FEBRUARY 1993

The Institute of Petroleum

PETROLEUM REVIEW

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Contents

Cover photo – Elf Aquitaine's Ashtart oilfield off Tunisia.

. . . news in brief

7 January

Elf has awarded a £70 million contract to SLP Engineering to build the accommodation platform for its Claymore field development

UOP has entered into an agreement with Pemex to supply the technology and engineering for a 20,000 b/d straight run naphtha reforming unit at Cuidad Madero in Mexico.

8 January

An offshore worker has been awarded more than £19,000 compensation and reinstatement after a tribunal ruled he was unfairly dismissed after being refused a flight to an offshore platform for being allegedly under the influence of alcohol.

11 January

BP has announced that it is near to an agreement to dispose of the consumer products arm of BP Nutrition for a figure of around £250 million.

Italy is to ban oil tankers from the Venice lagoon, through which 11 million tonnes of oil pass each year, due to fears of the consequences of a major oil spill following the Aegean Sea and Braer tanker accidents.

Total is to withdraw from its upstream operations in Canada in order to concentrate its international operations.

12 January

Marathon Oil has announced that it has encountered two hydrocarbon bearing structures during drilling in the Brae block in the central North Sea.

13 January

ENI, Italy's state energy holding group, is to receive advice from four banks on the possible stock market flotation of its AGIP and SNAM subsidiaries.

Amoco and British Gas have agreed an asset swap agreement for a number of North Sea blocks allowing both companies to consolidate their respective interests.

Favourable winds prevented Banff and Buchan's northern coastline from threatening pollution after 416 barrels of drilling mud was accidentally spilled from the Northern Commander anchored a mile off Troup Head near Banff.

14 January

Ireland's coalition government has appointed Mr Brian Cowen as the first minister for transport, energy and communications.

Supply of physical crude in December exceeded demand as OPEC production edged up rather than falling after the group's November meeting.

Israel intends to raise the issue of tanker seaworthiness with its Arab neighbours following the Shetland and Galician oil spills with the possibility of banning unsafe vessels from its ports.

AMEC Offshore Developments has signed a five-year partnering agreement with Mobil North Sea for engineering and construction work in the Beryl field.

Austrian oil and gas group, OMV, is seeking a buyer for its Canadian assets as part of its strategy to concentrate exploration and production activities in Europe and nearby areas.

The United States could be importing more than half its crude requirements within two years because of declining domestic production, according to American Petroleum Institute.

Santa Fe International is to consolidate its affiliates into a single organisation and relocate from California to Dallas.

Last year's restructuring of Kelt Energy has led to a turnaround in fortune from a £4.13 million loss to a £629,000 profit in the six month period to September 1992.

The European Community is backing a self-drive electric car trial in Coventry city centre.

15 January

Drilling activity in the United States fell to its lowest level for more than 21 years reflecting a fall of more than 22 percent over the previous year.

Two men appeared at South-wark Crown Court charged with conspiracy to defraud BP by selling confidential information on North Sea contracts.

16 January

French energy group Elf has announced two gas finds in the Dutch sector of the North Sea.

BHP subsidiary, Hamilton Oil, has discovered gas about 20 kilometres east of the Caister field in the southern North Sea.

18 January

Occidental has announced a gas discovery in the Attock region of Pakistan southwest of Islamabad.

Shell is to proceed with the construction of a $667 million refinery project in the Philippines which will increase existing production capacity at the Tabangao site to 720,000 barrels a day.

Cellnet, the mobile telephone company, has said that a leaflet distributed by Shell warning drivers not to use their car telephones due to the risk of explosions is out of proportion to the risk.

Amerada Hess has donated £5,000 to sponsor the Robert Gordon Institute Lecture.

19 January

Italy's SNAM has signed an accord worth $2 billion with Russia's Gasprom for the supply of equipment to improve Russia's gas transmission system. Russia will supply natural gas to Italy, which currently imports 40 percent of its requirements from the former Soviet Union.

Smedvig has taken a 25 percent stake in a giant new jack-up drilling rig originally scheduled for delivery to Maersk.

John Wood, the UK oilfield services group, has bought a 47 percent stake in the US-based wellhead equipment manufacturer, ERC Inc.

Private cars are being banned from central Athens to combat air pollution accentuated by unusually warm, still weather.

20 January

Foreign oil workers have been evacuated from the town of Soyo in northwest Angola after Unita rebels attacked oil plants. Eighteen executive workers with Petrofina, including one Briton, were held by the rebels when they took control of the town from government forces. On-shore production has halted.

The biggest oily water cleaning plant in the North Sea is to be delivered to the Troll project operated by Norsk Hydro.

North Sea oil and gas prod-uction reached a record 4.22 million barrels a day last year according to analysts Wood Mackenzie.

Shell is to invest more than $2 billion upgrading its 375,000 b/d refinery at Pernis in The Netherlands.

Irish oil company Aminex is making a $4.2 million bid for Tuskar Resources saying its growth potential outstrips that of its rival.

London Electricity has asked Professor Stephen Littlechild to rule on new transmission charges introduced by National Grid from 1 April.

Statoil is to back Norsk Hydro's decision to go for a concrete semi-submersible production system for the development of its West Troll oil province.

Shell and Saga Petroleum have signed a co-operation agreement covering oil and gas projects in the Timan Pechora basin in northern Russia.

Elf-Sanofi, the perfume and pharmaceutical group controlled by Elf Aquitaine, is to take control of French fashion house Yves Saint Laurent.

Chevron is to boost its capital spending budget by five percent to £4.9 billion of which 75 percent will be spent outside the United States.

Tankers collide in busy waterway

A fully laden supertanker carrying almost two million barrels of oil destined for Japan, collided with an unladen tanker off the coast of Sumatra.

The vessel, the Singapore-registered supertanker *Maersk Navigator*, caught fire and was abandoned after colliding with the 96,545 ton *Sanko Honour*. A slick formed about 60 miles north of Sumatra. Around 600 ships pass daily through the narrow straits bordering Malaysia, Indonesia and Singapore. Last year there were four major maritime accidents including a collision involving the 95,000 ton tanker *Nagasaki Spirit*.

Training course for tanker drivers

A drivers' training programme developed by Shell U.K. Limited Downstream Oil, to meet changes in European legis-lation on the carriage of dangerous substances, has gained independent accredi-tation by the City and Guilds of London Institute and the Department of Transport.

The approval comes ahead of legislation which requires all drivers of vehicles carrying hazardous loads to pass an external examination by the end of 1994.

The course concentrates on flammable liquids and gases, includes practical exercises in fire fighting and resuscitation and covers a study of the chemistry and behaviour of petrol, diesel fuel and liquefied petroleum gas.

The three-day course, which also includes sessions on environmental awareness and the correct handling of hazardous waste, is being rolled out to the 400 drivers employed by Shell.

Amerada acquires licence interests

International energy resources company, Unocal Corporation has reached an initial agreement with Amerada Hess whereby Amerada will take over 80 percent of Unocal's UK offshore exploration licence interests, excluding the Heather oilfield which will be retained by Unocal. The transaction is still subject to the consent of the Department of Trade and Industry.

Amoco targets $3.2 billion capital spending programme for 1993

Amoco Corporation plans to spend $3.2 billion for capital investment and exploration in 1993.

The figure is essentially unchanged from the amount of authorised spending for 1992. The largest portion of the budget will go for exploration and production of crude oil and natural gas. About 70 percent of the exploration and production spending will be outside of the United States and reflects the company's continuing shift to overseas exploration and production.

In 1993, Amoco will complete several major offshore gas projects, including the Central Area Transmission System (CATS) in the United Kingdom, start-up of the P15/18 development in The Netherlands, and start-up of the Immortelle Field in Trinidad. Oil production from the Scott Field in the United Kingdom also should start in 1993.

According to the company, the current level of spending can be maintained in spite of flat oil prices largely because of the cost-cutting programme started in 1992. Amoco expects to realise $600 million in pre-tax savings in 1993 from the cost-cutting programme.

Clair development scheme

BP Exploration on behalf of the Clair Partners has awarded a contract to Victoria Oilfield Development to perform a feasibility study for a floating production facility which would be capable of operating within Block 206, west of Shetland.

The study will be undertaken by an alliance of companies comprising of Victoria Oilfield Development, JP Kenny, Foster Wheeler and Diamond M-Odeco, who will work in close partnership with BP.

The combined expertise of the Clair study team members will contribute to the task of establishing the optimum technical and commercial solutions for the Clair discovery, based upon the use of floating production concepts.

BP originally issued an 'Invitation to Participate in Clair' to contractors and engineering groups in March last year, seeking proposals for a facilities scheme for the development.

Severe weather slashes production

A series of accidents and severe weather seriously disrupted North Sea oil and gas production throughout January.

In the UK sector, production through the Ninian system was halved on several occasions as tankers were unable to load through Sullom Voe due to ullage restrictions. Lasmo's Staffa subsea production system, Unocal's Heather field, BP's Magnus, Total's North Alwyn and Chevron's Ninian field were all affected.

BP 's production in January was further affected through three fields with the Thistle platform closing down after an oil and gas leak in the crude pumping room. Production at the 25,000 (b/d) field was halted for over a week. An investigation into the incident is still underway.

The severe weather also halted production at the Buchan and Donan fields. The 16,000 b/d Buchan field was shut down between 11 and 15 January while the 12,000 b/d Donan field only managed three days production in the first three weeks of the year. Overall deferred production amounted to around 500,000 barrels.

Production at Shell's Kittiwake field was suspended several times over the period as tankers were unable to take on crude. Several other Shell platforms were affected because of the lack of storage capacity at Sullom Voe. A spokesman for the company said figures for actual lost production would not be made available until later this month.

Mobil deferred production of 665,000 barrels within the first three weeks of the year with production curtailed to 20,000 b/d beyond that due to tankers being unable to dock at the tanker loading system at the Beryl field.

Norway's offshore production was severely curtailed due the sectors reliance on offshore tanker loading. Storage tanks for produced crude filled as tankers were unable to dock with waves of five to six metres.

The Snorre, Statfjord and Gullfaks fields, which produce a total of 1.25 million b/d, were either shutdown completely or had production severely restricted for extended periods throughout the month.

Production was also halted at the Norsk Hydro-operated Oseberg, Oseberg C and Gamma North fields where oil is piped ashore to storage tanks before being loaded onto tankers.

Total lost production in the Norwegian sector is estimated to be around 10 million barrels.

Hudson gets Annex B approval

The Department of Trade & Industry (DTI) has granted consent to a development plan for the Hudson field (Annex B) submitted by Amerada Hess Limited (AHL) and its co-venturers. The approved plan uses an two phase approach which will provide first oil by the third quarter of 1993, with the second phase coming into production in the Spring of 1995.

Hudson is located some 300 miles northeast of Aberdeen primarily in Block 210/24a, with an extension into the adjacent block 210/24b. This extension was recently acquired from BP and ARCO British Limited. The field was discovered in 1977 with the 210/24-2 well, with a full oil bearing sequence of Brent sand being found with the drilling of well 210/24-3 in 1987. The field has estimated recoverable reserves of 87 million barrels of oil.

Phase 1 production, under the development scheme, will average up to 38,000 bopd from two subsea wells tied in to the Floating Production, Storage and Offloading vessel, Petrojarl 1. The Petrojarl will be upgraded to provide the necessary production capacity and be relocated to Hudson on suspension of production in the Angus Field, anticipated at the end of July.

During Phase 2, production will be from 6 subsea wells tied back to Shell/Esso's Tern plafform, 11 kilometres to the east of Hudson. Whilst AHL will retain the responsibility as Hudson operator, the day to day operation of the field in Phase 2 will be handled from the Tern facilities which will provide crude stabilisation, gas lift and water injection facilities. Processed crude will be exported through to a delivery point at Cormorant Alpha for entry into the Brent System and transportation to the Sullom Voe terminal. It is anticipated that Phase 2 production will initially average 38,000 bopd.

AHL is currently evaluating bids for the design/fabrication/installation of the subsea manifold; the design/fabrication/instalation of pipelines and the supply of various long lead materials and equipment, all with a view to installation of Phase 2 facilities during the 1994 season.

The partners in the Hudson field are:
Amerada Hess Limited 28.46 percent
Enterprise Oil 25.77 percent
Mobil North Sea Ltd 20.00 percent
Shell UK Exploration and Production 12.88 percent
Esso Exploration and Production UK Ltd 12.88 percent

Offshore licensing round gets big response

The number of blocks applied for in the 14th round of offshore licensing is the highest for 20 years, said Tim Eggar, Minister for Energy, in answer to a parliamentary question from Mrs Judith Chaplin MP (Newbury).

Mr Eggar said: 'We received 96 applications from groups involving 62 companies for 122 blocks offered in the first two stages of the 14th Round. The number of blocks applied for is the highest since the 4th Round, over 20 years ago. The response shows there is still a major commitment to exploring in the United Kingdom Continental Shelf.

'I am particularly encouraged by the sustained level of interest shown in exploring the Southern Basin of the North Sea which historically has been associated with major gas finds,' he added.

Britannia test 'very encouraging'

Chevron UK has described as 'very encouraging' the test results from the appraisal well 16/26-24 in the Britannia gas/condensate field.

The appraisal well in the south east of the block tested both the oil and gas columns.

In the gas bearing zone, a seven-day extended test to establish reservoir limits was produced at 17.5 million cubic feet of gas a day and 1,150 barrels of condensate a day. A second gas zone test to evaluate well deliverability gave very encouraging results with a flow of 35.9 million cubic feet of gas a day and 1,750 barrels of condensate a day on a 54/64 inch choke.

In the oil zone lying beneath the gas/condensate reservoir, 40° API oil flowed at up to 500 barrels of oil a day.

The well encountered over 500 feet of gross reservoir, as expected, but well characteristics were of better quality than predicted. The net gas pay at 176 feet indicates more hydrocarbon bearing sand than was expected and will increase the recoverable reserves in block 16/26.

No further appraisal drilling is planned.

The field is situated 130 miles northeast of Aberdeen and has recoverable reserves of 2.5 trillion cubic feet of gas and 150 to 200 million barrels of condensate.

HSE exemption for gasoline deliveries

The Health and Safety Executive (HSE) has issued Certificate of Exemption No 5 of 1992, which allows operators of petrol filling stations until 30 June 1993 to comply with new requirements on the re-marking of tanks and fill points.

This is on condition that the licensees continue to comply with the marking provisions in the 1981 legislation that preceeded the new requirements.

The new certificate has been issued because it has become apparent that more time than originally thought is needed for the industry to achieve compliance with the new rules. The number of firms capable of providing licensees with sufficiently durable new labels and affixing them safely is small compared with the large number of tanks which need to be re-calibrated and re-marked.

Both the original 1981 regulations and the new 1992 Road Tanker Regulations require petrol tanks at filling stations to be clearly and durably marked so as to be identifiable; and any dipstick specific to a tank and any pipe leading to a tank from a remote fill point must be similarly marked. The 1992 regulations, however, additionally require the maximum working capacity and the permitted grade of petrol to be marked on the tank (and next to the filling point if this is not immediately adjacent to the tank); and it is now permitted to use combinations of letters and numbers for identification purposes, instead of numbers only.

The new certificate represents an extension of exemption, under the condition above, from paragraphs 2, 4 and 5 of schedule 4 of the Road Tanker Regulations. The full title of these regulations, which came into force on 1 June 1992, is the Road Traffic (Carriage of Dangerous Substances in Road Tankers and Tank Containers) Regulations 1992.

The certificate came into effect on 31 December 1992 for six months. A copy of Certificate of Exemption No 5 of 1992 is available from the Health and Safety Executive .

Tanker accident could herald European movement restrictions

The tanker accident off the coast of the Shetland Islands, following only weeks after a similar accident off the important fishing grounds of north western Spain, has led several governments to call for tightened restrictions on routes and vessels in European waters.

Shetland Islanders have called for a tanker exclusion zone to be established around the south and west of the islands and the government has announced that a public inquiry into the safety of shipping around the coastline will be established.

A separate inquiry into the causes of the accident is to be carried out by the Marine Accident Investigation Branch, part of the Department of Transport.

The public inquiry to be headed by Lord Donaldson, former Master of the Rolls, will consider whether further measures are necessary to protect the UK coastline from pollution from merchant shipping. Any new measures that are proposed will take into account any international and economic implications.

The transport secretary, Mr John MacGregor, stressed that while the inquiry would be free to make any recommendations it saw fit, only concerted international agreement would prove effective in preventing accidents.

The Marine Accident Investigation Branch inquiry will investigate the causes of the accident, the action taken to prevent it, the sea-worthiness of the vessel, the competence of the crew and the safety of navigation.

'The ... inquiry will investigate the causes of the accident, the action taken to prevent it, the sea-worthiness of the vessel, the competence of the crew and the safety of navigation.'

The Labour Party called on the government to introduce a ban on tanker traffic in the Fair Isle channel and the Minch on Scotland's west coast.

Shadow transport secretary, Mr John Prescott, said the government should seek agreement with Norway and Russia on a voluntary ban on allowing tankers to leave their shores on a route through the channel.

Elsewhere in Europe, pressure is increasing for tanker movement restrictions to introduced.

The Italian and French governments have reached an agreement effectively banning oil tankers or ships carrying dangerous cargoes from using the Strait of Bonifacio between Corsica and Sardinia.

The agreement, which comes into effect on 15 February, specifies that ships which use the strait will not be allowed to enter the ports of the two countries. The European Parliament voted to demand such a ban last summer.

The Italian government has also moved to ban ships from the Venice lagoon. Eleven million tonnes of oil pass through the lagoon each year bound for the industrial centre of Marghera.

The Italian environment minister, Mr Carlo Ripa di Mena, stated that due to the economic consequences of such an action it would not be fully implemented at once. Initially the ban will apply to ships without double hulls and a total ban will be applied once the port has organised a alternative supply system.

In France, legislation is being prepared to ban sub-standard ships from French ports and territorial waters. A minister expressed disappointment that the maximum age for tankers had not been reduced to 15 years.

The secretary of state for the sea, Mr Charles Josselin, stressed that any moves would need Europe-wide support.

Considerable pressure for rule changes has also been exerted in Germany where senior political figures including members of the leading government party, the Christian Democrats, have called for the immediate withdrawal of over-aged ships. The maximum age for tankers could be reduced from 25 years to 20 years.

The country is also considering pressing for shorter transitional periods for the recent International Maritime Organisation rules regarding tankers.

Denmark, which holds the European Community presidency, called a meeting of environment and transport ministers on 25 January which considered far reaching controls on the movement of tankers through international shipping lanes and whether more powers were needed to enforce existing regulations. ■

The stricken oil tanker Braer aground off the Shetland Coast.

The Institute of Petroleum

Oil Industry Taxation
A Global View

Monday 15th February 1993

To be held at The Cavendish Conference Centre, London

11.00 – 11.30	Registration and Coffee **Chairman: Mr Charles M. Smith, Managing Director, Chevron U.K. Ltd. and President, The Institute of Petroleum**
11.30 – 11.40	Chairman's Opening Remarks
11.40 – 12.15	**The Impact of Taxation on the Major International Oil Company** Mr. J. Maynes, Tax Partner, Peat Marwick
12.15 – 12.50	**UK Taxation** Mr. W.J.A. Nicolle, Chairman, UK Oil Industry Taxation Committee
12.50 – 13.00	Discussion
13.00 – 14.15	Lunch (Cash Bar available)
14.15 – 14.50	**European Taxation** Mr. A. Kerrigan, Directorate General XXI, Customs and Indirect Taxation, Commission of the European Communities
14.50 – 15.25	**Energy Taxation and the Clinton Administration** **Bad news for oil, good news for natural gas** John Kennedy, Editor, Oil and Gas Journal, Houston
15.25 – 15.55	Tea
15.55 – 16.30	**Eastern Europe** Mr. V. Lopukhin, ex-Minister for Fuel and Energy, now adviser to Lazards Freres in Moscow
16.30 – 17.05	**Overview** Professor A. Kemp, Department of Economics, Aberdeen University
17.05 – 17.15	Discussion

Towards 2000 – the national targets

By Peter Morley, chairman, National Council of Industry Training Organisations

If you have received recently from the Secretary of State for Employment, a White Paper entitled "Strategic Guidance on Training, Vocational Education and Enterprise for 1993/94, or from the National Training Task Force, a brown and cream folder entitled 'National Targets for Education and Training', and if you have read them, you will have noticed that the National Council for Industry Training Organisations, usually known as NCITO, is a signatory to the National Education and Training Targets.

