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GE/1

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ROCK DESCRIPTIONS FOR REGIONAL GEOLOGIST

MEMORANDUM

The following petrographic descriptions apply to rocks collected by Regional Geologist, I. Jennings.

Thomas' property, Beulah:

Fine to medium grained gray rock with rounded crystals of felspar up to 3 mm.

The thin section shows ragged crystals of biotite and rectangular crystals of felspar, largely epidotised, in a finer grained felspathic ground mass. The felspar of the ground mass is of two kinds; firstly short lath like crystals of albite or oligoclase with lamellar twinning and low extinction angles; secondly irregular, interstitial, untwinned grains of orthoclase.

Some of the biotite has been further altered to chlorite and there are single flakes of chlorite through the rock. Biotite also has inclusions of apatite. Magnetite is disseminated through the rock.

The rock is an altered felspar porphyry.

Forth River at Mouth of Horton's Creek:

Grey schistose rock with porphyroblasts of quartz.

Thin section shows irregular stretched grains of quartz in a matrix of sericite and smaller fragments of quartz; a moderately small amount of graphite is also present.

The rock is a quartz-sericite schist.

Junction of Dove Mill Road and Hanson's Creek:

Dark gray (fine grained spotted) laminated rock with oxide stains.

In thin section is seen to consist of oriented sericite with lenses of quartz grains. Spots of iron oxide indicate the erstwhile presence of small garnets. Chloritoid is also present in pleochroic greenish brown confused masses.

A quartz vein crosses the section at a low angle to the bedding.

The rock is a garnetiferous quartz-sericite schist.

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5/64/10 Dove Schist:

Gray quartzitic schist, irregularly laminated.

In thin section shows intense folding on a microscopic scale. Consists of about equal amounts of quartz and sericite with occasional garnets. Much of the quartz is microcrystalline. There is a small amount of magnetite - the octahedra having been distorted and sometimes shattered, to give fine bands and strings.

5/64/11:

Greenish gray banded schistose rock. There are two planes of schistosity, and both cut the banding or bedding.

Thin section shows laminae of sericite enfolding lenses of quartz, quartz grains and microcrystalline quartz. There is some chloritoid, a little chlorite, and a small amount of iron ores.

The rock is a quartz-sericite schist.

5/64/12:

Silky gray, finely spotted, laminated rock.

Thin section shows oriented biotite and sericite interlaminated with fine granular quartz. The laminae of quartz are really attenuated lenses. Most of the spots are mere holes, but a few are filled with minute books of biotite in random arrangement, the whole mass often giving a hexagonal section indicating that the biotite has replaced garnet.

The rock is a quartz-mica schist.

2/14/8:

Light gray medium to fine grained rock, made up of white and dark green crystals.

In thin section the rock is seen to consist of quartz, felspar, biotite and hornblende in that order of abundance. The hornblende crystals are the largest in size, next comes biotite, then felspar and quartz. Felspar and quartz make a granular ground mass of anhedral crystals averaging .1 mm. across. The larger felspars average .5 mm.; they are euhedral and unlike those of the ground mass, kaolinised. Orthoclase may be the principal felspar, but alteration prevents identification. There is a suggestion of graphic intergrowth between quartz and felspar in the ground mass. Biotite is associated with hornblende and is suggestive of alteration.

The rock is a fine grained granite.

2/14/9:

Pinkish gray porphyritic rock with phenocrysts of quartz and felspar up to 2 mm. long in a fine grained ground mass.

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In thin section euhedral felspars and rounded and embayed quartz grains are seen in a fine grained quartzo-felspathic matrix.

The felspar of the phenocrysts is probably albite, but both phenocryst and ground mass felspar shows alteration.

The rock is a quartz-felspar porphyry.

2/14/10:

Light gray rock with crystals of felspar set in fine gray ground mass and containing cubes of iron pyrites.

Porphyritic structure appears in thin section with euhedral smoky crystals of felspar showing simple and multiple twinning and clear irregular grains of quartz set in a microcrystalline groundmass. Iron pyrites is in large crystals and small granular masses surrounded by iron stains.

