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REPORT OF INVESTIGATIONS 87-4

PLATE 2-1B

STRUCTURAL SECTIONS AND ROCK UNIT DESCRIPTIONS LIME PEAK-MT PRINDLE AREA, EAST-CENTRAL ALASKA

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MARBLE AND DOLOMITIC MARBLE- Marble and dolomitic marble interlayered with pelitic schist (p€fs). Includes light-to very-dark-gray or black, greenish-gray, light-tan and brown-weathering, fine-grained to cryptocrystalline marble in beds up to several meters thick, with minor schistose varieties. Contains white, fine-grained veins and stringers of calcite, typically parallel to compositional layering and foliation of adjacent rocks. Commonly associated with or gradational into calc-silicate lithologies (pCfcs), and interlayered with gray quartzite and gray, calcareous phyllite.

CALC-SILICATE SCHIST- Brown-weathering, greenish-gray. calcite-epidote-diopside-quartz-plagioclase-actinolite schist; light-gray to white tremolite schist; light-greenishgray and purplish-gray, very-fine-grained spheneplagioclase-chlorite-diopside schist; red and green, reddish-brown-weathering, coarse-grained, pyrrhotite and calcareous hornfels or skarnoid (Table Mtn.). Calc-silicate schists comprise only a few percent of the total section. but are important stratigraphic markers. Metamorphosed locally to skarnoid and sulfide-bearing and tungsten

FELSIC SCHIST- White, light-gray and light blue-gray, very finely-laminated (mm-scale), white mica-plagioclase-quartz schist, and white laminated, banded, micaceous quartzite. Locally contains arsenopyrite(?), pyrite and chalcopyrite Rusty, reddish-brown-weathering and locally very friable. Commonly associated with dark-gray to black graphitic-

The Lime Peak, Quartz Creek, and Mount Prindle plutons are includes the Cache Creek pluton to the west and Circle Hot Springs pluton to the east (Chapman et al, 1971; Foster et al, 1983). Ten K-Ar age dates from the

In the study area, each of the three plutons in the Hope intrusive suite is composed of two or three main granite units (labeled chronologically TKg1, TKg2, and TKg3). The mineralogy of all the units is similar: quartz, K feldspar plagioclase, and less than 10 percent biotite and/or muscovite. Plagioclase is slightly to greatly sericitized and biotite is partly chloritized. Locally, primary topaz and/or tourmaline (0 to 5 percent) are present. The rocks are locally

EQUIGRANULAR MONZOGRANITE- White-weathering, fine to medium-grained equigranular biotite-white mica monzogranite; crops out as a small body in the Lime Peak pluton and as minor dikes in the Mount Prindle pluton: Unit typically contains 2 to 6 percent zinnwaldite (lithium bearing white-mica). Biotite (0 to 3 percent), topaz (0 to 5 percent), tourmaline (0 to 5 percent), and fluorite (0 to 2 MONZOGRANITE- White, gray, pink, and greenweathering biotite-bearing monzogranite with lesser syenogranite. Locally contains white mica (muscovite?; <3 percent) in addition to biotite. The unit is recessive weathering and typically forms smooth, low relief hills The unit is characterized by textural variability, relative abundance of rhyolite porphyry dikes, and the appearance of intruding in large part as dikes. The unit typically includes fine to medium-grained porphyritic granite which is slightly older than the fine to medium-grained equigranular granite. Medium-grained seriate rocks of this unit are present only in the Mount Prindle pluton, are gradational in texture to the medium-grained porphyritic rocks, and form knobby, blocky tors, generally smaller

(TKg1). Contains clear, smokey, and black quartz phenocrysts with common beta quartz outlines, and locally contains clusters of black tourmaline. In the Lime Peak pluton, the unit contains abundant chlorite greisen veins. COARSE-GRAINED SERIATE SYENOGRANITE- White, pink, and gray-weathering, coarse-grained seriate biotite syenogranites with lesser monzogranite. Typical grain size ranges from 0.5 to 12 mm; coarsest variant forms tors and commonly has large (up to 4 cm) megacrysts of potassium eldspar. Unit also weathers locally to loose grains forming abundant grus. This unit in the Quartz Creek and Mount Prindle plutons locally contains 10 to 20 percent K-

feldspar megacrysts (2 to 4 cm). Intruded by minor

aplite/pegmatite dikes of monzogranite composition with

up to 5 percent tourmaline and/or muscovite. Minor

miarolitic cavities and local quartz veins. Topaz and

than the tors of the coarse-grained seriate syenogranite

PORPHYRITIC, EQUIGRANULAR AND SERIATE

Other Intrusive Rocks

fluorite are very rare secondary minerals.

