DEPARTMENT OF ENERGY

Development of the oil and gas resources of the United Kingdom

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Contents

Introduction

This Report sets out the outcome of the third annual review of forecasts of oil and gas production from the United Kingdom Continental Shelf. The Report includes detailed assessments of progress of individual fields since publication of the 1974 Report and of prospects for the future.

1974 was a year of rapid expansion in exploration activity, of continued success in discovery and of progress with oil-field development, both offshore and in offshore-related work on land. As a result, 1975 will see the first production of UK offshore oil and the beginning of the climb to large-scale production within a few years.

The number of offshore wells drilled for exploration purposes rose from 42 in 1973 to 65 in 1974. The number of appraisal wells drilled rose from 19 in 1973 to 35 in 1974. Thus the total number of wells drilled, and of mobile rigs deployed to undertake the drilling, was higher in 1974 than ever before on the UK Continental Shelf.

In the period between May 1974 and the end of March this year 18 significant discoveries of petroleum were made, 14 of oil and four of gas or condensate. This rate of discovery augurs well for the level of UK oil production in the 1980s. Proven reserves of oil on the UK Continental Shelf are now estimated at over 1,000 m tons – an increase of nearly 20 per cent since May last year. Total recoverable reserves from the presently designated areas could lie within the range of 3,000–4,500 m tons.

The work of offshore oil production has continued at full pace, on one of the frontiers of technology. There have been major achievements of a kind new to the oil world, for example the successful float-out, piling and installation in over 400 ft of water of two enormous production platforms, of steel construction, for the Forties field. These platforms are much larger than any similar structure previously installed offshore. Another very large platform for the Auk field has also been floated-out and installed in a lesser depth of water.

On the principal Forties platform, major modules have been successfully installed, in mid-sea during the winter, by a process involving marine and engineering skills of a high order.

Oil pipelines have been laid on the seabed at greater water depths and for longer distances than anywhere else in the world and work on major terminals onshore has gone ahead.

The technical demands of undersea oil production in severe conditions of the Northern parts of the North Sea have meant that some aspects of oil development there have needed more effort and more time than the oil companies expected. The start of oil production from some fields has been set back by up to a year, though in no instance has a promising field been found incapable of development.

These delays in start-up date, together with a downward re-assessment of the size of the reserves in one or two fields, will mean that oil production for the next few years is not as high as had been hoped. But UK oil production in the 1970s will still provide a very substantial relief to the balance of payments and by 1980 oil production will be enough to provide self-sufficiency for this country in oil.

In that year UK oil production will amount to somewhere between 100 and 130 m tons. Production thereafter will depend to

an increasing extent on discoveries not yet made but, on the basis of current forecasts of the levels of exploration drilling and of the expected success rate, enough should be discovered to sustain a rate of oil production of between 100 and 150 m tons per annum (mtpa) throughout the 1980s, and perhaps more than that for some years.

Production of gas from the Southern basin in 1974 averaged about 3,500 million cubic feet per day (mcfd) and provided about 95 per cent of the UK's consumption of gas. The amount of gas available to British Gas is expected to increase significantly within a few years and to be sustained at a high level at least throughout the 1980s. The sales of this gas will be concentrated on markets where gas has a premium value.

In the Northern part of the North Sea, the Frigg gas field is being prepared for production. British Gas has concluded a contract with the licensees of both the UK and the Norwegian parts of this field, for the delivery of the gas to the UK. Agreement in principle has been reached with the Norwegian Government on the sharing of the benefits of gas production between the Governments and the licensees on the two sides.

It is expected that offshore activity will continue to attract new and expanding industries to the Development Areas, and particularly Scotland and North East England. Substantial investment has flowed into these areas already and some 40,000 jobs have been created in Scotland as a result of oil-related development. British industry is making a very significant contribution to the supply of equipment of all kinds for the North Sea – including the building of production platforms and the construction of platform modules.

The headquarters of the Offshore Supplies Office was established in Glasgow during 1974 and its staff has been considerably expanded to enable it more effectively to help British Industry win an increasing share of the goods and services supplied to the UK offshore market.

The Offshore Petroleum Development (Scotland) Act which came into force in March this year has enabled the Government to acquire sites for the construction of concrete platforms so that proper control can be exercised over the operations.

During the past year the Government's role in offshore activities has increased, as indicated in many parts of the present report. Among other things, important safety regulations have been issued – more are to come – and there have been some key developments on defence against any armed threat to oil installations and on protection of the environment. The scope of this year's report has been expanded to deal briefly with these activities.

The Government's policies on the development of UK oil and gas resources were set out in July 1974 in the White Paper 'United Kingdom Offshore Oil and Gas Policy', announcing proposals for new taxation on offshore oil profits and for changes in the terms of existing licences to provide for Government control over important aspects of the process of oil field development. In addition the White Paper announced the Government's intention of achieving State participation in finds under existing licences as well as through the terms of new licences, and the proposal to create a British National Oil Corporation. Legislation to give effect to all these proposals has now been laid before Parliament.

Part I: Progress and Prospects

Summary of Activity

Exploration and appraisal drilling activity in the UK Sector of the Continental Shelf continued to increase in 1974. A further 13 new mobile semi-submersible drilling rigs and a dynamically positioned drill ship came into operation in 1974. The total number of rigs used rose from 25 in 1973 to 39 in 1974 (compared with a forecast of 40) and the maximum number of rigs in use at any one time from 18 to 29. This resulted in an increase in the equivalent total time spent in the area by all rigs (rig years activity) from 13.3 in 1973 to 24.5 in 1974 (compared with a forecast of 25). The total number of exploration and appraisal wells begun and/or drilled rose from 61 in 1973 to 100 in 1974.

Exploration and appraisal activity is expected to continue at a high level in 1975. About six more new semi-submersibles should arrive in UK waters during 1975, some of these having been delayed from 1974 due to late delivery from overseas ship yards. The number of rigs employed therefore should rise to about 45 while the maximum number at any one time is expected to be about 35–40. Correspondingly the average number of rigs throughout the year is expected to be about 30 (rig years activity). Appendices 1–8 show how drilling activity in 1974 in each area compares with that in preceding years.

Experience with the new types of semi-submersibles has shown that while they can stay on location throughout the year and can continue to drill in even quite severe weather conditions, other operations such as moving on and off location, running, casing and testing can be severely hampered, so that prolonged periods of bad weather can still severely impede progress.

During 1974 drilling from fixed platforms in the gas fields in the Southern Basin of the North Sea continued to decline as development of these fields approached completion. The number is expected to fall further in 1975. On the other hand drilling should commence from fixed platforms on oilfields in Northern waters during 1975.

Between May 1974 and the end of March 1975 14 significant discoveries of oil were made – eight of them to the East of the Shetlands. Four new gas or gas condensate discoveries have also been made; one of them in the Irish Sea basin. The map in the back cover shows the locations of all discoveries made up to March 31 1975 and the chart at Appendix 16 shows the generalised stratigraphy of the North Sea and indicates the geological formations in which oil and gas have been discovered.

The area of the UK Continental Shelf so far designated totals 579,000 sq kms. During 1974, 14 new licences for petroleum exploration were issued – 11 of them in offshore areas. At the end of 1974 35 offshore exploration licences and 208 offshore production licences were in force. The latter cover 581 blocks; an area of 107,900 sq kms.

International Negotiations

During 1974 negotiations on the division of the Continental Shelf took place. The basis for the division between neighbouring and adjacent states is the 1958 Continental Shelf Convention which was ratified by the UK in 1964. Negotiations since then have led to agreements on boundaries between the UK and Norway (up to 61° 44′ 12″), Denmark, the Federal Republic of Germany and the Netherlands. Agreement in principle

has also been reached with Belgium, and negotiations are still proceeding with the Irish Government. In regard to the dividing line with France, the two Governments have agreed to submit the matter to arbitration by an independent tribunal.

In June 1974 the Norwegian Government consented to the landing of all Frigg gas in the UK and negotiations on the proposed inter-Government Agreement on the joint exploitation of the field and the sharing of the reserves, are progressing. Negotiations on an inter-Government Agreement with Norway about the Statfjord field are also expected to begin in the near future, following exploratory discussions between the Norwegian and UK licensees.

Opportunities for British Industry

British industry is already making a very significant contribution to the supply of equipment for the development of our offshore oil and gas resources. The market is expanding as further discoveries are being made and many new opportunities for involvement are being created. The forecast level of oil production of between 100 and 150 mtpa throughout the 1980s and beyond will lead to a continuing high level of demand for many types of equipment.

Much of this equipment is within the normal range of British manufacture and British industry is making a good contribution to the supply of pumps, process plant, valves, electrical equipment and instruments. In addition, several British companies have successfully been entering new activities. British based yards for fabricating steel jackets for production platforms have already produced structures larger than those produced anywhere in the world. During the year the first two massive steel jackets for BP's Forties field (Graythorp I and Highland I) were successfully floated out and installed on the sea-bed. It is confidently expected that the concrete structure yards based on British civil engineering experience will similarly establish themselves in the offshore market. At Appendix 13, the oil platforms installed and under construction are listed, and the map inside the back cover shows the location of platform construction sites in the UK.

The Offshore Petroleum Development (Scotland) Act which entered into force in March 1975, has enabled the Government to acquire sites in Scotland which are needed for operations in connection with offshore oil; to ensure that these sites are properly restored or converted to another use once they are no longer needed for oil-related purposes; and to provide a system of proper control over operations, such as platform assembly carried out in in-shore waters.

The involvement of British companies in the building of the giant steel modules which house the equipment, and services on production platforms has expanded dramatically. In the second half of 1974 some 150 of these modules were on order or being fabricated in the UK compared with only two under construction at the end of 1972. Other promising areas for British involvement are in offshore maintenance, the operation of submersibles, and the treatment of water for secondary recovery processes.

This upsurge of construction and engineering activity for the offshore market has already led to a substantial inflow of investment and new jobs to the Development Areas, particularly in Scotland and North East England. Some 40,000 in Scotland are engaged directly and indirectly in oil – related work. In North East England some 6,700 people are employed by major contractors on North Sea work. The numbers are expected to increase as more companies enter the offshore market and new orders flow to those already in it.

The Government attaches great importance to the involvement of British industry in the offshore market and to help achieve this the Offshore Supplies Office has been considerably strengthened. During 1974 staffing has increased from about 60 to 180 and the Headquarters has been established in Glasgow.

The objectives of the Offshore Supplies Office (OSO) are to ensure full and fair opportunity for British Industry to compete

in the offshore market and to assist the oil companies in obtaining vital equipment and supplies without undue delay. The Offshore Supplies Office also administers an Interest Relief Grants scheme, which reduces the cost of credit obtained to finance the supply of UK goods and services. The maximum qualifying borrowing on contracts registered under the scheme up to March 31, 1975 was £128 million. Offers of assistance under Section 8 of the Industry Act 1972, totalling £1.15 million were made to two newly-formed British companies during 1974, to help with the setting up of a floating base for the repair and maintenance of drilling rigs in the North Sea (Marine Oil Industry Repairs Ltd) and to help towards the cost of a drill ship project (Salvesen Offshore Holdings Ltd).

In November OSO initiated moves to strengthen Britain's capacity to provide divers and advanced diving equipment for work on the UK Continental Shelf. It contacted a number of British companies with an interest in diving technology and much useful information flowed from these discussions. OSO is at present considering how best to implement the suggestions put forward to achieve their objective. The Ministry of Defence is playing a very important role in this exercise because it has a wealth of research expertise in the design and development of equipment. It is intended that their experience should be used to help commercial companies strengthen their own capabilities.

Training

In December 1974 the Manpower Services Commission obtained Government agreement to the setting up of an underwater training centre on Loch Linnhe in the Fort William area. This should provide facilities to meet the long term training needs of divers engaged in the offshore oil and gas development programme, and should lead to a significant improvement in the safety record of these operations.

The Government is providing support for the establishment of a Drilling Technology Centre at Livingston and this is expected to run a wide range of courses beginning with one for rig crews in August 1975. It is hoped that the Centre will provide a powerful stimulus for British enterprise in the relatively new and difficult area of offshore drilling.

Heriot-Watt University, Edinburgh is setting up a Petroleum Engineering Centre to run post-graduate and post-industrial experience courses and the Department of Energy has exceptionally provided a grant of £300,000 for the building.

Offshore Safety Legislation

The past year has seen the introduction of two important sets of regulations under the Mineral Workings (Offshore Installations) Act 1971.

The Construction and Survey Regulations provide that every installation operating on the UK Continental Shelf must have, by August 31 1975, a valid Certificate of Fitness. Appointed Certifying Authorities, including Lloyds Register of Shipping, will monitor designs and methods of construction and issue the certificates. In this fast-moving area of technology, standards and codes of practice used in design and construction need frequent revision and on this subject the Secretary of State for Energy is advised by the Offshore Installations Technical Advisory Committee, a body of professional experts. Additionally, the Government needs feed-back from the industries involved and in February 1975 an Advisory Committee on Fixed Offshore Installations – with special reference to concrete structures – was set up. This includes representatives of the Engineering Institutions, the British Standards Institution and Government Departments.

The Diving Regulations came into operation on January 1 1975 and the Department of Energy will be keeping a close watch to see that they are observed and to assess their impact on diving operations. These are the first Government regulations on offshore diving operations and other North Sea States, particularly Norway, may follow the UK's lead in this field.

Other Regulations have been made covering

the appointment of installation managers responsible for safety, for keeping an official log book, and for public inquiries into serious accidents. Regulations are being prepared on insurance, day-to-day safety, health and welfare matters, safety of equipment and working procedures and emergency equipment and procedures. All these Regulations may need to be revised in the light of experience in actual production, which has not yet started. In dealing with the challenge presented by the problems of offshore safety the Department undertakes extensive consultation at home and is actively co-operating with other North West European Coastal States to ensure a free and effective exchange of information, and to try to achieve a harmonisation of standards.

Environmental Protection

The Construction and Survey Regulations, mentioned in the preceding section, should ensure that offshore installations are designed and constructed to a high standard, and this will go some way towards minimisation of pollution risks. Operators are also required, under the terms of their production licences, to follow good oilfield practice to avoid the escape of petroleum.

The Department of Energy, in conjunction with other Government Departments and the United Kingdom Offshore Operators Association, has been establishing procedures for dealing with any pollution which does occur as a result of accidental damage to installations. Operators are expected to make provision for clean-up in the event of a spill but arrangements have been made for them to invoke Government assistance should any incident be beyond the resources of the offshore industry. The industry has devised a scheme, which it is hoped very soon to bring into operation, whereby money will be immediately available (up to $16 m.) to meet clean-up expenses or compensation liabilities if these should arise following a spill or leakage. An inter-Government Convention of the North Sea States on the same subject is also nearing completion.

Protection of Installations

It was announced in Parliament on February 11 1975 that Ships and Aircraft of the Armed Services were being deployed to assist in protecting the installations on the UK Continental Shelf. In addition to patrols by Naval vessels and Royal Air Force aircraft, two existing vessels will be commissioned as RN ships for full time deterrent patrols this year. In due course five new Royal Navy ships will take up this work and the Royal Air Force will deploy modified aircraft. Eventually 8 ships (5 Royal Navy and 3 from the Department of Agriculture and Fisheries for Scotland) will be available for offshore tasks full-time, other RN ships being deployed as necessary.

Review of Accidents and Dangerous Occurrences

During 1974 there were six fatal accidents and 22 serious injuries to people working on installations covered by the Mineral Workings (Offshore Installations) Act. In addition there were three diving fatalities from these installations and three fatal accidents and two serious injuries to people on vessels which were engaged in work related to these installations.

Appendix 14 shows how these figures compare with those for previous years.

Operations on and around the drilling floor appear to cause the most accidents, followed by accidents involving cranes, diving accidents and accidents on attendant vessels. It will be noted that, taking fatal accidents and serious injuries together, there has been a slow decrease over the years in the frequency of such accidents per thousand people employed offshore.

In 1974 in the installations themselves there were six fatalities out of about 3,760 people employed giving a fatality rate of 1.6 per 1,000. In the same period there were three diving fatalities out of about 270 divers employed giving a fatality rate of 11.1 per 1,000. No estimate is available of the number of seamen employed on the attendant craft, so no comparable statistic

can be calculated for the three fatal accidents on them.

