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EXPLORATION LICENCE 33/79

WARATAH, TASMANIA

REPORT FOR THE YEAR ENDED 14TH JULY, 1983

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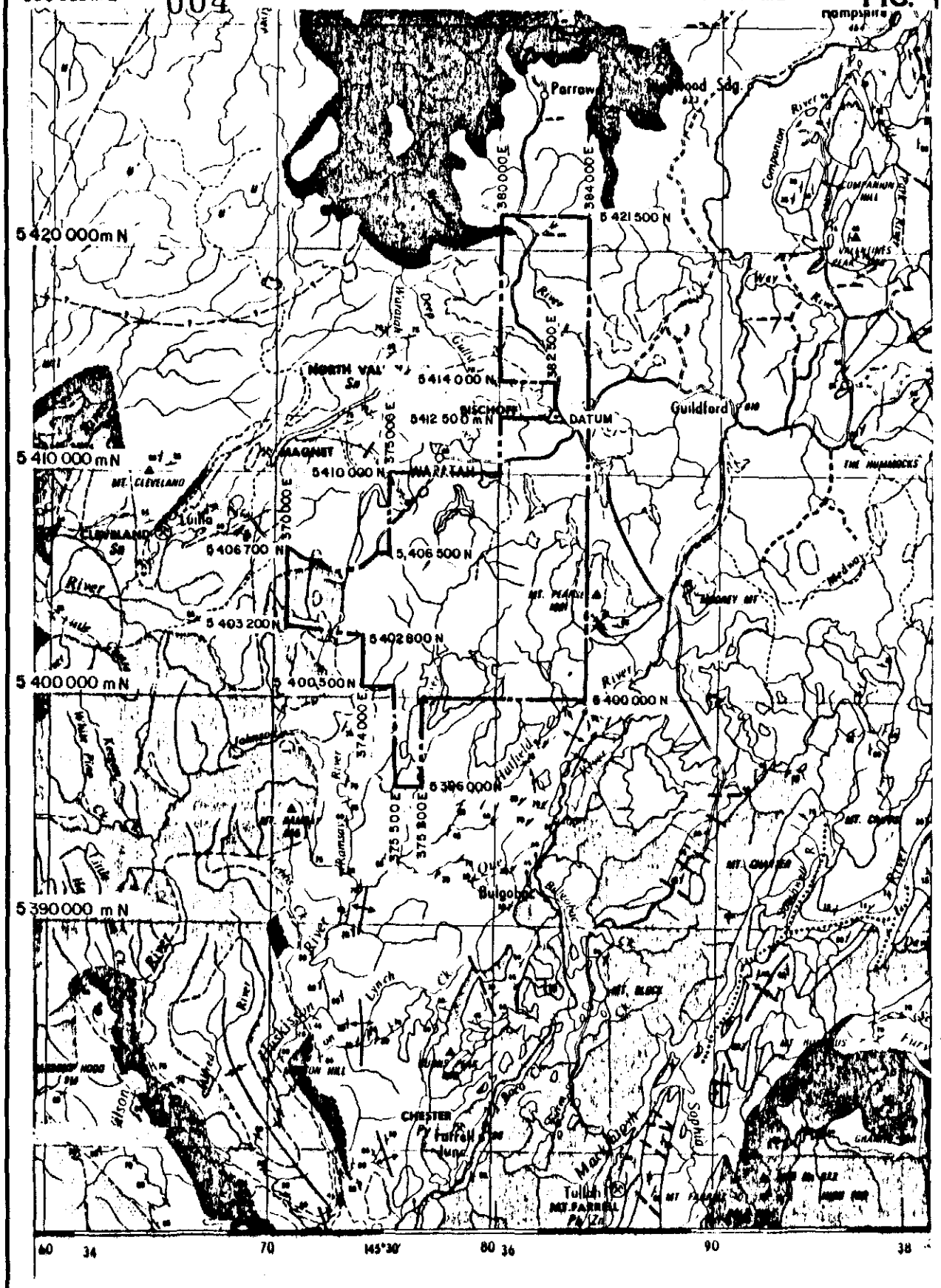
FIG. 1



5 cm

Scale 1:250 000

0 5 10 15 Km

Photo copied from Geological Survey of Tasmania, Burnie, 1:250 000 Geological sheet.

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO LTD	Project No
Date 12-2-82	LOCATION MAP E.L. 33/79 WARATAH, TASMANIA	Drawing No A4-2020/2

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EXPLORATION LICENCE 33/79
WARATAH, TASMANIA
REPORT FOR THE YEAR ENDED 14TH JULY, 1983

1. GENERAL

Exploration Licence 33/79 of 150 square kilometres was granted to The Broken Hill Proprietary Company Limited on 11th January, 1980. The current expiry date is 14th January, 1984.

2. EXPLORATION PHILOSOPHY

The Exploration Licence lies within a mineralised belt which includes the Mt. Bischoff, Cleveland, Magnet and Godkin mines, as well as covering the northern extension of a sequence of sediments which include the host rocks for mineralization at Renison Bell and Mt. Lindsay.

The principal target in the area is a massive sulphide or skarn hosted tin-tungsten deposit. Suitable host rocks for these styles of mineralization are known to extend beneath the blanket of Tertiary basalt which covers most of the licence area.

In the past the basalt cover has prevented a concerted exploration effort and it was only in the period 1977 to 1979 that the area was first explored by modern techniques.

Our current exploration is largely dependent upon the generation of drill targets by interpretation of geophysical anomalies. Consideration has also been given to the use of:-

(a) geological methods - extrapolation of structure and lithology in surrounding terrain;

(b) remote sensing and photogeological methods;

(c) geochemical methods - including soil, humus seepage and spring water sampling.

3. SUMMARY OF PREVIOUS WORK

(a) Literature review and compilation of existing data

(b) Geological mapping at 1:50,000 scale

(c) Orientation stream sediment and pan concentrate sampling (28 samples)

(d) I.P. profiling and depth sounding in the Reservoir Grid area

(e) A Dighem II helicopter-borne E.M. test survey consisting of 50 line kilometres over five east-west and two north-south lines

(f) Rock chip sampling of basalts for geochemical analysis and magnetic susceptibility measurements (50 samples)

(g) Twenty line kilometres of grid cutting and surveying

(h) Ground magnetic surveying on cut lines at 10 metre intervals and modelling of anomalies

(i) Soil sampling at 100 metre intervals on cut lines (259 samples)

(j) Interpretation of Landsat image at 1:250,000 scale

(k) A detailed aeromagnetic survey over the entire E.L. East-west lines spaced at 250 metres and a sensor terrain clearance of 90 metres

(l) Geochemical sampling for orientation purposes including water, seepage and humus sampling

(m) Soil sampling on tracks in granite terrain in the western part of the licence area

(n) Access track construction to 8 drill hole sites

(o) Drilling of 6 stratigraphic drill holes (totalling 505 metres) to test magnetically anomalous zones and zones of low magnetic noise

(p) Drilling of 10 orientated small core drill holes for magnetic susceptibility and magnetic field orientation measurements

4. DRILLING PROGRAMME 1982-83

4.1 General

The main aims of the drilling programme were:-

(a) to locate the source of four aeromagnetic anomalies

(b) to provide stratigraphic information regarding the thickness of the Tertiary basalt and the nature of the underlying lithologies

(c) to test the relationships between present day and past topography

Initially eight sites were chosen on this basis but only six of these were eventually drilled. Two boreholes were also drilled in the adjacent Wynyard licence area (EL 23/79). Drilling took place between 12th January, 1983 and 10th February, 1983 utilising a Warman 250 Scout, track mounted rig and a Warman 500 supplied by Overland Drilling Co. The large Warman arrived later in the programme to accelerate progress and was mainly used to precollar the holes. Total metreage of the programme was 1568.52 m (Table 1).

Particular consideration was given to access during site and rig selection as a direct result of the difficulties encountered during the previous drill programme. All sites required minor preparation involving clearing of tracks and sites and sump construction. Water cartage did not prove necessary.

The Scout is of great value in areas of difficult, steep access under wet conditions but the dry weather which continued throughout the period of drilling made this a minor factor. In contrast to the previous drill programme, a greater depth of percussion hammering was achieved, and this was further enhanced by the greater capabilities of the Warman 500.

Further detail on problems encountered in individual holes is given in the following section.

TABLE 1

DRILLING STATISTICS

HOLE NO.	TOTAL DEPTH	TOTAL PERCUSSION	TOTAL DIAMOND DRILLING	BASALT THICKNESS
WA 1	299.90	85.00	214.90	223.52
WA 2	190.77	187.00	3.77	189.86
WA 3	284.20	141.00	143.20	240.35
WA 4	349.15	85.00	264.15	285.60
WA 5	183.00	84.00	99.00	52.00
WA 6	261.50	140.00	121.50	219.25

TOTAL METREAGE - 1568.52

4.2 Sampling Methods

During the programme percussion chip samples were collected at 2 metre intervals and stored in core trays. Magnetic susceptibility measurements were taken at 2 metre intervals over all chips and core collected.

Geochemical samples of all basement core were taken over 5 metre lengths or over defined lithological units by chip sampling. These samples were despatched to Analabs to be dried, crushed, pulverised and analysed for copper, lead, zinc, silver, arsenic, tin and tungsten by A.A.S. and XRF methods. In addition selected rock units were sent for petrological identification to Central Mineralogical Services in South Australia.

A summary of all samples series used is presented in Table 2 and the results are in Appendix 4.

Following the completion of the drill programme, Tony Brown and Steve Forsythe of the Department of Mines, together with a botanist from the University of Tasmania, were invited to sample the Tertiary basalts and sediments for identification and dating.

TABLE 2

SAMPLE SERIES - 1982-83 PROGRAMME

			No of Samples
STREAM SEDIMENT	T65/300, 302, 304	-20# field/-80# lab	3
PAN CONCENTRATE	WPC 9 & 10 (from 1-15)	Coldstream 1981	2
	T65/301P, 303P, 305P	Coldstream follow up 1983	3
	T65/306P	WA 4	1
	T65/307P-314P	Granite grid augering	8
CORE CHIP	BE 5001-5029	Drill Hole WA 1	29
	BE 5030-5031	Drill Hole WA 2	2
	BE 5042-5051	Drill Hole WA 3	10
	BE 5051-5054	Drill Hole WA 4	4
	BE 5055-5086	Drill Hole WA 5	22
	BE 5087-5097	Drill Hole WA 6	11
	BE 5098	Drill Hole WA 4	1
CORE PETROLOGY	WA1-1 160.5 m 2 252.52 m 3 254.07 m 4 262.05 m 5 287.4 m 6 282.1 m 7 283.2 m 8 292.6 m	WA3-1 252.9 m 2 262.93 m 3 273.96 m 4 282.3 m WA4-1 333.85 m 2 336.6 m	WA5-1 151.58 m 2 155.98 m 3 177.28 m 17

4.3 Drill Hole WA1

This hole was positioned over an aeromagnetic anomaly (Anomaly E) of similar size to the Mt. Bischoff anomaly and on a trend passing through mines at Mt. Cleveland, Magnet and Mt. Bischoff. On geophysical grounds it is an outstanding anomaly with an estimated depth to source of 220 to 280 metres.

A grid was put over the anomaly (Figure 5) to accommodate an EM 37 survey documented in Section 6. The site has an elevation of 615 metres and is situated in open eucalypt forest with a minimal surficial outcrop of basalt. The hole was drilled to a total depth of 299.9 metres, of which 85 metres were hammer drilled. No major drilling problems were encountered.

Results

A fairly thick sequence of Tertiary basalt (223.52 m), with approximately twenty individual flows of 6.5 metres average thickness below 85 metres, was passed through before Cambrian basement was intersected (Appendix 3). Ten metres of Tertiary silcrete separate the basalt from the underlying Cambrian andesite. The andesite is dark green in colour, medium grained with hematite rings and 1-2 mm feldspar phenocrysts. Magnetite is a major constituent and therefore provides a strong contribution to the magnetic anomaly.

Beneath the andesite is a thirty metre turbidite sequence of laminated red shales or mudstones, thin beds of chert, lithicwacke and carbonate, minor andesite, microdiorite and volcanic breccia. The lithicwackes are well graded and cross bedding is evident. A sample from each of these units was put

in for petrological analysis and descriptions are in Appendix 6. Of note are the carbonates distinguished as a cherty dolostone (WA1-7) and dolomitic chert (WA1-6). No mineralization was evident other than a fine trace of pyrite in the cherty dolostone. No anomalous analytical results were obtained.

4.4 Drill Hole WA2

This drill hole was sited partly to test the theory that present day topographic highs reflect basement highs. In addition it has a coincident magnetic anomaly (Anomaly C) over it. Outcrop indicates a solid basalt knoll but several quarries on topographic highs west of the Waratah highway contain Precambrian cherts and suggest a thin basalt cover.

Considerable problems were encountered in drilling this hole and at the time of writing this report, over 100 metres of drill rods and hammer remain in the hole. The main causes of the trouble are numerous thin interflow sediments in the Tertiary basalt coupled with some misjudgement by the drillers. The first drilling attempt with the 250 Scout reached 190.77 metres. On the second drilling attempt with the Warman 500 replacing the 250 Scout, the hole was abandoned at 187 metres.

Results

Again the Tertiary basalt cover proved thicker than anticipated totalling 190 metres. There appear to have been numerous volcanic eruptions followed by brief periods of sedimentation. A thick sequence (18.99 metres) of mudstone with abundant fossil plant matter, interbedded sills and fine grained sands occurs at a depth of 129.31 metres. At 189.86

metres the drill passed into a chert breccia (?silcrete) composed of coarse one centimetre fragments of grey angular chert in a fine grained matrix.

Two samples were taken for geochemical analysis, BE 5030 from the Tertiary mudstones and BE 5031 from the chert breccia. Results were not anomalous.

It is hoped to deepen this hole at a later date.

4.5 Drill Hole WA3

The main aim of drilling WA3 was to provide stratigraphic information. It has a very minor magnetic response (Anomaly D). The site is on a prominent topographic high called Belmont Plain, north-east of Mt. Bischoff. Belmont Plain is a buttongrass plain sitting atop a basalt knoll.

Results

As this hole was drilled by the Warman 500, a greater percussion depth was achieved and thus basalt flow information could be obtained only from 141 to 240.35 metres. Tertiary flows are numerous and average five metres in thickness. One metre of Tertiary gravels and clay separate the base of the basalt from the Cambrian basalts underneath.

This latter sequence consists of forty metres of dark green serpentinized and chloritised tuffs, lavas and komatiites with minor sediment. The komatiite displays relict phenocrystic olivine textures and scattered chromites in a fine grained matrix.

Two tuff units, separated by twelve metres of komatiite and sediments, are virtually identical porphyritic ultramafic extrusives or high level intrusives and are probably co-magmatic with the komatiites.

A total of ten geochemical samples from the Cambrian ultramafics were analysed. Copper, lead and zinc values appear to be quite uniform for each lithological unit (Appendix 4).

The Tasmanian Mines Department intends to deepen this hole later in the year.

4.6 Drill Hole WA4

Anomaly G was chosen from the aeromagnetic data as having favourable size and shape to be representative of an ore deposit. It also lies within a circular feature which may be a halo effect caused by an underlying granite. The anomaly indicates a deep source at 120 to 150 metres.

The site is in open eucalypt forest. Outcrop is minimal and basaltic. The basalt proved to be very thick in this hole and major drilling problems resulted. A Tertiary river bed, consisting of loose sand and gravels, was intersected at 285.6 metres. Pebbles jammed the diamond bits, cave ins were numerous and an attempt to ream over the BQ core with NQ was abandoned in favour of AQ coring. Although favourable rock units were intersected at the base, the hole had to be abandoned due to low core recovery.

Results

Tertiary basalt cover in this hole (285.6 metres) proved to be the thickest of all six holes drilled

on the licence. Below 85 metres approximately 31 individual flows could be delineated with an average thickness of 5 metres.

A six metre mudstone sequence at 166.17 metres with abundant plant matter is the only indication of interflow sedimentation.

Four metres of Tertiary mudstone mark the base of the basalt. Beneath this is a Tertiary river bed, the source of various chert and quartz pebbles and quartz sands of probably granite derivation. Up to forty metres from this contact the basalt is strongly weathered, brecciated and fragmented. The river gravels have a total thickness of forty metres although very little core was retrieved over this depth.

Precambrian sediments continue from 327.5 metres to the base of the hole at 349.15 metres, but very little of this metreage was retrieved in the core. The sediments consist of a sequence of steeply dipping black shales, dolomite and white sandstones/ quartzites all with finely disseminated pyrite. Petrological examination of two specimens from the dolomite indicate the presence of minor sphalerite.

Three geochemical samples (BE 5052-5054) from these sediments show anomalous lead and zinc values (210, 205, 115 ppm lead), (2450, 940, 465 ppm zinc).

4.7 Drill Hole WA5

During the previous two field seasons the reservoir grid was laid out in the area of Waratah reservoir and five drill holes were sunk into various magnetic highs and lows and one photogeological feature.

Originally we had planned to deepen the 1982 drill site RW8 (documented in the previous six monthly report) which had penetrated 100 metres of basalt. The drill site was altered to anomaly H (Figure 5), which fell on the same composite linear magnetic trend as RW8, coinciding with a south-east porphyry dyke trend extending out from Mt. Bischoff. This magnetic feature is a better anomaly than that of RW8.

A small grid was put over the drill site and several lines of ground magnetics completed (Figure 5). A deep source at 140-160 metres was estimated.

Results

Perhaps the most striking feature of this hole is the relatively thin (52 m) cover the Tertiary basalt. This is underlain by 33.5 metres of Precambrian sandstone and 97.5 metres of black shales. The black shales display bedding, microfaulting and folding and quartz veining. Several thin (one metre) interbeds of siliceous sandstone with fine carbonate and quartz veins occur within the shales. Mineralisation present consists of finely disseminated pyrite most abundant on fracture faces.

Geochemical results for the Precambrian rocks appear to be relatively uniform. However, anomalous zinc values (525, 250, 910 ppm) appear in samples BE 5082, 83 and 86.

4.8 Drill Hole WA6

Largely a stratigraphic hole, WA6 was positioned within a broad topographic high marginal to the circular magnetic feature around anomaly G (WA4).

The site is only 50 metres off the Luina road east of Waratah. Basalt outcrops on the surface. A major problem during the percussion drilling of this hole was the huge supply of underground water.

Results

The lithologies intersected in this hole are very similar to those of WA5. Tertiary basalt cover is 219.25 metres thick with 15 estimated flows below a depth of 140 metres. This is underlain by 42 metres of black shales, steeply dipping, microfaulted, folded and containing thin sandstone beds as in WA5. Geochemical values are also very similar but no obviously anomalous values were seen.

4.9 Conclusions

Tertiary Basalt

As can be seen from the graphic logs and other data, most holes encountered a large thickness of Tertiary basalt cover. An attempt was made to define the individual flows, measuring thicknesses from vesicular/amygdaloidal top to dense base (recognisable in the core only). This information is presented in Appendix 3 and reveals the Tertiary in this area to have been a period of frequent fissure action.

Flow thicknesses vary from several centimetres to ten or more metres often separated by periods of erosion and sedimentary deposition. Correlation of flows between the drill holes is impossible, the varied thicknesses indicating the ancient topography was considerably more rugged than it is today.

Pre-basalt Geology

The most recent mapping of the region is that by Tasmanian Mines Department geologist, Tony Brown (TMD Unpub. rep. 1982/46) and a composite of this work is represented in Figure 2. Most of the following conclusions on the geology of the drill holes relate to this mapping.

The basement sequence of drillhole WA1 can be correlated with the Eocambrian Crimson Creek Formation which has been mapped west of the licence area. This formation is described as a monotonous sequence of laminated siltstone and mudstone with volcanoclastic lithicwacke, minor tuff, carbonate horizons and tholeiitic basalt flows (Brown, A.V., 1980a).

Exposure in the quarries near WA2 shows a chert breccia at the contact between the basalt and the underlying Precambrian. Although only one metre of the breccia was drilled it is apparent that the base of the Tertiary basalt has been reached.

In hand specimen the Cambrian ultramafics of WA3 bear a strong resemblance to the Magnet dyke which occurs west of Mt. Bischoff. This dyke is an elongate strip of predominantly porphyritic to amygdaloidal spilites or albite dolerites which have been deuterically altered to opherilitic quartz-chlorite rocks (Groves et al, 1973). The dyke is associated with localised silver, lead, copper ore deposition at Magnet, Fawkner's Tunnel and Persic. The northeast trend of the dyke could be extended to include drill site WA3 (Figure 2) but it is possible WA3 is a discontinuous pod (contrary to its name the dyke is not magnetic).

The carbonates and shales of drill holes WA4, 5 and 6 can be correlated with the Precambrian Oonah Formation which has been mapped south of the licence area and outcrops as a sequence of quartzites and shales interbedded with dolomite horizons at Mt. Bischoff. Tight isoclinal folding is also associated with the Oonah Formation and some of these structures in WA4, 5 and 6 sediments reflect this.

Overall, with the knowledge that WA4, 5 and 6 contain Precambrian Oonah Formation and WA1 has intersected Eocambrian Crimson Creek Formation, it is possible to extrapolate a boundary between them from west of the licence area underneath the Tertiary basalt to the south (Figure 2). This boundary can be drawn to also delineate an area of less intense magnetism on the aeromagnetic data coinciding with the Precambrian.

5. GEOPHYSICS

5.1 Ground Magnetics E Grid and Reservoir Grid

Ground magnetic surveys were conducted at the sites of drill holes WA-1 and WA-5. The purpose of these surveys was to assist in positioning the drill holes designed to intersect airborne magnetic anomalies. Because the highly magnetic Tertiary basalts outcrop in these areas, the raw magnetic data are dominated by their response. To allow direct comparison between airborne and ground data, the latter were upward continued to a level equivalent to the airborne survey flying height (90m).

Figure 5 shows the locations of the grids on which magnetic readings were taken every 2.5 metres. Geometrics G 856 proton magnetometers were used to measure and digitally record the data.

The raw and continued data for the "E-Grid" where WA-1 was sited, are shown in Figures 7a, 7b, 7c, 7d. The data from the Reservoir Grid around the WA-5 site, are shown in Figures 8a, 8b, 8c, 8d. It should be noted that data from lines 3430N, 2700N, 2000N and 1200N on the Reservoir Grid have previously been reported.

5.2 Ground Electromagnetics

A brief programme of ground EM was carried out by Geoterrex Pty. Ltd. on the E-Grid. The work was effectively an orientation survey to gauge the response of the Geometrics EM 37 transient EM system in the basalt covered prospective areas. The E-Grid was chosen because it was located on one of the prime magnetic targets interpreted as possible Mt. Bischoff type mineralization. The fixed transmitter roving receiver configuration was used to survey lines 200N, 400N, 600N and 800N. The transmitting loop was 300m x 600m with sides on lines 200N, OE, 800N and 300E. The results are shown in Figures 9 a through 9 1. The response observed is a relatively conductive half space response and no strong lateral conductivity contacts are evident. In order to quantify the thickness and resistivity of this "half space", four transient EM soundings were carried out.

Figure 10 shows the locations of the soundings. The sounding data and interpretation (by Geoterrex) are presented in Figures 11a, 116, 11c, 11d. The results show an upper layer of moderate (c. 100 ohm - metres) resistivity with a thickness of around 120 metres. Overlying this is a layer of similar thickness but much lower resistivity (c. 20 ohm-metres). Below around 240 metres a very thick zone of very high resistivity is evident.

Initially (pre drilling) the second low resistivity layer was interpreted as a combination of Tertiary sediments below the (outcropping) basalt with highly weathered basement (Cambrian or Precambrian). The drilling of WA-1 showed that in fact this "layer" coincides with basalt.

5.3 Downhole Logging

Because of the unexpected EM resistivity and drilling results from the E-Grid, resistivity logs were measured to further investigate the "two-layer" resistivity nature of the basalt. Single point resistivity and gamma tools were run down holes WA-3, WA-5 and WA-6 in addition to WA-1. Unfortunately all of these holes were blocked by cave-in material at or slightly above the Tertiary/basement boundary. In WA-1, the single point resistance logs (Fig. 12) clearly show the reason for the two layer response of the basalt. The upper 120 - 130 metres shows a dominance of extremely high resistivity 'bands', whereas these are much less frequent in the lower 100 metres. Since core was only obtained below 85 metres and the basalt was not logged in great detail, it is difficult to positively identify the cause of the higher resistivity 'bands'. Where core exists however, these bands can be correlated with dense basalt flows in contrast to the more common vesicular and amygdaloidal flows. Similar resistivity responses were observed from the logs in WA-3, WA-5 and WA-6 (Figures 14, 16, 17).

In all holes, magnetic susceptibility measurements were taken at 1 metre intervals to assist in magnetic interpretation. The results (Figures 12-17) show that the Tertiary basalt has a moderate-high susceptibility while the Precambrian

basic rocks (e.g. in WA-1) are significantly higher in susceptibility. Remanence tests on the Tertiary basalts (previously reported) show them to have an additional permanent magnetic component. The Cambrian (?) basic lavas encountered in WA-3 are, by contrast, non magnetic.

6. MEREDITH EAST AREA

6.1 General

The aeromagnetics over this area indicate an intense magnetic zone parallel to the margin of the Meredith Granite (Fig. 6). This zone may represent contact metamorphism, ultrabasics or possible skarn development and is therefore of some interest. Two holes were drilled in the area in 1982 but failed to penetrate the basalt cover. The area has also been subjected to several small soil, rock chip and stream sampling programmes, the latter of which produced anomalous geochemical results. There are also several isolated magnetic anomalies east of the granite margin.

6.2 Geochemistry

Two pan concentrates, WPC-9 and WPC-10 (Figure 5) from a fifteen sample programme in 1980, gave anomalous tin values of 11,500 ppm and 80 ppm. These were taken from the main body of the Coldstream River (WPC10) and from a small tributary draining the Meredith Granite marginal zone. This smaller area is blanketed by temperate rainforest within which outcrop is minimal. Small stream channels are not easily distinguished and the gravels are often covered by up to 10 cm of mud and slime.

Repeat samples of WPC 9 & 10 (T65/300-305P) were taken this season and confirmed these results. (Appendix 4). Gravels observed at the sample sites contain an abundance of chert and quartz pebbles.

6.3 Auger Sampling

In an effort to determine the position and nature of the granite margin and the contact rocks, a grid consisting of 4 east-west lines and one north-south line was cut. A motorised auger was used to drill 8 holes along the lines to locate the bedrock. Below a depth of two metres it became increasingly difficult to lift the auger with the sample to the surface, but in all holes results were reasonably conclusive by that depth.

Samples were taken at the base of each hole and panned. The geochemical results are given in Appendix 4. Results show the contact to be granite-basalt in this area with no intermediate sediments. The trend of the contact indicates a bulge to the West. (Appendix 4). Minor outcrops of granite and basalt were seen.

6.4 Ground Magnetics

Three ground magnetic grids were surveyed in the Meredith East area to provide positive information on aeromagnetic anomalies identified as a marginal magnetic zone of the Meredith Granite. As with the ground magnetic data described in section 5.1, it has been necessary to upward continue the ground magnetic data to the equivalent airborne survey height to allow workable comparisons to be made. The raw and continued data for the K grid are presented in Figure 18, for the L grid in Figure 19 and for the M (Coldstream) grid in Figures 20a to 20e.

7. FUTURE PROGRAMME

Future work on the project will include further interpretation of the aeromagnetic data on the basis of the drilling results. Attempts are being made to cancel out the surficial effect of the basalt cover to reveal deeper magnetic sources.

The potential of anomalies K, L and M as future drill targets on the basis of the ground magnetics surveys will also be assessed.

A further drilling programme is planned for the 1983-84 field season.

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370 000 mE

80

90

5420 000 mN

10

00

Ecc (chert)

Bell's Plain

WA 2
189·86/190·77

Belmont Plain

WA3 (€b1)
240·35/284·2

(Ecc) WA1
223·52/
299·9

Gatcomb Plain

Belmont Hill

Guildford

Waratah

WA6 (Pu)
219·25/261·5

WA4 (Pu)
285·6/349·15

WA5 (Pu)
52·0/183·0

Champion Heath

Knole Plain

Pearsefield

△ MT. PEARSE

△ MT. RAMSAY

Bischoff Reservoir

Waratah Reservoir

MOUNT BISCHOFF

Silver Cliffs (Pb,Zn,Ag)

Fawker's Tunnel (Pb,Cu)

Magnet (Pb Ag)

Six Js

Brooks

Persic (Pb)

Haynes Creek

Tinstone Creek

Ritchie Creek

Magnet Creek

Wandle River

Arthur River

Deep River

Warrigal Creek

Summer Creek

Ramsay River

Gully

Dip Creek

Belmont Creek

Coldstream River

Hay Creek

Hatfield River

Que River

Fossey River

Nethercby Creek

HELLYER

H.E.C.

RAILWAY

EMU BAY

MURCHISON HIGHWAY

probably thru sequence

ACKNOWLEDGEMENTS :-

Compiled from Dept of Mines Unpubl. Rep. 1982/46 (A.V. Brown)

Dept of Mines Mackintosh sheet (1:63 360)

526028

FIG. 2

LOCALITY MAP

EL 33/79

0 20 40 60 80 100 kms

Smithton

Burnie

Devonport

WARATAH

Queenstown

41°

42°

145°

146°

GN MN

LEGEND

QUATERNARY	Qts	Sand, gravel, basalt talus	
TERTIARY	Ts	Interflow sediments, silcrete, laterite	
PERMIAN	Pt	Tillite, some varves and related sediments	
ORDOVICIAN	Os	Quartz sandstone	] correlate of Owen Conglomerate
CAMBRIAN	€mu	Calcareous conglomerate, greywacke, sandstone	] correlate of basal Dundas group
EOCAMBRIAN?	Ecc	Volcaniclastic lithicwacke siltstone and mudstone with minor carbonate and tholeiitic basalt. Areas of predominantly basalt indicated (Eccb)	] Crimson Creek formation
PRECAMBRIAN	Pu	Quartzite, mudstone, minor dolomite	] correlate of Oonah formation

IGNEOUS ROCKS

TERTIARY	Tb	Olivine basalt	
DEVONIAN	Dp	Felsic porphyries	
	Dg	Biotite adamellite	] Meredith granite
CAMBRIAN	€b1	Basic igneous suite - spilite	
	€b2	Basic igneous suite - gabbro	
	€s2	Serpentinite	
	€p	Predominantly quartz feldspar porphyries	] Mount Read Volcanics

- geological boundary
- geological boundary - concealed and interpretative
- fault
- strike, dip of strata
- minor fold orientation
- strike of joints
- mine or prospect
- C — C' geological cross section
- WA3 25/67 drill hole Basalt thickness / total depth
- railway
- powerline

SCALE 1:50 000

0 1 2 3 4 5 kms

5 cm

027

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

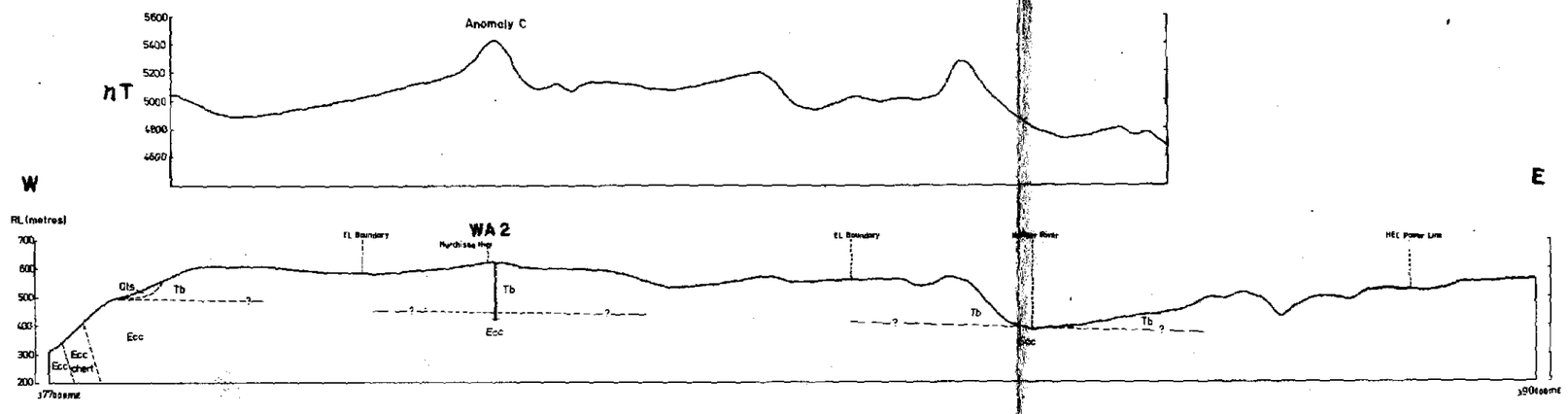
EL 33/79 WARATAH

Solid and Interpretative Geology

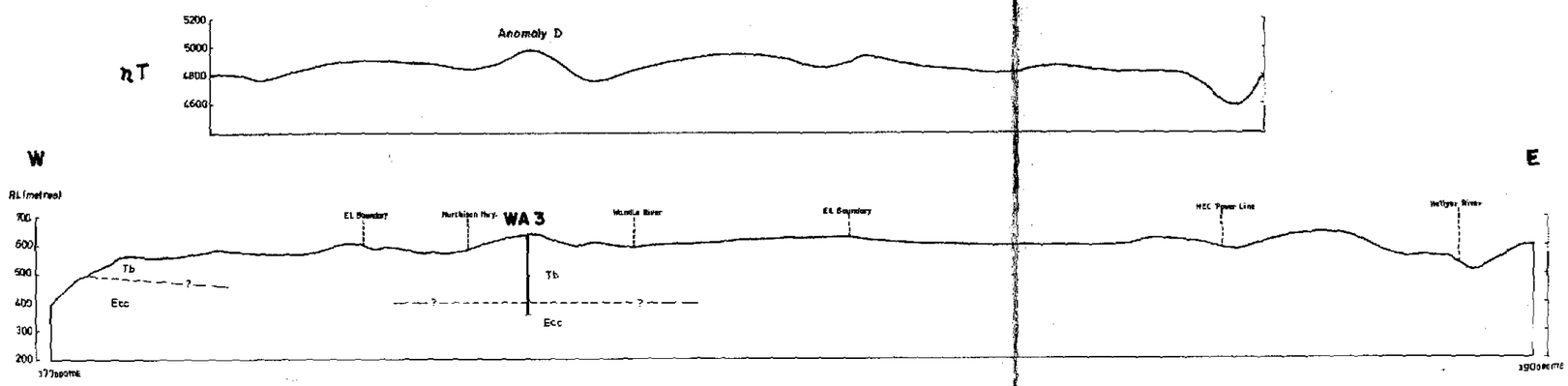
Drawn: S.P. KERBER	Date: 5-5-83	Centre: HOBART
Traced: A. HANSEN	Project No:	Drawing No: A1-
Checked:		

Revisions:

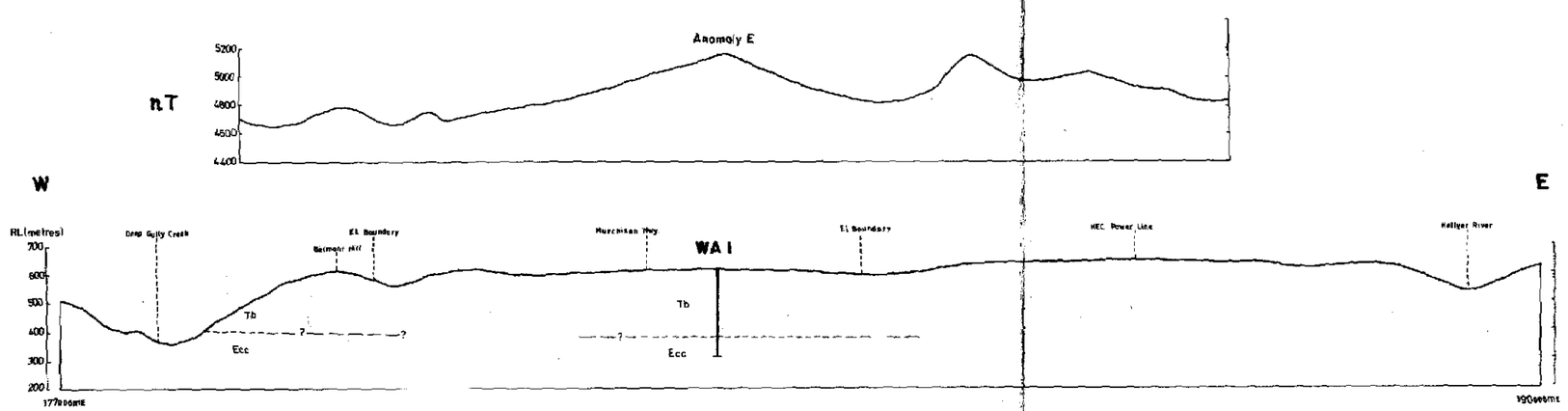
526029 FIG. 3



Section C-C (west east through D.D.H. WA 2)



Section D-D (west east through D.D.H. WA 3)



Section E-E (west east through D.D.H. WA 1)

LEGEND

QUATERNARY	Qls	Sand, gravel, basalt talus
TERTIARY	Ts	Interflow sediments silcrete laterite
EDCAMBRIAN	Ecc	Volcaniclastic lithicwacke siltstone and mudstone with minor carbonate and tholeiitic basalt.
PRECAMBRIAN	Pu	Quartzite mudstone minor dolomite
	IGNEOUS ROCKS	
TERTIARY	Tb	Olivine basalt

5 cm

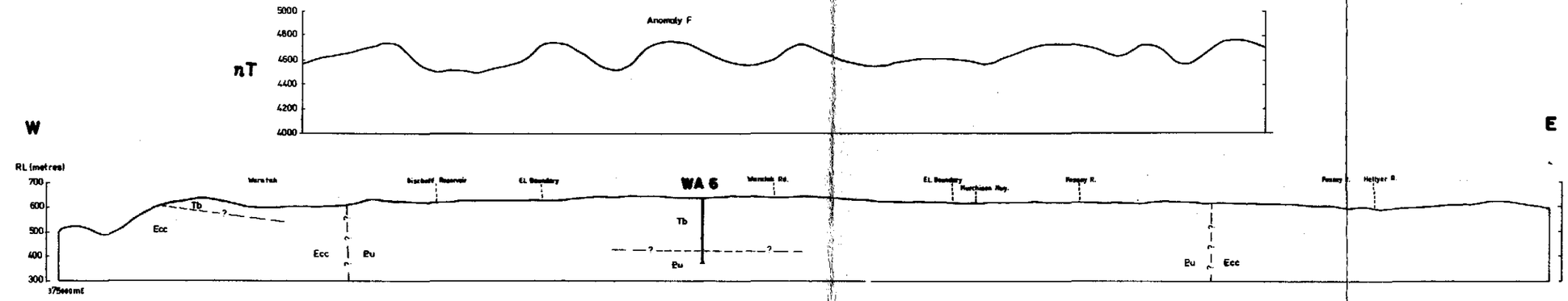
VERTICAL SCALE 1:20,000
HORIZONTAL SCALE 1:50,000
0 1 2 kms

Note : For location of sections see fig. 2.

