MAY 2005

Petroleum review



SUBSEA DEVELOPMENTS
 Rising to the deepest challenges

CASPIAN AND CENTRAL ASIA
 Russian oil matters

A law unto itself

AFRICAN E&PLibyan licensing round

Covering the international oil and gas industry from field to forecourt – exploration, production, refining, marketing



www.energyinst.org.uk

EI Oil and Gas Training 2005





Fundamentals of petroleum refining processes

10-13 May 2005 El Member £1,900.00 (£2,232.50 inc VAT) Non-member £2,100.00 (£2,467.50 inc VAT)*

*Includes complimentary Affiliate membership to the Energy Institute

This 4-day course examines the composition, main characteristics and new trends of petroleum products, examining the roles of the different refining units and their process characteristics. Participants will gain an understanding of the main manufacturing schemes encountered in the oil refining field and look at the overall economic context of this industry. Subjects covered include: petroleum products; refining processes: crude oil fractionation, catalytic reforming and isomerisation, hydrorefining processes, conversion units; manufacturing schemes; and main economic features of refinery operations.

Who should attend?

Anyone working in the oil and gas and related sectors whose activity, whether technical, commercial, legal, financial, or human resources, is in some way connected with oil refining.

Decommissioning of oil and gas facilities: technical, commercial and legal issues

17 May 2005 El Member £550.00 (£646.25 inc VAT) Non-member £650.00 (£763.75 inc VAT)*

*Includes complimentary Affiliate membership to the Energy Institute

This course addresses decommissioning from an international perspective reviewing technical, environmental, commercial and legal requirements. It contrasts accepted procedures in several regions, including the North Sea and North America.

Attend this 1-day course and secure 10% discount off any other 2005 El oil and gas course (London only)



COURSE

NEW

ensor

COURS NEW



Fundamentals of retail marketing

7-10 June 2005 El Member £1,900.00 (£2,232.50 inc VAT) Non-member £2,100.00 (£2,467.50 inc VAT)*

*Includes complimentary Affiliate membership to the Energy Institute

This 4-day course provides delegates with a broad understanding of the key components of Retail Marketing, placing them in a strategic and competitive context, using examples from Europe and global markets. Participants will learn through presentations, videos, syndicate work and pictorial illustrations about the nature of competition globally and in Europe, extending their knowledge and appreciation of the retail challenges. Who should attend?



Applied petrophysics

13-17 June 2005 £1,960.00 (£2,303.00 inc VAT)

(For staff in E&P with little or no Petrophysics experience.)



Oil and gas industry fundamentals

15-17 June 2005 El Member £1,400.00 (£1,645.00 inc VAT) Non-member £1,600.00 (£1,880.00 inc VAT)*

*Includes complimentary Affiliate membership to the Energy Institute

This 3-day course comprehensively covers the oil and gas supply chains from exploration through field development, valuation and risk, production, transportation, processing and refining, marketing, contracts, trading, retailing, logistics, emerging markets and competition with alternative energies. As such, it provides understanding and insight to the processes, drivers, threats and opportunities associated with the core industry activities.

Who should attend?

Personnel from a range of technical, non-technical and commercial backgrounds, new industry entrants and those with expertise in one area wishing to gain a broader perspective of all industry sectors. It also provides a valuable industry overview for those requiring an informed introduction to the economic and commercial background and general trends within the oil and gas industry.

Introduction to petroleum economics – strategic, global and regional oil and gas market economics

20-22 June 2005 El Member £1,400.00 (£1,645.00 inc VAT) Non-member £1,600.00 (£1,880.00 inc VAT)* *Includes complimentary Affiliate membership to the Energy Institute

This 3-day course concentrates on the economic issues facing the oil and gas industry, their geopolitics and the workings of their principal markets. It provides an introduction to the economic and commercial background and general trends of the upstream and downstream sectors of the petroleum industry, underpinning an understanding of oil and gas products and their markets with an awareness of global and strategic economic issues. Participants will gain an appreciation of the issues faced through a series of regional case studies spread throughout the course.

Who should attend?

Professionals from a wide range of technical and commercial backgrounds; those employed by financial, commercial, legal, insurance, governmental, service, supply and advisory organisations; analysts, economists, new starters, engineers and risk managers.

For more information please contact Nick Wilkinson t: +44 (0)20 7467 7151 f: +44 (0)20 7255 1472 e: nwilkinson@energyinst.org.uk

www.energyinst.org.uk









MAY 2005 VOLUME 59 NUMBER 670 SINGLE ISSUE £15.00 SUBSCRIPTIONS (INLAND) £215.00 AIRMAIL £358.00

PUBLISHER



61 New Cavendish Street, London W1G 7AR, UK

Chief Executive: Louise Kingham, MEI

General Enquiries: t: +44 (0)20 7467 7100 f: +44 (0)20 7255 1472

Editor:

Chris Skrebowski FEI

Associate Editor:

Kim Jackson MEI

Design and Print Manager: Emma Parsons MEI

Editorial enquiries only: t: +44 (0)20 7467 7118 f: +44 (0)20 7637 0086

e: petrev@energyinst.org.uk

www.energyinst.org.uk

ADVERTISING

Advertising Manager: Brian Nugent McMillan-Scott plc 10 Savoy Street, London WC2E 7HR

t: +44 (0)20 7878 2324 f: +44 (0)20 7379 7155 e: petroleumreview@mcmslondon.co.uk www.mcmillan-scott.co.uk

SUBSCRIPTIONS

Journal subscriptions: Chris Baker t: +44 (0)20 7467 7114 f: +44 (0)20 7252 1472 e: cbaker@energyinst.org.uk

Printed by Thanet Press Ltd, Margate



MEMBER OF THE AUDIT BUREAU OF CIRCULATION

ABBREVIATIONS

The following are used through	ughout Petroleum Review.
$mn = million (10^6)$	$kW = kilowatts (10^3)$
$bn = billion (10^9)$	MW = megawatts (106)
$tn = trillion (10^{12})$	$GW = gigawatts (10^9)$
cf = cubic feet	kWh = kilowatt hour
cm = cubic metres	km = kilometre
boe = barrels of oil	sq km = square kilometres equivalent
b/d = barrels/day	
t/y = tonnes/year	t/d = tonnes/day
No single letter a	bbreviations are used.
Abbreviations go together e	g. 100mn cf/y = 100 million

Front cover picture: Versatile operating platforms such as this newbuild semi-submersible – the *Development Driller II* – are likely to be in demand for deep construction work going forward, as much as deepwater-rated rigs will be for future offshore exploration *Photo: Global Sante Fe*



CONTENTS

N E W S

- 3 UPSTREAM
- 7 INDUSTRY
- 9 DOWNSTREAM

SPECIAL FEATURES

- 12 E&P DEEPWATER Rising to the deepest challenges
- 14 AFRICA E&P Deepwater developments
- 15 RUSSIA E&P Russian oil matters
- 30 UTILITIES ENVIRONMENT Kyoto protocol – global targets, local pain

FEATURES

- 18 COMPANY PROFILE SIBNEFT Ambitious growth targets
- 20 AFRICA LIBYA US targets Libyan auction
- 24 NORTH AMERICA REGULATIONS A law unto itself
- 27 COMPANY PROFILE OMV Scanning the world for new opportunities
- 28 UTILITIES GAS Utility companies impaled by gas price spikes
- 32 ASIA PROJECT FINANCE ADB targets energy efficiency and renewables
- 35 CHINA ENERGY China targets overseas supplies
- 38 FORECOURT SHOW REVIEW Forecourt focus
- 44 IT SUPPLY CHAIN Maximising value in the petroleum supply chain

REGULARS

2 FROM THE EDITOR/E-DATA 48 LETTER TO THE EDITOR

The Energy Institute as a body is not responsible either for the statements made or opinions expressed in these pages. Those readers wishing to attend future events advertised are advised to check with the contacts in the organisation listed closer to the date, in case of late changes or cancellations.

FROM THE EDITOR Cutting some slack – a dream?

With oil prices apparently locked in a \$50-\$60 range, what the global oil production system currently needs above all else is some slack. This will not be easy but, if the system can re-establish obvious spare capacity, it will then be able to insulate itself from the day-today shocks of minor interruptions and equipment breakdowns. It will also have some ability to resist the escalating tax demands of the producers.

In Russia, the marginal tax rate is now reported to be 90% at prices over \$25/b and the quasi-legal destruction of Yukos continues apace, with its main producing assets now frozen by a Moscow court. (See also our Russian feature on pp15-17.) Meanwhile, President Chavez of Venezuela has announced plans for a further unilateral increase in oil taxation. As David Wood reported in the February issue, nine countries have already tightened terms and taxes over the last year or so. A process that can only be resisted by weaker demand or alternative supplies.

A debate is already emerging on the sufficiency of future supplies. What remains clear is that, even if investment opportunities are freely accessible to the major oil companies, it will take five or six years to create any significant supply slack. Recession would clearly depress demand, but that is the economic equivalent of amputation to cure toe rot.

It therefore follows that what is currently required is a gentle amelioration of demand growth without imperilling economic activity. This could be achieved by greater efficiency in use. While the current high price signal will produce this effect over time, the process can probably be usefully accelerated by government action and energy saving publicity. Much of this is already in place and organisations such as the Energy Institute are already working in this area.

Now it would be unreasonable to expect the oil companies to actively promote minimising fuel use, but they currently have no real reason to oppose an efficiency drive. For governments it should be a no-brainer. Just a few percent slack in the system would reduce the price of oil, stabilise the system, reduce producer leverage and give more time for adjustment and investment to provide a more comfortable supply/demand balance.

For the oil companies, a little less pressure on the system would reduce price instability, allow more investment time and provide a more balanced negotiation between companies and producer governments. Profits are unlikely to be lower and would be rather more predictable, facilitating investment.

A fanciful dream or a realistic next step?

However, it should not be imagined that energy efficiency is painless or easy. The US consumer is already reacting to high gasoline prices by buying fewer SUVs. This, we are told, is one of the reasons General Motors recorded a loss in the second quarter and that Ford's profits plunged in the same period.

In Europe, the trend to diesel continues apace, but this is now straining the supply system. Already, European diesel demand can only be met by importing gasoil from Russia for upgrading to diesel specifications, as well as limited imports from the Middle East. The resultant excess gasoline supply is then exported to the US.

The unspoken question is: 'What happens when the US and Russia start buying diesel-powered vehicles in much greater numbers?'

For the moment we have a significant difference in fuel efficiency between diesel and gasoline engines. When fuel prices were low this was offset by the higher cost of diesel engines, but lower cost diesels (now they are produced in much greater numbers) and high oil prices have effectively removed this helpful offset.

For the oil company and the refiner, the challenge is whether to invest in new refinery units and refinery modifciations to boost yields, or to rely on inter-regional movements of gasoline and diesel, hoping that new engine developments will narrow the fuel efficiency gap between gasoline and diesel engines.

The gas-to-liquids (GTL) projects currently planned are increasingly diesel focused. One of the attractions of GTL is the ability to produce virtually a single product and, in the case of diesel, a very high quality one. In the case of GTL diesel, the blending cetane number can be up to, or even over, 70 and is definitionally sulphur-free. GTL diesel allows virtually any gasoil to be blended to a diesel specification. So will the answer to the potential diesel deficit be GTL diesel blendstocks?

Chris Skrebowski

The opinions expressed here are entirely those of the Editor and do not necessarily reflect the view of the EI.

E-DATA

The Web Marketing Association is calling for entries for its 9th annual international WebAward Competition at www.2005webaward.org The deadline for entry is 1 June 2005. Websites are judged on design, innovation, content, technology, interactivity, navigation and ease of use. Each WebAward entry is judged against other entries in the category and then against an overall standard of excellence. Past WebAward Best Energy Website winners include Abengoa Bioenergy in 2004 (www. abengoabioenergy.com) and TXU Global's site redesign (www.txu.com) in 2001.

UK Science and Innovation Minister, Lord Sainsbury, has announced £100mn for the next round of the government's Technology Programme, with automotive, energy and aerospace sectors set to benefit. A new feature of the Technology Programme will be £30mn specifically targeted to create demonstrators of next generation technologies in industries like aerospace and automotive. Tackling issues like climate change is also at the forefront, with zero emission enterprises and emerging energy technologies highlighted as priority areas. For details of the Technology Programme visit www.dti. gov.uk/technologyprogramme

Hawke International has developed a web-based cable gland selection application that is available to registered users of its website at www.ehawke.com

The UK Freight Transport Association (FTA) has launched an Online Supplier Directory at www.fta.co.uk specifically designed to provide a link between industry buyers and sellers via an internet-based directory. FTA members will be able to search the directory free of charge, as well as add themselves to the database of suppliers. The directory will provide a comprehensive and powerful search capability to identify potential suppliers, with each supplier providing contact details, descriptions of products and services as well as clickthrough links to their email and website. Suppliers will be able to amend and update their details in real-time, enabling them to flag-up any special offers or product launches. A 'what's new' page and a 'classified' section complete the picture. The FTA represents the transport interests of companies moving goods by road, rail, sea and air. Its members operate over 200,000 goods vehicles - almost half the UK fleet.

MEGlobal has launched its new website at www.meglobal.biz The site provides news and information about the Dow Chemical Company/Petrochemical Industries Company of Kuwait joint venture, product guides for monoethylene glycol (MEG) and diethylene glycol (DEG), and material safety data sheets (MSDS).

MAY

N E W S

BRIEF

Amec has announced that first gas has been achieved on the BP Bruce lowpressure booster compression project.

UK

Shell's oil and gas reserves have fallen by a further 1bn barrels. The company has published a 264-page document, filed with the US Securities and Exchange Commission (SEC), which confirms that the group replaced only 19% of its production last year by new discoveries. This means that after producing 1.3bn barrels of oil and gas in 2004, Shell's proven reserve base now stands at the equivalent of 11.9bn barrels, compared with 12.9bn at the end of 2003. Shell states that the end-2004 proven reserves figure exclude the Athabasca oil sands mining reserves of 600mn barrels as these are open-cut mines; the SEC accepts only reserves found by drilling.

BP has raised production slightly in 1Q2005 – 4.09mn boe/d – compared to the same period last year (4mn boe/d) and reports that it is on course to hit its full-year production target of between 4.1mn and 4.2mn boe/d.

Total reports that the UK Department of Trade & Industry (DTI) has granted development approval for the Forvie North gas and condesate field, located in northern North Sea block 3/15. First production is expected in late 2005.

A deal between the UK and Norway that could secure up to 20% of the UK's future gas demand has been signed by the UK and Norwegian Energy Ministers. The full copy of the UK/Norway Framework Treaty can be found on the DTI website at www.og.dti.gov.uk

Complete news update

The In Brief' news items in Petroleum Review represent just a fraction of the news we regularly publish on the El website @ www.energyinst.org.uk via the 'News in Brief Service' link from the 'Petroleum Review' dropdown menu. Covering all sectors of the international oil and gas industry, the News in Brief Service is a fully searchable news database for El Members.

Why not visit the site to find out more about the latest developments and trends in your industry? Click on

www.energyinst.org.uk

2005

Latest US GoM auction awards

The US Minerals Management Service (MMS) held two auctions for offshore blocks in the Gulf of Mexico in mid-March, writes *Judith Gurney*. In the Central Gulf sale, 80 companies bid for 428 blocks off the coast of Alabama, Louisiana and Mississippi. They put \$540mn on the table and came away with apparently successful high bids at a cost of \$354mn.

Two-thirds of the bids were for shallow-water blocks believed to contain natural gas fields at considerable depths. There was also interest in deepwater blocks, with eight bidders vying for a block in Mississippi Canyon. Ultra-deep blocks in water depths greater than 1,600 metres attracted many. NACRA (North American Civil Recoveries Arbitrage) made a bid for a block in depths of 3,377 metres in Amery Terrace, an area abutting the Mexican offshore border.

Despite current high oil and gas prices, the number of bidders and the amount bid hardly varied from the results in the previous year's Central Gulf sale. What was different this year, however, was strong bidding by independent companies – not only for shallow-water acreage, but also for deepwater blocks. All of the companies submitting the top ten successful high bids were independents, six on their own and four with partners. Half of these bids were for deepwater and ultra-deepwater blocks. The highest bid of \$21mn, by Dominion partnered with Stone Energy, was for a shallow-water block in West Cameron. The next highest bid – \$20mn – by Dominion, Murphy, Pioneer and Spinnaker, was for an ultra-deepwater block in Mississippi Canyon.

The most active company was Dominion, with the most bids and high bids made, the most successful high bids, and the most money offered on the table – \$72mn – more than twice the amount offered by any other company. In the list of the number of high bids submitted, Dominion was followed by Focus Exploration, Murphy, LLOG, Energy Partners, ChevronTexaco, Remington, Spinnaker, ExxonMobil and Magnum Hunter.

The second MMS auction offered 124 blocks in the Eastern Gulf, where exploration and production is limited by federal and state regulations to a very small area off the coast of Alabama. Twelve blocks more than 100 miles offshore in ultra-deep waters received single bids totalling \$7mn. There was a \$2mn bid for a Lloyd Ridge block and a \$1.6mn bid for a DeSoto Canyon block; all other bids were considerably less.

As in the Central Gulf auction, many of the bidders seeking Eastern Gulf acreage were independents, including Helis Oil & Gas, Houston Energy, Red Willow Offshore, Dominion, Spinnaker and Newfield. Single, or in partnerships, these companies won five blocks. Petrobras and Anadarko, on their own, acquired the remaining seven blocks.

'Deepwater' milestone for India

INTEC Engineering's Kuala Lumpur office in Malaysia has completed front-end engineering design (FEED) for ONGC's first deepwater field development offshore India in the Bay of Bengal. Planned for completion in 1Q2006, the G1 field is located offshore the East Godavari region of Andhre Pradesh in close to 1,000 ft of water. While this water depth is not considered 'deepwater' compared to Gulf of Mexico activities, where asset developments can exceed 5,000 ft of water, the G1 development is a milestone for India as the country contemplates further deepwater developments.

The G1 project is part of an integrated development with additions to ONGC's GS15 field, also in the Krishna Godavari basin, and extensions to an existing onshore processing facility at Odalrevu. Both fields are part of ONGC's Rajahmundry asset. Anticipated peak production from the integrated development is 9,400 b/d of oil and 100mn cf/d of gas. The fields are expected to produce through 2015.

The breadth of the G1 project calls for a subsea development, with production through a subsea manifold and two multiphase pipelines tieing back 15 miles offshore to the onshore processing facility at Odalrevu. The GS15 portion of the project calls for modifications to an existing platform to accept new production, a new platform and a new pipeline for tie-in to one of the new G1 pipelines to shore. Current GS15 production transports gas through an existing 6-inch diameter pipeline to shore. The project includes expansion of the onshore facility to accept new production from both fields.

The G1 field, located in water depths ranging from 881 ft to 990 ft, includes up to five wells for subsea tie-back to the central gathering manifold, including two new wells to be drilled and completed and three existing wells – G1-9, G1-10 and G1-11 – to be re-entered and completed.

N BRIEF

Venture Production's Saturn (Annabel) gas field has come onstream. Total proven and probable reserves are estimated to be 96bn cf from the two wells.

The UK Department of Trade and Industry (DTI) has published its latest Energy Trends and Quarterly Energy Prices reports at www.dti.gov.uk/energy/ inform/energy_stats_overview/index. shtml

EUROPE

The Norwegian authorities have approved Norsk Hydro's (28.85%) plan for developing and operating (PDO) the Vilje field in the North Sea. The field lies north of the Heimdal project and will be developed with two subsea installations on the seabed. Due onstream in February 2007, recoverable reserves are estimated at about 50mn barrels of oil and 0.4bn cm of gas.

NORTH AMERICA

CNOOC, through its wholly owned subsidiary CNOOC Belgium, is to pay C\$150mn for a 16.69% stake in MEG Energy – a pure play oil sands company in Alberta. It is estimated that there are over 4bn barrels of bitumen in place, with a total recoverable reserves of about 2bn barrels.

MIDDLE EAST

Russian oil company Tatneft has signed a contract for the exploration and development of a new oil and gas deposit in Dayar al-Zur Province in east Syria, reports Stella Zenkovich.

The volume of natural gas reserves available in the Gulf Cooperation Council (GCC) member states has grown considerably from 3.6tn cm in 1970 to 41tn cm today, according to a study by the Kuwait-based Organisation of the Arab Petroleum Exporting Countries (OAPEC), writes Stella Zenkovich.

Iran is reportedly planning reform in a bid to make its oil projects more attractive to foreign investors, including improvements to the buy-back scheme under which such companies can operate in the Middle East country.

RUSSIA/CENTRAL ASIA

Gazprom and German partner BASF are jointly to develop the Yuzhno-Russkoye gas field in western Siberia.

N E W S

Budget impact on UK upstream

upstream

The UK Chancellor resisted the temptation to impose a windfall tax on the UK's gas industry in his latest Budget, but instead reduced the tax-payment schedule from four to three times a year. According to Deloitte, this will improve the Treasury's finances for 2005–2006 and – in conjunction with a tightening in tax loopholes – will provide the Chancellor with the war chest necessary to pay for tax-reductions for the less well-off in the UK.

Julian Small, head of Deloitte's oil tax group, points out that this form of accelerated payment – which will be applied to no other UK businesses – will bring forward a \$1.9bn tax payment from 2006/2007 to 2005/2006. He says: 'Until now the oil industry paid their corporate taxes in the same way as any other company – by four equal quarterly installment payments. Under the Budget changes, oil companies will now pay corporation tax in three installments on a more accelerated basis than other businesses. At a \$40/b oil price, this change brings forward the substantial tax payment of £1bn from 2006/2007 to 2005/2006. This is a surprising and no doubt unwelcome change, which is yet another special tax measure for the UK oil industry at a time when the government is receiving substantial windfall payments as a result of oil prices being at a record high. While the additional burden to the industry is limited to financing the cash flow cost, this change creates another question mark about the future stability of the UK North Sea fiscal regime.'

Kizomba B FPSO sets sail for Angola



Semco Salvage & Marine recently began towing the *Kizomba B* FPSO (floating, production, storage and offloading vessel) from Ulsan, Korea, to offshore Luanda, Angola, on behalf of Hyundai Heavy Industries (HHI). As in the case of the earlier tow of sister FPSO *Kizomba A*, this voyage is to be executed by three tugs – the sister tugs *Salvanguard* and *Salviscount* (165 tonnes bp (bollard pull)) and the 110-tonnes bp *Salvigour*. An additional tug of 146 tonnes bp, *Salvana*, will escort the spread from Singapore onwards.

Due to arrive offshore Luanda as *Petroleum Review* went to press, Semco has been contracted by HHI to perform positioning and deck operations in respect of the moorings. This project phase will be performed in alliance with Offshore Dynamics and SWG Australia (deck operations).

Over the past three years Semco has remodelled to gear up for special projects, particularly FPSO-related services. Its strategy includes the building of new, very powerful ocean towage/salvage tugs and the establishment of dedicated project teams to handle positioning, engineering and deck operations works. The *Salvanguard* and *Salviscount* were delivered in early 2004, with two utility tugs due to be delivered this October. Orders for two 150-tonnes bp ocean towing/ salvage tugs (plus one option) will be placed with a major Far East shipyard very shortly, with delivery slated for end-2006. By 2007 Semco's fleet will include four big tugs. Together with its alliance partner Fairmount Marine – who is also building four 200-tonnes bp tugs for delivery from May onwards – the OneAllianz partnership will have eight such units available on the global marine towage market. Semco's other alliance partner, FPSOlutions, provides dedicated marine moorings installation.

NEW

Partners in the North Caspian Sea production sharing agreement have acquired BG Group's 16.67% interest. They are to subsequently transfer half of the interest acquired to Kazmunaigaz (KMG), the state-owned Kazakh oil company. The new ownership structure is Eni (operator; 18.52%), ConocoPhillips (9.26%), ExxonMobil (18.52%), Shell (18.52%), Total (18.52%), Inpex (8.33%) and KMG (8.33%). The consortium is developing the Kashagan field, first production from which is expected in 2007-2008. Recoverable oil reserves are put at between 7bn and 9bn barrels.

BRIEF

Sibneft has won an open auction for the rights to develop the Salymskiy-5 block in the Khanty-Mansiisk Autonomous District of western Siberia.

Majority foreign-owned companies will not be allowed to participate in auctions for major oil and gas fields this year, Russian Natural Resources Minister Yury Trutnev has announced. Only groups more than 51% owned by Russians will be able to bid for the fields, reports Stella Zenkovich.

Lukoil has brought onstream the Nakhodkinskoye field in the Yamalo-Nenetsky Autonomous District. Gas reserves are put at more than 250bn cm, with 9mn tonnes of oil.

ASIA-PACIFIC

The Australian federal government has announced 29 new offshore petroleum exploration areas off the Northern Territory, Western Australia, Ashmore and Cartier Islands and South Australia coastlines. The new areas included five designated frontier areas.

Japan is reported to have begun allocating gas exploration rights in an area of the East China Sea that is also claimed by China. In a statement on Wednesday 13 March, Japan's Ministry of Economy, Trade and Industry said it would begin reviewing applications from companies that wanted to explore the disputed gas fields.

Petronas has commenced sales gas production from the Rehmat field in block 2769-4 (Mubarak) in Pakistan's Sindh Province. Initial production of 15mn cf/d is expected to rise to 70mn cf/d within a few months.

