



Joint Circular from the
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Sir

15 January 1985

Planning Control over Oil and Gas Operations

We are directed by the Secretary of State for the Environment and the Secretary of State for Wales to bring to your attention the Annex to this Circular which provides guidance to mineral planning authorities on the exercise of planning control over on-shore hydrocarbon exploration, appraisal and production. In particular, it indicates the national policy considerations that need to be taken into account, the importance of including appropriate policies in development plans, and some of the factors to be considered when determining individual planning applications.

Onshore oil and gas operations are also controlled through licences granted by the Secretary of State for Energy. Appendix A to the Annex describes the licensing system, including the changes brought into effect in January 1985, while Appendix B outlines the three stages in which oilfield development is usually considered. Appendix C lists some sources from which further advice might be obtained.

There is growing interest in undertaking oil and gas exploration and exploitation in estuaries and other waters close to the coast where onshore planning control does not generally apply. Guidance on how such development might be considered is also contained in the Annex and in Appendix A.

The Secretaries of State recognise that, as a result of the increased interest of the oil and gas industry in on-shore development, some mineral planning authorities have had to devote more time and effort to considering oil and gas matters. This is inevitable so long as the present active phase of exploration and development continues. Mineral planning authorities have to date generally dealt with this by redeploying staff from elsewhere. This is a sensible response to changing priorities. The guidelines in the Annex to this Circular are designed to enable mineral planning authorities to reassess priorities and to deal with oil and gas applications more efficiently and

effectively. Particularly because of the availability of specialist advice, from the Department of Energy amongst others, as explained in paragraph 16 of the Annex, the guidelines are not expected to have any new expenditure or manpower implications.

We are, Sir, your obedient Servants,

P F EVERALL, *Assistant Secretary*

A E PEAT, *Assistant Secretary*

The Chief Executive

County Councils }
District Councils } In England and Wales
London Borough Councils }

The Town Clerk, City of London
The Director General, Greater London Council
[DOE M/379/11]
[WO P3/104/05]

PLANNING CONTROL OVER OIL AND GAS OPERATIONS

Introduction

1. Recent years have seen a renewed industrial and commercial interest in on-shore oil and gas development. This interest has not, however, gone unchallenged. There is considerable public concern about the possible effects on the countryside and on local communities, and about how far it is possible to strike an acceptable balance between the exploitation of this important national resource and the protection of the environment. This concern is entirely understandable. Although the first commercial field was discovered in East Sussex as long ago as 1895, and oil and gas has been produced on a small scale in the East Midlands for many years, the growth of interest in the last decade has been marked: seventy-five exploration wells and sixty appraisal and development wells have been drilled (source: "Development of the Oil and Gas Resources of the United Kingdom, 1984"; Department of Energy) and substantial areas of the country are now covered by exploration or production licences. Figure 1 illustrates the broad sedimentary basins having hydrocarbon potential, together with the distribution of licence awards.

2. Production of oil and gas from the North Sea is expected to peak around 1985-86. New fields are needed—both on and off-shore—to take over from those now in decline. As well as blocks licensed on-shore, others have therefore been put on offer in the Ninth Round of Offshore Licensing, some of which are in deeper waters and others nearer to the coast than in previous Rounds. Licences have also been awarded in a number of estuaries including the Solent, Solway, Humber and Liverpool Bay. Planning controls do not normally operate in these areas but clearly the award of licences has implications for development on-shore and for the coastal environment.

National Policy Considerations

3. The nation's interest in developing indigenous on-shore oil and gas reserves can be in conflict with that of protecting the environment. In most cases it should be possible to find a solution so that development can proceed in an environmentally acceptable manner. Exceptionally the environmental implications will be so great that the proposed development cannot be permitted on a particular site. It will be for the industry in the first instance to demonstrate how any environmental objections can be treated, and for mineral planning authorities to determine any proposals on their merits and having regard to the following energy and environmental policy considerations.

4. Successive Governments have sought to encourage the full exploration of our mineral resources, including hydrocarbons. For some minerals, exploration programmes have been funded and managed by Government Departments. The strategic and commercial arguments in favour of an active exploration and appraisal programme apply fully in the case of oil and gas, both on and off-shore. Supplies of home produced oil and gas are inevitably more secure than are imported supplies. It also takes a long time to search for oil and gas, and to bring these reserves into commercial production. Exploration and appraisal activity is therefore a sound preparation for the future, provided that it takes proper account of environmental considerations.

5. It is also Government policy to ensure the maximum economic exploitation of oil and gas reserves over time, consistent with good oilfield practice (including tight restraints on gas flaring) and with the protection of the environment. The Government seeks to ensure that recovery is as effective as it can be without jeopardising the economics of the operations. This means that in particular cases the Government's view of what maximum economic recovery entails can and does vary from that of the company concerned. At the present time the Government sees no economic case for delaying or imposing cuts in on-shore production; powers of intervention are nevertheless retained for use in unforeseen emergency circumstances.

