EM AND MAGNETIC SURVEY

CLAYTON RIVULET, EL 15/65: TAS.

by

P. HILLSDON

MELBOURNE JUNE 1968.

INDEX

MAPS

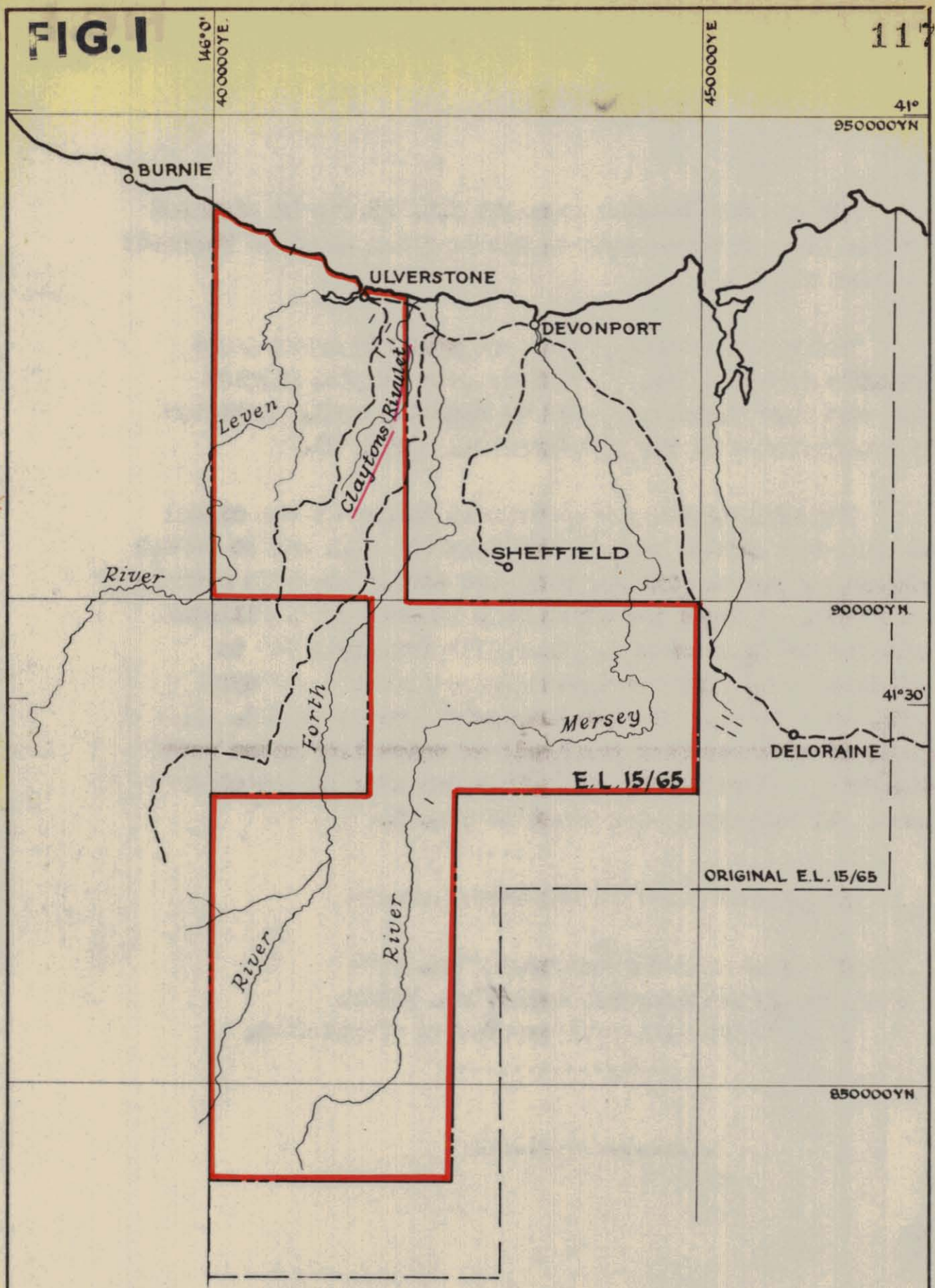
Fig. No.	Title	Drawing No.
1	Locality map Clayton Rivulet	A4 - 1099
2	Geological Map	A4 - 1092
3	Geophysical Traverses	A2 - 1013
4	E.M. and Magnetic Profiles Traverses 1 - 3	A3 - 1061
5	E.M. and Magnetic Profiles Traverses 4 - 11	A3 - 1062

.....

