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EXPLORATION LICENCE 33/79

WARATAH, TASMANIA

REPORT FOR THE AREA RELINQUISHED 14TH JANUARY, 1985

**OPEN FILE**

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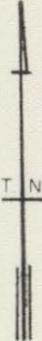
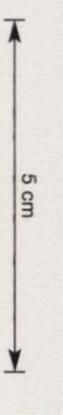
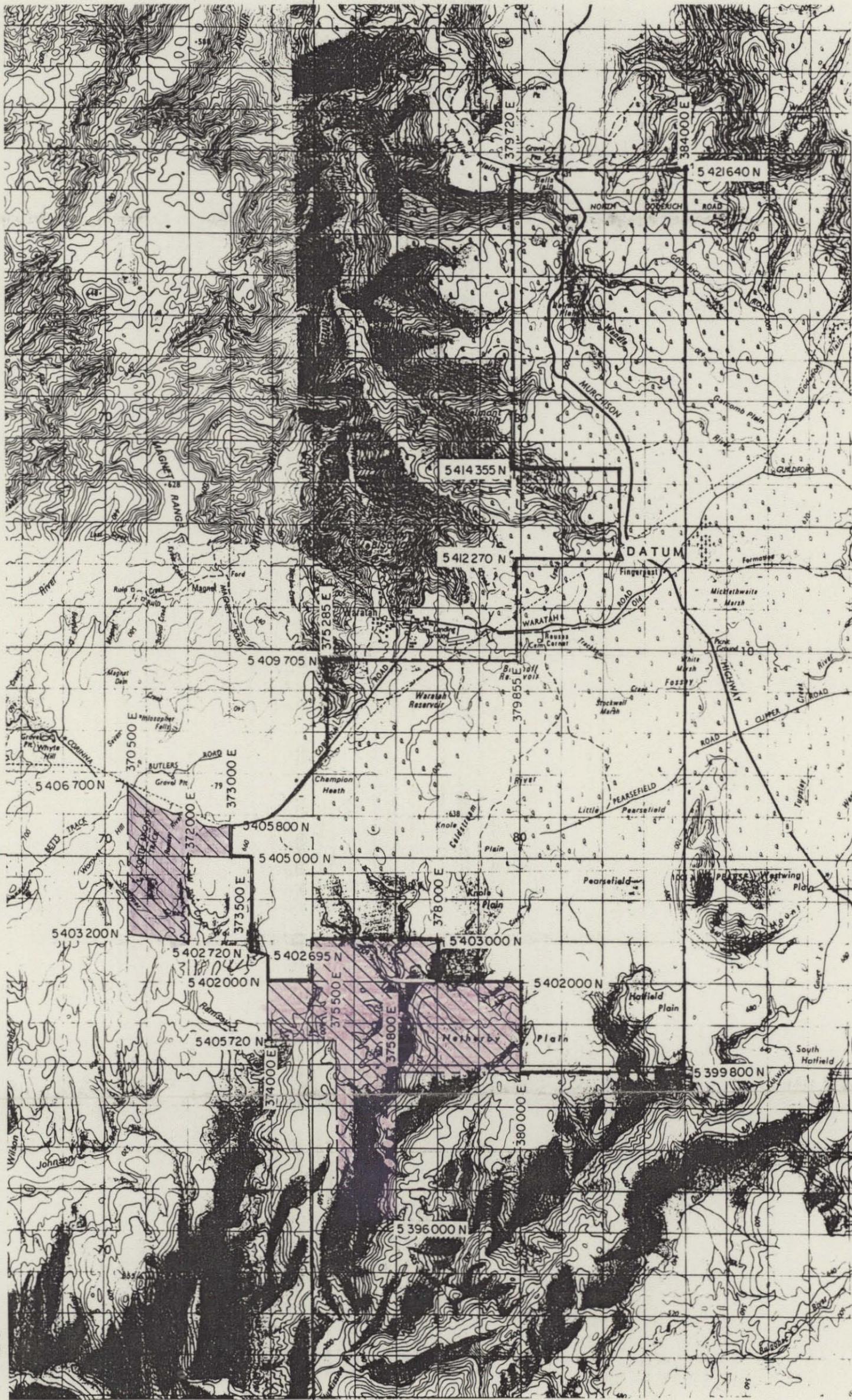
FIGURES

1. E.L. 33/79 Waratah, Tasmania. Location Map.
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4. Location of Cut Lines, Drill Sites and EM37 Surveys.

APPENDICES

1. Measured and Upward Continued Ground Magnetic Profiles  
- M Grid.
2. EM37 Survey Data - N Grid.

375 000 m E



5 405 000 m. N.

EL boundary

 Area to be relinquished

Revisions:

Prepared by: A. Clark	Centre: Melbourne
Date: Nov. 1984	Project No: T650
Drawn: C. Osborne	Drawing No: A3-1666

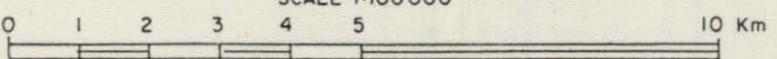
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EXPLORATION DEPARTMENT

**LOCATION MAP**

E.L. 33/79-WARATAH, TAS

Fig No  
To accompany  
Dated

SCALE 1:100 000



This map is a photo copy from  
Arthur River, Hellyer, Pleman, and Sophia  
1:100000 topographic maps

EXPLORATION LICENCE 33/79WARATAH, TASMANIAREPORT FOR THE AREA RELINQUISHED 14TH JANUARY, 19851. GENERAL

Exploration Licence 33/79 of 150 square kilometres was granted to The Broken Hill Proprietary Company Limited on 11th January, 1980. In October, 1984 notification was given of a reduction to approximately 125 square kilometres. This report covers all exploration data relevant to the relinquished area.

Regionally the principal target was a massive sulphide carbonate-hosted tin deposit of the Renison type. Work done in the relinquished portion of the licence area was restricted to aeromagnetic coverage and two grid surveys in basalt-covered parts of the southern area. One grid was surveyed using a transient EM system and the other was surveyed by ground magnetics.

2. REGIONAL GEOLOGY

The solid and interpretative geology of the Waratah Exploration Licence is summarised in Figure 2.

The Mt. Bischoff series, consisting of siltstones, laminated mudstones, occasional spillites and dolomite (at Mt. Bischoff only) is characteristic of the unmetamorphosed rocks that surround the edges of the Rocky Cape, Forth and Tyennan Blocks. From the time of deposition of these rocks (late Proterozoic), the environment was a marginal trough. This depositional environment persisted until the Mid-Devonian Tabberabberan orogeny. During the Cambrian, the trough underwent syntectonic deformation producing a north-west trend of folds. At this time, there was extensive alkali volcanism. Unconformably following the Cambrian lavas and volcanoclastics is the basal Roland conglomerate of the Ordovician sequence (June Group Correlate). These are conformably overlain by the Eldon Group (Silurian-Devonian).

The Tabberabberan orogeny exaggerated the earlier Cambrian fold patterns in the first period of deformation and produced north-trending folds. The second period of deformation resulted in northwest trending folds.

During the Late-Devonian to Early Carboniferous, the Meredith and Husetop Granites were emplaced. The tin and silver/lead deposits of the Mt. Bischoff, Cleveland, Magnet and Mt. Lindsay areas are associated with this emplacement.

After this, a period of erosion occurred, that terminated with the glacial, glacio-marine, and freshwater sequences of the Parmeener Super Group. The basal unit is the Wynyard Tillite.

The Tertiary system unconformably overlies all previous successions and consists of basalts and interflow sediments, with large fluvial quartz sandstones and gravels. The Waratah basalts are interrupted by a large lake during the early Oligocene (Brown & Forsyth 1984). Evidence from drilling is that the pre-Tertiary relief is very rugged, perhaps more so over areas of Precambrian sub-outcrop than over the Cambrian.

3. WORK PROGRAMME

The following is a summary of work carried out:

- 1. Literature survey and review of data.
- 2. Geological compilation and reconnaissance mapping, with continuous updating as exploration proceeded.
- 3. High-resolution aeromagnetic survey covering the total licence area, with eastwest lines spaced at 250 metres and a mean sensor terrain clearance of 90 metres.
- 4. 5.4km grid line cutting and ground magnetics over 'Anomaly M'.
- 5. Approximately 5.7km grid line cutting and EM37 transient electromagnetic survey over 'Anomaly N'.

4. GEOPHYSICS

4.1 Aeromagnetics

A detailed magnetic survey covering the entire licence area was flown in January, 1982. Coverage relevant to this report appears in Figure 3.

Various anomalies of interest were selected for further work and these were identified alphabetically. Anomalies M and N fall within the area specifically covered in this relinquishment report.

4.2 Ground Magnetics

Anomaly M is located some 3km east of the Meredith Granite contact and was considered to be of possible 'orebody' size and shape. A grid was surveyed in early 1983 and a ground magnetic survey carried out.

The raw magnetic data is dominated by the erratic and spiky response caused by the outcropping Tertiary basalts. It was therefore necessary to upward continue the ground magnetic data to the equivalent airborne survey height to allow workable comparisons to be made. Data is provided in Appendix 1 (note that this includes an earlier orientation magnetic survey line done during 1981).

Interpretation of the results did not support the possibility of a sub-basalt source of suitable dimensions to represent pyrrhotite mineralisation. No further work was carried out.

4.3 EM37

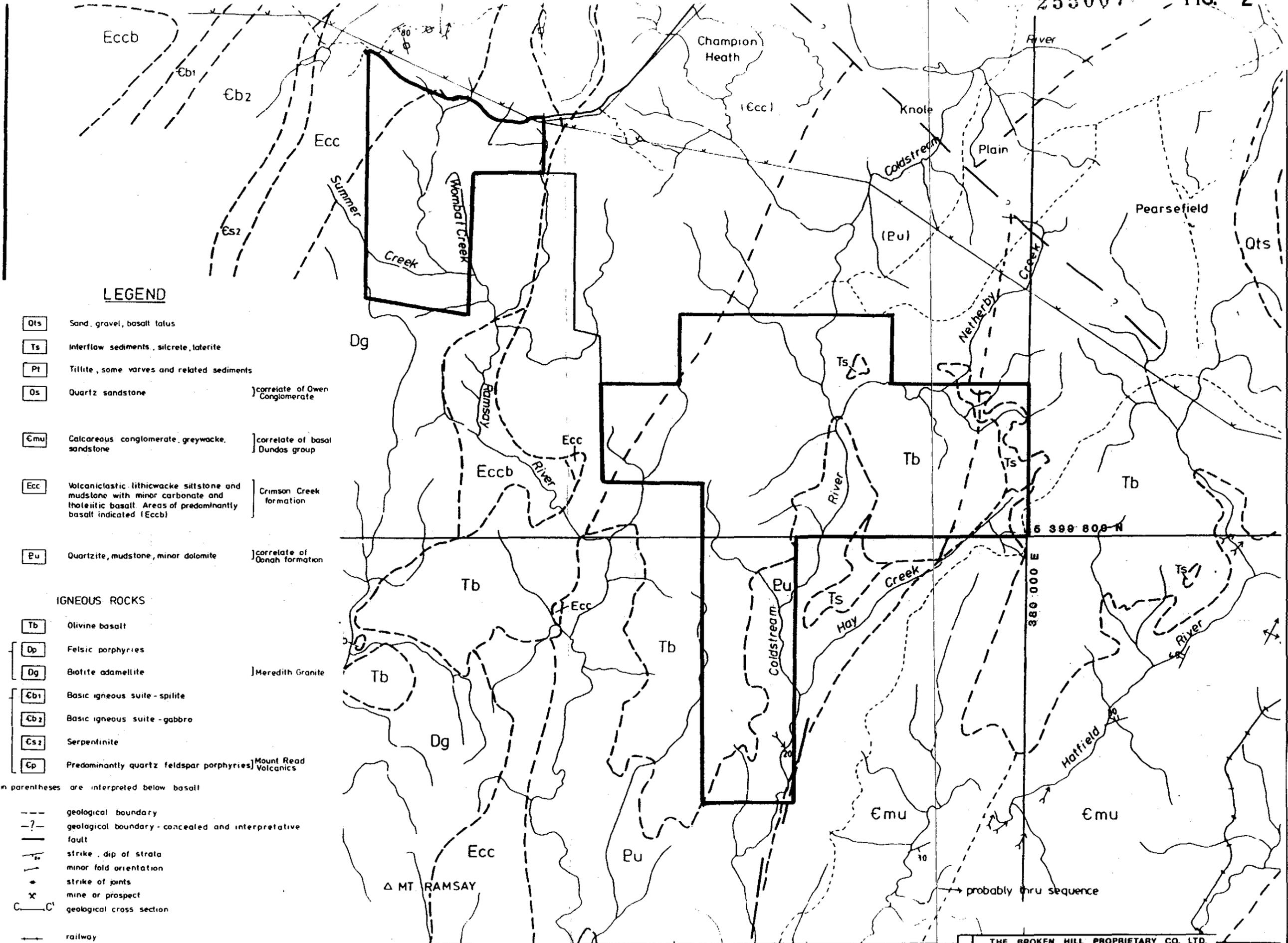
Prior to the commencement of the 1983-84 summer field season further interpretation of the detailed aeromagnetic data was carried out and promising anomalies with probable basement sources were identified.

