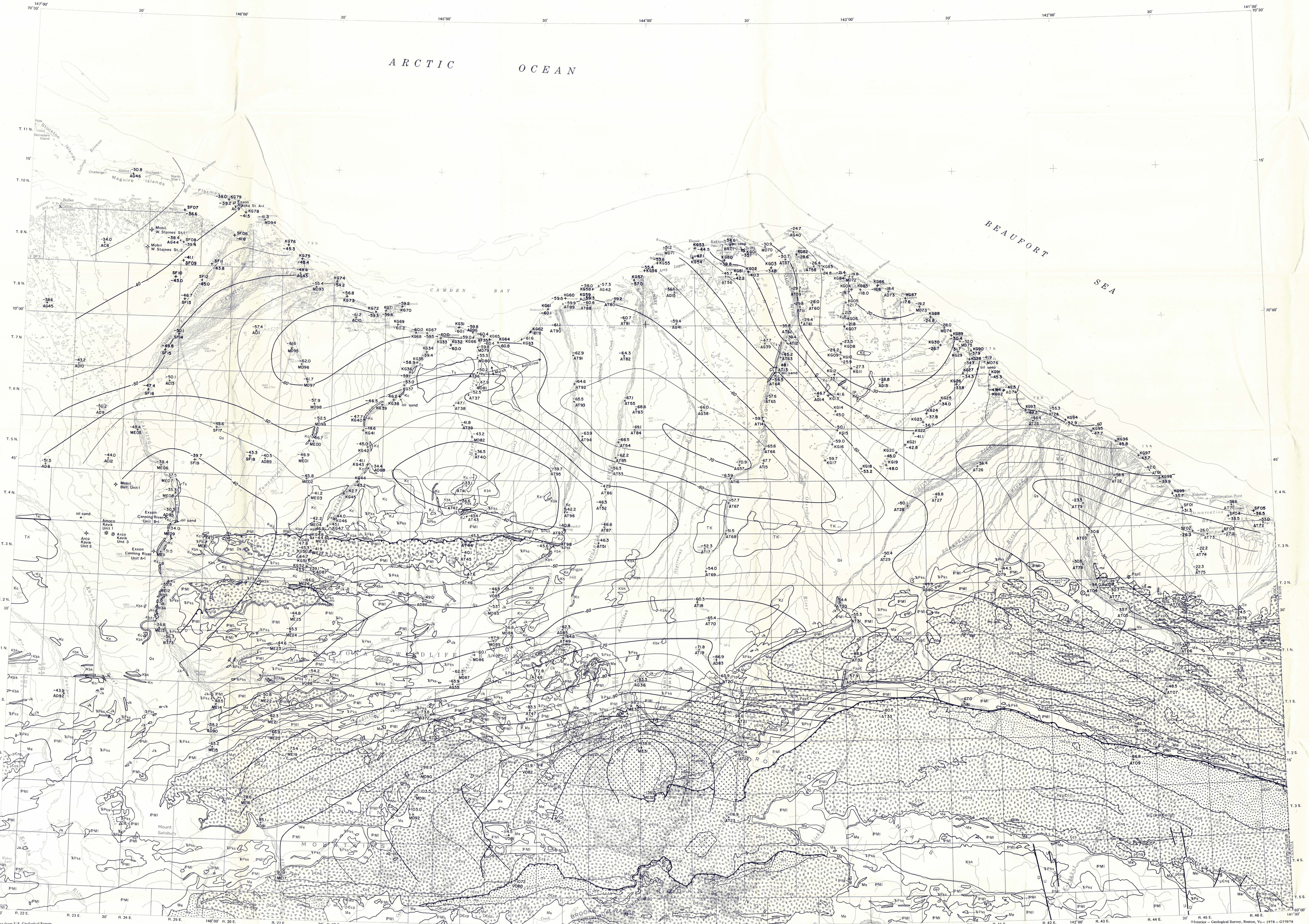
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BULLETIN 1440
PLATE 1



Base from U.S. Geological Survey
Barter Island, 1959; Flaxman Island, 1955;
Demarcation Point, 1955; and
Mt. Michelson, 1956

SCALE 1:250 000

5 0 5 10 15 20 MILES

5 0 5 10 15 20 25 30 KILOMETERS

DATUM IS MEAN SEA LEVEL
DEPTH CURVES IN FEET — DATUM IS MEAN LOWER LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
1955 MAGNETIC DECLINATION AT SOUTH EDGE OF SHEET VARIES FROM 34°30′ TO 36°30′ EAST

