12 SEP 1963
MINES BRANCH

INTERPRETATION REPORT

ON

AIRBORNE MAGNETOMETER SURVEY

IN

NORTHERN TERRITORY Hd Reserve
OP 82

FOR

ROSET PTY. LTD.

Aero Service Limited.

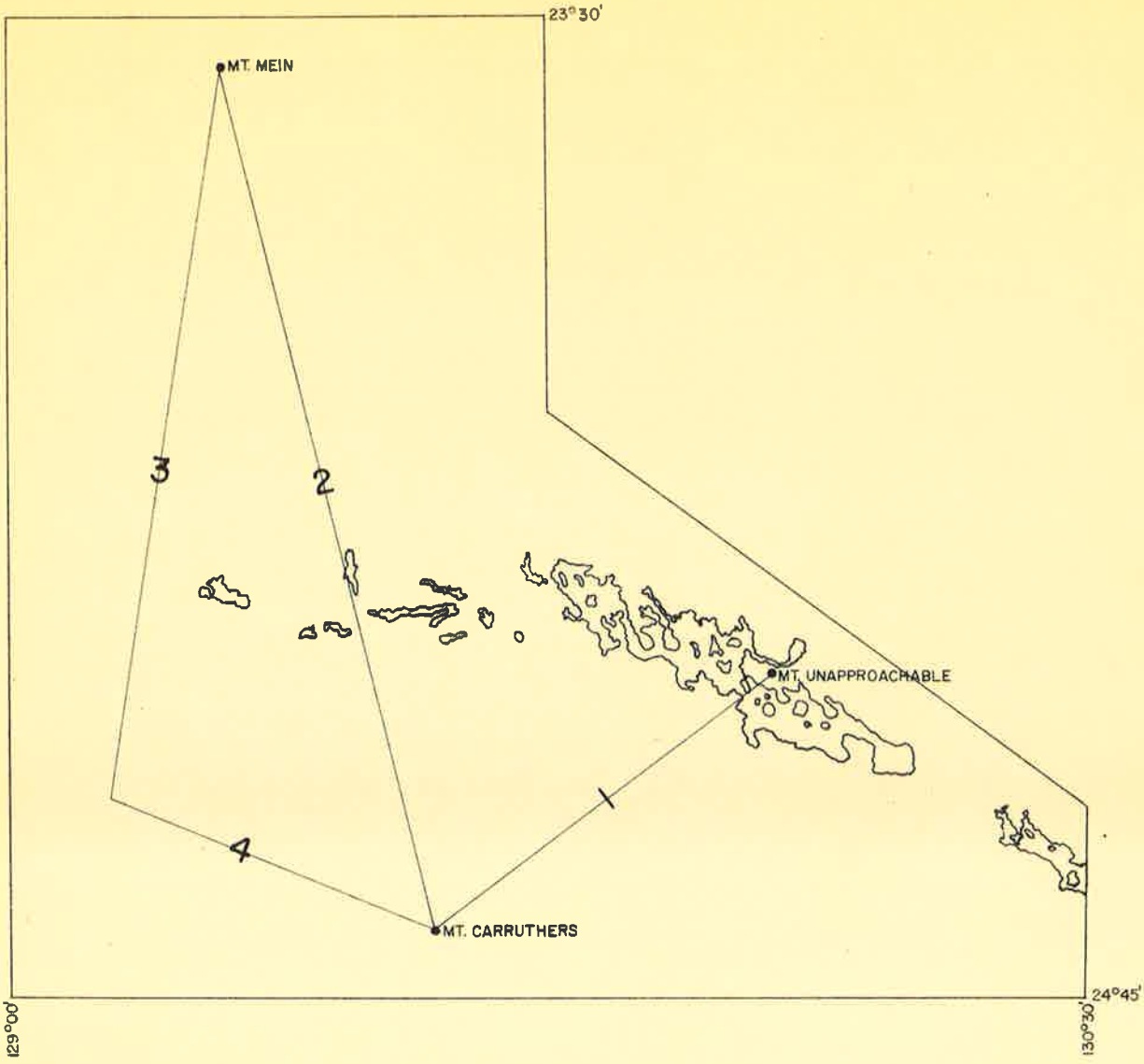
Kalman N. Isaacs,

Ronald R. Hartman.

Geophysicists.

August, 1963.

PR63/009



AEROMAGNETIC SURVEY

O.P. 82

ROSET PTY. LTD.