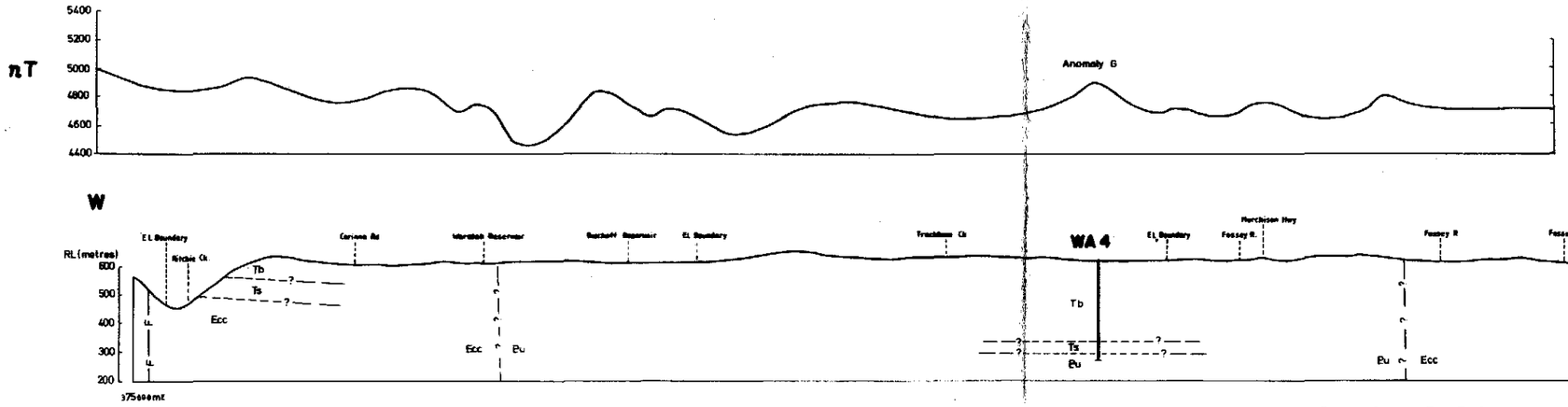
THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT	
EL 33/79 WARATAH Geological Cross Sections and Aeromagnetic Profiles C-C¹ D-D¹ E-E¹	
Drawn: S. NEWBERY	Date: 15-5-85
Traced: A. HANSEN	Project No: Task
	Drawing No: A1-

028

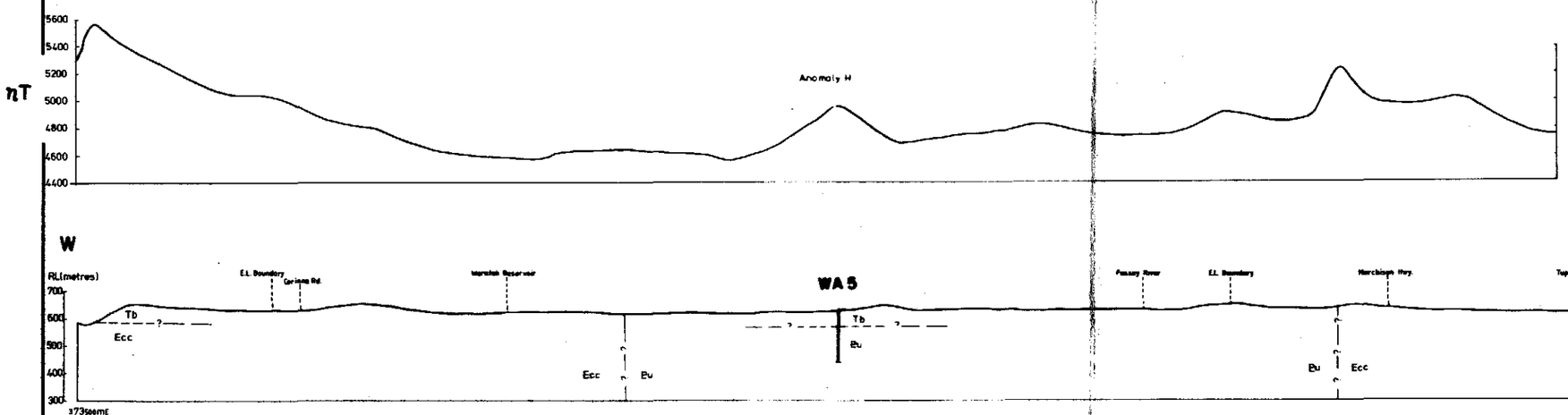
526030 FIG. 4



Section F-F (west-east through D.D.H. WA 6)



Section G-G (west-east through D.D.H. WA 4)



Section H-H (west-east through D.D.H. WA 5)

LEGEND

QUATERNARY	Qts	Sand, gravel, basalt talus
TERTIARY	Ts	Interflow sediments, silcrete, laterite
EOCAMBRIAN	Ecc	Volcaniclastic lithicwacke siltstone and mudstone with minor carbonate and tholeiitic basalt
PRECAMBRIAN	Eu	Quartzite mudstone minor dolomite
		IGNEOUS ROCKS
TERTIARY	Tb	Olivine basalt

5 cm

VERTICAL SCALE 1:20000
HORIZONTAL SCALE 1:50000
0 1 2 kms

029

Note: For location of sections see fig 2

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

EL 33/79 WARATAH
Geological Cross Sections and Aeromagnetic Profiles
F-F' G-G' H-H'

Drawn S. KERRIER	Date 12-5-83	Centre NEWCASTLE
Traced A. HANSEN	Project NP	Drawing NP
		A1

LOCALITY MAP
EL 33/79
0 20 40 60 80 100 kms
Smithton
Burnie
Devonport
WARATAH
Queenstown
41°
42°
145°
146°

75
10
05
380000mE
5400000mN
GN
MN

Deep Gully Ck
Wandle R.
ANOMALY E
WA 1
400N
600N
800N
1000N
1000E
800E
0E
MOUNT BISCHOFF
WARATAH RIVER
Haynes Ck
Taylors Ck
Lynch Ck
MURCHISON HIGHWAY
Fingerpost
WARATAH
WA 6
Road
Waratah
Landing ground
Ritchie Ck
Bischoff Reservoir
4400E
3000E
LINE 3400N
2100E
RESERVOIR GRID
3900E
Waratah Reservoir
LINE 2700N
2000E
LINE 2000N
WA 5
1400N
1300N
1200N
1100N
3200E
1000E
2100E
300E
Trackham
WA 4
White Marsh
Fossey River Ck
Stockwell Marsh
Champion Heath
Carinna Road
RIVER
Pearsfield Road
Knole
Plain
COLDSTREAM
RAMSAY RIVER
Wombat Ck
GRANITE GRID
WPC9
302
303P
300
301P
WOMBAT GRID
0E
750S
4000E
1500S
2000E
3500E
Wombat Flat
ANOMALY K GRID
700N
600N
500N
600E
1000E
1400E
ANOMALY L GRID
3000E
2700E
550S
3300E
650S
WPC10
304
305P
ANOMALY M GRID
900N
600W
1200W
1000N
900N
800N
700N
600N
1500W
0W
Netherby Ck
Hatfield
Plain
HOY
E.L. 33/79

LEGEND
WA 4 Drill site
4000E Cut grid lines
302P Pan concentrate
301 Stream sediment sample
sealed road
1st class unsealed road
2nd class unsealed road / approx position only
walking track
power lines

SCALE 1: 50,000
0 1 2 kms
5 cm

Note: For location of drill holes D.D.H WA1 and 2 see fig 2.

030

Revisions	
Drawn S.P.K.	THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT
Traced A.H	EL 33/79 WARATAH, TASMANIA
Checked	Location of cut lines, 1983 drill sites and stream sediment sample sites
Date APRIL 83	Centre HOBART
Project No T 650	Drawing No A1-

5260031

FIG. 5

145°22'30"E
41°15'S

145°45'E
41°15'S

WA 2
WA 3
WA1
WA6
WA4
WA 5

41°25'S

41°37'5"S
145°22'30"E

41°37'5"S
145°45'E

SCALE 1:50 000
0 500 1000 1500 2000 2500 METRES

WARATAH WYNYARD REPROCESSED DATA
FINAL PLOTS

DETAILS OF SURVEY
FLOWN BY : GEOMETRICS
DATE : JANUARY, 1982
1:250,000 SHEET : BURNIE SK55-3
EL 33/79, EL 23/79
ANG ZONE : 55

LINE SPACING : 250m
SURVEY HEIGHT : 90m
MAGNETOMETER : GEOMETRICS G813

DETAILS OF PROCESSING
PROCESSED BY BHP EXPLORATION : CAMBERWELL
MESH : 160.80
SCAN : 700
CONTOUR INTERVAL : 5 nT
IGRF REMOVED
5000 (GAMMAS) ADDED TO DATA
: DIURNAL CORRECTION : BASE VALUE IS 6143 GAMMAS 24-Mar-82

● WA5 Drill hole location and number

ELs 33/79, 23/79, WARATAH, WYNYARD, TAS.

TOTAL MAGNETIC INTENSITY CONTOURS

526032

5 cm

032

526033 FIG. 7a

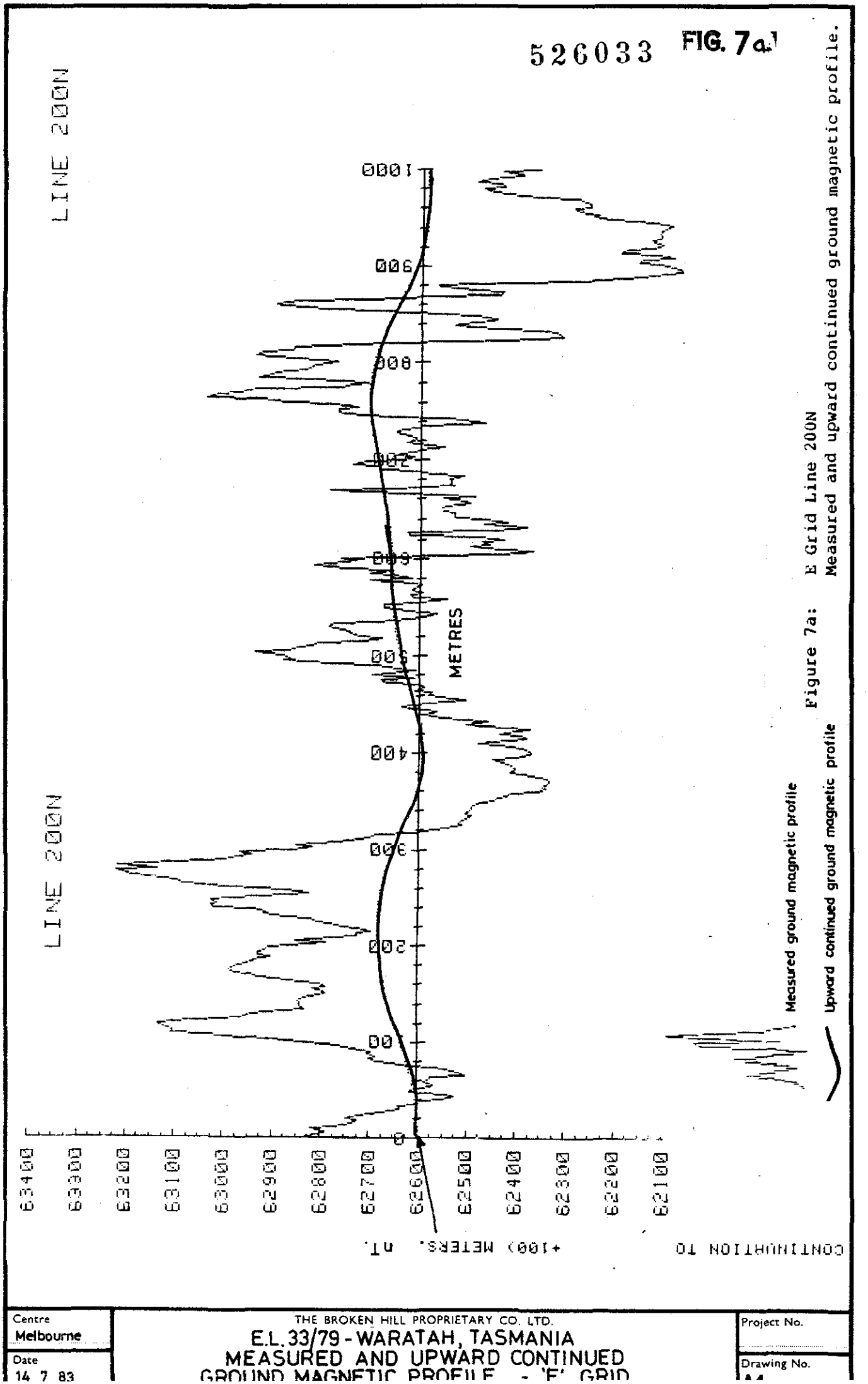


Figure 7a: E Grid Line 200N
Measured and upward continued ground magnetic profile.

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD. E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - 'E' GRID	Project No.
Date 14 7 83		Drawing No. A4

526034 FIG. 7b

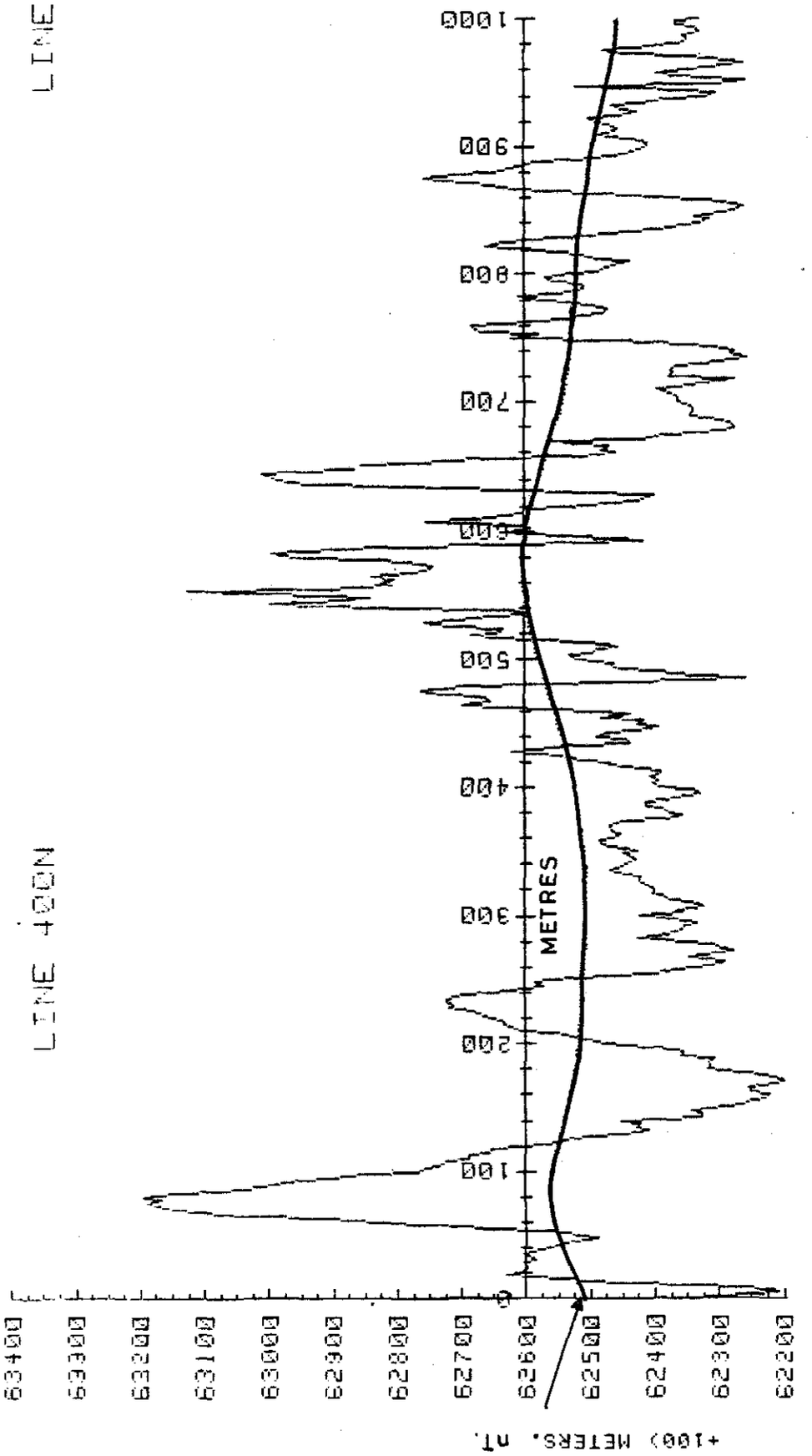


Figure 7b: E Grid line 400N
Measured and upward continued ground magnetic profile.

Centre: Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD. E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - 'E' GRID	Project No.
Date: 14 · 7 · 83		Drawing No. A4–

526035 FIG. 7c

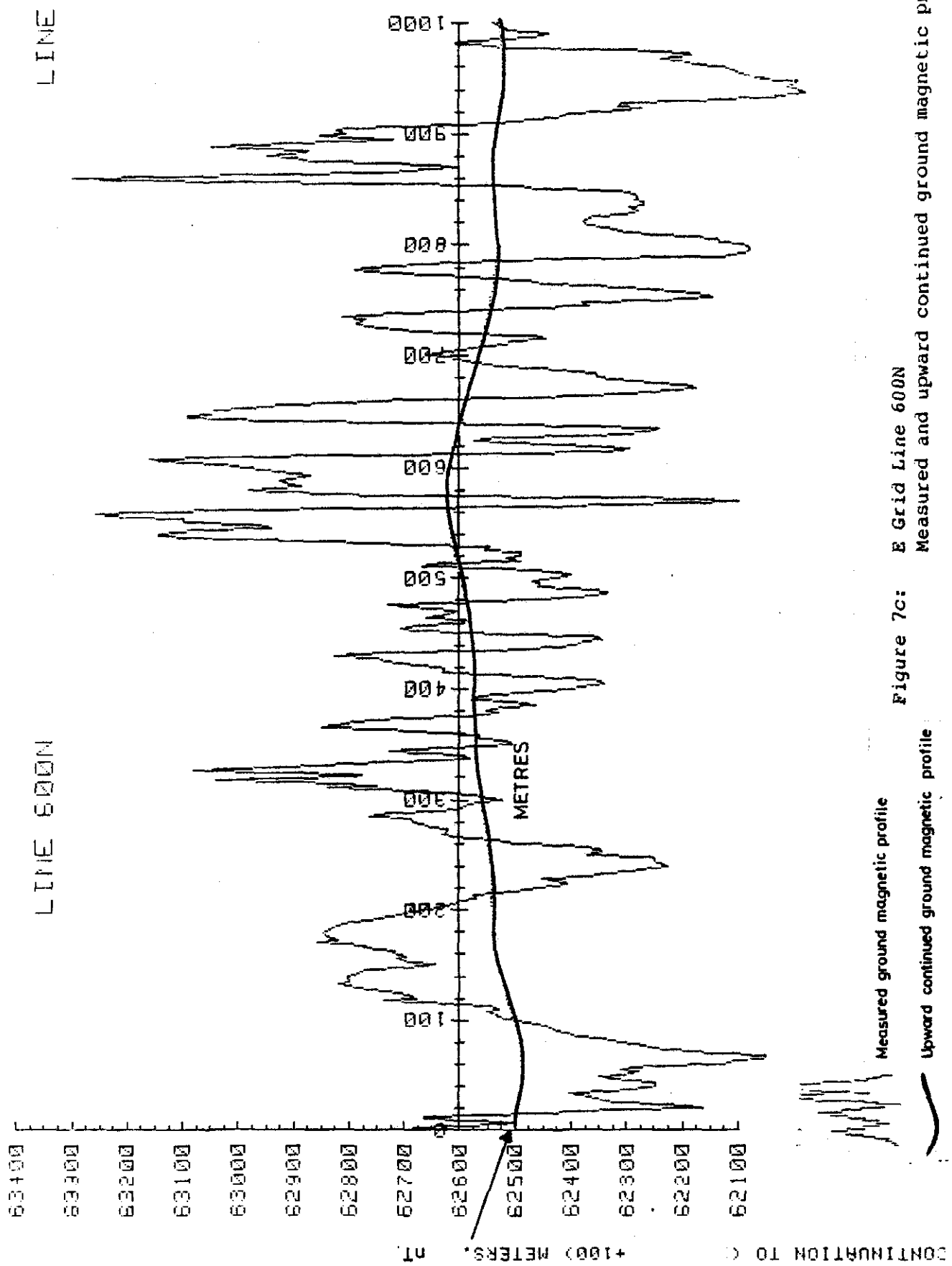


Figure 7c: E Grid Line 600N
Measured and upward continued ground magnetic profile

Centre: Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD. E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - 'E' GRID	Project No.
Date: 14 7 89		Drawing No. A4-

526036 FIG. 7d

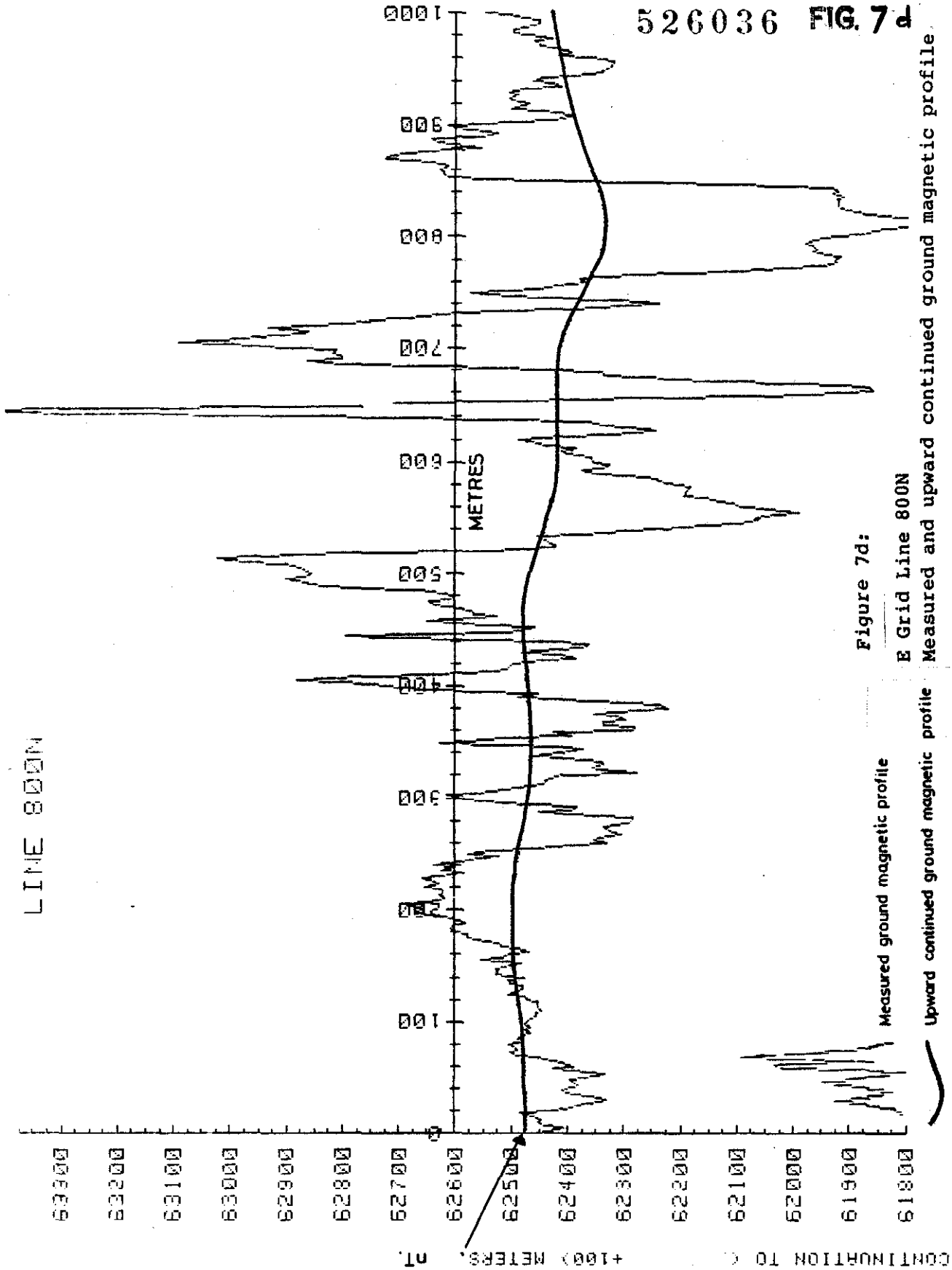


Figure 7d: E Grid Line 800N Measured and upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - 'E' GRID	Project No.
Date 14 7 83		Drawing No. AA

036

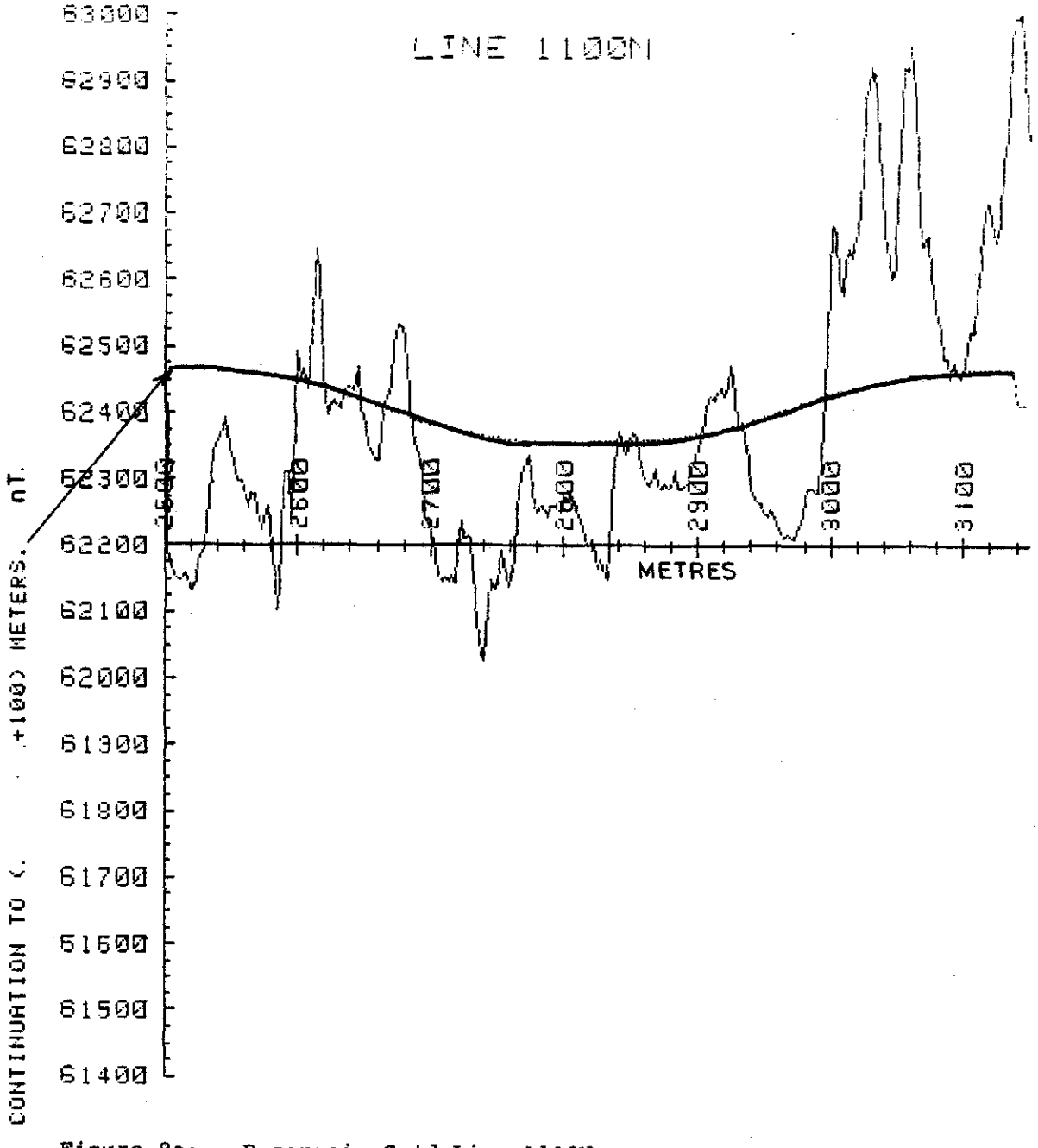
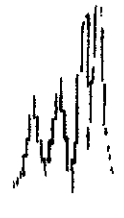


Figure 8a: Reservoir Grid Line 1100N
Measured and upward continued ground magnetic profile.



Measured ground magnetic profile

Upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date 14 · 7 · 83	E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - RESERVOIR GRID	Drawing No. A4–

037

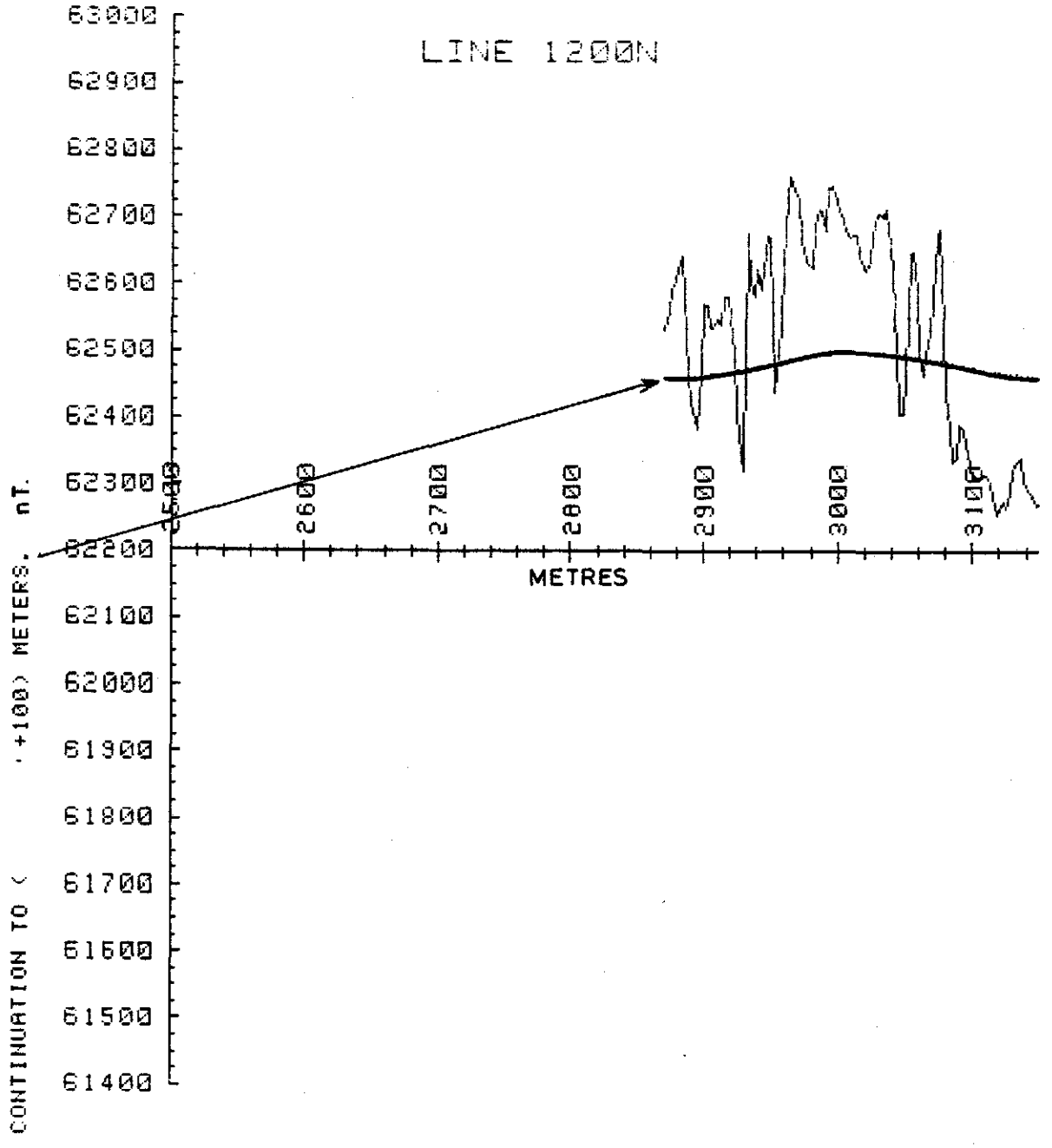


Figure 8b: Reservoir Grid Line 1200N
Measured and upward continued ground magnetic profile.

Measured ground magnetic profile

Upward continued ground magnetic profile

Centre: Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date: 14 7 83	E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - RESERVOIR GRID	Drawing No. A4

038

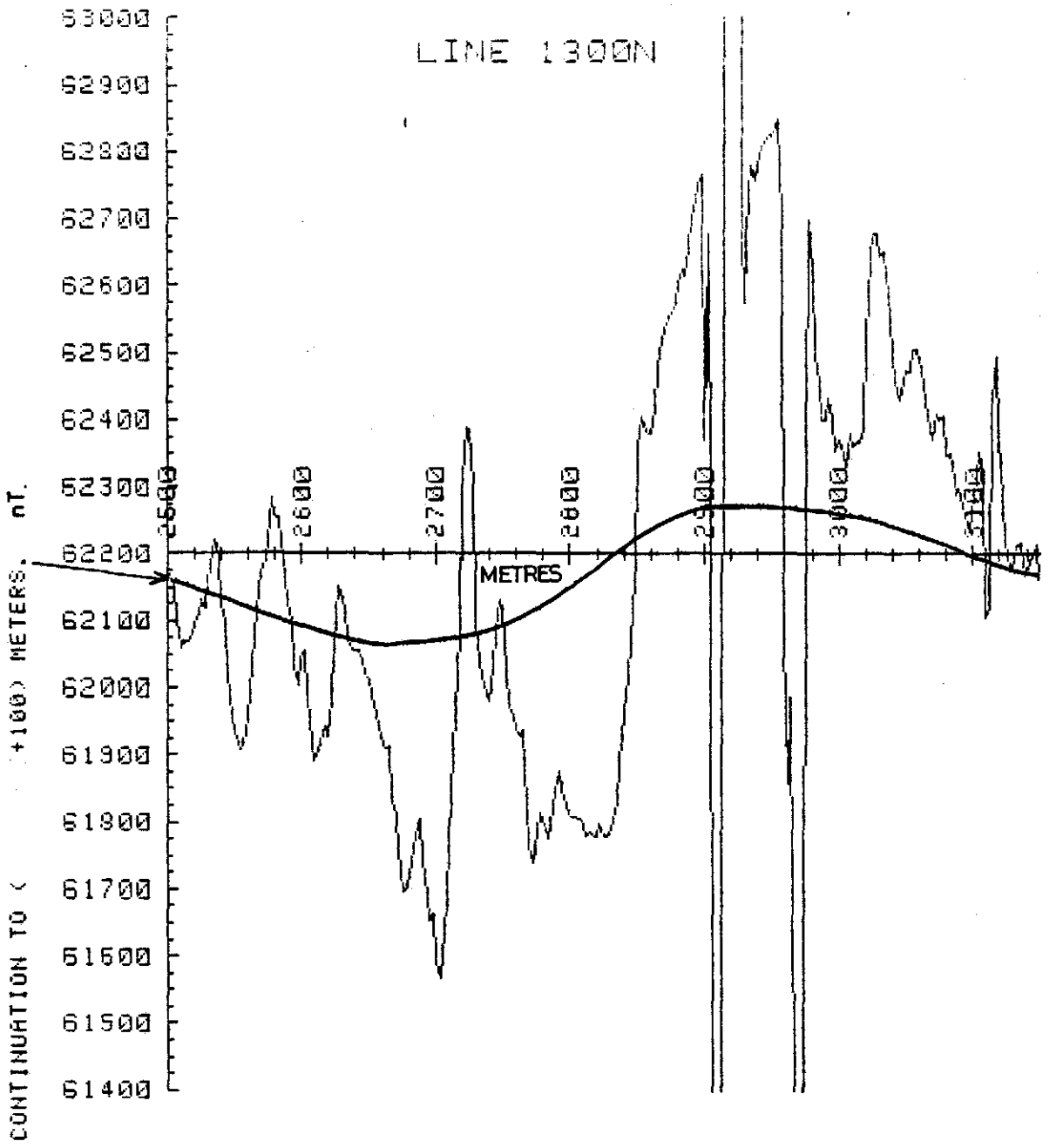
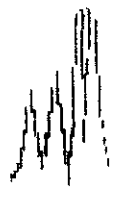


Figure 8c: Reservoir Grid Line 1300N
Measured and upward continued ground magnetic profile.



Measured ground magnetic profile

Upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date 14 · 7 · 83	E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - RESERVOIR GRID	Drawing No. A4–

039

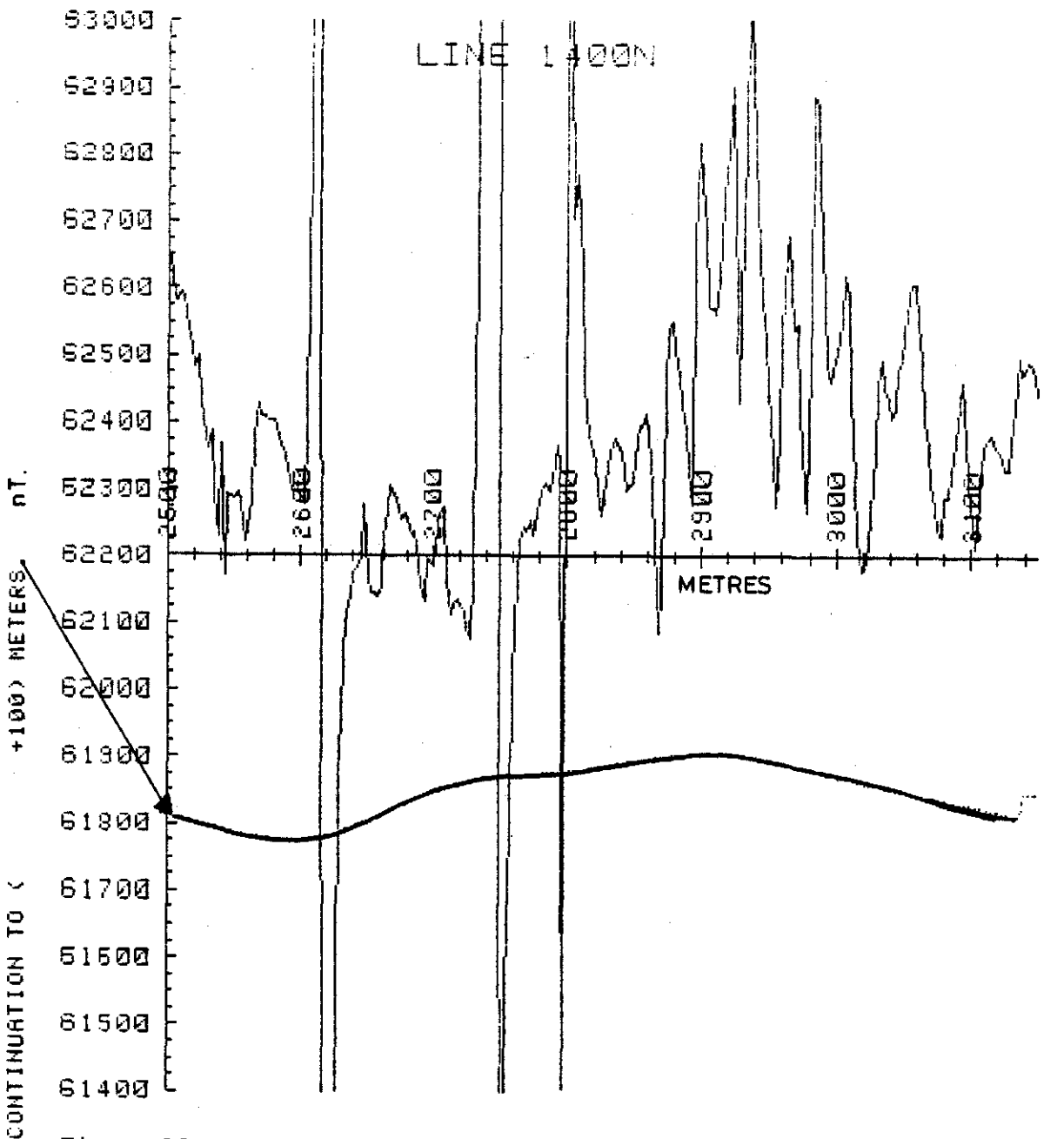


Figure 8d: Reservoir Grid Line 1400N
Measured and upward continued ground magnetic profile.

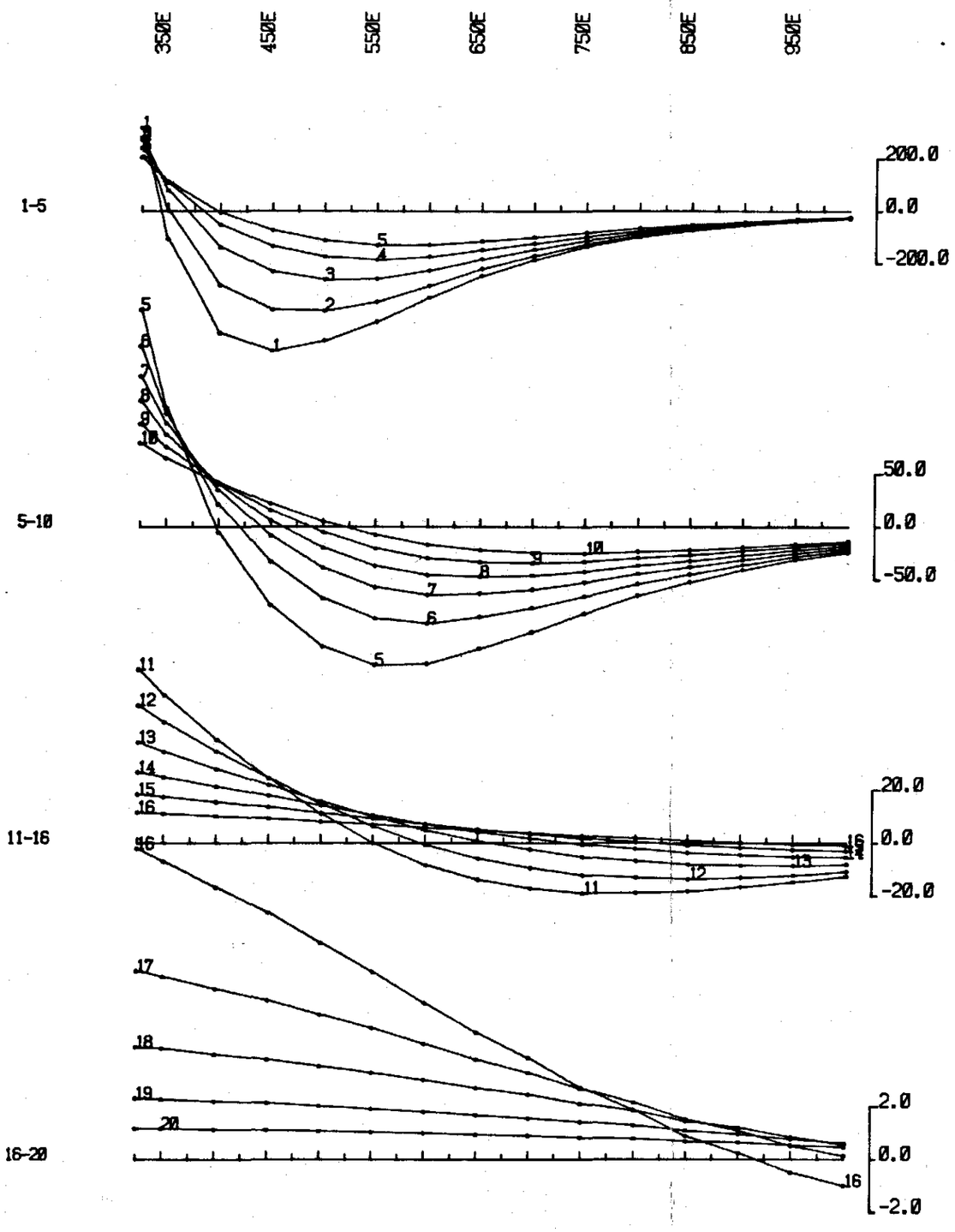
Measured ground magnetic profile

Upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date 14·7 83	E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - RESERVOIR GRID	Drawing No.

