

TDH/2

29th March, 1955

MEMORANDUMGEOPHYSICAL SURVEY OF AREAS NORTH AND WEST OF ZEEHAN

On the 22nd instant I visited Zeehan and discussed with Dr. S. Horvath of the Mineral Resources Bureau many aspects of the Geophysical Survey now being conducted in the Zeehan area.

Opportunity was taken to examine briefly much of the area pegged, the trenches bulldozed as a result of the survey, cores obtained from the two bore holes and some of the workings of the present Montana Mine.

AREAS COVERED BY SURVEY

1. North-East of present Montana Workings:-

- (a) Reconnaissance Traverses; six traverses about half a mile apart and approximately 3,000 feet in length.
- (b) Nearer the Mine; more detailed traverses; 200 feet apart and 2,000 feet in length.

2. South of present Montana Workings:-

A roughly triangular area having its apex near the Montana Mine; its eastern boundary near the Corinna Rd; its western boundary through the Big Ben Workings and on a bearing of about 200°; and its base along the Trial Harbour Rd. on its eastern portion and Oonah Hill in its western part. The traverses are usually 200 feet, sometimes 100 feet apart.

3. The Queen Hill Area:-

Across the Eastern part of Queen Hill between the Trial Harbour Road and the Western part of the town - about 200 feet apart, concentrated near the New Argent Shaft.

4. Limestone Area, North-West of Town:-

Fifteen traverses mainly across flat with Despatch Creek as the eastern boundary. The traverses are usually 200 feet (rarely 100') apart.

5. Town Area:-

A few traverses were run across the township.

GEOPHYSICAL METHODS USED:-

1. Electro-magnetic:-

The cause of the electro-magnetic indications is good conductivity of material such as pyrite,

galena or graphite.

2. Self Potential:-

The cause of self-potential anomalies is oxidation of sulphide usually pyrite or pyritised slates.

3. Magnetic:-

The cause of these indications is high magnetic susceptibility over line of lode. In this area it is considered that the indications are due to siderite as no magnetitic or pyrrhotite have been observed and at the Oceana it is the siderite in the lodes that causes the magnetic anomalies. In the areas tried here the magnetic anomalies have been rather weak.

4. Resistivity:-

This is a limiting device used in trenches put down to test anomalies shown by other methods.

The principal methods used are 1 and 2 checked by 3 where anomalies show.

RESULTS OBTAINED:

In certain areas anomalies obtained by electro-magnetic and self-potential methods coincide although no strong magnetic anomalies have been found in these. The areas are as follows:-

1. In the triangular area, zones which would be the continuation of the shear zones in which occur the Montana and Barnetts Workings. Three new zones roughly parallel and to the East were also picked up. Further indications were also obtained on the Big Ben Shear line.
2. Queen Hill Area. Both electro-magnetic and self-potential anomalies were picked up in three distinct zones, coinciding with known lines of lode, two pyritic and one pyrite and galena.
3. Limestone Area. A small indication was found over a limited area by the electro-magnetic method.
4. Town Area. A series of weak indications were recorded near the old Zeehan Mines.

However, it should be emphasised that these results are still tentative and no complete results can be obtained until all the levels of the pegs can be obtained. It is understood that both Mr. Robertson and the Commonwealth surveyor have almost completed these calculations.

PROSPECTING COMMENCED:

1. Three trenches have been bulldozed and two bores (90 feet each) put down on one anomaly south of the Montana Mine and it was found to be due to a graphitic slate containing pyrite but apparently no galena. Samples have been sent for assay and for geo-chemical investigation. One small piece of

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galena was found loose in the trench but this may have been caught in the bulldozer blade.

2. A trench was put in on another anomaly situated between the bores and the Montana Mine and some pyrite was found in the slates. Samples have been taken for geo-chemical examination.

3. A trench was bulldozed on the anomaly in the limestone area at five feet a soft clay (called locally a pug-lode) was encountered. A sample from this showed, on assay 3 dwt. of silver to the ton. Samples have been taken for geo-chemical examination.

GEO-CHEMICAL WORK:-

From the above notes it can be seen that anomalies recorded may be due to galena or pyrite or even graphitic slates. It was, therefore, decided to do some geo-chemical work over the anomalies noted and see if any traces of lead could be detected. Unfortunately lead salts do not rise to the surface easily as do those of zinc but samples taken below the surface and at a lower topographical level than the anomalies may give some results. The Bureau has a small rotary drill mounted to a Land Rover which can drill to about 10 feet and obtain samples for geo-chemical work.

WORK STILL TO BE DONE BY GEOPHYSICAL PARTY:-

1. Finish checking anomalies by Magnetometer.
2. Put in a few short lines on Queen Hill-Argent Area.
3. Take samples for geo-chemical investigation.
4. Correlate data obtained when levels are completed and if possible recommend prospects for trenching or drilling.

WORK TO BE DONE BY MINES DEPARTMENT:-

As soon as all the survey work is complete, and that stage should be reached by now, a start should be made in preparing plans of the area showing the traverse lines in relation to natural features, roads, lease boundaries and old mine workings. It will probably be necessary for Mr. Robertson to come to Hobart to initiate the draftsman to this work. A plan of the portion mapped by the Commonwealth surveyor will be prepared by him and forwarded here for incorporation on the plan.

GEOLOGICAL RECOMMENDATIONS:-

My visit was too brief to attempt any overall description of the area but until a geological examination can be made certain tentative suggestions may be made.

1. In the Queen Hill Area, the anomaly shown near the prospecting shaft put in by the Montana Company should be further investigated. It seems to me that the massive Queen Hill Quartzites may prove some sort of wall for galena "lodes" developed in the salts at their edge. Material from trenches

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shows that several inches of galena exist here in various places. It has been decided to put in some further short traverses along the eastern edge of the hill and take samples for geo-chemical work. It may be desirable later to put down some shallow bores.

2. If the main fault along the Corinna Road, near the Montana Workings is pre-mineral, then concentrations of metallic minerals may occur near it. I think that extensions of the north-east trending anomalies found in the triangular area could be followed by geo-chemical tests near this main fault.
3. From a brief examination of the Montana Workings, it would not appear as though there is any more ore in sight nor can any suggestion be made as to possible makes of ore.

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Forwarded through the Chief Geologist.