JUNE 1992

The Institute of Petroleum



PETROLEUM REVIEW



Outline of the EC Draft Stage 1 Directive plus new IP Guidelines

Europe

The changing crude and products supply picture in eastern Germany

John Cranfield asks whether Italian retail marketing faces an upheaval

Focus on the UK Forecourt Marketing Show

South Africa

the current energy scene by Robert McLeod





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Cover photo of Kendal power station — the largest dry cooled power station in the world. Photo courtesy of Eskom.

... news in brief

15 April

British Gas has been appointed operator of the North Sea Armada project costing an estimated £800m.

17 April

Statoil has awarded a \$330m contract to Bredero Price for pipecoating on the Europipe project.

18 April

Chevron Chemical Company has announced the sale of manufacturing technology and marketing rights outside the United States, and supply contracts for three of its agricultural chemical products — Orthene, Select and Monitor to Tokyo-based Tomen Corp.

British Gas has paid \$52m for a one-third stake in Natural Gas Clearinghouse, the largest independent gas marketing company in the United States.

LASMO Nova Scotia has announced that modification work in Germany on the storage tanker for the Cohasset project has been completed.

19 April

A North Sea oil worker was killed when he was hit by a helicopter blade on a diving support vessel 90 miles off Shetland.

21 April

Nigeria has been forced to import petrol following shortages caused by smuggling, hoarding and refinery stoppages.

23 April

Greenland has announced a series of licensing rounds in the 1990s covering offshore areas in West Greenland, the first of which will take place in 1992/3.

Petrobras, the Brazilian stateowned oil company, plans to introduce a pilot development system on the giant offshore Barracuda field in the Campos basin involving the use of two tankers.

The Commodity Futures Trading Commission has approved the New York Commodity Exchange as a contract market for Dubai sour crude futures.

Shell Australia expects to invest A\$3.2bn in new capital spending over the next five years on exploration and production.

24 April

India's Ministry of Petroleum received a disappointing 24 bids for the 72 onshore and offshore blocks thrown open for exploratory drilling in the fourth licensing round.

27 April

A Greek tanker, the Katina P, carrying about 430,000 barrels of oil broke up and sank 95 miles off Mozambique.

28 April

LASMO is to sell the Stockbridge oilfield and other onshore assets from the former portfolio of Ultramar as part of its rationalisation plans following the successful £1.2bn takeover last year.

29 April

Statoil has sold its production interests in the Netherlands offshore sector, including the Kotter and Logger oilfields, to Dutch company Oranje-Nassau. Italgas, the Italian gas and water distribution company, raised net

group profits by 16.7 percent to L91bn last year partly due to a 25 percent increase in sales.

Ireland's energy minister, Robert Molloy, unveiled a series of petroleum tax measures aimed at boosting the level of oil and gas exploration offshore.

30 April

Algeria has nearly reached its target of almost doubling gas exports to 60bn cubic metres a year by 1995 according to Mustapha Faid, the deputy general manager of Algerian state oil company Sonatrach.

1 May

Offshore contractor Stena has strengthened its presence in Norway by merging subsidiaries Stena Offshore and Stena Drilling into one company — Stena Offshore.

2 May

Ranger Oil UK has completed well 22/27a-3, some 150 miles east of Aberdeen, where it says oil was encountered but not tested.

5 May

Norway's Norsk Hydro and Total of France have joined forces with Marubeni Corporation of Japan to participate in a \$1bn oil development project offshore Vietnam.

6 May

The financial crisis at the International Maritime Organisation has eased following the payment of more than \$2m by Liberia — the single largest contributor to the UN agency.

Brazil's government announced it will appoint former foreign trade official Benedito Moreira to head the privatisation of Petrobras, the state-run oil company.

8 May

Amerada Hess has made an oil discovery just 6 km from its Ivanhoe/Rob Roy producing field and the Scott development.

Phillips has conducted a single drill stem test on the Jacqui appraisal well 30/13-4.

Nigeria is to hold a new round of licensing where oil companies will be able to nominate blocks they want to bid for in the round according to Iyke Ijicu, president of Pan African International.

13 May

A group of companies led by Tullow Oil have signed a three year deal to explore for oil in Syria. **BP** Chemicals is to spend about \$100m a year over the next five years to reduce waste emissions from its plants.

Chevron has begun drilling on the Petal Salt Dome near Hattiesburg in Mississippi to create the company's first underground storage facility for gas.

Babcock Energy has won a £60m contract to convert two gas turbines at Lavrion, Greece to a combined cycle power generation system.

The US government has bought foreign oil — 1 million barrels of North Sea crude — for its strategic petroleum reserve for the first time since Iraq invaded Kuwait in August 1990.

Conoco has successfully installed the Lyell oilfield subsea production manifold in UK North Sea block 3/2, using the crane barge DB102.

14 May

Mobil Corporation announced that its Mobil Co-ordination Centre NV and the Bank of America has launched a European Treasury Centre at Zaventum, Belgium to facilitate cash management and financing on the Continent.

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... newsdesk

Charity link in retail promotion

Burmah Petroleum has teamed up with the RSPCA, Age Concern and Save the Children and launched a major new fuel promotion utilising smart card technology that is designed to take advantage of the 'caring nineties'.

Customers at Burmah sites will collect bonus points that are automatically credited to their individual card and the proceeds can be either redeemed at stores such as B&Q, Index (part of the Littlewoods chain) or Comet or passed directly onto the charities.

Burmah Managing Director Rikki Hunt believes that the new promotion, called 'Reward', will meet with consumer preference for promotions and at the same time satisfy the desire to support these major charities.

'The system we will be using is the most advanced on the market today and will allow us to run this complex scheme whilst being simple for the consumer to benefit.'

Every five litres of fuel purchased will accrue 20 points, while 2,500 points will entitle customers to a £5 store voucher or a donation to charity. By hooking up to high profile charities, particularly the RSPCA and its Scottish and Ulster equivalents, the company expects to attract a broad range of customers who would not normally take part in loyalty promotions.

The company estimates that if 10 percent of its customers follow the charity route as much as $\pounds 1.5$ million could be generated in the first year of operation.

The scheme will initially operate at selected garages around the United Kingdom and the company expects most stations to take up the scheme by the end of the year.

Jerry Lloyd, Director of Public Relations at the stated that RSPCA, the promotion matched the charity's drive for closer links between it and commerce. 'I am sure that mutually beneficial links between charity and commerce are the way forward, both for our partners to achieve clear commercial objectives and for charities such as the RSPCA to receive funds necessary to carry out our invaluable work. Supporters of ours can use the power of their pocket at Burmah garages to help us fight and win our battle against animal cruelty everywhere.

Since taking over at the company, Mr Hunt has attempted to develop closer bonds between it and the retailers. All directors and senior managers throughout the organisation now spend 20 percent of their time meeting with retailers onsite and examining individual needs as part of the company's drive for an increased market share.

Nigerian gas long-term contract

Nigerian company NLNG and Gaz de France, the French national gas utility, have signed a long-term contract for the purchase of 500 million m³ of liquefied natural gas per year beginning in 1997.

The contract, which was signed in Lagos in April, covers a period of 22.5 years. It follows the first agreement between the two companies in September 1991 which dealt with the principal conditions for delivery of the gas to Gaz de France.

According to Gaz de France, the signature of this contract and those including other buyers 'marks a new and important step in the process of developing Nigeria's natural gas exports and permits the launch of the project's industrial phase.'

North Sea gas fields and new pipeline system

Conoco (UK) Limited and Total Oil Marine plc, as operators, are to develop the Murdoch and Caister gas fields in the southern North Sea along with the Caister Murdoch System (CMS), a new gas gathering and transportation system. The Department of Energy has approved the development which will cost approximately £400 million and is planned to begin production towards the end of 1993.

The fields, which lie in quadrant 44, 180 kilometres north east of Theddlethorpe in Lincolnshire, are the first carboniferous fields to be developed in the UK sector. Caister also includes a Bunter reservoir. They contain total recoverable reserves of approximately 620 billion cubic feet of gas and 5.7 million barrels of condensate. At peak production, which is expected to be achieved in 1994, they will deliver around 280 million standard cubic feet of gas per day to the British market.

The CMS development consists of two not-normally-manned production platforms controlled remotely from the Conocooperated Theddlethorpe gas terminal and linked to a new complex of 16 inch and 26 inch pipelines that will gather the produced gas and transport it to Theddlethorpe for processing and delivery to gas purchasers.

PNG's second oilfield

An excellent flow from the South East Gobe 3 well in the Papua New Guinea highlands has added to the attractiveness of the area as a future commercial oil producer.

The well has yielded a flow of 45° API oil at a stabilised rate of 6,300 b/d accompanied by 22.1 million cubic feet of gas a day. The well is in PPL 56 and the structure extends in to PPL 100 where Chevron Corp is the operator of the \$A1.3 billion Kutubu joint venture which exports oil from a marine terminal in the Gulf of Papua starting in July. MIM Holdings Ltd subsidiary, Barracude Petroleum, operator of SE Gobe field, said the well had intersected the top of the SE Gobe reservoir higher in SE Gobe 3 than in the discovery well SE Gobe 1.

Chevron is taking over the Gobe rig and will start drilling a well which should provide more data on the size of the field, located 500 km northwest of Port Moresby.

If the Chevron well in Gobe field proves to be a discovery, analysts believe the field could contain up to 150 million barrels of recoverable oil.

Other analysts suggest that Chevron and its joint venture partners may prefer to forge ahead with the development of the Manada field because this expenditure can be deducted from Kutubu revenues for tax purposes.

Strathspey contracts

Texaco has awarded contracts worth over £13 million for the hook-up and commissioning of its Strathspey field in North Sea Block 3/4a.

Stena Offshore Ltd have won the £10.8 million contract for the laying and hook-up of umbilicals and pipelines plus commissioning work. Eighteen umbilicals, total length 53.2 kilometres, and 41 flexible pipe spools are to be installed. The vessels *Stena Wellservicer, Stena Constructor* and *Stena Orelia* will be used for this work, scheduled for the second and third quarters of 1993 and expected to last 120 days.

The £2.4 million contract for the installation of the Strathspey ancillary structures has been awarded to Comex UK Ltd.

· · · newsdesk

and retail operations. Mr

Badiani previously owned

Corbray Limited, a family

business concerned with rent-

ing and operating petrol sites.

Mr Lakhani is a qualified

According to John Powell,

the management buy-in will

form the basis of future expan-

sion for Petroform. 'Our first

intention is that all 10 petrol

stations will operate under the

brand of a major oil company

and negotiations on that are

already at an advanced stage.

We then plan to expand the

chain through selective ac-

quisition and that growth

should create a significant

number of jobs.'

Chartered Accountant.

New owners for Bio Petroleum

A management buy-in team has acquired the 10-strong retail operation from the receiver of Bio Petroleum for a seven figure sum under a new company, Petroform.

3i capital group has provided the necessary equity and loan funding for the management buy-in and has acquired a 25 percent shareholding in Petroform.

The buy-in team of John Powell, Natu Badiani and Atul Lakhani has considerable experience in the retail petrol industry. Mr Powell spent many years at Total where he was involved in site selection, acquisitions and development

Lubricants plant to close

Texaco has announced that it is to close its lubricants manufacturing plant in Manchester and technical centre in Kings Langley as part of a rationalisation of its lubricants business in Europe.

The company has entered into a 15-year manufacturing agreement with Century Oils in Stoke-on-Trent to produce Texaco branded products utilising Texaco technology.

The decision will result in 90 job losses although the company hopes to be able to offer employment at other Texaco locations where possible. Some redundancies seem inevitable.

Production at Manchester will be phased out over the next few months and both Texaco sites will be closed by the end of the year. The company had looked at a number of possible solutions to the problems the lubricants division had been facing but the industry's overcapacity for production in Europe combined with reduction in demand due to the recession meant that the plant was no longer viable.

The Manchester plant has been in operation since 1929 and, while Texaco are reluctant to reveal the capacity of the plant for commercial reasons, it is understood that it has not been operating at full capacity recently.

The company will continue to operate plants in Europe through its centres in Spain, Italy, Belgium, Denmark, Sweden and Greece.



Jacqueline Muller from Aberdeen has scooped Scotland's top award for young business achievement at the Scottish final of the 1992 Livewire Business Start-Up Awards, sponsored by Shell UK. Jacqueline's business, 'Pumps Unlimited', is a North Sea oil service company providing mud recovery and pumping systems to the oil, construction and chemical industries, chiefly on a rental basis.

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> The European Commission has announced plans for the introduction of a carbon tax on fossil fuels that would add up to \$10 on a barrel of oil equivalent.

The introduction of the tax, however, is dependent on other western countries also adopting a similar tax — a prospect thought unlikely, particularly in the United States — although the EC Environment Commissioner, Mr Carlos Ripa di Meana, said that Europe could proceed unilaterally with a modified version of the scheme if the United States refused to consider similar proposals.

The tax would be phased in over a period of seven years, immediately adding up to \$3 to a barrel of oil and increasing by \$1 per barrel each year thereafter. Energy intensive industries would be likely to gain exemption from the tax on the condition that steps are taken to reduce energy consumption and increase efficiency.

The tax would be balanced by reductions in other levies and taxes and the Commission believes that economic growth would be only marginally affected.

Record safety fine

A record fine has been imposed on a North Sea drilling company after it was found guilty of charges under the Health and Safety at Work Act.

Atlantic Drilling Company was fined a total of £101,000 after a jury delivered a unanimous guilty verdict on direction on charges relating to an accident in which a man died as a result of being struck on the head by a bulk water hose he was transferring to a supply vessel.

The fine is the highest ever imposed on a drilling company and is one of the largest ever imposed in the United Kingdom for a health and safety offence. The company was found guilty of failing to ensure the safety of one of their employees, failing to ensure lifting equipment had been thoroughly examined and tested by a competent person not in their employ, within the required period and a record preserved, failing to provide suitable lifting equipment and failing to provide proper supervision.

Dr Allan Sefton, Director of Operations in Aberdeen, said that the Health and Safety Executive was pleased by the substantial level of the fine and added that the case had lessons for all offshore operators.

The case was one of a number involving the oil industry that the HSE is in the process of bringing to the courts. Stena Offshore and Amoco UK Exploration were found not guilty to a total of 15 charges at Norwich Crown Court relating to diving activities and Shell UK - prosecuted over an incident relating to a hazardous leak at its detergent alkylate plant at the Stanfordle-Hope refinery in Essex was fined £100,000 with £10,341 costs.

The HSE has said that there are approximately 10 cases involving companies operating in the North Sea before the procurator fiscal in Scotland.

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Russian law contract

City law firm Denton Hall Burgin & Warrens has won a contract from the European Commission to advise the Parliament of the Russian Federation on the drafting of its new petroleum and mining laws and on privatisation in the Russian petroleum and mining industries. The contract will last for about three months initially.

One of the lawyers involved, partner David Moroney, said: 'The Russian Government is very aware of the pressing need for consistent and workable laws on exploration and production of petroleum and minerals. Without them and without a good structure to administer them the international oil and mining companies are reluctant to invest the large sums urgently needed to develop these industries in Russia. The introduction of practical laws will give much greater confidence to potential investors and help the rapid development of these important hard-currency earning sectors.

The project involves advice on how best to draft Russia's new petroleum and mining laws so as to attract foreign investment in those industries and assistance with the actual drafting of the laws. It also involves advice on the workings and the administration of the mining and petroleum industries in other countries throughout the world and assistance with the development of a structure in Russia for the efficient administration of the new laws. Advice will also be given on the possible establishment of a Russian national oil corporation and on privatisation of the existing producer associations.

Reward for Exxon chief's return

The Exxon Company International has announced that it is prepared to pay a 'substantial' reward for information leading to the safe return of its chairman, Mr Sidney Reso.

Nothing has been heard of Mr Reso since his car was found with its engine running at the foot of his driveway on 29 April. The authorities have not ruled out foul play nor can they say whether he left voluntarily or not, suggesting a lack of forensic evidence at the scene. His wife, Mrs Patricia Reso, received an unidentified message and has issued a personal appeal for his return.

A spokesman for Exxon stated that the company would pay the money to anyone who could provide information leading to Mr Reso's safe return. The decision to offer the reward was made to solicit the public's assistance. Personnel at the company are maintaining a 24-hour telephone service to receive calls regarding the incident and all calls will be kept 'strictly confidential'.

Mr Reso, 57, has worked for Exxon since graduating from Louisiana State University with a degree in petroleum engineering. As head of the international division he is responsible for all Exxon's oil and gas operations outside the United States and Canada.

Syrian licence

Tullow Oil has signed a production sharing agreement with the Syrian Arab Republic and the Syrian Petroleum Company concerning the East Ash Sham licence in southeast Syria. The initial licence period, subject to ratification by the Syrian Parliament, is for three years.

Donan field

BP Exploration has started producing oil from the Donan field using the company's monohull oil production vessel *Seillean*.

The Donan field, the second to be developed using BP's SWOPS system, contains an estimated 25 million barrels of recoverable oil.

AMEC Group restructuring

AMEC Group plc has announced a corporate restructuring programme that will bring together former individual companies under the banner of AMEC Process and Energy Limited. The new group will be split into five separate areas of expertise and supply 30 percent of the overall AMEC Group's annual turnover.

Some of the most familiar names in the industry — Press Offshore, Matthew Hall Engineering and Matthew Hall, Keynes — will cease to exist as corporate entities.

AMEC Process and Energy believes the restructuring reflects the approach that is crucial for its future success in the marketplace by anticipating changing customer requirements and partnering style arrangements.

The company operates on a world-wide scale and has projects underway in Venezuela, Kuwait, India and Russia. A number of projects both in mainland Europe and the Mediterranean involving the Libyan oil industry have been put on 'hold' until the political difficulties between Libya and the United Kingdom are resolved. The company will be in overall charge of the five new sectors and will act to ensure effective integration across all divisional companies and monitor the market. The board members will include the five new managing directors of the sector companies. The five separate companies are:

AMEC Engineering, formerly Matthew Hall Engineering;

AMEC Engineering International;

AMEC Offshore, formerly Press Offshore;

AMEC Offshore Developments, formerly Press Offshore and Matthew Hall Engineering companies;

AMEC Engineering b.v., located in Schiedam with offices in Holland and Belgium.

Dennis Clark, Chairman of AMEC Process and Engineering Group, said the restructuring will provide an integrated identity in the marketplace. He did not expect to lose goodwill by dropping the original company names. Employees were balloted on the change before it took place and most were in favour of the transition.

Kazahkstan oil deal

A breakthrough has been made in the race to develop and exploit the vast oil and gas reserves in the former Soviet Union.

The Chevron Corporation has become the first US oil major to reach an agreement on the exploration and production of fields in Kazakhstan. The company has signed an agreement on the establishment of a joint venture, Tengizchevoil, to exploit two of the world's largest oilfields — the multi-billion barrel Tengiz field, bordering the Caspian Sea, and the nearby Karolev field.