040

VERTICAL COMPONENT B (Z)



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

TX LOOP SIDES	: 200N	0E
	: 600N	300E
TX LOOP SIZE	: 300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., A.	
DATE	: 06-JAN-1983	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1468

CLIENT : B.H.P. Co. Ltd.

PROJECT : ECHIDNA (E Grid)

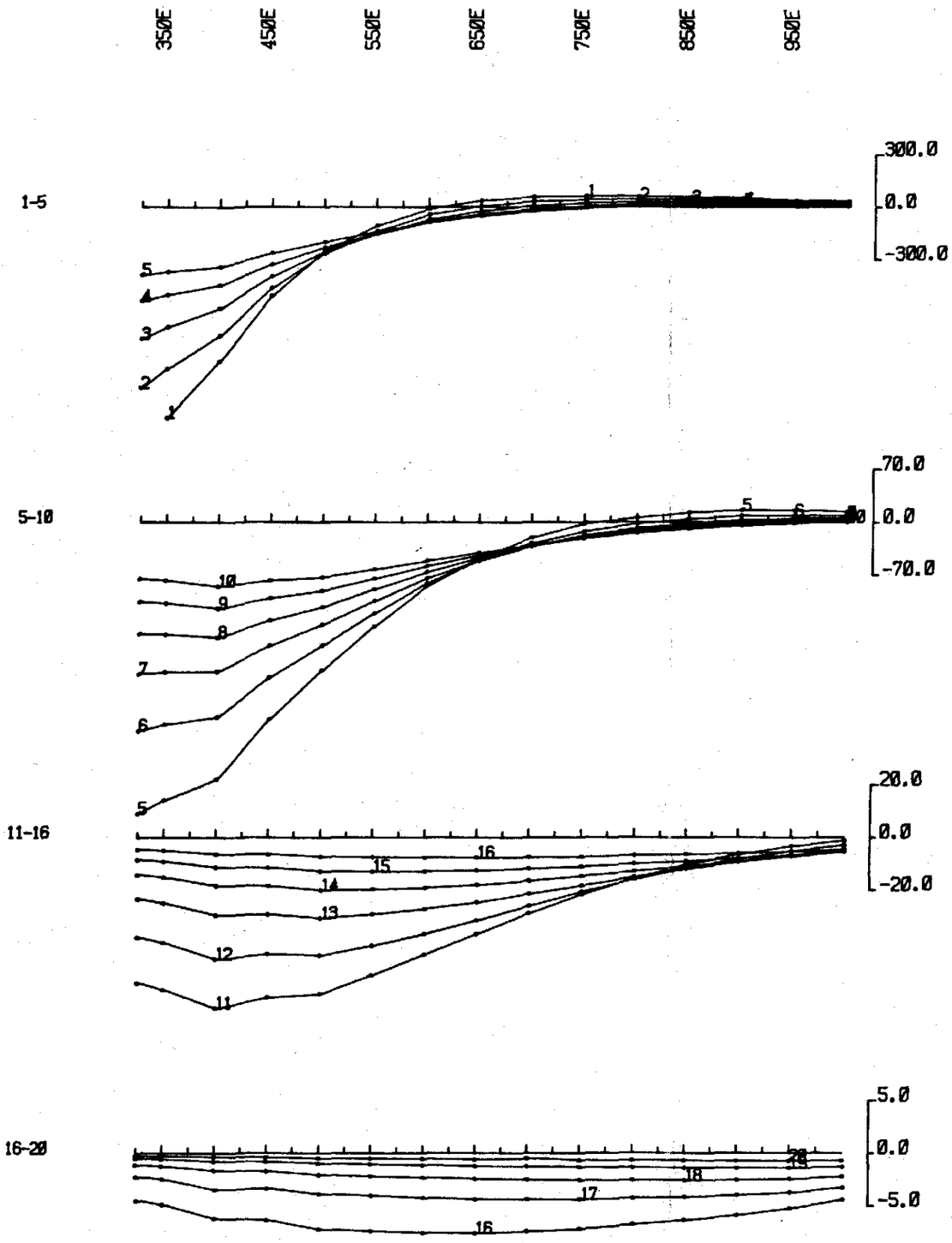
AREA : Waratah Tasmania

LINE : 200N Z

TX LOOP : 1

041

HORIZONTAL COMPONENT B (X)



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

TX LOOP SIDES	: 200N	0E
	: 800N	300E
TX LOOP SIZE	: 300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., A.	
DATE	: 06-JAN,1983	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1480

CLIENT : B.H.P. Co. Ltd.

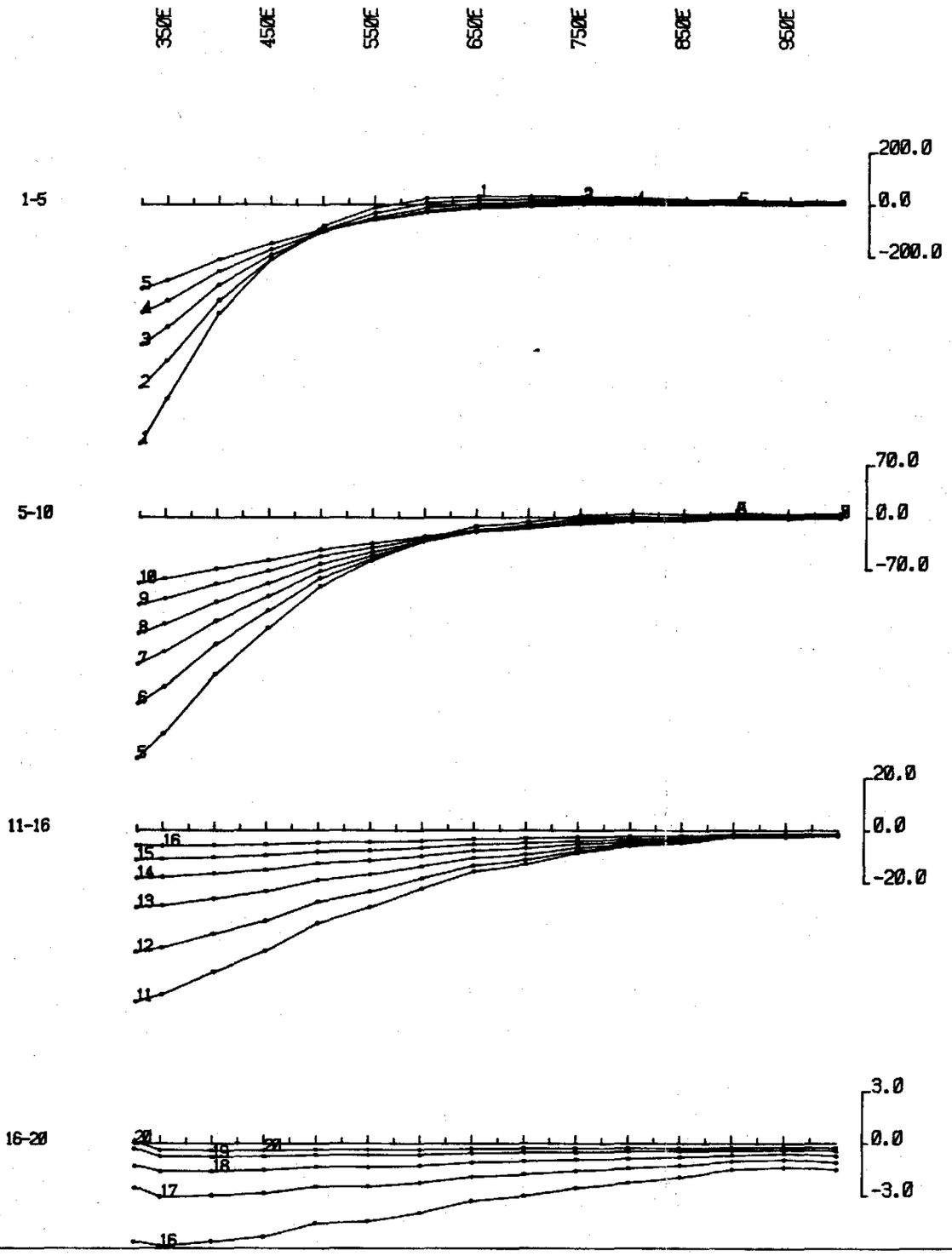
PROJECT : ECHIDNA (E.Grid)

AREA : Norotah Tasmania

LINE : 200N X

TX LOOP : 1

HORIZONTAL COMPONENT B (Y)



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

TX LOOP SIDES	: 200N	0E
	: 800N	300E
TX LOOP SIZE	: 300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., A.	
DATE	: 06-JAN,1983	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

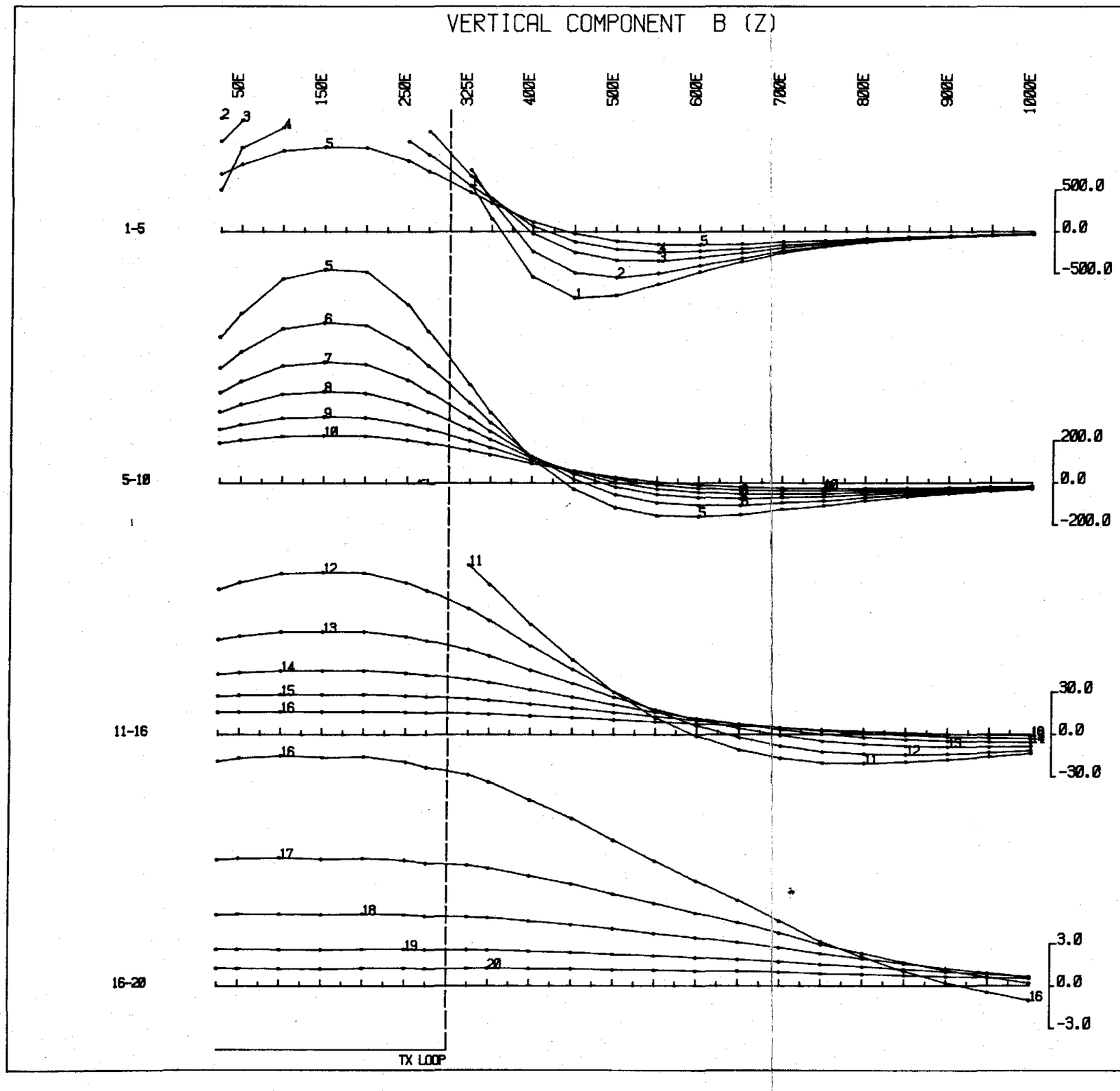
CLIENT : B.H.P. Co. Ltd.

PROJECT : ECHIDNA (E Grid)

AREA : Waratah Tasmania

LINE : 200N Y

TX LOOP : 1



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

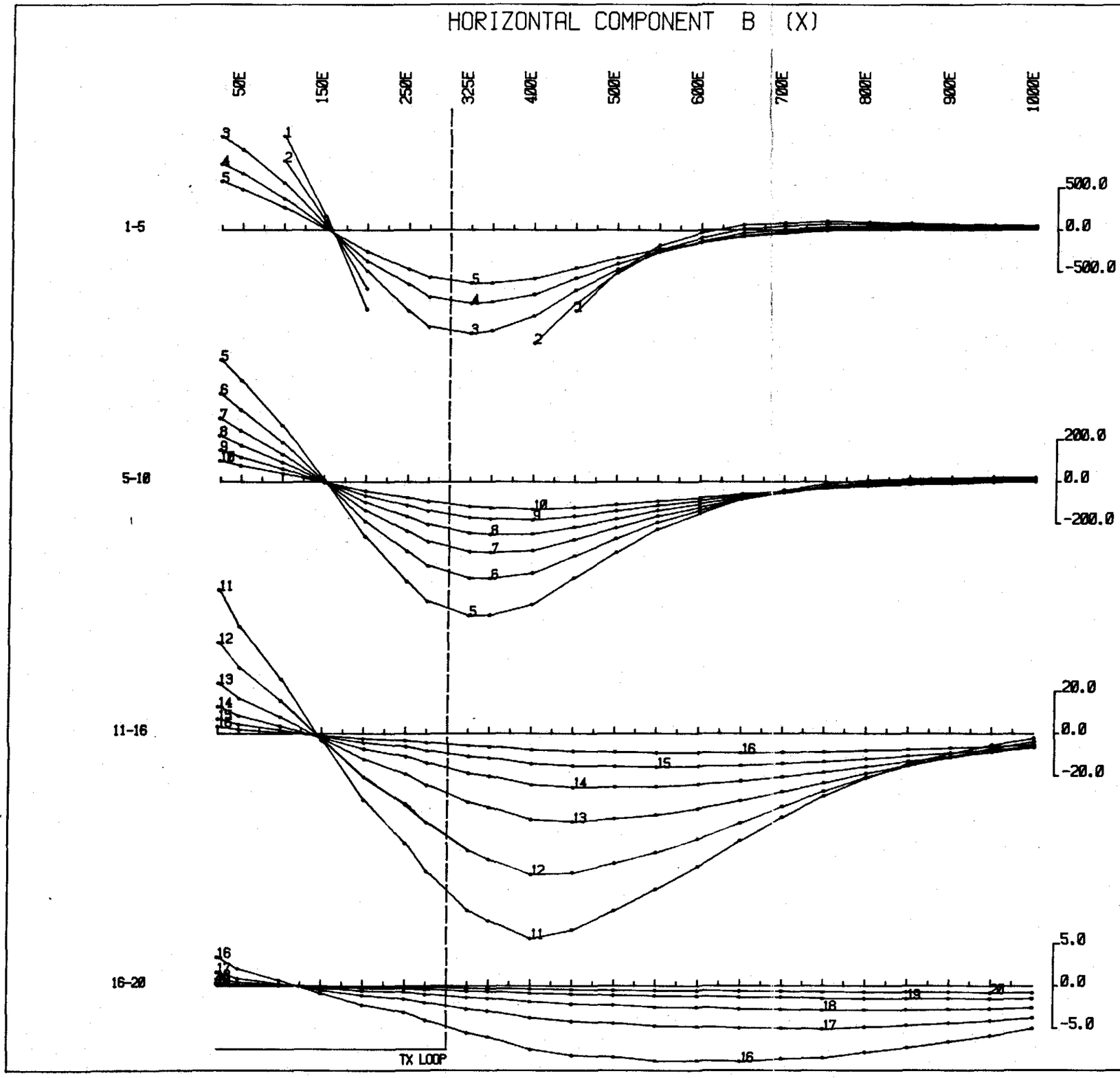
TX LOOP SIDES	: 200N	0E
	: 800N	300E
TX LOOP SIZE	: 300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., R.	
DATE	: 06-JAN,1983	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

CLIENT	: B.H.P. Co. Ltd.
PROJECT	: ECHIDNA (E Grid)
AREA	: Waratah Tasmania
LINE	: 400N Z
TX LOOP	: 1

044



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

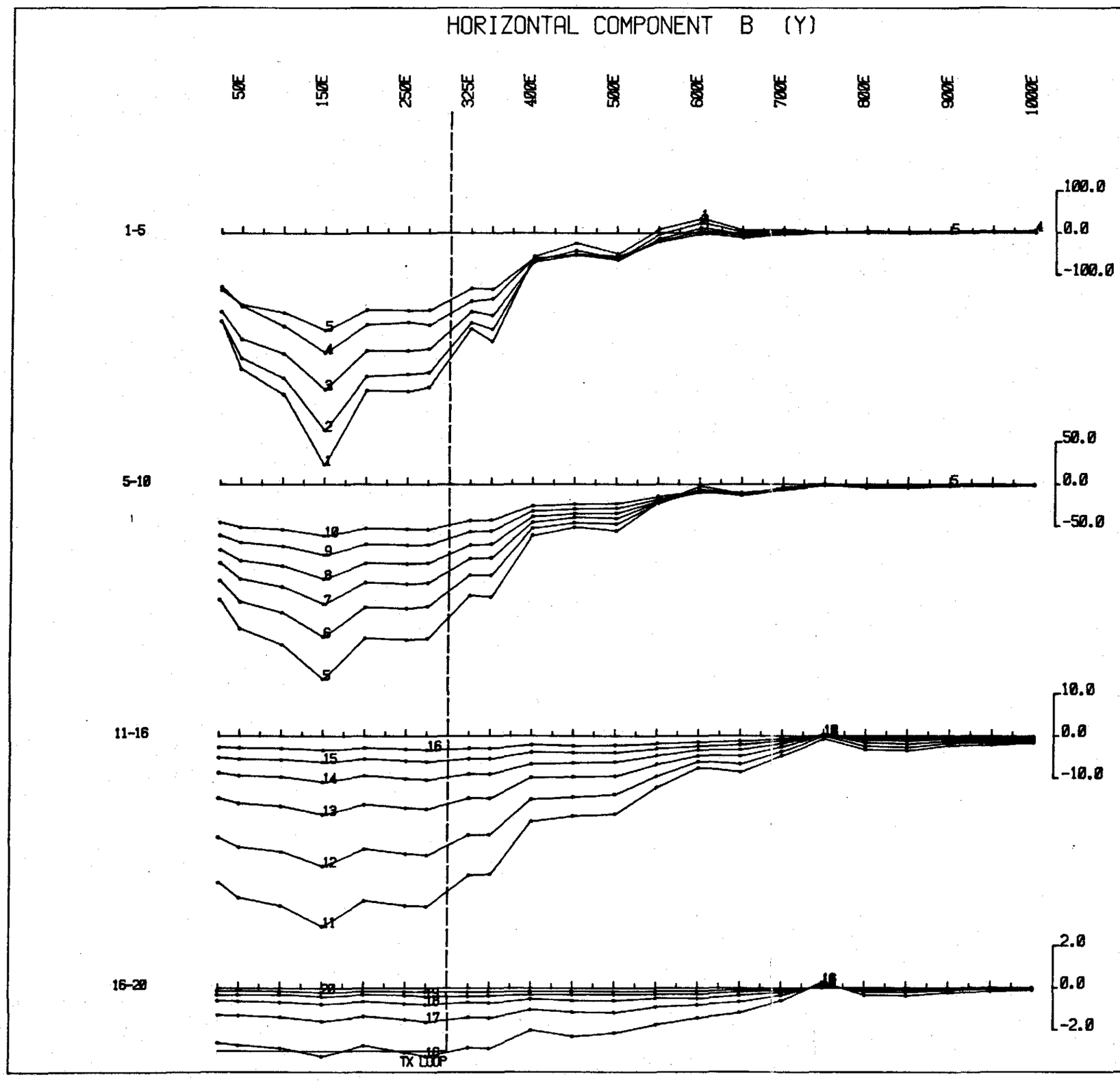
TX LOOP SIDES	:	200N 0E
	:	800N 300E
TX LOOP SIZE	:	300m X 600m
TX TURN OFF TIME	:	270 microsecs
CURRENT	:	13.0 amps
FREQUENCY	:	25 Hz
INTEGRATION TIME	:	256 cycles
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1:5000
SURVEYED BY	:	J.P., R.
DATE	:	06-JAN.1983

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

CLIENT	:	B.H.P. Co. Ltd.
PROJECT	:	ECHIDNA (E Grid)
AREA	:	Waratah Tasmania
LINE	:	400N X
TX LOOP	:	1

045



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

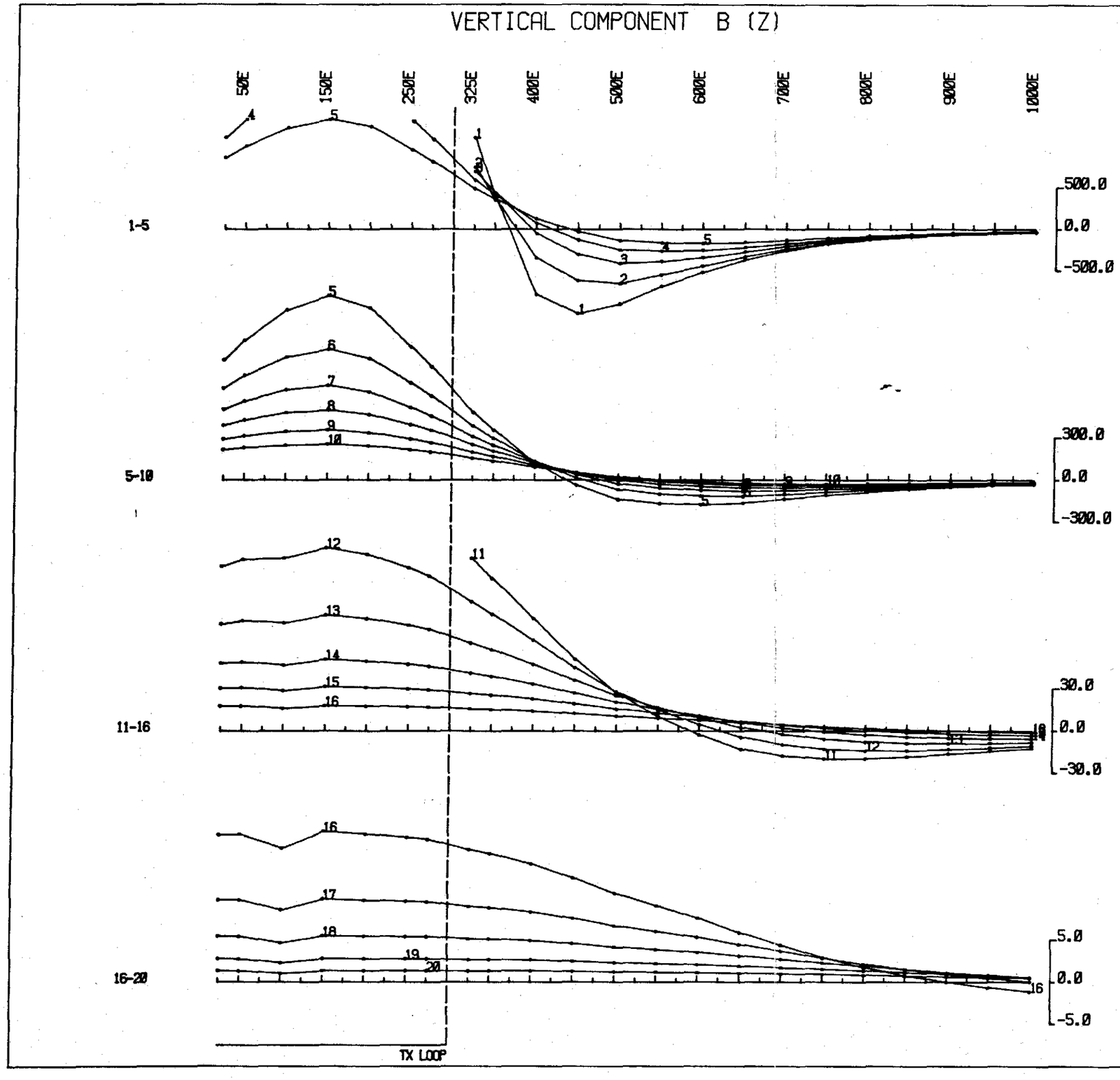
TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

TX LOOP SIDES	: 200N	0E
	: 800N	300E
TX LOOP SIZE	: 300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., A.	
DATE	: 06-JAN.1989	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.	PROJECT NO. 85-1460

CLIENT	: B.H.P. Co. Ltd.
PROJECT	: ECHIDNA (E Grid)
AREA	: Nanatah Tasmania
LINE	: 400N Y
TX LOOP	: 1



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

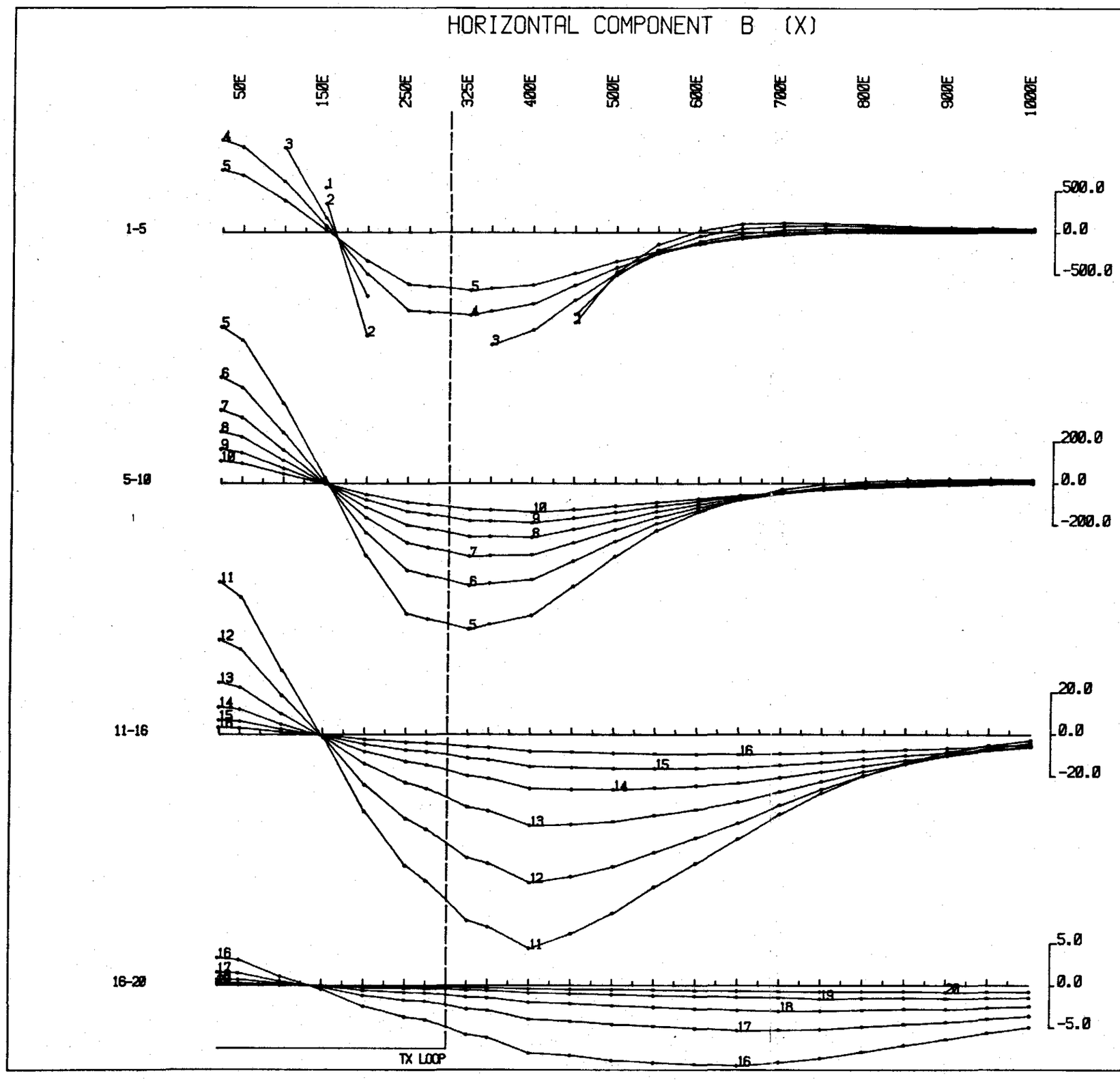
5 cm

TX LOOP SIDES	:	200N 0E
	:	600N 300E
TX LOOP SIZE	:	300m X 600m
TX TURN OFF TIME	:	270 microsecs
CURRENT	:	13.0 amps
FREQUENCY	:	25 Hz
INTEGRATION TIME	:	256 cycles
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1:5000
SURVEYED BY	:	J.P., A.
DATE	:	06-JAN-1983

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

CLIENT	:	B.H.P. Co. Ltd.
PROJECT	:	ECHIDNA (E Grid)
AREA	:	Maratah Tasmania
LINE	:	600N Z
TX LOOP	:	1



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

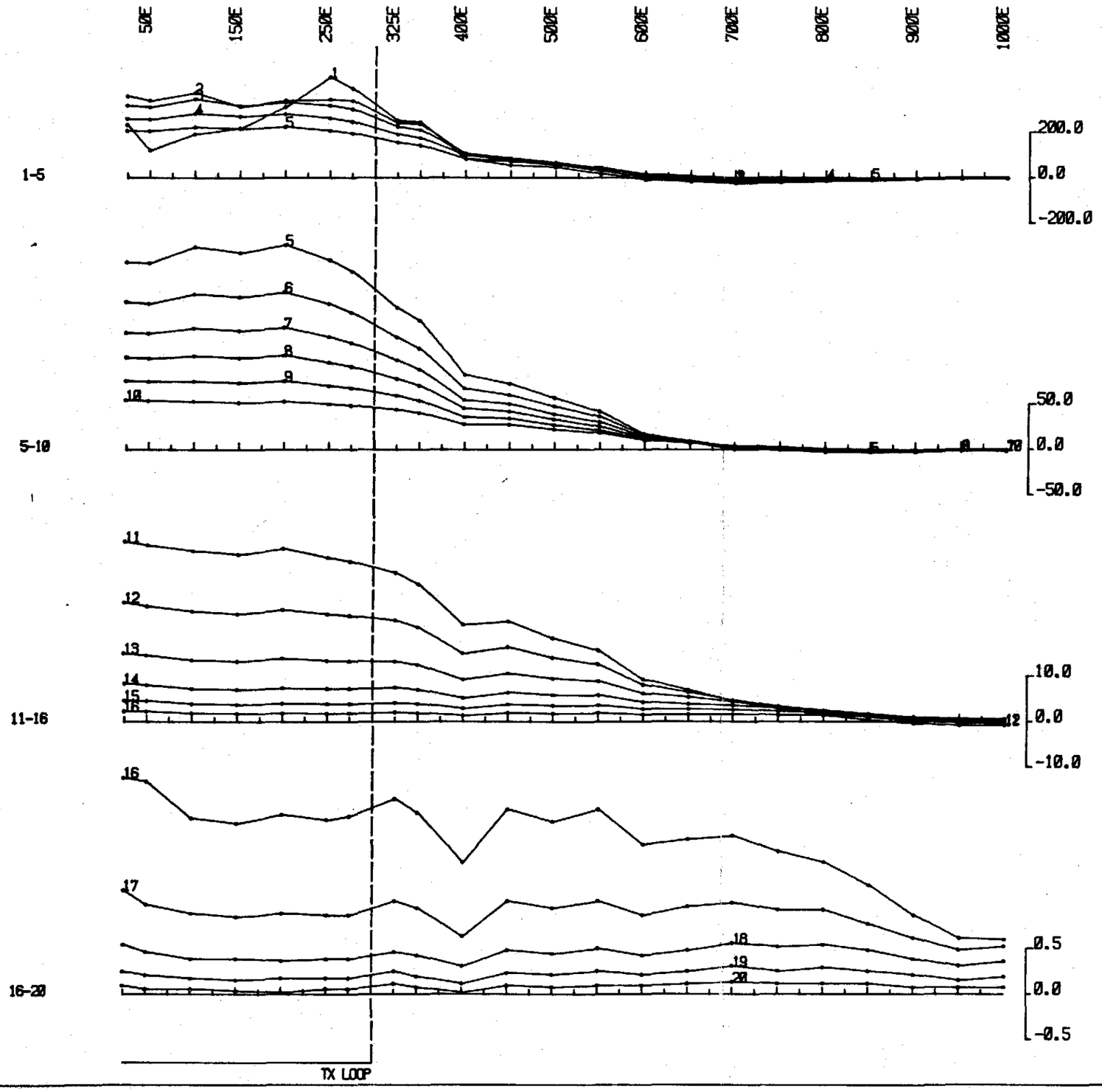
TX LOOP SIDES	: 200N	0E
	: 800N	300E
TX LOOP SIZE	: 300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., A.	
DATE	: 06-JAN-1983	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

CLIENT	: B.H.P. Co. Ltd.	
PROJECT	: ECHIONA (E Grid)	
AREA	: Mararoh Tasmania	
LINE	: 600N	X
TX LOOP	: 1	

HORIZONTAL COMPONENT B (Y)



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

TX LOOP SIDES	:	200N 0E
	:	800N 300E
TX LOOP SIZE	:	300m X 600m
TX TURN OFF TIME	:	270 microsecs
CURRENT	:	13.0 amps
FREQUENCY	:	25 Hz
INTEGRATION TIME	:	256 cycles
SYNC MODE	:	CRYSTAL
HORIZONTAL SCALE	:	1:5000
SURVEYED BY	:	J.P., A.
DATE	:	06-JAN-1983

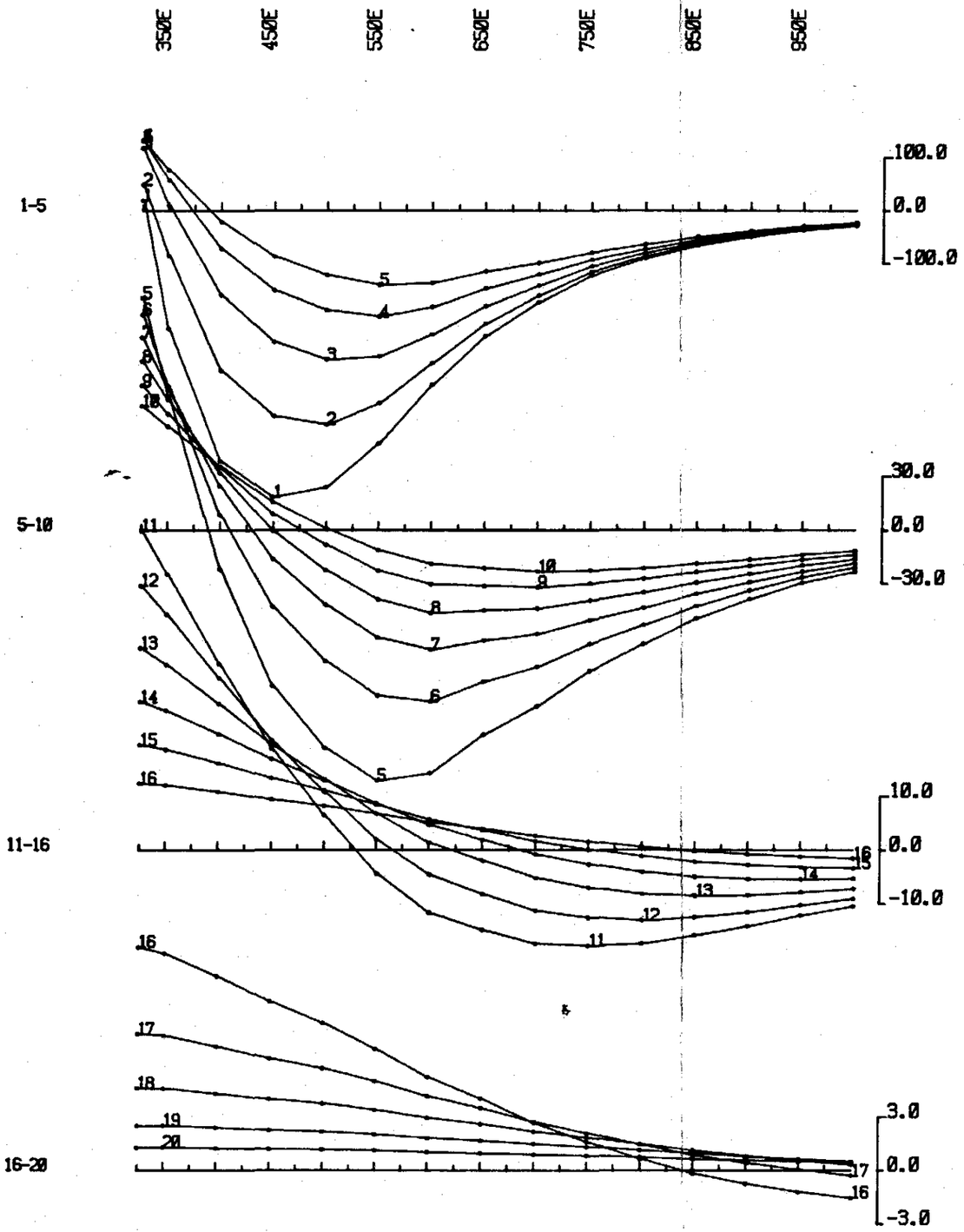
SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

CLIENT	:	B.H.P. Co. Ltd.
PROJECT	:	ECHIDNA (E Grid)
AREA	:	Waratah Tasmania
LINE	:	600N Y
TX LOOP	:	1

049

VERTICAL COMPONENT B (Z)



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

TX LOOP SIDES	: 200N	0E
	: 800N	300E
TX LOOP SIZE	: 300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., A.	
DATE	: 06-JAN,1989	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

CLIENT : B.H.P. Co. Ltd.

PROJECT : ECHIDNA (E Grid)

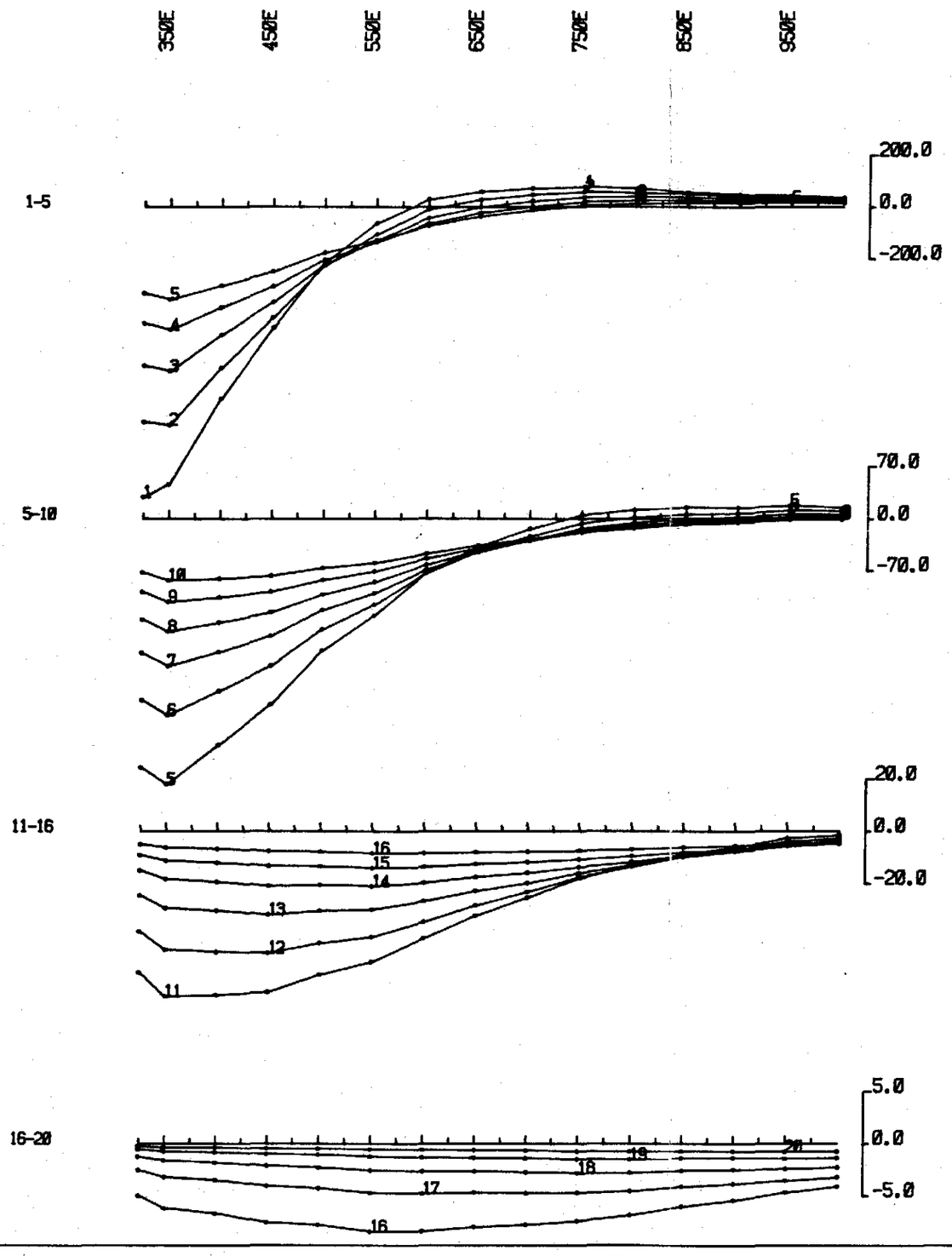
AREA : Waratah Tasmania

LINE : 800N Z

TX LOOP : 1

050

HORIZONTAL COMPONENT B (X)



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

TX LOOP SIDES	: 200N	0E
	: 800N	300E
TX LOOP SIZE	300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., A.	
DATE	: 06-JAN-1989	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

CLIENT : B.H.P. Co. Ltd.

