

The Institute of
Petroleum



PETROLEUM REVIEW

Europe

The outlook for
lubricants supply
and demand in
West Europe

Retail

David Pirret looks
into restoring the
balance

Spain

Gas use grows fast

Braer

A close look at the
clean-up operation





Thinking ahead.



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Cover photo - Laying gas pipeline in Madrid. Photo courtesy of ENAGAS.

28 April

Total announced a FFr4.07bn increase in capital that will put 7 percent of its shares in the hands of three friendly French companies and create a new series of strategic alliances.

Exxon, Amoco and China American Petrochemical have signed a memorandum of understanding for an aromatics complex in Singapore.

29 April

A code of practice designed to help develop environmental standards in the shipping industry has been launched by the International Chamber of Shipping.

Texaco has made a second successful gas and condensate discovery off the coast of Myanmar, formerly Burma, about 260 miles south of Yangon.

30 April

British Gas Chairman Robert Evans announced he is to step down from the company when his five-year contract expires in June next year.

Aran Energy has increased its stake in the north half of the South Pass 37 oil and gas field in the Gulf of Mexico to 41 percent from 33.5 percent.

1 May

Petrobras has selected Coflexip/Marflex for a long-term very deep water pipelayer charter and is calling other bids for upgrading two floaters for deep water floating production in the Campos Basin.

A contract worth NKr560m for the module support frame on the West Troll oil platform in the Norwegian sector of the North Sea has been awarded to Norway's Kvaerner Rosenberg.

Elf Aquitaine has signed production sharing contracts for two offshore and three onshore blocks with state-owned Nigerian National Petroleum Corporation.

Shell Oil announced its highest first quarter net income since 1989 at \$239m, against a loss of \$452m in 1992.

A diving survey of the wreck of the *Braer*, the tanker which broke up off the Shetland Islands in early January, has concluded she no longer poses any pollution threat.

5 May

BP Norway is planning to increase production from its Gyda field by up to 30 percent from next year by using a drag reducing chemical which will allow it to boost water injection into the field's reservoir.

State-controlled Korea Gas has awarded a contract to Hyundai Heavy Industries for the construction of a 125,000 cu m LNG carrier.

Shareholders in Oliver Resources have approved the company's £22m takeover of Norwegian oil company Kirkland and approved changing the name of the enlarged company to Dragon Oil.

6 May

The North East Petroleum Operating Agency opened the first international auction for exploration licences in north-east Russia. It presented terms and conditions of the bidding procedure, plus a model licensing agreement drawn up on the basis of international standards.

Partners in Canada's Hibernia field have announced a 21 percent cut in development costs by relocating the gravity base structure more centrally on the field.

Singapore's Sembawang Group has secured orders to build oil platforms for use in China.

Sharjah-based Crescent Petroleum is now in a position to sell associated gas, rather than flaring it off, following a \$32m expansion of its A offshore production platform complex in the Mubarek field.

PDV Europa has received six claims from shipowners alleging dangerously low flash-points in fuel supplied in Rotterdam.

Amoco intends to purchase a second-hand semi-submersible drilling rig for conversion into a

floating production system for its Lihua 11-1 field in the South China Sea.

Conoco has ordered a 120,000 dwt, double-hull shuttle tanker from Samsung Shipbuilding in South Korea.

Japan's Daitoh Trading has announced its withdrawal from the crude oil and petroleum products market by offering for sale its 60,000 dwt tanker *Hoyo Maru*.

7 May

Petrobras has announced approval for a \$230m project to bring on stream its second biggest field, Barracuda, and a multi-million dollar international tender for a 100,000 bpd semi-based processing plant.

Total Oil Marine is to relocate its head office to Aberdeen from London in July.

Statoil boosted first-quarter net profit to NKr1.2bn from NKr605m last year, helped by higher oil prices and cost reductions.

8 May

Mr Michael Howard, the UK Environment Secretary, said the UK's emissions of carbon dioxide were likely to rise after 2000 even if the country met international targets on combating global warming.

China's National Petroleum and Gas Corporation has agreed to acquire a 43.2 percent stake in Hong Kong-listed Paragon Holdings in an \$18.57m transaction.

Conoco has ended its contract with British Gas to supply gas from the Viking field after delivering almost 3 trillion cubic feet of gas since the contract began in 1972.

Austrian energy group OMV has reached agreement with Clyde Petroleum and Ansan Wifks to participate in the exploration of block 10b, Sarr, located in the Masila area in eastern Yemen.

The Petroleum Authority of Thailand has chosen a consortium led by Samsung

Engineering of South Korea to build a \$51.4m gas separation plant in southern Thailand.

10 May

Suez Canal revenues could top \$2 billion for the first time after rising to \$631m in the first four months of 1993, according to the Egyptian government. About 1,020 tankers with 45m tonnes of cargo used the waterway in this period.

Plans have been revealed by KD Offshore for a £1.5m waste oil recycling plant at Tayside in Scotland to serve the offshore and shipping industries.

World oil demand will rise only slightly this year to a little over 65m barrels a day, according to OPEC Secretary-General Subroto.

British Petroleum revealed pre-tax profits of £249m excluding stock gains for the first quarter of 1993.

McDermott Inc and the Azerbaijan state oil company have agreed to form a joint venture to upgrade offshore industry vessels operating in the Caspian Sea.

A group of five Argentine oil-producing provinces will hold a 13 percent stake in the state-owned YPF oil company after its partial privatisation, according to the Argentine Economy Ministry's legal and technical coordinator, Horacio Liendo.

11 May

The French government have increased the tax on petrol. From July 12 the tax is going up by 28 centimes a litre.

Norway's crude oil production could reach 3m barrels a day in 1996/7, a 20 percent rise over present levels, according to the Norwegian energy and industry ministry.

BHP Petroleum of Australia, Crescent Petroleum of Sharjah and Pipeline and Production Services Corporation of Houston have sought Indian government permission to establish facilities to bring Gulf natural gas for sale in India.



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Geotechnical survey in Gulf

Saudi Arabian Dames & Moore has been awarded a contract from Saudi ARAMCO to conduct geotechnical investigations in the offshore Gulf oilfields.

The purpose of the project is to provide ARAMCO with geotechnical design parameters for the temporary positioning of jackup barges

and pile design of permanent steel jacket structures.

The initial phase of the project involves the investigation of locations in Marjan, Zuluf, Safaniyah and Berri offshore oilfields. The drilling and sampling work will be carried out using a drillship with a heave motion-compensated drilling system.

At the end of March AP Moller took delivery of an advanced jack-up, said to be one of the world's largest. The Maersk Gallant left Far East Levingston Shipbuilding in Singapore on its journey to the North Sea. Its first assignment is to drill for Amoco Norway, beginning end-July. Next summer it is contracted to drill for Elf Petroleum Norge A/S.



Unmanned underwater vehicle research

Exploitation of the 'inner space' of ocean resources will depend on the ability to navigate and undertake real work in increasing water depths by remote means. The Marine Technology Directorate Ltd has set up a new Technology for Unmanned Underwater Vehicles (TUUV) research programme which aims to increase the efficiency and performance of unmanned underwater vehicles by concentrating on fundamental problems identified by the civil

and defence industries.

The research programme was identified with the help of end-users. From the proposals received, 11 prime projects were selected, covering sensing, control, communications, navigation, propulsion and analysis. These projects are now under way.

Sponsors of the TUUV programme are the Defence Research Agency, the Offshore Supplies Office, the Offshore Safety Division of the HSE, Shell, Mobil, Rockwater, Lockheed and SERC.

UK/Ireland gas interconnector

A treaty has been signed covering the gas interconnector between the United Kingdom and the Republic of Ireland.

The natural gas pipeline will run from Moffat in Scotland to Ballough in the Republic of Ireland. It will be owned and operated by Bord Gas Eireann. Construction is due for completion towards the end of this year (see *Petroleum Review*, December 1992).

President of the Board of Trade Michael Heseltine said, 'The treaty will ensure the effective regulation of a pipeline which crosses international boundaries. It will set out matters of jurisdiction and provide for consultation and the exchange of information between the two governments including a forum in

which issues over the pipeline can be discussed. It will also provide for guaranteed access for links to Northern Ireland and the Isle of Man.

'By facilitating a link in the European infrastructure, the treaty takes us further down the road to a single market in energy.

'Construction of the pipeline has also brought more immediate benefit to the UK with contracts worth over £100 million being awarded to UK firms. The existence of an interconnector has the potential to create trading opportunities from which both countries can benefit. We have already seen National Power stepping in to strike an innovative deal to provide standby supplies to the Republic over the next five years'.

Optimism at Enterprise

Speaking at the company's annual general meeting, Mr Graham Hearne, Chairman and Chief Executive, Enterprise Oil, talked of the challenges of 1993 and future years.

The first challenge, he said, was 'to bring on stream and under budget our new field developments, most notably Scott and Nelson. Even without these two major projects, Enterprise's average daily production in the first quarter was 165,000 barrels of oil equivalent per day, compared with 142,600 b/d in the same period in 1992. These figures included the company's indirect share of Elf Enterprise Petroleum's production.

The second challenge was to ensure that the company's extensive portfolio was directed and managed to secure the maximum added value for shareholders.

The exploration programme was doing well – the successful wells drilled last year on the Pierce and Clair discoveries, as well as the Norne discovery in Norway. Mr Hearne added that

drilling and production tests in the Southern Apennine area of Italy were also encouraging and likely to add to the reserve base.

Commenting specifically on the UK Budget tax proposals, he said, 'We in Enterprise are beneficiaries of the proposed changes. We have a number of fields like Beryl and Ninian, and yet to come on stream Scott and Nelson, which will pay significantly less tax than they were going to. That has to be good news'.

On the other hand, there were minus factors. He added, 'Of course our North Sea drilling programme will be more expensive but we have to manage this in accordance with the new economic criteria. Furthermore, subsidies create distortions and when they are removed new opportunities are created'.

Nevertheless, he saw plenty of opportunity on the UK Continental Shelf which, he stated, would remain Enterprise's most important operating base for many years to come.



TDC3000 Operator Station in the new Central Control Room.

Shell reshapes its LPG business

Shell Gas has launched a major reshaping of its retail liquefied petroleum gas operations to bring new benefits to both customers and company.

The successful cylinder and small bulk gas business built up by the eight Shell regional subsidiary companies will now be allied to the Shell Gas name, creating a single national brand identity. The subsidiaries will be restructured into six areas, retaining the essential local management and customer bases while adding the market strength of the Shell brand and the advantages of pooled resources.

Shell acquired the established regional companies in the late 1980s and subsequently invested heavily in equipment, safety and training. Allying the Shell Gas brand to their successful businesses within a new

national network will allow them to build on their local success.

The existing subsidiaries are Citigas (London and the Southeast), Unigas (East Anglia), Metrogas (North and Border area), Freedom LPG (North Midlands and Yorkshire), Amazon Gas (North Wales), Prestogas, (Northwest), Avongas (Southwest) and Readygas (South Midlands and Welsh borders).

The six new areas will be Shell Gas South East, Shell Gas South West, Shell Gas Midlands, Shell Gas North East, Shell Gas North West and Shell Gas North.

The separate Shell UK subsidiary, Britannia LPG, which supplies bulk wholesale LPG under the Shell Gas brand, will continue its wholesaling business separately from the new national retail structure.

New engineering contract

The Institution of Civil Engineers has launched the first edition of 'The New Engineering Contract'. This is a standard form of contract suitable for use in the design and construction (including erection) of new works involving any, or all, of the engineering and building disciplines.

It is a new and innovative form of contract which facilitates good management and teamwork by giving the employer choice

in the type of contract strategy and in the allocation of risk.

The intention is that use of this contract will lead more frequently to achievement of the employer's objectives for each project in terms of its ultimate quality, performance, cost and completion time, and the contractor's objectives which include making a profit. Achievement of objectives will reduce the incidence of disputes.

New controls for Shell Haven refinery

Two major controls projects have been completed as part of a £250 million upgrading of the Shell Haven refinery in Essex. The core refinery units are now controlled from a new central control room complex, replacing three separate control rooms and using Honeywell's TDC3000 distributed control platform, whilst a new Naphtha Minus plant is now on stream using smart

transmitters digitally integrated with the new system.

The blastproof control room building houses the control room itself with three operator consoles, totalling 29 bays. The consoles included 20 stations, grouped in pairs one above the other and with a shared keyboard, each capable of providing a 'single window' to the plants using touch screen control.

New Brown Book launched

The Report to Parliament by the Minister for Energy, generally called the 'Brown Book', gives details of the exploitation of the oil and gas resources of the United Kingdom during the previous year. It also covers the economic, industrial and environmental aspects of oil and

gas production.

The 1993 edition covers the last year before the 1993 Budget which proposed a revised tax regime for oil and gas producers and exploration companies. In any case, according to Minister for Energy Tim Eggar, this latest edition might be the last in its present form.

North Sea expansion

BP, together with Shell, Esso, AGIP, Hamilton, Murphy, Lasso, Fina and Monument, are drawing up plans for the integrated development of several oil and gas discoveries in the central sector of the UK North Sea. These plans are said to have been given a boost by the tax proposals included in this year's UK Budget which have turned the project into a much more attractive proposition.

The four major and five smaller adjacent finds in the Eastern Trough area lie some 260 kilometres northeast of Aberdeen. They are estimated to contain reserves of 650 million barrels of oil and gas equivalent, including 1.2 trillion cubic feet of gas.

Under the new tax regime three of the nine fields which would previously have had to pay Petroleum Revenue Tax will not now be liable to pay it.

Approval for this Eastern Trough Area Project is expected early in 1995, with first production in 1998. Peak

production rates are estimated at 150,000 b/d of oil and 400 million cubic feet/day of gas.

The four main fields are Marnock, Mungo and Machar, all operated by BP, and Heron operated by Shell. The nearby smaller discoveries include the BP-operated Monan and Medan fields.

The technical feasibility of integration has been the subject of a £1.4 million study which considered the options for evacuating and processing the oil and gas. It recommended a single processing and export platform on the Marnock field, with other fields tied back either as unmanned process platforms or subsea developments.

Further discussions will now take place between the nine companies on how cooperation in transportation and processing can achieve further cost reductions. An agreement for the overall development will then be finalised.

Olé for Spanish gas

By Daniel Whitaker



Spain is a new gas market in Europe. Relative to other EC countries, gas use is still slow at 6 million tonnes of oil equivalent (mtoe) or around 6 percent of total primary energy demand (TPED) in 1992 against an EC average of almost 20 percent. The historic reasons for this are Spain's lack of major domestic gas fields and the ready existence of alternative energy sources in the form of coal and hydroelectric power. But gas use is now growing fast, having more than quadrupled since 1980 and with usage predicted to double again in volume terms, rising to 12 percent of TPED by 2000. Only the low population density, which adds to distribution costs, is likely to stop Spain reaching the EC average.

This increase is partly due to the rapid economic growth over recent years. More importantly, however, Spanish government policies have been designed to stimulate the gas market's development. Gas is being promoted in order to diversify energy sources, especially away from imported oil, though also away from nuclear (now subject to a moratorium) and polluting coal. In addition, the government would like to see a Spanish gas industry capable of competing with those of

other EC countries. Spain's National Energy Plans of 1983 and 1991 had growth in the use of gas as a main objective of energy policy. Most consumption at present is by industrial and commercial customers but power generation is expected to account for a lot of future growth. Gas at present fuels less than 1 percent of electricity production compared with a current EC average of about 7 percent, while the National Energy Plans predict the Spanish figure to be 11 percent by 2000.

Supply: growing international connections

In 1991, some 20 percent of Spain's gas came from domestic production; 53 percent was purchased as liquefied natural gas from Algeria (under a long-term contract); and another 27 percent arrived as LNG from Libya. The tanker costs from Algeria were estimated by Arthur D. Little in 1990 to be around \$0.40/Mbtu.

Without new discoveries, Spain is likely to be completely dependent on



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imports by 2000. Most domestic gas is from the Gaviota field in the Bay of Biscay, with estimated reserves now below 12 billion cubic metres (bcm). The remainder comes from the Serrablo field in the Pyrenees (estimated reserves of 2 bcm) and several minor fields in the south. In the Gulf of Cádiz there are reserves estimated at 3 bcm but there are no current plans for their development. Total Spanish gas storage capacity is less than 0.5 bcm, while LNG regasification plants exist at Barcelona, Cartagena and Huelva.

Gas supply is due to be revolutionised, however, by major inter-connection projects linking Spain to North African gas fields (Algeria via Morocco in 1995) and to the French grid (Calahorra-Lacq later this year) as well as by the expansion of the domestic grid. The North African pipeline, with a contract signed in 1991 with the Algerian company Sonatrach, is the bigger project. The 1,265 km line is expected to cost \$1.4 billion in its initial stage and to have an eventual capacity of 16 bcm annually via 24-in pipes which will pass under the Straits of Gibraltar.

Arthur D. Little estimates that this gas would be some of the cheapest on the European market, with the delivered cost in 2000 of a rock-bottom \$0.70/Mbtu, half that of gas were it to be supplied via a new Algerian LNG plant and less than a third of the cost of Norwegian Haltenbanken gas. The French connection at Lacq (estimated cost \$110 million) will offer the Spanish some security against disruption in the Maghreb by allowing pipeline flows from Norway and Russia to reach Spain, while a second link with France will create a new gateway for North African gas sales into the rest of Europe. Once depleted, the Serrablo gas field will provide a convenient site to store the gas close to the Lacq-Calahorra link. In a further effort at diversification, a contract has been signed with Nigeria for at least 1 bcm of LNG starting in 1997.

Players in the gas sector

Gas supply is a highly regulated activity in Spain, with almost every aspect of the industry governed by the 1987 Gas Act. The Act confers powers on both the central government and

Spain's autonomous regions but Madrid retains true control since only the Ministry of Industry can award the concessions required for all fundamental activity in the sector. The regions are only able to award distribution concessions within their own region. The state-owned National Institute of Hydrocarbons (INH) currently owns and controls Repsol via a 60 percent shareholding, though almost a third of this is about to join the rest of the company on the Spanish stockmarket. Repsol is an integrated producer, refiner and seller of oil, petrochemicals and gas. Via INH, the state also owns Enagas (Empresa Nacional de Gas), which has a de facto monopoly over gas imports, supply and transport. Enagas imports and distributes the gas through its national grid to the different regional distributors and to big industrial users.

There are then 14 main regional distributors (with several of the largest now grouped under a new company called Gas Natural) which distribute natural gas to domestic customers and small industrial users in their respective operating areas, although the regional distributors of



Catalonia and the Basque country also distribute gas to big industrial users in their regions. The import, production and distribution of LPG is controlled by Repsol Butano, a subsidiary of Repsol. Although Repsol and Enagas are legally independent companies, the current chairman of Repsol, Sr Oscar Fanjul, is at the same time chairman of the INH. Therefore the president of Enagas must in effect report to the chairman of Repsol. The Spanish financial press regularly speculates that Repsol may eventually absorb Enagas.

Repsol and the INH also have important and growing interests in the regional distributors. In 1988 for example, Repsol acquired Gas Madrid, one of the major regional distribution companies. In 1991 the largest of the regional distributors, Catalana de Gas, merged with Gas Madrid creating the basis of Gas Natural (GN). GN is jointly owned by Repsol, INH and the Barcelona savings bank, La Caixa, with a minority of the shares being traded on the stock exchange. The creation of this profitable semi-public company, which has been strongly encouraged by the government, is probably the first step in the development of a national gas corporation along the lines of British Gas or Gaz de France. The government argues that such a company must have the size to undertake the investments necessary for the sweeping conversion of Spain to natural gas. For the next decade GN plans to invest nearly \$3 billion on infrastructure projects. Its objective of adding 500,000

customers to its existing base of 2 million is clearly visible in the roadworks ravaging much of central Madrid. GN has also shown international ambitions by taking a controlling stake in the Argentinian gas distributor, Buenos Aires Norte.

The Spanish gas industry is therefore undergoing a process of horizontal concentration and vertical integration. The first is to be achieved by the fusion of the different regional distributors, which began with the creation of GN. Vertical integration is to be achieved by increasing the share of Repsol and INH in the regional distributors, and the possible future absorption of Enagas by Repsol.

'Gas supply is due to be revolutionised by major interconnection projects'

Gas prices

According to the Gas Law of 1987, the government, through the Ministry of Industry, sets the price of gas that Enagas may charge to the distributors. It also fixes the retail tariffs that distributors may charge to the final customers, which must be uniform across Spain. In order to encourage gas market expansion, the government's transfer prices take into consideration the regional distributors' different operating and capital costs, and guarantee them a profit

margin. This can imply that Enagas costs are not always covered – in 1991 the company lost around \$36 million, though it was able to return to profit in 1992.

