703001

88-2893

NEW HOLLAND MINING NL

EL30/87

KING RIVER, TASMANIA

ANNUAL REPORT

YEAR 1

(15.1.88 - 15.1.89)

Address of licencee
175 Great Eastern Highway
BELMONT, W.A. 6104

Author
William C. Cromer Pty Ltd
Consultant Geologists
190 Macquarie Street
HOBART TAS. 7000
December, 1988

CONTENTS

List of Figures

List of Tables

03

SUMMARY

Rocks ranging in age from Cambrian-Recent crop out on EL30/87 in central western Tasmania.

The Cambrian rocks, which contain interbedded felsic-intermediate volcanics and volcaniclastics, crop out over about $12km^2$ and are the most prospective on the tenement. Some of the andesitic and rhyolitic rocks along the common boundary with New Holland's EL29/87 on the lower King River show some chemical and petrological affinities with the andesite-dacitic-rhyolitic volcanics in the Mt. Read Volcanic Belt near Que River and Hellyer. Potential exists therefore, for high-grade, moderate-tonnage base metal and gold volcanogenic massive sulphides. This concept is untested in the area.

Exploration on EL30/87 should continue to evaluate the prospectivity of the Cambrian rocks, preferably in conjunction with work in similar Cambrian sequences on the adjoining EL29/87.

A regional geophysical assessment of the tenement suggests limited mapping and sampling follow-up in the Teepookana area, as well as near the mouth of the King River.

The Mt. Lyell pyritic tailings in the lower King River need further assessment.

1. INTRODUCTION

1.1 Tenement Details

Exploration Licence 30/87 (Figure 1) was granted to New Holland Mining NL on 15 January, 1988. The Company is sole owner and manager.

The area of 127 km^2 comprises (guide only)

	o	Timber Reserve	31.5 km^2
	o	South West Conservation area	95.6 km^2
and excludes	o	Crown Reserves	0.1 km^2
it contains	o	South West Tasmania Australian Heritage Commission registered entry.	95.6 km^2

There are no current mining leases within the tenement. Mining lease 59M/87 of 16ha, presumably for alluvial gold, was recently pegged in the Strahan area close to the northwestern corner of EL29/87.

The northern boundary to the tenement is the northern bank of the King River, which is also the southern boundary to EL29/87 (150km^2) also wholly owned and managed by New Holland Mining. The northwestern corner of EL30/87 runs north-south across the mouth of the King River.

1.2 Exploration Aims

New Holland regards the Cambrian rocks on EL30/87 and on the adjacent EL29/87 as having underexplored prospectivity for volcanogenic massive sulphide mineralisation of the Hellyer-Que River Style.

In addition, the Company intends to reassess the reserves and grades of gold, copper and other metals in the Mt. Lyell tailings along the lower King River.

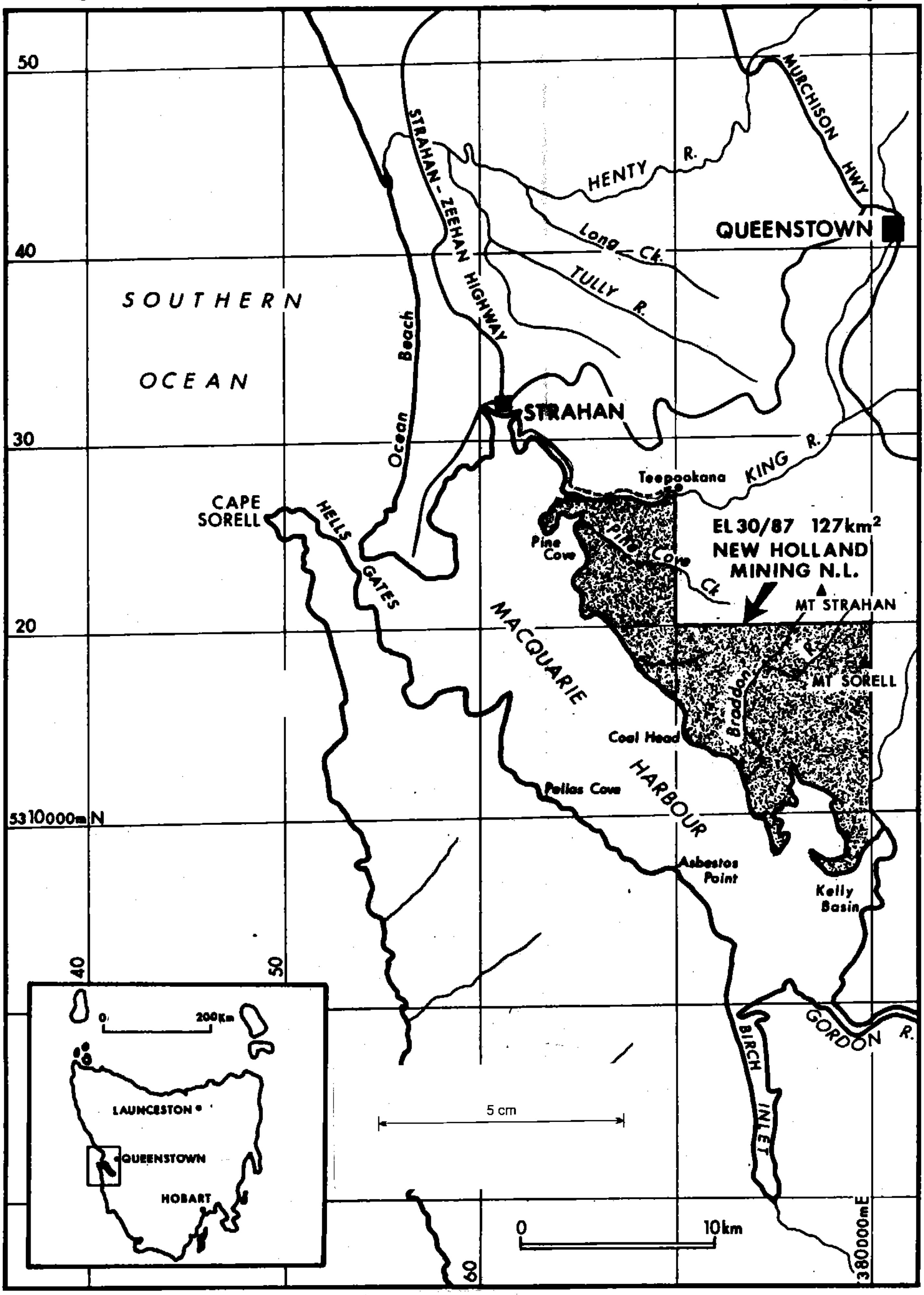


Figure 1. Location map, EL30/87 (1:250 000)

2. WORK COMPLETED IN YEAR 1

2.1 Summary

The main Year 1 exploration activity has been

- a review of all previous exploration and the compilation of a prospectivity report on the tenement (Cromer, 1988c),
- reconnaissance rock chip sampling and mapping,
- preparation of a regional geophysical interpretation of the licence area based on existing gravity and magnetic data (Leaman, 1988b), and Appendix 1, this report).

2.2 Review of Previous Exploration

Government Geologist Charles Gould, on his second expedition to Macquarie Harbour in 1862, recorded non-payable gold along the King River (Blainey, 1967, p 9; Binks, 1980, p 180). Soon after, exploration shafts were sunk for alluvial gold near the mouth of the King River, and in 1866 the Eldon Ranges Prospecting Company was formed to explore for gold near Macquarie Harbour (Blainey, ibid. p 11).

Between 1881-3, payable alluvial and reef gold was found along the Queen River five kilometres north of its confluence with the King (Pink, 1984). About the same time, reef gold prospects were worked near the northern boundary of EL30/87, leading directly to the discovery of gold (1883) and copper (1891) at Mt. Lyell. Other gold, copper or silver-lead-zinc prospects in the Queenstown district were mined sporadically in the 1890's, and Mt. Lyell has operated continuously. It has produced 100mt of ore yielding 1.18mt copper, 700t silver and 40t gold.

The central west of Tasmania has seen several decades of modern exploration, mainly by large companies such as Mt. Lyell Mining and Railway Co. Ltd., E.Z. Co. Ltd., Lyell-E.Z., BHP ~~Pty~~. Co. Ltd., Rio Tinto Aust. Exploration and Pickands Mather and Co. However, much of EL30/87 remains underexplored and its base metal and gold prospectivity untested.

The Mt. Lyell Mining and Railway Co. Ltd. held large areas of western and southwestern Tasmania in the 1950's, but most of the reported work is not relevant to EL30/87. Scott (1957(a)) described a lead-zinc prospect on a series of old mining leases on the Strahan-Queenstown road 5 km north of the tenement. He also reported (1975(b)) on copper mineralisation at Pelias Cove 10km west of EL30/87 on the western shore of Macquarie Harbour. Rodda (1958) for Lyell-E.Z. Explorations described a magnetic anomaly near Strahan which he suggested may have been due to magnetite-bearing beach sand. More recent regional data (Corbett et al, 1982) have shown this anomaly to be part of a major arcuate belt 100 km long and several kilometres wide trending southeast and south down the eastern margin of Macquarie Harbour.

In the early 1970's, Mt. Lyell investigated the prospectivity of its own tailings built up at the King River delta on the northern boundary of EL30/87 (McKibben, 1971) proving a reserve of 300 000t of pyritic sand and silt averaging 0.16% copper. Later, Citco International extended the work and proved 100mt of tailings in the river and delta averaging 0.11-0.15% copper with minor zinc (180 g/t), cobalt (80 g/t), molybdenum (50 g/t), silver and gold (Jinks, 1976). Citco concluded that, of the 100 mt deposit, about 2 mt occurred along the lower King River at any time. The river deposit is continuously being replenished from Mt. Lyell via the Queen River but is constantly flushed by high river flows.

For 10 years from 1965 Broken Hill Proprietary Co. Ltd. held EL13/65 which originally extended south from Strahan to include most of southwestern Tasmania. BHP's exploration was concentrated south of Macquarie Harbour, and the area of EL30/87 was not investigated. However, Hall (1969) described copper mineralisation south of Macquarie Harbour in the Cambrian Mainwaring Group which lies on the regional anomalous magnetic trend described earlier.

Amoco Aust. Petroleum Co. conducted an east-west marine seismic line across Macquarie Harbour. Economic basement including the Mesozoic was interpreted at 500-800m and too immature for hydrocarbon generation (Womer, 1983).

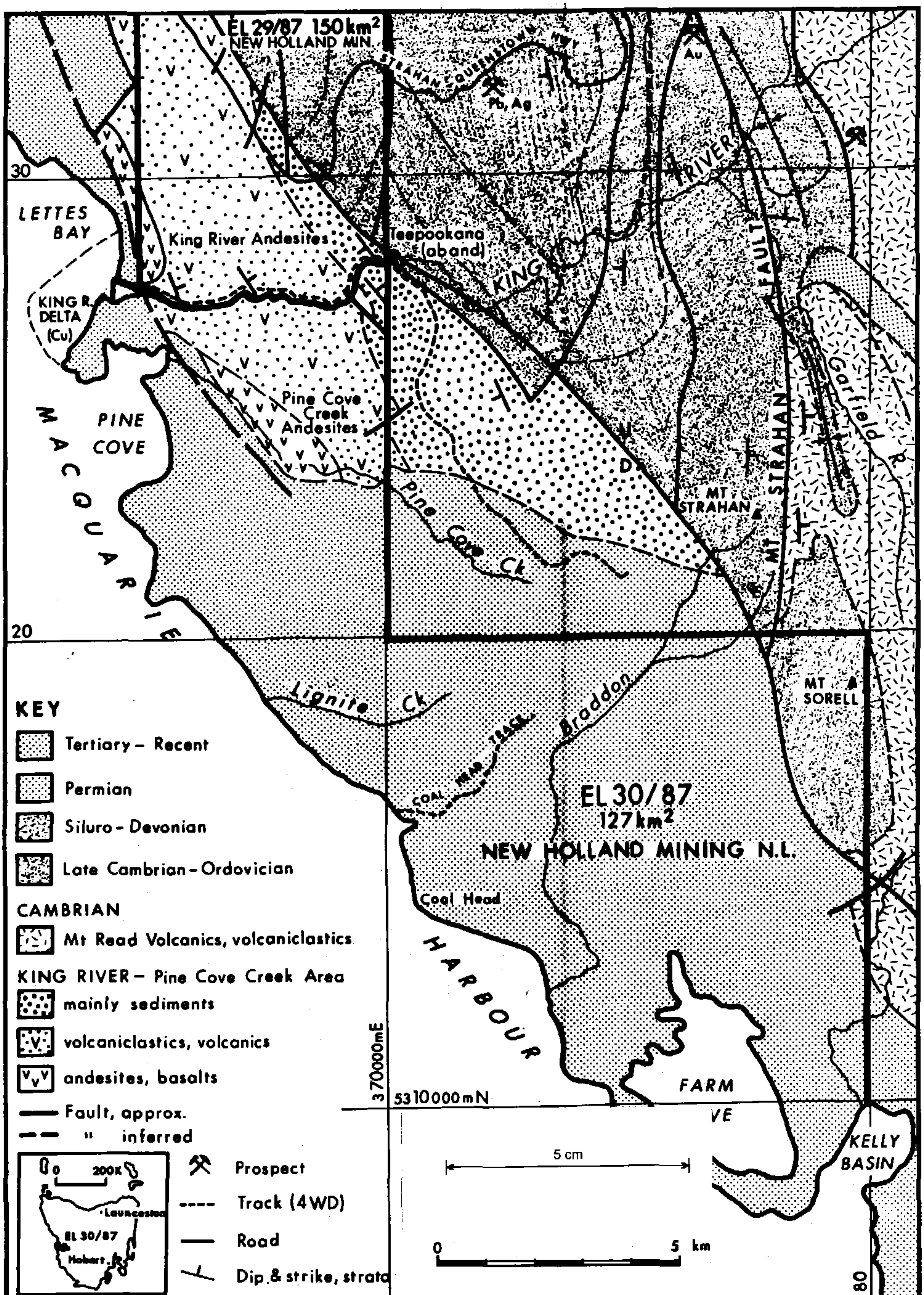
More recently, Cox (1985) described Cambrian sequences on and adjacent to EL30/87 and Corbett and Solomon (<u>in press</u>) summarised the Cambrian geology and mineralisation of central western Tasmania.

2.3 Tenement geology and mineralisation

The regional geology of the Strahan area including the northern part of EL30/87 has been mapped by Baillie <u>et al</u> (1977) and described by Baillie and Corbett (1985). Most of the tenement is also included on a recent geological compilation of the Mt. Read Volcanic Belt by Corbett and McNeill (1978). Figure 2 shows the general geological features of EL30/87. Most of the area has not been mapped in detail.

Rocks ranging in age from Cambrian to Recent occur on the tenement. The pre-Carboniferous rocks are the most prospective for primary gold and base metals deposits but are virtually unexplored. The Tertiary sediments are prospective for placer heavy minerals including gold, but are low priority.

The oldest rocks are (?) Middle Cambrian sediments and volcanics cropping out over about 12km^2 in the northern part of EL30/87. The open-folded sequence strikes NNW-SSE, extends north of the King River onto EL29/87 (New Holland) and youngs eastwards where it is fault-bounded by Siluro-Devonian sediments.



Geology from Corbett & McNeill, 1988

Figure 2.: Generalised geology, EL30/87 (1:100 000)

The Cambrian rocks are well exposed along the lower King River where Cox (1985) described a mainly sedimentary eastern sequence, overlying a western volcaniclastic sedimentary sequence including interbedded felsic lavas, pyroclastics, and andesites. Corbett and McNeill (1988) subdivide the succession into three units (Figure 2).

The rocks show lithological similarities to parts of the Mt. Read Volcanic Belt. In particular, andesites associated with felsic volcanics suggests correlation with some of the Dundas Group rocks of the Belt which northeast of EL30/87 host the Hellyer (34t Au) and Que River (7t Au) massive sulphide ore bodies.

