

MODERN TOOLS FOR STRATIGRAPHIC EXPLORATION

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ABSTRACT

Petroleum exploration techniques are rapidly changing. The well-used methods of the past, which admittedly found tremendous reserves, are not adequate for today's stratigraphic exploration and development programs.

It is said that if future demand is to be met, oil and gas must be discovered at twice the present rate—which is at a twenty-year low. Therefore, we say that the problem for the geologist today is the proper utilization of the new methods at his disposal. Refined mapping procedures, formation analysis, geophysical methods, core analysis, and advanced logging techniques have developed new concepts which open the door to new approaches to exploration. Most of these new techniques being developed are timesavers, and their growing usage will make oil finding a more exact science.

In the area of research and development, some recent programs include:

Use of computers to handle the vast amounts of data necessary to map deep cross sections over wide areas.

Use of new data-processing techniques, by U. S. oil companies, for reworking an estimated 2.5 billion dollars worth of seismic records gathered over the years.

Programs for putting log data on computer tapes and punch cards for interpretation, correlation, and cross-section studies.

Advanced research studies on paleontology, grain sorting, dating, and sedimentation.

The geologist today has at his disposal computers and analysis procedures with which he can correlate massive amounts of related data. Even with this expanding knowledge, oil scientists are still searching for better ways to discover "stratigraphic traps." These, as we all know, are hard to find. Yet, some of the world's biggest fields, such as East Texas and Lake Maracaibo, are stratigraphic traps. The challenge then—for all of us—is how well we adapt and use the tools of mathematics, electronics, nuclear physics, chemistry, and other sciences in the search for "stratigraphic oil." There are still giants to be found.