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CRA EXPLORATION PTY. LIMITED

ATLAS EL 1/77 (PART ONE)

REVIEW OF EXPLORATION TO DECEMBER, 1982.

**OPEN FILE**

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CONTENTS

	<u>Page No.</u>
1. SUMMARY	1
2. CONCLUSIONS	1
3. RECOMMENDATIONS	2
4. INTRODUCTION	2
5. GEOLOGY	3
5.1 Regional Setting	3
5.2 Atlas Formation	4
6. GEOCHEMISTRY	6
6.1 EL General	6
6.1.1. Drainage Geochemistry	6
6.1.2. Soil Traverses	8
6.1.3. Atlas Grid Area	8
6.2.1. Lead	8
6.2.2. Zinc	9
6.2.3. Copper	9
6.2.4. Manganese	9
7. GEOPHYSICS	10
8. REFERENCES	10
9. KEYWORDS	11
10. LOCATION	11
11. LIST OF PLANS	11
12. LIST OF APPENDICES	12

## 1. SUMMARY

Work in the licence area had two initial objectives;

1. A regional panned concentrate survey by CRAE in 1977 indicated a number of tin anomalies in the eastern portion of the licence. These were to be followed up.
2. Ground checking of a number of isolated aeromagnetic anomalies in the western portion of the licence.

Subsequent work in 1980 indicated that the tin anomalies were due to reconcentration of material from basal Permian glacial sediments. Minor gold occurs in the streams draining the Permian sequence, and probably has a similar origin to the anomalous tin values. No anomalous tin values in panned concentrates were obtained from the streams which drain the aeromagnetic anomalies. Most of the anomalies were field checked, and are coincident with outliers of Tertiary basalt.

Work since 1980 has been concentrated on a band of dolomites and shales (the Atlas Formation) which has anomalous lead, zinc and manganese values. This unit lies within upper Proterozoic sediments.

The unit has been traced over a strike length of four and a half kilometres by mapping and geochemical sampling, including a 1300 metre grid on its southern extremity. It represents a significant target for future base metal exploration.

Future work will be concentrated on locating further extensions to the Atlas Formation in the hitherto unexplored south western extremity of the licence area. A diamond drill hole is recommended to test the formation at the Atlas grid area.

## 2. CONCLUSIONS

1. The anomalous tin and gold values in panned concentrates are probably due to reconcentration of basal Permian sediments.
2. The area has little potential for cassiterite-sulphide mineralisation.

- 3. The "Atlas Formation" is a good target zone for stratiform base metal mineralisation.

3. RECOMMENDATIONS

- 1. A detailed soil and stream sediment sampling programme be implemented over the south western portion of the licence, with the object of locating stratigraphic zones that are anomalous in lead and zinc.
- 2. Further geophysical work on the Atlas grid, by a suitable technique for locating a weak to moderately conducting sulphide accumulation.
- 3. A diamond drill hole on the Atlas grid. Suitable co-ordinates for the hole would be 3860N, 4900E, drilling at -50° to grid west.

4. INTRODUCTION

EL 1/77 was granted on 28th March, 1977. The area covered by this report is shown on plan TASH 1117 (designated "Part 1").

The licence as a whole has been partially covered by a number of regional surveys; these have been summarised by Weir, 1982. The area of the licence covered by this report was retained for two principal reasons:

- 1. Anomalous tin values in panned concentrates from streams draining the eastern portion of the licence. These samples were taken in the initial 1977 reconnaissance programme by CRAE. (Porter, 1977).
- 2. The Proterozoic succession was considered equivalent to the host rocks of Mount Bischoff, which is only 12 kilometres south of the licence. Dolomites and dolomitic siltstones had been noted at the old Atlas mine workings by T.M.Porter in 1971.

Accordingly, work in 1980 consisted of extending the coverage of the panned concentrate survey and checking a number of aeromagnetic anomalies which lay along the trend of the dolomite horizon.

These investigations failed to reveal any promising tin anomalies, but interest was re-awakened in the high lead and zinc values associated with the dolomite horizon at the Atlas workings. Early work was hampered by access difficulties, but in 1980-81 a new logging road was constructed to within one kilometre of the Atlas workings.

In the 1981-82 field season, reconnaissance soil and stream sediment traverses were put in north and south of the Atlas workings to find the anomalous horizon (the "Atlas Formation"). A 13 line kilometre grid was laid out over the workings. All available road exposures were geologically mapped and chip sampled.

The "Atlas Formation" has been traced approximately 4.5 kilometres north from the grid. To the south, it disappears beneath Tertiary basalt and has thus far not been located on the southern edge of the basalt.

Future work would be best concentrated on the finding and evaluating the southern extensions of the formation. More geophysical work and diamond drilling would be appropriate for the grid area.

## 5. GEOLOGY

### 5.1 Regional Setting Plan No. TASH 106

The oldest rocks exposed in the area are a sequence of siltstones and shales with minor quartzite and dolomite of Upper Proterozoic age. They are a probable correlate of the Burnie Beds (Gee, 1977) and are extensively deformed and have suffered low grade regional metamorphism. The Keith metamorphics trend through the north western portion of the licence, and are of lower greenschist facies (Gee, 1977). They are dominantly quartz-muscovite-calcite-albite schists and show some segregation into quartz-calcite and muscovite-albite layers, with obliteration of original bedding. Bodies of greenschist amphibolites are common, and probably represent original minor intrusives of dolerite composition. The metamorphic event is regarded as being due to overfolding and high angle thrusting from the west.

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The Arthur Lineament represents a line of deep crustal weakness and downwarping between the Rocky Cape geanticline and the Burnie geanticline (Legge, 1980).

With progressive distance from the Keith schists, the metamorphism decreases in intensity, being confined to poorly defined zones separated by bands of relatively unmetamorphosed sediments. The amphibolites and the finer grained units are preferentially deformed to phyllites and schists, with the more massive sandy and silty units ranging from essentially unmetamorphosed to phyllitic textures. The sequence as a whole strikes at around 030° magnetic, with steep dips to the east and zones of tight folding, as exposed in Junction Road, Arthur River. Careful mapping is required to determine the wavelength and geometry of the fold sequence; some east west trending cross folding is also in evidence (e.g. Junction Road on the eastern side of the Arthur River).

The Proterozoic rocks are unconformably overlain by basal Permian mudstones and tillites which dip at a low angle to the south east (20° to 130°). The distribution of these rocks is governed by a series of north south and east west trending major faults which have downthrown the Permian several hundred metres. Virtually no Proterozoic rocks occur east of the Arthur River or north of the Hellyer and Arthur Rivers; some scattered outliers of Permian rocks outcrop on the western slopes of the Arthur.

Basalt flows of Tertiary age covered the area and have subsequently been extensively dissected, leaving cappings of basalt on the higher ridges. The pre-basalt land surface was weathered to a substantial depth, as evidenced by the extensive deep gossan outcrops in the Keith River area (Porter, 1971), and the oxidation of the Atlas Formation to at least 30 metres.

5.2 Atlas Formation

The Atlas grid was emplaced over a series of gossan bands with anomalous base metal values (up to 4,800 ppm Pb, 1.4% Zn) contained within a dolomite and dolomitic siltstone unit within the Upper Proterozoic sequence. (Plan TASH 106). The gossans were first located by prospectors around 1890's, and three short adits were driven from Atlas Creek.

The adits did not penetrate below the oxidised zone. The gossans consist of poorly cellular manganese-quartz bands that are up to 4 metres thick, separated by a friable greyish or orange-brown dolomitic and pyritic beds and are best exposed in a costean bulldozed by T.M.Porter of CRAE in 1972.

The geology of the grid area is shown on Plan TASH 934. The above-mentioned gossanous bands are part of a recognisable stratigraphic unit that has been named the Atlas Formation. The components of the Atlas Formation are summarised below:

Thickness, m.

- 20 - 40m Brown-grey laminated micaceous siltstones/sandstones with minor thin dolomite beds to 20cm thick.
- 0 - 30m Dolomite, well bedded in places, mostly grey and massive, with occasional lenses and clasts of black and grey chert.
- 20 - 60m Interbedded grey/brown micaceous siltstone, dolomitic siltstones and dolomite. The southern portions of the grid are marked by an apparent increase in lead, zinc, manganese values. (This may be due to the lack of outcrop in the northern portion of the grid - it is mostly mantled by 1 - 2 metres of bleached "lag" quartz gravels).
- 0 - 20m Orange crumbly "sandstone". Massive and poorly bedded, with abundant quartz-carbonate veinlets. Extensively weathered, may in fact be a dolomite bed.

