

CR 8505

PARTIAL RELINQUISHMENT REPORT
FOR EXPLORATION LICENCE 7797

BATTEN CREEK
NORTHERN TERRITORY

OPEN FILE

T PATERSON

JANUARY 1996

Tenement EL7797 is held by:

BHP MINERALS PTY LTD
Level 3
3 Plain Street
EAST PERTH WA 6004

CR96/95

SUMMARY

Exploration Licence (EL) 7797 is wholly owned by BHP Minerals. It is part of the Batten Creek Project, which also includes EL8656. A reduction of five blocks from 50 to 45 blocks was made on 10 November 1995.

EL7797 is located in the mid-Proterozoic McArthur Basin, which is considered prospective for sediment-hosted base metal mineralisation.

Field work completed on the relinquished portion consists of five PROTEM electromagnetic soundings. No strong bedrock conductors were recognised by this work; consequently this part of the area could be relinquished.

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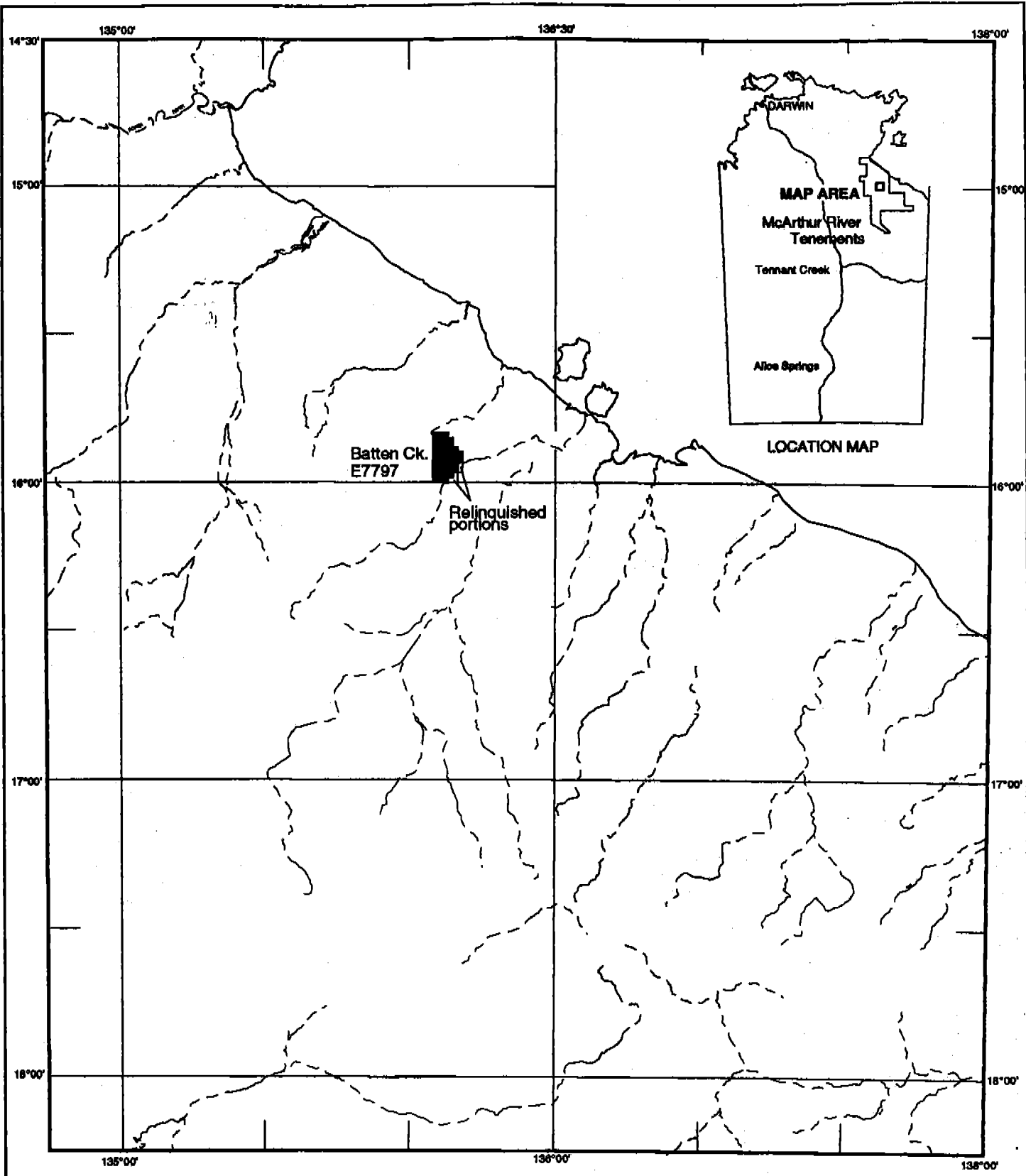
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1. PROTEM Survey Specifications.



Prepared : T. Paterson
 Drawn : S.J. Shephard
 Date : 22.1.96
 Revised :



McARTHUR RIVER PROJECT
EL 7797 BATTEN CREEK
LOCATION PLAN

Exploration - BHP Minerals
 BHP Minerals Pty. Ltd., A.C.N. 008 084 782

Centre : Perth
 Drg. No. : A4-5699

FIGURE 1

1. INTRODUCTION

This report covers all exploration carried out by BHP Minerals Pty Ltd on five blocks relinquished from EL7797 on 10 November 1995.

The licence is located in the mid-Proterozoic McArthur Basin, NT, in the northern part of the Batten Trough. Exploration was for a large sediment-hosted base metal deposit. The work was carried out by BHP Minerals staff based from Perth, WA.

Work completed includes:

- (a) Review and interpretation of available geological and geophysical information.
- (b) Five sites were tested by PROTEM electromagnetic soundings.

1.1 Location, Access and Physiography

EL7797 is located approximately 15 km northwest of Borroloola in the Gulf region of the Northern Territory (Fig. 1). Borroloola is approximately 970 km by sealed road from Darwin.

The licence is located on the Mount Young 1:250,000 and the Bing Bong 1:100,000 map sheets. Access to the area is by tracks which lead off from the sealed road between Borroloola and Bing Bong on the coast.

Elevation ranges from approximately 20 to 50 metres above sea level. Vegetation varies from open eucalypt woodland to thick acacia and melaleuca scrub. The main drainage is Batten Creek, which flows from southwest to northeast, at the northern end of the relinquished blocks. The climate is monsoonal with hot, humid summers, and mild, dry winters.

1.2 Tenement Status

Exploration Licence 7797 BATTEN CREEK was granted to BHP Minerals Pty Ltd on 27 October 1992.

