Re-interpretation of Lorna Anomalies and Recommended Drilling, Anvil District, Yukon

(Revised October 22, 1970)

Work to Date: (Refer to all previous maps and reports)

Work done to date, consisting of line cutting, soil sampling and magnetic gravity and geologic surveys have outlined coincident magnetic and gravity anomalies which have been interpreted by Overland Exploration Services at Calgary as follows:

"The positive feature is a reflection of a dense mass which has a large areal extent and a linear distribution. A feature of this size and shape can only be construed to be an intrusive dyke type feature composed of denser material. In all probability this is an ultrabasic rock intrusion extending across the area. If this is so, magnetic work should show this feature to be magnetically high".

The regional gravity profiles were then drawn to compensate for this gravity "high", still leaving a 0.8 milligal gravity anomaly on lines 24 W. and 32 W. This residual anomaly was further interpreted as the upper portion of the basic intrusive closer to surface, or as local presence of denser material, and I.P. work was recommended to test this conclusion.

Geologic mapping in the vicinity by Karvinen suggests that the anomaly area is favourably located in the stratigraphic section, containing structural features favourable for ore deposits. Basic and ultrabasic rocks do occur in the district but are not exposed near the claim group which is entirely covered by glacial drift that masks both rock types and any geochem.

Alternative interpretation:

Careful study of all data suggests that the combined magnetic and gravity anomalies could also be caused by massive sulfides which are the object of the search. Reasons for this alternative are as follows:

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1. Although the Anvil aeromag-EM survey (flown at 150' to 200' ground clearance) showed a fairly strong magnetic anomaly similar to that associated with the Vangorda sulfide body and with several greenstone bodies, the Federal Government aeromag survey (flown at perhaps 2000' ground clearance in this locality) showed only the faintest response as compared with many greenstone or ultrabasic bodies elsewhere in the district which gave strong responses. The suggestion is therefore, that the magnetic body is more local and confined stratigraphically to the southwesterly dipping phyllite section, a conclusion that is supported by the magnetic low on the NE side of the Anvil airborne anomaly, and by structure in the general area.
2. Total length of the coincident magnetic and gravity "highs" is about 5500 feet, and width is 1500 to 2000 feet, which is of the same order of magnitude as dimensions of the original uneroded Faro and Vangorda sulphide bodies.
3. Slight EM response is obtained from both EM16 and the Anvil airborne EM in the vicinity of the magnetic and gravity peaks on lines 24W and 32W. It should be recalled that Faro No. 1 orebody, about 50 - 70 million tons, gave even less EM response on similar equipment.
4. Soil sampling shows a faint but definite, chevron-shaped copper-lead-zinc geochemical anomaly in the glacial overburden on the down-valley side of the mag-gravity anomaly exactly as might be expected if metals were gouged from this source by ice.

Although most anomalies reflect something uncommercial, there is a substantial chance that these anomalies could be caused by sulfides. Looking for an orebody, we could not have hoped to find much more, considering the overburden cover, except by continued application of other geophysical methods. Assuming sulfides, the following reasoning could apply:

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The entire gravity high could be caused by sulfides in which case the "regional" high should not be eliminated in the residual but would extend 5000 feet or so, coincident with the magnetics, from the same reasoning whereby it was assumed to represent a basic or ultrabasic intrusive. The resultant gravity profiles, corrected for regional gradient could therefore show approximately the following anomalous highs.

Line 8 E	±	0.7 milligals coincident with mag. high at about 6N.
Line 8 W	±	0.9 milligals coincident with general centerline of mag trend and with local mag high.
Line 24 W	±	1.6 milligals corresponding with more intense and broader mag high with magnetic and gravity peak and EM response at about 9 N.
Line 32 W	±	0.8 milligals generally coincident with mag.

Karvinen's plunge of folds in the creek southeast of the anomalies suggest that the main mass could be plunging in this direction, thus giving gentler magnetics and gravity responses in this direction.

The separate weaker anomalies on lines 64 W and 72 W to the northwest might also reflect a down-faulted or down-warped block.

Comparing the results to date with Faro and Vangorda, the magnetic/gravity anomalies are of similar size and magnitude and might reflect up to the order of 100 million tons or more of sulfides.

Recommendations:

1. In view of the above, it is recommended that the target be conclusively tested as soon as possible by means of drilling around line 24 W 9N this fall. Further geophysical surveys may give more conclusive evidence but would tend to prolong the timing and would probably evolve into a decision to drill the gravity peak in any case. An I.P. or deep EM survey could be done to check the target, if time allows, before a drill program.

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2. Fill - in staking should be done to tie the Lorna, Jean, Gran and Roto claim blocks together for a more extensive exploration program to be proposed for next season.

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