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PROGRESS REPORT ON EL 1/77

PIEMAN HEADS GRANITE AREA

WESTERN TASMANIA

MICROFILMED

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Date : 30th November, 1983.

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1. SUMMARY

During 1983 new exploration work was conducted over a series of magnetic anomalies delineated during the 1981 West Coast aeromagnetic survey adjacent to the Pieman Heads Granite. A total of 30 kilometres of grid was pegged and ground magnetic readings were taken at 25 metre intervals. A total of 337 bedrock geochemical samples were taken over the magnetic anomalies adjacent to the granite. Rock and stream sediment samples were collected and the grid was mapped.

Several elevated zinc zones and occasional spot highs of either tungsten, copper and lead were located. No major anomaly was outlined and although the elevated zones warrant infill sampling the anomalies outlined do not justify remobilisation costs.

2. INTRODUCTION

The Pieman Heads Granite area forms portion of Exploration Licence 1/77 granted on 28th March, 1977 over an area of 5200 square kilometres. The licence area has been successively reduced to its present size of 1400 square kilometres. Since 1979 EL 1/77 has been the subject of a Joint Venture agreement between CRA Exploration and Geopeko Limited.

The report describes exploration work conducted over the north-eastern contact of the Pieman Heads Granite / Interview Siltstone where the 1981 West Coast aeromagnetic survey had outlined a group of magnetic anomalies. The work entailed gridding, ground magnetics and bedrock geochemical sampling. The exploration targets were

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Renison - Bell tin replacement style mineralisation or King Island Scheelite skarn mineralisation. Due to the presence of tin bearing high level gravels it was thought difficulty might be experienced in collecting uncontaminated samples. However the Bombardier mounted Jacro auger drill was able to penetrate the gravel horizon and collect uncontaminated bedrock samples.

3. CONCLUSIONS

1. No zone of significant tin, tungsten or base metal mineralisation was delineated during the programme.
2. Molybdenum / Tungsten values received from bedrock samples along the edge of the granite / Interview siltstone contact did not indicate the presence of any skarn style mineralisation.
3. The high tin stream sediment values obtained in samples 975879 - 975881 are due to the presence of tertiary tin bearing gravels.

4. RECOMMENDATIONS

1. The anomalous rock sample collected 6600N / 6271E containing 1950ppm Pb and 6500ppm As should be resampled and the area mapped and sampled for gold and base metal mineralisation.
2. No further work be done on the high tin values obtained in stream sediment samples 975879 - 975881, because although confirming earlier stream sampling the tin is derived from high level gravels.

3. The anomalous bedrock sample 7000E / 5850N of 1200 ppm Cu, 900 ppm Pb, 285 ppm Zn, be followed up with further sampling or a quick reconnaissance geophysical technique such as self potential. Hand held power auger sampling should penetrate deep enough for followup sampling.
4. The two slightly elevated tungsten / zinc zones on 5000N line are not worthy of followup work and are probably due to minor mineralisation within the contact aureole of the granite.

5. GEOLOGY

The geology of the immediate area is comprised of rocks belonging to the Rocky Cape Group (1400 - 600 Ma) consisting of the Interview Siltstone sequence where it abuts the Devonian Pieman Heads Granite. Mapping by the Consolidated Syndicate (Bell 1972) and Esso Australia (Neil 1974) and the present mapping has disclosed a sequence of quartzites, siltstones trending north-easterly away from the granite contact. There is little evidence of contact metamorphism apart from minor development of tourmaline and andalusite in some shaley sections.

A geology map (plan TASH 1525) which shows three units have been recognised within the Interview Siltstone sequence (Pss). They are :-

Pbs Black shale unit which also includes dark grey and grey black shales and also brown (tourmalinised?) shales near the Granite.

Psc Light grey siltstones, micaceous sandstones and siltstones.

Psq A very distinctive massive white crystalline quartzites. Esso mentioned several of these

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outcrops were tourmalinised, however no evidence of tourmalinisation was observed in the current exploration programme.

No carbonate bearing rocks were observed in the mapping or in the bedrock geochemical sampling. No large sulphide units which may have had later introduction of tin were found.

6. PREVIOUS EXPLORATION

6.1 Pickands Mather

As part of their extensive stream sediment sampling programme Pickands Mather sampled streams draining the Pieman Heads Granite. They obtained extremely anomalous tin results but did not follow them up. They explained these anomalies away as being derived from tin bearing gravels which cover the area.

6.2 Consolidated Syndicate

6.2.1 Pieman Heads Granite

This syndicate completed detailed geological mapping over the granite together with stream sediment sampling (Bell 1972). They also completed an extensive stream sediment sampling programme along all creeks in the area and from outcrops produced a Geological Map. Their gridding consisted of one grid over portion of the granite itself with one small extension crossing the contact with gridding and trenching several hundred metres north of the contact. The grid portions can be found on plan TASH 1525.

The grid within the Pieman Heads Granite was over several creeks that contained anomalous tin values. No veining or stringer type mineralisation was located that could explain the stream anomalies. The reason for the northern extension was to examine the granite / sedimentary contact. The grid was sited some two hundred metres north of the contact in a magnetically quiet area. No significant geochemical results were found. The high tin values in stream sediment samples were deduced to be derived from high level tin bearing gravels.

6.2.2 Regional Exploration

The Consolidated syndicate completed stream sediment sampling along creeks north of the granite. They located several interesting zones :-

1. Anomalous copper in Violet Rivulet in a Black Shale unit (230 - 830 ppm Cu).
2. Anomalous tin in Websters Creek draining Intervew Siltstone sequence (upto 5760 ppm).

A grid was laid out over this area in 1972 (Schellekins 1972) and ground magnetics, soil and rock sampling, and mapping were completed. Once again the grid was placed in an area of particularly low magnetic relief. No encouraging results were obtained and the area was relinquished. No record of followup work on the anomalous (5760ppm Sn) in the Upper reaches of Websters Creek was found.

6.3 Esso Australia Ltd.

During 1973 Geoterrex Limited of Canada were contracted to fly a combined airborne magnetic and electromagnetic (input) survey. The Pieman Heads Granite area was covered in this survey. A group of input / magnetic anomalies were found adjacent to the granite margin. A series of lines were pegged to assess these anomalies (refer plan TASH 1525) and ground magnetics were completed (Neale 1973). No record of rock and soil sampling is known. Neale stated 'the input anomalies are attributed to pyrite bearing black graphitic slates containing insignificant amounts of base metal sulphide. Accordingly, these input anomalies require no further work'. Neale went on to state that 'most of the magnetically active region is covered by Tertiary sands and gravels.'

6.4 West Coast Regional Aeromagnetic Survey

During 1981 the Tasmanian Department of Mines with the assistance of a Federal grant flew a low level aeromagnetic survey over the Pieman Heads area. The survey indicated a group of discrete magnetic anomalies adjacent to the granite / siltstone contact. A grid was laid out to cover these anomalies to assess their potential for Renison Bell replacement style or skarn type tin - tungsten deposits.

7. EXPLORATION

7.1 Pieman Heads Grid Area

Some twenty-two field days were spent cutting and pegging a thirty kilometre grid mainly over button grass. The grid was covered by ground magnetics

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at twenty-five metre intervals using a proton magnetometer. The results were levelled and plotted. A contoured plan (TASh 1303) of these results together with a computer assisted interpretation of the anomalies can be found in Appendix Two.

From this work lines were selected for bedrock geochemical sampling using a Bombardier mounted Jacro auger rig. Depths to basement were upto nineteen metres but were generally more in the one to four metre range. Samples were collected and dispatched for analysis. The results can be found in Appendix One and are plotted on plan numbers TASh 1374 (Cu, Pb, Zn) and TASh 1375 (W, Sn). Histograms of geochemical values can be found in Appendix ^{One} ~~Two~~.

The results show that the Jacro auger rig was successful in collecting uncontaminated tin samples the highest tin assay being 47ppm. Tungsten values showed a slightly elevated zone on the 5000N line adjacent to the granite the values ranged from 9 to 119 ppm. A spot high of 299 ppm occurred on line 5000N at 6900E. Samples were reassayed on 5000N line for molybdenum to see if an anomalous zone existed similar to that occurring over the Bold Head Scheelite orebody on King Island (Rogers in Butt and Smith 1980). However the highest molybdenum assay received was only 4ppm.

Base metal values did not outline any highly mineralised zone although several samples returned anomalous assays. The highest assays recorded for copper and lead were in a sample of Khaki clay collected at 7000E 5850N (1200ppm Cu, 900ppm Pb) however bedrock geochemical samples collected twenty five metres north and south were not anomalous (Appendix One p. 9). A value of

1350ppm Zinc was returned from a bedrock sample adjacent to the granite contact at 5000N 7025E. The base metal values although anomalous do not warrant priority in further exploration as sampling either side of them did not indicate further mineralisation.

The grid was mapped and rock and stream samples collected. One rock sample of a grey micaceous siltstone - shale returned values of 1950ppm lead and 6500ppm arsenic. This sample warrants followup work in determining the extent of the rock unit and further sampling for base and precious metals.

7.2 General Exploration

The copper prospect to the north of the grid was located and the creek where the Consolidated Syndicate obtained a 5760ppm tin stream sediment sample was inspected.

The copper prospect? was located and consisted of a small shaft almost filled in with some vein quartz material containing minor pyrite mineralisation. Two rock samples from the shaft area did not return any significant assays.

The creek which yielded the anomalous tin stream sediment results was found to be a gentle U - shaped valley with a very small water channel one metre wide and one metre deep. Three stream sediment samples were collected one from approximately the original Consolidated Syndicate site and two more about 200 metres upstream from each other.

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All three samples returned anomalous tin values. The float was siltstone pale brown in colour and much quartz gravels. Inspection of the siltstone outcrops did not indicate extensive veining in the area and it is concluded that the high tin values are due to high level tin bearing gravels of no economic importance.

8. REFERENCES

- | | | |
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Vol. 91

9. KEYWORDS

BURNIE SK 55-3. Precambrian - Proterozoic - Up, Devonian -
Granite, Assays - geochem, copper, lead, zinc, tin, tungsten,
Geophys - mag, Pieman Heads Area - Rocky Cape.

10. LIST OF PLANS

- | | | |
|-----------|---|----------------------------|
| TASh 1557 | Location Plan Pieman Heads Area | 1 : 500 000 |
| TASh 1303 | EL 1/77 Pieman Heads
Ground Magnetic Contours | 1 : 5000
(Appendix Two) |
| TASh 1373 | EL 1/77 Pieman Heads
Bedrock Geochemistry
Sample Locations | 1 : 5000 |
| TASh 1374 | EL 1/77 Pieman Heads
Bedrock Geochemistry
Sampling Results Cu, Pb, Zn | 1 : 5000 |

TASh 1375	EL 1/77 Pieman Heads Bedrock Geochemistry Sampling Results W, Sn	1 : 5000
TASh 1525	Pieman Heads Grid Geology and Rock / Stream Sediment Sites	1 : 10 000

11. LIST OF APPENDICIES

- APPENDIX ONE : Rock, stream sediment and Bedrock
Geochemical Ledgers.
- APPENDIX TWO : Pieman Heads Ground Magnetic Survey
Interpretation by M.F. Flis.

APPENDIX ONE

ROCK, STREAM SEDIMENT AND

BEDROCK GEOCHEMICAL LEDGERS

'Mo'

< 1	1	2	3	4	5	5 >
 	 -	 -				
45	16	6	5	4		

BACKGROUND

POSSIBLY ANOMALOUS

'Pieman Heads'

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'Cu'

< 5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-100	100 >
45	69	55	37	26	10	9	10	10	6	23	7

BACKGROUND

POSSIBLY ANOMALOUS

ANOMALOUS

Rocky Cape
Peman Heads.

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'Pb'

<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-100	100-120	120-140	140-160	160-180	180-200	200 >
56	55	47	34	19	13	11	9	11	4	5	1	6	6	1	1	10	2	6	3	1		6

BACKGROUND
Rocky Cape - Pieman Heads.

POSSIBLY ANOMALOUS

ANOMALOUS

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C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name ROCKY CAPE EL 1/77 No. 975050 - 064 Sample numbers. 975050 - 064 Collected by GW + TB Sheet no. 1 of 25

Area / Prospect PIEMAN HEADS Date 9.11.82

Map / Photo reference..... Analysed by ANALABS DPO no. 30213

A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations		
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	Mo	W	Sn				
		o/c sample type ***					depth													
975050	br						3.5m		5	20	35	X	X	X			11	X	5000N 4575E	5000N LINE (4575E → 5000E) lt pinky gy - dk br gy micaceous sandy siltstone.
975051	br						2.7m		5	5	50	X	X	X			X	X	4600E	Gy-br micaceous siltstones occ gy and yellow br.
975052	br						2.5m		5	10	70	X	X	X			X	X	4625E	Yellow-br sandy clays - some yellow-ss and occ pale gn-yellow.
975053	br						1.75m		10	15	40	X	X	X			X	X	4650E	Pale gn-gy micaceous clays.
975054	br						2.7m		5	5	10	X	X	40			18	X	4675E	Bright yellow m-c.g. sands. SS pieces pale yellow.
975055	br						8.0m		10	5	120	0.5	X	3.0			X	X	4700E	CONTAMINATED Sandy gn-gy m-c.g. purple clayey sands + dk gn-gy sands.
975056	br						2.3m		35	50	65	X	X	3.0			12	X	4733E	Med-dk br clayey sands occ yellow sandy clay pieces.
975057	br						8.5m		40	5	55	0.5	X	4.0			X	X	4750E	Dk - med gy clays - grit particles - contamination?
975058	br						1.0m		X	60	10	X	X	3.5			4	X	4775E	Bl or Gy Shales.
975058	br						1.0m		X	20	15	X	X	1.0			13	X	4800E	Bl or Gy Shales.
975060	br						1.0m		5	10	10	X	X	2.0			11	X	4800E	duplicate of above
975061	br						2.5m		5	25	15	0.5	X	3.0			49	7	4825E	Med-th br gy micaceous clays - br shales
975062	br						3.7m		X	5	15	X	X	0.5			4	X	4850E	Pale pink micaceous clays.
975063	br						1.0m		X	X	10	X	X	4.0			12	6	4875E	Buff gy sands and sandstone.
975064	br						2.6m		X	5	15	X	X	X			X	X	4900E	Buff very micaceous clays.

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock geochem.

** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

*** Outcrop sample type gs = grab sample rc = rock chip (state interval & lin)

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name ROCKY CAPE EL 1/17 No. Sample numbers 975065 - 068 Collected by CBW + TB Sheet no. 2 of 25
 Area / Prospect..... Date 9.11.82
 Map / Photo reference..... Analysed by ANALABS DPO no. 30213
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	Mo	W	Sn				
		o/c sample type ***																		
		s sample type **** depth																		
975065	br						3.7m	x	10	20	1.0	x	x		x	x	5000N/ 4905E	5000N LNE (4975E → 5000E) Med bn micaceous clayey or white clay - minor contamination.		
975066	br						1.7m	x	15	25	0.5	x	x		x	4	4950E	Dk gy-bn micaceous weathered siltstones		
975067	br						6.7m	10	50	20	0.5	x	x		x	x	4975E	Hard angular qtz particles - dk bn clay becoming med-lt gy micaceous. At total depth, lt. pinky gy micaceous clay.		
975068	br						3.7m	5	15	10	x	x	x		x	x	5000E	med-lt bn micaceous clay-siltstones.		

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock

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Tenement name ROCKY CAPE EL 1/77 No. 975069 - 092 C.R.A. EXPLORATION GEOCHEMICAL SAMPLE IDGER
 Area / Prospect PIEMAN HEADS Sample numbers 975069 - 092 Collected by GBU + TB Sheet no. 3 of 25
 Map / Photo reference A 02143 Analysed by ANALABS Date 9-10-11-82 DPO no. 30213

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn			
		o/c sample type ***														s sample type ****		
							depth											
975069	br						57m		5	15	25	1.5	X				4800N/	4800N LINE (5000E → 4700E)
975070	br						37m		5	10	20	X	X				5000E	Gy clays - contaminated
975071	br						37m		5	10	15	1.0	X				4975E	Lt gy-gr micaceous clays.
																	4950E	Pale gr-gr med c gy particles to v.c.s. sand gr size - contamination?
975072	br						7.0m		10	155	25	X	X				4925E	Med gy micaceous weathered siltstone/shale
975073	br						3.0m		10	10	15	1.0	X				4900E	Pale gy - med gy weathered granite.
975074	br						2.5m		5	95	10	1.0	X				4875E	Deeper - red br micaceous siltstone some gy-gr-br material.
975075	br						2.5m		X	95	10	1.0	X				4875E	ditto - duplicate of above
975076	br						1.5m		X	5	10	1.0	X				4850E	Red br clay - siltstone.
975077	br						4.8m		10	35	25	0.5	X				4825E	Gy micaceous clays.
975078	br						3.7m		X	35	40	X	X				4800E	Med br clays become gritty with biotite flakes - weathered granite.
975079	br						3.7m		30	120	15	2.5	X				4775E	Lt creamy gy micaceous gritty clay - weathered granite.
975080	br						3.0m		25	65	190	1.0	X				4750E	Gritty Granite? in black gr - heavy contamination - shallow granite
975081	br						4.7m		5	10	25	0.5	X				4725E	Grey clays sh. gritty.
975082	br						1.8m		X	X	20	0.5	X				4700E	Med-br gritty - no mica prob ss or siltstone.

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock

** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE EDGER

Tenement name ROCKY CAPE EL 1/77 No. 975083 - 094 Sample numbers 975083 - 094 Collected by GSD + T.B. Sheet no. 4 of 25
 Area / Prospect PIEMAN HEADS Date 10-11-82
 Map / Photo reference..... Analysed by ANALABS DPO no. 30213
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn					
		o/c sample type ***					depth													
ss*	oc	f	s																	
975083	br						7.8m		10	X	35	0.5	X			4	X	4850E	Dk br sands + gy clays - contaminated?	
975084	br						8.0m		5	5	65	0.5	X			8	X	4875E	Gy clayey grits + br sands - contaminated.	
975085	br						6.8m		5	5	30	X	X			X	4	4900E	Gy gritty clays + br sands - contaminated.	
975086	br						5.3m		110	5	65	X	X			17	X	4925E	Gy-white gritty clays + br sands - contaminated? - Granite basement?	
975087	br						2.5m		5	X	40	0.5	X			9	X	4950E	Oyster siltstone - v. contaminated.	
975088	br						2.3m		5	X	55	X	X			X	X	4975E	Gy quartz	
975089	br						2.7m		15	5	150	X	X			5	X	5000E	Gy weathered clays - siltstone.	
975090	br						1.5m		65	10	60	1.0	X			10	X	5025E	Gy clays with mica 5°	
975091	br						1.5m		5	15	30	X	X			25	47	5050E	Gy clay	
975092	br						2m		X	X	15	X	X			X	X	5075E	brown siltstone.	
975042	br	(hand auger)					0.7m		5	5	10	X	X			X	X	5100E	Dk br-yellow clays - siltstone.	
975093	br						1.0m		X	5	20	X	X			7	X	5125E	Sulphur yellow gritty clays.	
975094	br						1.7m		X	X	20	X	X			8	X	5150E	Lt br clay.	

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bed rock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km²

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE EDGER

Tenement name ROCKY CAPE EL 1/77 No. Sample numbers 975107 - 120 Collected by T.B. Sheet no. 6 of 25
 Area / Prospect PEMAN HEADS 975048 - 049 Date 12.11.82
 Map / Photo reference..... Analysed by ANALABS DPO no. 30213
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn				
		o/c sample type ***																	
		s sample type **** depth																	
975107	br						1.5m	x	15	15	x	x			7	5	5400E/ 5425N	5400E (5400N - 5800N) Gy shale.	
																	5450N	% Gy siltstones - could not sample.	
975108	br						1.7m	x	15	10	x	x			x	x	5475N	Lt br clay.	
975109	br						1.7m	x	x	10	0.5	x			x	x	5500N	Yellow clay	
975110	br						1.8m	x	5	15	0.5	x			x	x	5525N	Lt yellow clay.	
975111	br						1.5m	x	45	25	x	x			11	x	5550N	Yellow clay.	
975112	br						1.5m	x	10	15	0.5	x			x	x	5575N	Yellow-white clay.	
975113	br						1.5m	x	5	15	1.0	x			x	x	5575N	ditto - duplicate sample.	
975114	br						0.7m	x	10	15	x	x			4	x	5600N	Yellow and grey clay	
975115	br						1.0m	x	20	15	1.0	x			5	x	5625N	Khaki clay.	
975116	br						1.5m	5	25	25	x	x			x	x	5650N	Dk br clay	
975117	br						1.0m	65	x	55	0.5	x					5675N	White clay.	
975118	br						2.0m	20	160	20	1.0	x			x	x	5700N	Black clay shales	
975119	br						1.7m	35	5	35	0.5	x			x	x	5725N	Khaki gritty clay.	
975120	br						2.0m	115	10	55	0.5	120			x	x	5750N	Yellow-orange clay.	
975048	br	(hand auger)						0.5m	10	x	55	x	x			4	x	5775N	Yellow-br clays over pale yellow-gn siltstones.
975049	br	(hand auger)						0.5m	35	15	50	x	x			x	5	5800N	Yellow-br clays over pale yellow-gn siltstones.

