**MAP I-807** 

#### INTRUSIVE ROCKS

Hypabyssal rocks PORPHYRY - Includes several color, textural, and phenocrystal varieties largely of andesite and dacite composition. Gray, drab brown, and pinkish gray with phenocrysts of hornblende and plagioclase in a fine-grained intergranular to trachytic groundmass; commonly altered. Occurs as dikes, sills, and irregular masses; only the larger and more conspicuous bodies shown. Porphyry along north bank of Gravel Creek contains phenocrysts of plagioclase, hornblende, and augite in a

fresh microlitic matrix of feldspar and pyroxene PORPHYRITIC DIORITE AND MAFIC DIORITE - Small, irregular intrusives of intimately mixed augite-hornblende porphyritic diorite and fine- to medium-grained equigranular mafic hornblende diorite. Porphyritic varieties contain augite, hornblende, and plagioclase phenocrysts in a fine-

grained, generally subhedral granular groundmass of plagioclase and hornblende. May represent marginal facies of Klein Creek batholith (Kg, Kd) GABBRO - Dark-brown irregular bodies of augite gabbro; medium to coarse-grained with a subhedral granular to ophitic texture. Intrudes Permian rocks (Pa, Pl, Pv) but only larger and more

conspicuous bodies shown KLEIN CREEK BATHOLITH

CORRELATION OF MAP UNITS

QUATERNARY

**INTRUSIVE ROCKS** 

Hypabyssal rocks

Plutonic rocks

METAMORPHIC ROCKS

TKd

TERTIARY

CRETACEOUS

MESOZOIC(?)

DEVONIAN AND OLDER

TERTIARY OR CRETACEOUS

TRIASSIC OR PERMIAN

Qaf Qrg Qcl Qcu Qs

CRETACEOUS

TRIASSIC

PERMIAN

DESCRIPTION OF MAP UNITS

SEDIMENTARY AND VOLCANIC ROCKS

nate interlayered massive volcanic flows and thin-bedded dark volcaniclastic rocks.

Qam

Chiefly biotite-hornblende granodiorite but includes quartz monzonite, quartz diorite, diorite,

syenodiorite, and biotite gabbro as abundant variants. Rocks are medium to coarse grained with a subhedral granular texture and are nonfoliate. Hydrothermal alteration, brecciation, and limonitestaining locally pronounced. K/Ar dates indicate an age of 111 m.y. (M.L. Lanphere, written commun., 1970) + Kd + + Chiefly mafic hornblende diorite but includes minor granodiorite and syenodiorite. Rocks are

medium grained with a subhedral granular texture and are nonfoliate. Disseminated sulfides, especially pyrite, abundant in and around large gypsiferous limonite-stained area south of Baultoff Creek

GNEISS AND METAGRANITIC ROCKS - A complex of banded gneiss including light-colored granite gneiss, quartz diorite gneiss, and dark-colored biotite- and diopside-bearing amphibolite gradational into light-colored crystalloblastic biotite granodiorite and granite. Metagranitic rocks

METAMORPHIC ROCKS

are medium to coarse grained, locally pegmatitic, with a xenoblastic or granoblastic texture. Garnet porphyroblasts locally abundant in the less mafic gneissie units Ds SCHIST AND PHYLLITE - Chiefly gray-green quartz mica schist and micaceous quartzite and darkgray phyllite with abundant quartz veins and lenses. Rocks are multiply deformed and regionally metamorphosed within the greenschist facies. Exposures poor north of the Denali fault

Contact, approximately located - Triangle indicates locality where contact was well exposed at time

..... Contact between individual alluvial fans and cones

Fault, showing dip - Dashed where approximate or inferred; dotted where concealed. U, upthrown side; D, downthrown side. Broad line indicates zones of known Holocene movement

Thrust fault - Dashed where approximate or inferred; dotted where concealed. Sawteeth on upper Terrace scarp – Hachures point downslope

Folds - Showing approximate trace of axial plane. Dotted where concealed Anticline

