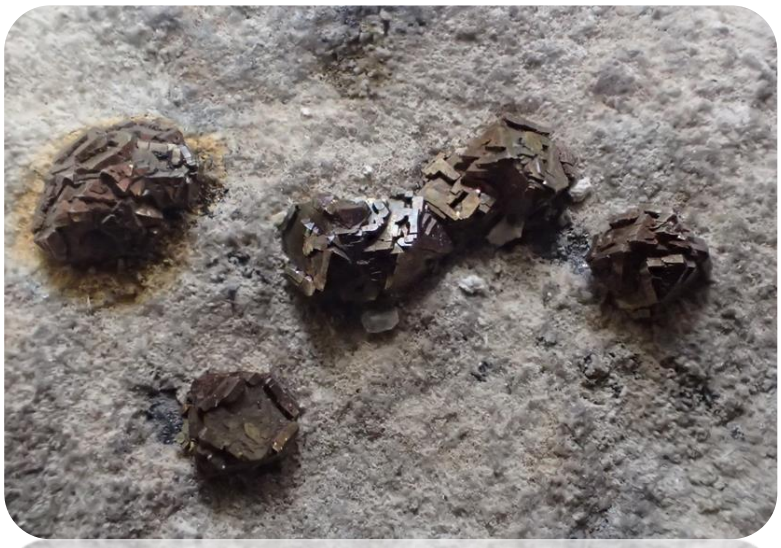
Mineral Resources Tasmania

Laboratory Report

LJN2019-123

MINERALOGICAL ANALYSES, AVEBURY MINE



An unpublished Mineral Resources Tasmania Report for:

N Parker

By: R S Bottrill & L Unwin

Date: 26 September 2022

Mineral Resources Tasmania
Department of State Growth

Tasmanian Government

SUMMARY

Two samples from the Avebury mine were analysed mineralogically. The brassy crystalline spheroids are pyrite. The white fibrous sample contains calcite and natrolite.

INTRODUCTION

Two mineral samples from the Avebury mine were submitted for identification. The sample details are given in Table 1.

Table 1. Sample details

MRT Reg. No.	Test	Location	Sample Description
G410112	XRD	Avebury	Pyrite or pentlandite?
G410118	XRD	Avebury	Calcite + okenite?

PROCESS AND DESCRIPTION

To determine the mineral composition, some representative parts of the material were examined optically and crushed and analysed by X-ray Diffraction (XRD) in the Mineral Resources Tasmania (MRT) Laboratories, Rosny Park and Mornington.

The sample G410112 is of massive, black, magnetite-rich skarn with some white coating (clay, amphibole or serpentine) with small spheroidal, complex crystal aggregates of a brassy sulphide to a few mm's wide (Figs. 1 - 3).

The sample G410118 contains white, crystalline calcite plus white fibrous material, with crystals to a few mm's long, from a vein (Fig. 4)

