicle design and specifications, onboard technology and driver training. The film also features advice from the Road Haulage Association, Freight Transport Association and the Road Traffic Commission. John Boocock, TDG's Group Driver Development Manager commented 'The video aims to deliver the principles of best driving practice to drivers and operators alike, whether they comprise of a fleet of one or 100 vehicles.'

Latest from the Library

YOUR OFFICE AWAY FROM HOME

IFEG AGM

The Information for Energy Group (IFEG) AGM will take place on Thursday 11 January at 2pm. This will be preceded by a buffet lunch at 1pm, that is sponsored by Infield Systems (**www.infield.com**). All members and prospective members are welcome. Contact Sally Ball for more information.

Library Charges 2001

Entrance Fee (open 9.30am to 5pm, Monday to Friday, except Bank Holidays):

- IP Members: Free
- Non-members: £20 (half day); £30 (full day)
- Students: £2 (with student ID card and letter)

Photocopies:
10 A4 copies – £2.80; 20 A4 copies – £5.00; 50 A4 copies – £9.50; 100 A4 copies – £17.00
By post – Members: minimum charge £6.00 (plus VAT) for 20 pages; Non-members: minimum charge £12 (plus VAT) for 20 pages. There are special reduced rates for photocopy account holders.

Loans (to Members only):
Free – but if posted cost of postage must be refunded.

Research:
Research is carried out by our expert information officers. Members: £50 per hour (Non-members: £100 per hour), plus costs such as online charges and photocopying – plus VAT.

New Editions to Library Stock

- *Transport Fuels Technology.* By Eric Goodger. Landfall Press, Norfolk, UK, 2000.
- *Energy Derivatives: Trading Emerging Markets.* By Peter Fusaro and Jeremy Wilcox. Energy Publishing Enterprises, New York, USA, 2000.

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  Sally Ball, Information Officer, +44 (0)20 7467 7115
- Library holdings and loans queries to:
  Liliana El-Minyawi, LIS Assistant, +44 (0)20 7467 7113
- Careers and educational literature queries to:
  Deborah Wilson, Information Assistant, +44 (0)20 7467 7116
- Website queries to:
  Perry Hackshaw, Webmaster, +44 (0)20 7467 7112
- LIS management queries to:
  Catherine Cosgrove, Head of LIS, +44 (0)20 7467 7111
- IFEG Queries to:
  Sally Ball, IFEG Secretary, +44 (0)20 7467 7115

Fax any of the above on +44 (0)20 7255 1472 or e-mail: **lis@petroleum.co.uk** Visit our website at **www.petroleum.co.uk**

Exploring the benefits of remote access

Point to Point based in Crowthorne, Berkshire, has been working closely with the Aberdeen concern Expro Group over the past six months to provide a virtual private network (VPN) which would allow users in remote and underdeveloped locations to connect to the local area network (LAN). It has been involved in the key phases of providing advice and testing equipment to the point of completion and installation of the Intel/Shiva VPN solution and is continuing to provide support and consultancy on an ongoing basis.

'The Expro Group prides itself on both its reputation as an innovative leader in oilfield technology, and the commitment it has to research and development,' says Martin Ogden, Technical Support Manager for the Expro Group. 'It aims to provide the calibre of products that lead the way in the oil and gas industry, and it is this goal which has driven the need for a network that can provide connectivity to the central systems throughout the world.'

The system currently supplies core applications to Expro's global offices at eight major sites in Holland, the UK, the US and Western Australia, as well as 30 to 40 smaller sites that are local to the field operations. The main applications include e-mail exchange, the company's Intranet, Oracle Financials and human resources, and RMS – an internal enterprise resource planning system.

In 1999, Ogden was faced with the task of changing the IT infrastructure throughout the Expro Group so that employees in both remote and underdeveloped areas could still access the company's network and improve speed and integrity of information flow.

He turned to Point to Point, a value added reseller, for advice and support in choosing an appropriate solution. The initial brief was to provide a very secure remote access solution for both mobile and remote based users, as well as using LAN-to-LAN tunnels, moving non-critical traffic off the company's frame relay network and on to the Internet.

