Definition of Terms

Terms frequently used in this report are defined below. These definitions are limited to elements of meaning necessary for this report and should not be construed to be complete technical definitions.

OCS.-The Outer Continental Shelf (OCS) is that portion of the land beneath the ocean off U.S. shores seaward of the three mile state jurisdictional limit, which for the majority of the coastal states is three nautical miles. OCS acreage of the U.S. totals some 560 million acres* of which 10 million have been leased.

Frontier Areas.—Frontier areas of the OCS are those which have not yet been explored and are generally considered suitable for leasing. A number of specific regions in the Atlantic, the Gulf of Mexico, the Pacific and around Alaska are identified as frontier areas. The principal ones are (see Figure II–2) :

Georges Bank (North Atlantic)
Baltimore Trough (Mid Atlantic)
South Atlantic
Gulf of Mexico (beyond all present discoveries)
Southern California Offshore
Washington and Oregon Offshore
Gulf of Alaska and Outer Cook Inlet
Bering Sea, Bristol Bay and Norton Sound (Alaska)
Chukchi Sea (Alaska)
Beaufort Sea (Alaska)

Oil *and Gas Reserves.*—Reserves of oil and gas in any field are those quantities which have been identified through drilling. sampling and calculating specific quantities. "Proved" reserves are those quantities in a field which can be recovered with reasonable certainty under existing economic and operating conditions. Only a portion (20-40%) of the total reserves in place can be recovered.

Trap and Field.—Oil and gas are found in commercial quantities because these hydrocarbons tend, by geologic recesses, to concentrate in particular rock formations overlong periods of time. Certain kinds of subterranean geologic features are known to have acted as "traps" for oil and/or gas, and such traps are commonly described by geologists as having the potential of containing hydrocarbons. The process of exploring or oil and gas is thus focused on finding traps where petroleum may have been collected. When a trap has been identified and subsequently, through exploratory drilling, found to contain commercially producible quantities of oil or gas, it is then designated a "field." A field is thus a trap in which commercial amounts of oil or gas have been discovered.

Structural and Stratigraphic Traps.—There are two principal geologic descriptions of traps which typically contain commercial quanti-

* U. S. Department of the Interior, "Outer Continental Shelf Statistics . . . 1953 through 1972," p. 1'5.

tities of petroleum: structural traps and stratigraphic traps. These terms describe the rock layer formation that surround a given trap. A structural trap is one typified by a particular conformation of the natural layering characteristic of sedimentary rocks. A stratigraphic trap is one typified by alterations in the composition of the natural layering .

Block- It is common for a large trap to be divided by vertical shiftings of formations known as "faults." Each section of a major trap so separated is known as a block (or sometimes "fault-block?'). An individual block can thus be considered a smaller sub-trap which is part of but not connected with the rest of the main trap.

Exploration.— Simply defined, exploration involves two major steps: **geophysical surveys** and exploratory drilling. More broadly, exploration for oil and as is the entire process of broad and specific surveys and collection of indicative data on an area followed by detailed geophysical delineation of geologic features and by drilling of holes into potentially productive traps. Exploration is completed if oil or gas is found. Additional exploration work—the drilling of more holes- may be done after a discovery to further delineate a field. Exploration involves a high economic risk, since there is the high probability that no discoveries will be made, particularly in frontier areas. In the offshore oil industry, even after detailed surveys are conducted, only one drill hole in ten can be expected, on the average, to show a commercial discovery, and there are wide but unpredictable variations, in particular cases, from the average.

Geophysical Surveys.—Geop hysical exploration is an indirect method of mapping subbottom geol ogical forms and features to show submerged structures and interfaces. The principal method used is the seismic (or acoustic) survey, a technique of producing precise sounds (of discrete frequencies and intensities) which are variously reflected and refracted from underground layers and then measured at the surface. The measurement of natural gravity and magnetic fields also helps define the geology of an area. Having become a major component in oil exploration, the seismic survey is typically employed extensively in any offshore area prior to drilling. Seismic techniques have become much more sophisticated in recent years and are used both to identify good **poteential traps and to locate the most** promising site for drilling an exploratory hole.

Seismic Line Mile.—Seismic surveys are normally conducted from a ship equipped with geophysical data-gathering instrumentation. The ship proceeds along pre-determined lines following a grid on the surface above a given area. Many miles of closely-spaced crossing lines are necessary to survey a major area. A seismic line mile is a typical unit of measure of these survey lines.

Core Drilling.—Drilling, sometimes called stratigraphic drilling, is done to obtain samples of sedimentary rock. These rock samples provide a valuable means of interpreting geophysical data, primarily those obtained by seismic techniques. Until such samples of the rock have been obtained, the exact speed at which sound travels through individual layers is difficult, if not impossible to determine. (See Geophysical Surveys,) above.)

Exploratory Drilling.-Exploratory drilling is the second phase of an exploration program. In offshore areas it is accomplished by means

of some floating or "jack-up" type of mobile drilling rig, which can be moved from place to place to drill into traps located by geophysical methods. The primary purpose of exploratory drilling is to get a "yes" or "no" answer as to whether there is, in fact, oil or gas in a given trap. Coring and data logging techniques within the exploratory well may be necessary to make this determination and to provide certain additional geologic information. Data logging involves the lowering of a sensor (acoustic, gamma-ray, etc.) down a drill hole to obtain formation data.

Developmemt and Production.—Basically, development of an oil and gas field begins after discovery of accumulations in commercial quantities. It includes definition of the extent of potential reserves, production rate estimates, and construction and installation of facilities for production of the field, including the means to deliver the product to a loading point. Production of the oil or gas begins only after a reasonable estimate has been made of the approximate amount and potential flow rates of the oil or gas found and completion of the installation of necessary facilities and the drilling of producing wells. (Oil and gas can occur together in a field or separately. There is usually some gas associated with all oil fields, but there can be significant occurrences of gas with little or no oil.)

Tract.—A compact area of up to 5,760 acres (3 miles square), defined in the OCS Lands Act of 1953 as the maximum unit of area offered in each lease sale issued pursuant to the Act.

Unitized Exploration or Production.-In situations where a trap may underlie multiple tracts, the lease-holders agree that a single one of them (thus "unitized") will make the exploration and/or development effort, with all sharing the costs (and possible returns) on a pro rata basis.