6. Apart from the value it yields to the Exchequer through tax and royalties, on-shore oil and gas production can make a valuable contribution to both local and national economies and to economic recovery. The value of on-shore oil production this year for example is expected to be around £50 million. This could increase substantially over the next 5-10 years if commercial reserves are exploited. This potential provides an important incentive to the industry to develop new technology which can be applied elsewhere. Development can also bring new permanent jobs to an area, both on site and with supplying companies. This has already been a feature of development in the older East Midlands fields which have been in production for many years. Production also provides an inducement to undertake further exploration and appraisal. Although substantially less costly than off-shore development, on-shore operations are still high risk ventures. The chances of finding potentially commercial quantities of oil and gas vary geographically and through time and, although the success rate of exploratory wells is currently fairly high in the South of England, this is unlikely to remain the case indefinitely.

7. The Government's role in relation to energy supply is to help create the conditions necessary for the free operation of market forces. Particular investment decisions are for the oil and gas industry to justify against economic, environmental and other criteria. The Government will continue to take steps to increase competition in the energy market with the aim of widening consumer choice and bringing about more competitive pricing. A freer and more competitive market will regulate successfully supply and demand, and help to achieve the right balance between investment in energy supply and energy efficiency.

8. The commercial and economic considerations that underlie particular investments are nonetheless subject to the environmental acceptability of specific projects as determined by the land-use planning system and by other environmental controls. This is as true for exploration and appraisal activities as it is for commercial production. The Government recognises that, as for so many of the country's key minerals, oil and gas reserves may coincide with those areas where there is a strong national interest in the protection of the landscape and natural environment.

9. Special policy considerations therefore apply to all mineral working in National Parks, Areas of Outstanding Natural Beauty and other areas given protection for environmental reasons (for example, Sites of Special Scientific Interest, National Nature Reserves and Conservation Areas). Many of these owe their designation in part to the underlying geology, which can be of potential interest for oil and gas exploration. DOE Circular 4/76 (WO 7/76) states that, in respect of National Parks, planning applications for new mineral workings or extensions of existing working should

be subject to the most rigorous examination because of the serious impact these might have on the natural beauty of the parks. Such an approach also applies to the consideration of applications for oil and gas exploration, appraisal and development in other areas designated for environmental reasons. It will be for the industry to show in any particular case that the need to undertake the development outweighs the environmental objections, including those arising from the factors which led to the designation of the area in the first place.

10. Many potential oil and gas resources also lie under good quality agricultural land, and, in coastal or estuarine waters, under fishing grounds. Planning applications for oil and gas development which impinge upon agricultural land are subject to the policies set out in DOE Circulars 75/76 and 22/80 (WO 110/76, 40/80). These aim to ensure that no more than the essential minimum of agricultural land is diverted to development, and that land of a higher quality is not taken where land of a lower quality could reasonably be used instead. In addition, where agricultural land is proposed to be taken for oil and gas development, the feasibility of restoration to agriculture should be taken fully into account before such land is released.

11. There is a substantial body of legislation relating to water supply, land drainage, noise and air pollution. The need to protect the flow and quality of water supplies in accordance with British and European Community legislation, to avoid air pollution through unsatisfactory gas flaring and to prevent undue noise being caused by drilling and other operations should all be taken into account in preparing development plan policies for oil and gas and when determining planning applications. If the development is hazardous (as defined by DOE Circular 9/84 (WO 17/84)) the mineral planning authority should consult the Health and Safety Executive as to the exercise of planning controls over the development itself, and over development within the vicinity.

The Planning and Licensing Systems

12. Nearly a decade ago, the Committee on Planning Control over Mineral Working (the Stevens Committee) remitted to the Secretary of State for the Environment the question of whether a special planning regime should apply to on-shore oil and gas. The Government believed then that the provisions operative for all minerals provided a sufficiently comprehensive and distinctive framework of control to meet the Committee's concern, and this remains the position. The Secretaries of State reaffirm their belief that planning decisions on on-shore oil and gas development should rest as far as is possible with mineral planning authorities, and only in exceptional circumstances would they wish to call in an application for their own decision. Most authorities have shown both imagination and good common sense in developing policies for hydrocarbons, and in deciding particular cases. They have demonstrated that sensible planning policies can be drawn up which balance effectively oil and gas development with the protection of the environment.

13. Oilfield operations are also regulated by the system of specific licences awarded to oil companies by the Secretary of State for Energy. Appendix A describes this licensing system in some detail. No operator is permitted to search for, or develop, oil and gas resources without the requisite licence. The system is designed to achieve a satisfactory balance of safeguards and rights between the Crown (in whom the hydrocarbon resources are vested by virtue of the Petroleum (Production) Act 1934) and the licensee, as

well as a framework for the safe and orderly development of the resource itself. Operators are required to carry out all operations under a licence in accordance with the accompanying health and safety notices, with good oilfield practice, and, in the case of development, with an approved programme. In addition to these general requirements, there are specific controls on the operator—for example, he must obtain the consent of the Secretary of State for Energy to drill a well, and to obtain that consent he must submit plans showing precisely how the well is to be engineered. Likewise, he must also obtain consent to abandon a well and he must satisfy the Secretary of State on how this is to be achieved safely. Under the new system of landward licensing an operator will also have to obtain planning permission before a development licence is awarded.

