



Explanation

QUATERNARY

Qu Undifferentiated Quaternary deposits, including all alluvial, colluvial, glacial, and talus deposits. For detailed maps of these deposits see Bundtzen et al. (1994) and Kaufman et al. (1989).

NOME GROUP

pCPzngu Undifferentiated metamorphic rocks.

pCPzm Blue-gray calcite-bearing platy and massive marble.

pCPzim Impure marble, dolomite and calc-schist.

pCPzb Black graphitic and siliceous argillite, phyllite and schist, silstone and quartzite with rare intervals of gray calcite limestones and marble. Equivalent to GQ of Till (1980), Pollock (1982), Lieberman (1988), and pCPzgb of Bundtzen et al. (1994).

pCPzqms Pelitic and semipelitic quartz mica schist containing white mica = chlorite = quartz = chloritoid = albite = epidote = graphite. Equivalent to the PS units of Till (1980), Pollock (1982), Lieberman (1988), as mapped in the Nome Group.

pCPzcs Mafic to calcareous chlorite albite schist containing chlorite + albite + quartz + white mica = epidote/clinozoisite = biotite = titanite + calcite. Equivalent to QFG of Till (1980), Pollock (1982), and Lieberman (1988), and pCPza, pCPzt, pCPzic of Bundtzen et al. (1994).

pCPzmvu Undifferentiated mixed mafic volcanic, metasedimentary (including marble) and tuffaceous rocks of low metamorphic grade. Unit is extremely poorly exposed and mapped only in the northwestern part of map area.

pCPzmb Massive to foliated metabasalt flows (?) and metamorphosed gabbro/diabase sills, dikes and/or stocks containing chlorite = albite + epidote + actinolite + glaucophane = garnet + sphene + quartz + white mica + biotite + calcite. Equivalent to the pCPzb unit of Bundtzen et al. (1994).

KIGLUAIK GROUP

pCPzkgu Undifferentiated pelitic to quartz-feldspathic rocks of the Kigluaik Group.

pCPzqs Undifferentiated greenschist to amphibolite facies pelitic and psammitic schists containing quartz + biotite + graphite = staurolite = sillimanite + muscovite = K-feldspar. Includes subunits of pCPzgc and pCPzbs described below. Equivalent to PS unit of Till (1980), Pollock (1982), and Lieberman (1988).

pCPzqc Quartzite, quartzose schists, and minor calc-silicate bearing psammitic schist containing quartz + biotite = plagioclase = actinolite = diopside = epidote/clinozoisite + graphite = white mica + sillimanite with lesser marble and pelitic schist horizons. Proportion of pelitic schist increases eastward in the map area.

pCPzbs Biotite-rich pelitic schist containing quartz + biotite + graphite + muscovite = garnet = staurolite = sillimanite with intervals of biotite-bearing quartzose graphitic schist and psammitic schist.

pCPzhs Heterogeneous metasedimentary unit that includes platy quartzofeldspathic, pelitic and quartzose schist, lesser biotite-rich quartzite, gray calcite marble, and calc-silicate bearing impure marble interlayered on a scale varying from a few centimeters to several meters. Quartzofeldspathic schists contain biotite + K-feldspar + plagioclase + biotite + graphite + sillimanite = garnet. Pelitic schists contain biotite + quartz = graphite = garnet = sillimanite = K-feldspar + plagioclase.

pCPzbgg Highly resistant, coarse-grained pelitic paragneiss and schist present in layers varying in thickness from 10-100 meters containing quartz = plagioclase + biotite = sillimanite = K-feldspar = garnet = graphite. Locally pervasively mylonitized.

pCPznu pCPzm pCPzmc Undifferentiated calc-silicate and marble bearing units of the Kigluaik Group. Includes pCPzm and pCPzmc as dominant subunits described below.

pCPzm Massive to foliated blue-gray calcite marble.

pCPzmc Massive to foliated blue-gray calcite marble interlayered with calc-silicate bearing dolomitic and calcite marble, schist, and gneiss.