Future expansion needs

An Intel/Shiva VPN solution was chosen because of its fast and reliable connectivity to core applications, ease-of-deployment and enterprise-wide scalability. Additionally, as the wide area network requirements grow, additional gateways, remote clients and central management stations can be easily added to accommodate the expansion.

The next stage involved Point to Point loaning equipment to the Expro Group so that it could test the solution to ensure that it would satisfy the requirements. Point to Point also provided a consultant to implement the solution, monitor it and provide technical support.

Since implementation, the number of long distance calls is reported to have been significantly reduced, with users now only being charged at the local rate. 'Another significant advantage is that the Group can now supply IT systems to replace the existing paper-based systems that were unwieldy to manage, while providing business advantages through increased speed of information flow and accuracy and integrity of the information supplied,' explains Ogden.

Reinvestment of savings

The VPN solution can also be used to provide connectivity between the main bases for other applications, states Ogden. Furthermore, it has enabled Expro Group to provide WAN (wireless area network) access to smaller offices where traditional solutions are not cost-effective. The money saved is currently being reinvested within the IT department so that further projects can be undertaken.

'Point to Point were extremely helpful from initial enquiries to the development cycle, right through to completion,' says Ogden. 'They offered a significant amount of pre-sales help and advice and were therefore an obvious choice when looking to deploy new solutions. We look forward to conducting more projects together in the future.' ●

For further information please contact Sandra Palmer at Point to Point.
Tel: +44 (0)1344 755955
Fax: +44 (0)1344 755987

NEWS Technology

Aggressive pipe coupling

Glynwed Pipe Systems now manufactures its Straub Grip–L range of axial restraint pipe couplings with the option of Viton® fluoroelastomer sealing gaskets. This gives the coupling superior resistance to high temperatures and aggressive chemical fluids, according to the company.

The couplings are also available with WRc–approved EPDM (ethylene propylene diene monomer) and NBR (nitrile) rubber gaskets. The Viton® gaskets allow the couplings to sustain continuous working temperatures up to 180°C and withstand strong acids, petroleum products, aromatic fuels and hydraulic fluids.

The unique gasket shape within the Straub design produces a progressive seal, which responds to the pressure of the medium in the pipe. This system is said to eliminate the high, static loaded appllied to the pipe by conventional compression fittings and means that Straub couplers can be used successfully even when pipe walls are thin or brittle.

Tel: +44 (0)121 700 1000
Fax: +44 (0)121 700 1001

Online analyser improves hydrocarbons processing

A new online analyser that is claimed to produce significant improvements in the performance of hydrocarbons processing operations through the simultaneous measurement of hydrogen sulfide and carbon dioxide, is now available in the UK from APK Engineers.

The CS200 analyser, developed by Orbital Applied Instrument Technologies, uses patented flow injection technology licensed from BP Amoco for the optimisation of the formation amine units in natural gas processing and crude oil refining. The analyser is said to be compatible with all amines – including MEA, DEA, MDEA, DFIPA and DGA – as well as specially formulated variants. Built-in automated stream switching also facilitates sequential analysis of rich and lean amine streams, whilst the ability to sample from up to four streams simultaneously offers a turnkey system solution.

The self-contained computerised control is operated from a Windows-NT based touch screen menu for system set-up, calibration, diagnostics and the display of routine results. Remote system monitoring and control is provided by integral Modbus drivers and a DCS interface port.

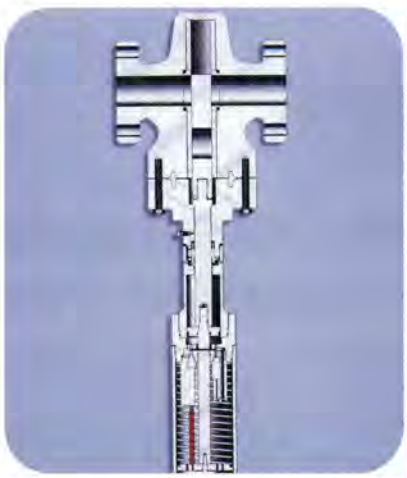
Tel: +44 (0)1380 720831
Fax: +44 (0)1380 720547

PowerMaster actuator without external controls

Baker Oil Tools recently unveiled its new PowerMaster ESDV (emergency shut down valve) actuator featuring micro electro-hydraulic controls fitted within the actuator itself, rather than in a conventional external power pack.