ALASKA
MAP LOCATION

☆Interior — Geological Survey, Reston, Va.— 1978 — G77078

Geology from Reiser and others, 1971 and 1974

BOUGUER GRAVITY MAP OF THE NORTHERN PART OF THE ARCTIC NATIONAL WILDLIFE RANGE, ALASKA

CORRELATION OF MAP UNITS

- Qs — Holocene and Pleistocene — QUATERNARY
- Unconformity
- Ts — Pliocene and Miocene(?) — TERTIARY
- Unconformity
- TK — TERTIARY OR CRETACEOUS
- Kc — Upper Cretaceous — CRETACEOUS
- Unconformity
- Kn — Lower Cretaceous
- Local unconformity
- Kbk
- Unconformity
- KJ — Lower Cretaceous and Jurassic — CRETACEOUS AND JURASSIC
- Jk — JURASSIC
- Disconformity
- TrPKs — Upper Triassic to Lower Permian — TRIASSIC AND PERMIAN
- Unconformity
- PMl — PENNSYLVANIAN AND MISSISSIPPIAN
- Me — MISSISSIPPIAN
- Unconformity
- Dn — DEVONIAN
- Unconformity(?)
- Dk — DEVONIAN OR OLDER
- Unconformity
- O€cp — ORDOVICIAN AND (OR) CAMBRIAN
- €cs — CAMBRIAN
- Unconformity
- Units of uncertain age and stratigraphic position: gr — DEVONIAN OR OLDER; mv — LOWER PALEOZOIC AND PRECAMBRIAN(?); Pzp€, sa — LOWER PALEOZOIC OR PRECAMBRIAN
- p€nq — PRECAMBRIAN

DESCRIPTION OF MAP UNITS

Qs SURFICIAL DEPOSITS (Holocene and Pleistocene) – Unconsolidated, unsorted to well-sorted silt, sand, and gravel. Includes alluvium, beach, terrace, and glacial deposits, colluvium, and the Gubik Formation. Thickness 0 to about 200 m

Ts UPPER PART OF SAGAVANIRKTOK FORMATION (Pliocene and Miocene?) – Poorly consolidated well-stratified grayish-brown to olive-brown shale, claystone, siltstone, sandstone, and conglomerate. Thickness 0 to 1,330 m

TK TERTIARY OR CRETACEOUS ROCKS, UNDIVIDED

Kc COLVILLE GROUP (Upper Cretaceous) – Includes Seabee, Prince Creek, and Schrader Bluff Formation. Poorly to well-consolidated well-stratified marine and nonmarine grayish-brown shale, siltstone, sandstone, conglomerate, coal, white tuff, and black organic shale with bentonite. Thickness 200 to 875 m

Kn NANUSHUK GROUP (Lower Cretaceous within map area) – Includes marine Tuktu Formation and nonmarine Chandler Formation. Marine strata of interbedded greenish-yellow to brown calcareous sandstone and conglomerate, dark-gray siltstone, and shale. Nonmarine strata of interbedded dark-grayish-brown crossbedded polymictic conglomerate, salt-and-pepper sandstone, dark-gray to black carbonaceous micaceous shale and siltstone. Thickness 0 to 2,000 m

Kbk BATHTUB GRAYWACKE AND KONGAKUT FORMATION, UNDIVIDED (Lower Cretaceous) – Bathtub Graywacke includes dark-gray to green graywacke interbedded with conglomerate, shale, and siltstone. Kongakut Formation includes siltstone, pebble shale, Kemik Sandstone, and clay-shale members, dark-gray fissile shaly quartz arenite, gray manganiferous shale, and siltstone. Thickness 800 to 2,000 m

KJ LOWER CRETACEOUS AND JURASSIC ROCKS, UNDIVIDED

Jk KINGAK SHALE (Jurassic) – Gray clay and silty shale with siltstone and ironstone nodules in upper part; dark-gray to black fissile shale and claystone in lower part. Thickness 0 to 500 m

TrPKs KAREN CREEK SANDSTONE, SHUBLIC FORMATION, AND SADLEROCHIT GROUP, UNDIVIDED (Upper Triassic to Lower Permian) – Karen Creek Sandstone; dark-gray quartzitic sandstone and siltstone with large phosphate nodules. Shublick Formation; dark-gray to black calcareous siltstone, shale, and limestone with abundant small phosphate nodules. Sadlerochit Group includes Ivishak and underlying Echooka Formation. Ivishak Formation includes Fire Creek Siltstone Member – medium-dark-gray laminated siltstone, shale, and sandstone; Ledge Sandstone Member – massive clean light-gray sandstone and local conglomerate; and Kavik Member – dark gray laminated siltstone and shale. Echooka Formation includes: Ikiakpaurak Member – red-brown ferruginous quartzitic sandstone, siltstone, and shale; and Joe Creek Member – quartzose calcarenite, bioclastic limestone, and chert. Thickness 0 to 565 m