The 1991 National Energy Plan states that the objective of its pricing policy is to 'ensure that distributors have sufficient resources to undertake the investments required to develop the gas infrastructure. The priority objective with respect to retail tariffs is to ensure that gas would be competitive with alternative energy for each particular application'.

The future

The Spanish gas market's rapid development is likely to continue. Table 1 gives forecasts of demand in 1995 and 2000, broken down between customer groups. Residential customers are likely to remain relatively unimportant in natural gas consumption but they will continue to use LPG because of transport constraints in some areas, though LPG is likely to decline from its existing 7 percent market share. Town gas is set to die out as installations are converted to natural gas. Meanwhile, gas-powered electricity cogeneration is expected to expand rapidly throughout the 1990s, before being eclipsed by gas sales to new generating plants. GM's car plant in Zaragoza recently became the latest manufacturer to announce that it would build its own cogeneration unit.

The state retains a fundamental role in the development of the gas industry and, unlike what has happened in the oil sector, the prospects are that it will not reduce its influence in this sector (this is especially true given the government's long-term agreements with Algeria).

Table 1: Actual and forecast natural gas consumption in Spain, 1991-2000

	1991*	1995	2000
Domestic-Commercial	17.4%	13.6%	9%
Industrial (excl. ammonia)	64.1%	52%	37.2%
Ammonia production	7.8%	8%	4.8%
Cogeneration	7.1%	23.8%	16.5%
Conventional electricity	3.6%	2.6%	20.5%
Combined-cycle electricity	-	-	11.7%
Total demand	100%	100%	100%
Total demand in bcm	6.1	9.3	21.3
Increase with respect to 1991	-	52%	249%

Source: National Energy Plan 1991, Enagas

Table 2: Actual and forecast natural gas supply 1991-2000

	1991 (%)	1995 (%)	2000 (%)
National	20.2	4.8	-
Algeria (LNG)	53.3	57.3	24.2
Libya (LNG)	26.5	27.1	16.3
Norway (Pipeline)	-	10.8	13
Algeria (Pipeline)	-	-	40
Nigeria (LNG)	-	-	6.5
Total supply	100	100	100
Total supply in bcm	6.1	9.3	21.3

Source: National Energy Plan 1991, Enagas

Table 3: Selected demand and supply statistics, 1991

Reserves	20.47 bcm
Production	1.41 bcm
Consumption	6.29 bcm
Industrial use	4.14 bcm
Power generation use	0.19 bcm
Imports	5.56 bcm
Exports	-
Gas as share of tpec	5.6%

Source: Sedigas

Restoring the balance

By David Pirret, General Manager, Retail Division,
Shell U.K. Limited Downstream Oil



What I would like to address here is the gritty local challenges of how to put the big ideas into practice. As the focus narrows in from the universal to the everyday, its impact is increasingly being felt. Already, we are starting to experience the weight of legislation upon us and to see fiscal measures and market-driven mechanisms put into place. Witness the Chancellor's last Budget. I intend to consider the challenges that face us and some of the inequities we need to address if we are to be able to offer an effective response.

I speak of course from the point of view of an integrated oil company, rather than a petrol retailer alone. But I believe that this perspective is important as retailers and refiners are mutually dependent. What is in the interests of companies like Shell UK is, by extension, in the interests of us all involved in supplying the motoring public.

What then are the problems which face us in terms of implementing effective environmental solutions? I see it as a complex nexus of issues – breaking down into three main areas:

- Environmental costs
- Competition
- Supply security

Environmental cost

There are two main areas here – prevention, in terms of designed-in clean technology and remediation, the clean-up process.

In the first case, I'd like to explain what Shell is doing in terms of installing clean technology on our sites. Since 1990, all new Shell sites and those we have renovated from scratch – some 140 – have had the following improvements made: single-skin tanks replaced with a double-skinned version; plastic suction lines installed to replace the metal suction lines; check valves put on all pumps; and highly sensitive tank monitoring systems installed, able to measure if even a teacup of oil disappears. Complying with new environmental and safety standards and regulations means that to build an average forecourt costs £92,000 per site more today than would have been necessary 10 years ago.

'HEAL' – the Shell clean-up programme

However, we still need to deal with a large number of our sites. In order to establish which sites are in need of attention, we are carrying out a comprehensive programme of risk assessment known as 'HEAL'.

We believe HEAL to be the first programme of its type in the country, on which we are working in close conjunction with the National Rivers Authority. It could well provide an effective model for other petrol retailers to follow.

How does it work? Basically, before any action is taken to start work on renovating a site, we undertake a thorough on-site evaluation to see where the problems lie. The acronym HEAL stands for four main areas:

- H** - The history of the site. Have there been any leakages or spills in the past which will have contaminated the ground?
- E** - The equipment present. Are there any indications that the engineering designs might fail?
- A** - The aquifer quality. Is the site sitting on a water table used for drinking water and likely to contaminate it? This is particularly a problem in the East and South East.
- L** - The locality of the site, its proximity to basements, schools, kitchens etc.

It is a very thorough process which has shown that the main problems lie in suction lines (90 percent of the total), the flexi-pipe on the pump, single-skin tanks, the absence of a monitoring system of tank space or

liquid management and of overfill prevention and a vapour recovery system. These risks are obviously increased in areas of harsh ground condition or where the quality of construction on the site is poor. Rural sites, which tend to be older, are more likely to suffer.

Industry consultants have suggested that 30-40 percent of UK petrol filling stations have problems. Our own figures, based on the HEAL programme, tell us that a third of the 1,100 company-owned Shell sites have contamination problems to a greater or lesser extent.

We believe that these problems are not unique to Shell but begin to give an accurate picture of what the entire UK petrol retailing industry now faces in terms of environmental investment.

Putting those problems right will be a very costly business. Many of the sites will not justify being knocked down and rebuilt. They call instead for retro-fitting, a complex and more expensive process. We cannot wait for the average 15-20 years rebuild programme to be completed before all sites are legal.

Remediation

The second stage of environmental spend is remediation. Again, allow me to draw on the experience of my own company. It is Shell policy, based on our perception of our responsibilities to the local environment, always to carry out a site survey prior to removal of the tanks and lines to see if the site is clean or not. If not, then the appropriate remediation is completed before the site is sold.

We recently calculated the bill of returning a small site just north of London to a condition which would meet the standards of impending environmental legislation. The total amount came close to £250,000 for the clean-up costs to final sign off – more than the market value of the site.

That figure included a soil gas survey, the installation of monitoring wells, hazard assessment, project design and tender pump and treatment, dual phase extraction, tank removal and final report. We do not believe this site to have been uniquely dirty but that there are many more like it throughout the industry.

We must give some thought to the appropriate balance between cleaning up the past and improving our future performance. If we spend a disproportionate amount of resources on clean-up, our ability to move forward will be diminished. An important aspect of this is the degree to which we remediate polluted industrial sites. Do we need to return every site to its original pre-industrial condition whatever the cost? Or, can we accept that some sites will remain restricted for industrial use and need only be cleaned up to an appropriate degree?

A fair share

And still on the area of environmental spend, what of the proposed EC Directives on Vapour Recovery – Stages 1a and 1b and Stage 2? These measures are designed to reduce the photochemical smog produced, mainly in urban areas, when volatile organic compounds (VOCs) combine with nitrogen oxides in the presence of sunlight.

Small and independent petroleum retailers have, as you know, lobbied for derogation from vapour recovery for smaller sites. This is on the basis that the impact from these emissions at that stage in the supply chain tends to be relatively insignificant and that the smaller sites are more likely to be in rural areas whereas the smog concentration builds up in urban locations. It was a case of balancing the social requirements of having service stations against the environmental impact – and we believe there clearly is a case for derogation.

But the same argument for rural sites does not apply when it comes to leakage from underground tanks. These distinctions need to be made and understood. Smaller sites are often the worst offenders. More, losses from underground tanks are not related to site size. They are related to age.

The argument that small sites and dealers cannot afford the cost of repair and preventative technology is simply untenable.

The up-front payments currently on offer for a five-year contract at a one million litre site are easily enough to cover this type of expenditure. It's just that many of the recipients choose to channel the money elsewhere. The smaller sites contribute their share of the pollution: they should pay their fair share of the costs.

I suggest that the same process of risk assessment which Shell is currently undertaking on its network should be carried out for all sites, large and small.

Of course, it is not going to be easy for the smaller sites. We face impending European legislation regarding the quality of water discharged from the drainage systems, calling for a further substantial reduction in the amount of allowable hydrocarbons. Many of the smaller sites have no system in place for preventing minor or major spills entering the drainage system. But those are demands we all face and meet them we must.

The price of competition

Moving on to the second challenge I outlined at the outset – the whole question of competition. As things stand, I think it is honestly true to say the oil industry is subject to special problems.

There are now more players in the market than ever before. The barriers to entry are low, mainly due to oversupply. Hypermarkets currently account for up to 16 percent of the market – and that share is rising. I have nothing against the concept of a free market – quite the reverse.

But the hypers' entry into our business – whether as a loss-leader to shift food product off their shelves or as a 'cherry-picking' activity, going for the best sites, without carrying the less profitable smaller ones or indeed a whole distribution network – their entry is fundamentally affecting the whole infrastructure of the petrol retailing industry.

By pushing prices down as insistently as they do, they are leaving the other retailers with precious little to invest in urgent, compulsory environmental improvements. The money has to come from somewhere. I don't think the message has yet fully filtered through to motorists that environmental improvements will have to be paid for at the pumps.

I believe we are entering an era

when petrol retailing margins must increase to include active environmental remediation costs over and above the operating costs the industry has always borne.

Rural sites – a social obligation?

And don't forget the other spin-off of the hypermarkets' price-cutting. For the retailers to survive within the law, they will have to start closing their less profitable sites. That means many rural sites will close. Historically, the Office of Fair Trading has put a social obligation on the major oil companies to maintain supplies to rural areas. But this will become unthinkable if price-cutting continues unchecked.

As all of you here know, back in the mid-1960s, the oil companies signed the undertakings, to which newcomers to the industry – including the hypermarket – are not subject. I believe some of these regulatory undertakings and their subsequent clarifications are tying our hands steadily tighter behind our backs.

The structure of petrol retailing has changed – as has market demand. The application of the competition regulations has not. But change it must. A shrinking of the network is the logical extension of current practice and policies.

Refiners – the tightening screw

The third area of challenge I pointed to at the start of my presentation was security of supply. I mentioned that one of the reasons we have seen so many players in the fray is because of oversupply. But as refinery margins continue to fall – towards or perhaps even below cash costs – a cash squeeze is hitting those involved in this link of the chain.

Then there are the huge environmental costs faced by refiners – for measures imposed by the companies themselves and to meet EC Directives. Fulfilling the requirements on diesel sulphur reduction could cost the European industry somewhere in the region of £3.5 - 5 billion. At Shell UK's Stanlow refinery, we recently spent £35 million on the first phase of a major new water purification scheme – Shell UK's largest single environmental project to date.

The screws are tightening on all sides to the point where many refiners are seriously asking themselves whether operating remains viable.

Regulatory process must improve

What is the way forward? The key point is that regulators and industry must work more closely together to understand the complex cost benefit analysis involved.

It is not always clear that the environmental trade-offs have been fully taken into account. For example, the EC Directive on reducing the sulphur content of diesel. Yes, we should certainly be working to reduce the diesel emissions responsible for acid rain and smog. But the irony here is that in order to remove the sulphur at the refinery stage, we unavoidably produce more carbon dioxide gas, the main gas linked with the threat of global warming. Indeed carbon dioxide emissions from refineries will be about 10 times the sulphur emissions from car exhaust fumes.

And let me say a brief word about the environmental regulators, whose job it is to implement the legislation. The fragmentation that now exists at local and regional level, and the widely differing levels of technical understanding, make any meaningful dialogue extremely difficult.

Take the case I quoted earlier, where we carried out the survey of clean-up costs at a Shell site. We had to talk to the Petroleum and Trading Standards Officers, the Environmental Health Department, the Health and Safety Executive, the National Rivers Authority and the Drainage Authorities.

All these groups have different agendas and concerns. I believe that more unified Health, Safety and Environmental regulation would solve this problem. By giving a clear point of input for the industry, it would improve the dialogue resulting in a closer understanding of the technical and cost benefit issues and also help minimise some of the less

balanced directives that occasionally emerge from Brussels.

With good regulations being put forward, business people must then accept responsibility for implementation. That must include the smaller sites, as I said earlier.

Clarity and solutions

But there are still great problems caused by lack of clarity in environmental legislation. The potential impact on the industry is enormous. That's why everyone is watching the Eastern Counties Leather case with eagle eyes. The company concerned was prosecuted retrospectively for polluting the local river – an act that was not illegal at the time it was carried out. The case is still subject to a House of Lords appeal – but its implications mean that we could find it increasingly difficult to insure against such risks, with the owner of the land therefore liable.

If, however, the polluter runs into financial difficulties and, as is often the case, the site is security for lending, the bank or supplier takes the site but is liable for the remediation of the pollution. How will the independent retailer be funded in the future?

We must be pragmatic or we will be in a position where small retailers cannot afford to retire (as their site has no value) or close because they cannot afford the remediation cost.

For possible solutions, we could consider initiatives undertaken in The Netherlands and France. Petrol retailers in The Netherlands have set up a special fund to help pay for the clean-up where sites are closing down. This operates by means of a levy of 0.5 cents per litre on all refined and imported petrol. France has introduced a similar measure, with an industry scheme of environmental investment to help keep open smaller, rural sites which would otherwise be economically unviable.

Hypermarkets, customers and regulators

To sum up, my plea throughout has been for a restoring of balance. We have developed the technology to deal with and put right much that was wrong. What we must have now is the necessary consensus and balance to move forward.

The way our industry is now structured, we have cut-throat competition in the market coupled with under-investment in the environment.

I believe that customers, and regulators, must be aware of the larger picture. If structural imbalances allow pump prices simply to be driven down for short-term gain, it will be very difficult to fund the necessary environmental expenditure. Smaller stations play an important role in this industry but must start bearing their full responsibilities. Likewise, hypermarkets must play their part in shouldering the collective burden.

The oil companies are committed to doing their share. Indeed we have been in the spotlight more than most in recent years and are seasoned participants in the environmental debate.

The public's very high expectations of what the oil industry must and must not do have to be broadened out to include the whole industry. Legislation and government should reflect it, and the motorist at the pump must be prepared to pay extra for what he believes to be right.

The problems we face are certainly more surmountable than they were a few years ago. Together, I think we achieve real progress. ■

This article formed the Keynote Address at the recent IP conference, entitled 'Petroleum Retailing – The Environment, Regulation and Profitability'.

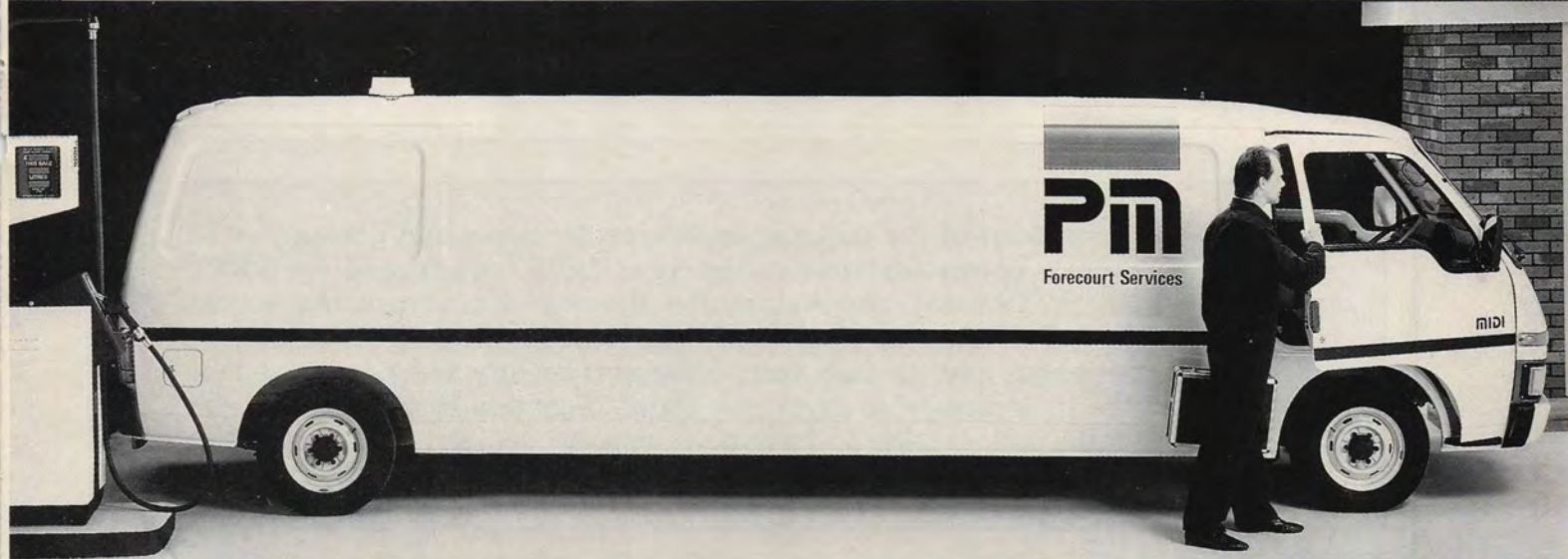
Annual survey of the average lead and sulphur contents of petroleum products delivered into the UK market in 1992

	Petrol Lead Content (grams/litre)			Sulphur Content (% mass)								
	2-Star	4-Star	U/Leaded	Premium Motor Spirit		Reg. Kero.	Avn Kero.	Auto Diesel	Gas Oil	Fuel Oil		
				Leaded	U/Leaded					Light	Medium	Heavy
1988	0.138	0.143	0.002	0.04	-	0.03	0.03	0.19	0.25	1.4	1.8	2.0
1989	†	0.143	0.002	0.05	0.03	0.04	0.03	0.19	0.21	1.8	2.2	2.2
1990	-	0.143	0.002	0.05	0.04	0.04	0.03	0.19	0.21	1.7	2.0	2.2
1991	-	0.145	0.001	0.04	0.03	0.03	0.04	0.19	0.21	1.4	1.8	2.1
1992	-	0.143	0.001	0.05	0.03	0.04	0.05	0.19	0.20	1.8	2.2	2.4

Notes: ‡ Fuel oil figures exclude deliveries for export, bunkers and public authority electricity generation.
† Following the duty increase imposed in the 1989 March Budget, 2-Star petrol rapidly disappeared from the market.

Source: Based on weighted average figures provided by UK Petroleum Industry Association

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The outlook for lubricants supply and demand in key West European markets

By Andrew Slaughter, Principal, International Energy Services, DRI

A recent major forecast of the outlook for lubricants supply and demand in 16 West European countries† out to the year 2005, conducted by DRI's International Energy Industry and Automotive Services, has shown that recent historical growth patterns for this traditionally profitable segment of the oil market are not likely to continue into the early years of the next century. Indeed, demand for automotive lubricants is forecast to decline by about 25 percent from 1990 levels by the year 2005. Industrial, marine and aviation lubricant demand will continue to show modest growth of 16 percent in aggregate over the same period.

Western Europe accounts for approximately 15 percent of world lubricant demand. The region is a relatively efficient user of lubricants – per capita lubricant consumption in Western Europe is the lowest among the OECD regions (15 kilograms per person in Europe, compared with 34kg in North America and 20kg in Asia/Pacific). Lubricant demand in Western Europe has been virtually stagnant over the last 20 years. The first half of the 1980s was a period of declining consumption. Demand started recovering in 1986 and growth has averaged 1.9 percent per year since then. Overall, between 1980 and 1990, European lubricant consumption increased by 5 percent.

Figure 1 shows the breakdown of demand between the major categories of lubricants in Western Europe in 1990.

Historical trends in lubricants sales have been similar in the two major end-markets (automotive and industry). In 1991, however, the automotive lubricant market remained approximately stable, whereas there was a decline in total deliveries of finished lubricants (probably induced by destocking of industrial lubricants, as a result of the

Gulf crisis). Total lubricant demand is believed to have recovered in 1992, with the rebuilding of stocks to previous levels.

Automotive lubricant demand

The forecast for automotive lubricant demand is of fundamental importance to the structure of the lubricants industry. Since 1985, this segment has shown regular year-on-year growth in what is normally considered to be a high margin area for oil companies and specialist

lubricant blenders and marketers.

Total West European demand for lubricants used in automotive vehicles in 1990 was just over 2 million tonnes, with France, Germany, the United Kingdom and Italy accounting for 68 percent of West European automotive lubricant consumption. There is a further 0.4 million tonnes of demand from sources not directly associated with vehicle usage.

† Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, U.K.