The agreement is the result of four years of negotiations, often criticised in the past for selling the resources too cheaply. The current deal is understood to include equal funding of the venture with the republic taking the largest portion of the profits, possibly around 78 percent.

Chevron Chairman Kenneth Derr said: 'We are pleased that after long discussions we've reached this breakthrough.

'From our standpoint it is a very high risk deal but the size of it is unique and it could have a meaningful impact on a company of our size for a long time.'

The fields are estimated to have recoverable reserves of between 6–9 billion barrels of oil and the deal is believed to include the construction of a pipeline to one of the Black Sea ports.

Oil curtain lifts on South Africa

By Robert McLeod

The European Community has lifted its ban on oil exports to the Republic of South Africa, opening the way for companies presently operating in the country to expand their operations and providing opportunities for businesses to participate in the region's energy sector.

Although the United Nations embargo is still in force, the move has been widely welcomed in the Republic as sources of crude oil supplies can now be diversified. However, the secrecy that surrounds the country's oil industry, through Section 4a of the Petroleum Act, remains in force until the lifting of all oil sanctions but it will mean that companies will be able to trade openly in oil products and expand their chemical and petroleum product base to supply the energy and petrochemical demand of the developing nations of Southern Africa.

The South African Energy Consul in Paris, Mr Arthur Dykes, welcomed the decision of the Community but stressed that the decision last year to release part of its stockpile indicated that South Africa was not overly concerned about supplies of crude oil. It was, however, a 'great psychological boost for the country'.

Exploration

The search for crude in South Africa was sporadic and ill-equipped until the

first extensive survey programme carried out by the Geological Survey in 1940, although the first systematic exploration programme only began in 1965 with the creation of the stateowned Southern Oil Exploration Company, later renamed Soekor (Pty) Limited.

Since then, only a handful of noncommercial discoveries of gas and oil have been made on land, mainly in the west of the country near the Swaziland border and in the south by Port Elizabeth. A number of smaller, locally-based operators are carrying on the exploration of these regions.

Most attention has focussed on offshore areas with the first gas discovery in 1969 off Plettenberg Bay by the Superior Group — too small to warrant exploitation at the time while a major gas discovery was made by Chevron in 1974 off the mouth of the Orange River in Namibian waters.

Soekor, which has been responsible for all offshore drilling since 1976, made the first significant discovery of gas off the southern South African coast



in 1978 in the area where exploration interest has focused.

In 1980 a well in the F-A field south of Mossel Bay yielded results of 56 million cubic feet of gas and 1,200 barrels of condensate per day. The discovery of the E-M field further to the west forms the nucleus of the Mossel Bay Gas Project.

Further seaward drilling has located the existence of a number of small oilfields in the Bredasdorp basin with the most recent discoveries including 5,000 barrels per day oil equivalent (b/doe) well in March 1987, wells showing 4,800, 5,400 and 7,000 b/doe in 1988 — this last well, discovered in June 1988, included 3,800 b/d of high quality crude — and a well in Mossel Bay, discovered in 1990 which flowed at 7,700 b/d although reservoir size was said to be small.

Soekor drilled a total of 20 boreholes in 1989 of which two had potentially commercial gas production rates. 22 boreholes were drilled in 1990 (two with potentially commercial gas and condensate and two with potentially commercial oil production rates) and 11 in 1991 (three gas and condensate and one oil). So far this year four boreholes have been drilled — one of which had potentially commercial rates — and a further six are planned. Onshore exploration with regard to coal-bed methane exploitation is being investigated at the present time.

In addition to managing the offshore F-A production platform, the company is presently developing a plan for the commercially viable boreholes.

Oil supply

It is widely accepted that South Africa circumvented the worst effects of the oil embargo first placed in 1973 and is known to have stockpiled massive quantities of oil — over 900 days'

Petroleum Review June 1992

supply in the late 1980s according to some reports — although some of the reserves have subsequently been sold to generate foreign currency.

In August 1991 stocks worth \$350 million were sold to raise money for schools, clinics and other facilities in impoverished black areas and a further \$385 million similarly raised was invested in 'energy-related projects' — possibly the Mossel Bay oil-from-gas project. In addition to its own marginal oil production, South Africa has the most advanced synthetic fuels programme in the world, particularly in the transport sector.

Fuel production

The major synthetic petroleum products producer in South Africa, Sasol, operates three plants converting coal to liquid products. The older of these is being modified to produce higher-value chemical products, while the second and third units continue to produce transport fuels.

Production of synthetic fuels stood at around 3,000 b/d in 1975, while the latest reliable figures put the production rate at around 80,000 b/d. Annual consumption of approximately 270,000 b/d (of which slightly more than half are transport fuels) therefore must be met through imports.

Sasol announced in its 1991 Annual Report that production levels at both plants had improved considerably on their best-ever figures. Sasol Two is currently operating at levels well above its design capacity which the company attributes to achievements of its maintenance crews who, for instance, reduced gasifier overhaul times from 26 to 18 days, as well as fine tuning of the sophisticated instrumentation.

Sasol Three, where turnover has increased by 37 percent and oil production by 17 percent, produces mainly automotive fuels. However, the company is examining opportunities for adding value to existing streams.

In total the turnover of the Sasol Group's fuel products increased by 24.7 percent over the year to R5,773 million (£960 million) as a result of a 3.5 percent increase in sales volumes and higher international petroleum prices due to the Gulf War.

In addition to the two Sasol plants, there are four other refineries in South Africa. Shell and BP operate a 200,000 b/d refinery at Durban on the east coast, Caltex (jointly owned by Chevron and Texaco) operates a 65,000 b/d refinery in Cape Town and a 75,000 b/d refinery operated by Natref in which Total has a 36 percent interest and from which it takes its products. The fourth refinery, a 65,000 b/d plant operated by Engen in Durban, was formerly owned by Mobil which pulled out of South Africa in 1989. Engen has plans to double its capacity.

Although production figures for the six plants are a closely guarded secret, it is widely assumed that South Africa consumes around 330,000 b/d and produces a sufficient surplus to be able to export refined products to other southern African States.

South Africa's newest project involves transporting gas from the Mossel Bay fields to the Mossgas plant offshore where it is transformed into synthetic fuels and petrochemicals.

The go-ahead for the project was given in 1987 in a political climate that demanded self-sufficiency and put strategic interests before economic ones. The controversial £2.2 billion project is expected to add about 27,000 b/d and is widely seen in the oil industry as a 'spectacularly inefficient'



method of increasing national production capacity.

Oil industry calculations in 1989 suggested that it would have cost approximately the same to replace the entire existing refinery capacity. There are also concerns that oil companies, as taxpayers and competitors, will need to be compensated for the losses suffered in terms of lower refinery margins and spare capacity.

Other energy resources

Coal

Although South Africa's oil and gas reserves can only be described as modest, the country has enormous reserves of mainly bitumous, thermal grade coal, estimated at 55 billion tonnes. Production for 1990 was 219.1 million tonnes (mt) while total saleable coal output was 174.8 mt of which around 63 mt was used for electricity generation and 49.6 mt was exported.

Consumption of coal at Sasol's three plants exceeded the company's own mine production by 3.8 mt. The Sigma Colliery south of Johannesburg, which supplies Sasol One, produced 7.4 mt, while the Secunda Collieries to the east produced 29.2 mt. In 1991 a new mine, Syferfontein, began production with 0.5 mt and when the infrastructure is fully developed Sasol hopes to be self-sufficient.

Uranium

The country has substantial reserves of uranium estimated at 304,900 tonnes recoverable at less than \$80 per kilogramme. The reserves are scattered throughout the country but are recovered primarily as a by-product of gold, and to a lesser extent, copper mining.

Nearly all South African uranium is processed and marketed by the Nuclear Fuel Corporation of South Africa, a private company closely associated with the Chamber of Mines. Each gold mine producing uranium has a share in the company.

Total production in 1989 was 3,472 tonnes of uranium oxide. This fell to 2,903 tonnes in 1990. Domestic requirements are expected to be around 270 tonnes p.a. until 2005 with the remainder available for export.

Other fuels

Biomass continues to play a major role in South Africa's rural and underdeveloped areas and a detailed study has been carried out into combustibility of different firewood as well as domestic biogas programmes. Fuel wood is still the largest source of household heat energy in the developing, rural regions.

Research into wind energy has been carried out and available data suggests potential in some coastal and inland regions. Similarly, research into solar energy systems, including desalination plants, and alcohol-fuelled vehicles is underway.

Electricity generation

Although South Africa covers just four percent of the continent with six percent of the population, the country supplies more than half of all electricity generated.

Eskom generates 94 percent of the country's electricity through 25 power stations with an installed capacity of 34,131 MW. Coal remains the main source of power with about 90 percent of electricity from coal-fired stations. The remainder is supplied by three gas turbine and diesel stations, two hydro stations, two pumped-storage stations - all used only for peak period and emergency generation - and the Koeberg nuclear facility. The remainder is generated by industry and some municipal authorities while a small amount is purchased outside South Africa.

In the 12 month period between August 1990 and July 1991 a total 167,775 GigaWatt/hours (GWh) were generated with an additional 267 GWh purchased from abroad. 13,840 GWh was consumed in power stations, 5,870 GWh was sold outside South Africa with the remainder (149,334 GWh) for domestic consumption.

Eskom has plans for a grid system stretching as far north as Kenya and encompassing the entire Southern African region. The potential already exists with the existing grid linking with Namibia to the northwest and Botswana, Mozambique, Swaziland, Zimbabwe, Zambia and Zaire to the north.

The growth potential for the region is huge with increasing urbanisation and industrialisation and South Africa's dominant developed infrastructure. Notwithstanding this, only 34 percent of South Africans have access to electricity.

With the current oversupply of electricity and its desire to import from other states to promote industrialisation in the region there are no immediate plans to expand its generating capacity before 2006 at the earliest.

Investment potential

It is the policy of the South African government to leave the exploitation of the country's mineral resources to private enterprise and mining laws do not differentiate between nationals and foreigners.

Strategic rather than economic justification continues to play a major role in decision-making though with increased political development and gradual re-acceptance into the world community, South Africa will be able to build on its industrial and resource strength.

Towards the end of 1991 the authorities announced they were opening up virtually all of the country's offshore and onshore territory for exploration. Soekor will regulate the licensing and a range of participation options are being offered. It can also provide specialised services to companies wishing to operate in the region.

'South Africa is a natural place for the refining industry for all of Southern Africa,' maintains Mr Dykes, 'based on the country's industrial capacity. Companies wishing to invest in the area must realise that this is not an enormous market but that they do have the advantage of access to the most upto-date technology.

'With its position as the dominant industrial power of the region, the country is a natural springboard for companies wishing to invest in the region.'

Technology such as vapour recovery and lead-free fuels is still underdeveloped and there is a 'lot of catching up to do'. Despite a programme of petrol station closures promoted by the government, there is still an oversupply of sites. South Africa continues to market fuel products in other Southern African States.

The embargoes in place over the last decades, enforced with different pressure by different countries, have seen some organisations leave the country with the most notable of the oil companies being Mobil which pulled out in 1989 after tax difficulties and pressure from anti-apartheid groups.

Other oil companies, including BP, Shell, Chevron and Texaco (through Caltex), and Total as well as engineering, drilling and service companies (AMEC, for example, was involved in the Mossel Bay gas field development) have stayed or worked in the country despite, in some cases, considerable pressure to disinvest.

Companies that continued to operate in the region have maintained, with justification, that they have pursued corporate policies, such as equal pay, training, promotion on merit and union recognition that have worked towards eliminating some of the existing imbalances in South African society.

Crude and oil product supply of eastern Germany

By Birgit Töllner and Joshua Jampol, Enerfinance Consulting Services

• Five months after the Leuna sale, the long-awaited decision on how to supply eastern Germany's refineries has yet to be taken. What is more, a third possibility, suggested by the Elf-Thyssen consortium, has broadened the issue.

• At the same time, discussion over a product pipeline from Wilhelmshaven or Hamburg to eastern Germany has heated up, with economics and politics at odds.

• To supplement the Leuna and Schwedt refineries, an additional product supply for eastern Germany seems necessary, since consumption is growing there as well as in Poland.

If CIS oil exports continue to decline, the deficit in oil products in eastern Germany and across eastern Europe could reach massive proportions by 1995 — upwards of 44 million tons (mt) is estimated. The Russian government recently posted its 1992 crude output at 405.5 mt, down from 462 mt in 1991. The Druzhba line's throughput to eastern German refineries dropped 13 percent from 15.8 mt in 1990 to 12 mt in 1991. Eastern German refineries are now turning at 69 percent capacity.

In an earlier study* Enerfinance detailed new pipeline routes that would better move products from supply-rich areas in the west to countries in the east where demand is expected to shoot up sharply.

Several pipeline projects are now under review or under construction. The following is a roundup of the current status of the main crude oil and product pipeline projects.

Crude oil pipeline projects

North-east pipeline

This new line to eastern Germany would run about 400 km from Wilhelmshaven and be linked to the existing artery between Schwedt and Leuna. Promoted by NWO (BP, Fina, Holborn, Dea, Ruhr Oel and Wintershall) on behalf of four refineries — Schwedt, Leuna, Zeitz and Addinol the 28 inch diameter artery would carry anywhere from 10–28 mt/year. Cost is estimated at 850 million Deutsche marks (\$515 million).

Unlike other proposals, the project has progressed smoothly and is free from political problems. The extension would cross two länder, Lower Saxony and Saxony-Anhalt. Each must give its agreement for the plan to go forward, and both states are in favour. Local governments, including Lower Saxony's Economics Minister Peter Fischer, have warmed to the project, since it would create jobs in the Wilhelmshaven area where unemployment is high. Veba chairman Hubert Heneka also backs the project, calling it a realistic solution for a supply alternative for Schwedt.

Advocates say Wilhelmshaven is particularly well-placed. It can receive crude from both the North Sea and North America. Choosing the harbour, they add - Germany's sole sizeable point of supply - would strengthen Wilhelmshaven's role as the only major national point of entry for crude oil should another oil crisis arise. Those opposed to the plan claim that crude supplies from the North Sea are expected to drop after 2000. Crude oil imports from the Middle East would then have to be augmented, though long transport distances might affect the price differential between Trieste and Wilhelmshaven.

Supporters also point to Wilhelmshaven's proximity to Leuna and Schwedt. Crude could be shipped to Schwedt in four or five days. The decision to build this link depends mainly on whether Leuna decides to receive its crude from Ingolstadt or Wilhelmshaven, something which will not be known until after this month, when the Elf-Thyssen consortium takes control of the refinery.

Crude oil supply via Rostock harbour

Leuna's new owners, the Elf-Thyssen consortium, have proposed plans for a crude supply alternative for their new refinery: a pipeline from the port of Rostock to Heinersdorf, near Schwedt, from where existing lines to Leuna could be used. Capacity would be between 7.5–12 mt year.

This recent idea dates from the Leuna sale. Thyssen, who has admitted being drawn to Leuna by the possibility of rebuilding the refinery (the existing facilities will be torn down and rebuilt), is seen in some quarters as favouring this option because of reconstruction potential at Rostock harbour. Taking a one-third stake in the Leuna consortium (Elf has the other two-thirds) was Thyssen's approach to the potential rebuilding order.

In 1990 Thyssen, along with Finland's Neste and Japanese

NOP

Nord-Ost-Pipeline

- Companies involved: NWO (BP, Fina, Holborn, Dea, Ruhr Oel, Wintershall)
- Trajectory: From Wilhelmshaven to Tornau (near Köthen), then into MVL
- Length: 430 km
- Diameter: 28 inches
- Cost: DM 850 million
- Targeted date of operation: 1994

engineers Marubeni, considered building a 123,000-barrel-a-day refinery in Rostock. The plan was abandoned, however, after the partners decided that the harbour would probably not receive enough crude oil. Rostock is small; a serious supply would require serious extensions of the facilities there.

Bernd Gerken, managing director of Thyssen-Elf Oil GmbH, has not come out for either the Rostock, Wilhelmshaven or TAL possibilities.

The TAL extension

former Soviet Union, where supply has dropped 28.8 percent compared to 1990 figures.

The Czechs did not wait for a verdict on Leuna. The Litvinov refinery formed Chemopetrol IKL to oversee construction and operation of the pipeline. A Munich-based subsidiary, The Chemopetrol Pipeline GmbH, is the German arm. Chemopetrol Litvinov and TAL's owners (Esso, Shell, BP, Mobil, Ruhr Oel, Eni, Dea, ÖMV, Wintershall, Conoco and Total) announced the signing of a vast planning and building pact for the IKL

IKL Ingolstadt-Kralupy-Leitung

- Companies involved: Chemopetrol (on behalf of the Kralupy and Litvinov
- refineries) TAL (Esso, Shell, BP, Mobil, Ruhr Oel, Eni, Dea, ÖMV, Wintershall, Conoco, Total)
- Trajectory: Pipeline extending the TAL from Trieste. The new trunk will begin at Vohburg (near Ingolstadt) and continue to Kralupy
- Diameter: 28 inches
- Capacity: 10 to 15 million tons per year
- Cost: DM 550 million
- Weiden to Leuna, as an extension of the pipeline to be built from Vohburg to Kralupy

One of the oldest existing projects, the IKL addition to the TAL would supply the two Czech refineries at Kralupy and Litvinov, in northern Bohemia. The new line would extend the TAL from Trieste, with a new trunk beginning at Vohburg (near Ingolstadt). The 28 inch diameter line, which would cover 314 km, is expected to reach completion in 1994.

The 550 million Deutsche mark project (\$333 million) would have an initial 10 mt/year throughput delivered from Trieste.

Waning Russian production gave rise to the project, as Kralupy and Litvinov began to see the risks of relying on a single supplier. Today the Czech refineries, dependent solely on Druzhba, urgently need crude oil diversification. Czechoslovakia imported 11.3 mt of crude in 1991, making the Czechoslovakian refineries run at 66 percent of their capacity. Of this, 9.4 mt were supplied by the link on 10 April this year. Under study since 1990, the project was approved by the Czech Republic's Ministry of Industry on 4 February.

Construction of storage capacities and pump facilities were due to begin this spring, but have been delayed, perhaps until the end of the year. Chemopetrol IKL might want to wait until the regional planning procedure in Bavaria is completed, in order to be sure just where the TAL will enter Czech territory. From 1994 onwards, the pipeline would transport 5 million tons per year to Czechoslovakia. By 2005, shipments would amount to 10 million tons per year.

The question on everyone's mind now is where will Leuna's crude come from, and how? Will it be supplied by Trieste, Rostock or Wilhelmshaven? Further decisions on the German side of the TAL extension await this clarification.

