Petroleum review

SEPTEMBER 2002

North Sea
- Successfully squeezing the rocks

Subsea
- Record distance tie-backs

Global reserves
- Discovery rates low despite more drilling

Gas
- UK to resume gas imports

Profile
- Jeff Pym: from BP to the IP and beyond

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

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ABBREVIATIONS

The following are used throughout *Petroleum Review*:

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

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

Front cover: Statfjord A. One of the early North Sea giants. Many operators confronted with large high-cost facilities and reduced flows are now seeking to simplify and de-man production facilities

Photo: Øyvind Hagen, Statoil

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ROUNDUP From the Editor

Ignoring the drums of war

This issue is the one where we take a look at current developments in the North Sea (see p14). It is good to be able to report that after years of quite sharp production declines, output from the UK sector has recently stabilised as the impact of higher than expected investment levels feed through. In all sectors of the North Sea the industry has been highly successful in maximising production by the use of sophisticated technology and production hubs.

It is not all goods news, however, as overall decline for the whole North Sea area is close with the International Energy Agency (IEA; in its August *Oil Market Report*) indicating a small fall in total North Sea liquids production in 2003.

This is also the issue in which we report on IHS Energy's *World Petroleum Trends 2002* report. The report (see p28) shows that 2001 new field wildcat discovery (outside North America) at 9bn barrels was once again well short of consumption. More unexpected was that gas discovery at 42tn cf was well under half gas consumption in the year.

The idea that discovery is declining is generally confirmed by the clear slowdown in discovery in the three key offshore hotspots – USGS, Angola and Brazil. However, just as things were starting to look gloomy we hear of a potential 600mn barrel discovery in the Campos Basin and ChevronTexaco's Gabela-1 oil discovery in block 14 offshore Angola along with the Aparo oil discovery which appears to be an extension of the Bonga SW field.

Gas is altogether a rather more enigmatic energy source, as supply location is so important. Turkey made hugely ambitious plans for gas imports from Russia, Azerbaijan, Nigeria (LNG), Trinidad (LNG), Egypt and Iran – however, it is now experiencing major economic problems and has the International Monetary Fund (IMF) lurking at the door, leading to contracts being cancelled or renegotiated. The latest to feel the backwash is BP's Shakh Deniz project offshore Azerbaijan where timetables appear to be being put back.

In sharp contrast to the excess of supply in the Eastern Mediterranean, Middle East and Central Asia regions the smart money says that the first place to experience a major gas supply shortfall will be the US – possibly as early as this winter. The facts are that lower 48 gas supplies are currently falling at around 5%. The drilling boom is over and the rig count is massively below year earlier levels, but gas storage is at record levels and gas prices fairly subdued. The pessimists argue that Canada is unable to supply significant extra volumes, LNG import capacity is very limited and record numbers of gas-fired generating plants have been commissioned. The optimists counter that the gas in storage provides a huge buffer until the Canyon Express pipeline from the deepwater Gulf of Mexico starts delivering large volumes (500mn cf/d) in the fourth quarter. Clearly it is going to be a tight run thing and a fair bet would be higher US gas prices.

In an item that came in too late to feature in this issue, OAPEC has just calculated that the Arab oil producers will have to invest $119bn just to maintain production capacity and to make the necessary gas and petrochemical investments over the next five years. With a production capacity of around 20–22mn b/d they will produce between 37bn and 40bn barrels of oil over a five-year period. This means the investment cost would be around $3–3.50/b. At this level the investment could clearly be financed, but not necessarily within the current government expenditure patterns of these states.

History is constantly being rewritten – there is nothing particularly special or sinister about that. More information becomes available, analysis changes and new views are taken. The Californian power crisis of 2000/2001 is now coming under the revisionist spotlight. The original analysis was that a botched privatisation and inappropriate price controls had produced both gas and electricity supply shortfalls. High prices had then resulted as companies struggled to deliver. Now the Federal Energy Regulatory Commission (FERC) has just issued a report whose findings are that both gas and electricity prices were manipulated by Enron and others.

The probable upshot is that the recent US enthusiasm for full decontrol and market solutions for gas and electricity supply will wane. Most US politicians are unlikely to relinquish all controls on those who supply their voters.

Chris Skrebowski

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

eworld

The UK Department of Trade and Industry (DTI) has published its *2002 Digest of United Kingdom Energy Statistics* that provides a comprehensive account of energy supply and demand in the UK. Free copies can be downloaded from **www.dti.gov.uk/energy/inform/dukes** In addition, the DTI has published *Energy Consumption in the United Kingdom*, bringing together statistics from a variety of sources to produce a comprehensive review of energy consumption in the UK since the 1970s. This can also be downloaded for free from the DTI site at **www.dti.gov.uk/energy/inform/energy_consumption/** Copies of a DTI booklet that looks at the social and environmental impact of the production and use of energy can be accessed at **www.dti.gov.uk/energy/environment**

The **www.oilandgas-projects.com** database now features over 200 upstream and downstream projects, the latest addition being Kazakhstan with details of offshore exploration and international pipeline projects from the Caspian region. Registration for all UK suppliers is £95/y plus VAT, providing access to the whole database. For further information, visit **www.otmnet.com**

Emerson Process Management has launched PlantWeb University at **www.PlantWebUniversity.com** – a free online learning platform designed for the process industry. The site includes details of the latest automation technology and business topics relevant to the sector.

Regulating Health and Safety in the UK Offshore Oil and Gas fields – Who Does What? – will be available on the HSE website at **www.hse.gov.uk**

Neft i Kapital Publishing House has introduced a new website at **www.oilcapital.ru** providing useful information on oil and gas activities in the former Soviet Union. Further details in English can be found at **www.oilcapital.ru/main.asp?IDR=278** To register for free trial access to the searchable archives, visit **www.oilcapital.ru/main.asp?IDR=1956**

Ofgem, the UK gas and electricity market watchdog, has published its response to the UK Government's consultation on energy policy. Copies can be found at **www.ofgem.gov.uk/public/pub2002.htm**

Infield Systems recently added a new Participants database that identifies the owners and their percentage holdings for each offshore field, worldwide, to its database portfolio. To view an online sample, log on to **www.infield-online.com** using 'sample' and 'sample' as the user name and password.

In Brief

UK

Shell and ExxonMobil have brought *onstream the Brigantine C field in the North Sea (see story to right).*

ATP Oil & Gas has been confirmed as *operator of the Helvellyn field in block 47/10 of the North Sea. First production is expected in 2003 (see story to right).*

Dana Petroleum has announced that *its 23/16c-8 exploration well that was drilled to test the Barbara prospect in the North Sea has discovered a full hydrocarbon column in the Forties formation.*

Europe

TotalFinaElf (50%) has taken over *operatorship of the Tempa Rossa oil field located in the Basilicata region of southern Italy. First field production is slated for 2006. Plateau production is expected to be 50,000 b/d.*

Clyde Petroleum is reported to have *brought onstream the Q4-B gas field in the Dutch sector of the North Sea.*

North America

Marathon (30%), EnCana (26%) and *Murphy Oil (19%) are reported to have discovered gas in the deepwater Annapolis prospect offshore Nova Scotia.*

BP has announced that it plans to *invest at least $15bn by 2010 on a number of large oil and gas fields in the deepwater Gulf of Mexico.*

NEWS Upstream

North Sea fallow fields 'in right hands'

The 'flush of new developments in the North Sea' has 'boosted the government's faith in its efforts to bring new operators into the sector and ensure that fallow fields are in the right hands,' UK Energy Minister Brian Wilson recently stated.

The five North Sea developments he referred to were:

- The start-up of the Talisman-operated Halley oil field in central North Sea blocks 30/11 and 30/12. Development comprises a single well tied back to the Fulmar platform.
- The start-up of the Shell-operated Brigantine C and D fields in block 49/19 in the southern sector, located adjacent to Brigantine A and B. Gas is transported to Shell's Corvette platform.
- Department of Trade and Industry (DTI) go-ahead for the Helvellyn gas field, operated by ATP in southern North Sea block 47/10d. Recoverable reserves are put at 53bn cf of gas over a field life of eight years. The field is planned as a single well subsea development, tied back to the nearby BP-operated Amethyst field platform facility.
- The discovery of hydrocarbons in the Dana-operated Barbara prospect following test drilling in block 23/16. Results are currently being evaluated with a view to determining a future appraisal strategy. Studies will include examining the exploration potential of neighbouring block 23/11.
- The discovery of a mix of oil and gas from the Black Horse test well, operated by EnCana, which tested at 6,274 b/d of oil and 3.9mn cf/d of gas.

'The massive Buzzard discovery has shown that very large new finds in the North Sea are possible. But, in terms of employment and economic returns, it is equally important to have a wide range of smaller developments coming onstream and that is why this recent activity is so welcome,' commented Wilson.

He also noted that the 20th UK offshore licensing round included six companies acquiring their first offshore licences, as well as more familiar operators.

Developments upstream Africa

Stella Zenkovich reports on recent upstream developments in Africa:

- Saipem and its South Korean partner Hyundai Heavy Industries have been awarded a $585mn contract from the Libyan National Oil Company and Eni of Italy to build and install a production platform offshore Libya by July 2005.
- Oil production in Equatorial Guinea is expected to reach 200,000 b/d by 2025. The government is also in the process of setting up a new oil company – GEPetrol – to manage future developments and work with international oil majors.
- Canadian-based Heritage Oil & Gas has signed a Memorandum of Understanding giving it exclusive rights to negotiate for an oil and gas exploration permit in the Lake Albert Basin in the Congo border area.
- NNPC, Shell and ChevronTexaco have signed agreements concerning the commercial, legal and planning structure of the third phase of the sub-regional, 617-km, $430mn West African Gas Pipeline Project.
- Following 7.1% growth in 2000, Nigerian crude production rose only by a marginal 0.4% in 2001 due to Opec having revised the country's quota downwards three times in the course of the year – to 2.075mn b/d in February, 1.993mn b/d in April and 1.911mn b/d in September. Gas production rose 21% in 2001 to reach 57,530mn cm.

Record ERD drilling in Germany

KCA Deutag claims to have set several records in drilling the sixth well for RWE-DEA on the offshore Mittelplate field, Germany's most productive oil field. The field is accessed from an onshore site at Friedrichskoog, with extended reach (ERD) wells drilled in the east of the field in order to avoid polluting the sensitive tidal flatland environment of the Wattenmeer National Park.

At 9,275 metres, the Dieksand 6 well is claimed to be the longest ERD well in Germany. It is also reported to feature the fifth largest deviation in the world for an ERD well, at 8,404 metres horizontal stepout; the deepest (length MD) 8 3/8-inch section in the world, from 7,247 metres to 8,562 metres; and the deepest (length MD) 6-inch section in the world, from 8,562 metres to 9,275 metres.

NEWS Upstream

Green light for UK's largest offshore wind farm

The UK Government has granted consent to what is claimed will be the single largest offshore wind farm in the UK. National Wind Power's North Hoyle project – comprising up to 30 wind turbines with a total capacity of up to 90 MW – will be based some 7.5 km off the north Wales coast and provide electricity for a minimum of 50,000 homes. Work is slated to complete by autumn 2003.

The government is aiming to create a £1bn market for renewable energy by 2010. The main driver for this will be the Renewables Obligation that will put an obligation on electricity suppliers to supply 10% of their electricity from renewable sources. In addition, a £260mn support programme is to be provided over the next three years.

PGS/Veritas merger cancelled

Veritas is reported to have pulled out from its proposed merger with Petroleum Geo-Services due to increasing shareholder concern over PGS' level of debt and its limited cash flow. Had the deal gone ahead, it would have created the world's second largest contractor in the land and marine geophysical services sector after WesternGeco.

E&P news in Russia & Central Asia

Stella Zenkovich reports on recent exploration and production developments in Russia & Central Asia:

- Chechnyan state-owned company Grozneftegaz is targeting 5mn tonnes of oil production in 2002. The country's oil sector currently produces 4,000 t/d of oil and it employs some 3,000 people, according to Director General Baidi Khaminov.
- Tatneft, the 'national' oil company of the Muslim enclave of Tatarstan in Russia, has unveiled plans to prospect for oil in China. It is also to undertake a feasibility study for a motor oil plant in Tabriz, Iran, under a two-year protocol signed with the Middle East country.
- Russia has announced that it will be building a linking spur from Novorossiysk via Georgia to the US-backed Baku–Tblisi–Ceyhan oil pipeline project after years of opposing it. The announcement followed confirmation from the project partners that the pipeline will be operational by 2005 (see p10).

Positive outlook for Energy Africa

Energy Africa Chairman Dato Idris Mansor announced 'significant increases' in both commercial oil reserves (22%) and potentially commercial reserves (118%) during the company's recent AGM. Reporting a 21% increase in production to 21,400 b/d of oil, he said that there had also been some disappointing results over the past year – most notably the two Kudu appraisal wells offshore Namibia that failed to prove up the reserves that would have been necessary for progressing Shell's floating LNG plans for the field. He noted, however, that discussions were still underway regarding the way ahead for Kudu.

Mansor also reported that the company was 'moving on' in Equatorial Guinea to drill prospects in parts of block F and G away from the Okume/Oveng complex of discoveries. Although confident of further success he stated that 'we cannot expect every well to be a discovery and some will be drilled partly for purposes of geological and seismic information.' For example, although the most recent well to be drilled to test a previously unexplored reservoir system – the F3 well in block F – was not a commercial success, results indicated a working oil system in the previously undrilled central section of the block and provide encouragement for future exploration of the numerous trap types in the region.

In Brief

***EnCana of Canada is reported to** have acquired Williams' Wyoming gas assets for $350mn. Reserves are put at 600bn cm.*

Middle East

***BP and National Iranian Oil Company** are reported to have completed a $10mn feasibility study for establishing an LNG project in southern Iran. The proposed 8mn t/y project would source gas from the offshore South Pars field.*

***Iraq is reported to have announced** that it is boosting production from its southern oil fields by 100,000 b/d, some 50,000 b/d of which will be produced at the Majnoon fields. A further 50,000 b/d is expected to be produced from the West Qurna fields once rehabilitation work is completed.*

Russia & Central Asia

***Sibneft has completed the first of** four wells at the West Ozyornoye gas field located in the Chukotko autonomous district of Russia. Field reserves are put at 6bn cm, with a production target of 120mn cm/y.*

***Lukoil is reported to have secured the** rights to develop the Russian sector of the Khvalynskoye oil field in the northern Caspian Sea. Kazmunaigaz of Kazakhstan owns the Kazakh section of the field, but is expected to sell its interest to a foreign investor.*

***Gazprom is reported to have brought** onstream the Severo-Vasyuganskoye gas condensate field in the Tomsk region of Russia. The project is expected to produce 1.5bn cm/y*

***ABB is reported to have secured a** $987mn contract from Exxon Neftegas to engineer and construct the onshore processing facilities for the Sakhalin 1 project in eastern Russia. Comprising the development of three offshore fields, Sakhalin 1 recoverable reserves are put at 2.3bn of oil and 17tn cm of gas. First production from the Chayvo-Odoptu field is slated for 1Q2005.*

Asia-Pacific

***Recent estimates of reserves in the** ExxonMobil-operated Cepu block in Indonesia have been increased by 100% to 500mn barrels of oil.*

In Brief

***Conoco reports that gas deliveries** have commenced from the* Hang Tuah *moveable offshore gas production unit (MogPU) on block B in Indonesia's Natuna Sea. At the initial stage, some 100mn cf/d of gas is being delivered to Petronas in Malaysia. This is expected to rise to 250mn cf/d in 2007.*

***A new gas discovery has been** reported in South Korea by KNOC. The Donghae-1 field has reserves estimated at 40bn cf, boosting total reserves for the country to 240bn cf. The field is due onstream in 2003/2004.*

***US company Murphy Oil has made a** 'significant' find on the Kikeh prospect in block K offshore Sabah – reportedly the first deepwater discovery to be made offshore Malaysia. Initial estimates indicate reserves of 120mn plus barrels.*

***PTT Exploration and Production is** reported to have awarded a $33mn contract to Japan's Nippon Steel Corporation to fabricate and install a 13th wellhead platform at the Bongkot gas field in the Gulf of Thailand by mid-2003. Part of the Phase 3 development of the field, the new facility will help maintain production of between 550mn and 630mn cf/d of gas and 13,000 b/d of condensate. Some 2tn cf of proven reserves remain to be developed. Some 1.2tn cf of reserves have already been extracted.*

***Conoco is reported to be planning to** bring onstream the Belanak field in the West Natuna Sea in October/November 2004, producing 40,000 b/d of oil via an FPSO vessel.*

***Recent estimates put proven gas** reserves in the Tarim Basin in north-west China at 526.7bn cm, more than enough to supply the $17bn West–East pipeline project currently under construction that is to carry 12bn cm/y of gas to Shanghai and other industrial areas of the Yangtze River Delta when it comes onstream in 2005.*

Latin America

***Petrobras is reported to have made a** significant find in the Campos Basin of Brazil, with reserves estimated at 600mn barrels of oil.*

***Petrobras is understood to be planning** to produce some 88mn cf/d of gas from fields in the BCAM 40 block off-*

NEWS Upstream

UKCS production fall in May

UK oil production of 2,106,088 b/d in May 2002 was down 5.6% on the month and down 3% on the year, with the average daily production 6.5% lower (at 3,857,949 boe) than in the 12 months to May 2001, according to the latest Royal Bank of Scotland *Oil and Gas Index*. Gas production was also down by 12.7% on the month at 9,951mn cf/d, but up 8.7% on May 2001.

Tony Wood, Senior Economist with the Bank, said: 'Crude oil prices have remained high, despite the considerable weakness experienced across equity markets. Crude prices are being held high by the ongoing tensions in the Middle East, Opec, supply controls and Iraq's difficulties in selling its crude. In addition, the real economy demand outlook remains relatively positive. A period of sustained higher oil prices is positive for the UK's oil industry.'

Year Month	Oil production (av. b/d)	Gas production (av. mn cf/d)	Av. oil price ($/b)
May 2001	2,170,520	9,155	28.30
Jun	1,993,483	8,639	27.60
Jul	2,033,323	8,841	24.70
Aug	2,018,982	8,814	25.60
Sep	1,984,388	9,091	25.90
Oct	2,169,226	8,909	20.60
Nov	2,161,755	11,949	18.80
Dec	2,425,159	12,621	18.60
Jan 2002	2,270,322	12,303	19.30
Feb	2,247,395	11,732	20.20
Mar	2,153,321	11,640	23.80
Apr	2,230,781	11,403	25.70
May	2,106,088	9,951	25.50

Source: The Royal Bank of Scotland Oil and Gas Index

North Sea oil and gas production

CMS III well on way

Conoco has successfully tested the first of six production wells currently being drilled in the CMS III gas development in the southern North Sea. The 44/17a-6Y well in the Hawksley field achieved a maximum flow of 148mn cf/d of gas. First gas from CMS III is slated for 4Q2002.

Forming part of the Caister Murdoch System, the CMS III project comprises the development of five gas discoveries – Hawksley, McAdam, Murdoch K, Watt and Boulton H. Co-venturers are Conoco (operator, 59.5%), GdF Britain (26.4%) and Tullow Exploration (14.1%). Production from CMS III is expected to peak at 300mn cf/d gas, although Conoco reports that the discovery of another zone in the Hawksley reservoir 'suggests at least a potential for some upside.'

Call to increase Opec production quotas

Algeria is reported to have officially requested an increase in its Opec production quota from the current 693,000 b/d. The country is capable of producing 1.1mn b/d.

Nigeria is also planning to formally request an increased production quota in the near future, ending rumours that the country was contemplating pulling out of the oil export cartel.

Nigerian reserves currently stand at 30bn barrels, a target achieved a year earlier than forecast. This figure is predicted to rise to 40bn barrels by 2010, with a production capacity of 4mn b/d.

Nigeria also holds 159tn cf of gas reserves, placing it seventh in the world. Current gas production is 3.8bn cf/d, forecast to rise to 7.1bn cf/d by 2010.

Middle East development update

Stella Zenkovich reports on recent developments in the Middle East:

- A new phase of Russo–Iranian oil industry cooperation is outlined in a 12-page document drawn up by representatives from both sides, under which Russo-Belarus joint venture Slavneft and National Iranian Drilling Company will work out together a plan for extending oil drilling in Iran. Russia is also to help with building Iranian export pipelines, including one from Iran to India, and with exploration in the Iranian sector of the Caspian Sea.
- The Kuwaiti Oil Ministry is planning to begin development of the Dorra gas field, located in waters divided between Iran, Kuwait and the neutral zone, in 2003. The field will be jointly operated by Kuwait and Saudi Arabia, with a production target of 34mn cm/d of gas.
- POG, a subsidiary of state-owned Iranian National Oil Company, has received proposals from Petronas, Eni and TotalFinaElf for developing phases 11 and 12 of the South Pars gas field in Iran.
- Syrian Petroleum is expecting bids from international oil majors by October for licences to be awarded on a production sharing basis in 11 blocks covering 63,000 sq km.
- The state-owned Israel Electric Corporation has signed a first contract to buy gas from Noble Energy Incorporated (NBI) – the US parent of Samedan Oil Corporation – for $150mn over 11 years. Samedan will supply the gas, together with Israeli partners Delek Drilling, Avner Oil Exploration and Delek Investments & Properties, from fields in the Mediterranean off the coast of Ashkelon, beginning in 2004.
- Looking for support as the threat of a US attack looms increasingly larger, Iraq is counting on Russia first and foremost for help. Its Ambassador to Moscow, Abbas Kalaf, declared on 23 July that Iraq will repay its $8bn Soviet debt if, and as soon as, UN sanctions against it are lifted, and that it will completely open up its oil and gas industry for participation to Russian companies. Meanwhile, an Iraqi delegation led by Deputy Prime Minister and Military Industrialisation Minister Tawwab Mulla Huwaysh, visiting Minsk, has pleaded for Belarus expertise and equipment to develop Iraq's oil industry.

Canyon Station

McDermott's *DB50* derrick/lay barge recently installed the 3,450-tonnes deck on the Williams Canyon Station production platform located in 299 ft of water in the Gulf of Mexico East Main Pass block 261 offshore Alabama.

Texas-based Paragon Engineering Services provided project management, engineering design/drafting, procurement and fabrication inspection for the four-pile, four-legged platform that completed hook-up and commissioning on schedule in late June 2002. The project includes an innovative and cost-effective methanol recovery and reuse process developed by Paragon to ensure the flow of deepwater production across extended distances.

The facility will treat, process and handle gas and liquids from 10 subsea deepwater wells located 55 miles south of the platform in the Camden Hills, Kings Peak and Aconcagua fields in between 5,000 to 7,200 ft of water. The fields are operated by TotalFinaElf, Marathon Oil and BP.

In Brief

shore Brazil by 2004. Estimated reserves are put at 700bn cf.

