

Granitic rocks from the Montgomery 1:50 000 scale geological map sheet

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Abstract

The southern portion of the land mass covered by the Montgomery geological map sheet is occupied by granitic rocks (Cbg) and an associated area of granitic rocks which contain felsic volcanic screens (Cbgs). These two areas are cut by later mafic dykes (Dmv). The rocks are dominantly medium- to very coarse-grained, equigranular, biotite granitoid with minor, irregular patches and dykes of aplite.

INTRODUCTION AND AGE

This report will eventually form part of:

BROWN, A. V. (in prep). Geological Atlas 1:50 000 series. Sheet 78 (7912S). Montgomery. *Explanatory Report Mineral Resources Tasmania*.

Traditionally, the granitic rocks (Cbg) in this area have been considered to be of Cambrian age and similar to the Murchison (K-Ar, 512–538 Ma) and Dove (K-Ar, 476–509 Ma) granites of western Tasmania. The younger radiometric age (K-Ar, 414 Ma) obtained from this body have been attributed to 'leakage' of the relevant radioactive isotopes. Whilst a Cambrian age for this granitic body may still be correct, field evidence shows that:

- the granitic body is younger than the felsic volcanic (Cfv) rocks, as in the area around CN775410 granitic rocks intrude the volcanic rocks resulting in numerous screens of volcanic rocks (Cbgs) being incorporated within the granite; and
- between CN773414 and CN777422 the volcanic succession has been altered by contact thermal metamorphism produced by the granitic body, indicating that the granitic rocks are at least younger than the felsic volcanic suite if not younger than Cambrian.

FIELD DESCRIPTION

Overall, the granitic rocks in this area are medium-grained, equigranular, biotite granite/adamellite. The grain size ranges from medium (3–5 mm) to coarse (5–7 mm) and very coarse (7–9 mm). The feldspar grains are altered and weathered, being cream, pink or green in colour. Quartz grains exhibit extensive fracturing and zones of

recrystallisation. The percentage of biotite within an outcrop varies from place to place. The larger biotite grains contain kink bands. Cutting the main granitic rocks are thin dykes and small areas of aplite (e.g. around CN777396).

A small area of granitic rock (Cgf) intrudes the felsic volcanic (Cfv) rocks around CN774447. This granitoid is fine-grained and contains small (>10 mm) phenocrysts of feldspar. It has an irregular boundary with the felsic volcanic rocks and contains numerous blocks/screens of the volcanic rocks within its surface exposure.

In thin section, a typical sample of the granitoid consists of intergrowths of roughly circular areas of quartz (1–2 mm) with areas of subhedral, perthitic, alkali feldspar. The areas of alkali feldspar contain smaller (0.5–1.0 mm) plagioclase crystals and are partially altered to sericite and muscovite. Fractures within the sample are filled with a colourless to pale brown pleochroic (biotite?) mica and leucoxene, after opaque oxide grains.

ANALYSIS

Four samples were selected for analysis. From north to south these are:

1. Mo 203 — Approximately 500 m NNE of Schist Point [CN774412]. Granitic rock from within the area containing screens of volcanic rocks (Cbgs). Hand specimen consists of quartz, pink feldspar, biotite and an opaque mineral. Sample contains epidote alteration. Fifty metres along the spur the feldspars weather to a pale green clay.
2. Mo 221 — Approximately 400 m NNW of the lighthouse at Low Rocky Point [CN776402]. Coarse-grained biotite granitoid. Feldspars altered to pink and pale green but sample the best in the area.
3. Mo 214 — Approximately 200 m southwest of the lighthouse at Low Rocky Point [CN777396]. Coarse- to very coarse-grained biotite granitoid.
4. Mo 218 — Approximately 25 m from southern end of Low Rocky Point [CN772388]. Medium- to coarse-grained biotite granitoid.

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Sample No.	Mo 203	Mo 214	Mo 218	Mo 221
Analysis No.	873011	873012	873015	873016
AMG co-ords	CN774412	CN777396	CN772388	CN776402
SiO ₂	68.98	75.72	74.46	74.37
TiO ₂	0.53	0.24	0.24	0.24
Al ₂ O ₃	13.42	12.81	12.58	12.55
Fe ₂ O ₃	3.33	1.04	1.30	1.03
FeO	1.45	0.70	1.18	0.98
MnO	0.02	0.01	0.02	0.02
MgO	1.08	0.27	0.32	0.32
CaO	2.29	1.76	1.01	1.42
Na ₂ O	2.89	4.61	3.32	3.61
K ₂ O	4.37	2.85	4.79	4.52
P ₂ O ₅	0.07	<0.01	<0.01	0.17
Total S	<0.05	<0.05	<0.05	<0.05
CO ₂	0.16	0.15	0.16	0.10
H ₂ O	1.32	0.69	0.84	0.69
Total	99.91	100.85	100.22	100.02
Ba	1200	690	1050	950
Bi	7	<5	<5	5
Ce	140	105	110	120
Co	10	<4	<4	<4
Cr	80	81	81	99
Cu	24	19	18	21
La	48	46	53	70
Nb	14	18	15	18
Nd	30	23	31	36
Ni	16	7	4	7
Pb	9	13	11	6
Rb	130	97	145	135
Sc	<10	<10	<10	<10
Sn	9	4	<4	<4
Sr	185	155	99	105
Th	16	32	22	25
U	11	5	16	27
V	55	16	16	27
W	16	390	11	22
Y	35	43	38	44
Zn	23	21	15	12
Zr	280	175	165	165