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

459027

Tenement name ROCKY CAPE EL 1/77 No. Sample numbers 975121 - 137 Collected by T.B. Sheet no. 7 of 25
 Area / Prospect PIEMAN HEADS Date 12.11.82
 Map / Photo reference Analysed by ANALABS DPO no. 30213
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations		
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	Mo	W	Sn				
		o/c sample type ***																	s sample type ****	
						depth														
975121	br						3.7m		75	45	155	0.5	x	1.0			42	7	5000N / 6800E	5000N (6800E - 7175E) Br gritty clay.
975122	br						7.2m		15	15	50	0.5	x	1.5			25	4	6825E	Gry gritty micaceous clay.
975123	br						2.5m		30	10	50	x	x	1.5			40	x	6850E	micaceous clayey grits - contamination?
975124	br						2.0m		20	10	50	x	x	2.0			16	x	6875E	Lt br clay
975125	br						2.5m		10	15	45	x	x	4.0			266	x	6900E	Gn - gry clay
975126	br						2.6m		10	50	75	x	x	1.5			42	4	6925E	Gry gritty clay.
975127	br						8.5m		20	80	175	x	x	1.0			4	x	6950E	White clay - weathered granite?
975128	br						2.5m		15	40	25	x	x	0.5			40	x	6975E	Dk br clay
975129	br						2.5m		15	40	25	0.5	x	1.5			53	x	6975E	ditto - duplicate sample.
975130	br						5.7m		15	35	95	0.5	x	1.5			4	5	7000E	Lt br clay
975131	br						5.7m		65	30	1350	x	x	1.0			54	x	7025E	Lt br clay
975132	br						5.7m		45	25	15	x	x	2.0			x	5	7050E	Lt br clay
975133	br						5.7m		10	x	10	x	x	1.0			4	5	7075E	Lt br clay
975134	br						5.7m		115	10	530	0.5	x	0.5			19	x	7100E	Lt and dk br micaceous clay.
975135	br						5.7m		10	10	25	x	x	x			10	4	7125E	Lt br micaceous clay.
975136	br						5.7m		10	x	45	x	x	0.5			14	x	7150E	Weathered granite
975137	br						5.7m		5	15	40	x	x	x			9	5	7175E	Weathered granite.

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

Tenement name ROCKY CAPE EL 1/77 No. Sample numbers 975138 - 154 Collected by T.B. Sheet no. 8 of 25
 Area / Prospect PIEMAN HEADS Date 13-4-82
 Map / Photo reference Analysed by ANALABS DPO no. 30213
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn					
		o/c sample type ***																		
		s sample type **** depth																		
975138	br						5.0m		5	25	40	x	x					7000E/4800N	7000E (4800N - 5200N)	White gritty clay.
975139	br						4.5m		5	10	50	x	x					4825N	Lt br gritty clay - granite?	Lt br gritty clay - granite?
975140	br						5.0m		x	10	85	x	x					4850N	br-wh clay.	br-wh clay.
975141	br						4.0m		5	x	55	x	x					4875N	White gritty clay.	White gritty clay.
975142	br						3.7m		5	95	75	x	x					4900N	White gritty clay.	White gritty clay.
975143	br						3.5m		40	5	85	x	x					4925N	Gy clay	Gy clay
975144	br						4.2m		15	15	50	x	x					4950N	Gm (chloritic) and gy clay.	Gm (chloritic) and gy clay.
975145	br						5.7m		10	5	160	0.5	x					4975N	Gy and white clay.	Gy and white clay.
975146	br						5.7m		10	5	105	x	x					4975N	ditto - duplicate sample	ditto - duplicate sample
																		5000N	(Refer p 7 No 975130)	(Refer p 7 No 975130)
975147	br						1.0m		20	45	30	x	x					5025N	Dk br clay.	Dk br clay.
975148	br						1.2m		45	35	35	x	x					5050N	Dk br clay	Dk br clay
975149	br						6.7m		5	185	25	x	x					5075N	Gy gritty clay minor S ²	Gy gritty clay minor S ²
975150	br						3.7m		x	20	60	x	x					5100N	White gritty clay.	White gritty clay.
975151	br						5.7m		x	15	75	x	x					5125N	White gritty clay.	White gritty clay.
975152	br						4.7m		x	5	55	x	x					5150N	Gy gritty clay.	Gy gritty clay.
975153	br						4.8m		x	5	25	x	x					5175N	Dk gy clay.	Dk gy clay.
975154	br						4.0m		5	10	15	x	x					5200N	White gritty clay.	White gritty clay.

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock.
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

Tenement name ROCKY CAPE EL 1/77 No. 97S155-170 C.R.A. EXPLORATION GEOCHEMICAL SAMPLE IDGER
 Area / Prospect PIEMAN HEADS Collect by T.B. Sheet no. 9 of 25
 Map / Photo reference..... Analysed by ANALABS Date 15.11.82
 A.02143 DPO no. 30213-30217

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations									
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn														
		o/c sample type ***																											
		s sample type **** depth																											
97S155	br						2.0m									5	15	70	x	x					6	x	5750N	Br clay	
97S156	br						2.5m									5	10	10	x	x					x	x	5775N	White and yellow clay	
97S157	br						2.0m									5	15	15	x	x					10	x	5800N	Dr br clay	
97S158	br						1.5m									x	5	10	x	x					9	x	5825N	Dr. br clay	
97S159	br						2.0m									1200	900	285	0.5	x						12	x	5850N	Khaki clay
97S160	br						1.0m									30	40	40	x	x					22	x	5875N	Lt br clay siltstone clipp.	
97S161	br						1.5m									25	25	35	x	x					x	x	5900N	Khaki clay	
97S162	br						1.5m									10	15	30	x	x					x	x	5925N	Lt br clay	
97S163	br						1.5m									10	30	55	x	x					x	x	5950N	Lt br clay	
97S164	br						1.7m									50	80	120	0.5	x						x	x	5975N	Dr br clay
																											6000N	NO SAMPLE NO ACCESS.	
97S165	br						1.7m									40	65	100	x	x					20	x	6025N	Black Shales	
97S166	br						1.0m									35	20	110	0.5	x					x	11	6050N	Black Shales	
97S167	br						2.0m									45	30	95	x	x					10	x	6075N	Black Shales	
97S168	br						2.7m									95	25	35	x	x					x	7	6100N	Black Shales	
97S169	br						2.0m									35	5	25	x	x					10	x	6125N	Khaki clay	
97S170	br						2.0m									50	30	35	x	x					4	4	6150N	Lt yellow-br clay	

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km²

459030

Tenement name ROCKY CAPE EL 1/77 No. 975171 - 190 Sample numbers 975171 - 190 Collect by T.B. Sheet no. 10 of 25
 Area / Prospect PIEMAN HEADS Date 15-16-11-82
 Map / Photo reference A 02143 Analysed by ANALABS DPO no. 30217

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn						
		o/c sample type ***														s sample type **** depth					
975171	br						2.7m		20	30	25	x	100					x	x	5800N/ 7050E	5800N(7050E - 7600E) Gy shales - carbonates?
975172	br						2.7m		20	40	25	x	200					7	5	7075E	Br clays
975173	br						1.7m		20	10	25	0.5	x					x	x	7100E	Br clays
975174	br						1.7m		25	5	45	x	x					x	x	7125E	Br clays
975175	br						1.5m		20	5	25	x	x					14	x	7150E	Br clays
975176	br						6.7m		45	30	175	x	x					13	x	7175E	Bl shales
975177	br						2.7m		20	65	40	x	x					x	x	7200E	Gy shales
975178	br						2.7m		20	35	40	1.0	x					x	x	7225E	Gy shales
975179	br						4.7m		60	45	65	0.5	x					7	30	7250E	Gy gritty clay
975180	br						2.0m		50	10	40	x	x					8	x	7275E	Bl shales - disc. ophelinite?
975181	br						1.5m		55	230	25	1.0	x					9	5	7300E	Bl shales - disc. ophelinite?
975182	br						1.5m		15	235	20	3.0	x					x	x	7325E	Bl shales - disc. ophelinite?
975183	br						2.0m		85	95	50	x	x					100	5	7350E	Bl shale + vein of material.
																				7375E	} NO ACCESS - NOT SAMPLED.
																				7400E	
																				7425E	
975184	br						2.0m		55	80	20	x	x					4	4	7450E	Khaki clay
975185	br						2.0m		70	10	20	x	x					x	4	7475E	Orange clay
975186	br						1.5m		65	710	35	x	x					4	x	7500E	Yellow and orange clay
975187	br						2.0m		15	10	25	0.5	x					4	4	7525E	Orange yellow clay
975188	br						1.7m		30	80	25	x	x					12	x	7550E	Orange yellow clay
975189	br						1.5m		15	5	25	x	x					13	x	7575E	White clay
975190	br						1.7m		25	15	50	x	x					x	x	7600E	Yellow and orange clay

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

Tenement name ROCKY CAPE EL 1/77 No. Sample numbers 975191 - Collect by T.B. Sheet no. 11 of 25
 Area / Prospect PEMAN HEADS Date 16.11.82
 Map / Photo reference A 02143 Analysed by ANALABS DPO no. 30217

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations			
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn								
		o/c sample type ***														s sample type ****							
							depth																
975191	br						1.5m		25	40	30	x	x			8	x	25ms	Dk bn clay				
975192	br						0.5m		10	x	20	x	x			18	x	50ms	Dk bn clay				
975193	br						0.5m		10	5	10	0.5	x			120	x	75ms	Dk bn clay				
975194	br						0.5m		10	x	20	0.5	x			11	x	100ms	Dk bn clay				
975195	br						2.7m		40	40	385	x	x			26	x	125ms	Gy clay				
975196	br						1.0m		15	120	40	1.0	x			8	x	150ms	Khaki clay				
975197	br						1.0m		20	15	45	1.0	x			27	x	175ms	Lt bn clay				
975198	br						1.0m		465	5	345	6.0	x			19	x	200ms	Lt bn clay				
975199	br						1.0m		20	470	50	x	x			12	x	225ms	Lt bn clay				
975200	br						1.0m		20	60	45	x	x			22	x	250ms	Lt bn clay				
975201	br						0.7m		30	40	45	x	x			x	x	275ms	Dk bn clay				
975202	br						1.0m		35	20	50	0.5	x			25	x	300ms	Dk bn clay				
975203	br						2.0m		15	125	40	x	x			25	x	325ms	Dk bn clay				
975204	br						1.0m		10	140	20	0.5	x			x	x	350ms	Bl Shale				
975205	br						0.7m		25	20	20	x	x			x	x	375ms	Yellow gy clay				
975206	br						1.0m		30	15	35	0.5	x			6	x	400ms	Orange clay				
975207	br						1.0m		20	10	40	x	x			10	x	425ms	Orange clay				
975208	br						1.0m		10	15	35	x	x			x	x	450ms	Orange clay				
975209	br						3.7m		45	10	85	0.5	x			15	x	475ms	Gy clay				
975210	br						1.0m		15	65	35	0.5	x			10	x	500ms	Khaki clay				
975211	br						1.0m		10	65	30	0.5	x			x	x	500ms	ditto - duplicate				

* Sample type ss = stream sediment oc = outcrop f = float s = soil

br = bedrock

** Stream sed sample description fl = flow m³/sec wi = width m al = alluvial co = colluvial ca = catchment km²

Tenement name ROCKY CAPE EL 1/77 No. Sample numbers 975212 - 232 Collected by T.B. Sheet no. 12 of 25
 Area / Prospect PIEMAN HEADS Date 16-17-11-82
 Map / Photo reference..... Analysed by ANALABS DPO no. 30217
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations							
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn												
		o/c sample type ***														s sample type ****											
							depth																				
975212	br						1.5m						15	15	30	1.0	X							6	X	6600E	Lt br clay.
975213	br						1.0m						10	20	25	X	X							X	X	6575E	Lt br clay.
975214	br						1.0m						130	35	120	3.0	X							14	X	6550E	Lt br clay.
975215	br						1.5m						65	25	55	1.0	100							X	X	6525E	Khaki and orange clay
975216	br						1.7m						25	10	30	X	X							X	X	6500E	Yellow clay
975217	br						1.2m						35	5	45	X	100							X	X	6475E	Grey clay.
975218	br						1.5m						65	15	40	1.0	X							4	X	6450E	Yellow clay
975219	br						1.7m						60	10	40	X	X							X	X	6425E	Yellow clay
975220	br						1.5m						85	5	70	1.5	X							7	X	6400E	Khaki clay
975221	br						1.5m						55	10	35	X	X							X	X	6375E	Yellow clay.
975222	br						1.5m						30	10	35	0.5	X							38	X	6350E	Lt br clay with qtz veins
975223	br						1.0m						40	15	50	X	X							5	X	6325E	Grey gritty clay.
975224	br						2.3m						15	10	35	X	X							12	X	6300E	Br gritty clay.
975225	br						1.5m						15	15	30	X	X							10	X	6275E	Grey clay
975226	br						1.7m						35	10	30	X	X							X	X	6250E	Grey clay
975227	br						2.7m						20	10	20	X	X							10	X	6225E	Grey + Khaki clay
975228	br						1.7m						40	10	25	X	100							X	X	6200E	Yellow and br clay.
975229	br						1.7m						30	10	25	X	X							5	X	6175E	Yellow and gr clay
975230	br						1.7m						75	50	35	X	X							7	X	6150E	Yellow clay
975231	br						2.7m						15	10	30	0.5	100							X	X	6125E	Br, gr and grey clay
975232	br						2.7m						15	15	35	X	X							26	X	6125E	ditto - duplicate sample

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

Tenement name ROCKY CAPE EL 1/77 C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER No. Sample numbers 975233 - 237 Collected by T.B Sheet no. 13 of 25
 Area / Prospect REMAN HEADS Date 17.11.82
 Map / Photo reference..... Analysed by ANALABS DPO no. 30217
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sr						
		o/c sample type ***							s sample type ****												
							depth														
975233	br						1.7m		30	30	40	x	x					x	x	400E	lt br clay
975234	br						2.7m		20	45	25	x	x					34	x	605E	Fine white clay
975235	br						1.7m		35	40	50	x	x					x	x	6050E	yellow clay
975236	br						1.7m		40	125	65	x	x					x	x	6025E	lt br clay
975237	br						1.7m		25	200	40	x	x					x	x	6000E	ly and white clay

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name ROCKY CAPE EL 1/77 No. 975238 - 260 Sample numbers 975238 - 260 Collect by T.B. Sheet no. 14 of 25
 Area / Prospect PEMAN HEADS Date 17-18-11-82
 Map / Photo reference Analysed by ANALABS DPO no. 30217
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	Mo	W	Sn				
		o/c sample type ***																		
		s sample type ****															depth			
975238	br						0.5m		15	40	45	X	X	15			25	6	5150E	Gy gritty clay
975239	br						1.7m		15	15	35	0.5	X	3.0			X	X	5200E	Gy clay
975240	br						1.7m		10	35	55	1.0	X	X			15	X	5250E	White gritty clay
975241	br						0.8m		15	X	40	X	X	X			6	X	5300E	Yellow clay
975242	br						1.7m		10	5	40	X	X	X			X	X	5350E	White clay
975243	br						1.7m		10	5	45	X	X	X			17	X	5400E	Dk br micaceous clay
975244	br						1.7m		10	5	25	0.5	X	0.5			X	X	5450E	Gritty br micaceous clay
975245	br						1.7m		15	20	25	X	X	X			11	X	5500E	Lt br micaceous clay
975246	br						1.7m		15	10	30	X	X	15			13	X	5550E	Micaceous br clay
975247	br						2.7m		10	10	25	0.5	X	X			7	X	5600E	Sandy clay
975248	br						4.7m		10	5	35	X	X	0.5			17	X	5650E	Granite
975249	br						3.7m		5	X	45	X	X	1.0			X	X	5700E	Granite
975250	br						2.7m		15	X	35	X	X	X			X	X	5750E	Granite
975251	br						1.7m		20	105	65	X	X	X			X	X	5775E	Brown clay
975252	br						1.7m		10	5	30	X	X	0.5			9	X	5800E	Lt br clay
975253	br						1.7m		20	30	60	X	X	1.0			19	4	5825E	Gy gritty clay
975254	br						1.7m		5	25	240	X	X	X			25	8	5850E	V. green chlorite clay
975255	br						1.7m		15	20	85	X	X	0.5			18	4	5875E	Green-grey clay
975256	br						1.7m		20	120	170	X	X	0.5			32	8	5900E	Green-gy clay
975257	br						1.8m		10	15	75	X	X	X			14	X	5925E	Gy gritty clay
975258	br						1.7m		15	105	60	X	X	X			22	X	5950E	White gritty clay
975259	br						1.7m		15	5	365	X	X	X			12	X	5975E	Gy-gy gritty clay
975260	br						1.7m		50	25	105	1.0	X	0.5			37	X	6000E	Gy gritty clay

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock.
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

Tenement name ROCKY CAPE EL 1/77 C.R.A. 'PLORATION GEOCHEMICAL SAMPLE REGISTER No. Sample numbers 975261-277 Collect by T.B. Sheet no. 15 of 25
 Area / Prospect PIEMAN HEADS Date 18-19-11-82
 Map / Photo reference A 02143 Analysed by ANALABS DPO no. 30217

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	Mo	W	Sr				
		o/c sample type ***																		
		s sample type ****																		
975261	br						0.5m		15	x	20	x	x	25		119	x	6025E	9% grey gravel and rock chips (contaminated)	
975262	br						1.7m		10	5	50	1.5	x	x		27	4	6050E	Weathered granite	
975263	br						1.7m		15	5	30	0.5	x	1.0		29	4	6100E	Weathered granite	
975264	br						2.7m		5	5	40	x	x	x		9	8	6150E	Weathered granite	
975265	br						1.5m		5	30	20	1.0	x	1.0		12	38	6200E	Weathered granite	
975266	br						1.5m		5	x	15	1.0	x	2.0		9	34	6200E	ditto - duplicate sample	
975267	br						2.7m		5	5	30	x	x	x		14	x	6250E	Weathered granite	
975268	br						2.7m		5	5	35	1.0	x	x		13	19	6300E	Weathered granite	
975269	br						1.7m		20	10	30	1.5	x	2.5		24	x	6350E	Dk br gritty clay	
975270	br						2.7m		5	15	40	x	x	x		7	x	6400E	Blue-grey micaceous clay	
975271	br						5.7m		15	20	60	0.5	x	0.5		31	x	6450E	Gry clay	
975272	br						4.7m		5	25	75	1.0	x	x		20	x	6500E	Gry clay	
975273	br						4.7m		15	20	40	1.5	x	x		28	x	6550E	Weathered granite	
975274	br						6.7m		5	20	75	x	x	x		8	x	6600E	Weathered granite	
975275	br						5.7m		5	15	20	0.5	x	x		x	x	6650E	Weathered granite	
975276	br						4.7m		10	60	110	1.5	x	0.5		12	x	6700E	Weathered granite	
975277	br						4.7m		5	25	15	x	x	x		x	x	6750E	Weathered granite	

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

459036

Tenement name ROCKY CAPE EL 1/77 No. 975278-286 C.R.A. 'PLORATION GEOCHEMICAL SAMPLE' DGER
 Area / Prospect PIEMAN HEADS Collect by T.B. Sheet no. 16 of 25
 Map / Photo reference A 02143 Analysed by ANALABS Date 23.11.82
 DPO no. 30217

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn					
		o/c sample type ***																		
		s sample type **** depth																		
975278	br						15.0m		5	10	20	10	x					6200N	6200N line (4800E - 5000E)	
975279	br						15.0m		5	20	20	x	x					4825E	Sandy gy clay.	
975280	br						19.0m		10	5	40	10	x					4850E	Gy clay.	
975281	br						18.5m		5	5	35	x	x					4875E	Gy clays	
975282	br						14.8m		10	x	45	0.5	x					4900E	Gy clays	
975283	br						14.5m		10	5	25	x	x					4925E	Brownish-gy clays	
975284	br						11.5m		x	x	45	x	x					4950E	Gy clays	
975285	br						3.7m		5	x	55	x	x					4975E	Gy clays	
975286	br						1.5m		x	5	10	x	x					5000E	Orange-red sandstone	

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

Tenement name ROCKY CAPE EL 1/77 No. sample numbers 975287 - 307 Collected by T.B. Sheet no. 17 of 25
 Area / Prospect PIEMAN HEADS Map / Photo reference A 02143 Analysed by ANALABS Date 24.11.82 DPO no. 30217

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn						
		o/c sample type ***																			
		s sample type ****														dept					
975287	br						0.8m		5	10	40	x	x						6200N/	6200N (5200E - 5800E)	Yellow-bn clays
975288	br						1.7m		5	x	60	x	x						5225E		Sulphur-yellow soils
975289	br						1.3m		5	x	60	x	x						5250E		Yellow soils -> gys soils
975290	br						1.7m		10	15	60	0.5	x						5275E		Lt yellow - bn soils
975291	br						1.0m		5	x	75	x	x						5300E		Dk bn soils min ref gfs.
975292	br						1.0m		5	5	80	x	x						5300E		ditto - duplicate sample
975293	br						1.1m		x	x	25	x	x						5325E		Dk bn clay soils
975294	br						0.8m		5	20	70	x	x						5350E		lt bn soils
975295	br						0.7m		5	15	50	x	x						5375E		lt bn soils some gfs gravel (contamination)
975296	br						1.8m		x	20	65	x	x						5400E		Yellow-gys clays
975297	br						1.2m		x	10	75	x	x						5425E		lt bn soils
975298	br						1.8m		x	x	35	x	x						5450E		lt gys soils
975299	br						2.8m		5	15	75	1.0	100						5475E		Clay
975300	br						1.5m		20	60	75	0.5	x						5500E		lt bn-gys soil.
975301	br						1.7m		5	70	95	x	x						5525E		Gry gitty clay
975302	br						1.7m		15	65	75	x	x						5550E		lt bn-gys soil.
975303	br						0.7m		20	40	65	2.0	x						5575E		Dk yellow clays
975304	br						1.7m		40	85	60	x	x						5600E		lt gys soils.
975305	br						1.5m		35	90	105	0.5	x						5625E		lt bn soils
975306	br						1.8m		10	60	20	x	x						5650E		Bl Shales.
975307	br						1.8m		45	50	25	x	x						5675E		Dk yellow soils - ferruginous fragments - gossans?