China National Petroleum Corporation (CNPC) is reported to have begun developing China's largest gas condensate field, Dina, in the Tarim Basin of

Declining oil output continues in 2005

UK oil production fell by 15.6% to 1,700,451 b/d in January, continuing last year's trend of declining production, according to the latest (March) Royal Bank of Scotland Oil and Gas Index.

Gas production was also down by 14.4% on the year, at 10,858mn cf/d.

Year Month	Oil production (av. b/d)	Gas production (av. mn cf/d)	Av. oil price (\$/b)
lan 2004	2 014 906	12 689	31.12
Feb	1,972,891	11,220	30.89
Mar	2,006,160	11,787	33.72
Apr	1,964,905	12,181	33.36
May	1,778,979	9,218	37.72
Jun	1,776,246	10,192	35.21
Jul	1,758,312	10,292	38.15
Aug	1,621,582	8,585	42.99
Sep	1,526,692	8,964	42.92
Oct	1,747,619	9,678	49.66
Nov	1,734,630	10,396	42.88
Dec	1,817,724	11,072	39.55
Jan 2005	1,700,451	10,858	44.24

Source: The Royal Bank of Scotland Oil and Gas Index

North Sea oil and gas production

Compressor performance workshop

Lessons learned about the actual performance of compressors in the oil and gas industry are to be shared for the first time in mid-May with operators on their home ground in the Gulf states – at the request of participants in a conference held last year by compressor technology expert MSE Consultants.

Losses in the field compared with test data can be as much as 25%. They go straight to the bottom line in the form of lower production, low plant availability and, worst of all, unscheduled stoppages.

Salim Al Harthy, Head of Mechanical Engineering at Petroleum Development Oman (PDO), has agreed to chair the workshop. Participants will then be invited to join MSE's joint industry project (JIP) on optimising compressor performance. 'Operators in the Gulf are keen to learn more about the JIP because the lessons learned are at present only coming from UK-based participants,' says Dr Sib Akhtar, MSE's Technical Director.

MSE launched the JIP in 2002. The aim is to evaluate performance losses with the help of real production data. The six companies supporting the work are BG Group, British Gas (HRL), BP Exploration, Centrica Storage, ConocoPhillips and Eni Lasmo. Between them, the companies have contributed design, selection and operating data on some 50 centrifugal compressors.

'The more machines we have in our database the more we'll be able to identify best designs and root out operational problems,' comments Dr Sib Akhtar.

Operating companies interested in attending this free workshop in Dubai, on 14–15 May 2005, should contact Dr Akhtar – e: info@mse.co.uk, f: +44 (0)208 773 4600 – or apply via the MSE website at www.mse.co.uk

Apache makes two oil finds in Egypt

Apache has announced two discoveries in Egypt. The Syrah 1X wildcat on the Khalda concession tested 46.5mn cf/d of gas, while the Tanzanite 1X discovery onshore the West Mediterranean concession test-flowed 5,296 b/d of oil and 7.4mn cf/d of gas.

Apache plans to produce Syrah's gas through its new Qasr field production facility starting this summer, adding to the company's present Western Desert gross production of 300mn cf/d of gas. The company has contracts that will more than double its Western Desert production to 637mn cf/d of gas as additional processing capacity comes online over the next few years.

The Tanzanite well will be connected to the North Alamein processing facilities. Production will commence upon approval of a development lease by the Egyptian General Petroleum Corporation.

N BRIEF

NEWS

the Xinjiang Uygur Autonomous Region. Dina will produce 5.1bn cm/y of gas, accounting for 40% of total Chinese gas to be transported to eastern China.

ChevronTexaco, ExxonMobil and Shell have agreed to integrate their interests in Australia's Greater Gorgon area – with ChevronTexaco to hold 50% and ExxonMobil and Shell 25% each. The gas fields in this area comprise one of the most significant undeveloped natural gas accumulations in the region. The Gorgon joint venture proposes to construct two 5mn t/y LNG trains on Barrow Island, offshore Western Australia, using gas sourced from the Greater Gorgon area.

Myanmar's military government has barred foreign firms from onshore oil and gas exploration and production, opting to reserve such operations for state enterprises, the Myanmar Times has reported. However, it is not stated whether existing contracts with foreign firms will be terminated.

Amerada Hess reports that initial gas sales from block A-18 of the Malaysia-Thailand Joint Development Area (JDA) have commenced. Gross production is currently averaging approximately 110mn cf/d and is expected to increase to 390mn cf/d by 1Q2006.

Woodside Energy (8.2%) reports that oil production has started at the Mutineer-Exeter oil fields offshore northwestern Australia. Initial output is expected to be between 70,000 and 90,000 b/d, via seven wells tied to a FPSO.

Unocal has started production from the Moulavi Bazar gas field in Bangladesh.

AFRICA

Pecten Cameroon Company, together with Total E&P Cameroon, has been awarded a new production sharing contract in the offshore area of Rio del Rey by the Cameroonian government. Total will operate the contract, in which the two companies have equal shares.

Sonangol (20%) and BP (26.67%; operator) have announced the Ceres-1 oil discovery in ultra-deepwater block 31 offshore Angola. Ceres-1 is the sixth successful discovery that BP has drilled in block 31, following Plutão, Saturno, Marte, Venus and Palas. The well tested at a maximum rate of 5,844 bld of oil.

Algeria's sixth licensing round

Sonatrach, the Algerian national oil company, has awarded Shell an exploration and production contract in the Reggane and Timimoun Basins as part of the sixth Algerian exploration bid round. The contract award relates to the Reggane Djebel Hirane and Zerafa blocks, and marks the re-entry of Shell into the Algerian upstream sector.

Shell, as operator, is committed to the following work programmes:

- Reggane Djebel Hirane a first exploration phase consisting of two exploration wells, 750 km of 2D and 900 sq km of 3D seismic.
- Zerafa a first exploration phase consisting of two exploration wells, 960 km of 2D and 540 sq km of 3D seismic.

The contract also provides a framework for joint exploitation of any commercial hydrocarbons resulting from exploration and appraisal activities in the blocks. The structure of the joint operating body is to be defined at a later stage.

A total of ten exploration blocks were on offer in the round. Other successful bidders included BP, which was awarded three blocks. Two of the blocks – South East Illizi and Bourarhat – are located in the Illizi Basin, close to the In Amenas project that BP is currently developing. The third block, at Hassi Matmat in the Benoud Basin, lies some 160 km north-east of the large Hassi R'Mel gas condensate field. In Amenas is due onstream in late 2005/early 2006 and is expected to produce some 9bn cm/y of gas and associated liquids.

Saudi Aramco signs megaproject deals

Saudi Aramco has moved forward on two new megaprojects, signing contracts for the Khursaniyah oil and gas programme and the Hawiyah NGL recovery project. The Khursanivah programme will develop oil and gas production facilities for the onshore Abu Hadriya, Fadhili and Khursaniyah oil fields near Jubail Industrial City in the Eastern Province, with capacity reaching 500,000 b/d of oil by the end of 2007. The Hawiyah NGL recovery project will produce an additional 310,000 barrels of ethane and NGL products daily, through the Hawiyah NGL plant near the Ghawar field and an expansion of the Ju'aymah gas fractionation plant not far from Ras Tanura, expected to be completed in early 2008.

Italy's Snamprogetti has been selected for the execution of the Khursaniyah producing facilities. The scope of work includes building a central gas-oil separation plant (GOSP) and wet crude handling facilities to process crude from the three fields, gas gathering compression facilities, a cogeneration plant, crude stabilisation and water injection.

A consortium of Bechtel Overseas and Technip secured the contract for the Khursaniyah gas plant. The scope of work covers construction of two trains of gas conditioning and ethane and NGL recovery with a total capacity of 1bn cf/d. The facilities will produce 550mn cf/d of sales gas and 240,000 b/d of ethane & NGL and 1,800 tonnes of sulphur.

Saudi Aramco also awarded five contracts to build what is claimed will be the world's largest NGL processing plant at Hawiyah, to recover ethane and NGL from approximately 4bn cf/d of sales gas. Japan's JGC Corporation secured the contract for the Hawiyah NGL and related facilities, consisting of three NGL recovery trains, product surge and shipping facilities, utilities, tank and process control system. Snamprogetti will carry out the work related to gas treating and compression facilities to include inlet distribution, two gas treating trains, sales gas compression, and electrical system and support facilities. Contracts for communication, plant infrastructure facilities and temporary camp and catering services were signed with local contractors General Telecom & Engineering (GTE), Modern Arab Construction (MAC) and National Engineering Services and Marketing Agency (NESMA).

Under a separate contract, Spain's Tecnicas Reunidas will expand the Ju'aymah gas fractionation plant as part of the Hawiyah NGL recovery programme. The contract calls for construction of a fourth train to fractionate 270,000 b/d of ethane and NGL and 100,000 b/d of propane and NGL.

Visit Petroleum Review's 'News in Brief Service' via the 'Petroleum Review' drop-down menu at www.energyinst.org.uk

N E W S

N BRIEF

UK

Texas-based CB&I has secured a lumpsum turnkey contract, valued between \$470mn and \$500mn, for the expansion of an LNG import terminal at the Isle of Grain, Kent, in the UK. The LNG import terminal will have an initial capacity of 3.3mn t/y, rising to 9.8mn t/y – equating to some 12% of the UK's annual gas demand.

BP's new olefins and derivatives subsidiary is to be called Innovene. With more than \$9bn in assets and \$15bn in third-party sales globally, the new company will be headquartered in Chicago. Innovene will be among the five largest petrochemical companies in the world.

EUROPE

BBL Company and Shell UK have announced that the natural gas terminal at Bacton on the Norfolk coast is to supply gas from the Balgzand-Bacton pipeline (BBL) to the National Grid Transco gas transport network in the UK. The 235-km, 36-inch diameter pipeline will allow the additional import of gas from Europe, to increase security of energy supply to the UK as the country relies more heavily on imported gas from 2005. It is planned to be operational by the end of 2006. At full capacity it is likely to supply 13% of the UK demand for gas.

Plans to build a \$800mn trans-Balkan oil pipeline from the Black Sea to the Mediterranean are reported to have been approved by the governments of Russia, Bulgaria and Greece. The 285km pipeline will carry Russian and Caspian oil overland from Bulgaria's Black Sea port of Bourgas to Alexandroupolis on the Aegean Sea, avoiding the congested Bosphorus Strait. BP's Russian joint venture TNK-BP is to coordinate the project, together with Gazprom, Lukoil and Transneft. The pipeline is expected to have an initial capacity of 300,000 b/d of oil, rising to 700,000 b/d over three years.

European Union antitrust regulators are reported to have approved Lukoil Holding's acquisition of Finnish oil companies Teboil and Suomen Petrooli. Between them, Teboil and Suomen Petrooli operate 289 service stations and 132 diesel fuel retail outlets in Finland.

European Climate Exchange (ECX) and the International Petroleum Exchange (IPE) began trading for ECX Carbon

Repsol YPF signs Venezuelan MoUs

Repsol YPF of Spain is to sign various memorandums of understanding (MoU) with Venezuela's PdVSA. The first of these contemplates the creation of a joint venture between PdVSA (51%) and Repsol YPF (49%) that would be one of the largest petroleum producers in Latin America. Participation in the joint venture would allow Repsol YPF to double its reserves in Venezuela and increase its current net production (100,000 b/d) by 60% to 160,000 b/d.

The PdVSA-Repsol YPF joint venture would be the first of its kind to be created in Venezuela, the fifth largest producer of crude oil in the world and the leading provider to the US market.

The MoU also includes plans to identify new exploration and development areas where Repsol YPF could be granted gas licences.

The second MoU contemplates the identification of business opportunities by building an LNG plant on the Venezuela coast, and the granting to Repsol YPF of one or various licences for gas to supply the volumes required by the

plant, as well as to include Repsol YPF's participation in the Gran Mariscal Sucre project – the main LNG project currently being studied in Venezuela.

The third MoU would allow Termobarrancas (a subsidiary of Repsol YPF in Venezuela) to construct, develop and operate an electricity generation plant in the municipality of Obispos del Estado Barinas. As a result of this contract, PdVSA would buy from Repsol YPF blocks of electricity up to 300 Mw/h. Production could begin in 4Q2005, with an estimated production of 80 MW. The gas that would feed the plant would be supplied from one of the fields that Repsol YPF has in the Barrancas area.

Besides the commercial agreements, Repsol YPF and PdVSA have also agreed to cooperate in the coming three years in the technical and scientific development of personnel at PdVSA and the Ministry of Energy and Oil, including the award on the part of Repsol YPF of 20 scholarships to attend the Instituto Superior de la Energía ISE.

First new LNG terminal in US in 20 years

The tanker *Excelsior* started unloading its cargo off Louisiana on 17 March, marking the opening of the US' first new LNG terminal in 20 years. The terminal – which comprises a submersible buoy and miles of connecting pipeline – is operated by Houston-based Excelerate Energy. Such an arrangement avoids the need for large fixed facilities to turn the supercooled liquid into a gas by having that equipment onboard the tanker. There are currently four LNG import terminals in the US, all of them on land. However, dozens more are planned, many of which will be located along the Gulf Coast, where communities have been less likely to object to the potential environmental and safety concerns.

Excelerate's system is called the 'Energy Bridge'. It centres on a specially designed buoy anchored 100 ft below the surface by eight lines when not in use. The LNG stored on the tanker is returned to its gaseous state onboard the ship and fed through the buoy into a flexible pipe, which connects to a subsea pipeline that brings the gas to shore. The *Excelsior* is one of three ships that Excelerate has planned. The vessel has storage capacity of 3bn cf of LNG and can regasify and offload up to 500mn cf/d through the buoy.

New Nigerian LNG project proposed

The Nigerian National Petroleum Corporation (NNPC), Chevron Nigeria, BG International and Shell Gas & Power Developments have signed a memorandum of understanding (MoU) on the Olokola LNG project to be sited in Nigeria's Olokola Free Trade Zone.

The project is the outcome of two separate studies conducted by Chevron and BG, and Shell, which proposed to NNPC the development of their respective greenfield LNG projects in the Olokola area, due to its natural deepwater berth and other technical reasons. The projects' target shipment dates are 2009 and 2010 respectively. In view of the proposed timing and location of the two independent projects, NNPC identified the opportunity for significant synergy and cost savings to be achieved by merging the two projects into one.

The integrated project will comprise a four-train, 20mn t/y facility. There will be joint ownership of all facilities, except for the individual trains. A single technology will be used, with a single operator. Individual train owners will buy their own feed gas and sell their own LNG. N BRIEF

NEWS

Financial Instrument (ECX CFI) futures contracts in April 2005. The ECX CFI futures contract, which is listed for electronic trading on the IPE, is claimed to be the first exchangetraded futures contract for the European Union's Emissions Trading Scheme (EU ETS).

MIDDLE EAST

Qalhat LNG, in which the Omani government has 55.84% stake, is reported to have signed a loan agreement worth \$688mn rials with 13 international banks to launch a third LNG train early next year.

Petroleum Development Oman (PDO) reports that the \$150mn Saih Nihayda plant has been commissioned. The plant, which is processing gas from the Saih Nihayda field, is capable of exporting up to 20mn cm/d of gas and 10,000mn cm/d of condensate. The new facility will feed gas to the nation's third LNG train, which is currently under construction at Qalhat.

RUSSIA/CENTRAL ASIA

TNK-BP is reported to have received a back tax bill for almost \$1bn. The claim, which refers to 2001, is understood to have come out of the blue and is likely to cast a cloud over the Russian investment climate. The company – which had initially been asked to pay just \$145mn – is to contest the new bill.

ASIA-PACIFIC

Shell is reportedly planning to export 2.5mn tly of LNG from the proposed Gorgon project in Western Australia to the Energia Costa Azul terminal being built in Baja California, Mexico, for as long as 25 years. Gas deliveries are expected to begin in 2010. The terminal near Ensenada will be the first to import LNG to North America's West Coast.

AFRICA

CB&I has been awarded a lump-sum turnkey contract valued at approximately \$100mn for the design and construction of two 160,000cm capacity storage tanks at an LNG import terminal in Fujian Province, China. The facility has a Phase 1 capacity of 2.6mn t/y of LNG, with Phase II expansion under planning.

Energy Institute and climate change

The Energy Institute (EI) organised a consultation event on climate change during IP Week – on Wednesday 16 February, the day on which the Kyoto Protocol came into force. The event brought together over 100 experts from across the energy sector and Defra/DTI officials to discuss how the industry could support government in meeting targets set in the Kyoto Protocol and the Energy White Paper.

The meeting, chaired by Professor John Chesshire OBE FEI, was divided into two breakout sessions covering 'Energy Supply' and 'Energy Efficiency' respectively. The energy supply workshop focused on how the UK energy system could deliver carbon reduction over the long term and the signals that the government should be giving about the development of the EU emissions trading system (EU-ETS). Meanwhile, a lively energy efficiency workshop took place in an adjacent room to establish what further measures the government might introduce to drive energy efficiency savings to 2010 and 2020.

Transcripts of the debate have now been edited and submitted to Defra for inclusion in the Climate Change Review documentation, which will be published on the Defra website. A summary of the discussions can be found on the Energy Institute's website – www.energyinst.org.uk – under the 'Media Centre' button. Further information can also be found at www.defra.gov.uk/corporate/consult/ ukccp-review/index.htm

ChevronTexaco and Unocal to merge

ChevronTexaco is to acquire Unocal in a stock (75%) and cash (25%) transaction valued at approximately \$18bn, including net debt.

ChevronTexaco expects oil-equivalent production from the combined portfolios during 2006 to average about 3mn b/d. Unocal's 1.75bn boe proved reserves would increase ChevronTexaco's reserve base as of the end of 2004 by about 15%. The resultant weighting of natural gas reserves would increase by about 5 percentage points to roughly one-third of the oil-equivalent total.

Nigerian GTLs

ChevronTexaco's Nigerian subsidiary has awarded a \$1.7bn engineering, procurement and construction (EPC) contract for the Escravos gas-to-liquids (EGTL) project in Nigeria. The owners of EGTL – the Nigerian National Petroleum Corporation (NNPC; 25%) and Chevron Nigeria (CNL; 75%) – awarded the EPC contract to Team JKS, a consortium composed of JGC Corporation of Japan, KBR and Snamprogretti. Sasol Chevron will provide technical support.

EGTL will convert natural gas currently being flared into high-value clean transportation fuels. The project is expected to produce 34,000 b/d of GTL diesel, GTL naphtha and a small amount of LPG. GTL contains virtually no sulphur, is very low in aromatics and offers impressive power ratings. EGTL will combine advanced hydroprocessing technology developed by ChevronTexaco with the Slurry Phase Distillate™ (SPD) process owned by Sasol of South Africa, which also is providing risk-based financing for the project.

The Escravos gas project Phase 3 (EGP-3), consisting of onshore and offshore facilities, is expected to provide approximately 300mn cf/d of natural gas in feedstock for the EGTL project. NNPC's equity participation in EGP-3 is 60%, while CNL holds 40%.

Coal-to-liquids first for Sasol

Foster Wheeler, in a joint venture with China Huanqiu Contracting & Engineering Corporation, has been awarded a feasibility study Stage I contract by Sasol and its Chinese partners (China Shenhua Coal Liquefaction Corporation, Ningxia Luneng Energy and High Chemistry Investment Group).

The contract is related to two 80,000 b/d coal-to-liquids (CTL) facilities to be located at Ningxia Autonomous Region and Shaanxi Province, respectively, both in coal-rich western China.

It is reportedly the first use of Sasol's CTL technology outside South Africa.

Coal-to-liquids comprises an integrated process for the conversion of coal into selected fuel products such as diesel, naphtha and LPG by using a combination of three principal processes – gasification of coal to synthesis gas, conversion of gas-to-liquids and hydrocracking the converted products into fuel products.

The three processes involve separate technologies, central to which is Sasol's low-temperature Fischer-Tropsch technology for the conversion of synthesis gas to liquid fuels.

N BRIEF

NEWS

UK

Open outcry trading has stopped at London's International Petroleum Exchange (IPE) after it switched to a fully electronic system designed to better meet client needs and improve efficiency. It is understood that many of the traders plan to relocate to the rival Nymex exchange in Dublin, which continues to run open outcry trading.

The Morrison supermarket chain is reportedly ending the forecourt partnership between its recently-acquired Safeway group and BP, with the 61 service stations operated under the scheme to be divided between the two parties.

EUROPE

Legal final warning letters from the EC threatening European Court of Justice (ECJ) action have been sent to Belgium, Estonia, Germany, Ireland, Latvia, Lithuania, Luxembourg, Spain and Sweden for failing to implement the EU's key gas liberalisation directive, reports Keith Nuthall. The EC has also sent critical formal notices to Belgium, Cyprus, Estonia, France, Italy, Luxembourg, Poland, Portugal and Slovenia accusing them of failing to submit national reports framing 2005 effective targets for biofuel consumption, as required under the EU biofuels directive. Meanwhile, the EU's Latvian Energy Commissioner has braved the wrath of speed-loving Germans by saying in the Die Welt newspaper that he backs the International Energy Agency (IEA) proposal for a European speed limit of 90 km/h (55.9 mph). Andris Piebalgs noted speeding cars 'use a lot of petrol'; he is charged with securing Europe's energy supplies.

European experts met in Brussels on 13–15 April 2005 to consider a potential method to reduce carbon dioxide (CO_2) emissions on a large scale. The European strategy 'Towards Zero Emission Power Plants' aims to reduce drastically these emissions by capturing the CO_2 and storing it underground in geological formations. This will, in effect, return the carbon back into the earth's geological formations from where it came.

EASTERN EUROPE

Lukoil has acquired 15 service service stations in Hungary from Austrian ABA, increasing Lukoil's network in the country to 26 – accounting for just over a 3% share of the Hungarian fuel market.

Commercial first for biodiesel



Commercial production at what is claimed to be the UK's first large-scale biodiesel plant has started. The first tanker-load of the clean, green road fuel – made from used used cooking oils and tallow – has been picked up from the Argent Energy plant at Motherwell, in Scotland, by Petroplus and will shortly be available at forecourts. Once at full production the plant will be capable of producing 50mn l/y of the fuel, which meets BS EN 14214, the European standard for biodiesel. Argent is currently looking at the possibility of setting up at least two more plants in other parts of the UK.

The load is part of a contract between Argent Energy and Petroplus which could see up to 25,000 t/y of biodiesel making its way to refineries in Grangemouth and in Teesside. There it will be blended with mineral diesel. The resultant blend of 95% mineral diesel to 5% biodiesel will be marketed under the Bio-plus brand at the forecourt. It requires no changes to the logistics of the fuel supply chain or to vehicle engines, states Argent Energy.

Biodiesel is currently available at over 100 service stations in the UK and sales are approximately 1.8mn litres per month – compared to total diesel sales of roughly 1,700mn litres/month. Argent will supply around 4.2mn litres/month when the plant is fully operational later this month.

Fuel developments in European Union

The European Parliament and the European Union (EU) Council of Ministers have compromised on the final shape of a directive reducing sulphur content in marine fuels, writes Keith Nuthall. The result is legislation that permits higher sulphur usage than the parliament wanted, cutting its marine fuels content to 1.5% by 2007 for all vessels in the Baltic, the North Sea, and the English Channel, and passenger ships in all EU seas and oceans. This must be reduced to 0.5% near ports. MEPs had wanted a 0.5% limit from December 2008 for all EU seas and oceans bordering special SOx (sulphur oxide) Emission Control Areas, as framed in International Maritime Organisation (IMO) rules.

Elsewhere in the EU, the main barriers to establishing hydrogen fuel systems are no longer economic or technical, but a lack of commitment and cooperation amongst the energy sector and governments, the general assembly of the European hydrogen and fuel cell technology platform has heard. The publicprivate umbrella group adopted a 10-year research and development plan to reduce fuel cell systems costs to at least a tenth of those today, while doubling their performance and durability. Meanwhile, the European Commission (EC) and three Danish local authorities are planning to launch Europe's first hydrogen-powered train, helped by Jutland's Hydrogen Innovation and Research Centre.

PETROLEUM REVIEW MAY 2005



NEWS

NORTH AMERICA

Scientists at the US government Agricultural Research Service have developed a way to eliminate costly conventional and costly oil extraction procedures in making biodiesel, reports Monica Dobie. The new method involves oil being created through a chemical reaction caused by incubating dried oilseed with methanol and sodium hydroxide, which are currently used to process extracted oil.

General Motors (GM) is reported to have signed an \$88mn deal with the US Department of Energy to build a fleet of 40 hydrogen fuel cell vehicles and further develop the technology. In a separate commercial agreement, Shell Hydrogen will support GM by setting up five hydrogen-refuelling stations in Washington, DC, New York City, and in California.

Technip has secured a contract from Hovensa for a new hydrotreating unit to be located at its 495,000 bld refinery in St Croix, US Virgin Islands. The 50,000 bld FCC (fluid catalytic cracker) gasoline hydrotreater will produce low-sulphur gasoline in compliance with new US regulations.

Shell Oil is understood to have sold its Bakersfield refinery, once slated for closure in October 2005, to Flying J for \$130mn. The Utah-based diesel fuel supplier and truck stop operator is understood to be planning to spend a similar amount on expanding gasoline and diesel production from the facility. In its current configuration, the refinery produces 2% of California's gasoline and 6% of its diesel.

MIDDLE EAST

Saudi Aramco is reportedly planning to build a new 400,000 b/d refinery on the Red Sea at a cost of between \$2.13bn and \$2.66bn. The company is seeking two foreign partners to take a 30% stake in the project.