Magnetic data support this view. Regionally the Mt. Read Volcanic Belt shows a strong, variable magnetic signature, in the range 250-1000nT (Corbett et al 1982). Similarly, the Strahan and King River anomalies, and a related belt of anomalies extending from Pine Cove Creek southeast through EL30/87, are part of a large, curved belt up to 5 km wide and 100 km long extending south through the Cambrian Mainwaring Group to Elliott Bay. At several locations, including Pine Cove Creek, the anomalies appear to be related to andesitic volcanics.

Most of the remainder of the tenement is underlain by Tertiary unconsolidated sediments including lignitic intercalations, deposited in the Macquarie Graben.

2.4 Reconnaisance Rock Chip Sampling and Mapping

In conjunction with exploration on New Holland's adjacent EL29/87, an orientation mapping and rock-chip sampling programme has been completed in the Cambrian Mt. Read Volcanic-type succession exposed along the common EL boundary on the lower King River (Cromer, 1988a, b). Fifty one samples of most rock types, including andesitic varieties, were collected. Brief descriptions are summarised in Table 1 which was included in Cromer (1988a).

Twenty samples were submitted for assay for Au, Ag, As, Cu, Pb, Zn, Ni, Ba, Cr. Care was taken in laboratory preparation to thoroughly wash each sample to remove possible wind-blown contamination from the pyritic tailings along the King River. Results are listed in Table 2.

Three samples (Table 1) including an andesite were also submitted for whole rock analysis for major oxides and trace elements Ba, Rb, Sr, Y, Nb, Zr, Co, Ni, Cr, V, Sc, Cu, Pb an Zn. Analyses are shown in Table 3; Figure 3 is a comparative K_2O-SiO_2 plot of the Mt. Read and King River volcanics.

Polished thin sections were cut from eleven samples (Table 1). Petrographic studies are proceeding.

The reconnaissance mapping and sampling generally verified Cox's (1985) descriptions of the Cambrian rocks and inspection of polished thin sections has confirmed field descriptions.

The volcanic rocks in the lower King River are dominantly felsic, feldspar phyric crystal-lithic and vitric tuffs and minor andesites, interbedded with probably volcanogenic, marine and often finely laminated siltstone, mudstone and sandstone. The rocks young to the east, and may range from proximal through distal facies of a mixed andesitic-felsic volcanic pile. The volcanic centre might correspond with the strong magnetic high near the mouth of the King River.

Low-grade regional sericitisation and to a lesser extent chloritisation is present in most rock types, locally overprinted with a strong, probably Devonian, schistosity. Quartz-chlorite hydrothermal alteration was observed at two localities in association with feldspar phyric vitric tuffs. More sampling and petrological and geochemical studies are needed, however, to determine whether there are similarities with the higher grade quartz-sericite-chlorite-barite-pyrite-carbonate alteration around the Hellyer, Que River, Rosebery and Mt.Lyell orebodies.

Several samples show elevated base metal values - up to 290ppm zinc in a volcanogenic mudstone, 160ppm lead in a pyritic mudstone, and 96 ppm copper (pyritic mudstone). A mudstone interbedded with lithic and crystal tuffs returned anomalously high silver (5 g/t). Several other rocks, including an andesite, yielded gold up to 10ppb. Chromium ranged up to 215ppm, nickel to 126ppm and barium to 2250ppm.

Chemically, the vitric tuffs and vitric crystal tuffs are calc-alkaline, low-medium potassium, rhyolitic lavas (75-77% SiO_2). The more mafic rocks near the King River mouth are medium-potassium, calc-alkaline andesites (57% SiO_2). The two groups plot within the Que-Hellyer basalt-andesite and dacite-rhyolite fields on a K_2O-SiO_2 plot (Figure 3) and demonstrate the "silica-gap" described by Corbett and Solomon (in press).

A single composite talings sample from the north bank of the lower King River at (651273) returned (:ppm):

Cu	Pb	Zn	Ag	Au
1850	50	290	, 0.5	0.27

The copper value is in general agreement with earlier reported assays by Mt. Lyell (McKibben, 1971) and Citco (Jinks, 1976). However, no gold assays have previously been published. The value of 0.27 ppm is anomalous and warrants further work.

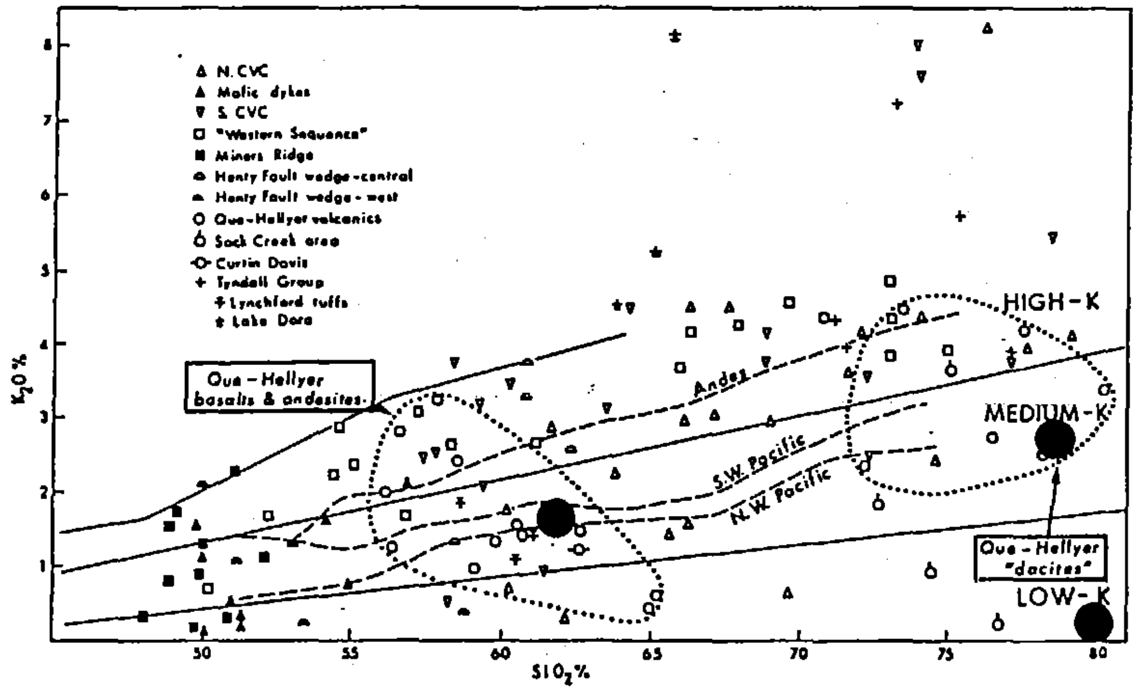


Figure 3.: K_2O vs SiO_2 plot for Mt. Read Volcanics, showing low-K, medium-K, high-K boundaries, trends for Andes and Pacific suites and basaltic-andesitic and dacitic-rhyolitic envelopes for Que-Hellyer volcanics. Reproduced from Corbett and Solomon (<u>in press</u>, Fig.4.11, p 113) with lower King River analyses added (larger filled circles). Analyses recalculated volatile-free.

2.5 Regional Geophysical Interpretation

As part of its Year 1 exploration programme, New Holland Mining commissioned Dr. D.E. Leaman to review existing regional geophysical data on EL30/87 (Leaman 1988b). His report is presented here as Apendix 1.

The main results of the study are :

- o A major NNW-SSE fault zone extends past the mouth of the King River, and east of the eastern margin of Macquarie Harbour. Tyennan basement and the source of the magnetic anomaly at the mouth of the King River appears to be deeply buried.
- o There is no evidence of Cambrian or Devonian granites in the tenement, and no significant acid-intermediate volcanic piles are indicated.
- o Limited areas (e.g. near Teepookana) are worthy of follow-up geochemistry and mapping where they coincide with magnetic anomalies and E-W structuring.

3. DISCUSSION

The Cambrian interbedded volcanics and volcanogenic sediments occupying about 12 km^2 on EL30/87 are a strike extension of similar rocks on New Holland's adjoining EL29/87. The latter display similarities to parts of the strongly mineralised Mt. Read Volcanic Belt, and are prospective for base metal and gold volcanogenic massive sulphides. Reconnaissance sampling by New Holland on EL29/87 on its common boundary with EL30/87 shows the interbedded lavas are of rhyolitic and andesitic composition, chemically similar to the rhyolite-dacite and basalt-andesite volcanic suite hosting the Que River and Hellyer polymetallic massive sulphide ores.

The rhyolitic-andesitic lavas on the lower King River may represent part of an andesitic stratovolcano typical of island arcs: the centre of the volcano might correspond with the magnetic high at the mouth of the King River. Similarly, other magnetic highs on EL29/87 and 30/87, apparently coinciding with mapped andesites, may be proximal to other andesitic centres. The silica gap evident between the lava types in the lower King River is possibly related to chamber fractionation, and is similar to that observed in lavas in the Que-Hellyer area.

The lower King River within EL30/87 contains about 2 mt of reasonable pyritic tailings from the Mt. Lyell copper-gold mine at Queenstown. A single grab sample from the tailings returned 1850 ppm copper and 0.27 ppm gold.

The regional geophysical assessment of the tenement suggests that in addition to the andesitic volcanics near the King River mouth, the Teepookana area may merit limited follow-up.

4. PROPOSED FUTURE EXPLORATION

1. Exploration on EL30/87 should concentrate on the Cambrian andesitic, rhyolitic and associated rocks

   (a) exposed along the lower King River and extending south to Pine Cove Creek, and

   (b) in the Teepookana area.

   The work would involve geological mapping and rock-chip and soil sampling, and should be integrated with exploration on EL29/87.

   The target on both ELs is stratabound base metal and gold volcanogenic massive sulphides of the Hellyer-Que River style.

2. The precious metal content of the pyritic tailings on the lower King River should be evaluated.

15

5. REFERENCES

BAILLIE, P.W. et al 1977. Geological atlas 1:50 000 Series. Sheet 57 (7913N) Strahan,. Geol Surv. Tasm.

BAILLIE, P.W., CORBETT, K.D. 1985. Geological atlas 1:50 000 Series. Sheet 57 (7913N) Strahan. Explan. Rep. Geol. Surv. Tasm.

BAMFORD, A.L. and GREEN, C.R. 1986. The Distribution and Nature of Mineralisation in the Mt. Read Volcanics - Mt. Darwin to Hellyer in COLLINS, P.L.F., and LARGE R.R.(Eds). The Mt. Read Volcanics and Associated Ore Deposits. Geol. Soc. Aust. Tas. Div., Hobart.

BANKS, M.R., COLHOUN, E.A., CHICK, N.K. 1977. A reconnaissance of the geomorphology of central western Tasmania, in BANKS, M.R., KIRKPATRICK, J.B. (Eds) Landscape and Man, 29-54. Royal Society of Tasmania, Hobart.

BINKS, C.J., 1980. Explorers of Western Tasmania (264pp) Mary Fisher Bookshop, Launceston

BLAINEY, G. 1967. The Peaks of Lyell. Melbourne University Press. 341 pp.

COLLINS, P.L.F. and WILLIAMS, E. 1986. Metallogeny and Tectonic Development of the Tasman Fold Belt System in Tasmania. Ore Geology Review 1(pp 153 - 201)

CORBETT, K.D., RICHARDSON R.G., COLLINS, P.L.F., GREEN, G.R. AND BROWN, A.V., 1982. The 1981 West Coast aeromagnetic survey: summary of information and results. Dept. Mines Tasm. Unpublished Rept. 1982/39

CORBETT, K.D.& McNEILL, A.W. 1988. Geological Compilation Map of the Mt. Read Volcanics and Associated Rocks; Hellyer to South Darwin Peak. Map 6, Mt. Read Volcanics Project, Geol. Surv. Dept. Mines Tasm.

CORBETT, K.D. & SOLOMON, M., in press. Cambrian Felsic Volcanism and Associated Mineral Deposits in BURRETT, C.F. and MARTIN, E.L. (Eds) Geology of Tasmania. Geol. Soc. Aust. Tas. Div.

COX, S.F., 1985. Cambrian sequences - Southern Area in BAILLIE, P.W. & CORBETT, K.D. Geological Atlas 1:50,000 Series. Sheet 57 (7913N) Strahan. Explan. Rep. Geol. Surv. Tasm

CROMER, W.C. 1988a. EL29/87. Strahan, Tasmania. Annual Report, Year 1. Unpub. Rep. New Holland Mining NL.

CROMER, W.C. 1988b. EL29/87. Strahan Tasmania. Review of Geology and Prospectivity. Unpub. Rep. New Hollaand Mining NL.

CROMER, W.C. 1988c. Review of Geology and Prospectivity, EL30/87, King River, Western Tasmania. New Holland Mining NL Unpubl. Rept.

HALL, W.D.M., 1969. Report on Field Work in Exploration Licence 13/65 southwest Tasmania during 1967-68 Field Season. (Broken Hill Pty. Co. Ltd) Dept. Mines Tasm. Open File Rept. 69-555

JINKS, D.D. 1976. Tasmania copper project, Phase III - Final Report, Macquarie Harbour. (Citco International Minerals Co.). Dept. Mines Tasm. Open File Rept. 84-2303

KIRKPATRICK, J.B. 1977. Native Vegetation of the West Coast of Tasmania in BANKS, M.R., KIRKPATRICK, J.B. (Eds). Landscape and Man, 55-80 Royal Society Tasmania, Hobart.

KIRKPATRICK, J.B., and DICKINSON, K.J.M., 1984. Vegetation of Tasmania. 1:500 000 map, Forestry Commission, Tasmania.

LARGE, R.R., 1987. The mineral wealth of Western Tasmania and the potential of the South West Conservation Area. Tas. Chamber of Mines Ltd., Hobart.

LARGE, R.R. and HERRMANN, W. 1984. Gold in the Mt. Read Volcanics at Elliott Bay in BAILLIE, P.W. and COLLINS,P.L.F. (Eds). Mineral Exploration and Tectonic Processes in Tasmania. Geol. Soc. Aust. Tas. Div., Hobart.

LEAMAN, D.E., 1988a. Late Precambrian and early Palaeozoic basin evolution, western Tasmania, in TURNER, N.J. (Ed). The Geology and Evolution of the Late Precambrian to Cambrian Rocks in the Western Tasmania Terrane. Geol. Soc. Aust. Tas. Div., Hobart.

LEAMAN, D.E. 1988b. Regional Geophysical Review, EL30/87, King River. New Holland Mining NL Unpubl Rept. (see Appendix 1 this report)

McKIBBEN, J.P., 1971. Annual Report on S.P.L. 94. King River delta area (Mt. Lyell Mining and Railway Co. Ltd). Dept. Mines. Tasm. Open File Rept. 71-757

NYVLT, J., 1981. Exploration Licence 51/80, (Misery Flat). Report for six months ended 8 November, 1981. Electrolytic Zinc Co. of A'Asia Limited) Dept. Mines Tasm. Open File Rept. 81-1654

PINK, K., 1984. The West Coast Story. West Coast Pioneers Memorial Museum, Zeehan, 182 pp.

POWELL, C. McA., 1984. Tectonic Evolution of the Tasman Fold Belt with emphasis on Palaeozoic Implications for Tasmania in BAILLIE, P.W. and COLLINS, P.L.F. (Eds) Mineral Exploration and Tectonic Processes in Tasmania. Geol. Soc. Aust. Tas Div., Hobart.