NCITO as its name suggests, is the umbrella organisation which looks after the interests of Industry Training Organisations, or ITOs for short. The Petroleum Industry ITOs are the Petroleum Training Federation, headed by Richard Ayres, and the Offshore Petroleum Industry Training Organisation, which as I understand it, is responsible for getting the product out of the ground (or to be more precise, the sea).

NCITO provides a national forum for your opinions and the opportunity for representation to the relevant Ministers.

This is not to say that the industry is incapable of conducting its own affairs. On matters affecting your industry a direct approach will bring direct benefits.

NCITO's interests lie in those areas of general concern of which the National Education and Training Targets are one, or to be precise, eight.

Forecasting

The role of chairman of NCITO, apart from trying to coordinate the diverse and sometimes differing interests of more than one hundred voluntary organisations, is to ensure that national concerns are fully understood, pursued to the advantage of ITOs and reported upon. Hence I am talking about National Targets.

Forecasting is a dangerous business. Just ask the Chancellor of the Exchequer, who with all the economic experts and machinery of the Treasury behind him cannot tell you what the value of the pound will be next month, let alone next year or the year after.

Since the value of the pound determines in part the economic progress of industry, forecasting at the present time our ability to meet any sort of target is equally a risky business. Instead of lecturing you about your responsibilities, the advantages of the motivated, highly trained workforce, etc., I will content myself with an explanation of the targets and provide a number of options as to if or how we can reach them.

Priorities

This is what the Employment Department has to say in the White Paper about priorities: 'The Government is committed to securing a sustained increase in the quantity and quality of the skills in Britain's workforce, as the key to business success and personal opportunity. This requires a partnership spanning business, education and training, within a framework and towards common goals set by Government.'

Employers must invest more effectively in the skills their businesses need.

Young people must have the motivation to achieve their full potential and to develop the skills the economy needs.

Individuals must be persuaded that training pays and that they should take more responsibility for their own development.

People who are unemployed and those at a disadvantage in the jobs market must be helped to get back to work and to develop their abilities to the full.

The providers of education and training must offer high quality and flexible provision which meets the needs of individuals and employers.

Enterprise must be encouraged throughout the economy, particularly through the growth of small business deveopment.

I am resisting the temptation to make a general comment, because the training targets which these support are addressed largely to employers and to young people; priorities two and one. They are, respectively, Foundation Learning and Lifetime Learning and there are four targets in each group.

The first group, Foundation Learning, is about young people and their education. Their importance to employers, apart from the obvious benefits of better quality recruits, is the contribution they make to Lifetime Learning by starting from a better base.

Targets

The targets are:

1. Immediate moves to ensure that by 1997 at least 80 percent of all young people attain NVQ/SVQ Level 2 or its academic equivalent in their foundation education and training.

Notice the 'or equivalent'. The quantum leap here is in vocational education.

At the last count, in 1990, 33 percent of young people between 16

IP WEEK 1993

MONDAY FEBRUARY 15

OIL INDUSTRY TAXATION - A GLOBAL VIEW
Conference organised by the IP's Energy Economics Group
To be held at The Cavendish Conference Centre, London

TUESDAY FEBRUARY 16

Morning OIL PRICE INFORMATION Seminar
To be held at The Institute of Petroleum
(With relevant Software Exhibition)

TUESDAY FEBRUARY 16

LUNCHEON *at The Dorchester, London*
Guest of Honour and Speaker: Mr. A.C. DeCrane, Jr., Chairman, Texaco Inc. *who will speak on* **'Back to the Future' — Petroleum's Contributions to Progress in the 20th Century are Prologues to its Prospects in the Century Ahead**

TUESDAY FEBRUARY 16

EVENING DISCUSSION MEETING *of the IP's London Branch at The Institute of Petroleum, London* **'Environmental Management Systems - An Update' Speaker: Mr. M. Gilbert, BSI**

WEDNESDAY FEBRUARY 17

IP ANNUAL DINNER at Grosvenor House, London

THURSDAY FEBRUARY 18

Morning Conference *organised by the IP's Exploration and Discussion Group :* **'COST CUTTING FOR NORTH SEA SURVIVAL' at the IP**

THURSDAY FEBRUARY 18

EVENING DISCUSSION MEETING *of the Environment Discussion Group at the IP* **'Clouds and Climate Change' Speaker: Dr. G.J. Jenkins, Head of Meteorological Research Flight, Royal Aerospace Establishment, Farnborough**

For further information on any of the above events, please contact: The Institute of Petroleum,
61 New Cavendish Street, London W1M 8AR, UK.
Telephone: 071 636 1004. Telex: 264380.
Fax: 071 255 1472.

THE INSTITUTE OF PETROLEUM

LUNCHEON

TUESDAY 16 FEBRUARY 1993
To be held at
The Dorchester, London

The Guest of Honour and Speaker will be
Mr. A.C. DeCrane, Jr. Chairman, Texaco Inc.
who will speak on the subject
'BACK TO THE FUTURE' Petroleum's Contributions to Progress in the 20th Century are Prologues to its Prospects in the Century Ahead

The availability of affordable, reliable energy was a major contributor to the growth, the spread of progress and the broadened prosperity that marked this century. The petroleum industry was the key provider of that energy. In doing so, the industry met, matched and exceeded the challenges of increasing consumption, demanding and often hostile operating conditions and a startling array of product specifications. It demonstrated technical ingenuity, operational flexibility and commercial competence in meeting customer requirements.

Continued growth and the further spread of enhanced prosperity in the century ahead will require energy policies bottomed on good science, solid economics and an ordered prioritisation of social objectives. Under such conditions the petroleum industry will broaden the availability of products appropriately formulated to help fuel that progress.

Only an era of intelligent cooperation and open communication between governments, scientists, suppliers and consumers will ensure continuation in the years ahead of the positive aspects of the record of progress we look back upon as we close this 20th century.

For a copy of the ticket application 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

and 19 were qualified to level 2 or equivalent. If you add in the 20-24 year olds the figure changes to over 50 percent. Still a large gap though it is amazing what you can do with statistics!

2. All young people who can benefit should be given an entitlement to structured training, work experience or education leading to NVQ/SVQ level or equivalent.

(In case it has not already been explained, 6 units at level 3 are considered to be broadly equivalent to an "A" level).

About 53 percent of 16-year-olds were in full-time education in 1990. In 1976 it was 31 percent. YT is in decline, the numbers finding work after school is in steep decline and consequently the percentage of young people staying on at school is rising rapidly.

3. By the year 2000, at least half the age group should attain NVQ/SVQ level 3 or its equivalent as a basis for further progression.

There are six priorities, each addressed to a particular audience:

This says effectively that half of school or college leavers should reach "A" level standard. I do not believe it! In 1989/90 21 percent of 18-year-olds gained 2 or more "A" levels. Another quantum leap! Again. if you widen the age group to 24 years then the figure for NVQ 3 equivalent including "A" levels jumps to 34.2 percent. I still do not believe lt.

4. All education and training provision should be structured and designed to develop self-reliance, flexibility and broad competence as well as specific skills.

Lifetime learning

The second group, Lifetime Learning targets, are aimed at employers:

1. By 1996, all employees should take part in training or development activities as the norm.

This means that your entire staff should be appraised against the demands of their jobs and/or national standards (if appropriate and available), and have the opportunity for training and for personal development. Most companies I know provide this facility for managers but not so many for their operatives.

Yet in my business when it comes to the national competition for 'Checkout Operator of the Year', I never fail to be surprised at the knowledge, skill and outstanding competence of the finalists, ordinary women and men whom we take for granted. There is a wealth of talent amongst our staff which target No. 1 can release.

A survey carried out in the London area in 1991 showed that less than 14 percent of employees had received any sort of training in the previous four weeks and of those only 30 percent were on courses leading to qualifications.

2. By 1992, at least half of the employed workforce should be aiming for qualifications or units towards them within the NVQ/SVQ framework, preferably in the context of individual action plans and with support from employers.

This is another game altogether – we are talking about 12 million NVQs or units towards them. That is big money, a big investment in time, in setting standards, in training assessors, in developing the further education system. Whether we have the will or not is one of my options.

3. By the year 2000, 50 percent of the employed workforce should be qualified to NVQ/SVQ level 3 or its academic equivalent as a minimum.

'Rather more than 30 percent of employed people are already qualified and the percentage is increasing.'

Please note the words 'or its academic equivalent'. Rather more than 30 percent of employed people are already qualified and the percentage is increasing. It is a challenging target nevertheless and the same constraints apply as for No.2.

4. By 1990, at least half of the medium-sized and larger organisations should qualify as'Investors in People', assessed by the relevant TEC or LEC.

Medium or large means two hundred employees or more. I do not know the total number, but you will appreciate how the targets and Investors in People fit together.

The Government insists, with some reason, that they do not 'own' the targets and at their last try listed 21 national groups of supporters, although to the best of my memory the original group was five. True, the original targets, then known as World Class, were developed by the CBI and adopted by organisations such as NCITO, but since then we have slid into a recession which makes reaching the targets that much more difficult.

The keys to the enterprise are three in number:

The success of NVQs as a popular means of recognising what people can do, involving new attitudes to leaming and to qualifications.

Persuading employers that becoming 'Investors in People' is essential to commercial success.

Enough resource from central funds to make the whole system workable.

None of them are straightforward – even if you threw unlimited money at the targets there is no guarantee that you would reach them.

So here are a number of options, my own, not NCITOs:

First, to do nothing and let events take care of themselves. This might work in time of economic boom, where the better equipped employers will find it easier to boost their training programmes and might be persuaded that training is an employer's prerogative and possibly provide trained staff (at a premium) for the less committed.

This is supposedly what happens in Germany, under the dual system, managed by the local Chamber of Commerce. It is true that most employers take on trainees but I suspect that this may have more to do with the fact that all except the smallest employers have to join their local Chamber of Commerce for a sizeable fee which includes the administrative costs of the training scheme and that they pay half wages for the first year and two-thirds for the second. So much for altruism.

In any case the German system is inflexible and outdated by the NVQ framework.

Responsible for delivery

My second option is to finance the targets through TECs, who are ultimately responsible for delivery. This is happening already in part, to the extent that every TEC has a National Education and Training Targets or NETT committee. However, this has limitations in that ITOs have a much closer relationship with large, national employers than TECs.

For example my ITO is prepared to act as agent for large retailers to sell ready-made NVQs to TECS. Far fetched? - not at all. Many large companies already provide outcome-based training to national standards. They just do not see added value to themselves in the qualification and

certification process, but would certainly do so if this part of the system were subsidised.

Then there is the question of education, particularly further education, which has to bear the brunt of the increased numbers requiring training, and needs to pay more teachers, provide learning accommodation, train assessors and verifiers and pay them as well. Someone has to find the money for them.

My third option is revolutionary, particularly with the present Government.

Surcharge every employee and every employer through their National Insurance contribution to the tune of £50 - £100 per employee and £150 - £200 per employer, for the next five years only. Refund the entire amount on presentation of an NVQ certificate. This way the non-believers pay for the enlightened.

By the end of five years we shall have achieved the Lifelong targets. All the most recent evidence from Labour Market Surveys suggest that levels of economic activity increase with qualifications, sufficient by then to make the scheme self-perpetuating.

The lesson is clear enough – if you want to be a serious contender in the 1990s, particularly in the more prosperous parts of Europe where certification is the norm, you have to get a recognised qualification of some sort. And the higher the qualification, the better are your chances of being active in the labour market as an employer, or as an employee, of being in employment.

The unanswered question is, do we care enough to pay the price? That's one to which only the Government has the answer. ■

This paper was first presented at the Standards of Competence in Pratice conference held at the Institute of Petroleum.

Refinery process operations national/Scottish vocational qualifications

By JA Fuller, Standards Manager, The Petroleum Employers Skills Council

The decision to start work on the production of minimum industry competence standards for key jobs in refinery process operations was taken at a meeting of senior personnel from UK refineries in June 1989.

A strong feeling existed on the desirability of job standards in this vital sector of industry operations which would have industry-wide acceptability. A need was also felt for a vocational qualification personnel could aim for and be credited with National Vocational Qualifications and Scottish Vocational Qualifications, backed by The National Council for Vocational Qualifications in England and Wales and SCOTVEC for Scotland, were being strongly promoted as the nationally approved system for achieving the aims required. The group therefore agreed to use this system.

A successful application was made to the Department of Employment for the cost of the services of a specialist consultant to oversee the work required to produce the standards and the project started in earnest in early 1990. A steering group to oversee the project was set up consisting of representatives from the following interested bodies:

Department of Employment
National Council for Vocational Qualifications
Petroleum Training Federation
(then responsible for onshore oil industry training and standards work as Industry Training Organisation and Industry Lead Body)
SCOTVEC
and, crucially, interested industry personnel

The next stage was to set up a Working Group of industry personnel to work with the consultant, Karen Moloney of Moloney and Gealy, on the analysis needed to produce the standards. Right from the beginning, enormous support was given to the project and great credit is due to the individuals who devoted a great deal of their time to this work over an extended period and to the companies which again gave total support over a three-year period:

Andy Brown	Mobil
Mike Cunningham and Peter Smith	Shell
John Fitzgibbon	Phillips Petroleum
John Gregg	Esso
Mike Owen	Texaco
Noel Rees	Conoco
Walter Williamson and Frank Wolfe	BP
Frank Main	Elf — from 1992

The steering group was required to meet approximately six monthly. The main Working Group at the key stages of the project was meeting every three months for two full day sessions of very hard work. pulling out all the technical aspects of refinery operations and ensuring that we, the industry, would finish up with consistent job competence standards which every refinery in the United Kingdom could accept and use.

The Industry Training Organisation is the body responsible for liaising with the Department of Employment on all matters of training affecting a specific industry. The Industry Lead Body is the organisation responsible for the production and implementation of National/ Scottish Vocational Qualifications in a specific industry or over a functional area, e.g. management, information technology, training, accountancy.

The consultant, initially Karen Moloney, later on Lynne Jackson also of Moloney and Gealy, ensured that what was agreed would be in the right format to be acceptable to the National Council for Vocational Qualifications and SCOTVEC for eventual accreditation as a recognised National/Scottish Vocational Qualification.

The operation began by group members undertaking a breakdown of the key functions involved in refinery process operations — a functional analysis. Two key functions were identified — Refinery Field Operations and Refinery Control Room Operations.

Refinery Field Operations

Work then started, firstly on the field operations side, on breaking down this function into its component parts in line with the approved NVQ formula. Firstly the major functions of the jobs were clarified — these became the Units of Competence. A unit is an obviously recognisable aspect of a job which is free-standing and worth the issue of a certificate of competence. An example for a field operator would be Unit 1 - Following Safe Working Practices. The next breakdown is into Elements. Every unit must have at least two elements in it. Normally an element is phrased in a specific way 'The candidate should be able to...' A sentence with a verb, object and where necessary conditions relating to an activity.

Element 1 of Unit 1 Field Operations is 'Maintain a safe working area'.

After the initial breakdown, it was necessary to agree criteria for judging whether an individual could perform the activity concerned to an acceptable standard. These are known as performance criteria — effectively, statements against which a qualified assessor (a specially trained individual with full knowledge of the job and NVQ concerned and generally work-based) can judge whether the individual concerned can successfully perform the work specified in the element.

A performance criteria against Unit 1, Element 1 is 'Equipment and tools are returned to designated place after use.' Several performance criteria will apply against any element. All must be successfully completed.

Finally it was necessary to agree the range of equipment, tools, etc. applicable to each element — effectively the equipment or tools worked on or with by the competent operator concerned — and to agree the aspects of knowledge needed to back up competent and safe operations.

In many instances, company procedures were a key part of knowledge but legislation, codes of practice and basic specialist information were all relevant where necessary.

The work was made more difficult by the fact that aspects of the NVQ system itself were still changing in the light of experience gained from other industry NVQs being accredited (now over 400, spanning the whole of British industry). This necessitated constant review of the format being followed. The technical content remained throughout, once agreed.

One important point which cannot be overstressed is that NVQs are industry-driven.

While the system and format are set, all aspects of the technical input to a job competence standard is purely for that industry to agree. In addition, no standard will be accredited unless it carries the backing of the vast proportion of the interests concerned in that industry or sector and unless any standard has been fully field trialled.

Control Room Operator

The whole operation was then repeated for the Control Room Operator.

Field trialling was the key stage after the original standards had been agreed. A questionnaire was sent out to refineries asking for feedback on the relevance and accuracy of what had been produced. Changes were made incorporating the replies to this questionnaire and the standards were then fully field trialled on site. Again, changes were made as a result of feedback received.

The next stage was to agree a contract with a major national awarding body which would undertake the administrative aspects of awarding certificates and dealing with the NCVQ on the industry's behalf. Individual Unit certificates are awarded by the Awarding Body on behalf of the Lead Body concerned — since January 1992 the Petroleum Employers Skills Council. Full competence certificates are awarded by the National Council for Vocational Qualifications. The Lead Body retains responsibility for the updating of the technical content of the qualification. The Awarding Body and the Lead Body work together to ensure that any accredited (approved by NCVQ/SCOTVEC) job competence standard or NVQ is run correctly at every level down to assessment on sites approved to operate schemes.

Full details on all aspects of implementation of the scheme were agreed with the chosen Awarding Body — City & Guilds of London Institute — and a joint application for accreditation of the standards made to NCVQ and SCOTVEC in April 1992.

The system of accreditation of standards is a lengthy and complex one — as it must be bearing in mind the importance of getting them right. A number of meetings were held with NCVQ and SCOTVEC last year culminating in the accreditation of the standards by SCOTVEC as Scottish Vocational Qualifications at Level 2 - Field Operator and Level 3 - Control Room Operator last December.

Accreditation by NCVQ was expected last month.

Only the beginning...

Overall, it was a very long and difficult project which is by no means over. In fact, the hard work of implementation is really only just beginning. There is no doubt, however, that a tremendous amount of effort by many people will in the future make a major contribution in a key sector of the industry's operations.

Further details on the standards are available from the Petroleum Employers Skills Council. ■

PESC S/NVQ Refinery field operations - Level 2

The qualification comprises the following units:

1. Contributing to the safety of refinery operations
2. Establish equipment start—up conditions
3. Starting up equipment
4. Monitoring and maintaining process and equipment state
5. Responding to incidents, hazardous conditions or emergencies
6. Collecting, interpreting and communicating non-routine information on plant conditions
7. Providing samples for analysis
8. Shutting down equipment
9. Providing on-plant instruction
10. Contributing to Maintenance

All of the above units are required plus one of the following (for the award of a full S/NVQ).

11. Carrying out maintenance
12. Analysing samples

PESC S/NVQ Refinery control room operations — Level 3

The qualification comprises the following units:

1. Contributing to the safety of refinery operations
2. Establish process start-up conditions
3. Commissioning process operations
4. Controlling process operations
5. Responding to incidents hazardous conditions or emergencies
6. Collecting. interpreting and communicating information on process conditions
7. Responding to abnormal process conditions
8. Shutting down process operations

Letters

Madam –'To standardise or not to standardise that would seem to be the question'

Problems associated with microbiological contamination of gas oil were highlighted last summer with attention focused on Russian gas oil.

In August SGS Redwood introduced a set of guidelines for their customers. Redwood fully appreciate that this is a complex subject and interpretation of analytical results can depend on a variety of circumstances. However, the trading community demanded a simple guideline and, based on many years of specialist analytical experience, SGS were able to advise traders on levels of microbial contamination which were unlikely to lead to operational problems. This guideline was set at 3,000 viable organisms per litre, in order to give some protection along the trading chain. SGS Redwood did not claim that levels in excess of 3,000 were unacceptable.

Since then, many traders have included a microbiological specification in their contracts in an attempt to control the problem. However, distributors, traders, inspection companies and consultants continue to debate the need for standards, and how levels of contamination should be described by these standards.