As far as the supply of Schwedt

Rostock-Heinersdorf-Pipeline

- Companies involved: Thyssen-Elf Consortium
- Trajectory: From Rostock harbour to Heinersdorf (near Schwedt); link to the existing MVL
- Diameter: 28 inches
- Capacity: 7.5 million tons per year
- Cost: DM 700 million

refinery is concerned, detractors of the TAL project cite the vast distances that separate Trieste from Schwedt. Being last in line at the end of a 10-day trip, they feel, might affect the quality of the crude. They criticise a pipeline that passes nine refineries along the way, and warn of high rates due to the long mileage. They also point out that Trieste can only handle tankers up to 160,000 tdw.

Promoters of the plan note Trieste's proximity to the Middle East. They say the link could be completed relatively quickly, and could supply both German and Czech refineries.

The possibility of Leuna linked to TAL is still open via Weiden, a halfway point between Vohburg and Kralupy.

Product pipeline projects

Hamburg-Saxony pipeline

The Hamburg-Saxony-Rohrleitung pipeline, known as HSR, is a 450-km project that will cross four German länder. Political objection is currently feeding the fire over this embattled project.

The HSR, led by Deutsche Shell, includes Deutsche BP, Dea, Esso and Veba Oel.

Work on a prospective trajectory and regional planning are well underway, though a 30 percent jump in project costs has cooled enthusiasm somewhat. Original projections of 600 million Deutsche marks (\$364 million) have soared to 900 million Deutsche marks, or \$545 million.

The main obstacle to this plan, however, is political. The proposed line crosses the German states of Hamburg, Lower Saxony, Saxony-Anhalt and Saxony. Saxony-Anhalt's Economics Minister, Horst Rehberger, is against the pipeline. The government claims that delivery of western products would create competition that could endanger the Leuna refinery, located in eastern Germany.

'West German companies must accept the fact that oil products are also

produced in the new länder,' Rehberger says. 'These products will have a chance on the market and will compete with those of the west German oil companies.'

The Minister had denied Shell's request for regional planning, something it is normally all but forced to allow, even if it does not approve the project.

Shell dismisses the government's claim that the HSR would threaten Leuna. The firm is targeting a 1995 startup date with a capacity of 6 mt/ year. Only 40 percent of this would go to eastern Germany; 3.5 mt of finished products would go to Hanover, and 2.5 mt to Saxony-Anhalt and Saxony. This remaining portion will be no danger to Leuna, Shell says. The group has threatened to take the case to the Administrative Court in Magdeburg, and might go so far as to raise the matter with the European Commission, citing unfair hindrance to free trade.

Deutsche Shell's decision to buy a 300,000-ton/yr SOW (Sächsische Olefinwerke) ethylene cracker in Böhlen, eastern Germany, hinges on the outcome of the HSR project. Shell would use the cracker to treat feedstock supplied via HSR, according to board member Thies Korsmeier.

The Wilhelmshaven pipeline

This project would carry 10–15 mt from the Beta refinery in the North Sea port of Wilhelmshaven. Like the HSR product pipeline, it too would supply eastern German regions of Lower Saxony and Saxony-Anhalt, passing through the Bremen and Hanover regions.

Launched by Johan van Weelden, managing director of the expanding, 8 mt-capacity Beta (ex-Mobil) refinery at Wilhelmshaven in late 1991, the idea was not an instant success.

Critics said Beta could never finance the project alone, and predicted that other oil companies would not help bankroll the idea.

Despite early resistance, Beta has managed to convince a few firms to come in. German Conoco Mineraloel,



Existing crude oil pipelines and alternative projects

Mobil Oil AG and Wintershall have confirmed their interest in the 350-km plan.

Refineries in the area are long on feedstock and the group feels it could ship this commodity, along with finished products, through the new artery.

The plan won support from the Lower Saxony government. Saxony-Anhalt's Minister Rehberger, however, is once again opposed to a new pipeline which would ship finished products to Leuna.

One advantage of this artery is that it would provide the region's substantial chemical industry with feedstock.

The coming deficit

The expected trend towards greater consumption in eastern Germany since the fall of the Berlin Wall has already been confirmed in major areas, ie motor fuel and heating gasoil.

Rise in motor fuel is due to a general growth in the standard of living. It translates into more automobiles and increased use of them, as well as extended commercial exchanges, both within eastern Germany and with its neighbours. Motor fuel consumption in eastern Germany (including western Berlin) increased from 8 mt in 1990 to 8.28 mt in 1991.

HSR

Hamburg-Sachsen-Rohrleitung

- Companies involved: Shell, Esso, BP, Dea, Veba Oel
 Trajectory: From Hamburg to Nossen (near Dresden)
- via Hanover and Böhlen
- Capacity: 10 to 15 million tons per year
- Cost: DM 800 to 900 million
- Targeted date of operation: 1995

WPL

Wilhelmshaven Pipeline

- Companies involved: Beta, Wintershall, Conoco, Mobil
- Trajectory: From Wilhelmshaven to the region of Leuna
- Capacity: 10 to 15 million tons per year

Heating gasoil has gained as the nation switched over from coal to oil or gas. Use of heating gasoil before reunification was restricted mainly to industry, accounting for this figure's substantial increase from 1.47 mt in 1990 to 3.5 mt the year after (including western Berlin).

The total market for oil products in eastern Germany and western Berlin showed a significant gain in 1990– 1991: growth was up from 14.4 mt in 1990 to 16.5 mt in 1991, a 14.6 percent improvement.

By comparison, western Germany's consumption progressed from 101.1 mt in 1990 to 107.1 mt the following year, an increase of 5.9 percent. This was largely due to expanded heating gasoil use; it also reflects the stimulating effect of reunification on western Germany's consumption.

When discussing consumption and supply in eastern Germany, one must examine the broader picture, bringing the influence of neighbour nations into play. A marked increase in consumption is also predicted for Poland and Czechoslovakia. Supply deficits originating across the border will spill over, affecting eastern Germany. Products might be moved to Poland and to and from Czechoslovakia.

The effects of reunification on consumption were not felt until 1991. In 1990, eastern German refining production still covered demand, even providing a 3.2 mt surplus. Crude processing dropped in 1991 however, and a deficit of nearly 2 mt appeared. Assuming Leuna is not rebuilt before 1995, eastern Germany's deficit could climb to 2.1 mt between now and then.

The Leuna effect will only be felt after 1995, when that refinery will be rebuilt. Two scenarios are possible for a post-1995 Leuna, depending on the capacity envisioned:

An 8 mt Leuna facility. With consumption at 21.1 mt in 2000 and 22.8 mt in 2005, eastern Germany's deficit would widen to -1.65 and -3.2 mt, respectively.

A 12 mt facility. Leuna would become one of Germany's largest refineries, helping eastern Germany to a 2 mt surplus in 2000 and a nearly balanced status by 2005.

These assumptions, however, are based on a relatively moderate growth rate in the eastern German market. Enerfinance estimates that demand in eastern Germany should increase from 16.5 mt in 1991 to 22.8 mt in 2005, a 38 percent growth. However, talking about deficits in the total oil product market may oversimplify the situation. Surpluses and deficits occur in different ways in the light, middle and heavy cuts.

Even with Leuna's capacity at 12 mt/y, eastern Germany's deficit could rise, thanks to product transfers to Poland, thus increasing the need for an oil product pipeline. This much seems certain. The question is: from where to where?

Western Germany will continue to be short 30 mt. Total refining capacities in the länder of Schleswig-Holstein, Hamburg, Bremen and Lower Saxony are 20 mt/y including the Beta refinery. This just covers the demand in these regions (19 mt in 1990). Product shipments from Wilhelmshaven or Hamburg to cover the eastern German deficit would call for additional imports of products. Another solution is to upgrade the refineries, but this seems less likely.

*Logistics and Supply in Europe, Enerfinance Consulting Services, Paris, 1991

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The profitability of car washing

By Jon Campbell-Harris, Sales Director, Valetmatic & Brushwash Ltd

In optimum circumstances in the United Kingdom, pressure washes generate a turnover exceeding £30,000 per annum, rollover brushwashes £70,000 and conveyors considerably more. On the average site income generated from car washes tends to run at about 40 percent of the levels quoted above (figures based on May Holdings portfolio of operating assets). Oil company operated sites exceed the average by 10-20 percent. Taking account of all running costs together with depreciation and interest but excluding groundworks, a jet wash earning £12,000 per annum (pa) will pay for itself in around nine months, showing annual profit of around £9,400. A rollover earning £28,000 pa will pay for itself in around 19 months, showing an annual profit of around £13,000.

Of the two, the pressure wash will invariably offer the fastest return on capital. On the right site the rollover will return the greater absolute profit. The reason why rollovers can generate greater income than pressure washes is because the wash cycle is typically faster allowing greater throughput and wash vend prices are typically around 15 percent higher. Against this, rollovers suffer more down time. The greater relative profitability of pressure washes stems from:

- Lower capital cost (around 25 percent of capital cost of a rollover).
- Longer life (typically pressure washes remain in service for up to twice as long as rollovers).

- Lower service cost (around 30 percent of service cost of rollover).
- Less water usage (around 35-40 percent of rollover).
- Smaller capital outlay on groundworks and buildings.
- Less risk of accident damage (generally cost less on all insurance).

On large busy sites conveyors can generate the greatest absolute profits and a return on capital invested comparible with the pressure wash. They are unpopular with UK oil companies because historically they have required manning. They are frequently found on supermarket sites, stand-alone wash centres and service stations in some other European countries. Interestingly, unmanned conveyors are currently operating successfully on 10 Morrison supermarket sites. Morrisons have a further six on order.

Impact on petrol station profitability

Based on a recent survey quoted in the February issue of *Garage and Automotive Retailer* car washing accounts for 26 percent of service station turnover but 12 percent of net profits in the United Kingdom. There is an added benefit in that car-washing tends to attract new customers to the forecourt whilst reinforcing customer loyalty.

In the United Kingdom more than 80 percent of motorists never or seldom use car washes, preferring to wash their vehicles with a hosepipe or bucket and sponge. But as environmental legislation gathers pace they will be forced to wash their cars on controlled sites such as service stations, supermarkets, stand-alone car wash centres.

As increasing numbers of motorists use car washes, revenues from individual car-wash machines will increase at a faster rate than has historically been the case. Based on May Holdings operational portfolio, the average income generated from each machine has risen by over 113 percent over the last seven years.

Historically mechanised car washing has been the preserve of the service stations. However, in more recent years a significant volume of car washing has moved to other areas, principally purpose-built car-wash centres, supermarkets and hypermarkets.

As end-user demand for car washing facilities builds up business continues to be transferred away from service stations, although there are many service stations with underutilised space which could very profitably be used for car washing.

Share of income schemes

Share of income schemes offer oil companies and forecourt operators comparable absolute profits to outright purchase whilst relieving them of the risks associated with acquisition, reducing the administrative burden and, at times of limited capital budget, avoiding the necessity of choosing between car valeting and other desirable forecourt investment.

Under such a partnership scheme the manufacturer will install valeting equipment, provide service and (in the case of pressure washes) ingredients at no cost to the oil company/forecourt operator; and share the revenue.

In addition the manufacturer will give ongoing marketing support to attract additional business. A serious manufacturer will also upgrade the equipment when he feels that this is warranted by the income potential of the site and remain at all times active in protecting the income base of the site — for example in the case of water shortages.

The input of both partners maximises the profitability of the asset. We believe that it is these partnerships which have developed the substantial growth of pressure washing in the United Kingdom over recent years.

Which machine?

Obviously where space will only allow for a pressure wash, this is the machine to choose. It is also the machine to choose on larger sites where throughput is not large enough to merit the greater investment and running cost of Electrical energy is the common factor that binds us in our quest for a better quality of life for all our peoples. By concentrating on the positives, on common development factors, we are building bridges for tomorrow. I believe that electricity could be a catalyst not only for illustrating the interdependence of all Southern African states, but also for stimulating a new development in our subcontinent.



Dr. John Maree, Chairman, Eskom Electricity Council.





a rollover. A rollover can achieve greater absolute profits on high volume sites — if the demand is there, as it can wash twice as many cars, albeit at approximately four times the cost per wash. On very large, very high volume sites modern conveyers deserve very serious consideration. Experience shows that where a pressure wash and rollover coexist on the same site they tend to enhance the income of each other as well as fuel and shop sales. On quality sites the mini car wash centre (see photograph) is an attractive option.

Having decided on the type of machines required, the next decision concerns the manufacturer and supplier.

Many purchasers consider only the acquisition cost rather than the overall cost of running the equipment, the quality of wash it will provide, its reliability and the income it will generate. The more sophisticated purchaser will consider the likely profit that he will generate from the various machines on offer considering investment cost, user appeal, reliability of manufacturer, service reliability, expected downtime and resulting loss of earnings and customer loyalty, operating costs and useful life of the equipment. The cost to the operator of unreliable equipment in terms of lost income in the short term and loss of customer lovalty in the medium term can be substantial. Consequently the more experienced purchasers tend towards quality equipment.



The Institute of Petroleum

OFFSHORE SAFETY — THE RESPONSE TO CULLEN

Tuesday 16 June 1992

A one day conference to be held at the Cavendish Conference Centre

Lord Cullen's report of the Public Inquiry into the Piper Alpha disaster was published on 12 November 1990 and 10 days later the Institute of Petroleum held a conference 'Offshore Safety — The Way Ahead' in order to examine the implications of the report's recommendations for the management of offshore safety in North Sea oil and gas operations.

Since the publication of the report, all those with responsibility for safety in the offshore oil and gas industry have been considering how best to implement the recommendations regarding safety cases. The issuing of the HSC consultative document 'Draft Offshore Installations (Safety Case) Regulations 199-' in February has provided proposals for regulations and guidance to implement the introduction of a safety case regime.

The conference will examine the implications of the draft regulations and the steps which have been taken in implementing the recommendations of the Cullen Report. A concluding paper will review the way in which offshore safety is regulated in Norwegian waters in comparison with the proposed new UK offshore safety case regime.

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. Telephone: 071-636 1004. Telex: 264380. Fax: 071-255 1472.

Petroleum retailing hypermarkets

By Ian Rose, Petroleum Sales Development Manager, Safeway Stores plc

A hypermarket is defined as a self-service retail outlet which offers a wide range of food and non-food products with a sales area in excess of 2,500 square metres. This format was originally developed in France during the late 1950s and early 1960s and has evolved throughout most West European countries with varying speed and success. In the United Kingdom the term 'hypermarket' has been rejected in favour of the term 'superstore'. Perhaps one consequence of the Single Market will be common terminology.

A theme common to all hypermarkets is the encouragement of infrequent visits with high customer spends. The provision of ancillary services — restaurants, pharmacies, post offices and petrol stations — is a logical diversification and extension of the 'one-stop shopping' concept. Petrol stations have therefore become an important ingredient in the customer offering in providing a convenient facility for what can be a distress purchase, as well as a marketing tool with which to promote the store's price perception.

UK market

During the 1980s a combination of over-supply by refiners and increasing competition in the retail market helped to keep pump price inflation some way below the Retail Price Index. Meanwhile, market growth declined from 6.4 percent in 1988 to 0.8 percent negative growth in 1991, in line with the economic slow down. During the same period, the number of retail outlets declined from 21,100 in 1985 to 19,200 in 1991, while the number of superstores selling petrol has nearly doubled in the last four years and now represents 2.7 percent of total outlets. (See Table 1.)

Superstore sites now exceed 500 with a market share by volume of around 12 percent. Tesco have the dominant presence with 5 percent from 147 sites. The supplier split shows a wide range with Texaco supplying 19 percent of all superstore sites. (See Table 3.) Within the next 12 months, the vast majority of total superstore development will be carried out by Tesco, Sainsburys and Safeway whose share of superstore sites will grow by 8 percent.

The current average site throughput for the industry is around 40,000 litres per week. This compares with the superstore average of 127,000 litres per week. UK superstore outlets are characterised by a number of features: they all adopt a one-stop concept, with the notable exception of Asda; there are generally limited ancillary facilities eg shops, car washes and instead an emphasis on large forecourts and queuing space; they tend to be located and orientated primarily for the store customer and have opening hours which reflect those of the store.

European market

The maturity and size of the hypermarket sector in Europe largely reflects the developed nature of each nation's economy together with the availability of land. The extent to which gasoline retailing features with hypermarkets is determined by other factors such as planning restrictions and environmental concerns. The Spanish market is notably lacking in hypermarkets as competitors of the oil companies. On the other hand, France has close on 4,000 hypermarket/supermarket petrol outlets. Germany and the United Kingdom are the next populous with 800 and 500 respectively. Surprisingly perhaps, Switzerland has as many as 115 outlets with a market share of 11.2 percent. (See Table 2).

In Italy, retailing as a whole is relatively undeveloped with hypermarkets representing a minimal proportion of sales. Petrol retailing does not feature in the hypermarket offering with only 26 petrol stations out of 3,285 hypermarket/supermarket sites. Market share is very low but is destined to increase rapidly in the next few years with the number of hypermarkets likely to rise by over 50 percent in the next three years.

The boom period for hypermarkets and supermarkets in the former West Germany is now over, having reached near saturation and a 12 percent share of total retail sales. Over 800 hypermarket petrol sites have a market share of 10 percent. Reunification contributed to a 9 percent gain in hypermarket sales to underserved East Germans since 1990. Major hypermarket operators are now looking east for expansion opportunities.

If we consider the most highly developed nation in Europe for hypermarkets — France, 96 percent of the 851 hypermarkets have petrol and like Germany the rapid expansion of the 1980s is now moderating. Leclerc is the largest retailer in the hypermarket and supermarket sector with a turnover of FFr100 billion in 1990, although Carrefour's acquisition of the Euromarche Group in mid-1991 will enable the former to challenge Leclerc for the leading position in coming Table 1: The UK market

years. Since minimum pump prices were deregulated in 1985, hypermarket sales have grown, increasing market share from 22 percent in 1985 to 40 percent today. In common with the United Kingdom overall site numbers have declined from 46,000 in 1973 to 24,000 in 1991, with a further fall projected to 18,000 in 1995.

Most French hypermarket petrol sites employ a two-stop concept where the customer drives forward from the pump to pay at a toll booth. Car care centres are invariably annexed to the stores themselves and are quite separate from the petrol operation. A further contrast with the United Kingdom is the offer of branded as well as own brand fuels from the same filling positions. Most hypermarkets purchase on the spot market (France is a net importer of unleaded gasoline) and oil companies rely on brand differentiation to combat price. In November 1990 Shell signed contracts with Unico and Intermarche which now only sell gasoline under the Shell brand and at prices determined by Shell. Generally however, the hypermarket offering is an own-brand cut-price phenomenon with no frills.