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name ROCKY CAPE EL 1/77 No. Sample numbers 972308 - 316 Collected by T.B. Sheet no. 18 of 25
 Area / Prospect PIEMAN HEADS Date 24.11.82
 Map / Photo reference..... Analysed by ANALABS DPO no. 30217
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn					
		o/c sample type ***																		
		s sample type ****														depth				
975308	br						1.8m	10	130	15	X	X			7	X	5700E	6200N (5200E - 5800E) Black Shales Fe rich.		
975309	br						0.8m	15	35	20	X	X			X	X	5725E	Bl Shales.		
975310	br						0.8m	160	35	15	X	X			4	X	5750E	Bl Shales.		
975311	br						0.7m	40	20	15	X	X			X	4	5775E	Yellow-br soils		
975312	br						1.2m	X	10	10	X	X			15	X	5800E	Lt br soils		
975313	br						1.8m	25	45	10	X	X			X	X	5825E	Yellow soils		
975314	br						1.5m	15	20	15	X	X			14	X	5850E	Gy soils		
975315	br						1.8m	5	5	15	X	X			X	X	5875E	Dk yellow soils		
975316	br						1.8m	20	10	10	X	X			16	X	5900E	Lt yellow soils		

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

Tenement name ROCKY CAPE EL 1/77 No. Sample numbers 975317 - 325 Collected by T.B. Sheet no. 19 of 25
 Area / Prospect PIEMAN HEADS Date 25.11.82
 Map / Photo reference Analysed by ANALABS DPO no. 30217
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn					
		o/c sample type ***																		
		s sample type ****														depth				
975317	br						1.8m	5	40	15	x	x			x	x	6000N/4800E	6000N line (4800E - 5000E) Gy - yellow soil		
975318	br						0.8m	5	5	15	x	x			6	x	4825E	Lt br soil.		
975319	br						0.8m	15	20	30	0.5	x			x	x	4850E	Yellow-br clays		
975320	br						0.8m	55	5	75	1.0	x			11	x	4875E	Lt brown soils		
975321	br						0.6m	10	x	45	0.5	x			16	x	4900E	med-br soil		
975322	br						1.5m	10	x	20	x	x			15	x	4925E	Brown soil.		
975323	br						6.7m	10	x	75	x	x			x	x	4950E	Gy clays		
975324	br						3.0m	10	x	10	1.0	x			10	x	4975E	Dk br sandy soils		
975325	br						1.8m	10	x	20	x	100			9	x	5000E	Lt gy clays		

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed sample description fl = flow m3/sec wi = width m al = alluvial

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name: ROCKY CAPE EL/77 No. Sample numbers 975326 - 335 Collected by: T.B. Sheet no. 20 of 25
 Area / Prospect: PIEMAN HEADS Date: 25.11.92
 Map / Photo reference: Analysed by: ANALABS DPO no. 30217
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn					
		o/c sample type ***																		
		s sample type ****														depth				
975326	br						0.8m	10	x	40	x	x			x	x	6000N / 5200E	6000N line (5200E - 5400E) lt br soils		
975327	br						1.0m	5	x	55	0.5	x			x	x	5225E	lt br soils		
975328	br						0.8m	5	x	45	x	x			8	x	5250E	lt yellow br soils		
975329	br						0.8m	5	x	65	0.5	x			x	x	5275E	lt br soils		
975330	br						1.5m	15	x	40	1.0	x			x	x	5300E	v. lt br soils		
975331	br						1.5m	15	x	60	x	100			5	x	5325E	lt br soil		
975332	br						1.2m	10	x	50	x	x			x	x	5350E	lt br soil		
975333	br						1.2m	10	x	110	x	x			x	x	5350E	ditto - duplicate sample.		
975334	br						1.5m	5	5	40	1.0	x			4	x	5375E	lt br soil		
975335	br						0.8m	20	10	70	x	x			4	x	5400E	lt br clay		

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = calc ent km2

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name ROCKY CAPE ELVTY No. 975336- Sample numbers 975336- Collected by T.B. Sheet no. 21 of 25
 Area / Prospect PIEMAN HEADS Date 25.11.82
 Map / Photo reference A 02143 Analysed by ANALABS DPO no. 30217

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	As	W	Sn						
		o/c sample type ***																			
		s sample type ****																			
		depth																			
975336	br						1.8m		15	5	80	1.0	x					5	x	5400E/ 6025N	5400E line (6025N - 6375N) Yellow clay
975337	br						1.3m		10	x	70	x	x					x	x	6050N	Yellow clay
975338	br						0.8m		10	5	75	0.5	x					13	x	6075N	Yellow clay
975339	br						0.8m		25	x	75	1.0	x					x	x	6100N	Yellow clay
975340	br						0.8m		5	10	60	0.5	x					x	x	6125N	Yellow-white clay
975341	br						0.8m		10	x	60	0.5	x					x	x	6150N	Yellow clay
975342	br						0.8m		10	10	30	x	x					5	x	6175N	Yellow clay
																				6200N	(Refer p 17 No 975236)
975343	br						0.8m		20	x	55	0.5	x					x	x	6225N	Yellow clay
975344	br						0.8m		10	5	50	x	x					5	x	6250N	Yellow clay
975345	br						0.8m		10	x	30	0.5	x					x	x	6275N	Lt br clay
975346	br						0.8m		5	5	50	0.5	x					15	x	6300N	Yellow clay
975347	br						0.8m		5	x	50	1.0	x					x	x	6325N	Yellow clay
975348	br						0.8m		10	15	40	0.5	x					39	x	6350N	Yellow clay
975349	br						0.8m		10	10	30	0.5	x					84	x	6375N	Yellow clay

* Sample type ss = stream sediment oc = outcrop f = float s = soil br = bedrock
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2
 *** Outcrop sample type fl = sample rc = rock chip l = & ten th l =

Tenement name ROCKY CAPE EL 1/77 No. 975016 - 027 C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER
 Area / Prospect PIEMAN HEADS GRID Collected by GBW Sheet no. 22 of 25
 Map / Photo reference Date 26.10.82
 A 02143 Analysed by ANALABS DPO no. 30212

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		ss *	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	As	W	Sn			
		oc	o/c sample type ***																	
		f	s sample type ****																	
975016	%	gs.							55	120	165	x	20	x		x	10	5000W/500E	20m S mica schist and weathered SS% - al micaceous - garnetiferous - cream - yellow al granular after garnets? - non magnetic.	
975017	%	gs.							15	55	140	x	x	x		x	6	5000W/500E	About 70m S in E - reef Qtz - maybe swept out from weathered mica garnet ss-schists - vein chloritic	
975018	%	cs.							15	25	70	x	x	x		x	10	5000W/500E	70m S - same location fresh ch. gr mica chlorite of gneiss.	
975019	%	gs.							NOT ASSAYED									4500W/100E	Granite - v.c.g biotite, qtz, feldspar - fresh sample - granite contains tourmaline aggregates	
975020	%	gs.							10	70	100	x	x	x		x	8	7400E/500W	Thin 1cm qtz vein in granite - W?	
975021	%	gs.							20	50	500	1.0	20	x		x	7	7400E/500W	Qtz vein + hornblende in quartz schist.	
975022	%	gs.							NOT ASSAYED									5800E/500W	Sl micaceous sandstone containing red tourmaline specks	
975023	%	gs.							15	110	265	0.5	10	x		x	10	5830E/500W	Dk. qtz al dirty qtzite micaceous - could call it a qtz - schist	
975024	%	gs.							15	5	30	x	10	x		x	x	5700E/500W	Qtzite containing red tourmaline crystals.	
975025	%	gs.							15	35	35	x	x	x		x	x	5700E/500W	Laminated qtz shales v. al granular - knifed.	
975026	F	gs.							10	25	60	x	x	x		x	x	5700E/450E	About 150m S. Reason/ACI pits - 6000W 400E complete reef qtz	
975027	F	gs.							10	30	80	0.5	x	x		x	6	5700E/400E	About 150m S. - same loc. qtz - br al flaggy sandstone - leached.	

* Sample type ss = stream sediment oc = outcrop f = float s = soil
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name ROCKY CAPE EL 1/77 No. sample numbers 975028 - 367 Collected by GSW Sheet no. 23 of 25
 Area / Prospect PIEMAN HEADS Date 27.10.82
 Map / Photo reference..... Analysed by ANALABS DPO no. 30212
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref	Geological Observations
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Mo	As	Co	Ni	W	Sn		
		oc	o/c sample type ***																		
		f	s sample type ****																		
975028	F	gs							10	320	30	X	X	X			X	7	5360E/5360N	Dk bn - tourmalinised - feggy - gneiss siltstone from ACI hand dug pit.	
975029	%	gs						10	X	20	0.5	X	X				X	3	5550N/6550E	White gneiss some minor black specks - ilmenite?	
975030	%	gs						15	25	85	0.5	X	X				X	3	5900N/6550E	bracciated/veined sl. ferruginous gy obl shales.	
975031	%	gs						15	60	30	0.5	30	X				X	5	5900N/6550E	Dk steel gy shales sl. Fe staining.	
975032	%	gs						15	35	60	X	10	X				X	X	8	5815N/7010E	Red Blt (beside road) - vuggy after W?
975033	%	cs						10	20	45	0.5	X	X				X	8	7225E/5375N	Dk gy shales % in road	
975034	%	cs						10	75	95	0.5	X	X				X	8	7225E/5375N	Adjacent bn (tourmalinised?) shales in road	
975036	F	gs						15	1950	30	70		6500				X	X	6600N/6710E	Gy micaceous shale/siltstone	
975037	F	gs						10	15	15	X		X				X	X	6600N/6720E	Red Blt with inclusions of shale - sl Fe stained.	
975038	F	gs						5	X	125	X		X				4	X	7025N/7000E	White sl calcareous gneiss	
													Ba								
975351	%	gs						10	10	20	X	581	X	10	20	60	X	X	5400E/8100E	Gy shales + sandstone highly contorted	
975352	%	gs						65	185	45	1.0	382	X	15	20	24	X	X	5450N/8100E	Iron stained gy-black contorted (fault zone) shales	
975353	%	gs																X	5470N/8100E	Gy shales sl. contorted.	
975354	SS	0.1m ²	2m	al	co.			10	30	50	0.5	167	X	10	25	6	X	X	5550N/8100E	SS. from ch. bed.	
975355	%	gs						30	75	85	1.0	652	X	20	30	9	X	X	5480N/8100E	Gn. chloritic siltstones sl Fe stained.	
975356	%	gs						15	20	45	0.5	411	X	10	30	9	X	X	5525N/8100E	Gy micaceous siltstones showing 'pyroclastic' type folds. v. sl. Fe stained	
975357	%	gs						10	40	75	0.5	450	X	5	20	6	X	X	5800N/8100E	Fairly massive Gy shales	

* Sample type ss = stream sediment oc = outcrop f = float s = soil
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name ROCKY CAPE EL 477 No. sample numbers 795888 - 893 Collected by GBW Sheet no. 24 of 25
 Area / Prospect PIEMAN HEADS Date 14 of 11 of 82
 Map / Photo reference Analysed by ANALABS DPO no. 30212
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %							Grid ref	Geological Observations				
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	As	Co			Ni	Fe	W	Sn
		oc	o/c sample type ***																		
		t	s sample type ****																		
795888	%	gs							x	x	45	x	x	-	-	-	x	x		Found 1.67% S. loc. Granite 7-10m away 2 phases. - 888 - coarse normal phase. - biotite, feldspar, qtz	
795889	%	gs							x	x	35	x	x	-	-	-	x	7		Finer phase of granite - crystals < 1mm - 2nd intrusive phase?	
795890	%	gs							x	x	10	x	x	-	-	-	x	5		ACI grid 2000N 400E - 05 float Tommanahind reef qtz	
795891	%	gs							x	5	15	x	x	-	-	-	x	x		Same loc. but gneiss - leached	
795892	%	gs							x	x	15	x	x	-	-	-	4	25		About 150m S.E. Gneiss zone	
795893	%	gs							x	x	15	x	x	-	-	-	17	53		Ditto - same locality	

* Sample type ss = stream sediment oc = outcrop f = float s = soil
 ** Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial co = colluvial ca = catchment km2

APPENDIX TWO

PIEMAN HEADS GROUND MAGNETIC SURVEY

INTERPRETATION BY M.F. FLIS



CRA EXPLORATION PTY. LIMITED

(INC. IN N.S.W.)

LEVEL 4, BELLERIVE QUAY,
CAMBRIDGE ROAD, BELLERIVE, 7018, TASMANIA, AUSTRALIA

P.O. BOX 138
BELLERIVE 7018
TELEGRAMS: CRAEX
TELEX: AA57144
TELEPHONE: 44 3533
AREA CODE: (002)

IN REPLY PLEASE QUOTE

18th July, 1983.

Memorandum To: G.WEBER

Copy: T.W.DICKSON

From: M.F.FLIS

Subject: PIEMAN HEADS GROUND MAGNETIC SURVEYINTRODUCTION

A ground magnetic survey was initiated in the Pieman Heads area to follow-up a complete set of anomalies defined by the Dept. of Mines West Coast aeromagnetic survey. The anomalies occur within Pre-Cambrian slates and quartzites on the northern edge of the Devonian Pieman Heads Granite. The target is skarn mineralisation associated with this granite. A total of 30.2 kilometres of grid lines were surveyed at a 25 metre sampling interval (see plan TASH 1303). Soil geochemistry samples were collected around the more interesting magnetic responses.

DISCUSSION

The aeromagnetic anomalies were delineated and further defined by the ground magnetometry. Two major zones were defined.

Zone I

Trending at 30° grid north, this zone contains four distinct responses in a generally disturbed area. These responses were modelled by inversion. A note on modelling procedure and outputs are contained in Attachment I.

The anomaly centred on 4770mE, 5000mN models at a depth of 43 metres, dip of 91° and susceptibility of 0.031 cgs giving it an equivalent magnetite volume of 9.5%.

Due to the arcuate appearance of the anomaly the modelled dip may be in error. No significant geochemical anomaly was found coincident with it.

The anomaly centred on 5200mE, 5400mN could not be modelled along line 5400mN due to neighbouring anomalies, so line 5400mE had to be used. As this passes to the flank of the anomaly the modelled depth of 139 metres is probably excessive. The dip is not well defined either so little faith can be put in it. The modelled susceptibility is equivalent to 4.3% magnetite by volume. This figure would increase (marginally) if the body was modelled at a shallower depth. Slightly elevated geochemistry (115 ppm Cu, 160 ppm Pb) exist in the area but are very spotty.

Similarly, the anomaly centred on 4900mE, 6000mN is ambiguous: depths of 16 and 55 metres and dips of 4° and 81° to the west were modelled. The shape of the anomaly suggest the steeply dipping shallow body to be more probable. No anomalous geochemical response is associated with it.

Finally, the anomaly centred on 5400mN, 6125mE, is modelled at a depth of about 55 metres, dips approximately 35° south-east and has an equivalent magnetite volume of 7.25%. No anomalous geochemistry is associated with it.

Zone II

Being far less defined than Zone I, this zone contains deeper seated anomalies of a less restricted nature. Few of the anomalies can be modelled, however, due to their composit nature. The anomaly centred on 7000mE, 5025mN was modelled at a depth of 55 metres, dipping 60° south-east, and having an equivalent magnetite volume of about 5%. Spot zinc (up to 1350 ppm) and tungsten (43 ppm) anomalies are associated with it.

GENERAL

The obvious difference in character between the zones is a reflection of their cause: Zone I being well defined with small, but intense, anomalies is possibly due to a corridor of shearing or jointing; Zone II on the other hand, is ill-defined with anomalies being relatively deep seated. This zone is probably due to an already magnetic unit which trends 38° TN to the north-east of the granite-local metasomation and remobilization producing the observed pattern (particularly the large anomaly on line 5800mN which sub-parallel the granite contact).

CONCLUSIONS AND RECOMMENDATIONS

As the majority of anomalies modelled are at a shallow depth it must be assumed that they have been adequately sampled by the geochem survey.

Although this survey found spot highs, they appear largely spurious in nature. The magnetic survey was designed to test for the existence of skarn mineralisation with inferred magnetite associations. Whilst it was suggested that magnetite contents up to 9.5% do exist on the grid, it is unlikely that they are part of a skarn assemblage where higher contents are expected. Within these model constraints no further work can be recommended.

MARCUS FLIS
Geophysicist

ATTACHMENT I

MODEL PROCEDURE AND MODEL OUTPUTS

Field data was modelled by the FORTRAN programme MAGMOD using an inversion procedure. The data was fitted to two models: TABULAR - a 2D dyke like body of "infinite" depth extent (i.e. bottom too deep to be detected) and RIBBON - a 2D dyke-like body of finite depth extent but whose width is very much less than it's depth of burial.

Seven parameters are fitted: MAGNET(IZATION) - the product of the strength of the earth's magnetic field (here about 62500nT) and the body's magnetic susceptibility (in cgs units) for TABULAR and the magnetic field, the susceptibility and the width for RIBBON; DIP - with respect to the profile direction; BASE LEVEL and BASE SLOPE - the regional components of the anomaly; POSITION; HALF WIDTH - half thickness of TABULAR body or WIDTH - depth extent of RIBBON body; and DEPTH. A RANGE is given for each fitted parameter reflecting the noise in the data or the determineability of the parameter.

Outputs from these two models are compared to obtain an idea of how well each parameter is defined. It is usually found that the MAGNET parameter is well defined (if the HALF WIDTH from the TABULAR model is used in the MAGNET of the RIBBON model) whilst DEPTH is greater for RIBBON if the causitive body has a thickness equal or greater than its depth.

Finally, the NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT is a measure of the models goodness of fit. The smaller this number, the better the fit. Typically, anything below about 0.06 is a good fit, but this depends very much on the data and the model.