***The Hibiscus field offshore Trinidad** and Tobago is expected to come onstream in this quarter, according to partner PetroCanada (17.3%). Gas is to be sold to the 3mn t/y train 2 of the Atlantic LNG project which is due to be commissioned this month.*

Africa

***BG is reported to be planning to** spend $70mn modifying its offshore Miscar gas platform in Tunisia in order to extend production by five years.*

***ChevronTexaco and Energy Africa are** reported to be reviewing future development plans with the Namibian authorities for the offshore Kudu project, following partner Shell's recent withdrawal from the project as the 1.3tn cf of reserves were insufficient to support its proposed $2.5bn floating LNG plant plans. ChevronTexaco now holds a 60% stake in the project, Energy Africa the remaining 40%.*

***Repsol YPF has been given the green** light to develop the A field in area NC-186 in Libya's Murzuq Basin. Recoverable oil reserves are estimated at 140mn barrels. The $155mn project is expected to produce first oil in 1Q2004, with a plateau production of 40,000 b/d. Production is to be connected via a 31-km pipeline to the facilities of the 163,000 b/d El-Sharara field, also operated by Repsol YPF, with onward transport via pipeline to the Mediterranean port of Zavia.*

***ChevronTexaco has announced its** eighth 'significant' discovery in Angola's deepwater block 14. The Gabela-1 well produced more than 1,000 b/d of 17.3° API oil.*

***Pioneer Natural Resources' Gnadi** Marin-1 well on the Olowi block in the shallow waters offshore Gabon is reported to have flowed between 1,600 b/d and 2,000 b/d of oil. It is the US company's fourth discovery in the block.*

MANY OF THE MONTH'S UPSTREAM NEWS STORIES NOT INCLUDED ABOVE CAN BE FOUND ON THE NEWS IN BRIEF SERVICE @ www.petroleum.co.uk

In Brief

UK

Shell has unveiled plans to cut 2,000 *jobs globally, including some 250 in the UK, in a bid to save $550mn this year.*

BG has posted a 2Q2002 clean net *income of £127mn against £112mn a year earlier. However, a one-off charge relating to the increase in North Sea oil taxes of £51mn brought the final net income for the period to £55mn.*

Europe

Statoil's 2Q2002 net income fell 22% *to NKr11.1bn ($1.45bn). However, Chief Executive Olav Fjell reported that oil and gas production rose by 15% to 1.075mn b/d, while gas sales grew 70% to reach 4.3bn cm in the second quarter.*

North America

Anadarko is to raise its capital *spending by 10% to $2.2bn to fund further development in the US and Canada and to restart exploration in Algeria. The company's Canadian subsidiary is reported to be selling $160mn worth of Alberta assets and has identified a further $100mn of assets to sell in the future.*

Williams Corporation is understood to *be considering the sale of its gas processing and liquids extraction operations in western Canada. The assets include 6bn cf/d of gas processing capacity, 225,000 b/d of gas liquids production capacity, a gas liquids pipeline system and over 5mn barrels of gas liquids storage capacity.*

Husky Energy has posted 2Q2002 earnings *of C$263mn, down 12% on the same period a year earlier.*

ChevronTexaco has reported a preliminary net income *of $407mn for 2Q2002, compared with a 2Q2001 net income of $2,108bn.*

ExxonMobil has posted a 2Q2002 net *income of $2.6bn, down from $4.5bn in the same period a year earlier. The company's refining business reported profits of just $382mn, down from $1.3bn.*

Dynegy is to sell its 100% owned *Northern Natural Gas Company to MidAmerican Energy Holdings for $928mn.*

NEWS Industry

Tough times hit BP half-year profits...

BP posted a 2Q2002 pro forma result, adjusted for special items, of $2,181mn, compared with $3,431mn a year ago and a reduction of 36%. For the half-year, the result was $3,763mn compared to $7,143mn. The results reflected a less favourable environment than a year ago, reported Chairman Lord John Browne.

He reported that Exploration and Production's 2Q2002 result was down 26% on a year ago, at $2.889mn, due to significantly lower liquids and natural gas realisations, which were down 8% and 29% respectively. On a more positive note, total hydrocarbon production for the quarter was at a record level of 3,546mn boe/d – up 5.5% on a year ago as a result of the continued ramp-up of projects commissioned in 2001, start-up of the King field in the Gulf of Mexico, improved operating efficiencies and the increased interest in Sidanco that more than offset the impact of Opec-related quota restrictions and divestments. Browne also pointed out that the recently amended fiscal regime in the North Sea had required a special item adjustment of $355mn to the North Sea deferred tax balance for the supplementary UK corporation tax rate.

In Gas, Power and Renewables, the result was down 29% compared to a year ago – 2Q2002: $114mn; 1H2002: $225mn – primarily reflecting weaker market conditions. However, BP Solar production expanded, up over 30% in the first half compared to a year ago.

The Refining and Marketing 2Q2002 result was $685mn, down $1,077mn from the same period last year in reaction to significantly lower worldwide refining margins. Meanwhile, the Chemicals 2Q2002 result increased significantly to reach $246mn compared with $108mn in the prior quarter, in response to lower unit costs and firmer margins.

Capital expenditure, excluding acquisitions, was $3bn for the quarter. Total capital expenditure and acquisitions was $6.1bn, including $2.4bn for the purchase of the remaining 49% of Veba. Disposal proceeds were $2.5bn for the quarter, including $1.5bn from the sale of Veba upstream assets.

First half-year return on average capital employed (ROACE), on a pro forma basis adjusted for special items, was 13% compared with 24% in 2001. Browne also announced the company's plan to resume its share buyback programme that had been put on hold in 1H2002 due to the prevailing market conditions at that time.

● Lord Browne is to stay with the company for a further six years. Browne, who has served seven years as BP's CEO, currently holds a contract with a two-year notice period. The contract extension means he will remain with the company until he reaches the mandatory retirement age of 60.

... as Shell fails to meet 2Q aspirations

Shell announced $4.2bn in adjusted CCS earnings for 1H2002. CCS earnings for the second quarter were $2.2bn, up 10% compared with 1Q2002 despite poor industry conditions in refining, although 38% down on the record second quarter in 2001. The major decreases in the second quarter were in Gas and Power and Oil Products. Gas and Power earnings were down 62% at $149mn compared to $390mn in 2Q2001, in response to the 'poorer business environment' and 16% lower LNG prices (a lagged effect of the lower oil prices). Oil Products earnings fell 66% to $347mn due to the dramatic reduction in refining margins since 1Q2001 and a high level of refinery shutdowns in the second quarter.

Exploration and Production 2Q2002 earnings were $1,809mn, down 17% on the same period a year earlier – primarily affected by the fall in oil and gas prices that more than offset higher volumes. The Group reported that the recent UK offshore tax changes would 'have a significant impact' that would be recognised in the third quarter when there would be an incremental charge of around $320mn reflecting a catch up for 2Q2002 and the impact on the deferred tax balance.

Chemicals showed an improvement, however, rising 4% from $127mn in 2Q2001 to $132mn in 2Q2002.

Philip Watts, Chairman of the Committee of Managing Directors of Shell, commented that while the earnings for the first half were, 'by any standards, robust profitability in an uncertain world,' the second quarter earnings were 'below our aspirations'. He promised that 'we will do better', citing that there was 'more work to do on costs and capital efficiency'.

The impact of the weaker environment on earnings pushed return on average capital employed (ROACE) down to 12%.

NEWS Industry

Environmental risks to company shareholders

The World Resources Institute (WRI – **www.wri.org/wri**), an international environmental think tank, has released a new report that calls on investors to pay closer attention to how oil and gas companies are exposed to environmental risks. The report – *Changing Oil: Emerging Environmental Risks and Shareholder Value in the Oil and Gas Industry* – warns that shareholders in leading oil and gas companies could see losses of more than 6% of their investments due to prospective actions to curb climate change and growing constraints on access to energy reserves. The report also claims that companies have made only very limited disclosure to investors on the relevance of these issues for future financial performance.

A total of 16 oil and gas companies were studied. As of 30 June 2002 these companies had a combined market capitalisation of nearly $1tn. Occidental, Repsol YPF and Unocal are reported to potentially face the biggest losses due to their vulnerability as these environmental issues unfold over the next decade, with Burlington Resources, Valero and Sunoco found to be best insulated. Only BP, Conoco and Phillips were found to have indicated in their annual financial reports that climate policies may impact on future business operations.

Industry news in Eastern Europe

Stella Zenkovich reports on recent industry developments in Eastern Europe:

- Bosko Lemez, Minister for Energy and Mining of the Serb Republika Srpska in northern Bosnia has signed a $110mn contract with the Russo-Bosnian Serb joint venture Slavija International that will fund, build and manage a 450-km gas pipeline linking all the republic's major cities as well as Bosnia's other semi-independent entity, the Sarajevo-based Muslim-Croat Federation. The 1.2bn cm/y capacity pipeline is expected to be supplying industrial users by 2005 and domestic consumers by 2010.
- Prosecutors have charged Waclaw Niewarowski, the Polish Industry Minister in 1992–1993, and three former Board members of gas monopoly PGNiG with allowing private Gas Trading to take over 4% in EuroPolGas, a joint venture between PGNiG and Gazprom and the builder of the 420-km Polish sector of the Siberia–Western Europe Yamal gas pipeline, thus leaving both Gazprom and PGNiG with 48% of the venture and depriving the latter of control of the project. This permitted Gazprom to lay an optical fibre cable free of charge along the pipeline, that was powerful enough to carry all Russian telecoms traffic to Western Europe. Niewarowski may face a 10-year prison sentence for overstepping his authority.

NWS Venture to supply Guangdong LNG

The North West Shelf Venture in Western Australia has been selected as the preferred LNG supplier to Phase 1 of the Guangdong LNG terminal and trunkline project in China, the country's first LNG import project. Under the deal, the NWS Venture will supply 3mn t/y of LNG over a 25-year period from 2005/2006.

Phase 1 of the project involves the construction of an LNG import terminal, a 300-km pipeline along the eastern side of the Pearl River delta in Guangdong Province and a branch pipeline to Hong Kong. In Phase 2, the pipeline will be extended around the western side of the Pearl River delta. The total project is expected to cost $850mn.

It is also proposed that the China National Offshore Oil Company (CNOOC) will have the opportunity to acquire a 25% interest in the NWS Venture gas reserves and production that will supply gas to Guangdong. The NWS Venture and Chinese shipping companies COSCO and China Merchants are to establish ship owning and ship management companies for LNG transport to the project. Two to three LNG carriers are expected to be required to service the China trade route.

The NWS Venture is currently constructing a fourth LNG train at its Burrup Peninsular facilities, with first production slated for mid-2004. This latest contract is expected to underpin a fifth LNG train.

In Brief

***Kellogg Brown & Root, Halliburton's** engineering arm, is reported to have announced that it is no longer taking EPIC (engineering, procurement, installation and commissioning) contracts following a series of cost overruns on such fixed-price lump-sum projects. KBR is expected to post a pre-tax loss of $119mn on the Baracuda-Caratinga project in Brazil in its 2Q2002 results.*

Middle East

***Iran's readiness to commence negotiations** concerning the proposed Kazakh–Turkmen–Iranian oil pipeline to the Persian Gulf has been announced, reports* Stella Zenkovich. *TotalFinaElf is to undertake a related feasibility study.*

Russia & Central Asia

***Gazprom has submitted the only bid** in the latest round of the tender for a 34% stake in Lithuanian gas company Lietuvos Dujos, reports UFG.*

***Rusia Petroleum plans to begin gas** supplies to China in 2008, reports UFG, initially supplying some 20bn cm/y. The announcement followed the Chinese Government's recent selection of the eastern route for a gas pipeline to transport gas from the Kovykta field in eastern Siberia to northeast China.*

Asia-Pacific

***The BP-operated Tangguh gas field in** Indonesia has been selected to supply gas to China's second LNG gas terminal that is to be built in Fujian Province. Due to be commissioned in 2006, the facility will have a 2.5mn t/y LNG handling capacity. In addition, BP is also reported to have signed a Letter of Intent with the Philippines to supply 1.3mn t/y of LNG from Tangguh.*

***The Pakistani Government is understood** to be planning to end fuel oil imports by June 2003 as part of a drive to encourage the utilisation of domestic energy resources.*

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In Brief

UK

***Centrica subsidiary British Gas Trading** has acquired Electricity Direct (UK), the UK's largest independent commercial electricity supplier, for £49.5mn. In addition, Centrica will assume net debt of £13.5mn. The deal makes Centrica the third largest commercial electricity supplier in the UK, with nearly 20% of the market.*

***Electricite de France (EdF) is reported** to have been given the go-ahead by the European Commission to proceed with its proposed acquisition of southern UK utility company Seeboard from American Electric Power for $2.1bn. EdF already owns London Electricity, SWEB in southwest England and the southeast England power distribution business formerly owned by Eastern Electricity.*

***The UK Government's duty reduction** on biodiesel blended fuels has entered into force. At 20 p/l below the rate for ultra low sulfur diesel (ULSD), the fuel duty incentive aims to encourage the development of biodiesel blended fuels in the UK. The 20 pence reduction applies only to the volume of biodiesel in the blended fuel. Greenergy reports that its GlobalDiesel fuel (see* Petroleum Review, *August 2002), with a 5% rapeseed oil content, will be eligible for a 1 p/l duty reduction, bringing its price within a penny of standard ULSD.*

Europe

***Spectron's new European fuel oil desk** started trading on 1 August 2002.*

***Kvaerner's E&C business has been** awarded a contract by Statoil, on behalf of Vestprocess, for the expansion of the Vestprocess (VP) unit at the Norwegian oil company's Mongstad refinery. The project will almost double the capacity of the existing unit, which processes streams from the Oseberg and Troll fields (separated and routed via Kollsnes and Sture to Mongstad), to 335 t/hr. Once upgraded, the VP unit will also process condensate from the Kvitebjorn and Visund fields, routed via Kollsnes. The plant will be commissioned in October 2004.*

***Shell has signed an agreement with** RWE DEA to acquire the latter's share in the Hamburg-based joint venture Shell & DEA Oil a year ahead of*

ICE launches new clearing service

InterContinentalExchange (ICE) and London Clearing House (LCH) are planning to launch a clearing service for UK Gas (NBP) OTC (over the counter) contracts on 12 September 2002, marking the start of an extensive programme for clearing ICE OTC contracts in Europe.

ICE launched NBP bilateral trading in December last year and has been capturing a growing market share ever since. More than 25 firms now trade regularly, with daily OTC volumes averaging 75 trades per day in 2Q2002, reports ICE. On 26 July a new record daily volume was set, with over 270mn terms traded.

As part of their European Clearing programme, ICE and LCH will launch clearing for German and UK Power contracts later this year. Bilateral trading on these contracts was launched on ICE in May.

By providing OTC Clearing to ICE participants, traders will reduce their reliance on bilateral credit lines, as LCH becomes the central counterparty to all trades, allowing increased trading opportunities and more efficient use of capital. Furthermore, additional benefits will be gained through cross margining between the ICE OTC NBP contract and the International Petroleum Exchange's NBP Futures contract, which also clears through the LCH, and through the efficiencies of straight through processing.

OTC Clearing is offered as an optional service in the same price stream as bilateral trading on the ICE screen. It is reported to present increased opportunities for traders as credit intermediation by their clearing firm makes it possible for the trader to see more 'white' (tradeable) prices on the screen. Traders will now have the ability to designate whether they prefer to conduct bilateral (OTC) transactions with specific counterparties or trade on a cleared basis.

As well as offering clearing for trades executed on the ICE trading platform, ICE and LCH will extend their clearing service to cover OTC trades executed away from the platform, generally for reasons of size. These block trades may be posted as months, quarters, seasons, calendars and spreads – from nearby expiration out as far as 60 months.

Industry news in the Middle East

Stella Zenkovich reports on recent Middle East downstream developments:

- Iranian oil storage capacity is to be increased at Kharg Island over the next two years from the current 14mn barrels to 20mn barrels, according to Mohammad Reza Movahhed, CEO of Kharg's Oil Export Terminals Company.
- Technip-Coflexip has secured a $480mn contract for expanding Abu Dhabi refinery – including the addition of units for the production of unleaded and low-sulfur fuels – by July 2005. It has also been contracted by Saudi Aramco to construct a new $100mn sulfur plant at Riyadh refinery in Saudi Arabia.
- Veco of the US is to undertake the feasibility study for the Yemen's first private refinery at Ras Issa.

Green electricity supply contracts

Renewables Obligation Certificates (ROCs) proving UK electricity companies are supplying green electricity to their customers have become active for the first time.

The ROCs are issued by energy regulator Ofgem to renewable generators to prove that their generation comes from eligible renewable sources. Electricity suppliers can buy these ROCs to prove that they are meeting their obligation to supply their customers green electricity.

Under the UK's Renewables Obligation, electricity suppliers are required by the government to supply a certain percentage of electricity from renewable sources each year. Companies can choose to meet their target by buying enough ROCs, by paying a premium to make up the shortfall, or by using a combination of both these methods.

For more information on how the Renewables Obligation works, visit **www.ofgem.gov.uk/docs2002/42eap_factsheet.pdf** In addition, an online register at **www.rocregister.ofgem.gov.uk/main.asp** allows electricity companies, generators and the public to keep track of the movement of ROCs.

NEWS Downstream

New GTL catalyst technology unveiled

Research workers at the University of Oxford are reported to have developed new catalysts that can be specifically used for the partial oxidation of methane to synthesis gas and the Fischer-Tropsch reaction.

The catalysts are claimed to offer superior activity, selectivity and stability over those currently used. They are also said to be significantly cheaper than the noble metal alternatives.

The invention is subject to a patent application. Partners are currently being sought for the licensing and commercial development of the new technology.

For more information, log on to **www.newproducttechnologies.com**

Downstream Russia & Central Asia

Stella Zenkovich reports on recent downstream developments in Russia & Central Asia:

- The Georgian International Oil Corporation has invited US proposals for building an underground gas storage facility in Georgia, aiming to avoid winter power shortages.
- OMV-Yugoslavija, the Belgrade-based subsidiary of the Austrian parent, claims to have become the first foreign company to penetrate the fuel retail markets of Serbia and Montenegro with the opening of the Lapovo North and Lapovo South service stations. Reported to be the largest fuel retail outlets in the Balkans, Lapovo North and South each cost €1.5mn to build. The company plans to open a further 12 service stations by the end of the year and is targeting a 100-strong network and 10% market share by 2007.
- Mol has sold 17 of its Slovakian service stations to Slovnaft, the Slovak retailer in which Mol is the largest shareholder after the state. Mol has also announced that it is expecting to earn $20mn/y in transit fees for Russian crude following the integration of the Druzhba and Adriatic pipelines.
- The OKTA refinery in Skopje, Macedonia, recently acquired by ELPE of Greece, has announced the commissioning of the Skopje–Thessaloniki oil pipeline. Proposals for the construction of two further oil pipelines are currently being appraised – the first, a 60-km long pipeline, would connect the OKTA refinery with Kosovo; the second 15-km pipeline would link the refinery to the southern Serbian border.
- OMV Romania Mineraloel, which holds a 3.8% share of the Romanian fuel retailing market and lies fourth behind SNP Petrom, Shell and Rompetrol, is planning to invest some €100mn on its service station network over the next five years in a bid to increase its size to 110 outlets and achieve a 20% market share. The company plans to add 16 sites to its existing 38-strong network in 2002, and boost sales from €39mn to €130mn.

Green light for Caspian pipeline

A consortium comprising nine western oil companies is reported to have finally approved construction of the $2.9bn Baku–Tbilisi–Ceyhan oil pipeline following board approval by Eni of Italy, the last of the nine members to do so. The decision leaves the way clear for the creation of two companies that will finance and construct the 1,730-km pipeline linking the Caspian to the Mediterranean Sea.

BTC Pipeline Company, in which BP holds a 34.7% stake and Socar of Azerbaijan 25%, will build and own the 1bn b/d capacity pipeline. Construction is expected to begin in 1Q2003 and is slated to complete in 2004. The first contracts for pipelay through Azerbaijan and Georgia are reported to have already been awarded.

In Brief

schedule for $1.35bn. Shell & DEA started operations as a 50:50 joint venture in January 2002.

***The Italian authorities are understood** to have approved Kuwait Petroleum's acquisition of CIT Petrol, a small petroleum products distributor in Italy, for an undisclosed sum.*

North America

***According to estimates from the** Energy Information Administration (EIA), US gasoline sales by foreign-owned or by associated petroleum groups saw a 9% increase in 2000, marking a 35% share increase of all gasoline sales. An EIA report states that the total level of gasoline sales by foreign petroleum groups in the US rose to 2,971 b/d, compared with 2,737 b/d in 1999.*

***Williams is reported to be selling its** 5bn cf capacity Cove Point LNG storage facility in Calvert County, Virginia, to Dominion Resources for $217mn.*

***According to a new report from the US** Agricultural Department, ethanol provides more energy than is consumed in producing it. Researchers are reported to have found a net energy gain of 21,105 BTU per gallon.*

***The US Federal Energy Regulatory** Commission is reported to have given the go-ahead for plans to expand the CMS trunkline LNG terminal and storage facility at Lake Charles, Louisiana. The project, slated to complete early 2005, would allow the terminal to handle two tankers simultaneously and nearly double send-out capacity to 1.3bn cf/d.*

Middle East

***Saudi Aramco reports that its Haradh** gas project that is to process 1.6bn cf/d of non-associated gas from 2003 is currently running six weeks ahead of schedule. The plant is forecast to increase sales gas supplies to the country's master gas system (MGS) by 1.5bn cf/d, bringing the total sales gas supply to 9bn cf/d.*

Russia & Central Asia

***Industry analysts are reported to have** predicted that Russian companies will invest up to $2bn in refining and fuel*

retailing in 2002, ten times funding levels in the late 1990s, in response to output outstripping export capacity.

***The Russian Federation Council has** approved the amendments to the Tax Code that change the regime for taxing motor fuel sales, reports UFG. Starting from 1 January 2003, gasoline excise and gasoil excise will be charged at the pump rather than at the refinery gate. At the same time, the rates will be increased from $53 to $75/t and from $18 to $25/t respectively.*

***Sibneft has secured a long-term contract** to supply 350,000 t/y of oil to the Moscow refinery.*

***Russian oil company Yukos and China** National Petoleum Company (CNPC) have agreed upon their respective responsibilities in the construction of the 1,500-km Angarsk–Daqing oil pipeline, reports UFG. Yukos is to build the section of the pipeline running through Russia, while CNPC will be responsible for the construction across China. CNPC may be allowed to invest in the Russian pipeline construction programme, its investment serving as a guarantee that China would not refuse to purchase oil from Russia once the pipeline is commissioned in 2005, comments the analyst. Initial pipeline throughput is expected to be 400,000 b/d, although this is forecast to rise to 600,000 b/d by 2010.*

Asia-Pacific

***Shell and China National Offshore Oil** Corporation (CNOOC) are understood to be planning to build a joint petrochemical project in Huizhou city in China's Guangdong Province. Due to be commissioned in 2005, the plant will produce 800,000 t/y of ethylene and over 2.3mn t/y of chemicals and by-products.*

***It has been reported that new** sponsors could be brought in for India's Dabhol Power Company (65% owned by Enron) via the sale of its assets rather than the sale of its equity in a bid to provide new impetus for the project. Building work on the 2,184 MW plant was called to a halt shortly before completion after a dispute over bills with the Maharashtra State Electricity Board (MSEB), its sole customer.*

Africa

***If the proposed World Bank-initiated** phase-out of leaded petrol in sub-Saharan Africa by 2005 deadline is adopted and adhered to by the Kenyan Government, some 3,000 jobs could be lost at Kenyan Petroleum Refineries in Mombasa, according to the Ministry of Energy's Chief Economist Jane Akumu. However, she said jobs could be saved if the refinery was upgraded to produce unleaded petrol over the next three years, reports* Stella Zenkovich.

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UK downstream oil industry forum convenes

A new forum bringing together the UK Government and the key players in the UK wholesale and retail fuel business met for the first time on 24 July 2002 under the Chairmanship of Energy Minister Brian Wilson. The Downstream Oil Industry Forum is intended to encourage discussion of a wide range of issues affecting the distribution and availability of petrol, diesel and other oil products in the UK.

The inaugural meeting focused in particular on matters affecting rural motorists. 'Rural filling stations are important to local communities in their own right but also support other necessary services,' commented UK Rural Affairs Minister Alun Michael. 'So we have extended the rate relief to rural filling stations, as pledged in the Rural White Paper. Rural enterprises need to diversify to expand their customer base and our £2mn fund is helping to maintain or re-open post office facilities in areas where the traditional post office is closing or has recently closed. The £39mn Vital Villages Initiative, over the next two years, is also improving access to essential community services. We need to ensure that the small independently-owned rural filling stations have fair access to the distribution infrastructure.'