Recent developments

The recent accelerated growth of superstore petrol sites in the United Kingdom has seen a marked contrast in styles and philosophy. A number of superstore groups have begun to provide more than just cheap petrol. Safeway, Morrisons and William Low in Scotland particularly have gone for a more comprehensive offering to broaden their appeal with forecourt shops, car washes, pressure washes and extended opening hours. Tesco and Sainsbury's have so far resisted this trend although the continuing Sunday opening of the stores has now brought seven day trading throughout their networks. This market segmentation reflects the companies' attitude towards petrol retailing. Some recognise that competitive pricing attracts non-store custom which ought to be provided with the same comfort and facilities as that provided by the oil companies. Also, the majority of the petrol buying public do not buy purely on price; increasingly, it is location, convenience and service which matters most. The contra argument is that you attract customers with cheap petrol and this hopefully leads in to the store for other purchases. The 1990s will see a further development of this change and will represent a second front on which to compete with the oil company 'gas bar'.

	Numbe	Numbers of service stations		
	Numbers Thousands	Growth %	Superstore Sites	
1985	21.1			
1986	20.6	-2.3		
1987	20.2	-2.0		
1988	20.0	-1.0	270 1.4%	
1989	19.8	-1.0	369 1.9%	
1990	19.5	-1.5	443 2.3%	
1991	19.2	-1.5	502 2.7%	

Source: Mintel, Forecourt News

The relationship between refinermarketers and superstore groups has seen some change recently. Whilst in direct competition at a retail level, the national accounts divisions are competing amongst themselves and against non-retail sources, to supply the fastest growing sector of the UK petrol market. Traditionally, it has been the mini-majors and minor oil companies who have shared this volume. Recently, however, the majors, including Shell, have been much more active in pursuing this market. In France, Casino has recently sold its petrol stations to Shell and Agip with a resultant softening of price stance. Approaches have been made in the United Kingdom by some oil companies without success. Superstore groups are justifiably reluctant to lose control of their front-line price attraction and marketing tool. A group with a less than strong capital base however, may be tempted to sell.

The search for better supply arrangements continues with increasing use of spot buying and research into supply logistics. In France, hypermarket groups Promodes, Euromarche and Carrefour have invested FFr80m in a fuel depot near Bordeaux and another is planned in Fos. This perhaps demonstrates the long-term view taken by hypermarkets in France that they wish to continue the battle against the refiner-marketers. It may also indicate the possibility of future cooperation in supply infrastructure amongst superstores in the United Kingdom.

The oil companies' answer to the erosion in their market share is brand differentiation. We have seen recently Esso's fuels awarded the AA Seal of Approval and Shell's clean fuel campaign which reflect the use of additives to enhance and inhibit particular properties. Indeed, Shell will only supply superstore groups on the basis of brand representation at the pump and price sign. In France, the dual branding on some hypermarket sites give the customer the choice between price and superior quality, perceived or not. As more UK refinermarketers introduce their own fuel additives, the advantage will dissipate

Table 2: The European market

	1980	1985	1990	1995	2000
France	12.0	22.0	39.0	35.0	35.0
Germany	8.7	8.9	9.0	?	?
UK	1.1	3.0	8.0	16.0	25.0
Austria		2.6	2.2	2.2	2.2
Belgium	5.0	5.0	5.0	5.0	5.0
Finland	_	2.0	2.7	3.0	3.5
Greece	-	-		-	-
Ireland					-
Italy			0.3	0.6	1.5
Portugal		-	0.5	3.0	6.0
Spain	-		-		
Switzerland	12.6	12.1	11.2	15.0	15.0

Source: Shell Oil





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Table 4: The European market Table 3: The UK market Superstore sites split by supplier France — Market Share % Numbers Share % 1990 1991 19.0 1989 88 Texaco 72 15.6 Gulf 74.1 65.4 67.2 **Refiner-Marketers** 69 15.0 18.6* Shell 18.0 16.4 Hyper/Supermarkets 49 10.6 Conoco 18.2 14.8 7.3 Independents 42 Mobil 9.1 100 100 100 8.2 38 Esso *40% If refiner-marketer branded unleaded sales are included. 37 8.0 BP 3.4 17 Total 14 3.0 Philips Source: Institut Francais du Pétrole 37 8.0 Others

and oil companies will need to research and market new quality thresholds.

On the environmental front, new conditions of licence and legislation has begun to place new burdens and costs on retailers. The demands of providing for vapour recovery, secondary containment, leak detection and tank testing have added to construction costs and will contribute to the closure of smaller uneconomic businesses without the resources to invest. Superstore groups are well to provide for those placed improvements which sit very well with their image as good neighbours and environmentally active. More generally however, many countries in Europe now have restrictions upon building edge of town or out of town retail parks, primarily for environmental reasons. In Austria, for example, no further links of junctions on motorways are permitted for access to retail parks. In the United Kingdom the laissez-faire attitude of government and liberal planning laws continue to foster the growth of these develop-Market saturation will ments. probably be the natural regulator.

The 'single market'

The creation of a single market will have no immediate consequences for hypermarket petrol retailing. It will create a climate in which certain existing developments will be affected, and some new initiatives started.

A consequence of converging national economies will be a gradual move towards the harmonisation of duty. Given the vast differences in retail prices throughout the EC, this will take some time to achieve, if at all. With improved road travel links to the continent, the UK superstore groups with sites in the Southeast should be much more aware of their counterparts in Northern France and Belgium. We may even see price changes in one country having some affect on those in another.

The broadening of the EC into Eastern Europe will facilitate the expansion of hypermarkets and represent new challenges for product supply and quality. The single market perhaps will provide a framework in which joint ventures between hypermarket groups will exploit these new markets.

The opportunity will be provided for fuel grade rationalisation, no doubt welcome to the motor manufacturers. For example, Regular Unleaded gasoline (90/91 Octane) sold mainly in Germany and Austria could be phased out and blending of grades stopped. With the demise of leaded fuel also, the hypermarkets will have some decisions to make about the provision of choice.

Supply chain management will be the key area of development in the next few years with UK superstores particularly looking more to Europe for supply and perhaps investing more extensively in supply chain infrastructure. With further use of computerised systems, forward buying based on projected throughput and latent storage is certainly possible. The probability of a single currency will pose some interesting problems for hypermarkets. Establishing perceived price advantage and credibility in a new currency will be unchartered water. Price differences in Ecus per litre may need to be increased to influence buying behaviour, resulting in an erosion of gasoline retail margin for hypermarkets. If price does become less important, then superstores with more to offer will survive.

In the developed North and West European markets, rising land cost, increased price competition, refinermarketer investment and environmental restrictions will tend to inhibit hypermarket growth within the Single Market. In Southern and Eastern Europe the predominance of cheap land, the urbanisation of the population coupled with rapid income growth and large scale investment in infrastructure will represent the main expansion opportunity for hypermarkets. Petrol retailing will continue to play a key role in these expansion plans with or without the cooperation of the refiner-marketers.

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Italian marketing looks set for a major upheaval

By John Cranfield

The coming year could see a major move towards more competition in the Italian oilproducts market. And nowhere is that needed more than in the retail automotive fuels sector. For the past two decades have seen the major international marketers pulling out of Italy, initially selling out to indigenous firms, but latterly providing a foothold for producer countries keen to extend their activities downstream. Now that seems set for a change. The majors are looking again at what, for years, has been a difficult market. The advent of the Single European Market could see the dominant position of state-owned marketers begin to crumble.

How the Italian government has for so long been able to justify the dominant position held by its state-owned oil companies is a mystery to many. And, despite EC competition rules that get stricter year by year, that dominance, far from dwindling, has actually got stronger. Four years ago, state firm ENI held 36 percent of the products market, via its two subsidiaries Agip Petroli and Italiana Petroli (IP). That would have sparked off a monopolies investigation in many countries. Yet today. despite increased competition in most of the rest of Europe, ENI-group companies now hold 47 percent of the market.

This position has largely been built up as a result of the majors pulling out. Today, only Esso remains as a major player. However, Shell - which sold out back in the 1970s, its assets forming the basis for IP - returned in the 1980s. An initial purchase of ex-Texaco assets in the Milan area provided Shell's stake in a joint venture with Montedison, which had built up its network from one-time BP and Total assets. Esso now holds 15 percent of the gasoline market and MonteShell 7.5 percent. Other significant operators are: Q8, developed from Kuwait Petroleum's purchase of Gulf and Mobil assets, as well as those of the independent, Pisa; and Tamoil, which is a blend of ex-Amoco assets, the resurrection of the old Tamoil independent - purchased from bankruptcy by Libyan interests - and the networks owned by independents Borlotti and Vulcan. Privately-owned ERG has managed to hold on to a 12

percent share of the market, the balance being covered by a number of small, generally, local, independents.

Several factors have contributed to this position. One has been the fairly rigid state control on prices. The maximum price allowed to a retailer is the average of average prices in Belgium, Britain, France, Germany and the Netherlands. Changes can only be made when that average of averages moves by the equivalent of US\$0.004/litre (c. 1p/gallon). As a result, before the Energy Ministry in Rome will authorise a change, prices on the world market, both for crude and for products, may well have fluctuated up and down by a sizeable amount, with the average of averages remaining little changed. Italian retailers can thus never respond quickly to market trends, with losses coming so hard on the heels of profits that even the most efficient marketer never knows whether he's going to end the year in the red or black. As a result, returns on investment have been so low that majors have pulled out one after another.

Loosening price controls

To some extent, that state of affairs is changing, with the government freeing some products from control, though only in small volumes so far. But, for many years, the problem has been compounded by the government's method of taxing oil products. This imposes tax not at the point of retail sale but at the refinery gate. And, until the beginning of last year, the tax was not only due for payment within 15 days but was subjected to high levels of interest if late. As a result, cash flows were severely hit since the government took its slice of the action long before the companies could get back their outlay via actual sales. From January 1991, the 15-day rule was moved into line with practice elsewhere in the EC, with 30-day payment now being usual. But the refinery-gate impost remains.

These changes were, it is said, just enough to keep Esso in the market. For the company had, reportedly, been on the verge of pulling out. Had this happened, the only refining operation still run by an international major would also have gone.

The third bugbear for those operating in Italy's retail market is its fragmented nature. Whereas Europe's biggest market, (west) Germany, gets by with some 18,500 filling stations, Italy — the second biggest — has 34,000. That, say private-marketers' organisation Unione Petrolifera (UP), is far too many. Late in 1991 UP was forcibly urging the Industry Ministry to allow 5–7,000 filling stations to be closed. Even then Italy would be left with many more than it really needs, or can really support.

And it is not as if marketers had other sectors to fall back on. Although, in 1990, gasoline demand rose 6.2 percent over 1989, to stand at 13.7 million tons, all other products are in decline or stagnating. Automotive gasoil (diesel) may seem to provide a major new market, demand having risen rapidly from 9.7 million tons in 1979 to 16.8 million tons 10 years later. But in 1990 it slipped back 1.8 percent, while the demand for heating oil (gasoil) slumped from 12.4 million tons in 1979 to just 6.9 million tons in 1990. In other words, overall gasoil demand has risen but marginally, from 22.1 million tons in 1979 to 23.4 million tons in 1990. The heating-oil demand slump of 11.5 percent in 1990 over 1989 continues to bode ill for this sector, while new government rules on cleaner automotive fuels, in effect from 1 February 1992, have put up diesel prices (though not gasoline), thus adding a further curb to this sector.

Shrinking market

The rapid decline in gasoil demand for heating is due to the heavy penetration of its market by gas. The same goes for the fuel-oil market which, in 1979 required 37.5 million tons to satisfy it. In 1990, the figure was 26.7 million tons. And that's despite a rise in fueloil demand for electricity generation, from 18.3 million tons in 1979 to 21 million tons in 1990. Industry which required 15.8 million tons in 1979, took just 4.8 million tons in 1990, while the heating market had dwindled to just 0.9 million tons in 1990, compared to 4.1 million tons in 1979.

increased efficiency, Clearly, improved cash flow and more rapid response to market conditions are essential in handling a declining market. But it is only recently that the government has woken up to this, easing the reins somewhat as mentioned above. Whether further impetus for change comes with the Single European Market, with its rules on market access, remains to be seen. But already last year it was becoming clear that the government wanted to move away from any charges of monopoly.

Although nothing official has been said, it is widely speculated that IP may be hived off. Whether Shell would want to buy back its old assets is a moot point, though some of the high-volume autostrada sites have attractions. More likely buyers, if the group is sold as a whole, would be producer countries seeking more downstream action. Kuwait Petroleum has been mentioned as intested, while Nigeria National Petroleum Co and Petroleos de Venezuela are also reckoned to be keen. But a further option must be Star Petroleum, the Saudi/Texaco joint venture. Italy is one EC country where Texaco no longer has interests, while the Saudis have been regularly beaten



Although sales of automotive gasoil have grown strongly in recent years, refiners have been hit by a corresponding slump in gasoil use for heating.

A Shell photograph

to European products markets by the Kuwaitis.

Further confusing the options is BP's lubes-marketing deal with independent ERG. A second BP deal involves a joint venture with Fintermica, which earlier acquired most of Texaco's marketing assets. A state sell-off could thus be of interest to the UK major.

Refining out of gear

Refining is similarly concentrated in state hands. Only Esso among the majors has retained process capacity, with its fully-owned 180,000-b/d Augusta refinery and a 66 percent stake in Sarpom's 220,000-b/d Trecate plant (the rest being owned by Fintermica and Isab). Q8 runs the ex-Mobil Naples refinery (100,000 b/d), while Tamoil owns the 90,000-b/d Cremona plant. Several other small plants are independently owned but, overall, Agip has around 35 percent of Italian refining capacity aimed at the home market. There are also ENI stakes in export refineries which, with over 800,000 b/d capacity, are not far behind the volume serving local needs. However, the refining industry is unbalanced, largely because it aims mainly at middle-distillate production. Product import in 1990 totalled 35 million tons, while crude deliveries were 79 million tons. Some 20 million tons of products were exported, leaving a balance of 15 million tons imported, mostly fuel oil.

The presence of so much exportorientated refining capacity tends to throw utilisation statistics into confusion. In some years third-party refining runs at a high level, sometimes at a very low level. As a result, overall capacity utilisation lurches from around 60 percent to over 85 percent, the latter level doubtless confirming government thoughts that rationalisation is not really needed. But the 60 percent level should clearly give pause for thought, especially as the new energy plan is likely to aim at lowering oil demand even more quickly than PEN 88. And, with the advent of the Single European Market, majors contemplating a return to Italy should, in theory, have no problem moving products to the local market from more efficiently utilised capacity elsewhere in Europe. The next year could see such moves, but only if Roman bureaucracy can first be overcome.

TAMOIL. THE JOURNEY HAS JUST BEGUN.



Distribution trends in France

By Stuart Todd

An annual report on distribution trends in France in 1991, published by the Bulletin de l'Industrie Pétrolière, BIP, reveals that the major refinery groups significantly increased their control of petroleum products markets at the expense of the independents while the supermarkets share remained stable.

The multi-nationals saw their share of the petrol distribution market rise from 67 percent in 1990 to just over 74 percent last year. Elf holds pole position with 20.3 percent (+4.09 percent on 1990) followed by Total, 17.8 percent (+1.92 percent). The two companies acquired three of the largest independent groups in 1991 as well as a string of smaller distributors. In April of this year, Total acquired Aral's service stations which accounted for 0.27 percent of French market sales in 1991.

Shell saw its share increase by 0.86 percent to 10.50 percent, taking third place from Esso, 9.98 percent. BP's share fell by 0.5 percent to 5 percent. A tighter grip on the market by the multinationals is not unexpected but what is surprising is that they have been able to increase their share (2.71 percent out of an overall rise of 6.94 percent) without the support of their distribution subsidiaries' commented BIP analyst Jacques Marie. 'On this basis, Total and Shell in particular, have distinguished themselves while BP continues to lose ground. Such trends amount to a radical development in the sector in France with the Single Market only a few months away', he added. Viewing market share developments (including distribution subsidiaries) over the past three years highlights near 6 percent growth for Elf, 1 percent for Total and 1.2 percent for Shell. The latter's advance is explained by its supply network extending to the Casino supermarket chain whose service stations it acquired with Agip at the end of 1990. Esso's share has stagnated while BP sees its fifth place threatened by Mobil.

The independent distributors' share of the petrol market withered by just over 50 percent in 1991 to 7.3 percent. This compares with 14.79 percent in 1990 and 18.20 percent in 1989. 'The days of excess capacity are over and the independents are experiencing difficulties with their supplies. This has induced a good number into selling their activities to the multi-nationals', explained Mr Marie. 'The independents demise has also been compounded by the fact that the majority of them are family-owned and there is no one to hand the business over to. Sale is the only real option.'

The supermarkets share of the petrol market increased marginally to 18.59 percent. However, in taking into account petrol bought from the multinationals and later re-sold, the supermarkets share leaps to around 40 percent.

The market share breakdown for unleaded petrol shows a similar picture; 79.19 percent for the multinationals, 15.78 percent for the supermarkets and 5.03 percent for the independents.

The multi-nationals and their distribution subsidiaries have also made a spectacular surge in wholesale markets for other petroleum products — by 9.1 percent for diesel oil to 78.39 percent, 10.65 percent for domestic fuel to 77.25 percent. In each category it is Elf and Total who have made the strongest gains.

This growth was achieved at the expense of the independents. The supermarkets recorded very modest increases in their share of the diesel oil and domestic fuel markets.

The multi-nationals had nearly 100 percent control of heavy fuel supplies to France's nuclear power stations led by Shell.

The multi-nationals have strengthened their already dominant position in 1992 and further buy-ups of independents are in the pipeline. 'German group, RWE-DEA recently purchased a small distributor, Calmès, based in Metz, in Eastern France and there are other independents looking to be bought', commented Mr Marie. 'Taking into account the scale of their acquisitions programmes in 1991, Elf and Total will probably be less prominent in this respect in the current year although short of knowing their strategy secrets one can never be sure. Other multi-nationals present in the French market and those seeking to break into it could come to the fore. The Libyan group, Tamoil, is in this latter category but the diplomatic situation is an obstacle at the moment.'



French market share for petrol in 1991 (%)

The Institute of Petroleum

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The 1992 Forecourt Marketing and Equipment Show, to be held from 9–11 June at the National Exhibition Centre in Birmingham, will offer a unique opportunity for companies to examine the latest developments in the petroleum retailing industry.

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The petroleum retailing market faces a challenging time as stringent environmental legislation and competition from the hypermarkets force oil companies and retailers into redevelopment and upgrading of their existing sites.

1991 saw a drop of almost one million tonnes in total motor fuel supplied in the United Kingdom with a slight fall in average site throughput forcing retailers to examine development options in order to stay competitive. This year's show will feature a dedicated area within the exhibition featuring the latest products designed for pollution control as well as an 'advice shop' run by the Petroleum Retailers Association. This has been set up to offer help and guidance on all aspects of petroleum retailing including new legislation, training and recruitment, petrol margins and legal problems.