The formation is enclosed by pelitic and psammitic schists, and strikes approximately 030° magnetic, with an apparent dip of 50 - 60° to the east. Chip sampling in the grid area (Plan No. TASH 935) indicates that there is an abrupt increase in lead, zinc and manganese values in the lower two thirds portions of the formation. In the southern portion of the grid, lead abundances show a 20 to 30 fold increase, zinc 10 fold and manganese 2 - 3 fold. These increases are characteristic of the formation as whole, and cannot be ascribed to sampling bias towards the gossans.

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It seems likely that the individual gossan bands represent original stratiform sulphide accumulations. The deep weathering and poor exposure make drill testing the only method of determining whether this is the case; the optimum siting of such a hole would be best determined by a geophysical technique that could locate poorly conducting primary mineralisation. The most appropriate model for the mineralisation would be one of the low-pyrite, zinc-lead deposits of the Selwyn Basin type. The petrological samples described in Appendix Two indicate a quiet water environment with restricted sediment input.

Away from the grid area, the Atlas formation can be traced to the north along the valley of Halfway Creek for some three and a half kilometres, to where it cuts across Junction Road (Plan TASH 106). At this point the dolomite horizon is only 10 - 15 metres thick, with lead values up to 745 ppm. Sampling of this northern extension has been mainly by minus 80 mesh drainage sampling from Halfway Creek, and indicates that the formation does not have high and consistent base metal content, as it does in the grid area (Plan TASH 107). Some reconnaissance soil and mapping traverses should be done to see whether this is the case.

To the south, the formation disappears beneath Tertiary basalt, with the next exposure of Proterozoic sediments being in a valley some three or four kilometres along strike. A reconnaissance line of soil samples below the base of the basalt at 40 metre intervals (Plan TASH 107), did not locate any striking anomalies, although one sample of 130 ppm lead was obtained (No.932456). This area should be intensively investigated, particularly as there is a line of INPUT anomalies which lie on regional strike a further 3 or 4 kilometres to the south and trend into the adjoining EL 1/79 (Flis, 1982).

## 6. GEOCHEMISTRY

### 6.1 EL General Plan TASH 107

#### 6.1.1. Drainage Geochemistry

The initial panned concentrate survey was designed to locate areas that were anomalous in tin, seeking a cassiterite-sulphide target.

The streams draining the Permian sediments show a high background (70-710 ppm Sn) which shows a rough correlation of high tin values with the larger catchment area streams. Gold was noted during the sampling process in some samples; later assaying showed a similar pattern of high gold values with high tin values and large catchment areas.

Some large (200 - 400 gram) minus 80 mesh samples were taken in selected streams and did not indicate any coincident pattern of anomalies to the panned concentrates for either tin or gold. It was thus concluded that the tin and gold represented an accumulation by reworking of relatively coarse grained detrital grains from the Permian sediments. No anomalous tin or gold was located in the streams which drained the Proterozoic sediments - background levels ranged from 4 to 26 ppm tin, and below the detection limit for gold.

Minus 80 mesh sampling for base metals was concentrated on the streams draining the probable extensions of the Atlas Formation. The streams draining the grid area showed markedly anomalous lead and zinc values with values up to four times background (10 ppm Pb, 20 - 40 ppm Zn) persisting for 800 - 1000 metres downstream from the formation. Further sampling will be required to define the length of this drainage train. The samples taken from Halfway Creek over the northern extensions of the Formation show a diffuse pattern of anomalous samples separated by numerous samples with only background levels. This is consistent with a geological interpretation of scattered patches of anomalous lead/zinc values along the length of the Formation, and indicates that there is not a large area of strongly anomalous material exposed in the catchment of Halfway Creek. Some regional soil sample traverses need to be emplaced to verify this interpretation.

The few samples taken in the south western portion of the area do not show any highly anomalous areas, but do show a higher background for lead and zinc, 2 or 3 times that of the north.

This may be due to a relatively lesser degree of weathering or deeper erosion, as more pyrite was observed in the exposures in the creeks.

6.1.2. Soil Traverses

Some soil traverses were emplaced as shown on Plan TASH 107, to locate extensions of the Atlas Formation. The short traverse 500m north of the exposure of the dolomite in Junction Road shows anomalous lead and zinc values; some further traverses should be done to the north of this. One sample on the traverse to the south of the basalt capping (932456) gave 130 ppm lead, 370 ppm zinc, it appears that there was some contamination by basalt soil, so this should be re-sampled. Soil sampling on widely spaced lines appears to offer the best means of locating anomalous base metal horizons.

6.1.3. Atlas Grid Area

The grid was sampled at 25m intervals on 100 or 200 metre spaced lines (Ref. Plan TASH 108). A chainsaw driven power auger was used to try and penetrate the capping of leached quartz gravel which overlies much of the northern portion of the grid. This was largely unsuccessful. A further problem with the power auger was the contamination of the lower horizon samples by material from the A - B horizons. This resulted in a dilution of metal values for all elements, and can be readily seen by comparing the values for hand auger sampling on the early reconnaissance traverses (Ref. Appendix 1c). The two suites of samples effectively define the same anomalous horizon.

6.2.1. Lead Plan TASH 946

Contours have been drawn at 35 ppm, 100 ppm, 400 ppm, and 900 ppm. The rise in background (referred to in Section 5.2) over the Atlas Formation is clearly evident southwards from line 4400N, and is marked by the 35 ppm contour. To the north (lines 4600N to 5000N) most of the samples are below the detection limit; this coincides

with a hard capping of totally leached quartz "lag" gravel which was not penetrated. In general the anomaly pattern strengthens to the south of the gossans exposed in the costean (up to 2200ppm Pb), although somewhat distorted by patches of quartz gravel and substantial amounts of basalt. One sample at 4200N, 4875E returned 1.9% lead; some visible galena in a shale fragment was noted in this - the only sulphide seen in the grid area to date.

6.2.2. Zinc Plan TASH 945

Contours drawn at 60 ppm, 100 ppm and 150 ppm. Background over the Proterozoic sequence is less than 60 ppm, while over the basalt is in the range 60 ppm to 150 ppm. The anomaly pattern is distorted, but essentially shows the same distribution as for lead. Values greater than 150 ppm are confined exclusively to the Atlas Formation.

6.2.3. Copper

Similar distribution to zinc, in that the basalt has a higher background than the basement. Threshold value is 85 ppm, coincident with the high lead, zinc values. The Atlas Formation as a whole is around 2 to 3 times background, but absolute values are low (15 - 40 ppm).

6.2.4. Manganese Plan TASH 947

Background over basement ranges from 15 - 200 ppm; on basalt 300 - 1300 ppm. Values over Atlas Formation coincident with lead, zinc, copper anomalies, range from several thousands of ppm to several percent. The extent of the leaching in the quartz gravel is clearly demonstrated - maximum value of 45 ppm, most around 10 ppm.

7. GEOPHYSICS

The 1956 Rio Tinto aeromagnetic survey shows a number of anomalies over the Proterozoic sediments, some of these coincident with the trend of the Atlas Formation. Ground inspection and spot readings with a magnetometer indicated that these are coincident with outliers of Tertiary basalt. The Western portion of the licence was re-flown in 1982 as part of the survey of the Rapid River EL (No.1/79) and did not alter the overall distribution of anomalies.

A Sirotem survey was conducted over the Atlas grid in 1982; results and interpretation are contained in Appendix Three. The survey did not define any outstanding conductors, but gave a weak response close to the Atlas gossan on line 4300N. The survey was inconclusive, as the equipment was being used in an experimental mode; it also is doubtful whether the primary mineralisation responsible for the lead and zinc anomalies will be highly conductive. Future geophysical work is planned - either I.P., or an E.M. technique more appropriate to the likely nature of the conductor.

8. REFERENCES

Flis, M.F.	Preliminary Report on an Airborne Geophysical Survey, Rapid River EL 1/79, North West Tas. 1982 CRAE Unpublished Report No. 11637.
Gee, R.D.	Geological Survey Explanatory Report, Burnie 1:63 360 Series. Tas. Dept. Mines Report, 1977.
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Porter, T.M.	Geochemical and Geological Investigations of the Atlas Leases, EL 43/70. North West Tas.