PROJECT : ECHIONA (E Grid)

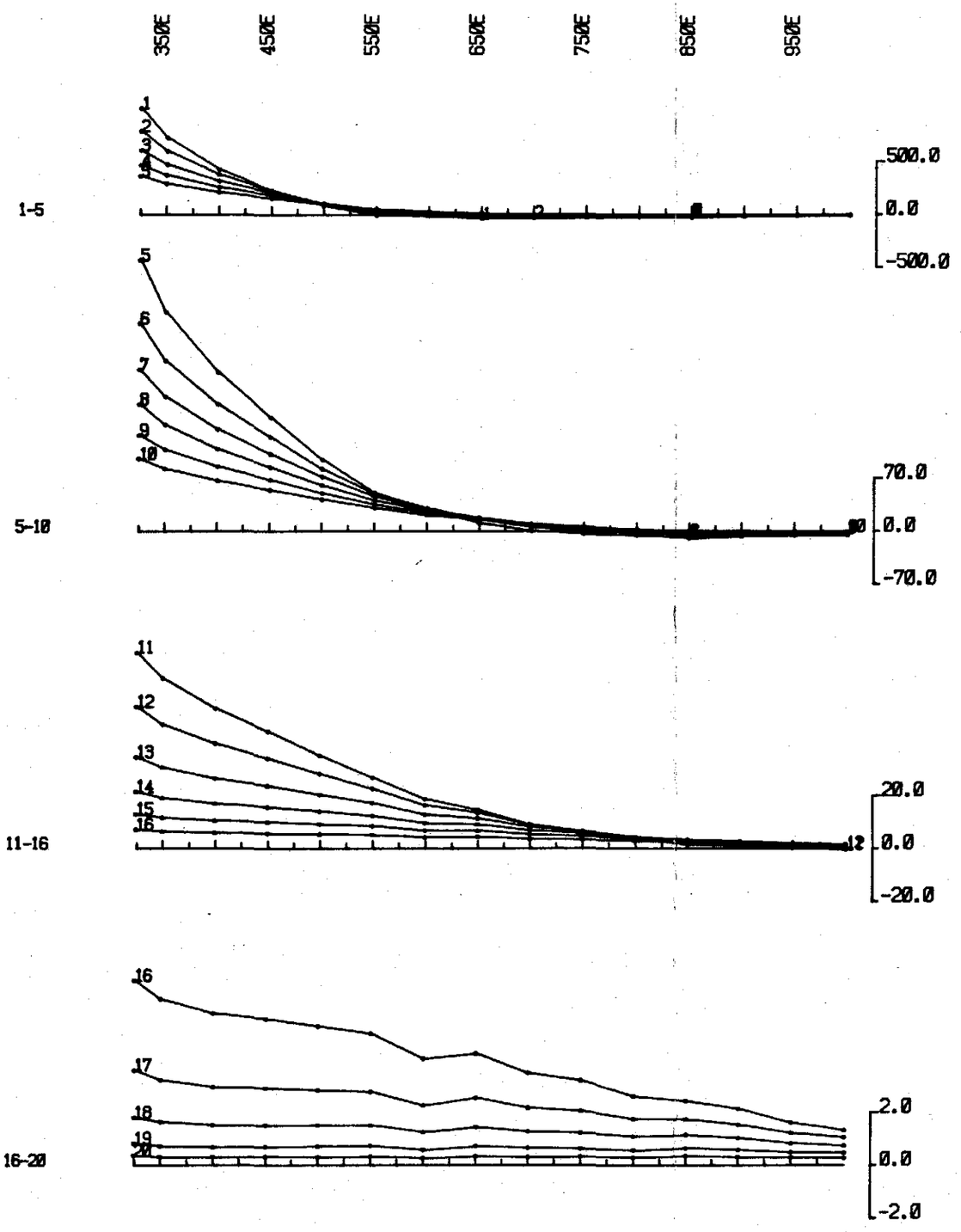
AREA : Waratah Tasmania

LINE : 800N X

TX LOOP : 1

051

HORIZONTAL COMPONENT B (Y)



nanovolts per amp.metre squared

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

TX LOOP SIDES	: 200N	0E
	: 800N	300E
TX LOOP SIZE	: 300m X 600m	
TX TURN OFF TIME	: 270 microsecs	
CURRENT	: 13.0 amps	
FREQUENCY	: 25 Hz	
INTEGRATION TIME	: 256 cycles	
SYNC MODE	: CRYSTAL	
HORIZONTAL SCALE	: 1:5000	
SURVEYED BY	: J.P., A.	
DATE	: 06-JAN./1983	

SURVEYED AND COMPILED BY GEOTERREX PTY. LTD.

PROJECT NO. 85-1460

CLIENT : B.H.P. Co. Ltd.

PROJECT : ECHIDNA (E Grid)

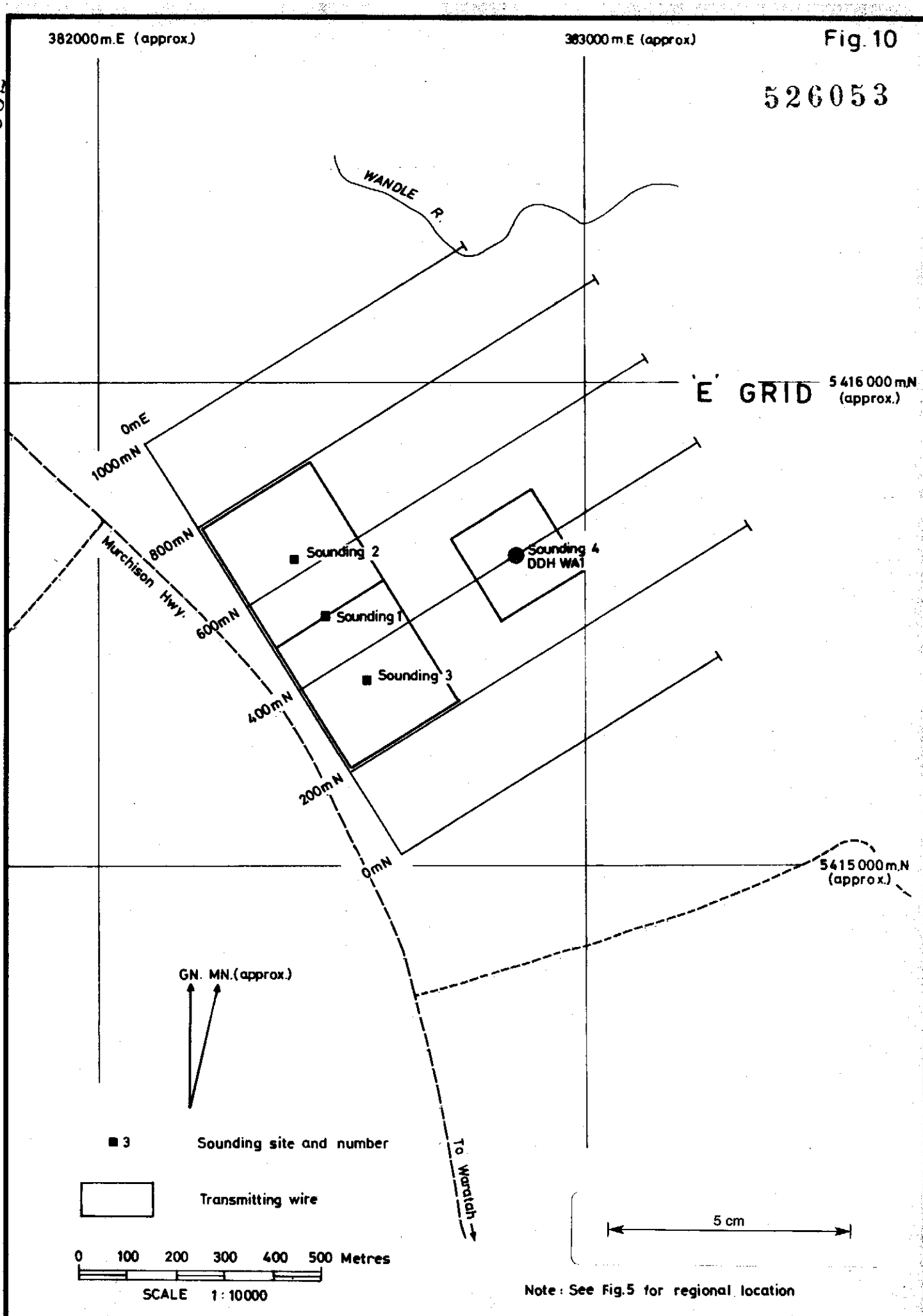
AREA : Waratah Tasmania

LINE : 800N Y

TX LOOP : 1

Fig. 10

526053



Note: See Fig.5 for regional location

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No T650
Date 13·7·83	E.L. 33/79 - WARATAH, TASMANIA LOCATION OF E.M. SOUNDINGS ON 'E' GRID	Drawing No A4-2410

Sounding No.: 1

Date: January 7, 1983

Components: Z

Location: Waratah, Tasmania (Echnida Grid)

A = 300 metres

B = 600 metres

I = 13.0 Amps

T/o = 270 u sec

Base frequency = 25 Hz

CHANNEL	TIME (ms)	GAIN	VALUE	[illegible]	[illegible]
1	.0865	4	3808	.30	165.0
2	.109	4	2837	.33	159.0
3	.140	4	2143	.37	143.9
4	.177	4	1598	.42	132.6
5	.220	4	1211	.47	122.4
6	.280	4	908	.53	109.5
7	.355	4	687	.60	96.8
8	.443	4	525	.67	86.0
9	.563	4	385	.75	75.9
10	.712	4	278	.84	67.5
11	.876	4	205.2	.94	61.1
12	1.067	4/6	142.1/552.0	1.04	56.6/57.7
13	1.400	6	346.9	1.18	53.5
14	1.772	6	214.1	1.33	51.3
15	2.210	6	132.0	1.49	50.1
16	2.820	6	75.3	1.66	49.5
17	3.570	6/9	40.9/316.2	1.69	50.9/52.1
18	4.460	9	177.2	2.11	53.5
19	5.607	9	91.9	2.38	56.2
20	7.160	9	45.2	2.68	61.6

Two Layered Model:

$\frac{RHO2}{RHO1}$ = 1/4

$\frac{H2}{H1}$ = 1.8

$\frac{RHO3}{RHO1}$ = infinity

110 metres	112 ohm metres
200 metres	28 ohm metres
infinite	infinite

Mission 85-1460 for BHP on Echidna Grid

Date January 7, 1983

053
526054

E.S.

Drill Hole

Bearing of A B

Elevation

Co-ordinates of centre

X = 150 E Y = 500 N

Sounding No. 1

A = 300 metres
B = 600 metres
I = 13.0 Amps
T/o = 270 u sec
Freq = 25 Hz

E.M.37 SOUNDING DATA

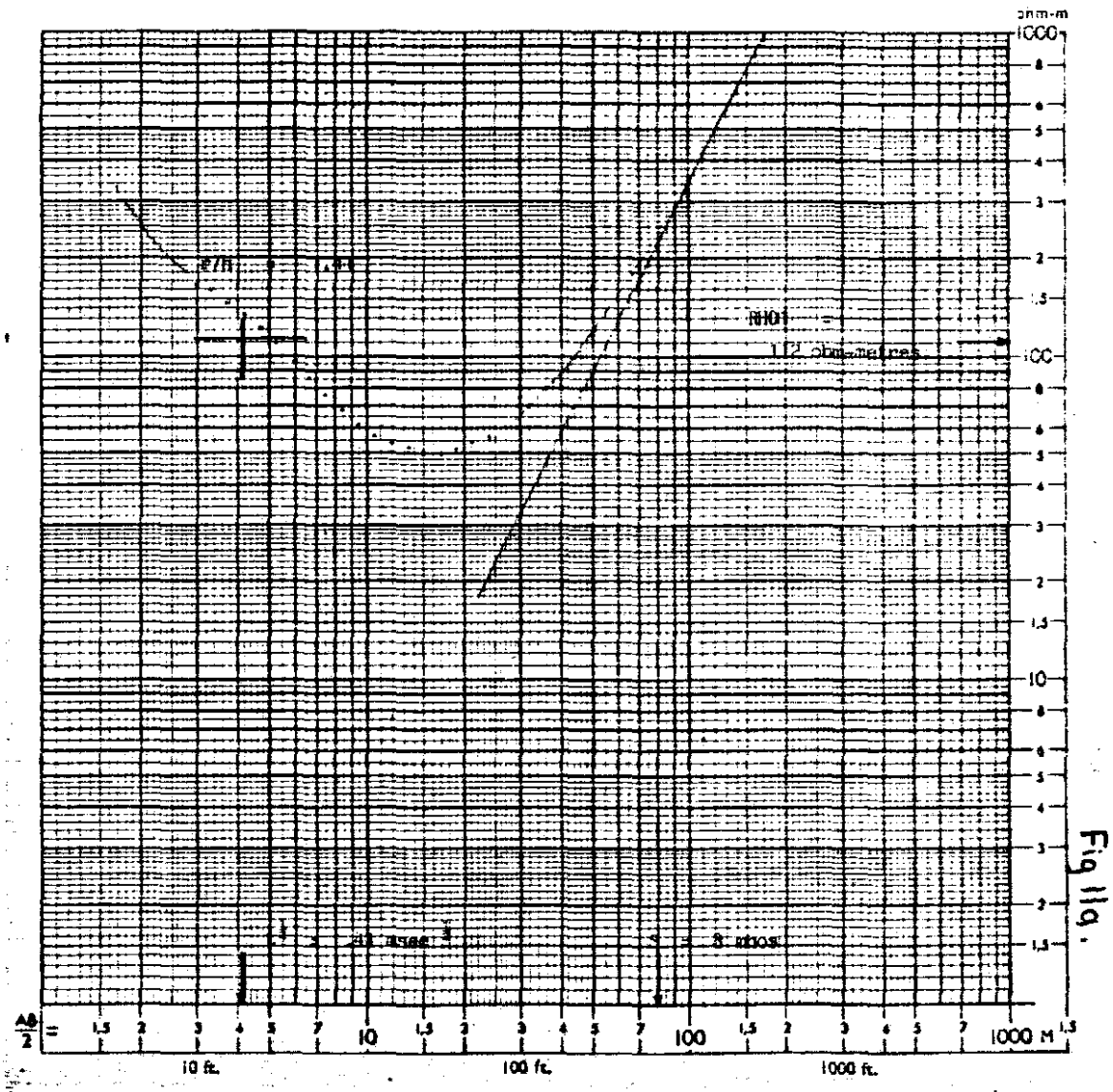


Fig 11a.

526055

Sounding No. 2 | A = 300 metres | B = 300 metres | I = 17.5 Amps | T/o = 230 u sec | Base Frequency = 25 Hz

Date: January 7, 1983

Component: Z

Location: Waratah, Tasmania (Echidna Grid)

Mission 85-1460 for BHP on Echidna Grid
Date January 7, 1983

E.S.
Drill Hole 054

Bearing of A à
Elevation
Co-ordinates of centre
X = 150 E Y = 650 N

E.M.37 SOUNDING DATA

CHANNEL	TIME (ms)	GAIN	VALUE	LOG	ρa
1	.0665	4	5923	.30	103.1
2	.109	4	4199	.33	102.3
3	.140	4	2843	.37	99.0
4	.177	4	1985	.42	94.8
5	.220	4	1421	.47	90.3
6	.280	4	1007	.53	83.3
7	.355	4	725	.60	75.6
8	.443	4	529	.67	68.9
9	.563	4	370	.75	62.3
10	.712	4	256	.84	56.7
11	.876	4	182.8	.94	52.2
12	1.087	4/6	122.6/477.1	1.04	49.1/50.0
13	1.400	6	290.7	1.18	47.2
14	1.772	6	174.3	1.33	45.9
15	2.210	6	104.4	1.49	45.6
16	2.820	6/9	58.5/448.3	1.68	45.5/46.8
17	3.570	9	238.9	1.89	48.7
18	4.460	9	130.7	2.11	50.7
19	5.667	9	66.3	2.38	54.0
20	7.160	9	32.1	2.68	59.7

Interpreted Model:

$\frac{RHO2}{RHO1}$	=	1/4
$\frac{H2}{H1}$	=	1
$\frac{RHO2}{RHO1}$	=	10

117 metres	87 ohm-metres
117 metres	30 ohm-metres
infinite	870 ohm-metres

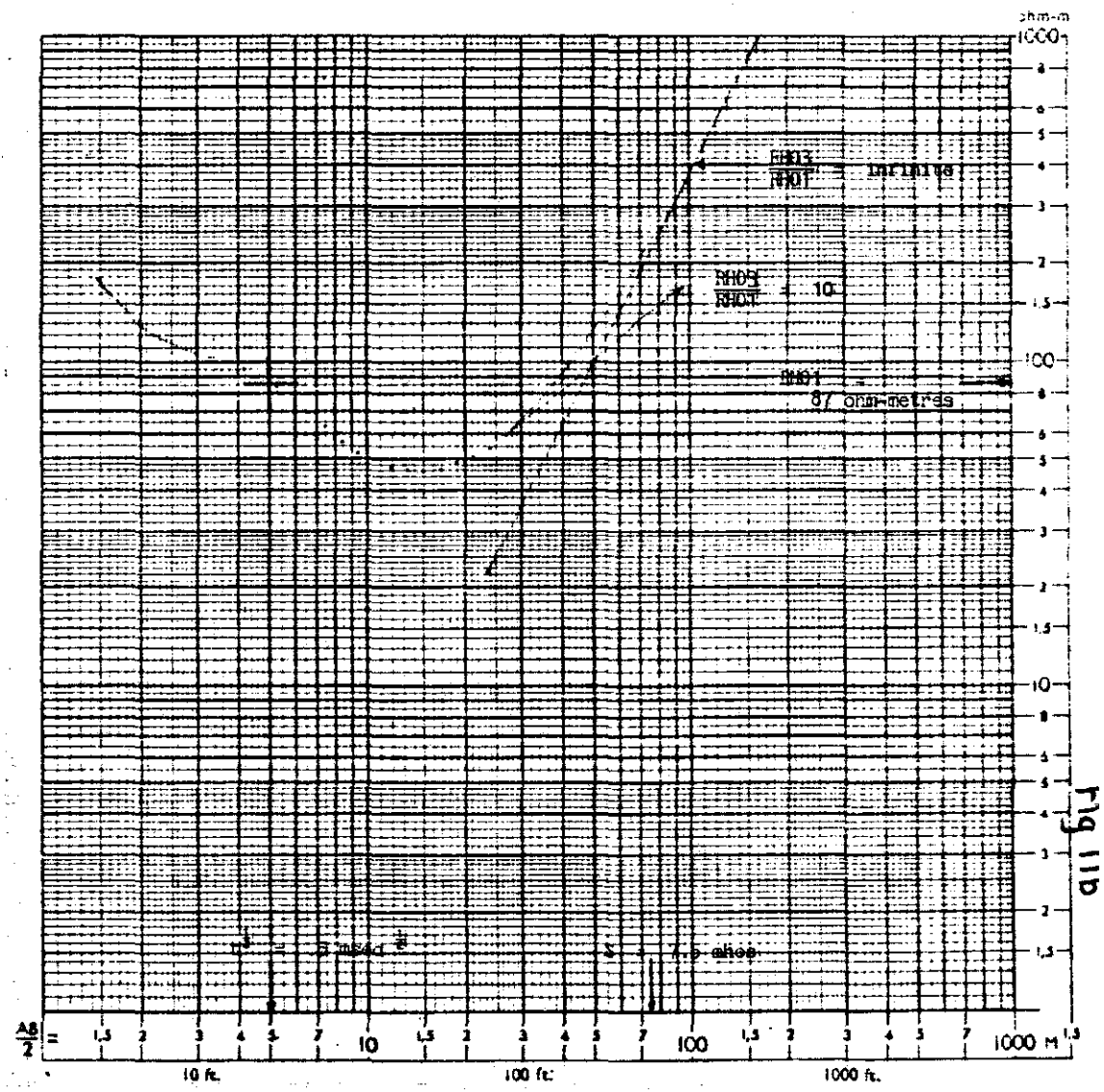


Fig 11a

Sounding No.: 3

Date: January 7, 1983

Component: Z

Location: Waratah, Tasmania (Echidna Grid)

A = 300 metres

B = 300 metres

I = 15.0 Amps

T/o = 220 usec

Base Frequency = 25 Hz

CHANNEL	TIME (ms)	GAIN	VALUE	LOG	pa
1	.0685	4	4527	.30	114.0
2	.109	4	3287	.33	111.2
3	.140	4	2269	.37	106.1
4	.177	4	1604	.42	100.5
5	.220	4	1157	.47	95.2
6	.280	4	823	.53	87.4
7	.355	4	592	.60	79.2
8	.443	4	427	.67	72.5
9	.563	4	295	.75	66.1
10	.712	4	200	.84	60.8
11	.876	4/6	140.8/548.5	.94	56.4/57.4
12	1.087	6	361.2	1.04	54.7
13	1.400	6	216.3	1.18	52.1
14	1.772	6	128.1	1.33	51.1
15	2.210	6/9	76.8/591.5	1.49	50.7/52.0
16	2.820	9	331.0	1.68	51.8
17	3.570	9	177.23	1.89	53.7
18	4.460	9	97.75	2.11	55.6
19	5.667	9	50.13	2.38	58.8
20	7.160	9	24.45	2.68	64.6

Interpreted Model:

$\frac{RHO2}{RHO1} = 1/4$

$\frac{H2}{H1} = \frac{1}{1.8}$

$\frac{RHO2}{RHO1} = 8$

114 metres	83 ohm-metres
63 metres	21 ohm-metres
infinite	700 ohm-metres

526056

Mission 85-1460 for BHP on Echidna Grid

Date January 7, 1983

E.S. 055

Drill Hole

Bearing of A & B

Elevation

Co-ordinates of centre

X = 150 E Y = 350 N

Sounding No: 3

A = 300 metres
B = 300 metres
I = 15.0 Amps
T/o = 220 usec
Freq = 25 Hz

E.M.37 SOUNDING DATA

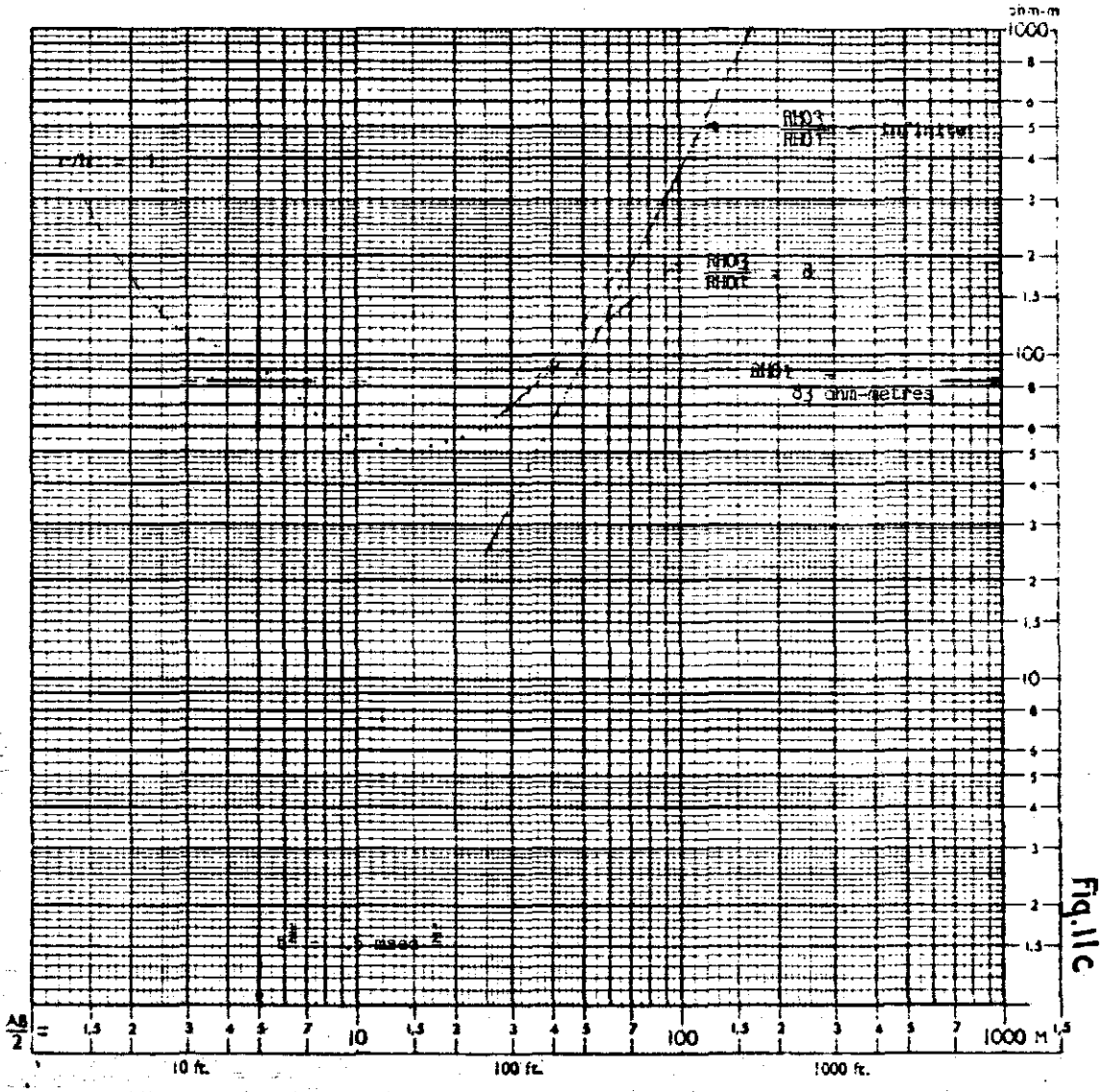


Fig.11c

526057

Sounding No. 4

Date: January 7, 1983

Component: Z

Location: Waratah, Tasmania (Echidna Grid)

A = 200 metres

B = 200 metres

I = 17.5 Amps

T/o = 152 usec

Base frequency = 25 Hz

Mission 85-1460 for BHP on Echidna Grid

Date January 7, 1983

E.S. 056

Drill Hole

Bearing of A B

Elevation

Co-ordinates of centre

X = 500 E Y = 500 N

E.M.37 SOUNDING DATA

CHANNEL	TIME (ms)	GAIN	VALUE		pa
1	.0685	4	4839	.30	85.1
2	.109	4	3193	.33	87.4
3	.140	4	1972	.37	88.5
4	.1..	4	1258	.42	88.4
5	.220	4	828	.47	87.7
6	.280	4	540	.53	83.9
7	.355	4	364	.60	78.2
8	.443	4	253	.67	72.4
9	.563	4	171	.75	66.0
10	.712	4	117	.84	59.7
11	.876	4/6	83.6/326.2	.94	54.3/55.2
12	1.067	6	218.1	1.04	51.6
13	1.400	6	132.6	1.18	48.3
14	1.772	6	79.1	1.33	46.8
15	2.210	6/9	47.2/367.0	1.49	46.3/47.2
16	2.820	9	203.1	1.68	47.2
17	3.570	9	107.0	1.89	49.3
18	4.460	9	58.4	2.11	51.3
19	5.667	9	29.9	2.36	54.0
20	7.160	9	14.7	2.68	59.0

Interpreted Model:

RHO2/RHO1 = 1/4	132 metres	77 ohm-metres
H2/H1 = 1	120	20 ohm-metres
RHO3/RHO1 = 16	infinite	1200 ohm-metres

S = 8 mhos

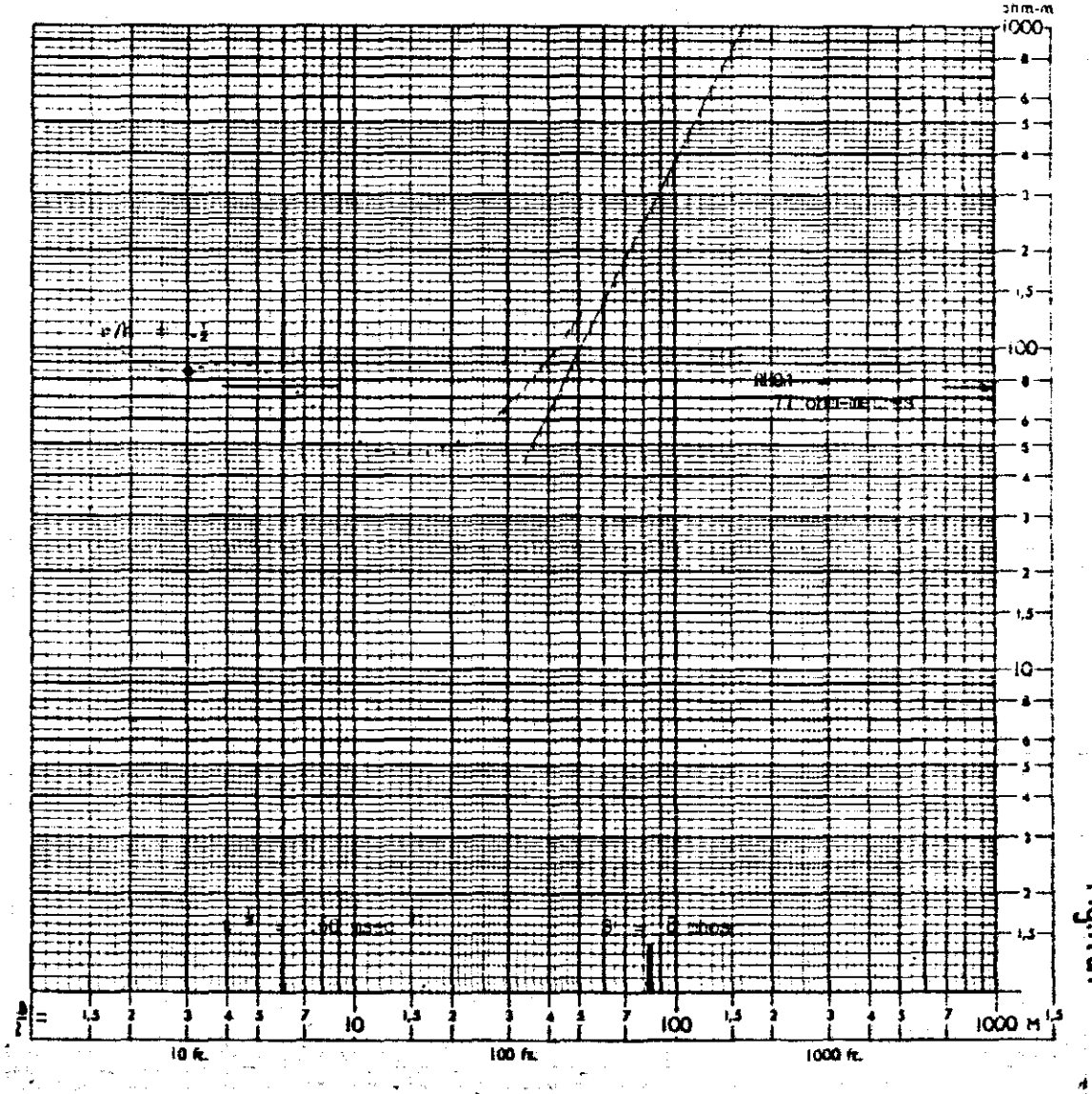


Fig.11.

D.D.H. WA1

DEPTH

METRES

0
50
100
150
200
250
300

Percussion drilling only

TERTIARY

CAMBRIAN

T.D. 300 m.

RESISTIVITY LOG

0 500 1000
ohms-metres
Single point resistence

SOUNDING LOG

20 200
ohms-metres
Apparent resistivity from E.M.37 interpretation (Tem-sounding) by J. Peacock - Geoterrex

APPARENT MAGNETIC SUSCEPTIBILITY LOG

0 200 400 600 800 1000 4000 8000
cgs x 10^6
Measured on core with hand held instrument

GAMMA LOG

0 10 20 30
counts per second - winding speed 6m/min.

Vertical scale 1:1000

Revisions:

Drawn: C Osborne
Date: 5.7.83
Prepared by: D. Isles
Centre: Melbourne
Project No T650
Drawing No A3-1621

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 33/79 - WARATAH, TASMANIA

GRAPHIC AND GEOPHYSICAL LOG - D.D.H. WA1

LEGEND

TERTIARY
- Basalt flows, amygaloidal, occasionally weathered Denser flows indicated by compact symbols
- Silcrete

CAMBRIAN
- Andesite
- Shale
- d Dolomite
- Diorite dyke

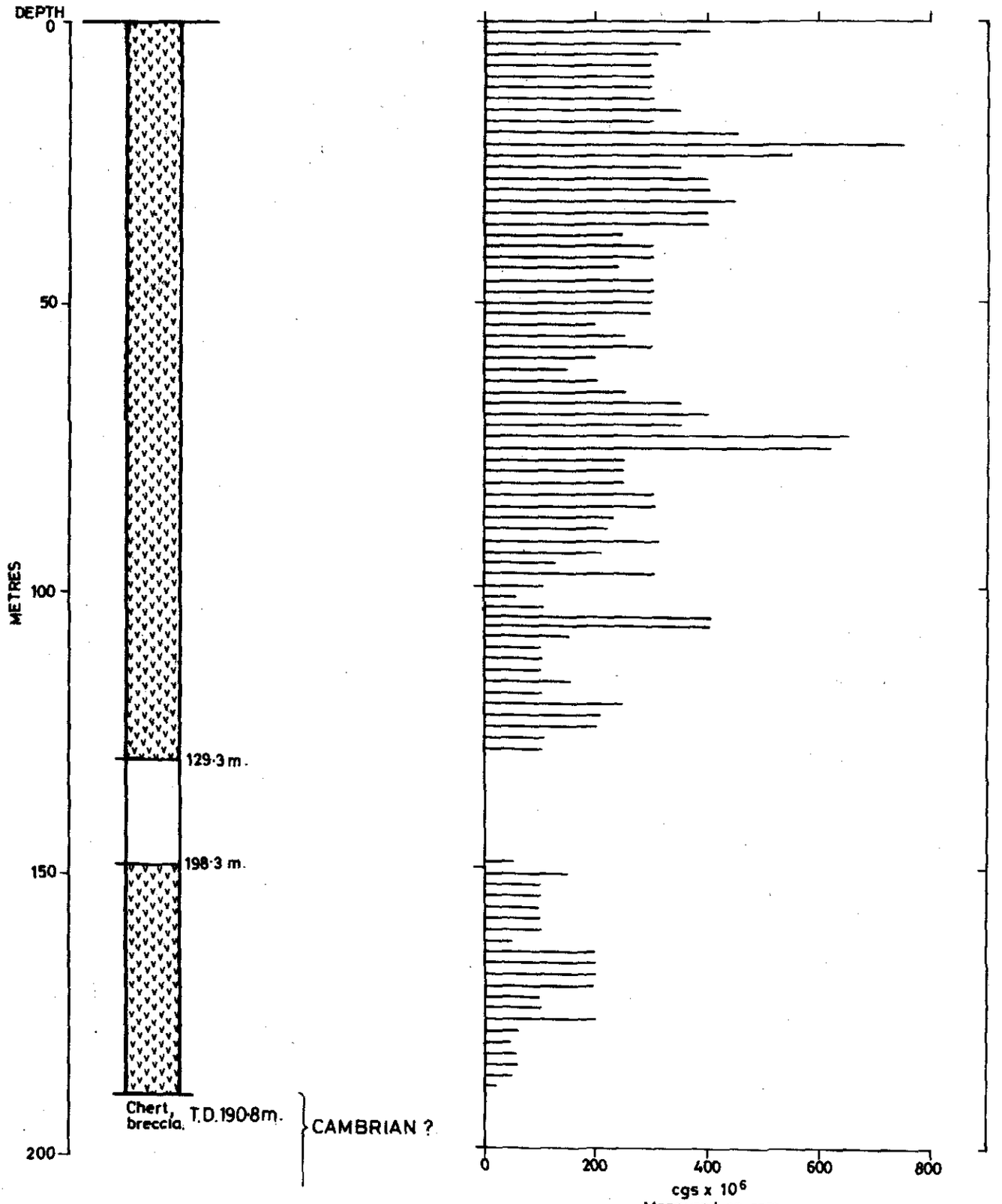
5 cm

Note : For location see fig. 2

Fig.13

D.D.H. WA2

APPARENT MAGNETIC SUSCEPTIBILITY LOG



LEGEND

TERTIARY
- Basalt
- Mudstone

5 cm

Vertical scale 1:1000 Note : For location see fig. 2

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project N° T650
Date 5·7·83	EL. 33/79 - WARATAH, TASMANIA GRAPHIC AND GEOPHYSICAL LOG D.D.H. WA2	Drawing N°

DDH WA3

RESISTIVITY LOG

APPARENT MAGNETIC SUSCEPTIBILITY LOG

GAMMA LOG

DEPTH

METRES

0
50
100
150
200
250
300

TERTIARY

CAMBRIAN

T.D. 284 m.

0 500 1000
ohms-metres
Single point resistence

0 500 1000
cgs x 10^6
Measured on core
with hand held instrument

0 250 500
Counts per second
Winding speed 6m/min

LEGEND

TERTIARY
- Basalt
- Chert clay

CAMBRIAN
- Lava sediments
- Breccia
- Sediments
- Lava

5 cm

Vertical scale 1:1000 Note : For location see fig 2.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 33/79 - WARATAH, TASMANIA
GRAPHIC AND GEOPHYSICAL LOGS DDH WA3

Revisions:

Drawn: C. Osborne
Date: 7.7.83
Prepared by: D. Isles
Centre: Melbourne
Project No T650
Drawing No A3-1622

526060

Fig. 14

060

D.D.H. WA4

APPARENT MAGNETIC SUSCEPTIBILITY LOG

DEPTH

METRES

0
50
100
150
200
250
300
350

T.D. 349·2 m.