WEIGHTED LEAST SQUARES FIT - TABULAR

1 PIEMAN HEADS GRID 5000mN, 4775mE

ITERATION NUMBER 50

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	1 1.000E+03	1.0E+01	3.0E+04	1.956E+03	5.0E+00	1.3E+02
DIP	1 9.000E+01	0.0E-01	0.0E+01	9.111E+01	2.0E+00	4.3E+00
BASE LEVEL	1 5.500E+02	0.0E-01	0.0E-01	3.227E+02	2.0E+00	1.0E+01
BASE SLOPE	1 0.000E-01	0.0E-01	0.0E-01	2.411E-02	5.0E-04	3.9E-02
POSITION	1 4.775E+03	4.7E+03	4.9E+03	4.770E+03	5.0E+00	3.8E+00
HALF WIDTH	2 1.000E+01	1.0E+00	2.0E+03	2.989E+00	1.0E+00	0.0E-01
DEPTH	1 5.000E+01	0.0E-01	1.5E+02	4.318E+01	2.0E+00	1.8E+01
INCLNATH	0 -7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATH	0 1.690E+02	0.0E-01	0.0E-01	1.690E+02	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01

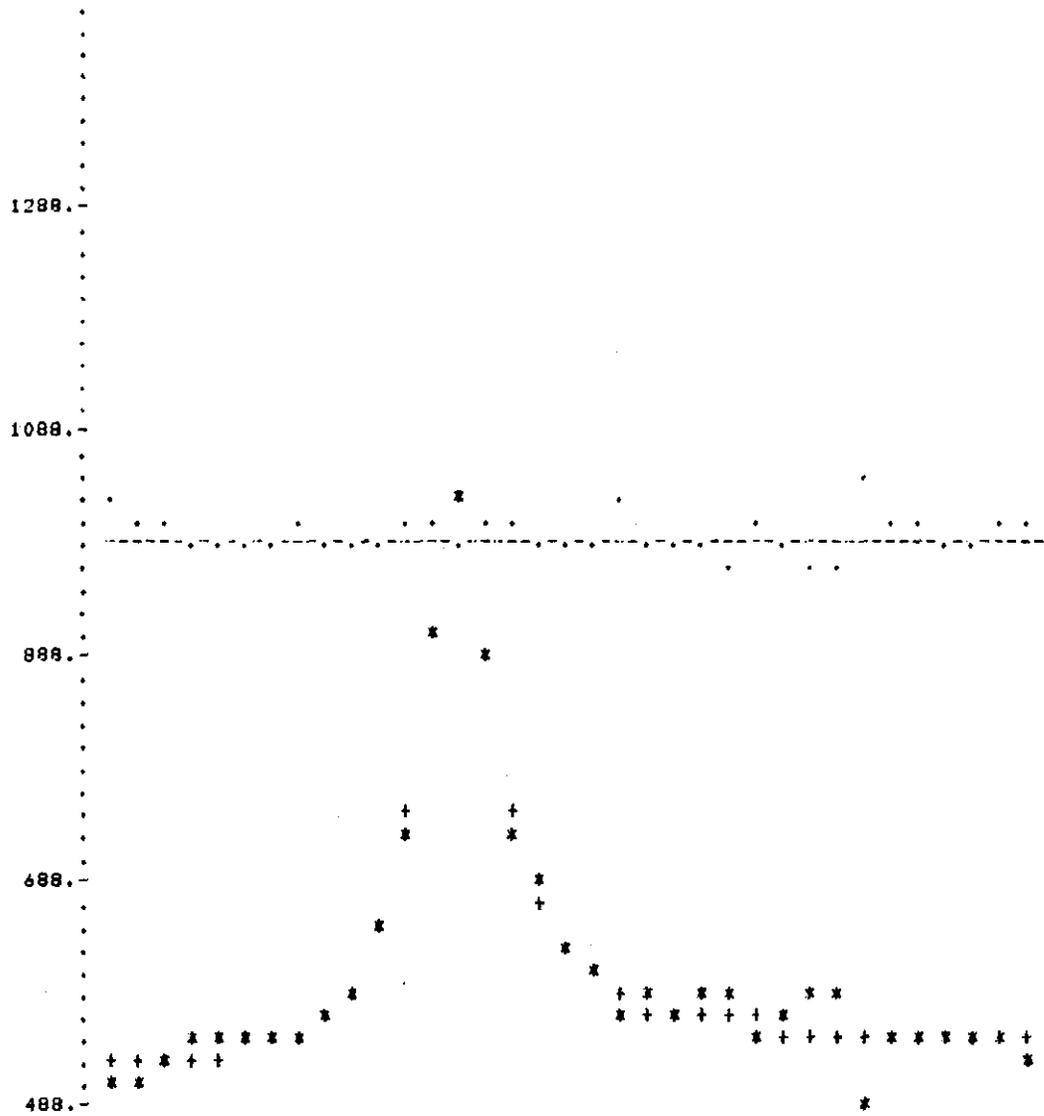
POSITION	WEIGHT	OBS	FITTED
4450.0000	0.14	492.	517.
4475.0000	0.14	500.	518.
4500.0000	0.14	512.	520.
4525.0000	0.15	530.	523.
4550.0000	0.15	535.	526.
4575.0000	0.15	541.	530.
4600.0000	0.15	542.	536.
4625.0000	0.15	537.	545.
4650.0000	0.16	566.	559.
4675.0000	0.17	588.	585.
4700.0000	0.18	648.	633.
4725.0000	0.21	722.	730.
4750.0000	0.25	901.	905.
4775.0000	0.26	1016.	1010.
4800.0000	0.24	873.	878.
4825.0000	0.21	727.	736.
4850.0000	0.19	671.	657.
4875.0000	0.17	615.	614.
4900.0000	0.16	592.	590.
4925.0000	0.16	549.	575.
4950.0000	0.16	569.	565.
4975.0000	0.16	568.	559.
5000.0000	0.16	574.	554.
5025.0000	0.16	571.	551.
5050.0000	0.15	535.	549.
5075.0000	0.15	558.	547.
5100.0000	0.16	573.	545.
5125.0000	0.15	577.	545.
5150.0000	0.15	488.	544.
5175.0000	0.15	538.	543.
5200.0000	0.15	535.	543.
5225.0000	0.15	548.	543.
5250.0000	0.15	547.	543.
5275.0000	0.15	530.	543.
5300.0000	0.15	524.	543.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0250

05

459052

MAGMOD PLOT OF FTV 1



MODEL TABULAR

TITLE PIEMAN HEADS GRID 5000mN

NUMBER OF STATIONS 35 MAX AMPLITUDE 528. X INCREMENT 2 COLUMNS PER STATION. Y INCREMENT OF 20. GAMMAS PER LINE.
 FIELD DATA CURVE...Z*XZ FITTED CURVE...Z*XZ ERROR CURVE...Z*XZ
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0250 PARFIT FLAG 2 ERROR CURVE DATUM 988.000

DERIVATIVE MATRIX

0.14E-03	0.16E+00	0.14E+00	-.44E+02	-.79E-02	0.90E-01	0.28E-01
0.21E-03	0.17E+00	0.14E+00	-.41E+02	-.95E-02	0.14E+00	0.33E-01
0.31E-03	0.19E+00	0.14E+00	-.39E+02	-.12E-01	0.20E+00	0.40E-01
0.45E-03	0.22E+00	0.15E+00	-.36E+02	-.16E-01	0.29E+00	0.49E-01
0.64E-03	0.24E+00	0.15E+00	-.33E+02	-.21E-01	0.42E+00	0.60E-01
0.92E-03	0.28E+00	0.15E+00	-.29E+02	-.26E-01	0.61E+00	0.74E-01

052

459053

ITERATION NUMBER 23

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	1	1.000E+03	1.0E+01	3.0E+04	1.163E+04	3.0E+00 7.4E+02
DIP	1	9.000E+01	0.0E-01	0.0E-01	9.123E+01	2.0E+00 4.3E+00
BASE LEVEL	1	3.500E+02	0.0E-01	0.0E-01	3.333E+02	2.0E+00 1.0E+01
BASE SLOPE	1	0.000E-01	0.0E-01	0.0E-01	2.418E-02	5.0E-04 3.9E-02
POSITION	1	4.775E+03	3.7E+03	4.9E+03	4.770E+03	3.0E+00 3.8E+00
WIDTH	2	1.000E+01	1.0E+00	2.0E+03	1.999E+03	1.0E+00 0.0E-01
DEPTH	1	5.000E+01	0.0E-01	1.5E+02	4.296E+01	2.0E+00 2.1E+03
INCLNATN	0	-7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01 0.0E-01
DECLNATN	0	1.690E+02	0.0E-01	0.0E-01	1.690E+02	0.0E-01 0.0E-01
VERTICAL	0	0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01 0.0E-01
TRAV DIR	0	0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01 0.0E-01

POSITION	WEIGHT	DRS	FITTED
4450.0000	0.14	492.	518.
4475.0000	0.14	500.	519.
4500.0000	0.14	512.	521.
4525.0000	0.15	530.	523.
4550.0000	0.15	535.	526.
4575.0000	0.15	541.	530.
4600.0000	0.15	542.	536.
4625.0000	0.15	537.	545.
4650.0000	0.16	566.	560.
4675.0000	0.17	588.	585.
4700.0000	0.18	648.	632.
4725.0000	0.21	722.	729.
4750.0000	0.25	701.	904.
4775.0000	0.26	1016.	1012.
4800.0000	0.24	873.	877.
4825.0000	0.21	727.	739.
4850.0000	0.19	671.	656.
4875.0000	0.17	615.	613.
4900.0000	0.16	592.	589.
4925.0000	0.16	549.	575.
4950.0000	0.16	569.	565.
4975.0000	0.16	568.	559.
5000.0000	0.16	574.	554.
5025.0000	0.16	571.	551.
5050.0000	0.15	535.	549.
5075.0000	0.15	558.	547.
5100.0000	0.16	573.	546.
5125.0000	0.15	577.	545.
5150.0000	0.15	488.	544.
5175.0000	0.15	538.	544.
5200.0000	0.15	535.	543.
5225.0000	0.15	548.	543.
5250.0000	0.15	547.	543.
5275.0000	0.15	530.	543.
5300.0000	0.15	524.	544.

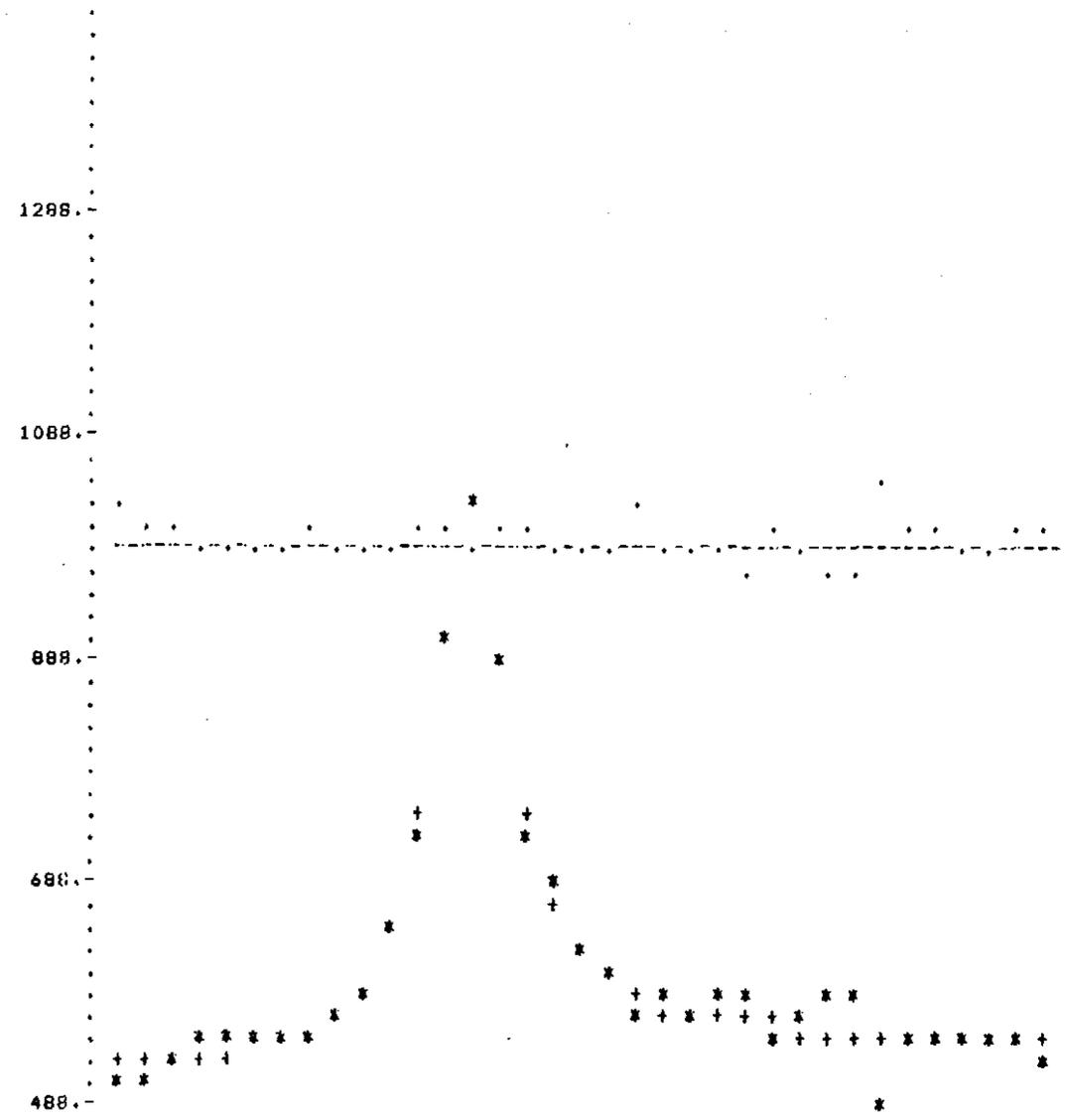
NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0251

MAGMOD PLOT OF FIT 1

053

459054

MAGMOD PLOT OF FIT 1



MODEL RIBBON TITLE PIEMAN HEADS GRID 5000mN
 NUMBER OF STATIONS 35 MAX AMPLITUDE 528. X INCREMENT 2 COLUMNS PER STATION. Y INCREMENT OF 20. GAMMAS PER LINE.
 FIELD DATA CURVE...X*X FITTED CURVE...X*X ERROR CURVE...X*X
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0251 PARFIT FLAG 2 ERROR CURVE DATUM 988.000

DERIVATIVE MATRIX

-.94E-04	0.14E+00	0.14E+00	-.44E+02	-.77E-02	0.63E-03	0.28E-01
-.84E-04	0.16E+00	0.14E+00	-.41E+02	-.93E-02	0.65E-03	0.33E-01
-.71E-04	0.18E+00	0.14E+00	-.39E+02	-.12E-01	0.67E-03	0.40E-01

WEIGHTED LEAST SQUARES FIT - TABULAR

1 FIEMAN HEADS GRID 5400mE,5600mN
 INCOMPLETE FIT - TOO MANY ITERATIONS

055

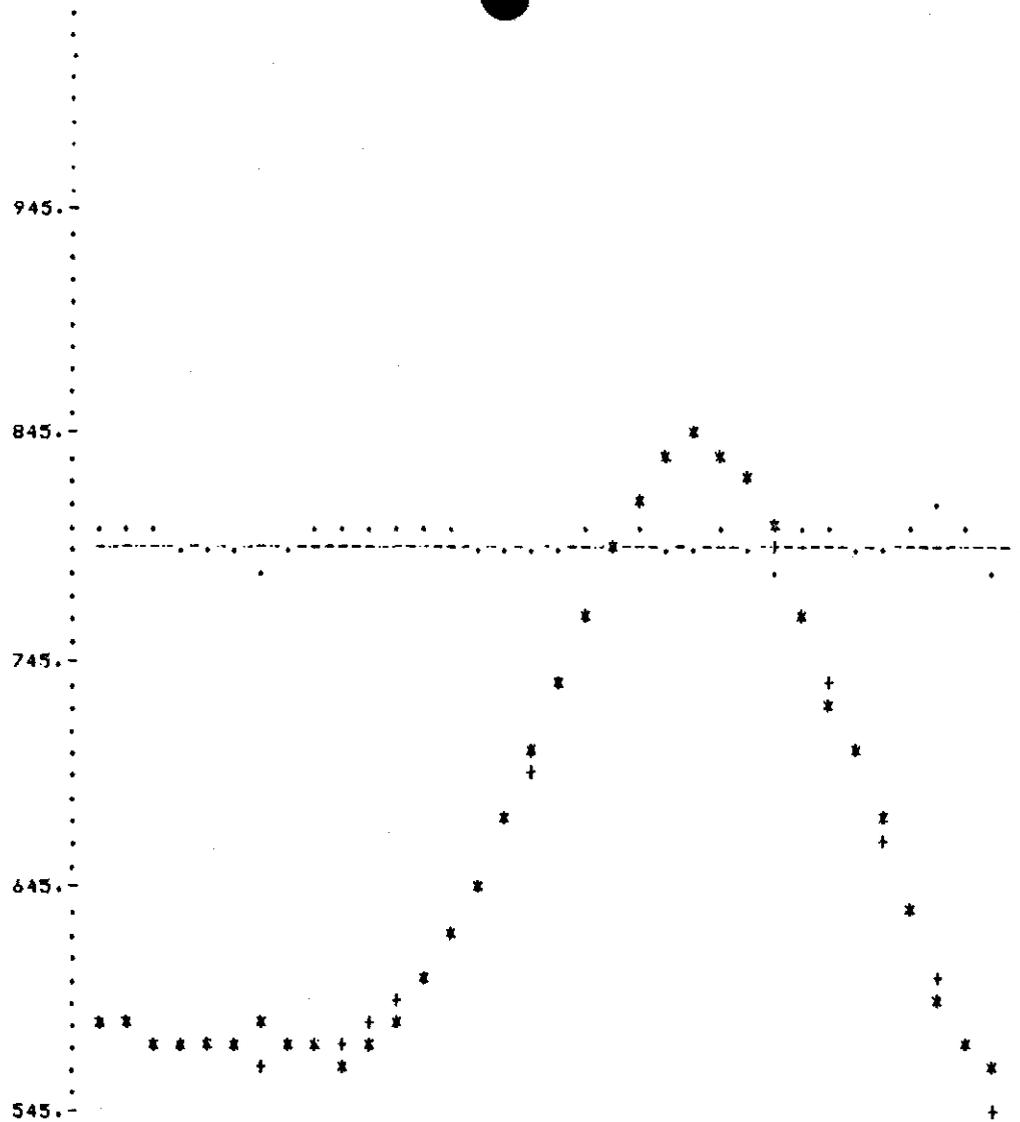
ITERATION NUMBER 51

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	1	1.000E+03	1.0E+01	3.0E+04	8.105E+02	5.0E+00 0.0E-01
DIP	1	9.000E+01	0.0E-01	0.0E-01	9.552E+01	2.0E+00 0.0E-01
BASE LEVEL	1	5.750E+02	0.0E-01	0.0E-01	4.146E+02	2.0E+00 0.0E-01
BASE SLOPE	1	0.000E-01	0.0E-01	0.0E-01	-3.248E-01	5.0E-04 0.0E-01
POSITION	1	5.600E+03	5.5E+03	5.7E+03	5.575E+03	5.0E+00 0.0E-01
HALF WIDTH	1	1.000E+01	1.0E+00	2.0E+03	2.045E+01	1.0E+00 0.0E-01
DEPTH	1	5.000E+01	0.0E-01	1.5E+02	1.392E+02	2.0E+00 0.0E-01
INCLNATN	0	-7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01 0.0E-01
DECLNATN	0	1.290E+02	0.0E-01	0.0E-01	1.290E+02	0.0E-01 0.0E-01
VERTICAL	0	0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01 0.0E-01
TRAV DIR	0	5.000E+01	0.0E-01	0.0E-01	5.000E+01	0.0E-01 0.0E-01