FIG. 1

117003

003



Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No. TSh 42
Date Oct. 1968	E.L.15/65, SHEFFIELD – TASMANIA LOCALITY MAP~CLAYTONS RIVULET	Drawing No. A4-1099

INTRODUCTION

The Clayton Rivulet area, in E.L. 15/65, is situated 5 miles east of Ulverstone on the northern coast of Tasmania as shown on Fig.1.

The Devonport geological one mile map shows serpentinite intruded into quartzites near Clayton Rivulet with the area largely covered by basaltic soil. Asbestos is associated with the serpentinite. (Fig. 2).

The aims of the survey were to determine the extent of the serpentinite beneath the basaltic soil and to detect conducting zones. The magnetic and electromagnetic methods were used. Fifteen traverses were covered by P. Hillsdon assisted by W. Cherrie and B. Reilly from 19th May to 1st June 1968. The traverses were pegged and surveyed by J. Williamson. The station spacing was 100 feet. 5.07 miles of traverse were prepared; of which 1.83 miles were cleared by D6 bulldozer and 3.24 miles were across cleared land. The traverses are shown on Fig. 3.

Instruments used in the survey were:-

Jalander magnetometer serial No. 7300
Askania magnetometer serial No. 582374
ABEM EM Gun with coil separation of 100 feet.

.....

RESULTS

The magnetic and EM profiles are shown on Figs 4 and 5. The magnetic profiles were used to determine the extent of the serpentinite under the basaltic soil. (The survey was not continued to the south of traverse 12 since the terrain was too steep to traverse).

Being more magnetic than the quartzite and basaltic soil, the serpentinite is recognized by an anomaly or by edge effects depending on the size of the body. Since the serpentinite is only slightly more magnetic than the basaltic soil, the soil increasingly masks the effect of the serpentinite as the thickness of soil cover increases. This is illustrated on traverses 8, 7, 6, 5 where the thickness of soil increases in order from a few inches to tens of inches.

There are two separate bodies of serpentinite as shown on Fig.2. The major parts of these were covered by the traverses.

The EM profiles over the two areas do not indicate any conducting zones caused by mineralisation. Only minor and irregular conductivity variations are indicated by the profiles. Interpretation is limited to the imaginary component. The real component could not be corrected for differences in elevation between the two staffs because the levels required were not taken. Several spurious anomalies resulted from the numerous boundary fences which crossed most of the traverses.

.....

CONCLUSION AND RECOMMENDATION

The magnetic method successfully delineated the serpentinite at Clayton Rivulet despite the masking effect of the basaltic soil.

The EM survey did not indicate conducting zones in the serpentinite. The interpretation of the EM results was handicapped by the absence of corrections for the real component.