ORTHOIGNEISS

pCtog Precambrian granitic Thompson Creek Orthogneiss. Dated at 555 ± 15 Ma using U-Pb zircon (Amato et al., 1994; Amato and Wright, 1998).

pCdog Precambrian granitic orthogneiss equivalent to the Dorothy Creek orthogneiss. Dated using U-Pb zircon analysis at 681 ± 3 Ma (Patrick and McClelland, 1995) from Dorothy Creek locality (not shown on this map) and 678 ± 4 Ma (Amato and Wright, 1998) at locality north of Salmon Lake.

pCPzug Undated granitic orthogneiss bodies of probable Proterozoic to early Paleozoic age.

Kgog Cretaceous garnet-bearing orthogneiss dated at 105 ± 3 Ma using U-Pb zircon analysis (Amato et al., 1994).

Ksog Syenitic orthogneiss containing K-feldspar + hornblende + garnet. Dated at 110 ± 5 Ma using U-Pb zircon analysis (Amato and Wright, 1998).

UNDEFORMED IGNEOUS ROCKS

Kd Fine- to medium-grained biotite hornblende diorite, quartz diorite, granodiorite, tonalite, and gabbro. Comprises the lower unit of the Kigluaik pluton, dated at 90 ± 1 Ma using U-Pb zircon analysis (Amato and Wright, 1998).

Kg Leucocratic fine to medium grained biotite granite and granodiorite. Includes upper unit of the Kigluaik pluton and minor granitic dikes.

Granitic pegmatite dikes and sills containing quartz + feldspar + biotite + sillimanite = garnet + muscovite = tourmaline. Dikes and sills range from highly deformed to cross-cutting. Generally 5-10 m thick. Shown schematically. Dated at 90-91 Ma using U-Pb monazite analysis (Amato and Wright, 1998).

Mafic to intermediate diabase dikes, generally 1-5 m thick, containing plagioclase + hornblende + biotite = clinopyroxene = olivine = quartz. Dikes cut across regional foliation, are steeply dipping, and are generally oriented N30W to N50W. Dikes are chemically similar to the lower unit of the pluton (Kd) and are at least 84 Ma based on ⁴⁰Ar/³⁹Ar dating of biotite and hornblende, and younger than 90 Ma based on cross-cutting relationships with Kg and Kd (Amato et al., 2003).

METAMORPHIC ISOGRADS

Dashed where approximate, dotted where concealed.

— Biotite-In

— Staurolite-In

— Sillimanite-In

— Sillimanite + K-feldspar-In

Strike and dip of foliation; trend of stretching lineation

Geologic contacts - dashed where uncertain.

Normal faults; dots on downthrow side

Faults with uncertain displacement

MAPPING CREDITS

Teller A-3	Teller A-2	Teller A-1	Bendeleben A-6
1	2	3	22
4	5	6	9, 22, 23, 24
13	15	16	10, 11, 22
14	17	18	12
19	20	21	
Nome D-3	Nome D-2	Nome D-1	Solomon D-8

Mapping credits for this compilation. References to previously unpublished mapping by workers associated with this project are in italics. Other references are for published maps. (1) K. Bennett, E. Miller, and C. Rubin, 1991; (2) E. Miller and C. Rubin, 1991; (3) Samsbury (1972); (4) J. Amato, E. Miller, and J. Toro, 1992; (5) J. Amato, 1992; (6) P. Gans, J. Amato, A. Calvert, and T. Little, 1991; (7) P. Gans, J. Amato, A. Calvert, and K. Hannula, 1998; (8) Till (1980); Lieberman (1988); (9) Samsbury (1984); (10) E. Miller and A. Calvert, 1989; (11) A. Calvert, 1989; (12) A. Calvert, 1989; (13) E. Miller, T. Little, A. Calvert, 1989; (14) A. Calvert and J. Lee, 1991; (15) J. Amato, E. Miller, J. Toro, and J. Wright, 1992; (16) J. Amato, A. Calvert, and K. Hannula, 1991; (17) Bundtzen et al. (1994); (18) Hummel (1962); (19) Pollock (1982); (20) E. Miller, J. Toro, and F. Cole, 1991; J. Amato and E. Miller, 1994; (21) T. Little, 1989; (22) Turner et al. (1980); (23) Samsbury (1974); (24) Till et al. (1986).

BEDROCK GEOLOGIC MAP OF THE KIGLUAIK MOUNTAINS, SEWARD PENINSULA, ALASKA

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