It was decided to apply a filtering technique to our exploration work, by doing preliminary EM37 geophysical surveys on cut lines in an attempt to define conductors that could be drill tested. Surveys conducted by Geoterrex Pty. Ltd. using this transient EM system were initiated in several areas, with Anomaly N falling within the relinquished part of the licence.

No indication of any sub-basalt conductor was obtained so no further work was warranted. Soundings gave an interpretative estimate of basalt thickness, and all details relating to the survey are given in Appendix 2.

*Soundings attached?*

006



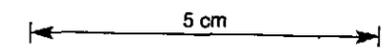
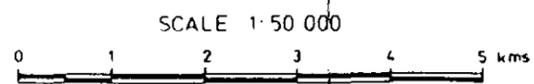
LEGEND

- 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 [Emu] 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

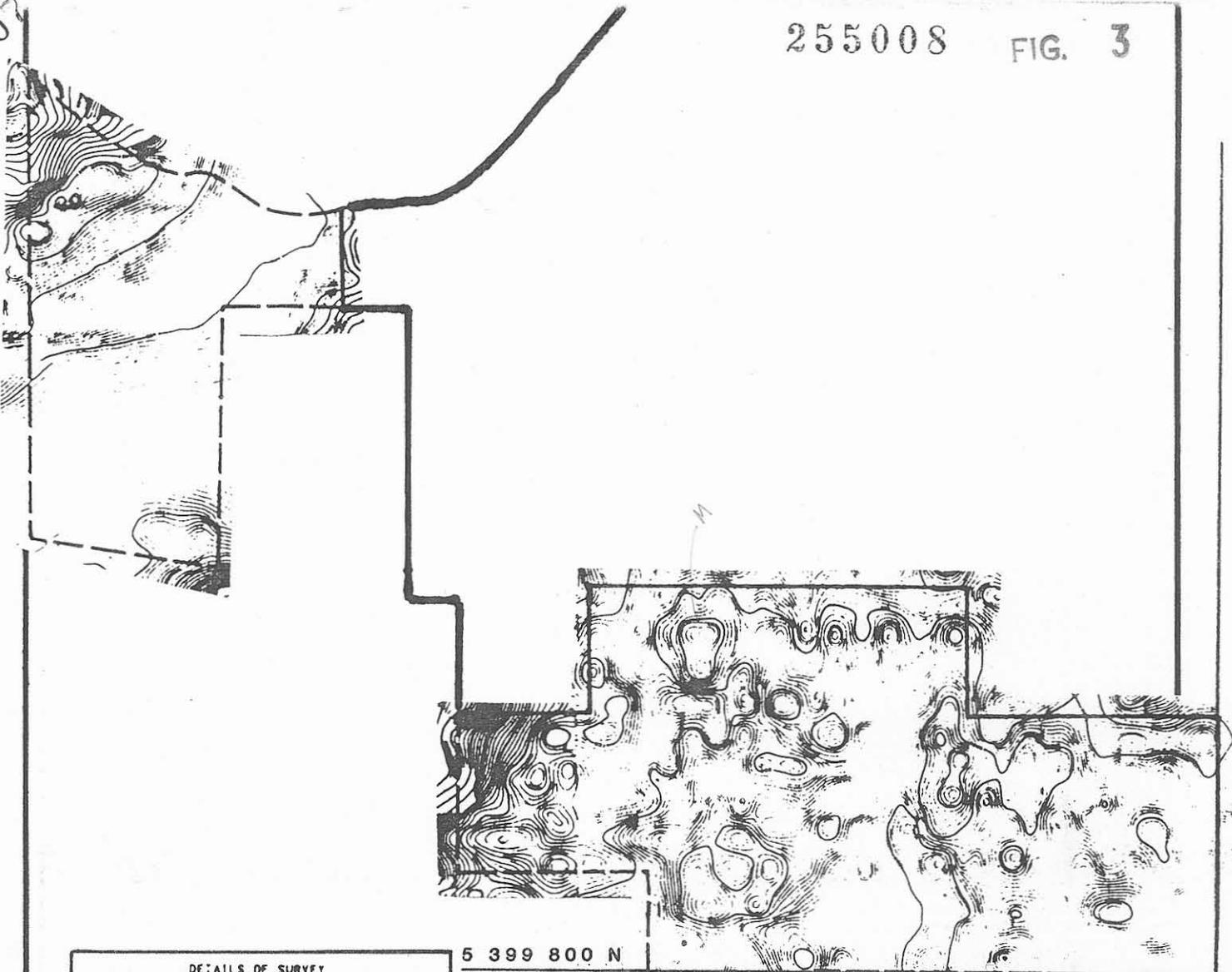
- TERTIARY [Tb] Olivine basalt
- DEVONIAN [Dp] Felsic porphyries
- [Dg] Biotite adamellite } Meredith Granite
- CAMBRIAN [Cb1] Basic igneous suite - spilitic
- [Cb2] Basic igneous suite - gabbro
- [Es2] Serpentinite
- [Cp] Predominantly quartz feldspar porphyries } Mount Read Volcanics

- NOTE: Symbols in parentheses are interpreted below basalt
- geological boundary
  - ?- geological boundary - concealed and interpretative
  - fault
  - strike, dip of strata
  - minor fold orientation
  - strike of joints
  - x mine or prospect
  - C—C' geological cross section
  - railway
  - powerline
  - Area to be Relinquished



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EXPLORATION DEPARTMENT

E.L. 33/79 - WARATAH, TASMANIA  
SOLID and INTERPRETATIVE GEOLOGY



DETAILS OF SURVEY

FLOWN BY : GEOMETRICS  
 DATE : JANUARY, 1982  
 1:250,000 SHEET - BURRHE SR55-3  
 EL 33-79, EL 23-79  
 AMG ZONE : 55

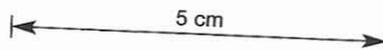
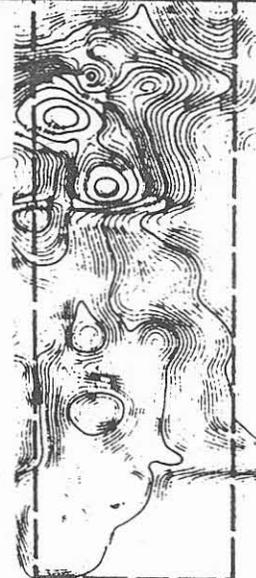
LIVE SPACING : 250  
 SURVEY HEIGHT : 90  
 MAGNETOMETER : GEOMETRICS G013

DETAILS OF PROCESSING

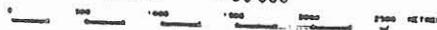
PROCESSED BY BHP EXPLORATION - CAMBERVELL  
 MESH : 160.801  
 SCAN : 700  
 CONTOUR INTERVAL : 5 mT  
 IGRF REMOVED  
 5000 (GAMMAS) ADDED TO DATA  
 DIURNAL CORRECTION - BASE VALUE IS 8143 GAMMAS

5 399 800 N

380 000 E



SCALE 1:50 000



Centre:

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Project N9:

Date:

E.L. 33/79 Waratah Area to be Relinquished  
 Total Magnetic Intensity Contours

Drawing N9:

A4-

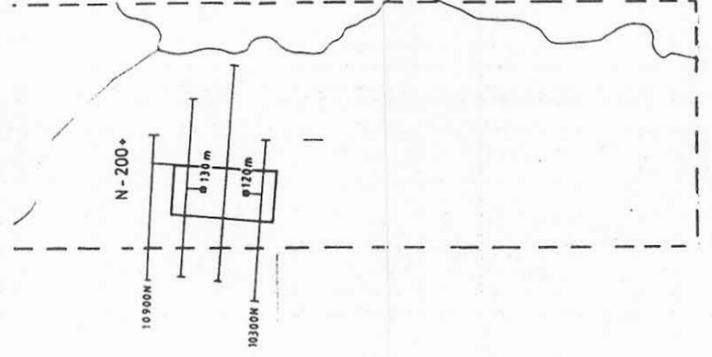
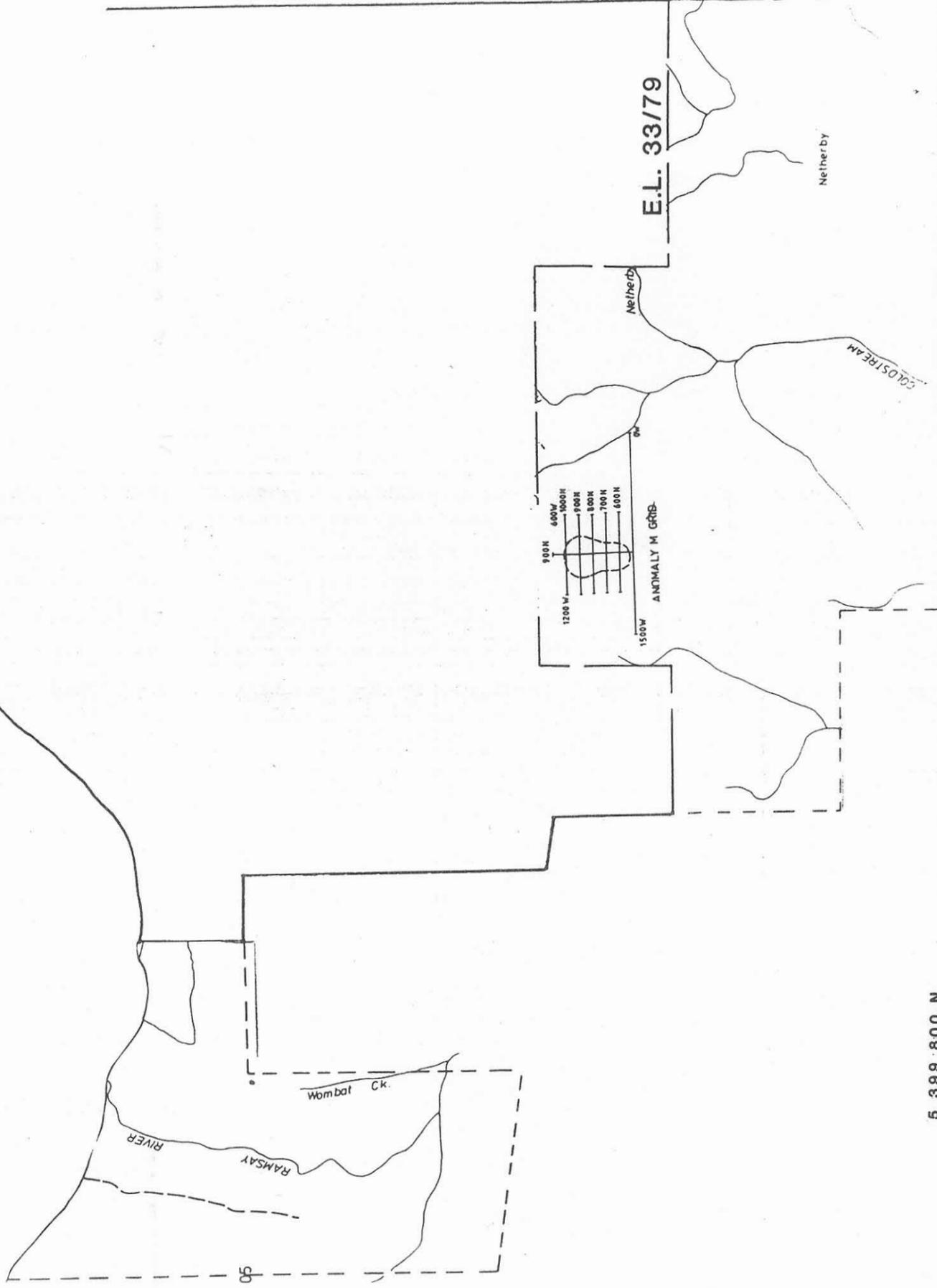
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Fig. 4

E 000 086

5 399 800 . N



**LEGEND**

- OWA 4 Drill hole location and number
- 349/328 Final depth m. / Basalt thickness m
- 302P Pan concentrate
- \ 301 Stream sediment sample
- sealed road
- - - 1st class unsealed road
- · - · - 2nd class unsealed road / approx position only
- · · · · walking track
- - - power lines
- N-200\* magnetic anomaly designation with est. depth (m) from computer modelling
- EM 37 survey loop and traverses and EM 37 sounding site with basalt thickness [interp.]