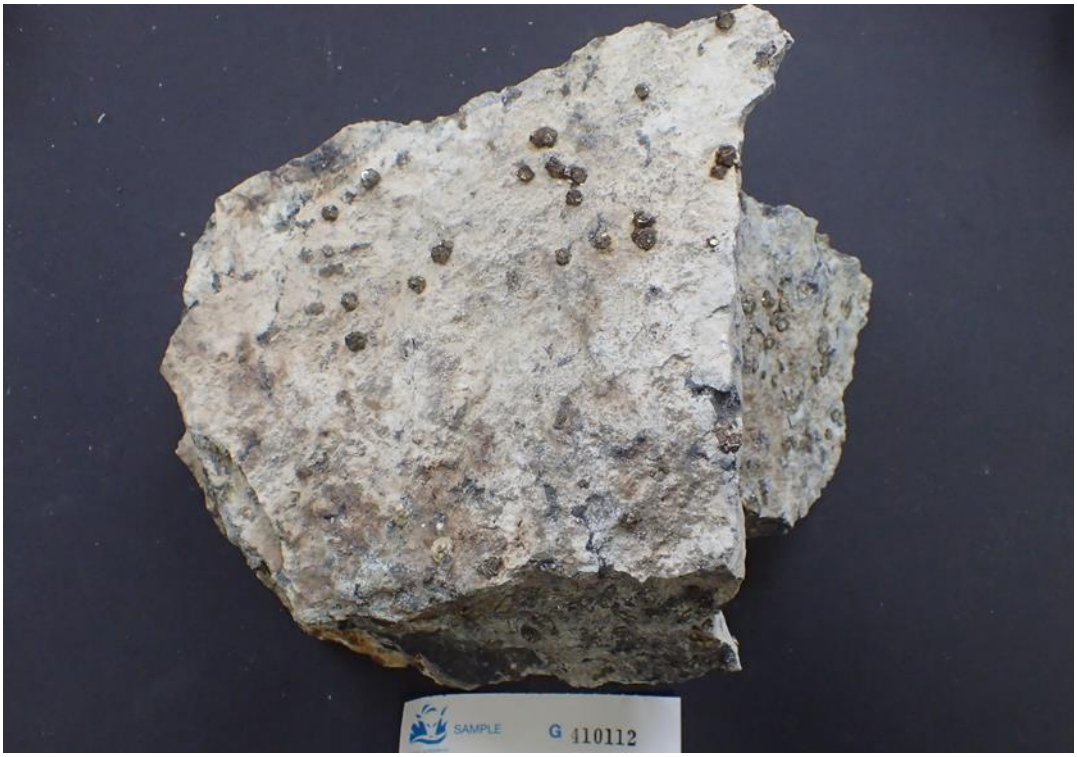


Figure 1: Sample G410112 Showing small spheroids of pyrite on matrix. Plain light, FOV (field of view) ~300mm.

Figure 2 Sample G410112 Showing small spheroids of pyrite on matrix. Plain light, FOV (field of view) ~50mm.

Figure 3: Sample G410112 Showing small spheroids of pyrite on matrix. Plain light, FOV (field of view) ~30mm.

Figure 4: Sample G410118, Glassy white calcite plus white fibrous natrolite. Plain light, FOV (field of view) ~25mm.

XRD ANALYSES

The samples were prepared, examined and analysed in the Mineral Resources Tasmania (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 Scintillation counter (SC) with Be window, -3^{o} to 145^{o} 2Ø scanning range and 2^{o} - 145^{o} 2Ø measuring range, with a scanning speed of 0.01 to 100^{o}/min, a graphite counter monochromator and a Kß Ni- filter. The analysis software used is the PDXL2, using the ICCD database.

The results are shown in Appendix 1.

XRF

The sample was analysed in two spots for major and trace elements using an Olympus Vanta M Series pXRF. The instrument uses a 4-Watt X-ray tube with application optimized anode material (rhodium Rh and tungsten W): 8-50 kV with a large area Silicon Drift Detector. The instrument uses the built in Olympus Vanta analysis software version 3.12.34.

The results are shown in Appendix 1 and Table 2. The rock is rich in Si, Al, Ca, Fe, Mg, Ni and S as expected. Overall Ni does not correlate well with Fe or S (Fig. 5), suggesting that most of the Ni is in the matrix rather than in the obvious coarse sulphides on the surface, which probably contain ~1% Ni, from the most S-rich analysis.

Table 2: Summary of Results, G410112, wt.%

Element	spot 1	spot 2	spot 3	spot 4	spot 5	spot 6
S	4.5	6.3	0.8	0.6	8.0	16.2
Ni	0.5	0.9	1.7	1.8	1.6	0.3
Fe	27.3	22.6	5.4	23.3	12.1	21.4

