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CINDY MINES LTD. (N.P.L.)

REPORT ON TOM & HAPPY DAY GROUPS

CRANBROOK, B.C.

C O N T E N T S

LOCATION AND ACCESSIBILITY

The property is located at Latitude 49° 14' N. Longitude 115° 40' W., and lying between the southern Transprovincial Highway and Kettle Valley Railway, and the St. Mary's River. Eagle Station on the Kettle Valley Railway is 4 miles northwest of the centre of Cranbrook, and Eugene, Mission, is 5 miles almost due north of Cranbrook. The property is well located as far as necessary facilities are concerned should a producing mine be found on it.

TOPOGRAPHY, SOIL COVER AND FLORA:

The terrain is gently undulating lying as it does on the west flank of the Rocky Mountain Trench and is dotted with small lakes. It is covered with a growth of relatively small fir and is a source or supply for Christmas tree cutters. It is thus criss-crossed with roads making any part of it easy of access. Soil cover is variable but generally not deep. There are few outcrops but sufficient to make geological mapping possible and this has been done by A.C.A. Howe & Associates.

HISTORY AND PREVIOUS WORK:

Interest in mining in the Cranbrook-Fort Steele area dates back to before the turn of the century. It is noted that

HISTORY AND PREVIOUS WORK - Cont'd

the first geological report on the area was by H. Banerman in 1882, and this was followed by a report by G.M. Dawson, in 1885. The first comprehensive report was by Stuart J. Schofield in 1915. Since then reports have been written by C.E. Cairnes, H.M.A. Rice, and G.B. Leech. (See bibliography.) The Sullivan mine, is of course the most important by far of all the properties that have developed in this area. There is no reason why other hidden "Sullivan's" cannot be found in a similar environment. Early investigators have drawn attention to the copper in the Purcell intrusives and have suggested that economic deposits were possible but, with the exception of a small tonnage from Mount Evans, no copper has as yet been exploited. The only reference to any of the showings in the Cindy Group is a reference to the Copper Belt Group in the Annual Report of the Minister of Mines for 1928, Page A 206, which refers to a shaft and tunnel on finely disseminated sulfides and quartz stringers. These workings were found but are no longer accessible. No reference to other showings are known to the writer. The present owner has had part of the ground mapped geologically on a scale of 400 feet to the inch by A.C.A. Howe & Associates, who also did Geochemical survey over that part which constitutes the western half of the claim group, or 58 claims north of the highway from Cranbrook, and extending to the St. Mary's River. The

HISTORY AND PREVIOUS WORK - Cont'd

geochemical survey apparently indicated copper over extensive areas covered by overburden with few outcrops. The writer was unable to see any signs of copper mineralization over most of the area but the outcrops of dikes are often pyritized to some extent and it is therefore believed that all the outcrops should be closely investigated for evidence of copper and wherever such evidence is found, some stripping and trenching should be done, to be followed by drilling if any of the trenching shows an improvement in the copper. It is further recommended that the soil sampling should be checked carefully at places where outcrops in the vicinity of anomalous samples fail to reveal mineralization that could cause the anomalous condition. An I.P. survey was run over several of the anomalous lines but if failed to given any significant readings. Power lines in the vicinity may have had some effect on this survey but I doubt that they were close enough.

RECENT WORK:

This consists of stripping at several places and trenching and pitting on either side of the old pit. From this pit the topsoil was stripped over an area about 120 feet wide for 150 northerly. At the north end a rock trench was

RECENT WORK - Cont'd

blasted into sheared and altered diorite, almost a talc schist in places. This shows stringers of quartz mineralized by pyrite and chalcopyrite and staining by copper carbonates, particularly across a 2 foot band of sheared diorite striking north 70 E and dipping 55° westerly.

About 70 feet south 20 degrees east an elliptical shaped pit 8' by 10' shows fractured relatively fresh diorite with mineralized criss-crossing quartz seams and fractures as in the old pit 70 feet to the east. Another 60 feet to the east there is a new pit showing a strong cross shear in the diorite striking about north 55 degrees east and dipping south at 70 degrees. In this shear is a band of rusty calcite about 1 foot thick. Some quartz stringers carry pyrite and chalcopyrite and again there is a fair amount of copper carbonate staining.