SCALE 1:25 000



Fig. No .....  
 To accompany .....  
 Dated .....

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<b>E.L. 33/79 Waratah Tasmania</b> Location of cut lines and EM37 surveys			
Revisions:	Prepared by:	Centre:	
	Date:	Project No:	Drawing No:
	Drawn:		A3-

APPENDIX 1

Measured and Upward Continued Ground Magnetic Profiles

- N Grid

GEONICS LIMITEDEM37 Ground Transient Electromagnetic System  
Technical SpecificationsTransmitter

- Current Waveform - See Fig. 1
- Repetition rate - 3Hz or 30Hz in countries using 60Hz power line frequency; 2.5Hz or 25Hz in countries using 50Hz power line frequency; all four base frequencies are switch selectable.
- Turn-off time ( $\Delta t$ ) - fast linear turn-off of maximum 300  $\mu$ sec. at 20 amps into 300x600m loop. Decreases proportionally with current and (loop area)<sup>1/2</sup> to minimum of 20  $\mu$ sec. Actual value of  $\Delta t$  read on front panel meter.
- Transmitter loop - any dimensions from 40x40m to 300x600m maximum at 20 amps. Larger dimensions at reduced current. Transmitter output voltage switch adjustable for smaller loops. Value of loop resistance read from front panel meter; resistance must be greater than 1 ohm on lowest voltage setting to prevent overload.
- Transmitter protection - circuit breaker protection against input over-voltage; instantaneous solid state protection against output short circuit; automatically resets on removal of short circuit. Input voltage, output voltage and current indicated on front panel meter.
- Transmitter output voltage - 150 volts (zero to peak) maximum;  
20 volts (zero to peak) minimum
- Transmitter output power - 2.8 kw maximum
- Transmitter wire supplied - 1800m. #10 copper wire PVC insulated with nylon jacket; transmitter wire contained on 6 reels (supplied); 2 reel winders supplied.
- Transmitter motor generator - 5 HP Honda gasoline engine coupled to 120 volt, 3 phase, 400Hz alternator. Approximately 8 hours continuous operation from full (built-in) fuel tank.

## Receiver

- Measured quantity - time rate of decay of magnetic flux along 3 axes.
- Sensor - air-cored coil of bandwidth 40 kHz; 100cm dia. by 7x5cm cross-section. Coil holder supplied to facilitate measurement along 3 axes.
- Time channels - 20 time channels with locations and widths as shown in Fig. 2. Successive operation at 30Hz, then 3Hz, effectively gives 30 channels covering range from 80  $\mu$ sec. to 80 msec.
- Output display - 4 digit plus sign LED display; display also shows channel number and gain.
- Integration time -  $2^n$  cycles at 30Hz; n=4,6,8,10,12,14 (switch selectable); similar integration times at other base frequencies.
- Receiver output noise referred to input - typically  $1.5 \times 10^{-10}$  volt/m<sup>2</sup> at last gate at 30Hz with integration time of 34 seconds. Noise will be higher during intense local spherics activity.
- Output connector - all 20 channels in analogue format and house-keeping functions in digital format available from output connector.
- Synchronization to Tx - any of the following (switch selectable)  
 (1) reference cable  
 (2) primary pulse  
 (3) 27 MHz radio link (40 channels)  
 (4) high stability (oven controlled) quartz crystals.
- Noise rejection circuitry - Selective clipping of atmospheric noise pulses at all times. Audio output of Rx coil (transmitter pulse blanked out) is available on built-in loud speaker for ready identification of interference.
- Receiver batteries - 12 volt rechargeable Gel-cell; 9 hours continuous operating time at 17°C. Two batteries and a battery charger supplied to permit charging of second battery from transmitter motor generator during survey.

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Component Dimensions

Transmitter console	25x42x56 cm
GPU	55x74x48 cm
Wirewinder	42x38x35 cm each (2 off)
Wire reels (20 amp)	33x31(dia.)cm each (6 off)
Receiver console	38x37x27 cm
Receiver coil	100 cm dia. 7x5 cm cross-section

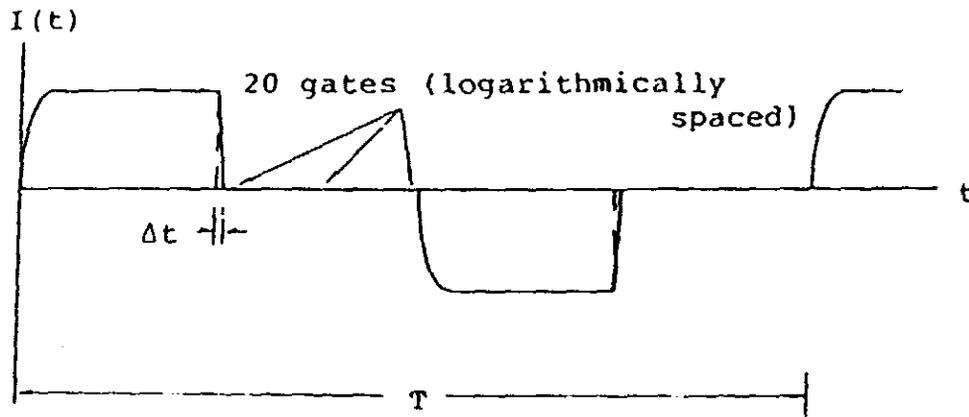
Component Weights

Transmitter console	20 kg
GPU	60 kg
Wirewinders and loaded reels (20 amp)	120 kg (total)
Receiver console (incl.20 amp-hour battery)	21.8 kg
Receiver coil	8.0 kg

Shipping Information

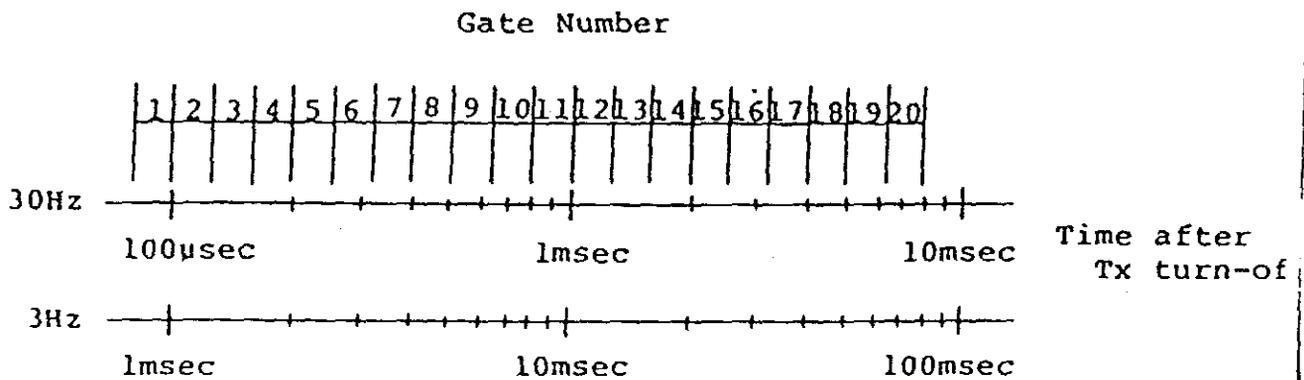
Shipment consists of 5 boxes

Two wire boxes	116x62x48 cm @ 186 kg (total)
GPU box	96x61x73 cm @ 90 kg
Receiver/transmitter box	96x75x73 cm @ 86 kg
Receiver coil/coil-holder box	110x110x20 cm @ 34 kg
Total shipping volume	1.90 cubic metres
Total shipping weight	390 kg



Transmitter Current Waveform

FIG. 1



Gate Location and Widths (30 and 3Hz)

FIG. 2

APPENDIX 2

EM-37 PLOTTING AND  
INTERPRETATION CONVENTIONS

The Geotrex fixed-loop time-domain convention system has been designed with consistency in mind. Given the great diversity of grid and loop orientations, it is most important that anomalies are of a predictable shape.

To fully understand the convention, four basic rules must be laid down:

- 1) The vertical primary field (Z component) is positive within any loop. To be consistent with a Cartesian co-ordinate system, the  $Z^+$  direction is defined as 'up', i.e. the field vectors point up within the loop and down when outside the loop.
- 2) The X component is defined as that which points along the grid lines. Depending upon which direction the lines run, W or S is defined as  $X^+$ .
- 3) Using a right hand orientation where  $X^+$  is direction of the middle finger, and  $Z^+$  is the direction of the thumb, then  $Y^+$  is the direction defined by the index finger.
- 4) North or East is always plotted to the right on the page.

With these four rules, the shapes of the half space responses for late times for all three components are uniquely defined as shown in Figures 1, 2, 3a and 3b.

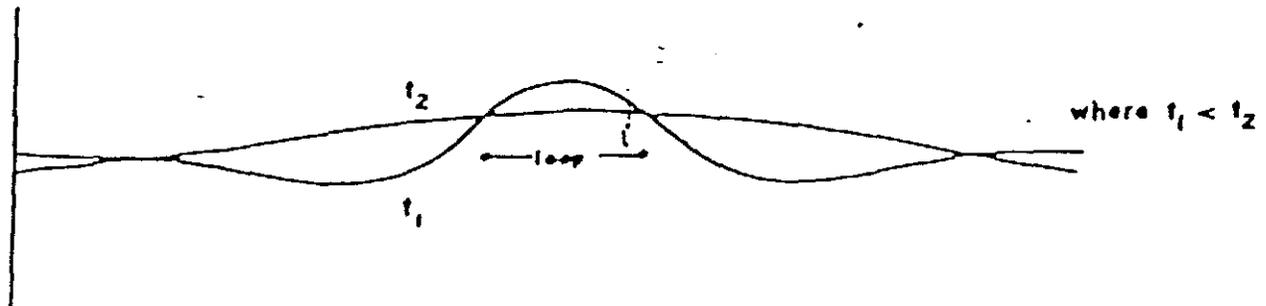


Fig. 1 Half-space response : Z component

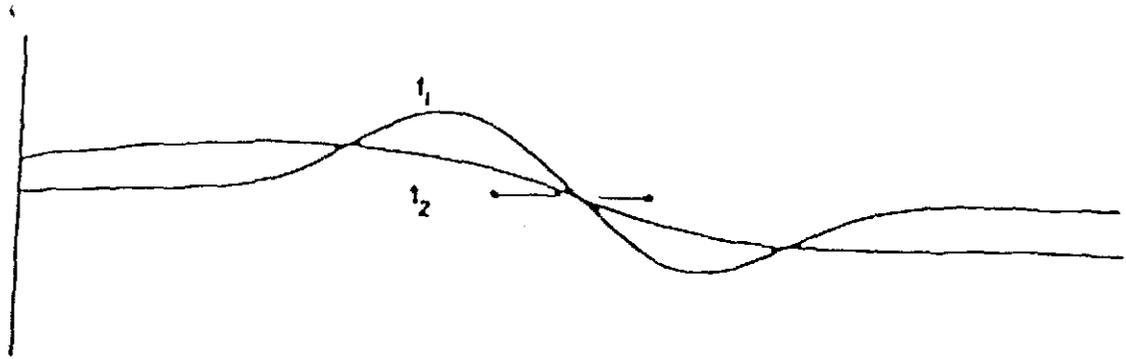


Fig. 2 Half-space response : X Component

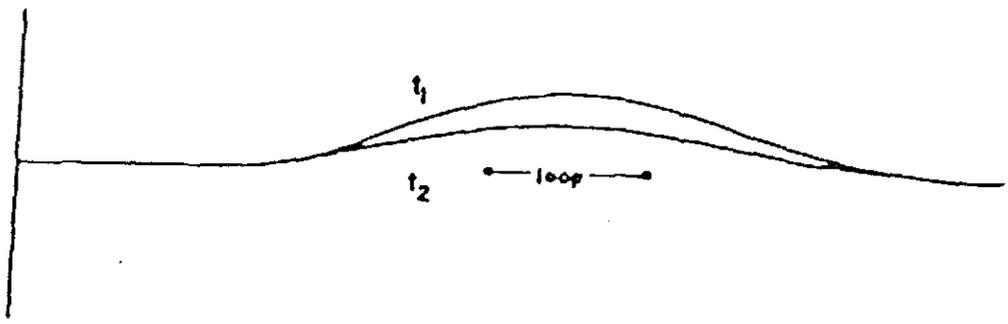


Fig. 3(a) Half-space response : Y component (Positive half of loop)

