/* ---------- CODESET ---------- */
Title: Geologic Map of the Circle mining district, Alaska
Publication: RI 95-2A
URL: http://www.dggs.dnr.state.ak.us/pubs/pubs?reqtype=citation&ID=2514
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DESCRIPTIONS OF UNITS

UNCONSOLIDATED DEPOSITS

Fluvial Deposits

Qa - FLOODPLAIN ALLUVIUM---Elongate deposits of pebble-cobble gravel and sand with a few to numerous boulders beneath modern floodplains; well-sorted and medium to thick bedded, locally crossbedded; surface smooth, except for local low scarps

Qaf - ALLUVIAL-FAN DEPOSITS---Fan-shaped, heterogeneous mixtures of pebble-cobble gravel with some sand and silt and few to numerous, subangular to rounded boulders; thick to thin bedded; surface smooth, except for numerous shallow, interconnected channels

Qat - TERRACE ALLUVIUM---Elongate deposits of pebble-cobble gravel and sand with trace to some silt and rare to numerous boulders comprising stream terraces bordering modern floodplains; includes strath terraces; higher, older terraces are covered with 3--5 m of undifferentiated colluvium; surface smooth, except for local low scarps

Colluvial Deposits

Qc - UNDIFFERENTIATED COLLUVIUM---Irregular, heterogeneous blankets, aprons, and fans of angular to subrounded rock fragments, gravel, sand, and silt up to 3 m thick that are left on slopes or at slope bases by residual weathering and complex mass-movement processes, including rolling, sliding, flowing, gelifluction, and frost creep; locally washed by meltwater and slope runoff; medium to thick bedded; surface smooth, lobate or terraced, and generally reflects configuration of underlying bedrock surface

Qcf - UNDIFFERENTIATED COLLUVIUM---Irregular, heterogeneous blankets, aprons, and fans of angular to subrounded rock fragments, gravel, sand, and silt up to 3 m thick that are left on slopes or at slope bases by residual weathering and complex mass-movement processes, including rolling, sliding, flowing, gelifluction, and frost creep; locally washed by meltwater and slope runoff; medium to thick bedded; surface smooth, lobate or terraced, and generally reflects configuration of underlying bedrock surface

Glacial Deposits

Qd - MODIFIED DRIFT OF MASTODON DOME GLACIATION---Heterogeneous blankets of pebble-cobble gravel with trace to some sand and silt and few to numerous subangular to subrounded boulders deposited directly from glacial ice and reworked by mass-movement processes; locally sorted into circles and nets (spot medallions) by frost action; massive bedded; surface smooth to slightly irregular, lobed, and terraced

Complex Deposits

Qh - MAN-MADE DEPOSITS, PRIMARILY PLACER-MINE TAILINGS---Water-washed pebble-cobble gravel with trace to some sand; moderate to well-sorted; surface irregular or forming symmetrical ridges and cones

Qsu - UNDIFFERENTIATED PEAT AND ORGANIC SILT---Heterogeneous blankets, aprons, and fans of peat and organic silt laid down by fluvial, eolian, and colluvial processes; probably perennially frozen and locally ice rich; surface smooth to locally pitted and gullied by melting of ice-rich permafrost

INTRUSIVE ROCKS

Tm - MAFIC DIKE---Black to dark gray, aphanitic to slighly porphyritic mafic dikes; 0.5--2 m thick, occurs as sills and dikes spatially associated with Tg and northeast trending faults; major plagioclase, augite, hornblende, and magnetite; minor K-feldspar and quartz; compositionally identical to basalt in Fairbanks area with K-Ar age of 55 ± 2 to 51 ± 2 Ma

Tge - EQUIGRANULAR TERTIARY GRANITE---Light gray tourmaline biotite syenogranite with fine to medium grained equigranular texture; contacts with Tg are obscure

Tg - TERTIARY GRANITE---Light gray, (hornblende, tourmaline) biotite monzogranite to syenogranite; textures vary, seriate, porphyritic, equigranular, and aplitic-pegmatitic; porphyritic (5%--20% 5 mm quartz and 5--10 mm orthoclase in 2--4 mm groundmass) and subequigranular (2--5 mm grain size) phases most common; accessory minerals include; zircon, topaz, apatite, and ilmenite; biotite is slightly chloritized; orthoclase slightly sericitically altered; sporadically occurring chlorite greisen veins, 1--2 mm thick, minor fluorite, topaz, and cassiterite, most common near hornfels contact; rare muscovite greisen; K-Ar and Ar-Ar dating of biotite and greisen muscovite yield ages of 54 ± 2 to 58 ± 2 Ma