PMl LISBURNE GROUP (Pennsylvanian and Mississippian) – Fine- to coarse-grained partly oolitic and glauconitic limestone, minor dolomite, and black chert. Thickness about 1,000 m; thins to north

Me ENDICOTT GROUP (Mississippian) – Includes Kekiktuk Conglomerate and overlying Kayak(?) Shale: Kekiktuk Conglomerate – sandstone, quartzite, quartz- and chert-pebble conglomerate, and local anthracite coal. Kayak(?) Shale – dark-gray to black shale and minor limestone. Locally (T. 5 S., R. 37 E.) includes sandstone and calcareous sandstone unit (Devonian) of Reiser and others (1974) at south edge of map area. Thickness generally less than 100 m

Dn NANOOK LIMESTONE (Devonian) – Fine-grained limestone and dolomite with minor shale. Thickness about 1,000 m

Dk KATAKTURUK DOLOMITE AND UNNAMED DOLOMITE OF DUTRO, BROSGE, AND REISER (1972) (Devonian or older) – Dolomite, locally stromatolitic, pisolitic, and dolomitic conglomerate; minor dolomitic silty shale in lower part. Thickness 1,000+ m

gr GRANITIC ROCKS (Devonian or older) – Predominantly quartz monzonite. Muscovite and biotite common accessory minerals within main pluton (Okpilak batholith) and in Jago stock in T. 2 S., R. 35 E. Potassium-argon age of 431 ± 13 m.y. on hornblende from small stock at head of Jago River in T. 3, 4 S., R. 35 E. Lead-alpha ages of 310 ± 25 and 405 + m.y. on zircon and potassium-argon ages of 125 and 128 m.y. on biotite from Okpilak batholith (Sable, 1965). Alternation of Mississippian(?) in contact with granite indicates post-Mississippian (Cretaceous?) remobilization.

NERUOKPUK FORMATION – Includes:

O€cp CHERT AND PHYLLITE UNIT (Ordovician and (or) Cambrian) – Chert with interbedded phyllite slate and rare thin-bedded limestone and mafic intrusive rocks. Thickness 300 to 1,000 m

€cs CALCAREOUS SILTSTONE AND SANDSTONE MEMBER AND BLACK PHYLLITE AND SANDSTONE MEMBER (Cambrian) – Calcareous siltstone and sandstone, phyllitic siltstone, phyllite, minor limestone and calcareous graywacke, chert, argillite, and slate. Thickness less than 2,500 m

mv MAFIC VOLCANIC AND CARBONATE MEMBER, VOLCANIC AND VOLCANICLASTIC UNIT, BASALTIC TUFF UNIT, BLACK SLATE UNIT, GRAY PHYLLITE AND CHERT MEMBER, MAFIC ROCKS UNIT, AND CAMBRIAN LIMESTONE UNIT (lower Paleozoic and Precambrian?) – Volcanic and volcaniclastic mafic rocks, locally includes Cambrian limestones, Ordovician shale, siltstone, mudstone, and chert, phyllite, and slate of unknown age. Thickness about 700 to 1,400 m

Pzp€ LIMESTONE MEMBER, ARGILLITE AND LIMESTONE MEMBER, PHYLLITE AND ARGILLITE UNIT, AND PHYLLITE AND QUARTZITE UNIT (lower Paleozoic or Precambrian) – Includes limestone, quartzose limestone, silty limestone, calcareous sandstone, calcareous grit conglomerate, dolomitic shaly limestone, dolomitic siltstone and sandstone, dolomite, interbedded shale, phyllite, argillite, and calcareous and dolomitic quartzite with thin-bedded limestone, and phyllite interbedded with fine-grained quartzite. Thickness less than 1,300 m

sa RED AND GREEN PHYLLITE MEMBER AND SLATE, ARGILLITE, QUARTZITE, AND CHERT UNIT (lower Paleozoic or Precambrian) – Red and green phyllitic argillite and slate. Thickness more than 300 m

p€nq QUARTZITE AND SEMISCHIST MEMBER AND FERRUGINOUS SANDSTONE MEMBER (Precambrian) – Quartz wacke, lithic sandstone, lithic graywacke, all commonly schistose, some siltstone and phyllitic slate. Thickness more than 1,700 m

Station location

−49.5 Complete Bouguer anomaly in milligals
+
AD74 Station identification

—50— Generalized complete Bouguer anomaly contours. Contour interval is 5 milligals

Granitic rocks

Pre-Carboniferous basement rocks

Volcanic, volcaniclastic, and associated rocks

Contact between units

Fault – U, upthrown side; D, downthrown side

Thrust fault – Sawteeth on upper plate