Project status has been granted to EL7797 and EL8656, which together form the Batten Creek Project. A required 50% reduction of 50 blocks was made on 14 December 1994.

A partial waiver of reduction was sought from the NTDME which would result in a 10% reduction, from 50 blocks to 45 blocks. This was approved on 10 November 1995. Total expenditure on the five relinquished blocks for the period 27 October 1992 to 26 October 1995 is \$11,186 (Appendix 1).

2. GEOLOGY

The area lies within the mid-Proterozoic McArthur Basin, and is located at the eastern edge of the Batten Trough. In the area of the HYC deposit, the eastern edge of the Batten Trough (defined essentially by the distribution of McArthur Group units) is marked by the Emu Fault.

EL7797 is east of the northern continuation of the Emu Fault. However, McArthur Group units are present in drill holes (MCA5 and MCA16) and mapped outcrop on EL7797. Thus the eastern edge of Batten Trough may be defined in this northern area by the Rosie Creek Fault.

The area covered by the relinquished blocks contains outcrop of the Proterozoic Yalco Formation (McArthur Group) mapped as dominantly dolomite. Aeromagnetic data show the NNE trending Rosie Creek Fault passes 2-3 km east of the relinquished blocks. To the east of the fault, Proterozoic Roper Group units outcrop.

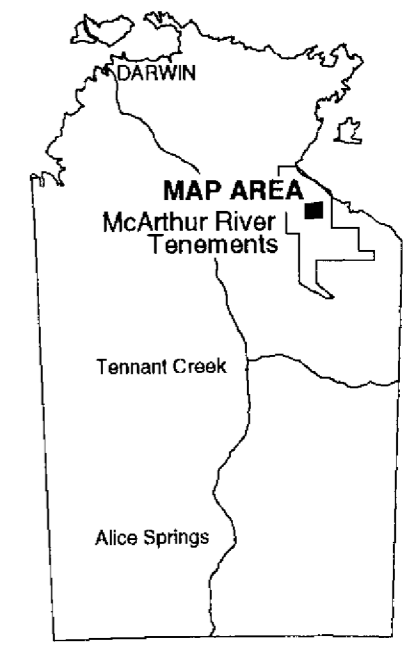
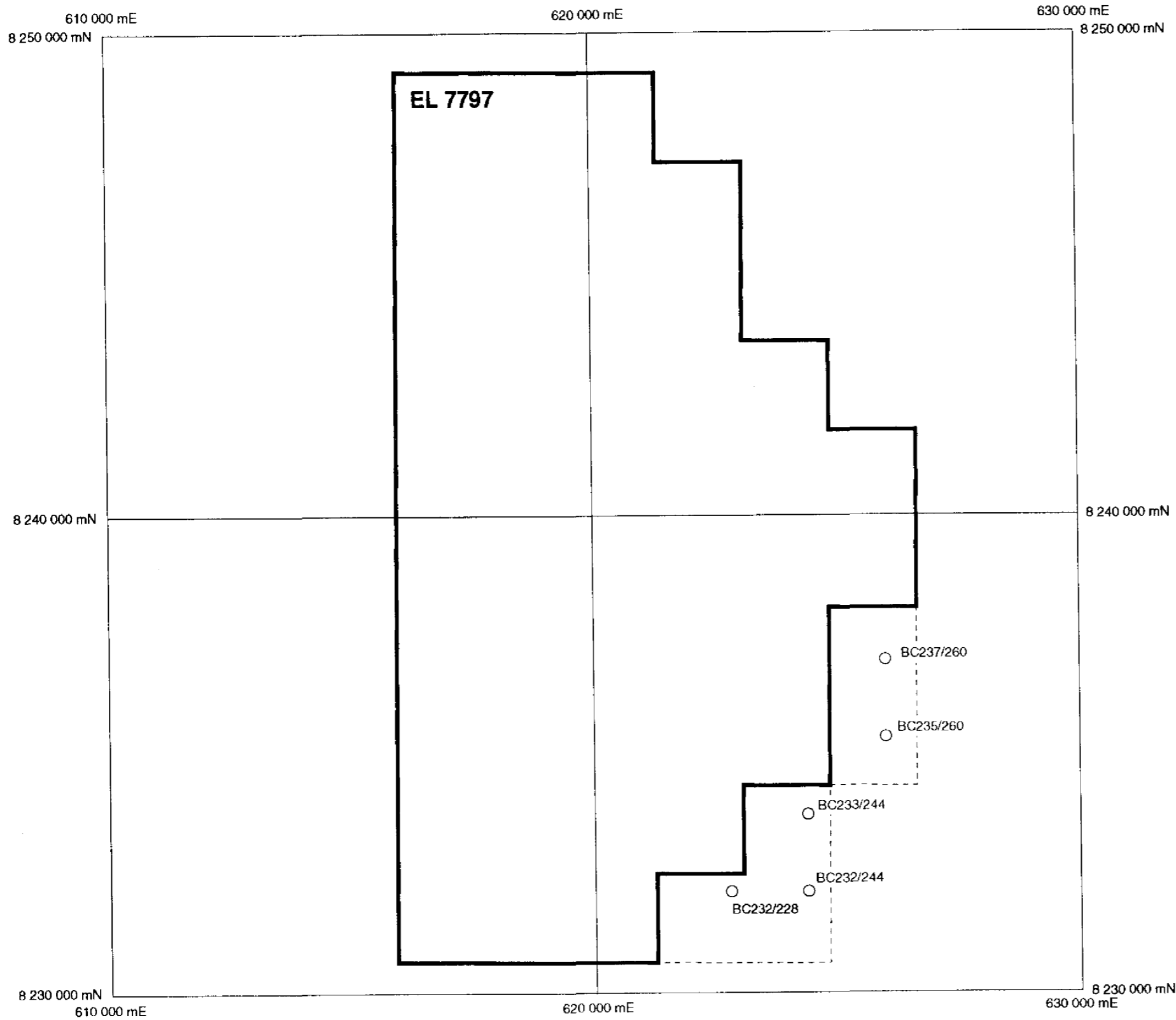
3. TEM SOUNDINGS

In the field season of 1994, Geotrex of Sydney were contracted to perform electromagnetic soundings using the PROTEM system. Of the soundings sites located on EL7797, five fall within the area covered by this report. The sites were based on a 1.6 km by 1.6 km grid. Co-ordinates of the sites are given in Appendix 2, and a location plan is provided (Fig. 2). Survey specifications are presented in Table 1. None of the five soundings in the relinquished area indicate the presence of bedrock conductors. Upper layers of low to intermediate resistivity (8-41 ohm.m) are present in four of the soundings. The shallow depths (36 m maximum) of these layers suggest they are due to Cenozoic or Cretaceous cover, rather than sulphide mineralisation in the Proterozoic basement. Data and inversions from all five sites are contained in Appendix 3.