It is clear that accurately defining levels of microbiological contamination through sampling and analysis is very difficult. The fact that the organisms are alive and can proliferate or die off dependent on conditions, adds further complications. Although a variety of analytical techniques exist for laboratory analysis as well as less accurate field estimates, and most experts have different views on what levels of fouling present a problem (indeed this is often dependent on a variety of circumstances), it seems the main issue is whether or not it is appropriate, or possible, to introduce a standard.

Almost every aspect of our lives is controlled by standards, guidelines, codes of practice, or directives of some kind. Whether we choose to follow these depends on whether there is a legal requirement, a contractual agreement, a business understanding or moral ethic to observe. We live, and work, in a very varied environment with many choices to make. Having standards does not, by definition, need to restrict the way we operate, nor do they need to reduce every choice to a question of black or white, yes or no, go or no go. They merely enable us to better understand the choices we make.

To suggest that oil majors, international traders, fuel distributors and inspection companies can operate satisfactorily without a standard to control the microbiological quality of gas oil is clearly naive. It is widely accepted that good housekeeping can control, if not eradicate, microbial growth but how do we define 'good' and how do we define 'control'? These terms are meaningless without some form of measurement.

Turning to the question of whether it is possible to introduce a meaningful standard, I am confident the pundits will argue for a long time about sensitivities, repeatabilities and the need for more data. Writing a standard, or guideline, to cover this subject may be difficult but it should not be impossible. Like all other standards, early attempts can be reviewed and modified at a later date with improved knowledge.

If the experts have difficulty in agreeing the levels of contamination which are acceptable, perhaps the problem could be approached from a different angle. It should be simpler to agree the levels of microbial contamination which could be achieved if good standards of housekeeping are maintained throughout the refining, trading, storage and distribution network.

Producing a standard may be difficult but the industry clearly needs one if it is to be confident of avoiding problems in future. The Institute of Petroleum is setting up a Task Force to look at this problem. The industry eagerly awaits its findings.

J Laurenson,
Regional Manager,
SGS Redwood

Managing offshore installations

By Dr Rhona Flin & Georgina Slaven, Business Research Unit, Robert Gordon University, Aberdeen

Each offshore oil and gas installation on the UKCS is managed by an Offshore Installation Manager (OIM) who is registered with the Health and Safety Executive. It is estimated that out of a total offshore workforce of some 33,000, there are 400-500 OIMs. These men are responsible for the day-to-day operation of such installations but may also be called upon to make decisions which affect the very survival of all on board the installation. The importance of this manager's role has been highlighted by recent events such as the Public Inquiry into the Piper Alpha disaster and the Fatal Accident Inquiry following the blowout on the Ocean Odyssey drilling rig.

There are no standard selection or training procedures for the OIM post, but in the new UK Safety Case regime, employers of OIMs will now be required to demonstrate that they have assessed the competence of their OIMs to manage offshore emergencies. To date, there has been no published research into this unusual and important management position. This article presents a summary of the results from a survey of OIMs carried out by the Robert Gordon University in the summer of 1991. The project aim was to collect descriptive data on the career paths and training experiences of existing OIMs and to examine their perceptions of the responsibilities, demands and satisfactions of the OIM's job. A full report can be obtained from the Business Research Unit at RGU.

The survey team distributed 337 questionnaires to OIMs in 15 operating and 19 drilling/support companies. OIMs completed it anonymously. A total of 134 questionnaires were returned: 51 percent from production installations, 40 percent from drilling rigs and nine percent from service installations.

Age, qualifications and experience

The majority of OIMs sampled were aged between 36 - 50 years, with most in the 41 - 45 years group. Drilling and services OIMs (85 percent) were usually qualified as Master Mariners, whereas 41 percent of the production OIMs had science or engineering degrees. Most of the OIMs had between six and 20 years offshore experience, which may have included experience on seagoing vessels. The majority of the sample had served as an OIM for between two and eight years. The drilling OIMs were normally managing rigs with POB's of 51-100 persons, while the production and flotel managers tended to be on larger installations.

Not surprisingly, many drilling OIMs came from a marine or drilling background, their careers included previous marine jobs such as Master of a vessel, Mate, Barge-master or assistant; and drilling jobs such as Toolpusher and Driller. Production OIMs came from a greater variety of prior jobs, though the most common prior post was an Offshore Supervisor. When asked which work experience they considered had resulted in them being considered qualified to be an OIM, 52 percent considered their offshore supervision experience as most relevant and 37 percent mentioned their Merchant or Royal Navy experience.

Selection and training

The majority of OIMs had been promoted to this position internally rather than being chosen from a pool of external applicants. Their selection had been generally based on ongoing appraisal/ assessment (25 percent) and internal transfer (24 percent). Only 22 percent said that they had been specially interviewed for the position. The most common types of training they had received for the job were: OIM regulations courses (81 percent), in-company training (40 percent), fire control courses (37 percent) and various kinds of managerial and offshore related courses. When asked what types of additional training the OIMs thought might be beneficial for the post (apart from emergency response training), a very wide range of suggestions was put forward, including management training, personnel management, technical training and communication skills.

Roles and responsibilities

Several questions were designed to collect information about the principal roles and responsibilities of the OIM. All OIMs reported that they had the authority to shutdown operations, but two men qualified this by saying it depended on the circumstances. The most frequent answers made reference to their legislative responsibilities for safety, health and welfare of personnel on the installation and general managerial or operational duties. OIMs fulfil a very wide range of functions, although this does vary

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across installations and companies.

The OIM's job appears to have a number of distinctive features. When asked 'In what ways do you think the job of OIM is unique?', 33 percent of respondents mentioned the range or level of responsibility the job entailed, other common factors were the sole responsibility, the isolation and remoteness of the installations and the legal responsibilities. It is interesting to note that 15 percent of OIMs replied that they did not regard the OIM's job as unique and that they saw it as similar to that of a ship's captain or an onshore plant manager.

We were particularly interested in the OIMs' opinions of the type of person who they considered best suited to an OIM appointment. The most common characteristics listed were Leadership (40 percent), Technical knowledge (35 percent), Calm (33 percent), Communication skills (31 percent) and Self confidence (28 percent). The pattern of responses was similar across the three types of installation, with one exception; 20 of the drilling OIMs thought that a sense of humour was necessary, a view shared by only two production OIMs and one flotel OIM.

Emergency command

The Public Inquiry into the Piper Alpha disaster focussed on the ability of OIMs to take the command role in an offshore emergency. OIMs were asked 'How has your ability to command in a crisis been assessed?'. While a number of OIMs (29 percent) reported that there had been no assessment, the most prevalent indicators were their previous experience offshore (including actual crises/incidents), and their performance during offshore exercises.

When asked, 'What training have you received to undertake the commanding role in a crisis?' Some of the drilling OIMs (15 percent) said that they had received this type of training earlier in their careers from the Merchant Navy or the services, but 28 percent of OIMs had received no specific training of this type. Many of the OIMs replied that they had been trained on in-house courses/exercises or on courses such as a fire-control course.

OIMs were asked for suggestions on how training to command in the event of an emergency could be improved. The most frequent suggestions were the use of realistic offshore exercises, simulations, and training for emergency situations. They were also asked 'What characteristics and/or skills does an OIM need to cope with an emergency?' The most important characteristics and skills were thought to be: the ability to stay calm, leadership, knowledge of the installation, knowledge of emergency procedures, the ability to assess the overall situation and to be decisive under pressure.

One of the OIMs who reviewed the questionnaire at the pilot stage suggested that a question should be included to give the OIMs an opportunity to comment on Lord Cullen's Report. A final question was therefore included: 'Lord Cullen's Report of the loss of the Piper Alpha made a number of criticisms of the OIMs on duty on the night of the disaster. If you are familiar with the report, please comment on his criticisms regarding the OIMs' performance'. Of those OIMs who wished to comment (80 percent), a wide range of views were expressed. In general very few OIMS disagreed with Lord Cullen, but some commented that his criticisms may have been rather harsh and that 'In the cold light of a court's scrutiny, foreseeability improves with hindsight. A sample of illustrative quotations is given below.

'Lack of training/experience in the magnitude of the disaster. Production coming before drilling.'

'Would agree with criticism of offshore management. It was proven that safety was not a priority.'

'He seems to have been criticised for panicking and not advising personnel to attempt to leave the accom-modation and try to escape. All normal escape routes to the lifeboats were impassable. The type of incident had previously been regarded as beyond credibility. His reactions are therefore understandable and the report could have said: 'There but for the grace of God go I.'

1. Criticism of Piper Alpha OIM was somewhat academic given the nature of the emergency.
2. OIMs on gas exporting platforms should have shut down once doubt was raised, but criticism of these OIMs is essentially condemnation of the company procedures.'

'Having read the report I believe that both he, and now the HSE are looking for the perfect being, somebody like Clark Kent, who will sit in his office chair carrying out mind numbing admin. for 364 days with a wry grin on his granite hewn features, only to disappear into the closet on hearing the general alarm and to reappear in a trice with a flowing cape, a pair of tights, complete with modesty knickers over them, and a huge OIM emblazoned on the chest. Ready to take on the world. Where they are going to find him God only knows, and when they do I want to be there to read the job description and see the salary grade.'

Job satisfaction, hassles and stress

Every managerial position, whether onshore or offshore, has its share of job satisfaction as well as day to day hassles and stresses. When asked to describe these for the OIM's job, the majority of respondents mentioned the satisfaction of managing safe and efficient operations. Some OIMs enjoyed the level of autonomy and responsibility that the job offered, and good team work/high morale on the installation. The major hassles mentioned were: dealing with onshore management and the amount of paperwork. Other items mentioned include the fragmented nature of the job, and five individuals said there were no hassles.

While several studies have been conducted into the sources of stress for offshore oil and gas workers (Sutherland & Flin,1991), these have not focused on particular offshore job categories. However, a recent study by Gann (1990) which compared the levels of anxiety and depression in onshore and offshore staff from an operating company included the following observation, 'At the JG3 level, the most senior group represented offshore, anxiety and depression scores are numerically higher than the comparable group onshore but these differences are not statistically significant. However it should be noted that this group of men carry the ultimate responsibilities for the safety of their installations and the possibility of excessive stress warrants careful attention' (p141).

In order to examine the possible stressfulness of the OIM position, respondents were asked 'How stressful do you feel the post of OIM is?', and a five point scale was provided, responses are shown in brackets.

Not at all stressful (three) Rarely stressful (16) Mildly stressful (43) Considerably stressful (56) Extremely stressful (seven).

These scores indicate that 42 percent of OIMs regard their work as 'considerably' stressful. A number of respondents (nine) commented that the level of stress could vary depending on operations or circumstances. The pattern of responses is similar for the three categories, drilling,

production and services. As Gann (1990) has suggested, this may be an area worthy of future research, especially to identify particular causes of stress and also to make more detailed comparisons with similar onshore managers.

Work schedules

The OIMs worked a wide variety of shift rotations, ranging from one-on/one-off to four-on/four-off, the most common being two weeks-on/two weeks-off (47 percent). When asked what their preferred rotation would be, the most popular answers were two-on/two-off (27 percent), one-on/one-off (22 percent) two-on/three-off (24 percent). A number of drilling OIMs said that they would like to see holidays additional to the standard work rota or the rotas designed to take account of holidays and training courses. When asked how many hours a day they worked, it was found that rather than working a 12 hour day, many OIMs worked 14 to 16 hours (29 percent), and this could often stretch to even longer in particular circumstances (e.g. rig moves, severe weather).

OIMs' advice to their successor

OIMs were invited to offer advice to their successor. A number of themes emerged from their responses which are outlined below, with illustrative quotes.

Be self-confident and decisive.

'Try and be strong-willed because if you are not there are plenty of people ready to take advantage of any weaknesses you may have.'

'Do not be pressured into taking actions unless sure in your own mind.'

Listen to the advice and expertise of your multi-disciplinary team.

'Consult with supervisors, use advice and experience from others'.

'Give due consideration to the expertise of those working for you.'

Safety is a priority.

'Never be negligent on points of safety'. 'Know legislative requirements and company policy. Review the platform operations and safety appliances until they become memory.'

Delegate.

'Delegate responsibility – the OIM is not a "one man band". 'A manager gets work done through by others. Use the expertise on board, learn when and when not to delegate. You cannot do it all yourself.'

Build up and train your work team.

'Collect a good crew around you.' 'Run your team properly and they will make the whole thing work.' Be approachable to staff. 'Never stand aloof to the others on the rig.' 'Be seen out and about on the job. Talk to people and show an interest in their work.'

Learn from others' experiences/incidents.

'Read about accidents and crises and how they were or should have been coped with.' 'To read the Cullen Report and re-read relevant sections. OIMs must be aware that the worst case disaster can happen, has happened and could happen again if personnel become complacent about safety.'

Know the installation.

'Get to know the platform geography and basic processes as quickly as possible.' 'Accumulate knowledge of the crew and equipment as the highest priority, continually update this knowledge.' 'If you don't have more than a smattering of knowledge about rotary drilling/well control etc., get some.'

Know the beach personnel.

'Get to know the people on the beach – those who work in the company office and play a key role in "support" to the installation.'

Know/keep up-to-date with relevant legislation.

'Ensure that you keep up-to-date with legislation.' 'Know legislative requirements and company policy.'

Use your authority.

'Don't be afraid to shut down the platform if you really think it is necessary.' 'Do not hesitate to bring the total commitment and authority in use if required to achieve full protection of the facilities.'

Conclusion

These findings have begun to describe the population of senior managers who act as OIMs on the rigs and platforms of the UKCS, it is clear that within this group there are several different sets of roles and responsibilities depending on the installation and its primary function, as well as different company demands. Any examination of selection methods or training needs obviously has to take account of the diverse nature of this group. An OPITO Standards of Competence working group has already addressed this issue in relation to their work on management competencies. The OIMs hold an unusual and highly responsible managerial position in the offshore oil industry and future research will investigate the particular demands of this position and to what extent available training meets the needs of this group and the offshore managers of the future. We are now working on a project funded by the Offshore Safety Division of HSE 'The Selection and Training of Offshore Installation Managers for Crisis Management'. This has surveyed companies in the UK and in Norway to examine their methods of selecting and training OIMs, it also reviewed the methods used by other organisations to select and train commanding officers, and it presents the results of in-depth interviews with OIMs who have managed an offshore emergency. ■

An interim report (OTO 92011)is available from RGU, Business Research Unit in Aberdeen.

IFEG

Information for Energy Group

OIL PRICE INFORMATION

Tuesday 16 Febrary 1993

The Information for Energy Group is once agin organising an Oil Price Information Seminar during IP Week, which has become a regular and popular feature of the programme of events.

It combines three formal presentations on aspects of price information with an exhibition by suppliers of such information, which in the past has proved to be a successful formula.

This year the papers will cover product prices, competition and profitability; the effect of price on developments in industry structures; and crude oil price trends – the outlook for the future.

The meeting will be of interest to traders, marketers, analysts, information providers and forecasters.

Programme

Product prices, competition and profitability
Gilbert Jenkins, Director, *Associated London Energy Consultants*

Effect of price on developments in industry structures
Brian Sweeney, Senior Consultant, *Arthur D. Little Ltd.*

Crude oil price trends – the outlook for the future
Nicholas Black, Commodities Editor, *Petroleum Argus*

The seminar will be chaired by Patrick Thompson, President, NYMEX

Exhibits will be provided by : **EMC Energy Market Consultants; Knight-Ridder Financial; NYMEX; Petroleum Argus ; Platt's; Saladin; Telerate**

For a copy of the registration form and further information, please contact **Catherine Cosgrove, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR. Tel : 071 636 1004. Telex : 264380. Fax : 071 255 1472**

New Zealand's Maui B project comes on stream

By William A. Scholes

Despite nine metre waves thrashing the treacherous Tasman Sea, first gas and oil will be produced from the Maui B platform and piped to the Maui A platform in the Taranaki Gulf off New Zealand's North Island's west coast in mid-February on schedule.

All offshore construction activities of the $NZ 1.2 billion project were completed within budget and on schedule. The major overseas contractor, Heerema, left New Zealand in September following the positioning of the rock ballast over the Maui B to Maui A pipeline – the last offshore activity.

In preparation for the delivery of gas from the Maui B field into the current production trains, modifications were made to the Maui A and the Oaonui shore station gas treatment systems. These also were completed ahead of schedule.

To minimise facilities needed on the Maui B platform and accordingly minimise the size of the platform, the drilling of the wells has been carried out using Sedco 702 as a drilling tender vessel. Actual drilling, however, was done from the B platform.

Maui B has been designed with simplicity in mind. This is reflected in lower capital and operating costs than the main Maui A platform. In its operational mode Maui B will be an un-manned satellite of Maui A. As such it will support:

- a drilling equipment set for drilling the eight wells;
- pipe work to manifold the production of the eight wells into the pipeline;
- minimal utilities to support the production;
- controls and basic safety systems which will be monitored remotely from the Maui A platform via a microwave link; and
- a shelter module for operations and maintenance crew who may be stranded on the platform.

The commencement of drilling coincided with the commissioning of the B platform safety system.

The final critical stage of the Maui Stage II development was the lifting of the topsides module on to the steel tower.

The 7,438 tonne Semco Giant barge, complete with the 2,350 tonne topsides, was towed from Port Taranaki by the 1,487 tonne Pacific Shogun to the Maui B site 50 kilometres off the Taranaki coast. However, strong winds and heavy sea swells delayed the lift until the first week of June.

The semi-submersible crane vessel Balder, which had already laid the 15 kilometre of pipeline between the Maui A and B sites as well as launching and righting the 6,500 tonne tower, was used to lift the topsides module into place.

Shell Todd Oil Services Maui B development manager Dolf van den Berg said the whole exercise went very smoothly. The actual lifting operation took only an hour. The associated telecommunications tower plus drilling packages were later lifted onto the module and the 12 drilling conductors connected from the tower to the topsides.

The Balder had also completed driving the twelve 57 m long piles into the sea-bed and anchoring the tower in less than a month. This contrasted sharply with the year-long piling program for the Maui A platform in the 1970s.

Mount Taranaki looms over the Maui development

The 12 conductors – nine for the Maui B wells and three spare – were sunk 75 m into the sea-bed plus they rose more than 140 m up the tower to the topsides.

The Maui Stage II program continued to make steady progress throughout the year. On 1 June 1992 the Singapore-built 2500 tonne Maui B topsides module was mated with the previously anchored Japanese-built substructure. The Balder semi-submersible crane vessel carried out the lift of the topsides module off the Semco Giant barge. The Semco had previously been standing by for about a week, waiting for the correct weather conditions necessary for the transfer.

The associated drilling mast, drilling packages and the communication tower (to carry the instruction signals from the manned Maui A platform to the remotely operated Maui B platform) were all now positioned on the Maui B platform.

The Balder having completed the laying of the 15 kilometre Maui B to Maui A production pipeline and the location and anchorage of the Maui B substructure, departed New Zealand waters on 18 June 1992.

Dramatic improvement

The major offshore installation work of the Maui Stage II Project was now completed. Although this work had taken longer than originally planned, it had nevertheless been a dramatic improvement over the equivalent experience with the Maui A platform and pipelines in 1978. This success confirms the approach by Shell Todd Oil Services Limited, the project operator, in believing that work in the Maui environment required the very largest of offshore construction equipment.

The 508 millimetres diameter two-phase pipeline, to carry production from the Maui B to the Maui A platform was covered by a one metre thick layer of insulating and protective aggregate. This work was done by the specialist vessel, Rocky Giant. This cover is necessary to both offset the positive buoyancy the pipeline will have during use and to help maintain the temperature of the gas stream above 20°C. At temperatures below this, gas hydrates can form posing the risk of pipeline blockage.

The next major work to be undertaken was the Maui B drilling program for the initial production wells.

Modifications to the larger Maui A platform and the Oaonui onshore production station were now well advanced. Changes at Oaonui were nearing completion with the commissioning of the third condensate fractionation train. As Maui B gas is "wetter", the existing fractionation trains could not have coped with the Maui B product without the addition of the new train.

The Maui B project, a modified version of the $NZ 2 billion stand-alone system previously planned, is the legacy of the hard work of the seventies and eighties by the marine explorers.

