

**FACIES COMPARISON OF AUTOCHTHONOUS AND ALLOCHTHONOUS PERMIAN AND TRIASSIC UNITS,
NORTH-CENTRAL BROOKS RANGE, ALASKA**

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ABSTRACT

Eight stratigraphic sections of Permian and Triassic rocks have been studied over a 20-by-90 mile (30-by-150 km) area in the Endicott and Philip Smith Mountains of the central Brooks Range. Six of the sections are located on the Endicott Mountains allochthon and the remaining two are parautochthonous columns in the Mount Doonerak area. The sections record a facies transition between the autochthonous Sadlerochit Group and Shublik Formation of the northeastern Brooks Range and the characteristically siliceous rocks of the allochthonous Siksikuk and Otuk Formations of the western Brooks Range.

Laterally continuous and bioturbated beds of fine-grained sandstone, siltstone, and shale dominantly compose the Permian sequence, whereas the Triassic rocks consist of black shales, thin rhythmically bedded siliceous mudstones, and fossiliferous limestones. When the allochthonous sections are restored to a position south of the Mt. Doonerak area, a general shallowing trend from southwest to northeast becomes evident within the reconstructed marine basin. To the south and west, the Permian strata show (1) a marked increase in silica content and (2) the occurrence of barite, with a corresponding decrease in the thickness of the basal coarser grained clastics. The Triassic formations also document an increase in silica and the presence of barite to the south and west, while becoming significantly sooty and phosphatic to the north and east. Ongoing petrographic and micropaleontologic studies of the field data will clarify these general paleogeographic relationships.

AGE AND CORRELATION OF THE OTUK FORMATION, NORTH-CENTRAL BROOKS RANGE, ALASKA

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ABSTRACT

Allochthonous Triassic rocks of the north-central Brooks Range thrust belt were originally mapped as part of the Middle to Upper Triassic Shublik Formation. Recently, these strata were named the Otuk Formation. Detailed paleontologic studies of 11 measured sections more precisely document the age of the Otuk and show that its base is older than the base of the Shublik and that its top is younger than the top of the Shublik. Megafossils (pelecypods and ammonites) and microfossils (Radiolaria, conodonts, and foraminifers) indicate an age range of Early Triassic (Dienerian-Smithian or older) to Middle Jurassic (Bajocian). The lithology consists of 400 feet (120 m) of interbedded, very fine grained rocks (shale, limestone, and chert) representative of very slow deposition, below wave base in an open marine environment. The Otuk Formation does not contain suitable reservoir rocks, but organic geochemical data indicate that the shales are possible oil source-rocks. The Otuk Formation is disconformable with both the underlying Permian (Wolfcampian-Guadalupian) Siksikuk Formation and overlying Lower Cretaceous (Valanginian) coquinoid limestone and shale. These unconformities are correlative with similar unconformities in the northeastern Brooks Range and subsurface of the North Slope. Thus, the Otuk Formation is a condensed, deeper water, more distal equivalent of the Ivishak and Shublik Formations, Karen Creek Sandstone, and lower Kingak Shale of the northeastern Brooks Range and equivalent subsurface units of the North Slope.



NATIVES OF POINT BARROW.

(Healey M. A., Report of the cruise of the Revenue Marine steamer Corwin in the Arctic Ocean in the year 1885: U.S. Revenue Marine, p. 58-59).