0 500 1000 2000 3000

cgs x 10^6
Measured on core
with hand held instrument

5 cm

LEGEND

TERTIARY — Basalt
Gravels
CAMBRIAN — Shale/carbonates

Note: For location see fig. 2

Vertical scale 1:1,000

Revisions:

Drawn: C Osborne
Date: 5.7.83
Prepared by: D. Isles
Centre: Melbourne
Project No: T650
Drawing No: 82-1622

E.L. 33/79 - WARATAH, TASMANIA
GRAPHIC AND GEOPHYSICAL LOG DDHWA4

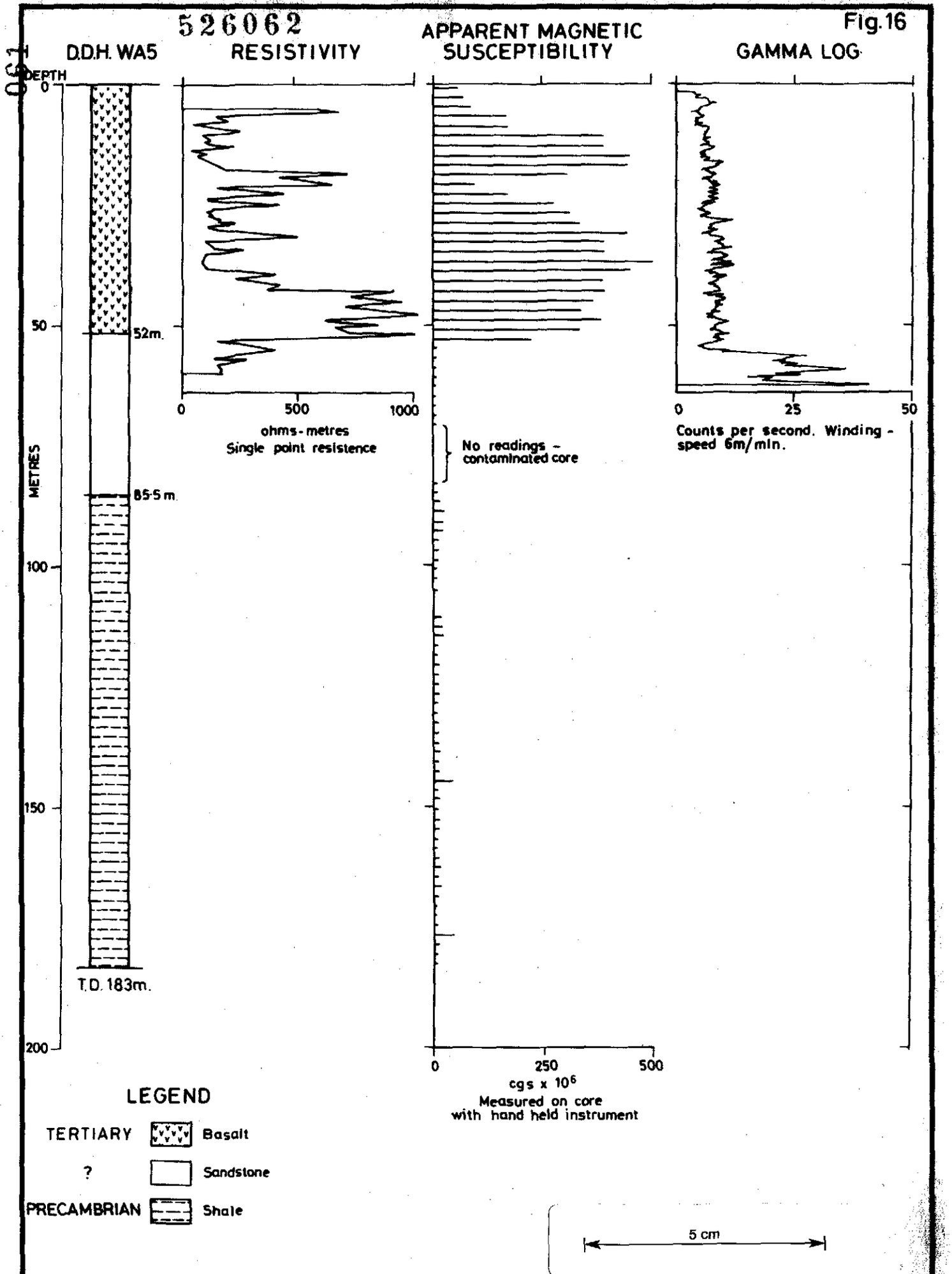
THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

526061

Fig. 15

526062

Fig. 16



Vertical scale 1:1000 Note : For location see fig. Fig.2

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No T650
Date 5 · 7 · 83	E.L. 33/79 - WARATAH, TASMANIA GRAPHIC AND GEOPHYSICAL LOG D.D.H. WA5	Drawing No

062

526063

Fig.17.

DDH WA6

RESISTIVITY LOG

APPARENT MAGNETIC SUSCEPTIBILITY LOG

GAMMA LOG

DEPTH

METRES

0

50

100

150

200

250

TERTIARY

PRECAMBRIAN

219m.

T.D.261m.

0 500 1000

ohms metres
Single point resistence

0 500 1000 2000 3000 4000

cgs x 10^6
Measured on core
with hand held instrument

0 10 20

Counts per second
Winding speed 6m/min.

5 cm

Vertical scale 1:1000 Note : For location see fig. 2

LEGEND

TERTIARY — Basalt

PRECAMBRIAN — Shale

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.33/79 - WARATAH, TASMANIA.
GRAPHIC AND GEOPHYSICAL LOG DDH. WA6

Revisions:

Prepared by: D.Isles	Centre: Melbourne	
Date: 7·7·83	Project Nº T650	Drawing Nº A3-1624
Drawn: C Osborne		

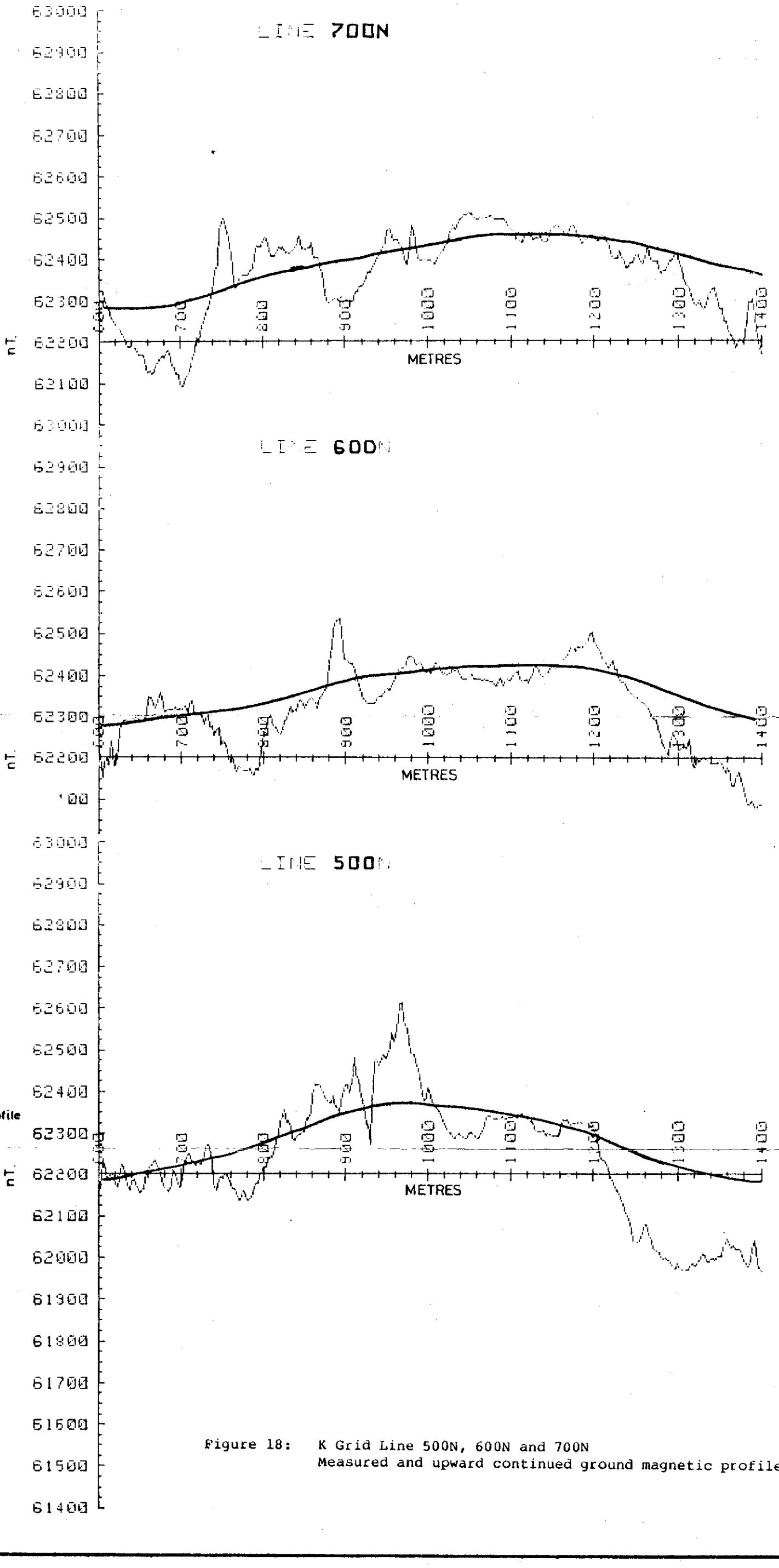
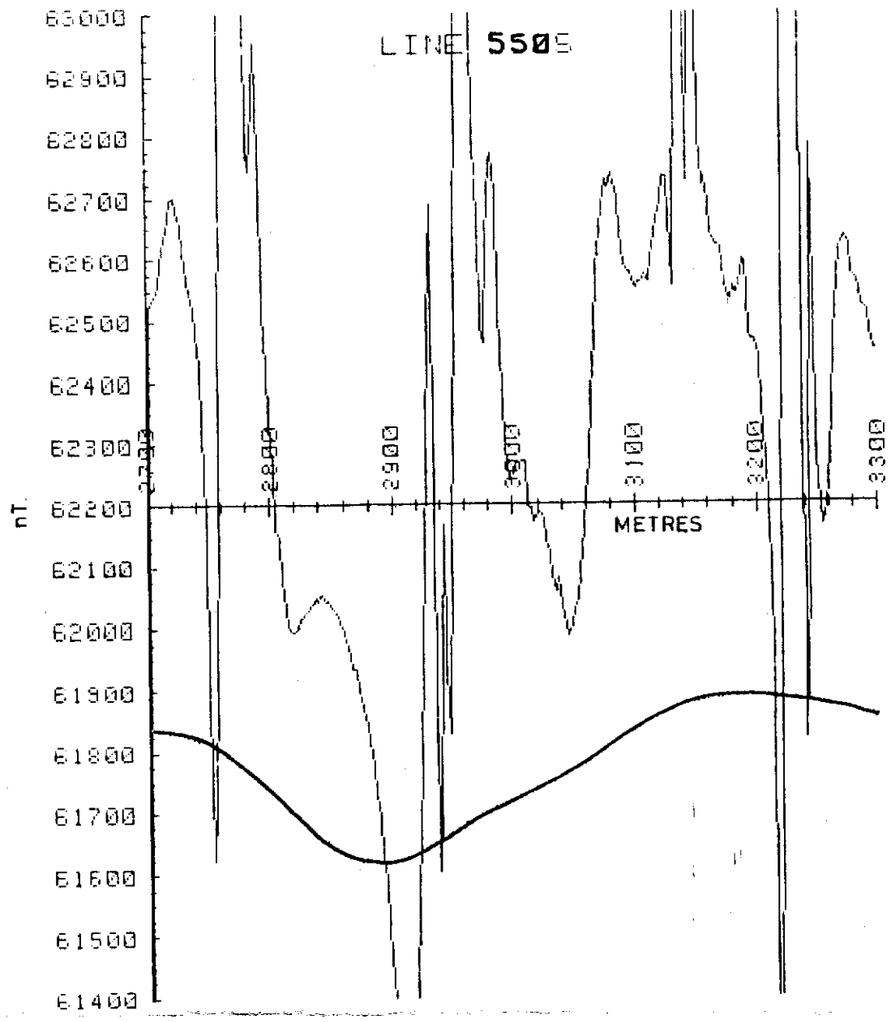
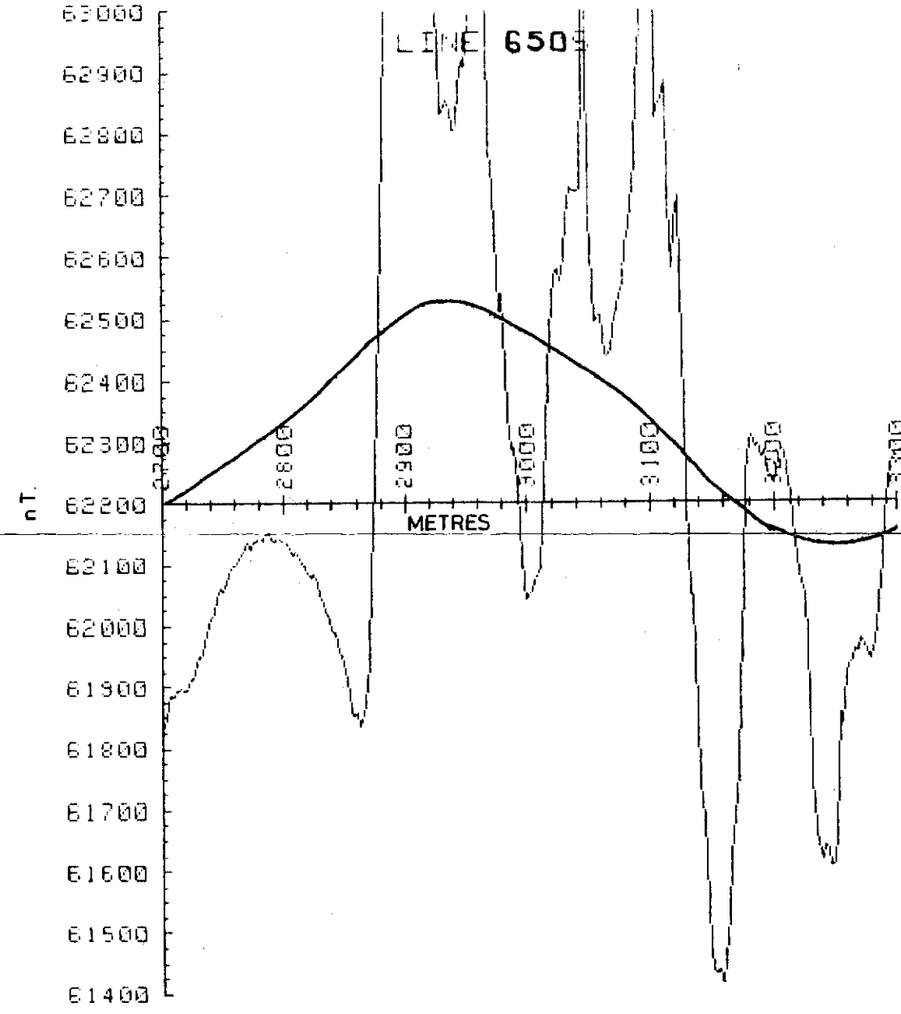


Figure 18: K Grid Line 500N, 600N and 700N
Measured and upward continued ground magnetic profile.

FIG. 18





Measured ground magnetic profile

Upward continued ground magnetic profile

Figure 19: L Grid Line 550N and 650N
Measured and upward continued ground magnetic profile.

526064 FIG. 19

Revisions:

Drawn:

Date: 14/7/83

Prepared by: D. Isles

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 33/79 - WARATAH, TASMANIA
MEASURED AND UPWARD CONTINUED
GROUND MAGNETIC PROFILES - 'L' GRID

Project No:

Centre: Melbourne

Drawing No: A3-

Fig No
To accompany
Dated

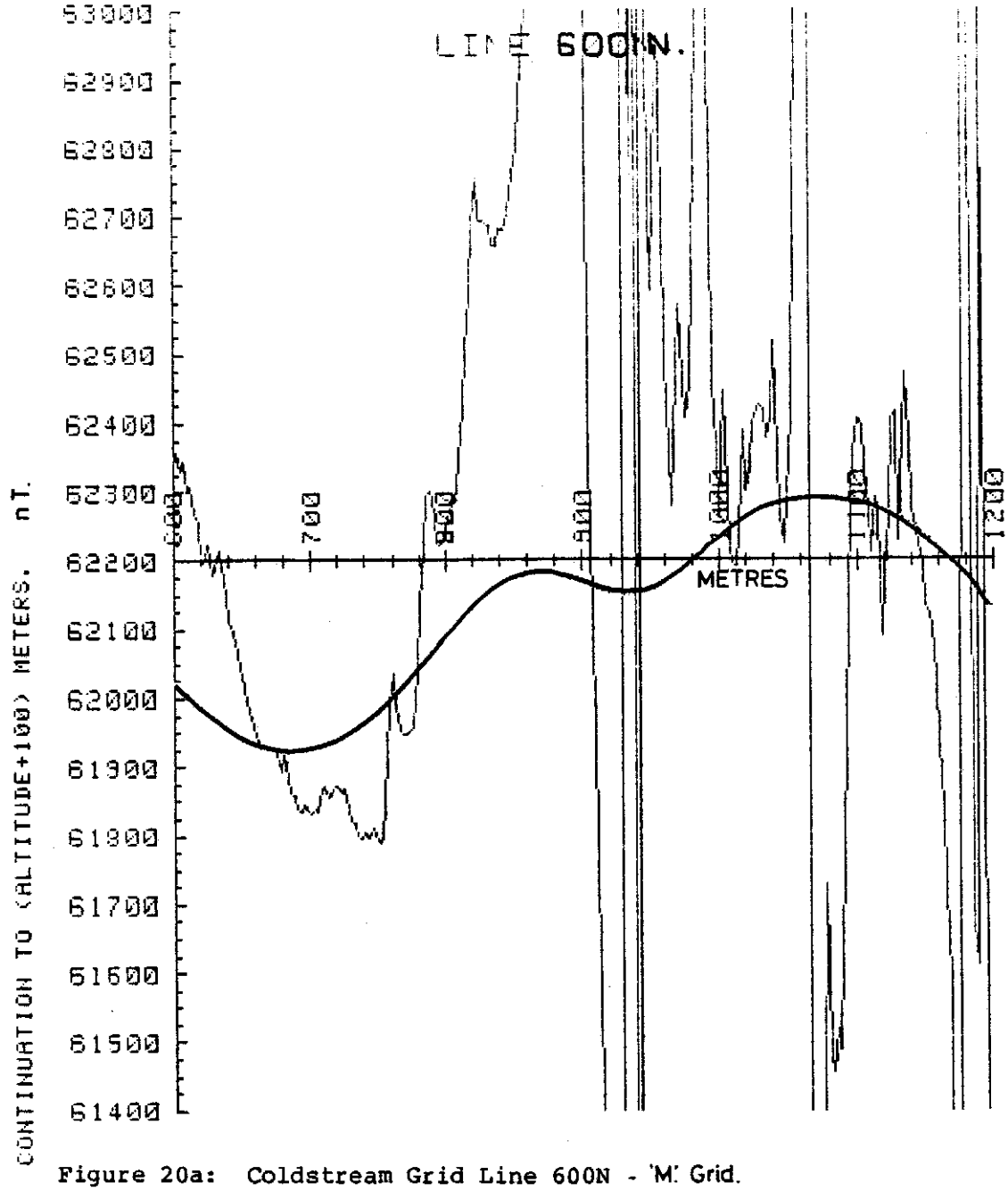
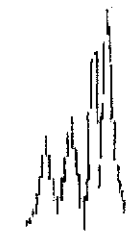


Figure 20a: Coldstream Grid Line 600N - 'M' Grid.
Measured and upward continued ground magnetic profile.



Measured ground magnetic profile

Upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date 14 · 7 · 83	E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - 'M' GRID	Drawing No. A4–

FIG. 20b

066

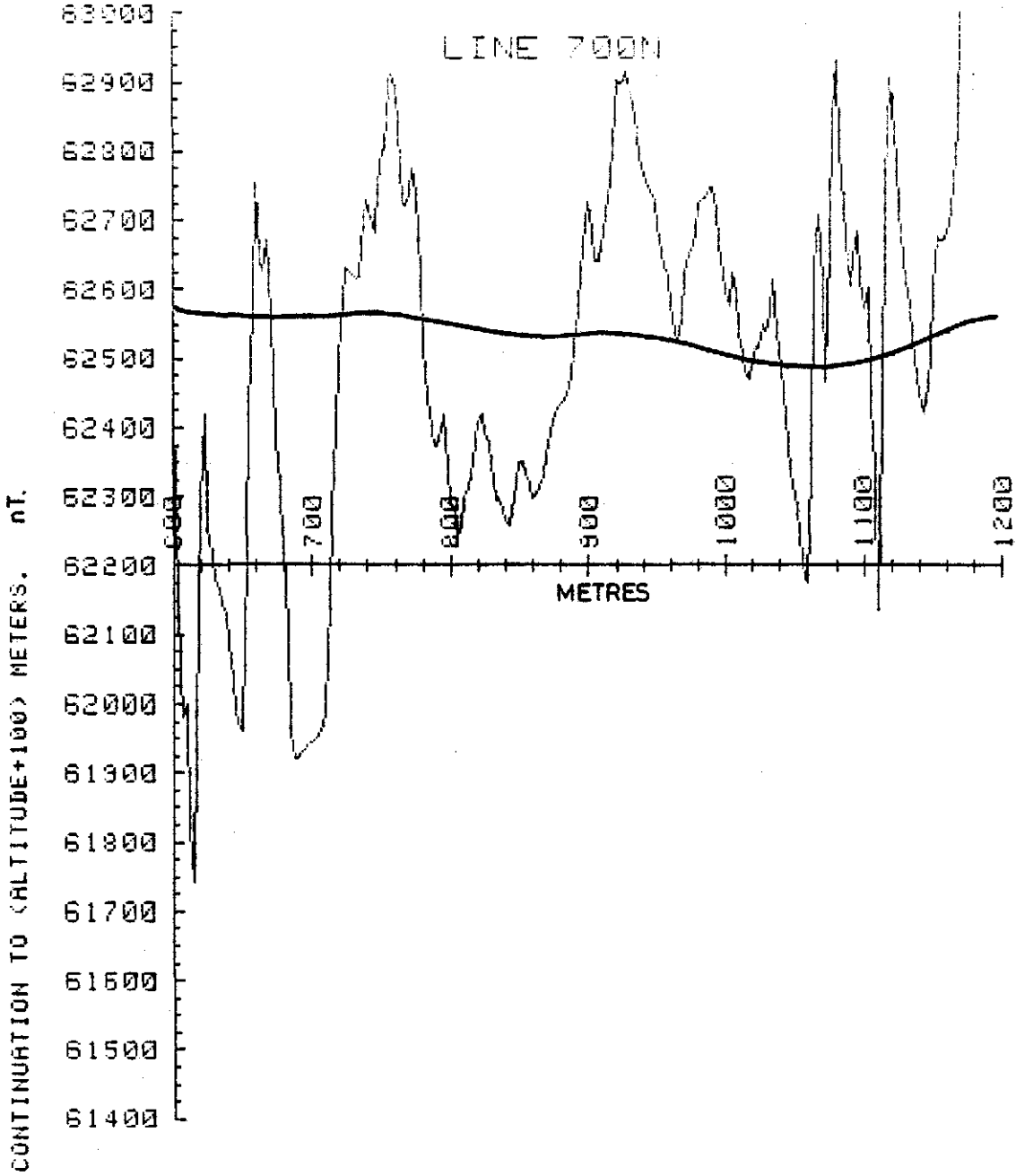
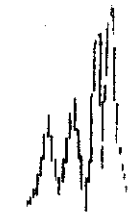


Figure 20b: Coldstream Grid Line 700N -'M'Grid
Measured and upward continued ground magnetic profile.



Measured ground magnetic profile

Upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date 14 · 7 · 83	E.L.33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - 'M' GRID	Drawing No. A4

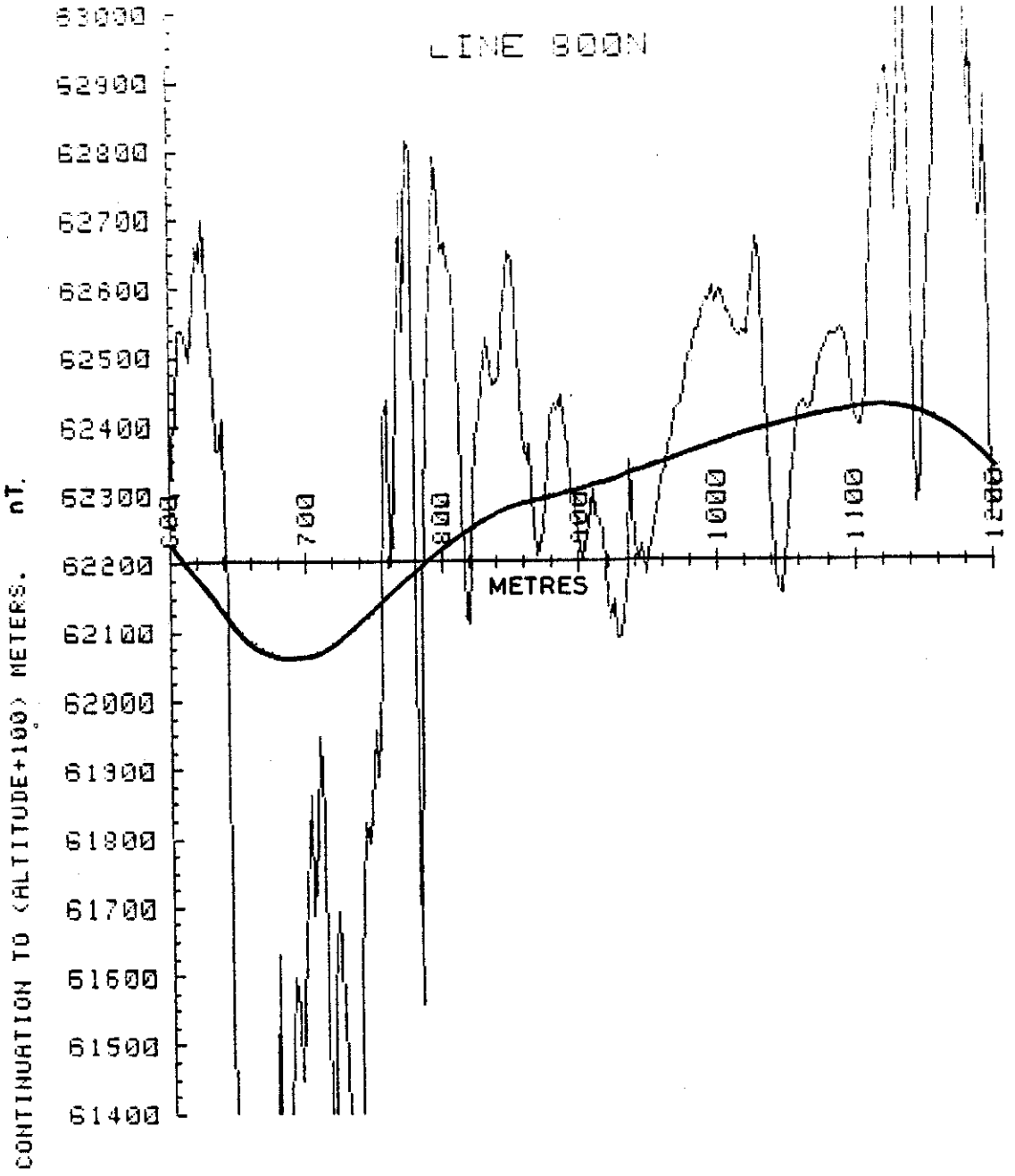


Figure 20c: Coldstream Grid Line 800N 'M' Grid
Measured and upward continued ground magnetic profile.

Measured ground magnetic profile

Upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date 14·7·83	E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILE - 'M'GRID	Drawing No. A4-

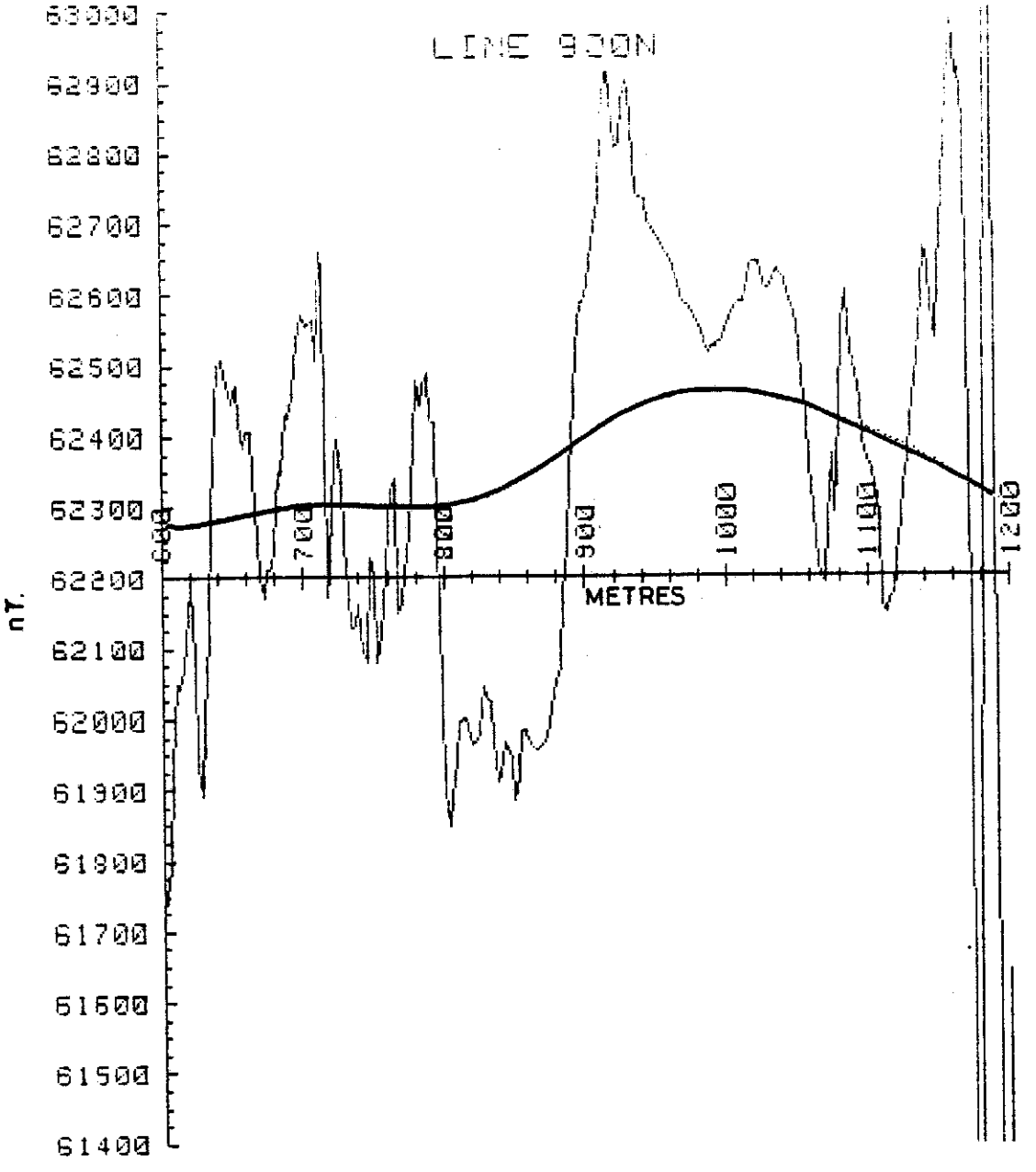


Figure 20d: Coldstream Grid Line 900N - 'M' Grid.
Measured and upward continued ground magnetic profile.

Measured ground magnetic profile

Upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date 14 · 7 · 83	E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILES - 'M' GRID	Drawing No. A4

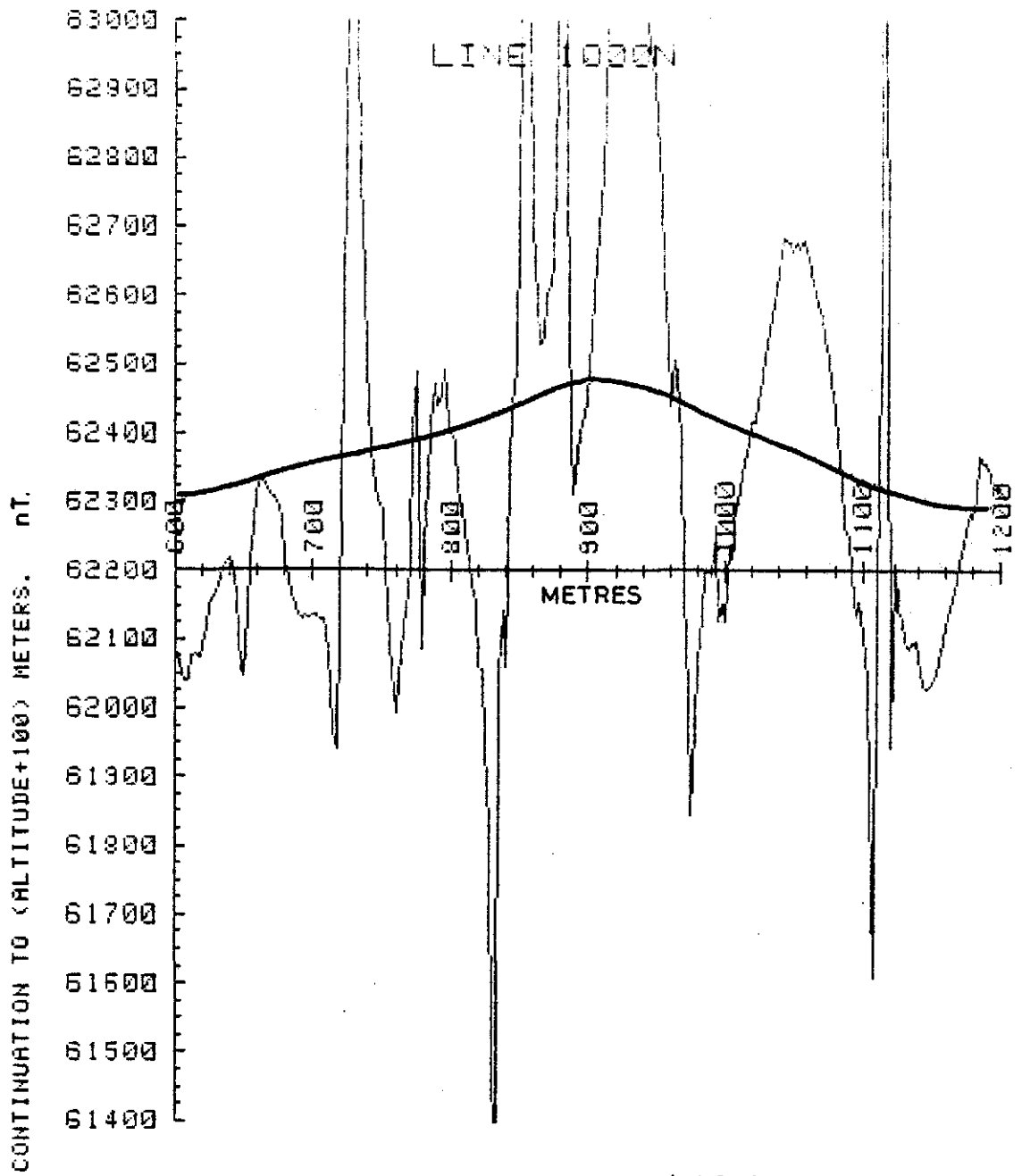
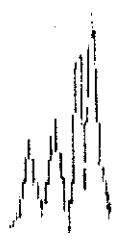


Figure 20e: Coldstream Grid Line 1000N - 'M' Grid
Measured and upward continued ground magnetic profile.



Measured ground magnetic profile

Upward continued ground magnetic profile

Centre Melbourne	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No.
Date 14·7·83	E.L. 33/79 - WARATAH, TASMANIA MEASURED AND UPWARD CONTINUED GROUND MAGNETIC PROFILES - 'M' GRID	Drawing No. A4-

APPENDIX 1

Descriptive Logs

526071

T70

BROKEN HILL PROPRIETARY CO. LTD.

DRILL LOG HEADER SHEET

Project: TIN, TASMANIA
Prospect: WARATAH T650
Local Grid co-ords.
AMG co-ords CQ 82915800
Drilling Co: OVERLAND DRILLING Co
Drill type: WARMAN 250
Driller: W. EVERSDEN B. LOVELL L. THOMPSON I. LARSEN

Hole No: WA. 1.
Total depth: 299.9m
Bearing:
Depression VERTICAL
R.L. Collar:
Commenced: 12/1/83
Completed: 20/1/83
Logged by: S.P. KERBER
Sampled by: S.P. KERBER, A. CLARKE

Hole Size		From	To	Total
Non-core	HQ	0	85.0	85.0
Core	NQ	85.0	213.5	128.5
	BQ	213.5	299.9	86.4
Casing				
Casing left.				

Core storage:	SCAMANDER
No. of trays.	24 CORE 1 CHIP
Sample storage	ANALABS - CODEE
Geochem. Lab.	ANALABS
Analytical reports	
Min. and Pet Lab.	M.R.L.
Min and Pet report	

Hole Survey Data: Susceptibility - 2m intervals. Geochemistry - BE 5001 - BE 5029
Petrology - WA1-1 to WA1-8

Summary Log:
TERTIARY 0 - 223.52 Basalt
223.52 - 233.5 Silcrete
CAMBRIAN 233.5 - 270.23 Andesite
270.23 - 282.4 Shale
282.4 - 284.2 Dolomitic chert
284.2 - 299.9 Shale

Comments: E.O.H 299.9m

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA. 1.

Sheet 1 of 5

DRILLING						DESCRIPTIVE LOG				INTERSECTION ANGLE LCA						
Core Size	From m	To m	Inter-section m	Recov-ered m	% Recovery	From m	To m	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other FRACTURES		Petrology etc	Box No.
						0	4.0	SOIL									
						4.0	85.0	BASALT									
NQH CORING								4.0-10.0 grey rounded chips coated in brown clay.									
								10.0-16.0 grey angular chips, shiny black clay mineral minor with zeolites.									
								16.0-20.0 grey angular chips, abundant shiny black clay mineral									
								20.0-58.0 grey, angular chips, abundant zeolites, brown clay mineral									
								58.0-85.0 dark grey to black, abundant zeolites									
	85.0	86.5	1.5	1.5	100	85.0	223.52	BASALT				80°					1
	86.5	88.8	2.3	2.3	100			- grey medium grained with interflow sediments.									
	88.8	91.0	2.2	2.18	99			90.5 - 91.2 Basalt, amygdaloidal, zeolite minor, abundant clay minerals.									
	91.0	93.4	2.4	2.24	93.3			91.2 - 91.36 Mudstone, light brown									2
	93.4	96.5	3.1	3.1	100			91.36 - 99.5 Basalt, amygdaloidal, zeolite, black clay.					70°				
	96.5	99.5	3.0	3.0	100												
	99.5	102.5	3.0	2.91	97			99.5 - 100.12 Basalt, dense									3
WIRE								100.12 - 101.47 Basalt, amygdaloidal									
								101.47 - 102.25 Basalt, dense, small 1mm lathlike phenocrysts.									
CORE	102.5	104.8	2.3	2.26	98.2			102.25 - 102.95 Basalt, vesicular									
								102.95 - 103.2 Basalt, pink hinge, dense.				48°					
	104.8	107.2	2.4	2.4	100			103.2 - 105.6 Basalt, numerous clay replaced phenocrysts. coarse vesicles. 3cm long.									
	107.2	110.3	3.1	3.09	99.6			105.6 - 107.4 Basalt, phenocrysts. clay replaced.									4
	110.3	111.5	1.2	1.06	88.3			107.4 - 111.15 Basalt, amygdaloidal. zeolites minor.									
	111.5	114.5	3.0	3.0	100			111.15 - 117.5 Basalt, light grey dense.									
NQ	114.5	117.3	2.8	2.53	90.4			117.5 - 120.4 Basalt, very vesicular, pink hinge.									5
	117.3	120.4	3.1	3.1	100												
	120.4	123.5	3.1	3.1	100			120.4 - 123.5 Basalt, dense, thin calcite veins.				58°					
	123.5	126.8	3.3	3.3	100			123.5 - 124.6 Basalt, amygdaloidal.									6
								124.6 - 124.8 Basalt, very dense. Flow indicated by phenocrysts 58° to core.									
								124.8 - 126.87 Basalt, vesicular, mauve colour, weathered.									
	126.8	129.1	2.3	2.3	100			126.87 - 130.7 Basalt, amygdales dense Flow in all directions, minty chalcedony.									
	129.1	132.5	3.4	3.4	100			130.7 - 131.2 Basalt, weathered to clay, vesicular, zeolites / calcite									Y
	132.5	134.0	1.5	1.5	100			131.2 - 136.5 Basalt, dense calcite amygdales. chalcedony veining.				80°					
	134.0	136.5	2.5	2.5	100												
	136.5	138.3	1.8	1.8	100			136.5 - 143.3 Basalt, amygdaloidal, all clay in vugs.									8

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Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO LTD.

Drillhole No WA 1.

Sheet 2 of 5

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE LCA						
Core size	From m	To	Intersected m	Recovered m	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No	Bedding	Veins		Other		Petrology etc	Box No
	138·3	138·9	0.6	0.6	100			BASALT									
	138·9	141·3	2.4	2.4	100												
	141·3	144·4	3.1	3.1	100			143·3 - 146·89 Basalt, dense									
	144·4	144·9	0.5	0.5	100												
	144·9	147·5	2.6	2.6	100			146·89 - 147·5 Basalt, amygdaloidal, black clay fillings.									9
	147·5	150·5	3.0	3.0	100			147·5 - 151·22 Basalt, weathered to soft green clays, vesicular.									
	150·5	153·4	2.9	2.81	96.9			151·22 - 153·4 Basalt, black, small amygdales									10
	153·4	153·9	0.5	0.44	88			153·4 - 155·1 Basalt, clayey, soft, grey									
	153·9	154·4	0.5	0.36	72												
	154·4	155·1	0.7	0.56	80												
	155·1	156·0	0.9	0.51	56.7			155·1 - 162·45 Basalt, amygdaloidal clayey, dense. Feldspar laths altered to kaolinite, fresh olivines.									
	156·0	156·5	0.5	0.5	100												
N	156·5	156·8	0.3	0.3	100												
Q	156·8	157·5	0.7	0.62	88.6												
1	157·5	158·2	0.7	0.27	38.6												
R	158·2	159·5	1.3	1.05	80.8												
O	159·5	161·0	1.5	1.48	98.7											WA2-1-160.5m	
C	161·0	162·8	1.8	1.8	100			162·45 - 170·0 Basalt, weathered, clayey green amygdaloidal.									11
	162·8	163·0	0.2	0.2	100												
	163·0	163·6	0.6	0.6	100												
	163·6	163·9	0.3	0.3	100												
	163·9	164·1	0.2	0.2	100												
Q	164·1	165·0	0.9	0.9	100												
N	165·0	166·5	1.5	1.5	100												
	166·5	167·3	0.8	0.8	100												
	167·3	170·3	3.0	3.0	100			170·0 - 173·4 Basalt, dense, iddingsite / bowlingite in phenocrysts.									12
	170·3	171·4	1.1	1.1	100												
	171·4	172·5	1.1	1.1	100												
	172·5	174·4	1.9	1.9	100			173·4 - 174·0 Basalt, weathered to greenish clay									
	174·4	175·8	1.4	1.4	100			174·0 - 176·35 Basalt, porphyritic, 2mm in size, black clay.									
	175·8	176·3	0.5	0.5	100												13
	176·3	179·3	3.0	3.0	100			176·35 - 180·9 Basalt, dense, black amygdaloidal, zeolite, black clays.									
	179·3	180·4	1.1	1.1	100												
	180·4	182·0	1.6	1.56	97.5			180·9 - 182·1 Basalt, vesicular, 2cm vugs, zeolite / calcite.									
	182·0	183·9	1.9	1.9	100			182·1 - 185·8 Mudstone, small sections in basalt, clayey.									14

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA.1.