The next meeting of the Downstream Forum is scheduled for November 2002. For more information, Tel: +44 (0)20 7215 5000 or visit **www.dti.gov.uk**

UK Deliveries into Consumption (tonnes)

Products	†June 2001	†June 2002	†Jan–June 2001	†Jan–June 2002	% Change
Naphtha/LDF	71,412	111,416	822,678	543,977	–34
ATF – Kerosene	933,958	832,652	5,183,194	4,759,835	–8
Petrol	1,763,968	1,641,664	10,336,568	10,131,787	–2
of which unleaded	1,686,859	1,562,653	9,852,394	9,811,254	0
of which Super unleaded	32,823	43,345	188,109	259,759	38
of which Premium unleaded	667,286	–	4,890,793	–	–100
ULSP (ultra low sulfur petrol)	986,750	1,519,308	4,773,492	9,551,495	100
Lead Replacement Petrol (LRP)	77,109	52,014	483,364	293,536	–39
Burning Oil	196,190	177,093	2,319,795	2,008,739	–13
Automotive Diesel	1,311,094	1,281,304	7,826,884	8,233,366	5.2
Gas/Diesel Oil	468,464	413,402	3,160,511	3,051,978	–3
Fuel Oil	137,494	95,597	1,158,198	1,047,413	–10
Lubricating Oil	71,267	65,633	458,741	419,680	–9
Other Products	698,809	601,703	3,965,105	4,027,137	2
Total above	5,652,656	5,220,464	35,231,674	34,223,912	–3
Refinery Consumption	311,893	374,326	2,322,581	2,442,115	5
Total all products	5,964,549	5,594,790	37,554,255	36,666,027	–2

† Revised with adjustments

All figures provided by the UK Department of Trade and Industry (DTI)

Gas is key to North Sea future

Photo: Statoil/Dag-Tore Anfinsen

Nick Terdre reports on recent North Sea developments outside the UK Continental Shelf, including the Norwegian Government's proposed liberalisation of licensing policy and gas project prospects in the Barents Seas.

Above: Statoil's Huldra gas condensate field came onstream in 2001. Pictured here is the *Maersk Gallant* jackup, drilling development wells

A liberalisation of licensing policy is one of the measures put forward by the Norwegian Government as an earnest of its intent to adapt framework condition for the offshore industry to changing circumstances. It is contained in a White Paper in which the Oil and Energy Ministry sketches out a policy for securing a further 100 years of activity.

Under the licensing proposal companies would be permitted to apply for new acreage in defined mature areas in the North Sea at any time, thus accelerating the exploration and development of small prospects. A differentiated policy is required given the different stages of development reached in different parts of the sector – much of the North Sea is already mature, while exploration in much of the Norwegian and Barents Seas is still in the early stages.

But the government's insistence that the industry has to co-exist with other users of the sea and not harm the environment could limit activities. An impact study is to be made of the effect of all-year-round production operations in the Barents Sea and around the Lofoten Islands in the northern Norwegian Sea. Depending on the results, this could lead to restrictions on the industry's activities in some areas or

even an outright ban. Norske Agip waits to see if it will be allowed to proceed with its Goliath development in the Barents.

In the meantime field development spending remains comparatively low. According to the spring survey by Statistics Norway, this year's spend is forecast at NKr17.8bn – against NKr20.2bn in 2001 – although it is likely to rise somewhat as the year progresses. Investment should get a boost next year as spending on a couple of bigger projects, Kristin and Snøhvit, kicks in. But the picture for the next few years is one of mainly small projects accompanied by a few larger ones. Other large developments in the pipeline are BP's Skarv and Norsk Hydro's Ormen Lange fields.

Seven new fields or developments came onstream last year – Shell's Garn West, Statoil's Glitne, Gullfaks South II and Huldra, ExxonMobil's Ringhorne, Norsk Hydro's Snorre North and BP's Tambar. This year the number will be just three – Norsk Hydro's Tune, Vale and Visund North – plus two further developments of producing fields – Ringhorne II and Troll Oil III. Next year around a dozen new fields could come onstream, including Grane, the largest undeveloped oil field in the sector, ExxonMobil's Sigyn and Statoil's Mikkel, both gas/condensate fields, and BP's development of the Valhall flanks.

Photo: Mærsk

In March 2002 Mærsk started production from the Tyra South-East wellhead platform, which is tied back to the Tyra East field centre

Denmark

Development activity is relatively high in the Danish sector, where Dong received approval in June to develop the Nini and Cecilie fields. A wellhead platform will be placed on each field and tied back to the Siri platform. Saipem has been appointed the main contractor, with responsibility for platform and pipeline installation, and has subcontracted Danish yard Bladt Industrier for platform fabrication. Start-up from the two fields, which have combined reserves of some 65mn barrels, is scheduled for 3Q2002. Dong has also applied to develop the small Amalie gas field.

Last month, Dong was due to take over operatorship of the Siri field and facilities as a result of its acquisition of Statoil's upstream assets in Denmark. It will also be expected to take over Statoil's plans for development of Segment 1 of the Siri East reserves. This will involve two subsea wells tied back to the Siri platform. In December 2001 Statoil brought the Siri East Segment 2 reserves onstream through a long-reach well drilled from Siri.

Meanwhile, Mærsk is implementing the third stage of development of Halfdan. This calls for the addition of process facilities to the existing platform, a new accommodation platform and flare platform at the field centre, a satellite wellhead platform and an additional 22 wells. The satellite platform was installed in spring and drilling through it by a jackup has already begun. The other platforms and process deck are scheduled to be installed in summer 2003.

Production began in March from Mærsk's Tyra South-East wellhead platform, which is tied back to Tyra East. Mærsk has also received approval for the development of the Boje area reserves, and for the neighbouring Igor and Sif fields where it plans to install a wellhead platform. It has also applied to develop the Freja field.

Phillips also looks to have developments on its hands. Last year it made a significant discovery at Hejre and could have another at Svane, where it was engaged in a lengthy well test in mid-year.

Ireland

In April 2002 Enterprise, now taken over by Shell, received approval to develop the 850bn cf Corrib gas field, the first to be developed off the west coast of Ireland. The field will be developed via subsea wells tied back 91 km to a shore terminal. A hold-up in the planning process means start-up will probably be delayed to 3Q2004.

Meanwhile, Ramco is seeking approval to develop a series of gas structures in the Seven Heads region off the southeast coast. Six subsea wells will be connected to a manifold that will be tied back 35 km to Marathon's Kinsale Head facilities. Start-up is scheduled for late 2003.

Netherlands

In the Dutch sector Wintershall aims to achieve partner sanction for the F16/E18 gas field by year-end. It plans to put a manned processing platform on F16 and a satellite platform on E18, and export through either the NGT or Nogat pipelines. The company is also in talks with contractors seeking a low-cost solution for developing the small Q5-A find as a single-well subsea tie-back to Clyde's Q8-B platform.

Photo: TotalFinaElf E&P Nederland

Jackup *Noble Al White* drilling production wells at TotalFinaElf's K1-A platform that came onstream in 2001

Clyde itself completed a tight appraisal well on its Q4-10 discovery. The field, which extends into Q1, has been named Q1-B. In a first stage of development the company is tendering for a satellite platform, Q4-C, to be tied back to Unocal's Hoorn field centre in Q1. Start-up is scheduled for 2003. A second platform, on Q1, is also likely.

NAM has yet to decide on a development plan for its K15-16 gas find. In addition, contract awards for platforms and pipelines for its Neptunus project have been interrupted as the company looks for ways to reduce development costs. Neptunus involves the K2-FA and G16-FA fields and some shallow gas finds in the A and B quadrants.

In July Gaz de France brought the G17-A field onstream with a processing platform tied into the NGT pipeline. The main projects which came onstream in 2001 were Veba's Hanze oil field, TotalFinaElf's K1-A gas field, and Gaz de France's K12-G satellite. Meanwhile, Clyde reinstalled the jackup wellhead platform from P2-SE on P6-D.

Smaller projects involving tie-backs to existing infrastructure are still coming forward. In July 2002 Norsk Hydro applied for approval for its Vigdis expansion project, which will use the Snorre facilities, while TotalFinaElf received approval for Skirne and Byggve, two small gas fields to be tied back jointly to the Heimdal field centre. Marathon, which has boosted its presence in the Heimdal area by acquiring interests from Norsk Hydro, is planning the development of the Kameleon and Gekko fields using the Heimdal infrastructure. Ole and Dole, neighbouring fields discovered this summer by Statoil, will be tied back either to Statfjord or Gullfaks.

On occasions maturity can spark big development projects. Statfjord is now considering the best way to maximise production from the Tampen area of the North Sea, which includes Statfjord, Gullfaks and Snorre. One solution under study involves a large new processing platform to carry out all oil and gas processing for the fields, conversion of the Statfjord and Gullfaks platforms to wellhead structures, and several new pipeline links. Other scenarios include the transfer of Statfjord processing to Brent.

Cross-border cooperation

Talks on cross-border cooperation between Norway and the UK could open the way to projects between the two sectors. One possibility is the Gudrun field in blocks 15/3 and 15/2, which Marathon, one of the licensees, wants to tie back to the Brae field facilities just 15 km away in the UK sector. However, Statoil, the operator, says it is looking at a tie-back to the Sleipner infrastructure some 60 km distant.

Meanwhile, an interesting new model of contractor involvement has arisen with PGS Production's acquisition of a 70% stake in the Varg block, 15/12. Through its newly established subsidiary Pertra, PGS plans to develop the Rev discovery, now renamed Varg South, by wells drilled from the Varg wellhead platform. Such a move will also extend production on the main Varg field, which would otherwise be ended next year.

New gas hubs

New gas developments are centred in the Norwegian Sea. Here BP is examining concepts for the Skarv oil and gas field. Its preference is for a stand-alone FPSO that can serve as a hub for future developments in the region, a prime candidate being Statoil's nearby Idun gas field. The company should make up its mind by October, opening the way to submission of a plan for development and operation (PDO) in early 2003, aiming at start-up in late 2005/early 2006.

Statoil's Kristin facility, a semi-submersible gas platform, will also act as a hub for other fields in the Halten Bank West area. The two most likely to come up for development once Kristin is onstream in 2005 are Morvin and Lavrans.

Norsk Hydro aims to select the concept for the giant Ormen Lange gas field before year-end and submit a PDO in 3Q2003. Here the licensees have decided that a processing platform with direct gas export to the North Sea network offers a more cost-effective option than onshore processing in mid-Norway. Such a move, however, is bound to arouse opposition from mid-Norway communities and politicians keen to secure new sources of work for the region.

The local community in Hammerfest in northern Norway has welcomed the go-ahead for Snøhvit, which involves the construction of an LNG plant near the town. Snøhvit will be developed with subsea wells tied back 170 km to shore at Melkøya. It will involve no emissions to sea and part of the carbon dioxide produced will be injected beneath the seabed. Even so, the project is being fiercely opposed by Bellona and other environmental groups that would prefer to see no oil and gas developments in the Barents Sea.

With its major gas reserves, Norway aims to be a major beneficiary of the UK's looming need for gas imports (see p24). An increase in deliveries to this market will require new transport links, which could involve the use of existing UK pipelines with spare capacity. Statoil, which recently announced a 10-year deal to supply 5bn cm/y of gas to British Gas Trading, is studying a number of possibilities using Sleipner as a jumping-off point. Marathon has proposed building a new pipeline from Heimdal via Brae to Bacton known as the Symphony line, but neither Statoil nor Hydro is thought to favour this solution.

Photo: Statoil

An impression of the Snøhvit LNG plant, construction of which is currently underway

Photo: Øyvind Hagen, Statoil

Successfully squeezing the rocks

UKCS oil production in the first six months of 2002 has reversed the production decline of the last two years, with output so far matching or exceeding year earlier levels. The achievement is as impressive as it is unexpected. Everyone involved can feel proud of what they have achieved. It is unexpected because the production decline in the UKCS seemed well established, with peak production of 124.9mn tonnes in 1999 falling 8% to 114.8mn tonnes in 2000 and a further 7.7% to 106.6mn tonnes in 2001, according to UK Government figures. *Chris Skrebowski* reports.

The stabilisation of production is impressive because of the sheer scale of production required to offset the declines in output from the older fields in the North Sea. In a recent Royal Bank of Scotland conference* Roger Read, Vice President–Europe Research of Simmonds & Co calculated that in 1994 – 55 fields accounted for 90% of UKCS production. By 2000 the same fields accounted for 43% of production, giving a decline rate of 11%/y on the pre-1994 fields. *Petroleum Review* calculates that for the ten largest UKCS fields by original reserves, the 2000/2001 production decline was 15%, falling from 466,200 b/d in 2000 to 396,700 b/d in 2001 – a rate of decline that continued in 1H2002.

Although 2001 saw a near record number of new developments (see **Table 1,** p17), these were not enough to offset the decline of the older fields largely because of delays to and the slow build-up of production from the two largest 2001 developments – Elgin/Franklin and Shearwater. The early part of 2002 saw production building up rapidly from the Elgin/Franklin, Shearwater, Foinaven and Schiehallion fields, as well as higher than expected flows from Blake and Kestrel. There were also disappointments, however, with Shearwater producing erratically, production problems resulting in Leadon flowing at half anticipated rates, and Kyle production fading.

This year (2002) has seen the largest ever number of new projects and developments (see **Table 1**) for any year to date. However, most of the new developments are small – often effectively off-platform outstep wells – so it is perhaps not unexpected that the latest International Energy Agency (IEA) monthly report (August) anticipates UKCS production falling short of year earlier levels in 4Q2002 and the shortfall continuing in 2003. Although always a figure to be treated with caution, it has been estimated that, on average, UKCS field developments now yield just 18,000 b/d.

UKCS scorecard

At the start of 2002 the UKCS scorecard would have read as follows: cumulative crude production to end-2001 of 2.5mn tonnes (or 18.8bn barrels) with, according to consultants Wood Mackenzie, around 10bn barrels of proved and probable reserves yet to produce. This in turn breaks down as 6bn barrels (60%) in the fields that are already onstream, a further 500mn barrels (5%) in fields under development, and an additional 1bn barrels (10%) in probable developments. That leaves the remaining 2.5bn barrels (25%) in the so-called 'fallow fields' – discoveries where there has been little or no further appraisal work. Wood Mackenzie splits

the fallow field designation into the 400mn barrels (4%) of reserves where some work has been done – seismic appraisal wells etc – and the untouched remainder.

The other key feature of the scorecard would be that, of the 162 fields and field groups whose production is reported by the UK Government, only 31 fields are not in obvious decline. Of these, all bar one are post-1996 start-ups while 18 of them are 1999 or later start-ups.

This means that new production to slow decline must come from mobilising development of the fallow fields or from new discoveries. It is clear that companies are already taking all economically attractive options to slow decline and maximise recovery from existing fields. The UK Government, through its Pilot initiative, is actively promoting a 'use it or lose it' approach to the development of finds. This approach is explicit in the terms of the recently announced 20th licensing round exploration licences but, for the earlier rounds, it depends on exhortation and encouragement. The policy appears to be paying off with large-scale sales and purchases of North Sea assets occurring over the last year or so – a process that has also been helped by post-merger rationalisation of assets by some of the super majors.

Asset takeovers

Over the last 18 months, in terms of North Sea assets, Eni has taken over Lasmo, while RWE-DEA has acquired Highland Energy, Burlington Resources has taken over Alliance Resources, Centrica has acquired Yorkshire Electricity, Consort Resources has taken over TXU Energy, Enterprise has taken over Petrobras, and Talisman has acquired Lundin Oil. These deals have, however, been dwarfed by the merger of Conoco and Phillips and by the acquisition of Enterprise Oil by Shell. The recent acquisition of Agip's North Sea assets by Dana Petroleum is the latest in the ongoing rationalisation of North Sea assets. In addition to the company takeovers and mergers there have been a whole series of purchases and asset swaps between companies aimed at rationalising holdings. The process has usually simplified shareholdings and given the operator the dominant holding. It also appears to have been an effective stimulant to new development projects.

Discoveries

Over recent years the UKCS discovery rate has fallen to quite low levels, with IHS Energy (see p28) estimating that the last few years have seen a replacement rate of around 21% – roughly 170–200mn b/y. Now 2001 was a quite spectacularly good year for discovery with eight significant finds including Buzzard, now rated to have recoverable reserves of 400mn barrels, the largest discovery for over 10 years. Active development plans are being made for Buzzard to start producing in 2004.

New discovery rates are the area of greatest debate and the one that separates the optimists from the pessimists. Ansel Condray, Chairman & Production Director of ExxonMobil International, London, gave an estimate of 12bn boe for yet-to-find in the recent Royal Bank of Scotland conference. The latest figure from the UK Department of Trade and Industry (DTI) and UK Offshore Operators Association (UKOOA) is slightly higher at 14bn boe. The Economic Advisory Group's position paper on 'Ultimate recovery in sanctioned UKCS fields in 2000' estimated that there is an additional recoverable prize of between 2bn and 4bn boe in existing field developments. The Pilot Brownfields Work Group is seeking ways to identify and deliver the extra from UKCS fields.

The current incentive to bring onstream any significant discovery is illustrated by the fate of 2001's eight significant finds. EnCana's Buzzard field is a major development project that may feature two platforms, while Kerr-McGee's Tullich field is to be developed as a subsea tie-back to the Gryphon FPSO. The Murdock gas find is being incorporated into the CMS development due onstream this year. BP's Davy North gas field is already onstream and BP's Claw and North Channel discoveries will be developed as part of the Schiehallion satellites development. Of the key 2001 discoveries this leaves only Talisman's Lucy field, where subsequent appraisals appear to have proved disappointing, and BG's Rose-R2 gas field that is likely to be developed (although no plans have so far been announced).

To date, 2002 has had three significant discoveries announced – TotalFinaElf's Forvie North gas and condensate field in block 3/15, EnCana's Black Horse discovery in block 15/22 which tested 6,274 b/d of oil and 3.9mn cf/d of gas and Dana Petroleum's Barbara gas condensate discovery in block 23/14c. Interestingly the Barbara discovery is in one of the blocks acquired with the takeover of Agip assets. The Forvie North find looks likely to be developed as a tie-back to TotalFinaElf's Dunbar facilities.

Development drivers

The rush to develop even quite small accumulations is driven by a number of factors. The continuing high oil price is an obvious incentive while the desire to load up existing production facilities and delay decommissioning is another important driver. Many operators are faced with declining production from their existing fields and are keen to maintain overall production volumes.

To date there have been relatively few field decommissions in the UKCS. In fact, some previously decommissioned fields are now to be redeveloped – Argyll is a good example, now renamed Ardmore. Last year saw the first northern North Sea deepwater decommission with the closure of the Hutton field. The decommissioning was relatively straightforward as the field was developed with a steel tension leg platform (TLP). This has been removed from the field and is now in Norway and on the market for reuse. Likely decommissions this year are BP's Brimmond and NW Hutton facilities, and Talisman's Sedgwick. Brimmond and Sedgwick are subsea tie-backs and should present few difficulties, but NW Hutton is a fixed steel platform development and will provide practical experience and real costs for a major deepwater decommission. As such it will be closely followed by both the UK Government and companies with major deepwater facilities.

Rationalising facilities

In both the UKCS and the Norwegian sector of the North Sea there is increasing discussion about the rationalising of production facilities in a bid to lower costs and minimise the offshore workforce as production flows decline. It looks increasingly likely that a number of facilities will be de-manned and turned into wellhead platforms, with the number of manned processing platforms reduced to a limited number of key hubs.

The other stimulus to activity is the new entrants to the North Sea. Because the area represents most or all of their operations, it is argued that they have a much greater commitment than the international majors where the North Sea is just a small part of their global operations that must compete for capital against lower cost regions offering much larger field sizes.

Talisman, arguably the first of the end of field life operators to work on the UKCS, gave some indications of the size of cost reductions possible at the recent Royal Bank of Scotland conference. According to Jim Buckee, CEO of Talisman Energy, the company reduced operating costs on its Beatrice/Buchan /Clyde fields from £68mn/y in 1992–1997 to £49.5mn in 2001–2002 and reduced operating costs on Piper/Claymore by 25%. The overall effect was to reduce Talisman's North Sea operating costs from $7.70/b to $5.75/b.

Buckee explained that the principal

Field name	Oil/gas	Block no.	Operator	Start-up	Oil reserves	Gas reserves	Prod. system	Peak prod. (yr)
UK								
Onstream 2001								
Angus (redvlopmt)	oil	31/21, 31/26a	Amerada Hess	**Oct-01**	15mn b or 4mn boe		to Fife-Fergus FPSO	25k b/d
Beatrice (redvlopmt)	oil		Talisman	**Oct-01**	166mn b		plat	54k b/d (2002)
Beauly (ex Zeta)	oil	16/21c	Talisman	**Mar-01**	3mn b		horiz well to Balmoral FPS	10k b/d
Blake	oil	13/24a, 24b, 29b	BG	**May-01**	65mn b		8 subsea to Ross FPSO	34k b/d (2002)
Brigantine A and B	gas	49/19, 49/18	Shell	**Jan-01**	3mn b (cond)	280bn cf	2NNM plats via Corvette	4k b/d (cond), 130mn cf/d (2002)
Chestnut Ph1 EWT	oil	block 22/2a	Amerada Hess	**Jul-01**	20mn b		subsea horizontal well	10k b/d
Davy N	gas	49/30a	BP	**Nov-01**	or 7mn boe	40bn cf	1 well subsea tieback	30mn cf/d (2002)
South Everest	gas/cond	2/9, 22/10a, 23/21	BP	**3Q2001**			tieback to Lomond	
South Dunbar	oil	3/14a	TotalFinaElf	**end-2001**			tieback to Dunbar plat	
Elgin/Franklin	cond	22/30b, 30c, 29/5b	TotalFinaElf	**Jun/Sep 01**	410mn b (cond)	1800bn cf	PDQ + wellh'd plat	140k b/d 480mn cf/d
Flowers N	gas		BP	**3Q2001**	30bn cf		ERD	15mn cf/d
Foinaven E	oil	204/24a, 204/25b	BP	**Oct-01**	36mn b		Tieback to Foinaven FPSO	started at 20k b/d
Guillemot A incr dev	oil	21/24, 21/29a	Veba Oil & Gas	**Dec-01**	5mn boe		To Guillemot facils	
Guillemot W & NW	oil	21/24, 21/29a	Veba Oil & Gas	**Dec-01**	16mn b+ or 20mn boe		horiz well to Triton FPSO	25k b/d
Hamilton E (Lambda)	gas	110/13a	BHP	**Oct-01**	or 13mn boe	75bn cf	1 well tieb'ck to Douglas plat	
Leadon area	oil/gas	block 9/14a, 9/14b	Kerr-McGee	**Nov-01**	145mn b		16 subsea wells to FPSO	50k b/d (2002)
Hoton	gas	48/6, 7b	BP	**Nov-01**	or 12mn boe		95bn cf or 15bn cf wellh'd plat to W.Sole	40mn cf/d (2003)
Kestrel (SA)	oil/gas	211/21a	Shell	**Dec-01**	7mn b or 8mn boe		2 well tieback to Tern	6k b/d (2002)
Kyle	oil	29/2c	Can Nat Res's	**Apr-01**	28-35mn b	60-90bn cf	4ss wells via Curlew FPSO	22k b/d(2002), 60mn cf/d (2003)
Magnus NW	oil	211/7a	BP	postponed	10mn b		ERD from Magnus	7k b/d
NUGGETS N1,N2,N3	gas	3/18c, 19a, 19b, 20a, 24a,	TotalFinaElf	**Nov-01**		300bn cf	5 subsea wells to Alwyn Nort	165mn cf/d
Shearwater	cond	22/30b	Shell	**Apr-01**	140mn b liquids	710bn cf	PDQ + wellh'd plat	68k b/d (2002), 350mn cf/d (2002)
Schiehallion phase II	oil	204/20a	BP	**Dec-01**			1 horiz well + 2 injectors	
Onstream 2002								
Alba extreme south	oil	16/26	ChevronTexaco	Oct-02	15mn b or 50mn boe		14 subsea wells to Alba plat	16k b/d
Bains	gas	110/3c	Centrica	Nov-02		45bn cf	tieback to Morecambe S	35mn cf/d (2003)
Braemar	gas/cond	16/3c	Marathon	Nov-02	10mn b (cond)	115bn cf	1 subsea well to Brae B	10k b/d (2003), 40 mn cf/d (2003)
Brigantine C	gas	49/19	Shell	**Jul-02**	1mn boe	6bn cf	via Corvette	
Caledonia (Parlmnt)	oil	16/26	ChevronTexaco	Oct-02	10.3mn b	15mn boe	subsea to Britannia	12-13k b/d
Chestnut PhII	oil	block 22/2a	Amerada Hess	Jun-02	15-20mn b		FPSO	18k b/d
CMS III	gas	44/22a	Conoco	Sep-02	68mn boe	415bn cf	Tiebacks to Murdock plat	205mn cf/d (2003)
Goosander	oil	block 21/12, 21/13a	Shell	mid-2002	16mn b++		subsea to Kittiwake	15k b/d
Halley	oil/gas	30/12b	Talisman	**Jul-02**	7-9mn b	9bn cf	2 ER wells from Fulmar	11k b/d (2002), 13mn cf/d (2002)
Hannay	oil	20/5c	Talisman	**Mar-02**	10mn b		2 well tieback to Buchan ss	7k b/d (2002)
Heather Phase II (W)	oil	block 2/5	DNO Heather	Dec-02	22mn b		subsea tieback to Heather	32k b/d (2003)
Helvellyn	gas	47/10DA	ATP Oil & Gas(UK)	4Q2002	50bn cf		subsea to Amethyst plat	36mn cf/d (for 5 yrs)
Jade	gas/cond	30/2c	Phillips	**Feb-02**	15-30mn b (cond)	400bn cf	steel plat via Judy/CATs	30k b/d (2002), 200mn cf/d (3Q-02)
Juno project (ECA2)	gas	47/3b, 3c, 4a, 4b	BG	4Q2002	or 70mn boe	400bn cf	subsea + Minerva plat	300mn cf/d(2003) or 8.5mn cm/d
Lewis	oil	9/13a	ExxonMobil	**Apr-02**			tieback to Beryl Alpha	6k b/d (2002)
Magnus EOR	oil	211/12a	BP	3Q2002	additional 60mn b	200bn cf	infill wells, misc gas injec	38k b/d to 49k b/d
Maclure	oil/gas	block 9/19 Area N	BP	mid-2002	12-19mn b	65bn cf	1 subsea to Gryphon FPSO	15-19k b/d (2002), 20mn cf/d (2006)
NUGGETS N4	gas	3/18c, 19a, 19b, 20a, 24a	TotalFinaElf	2002		500bn cf	subsea	150mn cf/d (2004)
Otter (Wendy)	oil	210/15a	TotalFinaElf	Nov-02	30-45mn b		3 prod, 2 inj to Eider plat	45k b/d (2003)
Penguin A,C,D,E	hvy oil	211/13, 211/14	Shell	Nov-02	32mn b or 90mn boe	90bn cf	subsea to Brent C	53k b/d (2003), 100mn cf/d (2003)
Schiehallion phase III (Claw, N Channel)	oil	204/20, 204/25	BP	May-02	100mn or 163mn boe		3 prodn+ 5 inject to FPSO	
Scoter	gas/cond	22/30a	Shell	Dec-02	3mn b or 40mn boe	180bn cf	tieback to Shearwater	6k b/d (2003)
Skene (ex Sorby)	gas/cond	block 9/19	ExxonMobil	**Jan-02**	16mn b	530bn cf	5 subsea wells to Beryl A	27-40k b/d (2004), 180mn cf/d (2004)
Skua	oil/gas	22/24b	Shell	Jun-02	21-25mn b	24bn cf	2 subsea wells to Marnock	24k b/d (2002), 15mn cf/d (2003)
Sycamore (Pine,N,Elm)	oil	16/7, 16/12a	Venture Petroleum	Ph 1 Nov-02	25-30mn b	14bn cf	2 subsea to Brae A	7-22k b/d (2004), 30.5mn cf/d (2004)
Tullich (Phase I)	oil/gas	9/23a	Kerr-McGee	4Q2002	40mn b		4 subsea to Gryphon FPSO	20k b/d (03), 6mn cf/d (03)
Viscount /Vanguard extn	gas	49/16	Conoco	Nov-02		150bn cf	3 horiz subsea via Loggs	90mn cf/d
Wood (SA)	oil/gas	22/18	Nisus consort'/BP	2H02		15mn boe	1-2 subsea to Arbroath	
Onstream 2003								
Ardmore (Argyll redev)	oil	30/24	Tuscan Energy	2003			3 subsea and FPS	40k b/d
Beechnut	oil/gas	29/9b	Amerada Hess	2003			subsea tieback or FPSO	20k b/d
Calder/Rivers	gas	110/7a	Burlington	end-2003	49k b (cond)	250-300bn cf	50 km multiphase tieback	80mn cf/d (2006)
Cleaver Bank	gas		Shell	2003			plat + subsea	
Curlew A -D	oil	block 29/7	Shell	2003	20mn boe		subsea to Curlew	