To help achieve the 'packaging' for the design Baker Oil Tools specified Penny & Giles VRVT100 in-cylinder position sensors. They form part of a 'belt and braces' system – the other part being a hydraulic pressure switch – which provides position feedback to warn if the flow line pressure is changing and moving the valve.

Tel: +44 (0)1202 409409
Fax: +44 (0)1202 409410



Easy to use rapid analysis spectrometer

Lab–X3500 is the new spectrometer from Oxford Instruments's Lab-X range of Energy Dispersive X-ray Fluorescence Analysers. The spectrometer, according to the company, incorporates advances in many areas, including a new control layout design, a new user interface and new software. It provides rapid analysis on a range of materials including solids, liquids, greases, films, coatings and pastes, on site or in the laboratory.

Samples can be analysed 'as received' or with minimal sample preparation. A range of sample holders and accessories are available as is an integrated autosampler. The spectrometer can be operated as a dedicated 'stand–alone' instrument.

Tel: +44 (0)1494 442255
Fax: +44 (0)1494 461033

Corrosion resisting pipeliners

Solving the problem of preventing corrosion in multiphase oil and gas pipelines has drawn a significant step closer with the development of a new technique for dealing with gas permeation through pipeline liners. The technique results from a joint industry project sponsored by major oil companies and contractors, and is soon to undergo full scale trials.

The development of the technique stemmed from the problem of small volumes of gas permeating through the plastic liner and building up in the tight annular space between the plastic liner and pipewall over time. When pressure in the pipeline is reduced, expansion of the gas in the annulus can collapse the lining.

Under Phase 2 of the ongoing COREL (corrosion resisting liners) project, plastic liners have been enhanced to include axial grooves running along the annular face of the liner which act as venting channels, allowing permeating gas to move along the line to an external venting point, removing the danger of collapse. Small perforations through the liner enable gas to be returned to the main flow.

Tel: +44 (0)1483 598000
Fax: +44 (0)1483 598010

Membership News

NEW MEMBERS

Mr O A Ajibola, Mott MacDonald Limited
Mr S Al-Anazi, Saudi Aramco
Mr K Ampim, Laird International Finance Corporation
Mr M T Ancell, London
Mr S Bee, Newcastle-upon-Tyne
Mr A S Bligh, Petrostar Limited
Alhaji D'Bobbo, National Boundary Commision
Mr D Butterworth, ALPEMA
Mr R W Cheung, Hong Kong
Mr T Christie, Aberdeenshire
Mr S A Clark , NWF Group plc
Mr R Cussen, Irish Refining plc
Mr T Daniel, DJ Freeman
Hon A S Daura, Nigerian National Assembly
Alhaji S M Diggi, National Boundary Commision
Mr A N Dunn, Scotland
Mr M Fletcher, United Nations
Mr G Gaviotis, Dubai
Mr F V Gay, Hampshire
Ms K A Goodrich, Offshore Technology Management Limited
Ms A Hacawi, Bloomberg L.P.
Mr M R Hansen, Cool Sorption A/S
Mr F Harper, Wiltshire
Mr K Hudson , P&O Trans European Limited
Mr PL Kelly, Rowan Companies Incorporated
Mr S M Kwok, Singapore
Mr A J H Little, Energy Scitech Limited
Mr D Long, Northumberland
Mr J McHardy, Excel Turbine Services Limited
Mr R Mullins, Hertfordshire
Mr T Ogbe, Geo-Group Limited
Hon D Onyia, Ministry of Foreign Affairs, Nigeria
Dr D Papaioannou, Stockton-on-Tees
Ms V J Pond, Bedford
Mr J C Reynolds, Gwynedd Council
Mr C A Semiteje, Delta State Government
Mr R L T Serrette, The National Gas Company of T&T
Mr J B Stephenson, South Buckinghamshire
Alhaji H Tukur, Ministry of Foreign Affairs, Nigeria
Alhaji K M Tumsah, Ministry of Foreign Affairs, Nigeria
Dr T Umar, Ministry of Foreign Affairs, Nigeria
Mr E O Vera-Cruz, Victor & Charles (Solicitors)
Mr S West, Bank Of America
Mr K Williams, Anglo Siberian Oil Company plc
Mr M E Woodward, Dorset