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PERSONNEL EDUCATION & TRAINING DISCUSSION GROUP — EVENING MEETING

Thursday, 11 June 1992

5.15 for 5.45 p.m.

Richard Ayres

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John Fuller

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will give a presentation on

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Europe-wide transport charge card launched

... technology news

Repsol, Elf Aquitaine, Agip Petroli, Petrogal and Texaco Europe, have joined forces to launch a new international credit card on the market called the Pan Diesel Card, intended for transport companies working in Europe.

This card, based on an advanced system of invoicing, supervision and control, will not only allow transport drivers to purchase fuel and lubricants but will also permit them to make use of a wide range of auxilliary services both for the vehicle — such as emergency repairs and onroute assistance — and for the

driver himself (board and lodging, telephone calls, etc). During the first stage, the new card will be accepted at

new card will be accepted at 3,000 service stations in 16 European countries including Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. It is hoped to achieve coverage of 5,000 sales outlets throughout 20 European countries by 1993.

Growth prospects for international road transport indicate that this activity will increase by approximately 10 percent per annum within the European Community until the turn of the century, and it is expected that 25 percent of all diesel consumption may be attributed to international transport by the year 2000 or thereabouts.

A joint company, called TEPAR, has been set up by the promoting companies as a European Group of Economic Interest (EGEI) in order to introduce and develop this new card. The headquarters of this enterprise will be at Sophie Antipolis, near Nice, France.

In order to satisfy the specific

needs of transporters and in response to the type of internal control they have chosen, there will be three versions of the card available.

- The first version will be a *driver's card* which will allow an authorized person to drive any of the fleet's vehicles.
- The second version will be a *vehicle card* to allow any person to drive the vehicle in question.
- The third type, a *mixed driver/vehicle card*, is valid for a certain driver and a certain vehicle.

Stage II vapour recovery

The subject of vapour recovery at petrol retail sites is becoming increasingly topical. For the European market and based on the ZVA slimline nozzle, Elaflex has produced an open system which does not require a nozzle with a rubber bellow.

With the open system the nozzle has a metal vapour spout. The handling of the nozzle is the same as with the standard ZVA nozzle. Special operating instructions for the customers, for instance not to top off the tank, are not necessary. It is also possible to fill motorcycles, petrol cans and to top up.

The Elaflex System is an active system using a small vacuum pump fitted either inside the petrol dispensing pump or outside if a central vacuum pump is preferred.

The pump produces a low vacuum which sucks the vapour back from the filler pipe of the car. The control of petrol and vapour is achieved by installing a small control valve.

This ensures that no excess air is returned, only the amount that the fuel has displaced is returned, hence the 1:1 ratio. The vapours are sucked in through the metal vapour spout of the nozzle into a dedicated channel inside the nozzle, which is connected to



the Elaflex Slimline 21 rubber coaxial hose, and then returned out of the pump through a small bore pipe in the ground back to the storage tank. The coaxial hose is designed so that it can be fitted to standard dispensing pumps adapted to accommodate Stage II as well as new dispensers including low hose pumps (internal hose retractors). The Elaflex system is now widely in use in Sweden where Stage II is mandatory for all new pumps.

It is also possible with the Elaflex system to retrofit to Stage II existing dispensing pumps with some modifications. The retrofitting does not include changing the nozzle boot.

Pump island units

MSI-Forecourt Structures Limited — an amalgamation of Turners-Kingswood Ltd and Mech Construction Ltd (Canopies Division) — is launching four new products.

Of particular interest will be the combination of display and information highlighting new ranges of canopies and pump island units, designed and manufactured following 12 months research in conjunction with major oil companies.

Built to meet specific requirements, the company's new pump island units represent a market first in the incorporation of pump island, cradle and containment sump facilities.

Contact List

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ELAFLEX	0992 451494
PM Services	0378 75626
MSI-Forecour Structures	t 0302 730202
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Triscan	0254 682111
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Tank gauging system

Veeder-Root Environmental Systems Normond CMS will launch a new, advanced tank gauging system, the TLS 350R, which has been developed specifically for the UK market at the Forecourt Marketing Show.

The new system will offer the industry and owners of filling stations an underground storage tank monitoring system with an automatic precision tank test.

The TLS 350R is an upgrade of the TLS 200R and will provide automatic tank calibration and dynamic wet stock reconciliation, including the production of inventory reports, a tank and alarm system status report and daily reconciliation reports. It is a modular system which can be upgraded to include new features which will be available in the near future. These include a dynamic leak detection facility and the ability to monitor a range of vapour and hydrocarbon sensors.

In addition the company will launch a new interstitial monitor for double-skinned tanks, which links to the new TLS 350R console reducing the number of console units in the service station and streamlining maintenance and service procedures.

... technology news

Full-range exhaust analyser

Analize (UK) is set to launch their revolutionary forecourt exhaust gas analyser, the first ever self-serve unit to provide a comprehensive analysis meeting both current and forthcoming legislation. Five readings are displayed and printed, to establish clearly within two minutes whether vehicles are running legally, economically and clean.

The new vehicle exhaust controls, introduced to MoT Testing in November 1991 have alerted motorists to the need and the benefits of checking exhaust emission levels. However, on this new forecourt analyser, readings not only confirm whether or not a vehicle is running legally, but also indicate the exact level of pollution and whether, and by how much, there is room for improving miles per gallon!

The self-serve Exhaust

Tester (ET) is easy to operate and gives quick and accurate readings of CO, HC, CO₂ and O₂. In addition the on-board computer instantly produces the air/fuel ratio known as the LAMBDA factor, which is the all important check on engine efficiency.

ET has been developed from the company's workshop analyser with a number of added controls and modifications for self-service use which have recently completed extensive trials.

There are 20 million MoT tests annually in the United Kingdom, and the only part of the test which a motorist cannot possibly pre-check is the infra-red gas analysis readings. Failure rates on emission levels are reported at 30–40 percent. The scope and cost of MoT tests is set to increase. 1993 sees the introduction of many new items of testing and the emission itself is scheduled to become much stricter with CO_2 and O_2 readings being added later to the presently controlled CO and HC levels. At the moment the only means of checking exhaust gases is to go to a garage and pay for a skilled fitter to do it.

Design has concentrated on reliability, durability and appearance, regardless of manufacturing costs. In use, it has an amazingly quick payback and initial cost has therefore been a minor consideration. Built in heavy GRP and stainless steel, it has an indefinite life-span. It can be produced in any colour scheme with all lettering, logos, instructions etc entirely in GRP. The display screen is in scratchproof anti-glare shatter-proof acrylic, chemically engraved.

Space saving payment system



A new outdoor payment system integrated with a fuel island pump is being launched by TRISCAN at the 1992 Forecourt Marketing and Equipment Show.

The company is introducing a pump integrated cardreader (PIC) to save space on busy fuel islands.

Accepting all major credit, debit and local account and fuel cards, the PIC can be accessed from either side of the island and issues a receipt on request.

Overfill prevention system

Scully U.K. Limited, designers, manufacturers and suppliers of liquid level detection systems have launched a failsafe, self-checking overfill prevention system for use on petrol station forecourts.

The system utilises the Scully Dynamic Self Test® overfill prevention concept which, by use of a dynamic pulsing signal transmitted to the optic sensors situated in the underground storage tanks, tests the entire circuitry 30 times every second. The total system is managed by a control monitor on board the delivery vehicle. The electronics based system has no moving parts to obstruct the free flow of fuel, and is maintenance free.

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Taking a leaf out of the

The Micrelec 9500 SERIES, a

completely new concept in

forecourt automation, will be

unveiled for the first time at the

1992 Forecourt Marketing

Show.

Micrelec follow the slim design lines associated with the portable lap-top. Although much smaller than comparable devices, the Integrated Console incorporates a 32position pump controller and highly sophisticated point-ofsale terminal, suitable for use in the UK and mainland Europe.

A separate processing unit, the Site Controller, is set to revolutionise the operation of the forecourt environment. As the central 'brain' for all site information and control, the Site Controller acts as the single interface between pumps, payment consoles, tank gauges, leak detection systems, back-office packages and data networks, accepting and processing information from up to 32 fuelling positions and a large number of peripheral devices.

Meter proving system

PM Services has launched a new system for improving the accuracy of fuel dispenser meters in association with a major oil company.

Available through PM Meter Audits, the system could save high volume retailers thousands of pounds each year by eliminating overgenerous dispensing. It operates without compromise to the requirements of allowable tolerances specified by Trading Standards Officers.

Checking the accuracy of fuel dispensing meters is usually carried out by service engineers to make sure that meters dispense measures within Weights & Measures tolerances.

National projects manager, Barry Dewhurst, says: 'A pump can easily meet Weights & Measures requirements, yet still give away a significant amount of fuel over a period. Meter Audits quantifies the meter performance with far less margin of error.'

New forecourt information system

A better way

By Carol Reader

At BP the decision has been taken to find a better, cleaner, safer way to distribute petroleum. The reasoning behind this strategy combined both financial wisdom and environmental common sense. Analysts at BP reckoned that in the long term it might work out cheaper to install a high degree of environmental protection throughout the distribution system at the outset rather than to continue to install additional control equipment every time new legislation is passed.

To the unitiated, GGF is yet another unknown acronym. However, to those involved in a small working group within the Distribution Development Centre at BP's Britannic Tower, together with researchers and suppliers at scattered locations, it stands for 'Green Generation Facilities' — the search for the better way.

The strategy developed from a study carried out by the company in 1989 when it was discovered that to comply with multifarious environmental regulations likely to be imposed worldwide over the next 20 years would cost a huge sum of money.

In the past BP had been complying with regulations as they were implemented but as a result of their study, they decided to investigate the whole question as comprehensively as possible, with the aim of achieving compliance at hopefully a lower cost.

Initial studies revealed that if environmental protection was installed at the beginning of a facility's life, the cost would be considerably less than if it were brought in stage by stage, as technologies were developed and as regulations changed (see **Figure 1**).

The team describe their objectives as the 'initiation of the development of cost-effective, safe environmental control technology for the long term, with the aim of re-affirming public confidence and protecting industry licence to operate.'

A better way?

BP was aware of the deficiencies and potential hazards of existing systems. They realised that GRP tanks were not the whole answer, that taking vapour back from retail underground tanks for recovery at terminals was only 50–60 percent effective, that vapour emissions did take place, that accidental spills and leaks were always possible, and that air and water pollution were constant dangers.

The company therefore decided to investigate a better way, utilising existing technology, where possible. The final recommended systems would be fitted worldwide at new facilities and also at existing facilities, if proven technically and cost-effective.

The three major components of the programme are:

The development of a secure, closed product containment system

Environmental sensing and site monitoring

Automated loading system

Product containment

The aims are:

- To protect employees, customers and the public from exposure
- To prevent liquid/vapour emissions to the environment
- To prevent product losses
- To achieve a high degree of longterm environmental control.

How could this be achieved? The researchers came up with the 'wine bag' concept — heavy duty bags of any size that could be used at any stage in the distribution chain, from the refinery to the retail site. Hey presto — a solution to everyone's problems.

In simple terms, there would be no possibility of vapour or liquid escaping, because the product would always be contained and its container would change shape and size as it was filled or emptied. This would apply to terminal storage tanks of whatever size, road tankers and service station storage.

A product containment system such as this would protect employees, customers and the public from exposure, would prevent liquid/vapour emissions to the environment, prevent



Figure 1: Financial comparison: Green Generation Facilities versus conventional designs





product losses and achieve a high degree of environmental control. The system could be fitted to new facilities or retrofitted to existing ones, assuming that costs were within reason.

In very specific instances similar bags have already been tried out or used. One thinks of 'dracones' used to contain large quantities of water for towing by sea to drought-stricken areas or the Irish road tanker which, by report, carries mineral oil in one direction and orange juice in the other — by using different 'wine bags' within the same tanker — and never the twain shall mix!

Impervious membrane bags could contain product and/or air in all tanks whether at storage at terminals or service station or in the fuel tank of a road vehicle, thus eliminating any possibility of vapour emissions because there are no vapour spaces at all in the system.

Materials needed to be developed to meet BP's very tight specifications. This has involved cooperative efforts with several major manufacturers and fabricators of membrane materials.

Designing bags also posed challenges. In the designs developed for the road tanker and underground retail storage tank versions, the lower half of the bag is rigid, while the upper half of the liner collapses into the lower half as it drains. It must even fold in a predetermined fashion, aided by batons (referred to as 'fold promoters'). All minutiae have been studied.

Figure 2 shows the current thinking concerning how the bag concept would

be adopted for large-scale storage tanks, while **Figure 3** shows similar design concepts for a road tanker.

Testing

BP's researchers, aided by many suppliers, have been looking at possible materials for the bags. The requirements were daunting — nevertheless, a dozen sorts of material have been considered for use with a range of fuels. The bag designs have been looked at from all angles, since there are a number of mechanical requirements:

- Easily installed and able to withstand installation stresses
- Predictable and repeatable filling/ collapsing
- Withstands repeated cycling
- For road transport, withstands dynamic stresses
- Free draining
- Permits gauging of contents
- Safe
- Compatible with conventional hardware

The designs have been developed from model tests and materials evaluations, consultations with suppliers and fabricators and after theoretical stress calculations. This bag research has been progressing well; tests with water have been carried out; those with product are just beginning and UK field trial using one road transport and one retail site begin shortly. A larger field trial is scheduled for 1993.

But how to ensure that the product bags remain intact? BP and its teams have also been looking at that, conducting research into environmental sensing and site monitoring.

BP's requirements for sensors are that they have an adequate sensitivity, are robust and reliable, safe and costeffective. They also want the sensors to be self-checking because most commercially available sensors do not have the desired stability and reliability.

Again, a number of instrument manufacturers, research bodies and universities have been assisting with



Figure 3: Product containment system design concept — road tanker compartment with product bag.



An experimental 'wine bag'.

this search for the necessary technology.

A survey of commercially available sensors and considerable laboratory testing has already been carried out. Now, a specific trial of an array of sensors is currently under way at Kingsbury Terminal, near Birmingham. (See **Figure 4** for the locations and sensor types installed).

Automatic loading system

The aim of an automatic loading system is not to function in a scientific fiction setting but to reduce exposure and risks during product transfer, to reduce product transfer time, to prevent crossovers and to improve capital resource utilisation.

Locations	Sensors
Inlet manifold	Hydrocarbon vapour (catalytic, semiconductor) Hydrocarbon liquid (float/conductivity)
Tank with membrane underneath	Hydrocarbon vapour (catalytic, semiconductor, adsistor)
	Hydrocarbon liquid (cable)
Existing tank with boreholes	Vapour extraction to remote sensor (semiconductor)
	In-situ vapour sensors (catalytic, adsistor semiconductor, diffusive)
Tank vent	Vapour extraction to remote sensor (semiconductor)
	In-situ vapour sensors (catalytic, adsistor, semiconductor)
Pump stand	Open-path infrared
Gantry	Catalytic, semiconductor, open-path infrared
Interceptor area	Float oil film sensor
Weather station	Wind speed, wind direction, temperature, pressure, humidity

Figure 4: Environmental sensing and site monitoring: Kingsbury Terminal demonstration project.

BP experts are talking to manufacturers of automatic loading systems and looking at coupling configurations. Ideally, an automated loading system would include a 'no-spill' coupling. Such a 'perfect' connector is also required in other industries for other purposes, so BP is talking to them about these problems and possible solutions. The components of automated loading are already available; BP's task is to assemble them innovatively into a system.

With automatic loading, it is also hoped to engineer faster loading at terminals. Results so far indicate that loading time can be reduced from the typical 20 minutes to 7 minutes. Such a reduction would obviously mean that fewer gantries and fewer tankers were required.

BP is also investigating delivering to high-volume sites such as airports and concentrated urban areas by means of pipelines, as an alternative to tanker deliveries. A single sleeve, containing a bundle of other pipelines each with a different product, would serve the purpose. The benefits would be reduced capital and inventory requirements and hopefully a reduced incidence/ severity of product releases.

Ultimate goal

Elements of BP's GGF *deus ex machina* will take five to 30 years to implement, assuming that they are proven costeffective. Building into its systems the ultimate environmental requirements, the scheme stretches over the horizon into the next century. However, there is the likelihood, according to Dr DS Rulison, BP's GGF Programme Manager, that some elements of the programme, notably the sensors might come even earlier than the five-year target.

He told *Petroleum Review* that while BP had been working on GGF on its own, the company was talking to other major oil companies and one was close to signing an agreement on a cooperative development venture. As far as he knew, no other oil company was working along similar lines and in such detail.

The GGF developers are in close contact with the regulatory authorities such as the US Environmental Protection Agency, the European Commission, the UK Health and Safety Executive and the London Fire Brigade, trying to work in tandem so that they obtain regulatory approval. They see GGF as an alternative, a better way, to ever-increasing sets of regulations, imposed year by year. ■

IP vapour recovery guide

By Brian Smithers, Chairman of Vapour Recovery Panel, DOC-4-D

The Institute of Petroleum has recently published 'Guidelines for the Design and Operation of Gasoline Vapour Emission Controls'. This document, which is believed to be unique in its coverage of the subject, has been written by the Vapour Recovery Panel of the Marketing Committee in response to proposals by the European Commission for two Directives mandating emission controls.

Although written in response to European legislation, it is the intention that the IP Guidelines will be of benefit to the oil industy wherever gasoline vapour emission controls are to be implemented.

The first of the EC Directives has just been issued in draft form and details of the proposals are given on page 290. This Directive will require Stage 1 emission controls during gasoline storage, loading into road tankers, rail tank cars and marine vessels and subsequent offloading.

The second Directive, which is still being prepared, will address automobile refuelling emission controls and will require the so-called Stage 2 modifications to gasoline dispensers at service stations.

These Directives will result in new types of equipment being installed, which in turn will lead to new safety practices and operation/maintenance procedures being introduced.

The IP Guidelines address the major sources of emissions within the gasoline supply, marketing and retail operations and set out the main points in the design, operation and maintenance of systems to reduce emissions at these sources and the safety factors to be considered.

In particular, because a Stage 1 vapour control system comprises a combination of sub-systems (eg the vapour lines on the road tanker, the vapour collection pipework at the terminal and the vapour recovery unit, or the road tanker and the service station vapour balancing pipework), it is important that these sub-systems are compatible with each other to achieve effective emission control.

Storage facilities

For above-ground gasoline storage tanks there are three options for controlling emissions proposed in the draft Directive. These are the use of external floating roofs fitted with secondary seals, or for fixed roof tanks, the installation of internal floating roofs or connecting the vapour spaces of the tanks to a vapour recovery unit (VRU). Guidance is given on the design of all of these options and some pointers given to permit system evaluation.

Product loading

The EC Directive will mandate bottom loading of road tankers because of the increased vapour collection efficiency achieved compared with modified top loading systems. The IP Guidelines, therefore, only give design considerations for vapour collection systems during the closed loading of road tankers. The vapour pipework on tankers designed for botton loading is detailed and test methods described to permit the integrity of this pipework to be checked.