4. CONCLUSIONS AND RECOMMENDATIONS

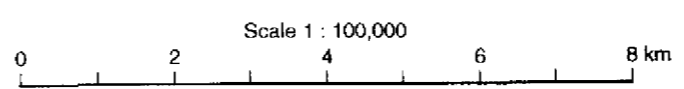
The Rosie Creek Fault, which may be a bounding fault to McArthur Group units, was located on aeromagnetic data. McArthur Group units in the vicinity of this structure were tested for conductive, sediment-hosted base metal mineralisation by electromagnetic mineralisation.

No conductive bodies were identified in the area covered by this report. It is felt that this area has been adequately tested for large, conductive mineralisation systems, and can therefore be relinquished.



LOCATION MAP

BC237/260 ○ PROTEM sounding location and number



BHP		Exploration - BHP Minerals <small>BHP Minerals Pty. Ltd., A.C.N. 008 694 782</small>	
		McARTHUR RIVER PROJECT EL 7797 BATTEN CREEK	
PROTEM Sounding Location Map			
Prepared : T.Paterson	Date : 22.1.96	FIGURE 2	
Drawn : R.J.Clark	Revised:		
Centre : Perth	Drg. No.: A3-4003		

TABLE 1

GROUND TEM SOUNDINGS SURVEY SPECIFICATIONS

EL	:	7797
Contractor	:	GEOTERREX PTY LTD, Sydney
Instrument	:	PROTEM receiver. TEM 37 transmitter
Loop Size/Configuration	:	300 x 300 m/fixd. Diamond shaped
Base Frequency	:	25, 6.25 Hz.N = 20
Receiver Spacing/Components	:	300 m / Z only
Coverage	:	5 loops
		Both in- and out-of-loop readings (6.25 Hz)
		in-loop only (25 Hz)
Totals	:	5 soundings

APPENDIX 1

EXPENDITURE 27/10/92 TO 26/10/95

E7797 - BATTEN CREEK

27 October 1992 to 26 October 1995

Wages and Salaries	2,245
Field Support	695
Vehicles	266
Equipment	1,077
Geophysics	4,342
Surveys	3
Office Expenses	62
Other	24
Consultants	98
In-House Services: Geophysics	485
In-House Services: Drafting	25
Sub-Total	9,322
20% of Total for Corporate Overheads	1,064
TOTAL	\$11,186

APPENDIX 2

PROTEM SITE CO-ORDINATES

Protem site	Easting	Northing
BC232/244	624400	8232200
BC232/228	622800	8232200
BC233/244	624400	8233800
BC235/260	626000	8235400
BC237/260	626000	8237000

*AMG zone 53

APPENDIX 3

PROTEM SOUNDING RESULTS

BC 237/260

GRENDL Inversion results

Job # : 3-825 Date : 26.10.94
 Program : GRENDL Version : July, 1992

Client : RHP

TEM File: 130794.TEM
 Loop : 236
 Line : 2370N Station : 260.000

The initial model is:

I	Resistivity	Thickness	Depth
1	100.0	50.00	50.00
2	50.00	500.0	550.0
3	500.0		

Convergence to final model

- Standard error = 167.22 percent
- Standard error = 55.59 percent
- Standard error = 41.11 percent
- Standard error = 3.65 percent
- Standard error = 3.16 percent
- Standard error = 2.59 percent
- Standard error = 2.38 percent
- Standard error = 2.32 percent
- Standard error = 2.28 percent
- Standard error = 2.26 percent
- Standard error = 2.24 percent
- Standard error = 2.23 percent
- Standard error = 2.22 percent
- Standard error = 2.21 percent
- Standard error = 2.20 percent
- Standard error = 2.19 percent
- Standard error = 2.19 percent
- Standard error = 2.18 percent
- Standard error = 2.18 percent
- Standard error = 2.18 percent
- Standard error = 2.17 percent
- Standard error = 2.17 percent
- Standard error = 2.17 percent
- Standard error = 2.17 percent
- Standard error = 2.16 percent
- Standard error = 2.16 percent
- Standard error = 2.16 percent
- Standard error = 2.16 percent
- Standard error = 2.16 percent
- Standard error = 2.15 percent
- Standard error = 2.15 percent
- Standard error = 2.15 percent
- Standard error = 2.15 percent

Final model :

"TEM File: 130794.TEM Loop : 236 Line : 2370N Station : 260.000"

I	Resistivity	Thickness	Depth
1	36.01	36.48	36.48
2	89.09	73.30	109.8
3	528.7		

Error structure of fitted model

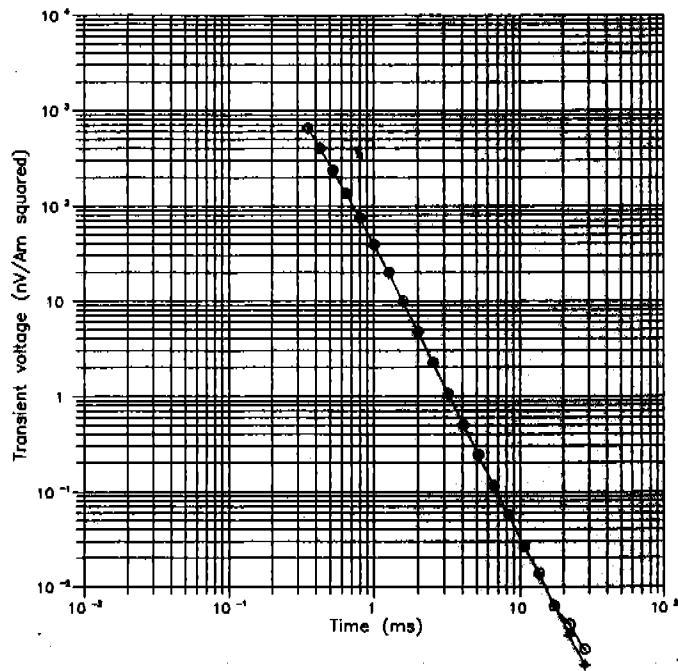
Chnl	DELAY Time (ms)	Apparent Resistivity		Observed DB/DT (nV/sq.m)	Calculated DB/DT (nV/sq.m)	Weighted percent Symmetric Error
		Observed	Calculated			
1	0.352	58.6	58.9	648.3	646.2	0.3
2	0.428	63.9	63.4	401.3	406.1	-1.2
3	0.525	69.7	69.2	236.3	238.4	-0.9
4	0.647	76.1	75.8	134.7	135.5	-0.6
5	0.803	83.3	83.7	74.46	73.97	0.7
6	1.003	92.1	93.1	39.30	38.68	1.6
7	1.258	102.6	104.0	20.01	19.62	2.0
8	1.582	115.4	116.7	9.858	9.698	1.6
9	1.997	130.9	131.1	4.727	4.714	0.3
10	2.525	148.8	147.4	2.238	2.262	-1.0
11	3.197	167.7	165.2	1.055	1.079	-2.3
12	4.055	187.7	184.7	0.5007	0.5127	-2.4
13	5.148	205.8	205.3	0.2433	0.2442	-0.4
14	6.543	227.5	226.9	0.1160	0.1165	-0.4
15	8.323	246.7	249.5	0.5678E-01	0.5590E-01	1.6
16	10.592	275.4	272.1	0.2651E-01	0.2698E-01	-1.8
17	13.490	284.6	295.4	0.1385E-01	0.1310E-01	5.6
18	17.188	325.7	319.6	0.6200E-02	0.6377E-02	-2.8
19	21.903	293.7	345.3	0.3960E-02	0.3105E-02	0.0
20	27.915	292.2	374.1	0.2180E-02	0.1507E-02	0.0