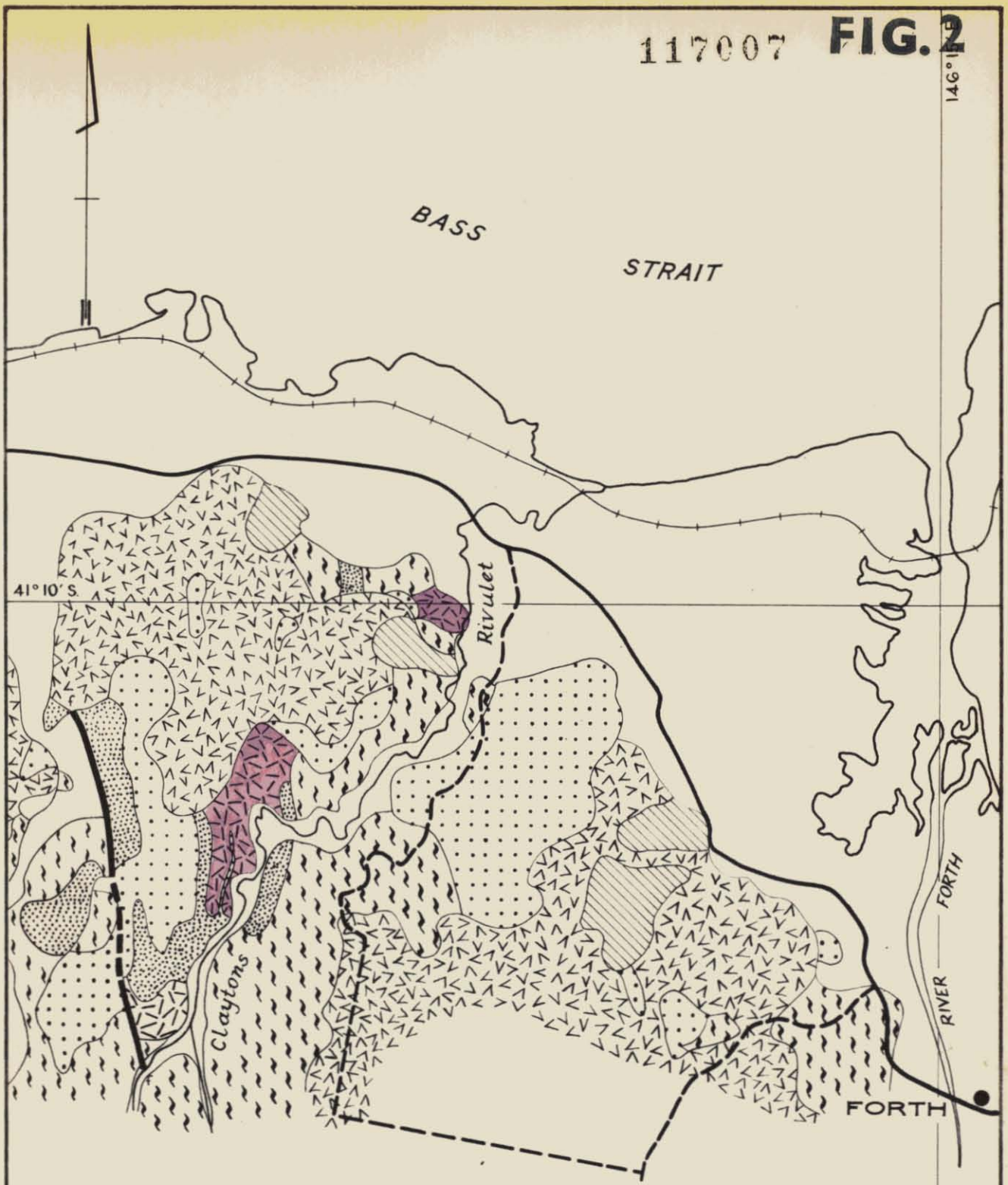
Any further geophysical work in the area should explore the serpentinite body to a greater depth.

