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COMMONWEALTH OF AUSTRALIA
MINISTRY OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES,
GEOLOGY AND GEOPHYSICS

RECORDS 1952 No. 13

NOTES ON

GRAVITY SURVEY OF EAST GIPPSLAND AREA, VICTORIA

by

J.C. Dooley

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- NOTES on GRAVITY SURVEY of EAST GIPPSLAND AREA VICTORIA -

The accompanying gravity map shows Bouguer Anomalies over the area in East Gippsland held as Petroleum Prospecting Leases by Lakes Oil Ltd. and Austral Oil N.L. The map is compiled chiefly from the survey by Robert H. Ray Co. U.S.A. and incorporates additional work carried out by the Bureau of Mineral Resources during 1951. The additional work was done in the following areas:

1. The coastal area, along Lake Reeve.
2. Along the shores of Lake Wellington, and adjacent areas.
3. To the S.W. of Lake Wellington, over the Baragwanath anticline.
4. In the area west of Bairnsdale and north of Holland's Landing.

The gravity contours appear to represent the general trends of the tertiary sediments fairly well; areas where the gravity values are low correspond with areas of thick tertiary sediments. Thus, although residual and second derivative maps have been prepared for the area, the interpretation is based chiefly on the Bouguer anomaly map. This indicates a basin generally deepening southwards, but with local disturbances.

The Latrobe River syncline and the Baragwanath anticline form prominent features at the western edge of the area, south of Sale. The additional gravity work shows that the Baragwanath anticline cuts out south-west of Lake Wellington. No readings have been taken in Lake Wellington; however the syncline seems to lose definition as the lake is approached.

North of Lake Wellington, the gravity contours are disturbed by features striking approximately north-south. These may be caused by changes in basement elevation or by changes in rock-type within the basement. A high gravity trend through the vicinity of Meerlieu No.1 Yeerung No.1 bores culminates on the north shore of Lake Wellington, east of the Perry River. This feature is associated with a magnetic high which is slightly displaced from it. As this area is between Lake Kakydra and Holland's Landing bores, proving 3500 to 4000 feet of tertiary sediments, it is considered that this anomaly warrants investigation by seismicmethod.

The gravity contours show two high features along the coast between Giffard No. 14 and Dulungalong No.1 bores. The contours in this area are of the order of -25 milligals which could mean 5000-6000 ft. of tertiary sediments. The feature near Signal Hill bore shows a definite reversal of regional dip, and thus closure of the contours can be assumed off-shore. This anomaly is considered worth investigation by seismic methods.

The additional gravity work defined more closely two high features to the west of Bairnsdale. Subject to geological advice, these features are considered of less interest than those above mentioned, because of the relatively shallow basement in this area. It is expected that basement here would be too shallow for reflection seismic work to be carried out.

More detailed discussion of the geophysical results will be presented at a later date.

(J.C. DOOLEY.)
Geophysicist.

146 Total area 170 sq. miles : Austral Oil N.L.
149 Total area 2·8 sq. miles : Lakes Entrance Pure Oil
151 Total area 16 sq. miles : Gippsland Oil Co. Ltd.
153 Total area 136 sq. miles : Lakes Oil Ltd.
147 Total area 198 sq. miles : Austral Oil N.L.
142 Total area 165 sq. miles : Lakes Oil Ltd.
154 Total area 172 sq. miles : Austral Oil N.L.
144 Total area 183 sq. miles : Lakes Oil Ltd.
143 Total area 180 sq. miles : Lakes Oil Ltd.

ABBREVIATIONS USED IN BORES

C - Colquhoun
NC - North Colquhoun
K - Kalimna
G - Glencoe
L.E.D. - Lakes Entrance Development
G. Oil - Gippsland Oil

Grid North
Magnetic North

SCALE
2 1 0 2 4 6 8 10 12 14 16 18 Miles

GRAVITY SURVEY, GIPPSLAND, VICTORIA.
PRELIMINARY MAP SHOWING
BOUGUER ANOMALIES

LEGEND
-15 Gravity contours, 5 Milligal intervals
Gravity contours, 1 Milligal intervals
Gravity contours, ½ Milligal intervals
Gravity contours, Hypothetical
143 PPL Boundaries
\+ High gravity anomalies
\- Low gravity anomalies
. o x Gravity stations

Geophysical Section, Bureau of Mineral Resources, Geology and Geophysics.

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