Sheet 3 of 5

DRILLING						DESCRIPTIVE LOG											
										INTERSECTION ANGLE							
Core size	From m	To m	Intersected m	Recovered m	% Recovery	From m	To m	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other		Petrology etc.	Box No.
	183.9	184.8	0.9	0.9	100			BASALT									
N	184.8	187.2	2.4	2.4	100			185.8-190.5 Basalt, dense clay filled amygdales and phenocrysts.									
Q	187.2	188.7	1.5	1.5	100												
	188.7	190.0	1.3	1.3	100												15
C	190.0	191.5	1.5	1.5	100			190.5-191.05 Basalt, very amygdaloidal, 3cm amygdales, zeolites and calcite									
O	191.5	192.8	1.3	1.3	100			191.05-192.3 Basalt, pink, coarse chalcedony veins.									
R	192.8	194.0	1.2	1.2	100			192.3-194.6 Basalt, vertical fracture filled by coarse feathery zeolites									
I	194.0	197.1	3.1	3.1	100			194.6-203.32 Basalt, dense, fine calcite veins,				2°					16
N	197.1	200.2	3.1	3.1	100												
G	200.2	203.0	2.8	2.8	100												
	203.0	206.1	3.1	3.1	100			203.32-206.1 Basalt, weathered, red-brown clay									17
	206.1	209.2	3.1	3.1	100			206.1-210.2 Basalt, dense									
	209.2	212.3	3.1	3.01	97			210.2-212.7 Basalt, vesicular, amygdaloidal, calcite filling vugs.									18
	212.3	213.5	1.2	1.2	100			212.7-219.46 Basalt, less vesicular, smaller amygdales.									
	213.5	216.1	2.6	2.06	79.2												
	216.1	218.1	2.0	1.89	94.5												
	218.1	221.2	3.1	2.99	96.5			219.46-223.52 Basalt, dense fine calcite veins, chalcedony veins				75°					19
B	221.2	224.5	3.3	3.1	93.9	223.52	233.5	TERTIARY SILCRETE / SILT									
Q	224.5	226.6	2.1	1.74	82.9			223.52-226.1 Silt, sandy, light brown, coarse grained, abundant wood fragments.		GE SD01							
	226.6	228.8	2.2	1.81	82.3			226.1-228.5 Silcrete, white, coarse grained, fine vugs.		GE SD02							
C								228.5-228.8 Silt, coarse grained, dark brown, sandy.		GE SD03							
O	228.8	230.4	1.6	0.55	34.4			228.8-232.5 Silcrete, rounded quartz pebbles		GE SD04							20
R	230.4	232.5	2.1	1.85	88.0												
I																	
N	232.5	233.8	1.3	1.29	99.2	233.5	270.23	CAMBRIAN ANDESITE									
G	233.8	236.4	2.6	2.6	100			233.5-270.23 Andesite, dark green, medium grained, red/brown haematite rings,		GE SD05		15°					
	236.4	238.6	2.4	2.21	92			feldspar phenocrysts 1-2mm, magnetic, calcite veins.									
	238.6	241.4	2.8	2.62	93.6					GE SD06							21
	241.4	243.4	2.0	2.0	100												
	243.4	244.5	1.1	1.1	100					GE SD07							
	244.5	247.5	3.0	3.0	100												
	247.5	249.7	2.2	2.17	98.6												22
	249.7	250.7	1.0	0.96	96					GE SD08							
	250.7	251.7	1.0	0.98	98												

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Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA1.

Sheet 4 of 5

DRILLING						DESCRIPTIVE LOG											
										INTERSECTION ANGLE LCA							
Core size	From m	To	Intersected m	Recovered m	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other (Contact, Cleavage)		Petrology etc	Box No.
	251.4	253.8	2.1	2.1	100											WA1-2 252.54	
	253.8	255.1	1.3	1.15	88.5											WA1-3 254.04	
	255.1	255.5	0.4	0.4	100												
	255.5	258.5	3.0	3.0	100												
	258.5	261.5	3.0	3.0	100					DE SD09							23
	261.5	264.1	2.6	2.55	98												
B	264.1	267.5	3.4	3.34	98.2					DE SD10						WA1-4 262.5	
Q	267.5	270.5	3.0	3.0	100	270.23	273.1	SHALE, turbidite sequence.		DE SD11							24
	270.5	273.0	2.5	2.5	100			270.23-273.1 Shale, red, micro-faulting, calcite veining several 10-20cm lithicwacke beds.	Py on contact face.	DE SD12		65°		60°			
	273.0	273.5	0.5	0.5	100	273.1	273.5	ANDESITE									
C								273.1-273.5 Andesite, dark green, medium grainsize, magnetic, minor haematite banding, calcite veining.		DE SD13				55°			
O																	
R																	
I						273.5	278.4	SHALE/CHERT									
N	273.5	276.5	3.0	2.92	97.3			273.5-276.4 Chert, lithicwacke, green, with minor red shale interbeds.		DE SD14							
G	276.5	277.8	1.3	1.29	99.2			276.4-278.4 Shale, dark red-brown, fine calcite veining		DE SD15							25
						278.4	278.7	VOLCANIC BRECCIA									
	277.8	278.7	0.9	0.58	64.4			278.4-278.7 Breccia, fine grained, fragments of basaltic glass, cohesive veining	Fine pyrite.	DE SD16						WA1-5 278.4	
						278.7	281.47	SHALE/CHERT									
	278.7	279.5	0.8	0.8	100			278.7-280.4 Shale, red, very fine grained.		DE SD17							
	279.5	279.8	0.3	0.3	100												
	279.8	280.7	0.9	0.9	100			280.4-280.8 Fracture filling, fragments of shale and chert strongly veined		DE SD18							
	280.7	281.7	1.0	1.0	100			280.8-281.03 Vein, siliceous, medium grained in green Chert.		DE SD19							
								281.03-281.3 Chert, green.		DE SD20							
						281.3	281.47	VEIN									
								281.3-281.47 Calcite-chalcedony vein and possible volcanic breccia.		DE SD21							
						281.47	282.4	CHERT									
	281.7	282.3	0.6	0.6	100			281.47-282.4 Chert, green, banding 50° to core.		DE SD22	50°						

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Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole N° WA.1

Sheet 5 of 5

DRILLING						DESCRIPTIVE LOG											
										INTERSECTION ANGLE LCA							
Core Size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample N°	Bedding	Veins		Other		Petrology etc	Box N°
	282.3	283.3	1.0	1.0	100	282.4	284.2	DOLOMITIC CHERT									
	283.3	284.7	1.4	1.38	98.5			282.4 - 284.2 Dolomitic Chert, white, fine to medium grained.		GE SD23		50°				WAI-6 284.1	
																WAI-7 283.2	
								CHERT									
	284.7	285.6	0.9	0.85	94.4	284.2	286.8	284.2-286.8		GE SD24							
B	285.6	286.1	0.5	0.5	100												
Q	286.1	286.6	0.5	0.42	84												26
	286.6	286.9	0.3	0.3	100	286.8	291.3	SHALE									
	286.9	287.5	0.8	0.8	100			286.8-289.9 Shale, red-brown, cross bedding apparent.		GE SD25							
	287.5	287.8	0.3	0.3	100												
C	287.8	288.6	0.8	0.79	98.8												
O	288.6	290.5	1.9	1.9	100			289.9-290.5 Lithic wacke, dark green, medium grained.		GE SD26							
R	290.5	293.1	2.6	2.6	100			290.5-291.3 Shale, red		GE SD27							
I																	
N						291.3	292.8	MICRODIORITE									
G								291.3-292.8 Microdiorite, green, medium grained, magnetic		GE SD28						WAI-8 292.6	
						292.8	299.9	SHALE									
	293.1	294.5	1.4	1.4	100			292.8-299.9 Shale, red.		GE SD29							
	294.5	297.5	3.0	1.3	43.3												27
	297.5	298.5	1.0	1.0	100												
	298.5	299.9	1.4	1.22	87.1			E.O.H. 299.9m									

077

526077

BROKEN HILL PROPRIETARY CO. LTD.

DRILL LOG HEADER SHEET.

Project: TIN, TASMANIA
Prospect: WARATAH T650
Local Grid co-ords.
AMG co-ords CQ 809215
Drilling Co: OVERLAND DRILLING CO.
Drill type: WARMAN 250, WARMAN 500
Driller: W. EVERSDEN
B. LOVELL

Hole No: WA.2.
Total depth: 190.77m
Bearing:
Depression VERTICAL
R.L. Collar:
Commenced: 22/1/83 4/3/83
Completed: 28/1/83 9/3/83
Logged by: S.P. KERBER
Sampled by: S.P. KERBER

Hole Size		From	To	Total
Non-core	HQ	0	96.0	96.0
	HQ	96.0	184.0	91.0
Core	BQ	96.0	190.77	94.77
Casing				
Casing left.				130.0

Core storage:	SCAMANDER
No. of trays.	10 CORE / CHIP
Sample storage	ANALABS COOEE
Geochem. Lab.	ANALABS
Analytical reports	
Min. and Pet Lab.	M.R.L.
Min and Pet report	

Hole Survey Data: Susceptibility - 2m intervals. Geochemistry - BE 5030 - BE 5031

Summary Log: TERTIARY 0 - 129.31 Basalt
129.31 - 148.3 Mudstone
148.3 - 189.86 Basalt

189.86 - 190.77 Chert breccia

E.O.H. 190.77

Comments: Warman 250 stopped drilling at 190.77 after drilling off the edge of the cement plug. Warman 500 began re-drill, reached 184.0 and bogged casing and hammer.

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA.2

Sheet 1 of 3

DRILLING						DESCRIPTIVE LOG										
Core Size	From m	To	Inter-sected m	Recov-ered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	INTERSECTION ANGLE LCA Bedding	Veins	Other	Petrology etc	Box No.
						0	6.0	SOIL - brown, weathered basalt chips, clay balls.							
						6.0	20.0	CLAY - yellow/red, minor grey basalt chips.							
WOW CORING						20.0	96.0	BASALT -							
								20.0-28.0 grey chips							
								28.0-42.0 grey chips, very high clay content							
								42.0-68.0 grey chips							
								68.0-84.0 pinky/red chips, zeolite fragments.							
								84.0-96.0 grey, coarse chips.							
						96.0	129.31	BASALT							
	96.0	97.2	1.2	0.92	76.7			96.0-103.9 Basalt, coarse grained, fairly dense, clay mineral on fracture faces.							1
	97.2	99.0	1.8	1.79	99.4										
	99.0	99.3	0.3	0.26	86.7										
	99.3	102.3	3.0	3.0	100										
	102.3	103.7	1.4	1.21	86.4										
	103.7	106.7	2.9	2.89	99.65			103.9-105.89 Basalt, partly vesicular, partly amygdaloidal, 4cm veg., minor zeolites.							2
	106.7	109.6	3.0	2.93	97.7			105.89-107.26 Basalt, very dense, coarse grained, flow of 3mm amygdales 25° to core.							
								107.26-109.1 Basalt, amygdaloidal and vesicular, minor zeolites, dark clay mineral.							
	109.6	112.7	3.1	3.08	99.35			109.1-114.21 Basalt, dense, very coarse. minor amygdales form trains 20° to core.							
	112.7	115.8	3.1	3.02	97.41			114.21-118.0 Basalt, amygdaloidal, serpentine mineral and zeolites.							3
	115.8	118.5	2.7	2.7	100			118.0-120.5 Basalt, dense, medium grained, chlorite replacement of phenocrysts.							
CORING	118.5	120.5	2.0	2.0	100										
	120.5	123.6	3.1	3.1	100			120.5-124.0 Basalt, amygdaloidal, serpentine and zeolite minerals.							
	123.6	125.0	1.4	1.4	100										
BQ	125.0	127.7	2.7	2.7	100			124.0-124.75 Fragments of vesicular basalt, brown medium grained sand, clay minerals, abundant serpentine, calcite veining, zeolite fragments.							4
								BASALT							
								124.75-126.29 Basalt, vesicular and amygdaloidal, elongated vesicles.							
	127.7	129.5	1.8	1.77	98.3			126.29-129.0 Basalt, coarse grained, dense, abundant serpentine.							
								129.0-129.31 Basalt, amygdaloidal, partly vesicular. serpentine.							

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Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA 2.

Sheet 2 of 3

DRILLING						DESCRIPTIVE LOG												
Core size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	INTERSECTION ANGLE TCA Bedding	Veins		Other		Petrology etc	Box No.
						129.31	148.3	TERTIARY SEDIMENTS.									
	129.5	132.6	3.1	1.25	40.4			129.31-132.6 Sandy Clay, light brown unconsolidated, weathered basalt fragments, coarse quartz grains, plant fragments. 34° contact with the basalt.									
	132.6	135.5	2.9	2.01	69.3			132.6-134.2 Silt, sandy medium grained white, plant layers 45° to core.									
	135.5	138.5	3.0	3.0	100			134.2-138.3 Mudstone, light tan, plant fossils, graded contact.									5
	138.5	141.5	3.0	2.74	91.3			138.3-138.7 Sand, silty light tan coarse grained. 2-3cm pebbly fragments.									
								138.7-140.05 Gravel, coarse grained with medium to fine silt and sericite flakes.									
	141.5	144.5	3.0	2.66	88.6			140.05-148.3 Mudstone, fine, sericite									
	144.5	147.5	3.0	2.72	90.6												6
	147.5	149.8	2.3	1.37	59.6	148.3	189.86	BASALT									
	149.8	152.9	3.1	1.87	60.3			148.3-150.04 Basalt, light grey coarse vesicles 1-2cm in size.									
								150.04-150.07 Sand, light grey, fine grained, minor sericite bottom contact 30°									
								150.07-152.6 Basalt, light grey, dense, round amygdales, zeolites, abundant olivine									
	152.9	156.0	3.1	3.1	100			152.6 - 153.64 Sand, grey, small 20cm interbeds with basalt.									
	156.0	159.1	3.1	3.1	100			153.64-163.08 Basalt, grey dense, 1cm olivine phenocrysts.									7
CORING	159.1	159.7	0.6	0.6	100												
	159.7	160.1	0.4	0.4	100												
	160.1	162.0	1.9	1.9	100												
	162.0	164.5	2.5	2.09	83.6			163.08-164.2 Sand, very fine with plant layers.		BE 5030							
								164.2 - 164.39 Mudstone, brown woody plant layer.									
BQ	164.5	167.6	3.1	3.1	100			164.39-164.85 Silt, fragments of clayey basalt, wood, silt, grey-green clay									
								164.85-165.0 Basalt, light grey, vesicular 1 to 2cm vugs zeolites abundant.									
								165.0 - 165.2 Clay, fragments of plant material.									
								165.2 - 166.83 Basalt, vesicular, zeolite in 1-2cm vugs.									
	167.6	170.2	2.6	2.6	100			166.83 - 167.85 Basalt, dense 1mm vesicles.									8
								167.85-167.98 Basalt, vesicular zeolites seperating in fractures.									
								167.98-169.9 Basalt, dense abundant olivine									
								169.9 - 170.1 fracture filled by green clay, fossil wood. 84° fracture.									
	170.2	173.3	3.1	3.2	103.2			170.1 - 171.0 Basalt, dense									
	173.3	176.4	3.1	3.09	99.67			171.0 - 173.95 Basalt, vesicular, zeolites abundant, clay minerals, 1-2cm vugs.									
	176.4	178.7	2.3	2.19	95.2			173.95-176.91 Basalt, dense. 84° contact with vesicular section zeolites									9
								176.91-177.31 Basalt, vesicular									
								177.31-177.43 Basalt, dense									
								177.43-177.9 Basalt, vesicular ½cm vugs, zeolites.									
	178.7	180.5	1.8	1.8	100			177.9 - 188.25 Basalt, dense, medium grained vertical fractures, zeolites									

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Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA 2.

Sheet 3 of 3

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE LCA						
Core size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No	Bedding	Veins		Other		Petrology etc	Box No
	180.5	182.5	2.0	2.0	100			BASALT									
	182.5	182.9	0.4	0.4	100												
	182.9	185.6	3.3	2.63	79.7												
	185.6	186.8	1.2	1.14	95												
	186.8	188.6	1.8	1.67	92.8			188.25-188.52 Basalt, grey round vesicles 3mm in size, zeolites.									10
	188.6	190.5	1.9	1.9	100			188.52-188.62 Gravel, fracture infill, coarse grains, serpentine.									
								188.62-189.02 Basalt, rounded vesicles.									
								189.02-189.18 fracture filling of serpentine, plant material, silt, zeolites									
								189.18-189.26 Clay, grey, fragments of green clayey basalt.									
								189.26-189.51 Basalt, vesicular, rounded vugs.									
						189.86	190.77	CHERT BRECCIA									
								189.86 Breccia, grey matrix, white angular chert fragments 4cm. average of ½cm. elongate wood and serpentine fragments 4 x ½cm in size. Silt, clay, zeolite matrix.		DE 5031							
	190.5	190.77	0.27	0.27	100			190.5 Breccia, grey matrix and fragments, coarser average over 1cm. fine matrix veins of zeolite.									
								E.O.H. 190.77m.									

526081

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BROKEN HILL PROPRIETARY CO. LTD.

DRILL LOG HEADER SHEET

Project: Tin, Tasmania
Prospect: WARATAH T650
Local Grid co-ords.
AMG co-ords CQ 811177
Drilling Co: OVERLAND DRILLING CO.
Drill type: WARMAN Y50
Driller: P. HARPER V. EVERSDEN I. LARSEN

Hole No: WA.3.
Total depth: 284.2m
Bearing:
Depression VERTICAL
R.L. Collar:
Commenced: 15/2/83
Completed: 24/2/83
Logged by: S.P. KERBER
Sampled by: S.P. KERBER

Hole Size		From	To	Total
Non-core	HQ	0	141.0	141.0
Core	NQ	141.0	207.4	66.4
	BQ	207.4	284.2	76.8
Casing				
Casing left.				

Core storage:	SCAMANDER
No. of trays.	15 CORE 2 CHIP
Sample storage	ANALABS - COOEE
Geochem. Lab.	ANALABS
Analytical reports	
Min. and Pet Lab.	M.R.L.
Min and Pet report	

Hole Survey Data: Susceptibility - 2m intervals.

Geochemistry - BE 5042 - BE 5051

Petrology - WA3-1 to WA3-4

Summary Log:

TERTIARY 0 - 240.35 Basalt
240.35 - 241.4 Chert, clay, gravel.

CAMBRIAN 241.4 - 254.0 Basalt - Tuff.
254.0 - 254.44 CHERT
254.44 - 256.0 BRECCIA
256.0 - 264.6 KOMATIITE
264.6 - 276.1 TUFF
276.1 - 284.2 KOMATIITE

Comments:

E.O.H. 284.2m

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole N° WA.3.

Sheet 1 of 4

DRILLING						DESCRIPTIVE LOG										
Core size	From m	To	Inter-sected m	Recov-ered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample N°	INTERSECTION ANGLE LCA Bedding	Veins		Other		Petrology etc	Box N°
						0.0	2.0	SOIL brown, weathered basalt chips.									
N						2.0	16.0	CLAY brown rounded clay balls, white clay balls, weathered basalt chips.									
O																	
N						16.0	141.0	BASALT									
I								16.0-18.0 Basalt, grey and light grey clay.									
C								18.0-44.0 Basalt, dark grey, red-brown shale chips, kaolinite, zeolite									
O								44.0-58.0 Basalt, pinkish, weathered									
R								58.0-68.0 Basalt, grey.									
I								68.0-72.0 Basalt, pink weathered.									
N								72.0-104.0 Basalt, grey									
G								104-110 Basalt, pinkish hinge, weathered.									
								110-124 Basalt, grey.									
								124-126 Basalt, pinkish, weathered.									
								126-141 Basalt, grey.									
						141.0	240.35	BASALT grey, medium grained, minor interflow sediments.									1
	141.0	141.6	0.6	0.35	58.3			141.0-141.6 Basalt, dense.									
	141.6	148.8	7.2	1.1	15.2			141.6-149.1 Basalt, amygdaloidal, black iddingsite/laumontite filling									
	148.8	150.4	1.6	1.1	68.8			149.1-157.49 Mudstone, light tan, minor plant fossils.									
N	150.4	153.4	3.0	2.7	90.0			157.49-157.74 Basalt, pale green, weathered, vesicular, kaolinite replacing feldspar laths.									
Q	153.4	156.4	3.0	3.0	100			157.74-153.98 Basalt, mauve, weathered vesicular clayey.									
								153.98-155.82 Basalt, dense									2
	156.4	159.4	3.0	2.96	98.7			155.82-159.13 Basalt, pinky hinge, weathered, vesicular									
C								159.13-159.58 Basalt, grey-green, dense									
O	159.4	162.4	3.0	3.0	100			159.58-161.06 Basalt, vesicular									
R	162.4	165.4	3.0	3.0	100			161.06-167.4 Basalt, dense iddingsite/laudingsite in phenocrysts.									3
I	165.4	168.4	3.0	3.0	100			167.4-167.3 Basalt, grey-brown chalcedony vein									
N	168.4	171.4	3.0	3.0	100			167.3-167.46 Basalt, pink, vesicular ½-1cm vugs.									
G								167.46-170.66 Basalt, smaller vesicles.									
								170.66-171.4 Basalt, vesicular.									4
	171.4	174.4	3.0	3.0	100			171.4-173.12 Basalt, dense.									
	174.4	177.4	3.0	3.0	100			173.12-175.02 Basalt, very vesicular, pink, clayey									
								175.02-177.0 Basalt, vesicular grey									
								177.0-178.23 Basalt, dense.									

082

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Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA 3.

Sheet 2 of 4

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE CCA						
Core size	From m	To	Inter-sected m	Recov-ered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other cont.	feat	Petrology etc	Box No.
	177.4	180.4	3.0	3.0	100			BASALT									5
N	180.4	183.4	3.0	3.0	100			178.22-180.81 Basalt, mauve, vesicular. Iron veg.									
Q	182.4	186.4	3.0	3.0	100			180.81-182.57 Basalt, dense. High felsic mineral content							70°		
								182.57-185.0 Basalt, mauve, green, vesicular. High chalcedony content.									
C								185.0-186.25 Basalt, dense.									6
O	186.4	189.4	3.0	3.0	100			186.25-186.8 Basalt, vesicular									
R								186.8-187.18 Basalt, mauve vesicular									
I								187.18-187.88 Basalt, vesicular									
N	189.4	192.4	3.0	3.0	100			187.88-190.5 Basalt, grey-green, dense vesicl amygdales zeolite filled.									
G								190.5-191.7 Basalt, vesicular, mauve.									
	192.4	195.4	3.0	2.86	95.3			191.7-193.5 Basalt, amygdaloidal, green clay									7
	195.4	198.4	3.0	3.0	100			193.5-200.5 Basalt, dense									
	198.4	201.4	3.0	2.45	81.7			200.5-201.95 Basalt, green, vesicular, amygdaloidal, abundant kaolinised feldspar.									8
	201.4	204.4	3.0	3.0	100			201.95-204.8 Basalt, darker, dense.							75°		
	204.4	207.4	3.0	3.0	100			204.8-207.5 Basalt, vesicular, amygdaloidal									9
	207.4	209.2	1.8	1.8	100			207.5-210.13 Basalt, dense									
	209.2	210.2	1.0	1.0	100			210.13-210.57 Basalt, pink, vesicular.						75°			
	210.2	213.2	3.0	3.0	100			210.57-212.88 Basalt, vesicular, yellow zeolite									
								212.88-213.2 Basalt, red staining, dense, fragmented at the top.						30°			
B	213.2	213.6	0.4	0.4	100			213.2-214.16 Basalt, green, weathered									
Q	213.6	216.4	2.8	2.5	89.3			214.16-214.96 Basalt, dense, calcite vein, high chalcedony content				5°					
								214.96-215.03 Basalt, vein of tan colored zeolite or secondary mineral.									
	216.4	218.15	1.75	1.75	100			215.03-216.89 Basalt, dense, calcite veining, clay fill in fracture.									
C								216.89-217.07 Basalt, green clayey fracture fill									
O								217.07-217.85 Basalt, dense									10
R								217.85-218.15 Basalt, green serpentinised vein, abundant calcite veining									
I	218.15	221.2	3.05	3.05	100			218.15-218.81 Basalt, dense, abundant calcite veining.				5°					
N								218.81-220.34 Basalt, dense.									
G								220.34-220.48 Mudstone, tan.									
								220.48-220.9 Clay, fracture fill.									
	221.2	222.4	1.2	1.2	100			220.9-221.7 Basalt, green mauve, weathered, clayey.									
								221.7-222.4 Basalt, fresh vesicular.									
	222.4	224.8	2.4	2.19	91.3			222.4-222.9 Basalt, dense									
	224.8	228.0	3.2	3.2	100			222.9-224.2 Basalt, vesicular, green, clayey									
	228.0	231.15	3.15	3.15	100			224.2-228.4 Basalt, dense.									11

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526083

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA 3

Sheet 3 of 4

DRILLING						DESCRIPTIVE LOG				INTERSECTION ANGLE LCA							
Core Size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other (FAULT)		Petrology etc.	Box No.
	231.15	234.2	3.05	3.05	100			BASALT									
	234.2	237.35	3.15	3.15	100			234.2 - 236.8 Basalt, vesicular, green clay									12
								236.8 - 237.25 Fracture fill, soft grey chalcedony.									
	237.35	240.35	3.0	3.0	100			237.25 - 239.1 Basalt, dense, 4cm zeolite vugs.									
B								239.1 - 239.6 Basalt, vesicular, amygdaloidal, zeolites									
Q								239.6 - 240.35 Basalt, dense.									
								TERTIARY SEDIMENTS									
	240.35	241.4	1.05	0.24	22.9	240.35	241.4	240.35 - 241.4 Coal, clay and chert pebbles.									
								CAMBRIAN BASALTS.									
	241.4	243.35	1.95	0.2	10.3	241.4	251.6	241.4 - 251.6 Basalt, greeny brown, very weathered, oxide staining		BE 5042							
C	243.35	244.25	0.9	0.14	15.6												
O	244.25	246.4	2.15	1.98	92.0												
R	246.4	247.2	0.8	0.8	100					BE 5043							
I	247.2	248.4	1.2	1.0	83.3												
N	248.4	249.3	0.9	0.6	66.7												
G	249.2	251.4	2.1	0.54	25.7			TUFF									13
	251.4	252.0	0.6	0.6	100	251.6	258.0	251.6 - 252.0 Basaltic lava, dark green, serpentinized.									
	252.0	254.0	2.0	2.0	100			252.0 - 254.0 Tuff, dark green, breccia, very fine grained.						25°		WA3-1 252.9m	
						254.0	254.44	CHERT		BE 5044							
	254.0	257.0	3.0	2.9	96.7			254.0 - 254.44 Chert, green, very fine grained, layering defined by grainsize, serpentinized.									
						254.44	256.0	BRECCIA									
								254.44 - 256.0 Breccia, dark green fragments of chert in black veins		BE 5045							
						256.0	264.6	KOMATIITE									
	257.0	259.8	2.8	2.51	89.6			258.0 - 264.6 Komatiite, dark green, fine grained matrix, chlorite-serpentine rich,		BE 5046							
	259.8	261.45	1.65	1.25	75.8			relic phenocrystic texture, abundant veinlets.									
	261.45	262.9	1.45	1.22	84.1					BE 5047							
	262.9	263.0	0.1	0.1	100											WA3-2 262.93	
								TUFF		BE 5048							
	263.0	267.1	4.1	4.07	99.3	264.6	276.1	264.6 - 276.1 Tuff, dark green, 4-5cm size fragments of basalt, some amygdaloidal, angular, fragmented grandmoos, minor calcite veining				5°					

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Project: JARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole N°: WA 3.

Sheet 4 of 4

DRILLING						DESCRIPTIVE LOG											
Core size	From m	To	Inter-sected m	Recov-ered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample N°	INTERSECTION ANGLE LCA Bedding	Veins		Other		Petrologs etc	Box N°
B	267·1	270·2	3·1	3·1	100												
Q	270·2	273·55	3·35	3·33	99·4					BE 3049						WA3-3 273·96	15
						276·1	284·2	KOMATIITE									
C	273·55	276·35	2·8	2·8	100			276·1 - 284·2 Komatiite, dark green, fine grained matrix, serpentine rich, abundant calcite veining, abundant pyroxenes and chromitite porphyritic, peridotitic. Relict phenocrystic olivine textures.		BE 3050							
O	276·35	278·85	2·5	2·5	100												
R	278·85	279·35	0·5	0·5	100												
I	279·35	279·9	0·6	0·53	88·3					BE 3051							
N	279·9	282·4	2·5	2·5	100											WA3-4 282·3	16
G	282·4	283·1	0·7	0·7	100												
	283·1	283·2	0·1	0·1	100												
	283·2	283·8	0·5	0·5	100												
	283·8	284·2	0·4	0·4	100			E.O.H. 284·2m.									

085

526085

086

526086

BROKEN HILL PROPRIETARY CO. LTD.

DRILL LOG HEADER SHEET

Project: TIN, TASMANIA
Prospect: WARATAH T650
Local Grid co-ords.
AMG co-ords CQ 825096
Drilling Co: OVERLAND DRILLING Co.
Drill type: WARMAN 25D SCOUT
Driller: R. WADDLE
R. LESAY

Hole No: WA.4.
Total depth: 349.15m
Bearing:
Depression VERTICAL
R.L. Collar:
Commenced: 12/2/83
Completed: 28/2/83
Logged by: S.P. KERBER
Sampled by: S.P. KERBER

Hole Size		From	To	Total
Non-core	HQ	0	85.0	85.0
Core	NQ	85.0	200.9	115.9
	BQ	200.9	317.0	116.1
	AQ	317.0	349.15	32.15
Casing				
Casing left.				

Core storage:	SCAMANDER
No. of trays.	25 CORE 1 CHIP
Sample storage	ANALABS - COOKE
Geochem. Lab.	ANALABS
Analytical reports	
Min. and Pet Lab.	M.R.L.
Min and Pet report	

Hole Survey Data: Susceptibility - 2m intervals.

GEOCHEMISTRY - BE 5052 - BE 5054
BE 5098
PETROLOGY - WA4-1 to WA4-2

Summary Log: TERTIARY 0 - 285.6 Basalt
285.6 - 317.5 Gravels

PRECAMBRIAN 317.5 - 349.15 Shale / Dolomite

E.O.H. 349.15

Comments: River bed at 285.6 caused problems. Attempt to ream with NQ abandoned. Reduced to AQ but core loss considerable.

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA 4

Sheet 1 of 5

DRILLING						DESCRIPTIVE LOG											
Core size	From m	To	Intersection m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No	INTERSECTION ANGLE LCA Bedding	Veins	Other	Petrology etc	Box No
N						0	6	CLAY, yellow rounded balls.							
O															
N						6	20	CLAY, pale grey, weathered grey basalt chips.							
C						20	85	BASALT,							
O								20.0-28.0 Basalt, pink tinge, weathered.							
R								28.0-40.0 Basalt, grey, minor zeolites							
I								40.0-42.0 Basalt, grey, light grey clay balls.							
N								42.0-50.0 Basalt, grey							
G								50.0-52.0 Basalt, green-grey weathered chips.							
								52.0-66.0 Basalt, grey							
								66.0-79.0 Basalt, grey abundant zeolites							
								79.0-82.0 Basalt, pink tinged, amygdaloidal							
								82.0-85.0 Basalt, grey.							
						85	166.17	BASALT grey, medium grained							1
	85.0	88.0	3.0	3.0	100			85.0-87.85 Basalt, dense, coarse grained, olivine phenocrysts.							
	88.0	91.0	3.0	3.0	100			87.85-89.59 Basalt, weathered amygdaloidal, zeolite and calcite in vugs.							
								89.59-90.6 Basalt, dense, white feldspar laths.							
	91.0	93.5	2.5	2.5	100			90.6-93.5 Basalt, amygdaloidal, zeolites, minor chalcedony, 2cm vugs.							2
	93.5	96.5	3.0	3.0	100			93.5-96.9 Basalt, dense, elongated amygdales coarse grained							
	96.5	99.5	3.0	3.0	100			96.9-99.5 Basalt, amygdaloidal.				65°			
	99.5	102.0	3.0	3.0	100			99.5-102.8 Basalt, dense, small amygdales with iddingsite / bowlingite							3
	102.0	105.0	3.0	3.0	100			102.8-106.5 Basalt, very dense, coarse grained							
	105.0	106.5	1.5	1.5	100										
	106.5	108.5	2.0	2.0	100			106.5-107.25 Basalt, rounded amygdales, chlorite fillings							
								107.25-108.2 Basalt, amygdaloidal, weathered to black, chalcedony abundant.							4
	108.5	109.4	0.9	0.9	100			108.5-109.7 Basalt, dense, grey-black, calcite veining, secondary minerals common				35° 40°			
	109.4	111.5	2.1	2.1	100			109.7-111.0 Basalt, amygdaloidal, weathered, zeolites, chalcedony.							
	111.5	114.5	3.0	3.0	100			111.0-112.0 Basalt, amygdaloidal, black clay abundant.							
								112.0-113.8 Basalt, dense, few amygdales, coarse grained, chalcedony veining				90°			
	114.5	117.5	3.0	3.0	100			113.8-115.0 Basalt, amygdaloidal, black, weathered,							5
								115.0-115.4 Basalt, vesicular, amygdaloidal, red-brown, weathered							
								115.4-116.0 Basalt, dense, several large vugs.							
								116.0-117.8 Basalt, dense, small lava chlorite amygdales, elongated 90°.							

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA4.

Sheet 2 of 5

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE LEA							
Core Size	From m	To	Inter-sected m	Recov-ered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No	Bedding	Veins		Other (contact, fract.)			Petrology etc.	Box No
	117.5	120.2	2.8	2.74	97.8			117.8-118.0 Basalt, dense, colour change green-grey to grey contact 65°										
								118.0-118.45 Basalt, dense, green-grey.										
								118.45-120.1 Basalt dense, light grey, phenocrysts abundant olivine										
	120.2	123.5	3.3	3.16	95.8			120.1-123.05 Basalt, amygdaloidal, weathered, high clay mineral content.										6
	123.5	124.5	1.0	1.0	100			123.05-124.5 Basalt dense, partly amygdaloidal and vesicular.										
	124.5	126.5	2.0	2.0	100			124.5-126.2 Basalt, amygdaloidal, weathered, dark greeny-grey.										
	126.5	129.5	3.0	2.8	93.3			126.2-127.75 Basalt, dense, phenocrysts abundant, calcite amygdules 40° to core.										
								127.75-128.35 Basalt, green-grey, dense. 55-60° contact. chalcedony veins.										
	129.5	132.5	3.0	2.68	89.3			128.35-130.2 Basalt, vesicular, amygdaloidal.										
								130.2-131.0 Basalt, dense, coarse grained, dark grey calcite veining.				0°						7
	132.5	135.5	3.0	3.0	100			131.0-133.5 Basalt, amygdaloidal, weathered, green-grey										
								133.5-134.5 Basalt, calcite veining dense.										
	135.5	138.5	3.0	2.98	99.3			134.5-142.6 Basalt, dense, very coarse grained.										8
	138.5	140.5	2.0	2.0	100													
	140.5	143.6	3.1	3.1	100			142.6-143.6 Basalt, slightly amygdaloidal.										
	143.6	148.4	1.1	1.1	100			143.6-143.8 Basalt, amygdaloidal, rounded, zeolites and clay minerals.										
								143.8-144.7 Basalt, dense										
								144.7-147.5 Basalt, amygdaloidal, weathered.										9
	148.4	151.5	1.0	1.0	100			147.5-149.0 Basalt, dense										
								149.0-149.4 Sand, brown, medium grained with mudstone, light grey, plant matter.			25°			35°				
								149.4-149.75 Mudstone, sandy.										
								149.75-149.9 Sand, coarse grained, grey-brown.										
								149.9-150.09 Silty Mudstone										
	151.5	151.6	0.1	0.1	100			150.09-150.49 Basalt, amygdaloidal, black, weathered										
	151.6	153.3	1.7	0.13	7.6			150.49-158.6 Basalt, dense, weathered.										10
	153.3	155.3	2.0	1.78	89			158.6-165.9 Basalt, very dense, coarse grained, fine calcite veining				3°						
	155.3	158.4	3.1	3.1	100													
	158.4	161.0	2.6	2.6	100													11
	161.0	164.1	3.1	3.1	100													
	164.1	167.2	3.1	3.1	100			165.9-166.17 Basalt, dense,										
						166.17	172.0	MUDSTONE			2°							
	167.2	170.3	3.1	3.1	100			166.17-172.0 Mudstone, light tan, sericite and plant matter abundant										12

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WR4

Sheet 3 of 5

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE LCA						
Core Size	From m	To	Inter-sected m	Recov-ered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No	Bedding	Veins		Other CONTACT	Other BREAK	Petrology etc	Box No
	170.3	172.4	2.1	2.1	100	172.0	285.6	BASALT, grey, medium grainsize.									
	172.4	174.5	2.1	2.1	100			172.0-172.4 Basalt, vesicular, weathered.									
	174.5	177.5	3.0	2.07	69			172.4-175.5 Basalt, dense.									
N								175.5-175.95 Basalt, small vesicles, green-grey, weathered, altered									13
Q								175.95-177.23 Basalt, vesicular, red-brown.									
	177.5	178.5	1.0	1.0	100			177.23-178.12 Basalt, dense, green-grey.									
								178.12-178.48 Basalt, vesicular, pale green, partly amygdaloidal.									
C	178.5	180.5	2.0	1.0	50			178.48-178.65 Basalt, vesicular, dense.									
O								178.65-178.72 Vein, chalcedony.									
R								178.72-179.57 Basalt, green, dense but vesicular.									
I								179.57-180.1 Basalt, rare flat, pinky-red, highly vesicular.						35°			
N								180.1-180.77 Basalt, dense, greeny grey.									
G	180.5	183.5	3.0	3.0	100			180.77-181.97 Basalt, dense, amygdaloidal, oval shapes, dark green secondary mineral Rare 65°									
								181.97-182.25 Basalt, vesicular, amygdaloidal, no green secondary minerals									
								182.25-182.65 Basalt, vesicular, red staining, black clay abundant.									
	182.5	186.5	3.0	2.83	94.3			182.65-184.27 Basalt, vesicular, partly amygdaloidal.									14
								184.27-185.28 Basalt, dense,							2°		
	186.5	189.5	3.0	3.0	100			185.28-187.23 Basalt, amygdaloidal, round dark green clay filled amygdales. 1mm size.									
								187.23-189.0 Basalt, dense, still amygdaloidal, elongated, angular shapes									
								189.0-189.25 Basalt, vesicular, dark green, clayey.									
	189.5	191.5	2.0	1.7	85			189.25-190.15 Basalt, dense,									
								190.15-191.5 Basalt, weathered, clayey, thick 15cm chalcedony veins.									
	191.5	194.5	3.0	2.6	86.6			191.5-192.5 Basalt, vesicular, minor.									15
								192.5-192.8 Basalt, dense, dark green, vesicles, clayey groundmass.									
								192.8-193.4 Basalt, dark green amygdales, zeolite common.									
								193.4-193.83 Basalt, weathered, 20cm chalcedony vein, very broken up.									
	194.5	197.5	3.0	3.0	100			193.83-195.96 Basalt, dense, light green, small vesicles and amygdales.									
	197.5	200.5	3.0	3.0	100			195.96-200.4 Basalt, dense, grey, phenocrysts et clinic, abundant.									16
	200.5	200.9	0.4	0.35	87.5			200.4-202.5 Basalt, vesicular, weathered.						40°			
	200.9	203.0	2.1	1.3	61.9												
	203.0	205.0	2.0	2.0	100			202.5-211.1 Basalt, dense, dark grey-green, few vesicles.									
B	205.0	207.5	2.5	2.48	99.2												
Q	207.5	210.5	3.0	3.0	100												17
	210.5	213.5	3.0	2.69	89.6			211.1-214.38 Basalt, vesicular, minor zeolite									
	213.5	216.5	3.0	2.98	99.2			214.38-216.83 Basalt, dense, small veins.									

