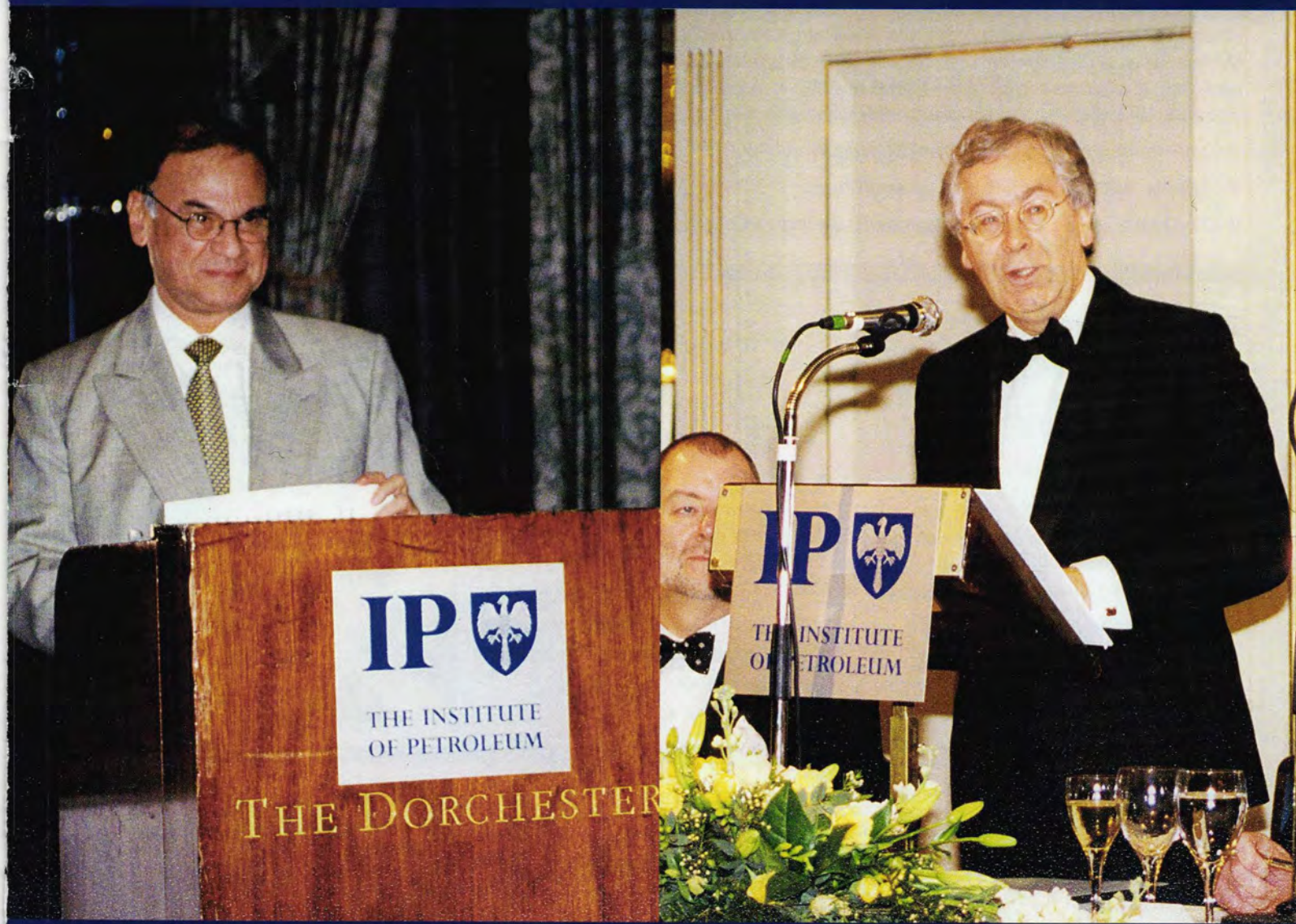
Petroleum review

MARCH 2001



IP Week – Keynote speeches – Highlights

- Ali Rodriguez-Araque: Bringing stability to the oil market
- Mervyn King: No country is an island
- Charles Henderson: Review of industry and the IP in 2000

Middle East

- Smaller producers encourage foreign investment

Exploration

- Turning tide for seismic sector

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ABBREVIATIONS

The following are used throughout *Petroleum Review*:

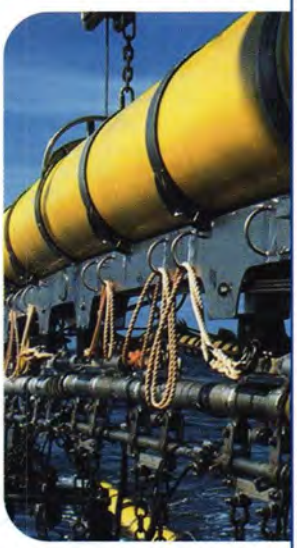
mn	= million (10^6)	kW	= kilowatts (10^3)
bn	= billion (10^9)	MW	= megawatts (10^6)
tn	= trillion (10^{12})	GW	= gigawatts (10^9)
cf	= cubic feet	kWh	= kilowatt hour
cm	= cubic metres	km	= kilometre
boe	= barrels of oil equivalent	sq km	= square kilometres
		b/d	= barrels/day
t/y	= tonnes/year	t/d	=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

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

Front cover: Left: Dr Ali Rodriguez Araque, Secretary General of Opec, at the Dorchester Hotel, London

Right: Mervyn King, Deputy Governor, Bank of England, speaking at the Annual Dinner

inside...



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features

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From the Editor

Outlook changeable (again)

The last two years have been a real rollercoaster as bust turned to boom and as profits recovered and soared. It would be nice to be able to confidently predict a period of stability, but in reality, the outlook has rarely been more uncertain.

Before looking at some of the possibilities it is pleasant to be able to record that IP Week was again a great success. Some of the week's highlights are recorded in a report of the week on p30. Our usual reports on the speeches given at the annual dinner and luncheon are on p24, 27 and p20.

Anyone who took part in the week's events will confirm that a sense of confidence and excitement is coming back into the industry. Long may this continue.

Better morale will, however, be needed to tackle some of the problems 2001 may bring.

At the moment oil prices are easing back as demand starts to slow as we move into spring. Here, however, is the first major uncertainty – the size and extent of the US economic slowdown and its global impact. Mervyn King, in his speech to the annual dinner (p27), was quite optimistic and positive. Other commentators have been much less sanguine – downward revisions of oil demand in 2001 have been made by the IEA in both its January and February oil market reports. The latest estimate is for oil demand growth of 1.5mn b/d, down nearly 300,000 b/d on earlier estimates. Already some commentators are predicting growth of 1mn b/d or less.

For the moment Opec appears united in its determination to restrict production to maintain prices in its $22–28 range. Another way of analysing this development is that Opec is once again hoping, or attempting, to set world oil prices. Its chance of succeeding will depend on three things – how much or how little demand slows, how successful companies are in developing non-Opec production capacity and, most important of all, how determined Opec is to defend its price range.

Opec has always disliked the independent pricing of crude because of the spot and futures trading of marker crudes such as WTI and Brent. The coming year presents something of a problem in this area. Steady declines in both Texan and North Sea production means that both WTI and Brent are volumetrically becoming quite small markets.

The IEA's current supply prediction is that the production of the Brent fields will be under 280,000 b/d in 2001, with the Ninian fields down to 116,000 b/d. WTI grades are now running at or under 400,000 b/d. What this means is that production of a little over 700,000 b/d is the primary price determinant for the 77mn b/d the world is expected to produce in 2001. That's under 1% of production. The natural market crude would be Saudi Light with a production of nearly 5mn b/d. The Saudi's have, however, always refused to allow the on-trading of their crudes. It certainly seems that a new pricing basis will be needed within the next two years. Pricing also looks to be a potentially contentious point for Opec.

Opec's newly appointed Secretary General Rodriguez Araque appears to be offering Opec's cooperation with the consuming countries. There are, however, three areas of potential tension. If Opec guarantees supplies but succeeds in keeping stocks low it will be able to control prices within its current price range objective. It has clearly indicated that it does not like the high levels of tax favoured by European governments, but it is in no sense clear what Opec intends or can do (if anything).

Finally, there is some ambivalence on the part of the oil companies who know that financing new production and making returns acceptable to shareholders are easier at rather higher prices, but who are reluctant to have the pricing of the industry set by a third party other than a traded market.

All in all 2001 looks set to be somewhat turbulent. In the benign scenario demand doesn't weaken too far before recovering and Opec produces enough for stocks to rebuild a little. In the less benign scenario either non-Opec production fails to grow much (there is an undoubted impact from investment deferrals caused by low prices in late 1998/early 1999) and Opec gains price control by being the incremental supplier. Or economic slowdown becomes widespread and overcapacity draws prices down to Opec's pain threshold.

These are obviously the extremes, but with capacity still relatively tight in many areas of the industry it only takes quite small changes and movements to drive the industry either up or down.

Unfortunately, the single safe prediction is for instability in prices and profits.

Chris Skrebowski

e(world)

Quest Offshore Resources has launched **SubseaZone.com** which is claimed to offer industry low-cost access to up-to-date global subsea forecasting and a comprehensive bank of active subsea information which is contained in the company's QuestSUBSEA-DATA-BASE, as well as worldwide deepwater, flowline and umbilical data. The site allows clients to obtain precise subsea project information – be it for future forecasted projects, actual working, bidding, front-end engineering and design, or pending systems – for a small fee. For further information, contact Nick Search at e:**nsearch@questoffshore.com**

Over 20 airlines and six oil companies (including BP and Shell) are reported to have joined up to launch **Jet-A.com**, an independent Internet portal designed to cut costs in the jet fuel supply chain by up to $100mn/y.

Tankerworld.com has reportedly introduced a free daily interactive fixtures information service for all reported cargoes. The lists will be inter-linked with more than 5,000 pages containing directories on operators, terminals and vessels.

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We are planning to soon launch the Institute of Petroleums' new and improved website.

Although our existing site at **www.petroleum.co.uk** already contains a wealth of oil, gas and energy industry information, we have revamped the site to make it even more user-friendly and topical.

Colour coding has been used throughout to make it easier for the user to know which section of the site he or she is in.

Each sector has its own home page, detailing exactly what information is held in that part of the site and providing contact details if the user is unable to find exactly what he or she requires.

A 'Hot Topics' section will highlight the latest news and developments to come from the IP's various departments, branches and committees, as well as providing background information on topical issues that are in the media limelight.

We are sure all you IP surfers will appreciate the benefits derived from the new site and welcome any suggestions you have for further improvements.

In Brief

UK

Venture Production is to acquire *TotalFinaElf Exploration UK's stakes in eight UKCS blocks in the central and southern sectors of the North Sea. The assets include interests in the producing Tiffany, Toni, Thelma/SE Thelma (30%) and Mallard (23.76%) oil fields and the Audrey (16.44% unitised interest), Ann (42.78%) and Alison (42.78%) gas fields, together with interests in a number of undeveloped oil and gas discoveries.*

A partnership of Atlantic Supply Base *and Faroe Ship is reported to have secured the contract to run the onshore supply base at Runavik in the Faroe Islands.*

UK independent Tullow Oil has completed *its acquisition of BP's Murdoch and Boulton southern North Sea assets and related infrastructure – the first of two packages that the company is to acquire from BP for a total consideration of £210mn.*

Europe

The K4BE satellite platform in block *K4a in the Dutch sector of the North Sea has come onstream. Gas output is currently 1.4mn cm/d.*

Wintershall (28.3%) and partners *Veba Oil (28.3%) and Energie Beheer Nederland (43.4%) report that platform L8-P4 in the Dutch sector of the North Sea has produced first gas. Output is expected to reach 1.5bn cm of gas in the first year. Field life is put at eight years, depending upon prevailing economic conditions.*

North America

Shell is understood to have awarded a *contract to Hyundai Heavy Industries of South Korea for the fabrication of a floating production semi-submersible hull and topsides for the Na Kika project in block 474 in the Gulf of Mexico. The vessel will have a production capacity of 100,000 b/d of oil and 325mn cf/d of gas.*

A joint venture between Kvaerner and *SNC Lavalin Offshore has secured from Sable Offshore Energy the front-end engineering and design (FEED) contract for the Alma platform – the first stage in the Tier 2 development of the Sable gas field, offshore Nova Scotia.*

Seafloor processing study

ABB, BP, Chevron and Kvaerner have signed an alliance agreement to undertake a collaborative study that will address the challenges associated with advancing seafloor processing technology for deepwater oil and gas reserves. The study is expected to complete by the end of 1Q2001.

Today, technologies for deepwater production (>1,500 metres) are based around complex and expensive process facilities that are located on the ocean surface. Oil, water and gas are sent up from the ocean floor wellhead via pipeline to a floating, production, storage and offloading vessel (FPSO) where the separation process occurs. After separating the oil, gas and water, the clean crude oil is ready for transport, via tanker or pipeline, to a refinery for further processing.

With seafloor processing, the separation process is handled on the ocean floor and only clean oil is sent up to the ocean surface for further processing. The group plans to analyse how to develop standardised, modular, compact and remotely operated facilities that would sit on the seafloor, thereby reducing the operating difficulties, costs and environmental impact of deepwater oil and gas operations.

The study is expected to yield a number benefits, including:

- New cost-effective production facilities that are removable and will have parts that can be reused or recycled.
- Increased oil recovery over traditional field development options such as FPSOs.
- Spin-off technologies in the area of oil and gas treatment that could improve the operation of conventional facilities.
- Provide the necessary foundation to continue collaboration that could lead to further spending in this area of technology.

Paving the way for Sibneft–Yugra JV

Sibneft has signed funding and operating agreements with Sibir Energy, paving the way for the creation of the Sibneft–Yugra joint venture company which is to develop an estimated 2.1bn barrels of recoverable reserves currently controlled by Sibir's Yugraneft subsidiary. The partners hope to raise production from the joint venture's fields to 60,000 b/d by 2008.

The Sibneft–Yugra venture plans to invest more than $50mn this year in a bid to increase production to around 5,000 b/d of oil in 2001 (up from 1,500 b/d in 2000). The bulk of the spending will focus on the southern part of the Priobskoye field where a new pipeline is to be built to link the field to the Transneft pipeline system. The remaining funds will go on development of the smaller Palyanovskoye field.

Under the pilot phase set to commence in 2001, the partners plan to initially drill 25 new wells and bring back onstream a further 14 wells which had previously been shut in. Sibneft–Yugra is also to begin work on constructing geological models of the fields which will form the basis for a full field development blueprint due to be completed in late spring.

Anadarko brings GoM fields onstream

Anadarko reports that it recently began production from the sub-salt Tanzanite and Hickory fields in the Gulf of Mexico. Tanzanite (100% owned by Andadarko) is currently producing more than 10,000 b/d of oil and 23mn cf/d of gas from its first completed well. Hickory (in which the company holds a 50% stake and acts as operator) is producing 62mn cf/d of gas 4,100 b/d of condensate from its first well.

A second well is currently being completed at Tanzanite and is expected to boost production to 15,000 b/d of oil and 50mn cf/d of gas. At Hickory, three additional wells will be completed and tied in over the next few months. Once all four wells are completed, production is forecast to exceed 200mn cf/d. Production from the two fields is forecast to add an estimated 10mn energy equivalent barrels to the company's net production in 2001.

Anadarko is allocating $414mn to drill 46 wells in the Gulf of Mexico this year (compared with 27 in 2000). Some 20 development and 10 exploratory wells are planned in, and around, older, existing shallow water fields. A further seven exploratory wells and one development well are planned in the sub-salt region – the company holds a total of 115 lease blocks in its sub-salt programme and has identified 23 potential prospects. Eight exploration deepwater wells are to be drilled in 2001.

NEWS Upstream

New additions to Lamnalco tug fleet

Lamnalco has taken delivery of two 4,000 bhp deepsea azimuth stern drive (ASD) tugs – the *Lamnalco Harrier* and *Lamnalco Houbara*. Both vessels will be used in support of tanker berthing and harbour towage duties in the Middle East and West Africa.

The *Lamnalco Houbara* (see above) has been chartered on a long-term contract to operate in Qatari waters. Fitted with foam/water firefighting capability. She is also designed and outfitted to perform safety standby, rescue and maintenance services as well as pollution control.

The *Lamnalco Harrier* will be located offshore Nigeria, in support of similar tanker berthing and safety standby duties for Conoco, and joins a fleet of 14 Lamnalco vessels located in West African waters.

Pan-industry field trial database

Offshore Technology Management (OTM) has begun work on the development of a pan-industry field trials database. The work is being sponsored by the UK Department of Industry (DTI), and is being carried out in collaboration with the Industry Technology Facilitator (ITF) programme.

Companies often expend considerable resources developing innovative new technologies that could benefit the economics and technologies of fields in the North Sea and worldwide. However, these developments often never come to the market due to the difficulty in finding operators prepared to host field trials of the prototype. The aim of the database, therefore, is to compile a list of technologies in need of a field trial and develop a methodology to ascertain if there are operators that would hold trials in these technologies. The database will include details of the technology and the benefits it would bring to the host operator and the industry in general.

Information about relevant technologies will be gathered by OTM by means of an online survey. The database information will then be disseminated to operators by ITF. Ultimately it is hoped that the database will evolve into a broking service to match technologies with potential hosts.

Chinese find puts pressure on Russian exporters

The discovery of a major gas field – Sulige – by PetroChina in northern China is set to increase the pressure on Russian exporters, reports UFG. Proven field reserves are put at between 160bn and 220bn cm, although it is claimed that the reservoir could hold as much as 700bn cm of gas – translating into an annual output of between 20bn and 25bn cm. This compares with a forecast 30bn cm/y of production from the BP-led Kovykta project, that has larger reserves but higher infrastructure costs due to its remoteness from markets.

Despite the threat, UFG believes that the Chinese market will be able to absorb both projects, given its need to replace environmentally-harmful coal capacity and expensive oil imports (which reached over 25mn tonnes in 2000). The analyst states that the discovery may even stimulate cooperation between the two countries.

In Brief

***PetroCanada's Terra Nova project offshore** Newfoundland is reported to have fallen further behind schedule and run up additional cost overruns. First oil is now slated for 4Q2001.*

***Canadian oil and gas producers have** begun the year with fat budgets, reports* Monica Dobie. *The 2001 spending budgets of nine major firms totals C$13.3bn, an increase of 14% from last year, claim reports in Canada's National Post. The Canadian Association of Oilwell Drilling Contractors (CAODC) predicts more than 18,500 wells will be drilled this year, shadowing the 16,400 in 2000.*

***Murphy Oil's latest onshore natural gas** discovery in northeast British Columbia is reported to have tested 100mn cf/d of gas. The flow rate is claimed to make the discovery one of the ten largest finds in Canadian history.*

***The US Governor of Florida, Jeb Bush,** is understood to have requested the cancellation of the proposed sale of oil and gas lease 181 in the eastern Gulf of Mexico, claiming that it 'threatens' Florida's tourism industry.*

***TotalFinaElf has announced the formation** of US exploration and production subsidiary, TotalFinaElf E&P USA.*

***Texaco has announced three discoveries** in the Gulf of Mexico and Louisiana Gulf Coast: the North Tern Deep prospect in the Gulf of Mexico's Eugene Island block 193, Oscar in the Bay St Elaine field and a wildcat find in the Vermillion Bay fields in coastal Louisiana.*

***President Bush is reportedly moving** quickly to implement an energy policy that will open up the Arctic National Wildlife Refuge for oil and gas exploration. Activity will focus on a 1.5mn acre coastal plain section of the 19mn acre refuge.*

Middle East

***Iranian National Oil Company has** reported a new gas field offshore Iran, close to the Iraqi border. The field has estimated gas reserves of 40bn cm and is part of the Karanj field development, writes* Stella Zenkovich.

***A large oil field is reported to have** been discovered in the western Persian Gulf. The Dasht-e Abadan field is claimed to be comparable in size to Azadegan, which has 26bn barrels of in-place reserves.*

In Brief

Russia & Central Asia

Lukoil and Rosneft are reported to be *seeking equity stakes in RosShelf in order to finance the 700bn barrel Prirazlomnoye oil field.*

Eni subsidiary Agip is reported to have *secured the operatorship of the Kashgan oil field in Kazakhstan.*

Russian President Putin has signed the *law including the Kovykta gas condensate field in the list of projects eligible for development under PSA terms.*

The Kazakh Government is reported to *have unveiled plans for a four-fold increase in output by 2012. The increased output will come from Chevron's Tengiz field, Agip's Karachaganak field and the state-run OKIOC's Kashagan field.*

Petrosakh has been granted a production *licence to explore the Sakhalin-6 block of fields, becoming the first private Russian oil company to gain exposure to this oil-rich region.*

Socar and Lukoil have reportedly *signed an agreement on the rehabilitation, exploration and development of the Azeri Zyk and Govsany oil fields.*

Yukos is reportedly planning to invest *$25mn–$30mn in the development of the Western Malobalyk field in 2001.*

The Russian Government, according to *UFG, has finally approved Lukoil's acquisition of a 20% stake in the 400mn Karyaga PSA.*

Asia-Pacific

Cultus Timor Sea's Audacious-1 explo- *ration well in the Timor Sea has tested at 9,100 b/d of oil – reportedly the second highest rate ever recorded in the area.*

IHS Energy Group has been selected by *PetroChina to promote and host a bidding round on 17 blocks in the onshore Bohai Gulf Basin, two of which are located in the tidal zone.*

New Zealand's Pohokura gas field off- *shore north Taranaki has been re-evaluated and is reported to be almost one-third larger than previously thought. Reserves are put at 964bn cf of gas and 53mn barrels of condensate.*

PetroChina is understood to have put *on offer seven blocks in the onshore*

NEWS Upstream

Oil profits to lead to increased investment

Despite a fall in oil production of 8.1% in 2000, strong profits and healthy cash-flow will lead to increased investment in the UK oil and gas industry, according to Stephen Boyle, Oil and Gas Economist with the Royal Bank of Scotland.

The Bank's latest *Oil and Gas Index* shows that despite oil production in 2000 being at its lowest level since 1993, its value has remained stable over the year. 'Higher prices and the depreciation of sterling against the dollar have offset the falls in output,' comments Boyle.

The price per barrel of Brent rose over 70% in the year to December 2000, to $28.57, although this was well below the peak monthly average of $33.70 reached in September.

Oil production grew in December by 66,000 b/d to 2.39mn b/d, although output was 9.3% lower than in December 1999. Gas production reached record levels during 2000, and demand continues to grow strongly. Combined production of oil and gas was down only 1.1% in the year to December 2000.

Year Month	Oil production (av. b/d)	Gas production (av. mn cf/d)	Av. oil price ($/b)
Dec 1999	2,634,050	13,078	25.64
Jan 2000	2,645,841	12,913	25.63
Feb	2,567,535	12,743	27.97
Mar	2,606,250	12,485	27.27
Apr	2,480,945	12,149	23.15
May	2,222,686	9,089	24.15
Jun	2,436,450	8,609	30.50
Jul	2,383,944	7,531	28.90
Aug	2,339,363	7,464	31.60
Sep	2,281,516	8,080	33.70
Oct	2,247,307	10,172	30.90
Nov	3,322,296	11,621	32.80
Dec	2,388,038	11,439	26.30

Source: The Royal Bank of Scotland Oil and Gas Index

North Sea oil and gas production

Cutting North Sea gas flaring

Eleven oil and gas companies operating in the North Sea have announced the start of an offshore flare transfer scheme designed to reduce the level of gas flared at more than 55 offshore fields.