RODDA, P., 1958. Report on Examination of Strahan Area Magnetic Anomaly 2N/6 (Lyell-EZ Explorations) Dept. Mines. Tasm. Open File Rept. 58-210

SCOTT, B., 1957(a). Report on Examination of the Strahan Lead-Zinc Prospect (Mt. Lyell Mining and Railway Co. Ltd.) Dept. Mines Tasm. Open File Rept. 57-147

SCOTT, B., 1957(b). Geochemical samples, Molybdenum and Copper (Lyell-EZ Explorations) Dept. Mines Tasm. Open File Rept. 57-180

WOMER, M.B., 1983. Final Report EL5/75 Tasmania. CSA and Fe region (Macquarie Harbour) (Amoco Aust. Petroleum Co.) Dept. Mines Open File Rept. 83-1981

Table 1. <u>Rock Sample Descriptions, lower King River, EL 29/87 and 30/87</u>
PTS, a, or WR following description indicates polished thin section, assayed (Cu, Pb, Zn, Au, Ag, As, Ba, Cr), or submitted for whole rock analysis (including trace elements) respectively. Column 3 indicates distance west in metres from western abutment of Teepookana Bridge (Numbers to 1600 estimated to ± 10m, others to ± 50m).

Sample No.	AMG Coords	Metres	Description	Lab. Work
NHS1	700279	-40(N)	siltstone; tuffaceous, brown	a
2	700279	-20(N)	sandstone; tuffaceous, fine-medium grained, brown	
3	700279	0	conglomerate; siliceous, brown	
4	700279	50	siltstone; weakly cleaved, brown-grey	
5	698278	300	quartzite; (indurated sandstone), grey	
6	697278	370	siltstone and fine sandstone; grey, laminated, tuffaceous	
7	697278	390	siltstone and fine sandstone, grey, laminated, locally pebbly	
8	695277	510	sandstone; fine grained, brown, tuffaceous, trace lithics	
9	694276	675	sandstone; fine grained, dark grey, cleaved, quartz veined	
10	694275	770	greywacke or lithic quartzwacke; olive grey, cleaved	
11	694273	975	sandstone; brown, tuffaceous, medium grained	
12	694272	1040	mudstone; cherty, dark olive	
13	694270	1300	crystal tuff; feldspar-quartz phyric, quartz veined	PTS,a
14	694270	1305	crystal tuff; feldspar-quartz phyric, quartz veined	PTS,a
15	694270	1315	mudstone; pyritic, black, hornfelsed	a

Sample No.	AMG Coords	Metres	Description	Lab. Work
16	694270	1325	vitric tuff; with devitrification(?) patches	PTS,a
17	693270	1400	vitric tuff	PTS,a
18	692270	1465	crystal tuff; hard, grey, feldspar-quartz rich	PTS,a
19	691270	1562	crystal tuff; hard, grey, feldspar-quartz rich	PTS,a
20	691270	1635	quartzite; cherty, grey (recrystallised sandstone?)	
21	690270	1800	mudstone; cherty, grey, very hard, subtranslucent, volcanogenic?	
22	689269	1950	cherty ash (mudstone), dark grey with crystal-rich fine sand, trace pyrite	a
23	688269	2050	cherty ash (mudstone); dark grey with crystal-rich fine sand	a
24	685269	2300	siltstone; dark grey, cherty?, hard	
25	681270	2700	siltstone and fine sandstone; black and brown, laminated, tuffaceous	
26	680271	2870	cherty ash (mudstone); with crystal-rich fine sand, dark grey	
27	678271	3130	mudstone and fine sandstone (ash?); dark grey, laminated	
28	677271	3180	mudstone; volcanogenic?, dark grey, cleaved, phyllitic	
29	677271	3180	mudstone; dark grey, cleaved, with quartz veins	a
30	672272	3600	crystal lithic tuff; púmice-bearing, brown, soft, schistose	
31	670273	3930	mudstone; cherty, volcanogenic?; dark grey, hard	
32	669272	4140	lithic tuff; brown, weathered, cleaved	a
33	668270	4300	chlorite patches and blebs in vein quartz	
34	668270	4300	chlorite patches and blebs in vein quartz	a
35	668270	4300	vitric crystal tuff; light grey, feldspar phyric	PTS,a,WR

Table 2. Assay results, Cambrian rocks, lower King River, EL29/87 and 30/87

Sample No.	Description	Au	As	Ag	Cu	Pb	Zn	Ni	Cr	Ba
NHS1	siltstone	x	9	x	48	22	155	126	219	167
13	crystal tuff	x	6	x	28	10	13	16	41	1450
14	crystal tuff	x	5	x	27	8	10	7	22	1135
15	pyritic mudstone	0.01	37	x	96	159	174	NA	150	689
16	vitric tuff	x	6	x	30	17	19	20	44	2034
17	vitric tuff	x	70	x	50	19	20	22	38	2257
18	crystal tuff	x	7	x	55	18	20	21	36	663
19	crystal tuff	x	6	x	35	18	39	16	31	228
22	mudstone	x	5	x	55	28	64	69	114	22+
23	mudstone	0.003	6	5	74	37	104	NA	170	308
29	mudstone	0.005	15	x	63	39	290	NA	130	333
32	lithic tuff	x	9	x	9	11	29	19	41	624
34	quartz-chlorite	x	5	x	23	9	96	28	18	54
35	vitric tuff	x	6	x	14	14	22	12	23	139
37	crystal lithic tuff	NA	6	x	16	10	59	20	28	741
37a	chlorite-quartz	x	2	1	4	21	294	39	x	x
39	siltstone	x	10	x	54	37	82	65	149	139
46	vitric tuff	x	x	NA	8	x	7	x	x	52
49	andesite	0.01	x	x	10	10	57	17	34	38
51	lithic tuff	x	2	x	23	x	18	7	18	674

Detection limits (ppm):
Au (fire assay) 0.001, As 2, Ag 1, Cu 2, Pb 5, Zn 2, Ni 5, Cr 10.
"x" indicates below detection limit.

NA = results not available at time report prepared.

Table 3. Whole rock analysis, Cambrian volcanics, lower King River, EL29/87 and 30/87

AMG coords Rock type Field No.	668270 Vitric tuff NHS 35	656272 Vitric tuff NHS 46	651273 Andesite NHS 49
SiO_2	75.0	77.3	57.4
TiO_2	0.57	0.05	0.75
Al_2O_3	12.5	13.1	18.1
Fe_2O_3	2.63	1.09	4.56
FeO	1.02	0.81	6.18
MnO	0.06	0.08	6.18
MgO	0.74	0.53	2.62
CaO	0.21	0.10	0.17
Na_2O	0.43	0.13	1.18
K_2O	2.50	2.70	1.38
P_2O_5	0.13	0.05	0.11
H_2O+			
H_2O-			
CO_2	0.26	0.55	0.62
SO_3	0.01	0.005	0.005
S	0.06	0.03	0.02
Total	96.38	96.53	93.22
LOI	2.35	3.54	5.40
Ba	139	52	38
Rb	90	60	10
Sr	10	10	17
Y	40	10	10
Nb	10	10	10
Zr	230	70	200
Co	5	5	14
Ni	12	5	17
Cr	23	10	34
V	56	15	193
Sc	10	10	10
Cu	14	8	10
Pb	14	5	10
Zn	22	7	57
Au	0.001	.001	0.10

?0·01

22

703023

APPENDIX 1

Regional Geophysical Review

by

Dr. D.E. Leaman

23

LEAMAN GEOPHYSICS

Survey Review, Specification, Reduction, Interpretation
Wide Experience Most Methods
Specialties:- Gravity, Magnetics, Seismic Methods

Registered Office:
21 Zomay Avenue, DYNNYRNE TAS 7005
All Correspondence to:
G.P.O. BOX 320 D, HOBART, TAS. 7001.
TELEPHONE: (002) 240319

703024

EL 30/87 KING RIVER

REGIONAL GEOPHYSICAL REVIEW

for
NEW HOLLAND MINING N.L.

by
Dr. D.E. Leaman

October 1988

KINGRIVR

24

703025.

CONTENTS

FIGURES

25

703026

SUMMARY

Exploration licence "King River" includes a large part of the Macquarie Harbour Tertiary basin of western Tasmania. Cambrian (?) rocks are exposed around the northern margin of the basin. The prospectivity of these rocks has never been highly rated and no previous mines or prospects are known. This may reflect stratigraphic-structural position or exposure and access.

This review has assessed the available magnetic and gravity data with a view to determination of the form of structures in this region, their possible control on mineralisation or alteration and any indications of bulk alteration which might indicate blind mineralisation.

The review has shown that the Tertiary basin is compound and that the controlling faults were rejuvenated; there having been previous movement during Permian, Devonian and probably Cambrian time. Several east-west displacements are evident and this type of feature is associated with all west Tasmanian mineralisation. The southern part of the licence includes the offset, but concealed, margin of the Tyennan basement with a negligible pile of Mt Read Volcanics upon it. There is thus scope for adequate plumbing for mineralising fluids given an appropriate source. Unfortunately such a source appears to be absent.

EL 30/87, in regional context, appears to lie near the axis of a large anticlinorium which has elevated Lower(?) Cambrian essentially sedimentary sequences. The core of the fold system includes volcanic and igneous rocks which are believed to be correlates of the Crimson Creek or Mainwaring Group formations. Neither formation is significantly mineralised unless intruded by Devonian granites.

No Cambrian or Devonian granites can be inferred in the immediate vicinity of EL 30/87 and there are no suggestions of the volcanic association which is richly mineralised to the north east.

Magnetic data do not indicate the presence of any bulk alteration volumes although there are suggestions of alteration near some east-west features and offsets.

If the interpreted setting of the licence is correct then prospectivity is indeed very limited and restricted to narrow structural corridors. Geochemical sampling in the vicinity of these features is recommended as an indicator of economic mineralisation.

26

703027

INTRODUCTION

EL 30/87 "King River" is located on the eastern side of Macquarie Harbour in western Tasmania some 8 km east of Strahan. The King River forms the northern boundary of the licence (Figure 1).

The licence includes the north eastern side of the Macquarie Harbour Tertiary basin and faulted portions of the Lower(?) Cambrian sequences. No significant mineralised sites are known. Geological basemaps are included in Figures 4 and 5.

Previous exploration may have been restricted by limited access and Tertiary cover and it is likely that the region has not been fully explored.

This review was commissioned with three basic objectives.

1. to provide a regional view of the licence and any anomalous character within or around it.
2. to assess the form of structuring, possible igneous associations (including concealed granites) and presence of possible altered rock volumes.
3. to suggest areas which warrant more detailed examination and the methods which might be used.

Available regional gravity and magnetic data have been used for this review.

27

703028

DATA

Only geophysical data with regional coverage and value has been used for this review. In effect this means aeromagnetic and gravity data.
Little other data exists (note Leaman, 1980).

The aeromagnetic data used was acquired by the Mines Department in 1981 (Corbett et al, 1982; Leaman, 1986 a). It represents the most recent, fully recoverable and digital data set of uniform specification. The line spacing was about 500 m, with sampling at some 40 m, and nominal terrain clearance of 150 m. The contractor's contour presentation is given in Figures 2 and 3.

The gravity data was extracted from the Mines Department Tasgrav and Mt Read gravity data bases. The coverage is generally good at a spacing of 1 km; there being some modest gaps south of the King River. Much of this data was acquired recently as part of the Mt Read Volcanics Project and has not been previously interpreted. Raw data has not been presented for the northern part of the licence and a residual compilation based on the regional formulation of Leaman (1988 b) is given in Figure 4.. This primary separation is crucial to any specific evaluation of local structure. Unfortunately a reliable or tested extension of this formulation is not yet available for the region south of 5320 000 mN and the raw Bouguer anomalies are shown in Figure 5 for the southern section of the licence.

PREVIOUS WORK

The only regional assessments in the public or open file domain based on available data or, in the gravity case, earlier compilations of the data bases have been prepared by Leaman (1986 a, b; 1987; 1988 a, b). These studies treat the King River area in a general way but carry little specific detail.

Leaman (1986 a) reviewed a single profile at the approximate northing of the King River. The interpretation is shown in Figure 8. It provides some perspective on the large anomaly observed near the mouth to the river (Figure 4) and the responses of the West Coast Range. These features dominate the profile. Any subsidiary effects can be grossly related to the variations of lithology in a large antiform or fault truncation. A low contrast is implied for the sedimentary Cambrian rocks but the mafic-andesitic sequence exposed near the Harbour is strongly magnetised.

Leaman (1986 b) expanded upon these implications using gravity data (Figure 9). These provide a better perspective on the fold and fault relationships but the two interpretations are complementary and consistent. The gravity solution would suggest that the exposed magnetic units in the core of the fold are part of a substantial lower sequence.
A structural summary based on all extant work was included (Figure 10). This attempted a synthesis of key structures and their relationships. A major dislocation of Lowermost Cambrian age was implied along the Harbour. There is evidence that this has moved subsequently. Sympathetic structures a few kilometres to the north have certainly experienced post Cambrian disruption and this has affected Permian and Tertiary deposition. Many motions appear to be reverse. A significant north-south component is carried south at the easting of Birch Inlet. This zone marks the junction between shallow Tyennan basement with its Middle Cambrian volcanic piles and the thicker more mafic, older sequences to the west. Some of the NE-trending structures north and south of the Harbour may be Lower or Middle Cambrian in age with evidence of Devonian rejuvenation on several.

Leaman (1987) updated the qualitative trend analysis provided by Leaman (1986 a, b) as part of a review of major mineralised sites and their gravity and magnetic responses. The distribution of mineralised sites is indicated in Figure 7 with respect to the trend systems inferred. Inferences were limited by the poor gravity coverage available at the time but the absence of known mineralisation did not indicate an attractive region.

None of these early interpretations offer much detail about the structures on the northern side of Macquarie Harbour.

Leaman (1988 a) suggested a regional setting. The area was placed a little east of the central axis of a major Late

Precambrian or early Cambrian Trough. The scale of Cambrian and Devonian granites had been appraised and none could be inferred within many kilometres (see revised model, Figure 11). The relationships in the southern part of the licence near Mt Sorell are suggested in Figure 12 where a major structural and sedimentological change is implied at the face of the West Coast Range. Near this feature basement may locally be very shallow.

The net result of Leaman (1988 a) was production of a crustal formulation which could be used to prepare residual Bouguer anomaly maps (Leaman, 1988 b). The concept known as Mantle88 was refined and checked. It has been used to generate the presentation shown in Figure 5. This is a crucial development potentially of greater value than the regional setting interpretations which made it possible since it allows more reliable and comprehensive use of the gravity data base and frees the interpreter of the need to consider crustal sources and the surveyor of the need to acquire extended profiles. More reliable local interpretations are facilitated using simpler procedures and methods.

This review is built upon, and dependent upon, the implications and formulations of the foundations provided by the work described above. The present review fine details the above work and assesses exploration factors in a way which would not be possible without that foundation.

This summary of previous work or knowledge status has emphasized those elements which are regionally relevant or which might affect prospectivity assessment and exploration direction. More specific information has not been sought or recovered for this review.

INTERPRETATION

QUALITATIVE COMMENTS

The following notes outline features of the gravity and magnetic fields and any obvious relationships. They also serve to draw attention to those elements perceived to be relevant to further exploration.

The gravity field is most informative (Figures 5 and 6). Its value is limited by current restrictions on the presentation of residuals.

Figure 5, including basemap geology of Baillie et al (1977), shows that the Tertiary basin margin occurs right at the limit of mapped Cambrian rocks. Surprisingly, however, the basin is shown to be limited in length and only about 4 km wide. It is terminated or offset by a major NE-trending structure near 370 000 mE. Consideration of all data (including Figure 6) indicates that this structure extends along the west face of the West Coast Range to Lynchford and Queenstown. The gravity coverage is unable to resolve the boundary between the mapped Cambrian sequences and it is possible that the decreasing field toward Teepookana is related either to change in Cambrian section or approach of the downfaulted Siluro-Devonian section. This uncertainty notwithstanding, there is a dislocation in the residual field along the river west of Teepookana. This suggests that a structure, or lithology change, sub-parallel to the main Teepookana faulting is present at least two kilometres further west. Trend patterns near the mouth of the river mirror mapped exposure or fault orientations.