Analysis of the causes of these accidents reveals that most of them were the consequences of human error. With the rapid expansion of this new type of industrial activity in a hazardous marine environment, there is a severe shortage of skilled and experienced men and supervisors. Plans have however been made to improve training facilities. In this connection the work of the Petroleum Industry Training Board is acknowledged and the Drilling Training School to be established at Livingston and the Diving Training School at Fort William should materially improve the situation.

Apart from the casualties mentioned above, 24 dangerous occurrences were reported which could have resulted in loss of life or serious injury although in fact no-one was hurt. The most important of these was the loss of the mobile drilling platform "Transocean III" which capsized and sank at anchor after suffering damage during a prolonged spell of bad weather. The crew had been removed to safety by helicopter some six hours earlier. Another mobile platform, the "Transworld 61" also suffered damage during the same storm and had to be towed to port for repairs. Again no-one was hurt.

An investigation into both incidents was carried out by inspectors of the Petroleum Production Inspectorate and their report is due to be published shortly.

Other dangerous occurrences involved damage to crane booms and collisions with installations while boats were transferring supplies – in one such occurrence the boat was damaged and sank but all the crew were saved.

Part II: Field-by-field Progress Reports

East of Shetland

Following the successes in this area in 1973, it is not surprising that there was a further marked increase in activity in 1974. The number of exploration wells rose from 16 to 24 while no fewer than 26 appraisal wells were drilled compared to only seven the previous year. Eight significant discoveries of oil were made in the area between May 1974 and the end of March this year and a number of these promise to be commercially exploitable.

It is to be expected that activity will continue at a high level in 1975 as companies continue their exploration of this highly attractive area and appraise the discoveries that have already been made.

A detailed assessment of the development in and prospects for each of the discoveries in the areas is as follows:

(i) *BRENT (Shell/Esso, block 211/29, found July 1971; extension into block 3/4, Texaco proved October 1973).*

Appraisal drilling on the Brent structure continued in both blocks during 1974. Orders have been placed for four permanent platforms to be installed in Block 211/29; one steel and three concrete. Production is planned to start in 1976, and the oil will initially be brought ashore by tankers loading from a single point buoy mooring ("Spar").

Eventually Brent production will flow through a crude oil transportation and delivery system which is planned to serve five oilfields in the area to the North East of the Shetlands – Brent, Thistle, Dunlin, Cormorant and Hutton. The system includes a gathering platform to be located on the Cormorant field, as well as a 36 inch pipeline to the Shetland Islands and terminal facilities at Sullom Voe. An agreement, setting up the system was signed by 17 oil companies, in September 1974. The pipeline is scheduled for completion by the end of 1976.

Work on the terminal at Sullom Voe started in Summer 1974 and the first phase is scheduled for completion in Autumn 1976. With the oil from the Brent system and the planned pipeline from Ninian and other fields the completed terminal should be handling at least 60 per cent of UK North Sea oil by 1980. Facilities will include joint user storage, a treatment plant, and a shipping terminal to receive and despatch oil and capable of berthing tankers of up to 300,000 tons deadweight (dwt).

The Sullom Voe complex will be managed by the Shetland Islands Council and the oil companies in partnership.

Discussions continue for the sale of gas from Brent to the British Gas Corporation and if these are successful a line will be constructed from Brent to a terminal near St Fergus, North of Aberdeen. It will not be possible to complete such a line by the time oil production commences and it is presently planned to reinject gas that is produced with the oil, until the gas line is ready.

(ii) *THISTLE (Burmah Group – formerly Signal – block 211/18, found September 1972)*

Appraisal drilling continued in 1974 and in June an extension into the Conoco/NCB/Gulf block 211/19 to the east was proven. Also a separate smaller accumulation was found in block 211/18 to the north of the 'Thistle' field proper.

A steel platform has been ordered for installation in 1976 and it is planned that production should commence in 1977 into the Brent pipeline system.

(iii) *BERYL (Mobil/Gas Council group, block 9/13, found September 1972)*

Appraisal drilling planned for 1974 was considerably delayed by the loss of the "Transocean III" and the damage to the "Transworld 61" and is still continuing. A well drilled by the Conoco/NCB/Gulf group to establish the extension of the field southward into block 9/18 failed to reach its objective due to mechanical reasons and another well is now being drilled.

The concrete platform ordered for this field is due to be installed this summer and production of oil is planned to commence late in the year using a single point buoy mooring and tankers. One of the suspended wells will be completed as a subsea completion and produced to this platform also.

(iv) *CORMORANT (Shell/Esso, block 211/26, found September 1972)*

Appraisal drilling continues on this structure and in August 1974, the extension into the Shell/Esso block 211/21 to the north was confirmed.

A concrete platform has been ordered for installation in 1976, and this platform will serve both as a drilling/production platform for the Cormorant oil field, and also as the main pumping platform for the Brent pipeline system. First production is planned for 1977.

(v) *DUNLIN (Shell/Esso, block 211/23, found July 1973)*

Appraisal drilling continued in 1974 and the extension into the Conoco/NCB/Gulf block 211/24 to the east was proven. A concrete platform has been ordered for delivery in 1976 and production of oil should commence in 1977, into the Brent pipeline system.

(vi) *BLOCK 3/15 (Total Group, found July 1973)*

Appraisal continued on this oil discovery in 1974, but no plans for commercial development have been announced.

(vii) *HUTTON (Conoco/NCB/Gulf group, block 211/28, found September 1973)*

Appraisal drilling continues on this oil field and its extension into the Gas Council/ Amoco group block 211/27 to the west was proven in August 1974. However further appraisal has suggested that this field may not be as large as had been originally hoped, and no plans for its commercial development have yet been announced.

(viii) *ALWYN (Total Group, block 3/14a, found November 1973)*

Appraisal wells on this oil discovery encountered mechanical problems. They are still being drilled and development plans have not yet been announced.

(ix) *HEATHER (Unocal group, block 2/5, found December 1973)*

Appraisal drilling was carried out in 1974 and a steel platform has been ordered for 1977 delivery. Production of oil should commence in 1978, either through the planned "Ninian" pipeline or by means of a single point buoy mooring.

(x) *NINIAN (BP/Ranger group, block 3/8 found January 1974; extension into block 3/3, Burmah Group, proved February 1974)*

Appraisal drilling continued on both blocks in 1974 and two platforms, one steel, the other concrete, have been ordered for installation in 1977. Oil production is expected to commence in late 1977 or early 1978, and plans are being prepared for a 100 mile submarine pipeline to the terminal at Sullom Voe. Construction of the line is scheduled for completion, including trenching in mid-1977.

(xi) *FRIGG (Petronord Group, Norwegian Waters discovered 1971; extension into block 10/1, Total group proved May 1972)*

The first steel drilling platform for the Frigg field was completed by Union Industrielle et d'Enterprise at Cherbourg, France in Summer 1974. However, whilst the French company were attempting to install the platform on the UK sector of the field some

of the flotation units collapsed and the platform now rests on the sea bed some 3kms off location. Efforts to refloat and repair the platform and reinstate it on location have been hampered by the winter weather and have so far failed, but they are continuing. In case it proves impracticable to complete this operation, plans are being made to modify a concrete platform, being built as a pipeline booster platform, for use as a replacement drilling platform and to install it in the summer of this year. A concrete production platform has also been ordered and it is hoped this will be installed in the summer of 1976. Construction of a 225 mile 32-inch pipeline to St Fergus has commenced.

It is now expected that deliveries of Frigg gas to British Gas will commence in 1977. This represents a year's delay compared with last year's forecast and is due largely to the failure to meet the platform installation schedule.

(xii) *Block 3/19 (Total Group, found July 1973)*

No further appraisal work has been done on this gas discovery.

(xiii) *MAGNUS*

In June 1974, BP announced an oil discovery on block 211/12 which they named Magnus. No appraisal has yet been carried out to determine the size of this discovery, but there is hope that it will prove to be commercial.

(xiv) *BLOCK 9/8*

In July 1974, the Hamilton group made a discovery of gas condensate on this block and an appraisal well has been drilled to evaluate the size of this discovery. It has not yet been determined as commercial.

(xv) *STATFJORD*

This field was discovered in Norwegian waters by a group headed by Mobil, and its extension into Block 211/24 in UK waters was confirmed in February 1975, by a well drilled by the Conoco/NCB/Gulf group.

A platform has been ordered for installation in 1976 in the Norwegian part of the field. Exploitation of the UK share of the reserves will be planned in association with the licensees of the Norwegian block and with the Norwegian Government.

(xvi) *BLOCK 9/13*

In June 1974 the Mobil group made an oil discovery on a structure on the western side of Block 9/13, separate from the Beryl field. In February 1975 the Unocal group discovered an extension of this structure in their adjoining block 9/12.

(xvii) *OTHER DISCOVERIES*

Other discoveries were made on Block 211/13 by the Shell/Esso group, on Block 2/5 by the Unocal Group (separate from the Heather field), on Block 3/11 by the Gas Council/Amoco Group, on Block 3/25 by the Total Group on Block 3/4 by the Texaco Group and on Block 9/28 by the Hamilton group, but the commercial importance of these discoveries has not yet been determined.

The Area East of Scotland

As expected the number of drilling rigs employed increased in 1974 but several wells took longer than expected to drill so that the number of wells drilled did not increase in proportion. With five more discoveries (Claymore, Andrew, 21/1, 15/16 and 14/20) and appraisal drilling still to be carried out on these and some earlier discoveries, activity is expected to continue at the same or even higher level during 1975.

A detailed assessment of the development in and prospects for each of the discoveries in the area is as follows:

(i) *MONTROSE (Gas Council/Amoco group, block 22/18, found September 1969)*

A steel platform has been ordered for installation this year with drilling to commence as soon as possible, probably very early 1976. The oil will be brought ashore by tankers, loaded through a SPBM system, starting in 1976.

(ii) *JOSEPHINE (Phillips group, block 30/13, found September 1970)*

No further drilling was carried out during the year. The find has not been declared a commercial oil discovery.

(iii) *FORTIES (BP block 21/10, found November 1970; extension into block 22/6a, Shell/Esso, proved October 1971)*

The first two steel platforms were placed on site in the summer of 1974. Module installation on one platform was completed, after considerable delay, caused by bad weather, in February 1975. The 32 inch submarine pipeline from the Forties Field, to cruden Bay, Aberdeenshire, was completed in October 1974. Burying operations, which began in 1974 are scheduled to restart this Spring, and should be completed by July 1975. The 129 mile 36 inch land-line which connects with the submarine line and Cruden Bay to facilities at the Kerse of Kinneil (adjoining Grangemouth refinery) was completed during 1974. The terminal facilities, oil storage and gas treatment plant are expected to be completed in 1975. Drilling of sufficient wells is expected to allow the first oil to flow through the pipeline to Cruden Bay and thence to Grangemouth later this year.

A small quantity of gas in solution in the oil will also be delivered at Grangemouth. BP are negotiating with British Gas for the sale of this gas.

(iv) *AUK (Shell/Esso, block 30/16, found February 1971)*

A further appraisal well was drilled during the year. The steel jacket has been installed but bad weather and piling problems have caused delays. Problems are also being experienced with the Exposed Location Single Point Mooring system installed in the field.

Drilling of the development wells should begin before the middle of the year and production should commence toward the end of the year, the oil being brought ashore by tanker to Shell's refinery at Teesside.

(v) *BLOCK 30/2 (Burmah/Hamilton group, found June 1971)*

No appraisal well was drilled on this gas condensate discovery during the year.

(vi) *ARGYLL (Hamilton group, block 30/24, found August 1971)*

The appraisal well programme was completed during the year. Subsea wellheads and flowlines to the subsea manifold were installed. A semi-submersible drilling rig, Transworld 58, modified to fit production facilities, marine riser and connections to enable it to serve as a production platform, was installed in March 1975. After separation of gas from the oil, the oil will be pumped from the platform to a single point mooring and tanker loading facility. Production is scheduled to start in the Summer of this year.

(vii) *LOMOND (Gas Council/Amoco group, block 23/21, found May 1972)*

An appraisal well was drilled in 1974 but no decision to develop this gas condensate field resulted. Development would probably require sophisticated and capital-intensive production techniques involving recycling of gas to get maximum recovery of both the valuable liquid condensate and ultimately production of the gas.

(viii) *PIPER (Occidental group, block 15/17, found January 1973)*

The steel platform scheduled for installation in 1974 was subject to a number of delays and will now be installed in 1975. Drilling, using twin rigs, should commence later in the year and production is now expected to begin early in 1976. Nearly all 124 miles of the 30-inch pipeline between the Piper field and the Flotta terminal in the Orkneys were laid between April and November 1974. The middle section should be completed in the Spring 1975 and trenching of the line is scheduled for completion by the Autumn. It is expected that an eight mile stretch of 16-inch pipe will be tied into the line to carry oil from the Claymore field. The terminal facilities at Flotta in Scapa Flow are scheduled for completion late this year or early 1976 and will handle the products from both the Piper and Claymore fields. Facilities will include gas separation and processing plants. Mooring and loading facilities will be provided for tankers of up to 150,000 dwt. Management of the Flotta terminal will be by the Orkney Islands

Council in co-operation with the Occidental oil company.

(ix) *MAUREEN(Phillips group, block 16/29, found February 1973)*

Appraisal drilling on this oil find was carried out in 1974 and will continue in 1975. No decision to develop the field has been made.

(x) *CLAYMORE*

In June 1974, the Occidental group discovered an oilfield on block 14/19, which they named Claymore. Vigourous appraisal drilling commenced immediately and continued into 1975. A steel platform has been ordered for 1976 installation, and it is expected that an eight mile stretch of undersea pipeline will be laid to tie-in to the Piper line to the Orkneys.

(xi) *ANDREW*

In June 1974, BP made a promising oil discovery on Block 16/28 which they named Andrew. In February 1975, the Phillips Group commenced an offset well on the adjacent block 16/27.

(xii) *BLOCK 21/1*

In August 1974, the Transworld group made an oil discovery on block 21/1. Further appraisal will be necessary to establish whether this field is commercial.

(xiii) *BLOCK 15/16*

In December 1974, Texaco made an oil discovery on block 15/16 and appraisal drilling commenced immediately.

(xiv) *BLOCK 14/20*

In February 1975, Texaco made an oil discovery in block 14/20, on a structure, which is separate from, but related to, that discovered in the adjacent block 15/16.

(xv) *OTHER DISCOVERIES*

In addition to the discoveries reported above, Texaco made a discovery in Block 15/23 in October 1974, but the well has been plugged and abandoned and it appears probable that the discovery is non-commercial.

Southern North Sea Area

As expected, 1974 was a year when activity was concentrated on the expansion of facilities on existing gas fields. The level of activity will remain similar this year; the only significant change being the development of a small new gas field, "Rough", by the Gas Council/Amoco Group.

(i) *LEMAN BANK FIELD*

Field development drilling took place on two existing platforms and will continue on one of them in 1975. Compressors will be installed on three platforms in 1975 to boost pressure on the trunk pipeline system to counteract fall in field pressure caused by the production of gas from the reservoir.

(ii) *INDEFATIGABLE FIELD*

Field development drilling took place on one platform throughout the year. This will be completed early in 1975 and no further development is visualised at present.

(iii) *VIKING AREA*

Development drilling was completed on the second main platform in 1974. Drilling, using a jack-up rig, and subsequent erection of production platforms took place on three small satellite units and this programme will continue into 1975 until six such units are installed. (In the 1974 Report to Parliament the area was referred to as "Broken Bank".)

(iv) *WEST SOLE FIELD*

A satellite platform erected over two wells on this gas field was completed early in 1974 by a jack-up drilling rig.

(v) *HEWETT FIELD*

No development of this gas field took place in 1974 but a further platform has been ordered for installation in 1976.

(vi) *ROUGH FIELD*

Installation of a platform and development drilling is scheduled for 1975, so that production of gas should begin this year. A 16-inch diameter gas pipeline to a terminal adjacent to that of BP at Easington is under construction.

West of Shetland Area

Eight exploration wells were drilled but no significant discoveries were made and all were abandoned as dry holes. There results do not enhance the prospects of the area and it is unlikely that there will be much increase in activity in 1975.

West of England and Wales

Activity was at a low level in 1974 with only four wells drilled, two in the Morecambe Bay area and two further south in the "Celtic Sea" area. A gas discovery was made in block 110/2 by Hydrocarbons (GB) Ltd and additional drilling will be needed to assess its commercial significance. In the Celtic Sea activitity is expected to remain at a low level, perhaps about six wells being drilled during 1975, depending on the release of rigs from the more attractive prospects in the North Sea.