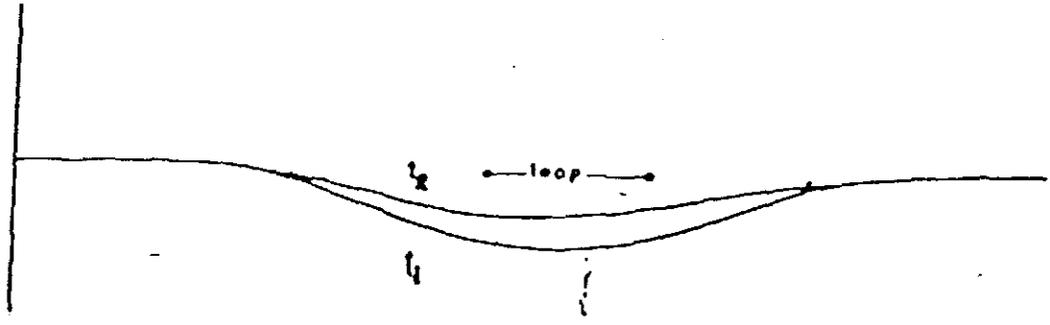
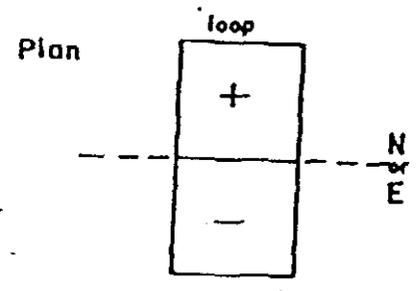


Fig. 3(b) Half-space response : Y component (Negative half of loop)

Note: Unlike the Z component, there is only one maxima or minima for the Y component for a homogeneous half-space.

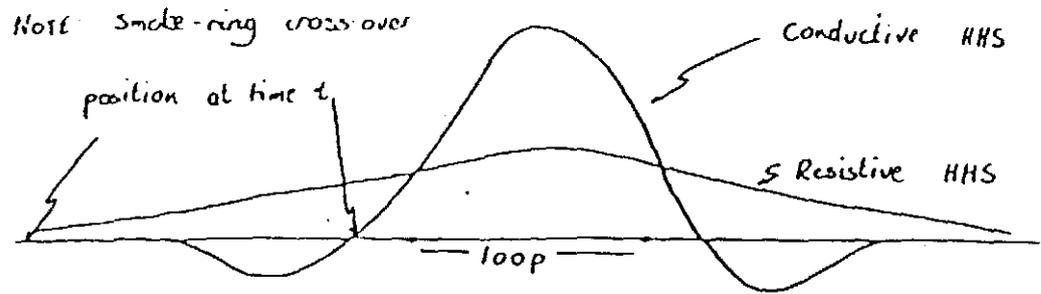


Fig 4. Comparison of conductive and resistive homogeneous half-space responses for Z-component.

A conductive homogeneous half-space is characterised by an early channel high amplitude response with a slow migration of the smoke-ring crossover from the loop.

By comparison, a resistive HHS will exhibit a lower early channel amplitude response and a rapid migration of the smoke-ring.

Note that the rate of decay of the channel amplitude responses for both conductive and resistive HHS is the same, and is proportional to  $t \cdot \exp(-5/2)$ .

The migration of the smoke-ring determines the detection of a conductor with respect to time and space. For example, a conductor located beyond the smoke-ring in a relatively conductive environment will not be energised by intermediate times but may be evident at late times if the smoke-ring has passed beyond it. In short, only conductors within the limits of the smoke-ring at a given time can possibly be detected.

Confined Conductor Responses

The response due to a confined conductor is closely related to the aforementioned half-space responses and to the conductor's position with relation to the loop. Figures 5, 6, 7a and 7b show the responses for a vertical plate.

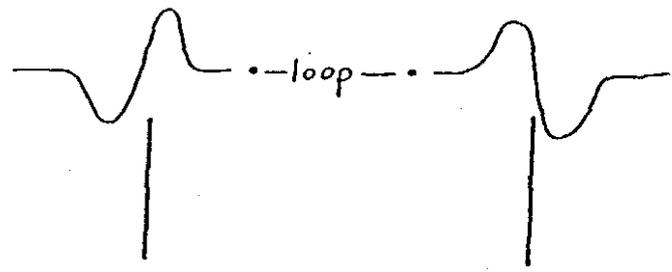


Fig. 5 Vertical conductor: Z component

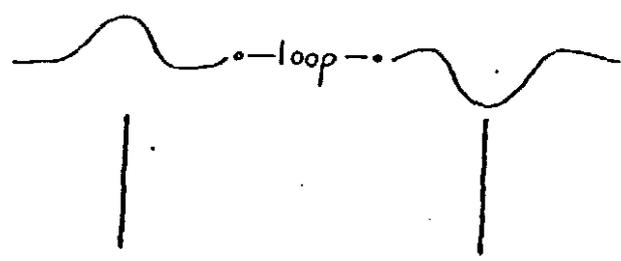
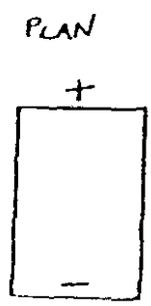
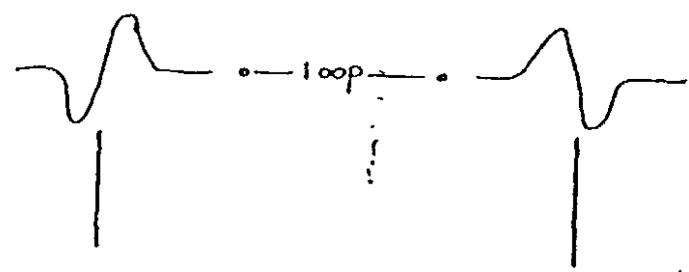


Fig. 6. Vertical conductor: X component



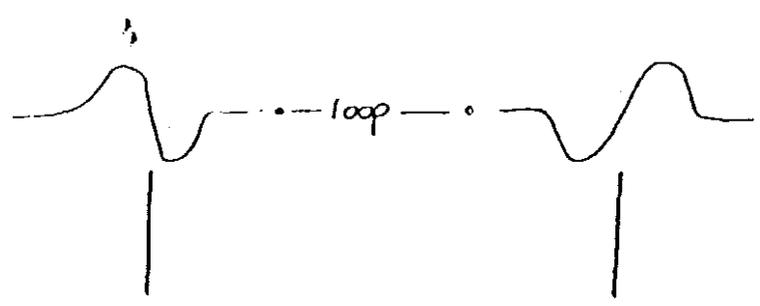


Fig. 7b Vertical conductor : Y component  
(Negative side of conductor)

When the dip of the conductor is allowed to vary, the responses become more complicated. Figures 8 through to 12 show how the dip effects the vertical and horizontal components.

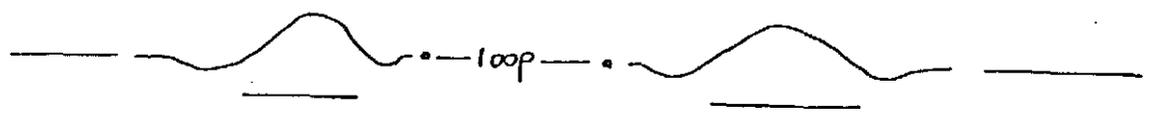


Fig. 8 Horizontal conductor : Z component

NOTE: Late-time response character both inside and outside loop the same.

NOTE: difference of amplitude

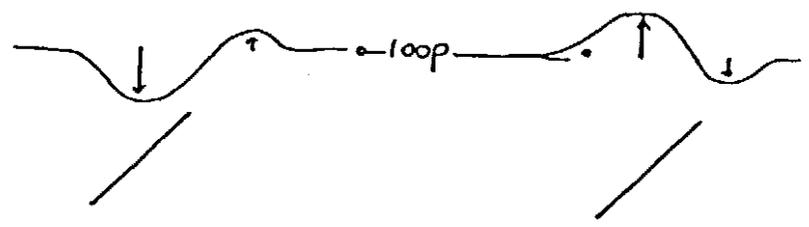


Fig. 9. Dipping conductor : Z component

NOTE: That the positive shoulders in Fig 9. are on the loop side of the anomaly.

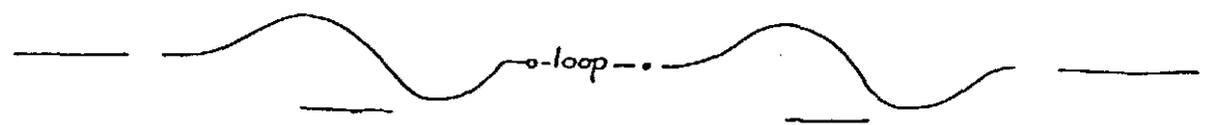
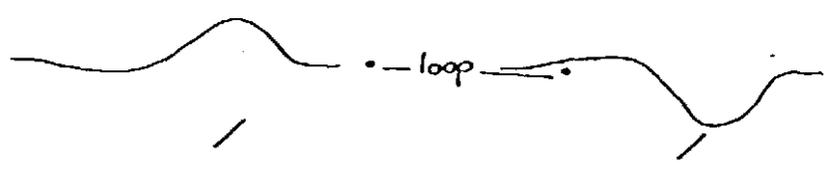