STUDENTS

Mr T-T Ajayi, Nigeria
Mr E F Diaso, London
Mr R Saynor, Brighton
Mr D R Stokes, Imperial College
Mr P D Trinh, Aberdeen

NEW CORPORATE

Minarak Energy (UK) Limited, 11 Westward Close, Swansea SA3 5DJ, UK
Tel: +44 (0)1792 202068 Fax: +44 (0)1792 401642
e: tge@global.net.co.uk

Representative: Mr T G Evans, Managing Director
Oil and gas exploration onshore the UK. One UK licence has been awarded by the DTI as operator (EXL 295) in southern England. Minarak's parent company is active in Yemen and France and will soon begin production in Indonesia.

DEATHS

We are sorry to report the death of Mr Edward Stokoe. He was born 1909.

EVENTS Forthcoming

JANUARY 2001

22–26 **Leeds**
Fire Dynamics and Modelling
Details: University of Leeds, UK
Tel: +44 (0)113 233 2494
Fax: +44 (0)113 233 2511
e: cpd.speme@leeds.ac.uk
www.leeds.ac.uk

22–26 **Leeds**
Combustion Instrumentation, Control and Low NO_x Burner Emissions
Details: University of Leeds, UK
Tel: +44 (0)113 233 2494
Fax: +44 (0)113 233 2511
e: cpd.speme@leeds.ac.uk
www.leeds.ac.uk

FEBRUARY 2001

12–14 **Kuala Lumpur**
ARTC Petrochemical Conference
Details: GTF Conferences, UK
Tel: +44 (0)1737 365100
Fax: +44 (0)1737 365101
e: events@gtforum.com
www.gtforum.com

16–19 **Surrey**
Understanding Oil Supply and Logistics
Details: Petroleum Economist, UK
Tel: +44 (0)20 7831 5588
Fax: +44 (0)20 7831 4567
e: jones@petroleum-economist.com
www.petroleum-economist.com

19–22
IP WEEK
Details: Christine Pullen, The Institute of Petroleum

20 **London**
International Dry Bulk Shipping
Details: Lloyds List Events, UK
Tel: +44 (0)20 7453 2236
Fax: +44 (0)20 7453 2238
e: sarah.fell@informa.com
www.lloydslistevents.com

21–23 **Rome**
ERTC Petrochemical Conference
Details: GTF Conferences, UK
Tel: +44 (0)1737 365100
Fax: +44 (0)1737 365101
e: events@gtforum.com
www.gtforum.com

22–23 **London**
Fostering Intrapreneurship – Converting Ideas to Bottom Line Results
Details: Access Conferences, UK
Tel: +44 (0)20 7840 2700
Fax: +44 (0)20 7840 2701
www.access-conf.com

22–23 **London**
Nigeria Oil and Gas Summit
Details: IBC Global Conferences, UK
Tel: +44 (0)1932 893857
Fax: +44 (0)1932 893893
e: cust.serv@informa.com
www.ibcglobal.com/nigeria

26–27 **Antwerp**
2nd European Catalyst Technology Conference
Details: Euro Petroleum Consultants, UK
Tel: +44 (0)1483 771061
Fax: +44 (0)1483 756932
e: Conferences@EuroPetro.com

26–27 **Thame, UK**
Quality and Security of Electrical Supply
Details: ERA Technology, UK
Tel: +44 (0)1372 367021
Fax: +44 (0)1372 377927
e: beverly.dunham@era.co.uk
www.era.co.uk

27–28 **London**
Lloyd's Maritime Training Programme Bunker Claims Seminar
Details: Lloyds List Events, UK
Tel: +44 (0)20 7453 2236
Fax: +44 (0)20 7453 2238
e: sarah.fell@informa.com
www.lloydslistevents.com

MARCH 2001

7–9 **Kuala Lumpur**
ARTC 4th Annual Meeting
Details: GTF Conferences, UK
Tel: +44 (0)1737 365100
Fax: +44 (0)1737 365101
e: events@gtforum.com
www.gtforum.com