Land Operations

Six new exploration wells and four appraisal wells were drilled during 1974. The 1973 discovery by Candecca, at Axholme in Lincolnshire was under evaluation and further drilling on this discovery is expected in 1975. The discovery by British Gas at Wytch Farm in 1973 stimulated interest in the Hampshire/Dorset area during 1974 but no further discoveries were made. Appraisal drilling commenced early in 1975 at Wytch Farm. In the East Midlands development drilling on the Beckingham field continued in 1974 and early 1975 and more drilling on existing discoveries in this area is expected to take place during 1975.

Production from the small Lockton gas field in Yorkshire ceased at the beginning of September 1974. Lockton was discovered in 1967 and started to produce in May 1971 following the construction of a treatment plant at Pickering to remove sulphur from the gas. Shortly after start-up, the wells began to produce water as well as gas and tests established that the reserves were smaller than originally estimated. All attempts to maintain economic production failed and the field has now been abandoned and the treatment plant dismantled.

The overall level of activity on land is not expected to rise significantly during 1975 as there are few land rigs available for hire in the UK, but exploration activity in a number of areas is expected.

Part III: Production and Reserves of Oil and Gas

Oil: Reserves

Appraisal work carried out in 1974 has confirmed the existence of over 1,000 million tons of oil reserves on the United Kingdom Continental Shelf, which, on the available evidence, are virtually certain to be technically and economically producible. This means that our proven reserves of oil have increased by nearly 20 per cent since May 1974. The estimates of reserves of fields which are considered commercial are based on geophysical and geological information obtained from both seismic surveys and testing of appraisal wells. The estimates of the reserves of discoveries not yet fully appraised have been made on a similar basis, but are necessarily less reliable and, consequently, only a small percentage of these reserves can be considered proven. The possible total of reserves from all finds under existing licences is now estimated at 1,800 million tons – an increase of 250 million tons compared with last year's Report.

The estimates of reserves from existing and

Table 1 Estimated United Kingdom Continental Shelf Oil Reserves

	totals (millions of tons)				
	Proven	Probable	Probable Total	Possible	Possible Total
1 Proven fields	995 (895)	90 (165)	1085 (1060)	135 (100)	1220 (1160)
2 Other significant discoveries not yet fully appraised	65 (—)	215 (230)	280 (230)	300 (160)	580 (390)
3 Total from existing finds (1 March 1975)	1060 (895)	305 (395)	1365 (1290)	435 (260)	1800 (1550)
4 Expected from future finds on existing licences	— (—)	900 (700)	900 (700)	400 (700)	1300 (1400)
5 Total from existing licences	1060 (895)	1205 (1095)	2265 (1990)	835 (960)	3100 (2950)

Footnote: (a) The figures include the small amounts of liquid condensate at present being produced with gas in the southern North Sea basin and those which might be produced from the gas condensate discoveries East of Scotland and East of the Shetlands.

(b) Reserves are estimated on a volumetric basis, reservoir-by-reservoir. Recovery efficiencies assumed range from 30 – 45 per cent of oil in place, depending on the reservoir characteristics and on the properties of the reservoir fluids.

future discoveries are set out in Table 1 in the following three categories:

i Proven – those which on the available evidence are virtually certain to be technically and economically producible.

ii Probable – those which are estimated to have a better than 50 per cent chance of being technically and economically producible.

iii Possible – those which at present are estimated to have less than a 50 per cent chance of being producible.

The estimates given in the 1974 Report are included in brackets, in the table for ease of comparison.

The table shows that reserves of oil in existing licensed areas could total between 2,265 and 3,100 million tons. Taking into account estimates of reserves in areas of our shelf, which are already designated, but not yet licensed, the total reserves could reach 4,500 million tons.

As mentioned earlier in the Report, the lines which will divide parts of the Continental Shelf between the United Kingdom and Ireland and the United Kingdom and France, have not yet been agreed. Once the determination of these lines has been made, then additional areas of the UK Continental Shelf will be available for licensing and it is reasonable to assume that discoveries made in these areas could contribute to maintaining substantial UK oil production in the 1990s. In addition, as technology develops, there is the possibility of reserves being found and exploited in very much deeper waters than those of the Continental Shelf. However it is unlikely that any such reserves would contribute significantly to production before 1990.

Oil Production

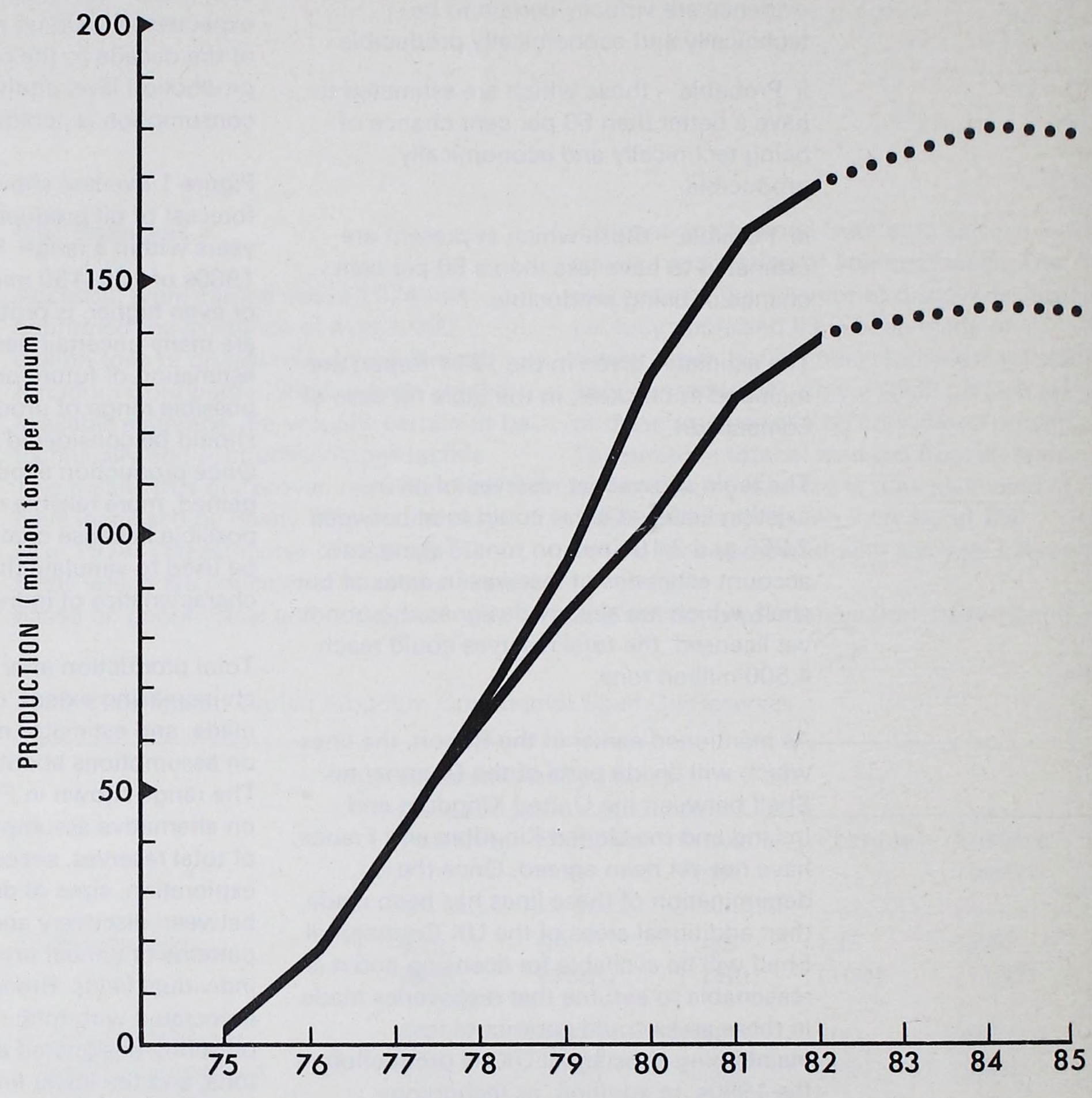
Oil production from the UK Sector of the North Sea is expected to begin this Summer and by the end of 1975 four oilfields are due to be in production. Total production in 1975 is now expected to be between one and two million tons. This estimate, and that for 1976, are somewhat lower than those given in last year's Report and this is mainly due to delays in the construction and installation of platforms for some of the fields scheduled to come on stream in the early years. Nevertheless, production is still expected to build up rapidly during the rest of the decade to the point where a production level equivalent to national consumption is achieved in 1980.

Figure 1 overleaf shows the Government's forecast of oil production for the next ten years within a range. Production during the 1980s of 100–150 million tons per annum, or even higher, is probably attainable. There are many uncertainties associated with the estimating of future production and the possible range of production illustrated should be considered with this in mind. Once production experience has been gained, more reliable estimates will be possible because computer techniques can be used to simulate the producing characteristics of individual fields.

Total production after 1980 will depend, to an increasing extent, on discoveries not yet made, and estimates must therefore depend on assumptions about these discoveries. The range shown in Figure 1 is thus based on alternative assumptions about the scale of total reserves, success rates in exploration, sizes of discoveries, lead times between discovery and first production and patterns of annual production from individual fields. Broadly, the upper line is associated with total recoverable reserves in presently designated areas of 4500 million tons, and the lower line with total recoverable reserves of 3000 million tons.

The forecasts illustrated raise the question of the best use of our oil resources, over time. There are too many uncertainties involved in forecasting to enable a definitive depletion strategy throughout the 1980s to be determined at present. A Statement by the Secretary of State for Energy on 6 December 1974 reaffirmed the Government's commitment to a rapid build-up of production to achieve self-sufficiency and indicated how Government powers to control depletion would be exercised. Use of these powers could start to affect production levels after 1982. The full text of the Statement is included, for ease of reference at Appendix 15 of this Report.

Figure 1 Forecast Range of Oil Production 1975–1985
Production from existing and future discoveries in the presently designated areas of the United Kingdom Continental Shelf



Gas: Reserves

Reserves of gas in discoveries, made up to December 31 1974, in the UK sector of the North Sea are estimated to lie within the range of about 27 to 45 trillion (10^{12}) cubic feet.

Table 2 shows the make up of these estimated reserves in more detail.

No new gas discoveries were made in the Southern Basin during 1974, and the reserves shown for this area in Table 2 correspond to those given in the 1974 Report, except that they have been corrected for the gas produced during 1974 and adjusted for the fact that the reserves of the Rough gas field are now under contract to British Gas.

Of reserves in the Northern Basin of the North Sea, the UK share of the Frigg gas field is now under contract to British Gas and so also, although not included in Table 2, is the Norwegian share of Frigg. During 1974, as mentioned in Part II of this Report, two gas condensate discoveries were made in the area East of Shetland and gas has been found in association with oil in several discoveries in the North Sea. Reserves of gas estimated to exist in present discoveries in the Northern basin therefore show a significant increase compared with the end of 1973.

Table 2 Estimated United Kingdom North Sea Gas Reserves (Remaining in known discoveries at December 31 1974)

	Totals in trillion (10^{12}) cubic feet			
	Proven	Probable	Possible	Total
Southern Basin				
Fields presently being produced or under contract to British Gas	18.2	1.1	1.5	20.8
Other discoveries believed to be commercial but not yet covered by British Gas contract	2.8	0.1	0.2	3.1
Other discoveries which may become commercial in due course	—	1.2	1.4	2.6
Total Southern Basin	21.0	2.4	3.1	26.5
Northern Basin				
Under contract to British Gas	2.9	0.3	—	3.2
Other significant gas discoveries (including gas in gas-condensate finds)	—	4.3	4.5	8.8
Gas associated with oil discoveries	3.0	2.5	0.4	5.9
Total Northern Basin	5.9	7.1	4.9	17.9
TOTAL UK North Sea	26.9	9.5	8.0	44.4

The uncertainties attached to estimating of gas reserves are broadly the same as those for estimating oil reserves, but in addition there is the complication that the amount of gas in solution in an oil discovery varies very considerably from field to field in the North Sea. Fields with ratios of less than 100 cubic feet of gas for each barrel of oil have been discovered, while other fields have ratios of nearly 2,000 cubic feet of gas for each barrel of oil. Some condensate fields give 5,000 cubic feet of gas for each barrel of liquid and it is not yet possible to establish a pattern for these variations between fields. This enormous range of gas/oil ratios renders any attempt to predict future amounts of gas associated with oil discoveries extremely hazardous and no estimates are given in the Table.

Gas: Production

Table 3 shows the actual levels of production of gas from five Southern basin gas fields each year from 1972–1974. This shows that gas equivalent to about 30 million tons of oil was produced from the UK sector of the North Sea during 1974; these supplies of gas averaged nearly 3,500 million cubic feet a day (mcfd) throughout the year.

Table 3 Natural Gas Production 1972–1974

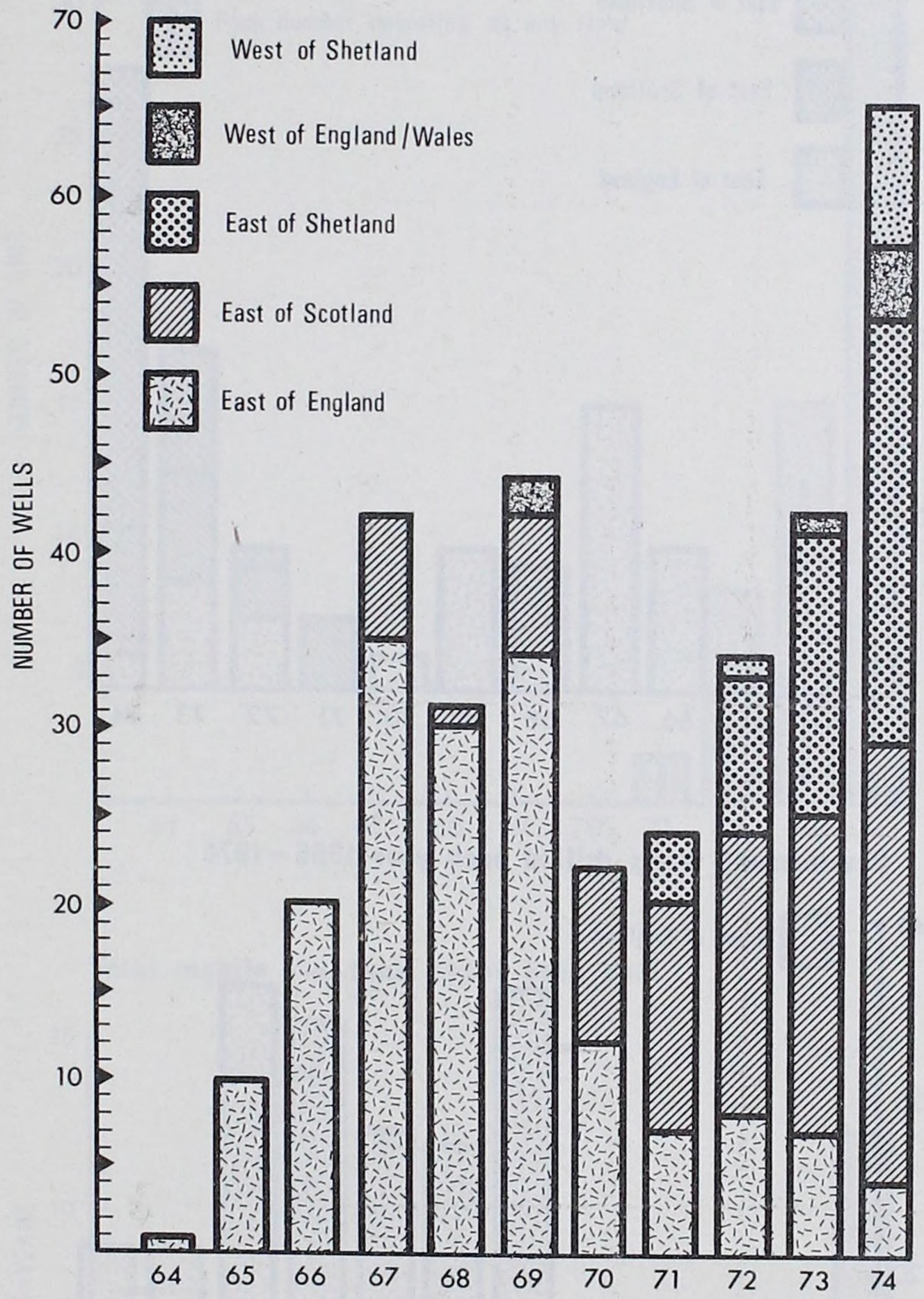
	m. therms	*m. tons oil equivalent*
West Sole Field		
1972	840	1.9
1973	700	1.6
1974	670	1.5
Leman Bank Field		
1972	4950	11.4
1973	4950	11.4
1974	5890	13.5
Hewett Field		
1972	1920	4.4
1973	2110	4.9
1974	2595	5.8
Indefatigable Field		
1972	1675	3.8
1973	1700	3.9
1974	2075	4.8
Viking Field		
1972	505	1.2
1973	1305	3.0
1974	1765	4.1

Reserves of gas, already under contract to British Gas, or likely soon to be brought under contract, are sufficient to support a production rate of some 5,000 mcfd by the end of the decade, or some 6,000 mcfd if supplies from the Norwegian share of the Frigg Field are included.