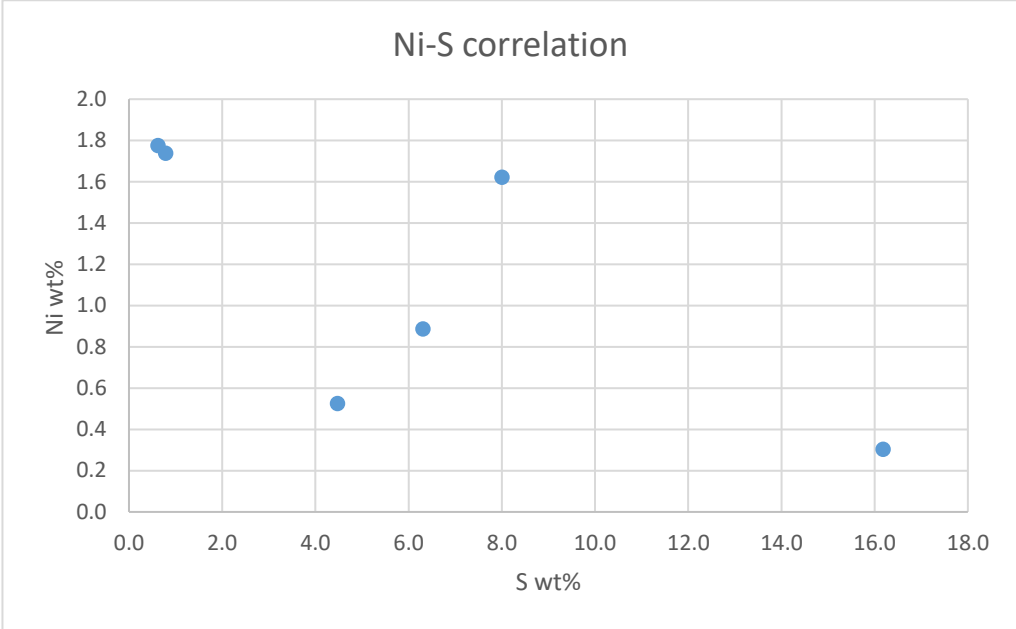


Fig. 5: Ni-S correlation, G410112

DISCUSSION

The brassy spheroids on G410112 are pyrite with only minor Ni, as crystalline clusters on a Ni and magnetite rich rock.

The sample G4101128 contains calcite and natrolite, probably the first record of zeolites in this deposit.

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This and other data collected in MRT laboratories may enter the MRT databases but every attempt will be made to ensure it remains closed file and not be available externally, unless at your request.

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Appendix 1: XRD Analyses

Client: N Parker
Sample Source: Avebury mine
MRT Job Number: LJN2019-123
Analysis: Approximate Mineralogy
Method: X-Ray Diffraction

Analysis Results – G410112

General Information

Analysis date	2020/02/05		
Sample name	LJN2019-123	Measurement date	2020/02/05
File name	G410112.ras	Operator/Analyst	lunwin
Comment	GD shifted -0.05 Refined		

Quantitative analysis results (RIR)

Phase name	Content (%)
Pyrite	53(±5)
Magnesio-arfvedsonite	25(±3)
Lizardite	19(±3)
Hydromagnesite	2(±8)
Magnetite	<1(±19)
Millerite	<1(±3)

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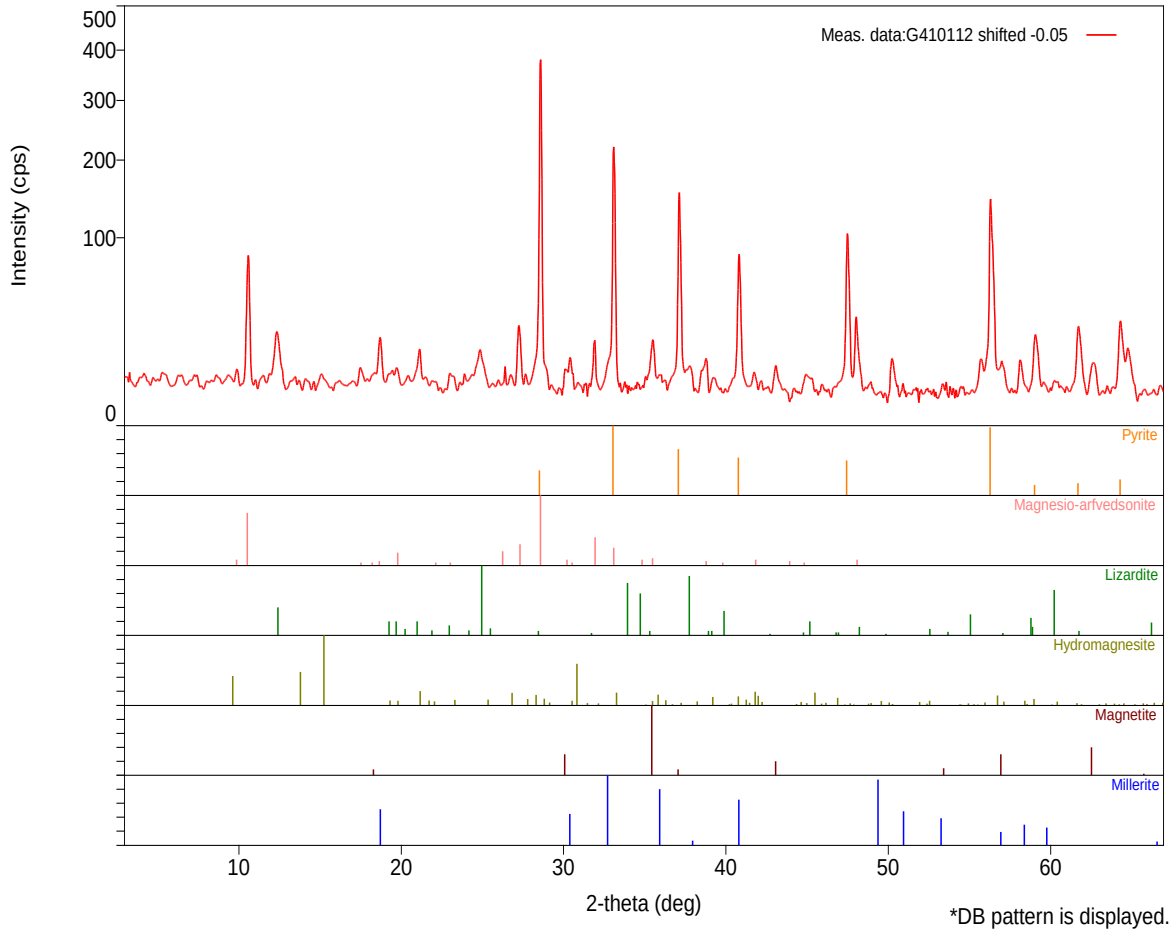
Phase Pattern