Kg - CRETACEOUS GRANITE---Chloritized porphyritic (hornblende) biotite monzogranite; 5--10 mm quartz and 10--45 mm microcline phenocrysts in 2--5 mm groundmass; primary trace minerals include zircon, allanite, apatite, and ilmenite; plagioclase extensively zoned, and appreciably sericitized; trace hornblende slightly altered to biotite; biotite slightly to completely altered to chlorite, rutile, sphene,

magnetite, and calcite; thin quartz-chlorite veins and veinlets are common; disseminated sericite-quartz alteration (pattern) and sericite-quartz veinlets occur sporadically in the granite; anomalous gold concentrations are spatially associated with the sericite-quartz occurrances; apparent K-Ar ages vary from 57 ± 2 to 71 ± 2 Ma.; Ar-Ar age dating studies indicate age resetting due to Tg intrusion, a likely age of 90 ± 2 Ma

Kgp - CRETACEOUS GRANITE OR GRANODIORITE(?) PORPHYRY---Chloritized and sericitized (hornblende) biotite monzogranite porphyry; 2--4 mm biotite and feldspar phenocrysts in an aphanitic groundmass; occurs as 1--10 m thick, steeply dipping dikes located between Deadwood Creek and Porcupine Dome; usually extensively altered to sericite-quartz-carbonate-arsenopyrite; anomalous gold concentrations; least altered rocks are similar in major and minor element chemistry to Kg; Ar-Ar age dates of biotite from least altered dike near Tg pluton indicates some apparent-age resetting and a minimum age of 68 ± 0.5 Ma

Kgrd - CRETACEOUS GRANODIORITE---Chloritized porphyritic hornblende biotite granodiorite; 10%--20% 7--15 mm microcline phenocrysts in a 2--4 mm granitic ground-mass; occurs as 50--200 m diameter isolated masses within and intruded by Kg; mineralogy and alteration similar to Kg; slightly higher abundance of mafic minerals and plagioclase, generally finer grain size; single K-Ar age date analysis from chloritized biotite yields a minimum age of 70 ± 2 Ma; Ar-Ar studies indicate age resetting and a likely age of 90 ± 2 Ma

METAMORPHIC ROCKS

Pzst - THRUST PLATE SCHIST---Dark gray to green gray, fine to medium grained, slightly calcareous biotite-chlorite-muscovite-quartz schist with porphyroblasts of pink garnet and plagioclase; forms flaggy to platy subangular talus and rubble crops; porphyroblasts of garnet and plagioclase are less than 1 mm in diameter; garnet is subhedral, skeletal, and occasionally moderately helecitic. Scattered anhedral grains of tourmaline and clinozoisite are common in minor and trace amounts, unit contains layers of micaceous quartzite up to 20 cm thick and impure marble lenses up to 5 cm thick. Local small isoclinal folds are visible in outcrop; abundant fragments of mesoscopic isoclinal fold hinges are present in talus and rubble

Pzsu/Pzsq/Pzmu - UPPER SCHIST---Mixed unit dominated by thinly layered, fine to medium grained, light gray to medium gray or tan, variably garnetiferous, pelitic quartz-muscovite schist, muscovite-quartz schist, chlorite-quartz-muscovite schist, and distinct intervals several tens of meters thick of garnetiferous, calcareous albite-porphyroblastic muscovite-chlorite schist with interlayered thin, 5--3 cm thick, impure marbles (Pzmu); biotite is a common minor phase throughout the Upper Schist. Thin sections made from the metaclastic rocks of this unit reveal a black anhedral opaque mineral believed to be ilmenite. Impure marbles of the Pzmu subunit have a distinct porous, medium to dark brown weathering surface; they occur as layers or thin, laterally extensive lenses in calcareous chlorite-rich schists that have knotty, crenulated foliation and well-developed schistosity; schists of Pzmu form large, angular, slabby talus; in outcrop, Pzmu schists

have common intrafolial knotty quartz veins, lenses, and pods about 2 cm thick and up to 10 cm long; evidence of multiple fold deformations is seen in outcrops in the form of tightly appressed refolded isoclinal folds; pelitic quartz-muscovite schists (Pzsu) resemble those of the Upper Quartzite; except where they contain dominant quartzite, they form subdued rubble outcrops of small 2--10 cm diameter, irregular subangular plates; the pelitic schists are only slightly chloritic; tourmaline is sparse but is a common trace mineral as is ilmenite(?); Pzsu rocks host local concentrations of thin to moderately thick quartzite and micaceous quartzite layers; and where quartzite is clearly dominate in abundance, this unit has been identified as Pzsq