12–13 **London**
Can Renewables Deliver?
Details: The Royal Institute of International Affairs
Tel: +44 (0)20 7957 5754
Fax: +44 (0)20 7321 2045
e: gwright@riia.org
www.riia.org

17–20 **Bahrain**
Middle East Oil Show and Conference
Details: Overseas Exhibition Services Ltd, UK
Tel: +44 (0)20 7862 2141
Fax: +44 (0)20 7862 2078
e: pmckean@montnet.com
www.montnet.com

19–23 **Leeds**
Fire Safety Design
Details: University of Leeds, UK
Tel: +44 (0)113 233 2494
Fax: +44 (0)113 233 2511
e: cpd.speme@leeds.ac.uk
www.leeds.ac.uk

20–21 **London**
Containerisation International's Global Conference 2001
Details: Lloyds List Events, UK
Tel: +44 (0)20 7453 2236
Fax: +44 (0)20 7453 2238
e: aidan.o'donovan@informa.com

20–21 **London**
Communications and IT in Shipping
Details: The Informa Group, UK
Tel: +44 (0)1932 893861
Fax:+44 (0)1932 893893
e: cust.serv@ibcuk.co.uk

26–28 **Leeds**
Industrial Air Pollution Monitoring
Details: University of Leeds, UK
Tel: +44 (0)113 233 2494
Fax: +44 (0)113 233 2511
e: cpd.speme@leeds.ac.uk

27 **Leeds**
Emissions Monitoring Exhibition
Details: University of Leeds, UK
Tel: +44 (0)113 233 2494
Fax: +44 (0)113 233 2511
e: cpd.speme@leeds.ac.uk

28–1 March **Houston**
Floating Production Systems 2001
Details: Clarion Technical Conferences
Tel: +1 713 521 5929
Fax: +1 713 521 9255
e: info@clarion.org

CALL FOR PAPERS
INTERNATIONAL CONFERENCE

10–12 October 2001 Hamburg
Creating Value from Light Olefins – Production and Conversion
Details: DGMK, Germany. In association with AFTP, IP, IRPB and Enerclub
Tel: +49 40 639004 11 and ask for Gisa Tessmer
www.dgmk.de

The conference will address all scientific and technical issues related to the manufacture of ethene, propene, butenes etc, and their conversion into valuable products.

The call for papers is open until 1 April, 2001.

IP Discussion Groups & Events

Energy, Economics, Environment

A joint meeting with the British Institute of Energy Economics

'Oil Markets 2000 and Outlook for 2001'

By John Toalster, Société Generale

Thursday 11 January at BP Amoco, Britannic House, London

Contact: Mary Scanlan, BIEE
Tel: +44 (0)20 8997 3707

Energy, Economics, Environment Discussion Groups
Please notify the contacts if you plan to attend any of the advertised events. All events will take place at the IP unless stated otherwise
Institute of Petroleum, 61 New Cavendish Street, London W1G 7AR, UK
Tel: +44 (0)20 7467 7100
Fax: +44 (0)20 7255 1472
e: jsandrock@petroleum.co.uk

IP THE INSTITUTE OF PETROLEUM

Branch Activities

Essex

Contact:	*Arnold Carlson Tel: +44 (0)1268 794615*
10 Jan:	5.30 pm: Independent Cargo Inspection, by A H Edwards
14 Feb:	5.30 pm: AGM, followed by Helium from Natural Gas and its Applications, by Ali Karim and Peter Ward of Linde Gas UK
14 March:	5.30 pm: The HSE – Regulating, Enforcing, Advising, by Tony Stammers, HM Inspector of Health and Safety
16 March:	7.15 pm, annual dinner dance (apply by mid-January)

Humber

Contact:	*Dave Hughes Tel: +44 (0)1469 555237*
1 Feb:	Local Power Station Development
2 March:	Annual Dinner

North East

Contact:	*John Sparke Tel: +44 (0)1642 546411*
6 Feb:	7 pm: AGM, followed by presentation on Technical Committees of the Institute of Petroleum, by Brian Abbott, IP Technical Director
13 March:	5 pm, visit to the ETOL Emergency Control Centre

IP Training Courses 2001 – Brochure

For details of how to obtain your copy please contact Nick Wilkinson at the IP
Tel: +44 (0)20 7467 7151 Fax: +44 (0)20 7580 2230
e: *nwilkinson@petroleum.co.uk*

IFEG Information for Energy Group

AGM

The Information for Energy Group Annual General Meeting will take place at the Institute of Petroleum on **Thursday 11 January 2001** at 2pm.