Figure 1 – The European lubricants market 1990

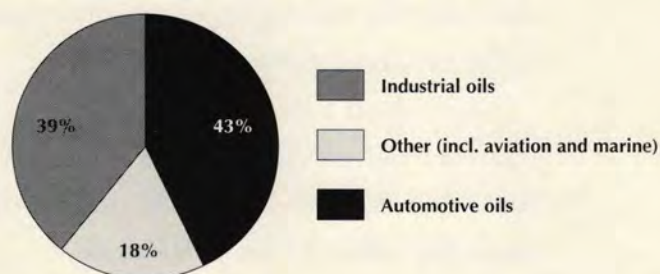


Table 1 – Evolution in engine oil change intervals

<i>Average interval between oil change (km) (average whole parc)</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>
Passengers cars				
Gasoline	9,000	10,500	13,000	17,500
Diesel	8,000	9,500	11,500	15,500
Commercial vehicles				
<3.5 tonnes	6,000	9,000	12,500	17,000
>3.5 tonnes	8,000	11,000	16,500	22,000

The outlook for demand for automotive lubricants is highly influenced by developments in engine and lubricant technology, which will result in reduced specific lubricant consumption and increased intervals between oil changes. These are the main driving forces leading to the decline in overall automotive lubricant demand.

Despite an expected increase in the total number of passenger cars in circulation in Europe of 42 percent from 142 million in 1990 to 202 million in 2005 together with an increase in the total number of vehicle kilometres of 14 percent from 2150 billion km in 1990 to 2454 billion km in 2005, demand for lubricants used in automotive vehicles is expected to decline.

In 1990, engine oils accounted for just over 90 percent of the demand for automotive lubricants. Engine oil consumption is expected to decline from 1.8 million tonnes in 1990 to 1.1 million by 2005. By the year 2005, as engine oil change intervals become longer and the consumption of automatic transmission fluids increases, the share of engine oils in total automotive lubricant demand will have fallen to 85 percent. The decline for commercial vehicle engine oil is expected to be a little faster than for passenger car engine oil. Demand for passenger car engine oil (gasoline and diesel) is expected to drop by over 35 percent, from 1.1 million tonnes to 700,000 tonnes between 1992 and 2005, whereas demand for commercial vehicle engine oil will decline by over 40 percent, from 553,000 tonnes in 1992 to 322,000 tonnes in 2005.

The key factors driving this change are the evolution in engine and transmission oil change intervals. Table 1 shows the expected trend of lengthening oil-change intervals.

For new passenger cars, many European car manufacturers already

specify oil service intervals of 20,000 km (or 12,000 miles) with a minimum of one change per annum. However, there is some reluctance on the part of car manufacturers to extend this interval.

In practice, a general annual service is required and engine oil replacement will continue to be a key part of car servicing. Additionally, any further extension of service intervals would be unpopular with the manufacturer's retail outlets for whom service is a significant source of income. Some vehicle manufacturers will continue to try to extend their oil service intervals but the majority in Europe will not. The effect of extended oil service intervals on annual consumption will be progressive with the gradual introduction of new vehicles into the overall parc but, by the end of the decade, there will be a substantial reduction as a high proportion of the vehicles within Europe will be operating at extended service intervals.

Total automotive manual transmission oil consumption is expected to increase from 110,000 tonnes in 1990 to 120,000 tonnes in 1997. Demand for passenger car manual transmission oil, which accounts for 60 percent of the total transmission oil demand, is expected to decline gradually after 1995 as automatic transmissions slowly replace manual gearboxes. Demand for automatic transmission oils is

expected to increase from a low base of 27,000 tonnes in 1990 to 121,000 tonnes by 2005, with the increased penetration of automatic transmission vehicles in Western Europe.

Two-stroke lubricants account for less than 3 percent of the total automotive lubricant market. Demand will fall from 52,000 tonnes in 1990 to 35,000 in 2005, mainly as a result of an increased penetration of four-stroke engines in motorcycles and increases in fuel efficiency of two-stroke engines. The introduction of two-stroke engines into cars and commercial vehicles will have no impact, since the engine technology is fundamentally different and traditional two-stroke oils will not be used.

Industrial lubricant demand

Over the period up to 2005, demand for industrial lubricants is expected to grow by just under 15 percent, from 2.24 million tonnes in 1980 to 2.57 million tonnes in the year 2005. This increase masks a real decline in unit consumption, as industrial production is forecast to grow at an average annual rate of 2.7 percent, equivalent to 49 percent over the whole period. However, there is likely to be considerable variation in the demand trends for different segments of industrial lubricants (see Table 2).

The market for hydraulic oils is one of the few lubricants market segments which has posted continuous growth throughout the 1980s. The tendency towards automation in industry has generated a structural increase in the demand for hydraulic fluids, which translated into a cumulative growth of the market of 23 percent between 1982 and 1990.

Future demand for hydraulic oils is expected to grow broadly in line with overall economic activity with an annual growth of approximately 2.3 percent in real terms over the forecast period. This reflects the continued automation of production processes

Table 2 – The outlook for consumption of industrial lubricants in Western Europe

<i>Average annual % change in demand</i>	<i>1991-2005</i>
Hydraulic oils	2.30
Greases	-0.56
Metalworking lubricants	0.07
Process oils	0.06
Other industry	2.07
Total industrial lubricants	1.71

in the European economies, where the rate of penetration of computerised and numerically controlled machinery is still much less than in economies such as Japan.

We expect the market of industrial greases to contract by approximately 8 percent over the forecast period, i.e. between 1991 and 2005, as new lubricating oils are developed that have the right properties to substitute for industrial greases.

The outlook for metalworking lubricants is for a relatively stable demand in the short and medium term, as the output of the West European ferrous and non-ferrous metals sectors stagnates and the penetration of water-mix fluids slows down. This will be followed by a period of slow growth, as the market share of neat-cutting oils continues to recover. The rate of recovery, however, depends on the rate of replacement by industry of machine tools previously relying exclusively on water-mix fluids.

Following a major drop in the early 1980s, the demand for process oils remained approximately stable until 1986. In 1987, the market resumed an upward trend, temporarily interrupted in 1989, despite strong European industrial production

growth, and in 1991, because of the Gulf crisis effect.

Demand for process oils is expected to remain stable over the forecast period, in volume terms, despite sustained growth of industrial production in Western Europe.

The market for other industrial lubricants is, as in the past, expected to continue growing broadly in line with the overall growth in economic activity.

Recovery of used oils

In 1990, out of a total lubricant consumption of 5.2 million tonnes in Western Europe, the amount of used oil generated was 2.8 million tonnes. Of this, about half was collected and recycled or otherwise disposed of through authorised used oil business. The remaining 1.4 million tonnes were either burnt by the lubricants users on-site (with or without authorisation) or disposed of in an uncontrolled way. The do-it-yourself sector accounts for a large proportion of this uncontrolled disposal.

The economics of collecting and recycling used oils are not favourable. However, from an environmental point of view, it is generally recognised as desirable to increase the

amount of used lubricants collected and recycled. EC and national legislation in most West European countries has already been put in place to create the appropriate incentives and future legislation is likely to increase the proportion of used oils collected and recycled.

Base oil supply

Rerefined base oil contributes to the supply of base oil for manufacturing of finished lubricants, supplementing the major source of base oil, which is conventional virgin base oil, obtained from refining crude oil (see Table 3).

In recent years, conventional base oil capacity has remained fairly constant, despite the recent recovery of total lubricant demand. This has given rise to fears of under-capacity in Europe. Over the forecast period, however, demand for virgin base oils is expected to decline, while production capacity is expected to remain broadly stable. Therefore, the Western European lubricants market is expected to remain in surplus. The surplus, which amounted to 20 percent of working capacity in 1990, is expected to increase to 28 percent at the end of the century and to 30 percent in 2005 (see Figure 2).

The consumption of additives has increased in recent years to obtain the desired qualities of finished lubricants. This trend is expected to continue, leading to an increase in the contribution of additives to finished lubricants volume from 7.5 percent at present to 8.7 percent in 2005.

In the past, Western Europe has been a net exporter of base oil (and finished lubricants). This situation will thus continue for the rest of this century and in the early years of the next century (net exports will even increase). Within Western Europe, the main exporters of finished lubricants are France, United Kingdom, Italy and the Netherlands, while the main European net importers are Belgium and Germany. ■

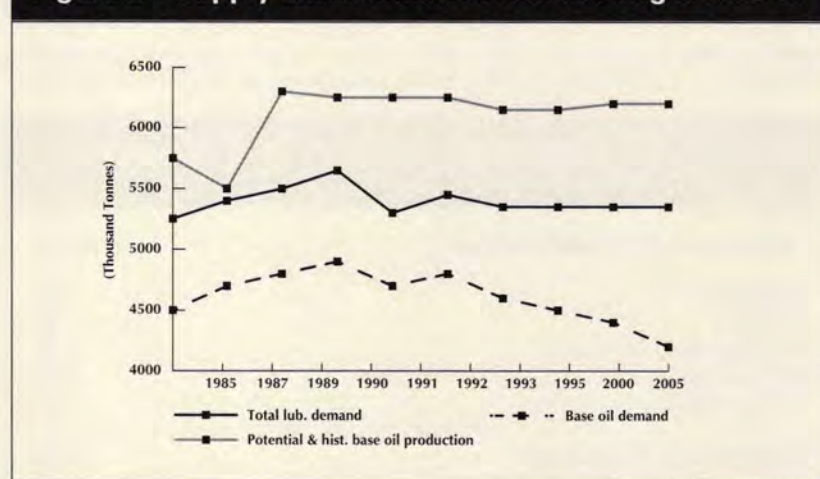
This article is based on the DRI study 'European Lubricant Markets', published in Autumn 1992. It was compiled by Andrew Slaughter, Principal responsible for DRI's International Energy Services, based on work done by Michael Smith, Gary Beecroft, Ashvin Chotai, Elisabeth Waelbroeck-Rocha, Arlette Miguel and Jeremy Lever. The project was directed by Silvia Pariente-David, Research Director of DRI.

Table 3 – Breakdown of lubricant components

% of total lubricant consumption	1990	1992	1995	2000	2005
Additives	7.5	7.7	7.9	8.3	8.7
Synthetic & natural base oils	2.8	3.8	5.8	9.2	12.0
Rerefined base oil	3.7	3.3	3.3	3.3	3.3
Mineral virgin base oil	86.0	85.2	83.0	79.2	76.0
Total lubricant consumption *	5702.5	5615.4	5533.9	5564.2	5607.2

* Thousand Tonnes

Figure 2 – Supply and demand of mineral virgin base oil





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Expansion of Syrian crude production

By Naji Abi-Aad, Energy Consultant

Syria is rapidly confirming its status as a major oil producer with output averaging 515,000 barrels a day in 1992, compared with 492,000 b/d in 1991. The increase came mainly from the rise in the output of fields operated by Al-Furat Petroleum Company (AFPC), the Pecten/Shell/Deminex venture. However, the Deir ez-Zor Petroleum Company (DEZPC), whose foreign partner is Elf, is expected to emerge soon as a new major producer. In the early part of this year output was still rising.

After rising to 192,000 b/d in 1976, Syrian oil production had declined and did not recover to that level again until 1986 when the AFPC brought the al-Thayyem light crude field on stream. Production at al-Thayyem started at an initial rate of 35,000 b/d and rose to 60,000 b/d by early 1988. By then, the four small neighbouring fields of al-Ward, al-Ashara, Jido and al-Ahmar had entered production at a combined rate of 40,000 b/d. Then, early in 1980, the AFPC brought the Omar field into production, followed by a series of smaller fields. Consequently, production rose in 1990 to around 386,000 b/d from 301,000 b/d in 1989.

Oil production was running slightly over 540,000 b/d at the beginning of 1993. The 1992 oil output consisted of some 355,000 b/d of light crude (36° API) produced by the AFPC, around 150,000 b/d of heavy crude (24° API) primarily from the SPC's Suwaidiyah-Karatchok fields and about 10,000 b/d of light crude from the North Attala and Mazraa fields operated by the DEZPC.

The AFPC's main producing fields in 1992 were al-Thayyem (with an average output of 70,000 b/d), Omar (45,000 b/d), Maleh (40,000 b/d), Tanak (30,000 b/d), Sijan (30,000 b/d), al-Isba (29,500 b/d) and al-Ward North (26,000 b/d). Other producing fields included Akash, Azraq, North-East Omar, Galban, Abu Hardan, al-Ayya, Jazieh and Ghawari fields which were all brought into production in 1992.

Altogether, at the beginning of 1993, the AFPC had 33 fields in production, compared with 24 fields in early 1992. The AFPC expects its output to rise from around 400,000 b/d – a level reached last November to around 430,000 b/d by the end of this year.

Consequently – and as a result of developing new oil fields including Omar, Jafra and al-Isba – total oil production should reach more than 600,000 b/d by the end of this year.

Last September, AFPC awarded a \$71-million contract to Davy McKee for the second phase of Omar development scheme. The agreement provided for the construction, supply and installation of a second water treatment and injection unit with a capacity of 110,000 b/d.

The unit, designed to maintain pressure in the reservoir, is scheduled for completion by the end of this year.

The original scheme for developing the Omar field consisted of two crude oil gathering stations, each with a capacity of 60,000 b/d and a 95-km, 24-inch spur line linking the field to the main east-west pipeline running to the Homs and Banias refineries. Production started in March 1989 and soon reached 100,000 b/d but it rapidly started to decline because of a drop in reservoir pressure until it was only 16,400 b/d early in 1991.

To counter the drop in pressure, AFPC decided to install a water injection system at the field, with the aim of restoring output to near its initial design capacity rate. The first stage of the scheme was completed in early 1991. Omar's output was subsequently raised to 30,000 b/d in June.

At Jafra oil field, the DEZPC issued a tender in September 1992 for the construction in four lots, of a central production unit with a capacity of 60,000 b/d which could be doubled to 120,000 b/d. The work will include a gathering station, a central production facility terminal, a pipeline network, a water-lift station and living quarters. Bids for the estimated \$150 million projects were submitted by six groups last November. The award of the contracts was expected last month.

A \$17 million contract to build a second 40,000 b/d production train at al-Isba field was awarded to Suedrohrbau of Germany last year. That followed a \$12 million contract awarded to the Hungarian state-owned Lowlands Petroleum Company for development drilling in the field. Lowlands' operations are to cover the period from September 1992 to August 1994. The field, located on the Ash Sham acreage, entered production in August 1989 at an initial rate of 15,000 b/d and in 1992 its output averaged 29,500 b/d.

Medium and long-term output projections are dependent on the real potential Syria possesses underground. Although recoverable oil reserves were estimated at 1.7 billion barrels at the beginning of this year, Syria's oil resources are believed to be much higher – some experts give a figure of some 4 billion barrels and others 5.5 billion barrels.

In fact, up to the middle of last year, exploration work had covered only 19 percent of the Syrian territory. Wildcats had been drilled in only 235 of the 724 potentially oil and gas-bearing structures, out of which 72 showed oil and 43 produced volumes which could be commercially viable. ■

Syria's crude oil production (b/d)

1980	158,000	1985	176,000	1990	386,000
1981	163,000	1986	194,000	1991	492,000
1982	138,000	1987	232,000	1992	515,000
1983	161,000	1988	270,000		
1984	162,000	1989	301,000		

The Braer incident at first hand

By Dick Thomas, Warren Spring Laboratory

Local authorities are responsible for dealing with small-scale pollution of the UK coastline. In a major incident, such as the Braer, a Joint Response Centre (JRC) involving both local and central government is normally set up to co-ordinate coastal counter-pollution operations.

Central government response to a marine emergency in UK waters rests with the Marine Pollution Control Unit (MPCU) of the Department of Transport. The Unit maintains a National Contingency Plan and has the resources to carry it out. Her Majesty's Coastguard acts as the eyes and ears of the Unit during emergencies but retains its primary function of search and rescue throughout.

The R&D needs of the Unit have often been contracted to Warren Spring Laboratory (WSL) which is the Environmental Technology Agency of the Department of Trade and Industry. The laboratory has conducted much of the R&D that underpins MPCU's operational response at incidents.

A standing agreement exists that enables personnel from the laboratory to join the Marine Pollution Control Unit temporarily at their request.

In the JRC set-up at the airport complex in Sumburgh, the MPCU provided advice and support for Shetland Island Council. The Scottish Office for Agriculture and Fisheries Development (SOAFD) and Scottish Natural Heritage were actively involved in proposed counter-pollution activities.

Representatives from the International Tanker Owners Pollution Federation and the Norwegian Protection and Indemnity Club were also located in Sumburgh.

The following description of the Braer incident is given from the perspective of staff from WSL involved in Shetland.

The incident

On the morning of Tuesday 5 January 1993 the MV Braer was on passage from Mongstad, Norway to Quebec, Canada. Her cargo was some 85,000 tonnes of Gullfaks crude oil. At 0600 hours she suffered a complete power failure that left her adrift 10 nautical miles south of Sumburgh Head in southerly winds that exceeded 50 knots.

Despite attempts to secure a tow-line, the vessel was driven ashore on the west side of Garth's Ness shortly after 1100 hours. Pollution was reported almost immediately (Figure 1).

It was clear that this area could suffer a disaster on a scale requiring a response reaching beyond the combined resources of the Shetland Island Council and the BP oil terminal at Sullom Voe.

The ship was continually battered by storm force winds but she remained more or less intact throughout the next six days, gradually releasing her cargo and bunker fuel oil into the bay at Garth's Ness. She finally broke up over the night of 11 January, spewing the remainder of her cargo into that small bay.

It was fairly evident that tidal streaming, assisted by the storm-force winds, was taking the oil out of the bay and

dispersing it into the water column. The distinctive 'coffee-coloured' brown plume (so characteristic of dispersed oil) could be seen some 25 km up the western side of Shetland. Very little evidence of pollution was ever seen to the east of the island.

The response

On Tuesday 5 January, even before the Marine Emergency Information Room (MEIR) in London was activated, the MPCU's contracted surveillance aircraft was airborne. Its immediate task was to determine the extent of the sea-borne pollution and assess the potential coastal impact. A combination of Sideways Looking Airborne Radar (SLAR) Infra-Red and Ultraviolet line-scanning sensors made this assessment possible.

Six contracted dispersant spray aircraft were placed on immediate stand-by, in anticipation of an improvement in the weather at the scene.

The Joint Response Centre set-up in the airport complex at Sumburgh was the base of the MPCU's Land Coordinator, while operations at sea were controlled from the coastguard station in Lerwick.

MPCU's equipment stockpile contractors in Aberdeen, Stirling, Burtonwood, Milford Haven and Ipswich were placed on immediate stand-by. The readiness of specific items of equipment, now considered to be appropriate, was essential if speed of response was to be optimised. The main commercial suppliers of equipment and dispersant were notified of impending calls on their resources.

Warren Spring Laboratory staff became involved in several ways:

- The Ipswich contractor was supplied with the details for loading, despatch and delivery of specified oil recovery equipment.
- Information support was given at both the MEIR, London, and the JRC, in Sumburgh.
- Likely areas of impact were modelled, using the Oil Spill Information System, OSIS, in order to predict the quantity and properties of any crude oil or emulsion beached (Figure 2).

Test-spraying of dispersant by the DC3 aircraft onto the oil issuing from the Braer took place on Wednesday 6 January, after all agreements stipulated as necessary in the National Contingency Plan had been obtained.

Early observation suggested that aerially applied dispersants were promoting the significant natural dispersion.

The rig supply vessel Norman Borg was chartered in readiness for potential recovery at sea operations. WSL personnel were prepared to conduct them.

Ground-truth data, on the concentration of hydrocarbons in air and dissolved or dispersed into the water-column, were added daily by the WSL team to the information gained from the aerial surveillance flights conducted by Air Atlantique.

Since there was never a significant quantity of surface oil (other than that in the bay at Garth's Ness), there was no need to continue dispersant spraying. The spray aircraft were stood down on Saturday 9 January.

The SOAFD vessels, Clupea and Scotia, were alerted to the need for water column quality measurement. Their



Figure 1: The Braer aground at Garth's Ness.

sampling of the waters and sediments around Shetland is continuing to assess further the extent of any pollution problems associated with the Braer.

A Norwegian survey vessel, Michael Sars, has contributed by sampling the waters to the east of the Shetland Islands.

By Thursday 7 January the North Atlantic Fisheries College, in Scalloway, had embarked on a programme of organoleptic surveys of fish taken from salmon cages.

A voluntary 'exclusion zone' on fishing was invoked on 8 January. This became mandatory some days later.