Both orthoclase and albite occur as phenocrysts.

The rock is a quartz-felspar porphyry.

2/13/10:

Light coloured medium grained rock. Crystals of pink felspar make up most of the rock, with dark yellowish green material between them.

A hypidiomorphic granular texture shows in thin section.

Pink orthoclase is the principal mineral with inclusions of another felspar and hornblende. Interstitial quartz is prominent. The other felspar is oligoclase. Yellow-green hornblende appears as an alteration of colourless augite, very little of which remains. The hornblende is closely associated with quartz and epidote.

A little iron ores, rutile and zircon, appear as accessories.

The rock is a granite.

2/13/11:

Medium to fine grained rock, very similar to No. 10, but a little finer grained.

In thin section may be seen to differ from No. 10 by the presence of biotite and chlorite and a greater proportion of quartz.

The rock is a fine grained granite.

2/13/12:

Fine to medium grained greenish-black rock, with light and dark coloured crystals showing glassy cleavage faces. There are also some whitish irregular spots

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usually less than 1 mm. across of soft mineral. The rock has a slight vesicular tendency, and bears an outer layer of light brownish weathered material.

A greenish glass appears in thin section, containing crystals of felspar and pyroxene, both in the matrix and as phenocrysts. Iron ores are fairly plentiful.

The felspar phenocrysts tend to be stumpy rather than lathlike and contain numerous inclusions, and are often zoned. Extinction angles on albite twins normal to 010 show the felspar as andesine. However, the felspars are often considerably altered and data is difficult to obtain.

Augite is in twinned irregular crystals irregularly shattered, so that cleavage is not often apparent. The mineral is almost colourless and shows twinning. Alteration to chlorite has occurred.

Irregular patches of carbonate and chlorite are present. Sometimes chlorite forms a margin round the carbonate.

Iron ores, felspar and pyroxenes, occur as fine crystals in the matrix, and crystals of all intermediate sizes occur.

The rock is an augite-andesite.

2/13/12:

Medium to fine grained grey rock, with phenocrysts of felspar up to 3 mm. and masses of black glassy material of about the same size.

In thin section the specimen is obviously made up of different kinds of rock to give a fine breccia. The different rocks forming the breccia are all andesites containing altered felspars, augite magnetite and glass. The augite has given place to chlorite to some extent. The glass varies in colour from opaque black to almost colourless. The grain size of the andesites is also very variable.

2/13/2:

Medium grained grey rock with pink felspars and veins of epidote.

In thin section the structure is microgranitic, with some larger crystals of altered felspar, biotite, and confused masses of hornblende, all of which are altered and somewhat opacified. The general mass of the rock consists of felspar - usually too much altered to identify further, but both orthoclase and plagioclase are present - clear quartz, hornblende, biotite and white mica and small crystals of disseminated iron ore minerals. The felspars have a brownish hue and the quartz exhibits strain.

The rock is a granodiorite.

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2/16/1:

Fine to medium grained dark gray, saccharoidal rock.

In thin section intergranular texture is prominent with granular titaniferous augite between laths of felspar. There is a good deal of olivine in larger rounded crystals with strongly marked cracks. Skeletal crystals of ilmenite are scattered through the section.

The rock is an olivine basalt.

2/17/1:

Gray medium grained rock.

Similar in thin section to 2/16/1.

The rock is an olivine basalt.

2/T306/14/1:

Medium grained rock composed chiefly of pink felspars and greenish hornblendic material.

Pink felspars are the most prominent crystals showing in thin section and contain small inclusions of sodic felspar. Albite shows as clear broad lathlike crystals with multiple twinning in contrast to orthoclase which is very cloudy and untwinned. Quartz is prominent in clear irregular grains. Hornblende, partly altered to chlorite is present in ragged crystals with inclusions of plagioclase. Biotite is present in euhedral crystals and iron ore in fair amount disseminated through the rock.

The rock is a granite that may be contaminated with basic material.

(G. Everard)
MINERALOGIST & PETROLOGIST

The Director of Mines,
Department of Mines,
HOBART.