Fig. 10. Horizontal conductor : X component



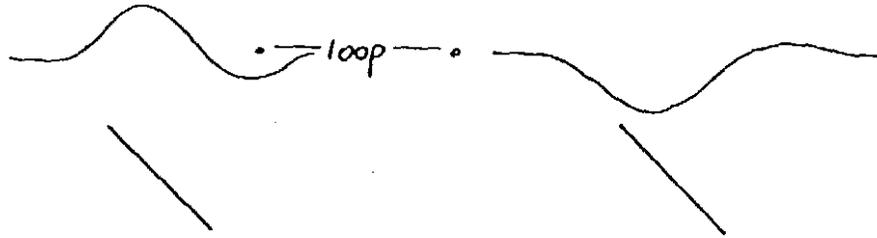
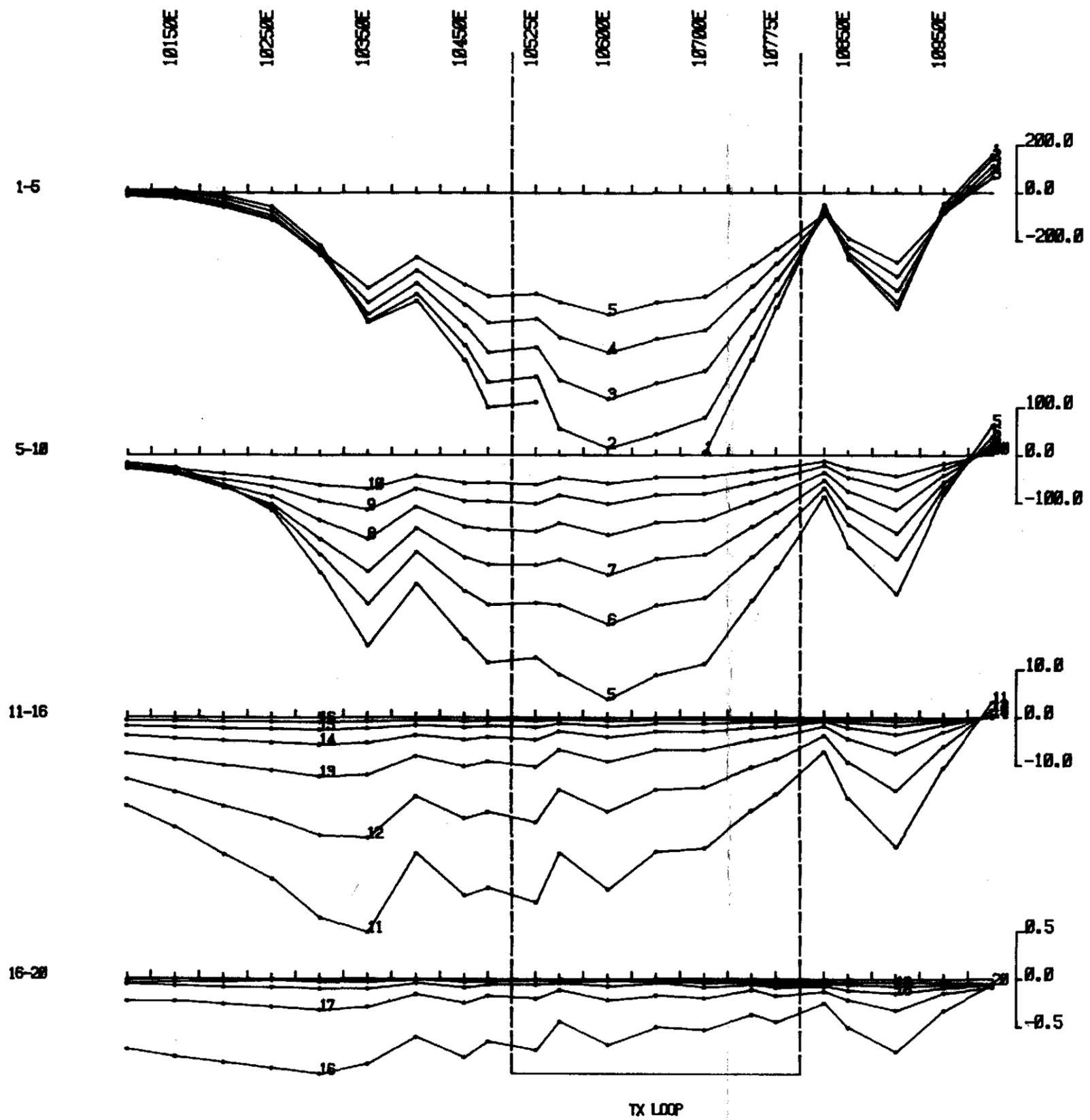


Fig. 12 Dipping conductor : X component

By remembering the shapes of the responses for these few simple geometrics, the identification of false anomalies can be avoided.

In conclusion, by identifying features which appear to have stable (non-diffusing) responses with respect to an appreciable length of time one can isolate confined targets from the half-space. After these interesting features have been identified, the geometry of the situation can be ascertained.

HORIZONTAL COMPONENT B (Y)



021

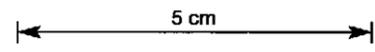
255022

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolt per amp-metre squared



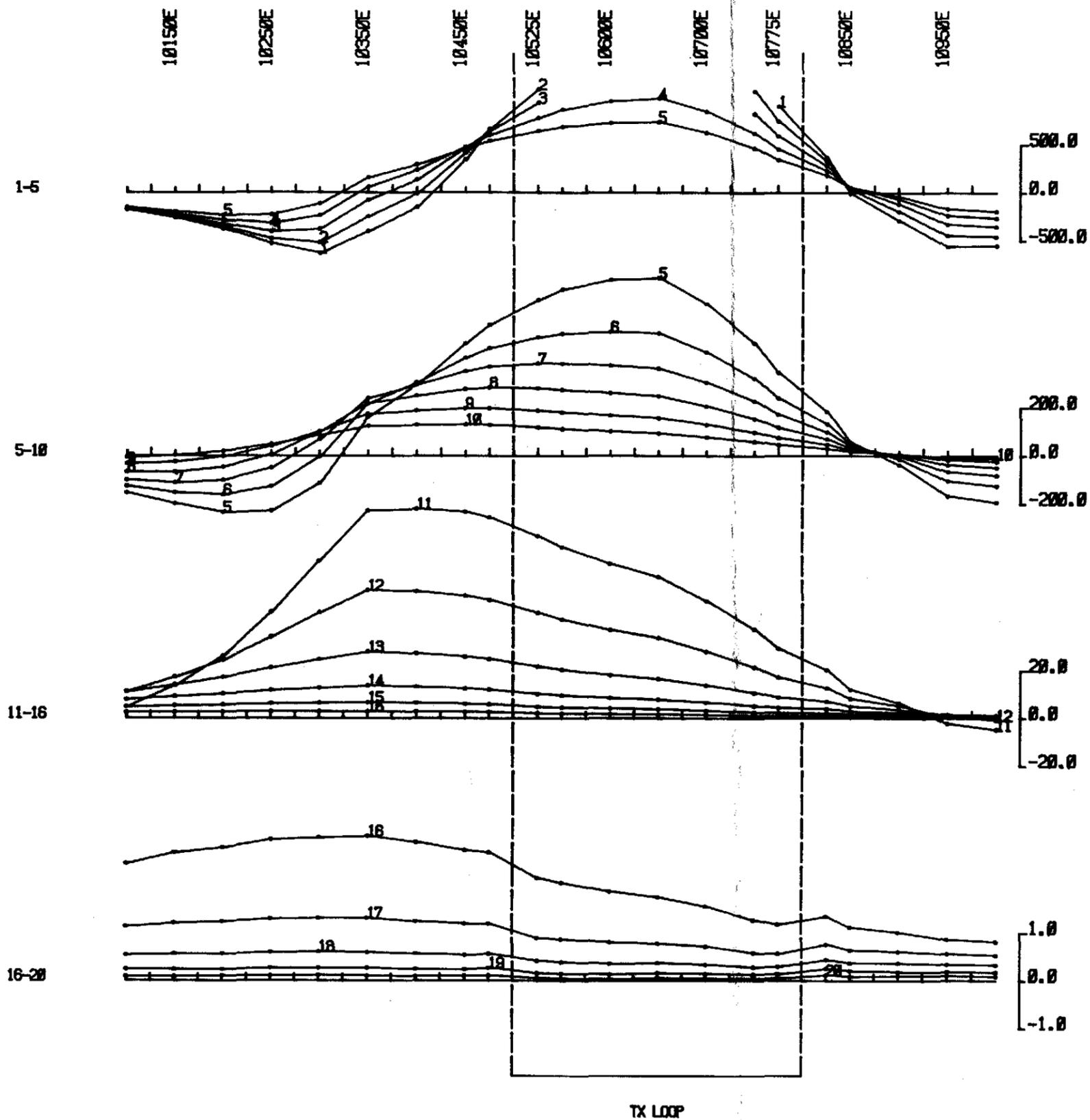
TX LOOP SIDES : 10200N 10500E  
: 10800N 10800E  
TX LOOP SIZE : 900m X 600m  
TX TURN OFF TIME : 305 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:50000  
SURVEYED BY : J.P.R.L.  
DATE : 01-DEC-1969

	SURVEYED AND COMPILED BY	PROJECT NO.
	GEOTREX PTY. LTD.	65-1499

CLIENT : The BHP Co. Ltd.  
PROJECT : AREA N  
AREA : Haratch Tasmania.  
LINE : 10300N Y  
TX LOOP : 6

022

VERTICAL COMPONENT B (Z)



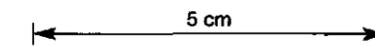
255023

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

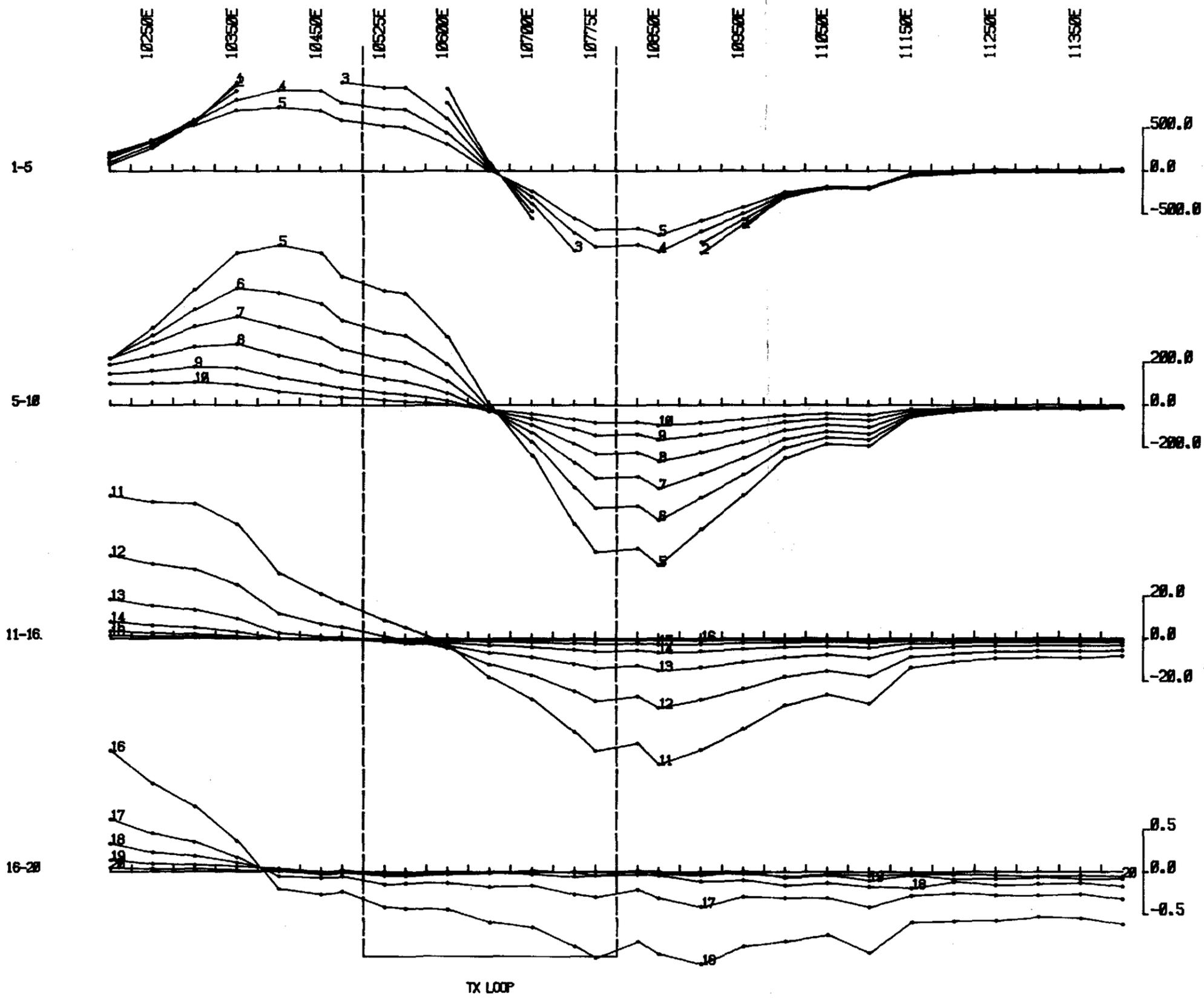
nanovolts per amp-metre squared



TX LOOP SIDES : 10200N 10500E  
                  : 10300N 10600E  
TX LOOP SIZE : 300m X 400m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:5000  
SURVEYED BY : J.P.R.L  
DATE : 01-DEC-1989

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 85-1488
	CLIENT : The BHP Co. Ltd. PROJECT : AREA N AREA : Waratah Tasmania. LINE : 10300N TX LOOP : 6	Z

HORIZONTAL COMPONENT B (X)