National Iranian Oil Engineering and Construction Company is seeking \$10.1bn in investments for the development of seven domestic refineries, writes Stella Zenkovich.

ASIA-PACIFIC

Biodiesel producer D1 Oils has announced a significant boost to its renewable fuel programme in India. D1

Flexibe fuel account control

Managed accounts offer a high level of control over a fuel account, minimising the need for credit control and enabling Diesel Direct dealers to offer more flexible terms to new customers, even if they have little trading history. The scheme, devised by fuel management expert CH Jones, allows dealers to set up accounts with distinct parameters, giving complete control over the delivery, supply and payment for fuel consignments. The system has built in features, which mean the fleet manager is prompted when stocks get low, and if necessary a stop level can be set at which no further drawings can be made. Daily limits can be set for each vehicle within a fleet, to ensure consumption can be closely monitored at all times.

Oxon-based abbey group operates as a Diesel Direct dealer on behalf of CH Jones and has been offering managed accounts since the beginning of 2005. Steve Clarke, abbey's Customer Services & Marketing Manager comments: 'Managed accounts are a useful alternative to "credit" accounts because we encounter many newly established Limited companies and sole traders who would like to enjoy the service, savings and security that an abbey Diesel Direct card offers, but have little trading history. Our managed account offer, called "easy-diesel", fills a gap in our portfolio, and has already enabled us to secure a number of new accounts, whose needs we would not previously have been able to meet.'

Steve also emphasises the security and flexibility that 'easy diesel' offers to abbey's customers: 'As the product is fully "smart" enabled using Chip and PIN technology it is one of the most secure products on the market. The customer can stipulate that an individual card can only be used to draw a maximum amount of fuel in any one day, can only be used for diesel, only allowed to draw on specific days or from particular sites and so on. The system couldn't be more flexible.'

New alliance helps optimise fuel operations

KSS and FuelQuest have formed a partnership aimed at helping fuel retailers optimise their business operations across the fuels pricing and supply chain based on a 'unique understanding of customer demand'. FuelQuest is the provider of FMS, a leading industry solution for fuel demand and supply chain management. KSS is the provider of PriceNet, a leading industry solution for retail fuels pricing and price decision support.

The two companies will co-market a certified interface between the FMS and PriceNet systems that will allow users of both solutions to drive incremental value by creating linkage between fuel supply schedules and sales forecasts that take account of short-term pricing strategies and positions. This will establish a fully integrated solution that will provide improved visibility of the short-term supply position to the pricing function and will provide visibility of sales forecasts adjusted for short-term pricing tactics. The interface will reportedly allow better coordination between supply and pricing.

Biodiesel refining

D1 Oils has reported the successful completion of a rigorous 24-hour, seven days' continuous production trial of the latest version of its D1 20 modular biodiesel refinery trans-esterification process. The refinery is designed to convert crude vegetable oil into biodiesel that meets European quality standard EN14214. The trial was witnessed and independently audited by Mott MacDonald, a global power engineering consultancy.

The trial was conducted using rapeseed oil. Jatropha oil will be processed by the D1 20 refinery as soon as sufficient quantity of raw feedstock is available and a pre-processing unit designed to process a wider range of both food and non-food grade vegetable oils, currently under construction, is completed. This is anticipated to be in 2H2005.

Lubes venture

The Shanghai Automotive Group Company (SAGC) and Shell have announced plans to launch a new joint venture to develop fast lube service facilities for motorists in China. The new joint venture – Anji Jiffy Lube Automotive Services Company – will start building a network of fast lube service outlets this year, modelled on the pioneering Jiffy Lube chain in North America.

The joint venture expects to develop about 10 pilot outlets in Shanghai within the first year of operation, using this experience to plan for expansion in Beijing and elsewhere in China. The outlets will be named 'Jiffy Lube Automotive Preventive Maintenance Centre' and will also display Jiffy Lube and Anji logos. Its lubricants products will be mainly provided by Shell.

PETROLEUM REVIEW MAY

NEWS

N BRIEF

Mohan Bio Oils, its 50:50 joint venture, has signed a memorandum of understanding (MoU) with the State Bank of India (SBI) to provide 1.3bn rupees (approximately £15mn) to local farmers in Tamil Nadu to plant up to 40,000 hectares of jatropha. The harvested seeds will have an anticipated yield of between 100,000 and 120,000 tonnes of crude jatropha oil per annum (assuming the full 40,000 hectares are planted).

The Chinese authorities have granted

final approval for the creation of a new joint venture to be known as Total Sinochem Fuels Company, owned 49% by Total and 51% by Sinochem. The first service stations operated under the partners' banner are expected to open in Beijing this autumn. The new venture aims to develop a network of 200 service stations around Beijing and Tianjin, and in the Hebei and Laioning provinces.

National Iranian Oil Company (NIOC) is reported to have signed an initial agreement to build a \$3bn refinery in Indonesia, partnered by Indonesia's state-owned Pertamina.

CITIC Resources Holdings is reported to have stated that its new Caltex distribution joint venture in south China plans to double its number of service stations to 100 in the coming year. CITIC has taken a 50.5% stake in Caltex South China Investments for \$45mn.

AFRICA

Sudan is planning to double its refining capacity in three years to handle increased production, according to Energy Minister Awad Ahmed al-Jazz. A new 100,000-bld refinery is to be built in Port Sudan, on the Red Sea, while the capacity at two existing refineries – one in Port Sudan and one in the capital, Khartoum – are to be increased, writes Stella Zenkovich.

Eni reports that the Okpai independent power project in Nigeria's Delta state has been inaugurated. The plant is reportedly the first of its kind to be built by an oil company in Nigeria and is consistent with the plan for natural gas monetisation that was launched by Eni in 1999 with the aim of elimination of atmospheric emissions by 2008.

Arabian Gulf Oil (AGO) has signed an agreement with the Ghanaian government to build a 200,000-b/d refinery at a cost of \$2.84bn, reports Stella Zenkovich. The facility is to be built in the southwestern Takoradi port town by 2009.

Greenergy and Tesco join forces

Greenergy has joined forces with 25% shareholder Tesco to service the rapidly growing European biofuels market. The partnership with Tesco will enable Greenergy to extend its existing domestic and European biodiesel supply operations by building what is claimed will be the UK's largest single-line biodiesel production facility.

Capitalised at over £10mn and scheduled to open in 2Q2006, subject to the usual consents, the plant will initially have a 100,000 t/y production capacity. Its intended location at Immingham on the Humber Estuary will allow cost effective distribution across the UK and into Europe with supply of rapeseed, the main oilseed for the facility, secured under existing contracts with the UK farming community.

Andrew Owens, Chairman of Greenergy Fuels commented: 'We are pleased to announce that funding is now in place to build this plant and that we are on schedule to open 2Q2006. At a time when supply constraints are leading to high oil prices, and there is increasing government focus on effective and immediate reductions in carbon dioxide emissions, low carbon, renewable biodiesel offers a vital part of the solution. Used as a blend in standard fuel mixes, biodiesel can provide security of supply through UK sourcing, and reduce the greenhouse gas emissions required if climate change commitments in the transport sector are to be met.'

The announcement came as the UK government makes tackling climate change a key objective of its G8 and EU Presidencies, with the renewable fuel biodiesel central to the its strategy to reduce transport-related carbon emissions. Biodiesel already benefits from a duty incentive in the UK and a Renewable Fuels Obligation looks set to stimulate demand further. At the same time the European market, in particular France and Germany, is experiencing rapid growth in demand driven either by mandated use or by low or zero fuel duties, coupled with a shortage of plants able to deliver cost effective processing and distribution.

The European biofuels directive requires European governments to set targets for biodiesel usage in their country as a proportion of total diesel usage. The targets are progressive, starting at 2% of the diesel market (350,000 tonnes of biodiesel) in 2005 and rising to 5.75% (1.2mn tonnes of biodiesel) by 2010. The 2005 target is a five-fold increase on current biodiesel usage levels in the UK.

New petrol grade for Saudi market

Saudi Aramco has awarded five major construction contracts as part of a project to launch a new grade of petrol (octane 91) on the Saudi market, in addition to the current petrol grade (octane 95), by January 2007.

Studies have confirmed that the majority of vehicles Saudi Arabia are designed to use the octane 91, or premium, petrol. Using higher octane for those vehicles means higher cost for the customer for no added value, states Saudi Aramco. The five contracts – signed by four contractors: Arabian Bemco Contracting, Contracting and Trading, MR Al-Khathlan for Contracting, and National Engineering Services and Marketing – will upgrade various facilities, including Saudi Aramco's four refineries and one terminal, to allow them to produce, store, handle and sell the new grade of fuel. The awards are the latest in a series that have seen earlier contract awards for site preparation, storage tanks and plant construction.

Russian electricity sector reform

The International Energy Agency (IEA) recently published a new report – *Russian Electricity Reform: Emerging Challenges and Opportunities* – which examines the proposed market structure and the strength of the inter-regional grid system to maintain healthy trade and competition, and to minimise the potential for market power abuse.

In this respect, Russia's extremely costly experience in privatising its oil sector over the early 1990s should provide a sharp reminder of the potential dangers of this process,' commented Claude Mandil, Executive Director. 'Keys to the success of competitive markets in electricity and eventually other parts of Russia's energy sector will be a truly independent grid operator and strong, well resourced, well informed, well-trained and independent regulators that can rise to the challenge of establishing access to network and other monopoly products and services on fair and reasonable terms for all market players.'

deepwater

according to Garvin: 'Allows us to do subsea construction over the side while we are doing other things in the moonpool. We can install trees, manifolds and jumpers, as well as pulling in flowlines.'

In addition, the unit has two remotely operated vehicles (ROVs) and a dedicated ROV moonpool, which will be particularly useful – 'We will be installing long jumpers between wellheads and manifolds,' Garvin explains.

So, does the offshore industry really need to operate beyond 10,000 ft, and does it have the technical ability to do so?

'It is like asking how long is a piece of string,' says Garvin. 'A lot of factors determine how deep you can go, the mud weight, and how the drilling riser reacts to the environmental conditions. A lighter mud weight means less riser stress.'

Another issue is the amount of anchor line a unit can carry. The *Development Driller II* is equipped with mooring lines and dynamic positioning (DP). 'It has a full mooring system,' says Garvin. 'But, for Atlantis, we are planning on maintaining station with DP only and we have elected to leave all of the chain behind, except two lines – as a contingency.'

P

hoto: Global Sante

Garvin says that the major challenge in the deepwater arena remains development work – drilling in 15,000 ft of water is now an achievable target, but it's not an immediate goal. 'People are facing challenges everywhere, but field development is what puts money in the coffers,' he comments.

Drilling in 15,000 ft of water may be achieved purely by adding more riser to existing drilling units. 'I think it will happen,' Garvin says. 'It is all about riser analysis.' More information is needed about the effects of environmental loads on drilling riser – such as vortex induced vibration, how riser load is affected by the mud weight inside, and how variations in mud weight affect riser performance and its fatigue life operating at 15,000 ft. 'Once you have all that information you can run a riser analysis that will tell you if you can do it or not.'

Riser weight is another factor, where the variable deckload of a rig comes into the equation. 'One of the issues is carrying the joints of riser, but you can run it off another boat, if the weather permits,' Garvin notes. 'Most fifth generation drilling units are more than capable of running riser weight at that depth.'

Going deeper

Another drilling competitor, Transocean, believes there is scope to drill in up to 15,000 ft of water depth (4,573 metres) too. 'We can move to the next levels of water depth exceeding 10,000 ft of water, mainly by adding riser,' says a

2005

After the psychologically important 10,000-ft water depth drilling limit was broken, the offshore industry might be wondering how much deeper can it go. Part of the answer lies in riser technology. But a further question remains – how to successfully exploit deep discoveries within a commercially viable framework? John Bradbury reports.

Versatile operating platforms such as this newbuild semi-submersible – the *Development Driller II* – are likely to be in demand for deep construction work going forward, as much as deepwaterrated rigs will be for future offshore exploration Transocean's Discoverer Deep Seas set a new world water-depth drilling record in November 2003 by spudding a well in 10,011 ft of water with ChevronTexaco's Toledo project in the US Gulf of Mexico Alaminos Canyon block 951. While setting a precedent, a bigger challenge is developing known deep resources. Two new semi-submersible ultra-deep construction vessels, Global Sante Fe's Development Driller I and II, can help to answer that call to exploit deeper reserves.

Rising to the

deepest

challenges

BP's \$2bn Gulf of Mexico Atlantis development will see first use of the *Development Driller II.* Mike Garvin is Global's Operations Manager for the unit. 'Some 70% to 80% of the time we will be doing something other than drilling. Most of that is development work – completion and subsea construction,' Garvin explains. 'At most, 20% to 30% of our time will be drilling.'

To maximise versatility, Global has built its new semi-submersible with a 'well activity centre' which provides primary and secondary work paths within a single derrick, incorporating two 1,000tonne and 500-tonne active heavecompensated drawworks that allow simultaneous seabed installation operations through a large moonpool. Separate operations on wells 30-ft (9 metres) apart are possible. The unit also has a modified anchor winch, which,

& P

Transocean spokesman. 'This type of step would move us into the range of 11,000 ft to 12,000 ft plus of water.'

Managing more drilling riser is one of the keys to future deepwater activity. Rigs need to carry substantial quantities of drilling riser – with huge weight – to reach down to the sea floor. As water depth increases, so does riser weight, thus rigs with substantial payloads are required to carry them. 'Today's fifth generation ultra-deepwater rigs are delivering the advanced technology required to construct wells,' Transocean's spokesman states.

Garvin identified other issues too, including the need to manage riser recoil in water under environmental loadings, which Global overcomes by using moveable (slick) joints at the bottom of a drillstring, and by adding buoyancy to riser joints above.

Yet construction challenges remain. 'I think we are heading in the right direction,' Garvin comments. 'I think it will be an evolutionary process. We are learning a lot more about riser management all the time. On Atlantis, we will make use of extensive riser instrumentation technology, which will report data in real time. We are adding strain gauges, accelerometers and full length current monitoring for the riser.'

Garvin also suggests that more empirical and theoretical data is necessary to allow the deepwater operating envelope to be stretched further. BP is turning to real-time riser instrumentation on its US Thunder Horse project, where 2H Offshore Engineering will be fitting a drilling riser monitoring and response evaluation system onboard Transocean's *Discover Enterprise* drillship for operations at Thunder Horse, in 5,980 ft (1,900 metres) of water depth.

Due for installation September 2005, the 2H equipment will give structural response information on the entire riser length in real time, to confirm its structural integrity during drilling. 2H claims the system will provide the best information yet on riser response to vortex induced vibration, current loads, and fatigue damage.

Technology barriers

Clearly riser management is still a technology barrier for future deep operations and Garvin doubts there are universally accepted techniques for handling marine drilling riser: 'I do not know if there is complete agreement within the industry on the proper way to manage the effects that the environment has on the riser.'

Exotic materials such as carbon fibre,

titanium and aluminium have a part to play in riser construction, he says, but although they offer huge weight savings over steel, joining these with other materials presents problems. 'It is when you get to discontinuities - where you have to make a flange or a connection - that their construction becomes very complex,' he notes. But the weight saving these lighter materials offer is the biggest benefit. 'Where you have an older rig with a marginal deck load, there is a real value in that. It gives you the opportunity to upgrade the water depth [on an older rig] without sacrificing variable deck load."

Upsurge in interest

Fearnley Offshore, in its 2005 Oil and Gas Review predicts an upsurge in deepwater spending, stating: 'The main trend for exploration and production companies is the move towards deeper water. Hence, worldwide deepwater activity will require capital expenditure exceeding \$56bn from 2004 to 2008.'

Deepwater drilling spending will form 31% of the 2007 global drilling total, Fearnley suggests. Equally important, Fearnley forecasts that the subsea processing market – estimated to be worth \$370mn between 2003 to 2007 – will more than treble to \$1.6bn between 2008 and 2012.

Another forecast indicates deepwater will be a mainstay of worldwide exploration spending. Expenditure for drilling and completing of all deepwater subsea wells (including trees or templates) due onstream in the period 2005–2009 in Africa, Latin America and North America is estimated at \$24,708mn according to Infield Systems data, which uses 1,640 ft (500 metres) as its deepwater definition (see Table 1).

Between 2005 and 2009, according to Will Rowley, Director of Analytical Services at Infield, deepwater facilities spending – fixed and floating surface structures – will be \$20,611bn, compared with \$13,747bn for the period 2000–2004. The annual breakdown of global expenditure by region for 2005–2009 is shown in Table 2.

Global production additions by the world's seven oil majors - BP, ExxonMobil,

	the second se
Africa	\$11,113mn
Latin America	\$5,544mn
North America	\$8,051mn
Table 1: Total dee subsea completio	pwater drilling and n expenditure
2005-2009	Source: Infield Systems

Shell, ChevronTexaco, ConocoPhillips, Total and Eni – in the period 2002–2008 is forecast at 2.18mn boe/d.

Split by region, that figure breaks down to 830,000 boe/d for the Gulf of Mexico, Angola 750,000 boe/d; Nigeria 420,000 boe/d and other West African production 10,000 boe/d, and the rest of the world at 160,000 boe/d, according to Total's December 2003 issue of *Techniscoop* magazine – leaving one to conclude that much of the production from oil majors in the future will emanate from deep provinces.

Rigs to riches

Further proof of buoyancy in the deepwater arena is provided by high dayrates achieved by high specification rigs. Transocean's *Discovery Deep Seas*, working for ChevronTexaco in the US Gulf of Mexico is earning \$205,000/d, the *Discoverer Enterprise* is operating for BP for \$182,500/d, and the *Discoverer Spirit* was operating for Unocal in the same region for \$204,000/d.

Transocean's Chief Executive Officer Robert Long said recently that deepwater exploration would continue to underpin the company's future. 'Anyone looking for a fifth-generation rig in 2005 basically can't get them,' he said. 'A lot of jobs are for one to two years in length.' Fifth-generation drilling units were starting to receive dayrates bids 'well above' \$200,000/d, Long told delegates at the A G Edwards energy conference in the US.

Technology issues

Returning to development issues, Joel Fort, former Project Manager for the North Sea Elgin Franklin project and now Vice President for Development and Operations Technology at Total, *continued on p17...*

Region	2005	2006	2007	2008	2009
North America	1,187	1,195	778	810	518
Latin America	1,216	1,197	760	1,229	888
Asia	431	458	584	208	70
Australia	0	0	83	240	45
Europe	0	11	44	154	0
Africa	2,295	2,282	1,575	1,034	1,298
Total	5,129	5,143	3,823	3,675	2,819

Table 2: Deepwater capital expenditure 2005–2009 (\$mn)

Source: Infield Systems

AFRICA

Deepwater developments

Norson Services, a UK market leader in pipeline, process and umbilical services, recently completed its first deepwater pipeline operation offshore Equpt using newly developed technology. The success of this project will see the Aberdeenbased company complete work on the remaining 21 pipelines in a contract worth over \$6mn. Les Graves. Director of Norson's Pipeline, Process and Umbilical division, hopes that the project will also open up new markets for the company.

In an alliance with Weatherford International, Norson Services was appointed by Technip Offshore UK to provide pre-commissioning services to the Simian, Sienna and Sapphire development in the Egyptian Mediterranean West Delta Deep Marine Fields, which is to supply the Egyptian LNG export project. As part of the contract, Norson developed a subsea remote flooding module (RFM) which was able to flood and pig pipelines and flowlines in water depths of almost 1,000 metres to clean them and allow pressure testing.

RFM at work

Newly installed pipelines are laid on the seabed at atmospheric pressure. The new remote flooding module uses the available seawater pressure outside the pipe as a source of power and water to flood and pig the lines, whilst still meeting the desired filtration and chemical protection specifications. The modular remote system is ROV friendly and removes the need for connection to a topsides vessel or installation, thus saving substantial costs and time.

An onboard or ROV-mounted hydraulically driven centrifugal pump unit is used to complete operations where pigging is required. Usually driven by the ROV, which is in any case used to recover the unit to surface, this pump is designed to overcome the differential pressure across the pig(s) and drive them into the receiver. The RFM



can be used in any water depth. Where no pigging is required, depending on the operation being undertaken, 100% flooding can be achieved in deepwater without the completion pump being required.

The RFM has many benefits over conventional surface and other subsea equipment, including:

- Removal of downline failure risk.
- Reduced vessel size, space, crew and dramatically reduced project costs.
- Great schedule flexibility.
- Allows vessel to do other work during flooding operations.
- The RFM holds more chemical than other subsea units, allowing less recovery and deployment cycles.
- The RFM uses rigid loading arm technology to reduce subsea connection times.
- The RFM is extremely ROV friendly, ROV specialists involved in design.
- Reduced thermal stabilisation for hydrotest.

Pipeline pressure testing

Norson has also developed an ROVdriven hydrotest pump system (SHP) and a subsea data logging system, specifically for projects in Africa.

The SHP comprises a small pump skid that is positioned subsea by the ROV and also powered hydraulically from the ROV. It is used to pressure test subsea pipelines. Once the SHP has raised the pressure and the test is holding, the ROV and vessel can leave it and get on with other work. This facilitates the use of a small ROV vessel, eliminating the need for a large pumping spread sitting on a large vessel that has to remain in place for days in order to monitor the test. The system is to be used for the first time offshore West Africa later this year.

The SHP will include a full pressure control system and newly-developed subsea data logging facility. The subsea data logging system has already been successfully used on the Simian and Sapphire fields.

MAY

RUSSIA

Russian oil matters

The Russian oil and gas industry is one sector where comparison with the matryoshka doll – the dolls beloved by tourists that open up to reveal a series of ever smaller dolls within – seems particularly apt. Inside the outer doll, which represents the industry as a whole, you find a smaller doll representing Gazprom, the natural gas monolith. Inside again is Rosneft, the only Russian oil company that is completely owned by the state. The oil giant Yukos is in there too. And then finally, some analysts would suggest, at the heart of the doll, is the Kremlin.

Overshadowing the industry is the fate of Yukos. The Russian government's aggressive scrutiny of Yukos' tax affairs, which involved a series of tax demands and dawn raids by bailiffs and armed soldiers, is widely regarded as a politically-motivated response to the political ambitions of its former Chief Executive, Mikhail Khodorkovsky. He had funded liberal opposition groups, and was arrested in October 2003 on fraud and tax evasion charges.

The proposed merger between Rosneft and Gazprom is the current eye-catching event. The deal was announced earlier this year in a grand, orchestrated televised press conference staged by Aleksei Miller, the Chief Executive of Gazprom, and Sergei Bogdanchikov, Chief Executive of Rosneft. If all goes to plan, Gazprom will acquire Rosneft and in return the Russian government will boost its 39% interest in Gazprom to a controlling 51% stake. Having formed a state-owned energy champion with majority control, Putin's government will then allow foreign trading in Gazprom shares. The latest betting is that Gazprom will finally absorb Rosneft in June.

Public sqabbles

However, the two firms are already squabbling in public. The dispute is centred on the future of one of Russia's biggest gas fields, operated by Rosneft through its newly-acquired Yuganskneftegas arm, and the extent to which Rosneft will be integrated into Gazprom in the wake of the merger. Miller initially suggested Rosneft will be integrated and forfeit its separate legal and operational entity. Rosneft officials begged to differ.

The merger inches towards a conclusion. In March, Rosneft and Gazprom



Mark Rowe provides an update on the proposed merger between Rosneft and Gazprom, including the ongoing dispute regarding the sale of Yukos' production arm,

Yuganskneftegas.

confirmed the structure for their companies' shares and assets exchange and issued a rather unconvincing joint statement in which they announced that Rosneft and Gazprom would remain as separate legal bodies and that Rosneft would preserve all its competitive advantages. While investment continues - Rosneft is increasing output at its refinery at Komsomolskon-Amur to 7mn t/y - the knock-on effect is biting. Viktor Khristenko, Russia's Industry and Energy Minister, calculates Gazprom's loss from gas sales on the domestic market will reach \$1.08bn in 2005 as a result of a planned re-evaluation of its fixed assets.

A source at Yukos, who preferred not to be named, put the implications for the industry more bluntly: 'The industry is going more and more down the state-controlled line and further away from a good mix of state and private investment. Russia has some extremely big issues coming. Certain people are looking to get hold of the riches they felt they should have had in the Yeltsin era. They're unable to hold back now and wait for the even larger pie that would have come along in a few years and benefited the whole country.'

Worth the risk

It would be tempting to marvel at this mesmerising public spectacle of power politics were it not for one thing – Russia's oil matters. Many western nations face pressure to address the critical issue of their future supply of their energy and, even though Putin has indicated Yukos is a one-off, they have little choice but to swallow their doubts. 'Putin saw what happened to Yukos as a necessary evil,' says Stephen O'Sullivan, Head of Research for UFG, who doubts whether the move was part of a long-term plan to keep the

European Union support

Whith security of energy supplies being a key concern of the European Union (EU) and the subject of legislation under discussion in Brussels, it is no surprise that the EU devotes millions of euros to developing the oil and gas sector of the Former USSR, writes *Keith Nuthall*. The European Commission (EC) has long seen the value of using the region as an alternative energy source to the politically unstable Middle East and so has worked to promote pipeline links and oil and gas field exploration.