Project design

Project design of the Maui B platform, the 15 kilometres pipeline between the two platforms and modifications to the existing platform and the Oaonui onshore production station began in late 1989.

A second platform, to supplement the Maui A platform tapping into New Zealand's largest single energy resource, was suggested 12 years ago but changing natural gas usage patterns, including lower electricity demand forecasts, coupled with decreasing estimates of the field reserves – estimates are almost 35 percent down on the original figures to 4,166 Petajoules of recoverable gas, 11.8 million barrels of oil and 118.2 million barrels of condensate – meant the Maui partners delayed for a decade on what was considered a straightforward business deal.

The Maui partners – Fletcher Challenge Petroleum (68.75 percent), Shell Petroleum Mining (18.75 percent) and Todd Petroleum Mining (12.5 percent) – gave final approval to the project because of the Maui take-or-pay contract entered into by the Kirk Labor Government in the mid 1970s.

The partners were legally bound to take a certain amount of gas each year whether they used it or not. The contract expires in 2008 and it has only been since the Motonui Synfuel plant began operating in North Taranaki in late 1985 that gas usage has approached the levels specified in the contract. Current gas consumption in New Zealand is less than 200 PJ per annum.

Originally the second platform was to be a near replica of the existing one 33 kilometres off the Taranaki coast, with a tower weight of approximately 6,300 tonnes and a platform weight of about 20,000 tonnes. The Maui A has accommodation for 58 people, though usually only 30 are onboard.

The cheaper satellite platform, with only a single pipeline taking wellstream liquids and gases 15 kilometres to Maui A for initial processing was approved. It would still have massive subsea tower structure supporting a two-level topsides development.

The topsides would only weigh about 2,800 tonnes with no crew accommodation apart from emergency quarters for up to 20 people. The topsides structure would contain drilling facilities, their support systems, 10 well conductor slots, a helideck, crane, retractable flare boom, lifeboats and a telecommunications tower.

The facilities on the second platform would be capable of producing 400 million cubic feet of gas per day, initially from six wells and, for the first five years or so, up to 1000 bpd of crude oil from two wells.

The single 508 millimetres diameter pipeline would transport all hydrocarbon products 15 kilometres to the A platform. The existing onshore production station on Oaonui would be expanded 30 percent.

The Maui B substructure, designed by Earl and Wright in San Francisco and built by Nippon Steel in Japan, was transported 9,000 kilometres to Golden Bay, at the top of New Zealand's South Island.

Topsides

The tower was transported on Heerema Marine Australia's MWB404 barge and arrived in the Marlborough Sounds early in 1992. The tower was checked and then transported to the Maui B location, about 48 kilometres off the Taranaki coast, where it was righted, positioned, deballasted and lowered onto the sea floor.

The two-deck topsides, built by Sembawang Engineering in Singapore, under a $A 16 million contract was loaded onto tbe "Semco Giant I" and arrived at Golden Bay late J anuary 1992.

Heerema Marine was the tow contractor and also for installing the jacket and topsides and its derrick barge "The Balder" to J-lay the 15 kilometres of pipeline between the two platforms. The Balder then returned to Golden Bay to demobilise the pipelaying equipment and load the piles and conductors for the installation of the jacket.

The Ocean Seal barge loaded the 72 m long pipe strings and then travelled to Golden Bay where the pipe strings were offloaded onto The Balder.

The pipe lengths arrived in New Plymouth from Japan Steelworks and Hamilton-based Brian Perry Ltd, subcontracted to Nippon Steel, assembled the more than 100 sections of 12 m long pipe into 72 m long sections.

The 508 millimetres diameter pipes were lined with 3 millimetres of stainless steel inside 19 millimetres of carbon steel to cope with the highly corrosive raw gas, gas liquids, oil and formation mixture and condensed water in the Maui B products stream.

Dry hyperbaric welding techniques connected pipe spool pieces to the pipeline so the risers at each platform could be installed.

Welding pipes with internal stainless steel liners is something new. It has not been done before at water depths of 110 metres.

Hyperbaric technique

Subsea Offshore Ltd tested the hyperbaric technique at Aberdeen, Scotland, and its New Zealand office welded the pipeline to the Maui A riser. Two pipe spools were fabricated on The Balder and lowered onto the seabed to connect the pipeline and risers.

The B platform had its riser already installed when it arrived in New Zealand.

Dutch marine contractor Van Oord ACZ, was a subcontractor to Heerema for the Maui B project. It sent one of the flexible fall pipe vessels (FFPV) for backfilling the pipeline trench with coarse sand and gravel, burying the new Maui pipeline by more than a metre.

Modifications to the existing Maui A platform involve the installation of a new riser, new pig launcher-receiver and two new high pressure separators to remove the gas and gas liquids from the Maui B platform.

Previously it was almost impossible to acquire 3D seismic surveys over offshore areas as large as 1,000 sq kilometres of the 4,324 sq kilometres Maui licences. The survey included the 784 sq kilometres Maui mining licence PML381012 plus small areas of the neighbouring prospecting licences PPLs 38420, 38441 and 38442, which the partners were granted last year.

But the introduction of the quad-quad system enabled acquisition of a very large, high resolution 3D survey within a few months at much lower costs.

The technique was selected for the Maui survey because of its cost efficiency and the fact that it was the only system capable of acquiring all the necessary data within the short weather window available in a typical season in the Tasman Sea. The survey was delayed several times by bad weather and took nearly six months to complete.

'The New Zealand government's new petroleum taxation regime is seen as a welcome change by the industry'

The twin vessels *Geco Kapa* and *Geco Delta* enabled the undershooting of the Maui A platform, which had not been done before.

This technique meant one boat generated sound waves on one side of the platform while the other boat, on the other side of the platform, received the reflected and refracted sound waves from deep beneath the platform.

The technique was immensely complex and required a degree of sophistication unheard of in conventional 2D seismic.

All complex electronics, electrical, optical, acoustic and mechanical equipment had to be operational at all times in a region frequently pounded by waves up to nine metres high.

The two vessels worked in parallel for most of the duration of the survey, keeping a distance of no more than 200 metres, with the inner part of their towing equipment being as close as 60 metres.

Lines were acquired every 25 metres instead of the more usual 100 metres.

Each square kilometre of licence area was covered by about 40 kilometres of subsurface lines.

The main contractor was Geco-Prakla of Norway. Subcontracted radio positioning services were provided by Racal Survey (Malaysia) and New Plymouth-based BTW Associates provided support services.

Radio positioning

Radio positioning operated with shore transmitter stations located at Cape Egmont, Pihama, Patea, D'Urville Island and Farewell Spit. A total of 320 gigabytes of data was collected. The data was processed on two Cray supercomputers in the Hague.

The Maui gas field is still among the 10 largest in the Western world and companies like Sun Oil International and Cairn Energy PLC, newcomers to the New Zealand exploration scene, are positive signs for the petroleum industry.

In addition, the New Zealand Government's new petroleum taxation regime is seen as a welcome change by the industry. ■

FORTHCOMING EVENTS

February

3rd
London: Conference on'New Entrants to the UK Gas Market'. Details: The Conference Department, The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1E 4LE.
Tel: (071) 957 5700.
Fax: (071) 957 5710.

10th-11th
Aberdeen: Conference on 'Emergency Planning and Response – Offshore Operations'. Details: Langham Oil Conferences, 37 Main Street, Queniborough, Leicester LE7 8DB. Tel: (0664) 424778. Fax: (0664) 424832.

11th
London: Conference on 'Carriage of Goods by Sea Act 1992'. 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.

11th-12th
London: Conference on 'The Russian Oil Industry: Foreign Investment Opportunities'. Details: The Conference Department, The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1E 4LE.
Tel: (071) 957 5700.
Fax: (071) 957 5710.

11th-12th
Brussels: 'Waste Management in Europe'. Details: Club de Bruxelles 10 rue du Collège, Saint-Michel, B-1150 Brussels. Tel: 32 2 771 98 90. Fax: 32 2 770 66 71.

15th-17th
London: IP Week – see details on page 61.

16th-17th

Aberdeen: The Second Annual Henry Stewart Conference on: 'Topside Maintenance '. 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.

16th-18th

Monterrey, Mexico: Symposium on 'Air Pollution'. Details: Pamela Spalding, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton SO4 2AA.
Tel: (0703) 293223.
Fax: (0703) 292853.

16th-19th

Paris, France: Conference and Exhibition 'Gastech 93'. Details: Gastech 93 Secretariat, Glen House, 200/208 Tottenham Court Road, London W1P 9LA. England.
Tel: (071) 436 9774.
Fax: (071) 436 5694.

17th

London: Conference on 'Installation of Major Offshore Structures and Equipment'. Details: Ms Rhian Bufton, Conference Organiser, The Institute of Marine Engineers, The Memorial Building, 76 Mark Lane, London EC3R 7JN.
Tel: (071) 481 8493.
Fax: (071) 488 1854.

17th
London: First of the 1993 Parker Energy Seminars on: 'The Reconciliation of Commercial and Environmental Objectives in Energy'. Details: The Conference Department, The Royal Institute of International Affairs, Chatham House, 10 St James's Square, London SW1E 4LE.
Tel: (071) 957 5700.
Fax: (071) 957 5710.

17th
London: British Institute of Energy Economics – 'Border disputes in the Greater Middle East: Implications for Oil & Gas'. Details: Chatham House. RSVP is required (for security) to Mary Scanlan, Tel: (081) 997 3707 Fax: (081) 566 7674

18th-19th
Amsterdam: Conference on 'Offshore Pipeline Technology'. Details: Sarah Peace, IBC Technical Services Ltd, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

23rd
London: Conference on 'Energy Choice'. Details: Monique Quant, IBC Financial Focus Ltd, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 323 4298.

23rd
London: Seminar on 'Microbes in Fuels, Lube Oils and Bilges'. Details: The Conference Department, The Institute of Marine Engineers, The Memorial Building, 76 Mark Lane, London EC3R 7JN.
Tel: (071) 481 8493.
Fax: (071) 488 1854.

23rd
London: Conference on 'Practical Non-Destructive Testing in Process Plants'. Details: IIR Ltd, Industrial Division, 28th Floor, Centrepoint, 103 New Oxford Street, London WC1A 1DD.
Tel: (071) 412 0141.
Fax: (071) 412 0145.

24th-25th
London: Seminar on 'Doing Effective Business in the New Russia', Details: Jo Robinson, Central European Seminars, Nestor House, Playhouse Yard, London EC4V 5EX.
Tel: (071) 779 8791.
Fax: (071) 779 8603.

24th-25th
London: Conference on 'Gas Powered Electricity Generation'. Details: Jane Worman, IBC Technical Services Ltd, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

25th-26th
Houston: Society of Naval Architects and Marine Engineers (SNAME) 1993 Offshore Symposium: 'Floating Production, Storage and Offloading (FPSO) Technology "State-of-the-Practice"'. Details: Michael Pantazopoulos
Tel: 713-940 4793.
Fax: 713-940 3751

March

3rd
Aberdeen: Forum for discussion 'Intelligent Pigs'. Details: Jean Pritchard PSTI House, Exploration Drive, Offshore Technology Park, Bridge of Don, Aberdeen AB22 8GX.
Tel: (0224) 823637.
Fax: (0224) 820236

FORTHCOMING EVENTS

3rd-5th
Aberdeen: 'Offshore Loss Prevention – a Systematic Approach'. Details: Mrs Kit Stones, Conference Organiser, BHR Group Limited, Cranfield, Bedford MK43 0AJ.
Tel: (0234) 750422.
Fax: (0234) 750074.

4th
London: Seminar on 'Underground Liquid Storage Tanks'. Details: Jane Worman, IBC Technical Services Ltd, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

7th-11th
Divonne-les-Bains, France: 'AIPES '93', PEL's 9th Advanced International Executive Seminar. Details: Dr Bob Gale, Seminar Manager, Petroleum Economics Limited, Piercy House, 7 Copthall Avenue, London EC2R 7BU.
Tel: (071) 638 3758.
Fax: (071) 638 3708

8th-12th
Lübeck-Tavemünde, Germany: '1993 European Community Wind Energy Conference and Exhibition'. Details: Conference and Exhibition Organiser, WIP-Munich, Sylvensteinstr. 2, D-8000 München 70, Germany.
Tel: -49 / 89 / 7201235.
Fax: -49 / 89 / 7201291.

9th-10th
London: Conference on 'Distribution of Oil and Gas in the FSU - Pipeline Transmission Systems'. Details: Business Seminars International Ltd. 56-60, St John Street, London EC1M 4DT.
Tel: (071) 490 3774.
Fax: (071) 490 2296

16th-18th
Manchester: Course on 'Safety of Electrical Equipment in Potentially Explosive Atmospheres'. Details: Sira Communications Ltd, South Hill, Chislehurst, Kent BR7 5EH.
Tel: (081) 467 2636.
Fax: (081) 467 7258.

16th-19th

London: Course on 'Offshore Pipeline Engineering - Level 1'. Details: Sarah Peace, IBC Technical Services Limited, 57-61 Mortimer Street, London W1N 7TD.
Tel: (071) 637 4383.
Fax: (071) 631 3214.

16th-21st

Lagos: 'The World of Oil in Nigeria 1993'. Details: Carolyn Anderson, Project Manager - Glahe International Group Ltd, Woodcroft, Pebmarsh Road, Bures Hamlet, Suffolk CO8 5DU.
Tel: (0787) 228086.
Fax: (0787) 228164.

17th-18th

London: Conference on 'Certification Standards for Non-Destructive Testing'. Details: PCN, 1 Spencer Parade, Northampton NN1 5AA.
Tel: (0604) 30124.
Fax: (0604) 231489.

18th-20th

Wiesbaden: '3rd International Petrol Station Fair, Tankstelle '93'. Details:MMS Expoconsult GmbH, Postfach 4266, Abeggstr. 2, DW-6200 Wiesbaden, Germany.
Tel: (06 11) 52 70 17.
Fax: (06 11) 52 70 10.

22nd-24th
Cranfield: Course on 'Pressure Surges in Pipe and Duct System'. Details: The Short Course Administrator, Department of Fluid Engineering and Instrumentation, School of Mechanical Engineering, Cranfield Institute of Technology, Bedford MK43 0AL.
Tel: (0234) 752766.
Fax: (0234) 750728.

22nd-26th
Zurich: Course on 'Multiphase Flow and Heat Transfer: Bases, Modelling and Applications in the Process Industries'. Details: Prof. G. Yadigaroglu, ETH-Zentrum, CH-8092 Zurich, Switzerland. Tel: 41 1 256 4615. Fax: 41 1 262 2158.

23rd-25th
Birmingham: 'Environmental Technology '93'. Details: Showcase Communications, 36 Earls Court Square, London SW5 9DQ. Tel: (071) 373 8711. Fax: (071) 835 2081.

24th
London: Conference on 'The UK Oil Industry in the 1990s – Key Legal and Commercial Issues'.
Details: Miss Caroline Little, The Institute of Petroleum, 61 New Cavendish Street, London W1M 8AR.
Tel: (071) 636 1004.
Fax: (071) 255 147

29th-30th
London: Conference on 'Conflict and Transport in the former Soviet Union: Dilemmas for Investors'. Details: Verna Cappuccio, Europe Energy Environment Ltd, 49 Hay's Mews, Mayfair, London W1X 7RT.
Tel: (071) 493 4918.
Fax: (071) 355 1415.

29th-30th
London: Conference on 'Hedging the Risk in Energy Price'. Details: Monique Quant, IBC Financial Focus Ltd, 57/61 Mortimer Street, London W1N7TD.
Tel: (071) 637 4383.
Fax: (017) 323 4298.

29th-30th
London: 'The 1993 European Seminar on Offshore Water & Environmental Management'. Details: Lisa Bilby, Business Seminars International, 56-60 St John's Street Farringdon, London EC1M 4DT.
Tel: (071) 490 3774.
Fax: (071) 490 2296.

31st March-1st April
Dusseldorf: Conference on 'Developments in Protection Strategy and Pipeline Security'. Details: Katie Abberton, Technical Services Ltd, 57-61 Mortimer Street, London W1N 7TD. Tel: (071) 637 4383. Fax: (071) 631 3214.

April

3rd-6th
Bahrain: '8th Middle East Oil Show & Conference'. Details: Stephen Key, Arabian Exhibition Management, PO Box 20200, Manama, Bahrain.
Tel: 973 550033.
Fax: 973 553288.

5th-7th
Aberdeen: Training course for the non-specialist on 'Monitoring Hydrocarbons and Oil Field Chemicals in the Environment'. Details: Dr R Large, M-Scan Limited, Silwood Park, Sunnighill, Ascot SL5 7PZ.
Tel: (0344) 27612.
Fax: (0344) 872709.

Southern Mediterranean activity is fanning out

By David Buckman

A co-operative effort by once-wrangling Libya and Tunisia, surveys of waters off Algeria, an exciting gas find off Egypt and burgeoning activity off Tunisia and Libya are all indicators of the enhanced exploration and production status of the southern Mediterranean. Rising domestic oil and gas demand and the knowledge that the fast-growing Europen market lies just across the water are both spurring North African states to find more hydrocarbons and to bring in overseas companies to help. The next decade should see exploration areas opened up in what has been a modest-activity region.

There are still uncertainties about the immediate future of the 7 November region, the 3,000-sq.km tract carved out of disputed Libyan and Tunisian waters after years of quarrelling. It was in May 1988 that agreement in principle was made between Libya's Colonel Moammar Gaddafi and Tunisian president Zain al-'Abdin Ben'Ali to push ahead with a joint search. That deal was made over six years after the International Court of Justice had approved a demarcation line between boundaries originally claimed, although it did not actually draw the line. Just over half the 7 November zone was taken from Libyan-claimed waters.

Joint oil company

By the end of 1988 the basis of what became the Joint Oil Company (JOC) had been established on Tunisia's Djerba Island. It has an equally shared declared capital of $5 million, a subscribed capital of $1 million and rotating director-generals in the persons of Tariq Mustafa Hasan of Libya and Abdallah Daoud of Tunisia.

The potential of 7 November looks interesting. Early indications were that it might contain two minor undeveloped structures and a major one, Omar, believed to be geologically similar to the big Libyan Bouri oilfield, maybe matching it in size. However, the structures were surveyed in the 1970s, and more sophisticated work has been necessary to pinpoint prime drilling targets . An official study released in 1991, when new surveying was getting under way, estimated recoverable oil reserves in the area 110 km northeast of Djerba, at 211-473 million tons.

Recoverable gas reserves were put at 132-328 billion cubic metres. Compagnie Generale de Geophysique is understood to have finished a new survey of 7 November in 1991 although no results have been released. JOC was hoping for a first well to begin by the end of 1992, with another scheduled. One figure published for the cost of this initial operation is $58 million, with $14 million already spent on seismic. If the search soon proves fruitful, JOC would like to see production initiated around 1997.

Early on it was agreed that foreign help could be summoned to this play but the role of overseas companies still has to emerge. JOC was reported recently to have signed a letter of intent for a mobile rig to start an early hole, but now JOC — a joint venture between Libya's National Oil Corporation (NOC) and Tunisia's Entreprise Tunisienne d'Activites Petrolieres (ETAP) — is believed to be considering a bidding operation to expedite the search.

Egypt's Mediterranean play has been about to accelerate for years but has never quite done so, with one gas patch on stream. Now there are renewed hopes for production. They centre on a gas discovery by an Agip-affiliate company, International Egyptian Oil Company (IEOC) in the eastern Nile Delta area, 40 km off Port Fuad. A series of appraisal wells followed. After the initial discovery IEOC sank a dry hole but the third well yielded 26 MMcfd of gas and 1,262 b/d of condensate on one test and 30 MMcfd of gas and 1,600 b/d on a second test. There is talk of production starting in two years, with gas being piped to shore possibly in the Damietta area, then linked to the national grid. Unofficial estimates put reserves as high as 1.5 Tcf. Egypt has moved towards greater use of gas to release oil for export, but output even at 1,000 MMcfd lags well behind demand. There are ambitious plans to extend the grid and boost the national gas reserve to well over 12 Tcf.