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Analysis Results – G410118

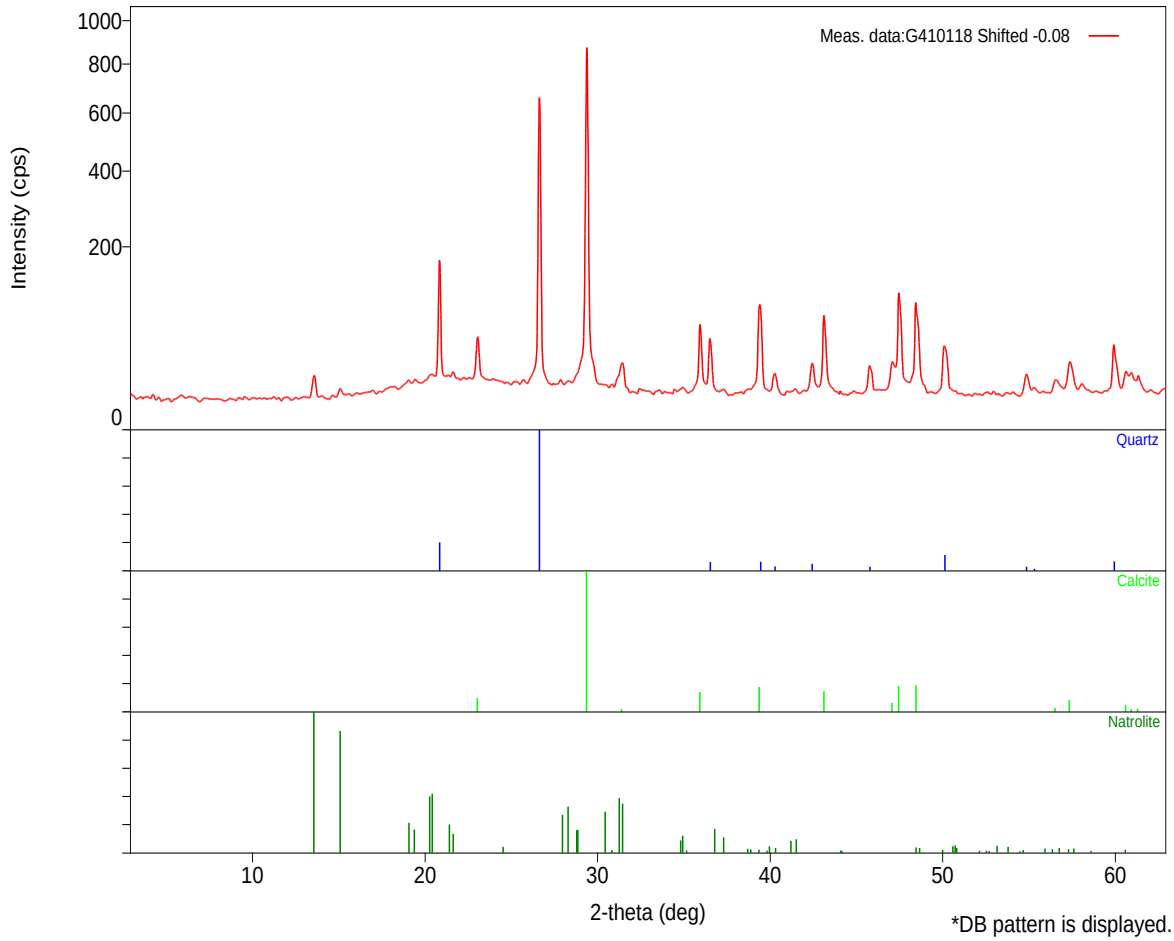
General Information

Analysis date	2019/12/13		
Sample name	LJN2019-123	Measurement date	2019/12/13
File name	G410118.ras	Operator/Analyst	lunwin
Comment	Shifted -0.08 with added Quartz		

Analysis results

Phase name
Natrolite
Calcite

Phase Pattern



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