POSITION	WEIGHT	ORG	FITTED
5050.0000	0.15	579.	584.
5075.0000	0.15	577.	579.
5100.0000	0.15	569.	575.
5125.0000	0.15	574.	571.
5150.0000	0.15	575.	568.
5175.0000	0.15	574.	566.
5200.0000	0.15	577.	565.
5225.0000	0.15	566.	566.
5250.0000	0.15	567.	568.
5275.0000	0.15	565.	573.
5300.0000	0.15	571.	580.
5325.0000	0.15	583.	589.
5350.0000	0.15	600.	603.
5375.0000	0.16	618.	619.
5400.0000	0.16	642.	641.
5425.0000	0.17	670.	666.
5450.0000	0.18	702.	695.
5475.0000	0.19	729.	727.
5500.0000	0.19	758.	759.
5525.0000	0.20	790.	790.
5550.0000	0.21	808.	815.
5575.0000	0.21	834.	832.
5600.0000	0.21	839.	838.
5625.0000	0.21	828.	833.
5650.0000	0.21	820.	818.
5675.0000	0.20	805.	794.
5700.0000	0.20	744.	765.
5725.0000	0.19	724.	732.
5750.0000	0.18	699.	698.
5775.0000	0.17	674.	665.
5800.0000	0.16	631.	632.
5825.0000	0.15	587.	602.
5850.0000	0.15	568.	573.
5875.0000	0.14	558.	545.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0089

459056



MODEL TABULAR

TITLE PIEMAN HEADS GRID S400ME

NUMBER OF STATIONS 34 MAX AMPLITUDE 294. X INCREMENT 2 COLUMNS PER STATION. Y INCREMENT OF 10. GAMMAS PER LINE.
 FIELD DATA CURVE...X*Z FITTED CURVE...X+Z ERROR CURVE...Z.X
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0089 PARFIT FLAG -2 ERROR CURVE DATUM 795.469

DERIVATIVE MATRIX

-.20E-03	0.45E+00	0.15E+00	-.78E+02	0.31E-01	-.61E-02	0.65E-01
0.37E-03	0.47E+00	0.15E+00	-.74E+02	0.28E-01	0.17E-01	0.70E-01
0.10E-02	0.48E+00	0.15E+00	-.70E+02	0.24E-01	0.44E-01	0.74E-01
0.18E-02	0.50E+00	0.15E+00	-.66E+02	0.20E-01	0.76E-01	0.79E-01
0.28E-02	0.53E+00	0.15E+00	-.63E+02	0.14E-01	0.11E+00	0.85E-01
0.39E-02	0.55E+00	0.15E+00	-.59E+02	0.81E-02	0.16E+00	0.91E-01
0.52E-02	0.57E+00	0.15E+00	-.55E+02	0.49E-03	0.21E+00	0.96E-01

WEIGHTED LEAST SQUARES FIT - RIBBON

1 PIEMAN HEADS GRID 5400mE, 5600mN

ITERATION NUMBER 23

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	2 1.000E+03	1.0E+01	3.0E+04	3.000E+04	5.0E+00	0.0E-01
DIP	1 9.000E+01	0.0E-01	0.0E-01	1.504E+02	2.0E+00	7.3E+02
BASE LEVEL	1 5.750E+02	0.0E-01	0.0E-01	5.475E+02	2.0E+00	2.1E+00
BASE SLOPE	1 0.000E-01	0.0E-01	0.0E-01	-1.757E-01	5.0E-04	4.0E+00
POSITION	1 5.600E+03	5.5E+03	5.7E+03	5.647E+03	5.0E+00	1.4E-02
WIDTH	1 1.000E+01	1.0E+00	2.0E+03	1.871E+02	1.0E+00	4.6E+00
DEPTH	1 5.000E+01	0.0E-01	1.5E+02	1.388E+02	2.0E+00	6.6E+00
INCLNATH	0 -7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATH	0 1.290E+02	0.0E-01	0.0E-01	1.290E+02	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 5.000E+01	0.0E-01	0.0E-01	5.000E+01	0.0E-01	0.0E-01

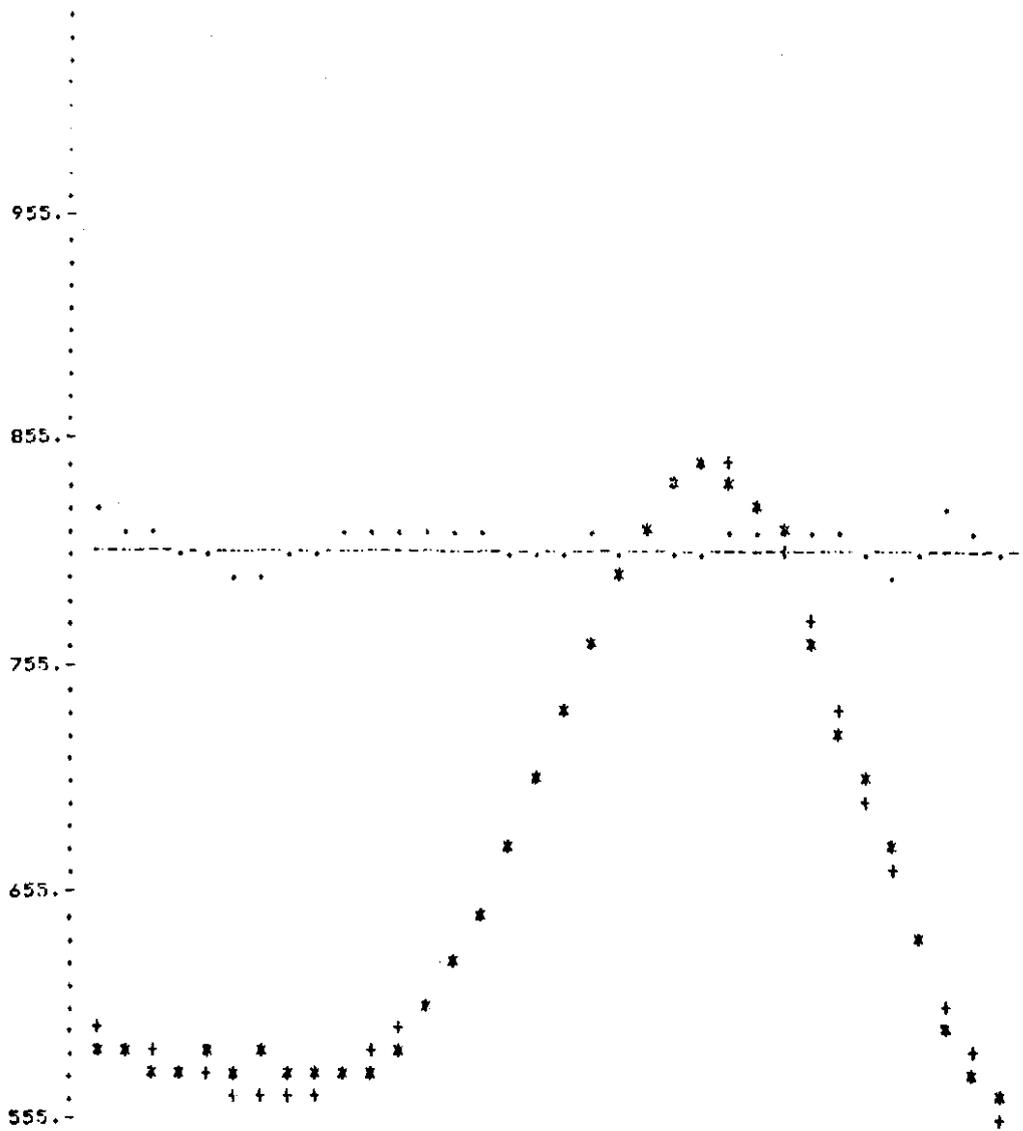
POSITION	WEIGHT	ORS	FITTED
5050.0000	0.15	579.	590.
5075.0000	0.15	577.	583.
5100.0000	0.15	569.	577.
5125.0000	0.15	574.	572.
5150.0000	0.15	575.	567.
5175.0000	0.15	574.	564.
5200.0000	0.15	577.	562.
5225.0000	0.15	566.	562.
5250.0000	0.15	567.	564.
5275.0000	0.15	565.	569.
5300.0000	0.15	571.	577.
5325.0000	0.15	583.	588.
5350.0000	0.15	600.	603.
5375.0000	0.16	618.	622.
5400.0000	0.16	642.	644.
5425.0000	0.17	670.	670.
5450.0000	0.18	702.	698.
5475.0000	0.19	725.	728.
5500.0000	0.19	758.	758.
5525.0000	0.20	790.	787.
5550.0000	0.21	808.	811.
5575.0000	0.21	834.	829.
5600.0000	0.21	839.	838.
5625.0000	0.21	828.	836.
5650.0000	0.21	820.	822.
5675.0000	0.20	805.	798.
5700.0000	0.20	764.	767.
5725.0000	0.19	724.	731.
5750.0000	0.18	699.	695.
5775.0000	0.17	674.	660.
5800.0000	0.16	631.	628.
5825.0000	0.15	587.	600.
5850.0000	0.15	568.	576.
5875.0000	0.14	558.	555.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0092

057

459058

MAGHDD PLOT OF FIT 1



MODEL RIBBON

TITLE PIEMAN HEADS GRID 5400ME

NUMBER OF STATIONS 34 MAX AMPLITUDE 284. X INCREMENT 2 COLUMNS PER STATION. Y INCREMENT OF 10. GAMMAS PER LINE.
 FIELD DATA CURVE...Z*Z FITTED CURVE...Z*Z ERROR CURVE...Z*Z
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0092 PARFIT FLAG 2 ERROR CURVE DATUM 804.886

DERIVATIVE MATRIX

-.32E-03	-.11E+00	0.15E+00	-.89E+02	0.39E-01	-.37E-01	0.63E-01
-.33E-03	-.12E+00	0.15E+00	-.85E+02	0.37E-01	-.33E-01	0.71E-01
-.34E-03	-.13E+00	0.15E+00	-.80E+02	0.33E-01	-.28E-01	0.80E-01

058

459059

WEIGHTED LEAST SQUARES FIT - TABULAR

1 PIEMAN HEADS GRID 5400mE, 6200mN
 INCOMPLETE FIT - TOO MANY ITERATIONS

ITERATION NUMBER 51

PARAMETER KEY	START	LIMITS	FITTED	TOLERANCE	RANGE
MAGNET	1 2.840E+02	1.0E+01 3.0E+03	2.005E+03	3.0E+00	0.0E-01
DIP	1 3.900E+01	0.0E-01 0.0E-01	3.897E+01	2.0E+00	0.0E-01
BASE LEVEL	1 6.000E+01	0.0E-01 0.0E-01	6.030E+02	2.0E+00	0.0E-01
BASE SLOPE	1 -5.000E-01	0.0E-01 0.0E-01	-5.846E-01	5.0E-04	0.0E-01
POSITION	1 6.123E+03	6.0E+03 6.3E+03	6.123E+03	5.0E+00	0.0E-01
HALF WIDTH	1 5.400E+00	1.0E+00 2.0E+02	7.686E+00	1.0E+00	0.0E-01
DEPTH	1 5.900E+01	0.0E-01 1.5E+02	5.842E+01	2.0E+00	0.0E-01
INCLNATN	0 -7.200E+01	0.0E-01 0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 1.410E+02	0.0E-01 0.0E-01	1.410E+02	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01 0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 6.300E+01	0.0E-01 0.0E-01	6.300E+01	0.0E-01	0.0E-01

POSITION	WEIGHT	OBS	FITTED
5825.0000	0.15	587.	585.
5850.0000	0.15	568.	562.
5875.0000	0.14	558.	548.
5900.0000	0.14	514.	516.
5925.0000	0.13	486.	493.
5950.0000	0.12	464.	477.
5975.0000	0.12	441.	466.
6000.0000	0.12	439.	465.
6025.0000	0.13	465.	481.
6050.0000	0.15	583.	519.
6075.0000	0.16	620.	587.
6100.0000	0.17	669.	679.
6125.0000	0.19	652.	781.
6150.0000	0.23	978.	870.
6175.0000	0.24	925.	926.
6200.0000	0.24	919.	947.
6225.0000	0.24	956.	940.
6250.0000	0.24	892.	915.
6275.0000	0.23	885.	882.
6300.0000	0.22	826.	844.
6325.0000	0.21	784.	807.
6350.0000	0.21	802.	770.
6375.0000	0.20	791.	735.
6400.0000	0.19	743.	701.
6425.0000	0.17	642.	670.
6450.0000	0.16	598.	640.
6475.0000	0.15	573.	611.
6500.0000	0.14	551.	584.
6525.0000	0.14	539.	558.
6550.0000	0.14	535.	534.
6575.0000	0.14	530.	510.
6600.0000	0.14	526.	487.

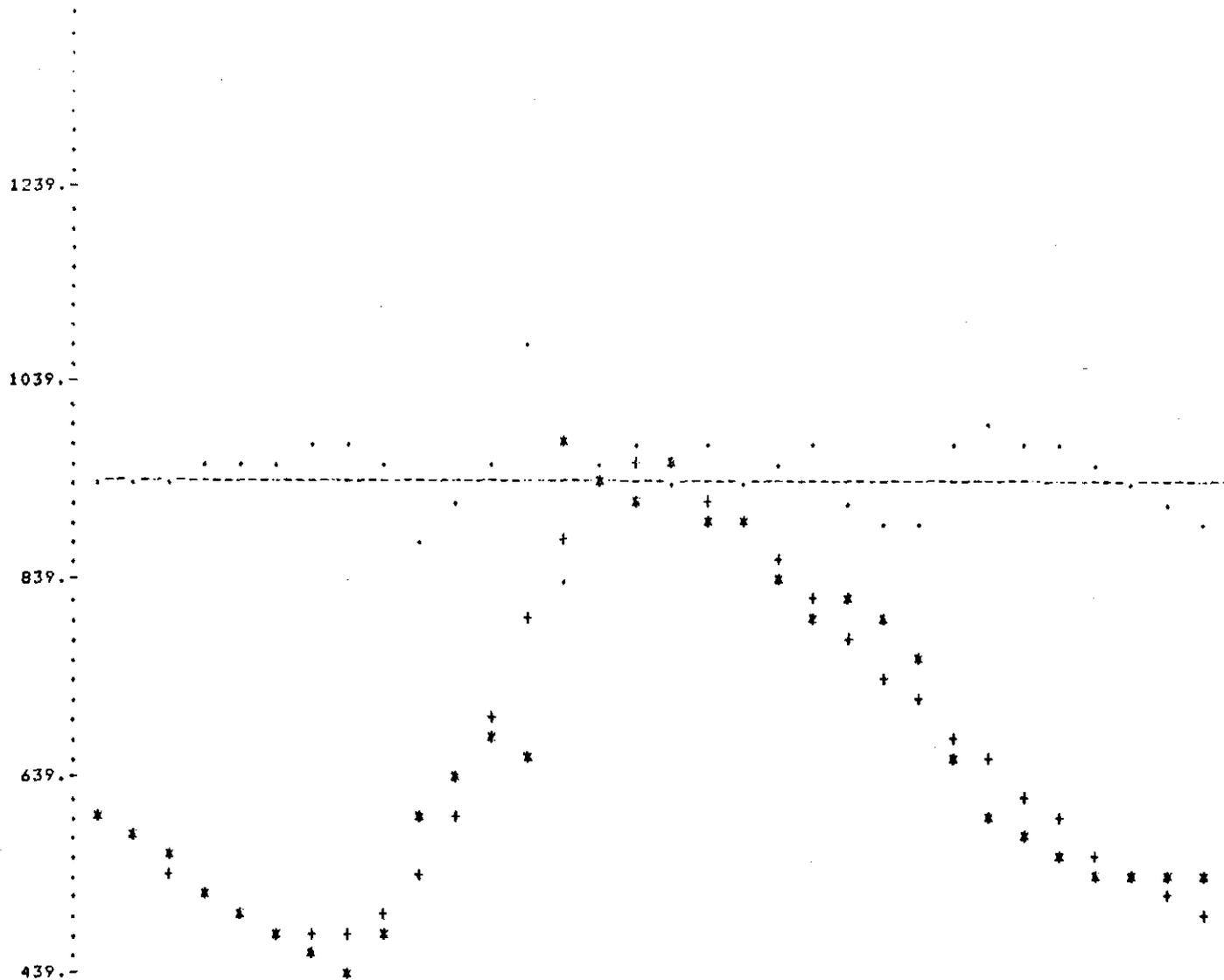
NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0592

059

459060

060

MAGNOD PLOT OF FIT 1



MODEL TABULAR

TITLE PIEMAR HEADS GRID 5400ME

NUMBER OF STATIONS 32 MAX AMPLITUDE 539. X INCREMENT 3 COLUMNS PER STATION. Y INCREMENT OF 20. GAMMAS PER LINE.
 FIELD DATA CURVE...Z*Z FITTED CURVE...Z*Z ERROR CURVE...Z*Z
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0592 PARFIT FLAG -2 ERROR CURVE DATUM 939.000

DERIVATIVE MATRIX

-.14E-01	-.21E+00	0.15E+00	-.45E+02	0.14E+00	-.38E+01	0.23E+00
-.15E-01	-.19E+00	0.15E+00	-.41E+02	0.14E+00	-.39E+01	0.27E+00
-.15E-01	-.15E+00	0.14E+00	-.36E+02	0.13E+00	-.39E+01	0.31E+00

459061

WEIGHTED LEAST SQUARES FIT - KIRKON

1 PIEMAN HEADS GRID 5100E, 4200W

ITERATION NUMBER 23

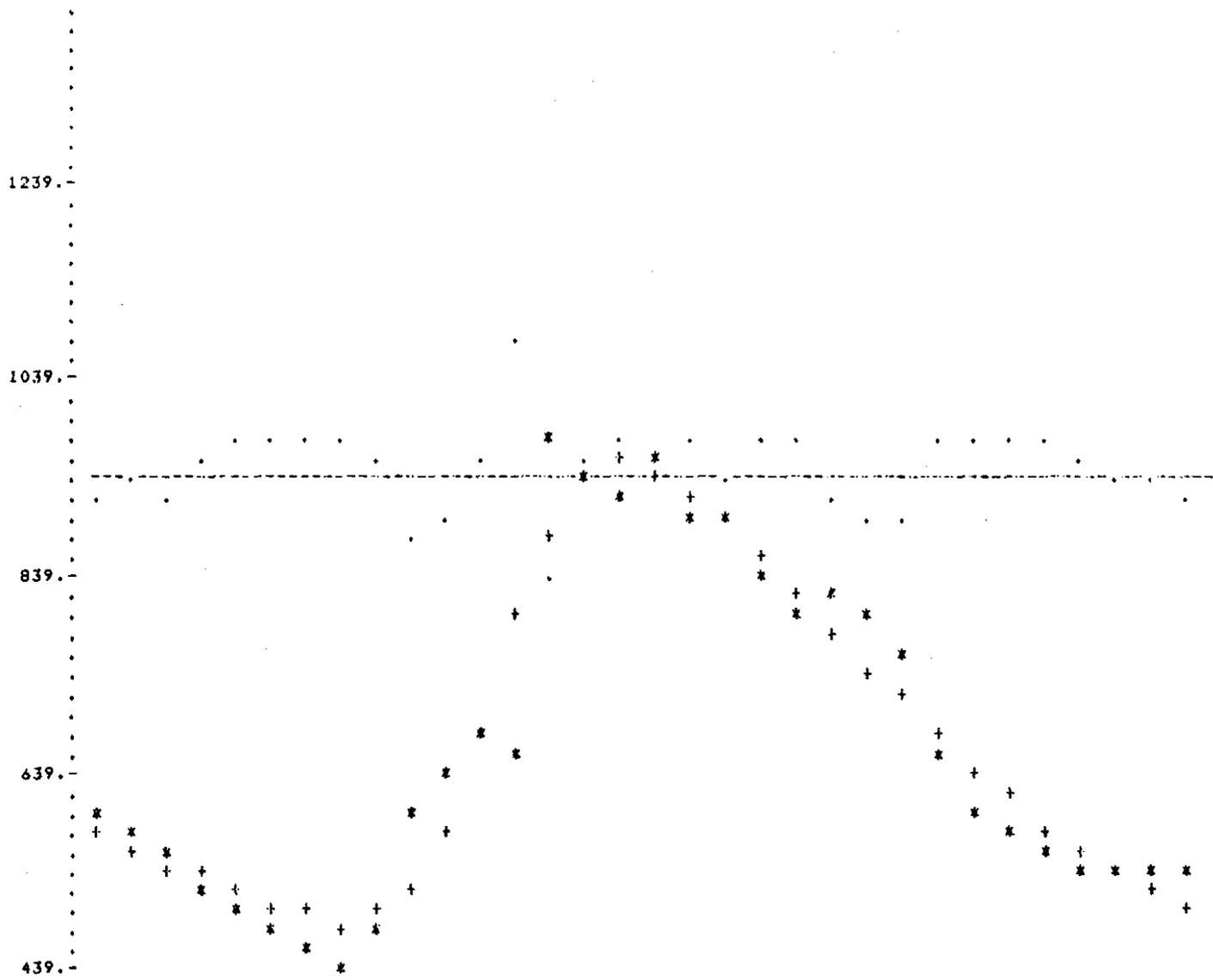
PARAMETER KEY	START	LIMITS	FITTED	TOLERANCE	RANGE
MAGNET	1 2.840E+02	1.0E+01 3.0E+04	1.367E+04	5.0E+00	1.7E+03
DIP	1 3.900E+01	0.0E-01 0.0E-01	2.823E+01	2.0E+00	7.9E+00
BASE LEVEL	1 6.000E+01	0.0E-01 0.0E-01	5.946E+02	2.0E+00	2.7E+01
BASE SLOPE	1 -5.000E-01	0.0E-01 0.0E-01	-1.960E-01	5.0E-04	1.1E-01
POSITION	1 8.123E+03	8.0E+03 6.3E+03	6.114E+03	5.0E+00	1.6E+01
WIDTH	1 5.400E+00	1.0E+00 2.0E+03	1.454E+02	1.0E+00	3.1E+01
DEPTH	1 5.900E+01	0.0E-01 1.5E+02	5.026E+01	2.0E+00	6.9E+00
INCLNATN	0 -7.200E+01	0.0E-01 0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 1.410E+02	0.0E-01 0.0E-01	1.410E+02	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01 0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 6.300E+01	0.0E-01 0.0E-01	6.300E+01	0.0E-01	0.0E-01