Mean percent Symmetric error = 1.86
 Maximum percent Symmetric error = 5.59
 Maximum Symmetric error occurred at observation 17

Average predicted residual error (APRE) = 2.42 percent

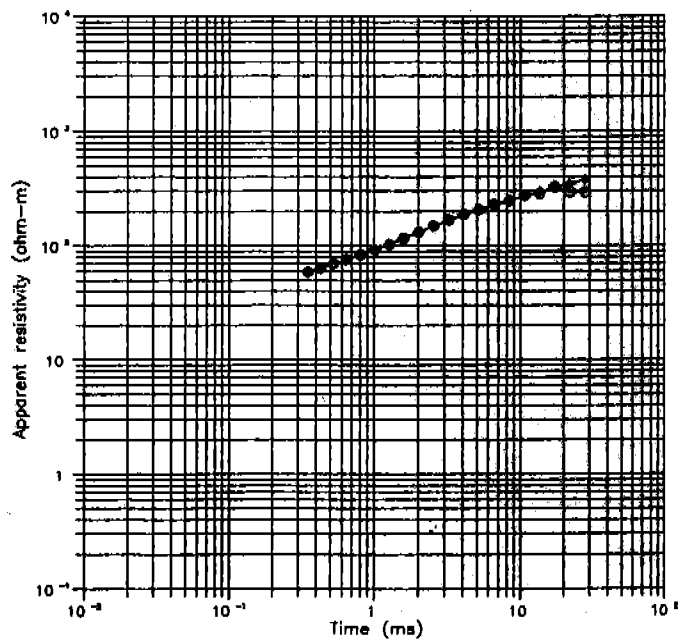
Transient decays

6.25 Hz data
Loop : 236
Station : 370N, 260



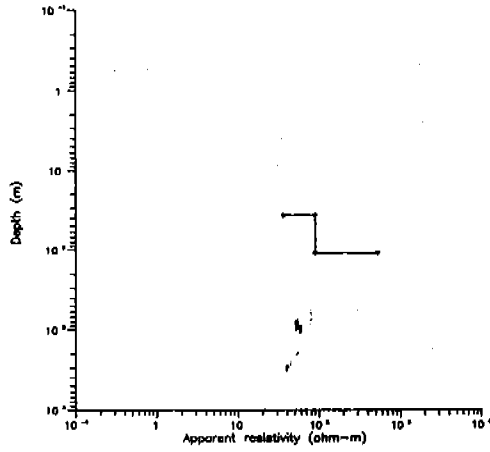
Apparent resistivity

6.25 Hz data
Loop : 236
Station : 370N, 260



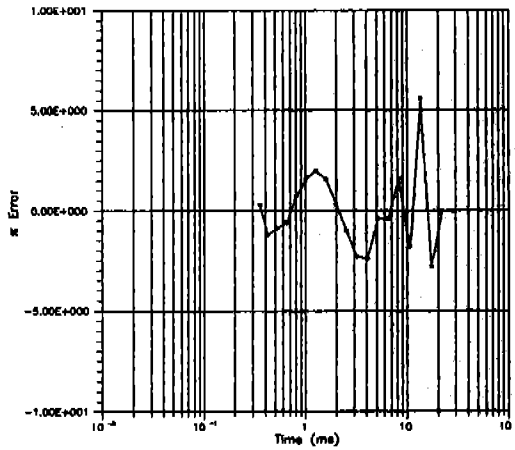
Layered-earth model

6.25 Hz data
Loop : 238
Station : 370N, 280



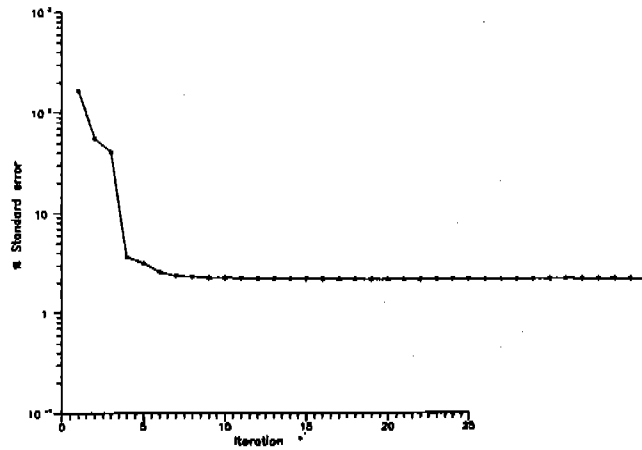
Error structure

6.25 Hz data
Loop : 238
Station : 370N, 280



Standard error per iteration

6.25 Hz data
Loop : 238
Station : 370N, 280



DL 200/20

BC 235/260

GRENDL Inversion results

Job # : 3-825 Date : 26.10.94
Program : GRENDL Version : July, 1992

Client : BHP

TEM File: 130794.TEM
Loop : 235
Line : 2354N Station : 260.000

The initial model is:

I	Resistivity	Thickness	Depth
1	100.0	50.00	50.00
2	50.00	500.0	550.0
3	500.0		

Convergence to final model

- Standard error = 153.39 percent
- Standard error = 63.76 percent
- Standard error = 30.64 percent
- Standard error = 2.89 percent
- Standard error = 1.76 percent
- Standard error = 1.20 percent
- Standard error = 1.20 percent
- Standard error = 1.20 percent
- Standard error = 1.20 percent

Final model :

"TEM File: 130794.TEM Loop : 235 Line : 2354N Station : 260.000"

I	Resistivity	Thickness	Depth
1	21.85	22.89	22.89
2	143.5	306.5	329.4
3	1622.		