This desire has found one expression in the EU's INOGATE (Interstate Oil and Gas Transport to Europe) project. Launched in 1996, the project is now in its third and possibly final phase, ending in 2007. INOGATE has funded the assessment and installation of pipelines and associated technology from across the Former USSR, from building cross-border gas metering stations and gas storage units, to assessing multi-modal oil transport systems and gas interconnections. It has also helped forge international agreements to build the pipelines themselves. INOGATE commanded

53mn in funds from 1996–2003 and has a 18mn budget for the period 2004–2006.

Most of INOGATE'S money has come from a broader EU programme for the region – TACIS (Technical Assistance for the Commonwealth of Independent States). This was launched in 1991 and focuses on Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Broader than INOGATE, its priorities are of interest to the energy sector, given that they include the development of infrastructure networks, the management of natural resources and promoting environmental protection. TACIS has been well funded, spending

507mn in 1998 and 427mn in 1999, for instance.

oligarchies in check and claw back the massive oil reserves that were sold off in the 1990s for small change into the coffers of the state.

'Had it been part of a wider campaign we would have seen another incident by now,' he comments. 'The action against Yukos was primarily political and aimed to cut a rival down to size. Putin had agreed with the oligarchs that they could keep the companies they picked up cheaply and he could keep power.

Funding opportunities

Looking ahead, the TACIS programme is due to expire next year, but European Commission officials are devising a replacement programme. Here again, there will be large opportunities for energy funding, given that Brussels has named 'cooperation with the EU, in areas of mutual strategic interest' as one of two broad priorities (the other being poverty reduction). The Commission wants the new TACIS to include tailor-made national strategies that closely fit the needs of countries in the region. For some - such as Azerbaijan and Kazakhstan - that may well mean better energy infrastructure. The rule of thumb is the richer the country (read Russia, the Ukraine and others), the more concentration on cooperation with the EU, and that will encourage energy spending. For the comparatively poorer countries, such as Moldova, fighting poverty will be more important.

In time, TACIS will be replaced by closer links, maybe with more former Soviet republics following Estonia, Latvia and Lithuania into the EU. In the meantime there are a series of association agreements with other ex-USSR states, barring Belarus and Turkmenistan, whose regimes are deemed too politically contentious to be allowed to sign on the dotted line. These deals formally commit the EU to cooperate with these countries to boost their economic development and energy is a key sector highlighted in their texts. For instance, oil and gas rich Azerbaijan's partnership agreement commits both sides to working together to formulate public energy policy, improve energy supplies and modernise energy infrastructure. The EU also has a special EU-Russia Energy Partnership underlining the increasing dependence of western Europe on Russian gas and, to a lesser extent, oil. The regular meetings sparked by this

Khodorkovsky broke those rules. Only then did Yukos become an economic issue with players snapping bits off the corpse.'

'The major oil companies will have rolled their eyes at what happened to Yukos, but they still come back because, even though they have to grit their teeth, they calculate Russia is worth the risks. For strategic reasons the country is interesting. There are substantial reserves and production is large and growing, and that is good separate agreement focus on all questions of common interest, but especially the introduction of cooperation on energy saving, rationalisation of production and transport infrastructures, European investment, and diplomatic relations affected by production and consumption.

Inevitable spin offs

Such prioritisation of energy cooperation has had inevitable spin offs within the lending policy of EU financial institutions, notably the European Bank for Reconstruction and Development (EBRD), whose raison d'être is to promote the economies of eastern Europe and central Asia. It has been investing in oil and natural gas production since its launch in the wake of the fall of communism in 1989 and 1990. This policy is driven by economic reality. A review of EBRD policy said last year, regarding Russia, that it was not interested in determining 'if' it should invest in energy, rather the focus of spending. One suggested spending strategy said there should be increased lending to locally owned firms, another looked at reforming consumption systems, as well as exploration and production.

Looking back, however, EBRD support of the region's oil and gas extractive industries has been variable, not even reaching 50mn in 2003, but hitting 175mn in 2002. However, overall, funding has been significant. By 2003, the Bank had sunk 1.6bn into eastern Europe and central Asia's natural resources sectors (including mining). This is much more than the efforts of the EU's largest financial institution, the European Investment Bank, which has largely ignored the Former USSR's oil and gas sector, focusing instead its lending on natural gas investments on former communist countries who have now joined the EU or those who are about to, notably Romania.

for your bottom line. Most felt the Yukos affair wasn't enough to put them off Russia completely. But that's not a universal sentiment. Exxon feel they won't be in Russia more than they have to be.'

Less drama in 2005

By comparison, events this year in Russia are likely to be somewhat less dramatic. With no major auctions remaining the interest will lie largely in

deepwater

the consolidation of small and medium enterprises, according to O'Sullivan. 'Luffneft is growing quickly and may make some acquisitions, while TNK-BP may acquire the other half of Slavneft from Sibneft,' he notes.

In March, TNK-BP endorsed a plan to simplify its corporate structure and increase internal and external transparency. This mainly involved a restructure of the company that pooled three holding companies TNK, ONAKO and Sidanco, into TNK-BP holding, a recently incorporated Russian domiciled open joint stock company. 'This is another important step in the extensive restructuring programme we have initiated, explains Kent Potter, TNK-BP's Chief Financial Officer, adding that TNK-BP intends to initiate further accessions of large operating subsidiaries to TNK-BP Holding. However, a source at the company made it clear that TNK-BP remains anxious about increasing state control and the way in which state monopolies are restricting oil and gas transportation and oil exports. 'The phrase we prefer to use is that "the environment remains challenging but manageable",' he said, with an accent laced with understatement. 'But the fact that we and other players continue to develop our interests suggest we think the Yukos case is a one-off."

Yukos continues to insist that it has acted within the bounds of the law, implacably opposes the government's tax claim and, last December, staved off bankruptcy by filing for Chapter 11 protection in the US.

While the company continues to fight its corner, it is aware that every day that passes makes its challenge harder. 'We still produce 700 b/d, have two production units and six refineries in Russia and employ up to 100,000 people,' says Claire Davidson, a spokeswoman for Yukos. 'We are committed to Samaraneftegas and Tomskneft. But the longer this all goes on, the harder it is to maintain output production. As far as we are concerned we are still the main shareholders of Yuganskneftegas. We've been given no proof that an auction took place, no confirmation of the purchase and no proof that any money changed hands. We are still committed to a settlement and, in the interest of moving things on, have indicated we are happy to pay back just under \$4bn. What happens next? We just don't know. We still have had no response from the Russian government despite endless requests. The government holds all the cards.'

... continued from p13

suggests longer subsea tiebacks are the future for deeper projects, involving more stringent flow assurance regimes at increasing water depth. He also talks of production risers forming part of the future technology challenge, along with 'processing on the mudline'.

'We need increased reliability everywhere, and new materials,' he said, speaking at Quest Offshore's Marine Construction Europe (MCE) conference in Pau, France, in March. Flow assurance will involve more hydrate formation analysis, he said, while riser design optimisation will involve more study of fatigue and thermal insulation. Seabed processing will mean improving recovery and minimising energy usage. 'Total is ready today to launch and develop a large-scale field based on some sort of subsea processing,' he told MCE delegates.

Fort said Total expects more deep sea wells going forward. His company anticipates a \$20.8bn spend on offshore support services in the period 2004–2008; another \$17.7bn for subsea installations, and pipelines accounting for \$17.7bn.

Total and Petrobras are each planning more than 250 subsea completions in more than 1,640 ft (500 metres) depth in the period 2004-2010, with another 200 subsea completions each in more than 4,920 ft (1,500 metres), Fort predicted based on Quest data. Some 85% of deepwater drilling will be in the golden triangle between Brazil, West Africa, and the US Gulf. Total expects 93 deepwater wells to be drilled in more than 500 metres water depth this year; 336 in 2006 and 550 in 2007 - with 85 deepwater rigs and five newbuilds or upgrades under way at the end of 2004 available to drill them. If those numbers are correct then, by 2007, each deepwater drilling unit will need to drill an average of 6.1 wells in 2007 - assuming 100% uptime and no damage or equipment failures - which is optimistic.

E&P commitment

Each point in that golden triangle will see deep activity by the end of the decade. Total has heavily committed to West Africa, with its second major deepwater development due to take place in block 17 offshore Angola, on the Dalia field, comprising 67, and possibly 71, subsea wells – making it the most extensive deepwater subsea production system to date.

Following the award-winning Girassol project, onstream since December 2001, Dalia is set to replicate extensive deepsea production technology for Total's second block 17 project. Rather than use the hybrid riser towers first used on Girassol, Total is opting for eight integrated 12inch production bundles tied directly to an FPSO (floating, production, storage and offloading vessel), Daniel Picard, Dalia Project Manager told Quest's MCE conference.

Dalia, in depths ranging from 4,100 ft to 592 ft (1,250-1,400 metres), will feature four production loops totalling 25 miles (40 km); four water injection loops totalling 22 miles (35 km), and two gas injection lines totalling 95 miles (152 km), hooked up to a moored FPSO. The FPSO was built by Samsung in Korea, with 29,400 tonnes of topsides being built by Daeweoo Shipbuilding and Marine Engineering (DSME) with process capacity for 240,000 b/d of oil, 390,00 b/d of water injection and 8mn cm/d of gas injection, plus storage for 2mn barrels of oil. Dalia is costing \$3.4bn and first oil is due in 4Q2006.

Further ahead, Total is looking at what it calls a 'third pole' development in block 17, utilising a third giant FPSO concentrating on Upper Miocene block accumulations including the Hortensia and Acacia discoveries which were appraised in 2004. First oil could be produced by 2008–2011, Total has indicated.

Independence hub

eastern US Gulf, the In the Independence hub is another deepwater project using a \$385mn semisubmersible platform to host seven gas discoveries - Atlas and Atlas Northwest, Jubiliee, Merganser, Spiderman, San Jacinto and Vortex - owned by the US Atwater Valley Producers Group, comprising Anadarko, Dominion, Devon Energy, Kerr-McGee and Spinnaker. It will be installed in 8,000 ft (4,239 metres) of water in Mississippi Canyon block 920, and use polyester mooring and 5-inch chain wire to anchor the facility. First production is due 2007.

Offshore Mexico, Pemex is beginning to look hard at its deepwater assets in the Western Gulf where it estimates that there are 54bn barrels of potential play concepts to be explored in water depths extending beyond 500 metres to 2,000 metres.

And in Brazil, another deep development got off the ground recently with subsea construction contracts being awarded for the P52 Roncador project in 6,2032 ft (1,900 metres) of water. Subsea 7 and Technip clinched contracts worth \$500mn for the Campos Basin development, covering installation and provision of subsea umbilicals, risers and flowlines, including 138 miles (221 km) of flexible lines, 52 miles (83 km) of jumpers – plus pre and post-lay ROV equipment installation surveys. Work is due to commence late 2006.

MAY

COMPANY PROFILE

Ambitious growth targets

Continuing with our series of articles analysing a cross-section of oil and gas companies from around the world – based on information supplied by Oilvoice.com* – we take a closer look at the activities of Sibneft.

ibneft is one of Russia's largest integrated oil companies and one of the world's top 20 private sector oil producers in terms of reserves (see Figure 1). The company's core upstream assets are concentrated around Noyabrsk in Western Siberia, but it has recently begun expanding into other regions of Western and Eastern Siberia. Sibneft has also set ambitious future growth targets, to be achieved through a combination of organic growth and acquisitions. The company holds some 4.6bn barrels of low-cost reserves and is reported to have the highest well productivity of any large Russian oil company.

Sibneft's downstream business is built around the Omsk refinery – one of the largest in the world and reportedly the most technically advanced in Russia. The company recently launched a modernisation programme in order to maintain its competitive advantage and to stay one step ahead of demand requirements. Sibneft is also investing heavily in the development of its fuel retail network in its core markets in Western Siberia, with the aim of capturing a larger slice of the downstream margin. The company controls large shares of its principal markets, and its retail network now includes around 1,000 service stations.

Company history

Sibneft was created by uniting four separate operating companies, all of which had a long history of cooperation with each other. These units are:

- Noyabrskneftegas responsible for exploration and production, the Noyabrskneftegas Exploration and Production Industrial Association was established in April 1981 to develop oil fields in the Northern Tyumen region.
- Omsk refinery responsible for processing crude oil into refined products, the refinery began operations in 1955.
- Omsknefteproduct responsible for the distribution and marketing of refined products in the Omsk region.
- Noyabrskneftegasgeophysica responsible for providing well logging and perforation services.

Highlights in 2004

Crude oil production rose to 34.04mn tonnes (693,000 b/d) in 2004 compared to 31.45mn tonnes (641,000 b/d) in 2003 – an increase of 8.2% year-on-year (see **Figure 1**). Growth in exports outside the CIS outpaced production, coming in at 9% as total volumes rose to 13.58mn tonnes versus 12.46mn tonnes the previous year. As with 2003, crude oil exports last year constituted just under 40% of Sibneft's overall production.

sibneft

The production figure does not take into account Sibneft's stake in Slavneft, which it owns and operates jointly with TNK-BP. Slavneft announced a 24.1% increase in crude oil output to 22.01mn tonnes in 2004.

Meanwhile, Sibneft's Omsk refinery posted a 3.4% increase in processing to 14.31mn tonnes (292,000 b/d) in 2004, up from 13.83mn tons (282,000 b/d) in 2003. The company also refined 9.1% (3.25mn tonnes; 66,200 b/d) more crude oil at the Moscow refinery in 2004. It also boosted output of profitable lighter petroleum products such as gasoline, aromatics and jet fuel at both facilities.

Total refining for 2004 fell by 2.2% to 17.56mn tonnes (358,000 b/d), however, down from 17.96mn tonnes (366,000 b/d) the previous year. Petroleum product exports also dipped by 4.2% to 5.17mn tonnes, down from 5.4mn tonnes. Both decreases were due to the curtailment of refining at Slavneft's Yaroslavl refinery under an agreement with TNK-BP to run all Yaroslavl volumes through Slavneft.

During 2004 Sibneft also continued its fuel retail network expansion in its traditional base in Western Siberia, as well as in markets in European Russia. Fuel sales through its network rose nearly 22% during the year.

Omsk refinery

In early 2005, Sibneft and Shell Global Solutions entered into a four-year



agreement under which Shell will provide operational and technical services support for the Omsk refinery as part of an overall performance improvement programme. The programme is designed to bolster the refinery's operational and economic results while overhauling its management systems.

Located in Western Siberia, the Omsk refinery is among Russia's largest fuel and petrochemical suppliers, refining over 14mn t/y of oil (285,000 b/d).

Oil and gas production

Sibneft has worked continuously to develop and diversify its resources base. Since 2001, the company has acquired several upstream ventures and incorporated them into the group structure:

- Sibneft-Noyabrskneftegas Sibneft's main production unit and one of the major oil producing enterprises in Russia, Noyabrskneftegas was founded in April 1981 and currently develops more than 20 oil fields in the Yamal-Nenets and Khanty-Mansiisk districts of Western Siberia. The company accounts for a major portion of Sibneft's production
- and reserves.
 Sibneft-Yugra was founded in 2000 to develop the southern part of the Priobskoye field and the Palyanovskiy block of the Krasnoleninskoye field in Western Siberia. The Priobskoye field is expected to be one of the primary sources of long-term production growth for the company.
- Meretoyakhaneftegas Sibneft has controlled 67% of this company since 2002, which is developing the Meretoyakhinskoye field located to the north of Noyabrskneftegas' primary operations area.
- Archinskoye and Shinginskoye acquired in 2004, these two enterprises hold licences to develop and produce oil from three oil fields in the Tomsk region.
- Sibneft-Chukotka major pilot upstream project operating in one of the most climatically difficult geographical regions of Russia. Sibneft-Chukotka is involved in offshore drilling projects in the Baring Sea, as well as onshore oil and gas projects.

Visit www.oilvoice.com to view a worldwide selection of continually updated oil company profiles, or contact Chris Pettit on e: chris@oilvoice.com

2005



The Cadman Lecture

Thursday 23 June 2005



Presented to: Michel Contie, Managing Director, Total E&P UK

The Cadman Memorial Fund commemorates the late Lord Cadman of Silverdale, Chairman of the Anglo-Iranian Oil Company (now BP) and past-President of the former Institute of Petroleum (now the Energy Institute) and is made on an international basis for outstanding service to the petroleum industry.



The lecture will take place on Thursday 23 June at the Old Hall and Crypt, The Honourable Society of Lincoln's Inn, Holborn, London, WC2A 3TL from 17.45.

Admission, which is complimentary, is strictly by ticket only, and these are available from Jacqueline Warner, Energy Institute, 61 New Cavendish Street, London W1G 7AR, t: +44 (0)20 7467 7116 f: +44 (0)20 7580 2230 e: jwarner@energyinst.org.uk Tickets will be available on a first-come first-served basis.

AFRICA

exploration and production



On 29 January 2005, Libya held a long-anticipated auction of exploration licences for 15 onshore and offshore blocks, offering acreage for the first time on open competitive bidding. Despite keen competition for several blocks, US companies were determined and largely successful bidders, eager to return to a country from which they had been barred since 1986 when the US government ordered them to leave and surrender their holdings. For these companies, Libyan operations offer the added attraction of relatively quick shipment of produced oil to US Gulf Coast refineries, compared to the time required for the transport of Saudi oil. Judith Gurney reports.

Ithough the oil fields that have been discovered and developed in Libya produce highly attractive low-sulphur, high-quality oil, much of the country has not been explored. This is mainly the result of two decades of US, and subsequent UN, sanctions. These forced both the Libyan National Oil Company (NOC) and the foreign companies which remained in Libya to concentrate on maintaining their current operations and effectively discouraged further exploration in Libya's four known onshore sedimentary basins -Sirte, Murzug, Ghadames and Kufrah or in the Cyrenaica platform (see Figure 1). Libya's proven oil reserves are reported as 36bn barrels, with some estimates of total reserves as high as 117bn barrels. Proven gas reserves are given as 1.31tn cm, with estimates of total reserves ranging up to 2tn cm.

There has been very little exploration outside of the central core of the Sirte Basin and some areas in the Murzuq and Ghadames Basins – although there has been successful drilling offshore. Despite its promise, much of Sirte was ignored by the companies (mostly US operators) which made substantial, relatively shallow discoveries, including 16

Western Libyan gas project - Wafa field oil train

2005

MAY

giant fields, in a geographically concentrated area, during the bonanza period of Libyan oil in the late 1950s and 1960s. Content with their profitable ongoing projects, companies saw little reason to explore further afield at that time, especially given the cost of building pipelines far out in the desert to connect with their central pipeline system to the coast.

Both the Murzuq and Ghadames Basins in south and south-western Libya, separated by the Al Qarquaf uplift, have similar geological features to the nearby Illizi Basin in Algeria. Exploration in their remote and inhospitable terrain was sporadic and largely unsuccessful until the 1980s and 1990s. Recent major discoveries here include the Ghadames Wafa gas field and the Murzug Elephant and El Sharara fields.

There have been no discoveries to date in the Kufrah Basin in south-east Libya, which many consider to lack suitable geological conditions for hydrocarbon formation and storage. There have been a few sightings in wells sunk in the north-east Cyrenaica platform, which borders on the Egyptian desert where discoveries have been made.

The relatively narrow Pelagian continental shelf has been found to have significant oil and natural gas fields off the north-west coast, near Tripoli, and is believed to contain similar reserves in the offshore Gulf of Sirte to the east.

EPSA IV auction

Although the long-heralded revision of the 1955 Libyan Petroleum Law had not been completed, the Libyan government was able to offer terms for its January EPSA IV auction that were more attractive than those of earlier Libyan EPSAs (exploration and production sharing agreements). As in EPSAs elsewhere in the world, the government retains title to all acreage awarded, holds bidders responsible for the risks and costs of exploration, and acquires a right to a proportion of all future production.

The auction included 15 blocks of varying size. Six of these were offshore blocks, three were in the Sirte Basin, three in the Murzuq Basin, two in the Ghadames Basin and one in Cyrenaica. Preparations for the auction included a process of qualifying companies to bid and fees for access to a data room regarding the blocks on offer. Most data, however, was more than 20 to 30 years old, with few records of exploratory wells and 3D seismic.

Awards made were based on the share of future production assigned to the Libyan government and the amount of signature bonus offered.

Although 63 companies were reported

2005



to be qualified to bid, and interest by many was said to have been considerable, US companies were overwhelmingly the winners – gaining 11 of the blocks offered. In most cases, the awards involved partnerships (see Table 1).

Companies receiving licences	Number, block location	No. of bids reported
Occidental (45%), Woodside (55%), Liwa (10%)	#35, central offshore	3
Occidental (45%), Woodside (55%), Liwa (10%)	#36, central offshore	7
Occidental (45%), Woodside (55%), Liwa (10%)	#52, central offshore	6
Occidental (45%), Woodside (55%), Liwa (10%)	#53, central offshore	8
Occidental (90%), Liwa (10%)	#106, Sirte Basin	15
Occidental (90%), Liwa (10%)	#124, Sirte Basin	4
Occidental (90%), Liwa (10%)	#131, Murzuq Basin	10
Occidental (90%), Liwa (10%)	#163, Murzuq Basin	9
Occidental (90%), Liwa (10%)	#59, Cyrenaica	1
Petrobras (70%), Oil Search (30%)	#18, Tripoli offshore	2
Vernex (50%), Medco (50%)	#47, Ghadames Basin	9
Oil India (50%), India Oil (50%)	#86, Sirte Basin	5
ChevronTexaco	#177, Murzuq Basin	6
Amerada Hess	#54, central offshore	15
Sonatrach	#65, Ghadames Basin	4

Table 1: Libyan EPSA IV licence awards



Occidental Petroleum, as a minority partner with Woodside and with Liwa of the UAE a third partner, acquired four blocks located offshore in the Gulf of Sirte. As the majority partner with just Liwa, Occidental also won two Sirte blocks, two Murzuq blocks and the one Cyrenaica block. There was strong competition for most of these blocks, except for the one in Cyrenaica.

Amerada Hess won a hotly contested offshore block in the central Gulf of Sirte and ChevronTexaco one in Murzuq. Other successful bidders were Petrobras in partnership with Oil Search (Australia) with a block offshore Tripoli, and Sonatrach (Algeria) with a Ghadames block. Vernex (Canada) and Medco (Indonesia) won a Ghadames block and Oil India, with India Oil, a Sirte block. Little information is available at this time on bids that failed, but there have been suggestions that there was tight bidding, especially for offshore blocks.

Signature bonuses offered, especially those made by Occidental and partners, were exceptionally high. They are reported to have offered a bonus of \$25.6mn for block 106 in Sirte – a block for which 14 other companies bid. Altogether, the Occidental partners are said to have offered signature bonuses of \$122mn. Most rival bidders are reported to have made offers of between \$1mn to \$3mn per block, amounts in accordance with most EPSA agreements in other countries.

The share of production which bidders agreed to give to NOC if discoveries were made was also unusually high in some cases. For Sirte block 124, for instance, Occidental and Liwa agreed to give NOC 89.2% of any production – although they won the Cyrenaica block with an offer of only 61.1% of production. Two other winners agreed to surrender high shares of output to NOC – Amerada Hess, 87.6% of production from its offshore block; and the partnership of Vernex and Medco, 86.3% of production from their Ghadames block.

Existing operations

The successful bidders for licences in the EPSA IV auction, and those in the subsequent auction expected soon, will presumably benefit from the experiences of working with NOC or the foreign companies with current operations in Libya. Any US companies whose operations were taken over in 1986 by four Libyan National Oil Company (NOC) subsidiaries – Zueitina, Waha, Sirte and Agoco – will have to work with NOC if they want to have a role in their former holdings. Several European oil companies have had operations in Libya for many years on the basis of on-going contracts with NOC. These, and a few newcomers, have augmented their operations through takeovers of the holdings of companies that have left the country.

The most prominent of these companies is Eni/Agip, which acquired its first concession in 1959. Eni has significant gas operations and also produces from two major oil fields – the Sirte Bu Attifel field and the Murzuq Elephant field, which it acquired in a takeover of Lasmo at the end of 2000.

Repsol YPF, precursor whose Hispanica de Petrole acquired a nonproductive concession in 1966, only became significantly involved in Libya following the takeover of Rompetrol's interests in Murzug in 1994. Repsol is involved with groups of mainly European companies in several Murzug projects. In a similar manner, Petro-Canada became involved in Libva, mainly in Sirte, followings its acquisition of Lundin in 2001 and of Veba's Libyan holdings in 2002. It also has a share in the Ras Lanuf refinery.

Total has been in Libya since 1959. Its main source of production is the Mabrouk field in Sirte and it is also involved in partnerships in Murzuq. OMV, in Libya since 1975, has interests resulting from an acquisition of a share of Occidental's Sirte assets. It is also involved in Ghadames and Murzuq in partnerships with Repsol and Total. Wintershall, a subsidiary of German petrochemical giant BASF, has had small operations in Sirte since 1958.

Recent changes

A major development in Libya is the Western Libya Gas Project (WLGP), a joint venture of Eni and NOC. WLGP started operations in October 2004 when the Eni-operated Wafa field near the Algerian border began to send processed gas through two 530-km pipelines to the Mellitah gas gathering station on the Libyan coast. From there the gas is sent through the recently completed Green Stream, 520-km subsea pipeline to Gela in Sicily for further transmission to the Italian mainland. Gas from the Eni-operated offshore Bahr Essalem field will be included in the Green Stream pipeline when it comes onstream in 2005.

