

Mineral Resources Tasmania
Mineralogical/Petrology Report
MPR2012/044

XRD ANALYSES: MELBA FLATS

An unpublished Mineral Resources Tasmania report for
T. McGilvray, MMG, Rosebery Mine

by R S Bottrill and R N Woolley

10 October 2012

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INTRODUCTION

The objective of this particular study is to confirm the mineralogy of a sample collected by Todd McGilvray from a drillhole in the Rayne prospect, on EL49/2004 Rayne in the Melba Flats area, near Rosebery in W Tasmania. The sample is high in Ba and Sr; the assay gives >10000 ppm Ba and 5450ppm Sr (unpub. MMG data). The drillhole is RYN001, intersected at 446.6m (0.6m wide), located at E364312/N5368584 (GDA94) drilled to 237magN azimuth at -75 degrees dip.

The sample was identified as in Table 1 below:

Table 1: Sample details

| MRT ID | Sample ID | Location | Description | Comment/Instruction |
|---------|-----------|-------------------------------|--------------|---------------------|
| G403598 | D1392659 | Rayne Prospect, RYN001/446.6m | Breccia zone | High Ba & Sr |

TREATMENT

The sample was prepared, examined and analysed in the MRT laboratories, Rosny Park, Tasmania. It was run on an automated Philips X-Ray diffractometer (XRD) system: PW 1729 generator, PW 1050 goniometer and PW 1710 microprocessor with nickel-filtered copper radiation at 40kV/30mA, a graphite monochromator (PW1752), sample spinner and a proportional detector (sealed gas filled PW1711). The PW1710 system is presently driven by the CSIRO XRD software: "PW1710 for Windows" and "XPLOT for Windows". Interpretation and quantification is largely manual, using a series of prepared standards of the more common minerals to enable some semi-quantitative analysis.

DESCRIPTION

The sample was examined by stereomicroscopy in the MRT laboratories, Rosny Park. It exhibits a hydrothermal breccia with abundant angular clasts of white to grey barite and medium to dark grey weakly foliated mudstone, in a white to grey matrix rich in barite with ~10% pyrite. The grain size of both the barite and pyrite is medium to coarse grained (0.1-4 mm). There may be trace arsenopyrite, but no other identifiable minerals were noted.

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XRD RESULTS

The sample is rich in barite, with minor calcite, quartz, pyrite, chlorite and plagioclase. There is a trace of a mineral corresponding with barian celestine, or perhaps strontian barite, an intermediate phase between barite and celestine (SrSO₄).

INTERPRETATION

The strontian barite/ barian celestine may be richer in the grey barite zones, probably largely the breccia matrix in the core, rather than the white areas, suggesting it may have formed during brecciation. The chlorite and plagioclase may be in the grey "mudstone" clasts.

Barite and celestite form a complete solid solution, but intermediate compositions are rare. This is because the minerals in this series are very inert once precipitated, and reflect some changes in hydrothermal fluid compositions during formation, e.g. perhaps a late increase in Sr forming a coating on older barite crystals during brecciation?

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Appendix 1: XRD Analyses

MRT Laboratory Report

Client: T. McGilvray, MMG

Sample Source: Rayne prospect

MRT Job Number: MPR2012/044

Analysis: Approximate Mineralogy

Method: X-Ray Diffraction

Results (approx wt %)

| Sample | MRT Reg. No. | 25%-35% | 10%-15% | 5%-10% | 2%-5% |
|----------|--------------|---------|-------------------------------|---|-------------------------------|
| D1392659 | G403598 | Barite | Calcite, Quartz, Pyrite | Chlorite, Plagioclase, ? ¹ | Ba- Celestine ² |

Peak overlap (e.g. Clinopyroxene, K-Feldspar and Titanite) may interfere with identifications and quantitative calculations

Amorphous material (e.g. hydrous iron oxides, organic matter) and minerals present in trace amounts may not be detected

¹ peak at 3.24Å, small peak at 3.00Å, very small peaks at 3.95Å, 2.90Å, 2.77Å; probably Titanite and/or K-Feldspar

² apparently concentrated in darker portions of core

Weight loss after treatment with HCl: 14.8%, probably representing calcite.

Analyst: R.N. Woolley

Date: 3 May 2012