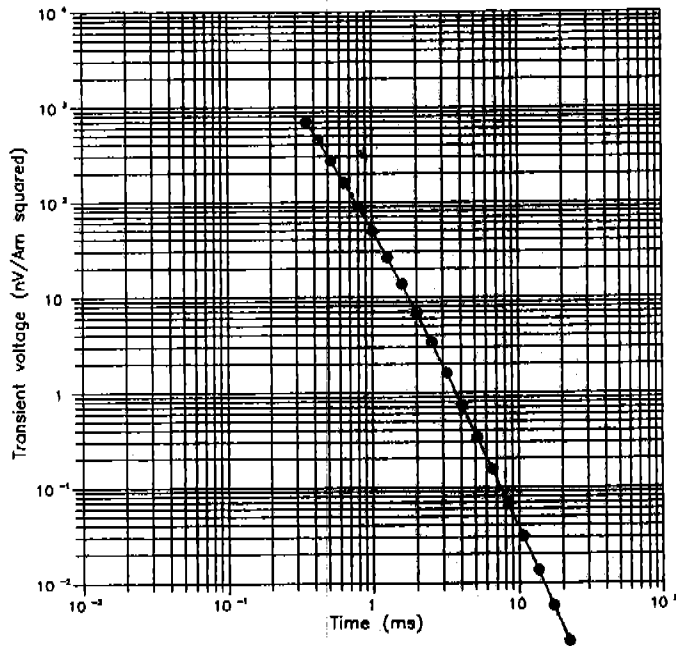
Error structure of fitted model

Chnl	DELAY Time (ms)	Apparent Resistivity Observed	Apparent Resistivity Calculated	Observed DB/DT (nV/sq.m)	Calculated DB/DT (nV/sq.m)	Weighted percent Symmetric Error
1	0.352	55.2	55.3	700.3	700.0	0.0
2	0.428	58.9	58.9	445.6	445.8	0.0
3	0.525	63.3	63.8	268.9	267.7	0.4
4	0.647	68.1	68.0	157.1	157.3	-0.1
5	0.803	73.3	73.1	89.21	89.55	-0.4
6	1.003	79.3	78.8	48.73	49.06	-0.7
7	1.258	85.7	85.4	25.98	26.09	-0.4
8	1.582	93.0	93.3	13.52	13.47	0.4
9	1.997	101.6	102.5	6.864	6.772	1.3
10	2.525	112.7	113.8	3.366	3.316	1.5
11	3.197	127.2	127.4	1.591	1.588	0.2
12	4.055	145.4	143.9	0.7319	0.7436	-1.6
13	5.148	166.2	163.8	0.3345	0.3420	-2.2
14	6.543	189.0	188.1	0.1533	0.1545	-0.8
15	8.323	214.1	216.9	0.7021E-01	0.6885E-01	2.0
16	10.592	249.8	251.2	0.3066E-01	0.3041E-01	0.8
17	13.490	290.4	292.1	0.1344E-01	0.1332E-01	0.9
18	17.188	342.9	340.1	0.5740E-02	0.5811E-02	-1.2
19	21.903	405.7	396.6	0.2440E-02	0.2524E-02	0.0

Mean percent symmetric error = 1.03
 Maximum percent symmetric error = 2.21
 Maximum symmetric error occurred at observation 13
 Average predicted residual error (APRE) = 1.26 percent

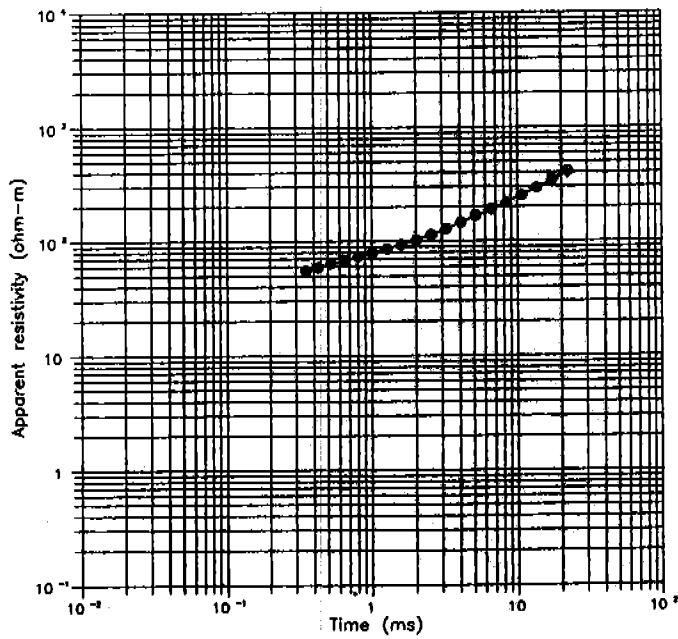
Transient decays

6.25 Hz data
Loop : 235
Station : 354N, 260

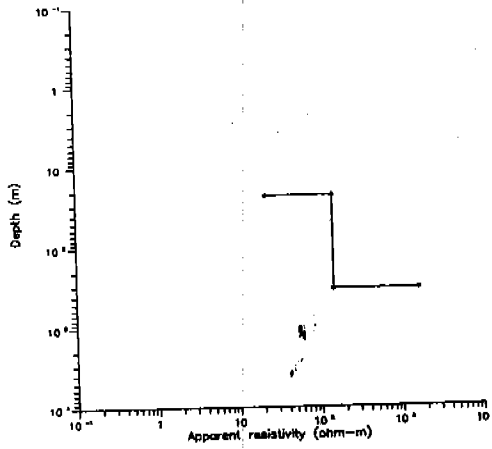


Apparent resistivity

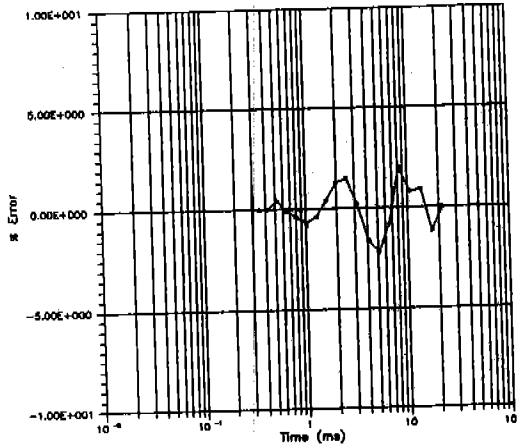
6.25 Hz data
Loop : 235
Station : 354N, 260



