DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

CORRELATION OF MAP UNITS

Qal — Qaf — Qd — Qcl — Qcu } Holocene } QUATERNARY
Qau — Qam — Qwg — Qog } Pleistocene

SEDIMENTARY AND VOLCANIC ROCKS

KJs — Lower Cretaceous and Upper Jurassic } CRETACEOUS AND JURASSIC

Fault contact

Ktl — Upper Triassic } TRIASSIC

Angular local unconformity(?)

Kml — Disconformity(?)

Kn — Upper and(or) Middle Triassic

INTRUSIVE ROCKS

TKd — TERTIARY OR CRETACEOUS

Kg — CRETACEOUS

METAMORPHIC ROCKS

Ds — DEVONIAN AND OLDER

DESCRIPTION OF MAP UNITS

ALLUVIAL DEPOSITS

Qal Alluvium underlying active flood plains and terraces of major streams. Chiefly gravel and sand

Qaf Alluvial fans and cones; only larger, better defined cones differentiated from unit Qcu. Chiefly gravel and sand

Qau Undifferentiated alluvial deposits mantling pedimentlike surface northeast of Denali fault. Includes alluvium from numerous and presently active small streams, outwash of Alaskan Glaciation, and probably outwash of late phases of Wisconsin Glaciation. Incised by presently active major streams. Chiefly gravel and sand

ROCK GLACIER DEPOSITS

Qrg Includes deposits of active and formerly active rock glaciers. Chiefly rubble and diamicton

COLLUVIAL DEPOSITS

Qcl Landslide deposits, chiefly debris avalanches and block glides

Qcu Undifferentiated colluvium on valley walls and hill slopes. Chiefly talus and other slope debris but includes alluvium of numerous minor streams and, locally, glacial, rock glacier, and other mass-wasting deposits. Chiefly rubble, gravel, sand, and silt; usually poorly sorted. On low-gradient slopes in vicinity of Denali fault, colluvium is chiefly solifluction debris consisting of bedrock rubble but may include drift of older glaciations (Qog)

Qam DRIFT OF THE ALASKAN GLACIATION — Chiefly end moraines of later phase of Alaskan Glaciation. Diamicton and rubble; locally includes gravel

Qwg DRIFT OF WISCONSIN AGE — Undifferentiated glacial and fluvioglacial deposits of probably more than one episode of Wisconsin Glaciation. Chiefly diamicton but locally includes rubble, gravel, and sand

Qog DRIFT OF OLDER GLACIATIONS — Undifferentiated glacial deposits northeast of the Denali fault. Includes deposits of Black Hills Glaciation of Illinoian age (Fernald, 1965)

SEDIMENTARY AND VOLCANIC ROCKS

KJs NUTZOTIN MOUNTAINS SEQUENCE — Undifferentiated intermediate and deep marine sedimentary rocks consisting of dark-gray argillite, graded beds of argillite, siltstone, and graywacke, and massive graywacke, conglomeratic graywacke, and pebble to cobble conglomerate. Graded beds are exceptionally well developed and consist of rhythmic units ranging from 1 to more than 30 cm thick. Clasts in conglomeratic rocks are chiefly extraformational and consist largely of igneous and sedimentary rocks derived from subjacent Pennsylvanian through Triassic terrane and crystalline rocks and quartz apparently derived from metamorphic terrane north of Denali fault. Rocks are complexly folded and faulted and locally exhibit pronounced slaty cleavage. Adjacent to Antler Creek pluton (units Kg and Kh), these rocks have been thermally metamorphosed to hornfels that locally contain sulfide minerals, chiefly pyrite. No fossils were found; however, abundant Buchia collected from same lithologic sequence in the adjacent Nabesna A-3 and A-2 quadrangles (Richter, 1971a; Richter and Jones, 1973) suggest a Late Jurassic and Early Cretaceous (Tithonian to Valanginian) age