Gas production of 10bn cm/y is forecast when WLGP is fully operational, of which 2bn cm is designated for the domestic market and 8bn cm for export to Italy, sold under 24-year take-or-pay contracts to Edison Gas (4bn cm), Gaz de France (2bn cm) and Energie Gas (2bncm).

New overtures

With Libyan oil production, which peaked at 3.7mn b/d in 1970, apparently unable to exceed 1.6mn b/d, the Libyan government took several measures prior to the ending of sanctions to make oil and gas operations more attractive to European, Middle Eastern and Asian companies. It renegotiated earlier EPSA contracts with existing companies to include better terms and to allow the inclusion of new partners, and negotiated with foreign contractors for pipeline construction and seismic studies.

It also made several awards of blocks for exploration, although many of these apparently have not been finalised. Some were to companies with existing operations, including Repsol, Total and OMV. Others were to newcomers, INA-Naftaplin including (Croatia). Naftugaz Ukraying (Ukraine), Videsh (India), Turkish Petroleum Overseas and International Petroleum. Awards announced in 2003 for the so-called '2000 bid round', said to have included 137 blocks, led to awards of five Sirte blocks and one Murzug block to a partnership of Woodside, Repsol and Hellenic Petroleum, and six Sirte blocks to RWE-DEA (Germany). In addition, awards were made of one Sirte and one Murzug block, plus two offshore blocks and two Kufra blocks, to Repsol and OMV. A number of other companies were said to have submitted unsuccessful bids.

The government also decided to permit exploration for gas reserves as well as for oil. In March 2004 it signed a memorandum of understanding (MoU) with Shell for gas exploration and for updating and adding a new LNG train to the Marsa el-Brega LNG terminal. Although LNG has been exported since 1971 from this terminal, its capacity has fallen from 2.6mn t/y to 1.5mn t/y and its output is even lower. Negotiations apparently are still continuing regarding these plans.

No clear sailing

Working in Libya can be difficult and frustrating, and the incoming US companies will face a number of unique difficulties. For although US sanctions have been lifted, severe restrictions remain regarding the export of equipment to Libya considered to have potential military uses. A number of items used in oil and gas exploration and production may fall into this category, such as computers with sophisticated capabilities, and some oil exploration and extraction equipment, such as measuring devices containing radioactive materials and explosives used in oil wells.

HEAD OF OPERATIONS

Upper Quartile Package, North West England

Highly respected international services company. Well established, successful organisation with the exciting opportunity for major growth.

New high profile role as member of UK Company Executive. Responsible for direction and management of all operations delivering growth in line with agreed strategy.

Identify and implement closer synergies across operational functions driving through cultural change and greater efficiencies. Further develop a highly client focused and flexible workforce, building and maintaining strong customer and supplier relationships.

Support product development and promotion of commercial prospects on a global stage.

Preferably Science/Engineering degree with between 5 to 15 years' broad operational experience ideally gained in heavily regulated sectors, eg Energy or other areas. Prior change management experience advantageous.

Commercially and strategically astute. Commands instant credibility and respect with ability to influence at all levels. Comfortable leading highly skilled multi-discipline teams across various sites. Considerable UK travel.

Measurably Different

NORMAN BROADBENT

Please send full CV, stating salary and quoting reference AB243130/PR to Nigel Bradburn at Norman Broadbent Energy & Natural Resources Practice, 3 Albert Street, Aberdeen AB25 1XX, UK. Email ab4@normanbroadbent.com Fax. 01224 621337 Tel. 01224 621011 www.normanbroadbent.com

ISO 9001 Registered

Senior Chemist – Analyers

The Bahrain Petroleum Company is the National Oil Company of the Kingdom of Bahrain. The Kingdom of Bahrain is an archipelago of low-lying islands located in the Arabian Gulf. It operates a 250,000 bpd Refinery.

The Refinery Laboratory has a vacancy for an experienced Section Head to oversee the acquisition and installation of new state-of-the-art, analysers for both its Quality Control and Analytical Sections. These generate data for process control and for finished product certification. Applicants should have initiative and drive, the ability to trouble-shoot testing and analytical problems, possess good inter-personal skills and be able to motivate a team. Extensive knowledge of standard petroleum testing procedures for crude oil, refinery process streams and a full range of finished products, from naphtha through to asphalt, is required.

The ideal candidate will be a Chemistry Graduate with at least ten years experience in a modern petroleum testing laboratory operating a certified quality system, at least five years of which will have been at supervisory level. Knowledge and experience of environmental and laboratory health and safety protocols, including risk-assessment will be advantageous. The candidate must be computer-literate and conversant with the use of laboratory information management systems as well as being able to communicate effectively at all levels. Experience of statistical quality control techniques will be an advantage.

To apply, please send your CV, accompanied by a hand-written letter of application telling us how you meet our requirements, to: Recruitment Officer, BAPCO - Personnel Department, P-16 – Bahrain Refinery, Kingdom of Bahrain, Fax No. (+973) 177 55 302, E-mail: recruit@bapco.net

In return, the rewards are excellent for a two-year renewable contract (married or single status). The position offers an attractive tax free salary, with a full range of benefits including free furnished accommodation and utilities, generous assistance with local and overseas children's education, paid annual home leave with generous travel settlement and excellent social and recreational facilities. Bahrain iscosmopolitan society, compatible with a western lifestyle.



ww.normanbroadbent.com

NORTH AMERICA

regulations

A law unto itself

Have regulations placed a stranglehold on North America's petroleum sector? Petroleum Review investigates.

The Mackenzie Delta

he Mackenzie gas project proposes to move 1.2bn cf/d of natural gas a distance of 1,300 km from the Arctic to northern Alberta. Few doubt that it will not be welcome by voracious markets to the south but, on its way, the route will cross some 500 rivers, five major bird areas and countless pristine habitats. In their quest for regulatory approval, proponents have already spent four years with stakeholders, outlining their plans to deal with environmental. social and technical worries; they expect to spend another two years at formal hearings. 'In round numbers, so far, we've spent upwards of \$250mn,' says Hart Searle, spokesman for the project.

The Mackenzie gas project, alas, is not alone. Throughout the continent, major (and minor) proposals are going through the regulatory meat grinder – the lengthy processes adding evermore to the costs and delays of building, upgrading and maintaining the energy infrastructure in North America. 'There is an additional year to two years [to obtain approvals] compared to 10 years ago, notes Michele Joy, General Counsel for the Association of Oil Pipe Lines (AOPL). 'East of the Mississippi and Texas, it's an extra three years, or impossible.'

'Delay is not cost free,' comments Don Santa, President of the Interstate Natural Gas Association of America (INGAA), which recently conducted a study to ascertain the economic impact of a twoyear delay in natural gas infrastructure construction. It concluded that, by 2020, delays will add up to a total cost to US consumers of \$200bn. 'The due process of environment and land use issues is important, but having processes dragging on and on hurts the consumer and hurts the economy,' says Santa.

Proponents of regulations have a different point-of-view. 'We should not sidestep environmental regulations to reduce costs,' states Mary Griffiths, Environmental Policy Analyst at the Pembina Institute for Appropriate Development, a respected, non-profit environmental advocacy group based in Canada. 'The cost to the environment would be far greater if we cut corners.'

True. Thanks to the initiatives of nongovernmental organisations (NGOs), the quality of air, water and soil has improved tremendously over the last several decades. But North America's energy companies have also taken their own initiatives, reducing tanker and pipeline spills, increasing safety and improving the quality of fuels. Far from reluctantly submitting to regulations, they have proactively responded in a number of areas, such as reducing solution gas flaring by 70% in Alberta. Yet the maze of government statutes continues to grow, often reducing efficiency and delaying much needed upgrades. Will too many regulations eventually kill the goose that lays the golden egg?

A litany of woes

Photo: Imperial Oil

Conventional oil production in North America has been on the decline for the last several decades, primarily because the traditional basins have reached a mature phase in which new discoveries do not replace production. One strategy has been to seek offshore resources. This proved to be a great success in Eastern Canada, where Hibernia and other fields off Newfoundland provided significant discoveries. Unfortunately, the pace of new discoveries has slowed considerably, partly due to the tardy rate of approval for drilling. 'It was taking twice as long to get regulatory approval in Canada as it was in the North Sea and Gulf of Mexico,' explains Greg Stringham, Vice President of the Canadian Association of Petroleum Producers (CAPP).

At least the East Coast is in play; many areas of great potential, including the coasts of California, British Columbia and Florida remain off-limits due to environmental concerns. Oil companies think the worries are overblown. 'There have been a lot of changes in drilling in the last 20 years,' comments Stringham. 'It can be done in an environmentally safe way.'

'The technology being used is different than 30 years ago, but the risk is never zero,' responds Thomas Marr-Laing, Policy Director with Pembina. 'You have the Queen Charlotte Islands, which is a UNESCO world heritage site. You wouldn't want to mess up the fisheries or aboriginal interests.' A permanent ban, says Marr-Laing, would help the world seek alternatives to fossil fuels. 'By allowing continued exploration, you're relieving pressure from the system to develop other energy resources. And for what? Five or ten years? That's a blink of an eye.'

While conventional oil is lagging, the oil sands are surging ahead. The vast deposit of tarry bitumen in northeastern Alberta (an estimated 175bn barrels of reserves) is currently being produced at 1mn b/d. Expansion of the three current producing projects and the addition of several new schemes could push output past 2.2mn b/d by 2015. Each proposed project goes through a lengthy regulatory process before proceeding. Once up and running, operators follow a wide range of regulations to reduce environmental impact and to restore open pits after the bitumen has been extracted.

But the sheer scale of the oil sands may be their own worst enemy. Griffiths notes that oil sands mining uses roughly one barrel of water for each barrel of oil recovered. 'The Athabasca River is a huge river, but allocations are already one-tenth of the low stream flow.' Adding plant after plant is creating the need for a new level of regulations, one that will look at the cumulative effect on the entire region. 'We need to move from monitoring to management. We need to be prepared to shut down plants, if necessary, if environmental boundaries are exceeded,' Griffiths continues.

Natural gas has long been seen as a more benign form of energy, primarily because less greenhouse gases (GHG) are emitted during electricity generation when compared to coal or oil. But declining conventional fields mean that energy firms must rely upon unconventional supplies such as coal bed methane (CBM). Government estimates place reserves as high as 400tn cf in Alberta alone – more than enough to supply North America's needs for decades. CBM has long held a bad reputation in

2005

Colorado and Wyoming, however, where saline discharge (formation water must be removed before gas production can begin) has long angered ranchers and farmers. While Alberta's coal is much drier, and thus less prone to saline discharge, it takes many wells to produce it. 'The density of wells is a problem for landowners,' says Griffiths. 'Normally, it's four wells per section for oil, one well per section for gas, but up to eight wells per section for CBM.'

LNG is another form of unconventional gas that is touted as a solution to North America's growing energy demand. But the plants are perceived as being dangerously susceptible to explosion. Recently, an application to build a regassification plant in Maine – a \$350mn facility capable of receiving weekly shipments and delivering up to 0.5bn cf/d to markets in the Boston area – was rejected by local authorities amid concerns for safety. If regassification plants end up in application-friendly jurisdictions like Texas, extensive new pipelines will be needed, adding to the cost.

Pipelines, of course, face their own set of issues involving safety to people and the environment. 'There has been a large cost increase due to the [US] Office of Pipeline Safety's integrity management rules,' comments AOPL's Joy. 'The rules are designed to rectify any problems that might occur in areas that are environmentally sensitive or have high populations.' Although final bills for compliance are not in, estimates of the cost range in the \$1bn mark.

Sulphur, which exists in crude oil, causes acid rain, and most jurisdictions in developed countries have moved to gradually ban the element in fuels. For instance, the implementation of ultra-low sulphur levels in diesel comes into effect in the US and Canada in 2006. Refineries have invested several billion dollars in equipment in order to meet the regulations, but the piles of sulphur that now ensue create new headaches (see Petroleum Review, April 2005). Most is recycled as fertilizer and industrial sulphuric acid, but worldwide production is gradually outstripping consumption and the petroleum industry eventually could face the spectre of unwanted surpluses. Under such circumstances, The Sulphur Institute (an international organisation that promotes the consumption of sulphur), fears that mounds of the yellow stuff could accumulate around US refineries at the rate of 140,000 tonnes per week, triggering regulatory action. 'The only option may be to shut down a refinery if they have no place to send it,' says The Sulphur Institute's President Bob Morris.

Of all the recent regulations enacted, the Kyoto Protocol has created the most controversy. The international covenant binds participants to reduce carbon dioxide emissions to 6% below 1990 levels by 2012. 'With respect to greenhouse gases, to reduce the intensity and volume, it's absolutely essential,' says Pembina's Marr-Laing. 'They experimented with the voluntary approach over the last decade with no binding commitments, and it turned into a 30%-40% increase in greenhouse gases.'

Although the US did not join, Canada ratified the Protocol in 2002 and meeting Kyoto's targets will fall heavily on the petroleum industry – environmentalists note that the petroleum sector is a major culprit of emissions. 'The greenhouse gas emissions from the upstream oil and gas sector currently account for 16% of Canada's total GHG emissions,' comments Griffiths of Pembina. 'The federal government's official projection shows these emissions doubling between 1990 and 2010, largely as a result of development of Alberta's oil sands.'

The industry says that Kyoto won't solve the world's greenhouse gas problem. 'A formal target is counterproductive and won't help Canada contribute,' states Rick Hyndman, Senior Policy Advisor to CAPP. 'We should push energy efficiency but, equally, investing in carbon dioxide capture and storage to provide a more significant contribution in the future.' However, environmentalists say that Kyoto can be reached efficiently. 'There's lots of low-cost opportunities to make substantive headway,' claims Marr-Laing. 'The challenge is not engineering, it's a management challenge. It's not going to cost tonnes of money or bankrupt the industry."

The future

While the petroleum industry accepts regulation as necessary and valuable, it argues that improvements are needed across a wide range of issues. David MacInnis, President of The Canadian Energy Pipeline Association (CEPA), says that federal, provincial and territorial governments need to make regulatory efficiency and effectiveness an issue. 'When investors look at Canada, they need to see a regulatory system that ensures protection of the public and the environment, but allows business to do what it does to get energy to the market in a timely and safe manner.'

In the US, various groups have been participating in an industry/government council for the last three years to try to reduce permitting and approval delays for new pipelines and major repairs. 'We are working with the federal government to establish standardised methodologies to a particular activity, like trying to replace pipe in wetlands,' says Joy. 'In this way, when we NORTH AMERICA

regulations

have to go and do the work, we can say: "I will employ this process", and they will automatically approve the process. Our hope is that it will be approved by the federal government this year.'

Allan Ingelson, Associate Dean for the Strategy & Global Management department at the University of Calgary, is gathering data on ways that formal reviews can be streamlined. 'We are looking at the EUB [Alberta's Energy & Utilities Board] during the last 10 years to see what are the burning issues,' explains Ingelson. 'The same issues come up at hearings over several decades. Are we just reinventing the wheel? How can we better resolve issues and use the system so that companies and governments pay less?'

'We're in a constant state of reviewing regulations and trying to enhance them,' says Bob Curran, spokesman for the EUB. He notes, for instance, that while the number of applications have gone up, the number of formal hearings have stayed the same. 'In 2001, there were 30,000 applications and 20 formal hearings. In 2003, there were over 43,000 applications, and 19 formal hearings.' Curran attributes this to a recent EUB innovation - a multi-stage process where an oil company goes and consults with the public. If disagreements arise there, they can be resolved through mediation before the formal application hearing. 'We've got very positive feedback from the industry and public. It saves the applicant money, and everyone time.'

On the East Coast, governments, petroleum companies and various other industries have got together to iron out differences. 'We've been somewhat successful,' says Stringham. Ways of shortening the regulatory process have been identified and oil companies are once again showing interest in renewed levels of exploration.

In the end, however, it is unlikely that those who seek less regulations and those who seek more will ever make peace. 'Canada has among the longest approval process in the world says CEPA's MacInnis. 'Government has a primary role in fixing that.'

'Regulations are in place to help ensure that the environment and landowners are protected when oil companies come onto their land,' says Pembina's Griffiths. 'What would be the cost to society if there weren't regulations?'

For their part, proponents of the Mackenzie gas project feel that the cost, time and effort to meet their regulatory obligations are worth it. 'We're working as hard as we can to develop a project that meets regulatory approval, is technologically sound and economically viable,' says project spokesman Searle. 'We're still moving forward.'



High oil price – the impact on UKCS business

9 June 2005

Aberdeen Exhibition and Conference Centre, Aberdeen, UK

The 7th Logic Conference, organised jointly for the first time by Logical Advantage and the Energy Institute, will aim to address just how well the UKCS is positioned in a number of key areas including:

- Availability of infrastructure
- Peak oil and the appetite for exploration in the UKCS
- Maximising economic recovery from mature fields
- Investment strategies of all UKCS businesses

With scene setting keynote speeches from government and industry, delegates will be able to participate in a series of interactive sessions covering the main themes of the day with representatives from the smallest SME to the largest corporations to discuss and debate today's realities.

Inputs from the workshops will be drawn together during the day to allow analysis of industry concerns to be presented in the conferences final sessions.

Confirmed speakers:

- Clive Fowler, Logical Advantage
- Joan McNaughton, Director General, DTI Oil and Gas
- Michel Contie, Managing Director, Total E&P UK
- Brian Wilson MP
- Paul Horsnell, Barclays Capital

Jointly organised by:



t: +44 (0)1224 853430 e: kelly.newlands@logic-oil.com or Arabella Dick

on t: +44 (0)20 7467 7106 e: arabella@energyinst.org.uk for further information.

COMPANY PROFILE



In a very full and frank interview, Wolfgang Remp, Senior Vice President E&P International at OMV, told Petroleum Review about the company's recent achievements and future plans in global E&P.

A ccording to Remp, OMV's primary operated venture overseas is in Pakistan, where exploration began in the Middle Indus area in 1990. In 1993, the Miano gas field was discovered, which proved to be a stratigraphic play with recoverable reserves of 0.5tm cf. In 1998, the Sawan gas field was discovered to the south of Miano. This find was significantly larger, with recoverable reserves of 1.5tm cf.

OMV is now the largest foreign operator in Pakistan, although its equity position in the two fields is less than 20%. Miano came onstream in December 2001 and its 145mn cf/d of sales gas is sold to the Sui Southern Gas Company Ltd (SSGCL) for supply to customers. Sawan commenced production in mid-2003, its 360mn cf/d of sales gas is delivered to both the Sui Northern Gas Pipelines Ltd (SNGPL) and SSGCL. Gas from Miano is processed together with gas from Kadanwari gas field at the Kadanwari gas plant, using molecular sieves technology that was originally operated by Lasmo/Eni (partners in Miano and Sawan). Sawan gas is processed in an amine gas plant built and operated by OMV.

According to Remp, future prospects in Pakistan look good. In the medium- to long-term, the requirement for gas is set to grow – particularly as the country strives to minimise heating oil imports. OMV has two mining licences for Miano and Sawan, and there are evaluations ongoing about possible further extensions in the fields. Currently, there are nine wells on Miano and eight on Sawan. OMV is also involved in a further six onshore exploration blocks, four of which it operates. Remp states that the company remains confident of finding another gas field, while ongoing infill programmes are expected to maintain OMV's current share of production in Pakistan of about 18,000 boe/d. The company is targeting additional onshore acquisitions and is considering participation in the planned Pakistani privatisations.

Remp assesses Pakistan as predominantly gas prone, but notes the oil potential of the south-east where BP operates a number of oil fields. He explained that although the Afghanistan conflict had posed some security concerns, OMV had been able to build up its operations without any interference. Between the field operations in the Middle Indus Basin (Sindh Province) and the company's head office in Islamabad, OMV now employs 500 people – only 12 of whom are expatriates.

Middle East potential

Remp went on to explain that the Middle East in general was an important target area for further E&P growth for OMV. The company has a direct link to that area via the International Petroleum Investor Corporation (IPIC) of Abu Dhabi, who holds a 17.6% shareholding interest in OMV and is OMV's second largest individual shareholder after the Austrian States Holding ÖIAG.

OMV has signed an exploration and buy-back contract in Iran for the Mehr block, located close to the Iraqi border. Within the licence area OMV discovered oil in its first well, Band-E-Karkeh-2. The second well of the three-well programme, Musthaq-East-1, is currently drilling. Remp explained that prior to the start of seismic and drilling operations, the area had to be cleared of landmines. The residue of the Iran-Iraq war has delayed operations, but the company worked closely with the NIOC (National Iranian Oil Company) and cleared the area without incident. He noted the high calibre of the well-educated Iranians that OMV came across during all activities.

OMV

A major project with OMV involvement that could potentially bring Middle East gas to Europe is the Nabucco pipeline project. A feasibility study is likely to be completed mid-year and the pipeline should commence delivery by 2010–2012. The route would be from the Middle East producing regions to Turkey, Bulgaria, Romania, Hungary and into Austria, where it would be tied to the OMV hub in Baumgarten.

In Yemen, OMV is operating block S2 in the Shabwah Province. To date, two exploration wells have discovered oil and a third well, Habban-1, is currently drilling. Development options are now being examined. Mention of Iraq bought the enthusiastic response that the potential was 'so large'. In Qatar, 1,000 b/d of production gained via the acquisition of Preussag is seen as a possible disposal candidate in the near future.

North African core region

In contrast, the company has been operating in Libya for 30 years having taken over assets from Occidental in 1985 before Libya was embargoed by the US government. OMV equity production in Libya amounts to around 25,000 boe/d. The majority comes from the 1bn barrel continued on p48... UTILITIES

Utility companies impaled by gas price spikes

New research* from Datamonitor shows that the UK's leading energy utilities will have widely varying exposures to the wholesale gas markets in 2005 and beyond. Furthermore, another wholesale price spike will prove expensive for them and, ultimately, their customers, writes Datamonitor Analyst Andrew Hill.

The price spikes seen in the wholesale gas market towards the end of 2003 and 2004 have highlighted the issue of wholesale market exposure amongst the UK's energy utilities. Despite a lengthy and ongoing investigation by the industry regulator Ofgem, it is far from clear that the core issues surrounding these price spikes have been conclusively addressed, particularly as they occurred so near to contract renegotiation periods.

In November 2003, Ofgem sought views on the fact that prices for short-term gas had more than doubled from 15 pence per therm (p/therm) at the beginning of October 2003 to 34 p/therm by the end of the month – a rise that was far from understandable given prevailing market fundamentals at the time. Subsequently, Ofgem broadened the scope of its investigation to include price spikes that took place in the latter part of 2004.

After a year-long investigation Ofgem concluded that supply issues and oil product price linkage prevailing in European gas contracts were the key factors contributing to the price spikes.

Unusually high prices

Even before Ofgem had released its findings in October 2004, wholesale price levels during August and September 2004 were again reaching uncharacteristic, not to mention unfeasible, record highs. During this period prices averaged nearly 26 p/therm – around 85% higher



than the same period the previous year. These price levels are more usually associated with cold winter peak demand days rather than the low demand summer period when prices traditionally lose, rather than gain, momentum.

This market logic defying price run-up was accompanied by a strong upward movement in forward winter prices, which were trading around 42 p/therm – 69% higher than the corresponding period the previous year. On the day that the Ofgem report was released in October 2004, prices for January gas closed at an unprecedented 78.50 p/therm – a 20% premium on the previous day's closing levels and around double the previous year's already high level.

Consumer effect

Given that wholesale prices account for around half the cost of a typical residential customer's bill, and an even higher proportion in the case of industrial and commercial energy users, the effect on the retail market of these price spikes quickly became clear. In the residential market a series of price rises amongst the energy utilities passed on these higher wholesale prices to consumers. In the larger user market the upward pressure on prices in August and September 2004 a period when many gas purchase contracts are renegotiated ahead of the start of the new gas year on 1 October caused many industrial buyers to delay signing their supply contracts in the hope that prices would return to more usual levels. At the time, the UK division of E.ON Ruhrgas indicated that around half of its customers had not yet signed contracts for the coming gas year, with a similar pattern seen by the other utilities.

The fact that Ofgem, and subsequently the Financial Services Authority, concluded that there was no evidence of market manipulation was greeted with surprise in many quarters. While a combination of both planned and unplanned field maintenance, depletion of UK reserves and the effect of expensive oil-linked European gas finding its way to the UK market may explain a small proportion of the upward price pressure, it is difficult to see how the sheer magnitude and repeated prevalence of these record price levels can be entirely attributable to these factors.

Market sensitivity

These price spikes and their effects on retail pricing and customer switching mean that the utilities are now, more than ever before, particularly aware and sensitive to their exposures to wholesale market volatilities. In a trading statement in late 2004, Centrica stated that wholesale price levels '... continue to dominate the outlook for 2005', while in its 2004 preliminary results statement in February 2005, the company stated: 'The market outlook for 2005 is heavily influenced by the continued uncertainty over UK wholesale energy prices and the implications for retail prices.'

Other utilities have indicated a similar sensibility and are equally aware of their wholesale market exposures. While carefully planned and well executed hedging and forward buying are used to varying degrees by the utilities to mitigate wholesale market exposure, the effect wholesale price spikes have on utilities, and ultimately consumers, continues to be a significant issue both now and into the future.

As the UK continues to move towards its new status as a net gas importer, the potential for another round of wholesale gas price spikes grows. This potential is compounded by the fact that the majority of new import infrastructure will not become operational until at least 2007. This means that a particularly cold spell in 2005 or 2006 will lead to tightening in supply and upward price movement. If the price spikes seen in 2003 and 2004 were to repeat themselves in 2005, the marginal costs to the UK's energy utilities of meeting their net trade requirements from the wholesale market would vary widely.