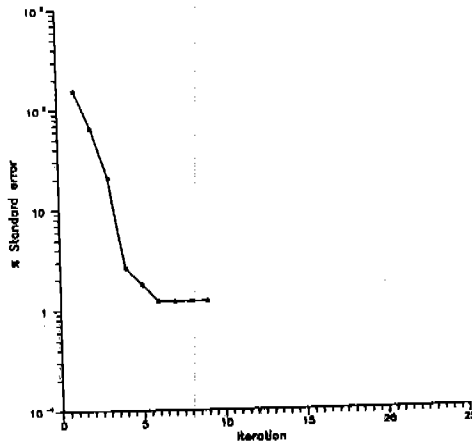
Layered-earth model
6.25 Hz data
Loop : 235
Station : 354N, 260



Error structure
6.25 Hz data
Loop : 235
Station : 354N, 260



Standard error per iteration
6.25 Hz data
Loop : 235
Station : 354N, 260



BC 233/244

BC 233/244

GRENDL Inversion results

Job # : 3-825 Date : 26.10.94
Program : GRENDL Version : July, 1992
Client : BHP

TEM File: 100794.TEM
Loop : 222
Line : 2338N Station : 244.000

Table with 4 columns: I, Resistivity, Thickness, Depth. Rows 1-3 showing initial model parameters.

Convergence to final model

- List of standard error percentages ranging from 38.02 percent down to 3.23 percent.

Final model :

TEM File: 100794.TEM Loop : 222 Line : 2338N Station : 244.000

Table with 4 columns: I, Resistivity, Thickness, Depth. Rows 1-3 showing final model parameters.

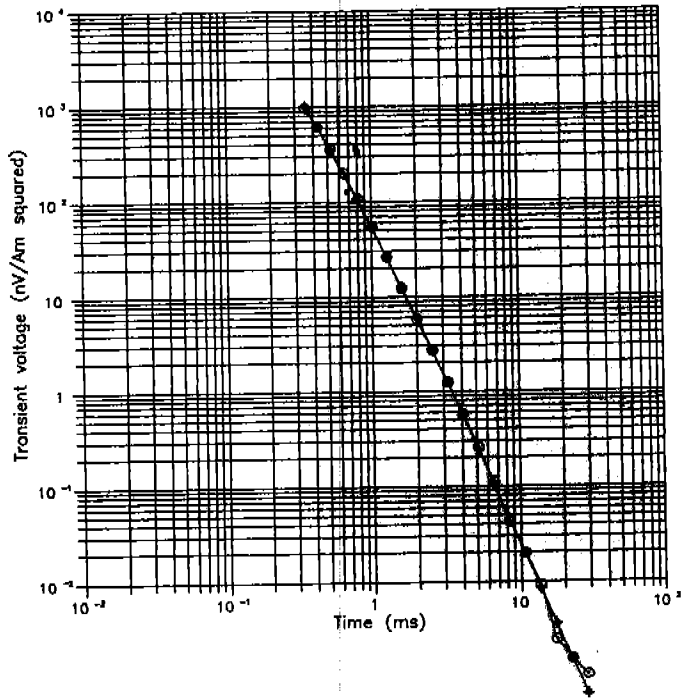
Error structure of fitted model

Table with 7 columns: Chnl, DELAY Time (ms), Apparent Resistivity (Observed/Calculated), Observed DB/DT (nV/sq.m), Calculated DB/DT (nV/sq.m), Weighted percent Symmetric Error.

Mean percent Symmetric error = 2.80
Maximum percent Symmetric error = 6.54
Maximum Symmetric error occurred at observation 15
Average predicted residual error (APRE) = 4.00 percent

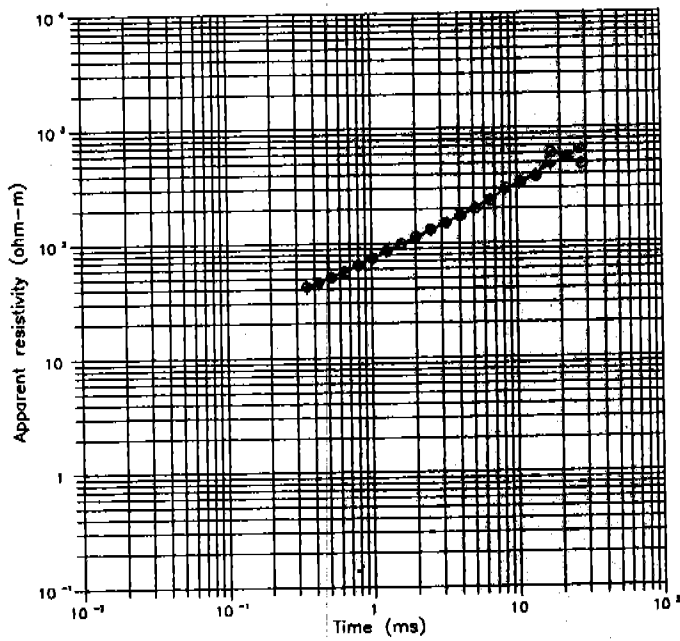
Transient decays

6.25 Hz data
Loop : 222
Station : 338N, 244



Apparent resistivity

6.25 Hz data
Loop : 222
Station : 338N, 244



232228A

SOUNDING: 232228 : Vers 1
Batten Creek BC232/228 25 Hz

* 119 ohm.m * 121 m.

* 119

121 m.

266 ohm.m 293 m.

266

414 m.

98.5 ohm.m 106 m.

98.5

* 520 m.