Table 1: North Sea fields onstream in 2002 and beyond

continued overleaf...

North Sea overview

Field name	Oil/gas	Block no.	Operator	Start-up	Oil reserves	Gas reserves	Prod. system	Peak prod. (yr)
ETAP II (Madoes/Mirren)*	oil	22/23B,28A,28C, 22/25B	BP	early 2003	75mn b	50bn cf	5 wells to Marnock	32k b/d(03) and 30mn cf/d (04)
Howe	oil	22/12a	Shell	2003	15mn boe		subsea tieback to Nelson	
Harding area gas	gas	9/23b	BP	end-2003	appraisal		tiebacks to Harding plat	
North Venture	gas	49/12a	Conoco	2003				
Jill & Julia (SA)	oil/gas	30/7a	Phillips	2003			subsea tieback to Judy	
Sycamore Phase II,III	oil	16/7, 16/12a	Venture Petroleum	2H2003	25-30mn b	14bn cf	5-7 subsea to Brae A	7-22k b/d (2004), 30.5mn cf/d (2004)
Skene Ph2 (Brora)	gas/cond	block 9/19	ExxonMobil					
Onstream 2004								
Blane	oil	30/3a	Shell	2004	15-40mn b		Subsea tieback to Pierce	15-25k b/d, 6-10mn cf/d (Ph1)
Buzzard	oil	block 20/6	Encana	2004	400mn b		FPSO/plat	
Clair S*	oil	206/7a, 8, 9a, 12, 13a	BP	2004	273mn b or 267mn boe		1 or 2 fixed steel plats	80k b/d (2005)
Devenick/Rhum	oil	9/24b	BP	2004	123mn boe/88mn boe	480bn cf	plat or tieback to Harding	
Don redev. W,SE (SA)	oil	211/18a	BP	2004	35mn boe		subsea tieback to Don	
Enoch/J1	oil/cond	16/13a	Shell	2003	10.4mn b	67bn cf	subsea to Miller or Brae	10k b/d (2003), 15mn cf/d (2003)
Glenelg	Oil/gas	29/4d	TotalFinaElf	2004	40mn b (cond)	200bn cf	wellhead plat via Elgin PUQ	
Goldeneye*	gas/cond	14/29a, 20/4b	Shell	Oct-04	17mn b (cond)	500 or 655bn cf	NNM plat, 105km t/b St Ferg	10k b/d (2005), 300mn cf/d (2005)
Kessog (SA)	gas/cond	30/01c	BP	2004	106mn boe		unmanned plat or subsea	
Perth/Lowlander	oil	15/21b	Amerada Hess	2004	45mn b		subsea to Scott	20k b/d (2003)
Onstream 2005								
Ettrick	oil	20/2a	Shell	2005	35mn b		FPSO or subsea	
Possible developments								
Alder	Oil/gas	15/29a	Chevron	2004	22.4mn b (liquids)	187.5bn cf	subsea tieback	
Amy and Argo area	gas	48/10b,48/9a	Conoco		79mn boe			
Anglia	gas							
Bedevere	gas	48/14	ExxonMobil	2003	100bn cf		ERD	40mn cf/d (2004)
Bennachie	oil	21/15a, 15b	Shell	2003	15mn b		subsea to Forties or Nelson	10k b/d (2003)
Beta (UK)	gas	44/24a	Consort Resources	2002	75bn cf		wellh'd plat to Orca	35mn cf/d (2003)
Cavendish	gas	43/19a	RWE-DEA	2003	100bn cf		subsea to Trent	51mn cf/d (2004)
Chiswick					19mn boe			
Dolphin		22/18	BP					
Jacqui	oil/gas	30/13	Phillips	2002	14mn b	90bn cf	subsea to Judy	10k b/d (2003), 50mn cf/d (2005)
Josephine	oil/gas	30/13	Phillips	2003	30mn boe	95bn cf	subsea to Judy	8k b/d (2003), 50mn cf/d (2003)
Kappa & Spectre					91mn boe			
Kate/Turnstone	oil/gas	22/23b, 28a	BP?	2002/3	73mn boe	20bn cf	subsea	20k b/d (2003), 15mn cf/d (2003)
Mandarin	oil	22/23b, 22/28d, 22/28a	Shell					
Marcel/Bravo								
Mariner	hvy oil	9/11a	ChevronTexaco	2002?	100mn b		project on hold	
Orca, Beta and Minkie	gas	44/24a, 29b, 30	CalEnergy	2002		265bn cf	wellh'd plat to D/15-FA	72mn cf/d (2003)
Pilot	oil	21/27	TotalFinaElf	2002?	77mn b		floater?	
Puffin	oil/gas	29/4a, 5a, 9a, 10	Shell	2004	40mn b	320bn cf	wellh'd plat to Shearwater	18k b/d (2008), 150mn cf/d (2008)
Solan/Str'thm're (SA)	oil/gas	204/30	Amerada Hess				FPSO	40k b/d
Suilven	oil	204/19	BP	2003?				
Topaz					9mn boe			
There are up to 200 discoveries on the UKCS which are possible prospects. These will be added once their status becomes clear.								
KEY DISCOVERIES 1999–2002								
Clapham	oil	21/24	Veba Oil		5,894 b/d on test		subsea to Guillemot NW	
Rochelle	oil/gas	15/27-9	Amerada Hess		7,973 b/d on test	4.67mn cf/d	on test	
Lucy	oil	15/12b, 15/17	Talisman		22mn b	10bn cf	tieback to Piper	
Claw	oil		BP				tieback to Schiehallion	
K field	gas	44/22a, 44/23a	Conoco	4Q2002	80bn cf		Caister Murdock (CMS III)	
York	gas	47/3a	Amerada Hess	2003?	test 24.7mn cf/d	200bn cf	Incorp in ECA2?	
Buzzard	oil	block 20/6	Encana		200-300mn b		plat?	
Rose-R2	gas/cond	47/15b	BG		test 30mn cf/d, 90 b/d (cond)			
Forvie North	gas/cond	Block 3/15	TotalFinaElf		test 1mn cm/d,1.4kb/d cnd			
Barbara	gas/cond	23/16c-8	Dana Petroleum		276 foot column			
NETHERLANDS 2001 and after								
A & B quadrant	gas	A12A	NAM	2004		410bn cf	plat	
F16-A	gas	F16/E18	Wintershall	2004			process plat + sat plat	
G16-FA	gas	G16	NAM	2004		226bn cf	plat	
G17d-A	gas	G17	Gaz de France	2002		200bn cf	plat	
Hanze	oil	F/2A	Veba Oil	Jul-01	35mn b	58bn cf	steel grav plat, via A6/	38mn cf/d (2001)
K/1A	gas	J/3A, K/1A	TotalFinaElf	Mar-02		520bn cf	plat	83mn cf/d (2003)

Table 1: North Sea fields onstream in 2002 and beyond

Field name	Oil/gas	Block no.	Operator	Start-up	Oil reserves	Gas reserves	Prod. system	Peak prod. (yr)
K/2-FA	gas	K/2	NAM	2004		270bn cf	plat	
K12-G	gas	K12	Gaz de France	2001		200bn cf	plat	
K12-15	gas	K12	Gaz de France	2002		50bn cf		
K15-16/F	gas	K15	NAM	2004				
L4-G	gas	L4	TotalFinaElf	2003		100bn cf	plat	
L/7-G	gas	L7	TotalFinaElf	2001		30bn cf	sat plat L4PN	
L/8-P4	gas	L/5C, L/8C	Wintershall	Jan-01		125bn cf	plat	
N/7	gas	N/7	NAM	2003		30bn cf	plat	
P/15-15	gas	P/15	BP	2002		15bn cf	plat	
Q1-B	gas	Q/1,Q/4	Conoco	2003		400bn cf	2 plat t/b to Hoorn	34mn cf/d (2000)
Q5-A	gas	Q5	Wintershall	2003		21bn cf	subsea to Q8-B	
Probable developments								
K/5-Fe	gas	K/5	TotalFinaElf	2002		80bn cf	plat	
K/2B	gas	K/2B	NAM	2001		86bn cf	plat	17mn cf/d (2002)
K/2B-K/3A	gas	K/2B,K/3A	NAM	2001		260bn cf	plat	
K/3A	gas	K/3A	NAM	2001		174bn cf	plat	35mn cf/d (2002)
K/4-E	gas	K/4A	Elf	2001		150bn cf	plat	
K/7-FB	gas	K/7	NAM	2003		150bn cf	plat	
K/15-FE	gas	K/15	NAM	2002		30bn cf	plat	
K15-FJ	gas	K/15	NAM	2004		40bn cf	plat	
K/15-FK	gas	L/1A	NAM	2004		300bn cf	plat	16mn cf/d (2001)
L/2-FB	gas	L/2	NAM	2003		85bn cf	plat	
L47-G	gas	L/4	TotalFinaElf	2003		117bn cf	plat	
L/9-6	gas	L/9A, L/9B	NAM	2003		100bn cf	plat	
L/9-7	gas	L/9A	NAM	2000		100bn cf	subsea	
Minke (Neth)	gas	M/7	NAM	2003		100bn cf	plat	45mn cf/d (2001)
Orca (Neth)	gas	D/15, D/18A	NAM	2003		104bn cf	plat	40mn cf/d (2002)
Q/1-A	gas	Q/1	Conoco	2004		400bn cf		
KEY DISCOVERIES								
K15	gas	K/15	Shell, ExxonMobil			300bn cf		
NORWAY								
Onstream 2001								
Garn West	oil/gas	6407/9	Shell	Dec-01	6407/9		subsea to Draugen	
Glitne/Dagny	oil	block 15/5, 15/6	Statoil	Jul-01	25mn b		Petrojarl FPSO	19k b/d (2001) 2/3 year life
Gullfaks South ph2	oil/gas	34/10, 33/12	Statoil	Oct-01	5mn t NGL	47bn cm	via Gullfaks C	34k b/d, 4.8bn cm, 0.5mn t NGLs
Huldra	gas/cond	30/2, 30/3	Statoil	Nov-01	7.4mn cm cond,0.3mn t NGL	19.1bn cm	NNM jack-up wellhead plat	30kb/d, 10mn cm/d
Ringhorne (subsea)	oil/gas	block 25/11,25/8	ExxonMobil	2Q2001	190-280mn b	2bn cm	5 subsea wells via Balder	
Snorre II (B)	oil	34/4, 34/7	Norsk Hydro	Jul-01	250-330mn b		subsea to Snorre TLP	108k b/d
STUJ	oil	34/7	Norsk Hydro	Dec-01	20mn b		subsea to Gullfaks C	12k b/d
Tambar	oil	block 1/3, 2/1	BP	Jul-01	41mn b, 0.3mn t NGL	1.8bn cm	2 subsea via Ula	
Onstream 2002								
Ringhorne (plat)	oil/gas	block 25/11,25/8	ExxonMobil	4Q2002	280mn b	2bn cm	PDQ plat via Balder	
Troll satellites	oil	block 31/2	Norsk Hydro	2002	105mn b		subsea t'bk to Troll B and C	
Trym	gas/cond	3/7, 8	Shell	2002	5mn b	3.3bn cm	subsea to Harald (Denmark)	
Tune A (ex Draken)	gas/cond	30/8,30/ 5, 30/6	Norsk Hydro	Oct-02	6.1mn cm(cond),0.1mn t NGL	24bn cm	subsea to Oseberg B	8mn cm/d
Vale	gas/cond	block 25/4	Norsk Hydro	May-02	20-21mn b (cond)	2.5-3.0bn cm	subsea to Heimdal Riser plat	1,600 cm/d
Visund North	oil		Norsk Hydro	Feb-02	19mn b		tieback to Visund plat	40k b/d (03)
Onstream 2003								
Byggve*	gas/cond	block 25/5	TotalFinaElf	2003	4.4mn b cond	2.4bn cm	1 subsea well to Heimdal	
Ebba	oil/gas	block 2/7-31	Phillips	2003	appraisal	appraisal	appraisal	
Fram W*	oil/gas	35/11,31/2	Norsk Hydro	Oct-03	100mn b	3.5bn cm	subsea via Troll C	63k b/d
Freja	oil	Block 2/12	Amerada Hess	2003	13mn b	0.3bn cm	NNM plat to Harald/Valhall	
Grane (Hermod)	oil	block 25/11	Norsk Hydro	4Q2003	705mn b (hvy oil)	1.8bn cm	PDQ plat	over 215k b/d (2005-09)
H West/H North	oil/gas	block 34/7	Norsk Hydro		4.3mn cm	0.5bn cm	subsea to Snorre/Tordis/Stat	
Kappa	oil/gas	30/6, 9	Norsk Hydro	2002/3	1mn cm	2.7bn cm	ERW from Oseberg B	
Mikkel*	gas/cond	6407/6, 6407/5	Statoil	3Q2003	35mn b	22bn cm	4 subsea to Asgard B	
Rogn South*	oil/gas	6407/9	Shell	1Q2003	35mn b		2 subsea to Garn West	
Sigyn*	gas/cond	block 16/7	ExxonMobil	1Q2003	35mn b cond	5.6bn cm	tieback to Sleipner A	
Skirne*	gas/cond	block 25/5	TotalFinaElf	end 2003	6mn b cond	4.3bn cm	single well t'bk to Heimdal	34k boe/d (2004)
Valhall water inject*	oil	block 2/8, 2/11	BP	Jan-03	additional 110mn b		15 well plat to inj 210k	60k b/d
Varg South	oil/gas	block 15/12	Pertra PGS	2003	40mn b	4bn cm	ERD well from Varg	
Vigdis East*	oil	block 34/7	Norsk Hydro	2003	50mn b		subsea to Snorre	
Onstream 2004+								
Barden	gas	6305/7	BP Amoco		100bn cm		design, 20km Ormen Lange	
Dagny	gas/cond	Blocks 15/6 and 15/5	Statoil	2004	6.3mn b cond	5.8bn cm	subsea via Sleipner A or T	
Ekofik G	oil/gas	block 2/4	Phillips	2005	156mn boe		wellhead plat +mods	
Falk	oil	6608/11	Statoil	2005	3.6mn b		subsea to Norne	
Fangst	oil	6507/3	Statoil				floater	
Gjoa	oil/gas	35/9, 36/7	Norsk Hydro	mid-2006	150mn b	19.9bn cm	subsea to Troll	
Goliath	oil	7122/7 (Barents Sea)	Agip	2005	71mn b		FPSO	

Table 1: North Sea fields onstream in 2002 and beyond

continued overleaf...

ways in which the company had achieved the cost reductions and increased volumes of production was by minimising avoidable downtime, making use of clever well designs and the greater reach now attainable, shortening lead times on projects and by using all these factors to extend field life. He did note, however, that there were downsides to being an operator in a declining province. There was the danger of resource flight when rigs and companies leave a region, raising costs and reducing competition amongst service and equipment suppliers. He also noted that costs were rising, and that timing was becoming an issue and would become more so as infrastructure was decommissioned and removed. The other major risk and uncertainty was tax changes.

Tax surprise

Over recent years there has been an unstated assumption that the UK Government would seek to maximise recovery of oil and gas from the UKCS by keeping taxes relatively low in order to offset the fact that it has become a high cost province. Wood Mackenzie recently reported that the UKCS came 58th out of 59 provinces in terms of development and operating costs.

Although the incoming Labour government had indicated an interest in higher North Sea taxes, low oil prices in 1998/1999 appeared to have ruled out tax increases. The decision to raise taxes by 10% in the 2002 Budget was as surprising as it was unheralded. Despite the concessions on first-year allowances and the likely removal of royalties on some older fields still paying it, the overall effect will be to take $1bn/y and, according to Julian Small, Tax Partner at Andersen, to raise the taxation level on North Sea projects from 45–50% to 50–55%.

The tax rise came too late to impact on the large number of 2002 projects. The key question now is whether the UK Treasury has finessed the amount of tax it can extract from the North Sea or whether it has undermined confidence and reduced the number of incremental projects in the region. A partial answer to this will be seen in the number of additional projects, above those already known, which come forward for 2003 and beyond.

*The Future of Investment in the North Sea – The Need for Change, *16–17 May 2002, London.*

Field name	Oil/gas	Block no.	Operator	Start-up	Oil reserves	Gas reserves	Prod. system	Peak prod. (yr)
Gudrun	gas/cond	block 15/2, 15/3	Statoil	2005	87mn b	15.6bn cm	NNM plat to Sleipner/Brae	
Idun	gas	6507/3	Statoil		4mn b	17.4bn cm	subsea to Skarv?	
Kristin*	gas/cond	6406/2-3, 11	Statoil	Oct-05	220mn b cond	35.4bn cm	12subsea to FPS toAasgard	15mn cm/d
Kvitebjorn*	gas/cond	34/11	Statoil	Oct-04	135mn b	52bn cm	PDQ plat (Aker to build)	20mn cm/d
Lavrans*	gas/cond	6406/2	Statoil	2006	30mn b	13,4bn cm	subsea to Kristin	
Morvin	gas/oil	6506/11	Statoil		63mn b	5bn cm	subsea to Kristin	
Nyk High	gas	6707/10	BP	2003+		40bn cm	FPSO?	
Ole/Dole	oil	33/12	Statoil	2004?			subsea Statfjord/Gullfaks	
Ormen Lange	gas/cond	6305/4,5,7,8	Norsk Hydro	2007	149mn b cond	390bn cm	subsea to plat in 250m?	50mn cm/d, 20 year plateau
Oseberg Delta	gas/cond	block 30/9, 30/8	Norsk Hydro	2003	7mn b	4bn cm	subsea via Oseberg	
Oseberg satellites	oil/gas	block 30/6	Norsk Hydro	2005	190mn b	6bn cm	subsea via Oseberg	
Ragnfrid	gas/cond	6406/2	Statoil		36mn b	8bn cm	subsea to Kristin	
Skarv	gas/cond	6507/3,5,6	BP	2005	70-140mn b	32-70bn cm	FPSO or tieback to Heidrun	11.3mn cm/d
Sleipner (alpha N)*	gas/cond	block 15/6	Statoil	2004	32mn b cond	13bn cm	3-4 w,18km tbk to Sleipner T	
Snoehvit+ others*	oil/gas	7120\5,6,7,8,9, 7121/4,5,7	Statoil	2006	115mn b (cond)	165bn cm	subsea 160km t/b to shore	20.8mn cm/d
Sogn	oil/gas		Norsk Hydro	2003/04	315mn b	63bn cm	FPO or subsea	
Staer	oil	6608/10	Statoil	Jun-09			subsea to Norne	
Svale	oil	6608/10	Statoil	2003	50mn b		subsea via Norne	
Tjalve	oil/gas	block 2/4	Phillips	2002/3	1mn cm	1.6bn cm, 0.1mn t	N subsea via Tor/Ekofisk II	
Tommeliten A	oil/gas	block 1/9	Phillips	2001??	16mn b	3bn cm	subsea to Ekofisk?	
Tyrihans N&S	gas/cond	6407/1, 6406/3	Statoil	2006	122mn b	23bn cm	subsea to Asgard	
Visund G	gas	block 34/8	Norsk Hydro	2005		50.5bn cm	via Visund F wells	
Volve	oil/gas	block 15/9	Statoil	2004?	35mn b	1bn cm	FPSO/Jack-up to FPS	40k b/d
block 1/3	oil	block 1/3	BP Amoco		30mn b		w'hd or s'sea via Gyda or Ula	
block 25/11	oil	block 25/11	Norsk Hydro	2005	3.6mn cm		subsea to Grane	
35/8	gas/cond	35/8, 35/11	Norsk Hydro		3.7mn cm (cond) 3.1mn t NG	20.8bn cm	linked to area development	
KEY DISCOVERIES								
President	oil/gas		Shell		1bn b?	1bn cm?		
DENMARK 2002 and after								
Adda	oil/gas	5504/8	Maersk	2005	6mn b	1bn cm	subsea or NNM to Tyra	
Alma	oil/gas	5505/17	Maersk	2005	6mn b	1bn cm	plat to Dan F	4k b/d (2004), 22mn cf/d (2004)
Amalie	gas/cond	5604/26a	DONG	2006	13mn b cond	3bn cm	plat	7k b/d (2002), 42mn cf/d (2006)
Bertel	oil/gas							
Boje	oil/gas							
Cecilie/Nini	oil	5604-20, 5605-10	DONG	mid-2003	65mn b		2 wellhead plats via Siri	
Elly	oil/gas	5504/6a	Maersk	2005	6mn b	1bn cm	NNM plat to Tyra	
Freja	oil	5603/27	Maersk		7mn b		subsea	
Gert	oil	5603/27a	Maersk	2000	9mn b	7bn cf	plat	6k b/d (2001), 5mn cf/d (2001)
Halfdan extension	oil/gas	5505/13	Maersk	2003	267mn b	5bn cm	Two jackets + bridge	100k b/d
Igor/Sif	oil/gas	5505/13	Maersk	2005	11mn b	7bn cm	NNM plat to Dan F	
Tyra SE	oil/gas	5504/12	Maersk	2002	6mn b	6bn cm	plat toTyra East	
IRELAND								
Corrib	gas	18/20, 18/25	Shell	2004		850bn cf	subsea to shore	
Seven Heads	gas	48/22, 48/23	Ramco	2003	8.5bn cm	subsea to Kinsale Head		

* Future developments with government approval in addition to those onstream in 2002
Abbreviations: Compass points abbreviated to single letter eg North = N, Northwest = NW; ,000 = k eg 439,000 = 439k; platform = plat

Table 1: North Sea fields onstream in 2002 and beyond

Investors cooling off in Kazakhstan?

