

OIL TERMS

A Dictionary of Terms used in
Oil Exploration and Development

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Leo Crook

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Leo Crook

INTRODUCTION

Much of the equipment used in the oil industry and especially in the exploration and drilling operations is quite unique when compared with other fields of engineering. Over the years this new technology has developed its own terminology and it is of great value, if not essential, that newcomers to the industry, journalists, and those wishing to compete with longstanding suppliers should familiarise themselves with every possible aspect of the exploration, drilling and production methods, equipment, and the 'language' involved.

In the following pages, therefore, this terminology is listed and described and much of the equipment peculiar to the exploration and drilling operations is illustrated. This book will be a valuable reference work, even for the experienced oil man but, more importantly, it will be useful as an introduction for the many individuals, companies and organisations, who whilst experienced in their own industries, have little or no previous contact with the exciting field of oil exploration, drilling and production.

OIL EXPLORATION AND DEVELOPMENT

The presence of promising reservoir formations in the seas around the British coastline have been known to geologists for many years but only recently have engineers been in a position to tackle the multitude of almost insurmountable problems presented by water depths and weather conditions never before encountered anywhere in the world. Although engineers are at present only considering production problems in a water depth of 450 to 600 feet in the North Sea area, major oil companies are already planning production from fields in depths of water in the 1000 to 2000 feet range in other parts of the world.

Obviously, drilling and production requirements will be very different from present techniques used for operating in shallower depths. It will be necessary to design and develop entirely new methods of operation and equipment to handle environmental, pressure and production problems which have never previously been experienced and which will demand an approach which, in our present situation, may appear to be bordering on the realm of science fiction.

Without going too deeply into the problems of the future we already have enough problems to tax existing expertise to its utmost if we are to drill, produce and pipe the known oil reserves in the North Sea area at a sufficient rate and financial consideration to satisfy the immediate needs of the United Kingdom, especially if we are to compete successfully with the importation of oil from overseas and the Middle East. It is a frightening thought to realise that overseas producers need only reduce the price of a barrel of oil by a few dollars, which they could easily accommodate, in order to create a situation where it would not be financially worthwhile to continue with North Sea operations.

In oil exploration the first step is for the geologist to identify an area where sedimentary rock formations of a suitable age exist and where, hopefully, reservoir conditions are suitable for the retention of oil and gas. The geophysicist then examines the identified area and attempts to identify anticlinal structures which are sealed by a cap rock and therefore present the most possible prospect of containing entrapped oil or gas. Unfortunately, neither the geologist nor the geophysicist is able at this stage to guarantee that hydrocarbons are actually present in a formation and consequently the only means of proving the prospect is by undertaking a very expensive drilling programme.

Even using the most modern equipment and technology, it is frequently necessary to drill some twelve to twenty wells in a wild-cat area before it is possible to evaluate the prospects of the existence or potential of a reservoir. Obviously, drilling costs are very much higher in regions of deep water than on land and a single well in a remote area or at sea may easily cost £1 million or more to drill.

The chances are that many dry holes will be drilled before a commercial find is established and consequently the petroleum engineer and the accountant are continually called upon to decide whether the expense of a drilling programme is justified and, if so, at what stage it should continue or should be abandoned if evidence does not support the hope of a discovery which will eventually provide a profit of reasonable proportions. This is unfortunately a situation which is not always fully appreciated by some governments who are inclined to examine the picture after a major discovery has been established, and then feel that they should be entitled to cash-in on the profits without accepting any of the risk costs. This approach has, in the past, been responsible for retarding progress in some overseas areas and in some cases has resulted in almost complete strangulation of the exploration programmes.

It is well to appreciate that major oil companies who are able to finance the huge projects involved are more than liable to invest their money in more profitable ventures in other areas if the authorities introduce conditions which are considered to be unreasonable and prevent a fair return on their investment. Like it or not, the major oil companies have access to finance and technical expertise which