14. Mineral planning authorities for those areas which are now covered by licences (see Figure 1) should consider whether the policies for oil and gas contained within their structure and local plans, if any, are adequate. If not, they should consider introducing, at the earliest convenient alteration, policies which are consistent with the national policy considerations set out above. It is clearly important both for the industry and for everyone living in the area where oil and gas development might take place to know what policies the mineral planning authority intend to apply to specific development proposals when they are made. In this respect it might be helpful to distinguish clearly between policies that apply to the three stages of exploration, appraisal and development, and to indicate specifically where there is a presumption against such activity. It is only exceptionally, and then for relatively small and sensitive areas, that circumstances would justify a presumption against exploration.

Handling specific development proposals

15. There is a good deal of uncertainty about what is involved in on-shore hydrocarbon development. It is of the utmost importance therefore that the industry seeks to explain fully, at each stage and as early as possible, the nature of their proposals—by arranging, for example, public meetings and exhibitions, and by explaining the way in which they intend to deal with environmental, health and safety factors. Mineral planning authorities should themselves encourage this dialogue and discuss their own thoughts at an early stage with both the applicant and the community. In this way the industry can be alerted to issues of local concern and appropriate action taken. Once planning applications are submitted, decisions should as a result be reached quickly and efficiently. It is often helpful for these matters to be brought together in an environmental assessment of the proposal which can be submitted at the same time as the planning application. While developers cannot be required to make such assessments in relation to proposals for oil and gas operations, a number of assessments have been made by the industry to date and these have proved to be valuable decision-making tools. Operators are therefore encouraged to prepare environmental assessments where the impact on the environment is likely to be considerable. Should permission be granted, especially for the development of a field, then it is often useful to set up a liaison committee or advisory panel, involving members of the community, industry and local authorities, to ensure that operations proceed smoothly and with minimum inconvenience to those most affected.

16. Many mineral planning authorities are well aware of the complex issues that can arise in relation to minerals matters, and have developed a suitable expertise to cope with them. Oil and gas proposals are unlikely

to raise wholly new issues of principle, and their impact on the environment can be considerably less than other forms of mineral working. In addition, many of the operational questions that occur on site will be anticipated by the operator and dealt with by him in accordance with the conditions of the licence. Nevertheless, local authorities are right to be alert to possible difficulties. Where oil and gas activity is relatively commonplace, authorities have in practice soon developed the technical knowledge and understanding to enable these matters to be discussed with the industry. Where this is not so, an authority may wish to make arrangements to draw on the expertise available in neighbouring authorities, or consider sharing specialist staff. They may also choose to engage consultants to advise on detailed matters which may be important in particular cases. An application for an exploratory borehole, for example, will need careful scrutiny, usually in consultation with other regulatory agencies. In the case of proposals to appraise and develop an oil field the use of specialist advice should be considered, unless the authority is well experienced in handling applications of this type. Appendix C lists possible sources of advice available to local planning authorities, including the Petroleum Engineering Division of the Department of Energy.

17. Geological structures containing oil and gas do not respect administrative boundaries. It is important that mineral planning authorities are fully aware of developments in neighbouring authorities, particularly those underlain by the same broad sedimentary basins (see Figure 1), and their policies towards oil and gas should be compatible where this is clearly sensible and practicable. Where local authorities have used regional or sub-regional forums to discuss common issues, these have proved helpful. Government Departments and the Health and Safety Executive remain ready to assist, but it is for local authorities and the industry to take the lead in making suitable arrangements.

18. The search for oil and gas, as well as their extraction, present a particular set of operational problems which require careful management and control in order to protect those working on the site as well as the local environment. The operator, the Department of Energy, the Health and Safety Executive and the pollution control authorities are all closely involved throughout. In exercising these controls, there is a need to avoid duplication between the operator and the relevant regulatory authority, and between them and the mineral planning authority. The Government nevertheless accept that pollution policies have a justifiable place in planning, and should be embodied in development plans where appropriate. But planning conditions should not be used to duplicate specific controls which already exist under pollution or other legislation. Where there are no such specific operational controls it will continue to be appropriate to consider the use of planning conditions if these enable a new development to proceed in an environmentally acceptable way. In the case of noise, specific advice has been issued in DOE Circular 10/73 (WO 16/73). Further advice on conditions generally will be given in the new edition of the Memorandum on the Control of Mineral Working.