By the 8/9 January, the construction of spade dams and sorbent barriers had been completed at the freshwater Loch of Spiggie. The weather prevented any permanent deployment of conventional booms across the harbour

Figure 2: OSIS screen display during modelling.



entrance at The Pool of Virkie east of Quendale. Sorbent booms were issued for deployment around salmon cages where surface sheens were observed. These were either of the ready-made commercial type or constructed on site by sandwiching shredded straw between two sheets of nylon netting (using equipment developed for MPCU).

Some minor beach cleaning was done locally. An area at the rear of Quendale had been excavated to receive recovered fluids if that became necessary. Dedicated beach-cleaning and oil-recovery equipment already in position, by Friday 8 January, at the designated forward bases, was never deployed.

Surveillance flights continued on a regular basis both around the casualty and offshore until 22 January. No trace of major shore-line pollution was found in the thousands of nautical miles surveyed – other than that at Garth's Ness.

The JRC remained active until 25 February when it was confirmed by the salvors that no oil remained in the Braer. Ground surveys had continued to show that there was little evidence to support the need for retaining dedicated anti-pollution equipment.

WSL sampling programme

A range of instrumentation was expected to be useful for the two people despatched from WSL on the afternoon of 7 January. A viscometer was included because oil recovery can be dependent on the rheology of the pollutant. A flash-point apparatus had been sent with oil recovery equipment from Ipswich. Oil particle size in the water column, before and after spraying, would be attempted with a Phase-Doppler particle analyser. Actual oil content would initially be monitored (and subsequently measured) by short wavelength fluorometry (four instruments were sent). The flow through cells were supplied via submersible bilge pumps. Seven were included, each complete with hoses and 12volt battery plus charger. Data logging was intended to be accomplished with two Gridcase weatherproof personal computers. Intended ambient air sampling was considered best done on this occasion with portable photo-ionisation detectors. Two were sent. The usual peripherals such as camera, film, binoculars and portable range finder were also included.

The majority of this equipment, weighing several hundred kilos, was taken from WSL to Coventry airport. The MPCU contractor, Air-Atlantique, freighted it to Sumburgh where it was stacked inside a hired van.

Sampling close to the Braer, on 8 January, provided a ground-truth assessment of the situation for MPCU staff in the JRC.

Figure 3: Concentrated oil-in-water emulsion at Garth's Ness.





Figure 4: Oil-in-water emulsion at Quendale Bay.

Air and water samples were taken around the casualty and along the predicted oil track (Figures 3 and 4).

With the wind gusting to 50 knots (WSW), it was obvious that there was a considerable quantity of oil droplets in the air close to the wreck. These were carried no more than a few hundred metres inland. Vapour concentrations beyond that were estimated to be below the Long-term Exposure Limit.

Quendale Bay, east of the casualty, was the farthest that visible oil plumes were travelling. These contained much less oil than the percentage levels observed at Garth's Ness. Similarly low levels of hydrocarbon in water were seen around the entrance to the fresh-water Loch of Spiggie to the west. Our impression was that these plumes were localised and extended no more than a hundred metres or so offshore.

Using rudimentary calculations, it was now possible to estimate relative oil movement and volumes. Assuming an average water depth of 30 metres and an average oil concentration of 240ppm extending 100 metres from the shore, then the volume of oil from the wreck to Quendale Bay (some 2 km apart) would have been 1,400 cubic metres. In the bay at Garth's Ness a concentration of 10 percent similarly held by storm-force winds could have contained some 22,500 cubic metres.

Sampling on the next day confirmed the observation that oil escaping from the bay at Garth's Ness was being swept along the west coast, as a naturally dispersed plume, under the combined effects of tidal currents and storm-force winds.

On 9 January at Ireland, 12.5 km from the casualty, a concentration of 715ppm indicated that an oil plume was moving northwestwards. Backtracking this concentration would account for around 27,000 cubic metres of the spilt oil.

Unconfirmed aerial reports were suggesting that the oil in the bay at Garth's Ness was a combination of cargo mixed with bunker fuel oil.

The bulk sample taken close to the casualty on 10 January confirmed the view that a concentrated oil-in-water dispersion was present. It was not possible to guess its composition. (However, in common with other dispersed oils this did not adhere to the side of the sample container.)

There were still obvious signs that the oil was continually being swept westward out of the bay. There was no evidence that oil, in any quantity, was moving east. Quite the reverse. Concentrations at Quendale Bay had fallen by an order of magnitude.

There was now (11 January) a pressing need to compare the concentration of hydrocarbons in the water column inside the exclusion zone to the water quality outside it. This was only possible with the full cooperation of individual fish farmers, their Association

and their insurers.

Information on water quality around individual cages, up to now, had been totally dependent on samples taken by the farmers themselves and analysed elsewhere.

Under the prevailing weather conditions it was not possible to deploy the Phase-Doppler particle analyser from any of the craft that we had at our disposal. Using only the Turner Designs flow-through fluorometric technique, we could detect no oil in the water column outside the exclusion zone.

Inside the northern end of the exclusion zone oil concentrations in the water column were much lower than those further down the coast (Figure 5).

Successive samples over the next two days generally showed oil concentrations falling with time, varying with tidal surges and, on average, two orders of magnitude less than the last sample taken at Quendale Bay.

Now that the tanker had finally broken up, six days after grounding, we could be fairly certain that all her cargo had been released.

So far all the evidence had suggested that the oil was well mixed into the water column. With the break-up of the casualty, it was important to know whether or not further oil had been released and whether this was about to aggravate what appeared to be a steadily improving situation.

By sampling well into the 'fjord-like' Clift Sound, on 13 January, information on the levels of hydrocarbon present could be determined. The variation with depth and time could be monitored.

Hydrocarbon levels were in keeping with, but generally lower than, those obtained on the previous day. This was taken to indicate that most of the Braer cargo (and bunkers) had been released before she eventually broke up.

There was little variation in concentration with depths down to 10 metres (the limit for our rig). This evidence supported the assumption that the oil was being well mixed vertically. There was every reason to suppose that this would continue.

A surface sample taken around noon on 14 January from the bay at Garth's Ness showed that the concentration of oil in water had already fallen to 25ppm. The work for the WSL sampling team at this incident was over.

Now that the immediate and dramatic threat to the environment has disappeared, WSL is interacting with the Environmental Monitoring Group set up by the Secretary of State for Scotland to assess the long-term effects of this unusual oil spillage. ■

This is a transcript of a talk given to the IP Environmental Discussion Group in March.

Figure 5: The Turner Design Fluorometer at a fish cage site.



Europe needs a bold initiative: EPIS

By Herman Mulder, Senior Vice President, ABN AMRO Bank

In a fragmenting Europe, also in the midst of a recession (Western Europe) or in a difficult and painful transition period (Central & Eastern Europe), initiatives are needed which appeal to a common, pan-European interest for many years to come. The European Energy Charter and the related Basic Agreement are clearly making such an appeal but the process has become essentially top down and may only offer hope in the longer run of creating a level playing field among the signatory countries with respect to the functioning of the energy industry.

It does not, however, offer any instrument apt for the much-needed development of priority energy projects in the short to medium term. Nor is it likely that the financing instruments presently offered by World Bank, EBRD or IFC will cause a massive flow of commercial funds; co-financing offers to investors some relief but the investors remain subject to the structural risks in the FSU-republics. The political component of such risks is currently simply too high, as a result of which only few and relatively small commercial transactions with short pay-out periods and/or offshore escrow accounts may be effectively arranged.

In a world full of investment opportunities elsewhere for investors in the energy industry the tangible flow of investments to the FSU-republics will for some time to come, to say the least, not be in line with the enormous potential of the region and the requirements for such potential to be exploited for world energy markets in general and Western Europe in particular. The FSU-republics are in a major way different from other so-called emerging countries: they do have an enormous combined base of natural resources, industrial capacity and human resources and there is an urgent need to re-direct this base towards market economy practices. Herein lies a common interest with Western Europe in particular and the need to develop a scheme to accelerate this transition process.

In our view what is needed is a

multilateral scheme which:

1. Accelerates the earning of hard currency income through the rapid development of large energy projects;
2. Allows the maximisation of the regional industrial contribution to such projects despite the absence of effective, sizeable local capital markets;
3. Enables the early tangible involvement of the western energy industry (including alongside investors, such as commercial banks) without incurring undue non-commercial risks;
4. Offers financial instruments which may be used for projects which comply with clearly defined commercial conditions;
5. Is bold, offering clear positive perspectives to the whole of Europe: creating employment, increase energy cooperation, enhance social stability.

In a balanced way, the scheme should allocate the different types of (commercial, political) risks among all interest holders from public and private sectors.

The general outline of the scheme as envisaged by us is as follows:

1. It offers to private investors guarantees (or insurance) by the EC for the risks associated with energy projects in the FSU-republics to the extent existing political risk coverage is not available from the official Export Credit Agencies. The

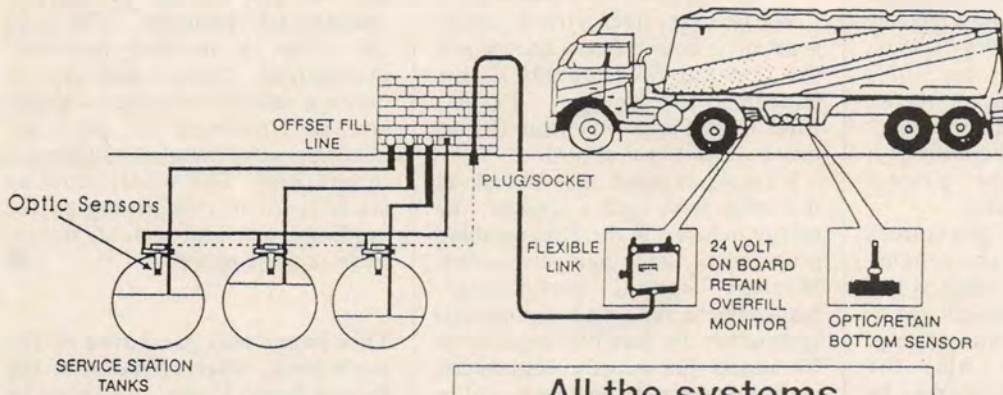
extended political risk coverage considered may be differentiated as follows:

- a. It offers political risk coverage for such costs which are not covered by official export credit and investment insurance and for local costs; the latter category, however, with a ceiling related to the export revenue proportion of a given project and to the extent not financed by way of the conversion of old (hard currency) external indebtedness into roubles; local costs beyond this ceiling must be arranged from local financial sources.
- b. It offers extended political risk coverage to equity and debt investors, ie extra coverage beyond traditional political risk coverage schemes as offered by Western governments, which are limited to nationalisation/expropriation, war/terrorism/civil disturbance, non-convertibility/transferability of hard currency, government breach of contract.

Such extended risk coverage should offer protection against any non-commercial or self-inflicted event which adversely affects the value of the investment. Causes for this are mostly related to the present uncertain and/or untested constitutional, legal and fiscal environment in the FSU-republics. Examples are: lack of authority of contract partners, title defects, non-

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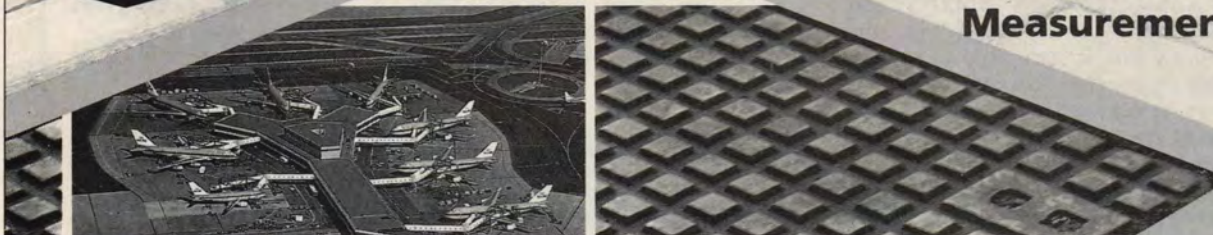
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priority of security, unknown liabilities, new taxation.

2. The eligible projects must be considered commercially sound (established by a comprehensive feasibility study), must have an adequate project structure and must be qualified by the EC and the host republic as having priority status. Western energy companies must have a significant interest in the project. The government of the host republic must be a party under the project agreement/concession.
3. The amount of guarantees available under the scheme may initially be limited but should be significant enough to be an effective catalyst, e.g. ECU 5 billion. Also the window of availability may be limited to e.g. five years (although coverage under the

guarantee may be offered for as long as 15 years). The scheme is, of course, optional but if called for, a guarantee commission is due by the project sponsors and a certain degree of own risk for the investors seeking coverage is required.

We believe that, with political goodwill in both Western Europe and the relevant FSU-republics, this (European) Energy Private Investment Support Scheme (EPIS) may be operational in 1994.

It should, however, also be realised that even with such a scheme, the energy industry in the FSU-republics must have an open character. Western capital technology, management skills and commercial approaches are essential ingredients for success. For instance, commercial banks are generally only interested in projects in non-OECD countries if there is a major role and identity of

interest of one of their existing clients in the energy industry.

We call on Western and Eastern Europe governments to enable the energy industry including its financiers to do the job, which for political and social reasons is urgent and for the energy industry a commercial challenge. EPIS is in our view a needed powerful instrument, complementary to existing official insurance schemes and to financing by (and co-financing with) multilateral financial institutions. The wheel must be made to turn: the energy sector holds the key and should, hence, serve as a role model. ■

This paper was presented at the conference, 'Marketisation of the Former Soviet Union', organised by the Adam Smith Institute, held on 24-25 March in Vienna.

Flexible underground pipework

Interest in underground pipework on service stations has increased lately because of the growing concern for environmental protection and public safety. Purfleet Commercials Ltd have responded to this problem with a totally new concept of flexible non-corrosive and totally contained piping system called Enviroflex. This is part of a complete containment system manufactured by Total Containment Inc.

The primary pipe is composed of three highly engineered, exceptionally strong layers of advanced thermo-plastic composites, surrounded by a protective polyester braid that is bonded to an abrasion-resistant polyurethane covering. The inner bore is corrugated for flexibility and is compatible with all fuels. Two layers of tough polyurethane add strength and puncture resistance.

The secondary pipe is of a corrugated high density virgin polyethylene, immune to corrosion. It provides complete secondary containment while allowing interstitial leak monitoring and detection, when required.

To achieve a totally leak-proof system which protects the environment from fuel leakage and protects underground pipework from water ingress, Enviroflex is used in conjunction with sealed storage tank

riser sumps and sealed dispenser sumps on pressure systems.

This system has no underground joints, as the connections are housed inside containment sumps, cutting out a potential 200 leaks. It has the added advantage of being easy to install and prevents unnecessary, costly and disruptive excavations once in service, as in the unlikely event of a leak, the entire primary pipe can be quickly removed and replaced from the surface. All joints

are accessible from above ground.

Being a flexible piping system it is not affected by ground movement. It is suitable for both pressure or suction installations.

Dispenser sumps are available for this system and are designed to allow direct mounting of the service station dispenser on top. This gives access for all pipe runs and connections and also acts as a product containment chamber should the dispenser, pipework or pumps leak. ■



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14th World Petroleum Congress

Stavanger, 29 May - 1 June 1994

High quality papers with a broad management significance are still required for this international Congress, particularly on the topics of global supply/demand trends, capital generation and availability, and research/technology transfer. There is time also to consider suggestions for

major papers on significant developments in upstream and downstream technology.

An equipment and systems exhibition is being run in parallel by the Norwegian organisers of the Congress and stand space may now be booked. Facilities for company social events will also be available.

Please direct papers to: Mr AEH Williams, British National Committee of the WPC, 61 New Cavendish Street, London W1M 8AR. For enquiries on the structure of the Congress, please ring Miss Wendy Runnacles on 071 636 1004.

Please direct enquiries regarding space for the equipment and systems exhibition to: Mr AG Ellingson, 14th WPC Office, c/o Statoil, PO Box 300, N-4001 Stavanger, Norway. Tel: 010 47 4 80 60 45 or Fax: 010 47 4 80 60 20.



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North Sea tax changes require strategy reviews

Bill Parker, recently Appointed Chairman and Managing Director, Phillips Petroleum Company United Kingdom Limited, expresses his company's concerns that the UK Budget proposals may affect the economic stability of the North Sea – where Phillips has just placed initial contracts worth £100 million for the development of new projects. In an interview with *Petroleum Review* he describes how several more fields may be developed through these projects.

Geoffrey Mayhew: Phillips has some very important developments in the North Sea this year?

Bill Parker: In the Southern Gas Basin the Ann gas field will come into production later this year with two subsea wells.

The development of two oil and gas fields, Judy and Joanne, in Quadrant 30 in the Central North Sea is now fully under way (see page 273).

This must be satisfying, considering the problems Phillips Petroleum Company had in fighting off take-over attempts in the 1980s?

Absolutely. Joanne was discovered in 1981 and Judy in 1985 – just prior to the take-over attempts. The Judy and Joanne developments were put on hold as a result. The collapse of oil prices in late 1985 also contributed to the delay.

Mr CJ 'Pete' Silas said in 1989 that the North Sea and the United Kingdom offered some of the world's more attractive opportunities (see *Petroleum Review*, February 1989). Has your commitment increased since then?

Phillips Petroleum Company has been a player in the North Sea since the



Mr Bill Parker – Chairman and Managing Director of Phillips Petroleum Company UK.

1960s, with Hewett and Ekofisk. Pete Silas, CEO, and Wayne Allen, President, both served as Managing Director in the UK and therefore have real appreciation for the strengths of the North Sea and the United Kingdom in particular. The attraction for Phillips has been the fiscal stability in a proven oil province.

I have to say the recent 1993 Budget has been a cause for concern about the future fiscal stability of the UK Sector.

Can the North Sea produce any more big fields?

The Southern and Central UK North Sea sectors, and even the Northern sector, have been fairly well explored for bell-ringers of over 300 million barrels. The fields are going to be smaller, not bigger, and will be more challenging to develop profitably.

The Norwegian sector, where not so much acreage has been licensed to date, has more opportunity.

The big ones in the UK Continental Shelf are going to be found west of

Shetland, as BP has recently announced, the Irish Sea and in the English Channel and Western Approaches.

Has Phillips the resources to play a big part?

Phillips is a worldwide player in exploration and production. Management has to invest where there are the chances to make the biggest impact. Phillips U.K. has to compete with other divisions of Phillips Petroleum for funds. Fiscal surprises, no matter how positive in the long term, make short-term arguments for funding more difficult.

Do the J fields, an area which adjoins Ekofisk, have a substantial potential beyond Judy and Joanne?

We are encouraged about the future in the Quad 30 area. In addition to Judy and Joanne there are a half dozen other discoveries in Quad 30 and a dozen more prospects. Most of these are small, but the future infrastructure at Judy may make it possible to develop them profitably.

Is the geology in Quad 30 similar to Ekofisk?

It is similar but the Palaeocene will be much more challenging to develop from geological and reservoir viewpoints.

What are the developments for Judy and Joanne this year?

We received Annex B approval in January. Design engineering is over 50 percent complete. We are focused right now on procuring the major facilities, with £100 million of orders having been placed to date.

Drilling on Judy will begin in May, a little earlier than anticipated. The plan is to drill eight wells now through the sea floor template and come back after the installation of the jacket and topsides to drill four more wells. Joanne drilling will start in March next year.

We started concept studies for the J Block almost 10 years ago. The final design today is not much different than the original concepts. It was unfortunate that a basically sound project was delayed so many years.

Are any other developments under consideration for Quad 30?

The infrastructure at Judy can meet the needs of a number of nearby future projects. The Jacqui and Julia fields, in our own blocks, are both possibilities but will require further appraisal drilling. Within a radius of 20 miles from Judy there are also a number of other prospects, each of which could be tied into the Judy complex.

We will have the Judy-Joanne facilities in place by 1996 and additional fields may be discovered by that time.

Phillips has several times found fields beneath existing fields. Is deep drilling one of the company's specialities?

Technology, particularly 3D seismic interpretation, is our speciality. This has led us to see things geologically that we might have missed a few years ago.

Through improved seismic interpretation, we have developed new features in the Maureen and Hewett Fields which will prolong the producing lives of these projects.

How important is it to organise and keep up to date on this type of technology?

It is critically important to analyse frontier licensing rounds and other areas which have been passed over by other people, in addition to exploiting

existing acreage. By using the technology of today we can look at these areas with a new interest.

You have had roles in what might be called turning-points in Phillips' development. How do you see the role you took up in January?

Historically, Phillips has been a one-field-at-a-time player in the North Sea. Judy/Joanne continues that tradition. But that is not an acceptable strategy in the long term. My mission is to move Phillips into a more focused strategy in the United Kingdom. Companies have to bring in bell-ringers or move to niches where they have strengths and focus exploration efforts on a few key basins with higher chances of finding bell-ringers.

What Phillips cannot continue to do is to try to play all areas of the UK sector. We do not have the resources to follow this strategy.