POSITION	WEIGHT	ORS	FITTED
5825.0000	0.15	587.	564.
5850.0000	0.15	568.	551.
5875.0000	0.14	558.	536.
5900.0000	0.14	514.	522.
5925.0000	0.13	486.	507.
5950.0000	0.12	464.	492.
5975.0000	0.12	441.	481.
6000.0000	0.12	439.	476.
6025.0000	0.13	465.	464.
6050.0000	0.15	583.	515.
6075.0000	0.16	620.	578.
6100.0000	0.17	669.	674.
6125.0000	0.19	652.	783.
6150.0000	0.23	978.	874.
6175.0000	0.24	925.	927.
6200.0000	0.24	919.	944.
6225.0000	0.24	956.	936.
6250.0000	0.24	892.	914.
6275.0000	0.23	885.	884.
6300.0000	0.22	826.	850.
6325.0000	0.21	784.	814.
6350.0000	0.21	802.	777.
6375.0000	0.20	791.	739.
6400.0000	0.19	743.	701.
6425.0000	0.17	642.	665.
6450.0000	0.16	598.	631.
6475.0000	0.15	573.	601.
6500.0000	0.14	551.	574.
6525.0000	0.14	539.	550.
6550.0000	0.14	535.	530.
6575.0000	0.14	530.	513.
6600.0000	0.14	528.	499.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0591

061

459062



MODEL RIBBON

TITLE PIEMAN HEADS GRID 5400mE

NUMBER OF STATIONS 32 MAX AMPLITUDE 539. X INCREMENT 3 COLUMNS PER STATION. Y INCREMENT OF 20. GAMMAS PER LINE.
 FIELD DATA CURVE...Z*Z FITTED CURVE...Z+Z ERROR CURVE...Z.Z
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0591 PARFIT FLAG 2 ERROR CURVE DATUM 939.000

DERIVATIVE MATRIX

-.96E-03	0.42E-01	0.15E+00	-.44E+02	0.78E-01	-.42E-01	0.11E+00
-.10E-02	0.37E-01	0.15E+00	-.39E+02	0.82E-01	-.43E-01	0.13E+00
-.11E-02	0.75E-01	0.14E+00	-.34E+02	0.84E-01	-.44E-01	0.17E+00
-.11E-02	0.97E-01	0.14E+00	-.29E+02	0.82E-01	-.44E-01	0.21E+00
-.12E-02	0.12E+00	0.13E+00	-.24E+02	0.76E-01	-.43E-01	0.25E+00
-.12E-02	0.14E+00	0.12E+00	-.20E+02	0.64E-01	-.43E-01	0.27E+00

WEIGHTED LEAST SQUARES FIT - TABULAR

1 PIEMAN HEADS GRID 7000E, 5025N

ITERATION NUMBER 39

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	1 7.870E+02	1.0E+01	3.0E+04	9.831E+02	5.0E+00	4.9E+01
DIP	1 1.130E+02	0.0E-01	0.0E-01	1.199E+02	2.0E+00	2.9E+00
BASE LEVEL	1 1.190E+02	0.0E-01	0.0E-01	4.251E+02	2.0E+00	3.9E+00
BASE SLOPE	1 -5.000E-01	0.0E-01	0.0E-01	1.940E-02	5.0E-04	1.9E-02
POSITION	1 5.123E+03	4.9E+03	5.2E+03	5.038E+03	2.0E+00	5.3E+00
HALF WIDTH	2 2.600E+01	1.0E+00	2.0E+03	2.957E+00	1.0E+00	0.0E-01
DEPTH	1 1.470E+02	0.0E-01	1.5E+02	5.451E+01	2.0E+00	1.5E-01
INCLNATN	0 -7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 1.220E+02	0.0E-01	0.0E-01	1.220E+02	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 4.300E+01	0.0E-01	0.0E-01	4.300E+01	0.0E-01	0.0E-01

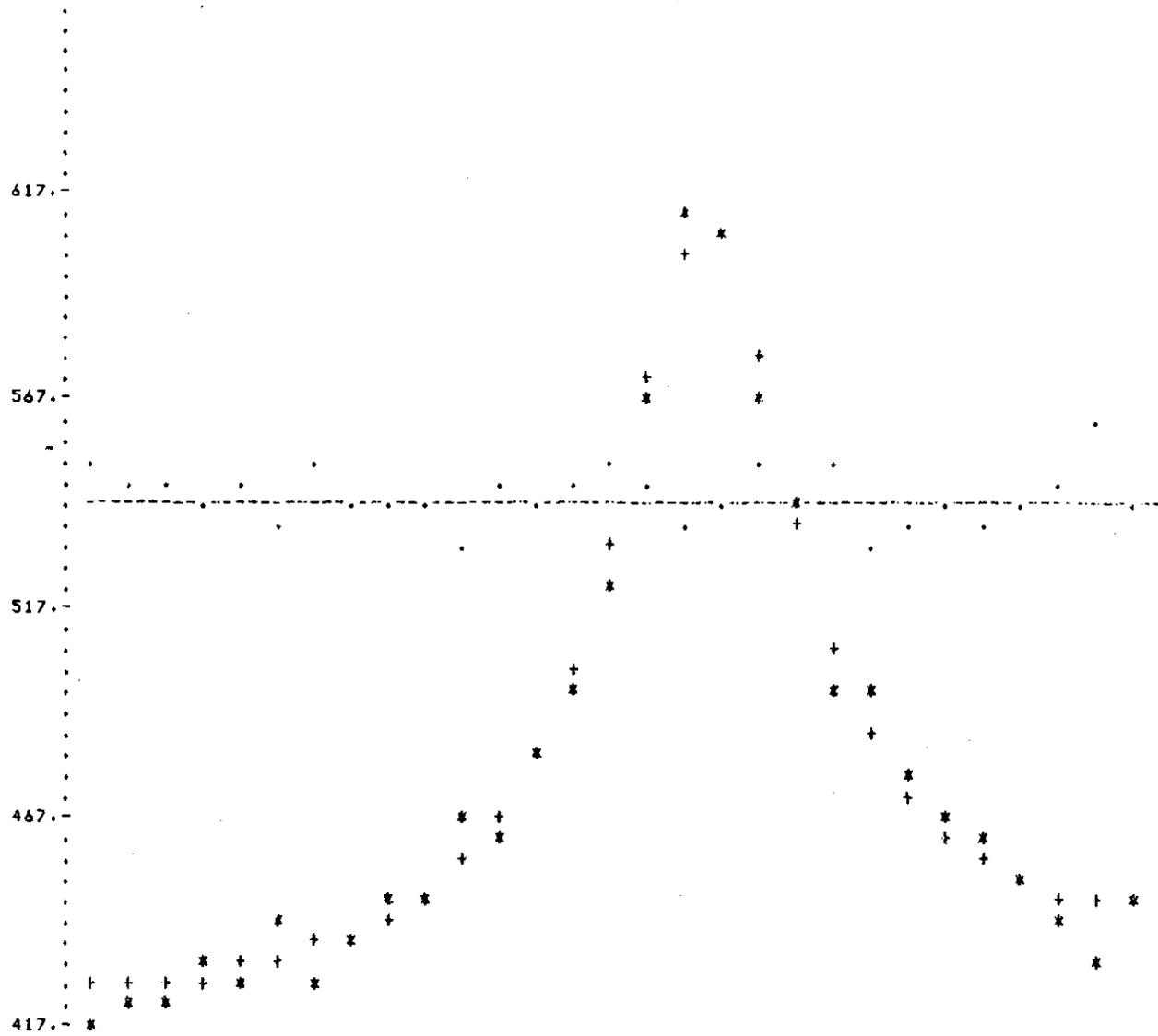
POSITION	WEIGHT	OBS	FITTED
4625.0000	0.16	417.	422.
4650.0000	0.16	420.	424.
4675.0000	0.16	422.	425.
4700.0000	0.17	428.	426.
4725.0000	0.17	427.	428.
4750.0000	0.17	438.	430.
4775.0000	0.17	425.	433.
4800.0000	0.17	437.	436.
4825.0000	0.17	443.	440.
4850.0000	0.18	447.	445.
4875.0000	0.18	465.	452.
4900.0000	0.18	459.	463.
4925.0000	0.19	482.	477.
4950.0000	0.19	497.	496.
4975.0000	0.20	522.	529.
5000.0000	0.22	565.	568.
5025.0000	0.23	608.	601.
5050.0000	0.23	605.	603.
5075.0000	0.22	565.	573.
5100.0000	0.21	538.	535.
5125.0000	0.20	497.	505.
5150.0000	0.19	495.	484.
5175.0000	0.19	476.	471.
5200.0000	0.18	464.	461.
5225.0000	0.18	461.	455.
5250.0000	0.18	451.	450.
5275.0000	0.17	442.	447.
5300.0000	0.17	428.	445.
5325.0000	0.17	446.	443.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0128

063

459064

064



MODEL TABULAR

TITLE PIKMAN HEADS GRID 7000ME

NUMBER OF STATIONS 29 MAX AMPLITUDE 191. X INCREMENT 3 COLUMNS PER STATION. Y INCREMENT OF 5. GAMMAS PER LINE.
 FIELD DATA CURVE...Z*Z FITTED CURVE...Z*Z ERROR CURVE...Z*Z
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0128 PARFIT FLAG 2 ERROR CURVE DATUM 542.000

DERIVATIVE MATRIX

0.87E-03	0.82E-01	0.16E+00	-.67E+02	-.74E-02	0.29E+00	0.16E-01
0.99E-03	0.87E-01	0.16E+00	-.63E+02	-.82E-02	0.33E+00	0.13E-01
0.11E-02	0.92E-01	0.16E+00	-.60E+02	-.94E-02	0.37E+00	0.21E-01
0.13E-02	0.98E-01	0.17E+00	-.56E+02	-.11E-01	0.44E+00	0.24E-01
0.16E-02	0.11E+00	0.17E+00	-.52E+02	-.13E-01	0.51E+00	0.27E-01
0.18E-02	0.11E+00	0.17E+00	-.48E+02	-.15E-01	0.60E+00	0.31E-01
0.22E-02	0.12E+00	0.17E+00	-.45E+02	-.17E-01	0.70E+00	0.36E-01

459065

WEIGHTED LEAST SQUARES FIT - RIBBON

1 PIEMAN HEADS GRID 7000mE,5025mN

ITERATION NUMBER 13

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	1 5.000E+03	1.0E+01	3.0E+04	5.111E+03	5.0E+00	2.5E+02
DIP	1 9.000E+01	0.0E-01	0.0E-01	1.199E+02	2.0E+00	3.5E+00
BASE LEVEL	1 4.300E+02	0.0E-01	0.0E-01	4.294E+02	2.0E+00	3.2E+00
BASE SLOPE	1 0.000E-01	0.0E-01	0.0E-01	1.802E-02	5.0E-04	1.9E-02
POSITION	1 5.025E+03	4.9E+03	5.1E+03	5.038E+03	2.0E+00	5.3E+00
WIDTH	2 1.000E+02	1.0E+00	2.0E+03	2.000E+03	1.0E+00	0.0E-01
DEPTH	1 5.000E+01	0.0E-01	1.5E+02	5.457E+01	2.0E+00	1.8E+03
INCLNATN	0 -7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 1.220E+02	0.0E-01	0.0E-01	1.220E+02	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 4.300E+01	0.0E-01	0.0E-01	4.300E+01	0.0E-01	0.0E-01

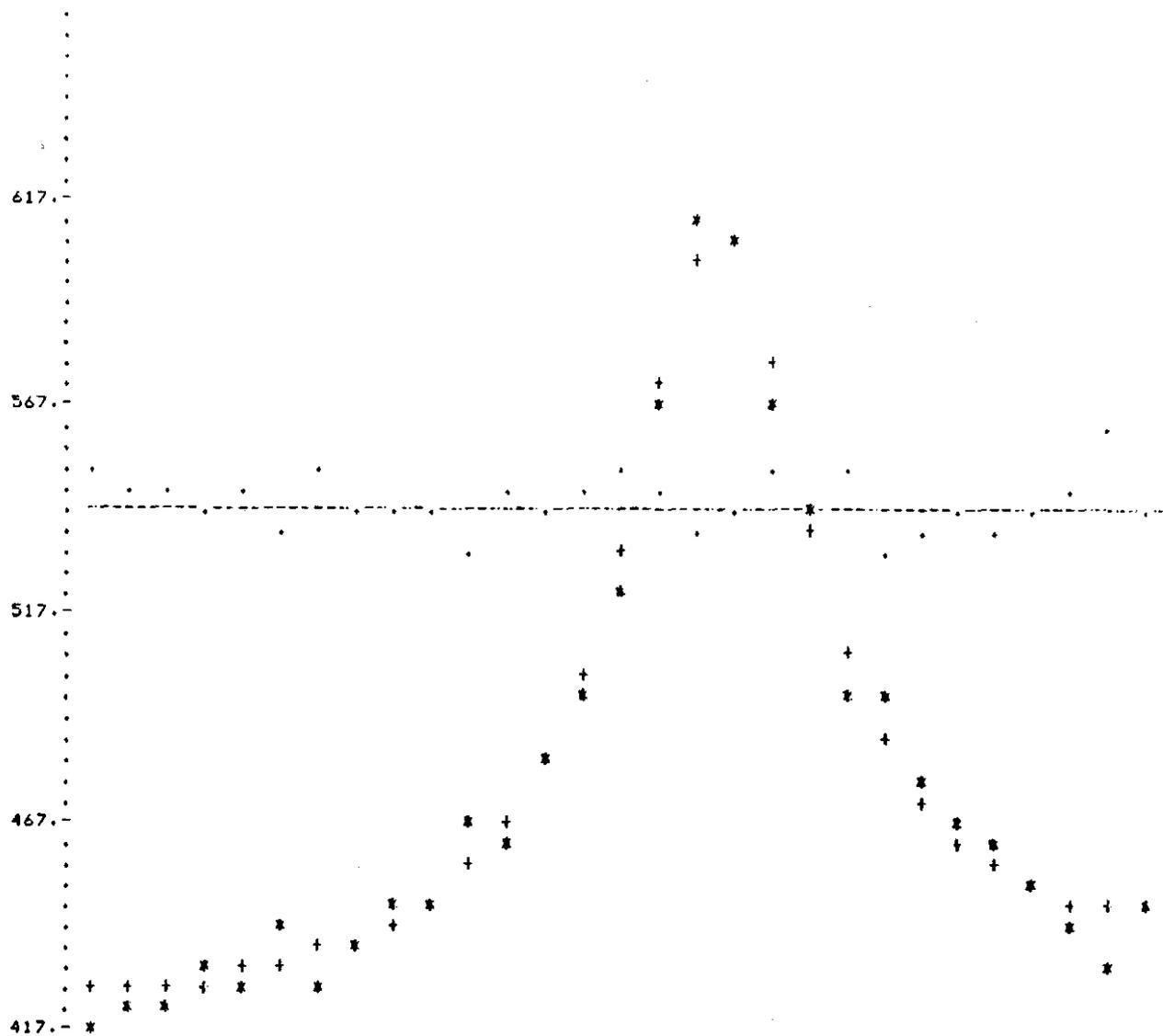
POSITION	WEIGHT	GRS	FITTED
4625.0000	0.16	417.	422.
4650.0000	0.16	420.	424.
4675.0000	0.16	422.	425.
4700.0000	0.17	428.	426.
4725.0000	0.17	427.	428.
4750.0000	0.17	438.	430.
4775.0000	0.17	425.	433.
4800.0000	0.17	437.	436.
4825.0000	0.17	443.	440.
4850.0000	0.18	447.	445.
4875.0000	0.18	465.	453.
4900.0000	0.18	459.	463.
4925.0000	0.19	482.	477.
4950.0000	0.19	497.	498.
4975.0000	0.20	522.	529.
5000.0000	0.22	565.	568.
5025.0000	0.23	508.	601.
5050.0000	0.23	605.	603.
5075.0000	0.22	565.	573.
5100.0000	0.21	538.	535.
5125.0000	0.20	497.	505.
5150.0000	0.19	495.	484.
5175.0000	0.19	476.	471.
5200.0000	0.18	464.	461.
5225.0000	0.18	461.	455.
5250.0000	0.18	451.	450.
5275.0000	0.17	442.	447.
5300.0000	0.17	428.	445.
5325.0000	0.17	446.	443.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0128

065

459066

MAGMDD PLOT OF FIT 1



MODEL RIBBON

TITLE PIEMAR HEADS GRID 7000mE

NUMBER OF STATIONS 29 MAX AMPLITUDE 191. X INCREMENT 3 COLUMNS PER STATION. Y INCREMENT OF 5. GAMMAS PER LINE.
 FIELD DATA CURVE...X*Z FITTED CURVE...X+Z ERROR CURVE...X.Z
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0128 PARFIT FLAG 2 ERROR CURVE DATUM 542.000

DERIVATIVE MATRIX

0.14E-04 0.99E-01 0.16E+00 -.67E+02 -.74E-02 0.43E-03 0.17E-01
 0.37E-04 0.11E+00 0.16E+00 -.63E+02 -.82E-02 0.43E-03 0.19E-01
 0.66E-04 0.11E+00 0.16E+00 -.60E+02 -.94E-02 0.43E-03 0.21E-01

066

459067

WEIGHTED LEAST SQUARES FIT - TABULAR

1 PIEMAN HEADS GRID 6000MN.4500NE

ITERATION NUMBER 10

PARAMETER KEY	START	LIMITS	FITTED	TOLERANCE	RANGE
MAGNET	1 1.000E+02	1.0E+01 3.0E+04	7.055E+01	2.0E+00	1.1E+01
DIP	1 9.900E+01	1.0E+00 1.8E+02	9.862E+01	1.0E+00	8.4E+00
BASE LEVEL	1 4.700E+02	2.0E+02 7.0E+02	4.722E+02	1.0E+00	1.0E+01
BASE SLOPE	1 -1.000E-01	0.0E-01 0.0E-01	-1.480E-01	1.0E+00	1.2E-01
POSITION	1 4.876E+03	4.0E+03 5.0E+03	4.875E+03	5.0E+00	5.7E+00
HALF WIDTH	1 3.000E+01	5.0E+00 3.0E+02	3.271E+01	1.0E+00	4.6E+00
DEPTH	1 1.910E+02	5.0E+00 5.0E+02	1.637E+01	2.0E+00	5.4E+00
INCLNATN	0 -7.200E+01	0.0E-01 0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATN	0 1.670E+02	0.0E-01 0.0E-01	1.670E+02	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01 0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 0.000E-01	0.0E-01 0.0E-01	0.000E-01	0.0E-01	0.0E-01