Exploration

19. The exploration phase of hydrocarbon operations encompasses both geological and seismic investigations, and the drilling of deep boreholes to assess prospects in more detail. Seismic investigations generally have very limited environmental effects, and most local authorities have regarded such development—particularly that involving vibroseis techniques—as

"de minimis", since the investigations are transient. However, good practice requires the industry to discuss fully their proposals with the local authorities and statutory agencies, including the water authorities and water companies. Mineral planning and highway authorities, for example, should be informed of the intended route for the survey, and prior notification should be given to residents on the immediate survey route. Operators should also ensure that District Councils are aware of the intended investigations, and their commencement date, and, in the case of vibroseis surveys using the road network, they should inform the police of the route and anticipated timing of their operations. Mineral planning authorities should in turn alert operators to particularly sensitive historic buildings and sites that may be affected along the route. Where waterborne coastal seismic surveys are carried out, operators should observe the requirements of the Continental Shelf Operations Notices Nos. 33 and 35. Early contact should also be made with local fishing interests.

20. The drilling of deep boreholes for exploration purposes requires an application to be made and planning permission granted by the mineral planning authority. Each application should be considered on its merits, and should not be influenced by any hypothetical future development. In submitting an application, the developer may be required to indicate what knowledge he has gained from seismic investigations in selecting the borehole site. Subject to the effects on the environment being fully assessed, and a satisfactory restoration plan prepared, applications for exploration might be favourably considered.

21. Mineral planning authorities should discuss with the industry the option of employing deviated drilling (see Appendix B) wherever this would seem technically feasible and environmentally desirable. Authorities should also give careful consideration to factors such as limiting night time "tripping" or testing, locating sites to minimise visual intrusion, controlling vehicular activity and vehicle routeing, and controlling the disposal of mud and other drilling residue. In many cases agreement can be reached with the operator based on the conditions attached to the licence, or as part of an arrangement made under section 52 of the Town and Country Planning Act 1981. In other cases it may be appropriate to attach conditions to planning permissions to ensure that any adverse impact of the operation on the environment and local inhabitants is kept to a minimum. Exploration wells should not be permitted close to houses and other noise sensitive development unless noise levels from drilling and other operations can be reduced to acceptable levels. Particular care should also be taken about siting wells close to water supply boreholes. Early consultation with the water authority is essential, so as to avoid the risk of pollution to ground water and aquifers.

22. Consultation has taken place on proposals to introduce a new class to the Town and Country Planning General Development Order 1977 (the GDO) to give permitted development rights in respect of certain exploratory operations undertaken with a view to the exploitation of a mineral, subject to the developer giving 28 days notice to the mineral planning authority. The proposals will apply to seismic surveys where these are such as to constitute development within the terms of the Town and Country Planning Act 1971. However, it is not intended that permitted development rights shall extend to more obtrusive operations and in practice this will mean that even when the GDO is amended, all exploration and appraisal boreholes for oil and gas are likely to continue to require planning permission following the submission of an application to the mineral planning authority.

Appraisal

23. Should hydrocarbons be found as a result of drilling an exploration well, it will often be necessary to attempt to delineate the extent of the field by drilling further wells from other sites in the area. Until the extent of a field has been delineated, it is difficult to assess the environmental effects posed by commercial exploitation, and to evaluate in environmental terms the various options available. Nevertheless, understanding of a field or structure develops during the exploration stage, and by the time applications for appraisal wells on other sites are submitted, operators may feel sufficiently confident about the extent of the field, and the way in which they would wish to exploit it, to consider supplying such information to the planning authority at that stage. This should be on the clear understanding that further appraisal might lead to a change in plan. Mineral planning authorities should consult the Department of Energy if they are uncertain about how to interpret technical information of this sort. Although, as with all other forms of development, an application for an appraisal well on a separate site must be considered on its merits, since such wells may subsequently be required for production purposes this consideration can take into account the long-term suitability of the site. Otherwise many of the factors listed in paragraph 21 above are equally as relevant to appraisal wells as they are to exploration ones.

Production and Distribution

24. As Appendix B makes clear, although individual well sites can raise controversial environmental issues, it is the processing and distribution facilities—particularly the gathering stations which separate, purify and treat the raw material—that are likely, for example, to take up the most land and to be visually obtrusive. There is limited flexibility in the siting of these facilities, although it may be possible to conceal them by careful screening, landscaping and design, and by sinking facilities (including security fencing) below the surrounding ground level. Early discussion between the mineral planning authority and the industry is essential. For the larger fields, it will be particularly important to establish how far surface production facilities are sufficient to handle the expected output from the field or related fields as a whole. These considerations will in any case form part of the development plan operators are required to submit for approval to the Department of Energy under the terms of their licence. In exceptional cases, where fields cross licence boundaries, the Secretary of State for Energy has powers to direct that such a field is worked and developed as a unit.

25. Where a mineral planning authority proposes to grant planning permission for a gathering station or an export terminal, it may feel it necessary to attach certain conditions to that permission—bearing in mind, of course, the general rules about attaching conditions to planning permissions—or to seek an arrangement with the operator, using section 52 of the Town and Country Planning Act 1981. For example, it may sometimes be desirable to control on planning grounds the timing and method of gas flaring, vehicle routeing, equipment type to minimise noise, the specification of the means of disposal of unwanted gas etc., and perhaps most importantly of all the method by which the end product is to be transported away from the gathering station. Operators should therefore indicate clearly in their planning applications those measures which they would expect to submit as part of their development programme to the

Department of Energy. Where pipelines are to be used for transporting the end product, it will be necessary to agree routes, vehicle access, the location of the machinery storage areas, and of pipes, pipe-laying equipment and other constructional materials, in order to avoid environmentally sensitive areas, and to ensure satisfactory operations. If the station and terminal sites are to be in rural areas, it may be necessary to exclude ancillary industrial processes.