Because of the sporadic and rather meager mineralization there seemed little point in taking samples, as regardless of the surface values the zone should be trenched the full width of the mineralization and then if it is sufficiently wide, say 150 feet or more it should be drilled to determine the subsurface values.

The drill holes should be from the lower side of

RECENT WORK - Cont'd

the zone pf mineralization and should be drilled about north 20 degrees east at minus 45 degrees to completely cross the dike, and further, if mineralization is found beyond the dike.

If holes drilled at or near either extremity of the presently trenched area fail to find mineralization with ore potential there would not be much incentive for looking elsewhere. However if there is a definite improvement over the surface minerlaization a deep hole could be drilled down the dip of the dike. This could be drilled with funds allocated for trenching as this work would then assume more importance than trenching unproven anomalies looking for a drill target. If mineralization of ore grade was found, further funds would have to be raised to block out this mineralization.

GEOLOGY

The geology of the area has been described by various geologists of the Geological Survey of Canada and there is nothing of a general nature that can be added. More specifically, the geology of the Group under discussion has been written up by J. Willars for A.C.A. Howe & Associates, whose report was made available to the writer. Whereas the

GEOLOGY - Cont'd

diorite occurrences are usually referred to as the Purcell sills it is obvious that on this property the majority of them cut across the bedding, parallel schistosity in strike and probably in depth. They are also variable in width depending no doubt on the character of rocks crossed.

Dr. S.J. Schofield, and presumably others, has suggested that the sills are likely to be larger in the older and thicker-bedded Aldrich Formation than in the younger and thinner-bedded Creston, Kitchener, and Siyeh Formations. This may be so, but the fact that dikes sufficiently wide to maintain an open-pit operation, if sufficient values can be found in them, occur in these younger formations on Cindy Property cannot be ignored.

There appears to be disagreement between Schofield, Rice and Cairnes, as to the age of some of the formations and there are many dikes where none were shown on any of the aerial geological maps. There is no reason to suspect, however, that the Aldrich is anywhere near the surface. It is obvious that the formations have been uplifted to the north and east by faulting, with considerable displacement along the Rocky Mountain Trench, but this is probably several miles away from the Cindy ground. Faulting indicated on the northwest corner of the Cindy ground has uplifted the formation

GEOLOGY - Cont'd

there and purcell rocks shown close to it should be investigated. The only other faulting indicated on the property is along and close to the highway near Eager Station. There is, however, considerable folding of both large and small amplitude which could provide favourable structures for mineralization.

MINERALIZATION

Dr. S.J. Schofield in Memoir 76, Geology of the Cranbrook Map Area, and Dr. J.D. Galloway in the Minister of Mines Report for 1915, describe a number of copper occurrences in the Purcell sills and related rocks. They describe two types, a differentiate type and a vein type. It appears that the term differentiate was applied to a product of differentiation in the cooling magma which carried chalcopyrite, pyrite and pyrrhotite in a sporadic manner. The vein type occurred in veins two to four feet wide, in shear zones in the sills. None of these appeared to be of commercial interest in 1915 when the above was written, but some of the differentiate bodies were apparently of large size and might bear investigation today.

On the Happy Day and Tom Groups some of the intrusive masses appear to be as much as 300 feet wide.

MINERALIZATION - Cont'd

Chalcopyrite mineralization has been found across a substantial width associated with numerous criss-crossing small quartz veins at the point where the dikes have been mapped as about 100 feet wide. The vein-lets cut across the dike almost at right angles presumably from foot wall to hanging wall. Another set of fractures runs almost 45^{o} to the strike. Looking at the walls of the cut suggests to the viewer that a mineralization would not be very obvious on the rock surface. It very definitely appears to be stronger a few feet into the dike. Along strike from the cut there are some weak surface indications of copper mineralization and quartz filled shears, which have not been trenched, and about 100 feet to the north there is to be seen a little malachite staining on the outcrop, apparently along a north south zone. The writer took no samples but estimated the grade of copper in the bottom of a pit, which is about 10 feet across and 9 feet deep, to be about .30% with a lower grade higher in the cut: sufficient to warrant further work in the form of trenching and diamond drilling, the latter from the downhill side to cut the zone well under the surface trench.