The magnitude of these short positions, and hence the costs of covering them, is a function of retail load and the degree to which utilities can meet these loads through their supply portfolios. Any gaps in the gas supply portfolio not covered by the utility's upstream assets, access to gas storage or gas purchase agreements must be met from the wholesale market. To varying degrees the costs of covering these positions will have been partially mitigated by hedging. But even a well-hedged utility will be hit hard having to cover short positions in a market at levels reminiscent of those examined in the Ofgem probe.

Price spike impact

The effects of these wholesale price spikes impact the UK's leading utilities in different ways, as the following paragraphs outline (see Figure 1 and Table 1).

Centrica

Of the UK's leading energy utilities, Datamonitor's forecasts indicate that Centrica has the largest exposure to the gas wholesale market in 2005 in volume terms. In order to cover its 2005 net trade requirement, based on our current and forecast market shares and switching behaviour, we estimate that Centrica will be exposed to around 69 TWh (2,354mn therms or 6.5bn cm) of wholesale market purchases. For every 1p/therm that average wholesale market levels increase over the year, the marginal cost to Centrica (above and beyond the commodity cost) of covering this net trade requirement is more than £23.6mn. Despite the fact that a combination of hedging and working its upstream assets harder would mitigate a proportion of this exposure, the potential cost implications are significant.

In the years following 2005 our fore-

Utility	2005 trade requirement (bri cm)	Marginal cost of 1 p/therm rise
Centrica	6.5	£23.6mn
EDF Energy	3.1	£11.4mn
E.ON UK	5.7	£20.8mn
RWE npower	4.4	£16mn
ScottishPower	2.6	£9mn
SSE	3.6	£13.4mn
Total	25.9	£94.2mn
* In addition to cost	of purchasing gas	

Table 1: Net gas trade requirement in 2005 (in bn cm) and the margin cost of a 1p/therm price rise

casts point to a reduction in wholesale market exposure as the company's significant investment programme made in recent years begins to make a contribution to the gas supply portfolio. These investments include the acquisition of more upstream gas interests – which are particularly needed given the decline of the Morecambe field which accounts for the vast majority of the company's gas output – as well as long-term pipeline gas purchases from the Netherlands and Norway, and LNG from further afield.

EDF Energy

In common with other former power-only players who have entered the retail gas market in recent years, EDF Energy does not have access to significant gas supplies outside of its wholesale market purchases. This lack of equity and contractual gas makes the issue of wholesale market exposure, and the possibility of price spikes, particularly pertinent and relevant to companies such as EDF Energy.

EDF Energy's gas retail and power generation activities during 2005 are likely to result in a total wholesale gas market exposure of 33.5 TWh (3.1bn cm).

E.ON UK

Of the UK's leading six energy utilities, E.ON has the highest net trade requirement after Centrica in absolute volume terms. Aside from small volumes of gas entering its supply portfolio via E.ON Ruhrgas UK Exploration and Production, E.ON is reliant on the wholesale market to meet its gas supply commitments.

Our current forecasts indicate a total exposure in 2005 of 61 TWh (5.7bn cm). For every 1 p/therm that average wholesale gas prices rise during the year, E.ON will be faced with a marginal cost of more than £20.8mn in addition to the gas purchase costs.

In late 2006 or early 2007 the company's exposure to the wholesale market is likely to be reduced when its 20% stake in the Balgezand to Bacton pipeline becomes operational. This will allow the company to import continental European gas into the UK, thus reducing required wholesale market purchases.

RWE npower

2005

Unlike some of its contemporaries,

npower has equity gas – albeit in relatively small volumes. Factoring in this equity gas and through the use of its capacity in the UK/Belgium Interconnector, we expect 2005 wholesale market exposure to equal 47 TWh (4.4bn cm).

ScottishPower

At 27.6 TWh (2.6bn cm), ScottishPower has the smallest exposure to the wholesale gas market of the six UK utilities. In addition to the commodity purchase price, this equates to a marginal cost of more than £9.4mn for every 1p/therm rise in average wholesale price levels to cover net trade requirements.

Scottish and Southern Energy (SSE)

Like ScottishPower, Scottish and Southern Energy does not have an upstream presence or significant long-term gas purchase contracts giving it significant exposure to the wholesale gas market.

Given its position in the market and the use of storage withdrawals from its Hornsea facility, we expect the company to need to source around 39.2 TWh (3.7bn cm) from the wholesale gas market in 2005. This equates to a marginal cost of £13.4mn for each 1 p/therm rise in average wholesale prices.

Keeping an eye on things

Collectively, it appears that the UK's six leading utilities will be faced with an additional cost (in addition to the cost of purchasing the gas) of £94.2mn for each 1 p/therm increase in average wholesale gas prices in 2005.

Ultimately, this additional cost will continue to be borne by consumers – meaning that Ofgem must continue to monitor the gas market closely to uncover any evidence of foul play and to discipline those found to be deliberately exerting undue influence on wholesale price levels.

*Datamonitor's Forecast Portfolio Profiles service analyses the structural gas and power positions of the UK's leading utilities on a quarterly basis over a five-year forecast period. For further details, please contact e: euroinfo@datamonitor.com

environment

UTILITIES

Kyoto protocol – global targets, local pain

The EU (or, more accurately, the preaccession EU15) is committed to slashing its greenhouse gas (GHG) emissions by 8% by 2008–2012 compared with the 1990 base year. Ultimately, it will be Europe's households and businesses that will foot the bill – to the tune of 5bn annually, reports Datamonitor's Mikhail Masokin.

y 2010, power demand in the expanded European Union (EU) D will have grown 16% from the 2002 base, with southern Europe seeing the fastest growth. However, more power produced means more carbon emissions. Now that EU countries have caps on how many tonnes of carbon dioxide (CO2) they are allowed to produce each year, this could potentially lead to severe power shortages. For instance, if Europe's generators were to simply build more power plants of the same types they have now - the 'more of the same' or 'business as usual' scenario - and stop producing as soon as they reached their annual emission quotas, by 2010 the EU would be faced with a 500 TWh shortfall each year - almost as much as the whole of Germany produces and consumes now.

Of course, Europe's governments would be unlikely to allow large-scale blackouts, and would much sooner increase their quotas or scrap them altogether. This would mean a collapse of the EU Emissions Trading Scheme (EU ETS) and a severe setback for the Kyoto process. The alternative to either blackouts or a collapse of the EU ETS is a major restructuring of the way in which Europe's utilities generate power. Ultimately, this means less carbonintensive generation technologies.



However, for the next few years renewables will not be the answer (see Figures 1 and 2).

Gas and nuclear

Even the introduction of emissions quotas in line with the EU's Kyoto commitment has not made large-scale growth of renewables the optimum compliance mechanism. Instead, those commitments can generally be met through a large-scale switch from coal and oil to natural gas – with its much lower carbon content per MWh of power produced – and by delaying the planned closure of nuclear plants.

However, building new nuclear capacity would take too long to solve the 2010 problem, and should be viewed as an even longer-term solution.

What is required is a large-scale switch from coal and oil to natural gas in member states' generation portfolios, given the much lower carbon content of gas compared with other fossil fuels. This will involve a major investment in new, efficient gas-fired power stations, and will therefore result in high compliance costs which utilities will have to pass on to their customers.

Compliance scenarios

The leading EU markets face three distinct compliance scenarios to 2010. The UK, French and Dutch power industries have relatively painless options for reforming their generation portfolios and securing any remaining carbon shortfall on the traded market (primarily from Eastern Europe). Germany, with its high proportion of coal at present and limited demand growth to 2010, has considerable scope for carbon savings by replacing coal with gas in its generation portfolio. Spain, while facing strong electricity demand growth, has relatively generous burden-sharing targets as part of the EU commitment. Italy is in the least comfortable position, having both to build much new gas-fired capacity to meet growing power demand and to face a large carbon shortfall (see Figure 3).

However, it is not governments as

such that will need to provide our electricity within the emissions quotas available, but national power utilities. For them, the total cost of carbon compliance includes both the cost of emissions reductions achieved through optimising its generation assets as described above, and the cost of additional emissions credits bought in addition to those self-generated reductions.

The future carbon-compliance costs of western European power utilities are estimated at some 5bn each year. Those costs would ultimately need to be passed on to consumers in the form of higher power prices. However, utilities need to be careful about how they do that in order to remain competitive and not antagonise their customers. They can either charge more in direct proportion to the client's consumption - 'flat' cost allocation method - or else tie the surcharge to the generation mix that stands behind the client's consumption load. Even then, utilities need to decide whether they want to effectively penalise those customers who use 'dirty' (eg coal-produced) power ('harm-reflective' cost allocation) or those who use 'expensive (for example renewable) power (see Figure 4).

The optimum strategy will depend on the market the utility operates in, the structure of its customer base, and the severity of emissions reductions it is facing. For instance, in markets likely to face a severe carbon-credits deficit, such as Italy, Germany and Spain, harmreflective pricing of carbon content is probably the best option for larger industrial and commercial customers and for the more sophisticated residential customers (see Figure 5).





ASIA

ADB targets energy efficiency and renewables

Rapid economic and social development has caused a huge increase in energy consumption throughout the Asia-Pacific region during the past two decades, forcing many governments to invest heavily in expanding domestic supplies. With few developing countries wealthy enough to finance energy development without outside assistance, most countries in the region have used project loans from multilateral lending agencies such as the Asian Development Bank (ADB) and the World Bank to expand supplies and reform their domestic energy markets. David Hayes reports.

Natural gas development project, Bangladesh All photos: David Hayes

project finance

Stablished in 1966, the Asian Development Bank (ADB) today has 63 member countries, including 36 borrowing developing countries in the Asia-Pacific region (stretching from Pakistan and Central Asia in the west to Pacific island nations in the east). The other members are mainly developed countries and include the US, Canada, Australia, New Zealand, Japan and western European countries that provide part of the Bank's reserves for lending.

Between 1966 and 2003 the ADB lent a total of \$105.07bn to finance projects in developing member countries. Loans for three sectors – agriculture and natural resource development, energy development, and transport and communication development – each accounted for 20% of accumulated lending. The other major sector to receive substantial loan support was social infrastructure, which constituted nearly 20% of total lending.

Energy and agriculture development attracted the major share of ADB project funding during the first two decades of the Bank's lending programme. However, a number of new trends emerged in the 1990s – agricultural lending began to decline while funding for transport and communications grew.

Energy lending has fallen since the Asian financial crisis struck in 1997, as many countries found that the resulting economic downturn led to a sharp drop in energy consumption. This caused a number of natural gas and power generation projects to be delayed due to the slowdown in energy demand growth. More recently the ADB's energy lending has focused more on energy efficiency and energy pollution emission control in line with the current global trend to promote low-cost, clean energy use.

Energy sector development

'In general the ADB is working more on energy sector reform in transmission and distribution, unbundling services and policy, and not on power generation,' commented Samuel Tumiwa, Energy Specialist in the ADB's South Asia Energy Division. 'If the energy sector is not working, the borrower does not get a return to pay for power. You have to get systems working efficiently before you put in generation. But in the past two years we have gone back to generation after power sector reforms.'

Energy sector development has been at the heart of ADB's project finance and technical assistance activities since the Bank's inception. Development of power generation, transmission and distribution, along with natural gas transmission and distribution, formed the core of the ADB's energy sector activities until recently, as most Asian countries focused on expanding energy supplies to tackle power shortages holding back economic development and to improve general living conditions.

Nuclear energy, a sensitive issue for many countries, has been excluded from the Bank's lending programme. Hydrocarbon exploration and production projects have been supported only in a few cases as international oil majors and national oil and gas corporations are more willing to finance oil and gas exploration and production activities that are commercially viable.

In 2003, the ADB approved project loans totalling \$6.1bn, the highest since 1997, of which energy projects accounted for 12% of the loan total. By comparison, transport and communications projects received 42% of total funding, almost double the figure for 2000, while social infrastructure projects accounted for 19% of the project loan total.

Project finance

Some 23 developing member countries received loans in 2003. India received \$1.53bn (the largest amount, equivalent to 25% of the loan total), followed by China with loans of \$1.48bn (equivalent to 24%), Pakistan \$871mn (14%) and Bangladesh \$532mn (9% of loans). Most borrowing member countries have used at least one or two loans each for energy development over the years, while some have regularly used ADB project loan finance and technical assistance and have involved the Bank closely in their energy development programmes.

China, India, Bangladesh and Pakistan have made regular use of ADB project loans and technical assistance to develop their electricity and natural gas industries over the years. Bangladesh, for example, has used about 12 ADB loans to develop its power generation, transmission and distribution system, which is based largely on indigenous natural gas fuel resources. Bangladesh is due to complete its latest ADB project shortly, for which a \$100mn loan was provided to install two 100-MW peaking power units at Siddhirganj near Dhaka, install a national electricity load dispatch centre, and upgrade and expand electricity distribution systems in the north-west region.

Bangladesh also has used a series of ADB loans to develop its natural gas supply network and currently is using a \$72.6mn ADB loan to extend its



Pirkoh gas development project, Pakistan

national natural gas transmission and distribution pipeline network and to introduce compressed natural gas (CNG) vehicle fuel for buses, cars and auto-rickshaw taxis.

Meanwhile, landlocked Laos – one of the least developed countries in Southeast Asia – has used ADB funds to build the Nam Leuk dam and extend its electricity transmission and distribution network to increase domestic hydroelectricity supplies and increase power exports to neighbouring Thailand. At present Laos is using a \$26mn ADB loan to increase power supplies to villages in the rural northern region.

In the Philippines, the ADB is supporting government plans to reform and privatise the electricity industry, and create a competitive wholesale electricity spot market with a \$40mn loan to improve power transmission facilities in the southern island of Mindanao, one of the poorest in the Philippine archipelago. The operation of an efficient, competitive electricity market relies on a modern, fully functioning power transmission network, which in Mindanao will transmit mostly hydroelectric power.

District heating has attracted ADB project loan support in several countries, including Kyrgyzstan and China, where finance has been used to upgrade existing systems and support organisational management development to assist in the upgrade and expansion of other district heating systems in the future.

In other developing countries such as Thailand and Malaysia, ADB assistance is no longer needed in the energy sector as earlier reforms and development have enabled the countries to manage their own energy development programmes. Thailand, for example, earlier used ADB funds to build the Mae Moh lignite-fired power station and to finance the launch of natural gas development in Gulf of Thailand.

Over the years the ADB has provided loans to finance gas industry development in a number of countries apart from Thailand and Bangladesh. South Korea, Malaysia, Indonesia and Pakistan also have used ADB project loans and technical assistance to develop gas transmission and distribution networks.

The ADB normally becomes involved in a gas project when private sector investment alone is insufficient to fund a project or where investors are looking for a multilateral development bank to provide investor confidence in a scheme. In other countries where private investment has not been encouraged in the gas sector – such as Pakistan, Bangladesh, and, until recently, Indonesia – the ADB has helped borrowing governments create national gas industries by providing a significant proportion of the necessary investment funds.

Recently, the ADB's private sector loan division agreed to support India's Petronet LNG import terminal project after earlier lending \$87mn in 2002 to PowerGas, a subsidiary of Singapore Power, to finance a bilateral gas import scheme with Indonesia. Natural gas development is also being supported in Afghanistan and Central Asia.

Hydroelectricity is another important energy resource throughout most of Asia. Although the Bank has been involved in major hydroelectric schemes in Pakistan, China and Laos, along with smaller schemes in Nepal, Samoa, Tajikistan and other countries, choosing the right projects to support is a major consideration due to the controversy that population resettlement can cause when a dam reservoir needs to be constructed.

'Big hydropower projects are prob-

lematic. We do not get excited with big dams. We prefer run of the river hydroelectric schemes with a smaller footprint. Hydro is not a big part of our portfolio,' commented Dan Mallison, ADB Energy Specialist, Environmental Assessment and Project Leader 'China and India are trying to increase the share of hydropower in their electricity generation mix. India has 25% and the government wants 40%. China has 20% and they want 40%. Whatever we invest in is a modest contribution. In India the state governments are the real ADB loan users so we try to focus on states where they need electricity reforms and unbundling following their 2003 Electricity Act. India has plenty of private and public money for generation. We are putting more into sector reform and power transmission and distribution in India."

China can also provide finance for energy development, but has decided to maintain ADB involvement in energy-related issues to benefit from the Bank's wide-ranging technical and management expertise. Urban environment programmes are one example of where ADB assistance is sought. The Bank has funded several projects in China, helping city governments tackle environmental pollution caused by old, outdated factories, boilers and other energy consuming equipment, which include advising city governments on the development of clean energy policies and regulations.

Energy efficiency and renewables

Meanwhile, energy efficiency and renewable energy development are two major themes in the ADB's current energy lending programme, reflecting the importance of energy efficiency and sustainable development as global issues. 'ADB's Energy Policy 2000 says ADB will promote indigenous non polluting energy. So it is something we want to do,' noted Tumiwa. 'For the borrowing countries it is different. India is well off with renewables while others are just getting into it, especially in South Asia.' Indonesia is using a \$161mn ADB renewable energy loan to construct small and mini hydropower projects and geothermal energy schemes that are planned to benefit an estimated 5.2mn people, of whom 1.5mn live below the poverty line.

'For Pakistan we have approved a project preparation technical assistance grant to assess renewable energy resources and to conduct a prefeasibility study for six to 12 projects,' Tumiwa said. 'We have hired a lawyer to look at the electricity regulatory framework such as prices and other issues; also a specialist in wind power. But, when you look around the world most renewables projects are private and do not involve government investment. We will talk to the Pakistan government and suggest if the private sector can do it.'

Although desirable, renewable energy is not always cheap. As with all energy development, setting the right tariffs is a prerequisite for a project to be financially viable.

China is interested in renewable energy and was due to use a \$58mn ADB loan to cover the foreign exchange costs of building three pilot wind farms totalling 78 MW installed capacity to be connected to regional power grids. However, the government decided to revise wind energy tariffs to a level below which the ADB felt was economically viable. Consequently, discussions continue over appropriate tariff levels before the project can move ahead.

Taking the initiative

Apart from providing bilateral energy project loan and consultancy support to individual countries, the ADB also is involved in various regional energy initiatives, trying to enable various countries to cooperate in energy development where there is a common interest. In Central Asia, for example, the ADB is working with Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan to try to enable the countries to share their hydroelectric power and natural gas resources for their mutual benefit. Both the Central Asian electricity grid and the region's natural gas grid were developed during the Soviet era when the countries were satellites in the Soviet empire. As the Central Asian electricity and gas grids were not designed with the individual states' economic interests in mind, the ADB has carried out a number of studies examining how the existing power and gas pipeline grids can be upgraded and extended to supply the various countries' energy needs. At the same time, planning is underway to set up power trading and gas trading systems so the countries can buy and sell electricity and gas according to their needs, replacing the current system of informal arrangements with formal energy purchase contracts that are necessary for bank loans to be used.

The ADB is also involved in planning for the proposed Turkmenistan-Afghanistan-Pakistan gas transmission pipeline project that may be extended to include India. The Bank's role as honest broker in promoting regional energy development cooperation recently encouraged the Indian Foreign Ministry to request the ADB to make a presentation comparing two gas import options that the government is considering - the Turkmenistan-Afghanistan-Pakistan-India pipeline and the Iran-Pakistan-India pipeline.

India is a potential participant in another regional energy initiative that the ADB is promoting. 'We have been pushing for electricity and gas regional trading between India, Bangladesh, Nepal and Bhutan, but it is not going anywhere as India and Bangladesh are not coming together,' Mallison said. 'Already there are India-Nepal and India-Bhutan bilateral agreements. Bangladesh is interested in importing hydropower from Nepal and supplying gas to Nepal and Bhutan, but this has to include India. ONGC of India has purchased gas with South Korean companies in Myanmar's Gulf of Martaban. ONGC has commissioned a pipeline study to look at alternative pipeline routes. India is looking at swaps with Bangladesh or a subsea route to India. The ADB would be interested in supporting this as regional cooperation."

El Summer Lunch

12 July 2005

Speaker: Sir David King, Chief Scientific Adviser to HM Government and Head of the Office of Science and Technology, Royal Automobile Club, London



For more information, please contact Arabella Dick, El Events Team t: +44 (0)20 7467 7106 f; +44 (0)20 7580 2230 e: arabella@energyinst.org.uk

www.energyinst.org.uk

CHINA

China targets overseas supplies

China's strong economic growth over the past two decades has been accompanied by a rapid increase in energy consumption. With the development of indigenous energy reserves unable to keep pace with energy demand growth, the country is increasingly looking to develop overseas supply sources – particularly for oil and gas imports – to boost current energy resources and ensure long-term security of supply. Petroleum Review reports.

Coal is China's largest source of energy and is expected to remain so in the future. According to government figures, it accounts for 65% of primary energy demand, while oil is about 24% and natural gas 3%. Hydroelectric power, nuclear power and renewable energy make up the remaining share.

Boasting an average annual GDP (gross domestic product) growth of 9% since 1980, China now plays a key role in the supply and demand of many global commodity markets – including oil, steel and cement. According to the International Energy Agency (IEA), between 1998 and 2003 China accounted for about half of the total world increase in coal demand, over

2005



25% of the total global increase in oil demand and more than 30% of the total world growth rise in electricity demand.

Energy elasticity

One recent development that has not yet attracted wide international attention is the fact that China's reported energy elasticity of demand (the growth rate of energy divided by that of GNP) exceeded 1.5 in 2004 for the first time. This means that energy demand grew over 1.5% for every 1% increase in GDP. At a recent hearing of the US Senate Committee on Energy and Natural Resources on the IEA's annual energy outlook for 2005 report, IEA Senior Energy Analyst and China Programme Manager, Jeffrey Logan, explained that while energy elasticity of demand over 1 is normal for developing countries like Brazil, Indonesia and India, this recent development in China represents a major shift for the mainland, which has a track record of maintaining energy elasticity below 1.

'Is this new energy-economy relationship in China temporary or does it indicate a deeper structural change within the economy? The difference could have a profound impact on future global energy markets, energy security and environmental quality,' Logan commented, noting that virtually no authoritative research has been conducted to explain the surging elasticity which may be a forewarning that China's energy requirements are likely to be much larger and grow faster than previously forecast. 'A clearer understanding of what is happening in Chinese energy markets may never be uncovered, but more research into the new energy-economy relationship would benefit the international community and China,' Logan said.

A question of accuracy

Although energy demand is growing, many Chinese and foreign analysts increasingly are questioning the accuracy of China's official economic and energy statistics. Current GDP growth is thought to be under-reported, after probably being overstated from the late 1970s to late 1990s. Energy consumption, particularly coal use, has been poorly recorded for various reasons – often because municipal authorities have wanted either to conceal or inflate production and consumption figures to suit their own purposes.

Coal use from 1996 to 1999 is now regarded as hugely under-estimated by both Chinese and foreign analysts due to untracked output by small coal mines that at one point numbered about 70,000 production units in the late 1990s. Poor energy statistics are one of the reasons for China's current energy problems, as effective energy policy and energy planning obviously relies on accurate data.

The structure of China's energy regulatory apparatus is another factor. Poorly staffed and with little expertise, the nation's energy regulators are struggling to reduce surging oil imports, resolve the worst electricity shortage in 20 years and clean up the deteriorating environment. Just two years old and employing a staff of 30, the Energy Bureau based in Beijing is one of more than 20 sub-departments under the State Development and Reform Commission. Other bureaux are also seriously under-staffed. China's National Statistical Bureau, for example, has only three people to handle energy data for the world's second-largest energy consuming nation.

'China is good in setting up energy policies at the very top level, but there are no institutions to implement and coordinate them,' Dai Yande, Deputy Head of the Energy Research Institute, a government think-tank, was reported recently as saying in the Chinese press. 'Without an administrative structure in place, many policies have no effect.'

Analysts say the government should consider boosting the manpower and political clout of the Energy Bureau, possibly by putting it under the control of a government task force headed by a vice premier. Other countries staff similar key agencies with a much larger workforce. For example, the US, the world's largest energy consumer, has a 14,000-strong Department of Energy, of which about 2,000 staff are involved in policy planning while 600 staff collect and analyse data. The responsibilities of the Department of Energy Vice President include drafting national energy policy.



Energy efficiency is an area where China has much to improve. Replacing old, outdated plant and machinery could greatly reduce energy consumption and costs. 'Energy consumption per unit produced in China is higher than the world level,' Shi Lishan, Director of the Bureau of Energy's Renewable Energy Division, told an audience at a recent energy conference in Germany. 'Total energy efficiency is 32%, lower than the world level of 42%.'

Thermal power generation in China uses 22% more fuel than power plants in most other countries, while energy consumption for steel making is 21% higher than the global average. Energy consumption by China's huge cement industry is 45% more than the world average, while energy consumption for buildings is usually two to three times higher than the global average.

China's oil demand growth has received most international attention. because of the potential future impact on the global oil market. In late 2003 China overtook Japan to become the world's second largest petroleum consumer. Domestic demand then grew 15% in 2004 to reach 6.37mn b/d - onethird of US demand. With domestic crude production growing slowly in recent years while oil demand has surged, China's oil imports grew guickly in 2003 and 2004. Oil imports climbed almost 75% from 1.38mn b/d in 2002 to 2.42mn b/d in 2004, and now supply 40% of total Chinese oil demand.