Has Phillips sold in advance the gas that will be produced from Judy-Joanne?

Yes. The contract was signed earlier this year.

Are you seeking further commercial arrangements like the Southern Electric venture?

We are pleased with our direct gas marketing joint venture with Southern Electric. There are good opportunities for significant growth in this area over the next few years.

There are some uncertainties, for example in the UK energy supply balance, but longer term we see direct gas marketing as a good niche area.

Would Phillips begin to invest in facilities for the production of gas prior to securing a supply contract?

Gas handling capacity at the Judy platform is over-designed to the extent of 150 million cubic feet of gas per day above what is required for Judy-Joanne. We are willing to invest now for potential upside opportunities. That is what one has to do.

What is your long-term estimate for the market for gas?

We are bullish on the future for gas. This is one of the reasons for the joint venture with Southern Electric. We are currently re-examining our strategy for the Southern Basin to take advantage of gas increasing share of the UK energy market.

Has the debate on energy policy led to second thoughts?

The recent energy policy reaffirmed the UK government's commitment to a balanced energy supply which includes gas. Phillips was pleased with the outcome and we intend to be actively involved in gas supply in the UK.

What are the factors for success in oil and gas in this decade and into the 21st century?

Two things: technology and focus. Oil and gas exploration and development

The sea-bed template for the Judy field before being taken offshore.



is a risky business. Technology increases the chances of finding significant reserves. In addition, it enhances the profitability of future development.

Only the very large major oil companies have the financial strength to do everything. The majority of oil and gas companies, including Phillips, have to focus on areas and niches where they have a competitive advantage.

How does the relationship between companies and government bodies work?

Having spent the past eight years in the United States, it is a pleasure to be back in a country where a more partnering environment exists between government and industry.

However, the recent fiscal policy changes, and even the energy debate, have strained that relationship. I think the new approach to offshore fiscal policy as shown in the Budget in March does cause companies to rethink their position and their long-term strategy. It will require intense discussion between industry and the regulatory bodies in order to regain some of that trust.

Nevertheless, the relationship is still better in the United Kingdom than almost anywhere else.

Would this affect Judy-Joanne?

It would not affect Judy-Joanne.

Or, say, the 14th Round?

Phillips has participated actively in the 14th Round and, despite the disappointment over changes in fiscal policy by the government, we



The tow-out of the Maureen platform.

have not changed our commitment or our applications for blocks. From Phillips' standpoint the 14th Round offers some excellent opportunities.

Increasingly, you are affected by EC directives. How efficient is the relationship there?

It is almost a full-time job to keep up with the EC paperwork and that is going to add to the cost of doing business. We are seeing this in the Judy-Joanne procurement. We will learn to work with the EC directives but it will take some time.

Is the environment the key challenge of the immediate future?

Safety has been and will be the key challenge. I am glad to say Phillips has an excellent record in safety.

On the environment, I was surprised on my return to the UK at the level of environmental interest compared with the United States. The Shetland oil tanker disaster did not get as much public attention as it would have got in the US. However, I think it is coming and increased environmental responsibility will become a key challenge over the next few years. ■

Phillips' North Sea projects in 1993

Judy and Joanne are two separate fields in Blocks 30/7A and 30/12A in Quadrant 30, 175 miles off Aberdeen in the Central North Sea in water depths of 80 metres.

The Judy field will have a 24-slot manned platform weighing 10,000 tonnes with a satellite subsea manifold of 400 tonnes with 14-slots on the Joanne field.

Production from Joanne will be transported to Judy via two 12-inch four-miles-long pipelines. The Judy and Joanne gas will be processed through a 3,600 tonne compression module and sent via a 20-inch trunk pipeline to the Central Area Transmission System (CATS).

Oil export will be via a 14-inch pipeline, 36 miles long, to Ekofisk in the Norwegian sector and then via the 34-inch Norpipe AS pipeline to the Phillips Teesside Terminal at Seal Sands.

A 12 slot sea-bed template is being installed for the Judy field and drilling will commence in May 1993.

Among the preparations for Joanne is the order of the manifold. Drilling will begin in March 1994, when six wells will be drilled and tied back to the manifold to be available for first production in 1996, when four more wells will be drilled.

Also near to Judy and Joanne are Jacqui and Julia. The scenario for the Jacqui field, 15 miles from the Judy platform site, is being decided.

The Ann gas field is 80 miles east of the Humber Estuary in the Southern Gas Basin and is in its final stages of development for production this autumn through a subsea template remotely operated by an 11-miles-long umbilical cable from the Audrey 'B' platform. The first gas will come ashore via the Lincolnshire Offshore Gas Gathering System (LOGGS).

Environmental Guidelines for Petroleum Distribution Installations

In response to the increasing environmental awareness both outside and within our industry, the Marketing section of the IP Downstream Operations Committee decided early last year to set up a working group with the brief to formulate industry views and standards on environmental performance and operating procedures in order to provide guidance to members.

The objectives adopted by the working group were:

- To make our industry aware of the environmental issues and challenges faced in the operation of distribution facilities.
- To be able to present an oil industry technical view to regulatory authorities on these issues.
- To have guidelines available that represent the current best and most cost-effective practices in minimising environmental impact and meeting the requirements of regulatory authorities.
- To provide an indication of possible future trends.
- To publish some guidelines, even in draft form, by early 1993.

Contents

The contents have focused on the four Cs – containment, control, clean-up and checking, with additional chapters on environmental management and waste disposal. High integrity containment systems, designed to minimise risk of loss, combined with closed systems to handle planned releases and minimisation of waste generation at source, are seen as the primary tools for ensuring releases of hydrocarbons to the environment are kept within permitted limits.

The Guidelines emphasise that equipment typically already installed at locations will produce surface water discharges meeting tight consent limits, provided run-offs are closely managed and waste hydrocarbon loading is minimised. The alternative is the use of 'end of pipe' technology requiring high levels of investment.

Another chapter recommends a step-by-step approach to the management of contaminated ground and stresses the benefits of careful evaluation of information on known uses and incidents in planning site investigations.

The section covering checking provides advice on sampling and testing regimes for surface water effluent, and the quality control and assurance measures to be applied.

The establishment of a formal environmental management system as described in the opening chapter is considered crucial to improving performance and to

obtaining the commitment of all the workforce to performance targets.

In a final chapter the requirements for handling and disposing of all waste is discussed and one of the appendices lists relevant UK environmental legislation.

Philosophy

The philosophy adopted in the preparation of the Guidelines is that a lasting improvement in performance will only be obtained through concerted and continuous management attention combined with total involvement of staff and contractors at all levels. Experience indicates that the Pareto concept applies with most of the benefit coming from small levels of investment to augment existing facilities allied to detailed attention to operating procedures and practices. This approach assumes that sufficient management resource is made available and requires the raising of employee and contractor awareness. Short-term investments need to concentrate on waste minimisation, separator protection and stopping ground pollution but it is recognised that there will be different solutions for new construction compared with retrofit. Making the best use of existing facilities is seen as a more effective approach than investment-led solutions.

Exclusions

At present the Guidelines only cover distribution installations but will have application in bitumen, lubricants, aviation and refinery storage operations. Retail operations may be added once the revised HS (G) 41 is in place and environmental assessments may also be included in future. Oil spill response, vapour emissions, combustion plant and occupational health and safety are excluded because they are considered to be adequately covered elsewhere.

Regulatory approval

In order to meet the objectives, the working group plans to obtain the endorsement of the principal regulatory authorities in the United Kingdom. Through this process it is hoped that appropriate solutions and measures will be recognised nationally and that unnecessary waste of financial resources will be avoided.

Publication date

Progress on the Guidelines has been slightly delayed by the need for self-education of the Group and the development of ideas. To date a first draft of the Guidelines has been prepared for review by the sponsoring committee and it is hoped to publish towards the end of the year. ■

Andrew Sangster, Esso Petroleum Co. Ltd., and
Chairman DOC 4 E, Environmental Working Group



Petroleum Revenue Tax

A Conference on the effects and implications of the budget changes

July 7th 1993, LONDON

Main address by

Stephen Dorrell MP, Financial Secretary
to the Treasury

Among the topics to be covered:

- Effects on short and long term oil exploration
- Implications for the contracting and drilling industries
- Effects on local economies and oil related service industries
- Tax take for the Treasury
- London's future as world oil centre

Conference Chairmen:

Dr Michael Clark MP
(Fmr Chairman, Select Committee on Energy)
Lord Goold



For further information and the full conference programme contact:

Iain Dale,
Conference Director
The Waterfront Partnership
132 Buckingham Palace Road
London SW1W 9SA

Tel 071-730 0430
Fax 071-730 0460



RETAIL MARKETING: PLANNING, ECONOMICS AND FUTURE DEVELOPMENTS

A short course from The College of Petroleum
and Energy Studies, Oxford
6 - 10 September 1993

Course Summary

The course aims to provide an understanding of the key factors in retailing to automotive markets; to outline marketing strategy options and the elements of an integrated marketing plan.

The course will include an analysis of marketing and business economics for both wholesaler and retailer and will outline significant trends and the latest developments in equipment and techniques.

For Whom Intended

A course for managers, commercial and marketing staff, estates, media and planning personnel, from both inside and outside the oil industry, who would benefit from a broader knowledge of the retail marketing of automotive petroleum fuels. The programme will be of particular interest to marketing executives about to undertake responsibilities for the development and control of retail networks.

Main Topics Covered

- The Nature of the Market
- Technological Trends
- Marketing Strategy Options
- Retail Networks: The Real Estate
- Retail Networks: Design and Operation
- Shops
- Retail Planning
- Car Valeting
- Retail Communications
- Retailing Economics
- Retail Automation
- Retail and the Downstream Oil Business
- Case Study/Field Visit

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THE QUEEN'S AWARD FOR EXPORT ACHIEVEMENT 1990

The 'European' service station: myth or reality?

By R S Taylor, General Manager, Petroleum Systems Division,
Mannesmann Kienzle Autocom Ltd.

For many years, economies of scale have forced the refining and transportation divisions of international oil companies to ignore country boundaries but it is only relatively recently that their retail colleagues (and their suppliers) have realised that there are also benefits to be gained from operating on a European scale.



Photo 1: The Wilsdruff Service Station located in eastern Germany. One of the largest service stations in Europe. The 114 nozzles and eight point-of-sale tills are all interconnected by an optical fibre local area network. A comprehensive Back Office system (which is also connected to Aral's Head Office) helps the Manager to control the station and his 47 employees.

Over the years, every oil company has evolved special marketing and administrative structures and systems to serve individual country markets within Europe. Within limits, each affiliate has been free to act to provide optimum returns on investment. This approach, not unnaturally, has concentrated management's efforts on local issues. Investment for the greater good of the overall organisation has, until recently, been given minimum priority.

However, with the elimination of trade barriers in Europe, major reductions in personnel and the impact of new competitors, the need to reorganise



Photo 2: A fully automated service station in Sweden, developed by a supermarket chain as part of their standard layout. The station comprises AutoLane Multi Product Dispensers controlled by combined Bank Note Acceptors and Card Readers connected directly to a host computer.

retailing on a much more efficient and larger scale has been recognised by many international oil companies. Investments in people, specialist skills, ideas and purchasing power can be spread over country boundaries, resulting in considerable cost savings as well as a much leaner organisation.

Marketing concepts, in terms of service station design, branding and image have long been successfully implemented across country borders. There are already examples of successful pan-European marketing systems (such as Euroshell, Mobil Diesel Club and Kuwait's IDS system). The next step is the investment in retail systems which will bring European service station managers and retail divisions up to the same level as their supermarket and convenience store competitors.

Service station investments

Historically, each oil company affiliate purchased their own service station equipment, very often based on corporate standard designs. The result, from a European viewpoint, is pumps, canopies, POS devices, forecourt controllers purchased from a multiplicity of vendors. Most oil companies have realised the ineffectiveness of this approach and have started to take steps to redress it. European contracts for pumps and car washes are now becoming commonplace. This is being further helped by the gradual harmonisation of the myriad of regulations affecting the operation of service stations. However, with few exceptions, the investment in a common service station system is only now starting to become accepted.

Service station system suppliers

The 1970s and 1980s saw the introduction of computerisation in the European service station environment. These systems took the form of stand-alone, proprietary systems developed by national pump and specialist systems suppliers. They now range from fully integrated service station systems, (photo 1), to fully automated, unattended service stations (photo 2).

To meet the changing retail requirements of the oil company, service station systems suppliers have had to reorganise and radically change their approach to systems development and support. No longer is the local market large enough to recover the cost of developing the

next generation of systems. Consequently, it has become essential to design systems for a much wider market. This approach is typified by Mannesmann Kienzle, a manufacturer of pump calculators and service station systems. The Company had experienced continued growth mainly from middle European markets and Spain. However, by 1990 it had become obvious that a radical change of direction was vital if a future was to be assured. Their strategy was changed to become a major supplier of European service station systems which would offer oil companies a competitive edge through technology.

The first goal was partially achieved by the acquisition of Autotank, both a key innovator and the largest supplier of service station systems in Scandinavia. This was combined with the setting up of agents in both west and east Europe. Support, where necessary, is offered by the resources of Europe's largest computer services organisations.

The second goal necessitated a major investment in a new generation of service station system ie one which could satisfy both corporate and national needs.

Modern service station's system requirements

During the last few years, the service station has come of age as a retail outlet with the profit contribution made by dry goods and food being vital to the overall existence of many service stations. However, modern retailing systems, which can optimise cash flow, minimise stock holding and capture all details of the sale, have yet to be introduced in the same scale as in the major supermarkets and 'convenience' store chains. This requires a new breed of retail system which is capable of communicating and translating this mass of data into immediately available information, thus giving the local manager an instant picture of his business whilst linking him directly with the buyer, supplier and administrative chains. This next generation of service station system must not only handle the standard pump, payment and card control functions but:

- be capable of implementation in any country and backed up with an effective support infrastructure
- integrate all functions on site (ie pump and forecourt control, car wash, Point of Sale and stock etc)

with Head Office retail/administrative systems.

- automatically capture details of every transaction.
- be introduced in an evolutionary and flexible basis (ie dependent on local need).
- conform to both corporate and local requirements.
- be flexible to changing requirements.
- be capable of linking into all types of communication networks.
- open up new marketing opportunities.

Service station system of the 1990s

The price performance of PCs together with 'Open Systems' design has enabled these objectives to be met within acceptable costs. An example of this new generation of system is Mannesmann Kienzle's 'PETROPOINT' range of products. Mannesmann Kienzle and Autotank designed this system as a series of building blocks. The foundation comprises a service station platform, with standard service station and convenience store functionality. On top of this are corporate requirements (eg European cards, accounting, purchasing and marketing). A further block houses the individual country modules (ie Weights and Measures requirements, tax regulations, currency) and finally local requirements are added separately.

The result is a family of software modules which can either be linked together or to existing equipment. The 'Open Systems' approach enables the customer to take advantage of continuous innovations in the PC world and to avoid the investment (and future maintenance) of proprietary solutions.

Whatever the system chosen, a key factor in ensuring benefits are achieved is the need for effective and efficient support including training, to ensure the most profitable use of all features.

In summary, it is almost inevitable that most oil companies, and coincidentally their suppliers, will embrace pan-European marketing strategies to improve their overall retail profitability. Consequently, the pan-European service station will soon become reality. However, there are only a few suppliers with sufficient breadth of experience in the service station system environment who can continually develop and support systems designed for this market. ■

Latest oil developments in Sudan

By Naji Abi-Aad, Energy Consultant

The border conflict between Khartoum and Cairo over the Halaib Triangle and the interminable civil war in the south of Sudan have only partly blocked exploration and development activities. At the time when the Canada-based International Petroleum Corporation (IPC) started its committed work on the Delta Tokar acreage, a consortium formed by Arakis Energy Corporation and State Petroleum Corporation, both registered in Vancouver, is preparing a programme to develop fields discovered but subsequently relinquished by Chevron.

In December 1991, IPC was awarded an exploration and development licence covering the two blocks, Delta Tokar and Halaib on the Red Sea. The company has committed itself to a three-phase programme, involving drilling a minimum of six wells during a six-year exploration period.

The Delta Tokar block covers a 28,199 square kilometres (sq km) onshore/offshore area between the Ethiopian border and Port Sudan, comprising Chevron's gas and condensate discoveries at Suakin and Bashayer.

The Suakin-1 well, drilled by Chevron in 1976, achieved flow of 6.9 million cubic feet a day (mcf/d) of gas and 1,158 barrel a day (b/d) of condensates on a 48/64-inch choke from a sandstone reservoir in the Upper Miocene Zeit formation. The 28-foot well net pay had an open flow potential of 17.4 mcf/d of gas and 2,925 b/d of condensates.

A 1,050 km two-dimensional seismic survey shot in the Suakin region by IPC in Spring 1992 showed that the Suakin-1 well was located at a downdip from the crest of the structure indicating that the feature extends significantly to the southeast and is much more pronounced than initially thought. IPC is planning to drill an appraisal well, Suakin-2, in the second half of 1993, five km to the southeast of the discovery well.

Assuming the 28-foot net pay extends over the entire reservoir, Suakin's proven recoverable reserves would be around 831 billion cu ft of gas and 79 million barrels of condensate. If the Suakin-2 appraisal well is confirming the existence of other, deeper reservoirs, as the gas log indicates, the potential could easily amount to 15 trillion cu ft of gas and 1.5 billion barrels of condensate.

IPC's current plans are to start production from two wells through an early production system upon completion of successful tests at Suakin-2 and re-entry of Suakin-1, which had been abandoned. Its agreement with the government gave the latter the option of taking the produced gas through a pipeline which IPC has offered to build. If after six months this option is not exercised, IPC can flare the gas and sell the condensate.

The 10,304 sq km Halaib block covers an area on the border with Egypt, over which Egypt claimed sovereignty and declared the IPC concession 'illegal'. Cairo announced that under an 1899 treaty, Khartoum has no authority to sign exploration agreements for acreage north of latitude 22°N which is considered the 'political' boundary between the two countries.

Sudan, however, believed an 'administrative' boundary, agreed in 1902, which runs north of the political border, entitles it to allow operations north of 22°N. IPC, waiting for a settlement of the dispute, noticed that Egypt has been offering a large block which runs south of its 'political' boundary with Sudan and in fact includes acreage targeted for exploration by the company itself.

The interest in exploration in the region of the Red Sea and Gulf of Aden has been recently revived following the publication by the World Bank of a study on the hydrocarbon potential in the area. The data and analyses gathered so far have been judged to be promising and likely to encourage oil companies to seek licences in this region.

In another development, the Sudanese government has been recently sounding out interest in the two exploration blocks held by a Total-led consortium, although the French company affirmed that it has not been asked by the government to transfer its interests in the acreages. These include the 118,348 sq km Block B around Muglad in the south, awarded in November 1980, and the 56,955 sq km Block C awarded in 1981.

Total has virtually ceased all activities in the country since 1984 and continues to wait for an eventual settlement of the situation in the south to resume its operations.

In June last year Chevron completely withdrew from Sudan after spending some \$1 billion over 18 years, selling its assets to the private local company, Concorp International. At that time, Chevron was holding concessions on two blocks, Melut and Muglad, covering around 170,000 sq km. Sudanese-owned Concorp subsequently sold the former Chevron concessions to the Sudanese government which, in December 1992, awarded the Canadian consortium, Arakis Energy Corp. (75 percent) and State Petroleum Corp. (25 percent), a production-sharing agreement covering the two blocks. The structures discovered there by Chevron are estimated to contain 280 million barrels of recoverable reserves out of a total 1.4 billion barrels of oil in place.

Arakis and State, which are reportedly searching for other partners on the acreages, are planning for an initial oil production of 40,000 b/d by mid-1994, mainly from the Abu Ghabra field.

In November 1991, the Sudanese government decided to resume drilling operations at Abu Ghabra and asked the Romanian company Rompetrol to complete the drilling of one well and to drill two new extension wells in the same region. The field was brought on-stream at the beginning of July 1992 at an initial rate of 2,500 b/d supplied to a small refinery with the same capacity located nearby.

Refined products

In the expectation that oil will be eventually produced in the south the government has been planning to install a 20-25,000 b/d topping plant, presumably at Kosti in the White Nile basin near the oilfields as there is no pipeline to carry the crude to the 23,800 b/d Port Sudan refinery. This project would increase the country's total capacity to 45-50,000 b/d - more than enough to cover domestic consumption currently estimated at about 40,000 b/d. ■



CONSULTANT LIST

Members of the Institute of Petroleum offer consultancy services in a wide range of petroleum industry subjects. Currently about 450 members offer 52 different categories of expertise.

A handbook of all consultants indexed by category is available from the Institute for £12. (Payment by cheque or credit card with the order.)