Existing discoveries will support production levels of 5,000–6,000 mcfd well into the 1980s and the likelihood of further commercial discoveries suggests that these levels of production should be sustained for even longer. The Southern Basin of the North Sea has been extensively explored and it is unlikely that there will be any large new discoveries in this area, but there is a good chance that further discoveries of gas either on its own, or in association with oil will be made in the Northern area of the North Sea. In addition the discovery of gas to the west of the UK, mentioned in Part II of the Report, raises the possibility that this area will make a significant contribution to UK gas resources, but it will not be possible to assess the size of this contribution until further exploration and appraisal has been carried out.

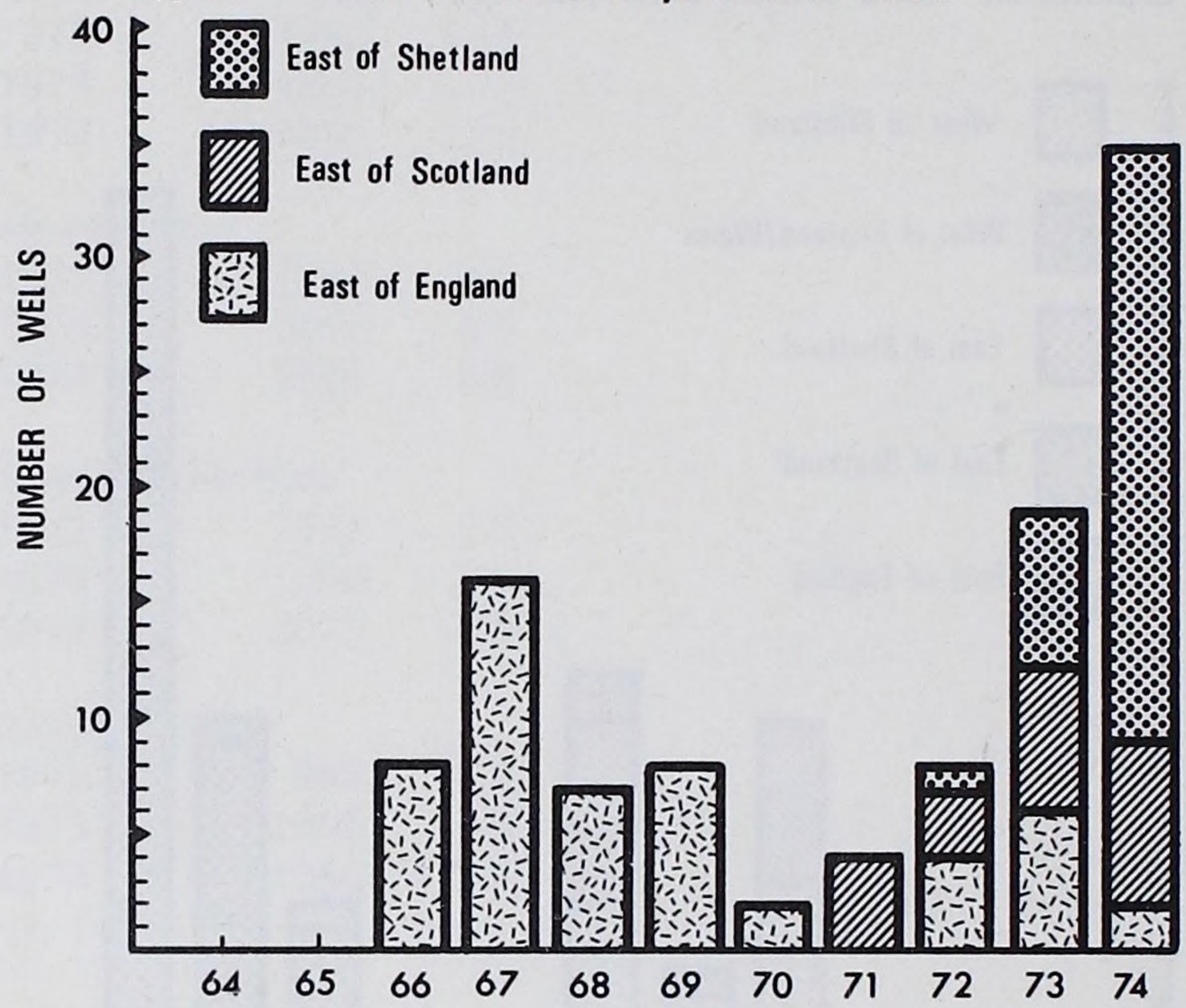
Appendix 1
Drilling Activity: UK Offshore Areas