No such correlations are possible within the southern part of the licence area (Figure 6). As the field has been presented in the form of the observed Bouguer anomalies it is necessary to review gradient locations only. Anomaly amplitudes are distorted by crustal effects.
It will be noted that no large negative features of the type observed in Figure 5 can be present which correlate with simple extensions of the Tertiary basin or the mapped distribution of Tertiary rocks (refer to Figure 4 basemap). Some Tertiary structures can be inferred, however. The largest of these trends NW from about 378 000 mE, 5310 000 mN. This feature is superimposed upon a larger, broader negative effect which all previous interpretations had assigned to shallow Tyennan basement. There is no reason to doubt this conclusion using the present much improved data coverage. Smaller, Tertiary-related anomalies can be recognised near 374 000 mE, 5315 000 mN and 376 000 mE, 5322 000 mN. In each case there is a small negative spine. Each Tertiary feature would appear to be marginal to the mapped limits of the material and thus may represent local depression fills. Tertiary sequences are thus offset and localised and not continuous along the Harbour. Offsetting structures trend north-east.

Although there does not appear to be any single major Tertiary basin marginal structures do persist from the mouth of the King River to Farm Cove. These are represented by gradient offsets and are not usually accompanied by thick Tertiary deposists. they form part of a NW-trending fracture pattern which persists as far inland as Teepookana.

Although the data set is not highly resolving a number of NE structures can also be recognised in Figure 6. These can be traced, believably, into the range. That at 375 000 mE, 5320 000 mN may be an extension of the Great Lyell Fault. The major gradient to the south east, and which encloses a substantial negative anomaly south east of 376 000 mE, 5315 000 mN, is related to the effective limit of the Tyennan basement. It carries little Cambrian cover in this region. Note implications of previous work (Figures 9, 11 and 12). This gradient thus reflects one of the most important geological boundaries in the area.

The magnetic data are of less structural value but do confirm the principal elements of the gravity view. Consider Figure 4 for clarity. Figures 2 and 3 provide plots of the field for more detailed inspection.
Large anomalies occur near the mouth of the King River and south of Goat Head. More subdued features occur between these but a major trend change form N-S to NW-SE is also evident. East of this belt of anomalies and, especially, south of Mt Sorell the magnetic field is stable and flat. This confirms the gravity implication that no significant Cambrian section is present in the area around Farm Cove. The field is disturbed between the northings of Teepookana and 5320 000 mN east of the anomalous belt but the scale of the features is quite small.

The change in amplitude along the principal magnetic trend largely reflects the effect of depth due to Tertiary cover. Gravity data show that the main Tertiary basin pod (minimum thickness of 600 m) is located east of Sophia Point with a NW extension from Goat Head. This would indicate that the Tertiary cover within the Harbour is negligible and that the source for the anomaly near the mouth of the King River is probably exposed. Andesitic-mafic rocks are exposed and could well source the effect. The larger anomaly south of Goat Head can be associated with mafic and ultramafic rocks and some of these might be present west of the mouth of the King River. The setting of these effects is summarised by Figure 8. No conflicts have been introduced by additional gravity data.

Detailed review of all available profiles confirms these suggestions. The systematic character changes evident in Figures 13 and 14 are wholly compatible. Only the subtler changes reveal second order structures. If the small anomalies east of 367 000 mE are reviewed it will be found that each set is terminated abruptly along strike. These magnetic units, and the major belt along the harbour side, have been mapped in Figure 17. Three offsetting zones may be recognised. One lies along the King River itself.

The others are blind. The southernmost may be reflected in the trend change exhibited by the distribution of Tertiary cover even though no great change in Tertiary thickness can be recognised (in gravity data). Magnetic data south of 5322 000 mN was not inspected since any implications should first be tested in those areas in which Cambrian rocks are exposed.

Figures 15 and 16 provide normalised detail of the central offset zone and the anomaly tails across the eastern parts of the licence area. The inspection of the profiles confirms what might be implied from inspection of Figures 2, 3 and 4; the offsets are principally oriented E-W. The contour presentation, however, is unclear and various orientations could be inferred due to smoothing and gridding effects. The minor disturbances in the magnetic field near, and south of Teepookana, are real and probably related to minor andesitic or tuffaceous units.

MINERALISATION RESPONSES

No mineralisation responses can be described within this licence area since no significant mineralised sites are known. There is, however, little evidence of gross alteration of the very slightly magnetic rocks exposed. One example may be inferred on line 5600 at about 369 500 mE just south of the river 1 km south of Teepookana. It may be significant that the gravity field, though poorly defined in this locality, is also warped to the northwest toward the river.

TREND PATTERNS

Gross patterns defined by previous work have been outlined above (Figure 7).
Each data set indicates the presence of NW-SE, NE-SW and E-W trends and structures. Many of these can be demonstrated to be extensions of known faults. Several have a history of movement. An outline of features evaluated in this review is shown in Figure 17.

CONCLUSIONS

Review of regional data in the region south of the King River near Macquarie Harbour has indicated

1. The overall setting of the exposed Cambrian rocks is that of the core of a large anticlinorium. Within the core lowermost Cambrian rocks are exposed. These are magnetic and are at least andesitic or mafic in composition. NW-trending structures have uplifted the fold core.

2. No significant acid-intermediate volcanic piles are indicated and the Tyennan basement is very deep near the mouth of the King River but shallow near Farm Cove. A primary basement margin occurs in the south eastern part of the licence.

3. No Devonian or Cambrian granites occur within the licence area. This deduction, coupled with conclusion #2 above, probably accounts for the dearth of known mineralisation.

4. Structures inferred in the region are major and have long histories. The trend sets which are often associated with mineralisation elsewhere in western Tasmania are in evidence. There is, however, only limited evidence for whole rock alteration on a large scale associated with any of them. This licence area cannot be considered to be highly prospective on the basis of conclusions #2, #3 and #4.

5. Limited areas are, however, worthy of further work but this should be directed toward establishment of mineralising processes in the area. Sites which should be sampled geochemically are associated with E-W trending structures or the anomalous and possibly altered area south of Teepookana (at about 369 500 mE, 5326900 mN).

RECOMMENDATIONS

1. Although the geophysical-structural review is not especially encouraging, some small areas justify a limited follow-up programme. These are associated with E-W structures and the most interesting lies immediately south of the King River within a kilometre of Teepookana. Limited geochemistry is recommended. If there are no encouraging indications then the area should be dropped. Samples should be analysed for base metals and gold.

35

703036

REFERENCES

Baillie, P.W., et al, 1977. Strahan. 1: 50000 geological map sheet. Geol. Surv. Tasm.

Bamford, A.L., and Green, G.R., 1986. The Distribution and Nature jof Mineralisation in the Mount Read Volcanics - Mt Darwin to Hellyer. Map Series Mines Department Tasmania, also Mount Read Volcanics and associated ore deposites, a symposium, Burnie, Abstract.

Corbett, K.D., Richardson, R.G., Collins, P.L.F., Green, G.R., and Brown, A.V., 1982. The 1981 West Coast Aeromagnetic Survey: summary of information and results. Unpub. Rep. Dep. Mines Tasm., 1982/39.

Leaman, D.E., 1980. Applied Geophysics in Tasmania - summary of surveys. Unpub. Rep. Dep. Mines Tasm., 1980/41.

Leaman, D.E., 1986 a. Interpretation and evaluation report. 1981 West Tasmania Aeromagnetic Survey. Mt Read Volcanics Project Report Dep. Mines Tasm.

Leaman, D.E., 1986 b. Interpretation of gravity data in west and north west Tasmania. Mt Read Volcanics Project Report Dep. Mines Tasm.

Leaman, D.E., 1987. Mineralisation signature study, geophysics - gravity and magnetics. Mt Read Volcanics Project Report Dep. Mines Tasm.

Leaman, D.E., 1988 a. Regional evaluation west and north west Tasmania. Precambrian and Lower Palaeozoic structural relationships. Mt Read Volcanics Project Report Dep. Mines Tasm.

Leaman, D.E., 1988 b. Mantle 88. Regional gravity field, Tas. Mt Read Volcanics Project Report Dep. Mines Tasm.