Pilot, the UK government/industry taskforce, initiated the inter-company emissions trading scheme, claimed to be the first of its kind in the UK. The scheme is being undertaken on a voluntary, no-risk basis. Aims of the scheme include:

- continue the reduction in the overall quantity of gas flared;
- provide early experience of target setting and trading mechanisms, and;
- prepare the industry for possible integration into wider emissions trading schemes that are being developed for UK industry.

UK Energy Minister, Peter Hain said: 'The government is keen to reduce offshore emissions and this pilot transfer will help to achieve this important goal by offering operators increased flexibility in their day-to-day management of offshore operations.'

Refurbished first for Dutch platform

An environmentally friendly decision to use a refurbished production platform has resulted in a new field being brought onstream in half the time a new platform would have taken, writes *Brian Warshaw.* Clyde Petroleum used the platform to bring the North Sea Q4-A gas field onstream late last year, at a steady production rate of 48.5mn cf/d from a single well. This is the first time that a refurbished platform has been used on the Dutch Continental Shelf.

The platform, a six-slot manned satellite, was originally installed on the K10-C field. It was operated by Wintershall until its abandonment in 1995. Standing in 29 metres of water, it was lifted and transported to Swan Hunter's Newcastle fabrication yard, where the topside units were removed.

The platform was acquired in 1998 by Gulf Canada Resources, who arranged for it to be taken to a construction yard at Ijmuiden, in the Netherlands, for modification. The jacket was shortened by four metres to accommodate the shallower depth of water at the Q4 location, and the latest environmentally efficient process and utilities equipment installed.

The acquisition of the previously used platform enabled Clyde Petroleum, a subsidiary of Gulf Canada Resources, to bring the Q4-A1 well onstream in record time. The field was discovered in February 1999, with project approval granted in June the same year. The platform was delivered to the Dutch yard in April, with construction beginning in early January 2000, enabling it to be installed on location during the second week of August.

A 35-km pipeline was installed between the Q4-A field and a central processing facility. Construction of the 14-inch diameter pipeline was completed in October 2000, enabling first gas to be delivered on 24 December. The capital cost for the refurbished platform was similar to that of a newly built structure but, significantly, it reduced the engineering, construction and installation period to just 14 months, a saving of at least 10 months.

A further two wells, Q4-A2 and Q4-A3, are to be drilled and brought into production during the 2Q2001. An associated field, Q4-B, some 7 km away, will be developed via the Q4-A platform during 2002.

NW Shelf Venture

Woodside Petroleum reports that gas and condensate production in 2000 from the NW Shelf Venture of 0.59tn cf of dry gas and 32.9mn barrels of condensate was partially offset by small additions to proved dry gas and condensate reserves. Overall proved and probable dry gas reserves for the NW Shelf Venture acreage have decreased from 17.39tn cf to 17.03tn cf and from 22.65tn cf to 22.15tn cf, respectively. Proved condensate reserves have fallen to 511.8mn barrels, while probable condensate reserves are put at 733.9mn barrels.

A revised geological model and the results of the Lambert-5 development well led to an increase in Lambert/Hermes reserves of 5.7mn barrels of proved reserves and 10.4mn barrels of probable reserves. The proved reserves attributed to the Cossack field increased by 5.1mn barrels.

Oil production in 2000 of 42.3mn barrels was partially offset by the inclusion of additional reserves identified above. As a result, the NW Shelf Venture oil reserves decreased by 31.5mn barrels to 102.2mn barrels at the proved level and decreased by 31.9mn barrels to 188.8mn barrels at the probable level.

Wood development

BP has selected *nisus* as the consortium to take its central North Sea Wood discovery – the first of four projects in the Logic (Leading Oil and Gas Industry Competitiveness) managed Satellite Accelerator initiative – through to development design. The consortium comprises Global Marine Integrated Services, Reservoir Management, Stolt Offshore and Wood Group Engineering.

Wood is a small oil and gas accumulation with estimated recoverable reserves of 10mn boe, located between the Arbroath and Marnock fields. The first phase of the Wood project will be to undertake funded studies to confirm that the technical and commercial aspects of the *nisus* proposal are viable. The project is then expected to move into a contract definition phase in the summer. It is hoped that first oil will be produced in 2H2002.

The Satellite Accelerator initiative aims to bring together the talents of the UK oil and gas industry, contractors and oil companies alike, to turn some of the more challenging UKCS development projects into reality. Plans for a second set of Satellite Accelerator projects, involving a wider group of operators, are currently under discussion. Phase two is slated to begin in 2Q2000. For further details, visit **www.logic-oil.com**

In Brief

Bohai Wan Basin, one located in the basin's tidal zone.

Latin America

TotalFinaElf reports the start-up of *production in the first development phase of the San Alberto natural gas reserves in Bolivia. Phase one is producing 6.6mn cm/d of gas, supplying the Brazilian gas market through the Bolivia–Brazil pipeline under a 20-year take-or-pay contract with Petrobras. Gas deliveries will increase to 12mn cm/d when phase two of the project comes onstream in 2002.*

Norsk Hydro has reportedly agreed to *buy a 19% stake in Trinidad and Tobago's deepwater block 27 from Petrobras. Petrobras will retain a 19% stake in the BP-operated exploration block.*

Africa

Apache has acquired the bulk of *Repsol YPF's oil and gas concessions in Egypt for $410mn. The acquisitions will increase its net production in Egypt by approximately 75% to 37,500 b/d of oil and 110mn cf/d of natural gas.*

A feasibility study undertaken by *Tecnomare assessing the development options for the BG-operated Hasdrubal field, offshore Tunisia, is reported to have concluded that a low-cost, unmanned platform is the preferred choice. Field reserves are put at 250bn cf of gas and 26mn barrels of condensate.*

TotalFinaElf is reportedly aiming to *bring its $1.3bn Amenam oil field onstream by mid-2001. Estimated recoverable reserves are put at 500mn barrels.*

Energy Africa Gabon has acquired *from Shell a 40% interest in the onshore Echira field located 15 km south of the giant Rabi-Kounga field in Gabon. In exchange, Energy Africa is to transfer to Shell a 25% stake in the Kenguerie exploration permit.*

Repsol has agreed to sell Apache its *stake in a number of exploration and production concessions in the Western Desert of Egypt for $410mn.*

TotalFinaElf has announced the launch *of development work on structure B in offshore block 137, following the approval of the Libyan authorities. First oil is expected in 2003.*

In Brief

UK

BG has posted a rise in net 2000 profits *to £425mn.*

The total traded volume at the *International Petroleum Exchange (IPE) in 2000 exceeded 25mn lots, an increase of 11% over the previous year's record. The value of this trade was $700bn.*

Europe

Norsk Hydro has announced what it *claims are its best ever results, with a net income of NKr 14bn in 2000 (NKr 3.4bn in 1999).*

Norsk Hydro is to set up a fund, Norsk *Hydro Technology Venture (NTV), which will invest in energy sector research and development projects implemented outside of the company's own operations. It has allocated NKr 350mn for this type of investment over the next four years.*

North America

Anadarko is reported to be planning *to sell off non-core assets worth several hundred million following its $777mn acquisition of Canadian company Berkley Petroleum.*

Baker Hughes has posted 4Q2000 earnings *of $81mn, compared with a loss of $22.2mn in the same period in 1999.*

Apache has earned $252.2bn in *4Q2000, an increase of 173% from the prior-year period.*

TotalFinaElf has sold its 8% stake in *Ultramar Diamond Shamrock (UDS) back to UDS for $230mn as part of a rationalisation programme of its US downstream operations.*

Anadarko Petroleum has posted a net *income of $454mn for 4Q2000, sixteen times that recorded in the same period in 1999. Earnings in 1Q2001 are expected to be 20% higher than the 4Q2000.*

El Paso Energy has reportedly completed *its $24bn acquisition of Coastal Corporation. The deal is said to make El Paso the fourth largest energy company in the US.*

Unocal has posted 4Q2000 net earnings *of $173mn, compared with $97mn in the same period a year earlier.*

Shell announces record profits

Royal Dutch/Shell has posted record 4Q2000 and full-year results – up 85% at $13.1bn on an adjusted CCS basis – with all businesses delivering results in 2000 ahead of targets for 2001. Commenting on the cost improvements, Chairman Sir Mark Moody-Stuart said: 'We were targeting $4bn/y of cost improvements for end-2001; by the end of last year we already exceeded the $4bn. We set ourselves a target for end-2001 of 14% for return on average capital employed (ROACE) at a $14/b oil price – the actual ROACE came in close to 20%, but at $14/b our ROACE would have been 14.2%, again ahead of target and ahead of time.'

Exploration and production adjusted earnings for the year of $9,257mn were also claimed to be a record, more than double the $4,355mn reported in 1999. This was reported to be due to higher oil and gas prices, higher gas volumes and lower operating and exploration expenses. Downstream Gas and Power adjusted earnings of $462mn were more than triple those achieved in 1999, reflecting higher earnings from LNG operations. Oil Products adjusted CCS earnings of $2,480mn were up 62% compared with 1999. This reflected the benefit of higher industry refining margins and rapid cost improvements, partly offset by a decline in fuels marketing margins. Chemicals adjusted earnings of $752mn were 8% lower than in 1999, with the benefits of cost reduction programmes and underlying business growth more than offset by lower margins and the effect of lower taxation in 1999.

The Group also announced plans to immediately launch a share buy-back programme. The company will repurchase between 0.5% and 3% of issued share capital of Royal Dutch and Shell Transport during 2001, the limits set under Dutch law.

Commenting on UK fuel prices, Moody-Stuart stated: 'We are fully aware of the impact that the combination of high crude prices, coupled with high excise duties and taxes on fuel [accounting for some 80% of the price of a litre of petrol], can cause to our customers. We do not control either of these factors; but where we can, through higher efficiencies and better service, we are helping alleviate the pressure on customers.' The company later reported that it had, in fact, reduced its average unleaded pump prices by over 5 p/l since 1 November 2000, and stated that, without the tax element, UK fuel 'is among the cheapest in Europe.'

In a subsequent press briefing on the issue of UK fuel prices, hosted by Malcolm Brinded, UK Country Chairman and Ian Sutcliffe, Manager UK Retail, the company explained why some of its massive profits had not been used to make petrol cheaper at the pump. 'Subsidising our fuels business with profits made overseas or from other UK businesses would not make commercial sense in the long-term. There are many other companies who compete against us only in individual business sectors (for example in gas sales, upstream, chemicals). Their performance is not constrained by subsidising other businesses and we need to compete against them in each sector, standing alone. Cross-subsidisation would quickly disadvantage small independent fuel retailers and could therefore be interpreted as anti-competitive. Many of these independents are already struggling to make a sustainable return on their business and would not be able to match a lower subsidised price at the pump.'

Conoco reveals 2001 capital budget

Conoco plans to spend about $2.4bn on capital projects and cash exploration expense during 2001, down nearly $400mn from 2000 that included the $550mn acquisition of Saga's North Sea business. Some $1.8bn of the 2001 capital budget will be spent upstream.

Major upstream projects include continued development of Petrozuata in Venezuela, as well as the Lobo and San Juan natural gas fields in the US. Other projects include funding in support of two natural gas export sales agreements from Indonesia to Singapore and Malaysia. In the UK, further development will be completed on natural gas assets in the southern North Sea and pre-project work on Clair, west of Shetlands. Other projects include the Huldra field offshore Norway and the Rang Dong field offshore Vietnam.

Between 25 to 30 exploration and appraisal wells are expected to be drilled in 2001, with the focus on the deep waters of the Gulf of Mexico, as well as Norway, the UK, Vietnam, Malaysia, Indonesia, Nigeria and Canada.

Worldwide refining, marketing and transportation capital projects include completion of the distillate clean fuels upgrade at the UK Humber refinery and marketing projects with the greatest potential for high returns where Conoco has already established a strong presence.

NEWS Upstream/Industry

Provisional UK energy statistics released

The UK Department of Trade and Industry has published provisional statistics showing energy production and consumption and petroleum product prices for 2000. The main points are:

- Energy production in 2000 was 2.5% lower than in 1999.
- Coal production was down by 13%.
- Oil production was down by 8%.
- Natural gas production was up 9.5%, with four new fields starting production during the year.
- Primary electricity was down by 10.5% and nuclear electricity generation fell by 10.5%. One nuclear station closed during 2000 and at a number of others there were extended outages and unplanned maintenance and repairs. Hydro output also fell by 7.5%.
- Primary energy consumption in 2000 was 1% higher than in 1999.
- Coal and other solid fuel consumption rose by 6%.
- Oil consumption was down 1.5%.
- Gas consumption was up 4%.

Latin American deal

TotalFinaElf has announced the acquisition of interests in several natural gas transmission assets in Argentina and Chile from TransCanada Pipelines (TCPL). These networks form an interconnected system supplying the markets of both countries and Brazil from the Neuquen and Northwest gas production basins in Argentina.

Under the terms of the agreement, which is valued at approximately $440mn, TotalFinaElf has acquired:

- 27.2% of the company Gasinvest;
- 46.5% of Gasoducto GasAndes (Argentina); and
- 21.8% of Transportadora de Gas Mercosur (TGM).

Natgas stake for Shell

Egypt Kuwait Holding Company is to transfer 18% of its Natgas shares to Shell. Natgas is an Egyptian joint stock company traded on the Egyptian stock exchange. Natgas has been awarded a 20-year concession to study, finance, design, build and operate a natural gas transportation and distribution network and market natural gas to residential, commercial and industrial customers on behalf of the Egyptian General Petroleum Corporation (EGPC) in the governates of Cairo, Giza, Alexandria and Beheira, the Sixth of October Industrial City and Borg Al Arab Industrial City.

Egypt has confirmed domestic natural gas reserves in excess of 50tn cf.

BP on track for 2001 cost savings

BP has posted a 2000 pro forma result, adjusted for special items, of $14,203mn, compared with $6,206mn in 1999. BP Group Chief Executive, Sir John Browne, reported that $2bn year on year reductions in the combined cost structure of BP and Arco had been achieved, while return on average capital employed was 23% compared with 13% in 1999. He also stated that the company was 'on track for the cost saving and improvement in return on capital targets by the end of 2001' and that 'hydrocarbon production is set to grow after the plateau seen in 2000 resulting from curtailed investment at the time of the BP Amoco merger.'

Exploration and Production's results for the 4Q2000 and full year were reported to be at record levels of $4,700mn and $15,710mn respectively – reflecting significantly higher oil and gas prices, the contribution from Arco and lower costs. Capital expenditure increased during 2000, to total $6.4bn. The reserve replacement ratio was 160%, with 1.8bn boe booked.

The Gas and Power division recorded a $186mn result, compared with $211mn in 1999, with the improved contribution from operations only partly offsetting increased business development costs.

The strong Refining and Marketing result of $4,943mn ($2,082mn in 1999) was reported to reflect significantly higher refining margins – although marketing margins came under pressure from higher product prices – and contributions from Arco and Burmah Castrol. The year's result also benefitted from cost reductions and a strong oil trading performance.

Chemicals result of $1.036mn for the year was a $103mn improvement on 1999, benefitting from productivity improvements which more than offset the effect of the weaker environment.

In Brief

***Phillips Petroleum has posted a** 4Q2000 income $701mn, compared with net earnings of $215mn in the same period a year earlier.*

***Chevron has announced a net income** of $1.494bn for 4Q2000 – nearly 90% higher than the 4Q1999.*

***Conoco has said that higher prices,** increased production and strong refining margins has produced record results for the fourth consecutive quarter. Net income totalled $574mn, and revenues exceeded $39bn, 44% higher than 2000.*

Middle East

***Iranian oil revenue is expected to** reach $20bn by March 2001, said Hojjatollah Ghanimiford, National Iranian Oil Company Deputy Managing Director.*

Russia & Central Asia

***BP has received $657mn from the sale** of its 7% stake in Lukoil, through a combined American Depository Receipts (ADR) placement and exchange bond offering. The ADRs were acquired through its merger with Arco in April 2000. The disposal does not include, and does not affect, the joint ownership by BP and Lukoil of LukArco.. BP will also remain coventurer with Lukoil in the Azerbaijan International Operating Company (AIOC).*

***Transneft plans to raise $115mn from** the European Bank of Reconstruction and Development (EBRD) in order to finance the construction of the Baltic Pipeline System, reports UFG. The $450mn project is set to increase Russia's export capacity by 12% (300,000 b/d) when it becomes operational in December 2001.*

Asia-Pacific

***Australian company BHP is understood** to be planning to launch a buy-back of up to 5% of its shares after posting an 18% increase in first half profit of A$1.43bn.*

Latin America

***Repsol YPF is to acquire Perez Companc** and Pluspetrol's stakes in Bolivian company Empresa Petrolera Andina as part of an asset rationalisation programme.*

In Brief

UK

***Retail Decisions (ReD), a UK-based card** fraud prevention specialist, has secured a further two-year contract with Murco to ensure that every transaction made at the retailer's UK service stations is validated. ReD is claimed to be the sole collator of the UK banking industry's Hot Card File, which contains millions of lost, stolen and forged cards and is updated every day.*

***British Gas is increasing prices for all its** domestic gas customers from 1 April 2001. The gas increase – averaging 4.7% – is largely in line with those announced by other major suppliers, which result from escalating gas costs affecting the whole industry, according to British Gas. The increase will add approximately £14 to the average bill for mains gas customers – less than 27 pence per week. At the same time the company will cut domestic electricity prices for customers in England and Wales*

***Murco is to trial promotions of fresh** meat, produce and chilled meals at its 37 Costcutter supermarket sites in the UK.*

Europe

***The European Commission has signalled its opposition to aid schemes** that compensate businesses because of rises in fuel costs, launching a formal investigation into proposed subsidies from the Belgian Government to its fishing fleet. It involved financing loans at preferential rates. The Commission said it 'has doubts about the compatibility' of the scheme with EU state aid rules, reports* Keith Nuthall.

***Shell Hydrogen, Hydro-Québec (HQ)** and Gesellschaft für Elektrometallurgie (GfE) have announced plans to establish a joint venture for the development of, manufacturing and marketing of hydrogen storage products. The safe storage of hydrogen is crucial for the introduction of the gas into energy markets. The partners believe that metal hydrides will be the best way to store the gas. These hydrides work by trapping the gas inside a metal alloy, safe because the hydrogen atoms are bonded to the metal.*

***France is to be taken to the European** Court of Justice by the European Commission for failing to abide by the EU VAT directive when applying different rates of VAT to gas supplies for*

UK HGV weight limit increased to 44 tonnes

The maximum weight for heavy goods vehicles (HGVs) operating in the UK recently rose from 41 tonnes to 44 tonnes. According to Richard Turner, UK Freight Transport Association (FTA) Chief Executive, the new 44-tonne vehicles 'really will be the perfect lorry'. He stated that they will be no bigger than current vehicles, but will be able to carry the extra weight distributed over a new sixth axle. In addition, they will be less polluting, have better brakes, cause less road wear, and result in fewer lorries on UK roads. He then went on to outline the details behind the claims:

- ***Fewer lorries*: In 1994 the UK Department of Trade calculated that a move to 44 tonnes would result in 6,500 fewer vehicles on the road. The Commission for Integrated Transport (CFIT) agreed, estimating an annual reduction of 100mn vehicle kilometres;**
- ***Less pollution*: CFIT estimated that the reduction in the number of vehicles would result in carbon dioxide emissions dropping by 80,000 to 100,000 t/y and nitrous oxide by 3,000 to 4,000 t/y.**
- ***Less polluting trucks*: 44-tonne trucks will meet strict EU design criteria to reduce emissions. Modern trucks are 80% less polluting than those of 10 years ago; the engines are also more efficient.**
- ***Safer trucks*: 44-tonne trucks will be equipped with brakes that are state-of-the-art, and feature anti-lock braking systems (ABS), which improve stopping ability and eliminate 'jack-knifing' and 'trailer swing'.**
- ***Reduces road wear*: Six axles rather than the usual five mean that the weight is distributed over more axles with the result that they are less hard-wearing on roads and bridges. The six axles also mean that vehicles are safe and more stable when manoeuvring and braking. In addition, the DETR has insisted on road-friendly suspension (air suspension or equivalent) which also lessens the impact on the highway.**

For more information, visit the FTA site at www.44tonnes.com

IP study on downstream mortality

The Institute of Petroleum has sponsored major epidemiological studies of UK oil refinery and distribution workers over the last 21 years. Previous results of the study were published in 1980, 1991 and 1995 and the latest 2000 reports, prepared by the University of Birmingham, are now available from the IP's distribution agent, Portland Press (Tel: +44 (0)1206 796 3510).

The original study cohorts comprised 34,569 refinery and 23,358 distribution workers. All these male employees had a minimum employment of 12 months during the period 1950–1975. As some of the study subjects were first employed around 1900, Birmingham University, for its review and report redefined the cohorts so that they would be more relevant to, and representative of, more recent work conditions which could be described with more confidence. The revised cohorts were 28,630 refinery and 16,480 distribution workers – which still comprises one of the largest single oil industry cohort studies ever undertaken.

The objectives of the study were to summarise available cohorts' mortality data and to determine whether any part of the cohorts' mortality experience might be related to occupational exposures, in which event further analyses capable of investigating the potential role of occupational exposures might be needed.

Observed numbers of cause-specific deaths occurring in the cohorts were compared with expectations based on UK national mortality rates to determine the standardised mortality ratios (SMRs). For the overall study cohort the resultant SMRs were significantly below 100 for all causes of death and for most of the main causes of death. The individual refinery and distribution cohorts' results are discussed in detail in each of the reports.

The researchers concluded that 'the findings of this analysis should be welcome news for UK refinery and petroleum distribution workers' – their overall mortality is well below the national average.

If you have any questions or comments please contact Professor Tom Sorohan at The Institute of Occupational Health, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK (Tel: +44 (0)121 414 3614) or the Institute of Petroleum, 61 New Cavendish Street, London W1G 7AR, UK (Tel: +44 (0)20 7467 7100).

EC assesses alternatives to oil and gas

The European Commission has positioned itself in stark contrast to the bullish pro-petrochemical stance of new US President George W Bush, by considering alternatives to oil and natural gas to guarantee energy supplies, including nuclear energy, which has previously been viewed as a pariah industry in Brussels, reports *Keith Nuthall*.

Speaking at the recent World Economic Forum in Switzerland, European Energy Commissioner Loyola de Palacio also released figures showing that the EU is underachieving in the creation of renewable electricity sources; instead of moving towards its 12% share goal, it is stagnating at around 6%. She said that renewable sources 'should be pushed and regulatory obligations or tax incentives are envisaged,' and that voluntary agreement with the power industry could also be struck to boost green energy. Palacio added that Europe is 'missing out on opportunities for energy saving,' that could cut EU energy demands by 18%.

The Commissioner was enthusiastically positive about nuclear energy, saying that resources need to be pumped into research for radioactive waste management. She added that nuclear energy has helped the EU achieve its Kyoto Protocol targets regarding global warming, helping it avoid around 300mn tonnes of greenhouse gas emissions annually.'

Palacio also expanded on previously announced plans to speed the liberalisation of the EU gas market, completing the process by 2005, creating competition for all non-domestic customers by 2004. She said that the Commission would probably propose measures boosting unbundling requirements, guaranteeing third-party access to supply infrastructures through fixed and regulated tariffs, creating an independent regulatory authority and re-examining public service provisions.

In a different speech, also at the forum, the Commissioner said that liberalisation per se, would not be enough to guarantee cross-border gas supplies across the EU. She said investment was needed to create additional infrastructure to widen supply bottlenecks and said that the Commission would shortly produce a new plan to improve capacity at these pinch points. She said that swift liberalisation was especially important in the gas sector because, so far – despite 75% of gas demand in the EU being open to competition – gas prices have yet to show independent price development from world oil prices. 'The completion of the internal market for gas is, therefore, of paramount importance in order to allow true competition in the gas sector and to gradually move away from the indexation of gas to oil prices [of particular relevance given the enormous volatility of oil prices we are witnessing],' said Palacio.