Restoration and Aftercare

26. Most mineral planning authorities now have specific policies for the restoration and aftercare of mineral workings, and these should be adequate to cover the particular circumstances of oil and gas development. The restoration of sites following unsuccessful exploration drilling should present few difficulties, and it should normally be possible to restore a site immediately after it has been cleared. In the case of appraisal and production sites, a comprehensive restoration and aftercare scheme should be settled at the time permission is granted, although some details can be agreed later where this makes sense operationally and environmentally. Detailed advice on the imposition of aftercare conditions is contained in DOE Circular 1/82 (WO 3/82). Particular attention should be given to the restoration of sites containing processing facilities, where the removal of plant and equipment at the end of the permitted period may present difficulties unless this is included at the design stage. The average life of an on-shore oil field is 20-25 years, which is long compared with some other mineral operations (for example, shallow sand and gravel pits). This has encouraged the idea of bonds or indemnities guaranteeing that the required restoration work will be carried out at the end of the field's commercial life. The Stevens Committee considered at length whether mineral operators should be required to contribute to a restoration fund or to provide some guarantee of this sort. The Government remains unpersuaded that this is necessary in the case of oil and gas or in other mineral cases, but mineral planning authorities are free to secure such arrangements as can be agreed voluntarily with the operator. The Government welcomes the industry's current investigation into the possibility of a voluntary restoration guarantee system, as has previously been established by the Sand and Gravel Association.

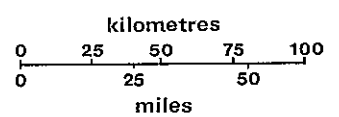
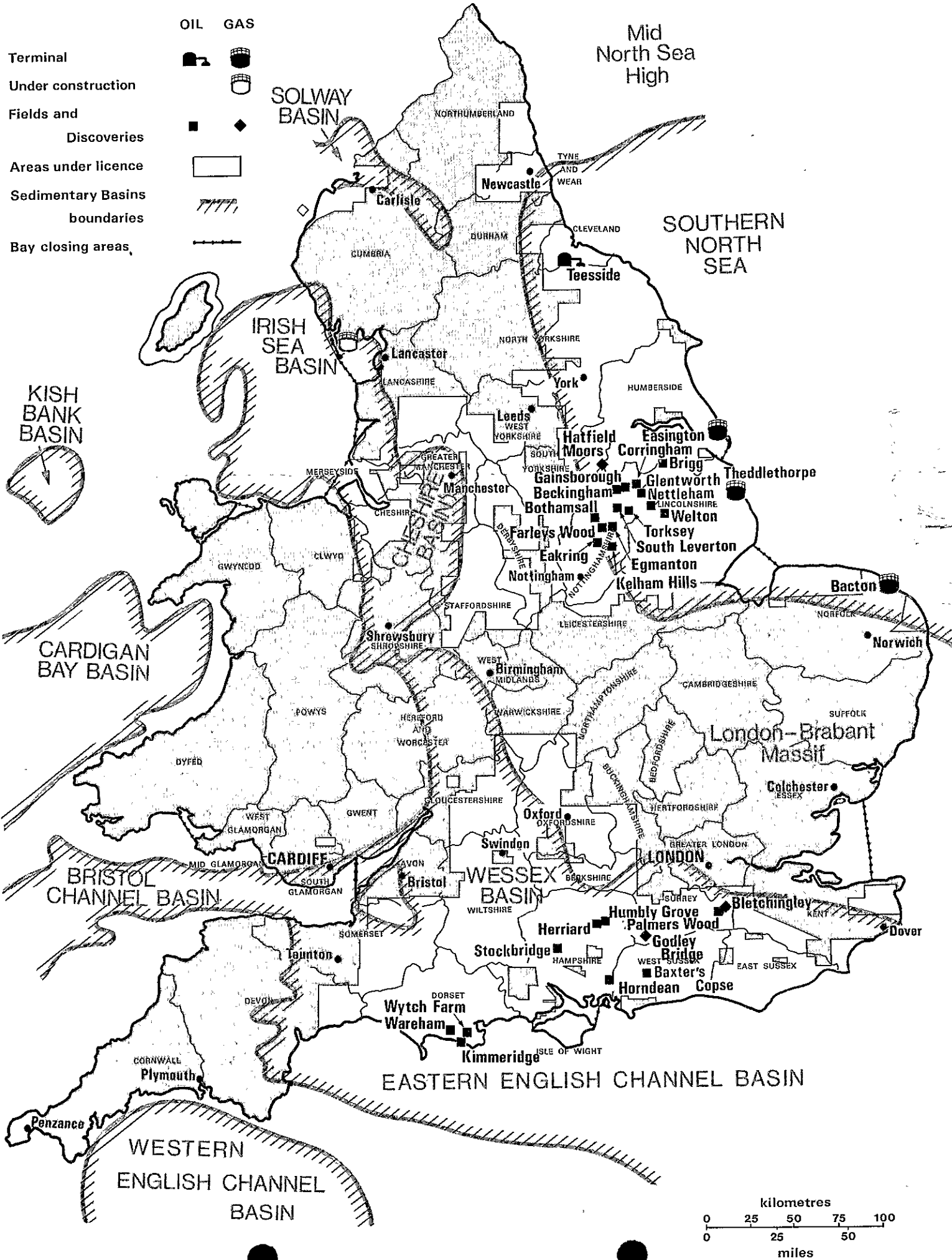
Further Advice on Conditions