36

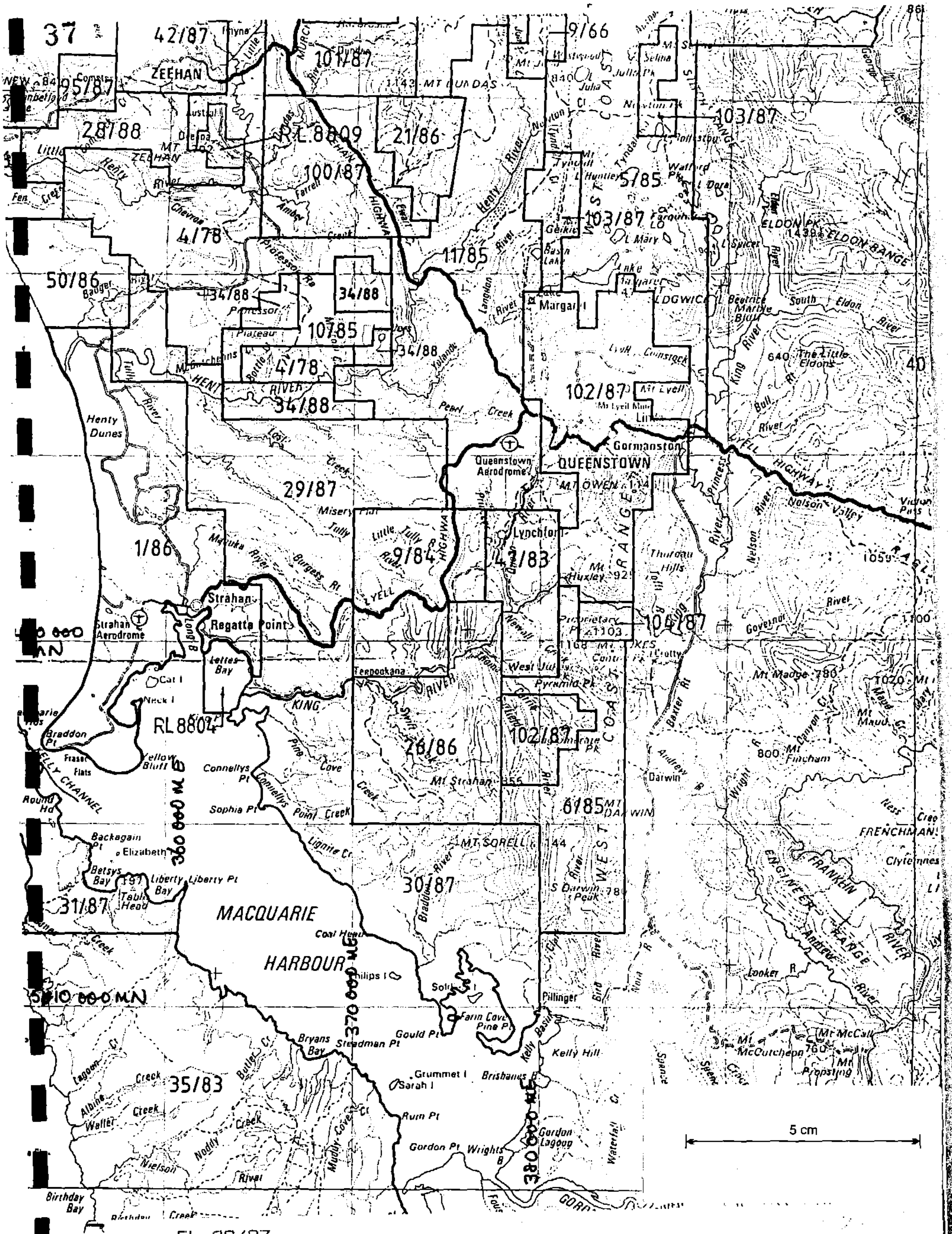
703037

Report submitted on behalf of
Leaman Geophysics
by

D. Leaman

Dr. D.E. Leaman, B.Sc., Ph.D
M.Aus.I.M.M., M.M.I.C.A

28/10/88



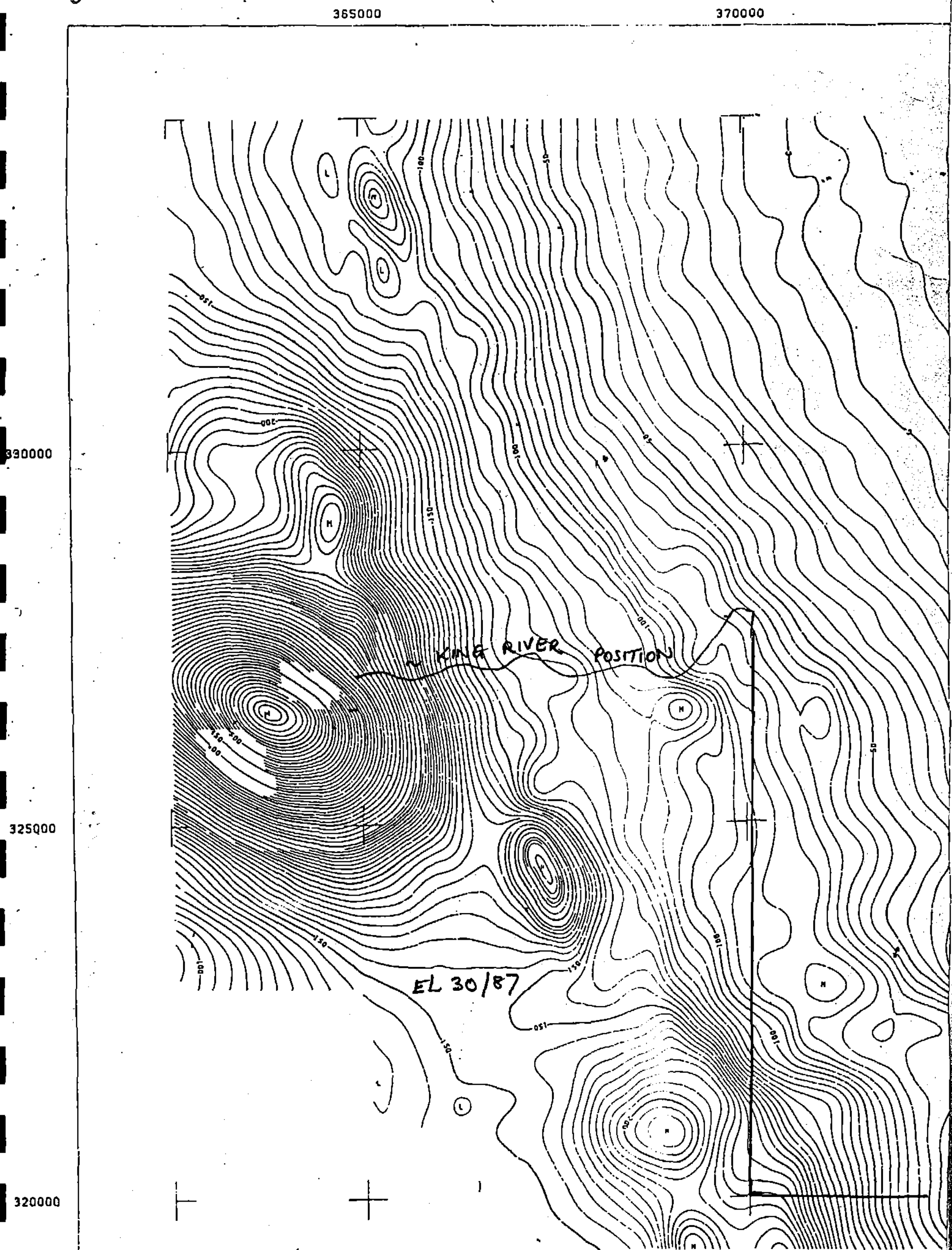
EL 28/87

LOCATION DIAGRAM

1:250 000

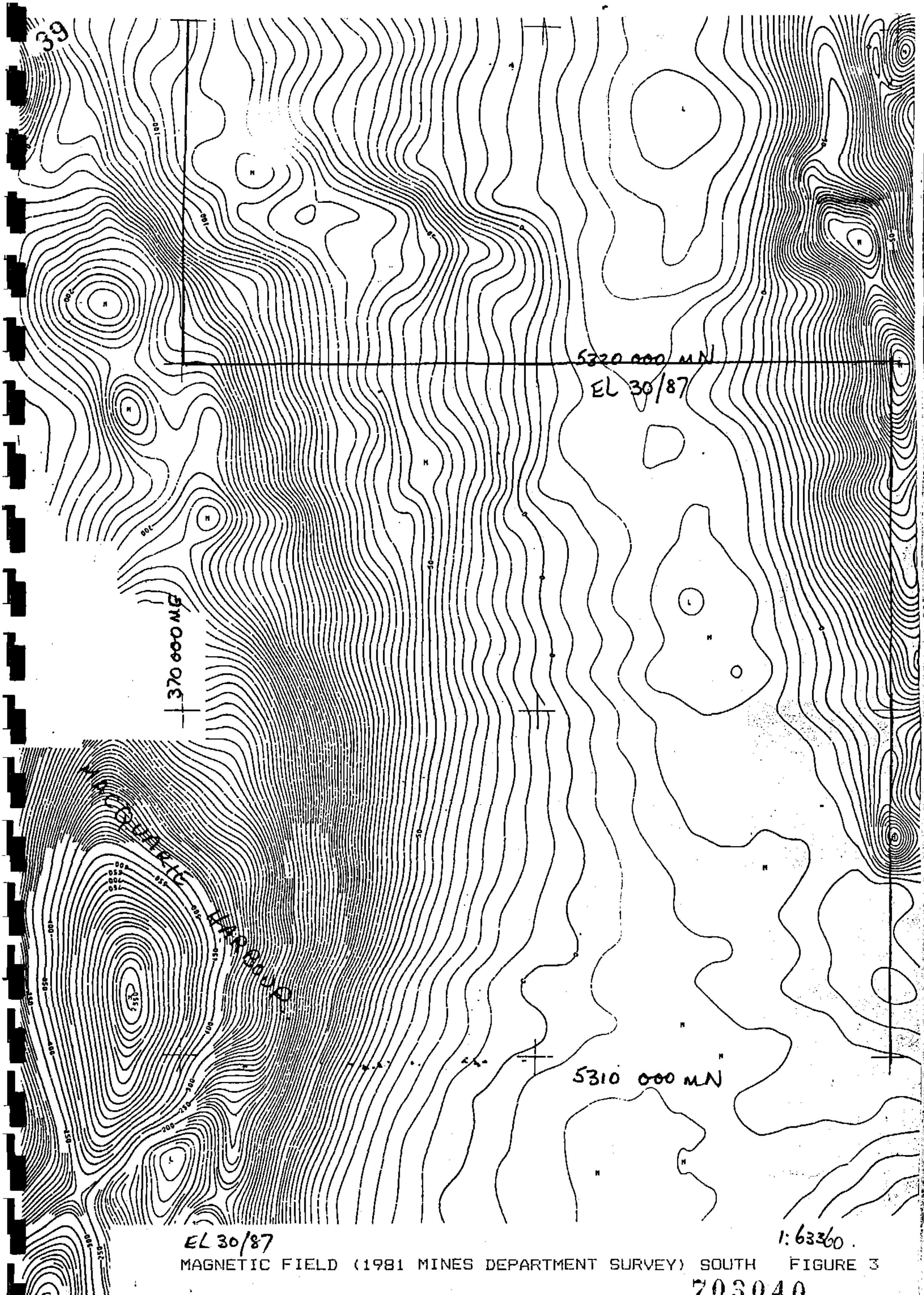
703038

FIGURE 1



EL 30/87 1:63360

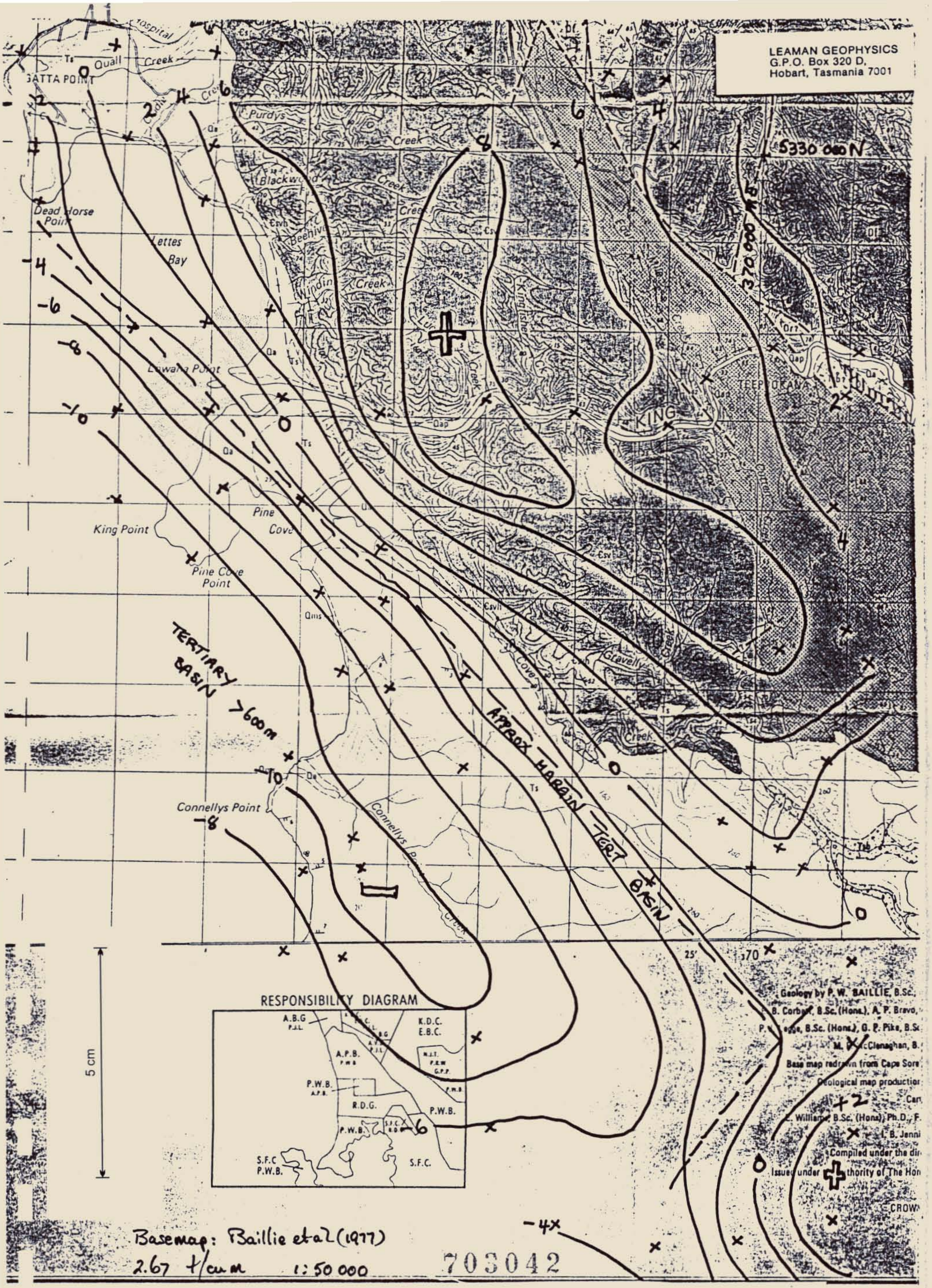
MAGNETIC FIELD (1981 MINES DEPARTMENT SURVEY) NORTH FIGURE 2



EL 30/87 1:63360.
MAGNETIC FIELD (1981 MINES DEPARTMENT SURVEY) SOUTH FIGURE 3
703040

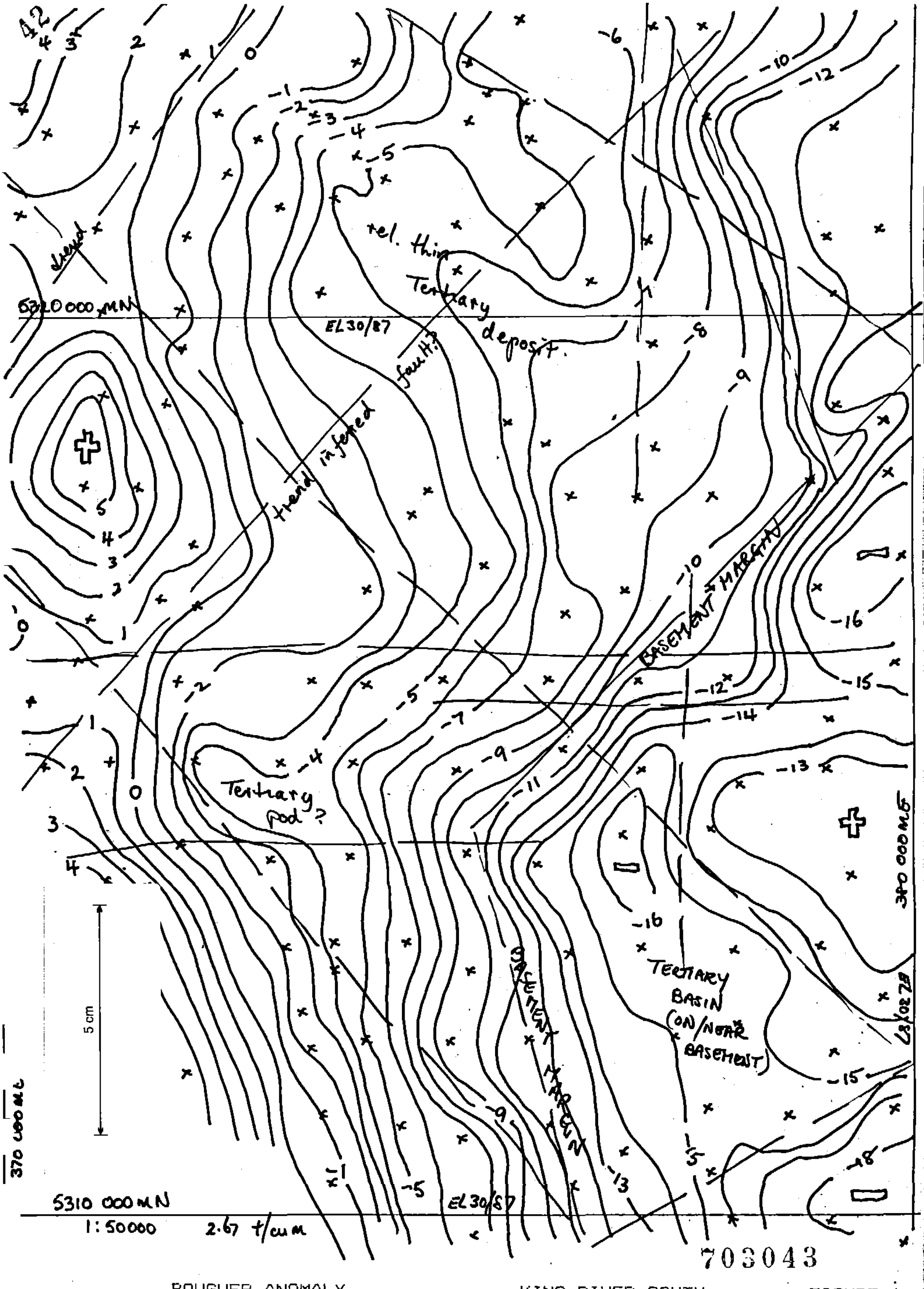
703041

MAGNETIC FIELD AND GEOLOGY (REGIONAL COMPILATION) FIGURE 4
(Mines Department data)



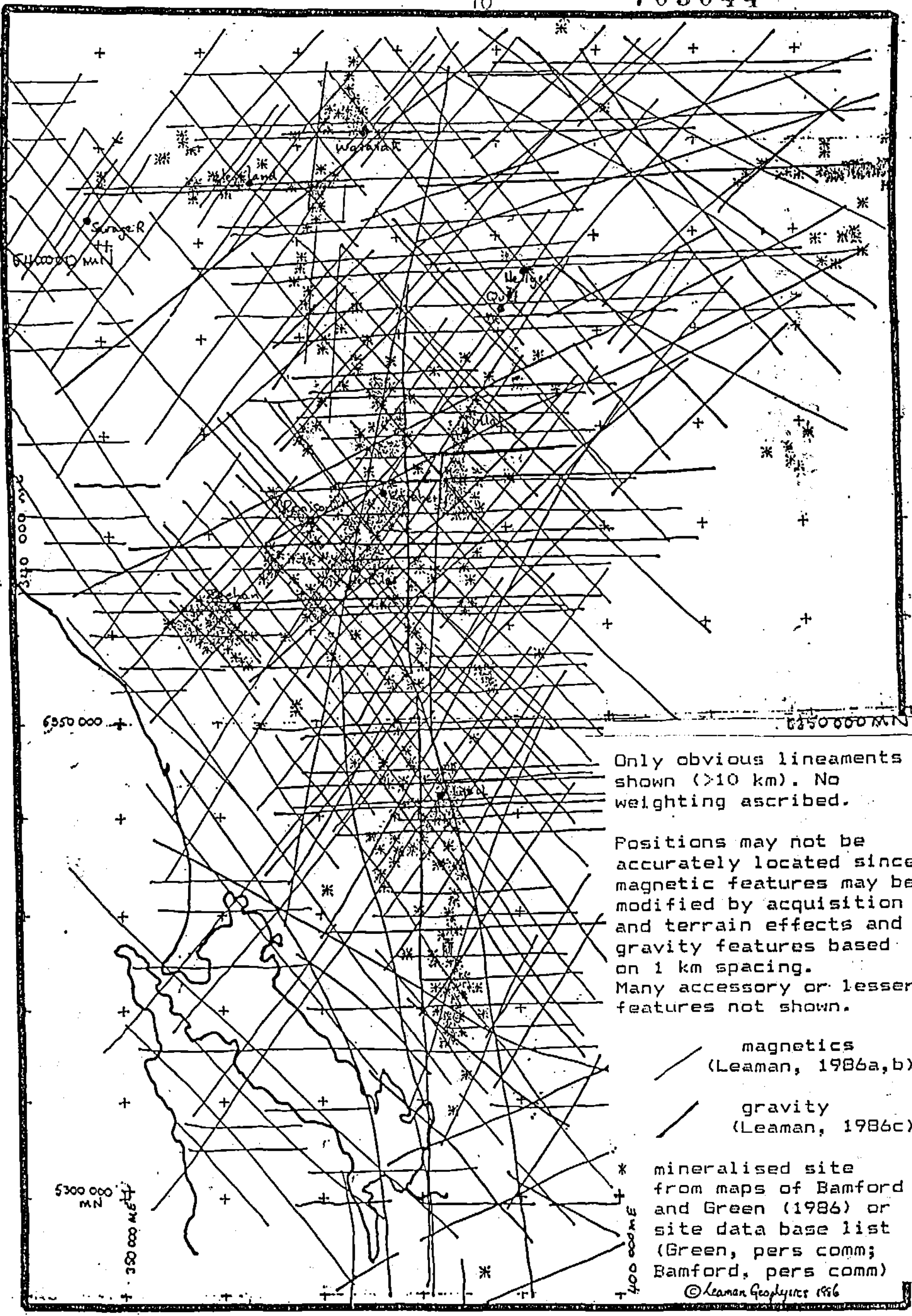
703042

RESIDUAL BOUGUER ANOMALY KING RIVER NORTH FIGURE 5



703043

BOUGUER ANOMALY KING RIVER SOUTH FIGURE 6



MINERALISED SITES AND REGIONAL TRENDS FROM PREVIOUS WORK (Leaman, 1987)