Photo courtesy of Christopher Pala

Christopher Pala explains why interest in the Kazakhstani E&P sector may be dwindling as existing projects grapple with new hurdles imposed by the government.

CPC Executive Kim La Bauve inspects some piping at the new CPC pipeline terminal

Kazakhstan is preparing to offer exploitation rights to about 100 blocks in the northern Caspian Sea this year. However, the response is likely to be tepid despite the nearby presence of the super-giant Kashagan deposit, oil executives say. The reason? Companies already operating in Kazakhstan say they are facing increased harassment from the Kazakhstani Government, even though almost all are still pouring money into projects in the country and profits are years away.

Sulfur sales

The oilmen point to several disturbing signs, the most visible of which was a ruling that the 5mn tonnes of sulfur stored at the Tengiz site constitute polluting waste rather than inventory, even though TCO (TengizChevrOil, operated by Chevron and operator of the giant field) is building a plant to turn the sulfur into pellets and sell it (see *Petroleum Review*, September 2001). The ruling allowed the Kazakhstani Government to impose a $73mn/y environmental fine, which TCO is fighting.

As the dispute winds its way to the country's highest court, the administration has filed another suit demanding that the payment be made before the appeal process is finished. The judicial – like the other two branches of government – is controlled by President Nursultan Nazarbayev. He has ruled Kazakhstan since before independence in 1991 and received 82% of the vote in his last re-election bid.

TCO is the largest foreign investor in the former Soviet republic. The government has held a double speech on the sanctity of contracts that has caused deep unease. 'We will respect the contract, but we will insist it be changed on the basis of goodwill where both sides agree that the contract has become unbalanced,' said Doulat Kuanyshev, a Vice Minister of Foreign Affairs who deals with foreign investment issues.

Transaction passports

The government is also forcing TCO and other oil companies to use so-called transaction passports – a document a company needs to obtain from the government for every import or export transaction. Foreign oil companies had been exempt from the transaction passports in the past.

TCO is resisting the move, which the oil industry views as cumbersome and giving undue power to the government over its activities. The industry claims existing contracts specifically exempt them from requiring transaction passports for their imports and exports.

Kashagan dispute

At Kashagan (see *Petroleum Review*, April 2001), the giant offshore field currently in appraisal stage, the govern-

ment and operator Agip KIOC are reported to be in a dispute over what can and cannot be claimed as investment, and what can therefore be recovered later from the income stream.

The government maintains that the consortium is over-claiming and gold-plating. However, the consortium says that not allowing it to recover what it has put in is tantamount to depriving it of its investment.

Agip KIOC, in its declaration of commerciality in June, said Kashagan had approximately 37bn barrels of oil in place, of which between 9bn and 12bn barrels should be recoverable.

Governmental grip

Also of concern is the strengthening grip on the oil industry by the President's son-in-law, Timur Kulibayev, who has engineered a merger of the national oil company and its gas and oil pipeline sisters into one unit called KazMunaiGas (KMG). Kulibayev is now its Deputy Chairman. He was previously President of the pipeline monopoly.

At the same time, Nurlan Balgimbayev, a petroleum engineer who rose to become Oil Minister and Prime Minister, has left his post as head of Kazakhoil, the national oil company, after it merged with the pipeline monopoly.

The consolidation also shifts some authority from the Ministry of Energy to KMG, making it variously a partner, a competitor and a government policy overseer. KMG has replaced the Energy Ministry as the government representative on the boards that oversee the exploitation of major oilfields such as Tengiz (see *Petroleum Review*, September 2001).

Export restrictions

In May 2002, KMG, reportedly acting on instructions from the Energy Ministry, unexpectedly restricted the export quota of Canadian-owned Hurricane Hydrocarbons just as it began scheduled maintenance on its refinery in Chymkent. As a result, Hurricane had to cut its 135,000 b/d production in half.

Over the years, Tengiz has accumulated 4.5mn tonnes of sulfur, storing it outdoors in huge slabs some 25 ft high and bigger than a football pitch

More recently, it was opposition by KMG that, again unexpectedly, scuttled a $100mn purchase by Hurricane of a stake in the Caspian Pipeline Consortium (CPC) that would have allowed it to use the pipeline to send its oil to the Black Sea. 'The Kazakhstani Government has behaved in ways that are giving companies pause for thought about the long-term investment climate,' comments Laurent Ruseckas of Cambridge Energy Associates.

Sour climate

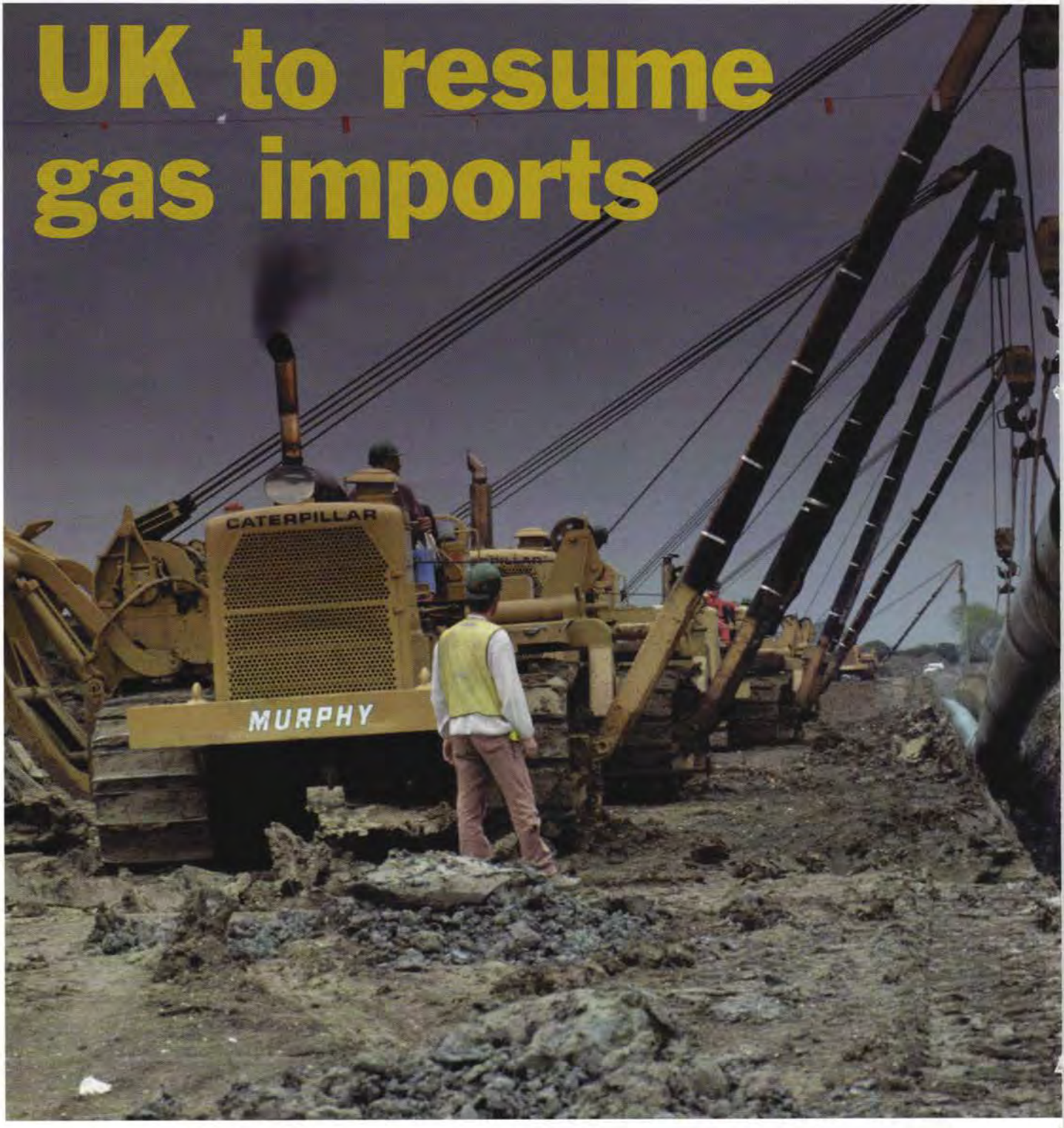
The souring of the investment climate in Kazakhstan comes at a time when the country has averaged 12% growth over the past 10 quarters, with oil accounting for only 15% of GDP and 25% of budget revenues. Kazakhstan is now a net creditor to the outside world and its oil fund – modelled on Norway's and designed to protect against drops in oil prices – has reached $1.65bn, or 13%, of GDP. 'There is a new sense of self-confidence,' says Michael Wilson, a lawyer who heads the European Business Association in Almaty. 'I know of several oil companies that won't invest here because the investment climate is getting worse.'

Looking ahead

Kazakhstani officials have postponed until next year plans to announce how the 100-odd offshore blocks will be allocated, a reflection of deep divisions inside the government. Some favour waiting until local companies learn more about the high-tech business of extracting deep, hot and high-sulfur oil so they can be more competitive. Others argue for at least opening the easier fields which are located above the salt dome, that are under less pressure and have little sulfur content.

'I don't think the large companies that are already here will want to increase their exposure,' commented one person with a broad knowledge of the situation who asked to remain anonymous. 'The few big ones who aren't here yet, like Amerada Hess, Conoco or Unocal, might give it a try but, otherwise, it will be the second-tier ones mostly,' he added.

UK to resume gas imports



After a brief period as an exporter of natural gas, the UK is set to become a net importer once again, with import volumes possibly rising to 90% of demand by 2020, writes *Jeff Crook*. The predicted shortfall in indigenous gas production has led to proposals for a new pipeline from Norway, a second Interconnector, and the resumption of LNG imports after a period of 20 years.

The UK imported up to 30% of its natural gas during the 1980s, largely from the Norwegian Frigg field that is due to be decommissioned in the near future. However, UK gas production has more than doubled since 1990, permitting the export of gas to continental Europe and to southern and northern Ireland. UK Department of Trade and Industry (DTI) figures show that the UK's net gas production rose from 46.3bn cm in 1990 to 108.3bn cm in 2000.

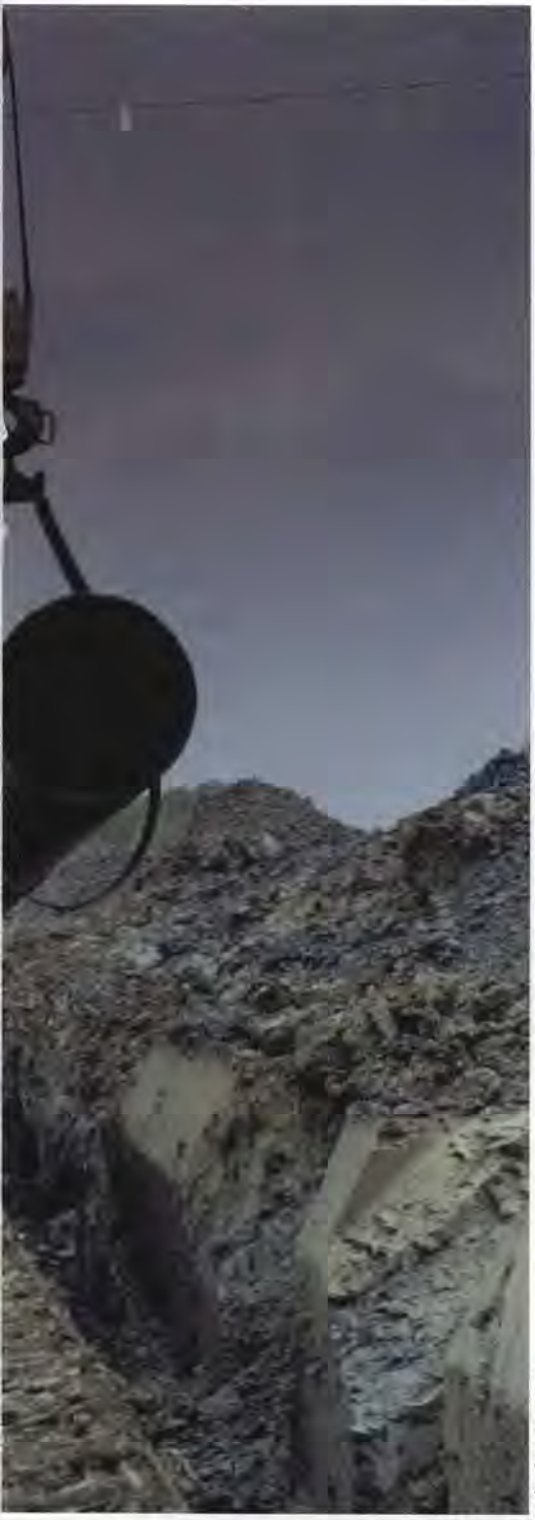


Photo: Transco

This upward trend appears to have reached its zenith, with net UK production falling marginally to 106.7bn cm during 2001 and predicted to fall sharply later in this decade. DTI figures suggest that production will peak at between 110bn and 120bn cm/y during both 2003 and 2004, falling thereafter to between 85bn and 95bn cm in 2007. While there are still hopes of undiscovered fields in newly licensed exploration regions – such as the White Zone between the Faroes and the Shetlands – it now seems probable that the UK will need to import far greater volumes from Norwegian fields, such as the massive undeveloped Orman Lange gas field.

West of Shetlands gas

First gas was landed from the West of Shetland region during May 2002 with completion of the first stage of the £320mn Magnus enhanced oil recovery (EOR) project. The project involves the piping of gas from the Schiehallion and Foinaven oil fields to the *Sullom Voe* oil terminal on Shetland. The gas will be piped from there to Magnus, which features the most northerly platform in the UKCS sector of the North Sea. Here the gas will be injected into the reservoir to flush out an extra 50mn barrels of oil. All the injected gas will eventually be recovered and transported to the UK mainland by the FLAGS system, when the Magnus oil is depleted.

The Magnus EOR project called for a high level of collaboration between 20 different commercial partners – an approach that could allow BP's Clair platform to be developed as a gas hub after it has been installed some 75 km to the west of the Shetland Islands during 2004.

The adoption of lower-cost production solutions continues to play an important role in maintaining production levels in the more mature regions in the North Sea. The most recent trend in this respect is the adoption of long tie-back distances (see *Petroleum Review*, January 2002) that are a feature of the two most recently announced gas/condensate field developments – Shell Expro's Goldeneye field and Burlington Resources' Calder field, part of its Rivers project.

Record-breaking tie-backs

Shell Expro's £300mn Goldeneye project in the Outer Moray Firth gained official government approval on 13 March 2002. Development involves a 105-km multiphase pipeline from an unmanned wellhead platform to new processing facilities at the St Fergus terminal. This tie-back distance dwarfs all previous UK records, although it is far shorter than the proposed 160-km tie-back for Snøhvit in the Norwegian sector.

The Goldeneye facilities will produce around 300mn cf/d of gas on plateau, with start-up towards the end of 2004. In all, the project will exploit 500bn cf of gas reserves and 17mn barrels of condensate. The co-licensees are Esso Exploration & Production UK, Lasmo (TNS), Paladin Expro and Veba Oil & Gas UK.

The Burlington Resources' Rivers development in the East Irish Sea uses a somewhat similar approach. The £150mn Calder project, the first phase of this scheme, involves a normally unmanned facility connected back by a 50-km multiphase pipeline to a new terminal, adjacent to the existing Barrow terminals belonging to Hydrocarbon Resources. Production is forecast to peak at 146mn cf/d, starting towards the end of 2003.

The Calder field is 100% owned by Burlington Resources and has reserves of 250bn cf of gas and 49,000 barrels of condensate. The other four 'Rivers' fields – Darwen, Crossans, Hodder and Ashland – will be produced as spare capacity becomes available in the Calder facilities. The new infrastructure will also open up opportunities for other developments in the East Irish Sea area.

Gas shortfall

But with UK demand for gas growing strongly, it seems unlikely that the UK will remain self-sufficient in gas, despite a host of initiatives such as Pilot. There were modest signs of increasing development activity on the UKCS during 2001, but this seems to have tailed off during 2002 with just two gas field approvals in the first half of the year on top of Goldeneye and Calder. The 10% corporation tax increase announced in this April's Budget could further reduce activity – the UK Offshore Operators Association (UKOOA) warned that these fiscal changes could put 50,000 jobs at risk (see *Petroleum Review*, July 2002).

The predicted shortfall in production has raised fears over the security of supplies, particularly at times of peak demand in severe winter weather. This latter subject was the focus of a report published by the DTI's Joint Energy Security of Supply Working Group (JESS) during June 2002.

The JESS report contains a warning of a possible gas shortage during severe winter weather by 2004/2005 if investment in gas storage/supply infrastructure is delayed. The report goes on to predict that imports could rise to between 33% and 58% of gas demand by 2010, rising to between 88% and 95% by 2020. While this level of imports has created new markets for overseas natural gas suppliers, it has also created the need for an extension to the present transport infrastructure.

Links to Norway

The TotalFinaElf-operated Frigg field straddles the UK/Norway boundary and has been a major supplier to the UK gas market since it came onstream during 1977. The field is located 230 km northwest of Stavanger, Norway, and the development consists of five platforms with a pair of gas pipelines running via a compressor platform, MCP-01, to St Fergus in northeast Scotland. One pipeline is owned by the Norwegian partners and the other by the UK partners of the Frigg field. Both pipelines are currently operated by TotalFinaElf.

With production declining, the field could possibly be taken completely out of service in 2003. While the precise date will depend on reservoir performance, a cessation plan was published towards the end of 2001 for a three-month public consultation period that ended on 28 February 2002. This plan covers the removal of the platform structures, but does not cover the export pipelines or satellites – the Lille Frigg and East Frigg subsea satellites were removed during the summer of 2001 and the Froy platform is due to be removed during 2002.

While the future of the British-owned pipelines is unclear, the long-term future of the Norwegian-owned pipeline has been secured by the Norsk Hydro-led Vesterled joint venture. This consortium undertook a $108mn project to lay a 32-inch diameter pipeline to link the Heimdal platform to the Frigg export line via a hyperbaric tie-in. The resulting Vesterled pipeline system has a capacity of 11bn cm/y and came onstream during October 2001.

Vesterled will play an important role in future Norwegian exports to the UK following the re-development of Heimdal as a major gas hub. Heimdal now receives gas from the massive Oseberg field and will process gas from Huldra. Its satellites include Vale (which started production on 31 May 2002) and the TotalFinaElf-operated Skirne and Byggve fields. Partners in the Vesterled joint venture are Norsk Hydro (operator; 13.86%), Statoil (12.28%), SDØE (Petoro; 60%), TotalFinaElf Exploration Norge (11.48%) and ExxonMobil (2.38%). A web-based reservation system may be found at **www.GasViaVesterled.com**

It would be technically feasible to transport gas from the Norwegian sector to the UK via a link from Statfjord to Brent, and then by the FLAGS pipeline to St Fergus. But FLAGS is already operating close to full capacity, transporting 11.6bn cm/y of gas during 2001. Landing additional volumes of gas at St Fergus would also create a strategic problem, since the capacity of the National Transmission System would need to be increased to transport the extra gas to the UK's main markets in the southeast of the country.

Marathon's Symphony pipeline proposal addresses both the UK's need to import larger quantities of gas from Norway as well as the need to convey this gas to the main market in the southeast. This proposed open-access dry natural gas pipeline would convey some 10bn cm/y to Bacton, with an operating pressure of 160 bar at Heimdal declining to 90 bar at the landfall. Designed to meet conditions which were laid down under the Framework

Agreement between the UK and Norway dated 25 August 1998, the Symphony pipeline could be commissioned in 4Q2005.

The 36-inch diameter Symphony pipeline is to run 675 km from the Brae/Miller complex to Bacton. A further 125-km spur will link Heimdal to Brae/Miller complex. Both Heimdal and Brae have significant gas compression facilities. The pipeline will also pass adjacent to the UK Miller and Britannia complexes that are some of the largest gas processing and transport facilities on the UK sector. Gas could also be routed from Bacton through to continental Europe, via the Interconnector to Zeebrugge.

Marathon says that access to additional North Sea gas supplies will be crucial to help meet growing UK demand for gas which, according to various estimates, will outstrip supply by some 83bn cm/y (8bn cm/d) by 2010. The proposal has won support from UK gas distribution company Centrica and from Callum McCarthy, Chairman of Ofgem, the UK's gas and electricity industry watchdog.

Interconnectors

The 235-km long, 40-inch diameter subsea Interconnector linking Bacton in the UK to Zeebrugge on the Continent has been fully operational since 1 October 1998 and has the capacity to export 20bn cm/y of gas from the UK to the European Grid. It was initially intended for the export of natural gas to continental Europe, but has been operated in the reverse direction on a number of occasions. In the reverse mode its capacity was originally 8.5bn cm/y, but this will be increased to 24bn cm/y following the construction of new compressor facilities at Zeebrugge.

However, there are proposals to construct a second Interconnector, running parallel to the first. The proposal was recently given added impetus following the signing of an 80bn cm gas sales agreement between British Gas Trading, the gas trading subsidiary of Centrica, and Gasunie, the Netherland's gas company, in June 2002.

This was in fact the second major gas import contract announced by British Gas Trading during the month of June 2002. The first involved the supply of 5bn cm/y of gas from Norwegian fields by Statoil. Both these contracts are expected to result in gas supply from 2005. Together, they will meet about 30% of Centrica's gas demand, or more than 10% of current UK demand. Further gas could be supplied to the UK market by sea transport.

LNG imports from Qatar

Although the first commercial cargo of LNG was landed at Canvey Island in 1964 the UK has not imported the product for 20 years. LNG does, however, continue to play an important role in the operation of the UK's National Transmission System. Around half-a-dozen LNG storage sites were constructed by the then British Gas Corporation, at strategic locations around the UK, to supply gas during periods of peak demand.

The import of LNG is likely to recommence from 2006/2007 following the announcement that Qatar Petroleum and ExxonMobil signed a Heads of Agreement (HOA) on 24 June 2002 for the supply of LNG over a 25-year period from Qatar to the UK. The HOA covers the development of two LNG trains which are expected to be the largest ever built by industry (the North West Shelf Venture partners claimed the record last year with a new train capacity of 4.2mn t/y at their Burrup Peninsular, Western Australia, facilities). The feed gas for the new Qatar trains will be sourced from the giant North field, which has proven natural gas reserves in excess of 900tn cf. Qatar Petroleum will have a 70% equity interest in the LNG trains, and ExxonMobil 30%. ExxonMobil says that it is currently investigating a number of potential sites in the UK for the import facility that will receive the LNG.

One of the UK's existing LNG storage facilities is located at the Isle of Grain, on the Thames Estuary, and there is speculation that this could be converted into an import terminal. While the Isle of Grain site seems to be a strongly favoured site, Milford Haven could offer an attractive alternative. Although less well situated for the markets in the southeast of England, Milford Haven has a superb deepwater harbour and offers shorter voyages to and from Qatar.

Transco is meanwhile undertaking a 'Transporting Britain's Energy' consultation process to study the implications for security of supply and the associated options for investment in gas infrastructure in the UK.