255024

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolt per amp. metre squared

5 cm

TX LOOP SIDES : 10200N 10500E  
                  : 10600N 10800E  
TX LOOP SIZE : 300m X 600m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:5000  
SURVEYED BY : J.P.R.  
DATE : 01-DEC-1983



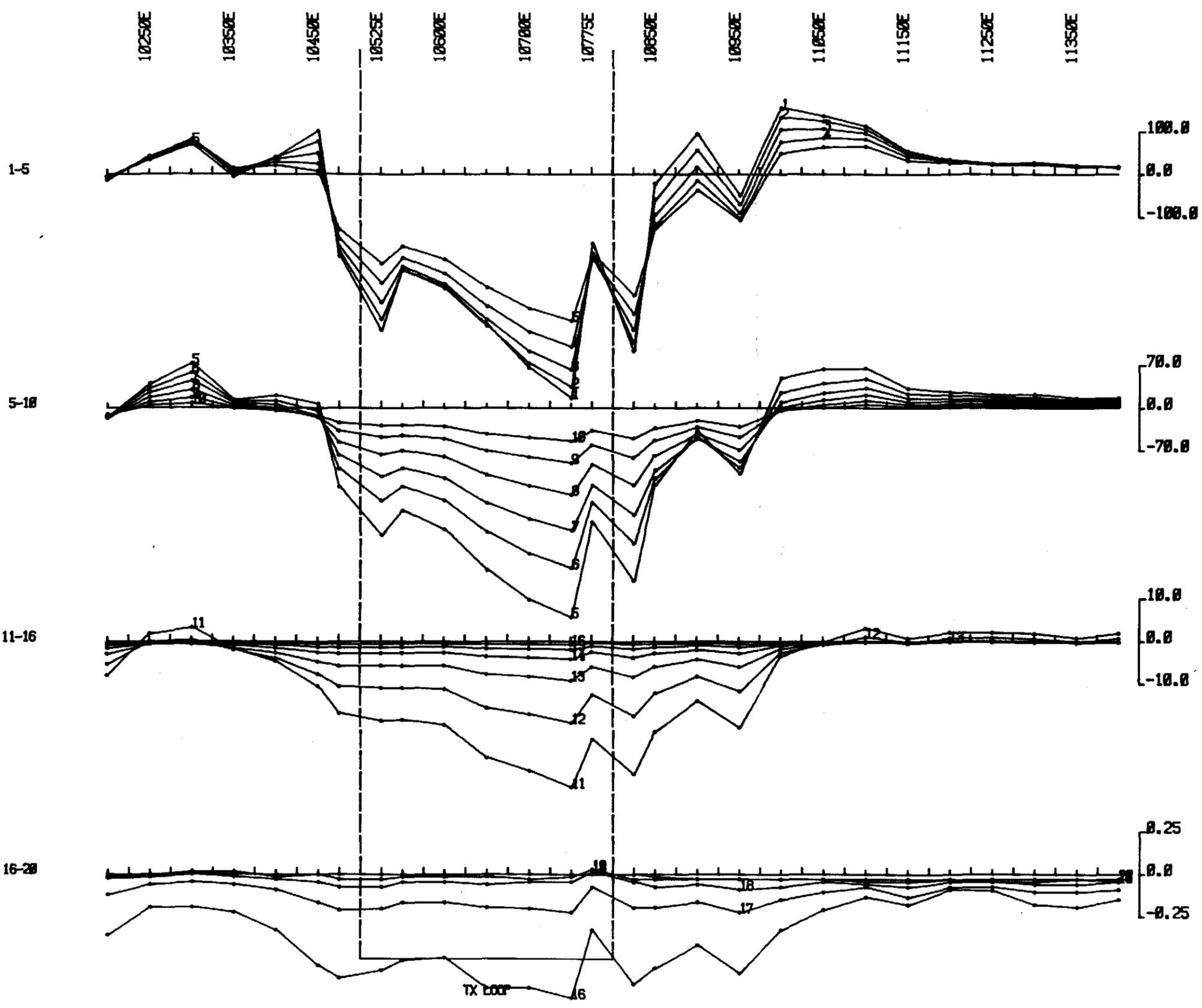
SURVEYED AND COMPILED BY  
GEOTREX PTY. LTD. PROJECT NO.  
65-1489

CLIENT : The BHP Co. Ltd.  
PROJECT : ARER N  
ARER : Karotah Tomanto.  
LINE : 10500N X  
TX LOOP : 6

023

024

HORIZONTAL COMPONENT B (Y)



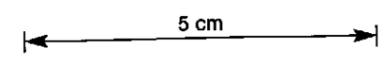
255025

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolt per amp-metre squared



TX LOOP SIDES : 10200N 10500E  
                  : 10600N 10800E  
TX LOOP SIZE : 300m X 600m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:5000  
SURVEYED BY : J.P.R.  
DATE : 01-DEC-1989

	SURVEYED AND COMPILED BY	PROJECT NO.
	GEOTREX PTY. LTD.	85-1499

CLIENT : The BHP Co. Ltd.  
PROJECT : AREA N  
AREA : Haratch Tasmania.  
LINE : 10500N Y  
TX LOOP : 6

025

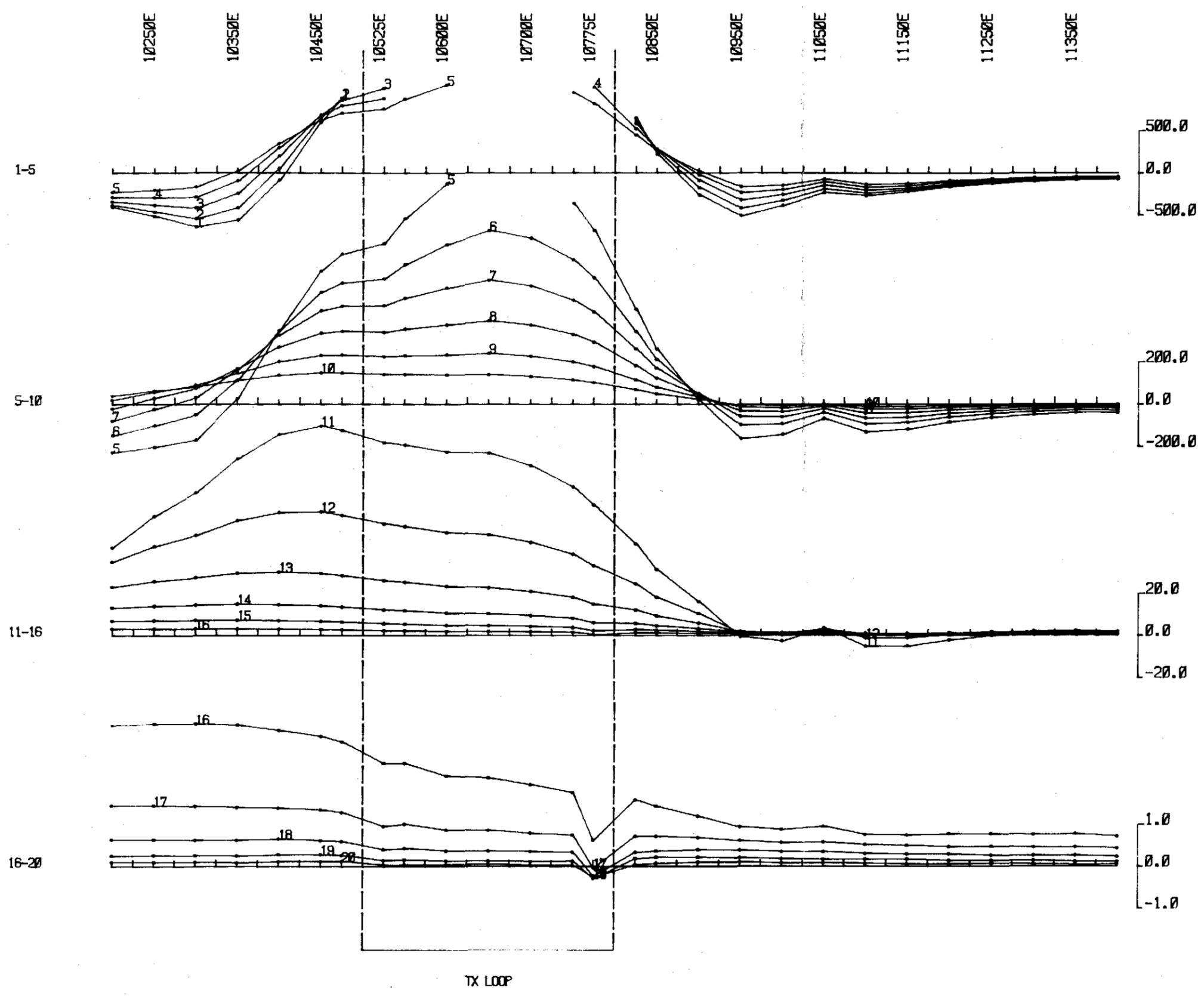
VERTICAL COMPONENT B (Z)

255026

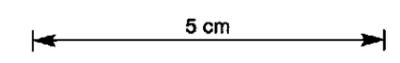
EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)



nanovolt per amp-metre squared



TX LOOP SIDES : 10200N 10500E  
                  : 10800N 10800E  
TX LOOP SIZE : 300m X 600m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:5000  
SURVEYED BY : JP,RL  
DATE : 01-DEC-1983

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 85-1498
	CLIENT : The BHP Co. Ltd. PROJECT : AREA N AREA : Waratah Tasmania. LINE : 10500N TX LOOP : 6	Z

026

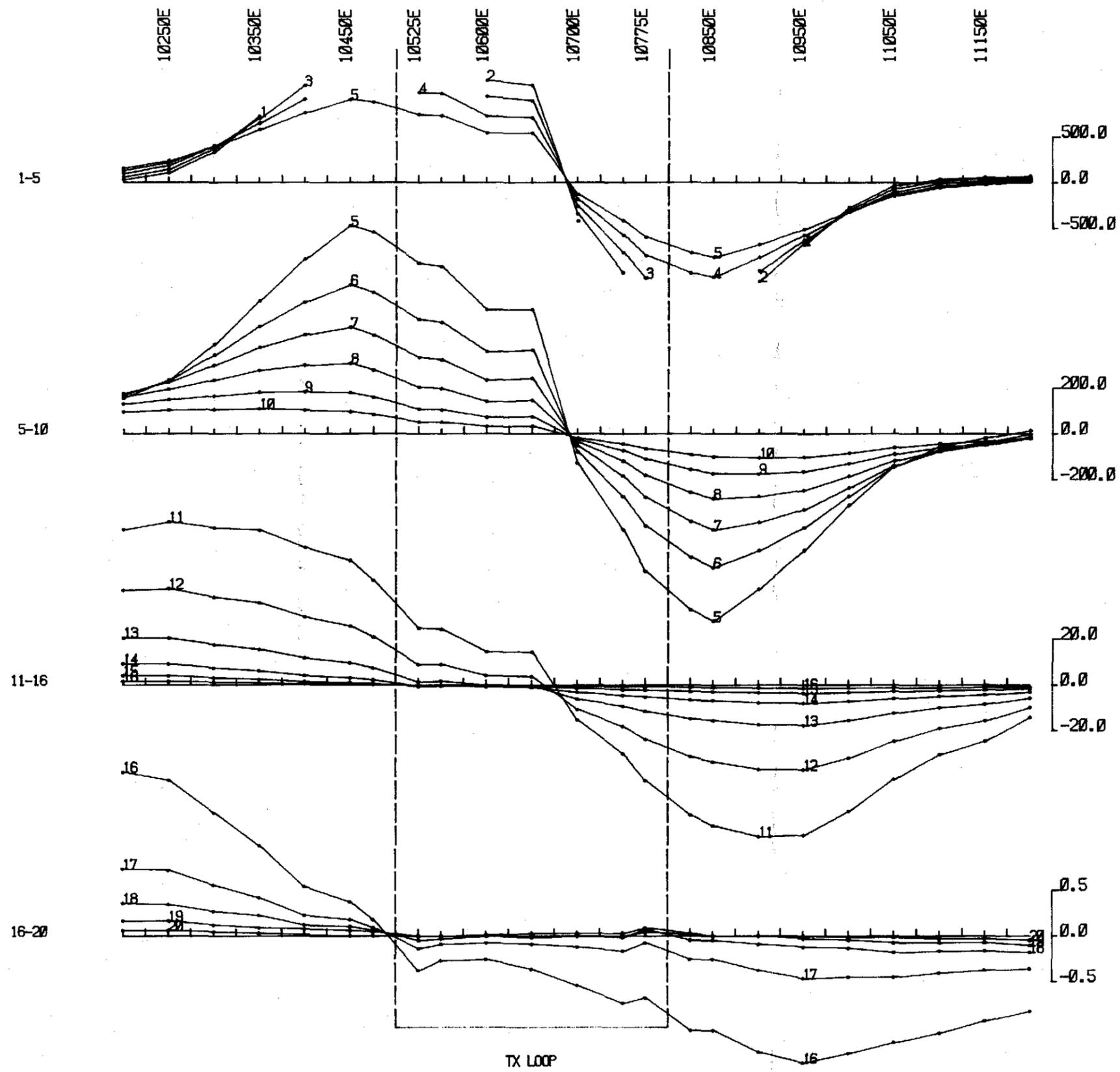
HORIZONTAL COMPONENT B (X)