Meeting global power needs

Agreements to buy electricity generating plants and distribution, transmission and supply assets reached an 'unprecedented' $85bn worldwide in 2000, according to a survey in the latest issue of FT Energy's *Global Private Power* report. Much spending went on generating stations, with 99,000 MW changing hands – enough to meet the power needs of almost 100mn European or US households.

The country-by-country analysis also found that:

- Over 35,000 MW of capacity under construction and development changed hands, almost all of it fuelled by natural gas.
- The sale of power distribution and supply companies serving around 24mn customers worldwide were agreed.
- Most of the activity has occurred in those countries in Europe, Latin America and, especially, North America, where the electricity generation and sale markets are already competitive or are in the process of being freed up.
- Much of the activity is involved in the sale of privately-owned facilities rather than the privatisation of state-owned assets.
- The majority of the buyers were 'deep-pocketed' power and energy companies who were consolidating, expanding or repositioning their ownership interests in markets where they were already active.

For more information, contact Rob Carson, Tel: +44 (0)20 7896 2513; e: **rob.carson@ft.com**

In Brief

fixed rate charges or variable bills set by usage, reports Keith Nuthall. *Spain is also being brought before the Court over VAT for allowing reduced rates for sales of imported LPG.*

Derivatives trading in electricity at EEX, *the European Energy Exchange, will be launched on 1 March 2001. According to EEX, it will be the first exchange in Germany to offer derivatives trading in electricity. More than 20 participants from five countries are technologically linked to the EEX system.*

EU Finance Ministers hope to have *agreed an extension to 36 derogations from European excise duty laws by March 2001, granting an additional two years of life to those regarding road haulage fuels and six years for the rest, which include heating oils and fuel for marine pleasure craft. Official sanction for the exemptions expired last December, writes* Keith Nuthall.

North America

Phillips Petroleum has acquired Tosco *Corporation, an independent US refining and marketing company, in a deal worth $7.5bn.*

Middle East

Egypt, Lebanon, Syria and Jordan have *signed a $1bn deal for the transportation and sale of gas in Cairo, writes* Stella Zenkovitch. *This deal confirms a protocol earlier signed in Beirut, stipulating the creation of two companies – the Orient and Arab.*

Russia and Central Asia

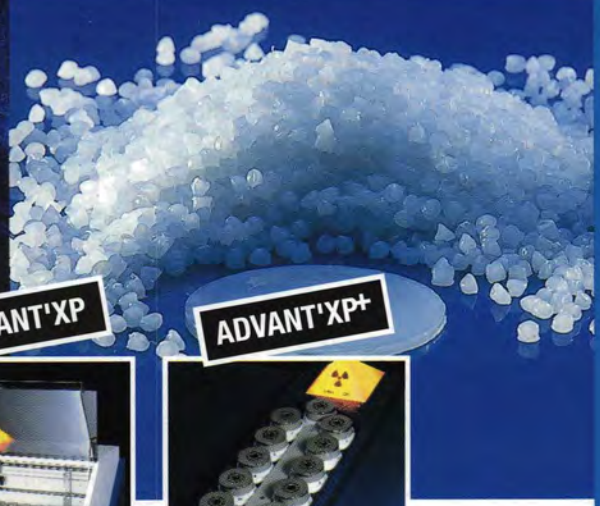
Surgut is reported to have begun *negotiations with the troubled Lithuanian Mazheikiu Nafta refinery and oil company.*

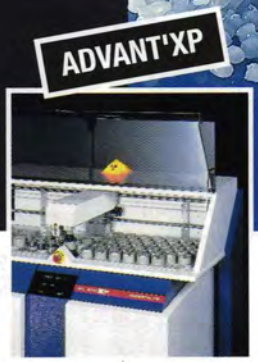
Lukoil is reported to be planning to *invest $400mn in its Ukrainian downstream operations over the next three years. Of this figure, some $240mn will be invested in refining, $100mn in petrochemicals and $60 in its retail network.*

Surgutneftegaz is reported to be planning *to build 200 service stations, conforming to international standards, in Russia. No further information is available.*

Yukos is planning to modernise 1,200 *Russian service stations over the next five years and to capture 10% of the*

The Family





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Continental prices influencing UK gas market

The single most important factor in influencing gas prices in the UK today is the price of gas in Continental Europe, according to a new report from independent energy consultants ILEX. The report, which was commissioned by Pilot, the joint UK government/industry initiative revitalising the offshore oil and gas industry, argues that the dynamics of the UK gas market have changed significantly since the opening of the UK–Continental Interconnector gas pipeline in October 1998.

When the oil price rises or falls, Continental gas price follows, usually with a time lag of around six to nine months. This then affects gas prices in the UK as a result of the link to the Continental market through the Interconnector pipeline.

ILEX Director, David Cox commented: 'ILEX believes that the prime reason for the increase in prices is due to the linkage between oil and gas prices. This is not just a UK issue – higher oil prices have fed through to increased gas prices across all of the European and North American gas markets. There are also a number of secondary factors that have contributed to the increase in prices including the introduction of entry capacity auctions, misplaced market – sentiment and inefficiencies, and the speed of regularity reform. Some have also alleged that there is gaming or manipulation of the gas market but no one has been able to produce any convincing evidence.'

The report's key findings are:

- The gas market in the UK is the most competitive in the world. All gas consumers in the UK are able to choose their gas supplier from a large number of competing companies. There is competition in all parts of the gas supply chain with over 50 producers of gas offshore, 60 licensed shippers, over 60 licensed commercial and industrial suppliers and nearly 30 domestic gas suppliers.
- UK supply and demand has doubled since the early 1990s, with the result that gas is now the largest source of primary energy in the UK.
- The bulk of UK produced gas – around 85% – is sold under long-term contracts at the beach, with the rest sold on the wholesale spot market.
- UK gas consumers have benefited from the introduction of competition, with gas prices steadily falling in real terms since the mid-1980s.
- Continental supplies from Norway, Holland and the Former Soviet Union are indexed to the oil price, which rose last year to over $30/b, significantly increasing gas contract prices in Europe.
- The UK was seen as a cheaper source of gas, resulting in large volumes of gas (up to 20% increase in the daily UK demand) being traded into Continental Europe both through long-term contracts and on the developing spot market at Zeebrugge. These export deals had two effects: (1) The export deals tightened the UK supply demand position. (2) the price of the export deal became the marker for the UK spot market.

Looking into the future, ILEX predicts that the recent decline in oil prices will translate into lower gas prices in the UK and notes that already the forward curve points downwards with annual gas available from October 2002 at around 18 p/therm, In the medium to long-term, ILEX believes that the annual wholesale spot UK gas price will tend towards 15 p/therm.

In Brief

country's fuel retail market, writes Stella Zenkovich.

***Between 50% and 97% equity in** Czech state gas company Transgas is to be sold, together with stakes in the eight regional gas distributors, as a single package, reports* Stella Zenkovich.

***Lukoil has acquired control over a 16-**strong network of service stations in Moldova, increasing its marketshare by 50%. The Russian oil company has two refineries nearby – Petrotel in Romania and Odessa in Ukraine, reports UFG.*

***The Slovakian National Property Fund** (FNM) is understood to be selling its 7.9% interest in the Slovnaft refinery. The facility is capable of processing up to 5.4mn tly of oil.*

Asia-Pacific

***The North West Shelf LNG Sellers have** signed a letter of intent with Tohoku Electric for the sale and purchase of 0.4mn tly of LNG, starting April 2005.*

Africa

***The World Bank has approved a** $30mn loan to Zambia to mitigate the effects of rising fuel prices, writes* Stella Zenkovich.

***Shell is planning to build a gas-to-liq-**uids (GTL) plant in Egypt to process gas from the Nemed field which is claimed to have 1bn barrels of liquids reserves and 15mn cf of gas, reports* Stella Zenkovich.

UK Deliveries into Consumption (tonnes)

Products	†Dec 1999	*Dec 2000	†Jan–Dec 1999	*Jan–Dec 2000	% Change
Naphtha/LDF	162,141	223,601	2,956,716	2,337,819	–21
ATF – Kerosene	768,639	781,119	9,619,339	10,242,070	6
Petrol	1,829,953	1,892,434	21,481,496	21,270,596	–1
of which unleaded	1,683,978	1,791,776	18,735,411	19,678,027	5
of which Super unleaded	63,849	34,875	461,143	471,509	2
of which Premium unleaded	1,620,129	1,756,901	18,274,255	19,206,518	5
Lead Replacement Petrol (LRP)	0	100,654	0	1,592,565	–
Burning Oil	429,464	350,233	3,556,858	3,603,361	1
Automotive Diesel	1,302,452	1,174,497	15,223,835	15,341,479	0.8
GasOil/Marine Diesel Oil	607,867	461,993	6,740,729	6,820,620	1
Fuel Oil	168,377	161,495	2,027,352	1,684,864	–17
Lubricating Oil	62,740	65,514	795,121	823,594	4
Other Products	747,683	701,047	8,540,800	8,461,492	–1
Total above	6,079,316	5,811,933	70,942,246	70,585,895	–1
Refinery Consumption	489,829	410,213	6,093,744	5,133,529	–16
Total all products	6,569,145	6,222,146	77,035,990	75,719,424	–2

† Revised with adjustments * Figures dated from Feb 2000 onwards are the final figures as supplied by reporting companies, they are no longer provisional figures

Turning tide for seismic sector

The past few years have been tough for the seismic sector. Low oil prices kept oil company exploration budgets tight and, as a result, there has been a substantial consolidation in the seismic contractor market. The tide seems to have turned, however, with higher commodity prices beginning to feed through to increased activity in the international seismic sector – in particular the Gulf of Mexico and offshore Brazil. *Kim Jackson* reports on recent and developing trends in the industry.

Virtually all of the deepwater ocean margin provinces – Brazil, West Africa, west of Shetlands and Canada, as well as the North Sea – are expected to be the focus of seismic activity this summer. The major oil and gas companies are keen to further improve recovery from their existing assets, leading to a greater degree of activity aimed at specific proven reservoirs while the smaller independent oil and gas companies, too, are very much coming back into play after they got hit so hard during the last downturn.

Exploration for gas is also forecast to increase, particularly onshore North America where gas is currently commanding an increasingly high price (see *Petroleum Review*, February 2001).

Contractor consolidation

The past year has seen a significant market consolidation in the seismic and geophysics sector – the 'natural consequence of a crowded market in difficult times,' comments John Greenway of Petroleum Geo-Services (PGS). Merger and acquisition activity has included the sale of Aker Maritime's seismic business to Compagnie Generale de Geophysique (CGG) of France for $118mn. However, the most significant merger that took place was between

Acoustic source of array being deployed off a Ramform seismic vessel

Photo courtesy of PGS

Baker Hughes' subsidiary Western Geophysical and Geco-Prakla, the Schlumberger subsidiary, to create WesternGeco at the end of 2000. Schlumberger paid Baker Hughes $500mn in cash and owns 70% of the new venture. At the time, the companies stated that the deal would result in 'significant' cost savings' – forecast at up to $150mn – which were to 'support the development and innovation necessary to help seismic maintain its role as a key contributor to the oil industry's process of lowering the cost of finding and producing oil and gas.'

More recently, WesternGeco told *Petroleum Review* that, while there have been 'some headcount reductions – mainly in duplicated support and management positions,' the objective is 'to maintain the level of field operations planned by the two partners before the merger' and to 'maintain proper capacity to meet industry demand.' It also reports that 'standardisation in the processing arena has undergone specific, detailed review. Each of the parent companies has a solid and algorithmically rich processing suite. We have decided to utilise Omega, the former Western package, and will incorporate the functionality unique to Seismos, the Geco-Prakla package.'

According to Robin Walker of WesternGeco: 'Industry rationalisation is being driven by poor financial results in the seismic segment. The seismic industry has long been acknowledged as contributing the highest value in the oil field, yet it provides very poor returns on investment. Indeed, while it is difficult to assess, the seismic business overall has not produced positive cashflow for quite some time.'

'Much of this [cash flow] has been used to fund the renewal of acquisition assets – new, specialised 3D vessels and high-tech land crews – as well as new computer capacity to handle today's massive quantity of data and complex processing algorithms. Capital has also been used to acquire an extensive global library of multi-client data. Regardless of returns from the industry's past investments in data and other resources, consolidations are likely to cause an increasingly stringent review of future investments throughout the seismic business.'

Commenting on the issue of costs, Greenway of PGS says: 'It is a bit early to say anything specific about pricing, as these mergers have only just happened; the same is true for any rationalisation gains that these companies may have. However, we at PGS believe that pricing could improve. Over the last 10 years or so, the seismic industry as a whole has not earned much money – despite the massive investments that it has made and the technological advantages that it has provided to its customers. We predict, therefore, that the merged companies will want to increase pricing in frustration over this situation, rather than use any cost-cutting gains from the mergers to reduce prices even further.'

PGS's *Ramform Challenger* — *Photo courtesy of PGS*

The onshore seismic sector is also expected to see its share of market consolidation in the future. WesternGeco's Walker comments: 'Onshore, there has historically been a place for the local or regional niche player. However, as industry quality, health and safety standards become more stringent, it is uncertain whether these companies will choose to continue as independents or consolidate into fewer, larger groups operating in less-specific geographical niches. Converting proprietary projects into non-exclusive ones may have constrained the financial freedom of movement of some of these companies.'

Multi-client surveys

One of the most obvious trends in the seismic sector has been the change from proprietary to multi-client activity for new acquisition. According to Walker this is 'a function of two factors: the significant upswing in activity in areas such a Brazil, whose acreage licensing structure favours such an approach, and the oversupply of crews, which caused a precipitous decline in acquisition rates to well below cost in many cases. This resulted in many jobs that should logically have been proprietary, being converted to multi-client.'

'It is unclear whether this trend will continue for much longer, before reverting to a balanced model where seismic with many customers is acquired as a non-exclusive dataset, but seismic with only one obvious customer will revert to being acquired as a proprietary survey.' Some, such as PGS, predict a 50:50 balance between proprietary and multi-client surveys this year and point out that, in the future, the balance is 'very much dependent on the frequency and size of international licencing rounds'.

There is also a growing need for oil companies to be able to interpret reservoir potential on a regional basis using 3D data. This requires access to vast seismic data librarys. The PGS library currently covers some 280,000 sq km, while Veritas and WesternGeco – who recently signed an agreement to jointly publish their libraries via the IndigoPool.com website (see section on technology trends) – own and market multi-client seismic libraries totalling over 3mn linear km of 2D data and 540,00 sq km of 3D data.

Prior to its merger with Geco-Prakla to form WesternGeco together with the recent agreement with IndigoPool.com, Western Geophysical launched **www.infoSeis.com** to provide interactive access to its worldwide 2D and 3D multi-client seismic data library. The site allows the user to conduct map-based or alphanumerical searches, and then pan, zoom and access map layers. Additional information about the surveys is also available. The site is to be further progressed under WesternGeco.

Historically, land seismic has not seen

Onshore seismic acquisition *Photo courtesy of Veritas*

the same increase in multi-client activities as it is more costly per square kilometre and the investment criteria are not so compelling. However, it is well-established onshore Canada and North America where data acquisition in the Texas terrain in particular has proved fairly efficient. In addition, multi-client 3D data has longer been in demand in the offshore Gulf of Mexico region, creating, in turn, a more developed market place on land.

High-density surveys

There has been a growing demand for high-density surveys, especially for 4D and reshoot surveys, in recent months. These surveys use a very large number of recording streamers towed quite close together and using a single sound source. They acquire a very high data density over the survey area and thus deliver improved data quality to the customer. PGS claims its Ramform vessels 'are particularly well suited to these jobs as they have a higher streamer count compared with the rest of the industry.' The company currently shoots its high-density surveys using 12 streamers, but is planning to extend this to 16 this year (and eventually a maximum of 20) following improvements to the towing system. Its conventional vessels tow six streamers.

'Altogether in the world, there are 35 fully-capable 3D streamer vessels,' states Greenway of PGS. 'Of these, 10 have a proven capability to tow 10 streamers. Six of these are PGS Ramform vessels, three are owned by WesternGeco and one by CGG. Ramforms are currently the only vessels capable of towing more than 10 streamers.'

Technology trends

The seismic sector is constantly striving to improve its technology in order to increase data acquisition efficiency while reducing survey duration – all at a lower cost.

Onboard seismic processing, in particular, has undergone tremendous development in the last eight years since it first began, driven by the significant increase in computing power and data transmission capacity in that time. Today, it is possible for any seismic contractor to process all routine stages onboard, although, for more sophisticated processing stages, it is quite common for the customer to prefer to get more heavily and directly involved.

Future developments in onboard processing are expected to include ever-better remote access and quality control, and faster delivery of data cubes. The costs are higher than shore-based processing, but the advantages in turnaround are such that the practice is nearly universal. As the industry moves away from exploration to focus on the reservoir, the need for such comprehensive, near real-time analysis becomes even greater. For example, short-duration activities such as injection programmes will require checking and their efficacy evaluated within days rather than weeks.

Other developing trends in the marine sector include larger streamer spreads for high-density surveys (particularly for 4D time-lapse projects); increased efficiency of seafloor seismic operations; and the development of permanent or semi-permanent sensor arrays over producing fields. Onshore, the focus is on increasing operational efficiency; fixed downhole installations for 4D and gas front mapping; and increased fidelity of multi-component data.

Attention in both sectors (marine and onshore) is also focusing on increased reliability in deriving reservoir/rock properties from seismic attributes, particularly on multi-component data; deriving of direct hydrocarbon indicators from seismic attributes; development of data visualisation systems which include 3D seismic and other exploration and/or production data – and doing it all even cheaper than before.

The driving force behind all these developments is that oil companies want a perfect description of the reservoir at minimal cost.

Some specific recent product developments include:

- New solid streamers developed by Western Geophysical together with Australian company Thomson Marconi Sonar, that are designed to reduce noise levels and increase the efficiency of sound acquisition. Such streamers allow the contractors to transfer receiver systems through different water temperatures without requiring reballasting.
- New cables from WesternGeco and CGG that can be steered in any chosen direction through the use of winged appendages. This stops streamers tangling and facilitates the precise positioning of geophones, a factor that is particularly important in 4D time-lapse surveys.
- A new topshooter synchroniser from CGG that is claimed to identify and reduce the number of double shots and misfires.
- WesternGeco's launch of its 'revolutionary' Q family of seismic acquisition and processing systems: Q-Land and Q-Marine. Q digitises data from every individual sensor in the survey, rather than grouping sensors and digitising the analogue-summed results which leads to a substantial loss in fidelity and reduces the ability to calibrate the signal and remove noise properly. By digitising the individual results, Q delivers a significantly better-focused image. The Q-Marine system allows recording by over 4,000 separate hydrophones on as many as 20 streamers, to give a maximum of 80,000 channels. However, the company currently plans to initially deploy Q-Marine on its 'mid-sized vessels as most reservoir-oriented projects are relatively small and do not normally require more than eight streamers.'
- PGS's new seafloor seismic acquisition system – FOURcE – that can be deployed in water depths of over 2,000 metres. The multi-component

acquisition system is reported to be capable of recording in both shallow and deep waters, and is claimed to be particularly useful in areas where towed streamer surveys are uneconomic or geophysically inappropriate.

Downhole seismic while drilling is another recent development, albeit not a particularly commerical one as yet. It is advantageous to be able to acquire data with sensors in the borehole while the hole is being drilled, as this saves expensive rig time by not having to stop drilling to conduct seismic. The borehole data can be very detailed, but, if the operator wants to image a whole field's reservoir accurately – and as reliably and early as possible – then it is also necessary to acquire data over the whole area.

In the future, it is predicted that exceptionally good reservoir imaging will be achieved by integrating several different types of data into the process, including 'hard' geological and lithological data from the well itself, together with detailed borehole seismic as a constraint on the images obtained from other methods (towed streamer, seabed cables, multi-component, normal pressure wave, etc). As in today's market, the range of methods that work for a particular reservoir will be determined by its geology and geography while the final methods selected will be chosen on cost grounds.

The Internet is also finding a role in the seismic sector, with WesternGeco's new infoSeis website already mentioned (see section on multi-client surveys). Schlumberger, too, has embarked on this road, with its Indigopool.com subsidiary, claimed to be 'the most comprehensive online service provider for the buyers, sellers and traders of oil and gas data and assets. The company manages the UK Government's LIFT (Licence Information for Trading) initiative, an online hub for identifying asset opportunities on the UK Continental Shelf.

More recently, Indigopool.com signed an agreement with Veritas DGC and WesternGeco to create what is claimed will be a 'groundbreaking technology venture for the geophysical industry.' The venture plans to develop industry-wide e-commerce standards and new technology to publish, market and licence multi-client seismic data online. Under the agreement, the companies will publish their respective data libraries on the IndigoPool.com website.

Indeed, the continuing development of e-commerce is expected to lead to significant change in business processes and business models in the seismic industry – as well as in the oil and gas industry at large – and to encourage the development of new, ever-more sophisticated data delivery mechanisms. ●

Seismic data management

Tony Wood, IBM's Global Petroleum Marketing Manager, explains the thinking behind Seitel Incorporated and IBM's decision to jointly build what is said to be the world's largest SAN (storage area network).

The petroleum industry's ability to analyse seismic data in a timely manner has traditionally been held back by the computing power required to manage and process the sheer volume of data. In a bid to eliminate this bottleneck, Seitel, a leading seismic data provider to the oil and gas industry, and IBM recently unveiled plans to develop the world's largest storage area network (SAN).

A SAN is a dedicated, centrally managed, secure information infrastructure, which enables 'any-to-any' interconnection of servers and storage systems. Such a system offers a number of benefits such as:

- Facilitating universal access and sharing of resources.
- Supporting unpredictable, explosive information technology (IT) growth.
- Providing affordable 24 x 365 availability.
- Simplifying and centralising resource management.
- Improving information protection and disaster tolerance.
- Enhancing security and data integrity of new computing architectures.

Seitel's state-of-the-art SAN is the first of its kind in the industry. It is designed to offer customers worldwide, complete access to North America's largest seismic data library, via a Web-enabled enterprise data management system.

The SAN allows a company to offload data traffic from its local area network (LAN) and servers on to a dedicated storage network, thus improving performance and availability of data across the enterprise. For Seitel, the SAN promises the ability to network its one petabyte of seismic data. That data will be licensed and shared by over 800 major and independent oil and gas companies worldwide. It also provides Seitel with an opportunity to expand its e-business capabilities by leveraging the power of the Web.

Future growth

The use of SANs in the petroleum industry looks set to grow. One of its key competitive advantages in the upstream sector is the ability to evaluate acreage faster than the competition. The SAN removes the bottleneck in data storage and provides exploration and geophysicists with a faster and more effective means of handling, processing and analysing huge volumes of seismic data.

On top of this, in current workflow processes, companies request a map from the vendor and select what seismic information they want to buy. The data provider downloads and delivers a tape to the oil company which then has to be loaded on the company's system before it can start analysing the data. This delay in the delivery and analysis of data can be costly to oil companies, particularly in an offshore environment where the cost of deepwater drilling rigs can run into hundreds of thousands of dollars a day.

A SAN such as Seitel's has the potential to dramatically reduce the time scales associated with this workflow by allowing companies to download the data over the Web. This can enhance the seismic data analysis process – allowing the opportunity for remote interrogation of key data and helping to reduce costs.

