DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PRELIMINARY GEOLOGIC MAP AND STRUCTURE SECTIONS
OF THE
SHAKTOLIK RIVER AREA, ALASKA

by
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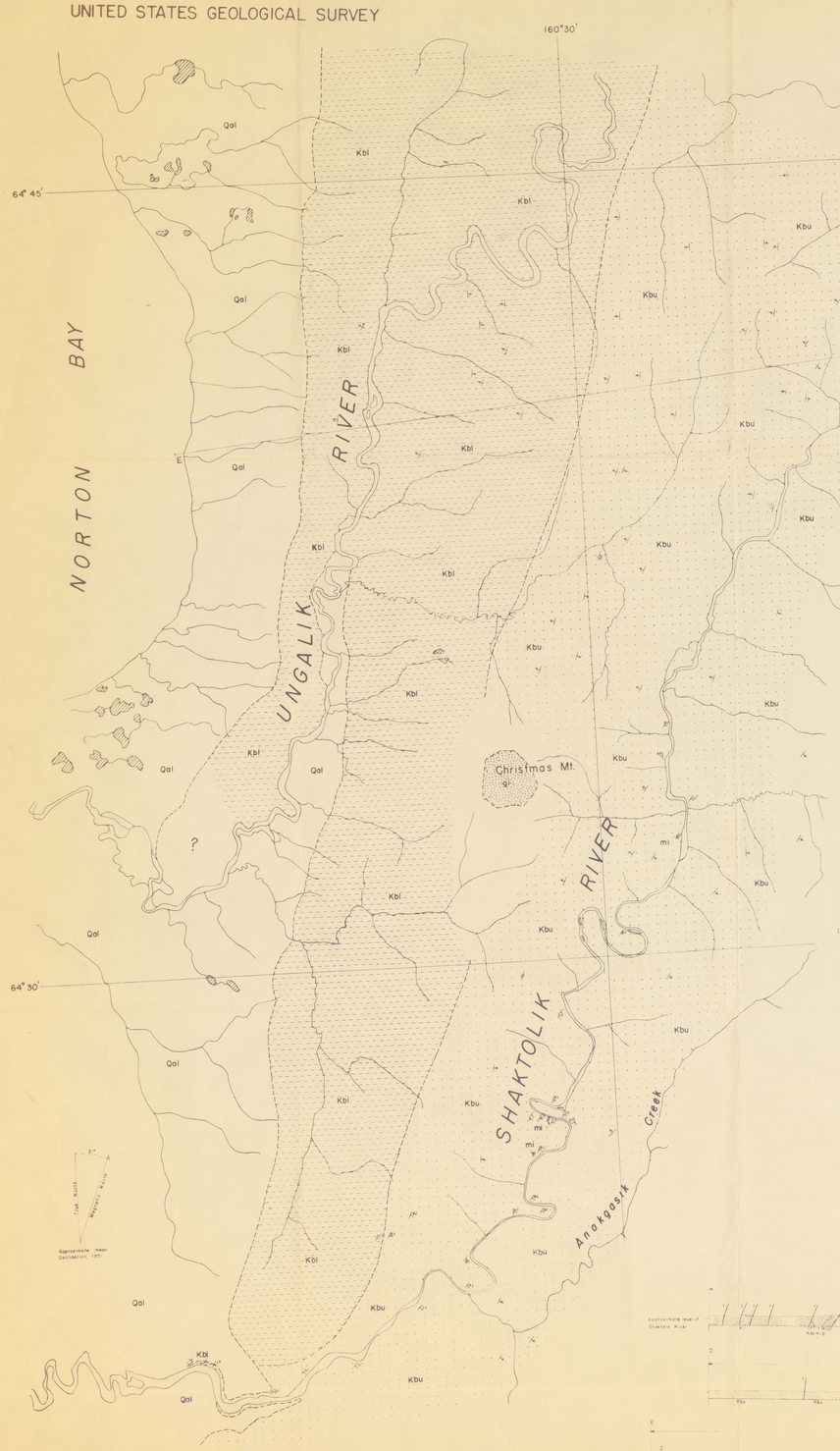
1955

Scale
0 1 2 3 4 5 Miles

This report is preliminary and has not been edited or revised for conformity with U. S. Geological Survey standards and nomenclature.



EXPLANATION

Qal — Unconsolidated deposits
Sand, gravel, and silt of fluvial and marine origin

gi — Granitic intrusive rocks

mi — Mafic intrusive rocks

CRETACEOUS
QUATERNARY
TERTIARY

BORDER FACIES
Rocks exposed on lower Shaktolik and Ungalik rivers, near western margin of Koyukuk Cretaceous basin

Kbu — Upper unit
Mostly medium dark-gray, calcareous siltstone, sandstone, and shale that weather a characteristic yellowish orange. Siltstone is micaceous and readily parts into thin brittle plates along irregular surfaces. Sandstone is hard, fine to coarse grained, thin to thick bedded, semilenticular, locally cross bedded, and rarely conglomeratic. Subordinate greenish-gray graywacke conglomerate, yellowish-orange feldspathic sandstone, pale-olive sandstone, and dark-gray shale. Fragments of plant remains abundant. Probably of both marine and nonmarine origin

Kbl — Lower unit
Graywacke conglomerate and sandstone. Conglomerate is greenish gray, poorly sorted, poorly stratified, and lenticular. Contains rounded pebbles and cobbles of mafic intrusive and extrusive igneous rocks and subangular fragments of slate, argillite, chert, and siltstone in matrix of graywacke sandstone. Sandstone is greenish gray, fine to coarse grained, and lenticular; bedding commonly crooked. Grades into upper unit. Probably of marine origin