Offshore Egypt

Egypt's only Mediterranean production comes from the cluster of gas reservoirs off Alexandria — Abu Qir/ North Abu Qir/Naf — which Western Desert Operating Petroleum Company (Wepco) has helped the state Egyptian General Petroleum Corporation (EGPC) to develop. In the last few years there have been a number of plans to exploit these reserves further — linked by pipeline to industrial users onshore — with the addition of hardware. At the end of the 1980s, when the capacity of Abu Qir/North Abu Qir was about 240 MMcfd, Wepco laid plans to boost North Abu Qir from 60 MMcfd to 150 MMcfd, and soon after the Oil Ministry set out to raise potential at Naf from 60 MMcfd to 120 MMcfd. The Egyptian contracting firm ENPPI has been working on North Abu Qir phase II Pl-P/U deck, able to handle 150 MMcfd, and the eventual tying-in

to existing processing facilities at platforms P-1D and P-2. Onshore work was handled at Petrojet's Maadia yard.

Egypt has long hoped for a development off Sinai, and there has been a revival of hope with more acreage taken up recently. Originally there was a poor response when government threw open onshore and offshore acreage just after mid-1989, so EGPC repeatedly set back the close of bidding. Occidental was one company that submitted a bid, for Block C in July 1990, but it withdrew this about a year later. Towards the end of 1989, however, IEOC had agreed to spend $200 million to try to develop gas off Sinai. The firm had already made a number of finds in the region. Notable oil flows have been that firm's Tina 1, of 1981,which gave 4,600 b/d, and Total's Mango 1, of 1986, to the east of IEOC acreage, which yielded 5,000-10,000 b/d. Later drilling disappointed.

Two new search tracts should be watched. Phillips has Block A, extending out to 1,400 ft water depth, with seismic shot in 1992. The 870,000-acre block is in the region of the Tina 1 find. More recently, EGPC's bid committee approved a production-sharing contract off North Sinai for British Gas, covering 8,500 sq km. The seven-year contract will call for a well in each of three phases. Total exploration expenditure is put at $25 million, with a $1 million signature bonus and $1.1 million for training local personnel. There will be a production bonus charge of $4 million for output up to 50,000 b/d and an added bonus of $6 million if production hits 100,000 b/d. That would be equal to over 10 percent of Egypt's entire present crude output.

Israel

A Sinai find would encourage Israel. Its offshore search has entered another of its periodic hiatuses. The latest Mediterranean campaign began mid-1989, after a gap of 30 years, with the drilling of wildcat Yam 1, 16 km off Tel Aviv. Forced to first sidetrack the hole and then abandon it after hitting very high water pressures, the group involved moved late in 1989 to a new site, Yam 2. In May 1990 that struck gas at over 17,000 ft, later testing up to 800 b/d of condensate as well. But funding has been a problem. By the time of testing $19 million had been spent.

The programme was led by Isramco, with major backing from Armand Hammer's company HEI. With his death, most funding ceased and HEI was wound up. A further campaign had been planned late in 1990 but Isramco developed a revised plan for a resumption of work. By the end of 1991, however, this was still at the planning stage and Isramco decided to concentrate onshore. While this was going on,a flurry of share dealing saw more changes in the partnership and more offshore work awaits resolution following new government proposals.

Egypt and Libya have made several agreements to co-operate on energy, including exploration, but it has been the Italians who have spearheaded development of the Mediterranean Sea's biggest oilfield off Libya and who are mulling over exploitation of offshore gas. In the west, near the 7 November joint zone, Agip NAME has been taking around 100,000 b/d of crude from the Bouri oilfield and it is now planning expansion to 150,000 b/d under a second phase. Two platforms and a storage tanker have been used to exploit Bouri's first phase, which went on stream in 1988. By the end of that year 50,000 b/d had been achieved and it has steadily climbed. Along the way horizontal drilling has been used to trim the gas/oil ratio. It has been envisaged that phase two will lift the number of wells at Bouri to just over 100 from around 50, with three or four platforms eventually needed and maybe a pipeline to shore. Phase one has cost some $2 billion.

In addition to Bouri's proved recoverable oil reserve of 670 million barrels, the field is estimated to have a recoverable associated gas holding of 70,000 MM cu m. For some time Agip and NOC have been working on a feasibility study to see if gas and condensate from Bouri can be tapped for export to Italy. The study may eventually prompt a series of appraisal wells in block NC-41, which contains 10 structures and Bouri. One alternative is an offshore gas treatment plant, with output piped to Italy. The other alternative is for production to be moved direct to Libya for treatment and transhipment to Italy.

The export-to-Italy scheme was being looked at as long ago as the late 1970s. By then it was clear that Libya's northwestern waters had enormous potential, with several giant fields claimed. Libya's own gas demand is modest, its reserves considerable, so exports seem logical. Recent thinking has been for 21 MMcmd to be tapped for Libyan and Italian use, with the expanding European market also in mind. It is known that around two dozen oil and gas fields lie in acreage held variously by Agip, Sirte Oil and Elf Aquitaine, so potential for feeding new gas into an export trunkline should be

The Tunisian port of Sfax, focal point for the country's offshore oil and gas effort

considerable. Moreover, if the search in 7 November zone proves successful there might be another 250,000 MM cubic metres to be tapped there, according to an estimate earlier given by Agip president Giuseppe Muscarella.

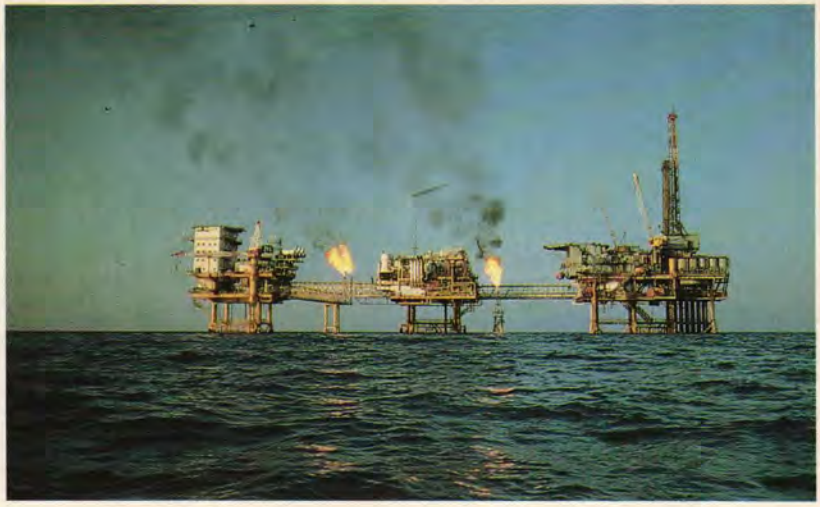
Libya's neighbour Algeria is showing more interest in its offshore potential. Algeria traditionally had so much to do onshore that its continental shelf took a poor second place, had little exploration and no commercial find. But whereas natural gas reserves are still seen to be good for over 50 years and natural gas liquids almost 40 years, oil — on which economic development has so much depended — will probably last for only 20 years, so all prospects must be exploited.

Algeria has been making strenuous efforts to tempt in foreign searchers. Recently, Energy Minister Hacen Mefti predicted that by end-1992 30 production-sharing deals would have been signed. About 40 would be logged in the near future. In the first half of 1992 the Japanese firm C Itoh & Company tendered for three prospects offshore jointly with Total-CFP, Taiyo Oil Company and Indonesia Petroleum Ltd. It was reported that Total would take a 50 percent stake in the venture, the balance to be shared among the rest.

The development with the largest offshore implications is the decision by British firm Intera Information Technologies about a year ago to pursue a non-exclusive study to assess offshore potential, attention being addressed to two areas. Algerian state firm Sonatrach would join Intera in the work. Zone 1 covers a region in west Algeria, immediately east of Oran town, where the onshore Chellif Basin has many shallow and depleted oilfields, and immediately offshore the ARZ-1 well was drilled. This well is one of only four — all dry — holes depicted on Intera's map of Algeria's offshore. Zone 2 is in the extreme east of the Algerian continental shelf, east of Skikda and nudging the median line with Tunisia. No wells are shown there. Intera cautioned that the project would only go ahead if there were 'sufficient industry precommitment.'

Tunisian hotspot

Tunisia is emerging as the southern Mediterranean hotspot of the next decade. Two offshore oilfields, Elf Aquitaine's Ashtart and Samedan's Tazerka, together yield around 28,000 b/d out of a current national total of 120,000 b/d but they are waning assets. The government is hoping for 200,000 b/d overall at some future date but this seems optimistic seeing that output has in recent years dropped below 100,000 b/d. New finds and development prospects give hopes of good things ahead.



Elf Aquitaine's Ashtart oilfield off the Tunisian coast

About six months ago, Marathon, a company with a string of Tunisian finds, with its Zarat 1 well tested a combined rate of 17.5 MMcfd of gas plus 1,498 b/d of liquids. This was just over 100 km northeast of its producing Ezzaouia field and close to the median line with Libya, a newly promising play. Shortly after, British Gas made two shallow water finds in its Kerkennah West permit. It moved fast to appraise Kerkennah North 1, which tested 1,100 b/d of oil, stating that engineering studies were in progress 'to determine the most economic means of exploiting the reservoir.' The second find, Salloum 1, tested up to 1,800 b/d of crude.

British Gas, which lately added acreage in Tunisia, has offshore gas development as its main activity now. It plans to have the Miskar gas field on stream in 1995, a $600 million scheme seeing 160 MMcfd flow over 20 years. Miskar lies 120 km offshore. Twelve wells will be drilled and two platforms installed, linked by a 26-inch diameter line to an onshore process plant. The company tells *Petroleum Review* that offshore structural and topside designs have almost been finished, with bid fabrication of offshore structures due last month and topside fabrication due about the same time. Onshore plant conceptual engineering design has been completed, with further advancement due about now, when the pipeline design should also be finished. Construction of offshore structures is scheduled to start in early-1993 and pipeline fabrication in mid-1994.

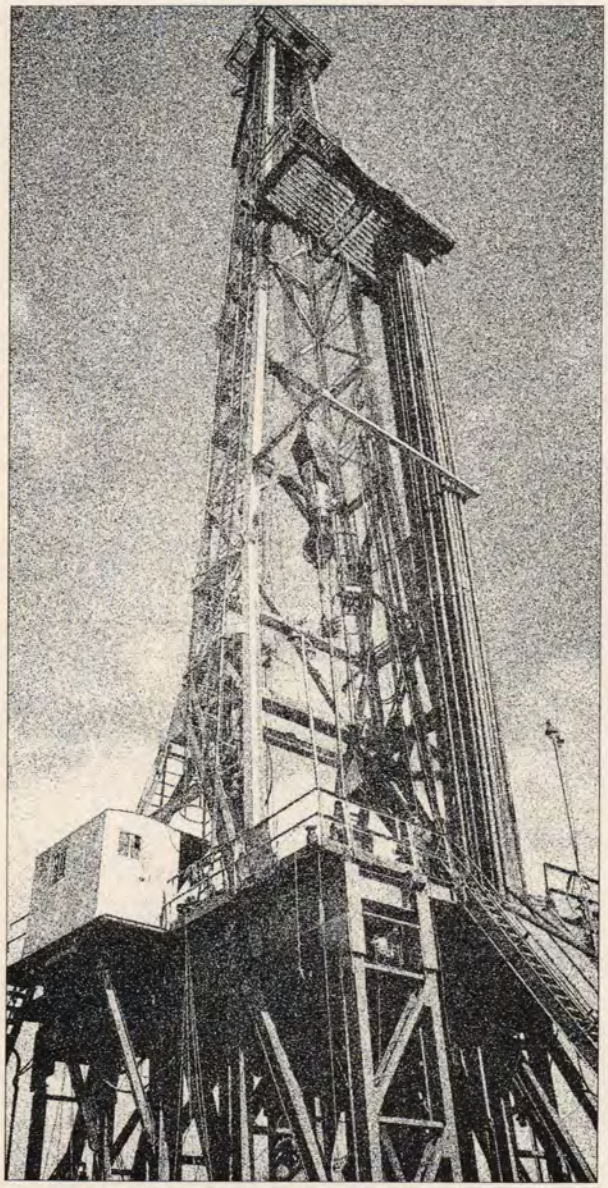
An offshore oil production prospect long dormant is Isis, again in the Gulf of Gabes. Found by Total in 1974, this was for some years nurtured by Shell but is now operated by US independent, Samedan. An exploitation permit was granted in 1980, a reserve of over 100 million bbl was earlier conjectured and 30,000-40,000 b/d output seemed feasible. In 1992 Noble Affiliates, parent of Samedan, said that it was evaluating plans for Isis, with a 3D seismic programme proposed 'to help delineate the optimal location of development wells. We anticipate that such wells would be drilled during 1993, with first production projected in 1994.'

Adjacent to Tunisian waters, keep an eye on Maltese exploration. So far almost all drilling off the island has been in the north, with disappointing results. In 1993 Amoco/Agip, which won blocks 3 and 4 in Area No 4 in the south early last year, is expected to put down a hole by around mid-year.

The last well off Malta was Amoco/BHP's Valletta 1, a dry hole finished early in 1992, 36 km northeast of Malta. Since offshore drilling began just over 20 years ago 10 holes have been put down, not a fair test of the island's marine potential. Thus the government has lately launched another bid to get companies interested in available acreage ■

सत्यमेव जयते

GOVERNMENT OF INDIA
NOTICE INVITING OFFERS FOR EXPLORATION FOR OIL & NATURAL GAS
FIFTH ROUND OF BIDDING (1993)



The Government of India invites companies to bid for acreage for exploration for oil and natural gas. 45 blocks — 29 offshore, 15 onshore and 1 onshore block extending into offshore — are available for exploration by companies, which can bid for one or more blocks, singly or in association with other companies.

CONTRACT FEATURES

Contracts to be signed with successful bidding companies would be modelled on the pattern of the production-sharing contracts to be signed under the Fourth Round and would include the following attractive features :

— Provision for seismic option
— No signature or production bonus
— No royalty payment
— No customs duty
— No ring fencing of blocks for corporate tax purposes
— Progressive fiscal regime
— Suitable provisions for production and pricing of gas
— Purchase of company's share of oil at international market price
— Provision for assignment

BID ITEMS

— Profit oil and profit gas shares expected by companies at various levels of post-tax rate of return or multiples of investment recovered
— Percentage of annual production expected to be allocated towards cost recovery
— Total length of exploration period, number of phases in exploration period and minimum work commitment in each of the phases

AVAILABILITY OF DATA

An information docket on each basin has been prepared. It will contain information on regional and local geology and the current status of exploratory activities in the blocks in each basin. Data packages containing seismic sections, gravity and magnetic anomaly maps, wireline logs, structure contour maps etc. are available for most of the blocks.

Companies may purchase either the information dockets or the data packages or both. There is no limit on the number of basins or blocks for which data may be purchased.

Companies interested in purchase of information dockets and data packages and in obtaining further information may contact :

Mr. R.N. Desai,
Head, EXCOM Group,
Oil and Natural Gas Commission,
7th Floor, Bank of Baroda Building,
Parliament Street, New Delhi-110001, INDIA.
Telephone : 3715291, 3317205 Telex : 031-65184, 031-66262
Facsimile : 3316413

Bids should be submitted in sealed envelopes superscribed **"Confidential" "Fifth Round of Bidding (1993)"** not later than 3.00 P.M. on 30th June, 1993 to :

Mr. Naresh Dayal, Joint Secretary (Exploration), Government of India, Ministry of Petroleum & Natural Gas, 2nd Floor, Shastri Bhavan, Dr. Rajendra Prasad Marg, New Delhi-110001, INDIA.

Economics and management training

By Ian Williamson, Director, The College of Petroleum and Energy Studies

Until 1982, the United Kingdom has no dedicated oil and gas business school, unlike France, where the Institut Francais du Pétrole (IFP) has had its own centre for about 40 years — L' Ecole Nationale Supérieure du Petrole et des Moteurs (ENSPM). This is an important European centre, which awards its own degrees. It is a subsidiary of IFP, which is effectively controlled by the government and financed by a tax on French gasoline.

In the United Kingdom, the break-up of the statutory Petroleum Industry Training Board led to the opportunity to create The College of Petroleum and Energy Studies (CPES). To date, around 1,800 oil, gas and energy-related organisations and governments have sent staff and officials to Oxford, to develop their skills and understanding in such areas as oil and futures trading, supply and refining economics, natural gas business management, economics of oil production, lubricants or LPG marketing.

The training philosophy of CPES is based on the 'Triad' ie., mastery in three areas – management skills, technical undertaking and economics knowhow.

Course format

Specialist training has always taken into account the problems of the oil and gas companies in releasing people for training. In most companies today, even a two-week course would not be approved. Hence the college initiated the system of one-week modules, grouped together by subject area.

The modular approach allows delegates from companies and governments outside Europe to join the same courses as Europeans, thus personnel from , say, Venezuela, Malaysia or Australia, might elect to come for two or three weeks of interrelated modules.

Taking this approach further, CPES has built up groupings of modules into Diploma Qualifications and theses in turn are built into joint degree courses with UK universities, such as Imperial College, Leeds and Salford. Many UK universities now take the same approach and are dividing up their MSc courses into modules.

Recent developments

Recognising that time constraints and flexibility in training remained a key issue, in 1989 CPES proposed to a number of oil companies and the EC that a programme of Distance Learning (DL) modules be developed, so that company employees could continue their studies at their place of work.

The EC supported programme was initiated in 1990 and eight to 10 modules will be available by the end of 1993. The DL modules also count towards the various qual-ifications in the management and economics of the oil and gas business, particularly the new Diploma in Management (Petroleum Man-agement).

Qualifications offered

Originally the college concentrated its efforts on its own diplomas and a 'petroleum MBA' offered jointly with Henley Management College. However, with the recent upsurge in availability of 'generic' MBA's, efforts have become more focused on 'Management of Technology', a subject pioneered by Warwick and Brunel Universities.

The following specialist MSc's are now offered :

- **Petroleum Production Management**
  – with Imperial College
- **Natural Gas Economics and Management**
  – with Salford University
- **Electricity Production Economics**
  – with Leeds University and National Power PLC

The new Diploma in Management (Petroleum Management) has also been started, offered jointly with Henley Management College, to meet the criteria of the Management Charter Initiative. This will eventually be put forward as a level 4/5 National Vocational Qualification.

Overseas moves

In recent years taking the training to overseas clients has become increasingly important. This move began in the mid-1980s, particularly when national oil companies began increased efforts in developing their personnel whilst also cutting costs. CPES gave its first overseas course, in China, in 1984, and since then has undertaken training in over 25 countries. This area of the business is growing rapidly.

CPES believes that in future overseas courses should count towards qualifications and candidates should be examined under supervised

conditions. This then adds to the flexibility of the training process.

Government and EC projects

The college receives a steady flow of delegates from UK government scholarships, offered under the Technical Cooperation and Training Programme administered by The British Council. However, in cooperation with The Foreign and Commonwealth Office, a special new Oil and Gas Scholarship Scheme has just been launched, which will offer places to foreign nationals sponsored by both their governments, and British oil and gas companies, in areas such as Eastern Europe, the Middle East and Africa.

Training developments

Initially, overseas courses were patterned on those held in Oxford but the college has also moved into training consultancy.

Developments in this area are moving rapidly and one now sees new publications such as 'The Learning Organisation', an area where Shell have been very successful. One of the implementation mechanisms for 'Learning Organisations' is 'Action Learning', where the whole concept of training is linked to the business objectives of the company. This concept originated in the 1950s but has only recently been taken up seriously. It has been recently adopted in parts of Shell with support from the International Centre for Organisational Management, for which a UK national training award is being presented this year.

The way forward

CPES believes that the way forward in economics and management training follows the same path as is being seen in most sectors, since the onset of liberalisation, privatisation and competitive markets. These can be summarised as follows:

- Companies will be more willing to support training, when it is linked to their corporate objectives, rather than purely linked to the development of individuals. 'Action Learning' builds on both areas at the same time.
- Qualification-based and competency-based training will be the key to both job performance and job satisfaction, for both the organisation and the individual. Qualifications tend to mainly enhance the individual's position, while training enhances both the company's position and the individual's.

Training overseas is likely to grow, because it is more economic than sending staff to the United Kingdom. However, the best will always benefit more from attending international programmes together with delegates from, say, 15 countries, than they will from an in-company course in their own country.

