NORDINE AIT LAOUSSINE, A. MEGATELI, A. SAÏD, and T. E. DALY, SONATRACH, Alger, Algeria

OFFSHORE ALGERIA—A GROWING INFANT

Exploration of the continental margin of Algeria is a natural result of the search for additional production and reserves by SONATRACH, the national Algerian oil company. The narrow shelf along much of the Algerian coastline discouraged exploration until 1965, but the rapid development of deep-water-drilling and completion techniques during the last 4 years has greatly increased interest in this area. The first offshore studies by SONATRACH, made in 1967, involved a comparison between the costs of exploring the offshore area and those of exploring the Algerian coastline. These studies indicated that the most economical method of exploring the coastline was to conduct offshore exploration first. In this manner, areas of interest suggested by the offshore results could provide leads to the most attractive areas of the coastline. A reconnaissance marine-seismic survey was completed in 1968. The results of this survey, and the rapid progress in marine drilling and completion techniques, indicate that exploration along the continental margin of Algeria may be much more rewarding than had been supposed.

AUGUSTUS K. ARMSTRONG and J. T. DUTRO, JR., U.S. Geol. Survey, Menlo Park, Calif.

CARBONATE FACIES AND CORAL ZONATION, MISSISSIPPIAN, KOGRUK FORMATION, LISBURNE GROUP, DE-LONG MOUNTAINS, BROOKS RANGE, NORTHWESTERN ALASKA[1]

The Kogruk Formation, 1,500 to 2,000 ft thick, is composed of marine carbonate rocks deposited in normal-marine to shoal-water environments. Carbonate rock types typically are bryozoan, echinoderm packstone and wackestone, and lesser amounts of calcareous mudstone, and oöid grainstone and packstone. Dolomite and other carbonate sedimentary rocks characteristic of intertidal and supratidal environments are absent in the sections studied. The Kogruk Formation was deposited in an open-marine environment on a subsiding shelf on which carbonate deposition and subsidence were near equilibrium. Only minor oscillations in environments of deposition are seen in a typical section. Lithostrotionid coral faunas are best developed adjacent to the shoal-water facies.

Two major coral faunas are recognized. The older, 600–800 ft above the base of the Kogruk Formation, consists of *Lithostrotion* (*Siphonodendron*) *sinuosum* (Kelly), *L.* (*S.*) *warreni* (Nelson), *Lithostrotionella mclareni* (Sutherland), *Thysanophyllum astraeiforme* (Warren), *Thysanophyllum orientale* Thomson, and *Sciophyllum lambarti* Harker and McLaren. This fauna is of middle Meramecian age. The younger coral fauna is in the highest 600–800 ft of the Kogruk Formation and contains many of the species of lithostrotionids which are present in the lower beds, plus *Lithostrotionella* aff. *L. macouni* (Lambe), *L. banffensis* (Warren), a new species each of *Lithostrotionella* and *Sciophyllum,* and two species of *Faberophyllum.* This fauna is of late Meramecian age.

[1] Publication authorized by the Director, U.S. Geol. Survey.

DONALD R. BAKER, Rice Univ., Houston, Tex., WILLIAM S. FERGUSON, and GEORGE E. CLAYPOOL, Marathon Oil Co., Denver, Colo.

ORGANIC GEOCHEMISTRY AND PETROLEUM DISTRIBUTION ON CHEROKEE PLATFORM, KANSAS AND OKLAHOMA[2]

In southeastern Kansas and northeastern Oklahoma rocks of the Cherokee Group (Desmoinesian, Middle Pennsylvanian) were deposited across the Cherokee platform—a part of the Mid-Continent craton. These sediments are a clastic sequence of the coal-cycle association. Cyclothems composed of several thin, persistent lithosomes characterize the section. The sedimentary sequence indicates a depositional model of fluctuating conditions which, from a tectono-environmental viewpoint, may be regarded as an *unstable shelf* dominated by nonmarine and shallow-marine environments (*e.g.,* fluvial, swamp, lagoonal, and littoral).

The Cherokee platform is flanked by other Middle Pennsylvanian tectonic features. The mildly positive Ozark dome on the east, the active Nemaha ridge on the west, and the cratonic shelf area on the north affected significantly the depositional history of the platform. The most important influence was the adjacent Arkoma basin on the south. The Arkoma basin was an actively subsiding *marginal basin* between the craton and the orogenic Ouachita system. Rocks of Desmoinesian age in the Arkoma basin are a clastic wedge whose principal source area was the Ouachita orogenic region. Rapid sedimentation in the Arkoma basin kept pace with subsidence. As a result, the basin floor generally was close to sea level. Hence, most of the clastic wedge consists of coarse terrigenous clastic strata, shale, and coal, and was deposited under nonmarine conditions. Desmoinesian strata of the clastic wedge are partly continuous with Cherokee platform rocks. Much of the detritus deposited on the platform (including carbonaceous matter) was derived from the south and transported across the nonmarine Arkoma basin. Although the strandline fluctuated widely, its average position was near the craton-marginal basin hingeline.

Organic geochemical aspects of the Cherokee platform sediments were influenced by the tectono-environmental setting. This influence is displayed by regional contour maps of organic geochemical properties. For example, contour maps of organic carbon, hydrocarbon, and carbon-isotope data display regional variations related to the clastic wedge on the south and more persistent marine depocenters on the shelf. Most regional geochemical variations of the Cherokee section can be related to variations in the proportion of the different rock types making up the section. However, some rock types display smaller but significant regional organic geochemical variations, which also appear to be a response to differences in the tectono-environmental setting across the platform. Perhaps the most important single aspect that controlled the organic composition of these sediments was the interplay between marine (*in situ*) and terrestrial (detrital) organic sources. Rate of sedimentation, rate of burial, and postdepositional effects were less important in causing observed variations.

The geochemical results support the "shelf principle" of petroleum origin. Specifically, the regional organic geochemical contour maps suggest a rational explana-

[2] Presented with permission of Marathon Oil Co.