The need for oil-fired power generation back up due to recent serious electricity shortages is one factor behind the rise in oil imports. Growing car ownership and the expanding petrochemical sector are other important factors.

At present about 24mn vehicles use China's roads. This figure is expected to grow to more than 100mn vehicles by 2020 and increase the proportion of petroleum demand used by the transport sector from 33% at present to almost 60%. Consequently, transport fuel use will rise from 1.6mn b/d in 2004 to about 5mn b/d in 2020. As part of efforts to control transport fuel use, the government introduced new car efficiency standards last year and continues to discuss the imposition of national gasoline taxes to suppress demand growth.

Oil consumption is expected to continue growing rapidly over the long term. The IEA in its World Energy Outlook 2004 forecasts China's petroleum consumption as approaching 14mn b/d in 2020, equivalent to about two-thirds of the US' current consumption. However, with China's domestic oil production unlikely to grow much higher than present levels, oil imports will continue to grow and are likely to account for 75% of demand in 2030. Strategic oil stockpiling will grow as import volumes increase.

China's 2001-2005 Five Year Plan calls for strategic petroleum reserves to be established by the end of 2005. Construction has started at one of four sites due to store government owned supplies. By 2008 the government aims to have a 100mn-barrel stockpile, equivalent to 35 days' imports. The government's original plans then call for stocks to be expanded to 50 days by 2010, although this may now be slightly delayed. At the same time, the recent surge in oil imports has caused some Chinese policymakers to consider an even more ambitious stockpile plan that would hold 90 days of reserves by about 2020.

Hunting overseas

The recent increase in oil imports has led to business links being developed with a growing number of oil suppliers. In 1993 almost all China's oil imports came from Indonesia, Oman and Yemen. In 2004, by contrast, Saudi Arabia was the largest oil supplier – supplying 14% of oil imports, while Oman, Angola, Iran, Russia, Vietnam and Yemen combined supplied a further 60%. The remaining 26% was supplied by a large number of countries.

China's state-owned oil companies have stepped up their hunt for overseas oil assets as part of the country's overall outward investment strategy. This strategy has seen a growing number of companies seeking metals, minerals and other resources including foreign technology acquisition travelling the world, looking for investment opportunities. Although a significant number of oil-related announcements have been published in the Chinese press since 2001, many of the deals have still to be finalised.

Until recently, Chinese oil companies operated mainly in countries such as Sudan, Angola and Iran, where the petroleum sector is not dominated by international oil majors. Half of all Chinese overseas oil production currently comes from Sudan. Today, however, Chinese companies are venturing into other countries including Russia, Kazakhstan, Ecuador, Australia, Indonesia and Saudi Arabia. At the same time, some analysts believe that Chinese companies are improving their ability to purchase assets without overpaying.

According to IEA figures, Chinese companies produced 220,000 b/d in 2003 from their overseas reserves. The total figure is projected to rise 8% annually until 2020 when production from overseas reserves is expected to reach 1.4mn b/d.

China National Petroleum & Gas Company (CNPC) has led the overseas investment rush among Chinese stateowned companies and claims to own petroleum assets in 30 countries. CNPC has announced plans to invest \$18bn on overseas oil and gas investment between now and 2020. Most of the company's current overseas production comes from Sudan, Kazakhstan and Indonesia.

Plans to import 1mn b/d from Russia through a pipeline have turned to disappointment, however, following the Russian decision to build the pipeline to Nakhoda – on the Russian far East coast, allowing oil to be exported to Japan and other countries – supported by Japanese finance, rather than build the pipeline to Daqing in north-east China in partnership with CNPC.

Kazakhstan, however, has proven keener to assist China's oil import plans. CNPC's acquisition of a 60% stake in the Kazakh oil firm Aktobemunaigaz was sealed with a pledge to invest significantly in the company's future development over the next 20 years. Then, in May 2004, the Kazakh and Chinese governments signed an agreement for the construction of a \$700mn pipeline to export Kazakh crude oil into western China. The pipeline will run from Atasu in central Kazakhstan to Xinjiang, supplying three refineries with about 200,000 b/d of crude oil, possibly doubling to 400,000 b/d in the future. Securing the deal is thought to reflect China's interest in extending its political and commercial influence into Central Asia, as some analysts believe the pipeline construction cost could be too high for the project to be commercially viable.

China Petroleum Company (Sinopec) is a more recent entrant to the international oil and gas market, and hopes to begin producing oil in Yemen, Iran and Azerbaijan this year. Sinopec's main success so far is a deal reportedly worth about \$100bn with Iran to buy 10mn t/y of LNG over a 25-year period from Iran's offshore South Pars gas field. Sinopec also has the right to exploit the Yadavaran oil field, with reserves reported at over 1.5bn barrels, on 'buy-back' conditions disliked by most international oil majors.

The other state company seeking overseas opportunities is China National Offshore Oil Corporation's (CNOOC), which is active in Australia and Indonesia. CNOOC recently surprised the international oil and gas industry when reports began appearing saying the company wanted to purchase Unocal for around \$13bn. Analysts note that these types of announcements tend to create an

MAY

image of Chinese companies as being bigger and more ambitious than actually is the case. As it turned out, ChevronTexaco signed an \$18bn stock and cash deal to merge with Unocal.

Gas plans

Meanwhile, government plans to develop natural gas use to help clean up airborne pollution in many fastexpanding cities across the country will further expand China's energy import needs. Construction is underway to build two LNG import terminals in Guangdong and Fujian Provinces in southern China, while plans are being discussed to construct about 10 other LNG receiving terminals in key port cities along the fast-developing east coast region.

Were China to construct only half of the proposed LNG terminal total, natural gas imports could reach between 30bn and 35bn cm by 2015. Piped gas imports are being considered in addition to expanding domestic gas production. Beijing recently signed an agreement to import gas by pipeline from Kazakhstan, which could be fed into the end of the recently completed 4,000-km West-East gas pipeline project built to transport gas from Xinjiang Province to Shanghai. Plans to import gas from Russia through a pipeline extending across China to South Korea could provide another source of gas, although talks have been stalled for some time due to disagreement over an acceptable price.

China looks to gas for clean energy

China plans to expand natural gas consumption as part of efforts to increase clean energy supplies across the country and diversify its fuel strategy from domestic coal and imported oil supplies. Future development of gas consumption will increasingly rely on imported LNG and, eventually, piped gas imports to meet gas demand growth.

Although the first records of gas reserves being tapped in Sichuan Province date back 2,000 years when hollow bamboo tubes were used as gas pipes, natural gas has never been an important fuel in China. Until the 1990s it was used largely as a feedstock for fertiliser plants, with little used for electricity generation. Indeed, while two gas pipelines supply natural gas to Beijing from the Ordos Basin to the west and Zhengzhou, which lies southwest of the capital, most gas has, until now, been used near producing gas fields in Sichuan Province.

Hydrocarbon exploration has revealed much larger reserves more recently, mostly lying in Xinjiang Autonomous Region in the west. China's domestic reserves of natural gas at the beginning of 2004 were estimated at 53.3tn cf. Current consumption is about 40bn cm/y, accounting for around 3% of China's total primary energy consumption. The government has announced a target of increasing gas consumption to 6% of total prime energy use by 2010. By 2020 gas demand is expected to reach 200bn cm/y, accounting for 10% of total energy use.

Gas offers China a number of important advantages, not the least its clean energy qualities. Using the World Health Organisation's (WHO) total suspended particulate (TSP) guidelines as a measurement of airborne pollution, China has the dubious distinction having nine of the ten worst air polluted cities in Asia, of which five are among the ten worst air polluted cities in the world.

Due to the heavy reliance on coal and a lack of environmental protection facilities at coal-burning plants, air quality is poor in all of China's industrial cities. One consequence of this is that about 150,000 premature deaths occur in the country each year, calculated in terms of normal life expectancy, due to excessively high TSP concentrations in urban areas.

Cleaning up urban air pollution is a priority and developing natural gas use is a major part of the government's strategy. Developing natural gas use also allows fuel diversification away from fast growing oil imports. In addition, developing gas use will help overcome coal transport and supply bottlenecks that have created serious energy shortages in many parts of China during the past two years.

Gas use also will help accelerate China's industrial modernisation as gas-fired industrial boilers are more efficient than coal-burning boilers, while gas-burning combined cycle power plants are more efficient than coal-fired steam turbine units.

Gas developments

During the past three years China has begun to embark on a number of major gas development projects aimed at supplying natural gas to the country's leading economic and industrial regions. For the moment, however, gas sector development is proceeding on a projectby-project basis, while the government has yet to draw up a gas sector development master plan. The lack of laws and regulations governing the natural gas industry is another issue, as these will be needed if private investors are to be encouraged to invest in the sector.

At present two LNG import terminals

are under construction in Guangdong and Fujian Provinces in southern China, while possibly as many as ten other LNG receiving terminals are under consideration or at the planning stage. Interest in LNG import projects has intensified over the past 10 months as China's energy shortage pushed up coal prices while rail transport constraints held up coal deliveries to power plants and other customers.

In fact, Shanghai and nearby provinces in Central and East China will be the first to launch major natural gas utilisation schemes following the recent opening of the 4,000-km West-East gas pipeline on 1 January 2005. Built at a cost of \$5.2bn in just two years, the pipeline was commissioned one year ahead of schedule. State-run PetroChina, which built the pipeline, announced that pre-inauguration gas sales in 4Q2004 reached 1.3bn cm, about 10% of the pipeline's designed annual capacity. The company expects gas supplies to climb to 4bn cm in 2005, reaching full Phase One designed supply capacity of 12bn cm/y in 2007 - one year ahead of schedule.

With gas prices previously above other fuel costs, some Chinese analysts had speculated that the West-East pipeline could prove unprofitable. However, the recent increase in oil and coal prices has made natural gas more appealing to large energy consumers. Should gas demand increase above the pipeline's present capacity, additional compressors can be installed and other equipment purchased so the pipeline can be expanded to carry about 20bn cm/y in the future.

LNG imports

Imported LNG will be used to develop the gas industry in many of China's fast continued on p42...

FORECOURT SHOW

review



Over 70 major companies exhibited at this year's International Forecourt & Fuel Equipment Exhibition (IFFE), promoting fuel dispensing equipment, car washes, electronic data systems, tank measurement devices, security systems and much more besides. Kim Jackson reviews some of the new products on offer, while Chris Skrebowski highlights the presentations at the EI's half-day Forecourt seminar organised in association with Greenergy. Some 6,000 people attended this year's IFFE three-day show at the Birmingham NEC. Indeed, the event is now deemed so successful that its frequency is being changed from once every two years to an annual event from next year. So, make a note in your diary – the next show will be held on 19–22 March 2006.

A vast range of forecourt equipment and services were on display, with a number of exhibitors promoting new products. Among them was Air-serv, displaying its new Millennium jetwash, which is available in multi-programme or buytime options. Other products on show were its Dual jetwash (two machines in one) and popular Vac & Fragrance machine.

Ambisol Signage and Lighting was showing off its patented large-area, low energy and low maintenance lighting system – Slablight – which spreads lighting evenly behind signage and across displays; while Big Oil Associates was busy promoting its Internet-based service designed for the independent fuel retailer. Initially launched in January 2004, the www.BigOil.net site features Platts fuel price data in the form of charts and tables, with weekly and monthly trends shown together with current averages, allowing the retailer to spot important price movements. It also offers a pump price optimisation model (PPOM) designed to help the retailer optimise fuel margins, control wet stock and working capital, analyse and audit delivery costs, and analyse the effects of pole price changes at a site - as well as market news and business intelligence reports. The company has also recently developed an In-store Digital Media (ISDM) screen advertising package, designed to help the forecourt retailer increase shop sales, promote a site and receive a share of advertising revenues.

Catalist, the forecourt retailing information specialist, was on hand to provide market information on forecourt networks across Europe. The company can supply a vast range of data, from targeted address lists to full trade analysis of a network of sites. Visitors to the Catalist stand were invited to enter two prize draws - the first to win a year's free access to PriceViewer, an Internet-based service that is specifically designed to provide the independent dealer with daily information on competitor site pricing; the second to win a free Site Report, including a location map, full site overview, a trade area report, colour photographs and a quadrant analysis chart, for any site of their choice.

Draws were made at the end of each day and congratulations go to the following: Michael Morecroft, Padholme



Road filling station, Peterborough; Rajni Shah, Star filling station, Millhill, London; Kumar Sharma, Sharma Garages, Sutton Coldfield, Birmingham – all of whom won the PriceViewer draws; and Paul Lewis, Lewis Forecourts, Anglesey; Philip Rutt, Woburn Sands; and Charles Dodman, Smithy View service station, Wrexham – winners of the Site Report draw.

D Berry & Co was exhibiting its latest additions to the Atlas family of tank and pipework interface solutions – its FILLmaster and the VENTmaster, designed to cut the time and cost of forecourt installations; while Dresser Wayne was showcasing its range of fuel dispensers, tank gauge systems and drivercontrolled delivery systems, including its latest Chip and PIN developments.

Elkington Gatic was promoting Slotdrain – originally developed for the airport runway and aprons, this robust water drainage system is now being marketed to the forecourt sector as a solution to the widespread problems associated with conventional drainage channels with loose gratings that routinely break down. Slotdrain is a singlepiece unit available in a variety of sizes, which is cast into a concrete surround to create a continuous, permanent drainage duct with no moving parts.

New from Gilbarco Veeder-Root was the Red Jacket submersible turbine pump, designed to eliminate spills that can occur when being serviced by a technician. The pump is also claimed to offer the lowest drop across the packer manifold, optimising flow with any sized motor that meets the site requirements – this results in more flow at discharge, allowing site owners to maximise flow and profits, states the company. Also on show was the company's range of fuel dispensing equipment, measurement control systems and support services, including the combination petroleum/LPG dispenser with Ecometer, and Passport Europe – a fully touch-screen operated POS (point of sale) and forecourt controller system.

Tattersfield and Partners who said of IFFE: 'For us it's more about networking with

clients and suppliers we haven't seen for a while. Finding out what is going on in

us a grass roots perspective'; middle right: the Gilbarco Veeder-Root stand; bottom

right: Ambisol Signage and Lighting; and bottom left: Elaflex

the business as well as meeting new clients and independent petrol retailers. It gives

Goodyear took the opportunity to launch its new forecourt nozzle range for standard and vapour recovery service, complimenting an improved line of the company's service station kerbside hose assemblies in both standard and vapour recovery forms. The company was also promoting its Redwing fuel oil hose for domestic tanker refulling applications, as well as its general-purpose petroleum transfer and dock hoses.

Meanwhile, HTEC was demonstrating its Chip and PIN solutions for the HydraPOS, Gemini and outdoor payment terminals. Also on show was its webbased loyalty and virtual back-office systems, plus the latest vehicle number plate recognition technology designed to help reduce the number of drive-offs.

Exhibiting for the first time at IFFE, was Istobal UK. It was marketing its M12 rollover car wash, with an extensive range of features and modular design; its M18 rollover, with a wash capacity of more than 20 cars per hour; and two models of payment terminal





FORECOURT SHOW



Samantha Aikman, Catalist (right) with Ray Holloway, Director of the UK Petrol Retailers Association (PRA), who drew the winning names for Catalist's two prize draws (see page 38).

built on a stainless steel structure.

Petroman Environmental Services unveiled its low-level PV valve - which is claimed to eliminate the need for working at high levels on the vent stack; while Risbridger was displaying its comprehensive range of forecourt valves and fittings, including its latest RIS-FLANGE family of fittings. Designed to eliminate large threaded joints where possible and minimise the total number of connections, each RIS-FLANGE assembly can be rotated through 360° to align with relevant chamber entry points. All the components can be directly connected to the pipe terminations or via flex connectors, while 'blind hole' tank lid tappings allow use of bolts or studs without risk of leakage, states the company.

On display at Ro-Dor's stand was the latest model of its tried and tested automatic roller door for the forecourt car wash. The door features a new failsafe feature, incorporating supplementary power from a battery back-up that allows the door to go up even if there is a power failure, enabling any trapped customers to exit the car wash safely.

Building on the success of its dog wash, THI UK was promoting its dedicated motorbike wash, claimed to be the only one of its kind currently available on the market. It is a totally selfcontained unit, featuring water reclaim and reverse osmosis facilities for the final rinse.

Meanwhile, Torex Retail presented its new site controller. The main supplier of forecourt management solutions Iridium and Prism, the company claims to have systems installed in more than 2,500 service stations in the UK – nearly one-quarter of the UK market.

VBi Retail Solutions launched its latest next-generation product – the Illumina outdoor payment terminal – a

stand-alone, touch-screen, Chip and PIN enabled terminal that allows customers to pay for fuel and other products out on the forecourt. The terminal can also play video media, including advertising, providing an additional potential revenue stream to forecourt operators, who are able to sell advertising space to third parties.

Washtec UK presented a host of new products, including its SoftCare Evo gantry car wash - claimed to provide performance and functionality at an economical price, and the SoftCare Juno car wash system - reported to be the fastest rollover car wash on the market, capable of cleaning 50% more vehicles than conventional gantry car washes, taking just one and a half minutes for the complete washing and drying cycle. The company's third new line is the Quad unit, which combines vacuum, fragrance, and air and water in one single cabinet, minimising the space requirement on the forecourt and making use of the facility far easier for drivers.

A host of other familiar names were exhibiting their wares, including Elaflex, Minale Tattersfield & Partners, Tokheim and Wilcomatic. Also present was the Energy Institute (EI), taking the opportunity to network with key industry players and marketing our range of membership offers. Of particular relevance was the promotion of Petroleum Review's annual UK Retail Marketing Survey (currently available from the EI Library at a cost of £20, t: +44 (0)20 7467 7114) - which provides a comprehensive review of forecourt retailing in the UK, examining trends, sector performance and developing market opportunities as well as providing detailed statistical information on a company, regional and fuel product basis. The show also provided the ideal venue to launch the latest edition of the El's filling station guidance publication -

Design, Construction, Modification, Maintenance and Decommissioning of Filling Stations, more commonly known as 'The Blue Book'.

A matter of convenience

The Convenience Retailing Show was held alongside IFFE, bringing together the latest products and services for the convenience market as well as offering useful tips and advice via its 'Virtual Store' stand. Here, visitors could watch a film entitled 'Share the vision', which aimed to show retailers how to develop their store to its fullest potential. The film focused on things such as first impressions – where layout and lighting can say a lot about a store. It also advised on keeping up with the latest product developments and encouraged retailers to embrace new technology.

Meanwhile, the 'Shop Zone' was busy promoting in-store products such as antifreeze, oil and car care accessories, as well as showing new ideas for effective ranging and marketing. Among the exhibitors were Pet Brands - unveiling its RAC Pets in Transit range that allows pets and owners to travel together safely, securely and comfortably; DCI Marketing - showing for the first time in the UK a range of top selling products in the US, including pump island convenience centres and waste containers; and Softoption Developments exhibiting its new integrated CCTV camera systems with EPOS (electronic point of sale) tills that are designed to film the customer at the pump and the customer at the till for extra security.

Working lunch

Centre stage during IFFE was Forecourt Live! – where the EI hosted a half-day seminar on 'Business trends in the forecourt sector' organised in association with Greenergy. This was also the venue for a series of working lunches hosted by *Forecourt Trader* on each of the three days of the show, where visitors had an opportunity to hear about and debate on controversial topics such as fuel pricing and security.

The EI seminar was introduced by Chris Skrebowski, Editor of Petroleum Review and the UK Retail Marketing Survey (RMS). He started by looking at the main business drivers that are changing the shape and nature of the forecourt business. The first of these was the impact of increasingly fuel-efficient vehicles, which had made forecourt operators increasingly dependent on non-fuel items with their higher margins for overall profits. There was also the challenge of how to get customers to make non-fuelling visits to

MAY

forecourts. He then looked at the way in which diesel vehicles had become fully competitive with petrol (gasoline) vehicles and the way that diesel sales were expanding rapidly while petrol sales continued to languish. He also examined the medium-term supply challenge of a diesel-short Europe and the prospects for a move to diesel in the US and Russia – both of which are currently gasoline dominated.

Before introducing the main speakers, Skrebowksi highlighted the main conclusions of this year's RMS survey, noting a number of long-running themes, including:

- Increasing vehicle numbers.
- Declining site numbers and network rationalisations.
- The expansion of supermarkets/ hypermarkets into fuel sales.
- An expansion of store area and store product ranges on forecourts.
- The expansion of separate catering offers – Little Chefs etc – which now appear to be reversing with a move to in-store catering, such as

Cutler J. Cleveland and Christopher Morris

Publishing: October 2005

ISBN: 0080445780

To order your copy,

Price: £50.00

please contact: energy@elsevier.com

c.512 pgs; Hardback

19

BP's Wild Bean Café etc.

- A progressive move to higher quality fuels with reduced sulphur and aromatics levels.
- Steadily rising levels of taxation on motor fuels.

He then posed questions about alternative fuels, likely future demand growth and customer response to high oil prices. He finished by noting that the *RMS* would continue to track and monitor the changes and provide readers with a concise summary of the UK fuel retail sector.

The next speaker was Nigel Lang, founder and Managing Director of Catalist. He described the way his company had been built up – starting from a room in his home in Bristol in 1993, monitoring just the UK market, to its present form where the company has 30 employees and 200 surveyors operating in over a dozen countries. Lang explained that Catalist maintains a definitive database on over 100,000 forecourts in Europe, as well as monitoring daily fuel prices in an increasing number of countries. As a result the company provides increasing amounts of data to companies inside and outside the industry, as well as consultants, financiers and governments (both local and national).

He then effectively demonstrated the breadth and comprehensive nature of the data in a series of presentation slides illustrating various aspects of the industry and the pressures on it. Lang also outlined many of the underlying trends alluded to by the first speaker, but using hard data from the Catalist database to illustrate the various points.

The next speaker was Donna Clarke of Greenergy, who spoke to the title 'Strategies for third grades'. She explained that she was an environmental specialist with 12 years' experience in energy and environmental policy. For the last four years she had been Business Development Manager for Greenergy, working on biofuels policy and the development of a biodiesel plant at Immingham.

She noted that 25% of Greenergy was owned by Tesco and that the supermarket chain currently had a 5% share of the UK fuels market overall



Cutler J. Cleveland and Christopher Morris

The **Dictionary of Energy** is the most comprehensive and up-to-date reference of its kind; clearly identifying and defining important, interesting, and topical energy terms used in the fields of energy and environmental science.

- 7000 clear and concise definitions on virtually every topic within energy
- Over 100 mini-essays concentrate on subjects of particularly topical interest, all written by leading experts in the field
- Written by the Editor-in-Chief of the Award Winning Encyclopedia of Energy

This will be an essential companion for anyone with an interest in energy, in particular scientists, consultants, journalists, economists, and policy makers.

www.elsevier.com/locate/isbn/0080445780

2005

and rather more in the south-east. Current sales were running at around 2bn litres, split 60:40 between petrol and diesel – the trend to diesel use illustrated by the fact that the split had been 70:30 only a few years ago.

Clarke explained that Greenergy had pioneered ultra-low sulphur diesel and petrol (ULSD/ULSP) grades in the UK. The company supplies GlobalDiesel to supermarkets and other majors, and advises customers on third grade strategies. A third grade is normally of higher value and lower volume and typically is a lead replacement (LRP) or additivised fuel. In the case of LRP, she noted that sales had now fallen to minimal levels and operators needed to look to more profitable opportunities for the forecourt space. The biofuels options were (a) 5% biodiesel in mineral diesel blend, which meets EN590 and complies with manufacturers' recommendations, and (b) petrol with added ethanol, where a 5% addition meets the EN228 specification.

The supply of ULSD was seen as the key to out-of-town sites, particularly as the UK moves to a 0% sulphur grade. Clarke explained that in making a biodiesel, the three principal biosources were rapeseed methyl ester, soy bean methyl ester and palm oil methyl ester – although for the UK the first was the most important. She also noted that Tesco is now moving to replace LRP pumps, usually with biodiesel ones on its forecourts.

Clarke then went on to state that new biofuels regulations had come into force on 1 February 2005, which require labelling of blends of more than 5% biodiesel to warn that it might not be suitable for all vehicles. This was seen as discouraging blends of over 5% and, as a result, most of the 106 forecourts that currently retail bioblends, sell grades with 5% or less. She stressed the view that development of third grade sales depended on customer confidence that they could simply fill up and go without risk to vehicle or warranty. This pressure meant that major companies and suppliers would stick to trusted and known suppliers, particularly as the reduced duty eligibility required 96.5% ester and under 50 ppm sulphur. Clarke warned, however, that operators should not be tempted by cheap offers from small-scale suppliers who could not guarantee quality and operability. Bioethanol grades were at a very early stage of development, although trial blending was starting. For hydrogen fuels her dismissive comment was 'dream on'.

The next speaker was Robert Onion, a design consultant and co-founder of the London-based branding consultancy Circle Design. He started by explaining that 10 years of experience consulting for petroleum companies in the Arabian Gulf region had shown the importance of brands that were both fit for purpose and blended the best of international standards with local culture.

He started by looking at various views of what a brand was, concluding that it depended on the individual viewpoint. The definition Circle had developed was that a brand was 'a unique combination of values and attributes that leave an impression in a customer's mind... and which act as a credible guarantee of quality'. He then showed, using Shell as the example, how a powerful brand could be undermined by incidents such as the Brent Spar. He then gave a range of examples of positive and negative images and their impact on brand perception.