New ideas such as 'EuroPro', which is a trans-border training system, sponsored by the EC and several oil companies, will continue to be developed to deal with the growing problems of the globalisation of business and the needs of companies to meet that challenge.

Flexibility and response to customer needs remain the cornerstone for success in this very tough business, where the clients complain immediately if training is not up to standard. ■

Classification of engine lubricants

By R F Haycock, Exxon Chemical Ltd., Abingdon

This article aims to give a general introduction to how and why engine lubricants are classified around the world. It gives some history in order to show how we have reached the present situation, discusses the most influential classifications today and speculates on future developments. As technical societies and trade organisations play a vital role in the development of classifications, this role is explained briefly.

Many reasons are given for the classification of lubricants but they seem to boil down to two fundamental reasons – to help the consumer and to protect the supplier, of both the lubricant and the equipment.

A newcomer trying to understand the world of lubricant classification is liable to get swamped in the alphabet spaghetti – a jungle of initials and acronyms for organisations which superficially all seem to overlap or do the same job (see box).

The inter-relationships between the organisations are also complex and are discussed by looking at the three main regions of influence – the United States, Europe and Japan.

United States – the SAE viscosity classification

The first property of engine lubricants to be classified was viscosity and the SAE J300 viscosity classification[1] has been the foundation since its inception in the early 1900s. However, it has not remained unchanged.

The essence of the classification is to indicate viscosity at both low (engine starting) temperatures and high (operating) temperatures. The viscosities are indicated by two numbers, with higher values showing greater viscosity. The low temperature viscosity is indicated with a W (for winter) and is given first. The correct way to indicate SAE viscosity is SAE xxW-yy e.g. SAE 10W-30.

Viscosity at low temperatures was originally estimated by extrapolation from measurements at higher temperatures but for a long time low temperature cranking viscosity and pumpability have been measured using the cold cranking simulator and mini-rotary viscometer respectively. Kinematic viscosity at 100°C continues to be measured by a U-tube method.

Because of the general recognition that high temperature high shear (HTHS) viscosity measured at 10^6 reciprocal seconds and 150°C is more representative of reality in operating bearings than kinematic viscosity at 100°C, it has been agreed in principle to include HTHS viscosity in SAE J300.

United States – the 'Tripartite'

By far the most influential of all organisations to define and develop automotive crankcase lubricant qualities in the world has been the 'Tripartite' of three large American organisations – SAE, ASTM and API – shown in **Figure 1.**

These organisations (each having fields of interest well beyond the confines of automotive lubricants) have for many years interlinked, each having a defined role but with individuals and companies often being represented on two or even all three of the organisations.

In the early 1950s, the American Petroleum Institute (API) introduced a system for classifying the various types of service conditions under

Definitions

Classification of lubricants is very closely interlinked with specification and approval.

a) **Classification.** The division of lubricant qualities into broad types to meet separate but broad user needs. Classification is usually carried out by technical societies.

b) **Specification.** This is a narrower definition than classification. It will usually apply to a limited range of equipment or a limited end-use market. Test methods will be defined in detail. Engine lubricant specifications are most often written by users, vehicle or engine manufacturers. An important element of engine lubricant specification is that performance will be defined, as well as chemical and physical properties.

c) **Approval.** This involves two parties: the presentation of evidence of performance from one to the other, the exchange of paperwork and an ongoing commitment by both parties. Usually the receipt of an approval will be advertised in some way.

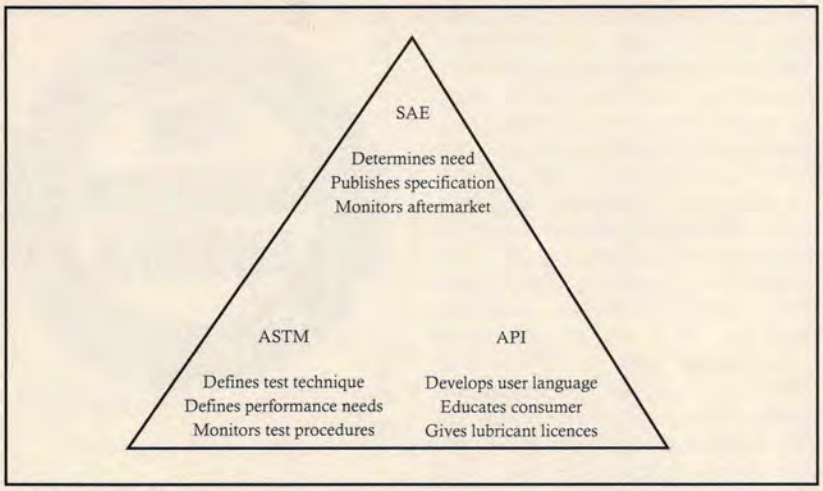


Figure 1: US 'Tripartite'

which engines operate. These were designated as ML, MM, MS (for petrol engines) and DG, DM, DS (for diesel engines) but no performance standards were specified.

In order to provide more precise definitions of oil performance and engine service, in 1969-70 API, in cooperation with the American Society for Testing and Materials (ASTM) and the Society of Automotive Engineers (SAE) established a new engine service classification for engine oils. ASTM defined the test methods and performance targets. API developed the service letter designations and 'user' language. SAE combined the information into an SAE recommended practice in the SAE handbook for consumer use. The current revision of that report is 'Engine Oil Performance and Engine Service Classification' (other than 'Energy Conserving') – SAE J 183 JUN 91 [2].

The current API Engine Service Classification is divided into an 'S' series, covering engine oils generally sold in service stations for use in passenger cars and light trucks (mainly petrol engines), and a 'C' series, for oils for use in commercial, farm, construction and off-highway vehicles (mainly diesel engines). An oil can meet more than one classification, for example, API SG/CD or CE/SG. The API SG category was formally adopted in March 1988 and meets the requirements of 1989 model year passenger cars. Similarly, the API CE was adopted in 1988 and recommended by all American heavy duty engine manufacturers In 1990 it was replaced by API CF-4 for four stroke engines. Plans to issue an API SH classification this year are well advanced.

The complete API system is described in API Bulletin 1509, 'Engine Service Classification and Guide to Crankcase Oil Selection'.

API does not grant approvals, but in 1983 it developed its symbol (**Figure 2**) and issued licences to oil companies who wished to use the symbol to promote their products. The central part is reserved for the SAE viscosity grade, the top half of the outer ring shows the API performance classification (only currently supported qualities are allowed to be shown) and the lower half of the ring is reserved to indicate whether the oil meets an 'energy conserving' or fuel economy standard. Today a further major change has taken place in API's role and its Engine Oil Licensing and Certification System (EOLCS)[3] represents a step change in oil quality management (see page 87).

Europe – individual OEM specifications and approvals

In Europe there have been diverse attitudes amongst the vehicle manufacturers towards lubricant classification and approval. In the last few years the need for individual OEM specifications and approvals has been reduced because of the existence of CCMC[4] classifications. They range from total reliance on SAE viscosity and API classifications only to having a detailed approval system.

Europe – CCMC sequences

The Committee of Common Market Automobile Manufacturers (CCMC) was a trade association founded in 1972 and lasting until late 1990. In 1991 it was replaced by a differently structured organisation – ACEA (Association des Constructeurs Européens d'Automobiles).

The Fuels and Lubricants Working Group within CCMC first published their classifications or 'sequences' in 1975. These covered additional requirements over and above the API designations and were thought necessary to bridge shortfalls in operating small engines in a European environment. Most of these additional test requirements have been developed by the Coordinating

Glossary of Acronyms

ACEA	Association des Constructeurs Européens d'Automobiles
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
ATC	Technical Committee of Petroleum Additive Manufacturers in Europe
ATIEL	Association Technique de l'Industrie Européene des Lubrifiants
CCMC	Comité des Constructeurs du Marché Commun
CEC	Co-ordinating European Council for the Development of Performance Tests for Transportation Fuels, Lubricants and Other Fluids
CMA	Chemical Manufacturers Association (U.S.A.)
DIN	Deutsches Institut für Normung
EOLCS	Engine Oil Licensing and Certification System (of API)
ILSAC	International Lubricant Standardization and Approval Committee
JAMA	Japan Automobile Manufacturers Association
JASO	Japanese Automobile Standards Organisation
MVMA	Motor Vehicle Manufacturers Association of the United States, Inc
SAE	Society of Automotive Engineers.

Figure 2

European Council for the Development of Performance Tests for Transportation Fuels, Lubricants and Other Fluids (CEC).[5]

The classifications were extensively revised in 1984 and 1991. The latest sequences include:

- **G-4** – minimum quality for passenger car gasoline engines
- **G-5** – low viscosity fuel economy oil for passenger car gasoline engines.
- **PD-2** – for passenger car diesel engines.
- **D-4** – minimum quality for commercial vehicle diesel engines
- **D-5** – as D-4 but for more severe service or extended oil drain

Performance parameters such as high temperature, high shear viscosity and volatility were recognised widely for the first time and had a significant and positive effect on quality in the European marketplace. There were several important differences between 'Tripartite' and CCMC classifications. The API and ASTM classifications were backed up directly by working groups monitoring test quality;the CCMC classifications were based (mostly) on CEC test procedures but the links between the organisations were much less formal.

CCMC has never given approvals, although often encouraged to do so. The organisation was reluctant to incur the financial costs of developing and maintaining the necessary bureaucracy, and was not a legally established body with the power to enforce any such system.

Europe – CEC

In Europe CEC has a parallel but much more limited role than ASTM in the United States. Firstly, its scope is limited to performance tests (essentially engine and rig tests) and generally bench tests are left to other technical organisations. Secondly it develops tests but does not set limits on those tests and leaves it to commercial organisations to set limits. The senior body (the Council) is comprised of members elected from its 11 constituent national European organisations. Reporting to it are committees including an Engine Lubricants Technical Committee (ELTC) and a Transmission Lubricants Technical Committee (TLTC) – each with voting membership from national organisations. The working groups reporting to the committees have membership from individual companies and it is really only at this lowest level that the organisation has much in common with its transatlantic cousin.

CEC has done and continues to do much useful work but, as in the United States, the existing way of doing things is being challenged. Council meetings and Technical Committee meetings are held six-monthly and decision-making tends to be slow. The organisation and voting by national bodies has some strengths but also weaknesses. Decisions are often requested of people who lack the detailed experience to make effective judgements. Many of the CEC lubricant engines test procedures are less rigorously defined and maintained than their US counterparts. The organisation recognises these concerns and is working with ACEA, ATIEL and ATC to develop a way to modernise its practices.

Japanese activities

Japanese vehicle manufacturers in general have relied on the API classification system to recommend engine oils for service-fill applications.

There is a parallel with Europe (CEC) in that the Japanese Automobile Standards Organisation (JASO) has developed four engine test procedures without giving pass/fail limits. The parallel is not complete because neither within nor outside Japan do the vehicle manufacturers require any of these tests to be run to meet their own specifications.

Within Japan the OEMs have generally developed private service-fill specifications and worked one on one with individual oil companies who would market these so-called 'genuine oils'. Since 1990, the

Figure 3

Japan Automobile Manufacturers Association (JAMA) has worked with the Motor Vehicle Manufacturers Association of the United States (MVMA) to develop a new performance standard called ILSAC.

ILSAC

The MVMA's opinion is that as vehicle design is becoming increasingly international and as trading barriers are being broken down, it makes sense to have worldwide lubricant specifications. With this thought in mind, they made overtures to the other major passenger car manufacturer federations, JAMA and CCMC. Details of their discussions have not been made public but their suggestions were broadly welcomed by JAMA but rejected by CCMC. (It is understood that there may have been a majority within CCMC in favour of co-operation, but the CCMC constitution required unanimity.)

The result was the International Lubricants Standardisation and Approval Committee (ILSAC) formed by JAMA and MVMA.

At the time of writing ILSAC has issued and recently revised one passenger car engine oil performance standard called GF-1,[6] has given some details for a second to issue in 1996 and the principle for a third to issue about year 2000. The GF-1 specification is based on API SG but in addition includes an energy conserving requirement which in practice will limit the specification almost exclusively to low viscosity SAE 0W, 5W and 10W oils. For this reason GF-1 standard lubricants are not widely marketed in Europe as the viscometric requirements tend to conflict with those of CCMC G-4 and G-5.

Recent developments

For many years concerns have been expressed, particularly by MVMA, about the quality of the 'Tripartite' process and in particular about its slow speed of reaction to motor industry need. Concurrently, questions have also been raised about the definition of 'passing' quality when applied to lubricants tested in engines. Should it mean 'always able to pass', should it mean 'capability to pass has been demonstrated', or something in between? The answer is not self-evident when the poor precision of engine tests compared with laboratory glassware tests is considered. With rare exceptions (e.g. the British Military) there has not been a requirement to pass each test every time or even on average. The growing interest in 'quality processes' has led to significant changes in industry practices, and in particular has led to the US Chemical Manufacturers Association (CMA) Code of Practice for lubricant engine testing and the API Engine Oil Licensing and Certification System (EOLCS).

The details of the CMA Code of Practice are very important to oil formulators but beyond the scope of this article. It is probably sufficient to say that all the world's major additive suppliers have voluntarily agreed to abide by them and that they provide a much more rigorous way of documenting oil performance.

The engine tests covered by the CMA Code are the IID, IIIE, VE, VI, L-38 and IG2 as are conducted for such industry standards as API SG, API SH and CCMC G-4 and G-5.

Oils will have to be formulated essentially to 'pass first time' and there will be stringent control of engine test stands and of formulation modifications.

The API EOLCS likewise applies a lot more rigour to an existing system for companies wishing to use the API symbol. Specifically the certification procedure includes:

- Application to all licensed lubricants which claim API 'S' and 'C' performance.
- Reference to all active API gasoline and diesel engine categories
- Guidelines for basestock and viscosity grade read-across.
- A requirement to follow CMA Code of Practice

In addition the licensing procedure covers such things as:

- Agreement to audits
- Payment of fees
- Usage of certification marks
- Claim language.

Europe – the future

Change is inevitable in Europe in the next few years but it is still too early to say exactly how the changes will evolve. Most parties see that quality classifications cannot be built on poor test procedures. Initially the focus is likely to be to identify the most important bench, rig and engine test parameters and develop new tests or improve existing CEC tests to far more exacting quality standards.

When developing their replacements for the CCMC sequences, ACEA will be urged to build on the best of current practices and incorporate the philosophy from the CMA Code of Practice. In turn, the European oil and additives industries will be urged to play their part by giving financial support to a European monitoring and approval agency.

Whatever happens, things will not stand still. ■

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From L to R – Dr Irene Himona, Mrs Elaine Gillatt, Ms Fran Morrison and Ms Angela Burns

A wealth of talent but . . .

By Carol Reader

Take a look around the IP Annual Dinner. Is there a woman on the top table? How many women are present? How many are there in their own right? The answers are depressing news to those who have long been campaigning for equal opportunities. But is the position as bleak as this glance round a large gathering of senior people in the oil industry would suggest?

The UK oil industry seems to compare badly with other organisations. For instance, in recent months publicity has been given to several new senior appointments in the UK public sector – for the first time women have been put in charge of the security service (Mrs Stella Rimington), Customs and Excise (Mrs Valerie Strachan) and the public prosecution service (Mrs Barbara Mills). All three are Permanent Secretaries – top positions in the British Civil Service.

These appointments represent part of the government's implementation of its own Opportunity 2000, an initiative to promote equality in the workplace and to increase both the quality and quantity of women's participation in the corporate world. For its part the Civil Service has had a long tradition of putting the equal opportunities philosophy into practice. Opportunity 2000 was launched just over a year ago and from an initial 61 member companies it now has over 130. Businesses both public and private have been encouraged to adopt this policy. It is now estimated that a quarter of the UK labour force is employed by companies that have taken up Opportunity 2000.

Among the supporting members of Opportunity 2000 are companies such as BP, Shell, Texaco, Esso, British Gas, British Rail, NatWest Bank, Lucas Industries and British Airways, who have each adopted their own individual targets and action plans in order to implement the initiative.

Equal opportunities in the widest sense means that there should be no discrimination for reasons of sex, ethnic origin, religion, colour, nationality or disability. However, here we are concentrating on the narrower sense and efforts to improve the recruitment and career structure of women.

Sole criteria — merit

Personnel managers emphasise that, despite their commitment to equal opportunities in their recruitment policies and career structures, in the final analysis promotion is through merit and merit alone. Otherwise they would face a new charge of discrimination rather than credit for improving the balance between the sexes.

It is easy to advocate that companies should develop their female workforce. In the past recruitment of women was so small and the industry had such a macho image that change was slow. On the installations in the North Sea there are now a few intrepid women and some employers are training girls specifically for offshore work.

While underrepresentation offshore is hardly surprising, in the mainland offices the situation is not noticeably much better. While the ratios of office staff are nearly balanced in the lower grades, at senior management levels women are definitely in a minority.

Statistics for the BP group in the United Kingdom are probably typical of the majors. Women account for 25 percent of lower grades, 17 percent of junior management, nine percent of middle management and a mere three percent of senior positions. Meanwhile, BP Exploration has set itself a target of seven percent of senior grade jobs to be held by women by 1995

Few top women — yet

Because the emphasis on equal opportunities is recent, it means that there is no pool of 'female human resources ' (the current jargon) to draw on – women with 20 years in the oil industry who might by now be expected to have reached senior management levels are few indeed.

This is the main reason why women are not yet making the top levels of the UK oil industry.

A recently published recruitment

brochure for UK graduates questioned recruiting companies about their equal opportunities policy and record.

These make interesting reading, proving that at long last the position is indeed changing. In this brochure Esso, Exxon and Mobil state that during the last three years over 40 percent of their science and engineering graduate recruits have been women. This represents a colossal change compared with figures of 20 years ago, or even 10 years ago, but it will be a considerable time before the imbalance of the sexes has been evened out.

Signs of progress

However, the current position is not as bleak as it might seem. Many organisations now include a reference to equal opportunities in their business strategies.

The problem is that the oil industry is frequently seen as a male-dominated industry, with the result that the proportion of women to men graduates applying to enter the oil industry is nowhere near 50:50. In addition, whereas universities produce roughly equal numbers of male and female graduates from most faculties, female engineers are still a rare breed – the very category needed by the oil industry. The reason for this imbalance is largely put down to stereotyping by schools and teachers before either university courses or careers are chosen.

As Barry Freeman, Human Resources Manager for Chevron put it, 'We want to be an equal opportunities employer – the problem has been getting the candidates'.

Shell UK is one company that joined Opportunity 2000 and is pushing hard to improve its image and its record in equal opportunities. Its first female director is about to take up her appointment – Mrs Elizabeth Rayner becomes General Manager for Human Resources and Public Affairs for Shell UK Ltd Downstream Oil this month She joined Shell originally in a technical role before turning to personnel work. With over 20 years experience, she is becoming a director and apparently only one rung from the board – her predecessor, Clive Mather, is moving to become Personnel Director with a seat on the board of Shell UK.

Appointments at this level in the oil industry are, as yet, unusual. In other British organisations women are already on the board – for example, at Glaxo, ICI and Times Newspapers.

British Gas has as a non-executive director, Baroness Platt of Writtle, a pioneer engineer, who has been a member of The Engineering Council and chairman of the Equal Opportunities Commission and is currently a member of the House of Lords Science and Technology Select Committee. Speaking at a recent conference, she said, 'It is very important that girls are made aware of the marvellous and interesting career opportunities in science and technology that will be available to them if they get the right education and training.'

Meanwhile, women are making progress towards the top echelons. For instance, BP in the United States selected the first woman non-executive director a year ago – Dr Karen Horn, chairman and chief executive officer of Bank One, Cleveland. But every company repeats the same theme that promotion to this level – indeed at all levels – must be on merit, as a 'token' appointment would be damaging to the cause.

While suitable engineers are in relatively short supply, women with other qualifications are making more headway. In financial, accounting, legal, trading and similar spheres, the position is quite different. One can quote examples of very highly regarded oil taxation specialists, bankers, lawyers, investment analysts and traders. Some hold very senior positions; some have set up their own businesses. It would appear that in these areas the aspiring 'executive woman' with appropriate tailored suit, well-coiffed hair and slimline briefcase stands a better chance than elsewhere! Perhaps in the City stereotyping is a thing of the past.

