



**EXPLANATION**

**STRUCTURE CONTOURS**  
(after Howitt, 1971)

- 2200 Marker 19, lowest
- 1300 Marker 10, middle
- - - 500 Marker I, top
- X 1000 (stage) (Mio) Outcrop thickness and apparent age of partial section
- - - 1.6 Geothermal gradient, from Geothermal Survey, North America

**Notes**

This map shows structure contours on several markers in the Tertiary rocks in the Prudhoe Bay area and the regional geothermal gradients.

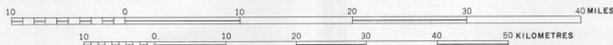
In a report on permafrost, Howitt (1971) summarized the available information on the youngest sediments found in wells along the coastal zone around Prudhoe Bay. His structural maps, based on three marker horizons in the electric logs, are reproduced on this map. The structure indicates northeastward deposition into a nearshore environment.

According to Howitt, pollen suites recovered from cores in these rocks indicate that spruce-pine-hemlock forests were in existence during deposition of the lower part of this section with the addition of some hardwoods during the middle part of deposition. During the last part of deposition, there was only sphagnum moss and non-tree vegetation, implying a cooler climate.

Contours of the geothermal gradient (Am. Assoc. Petroleum Geologists, undated) apparently correlate with other geologic trends. The lower gradients coincide with the deepest part of the Colville basin, and the higher gradients with the thinner section of sediments deposited over the Barrow arch. The inflection of the isograds in the vicinity of Prudhoe Bay may be due to an insulating effect from the hydrocarbon accumulation and/or a slightly greater proportion of poorly conductive rocks. Heat flow in the area of Prudhoe Bay is essentially the same as other regions in the Arctic (Gold and Lachenbruch, 1973).

CONTOUR INTERVALS: 100 OR 200 FEET SUB-SEA LEVEL, 0.20° F./100 FEET

Scale 1:500,000  
1 inch equals approximately 8 miles



Base from Harrison Bay, Beechey Point, Flaxman Island, 1955, Umat, Sagavanirktok and Mount Michelson, 1956, 1:250,000 U.S. Geological Survey

**GENERALIZED STRUCTURE MAP OF TOP, MIDDLE, AND BASAL TERTIARY MARKERS WITH GEOTHERMAL GRADIENTS  
EASTERN NORTH SLOPE PETROLEUM PROVINCE, ALASKA  
COMPILED BY I. L. TAILLEUR AND S. E. ENGWICHT, 1978**

Interior--Geological Survey, Reston, Va.--1978  
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