27. The new edition of the Memorandum on the Control of Mineral Workings (the Green Book) will cover in general terms all those detailed environmental factors which mineral planning authorities should have regard to in deciding mineral applications. Most of this advice will apply in full to oil and gas development. Adherence to good oilfield practice, and the development of a pollution contingency plan under the conditions of a licence awarded by the Secretary of State for Energy, will provide additional safeguards against pollution from spillage and from the disposal of wastes. These are drawn up in full consultation with those responsible for pollution control and with mineral planning authorities. The Secretaries of State will expect operators to adopt consistently high standards, agreed in advance whenever possible, with local authorities, the Nature Conservancy Council and other environmental bodies. In considering the total impact of an oilfield development it will be important to weigh visual intrusion as against the loss of woodland and agricultural land which may be required as a result of effective screening.

Onshore Oil and Gas

Fig 1

(as at 1.12.84)



Operations in Estuaries and other areas near to the shore

28. Where town and country planning controls do not operate—for example in some estuaries beyond the low water mark and in other areas close to the shore—special procedures are now adopted as part of the licensing system to ensure that planning and environmental issues are fully considered. The previous consultation arrangements are being extended and strengthened, and operators will be required to prepare environmental assessments in cooperation with local authorities, and environmental, fishery and other interests. This will ensure that interested parties are fully aware of related off-shore activity, and where appropriate enable them to help formulate and consider the best environmental options for development both on and off-shore. Further details are given in Appendix A.

OIL AND GAS LICENSING

On-shore

1. The Petroleum (Production) Act 1934, as amended by Section 18 of the Oil and Gas (Enterprise) Act 1982, provides for exploration for and production of on-shore hydrocarbon resources. The Act vests ownership of petroleum underground in the Crown and empowers the Secretary of State for Energy to grant to such persons as he thinks fit licences to search, bore for and get petroleum.
2. The main objectives of the licensing regime are to further the general Government policy of establishing the extent of the country's indigenous hydrocarbon resources. The regime is also intended to provide a framework within which the search for the production of oil and gas onshore can be undertaken in a safe and orderly manner, and to provide a satisfactory balance of safeguards and rights between the Government and licensees. The new regime will also maintain unproven acreage on short term licence and provide a satisfactory longer term licence for production.
3. The licence system in operation from 1972 to 1984 consisted of two licences, for exploration and production, both issued by the Secretary of State for Energy. The exploration licence enabled licence holders to search for petroleum and to drill shallow boreholes to a maximum depth of 350 metres. This licence covered an area not exceeding 500 km² and was valid for various terms up to 6 years in length. The production licence conferred the right to search and bore for and get petroleum. It was valid for an initial 4 years, after which up to half the area originally licensed could be given another 20 year extension. Although the Department of Energy would not authorise the commencement of drilling either for exploration or development until licensees had consulted all interested parties, and obtained the necessary planning permission, the award of a production licence was not conditional on planning permission first being obtained.
4. Criticism of the old system stemmed from the lack of requirement upon the licensee to establish beyond doubt the extent of the hydrocarbon resource before a production licence was issued. This meant that a production licence was a pre-requisite of exploration and appraisal. In addition there was a general desire to separate clearly both exploration and appraisal stages from the production stage.
5. The new licence system brought into effect in January 1985 reflects the main stages of onshore hydrocarbon development, with three licences required for the full exploitation of a hydrocarbon field. Following advertisement of a new Round of licence awards, the applicant will apply for an Exploration Licence which, if granted, is valid for 6 years and covers a 10 x 10 sq km block or blocks. The Licence will confer rights to carry out seismic investigations and drill deep exploratory boreholes (subject to the permission of the landowner or occupier, and to obtaining planning permission), but not to produce (beyond an initial test) hydrocarbons.
6. Following a successful exploration period, an Appraisal Licence may be applied for. This will be for a 5 year term (extended at the Secretary of State's discretion) and will be awarded for the specific area of any discovery to enable the testing and appraisal of a field. It will allow the preparation of a satisfactory development programme to be undertaken and enables the applicant to apply for planning permission to exploit a commercial field.