875 ohm.m

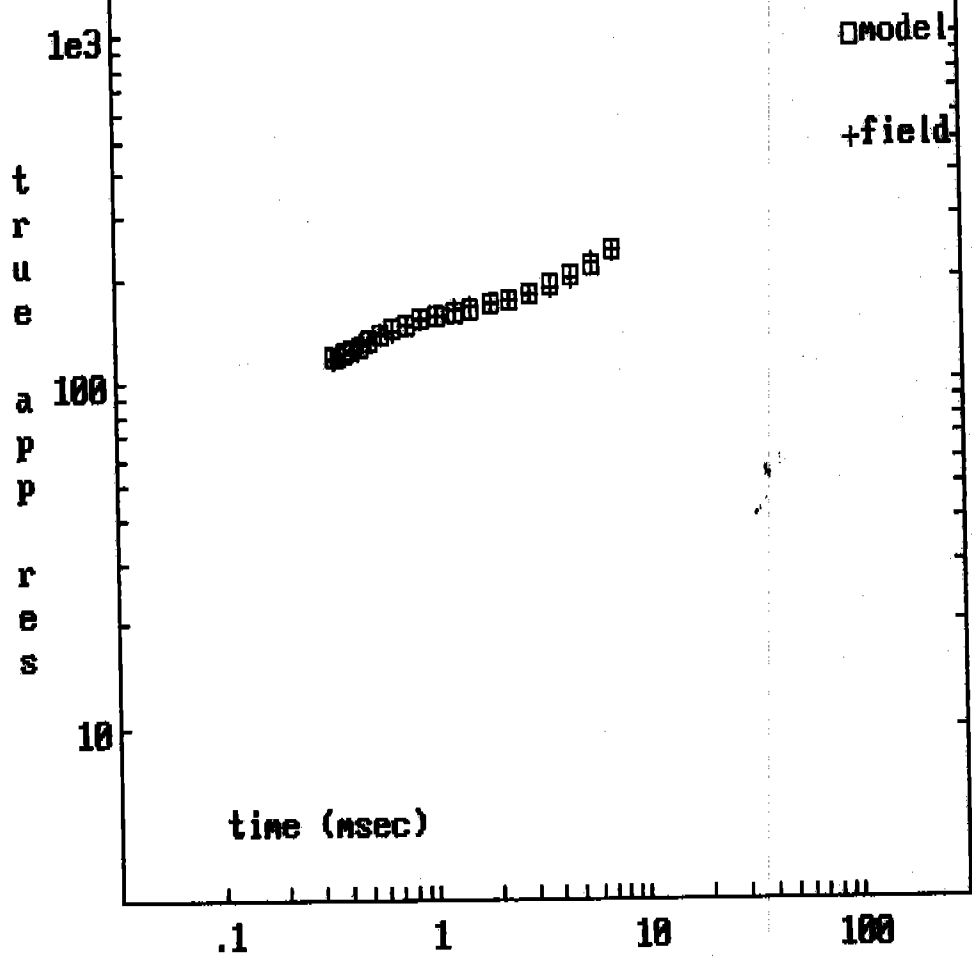
875

STD ERR= 1.4% : S= 3 S

E= 1%

S= 35

Sounding 232228 : Ver 1



SOUNDING: 232228 : Vers 2
Batten Creek BC232/228 6.25 Hz

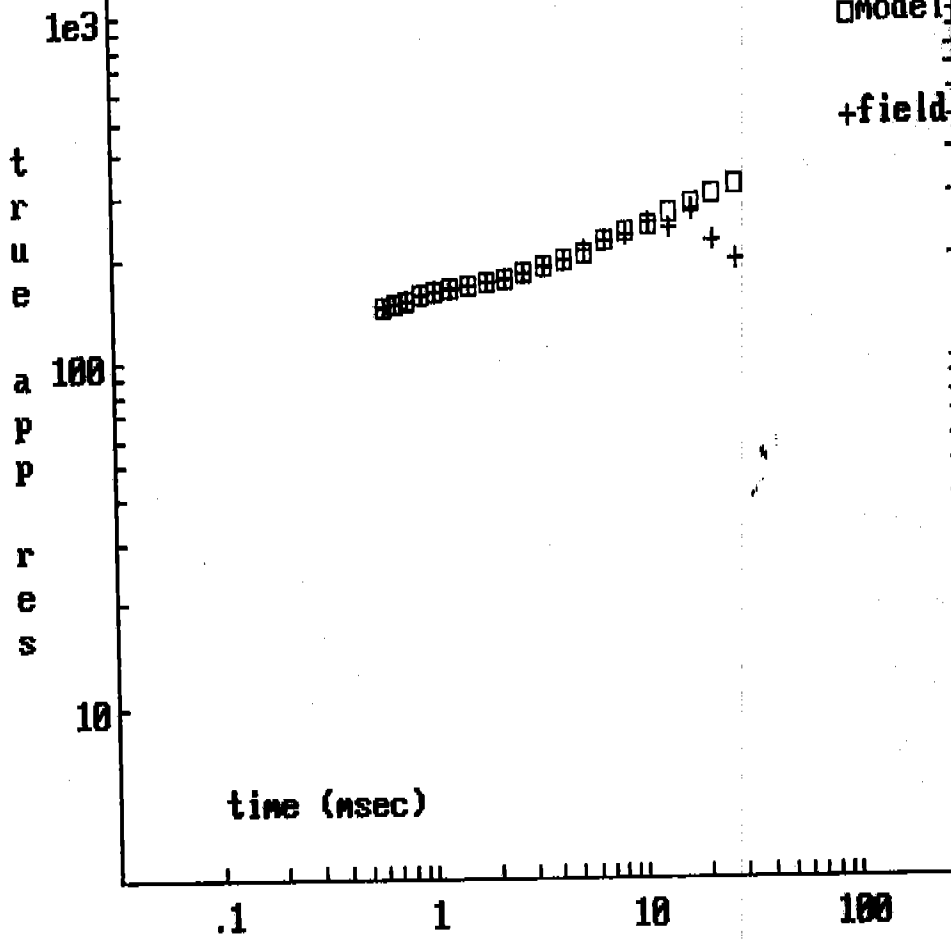
232228A

* 126 ohm.m	150 m.	* 126
	150 m.	
331 ohm.m	249 m.	331
	399 m.	
93.9 ohm.m	105 m.	93.9
	* 503 m.	
* 531 ohm.m		* 531

STD ERR= 1.3% : S= 3 S

E= 1%
S= 3S

Sounding 232228 : Ver 2



BC232/244

GRENDL Inversion results

Job # : 3-825 Data : 26.10.94
 Program : GRENDL Version : July, 1992
 Client : BHP

TEM File: 090794.TEM
 Loop : 215
 Line : 2322N Station : 244.000

The initial model is:

I	Resistivity	Thickness	Depth
1	50.00	20.00	20.00
2	200.0	500.0	520.0
3	1000.		

Convergence to final model

Standard error = 6.53 percent
 Standard error = 3.55 percent
 Standard error = 3.30 percent
 Standard error = 3.00 percent
 Standard error = 2.72 percent
 Standard error = 2.45 percent
 Standard error = 2.42 percent
 Standard error = 2.40 percent
 Standard error = 2.39 percent
 Standard error = 2.39 percent
 Standard error = 2.38 percent
 Standard error = 2.38 percent
 Standard error = 2.38 percent
 Standard error = 2.37 percent
 Standard error = 2.37 percent
 Standard error = 2.37 percent
 Standard error = 2.37 percent
 Standard error = 2.36 percent
 Standard error = 2.36 percent
 Standard error = 2.36 percent
 Standard error = 2.36 percent

Final model :

"TEM File: 090794.TEM Loop : 215 Line : 2322N Station : 244.000"

I	Resistivity	Thickness	Depth
1	41.55	21.47	21.47
2	220.6	659.9	681.4
3	3715.		