Both pictures: Transco carrying out work as part of its £290mn high pressure pipeline construction programme to meet growing UK gas demand
Photos: Transco

Discovery rate low despite increased wildcat drilling

_IHS Energy Group_* has just released its _World Petroleum Trends (WPT) 2002 report_, which highlights and examines petroleum trends in over 150 countries during the year 2001. It also presents key oil and gas exploration and production (E&P) data for the preceding decade (1992–2001). This year's report indicates a disappointing level of discoveries during 2001, despite an increase in wildcat drilling.**

'Although there are various sources and reports on the analyses of global E&P trends within the oil and gas sector, *WPT* represents one of the most consistent and accurate global sources of such information,' according to Mark Elliston, Manager–Economics, IHS Energy Group. 'This is because *WPT* is compiled from data within IHS Energy Group's global databases rather than being a collation of different sources. *WPT*'s summaries and analyses make it an essential reference for anyone needing an understanding of global E&P trends.'

Disappointing year

The *WPT 2002* report shows that in the world, excluding North America, the number of new field wildcat wells (NFW) completed in the year 2001 increased by 73 compared to 2000. Despite this increase, the number of oil and gas discoveries reported fell by 53. The year closed with a total of 173 new oil discoveries and 162 new gas discoveries.

Estimates of volumes of new hydrocarbon discoveries made in the year for the world (excluding North America) was almost 9bn barrels of liquids and 42tn cf of gas. Significantly, of the total ex-North American gas reserves discovered in 2001, 54% were located in the Far East/Australasia.

Total world production of liquids in 2001 remained flat at 26.8bn barrels, while gas production continued to increase to 94.4tn cf. It is worth noting that 2001 was the first year since 1995 when new discoveries of gas were significantly below annual production.

For most regions of the world liquids production showed a slight decrease on 2000. However, a significant upturn in Russian output, together with a smaller increase in Latin American output, brought total production to just over 73.3mn b/d – equal to the figure for the year 2000. Gas production rose in all regions except for Latin America, and increased globally from 252bn cf/d in 2000 to 259bn cf/d in 2001.

In 2001, a number of giant discoveries – over 500mn boe – were made:

- Io (gas) and Titanichthys (gas/condensate) both in Australia;
- Day (gas/condensate) and Kushk (oil), both in Iran;
- Bonga South West (oil/gas) in Nigeria;
- Khazzan (gas) in Oman; and
- Rakushechnoye (gas) in Russia.

Appraisal during 2002 of the Buzzard

Country	Replacement (%) 1997–2001	Replacement (%) 1992–2001	Production (,000 b/d) 2001	Production (b/y) 2001
1 Russia	21	15	7,056	2,575
2 Mexico	12	19	3,560	1,299
3 Norway	37	31	3,414	1,246
4 China	37	56	3,308	1,207.4
5 UK**	21	27	2,503	913.6
6 Brazil	79	188	1,337	488.0
7 Oman	38	33	959	350.0
8 Kazakhstan	889	517	828	302.2
9 Argentina**	22	33	822	300.0
10 Egypt**	32	33	758	276.6
11 Australia*	130	94	733	267.5
12 Angola*	694	447	731	266.8
13 Malaysia*	27	35	788	287.6
14 India**	23	18	782	285.4
15 Colombia**	10	26	627	228.9

Note these figures represent IHS Energy Group's estimate of volumes found in new-field discoveries and exclude any revisions made to fields discovered before 1992.

The production figures are from the BP Statistical Review of World Energy 2002.

** 2001 production below 2000 levels* *** 2001 production below 1998/1999 levels*

Table 1: Top 15 non-Opec producers (excluding North America) in 2001, liquid reserve replacements from new field wildcats 1992–2001

	2001–oil new discovery (bn b)	2001* oil production (bn b)	2001** reserves replacement ratio	2001–gas new discovery (tn cf)	2001* gas production (tn cf)	2001** reserves replacement ratio
Latin America	1.4	3.85	36.4%	4.0	4.76	84.0%
Europe	0.8	3.16	25.3%	2.7	10.33	26.1%
Africa	2.6	2.85	91.2%	5.2	4.37	119.0%
Middle East	1.4	8.11	17.3%	6.7	8.05	83.2%
Asia-Pacific	2.0	2.90	69.0%	22.8	9.88	230.8%
CIS	0.7	2.21	31.7%	0.8	23.91	3.4%
World excl. N. America,	8.9	23.36	38.10%	42.2	61.30	68.8%
of which Opec	3.0	11.02	27.2%	10.9	13.77	79.2%

* BP Statistical Review of World Energy *2002*

** Petroleum Review *calculation*

Table 2: IHS Group estimates of new discovery volume by region and *Petroleum Review* calculation of replacement ratios

oil field (discovered in the UK in 2001) indicates that this might also be a giant field – recoverable reserves are currently put at 400mn boe. In addition, during 2001 first discoveries were made in Mauritania (Chinguetti, oil) and the Faroes (Marjun, oil/gas).

Remaining reserves

IHS Energy Group estimates that remaining reserves of oil and gas liquids stood at 1,112bn barrels at the end of 2001. Gas reserves (conventional gas only) were estimated to be 6,054tn cf. Reserves to production ratios (R/P) for liquids and gas now stand at 41 and 64 years, respectively.

For liquids this shows a slight decrease from 42 years in 2000 to 41 years in 2001, with the overall trend for the decade also being downward, showing that demand for oil continues to outpace discovery. For gas, the R/P figure also shows a decline – from 66 years in 2000 to 64 years in 2001, similarly reflecting the decade's trend and indicating that demand continues to outpace discovery.

Opec reserves of liquids are almost double those of non-Opec countries – 701bn barrels compared to 411bn barrels, giving R/P ratios of 64 and 26 years, respectively.

Reserves replacement

Table 1 gives the percentage of liquids produced which were replaced by new field discoveries in the decade. The countries chosen are the top 15 non-Opec producing countries in 2001. Canada and the US are excluded because comparable data is not available. (These figures represent IHS Energy Group estimates found in new field discoveries and exclude any revisions made to fields discovered before 1992.)

Table 2 shows IHS Energy Group estimates of volumes of new discoveries for the year 2001.

Exploration performance

The number of NFW wells completed worldwide (excluding North America) rose from 895 in 2000 to 968 in 2001. Meanwhile, the number of oil and gas discoveries reported fell from 388 to 335 – hence the success rate decreased from 43% to 35%. However, the number of these discoveries likely to be deemed commercial is not known at this time.

Seismic and licences

In the world, excluding North America, both 2D and 3D seismic activity decreased in 2001 by 24% and 8%, respectively, compared with 2000. Also in 2001, the numbers of new licence awards made decreased by 15% compared with the previous year. However, the number of licences active during 2001 was comparable to that in 2000.

IHS Energy Group (www.ihsenergy.com**) was formed in 1998 following the merger of Petroleum Information/ Dwights, Petroconsultants, PI (ERICO), MAI Consultants and IEDS. Most recently, IHS Energy acquired QC Data's Petroleum Data Services Division and its AccuMap Enerdata Division.*

***The* WPT 2002 *report is available for purchase, on CD or online, from IHS Energy Group. For more information contact* **sales@ihsenergy.com**

Setting the stage for record distance tie-backs

Working in support of the BG-operated Scarab/Saffron subsea development project in the West Delta Deep concession off the Mediterranean coast of Egypt, *INTEC Engineering* of Houston is 'pushing the envelope' of technology to ensure the reliable operation of a long-distance tie-back of well fluids from a deepwater subsea production system to onshore processing facilities.

Above: One of the pipeline end termination sleds (PLET) of the 10-inch diameter infield flowlines about to be deployed in the Scarab/Saffron field. A total of 16 PLETS – one at the end of each flowline – is required. To attach each PLET, the pre-installed 10-inch diameter flowline is lifted to the surface. Once the PLET is attached, the flowline and PLET are laid back down on the seabed

The concession is operated by Burullus Gas Company, a joint venture company comprising Egyptian General Petroleum Corporation (EGPC), Egypt's national oil company; BG-Egypt; and Edison Gas. At a distance of 56 miles, the Scarab/Saffron subsea tie-back is claimed to be the second longest tie-back in the world, with Shell's Mensa tie-back reportedly holding the record at 68 miles. First gas from Scarab/Saffron is targeted for 1Q2003.

INTEC has specifically designed the West Delta Deep subsea pipeline and production system to accommodate the future subsea tie-in of BG's recent deepwater discoveries in the Simian, Sienna and Sapphire fields, all located nearby the Scarab/Saffron development. With the tie-in of Simian/Sienna scheduled for summer 2005, BG and its partners will announce an industry first with a long-distance tie-back of 70 miles via a controls platform, reports Richard Scarr, BG Project General Manager for the Simian/Sienna development. The two fields will provide feedstock for Egypt's first liquefied natural gas (LNG) export facility, with a capacity of around 600mn cf/d of gas. The Sapphire field is planned for tie-in to the West Delta Deep system in 2006.

Risk management

The vision for this 'dynamic endeavor', according to INTEC President Willem Timmermans, rests with BG and its partners. 'BG and its partners are demonstrating the value that comes from challenging conventional strategies while using proven technologies for a region with very little infrastructure or history for deepwater offshore field development.'

Peter Roberts, INTEC's Vice President of European Operations, echoes this point, explaining that from the outset, BG and its partners have recognised the importance of a systems approach and have valued flow assurance as a tool in managing operational risk. 'Effective risk management is the cornerstone of flow assurance technology. With the operator's embrace of analytical modelling in the early planning stages of Scarab/Saffron, BG and its partners are helping the deepwater subsea industry "come of age", allowing INTEC to illuminate the operator's perspective through intelligent application of flow assurance technology.' Roberts' London-based division is assisting in the front-end engineering for the Simian/Sienna development. 'BG and its partners are demonstrating their

reliance in the ability of facility system planners to predict parameters for safe, efficient operations – under a wide range of operating conditions – based on system simulation,' he continued.

Timmermans adds that the collaborative effort for the Scarab/Saffron project and the entire West Delta Deep development prospect is delivering a deepwater subsea system in frontier territory within budget and on schedule.

Deepwater management contractor

For the Scarab/Saffron project, Burullus Gas contracted INTEC in a consortium with Bechtel to act as the Deepwater Managing Contractor (DMC) for the complete implementation of the Scarab/Saffron development, which includes both onshore and offshore activities. INTEC's responsibility within the DMC is for the offshore portion of the project, while Bechtel is responsible for overall project management and engineering of the onshore gas processing facilities. Construction of the onshore plant is currently under way near Alexandria.

Large-diameter pipelines

The approximately $700mn development calls for the installation of two large-diameter subsea pipelines, one 24-inch and one 36-inch, from the Scarab/Saffron development wells north of Egypt's Nile Delta, to the newly built shore facilities.

The pipeline export system, currently under construction, will have a design capacity of approximately 1,800mn cf/d of gas. For the first four years of Scarab/Saffron production, Burullus will use only the 24-inch diameter pipeline, bringing the 36-inch diameter line into operation as reservoir pressures decline.

Oversized to acommodate the initial Scarab/Saffron development, the pipeline system will enable the planned expansion of the West Delta Deep development initially with a tie-in of the Simian/Sienna fields. While a relatively new occurrence in subsea construction – in particular for these long distances – subsea tie-backs are expected to become more prevalent as the industry continues deepwater development.

Scarr envisions an initial six wells for development of the Simian/Sienna fields, eventually increasing to 18 wells in water depths up to 3,600 ft. The Simian/Sienna wells will be monitored via a shallow-water controls platform, with hydrocarbons brought to shore via the Scarab/Saffron export pipelines.

Contracting strategy

'We're using deepwater subsea innovations such as those applied in the Gulf of Mexico, together with new contracting strategies to bring gas reserves to the marketplace and to increase shareholder value, states Scarr. For the Simian/Sienna and Sapphire developments, he explained that BG and its partners plan to use an EPIC (engineering, procurement, installation and commissioning) strategy for the total offshore scope. For development of the onshore terminal expansion, an EPC strategy is planned. The LNG plant will be built by other contractors.

'One of our biggest challenges for frontier projects such as these is getting a successful contracting strategy in place to manage the many companies, cultures and special talents needed to achieve the project goals. By using an integrated management team on the Simian/Sienna project, we believe we can build on the lessons learned on Scarab/Saffron.'

Work offshore

INTEC is currently completing its work on the offshore elements of the Scarab/Saffron development. As DMC, its responsibilities have included:

- front-end engineering design (FEED);
- preparation of ITB documents (ITBs);
- contract award of all service and supply subcontracts;
- management of all suppliers and contractors; and
- overall project execution through commissioning and first gas.

Following the development of a detailed front-end design concept and plan, INTEC recommended larger bid packages to minimise mobilisation and

One of the in-field flowlines for the BG-operated West Delta Deep subsea development is readied for abandonment. A slack wire loop is attached to the abandonment and recovery head to facilitate flowline recovery for attachment to the pipeline end terminal

interfaces while ensuring the best possible combination of equipment suppliers. This plan resulted in the formation of various consortiums of subcontractors to deliver equipment packages that would meet the project needs in terms of design flexibility, schedule and cost, says Uri Nooteboom, INTEC's Vice President of Offshore Projects. 'The pieces have to "fit together" to ensure an effective interface of subsea hardware and controls. We tried to create bid packages with sufficient design flexibility so that the best possible combination of suppliers would be able to match their equipment.' For example, this bidding strategy resulted in a successful bid from EDDC, an alliance of Cameron, the project's supplier of subsea hardware trees, and Kvaerner, which is providing the subsea control system. In another case, INTEC separated pipe supply from the installation contract to facilitate the timely and economic purchase of large-diameter pipe under the correct market conditions, reports Nooteboom. The DMC also incorporated as much local content as possible in developing the bid packages.

'This process requires a lot of communication and management interface through the development and installation phases. We can't assume everyone knows what to do.'

Scarab/Saffron development

The development scheme of the Scarab/Saffron calls for the tie-in of an initial eight subsea wells in waters up to 2,040 ft deep. With the addition of a third manifold and associated piping and umbilicals, the initial installation will handle up to 12 wells, with a maximum of 20 wells contemplated over the life of the field. Provisions for more subsea power may be required for this expansion, in addition to requisite manifolds, piping and umbilicals.

The initial wells are tied back with 10-inch diameter in-field flowlines to the two manifolds – four wells each – in 1,360 ft of water. Two 20-inch export lines link the manifolds to a pipeline end manifold (PLEM) – where Burullus Gas will tie in the future fields – in somewhat shallower water and nearer shore. The dual large-diameter pipelines connect the PLEM to the shore facilities. Jumper spools connect the flowline and pipeline flow paths. Onshore, production is received in a limited-capacity, 5,000-barrel slug catcher before fluids are sent to the gas plant for processing.

BG and its partners anticipate a 'normal' minimum production rate of 300mn cf/d of gas for Scarab/Saffron, with a maximum rate of 600mn cf/d of gas possible to accommodate consumer demand. In addition, the system may be required to operate at an 'abnormal' minimum production rate as low as 150mn cf/d.

Flow assurance

This variation in production rate – together with the need to design for total system capacity and future tie-ins that are expected to triple the maximum Scarab/Saffron production rate – presented the DMC with a number of flow assurance issues for the optimum operation of a large-diameter, long-distance tie-back system emanating from a low-pressure reservoir, advises Tom Choate, INTEC's Project Systems Manager for Scarab/Saffron.

'Flow assurance and operability under these changing conditions are critical. We've met the challenge, designing a tightly integrated system that is versatile and robust, using fit-for-purpose equipment to ensure reliability and simplicity of operation.'

Choate adds that the flow assurance and operability design is integrated with the design and operation of the wells, the reservoir, the subsea equipment, the control system, the pipeline system and the onshore facilities. 'Our common design basis covers every aspect of the project, with effective interface between the offshore and onshore equipment, including the design, supply and installation of all equipment and pipelines.' The wide range of production rates from the system – varying between 8% and 100% of the total system capacity – has demanded a lot of front-end planning and innovation to avoid unacceptably high transient liquid flow rates within the pipeline system.

Elements of the flow assurance strategy include effective use of hydrate inhibitors, including glycol, which the operator will inject continuously into each subsea well, and the installation of state-of-the-art production monitoring systems to accommodate the varying production rates and gas plant requirements.

Operating strategy

According to Choate, the operating strategy focuses on prevention, detection and remediation of hydrates and the control of liquid surges to avoid unnecessary gas plant disruption or downtime.

Given the operational requirements for the Scarab/Saffron pipeline system, INTEC conducted detailed studies, including transient multiphase hydraulic models to determine the boundaries and limitations of the system's operating envelope for the life of the field. The boundaries, advises Steven Cochran, INTEC's Flow Assurance Manager on the project, include minimum operating rates, maximum ramp-up and start-up rates and maximum water content. 'Liquids management has been our biggest challenge, with a lot of concern for the accumulation of liquids in the pipelines at low production rates, as dictated by consumer demand.'

To address this issue, INTEC has developed ramp-up procedures to ensure that the capacity of the onshore slug catcher and liquid handling system is not exceeded. Additional procedures include the management of system shutdowns, hydrate control and complete system optimisation, within the parameters of the production profile and varying gas rates.

Project status

Manufacture of the subsea equipment and umbilicals for Scarab/Saffron is well-advanced and pipeline construction has begun, with INTEC managing detailed planning and installation of the subsea equipment and pipelines. INTEC's project management has included the supervision of approximately 20 international and in-country subcontractors and suppliers, including Stolt Offshore and Petrojet Marine Services (PMS), Egypt's national offshore installation contractor.

Stolt Offshore is subcontracted to complete the subsea installation. Its *LB 200* derrick/lay barge has completed the installation of the large-diameter export lines and installation of umbilicals and infield connections is progressing.

PMS performed the concrete coating of the large-diameter pipe and provided support for the shallow-water portion of the project using pipelay barge *Petrojet 12* for the shore approach and to lay the large-diameter pipe.

The big picture

The Scarab/Saffron project, according to Timmermans, has required a lot of forward thinking – the ability to 'see the big picture' in terms of the complete system (its components and interfaces) to ensure the safe, reliable operation of a gas pipeline system under varied and changing economies. 'We're pleased to be a part of such a world-class project – one that will pave the way for more deepwater subsea completions and even longer subsea tie-backs in the quest to deliver hydrocarbons to emerging countries.'

Jeff Pym: from BP to the IP and beyond

IP Director General *Jeff Pym* will be departing 61 New Cavendish Street at the end of this month to concentrate on pastures new. *Petroleum Review* asked him to look back on his career to date and also what he can see in the stars for his future.

Photo: Jim Four

Q: Prior to joining the IP, you travelled extensively throughout the world as a BP senior oil executive before becoming President of BP Portugal. What do you feel have been your major achievements at BP and what are your happiest memories?

A: On the whole, the happy memories in my career are far too numerous to mention. I have made friends around the world, I have experienced to the full what major world cities have to offer and had plenty of fun both at work and socially and I will always treasure these memories. In fact, even to this day, I keep closely in touch with a very wide network of ex-colleagues from BP.

As far as the major achievements during my time at BP go, three things stick out very firmly in my mind. The first and probably the biggest was the fact that I was the last negotiator of the NorthWest Shelf LNG project and it was under my negotiation that BP achieved one of the most successful LNG contracts in history. And certainly one of the most flourishing in BP's history – selling NorthWest Shelf Australian LNG to all the Japanese gas and power utilities – 6mn tonnes a year! It was a big contract and I got a huge amount of satisfaction out of achieving it.

The second was my involvement in what seems a much smaller business, but one over which I had complete control, it was the European LPG business. The reason that it was so satisfying was that when I took it over, in the late-80s, the profitablity in the business was about £8mn a year. By the time I'd left that business in 1996, the profitability had gone up to well over £80mn/y and was still rising. The scope of the business had started of with four or five countries reporting to me and ended up with 12. Therefore increasing the scope and profitability in the LPG sector was an extremely satisfying achievement.

The third of my BP satisfying experiences was in Portugal. One of the main responsibilities I had was to implement a European joint venture between BP and Mobil – which was twice the size of BP in Portugal. Yet we managed to unify the culture and by the end of my tenure in Portugal, it was running very well.

So, happy times!

Q: Do you feel lucky and privileged to have had such life experiences?

A: Absolutely! I couldn't tell you how lucky I am. I have spent the best part of twenty years effectively travelling the world. I have seen parts of the world that someone from my background could not have done 30 or 40 years ago, other than through work. It has been a privilege as well as a pleasure and an excellent opportunity to grow personally and see and do things that I could never have done on my own.

Q: The three years that you have been Director General have presented the IP with the millennium technological challenge. What do you think has been the key features in bringing the Institute into the 21st century?

A: The past three years have been a turbulent time in many respects. The question immediately brings to mind the euphoria of the dotcom boom and everything that went with it. The IP went in the same direction to a small extent, because we have put into place a completely new, completely redesigned website which is far more capable than anything the IP has ever had before. The dotcom bubble has burst but our website has not. It goes from strength to strength. Now, virtually everything that can be produced by the IP on paper, or by other means, for example, CD-Roms etc – is on the website. All new products are going up on the website. We intend

in the 4Q this year to launch the transactional side of the website so we can actually sell our products online.

On a more general note, the obvious challenge and achievement is the one that is leading to my departure – the merger with the Institution of Gas Engineers and Managers and the Institute of Energy. It sounds rather perverse to say that my most successful achievement is the impetus for my leaving. But the logic behind this is that the Chief Executive Officer (CEO) of a new body really needs to be somebody that is neutral – certainly not the Director General (DG) of the largest of the three merging bodies, quite simply, because it looks too much like a takeover. That said, the achievement itself is absolutely life changing for all three institutes. We will end up being part of a body that has a Royal Charter, is twice the size of the IP alone. A body that is able to issue Chartered status to its engineers and will provide members and the general public with a much broader range of products and services that would not have been feasible before – a body that straddles the whole of the energy industry.

Yes, it has been a challenging time and I think we as an Institute have risen very well to these challenges.

Q: The current economic and political climate is difficult for the oil and gas industry and also for the IP. What economic variations can you see for the industry and the IP in the near future?

A: The economic and political climate for the oil and gas industry is always difficult. I do not remember a time throughout my career when we weren't saying that things were not difficult. The challenge is not the difficulty itself, it's the response one makes to that difficulty. Because, unless we are responsive, unless we change with the needs of our customers and the public at large, then of course times will be increasingly difficult. I believe as an Institute we respond very well to these challenges and I think that we can continue to do so even more effectively as we go into the future.

As far as the particular difficulties the oil and gas industry is likely to face in the future, the obvious one is environmental change and environmental challenges and its quite right that the oil industry does respond to those. The others issues are perhaps the ever greater demands of the public in asking for value from the oil and gas industry. That means that overall costs must be kept under close control and that includes costs of very valuable contributions to the likes of the IP.

Added to these, the general uncertainty, particularly in times like we see at the moment – political uncertainty in the Middle East and uncertainties in the international stock market and the international money markets. It's a challenging time as always.

Q: Can you see the merger as a blueprint in paving the wave for other Institutes to consolidate in the future?

A: Yes, I am absolutely certain this is the way forward. One of the things which struck me before I came into the IP [while I was actually still at BP] was the degree of fragmentation that exists in the area of institutions and associations. There are, in the UK, hundreds of organisations in fields related to the energy industry. If you multiply that by the countries in the world, there must be enormous numbers of such Institutes. Each of them offer excellent services and products and each of them have had a very good reason to exist.

However, in today's world of efficiency, where the companies in the energy industry that we are representing are themselves merging, I can see no reason why we should not, at least, work closely together if not completely merge. I think the model for the future of all institutes must involve alliances and mergers.

Q: At present, the IP has not appointed a new DG/CEO. With the ongoing tripartite merger, the new Institute will be profoundly different to the one you leave behind. What kind of characteristics do you think your successor will require to define and build the new organisation?

A: This is probably the most difficult question to answer. Once the IP does enter into a merger with the other two bodies, the characteristics of the individual are going to have to be carefully selected. They will of course involve a substantial amount of diplomatic skill, because the three bodies all have proud traditions. The new DG/CEO will eventually go into the role of CEO-designate and will have to keep all of the constituencies very much involved and engaged in the work of the new organisation.

In addition the person involved must have all of the general management skills of a DG and have a fairly extensive understanding of the energy industries, and in general terms, be able to achieve a fair level of credibility with our colleagues from those industries. Other qualities required? Well, we are trying to recruit lots of young people into all three of the institute's at present and we will continue to do so in the merged organisation. I have no doubt that the individual selected must have a real affinity and credibility with young people.