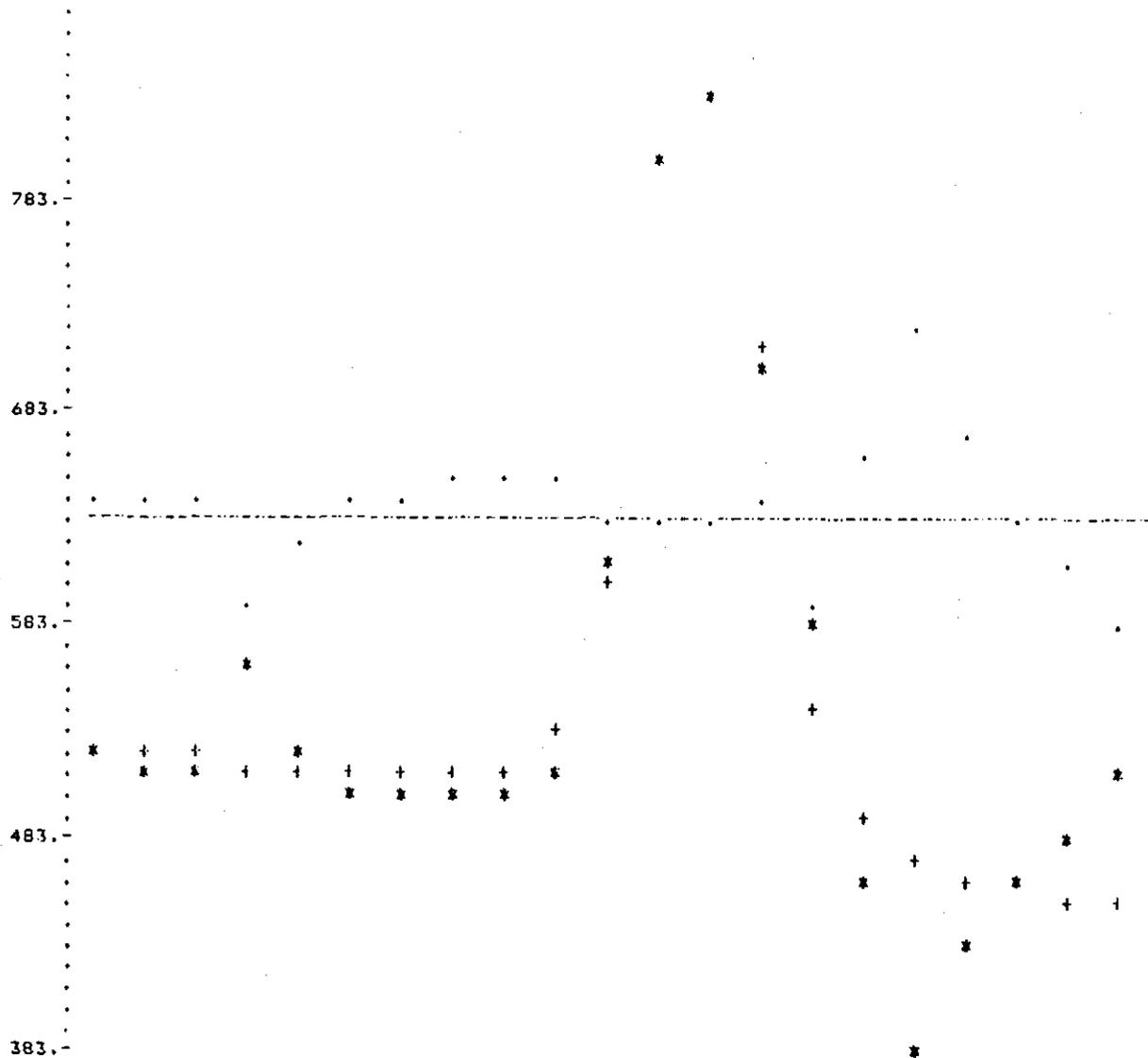
POSITION	WEIGHT	OBS	FITTED
4600.0000	0.20	515.	520.
4625.0000	0.20	512.	516.
4650.0000	0.21	512.	513.
4675.0000	0.21	557.	510.
4700.0000	0.21	522.	508.
4725.0000	0.20	501.	506.
4750.0000	0.20	497.	505.
4775.0000	0.20	495.	506.
4800.0000	0.20	475.	511.
4825.0000	0.21	513.	529.
4850.0000	0.25	505.	502.
4875.0000	0.30	795.	794.
4900.0000	0.31	331.	329.
4925.0000	0.28	696.	704.
4950.0000	0.23	575.	533.
4975.0000	0.19	460.	488.
5000.0000	0.16	383.	472.
5025.0000	0.17	479.	462.
5050.0000	0.18	456.	456.
5075.0000	0.19	477.	450.
5100.0000	0.20	504.	445.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0489

067

459068

MAGMOD PLOT OF FIT 1



MODEL TABULAR

TITLE PIENAN HEADS GRID 6000MN

NUMBER OF STATIONS 21 MAX AMPLITUDE 448. X INCREMENT 4 COLUMNS PER STATION. Y INCREMENT OF 10. GAMMAS PER LINE.
 FIELD DATA CURVE...X*X FITTED CURVE...Z+Z ERROR CURVE...X.X
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0489 PARFIT FLAG 2 ERROR CURVE DATUM 633.000

DERIVATIVE MATRIX

0.67E-02 0.13E+00 0.20E+00 -.60E+02 0.27E-01 0.19E-01 0.25E-01
 0.78E-02 0.14E+00 0.20E+00 -.55E+02 0.26E-01 0.22E-01 0.30E-01
 0.94E-02 0.16E+00 0.21E+00 -.51E+02 0.25E-01 0.27E-01 0.37E-01

068

459069

WEIGHTED LEAST SQUARES FIT - RIBBON

1 PIEMAN HEADS GRID 6000NR,4900NE

ITERATION NUMBER 28

PARAMETER KEY	START	LIMITS		FITTED	TOLERANCE	RANGE
MAGNET	1 1.000E+02	1.0E+01	3.0E+04	1.232E+04	2.0E+00	1.5E+03
DIP	1 9.900E+01	1.0E+00	1.0E+02	1.765E+02	1.0E+00	8.7E+00
BASE LEVEL	1 4.700E+02	2.0E+02	7.0E+02	5.120E+02	1.0E+00	1.5E+01
BASE SLOPE	1 -1.000E-01	0.0E-01	0.0E-01	-1.372E-01	1.0E+00	9.5E-02
POSITION	1 4.896E+03	4.8E+03	5.0E+03	4.920E+03	5.0E+00	5.1E+00
WIDTH	1 3.000E+01	5.0E+00	3.0E+03	6.070E+01	1.0E+00	7.3E+00
DEPTH	1 1.910E+02	5.0E+00	5.0E+02	5.533E+01	2.0E+00	4.9E+00
INCLNATH	0 -7.200E+01	0.0E-01	0.0E-01	-7.200E+01	0.0E-01	0.0E-01
DECLNATH	0 1.690E+02	0.0E-01	0.0E-01	1.690E+02	0.0E-01	0.0E-01
VERTICAL	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01
TRAV DIR	0 0.000E-01	0.0E-01	0.0E-01	0.000E-01	0.0E-01	0.0E-01

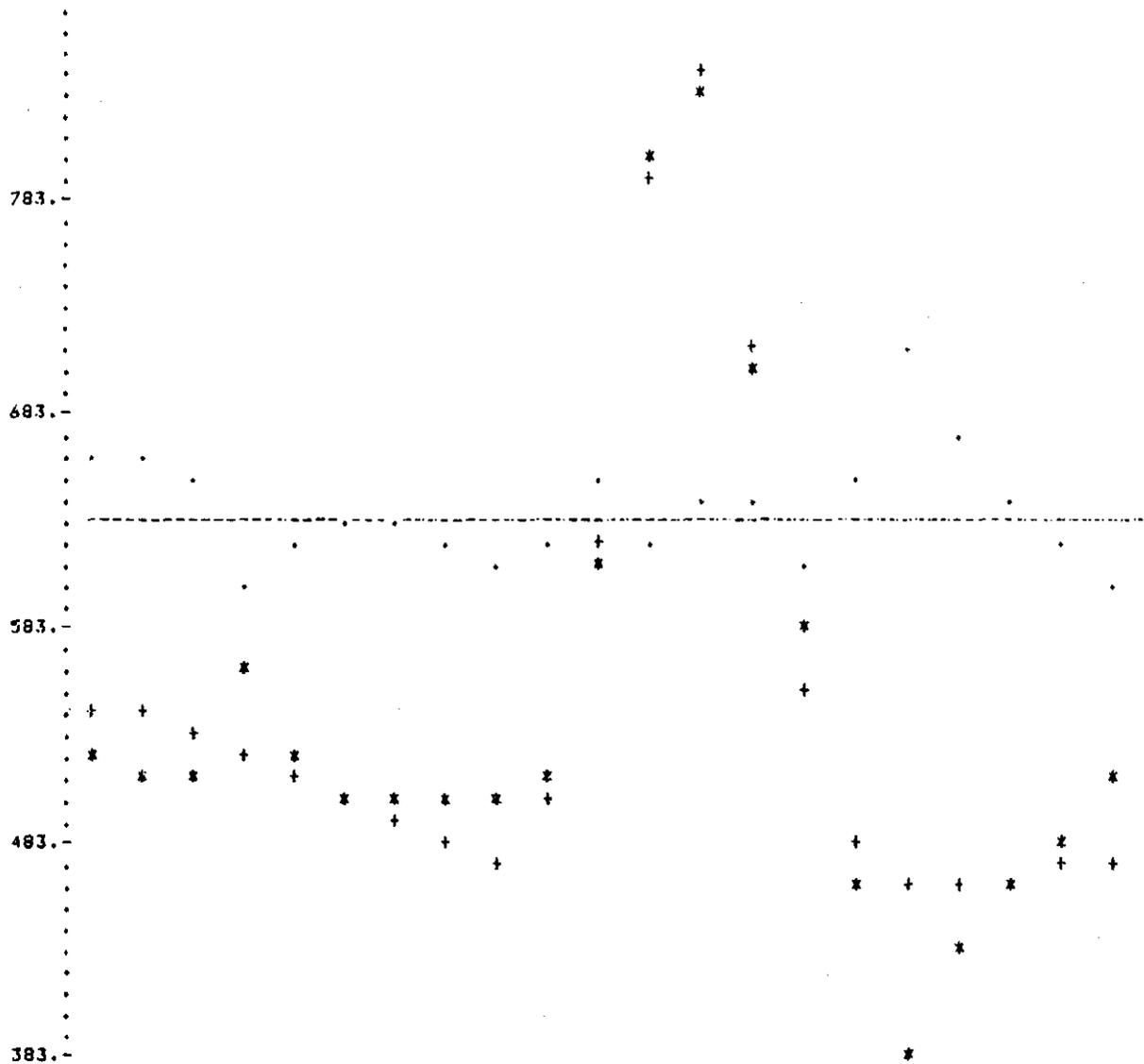
POSITION	WEIGHT	ORS	FITTED
4600.0000	0.20	515.	541.
4625.0000	0.20	512.	535.
4650.0000	0.21	512.	528.
4675.0000	0.21	557.	520.
4700.0000	0.21	522.	511.
4725.0000	0.20	501.	500.
4750.0000	0.20	497.	488.
4775.0000	0.20	495.	474.
4800.0000	0.20	495.	472.
4825.0000	0.21	513.	503.
4850.0000	0.25	605.	617.
4875.0000	0.30	795.	784.
4900.0000	0.31	831.	834.
4925.0000	0.28	696.	704.
4950.0000	0.23	575.	549.
4975.0000	0.19	460.	480.
5000.0000	0.14	383.	462.
5025.0000	0.17	429.	460.
5050.0000	0.18	456.	462.
5075.0000	0.19	477.	463.
5100.0000	0.20	504.	464.

NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT 0.0427

069

459070

070



MODEL RIBBON

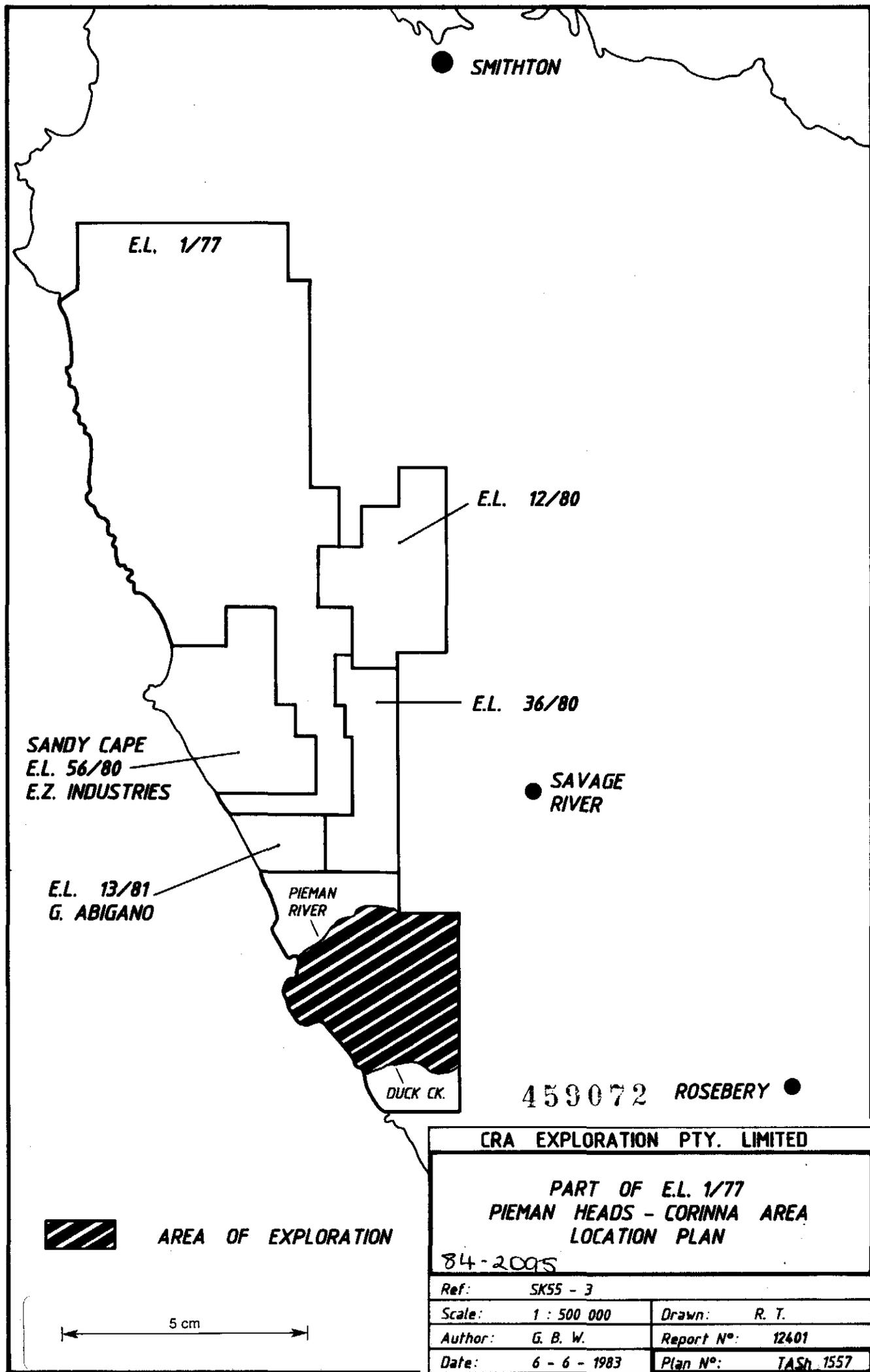
TITLE PIEMAN HEADS GRID 6000HN

NUMBER OF STATIONS 21 MAX AMPLITUDE 451. X INCREMENT 4 COLUMNS PER STATION. Y INCREMENT OF 10. GAMMAS PER LINE.
 FIELD DATA CURVE...X*X FITTED CURVE...X*X ERROR CURVE...X*X
 NORMALIZED WEIGHTED STANDARD DEVIATION OF FIT .0427 PARFIT FLAG 2 ERROR CURVE DATUM 633.000

DERIVATIVE MATRIX

-.25E-03	-.68E-02	0.20E+00	-.65E+02	0.48E-01	-.61E-01	0.10E-01
-.30E-03	-.97E-02	0.20E+00	-.60E+02	0.53E-01	-.73E-01	0.14E-01
-.36E-03	-.15E-01	0.21E+00	-.56E+02	0.61E-01	-.90E-01	0.22E-01
-.44E-03	-.23E-01	0.21E+00	-.52E+02	0.72E-01	-.11E+00	0.34E-01
-.53E-03	-.36E-01	0.21E+00	-.46E+02	0.82E-01	-.13E+00	0.54E-01

459071



SMITHTON

E.L. 1/77

E.L. 12/80

E.L. 36/80

SANDY CAPE
E.L. 56/80
E.Z. INDUSTRIES

SAVAGE RIVER

E.L. 13/81
G. ABIGANO

PIEMAN RIVER

DUCK CK.

459072 ROSEBERY



AREA OF EXPLORATION

5 cm

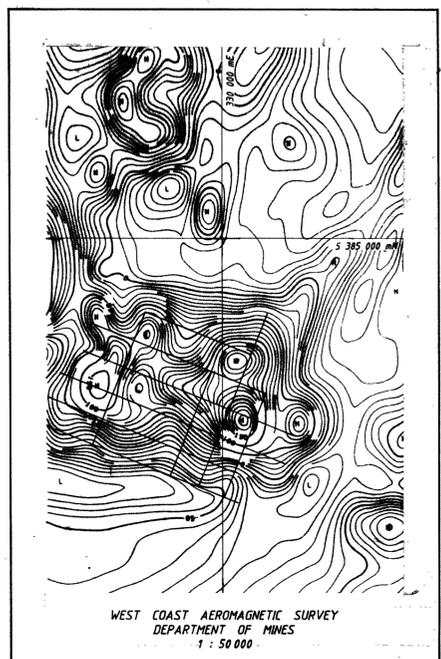
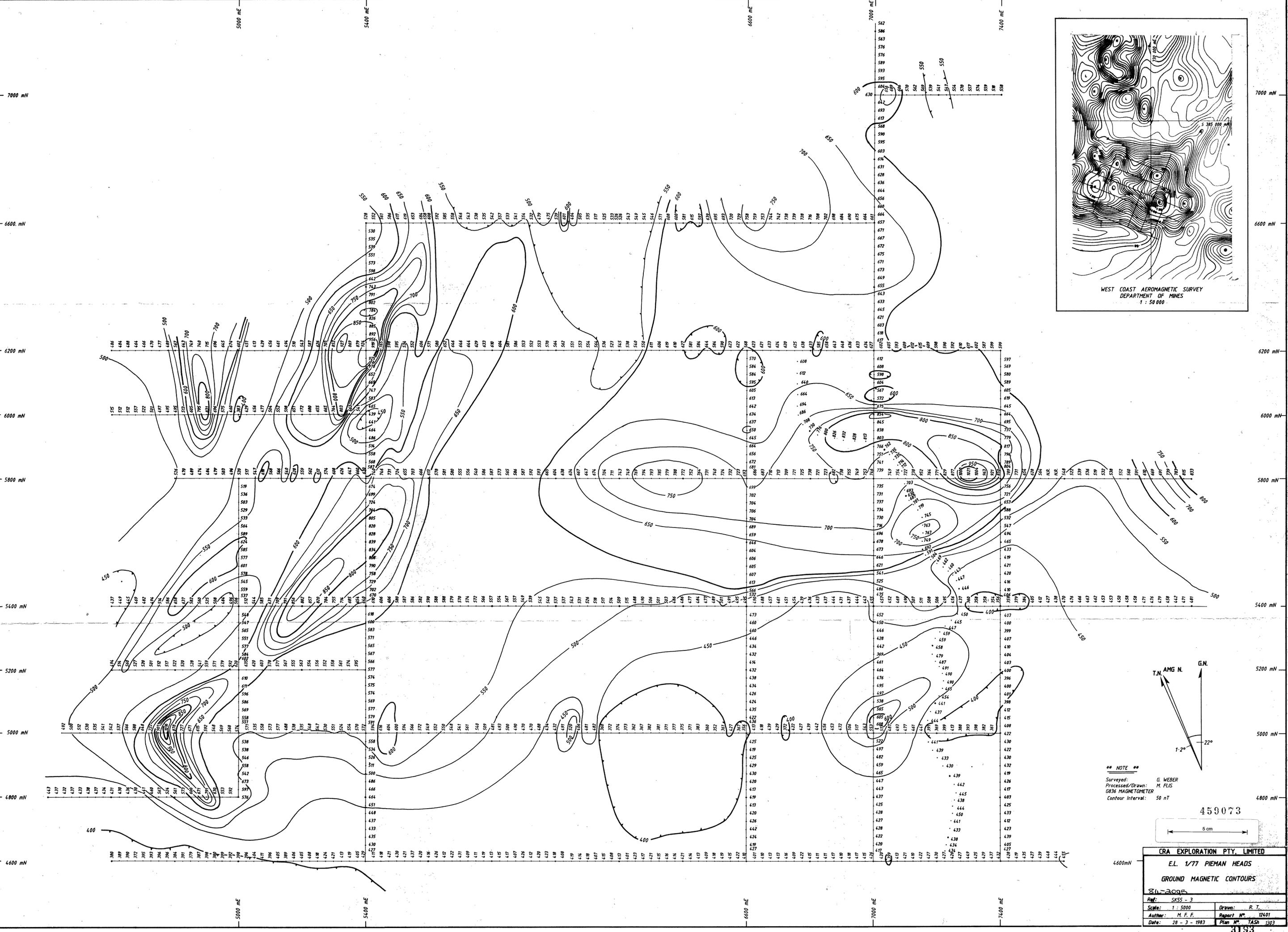
CRA EXPLORATION PTY. LIMITED