Plutonic and hypabyssal rocks of the Steese-White Mountain area that are not part of the Hope intrusive suite probably range from Early Paleozoic to Tertiary age and include syenite, gabbro and biotite lamprophyre.

> FELSIC GRANITIC BODIES- Orange and brown-weathering porphyritic granitic rocks, generally monzogranite. The unit forms dikes and small bodies and is similar to the rhyolite porphyry unit (TKr) but is slightly coarser grained. The unit crops out in four locations in the southern part of the map area and is probably related to

the Hope intrusive suite.

LAMPROPHYRE- Reddish-brown-weathering mafic dikes and sills (0.5 to 2 m wide) and small bodies with biotite phenocrysts (up to 2 cm) in a fine-grained groundmass Locally, minor altered clinopyroxene and/or hornblende(?) phenocrysts are present. Groundmass is composed dominantly of clinopyroxene, biotite, and K-feldspar Locally, large primary garnets are present, as are rounded inclusions of quartzite and jasperoid quartz. Unit is associated with the hornblende granite (TKhg) described below. Both the lamprophyre (TKI) and hornblende

granite (TKhg) are present in two northeast trending belts: one between the Lime Peak and Quartz Creek plutons, and the second south of Mount Prindle pluton. HORNBLENDE MONZOGRANITE- Dikes and small bodies of white to brown-weathering medium-grained hornblende monzogranite. Unit crops out in two discontinuous northeast trending belts and is associated with lamprophyre

(TKI). Most rocks are phaneritic and altered; many contain large megacrysts of feldspar and up to 1 percensubhedral sphene (up to 1 mm). Hornblende is partly to completely altered to chlorite and iron-oxides, and feldspars are highly sericitized. Dikes of the unit are commonly porphyritic with a microcrystalline groundmass. PINNELL TRAIL MONZOGRANITE - Slightly porphyritic.

coarse-grained K-feldspar megacrysts in a matrix of medium-grained quartz, zoned plagioclase (andesineoligoclase), and biotite. Small amounts (less than I percent) of primary hornblende, sphene, magnetite, myrmekite, and tourmaline are also present. Mafic minerals are pervasively altered to chlorite + rutile; plagioclase is pervasively sericitized. This unit also includes aplite dikes (< 1 percent). The age is most likely 70 to 90 Ma, based on the presence of monzogranites with these ages and similar textures and mineralogies in the Fairbanks and Circle mining districts. Unit crops out in the eastern part of the map area.

SYENITE- Dark to light gray-weathering dikes and sills of syenite composed of K-feldspar with minor (<3 percent) albite and apatite; crops out near the western boundary of the map area. K-feldspar is partly altered to clay minerals. The unit is probably related to the clinopyroxene-biotite syenite in the Livengood Quadrangle where two K-Ar ages of about 86 +/- 6 Ma have been determined (Burton, 1981).

GABBRO- Dark-weathering sills and dikes(?) of gabbro with minor clinopyroxenite and lherzolite; may include minor volcanic rocks; crops out in the Fossil Creek Volcanics, northwest of the Lime Peak pluton. Gabbro composed

dominantly of clinopyroxene and plagioclase. In some gabbros, minor amounts of brown hornblende or olivine are present. Rocks are holocrystalline, medium- to coarsegrained equigranular, or fine- and medium-grained porphyritic, and commonly highly altered to chlorite, clinozoisite, opaque minerals, carbonate, and +/- sericitic white mica. Lherzolites and clinopyroxenites are present with gabbros in the northwestern corner of the map area. The mafic and ultramafic plutonic rocks may be

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