This will be preceded by a buffet lunch at 1pm sponsored by Infield Systems Ltd (**www.infield.com**)

infield

All members and prospective members are welcome

Further information from Sally Ball, IFEG Secretary
Tel: +44 (0)20 7467 7115 Fax: +44 (0)20 7255 1472
e: sball@petroleum.co.uk

Calling all IP website surfers!

The redevelopment of the IP website (www.petroleum.co.uk) is now well under way. We are looking for volunteers to test the new site prior to its launch during IP Week in February.

Can you help?

If you are interested in testing the new site and providing feedback, please e:betatester@petroleum.co.uk

Please include your full name, occupation and company (if applicable) in your response

Many thanks Webmaster

IP Conferences and Exhibitions

IP Week 2001 – At a glance

Monday 19 February
- Financing the International Oil and Gas Industries: Unique Solutions for Individual Circumstances

Tuesday 20 February
- The Impetus to Adapt – Implementing Strategies for Growth
- When Will e-Business be Just Business
- Bunkers on the Internet
- Creating Competitive Advantage in European Refining – Examples of Success
- London Branch Evening Discussion Meeting
- Annual Luncheon at The Dorchester Hotel, London

Wednesday 21 February
- Energy and the Environment in the New Millennium
- Price.com – Establishing Oil Price through the Electronic Media

Annual Dinner at The Grosvenor House Hotel, London

Thursday 22 February
- International Conference on Deepwater Exploration and Production

For more information about events running in IP Week 2001, please see the advertisement on the inside back cover or log onto the IP website www.petroleum.co.uk

Forecourt Profitability – A Challenge to European Industry

in conjunction with the Forecourt Show

Birmingham, NEC: 13–14 March 2001

This timely IP Conference focuses on the need of the industry to enhance profitability in this sector: Areas to be examined are developments such as:

- Consolidation of ownership
- Reduction in the number of sites
- The development of wider retail offers
- Franchising and licensing to maximise the output from the retail space

Industry performance of this sector as well as new safety and environmental initiatives will also be discussed. An accompanying seminar **Petroleum Retailing in Central and Eastern Europe** will also look at one of the few growing areas for the retail business in Europe.

For further information please see contact details below.

For further information on any of the above conferences please contact:
The IP Conference Department
Tel: +44 (0)20 7467 7100
Fax: +44 (0)20 7580 2230
e: **cpullen@petroleum.co.uk**
or view the IP Web Page:
www.petroleum.co.uk

IP THE INSTITUTE OF PETROLEUM

New publication

Code of Practice for a Product Identification System for Petroleum Products

This Code of Practice describes a product identification system comprising tapes, stencils, tags or signs, for marking equipment used in the storage and handling of petroleum products downstream from refinery process plants.

The purpose of this Code is to offer a standard method of identifying equipment according to the products handled in order to assist the avoidance of accidental mixing and contamination of product. Although the Code highlights the identification of equipment at road tanker loading and unloading points, the system is suitable for use throughout all product storage and handling systems.

This is the fourth edition of this Code of Practice and contains revised product descriptors including a new identifier for PU 50.

ISBN 0 85293 307 x 25% discount for IP Members

Available for sale from Portland Press Ltd at a cost of £38.00 inc. postage in Europe (outside Europe add £5.00). Contact Portland Press Ltd, Commerce Way, Whitehall Industrial Estate, Colchester CO2 8HP, UK. Tel: +44 (0)1206 796 351. Fax: +44 (0)1206 799 331. e sales@portlandpress.com

***For a complete and up-to-date listing of all IP Publications see our website:* www.petroleum.co.uk**

MOVES People

Shell Latvia has appointed **Edgars Zalitis**, the company's Retail Director, as its new Executive Director.

Richard Bazian has been named Director of Energy and Utilities for Europe, Middle East and Africa (EMEA), by software company Lucent Technologies.