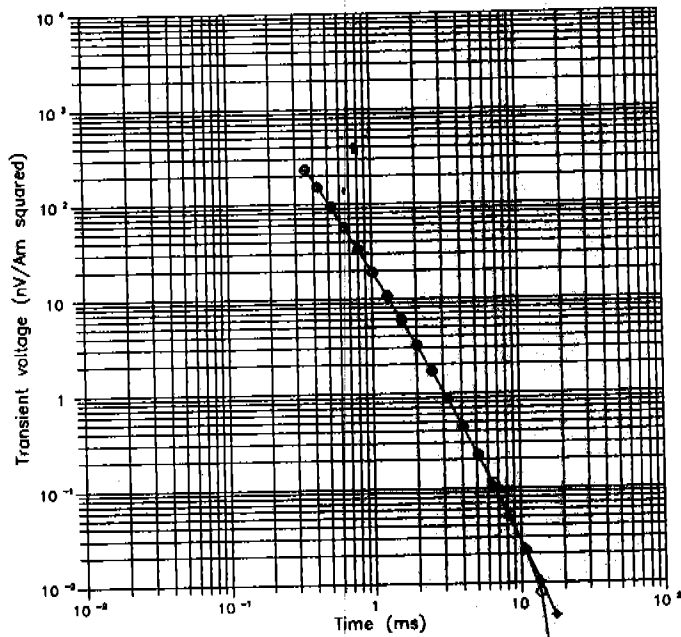
Error structure of fitted model

Chnl	DELAY Time (ms)	Apparent Resistivity Observed	Apparent Resistivity Calculated	Observed DB/DT (nV/sq.m)	Calculated DB/DT (nV/sq.m)	Weighted percent Symmetric Error
1	0.352	128.6	126.5	230.3	235.6	-2.3
2	0.428	132.0	131.4	149.9	150.8	-0.6
3	0.525	136.4	137.8	92.91	91.60	1.4
4	0.647	141.5	143.1	56.08	55.19	1.6
5	0.803	146.7	148.3	33.08	32.57	1.6
6	1.003	152.1	153.1	18.99	18.79	1.0
7	1.258	157.8	157.7	10.66	10.67	-0.1
8	1.582	163.9	163.1	5.888	5.933	-0.8
9	1.997	170.9	169.4	3.183	3.227	-1.4
10	2.528	179.5	177.7	1.688	1.713	-1.5
11	3.197	190.4	188.4	0.8726	0.8874	-1.7
12	4.055	203.3	202.3	0.4440	0.4475	-0.8
13	5.148	219.4	219.9	0.2211	0.2203	0.3
14	6.543	234.4	242.2	0.1110	0.1057	4.9
15	8.323	265.9	270.5	0.5076E-01	0.4947E-01	2.6
16	10.592	314.8	305.6	0.2170E-01	0.2269E-01	-4.4
17	13.490	414.1	349.3	0.7840E-02	0.1019E-01	0.0
18	17.188	1700.9	403.5	0.5200E-03	0.4494E-02	0.0

Mean percent Symmetric error = 2.01
 Maximum percent Symmetric error = 4.92
 Maximum Symmetric error occurred at observation 14
 Average predicted residual error (APRE) = 3.26 percent

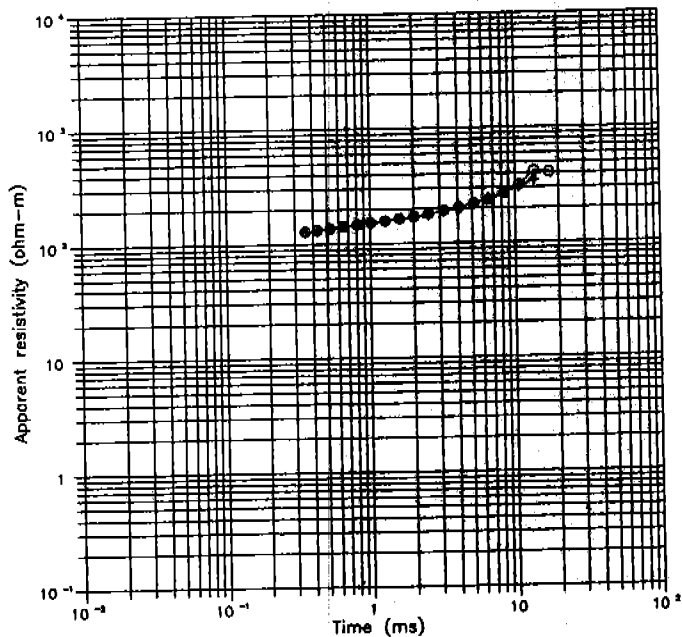
Transient decays

6.25 Hz data
Loop : 215
Station : 322N, 244

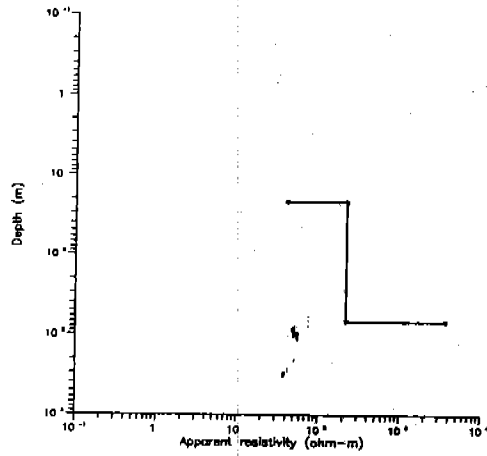


Apparent resistivity

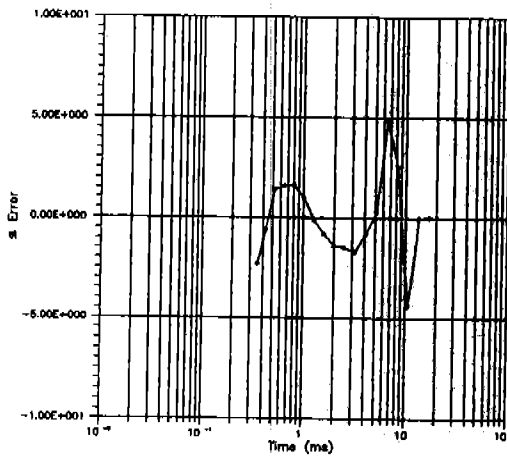
6.25 Hz data
Loop : 215
Station : 322N, 244



Layered-earth model
 6.25 Hz data
 Loop : 215
 Station : 322N, 244



Error structure
 6.25 Hz data
 Loop : 215
 Station : 322N, 244



Standard error per iteration
 6.25 Hz data
 Loop : 215
 Station : 322N, 244