Alternatively a list of consultants in any category will be provided free of charge on application (maximum 2 categories).

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Anyone interested should contact Jo Howard-Buxton at the IP, or send a request for the handbook, together with cheque/credit card details to: Technical Department, Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR.
Tel: 071 636 1004. Fax: 071 255 1472.

Standards revealed

A seminar and workshop 'Upstream Standards and the European Single Market' was held at the Institute of Petroleum on 4 May. This seminar was jointly sponsored by the Institute of Petroleum, the UK Offshore Operators Association and the 'CRINE' project. Delegates were updated by five speakers in the morning and then participated in discussions with the speakers and seven other experts as panel members in the afternoon.

The Chairman, **Steve Docherty** from Esso Exploration & Production, outlined the purpose of the seminar – to raise awareness of the importance of standards to the future success of the upstream industry internationally.

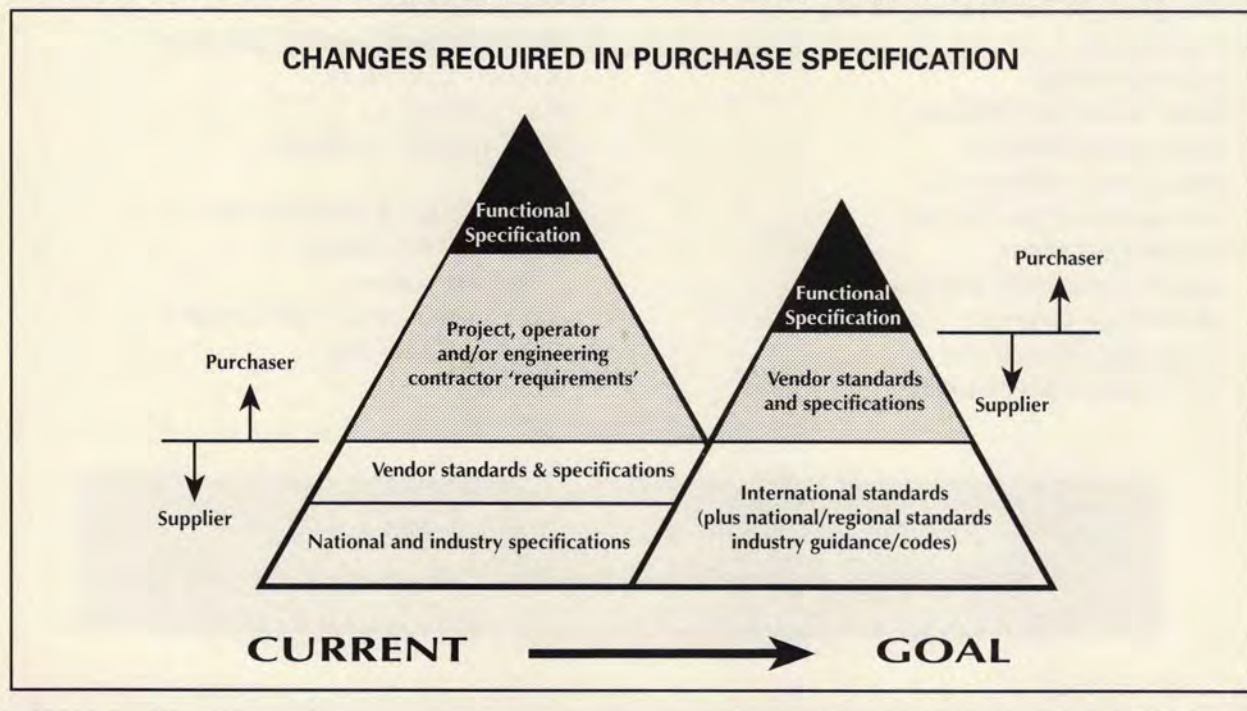
Geoff Thorp, Executive Secretary of the E & P Forum, described the historical background of standardisation. The E & P Forum set up their Standards Subcommittee in 1987 with the role of acting as a 'catalyst' in the working of standards with the American Petroleum Institute (API). In 1987/88 they joined with the British Standards Institution (BSI) to set up PSE/17 as the committee to match the International Organisation for Standardization Technical Committee (ISO/TC 67) and interface with the European Committee for Standardization (CEN) in providing standards for the petroleum industry. The E & P Forum is now a recognised non-governmental organisation in the international standardisation process.

Graham Thomas, Manager Standards, for BP and the current Chairman of PSE/17, who now coordinates the oil

industry input into ISO for BSI, gave an excellent summary of this complex topic. He illustrated the attitude changes in applying standards and purchase specifications. The industry needs to adopt a more 'black box' approach to trusting the quality of the products offered by the vendor.

The diagram below shows two triangles illustrating the current make-up of a typical purchase specification and the future goal. More attention to vendor's standard products and elimination of purchaser prescription by having essential user requirements embodied in common international standards will bring real savings in documentation, time and costs. 'The goal is specifications based largely on functionality. To this end, the international industry is working in ISO/TC 67 to develop these international standards. The work programme is already approaching 100 standards, most of them based on the tried and trusted API standards that have served the industry well for more than 70 years. The first dozen of these should be published later this year. An advisory group ISO/TC 67/AG 3, convened by Neil Reeve of Shell International, is planning the future scope and direction of the industry programme.'

He also updated delegates on the status of the issues following a meeting with Ad Hoc Work Group number 7 (AH/7) of CEN, the European standardisation body, in Brussels the previous week. The European Commission through CEN has now confirmed its intention to adopt international standards by parallel voting as provided for by the Vienna Agreement. They intend to contract the work to ISO on an industry agreed time schedule to avoid duplication of effort and the risk that we will end up with European standards we do not want. The industry has historically supported the drive towards international rather than European standards and is keen to work with API in the ISO framework. He said the philosophy for this is 'Do it once, do it right and do it internationally.'



Mike Spanhel from the Production Department of API in Dallas then gave a presentation on the outcome of an internal Work Group review, which was approved by the Exploration & Production Operating Committee in December 1992. The recommendations are far-reaching and a milestone towards achieving international standards. 'API would work actively within ISO in the short term to establish key standards with worldwide currency', he said. API will place its considerable resources behind providing effective intellectual input to writing and maintaining standards by active participation in the ISO process on behalf of the global petroleum industry; they will also maintain the links with international counterparts to discuss further synergies. He went on to say that 'API is also offering publishing assistance to ISO in order to help speed up the availability of key standards' and it is envisaged that by the end of the year some 90 standards will have been rewritten or converted to ISO format. API will now adopt this format for all future revised and existing standards.

'Do it once, do it right and do it internationally'

Geoff Strawbridge, Secretary to the Board of BSI, gave a punchy talk explaining the 'Utilities' Directives. The Treaty of Rome prohibits any discrimination on the grounds of nationality and European standards will therefore replace all national standards to comply with the 'New Approach' and 'Procurement' Directives. Materials and services must be purchased on an open market basis, although derogation can be applied for and he gave delegates some comfort when he said, 'It is likely that there will be at least a couple of legal grounds on which it would be acceptable to delay conforming to the strict letter of the law on applying the utilities directives.'

'CRINE - an acronym for Cost Reduction Initiative New Era'

Dick Luedtke, Manager Facilities Engineering and Construction for Hamilton Brothers Oil & Gas, then gave a stimulating talk on the potential for saving costs by changing attitudes from the 'inflexible, illogical and unprofitable' approach which has characterised many of the field developments in the North Sea in the past. He outlined the 'CRINE' project, an acronym for Cost Reduction Initiative New Era (see April issue, *Petroleum Review*). In some areas it may be necessary to create standards, in others to eliminate them. The work groups reporting through a Steering Committee are due to present their preliminary findings to UKOOA executives in September and it is the intention that this gives clear direction on how to achieve a one-third reduction in costs in the next two years. 'Some jobs will be eliminated, there is no ducking it,' he said, 'but these are necessary to make the best of the window of opportunity for the industry to survive with even greater consequence to loss of employment. If we don't change how we do things, there will be no oil industry as we know it today. How do we

know we are right? Instinct tells us we are right and although we are touching sensitive areas, no one has said you are wrong.'

This provided the basis for some lively debate over lunch and for the afternoon sessions when the speakers were joined by the panel members. These included:

Alain Loppinet	Manager Standards, Total Oil in Paris
Neil Reeve	Head of Standards for Shell International in The Hague
Bob Snudden	Director of the Engineering Equipment and Material Users Association
Bryan Taylor	Director Technical Affairs for the UK Offshore Operators Association
Ken Homewood	Operations Director for GP-Elliott Electronic Systems and Chairman of the Energy Industries Council Standards Committee
Leslie Teasdale	Technical Director for the British Pump Manufacturers Association
Alan Tidmarsh	Head of Mechanical Department at BSI

The panel discussions were in two parts. The first addressed issues from an operator's or user's perspective and the second concentrated on applying standards from the contractor's and manufacturer's perspectives. Panel members gave a brief resumé of their views and what they hoped to get out of the day and delegates then asked questions on a wide range of topics that illustrated the concerns that the industry has.

Summary

Steve Docherty summarised the discussion succinctly at the end of the day. He said that he had noticed positive support for the API initiatives and a resolve to use international standards. He was pleased to see that the IP is now taking up the challenge of supporting this effort on behalf of the UK industry and negotiating a contract with BSI to provide secretariat services to the PSE/17 committee and its subcommittees working on materials and equipment for the petroleum and natural gas industries.

Questions posed by Graham Thomas were 'What are the standards needed internationally by the oil and natural gas industries?' and 'Which standards are crucial for upstream procurement in Europe?' These will need input from the industry, in particular to assist in the prioritisation and planning process being undertaken by the Advisory Group (AG/3). 'Standardisation in itself is not necessarily a cost saver. The key development and operational drivers need to be examined. There is wide support for the CRINE initiative and the work on standardisation, together with the resolve to implement the cultural changes implicit from CRINE, could result in considerable benefits.'

An independent vehicle is required to follow up the CRINE recommendations and implement them. 'The Institute of Petroleum is understandably keen to become the forum to make this happen and to maintain the momentum of interest that cost reduction has attracted. Its traditional technical strengths in compiling standards and codes of safe practice and its independence in coordinating the input from oil companies, manufacturers and suppliers of services make it an ideal candidate to help move from talking to using.'

In closing the day he asked the IP to disseminate the information from the seminar to all interested parties. ■

Steve Docherty and Sjoerd Schuyleman

Education and Training Committee

Recently the Education and Training Committee of the Institute has been giving serious consideration to its role, purpose and method of operation. The Committee reached the conclusion that its prime function is to provide a forum for members so that they can be kept informed of developments and activities in the field of education and training, and that this can be effectively carried out through a regular series of evening discussion meetings, together with conferences on topics which require more detailed consideration. The quarterly two-page contribution to *Petroleum Review* will be continued as a regular feature and method of communicating with all members of the Institute. It was also concluded that these three main strands of activity do not justify the retention of a permanent standing committee and at its meeting on 30 March the Institute of Petroleum's Council reluctantly agreed that the Education and Training Committee should formally be disbanded but the three activities above should be actively continued.

Many members of the Institute and employees of member companies have given active support to the operations of the Committee in the past and all members of the current Committee have pledged their support and reaffirmed their willingness to help assemble *ad hoc* working parties, as and when required, to address any specific issues. This action should not be taken as any less an interest in or commitment by the Institute to education and training matters, but rather a more efficient method of operation. Bob Edmondson will continue to be the focal point for education and training activities within the IP.

Student prizes

Alan Higgins, Chairman of the IP Aberdeen Branch, pictured here, following the presentation of two IP Student prizes to Herbert Desabe of Uganda for his studies at the Centre for Petroleum & Mineral Law and Policy at University of Dundee and Richard Smith of BP Exploration for his work on the M.Eng Petroleum Engineering course at Heriot Watt University.



Back row from left: Roy Haites, Managing Director of British Bits Ltd and Richard Green, Branch Secretary. Front row from left: Herbert Desabe, Alan Higgins and Richard Smith

The education and training activities are being well supported. A planning group is working on the conference scheduled for 11 November which will build on the success of last year's conference on Standards of Competence. Also the full evening discussion group programme which has been arranged for 1993 got off to a good start with a lively and informative evening on the 'Learning Organisation' led by Terry Bowden of Shell.

Members are reminded that no formal registration is required for the evening meetings, all members and their friends are welcome on these occasions. If members have any special interests, concerns, suggestions or contributions on any matter relating to the whole field of personnel, education and training, or wish to be included on the regular mailing list for notices, please contact Bob Edmondson.

Boost for industry school links

Education industry link schemes relevant to engineering are to be combined to provide an improved service to schools. The Institution of Electrical Engineers 'UNCLE' scheme will be absorbed into the well-established Neighbourhood Engineers scheme to help teachers and young people. Both schemes help and encourage engineers and technicians to assist teachers in the classroom and to show secondary-school pupils the way technology is related to the world of work as well as fostering economic and industrial awareness, which is a cross-curricular theme within the National Curriculum.

Project UNCLE's engineers were specifically directed toward assisting teachers with examination project work and hence required engineers to make a regular time commitment to attend lessons. The enhanced Neighbourhood Engineers scheme involves more than 10,000 engineers in over 2,400 schools throughout the country. The education group within the Institute is aware of some of these engineers working within the oil industry who act as neighbourhood engineers and receive requests from these engineers and others for information related to the oil industry. If you, or your colleagues, would like to network with other neighbourhood engineers working within the oil industry or require further information, please contact Bob Edmondson at the Institute.

The Learning Organisation

The April meeting of the Personnel, Education and Training Discussion Group was billed 'The Learning Organisation in Practice - What does it mean for the oil industry?' Terry Bowden of Shell U.K. Downstream presented his views on why in the future organisations will need to be learning organisations if they are to maintain their competitiveness. This led to a lively and stimulating discussion. Taking as his theme the fact that there is constant and increasing rate of change everywhere and that in order to stay ahead and be competitive an organisation's rate of learning must be greater than the rate of change around it, Terry used as his definition of a Learning Organisation 'an organisation which facilitates the learning of all the members and continually transforms itself'. Essential elements of a learning organisation were that it should think through its business problems on a systems basis; that its staff should have personal competences and mastery of their skills; that its forward planning should consider a variety of scenarios and thus challenging mental models; that both the employees and the corporation have the same aspirations and should share visions of the same objective; and that team

... education and training

learning should be an integral part of the organisation's activities. Terry suggested prime exponents of these essential elements with examples of companies well known in the world market-place. Inevitably his own organisation figured in some of these but perhaps the most memorable was the shared vision of both the corporation and the employees of Disney which is to 'make people happy'. Terry's wide knowledge of the subject enabled him to respond helpfully to the many questions with suggestions for names and publications for further reference.

The Personnel, Education and Training Discussion Group meeting on 22 September will be on a related theme of 'Action learning'. All members and friends will be most welcome.

Women in the workforce

The quality and the quantity of women's participation in the workforce continues to grow. Karren Brady is now managing director of a first-division football club and Caroline Gledhill recently won the annual Young Engineer for Britain Award. What's the situation in the oil industry? Come to the Institute at 5.45 on Wednesday, 9 June for the Personnel, Education and Training evening discussion group meeting, when Jill Kenny, Plant Manager of Esso's West London Terminal, will present her views of the practicalities of the situation and Lois Leeming of Opportunity 2000 will describe why a balanced workforce of men and women in the future will be essential for the future competitiveness of organisations.

To university without A levels

Despite their unwieldy name and ambiguous standing, plus a low level of awareness among the public and employers, General National Vocational Qualifications (GNVQ) are alive and well and look likely to expand in both breadth and implementation. They recently received a boost when the ground rules for modular A level examinations were revised to bring in an era of flexible credit accumulation and transfer from Further to Higher Education. Guidelines have been announced which will remove the greatest obstacle to complete reform of post-16 route to university entrance and the professions. The untouchable A level 'gold standard' examination boards now have the official approval to create A level syllabuses with up to six modules which in some subjects will permit interchange with the new General National Vocational Qualifications at level 3. The guidelines are an important step to achieving parity of esteem between academic and vocational education; they pave the way for core modules or units which could be taken before students decide whether to take A level or GNVQ. The latter provide a genuine alternative to A level qualifications for the increasing number of students staying on in full-time education beyond the age of 16.

GNVQs are broader based than the more job-specific NVQs and are being piloted in 90 schools and further education colleges this year. They are made up of eight mandatory and four optional units deemed equivalent to two A levels. Modular A levels have already been piloted for some time. However, the recent official backing will encourage further development on the modularised units and permit interchange between A levels and GNVQ at level 3. This equivalence is extremely important as more than 50 universities have promised that all applicants securing a GNVQ level 3 by Summer 1994 will be guaranteed a university admission interview. Parity between GNVQ and A level is thus coming closer.

Tony Fox Memorial Fund

The Institute of Petroleum Tony Fox Memorial Fund was established in 1985 by donations from friends, colleagues and companies to commemorate the life of the late A F Fox, MBE, ERD, ARSM, BSc, FGS, F Inst Pet.

A selection panel, comprising members of the Institute who were colleagues of Tony, each year considers applications for a scholarship from students who have been accepted for the one-year post-graduate MSc course in petroleum geology at Imperial College and who are not in receipt of any other national or company awards.

Tony Fox, who died 10 years ago, was awarded a scholarship to study petroleum geology at the Royal School of Mines where his studies were interrupted by war service. He later worked as a geologist in the Middle East and was Operations Manager for BP in the United Kingdom and Europe from 1967-72, during the heady days of the award of the early blocks and the initial development of the North Sea oil and gas fields. He later became Managing Director for exploration and production at Tricentrol. Tony was a member of the Institute for over 30 years, served on the Council from 1967-75 and was twice Chairman of the IP Exploration and Production group and Chairman of the IP Membership Committee.



Mrs Anne Fox with Ian Ward and Julian Keites (left) at the Institute following the presentation to Julian of the Tony Fox Memorial Award for 1992/93.

Last year 14,000 people used a BTEC qualification to enter a degree course. The target is that by 1996 a quarter to all 16-year-olds should be participating in GNVQ courses. Courses available this year include business and manufacturing. In subsequent academic years the number on offer is intended to expand to include science, construction, engineering, technology, management and distribution. In addition, there are mandatory units based on core skills in communications, application of numbers and information technology. GNVQs are designed for delivery in schools and colleges with limited access to the workplace; they are unit based so the students can accumulate credits and are usually assessed internally by the teaching staff. ■

Institute News

New Collective Members

American Petroleum Institute

Central Abstracting & Information Services

275 Seventh Avenue, New York, NY 10011, USA

P Nominated Representative: Ms Monica Pronin, Director

The API Central Abstracting & Information Service (CAIS) provides for its members online services and abstract bulletins in the fields of petroleum refining and petrochemicals, transport and storage, petroleum substitutes, catalysts, and health and the environment. Worldwide sources covered include patents, technical and trade journals, conference proceedings and newsletters. API/CAIS also publishes the Guide to Petroleum Statistical Information.

Maersk Olie og Gas AS

50 Esplanaden, 1263 Copenhagen K, Denmark

IP Nominated Representative: Mr Ole Sidelmann Jorgensen

Part of the A P Moller Group, Maersk Olie og Gas AS undertakes, as operator, exploration, appraisal and development of new fields, as well as the day-to-day operation/production for Dansk Undergrunds Consortium (DUC). DUC is a consortium consisting of A P Moller, Shell and Texaco, which is engaged in exploration and production in the Danish part of the North Sea.

Wallem Limited

14 Charles II Street, St James's, London SW1Y 4QU

IP Nominated Representative: Mr M J Steele, Director

The Wallem Group, based in Hong Kong, has offices in 14 countries. The Group comprises a ship management company, ship agency in various South East Asian countries and a shipbroking company. The ship management company has strong links with certain major tanker owners.

Malta Branch Annual Dinner

Amongst the guests were the Hon. Dr George Bonello Dupuis, Minister for Economic Services, Malta, and Ian Ward, IP Director General. In his after-dinner speech Dr Dupuis spoke of the Maltese government's full support for the efforts of MOEX and Medserv to establish Malta as an administrative centre for the oil and gas industry in the Mediterranean. He said, 'The creation of the Mediterranean Centre for Petroleum Studies and other initiatives underline Malta's dedication to



Guests at the Annual Dinner of the Malta Branch held on 23 April

the realisation of this aim... On behalf of the government, I would like to assure you that all possible help and assistance will be provided to organisations wishing to set up base here to service the region.'

Mr Ward outlined the work and achievements of the Institute of Petroleum to the assembled Branch members and guests. He pointed out that 1993 was the 80th anniversary of the founding of the IP and that from those early beginnings it is still going from strength to strength – it has now more members than ever before. In recent years, greater emphasis had been given to the upstream side of the industry, while maintaining the Institute's interest and activities in the downstream sector.