Exploration wells drilled each year 1964 – 1974

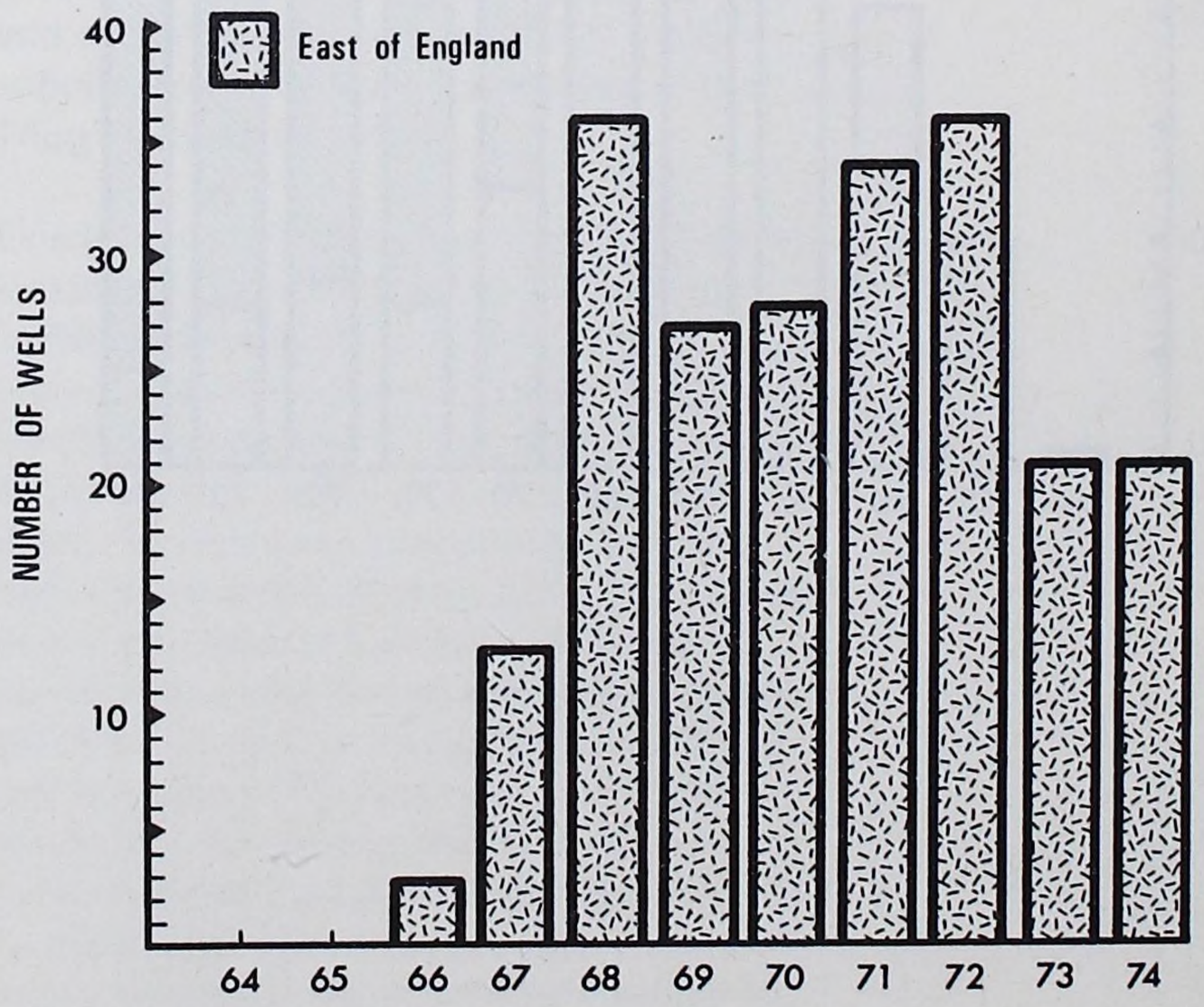


Appendix 2
Drilling Activity: UK Offshore Areas

Appraisal wells drilled each year 1966 – 1974

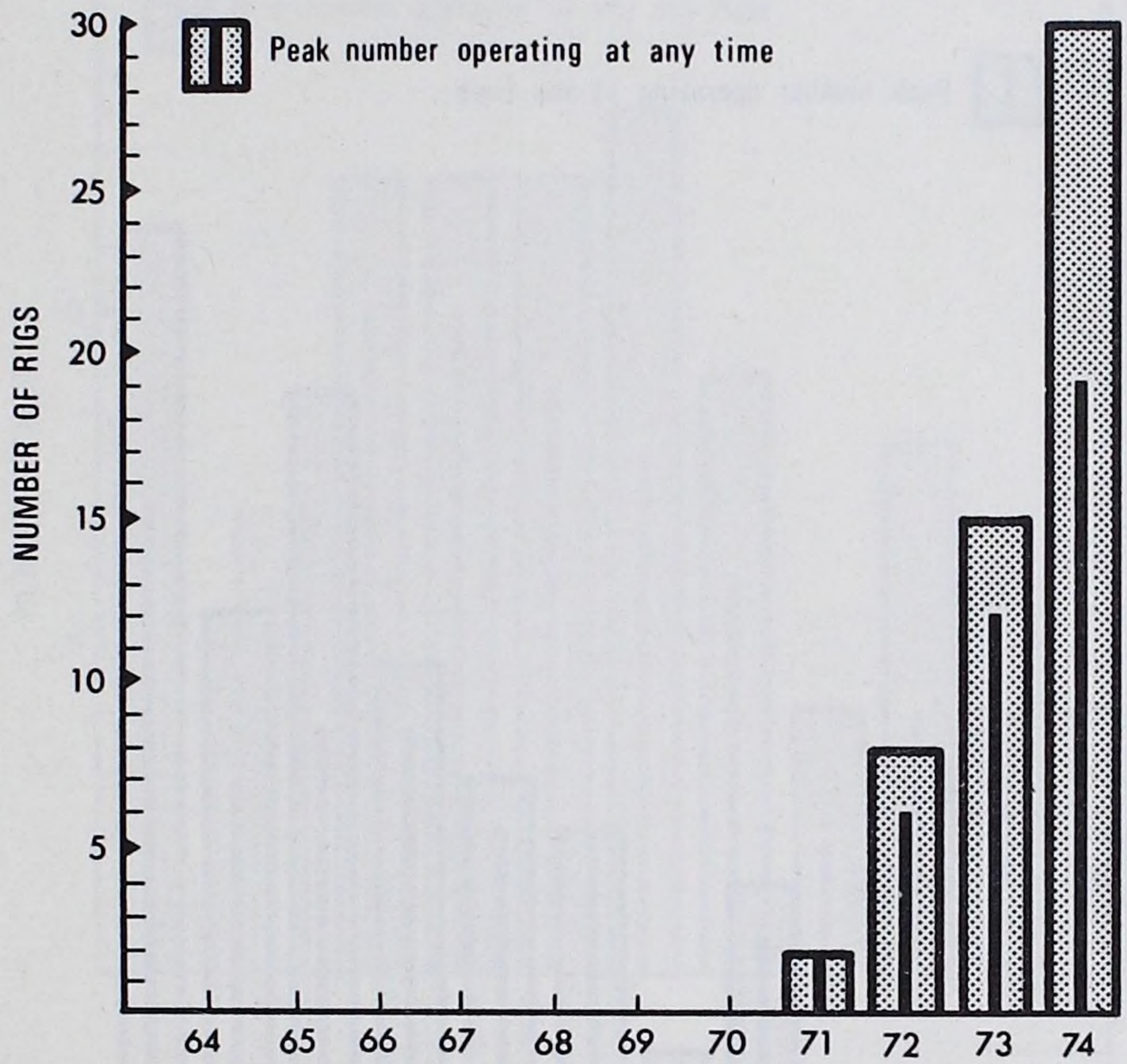


Development wells drilled each year 1966 – 1974

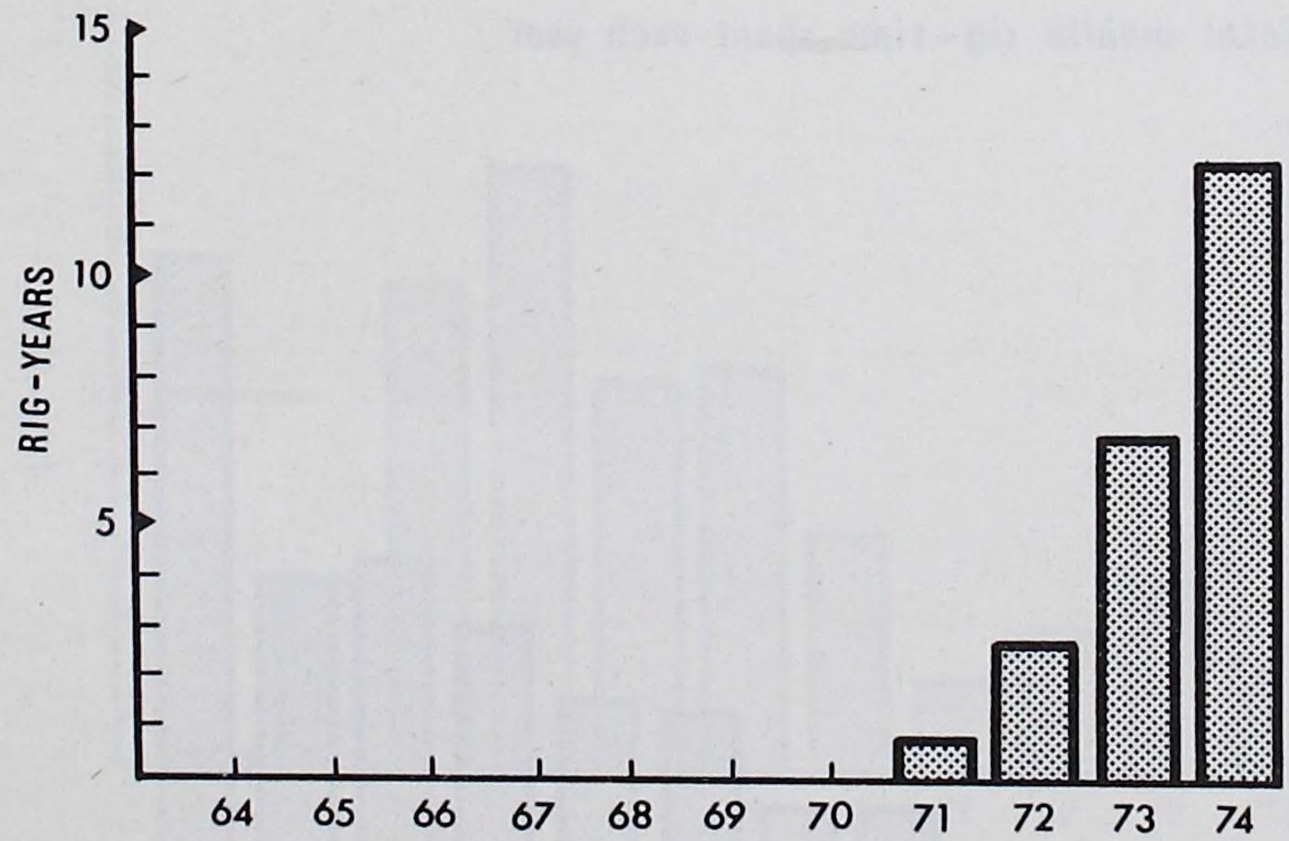


Appendix 3
Drilling Activity: East of Scotland Area 1964–1974

Mobile rig activity



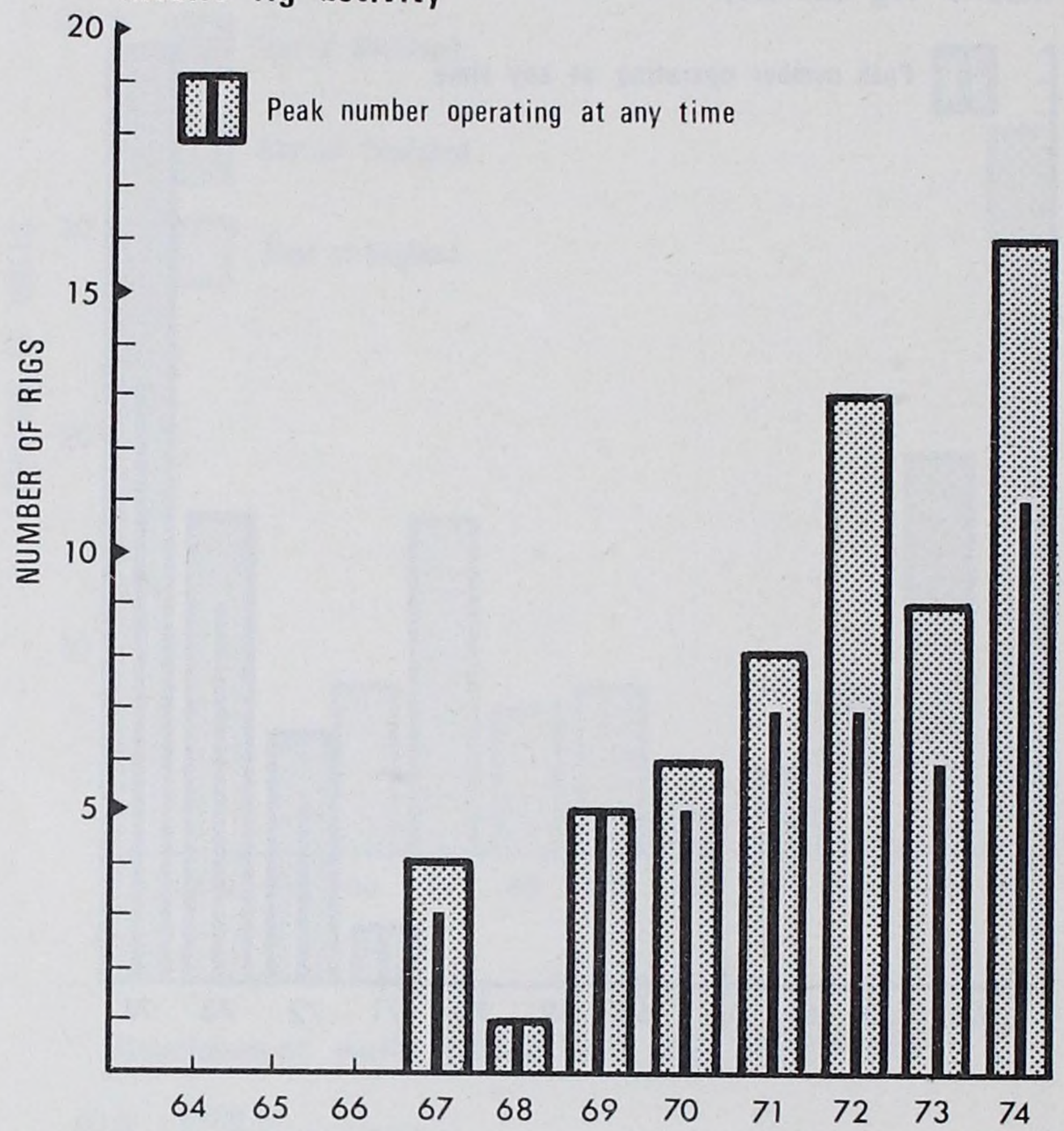
Total mobile rig-time spent each year



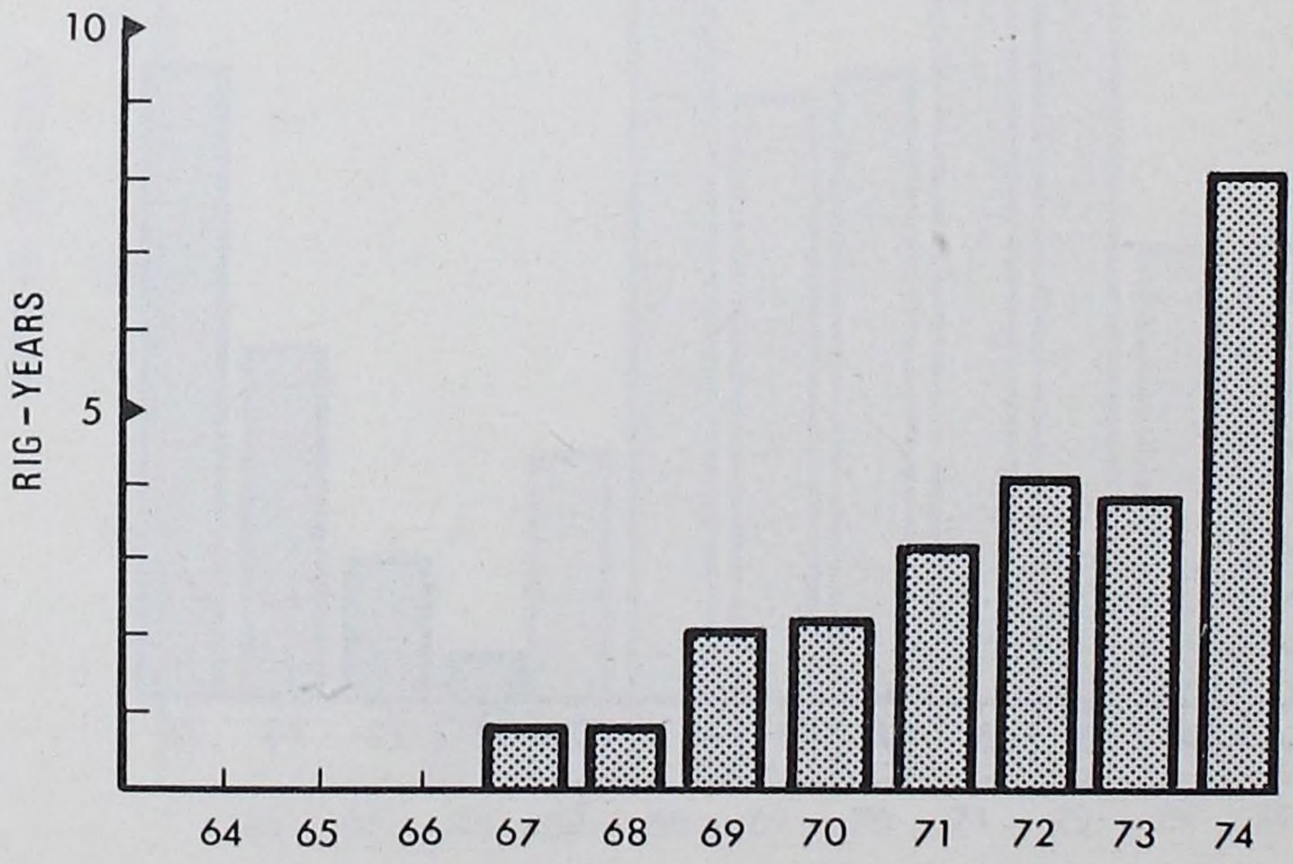
Appendix 4

Drilling Activity: East of Scotland Area 1964–1974

Mobile rig activity