\* Syncline Overturned syncline Strike and dip of beds and flows

Vertical - Arrow indicates direction of tops

Overturned Horizontal

Strike and dip of foliation

Vertical Lineations - Showing direction and amount of plunge. May be combined with other symbols

Axes of minor folds Strike and dip of major joints

Inclined Vertical

Mineral springs

Quartz vein

Altered area - Principally limonite staining from oxidation of iron-bearing sulfides. Gypsum abundant at Baultoff prospect (loc. 4)

Studied by

From Moffit (1954)

N. J. Silberling

N. J. Silberling

• Fossil locality - Numbers refer to collections described in accompanying table; localities marked F denote crinoid-bearing Permian limestone (PI)

Prospect or mineral occurrence - Numbers refer to deposits described in accompanying table

## FOSSIL COLLECTIONS USGS Jurassic and Cretaceous

1 sec. 24, T. 3 N., R. 23 E. M-5596 Buchia cf. B. fischeriana D. L. Jones 2 sec. 1, T. 3 N., R. 22 E. M-5595 Buchia sp.; may be B. fischeriana D. L. Jones Upper Triassic and Upper Triassic(?) 3 sec. 31, T. 5 N., R. 22 E. 69-AMn-178 Monotis sp. N. J. Silberling 4 sec. 22, T. 5 N., R. 21 E. 69-ARh-188 Scleractinian? coral N. J. Silberling Orthoconic nautiloid Coiled cephalopod Pelecypod scraps 5 sec. 31, T. 5 N., R. 22 E. 18346 Monotis subcircularis Gabb From Moffit (1954)

Monotis subcircularis Gabb Late Paleozoic (Permian?) 7 sec. 3, T. 4 N., R. 22 E. 69-ARh-210 Ramose bryozoans Brachiopod scraps 8 sec. 3, T. 4 N., R. 22 E. 69-ARh-211 Brachiopod scraps

6 sec. 33, T. 5 N., R. 22 E. 18342

PROSPECTS AND MINERAL OCCURRENCES

Principal commodity (name of deposit) Type of mineralization sec. 23, T. 5 N., R. 21 E. Cu (O'Hara) Disseminated in basalt sec. 25, T. 5 N., R. 21 E. Cu (Reynolds) Disseminated in basalt sec. 1, T. 4 N., R. 22 E. sec. 21, T. 4 N., R. 23 E. Cu (Baultoff) Disseminated in diorite secs. 31,32, T. 4 N., R. 23 E. Cu Disseminated in diorite sec. 7, T. 3 N., R. 23 E. sec. 16, T. 3 N., R. 23 E. Cu (Horsfeld) Disseminated in quartz monzonite sec. 10, T. 3 N., R. 23 E. Cu Disseminated in diorite sec. 31, T. 4 N., R. 24 E. sec. 36, T. 4 N., R. 23 E. Pb, barite Vein

Analytical data on samples from these prospects and mineral occurrences and from other localities in the quadrangle are reported by Matson and Richter (1971).

# REFERENCES

Matson, N. A., Jr., and Richter, D. H., 1971, Geochemical data from the Nabesna A-1 quadrangle, Alaska: U.S. Geol. Survey open-file report, 10 p. Moffit, F. H., 1954, Geology of the eastern part of the Alaska Range and adjacent area: U.S. Geol. Survey Bull. 989-D, p. 65-218.

Richter, D. H., and Jones, D. L., 1973, Reconnaissance geologic map of the Nabesna A-2 quadrangle, Alaska: U.S. Geol. Survey Misc. Geol. Inv. Map I-749.

## NOTE ADDED IN PROOF:

The Permian age designation for volcanic rocks (Pi and Pv) in the argillite-limestone-volcanic rock sequence shown above is questionable. Recent biostratigraphic studies (D. H. Richter and J. T. Dutro, Jr., unpub. data) of similar upper Paleozoic rocks elsewhere in the eastern Alaska Range indicate that the volcanogenic rocks are largely Pennsylvanian in age.

# RECONNAISSANCE GEOLOGIC MAP OF THE NABESNA A-1 QUADRANGLE, ALASKA

2000' 1000' -