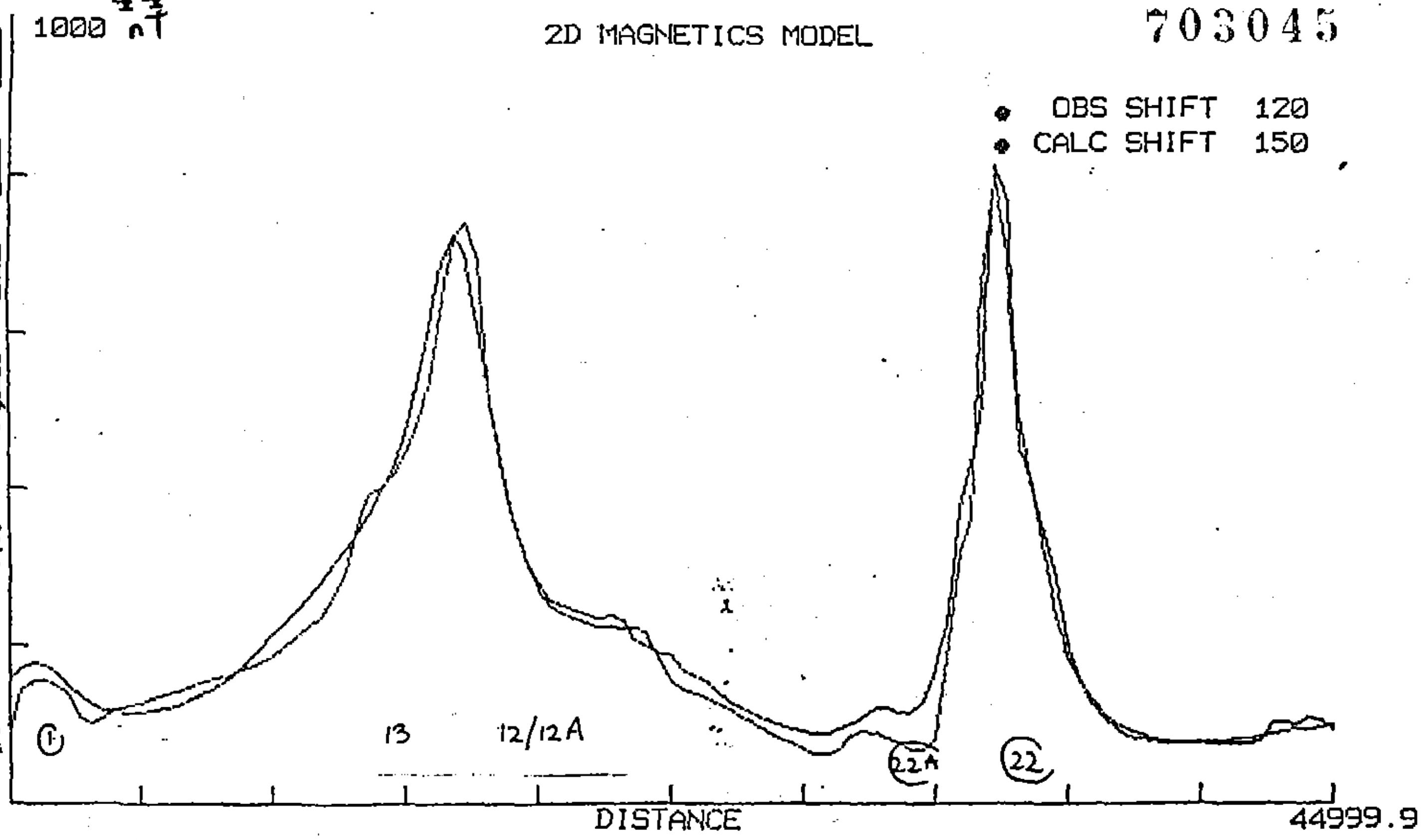
FIGURE 7

NE PARAMETERS - ORIGIN,LIMIT,INCR : 0 44999.9 409.09

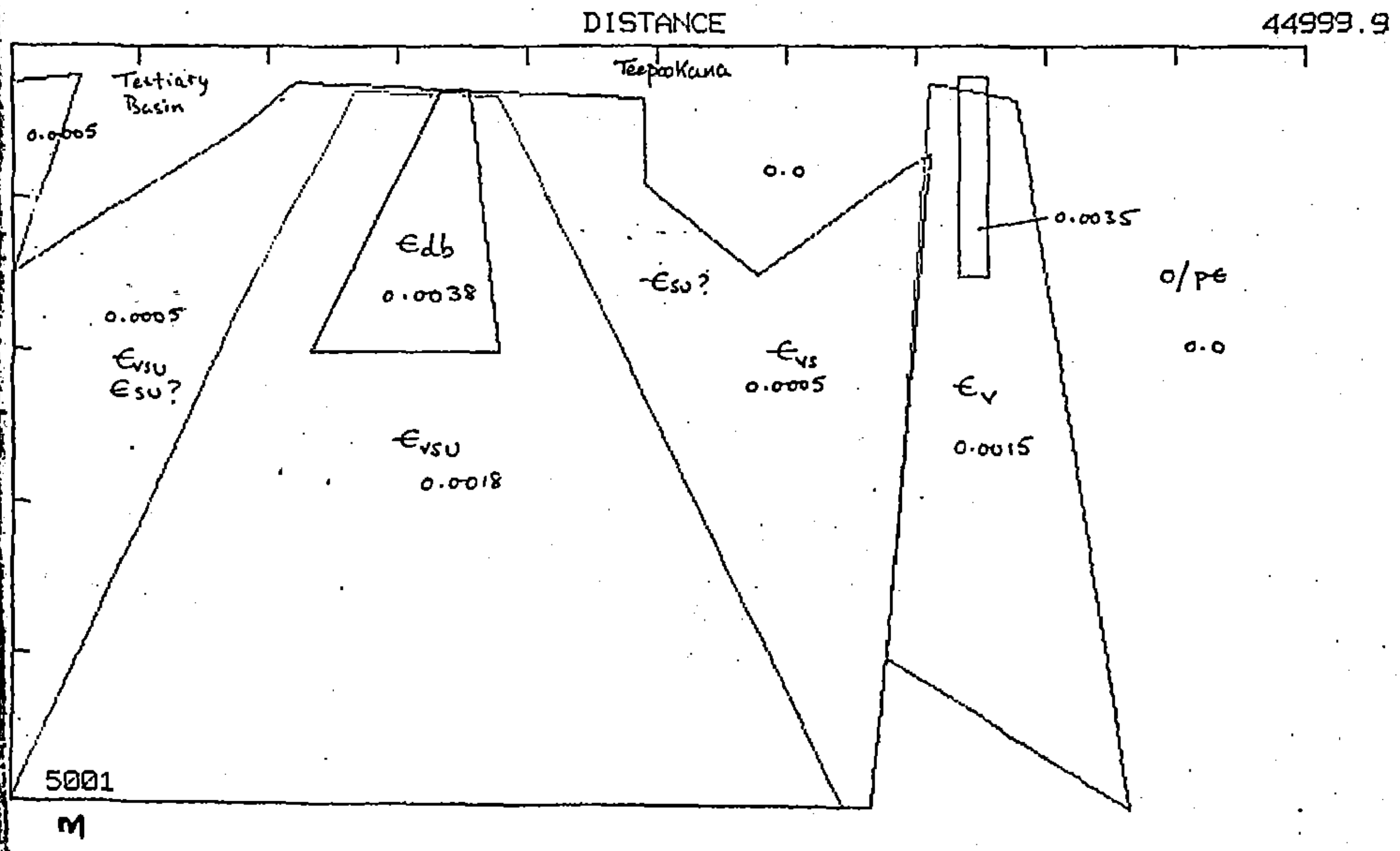
44

703045

2D MAGNETICS MODEL



TAS MAGNETICS LINE 550



REGIONAL MAGNETIC INTERPRETATION 5326 500 mN FIGURE 8

LEAMAN GEOPHYSICS
G.P.O. Box 320 D,
Hobart, Tasmania 7001

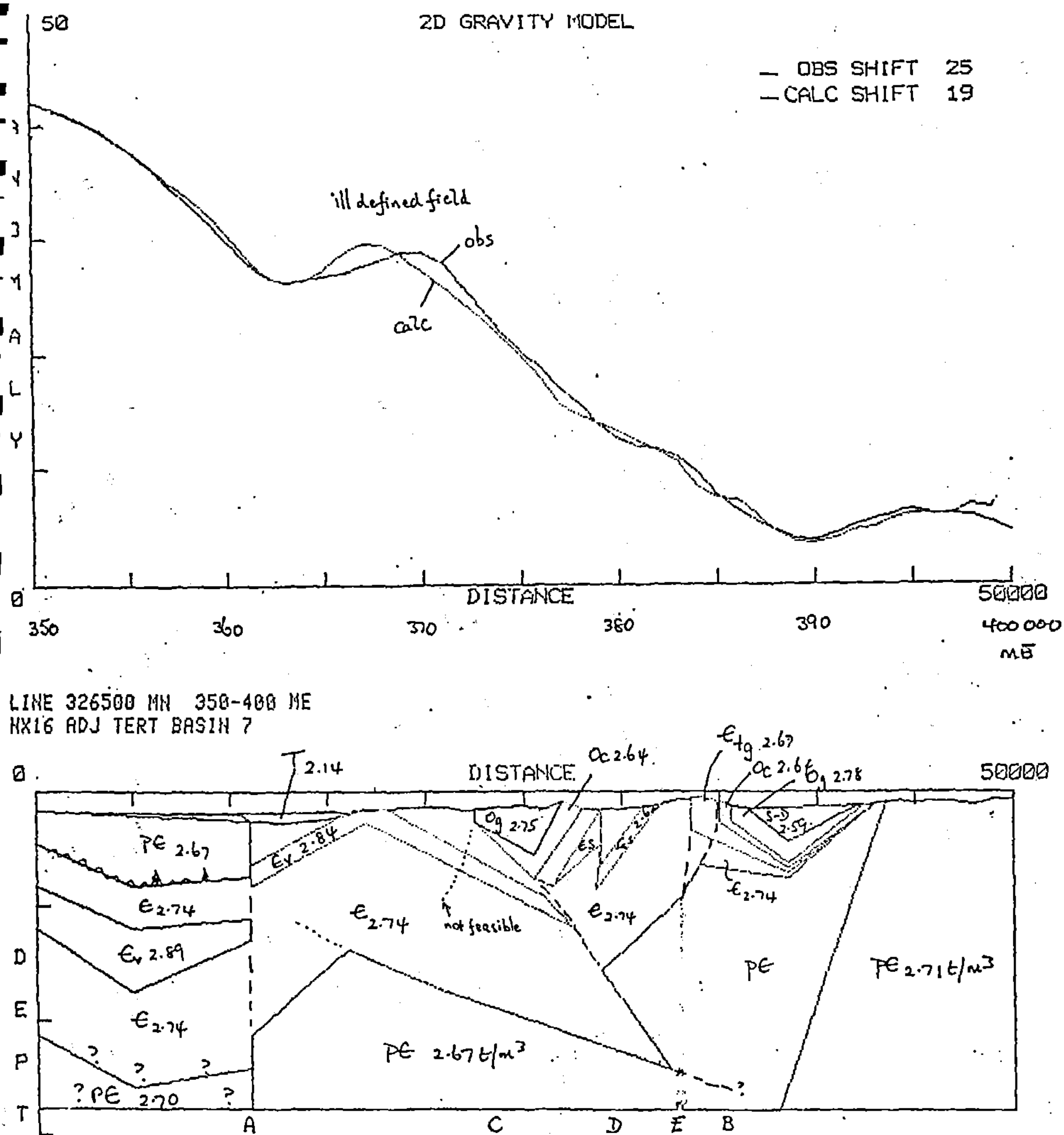
LINE 550 - 2D REGIONAL INTERPRETATION

703046

LEAMAN GEOPHYSICS

Survey Review, Specification, Reduction, Interpretation
Wide Experience Most Methods
Specialties:- Gravity, Magnetics, Seismic Methods

Registered Office:
~~461 OCEANA DRIVE, HOWRAH, TAS. 7018~~
All Correspondence to:
G.P.O. BOX 320 D, HOBART, TAS. 7001.
TELEPHONE: (002) ~~47 8848~~

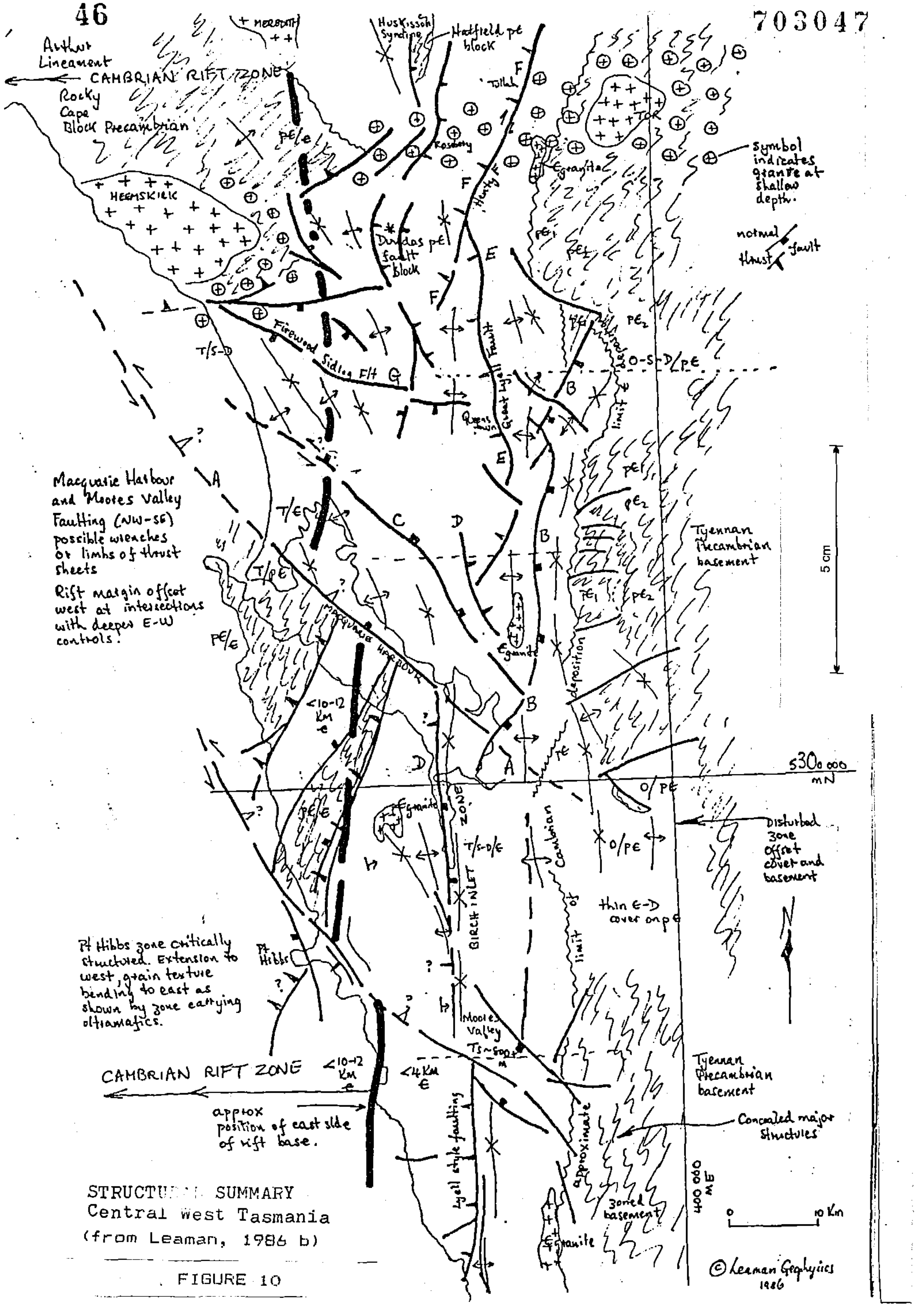


GRAVITY INTERPRETATION 5326 500 mN
(from Leaman, 1986 b)