Now everyone involved in the IP was making a concerted drive towards Europe – to recruit more members and to set up new IP branches. In particular, it was hoped that many of the IP codes of practice would be accepted as the basis for the development of new European standards.

Mr Ward summarised the achievement of the IP during the last year, listing the 15 IP-sponsored research projects, the 3,700 publications sold and the 100 branch meetings held. He gave details of the new codes of practice which had been published, of which the Gasoline Vapour Emission guidelines deserved special mention as it had been accepted as an authoritative document in many parts of Europe.

Around the Branches

Aberdeen

8th June: Visit to Peterhead Power Station

UK Deliveries into Consumption (tonnes)

Products	† Mar 1992	* Mar 1993	† Jan-Mar 1992	* Jan-Mar 1993	% change
Naphtha/LDF	286,110.0	334,416.0	861,825.0	888,539.0	3
ATF - Kerosene	537,302.0	486,495.0	1,477,841.0	1,416,566.0	-4
Motor Spirit	2,004,690.0	2,045,879.0	5,745,499.0	5,574,206.0	-3
of which unleaded	908,270.0	1,043,562.0	2,558,114.0	2,816,148.0	10
of which Super unleaded	113,117.0	127,574.0	314,601.0	343,703.0	9
Premium unleaded	795,153.0	915,988.0	2,243,513.0	2,472,445.0	10
Burning Oil	238,912.0	293,053.0	789,628.0	840,386.0	6
Derv Fuel	951,377.0	1,079,584.0	2,679,597.0	2,861,501.0	7
Gas/Diesel Oil	691,619.0	813,687.0	2,198,421.0	2,228,126.0	1
Fuel Oil	1,016,578.0	949,455.0	3,151,510.0	2,877,511.0	-9
Lubricating Oil	63,901.0	66,923.0	193,950.0	190,326.0	-2
Other Products	585,773.0	677,467.0	1,718,581.0	1,865,171.0	9
Total above	6,376,262.0	6,746,959.0	18,816,852.0	18,742,332.0	0
Refinery Consumption	502,745.0	512,121.0	1,483,272.0	1,551,270.0	5
Total all products	6,879,007.0	7,259,080.0	20,300,124.0	20,293,602.0	0

† Revised with adjustments * Preliminary n/a Not Available

Institute News

Shetland

15th June: Shetland Towage – Tug Operations at Sullom Voe

Southern

15th June: Visit to the Petroleum Centre, Royal Ordnance Corps, Wimbourne

Yorkshire

16th June: Golf Tournament – Otley Golf Club

New Collective Members

Dr A Abugre, Tema Oil Refinery Co Ltd., P O Box 599, Tema, Ghana

Mr C Akerele, InCapital Ltd., LBS-Forum, 97 Cromwell Road, London SW7 4BN

Mr A Alderman, Ryko International Ltd., Unit 11 Broadoak Ind Estate, Broadbridge Heath, Horsham, West Sussex RH12 3JR

Mr A R Baker, 89 Langham Road, Teddington, Middlesex TW11 9HG

Mrs A J Barber, Grimley JR Eve, 2 St Philips Place, Birmingham B3 2QQ

Mr R F Barton, Sedgwick Energy Ltd., Sedgwick House, The Sedgwick Centre, London E1 8DX

Dr M K Baru, Promas, NNPC HQ., Falomo-Ikoyi, PMB 12701, Lagos, Nigeria

Mr M R Bateman, 17 Thirlmere Avenue, Lower Edge, Elland, West Yorkshire HX5 9PN

Mr D A Berry, D Berry & Co (Pipe Fitting Supplies) Ltd., Unit 130, Middlemore Ind Estate, Kentish Road, Handsworth, Birmingham B21 0AY

Mr M G Berry, D Berry & Co (Pipe Fitting Supplies) Ltd., Unit 130, Middlemore Ind Estate, Kentish Road, Handsworth, Birmingham B21 0AY

Mr C A Birchall, 28 East Avenue, Stockton Heath, Warrington WA4 2BA

Mr D R Brown, Jaques & Lewis, 2 South Square, Gray's Inn, London WC1R 5HR

Mr T C Bush, 6 Springhill Close, Great Bromley, Colchester, Essex CO7 7HU

Mr N M Butter, FSSL Ltd., Castle Ind Estate, Ellon, Aberdeenshire AB41 9RF

Mr T J Calveley, Esso Petroleum Co Ltd., Fawley, Southampton, Hampshire SO4 1TX

Mr J Cargill, ASCO., South Bay Oil Service Base, PO Box 19, Peterhead, Aberdeenshire AB42 6UW

Mr R J Chadderton, 3 Falcon Close, Lightwater, Surrey GU18 5NB

Mr D K Chambers, Loffland Nabors UK Ltd., Kirkton Av, Pitmedden Road Ind Estate, Dyce, Aberdeen AB2 0DP

Mr B Clay, Consolidated Contractors International Co (SAL), Yemen – Masila Export Project, PO Box 3015., Aden, Republic of Yemen

Mr R M Conlin, 228 Moss Delph Lane, Aughton, Ormskirk, Lancs L39 5BJ

Mr P S Cook, Genesis Personnel, 79 Broad Street, Peterhead, Aberdeenshire AB42 6JL

Mr S J D Craddock, 73 Carlton Drive, Leicester LE18 1DG

Mr J Cunningham, 6 Cliffmer Close, Cheadle Hulme, Cheadle, Cheshire SK8 5JH

Mr J Dalton, 25 Mearns Street, Aberdeen AB1 2AT

Mr P M Delaney, Nations Bank, 26 Austin Friars, London EC2N 2EH

Mr R Drake, Putnam, Hayes & Bartlett Ltd., Lansdowne House, Berkeley Square, London W1X 5DH

Mr J M Fisher, Gulf Oil, The Quadrangle, Imperial Square,

Cheltenham, Glos GL50 1TF

Mr S Gibb, HER Group Ltd., Howe Moss Place, Kirkhill Industrial Estate, Dyce, Aberdeen AB2 0ES

Mr R A L Goodridge, 37 North Road, Midsomer Norton, Bath, Avon BA3 2QB

Mr K J Goodwin, 82 Mansionhouse Gardens, Langside, Glasgow G41 3DP

Mr N C Griffin, Spread Eagles, Melbury Abbas, Shaftesbury, Dorset SP7 0DU

Mr I S D Grime, Whessoe Varec Ltd., Heighton Lane, Newton Aycliffe, Co Durham DL5 6XZ

Mr B J Hayes, 32 Ravenswood Road, Heswall, Wirral, Merseyside L61 6UA

Mr T F Hocking, 13 Churchill Meadow, Ledbury, Herefordshire HR8 2DG

Mr A T Hope, 52 Latymer Court, Hammersmith, London W6 7JE

Mr R Hopkinson, 75 Beech Road, Hale, Altrincham, Cheshire WA15 9UY

Mr B Horsburgh, 7 Lilyloch Road, Stonehaven, Kincardineshire AB3 2WB

Dr P Horsnell, Oxford Institute for Energy Studies, 57 Woodstock Road, Oxford OX2 6FA

Mr P A Huffmann, 21 Granard Road, Wandsworth Common, London SW12 8UJ

Mr D Hurst, 4 Ryegate Road, Crosspool, Sheffield S10 5FA

Mr G Johnson, The Cottage, 85 Kingston Road, Willerby, Hull, North Humberside HU10 6AH

Miss O Jovanovic Moncur, Trans Oil Prop Ltd – Cyprus, c/o 61 Randolph Avenue, The White House, London W9 1DW

Mr S J Leach, A T & T / NCR, 2096 Coventry Road, Sheldon, Birmingham B26 3YU

Mr I J Machin, 18 Thornash Close, Horsell, Woking, Surrey GU21 4UP

Mr B R McDonald, Dept of Trade & Industry, 1 Palace Street, London SW1E 5HE

Mr G Mitchell, Enterprise Engineering Services Ltd., Craigshaw Drive, West Tullos, Aberdeen AB9 2WH

Mr I Morrow, Whessoe Varec, Heighington Lane, Newton Aycliffe, Co Durham DL5 6XZ

Ms L Murchie, BP Oil UK Ltd., 4th Floor, Arndale House, Manchester M3 4AP

Mr M H North, Aberdeen Trident Consultants Ltd., 58 Bridge Street, Aberdeen AB1 2JH

Dr D M Owen, Chemisolve Ltd., Thornley House, Carrington Bus Park, Carrington, Urmston, Manchester M31 4DD

Mr R Pandit, Inter-Commerce(Import & Export) Ltd., 44 Ellesmere Avenue, Mill Hill, London NW7 3EY

Mr J Papandreou, Petromarine S.A., PO Box 80137, Botsari 16, Piraeus 18538 Greece

Mr R C Phillipson, BP Oil UK Ltd., 4th Floor, Arndale Hse., Arndale Centre, Manchester M4 3AP

Mr R M Powell, Robert Powell Associates Ltd., 7 Lynmead Close, Edenbridge, Kent TN8 6LL

Dr I Price, IF Price & Associates Ltd., Pewley Fort, Pewley Hill, Guildford, Surrey GU1 3SP

Mr T Satisan, Gulf Agency Co (Dubai) Pvt Ltd., P O Box 2404, Dubai, United Arab Emirates

Mr C D Stewart, Inchcape Testing Services UK Ltd – Caleb Brett, Wellheads Crescent, Dyce Ind Park, Dyce, Aberdeen AB2 0GA

Mr R Sutcliffe, Bay Cottage, Low Road, Dovercourt, Harwich, Essex CO12 3TS

Mr E Threlfall, 11 Falcon Drive, Chadderton, Oldham, Lancs OL9 0EY

Mr A Tullis, Ardoyne, Oyne, Inch, Aberdeenshire AB25 6RQ

Mr M Velody, Apt 5, 588 Kingsland Road, London E8 4AH

Mr W F Venn, 76 Westgate, Southwell, Notts NG25 0JX

Mr J H West, D Berry & Co (Pipe Fitting Supplies) Ltd., Unit 130, Middlemore Ind Estate, Kentish Road, Handsworth, Birmingham B21 0AY

Mr J A Williams, Whessoe Varec, Heighington Lane, Newton Aycliffe, Co Durham DL5 6XZ

Fuel contamination monitor

A new portable organic vapour analyser manufactured by Riken Keiki of Japan and distributed in the United Kingdom by Weatherall Equipment & Instruments Ltd is available to detect low concentrations of combustible gases or organic vapours in the soil, ground water or atmosphere.

The detecting principle is by flame ionisation detector

using a special hydrogen storage cylinder to give 30 hours of continuous operation. A total of 14 different combustible gases and organic vapours can be monitored in three different operating ranges from 0 to 2000ppm. There is an internal data logger for up to 1000 measuring points on any gas or mixture of gases connected through an RS-232C.

Safe tanker access

Instant Zip-Up have devised a hydraulic cantilever platform which can be used at varying heights to conduct safe sampling of bulk deliveries from tankers.

The platform has a load capacity of 200kg and its height is adjustable between three and four metres. A hydraulic ram powered by a hand-pump is mounted at ground level and operates both the raise and lower functions. There are no trailing leads or restrictions on use in hazardous areas. The platform, which is constructed from steel, allows side or rear access to the tanker and can be tailored to suit any specific situation.

Its features include failsafe valves, braked wheels and

screw downjacks. An optional platform opening gate is available to gain access from platform to roof.



Safe solvent

A new biodegradable industrial and marine solvent, IMS 801, has been launched by The Seal Centre.



Developed by AW Chesterton Company this multi-purpose water-based detergent penetrates, emulsifies and removes dirt, oil, wax and mildew and should assist companies to reduce or eliminate the use of 1.1.1 Trichloroethane and other chlorinated solvents.

Trevor Markham, The Seal Centre's Sales Director, reports that, 'IMS 801 has enormous potential over a wide range of applications. With the phasing out of ozone-depleting products based on 1.1.1 Trichloroethane, industry is looking for an environmentally safe alternative. IMS 801 provides an efficient and cost-effective alternative'.

LNG reliquefaction-storage-sendout system

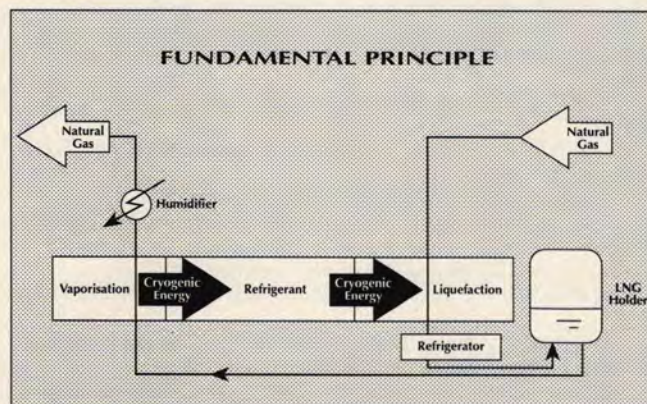
Osaka Gas Co. Ltd. has developed a natural gas reliquefaction-storage-sendout system as a replacement for conventional gas holders.

A feature of the system is the considerable reduction in electric power consumed for cooling, which is achieved by exploiting the LNG cryogenic energy. Verification tests will be conducted on a 1\10 scale test plant for about 18 months from February 1994.

Natural gas is cooled and stored in liquid form during the night. In the evening peak consumption periods the liquid gas is vaporised and sent back into the pipeline. In contrast to conventional gas stored in gas holders, liquefaction reduces the volume of natural gas to approximately 1\600 volume, and leads to considerable savings in tank size and plant area. Ultra low temperatures are required to liquefy it at -120°C .

A new refrigerant has been developed based on a mixed alcohol material. The cryogenic energy released at the time of vaporisation is stored by the refrigerant, then released when the

gas is liquefied, thereby reducing the electric power consumption to approximately one-quarter of the normal amount.



Tanker spill response kits

The new Tanker Spill Response Kits (TSK) from 3M Environmental Safety enable tanker drivers to carry their own sorbent materials as a contingency against petrol spills. The kits have been designed with the new Road Traffic (Carriage of Dangerous Substances in Road Tankers and Tank Containers) Regulations 1992 in mind.

Available in two sizes, the kits are lightweight and compact, and help drivers to comply with this legislation by ensuring that an adequate supply of absorbent material is always available near the fuel unloading point before commencing with the delivery of petrol.

Clearly labelled and supplied in a resealable bag which can easily be stored within the driver's cabin, each kit contains a variety of sorbent materials to facilitate the swift containment, clean-up and safe disposal of liquid fuel spills.

Suitable for spills of up to 15 litres, the TSK 15 contains 25 oil sorbent sheets and two pillows, whereas the

TSK 30 offers an absorption capacity of 30 litres and holds 50 sheets and two minibooms. To ensure that the correct clean-up and disposal procedures are followed each kit contains a comprehensive guide to disposal as well as a disposal bag and tie.

Offering a high absorption capacity, the sorbent material provides a fast and effective solution to spills and can easily be retrieved without drips or break-ups, thereby making it a clean and compact alternative to sand and granules.



The Port of London Authority have ordered one of RTK Marine's 512 Sea Truck Workboats.

The craft will be operated by the Port of London Authority as part of a service to provide rapid response to oil spills in the Thames. The service is being funded by and set up in conjunction with the Thames oil terminal operators under the banner of the Thames Oil Spill Clearance Association (TOSCA).

Monitoring made easy

Link Hampson's recently introduced 'In-situ KW140 monitor' is designed for detecting petroleum products in monitoring wells. Its simple construction and low cost means that it is suitable both for continuous monitoring of an environmental well and also for check monitoring at periodic intervals.

The KW140 monitors the entire well continuously, regardless of groundwater conditions, the sensing element detects petrol and vapours entering wet and dry monitor wells and will also detect diesel fuel and heating oil in liquid form.

It requires no electrical connection and therefore can be simply retrofitted or used as a periodic testing system thereby reducing the investment without reducing commitment to leak detection and environ-

mental monitoring. To check for any product leaks requires a simple visual check of the sensor body.

The KW140 friction fits over a standard 4 inch diameter well casing, although it can be adapted to a 2 inch size. Installation involves measuring the depth of the well sizing and attaching the sensor and weight retrieval line and then lowering the sensor and weight into the well and positioning the monitor on the well casing.



Core analysis technique

A new x-ray scanning technique has been used by the Aberdeen Rock Imaging Centre (ARIC) to evaluate what is claimed to be the longest-ever single length of whole core - 6.1 metres.

The project, for Elf Enterprise Caledonia Limited and partners Agip (UK) and Hardy Oil and Gas, involved a series of tests on reservoir rock from a high pressure well before it went on to Elf's research laboratory in Pau, France.

Mr Geoff Wilson, Engineering Manager at ARIC, said, 'Previously core has had to be cut into one-metre lengths from the standard 10 metre barrels which come from offshore. By pre-determining geological features such as true dip, main sedimentary and structural features, homogenous sections and drilling induced damage, this technique ensures plugs can be easily and accurately selected for further specific analysis. It is particularly powerful when used in

conjunction with ARIC's CT scanner'.

'The use of x-rays to produce detailed data on whole core within sleeving has never been possible before and represents a major landmark in core analysis management, having a significant impact on core related costs and quality of data acquisition.'

The scanner evaluates core samples through Real-Time Enhanced (RTE) Radiography - which allows the core to be scanned from all angles simultaneously to highlight the main areas of geological significance and to influence decisions on further analysis.

Commenting on the new technique Mr Colin Oswald, operations geology coordinator at EE Caledonia, said, 'The savings in financial, time and data quality terms are significant and the previous 'hit and miss' aspect of traditional core analysis techniques is eliminated.'

Catalyst cuts stack emissions

A new combustion catalyst for boilers and furnaces burning heavy fuel oil has been launched by Water Management & Gamlen Ltd (WM&G) of Droitwich. The company says that the catalyst increases the combustion of carbon particles, so dramatically reducing stack emissions and improving boiler efficiency.

'Ergopol 92', an organic liquid containing metallic compounds, accelerates the combustion of residual carbon

particles (cenospheres) in heavy fuel oils, especially the coarser particles which are common in fuels having a high asphaltene content. This has the dual effect of lowering the emission rate of unburnt carbon particles and improving combustion efficiency. WM&G says initial stack solids emissions are reduced by 50 percent or more, depending on the installation.

The advantage to boiler operators is easier compliance with air pollution

regulations. In addition, fuel economy and boiler efficiency are improved, because Ergopol 92 enables lower excess air to be used while maintaining complete combustion of carbon.

The catalyst is added to the fuel, manually or automatically, during storage tank filling. Average dosage is 1 to 4000, but levels vary according to the asphaltene content of the fuel. No alteration to existing equipment is necessary.

Design appraisal service

Lloyd's Register has added an offshore design appraisal section to its Aberdeen office. Increased local demand for such services stems from the current trend for operators and contractors to establish design centres in Aberdeen, particularly for the modification and refurbishment of North Sea platforms.

A multi-disciplinary team of specialist engineers will deal with design appraisal covering structural, electrical and mechanical engineering, heating, ventilation and air conditioning and pumping and piping aspects.

Economical 3D measuring

An economical 3D measuring system using just one sensor has been developed by Leica UK.

Leica UK were asked by McAlpine Humberoak Ltd (MHL) to develop a measuring system which would be used on site or in the offshore environment and manipulate the information obtained to produce 3D data required for isometric drawings, that is the relationship of flanges and lengths of runs with the replacement item being checked using the same system prior to erection.

The solution was to utilise Leica's ECDS software developed for high accuracy 3D measuring of aircraft and spacecraft components. This

non-contact measuring system uses a method of intersection of angles from two or more precision theodolites. MHL required a system which could be taken offshore. As Sam Gemmell of MHL says, 'It was unrealistic to expect that two theodolites could be used. Therefore, as the tolerances were fairly low it was possible to trade off some of the accuracy inherent in intersection methods and develop a single sensor system based on angle and distance measurements instead'.

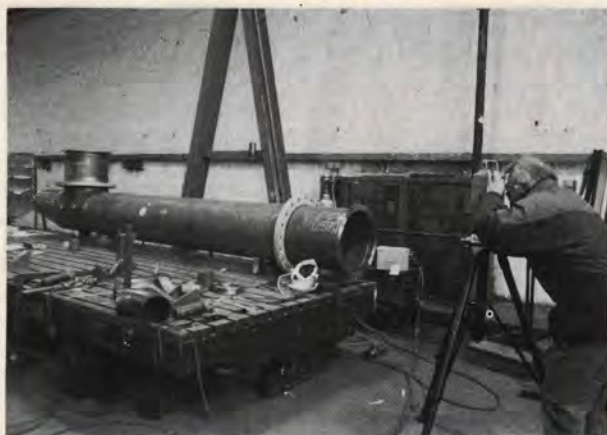
MHL use a special Leica TC2002, the most accurate survey total station, capable of angle measurement to ± 0.5 second of an arc and distance measurement ± 0.2 mm. It is the only total station opti-

mised for both reflective tape and prisms and capable of incidence angles of up to 45 degrees to the target. Also, the compensator can be switched on or off so it can be used in any plane. This means that 3D data can be obtained regardless of the object's position or attitude, ie length, diameter, roundness, angles between flanges, relationships between bolt holes. All that is required from the operator is that he points the sensor to the target and presses the TC2002's record button. There are no complicated set-up routines, no additional hand-held field processors and like ECDS, no requirement for known survey stations or coordinate information. The operator may even move

around the object, building up a full 3D model, using just the single recording function.