Ktl THIN-BEDDED LIMESTONE — Dark-gray fine-grained limestone in beds 5 cm to 2 m thick with thin interbeds of dark siliceous argillite, black carbonaceous shale, and dark chert. No fossils were found; however, the pelecypod Monotis subcircularis Gabb has been collected from shaly interbeds in adjacent Nabesna B-4 quadrangle (Richter, 1971b). Strata are probably correlative with lower part of McCarthy Formation in southern Wrangell Mountains (MacKevett, 1970)

Kml MASSIVE LIMESTONE — Gray to dark-gray fine-grained massive limestone with lenses and zones of dark-gray to gray chert, irregular patches of siliceous material, and minor dolostone. Commonly strongly brecciated and veined by coarsely crystalline calcite. Bedding generally indistinguishable. Strata are probably correlative with parts of the Chitistone and Nizina Limestones in the southern Wrangell Mountains (MacKevett, 1970)

Kn NIKOLAI GREENSTONE — [Middle and (or) Upper Triassic] — Dark-green, brown, reddish-brown, and maroon subaerial amygdaloidal basalt flows separated locally by thin maroon volcaniclastic beds. Predominantly massive as flows, as much as 15 m thick, with scoriaceous tops and bottoms. Amygdules contain quartz, calcite, chlorite, epidote, pumpellyite, prehnite, zeolite minerals, and native copper locally

INTRUSIVE ROCKS

TKd DIORITE — Chiefly mafic hornblende diorite

ANTLER CREEK PLUTON

Kg Chiefly hornblende syenodiorite; medium to coarse grained subhedral granular, and locally weakly foliated. Pluton has strong aeromagnetic expression in form of dipole with positive anomaly of 3,300 gammas and associated negative anomaly of 200 gammas (Alaska Division Geological and Geophysical Surveys, 1973)

Kh Hornblendite border zone containing subordinate augite and interstitial plagioclase, quartz, and sulfide minerals, chiefly pyrite and pyrrhotite. Rock is dark greenish gray and very coarse grained (1-3 cm). Hornblende yields K-Ar age of 105 m.y. (Richter and others, 1975)

METAMORPHIC ROCKS

Ds SCHIST AND PHYLLITE(?) — Localities not visited. Designation based on exposures of gray-green quartz-mica schist, micaceous quartzite, and dark-gray phyllite in adjacent Nabesna C-3 and C-4 quadrangles (D. H. Richter, unpub. data)

Contact, approximately located — Triangle indicates selected locality where contact was well exposed at time of mapping

Fault — Dashed where approximately located or inferred; dotted where concealed. U, upthrown side; D, downthrown side. Arrows indicate relative horizontal movement

Disturbed zone — Probably indicative of fault or shear zone

Major fold — Showing trace of axial plane. Dotted where concealed
Anticline
Syncline

Minor fold — Showing bearing and plunge of axis

Strike and dip of beds or flows
Inclined
Overturned
Vertical — Arrow indicates direction of top

Strike and dip of foliation
Inclined
Vertical

Strike and dip of slaty cleavage
Inclined
Vertical

Cu — Copper mineral occurrence in Antler Creek pluton — Chiefly copper-stained surfaces and small veins of quartz, chalcopyrite, and bornite

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Base from U.S. Geological Survey, 1960
Universal Transverse Mercator projection, 1927 North American datum
10,000-foot grid based on Alaska coordinate system, zone 2
1000-metre Universal Transverse Mercator grid ticks, zone 7

Bedrock geology by D. H. Richter, 1968, 1970, and 1971; N. A. Matson, Jr., 1970 and 1971; and P. C. Lowe, 1971; assisted by R. A. Lamarre, 1970 and 1971. Surficial geology chiefly by photointerpretation in collaboration with H. R. Schmoll.

SCALE 1:63 360

CONTOUR INTERVAL 100 FEET
DATUM IS MEAN SEA LEVEL

QUADRANGLE LOCATION

APPROXIMATE MEAN DECLINATION, 1975

Folds shown between the Cooper Pass and Denali faults are largely diagrammatic
Patches of ice and Quaternary deposits too thin to show at this scale have been omitted

Interior—Geological Survey, Reston, Va.—1975—G75047

RECONNAISSANCE GEOLOGIC MAP OF THE NABESNA B-3 QUADRANGLE, ALASKA

By

D. H. Richter

1975