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CRAE Unpublished Report No.3792.

Porter, T.M. Final Report on the Keith River Prospect, EL 43/70, North West Tasmania, 1971. CRAE Unpublished Report No.3793.

Weir, D.J. Rocky Cape EL 1/77. Lead-Zinc Computer Study Stream Sediments, 1982. CRAE Unpublished Report No. 11586.

9. KEYWORDS

Lead, Zinc, Proterozoic - Upper, Dolomite, shale-hosted, Stratabound, Stratiform, Geochem-Drainage, Geochem - rock, Geochem - soil.

10. LOCATION

Burnie 1:250 000 Sheet SK 55-3

11. LIST OF PLANS

Atlas EL 1/77 Location Map	TASh 1117
Atlas EL 1/77 (Part 1) Geological Map	TASh 106
" " Drainage geochemistry and sample locations	TASh 107
Atlas Grid - Geology Plan	TASh <del>945</del> 934
Atlas Grid - Rock Chip Geochemistry	TASh <del>946</del> 935
" " - Zn soil geochemistry (contoured)	TASh 945
" " - Pb " "	TASh 946
" " - Mn " "	TASh 947
" " - Cu " "	TASh 939
" " - Soil Sample Locations	TASh 108
" " - Rock Sample Locations	TASh 109

12. LIST OF APPENDICES

Appendix 1a	Geochemical Sample Ledger - Drainage
" 1b	" " " - Rocks
" 1c	" " " - Soils
Appendix 2	Petrological Descriptions
Appendix 3	Atlas Sirotek Survey

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APPENDIX 1A

GEOCHEMICAL DRAINAGE LEDGER -

PAN CONCENTRATES DRAINAGE SAMPLES

596016

Tenement name ATLAS PROSPECT No. 177 Sample numbers 869003, 004 Collected by G. BROADBENT Sheet no. 1 ONLY  
 Area / Prospect E.L. Pan-Con Survey 869080-085 inc. \* ANALABS Date 19/5/82  
 Map / Photo reference TAS. h. 107 932385, 388, 390 Analysed by C.A.M. LABS. DPO no. 26659, 30117  
 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	Ni	Co	Mn	Ag	Au	Bi			Cr	Sn	W
		oc	o/c sample type ***																				
		f	s sample type ****																				
869003	pan-con		% Gravel 30	% Sand 55	% Silt 15				8	20	150	50	36				<4	130	710	20	CQ766306	No o/c. Float - Permian shales/pabbly mudstones, rounded cobbles vein gte, quartzite, mica schist	
869004	pan-con		60	30	10				16	24	80	28	16				<4	1.45	190	210	CQ766284	oc Flat lying thinly bedded Permian sediments. Float - vein gte, quartzite, granite, mica schist.	
869080	pan-con		70	30	10				8	12	70	20	10				<4	200	14	210	CQ754324	oc thinly bedded gte mica schist, minor gteite, minor basalt float + Permian mudstone.	
869081	pan-con		60	30	10				4	8	38	4	<4				<4	24	24	210	CQ751325	oc thinly bedded gte mica schist, minor gteite	
869082	pan-con		50	40	10				24	40	90	40	26				<4	2900	410	210	CQ807311	No of. Permian mudstone and pabbly conglomerate. Float. Mud black sand is concentrated in 3 v. fine clasts.	
869083	pan-con		70	20	10				16	24	65	28	12				<4	1300	460	210	CQ802319	Float mudstone, siltstone minor gte, basalt, chert, mica schist. oc Permian mudstone.	
869084	pan-con		20	50	10				24	28	85	55	16				<4	85	260	210	CQ775354	oc - Permian tillite. Float - mudstone, siltstone, gteite and rare mica schist	
869085	pan-con		60	30	10				8	16	30	<4	6				<4	4	14	115	CQ749311	oc thinly bedded pe mica schist + siltstone str 025, dip sub vertical.	
932385	pan-con		channel 0.8 m							10	15	60			0.5	x			26	x	210	CQ804318	Trap site poor - lee of rocks + logs - 2 pan/legs reduced to 100 g. approx. P. Mudstone + tillite
932388	pan-con		channel 0.4 m, good trap site.							15	30	75			0.5	x			7	x	210	CQ802315	Small tributary Pan west - o/c, thinly bedded P. mudstone, tillite
932390	pan-con		channel 0.6 m, good trap site							15	30	75			0.5	2.78			37	x	210	CQ802315	Fl. P. mudstone, granite, quartzites + tillite. 3 very fine colour sh. observed. (390-Au) DUE TO COARSE GOLD IN SAMPLE

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

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LEADER

Tenement name ATLAS PROSPECT

No. 177 Sample numbers 869001, 002, 060 - 066, Collected by C. BROADBENT

Sheet no. DAF 4

Area / Prospect DRAINAGE SURVEY

932384

\* ANALABS

Date 19/5/82

Map / Photo reference TAS 4107

Analysed by CRMLABS

DPO no. 26663, 30116

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	Mo	Mn	Au	Sn	W			
		o/c sample type ***																		
		s sample type ****																		
869001	SS		5m					24	10	60	<1			0.30	8	<10	✓	CR756284	oc - Permian siltstones - mudstones. Float - granite, sandstone, mica schist, rare biotite granite	
869002	SS		8m					34	14	80	<1			<0.30	14	<10	✓	CR766306	No oc. - Float pebbly mudstone with rounded cobbles vein gtz, mica schist	
869060	SS	4	2m					22	18	85	<1			<0.1	<4	<10	✓	CR754324	oc thinly bedded grey and white mica schist, minor granite str 200, Minor basalt float, P. mudstone	
869061	SS	1.5	1m					60	10	36	<1			<0.1	6	<10	✓	CR751325	oc thinly bedded grey and white mica schist Float - some + <del>Permian mudstone</del> + minor basalt	
869062	SS	2.0	1.5m					30	18	75	<1			<0.1	4	15	✓	CR807311	no oc - terrace of Kellyer? float Permian mudst + pebbly mudstone, cobbles of granite, chert, mica schist.	
869063	SS	4	1.5m					24	16	80	<1			0.2	<4	<10	✓	CR803319	oc - Permian mudstone. float - mudstone, siltstone, minor basalt, rare chert, mica schist, granite	
869064	SS	2.3	3.5m					32	16	120	<1			<0.1	<4	<10	✓	CR775357	oc Permian tillite - float mudstone, granite, siltstone	
869065	SS	4	2m					16	12	20	<1			<0.1	<4	<10	✓	CR749311	oc Thinly bedded pE siltstone, mica schist str 0.25°, almost vertical.	
869066	SS	2	2m					12	10	22	<1			<0.2	6	<10	✓	CR751308	oc thinly bedded pE siltstone + slate. float - mudstone, siltstone, rare granite, chert, gtz.	
932384	SS	stream 0.8m wide - sample wet sieved to 2mm, then dry sieved to -80µm liter.							15	15	70	X			<0.005 X	X	✓	CR804318	No/o/c - float P. mudstone and cobbles granite, mica schist, rare granite - presumably from tillite beds. Same site as par con 932385.	