Once the Seitel SAN is in place, oil companies will be able to access seismographic charts, geographical surveys and photos that will be stored in a connected series of data warehouses. Such seismic information is vital in determining the location of oil and gas drilling prospects. The data gathered by Seitel to date is currently stored on millions of tapes spread over four warehouse facilities. However, many of the tapes are starting to deteriorate, emphasising that development of the Seitel SAN has come not a moment too soon. ●

*For further information, contact Clive Burr, IBM Industrial Marketing Manager, at e:***cburr@uk.ibm.com**

Seismic software

The technology used in the seismic sector is changing. Companies are making a once complex procedure into a quick and simple process, implemented at the touch of a button. *Cheryl Saponia* reports on some of the new software on the market.

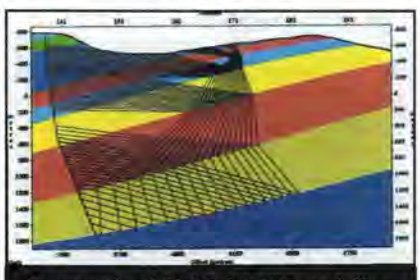
Hampson-Russell of Calgary, an independent software vendor, has a number of advances to announce in its latest software release, due summer 2001. Over the last three years the company has completely re-written its major software packages to make them compatible with whatever platform they are operating on, be it on PC (Windows) or UNIX (Sun, IBM, SGI).

Some of this new software functionality includes: elastic impedance (incorporating EEI and VerWest techniques) together with Lambda-Mu-Rho inversion; enhanced neural network applications and attribute analyses; elastic wave modelling with Q attenuation, time-lapse seismic analysis; wavelet analysis with Roy White scanning techniques, Geoframe links for log data and enhanced data loading.

A full list of new functionality will be available on the Hampson-Russell website at the time of release. For all their other information please visit **www.hampson-russell.com.**

Other new software includes Outrider™, from Digi-Rule. The PC-based Ray Trace Modelling software package for the geophysical exploration industry includes modules for forward and inverse (time to depth) structural modelling.

Outrider™ 5.0, scheduled for release this month, is a complete revision of Outrider™ 4.3. Originally released in 1988, the software has gone through four major revisions. Now included are tools for structural modelling, offset modelling and Kirchoff depth migration. A major new feature is a completely re-designed user interface that includes new editing tools, text and graphic support and multiple trace processing tools. Among the new features are vertical seismic profile (VSP) offset modelling, diffraction modelling in the structural module and an optimised seismic display.



An example of Digi-Rule's VSP modelling

For more information regarding this product please contact Digi-Rule at +1 403 292 0320, or visit the company's website at **www.digirule.com**

Boreholes

CGG of France claims to be the only company with a dedicated borehole seismic division offering acquisition and processing services on a worldwide basis. The Borehole Services Division's (BSD) Pipeseis technique allows VSP data to be acquired in sticky, or highly deviated or horizontal wells on a conventional wireline. Until recently this has only been possible using BSD's slimline dual analogue SSR receiver. But this year, BSD has introduced a digital version, the MSR-600, which allows data acquisition with up to eight satellites in horizontal holes, and can be deployed on monocable, co-axial or on standard seven-conductor wireline.

In addition, the introduction of the SST-500 downhole array receiver has meant that it is now possible to record walkaway VSP data in one pass of the source, when, historically, it would have taken at least three. 'Single-pass 2D and 3D VSP surveys are now a practical proposition rather than part of the geophysicist's wish list,' states the company.

BSD uses CGG's GeovecteurPlus seismic processing package with custom-written modules for certain borehole applications. This allows seamless integration of the processed borehole data into seismic or reservoir studies. All standard seismic processing tools and processes are available and provide the division with unprecedented capabilities in the handling of borehole seismic data.

For more details on this technology, and other services provided by CGG, Tel: +33 1 64 47 30 00 or visit their website at **www.cgg.com**

Wells

HRH is an oilfield service company based in Aberdeen that specialises in geological products and services. New technology from the company includes Well Browser, a geological interactive resource that is an easy to use web-based navigation utility which allows access to field data with minimal effort.

HRH provide a range of oilfield services

It contains well information, log images and other such data and allows a well information archive to be constructed and maintained, providing visualisation of logs and data. Wells can be grouped by area, field or number, allowing logical access for the user. Well Browser can be constructed to store any data. Typically the archive would contain well summary sheets, data tables containing geological and engineering data gathered at the wellsite and composite logs for the wells in a particular field or area.

The well summary documents contain the basic background well data (dates, rig, license, location etc), together with a location map and summary tables of the objectives, stratigraphy, logging runs, casing points, cores, sidewall cores and wireline formation tests. For wells where there are a large number of sidewall cores or wireline formation tests, these results are included as separate PDF documents and can be accessed from the well summary document via bookmarked links. As further wells are drilled these can easily be added to the archive. All the well data is available on an Intranet for use by all interested parties, whether geologists or well engineers.

For more information visit the HRH website at **www.hrh.ltd.uk** or contact them at info@hrh.ltd.uk

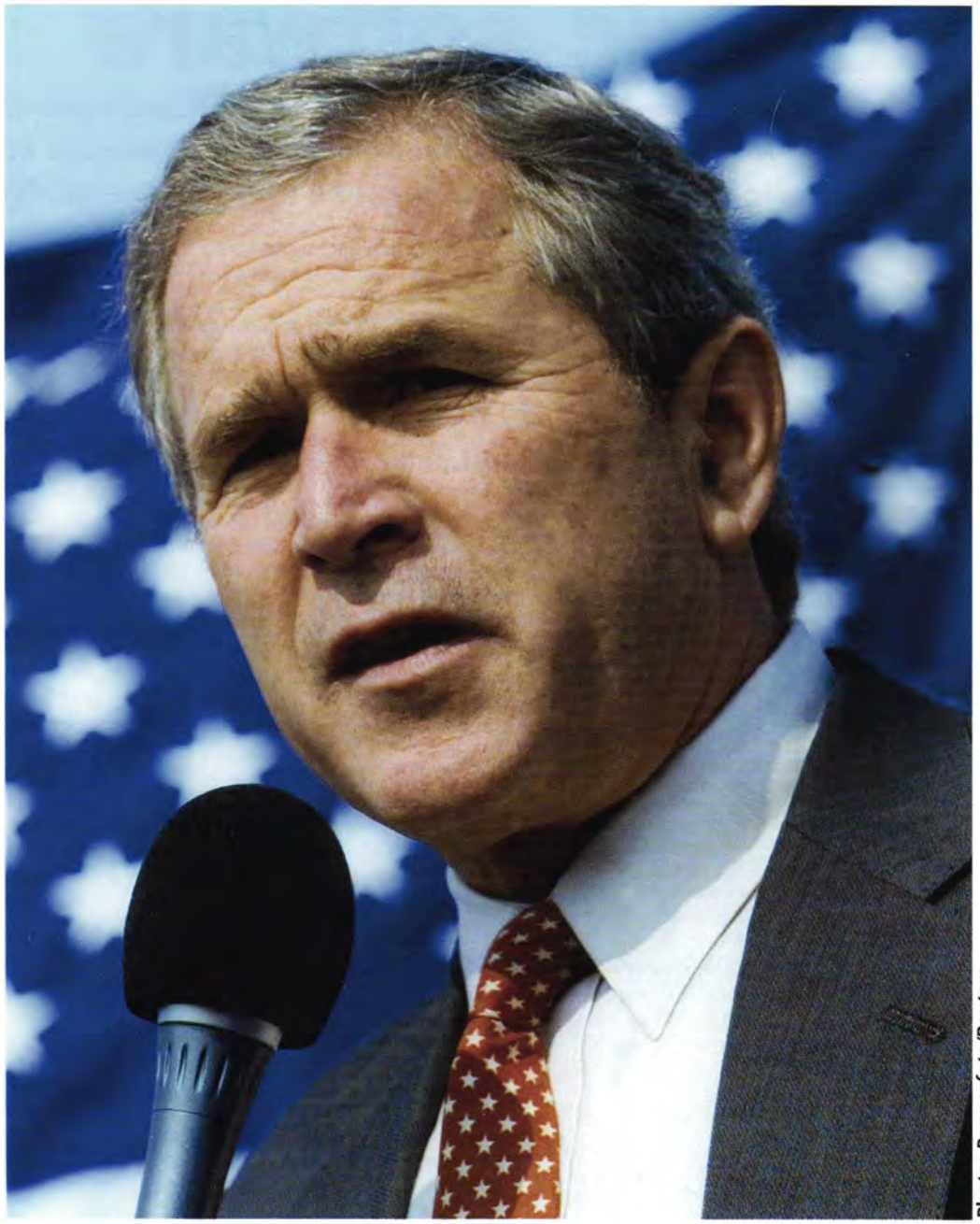


Photo: Popperfoto/Reuters

Will the new administration 'reverse' US energy policies?

Despite its 'less-than-rock-solid' legitimacy, the new administration in Washington is moving self assuredly to enact its agenda. *Peter S Adam* reports from the US.

Above: George W Bush, the 43rd President of the United States of America
Reuters/Jeff Mitchell

Right: Vice President Dick Cheney, former CEO, Halliburton

This is not a coalition-type government, bereft of a 'mandate.' Only one Democrat has been appointed to a senior-level post. Yet, Senate approval for all Presidential appointees, so far, seems assured. And, as things now stand, enthusiasm appears widespread for President Bush junior's priorities – education reform, tax cuts, a military beef up, a 'Star Wars'-type defence shield, some form of social security privatisation, a conservative tack on reproductive rights, and a

somewhat laissez faire/laissez passer approach to environmental and other forms of regulation.

As for energy and related matters – including Middle East policy – the respective planks in the platform the younger Bush ran on, reveal clearly the extent to which a full-fledged restoration is what the new administration has had in mind.

Forcing a re-retreat?

'Eight years ago,' that document states, 'the nation was energy confident. Our standing in the Middle East was at its zenith. The oil cartel was in retreat; gasoline was affordable, even as automotive progress reduced emissions from cars.'

It goes on to note that the Democrats' energy policy was 'a man-made nightmare.' Under the Clinton Administration, 'the Department of Energy has utterly failed in its mission to safeguard America's energy security,' it charges.

As for the interrelated matter of Iraq: 'Nowhere has the inheritance of Republican governance been squandered so fatefully as with respect to [sic] Iraq. The anti-Iraq coalition assembled to oppose Saddam Hussein has disintegrated. The [Clinton] Administration has pretended to support the removal of Saddam Hussein from power, but did nothing when Saddam Hussein's army smashed the democratic opposition in northern Iraq in August 1996.'

With regard to energy, the platform promises increasing domestic supplies of coal, oil and natural gas via tax breaks; removing unnecessary environmental regulations; opening up federal lands, including Alaska's Artic National Wildlife Refuge (ANWR) and the outer continental shelf (OCS), to the drill bit; promoting clean coal technology and renewable sources of energy, etc... the usual suspects.

Straight talk?

As for dealing with Iraq: 'A new Republican Administration will be patiently rebuilding an international coalition opposed to Saddam Hussein and is committed to joint action. We will insist that Iraq comply fully with its disarmament commitments. We will maintain the sanctions on the Iraqi regime while seeking to alleviate the suffering of innocent Iraqi people.'

Full support is pledged for the Iraq Liberation Act, which 'should be regarded as a starting point in a comprehensive plan for the removal of Saddam Hussein and the restoration of international inspections in collaboration with his successor. Republicans recognise that peace and stability in the Persian Gulf is impossible as long as Saddam Hussein rules Iraq,' it says bluntly.

ANWR, for starters

John Lichtblau, the Chairman of the Petroleum Industry Research Foundation Inc. (PIRINC) seems to think so. Allowing ANWR to be tapped could increase US production by up to 1mn b/d, he says. 'Domestically, that's significant. But it won't really alter world energy balances or diminish US demand for imported oil.' Beyond Alaska and the outer continental shelf, the US probably doesn't have more major conventional crude oil deposits to be found. But technological progress could well increase recovery rates from existing fields and future discoveries.' Even so, this won't significantly alter America's reliance on foreign-sourced petroleum.

Internationally, there could be a policy shift with regard to sanctions against Libya and Iran. The new administration might, he says: 'take a business is business attitude toward the two roguish states.' But perhaps not right away. 'The fact that the Vice President [Dick Cheney] spoke so forcefully against sanctions when he was the Chairman of Halliburton, the major oilfield services concern, and was criticised for it during the election may well constrain immediate action here.'

As for Iraq: 'No one's sure UN sanctions are weakening, but what happens next is anyone's guess,' says Lichtblau (see *Petroleum Review*, February 2001).

Others are less equivocal, and bureaucratic pressure may build on President George W Bush to do something, perhaps dramatic, even if Saddam Hussein bides his time. There are those close to the President who make no bones about wanting the Iraqi dictator toppled. Among them is Paul Wolfowitz, Dean of the Johns Hopkins School of Advanced International Studies. He is a long-time proponent of ousting Saddam Hussein. During the campaign Wolfowitz purportedly spoke with President Bush more than any other advisor – save Condoleezza Rice, newly-appointed National Security Advisor.

Vice President Dick Cheney, who is not thought to be a hard-liner on Iraq, did meet during the campaign with Ahmad Chalibi, Head of the Iraqi National Congress, and presumptively, the leader of the opposition to Saddam. Secretary of Defense Donald Rumsfeld has met with Chalibi too. And Zalmay Khalilzad, a Rand Corporation expert who also advocates overthrowing Saddam Hussein, is now in charge of staffing the Pentagon.

Of course now that they're in office some of President Bush's advisers acknowledge that containing Hussein, and even isolating him, will become increasingly difficult. And if eliminating him were readily feasible, it would have been done by now. Artfully dodging the issue, which is what the Clinton Administration for the most part did, is not likely to be possible either.

Timing is everything

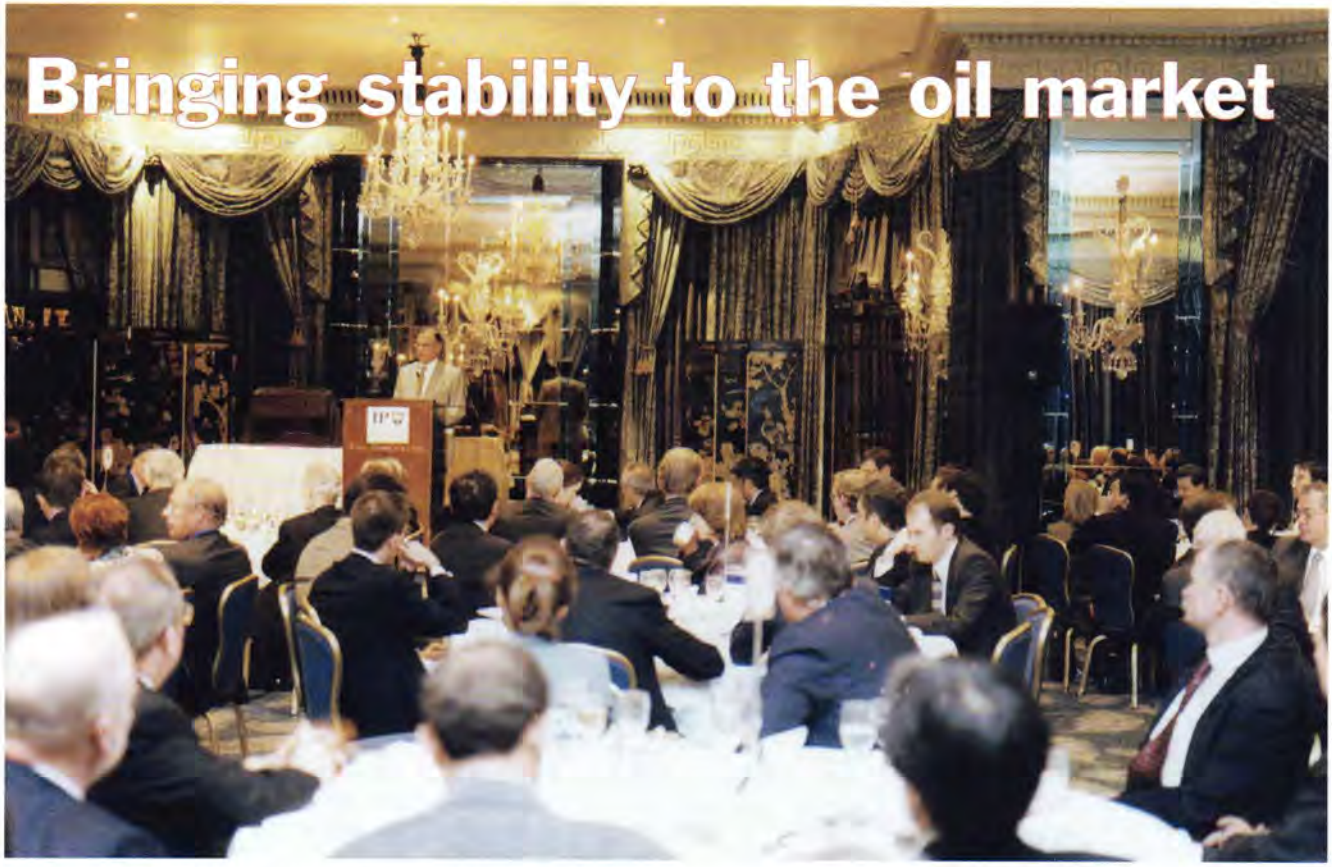
Prior to handing over the White House to George W Bush, President Clinton had this to say about the election: 'By the time it was over, our candidate had won the popular vote, and the only way they could win the election was to stop the voting in Florida.' His administration seems to have fired a more unsettling parting shot by having the Department of Defense release a report on 10 January, just ten days before the inauguration, warning that Iraq has rebuilt its weapons infrastructure and may be producing some chemical or biological agents.

President Bill Clinton has succeeded in passing off to President George W Bush the unfinished business that the former President Bush passed off to him.

Even though President Bush senior won Desert Storm, the oil price spike that preceded the military action helped deepen and prolong the recession that contributed to his repudiation at the polls. Like father, like son? One can only wonder what Saddam Hussein is thinking now as the price of oil remains much higher than expected, supply/demand balances tighten, UN sanctions continue to erode, his ability to produce weapons of mass destruction grows and a new President, the son of his old enemy, occupies the White House.

The new US Secretary of Energy, former Michigan Senator Spencer Abraham, is of Lebanese extraction. Perhaps this will enable him to sort out the petroleum/Middle East conundrum George W Bush must grapple with. ●

Bringing stability to the oil market



Addressing the annual IP Luncheon at the Dorchester Hotel, *Dr Ali Rodriguez Araque*, Secretary General of Opec, outlined some thoughts on the cartel's role in bringing stability to a very erratic oil market to his audience of senior oil industry executives.

Dr Ali Rodriguez Araque addressing the guests at the Annual Lunch at the Dorchester Hotel

His address:

What I would like to share with you this afternoon, are some thoughts on the role of Opec in bringing stability to a very erratic oil market. Of course, I shall try to restrain myself from indulging in a highly technical discussion, which I believe you will agree can be pretty hard to digest!

Let me begin by saying that we are no longer living in a chaotic world. This is a world of complex homogenisation of economic, cultural and political systems. In this vast changing globe, politics would be different. Markets react more rapidly than before. Moreover, multinational enterprises have gone through a process of transformation, changed their organisational structures, and entered more coalitions with ex-rivals to maintain their competitive edge.

As globalisation penetrates every corner of the world, reciprocal objectives would benefit us all. While today's globalisation has different attributes and rules, one particular trait is significantly relevant to my address this afternoon – integration.

As we march into a new millennium, some political pundits, media experts, and oil analysts – to name but a few – are bewildered by the survival of our Organisation. Since its inception, Opec has had to go through turbulent times. Disagreements among members were never a secret to the oil analysts or the market observers. Nevertheless, as we have now crossed the threshold of the 21st century, Opec's integrity remains intact. More united; better organised; and, particularly significant, more transparent.

To the dismay of the Organisation's critics, and despite the many hurdles, Opec has managed to stand tall, and to claim a place on the global financial and political stage.

Oil market status

Allow me to reflect briefly on the status of the oil market, especially during the last two years. My purpose is to illustrate Opec's unrelenting commitment to bringing stability to a volatile oil market.

In 1998 and early 1999, the world witnessed another oil price crash. High stocks and low demand combined to cause prices to plunge dangerously. During those troubling times, no one escaped the dramatic consequences of the economic near-disaster. Opec members, for one, lost in the process an estimated $56bn in petroleum export revenues. As most of the Organisation's members rely heavily on oil as the main source of generating income, much-needed revenues to bolster their impoverished economies were lost. Oil companies were also hard hit. As their income also slumped, thousands of workers lost their jobs, and the lack of cash meant that the oil industry was starved of major investments.

Notwithstanding the economic losses of the 1998 price collapse, one undeniable fact emerged – that low oil prices could have just as chilling an effect on the global economy as high oil prices. Luckily, the swift reactions of Opec and several major non-Opec producing countries in embarking on several rounds of production cuts were conducive to bringing about equilibrium to the market. After a third and decisive round of production cuts in March 1999, prices started to rebound. Those successful measures to tip the balance and the psychology of the market would not have materialised without the tremendous support given to Opec by several leading non-Opec producers, namely Mexico, Russia, Oman and Norway.

We believe that astute management of the market, and the ability to anticipate future trends in the energy sector, are essential to the health of the oil industry. It is in those areas that we believe the Organisation's efforts deserve to be applauded.

Equally important is that the foremost overall objective of Opec is to succeed in realising greater transparency regarding its price objectives. Moreover, I do not need to remind you, Ladies and Gentlemen, that the dangers to the world economy from underpriced oil are much greater than those from prices which are perceived to be too high. One danger is that low crude prices can lead to serious under-investment in the oil industry, and even to possible threats to the stability of the international monetary system.

Jeff Pym (left), IP Director General and Charles Henderson (right) greet Dr Ali Rodriguez Araque, Secretary General, Opec

An economic force

To avoid a repetition of the economic setbacks of the most recent oil price collapse, greater economic cooperation between producers and consumers is inescapable. In fact, we at the Organisation of the Petroleum Exporting Countries, firmly believe that the only way to solve any of the deep-seated and long-standing problems that plague the industry is through dialogue and open channels of communication. The future of the global market will hinge on whether we have the will and the power to discard the harsh rhetoric and translate our convictions into the realisation of practical objectives. The intention to fine-tune oil policies will be accompanied by pragmatic measures to correct past errors, and to accommodate the needs of both the market and the exporters.

During the last year, two remarkable milestones signified Opec's re-emergence as an economic force. The Second Opec Summit in Caracas, Venezuela, and the 40th Anniversary of the Organisation were two solemn events that magnified Opec's resilience and its phenomenal ability to beat all the odds stacked against it.

Managing the oil market is not the sole responsibility of the producers alone. To succeed in stabilising the global oil sector, concerted joint efforts by producers, consumers, oil companies, and of course governments, are imperative. Coming to the rescue and ensuring the security of oil supplies is a promise that the Organisation has never breached. During bad times and during good times, Opec's fundamental objective is to manage the market and stabilise the prices. Undeniably, this is the age of greater interdependency. That is why Opec must work in harmony with the rest of the industrialised countries to make our world a better place for our generation and for posterity.

The Caracas Declaration recognised the importance of oil wealth in transforming the economies of the developing countries, and bringing about prosperity. Particularly momentous is the fact that the Heads of State at the Summit have created a new identity for Opec. As a global economic powerhouse, Opec is navigating the new century with a greater sense of responsibility toward the global community.

The Caracas Declaration asserted that the Organisation would continue its efforts to secure oil supplies to world markets, and to achieve fair and stable prices for both producers and consumers. However, to realise those ambitions, a lot of hard work, compromises and goodwill must come into play.

In addition, it is quite essential that the industry recognises other crucial factors that may threaten the global economic boom, such as high fuel taxes, which amount up to 60% of the actual cost that consumers pay. Market speculation, the lack of the right kind of refining capacity and distribution are also major problems that the industry has to deal with.