Another area of known mineral occurrences on the property is that of the copper belt where a shaft and tunnel were driven to explore chalcopyrite associated with quartz

MINERALIZATION - Cont'd

stringers and a shear or fault zone in limey sediments of the Siyeh Formation. Quartz stringers outcrop over considerable width, possibly eighty feet. On the surface they appear quite barren but some copper stain was noted. A drill hole would be an effective means of testing this zone. As the highway is alongside the showing there would be no problem to getting a drill onto it.

About one mile west of this showing and some 4000 feet south of the mineralized cut in the diorite, there is a cut in diorite exposing criss-crossing carbonate veins which carry some chalcopyrite. At another point just north of the highway a shaft about 20 feet deep exposes some ragged quartz carbonate veinage with a little chalcopyrite in the Siyeh sediments.

PROPOSED PROGRAM OF WORK

Do further trenching to delimit area of mineralization on the Happy Day #2 M.C. in the vicinity of the old pit and on anomalous areas to the north and west where more than one high reading was obtained and where there are large areas with readings well above background.

Do about 1400 feet of diamond drilling from the lower or west side of the mineralized zone at - 45 degrees to cross the zone at about 100 feet below it on its west

PROPOSED PROGRAM OF WORK - Cont'd

boundary. The lengths of the holes will depend on the width of the mineralization found.

Expand the investigation to other areas where mineralization has been noted or where soil sampling has indicated anomalous conditions. In these areas any indications of mineralization should be first checked by trenching, particularly if its in the dikes, and favorable indications further checked by diamond drilling, or by percussion drilling where the latter will suffice.

Check anomalous soil samples and check along projected strike of dikes.

COST OF PROPOSED WORK

Trenching and stripping	$ 16,000.00
Diamond drilling copper occurrence in dike about 1400 feet	16,800.00
Diamond drill Copper Belt showing 400' in one hole	4,800.00
Assaying	3,000.00
Transportation	3,000.00
Supervision and Engineering	2,000.00
	$ 45,600.00
Contingencies	4,400.00
TOTAL	$ 50,000.00
Allow for additional drilling if favorable results are obtained from above.	20,000.00
TOTAL recommended now	$ 70,000.00

BIBLIOGRAPHY

Annual Report of Minister of Mines of B.C., (1) John D. Galloway, 1915 p. 110, and (2) A.G. Langley, 1923, p. 206.

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Rice, H.M.A. Cranbrook Map Area, B.C., Geological Survey of Canada, Memoir 207.

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Respectfully submitted,

J.A. Mitchell,
Professional Engineer.

West Vancouver, B.C.
April 23, 1969

CERTIFICATION

I, J.A. Mitchell of 2991 Mathers Avenue, West Vancouver, B.C., certify that:

1. I am a graduate of the University of British Columbia, in Applied Science (Mining) 1932.

2. That I am a professional Mining Engineer and have practiced my profession in various capacities since graduation.

3. That I am a member in good standing of the Association of Professional Engineers of British Columbia.

4. That I have no interest, either directly or indirectly, in either the securities or the properties of Cindy Mines Limited, nor do I intend to acquire any such interest in any manner whatsoever.

5. That I made a personal examination of the property of Cindy Mines Limited on April 17, 1964 to prepare the attached Report. I have also studied all the Reports of A.C.A. Howe and Associates.

6. This report may be used in a prospectus of Cindy Mines Ltd., (N.P.L.)

Certified this 22nd day of April, 1969, at West Vancouver, British Columbia.

J.A. Mitchell,
Professional Engineer.