\* 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.E. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name ATLAS PROSPECT

No. 177 Sample numbers 932, 386-389, 394, 395, Collected by G. BROADBENT

Sheet no. 2 of 4

Area / Prospect DRAINAGE SURVEY

398, 405, 415-418

Date 19/5/82

Map / Photo reference TAS h.107

Analysed by ANALABS

DPO no. 30116

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	Mn	Au	Sn	Ba					
		oc	o/c sample type ***																				
		f	s sample type ****																				
932386	SS		0.8m	channel	- sample				15	20	85	X					X	5		✓	CA804316	Shaly rocky bottomed creek - P mudstone various float cobbles - from hillside	
					collection	as for N <sup>o</sup> 384																	
932387	SS		0.4m	channel	- sample				15	15	80	X					X	X			CA802315	o/c - thinly bedded P. mudstone minor, quartz float.	
					collection	as above (small trib from W)																	
932389	SS		0.6m	- sample	collection				10	15	70	X					X	X			CA802315	o/c (30m below sample) - friable P. sandy mudstone (brachiopods) Granite, & rhyolite float (hillside)	
					as above.																ATLAS GRID AREA		
932394	S		Hand Auger	0.6m	B.C				70	685	2550	0.5									1150		Sticky brown clay loam - basalt?, or gossan caprock.
932395	S		"	"	1.0m	C			80	45	190	X									56		Brown clay basaltic loam
932397	S		"	"	0.8m	C			10	160	50	X									365	✓	Grey and yellow sticky clay with phylitic siltstone fragments.
932405	SS		0.3		✓ 0.03				20	430	330	1.5									329	CA718300	Grey micaceous siltstone/sandstone float, qtz rubble, possibly contaminated by brown clay loam.
932415	SS		1.2			1.0			10	90	140	X									238	CA718330	Abundant qtz-mica schist, minor basalt float large qtz mica schist/sandstone o/c in waterfall 20m upstream.
932416	SS		1.5			1.1			10	60	125	X									235	CA718335	Abundant qtz-mica schist, minor micaceous sandstone float.
932417	SS		1.5			1.2			5	15	35	X									129	CA718335	O/c - gray qtz-mica schist with qtz veining strike cleavage 035°. float - same ATLAS CREEK
932418	SS		2.0			0.4			10	15	60	X									230	CA719385	Tributary gully of Atlas creek. Float qtz mica schist

\* 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. E LORATION . GEOCHEMICAL SAMPLE LE IER

Tenement name ATLAS PROSPECT No. 1177 Sample numbers 932 419-421, 424-426 Collected by A. BRODSENT Sheet no. ③ of ④

Area / Prospect DRAINAGE SURVEY 433, 434, 438, 439, 441 Date 19/5/82

Map / Photo reference TAS h 107 Analysed by ANALABS DPO no 70116, 70118

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au	Ba				
		o/c sample type ***																		
		s sample type ****																		
932419	SS		0.6					5	25	50	X						144	CA719335	oc + float pe qtz mica schist. Atlas creek.	
932420	SS		0.4					5	10	15	X						103	CA719335	small trib from NW. float qtz mica schist.	
932421	SS		0.5					10	40	90	X						189	CA719335	Atlas creek above junction - float qtz mica schist ATLAS GRID AREA	
932424	SS	0.4		al			0.3	5	55	105	X						88	4880N 4900E	Float - grey siltstone, orange micaceous siltstone, minor dolomite, Mn oxide coatings.	
932425	SS	0.8		al			0.8	X	5	5	X						66	4200N 4900E	qtz, micaceous siltstone frags, o/c "ss/sh" manganese cappings.	
932426	SS	1.2						15	135	285	0.5						729	100m downstream from junction	oc - qtz veined micaceous sandstone + shale str. OBS. float - micaceous sediments (pe); basalt.	
932433	SS		0.6					25	20	115	0.5						240	CA711310	Trib. from north. Basalt cobbles, minor brown mic. sandstone and silvery-gray qtz mica schist.	
932434	SS		1.2					20	10	90	0.5						200	CA711310	Main stream no o/c - basalt cobbles with qtz and lesser qtz-mica schist.	
932438	SS		1.3					10	15	35	0.5						160	CA707304	oc yellow and grey mic. siltstone str oos, vet. float same + basalt and vein qtz pebbles.	
932439	SS		1.4					5	5	15	0.5						100	CA707309	no oc - basalt, minor qtz mica schist float.	
932441	SS		1.5	✓				15	5	90	0.5						160	CA707311	oc - well foliated silty qtz mica schist str 020, 75 E.	

\* 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 ATLAS PROSPECT

No. 177 Sample numbers 932 510, 511, 539, 540 Collected by G. BROADBENT

Sheet no. (4) of (4)

Area / Prospect DRAINAGE SURVEY

637, 638, 639.

Date 19/5/82

Map / Photo reference Tas. h. 107

Analysed by P.N.A.L.A.B.S.

DPO no. 30119

A 02143

30129

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au	Co	As			
		o/c sample type ***																		
		s sample type ****																		
932510	SS		1.2					15	1	86	0.2							✓	CQ718308	oc - black sl. pyritic gtz mica schist gtz, mica schist, basalt float.
932511	SS		1.2					16	2	92	0.1							✓	CQ715309	no o/c - mostly basalt float
932539	SS	dry	0.4					11	3	53	0.1							✓	CQ726340	oc - yellowish mic. siltstone str o/c
932540	SS	dry	0.3					3	3	24	0.1							✓	CQ726340	float - gtz mica schist, abundant black Mn oxide cement.
932637	SS		1.5m					29	36	191	X		1500	95	3			✓	LAST HOPE CRSEK	Basalt cobbles and outcrop.
932638	SS		2.0m					29	37	310	X		5200	285	4			✓	↓	Basalt cobbles - no other float
932639	SS		2.0m					21	46	175	0.2		850	85	2			✓	↓	Basalt cobbles - no other rock types.
"GONINON'S PROSPECT"		Traverse 1/6/82 D.P.O 30144																		
913636	SS		0.5m					10	30	65	-							✓	CQ714344	o/c - Bluish gray micaceous shale and orange siltstones with gtz veining Strike <sup>350°, dip 25° E</sup> Float - same.
637	SS		0.8m					5	25	20	-							✓	CQ715345	Float - grey gtz mica schist, and an unusual highly altered? carbonate rock. o/c - grey gtz-mica schist.
638	SS		0.7m					5	10	20	-							✓	CQ716345	Float - grey gtz mica schist, wiggly vein gtz.
647	SS		0.6m					<5	10	10	-							✓	CQ718348	Float - gtz veins and minor micaceous sand.
648	SS		0.5m					<5	5	5	-							✓	CQ718348	Float - gtz veins and gtz-mica sand; stream from north; joins stream from east (N#647)

\* 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

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE REGISTER

Tenement name: ATLAS EL 1/77 No. 973640-646 Sample numbers 973649 Collected by G. BROADBENT Sheet no. 3:6:82  
 Area / Prospect: Parrawe Creek Area Map / Photo reference: Plan No TAS h 107 Analysed by ANALABS DPO no. 30/44 20145  
 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	Mo	Mn	Au	Sn	Wt(g)			
		o/c sample type ***																		
		s sample type ****																		
973640	SS *	1.2m						20	15	80	-				0.010	8	240.79	/	CQ803315	o/c - Grey finely bedded Permian mudstones strike 027°: dip 27° SE. Float - P. mudstone, gtzite, pink c.g. granite, T basalt, ? dolerite.
641	SS	1.2m						15	10	70	-				<0.008	<3	255.96	/		
642	SS	1.1m						15	20	60	-				<0.008	5	281.62	✓	CQ801313	As above, N° 640.
643	SS	0.6m						15	20	60	-				<0.008	5	277.01	✓	CQ778296	float - pink silicified E mudstone, minor E hornblende andesite, c.g. micaceous sandstone (sample N° 973639), P. mudstone, gtz-mica schist.
644	SS	0.9m						15	15	70	-				<0.008	8	283.18	/	CQ777300	No o/c - float - P mudstone - sandstone pE quartzite
645	SS	0.8m						5	20	55	-				<0.008	4	365.80	✓	CQ780295	No o/c - float grey P mudstone, sandstone etc.
646	SS	1.1m						15	20	90	-				<0.008	4	228.23	✓	CQ780290	No o/c - " " " "
* NB.		Sample numbers 640 → 646 are all bulk wet sieved - 80# samples - 250 → 300 grams.																		
649	SS							15	15	50	0.5							✓	CQ719362	o/c - yellow phyllitic sandy siltstone str 035° dip 55° E. float - grey gtz mica schist, gtz, sandy siltstone as above.

