

CRETACEOUS SEDIMENTARY ROCKS AND
PETROLEUM RESOURCE POTENTIAL,
NATIONAL PETROLEUM RESERVE IN ALASKA

T.C. MOWATT
6711 W. Canyon Road, Tulsa, Oklahoma 74131

Petrographic studies of core samples from Cretaceous horizons in nine wells from the National Petroleum Reserve in Alaska (NPRA), evaluated in the context of other available information, suggest that reappraisal of regional petroleum resource potential may be warranted. Evidence of secondary porosity development in some of these wells, together with the character of much of the Cretaceous section indicates the potential for reservoir rocks to have been developed diagenetically. Heretofore, it has been held that significant reservoirs were unlikely in these rocks.

Consideration of other regional factors, including geothermal gradients, degree of maturation of organic materials, and structural and stratigraphic relationships indicates generally favourable conditions for development of secondary porosity elsewhere within the subsurface of NPRA, in rocks similar in nature to those studied. These same geologic factors are not inconsistent with regional potential for the generation and accumulation of petroleum as well.

Continental shoreline and nearshore depositional environments are recognized as predominant throughout the Cretaceous in this region. Associated organic material thus is likely to be predominantly terrigenous in character. This has led to consideration of the region as essentially 'gas-prone'. However, recently reported work elsewhere confirms the possibility of generation of significant amounts of liquid hydrocarbons from at least some types of terrigenous organic matter.