Terms

Current equal opportunity terms and conditions are generous and improving all the time. Sometimes the provisions exceed those laid down by the Equal Pay Act, the Sex Discrimination Acts and the Race Relations Act. For instance, a typical oil company may well be offering some or all of these terms:

- Career breaks
- Maternity benefits above the legal minimum
- Maternity leave
- Flexible working policies – part-time working, job sharing and home working
- Special women-only training
- Creche facilities
- Child-minding allowances
- Paternity leave

As John Collins, Chairman and Chief Executive of Shell UK, told the British Institute of Management, 'For too long macho management has been hailed as the only way to run things....This has been a tremendous waste of talent – something that business can no longer afford.' ■

From L to R – Mrs Helga Steeg, Dr Caroline Harper, tanker captain Anneli Paavola and Miss Carla Watts

Concrete block pavements for service stations

By John A Emery, Advanced Construction Materials Ltd.,
and Anthony NS Beaty

Concrete block paving is an increasingly popular method of surfacing the areas around fuel pumps on service stations. There are many advantages to this type of surfacing but until now a major drawback has been the problem of fuel spillages between the blocks causing accumulation of hazardous fuel vapour and the possibility of ground water contamination. This paper examines the problem and the remedial answer.

The major advantages of concrete blocks as pavement surfacing are :

- The pleasing appearance which can be achieved using the range of block shapes and colours available.
- The ability to take up and relay the blocks, either for access to buried services or for layout changes.
- The pavement can be opened to traffic immediately after construction, with no delay for curing or hardening.
- The blocks are highly resistant to spillage of petroleum products.
- Very low maintenance costs.

Block paving

Interlocking concrete block pavements for service stations consist of 80mm thick concrete blocks, manufactured with good quality control, to a crushing strength generally in excess of 55MPa. The blocks are manufactured to close dimensional tolerances, and are typically 200mm by 100mm in plan. They may be rectangular or of a large number of proprietary shapes. The surfacing consists of the blocks, normally in herringbone pattern, laid on a layer of carefully selected bedding sand, approximately 30mm thick after compaction. During compaction, some bedding sand is forced up into the joints between the pavers. These joints are approximately 3mm wide and are completely filled with jointing sand compacted by vibration.

Applying jointing sealer

The sand-filled joints are an important feature of this form of pavement; they ensure that the pavement behaves in a similar way under load to an asphalt pavement and that interlock is developed between individual pavers. Thus, when a wheel load is applied to a paver, the load is spread to adjacent pavers. An interlocking concrete block pavement can be designed by standard methods for flexible pavements, the pavers and sand being substituted for an equal thickness of asphalt.

The general arrangement of a block pavement is shown in **Figure 1**. Although initial interlock is obtained by compacting the pavement with a vibrating plate compactor, it develops further under the first few thousand loads. In order to avoid loss of jointing sand and to seal the joints against ingress of water, gasoline or oil, it is customary to apply a sealer to new service station pavements. An elastomeric proprietary sealer has been specifically developed for block paving.

Fuel spillages

In the United Kingdom, petroleum officers have expressed concern that fuel should not be allowed to penetrate the jointing sand, as they believe that a potential hazard may exist from spillages accumulating in the sand laying course and that fuel, permeating into the underlying soil, is

environmentally unacceptable because of the risk of contamination of water sources. This question of fuel accumulating beneath block pavements has previously been investigated by a number of organisations using the level of potentially explosive vapour under blocks and under traditional concrete surfaces. The findings indicated that in areas adjacent to the most frequently used pumps, all types of pavement are potentially hazardous but that the risk was no higher under blocks than under conventional pavements.

Joint sealing

A liquid pre-polymer has been developed with the specific aim of stabilising the jointing sand in block paving. It is used directly from the container and is applied evenly to the pavement by long-handled brush or foam roller. The material is worked into the joints so as to penetrate the jointing sand; no surplus material is left on the surface. The material was originally formulated to prevent jointing sand loss caused by jet blast from aircraft taking off from aircraft pavements surfaced with block paving. Other benefits demonstrated by the material have been:

- Its ability to prevent sand loss caused by vacuum sweeping.
- It provides a protective coating to the blocks, making subsequent cleaning easier.
- It greatly reduces the permeability of the jointing sand thus avoiding problems associated with ingress of water and fuels into the underlying sand and pavement structure. ■

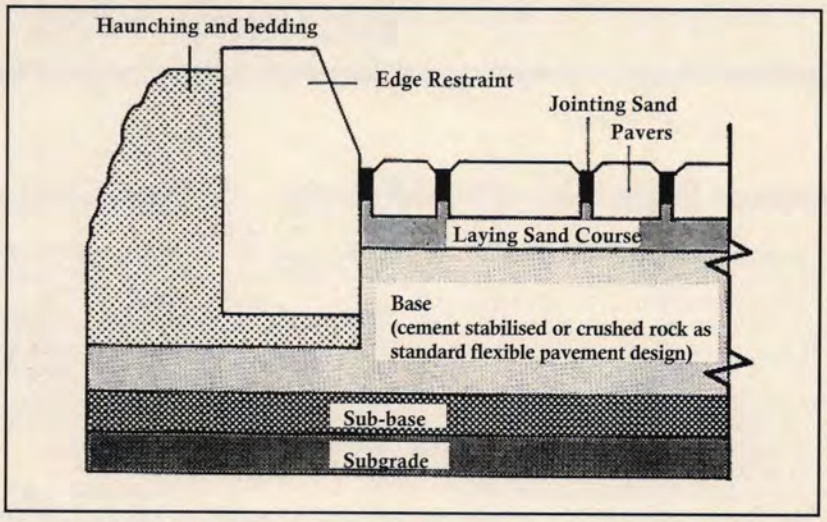

Figure 1 : Typical concrete block pavement cross-section

Institute News

Aberdeen Branch Membership Drive

The aim is to use the local branch structure to make it easy for prominent local business people to join the Institute of Petroleum. Many people would like to become members of the institute but never take the initiative themselves because they are uncertain they are eligible and do not know a suitable proposer. Inertia can also be a problem!

Our technique is to send personal invitations to identified people in the local business community. Two letters are sent, one from the Director General and one from the Chairman of the local branch to establish the local contact. The letters set out the benefits and value for money that membership of the Institute offers.

Possible targets are identified form local business directories and personal contacts but it is obviously essential to check carefully that they are not members already. Once the invitations have been sent out, the local branch makes telephone contacts to try to 'convert the sale' and to offer to propose the membership.

To keep the cost and demand on the local branch within reason, a steady programme is planned over two or three years. Later, the programme will move into maintenance mode, picking up new appointments and new companies, and possibly targeting technical personnel within the larger companies. We also plan to target students at local universities to try to keep our age balance in check.

At this stage, the indications are that we are achieving a yield of new members from 5 to 10 percent of the letters sent out. We believe that our targeted and structured approach is soundly based and will result in substantial increase in our membership.

Ramsay Spence

The Yorkshire Branch began the winter season of monthly meetings with a visit to X1 (F) Squadron based at RAF Leeming in North Yorkshire.
The visit began with an introduction to the members by Flight Lieutenant Hancock who outlined the current role of a Tornado squadron in the fast-changing defence role of today.
Following an excellent video of the squadron in flight, the members were taken into a hangar to see a Tornado and after emptying pockets of items likely to fall out, the members were allowed to sit in an actual aircraft.
A vote of thanks to Flight lieutenant Hancock for a most interesting visit was given by committee member Andrew Wells, who had organised the event. The members then retired to a local watering hole for a buffet supper.
The picture shows members of the Yorkshire Branch in front of a Tornado.

New Collective Members

G Watson Gray (Holland) bv
Stelle 6, Rotterdam - Hoogvliet, 3191 KE, Netherlands. Tel: 010 472 0422
IP Nominated Representative: Mr H T Kopp, General Manager.

G Watson Gray (Holland) bv, established in Holland in 1977, is a member of the Inspectorate Group of companies. The company provides inspection and laboratory services to the oil industry, with the main commodities being petrochemicals, petroleum products and crude oil.

Teknica (UK) Ltd
Avon House, 360-366 Oxford Street, London W1N 9HA. Tel: 071 465 8825
IP Nominated Representative: Mr C J Douhit, Senior Executive Vice President.

A subsidiary of Umm Al-Jawaby Oil service Co Ltd, Teknika (UK) Ltd offers engineering, project management and construction management services to the natural gas, hydrocarbons refining and petrochemical industries worldwide.

The Steel Construction Institute
Silwood Park, Ascot, Berks. SL5 7QN. Tel: 0344 23345
IP Nominated Representative: Mrs Sonya Bauer, Librarian

In its wider role, the Steel Construction Institute is concerned with the use of steek in construction. Its Offshore Group is active in the area of offshore structure safety, particularly from the effects of fires and explosions. This includes R & D activities into fire and explosions and the consequences therefrom.

Commercial Components (Int) Limited
Drybridge Park, Shewalton Road, Irvine, Ayrshire KA11 5AL. Tel: 0294 313131.
IP Nominated Representative: Mr R Lindsey, Technical Sales Manager

The company specialises in sub contract precision engineering both conventional and CNC in all materials including exotics, from small items up to 40 tons.

PG Marine bv
Kasleelweg 5-7, 3077DN, Rotterdam.

PG Marine was founded in 1990. The main activity is the inspection of quality and quantity of vegetable and animal oil and fats, minerals oils and chemicals, as well as calibration of shoretanks.

PG Marine concentrates on the petroleum sector as an independent inspector and cargo superintendent.

New Fellows

John Orange
He has a BA(Hons) from Trinity College, Dublin and is a Barrister at Law.

In a wide-ranging career with BP, Mr Orange has held positions as Group Legal Adviser, Regional Co-Ordinator Middle East, Managing Director BP Denmark, Chief Executive BP New Zealand. He is a Vice-President of the Institute of Petroleum, Manager for Culture Change and more recently Chief Executive BP Oil UK Limited.

Dr Patrick M Shannon
Having worked at the University of Newcastle upon Tyne and the Geological Survey of Ireland, Dr Shannon spent five years at the Petroleum Affairs Division of the Technical Section. In 1983 he took up his present post as Lecturer in Petroleum Geology.

He also acts as petroleum exploration consultant to a range of oil and service companies and state agencies.

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Dr Shannon has been a committee member of the Institute of Petroleum Irish Branch and organiser of its Bryony Berry Essay Competition since 1987. He has also delivered a number of papers to IP meetings since 1983.

Tim Gunner
Mr Gunner has a B.Sc. in Maritime Studies and is a Fellow of the Royal Institution of Naval Architects. He is also a Full Member of the London Maritime Arbitrators' Associations.

He is a Marine Consultant and Arbitrator, considering disputes in the assessment of quality and quantity of petroleum and petrochemical products. Lecturer and author he has undertaken research development into the low temperature behaviour of crude oils.

Dr R A Pike
Dr R A Pike joined British Petroleum as a University Apprentice in 1968 and read Engineering at Downing College, Cambridge, where he obtained First Class Honours and subsequently his Doctorate. From 1975 he held a variety of positions in BP Engineering and BP Exploration, culminating in his appointment in 1986 as Manager Technical, Sullom Voe Terminal, Shetland. He joined BP Chemicals KK, Japan.

Dr Pike was winner of the 1991 UK "Award to Excellence" sponsored by the Institution of Plant Engineers and BP Oil.

E John P Browne
Mr Browne is a Managing Director, British Petroleum Company plc and Chief Executive, BP Exploration Company Ltd and a Chartered Engineer.

He joined the BP Group in 1969 and holds degrees in physics from St John's College, Cambridge and MS in Business from Stanford University, California. After holding a variety of positions, he became in 1984 Group Treasurer and Chief Executive, BP Finance; in 1986 Executive Vice President and Chief Financial Officer, Standard Oil and from 1987 to 1989 both CEO Standard Oil Production Co & Executive VP & Chief Financial Officer, BP America. He has held his present position since 1989.

Raymond Clinton
Mr Clinton joined Irish Ropes plc as Works Chemist in 1962, following a degree in Chemistry and Physics from University College, Galway. He joined BP Chemicals (Ireland) Ltd in 1965, holding various posts, until his appointment as Director and General Manager in 1981. In 1985 he became Managing Director of the then BP Oil (Ireland) Ltd – more recently Statoil Ireland Limited.
Mr Clinton is a past Committee Member of the Federation of Irish Chemical Industry and past Chairman of the Plastics Industries Association. He has been a member since 1986 of the Institute of Petroleum Irish branch, serving as committee member since 1987 and Chairman from 1989 to 1990.

Alan Lodge
Following a degree in chemistry, Mr Lodge joined BP as a Process Development Chemist at the BP Research Centre and moved into training in 1964, first with BP Research and later at head office. From 1985 to 1992 Mr Lodge served as the Institute of Petroleum's Technical Manager (Upstream and Environment), before leaving to take up his present position as Professional Activities Officer at The Royal Society of Chemistry.
For many years prior to his employment with the Institute of Petroleum, Mr Lodge was an active member of its Education Committee.

New Years Honours

Brian Goodland, OBE, former Director Safety and Environmental Affairs, Texaco. IP Fellow; Chairman IP Membership and Environment Committees; ex IP Council member; ex IP Management Committee member.

J M Hyslop, OBE, Managing Director, AOC International Ltd. IP Fellow.

Top table guests at the Aberdeen Branch Annual Dinner, held on 27 November 1992

UK Deliveries into Consumption

Tonnes

Products	*Nov 1991†*	*Nov 1992**	*Jan–Nov 1991†*	*Jan–Nov 1992**	*% change*
Naphtha/LDF	304,469.0	252,166.0	3,037,713.0	2,985,049.0	-2
ATF–Kerosine	505,353.0	484,056.0	5,717,716.0	6,202,172.0	8
Motor Spirit	1,980, 987.0	1,925,987.0	22,011,171.0	21,867,380	-1
of which unleaded	857,344.0	947,546.0	9,001,206.0	10,197,625.0	13
Super unleaded	103,431.0	118,426.0	1,066,731.0	1,287,105.0	21
Premium unleaded	753,913.0	829,120.0	7,934,475.0	8,910,520.0	12
Burning Oil	226,051.0	230,129.0	2,105,133.0	2,167,360.0	3
Derv Fuel	926,867.0	954,486.0	9,855,837.0	10,166,116.0	3
Gas/Diesel oil	683,414.0	683,806.0	7,236,527.0	7,122,636.0	-2
Fuel oil	827,076.0	1,081,916.0	10,911,582.0	10,196,577.0	-7
Lubricating oil	70,196.0	63,644.0	709,180.0	740,720.0	4
Other products	614,903.0	620,175.0	6,678,600.0	6,470,645.0	-3
Total above	6,138,929.0	6,296,365.0	68,263,459.0	67,918,655.0	-1
Refinery consumption	497,548.0	508,420.0	5,520,947.0	5,550,035.0	1
Total all products	6,618,477.0	6,804,785.0	73,784,406.0	73,468,690.0	0

† Revised with adjustments *Preliminary n/a Not Available

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New Members

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Obituaries

Dr B N Ballantine was killed in a road accident in December. After 20 years as a General Practitioner, he joined British Gas in 1981 where he was responsible for occupational health for UK offshore and onshore oil and gas activities. He was an IP member and on the IP and UKOOA Medical Committees.

Roy Gilpin, a former IP Technical Officer in charge of standardization, died on 21 December 1992. He received an IP Award of Council in 1984.

Around the Branches

Aberdeen
9th February: AGM.

Edinburgh & SE /Scotland Branch
23th February: 'Fluidics', Mr M Rowe, AEA.

Essex
10th February:AGM followed by: 'The Role of the Haulier in the Bulk Liquid Transport Industry', Joe Chapman, Divisional Director, P & O Roadtanks Ltd.

Humber
18th February: AGM followed by: 'Integrated Pollution Control', Mr I M Rickell, HM Principal Inspector of Pollution.
26th February: Annual Dinner.

Midlands
17th February: AGM.

Northern
16th February: 'Modern Concepts in Additives', Tim Mountain, Adibis Ltd.

North-East
9th February: AGM followed by: Presentation by Derek Fraser - Vice Chancellor, Teeside University.

Shetland
9th February: AGM.

Southern
1st February: AGM followed by: 'What's in the Future for the IP', Mr Charles Smith, President of the IP.

South Wales
18th February: AGM followed by: 'Medieval Dyes', Mr D Redpath

Stanlow
17th February: 'Lubricants – Usage and Control on British Rail', I J McEwen, Head of Lubrication and Wear Unit, BR.

Yorkshire
9th February: AGM followed by: Hot Pot Supper and Guest Speaker.

Layflat pipes for offshore

Judging by the growing number and variety of applications, offshore engineers seem to be losing their inhibitions for using layflat hoses.

Once seen as a little specialized, these flexible systems appear to be earning recognition as a viable solution to serious constructional problems. They are, for example, proving their value as a means of cutting installation costs without impairing performance on pipelines, and of reducing the impact that hoses can exert on topsides weights.

One manufacturer, Angus Flexible Pipelines, says that layflat hoses are now being specified for transport:ir1g drinking water, waste and sea water, fuel oil, cement, barytes and oil-based mud. They are being installed between and on platforms and rigs, and between on- and offshore and subsea locations, often over considerable distances. Most of the installations, Angus states, enjoy permanent status.

The company believes this popularity owes much to the combined pursuit of cost-effectiveness, compact stowed volume and lower topsides weight. Concern over all-in cost and weight of fluid-transfer installations has focussed attention on the drawbacks of cumbersome hard- and soft-walled rubber hoses, and of rigid pipelines in steel, aluminium and plastics. Worried by constraints in transportation, shipping, installation times and handling, engineers have looked for alternatives to the traditional approaches.

In Angus's view, the layflat hose is a product of technology transfer and adaptation, descended as it is from the well-proven fire hose. It brings to fluid transfer the specified hydraulic performance without the handicaps of weight and rigidity.

The key to the hose's features lies principally in its woven high-modulus synthetic reinforcement. Encapsulated between cover and lining, this adds great strength to an inherent flexibility. Layflat hoses for offshore duty can operate at very high pressures. Their design short burst pressure is up to 58 bar (or 850 lb/in2). They also have an end tensile strength much higher than the best rubber supply hoses, ranging up to 18 tonnes, depending on the hose size.

Because they are flexible and literally lay flat when unpressurized, the hoses are remarkably easy to handle and to coil compactly for transportation and storage. They impose very little demand on shipping or transport resources, which must come as a relief to anyone accustomed to moving heavy rigid metal or plastic pipe sections by road or sea.

For much the same reasons - flexibility and a weight one third that of an equivelant soft-wall rubber hose - layflat hoses can be deployed much more quickly and easily than other systems. Provided in continuous lengths, they can be assembled, connected and brought into use in a fraction of the time of a comparable steel pipeline, for example, and without any call on heavy and specialized handling equipment. The lengths, up to 200 metres available as standard, also reduce the number of coupling assemblies required per pipeline 'string'.

High pressure knife gate valve

A pressure energised transverse blade seal, a first in knife gate valve design, is a key feature of the new MF WEY Valve Series from Reiss Engineering, giving bubble-tight sealing up to 16 bar.

The sealing system employs a preloaded elastomeric section which develops a full seal under pressure of the process medium, does not rely on occasional re-packing to maintain efficiency and can practically eliminate the maintenance levels that are traditional for this valve type.

Fully effective transverse sealing has long been a benefit of Reiss Wey knife gate valves but in comparison with similar valves of conventional design, the MF can cope with pressures between 50 percent and 100 percent higher, depending on bore diameter.

Reiss MF WEY Valves also embody a mono flange design with enhanced strength and rigidity plus facility for dead-end duties.

The patented mono flange configuration represents a major improvement on conventional lugged or wafer knife gate valve body design and offers full flange connection in the pipeline.

The MF Valve series includes models from 50mm to 1800mm diameter and are available with body materials in cast iron,cast steel or stainless steel.

The valve blades are precision machined and ground from stainless steel. Manual, pneumatic, electric or hydraulic actuation is supplied to suit each installation.