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Project T650 WARATAH

THE BROKEN HILL PROPRIETARY CO LTD

Drillhole No WA4

Sheet 4 of 5

DRILLING						DESCRIPTIVE LOG										
										INTERSECTION ANGLE LCA						
Core Size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No	Bedding	Veins		Other Cont.	Other Fract.	Petrology etc	Box No
	216.5	219.5	3.0	3.0	100			216.83-217.5 Basalt, vesicular and amygdaloidal,									18
	219.5	221.9	2.4	2.37	98.7			219.5-221.5 Basalt, dense,									
	221.9	222.5	0.6	0.53	88.3			221.5-222.85 Basalt, vesicular, green, clayey						45°			
	222.5	224.4	1.9	1.47	77.4			222.85-223.25 Basalt, dense									
B	224.4	227.4	3.0	2.97	99			223.25-224.9 Basalt, vesicular, green, amygdales with calcite common									
Q	227.4	230.5	3.1	3.1	100			224.9-227.5 Basalt, dense									
								227.5-228.4 Basalt, vesicular and amygdaloidal, dark green, clay minerals.									19
	230.5	233.5	3.0	3.0	100			228.4-230.67 Basalt, dense									
								230.67-231.8 Basalt, vesicular, green.									
								231.8-232.75 Basalt, dense calcite veining				0°	45°				
C	233.5	236.6	3.1	3.1	100			232.75-236.19 Basalt, vesicular, amygdaloidal, very clayey									
O	236.6	239.7	3.1	3.1	100			236.19-239.29 Basalt, dense, calcite veining, thick 10 cm green clay veins				2°	25°				20
R	239.7	240.8	1.1	1.1	100												
I	240.8	242.8	2.0	1.65	82.5												
N	242.8	245.9	3.1	3.1	100												
G	245.9	248.1	2.2	2.15	97.7												21
	248.1	251.2	3.1	2.9	93.5			249.28-285.6 Basalt, weathered, mottled grey-green, brecciated, calcite between									
	251.2	252.5	1.3	1.15	88.5			fragments, some fragments angular and vesicular.									
	252.5	255.5	3.0	2.45	81.7			Hyalotcastile?									
	255.5	256.0	0.5	0.2	40												
	256.0	257.5	1.5	1.28	85.3												
	257.5	259.7	2.2	1.15	52.2												22
	259.7	260.2	0.5	0.3	60												
	260.2	263.3	3.1	2.3	74.1												
	263.3	264.5	1.2	0.95	79.1												
	264.5	267.5	3.0	2.9	96.6												
	267.5	268.5	1.0	0.65	65												
	268.5	270.5	1.0	1.85	92.5												23
	270.5	273.5	3.0	2.5	83.3												
	273.5	276.5	3.0	2.3	76.6												
	276.5	279.5	3.0	2.45	81.7												
	279.5	282.5	3.0	2.65	88.3												24
	282.5	285.5	3.0	1.5	50												
	285.5	288.5	3.0	1.0	33.3	285.6	327.5	TERTIARY SEDIMENTS.									
								285.6-288.5 Mudstone, grey,									

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Project T650 WARATAH

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA4.

Sheet 5 of 5

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE						
Core Size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other		Petrology etc	Box No.
B	288·5	291·5	3·0	0·55	18·3			288·5-295·2 Chert pebbles, clayey basalt infill.									
Q	291·5	295·8	4·25	2·65	62·3			295·2-308·9 Mudstone, grey, puggy.									
	295·8	300·5	4·7	0·35	7·4												
C	300·5	306·5	6·0	0·65	10·8												
O	306·5	308·9	2·4	-	-												
R	308·9	310·0	1·1	0·3	27·2			308·9-312·5 Basaltic breccia and clay, rounded quartzite and silcrete pebbles.									
I	310·0	312·5	2·5	-	-												
N	312·5	315·5	3·0	0·1	3·3			312·5-315·5 Chert pebbles, river clay quartz sand.									
G	315·5	317·0	1·5	0·35	23·3			315·5-317·0 Siltstone, light brown, clay.									
	317·0	318·5	1·5	0·05	3·3			317·0-318·5 Pebbles, quartzite, black shale.									
A	318·5	321·5	3·0	0·03	1·0			318·5-321·5 Pebbles, quartzite and black shale, rounded.									
Q	321·5	324·5	3·0	0·05	1·6			321·5-322·5 Pebbles, chalcedony, angular.									
	324·5	327·5	3·0	-	-												
C	327·5	328·6	1·1	0·2	18·1	327·5	349·15	PRECAMBRIAN SEDIMENTS.									
O	328·6	329·9	1·3	0·05	3·85			328·6-331·4 Black shale, steep dip.	Disseminated Py.	DE 3092	80°						25
R	329·9	331·3	1·4	0·25	17·9												
I	331·3	333·55	2·25	1·25	55·6			331·4-333·85 Dolomite, white, fine grained, very fine veinlets.	Disseminated Py.	DE 3093 DE 3093							
N	333·55	336·6	3·05	1·3	42·6			333·85-342·15 Dolomite, white and black, fine grained, cherty, brecciated, carbonate veins.	Sphalerite	DE 3094						WA4-1 Dolomite 333·85 WA4-2 Cherty dolomite 336·6	
G	336·6	339·1	2·5	0·7	28												
	339·1	342·65	3·55	0·05	1·4												
	342·65	348·75	6·10	0·2	3·3												
	348·75	349·15	0·3	0·05	16·7												
								E.O.H. 349·15m.									

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BROKEN HILL PROPRIETARY CO. LTD.

DRILL LOG HEADER SHEET.

Project: TIN, TASMANIA
Prospect: WARATAH T650
Local Grid co-ords.
AMG co-ords CQ 804096
Drilling Co: OVERLAND DRILLING Co.
Drill type: WARMAN 500, WARMAN 250
Driller: W. EVERSDEN R. WADDLE I. LARSEN R. LESAY

Hole No: WA.5.
Total depth: 183.0m
Bearing:
Depression VERTICAL
R.L. Collar:
Commenced: 28/2/83
Completed: 4/3/83
Logged by: S.P. KERBER
Sampled by: S.P. KERBER

Hole Size		From	To	Total
Non-core	HQ	0	84.0	84.0
Core	NQ	84.0	183.0	99.0
Casing				
Casing left.				

Core storage:	SCAMANDER
No. of trays.	15 CORE 1 CHIP
Sample storage	ANALABS - CODEE
Geochem. Lab.	ANALABS
Analytical reports	
Min. and Pet Lab.	M.R.L.
Min and Pet report	

Hole Survey Data: Susceptibility - 2m intervals.

GEOCHEM. - BE 5055 - BE 5086

PETROLOGY - WA5-1 to WA5-3

Summary Log: TERTIARY 0 - 52.0 Basalt

PRE CAMBRIAN 52.0 - 85.5 Sandstone

85.5 - 183.0 Shale

E.O.H. 183.0m

Comments: Precollared by Warman 500 to 84.0m.

Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA. 5

Sheet 1 of 3

DRILLING						DESCRIPTIVE LOG										
										INTERSECTION ANGLE LCA						
Core size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other		Petrology etc.	Box No.
N						0	4	SOIL yellow-brown, weathered basalt chips.									
O																	
N						4	10	CLAY grey with weathered and fresh basalt chips									
-																	
C						10	44	BASALT dark grey abundant sericite and kaolinite, minor clay									
O																	
R						44	52	BASALT light grey, abundant green clay mineral									
E																	
	84·0	85·5	1·5	0·9	60	52	85·5	SANDSTONE		BE 3055							1
										BE 3056							
						85·5	183·0	SHALE dark grey interbeds of		BE 3061							
	85·5	86·8	1·3	1·1	84·6			85·5-87·0 Shale.			15°						
	86·8	87·5	0·7	0·5	71·4			87·0-87·5									
N	87·5	88·8	1·3	0·9	69·2			87·5-88·8 Shale, minor oxidation.									
Q	88·8	91·4	2·6	2·35	90·4					BE 3062							2
	91·4	93·5	2·1	2·1	100			88·8-95·7 Shale pink.			25°						
	93·5	95·5	2·0	1·5	75												
	95·5	96·6	1·1	0·9	81·8			95·7-104·25 Shale, striped red/black, white mottled brown oxidising effect.		BE 3063	25°						
C	96·6	99·4	2·8	2·6	92·8												3
O	99·4	101·0	1·6	1·45	90·6												
R	101·0	102·9	1·9	1·8	94·7					BE 3064							
I	102·9	105·1	2·2	2·1	95·5			104·25-106·0 Shale, becoming blacker		BE 3065							4
N	105·1	105·8	0·7	0·7	100												
G	105·8	106·7	0·9	0·65	73·3			106·0-111·8 Black Shale.									
	106·7	108·1	1·4	1·4	100												
	108·1	109·8	1·7	1·35	79·4												
	109·8	110·8	1·0	0·75	75					BE 3066							5
	110·8	111·3	0·5	0·5	100												
	111·3	112·3	1·0	0·9	90			111·8-113·3 Black shale, microfaulting 73° bedding gently folded, veins faulted into thin strips.				5°					
	112·3	114·5	2·2	2·2	100												
								113·3-113·65 Black shale, quartz veining abundant, bedding altered									
	114·5	115·2	0·7	0·7	100			113·65-120·35 Black shale, less microfaulting and veining.		BE 3067	40°	73°	43°				
	115·2	116·7	1·5	1·5	100												6
	116·7	117·1	0·4	0·25	62·5												
	117·1	117·8	0·7	0·55	78·6												

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526093

Project VARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. WA5

Sheet 2 of 3

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE - CA						
Core Size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other		Petrology etc.	Box No.
	117.8	118.4	0.6	0.45	75			SHALE									
	118.4	119.1	0.7	0.6	85.7												
	119.1	119.9	0.8	0.55	68.8					BE 5068							
	119.9	121.9	2.0	1.7	85			120.35-120.95 Shale, brown oxidised zone, thicker quartz veins 2-3 mm		BE 5069							
	121.9	122.9	1.0	0.7	70			120.95-122.1 Black Shale.		BE 5070							7
	122.9	124.1	1.2	0.9	75			122.1-124.1 Shale, brown weathered oxidised zone.		BE 5071							
	124.1	125.3	1.2	1.2	100			124.1-125.3 Black shale		BE 5072							
N	125.3	126.0	0.7	0.7	100												
Q	126.0	126.7	0.7	0.6	85.7												
	126.7	127.4	0.7	0.6	85.7												
	127.4	128.1	0.7	0.7	100												
	128.1	129.5	1.4	0.8	57.1												8
	129.5	130.9	1.4	1.15	82.1					BE 5073							
	130.9	132.0	1.1	1.1	100												
C	132.0	133.0	1.0	1.0	100												
O	133.0	134.7	1.7	1.7	100												
R	134.7	135.8	1.1	1.0	90.9					BE 5074							9
I	135.8	138.0	2.2	2.1	95.5												
N	138.0	139.9	1.9	1.7	89.5												
G	139.9	141.5	1.6	0.1	6.2					BE 5075							
	141.5	143.9	2.4	2.2	91.6			142.19-143.9 Black shale, higher siliceous content, quartz veining, microfaulting			42°						10
	143.9	146.3	2.4	2.4	100			143.9-146.2 Black shale, bedding becomes shallower.			20°						
	146.2	147.8	1.5	1.4	93.3			146.2-147.8 Black shale, quartz veining very broken up.		BE 5076							
	147.8	149.8	2.0	1.9	95			147.8-149.8 Black shale veining parallel to bedding.		BE 5077	35°						
	149.8	150.5	0.7	0.5	71.4			149.8-150.55 Black shale very broken up, veined, microfaulted			15°						11
	150.5	152.4	1.9	1.7	89.4			150.55-150.65 Sandstone, light grey, siliceous, open fractures.									
								150.65-150.98 Black shale, lighter grey.			25°						
								150.98-151.48 Sandstone, very veined, siliceous, black shale bedded thinly.			85°	75°					
								151.48-151.62 Sandstone, very fine grained, open fractures, quartz-sericite cemented.								UA5-1 151.58	
	152.4	155.5	3.1	3.1	100			151.62-155.5 Black shale, mangled fault zone or fold zone, strongly veined, sheared.		BE 5078		65°					
	155.5	157.5	2.0	2.0	100			155.5-156.04 Siltstone-sandstone breccia (tectonic) fine grained, carbonate and qtz veins.								UA5-2 155.98	
	157.5	160.5	3.0	3.0	100			156.04-160.1 Black shale, strongly veined, brecciated.		BE 5079							12
	160.5	163.5	3.0	3.0	100					BE 5080							
	163.5	166.5	3.0	3.0	100			160.1-165.0 Black shale, bedding again evident, microfaulting, folding		BE 5081	60°						
								165.0-165.32 Black shale, mixed up zone, no bedding.									13

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Project UARATAH T.650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole No. UA5.

Sheet 3 of 3

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE LCA						
Core Size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No	Bedding	Veins		Other		Petrology etc	Box No
	166.5	168.8	2.3	2.2	95.7			165.23-167.89 Black shale, slight folding, ½-1 cm siliceous beds.			32°						
	168.8	171.1	2.3	2.3	100			169.89-170.09 Black shale, veined, crumbled section		BE 3988							
N								170.09-170.34 Black shale, bedding steepens.			85°						
Q								170.34-170.74 Black shale, shallower bedding			32°						
	171.1	172.8	1.7	1.4	82.4			170.74-172.84 Black shale, bedding steepens, crumpled zone, slate.			85°						
	172.8	174.7	1.9	1.9	100			172.84-174.5 Black shale, dense colouring, veins cut across bedding.	fg on veins, fracture faces.	BE 3989	60°	60°					14
	174.7	175.9	1.2	1.1	91.7			174.5-174.8 Black shale, steeper bedding			88°						
	175.9	177.9	2.0	1.7	85			174.8-177.57 Siltstone, sandy and shaley layer, very fine grained, later carbonate veining		BE 3990	76°					UA5.3 177.28	
	177.9	180.5	2.6	2.5	96.1			177.57-180.8 Black shale, lighter grey		BE 3991	75°						15
C	180.5	181.2	0.7	0.55	78.5			180.8-181.66 Black shale, strongly bedded, bedding wiggly, crumpled looking		BE 3992	85°						
O	181.2	183.0	1.8	1.7	94.4			181.66-183.0 Black shale, less crumpled.			62°						
R																	
I								E.O.H. 183.0m									
N																	
G																	

080

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BROKEN HILL PROPRIETARY CO. LTD.

DRILL LOG HEADER SHEET.

Project: TIN, TASMANIA
Prospect: WARATAH T650
Local Grid co-ords.
AMG co-ords CQ815106
Drilling Co: OVERLAND DRILLING Co.
Drill type: WARMAN 500, WARMAN 250
Driller: R. WADDLE W.EVERSDEN
R. LESAY I. LARSEN

Hole No: WA. 6.
Total depth: 261.5m
Bearing:
Depression VERTICAL
R.L. Collar:
Commenced: 4/3/83
Completed: 10/3/83
Logged by: S.P. KERBER
Sampled by: S.P. KERBER

Hole Size		From	To	Total
Non-core	HQ	0	140.0	140.0
Core	NQ	140.0	201.0	61.0
	BQ	201.0	261.5	60.5
Casing				
Casing left.				

Core storage:	SCAMANDER
No. of trays.	15 CORE 2 CHIP
Sample storage	ANALABS - CODEE
Geochem. Lab.	ANALABS
Analytical reports	
Min. and Pet. Lab.	M.R.L.
Min and Pet report	

Hole Survey Data: Susceptibility - 2m intervals. GEOCHEM. - BE 508Y - BE 509Y

Summary Log: TERTIARY 0 - 219.25 Basalt

PRECAMBRIAN 219.25 - 261.5 Shale

E.O.H 261.5m

Comments: Precollared by Warman 500 to 140.0m.

Project WARATAH T650.

THE BROKEN HILL PROPRIETARY CO. LTD

Drillhole No. WA.6.

Sheet 1 of 3

DRILLING						DESCRIPTIVE LOG												
										INTERSECTION ANGLE LCA							
Core size	From m	To	Inter-sected m	Recov-ered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No.	Bedding	Veins		Other contact, fract.		Petrology etc.	Box No.
						0	4	Not received.									
						4	14	CLAY grey, grey basalt chips, scalitic abundant.									
N																	
O						14	140	BASALT very dark, yellow scalitic abundant.									
N								48-50 Basalt, abundant grey-brown chips of shale, weathered basalt.									
-								50-52 Basalt grey, abundant scalitic									
C								52-56 Basalt grey									
O								56-76 Basalt very abundant scalitic, kaolinite									
R								76-82 Basalt, pink, weathered									
I								82-104 Basalt, abundant scalitic									
N								104-108 Basalt, red brown, weathered.									
G								108-110 Basalt grey, fresh									
								110-118 Basalt, red-brown, weathered, minor scalitic									
								118-120 Basalt, grey, fresh									
								120-124 Basalt, red-brown weathered chips.									
								124-128 Basalt, grey, scalitic									
								128-140 Basalt, red brown, weathered									
						140.0	219.25	BASALT grey, medium grained.									
	140.0	143.0	3.0	2.85	95			140.0-140.5 Basalt, amygdaloidal. ¼cm in size, round shapes									1
	143.0	146.0	3.0	3.00	100			140.5-150.26 Basalt, dense, high secondary mineral content. Iddingsite Montmorillonite.									
	146.0	149.0	3.0	3.00	100												2
N	149.0	150.5	1.5	1.35	90			150.26-151.5 Basalt, amygdaloidal.									
Q	150.5	153.5	3.0	3.0	100			150.5-151.28 Basalt, irregular amygdales, calcite vein, clayey weathered				60°					
								151.28-151.47 Basalt, vein									
C								151.47-151.94 Basalt, weathered, 2cm wide calcite vein.				5°	10°				
O	153.5	156.5	3.0	2.95	98.3			151.94-162.98 Basalt, dense thin calcite veins.				80°	45°		80°		3
R	156.5	159.5	3.0	3.0	100												
I	159.5	162.5	3.0	3.0	100												
N	162.5	164.3	1.8	1.8	100			162.98-164.3 Basalt, 1½cm chalcedony vein runs vertically down the core.									4
G	164.3	167.4	3.1	3.1	100			164.3-164.55 Basalt, 10cm red clay then green-grey weathered, partly amygdaloidal.									
								164.55-165.4 Basalt, dense, laths of kaolinite, oval shaped amygdales.									
								165.4-167.4 Basalt, grey-green, very weathered.									
	167.4	169.5	2.1	1.9	90.5			167.4-169.15 Basalt, dense, irregularly shaped scalitic amygdales									
	169.5	172.6	3.1	2.9	93.5			169.15-170.9 Basalt, weathered.									5

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Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

Drillhole N° WA 6

Sheet 2 of 3

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE LCA						
Core Size	From m	To	Intersected m	Recovered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample N°	Bedding	Veins		Other		Petrology etc	Box N°
								BASALT									
								170.4-171.5 Basalt, dense, coarse grained, thin calcite veins, iddingsite replacement.				42°			60°		
								171.5-178.2 Basalt, weathered, clayey amygdaloidal and vesicular.									
	172.6	175.0	2.4	2.4	100			172.8-173.75 Basalt, large 1cm ovoid calcite amygdales.									
								173.75-175.40 Basalt, smaller round amygdales.									
N								175.78-176.81 Basalt, amygdaloidal, clayey, weathered.									
Q								176.81-177.78 Basalt, dense, coarse grained, calcite veining.				25°					
	175.0	177.5	2.5	2.4	96			177.78-178.45 Basalt, amygdaloidal, weathered, clayey.									6
	177.5	180.5	3.0	3.0	100			178.45-177.85 Basalt, red oxide staining.									
								177.75-178.16 Basalt, mauve, weathered.									
								178.16-178.96 Basalt, grey, dense, coarse grained.									
	180.5	181.5	1.0	0.8	80			178.96-181.8 Basalt, red-brown, vesicular, weathered.									
	181.5	183.1	1.6	0.8	50			181.3-181.83 Basalt, grey, amygdaloidal.									
C	183.1	183.5	0.4	0.4	100			181.83-184.1 Basalt, amygdaloidal, weathered.									
O	183.5	184.1	0.6	0.3	100												7
R	184.1	186.5	2.4	2.3	95.8			184.1-185.8 Basalt, dense, calcite vein.				52°					
I								185.8-186.2 Basalt, red weathered.									
N	186.5	189.3	2.8	2.5	89.3			186.2-187.5 Basalt, grey, vesicular, black clay amygdales with a 52° flow.									
G	189.3	191.5	2.2	2.2	100			187.5-192.8 Basalt, dense.									8
	191.5	192.8	1.3	1.3	100												
	192.8	195.5	2.7	2.55	94.4			192.8-194.1 Basalt, red clayey weathered, calcite vein.				85°					
	195.5	198.1	2.6	2.6	100			194.1-199.1 Basalt, weathered, dense, calcite vein, becomes fresher and very dense				35°					9
	198.1	201.0	2.9	2.9	100			199.1-201.1 Basalt, amygdaloidal, weathered, clayey.									
	201.0	204.5	3.5	2.45	70			201.1-204.8 Basalt, dense, calcite veining.									
	204.5	207.5	3.0	1.0	33.3			204.8-207.2 Basalt, dense, fracture fills, abundant calcite / chalcedony veining.									10
	207.5	208.8	1.3	1.1	84.6			fragments of vesicular and dense basalt.									
	208.8	209.8	1.0	0.45	45			207.2-209.25 Basalt, dense, feathery calcite veins.				60°			50°		
	209.8	212.9	3.1	3.1	100												
	212.9	216.0	3.1	3.1	100												
	216.0	219.1	3.1	2.9	93.5												11
	219.1	219.3	0.2	0.2	100	219.25	261.5	SHALE									
	219.3	220.5	1.2	1.2	100			219.25-220.41 Clay, pink pebbly, fragments of shale and clay 1-2mm in size.		BE 5087							
	220.5	222.5	2.0	2.0	100			220.41-221.6 Shale, grey		BE 5088	50°						
	222.5	223.2	0.7	0.7	100												
	223.2	224.9	1.7	1.55	91.2												

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Project WARATAH T650

THE BROKEN HILL PROPRIETARY CO. LTD.

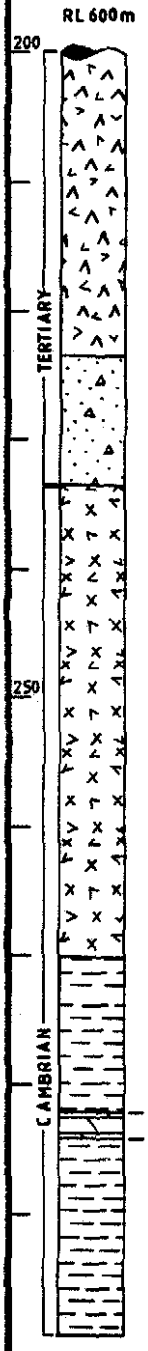
Drillhole No. WA6

Sheet 3 of 3

DRILLING								DESCRIPTIVE LOG			INTERSECTION ANGLE LCA						
Core size	From m	To	Inter-sected m	Recov-ered	% Recovery	From m	To	LITHOLOGY	MINERALISATION	Sample No	Bedding	Veins		Other	Exact.	Petrology etc.	Box No
	224.9	226.1	1.2	0.6	50					DE 5078							12
	226.1	227.0	0.9	0.6	66.7												
	227.0	228.1	1.1	0.75	68.2												
	228.1	230.3	2.2	0.45	20.5												
	230.3	231.6	1.3	1.1	84.6												
	231.6	232.6	1.0	1.0	100			231.6-232.3 Black shale,		DE 5080	38°						
	232.6	233.6	1.0	1.0	100			232.3-232.6 Black shale, brown clayey zone.									
								232.6-233.3 Black shale.									
								233.3-233.6 Black shale, brown clayey zone.									
	233.6	235.7	2.1	1.6	76.2			233.6-235.7 Black shale,			40°						
	235.7	237.4	1.7	1.5	88.2			235.7-237.0 Black shale, bedding steepens.		DE 5081	48°						13
								237.0-237.4 Black shale, clay zone									
	237.4	239.7	2.3	2.3	100			237.0-239.0 Black shale,			30°				70°		
	239.7	240.2	0.5	0.4	80			239.0-239.7 Black shale, clay zone.		DE 5082							
	240.2	241.4	1.2	1.05	87.5												
	241.4	244.1	2.7	2.7	100			241.7-242.4 Black shale, sandy, sericite, microfaulting.		DE 5083	50°						
	244.1	246.0	1.9	1.75	92.1			242.4-244.0 Black shale, microfaulting, bedding more massive.			38°						14
	246.0	247.4	1.4	1.4	100			244.0-252.44 Black shale, steeper bedding.		DE 5084	80°						
	247.4	248.3	0.9	0.9	100												
	248.3	249.3	1.0	0.8	80												
	249.3	251.5	2.2	2.2	100												
	251.5	251.9	0.4	0.4	100												
	251.9	252.6	0.7	0.5	71.4			252.44-252.6 Black shale, very fractured and faulted		DE 5085							
	252.6	254.0	1.4	1.25	89.3			252.6-253.0 Black shale, very black, bedding			30°				80°		
	254.0	254.7	0.7	0.7	100			253.0-158.67 Black shale,									15
	254.7	256.6	1.9	1.80	94.7												
	256.6	258.5	1.9	1.75	92.1					DE 5086							
	258.5	259.6	1.1	1.1	100			258.67-259.5 Black shale, siliceous sandstone beds and carbonate veining.									
	259.6	261.5	1.9	1.9	100			259.5-261.5 Black shale, mixed up zone, siliceous sandstone		DE 5087							
								E.O.H. 261.5m									

APPENDIX 2

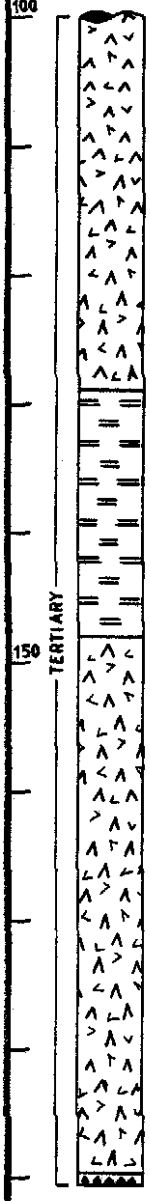
Graphic Logs



Sample No	Interval		Cu	Pb	Zn	Ag	As	Sn	W
BE 5001	223·53	226·1	60	25	375	-	-	5	-
BE 5002	226·1	227·53	15	5	190	0·5	-	-	-
BE 5003	227·53	230·6	20	10	180	0·5	-	3	-
BE 5004	230·6	233·5	30	5	145	-	-	-	-
BE 5005	233·5	238·6	65	10	245	0·5	-	7	-
BE 5006	238·6	243·4	145	15	200	-	-	3	-
BE 5007	243·4	249·7	100	5	215	-	-	-	-
BE 5008	249·7	255·5	115	20	195	-	-	7	-
BE 5009	255·5	261·5	140	20	175	0·5	-	4	-
BE 5010	261·5	267·5	165	55	185	0·5	-	3	-
BE 5011	267·5	270·2	160	40	205	-	-	4	10
BE 5012	270·2	273·1	375	45	135	0·5	-	5	-
BE 5013	273·1	273·5	365	55	225	-	-	8	-
BE 5014	273·5	276·7	80	30	205	-	-	8	10
BE 5015	276·7	278·4	60	25	80	-	-	3	-
BE 5016	278·4	278·7	195	10	75	0·5	-	3	-
BE 5017	278·7	280·4	140	60	160	-	-	-	15
BE 5018	280·4	280·8	115	10	40	-	-	3	-
BE 5019	280·8	281·03	265	15	65	1·0	-	-	-
BE 5020	281·03	281·3	160	20	90	-	-	4	-
BE 5021	281·3	281·47	110	20	25	-	-	3	-
BE 5022	281·47	282·4	90	15	105	-	-	3	-
BE 5023	282·4	284·2	125	20	250	-	-	3	-
BE 5024	284·2	286·8	160	5	105	-	-	5	-
BE 5025	286·8	289·9	100	20	75	0·5	-	7	-
BE 5026	289·9	290·5	95	5	240	0·5	-	-	-
BE 5027	290·5	291·3	35	15	115	0·5	50	6	-
BE 5028	291·3	292·8	115	10	190	0·5	-	-	-
BE 5029	292·8	299·9	45	25	125	-	-	-	-

Centre HOBART	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No. T650
Date 10-5-83	DRILL HOLE WA1 (ANOMALY E)	Drawing No.
	GRAPHIC LOG AND GEOCHEMISTRY RESULTS	

RL 631 m



Basalt, grey, medium grainsize, approximately seven flows, average thickness 4·65 metres (below 96 metres only)

Mudstone, tan with abundant plant matter, interbedded silts, fine sands

Basalt, grey, minor interflow sediments, approximately 10 flows average thickness 3·8 metres

Chert Breccia, coarse, angular fragments of chert

TD 190·77metres

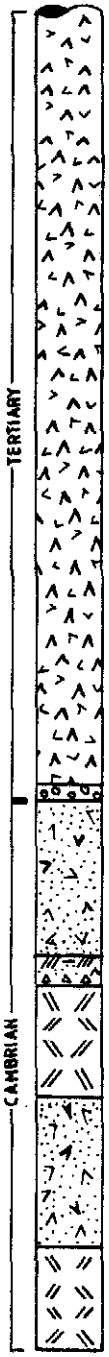
Vertical scale 1:500

Sample No	Interval		Cu	Pb	Zn	Ag	As	Sn	W
BE 5030	163	164	5	5	60	-	-	-	-
BE 5031	190	190·77	25	5	60	-	-	-	-

5 cm

Centre HOBART	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No. TA50
Date 9-5-83	DRILL HOLE WA 2 (ANOMALY C) GRAPHIC LOG AND GEOCHEMICAL RESULTS	Drawing No.

RL 640m



Basalt, grey, medium grainsize, minor interflow sediments, approximately 20 flows below 141metres. Average thickness 4·8 metres.

Sediments, coal, clay, chert pebbles

Basalt, greeny brown, weathered, oxidised.

Sediments, dark green cherty, fine grained, brecciated base.

Komatiite, dark green, fine grained matrix, chlorite-serpentinite rich.

Tuff, dark green, 4-5cm basalt fragments.

Komatiite, dark green, fine grained matrix.

Sample No	Interval		Cu	Pb	Zn	Ag	As	Sn	W
BE 5042	241·4	246·4	205	-	295	-	-	3	-
BE 5043	246·4	252·0	110	5	145	-	-	-	-
BE 5044	252·0	254·4	115	5	130	-	-	3	-
BE 5045	254·4	256·0	85	-	85	-	-	-	-
BE 5046	256·0	261·5	65	-	70	-	-	-	-
BE 5047	261·5	264·6	65	5	70	-	-	-	-
BE 5048	264·6	270·2	110	10	105	-	-	-	-
BE 5049	270·2	276·1	120	5	95	-	50	-	-
BE 5050	276·1	279·4	55	-	70	-	-	-	-
BE 5051	279·4	284·2	60	-	65	-	-	-	-

TD 284·2metres

Vertical scale 1:500

5 cm

Centre HOBART

Date 9-5-83

THE BROKEN HILL PROPRIETARY CO. LTD.

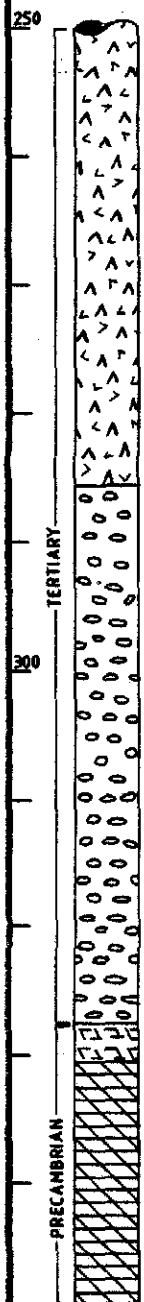
DRILL HOLE WA3 (ANOMALY D)

GRAPHIC LOG AND GEOCHEMISTRY RESULTS

Project No. T650

Drawing No.

RL 620m



Basalt, grey, medium grainsize, approximately 31 flows below 85·0 metres. Average thickness 4·9 metres. Six metre mudstone sequence at 166·2 metres. Plant matter abundant. Basalt brecciated and highly weathered below 249·3 metres

Gravels, coarse grained granite derived river sand, well rounded chert and quartz pebbles

Black shales, dolomites, steeply dipping, disseminated pyrite.

Dolomite, white, fine grained, very fine veinlets, cherty, brecciated, disseminated pyrite and very minor sphalerite.

TD 349·15 metres

Vertical scale 1:500

5 cm

Sample No	Interval		Cu	Pb	Zn	Ag	As	Sn	W
BE 5052	327·5	331·5	25	210	2450	-	-	-	-
BE 5098	331·4	331·5	10	95	190	-	-	-	-
BE 5053	331·5	333·9	20	205	940	-	-	4	-
BE 5054	333·9	349·15	20	115	465	-	-	3	-

Centre HOBART

Date 9-5-83

THE BROKEN HILL PROPRIETARY CO. LTD.

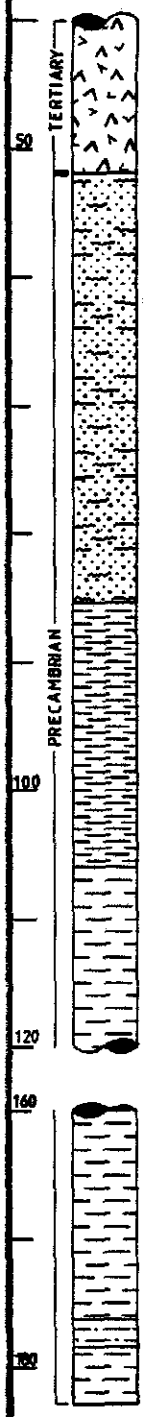
DRILL HOLE WA 4 (ANOMALY G)

GRAPHIC LOG AND GEOCHEMICAL RESULTS

Project No. 7650

Drawing No.

RL 620m



Basalt

Quartzite , white

Shale , red , black , grey , white, mottled colouring , laminated, altered.

Shale , black , microfaulting and folding evident. Siliceous sandstone interbeds with open fractures, carbonate and quartz veins.

Shale, black, steep bedding, microfaulting and folding.

Siltstone, sandy and shaly layers, later carbonate veining.

TD 183 metres

Vertical scale: 1 500

Sample No	Interval		Cu	Pb	Zn	Ag	As	Sn	W
BE 5055	52·0	58·0	30	-	50	-	-	-	42
BE 5056	58·0	64·0	15	5	15	-	-	-	-
BE 5057	64·0	70·0	15	10	20	-	-	-	-
BE 5058	70·0	76·0	10	5	15	-	-	-	-
BE 5059	76·0	80·0	10	15	20	-	-	-	-
BE 5060	80·0	85·5	10	-	15	-	-	-	-
BE 5061	85·5	90·1	40	5	40	-	-	-	-
BE 5062	90·1	95·5	40	5	35	0·5	-	-	-
BE 5063	95·5	101·0	30	15	30	-	-	-	-
BE 5064	101·0	104·25	40	30	20	0·5	-	-	-
BE 5065	104·25	109·8	60	20	35	-	-	-	-
BE 5066	109·8	114·5	35	5	75	-	-	-	35
BE 5067	114·5	119·1	25	5	60	-	-	-	-
BE 5068	119·1	120·35	30	-	55	-	-	3	-
BE 5069	120·35	120·95	30	10	105	-	-	-	-
BE 5070	120·95	123·1	10	15	40	-	-	-	-
BE 5071	123·1	124·1	25	5	60	-	-	-	-
BE 5072	124·1	129·5	30	5	55	-	-	-	-
BE 5073	129·5	134·7	40	5	90	0·5	-	3	-
BE 5074	134·7	139·9	40	-	75	-	-	-	-
BE 5075	139·9	147·2	30	-	45	-	-	-	-
BE 5076	147·2	147·9	35	5	115	0·5	-	-	-
BE 5077	147·9	151·62	35	-	55	-	-	-	-
BE 5078	151·62	157·5	50	5	60	-	-	-	-
BE 5079	157·5	160·5	35	10	80	0·5	-	-	-
BE 5080	160·5	164·1	30	-	35	-	50	-	16
BE 5081	164·1	169·89	35	5	40	-	-	-	-
BE 5082	169·89	172·84	45	70	525	0·5	50	-	-
BE 5083	172·84	176·8	40	45	250	-	-	-	-
BE 5084	176·8	178·57	40	15	40	-	-	-	-
BE 5085	178·57	180·8	35	30	95	0·5	-	-	-
BE 5086	180·8	183·0	40	55	910	-	50	-	-

5 cm

Centre: HOBART

Date: 9-5-83

THE BROKEN HILL PROPRIETARY CO. LTD.

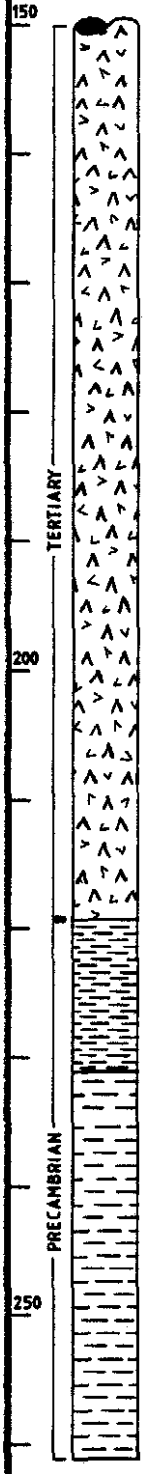
DRILL HOLE WA5 (ANOMALY H)

GRAPHIC LOG AND GEOCHEMISTRY RESULTS

Project No.: T650

Drawing No.:

R.L. 640 m



Basalt, grey, medium grainsize, approximately 15 flows below 140·0 metres, average thickness 5·3 metres.

Shale, grey, laminated

Shale, black, microfaulting and folding. Siliceous sandstone interbeds with minor carbonate veining.

Sample No.	Interval		Cu	Pb	Zn	Ag	As	Sn	W
BE 5087	219·25	220·41	25	25	40	-	50	-	14
BE 5088	220·41	225·15	30	25	30	-	-	-	-
BE 5089	225·15	231·60	25	25	30	-	-	-	-
BE 5090	231·60	235·70	40	30	20	-	-	-	-
BE 5091	235·70	239·70	30	25	55	-	-	-	-
BE 5092	239·70	241·70	30	30	135	-	-	-	-
BE 5093	241·70	246·0	25	30	75	-	-	3	-
BE 5094	246·0	252·44	30	25	55	-	-	-	-
BE 5095	252·44	256·60	30	15	50	-	-	-	-
BE 5096	256·60	259·50	45	30	75	-	-	-	-
BE 5097	259·50	261·00	40	25	85	-	-	-	-

TD 261·0 metres

Vertical scale 1:500

5 cm

Centre HOBART

Date 6/5/83

THE BROKEN HILL PROPRIETARY CO. LTD.

DRILL HOLE WA 6 (ANOMALY F)

GRAPHIC LOG AND GEOCHEMISTRY RESULTS

Project No. T650

Drawing No.

APPENDIX 3

Basalt Flow Tables

TERTIARY BASALT FLOW ESTIMATES - DRILL HOLE WA. 2.

Data begins below 90.5m due to inability to recognise individual flows in percussion chips.

Interval (m)		Flow thickness (m)		
90.5	91.2	0.7	1	
91.36	100.13	8.77	12	- Analysis 830774 - T
100.13	102.25	2.12	5	
102.25	103.2	0.95	2	
103.2	107.4	4.2	6	
107.4	117.5	10.1	14	Total number of flows - 20
117.5	123.5	6.0	9	Average flow thickness - 6.5m.
123.5	124.8	1.3	4	
124.8	130.7	5.9	8	
130.7	136.5	5.8	7	
136.5	146.89	10.39	15	- Analysis 830773 - Q
146.89	153.4	6.51	10	
153.4	162.65	9.25	13	
162.65	173.4	10.75	16	
173.4	180.9	7.5	11	Analysis 830772 - Q
180.9	182.1	1.2	3	
185.8	190.5	4.7		
190.5	203.33	12.83	2	
203.33	210.2	6.87	9	
210.2	223.52	13.32	1	Analysis 830771 - R.

Tertiary Basalt Flow Estimates - Drill Hole WA.2.

Interval (m)		Flow thickness (m)	
103.9	107.26	3.36	5
107.26	109.7	2.44	
109.7	110.0	0.3	
110.0	110.4	0.4	
110.4	114.21	3.81	3 – Analysis 830767 – Q (113m)
114.21	120.5	6.29	1
120.5	124.0	3.5	4
124.45	129.0	4.25	2
129.0	129.31	0.31	
148.3	150.04	1.74	7
150.07	152.6	2.53	6
153.64	163.08	9.44	2 Analysis 830768 – Q (154m)
164.85	165.0	0.15	
165.2	167.85	2.65	5
167.85	171.0	3.15	4
171.0	176.91	5.91	3
176.91	177.43	0.52	
177.43	188.25	10.82	1 – Analysis 830769 – Q (186m)
188.25	188.53	0.28	
188.63	189.03	0.4	
189.18	189.51	0.33	
189.51	189.86	0.35	

Total number of flows – 22 below 96 metres.

Average flow thickness – 2.86m

TERTIARY BASALT FLOW ESTIMATES. - DRILL HOLE WA 3.

Interval. (m)		Flow thickness. (m)	
141.6	151.49	9.5	
151.49	155.82	4.33	7
155.82	159.58	3.76	9
159.58	167.3	7.72	3 - Analysis 830758-T (163.5m)
167.3	170.66	3.36	12
170.66	173.12	2.46	17
173.12	178.23	5.11	6
178.23	183.57	5.34	5
183.57	186.25	2.68	16
186.25	190.5	4.25	8
190.5	200.5	10	2 - Analysis 830759-R (196m)
200.5	206.8	6.3	4
206.8	210.13	3.33	13
210.13	212.28	3.07	14
213.2	216.89	3.69	10
216.89	220.34	3.45	11
220.9	222.9	2.0	18
222.9	236.4	13.5	1
236.4	239.1	2.7	15
239.1	240.35	1.25	19

Total number of flows below 141.6 metres - 20.

