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D.E.C. Claims Yukon Territory
Gravity Interpretation
for
Dynasty Explorations Ltd.
by
Airborne Geophysical Surveys Ltd.

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November, 1972

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Introduction

Field work on the D.E.C. claims was conducted during the months of June and July, 1972. Fly camp, supplies, air support, communications and direction were provided by Dynasty Explorations, Ltd. Airborne Geophysical provided gravity meter, survey instruments and a three man crew consisting of meter operator, surveyor and rodman.

Programme consisted of about 60 miles of north-south lines and east-west tie lines. Line spacing was 800' for the most part, and station spacing was 200'. However station spacing was reduced to 100' in the east quarter of the area. Locally, line spacing was increased to 1600'. Areal extent of the survey is roughly 3 x 6½ miles. Highest elevation (3889') is in the northwest corner, and lowest (3000') is at Echo Lake in the southwest corner. Except for the 889' foot drop between the two, elevation change within the area is relatively small. The surface may be described as gently rolling. It is broken only by a series of east-west oriented hills with 100 feet to 200 feet of relief.

Accompanying this report are the following maps;

Station location

Elevation

Bouguer gravity

Residual gravity

Bouguer Map

Bouguer values were calculated in a normal manner using an elevation correction factor of 0.06 (corresponding to a surface rock density of approximately 2.7). The Bouguer map, contoured at a 0.25 mgal. interval, indicates a SSE gradient across the area of 9.4 mgals. from the northwest corner to a point near the south-east corner. Gradient increases from a rate of 3 mgals./mile SSE in the west to 4¼ mgals./mile SSE in the southeast.

Strong Bouguer positives and negatives do not coincide with topographic changes. However, the stronger topographic features do appear to exert a slight influence on the Bouguer map to the extent that a sharp topographic high yields a minor positive. A coincidence of this sort exists in the northwest corner where there is relatively steep topography. This happens to occur in the direction of regional change which cuts across all topographic features. The conclusion is that surface rocks throughout the area have a density slightly in excess of 2.7

A feature of probable importance is a lineation (local, sharp southerly gradient) which extends from 24S of Moose B.L.0 on 0E northeasterly to 2S. on Capa line 120E. This suggests the presence of a contact (fault ?) between differing country rocks. The contact is near the surface at line 24E, under some burial between 56E and 88E, and near the surface again between 104E and 120E. A string of residual positives exists along the north side of this feature.

A large number of positive noses, which yield residual closures, exist throughout the surveyed region. However, only in the Capa area on the east are any of these strong enough in amplitude and counter-regional gradient to have significant closure on the Bouguer map. These occur in two northeasterly trends: (1) from 22S of Moose B.L. 0 on 8E to 15S of Capa B.L. 0 on 104E and (2) from 9JS of Capa B.L.0 on 72E to 132E on Capa B.L. 0. It should be noted that these two positive trends are subparallel to the fault (?), contact described in the previous paragraph and that all three tend to merge along the Capa base line between 120E and 136E.

The various Bouguer flexures and closures have been isolated from regional. They are shown on the

residual map and described in the following section.

Residual Map

Bouguer values and elevations were plotted in profile form. These profiles accompany this report. On prints of the profiles, smoothed Bouguer lines were run. Regionals were also run, tied and adjusted. The residual map accompanying this report represents a contoured presentation of the difference values between smoothed Bouguer and regional. Contour interval is 0.1 mgal. It should be noted that the Bouguer values were smoothed to remove very sharp, small, near-surface effects; and the regional (subtracted from Bouguer) is designed to remove very deep-seated effects. The regional will also include (and remove from Bouguer) very gradually-changing near-surface features. What are left in the residual are shallow gravitational changes caused by density changes in masses having rather abrupt edges. The residual map should be used with care at the limits of data acquisition, as regional values (and hence residual values) are under poor control in these areas.

On the residual map, every local positive indicates the presence of a mass which is heavier than surrounding rocks. The mass may be a bedrock topo-

graphic high covered by overburden. It may be an injected dike or a local, vertically oriented heavy layer in a metamorphic sequence. It may be a greenstone lens. Or it may be a mass of heavy mineralized material. In evaluating the various positives, the writer relies primarily on amplitude and flank gradient. It should be noted that sulphide accumulations have been found in this region beneath positives as small as 0.5 mgal. On the other hand, some positive anomalies over 1.0 mgal. in amplitude have not been associated with mineralization.

Following are the prime anomalies in the prospect lettered consecutively in order of importance.

A. (intersection of Capa B.L.O and 146E). 0.7 mgal. amplitude. Causative mass 500' x 1200' in areal extent and 60' thick. Maximum depth to top 200'. Well developed anomaly with apex near the intersection of the two lines.

B. (63S of Capa B.L. O on 64E). 0.8 mgal. amplitude. Causative mass 1300' x 5000' in areal extent and 70' thick. Tilted SSE. Maximum depth to top near updip edge 110'.

C. (14S of Moose B.L. O on 24E to 50S of Capa B.L.O on 48E). 0.8 mgal. amplitude. Causative mass appears to be a long, rather narrow

slab extending some 7000 feet from near 8E to 64E. Width varies from 400' to 1000'. Maximum thickness is about 70'. Maximum depth to top is 195' on 20S and 145' on 48S. The anomaly has been downgraded somewhat because of the wide line spacing over the western two thirds (Moose part).

D. (intersection of Capa D.L. 85S and 80E) 1.1 mgal. amplitude. Causative mass 2000' x 3000' in areal extent and 95' thick. Maximum depth to top is 380'. Discounted because of the lack of a steep flank gradient. Although the causative mass may be a slab of heavy mineralization, at the relatively great depth of 380' there remains the suspicion that it is a buried stock.

E. (6N of Capa base line 0 on 120E). 0.5 mgal. amplitude. Possibly similar to "A" but causative mass parameters unknown because of the paucity of data. Downgraded for that reason.

F. (155E on Capa base line 0). 0.6 mgal. amplitude May be a narrow, vertically oriented slab extending to the base of overburden. Seen on only four stations on one line.

The various positives in the western part of the prospect are left ungraded because of a general lack

of strong amplitude and strong flank gradient. All may be overburden effects. The lone possible exception was found on the northern part of line 72W. This is essentially a singl point high and own-grad d for this reason.

Of interest, note that anomalies "C", "B" and "D" lie on subparallel northeasterly Bouguer trends which merge in the vicinity of the "A" and "E" anomalies and that a fault probably separates the "B" and "C" trends.

Recommendations

1. Drill the "A" anomaly to 300' at 134E Capo. B.L. O.

2. Drill the "D" anomaly to 200' at 62S of Capo B.L. O on 0E.

3. Consider drilling the D anomaly to 500' at 86S of Capo B.L. O. on 80E.

4. To further investigate the "C", "E" and "F" anomalies run intermediate gravity programme as follows:

   (a) Moose lines 10E and 22E from O to 50S.

   (b) Capo line 5S from 104E to 168E.

   (c) Diagonal line from 20S (Moose) on 0E to 44S (Capo) on 72E.

Respectfully submitted,

R. D. Galecki, P. Geoph.