255027

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)



nanovolts per amp-metre squared

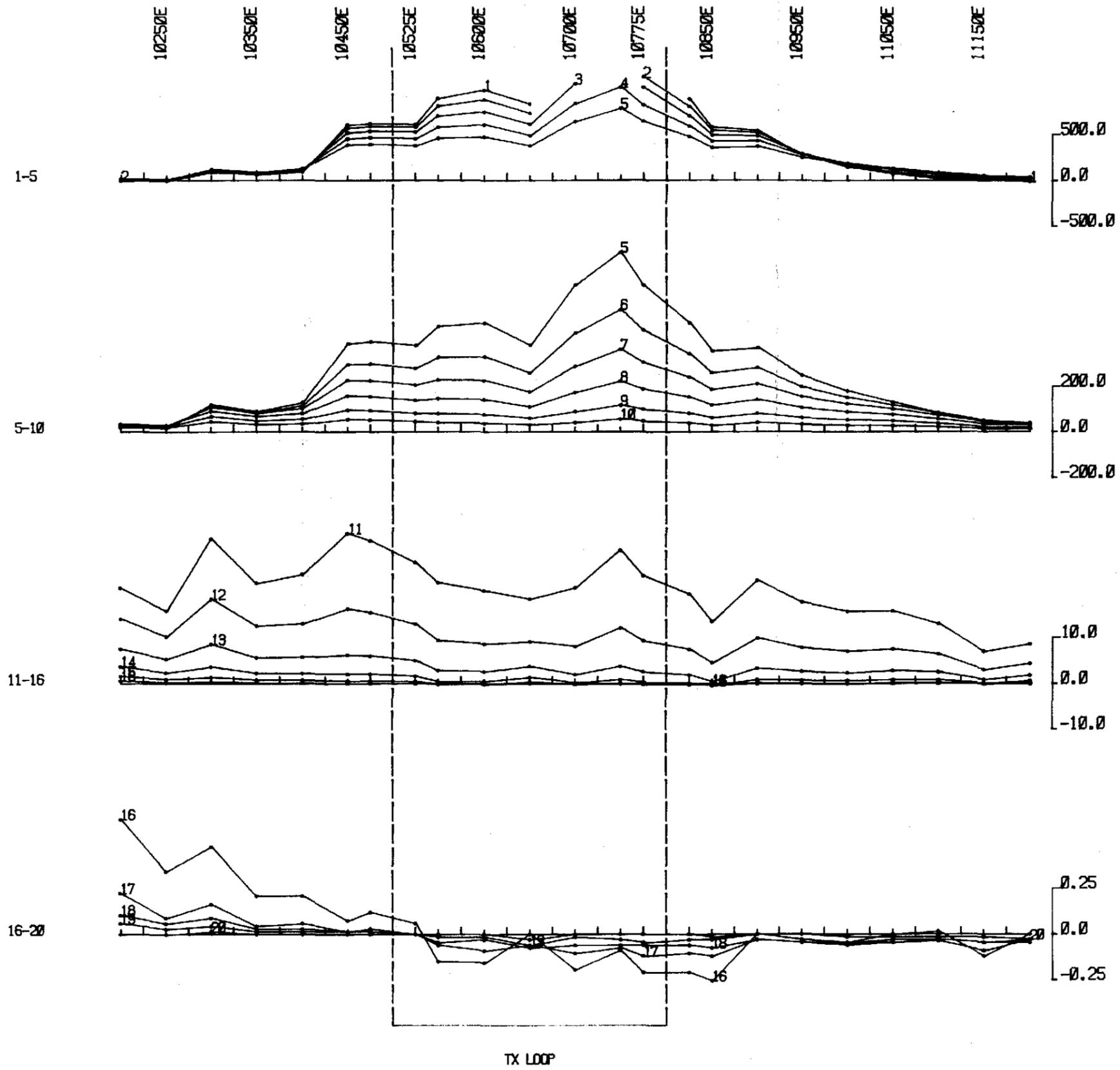
TX LOOP SIDES : 10200N 10500E  
                  : 10600N 10800E  
TX LOOP SIZE : 300m X 600m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:5000  
SURVEYED BY : J.P.R.L  
DATE : 02-DEC, 1983

	SURVEYED AND COMPILED BY	PROJECT NO.
	GEOTREX PTY. LTD.	85-1489

CLIENT : The BHP Co. Ltd.  
PROJECT : AREA N  
AREA : Waratah Tasmania.  
LINE : 10700N X  
TX LOOP : 6

027

HORIZONTAL COMPONENT B (Y)



255028

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

5 cm

nanovolts per amp-metre squared

TX LOOP SIDES : 10200N 10500E  
: 10800N 10800E  
TX LOOP SIZE : 300m X 600m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:5000  
SURVEYED BY : JP,RL  
DATE : 02-DEC,1983

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 65-1499
	CLIENT : The BHP Co. Ltd. PROJECT : AREA N AREA : Waratah Tasmania. LINE : 10700N TX LOOP : 6	Y

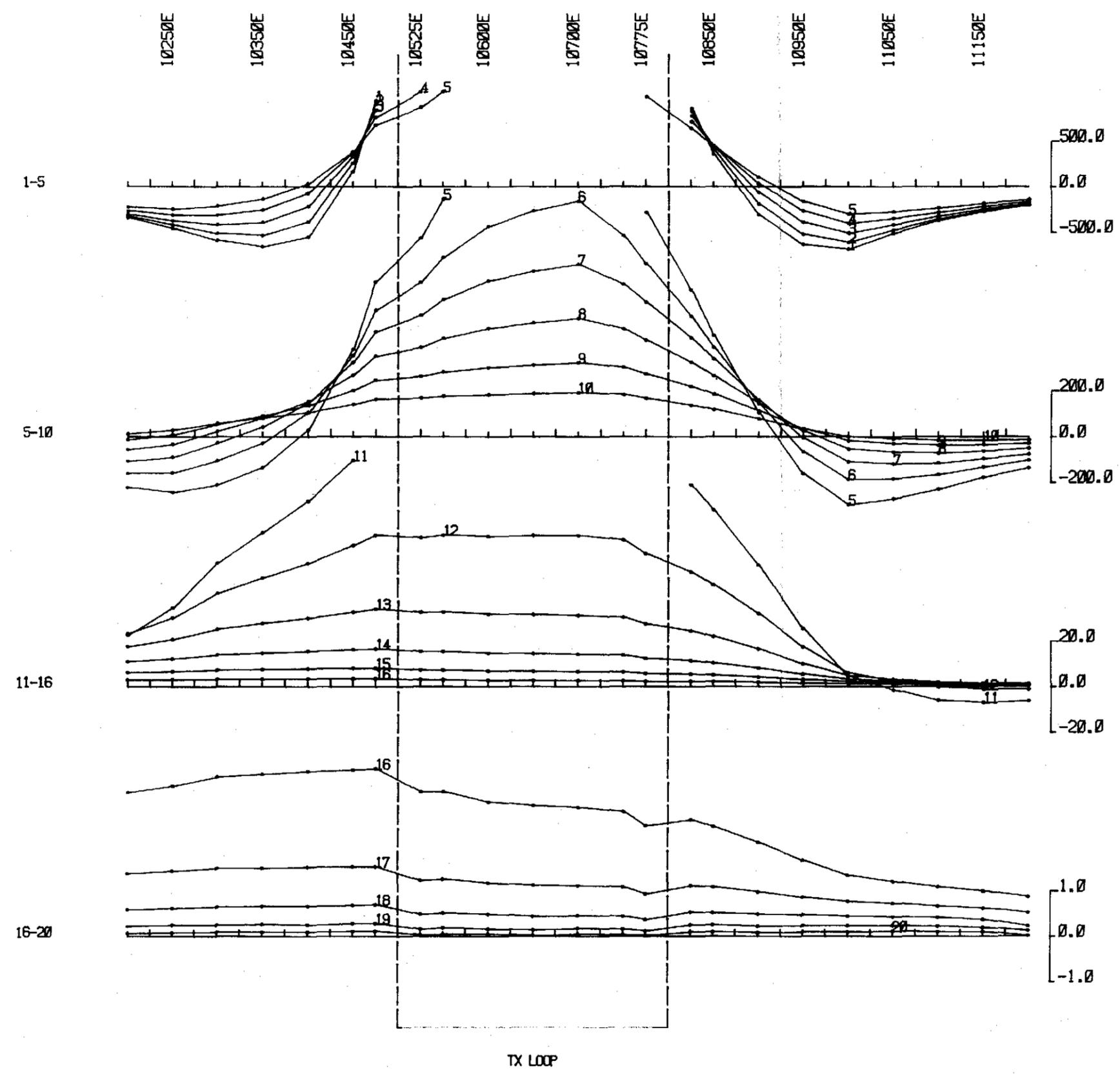
028

VERTICAL COMPONENT B (Z)

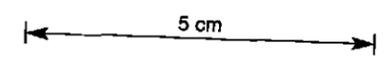
255029

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)



