



DISCUSSION

Since the discovery of the giant Prudhoe Bay field in 1968 and the subsequent exploration in northern Alaska, new data have added immensely to the understanding of the stratigraphy of rocks underlying the North Slope coastal plain. The four correlation sections of wells presented here show the regional stratigraphic relations of Mississippian through Tertiary rocks across the little deformed part of the North Slope.

The stratigraphic section consists of two sequences, the northward-thickening Ellesmerian sequence and the overlying southward- and southwestward-thickening Brookian sequence. The Ellesmerian sequence consists of Mississippian through lowermost Cretaceous rocks (Enderby Group through public shale unit) and the Brookian sequence consists of Aptian(?) and Albian (lower Cretaceous) and younger rocks, in which the east- and southwestward-prograding facies are highly diachronous. A regional unconformity at the base of the public shale unit (or Kank sandstone and lateral equivalent) represents progressively older rocks to the north and dies out to the south. This unconformity in the Brookian unconformity associated with the opening of the Canada basin to the north (Grants and May, 1967).

The correlations of the Brookian rocks in the national Petroleum Reserve in Alaska (NPR) are based largely on well-log character and seismic data, whereas correlations to the east are based on well-log character, some microfossil map data, a small amount of seismic data, and a combination of depositional patterns observed in NPR. Paleontologic determinations were by Roger Berg and formalized determinations were by Michael A. Misher, both of Microplacina Consultants, Inc. of San Diego, California. Inferences in correlation will probably be necessary as more paleontological data become available. Furthermore, additional well data will better delineate the unconformity, such as between the public shale unit and lowermost Cretaceous rocks in Section No. 1, data from two wells drilled between these wells in 1964 were not available at the time of this publication.

Terminology of Brookian rocks (the shale and Canning formations) in the eastern North Slope is from Molnar and others (1968).

The appropriate base of late Cenozoic turbidite transgression is used as a datum for section 2, and a variable datum is used for section 3, in which the lower topset or shif beds are held approximately flat.

Significant indications of oil or gas are shown at some wells. If there were only the Prudhoe Bay and Kuparuk fields (section 1) are prohibiting most of the other wells are abandoned, but some are suspended pending possible future development.

Vertical reflectance (R_v) data were provided by L. S. Hagood (oral comm., 1968).

EXPLANATION

FORMATION OR MEMBER CONTACT
INTERFOLDING OR DIACHRONOUS CONTACT
UNCONFORMITY
TIME LINE
COLL. CONGLOMERATE
SS. SANDSTONE
SLS. SILTSTONE
SH. SHALE
LS. LIMESTONE
CALC. CALCAREOUS
GAM. GAMMA RAY
RES. RESISTIVITY
SP. SPONTANEOUS POTENTIAL
SIGNIFICANT GAS SHOW OR PRODUCEABLE ZONE
SIGNIFICANT GAS SHOW OR PRODUCEABLE ZONE
BARRELS OF OIL PER DAY
THOUSANDS CUBIC FEET OF GAS PER DAY
RECOVERIES SHOWN ARE FROM DRILL-STEM TESTS

REFERENCES

Grants, Arthur, and May, S. D., 1967. Briefing history and structural development of the continental shelf north of Alaska. In Drake, C. L., ed., Studies in continental margin geology of the American Association of Petroleum Geologists, vol. 1, p. 77-100.
Molnar, C. S., Drake, C. L., and Kirk, A. S., 1968. Cretaceous and Tertiary stratigraphy of northeastern Alaska. In Tallent, L. L., and Weber, Paul, eds., Abstracts North Slope Geology Pacific Section, Society of Economic Paleontologists and Mineralogists (in press).

EXPLANATION

MOUNTAIN FRONT
WELL SYMBOLS—Numbered wells correspond to wells on correlation sections
• Dry hole
○ Oil well
○ Gas well
○ Suspended oil well
○ Suspended gas well