REPORT
ON
SURFACE MAGNETOMETER AND ELECTROMAGNETIC SURVEYS
OF
PACIFIC NICKEL MINES PROPERTY
NEAR HOPE, B.C.

FOR

PACIFIC NICKEL MINES LIMITED

DATED Nov. 17th, 1952

MCPHAR GEOPHYSICS LIMITED

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At the request of Dr. C. Riley, surface magnetometer and electromagnetic surveys were carried out during August and September 1952 at the property of Pacific Nickel Mines Ltd., near Hope, B.C.

The results are presented on the following map sheets;

MAIN GRID

Magnetometer and Electromagnetic results on maps 1009, 3018, 4016, 4017, all overlapping. Scale 1" = 100'

Magnetometer profiles maps 3021 and 4018.

Horizontal scale 1" = 300' Vertical scale 1" = 2000 Y

XYZ GRID

Magnetometer results on map 1008. Scale 1" = 300'

Electromagnetic results on map 1007. Scale 1" = 300'

Magnetometer profiles on map 2011. Horizontal scale 1" = 300'

Vertical scale 1" = 2000 Y

PRIDE OF EMORY

Electromagnetic results only on map 1011. Scale 1" = 100'

MAP 1012 Scale 1" = 300'

Miscellaneous electromagnetic transmitter locations and results.

Note; Vertical Magnetic intensity readings, in terms of gammas, all referred to an arbitrary datum.

1. MAIN GRID: MAGNETOMETER SURVEY

Previous magnetic surveys were successful in delineating nickeliferous sulphide mineralization in the western half of the hornblendite intrusive. Apparently, an increase in magnetite occurs in the hornblendite surrounding the sulphides and this magnetite, plus the pyrrhotite in the sulphides, has permitted the magnetometer to be of some value in the search for ore. One would expect the same conditions to exist in the area covered by the present survey. Such is not necessarily the case. Apparently, the magnetite content of the hornblendite of the area surveyed this year is, on the average, considerably higher than in the area to the west. Certainly, it is not an easy task to select well-defined magnetic anomalies from the vertical intensity profiles shown on maps 3021 and 4018. The line interval of 300 feet is, in general, too great to permit correlation of magnetic intensity features between lines over such an irregularly magnetized area. For that reason, the magnetic intensity has not been contoured on maps 1009, 3018, 4016 and 4017.

Relative station elevations were obtained with a clinometer on several traverses. From these results, topographic profiles have been drawn beneath the corresponding magnetic intensity profiles. There is no marked correlation between the two sets of profiles suggesting that the magnetic intensity pattern is primarily the result of variations in the magnetization of the hornblendite.

On lines A_n to E_n inclusive, the magnetic intensity pattern is not as complex as the pattern on lines E_n to R_n. Certain features of the profiles are moderately well-defined and can be correlated line to line. In particular, the magnetic "high" at station 17E

line D_n may be associated with the same structure causing the "high" at station 19E line E_n, and in fact, the "high" at station 17E line F_n may be an expression of the same feature. A double-peaked anomaly may be correlated between lines A_n and C_n in the area between stations 10W and 15W.

The zone of high magnetic intensity between stations 30W and 35W on line B_n may also be of significance.

2. XYZ GRID: MAGNETOMETER SURVEY

The magnetic intensity pattern on this grid is again irregular so that with the wide line spacing of 300 feet, contouring of the vertical magnetic intensity is hardly justifiable. Consequently the contours of map 1008 should not be considered too seriously. There are three marked anomalies indicated by the survey of this grid. They occur at station 5W on line 0; station 3W on line M and station 2W on line L; station 1E on line L.

3. PRIDE OF EMORY: ELECTROMAGNETIC SURVEY

To obtain an idea of the type and magnitude of readings to be obtained with the McPhar 1000 c.p.s. electromagnetic apparatus over known sulphide mineralization, a few readings were taken in the vicinity of the Pride of Emory sulphide body(see map 1011). The recorded "dip angles" were not large and were of such a distribution as to suggest that a sulphide body of this type could be missed in a reconnaissance survey on lines 300 feet apart. Because of this and because of the difficulty of securing the required accuracy of transmitting-coil-orientation in the rugged terrain of this property, most of the surface electromagnetic surveying was confined to checking anomalies indicated by other geophysical methods.

4. MAIN GRID: ELECTROMAGNETIC SURVEY

The electromagnetic survey of this area was chiefly designed to determine whether some of the more prominent magnetic peaks shown on the profiles of maps 3021 and 4018 were associated with highly conducting materials such as massive sulphide mineralization. No conductors were indicated with the transmitting coil at locations 2 to 5, 8 to 10, 15 to 22, 24 to 27, 30, 33 to 34, 36, 38 to 49 inclusive. From transmitter location 1 (100'E of station 8E line H_n) dip angles were recorded from station 6E to station 11E inclusive. A scarp trends roughly north-south a short distance east of station 11E and it is believed that these readings are essentially elevational errors. Subsequent readings taken along the same line from transmitter locations 3 and 4 substantiate this explanation. With the traverse lines as they were, it was extremely difficult to overcome such errors.

A conductor was indicated approximately at station 6E line F_n. A fault or shear was observed in this vicinity and it is considered that the conductor is associated with this feature. However, one cannot rule out the possibility of the shear being mineralized.

A few small readings were obtained in the vicinity of station 15E line D_n, from transmitting coil location 29. A cable employed in another geophysical survey on adjacent ground would serve as the conductor to explain these readings. The readings along line E_n from transmitter location 31 (station 15E line D_n) may be similarly explained.

A conductor has been detected at 15W line B'_n and about 14W line C_n. This conductor is relatively weak and consequently is difficult to delineate. It does, however, correspond with a magnetic anomaly and consequently should be further investigated.

CONCLUDING REMARKS

The results of the magnetic and electromagnetic surface surveys suggest that one small area in particular, the area in the vicinity of station 15W on lines B'_n and C_n, requires further attention. The magnetic profiles should be compared with the results of other geophysical surveys and known surface geology to check the possibility that some of the magnetic anomalies represent sulphide mineralization.

MCPHAR GEOPHYSICS LIMITED

S. H. Ward.

Dated: Nov. 17, 1952

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