Cooperation is vital

Much has changed since the birth of the Organisation back in 1960. The message of Opec, which has remained consistent all these years, and which the Second Summit made crystal clear, is that cooperation, not confrontation is the best policy for the attainment of the security

(L–R) Mrs G Pirri, Advisor to Dr Ali Rodriguez Araque; Jean Pierre Favennac, ENSPM; Terry Moore, Hon Secretary, IP; Jumi Akinjide-Balogun, Akinjide & Co; John Evans, IP Membership Sevices Director; Ms K Chacin, PA to Dr Ali Rodriguez Araque; Ian Dixon, IP Finance Director; Gary Jones, TotalFinaElf; Peter Ellis-Jones, Tawe Oil Management

Lamia Elhouni, World Petroleum Congress

Neal Wolkoff, Nymex

of energy supplies, and for making our world a better place.

It is through the coordination of petroleum policies and continued dialogue between producers and consumers that we can help to prevent repeats of past oil market calamities and economic disasters.

International energy forum

Against the backdrop of cynicism toward oil producing countries, widespread misinformation, together with inflated expectations of consumers, the 7th International Energy Forum – which was held in Riyadh, Saudi Arabia last November – acquired a special prominence. More than fifty-five oil producing and consuming countries and organisations participated, in an attempt to consolidate the efforts to secure energy supplies, at reasonable prices acceptable to both producers and consumers.

The International Energy Forum was an important high-level gathering for continued dialogue on issues pertaining to energy for sustainable development.

Rather than placing great strains on Opec alone, enormous self-discipline needs to be exercised by the consuming countries and governments as well. Let us not forget, Ladies and Gentlemen, that Opec can no longer work in isolation from the rest of the global community.

Global energy balance

While on the subject of open channels of communication, I am very glad to inform you that the Secretariat of the Organisation of the Petroleum Exporting countries is organising a seminar on the theme of Opec and the global energy balance, scheduled for 14 and 15 March 2001. Our aim is to attract some of the most senior and renowned figures from all walks of the petroleum industry, international organisations, and the global financial community. Coming at an opportune time, Opec's objective in envisaging the forum is to exchange views and stimulate lively debate on a range of timely issues.

Chaired by Opec Member Country Ministers, the seminar sessions will focus on issues including sustainable development, globalisation, the World Trade Organisation, taxation and investment.

This high-level gathering is another manifestation of our resolve and commitment to achieving sustainable order and stability in the oil market together with other parties. In such a complex and speculative environment, we must pool our resources for the betterment of all.

Environmental awareness

Allow me now to turn your attention to another topical issue, which has gathered huge momentum in the last few years – the environment.

Today, Opec is committed to taking a leading role in contributing to the international climate change negotiations. While we whole-heartedly share the concerns of the rest of the global community for a healthier planet, we have to be certain that those negotiations are conducted fairly.

Make no mistake, the quest for a clean environment is cherished by the entire human race. Some Members of the Organisation have indeed embarked on an aggressive campaign to invest in the production of environment-friendly fuel and gas projects.

It is within this context that Opec wishes to present its clear message to the world – as part of the global community, Opec member countries aspire to make our world a cleaner, healthier global village. It is evident that producers and consumers must work in harmony for the betterment of all.

United we stand

The oil exporting countries are not living in a cocoon. For the sake of many generations to come, we have to stand more united, and be more willing to lend a helping hand to the less fortunate. Cooperation and constructive partnership have never been more crucial.

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IP President reviews the year

Charles Henderson (right), President of the Institute of Petroleum addressing the annual IP dinner at the Grovesnor House Hotel examined the impact of oil price on the industry and stressed the need to communicate more strongly with the public and media about emotive subjects such as fuel price. The following is a shortened version of his speech.

The most significant event of 2000 for the oil and gas industry has been the behaviour of the crude oil price. We have seen a switchback over the last 18 months of unprecedented ferocity. There have been signs during the recent period of strong world economic activity that the world's productive capacity is much closer to demand than it has been at any time in the last 30 years. This may explain the greater volatility that we have experienced. But, more to the point, it suggests that we can expect that volatility to persist into the future.

If this view is correct then we need to reassess our behaviour in the face of either very low or very high prices.

Low oil price

Taking low oil prices first, the $10 price certainly caused a major reduction in investment in the United Kingdom Continental Shelf (UKCS), which is a matter for concern to the upstream companies, to the service companies and to the UK Government. But it did bring benefits as well.

It induced cost reduction, greater efficiency, rationalisation and technological innovation – all resulting in a much stronger industry.

And it promoted a closer relationship between the government and industry, first in the form of the Oil and Gas Industry Task Force (OGITF), and more recently its successor – Pilot.

Pilot has been a real breakthrough in government/industry relations and in developing a high level of mutual trust, confidence and understanding.

We have some very clear messages from government out of Pilot:

- Don't sit on fallow acreage.
- Rationalise interests.
- Reduce your costs.
- Cooperate.

We have taken these messages on board.

I think that the government, for its part, has a much better appreciation of the pace of technological innovation that is needed to keep development of the UKCS going, and of the risks involved in taking major investment decisions against a very uncertain crude oil price. I believe it recognises that the industry needs a degree of confidence about the stability of the future taxation regime if it is going to continue to explore and to deliver the investments that are surely still there in the UKCS.

High oil price

I have talked so far about the effect that the very low oil price had on the industry and government. But now what about the recent very high prices?

Perhaps the least well understood impact of the oil price, even now, is the price of petrol at the pump. Let me remind you of some simple facts.

First, the government takes 60.3

pence, or some 78%, of the 77 pence currently paid for a litre of standard unleaded petrol – at least that is what you might expect to pay at a really good service station.

That leaves the industry with 16.7 pence to pay for the cost of the crude oil, refining it, distributing it and marketing it.

Second, within that 16.7 pence the cost of the crude is about 11.5 pence, or 15% of the pump price.

So, other things being equal, a 10% change in the price of crude moves the costs that go into a litre of petrol by less than 2%.

Of course other things don't all remain equal, for a number of market related reasons. But I think we need to concentrate on getting the simple fundamentals across. Particularly because some media commentators and motoring organisations are encouraging the consumer to expect reductions in petrol prices which are proportionate to the fall in the price of crude. I did not see the same commentators advocating a proportionate rise in petrol prices when the crude oil price was on its way up!

The high oil price, reflected in recent company results has, of course, produced the usual crop of accusations that the integrated majors are making their profits at the expense of the poor motorist in the UK. Again, we have some clear messages to get over:

- The high pump prices in the UK are largely because of tax.
- Our petrol, pre-tax, is amongst one of the cheapest in Europe.
- Profit from downstream is minimal, if not negative.
- Action by the integrated majors to cross-subsidise petrol prices (which is what the critics are calling for) would be anti-competitive and extremely damaging to the independent retailers.

Another legacy of high oil prices is the rise of European wholesale gas prices – which are largely indexed to the oil price. The UK–Europe Interconnector ensures that UK wholesale gas prices are effected by what happens in Europe. We have experienced sharply higher wholesale prices in the last few months. Electricity prices and domestic gas prices cannot fail to be pulled up. Indeed, major users of gas who have tended to rely on short-term contracts are already suffering – and complaining; and many retail gas suppliers have announced price increases.

Hitherto, privatisation and liberalisation in the UK have occurred during oversupplied markets, and falling prices. Everybody has been happy. Now, as prices rise in a relative supply squeeze there is a risk that this favourable background could sour, and that support for the market mechanisms that have been put in place could weaken. We are seeing signs of this in the suggestions from some quarters that the high gas price in the UK arises partly from anti-competitive behaviour by gas producers. The European Commission's examination of the workings of the Interconnector is surely another straw in the wind.

When it comes to meeting oil men who make financial decisions, the event cannot be rivalled'

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It is essential that all of us involved in this great liberalisation project – government, producers, suppliers and consumer groups should maintain our commitment to liberalisation. The markets that have been created are highly competitive. We need to demonstrate that. It will need greater openness and dialogue. We need to explain that competition in a basically commodity-based market is not going to prevent upward movements from time to time.

A worrying example of how the debate is moving is that an extension of the regulatory regime to cover offshore infrastructure is being called for. It is not at all clear to me how this could help. Indeed it could prejudice the future maintenance and development of the infrastructure. A more rewarding objective in the near term must surely be to get regulation of the terms of access to the onshore gas infrastructure right.

So much for what I would call industry matters. Now let me say something about the Institute of Petroleum.

IP update

First, I am happy to tell you that the IP has the ultimate accolade – of recognition by the BBC! In a feature about IP Week on *BBC News On Line* it said that 'when it comes to meeting oil men who make financial decisions, IP Week cannot be rivalled.' It's nice to have a roomful of oily financial decision takers of both sexes to address tonight.

Indeed, we are delighted to see here for IP Week so many friends from abroad and from sister organisations both in the UK and overseas.

The IP continues to improve in its traditional role of supporting all its members. It is a major provider of information, training and education based on its reputation for scientific and technical excellence. Now it is intent on growing.

The most significant and visible development for the IP over the last 12 months has been the rebuilding of the IP's website. I say 'visible,' because a demonstration of the services that we can now provide through this new site is available throughout IP Week – at the IP itself and at the IP Week Exhibition at 1 Great George Street. I say 'significant,' because I believe that as a communicator and networking organisation the IP must be able to take advantage of modern communication technology. And I believe it will be an essential part of the future developments that we plan for the Institute.

I want to mention a few such developments now.

The first is in the educational field. There is no doubt that the industry is seriously short of experienced and well qualified professionals. And we are experiencing increasing difficulty in attracting the highest quality graduates to make a career with us.

As I have been drawing out in my previous remarks, there is an awful lot of possibly wilful misunderstanding out there about the industry. The IP is stepping up its role in promoting a proper understanding of the industry – in terms of its importance to the economy and society, how it exercises its social responsibility, and its long term future.

We are concentrating first on schoolchildren in the age range 7 to 11, and their teachers. If we are successful, and if we can get financial support for it from our major corporate members, we shall move on to the higher age ranges and to undergraduates.

The second development I would like to mention is the IP Awards scheme. Some of you were at the autumn lunch when the first awards were presented. The success of this first year has encouraged us to continue with the scheme. Our sponsors are maintaining their support and others are asking to sponsor new and existing awards.

The third development I wish to highlight also reflects the growing need for skills in our industry. Training

has always been important for the IP. But we believe it will become ever more so in future. We have, therefore, significantly increased the range, number, and quality of courses we offer. And we plan to widen the range still further over the coming years. We hope you will support us by sending people on our courses – and by letting us know your training needs.

Call to members

Now I want to say three things to you as IP Members – really by way of commercials. First, I do emphasise how important to the health of the IP is the voluntary work that many of you do in the committees of the Institute, and in helping to make the events programme what it is. We rely on this help and we are always on the look out for more of it. And, of course, I want to say how much we appreciate this help. It is not simply a question of the time you give us; it is the direct experience that you can bring us which so much enhances the credibility of what we do.

Secondly, I do encourage you to nominate for this year's IP Awards. You can nominate yourselves but, better still, nominate someone else whose work or achievements you respect.

Thirdly, do not forget the other events of IP Week. Many of you have come to London specially for this dinner. Those of you whose appetite extends beyond good food, good company and modest gambling there is still the opportunity tomorrow to sample some of our intellectually more demanding offerings.

Finally, I want to say a big thank you on all your behalves to those in the IP who have made this IP Week not just possible, but another great success.

Above: (R–L) Ian Dixon, Finance Director IP; Neil Brenton, IP Council; Jim Hill, Chairman, British National Commmittee – World Petroleum Congress.

Right: Overview of the top table

Guests being led down the staircase to the Great Room

(L–R) Peter Ellis-Jones, Tawe Oil Management; Lyn Arscott, Chief Executive, OGP

No country is an island

Addressing the annual IP Dinner at the Grosvenor Hotel, *Mervyn King* (above), Deputy Governor, Bank of England, outlined how unexpected changes in the world economy have had a significant impact on the international oil market.

(L–R) Chris Moorhouse, IP Past President; Mervyn King, Deputy Governor, Bank of England; Charles Henderson, IP President

No country is an island – in terms of economics, if not geography. Trade and capital flows link all the economies of the world. Since 1970 the volume of world trade has increased more than five-fold. Globalisation is not a slogan; it is a fact.

What happens in the world economy is of great importance to your industry. But no business in a country, such as the UK, which exports and imports almost a third of its national output each year, can ignore global economic developments.

Recent events have reminded us of just how volatile the economic weather can be. Only a few short months ago, the US was experiencing rapid economic growth at a rate which surprised us all. The new frontier was the new economy, and some had forgotten that economic downturns are a regular feature of a market economy. Share prices had reached levels four times those of a decade earlier, and the price earnings ratio of America's top 500 companies was over forty, an unprecedented level.

Now, after a swift and sharp fall of business and consumer confidence, the business cycle appears to be alive and well, and living in the US.

Equally, only a few months ago, some currency traders were openly deriding the euro. The euro reached a low of 0.82 to the dollar – the lowest level for the euro or its antecedents for over 15 years. Since then, however, the euro has recovered, and the euro area economy itself appears to be on a stable path.

In the other major industrialised part of the world economy – Japan – output has barely risen in recent years. Real GDP in Japan has grown by only just over 1% a year over the past decade, compared with over 4% a year during the previous ten years.

Impact on oil market

As you all know, unexpected changes in the economic weather have also had a significant impact on the oil market. Oil prices rose from below $10 a barrel (for Brent crude) in December 1998 to a recent peak of over $37 last September, falling back since. The standard deviation of daily changes in oil prices rose by a factor of three from the first half of 1999 to the second half of last year – an indication of just how much volatility has risen.

Moreover, volatility is not confined to the industrialised world. The past five years have seen a number of damaging financial crises that have afflicted

emerging market economies. Sudden reversals of short-term capital flows led not only to deep recessions and sometimes political crises, but also a debate about the role of the IMF [International Monetary Fund] in providing bailouts.

Weathering the storm

Despite this volatility in international economic conditions the British economy, has to date, experienced greater stability.

At first sight, this is encouraging. The UK has weathered some of the recent international economic storms, and achieved a post-war record of uninterrupted economic growth, falling unemployment, and inflation that is lower and more stable than for a generation.

But no two storms are ever the same. Rest assured that the Monetary Policy Committee will always act to maintain stability by keeping inflation on track to meet the target of 2.5%.

But the recent stability of inflation owes a good deal to the fact that economic shocks from overseas have tended to offset, rather than reinforce, each other.

It would be rash to assume that it will be at all easy to keep inflation over the next five years within the 2% to 3% range within which it has largely moved over the past five years. What matters most, however, is that any such deviations from target are short-lived, and that inflation expectations generally are firmly anchored on the target. If we cannot ensure that the waters are calm, we can at least steer a steady course.

Clouds on economic horizon

I want tonight to look more closely at two clouds on the international economic horizon. First, the US slowdown and, second, the risk of further financial crises in emerging market economies.

Central bankers are good at finding clouds. We know that one is attached to every silver lining. And even on passing through the gates of heaven, a central banker would probably argue for greater structural reform while declaring the situation 'not entirely unsatisfactory!'

The outlook for the world economy has deteriorated markedly in recent months as a result of the slowdown in the US and signs of renewed stagnation in Japan. The speed of the deterioration was a surprise, but not the fact of a slowdown. Last year saw the fastest growth rate of the world economy for 12 years. Growth in the US reached an annual rate of 6% in the first half of last year, well above even optimistic estimates of sustainable growth rates. A slowdown was not only inevitable; it was desirable.

Mervyn King (left), Deputy Governor, Bank of England, is greeted by Charles Henderson, IP President

The main surprise in the US was the sharp and sudden break in both business and consumer confidence.

Quite why this break in confidence should have been so rapid is not easy to understand. And its origins will largely determine the nature of the US downturn. On the one hand, greater use of information technology to economise on inventories may have led to shorter lags between changes in final demand and changes in output. If so, then it is possible that the speed of the downturn will be matched by the speed of the recovery, leading to a short-lived episode of output growth close to zero as the result of an inventory correction. On the other hand, the slowdown could be much more protracted if the imbalances in the US economy which have built up in recent years start to unwind, leading to a reduction in spending as both households and businesses seek to reduce the amount of outstanding debt on their balance sheets.

The key to the nature of the US downturn is what will happen to productivity growth. Over the past five years there has been accumulating evidence that the application of information technology has raised productivity – the 'new economy.' Expectations of higher productivity growth increased demand by more than it raised supply initially, as firms invested in new technology and households anticipated higher future incomes. As a result, spending grew rapidly, outstripping supply and large imbalances emerged. The current account deficit in the US is now close to 5% of GDP, a post-war record. It is sustainable as long as foreigners are prepared to finance it.

So far, the profitability of new investment opportunities in the US has attracted capital inflows to finance higher investment, which in turn has led to a strong dollar. If expectations about higher productivity growth prove well-founded, then US businesses and families will gradually repay the debts they have incurred, and the current account deficit will subside. The imbalances will unwind, they will do so slowly, allowing the US economy to recover from its present slowdown.

But if there were to be a reappraisal of the extent to which productivity growth had increased, then a more sudden downward adjustment to spending could result. In such circumstances, the imbalances would unwind more rapidly, leading to falls in the stock market and

IP Week 'attracts oil traders, energy brokers and officials from oil companies from Norway to Nigeria, from the US to Russia'

BBC Online

the dollar. That would imply a much bumpier ride for both the US and the world economy in the months ahead.

Clearly, there have been some downward adjustments to stock prices in the US over the past year. But their scale has been limited, and there does, at least so far, appear to be no significant reappraisal of the impact of new technology on US productivity growth. Although it is not easy to reconcile the recent sharp falls in confidence in the US and the relative stability of stock market prices, it would appear that investors generally have taken comfort from the Federal Reserve's ability and willingness to react to the latest data, and take appropriate action.

Emerging economies

The second cloud on the horizon is the risk to emerging market economies posed by the US slowdown. In some emerging markets, especially those in East Asia exporting high technology products to the US, the immediate outlook is for weaker economic growth. But for other countries, especially in Latin America, the fall in US interest rates and in the dollar against the euro will mitigate the direct loss of export demand.

But the major concern is to avoid another financial crisis, of which there have been too many in the past five years. Mexico in 1995, through the Asian crisis in 1997 and Brazil in 1999, and, more recently in Argentina and Turkey, sudden reversals of short-term capital flows have created financial crises that have proved devastating to the citizens of the countries affected.

There remains an urgent need for the international financial community to raise its game in both preventing and resolving such crises. On prevention, much has been achieved, built around the overriding principle of transparency.

In itself, transparency will not prevent financial crises. But it can help reduce the frequency of crises – by alerting both markets and policy makers to problems on the horizon – and their severity – by minimising the surprises about the scale of any liquidity problems.

Crises resolutions

On the resolution of crises, the past year has seen a significant change in practice with more weight given to the involvement of private sector creditors. The key to progress is the recognition that official finance from the IMF is strictly limited.

Large bailouts from the IMF are undesirable – partly because they reduce the incentive for private sector investors to appraise carefully the risks they take, and partly because the funds available to the IMF are wholly inadequate for it to play the role of an international lender of last resort.

(L–R): Jeff Pym, Director General, IP; Peter Brown, Crown Prosecutor and after-dinner speaker; Mervyn King, Deputy Governor, Bank of England

Once it is recognised that official finance is limited, then it is clear that countries need to work closely with their own private sector creditors. Debt obligations must be honoured, although in some circumstances it may be necessary to restructure those obligations. The relationship between debtor countries and their private sector creditors is one that must be nurtured at all stages. And several emerging market economies have provided excellent examples of good relationships with their creditors, thus enabling them to raise new money or lengthen debt maturities in times of stress.

The choice is not between large bailouts and no official finance. It is between an orderly framework, which recognises the complementary roles of private and official finance, and a disorderly process of default.

The combination of transparency to prevent crises and private sector involvement to resolve crises, follows naturally from the view that markets require information to work efficiently but that investors should take responsibility for the risks they choose to bear. This sentiment is remarkably close to views expressed recently by the new US Treasury Secretary. Now is the time to put in place a more systematic framework for the prevention and resolution of financial crises so that emerging market economies can take their rightful place in the international economy.

Looking to the future

What do these clouds mean for the UK economy? Fortunately, our own imbalances are on a much smaller scale than those in the US. But here too, final domestic demand growth, which has averaged 4% a year for four years, has exceeded supply and the trade deficit has risen.

Indeed, net trade is now likely to have made a negative contribution to output growth for five consecutive years, the longest such period since the nineteenth century. Final domestic demand growth, and especially that of private consumption, needs to slow.

Nevertheless, the differences between recent developments in the UK and the US are more significant than the similarities. Perhaps the most striking difference between the US and UK economies has been the remarkable resilience of business and consumer confidence in the UK in recent months. Of course, further weakness of the world economy, emanating perhaps in emerging markets, could change the outlook.

Nevertheless, I am confident that the British economy can withstand the storms and vicissitudes of the international economic weather.

No country is an island. As John Donne expressed the thought so vividly in his aptly-named *Devotions upon Emergent Occasions* – 'all mankind is of one author, and is one volume.'

Changing face of the oil industry

Chris Skrebowski **briefly reviews some of the highlights during IP Week 2001.**

(L–R): Chris Skrebowski, Editor, *Petroleum Review*; Brian Abbott, IP Technical Director; Ms K Chacin, PA to Dr Ali Rodriguez Araque at the Annual Lunch

A significantly expanded IP Week proved a major attraction to the industry with a comprehensive series of well attended and professionally delivered conferences, seminars and exhibitions. This year's events were largely based at the imposing Institute of Civil Engineers' building, opposite the Treasury and just a stone's throw from Parliament Square.

The Monday conference (held on 19 February), entitled 'Financing the International Oil and Gas Industries: Unique Solutions for Individual Circumstances', got off to a powerful start with Stephen Hodge, Shell's Director of Finance, giving the keynote address. His theme was that traditional models and analysis are no longer a reliable guide to shareholder value. The 'traditional' model focuses on size for its own sake – biggest is best – return on invested capital and cost cutting.

According to Hodge, changes in the business environment produced by technology, industry maturity and the digital economy mean that the traditional model is less relevant in a real operating environment characterised by ample oil supply at $14/b, flat demand in developed economies, huge volatility in commodity prices, exponential growth in the digital economy, changing funding sources, and the requirement – even necessity – for the industry to be completely open in its operations.

Technology and the e-revolution mean that the capital required per sales dollar is declining which, when added to large cash-flows from existing assets, means that there is more cash available for growth, dividends, share buy-backs and debt repayment – in short, a favourable conjunction of circumstances that will make the major oil companies highly attractive to shareholders.

IP Week is 'about selling oil... building relationships... lucrative job market'

BBC Online

Scandinavian experience

Continuing the theme of growth and profitability, Olav Fjell, President and CEO of Statoil, explained how the company has been restructured, its asset base rationalised and costs reduced, so that it is ready to capitalise on the Norwegian Government's desire to partially privatise the company. He put particular emphasis on the development of the gas business as 50% of Statoil's reserves are gas.

Food for thought

Delegates were well catered for with morning refreshments sponsored by Lukoil, the lunch by PriceWaterhouseCoopers, and the evening drinks reception by EDS. The well received and well attended lunch also gave delegates some time to view the exhibition stands displayed in the magnificent great hall.

E-business

Tuesday offered delegates three seminars in the morning and one in the afternoon. In the morning 'The Impetus to Adopt – Implementing Strategies for Growth', organised with Cambridge Management Consultants, addressed industry concerns about retaining talent, adapting in a fast-changing environment and making use of the Internet. Its theme was the need for 'knowing – doing – learning' to ensure rapid response and adaptability to gain competitive advantage in the new environment.