As stated earlier, it is very important that the vapour control sub-systems are compatible. The road tanker is the common factor in two systems during loading at the terminal (Stage 1a) and vapour balancing at the service stations (Stage 1b). As vapour recovery systems operate at only a very small pressure above atmospheric, the pressure drops across the components of the road tanker vapour pipework are critical to the operations of both Stages 1a and 1b. Considerations of this important issue are given, particularly with regard to road tankers designed to the IP Bottom Loading Code of Practice.

This has been addressed in the draft Directive where it is required that when loading with five arms simultaneously there is at least 35 mbar pressures available at the gantry side of the tanker vapour hose connection to overcome the pressure drop across the terminal vapour collection system and recovery unit.

Top loading of rail tank cars (RTCs) will still be permitted under the terms of the draft Directive. Design considerations are given in the IP Guidelines for vapour collection systems using modified conventional loading arms, lance type systems and drop



Vapour recovery unit at Matosinhos, Portugal. Photo courtesy of Kaldair

EC Draft Stage 1 Directive

A draft 'Proposal for a Council Directive on the Control of Volatile Organic Compound (VOC) Emissions Resulting from the Storage of Petrol and its Distribution from Terminals to Service Stations' has started its passage through the European Community legislative process. It is expected that adoption of the Directive may take up to 18 months.

This Stage 1 Directive is one of a series aimed at reducing VOC emissions in the 12 member states. The first step was the adoption last year of Directive 91/441/ EEC mandating automobile VOC emission controls, ie, catalytic converters in exhaust systems and small carbon canisters for evaporative emission controls. The Commission is currently preparing a Directive on automobile refuelling emission controls.

The Directive applies to the storage, loading and transport of 'petrol' from refinery or intermediate distribution terminals to service stations. Petrol is defined as any petroleum distillate (except 100 percent propane or butane) with an RVP of 27.6 kPa (4 psi) or more intended for use as a fuel in an internal combustion engine.

Requirements

Specific technical requirements are listed with target values for VOC emissions set down solely for reference purposes. Member states, however, may accept other technical measures for emission controls if these are demonstrated to have at least the same efficiency as those listed.

Storage at terminals

The technical measures proposed are that all petrol storage tanks:

- Should be painted in a light colour if above ground and be fitted with:
- An external floating roof with primary and secondary seals achieving at least 95 percent reduction in emissions compared to a fixed roof tank without controls; or
- An internal floating roof achieving at least a 90 percent emissions reduction; or
- Be connected to a vapour recovery unit (VRU).

Petrol loading facilities

The technical requirements proposed are that:

- Road tankers will have to be bottom loaded;
- Rail tank cars can still be top loaded but no splash loading will be permitted;
- Vapours displaced during loading will have to be fed to a VRU with a mean hourly vent emission limit of 35 g/m³;
- Incineration will be permissible for marine loading if vapour recovery is considered unsafe or technically impossible because of the volume of vapour to be processed;
- Vapour collection systems will have to be checked for leaks at least every three months;
- Product loading will have to be halted if a leak of petrol or vapour occurs.

In addition, to permit cross-border trade, road loading terminals will have to be equipped with specified loading equipment. Loading arms and vapour hoses designed for tankers equipped to the IP Bottom Loading Code of Practice would comply with the standard. The proposals are that terminals at which bottom loading is required would initially need at least one loading arm meeting the specified design, will all loading facilities meeting the specification 10 years after the date of adoption of the Directive.

Mobile containers

It is proposed that the design and operation of road tankers, rail tank cars, ships and barges shall be regulated if used for petrol transportation. Only those mobile containers that comply with the stated requirements would be allowed to load at facilities where vapour emission controls are mandated. In addition, the requirements apply to all new road and rail tankers from one year after the date of adoption of the Directive and to new marine vessels from four years after adoption. The requirements are that:

- Road tankers will have to be designed for vapour balancing at retail sites;
- All mobile containers will have to be designed and operated to retain any residual petrol vapours after

arms fixed within the RTC. Although very uncommon at present, the design of systems for vapour collection during the bottom loading of RTCs is also described.

Safety is the major concern with vapour collection systems during marine loading, as the vapour concentration is within the flammable range for the majority of the loading period. This is in contrast to road tanker loading when a number of compartments are usually loaded in parallel so that the average vapour concentration in the collection system is sustained above the flammable range. This concern has resulted in the EC proposing marine vapour control implementation at a later date than for road or rail loading to permit more technical development.

The IP Guidelines focus on the design of shore-side facilities, whilst the requirements of the ship system are being formulated by the International Maritime Organisation.

Vapour control systems

All of the vapour collection sub-

systems installed at a loading facility have to be connected to the vapour control unit. There are two types of terminal vapour collection systems. Either the loading facility can be connected directly to the VRU, or a vapour balancing system can be installed. In the latter, the vapours displaced during loading are piped back to the vapour space of the fixed roof tank from which the product is pumped and the vapours are then fed to the VRU when the storage tank is being filled. In both cases, to smooth out fluctuations in the vapour flow, a variable volume vapour off-loading and until subsequent refilling, except for losses through pressure relief valves;

- If after off-loading petrol a mobile container is subsequently used for products other than VOCs, then the vapours may be released at places where human health and the environment is not at risk;
- Road tankers will have to be leak tested at least quarterly;
- P/V valves will have to be inspected on all mobile containers at least every six months.

Service stations

The proposed requirements at service stations are that:

- Vapour balancing (Stage 1b) back to the road tanker during petrol off-loading will have to be undertaken;
- Off-loading will have to be halted if a vapour leak occurs.

Implementation timetable

The required implementation of controls is phased and, for existing sites, is dependent on the annual petrol throughput. There will be an interim phase comprising one year from the date of adoption of the Directive during which time the Directive will be transposed into national legislation, followed by three consecutive phases of three years each. It is anticipated, therefore, that all phases will be completed by 2003 (see table).

Other provisions

The draft proposes that member states may impose more stringent measures for storage and loading installations in geographical areas where necessary for human health or the environment. This provision is not included for service stations.

Product recovered in a VRU will be exempted from excise duties and other charges on petrol production.

EC Draft Stage 1 Directive — Phasing/Throughput Proposals Shown by size of facility (by annual petrol throughput) requiring controls

1993	(2) 19	94 19	97 200	0 2003
	Interim	Phase 1	Phase 2	Phase 3
Requirements	One year from DA	4 years from DA	7 years from DA	10 years from DA
 Service Stations — Vapour balancing on deliveries 	All new (3)	> 500,000 litres/year or all sites with habitation above premises in urban areas	> 200,000 litres/years	All sites
 Road Tankers – Bottom loading facilities Road and/or Rail Loading — Vapour collection + recovery Storage Tanks — Controls (floating roofs or tank vapour collection + recovery) 	All new	> 50 kt/y	> 25 kt/y	All sites
5. Marine Loading — Vapour collection + recovery	Not Applicable	All new	> 25 kt/y	All sites

Notes: 1) DA = Date of adoption.

2) The dates shown are ESTIMATED dates for completion of each phase.

3) NEW = Not having an operating or construction licence prior to DA.

holder can be installed in the line to the VRU.

Design emphasis is placed in the IP Guidelines upon the sizing of vapour collection and control systems, taking account of the various emission sources that contribute to the vapour flow rate. The method of production of vapour flow profiles and the way in which these can be used to establish the minimum VRU processing capacity and/or vapour holder capacity are described.

The IP Guidelines also consider overpressure and vacuum protection, condensate and recovered product handling and safety issues. The matter of safety is a particular concern where vapour balancing is installed and the vapour spaces of product storage tanks are connected together, increasing the risk of a fire propagating within the storage facility.

The Directive may permit incineration for marine loading and in the chapter on this subject particular attention is given to safety considerations, since it has to be recognised that using a flare effectively means having a continuous source of ignition present. Thus the main design priority is to prevent combustion occurring outside of the controlled environment of the incinerator. Ways of achieving this are considered, not only to prevent flashback within the vapour collection pipework but also to prevent ignition of any vapour occurring externally.

Service stations — vapour balancing

Two chapters of the IP Guidelines are devoted to emission controls at service

stations — on Stage 1b vapour balancing during road tanker offloading and on Stage 2 for automobile refuelling.

Stage 1b can be undertaken either by unloading only one tanker compartment at a time and connecting the vapour hose directly from the tank to the tanker, or by unloading a number of compartments simultaneously in which case the underground storage tank (UST) vent lines must be manifolded together and provided with a connection for the tanker vapour hose. If the vents are manifolded, however, precautions must be taken to prevent cross-contamination in the case of a UST being overfilled. Details are also given of operating procedures both before and after offloading and safety and maintenance considerations.

A detailed description of the flow parameters influencing the efficiency of Stage 1b is given, identifying some design criteria that can be used for the sizing of vent and balancing pipework systems. However, it must also be remembered that the road tanker vapour pipework is an integral part of the total system and must be considered when designing the service station piping layout.

Service stations — Stage 2

Vapour emission controls during the refuelling of automobiles can be undertaken either using a system on board the automobile (the enlarged carbon canister) or by collecting the vapours displaced by means of a special dispenser nozzle and piping the vapours back to the UST (Stage 2). Following developments in the United States, it is apparent that Stage 2 controls will be required by the EC.

The IP Guidelines on Stage 2 consider the design of both passive systems, which rely on vapour balancing from the car fuel tank to the UST, and active systems which use a pump to draw the vapours back to the UST. Inspection, servicing and testing of Stage 2 systems are also discussed.

Conclusion

The IP Guidelines refer to the control of the vapour emissions generated within the whole gasoline supply, distribution and retail chain — from the finished product tank at the refinery to the automobile fuel tank. As such it is believed to be a unique document that will assist the oil industry in the implementation of emission controls whether for legislative, loss control or safety reasons.

At present the Stage 1 Directive is in draft form and the Stage 2 Directive is still being prepared. Updates of the IP Guidelines will be produced once these Directives have been adopted by the EC and control requirements have been finalised.

Acknowledgement

The Panel would like to take this opportunity to thank the many people who provided comments on the IP Guidelines during their production.



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

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

Bookings and Further Information

send information to:
Course
Name
Company
Address

Fax Number.....

Please contact:

The Registrar, The College of Petroleum and Energy Studies Sun Alliance House New Inn Hall Street Oxford OX1 2QD England **Tel:** (0865) 250521 **Telex:** 838950 COLPET-G **Fax:** (0865) 791474



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... education and training

Industry needs to be heard in the education debate

A well attended evening meeting of the Personnel, Education & Training Discussion Group in March heard Professor Keith Foster, Director of the Engineering Profession of the Engineering Council, address the topic of 'Education and professional development in engineering — where are we going?'

There have been a wide range of changes in the field of education over the last few years which will have an effect on each stage of an engineer's career in the future. Professor Foster's talk reviewed some of these changes and observable trends at the present, and tried to indicate possible pathways forward.

The government has published two White Papers on education over the last year, one of which announced the removal of the divide between the university and polytechnic sectors so that all these institutions will be classed universities and the other heralded the expansion of numbers in higher education by a further 40 percent by the year 2000, but without any commitment to an equivalent increase in resources. To achieve the expansion and improve the skill of the workforce emphasis is placed on the development of vocational qualifications. In parallel major changes are taking place in the provision of education at school level. The changes to GCSE and the introduction of the two band science in the National Curriculum with less time now being spent on physics than previously, will all have an effect on the knowledge and experience of students entering higher education in engineering and science. At present they will have followed the GCSE curriculum, those entering in 1993 will have followed balanced science and by 1996 the effects of the National Curriculum will be felt. The major question here is where will the additional 40 percent of students come from, and what will be the quality of the output from the universities?

Against this background, it should be recognised that the numbers applying for engineering higher education courses have fallen as a proportion of all applications from 13.1 percent to 8.8 percent over five years. Whether this is a response to the market, or whether we need to encourage more people into engineering, and if so at what level, is another question. Where will engineering get its fair share of good quality applicants from? The universities and polytechnics are becoming far more flexible in their entry requirements with moves towards the acceptance of Business and Technology Education Council and other training. This scenario is leading to a revision of the thinking on recruitment to the engineering profession, the methods of assessing the qualifications necessary for registration and also the way in which courses are accredited.

The government has put great store on National Vocational Qualifications (NVQ's) based on standards set by industry. The criteria then solely being the ability to carry out a task or job, taking no account of how it is achieved. All these qualifications are employment led and over 300 have already been introduced, starting from the bottom up. To put some coherence into NVQ's from the top down as well, the engineering institutions are

becoming far more involved and it is now being recognised that vocational qualifications could be used as a test of competence for professional engineering work. The Engineering Council through the Engineering Occupations Standing Group has established four standing conferences covering primary industry sectors, including the Construction Industry's Standing Conference, Engineering Services Standing Conference, Standing Conference on Engineering Manufacturer and the Standing Conference for Extraction & Processing (SCEP), which includes the oil and gas industries. The Institute of Petroleum is represented on SCEP which is responsible for developing professional standards for engineers and developing N/SVQ's which are based on them at higher and professional levels.

In view of the fact that limited additional funding would be forthcoming for the greatly increased number of undergraduates, Professor Foster outlined a possible scenario whereby the first two years of engineering degree courses could have little practical work, little tutorial work and lectures given to very large groups. Some students would then either go straight into work in industry where they could choose to continue to study part-time or through distance learning, perhaps for the award of a vocational qualification. Others could continue in higher education for one or two years at a favourable student/staff ratio.

So much for the massive changes in the United Kingdom, what about Europe where the Single Market requires the mutual acceptance and equivalence of qualifications. The Continentals are certainly suspicious of the UK educational system in view of the fact that our degree courses are three years whereas their's are an absolute minimum of four. However, on the Continent, when he finishes his degree an engineer is qualified, whereas in the United Kingdom the degree course must be followed by a structured training course and experience in industry, and in many cases an assessment before the engineer is truly qualified.

Several different viewpoints were established in the lively discussion after Professor Fosters address. Concern was expressed about the calibre even now of engineers applying to join the industry, however, others in industry were saying that if the engineers were too specialised before starting their work career, they appeared to be interested in little outside their own speciality and therefore were not flexible enough in the work place. Frequent mention was made of the active work that needs to be done to market and sell engineering. As was pointed out, 'surely an engineering course must be more interesting than an accountancy course!'

As Professor Foster summed up, with the structured National Curriculum and growth of vocational qualifications, undoubtedly there will be changes to the experience of the students leaving university. If industry is to receive the personnel trained as industry thinks they should be, industry should be more active and involved in the debate on the structure and content of both academic and vocational training of young people.

Distance learning programme for the oil industry

The College of Petroleum and Energy Studies has launched a distance learning programme to bring courses to the international community of people furthering their careers in the oil, gas, petrochemical, and energy industries.

The first module, Production Economics, was launched earlier this year. The course provides a foundation on the economics of oil and gas production.

Another module The Structure, Working and Economics of the Gas Industry is also available. Four additional modules for 1992 release are: The Structure, Technology, Operations and Economics of the Crude Oil and Refined Products Markets; Lubricants Management and Technology; The Economics and Technology of Refinery Upgrading; and The Environment and the Oil, Energy, and Chemical Business: Assessment, Management, Legislation and Control.

Modules in the planning stages include:

- Power Generation Economics, Markets and Technology
- Project Development and Management
- Coal Trading and Clean Coal Economics
- Petrochemical Economics.

... education and training

Supply a 'rocks box' to your local school

The 'rocks box', a major new earth science teaching resource, was recently launched by the Northamptonshire County Council Science Centre and the Society of Petroleum Engineers.

The rocks box is, quite literally, a box containing 22 different fist sized rocks and minerals together with nine assorted fossils, a piece of sandstone core drilled from a bore hole, and a safely encapsulated sample of North Sea oil. The samples are of superb quality, specially selected for their educational value to young children; many of them exclusively sought and imported for this special collection.

Every rocks box also includes a specially written 150 page resource book, *Exploring Earth Science*. This book provides activities and illustrations designed to bring earth sciences alive for school children. It also provides essential background information for teachers — many of whom are not yet familiar with the earth science topics they must now teach as part of the new National Curriculum.

Children rarely fail to be fascinated by rocks, fossils and soils, and study of these are now an integral part of both the science and geography areas of the National Curriculum. However, up until now there have been few readily available resources to allow young children to have first-hand experience.

The rocks box is designed for school children in the 5–11 age range. Every activity in the resources book is cross-referenced to the National Curriculum. The material has been trialled with school children, to ensure that the activities and teaching points are stimulating and interesting to them.

The rocks box is available for £100 (plus £14 p + p) from Mick Revell, Northamptonshire Science Centre, Spencer Centre, Lewis Road, Northampton NN5 7BJ (telephone 0604 587441 or 0604 756134). *Exploring Earth Science* is also available separately, as are information sheets advising schools on how to obtain industrial sponsorship.





Steven Burford (second left) was recently presented with an Institute of Petroleum Student Prize for outstanding performance on the MEng course in Petroleum Engineering at Heriot-Watt University in the 1989/90 academic year. Also present (from the left) were John Wright of BP Exploration Operating Co Ltd (speaker at the meeting), Ramsay Spence (retiring Chairman of the IP Aberdeen Branch) and Captain George Buckenham (a past-Chairman of the Branch).

The Petroleum Employers' Skills Council

A new body, the Petroleum Employers' Skills Council — PESC, for short — has been set up by the Petroleum Employers' Council, as the downstream industry's focal point for the development of competency standards for vocational qualifications, and as the downstream oil industry's training organisation.

Both these functions had previously been performed by the Petroleum Training Federation (PTF), but it was seen to be crucial to the future integrity and credibility of competence standards within the industry that the body providing the training should not also be the body assessing the competence standards achieved as a result of it. The PTF now concentrates, therefore, on the more focused role of being the downstream industry's major provider of training.

The new PESC has already been recognised by the Employment Department as the industry's training organisation, and the lead body for the development of standards. It is expecting to launch the first two industry-specific NVQs, and their Scottish counterparts — SVQs — in a few months' time. These will be on refinery process operations and bulk liquid warehousing. The PESC is already representing the industry in the development of qualifications for boiler installation and maintenance, laboratory technicians, and engineering maintenance.

The Council itself consists of ten members representing all sectors of the industry and is chaired by Bruce Park Weir of Texaco. It is managed by John Fuller as Standards Manager, with Monica West as Administrator. John reports to the General Manager of the Petroleum Employers' Council, Richard Ayres.

For further information contact: 071 439 2632.

Petroleum Review June 1992

The Institute of Petroleum

Institute News

Obituaries

John Hyde

John Hyde, former senior vice president of British Petroleum America died in February at the age of 82.

