

Dorset HYDROCARBONS



What are Hydrocarbons?

Hydrocarbons are naturally occurring, liquid (petroleum) and gaseous (natural gas) compounds of hydrogen and carbon which were formed many millions of years ago from microscopic plants and animals which lived, generally, in a marine environment. Accumulating on the sea bed when they died, the organisms became buried in fine clay-like sediments. In the absence of oxygen and under the effects of increased temperature and pressure from the steadily growing thickness of overlying sediments, they decomposed to form oil and gas.

The fine-grained rocks in which these processes occur are referred to as "source" rocks. However, the hydrocarbons have normally moved or migrated from the source rocks into the pores and fissures of coarser "reservoir" rocks such as sandstone or limestone. Commercially important deposits can occur where the hydrocarbons become trapped within certain types of geological structures such as "anticlines" or "fault blocks" where the reservoir rock is overlain by an impervious bed or "caprock" that prevents further migration of the hydrocarbons.

The search for hydrocarbons therefore requires three broad elements. First, the regional geology has to be suitable. This generally means the presence of a major sedimentary basin of approximately the correct geological age. The Hampshire Basin, of which Dorset forms a western extension, is such a region. Second, within the basin there must be suitable reservoir rocks and traps. These are normally located by geophysical surveys. Finally, the presence of oil within the trap can only be determined by exploratory drilling.

The Planning and Licensing Position

In addition to the need for planning permission, conventional oil and gas operations are the subject of a separate licensing system by the Department for Trade and Industry (DTI). The DTI issues licenses for three distinct phases of oil and gas development – exploration, appraisal and production. Each phase requires a separate planning permission.

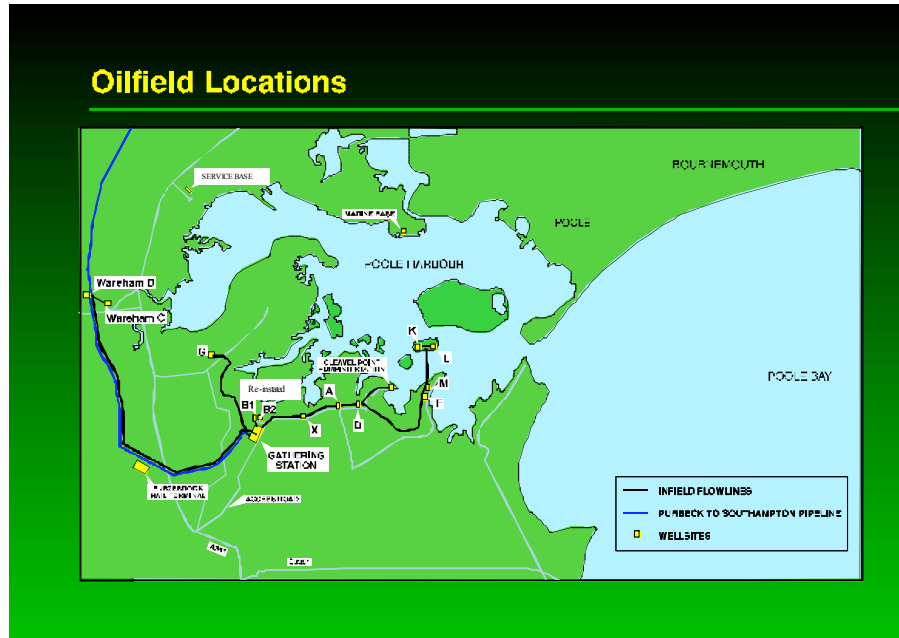
Exploration Licences are valid for a period of six years and give the sole right to the licensee to search for oil and gas, including seismic surveys and drilling. Appraisal Licences are awarded following the initial discovery of oil.

They are valid for five years and enable the licensee to evaluate the commercial viability of a discovery. Finally, Development Licences are granted initially for a period of 20 years to enable the field to be exploited.



Hydrocarbons in Dorset

Dorset has a long association with oil and gas exploration and production, with initial searches in the 1930's and the first commercial discovery at Kimmeridge in 1959. Interest in local oil shales had of course been around for a much longer period. The discovery of a significant oilfield in the Bridport reservoir at Wytch Farm in the early 1970s put Dorset in the forefront of oilfield development and intensified the search for oil throughout southern England.



The discovery of further commercial reserves, including those under Poole Bay, led to the Wytch Farm development becoming the most productive onshore field in Europe, reaching output levels of 100,000 barrels per day (bpd). This has since fallen to a current level of around 30,000 bpd or 2% of UK daily consumption. By comparison, Kimmeridge produces about 80 bpd.

There remains interest in further exploration in south Dorset, including the Dorchester area.

Production and Distribution in Dorset

Oil from Wytch Farm is transported by pipeline to Southampton Water and domestic gas is fed into the mains supply at Sopley in Hampshire. Until recently, the liquid petroleum gas fraction was exported by rail from Furzebrook, but the reduced quantities are now transported by road tanker.

On the whole, hydrocarbon exploration, appraisal and production in the County has had relatively little impact on the local environment. This is partly as a result of the nature of the operations themselves, which are fundamentally different in their limited land-take and more flexible locational requirements, compared to other forms of mineral working.

Issues for discussion

- Should exploration be encouraged?
- Does the production of hydrocarbons have major impacts on the environment?
- If so, what are the major impacts and how can these be addressed?