LYELL E.Z. EXPLORATIONS

Queenstown

Report on

MOORES VALLEY

GRAVITY - PRELIMINARY

Report No. GP 28

Dec. '59

342002 GP28

7th December, 9

To: Mr. G.P. Hudspeth

Gravity Survey - Moore's Valley, November 1959

Attached is a brief progress report by I. Sefton regarding the recently completed geophysical work in Moore's Valley.

The field programme has been completed and most of the initial reductions of the observed gravity results were finished before I. Sefton left Queenstown. It is hoped that the final plot of the results to the east of the known induced polarisation anomalies will be available before Christmas and the complete results available before the middle of January.

I. Sefton

Chief Geologist, L.E.E.

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342003 GP28

4th December, 9

To: Mr. G.F. Hudspeth

Gravity Surveys in Moore's Valley

Preliminary Report

This memo is intended only as a preliminary note. A full report on the gravity work in Moore's Valley will be prepared when results of the survey have been properly reduced and studied.

Gravity work in Moore's Valley was commenced during April 1959. This survey was intended to seek confirmation of the induced polarisation anomalies discovered last season. The field work was done by the writer under the general supervision of J.B. Boniwell and the results are discussed in his report on Moore's Valley geophysical surveys (Report G96).

The gravity coverage was extended by some 600 stations during November, 1959, making a total of 900 odd stations. This work was intended, firstly, to examine the presumed extension of the known anomalous I.P. zones and, secondly, to provide a gravimetric reconnaissance of the area between the southern detailed grid and the northern boundary of the Valley.

The extent of the complete gravity survey is shown on a modified version of plan No. 26, sheet 4.

The gravity results have been corrected for elevation, assuming a value for the mean density of near surface material of 1.87 gm./c.c., the figure chosen by Boniwell as being appropriate for the earlier results. However, it is now clear that the elevation correction will probably have to be varied at one or more places within the area surveyed.

In particular, noticeable correlations between topography and reduced gravity have been observed at all points north of 00/35N, suggesting a significant increase in near-surface density to the north. A detailed study of the results is required to determine the most likely value for this density. This study has been commenced, but at the time of writing it has not been completed. It may not be possible, however, to remove all the apparent correlation between reduced gravity and elevation, so that the final picture may show some gravity anomaly superimposed on the regional

effect.

This regional effect has already been observed in the earlier gravity results as an almost linear gradient (see plan No. S10, sheet 4 in Report G96). In spite of the uncertainties at present inherent in the results, it is clear that this gradient starts to diminish in magnitude at some point north of 00/35N and becomes flat somewhere between 00/130N and 00/150N. The results, as they stand, have been discussed with Dr. Scott but no reliable conclusions can be reached at this stage.

I propose to finish the reductions and plotting in Sydney and to send the final plot to Queenstown for drafting as soon as possible.

It is recommended that the issuing of a final report on the gravity work should be deferred until the results of the rest of the geophysical programme are available.

(signed) Ian Sefton

for L.A. Richardson & Associates.

Queenstown

Little Colin R.

Colin R.

Pitt R.

Cullen Ck

Wanderer R.

Innes Ck

Jones Ck

Cullen Ck

Hartwell Ck

Hales Ck

Conder Ck.

Cowthorpe Ck.

30W

32W

40W

20N

16N

12N

10W

5W

5E

10E

15E

20E

25E

30E

40E

50E

56E

70N

120

FLAT TOP

LEGEND

Existing Gravimetric cover

Projected Gravimetric cover

5 cm

Photo N° 20/904/64

MOORES VALLEY
GRAVITY

975 ft. to 1 inch (approx)

26 4

J.R.G. July '59

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