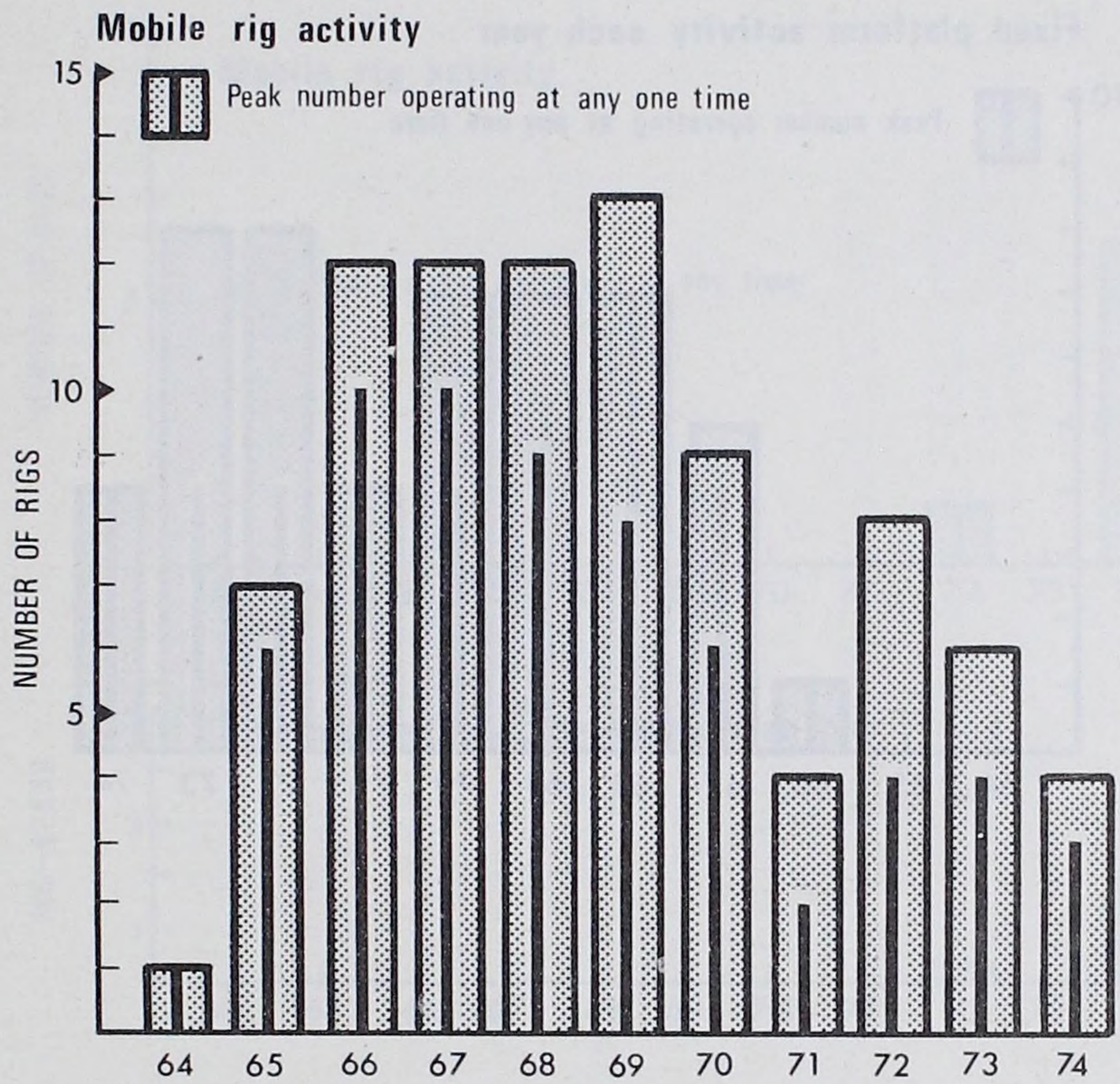


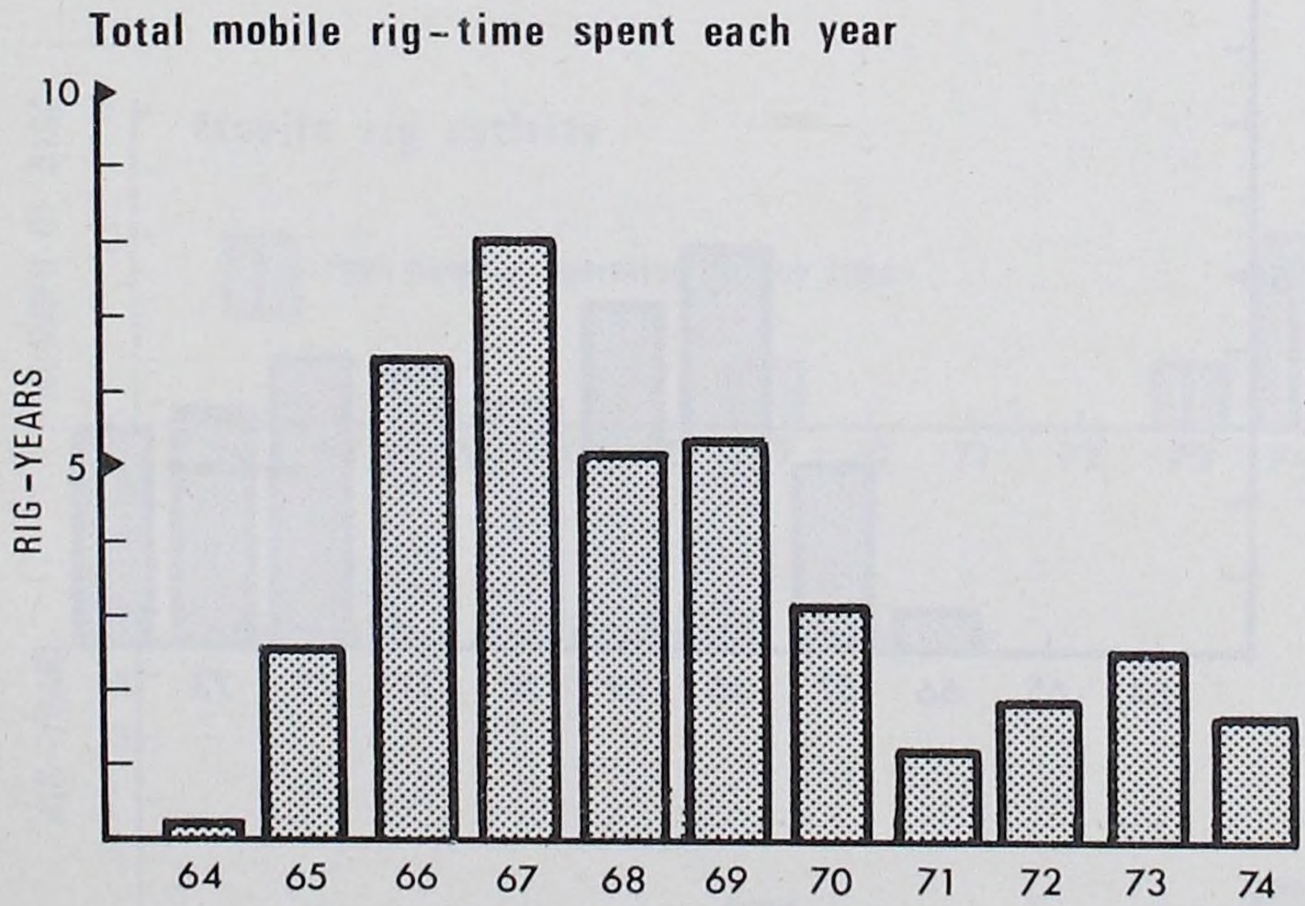
Total mobile rig-time spent each year



Appendix 5

Drilling Activity: Southern Basin of North Sea 1964–1974

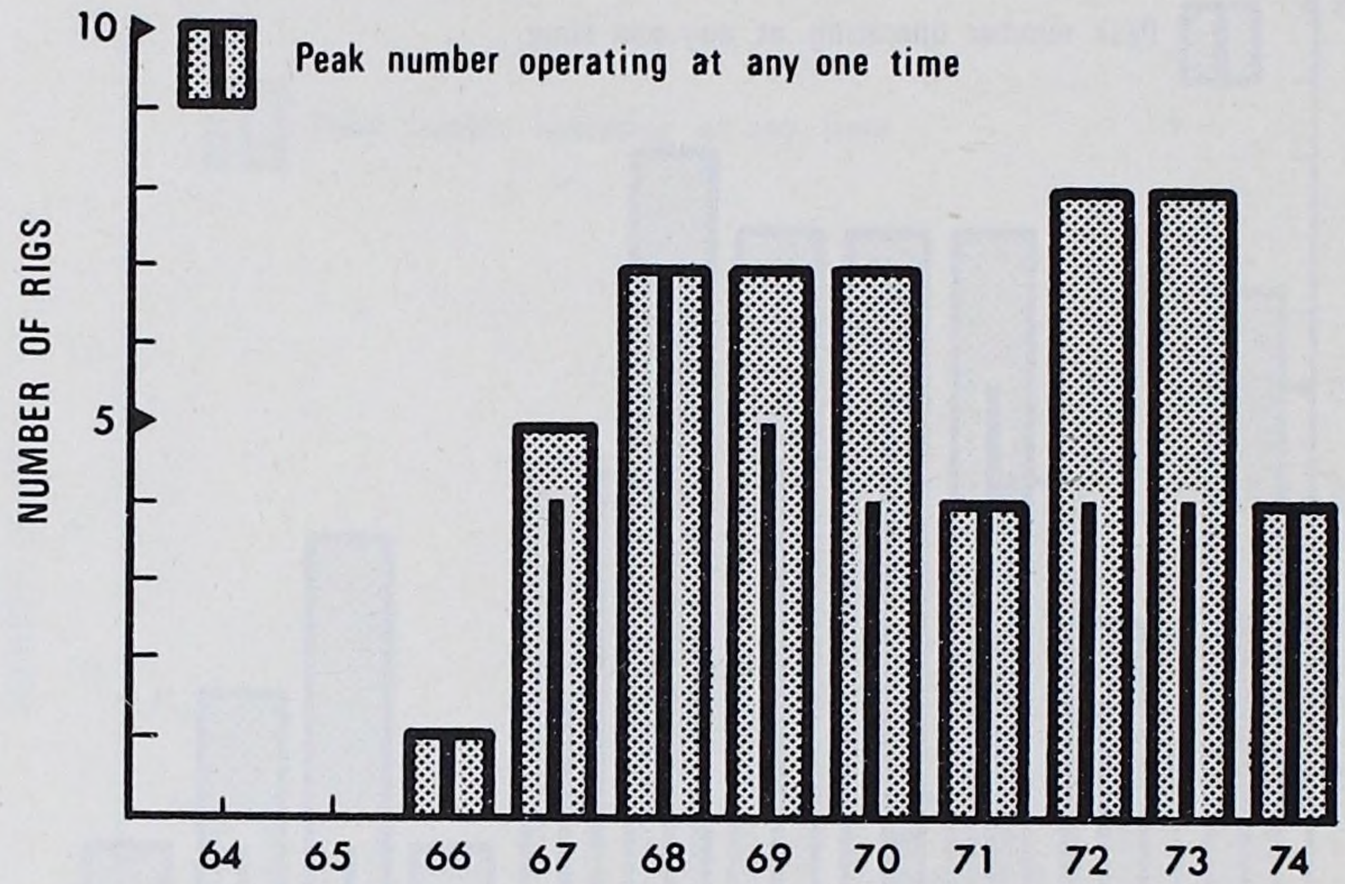




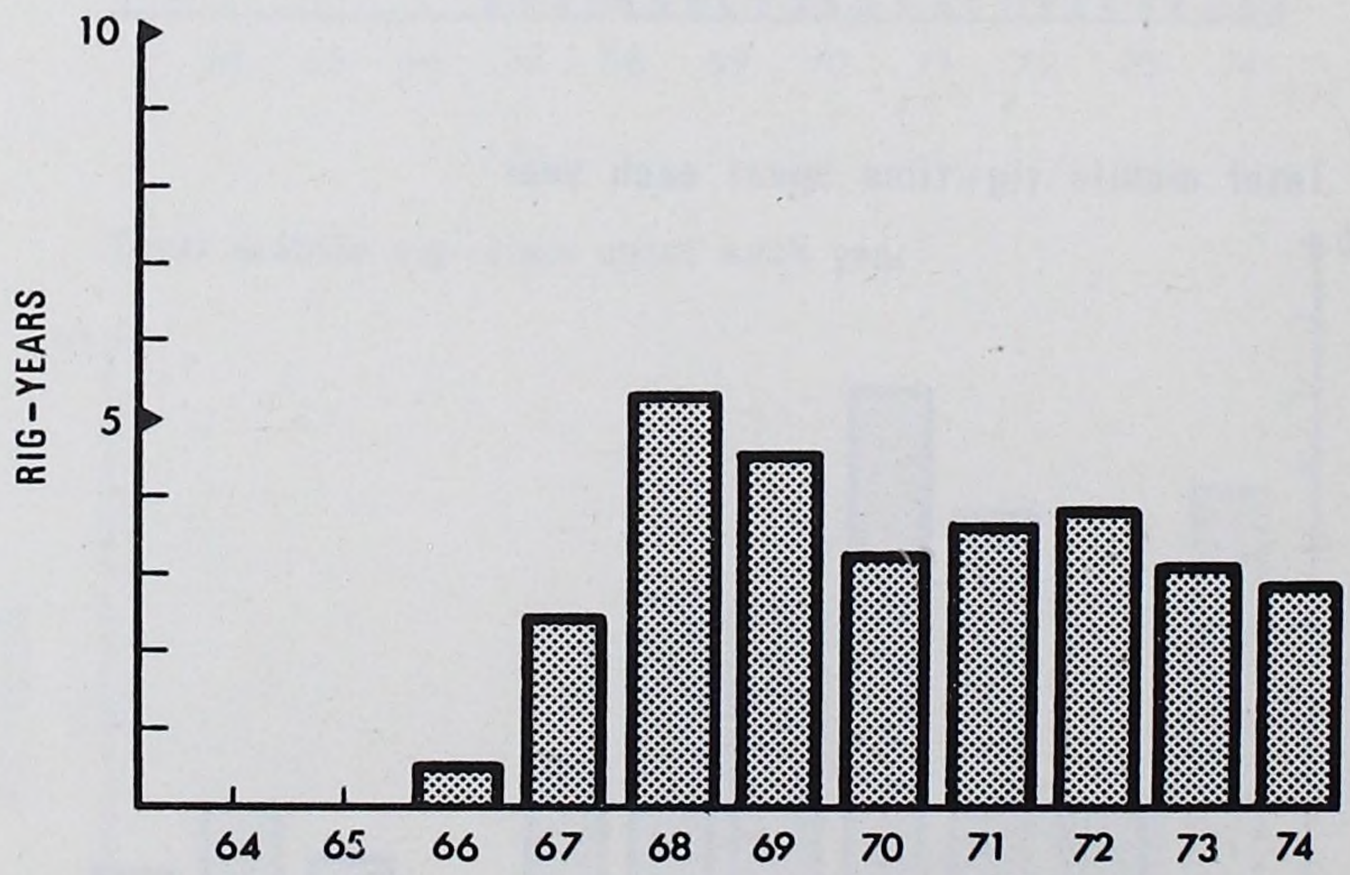
Appendix 6

Drilling Activity: Southern Basin of the North Sea 1964–1974

Fixed platform activity each year

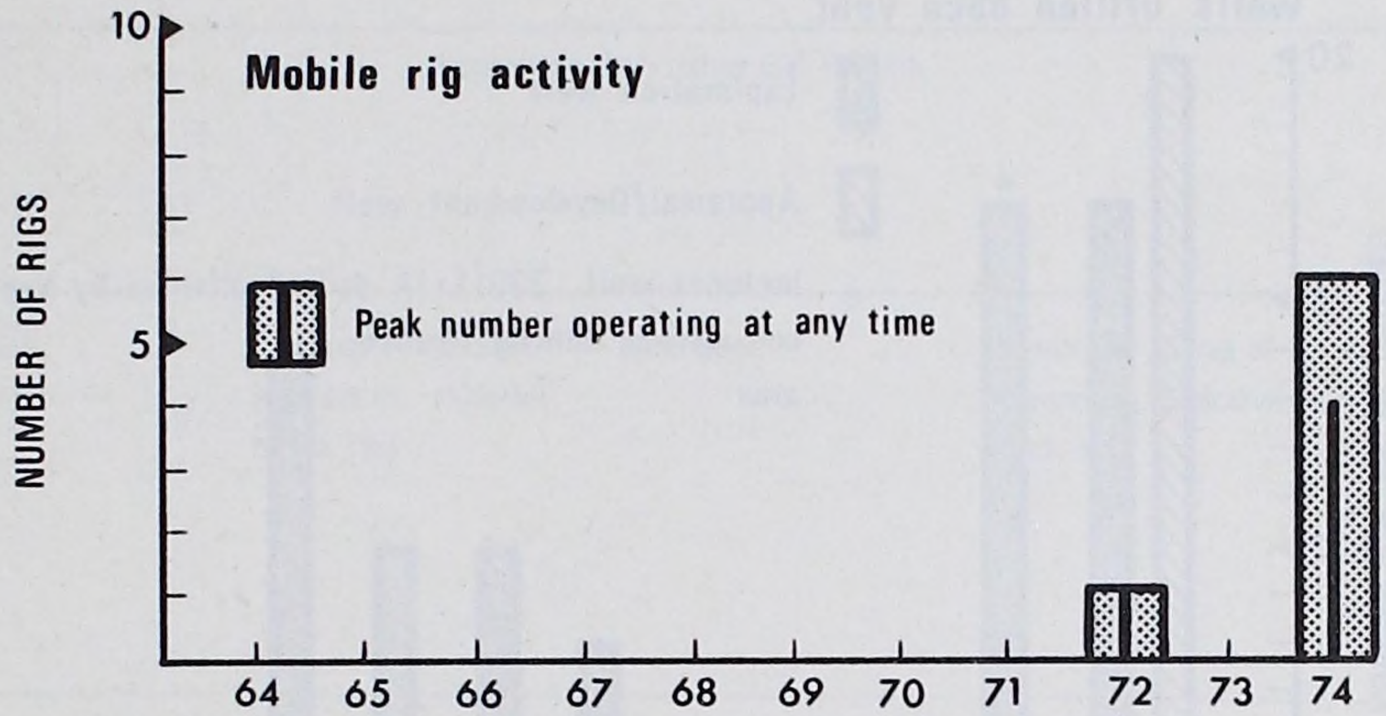


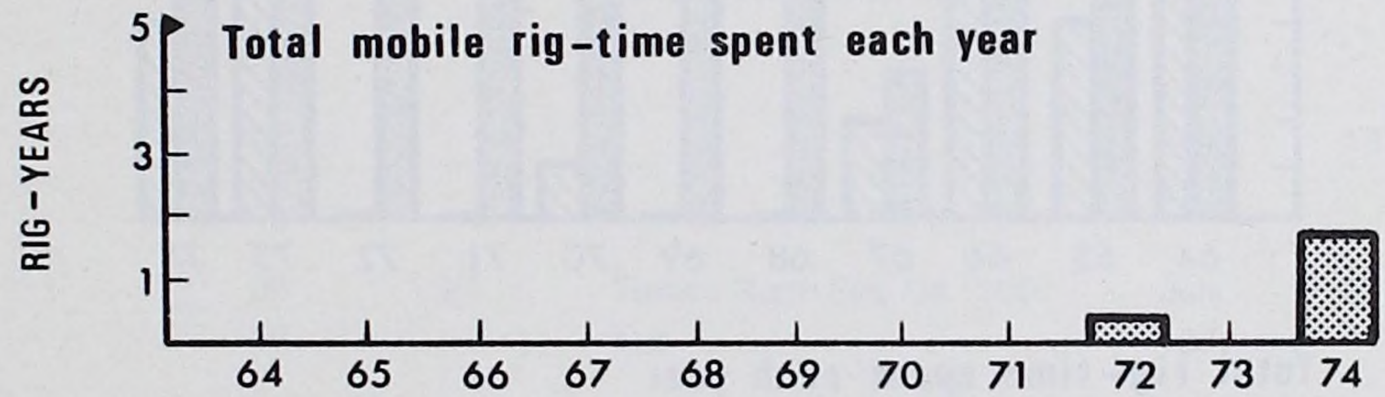
Total fixed platform activity



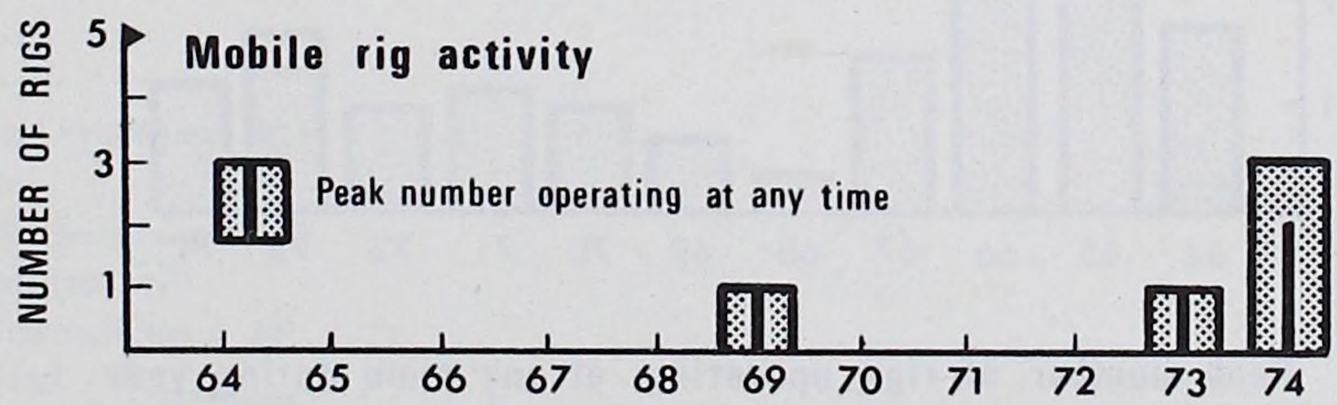
Appendix 7

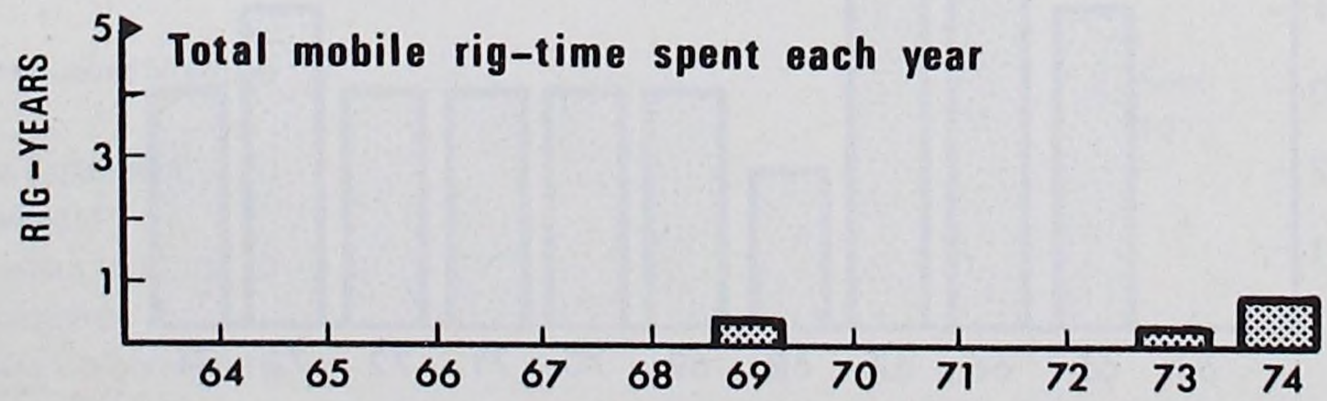
Drilling Activity: West of Shetland Area 1964–1974