27001 3.3

FIGURE 9

MODEL PROFILES: 5326 500 mN



STRUCTURAL SUMMARY
Central West Tasmania
(from Leaman, 1986 b)

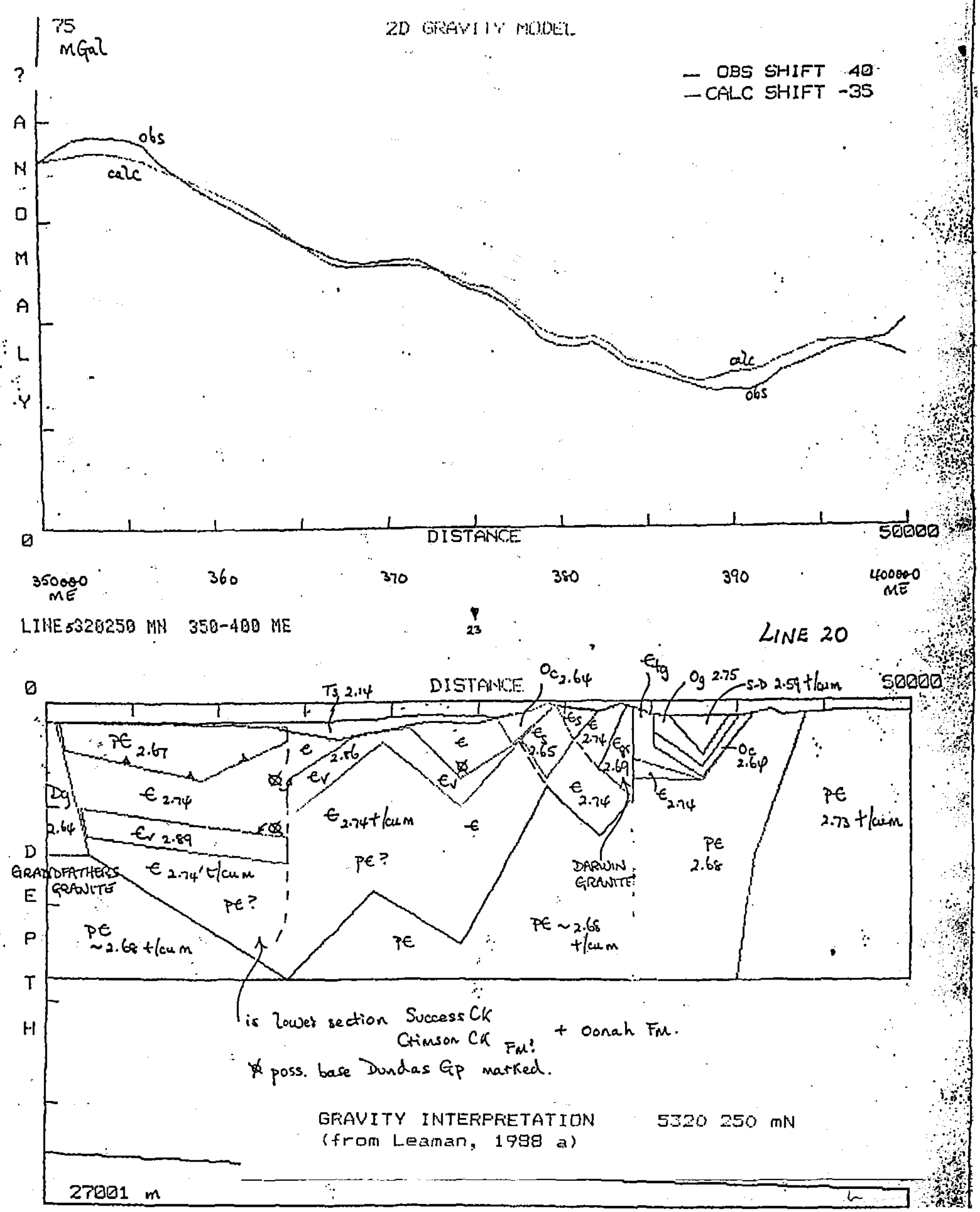
FIGURE 10

703048

LEAMAN GEOPHYSICS

Survey Review, Specification, Reduction, Interpretation
Wide Experience Most Methods
Specialities:- Gravity, Magnetics, Seismic Methods

Registered Office:
~~461 OCEANA DRIVE, HOWRAH, TAS. 7018~~
All Correspondence to:
G.P.O. BOX 320 D, HOBART, TAS. 7001.
TELEPHONE: (002) ~~47 8849~~



GRAVITY INTERPRETATION 5320 250 mN
(from Leaman, 1988 a)

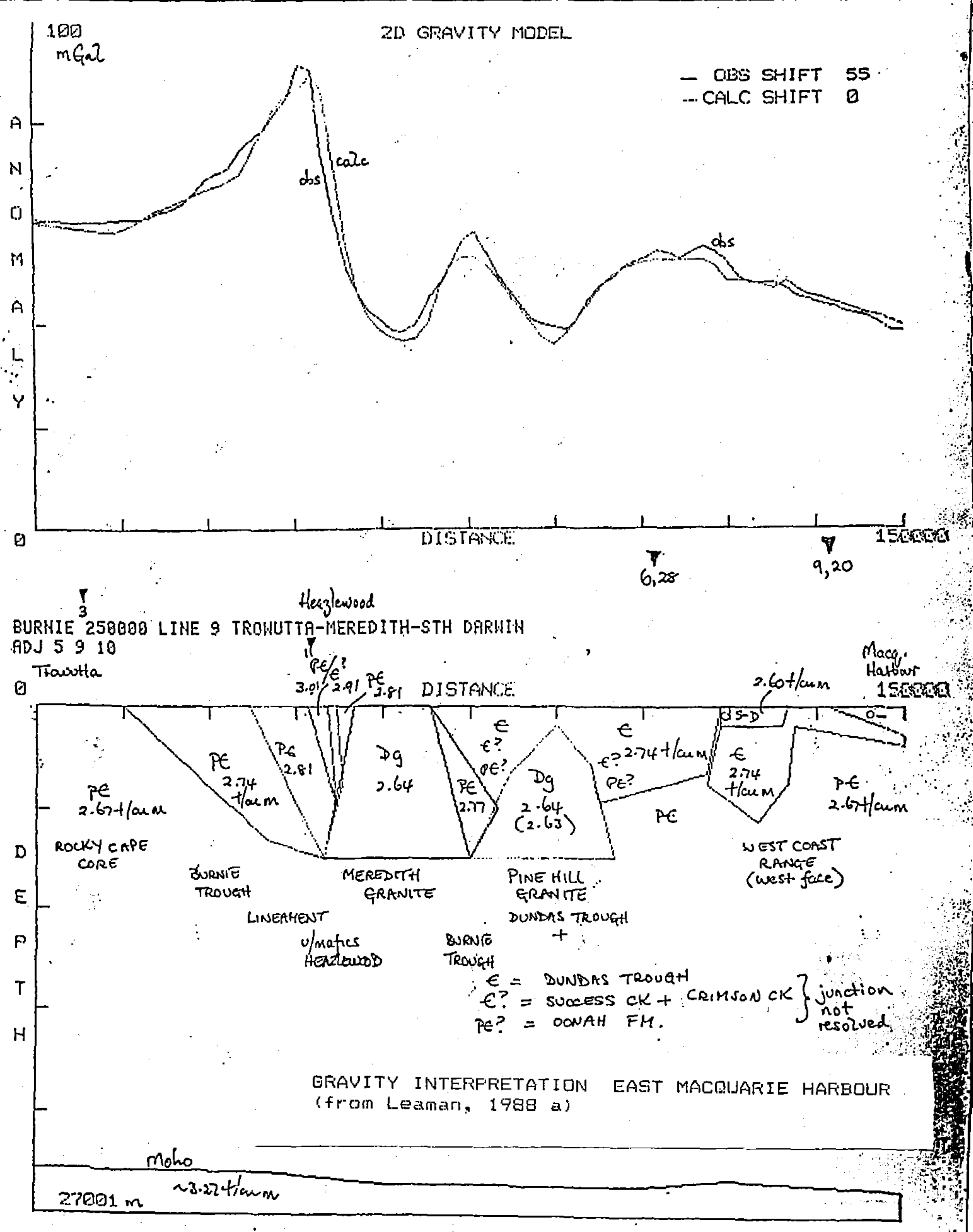
REGIONAL INTERPRETATION : LINE 20
5320 250 MN (350 - 400 000 ME)

FIGURE 11

703049

LEAMAN GEOPHYSICS
Survey Review, Specification, Reduction, Interpretation
Wide Experience Most Methods
Specialities:- Gravity, Magnetics, Seismic Methods

Registered Office:
~~461 OCEANA DRIVE, HOWRAH, TAS. 7018~~
All Correspondence to:
G.P.O. BOX 320 D, HOBART, TAS. 7001.
TELEPHONE: (002) ~~47 6849~~



REGIONAL INTERPRETATION : LINE 9
TROWUTTA – MEREDITH – STH DARWIN

FIGURE 12

49

703050

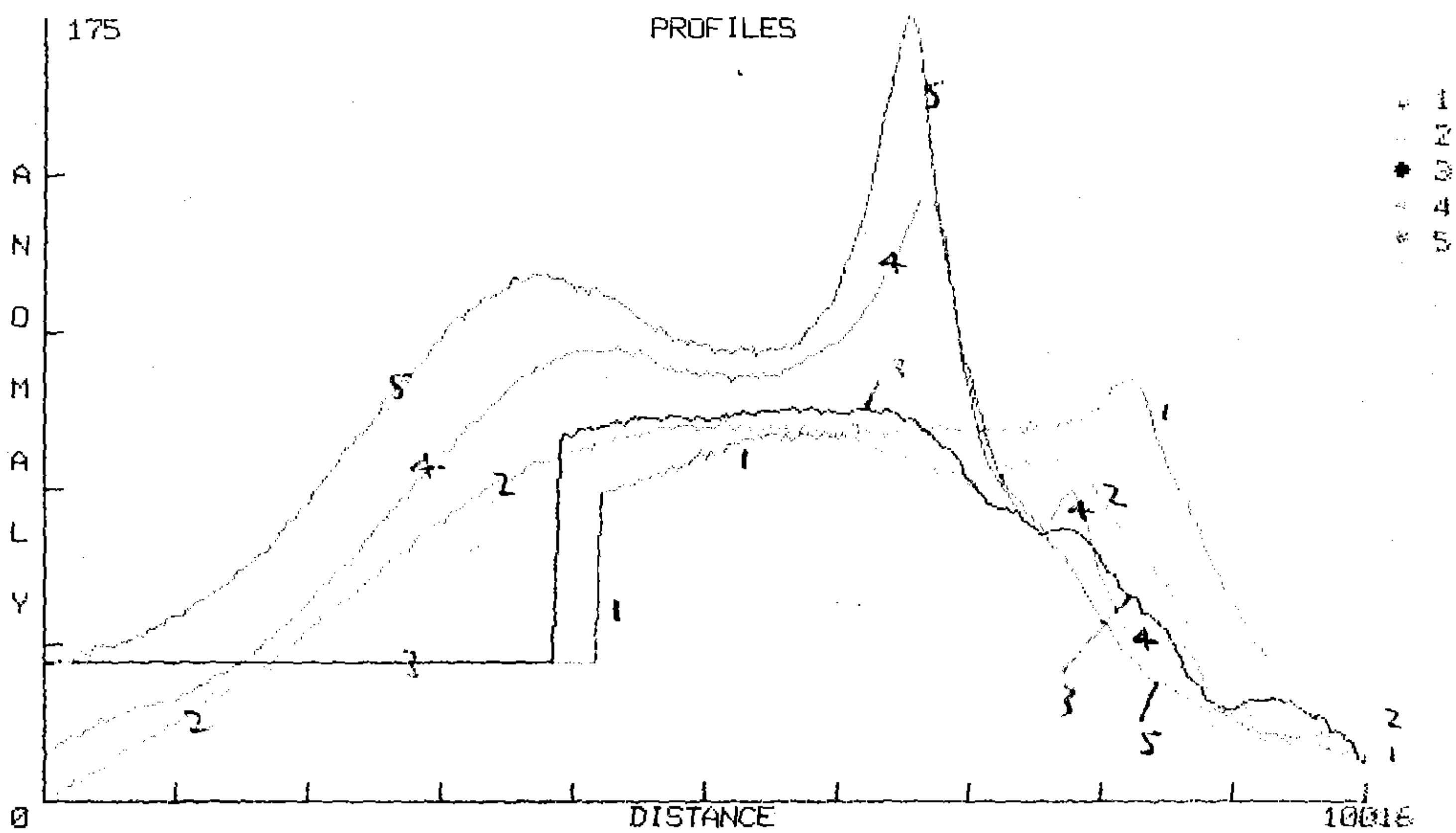
LEAMAN GEOPHYSICS

Survey Review, Specification, Reduction, Interpretation
Wide Experience Most Methods
Specialities:- Gravity, Magnetics, Seismic Methods

Registered Office:
21 Zomay Ave, Dynnyrne, Tas 7005
All Correspondence to:
G.P.O. BOX 320 D, HOBART, TAS. 7001.
TELEPHONE: (002) 24 0319

1	B:M4750	KING RIVER PROJECT LINE 4750	5322 300 N
2	B:M4800	KING RIVER PROJECT LINE 4800	5322 830 N
3	B:M4970	KING RIVER PROJECT LINE 4970	5323 100 N
4	B:M4960	KING RIVER PROJECT LINE 4960	5323 650 N
5	B:M5000	KING RIVER PROJECT LINE 5000	5324 150 N

ZERO SHIFT :-69.9



MAGNETIC PROFILES 5322 - 24 000 mN

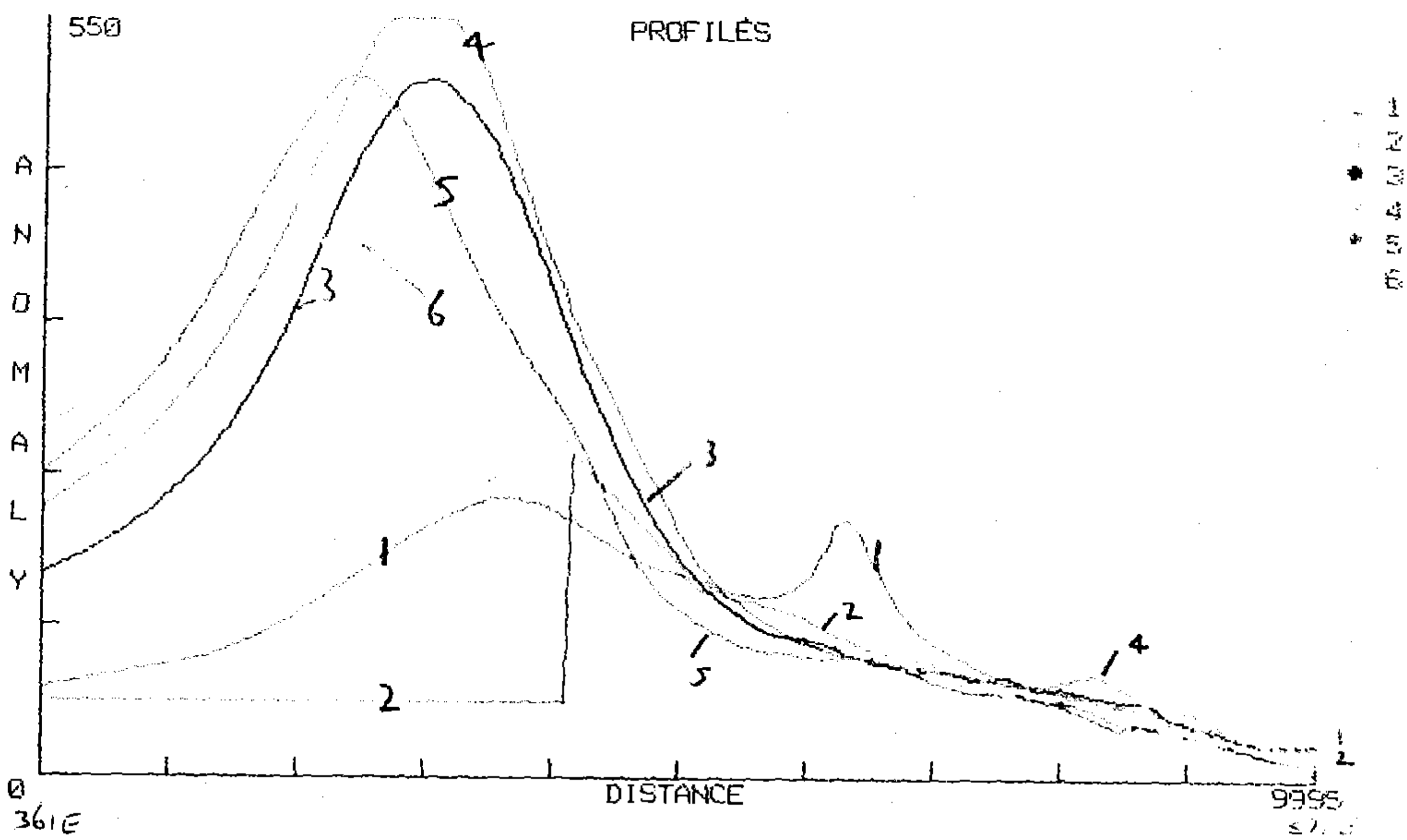
FIGURE 13

LEAMAN GEOPHYSICS
Survey Review, Specification, Reduction, Interpretation
Wide Experience Most Methods
Specialties:- Gravity, Magnetics, Seismic Methods

