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

RECORDS 1952 N^o. 14

NOTES ON
AEROMAGNETIC SURVEY OF
EAST GIPPSLAND AREA,
VICTORIA

by
E. McCARTHY

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by
McCARTHY

Notes on Aeromagnetic Survey of the East Gippsland Area of
Victoria.

During July and August 1951, officers of the Geophysical Section of the Bureau of Mineral Resources carried out an aeromagnetic survey of the East Gippsland area of Victoria, using the Bureau's D.C.3 aircraft VH-BUR. An F24 type aerial camera was used for taking vertical photographs for the purpose of plotting flight paths of the aircraft along the flight lines. The magnetic equipment consisted of a modified magnetic airborne Detector unit type AN/ASQ-1. The aircraft was flown at an altitude of one thousand feet above terrain, along parallel flight lines running in a north-south direction one mile apart.

Attached is a provisional map showing contour lines of total magnetic intensity, which covers the following one inch to the mile Military Survey maps: Stratford, Sale, Stradbroke, Bairnsdale, Stockyard, Orbost and Hartland. It is pointed out that the south-west corner of the Stradbroke sheet is incomplete and that this section of the contour map may be altered slightly after this area has been reflown.

In compiling this contour map, the profiles of total magnetic intensity have been corrected for latitude and longitude effects. An arbitrary datum was chosen and all corrected profiles have been tied to it.

The contour map shows a number of magnetic anomalies of varying intensities. An area showing an anomaly may be defined as one in which the earth's magnetic field, which is normally uniform, is disturbed due to differences in the magnetic susceptibility of the rocks and formations comprising the earth's crust.

It is known that the sedimentary rocks of the Tertiary basin of East Gippsland show negligible magnetic susceptibility, whereas samples of granite gathered from areas north of the Tertiary basin show relatively strong susceptibilities. It is known that granite forms the basement rock in some parts of the area, but in most of the area the nature of basement rock is unknown.

The anomalies shown on the contour map could be due to a number of causes:

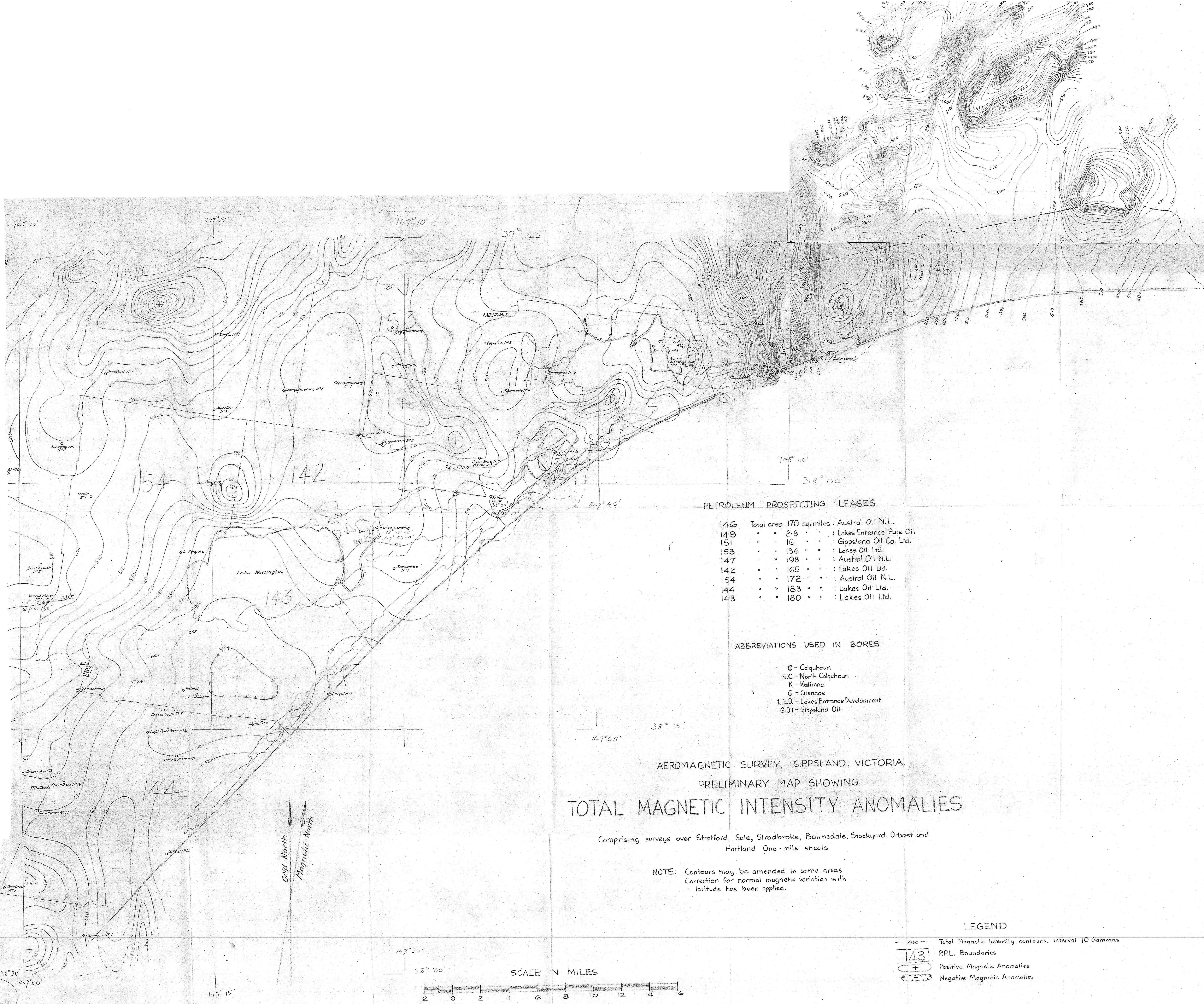
- (1) change in the nature of basement rock. A change in basement rock could account for the magnetic high, showing a north-south strike, on the contour map at the junction of the Bairnsdale and Hartland sheets. From the logs of drills put down in this area, it is known that basement is granite, whereas drill holes a little removed from this area have bottomed on metamorphic rock.
- (2) variations in depth to basement rock which have a higher magnetic susceptibility than the sediments. An example of this is shown by the distortion of the contour pattern over the Baragwanath anticline.
- (3) lava flows interbedded with Tertiary sediments. Tertiary basalts are known to be associated with the Tertiary brown coal deposits of the Latrobe Valley.

Attention is drawn to the fact that the information shown on this map has not been fully investigated and that the map might be amended after re-flying of part of the Stradbroke area has been completed. The map itself is only provisional, and in its final form the contours will be presented on maps of the same size and scale as the one inch to the mile Military Survey maps.

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Melbourne.

* ALL MAPS ARE PUBLISHED
RECORD 1962/53 } PUBLISHED VERSION
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PETROLEUM PROSPECTING LEASES

| | | |
|-----|---------------------------|-------------------------|
| 146 | Total area 170 sq. miles: | Austral Oil N.L. |
| 149 | " " 2.8 " | Lakes Entrance Pure Oil |
| 151 | " " 16 " | Gippsland Oil Co. Ltd. |
| 153 | " " 136 " | Lakes Oil Ltd. |
| 147 | " " 198 " | Austral Oil N.L. |
| 142 | " " 165 " | Lakes Oil Ltd. |
| 154 | " " 172 " | Austral Oil N.L. |
| 144 | " " 183 " | Lakes Oil Ltd. |
| 143 | " " 180 " | Lakes Oil Ltd. |

ABBREVIATIONS USED IN BORES

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

AEROMAGNETIC SURVEY, GIPPSLAND, VICTORIA

PRELIMINARY MAP SHOWING

TOTAL MAGNETIC INTENSITY ANOMALIES

Comprising surveys over Stratford, Sale, Stradbroke, Bairnsdale, Stockyard, Orbest and Hartland One-mile sheets

NOTE: Contours may be amended in some areas
Correction for normal magnetic variation with
latitude has been applied.

LEGEND

490 - Total Magnetic Intensity contours. Interval 10 Gammas
143 - P.L. Boundaries
+ - Positive Magnetic Anomalies
- - - Negative Magnetic Anomalies