The 'Bunkers on the Internet' seminar, organised with the International Bunker Industry Association, provided a detailed examination of the advantages and disadvantages of Internet trading. Although modestly attended, delegates who were largely not existing players in this market, heard how the Internet is changing bunkers trading. The benefits in terms of speed of process, back-office paper work and transparency were emphasised, and illustrated by speakers from Wake Marine, Telemarine and Smartbunkers.com

Enlarging the theme, a parallel seminar, organised in association with Accenture, attempted to answer the question: 'When will e-busines be just business?' Following an overview from Paul Spence, its Head of Global Energy e-Commerce, Andrew Moutrie developed the BP vision and model for becoming an e-business while Annette Nijs of TradeRanger.com gave a practical view of how this is happening on what is claimed to be the world's largest e-procurement exchange.

Competitive advantage

After the main IP Week Lunch at the Dorchester (see p20), addressed by

Above: John Evans, IP Membership Services Director, presents an award to Mohammad Piri at One Great George Street. Above right: Catherine Cosgrove and Jane Evans (both IP) watch a visitor test the preview of new IP website. Right: Charles Henderson, IP President, addresses the Luncheon at the Dorchester. Below: (L–R) Basil Butler, CBE, and Jack Birks, CBE – both past IP Presidents at the Annual Dinner

Opec's newly appointed Secretary General, delegates had the chance to attend a seminar on 'Creating Competitive Advantage in European Refining: Examples of Success.' The seminar, organised in conjunction with Wood Mackenzie, gave a different slant to the almost universal message about European refining that generally emerges from the majors and outlined how profitable opportunities can be developed in refining for flexible and adaptable operators, (Preem AB, PetroPlus, ERG Petroli and Conoco Humber Refinery).

An evening meeting at the Institute rounded out a very busy day, with Professor Stephen Richardson speaking on 'Piper Alpha – What Really Happened,' a commanding presentation that attracted an audience of nearly 90 people.

Oil price

Wednesday opened with a fascinating seminar, organised in conjunction with Nymex, entitled 'Price.com – Establishing Oil Price through the Electronic Media.'

Attendees learnt that Nymex is now trading its contracts for up to 21 hours a day via the Access system and that its latest venture, the shortly to be launched 'eNymex', is to trade OTC (over the counter) products. This is the first time a formal exchange, guaranteeing payment and taking on counterparty risk has offered such a service. Although trading OTC products on an exchange may not appeal to the larger, established players, it will certainly open the market to many smaller players.

Attendees also learnt of the considerable success of Enrononline, the 'one-to-many' e-trading platform operated by Enron. According to the company's CEO Guy Whalley, Enron has been rapidly expanding its trading of gas and electricity contracts in the US to the point where it is easily the dominant player in this market and a major one in many other market places. The other e-trading model – 'many-to-many' – was also presented by Isabel Whitely, who described the development of the Intercontinental and other exchanges and gave a feel for current levels of activity.

Environmental impacts

The parallel seminar on Wednesday addressed the challenging issues of environmental impact. 'Energy and the Environment in the New Millennium: Meeting the Needs of Society' was organised in association with IPIECA. Attendees heard a range of views on the costs and impacts of environmental regulation as well as learning of some of the great successes to date. This was the first time that IP Week devoted a specific event to the environment – although of course specific matters have been covered within conferences and seminars in earlier years. There will undoubtedly be more coverage of this topic in the future.

IP dinner date

The Wednesday is perhaps best known for being the night of the annual dinner. Once again, London's largest dining room – the great room of the Grosvenor House Hotel – was full of industry figures and their guests. The IP President's speech is summarised on p24, as is the full text of the guest address from Mervyn King, Deputy Governor of the Bank of England, on p27.

Few who attend can doubt how important an event in the industry's cal-

(L–R): John Banfield, ExxonMobil and IP Council member, Chris Moorhouse, IP Past President and Viv Thomas, CBE, Chief Executive BSI at the Annual Dinner.

endar this is. All around people can be seen meeting and greeting friends and acquaintances – how many deals have their origins at the IP annual dinner? We will never know.

The final furlong

The final day of the IP organised events was Thursday, which saw a very well attended conference on deepwater exploration and production. Organised in conjunction with OGP (International Association of Oil and Gas Producers, formerly E&P Forum), the event attracted an impressive selection of industry speakers, ably and effectively chaired by Lyn Arscott, the Executive Director of OGP.

The morning session was devoted to an overview of the geology, reserves and opportunities in the deepwater, while the afternoon examined in detail the techniques and technologies being used and developed for deepwater projects.

The morning's opening and keynote speaker was Ian Vann, BP's Technology Vice President. His address looked at the opportunities and challenges of the deepwater worldwide. He made it very clear that the deepwater presented a whole new range of opportunities and, possibly more important, it was an opportunity whose size was still growing. His estimate was that 45bn boe had been discovered so far and as there was 'no sign of the cumulative curve flattening off' what has been discovered 'is probably less than half of what the eventual resource will prove to be.'

Vann noted that the three great Atlantic provinces – the Gulf of Mexico, West Africa and Brazil – and to a lesser extent West of Shetlands, were predominantly oil provinces, while the deepwater province of northwest Australia, in the Far East, the Mediterranean and the northern North Sea/Barents Sea were overwhelmingly gas basins.

The rest of the morning's speakers then gave more detailed evaluations of the oil prone deepwater provinces and it is fair to say that the positive and enthusiastic tone set by Vann was echoed by all of them. Clearly there is a lot of considerable excitement about exploring and developing the deepwater provinces.

Jose Filho of Petrobras gave a fascinating insight into the way the company had moved into progressively deeper water and the solutions evolved for its development. He indicated that offshore Brazil was one of the most competitive of deepwater provinces with lifting costs of $3/b.

Dean Malouta of Shell Deepwater Services gave a detailed evaluation of the development of the deepwater Gulf of Mexico. He also showed the way that technology and experience had reduced cycle times and costs, allowing the economic development of smaller accumulations.

Jean-Francois Duhot, Vice President, Technical Affairs for TotalFinaElf, started by explaining the formation mechanism of the major West African deepwater plays, showed the way that the latest seismic interpretation allows to you 'see' the prehistoric rivers that produced the oil accumulations, and then went on to describe how TotalFinaElf was planning to develop various West African fields.

The morning session was rounded out by Martin Smyth, Subsea Manager for West of Shetlands. Backed up by what were probably the most dramatic visuals of the week, he described the challenges BP had met in working in this environmentally demanding and ecologically sensitive area. He described in detail the Magnus gas injection project in which gas will be taken from Foinaven and Schiehallion via Sullom Voe in the Shetlands and then for injection in Magnus. The project will allow increased output from the two west of Shetland fields, while increasing recovery from Magnus. Pipelaying for the project begins this summer.

Perhaps the most dramatic visual was a time lapse seismic showing how the reservoir can be effectively swept and a second 4D seismic of the impact of gas re-injection in the Foinavon reservoir.

The other interesting project described was the way BP is progressively linking up all its North Sea assets with a fibre optic network. This will allow greater monitoring and control of the fields and may in time allow more installations to be unmanned or have minimal manning. It came out in the questioning that Petrobras has also installed a fibre optic network for its deepwater fields.

The afternoon session started with Dr Mathias Bichsel, Director Deepwater Services, Shell, giving a comprehensive overview of the technical requirements and opportunities. He started by noting that current production from water depths of over 500 metres is only around 2.4mn boe/d and that predominantly from the Gulf of Mexico and the Campos Basin in Brazil. However, the knowledge gained in these two areas were now being applied to the massive discoveries in areas like West Africa, so the production total should rise rapidly over the next decade.

Key to development of these new resources was the ever improving seismic, drilling, subsea and flow assurance systems currently being developed and perfected. Individual speakers looked at the latest drilling innovations and, in particular, the use of deepwater vessels with a dual derrick capability, developments in subsea completions, issues involved in the use of FPSOs and dynamic risers for floating production systems.

Carolita Kallaur of the US Minerals Management Service looked at the regulation of the US offshore and the way the department has encouraged activity by its licensing policies. She also indicated that a final decision on the acceptability of FPSOs in the Gulf of Mexico would be made by the end of March.

A very positive and well attended day was rounded out by Mathew Shaw of Wood Mackenzie who made a cold-eyed appraisal of the economies of deepwater production and pointing up its relative position in terms of overall production costs when compared with other development activities.

Smaller oil producers actively encouraging foreign investors

In the second of our two-article series*, *Mojgan Djamarani* reviews development prospects in Kuwait, the Emirates and the smaller regional producers in the Middle East.

According to the projections from the Energy Information Agency (EIA) *International Energy Outlook* (IEO) *2000* report, in order to meet world oil demand of 113mb b/d in 2020, will require additional production capacity of almost 40mn b/d. The Gulf producers are expected to face most of this increase. Restricted investment resources to meet this challenge has led most Middle East producers, to varying degrees, to open up their oil industry to direct foreign participation.

The smaller Middle East oil producers – Bahrain, Qatar, Oman, Yemen and Syria – have led the way in offering incentives to foreign companies in the upstream oil sector. This is largely because of their smaller reserve base and the fear that they might lose out to the big regional producers who can offer contracts worth billions of dollars. In the case of Syria, it is also due to the rapid rate of depletion of oil reserves.

Bahrain

Bahrain is easily the Middle East's smallest producer. It has been producing 49,000 b/d since 1997. All of its 148mn barrels of proven oil reserves are concentrated in the Awali field, discovered in 1932. Texaco (1999) and Chevron (1998) have exploration concessions both offshore and onshore Bahrain. However, the country's only hope for major development of its resources may lie in the decision of the International Court of Justice at The Hague, in the Netherlands, which is soon to decide on the territorial dispute with Qatar over the Hawar Islands. These are located near the north end of Qatar's Dukhan field and could contain oil deposits. In May 2000, CGG Corporation was awarded a two-year contract to study future prospects for the Awali field.

Bahrain is also likely to become a natural gas importer unless new gas discoveries are made. Its reserves of 3.9tn cf are mostly associated gas from the Awali field, the bulk of which goes into domestic power generation.

Yemen

Yemen has attempted to improve its political and economic climate by settling its border dispute with Saudi Arabia and improving investment terms. It has reduced the size of its signature bonuses and improved the terms of production sharing agreements (PSAs). These now provide for two three-year exploration phases extendable for a further five years. The foreign oil operators' share of oil production has been increased – in the case of TransGlobe to 72% – and royalties are now set on a sliding scale of between three and 10 years. Because Yemen is not reliant on the Hormuz Strait and Bab al Mandeb chokepoint, the country provides a more secure export outlet to the open sea than countries around the Arabian Gulf.

The relatively small size of Yemen's oil reserves, but low production costs (as low as $1.70 for onshore output/barrel), has attracted a large number of smaller oil companies. Yemeni production increased from 190,000 b/d in 1990 to 490,000 b/d in 2Q2000. All production has come from five blocks with proven recoverable reserves of 1.7bn barrels (see **Table 1**). The completion of the $250mn infrastructure investment in the East Shabwa and Jannah fields contributed to a 30,000 b/d plus increase in production in 2000.

The current emphasis in the Yemeni oil industry is on exploration. The Vintage Petroleum (75%) as well as TransGlobe (25%) exploration concession (October 1997) for Damis block S1, where four exploration wells have been drilled, has shown the presence of gas and the potential for oil. Australia's Oil Search, and UAE's Mohammed al-Otaibi Group (September 1999) are involved in a $9.5mn exploration project on offshore block 15; while Eni and Sonatrach (October 1999) are involved in exploration and development in Al Maber block 2 in the Shabwa Basin. TransGlobe also holds a concession for the Tasour field in block 32 where DNO of Norway is the operator. The start-up date for the $17mn development was late 2000, with an initial output of between 5,000 b/d and 7,000 b/d. More recently Adair International Oil and Gas and CanOxy have also been awarded exploration acreages.

Most of Yemen's 16.9tn cf of natural gas reserves are located in the Marib-Jawf fields. The Yemen Liquid Natural Gas Company (a joint venture of TotalFinaElf and the Yemen General Gas Company) is to develop the Marib-Jawf and Jannah fields and transport the gas via pipeline to an LNG plant and export terminal in Bal Haf on the coast of southern Yemen for export to India. The planned completion date for the project is 2003. Other partners in the venture are Hunt Oil, Exxon and Yukong.

Syria

Syria's oil industry is in decline. There have been no major oil discoveries since 1992 and oil production has been steadily declining since 1996 to the current level of 522,000 b/d. Faced with prospects of becoming a net importer of oil within 10 to 12 years, the Syrian Government has improved its unattractive commercial terms to spur activity in exploration and development. Elf, Shell and Deminex are three foreign companies with a strong presence in Syria. The latter two because they are stakeholders in the Al Furat Company – a joint venture with Syrian Petroleum Company set up in 1985. Al Furat is the country's main oil producer. Its fields are located in northeastern Syria, particularly the Deir ez Zour area that produces 400,000 b/d.

In July 1999, Enppi of Egypt signed a service contract worth $30mn to upgrade production at the Thaban and Jarnof fields to 45,000 b/d and at the

Azraq-Maleh field to 35,000 b/d. In May 2000, Tanganyika Oil was awarded a concession for the Oude development block in northeastern Syria with estimated reserves of 2bn barrels of oil and 700bn cf of gas. The initial phase of the project involves feasibility studies and pilot tests to determine the optimal drilling technology and enhanced recovery schemes.

Syria's gas reserves are estimated at 8.5tn cf, about half of which are non-associated gas reserves. The country plans to boost the role of natural gas in its energy balance as a substitute for oil in power generation. The problems facing the Syrian gas sector are logistical, as gas reserves are located mainly in the northeast while the population is centred in the south and west of the country.

Much of the gas development activity is concentrated in the Palmyra region in central Syria with 3.6tn cf in reserves. The main fields in the area are Al Arak, Al Hail and the Al Doubayat sweet gas fields, as well as the Najib and Sokhne sour gas fields. Dutch company A Hak Pijpleidingen is contracted to build a $46mn, 200-km, 24-inch pipeline from the Palmyra fields to Aleppo. Gas production from the Palmyra fields during the last three years has reached 250mn cf/d and is expected to reach 450mn cf/d once Canada's Titan project completes development work on another group of fields in the area.

A $430mn gas project in Deir ez Zour area by Conoco and Elf (November 1998) is due for completion in September 2001. Under the contract, in which Conoco and Elf each hold a 50% interest, the companies will construct a pipeline and gas gathering system and processing plant for utilisation of 175mn cf/d of associated gas from 22 Deir ez Zour oil wells. The project also involves gas injection into Elf's Tabiyeh gas condensate field to boost condensate recovery. Around 150mn cf/d of residual gas from both facilities will be transported via a 250-km pipeline to the national grid serving western Syria.

There are also plans for construction of a pipeline from Syria to Lebanon with a capacity of 105mn cf/d. The pipeline will have two sections: a 75-mile section from Homs to Deir Ammoria in north Lebanon and a 90-mile section continuing to southern Lebanese town of Zahrani.

Qatar

Qatar has proven oil reserves of 3.7bn barrels, 2.2bn barrels of which are held in the onshore Dukhan field and the remainder in six offshore fields. Dukhan currently produces 170,000 b/d, but Qatar General Petroleum Corporation (QGPC) hopes to raise production to 380,000 b/d through enhanced oil recovery (EOR) schemes.

Field	Reserves (mn barrels)	Operator
Marib-Jawf block 18	490	Hunt Oil
East Shabwa block 10A	108	TotalFinaElf
Masila block 14	500+	CanOxy
Jannah block 5	345	Hunt/Jannah
Iyad block 4	135	Nimir Petroleum

Table 1: Yemeni producing blocks

Over the next 10 years QGPC plans to drill 270 wells in three fields: 140 at the onshore Dukhan field; 37 at Maydan Mazham and 86 at the Bul Hanine offshore fields. Both Maydan Mazham and the Bul Hanine fields are in decline, but QGPC hopes to extend the life of the fields through drilling new wells and gas re-injection operations. Maersk Oil, who operates the field, has reversed declining production at the Al Shaheen field in block 5 in recent years. Production at the Al Rayyan field in offshore block 11, operated by BP, was expected to reach 60,000 b/d by the end of 2000.

In the 3Q2000 Qatar was producing 810,000 b/d of oil and expects to raise this level to 900,000 b/d by year end with expansion of offshore and onshore fields.

Onshore, Qatar has a five-year exploration and production sharing agreement with Chevron (March 1998) for block 2, which covers the entire peninsula except for the Dukhan field. Chevron is also involved with Hungary's Mol in offshore block 1.

Qatar has proven gas reserves of 300tn cf, most of which is located in the North Field with 239tn cf of recoverable reserves. The Dukhan oil field contains an estimated 5tn cf of associated and 0.5tn cf of non-associated gas.

Last May, ExxonMobil and QGPC signed a $1bn development and production sharing agreement for the North Field. The Enhanced Gas Utilisation Project will develop upstream infrastructure in a portion of the field for domestic use, exports to Persian Gulf countries and use gas as a feedstock for local petrochemical projects. The initial phase of the project will produce 500mn cf/d, with eventual capacity to increase to 1.75bn cf/d.

Qatar has two LNG exporters. Qatargas has two 3mn t/y trains with a third to be added by 2002. Production is planned to rise to 9.2mn t/y by 2004 through an estimated $250mn debottlenecking project. Qatargas is a consortium of QGPC (65%), TotalFinaElf (10%), Mobil (10%), Mitsui (7.5%) and Marubeni (7.5%).

The other LNG exporter is RasGas, which consists of two 2.5mn t/y trains. Capacity is expected to increase to 20mn t/y by 2004–2007. RasGas has supply contracts with Japan, South Korea's Kogas, India's Petronet, US company CMS Energy and Taiwan's Tung Ting Gas Group. Partners in RasGas are QGPC (63%), Mobil (25%), Korea Gas (5%), Itochu (4%), and Nissho Iwai (3%).

QGPC recently raised finance for the $1.2bn NGL-4 natural gas liquids project, which will provide ethane feedstock for the Q-Chem petrochemical complex. The project is contracted to Snamprogetti and Hyundai and includes upgrading a Dukhan recycling plant, the North Field Masaieed gas plant, construction of a fractionation and treatment plant and a 100-km natural gas pipeline. The start-up production target is set at 115,000 t/d of ethane.

Qatar is also part of the UAE Offset Group (UOG) Dolphin natural gas project, which aims to integrate the gas networks of Qatar, the UAE and Oman. The project will see production of 3bn cf/d from Qatar's North Field. Starting in 2002, gas will be supplied from ExxonMobil's and TotalFinaElf's concessions in the North Field. Through a subsea pipeline, gas will be transported to the coast of Abu Dhabi and distributed within the Emirates through the existing gas network. Enron and TotalFinaElf have been selected by UOG to implement the project. They will have equity stakes of 24.5%. Enron will develop the pipelines, while TotalFinaElf will supply the gas. Qatar is also to begin gas sales to Kuwait via a subsea pipeline to be built by ExxonMobil.

Oman

Omani production costs, although still low by world standards, are still higher than the rest of the Middle East. Its fields are also generally smaller, less productive and more widely scattered. Oil production has been steady at around 880,000–910,000 b/d since 1998.

Plans call for production capacity of 1mn b/d by 2004.

Half of the current production comes from five fields in the north of the country where crude oil is found along with natural gas. Of its northern fields, Yibal–producing around 180,000 b/d – is the largest in the country. Oil from the southern fields is heavier and has little associated gas.

Most of the major oil fields are operated by Shell, which holds a 34% stake in Petroleum Development Oman (PDO), with the Omani Government holding 60%, TotalFinaElf 4% and Partex 2%. PDO hopes that two recently discovered major oil fields at Al-Noor and Al-Shomou will add 4.5bn barrels in reserves to the country's oil base by 2011. Al-Noor's light crude went onstream in summer 2000 with 10,000 b/d at a cost of $140mn.

In 1999, Oman awarded a 10-year exploration and production sharing contract to Phillips Petroleum for an 1,800 sq km block in southern Oman. Some $29mn is to be spent in the first three years of the contract and Phillips will be entitled to 40% of any discoveries. Heritage Oil was awarded block 17 in the north of the country, which represents the onshore Mosadan Peninsula and its three-mile offshore limit. Partners in block 17 include the operator Novus Petroleum (40%), Atlantis Holdings Norway (50%) and Eagle Energy – a wholly owned subsidiary of Heritage (10%).

Heritage also holds a 10% interest in the adjoining block 8, which includes the Bukha/Henjam field with reserves of 1,800bn cf of gas and 400mn barrels of condensate. Novus Petroleum operates the field, where gas is supplied through a 34-km subsea pipeline to an onshore plant in Ras al Khaimah in the UAE. Oman recently reached an agreement with Iran to develop the field, which lies across the territorial waters of both countries. Production terms are on an 80:20 basis in favour of Iran.

Oman has made natural gas the key element in its economic diversification strategy. It has proven gas reserves of 28.4tn cf, most of which are associated gas. In recent years it has consistently increased its gas reserves base.

Oman has a number of gas exploration and development agreements with foreign companies. A 1998 JV of Occidental (26%), Amoco (now BP) (60%) and Neste Oy of Finland (now Fortum) (14%) is engaged in exploration, development and production of natural gas in reserves in five blocks covering 14,000 sq km in northern Oman. The project also involves construction of a gas pipeline to Sohar and the Sharjah gas hub.

Last June, Gulfstream Resources won a concession for Haffar block 30. The company is to spend $60mn over eight years to develop the Haffar, Al Sahwa and Nadir gas fields. The development project also includes construction of gathering systems, a central processing facility and a 16-km link into the national gas system.

Oman also plans to extend its existing gas pipeline network. Dodsal of India and a consortium of Saipem, Snam, Mitsubishi and Lebanese Consolidated International Contractors have been awarded the contract.

The country's first LNG plant at Qalhat came onstream last summer. It is a joint venture of the Omani Government (51%), Shell (30%), TotalFinaElf (5.54%), Korea Gas (5%), Mitsubishi (2.77%), Mitsui (2.77%), Partex (2%) and Itochu (0.92%). The 6.6mn t/y plant consists of two 3.3mn t/y trains supplied with non-associated gas from the Saih Nihadya, Saih Rawl and Barik gas fields. Its customers are Korea Gas, India's MetGas, Japan's Osaka Gas Company, Coral Energy of the US and TotalFinaElf.

Oman is also tied into the Dolphin project of Qatar's North Field gas via a pipeline that is to be constructed around 2005 by Enron.

United Arab Emirates

UAE holds around 10% of the world's proven oil reserves – 97.8bn barrels. It currently produces around 2.5mn b/d. Most of the its reserves are held by Abu Dhabi, around 4bn barrels by Dubai and a further 1.5bn barrels by Sharjah and 100mn barrels by Ras al Khaimah. The UAE is also the Middle East's largest producer of condensate.

Abu Dhabi is the only one of the Emirates to be a member of Opec. It restricts its own oil production in order to allow the smaller Emirates to produce at full capacity so that the UAE's total production is kept within Opec quota levels. This has led to friction between Abu Dhabi and foreign oil companies who are reluctant to invest in new projects while Abu Dhabi runs a large excess capacity of around 500,000 b/d. Government plans call for oil production capacity to rise to 3.6mn b/d by 2005 and 4mn b/d by 2010.

The main producing groups in Abu Dhabi are ADCO (Abu Dhabi Oil Corporation (60%), BP, Shell, TotalFinaElf and Partex) for onshore operations and Abu Dhabi Marine Operating Company (ADNOC, BP, TotaFinaElf and Japan National Oil Company) for offshore operations. Crude oil in both ventures is allocated according to shareholding stakes. In recent years Abu Dhabi has focused its oil development projects on increasing rates of production from existing fields.

