019331

West Vangorda Area
Yukon Territory

Gravity Interpretation

for

AEX Minerals

by

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Introduction

Field work West of Vangorda was conducted in 1956 by Crone Geophysics for the account of Kerr-Addison Mines, Ltd. Kerr-Addison supplied the original Bouguer map, field data and computation sheets for this study. The material included here is only part of a larger field survey conducted at that time.

Lines were run perpendicular to the main Vangorda base line at 400' intervals for the most part. Between 50W and 64W, the line interval was reduced to 200'. Besides the main base line, B.L.#9 (1000' north of the main base line) was used for tying purposes. Another base line (at 20 south) is shown on the map, but the area of this study did not extend that far. Station interval is 100'. Approximately 1650 stations were used in this study.

Quality of the data is excellent. Furthermore, the elevation correction factor for a surface density of 2.7 was correctly applied. Therefore, it was not considered necessary to alter the original Bouguer map. However, Bouguer profiles were constructed; and, on these a regional was run and tied. A map of the regional gravitational surface accompanies this report.

Difference values between regional and Bouguer were extracted on the profiles, plotted and contoured. The resulting residual map also accompanies this report. It is the key map presented.

Bouguer Map

The Bouguer map, constructed in 1956, does not accompany this report; but it is available to AEX Minerals and to Kerr-Addison under separate cover. A brief description of it is included below.

Gravitational gradient is northeast (toward the top of the map). This gradient is interrupted by a northwesterly plunging nose extending from the base line at 20W to about 25N on line 64W. Along the axis there are local closures at 20W on the base line, 6N on 32W and 13N on 50W. The nosing yields anomaly B - discussed in the "Residual" section.

A less-pronounced nosing extends from about 10S on 50W to about 5N on 96W. There are local closures on this feature at 8S on 52W, 6S on 58W and1-2S on 76W. To the north there is a steepening of gradient extending from line 48W - just south of the base line - northwest towards about 24N on 92W. The gradient steepening and nosing create anomaly A, described in the "Residual" section.

Regional Map

Over the greater part of the area, regional gravity decreases northeastwards at a fairly uniform rate of about 1 milligal per 1000 feet. This probably indicates the presence of less dense country rock to the northeast.

In the eastern part of the area there is a sharp swing in regional strike to east-west. This indicates a sharp change in country rock type to denser materials east of a line drawn through the intersection of 16W and the base line and marked "Fault??". This line of demarcation has approximately correct strike, but location shown may be too far west.

Residual Map

The map is dominated by two residual positives - each of large areal extent and moderate amplitude. These are separated by a narrow trough. The positives have been labelled "A" and "B" for purposes of description. Before describing them, however, the writer prefers first to discuss the trough which lies between and some of the smaller features on the map.

The trough exists between 48W and 68W, and it is really well developed only between 52W and 64W. If one knew that this trough were due to the existence of excess overburden, rather than to the presence of high density materials within country rock on both sides, it would be necessary to eliminate from the interpretation the northeast flank of the A anomaly and the southwest flank of the B anomaly between 48W and 68W, thus joining A and B into one huge anomaly of irregular dimension. Such a feature might be ascribed to a local change in country rock type (perhaps an intrusion). However, each anomaly exists beyond the extent of the trough, and it is not logical to eliminate the flanks where they project into the area between 48W and 68W. Furthermore, although there is a stream at the southeast end of the trough, it does not extend northwestwards along the length of the trough. Rather, it angles northward across the B. anomaly. In other words, the trough is not a stream valley, and it does not appear to follow any surface indication of extra-thick overburden.

Several small local negatives exist, and these may indeed be areas of thick overburden. They are located with centres as follows:

(1) 13S - 14S on 24W.

(2) 3S on 44W.

(3) 13S - 14S on 56W.

(4) 26N on 88W.

The A anomaly has a maximum amplitude of 0.7 mgals. (on the north shore of Doal Lake, along 76W), but may have even greater amplitude beneath the lake. Length is over 5000 feet and maximum width is 3000'. Causative mass probably extends from 60W to 92W (over 3000') with maximum width over 2000'. There is probably a break in continuity along 72W. Although the main mass does not extend east of 60W, a pair of shallow shoots, possibly related to the main mass, do extend eastward to about 50W. One of these is along the base line, the other is 400'-800' south of it.

Using country rock density of 2.7 and ore density of 3.6, we can derive the following parameters for the A anomaly (assuming causative mass to be an ore body).

(1) Average thickness: 60'

(2) Depth to top along south side: 400'

(3) Depth to top along north shore Doal Lake: 270'

(4) Tonnage: 35MM.

Before leaving the A anomaly, it should be noted that:

(1) There is partial coincidence with a magnetic anomaly.

(2) There are Turam anomalies coincident with the two shallow shoots at the southeast end.

(3) Turam was not run through the central part of the anomaly (68W-76W).

(4) There is a Turam anomaly coincident with the western portion of A.

The B anomaly has a maximum amplitude of nearly 1.4 milligals. Length is over 6000' and average width is 3400'. Causative mass extends from a probable fault contact at 16W (or farther east) to 64W (about 5000' long) with a 2000' width. It is more or less on projection of the Vangorda deposit.