The Deputy Chief Executive of Gazprom, **Valery Remizov**, has left the company.

The gas pipeline group Epic Energy has named **Sue Ortenstone** as its new Chief Executive Officer. She will replace E J Holm.

The members of the new Gas and Electricity Consumer Council, set up by the UK Department of Trade and Industry, have been named. Membership of the council comprises of: **John Hanlon**, **Bob Wilkinson**, **Tim Cole**, **Sharon Darcy**, **Andrew Horsler**, **Neil Menzies**, **Les Roberts** and **Sukhvinder Stubbs**.

Bob Twist has been appointed Senior Project Manager by Caxios, the UK engineering and construction contractor.

Dr Donald Smith has been appointed the new Technical Manager for the UK-based International Association of Oil & Gas Producers.

Wood Mackenzie has appointed **Roger Neal** as Senior Vice President, to head up the new Houston consulting team. In addition, **David Dennison** will be in charge of the consultancy's new Sydney office.

Able Instruments and Controls has named **Andy Graham** as the new Technical Support for Scotland and the North of England.

Blair Douglas has been appointed Senior Hydrogeologist in Water Management Consultants Santiago office.

The ABB Board of Directors have named **Jörgen Centerman** as President and Chief Executive Officer. He will take over from Göran Lindahl.

The new Executive Board of the Moscow Oil Company (MNK) consists of **Shalva Chigirinsky** as President of MNK, **Yury Shafranik** as Managing Director, **Henry Cameron** as Vice President for Oil Production, **Yury Laptev** as Vice President for Corporate Finance and **Yevgeny Savostyanov** as a Representative of the Moscow Government.

dotRisk, the US-based digital commercial insurance and claims market, has appointed **Richard Voegeli** as Executive Vice President, Business Development.

Alisandra Khairuddin has been named Regional Accounts Manager–Asia-Pacific by GlobalView Software (GVSI).

The French Secretary of State for Industry has appointed **Jean-Luc Karnik** as Director of The Ecole du Pétrole et des Moteurs. He will replace Jean Masseron who is retiring.

Philip Gibb has been appointed Managing Director of Connect, the Cardiff-based utility infrastructure company. Connect is part of the TotalFinaElf group of companies.

Donna Miele has joined UtiliSave, the US utility data management and cost recovery service company, as Senior Vice President of Human Resources and Operations.

Gail Williamson has been appointed Executive Director of the Petroleum Exploration Society of Great Britain (PESGB).

The Board of Stolt-Nielsen has announced the appointment of **Niels G Stolt-Nielson** as Chief Executive Officer. He succeeds the founder of the company, Jacob Stolt-Nielson. **Jacob B Stolt-Nielson** has also been appointed Chief Operating Officer, and will replace Christopher J Wright who is due to retire at the end of 2001.

Anderson Exploration has appointed Executive Vice President and Chief Operating Officer **Brian Dau** as President of the company.

Petrotrin, the Trinidadian state oil company, has named **Roderick Parriag** as Chairman.

Jeff McParland has been named Senior Vice President, Finance, of Dynegy.

Shareholders in Russian oil company Onako has elected a new Board of Directors. Members include: TNK Deputy CEO **Victor Vekselberg**, TNK President **Simon Kukes**, TNK Executive Director **German Khan**, TNK First Deputy Vice President **Grigory Gurevich**, TNK First Vice President for Finance **Iosif Bakaleinik**, Orenburg Govenor **Yevgeny Shvidler**, Sibneft First Vice President **Andrei Gorodilov** and Sibneft First Vice President **Alexander Korsik**.

Oil and Natural Gas Corporation (ONGC) has appointed **Subir Raha,** Director Indian Oil Corperation (IOC), a member of the Board. IOC has appointed ONGC Director, **R C Gourh,** as a member of its Board. This follows the equity swap made by the two companies last year.

Hungarian oil and gas group Mol has appointed **Zoltan Aldott** Deputy Chief Executive Officer in charge of strategy. This is a newly created post.

Mike Hutchinson has been named General Manager of Racal Survey, the Aberdeen-based operation of Racal Survey Group. Racal has also appointed **Richard Benzie** as Asset Manager.