The other quality is someone with a firm understanding, not only of the energy industry, but of the institutional world. That would be a great advantage. The reason that I say this at this time is because the process of merging and the process of making a new entity work as an institute is in itself going to be a skill. A combination of those characteristics, diplomacy, knowledge, skill within the institutional sector and the affinity with all categories of membership, particularly the young, are the qualities I would look for.

Q: I am sure you have many happy memories of your time at the IP. Is there a particular favourite?

A: There are so many times I could mention. There are an enormously large number of occasions that I have found satisfying. Such as the delivery of a successful IP week and the speakers turning up at an IP dinner through to social events with my colleagues at the IP. These events have ranged from bowling nights in the West End through to some splendid Xmas dinners and the Xmas lunches we've had down in the IP canteen. Branch meetings and Branch dinners have also provided many happy memories – and photos – some good and some hidden away! There have been plenty of happy times and there has been many a plate and many a glass I have shared with my colleagues at the IP which I will always remember with great affection.

Q: What are your immediate plans for the future?

A: Well my last day in the office is the 26 September and on the 28 September I am actually boarding a plane and my wife and I are going for seven weeks on a world tour. Principally, spending time in Australia to visit my daughter, who has been living there for the last year. En route we intend to fly to Australia via all points east and return to the UK via all points west. Although I am melancholy to be leaving the IP, I am really looking forward to the trip.

Beyond the immediate future, I wish to go back to study and also to get involved in some personal business activities with colleagues and relatives. Apart from that I still intend to stay in touch with the oil industry and I am hoping to set up as a consultant.

Q: What do you wish to study?

A: I've had a lifelong fascination with astronomy and I know just the smallest amount about it. But nevertheless I am still fascinated by the stars. One of my intentions in retirement is to go back and study astronomy and astrophysics in some form. It will be of absolutely zero value to any future employment but will be personally very satisfying!

Emma Parsons

Coping with high-pressure and high-temperature environments

Miles Ponsonby and *Nick McClellan*, both of Halliburton, and *John Ligertwood* of TotalFinaElf*

present an overview of coiled-tubing (CT) innovations and perforating-tool enhancements that have been developed in recent years to meet the challenges of coiled-tubing perforating in high-pressure, high-temperature (HPHT) well environments in the North Sea, specifically on TotalFinaElf's Elgin and Franklin fields.

A number of criteria and standards have been put in place for coiled tubing (CT) used on high-pressure, high-temperature (HPHT) applications following experience gained on TotalFinaElf's Elgin and Franklin fields. These include:

- detailed inspection of nonconformance;
- calibration for final mill inspections;
- inspection of all butt and bias welds;
- a mill 'final inspection' of the tube after a hydrostatic test at 90% specified minimum yield strength (SMYS) has been initiated;
- for field inspections, a field electromagnetic inspection device is required with the capability to detect and document string abnormalities; and
- procedures for the cleaning, plus inspection, and storage of tubing reels returning from work sites.

Pressure-control equipment

All pressure-control equipment used in CT HPHT operations underwent shore trials prior to the Elgin and Franklin drilling programme. The equipment was component pressure- and heat-tested in two groups. The scope of these trials consisted of qualifying a complete package of pressure-containing equipment by simulating the offshore well conditions.

The entire stack was assembled on a rig test-site and pressure-tested to maximum working capabilities. The coiled tubing was run under simulated pressure conditions to verify the actual offshore procedures. These practice runs also provided valuable information on the performance of the wireless casing collar locator (WCCL) and qualification of the autolatch procedures. The autolatch facilitates the deployment and removal of the guns under pressure without the constraints of riser height. The autolatch/release connector is designed to join gun assemblies and enables the gun sections to be run in and out of new or producing wells without killing the well.

In addition, the trial led to the development of enhanced safety procedures for HPHT operations.

- Improvements were made to the working order of the equipment.
- All equipment was checked for suitability and compatibility in operational configuration.
- Communication protocols were established for a safer working environment.

Surface equipment

For the project 4 $^{1}/_{16}$-inch 15k metal-to-metal sealing riser sections were manufactured to maintain a uniform internal diameter (ID) of 4 $^{1}/_{16}$-inches for the coiled-tubing deployment equipment. In addition, a hydraulic dual-cutter valve-block was built for installation above the Christmas tree.

One of the most time-consuming tasks of deployment involves retesting of the riser during deployment and reverse-deployment. An HPHT sub was therefore developed and manufactured to test only the seal, not the entire riser.

During deployment, the riser is held in tension by the blocks and this load is transferred through the modified injector frame. The frame also supports the weight of the riser and well-control equipment when moving from well to well. The injector has a tubing guide fitted between the chains and the stripper to avoid the risk of tubing extrusion when snubbing against high pressure.

The coiled-tubing strings for HPHT operations are relatively heavy, generally weighing around 26 tonnes excluding the transit reel (34 tonnes total weight). The coiled-tubing reel and spreader base are manufactured for separate transport and installation to reduce the size of transit loads. The reel was re-engineered with the following features to qualify it for HPHT work:

- The reel shaft was designed for 15,000-psi operations.
- A high-pressure swivel was manufactured and qualified for 15,000-psi operations.
- A reel impact shield was included to contain the coil should the tubing break during HPHT operations.

Video cameras were also built into the coiled-tubing systems to monitor critical moving parts and provide more flexibility in equipment 'spotting' and operational safety.

Downhole tools

A real-time wireless coiled-tubing casing collar locator (WCCL) was used to allow accurate positioning of the bottom hole assembly (BHA) on depth. The major advantage is that electric line inside the coiled-tubing 'stiff wire' is not required.

Memory-correlation tools were also developed and qualified to supplement the WCCL during correlation runs and to provide a confirmation of perforating depth. The system was assembled in modular sections, tested to 350°F (177°C), then assembled as a complete unit.

In order to improve the 2.875-inch outer diameter (OD) motor head's capabilities in an HPHT environment, the load ring width and cross-sectional areas were increased. Additionally, body seal diameters were reduced to raise burst pressure, and thread lengths were made longer to increase stripping loads.

Perforating and deployment

The following tests were conducted at the manufacturing and testing facility in Alverado:

An offshore coiled-tubing operation

A coiled-tubing reel and impact shield

- *QC Testing of Charges in Cement.* 2 $^{3}/_{4}$ and 2 $^{1}/_{2}$-inch PYX Super DP charges were shot into 7-inch, 42 lb/ft chrome casing and 5,139-psi compressive strength cement targets.
- *API Section III Test.* A Section III test was conducted at 430°F for 30 hr for an assembly consisting of a 2-inch mechanical firing head, and two 6 shot/ft, 60° guns with PYX SDP charges.
- *Gun System Seal Test.* This test was conducted at 16,000 psi and 400°F for 30 hr. After 30 hr, the pressure was increased to 20,000 psi for 5 min to simulate actuation of the firing head.
- *Gun System Explosive Test with TDF Firing Head.* The TDF firing head was used in the test conducted at 18,000 psi and 430°F for 30 hr. After 30 hr, the pressure was increased to 22,000 psi to actuate the firing head. After the assembly was dismantled, the sealed initiator (autolatch) was tested to 20,000 psi from below.
- *KV II System Test.* The KV II firing head was tested in 2.2-sg XPO7 mud. The firing head was subjected to a pressure of 18,000 psi and a temperature of 400°F for 30 hr. After 30 hr, the firing head was actuated by applying 22,000-psi pressure.

Operational learning

A number of problems were encountered during the project, requiring various modifications and innovations, some of which are outlined here. For example, on the first wells, paint flags were used in conjunction with the other depth-correlation methods. However, it was recognised that the accuracy was questionable – on one well a 6.8-metre difference was recorded.

Seal problems leading to several misfires were also experienced on one particular well where 2 $^{1}/_{2}$-inch guns were used. This problem was rectified by changing the seal combination in the gun assemblies.

In addition, two modifications were made to the autolatch:

- A collet mandrel was modified for deeper recess to avoid a sheared pin sticking to the outer sleeve and preventing the autolatch from functioning.
- Latch fingers and stinger cap upper flats were both profiled from 30° to 45° to improve the latching/unlatching reliability.

String monitoring was also conducted during operations. String fatigue was updated using a real-time data-acquisition software (CT Win) in combination with Cerberus, a software application that calculates updated string fatigue information.

Investigation of O-ring compounds resistant to Caesium/Potassium formate with the ability to seal at high/low temperatures and pressures yielded several that retained their physical properties after a seven-day immersion test at high temperatures. Testing for a single compound O-ring system for the operations continues.

Contingencies

Several coiled-tubing cutting operations and extensive testing of explosive coiled-tubing cutters were performed. Tests included the use of a 1-inch OD explosive cutter, rated for 15,000-psi (1,034-bar) pressure and 400°F (204°C) temperatures, to successfully cut 1.75-inch. OD QT-1000 coiled tubing.

To qualify this method, a workover riser/coiled-tubing pipe-freeze test was carried out. A length of 1.75-inch x 0.188-inch coiled tubing was inserted in a 4 $^{1}/_{16}$-inch, 15-M riser (7-inch OD) and a CT blowout preventer (BOP) stack filled with water and a tension of 42,000 lb applied to the tubing prior to pressurising. Methanol as well as solid carbon dixodie (CO_2) gave the best freeze system, freezing the riser section and coiled tubing to –109°F in approximately 1 hour. An initial pressure of 3,500 psi was applied inside the tubing during the tests. The riser's fracture and fatigue properties are currently being considered for suitability under freezing in a dynamic environment.

Conclusions

Despite some technical problems, all of the wells were safely perforated with the required depth accuracy. The selected method of under- or on-balance perforating led to improved well performance and the following conclusions were drawn.

- Extensive planning before, during, and after coiled-tubing operations in HPHT environments is essential.
- A high level of quality control during the manufacture, operation, and maintenance of coiled-tubing equipment and tools is important.
- Project management should include team-building workshops for experienced CT crews and their customer counterparts to participate in exercises that create a safe and efficient working environment with a high level of communication.
- Testing and operational experience should be documented and analysed to help plan and direct future applications and best practices recommendations.

**The authors would like to thank TotalFinaElf, Halliburton, Quality Tubing and Expro for the support and contributions of key operational and engineering personnel within their organisations.*

Elfab first to satisfy pending ATEX Directive

Pressure safety systems provider Elfab has enhanced its Flo-Tel switch range to meet the European ATEX Directive (Atmospheres Explosibles) 100A. The Directive means that 'the switches of many manufacturers currently used to indicate that bursting discs and bursting panels have operated will be excluded from use,' points out the company.

Elfab believes that its Integral Flo-Tel switch range is the first to be awarded the highest level of protection for electrical equipment intended for use in explosive atmospheres.

Most alarm systems are activated via fluid flow created after a bursting disc has operated. In contrast, Integral Flo-Tel is installed on the vent side of bursting disc and bursting panel devices and is activated by the operation of the disc or panel. During operation, a magnet arcs away from its rest position, removing the magnetic field from a sensor, and comes to rest in a position which no longer influences the sensor. This causes the sensor to switch to its fail-safe condition of an open circuit and a latched alarm condition is the result.

After operation, the bursting disc or panel, complete with magnet, is the only part of the Integral Flo-Tel that requires replacing. The sensor's cable can be easily withdrawn from the bursting disc holder, prior to the holder being removed from the flange, and does not need to be electrically disconnected from the control system, reports the manufacturer.

The new switch is stated to offer an extended temperature range and improved environmental protection to IP67, and is suitable for use in both chemically aggressive and hygienic environments.

Since all of the switch's fragile electrical parts are situated outside of the pipe or vent bore, they are subject to much higher levels of mechanical protection than more traditional warning systems, comments Elfab, and therefore benefit from a greatly reduced potential for spurious alarms.

The rated burst pressure of the complete disc or panel assembly will not be affected by the addition of the magnet, and the design ensures that fragmentation of the assembly should be prevented, state the company.

Tel: +44 (0)191 293 1206
Fax: +44 (0)191 293 1200
e: **sales @elfab.com**

Online system for petroleum analysis upgraded

Phase Technology's range of online petroleum analysers, available from Sartec, has been upgraded to provide a fully integrated and virtually maintenance-free system for the continuous measurement of cloud, freeze and pour point.

The systems are self-contained and do not require an external chiller, water supply or an external PC. Each system consists of a process analyser, based on the measurement technology of the ASTM approved laboratory analyser, and the Aquanot – a self-cleaning sample conditioning unit. This combination is claimed to ensure reliable delivery of a dry sample to the analyser whilst almost eliminating regular maintenance – no calibration is required either.

The process analyser incorporates a touch-screen display, which provides an intuitive user interface and a graphical display of the test results. The processor has a 4-20mA current loop output for test results and contact switches for alarms. A MODBUS interface is also available as an option.

Tel: +44 (0)7000 727832
Fax: +44 (0)7000 885511

e: sales@sartec.co.uk
www.sartec.co.uk

Stainless steel valve for pneumatic and hydraulic use

The new enhanced stainless steel control valve – the 22000 Series – from AMOT Controls has been designed for use with both pneumatic and hydraulic control systems. The new range is reported to be more robust and offer a longer service life than previous models, with a simple construction that enables easier servicing and maintenance.

A ported exhaust feature allows the same valve to be used in both hydraulic and pneumatic applications. All gases or hydraulic fluids are captured and vented through an internal exhaust port. This is reported to increase versatility and reduces the inventory required by system integrators and end users that have traditionally required separate hydraulic and pneumatic control valves.

An O-ring spool eliminates the possibility of incorrect assembly in the field, while the valve maximum operating pressure of 10 bar satisfies all anticipated applications, states the company. The unit's pilot piston has been designed with a smaller surface area, providing a 50% reduction in the force required to manually shift the valve compared to the previous design. Typical applications include wellhead, compressor, pump and safety control systems.

Tel: +44 (0)1284 762222
Fax: +44 (0)1284 760256

Updated range of relief valves

Hoke Gyrolok compression tube fittings have been selected by Birkett for the latest models in its range of pilot-operated safety and thermal relief valves to ensure the highest standards of quality and reliability, reports Harrow-based Circor Instrumentation. The Gyrolok fitting features a controlled ferrule drive to improve remake life, a butt-seal to provide a secondary seal and a Gyrogage which is claimed to ensure proper fitting make-up.

The Birtkett Safeset pilot-operated valve is available in a variety of sizes ranging from 1-inch x 2-inch to 8-inch x 10-inch. Pressure ratings up to 450 bar and temperature ranges of –40°C to 260°C are also available.

Tel: +44 (0)20 8423 0113
Fax: +44 (0)20 8423 5933
e: **circor@circor.co.uk**

Protective coatings

International Protective Coatings has added a new ultra high solids epoxy barrier coating – Interzone 485 – to its product portfolio. The most heavy duty product in the range, the coating is claimed to provide improved cost/square metre/year life for assets exposed to the harshest environments.

The coating is reported to be easy to apply, with good resistance to damage during trench backfilling and excellent where high build specifications are required – it has a high solids rating of 99%.

Interzone 485 can be applied to hot surfaces, such as cathodically protected oil or gas pipelines, and will even cure underwater, claims the company.

Tel: +31 26 366 4433
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If you would like your new product releases to be considered for our *Technology News* pages, please send the relevant information, together with pictures, to:
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61 New Cavendish Street, London W1G 7AR, UK
or e: petrev@petroleum.co.uk

API/IP 1581 Specifications and qualification procedures for aviation jet fuel filter/separators

5th edition July 2002

The new edition of this important joint API/IP specification has been prepared by an international group of filtration experts in response to requests from element manufacturers and civilian and military users. It provides minimum performance and mechanical requirements and testing and qualification procedures for filter/separators used in systems that handle aviation jet fuel.

The most significant amendment to the previous edition is the modification of the test fuel chemistries for Category C, M and M100 testing.

This publication is an essential reference for all those involved in the supply of jet fuel to aircraft, and also those involved in the design, manufacture and supply of filter/separator elements.

ISBN 0 85293 371 1 £65.00 25% discount for IP Members

Petroleum road tanker drivers: Evaluation and control of exposure to noise

May 2002

Petroleum road tanker drivers may be exposed to moderate, but potentially significant, levels of noise exposure whilst at work.

There are several noise sources which may be controlled in any particular situation and these include the cab radio, the driver's window, the cargo pump used to offload product from some road tankers, noise exposure at the delivery point, and noise exposures during the pre-driving vehicle inspection. Additionally, programmes for information, instruction and training for the use of hearing protection devices are also identified as being important in the control of exposure.

This new document reviews the health effects of noise and occupational exposure data from several companies. It also reviews sources of noise and suggests methods to reduce exposure to as low as is reasonably practical.

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Predictions of minimum spark ignition energy and quenching distances for CH_4/H_2 and C_3H_8/H_2 mixtures with air

This report was commissioned to determine when gas streams containing hydrogen as a component should be treated as hydrogen for the purposes of specifying electrical equipment.

It has long been recognised that the particular properties of hydrogen require very specialised electrical equipment to be used to prevent ignitions. Many industrial gas streams contain hydrogen mixed with hydrocarbon gases. Engineers have to decide whether equipment designed for hydrogen duty is needed (i.e. gas group IIC) or whether equipment designed to the less stringent standards for hydrocarbon gas groups IIA or IIB is suitable.

This report provides the justification for the cut-off value of hydrogen concentration used when specifying hydrogen certified equipment (gas group IIC) for gas mixtures, referenced in the IP Model Code of Safe Practice Part 15: Area classification code for installations handling flammable fluids (see page 42).

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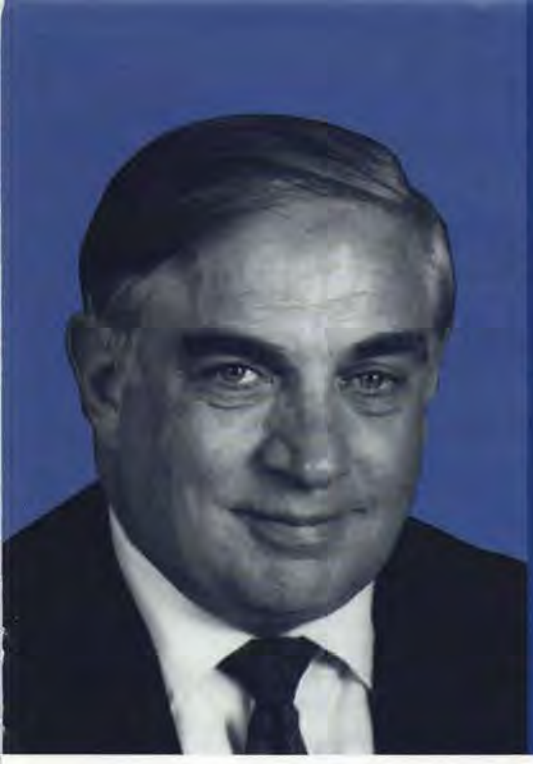
Available for sale from Portland Customer Services, inc. postage in Europe (outside Europe, add £6.00 per order). Contact Portland Customer Services, Commerce Way, Whitehall Industrial Estate, Colchester CO2 8HP, UK. Tel: +44 (0)1206 796351. Fax: (0)1206 799331. e: sales@portland-services.com



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Tuesday 8 October 12:30-14:30

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Guest of Honour and Speaker

Peter Sutherland, Chairman, BP Plc

Tickets are limited. Book now to avoid disappointment.

Peter Sutherland is non-executive Chairman of BP Plc (1997-current). He is also Chairman and Managing Director of Goldman Sachs International (1995-current). Of Irish nationality he was born on 25th April 1946 and was educated at Gorzaga College, University College Dublin and the King's Inns. He currently serves on the Board of Directors of Investor AB, Telefonaktiebolaget LM Ericsson and the Royal Bank of Scotland Group Plc.
Prior to his current position, Mr Sutherland served as Attorney General of Ireland (1981-1984); EC Commissioner responsible for Competition Policy (1985-1989); Chairman of Allied Irish Banks (1989-1993) and Director General of the World Trade Organisation, formally GATT (1993-1995). Peter Sutherland has received numerous awards and has eleven honorary doctorates from universities in Europe and America. Peter Sutherland is married and has three children. His leisure interests include reading and sport.

To apply for tickets, please complete this form in BLOCK CAPITALS and return it to the address below, together with payment in full. For further information please contact Laura Viscione, The Institute of Petroleum, 61 New Cavendish Street, London W1G 7AR. Tel: + 44 (0) 20 7467 7174, Fax: + 44 (0) 20 7580 2230, lviscione@petroleum.co.uk

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Tickets will be allocated and mailed from the week commencing 2 September 2002.

In the event of cancellation of attendance by ticket purchaser a refund, less 20% administration charge of the total monies due, will be made provided that notice of cancellation is received in writing on or before 30 August 2002. No refunds will be paid, or invoices cancelled after this date.

Code launch and seminar tie-in to aid in meeting new UK regulations

This month sees the eagerly awaited update to the well-established and internationally accepted *IP Model Code of Safe Practice Part 15: Area Classification Code for Petroleum Installations.*

Publication of the 2nd edition will be supported by a seminar on 17 September in Runcorn, Cheshire entitled *Hazardous Area Classification using the updated IP Model Code of Safe Practice Part 15, 'IP15'. A methodology for addressing new requirements under the UK's Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) implementing CAD and ATEX.*

Seminar

The seminar will address the arrival of the new UK regulations (DSEAR) implementing the safety aspects of the European Chemical Agents Directive and Explosive Atmospheres (Protection of Workers) Directive. DSEAR requires duty holders by law to classify plants where flammable substances are used. This seminar launches the revised IP Model Code of Safe Practice Part 15: Area Classification Code for Installations Handling Flammable Fluids which provides an appropriate methodology to comply with this requirement. The code retains the direct classification method but now provides an alternative methodology to calculate hazard radii which allows the code to be applied over a wide range of circumstances.

Code content

The new code will be of particular interest to those responsible for managing installations handling flammable fluids, engineers with responsibility for hazardous area classification and consultants advising on safety at petroleum, petrochemical along with similar installations.

The IP's new code:

- applies the latest understanding in modelling two-phase releases
- takes account of high-pressure releases and mist and spray formation
- has been broadened to encompass petrochemical as well as petroleum installations
- now specifically covers LPG.

Subjects covered by the new code include:

- scope, applicability and definitions
- step-by-step guide to classifying hazardous areas
- the technique of hazardous area classification using direct example and point source approaches
- how to classify typical facilities such as storage tanks and road tanker loading
- the classification of drilling rigs, onshore and offshore
- basis and application of point source methodology
- the effect of ventilation
- the selection of electrical equipment
- ignition risks arising from non-electrical equipment.

Further information about the code and the seminar can be downloaded from: **www.petroleum.co.uk/areaclassificationseminar/**

Cost of seminar: IP Members and IChemE Safety and Loss Prevention Subject Group members, £169.00 +VAT; Non-Members, £199.00 + VAT.

Please contact Andrea Fulton, IP Conference Department for seminar booking details: Tel: +44 (0)20 7467 7106 Fax: +44 (0)20 7580 2230 e: **afulton@petroleum.co.uk**

For information on obtaining the revised edition of the code please see the advertisement below.

A review of the seminar and code will appear in Petroleum Review *next month.*

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IP Awards 2001: Representatives from Oleoducto Central, Jeff Pym, IP and Charles Henderson, TotalFinaElf

IP Awards 2002: We are pleased to announce this year's Speaker and Presenter Richard Noble, former holder of the land speed record

IP Awards 2001: Jeff Pym, IP, Trevor Baylis OBE and representatives from BG Group

NEW Publications

A history of Trinidad oil*

George E Higgins (Available from R C Shaw, Shaw Oil & Gas, 10 Storeys Gate, London SW1P 3AY, UK. Tel: +44 (0)20 7222 7444; Fax: +44 (0)20 7222 7440; e: **rcshaw@shawoil.demon.co.uk***) ISBN 976 8160 07 1. 498 pages. Price: £28 (all monies go to the George Higgins Scholarship fund for students at the University of the West Indies).*

This book is divided into two parts, supplemented by ten appendices providing much statistical and detailed information on the history of Trinidad's oil industry. The first part of the book discusses the growth of the country's oil industry, from the exploitation of asphalt at Pitch Lake, La Brea – beginning in 1595 when Sir Walter Raleigh's cousin first saw Trinidad – up to modern development and offshore discoveries. The second part looks at the history of the major and independent companies that have searched for oil in Trinidad over the years.