In Dubai, oil production has been declining since its peak of 420,000 b/d in 1991. Last year, the Emirate managed 225,000 b/d. The main operating fields in Dubai are Fallah, Fateh, Margham and Southwest Fateh.

The UAE's 212tn cf of gas reserves are mostly located in Abu Dhabi. UAE was the first Middle East country to switch its economy to the use of gas and to become an LNG exporter. The Abu Dhabi Gas Liquefaction Complex at Das Island came onstream in 1977. It produces 8.6mn t/y of LNG and LPG and plans to start a feasibility study for a third LNG train.

In October 1998, Snamprogetti was awarded the construction contract for the second phase of the $1bn onshore gas development (OGD2) programme at Habshan gas complex above the Bab oil and gas field. Works to be completed by early 2001 involve construction of three to four gas processing trains to process 1bn cf/d of gas and 300–500 t/d of natural gas liquids, and up to 2,100 t/d of sulfur and also 35,000–55,000 t/d of condensate.

ABB Lumus is involved in a $260mn offshore engineering, procurement and construction contract for the $1bn Khuff gas project. The project, which is expected to produce 600mn cf/d of gas, involves construction of new platforms and pipelines. The Khuff reservoir underlies the TotalFinaElf 's Abu al Bukhoosh oil field and is one of the world's largest gas fields. Abu Dhabi Gas Company and the National Petroleum Company will build an 112-km, 48-inch pipeline at a cost of $84mn to carry gas from the field to Al Taweela processing plant and then through a new pipeline to the Jebel Ali industrial area in Dubai. The pipeline, to be completed by March 2001, will have an initial capacity of 500mn cf/d, rising to 900mn cf/d.

The Zakum gas injection project, a joint venture between ADNOC and Japan National Oil Corporation, was completed in 2000. It delivers 200mn cf/d from GGII to the Upper and Lower Zakum gas injection pilots. BP and TotalFinaElf's bids to buy 14.67% and 13.3% stakes respectively from ADNOC have been held up by the local Majlis [parliament]. The current partners intheventure are ADNOC 88%, and Japan Oil Development 12%.

The recent large gas discovery with estimated reserves of 3.8tn cf in Sharjah

by Crescent Petroleum has added complexity to the local gas trade. Sharjah consumes most of the gas it produces and exports some to Dubai which has no gas production of its own. Dubai is dependent on gas imports not just for power generation and industrial use but also for injection into oil fields. The new discovery by Crescent can increase Sharjah's export potential. But this is to a large degree dependant on the price Qatar will charge for its gas exports as both Abu Dhabi and Dubai are tied into the Dolphin project. Apart from Dolphin, Sharjah also faces competition for the Dubai market from the BP-led consortium which is developing five blocks in northern Oman and TotalFinaElf which is trying to sell dry gas from Iran's Sirri fields to Dubai.

Kuwait

Kuwait contains 96.5bn barrels, or 9% of world's proven reserves of oil. It currently produces 1.9mn b/d, some 400,000 b/d below full capacity within its own borders. More than half of its production comes from the Burgan fields – Burgan, Magwa and Ahmadi – which contain 70bn barrels in reserves. Other producing fields are Raudhatain, Sabriyah, Ratqa and Abdali in the north, which produce around 400,000 b/d, and Minagish and Umm Gudair in the west. Production of around 700,000 b/d in the Neutral Zone is shared with Saudi Arabia. Onshore Neutral Zone production comes from the Wafra, South Fawaris and South Umm Gudair fields operated by Texaco and offshore from the Khafji and Hout fields which are connected to the Saudi Safaniyah field.

The major focus in recent times in upstream oil operations have been construction of gathering centres (GCs) and expansion of production capacity to 3mn b/d. All of Kuwait's 26 GCs were destroyed or damaged by the Iraqis. A total of 18 were repaired within two years of the war and of the rest only one – GC no 25 at the Raudhatain field - has been restarted by South Korea's Daelim at a cost of $128mn. Two new GCs are due by 1Q2001.

Country	Type of contract	Date	Company	Field	Capex	Status
Yemen	PSA	Nov 1999	Adair Int'l Oil & Gas (30%), Occidental Yemen Sabatain (50%), SABA Yemen Oil Company (20%)	Block 20 between Marib and Habwah	Minimum commitment of $16.3mn in the six-year exploration period.	Adair will be the operator in the exploration phase and Occidental in the development and production phase.
	PSA	April 2000	CanOxy	Blocks 11, 12, 36, 54	$5mn on each block in the first phase. At least $6.5mn on drilling and assessing one well in each block in the second phase.	Exploration in all four blocks divided into two phases. The first, a mandatory 48 months, and the second a mandatory 36 months. 20-year development phase from first commercial discovery.
Syria	Subcontracted by Conoco/Elf	Mar 2000	Kvaerner ENC	Deir ez Zour project	$160mn	To engineer, procure and construct for the Conoco/Elf Deir ez Zour associated gas project.
Qatar	Concession 25 years	Mar 1997	Elf (operator, 55%), Agip Qatar (45%)	Al Khalij field in block 6	$200mn	To raise production from 32,000 b/d to 50,000–60,000 b/d.
	PSA	Dec 1997	Occidental (44%)	Id al Shargi south dome	$450mn	To produce 50,000 b/d by end-2000.
	PSA 25 years	1994	Occidental	Id al Shargi north dome	$700mn	Producing 135,000 b/d. Expected to surpass 150,000 b/d in 2001.
	PSA	–	Sasol (49%), QGPC (51%)	Gas-to-liquids project	$780mn	Project based at Ras Laffan industrial city for exports to Asia and Europe.
Oman	–	Dec 1999	Crosco, Riyam Engineering	5-year drilling project	$80mn	Field maintenance services: 2 workover rigs, 7 wireline units and 1 pumping unit.
	–	April 2000	Dodsal of India	Gas pipeline	$180mn	To build a 350-km pipeline from Fuhad in central Oman to Sohar in the north where a number of gas intensive industries are planned.
	–	April 2000	Saipem, Snam, Lebanese Consolidated Int'l Contractors, Mitsubishi	Gas pipeline	$124mn	To build 700-km pipeline from Saih Nihayda in northwest Oman to southern Salalah where a private power plant is planned.

Table 2: Field development projects in Yemen, Syria, Qatar and Oman

Country	Type of field	Location	Reserves	Company
Sharjah	Gas – Sharjah-2	Offshore	Estimated recoverable reserves of 500bn cf.	Crescent Petroleum and Atlantis Holdings, Norway
Oman	Oil Oil – Lekhwair East and Wazer North	Ghafeer –	60.4mn barrels –	PDO –
Yemen	Gas	S-1 Damis block in Alif area	Well flowed 40mn cf/d of gas and 1,020 barrels of condensate.	Vintage Petroleum
	Oil – block 53	–	12mn barrels recoverable reserves.	DNO Norway
	Oil – Qataban-1	Masik area	–	Canadian Oxy
Qatar	Oil – Idd El-Shargi	Offshore EOR project at South Dome oil field	2,500 b/d initial production.	Occidental Petroleum

Table 3: New oil and gas discoveries in Sharjah, Oman, Yemen and Qatar

The country's capacity expansion programme is to be achieved in two phases. The $7bn phase one plan calls for boosting oil production in the four northern fields to 900,000 b/d from the current 430,000 b/d. The fields are to meet 35% of the country's oil production by 2005, by which time the declining output from the Burgan area is expected to account for just over one-third of total production. Compared with the low production cost in Kuwait, the development of the northern fields will see these costs rise as they involve producing large amounts of water and possible injection of gas. Phase two involves expanding the capacity of the Minagish and Umm Gudair fields in the west.

These fields are being offered on a service contract basis, but, so far, oil industry response has been lukewarm. Oil companies prefer to function as operators rather than as contractors on a fixed-fee basis. Moreover, the foreign oil companies are expected to finance the development process and to develop only proven reserves and not engage in new exploration. There are also doubts as to whether the small increase in capacity can be justified on economic grounds and whether the work could not have been done by smaller companies or by the Kuwait Petroleum Corporation itself.

Kuwait admits that the programme is partly motivated by a desire to augment its international position vis-a-vis the involvement of the oil majors whose presence could act as deterrent against further Iraqi aggression. Some of the fields also straddle the border with Iraq and Kuwait might be aiming to be the first to develop them before sanctions against Iraq are lifted.

Kuwait has proven gas reserves of 52.7tn cf, but produces only small quantities of associated gas. As in the other Middle Eastern countries, it plans to increase the use of natural gas in the domestic economy to release more oil for exports both through an increase in the recovery of associated gas (which is currently flared) as well as through tapping its non-associated reserves.

The Raudhatain oil field is believed to be rich in gas from deeper formations. Last July, Kuwait also reached an agreement with Saudi Arabia over the equal division of gas resources of the offshore gas/condensate Dorra field, which is claimed by Saudi Arabia, Kuwait and Iran. Negotiations with Iran have not been concluded yet, although Iran has agreed to stop drilling at the field and to dismantle its platform there. Kuwait has also signed preliminary agreements for imports of gas from Iran via pipeline and also from Qatar. ExxonMobil is conducting a feasibility study for exports of gas via a subsea pipeline, which it would built from its sector of the North field (see Qatar above).

** Part one of the series, which reviewed development prospects in Iran, Iraq and Saudi Arabia, appeared in the February 2001 issue of* Petroleum Review. *Unfortunately, a few errors were printed in this first article. Please see the box piece in this article for the corrections.*

Addendum

The first part of this feature – entitled 'Big Three increase focus on gas reserves,' published in the February 2001 issue of *Petroleum Review* – unfortunately contained some errors. We apologise for any confusion that this may have caused. The correct information is published below.

- The introductory paragraph should have stated that Mojgan Djamarani was reviewing *recent developments* rather than 'development prospects,' as the article primarily covers present and not future projects.
- The figures used in the article were taken from the *BP Amoco Statistical Review of World Energy 2000* and other industry sources.
- In Table 1: the first entry under the company column should have read *semi-privatised affiliate* and the project aim was to raise production from *5,000 b/d* to 25,000 b/d. In the second entry, the reserve figures should have been listed under the field column. In the fourth entry, it is a *buy-back* contract. In the sixth table entry, the date should be *September 1999*. The completion date in the eighth entry is *April 2001*.
- Under the section reviewing Iran, Phase 4 and 5 of the South Pars project are to be completed at a cost of *$3.8bn*.
- In the section dealing with Iran's offshore developments, the field name should read *Sarkhound* and not Shorthand.

More EU regulation to ensure supply security?

The EU Commission's recently issued Green Paper on Energy Supply Security is 'a very good piece of work and raises a lot of questions which need to be discussed,' as one recipient put it. The Paper is also a highly revealing document in more ways than were perhaps intended, writes *Fred Thackeray*.

The Green Paper points out the inherent contradictions between some existing policies that make important impacts on energy supply and consumption. It implicitly recognises that in practice not much can be done to improve the security of traditional energy supplies. And, in a lengthy discussion of 115 pages, it exemplifies the inherent tendency that all bureaucracies exhibit – to seek extension of their regulatory powers.

Regarding the last point, it suffices to record one out of many relevant comments. This is that, as the Commission sees it, 'energy policy has assumed a new Community dimension without that fact being reflected in new Community powers.'

The Paper draws attention to the Commission's new forecasts that, on the basis of existing policies, within the next 20 to 30 years Europe's reliance on imports for its energy supplies will increase to 70% – against 50% today. This is for 30 countries, comprising the present 15 EU Members together with a further assumed 13 new Members plus Norway and Switzerland.

Supply and demand

The salient feature of the discussion, however, is that mainly it is not about energy supply but about energy *demand*. Mention is made, of course, of the recent initiative at Presidential level to discuss the scope for collaboration with Russia for investments and contracts to ensure future gas supplies. The Green Paper also acknowledges the key importance of future supplies of oil and natural gas from the Caspian Basin as a counter-balance to supplies from the Middle East.

But these and other supply-side issues form only a small part of the analysis. Principally, this is about how to meet the requirements of climate change policies by checking the growth and changing the patterns of energy consumption. Policy on the security of energy supply, the Paper says, is not about maximising self-sufficiency or minimising dependence on outside sources but about reducing the risks that are linked to dependence. To do this it sees the necessity of a 'determined policy of demand management.' This, it adds, is 'all the more necessary in that it is the only way of meeting the challenge of climate change.'

One should mention, incidentally, that the Paper also cites at length the calamities which will befall the world if climate change continues unchecked, taking it as proven that such estimates are beyond dispute. It says somewhat ruefully, however, that it is now 'much more arduous to reverse the trend of rising greenhouse gases than it might have seemed three years ago.'

Deep debate

Publication of the new analysis is intended to launch a 'deep debate' during 2001 on the essential questions that shed light on the energy choices to be made in the EU. For this purpose it provides an admirable basis in that it does not shirk the awkward issues – except one. This notable omission is the overall affects of its proposals on the competitiveness of the EU's already high-cost economies. It assumes that because it asserts that a measure will improve competitiveness then it will do so. Thus, although its proposals to promote renewable energy and to curb energy consumption almost all imply higher energy costs, it concludes that 'an ambitious policy to tackle climate change... should serve to promote innovation and structural changes and lead to more efficient production systems and improved European competitivity.'

Possibly the most awkward issue raised is that of nuclear power. Since 1980 nuclear generating capacity in the EU has grown from 45 GWe (Gigawatts electricity) to 125 GWe. In 2000 it can be estimated that nuclear power resulted in saving the use of 200mn toe (million tonnes of oil equivalent) of fossil fuels. It thus avoided around 300mn tonnes of carbon dioxide (CO_2) emissions, or the equivalent of taking 75mn cars off the road. However, five out of eight EU states that have nuclear power have adopted restrictions or reductions in nuclear power. Also, in the UK and France 'no new reactors are likely to be built in the next few years,' leaving only Finland as a possibility for a new plant.

In view of these plans, the Green Paper points out that 'the absence of nuclear would make it even more diffi-

cult to tackle climate change in the long-term.' It makes a key proposal therefore to concentrate on nuclear waste management research, although this does not appear to offer a solution in the short to medium term. The development of nuclear power, the Paper says, needs a consensus to give the industry a long enough period of stability; but this will only be the case when the waste issue finds a satisfactory solution with maximum transparency.' Its conclusion is that the 'the nuclear option must be examined in terms of its contribution to security of supply and greenhouse gas emissions reduction.' But, it adds, 'this is entirely without prejudice to the sovereign decisions of the countries that have decided to phase out nuclear power plants or put a moratorium on investment in this sector.' Here lie, no doubt, the seeds of a fierce long-running debate and deep policy divisions between countries, which will become even greater in the process of EU enlargement.

Aside from its significant reappraisal of nuclear power, the Green Paper makes numerous valuable demand-side proposals. Some may be singled out as follows:

- A pro-rail policy is proposed to be incorporated in a forthcoming White Paper on a common EU transport policy. This is in the light of the prospect that road transport could create three-quarters of the expected increase in CO_2 emissions in the EU between 1990 and 2010 if nothing is done to check it. A striking comparison is offered that an average truck generates six times more CO_2 per t/km than a train.
- An 'indicative target' is proposed to decrease energy intensity (energy used per unit of GDP) by 1%/y. It is claimed that there is economic potential for cost-effective reductions in energy consumption in the EU, equivalent to 160mn toe annually. As part of this plan it makes a strong commitment to increasing use of the high-efficiency technology of CHP (combined heat and power).
- During the Stockholm Commission meeting this month the Commission will present a targetted plan to improve energy efficiency in buildings and in the development of a new generation of road vehicles including NGV (natural gas vehicles) and 'in the longer term, hydrogen.'
- It is proposed that Community financial support for new available technologies should be directed more to support demand from potential users than 'to support the supply of technology which has existed for some time.' Such support for users would increase markets and achieve economies of scale that will make these technologies cheaper.

Along with its good ideas, however, the Green Paper also contains a number of eyebrow-raising suggestions for their implementation. One of these is for the promotion of renewable energy (see box piece), the underlying directive for which was agreed by the Council of Ministers on 5 December 2000 and now awaits endorsement by the European Parliament. To put it into effect, the Green Paper suggests that 'one possible way to finance renewables could be to subject the most profitable sources of energy – nuclear, oil, gas – to a contribution towards the development of renewable energy sources' (and thus presumably enhance the competitiveness of the European economies?).

A similar mindset may be discerned in some of the measures envisaged to promote the use of rail rather than road for freight transport. Estimating that over-capacity in road transport now stands at 30%, it suggests that the industry should be restructured by 'social measures,' including 'reviewing the conditions of access to the road haulage profession' and 'tightening up the enforcement of social and safety regulations.' Also, investments to develop a trans-European rail network should come partly from tolls on competing road routes.

A possible harbinger for the future, when amendment of the Common Agricultural Policy becomes urgent for EU enlargement, is a question raised in the following terms: 'Can an ambitious programme to promote biofuels and other substitute fuels... continue to be implemented via national initiatives or are coordinated decisions required on taxation, distribution and prospects for agricultural production?' Despite their high production costs, it is important, the Paper says, to ensure the continuing and growing presence of biodiesels and other biofuels, which 'will also help to create jobs and thus preserve the rural fabric by providing agriculture with new outlets.'

Inevitably, the Green Paper is compelled to tackle the issues surrounding the present high subsidies on indigenous coal in Germany and some other countries. It points out that in July 2002 the Treaty establishing the ECSC (European Coal & Steel Community) will expire. This, it proposes, 'should provide the opportunity for a wide-ranging review of the place of coal.' It suggests that one possible way forward could be to provide limited support for long-term continuation of some coal production 'to keep the equipment in operating condition and to retain the professional qualifications of a nucleus of miners and technological expertise.' The objective would be to contribute to strengthening security of energy supply.

The tangled web of EU policies on energy matters faces the Community with extremely difficult problems. The Commission's new analysis has not ducked the problems. It is to be hoped that the ensuing debate will solve them without requiring additional regulations. ●

Promoting renewable energy

A Commission-driven policy to promote the use of renewable energy sources has been agreed by the Council of Ministers and is currently awaiting endorsement by the European Parliament. Its key provisions are:

- Community objectives are established that by 2010 renewables will (a) account for 12% of gross consumption of energy and (b) contribute 22.1% of electricity consumption.
- Member states are obliged to set national objectives for future use of renewables to produce electricity.
- The EU Commission will monitor compliance of the national objectives with the Community objectives and with Community commitments on climate change. It will propose amendments to national objectives where these contradict Community objectives.
- Within four years of the Directive coming into force, the Commission may propose a more harmonised system of financial aid to renewables, allowing a transitional period of seven years to implement it.
- Member states will ensure priority access to electricity produced from renewables within two years; and they will guarantee that the calculation of connection costs for new producers are transparent and non-discriminatory.

M4 Data route solves back-up issues

As an oil exploration company, Phillips Petroleum holds significant amounts of data on its corporate servers, reflecting years of investment in research and millions of dollars in value. Loss of this data would have catastrophic, if not terminal, effects on its ability to maintain its business. A reliable back-up and storage solution is essential. With a particular need for a scalable product, Phillips Petroleum recently invested in a back-up tape library solution from M4 Data.

Phillips Petroleum building UK, Woking, Surrey

Phillips Petroleum is a fully integrated international oil company with assets in excess of $13.5bn and annual revenues in excess of $15.8bn. It is ranked eighth in the *Fortune 500* list of integrated oil companies based on annual revenues, and is large enough to be considered as one of the major oil companies. It has been active in offshore oil and gas production in the North Sea since 1962, establishing itself in both upstream and downstream operations in the UK.

The need to store

Because of the nature of its business, Phillips has huge amounts of seismic data that its geologists and geophysicists have to analyse and interpret in order to locate sites of potential oil and gas fields. Loss of that data would take years and significant expense to replace, so Phillips has to ensure that the data is stored safely and backed up regularly.

'Having back-up gives you the ability to restore data if a user accidentally deletes it, or a systems failure erases it,' says Conrad Marotta, part of the Unix support team at Phillips. 'Another useful aspect is that it puts you in a position of having a business resumption plan in the event of the building being destroyed.'

Changing needs

In 1999 Phillips' data storage requirements were outstripping its current capacity and Marotta had to re-assess the company's needs. 'The software back-up system we had in place was near the end of its support life so we needed to look at a new product,' he explains. 'As we had to replace the software we decided that it would be good to replace the hardware at the same time.'

Bearing in mind his new requirements and using his contacts in the industry, Marotta worked with Richard Augier, President of tape storage specialists, Data Product Services – **www.dps.uk.com** – and selected a MagStak 40 that comprised of two MagFile 20s with four Quantum DLT7000 tape drives from M4 Data, and Veritas NetBackup.

'We selected the MagFile tape library because of its unique ability for scalability,' states Marotta. 'I don't know if anyone out there has a product with such a high cartridge density that is expandable in the way the M4 Data product is – it is actually quite remarkable. Before MagFile one would buy a library that has four to six drives in it, and maybe 40–100 slots. Once these are full, that is it – it doesn't expand beyond that. What this means is a company has to make a best guess of future storage requirements at the time of purchase, which is never ideal as things can change so quickly. With MagFile however, it allows you to buy a solution for your immediate storage problem and then add capacity in an easy, measured and financially more suitable manner. So it provides more flexibility than other solutions and grows as your company's requirements grow.'

Future requirements

Marotta believes that Phillips' need to store information will continue to increase with 3TBs, a reality very shortly. 'With MagFile's expandability that will not be a problem – we can store 16.8TB in a 19-inch rack, and when that is full we simply buy another one to go next to it.'

He concludes: 'We have been using MagFile for a number of months now and I have been totally satisfied with it and M4 Data. As my needs to store increasing amounts of data grows, I can buy more MagFiles and simply add them to the stack. I have already added a further Magfile 20D module for increased tape capacity to the Stak since purchasing. For Phillips the two key issues were flexibility and expandability. M4 Data with MagFile satisfied those issues.'

Dr Duke Ebenezer, Chief Executive Officer of M4 Data says: 'MagFile's revolutionary design means it suits the back-up demands of smaller companies as well as the enterprise end of the market. We spent a lot of time understanding end user needs before developing the MagFile family of products and it is gratifying to note that we can cost-effectively satisfy Phillips Petroleum's need for continued growth in their back-up requirements'.

Off-the-shelf PA and alarm systems

Bespoke solutions have long been seen as the panacea for all public address and general alarm (PA/GA) systems in the offshore industry. However, in recent years there has been a significant change in attitudes and the demand now is for low cost, off-the-shelf systems. *Jim Padgett*, Product Development Manager for Federal Signal, a UK supplier of public address and voice alarm systems, looks at why big and bespoke is no longer beautiful.

In the good old days of the offshore oil industry, when money was no object and budgets were as big as oil fields, the cry among those responsible for offshore safety would always be for bespoke solutions when it came to designing, specifying and building PA/GA systems.

The advantages of this approach were, people thought, obvious. Bespoke was often perceived as a euphemism for the best – and most advanced – system money could buy, guaranteeing reliability and offering the highest standards of safety and operational excellence. In reality this was often not the case.

The vast majority of bespoke systems now in use are hardwired. Although good and offering significant advantages, many systems are so heavily engineered to comply with customer specifications relating to system design, installation and servicing, as well as meet the physical demands of harsh operating environments, that in reality they offer limited flexibility and use.

The main drawback of hardwired systems is that any changes or on-site reconfiguration to meet upgrades and network expansion requirements are difficult to undertake and invariably involve considerable cost.

Expensive technical expertise quite often has to be brought in to resolve problems and replacement parts never come cheap. It has not been unknown for companies to completely scrap systems and replace them with brand new ones.

However, the face of the oil industry is changing and those responsible for offshore safety on oil production platforms and floating production, storage and off-loading (FPSO) vessels are now specifying to increasingly tighter budgets.