Pzqu/Pzcq - UPPER QUARTZITE---Light to medium-gray, fine- to medium-grained, quartzite, quartz-muscovite schist, and medium-gray to greenish-gray, fine- to medium-grained porphyroblastic-albite-chlorite-muscovite-quartz schist (Pzcq); quartzites, micaceous quartzites, and grits up to tens of meters thick and blocky to slabby subangular talus are characteristic of this unit; coarse grained grits occur near the base of the Pzqu unit; quartzite layers in the Pzqu unit are massively lenticular within the surrounding quartz muscovite schists; calcite and chlorite are less common in Pzqu than in the Lower Schist and Middle Schist and Quartzite units; ilmenite is a common trace mineral, pyrite is present locally, tourmaline is often visible in these rocks with the aid of a hand lens. Pzcq represents thinly layered to moderately layered chloritic-muscovite-quartz schist and chlorite-muscovite quartzite; this unit comprises interlayers of quartzite and schist each up to 1 m thick. Pzcq is characterized by its gray-green color, planar to slightly crenulated foliation, fine to medium grain size, and especially its large planar slabby subangular talus that attains 1--2 meters in its largest dimension; very little intrafolial quartz veining, and sparse float of impure marble and calcareous chlorite-muscovite schist; grain size variation in some thinly laminated quartzite layers resembles bedding (top faces west?)

Pzsm/Pzcm - MIDDLE SCHIST AND QUARTZITE---Medium to dark gray and medium greenish gray fine to medium grained quartz-muscovite schist, porphyroblastic - albite-quartz chlorite-muscovite schist, lesser amounts of quartzose porphyroblastic-albite-chlorite schist (Pzcm) similar to that occurring in the Lower Schist unit, and fine to medium grained thin to thickly layered quartzites up to 5 m thick; quartzite and quartz-muscovite schist are more abundant in the Middle Schist and Quartzite than in the Lower Schist unit; calcite and clinozoisite are common minor minerals in the chlorite bearing schists; pyrite is commonly present in trace amounts

Pzsl/Pzcl - LOWER SCHIST---Medium to dark gray and medium greenish-gray, fine to medium grained, commonly slighly calcareous quartz-muscovite schist, porphyroblastic-albite-quartz-chlorite-muscovite schist, and lesser amounts of quartzose porphyroblastic-albite-chlorite schist and chlorite schist (Pzcl); thin, predominantly fine to medium grained quartzite occurs throughout the section; occasional coarse grained grit layers from a few centimeters up to a meter thick occur in the lower part of the section; clinozoisite and calcite are common minor minerals in the chlorite bearing schists; trace amounts of biotite partially replace chlorite, commonly where chlorite is in contact with garnet; occasionally, biotite is abundant enough to be seen in hand specimen; garnet

occurs as pink porphyroblasts about 1 mm in diameter and, where it has been retrogressively altered to chlorite, as dark green knots 1 mm in diameter; in thin section, garnet is commonly skeletal with quartz inclusions and varies from fresh to partially chlorite altered; trace occurrences of dark green-brown tourmaline crystals 1--2 mm long are common; ilmenite(?) is the most common opaque mineral, followed by pyrite, and rare euhedral magnetite. Hornfels variants (stippled) occur as roof pendants and in broad zones surrounding Cretaceous and Tertiary plutons. They are bleached light tan to light gray, are quartz rich, and often contain biotite that cross-cuts foliation; quartzites, muscovite-quartz schists, and biotite-muscovite-quartz schists predominate in the hornfels zones; occasionally, subhedral to euhedral andalusite up to 2--3 mm long can be seen in hand specimen; increased quartz content of the more intensely hornfels schists makes the rocks in these thermal metamorphic zones more resistant than the normal lower schist units

DISCLAMER