INTERIOR FACIES
Rocks exposed on upper Shaktolik River, in central part of Koyukuk Cretaceous basin

Kiu — Upper unit
Mostly sandstone, hard, light-green to brown, thick-bedded, fine- to medium-grained, cross-bedded, and lenticular; ripple-marked; calcareous ferruginous concretions as much as three feet in diameter. Subordinate sandstone, sooty, hard, dark greenish-gray, very fine- to fine-grained, medium- to thick-bedded; ironstone nodules; interbedded with dark-gray, rarely calcareous, shale and siltstone. Fossil mudcracks in shale. Probably of nonmarine and littoral marine origin

Kil — Lower unit
Dominantly sandstone, carbonaceous, muddy, hard, dark gray, very fine- to fine-grained, medium- to very thick-bedded, even-bedded; ironstone nodules and calcareous concretions. Subordinate shale and siltstone, carbonaceous, dark-gray, and locally calcareous. Commonly plant debris abundant. Grades into upper unit. Probably chiefly of marine origin

Ki — Upper and Lower units undifferentiated

Kilb — B member
Characterized by a rhythmic or cyclic alternation of sandstone, siltstone, and shale. Sandstone medium- to thick-bedded

Kila — A member
Sandstone typically occurs in massive sections as much as 1,000 feet thick. Subordinate thicknesses of siltstone and shale. Sandstone commonly very thick-bedded

CRETACEOUS

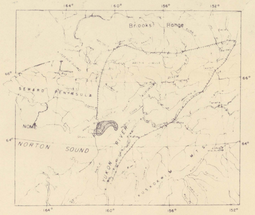
Contact
Includes both normal and faulted contacts

Strike and dip of beds
Field observation

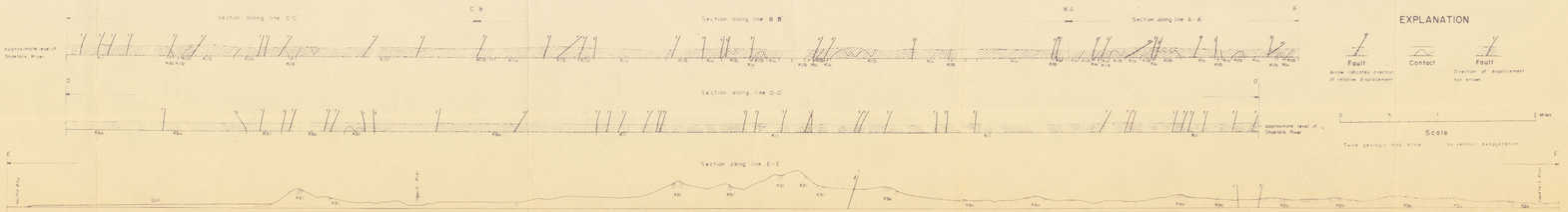
Strike of vertical beds
Field observation

Strike and dip of beds
Interpretation of aerial photographs

Strike of vertical beds
Interpretation of aerial photographs



INDEX MAP
approximate border of Koyukuk Cretaceous basin
area covered by this report



EXPLANATION
Fault — Arrow indicates direction of relative displacement
Contact
Fault — Direction of displacement not known

EXPLANATORY NOTES

General

The U. S. Geological Survey began stratigraphic and structural studies in the southern half of the Koyukuk Cretaceous basin in 1954. During June 1954, the Shaktolik River was traversed by boat from near the confluence of Brass Pan Creek to Norton Sound. All outcrop exposures along the river were examined and, in addition, some of the outcrops in the hills between the lower Shaktolik and lower Ungalik Rivers were visited.

Stratigraphy

The rocks of Cretaceous age, which underlie most of the Shaktolik River area, have been subdivided into the Ungalik conglomerate and the Shaktolik group by F. H. Smith and H. M. Eakin (U. S. Geological Survey Bull. 449, 1911). In the present report, two different sequences of Cretaceous rocks are recognized: a border facies and an interior facies. Each facies is tentatively subdivided into unnamed mappable units. The border facies crops out along the lower Shaktolik and Ungalik Rivers close to the western margin of the Koyukuk Cretaceous basin. The interior facies crops out on the upper Shaktolik River, in the central part of the basin. The border facies is believed to grade into the interior facies but a precise correlation is not yet possible. Near the mouth of Kingmetolik Creek the two facies appear to be in fault contact.

No identifiable fossils were found in the Shaktolik River area although elsewhere in the Koyukuk basin, Cretaceous rocks are known to be abundantly fossiliferous. Perhaps the fossil remains have been largely destroyed owing to the greater degree of deformation and saturation of the Cretaceous rocks in this area.

The thicknesses of the mappable units could not be measured with any assurance of accuracy because of the complex structure and the lack of persistent marker beds.

Structure

The Cretaceous rocks trend northeastward and are intensely folded and faulted. The structure sections A-A' to D-D' were plotted in the field at a scale of 1:31,200. They have been generalized and reduced to the present scale and smaller folds and faults, which were found at nearly every outcrop, have not been shown. Section E-E' was compiled at the present map scale from both field and vertical aerial photograph data. Only a few of the strikes and dips that were recorded in the field and used in preparing the structure sections are shown on the geologic map. Structural data in those parts of the area which were not traversed on the field have been interpreted from aerial photographs.

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Alaska (Shaktolik River area). Geol. 1:72,000. 1955. cop. 1.