Onion noted that for forecourts, like all retailing ventures, location remains the largest single advantage. He singled out the way that supermarkets had used the locational advantage of being a shopper's destination to build their share of the retail fuels market. He then examined the various types of customer loyalty - to the brand and to the product - looking at the value customers were prepared to put on a better experience and differentiating between active and emotional loyalty. He further developed the idea of positioning a brand, illustrating the various points with reference to the Emarat brand that Circle had developed for the rebranding of forecourts and shops operated by Emirates General Petroleum Corporation in Dubai (UAE). After showing all aspects of the positioning and rebranding, Onion concluded by showing the rapid sales growth in the various sectors after the rebranding programme.

The final presentation was given by Rory Hennessey, Chairman of the Energy Institute's Service Station Panel, who reviewed the latest version of the El's filling station guidance publication Design, Construction, Modification, Maintenance and Decommissioning of Filling Stations - more commonly known as 'The Blue Book'. He explained the way the revisions had been approached and gave details of the actual consultation and review process for this important publication. He also went through the revision timetable, showing the way in which the process had been foreshortened. Hennessey then explained the key changes in the second edition, noting the way it had become less prescriptive and now provided more practical information to allow operators to improve their decision-making. Published jointly by APEA and the EI, with technical input from the UK HSE, copies of the 'Blue Book' can be purchased from the El Publications Department (t: +44 (0)20 7467 7157, or visit www.energyinst.org.uk).

... continued from p37

developing east coast provinces. LNG import terminals in Guangdong and Fujian Provinces are being built, along with transmission pipelines to supply gas to power stations, industrial consumers and gas distribution companies in major cities.

Plans are under preparation to launch LNG import schemes in various other provinces as well – including Ningbo in Zhejiang Province, Qingdao in Shandong Province and Dalian in Liaoning Province, as well as in the cities of Shanghai and Tianjin. In addition, two other locations for LNG terminals have been suggested in Guangdong Province, where the first terminal near Shenzhen is due for completion shortly.

Guangdong LNG terminal will import LNG from Australia's Northwest Shelf, while the Fujian LNG terminal will import LNG from BP's Tangguh project in Indonesia. China is likely to import LNG from other suppliers in the future, including from Iran where China Petroleum Company (Sinopec) has concluded a deal to buy 10mn t/y of LNG annually over a 25-year period from the offshore South Pars gas field.

Piped gas

Meanwhile, proposals to import gas by pipeline from several neighbouring countries are under study as China looks further afield to fill its growing gas and energy needs. According to a recent report in China Daily, China and Kazakhstan are discussing the construction of a multi-billion dollar natural gas pipeline from western Kazakhstan to China's Xinjiang Autonomous Region, where it would link with the West-East pipeline.

Constructing the proposed Sino-Kazakh trunkline could give China access to other gas fields in western Central Asia. In the long term, the Sino-Kazakh gas pipeline might be extended further west to Uzbekistan and Turkmenistan. It could possibly connect with gas pipeline grids in Russia and Iran, creating a pan-Asian gas grid, China Daily said.

Another piped gas import scheme that China is pursuing would involve importing gas from Irkutsk in Russia. The plan, which has been altered several times, involves building a pipeline from Irkutsk, across northern China and then crossing to South Korea via a subsea route. China plans to buy 20bn cm/y of gas and South Korea 10bn cm/y. However, the project has run into problems over Russian insistence that a high gas price be paid – which China and South Korea are unable to accept.

2005

MAY

New for 2005





IP Standard Test Methods

for analysis and testing of petroleum and related products, and British Standard 2000 parts

2005 edition

Every year the Energy Institute (EI) publishes a new edition of Standard Methods for the analysis and testing of petroleum products and British Standard 2000 parts, a complete compilation of test methods based on both traditional and modern instrumentation techniques (including joint methods with BSI, EN ISO and ASTM). These Standard Methods are an essential part of any quality control regime. They are also necessary for national and international trading of petroleum and petroleum products.

The 2005 edition contains all the sampling and laboratory test methods called up in the specifications for European and National Automotive Fuels, International Marine Fuels and National Industrial Fuels and Lubricants. It also contains many other standard test methods required for production quality control and custody transfer quantity control.

The 2005 edition contains*:

- 282 full methods
- 19 proposed methods

Changes for the 2005 edition include*:

- 11 new full methods**
- 5 new proposed methods
- 10 new European Standards
- 7 new International Standards
- a number of test methods have significant changes, and many have minor changes

A free CD-Rom containing the full text and artwork of both volumes is included with the printed 2-volume hardback book.

64th ed Feb 2005 ISBN 0 85293 431 9 Full price £495.00 2-volume hardback set 25% discount to El Members

- Standard test methods for the quality control of bitumens and compliance with the European/British specifications for bitumens are published separately.
- ** 3 new bitumen standards are published separately.

IP Standard Methods Online... ...access when you need it!

STM online can be purchased in its entirety on an annual subscription basis, or in the form of single copy sales (ie single test methods purchased by credit card and delivered online).

Subscribers will be alerted by email when new methods are uploaded or old ones withdrawn.

There are three subscription types available:

- 1. Global License for worldwide company access
- 2. Site License for departmental access
- 3. Individual License

For further details about IP Standard Test Methods Online visit: www.energyinstpubs.org.uk



Order IP Standard Test Methods for analysis and testing of petroleum and related products, and British Standard 2000 parts, 2005 from Portland Customer Services, Commerce Way, Whitehall Industrial Estate, Colchester CO2 8HP, UK t: +44 (0)1206 796351 e: sales@portlandservices.com f: +44 (0)1206 799331 (please include your postal address and quote your El Membership number to obtain discount)

Maximising value in the petroleum supply chain

Volatility in the petroleum business continues to hit the headlines in 2005, as geopolitical events contribute to a further set of tensions in the global energy markets. Recently, new concerns surrounded a possible Opec production cut, Brent crude hit a new three-week high, and cold weather in the north-east US had created a surge of seasonal demand. This is typical of the dynamic environment facing traders, planners and refinery managers as they look to deliver a competitive advantage through their daily operating decisions.

The downstream petroleum supply chain has always been more complex than the equivalent supply chains in other process industries like chemicals or pharmaceuticals. The option to trade or exchange crudes, intermediates and products at key points along the chain means that companies have to balance a series of complex and interlinked economic decisions to maximise their margins (see Figure 1). The key is to make the best 'buy versus make versus trade' decisions at every stage, seizing market opportunities where they exist and optimising the use of a company's physical assets, from refineries and terminals to ships and barges.

Managing this supply chain efficiently and profitably presents petroleum companies with a significant challenge at the best of times. Over the past decade, however, there have been a series of structural changes to Chuck Moore, Vice President, Petroleum Business, Aspen Technology, looks at how operators can maximise value in their downstream supply chain against the backdrop of a

volatile marketplace.

the global petroleum business that has led to both greater complexity and an increase in operational risk. Some of the key factors include:

- Mergers and acquisitions of the 1990s increased the scale of business. The major oil companies are now much bigger global enterprises. Overall, the volume of supply chain operations (b/d) increased by a factor of 2 to 5, significantly increasing operational complexity.
- Trend towards lower inventory levels. As part of the drive to reduce working capital costs, operating companies have been steadily reducing the amount of inventory they carry. As a result, their supply chain systems have become much more sensitive to operational disruptions and demand volatility, which, in turn, has led to increased price volatility in recent years.
- Changing patterns of supply and demand. Significant shifts in the pattern of consumption, such as the dramatic growth in demand from China, have increased both the volume and



complexity of multi-regional trade necessary to balance regional demand and supply. This has placed new demands on the existing system of vessels, barges, pipelines and storage facilities, and put increasing pressure on refiners and marketers to import greater volumes to meet demand, such as in the US, where demand consistently exceeds supply.

- Clean fuels requirements. The stringent North American and European clean fuels legislation introduced in recent years has had an impact beyond those markets affected by the new standards. As domestic demand in the US and Europe continues to rise, the new requirements have significantly reduced the available pool of supply, leading to further complexity in the global marketplace.
- Proliferation of product specifications. With over 140 different product specs in the US alone, the fungibility of petroleum products has significantly decreased. The demand for specific blend components, coupled with product variations across regions, states, counties and seasons of the year, have further increased the demand on transportation and storage facilities, tightening an already-tight supply chain system.

Combine these different factors with geopolitical instability – such as the current uncertainty surrounding supplies from Russia and Iraq – and it is clear why the majority of operating companies are looking for more effective ways to manage and optimise their supply chain decision-making.

Inventory levels

Closer examination of the industry trends outlined above explains why one of the prime areas of focus is in the accurate understanding of inven-

MAY 2005

Industry collaboration provides EOM market solutions

AspenTech has responded to the emerging market for EOM solutions by working closely with its major customers in the refining and petrochemical/chemical sector to help define and develop a new generation of supply chain solutions. This initiative has been focused through the Foundation Client Program (FCP), a collaborative effort involving 14 operating companies together with AspenTech and Accenture.

At the end of 2004, AspenTech launched its new range of aspenONE™ solutions specifically designed for the EOM market. aspenONE for Petroleum incorporates software modules which address the key business processes in petroleum downstream (see Figure 2), including refinery operations; supply, distribution and trading; fuels marketing; regional planning; and engineering and innovation. Based on feedback from the FCP group, the solution places particular emphasis on facilitating the integration of the business processes along the buy versus make versus trade decision axis.

aspenONE for Petroleum is built on the Aspen Operations Manager platform, which provides a core set of capabilities including the ability to create role-based access; performance scorecarding to allow the measurement of results against key perfor-

tory levels at the key points through the supply chain system. Inventory provides companies with the buffer they need to help manage operational upsets and respond to sudden changes in demand or market opportunities. Cutting inventory levels frees up significant amounts of working capital, but it also exposes refiners to a greater level of operational risk. Striking the right balance between inventory and risk is an important goal for refiners and can impact directly on the ability to consistently create superior margins.

Managing and scheduling inventory to achieve this balance, however, requires more than just a knowledge of current inventory locations and levels. It requires an understanding of inventory projections for refined products and crudes, both in terms of quantity and quality, 10, 30 or 90 days in the future. These inventory projections help companies gain a clear picture of key elements of their business, such as where they are long or short, what amount is planned versus scheduled, and what amount is available rather than committed to fulfil contracts or exchanges. Combined with information on forward pricing, and



Figure 2: aspenONE for Petroleum addresses the key business areas in the petroleum supply chain

mance indicators (KPIs); and the infrastructure which allows multiple applications to be integrated with the solution using an open standardsbased approach.

One of the first modules that has been released is aspenONE Inventory Management & Operations Scheduling for Petroleum (IMOS). This is a webbased module that is designed for commercial crude and product schedulers and operators. The module enables business processes such as crude and product movement scheduling, movement tracking, inventory management, inventory forecasting analysis and planning, cost tracking, and decision support for transportation costs estimates and product blending. It also supports business process integration with the refining and fuels marketing business areas. IMOS is one of the four front-office modules that make up aspenONE Supply, Distribution and Trading for Petroleum.

transportation and storage costs, this knowledge provides the foundation for running downstream operations in the most responsive and profitable manner.

In reality, though, few companies are equipped to provide their planners, schedulers and traders with this level of insight into their business. The IT systems most commonly used to support crude and product scheduling and inventory management are in-house applications that were developed during the 1980s. These systems were not designed to accommodate the highly complex and dynamic supply chain environment we see today – as well as offering limited functionality, they are expensive to run and maintain.

So, the industry has arrived at a situation where the leaders recognise that there is a significant competitive advantage to be gained from implementing processes and systems that will give them the capability to manage their supply chains more effectively. Many of the major companies have already begun to establish programmes designed to meet these needs, with names that vary from 'Global Supply Chain Excellence' to 'Refining/Supply/ Trading Interface'. These initiatives share a common theme – to establish a solid foundation for accurate management of inventory projections, enabling better buy versus make versus trade decisions based on a clear picture of the different business options.

IT is key

At the heart of these programmes is a new generation of IT systems that are often referred to as enterprise operations management (EOM) solutions (see box). EOM solutions address the emerging market for integrated software solutions that enable manufacturing companies to manage and optimise their key business processes across the entire supply chain. In IT terms, these solutions fill the gap between the business systems that record historical financial performance and the refinery systems that control the second-by-second process operations in the facilities.

EOM solutions are characterised by a number of capabilities that make them especially suitable for the complex and dynamic nature of the downstream

petroleum supply chain. These capabilities include:

- Real-time visibility into a company's global operations.
- Consistent use of information and models to support decision-making.
- Business processes aligned with industry best practices.
- Role-based access providing each user with the data and analysis tools they require.
- Software integration to link with existing applications.

Unlike business systems which focus on recording historical transactions ('What *did* we do?'), companies can use EOM solutions to focus on predictive performance, enabling them to answer the question 'What *should* we do?'

Companies have the option of implementing individual EOM solution modules to address their most pressing business problems, or following an integrated approach that encompasses their entire downstream organisation. Integrating activities in this way helps companies to break down their internal 'silos', shifting the emphasis from individual departments and sites to a global functional model based around a consistent set of work processes, information and performance indicators.

If we look again at the challenges facing scheduling and operations staff as they manage multi-million-dollar supply chain transactions, it is clear that EOM solutions can have a dramatic impact on their ability to make fast, well-informed decisions. By consolidating real-time information from across the supply chain in a consistent form, these systems can provide every user with clear visibility of inventory projections, complete with the necessary volume, quality, price and time dimensions. It enables companies to track all planned, scheduled and committed movements; production information from the refinery; and details of trades, exchanges and sales.

In today's extremely tight supply chain environment, this kind of visibility ensures that petroleum companies are well positioned to respond to operational choices with the necessary agility. In the case of supply chain failures, it allows companies to reduce their exposure to the disruption and, in many cases, can position them to take advantage of the resulting impact. Thus, having visibility into inventories not only reduces operational margin erosion, for example by avoiding supply shortages and runouts, but it also helps companies to capture new revenue opportunities.

When considering the role played by EOM solutions, it is possible to think of them as a form of 'operational backbone' for the downstream supply chain. This backbone helps companies connect the key elements of the supply chain – including all of the interlinked assets and markets – with a common IT architecture. With such a backbone in place, companies have access to the processes and information they require to make more profitable daily buy versus make versus trade decisions.

There is no doubt that the supply chain management capabilities provided by EOM solutions will have a significant impact on the way that petroleum companies are able to respond to, and even benefit from, the volatility in the marketplace. The leaders have already started to appreciate the value of the additional visibility of their inventories, as well as the increased options in their decision making, and this trend is set to continue.

ener

Function rooms for hire

The Energy Institute's central London facility provides an ideal location for business and social functions.

With sumptious rooms, a fully-equipped Lecture Theatre and excellent transport links to all major airports and the rest of London – we cater for meetings and events of varying sizes.

Rooms:

Council Chamber:	style
Waterhouse Room:	12 people, boardroom style
Lecture Theatre:	120 people lecture style 100 people with catering 40 people, boardroom style
Committee rooms I&II:	10 people
Meeting room:	8 people

Audio-visual equipment is also available for hire.

Full catering services can be provided on request - price on application



Left: the Energy Institute hallway; top middle: the Council Chamber, boardroom style; top right: the Lecture Theatre, banqueting style.



For more information on bookings and room layout please contact:

Dave Monaghan t: +44 (0)20 7467 7107 f: +44 (0)20 7255 1472 e: dmonaghan@energyinst.org.uk or

Yasmin El Minyawi t: +44 (0)20 7467 7108 f: +44 (0)20 7255 1472 e: yem@energyinst.org.uk

Energy Institute 61 New Cavendish Street, London W1G 7AR, UK

www.energyinst.org.uk

2005

MAY



THE FUEL LOGISTICS EXHIBITION

Donnington Park 14th-15th June 2005



de

Goods and services relevant to an international audience from the downstream oil Industry.



The latest ideas and currrent innovations in equipment



Don't be caught out - understand new legislation that effects you

Sponsorship opportunities to promote your business and a delegate dinner



The Fuel Logistics Exhibition is a completely new forum bringing together diverse representatives of the downstream oil industry all under one roof.





ENQUIRIES :www.fuellogistics.com TEL: +44 (0)1295 255811



14th June Exhibition and New Legislation 15th June Exhibition and Dinner

... continued from p27

Murzuk field, where OMV partners with Repsol, Total and the Libyan NOC. Remp is confident that the exploration acreage includes various leads for potential large new discoveries, which will develop into drillable prospects. Other plans include the entry of natural gas exploration, with the ultimate aim to produce and sell equity gas into Europe.

Tunisia also represents a long-term commitment by OMV, with the company having activities there for 30 years. A 50% holding in the offshore Ashtart field provides most of the company's 8,000 to 9,000 boe/d of Tunisian production. It also has a small onshore exploration operation in the south of the country, where it is the operator.

The company has no current involvement in Algeria or Egypt but, according to Remp, it would be very interested to enter and continues to evaluate prospects.

Other areas contribute

UK operations currently provide some 17,000 b/d of production. Remp drew particular attention to the west of Shetland region where the company is involved in the producing Schiehallion field, the undeveloped Suilven field and the promising Lochnagar and Cambo discoveries.

In New Zealand, OMV claims to be the second largest international player after Shell. The company has interests in the producing Maui gas field and the soon to start up Pokohura gas field. It is also operator of the Maari oil field, where Remp describes development as a big technological and commercial challenge, but is 'more likely than not' to receive project sanction. Other countries with OMV engagement such as Australia, Albania, Bulgaria and Germany are mainly exploration ventures.

Recent major step

In December of last year, OMV took over 51% of Petrom, the large integrated oil company of Romania. The deal added some 220,000 boe/d of production and about 1bn boe of reserves to OMV's E&P portfolio. Although Romania is dominating the portfolio of Petrom, it provides further options with an engagement in Kazakhstan. Elsewhere, OMV has successfully operated Austria on a constant production level (40,000 boe/d) for many years.

Remp confirmed that Russia remains a key target area for OMV, but that Latin America now has a rather lower priority. Currently, the company's only Latin American assets are 3,000 b/d of production in Venezuela and 5,000 b/d of production in Ecuador, which are now seen as likely disposal opportunities.

'Our steep growth path in the last decade makes me confident that we will be able to continue to do so in the future,' Remp concluded.

L ETTER TO THE EDITOR

Dear Sir,

I refer to the comments made in the April 2005 issue of *Petroleum Review* (p37) by Mr Saddad Al-Husseini concerning my article on Saudi Arabia's reserves in the February 2005 issue of the magazine. Mr Al-Husseini said in his comments that I misquoted him on the size of the reserves. I will endeavour in this short note to put the record straight.

Mr Al-Husseini claims that Saudi Aramco's proven reserves were 260bn barrels as of year-end 2004. In his article featured in the 17 May 2004 issue of Oil & Gas Journal – and also in his other article on Saudi Arabia's oil reserves that appeared in the Saudi-American Forum on 27 May 2004 (p3) – he says that the figure of 130bn barrels was for the 'remaining proven developed reserves', while the other 50% refer to 'proven undeveloped reserves'. He adds that the addition of new proven reserves through further reservoir development is a foregone conclusion, although he could not be more specific about the size of future reserve additions. Yet, he asserts that Saudi Arabia's proven



Energy Markets – A forward market view Wednesday 4 May 2005, Energy Institute John Hall, Director of John Hall Associates Last chance to book!

Building Energy Performance -

Building Regulations Part L and The New Directive Wednesday 1 June 2005, Energy Institute Ted King BSc CEng FCIBSE, Principal Mechanical and Electrical Engineer, Office of the Deputy Prime Minister, Building

Regulations Division £15.00 plus VAT El members £20.00 plus VAT Non-members

Venue: The Energy Institute, 61 New Cavendish Street, London WIG 7AR Time: 07.30 Registration and breakfast – 08.00 Speeches

Forthcoming El Business Breakfasts: 6 July 2005: Eradicating fuel po

Eradicating fuel poverty – real progress or a mathematical conjuring trick? Jacky Pett, Head of Research, Association for the Conservation of Energy

For more information please contact: Arabella Dick t: +44 (0)20 7467 7106 f: +44 (0)20 7580 2230 e: arabella@energyinst.org.uk www.energyinst.org.uk

El Evening Lecture



energy

The 40% House

Wednesday 18 May 2005, Energy Institute

Dr Christian N Jardine, Research Analyst, Lower Carbon Futures team, Oxford University

The 40% House sets an agenda for reducing carbon emissions from the UK housing stock by at least 60% by 2050, in line with the government's Energy White Paper and the recommendation of the Royal Commission on Environmental Pollution.

The report brings together vital issues concerning energy, carbon and housing, for the first time, and proposes some radical solutions. These must not be forgotten among the debates about house prices and location.

Forthcoming El Evening Lectures:

- 1 June 2005: Microgeneration Dave Sowden, Micropower
- 7 September 2005: Oil Price Representative from Argus Media

For more information please contact: Jacqueline Warner t: +44 (0)20 7467 7116 f: +44 (0)20 7580 2230 e: jwarner@energyinst.org.uk www.energyinst.org.uk

reserves stood at 260bn barrels as of year-end 2004.

If he can't be more specific about the size of future reserve additions, how could he then assert that Saudi proven reserves stood at 260bn barrels at the end of 2004? This amounts to a contradiction in terms and would look like somebody trying to 'square the circle'.

In my February article, I estimated Saudi proven reserves at no more 182.72bn barrels – possibly even be less given the persistent reports about the virtual depletion of the Ghawar oil field, Saudi Arabia's largest field, which accounts for 59% of Saudi production. Dr Mamdouh G. Salameh

200

MAY

EI Oil and Gas Training 2005





Custody transfer of crude oil – trading and loss control issues 6-8 July, 2005



El Member £1,400.00 (£1,645.00 inc VAT) Non-member £1,600.00 (£1,880.00 inc VAT)³ *includes complimentary Affiliate membership to the Energy Institute

This 3-day course covers the principles of custody transfer, the units of measurement and the terminology used. Participants will become aware of the need to minimise the uncertainties during the various measurements that are crucial in performing a custody transfer. They will also learn the acceptable limits within which measurements may differ and what can cause excessive differences and their effect on the final outcome.

Who should attend?

Personnel responsible for product loss; vessel operators, ship brokers, bankers, solicitors, oil brokers, independent inspectors, insurance brokers, cargo underwriters, vessel p&i clubs and storage companies; operational and trading personnel; managers and administrators and other professionals within oil trading companies; accounting, financial and legal personnel; professionals from energy related consulting groups.



International upstream fiscal terms and contract negotiations July 12–15 2005

El Member £1,900 (£2,232.50 inc VAT) Non-member £2,100 (£2,467.50 inc VAT)* * includes complimentary Affiliate membership to the Energy Institute

This 4-day course focuses on the economic, negotiation and operational management issues associated with a comprehensive range of the licence agreements encountered in the upstream oil and gas industry. The many issues, going beyond just the fiscal terms, that must be considered when negotiating licence agreements are identified and reinforced through team exercises.

Who should attend?

• E&P technical professionals and asset managers, negotiators, economists, analysts, financial controllers and planners.

- Government and national company regulators, contract administrators, advisors and policy makers.
- Accounting, tax, legal and banking professionals supporting E&P operations.
- E&P industry consultants, investors, risk analysts and project engineers.



Geopolitics and risk in the oil and gas industry 18–21 July 2005

El Member £1,900 (£2,232.50 inc VAT) Non-member £2,100 (£2,467.50 inc VAT)* * includes complimentary Affiliate membership to the Energy Institute

This course outlines systematic, holistic and quantifiable approaches to risk management and integrates this with an overview of the regional and global geopolitical issues that now confront the oil and gas industry. It addresses risks from upstream, downstream, strategic, portfolio and corporate perspectives, and how they influence the valuation of assets. It addresses community, contractual, environmental, financial, fiscal, political, public relations, safety, security and technical risks, and the techniques used to assess, quantify and mitigate them in various risked valuation procedures.

Who should attend?

The course is structured for a multi-disciplined audience with diverse technical and professional backgrounds and experience levels from within oil and gas companies. Professionals from the industry support and service sectors, including government ministries and departments, will also benefit from participation in this course.

Forthcoming 2005 training courses

Working capital management in the oil business 14–16 September Supply and distribution: organisation, operations and economics 20–23 September European and UK gas supply and demand 27 September

COURS

NEW

Oil and gas industry fundamentals 28–30 September Safety in refinery and petrochemical plant operation 4-7 October NEW COURSE

For more information please contact Nick Wilkinson t: +44 (0)20 7467 7151 f: +44 (0)20 7255 1472 e: nwilkinson@energyinst.org.uk

www.energyinst.org.uk



vards 20

AWARD CATEGORIES >> COMMUNICATION

SPONSOR

One monther left to enter

amed











SPONSOR









enter now



For further information on how to enter, go to www.eiawards.com or contact Jacqueline Warner t: +44 (0) 20 7467 7116, e: jwarner@energyinst.org.uk

entry deadline: 1 june 2005

The El awards ceremony will take place on Friday 25 November 2005 at the Savoy Hotel, Strand, London.

To book a table at the ceremony please contact Arabella Dick. t: +44 (0)20 7467 7106, e: arabella@energyinst.org.uk



Guest speaker and presenter 2005 Sir Ranulph Fiennes Bt OBE

energy

For sponsorship opportunities, please contact Marta Kozlowska, El Business Development Manager, t: +44 (0) 20 7467 7104 e: marta@energyinst.org.uk

in partnership with

Deloitte.