Registered Office: 21 Zomay Ave, Dynnyrne, Tas 7005
All Correspondence to: G.P.O. BOX 320 D, HOBART, TAS. 7001.
TELEPHONE: (002) 24 0319

1	B:M5100	KING RIVER PROJECT LINE 5100	5324 600 N
2	B:M5200	KING RIVER PROJECT LINE 5200	5325 250 N
3	B:M5450	KING RIVER PROJECT LINE 5450	5326 100 N
4	B:M5500	KING RIVER PROJECT LINE 5500	5326 640 N
5	B:M5600	KING RIVER PROJECT LINE 5600	5327 000 N
6	B:M5700	KING RIVER PROJECT LINE 5700	5327 470 N

ZERO SHIFT :-46.1



MAGNETIC PROFILES 5324 - 27 000 mN

FIGURE 14

703052

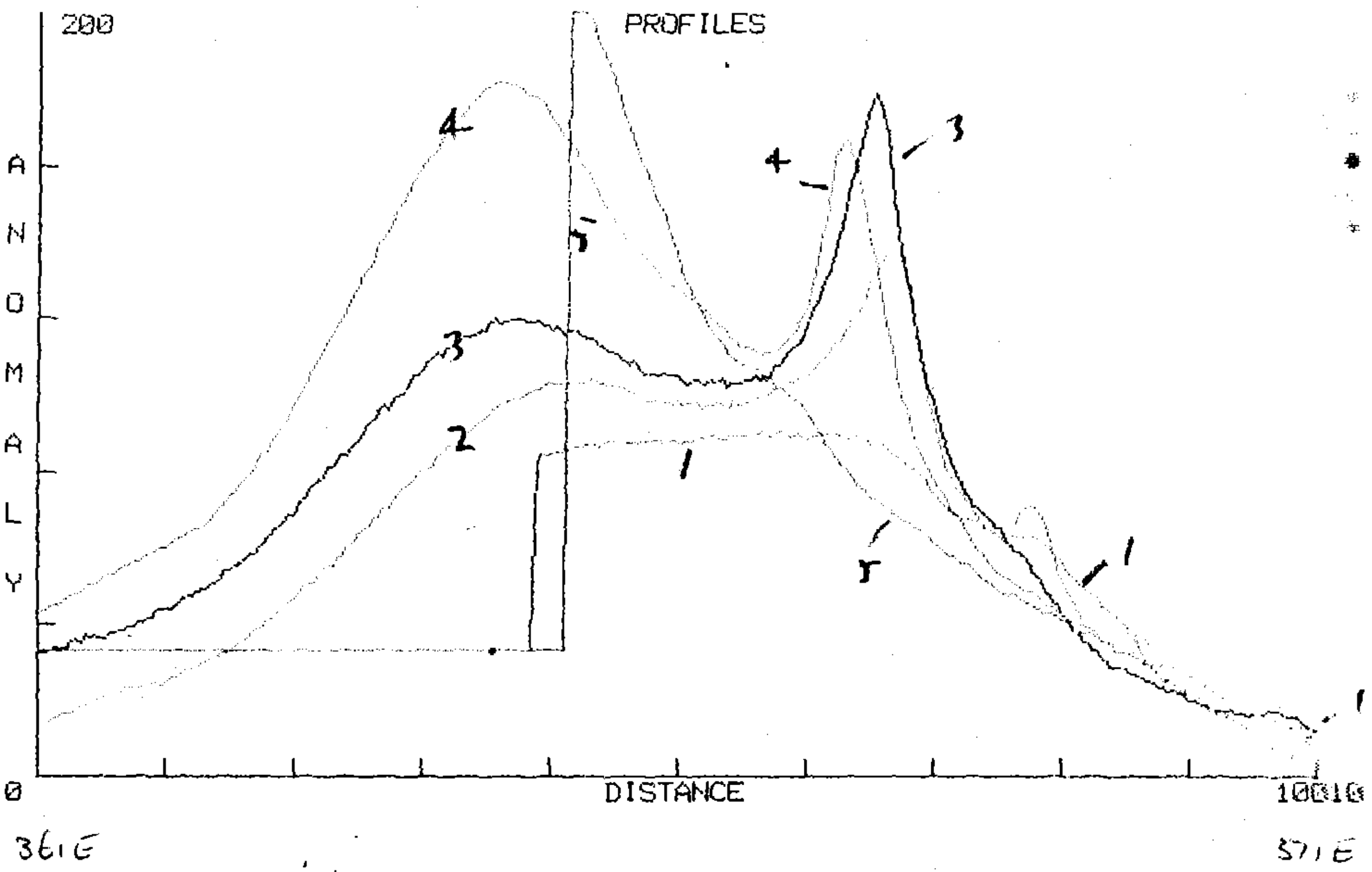
LEAMAN GEOPHYSICS

Survey Review, Specification, Reduction, Interpretation
Wide Experience Most Methods
Specialities:- Gravity, Magnetics, Seismic Methods

Registered Office:
21 Zomay Ave, Dynnyrne, Tas 7005
All Correspondence to:
G.P.O. BOX 320 D, HOBART, TAS. 7001.
TELEPHONE: (002) 24 0319

1	B:M4970	KING RIVER PROJECT LINE 4970	5323 100 N
2	B:M4960	KING RIVER PROJECT LINE 4960	5323 650 N
3	B:M5000	KING RIVER PROJECT LINE 5000	5324 150 N
4	B:M5100	KING RIVER PROJECT LINE 5100	5324 600 N
5	B:M5200	KING RIVER PROJECT LINE 5200	5325 250 N

ZERO SHIFT :-67.6



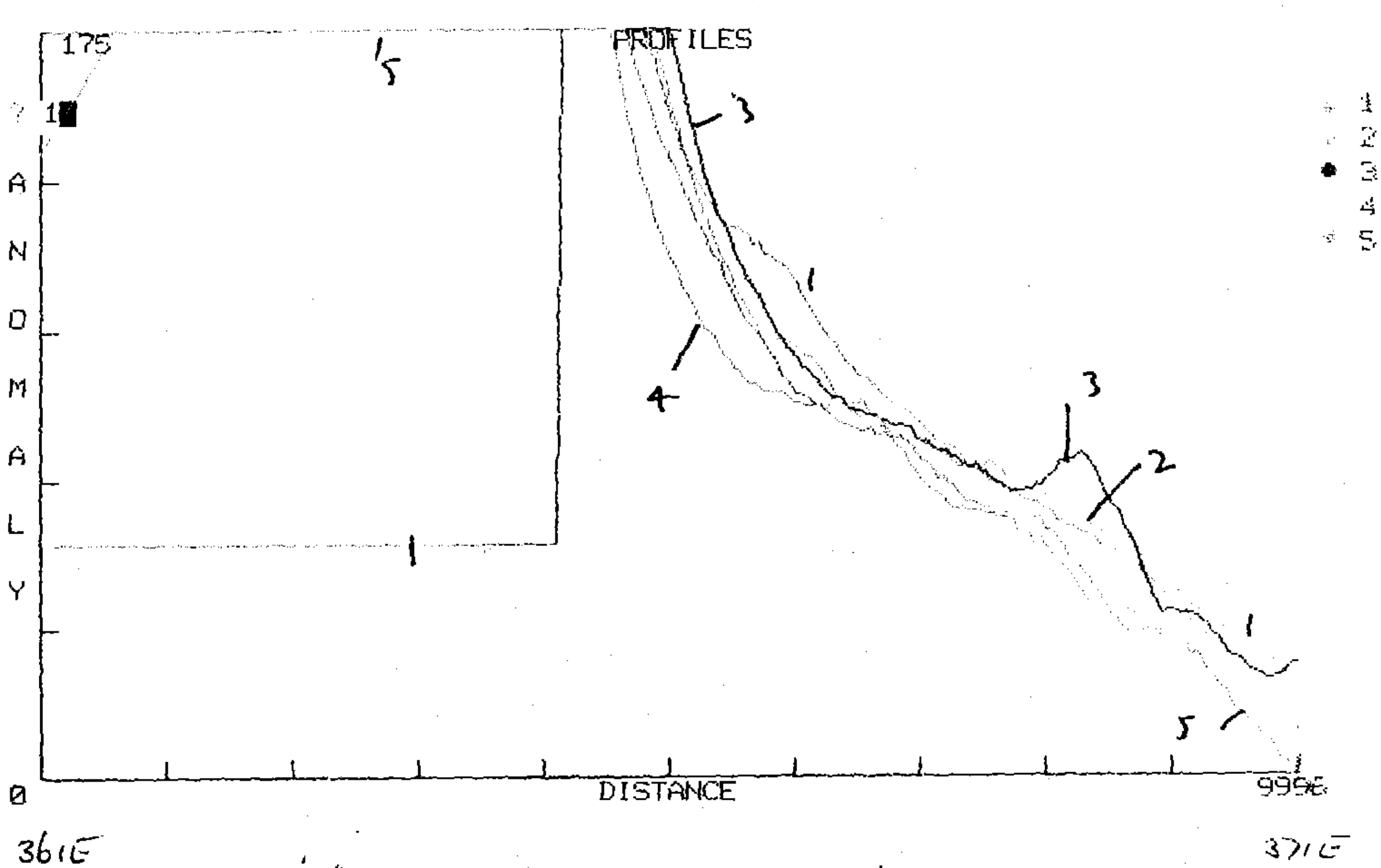
MAGNETIC PROFILES 5323 500 - 5325 500 mN FIGURE 15

LEAMAN GEOPHYSICS
Survey Review, Specification, Reduction, Interpretation
Wide Experience Most Methods
Specialties:- Gravity, Magnetics, Seismic Methods

Registered Office:
21 Zomay Ave, Dynnyrne, Tas 7005
All Correspondence to:
G.P.O. BOX 320 D, HOBART, TAS. 7001.
TELEPHONE: (002) 24 0319

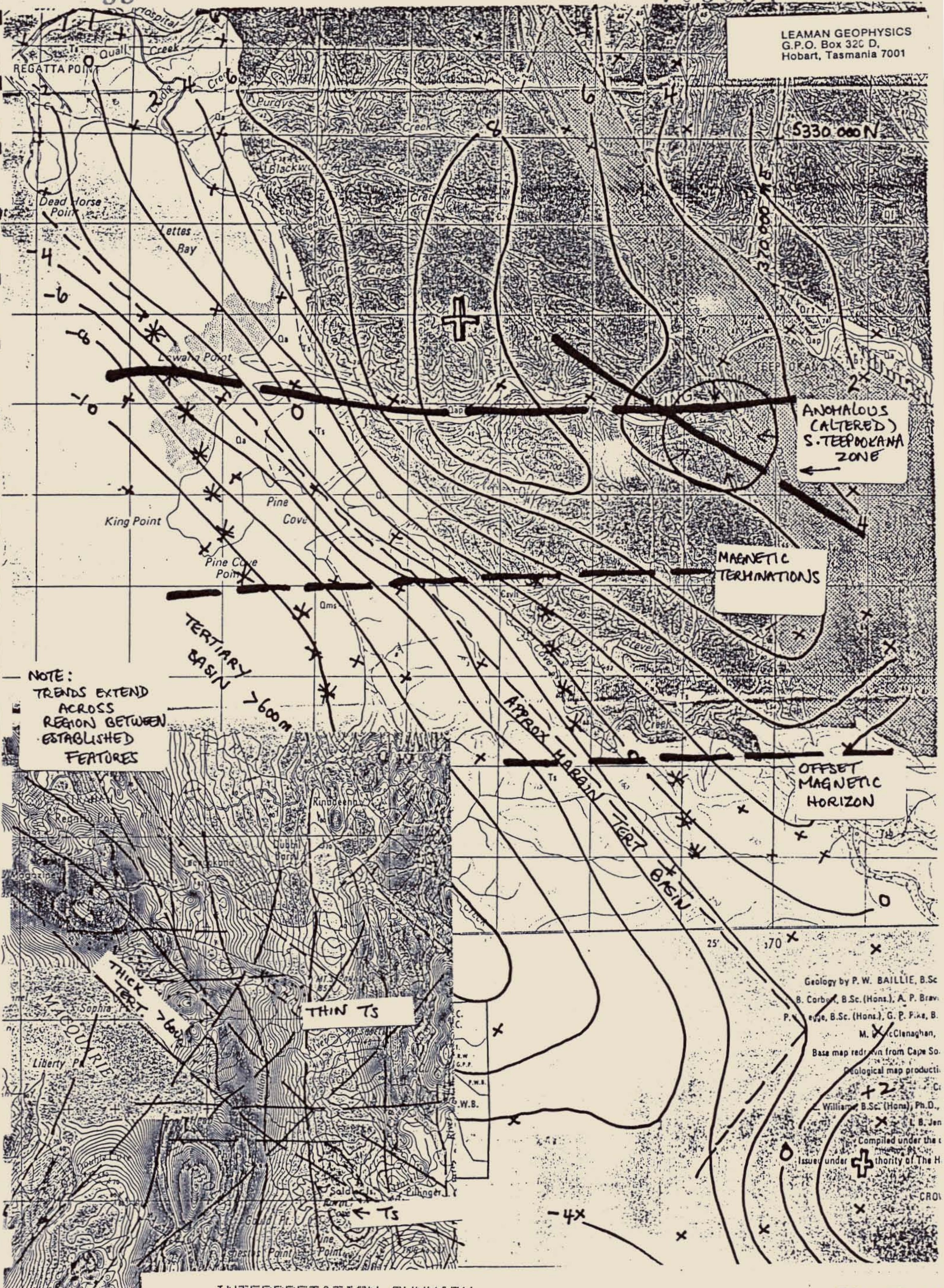
1	B:M5200	KING RIVER PROJECT LINE 5200	5325 250 N
2	B:M5450	KING RIVER PROJECT LINE 5450	5326 100 N
3	B:M5500	KING RIVER PROJECT LINE 5500	5326 640 N
4	B:M5600	KING RIVER PROJECT LINE 5600	5327 000 N
5	B:M5700	KING RIVER PROJECT LINE 5700	5327 470 N

ZERO SHIFT :-46.1



MAGNETIC PROFILES DETAIL 5324 - 27 000 mN FIGURE 16

53 703054



INTERPRETATION SUMMARY

* MAGNETIC ANOMALY TRENDS

FIGURE 17