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THE MT. CLEVELAND MINE - SUPPLEMENTARY REPORT

On the 13/7/53 I prepared a report on the Mt. Cleveland Mine, as the result of a detailed examination of the area about the old workings. This investigation was carried out in connection with a geophysical survey by the Bureau of Mineral Resources during April and May of that year. In the report, a description of the geology, structure and workings was given, the genesis and potentialities of the sulphide bodies discussed and certain conclusions and recommendations were made. All this was from purely geological evidence, as the Geophysical Report had not been received and indeed, a year later, has still not been sent to this Department.

Among the recommendations made was one that the geophysical survey should be extended in north-easterly and south-westerly directions. These directions were chosen because not only was it considered that, the same host rocks would be encountered (it is the direction of strike) but also because it was hoped that the zone of weakness containing the sulphide bodies would extend beyond the limits of previous workings. During the latter part of March and early in April of this year, a further geophysical survey, by magnetometer and self-potential methods, was undertaken by the Bureau.

The supervision and survey of the cut traverses was undertaken by me, and at the same time an opportunity was taken to examine the geological features of the extensions. Unfortunately there appears from surface indications scant signs of mineralization and although the host rocks are favourable, the absence of surface indications of any extensive zone of weakness seems to preclude the prediction, from geological evidence, of the presence of any large sulphide bodies.

This report then is purely supplementary to the original one and the general geology &c. will not be recapitulated.

THE AREA EXAMINED

The base line was extended in a north-easterly direction from "RO" for 2,000 feet to "BLO". This line generally follows the top of Crescent Ridge, which, in this area, flattens off considerably. Traverse lines were cut at 100 foot intervals, along the line, on bearings of about 133°. As the bearing of the base line varies considerably, it is not always approximately at right angles to the traverse lines, so that these are often less than 100 feet apart; nor are they always parallel. From "S" to "Y" they terminate at Deep Creek and from "BA" to "BL" at a smaller creek flowing into Deep Creek. Two additional lines, "BM" and "BN" were later cut (for 500 feet in the vicinity of the tram line) in order to clear up a small anomaly found in that neighbourhood. The lengths of individual lines from the base line are as follows:-

S	750 feet	BD	950 feet
T	825 "	BE	925 "
U	900 "	BF	925 "
V	950 "	BG	1000 "
W	1025 "	BH	1000 "
X	1100 "	BI	1000 "
Y	1125 "	BJ	1000 "
Z	1125 "	BK	900 "
BA	1175 "	BL	825 "
BB	1125 "	BM	275 - 800 feet
BC	1075 "	BN	300 - 800 feet

To the north-west the lines were continued for 200 feet beyond the base line, except for "BJ" which at the request of the syndicate was taken to 600 feet.

The base line was also extended for 1,000 feet in the other (south-westerly) direction. Here, it is almost a straight line and although close to, does not always follow the hill top. The traverse lines from "AB" to "AK" are approximately 100 feet apart and from the base line are continued to 200 feet on a 302° bearing and across Deep Creek on a 132° bearing. The lengths of each line to the south-east are as follows:-

AB	900 feet	AG	700 feet
AC	825 "	AH	650 "
AD	825 "	AI	600 "
AE	750 "	AJ	550 "
AF	700 "	AK	500 "

GEOLOGY

The same series of host rocks as in the original area, that is tuffs and slates, occur in both northern and southern sectors. In places, intense silicification of the slates has resulted in hard white cherts, but in others as at AG 440 and in the bed of Deep Creek in the northern sector, typical Dundas Slates of purple and grey-green colour may be seen outcropping. The tuff appears to be much more abundant than the chert but whereas the former seldom outcrops, and is seen largely by boulders and in Creek cuttings and workings, the chert outcrops boldly and forms small local ridges as that from "BH" and "BL" above the tram. The individual beds are still very narrow; a bed of chert ten feet in width may be seen in a cut on the tram at BH 750 and a fifteen foot bed of tuff in the adit on BN line. Because of this narrowness of bedding plus the paucity of outcrop, but particularly because the beds of slate or tuff are themselves not continuous, it is impossible to map the individual beds and as before, only actual outcrop is shown. To the north-west of Crescent Hill, in both cases, are much thicker beds of tuff with no apparent slates.

It is interesting to note that in neither sector is there any sign of the basic igneous rocks, either lavas or intrusive members, which are so conspicuous in the area of the workings, from lines "C" to "O" in the vicinity of the Creek.

Down the hill to the north-west, line BJ West was taken to 600 feet and about 300 feet further down the hill is the boundary between the Dundas rocks and the gabbro.

STRUCTURE

Due to lack of outcrop it is rather difficult to determine the local structure of the rocks. The southern sector is all contained in the south-eastern leg of a syncline, whose axis is to the north-west of Crescent Hill. No sign of faulting is apparent here, although there is some minor jointing and breaking in the slates at "AG 450". On the whole, however, the zone of weakness so apparent about the old workings, does not seem to continue to this area and no sign of mineralization could be seen.

In the northern area, the folding appears to become more complicated, and the dips to the north-west seen in outcrop in Deep Creek suggest that here (in the vicinity of lines "S" and "Y") the anticline is overturned. Further north-east, however, the workings near "BG" and BH" lines show beds with more normal dips. As in the south, the area is little disturbed, and although a few small faults, as at Y 910, were detected, there is no large zone of shattering and weakness, as can be seen in the old workings. A possible explanation of why all this disturbance has occurred only in a restricted area suggests itself. A glance at the map will show that only in the vicinity of the old workings (from lines "C" to "O") is there any large mass of igneous rock. If the rock is an intrusive dolerite then the force of that intrusion would tend to shatter the sedimentary rocks in the immediate neighbourhood; and this shattering would gradually die out away from the intrusion. If the origin of the rock is volcanic, then subsequent folding against this solid mass would also cause shattering.

As the zone of weakness does not seem to have extended into these two sectors, then the absence of channel ways seems to preclude the development of large sulphide bodies. Examples of the second type of opening described in the previous report, those caused by tension, are well developed though small. Veins of crystalline quartz are common and are sometimes accompanied by some mineralization, as in the Creek bed between "S" and "T" where marmatite and arsenopyrite can be seen. The presence of this mineralization has occasionally encouraged the opening up of such veins as in a trench at "BE 425" where a quartz vein 3" wide, containing abundant arsenopyrite in the footwall, was followed for fifteen feet.

WORKINGS

There are no workings of major importance in the areas, though prospecting has been extremely active. Three adits and innumerable cuts and trenches are in varying stages of preservation. Most of the trenches are very shallow though probably they originally all went down at least to bedrock, and are all without exception opened in the tuff beds. No sign of mineralization can be seen either in dump material or where the rock is visible except in the trench at "BE 425". Two of the adits at "BD 850" and "BN 650" are partially collapsed and full of water. These could be cleared if necessary, but they do not appear to go in more than 100 feet and there is no sign of any mineralised material on the dumps. Nor is there any in the adit between "BF 750" and BG 750", which is dry and in a good state of preservation and which was closely examined. This adit has been put in on a bearing of 70° for 120 feet. At 50 feet the adit branches, the second branch extending for 30 feet on a bearing of 35° and following the strike of the rock. Beds of both tuff and chert have been cut by this adit and they dip to the south-west.

CONCLUSIONS

Nothing likely to be of economic interest has been seen in the two extensions of the Mt. Cleveland Area, nor are there any promising structural features that suggest that they might be ore bodies resembling those in the old workings. However, it must be admitted that the major part of these areas is covered by a thick coating of soil and something of interest may be revealed

be Geophysical Methods.

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