7. The third licence is the Development Licence for which the Exploration and Appraisal Licences will be pre-requisites. The Development Licence will have a 20 year life renewable at the discretion of the Secretary of State. It will normally be awarded for the specific area of the discovery, and only after planning permission has been obtained by the operator and a satisfactory development programme submitted to the Secretary of State.

8. These changes in the licensing system have no direct influence on the planning regime, though they emphasise the requirement of planning permission before the development of a hydrocarbon field can take place. The Department of Energy will require evidence from licensees that local authorities have been consulted on seismic surveys. Planning permission will continue to be required before the deep drilling of both exploratory and appraisal wells can be undertaken, and the Department of Energy will continue to require proof that the necessary planning permission has been obtained for deep drilling and production, and that all necessary consultations have been completed before authorising commencement of these activities.

Oil and Gas in Estuaries

9. Estuaries, and certain other inshore waters included in "bay closing areas" (see fig. 1), although in most cases outside the planning regime, are covered by the onshore licence system, and are affected by the new landward licensing arrangements described above. The Government recognises that the exploration and development of hydrocarbon resources in these areas may give rise to strong environmental conflicts, in respect of wildlife habitats, amenity and tourist interests, as well as difficulties with navigation and fishery interests.

10. In recognition of the conflicts which may occur, the Government has adopted the following procedure. Firstly, prior to the award of an exploration or appraisal licence, the Government will undertake consultations, to include mineral planning authorities, on the need for restrictions on operations, and on whether there should be a requirement for the developer to consult or notify interested parties before carrying out operations. Any requirements arising out of the consultation procedure will be made a condition of the award of the licence.

11. Secondly, if a company wishes to undertake production from a well sited in an estuary, the Department of the Environment will be asked by the Department of Energy to undertake a "Government View" procedure similar to that which is currently operated for marine dredging of other minerals such as sand and gravel. As part of this procedure, consultations will take place with other Government Departments whose interest might be affected—for example, the Department of Transport (navigation, ports, oil spill contingencies), the Ministry of Agriculture, Fisheries and Food (fisheries and marine pollution), the Ministry of Defence, and the Crown Estates Commissioners—as well as with mineral planning, pollution and coast protection authorities, and with bodies representing environmental interests such as the Nature Conservancy Council and Countryside Commission. In relation to licences awarded prior to 1985, operation of this procedure will enable account to be taken of the views of all interested parties on a licensee's proposed Development Plan, and enable the Department of the Environment to advise the Department of Energy on the acceptance or rejection of this Plan. Where the new licensing arrangements apply, consultation will take place prior to the award of a Development

Licence. Oil spill contingency plans will in all cases be required at exploration drilling, appraisal and production stages. Developers are encouraged to prepare environmental assessments of their proposals for estuarine development as they are for proposals in sensitive on-shore areas.

Off-shore

12. The off-shore licensing system consists only of two licences—an Exploration licence and a Production licence. Both types of licence are issued by the Secretary of State for Energy under the Petroleum (Production) Act 1934, as extended by the Continental Shelf Act 1964, and relevant Regulations. Off-shore exploration licences may be applied for at any time and enable the licensee to explore for oil and gas anywhere in the designated area of the UK Continental Shelf, except in areas already covered by production licences. Off-shore production licences are issued in "Rounds" and give the licensee the exclusive right to search for and get oil and gas in a specified area.

13. Within the areas covered by off-shore licences, operations in coastal waters will be of particular interest to local authorities. Appropriate safeguards for blocks to be licensed in these waters will continue to be developed on a case by case basis, but are likely to be similar to those set out for estuaries.

STAGES IN ON-SHORE HYDROCARBON DEVELOPMENT

1. In recent years, it has become usual to consider on-shore hydrocarbon development as a three stage process: exploration, appraisal and production. Whilst this categorisation is broadly correct, it does rather belie the interrelated nature of the operations. In particular, it suggests that there is a universally accepted method of appraising and developing an oil field or oil fields. This is not so. Each oil field will exhibit particular characteristics and raise unforeseeable problems which will require a specific design approach or individual remedy. The description below outlines the main activities which may be expected, but also draws attention to particular sets of circumstances which may arise during on-shore hydrocarbon development.

Exploration

2. Exploration activity begins with a seismic survey of an area previously identified by geologists as having hydrocarbon bearing potential. Many seismic surveys are now carried out using the "vibroseis" method which involves sending small shock waves into the earth by means of vehicle mounted vibrators. The returning waves, reflected by the earth's strata, are recorded by equipment carried aboard a control vehicle.

3. While the "vibroseis" method described above accounts for many surveys, certain geological and surface conditions require that explosive sources be employed. In these circumstances a shot-hole is drilled, typically to a depth of 60 feet, and a charge of dynamite (say 15lb) is loaded. As the "vibroseis", returning waves are recorded, after which the shot-hole is plugged and made good.

4. If the seismic survey identifies a subsurface structure of interest, permission may be sought to sink an exploratory borehole. Drilling into a structure is the only known method of determining whether or not hydrocarbons are present.