Using densities as before, we derive the following parameters for the B anomaly (assuming causative mass to be an ore body):

Average thickness: 125'+

Depth to top: 535'

Tonnage: 90MM

The B anomaly is down-graded somewhat because:

(1) DDH 167 (15N on 54W) failed to find any ore. However, thishole should not condemn the anomaly, as it is in an edge position and may not have been deep enough anyway.

(2) The north flank is not fully developed, and the anomaly may extend farther in that direction.

(3) There is no coincident magnetic anomaly.

(4) There is a Turam anomaly only at the southeast end. It should be noted that the B causative mass may be too deep for magnetics and Turam.

Conclusions and Recommendations

The two anomalies are truly outstanding in their areal extent. However the apparent depth/thickness ratio - at the usual Vangorda district density contrast - makes them only marginally interpretable with the gravitational method. However, the excellence of the field data removes some of the uncertainties. Certainly, both anomalies A and B are prime drilling targets.

It is recommended that holes be drilled to test the A anomaly as follows:

2N on 68W	600' deep or
250'N on 64W	600' "
2N on 76W	600' " or
450'N on 80W	600' "
7N on 76W	550' "
82W on B.L. #9	550' "
17N on 76W	600' deep angled 60° SW under lake.

Test the B anomaly at:

8N on 32W	800' deep
and	
15N on 48W	800' "

Respectfully submitted,

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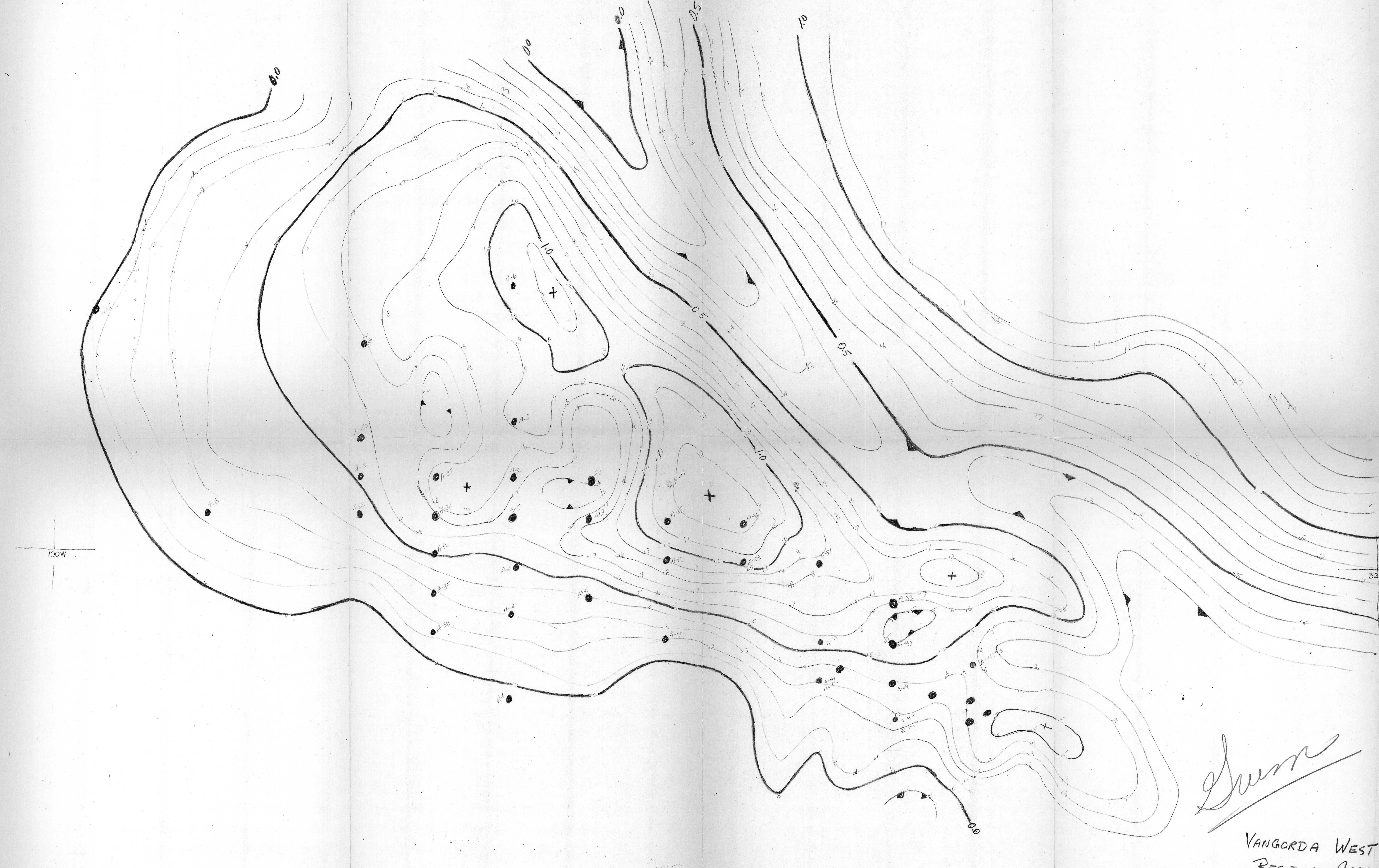

VANGORDA WEST
RESIDUAL GRAVITY
(Correct for Overburden)
Sept. 19/74

R.B. GALESKI CONSULTING

inches
0 1 2
0 1 2 3 4 5
centimetres

YUKON GEOLOGICAL SURVEY

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.