PART OF E.L. 1/77
PIEMAN HEADS - CORINNA AREA
LOCATION PLAN

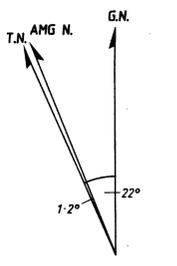
84-2095

Ref:	SK55 - 3	
Scale:	1 : 500 000	Drawn: R. T.
Author:	G. B. W.	Report N°: 12401
Date:	6 - 6 - 1983	Plan N°: TASH 1557

3192

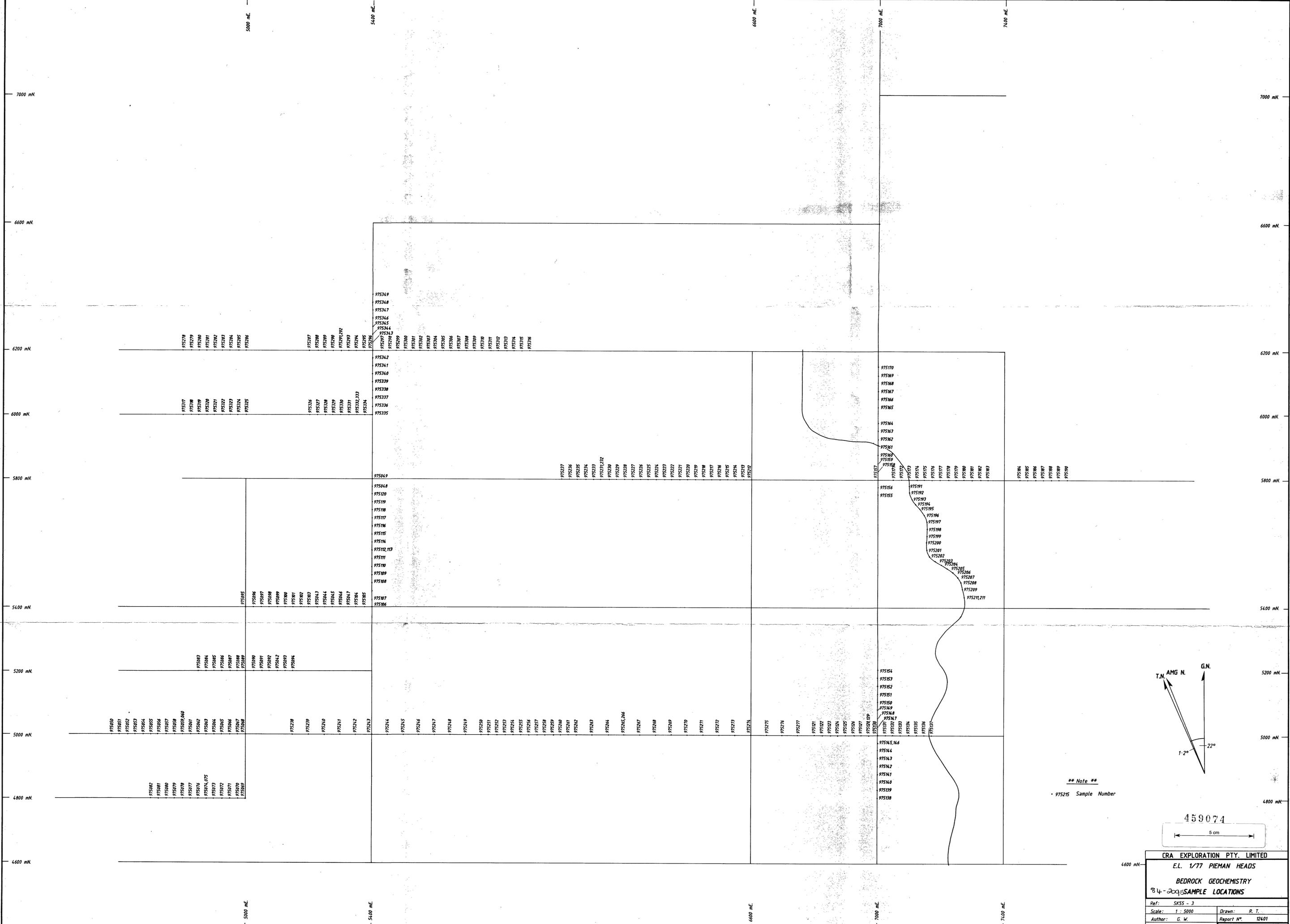


**** NOTE ****
 Surveyed: G. WEBER
 Processed/Drawn: M. FLIS
 G836 MAGNETOMETER
 Contour interval: 50 nT



459073

CRA EXPLORATION PTY. LIMITED	
E.L. 1/77 PIEMAN HEADS	
GROUND MAGNETIC CONTOURS	
SIL-2009	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 5000	Author: M. F. F.
Date: 28 - 3 - 1993	Plan No. TASH 1302



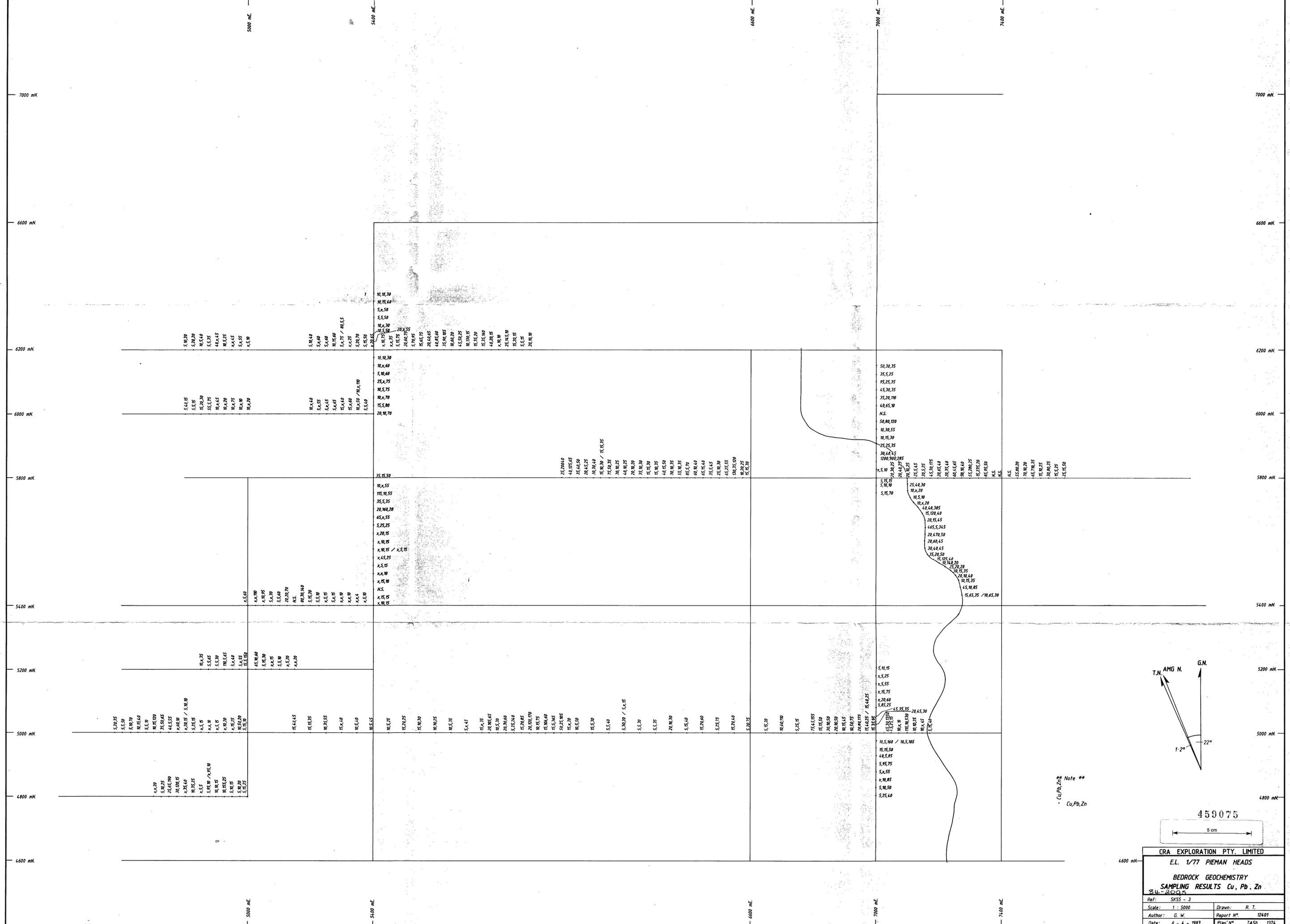
**** Note ****
 • 975215 Sample Number

459074

5 cm

CRA EXPLORATION PTY. LIMITED
 E.L. 1/77 PIEMAN HEADS
 BEDROCK GEOCHEMISTRY
 84-209 SAMPLE LOCATIONS

Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 5000	Report No. 12401
Author: G. W.	Plan No. TASH 1373
Date: 6 - 4 - 1983	



* Cu, Pb, Zn * Note **
* Cu, Pb, Zn

459075

5 cm

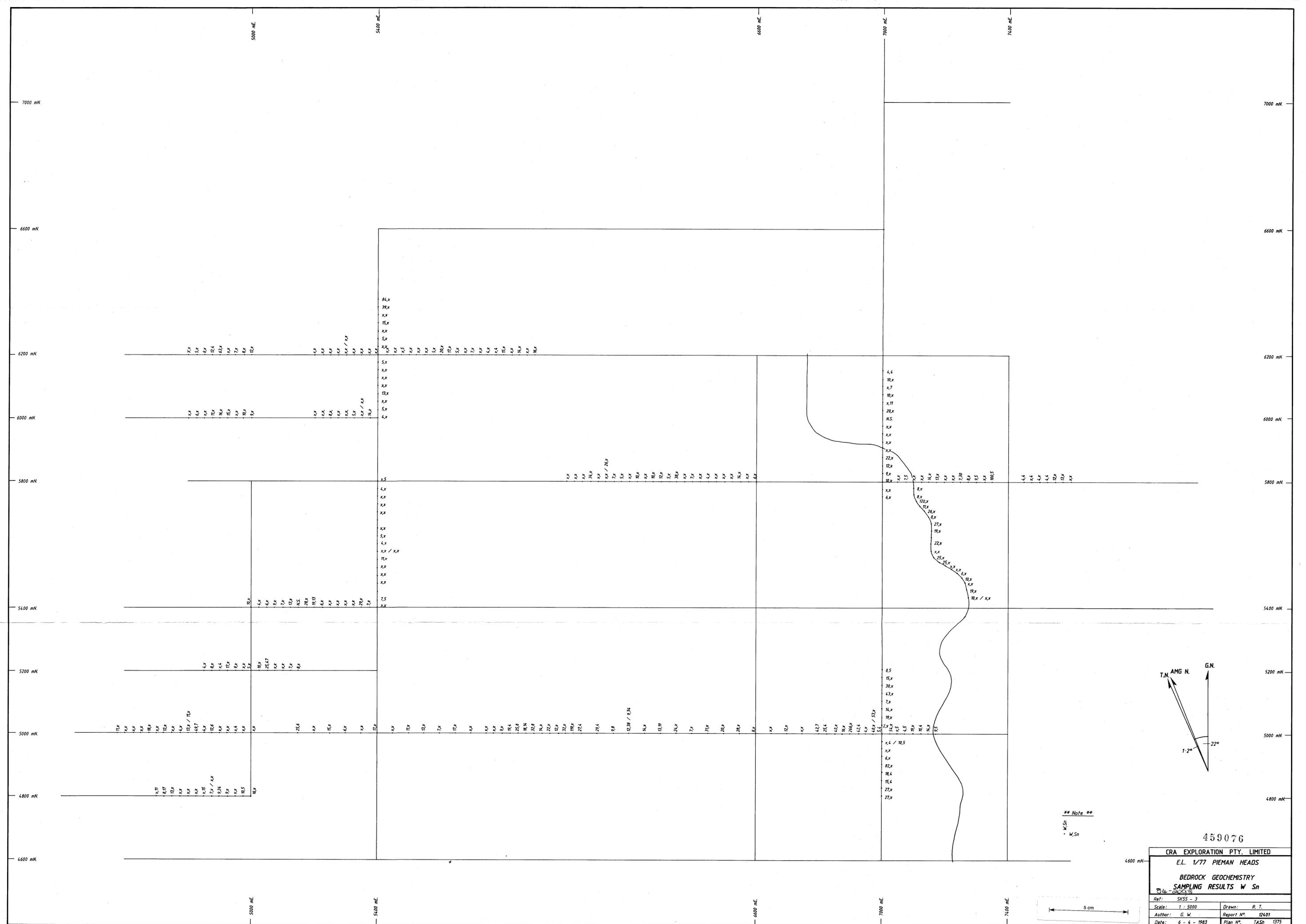
CRA EXPLORATION PTY. LIMITED

E.L. 1/77 PIEMAN HEADS

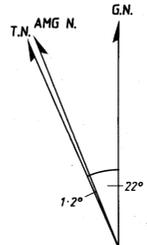
BEDROCK GEOCHEMISTRY
SAMPLING RESULTS Cu, Pb, Zn

Ref: SK55 - 3

Scale: 1 : 5000	Drawn: R. T.
Author: G. W.	Report No: 12401
Date: 6 - 4 - 1983	Plan No: TASH 1374

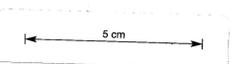


**** Note ****
 • W,Sn
 • W,Sn



459076

CRA EXPLORATION PTY. LIMITED	
E.L. 1/77 PIEMAN HEADS	
BEDROCK GEOCHEMISTRY	
SAMPLING RESULTS W Sn	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 5000	Report No: 12401
Author: G. W.	Plan No: TASH 1375
Date: 6 - 4 - 1983	



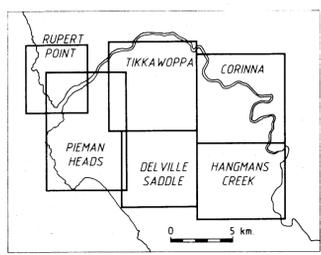
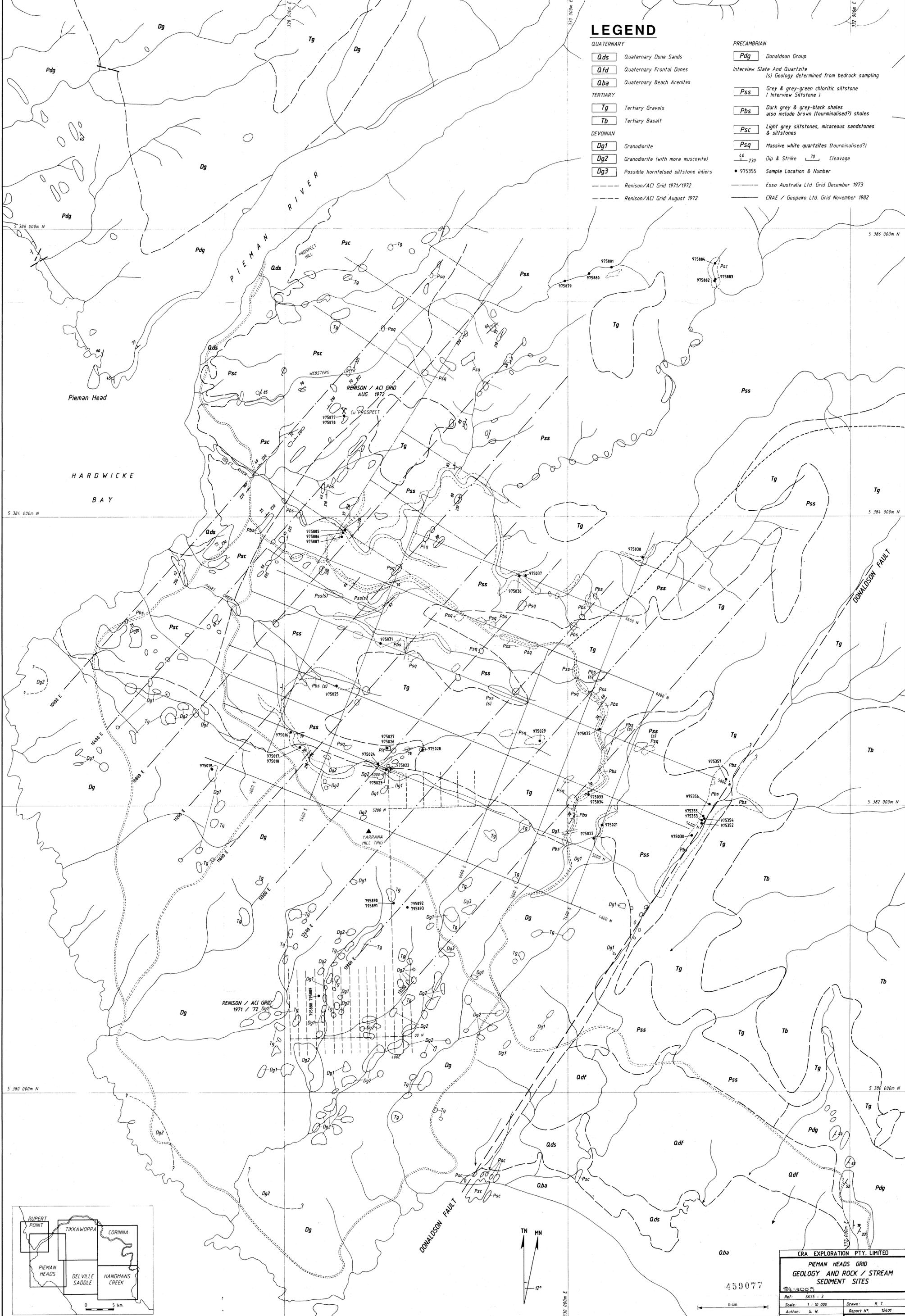
LEGEND

QUATERNARY

- Qds** Quaternary Dune Sands
 - Qfd** Quaternary Frontal Dunes
 - Qba** Quaternary Beach Arenites
- ## TERTIARY
- Tg** Tertiary Gravels
 - Tb** Tertiary Basalt
- ## DEVONIAN
- Dg1** Granodiorite
 - Dg2** Granodiorite (with more muscovite)
 - Dg3** Possible hornfelsed siltstone inliers
- Renison/ACI Grid 1971/1972
 - Renison/ACI Grid August 1972

PRECAMBRIAN

- Pdg** Donaldson Group
- Interview Slate And Quartzite
(s) Geology determined from bedrock sampling
- Pss** Grey & grey-green chloritic siltstone (Interview Siltstone)
 - Pbs** Dark grey & grey-black shales also include brown (tourmalinised?) shales
 - Psc** Light grey siltstones, micaceous sandstones & siltstones
 - Psq** Massive white quartzites (tourmalinised?)
- 40 230 Dip & Strike Cleavage
 - 975355 Sample Location & Number
 - Esso Australia Ltd. Grid December 1973
 - CRAE / Geopeko Ltd. Grid November 1982



CRA EXPLORATION PTY. LIMITED
PIEMAN HEADS GRID
GEOLOGY AND ROCK / STREAM
SEDIMENT SITES
 459077
 Ref: SK55 - 3
 Scale: 1 : 10 000
 Author: G. W. W. Drawn: R. T.
 Date: NOVEMBER 1982 Report No: 12401
 Plan No: TASH 1525