Mineral Resources Tasmania

Mineralogical/Petrology Report
LJN2018-097

MINERALOGICAL ANALYSES, MT BISCHOFF

An unpublished Mineral Resources Tasmania Report for:

A Tuma

By: R.S. Bottrill and L Unwin

Date: July 2018

Mineral Resources Tasmania
Department of State Growth

Tasmanian Government

Mineral Resources Tasmania

SUMMARY

The rock is a quite unique assemblage of magnesite, beryl, sellaite and celadonitic mica.

INTRODUCTION

One mineral sample was received from Andrew Tuma, for mineralogical analysis. Details are shown in Table 1. As it appeared to contain some rare minerals it was selected for a detailed mineralogical study.

TABLE 1: SAMPLE DETAILS.

Reg. No	Field No	Location	Description
G408884		Mt Bischoff	beryl skarn

The sample was cut and prepared as a polished thin section in the University of Tasmania and this was used for petrological analysis. Some sample was also extracted for XRD analysis.

SAMPLE DESCRIPTIONS

Under the stereomicroscope the sample contains veins of white quartz and carbonates, with pale to deep blue beryl crystals, to about 10mm long, in a fine grained indeterminate blue-grey matrix (Fig. 1).

Fig. 1: Sample G408884, showing veins of white quartz and carbonates, with pale to deep blue beryl crystals, in a fine grained blue-grey matrix FOV: about 60 mm.

PETROLOGY

The polished thin section was used to study the microscopic petrology of the samples.

The sample is mostly composed of carbonate (~50%), quartz (25%) and beryl (~15%), with minor mica (5%) and sellaite (5%) .

XRD

XRD ANALYSES

The samples were prepared, examined and analysed in the MRT laboratories, Rosny Park, Tasmania. They were run on a Rigaku Miniflex 600 X-Ray Diffractometer system: a 600W generator 150mm goniometer with a Cu tube; 40kV/15mA, sample spinner and a D/teX Ultra High Speed 1D Detector with Be window, -3º to 145º 2Ø scanning range and 2º - 140º 2Ø measuring range, with a scanning speed of 0.01 to 100º/min, A graphite monochromator and a Kß Ni- filter, The analysis software used is the PDXL2 using the ICCD database.

The results are shown in Appendix 1 and Table 2. These indicate the veins are a mixture of mostly magnesite, beryl and quartz. The matrix is mostly sellaite, mica (celadonite?), beryl and garnet (katoite or hydrogrossular?) and may have been an intensely metasomatised metasediment related to the tin mineralisation.

TABLE 2: XRD SUMMARY (APPROX. WT.%)

Phase name	G408884a (vein)	G408884b (matrix)
Magnesite	82 (9)	
Quartz	15(8)	
Beryl	1 (1)	13(11)
Siderite	1 (1)	
Katoite	<1	5(2)
Illite	<1	
Magnesite		8(2)
Sellaite		29(18)
Calcite		6(2)
Celadonite		39(19)

DISCUSSION

This is a mineralogical association that appears unique in Tasmania, and probably very rare in the world, containing magnesite, beryl, sellaite and celadonitic mica. It appears to have formed during the metasomatism of peltic sediments associated with the tin sulphide ores and skarns at Mt Bischoff. The metasomatism was most likely due to F and Be-rich magmatic fluids associated with the quartz porphyries intruding this deposit.

R.S. Bottrill
MINERALOGIST/PETROLOGIST

L Unwin
TECHNICAL OFFICER

Mineral Resources Tasmania

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Appendix 1: XRD Laboratory Report

Client: R. Bottrill
Sample Source: Mt Bischoff
Job Number: LJN2018-097B
Analysis: Approximate Mineralogy
Method: X-Ray Diffraction
Analyst: L Unwin
Lab Manager: R Bottrill
Date: 2/10/2018

Analysis Results – G408884a

General information

Analysis date	2018/09/18 12:02:09		
Sample name	LJN2018-097	Measurement date	2018/09/18 08:45:06
File name	G408884a.ras	Operator	lunwin
Comment	Shifted 0.08 Carbonate Layer only		

Phase name	Content(%)	Formula	Figure of merit	DB card number
Magnesite	82.4(9)	Mg (C O3)	2.772	01-071-6263
Quartz	14.6(8)	Si O2	4.820	00-005-0490
Beryl	1.42(8)	Na0.02 Be3 Fe0.06 Al1.94 Si6 O18 (H2 O	1.239	04-012-1582
Siderite	1.30(12)	(Fe0.65 Mg0.35) (C O3)	2.900	01-082-9278
Katoite	0.25(5)	Ca3 Al2 (O H)12	0.525	04-017-4321
Illite	0.07(12)	K0.7 Na0.01 Ca0.01 Mg0.15 Fe0.04 Al2.59	0.960	04-017-0520

Analysis Results – G408884b – Green layer

General information

Analysis date	2018/09/20 11:23:20		
Sample name	LJN2018-097-RSB	Measurement date	2018/09/18 10:03:42
File name	G408884b.ras	Operator	lunwin
Comment	Green layer		

Qualitative analysis results

Phase name	Content(%)	Formula	Figure of merit	DB card number
Celadonite	38.9(19)	K0.83 Na0.01 Ca0.03 Mg0.41 Fe1.51 Al0.12	1.113	04-017-0525
Sellaite	29.0(18)	Mg F2	0.489	01-071-4795
Beryl	13.1(11)	Na0.3 Be3 Mg0.3 Al1.7 Si6 O18 (H2 O)	1.913	04-013-3096
Magnesite	8(2)	Mg (C O3)	2.916	01-071-3698
Calcite	6(2)	Ca0.936 Mg0.064 (C O3)	1.177	04-013-2116
Katoite	5(2)	(Ca O)3 (Al2 O3)1.425 (H2 O)4.8	1.855	01-076-2505

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