The geometric coordinates TC2002 produces are analysed through a module of Leica's ECDS software giving usable 3D data for production and quality purposes on site. Digital data can be downloaded to a CAD system for verification against design modules and for output drawings.

The Leica single sensor package includes one TC2002 total station sensor, a plug-in recording module, a mini prism or tape targets and software. An advantage of the system is that it is possible to upgrade to full ECDS software for use with extra sensors as work develops.



Contacts

Lloyd's Register of Shipping, (Aberdeen)	0224	626626
Osaka Gas Co Ltd	071	493 4088
Instant Zip-Up Ltd	0952	825815
3M Environmental Safety Group	0800	212490
Water Management and Gamlen Ltd	0905	794774
RTK Marine	0202	685581
Link Hampson	0635	524200
The Seal Centre Ltd	0734	753757
Weatherall Equipment & Instruments Ltd	0494	758110
Leica UK Ltd	0908	666663
Aberdeen Rock Imaging Centre	0224	823703

Exploration and production

A one-day seminar and workshop 'Upstream Standards and the European Single Market' was held at the Institute on 4 May. Delegates, representing a wide cross-section of the industry, were updated by the speakers and then participated in two panel discussions. The event is reported on page 280. The seminar was very successful and publicised the IP commitment to make a significant contribution towards international standardisation and codes of safe practice.

The contract with BSI for the IP to provide secretarial services for the PSE/17 Committee, responsible for coordinating the UK industry's input into ISO/TC 67, is close to finalisation.

A draft report on the study of the routine case on subsea equipment operating envelopes is nearing completion. A workshop will be held in Aberdeen to gain industry feedback in the near future. The preparation of a code of safe practice is under discussion. Further review is required before proceeding with work on the non-routine case.

A conference, 'Current Developments in North Sea Drilling Operations', is planned for 8 June to be held in the Cavendish Centre.

Sjoerd Schuyleman was appointed Technical Manager Upstream from 1 February.

Refining and marketing

Comments on the draft Fire Precautions Code received from IP Committees and external organisations to whom it was circulated are being reviewed.

Two Model Codes of Safe Practice, Part 12: Pressure Vessel Examination and Part 13: Pressure Piping Systems Examination, have been published in association with EEMUA.

A draft Code of Practice for Product Uplifts from Service Stations and Customer Premises has been extensively edited and is now being revised to cover the impact of vapour recovery legislation on the uplift procedure. Balloting should take place shortly.

The first meeting of CEN/TC296/WG2 responsible for the design and construction of European non-pressure tanks for the carriage of dangerous goods by road has been held at the Institute with the IP providing the secretariat. During the two-day meeting, attended by representatives from across Europe, a visit was paid to Mobil's Buncefield Terminal to inspect road tankers built to UK designs prior to viewing films in BP House, Hemel Hempstead, of tanker crash experiments carried out at a test ground in Germany.

Electrical Committee obtained details from vehicle manufacturers of electrical energy sources in key fobs used for remote operation of vehicle door locks, burglar alarms, etc. Having considered the possible hazards created on petroleum installations by personnel, especially tanker drivers, carrying these devices, it was proposed that they be categorised similarly to matches and lighters and that equivalent controls should be exercised.

Electrical Committee has formed a working group to consider the need for written guidance on electronic vehicle tagging to ensure compatibility between systems being introduced by companies.

Work has resumed on the preparation of Volume 2 of the LPG Code, which will cover pressure storage at industrial, commercial and domestic premises, cylinder filling plants and transportation.

Petroleum Measurement

A Committee Draft version of the Code of Practice for the Calibration and Maintenance of Retail Metering Pumps/Dispensers is nearing completion.

Editing of PMM Part XIV: Statistics for Statistic and Dynamic

Measurement; and the revision of figures have been completed. The document is expected to be published shortly.

Test method standardisation

The 1993 edition of the 'Standard Methods for Analysis and Testing of Petroleum and Related Products' was published on schedule.

A questionnaire prepared jointly by the IP and BSI regarding the requirement by industry of a book of petroleum product specifications has been completed. The consensus is that industry wants such a publication. Work has started on its production and it is planned to publish it in 1994 as volume 3 of the IP Standard Methods for Analysis and Testing of Petroleum and Related Products.

Environment

The 'Code of Practice for the Investigation and Mitigation of Possible Petroleum-Based Land Contamination' has been published and sales are going well. The conference 'Petroleum-Based Land Contamination', which complements the code, has been arranged and will take place on 25 May.

The work on a sector application guide for BS 7750 for Oil Refineries dealing with the environmental effects assessment continues and the first draft was submitted for evaluation and comment by a refineries sub-committee.

Work also continues on the research project to find an alternative solvent to CFC 113, Freon, as the extraction solvent for the 'Oil in Water Test'.

The project, 'Fate and Effects of Marine Pollution in UK Waters', has been completed and copies will soon be available for study in the IP Library.

Health

An international workshop co-sponsored by the Institute was held at Nottingham University to coordinate the procedures used in estimating worker exposure to hydrocarbon in health studies taking place in the United Kingdom, United States and Australia.

An air quality working group has been established to co-ordinate industry representatives on technical committees in the Department of Health. This working group will include representation from the motor industry.

A draft document on health screening for benzene has been produced and may be used as a basis for developing guidelines.

A Code of Practice for Occupational Hygiene Audits has been published.

Microbiology

The 'Microbiology Fuels Task Force' sub-committee has started work on the document 'Guidelines for the Investigation of Microbial Content of Distillate Fuels' with a number of the sections having been drafted.

Work continues on the revision of the IP Tank Cleaning Safety Code to incorporate guidance on the cleaning of tanks which have contained product containing micro-organisms and/or biocides and the removal and disposal of waste waters and sludges which contain micro-organisms and/or biocides.

A conference on the 'Developments in Microbiological Control in Metal Working Fluids' has been arranged for 14 October 1993.

John Hayes, Technical Director

FORTHCOMING EVENTS

June

3rd-4th

London: '1993 - The Year of Vietnam - Business Opportunities for the Oil and Gas Industry'. Details: Nadia Ellis, IBC Technical Services Ltd.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

6th-11th

Singapore: 'Third International Offshore and Polar Engineering Conference 1993'. Details: ISOPE, P.O. Box 1107, Golden, Colorado 80402-1107 USA.
Tel: 1-303-273-3673.
Fax: 1-303-420-3760.

7th

London: 'Negotiating Joint Operating Agreements'. Details: Jane Giles, ICOM Group Conferences Limited, 109 High Street, Dodworth, Barnsley, South Yorkshire S75 3RQ.
Tel: (0226) 299072.
Fax: (0226) 299072.

7th

London: 'Coal Bed Methane' - a one-day symposium. Details: Heidie Gould, The Geological Society, Burlington House, Piccadilly, London W1V 0JU.
Tel: (071) 287 1433.

8th

London: Conference on 'Current Developments in North Sea Drilling Operations'. Details: Miss Caroline Little, The Institute of Petroleum.

8th

London: 'The Role of the European Community in Taxation'. Details: The Conference Organiser, IFS, FREEPOST, WC 5466,

London WC1E 7BR.
Tel: (071) 636 3784.
Fax: (071) 323 4780.

8th-9th

Aberdeen: 'Response to Incidents Offshore - Conference'. Details: Sarah Peace, IBC Technical Services Ltd.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

8th-10th

Birmingham: 'Forecourt Marketing Show & Convenience Retailing 1993'. Details: Nick Needs, Blenheim PEL, Blenheim House, 630 Chiswick High Road, London W4 5BG.
Tel: (081) 742 2828.
Fax: (081) 747 3856.

13th-18th

Wiltshire: 'The Practical Essentials of Natural Gas'. Details: Anita Gardiner, The Alphanania Partnership, Alphanania House, 82 Rivington Street, London EC2A 3AY.
Tel: (071) 613 0087.
Fax: (071) 613 0094.

14th-25th

Amsterdam: 'The International Gas Business: Technology, Economics, Project Development and Markets' - a two-week management development programme. Details: Sue Maloney, 535 Boylston Street, Boston, MA, 02116 USA.
Tel: (617) 536 0202.
Fax: (617) 536 4396.

15th-17th

Cannes, France: 'Undersea Defence Technology 1993'. Details: Reed Exhibition Companies (UK), 90 Calverley Road, Tunbridge Wells, Kent TN1 2UN.
Tel: (0892) 544027.
Fax: (0892) 541023.

16th-18th

Cannes, France: '6th

International Conference on Multi Phase Production'. Details: Mrs Kit Stones, Conference Organiser, BHR Group Limited, Cranfield, Bedford MK43 0AJ.
Tel: (0234) 750422.
Fax: (0234) 750074.

16th-18th

London: 'Land Pipeline Engineering - A Three Day Course'. Details: Sarah Peace, IBC Technical Services Ltd.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

17th

London: 'Regulatory Reform'. Details: Jonathan Mundy, Marketing Manager, OXERA Ltd., Blue Boar Court, Alfred Street, Oxford OX1 4EH.
Tel: (0865) 251142.
Fax: (0865) 201080.

17th-18th

Paris: 'Oil Markets: Strategies for Coping with New Challenges'. Details: Corinne Redonnet, Conference Organiser, DRI Europe, Wimbledon Bridge House, 1 Hartfield Road, Wimbledon, London SW19 3RU.
Tel: (081) 543 1234.
Fax: (081) 545 6248.

21st

London: 'Inaugural Meeting of The Russian Club'. Details: Dr Bob Gale, Petroleum Economics Ltd., Piercy House, 7 Cophall Avenue, London EC2R 7BU.
Tel: (071) 638 3758.
Fax: (071) 638 3708.

21st-22nd

Barcelona: '1993 European Oil Refining Conference & Exhibition'. Details: Mireia Mangual, WEFA Energy, 60/62 Margaret Street, London W1N 7FJ.
Tel: (071) 631 0757.
Fax: (071) 631 0754.

23rd-24th

Aberdeen: 'Preventing Oil Discharge from Drilling Operations - The Options'. Details: Nadia Ellis, Conference Organiser, IBC (Holdings) PLC, Gilmoora House, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

23rd-24th

London: 'Pipeline Management 93'. Details: The Conferences Manager, IWEM, 15 John Street, London WC1N 2EB.
Tel: (071) 831 3110.
Fax: (071) 405 4967.

23rd-25th

London: 'Introduction to Oil Industry Operations'. Details: Miss Caroline Little, The Institute of Petroleum.

24th

London: 'Pipelines Across the Straits of Gibraltar'. Details: Gareth Edwards, Institution of Mechanical Engineers.
Tel: (071) 973 1243.

24th

London: A marketing meeting - 'The Pacific Rim Energy Developments and Projects'. Details: Ms Tracy Leopard, Marketing Co-Ordinator, Ernst & Young Energy Business Centre.
Tel: (071) 931 1346.
Fax: (071) 620 0940.

28th-29th

Aberdeen: 'Minimise Operating Costs & Extend Field Life Through Not Normally Manned Facilities'. Details: Maria Coghlan, Customer Services Manager, IIR Industrial Ltd, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD.
Tel: (071) 412 0141.
Fax: (071) 412 0145.

FORTHCOMING EVENTS

28th-29th

London: 'Profit from Power – Ensuring Business Success in the Generation and Transmission of Electricity'. Details: Monique Quant, IBC Financial Focus Ltd., 57/61 Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 323 4298.

28th-30th

London: 'Introduction to Petroleum Economics'. Details: Miss Caroline Little, The Institute of Petroleum.

29th-30th

London: 'VOC Emissions in the Petroleum Industry: Estimation, Measurement and Reduction'. Details: Business Seminars International Ltd., 56-60 St John Street, London EC1M 4DT. Tel: (071) 490 3774. Fax: (071) 490 2296.

30th-1st July

London: 'Evaluating and Installing Combined Heat and Power'. Details: AIC Conferences, Nestor House, Playhouse Yard, London EC4V 5EX. Tel: (071) 779 8837. Fax: (071) 779 8663.

July

5th-6th

Leeds: 'Engine Emissions Measurement'. Details: Miss Julie Charlton, University of Leeds, Dept Fuel and Energy, Leeds LS2 9JT. Tel: (0532) 332494. Fax: (0532) 440572.

5th-6th

London: 'Partnering & Closer Working Relationships'. Details:

Maria Coghlan, Customer Services Manager, IIR Ltd., Industrial Division, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

7th

London: 'Petroleum Revenue Tax – The Effects and Implications of the Governments' Budget Changes'. Details: Mr Iain Dale, The Waterfront Partnership. Tel: (071) 730 0430. Fax: (071) 730 0460.

7th-8th

London: 'Third International Conference on Maritime Communications and Control. Details: Ms Rhian Bufton, Conference Organiser, The Institute of Marine Engineers, 76 Mark Lane, London EC3R 7JN. Tel: (071) 481 8493. Fax: (071) 488 1854.

7th-8th

Aberdeen: 'Comparing Practical Strategies for Cost Cutting in Offshore Development'. Details: Maria Coghlan, Customer Services Manager, IIR Ltd., Industrial Division, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

12th-13th

London: 'Cost-Effectiveness, Compliance and Competition in Petroleum Retailing'. Details: IIR Ltd., Industrial Division, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

12th-14th

Oxford: 'New and

Call for Papers – 'NEVA 93'

The International Shipping Exhibition and Conference with Russia and the Republics (NEVA 93) will be held again in St Petersburg, Russia during 14-18 September 1993.

As a complement to the Exhibition and the main Conference devoted to shipping activities in general, the Wessex Institute of Technology (WIT) will be organising a series of Technical Seminars on topics of current interest in the former Soviet Union in the design, construction and operation of ships, offshore structures and ports.

Contributed papers are invited on the following topics:

- *Computer Aided Design (CAD) – Shipbuilding*
- *Arctic Transportation*
- *Offshore Energy*
- *Advanced Marine Vehicles*
- *Safety at Sea*
- *Environmental Problems*
- *Submersibles*
- *Ship Propulsion.*

Abstracts of no more than 300 words, clearly stating the purpose, results and conclusions of the work to be described in the final paper, should be submitted to:

Jane Evans, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, Hants SO4 2AA. Tel: (0703) 293223. Fax: (0703) 292853.

Offers of co-ordinating sessions may also be submitted at the same time.

The camera-ready manuscript of the final full-length paper should be received no later than 1 August 1993.

Alternative Transport Fuels – Technology, Economics and Energy Efficiency. Details: The Registrar, The College of Petroleum and Energy Studies, Sun Alliance House, New Inn Hall Street, Oxford OX1 2QD. Tel: (0865) 250521. Fax: (0865) 791474.

12th-16th

London: 'Advanced Management Seminar Program'. Details: Mrs Julie Chapman, World Petroleum Congresses, 61 New Cavendish Street, London W1M 8AR. Tel: (071) 636 1004. Fax: (071) 255 1472.

25th-28th

Moreton-in-Marsh:

'Chemsafe Transport Emergency Response' course. Details: Ron Cameron, Marketing Manager, The Fire Service College, Moreton-in-Marsh, Gloucestershire GL56 0RH. Tel: (0608) 52156. Fax: (0608) 51788.

27th-29th

Bali: '16th Annual International Conference of The International Association for Energy Economics'. Details: Irdina A Irawati, c/o REDECON, Gedung Patra Jasa, 1st Floor, Room EFJ Jl. Jend. Gatot Subroto Kav. 32-34 Jakarta 12950, Indonesia. Tel: (62-21) 511821/511824. Fax: (62-21) 515133.



Current Developments in North Sea Drilling Operations

Tuesday 8 June 1993

To be held at
The Cavendish Conference Centre London

This conference is designed to give an up to date overview of offshore drilling operations. The papers are topical and cover company contractor relationships, safety management, environmental issues, shallow gas hazards and their consideration in Safety Cases, and the technology being developed now and for the future. All these subjects will be addressed by leading experts in their fields.

Papers being presented will include:

- Well Engineering in the Nineties
- Interfacing Drilling Contractor and Operator Safety Management Systems
- Drilling Fluids and the Environment
- Technological Advances for the Treatment and Disposal of Oily Cuttings
- Shallow Gas Hazards - The HSE Perspective
- The Use of Active Heave Compensator Systems in Subsea Well Work
- The Current Focus of Drilling and Downhole Technology R&D in Europe

For further information and a copy of the registration form, please contact
Caroline Little, The Institute of Petroleum,
61 New Cavendish Street, London W1M 8AR, UK.
Tel: 071 636 1004. Fax: 071 255 1472.



Code of Practice for Occupational Hygiene Audits

In seeking to provide a place of work which is safe and without risk to health, so far as is reasonably practicable, it is necessary to identify the agents and their associated hazards, consider the jobs and tasks which result in exposure to these hazards and thus determine the risk to health. Appropriate control measures can then be specified, including any needs for monitoring of exposures, surveillance or instruction and training of the workforce.

The new Code of Practice is designed to ensure that Occupational Hygiene Audits of performance review all aspects of this process, judging performance where possible against standards. Audits may be qualitative, offering subjective judgements, or quantitative, in which performance is compared with predetermined norms and scored numerically.

Available from the Institute Library. Price £20.00
ISBN-0-85293-125-5

25% discount is given to IP Members.



PERSONNEL EDUCATION & TRAINING DISCUSSION GROUP

'Equal Opportunities and the Oil Industry'

To be held at the Institute of Petroleum
Evening Meeting - Wednesday 9 June, 1993
5.15 p.m for 5.45 p.m

Lois Leeming
Campaign Development Manager, Opportunity 2000
Jill Kenny
Plant Manager, West London Terminal, Esso UK

will present short talks on the goals organisations can set in order to help ensure they have a balanced workforce of men and women, the benefits to their business of such a workforce together with a personal view of the practicalities and experience of equal opportunities. The presentations will be followed by an informal question & discussion time.

Chaired by **Derek Forrest**
General Manager, Human Resources, Texaco Ltd.

Staff of member companies, individual members, guests and those interested in the future of the oil industry will be most welcome.
Please call **Bob Edmondson** at the Institute of Petroleum
(tel: 071 636 1004) if you or your colleagues plan to attend.



THE INSTITUTE OF PETROLEUM



Background Courses

To be held at the Institute of Petroleum

Introduction to Oil Industry Operations

Wednesday 23 June – Friday 25 June 1993

This course is designed as a general introduction to the upstream and downstream activities of the oil industry and may be particularly valuable to companies who do not hold their own in-house induction courses covering these subjects. It is likely to be appropriate for:

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

Participants from financial institutions, government, other energy industries and the supply and service industries who require to obtain an informed and concise 'bird's eye view' of the oil industry.

Topics to be covered during the three days will include:

- *Changing Perspectives in the International Oil Industry*
- *Petrochemicals*
- *Basic Concepts of Drilling*
- *Research Activities in the Oil Industry*
- *Petroleum Production*
- *Introduction to Marketing and Distribution*
- *Supply*
- *The Retail Market*
- *Refining*

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

Introduction to Petroleum Economics

Monday 28 June – Wednesday 30 June 1993

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

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

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

Topics to be covered during the three days will include:

- **Structure of the Oil Industry**
 - Development of Major Oil Companies*
 - The National Oil Companies*
 - The Role of the Independents*
- **Geopolitics of Oil**
 - OPEC/Middle East*
 - Eastern Europe and the Former Soviet Union*
 - Asia and Pacific Region*
 - North America*
 - North Sea Basin*
- **The Oil Markets**
 - Product Markets*
 - Crude Oil Markets*
 - Oil Price Information*
 - Oil Futures Market*
 - Oil Supply and Price – The Outlook*

For copies of the registration forms for both courses, please contact Caroline Little, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. ☎ Tel: 071-636 1004. Fax: 071-255 1472

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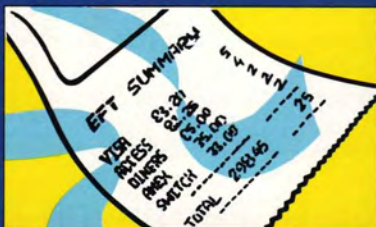
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