Average flow thickness - 4.79 m.

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TERTIARY BASALT FLOW ESTIMATES - DRILL HOLE WA 4.

INTERVAL		Flow thickness.	
87.85	90.6	2.75	10
90.6	96.9	6.3	4
96.9	107.25	10.35	3 — Analysis 830757 - Q (105m)
107.25	109.7	2.45	12
109.7	113.8	4.1	8
113.8	120.1	6.3	5
120.1	124.5	4.4	6
124.5	128.35	3.85	9
128.35	131.0	2.65	11
131.0	143.6	12.6	2 — Analysis 830755 - Q (140m)
143.6	144.7	1.1	13
144.7	149.0	4.3	7
150.09	166.17	16.08	1
172.0	175.5	3.5	9
175.5	178.12	2.62	12
178.12	179.57	1.45	16 1.45
179.57	181.87	2.3	13
181.87	185.38	3.51	8
185.38	189.0	3.62	7
189.0	190.15	1.15	17
190.15	193.4	3.25	10
193.4	200.4	7.0	3 — Analysis 830756 - Q (197.5m)
200.4	211.1	10.7	2
211.1	216.83	5.73	4
216.83	221.5	4.67	5
221.5	223.25	1.75	15
223.25	227.5	4.25	6
227.5	230.67	3.17	10
230.67	232.75	2.08	14
232.75	248.78	16.03	1
248.78	249.28	0.50	18

Total number of flows below 87.85m — 31

Average flow thickness - 4.98m

(154.51)

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TERTIARY BASALT FLOW ESTIMATES - DRILL HOLE WA. 6.

INTERVAL		FLOW THICKNESS.	
140·0	150·26	10.26	3 – Analysis 830762 (150m) – Q
150.26	151.47	~~1·68~~ 1·21	13
151.47	164·3	12·83	2
164·3	165.4	1·1	14
165.4	169.15	3·75	8
169.15	171.5	2·35	9
171·5	173·0	1·5	11
173.0	173·78	0·78	15
173·78	178·16	4·38	6
178·16	180·5	2·34	10
180·5	181·83	1·33	12
181·83	185·8	3.97	7
185.8	192·8	7·0	4
192·8	199·1	6·3	5 – Analysis 830763 – T (197.5m)
199·1	219·25	20·15	1

Total number of flows – 15
below 140.0m.

Average flow thickness – 5·3m

APPENDIX 4

Sample Results

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ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX | REPORT NUMBER | REPORT DATE | CLIENT ORDER No.

DRILL HOLE WA.1.

TUBE No.	SAMPLE No.	ROCK TYPE	Cu	Pb	Zn	Ag	AG	Sn	W	Approx. DEPTH. m.
1		SILT								223.5 - 226.1
2		SILCRETE	15	5	190	0.5	X	X	X	226.1 - 227.53
3		"	20	10	190	0.5	X	3	X	227.53 - 230.6
4		"	30	5	145	X	X	X	X	230.6 - 233.5
5		ANDESITE	55	10	245	0.5	X	7	X	233.5 - 238.6
6		"	145	15	200	X	X	3	X	238.6 - 243.4
7		"	100	5	215	X	X	X	X	243.4 - 249.7
8		"	115	20	150	X	X	7	X	249.7 - 255.5
9		"	140	20	175	0.5	X	4	X	255.5 - 261.5
10		"	165	55	185	0.5	X	3	X	261.5 - 267.5
11		"	160	40	205	X	X	4	10	267.5 - 270.2
12		SHALE	375	45	135	0.5	X	5	X	270.2
13		ANDESITE	365	55	225	X	X	8	X	273.1
14		SHALE	80	30	205	X	X	3	10	273.5
15		"	60	25	80	X	X	3	X	276.7
16		VOLCANIC BRECCIA	195	10	75	0.5	X	3	X	278.4
17		SHALE	100	60	160	X	X	X	15	278.7
18		"	115	10	40	X	X	3	X	280.4
19			265	15	65	1.0	X	X	X	280.8
20		CHERT								281.03
21										281.47
22		CHERT								282.4
23		DOLOMITIC CHERT								284.2
24		CHERT								286.8
25		SHALE								287.9 - 290.5
1			35	5	240	0.5	X		15	
2			45	15	115	0.5	50		X	
3										

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ANALYTICAL DATA

SAMPLE PREFIX | REPORT NUMBER | REPORT DATE | CLIENT ORDER No. | PAGE

DRILLHOLE WA.2.

			Pb	Zn	Ag	As	Sn	W	
5	BE 5030	5	5	60	X	X	X	X	WA.2
6	BE 5031	25	5	60	X	X	X	X	
7									

DRILLHOLE WA.3.

11	5042	205	X	295	X	X	3	X	WA.3	TUFF.
12	5043	110	5	145	X	X	X	X	Carbon TUFF Sedo.	
13	5044	115	5	130	X	X	3	X		
14	5045	95	X	85	X	X	X	X	Breccia	
15	5046	65	X	70	X	X	X	X	KOMAT	
16	5047	65	5	70	X	X	X	X		
17	5048	110	10	105	X	X	X	X	TUFF	
18	5049	120	5	95	X	50	X	X		
19	5050	55	X	70	X	X	X	X	KOMAT	
20	5051	60	X	65	X	X	X	X		

DRILLHOLE WA.4.

21	5052	25	210	2450	X	X	X	X	WA.4	
22	5053	20	205	940	X	X	4	X		
23	5054	20	115	465	X	X	3	X		
24										
25										

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

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SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
DRILL HOLE WA.5.	14.4 08 1902	7.4.83	006619	1 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As	Sn	W	
1	5055		30	X	50	X	X	X	42	
2	5056		15	5	15	X	X	X	X	
3	5057	Sst.	15	10	20	X	X	X	X	
4	5058		10	5	15	X	X	X	X	
5	5059		10	15	20	X	X	X	X	
6	5060		10	X	15	X	X	X	X	
7	5061		40	5	40	X	X	X	X	
8	5062	Shl	40	5	35	0.5	X	X	X	
9	5063	lam	30	15	30	X	X	X	X	
10	5064		40	30	20	0.5	X	X	X	
11	5065		60	20	35	X	X	X	X	
12	5066		35	5	75	X	X	X	35	
13	5067		25	5	60	X	X	X	X	
14	5068		30	X	55	X	X	3	X	
15	5069		30	10	105	X	X	X	X	
16	5070		10	15	40	X	X	X	X	
17	5071		25	5	60	X	X	X	X	
18	5072	Blch	30	5	55	X	X	X	X	
19	5073	Shale.	40	5	90	0.5	X	3	X	
20	5074		40	X	75	X	X	X	X	
21	5075		30	X	45	X	X	X	X	
22	5076		35	5	115	0.5	X	X	X	
23	5077		35	X	55	X	X	X	X	
24	5078		50	5	60	X	X	X	X	
25	5079		35	10	80	0.5	X	X	X	
1	5080		30	X	35	X	50	X	16	
2	5081		35	5	40	X	X	X	X	
3	5082		45	70	525	0.5	50	X	X	
4	5083		40	45	250	X	X	X	X	
5	5084		40	15	40	X	X	X	X	
6	5085		35	30	95	0.5	X	X	X	
7	5086		40	55	910	X	50	X	X	WA.5.

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
BE DRILL HOLE WA.6.	14.4 08 1902	7.4.83	006619	2 OF

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As	Sn	W	
8	5087		25	25	40	X	50	X	14	WA.6.
9	5088		30	25	30	X	X	X	X	
10	5089		25	25	30	X	X	X	X	
11	5090		40	30	20	X	X	X	X	
12	5091		30	25	55	X	X	X	X	
13	5092		30	30	135	X	X	X	X	
14	5093		25	30	75	X	X	3	X	
15	5094		30	25	55	X	X	X	X	
16	5095		30	15	50	X	X	X	X	
17	5096		45	30	75	X	X	X	X	
18	5097		40	25	85	X	X	X	X	
19										
20										
21										
22										
23										
24										
25										

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526118

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1813	15.2.83	6613	1 OF

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Sn	W			
8										
9	T65/302		11	8	124	210	X			
10	T65/304		44	4	220	9	X			
11										
12			Cu	Pb	Zn					
13										
14										
6	T65-301P	47.85	530	X						
7	T65-303P	107.77	4.42%*	X						
8	T65-305P	38.32	65	X						
9										
10		wt (g)	Sn	W						
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
* Denotes method		404								
23	DETECTION	.01	3	10						
24	DIGESTION									
25	METHOD		402	401						

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526119

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ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
T65	14.4 08 1879	11.4.83	006618	1 OF 1

TUBE No.	SAMPLE No.	Wt(gm)	Sn	W						
1	306P	77.06	X	0.140*	—				WA.4.	
2	307P	51.36	7	X	4				Granite	
3	308P	49.74	15	X	7				"	
4	309P	35.87	15	X	5				Basalt	
5	310P	21.39	300	X	64	Granite grid auger sampling.			"	
6	311P	35.55	7	X	2				"	
7	312P	70.53	160	X	113				Granite	
8	313P	48.55	6	X	3				Basalt	
9	314P	60.56	2100	10	1272				Granite	
10										
11										
12										
13										
14										
15	NOTE: * Analysed by Method 403									
16	Detection 0.005									
17										
18										
19										
20										
21										
22										
23	DETECTION		3	10						
24	DIGESTION									
25	METHOD		402	401						

Results in ppm unless otherwise specified
T = element present: but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

AUTHORISED OFFICER

ORIGINAL RAW DATA.

TO BE WT & PASTED AS ON ROUGH SHEETS. (neatly).

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526121

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1815	15.2.83	6615	2 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As	Sn	W	
1	BE 5026		95	5	240	0.5	X	X	X	
2	BE 5027		35	15	115	0.5	50	6	X	
3	BE 5028		115	10	190	0.5	X	3	X	
4	BE 5029		45	25	125	X	X	8	X	
5	BE 5030		5	5	60	X	X	X	X	
6	BE 5031		25	5	60	X	X	X	X	
7										
8										
9										
10										
11										
12										
13										
14										
15										
17										
18										
19										
20										
21										
22										
23										
24										
25										

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526122

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1815	15.2.83	6615	3 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As	Sn	W	
1	STD FS4		315	105	780	0.5	X			
2	RPT BE 5001		60	25	365	X	X			
3	RPT BE 5020		160	15	90	X	X			
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION		5	5	5	0.5	50	3	10	
24	DIGESTION		101	101	101	101	102			
25	METHOD		101	101	101	101	102	402	401	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526123

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1815	15.2.83	6615	1 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As	Sn	W	
1	BE 5001		60	25	375	X	X	5	X	
2	BE 5002		15	5	190	0.5	X	X	X	
3	BE 5003		20	10	180	0.5	X	3	X	
4	BE 5004		30	5	145	X	X	X	X	
5	BE 5005		65	10	245	0.5	X	7	X	
6	BE 5006		145	15	200	X	X	3	X	
7	BE 5007		100	5	215	X	X	X	X	
8	BE 5008		115	20	195	X	X	7	X	
9	BE 5009		140	20	175	0.5	X	4	X	
10	BE 5010		165	55	185	0.5	X	3	X	
11	BE 5011		160	40	205	X	X	4	10	
12	BE 5012		375	45	135	0.5	X	5	X	
13	BE 5013		365	55	225	X	X	8	X	
14	BE 5014		80	30	205	X	X	8	10	
15	BE 5015		60	25	80	X	X	3	X	
C	BE 5016		195	10	75	0.5	X	3	X	
17	BE 5017		140	60	160	X	X	X	15	
18	BE 5018		115	10	40	X	X	3	X	
19	BE 5019		265	15	65	1.0	X	X	X	
20	BE 5020		160	20	90	X	X	4	X	
21	BE 5021		110	20	25	X	X	3	X	
22	BE 5022		90	15	105	X	X	3	X	
23	BE 5023		125	20	250	X	X	3	X	
24	BE 5024		160	5	105	X	X	5	X	
25	BE 5025		100	20	75	0.5	X	7	X	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1815	10.2.83	6615	3 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As			
1	STD FS4		315	105	780	0.5	X			
2	RPT BE 5001		60	25	365	X	X			
3	RPT BE 5020		160	15	90	X	X			
4										
5										
6										
7										
8										
9										
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11										
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14										
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16										
17										
18										
19										
20										
21										
22										
23	DETECTION		5	5	5	0.5	50			
24	DIGESTION		101	101	101	101	102			
25	METHOD		101	101	101	101	102			

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1993B	11.5.83	906621	3 OF 3

TUBE No.	SAMPLE No.	Sn	W							
1	BE 5098	X	24							
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION	3	10							
24	DIGESTION									
25	METHOD	402	401							

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526126

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1993	5.5.93	006621	1 OF 2

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As			
1	BE5098		10	95	190	X	X			
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
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24										
25										

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526127

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
T65	14.4 08 1879	11.4.83	006618	1 OF 1

TUBE No.	SAMPLE No.	Wt(gr)	Sn	W						
1	306P	77.06	X	0.140*						
2	307P	51.36	T	X						
3	308P	49.74	15	X						
4	309P	35.87	15	X						
5	310P	21.39	300	X						
6	311P	35.55	T	X						
7	312P	70.53	160	X						
8	313P	48.55	6	X						
9	314P	60.56	2100	10						
10										
11										
12										
13										
14										
15	NOTE: * Analysed by Method 403									
16	Detection 0.005									
17										
18										
19										
20										
21										
22										
23	DETECTION		3	10						
24	DIGESTION									
25	METHOD		402	401						

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526128

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ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
BE	14.4 08 1902	7.4.83	006619	1 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As	Sn	W	
1	5055		30	X	50	X	X	X	42	
2	5056		15	5	15	X	X	X	X	
3	5057		15	10	20	X	X	X	X	
4	5058		10	5	15	X	X	X	X	
5	5059		10	15	20	X	X	X	X	
6	5060		10	X	15	X	X	X	X	
7	5061		40	5	40	X	X	X	X	
8	5062		40	5	35	0.5	X	X	X	
9	5063		30	15	30	X	X	X	X	
10	5064		40	30	20	0.5	X	X	X	
11	5065		60	20	35	X	X	X	X	
12	5066		35	5	75	X	X	X	35	
13	5067		25	5	60	X	X	X	X	
14	5068		30	X	55	X	X	3	X	
15	5069		30	10	105	X	X	X	X	
16	5070		10	15	40	X	X	X	X	
17	5071		25	5	60	X	X	X	X	
18	5072		30	5	55	X	X	X	X	
19	5073		40	5	90	0.5	X	3	X	
20	5074		40	X	75	X	X	X	X	
21	5075		30	X	45	X	X	X	X	
22	5076		35	5	115	0.5	X	X	X	
23	5077		35	X	55	X	X	X	X	
24	5078		50	5	60	X	X	X	X	
25	5079		35	10	80	0.5	X	X	X	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526129

ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
BE	14.4 08 1902	7.4.83	006619	2 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As	Sn	W	
1	5080		30	X	35	X	50	X	16	
2	5081		35	5	40	X	X	X	X	
3	5082		45	70	525	0.5	50	X	X	
4	5083		40	45	250	X	X	X	X	
5	5084		40	15	40	X	X	X	X	
6	5085		35	30	95	0.5	X	X	X	
7	5086		40	55	910	X	50	X	X	
8	5087		25	25	40	X	50	X	14	
9	5088		30	25	30	X	X	X	X	
10	5089		25	25	30	X	X	X	X	
11	5090		40	30	20	X	X	X	X	
12	5091		30	25	55	X	X	X	X	
13	5092		30	30	135	X	X	X	X	
14	5093		25	30	75	X	X	3	X	
15	5094		30	25	55	X	X	X	X	
16	5095		30	15	50	X	X	X	X	
17	5096		45	30	75	X	X	X	X	
18	5097		40	25	85	X	X	X	X	
19										
20										
21										
22										
23										
24										
25										

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
BE	14.4 08 1902	7.4.83	006619	3 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As	Sn	W	
1	STD FS4		300	105	750	1.0	X			
2	RPT BE 5055		25	X	40	X	X			
3	RPT BE 5074		40	5	75	X	X			
4	STD FS4		305	95	755	1.0	X			
5	RPT BE 5095		30	20	50	X	X			
6										
7										
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16										
17										
18										
19										
20										
21										
22										
23	DETECTION		5	5	5	0.5	50	3	10	
24	DIGESTION		101	101	101	101				
25	METHOD		101	101	101	101	102	402	401	

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1815	10.2.83	6615	1 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As			
1	BE 5001		60	25	375	X	X			
2	BE 5002		15	5	190	0.5	X			
3	BE 5003		20	10	180	0.5	X			
4	BE 5004		30	5	145	X	X			
5	BE 5005		65	10	245	0.5	X			
6	BE 5006		145	15	200	X	X			
	BE 5007		100	5	215	X	X			
8	BE 5008		115	20	195	X	X			
9	BE 5009		140	20	175	0.5	X			
10	BE 5010		165	55	185	0.5	X			
11	BE 5011		160	40	205	X	X			
12	BE 5012		375	45	135	0.5	X			
13	BE 5013		365	55	225	X	X			
14	BE 5014		80	30	205	X	X			
15	BE 5015		60	25	80	X	X			
16	BE 5016		195	10	75	0.5	X			
17	BE 5017		140	60	160	X	X			
18	BE 5018		115	10	40	X	X			
19	BE 5019		265	15	65	1.0	X			
20	BE 5020		160	20	90	X	X			
21	BE 5021		110	20	25	X	X			
22	BE 5022		90	15	105	X	X			
23	BE 5023		125	20	250	X	X			
24	BE 5024		160	5	105	X	X			
25	BE 5025		100	20	75	0.5	X			

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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526132

ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	14.4 08 1815	10.2.83	6615	2 OF 3

TUBE No.	SAMPLE No.		Cu	Pb	Zn	Ag	As			
1	BE 5026		95	5	240	0.5	X			
2	BE 5027		35	15	115	0.5	50			
3	BE 5028		115	10	190	0.5	X			
4	BE 5029		45	25	125	X	X			
5	BE 5030		5	5	60	X	X			
6	BE 5031		25	5	60	X	X			
8										
9										
10										
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Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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APPENDIX 5

Meredith East

MEREDITH EAST - AUGER SAMPLE LOG.

526134

GRID REF.	INTERVAL	SAMPLE DESCRIPTION.	SAMPLE No.	RESULTS. Sn ppm.	Sn corrected for weight. ie [illegible]	W
500N/150E	0.0 – 0.3m	Soil, mottled yellow-grey, clayey particles, small angular quartz/feldspar grains in grey clay.				
	0.3 – 0.6m	Soil, yellow-white, white clayey lumps after feldspar, minor black micas – Weathered Granite	765/ 307P.	7	4	–
500N/200E	0.0 – 0.15m	Clay, grey-brown, sandy, small quartz grains ½ mm size.				
	0.15 – 0.3m	Clay, yellow, sandy with medium sized quartz and feldspar grains.				
	0.3 – 0.6m	Clay, yellow-brown, sandy. medium to coarse grained feldspars and quartz.				
	0.6 – 0.9m	Clay, dark yellow-brown, sandy with coarse quartz grains.				
	0.9 – 1.3m	Sand, yellow-white clayey, medium to coarse grained - friable.				
	1.3 – 1.7m	Clay, yellow sandy, very few quartz grains,				
	1.7 – 2.0m	Clay, dark yellow-brown, minor 2mm quartz grains, some coarse micas.				

GRID REF.	INTERVAL	SAMPLE DESCRIPTION	SAMPLE No.	Sn ppm	Sn x Wt%	W.
	2.0 - 2.7m	Clay, yellow, weathered Granite	T65/308P	15	7	—
500N/250E	0 - 0.5m	Sand, grey brown fine clayey.				
	0.5 - 1.0m	Clay, brown, red basalt chips.				
	1.0 - 1.5m	Clay, light brown, weathered basalt lumps.				
	1.5 - 2.0m	Clay, orange - brown, fragments of orange - brown weathered basalt.				
	2.0 - 2.6m	Clay, brown. larger fragments of basalt.	T65/309P	15	5	—
500N/300E	0 - 0.5m	Clay, mottled orange - greeny brown, weathered basalt.				
	0.5 - 1.0m	Clay, yellow - orange. brown.				
	1.0 - 1.5m	Clay, green - brown				
	1.5 - 2.0m	Clay, light brown.	T65/310P	300	64	—
300N/165E	0 - 0.5m	Soil, red-brown, lumps of yellow - white clay				
	0.5 - 0.9m	Soil, yellow-brown, basalt pebbles. ~~and lumps~~.	T65/311P	7	2	—
100S/000E	0 - 0.3m	Sand, grey. quartz.	T65/312P	160	113	—
100S/50E	0 - 0.5m	Clay, mottled yellow - brown, basalt pebbles.				
	0.5 - 1.0m	Clay, mottled orange - yellow, minor basalt.				
	1.0 - 1.5m	Clay, mottled brown - yellow, green clay chips.				
	1.5 - 1.8m	Clay, yellow - brown with basalt chips.	T65/313P	6	3	—

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GRID REF	INTERVAL	SAMPLE DESCRIPTION	SAMPLE No.	Sn ppm	Sn x Wt%	W.
100N/150W	0·0 - 0·3m	Clay, grey-brown, rounded quartz grains, 1cm pebbles of black fine grained sandstone. Fresh angular quartz grains.	TC5/3141	2100	1272	10

Centre HOBART

Date 14-4-83

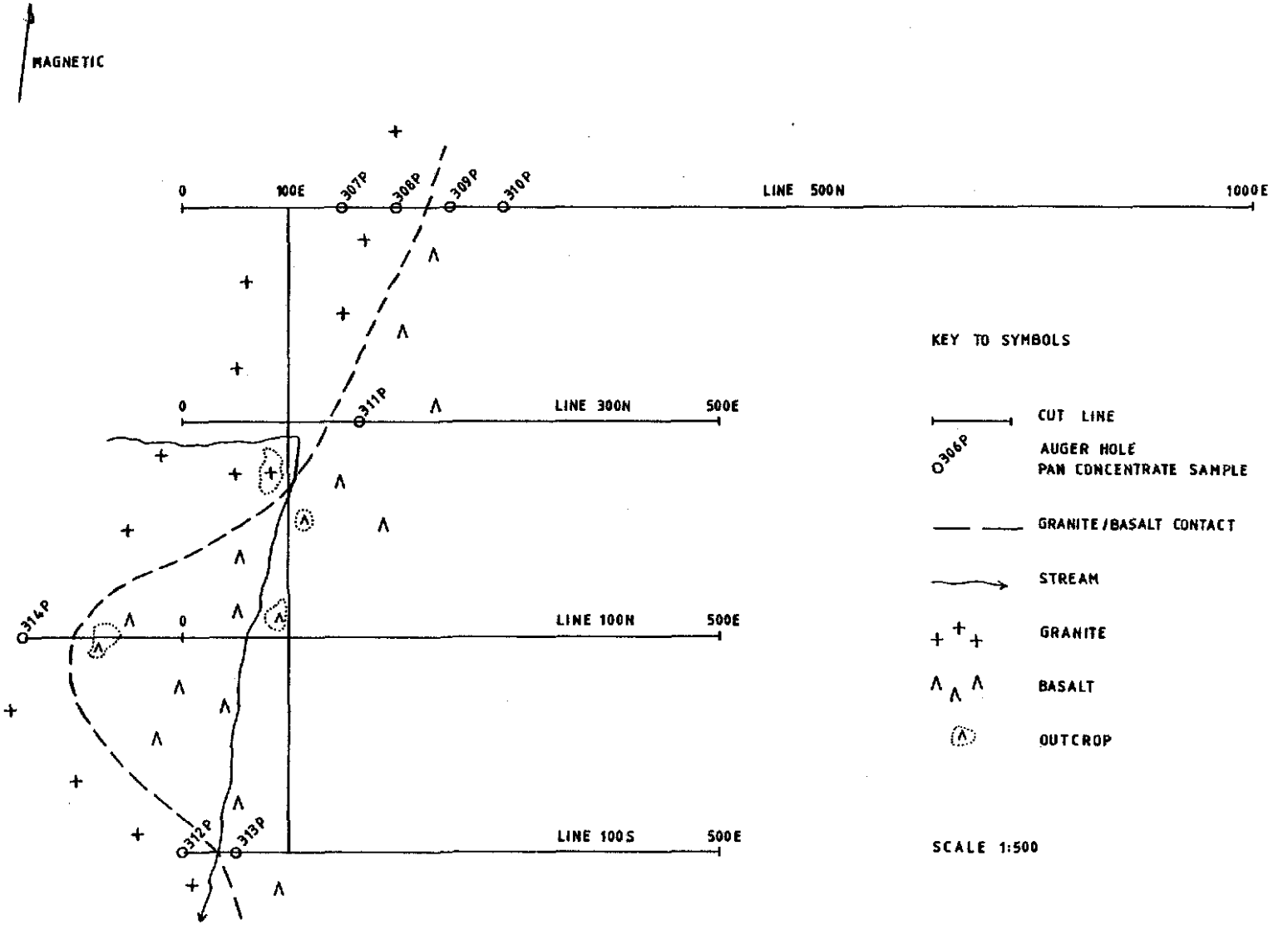
THE BROKEN HILL PROPRIETARY CO. LTD.

EL 33/79 WARATAH, TASMANIA

GRANITE GRID AND AUGER SAMPLING

Project No. 1650

Drawing No.



APPENDIX 6

Geophysics

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526139

Central Mineralogical Services

39 Beulah Road
Norwood, S.A. 5067
Telephone 42 5659

Miss S. Kerber
Exploration Office
The Broken Hill Proprietary Co. Ltd.
c/o Post Office
WARATAH / TAS. 7321

1st March, 1983

REPORT CMS 83/2/14

YOUR REFERENCE:	Letter dated 15.2.1983 File No. PM9 Job No. T 650
DATE RECEIVED:	17th February, 1983
SAMPLE NOS.:	MRL 14.423 - MRL 14.434
SUBMITTED BY:	D.J. Gilbert
WORK REQUESTED:	Petrology

H.W. Fander, M. Sc.

Copy & Invoice to:
Mr. D.J. Gilbert
Senior Petrologist
The Broken Hill Proprietary Co. Ltd.
P.O. Box 264
CLAYTON / VIC. 3168

REPORT CMS 83/2/14

Samples MRL 14.423 - MRL 14.434

Twelve samples were received for thin-section preparation and petrological description; carbonate stain tests were carried out on the offcuts where necessary, and thin-sections were examined under both stereobinocular and petrological microscopes. Each sample is briefly described in the accompanying table.

Summary

Samples T64/900-902 are weakly metamorphosed clastic sediments; it is inferred that they contained significant amounts of feldspars, and hence have been classified as meta-arkoses. They are generally pyritic and carbonaceous, suggesting deposition under reducing conditions. T64/903 is an incipiently metamorphosed orthoquartzite thought to be related to the other three rocks. No Sn minerals were detected, but unless the levels were relatively high, detection would be pure chance; crushing of the rocks and concentration would be necessary to track down any Sn sources. Logically, the quartz veins could be potential sources, but they seem to be virtually monomineralic.

Samples WA 1-1 to 5 and 1-8 are igneous rocks ranging from olivine basalt to andesites and microdiorites; the andesites and microdiorites are certainly genetically related, but the olivine basalt is believed to be unrelated or only distantly so; it is a typical Tertiary basalt.

WA 1-6 and 7 are chemical sediments composed of pelletal chert and fine dolomite (with minor clastic components) in varying proportions.

H.W. Fander, M. Sc.

CENTRAL MINERALOGICAL SERVICES

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
WA 1-1 MRL 14.427	Porphyritic Olivine Basalt. Large phenocrysts of altered olivine, smaller labradorite and augite phenocrysts; groundmass of labradorite, pyroxene, dark glass, magnetite.	Subparallel alignment of phenocrysts and groundmass crystals.	Isolated small chlorite-filled amygdales. Some olivine preserved.	Featureless, typical Tertiary basalt. Altered olivine is now bowlingite-iddingsite (soft, black).
WA 1-2 14.428	Magnetite-Andesite. Scattered andesine phenocrysts, groundmass of small andesine laths, interstitial magnetite and devitrified glass.	Random fabric, no flow-features. Crystals in three distinct size ranges.	Small chlorite pseudomorphs after ferromagnesian minerals. Quartz and carbonate veins.	White phenocrysts are andesine. Fabric suggests intrusive rock, rapidly cooled (quench textures).
WA 1-3 14.429	Ferruginised Andesite. Clusters of andesine phenocrysts in fine groundmass of andesine, magnetite, glass; bands of fine hematite impregnating rock.	Random fabric with a few phenocrysts. Quench textures in groundmass.	Scattered chloritised ferromagnesian minerals, including ?olivine.	Hematitic banding is post-magmatic and may be a type of "Liesegang Ring" effect. Rock correlates with WA 1-2.
WA 1-4 14.430	Microdiorite. Mostly stubby andesine crystals with interstitial magnetite, chloritised ferromagnesian minerals, secondary carbonate; a few andesine phenocrysts.	Uniform, random fabric. Medium-grained, weakly porphyritic.	Conspicuous carbonate-hematite-chlorite veins. Relict augite.	Probably a coarser-grained equivalent of WA 1-2/1-3. Minor intrusive; deuterically altered.
WA 1-5 14.431	Volcanic Breccia. Angular fragments of semi-opaque andesitic or basaltic glass, with extensive calcite-chalcedony veining.	Typical tectonic breccia fabric. Rock is very fine-grained.	Fine pyrite and black organic (?bituminous) material in veins.	Veins are a very low-temperature hydrothermal assemblage; no tourmaline detected. Possible flow-top.
WA 1-6 14.432	Dolomitic Chert. Small pellets or grains of fine argillaceous chert embedded in shapeless masses of microcrystalline dolomite.	Distinctly bedded, well-sorted; chert bodies are textureless.	Small grains and veinlets of ankerite. A few ?fossil fragments.	A mixed chemical sediment; chert grains were soft (i.e. unlithified) when deposited together with dolomite mud.
WA 1-7 14.433	Cherty Dolostone. Mainly microcrystalline dolomite with embedded irregular chert bodies, detrital quartz; wisps of carbonaceous matter.	Well-defined, fine bedding, with quartzose layers. Fine-grained.	Crosscutting ankeritic veins. Traces of fine pyrite.	Clearly related to WA 1-6, but dolomite > chert. Carbonate may not be pure dolomite, perhaps ferro-dolomite.
WA 1-8 (T.S. 45271) 14.434	Microdiorite. Prismatic andesine crystals, with smaller interstitial laths and magnetite crystals, secondary chlorite and carbonate.	Random, uniform fabric, non-porphyritic. Medium-grained.	Veinlets of calcite and fine micaceous hematite.	Believed to be genetically related to WA 1-4 and WA 1-2/3. Relationship to WA 1-1 not apparent.

526142

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT
Petrology Section

Melbourne Research Laboratories
245-273 Wellington Road
Clayton, Victoria 3168
P.O. Box 264, Clayton
Telephone 560-7066

9 JUN 1983

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Memo to: MISS S. KERBER, CAMBERWELL OFFICE

Date 6th June, 1983
Our Ref: WHR:DK
Your Ref:
File: M663
Date:

Subject: E1/15: PETROGRAPHY OF CORE SAMPLES FROM THE WARATAH AREA TASMANIA (MRL 14563-72)

Thin sections of samples from the Waratah area Tasmania were prepared and microscopically examined in transmitted light. As many of the rocks were either fine grained or highly altered, X-Ray diffraction analysis was used to aid in identifying the component minerals.

RESULTS

WA 3-1 to 3-4 (MRL 14563-66)

Two general rock types are present in this suite of samples. The rocks MRL 14563 and 14565 were similar in that both were chloritised fragmental mafic volcanics consisting of originally glassy, vesicular, and occasionally phenocrystic pyroclasts in a "cement" dominated by plagioclase with some augite, K-feldspar and prehnite (in MRL 14563 only).. MRL 14563 is rather well sorted and layered while MRL 14565 is much coarser in grain-size and appears unsorted. MRL 14563 was called a chloritised mafic layered tuff while MRL 14565 is a chloritised mafic coarse lapilli tuff.

MRL 14564 and 14566 were virtually identical and both chloritised and serpentinised porphyritic ultramafic extrusive or high level intrusive rocks. Both consist of completely serpentinised olivine euhedra surrounded by a fine-grained matrix of chlorite and fine sugary ? diopsidic pyroxene. The matrix has a texture resembling microscopic spinifex. Translucent spinels (chromite or picotite) are the dominant opaques. Both specimens were named Chloritised and serpentinised porphyritic peridotitic komatiite.

MRL 14563 and 14565 do not seem to be closely related to MRL 14564 and 14566 as their mineralogy and textures are quite different. However, the possibility that they are co-magmatic has not been disproved by this study.

MRL 14567, 14568 (WA 4-1, 4-2)

Both these rocks are fine-grained dolomites which contain variable quantities of authigenic and cherty quartz and minor opaques. No macroscopic circular features were found MRL 14568. Microscopic elliptical to roughly circular features $< 300\ \mu m$ in diameter, outlined in v. fine-grained opaques occur in MRL14567 but are of uncertain origin. No tourmaline was detected in these two samples.

MRL 14569-71 (WA 5-1 to 5-3)

This suite of rocks comprised a mature quartz-sericite cemented fine lithic sandstone (MRL 14569), a siltstone with shaley and sandy layers

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and a tectonic siltstone-sandstone breccia. Rare detrital tourmaline along with zircon is present in all three samples. Appendix I contains more detailed descriptions of these samples.

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MRL NO. FIELD NO. PS/PTS/TS	ROCK TYPE STAIN HAND SPECIMEN	MINERALOGY	FABRIC & TEXTURE	COMMENTS
MRL 14563 WA 3-1 TS	Chloritised mafic layered tuff Stain: K-feldspar (+) Alizarin (+) Green chloritic v. fine rock. Layered, fragmental.	(D) Chlorite; (SD) Augite, Plagioclase; (M) Prehnite, K-feldspar; (T) Opaques, Calcite, Epidote, ? Siderite.	Alternating v. fine grained chloritic layers containing fine grains of k feldspar, plagioclase and augite (<100µm) + occasional larger volcanic fragments and coarser grained layers dominated by chloritic volcanic fragments of various types. Fragments include altered glassy shards fresh clinopyroxene grains and fragments containing fine feldspar laths. The grain size in each layer is uniform and degree of sorting is high. Early veins of plagioclase + K-feldspar + opaques + minor prehnite cut by later zoned veins of ?siderite then chlorite with calcite core.	grain size in fine layers <100µm, in coarser layers 200-400µm occasionally to 1.5 cm.
MRL 14564 WA 3-2 TS	Chloritised and serpentinised porphyritic peridotitic komatiite Stain: Alizarin (-) Dark green chlorite-serpentine rich rock with relic phenocrystic texture. Fine grained matrix.	(D) Chlorite; (Ab) Serpentine, Pyroxene (? diopside); (T) Spinel, Opaques, Clay, Chrysotile.	Highly serpentinised rock with completely altered relict olivine euhedra surrounded by matrix of fine sugary pyroxene and acicular or skeletal completely altered (chloritised) spinifex olivine. Scattered euhedral/subhedral red-brown translucent-spinel (picotite or chrome spinel) + other opaques. Clay veinlets and crossfibre crysotile veinlets.	
MRL 14565 WA 3-3 TS	Chloritised mafic coarse lapilli tuff Stain: Alizarin (+) K-feldspar (+) Dark green coarse fragmental chloritic rock containing angular fragments up to 1.5cm in diameter. White veinlets.	(Ab) Plagioclase, Chlorite, Calcite, Glass; (M) Augite, K-feldspar; (T) Opaques.	Fragmental rock containing large (to 1.5cm) volcanic fragments of at least two types 1) glassy, slightly vesicular and phenocrystic and 2) highly vesicular, phenocrysts. Matrix is mainly plagioclase. Carbonate (calcite) veins and patches. Volcanic fragments partly chloritised.	Similar to but coarser grained than MRL 14563. Probably mafic rather than ultra mafic like MRL 14564 and 66.

MRL NO. FIELD NO. PS/PTS/TS	ROCK TYPE STAIN HAND SPECIMEN	MINERALOGY	FABRIC & TEXTURE	COMMENTS
MRL 14566 WA 3-4 TS	Serpentinised and chloritised porphyritic peridotitic komatiite. Stain: K feldspar (-) Alizarin (-) H/S: Dark green chlorite-serpentine rich rock. Relict phenocrystic olivine textures.	(D) Chlorite; (Ab) Serpentine, Clinopyroxene (? diopside); (M) Olivine; (T) Kaolinite?, Spinel (? chromite) or picotite), Chrysotile.	Very similar to MRL 14564 in mineralogy and texture. Shows some devitrified radiating microspherulites showing extinction cross under crossed polars.	Virtually identical to MRL 14564.
MRL 14567 WA 4-1 TS	Fine grained dolomite. Stain: Alizarin (-) H/S: V. fine white carbonate rock peppered with fine opaques. Fine veinlets cut section.	(D) Dolomite; (M) Opaques including carbonaceous material; (T) Quartz.	Dominantly submicrocrystalline and finely granular dolomite < to 100µm in size. Sparry dolomite veins. Anthigenic hexagonal quartz crystals and cherty quartz patches. Fine opaques in clots and patches, often interstitial to dolomite grains, and in small (<300µm) circular or elliptical structures of uncertain origin. Cherty microveins cut the dolomite.	
MRL 14568 WA 4-2 TS	Cherty fine-grained dolomite. Stain: Alizarin (-) H/S: Very fine grained brecciated rock comprising v fine grained white opaque-peppered fragments in dark grey matrix. Carbonate veins.	(D) Dolomite; (SD) Quartz; (M) Opaques including carbonaceous material; (T) ?Muscovite, ?Sphalerite, ?Chlorite, ?Illite/sericite.	Comprises areas of very fine dolomite (<10 µm - 50µm) and cherty quartz partly replaced by dolomite. Veins of medium grained quartz. Later sparry dolomite veins. Opaques scattered throughout as fine dusting and/or clots and small veinlets. Rare yellow ?sphalerite.	
MRL 14569 WA 5-1 TS	Mature quartz-sericite cemented fine lithic sandstone (sublitharenite) Stain: Alizarin (-) H/S: V. fine grained dark sandstone with uniform featureless appearance. Some open fractures	(D) Quartz; (SD) Illite/sericite, Interlayered mica/smectite; (M) Chlorite, Opaques; (T) ?Plagioclase, ?Rutile, Tourmaline, Zircon.	Even well-sorted fine-grained rock (100-300 µm) comprising ~ 70% subangular to angular quartz grains and ~ 30% sericitic/clayey/cherty rock fragments. Cement is both fine quartz + sericite/clay and quartz overgrowth. Scattered rounded detrital zircon and tourmaline. Flakes of muscovite. Thin quartz vein.	Rare detrital tourmaline.

MRL NO. FIELD NO. PS/PTS/TS	ROCK TYPE STAIN HAND SPECIMEN	MINERALOGY	FABRIC & TEXTURE	COMMENTS
MRL 14570 WA 5-2 TS	Siltstone-Sandstone breccia (tectonic) Stain: Alizarin (-) V. fine grained grey sandstone and schist fragments in dark grey micaceous material. Carbonate and quartz veins.	(D) Quartz; (SD) Sericite/clay; (M) Opaques, Carbonate, (? siderite); (T) Muscovite, Zircon, ?Tourmaline.	Brecciated texture. Angular to lensoidal v. fine sandstone and schistose siltstone fragments in a contorted and deformed dark brown (?carbonaceous-stained) foliated matrix. This matrix appears to have been plastically injected between the more competant sandstone and schist fragments. Thin irregular quartz veins later carbonate (? siderite) veins.	V. rare grey-gree (detrital) tourma line in sandstone
MRL 14571 WA 5-3 TS	Siltstone with sandy and shaley shaley layers. Stain: Alizarin (-) H/S: V. fine-grained, light grey silty rock with well laminated darker bands. Local micro faulting and associated folding. Later carbonate veining.	(D) Quartz; (SD) Sericite; (M) Opaques, Carbonate; (T) Muscovite, Tourmaline, Zircon.	Siltstone with occasional shaley layers and well laminated opaque rich v. fine sandstone bands. Contacts between layers vary from sharp to gradational. Micaceous plates aligned, comprise foliation parallel to layering. Local folding and micro-faulting. Veinlets and stringers of greyish pleochroic carbonate (? siderite). Detrital tourmaline (rare).	Rare detrital tourmaline.

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APPENDIX 2 - Summary of X-ray Diffraction Analysis

SAMPLE	DOMINANT[1]	ACCESSORY	TRACE
MRL 14563	Chlorite, (augite), (plagioclase), (prehnite).	K-feldspar.	
MRL 14564	Chlorite, (serpentine), (pyroxene - ?diopside).		
MRL 14565	Plagioclase, (chlorite), (calcite).	Augite.	
MRL 14566	Chlorite, (serpentine), (pyroxene - ?diopside).		Olivine, ?kaolinite.
MRL 14567	Dolomite.	Quartz.	Plagioclase, Chlorite, ?Pyrite, ?Sphalerite, Smectite.
MRL 14569	Quartz, (Illite/sericite), (Interlayered mica-smectite).	Chlorite.	Pyrite, ?plagioclase, ?rutile.
MRL 14570	Quartz, (Illite/Sericite).	Siderite, Illite-smectite (interlayered), Chlorite.	Pyrite, ?K-feldspar.
MRL 14571	Quartz, (Illite/sericite), (Siderite).	Chlorite.	Pyrite.

(1) Subdominant or Abundant minerals in brackets ( )