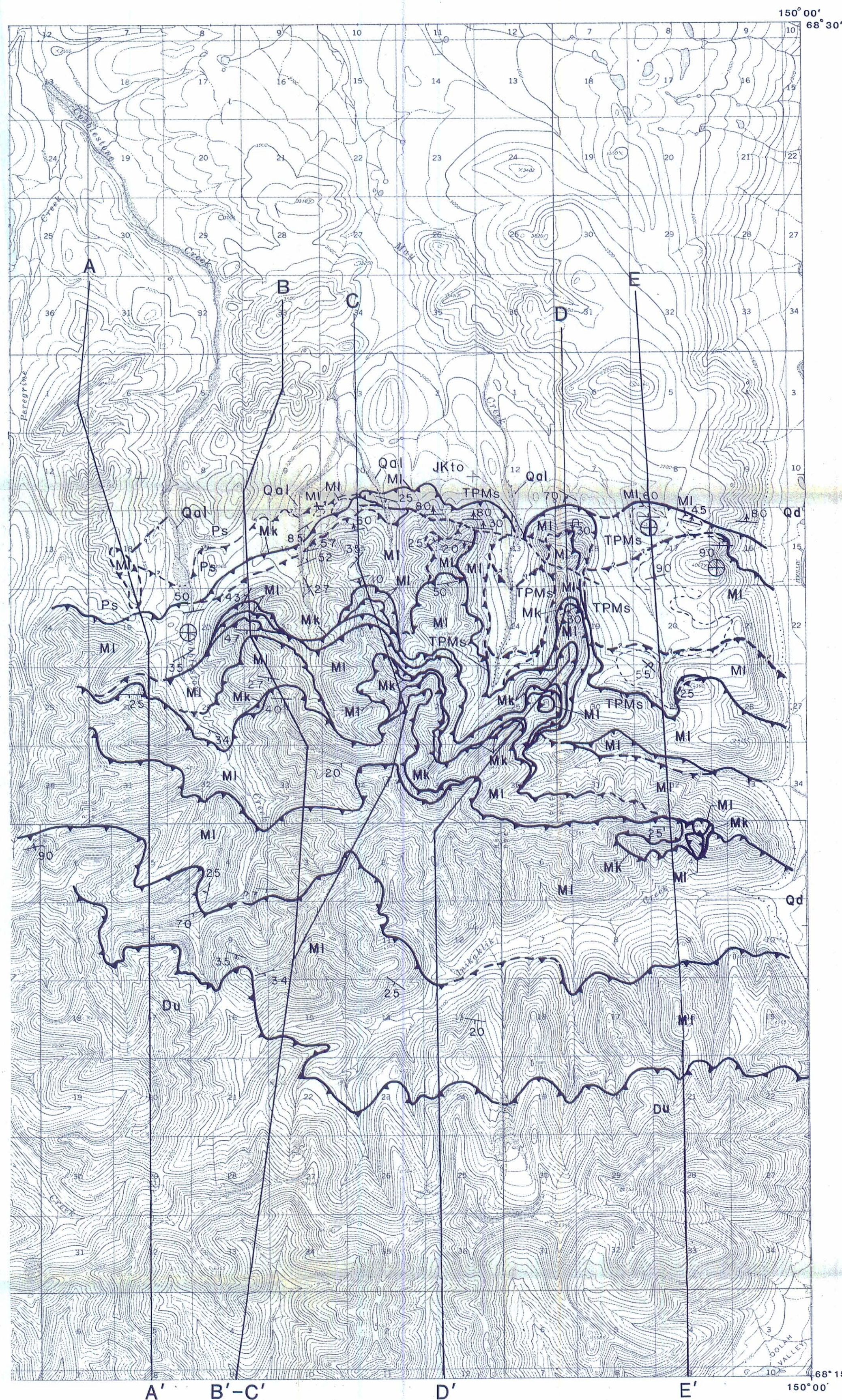


DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

OPEN-FILE REPORT
84-77

SHEET 1 of 3



Base from U.S. Geologic Survey
Chandler Lake (B-1), Alaska



GEOLOGIC MAP OF A PORTION

OF THE CHANDLER LAKE B-1 QUADRANGLE, ALASKA

by
J.S. KELLEY

1983

REPORT

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CORRELATION OF MAP UNITS

Qal	QUATERNARY	CENOZOIC
Qd		
JKto	CRETACEOUS	MESOZOIC
Pa	PERMIAN	
MI	MISSISSIPPIAN	PALEOZOIC
Mk		
MDu	DEVONIAN	

DESCRIPTION OF MAP UNITS

- Qal** QUATERNARY ALLUVIUM (Holocene)—Unconsolidated debris including boulders, gravel, sand, silt, clay, and humic material. Primarily sediments in river channels, active floodplains, bogs, and swamps.
- Qd** QUATERNARY DEPOSITS (Quaternary)—Undifferentiated unconsolidated deposits: boulders, gravel, sand, silt and clay.
- JKto** TIGLIKPOK FORMATION — OPIKIKUAK FORMATION UNDIFFERENTIATED (Jurassic and Lower Cretaceous)—Interbedded graywacke and mudstone that is generally negative weathering except for portions of the section consisting principally of graywacke. Graywacke is grayish-green, mostly medium-grained, and dense; grain boundaries are typically indefinite and the rocks appear to have much chloritic matrix. Lower contacts of graywacke beds are typically sharp and disconformable. Sole marks including flute casts and load casts are abundant. Trace fossils are common. Graded bedding is a typical feature of the graywacke. The interbedded mudstones are grayish-green to dark-green and typically sandy to very silty.
- TPMs** UNDIFFERENTIATED SHALE (Permian and Mississippian)—Structurally complicated admixture of negative weathering and poorly exposed dark-gray shales, mudstones, and very argillaceous limestones. Includes elements of the Shublik Formation, the Kayak Shale, and the Siksikpuik Formation. The Shublik Formation is mostly shale, mudstone, and siltstone. The shale is dark gray, very carbonaceous, lamy, probably phosphatic in part, and silty and grades to mudstone, siltstone, and very impure limestone; weathered surfaces commonly have a sooty appearance. The formation includes calcite-fluorapatite concretions and nodular concretionary beds. The Kayak Shale occurs as and may be restricted to discontinuous fault blocks and selvages along thrust fault contacts where the Lisburne Group forms the upper plate.