Mr Hyde, who joined the Institute of Petroleum in 1929, served as a senior vice president of BP in the United States and the United Kingdom for 54 years. After retiring in 1970, he became director of the eastern region of Pace Company, an engineering company based in Houston, and worked as an independent consultant in the United States.

Ron Garrard

It is with regret that we report the recent death of Ron Garrard, formerly Chief Electrical Engineer at British Pipeline Agency Ltd (BPA).

After a spell in the Merchant Navy, he joined Shell Mex and BP as an electrical engineer and later transferred to BPA where he held various positions before becoming Chief Electrical Engineer.

He joined the IP Eng-1 Electrical Sub-committee in 1981 and became its chairman in October 1985. He retired from the committee last year, having been an energetic and respected chairman. His death is a sad loss to his friends and colleagues.

Around the Branches

Irish

- 8 June: Golf outing
- 24 September: Seminar on Gas Pipeline
- 29 September: Golf outing
- 29 October: Evening meeting 'Bitumen What is new?'

12 November: Annual Dinner

Shetland

15 September: 'Ladies Night'

Yorkshire

17 June: Golf Tournament

New Collective Members

Metlab Pipelines Ltd, 84 Amiens Street, Dublin 1, Ireland. Telephone: 01 365 141.

IP Nominated Representative: Mr John R Moran, Director.

Metlab Pipelines Ltd is a subsidiary of Metlab International Ltd, part of the Metlab Inspection Group, an Irish based testing group specialising in X and gamma radiography of pipelines using the latest crawler systems. Metlab has participated in many pipeline projects, including all testing on Ireland's largest pipeline project from Dublin to Cork, as well as projects in the United Kingdom, France and several Gulf countries.

MTC Company Ltd, 8 Kanari Street, 185 38 Piraeus, Greece. Telephone: 01.4180480-4535465.

IP Nominated Representative: Mr Dennis Recantzis, Managing Director.

MTC Company Ltd is a marine and cargo surveying company, registered in Piraeus and attending, inter alia, the loading and/or discharge of petroleum and liquid chemical cargoes for quality and quantity control.

New Members

- Mr J Ahern, Flogas plc, Dublin Road, Drogheda, Co Louth, Ireland Mr WJ Arkless, Norwegian Trade Centre, Charles House, 5/11 Lower Regent Street, London SW1Y 4LR
- Mr MA Bagge, Flat 2, 37 Frances Road, Windsor, Berkshire SL4 3AG Mr WM Bain, 28 George V Avenue, Pinner, Middlesex HA5 5SE

Mr DA Balchin, Vale Farm Cottage, Vale Road, Claygate, Esher, Surrey KT10 0NN

- Mr AC Barber, Disaster Management Ltd, DML House, 2 Quintet, Churchfield Road, Walton-on-Thames, Surrey KT12 2TZ
- Mr WJ Bayliss, Argus Fire Protection Co Ltd, Hendglade House, 46 New Road, Stourbridge, West Midlands DY8 1PA
- Mr DA Boffey, Carmichael & Clarke Co Ltd, 3607 Shun Tak Centre, 200 Connaught Road, Central, Hong Kong
- Dr JA Brebner, RGIT Survival Centre Ltd, King Street, Aberdeen AB2 3BJ
- Mr C Brown, Chem Systems Ltd, 28 St James Square, London SW1Y 4JH
- Mr DF Butcher, Inchcape Inspection & Testing Services, St James's House, 23 King Street, London SW1Y 6QY
- Mr JD Castle, 24 Burgess Street, Leith, Edinburgh EH6 6RD
- Mr DP Chiles, Vronkenlaan 73, Leiderdorp, 2352 EN, Netherlands
- Mr LM Clapton, Spirax Sarco Ltd, Charlton House, Cirencester Road, Charlton Kings, Cheltenham, Glos GL53 8ER
- Mr DG Clark, Freeman Process Systems Ltd, 54 Bridge Street, Brigg, South Humberside DN20 8NS
- Mr BMW Clements, Enron Gas Liquids International (UK) Ltd, 19 Berkeley Street, London W1X 5AE
- Mr SJ Clifford, Western Geophysical, 455 London Road, Isleworth, Middlesex TW7 5AB
- Mr J Cole, 111 Neath Road, Briton Ferry, Neath, W Glam SA11 2DX
- Mr RW Court, Sedina Ltd, 8 Larch Avenue, Holbury, Southampton SO4 1PB
- Mr TA Coventry, 13 Capesthorne Road, Warrington, Cheshire WA2 9AF
- Mr ML Cox, Bowmer & Kirkland (London) Ltd, Kirkland House, 11/15 Peterborough Road, Harrow, Middlesex HA1 2XT
- Mr RH Davies, 7 Ladygate Close, Dorking, Surrey RH5 4AY
- Mr PM Demetriadi, Arden Chemical Ltd, 52 High Street, Henley in Arden, Solihull, West Midlands B95 5AN
- Mr GL Dickinson, Weir Materials Ltd, Park Works, Newtonheath, Manchester M10 6BA
- Mr J Donoghue, Herbert Watson & Co (Shipping), 3rd Floor, Cunard Buildings, Water Street, Liverpool L3 1EG
- Mr B Dutkiewicz, PO Box 3223, McLean, Virginia 22102, USA
- Mr ID Edgeley, 35 Lewis Road, Welling, Kent DA16 1SD
- Mr N Fakhroo, M N Fakhroo Est, PO Box 165, Qatar
- Mr FC Fischer, Tufton Associates Ltd, 3 Dean Trench Street, London SW1P 3HB
- Mr JD Foster, Bureau Veritas, 17 bis, Place des Reflets, La Defense 2, Courbevoie 92400, France
- Ms DE Gardner, Arthur Andersen & Co, 1 Surrey Street, London WC2R 2PS
- Mr AJ Garlick, Union Carbide Ltd, 95 High Street, Rickmansworth, Herts WD3 1RB
- Mr A Garner, 240 Quarmby Road, Huddersfield, West Yorkshire HD3 4FA
- Mr JJ Gill, PED Engineering Ltd, Pinewood, Bishopstown, Cork, Ireland
- Captain THT Goh, Blk 327 Jurong East St 31, No 10-16H 2260, Singapore
- Mr J Grant, Aberdeen Enterprise Trust, First Floor Seaforth Centre, 30 Waterloo Quay, Aberdeen AB2 1BS
- Mr T Green, 124 Maryon Road, Charlton, London SE7 8DH
- Dr A Grimley, Grimley Smith Associates, 54 Bridge Street, Brigg, South Humberside DN20 8DS
- Mr J Hancill, Heathfield, Greystoke Manor, Tunstall, Sunderland SR2 9EW
- Mr PJ Hebard, Alan Cobham Engineering, Holland Way, Blandford Forum, Dorset DT11 7BJ
- Mr BW Hindley, BWH Offshore Ltd, Pix's Lane, Rolvenden, Cranbrook, Kent TN17 4ND
- Mr RJ Holt, 8 Wallis Close, Osbaston, Monmouth, Gwent NP5 3NS
- Mr KW Hull, Marketing-Energy Division, GNI Ltd, Colechurch House, 1 London Bridge Walk, London SE1 2SX
- Mr HT James, 3 Rue de Sfax, 75116 Paris, France
- Mr G H Jesshope, c/o H N Jesshope, Acorn Fold, 11 Cranleigh Road, Esher, Surrey KT10 8DF
- Mr SR Judd, McDermott International Ltd, Eemhavenweg 35, 3089 KC, Rotterdam, The Netherlands
- Mr Z Khaleeli, OMEGA (Pvt) Ltd, 3 Hoshang Road, Karachi 75530, Pakistan
- Dr B Kiely, Biotechnology Manager, HP Chemie Pelzer R & D Ltd, Industrial Estate, Waterford, Ireland

Institute News

- Mr ACR Kirk, Flogas Ltd, LPG Terminal, Heath Road, Marylees, Desford, Leicester LE9 9FE
- Mr M Knight, 8 Mowlands, Capel St Mary, Ipswich, Suffolk IP9 2XB Dr MNS Kumar, Caleb Brett, PO Box 216, Rahima 31941, Via Dharan,
- Saudi Arabia Mr. WM. Kunda, Balkia Marina Saudi Arabia
- Mr WM Kunde, Baltic Marine Surveyors, Ul Indyjska 13, Gdynia 81-969, Poland
- Mr AM Lapre, AML Consultancy BV, Vredenburg 128, Dordrecht, 3320 DK, Netherlands
- Mr GP Le Claire, Institute of Offshore Engineering, Heriot-Watt University, Old Academy, Back Road, Stromness, Orkney KW16 3AH
- Mr WF Ledwood, Ledwood Construction Ltd, Waterloo Industrial Estate, Pembroke Dock, Dyfed SA72 4RR
- Mr S Leigh, Codd Johnson Harris, 12 New Burlington Street, London W1X 1FF
- Mr L Ljung, 31 Grove Road, Northwood, Middlesex HA6 2AP
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- Mr GD MacLachlan, 67 Crescent Lane, Clapham, London SW4 9PT
- Mr RW Macpherson, 71 Cambridge Road, Linthorpe, Middlesbrough, Cleveland TS5 5NL
- Mr WF Maas, Anikem, PO Box 2954, Kempton Park, South Africa
- Mr JP Malone, 43 Chislehurst Road, Orpington, Kent BR5 0DF
- Dr CN March, Industrial Unit of Tribology, The University of Leeds, Woodhouse Lane, Leeds LS2 9JT
- Dr JH Martin, 150 Croxted Road, Dulwich, London SE21 8NW
- Mr WL Martin, Andry Montgomery Ltd, 11 Manchester Square, London W1M 5AB
- Mr T Mayhill, Esso Exploration & Production UK, Esso House, 96 Victoria Street, London SW1E 5JW
- Mr J Millar, 35 Rubislaw Den South, Aberdeen AB2 6BD
- Mr ME Miltiadous, Cyprus Petroleum Refinery Ltd, Famagusta Road, PO Box 275, Larnaca, Cyprus
- Mr J Mitchell, Met Office, Aberdeen Weather Centre, Seaforth Centre, Lime Street, Aberdeen AB2 1BJ
- Mr CJ Mocock, Toplis & Harding (International) PO Box 50106, Medinat Qaboos, Oman
- Mr AJ Murray, 36 Cecilia Road, Dalston, London E8 2ER
- Mr W Ng, c/o GPO Box 11762, Central, Hong Kong
- Mr A Nicki, Enron Gas Liquids International, 19 Berkeley Street, London W1X 5AE
- Miss CE Noble, J Henry Schroder Wagg, 120 Cheapside, London EC2V 6DS
- Mr AO Oniwon, c/o College of Petroleum & Energy Studies, Sun Alliance House, New Inn Hall Street, Oxford OX1 20D
- Dr GJ Oxford, SGS Redwood Ltd, Middleplatt Road, Immingham, Grimsby, South Humberside DN40 1AH
- Mr M Papadopoulos, 67 Semley Road, London SW16 4PL
- Mr D Pearce, Clevedon, Abbey Road, Virginia Water, Surrey GU25 4RS Mr EN Phillips, 3 Selby Road, Ashford, Middx TW15 1JG

- Mr W Piasio, Lehman Brothers International, One Broadgate, London EC2M 7HA
- Mr D Recantzis, MTC Company Ltd, 8 Kanari Street, Piraeus 18538, Greece
- Mr MA Rimi, Gaspet (Nigeria) Ltd, Plot 266 (Block A Flats), Victoria Island, Lagos, Nigeria
- Mr IK Robinson, 74 Oakington Drive, Sunbury on Thames, Middlesex TW16 5NW
- Mr T Robinson, BP Oil UK Ltd, Powdrake Road, Grangemouth, Stirlingshire FK3 9UW
- Mr CC Roundell, 39 St Maur Road, London SW6 4DR
- Mr H Schouten, Hunters Lodge, High Drive, Oxshott, Surrey KT22 0NQ
- Mr NPA Scoggins, JDC Data (UK) International, NCR Building, Imperial Way, Watford, Herts WD2 4UN
- Mr AJ Scott, AMEC Offshore, Minto Drive, Altens, Aberdeen AB1 4LT
- Mr JA Simms, 138 St Johns Road, Tunbridge Wells, Kent TN4 9UT
- Mr P Sireci, 5 Chancery Lane, 03-01 Chanceryville, 1130 Singapore
- Mr PT Smedvig, Smedvig Holdings Ltd, 2 Throgmorton Avenue, London EC2N 2DL
- Mr MF Smith, Ivy House, 1 Sylvester Street, Kirton Lindsey, Gainsborough, Lincs DN21 4NG
- Mr RD Somers, MPSI Systems, Castlemead, Lower Castle Street, Bristol BS1 3AG
- Mr DG Stedman, Brathay House, Prey Heath Road, Mayford, Woking, Surrey GU22 0SW
- Mr AR Tozer, 18 Grange Walk, Bishops Stortford, Herts CM23 5SJ
- Mr GS Vijaya Kumar, Ranaco Marine Sdn Bhd, 32B 2nd Floor, Jalan Cungah 42000, Port Klang, Selangor, Malaysia
- Mr R White, Toplis & Harding, PO Box 50106, Medinat Qaboos, Sultanate of Oman
- Mr RA Wilson, Tom Pooles Barn House, Tanyard, Netherstowey, Bridgwater, Somerset TA5 1LP
- Mr RS Woods, 63A Belsize Lane, London NW3 5AU
- Mr SW Wright, Ashberry, 8 Chelveston, Welwyn Garden City, Herts AL7 2PW

Student Prize Winner

- Mr SA Burford, Conoco (UK) Ltd, Rubislaw House, North Anderson Drive, Aberdeen AB2 4AZ
- Mr G Pickering, Department of Geology, University of Southampton, Highfield, Southampton SO9 5NH

Students

Mr TS Darbari, A-157 New Friends Colony, New Delhi — 110065, India

Mr PJ Waddell, 23 Crescent Road, Shepperton, Middlesex TW17 8BL

Ms SJ Wilson, Scott Polar Research Institute, Lensfield Road, Cambridge CB2 1ER

UK Deliveries into Consumption

March 1992 — Tonnes

Products	Mar 1991†	Mar 1992*	Jan-Mar 1991†	Jan-Mar 1992*	% change
Naphtha/LDF	303,472	286,110	986,996	861 825	-127
ATF-Kerosine	417,506	526,526	1.257.231	1 454 186	15.7
Motor Spirit	2,050,908	2,001,828	5,669,611	5 742 637	13.7
of which unleaded	801,711	907.226	2,189,265	2 557 070	16.8
Super unleaded	94,034	111.811	252 551	313 295	24.1
Premium unleaded	707,677	795,415	1 936 714	2 243 775	15.0
Burning Oil	176,504	238,907	767 517	789 623	13.9
Derv Fuel	890,997	953.017	2 595 883	2 681 237	2.9
Gas/Diesel Oil	627.656	687 962	2 319 889	2 104 764	5.5
Fuel Oil	1.019.100	1 004 708	3 150 579	2,194,704	- 5.4
Lubricating Oil	59.618	66 454	183 736	202 101	-0.5
Other Products	578 314	573 116	1 502 024	1 705 024	10.5
Total above	6 124 075	6 338 628	18 433 466	1,705,924	13.6
Refinery Consumption	477 731	400 047	1 475 075	18,772,937	1.8
Total all products	6 601 806	6 828 675	10 000 441	1,470,574	-0.4
Pronacto	0,001,000	0,020,075	19,909,441	20,243,511	1.7
*Revised with adjustments	*Preliminary				

FORTHCOMING EVENTS

June 6th-7th

London: Conference on 'North Sea Oil and Gas: New Investment Challenges'. Details: Financial Times Conference Organisation, 126 Jermyn Street, London SW1Y 4UJ. Tel: (071) 925 2323. Fax: (071) 925 2125.

7th-12th

Moreton-in-Marsh: Course on 'Handling of Emergencies in the Petroleum Industry'. Details: Ron Cameron, Marketing Manager, The Fire Service College, Moreton-in-Marsh, Gloucestershire GL56 0RH. Tel: (0608) 52156. Fax: (0608) 51788.

7th-8th

Birmingham: 'European Retail Engineering Conference'. Details: Blenheim Pel, Blenheim House, Ash Hill Drive, Pinner, Middlesex HA5 2AE. Tel: (081) 868 4466. Fax: (081) 868 9933.

8th-10th

London: Course on 'Land Pipeline Engineering'. Details: Nadia Ellis, IBC Technical Services Limited, 57/67 Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 323 4298.

8th-12th

Oxford: Course on 'The Refinery — Power Generation Interface — Residue Processing and Integration for Power Production and Cogeneration'. Details: The College of Petroleum and Energy Studies, Sun Alliance House, New Inn Hall Street, Oxford OX1 2QD. Tel: (0865) 250521. Fax: (0865) 791474.

9th-11th

Birmingham: 'Forecourt Marketing and Equipment Show'. Details: Blenheim Pel, Blenheim House, 630 Chiswick High Road, London W4 5BG. Tel: (081) 742 2828. Fax: (081) 742 3183.

10th

Birmingham: 'Petrol Pump Ball'. Details: Tina Steele, BEN, Lynwood, Sunninghill, Ascot, Berkshire SL5 0AJ. Tel: (0344) 20191. Fax: (0344) 22042.

10th

Copenhagen, Denmark:

Course on 'Profitable Use of Information Technology in the Design and Fabrication of Ships and Oil Platforms'. Details: Short Course Programme, The University of Enterprise Training Partnership, c/o The Marine Technology Directorate Limited, 19 Buckingham Street, London WC2N 6EF. Tel: (071) 321 0674. Fax: (071) 930 4323.

11th

London: Conference on 'A Fully Unified EC Oil and Gas Market'. Details: Miss C Little, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel: (071) 636 1004. Fax: (071) 255 1472.

11th-13th

Aberdeen: Course on 'Oil and Gas Metering'. Details: John Fyfe, IITS (UK) Ltd, Caleb Brett Division, Wellheads Crescent, Dyce Industrial Park, Aberdeen AB2 0GA. Tel: (0224) 722324. Fax: (0224) 722894.

The Institute of Petroleum

12th

London: Conference on 'Liberalising the European Gas Markets'. Details: Miss C Little, The Institute of Petroleum.

15th-16th

Hamburg: 'The 1992 European Oil Refining Conference'. Details: Wefa Energy, 60/62 Margaret Street, London W1N 7FJ. Tel: (071) 631 0757. Fax: (071) 631 0754.

15th-19th

Aberdeen: Course on 'North Sea Economics and Decision Analysis'. Details: DCA Consultants Ltd, Haughend Farm, Bridge of Earn Road, By Dunning, Perthshire PH2 9BX. Tel: (0764) 84664. Fax: (0764) 84665.

15th-19th

London: Course on 'Horizontal Well Applications'. Details: OGCI, PO Box 35448, Tulsa, Oklahoma 74153-0448, USA.