\* 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



022

596023

APPENDIX 1B

GEOCHEMICAL DRAINAGE LEDGER - ROCKS

## C.R.A.E. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name... ATLAS PROSPECT No. 177 Sample numbers 932371-381 Collected by... G. BROADBENT Sheet no. 1 of 10  
 Area / Prospect ATLAS GRID / ROAD TRAVERSING Date 19/5/82  
 Map / Photo reference TAS h 109 / TAS h 107 Analysed by... ANALABS DPO no. 30114, 30115  
 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	Mo	Mn	Au	Sn	Zr	Ti			
		o/c sample type ***											Co	Ni	Cr						
		s sample type ****											Co	Ni	Cr						
932371	oc	16 kg bulk sample from Basal contact													X	X	280	4600	CA757359	Basal Massive Permian tillite - grey clayey matrix with <sup>rounded</sup> pebbles, talc, mica schist.	
932372	oc	2m x 0.4m r.c.							15	130	40	0.5		50					CA757359	Black qtz mica schist, slightly graphitic + pyritic with 9% segregations. str 025, 65°E.	
932373	oc	2m x 0.4m r.c.							20	70	15	X		90				ATLAS GRID AREA 4778N 4804E	Gray and yellow coarse grained with within gray mica schist, extensive remob. qtz, minor py.		
932374	oc	0.7m c.s.							60	435	25	X		50				4750N 4762E	Bleached l.g. shattered rock - iron sulphidic?		
932375	oc	0.6m x 0.1m r.c.							80	665	10	0.5		80	X			4751N 4767E	Green and black puggy porous material with qtz veining - fault pug, or shale?		
932376	oc	0.8m x 0.2m r.c.							290	200	55	0.5		130	X			4751N 4771E	Dark brown gossanous limonite with qtz veining		
932377	oc	0.6m x 0.2m r.c.							55	50	5	X		85				4752N 4777E	Black mic. shale band with qtz veins and secondary gossanous limonite		
932378	oc	1m x 0.2m r.c.							100	145	20	0.5		30	X			4751N 4774E	Bleached mica schist ± qtz veining.		
932379	oc	1.5m x 0.3m r.c.							125	655	135	0.5		105				4751N 4765E	Bleached pale gray mica schist ± qtz.		
932380	oc	30 x 1m r.c.							25	45	40	X		500	X			CA74359	Black graphitic schistose slates, slightly pyritic		
932381	oc	30 cm c.s.							45	50	265	X		700	X			CA74359	Sulphidic zone (20% cellular limonite) within N° 380		

\* 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.I. LOCATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name ATLAS PROSPECT No. 77 Sample numbers 932382, 383, 391, 393 Collected by A. B. Malbet Sheet no. ② of ⑩  
 Area / Prospect ATLAS GRID I.E.L. General 396, 398, 403, 410, 414, 422 Date 19/5/82  
 Map / Photo reference TAS h 107 | TAS h 107 Analysed by ANALABS DPO no. 30114, 30115  
A 02143 30117

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au	Sn	Zr	Ti			
		o/c sample type ***											Co	Ni	Cr	Ba	W	Ta			
		s sample type ****																			
932382	oc	1.5m x	0.2m r.c.					15	25	25	X	50	X					CA749294	Black slate band str 060, 80°E.		
932383	oc	2m bulk sample of conglomerate matrix along base of bed												X	X	220	4300	CA776295	Permian mudstone - bulk <sup>(16kg)</sup> sample of cobble bed (matrix only)		
932391	oc												0.017	7	250	3650	Bulk samples of Permian pebbly mudstone / Tertiary gravel from shore platform, Doctors Rocks, off Wyngard Rd.				
932392	oc												X		200	5900					
932393	oc.	g.s.							275	705	740	1.5						ATLAS GRID 3704N 4780E	Brown cellular limonite gossan outcrop, presumably developed over dolomite.		
932396	R	g.s.							30	440	675	0.5						3819N 4787E	Red-brown limonite rock with qtz veining "gossan"		
932398	P.	g.s.							85	575	65	1.0						3703N 4754E	Gray silicified shale with qtz veining, stained with black Mn oxides.		
932403	P.	g.s.							40	850	1750	0.5						3848N 4778E	Red brown ironstone gossan with qtz and minor secondary (base metal?) carbonates		
932410	oc	g.s.							30	40	80	X						3785N 4686E	Dark grey (carbonaceous?) muscovite rich schist. str 050, vertical.		
932414									20	45	85	0.5						CA718332	Very qtz rich qtz-micas schist; from base of waterfall - same loc as drainage sample 415		
932422									210	1250	515	9.5						4286N 4819E	"Atlas Gossan" - 3m sample of porous Mn rich gossan - assay for Ba.		

\* 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 km?

C.R.A.E. LOCATION . GEOCHEMICAL SAMPLE LOCATION

Tenement name ATLAS PROSPECT

No. 177 Sample numbers 932423, 431, 435-437, 440, 442, 443, 496, 497, 508 Collected by G. Broadbent

Sheet no. 3 of 10

Area / Prospect ATLAS GRID / E.L. GENERAL

Date 19/5/82

Map / Photo reference TAS h 107 / TAS h 109

Analysed by ANALABS

DPO no. 30117, 30120

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	Mo	Mn	Au	Sn Ba				
		o/c sample type ***																		
		s sample type ****																		
932423	oc	2x0.3	r.c.c.					35	50	30	0.5							CA750358	Black pyritic shale.	
932431	f	g.s.						20	90	125	1.0							3821N 4806E	Qtz mica schist - grey/yellow, originally siltstone?	
932435	oc	5x0.5	m.c.c.					46	21	29	0.7							CA711310	Sooty black mic. shale with qtz veining and 5-7% pyrite. Str 038, dip vertical!	
932436	f	g.s.						156	44	22	X							"	Slightly gossanous siltstone float - orig pyritic?	
932437	oc	g.s.						57	7	94	0.1							CA707307	Green mic. sandstone, str 035, 40°E.	
932440	oc	g.s.						9	7	12	X							"	Greyish-green cherty rock with qtz veining str 020, dip vertical.	
932442	oc	1m x 0.2	r.c.c.					14	35	1360	X							CA707311	Grey and brown mic. shale with qtz, Mn oxides	
932443	oc	s.s.						370	104	1490	0.1							CA725339	Black porous Mn rich band in pink and grey greasy feeling shales.	
932496	f	g.s.						47	4	170	X							CA707314	Yellowish? talcose rock with spots of reddish Fe oxides	
932497	f.	g.s.						96	5	65	X							CA704314	Green soft rock - chlorite? and weakly sulphidic.	
932508	oc	g.s.						18	27	67	X							CA712309	Grey very micaceous schistose rock ± minor qtz, limonite staining, str 010.	

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

C.R.A.E. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS PROSPECT No. 179 Sample numbers 932.509, 512-519, Collected by G. Broadbent Sheet no. ④ of ⑩  
 Area / Prospect ATLAS CRD 541, 542 Date 19/5/82  
 Map / Photo reference TAS 4109 Analysed by ANALABS DPO no 3.0.12.0  
 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	Mo	Mn	Au	Sn Ba				
		o/c sample type ***																		
		s sample type ****																		
932509	oc	g.s.						10	30	26	0.1						X	360	Q712308	Black grt mica schist, str 205°
																			ATLAS CRD	
932512	oc	g.s.						173	77	90	0.1						20	580	4865N	Dolomitic breccia - beige and pinkish grey
																			4819E	brecciated dolomite/siltstone.
932513	oc	g.s.						68	50	1.45	0.1						4	65	4878N	Dark brown ferruginous limonite-capping over
																			4830E	dolomite? Crystals of white mineral in cavities
932514	oc	10 x 0.5m	r.c.					2	17	35	X						5	30	4880N	Leached white powdery silica material beneath
																			4837E	limonite caprock, minor interbeds of grey siltstone
932515	oc	10 x 0.5m	r.c.					163	108	1230	X						20	170	4897N	Brown ferruginous clay - over dolomite?
																			4826E	
932516	oc	10 x 1m	r.c.					8	75	35	0.1						15	250	4860N	Bleached siltstone with ferruginous capping
																			4821E	
932517	oc	4m	r.c.					5	13	22	X						X	310	4861N	Yellowish grey greasy micaceous siltstone.
																			4830E	
932518	oc	g.s.						47	80	52	0.2						7	130	4890N	Dark grey mic siltstone with thin limonite
																			4830E	gossan bands - alter dol?
932519	oc	g.s.						59	64	52	0.1						5	180	4890N	Weathered yellow + brown clay with limonite
																			4824E	capping.
932541	oc	g.s.						13	84	24	X						6	650	4849N	Yellowish siltstones ± ferruginous capping
																			4814E	
932542	oc	g.s.						6	6	13	X						7	460	4801N	grey and yellow mic. siltstones with gossan
																			4812E	bands (dolomite)

\* 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. LOCATION GEOCHEMICAL SAMPLE LOCATION