West of England/Wales Area 1964–1974

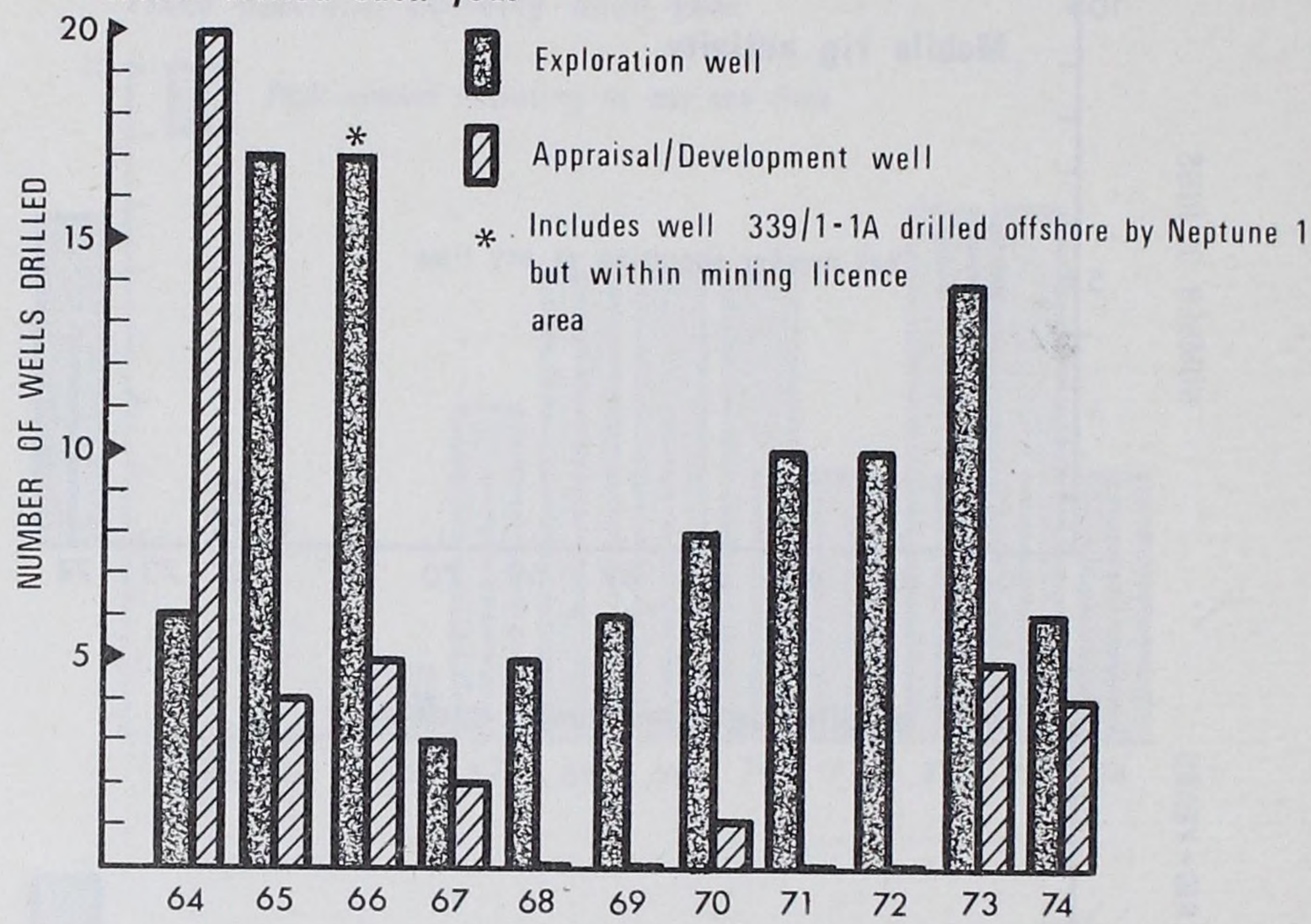




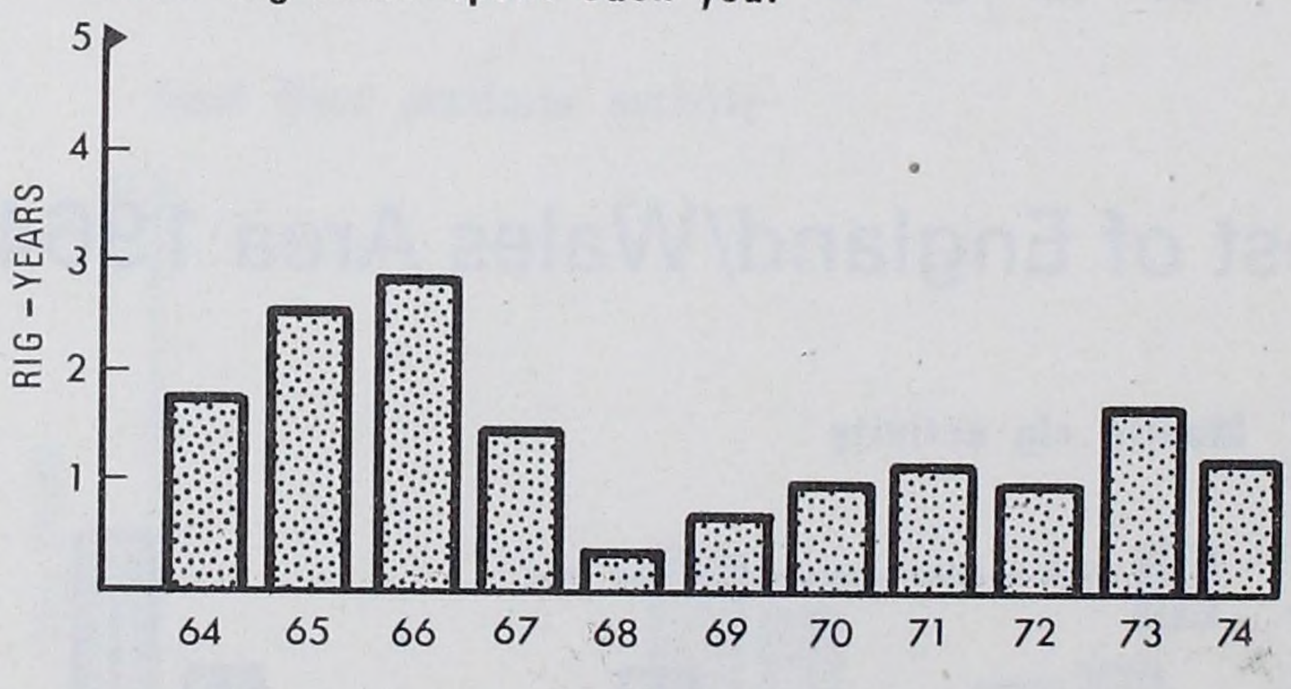
Appendix 8

Drilling Activity: UK Landward Area 1964–1974

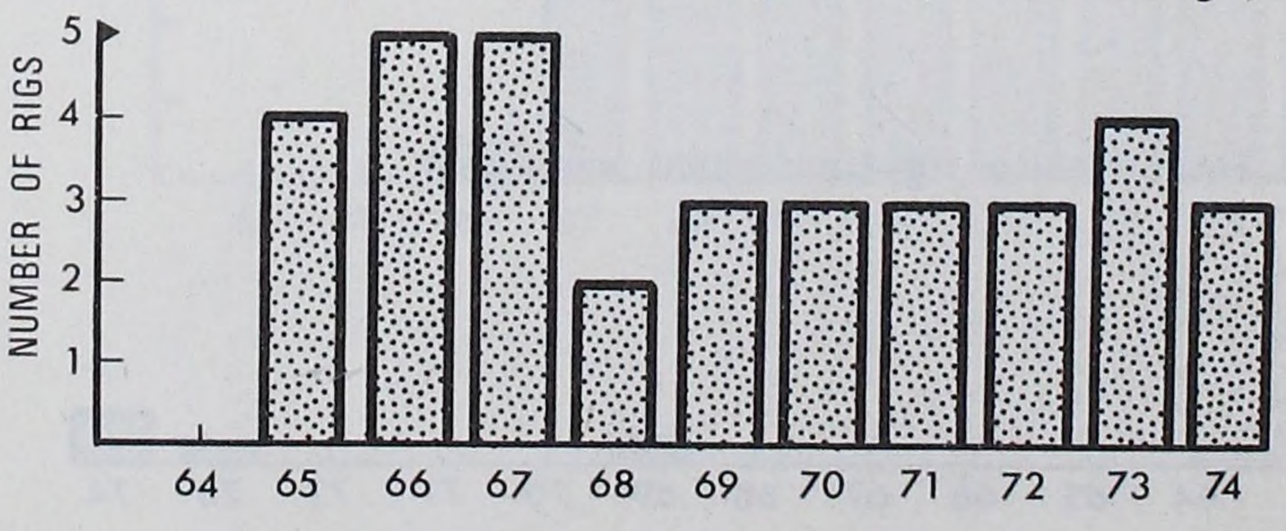
Number of exploration and appraisal/development wells drilled each year



Total rig-time spent each year



Peak number of rigs operating at any time during year



Appendix 9
Oil Discoveries

Proven Oil Fields	Main Block			Extension into other UK Blocks						
Field Name	Block number	Licensees	Company interest in block (%)	Block number	Licensees	Company Interest in block %	Date of Discovery	Operator's estimated date of production start-up	Operator's estimate of first year of peak production	Operator's estimated peak production (million tons per year)
Forties	21/10	BP Oil Development Ltd	100	22/6a	Shell UK Ltd (Shell) Esso Petroleum Co Ltd (Esso)	50 50	Nov 1970	1975	1977	20
Auk	30/16	Shell Esso	50 50	—	—	—	Feb 1971	1975	1976	2
Brent	211/29	Shell Esso	50 50	3/4	Texaco North Sea UK Ltd	100	July 1971	1976	1981	22
Argyll	30/24	Hamilton Brothers Oil Co (Great Britain) Ltd Hamilton Brothers Petroleum (UK) Ltd RTZ Oil and Gas Ltd Blackfriars Oil Co Ltd The Trans-European Co Ltd	48 12 25 12.5 2.5	—	—	—	Oct 1971	1975	1976	1.8
Piper	15/17	Occidental Petroleum (UK) Ltd Getty Oil International (England) Ltd Allied Chemical (Great Britain) Ltd Thomson Scottish Petroleum Ltd	36.5 23.5 20 20	—	—	—	Jan 1973	1976	1978	10.9
Beryl	9/13	Mobil Producing North Sea Ltd Amerada Exploration Ltd (Amerada) Texas Eastern (UK) Ltd (Texas Eastern) British Gas Corporation	50 20 20 10	—	—	—	Sept 1972	1975	1977	4

Proven Oil Fields	Main Block			Extension into other UK Blocks						
Field Name	Block number	Licensees	Company interest in block (%)	Block number	Licensees	Company Interest in block %	Date of Discovery	Operator's estimated date of production start-up	Operator's estimate of first year of peak production	Operator's estimated peak production (million tons per year)
Dunlin	211/23	Shell	50	211/24	Conoco Ltd (Conoco)	33⅓	July 1973	1977	1982	4
		Esso	50		Gulf Oil (Great Britain) Ltd (Gulf)	33⅓				
					National Coal Board (Exploration) Ltd (NCB)	33⅓				
Thistle	211/18	Burmah Oil Development Ltd	24	211/19	Conoco	33⅓	July 1973	1977	1978	8.8
		Champlin Petroleum Co Ltd	22.5		Gulf	33⅓				
					NCB	33⅓				
		Deminex (London) Ltd	20							
		Sante Fe (UK) Ltd	22.5							
		Tricentrol North Sea Ltd	10							
		Charterhouse Securities Ltd	1							
Montrose	22/18	Amoco UK Petroleum Ltd (Amoco)	30.77	22/17	Amoco	30.77	Sept 1969	1976	1978	2.43
		British Gas Corporation	30.77		British Gas Corporation	30.77				
		Amerada	23.08		Amerada	23.08				
		Texas Eastern	15.38		Texas Eastern	15.38				
Ninian	3/3	Burmah	30	3/8	BP Petroleum Development Ltd	50	Jan 1974	1977/78	1981	—*
		Chevron Petroleum Company Ltd	24							
		Imperial Chemical Industries Ltd	26		Ranger Oil (UK) Ltd	20				
		Murphy Petroleum Ltd	10		Scottish Canadian Oil and Transportation Co Ltd	7				
		Ocean Exploration Co Ltd	10		London & Scottish Marine Oil Co Ltd	15½				
					Cawoods Holdings Ltd	3¾				
					National Carbonising Co Ltd	3¾				

*Under reassessment

Proven Oil Fields	Main Block			Extension into other UK Blocks						
Field Name	Block number	Licensees	Company interest in block (%)	Block number	Licensees	Company Interest in block %	Date of Discovery	Operator's estimated date of production start-up	Operator's estimate of first year of peak production	Operator's estimated peak production (million tons per year)
Heather	2/5	Unocal Exploration & Production Co (UK) Ltd	31.25	—	—	—	Dec 1973	1978	1980	2.5
		Skelly Oil Exploration (UK) Ltd	31.25							
		Tenneco Great Britain Ltd	31.25							
		The Norwegian Oil Co DNO (UK) Ltd	6.25							
Claymore	14/19	Occidental Petroleum (Caledonia) Ltd	36.5	—	—	—	May 1974	1977	1979	5.1
		Getty Oil International (England) Ltd	23.5							
		Allied Chemical (Great Britain) Ltd	20.0							
		Thomson Scottish Petroleum Ltd	20.0							
Cormorant	211/26	Shell UK Ltd	50	211/21	Shell	50	Sept 1972	1977	1980	2
		Esso Petroleum Co Ltd	50		Esso	50				

Appendix 10
Other Significant Oil Discoveries

Field Name	Block Number	Discovered by	Date discovered
Maureen	16/29	Phillips group	February 1973
—	3/15	Total group	July 1973
Hutton	211/28	Conoco/NCB/Gulf group	September 1973
Alwyn	3/14a	Total group	November 1973
Magnus	211/12	BP	June 1974
Andrew	16/28	BP	June 1974
—	9/13	Mobil group	June 1974
—	21/1	Transworld group	August 1974
—	15/23	Texaco group	October 1974
—	3/11	Amoco group	December 1974
—	2/5	Union Oil group	December 1974
—	15/16	Texaco group	December 1974
—	14/20	Texaco group	February 1975
Statfjord	211/24	Conoco/NCB/Gulf group	February 1975
—	9/12	Union Oil Group	February 1975
—	9/28	Hamilton Group	February 1975
—	3/4	Texaco Group	March 1975

Appendix II
Gas Discoveries

Proven Gas Fields	Main Block			Extension into other UK Blocks				
Field Name	Block number	Licensees	Company interest in block (%)	Block number	Licensees	Company interest in block (%)	Date discovered	Date of production start-up
West Sole	48/6	BP Petroleum Development Ltd	100	—	—	—	October 1965	March 1967
Leman Bank	49/26	Shell UK Ltd (Shell)	50	49/27	Amoco UK Petroleum Ltd (Amoco)	30.77	April 1966	August 1968
		Esso Petroleum Co Ltd (Esso)	50		British Gas Corporation	30.77		
					Amerada Exploration Ltd (Amerada)	23.08		
					Texas Eastern (UK) Ltd (Texas Eastern)	15.38		
				49/28	Arpet Petroleum Ltd (Arpet)	$33\frac{1}{3}$		
					British Sun Oil Co Ltd	$23\frac{1}{3}$		
					North Sea Exploitation and Research Co Ltd	10		
					Superior Oil (UK) Ltd	20		
					Canadian Superior Oil (UK) Ltd	$3\frac{1}{3}$		
					Sinclair (UK) Oil Co Ltd	10		
				53/2	Mobil Producing North Sea Ltd	100		
Indefatigable	49/18	Amoco	30.77	49/23	Amoco	30.77	June 1966	October 1971
		British Gas Corporation	30.77		British Gas Corporation	30.77		
		Amerada	23.08		Amerada	23.08		
		Texas Eastern	15.38		Texas Eastern	15.38		
				49/19	Shell	50		
					Esso	50		
				49/24	Shell	50		
					Esso	50		

Proven Gas Fields	Main Block			Extension into other UK Blocks				
Field Name	Block number	Licensees	Company interest in block (%)	Block number	Licensees	Company interest in block (%)	Date discovered	Date of production start-up
Hewett	48/29	Arpet	33⅓	48/30	Phillips Petroleum Exploration UK Ltd	35	October 1966	July 1969
		British Sun Oil Ltd	23⅓					
		North Sea Exploitation and Research Co Ltd	10		Fina Exploration Ltd	30		
					AGIP (UK) Ltd	15		
					Century Power and Light Ltd	7.22		
		Superior Oil (UK) Ltd	20					
		Canadian Superior Oil (UK) Ltd	3⅓		Plascom (1909) Ltd	4.26		
					Halkyn District United Mines Ltd	4.26		
		Sinclair (UK) Oil Co Ltd	10		Oil Exploration Ltd	4.26		
				52/5a	Phillips group as above			
Viking	49/17	Conoco Ltd (Conoco)	50	49/12a	Conoco	50	May 1968	July 1972
		National Coal Board (Exploration) Ltd (NCB)	50		NCB	50		
Rough	47/8*	Amoco	13.68	47/3a	Amoco	30.77	May 1968	1975 (planned)
		British Gas Corporation	69.23		British Gas Corporation	30.77		
		Amerada	10.26		Amerada	23.08		
		Texas Eastern	6.83		Texas Eastern	15.38		
Frigg (UK)	10/1	Total Oil Marine Ltd	33⅓	—	—	—	May 1972	1977 (planned)
		Aquitaine Oil (UK) Ltd	22⅔					
		Elf Oil Exploration and Production (UK) Ltd	44⅔					

* Discovered by Gulf Oil (Great Britain) Ltd but licence now assigned to Gas Council/Amoco group

Appendix 12
Other significant gas and gas condensate discoveries

Field Name	Block Number	Discovered by	Date discovered
Ann	49/6a	Phillips group	May 1966
Dotty*	48/30	Phillips group	May 1967
—	53/4a	Signal group	July 1967
—	48/21a	Placid Oil (GB) Ltd	August 1967
Deborah*	48/30	Phillips group	August 1968
—	49/28	Arpet group	March 1969
Sean	49/25a	Allied Chemical group	April 1969
—	49/28	Arpet group	May 1969
—	41/24a	Total group	June 1969
—	43/20a	Hamilton group	June 1969
—	43/8a	Whitehall/Hamilton group	January 1970
—	47/13a	Tricentrol/Conoco/NCB group	April 1970
Viking Area	49/21	Signal/Conoco group	July 1970
Viking Area	49/16	Conoco/NCB group	January 1971
—	30/2 (gas condensate)	Burmah/Hamilton group	June 1971
—	48/18b	Ranger/Sea Search group	April 1972
Lomond	23/21 (gas condensate)	Gas Council/Amoco group	May 1972
—	49/22	Mobil/Conoco/NCB group	May 1972
Amethyst	47/14a	Burmah group	October 1972
—	3/19	Total group	July 1973
—	9/8 (gas condensate)	Hamilton group	July 1974
—	211/13 (gas condensate)	Shell/Esso	July 1974
—	3/25	Total Group	July 1974
—	110/2	Hydrocarbons (GB) Ltd	July 1974

* Gas supplies from these discoveries are included in the contract for the sale of gas from the Hewett Field.