- Pa** SIKSIKPUK FORMATION (Pennsylvanian? and Permian)—Dark-gray shale, mudstone, and siltstone that is soft and negative weathering. Includes thin chert beds and barite concretions that are elongate parallel to bedding. Chert is generally greenish-gray to light greenish-gray. The section is disrupted greatly and poorly exposed. The style of disruption is bedding-parallel extension that includes: (1) fragmentation and predominantly shaly matrix, and (2) complete obliteration of the sedimentary fabric. Intraformational folding in little disrupted section appears in some outcrops. The unit probably includes inlaid elements of the Shublik Formation.
- MI** LISBURN GROUP (Lower and Upper Mississippian)—Consists principally of light-gray-weathering limestone. A very resistant unit that forms positive-weathering outcrops; even outliers of the limestone typically stand out in bold relief in contrast to the rocks within which the limestone occurs. The limestone is mostly light-brownish-gray fossiliferous packstones and wackestones, but includes dark-shaly limestone, dark-gray shale, chert, and dolomite. Fossils are abundant locally and include brachiopods, echinoderms, bryozoans, corals, and gastropods. Bedding ranges from thin to massive. In most places, the classic character of the limestone is apparent but dolomitization obscures the original texture locally. Chert is generally dark-gray and occurs as nodules and nodular lenses. Dark-gray shales and shaly limestone intervals occur within the unit. A characteristic ferruginous-weathering interval occurs near the base of the unit where the unit grades into the underlying Kayak Shale. The unit is about 3,340 feet (1018m) thick based on measured sections in the Iktilik Lake area (Armstrong, 1977), although the cross sections suggest either thicker sections locally or unrecognized structural complications.
- Mk** KAYAK SHALE (Mississippian)—Mostly soft negative weathering very dark gray shale and mudstone, but includes siltstone, sandstone, and limestone beds. Shale and mudstone are carbonaceous. The unit is poorly exposed and greatly folded and faulted intraformationally. The shale grades upwards into the Lisburne Group. In most places, the shale occurs as small discontinuous fault blocks and selvages along thrust faults that repeat the basal Lisburne Group.