Essentials of sea survival*

Frank Golden and Michael Tipton (Available from Human Kinetics Europe, 107 Bradford Road, Stanningley, Leeds LS28 6AT, UK. Tel: +44 (0)113 255 5665; Fax: +44 (0)113 255 5885; e: **hk@hkeurope.com***) ISBN 0 7360 0215 4. 305 pages. Price: £18.95.*

This publication provides a comprehensive guide to open-water survival. Its real-life stories and easy-to-read format will appeal to the wider audience, while academics and those involved in the E&P sector will appreciate the original research and up-to-date physiological and medical information. The book dispels many misconceptions about how and why people die at sea; provides information on sustained survival in cold water; gives detailed explanations of hypothermia, cold shock, drowning and near drowning; and provides a common sense approach to life jacket, floatation device and survival gear selection.

Principles of applied reservoir simulation*

John R Fanchi (Gulf Professional Publishing. Available from Butterworth-Heinemann, 225 Wildwood Avenue, Woburn, MA 01801-2041, US. **www.gulfpp.com***) ISBN 0 88415 372 X. 355 pages (includes CD-Rom). Price: £65.*

This book provides a clear, concise computer-based introduction to practical reservoir modelling, complete with a fully-functioning reservoir simulator on CD-Rom. It begins with a reservoir engineering primer that makes information accessible to geologists, geophysicists and hydrologists, and serves as a review for petroleum engineers. The second part of the volume, covering modelling principles, has been substantially revised and updated since publication of the first edition.

Energy and greenhouse gas balance of biofuels for Europe – an update*

(Concawe, Boulevard du Souverain 165, B-1160 Brussels, Belgium. Tel: +32 2 566 91 60; Fax: +32 2 566 91 81; e: **info@concawe.be***) 18 pages. Free download available from* **www.concawe.be**

Recent literature publications have been used by Concawe to estimate the energy and greenhouse gas balance of the most relevant biofuels in Europe – ie ethanol and rapeseed methyl ester (RME). The potential for biofuels to substitute conventional fuels on the basis of available land is also discussed.

** Held in IP Library*

Latest from the Library

YOUR OFFICE AWAY FROM HOME

New database on the IP website

IP Members can now access a database providing details of forthcoming petroleum industry related conferences, courses and events run by the IP and other organisations. The database – held on the IP website at **www.petroleum.co.uk** – is updated frequently by the LIS Team from information received direct from the various organisers or verified information from third parties.

New editions to library stock

- *The EIC guide to the UK environmental industry 2001/2002.* Environmental Industries Commission (EIC), Macclesfield, UK, 2001.
- *Evaluation of diesel fuel cetane and aromatics effects on emissions from Euro-3 engines.* R H Clark, R de Craecker, H J Guttmann et al. Concawe, Brussels, Belgium, 2002.
- *Forecourt Trader business directory 2002/2003.* William Reed Directories, Crawley, UK, 2002.
- *The future for investment in the North Sea – The need for change: Presentations and biographies from the North Sea Conference 16–17 May 2002, London* (includes CD-Rom). Royal Bank of Scotland, Department of Trade and Industry, London, UK.
- *Handbook on petroleum: for inspectors under the petroleum acts and for those engaged in storage, transport, distribution and industrial use of petroleum and its products and calcium carbide, with suggestions on the construction and use of mineral oil lamps.* 3rd revised ed. Capt J H Thomson, Sir Boverton Redwood, Major A Cooper-Key. Charles Griffin & Co, London, UK, 1913.
- *The hydrocarbon oil (industrial reliefs) regulations 2002. Great Britain Laws and Statutes. SI no 1471.* The Stationery Office, London, UK, 2002.
- *NOF directory 2002–2003.* Northern Offshore Federation (NOF), Tyne & Wear, UK, 2002.
- *Oil and gas map of Western, Central & Eastern Europe 2002.* Petroleum Economist, London, UK, 2002.

Contact Details

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  Sally Ball, Information Officer, +44 (0)20 7467 7115
- **Library holdings and loans queries to:**
  Liliana El-Minyawi, LIS Assistant, +44 (0)20 7467 7113
- **LIS management queries to:**
  Catherine Cosgrove, Head of LIS, +44 (0)20 7467 7111
- **IFEG queries to:**
  Sally Ball, IFEG Secretary, +44 (0)20 7467 7115

Fax any of the above on +44 (0)20 7255 1472 or e: **lis@petroleum.co.uk**

Visit our website at **www.petroleum.co.uk**

Membership News

NEW MEMBERS

Mr M Adair, Inland Revenue
Ms P Aderogba, Waterhouse Energy Limited
Mr T Adewusi, Edgware
Mr T M Au Yeung, Hong Kong & China Gas Company Limited
Ms E Awudu, ICA Consulting
Mr D Barker, Sonorex Oil & Gas Limited
Mr M D Belcher, Divine
Mr J S Boyes, Reeves Oilfield Services Limited
Mr T Clarence-Smith, Rudgewick
Mr I P Clewley, Longworth
Mr R Crewe, British Gas
Mr C L Curlewis, Ametek
Mr W A Flanagan, Middlesbrough
Mr R G Freeman, Corpro Systems Limited
Mr C M George, Marsh Limited
Ms N Ginger, Meggitt Aerospace Equipment
Mr M Gunn, Barns
Mr M Hawkes, Elton
Mr A I Ibirogba, Nigeria
Mr M H Ibrahim, Petronas Penapisan (M) Sdn Bhd
Mr N Ingrassia, The Royal Bank of Scotland
Mr M Ito, Japan National Oil Corporation
Mr A T Jenner, Hants
Dr M Karmarkar, Jacobs Consultancy
Mr J E Longden, Louth
Mr G C Mackie, North Shields
Dr C A Milburn, Aberdeen
Mr O A Olagunju, London
Dr O A Olaosun, London
Mr F K Qureshi, Milton Keynes
Mr R Redding, Pelican Shipping Limited
Mr T M C Reid, Ashurst Morris Crisp
Mr O D Sokari-George, London
Mr S O Stefansson, Iceland
Ms C Van Dop, Burren Resources Petroleum Limited
Mr K D Westwood, Stockton-on-Tees

STUDENT

Mr R D S Gawthorne, Salterton

NEW CORPORATE

Cenelec Standards Inspections Ltd, Offshore House, Euro-Seas Centre for Technology, Blyth, Northumberland NE24 1LZ, UK
T: +44 (0)1670 544488 F: +44 (0)1670 544499
e: info@cenelec.com www.cenelec.com

Representative: Alan Gibson, Managing Director

- Specialists in the inspection and maintenance of electrical and instrumentation located within potentially explosive atmospheres and classified hazardous areas.
- Area classification
- Training of electrical personnel in hazardous areas
- Electrical/instrument maintenance management

Branch Activities

ESSEX

Contact: Arnold Carlson T: +44 (0)1268 794615

11 Sep: 1830: 'Global Diesel' by Andrew Owens, Managing Director, Greenergy Fuels Ltd.

9 Oct: 1730: 'ATEX – Legislation on Electrical Safety' by Mehdi Laftavi, Director, The Centre for Maritime and Industrial Safety Technology.

IP THE INSTITUTE OF PETROLEUM northern branch

The Cost of Loss
Wednesday 13 November 2002

One-day seminar
To be held at the Holiday Inn,
Haydock, Greater Manchester, Junction 23, M6
Cost: IP/APEA Members: £60 Non-Members: £80

With energy costs high for end-users and margins low for suppliers, this seminar will highlight the many ways you can combat losses and help to increase profitability. The one-day seminar and exhibition takes delegates through aspects of loss, whether through theft, physical or environmental causes, and suggests ways of reducing or eliminating these losses.

Topics to be discussed include:

- Legislative Factors – A changing scene
  Jo Bradley, Environment Agency
- Wetstock Management – An early warning system
  Bob Conlin, Fairbanks Environmental
- The Real Cost of Loss – The underwriters point of view
  Dr Ian Evans, CERTA
- Energy Efficiency – Minimising losses
  Nick Parkin, United Utilities
- Theft – Can it happen to you?
  Kevin Eastwood, BOSS
- The Cost of Accidents – Lost time in the workplace
  HSE speaker (to be confirmed)

Who should attend?

Oil Distributors	Petrol Station Operators
Environmental Consultants	Storage Companies
Health & Safety Officers	Accountants
Manufacturers	Refiners
Transport Companies	Tank & Equipment Suppliers

An exhibition will accompany this event – for details of how your company can exhibit please contact Steve Jones T: +44 (0)1695 51775 e: **stevejones@fairbanks.co.uk**

For more information on registration for this event please contact:

Paul Kerwin T: +44 (0)1270 620385
e: paul.kerwin@cibasc.com **or**
Steve Jones T: +44 (0)1695 51775
e: stevejones@fairbanks.co.uk
or visit the IP website:
www.petroleum.co.uk

EVENTS Forthcoming

SEPTEMBER 2002

9–11 **Jakarta**
Asia Pacific Drilling Technology
Details: SPE
Tel: +1 972 952 9393
Fax: +1 972 952 9435
e: **web@spe.org**

11–12 **London**
Gas to Liquids V: SMI 5th Annual Conference
Details: SMI Group
Tel: +44 (0)20 7827 6000
Fax: +44 (0)20 7827 6001
e: **customer_services@smiconferences.co.uk**
www.smi-online.co.uk

11–13 **London**
Land Tank and Shipboard Measurement
Details: Abacus International
Tel: +44 (0)1953 497099
Fax: +44 (0)1953 497098 or +44 (0)870 052 2235
e: **info@abacus-int.com**
www.abacus-int.com

12–13 **Amsterdam**
Commercialising Wind Energy
Details: Vision in Business Ltd
Tel: +44 (0)20 7839 8391
Fax: +44 (0)20 7839 7531
www.visioninbusiness.com

16–17 **Houston**
OPT USA 2002: IBC's 2nd annual Offshore Pipeline Technology Conference & Exhibition
Details: IBC Global Conferences
Tel: +44 (0)1932 893851
Fax: +44 (0)1932 893893
e: **cust.serv@informa.com**

16–17 **London**
Bulk Liquid Metering and Meter Proving
Details: Abacus International
Tel: +44 (0)1953 497099
Fax: +44 (0)1953 497098
e: **info@abacus-int.com**

17–19 **London**
Real Word Taxonomies: Structuring Content in Context
Details: Ark Group
Tel: +44 (0)20 8785 5900
Fax: +44 (0)20 8785 9373
e: hanson@ark-group.com

18–19 **Aberdeen**
Introducing Subsea Pipeline Engineering
Details: Trevor Jee Associates
Tel: +44 (0)1892 544725
Fax: +44 (0)1892 544735
e: **admin@tja.co.uk**

A more comprehensive listing of events for September is available on the IP website *www.petroleum.co.uk*

IP EVENTS

Conference & Exhibition
Improving Safety in Petroleum Product Deliveries and Petrol Filling Station Operations
Tuesday 10 September 2002
Wolverhampton Science Park, Wolverhampton, UK
Contact: Laura Viscione
T: +44 (0) 20 7467 7174
F: +44 (0) 20 7580 2230
e: lviscione@petroleum.co.uk

Discussion Group Meeting
Comparative Insolvency Regimes of the United Kingdom and America
Speaker: Stephen Gale, Herbert Smith
Wednesday 2 October 2002
Institute of Petroleum, London
Contact: Laura Viscione
T: +44 (0) 20 7467 7174
F: +44 (0) 20 7580 2230
e: lviscione@petroleum.co.uk

Hazardous Area Classification – IP15
Tuesday 17 September 2002
Heath Conference Centre, Runcorn, UK
Contact: Andrea Fulton
T: +44 (0) 20 7467 7106
F: +44 (0) 20 7580 2230
e: afulton@petroleum.co.uk

Metalcutting Fluids
Thursday 10 October 2002
Manchester United Complex, Old Trafford, Manchester, UK
Contact: Andrea Fulton
T: +44 (0) 20 7467 7106
F: +44 (0) 20 7580 2230
e: afulton@petroleum.co.uk

The Waste Oil Directive – Implications of New Legislation and Opportunities for the Lubricants Industry
Tuesday 5 November 2002
The Institute of Petroleum, London, UK
Contact: Andrea Fulton
T: +44 (0) 20 7467 7106
F: +44 (0) 20 7580 2230
e: afulton@petroleum.co.uk

For further information please visit the IP website:
www.petroleum.co.uk

IP THE INSTITUTE OF PETROLEUM **midlands branch**

Wednesday 18 September

Shared User Network Services for Distribution Packaged Lubricants and Bulk Fuels

Enhancing Delivery Services and Reducing Costs

Worcester Rugby Club, Worcester, UK **12.15pm for 1.00pm lunch**
Presentations follow lunch

Using existing distribution networks operated by major distribution companies can lead to significantly enhanced services whilst reducing costs. Two papers which are – presented by speakers from Christian Salvesen, Conoco and Wincanton Group – highlight the benefits of using these services and the use by distribution companies of the latest technology and systems to provide clients with management information through computer and web-enabled tools.

If you wish to attend this meeting please send a cheque for £12 per person – made payable to the Institute of Petroleum, Midlands Branch – to Margaret Ward, Midlands Branch Secretary, c/o Mike Ward Associates, The Rodgelands, Bank Lane, Abberley, Worcester, Worcestershire WR6 6BQ.
Cheques should be received before 11 September to secure your booking for lunch.
Full details of this meeting and other events can be found on the IP website at *www.petroleum.co.uk*

MOVES People

R A Walker has been appointed to the Board of Directors for Houston-based oil company Teppco. Walker will replace **Carl Clay** who retired from the Board in July.

The appointment of **Bill Murray** as Chief Executive Officer of the Offshore Contractors' Association (OCA) has been announced. Murray, formerly Director of Industrial and Community Relations, Amec, will take over from **Iain Bell** who is retiring after 11 years with the Group. Bell will continue to work with the OCA as a Director on a part-time basis for a three-month handover period.

Foster Wheeler has appointed **James C Crumm** to the position of Vice-President, Project Risk Management. He will report to **Raymond J Milchovich**, the company's Chairman, President and Chief Executive Officer.

*Evans Consoles has expanded the role of UK Sales Manager, **Marie McGinty** into Scandinavia and the Benelux countries. McGinty's career with the Calgary-based company began in 1997. In 2000 she was relocated to the UK and became Evans' first UK Sales Manager.*

Tony Funnell has been appointed Executive Director of Maritime London with immediate effect. Funnell will be working to support the aims of Maritime London as the world's premier Maritime Centre.

Furmanite International has taken on **Graham McKay** as Field Services Sales Manager. McKay started in July and will oversee activities throughout Scotland, predominantly focusing on the Aberdeen offshore market.

Jens Hügel has been appointed Head of Passenger Transport at the International Road Transport Union in Geneva. Hügel replaces **Adam Tarnowski** who has recently retired.

Pipeline and subsea engineering company JP Kenny has appointed **Phil Brown** as Operations Director for its Perth office in Australia. Brown has previously worked for the company in Europe as well as Australia and rejoins them from PSL where he was Technical and Marketing Director.

David Stanley has been appointed Chief Executive Officer of Penspen. Stanley has relocated to the London head office after three years as President of Penspen in Houston.

*Dorset-based Groveley Detection has appointed **Jim Davidson** as its new Project Manager. Davidson is an associate member of the IEE and has 12 years' experience with safety systems in the petrochemical and oil and gas industries.*

*AspenTech has named **Wayne Sim** as its Senior Vice-President, Worldwide Sales. Prior to this appointment, Sim served as co-founder and Chief Executive Officer of Hyprotech which was acquired by AspenTech earlier this year.*

Ivan Replumaz has recently joined Technip-Coflexip as Senior Vice-President, Business and Operations of the Offshore Branch. He reports directly to the President of the Offshore Branch, **Thomas Ehret**. His most recent position was as Managing Director of Bouygues Construction.

The Deputy Head of the Russian Property Fund, **Dmitry Mazepin**, has been appointed to the position of Chief Executive Officer of Gazprom subsidiary, Sibur.

*Bifold Fluidpower has appointed **Gary Jacobson** as Managing Director. Jacobson joins the company from Pirelli where he held the position of Plant Director.*

Andy Ford has been appointed Consultant at scientific information management consultancy Scimcon. Ford will advise the company's clients in the pharmaceutical, biotechnology and petrochemical industries on information management in the laboratory.

Virginia Hart has joined Global Change Associates as Director of Business Development. Hart is experienced in developing new business opportunities in the telecom and energy industries.

Susanne Jonsson has been appointed President of the new organisation Birka Energi following its merger with Fortum.

Kvaerner has appointed **Jan B Kjaervik** as its new Senior Vice-President and Group Treasurer. Kjaervik joins the Group from the Nordic bank group Nordea. He will report to Group Executive Vice-President and Chief Financial Officer **Trond Westlie**. **Tore Langballe** has also joined the Group as Vice-President with responsibility for investor relations. Langballe joins from Norsk Hydro and will report to **Geir Arne Drangeid**, Senior Vice-President, Group Communications.

International law firm LeBoeuf, Lamb, Greene & McRae has announced the addition of partner **Bruce Johnston** to the firm's London office. UK-qualified Johnston comes to the firm from Weil, Gotshal & Manges where he was Head of International Project Finance. The addition of Houston-based **Charles Moore**, former Chairman of the energy and converging industries practice Akin, Gump, Strauss, Hauer & Feld, and London-based **Keith Hughes** of Paul, Hastings, Janofsky & Walker further strengthens the firm's Energy and Project Finance sector.

IP THE INSTITUTE OF PETROLEUM

IP TRAINING COURSES 2002

Supply & Distribution: Organisation, Operations and Economics

The Supply and Distribution supply chain stretches from the refinery gate to the end user, the customer. This course is designed to consider the organisation of the Supply and Distribution function and how it interacts with the sales and marketing roles it serves. It also takes an in-depth look at various issues surrounding operations, both in primary and secondary supply and terminalling, together with inventory management, IT systems to manage the operation, as well as outsourcing and procurement.

Course Provider IP THE INSTITUTE OF PETROLEUM

Course Dates:
17 - 20 September 2002

Course Venue:
Institute of Petroleum, London

Registration Fee:
IP Member: £1800 (£2115.00 inc VAT)
Non-Member: £2000 (£2350.00 inc VAT)

Planning and Economics of Refinery Operations

In association with ensprm FORMATION INDUSTRIE

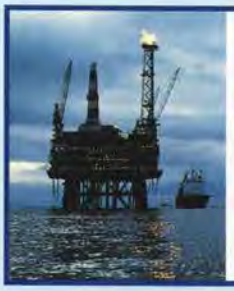
Course Dates:
8 - 11 October 2002

Course Venue:
Institute of Petroleum, London

Registration Fee:
IP Member: £1800 (£2115.00 inc VAT)
Non-Member: £2000 (£2350.00 inc VAT)

This intensive, **four-day course** will enable delegates to understand the essential elements of refinery operations and investment economics.

During the course, delegates will review the various parameters which affect refinery profitability and will develop a working knowledge of the management tools used in the refining industry.



Overview of the Oil Industry

This **two-day course** course provides a concise introduction to the structure of the oil industry and its operations: from the search for oil and gas, the workings of the principal markets, through to the delivery of products to different customers.

Participants will gain an appreciation of the principal activities in the international upstream and downstream petroleum industry and an understanding of how these inter-relate, as well as an appreciation of the impact of external influences.

Course Provider IP THE INSTITUTE OF PETROLEUM

Course Dates:
16 - 17 October 2002

Course Venue:
Institute of Petroleum, London

Registration Fee:
IP Member: £900 (£1057.50 inc VAT)
Non-Member: £1100 (£1292.50 inc VAT)

Introduction to Lubricants

Sponsored by LUBRIZOL

Course Provider IP THE INSTITUTE OF PETROLEUM

Course Dates:
24 - 25 October 2002

Course Venue:
Institute of Petroleum, London

Registration Fee:
IP Member: £900 (£1057.50 inc VAT)
Non-Member: £1100 (£1292.50 inc VAT)

This **two-day course** will provide an overview of the lubricants' business for those personnel needing a working knowledge of it, but in a limited amount of technical detail. The broad scope of the course will allow those new to the industry, or those with some experience of it, to draw immediate benefits from their increased knowledge to the advantage of themselves and their organisations. The importance of lubricants within an oil company product portfolio will be explained and the course will provide a sound background to those engaged in sales, marketing and planning strategy.

Economics of the Oil Supply Chain

During this **five-day course**, delegates will examine the various activities of the fictional Invincible Energy Company to explore the economic forces which drive the oil supply chain. They will concentrate on the main areas of risk and opportunity from the crude oil supply terminal, through transportation, refining and trading to the refined product distribution terminal. During their time in Invincible's refinery, delegates will learn about the quality aspects of product supply. They will study refinery process economics and the effects of upgrading.

In association with INVINCIBLE

Course Dates:
14 - 18 October 2002

Course Venue:
The Møller Centre, Cambridge

Registration Fee:
IP Member: £1950 (£2291.25 inc VAT)
Non-Member: £2150 (£2526.25 inc VAT)

Trading Oil on the International Markets

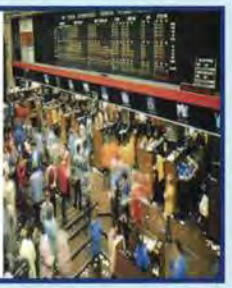
In association with INVINCIBLE

Course Dates:
21 - 25 October 2002

Course Venue:
The Møller Centre, Cambridge

Registration Fee:
IP Member: £2600 (£3055.00 inc VAT)
Non-Member: £2800 (£3290.00 inc VAT)

During this **five-day course**, delegates will become part of Invincible's fictional trading team, taking decisions about the company's activities to maximise profits through an understanding of the economics of trading and the management of inherent price risks. Delegates will trade the live, crude oil and refined product markets worldwide under the guidance of an expert team of lecturers reacting to events as they happen and using real-time information from Reuters and Telerate screens and daily price information from Platt's and Petroleum Argus.



For more information, see enclosed inserts or contact Lynda Thwaite at IP Training or visit: www.petroleum.co.uk

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IP THE INSTITUTE OF PETROLEUM

www.ipweek.co.uk

IP WEEK 2003

17 – 20 February, London

The Institute of Petroleum's IP Week is the focal point in Europe each year when leading figures in the oil and gas industry meet in London for an intensive round of conferences, industry and trade association events, company meetings and social functions. The Institute's own programme of events forms the core of these activities.

The week will include conferences focusing on:

- **Finance and Oil Price**
- **Refining and Marketing**
- **Future of Gas**
- **Exploration**
- **Oil Supply**
- **Bunkers**
- **Climate Change**

Selected IP Week 2003 events are organised in partnership with / sponsored by:

europia | New York Mercantile Exchange | WOOD MACKENZIE | AAPG

IP ANNUAL LUNCH

Tuesday 18 February, Dorchester Hotel, London

The IP Annual Lunch provides a unique opportunity to hear one of the world's senior figures in today's oil and gas industry discuss the key issues facing the industry in the context of the changing economic, social and political environment.

Guest of Honour and Speaker:

David O'Reilly, Chairman and CEO, ChevronTexaco

IP ANNUAL DINNER

Wednesday 19 February,
Grosvenor House Hotel, London

The Institute of Petroleum's 89th Annual Dinner is a unique event in the international petroleum industry, which brings together over 1500 of its leading figures, and provides an opportunity to meet with old friends and acquaintances.

Guest of Honour and Speaker:

Philip Watts, Chairman, Shell

EXHIBITION

17 - 20 February, London

Maximise on business and promotional opportunities connected with IP Week 2003 by participating in the oil and gas information services exhibition. The exhibition will be held alongside IP Week 2003 events.

The AAPG is honoured to announce its second presentation of the APPEX-London prospect and property exhibition at the IP Week program. Information on exhibiting or viewing at APPEX-London will shortly be available at either www.ipweek.org.uk or at www.aapg.org .

THE REST OF THE INDUSTRY WILL BE THERE. PLAN NOW TO JOIN US IN LONDON !

For more information on any IP Week 2003 event, contact the IP Conference Department:
Tel: +44 (0)20 7467 7100 e: events@petroleum.co.uk or visit: www.ipweek.co.uk