The effect is an increasing realisation that expensive, rigid bespoke solutions are no longer the only choice and that low cost, off-the-shelf modular products, which utilise the new generation of microprocessor-based operating technology, are gaining increased popularity – and credibility – as the way ahead for offshore PA/GA systems.

The operational and economic arguments for the use of microprocessor-based technology are difficult to refute. The new generation of equipment coming onto the market – Federal Signal's Verifire multi-zone broadcast voice alarm system, for instance – provides the end-user with the levels of flexibility and unit cost now being demanded by those responsible for safety and budgets.

Furthermore, with advancements in technology and software design, these systems can be easily designed and engineered to meet the conditions of the offshore environment while complying with the demands of BS5839 – the relatively new standard now in use for onshore based systems of this type.

Fully PC-programmable and off-the-shelf products such as Verifire have developed so much in recent years that they are now offering the same high specification features previously only available from bespoke systems at reduced cost – surely a major consideration in today's tough economic climate!

The utilisation of a Windows-based configuration programme provides a simple graphical interface allowing the system to meet the requirements of individual installations. The same interface provides diagnostic functions for fault finding and allows function modifications when changes are made elsewhere on the installation.

All Verifire racks run on a proven software package which reduces the chances of faults. Proven software, together with the modular approach to the hardware set-up, cuts maintenance down time and increases reliability.

Verifire is an integrated voice evacuation and alarm system fully compliant to BS5839 Part 8. It incorporates an input system with the pre-programmed ability to broadcast a message appropriate to the zone.

One or more fire microphones provide complete system command with live voice instructions to control any situation. Advanced system design features include inputs for paging and background music, with an override for emergency broadcasts.

FederalSignal's offshore PA/GA system, Verifire

Verifire's parallel banking requires fewer standing amplifiers to deliver a standard product that is significantly lower in cost per Watt of power than a bespoke system. It also provides capacity for up to 12-zone coverage while enabling up to three messages to be sent at the same time to as many zones as required.

Amplifiers and input cards can be easily removed if an application requires less amplification or decreased zone coverage, while future upgrades can be provided simply with the addition of new cards.

There's little doubt that the oil industry is changing and, as the search continues for deposits in ever more remote corners of the world, there is clearly a need for those responsible for safety to take a fresh look at the flexible and cost effective alternatives to bespoke systems. After all, what price human safety?

Membership News

NEW MEMBERS

Mr I K Alexander, Hutton Chemicals Limited
Mr M Ashwood, Tamworth
Ms M Ayala, PSCI
Dr G Bartlett, Trinmar Limited
Cpt Y Bhandarkar, Cork
Mr J S Boyd, Engen Petroleum Limited
Mr G Brebner, Inverurie
Ms M E Brooks, Booz Allen & Hamilton
Mr Castelein, Concawe
Mr C Chu, Chinese Petroleum Corporation
Mr I Cooling, Ocean Energy Inc
Ms L Davidson, Hedley Purvis Limited
Ms D M Davidson, Staffware plc
Mr R W Davison, Karachaganak Integrated Organisation
Mr X Delpierre, Afrinvest Securities Limited
Mr S D Dokubo, Serenity Union
Mr J Duff, PriceWaterhouseCoopers
Dr M M Gidado, Presidency Aso Rock
Mr S Giora, Delek – The Israel Fuel Corporation Limited
Mr C G Grant, Shotts
Mr D Haseotes, USA
Mr R D Kamel, Bethersden
Mr P Kennady, Hocol SA
Dr P Kerwin, Nantwich
Mr A King, London
Mr D W J Lush, Futura Petroleum Limited
Dr T R Lynch, T R Lynch Consulting Limited
Mr M Martens, Newcastle-upon-Tyne
Mr H I McGee, Phillips Petroleum Company UK Limited
Mr J C Moore, Foster Wheeler Energy Limited
Mr J C Mossom, Cape East Pte Limited
Mr B O'Connell, Inver Resources Limited
Mr A G W Parker, Hook
Ms B Paul, RWS Group
Mr D G Peck, Deltamoore Limited
Mr R E Pollock, London
Mr L Pritchard-Woollett, SAIC Limited
Mr B Roberts, Blackpool
Mr K Sears, Group Lotus plc
Mr N Sepulveda, Caribbean Petroleum Corporation
Mr T Sleigh, Booz Allen & Hamilton
Mr N Turner, Halesowen
Mr W van Rootselaar, Netherlands
Mr M D Vowels, Caltex Trading Pte Limited
Mr R G Walsh, Bord Gais Eireann
Mr J M White, Alresford
Mr J White, Shaw and Croft

STUDENTS

Mr R Abdalrsol, Libya
Mr M Awn,Libya
Mr H Bneni, Libya
Mr T H El-Falleh, Libya
Mr A Elramash, Libya
Mr Z Khamie, Libya
Mr S Masoud, Libya

DEATHS

We regret to announce the deaths of the following members over the past few months:

	Born
Mr L C Balmer	1923
Mr M J Delessert	1917
Mr E G Forscey	1926
Mr K Hanemann	1935
Mr M J Wells	1932
Mr R L Wilson	1928
Mr V B Wright	1911

GOLDEN ANNIVERSARIES

The IP is proud to announce that the following Members have all been award a special commemorative tie, in celebration of 50 years of IP Membership.

Mr E Andrews F Inst Pet
Mr G A Dickins F Inst Pet
Mr D J Hardie F Inst Pet
Mr A G Harris F Inst Pet
Mr J Henning F Inst Pet
Mr R L Messent F Inst Pet
Mr M R Nicholson F Inst Pet

NEW CORPORATES

Multi-Tech Contracts Ltd, Ditchfield Road, Widnes, Cheshire WA8 8TQ, UK
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Representative: Mr J J Randles, Managing Director
The company offers design, procurement, expediting and construction management for process industry plant operators. Its capabilities cover all disciplines, including, civil, structural, mechanical, electrical, control, project management, construction management and procurement.

Caltex Singapore Pte Limited, 30 Raffles Place #25-00, Caltex House, PO Box 646, Robinson Road, Singapore
Tel: +65 (533) 3000 Fax: +65 (439) 1760
e: mejin@caltex-dubai.com
Representative: Mohamed Ebrahim Jin, Regional Manager
Caltex is a downstream petroleum company involved in refining, distribution and marketing.

Petroleum Agency SA, Box 1174, Parow, South Africa, 7499
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Representative: Mr J Holliday, Acting Chief Executive
The Petroleum Agency SA is responsible for the management, promotion and monitoring of all onshore and offshore exploration and production on behalf of the Government of South Africa. It also manages the national exploration database. Its' offices are located in Cape Town and welcome interested companies to preview E&P opportunities.

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e: zal@hi-bar.com www.hi-bar.com
Representative: Zal Rustom, Director, Operations
Hi-Bar is an independently owned and operated oil spill response organisation. Based near London's Gatwick Airport the company is ideally situated for fast national and international response. The company was formed in 1989.

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Representative: Roland Kannor, Director
Chapter Oils is involved in the distribution of agricultural, industrial and domestic fuels as well as lubricants.

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Representative: Mr Fergus Wilson, Partner
Spencer Stuart is one of the world's leading executive search firms with offices in more than 24 countries. It has a series of industry-focused practice groups of which energy is the most successful.

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Representative: Alistair Russell, Programme Director
The Centre for Executive Education at the University of Durham Business School is a leading provider of executive education to our client organisations across all sectors. They work with a number of partners in the oil and gas industry to improve organisational performance through the development of people.

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Representative: Bob Lindsay, Managing Director
Orca Marketing and Consultancy Ltd is a provider of quality training and development and acts as a consultant to the Gulf Community Countries (GCC). The company provides a wide range of expertise to oil and gas clients and other commercial and industrial disciplines. It's trainers and consultants are drawn from highly qualified and professional people who are residents of Cyprus, the UK, US and Europe.

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Representative: Cristina Martin, Bunker Manager
Maritima acts as a bunker trader and ships agent. Services include: bunkers, lubricants, agency, spares, provisions, crew changes, stevedoring, warehouse, cargo handling, transport and distribution. All Spanish mainland ports are serviced as well as Ceuta, Gibraltar and the Canary Islands.

Road Haulage Association, 35 Monument Hill, Weybridge, Surrey KT13 0DT, UK
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e: c.rampley@rha.net
Representative: Chrys Rampley, Manager
The Road Haulage Association is an independent and non-political organisation. It was formed in 1945 by merging a number of independent representative groups which until then had covered various specialist categories of road transport operators. It is the only trade association for companies engaged in the hire-or-reward sector of road freight transport in the UK. These are the professional hauliers whose businesses carry other people's goods to and from factories, shops, warehouses, hospitals, sea and air ports and the like. They are thus a vital part of the UK's trade and service infrastructure.

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Representative: Arta Bazovska, Director
VentEko is involved in geological, hydrogeological and geoecological investigations; environmental impact assessments; risk assessment; soil surface water and ground water contamination remediation; hydrocarbon spill emergency clean-up; development of computer software to calculate the volume of contaminants in the environment and ground water flow and contaminant transport modelling.

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Rothschilds Continuation Holdings AG is the coordinating company of the N M Rothschild merchant banking group. Through its network of subsidiaries and affiliates in more than 30 countries, the group provides banking, treasury, investment banking, fund management, private banking and trust management services to governments, corporations and individuals worldwide.

OBITUARY
Mike Wells MInstPet
1933–2001

It is with considerable regret that we report the sudden death of Mike Wells on 2 February 2001. Mike, who edited *Petroleum Review* (1961–63) was a long-time member of the Institute. He had devoted his career to the oil and gas industry: first as Editor of *Petroleum Review*, then as an Amoco employee, predominantly in public affairs, and lastly as a freelance journalist of high repute. Mike was widely liked and admired both as an individual and as a specialist writer.

Over recent years he had also developed great expertise as an international defence journalist where his contribution was very highly regarded. He had the distinction of being elected an Honorary Royal Marine, although his military service had been in the 8th Hussars. His other great sporting love was rugby and he was a long time member of Saracens. He also acted as press officer for the Royal Marines Reserves (1987–97) and for the Royal Navy and Combined Services under-21s (1987–91).

He will be greatly missed by all who knew him.

NEW Publications

Freight Transport Association Drivers' Handbook*

(The Freight Transport Association, Hermes House, St John's Road, Tunbridge Wells, Kent TN4 9UZ, UK). Price: £5.

This publication, designed specifically for drivers, cuts through the excess of legal jargon that surrounds transport law and provides them with all the information and advice they need to carry out their jobs safely, efficiently and legally. The issues covered include everything from drivers' hours regulations to the condition of vehicles, defensive driving, vehicle loading, weights, and dealing with accidents and theft prevention. The handbook is divided into small, clearly signposted sections to make it easy to quickly find the information needed.

Petroleum Refining: Conversion Processes*

Editor: Pierre Leprince (Éditions Technip, 27, rue Ginoux, 75737 Paris Cedex 15, France). ISBN 2 7108 0779 3. 704 pages. Price: FFr 750 ($110).

This third volume of a series deals with the conversion processes for petroleum fractions as produced by the separation operations covered in volume two. The book presents the fundamentals of the chemical and physical mechanisms at the basis of the processes, calling on thermodynamics, chemical kinetics, reactor calculation and industrial catalysis. The major refining conversion processes are also discussed. The first group of processes is designed to improve the quality of light fractions: catalytic reforming and isomerisation. The second group involves the conversion of distillates: catalytic cracking and hydrocracking, along with their related units: alkylation, oligomerisation and etherification. The third includes processes for converting residues (visbreaking, coking and hydroconversion with its related hydrogen production unit) and processes which deal with reducing air and water pollution (sweetening of white products and hydrotreating to eliminate sulfur and nitrogen compounds, sour gas treatments to remove hydrogen sulfide, desulfurisation of heavy fuel oil, combustion of gases, and treatment of process water). In each of the chapters the basics needed to understand the chemical theory have been presented, as have the technical and economic data required to gauge the impact of the processes on refinery operation.

LNG: A Review of Markets, Projects and Issues in the Changing World of LNG

David Roe (SMi Publishing, Number One, New Concordia Wharf, Mill Street, London SE1 2BB, UK). ISBN 1 8620 6059 2. Price: £595 (£625 overseas).

This is a much-needed and up-to-date account of the principal facts, figures and trends in the complex and fast-changing international LNG industry. Both existing and proposed plants and trades are noted country-by-country, providing a firm basis for analysing prospective commercial developments. The author's own analysis leads him to forecast that total international LNG trade will double in the next ten years, with Asia's established importers – Japan, Korea and Taiwan – accounting for one-third of the growth in imports, and India together with China, one-quarter. The report also includes a very useful analysis of the 'generic costs' of the main elements of an LNG project. This includes estimates of the sensitivity of unit costs to variations in key factors such as the number and size of liquefaction trains, shipping distances, and the highly significant difference between expansion of an existing plant and construction of a greenfield plant.

Fred Thackeray

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New Editions to Library Stock

- *Petroleum Refining in Nontechnical Language.* By William L Leffler. PennWell, Oklahoma, US, 2000.
- *UK Energy Sector Indicators 2000.* Department of Trade and Industry, London, UK, 2000.
- *Energy Projections for the UK: Energy Use and Energy-Related Emissions of Carbon Dioxide in the UK, 2000–2020.* Department of Trade and Industry, Norfolk, UK, 2000.
- *Defence Standard 00-00 (Part 3) Section 4: Index of Standards for Defence Procurement: Index of Defence Standards. UK* Ministry of Defence. Glasgow, Scotland, 2000.

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EVENTS

MARCH 2001

19–21 **Cape Town**
Production Sharing Contracts & International Petroleum Fiscal Systems
Details: Conference Connection Administrators, Singapore
Tel: +65 226 5280
Fax: +65 226 4117
e:info@cconnection.org

21–23 **London**
E-Business for Chemicals, Annual Summit 2001
Details: IQPC, UK
Tel: +44 (0)20 7368 9300
Fax: +44 (0)20 7368 9301
e: echemicals@iqpc.co.uk

20–22 **Southampton**
Predicting Life and Durability Using Computational Models
Details: Computational Mechanics Beasy, UK
Tel: +44 (0)238 029 3223
Fax: +44 (0)238 029 2853
e: nicky@beasy.com

21–23 **Nigeria**
Offshore West Africa Conference and Exhibition: Challenges for the Emerging Frontier
Details: PennWell, UK
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Fax: +44 (0)1992 656735
e: francesl@pennwell.com

26–27 **Sarnico, Italy**
The Regulation of Natural Gas
Details: The University of Dundee, UK
Tel: +44 (0)1382 344300
Fax: +44 (0)1382 322578
e: cepmlp@dundee.ac.uk

26–27 **London**
B2B Collaboration
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Fax: +44 (0)20 7840 2701
www.access-conf.com

26–27 **Dubai**
Middle East Petroleum and Gas Conference
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Tel: +65 226 5280
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e:info@cconnection.org

26–30 **Singapore**
World Fiscal Systems for Oil & Gas
Details: CWC Associates, UK
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27 **London**
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27–28 **London**
Containerisation International's Global Conference
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e: aidan.o'donovan@informa.com

27–28 **London**
Petroleum Trading and International Law
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27–28 **London**
A User-Centric Approach to Web Marketing
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28–29 **Aberdeen**
Minimising the Environmental Effects of Drilling Operations
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Financing Natural Gas Projects
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www.cepmlp.org

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29–30 **London**
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29–1 April **Southampton**
Underwater Science Symposium
Details: Society for Underwater Technology, UK
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Fax: +44 (0)1224 820236
e: joycesut@sstg.demon.co.uk

APRIL 2001

2–3 **London**
Strategic Alliances for Clicks and Mortar eBusiness
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Fax: +44 (0)20 7840 2701

2–4 **Vienna**
Environmental Conference
Details: GTF Conferences, UK
Tel: +44 (0)1737 365100
Fax: +44 (0)1737 365101

2–6 **Berlin**
Thermo LabSystems World 2001 European Conference
Details: Thermolab, UK
Tel: +44 (0)800 0185227
Fax: +44 (0)161 942 3001
e: info@thermolabsystems.com

3–4 **London**
Developing a Sustainable Environmental Strategy for Commercial Success in the Upstream Oil and Gas Sector
Details: Global Business Network, UK
Tel: +44 (0)20 7291 1030
Fax: +44 (0)20 7291 1001

3–6 **Paris**
International Petroleum Economics Seminar
Details: ENSPM Formation Industrie, France
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Libya

Teknica, the oil and gas engineering company, require petroleum engineering staff in the following disciplines for single status, rotational assignments with their client, an oil operating organisation based in Tripoli, Libya:-

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IP Discussion Groups & Events

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Branch Activities

Essex
Contact: *Arnold Carlson Tel: +44 (0)1268 794615*
14 March: 5.30 pm: The HSE – Regulating, Enforcing, Advising, by Tony Stammers, HM Inspector of Health and Safety
16 March: 7.15 pm, Annual Dinner Dance

Humber
Contact: *Dave Hughes Tel: +44 (0)1469 555237*
2 March: Annual Dinner
5 April: Ladies Evening

London
Contact: *Ian K Robinson Tel: +44 (0)1932 783774*
20 March: 5.30 pm: AGM followed by Process Industry Corrosion, by Peter Lane and Richard Carroll, Foster Wheeler Energy

North East
Contact: *John Sparke Tel: +44 (0)1642 546411*
13 March: 5 pm: visit to the ETOL Emergency Control Centre
24 March: 7 pm: VOCs at Oil Terminals, by Lee Scott, Costain Oil, Gas and Process Ltd

Stanlow
Contact: *John Hinde Tel: +44 (0)151 342 1636*
14 March: One-day seminar: Oil in the Environment – Managing the Risk (jointly with the Environment Agency)

Petroleum Engineers

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Ranger Oil (UK) Ltd is the International Division of Canadian Natural Resources Limited, a highly successful senior Canadian oil and gas exploration and production company with operations in Canada, the North Sea and West Africa. The Company has ambitious growth targets for its UK and International operations and we are seeking Petroleum Engineers to join our Team, based in Guildford, Surrey.

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Interested applicants should send a copy of their current CV by 23 March 2001, to:The Human Resources Assistant, Ranger Oil (UK) Ltd, Ranger House, Walnut Tree Close, Guildford, Surrey GU1 4US.
E-mail address: recruitment@guildford.ranger-oil.com

RANGER OIL

MOVES People

New appointments have been made to the UK Gas and Electricity Markets Authority (Ofgem). These include **Callum McCarthy**, Executive Chairman; **Dr Eileen Marshall,** Managing Director Trading Arrangements and Industry Codes; **John Neilson,** Managing Director, Customs and Supply; and **Gill Whittington,** Ofgem's Chief Operating Officer. Non-Executive Board members include **Lord Currie**, **Richard Farrant**, **Margaret Ford**, **James Strachan** and **Sir Keith Stuart**.

The UK oil services and defence group, Hunting, has appointed **Dennis Proctor** Chief Executive.

Crowcon, a UK gas detection company, has appointed **John Wilson** as Sales and Marketing Director.

Environmental Simulations International (ESI) has announced the appointment of **Mike Streetly** as a Director. He will have responsibility for the continuing development of ESI's services in water resources and environmental impact assessment.

Murco has promoted *Tina Ryan* (right) to the position of Dealer Sales Specialist from Marketing Administrator. She has worked for the company for six years and is the first woman to be given this position. Other promotions within the company include *Julie Norman*, Manager, Property Services and *Nick Tomes*, Real Estate Manager.

The UK Offshore Operators' Association (UKOOA) has announced the names of the 12 industry figures that will form its Executive Committee for 2001. The team will be led by **John McDonald**, Managing Director of Texaco. He replaces UKOOA's current President, Dave Smith of Marathon Oil, with immediate effect. The new Vice Presidents are **Malcolm Brinded**, Managing Director, Shell UK Exploration and Production, and **Paul Blakeley**, General Manger, Talisman Oil UK. Executive Officers include **George Watkins** CBE, Chairman and Managing Director, Conoco UK; **Steve Marshall**, Regional President, BP Scotland; **Phil Dimmock**, Managing Director, Ranger Oil UK; **Jo Groeger**, Managing Director, Veba Oil and Gas UK; **Beverly Mentzer**, Manager Joint Interest, UK ExxonMobil; **Bob Connon**, Managing Director, Chevron UK; **Michel Contie**, Managing Director, TotalFinaElf Exploration UK; **Nick Fairbrother**, Managing Director, Amerada Hess; and **Peter Kallos**, General Manager, Enterprise Oil UK.

W van de Vijver is to be appointed a Managing Director of Shell Transport and Trading with effect from July 2001. At this time he will also be appointed a member of the Presidium of the Board of Directors of Shell Petroleum NV and a Managing Director of Shell Petroleum Company Ltd, thereby becoming a Group Managing Director of the Royal Dutch/Shell Group of companies.

Condoleezza Rice has resigned from the Board of Chevron to take up the position of National Security Adviser – Designate to President George W Bush.

NexClear, a newly-formed private clearing company which plans to offer services to the energy market, has appointed **Leslie McNew** Chief Operating Officer.

Supplier of petroleum additives for fuels and lubricants, Infineum, has just appointed *Trevor Russell* Worldwide Sales Vice President, responsible for global sales, supply chain and customer service. He succeeds Dave Corson who is retiring in 2Q2001.

Enterprise Oil has announced the appointment of **Paul B Loyd Jr** to the Board as a non-Executive Director.

Alan Grant is to become the new Executive Director of the International Association of Oil & Gas Producers (OGP). He succeeds Dr Lyn Arscott, who is retiring.

Environmental and engineering consultancy, Entec UK, has appointed **Doug Scott** Associate Director at its London-based risk management group.

Expro International has appointed **Stuart Ferguson** Group Marketing Director, responsible for strategic development of the Group's three core business streams: Cased Hole Services, Subsurface Systems and Surface & Environmental Systems.

The UK Freight Transport Association (FTA) has named **Heather Crocker** Regional Director for the Association's Northern Region.

John Miller, former Investments Manager for Esso, has joined Graham & Sibbald's Petroleum & Roadside Services Division as a Retail Petroleum Consultant. He will be assisting the Dealer Sector.

Following the acquisition of The Smith Rea Partnership by Capcis, **Leonard Rea** and **Norman Smith** have stepped down from the Board.

The Process & Building Solutions division of Intergraph has announced the appointemnt of **Jay Stinson** as Vice President, Enterprise Engineering Solutions.

Foster Wheeler has announced the appointemnt of **Gregory F Hartnett** Senior Vice President ECP Power at its subsiduary, Foster Wheeler USA.

OBITUARY

Sir Hugh Tett, FInstPet
1906–2001

The Institute of Petroleum regrets to announce the death of Sir Hugh Tett, the oil executive who pioneered leaded petrol and formulated high-octane fuel that helped the Spitfire outperform the Messerschmitt in the Second World War.

Sir Hugh joined Esso in 1928, was made a Board member in 1951, became Managing Director in 1956, Chief Executive in 1957 and Chairman in 1959. He was knighted in 1966 and retired at the end of 1967. He also served as Pro-Chancellor of Southampton University and was awarded honourary doctorates by both Southampton and Exeter Universities and was made a fellow of Imperial College, London.

Out thoughts go out to his wife and children.

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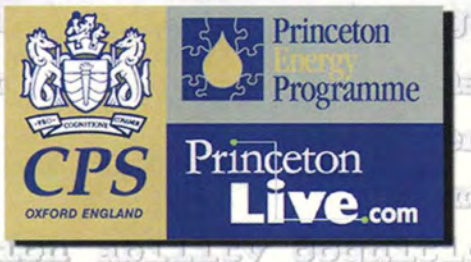

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