- MDu** HUNT FORK SHALE, NOATK SANDSTONE, AND KANAYUT CONGLOMERATE UNDIFFERENTIATED (Lower Mississippian? and Upper Devonian) HUNT FORK SHALE (Upper Devonian)—Principally consists of shale, siltstone, and argillaceous sandstone. Shale is dark-gray, medium-gray, olive-gray, and very silty. Sandstone interbeds and partings are common. Sandstone is light-brownish-gray, medium-brownish-gray, light-olive-gray, typically iron-stained, laminated to thick-bedded, generally very argillaceous, and poorly sorted. Sand grains are principally clear and white quartz and dark to light-gray chert. The Hunt Fork Shale includes plant debris, brachiopods, bivalves, gastropods, and corals. NOATK SANDSTONE (Upper Devonian)—Interbedded sandstone, shale and conglomerate. Sandstone is light-reddish-brown and light-gray, orange weathering in part, fine to coarse grained, quartz-rich, calcareous and silica cemented, and conglomeratic in part. Sandstone commonly occurs in fining and thinning-upward cycles. Shale is dark-gray and brownish-gray with ironstone nodules. Red shale occurs locally. Conglomerate is hematitic in part and consists principally of rounded small pebbles and granules of chert and quartz with interstitial quartz sandstone. KANAYUT CONGLOMERATE (Lower Mississippian? and Upper Devonian)—Resistant-weathering and cliff-forming sandstone, conglomerate, and shale. The unit includes light-greenish-gray, and dark-gray rocks, but is predominantly iron-stained and weathers reddish-brown. Conglomerate is composed of mostly chert, quartz, quartzite, and argillite. Conglomerate includes clasts up to about 9 in. (23cm) across. Largest clasts are mostly quartzite and quartz; argillite and other unstable rock fragments make up a small part of the conglomerates. Sandstones are hard, indurated, and predominantly silica cemented, and chiefly comprise rounded to sub-rounded grains of quartz, chert, and argillite. Crossbedding is prominent locally and the section includes plant fossils and coaly debris.

REFERENCE CITED

Armstrong, A.K. and B.L. Mamet, 1977, Carboniferous microfossils, microfossils, and corals, Lisburne Group, Arctic Alaska: U.S. Geol. Survey Prof. Paper 849, 144 p., 47 pl.

MAP SYMBOLS

- ▲▲▲▲▲▲▲▲▲▲ THRUST FAULT—Dashed where approximated, queried where inferred, sawtooth on upthrown block.
- ?--- FAULT—Dashed where approximated, queried where inferred.
- DEPOSITIONAL CONTACT—Between Quaternary sediments and bedrock.
- 40° STRIKE AND DIP
- 90° STRIKE AND VERTICAL DIP
- ⊕ HORIZONTAL BEDS
- 26° APPROXIMATE STRIKE AND DIP
- 65° OVERTURNED BEDS
- 30° APPROXIMATE STRIKE AND DIP OF OVERTURNED BEDS

This map is preliminary and has not been edited or reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature.

Geology by: J.S. Kelley, W.H. Nelson, D.M. Peterson, J.R. Bergquist,
and A.K. Armstrong, 1982