• • •

007

117007

FIG. 2



TERTIARY
- Alluvium
- Basalt
- Sand, grit
- Undifferentiated

CAMBRIAN
- Serpentinite

PRECAMBRIAN
- Quartzite
- Garnet schist

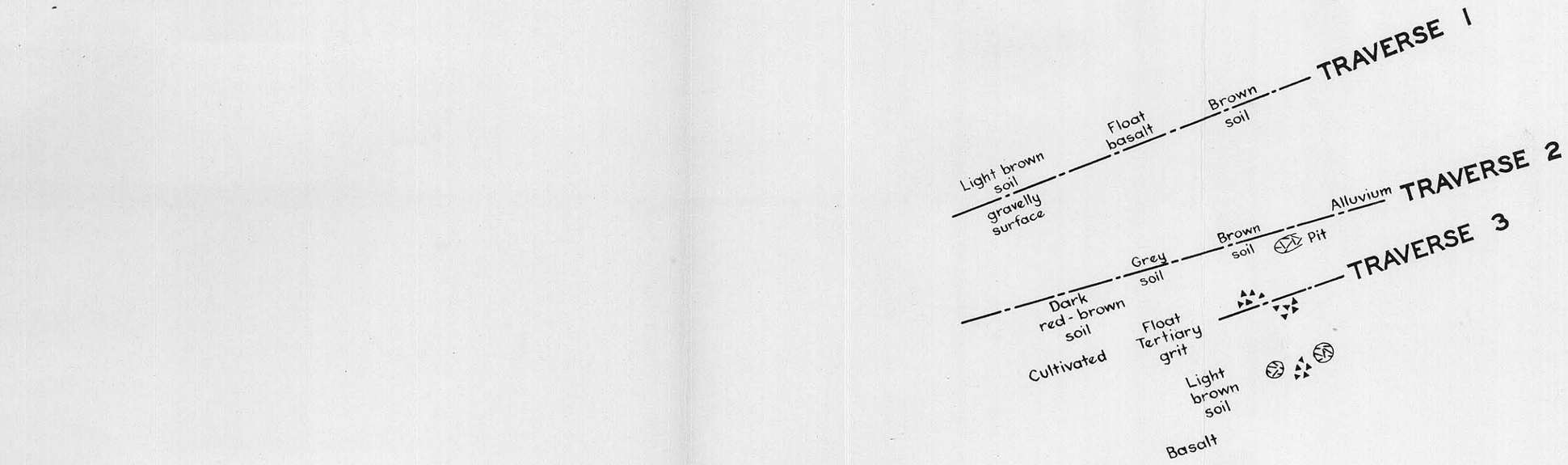
5 cm

0 1 2
SCALE OF MILES

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No. TSh 43
Date 7-11-68	E.L 15/65 SHEFFIELD – TASMANIA GEOLOGICAL MAP CLAYTON RIVULET	Drawing No. A4-1092

FIG. 3

117008



THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

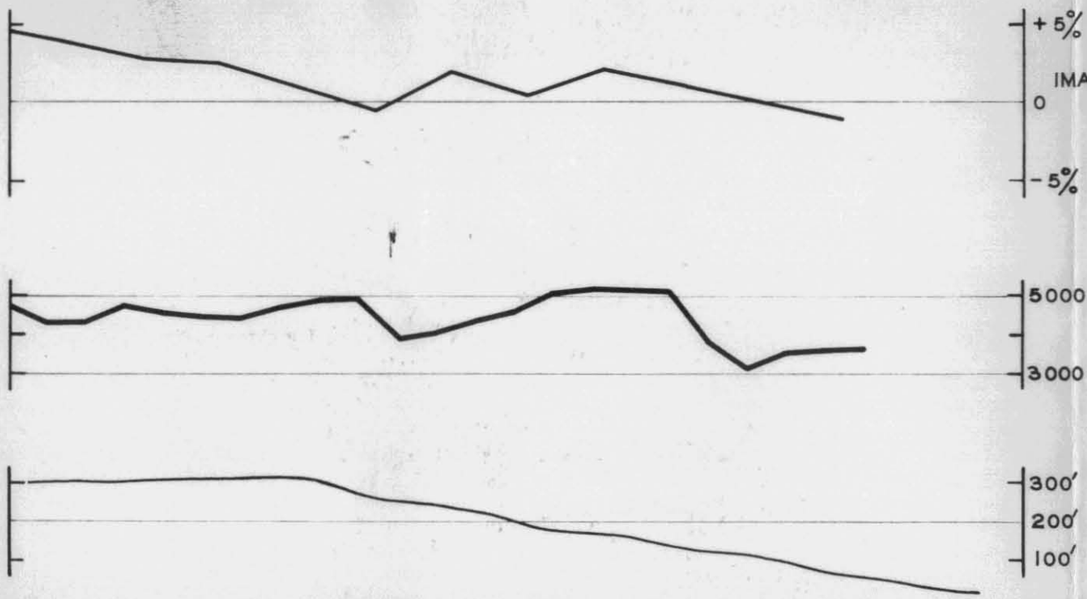
E.L. 15/65 SHEFFIELD TASMANIA
CLAYTON RIVULET
GEOPHYSICAL TRAVERSES

Drawn: K.M.H.	Date: 7-11-68	Centre: Melbourne
Traced: I.W.	Drawing No: A2-1013	Project No: TSh 43
Checked:		
O.I.C.:		