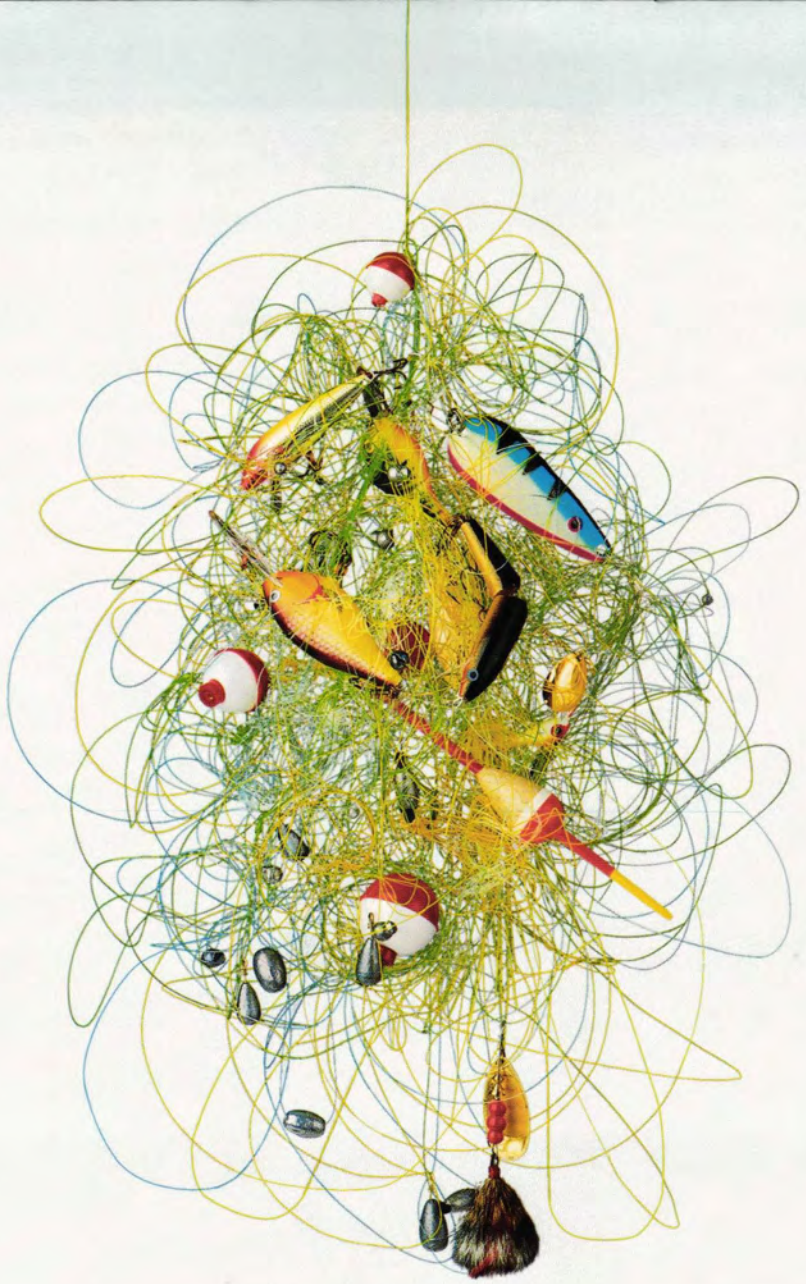
Ramco Energy has named **David Boyle** to the Group's Board as Non-Executive Director.

The Board of Directors at Lukoil have appointed **Serik Rakhmetov**, the former Head of Capital Construction Department, **Yurii Storozhev**, former Head of Oil Supplies and Oil Product Exports and **Lyubov Khoba**, former Chief Accountant, as Vice Presidents of the company.

KWI has made two key appointments. **Dean Murphy** has been named as Vice President of Strategy and Business Development and **Julie Webberly** has been appointed Head of Training and Support.

W James Bover, the Section Head of Quality Assurance for ExxonMobil Biomedical Sciences, has been appointed Chairman of the 571–member ASTM Committee D02 on Petroleum Products and Lubricants.

Air Products and Chemicals has announced the election of **John Jones III** as Chairman of the Board, President and Chief Executive Office. He replaces Harold ('Hap') Wagner, who is retiring.



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