16th

London: Conference on 'Offshore Safety — The Response to Cullen'. Details: Miss C Little, The Institute of Petroleum.

16th

Birmingham: 'Sign UK 92'. Details: Expoconsult UK Limited, 8 Martinfield Centre, Martinfield, Welwyn Garden City, Herts AL7 1HG. Tel: (0707) 376565. Fax: (0707) 376816.

16th-17th

London: Conference 'Cut Costs by Maximising Energy Efficiency'. Details: IIR Industrial Ltd, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

17th

London: Seminar on 'Financial Management and Accounting for the Oil and Gas Industry'. Details: MD Consultancy, 18a Carden Place, Aberdeen AB1 1UQ. Tel: (0224) 626268. Fax: (0224) 626950.

18th-19th

London: Conference on 'Cost Effective Safety'. Details: Liz Hyde, IBC Technical Services Limited, Gilmoora House, 57/61 Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 631 3214.

21st-26th

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

22nd-24th

Birmingham: Conference on 'Valves and Actuators for Fluid Control'. Details: Mrs J Whitham, BVAMA Valves and Actuators Conference, IT Conference Consultants, PO Box 452, Bedford MK43 9PL. Tel: (0234) 854756. Fax: (0234) 841375.

FORTHCOMING EVENTS

22nd-24th

Bromley: Course on 'Safety of Electrical Equipment in Potentially Explosive Atmospheres'. Details: Sira Communications Limited, South Hill, Chislehurst, Kent BR7 5EH. Tel: (081) 467 2636. Fax: (081) 467 7258.

23rd-26th

Birmingham: 'Eurochem 92'. Details: Sara Binns, Exhibition Manager, Reed Exhibitions, 26 The Quadrant, Richmond, Surrey TW9 1DL. Tel: (081) 948 1289. Fax: (081) 948 9989.

24th

London: Conference on: 'The Legal Implications of Waste to Energy Projects'. Details: Athina Peters, IBC Legal Studies and Services Limited, Gilmoora House, 57–61 Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 631 3214.

24th

Vienna: Conference on 'Eastern and Central European Energy — Investment for the Future'. Details: Sarah Whitefield, International Herald Tribune, 63 Long Acre, London WC2E 9JH. Tel: (071) 836 4802. Fax: (071) 836 0717.

24th-26th

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

29th-1st July

London: Course on 'Introduction to Petroleum Economics'. Details: Miss C Little, The Institute of Petroleum.

29th-17th July

Paris: 'Petroleum Management — Executive Seminar'. Details: Miss S Kromer, CESEG/Institut Francais du Petrole, 4 Avenue de Bois-Preau, BP 311, 92506 Rueil-Malmaison Cedex, France. Tel: 47 52 70 93. Fax: 47 52 70 66.

July

3rd

London: London Chamber of Commerce Lunch principal speaker Mr LC Van Wachern KBE speaking on 'Industry, Demoracy and the Values of Business'. Details: Mrs S Sherman, London Chamber of Commerce and Industry, 69 Cannon Street, London EC4N 5AB. Tel: (071) 248 4444.

6th-7th

London: Conference on 'Biotechnology in the Petroleum Industry'. Details: Lucy Lloyd, Henry Stewart Conference Studies, 2/3 Cornwall Terrace, Regent's Park, London NW1 4QP. Tel: (071) 935 2382. Fax: (071) 486 7083.

7th

Leeds: Course on 'Engine Emissions Measurement'. Details: Hansa Patel, Department of Continuing Professional Education, Continuing Education Building, Springfield Mount, Leeds LS2 9NG. Tel: (0532) 333235. Fax: (0532) 333240.

7th-10th

London: Conference on 'The Behaviour of Offshore Structures'. Details: Robert Gibbins, Boss 92 Secretariat, 2 Tavistock Place, London WC1H 9RA. Tel: (071) 837 6362. Fax: (071) 837 0822.

13th-17th

Oxford: Course on 'Health, Safety and the Environment in the Downstream Oil and Petrochemical Business'. 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.

13th-14th

Aberdeen: Conference on 'Successful Quality Management Systems for Offshore Contractors and Suppliers'. Details: IIR Industrial Ltd, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

15th-16th

Cranfield: Course on 'Managing Safety in the Offshore Oil and Gas Industries'. Details: Cranfield School of Management, Cranfield, Bedford, England MK43 0AL. Tel: (0234) 751122. Fax: (0234) 750835.

15th-16th

London: Conference on 'Refurbishment of Bulk Liquid Storage Tanks'. Details: IIR Industrial Ltd, 28th Floor, Centre Point, 103 New Oxford Street, London WC1A 1DD. Tel: (071) 412 0141. Fax: (071) 412 0145.

September 9th-11th

London: Course on 'Offshore Pipeline Engineering'. Details: Nadia Ellis, IBC Technical Services, 57/56 Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 631 3214.

13th-15th

France: 'International Petroleum Executive Seminar'. Details: Dr RL Gale, Seminar Manager, Petroleum Economics Limited, Piercy House, 7 Copthall Avenue, London EC2R 7BU. Tel: (071) 638 3758. Fax: (071) 638 3708.

15th-17th

Maastricht, The Netherlands: 'Energy Economy 1992'. Details: Energy Economy 1992, RAI Gebouw bv, Europaplein, 1078 GZ Amsterdam, Netherlands. Tel: 31 (0) 205491212. Fax: 31 (0) 206464469.

16th-18th

Brussels: Conference on 'Lubricants of the Future and Environment'. Details: BfB Consultant, DPT Congress, 23 Rue Haigneaux, 5300 Nameche, Belgium. Tel: 32 (0) 81581177. Fax: 32 (0) 81581179.

23rd-25th

Southampton: '4th International Conference on Hydrocyclones'. Details: Mrs K Stones, Conference Organiser, Hydrocyclones, Cranfield, Bedford MK43 0AJ. Tel: (0234) 750422. Fax: (0234) 750074.

27th-29th

Course on 'Introduction to Petroleum Exploration for Non-Geologists'. Details: The Administrative Secretary, JAPEC, c/o The Geological Society, Burlington House, Piccadilly, London W1V 0JU. Tel: (071) 434 9944. Fax: (071) 439 8975.

The Institute of Petroleum

... technology news

British discovery bonds water to diesel fuel

A breakthrough in overcoming water contamination in diesel fuel has come as a result of several years' research and field testing by the Thermo-Fluids Engineering Research Centre at City University, headed by Professor David Thorley. The result is a new product, Aquasolve, which is to be marketed throughout the United Kingdom and Europe by SHURflo Limited of Reigate, Surrey.

Unlike other diesel additives on the market, Aquasolve actually bonds the water to the fuel to form a solution that will burn cleanly with no adverse effects or power loss. This blending also helps to improve combustion and reduce emissions

Although Aquasolve is designed to take up to 1-2 percent water into solution, the research has shown that additives can be designed to enable much greater levels of water contamination to be converted into stable solutions.

Aquasolve is equally effective for treating fuel contamination by sea water. It also has the added benefit of preventing bacterial growth, a common problem when diesel fuel is stored in static tanks.

Apart from cleansing diesel fuel, Aquasolve also helps to flush engine filters free of contamination, so reducing the need for costly replacements.

Water contamination of fuel is a prime cause of transport breakdowns, especially in extreme weather conditions when 'waxing' occurs because of water crystals freezing within the fuel system.

By adding Aquasolve to the fuel tank at a ratio of 300 millilitres to 200 litres of fuel, this problem is overcome.

Another feature is that even if the diesel fuel is contaminated with other addithe properties tives. of Aquasolve are such that these foreign bodies are easily dispersed into a stable, clean burning solution.

Aquasolve can be used for all types of mobile and stationary disesel engines in a wide variety of applications.

'Deep-drain' oil interceptor

their Stetpak oil interceptor has been produced by Stetfield Ltd of Aldershot for British Pipeline Agency (BPA).

Top size in the standard range of oil/water separation units has a design capacity of 48m3/h and stands 2.7m tall. The geometry of the SS.180 model for BPA was extended upwards to nearly double the normal size. This was not to increase capacity, since Stetfield build special-order units of several hundred cubic metres per hour, but to give greater freeboard for deep-laid drains and so avoid the extensive on-site concrete work around the top of the interceptor in-ground that would otherwise have been necessary.

Single stage Stetpak oil interceptors are based on corrugated plate separators, removing solids and free oils from effluent and run-off streams to a clarity level of

A specially-enlarged version of 15-60 ppm. The two-stage version has a porous media separator as well as the plate type, enabling mechanical emulsions to be handled and giving clarities of up to 2 ppm.

The specially-extended Stetpak, which dwarfed the Stetfield factory building on completion, was installed at a pump station operated by BPA. It removes oil from run-off and other effluent waters, making them suitable for discharge to conventional drainage.

Among other typical applications are power stations, rail fuelling depots, tank farms, garaging bunded areas, marine waste treatment areas and industrial process and manufacturing plants. Stetpaks are built in five standard sizes with capacities from 4 to 48m3/h. Both the single and two stage types are available as free standing units or ready for installation below ground.

New vapour recovery process

Kaldair Limited has developed a new 'KVR' process to recover liquid gasoline from the vapour displaced from road and rail tankers during the loading of gasoline and diesel fuels, and thereby meet anticipated European legislation on volatile organic compound (VOC) emissions. The process has been proven at the BP Oil distribution terminal at Matosinhos in Portugal. Although currently operating at less than design capacity, this unit achieves VOC emissions within the very strict German TA Luft regulations and because of the nature of the process control, these low emissions are expected to be maintained even at higher throughputs.

The 'KVR' process combines activated carbon adsorption with condensation of the enriched vapour which is extracted from the carbon during its regeneration. This adsorption/condensation combination, together with enhanced control features, enables the process to achieve very low levels of VOC emissions and economically recover a useful liquid by-product. The liquid gasoline is collected in such a way that it may easily be measured, analysed, stored or recycled at will.

The Matosinhos distribution terminal has two bottom-loading gantries through which gasoline and diesel fuels are loaded into road tankers from a number of internal deck storage tanks. The road tankers and the gantries were modified to collect the discharged vapour and pipe it either to a vent in a safe location or to a vapour recovery unit.

The prototype unit was built in England but future units are to be built in the locality where the unit will operate. Except for the adsorber vessels and the control panel, all equipment was mounted on a single skid small enough to be transported to Portugal by road and ferry.

Alloy offers increased pitting resistance

Ferralium alloy SD40 is the latest addition to the Langley Alloys Ferralium family of super duplex stainless steels. It meets the increasing demands from the offshore industry for a product providing a pitting resistance equivalent number (PREN) greater than 40. It is claimed to be fully compatible with all seawater service requirements, and other chloride or hydrocarbon media and is suitable for the production of pump and valve components as well as flanges.

The high PREN gives an indication of high resistance to potentially aggressive C1-ions which attack the passive surface film of the alloy. In addition, critical pitting temperature (CPT) performance of 40C in the ASTM G-48 test (Method A) has been established, in line with Ferralium alloys 255-3SC and 255-3SF.

Ferralium SD40 otherwise offers similarly excellent corrosion and erosion resistance properties to established Ferralium alloys, including good sulphide stress and crevice corrosion resistance. Solution heat treatment brings about maximum hardness of Rc28, in conforming with NACE MR-01-75.

Minimum mechanical properties for the new material include UTS of 700 N/sq mm, 0.2 percent proof stress of 450 N/sq mm and elongation of 25 percent. Notch ductility averages 80 Joules.



The Institute of Petroleum

Two One-Day Conferences at The Cavendish Conference Centre, London

A FULLY UNIFIED EC OIL AND GAS MARKET?

Steps the Commission and Industry Still Have To Take

11 June 1992

This conference is designed to address two fundamental questions:

- What administrative business still has to be concluded before all obstacles to a unified Single Market will have been removed?
- How should companies be restructuring their operations to be fully prepared for the new market conditions?

Chairman: Baron Pierre Snoy, formerly Public Affairs, Shell Europe

Objectives for the Single Energy Market Mr J M Maters, Oil and Natural Gas, Directorate-General for Energy, Commission of the European Communities

Fair Competition and the EC Court Mr I Johnson, Partner, Ashurst Morris & Crisp

The Licensing Directive — New Opportunities Mr Richard Vernon, Director, External Affairs, Phillips Petroleum Co. United Kingdom Ltd

01.01.93 European Procurement Legislation — Upstream, Downstream

Mr Paul H Hopwood, Chief Supplies and Contracts Officer, European Procurement Affairs Branch, British Gas

Excise Tax Policy — Harmonisation and Consequences Mr Keith Myers, Partner, Arthur Anderson

Implications of Single Market on Company Operations and Organisation Dr David W Bennett, Management Consultant,

McKinsey & Co.

Organisational Implications of Operating in the New Europe

Mr G Cardinal, Manager, Marketing Support and Development, Mobil Europe

LIBERALISING THE EUROPEAN GAS MARKETS

Transit, Third Party Access and Cross-Channel Link

12 June 1992

The EC draft proposal, 'Common Rules for the Internal Market in Natural Gas,' is designed to take the gas industry towards a fully unified market. In parallel heady strides are being taken in the United Kingdom including the release of significant quantities of British Gas' contracted supplies to its competitors and the study of a cross-channel link.

Will such measures achieve their stated goals of greater competition, more efficiently functioning gas markets and increased supply security? Or, is there the risk that the outcome could be counter-productive?

Chairman: Mr James Allcock, Director of Gas Supplies, British Gas plc

The Latest EC Proposal and Potential Relevance of the British Liberalisation Experience Mr Graham Weale, Manager, WEFA Energy

Greater Access to the Market for Producers? Ms Elizabeth Berge, Natural Gas Marketing Manager, Statoil

Improved Purchasing Power for Consumers? Mr Alan Wilson, Head of Fuels Purchasing, Dow Chemicals

Opportunities for New Utility Operations Mr H Martin, Vice President, Strategic Planning and Product Support, Enron

The Future Role of Gasunie in a More Strongly Integrated European Gas Market Mr J ter Gast, Head of Gas Purchase Department, NV Gasunie

The Wintershall Natural Gas Project — A New Challenge Mr Eike Müller Elechnor, Head of Jaint Ventures

Mr Eike Müller-Elschner, Head of Joint Ventures, Wintershall AG

The Consequences of T P A on Supply Security, Prices and Future Investment Dr Wolf Pluge, Managing Director, BGW (Federal Germany Association of Natural Gas and Water

For further information and copies of both registration forms, please contact Caroline Little, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR, UK. Telephone: 071 636 1004. Telex: 264380. Fax: 071 255 1472

Industries)

· · people

Trinity International Services Limited have appointed **Mr Neil Nivet** as Financial Director. Mr Nivet joined the company last year as an accountant having worked in the oil industry since 1974. His experience has been with rig owners and major service companies.

The Balmoral Group Limited has appointed **Mr Duncan Watt**, below, as Quality Assurance Manager. Mr Watt was until recently, Quality Manager with Dresser Industries in Aberdeen. He has wide engineering experience at a senior management level on an international scale, including a ten year post with Vetco International as Operations Manager in Aberdeen and Singapore.



Weatherford International has appointed **Mr Tom Tilton** as Vice President — Engineering of Weatherford-Petco. Mr Tilton previously managed the downhole oilfield production equipment engineering effort at an oilfield products and services company for more than 15 years.

The Chief Executive of Manx Petroleum, **Mr John O'Brien**, has been appointed Executive Chairman of Alliance Resources Plc. Mr O'Brien has 15 years' experience in the oil and gas industry and joined Manx as Chief Executive in December 1991, after acquiring a 29.9 percent stake in the company.





Texaco Inc have elected **Mr Peter Bijur**, above, a Senior Vice President of the company. Mr Bijur, a Texaco Inc Vice President since 1983, will continue to serve as President of Texaco Europe, while assuming responsibilities for the company's Latin America/ West Africa Division and for two of Texaco's key service units: Information Technology and Corporate Services.

Brookfield Viscometers Ltd, suppliers of viscometers and rheo-

meters, has recently expanded its staff with the following appoint-

ments: Mr Darren Dunnett has

been appointed Sales Engineer for

the South of England and Mr

Stephen Bullock has joined the

Former Production Director and General Manager for Shell Expro, **Mr Dirk Andriesse**, above, has joined subsea engineering and management consultants, Gerard Engineering as Senior Consultant.

Mr Phillip de Boos-Smith has taken over as Managing Director and Chief Executive of Total Oil Great Britain following the retirement of Mr Robert Judlin. Mr de Boos-Smith has been with the Total group for 33 years. He was Finance Manager of Total Oil Great Britain in the late 1960s and has held top executive positions in Australia and France.



Cheryl Schroeder, below, has been appointed Manager of Core Laboratories Refinery Systems operations. worldwide Ms Schroeder joined Core Laboratories in 1980 and has held a number of sales management positions in analytical chemistry, core analysis and petrology services. She was appointed Sales Manager of the Refinery Systems group in The Netherlands in 1988 and Manager of Refinery Systems European operations in 1990.



Scottish Enterprise National has announced the secondment of **Mr Howard Whittaker** to its oil and gas group in Aberdeen. Mr Whittaker joins from BP Exploration where he was Exploration Coordinator, based at Grangemouth. He will be working mainly in the areas of company development and internationalisation.

Geraghty and Miller, the environmental service firm has appointed **Dr Brian Crook** as Managing Director of the firm's UK operations.





Mr Malcolm Curtis, above, has been appointed Managing Director of Anord Control Systems (UK) Ltd. He joins Anord from Durham Switchgear, where he was National Sales Manager. Foster Wheeler (Northern) Limited have appointed Mr Gareth Attwood as Director of Engineering and a member of the board. Victoria Westgarth, above, has been appointed Business Development Manager for Foster Wheeler Energy Limited's Infrastructure Group.



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Code of Practice for the Safe Handling of Drilling Fluids

The Code of Practice for the Safe Handling of Drilling Fluids has been prepared by the Institute of Petroleum Advisory Committee on Health and Occupational Hygiene Sub-committee in consultation with the UK Offshore Operators Association (UKOOA) and the Exploration and Production Forum.

It is recognized that exposure to fluids used in drilling operations associated with the exploration and production of oil and gas may give rise to health risks and appropriate measures must be taken to control them.

The purpose of this Code of Practice is to discuss how this may be done, indicating the responsibilities for action by the various parties in the drilling process.

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IP PM-BK Determination of wet and dry crude oil densities — hydrometer method

Due to a printing error in the 1992 IP Test Method book the equation to be used to calculate the dry oil density given in section 8.1 is incorrect.

The correct equation is as follows:

 $Dd = \frac{100 - x - y}{\frac{100}{Dm} - \frac{x}{Dw} - \frac{y}{Ds}}$

The publishers will be issuing an erratum slip in the near future; in the meantime purchasers of the 1992 IP Test Method book are asked to make the necessary alterations to the equation in Section 8.1.

The IP apologise for any inconvenience this error has caused.



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