Tenement name ATLAS PROSPECT

No. 177

Sample numbers 932543, 549, 695, 696 Collected by G. Broadbent

Sheet no. 5 of 10

Area / Prospect ATLAS GRID

973331, 332

Date 19/5/82

Map / Photo reference TAS 4109

Analysed by ANALABS

DPO no 30120, 30133

A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grd ref	Geological Observations	
		ss*	fl	wi	al	co	ca		pH	Cu	Pb	Zn	Ag	Fe	Mn	Cd	Sn Ba	As Cr			V
		oc	o/c sample type ***																		
		f	s sample type ****																		
s																					
932543	oc		5 x 0.5 m	r.c.				61	32	19	0.1					X			4793N 4812E	Pale white bleached mic. siltstone.	
932544	oc		4 x 0.4 m	r.c.				95	18	30	0.1					3			4788N 4810E	Orange sandy siltstone, massive	
932545	oc		6 x 0.5 m	r.c.				42	28	22	0.1					X			4762N 4792E	Yellow-brown siltstone with gossan bands.	
932546	oc		5 x 0.5 m	r.c.				41	26	18	0.1					8			4783N 4808E	Grey well foliated qtz mica schist	
932547	oc		10 x 0.5 m	r.c.				26	30	35	0.1					6			4752N 4754E	Orange finely laminated siltstone.	
932548	oc		10 x 1.0 m	r.c.				22	56	46	X					4			4754N 4747E	Spotted mic. siltstone - arg pyritic?	
932549	oc		10 x 1.0 m	r.c.				28	26	42	X					8			4760N 4737E	Pale gray and yellow siltstone, micaceous.	
932695	f		g.s.					20	910	2500	X						45		3848N 4775E	Brown cellular gossan, from tree roots.	
932696	f		g.s.					45	485	1600	0.5						21		3848N 4775E		
973331	oc		2m	r.c.				15	20	75	X	3.40%	1400	X					50 4956N 4973E	Gray mic. sandy siltstone	
973332	oc		10 x 0.5 m	r.c.				30	6	75	1.0	3.35%	1900	X					45 3857N 4943E	Yellowish brown finely laminated sandy siltstone, kinked and eroded.	

\* 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

Tenement name ATLAS PROJECT No. 177 Sample numbers 973333 - 343 Collected by B. Brabant Sheet no. 2 of 10  
 Area / Prospect ATLAS GRID AREA Map / Photo reference TAS 4109 Analysed by IANA LABS Date 19/5/82  
 A 02143 DPO no. 30133

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Fe	Mn	Cd	Ba	Cr	V			
		o/c sample type ***							s sample type ****												
973333	oc	3 x 0.5	r.c.					25	5	120	X	6.50%	1100	X	390	70	55	3856N 4930E	Sandy phyllitic schist.		
973334	oc	8 x 0.3m	r.c.					45	15	80	X	3.95%	3550	X	750	65	70	3855N 4932E	Pale grey → yellow brown gte mica schist str 213°		
973335	oc	g.s.						35	X	120	X	7.95%	2800	X	330	95	50	3854N 4928E	Mic. yellow-brown sandstone minor siltstone ± brown gossorous bands.		
973336	oc	20m x 1.0	r.c.					20	X	100	X	3.40%	4950	X	530	60	65	3836N 4882E	grey-brown finely lam. mic sandy textured gte mica schist str 035°, 61°E.		
973337	oc	g.s.						10	30	110	X	6.00%	3400	X	X	10	35	3810N 4873E	Massive crystalline grey dolomite, finely bedded - str 032, 54°E		
973338	oc	g.s.						15	100	45	X	2.85%	2250	X	200	100	45	3799N 4870E	Massive grey dolomite with chert bands and clasts.		
973339	oc	8 x 0.5	r.c.					25	365	385	X	35.0%	1.35%	X	350	45	45	3793N 4877E	Porous brown limonite ± gte - capping over dolomite? str. ?202°		
973340	oc	10 x 0.5m	r.c.					70	165	375	1.5	23.6%	7300	X	340	70	55	3799N 4788E	Hard porous limonite with soft grey and yellow weathered dolomite in cavities.		
973341	oc	22 x 1m	r.c.					45	15	60	0.5	3.40%	255	X	390	65	80	4988N 4968E	finely laminated orange + grey mic. sandy siltstones str 205, 59°E		
973342	oc	4.5 x 0.5m	r.c.					25	15	60	X	3.10%	195	X	300	90	55	4980N 4960E	Grey and dark grey shales		
973343	oc	5 x 0.5m	r.c.					26	20	60	X	2.90%	105	X	360	55	55	4077N 4056E	Orange mic. sandstone		

\* 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.F. LOCATION GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS Prospect No. 177 Sample numbers 973344-354 Collected by G. Broadbent Sheet no. 7 of 10  
 Area / Prospect ATLAS GRID AREA Date 19/5/82  
 Map / Photo reference TAS h. 109 Analysed by ANALABS DPO no. 30133  
 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	Fe	Mn	Cd	Ba	Cr	V			
973344	oc	4m	x 0.3m	r.c.					30	30	75	0.5	3.25%	155	X	310	70	50	4974N 4953E	Orange silty sandstone, micaceous + cleaved	
973345	oc	20x1.0m	r.c.						40	5	125	0.5	4.45%	265	X	390	65	75	4964N 4943E	Orange sandy siltstones with minor shaley beds and porous patches after sulphides	
973346	oc	20x1m	r.c.						30	5	75	X	3.40%	105	X	290	70	55	4950N 4930E	Orange weath. mic. sandstones, minor siltstone beds.	
973347	oc	5x0.5m	r.c.						30	10	35	X	2.80%	95	X	280	75	50	4942N 4920E	grey/orange mic schist, minor sandstone	
973348	oc	22.5x1.0	r.c.						40	10	30	X	2.80%	405	X	320	60	55	4931N 4910E	Brown finely laminated/crenulated mic. sandstone.	
973349	oc	20x1.0m	r.c.						60	20	65	0.5	3.10%	175	X	500	75	70	4915N 4905E	Brown finely laminated schistose sandy rock ± minor shaley interbeds.	
973350	oc	10x0.7m	r.c.						30	35	80	X	3.45%	115	X	400	65	70	4906N 4890E	Brown finely laminated schistose sandy rock ± qtz segregations.	
973351	oc	30x1.0m	r.c.						25	30	10	X	2.20%	55	X	260	75	75	4763N 4732E	Orange weath. qtz mica schist, fine grained, laminated 1-3 mm. str 042°, 62E.	
973352	oc	20x1.0m	r.c.						15	10	30	X	3.30%	775	X	260	60	90	4810N 4683E	Grey/orange weath qtz mica schist.	
973353	oc	10x1.0m	r.c.						155	45	530	0.5	2.60%	3.25%	X	800	70	180	4826N 4668E	Greasy feeling pinkish orange f.gr mica schist with abundant Mn oxides.	
973354	oc	16x1m	r.c.						75	40	210	X	3.45%	7750	X	450	95	265	4832N 4659E	F. gr. sandy mic. siltstone with qtz segregations and thin Mn rich bands.	

\* 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  
 \*\*\* Other notes

Tenement name ATLAS PROJECT C.R.A.E. LOCATION GEOCHEMICAL SAMPLE LOCATION No. 177 Sample numbers 973355-365 Collected by C. BRONBEAT Sheet no. 27 of 10  
 Area / Prospect ATLAS GRAD Date 19/5/82  
 Map / Photo reference TAS h 109 Analysed by ANALABS DPO no. 301.3.3  
 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	Fe	Mn	Cd	Ba	Cr	V		
		o/c sample type ***							s sample type ****											
973355	oc		20	x	1	m	r.c.		35	20	80	X	2.35%	1800	X	430	115	110	4827N 4650E	F. gr. sandy textured qtz mica schist ± minor Mn oxides and thin gossanous interbeds - originalite?
973356	oc		20	x	1	m	r.c.		30	15	65	X	4.05%	745	X	420	70	90	4854N 4600E	Orange qtz mica schist with sandy texture, coarsely laminated str. 207, 70°E.
973357	oc		20	x	1	m	r.c.		20	5	25	X	2.40%	555	X	250	75	40	4864N 4585E	Reddish brown/grey laminated coarse grained qtz mica schist.
973358	f	g.s.							25	710	20	3.0	1.90%	1200	X	180	55	45	3798N 4772E	Grey micaceous sandstone/siltstone qtz mica schist; yellow + orange massive sandstone.
973359	f	g.s.							40	425	360	1.5	7.25%	1.15%	X	660	40	45	3799N 4755E	Massive orange brecciated siltstone ± minor qtz veins.
973360	oc		8	x	0.5	m	r.c.		25	20	90	1.0	3.70%	1750	X	450	60	95	3820N 4717E	Micaceous grey silty mudstone, some minor waxy qtz veins.
973361	oc	g.s.							15	30	15	X	3.20%	545	X	220	80	55	3821N 4711E	Micaceous orange sandy textured rock - orig. greywacke?
973362	oc	g.s.							10	25	120	X	5.60%	2750	X	340	55	65	3834N 4704E	Same as 361.
973363	oc	g.s.							30	15	100	X	4.40%	210	X	400	80	125	3847N 4695E	f. gr. grey micaceous finer grained rock.
973364	oc		10	x	1	m	r.c.		30	20	100	X	4.35%	885	X	410	65	75	3878N 4670E	Grey and orange-grey silty sandstone, very micaceous.
973365	oc		20	x	2	m	r.c.		20	X	110	X	3.70%	1200	X	450	70	75	3899N 4668E	Thinly laminated orange and grey sandy micaceous schist.