nanovolts per amp-metre squared

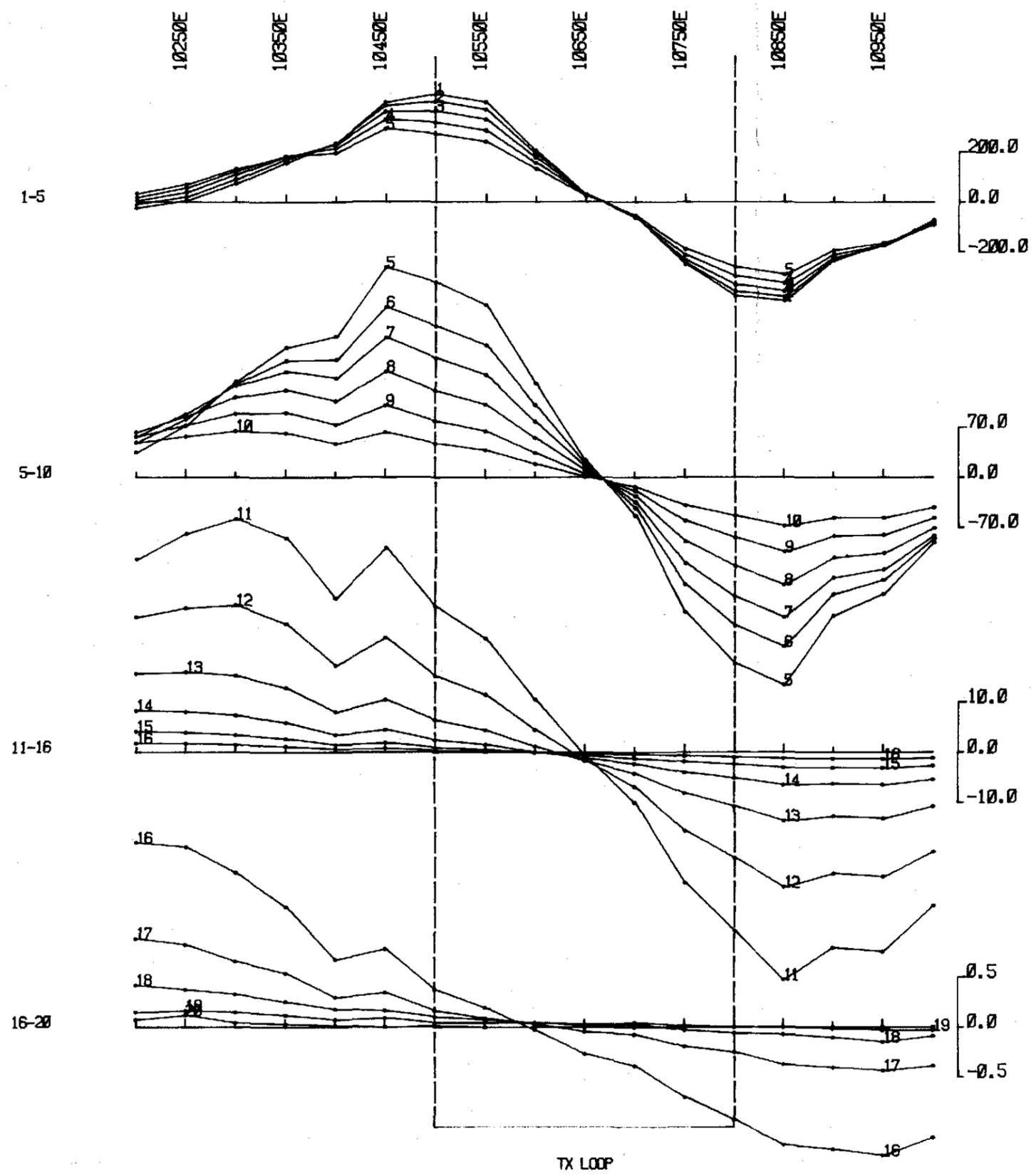


TX LOOP SIDES : 10200N 10500E  
                  : 10600N 10800E  
TX LOOP SIZE : 300m X 600m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:5000  
SURVEYED BY : J.P./RL  
DATE : 02-DEC-1983

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 85-1499
	CLIENT : The BHP Co. Ltd. PROJECT : AREA N AREA : Waratah Tasmania. LINE : 10700N TX LOOP : 6	Z

029

HORIZONTAL COMPONENT B (X)

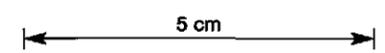


255030

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)



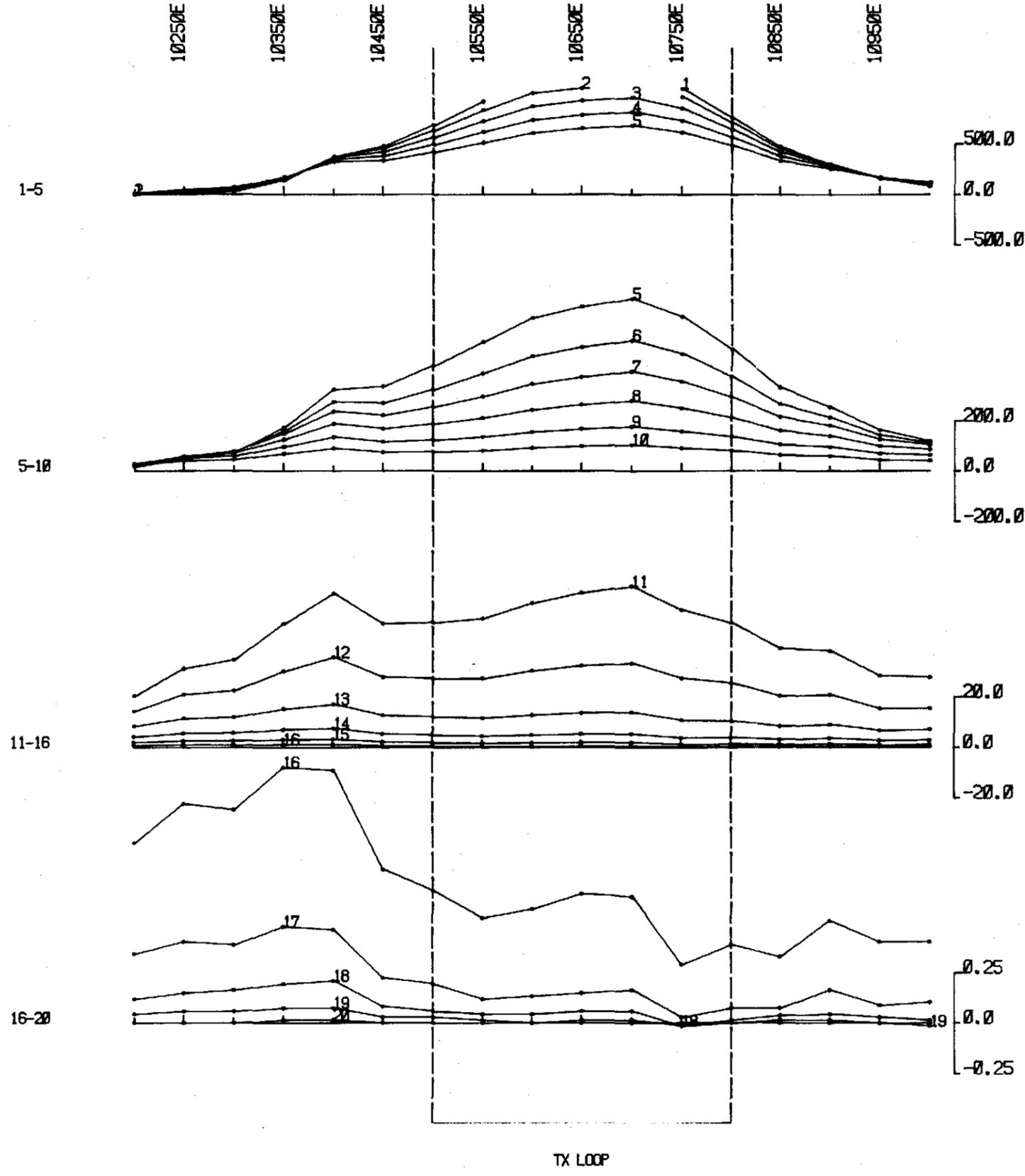
nanovolts per amp-metre squared

TX LOOP SIDES : 10200N 10500E  
                  : 10800N 10800E  
TX LOOP SIZE : 300m X 600m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNC MODE : CRYSTAL  
HORIZONTAL SCALE : 1:15000  
SURVEYED BY : JP,RL  
DATE : 02-DEC-1983

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 85-1499
	CLIENT : The BHP Co. Ltd. PROJECT : AREA N AREA : Karatah Tasmania. LINE : 10900N TX LOOP : 6	X

030

HORIZONTAL COMPONENT B (Y)

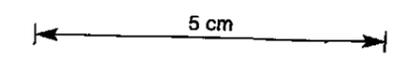


nanovolt per amp.metre squared

255031

EM-37  
FIXED  
TRANSMITTER  
SURVEY

ELECTROMOTIVE FORCE INDUCED BY  
SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)



TX LOOP SIDES : 10200N 10500E  
                  : 10800N 10800E

TX LOOP SIZE : 300m X 800m

TX TURN OFF TIME : 365 microseconds

CURRENT : 16.8 amps

FREQUENCY : 25 Hz

INTEGRATION TIME : 256 cycles

SYNC MODE : CRYSTAL

HORIZONTAL SCALE : 1:5000

SURVEYED BY : J.P.R.L

DATE : 02-DEC-1983

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 85-1499

CLIENT : The BHP Co. Ltd.

PROJECT : AREA N

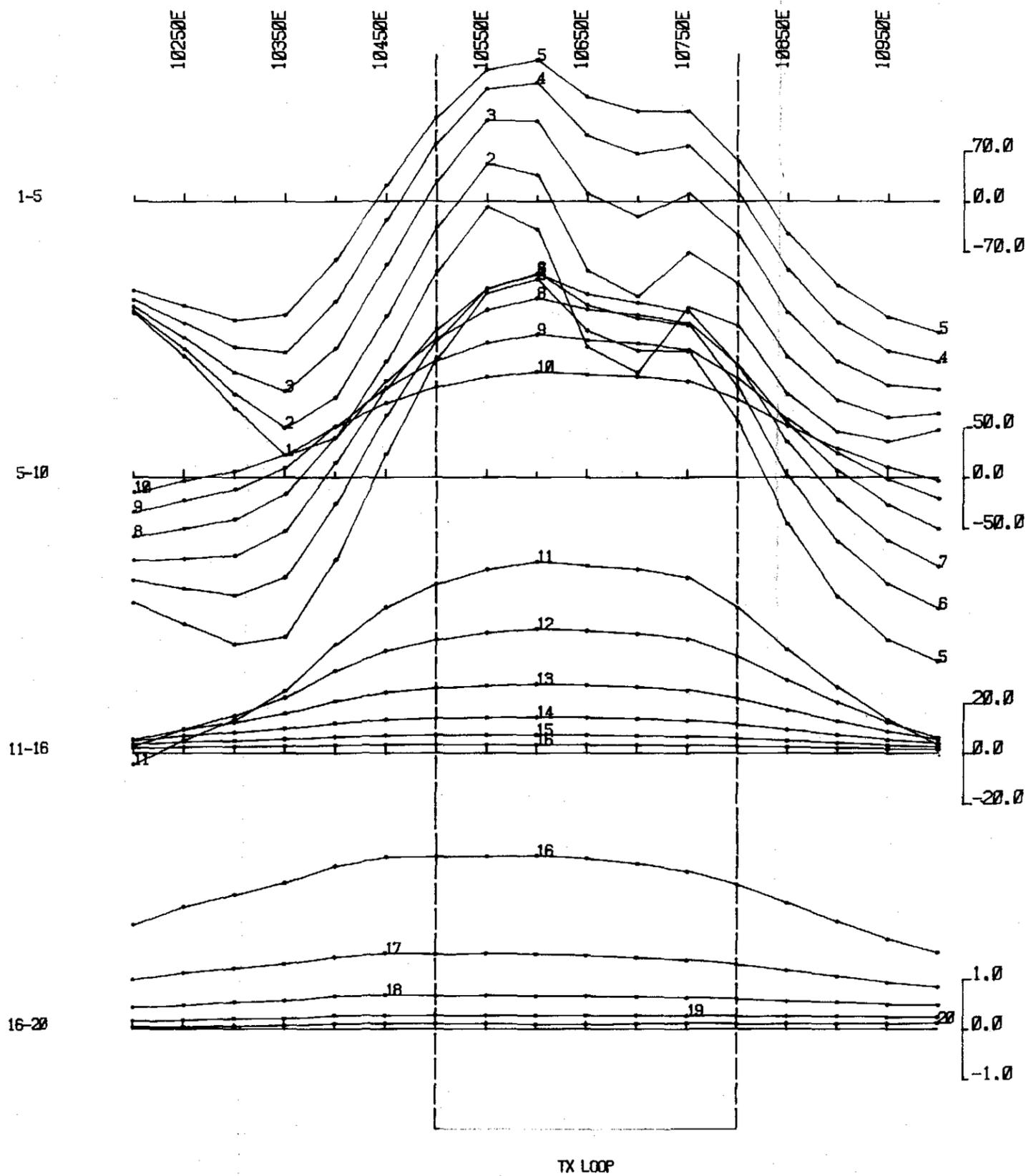
AREA : Marotah Tasmania.

LINE : 10900N Y

TX LOOP : 6

031

VERTICAL COMPONENT B (Z)



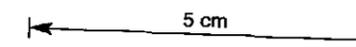
255032

EM-37

FIXED TRANSMITTER SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

nanovolt per amp-metre squared



TX LOOP SIDES : 10200N 10500E  
                  : 10800N 10800E  
TX LOOP SIZE : 300m X 600m  
TX TURN OFF TIME : 365 microseconds  
CURRENT : 16.8 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 256 cycles  
SYNCH. MODE : CRYSTAL  
HORIZONTAL SCALE : 1:5000  
SURVEYED BY : J.P.R.L.  
DATE : 02-DEC-1983



SURVEYED AND COMPILED BY  
GEOTREX PTY. LTD.

PROJECT NO.  
85-1499

CLIENT : The BHP Co. Ltd.  
PROJECT : AREA N  
AREA : Waratah Tasmania.  
LINE : 10900N  
TX LOOP : 6

Z