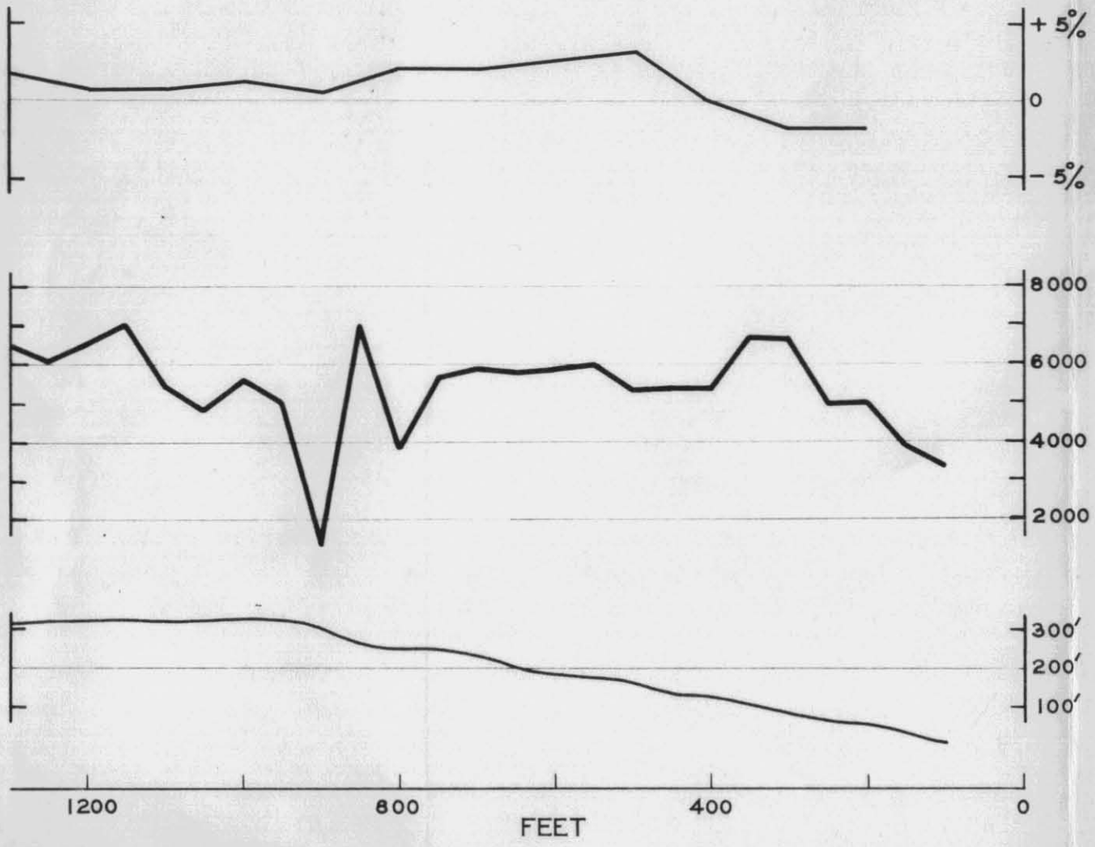
009

117009 **FIG. 4**

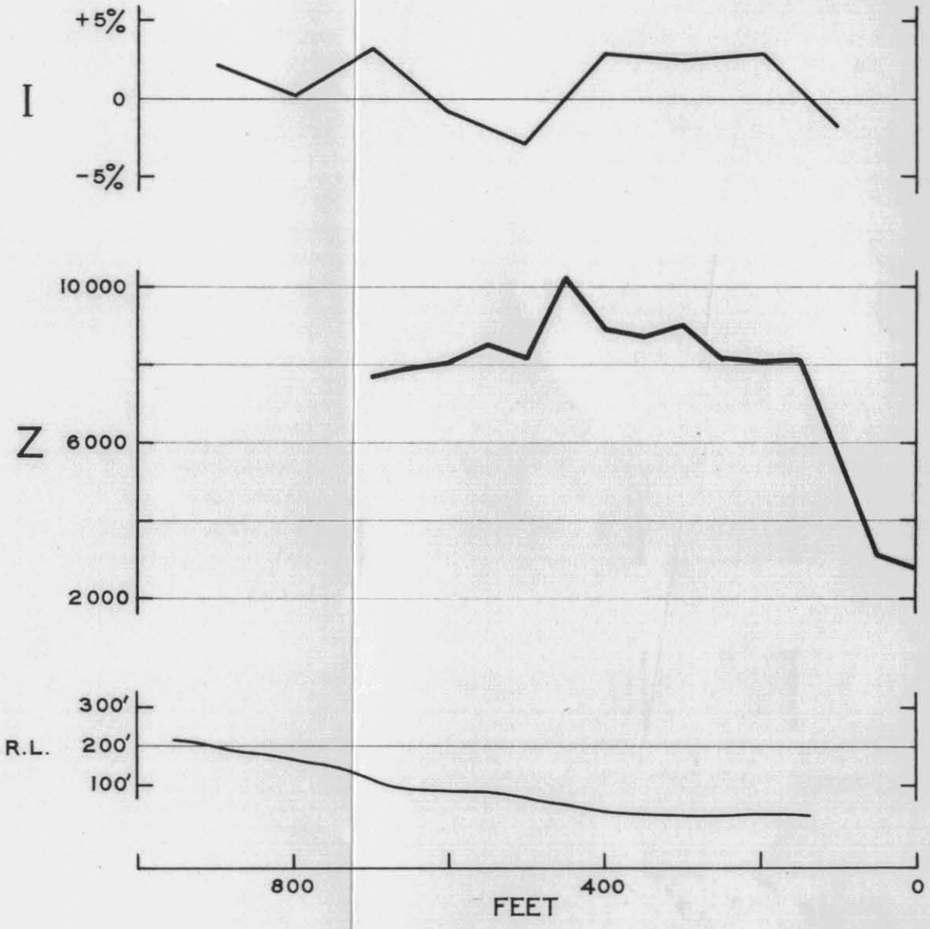
TRAVERSE 1



TRAVERSE 2



TRAVERSE 3



I IMAGINARY COMPONENT 1760 C.P.S.

Z VERTICAL FIELD GAMMA

ELECTROMAGNETIC PROFILE

MAGNETIC PROFILE

5 cm

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
E.L. 15/65 SHEFFIELD – TASMANIA E.M. AND MAGNETIC PROFILES TRAVERSES 1 – 3 CLAYTON RIVULET		
Prepared by: P.H.	Centre: Melbourne	
Date: 7-11-68	Drawing No: A3-1061	Project No: TSh 45
Drawn: I.W.		

117010

010

IMAGINARY COMPONENT 1760 C.P.S. +5% 0 -5%

VERTICAL FIELD GAMMA 8000 4000

TRAVERSE 4

I +5% 0 -5%

Z 8000 4000

TRAVERSE 5

I +5% 0 -5%

Z 10000 6000 2000

TRAVERSE 6

I +5% 0 -5%

Z 9000 5000 1000

TRAVERSE 7

I +5% 0 -5%

Z 10000 6000 2000

TRAVERSE 8

Z 11000 7000 3000

TRAVERSE 9

Z 12000 6000 4000

TRAVERSE 10

I +5% 0 -5%

Z 10000 6000 2000

TRAVERSE 12

5 cm

I IMAGINARY COMPONENT 1760 C.P.S.

Z VERTICAL FIELD GAMMA

ELECTROMAGNETIC PROFILE

MAGNETIC PROFILE

0 1000 2000 3000 FEET

FIG. 5

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 15/65 SHEFFIELD – TASMANIA
E.M. AND MAGNETIC PROFILES
TRAVERSES 4 – 11 CLAYTON RIVULET

Prepared by: P.H | Centre: Melbourne
Date: 7-11-68 | Drawing No: A3-1062 | Project No: T5h 46
Drawn: I.W.