\* 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

Tenement name ATLAS PROSPECT C.R.A.E. LOCATION . GEOCHEMICAL SAMPLE LIST GER  
 Area / Prospect ATLAS GRIP No. 177 Sample numbers 973366-376 Collected by G. BRODENT Sheet no. 9 of 10  
 Map / Photo reference TAS h 109 Analysed by A.N.A.L.A.B.S. Date 19/5/82  
 A 02143 DPO no. 30133

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	Fe	Mn	Cd	Ba	Cr	V			
		oc	o/c sample type ***																			
		f	s sample type ****																			
973366	oc		25	X	1	m	r.c.			20	X	45	0.5	3.05%	1050	X	350	90	50	3804N 4652E	Orange and grey mic. sandy qtz mica schist str 210, 70°E.	
973367	oc		15	X	1	m	r.c.			15	5	50	X	4.05%	1950	X	440	75	45	3888N 4635E	Orange grey mic sandstone ± interbedded grey qtz mica schist.	
973368	oc		5	X	0.4	m	r.c.			25	10	40	0.5	2.45%	595	X	360	95	65	3879N 4614E	Grey qtz mica schist	
973369	oc		g.s.							25	5	30	X	2.70%	450	X	290	75	50	4173N 5008E	grey f.gr. qtz mica schist	
973370	oc		4	X	0.5	m	r.c.			15	X	5	X	2.00%	550	X	190	120	35	4171N 4992E	Grey mic. sandy qtz mica schist ± qtz lenses.	
973371	oc		20	X	2	m	r.c.			15	5	1950	X	2.65%	1300	4.0	350	70	55	4176N 4971E	Grey mic. sandstone and mica schist (f.gr.) ± qtz lenses	
973372	oc		20	X	2	m	r.c.			15	20	100	X	3.10%	4150	X	420	85	65	4185N 3954E	As above, N° 371, 370.	
973373	oc		5	X	0.8	m	r.c.			15	60	155	X	3.10%	8750	0.5	340	70	65	4192N 4944E	Hard grey crystalline dolomite ± minor shale/chart lenses and some porous cellular bands.	
973374	oc		g.s.							10	35	55	X	7.60%	1750	X	120	200	45	4192N 4944E	Porous cellular limonitic band from N° 373, str 020, 70°E.	
973375	oc		g.s.							35	395	1700	2.0	5.10%	1150	3.0	420	100	115	4194N 4939E	Finely laminated mic. sandy siltstone adjacent to dolomite contact	
973376	oc		20	X	1	m	r.c.			15	X	35	X	2.45%	415	X	260	110	60	4204N 4924E	Finely laminated/crenulated brown and grey mic. sandy siltstones.	

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

\*\* Stream sed

C.R.A.F. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS PROSPECT No. 177 Sample numbers 973377-381 Collected by G. BROBERT Sheet no. (10) of (10)  
 Area / Prospect ATLAS 4RD / JUNCTION ROAD Date 19/5/82  
 Map / Photo reference TAS h 109 1107 Analysed by A.N.A.L.A.B.S. DPO no 30.33  
 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	Fe	Mn	Cd	Ba	Cr	V		
		o/c sample type ***																		
		s sample type ****																		
973377	oc	20	x	8.0m	r.c.				25	45	80	X	2.65%	1650	X	350	70	50	4207N 4906E	Thinly laminated / cross-laminated mic. sandstone / siltstone, brown + grey colours.
973378	oc	22	x	2m	r.c.				45	2700	265	2.0	3.35%	1850	X	260	65	55	4203N 4888E	As above, N° 377.
973379	oc	4m	x	0.5	r.c.				135	1450	875	X	4.90%	590	X	180	85	60	4200N 4872E	Soft grey and yellow weath. dolomite beneath Fe oxide capping.
973380	oc	g.s.							115	1200	730	1.5	4.55%	955	X	200	195	200	4217N 4837E	Totally weathered siliceified chert / dolomite breccia, from back in Adit 2.
973381	oc	g.s.							55	305	360	1.5	3.30%	360	X	180	145	145	4213N 4836E	Crushed / puggy Mn and Fe rich "lode" in Adit 2 - prob capping over leached dolomite.
ROCK SAMPLES FROM JUNCTION ROAD, ATLAS E.L., AND ELSEWHERE																				
973639	f	g.s.							15	30	70	<0.1							(R80031)	From traverse up creek on eastern portion of the E.L. : near <sup>80#</sup> sample N° 973642 Pink siliceous mudstone ± gte veins - E? or P?
973650	oc	7.0m	x	0.5m	r.c.				30	45	35	<0.1							(R742359)	Hard grey cemented greywacke, sericitic; minor reddish-brown staining in outcrop (Fe rich?)
651	oc	1.5m	R.B.						55	50	230	<0.1							"	Orange and grey thinly bedded dolomitic shale.
652	oc	1.0m	C.S.						35	180	270	<0.1							"	Dolomitic shale with 1-2% Mn as thin coatings on joints
653	oc	6m	C.S.						55	145	405	0.5							"	Orange dolomitic sandstone with minor gravel - grey shale : across axis of shallow drag fold.
654	oc	6m	C.S.						50	295	580	<0.1							"	Orange dolomite and shale (same bed as 651)
655	oc	1.5m	C.S.						80	745	760	0.5							"	Orange Fe stained dolomite? with gte veins + Mn.
656	oc	0.7m	C.S.						65	280	560	<0.1							"	Mn rich gossanous dolomite with gte and dolomite lenses and veins.

\* Sample type ss = stream sediment oc = outcrop f = float s = soil  
 \*\* Stream fl = flow m<sup>3</sup>/hr wi = width m al = thickness m co = flow m<sup>3</sup>/hr ca = flow m<sup>3</sup>/hr pH = ...

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LOG

Tenement name ATLAS AREA No. FL1/77 Sample numbers 973664 - 675 Collected by A. BROADBENT Sheet no. ....  
 Area / Prospect JUNCTION ROAD MAPPING + SAMPLING Date 5.6.82  
 Map / Photo reference TAS h 107 Analysed by ANALABS DPO no. 30145/

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
973664	oc	1.0 x 0.2 r.c.						35	25	30	40.5							CR763851	Kinked zone in black shaly schisty slate - pyritic and greenish where weathered.
665	oc	8.0 x 0.5 r.c.						115	390	485	1.0							CR761353	Orange granular clay with minor talc - weath. tuff?, or amphibolite? or fault pug? str 285°, 75° S.
666	oc	1m x 0.2m r.c.						30	85	85	40.5							CR760360	Black pyritic gte mica schist (orig. shale), minor gte lenses. str 135, 77° NE.
667	oc	15 x 0.5m r.c.						30	20	85	0.5							CR725342	Grey pyritic gte - mica schist. str 040°, 50° E.
668	oc	0.5m c.s.						65	25	40	0.5							CR753357	Very black f.gr. shaly micaceous rock with 5-10% f.gr. pyrite.
669	oc	4m x 0.2m r.c.						80	10	165	0.5							CR724351	Orange/grey green mottled granular textured clay - weath. amphibolite? str 205, 75° E.
670	oc	10 x 1m r.c.						185	<5	230	0.5							CR733357	Orange green sandy textured weath. rock - tuffaceous?
671	oc	4 x 0.5m r.c.						40	155	1450	0.5							CR747359	Orange crumbly clay - weath. dolomite?, interbedded with orange-brown finely laminated sandy siltstone.
672	oc	10 x 1m r.c.						40	60	50	<0.5							"	Brown and grey shaly micaceous thinly bedded siltstone with thin (to 10cm) gossanous bands - a tuff?
673	oc	20 x 1m r.c.						35	10	45	<0.5							"	Beige f.gr. siltstones + shales, highly cleaved and kinked in places with irregular gte segregations.
674	oc	g.s.						55	45	160	0.5							CR747358	Very black carbonaceous micaceous schist with gte, minor pyrite. str 005, 40° W.
675	oc	0.5m g.s.						30	5	70	0.5							CR747356	Dark grey sl. pyritic micaceous sandy rock. str 243°