NORTHERN TERRITORY

SCALE = 1:1,000,000

MILES 16 8 0 16 32 MILES

FIG. 1

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SYDNEY

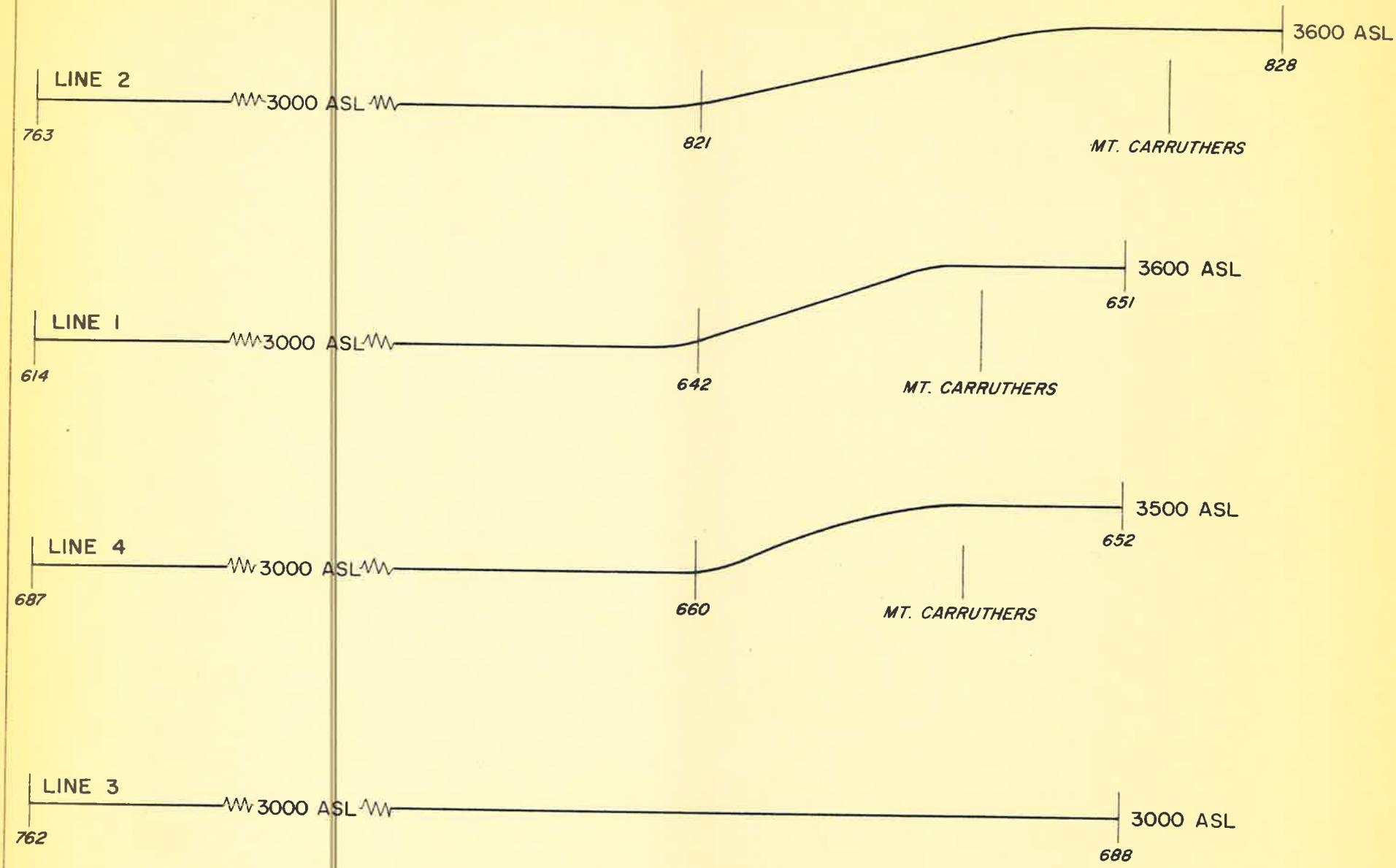
INTRODUCTION

On July 26, 1963, a reconnaissance airborne magnetometer survey was flown for Roset Pty. Ltd., of Sydney, New South Wales, by Aero Service Limited of Ramsgate, New South Wales. The reconnaissance traverses were located in the southwestern corner of Northern Territory. Three traverses were flown in a triangular pattern between the Bloods Range and Mount Mein, and a fourth traverse was flown from Lake Neal southwestward to Mount Carruthers, at the eastern end of the Bloods Range, Fig. 1.

The aircraft used on the survey was a Piper Apache equipped with a Gulf Research and Development Mark III continuously recording total intensity flux gate magnetometer. Auxiliary instruments included an Aeropath AS-5 continuous strip film camera and an APN-1 radio altimeter.

The survey altitude was 3,000 ft. above sea level except in the southern part where traverses 1, 2 and 4 intersect — Mt. Carruthers. The flight altitude had to be increased to clear this peak. Fig. 2. shows the elevation variation for each of these flights. Full scale deflection on the magnetic records is 600 gammas.

The interpretation map displays the location and extent of rock bodies of relatively basic composition, interpreted from



ALTITUDE PROFILES

HORIZONTAL SCALE: EXAGGERATED

VERTICAL SCALE: 1 INCH = 1000 FEET

FIG. 2

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the magnetic records, and conjectural contours of the depth to the basement surface deduced from individual depth estimates computed from anomalies on the magnetic records. Continuity has been assumed between the three traverses enclosing a triangular area for convenience of presentation, although such continuity may not exist.

The regional nature of the survey cannot be over-emphasized. The depth estimates obtained from single profiles such as these cannot be corrected for strike nor can factors be established to correct the slope length for its position on the anomaly.

GEOPHYSICAL INTERPRETATION

The magnetic records indicate that the crystalline basement rocks are exposed as near surface at the north end of the survey, in the Davenport Hills, and at the southern end of the survey, in the Bloods Range. Between these two areas there is a basement depression, which reaches a maximum computed depth of about 7,000 ft. below sea level toward the north end of traverse 3. The shallower depths on the north end of traverse 2 must be considered at this time to be equally valid. Therefore the conclusion drawn is that the basement lies between 4,500 and 7,000 feet.

The abrupt transition from the moderately deep basement expression toward the north ends of traverses 2 and 3, and the abrupt, intense anomalies, characteristic of exposed or near surface metamorphic or igneous rocks, in the Davenport Hills, suggests that a fault may be present along the southern edge of the hills.

A significant aspect of the survey then, as drawn from the above paragraphs is that the Amadeus trough in this area may be a down-thrown fault block containing a wedge of sediments which thin to the south.

Study of traverse 1 indicates that a thin but persistent veneer of sedimentary cover, less than 1,000 ft. thick, overlies the basement rocks between Mount Carruthers and Lake Neale.

Three large scale rock units in the basement, presumably of relatively basic composition, are delineated in the trough between the Davenport Hills and the Bloods Range. Their strike is apparently slightly north of east.

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