Development of the MF Valve design has made it viable for Reiss to reduce substantially the number of different valve types, to cover a span of pressure ranges with special features to fulfil the needs of different flow media.

This new series of valves is the result of a joint development of the Swiss licensor of the original WEY concept, the German manufacturing operation and Reiss Engineering Company Limited.

Trace heating on ethylene project

The new Ethylene Cracker project at BP Chemical's Grangemouth site features 22 kilometres of Raychem electrical self-regulating trace heating on pipework as an alternative to steam tracing.

The Auto-trace heaters are used mainly for providing frost protection on external and internal pipework. They also fulfil process temperature maintenance requirements on instrument impulse lines.

One of the largest onshore engineering projects in the UK, the KG Ethylene Cracker will more than double BP's ethylene output from its Stirlingshire base to 600,000 tonnes a year. The trace heating was fast tracked from drawing board to completion, which entailed Raychem's system design personnel liaising directly with the site-based installers rather than the engineering design contractors.

More than 17 kilometres of Raychem's BTV monolithic trace heater was installed for frost protection of pipelines. This consists of a tinned copper braid, electrical insulation, a self-regulating conductive core and a copper conductor and maintains pipe temperatures up to 65°C.

The high temperature capability XTV and KTV trace heaters were used for process temperature maintenance.

These represent the very latest development in their field by making optimal use of the mechanical strength, temperature performance and chemical resistance of Teflon PFA* to form a fibre which is wrapped around the conductors to create a unique compact high performance heater.

In all Raychem self-regulating heating systems, the heater consists of two parallel conductors and a specialised heating element made of polymer and conductive carbon. When the surrounding temperature drops, numerous electrical paths are created in the polymer and electrical current passes through these gateways, thereby increasing the heat output of the tape and maintaining the required temperature.

Conversely, as the surrounding temperature increases, the number of electrical paths automatically decreases and the heat output reduces.

Fully biodegradable non-toxic oil and brine remover

The new ECG liquid cleaner being introduced by Seres is the natural alternative to the damaging CFC solvents used throughout the oil and petrochemical industries for the removal of petrochemical stains and brine deposits from contaminated equipment. An effective replacement, it does not have the expensive burden of safety precautions or the unpopular and destructive aspects of pollution and ozone depletion.

Industry has relied on environmentally damaging CFC solvents, such as CFC-111, for degreasing and oil removal from contaminated equipment. ECG is a natural alternative, equally effective but has lower associated operational costs and is not harmful to the environment.

ECG is the first, non-corrosive, non-toxic liquid cleaner to become available in the United Kingdom that can offer full biodegradability with the innovative cleaning process of CHELATION. Whereas many cleaners within the oil industry claim to be 'environmentally friendly' products, only ECG offers a unique safe method of cleaning and protecting surfaces in heavy and light applications.

Chelation, the process by which ECG removes particulate matter from surfaces, is a non-corrosive emulsifying action that binds the impurities into a non-reforming, biodegradable condition. Such a process enables ECG to be used in a wide range of diverse applications, controlled by the level of dilution.

ECG, effective in both fresh and salt water applications, was developed in the United States in response to navy and aerospace manufacturing requirements, specifically for the removal of petrochemical stains and brine deposits.

Subsequently, ECG has led to other successful industrial applications including: degreasing, carbon deposits, plastics and hydrocarbon residues.

Seres Marketing is introducing ECG into the United Kingdom as an addition to its comprehensive range of safety related products. Areas of operation varying from the supply of accident prevention equipment through to the analysis of harmful effluent from major manufacturing plants, provides Seres with a valuable insight into today's 'Green' industrial requirements.

Industrial effluent treatment

A new package of biological treatment and plant for industrial wastewater processing and bio-remediation of contaminated land has been launched by Water Management & Gamlen Ltd (WM & G) of Droitwich. The products have been grouped with supporting laboratory and field services to form the company's new Biotechnology Division.

The range of adapted bacterial products is designed to help compliance with stringent environmental conditions in industrial wastewater by reducing BOD, COD and suspended solids levels. WM & G say that such substances as phenolics, chlorinated hydrocarbons, oils, fats, grease and pesticide residues are degraded at significantly faster rates than can be achieved by traditional biological methods.

The bacteria are more resistant to toxic shock and due to their high selectivity and efficiency will reduce effluent organic concentration without alteration to the treatment plant. Other benefits cited are removal of pass-through compounds, improved stability, better solids settling and consistent nitrification.

Application of the adapted bacteria to existing effluent treatment plant can cut the 4-6 weeks normally required for start-up or restart to 7-10 days.

As well as the biological benefits, the self-contained unit is factory-built, so is delivered, installed and commissioned with minimal disruption. The bio-reactor can be adapted, extended or re-located to meet changing site needs.

The biological and mechanical technology is also used to reclaim land contaminated by industrial waste spill. WM & G say the portable bioreactor unit can carry out bio-remediation efficiently and often at a fraction of the cost of alternative methods.

The adapted bacteria are supplied mostly as a dry powdered concentrate which contains the inert support matrix, usually bran, plus selected enzymes and micro and macro-nutrients. Strains for nitrification and some special uses are supplied in liquid form. The concentrates are easy to handle and can safely be dosed by hand.

WM & G specialise in treatment, equipment and technical services for water systems, industrial cleaning and fuels.

Firefighting Halon replacement

The agreement to tighten the Montreal Protocol which controls the production and consumption of products that deplete the ozone layer, including Halons – the production of which was due to stop by 1995 – has been brought forward and will have to stop in all industrialised countries by 1994.

This agreement has put increased pressure on the fire protection industry to seek a replacement that gives a high degree of fire protection and is environmentally acceptable.

NAF S lll is a highly effective fire fighting agent and is a direct replacement for Halons, effective in extinguishing Class A, B and C type fires (solids, liquids and gases).

The product chemically attacks a fire and destroys it by vapourising in the fire, producing an extinguishing gas, leaving no residue and is non-corrosive.

Halon 1301 has an ozone depletion factor of 16 while that for Halon 1211 is 3.5. NAF has only a factor of 0.04. The atmospheric life-time of NAF is approximately 7 years, compared to 25 years for Halon 1211 and 100 years forHalon 1301.

Rutland Fire and Marine are the exclusive distributors in the U.K. and Eire for NAF, which is the only 'drop-in' replacement for Halon.

Fire fighter for oil tanks

The latest in Chubb Fire Engineering's armoury of fire fighting equipment is aimed at protecting fuels stored in massive oil refineries.

In conjunction with the oil industry, Chubb has developed an Aqueous Film Forming Foam (AFFF)-based fire detection and protection system for floating roof storage tanks. The aim is to knockdown, within seconds, fires which may break out around the vulnerable tank rim seal.

Previously halon was used in similar systems, but it is now recognised as having a harmful effect on the ozone layer and is, therefore, being phased out. AFFF, with its rapid fire knockdown, cooling capability and foam blanket to reduce the hazard of re-ignition, is looked upon as the ideal solution.

Built on a modular self-contained design, the Chubb unit is fully automatic and independent of any external power source. Depending on the size of the tank, between four and 16 of these fire fighting modules can be installed on the roof. Each module can cover up to 20 metres of exposed rim seal.

The AFFF foam solution is stored in a pressurised container with a purpose-designed valve retaining the solution and supplying pressure to the pneumatic detection system. This well-proven method incorporates a pressurised nylon tube which ruptures when subjected to a fire, releasing pressure in the tube and operating the system.

A pressure switch sets off an automatic alarm of the fire, enabling them to re-charge the container for future use.

Hand-held rechargeable searchlight

The new TOPLITE 50 Watt rechargeable searchlight is probably the world's most powerful light source of its kind: BASEFA certified for use in hazardous environments. Until now only low-wattage torches – a fraction the power of this searchlight – have been safe in such conditions.

As a result of an intensive research programme to design and develop a heavy-duty, portable product of exacting quality and safety, the TOPLITE searchlight is manufactured under BS5750 Part 2 and IS0 9002 standards. It incorporates several intrinsically safe features including sealed, encapsulated parts and temperature and break-glass failsafe circuits. The light output is 160,000 candlepower from a halogen sealed beam unit, protected by toughened glass to BS587.

Contact List

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Raychem	0793 528 171
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Chubb Fire Engineering	0932 785 588
Rutland Fire and Marine	0384 377 020
Angus Flexible Pipelines	084 421 4545
Magnetrol International	0444 871 313
Reiss Engineering	081 204 7155
Toplite Technology	061 308 4350

Anti-corrosion technology advance

At the end of the first stage of a multi-client programme aimed at reducing corrosion in oil and gas pipelines AEA Technology is reporting major advances which are ready for application in the industry.

Corrosion occurring during the production and transportation of hydrocarbon fluids is a significant issue and several operators who sponsored the first stage over its two-year duration are already committed to supporting the second stage. This will take the anti-corrosion technology forward by focusing on corrosion inhibition in multiphase flow. Conditions can be harsh, but corrosion-resistant alloys and corrosion inhibitors can control the damage caused by corrosive species which may be present in multiphase flowlines and pipelines. Increased knowledge and a greater understanding of the injection and behaviour of inhibitors will help to improve their use and could effect a dramatic improvement in cost effectiveness.

The programme of work for Stage 1 has been sponsored by seven oil and gas companies. An important part of the work has covered investigation of the performance of corrosion inhibitors under slug flow conditions in horizontal pipelines, and providing a computer simulator to predict the distribution of inhibitors along the walls of gas transmission lines. This work has led to a considerable advancement of knowledge and understanding which the project sponsors can already put to good use.

Proposed studies for the two-year extension to the programme have already been prepared and the main aim will be to improve the use of corrosion inhibitors in multiphase flow. Work will include the effect of bends and fittings on inhibitor performance in slug flow, and studies will be undertaken to extend the current pipeline model to include the distribution of corrosion inhibitors in bends etc., in gas transmission lines. The requirements for inhibiting oil pipelines containing a small amount of water will also be investigated and these studies will include the prediction of the areas of pipe wall which will be water wet and the distribution of inhibitors between the water and oil phases.

A milestone in marine pollution control

RO-CLEAN INTERNATIONAL has won an order to produce the largest oil containment boom , ever, for the harshest marine environment – the North Sea.

The contract awarded by NOFO (Norwegian Offshore Clean Seas Association for Operating Companies) is valued at over $3.5 million and was won against fierce international competition. The winning product, developed especially for this project, is the RO-BOOM ATLANTIC 3500.

This boom is 3.5 metres tall, has a freeboard of 1.3 metres and a draught of 1.5 metres. NOFO has ordered 3.2 kilometres on specially constructed reels. Each reel with 400 metres of boom weighs over 20 tonnes.

The harsh environment in the North Sea dictated the vast size of the boom required. RO-CLEAN INTERNATIONAL won the contract by proving in several comparative sea tests that the boom was a superior product. These tests included oil retention tests and endurance tests in seven metre high waves.

The RO-BOOM ATLANTIC 3500 is produced at the company's factory in Odense, Denmark. This facility has a vast experience in rubber technology combined with sophisticated production and development techniques. The company manufactures the boom starting with synthetic rubber from producers of Neoprene and Hypalon, through to the finished vulcanizing in large hydraulic presses. All rubber compounds are chosen for their suitability without compromise.

This new boom is the largest RO-BOOM produced to date. At present, nine models are manufactured, the most popular being the RO-BOOM 2000, originally developed for the Danish Environmental Agency in 1979. The majority of the original booms from then are still in operation.

Oil/water separation

Weir Westgarth has started trials of a cellulose membrane which can separate water from very fine oil droplets in water/oil emulsions.

The 'hydrophilic' (water attracting) membrane does this more effectively than mechanical equipment which typically do not reduce the oil content below 40 parts per million.

As the water is removed by repeated passes, the oil droplets coalesce into drops large enough to be recovered and recycled or disposed of, leaving water with no significant oil content.

Where treated water is injected into oil reservoirs at high pressure to improve the yield, most of the produced water that comes up with the oil is in the form of an emulsion containing tiny oil droplets. Before it can be dumped, the oil must be removed to comply with legislation.

In the future, however, if the water has already been treated for the removal of sulphates and if the oil can be removed by further treatment, the water will be suitable for use as injection water.

This, in effect, will give a closed cycle which is economical and environmentally acceptable because oil is not discharged into the sea and because little make-up water will be needed.

Infrared detection

A new range of optical Infrared level switches which have no moving parts, operate with very low power consumption and are easy to install have been introduced by level specialists MAGNETROL.

The OX range of level switches operate by using an infrared emitting diode and a photodetector which act as a sensing probe and separate electronic converter. By transmitting the infrared light with pulse modulation, a strong beam eliminates build-up and fouling of the probe surfaces.

The problem of the switch mechanism being influenced by ambient light is eliminated by the use of a special frequency, enhancing its reliability.

The switch is ideally suited for use with corrosive liquids and particularly suited to applications where there is a need to detect the interface between two liquids or between liquids and solids.

The sensing probe of the switch is submersible (IP68) and the PVC housing, Polypropylene sealing connector and FEP covered probes are compatible with a wide range of liquids. The detecting level can be easily adjusted by altering the height of the cable fixing point.

...people

Irish National Petroleum Corporation has appointed **Mr Fergus Cahill**, above, as Chief Executive to succeed Mr Geoff Green who is retiring after eleven years with the corporation. The Corporation has also appointed **Mr Dermot O'Kane** as Manager, Commercial Development. Mr Kane was previously with BP, where he worked in the United Kingdom, Europe and the Far East. His most recent appointment was Commercial Director, BP Switzerland.

Mr Henrique Bandeira Vieira, above, an Executive Director of Petrofina SA, has been appointed Managing Director and Chief Executive of Fina plc, Fina Exploration and Fina Petroleum Development. He succeeds Mr Edouard Demeure de Lespaul who has returned to Brussels to take up a new position with Petrofina SA with responsibility for the Group's European marketing subsidiaries.

Mr Mohsen Khalifa has been promoted to Managing Director of Brown & Root Egypt. He began his career with the company in 1972. He has worked in Houston, London and Stavanger on the development of offshore fields including Forties, Frigg, Statfjord and Brae, before setting up Brown & Root's Egypt branch, as General Manager, in 1985.

Mr Tom Green has been appointed UK Marketing Manager for Inchcape Environmental.

Fluid Data have appointed **Mr John Worrell**, above, to Vice President of Sales for Fluid Data worldwide. He will be coordinating the company's sales of process and environmental analysers and system.

Dr Ken Sorbie, above, who has established an international reputation for his research into enhanced oil recovery, has been appointed to a personal professorship in the Department of Petroleum Engineering at Heriot-Watt University, Edinburgh.

Kuwait Petroleum has appointed **Mr Simon Cowie**, above, as manager of finance and supply. In his new role, he is responsible for overseeing all the company's financial activities including credit control and systems. He also has overall responsibility for supply and operations. Mr David Rae, retail manager and Mr Colvin Colvin-Smith, commercial manager, are appointed to the board of directors of Kuwait Petroleum (GB) alongside Mr John Auld and Mr Simon Cowie. Mr Christopher Taylor, who previously held the position of manager of finance and supply, has been appointed manager for a new systems development project at the parent company, Kuwait Petroleum International.

The following are the Irish Offshore Group Officers for 1992/93: Chairman, **Mr Timothy Howell**, Bula Resources PLC; Vice Chairman, **Mr John Craven**, Petroceltic and Secretary, **Mr Eugene McCarthy**, Marathon Petroleum Ireland Ltd.

Oceaneering International Services Limited have appointed **Mr Ray Tonge** as General Sales Manager for the company's subsea activities in the United Kingdom, Europe and Africa.

Mr Robin Burchett, above, has been appointed Manager, Quality Assurance at Foster Wheeler Petroleum Development Limited.

Mr Mike Hall has been appointed Director of Technical Development at Simon Petroleum Technology (SPT). He will have responsibility for software development, systems engineering, technical marketing and technical services. Mr Hall has over 23 years experience in the seismic industry and has previously held the positions in SPT of Manager Technical Servcies and most recently, Director of Simon-Geolithic.

Elf Enterprise Caledonian plc is donating £108,000 to sponsor an Elf Lectureship in Reservoir Evaluation and Management in the Department of Petroleum Engineering at Heriot-Watt University, Edinburgh.

Mr P Gunn has been appointed Director, Finance and Administration of CanadianOxy North Sea Petroleum Limited. ■

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ENVIRONMENT DISCUSSION GROUP

18 February — 'Clouds and climate change' — Dr Geoff Jenkins, Head, Meteorological Research Flight, Royal Aerospace Establishment, Farnborough

All members of the Institute and their guests are invited to the above meetings, which commences at 17.00. However, for catering purposes it would be helpful if members could inform **John Phipps** if they plan to attend the meeting.

John Phipps, Institute of Petroleum
61 New Cavendish Street, London W1M 8AR
Telephone: 071 636 1004. Fax: 071 255 1472.

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

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

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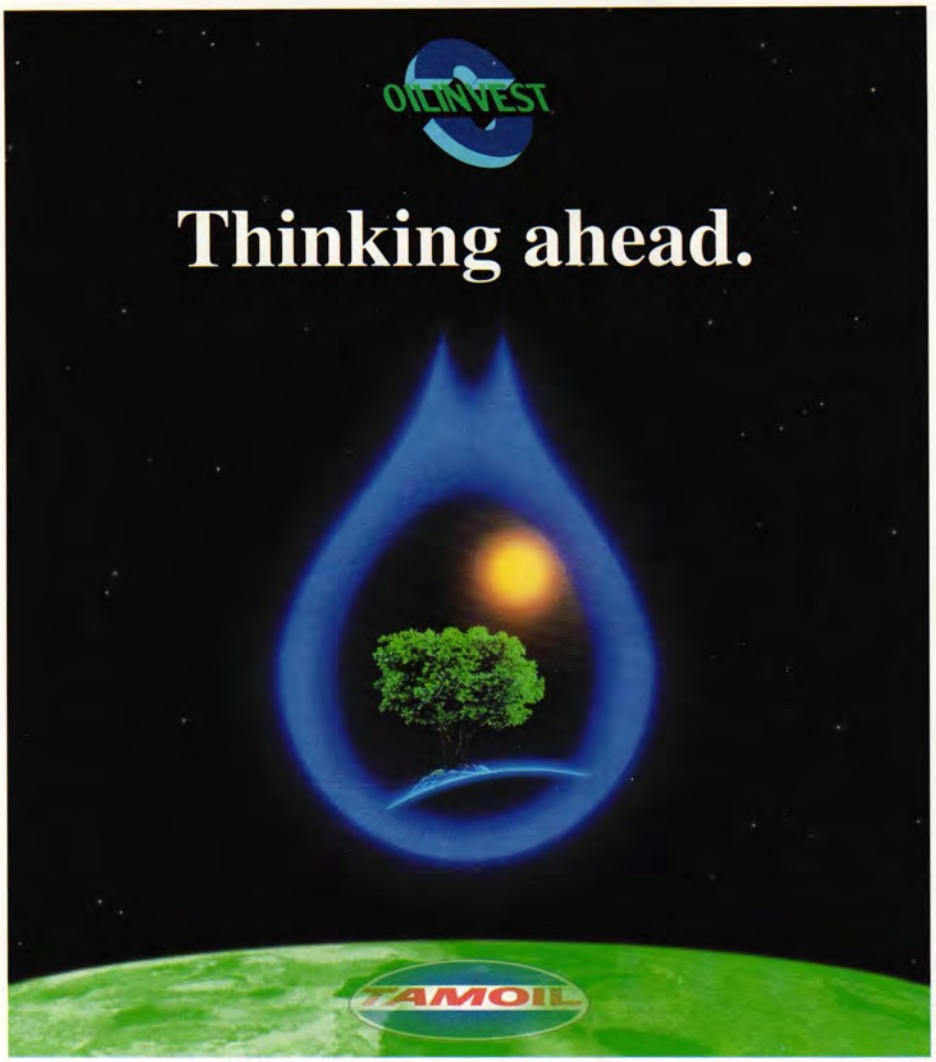

The Tamoil Group of companies is active in several European and non European markets, since 1986.
The group operates refineries in Italy, Germany and Switzerland, while the Tamoil brand is widely represented in seven European countries through a distribution network of more than 2600 service stations.
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