Appendix 13
Oil Production Platforms–Spring 1975

Field	Operator		Platform Contractor	Site	Platform Type	
Platforms Installed						*Installation Date*
Forties	BP	I	Laing Offshore	Teesside	steel	June 1974
Auk	Shell		Redpath Dorman Long	Methil	steel	July 1974
Forties	BP	II	Highland Fabricators	Nigg Bay	steel	August 1974
Argyll	Hamilton		Conversion by Wilson Walton	Teesside	Coverted drilling rig	March 1975
Platforms under construction						*Scheduled Platform Delivery Date*
Piper	Occidental		McDermott Union Industrielle et d'Enterprise	Ardersier Le Havre, France	steel	1975
Brent	Shell	A	Redpath Dorman Long	Methil	steel	1975
		B	Hoyer Ellefson/Aker/ Selmer	Stavanger, Norway	concrete	1975
Beryl	Mobil		Hoyer Ellefson/ Aker/Selmer	Stavanger, Norway	concrete	1975
Montrose	Amoco		Union Industrielle et d'Enterprise	Le Havre, France	steel	1975
Forties	BP	III	Highland Fabricators	Nigg Bay	steel	1975
		IV	Laing Offshore	Teesside	steel	1975
Dunlin	Shell		Andoc	Rotterdam, Holland	concrete	1976
Thistle	Burmah		Laing Offshore	Teesside	steel	1976
Claymore	Occidental		Union Industrielle et d'Enterprise	Le Havre, France	steel	1976
Cormorant	Shell		McAlpine	Ardyne Point	concrete	1976
Brent	Shell	C	McAlpine	Ardyne Point	concrete	1976
		D	Hoyer Ellefson/ Aker/Selmer	Stavanger, Norway	concrete	1976
Ninian	Chevron	I	Howard/Doris	Loch Kishorn	concrete	1977
		II	Highland Fabricators	Nigg Bay	steel	1977
Heather	Unocal		McDermott	Ardersier	steel	1977

Appendix 14
Accident Statistics

Year	Mobile Drilling Activity (rig years)	Fixed Platform Drilling Activity (rig years)	Production Platforms	Estimated Number of men employed	No. of Fatal Accidents	No. of Serious Injuries
1965	2.6	—	—	260	14	9
1966	6.4	0.5	—	690	0	15
1967	8.8	2.4	—	1120	1	18
1968	6.0	5.3	1	1210	3	21
1969	7.7	4.5	4	1450	2	19
1970	5.3	3.3	9	1150	1	12
1971	5.2	3.7	11	1260	4	17
1972	8.8	3.8	16	1850	3	17
1973	13.3	3.2	19	2430	3	22
1974	24.5	2.8	23	4030	12	25

Notes

1. Figures for the years 1965–1973 differ slightly from those reported previously. They have been adjusted so that they correspond to those given for 1974 which are in accordance with SI No 1842 of 1973, The Offshore Installations (Inspectors and Casualties) Regulation 1973, which came into operation on 1 December 1973.

2. Casualties associated with work on and from pipe-laying barges are not included as such vessels are outside the scope of the Mineral Workings (Offshore Installations) Act. During 1974 two diving fatalities occurred during pipe-laying operations.

3. Exact figures for the number of persons employed are not available. The estimates given above are based on the average number employed on each of the different types of installations on the basis of an average of a 42 hour week worked. Seamen employed on attendant vessels are not included in the figures given above.

4. 13 of the 14 fatal accidents in 1965 resulted from the loss of the mobile drilling platform 'Sea Gem'.

Appendix 15

Statement by the Secretary of State for Energy on Depletion Policy, 6 December 1974

In my statement to Parliament on 11th July on United Kingdom offshore policy I said that the Government proposed to take powers to control the rate of depletion of oil. I already have power to decide on the timing, nature and extent of future licensing rounds, and in the forthcoming petroleum legislation I shall be proposing powers to control the rate of production.

How or when such powers may be used in the 1980s and 1990s will depend on the extent of the total finds, on the world oil market and on the demand for energy. On all these points great uncertainty prevails. Policy will also be influenced by our general economic situation and in particular the outlook for our balance of payments. The Government cannot, therefore, be expected to define, before any oil has come ashore, and when large parts of the sea remain unexplored, a long-term production pattern. On the other hand, these powers may be needed in the future to safeguard national interests. However much oil we find, it is limited and can only be used once. This and future Governments must, therefore, ensure that this vital national resource will be used at a rate which secures the greatest long-term benefit to the nation's economy, and in particular to Scotland, Wales and other parts of the United Kingdom in need of development.

We propose, therefore, to take powers of control for use in the future, but it remains the Government's aim to ensure that oil production from the United Kingdom Continental Shelf builds up as quickly as possible over the next few years to the level set out in paragraph 4 of the White Paper (Cmnd. 5696). This will help our balance of payments, contribute to Government revenues, stimulate our industries and make our energy supplies more secure. It will also be an important British contribution to the development of the indigenous energy resources of the industrial world.

I wish, therefore, to assure the oil companies, and the banks to which they will look for finance, that our depletion policy and its implementation will not undermine the basis on which they have made plans and entered into commitments. Our future policy will be based on the following guidelines:

(*a*) No delays will be imposed on the development of finds already made or on any new finds made up to the end of 1975 under existing licences. If it should prove necessary to delay the development of finds made in 1976 or later, there will be full consultation with the companies so that premature investment is avoided.

(*b*) No cuts will be made in production from finds already made, or from new finds made before the end of 1975 under existing licences, until 1982 at the earliest, or until four years after the start of production, whichever is the later.

(*c*) No cuts will be made in production from any field found after 1975 under an existing licence until 150 per cent. of the capital investment in the field has been recovered.

(*d*) If we later need to use these powers we will have full regard to the technical and commercial aspects of the fields in question; and this would generally limit cuts to 20 per cent. at most. We shall be consulting the industry on the period of notice to be given before any reduction in production comes into effect.

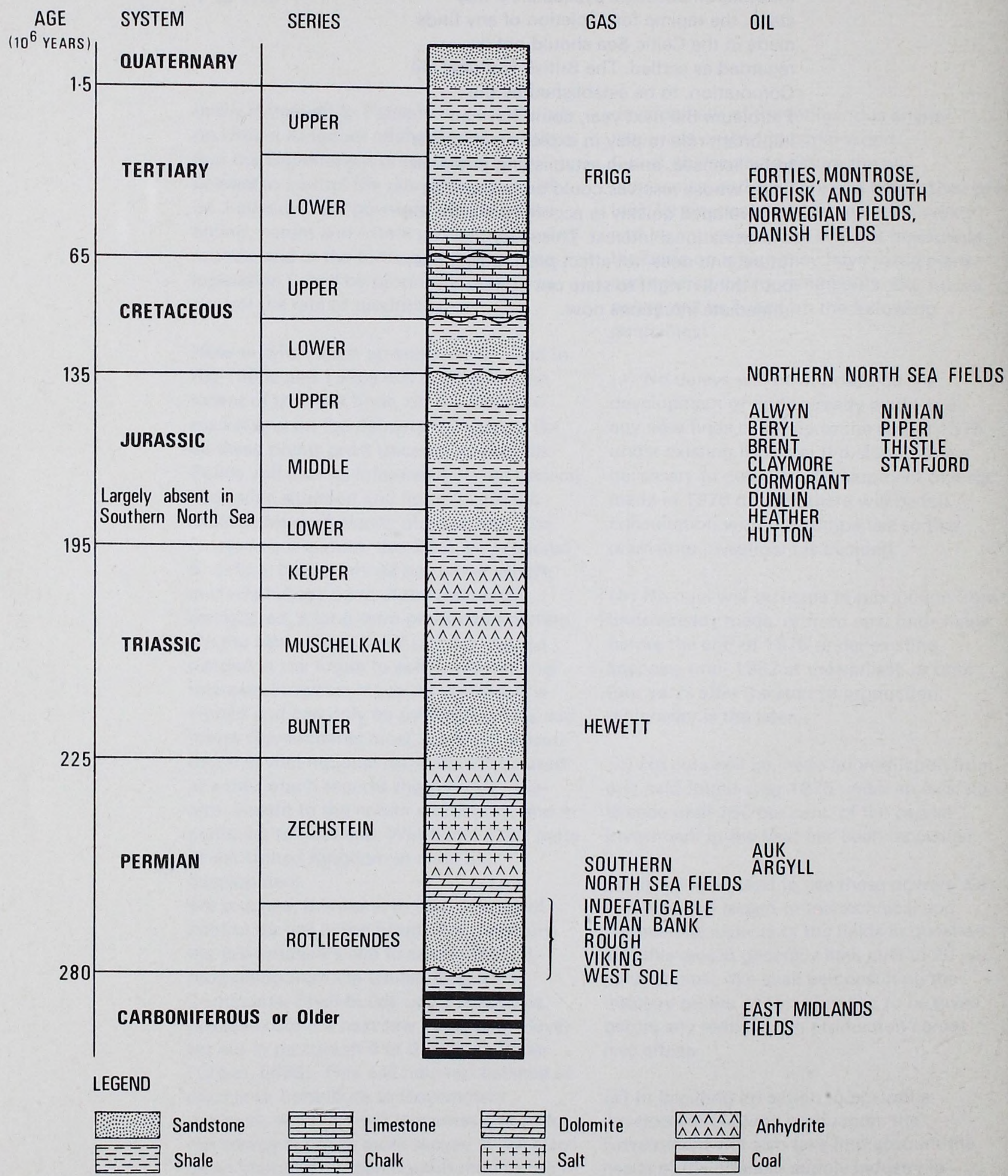
(*e*) In deciding on action to postpone development or limit production, the Government will also take into account the needs of the offshore supply industry in

Scotland, Wales and other parts of the United Kingdom, for a continuing and stable market.

Longer-term conservation strategy is being and will be formulated as progressively more information becomes available. At this stage, the régime for depletion of any finds made in the Celtic Sea should not be regarded as settled. The British National Oil Corporation, to be established by the Petroleum Bill next year, could have an important rôle to play in exploring areas yet to be licensed, and in establishing potential fields whose reserves could be husbanded or developed quickly in accordance with the widest national interest. This is for the future, and does not affect present licences; but I think it right to state our more immediate intentions now.

Appendix 16
Generalised Stratigraphy of the North Sea

SHOWING THE APPROXIMATE AGE OF HYDROCARBONS



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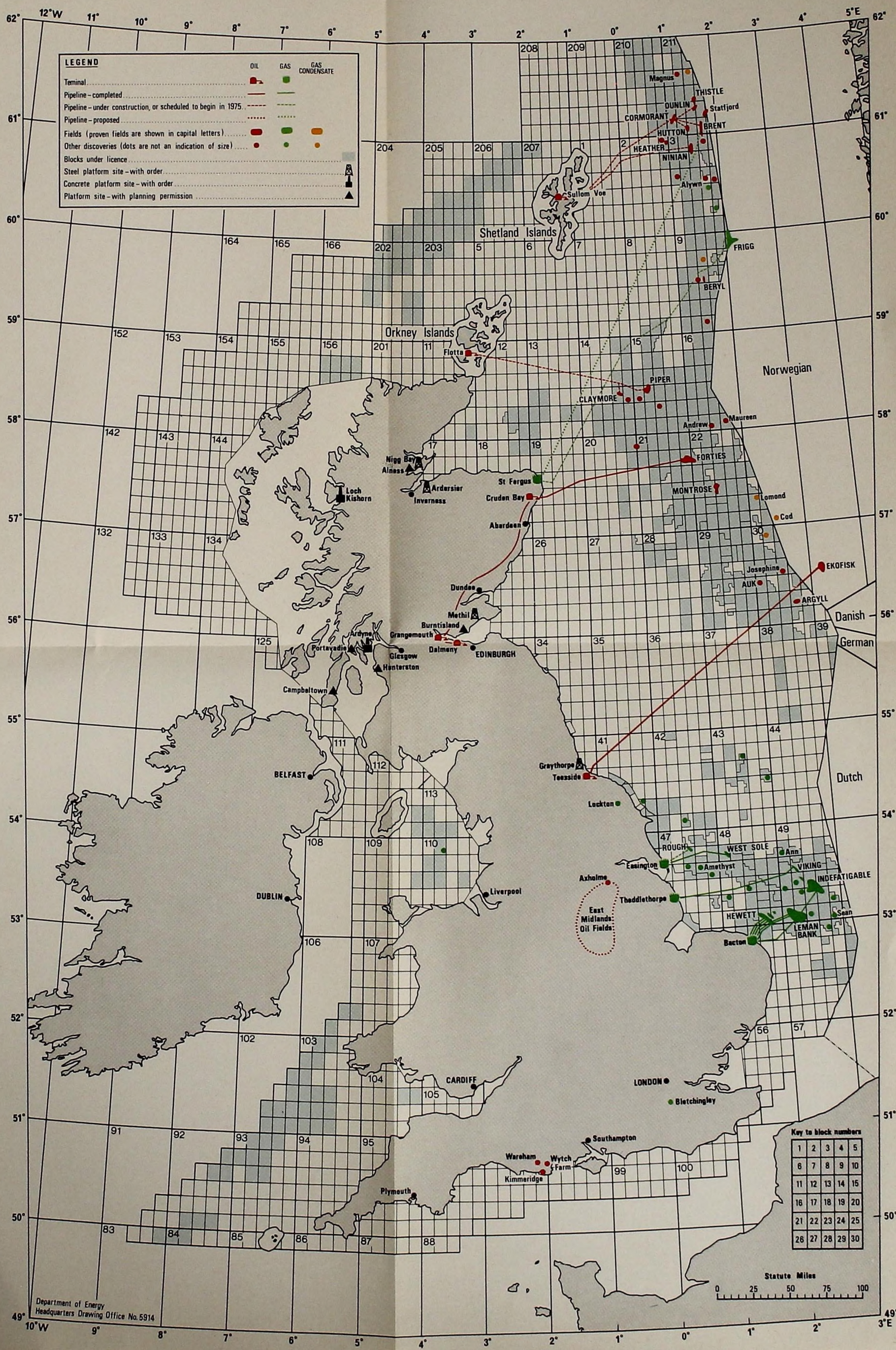
UK CONTINENTAL SHELF — SPRING 1975



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