5. Whilst there are good operational reasons for the surface location of the borehole to be directly above the crest of the structure, there may be limited scope for lateral movement. The extent of such a shift is largely dependent upon geological criteria, in particular the depth of the horizons to be investigated and the presence of faults. Clearly, environmental criteria also play a significant part in selecting a location from which to drill.

6. The main objective of an exploratory well is to establish whether or not hydrocarbons are present in a previously identified geological structure. However, whether or not hydrocarbons are encountered, the geological information the well yields is of vital importance to the wider search for hydrocarbons. Accordingly, the fact that an exploratory borehole is plugged and abandoned as a "dry hole" does not mean that the project was not worthwhile.

7. Experience has shown that exploration drilling on-shore is a very short-term, intensive activity. Typically, site construction, drilling and restoration may take twelve weeks or less. In the South of England, drilling has generally taken five weeks or less. This timescale is extended if hydrocarbons are encountered, to allow for production testing. The rig is normally retained for an additional ten to fourteen days in order to line the

borehole with steel casing and carry out a variety of short-term tests and measurements in order to obtain some idea of the flow characteristics of the reservoir and more detailed knowledge of the hydrocarbon behaviour. If the results of such tests are sufficiently interesting, much longer tests will have to be carried out to appraise more fully the commerciality of the find. These longer-term tests will be considered as part of the appraisal phase.

Appraisal

8. The appraisal of a structure can take several forms including running additional seismic coverage and longer-term tests, and will probably include the drilling of additional wells. Much will depend on the size and complexity of the geological structure involved. Before appraisal drilling takes place additional seismic data may be required. In the case of large structures, the limits of which are not accessible by deviated (directional) drilling, additional drilling site(s) at a distance from the discovery site will be required to appraise the structure adequately. These sites will normally be selected with a view to their retention for production purposes—should the appraisal programme indicate that production from the discovery is a commercial proposition. It is possible that more than one borehole will be required from each appraisal site. Smaller geological structures may possibly be appraised by deviated wells drilled from the original exploration site. In addition, there may be circumstances in which it is considered desirable to drill deviated boreholes for appraisal purposes from the discovery site before deciding whether to seek an additional site or sites. All appraisal wells which encounter commercial quantities of hydrocarbons will be cased, and then be subject to long-term production flow testing. Those which do not may be cased for observation purposes.

9. Long term production testing can be an important method of evaluating a field and may continue over many months. Normally this will involve the installation of a pump and storage tank(s). No decision would be made to draw up proposals for production facilities until the appraisal and associated testing programme had been completed.

Production

10. Once a company has evaluated the results of its appraisal and testing programmes, and is confident about the commercial viability of the discovery, proposals can be drawn up for production facilities.

11. Hydrocarbon production normally involves the drilling of additional wells from the existing sites, and possibly from additional sites if these are considered necessary to drain the reservoir(s) adequately. In addition, a gathering station is required to separate the oil, gas and water from the well products and thereby render the oil and/or gas suitable for longer distance transportation, usually by pipeline. Oil from the production wells may flow under its own pressure, or it may have to be pumped to the gathering station, which need not necessarily be in close proximity to the production wells, although it is often preferable on operational grounds.

12. The oil and gas are then transported from the gathering station to an export terminal where they are first stored and then taken from there via road, rail or pipeline, or some combination of all three. The export terminal generally consists of storage tanks, administration offices and despatch facilities. Within the limitations imposed by pipeline construction, an export terminal can be located adjacent to the existing transportation network or to the field. The production life of an on-shore oil field can be up to 20-25 years, after which time the facilities can be dismantled and the sites restored to their former use.

13. Throughout the sequence of events outlined above, the Department of Energy and the Health and Safety Executive work closely together in the evaluation and approval of each proposal from a technical and safety point of view. The Department of Energy also consider very carefully such other matters as the proposed rate of production (depletion), the technical and financial competence of the operator or consortium, the existence of adjoining prospective structures and the need to appraise them before the development commences. The Department of Energy is prepared to advise mineral planning authorities on these matters.

SOME SOURCES OF ADVICE IN RELATION TO OIL AND GAS OPERATIONS

A. INSTITUTIONS ETC

Energy, Safety and Development Aspects

The Department of Energy—advice on:

The licensing system

Technical development of oil and gas fields

Operating requirements

Pipeline inspection and safety

The Health and Safety Executive—advice on:

Control of air pollution (Industrial Air Pollution Inspectorate)

Safety of drilling sites and operations (Mines and Quarries Inspectorate)

Major hazard investigation

The Institute of Petroleum

British Geological Survey—advice on the geology of oilfields

Environmental Aspects

The Department of the Environment—advice on:

The planning system

Environmental and countryside policy

The Department of Transport—advice on:

Oil spill contingency arrangements

The Ministry of Agriculture, Fisheries and Food—advice on:

Marine pollution

Fisheries

Welsh Office

Nature Conservancy Council—advice on:

Wildlife and nature conservation

Countryside Commission—advice on:

Countryside impact

Water Authorities in England and the Welsh Water Authority—advice on:

Protection of groundwater supplies and aquifers.

B. PUBLICATIONS

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