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

\*\* Stream bed

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name ATLAS AREA No. 1/77 Sample numbers 973676-678, 680, 682 Collected by C. BRODSENT Sheet no. \_\_\_\_\_  
 Area / Prospect JUNCTION ROAD MAPPING + HALFWAY CREEK TRANSVERSE 698 → 706 Date 5.6.82  
 Map / Photo reference T.A.S. 107 Analysed by ANALABS DPO no. 30145/30146/30147

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations					
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au								
		o/c sample type ***																					
		s sample type ****																					
973676	OC	5 x 0.6 m r.c.							20	5	50	0.5							CQ742356	Black slate at same locality as 973675 str 235, 400			
677	OC	15 x 1.0 m r.c.							90	10	170	0.5				X			"	Brown granular textured weak rock - amphibolite?			
678	OC	20 m x 1.0 m r.c.							90	<5	130	0.5				X			"	As above, N° 677 - altered basic rock str 215, 500			
680	OC	g.s.							20	5	85	0.5							CQ731344	Grey finely laminated siltstone with ching micaceous hackly fracture * Petrological sample of same rock taken - N° 973680			
682	OC	1.0 mac - g.s.							5	25	30	<0.5								CQ732345	Hard grey f.gr. dolomite with veins white remobilised qtz and carbonate		
698	OC	2 x 0.4 m r.c.							25	15	115	<0.5								CQ730344	Grey and black laminated siltstone with schisty micaceous parting along bedding - Petrographic sample taken - N° 973698.		
699	f	g.s.							5	5	60	<0.5								CQ732345	Gossanous textured grey dolomite with cellular limonite		
700	OC	g.s. str 205°, 60° E							<5	10	60	<0.5									CQ733347	Yellow (weak) and grey shale/siltstone with gossanous yellow clay bands containing concretions of grey dolomite/chert. - Petrographic sample N° 973700.	
701	OC	g.s.							5	10	45	0.5									CQ738353	Grey fine grained dolomite - petrographic sample	
702	#f.	g.s.							30	<5	65	<0.5				<0.006						Petrographic sample of N° 973639.	
703	OC	g.s.																			CQ800311	Petrographic sample of bedded dolomite from Atlas grid area	
704	OC	5.0 x 0.5 m r.c. (true thickness)							80	150	280	<0.5										CQ761353	Orange granular clay - repeat of N° 973665
705	OC	5 x 0.5 m r.c.							20	20	25	<0.5										CQ762353	Black shale band which weathers pink and grey
706	OC	10 x 1.0 m r.c.							45	40	35	<0.5										"	Interbedded grey and black shales with mic. fgr. ? tuffaceous siltstone beds.

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

\*\* Stream ...

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LOGGER

Tenement name ATLAS No. 177 Sample numbers 973707-714 Collected by C. BROADBENT Sheet no. ....  
 Area / Prospect JUNCTION ROAD MAPPING Date 5.6.82  
 Map / Photo reference TAS h 107 Analysed by ANALABS DPO no. 30147

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
973707	oc	10x	0.6	r.c.				10	15	20	0.5							CQ762353	Hard grey siliceous f.g. micaceous tuffe? with interbedded grey and green siltstones + shales.
708	oc	2m	oc	-	g.s.			10	20	15	<0.5							4	Dark grey siliceous rock - micaceous and shot through with fine gtz veins.
709	oc	10x	1.0	m				15	5	25	<0.5							"	Interbedded grey and pinkish siltstones and shales with interbeds of hard grey gteite as above (N° 705)
710	oc	0.2m	g.s.					30	20	80	<0.5							CQ760354	Brown arenibly Fe rich clay interbed in hard grey "gteites" as above - dolomite?
711	oc	5x	0.5	m	r.c.			160	565	885	<0.5							CQ756360	Coarse grained clayey granular textured rock with some? talc - v. similar to "amphibolites" of N° 677, 678, but is transgressive - altered basic dyke or? fault pug.
712	oc	3x	0.5	m	r.c.			130	165	560	<0.5							4	As above, N° 973711.
713	oc	g.s.						85	<5	165	<0.5							CQ748358	Basic dyke? or sill? Conformable to surrounding gte mica schists, dark green and crystalline. str 198, 65°W.
714	oc	g.s.						90	70	255	<0.5							CQ751359	Dark brown-grey granular textured <sup>washed</sup> rock - basic dyke? str 233, vertical.

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

APPENDIX 1C

GEOCHEMICAL SAMPLING LEDGER - SOILS

C.R.A. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS PROSPECT No. 177 Sample numbers 932399-402, 404, 406-409, 411, 412 Collected by G. BROADBENT / K. BRENNAN Sheet no. ① of ⑨  
 Area / Prospect ATLAS GRID AREA Date 19/5/82  
 Map / Photo reference TAS h 108 Analysed by ANALABS DPO no. 30116  
 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	Mo	Mn	Au	Ba				
		o/c sample type ***																		
		s sample type **** Depth, m																		
932399	S	'C'	Horizon				0.6		55	715	350	0.5						812	3834 N 4740 E	Black phyllitic shale and spotted grey-brown sandstone.
932400	S	"					0.6		25	915	5	0.5						136	3889 N 4786 E	Yellowish-cream coloured clay loam with 50-60% rubbley qtz fragments.
932401	S	"					0.4		10	60	15	x						226	3889 N 4760 E	Pale yellow-grey silty loam
932402	S	"					0.6		15	120	30	x						190	3872 N 4750 E	Yellow-grey sticky clay with phyllitic shale fragments.
932404	S	"					1.1		40	245	285	x						300	3843 N 4730 E	Grey micaceous shale, minor Mn oxides
932406	S	"					0.9		15	15	25	x						495	3834 N 4738 E	Bluish-grey v. micaceous siltstone/shale.
932407	S	"					0.6		15	15	30	x						293	3788 N 4714 E	Yellowish micaceous siltstone
932408	S	"					0.8m		40	20	50	x						85	3778 N 4720 E	Yellow clay loam, minor basalt
932409	S	"					0.6		55	30	150	x						422	3785 N 4700 E	Yellow and grey mica schist.
932411	S	"					1.0		60	20	75	x						280	3825 N 4690 E	Yellow clay loam with qtz.
932412	S	"					0.6		40	10	45	x						420	3861 N 4664 E	Yellow-grey sticky clay with bluish grey lustrous qtz-mica schist.

\* 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. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS PROSPECT No. 1/77 Sample numbers 932413, 427-30, 432 Collected by G. GARDNER Sheet no. 2 of 9  
 Area / Prospect ATLAS GRD 444-448 Date 19/5/82  
 Map / Photo reference TAS 4108 Analysed by ANALABS DPO no. 30116, 30118  
 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	Mo	Mn	Au	Ba					
932413	S	Hand Auger			C'	horizon	0.5m		30	20	55	X						323	3881 N 4693 E	Blank and grey micaceous siltstone and clay, with minor ferruginous patches	
932427	S	Hand Auger			B	horizon	0.6m		30	65	50	X						312	3796 N 4805 E	Yellow sticky clay with micaceous siltstone frags. float - grey slightly qtz veined mica schist/siltstone.	
932428	S	"	"		B-C	"	0.8		170	665	90	X						315	3786 N 4784 E	Grey sticky clay with bluish grey micaceous shale, minor vuggy qtz frags.	
932429	S	"	"		C	"	0.2		25	130	260	X							3820 N 4807 E	Brown micaceous spotted siltstone, originally pyritic?	
932430	S	"	"		C	"	1.1		40	120	235	X							3844 N 4802 E	Brown sandy loam, vein qtz, minor micaceous siltstone float.	
932432	S	"	"		C	"	0.6		380	1500	170	4.0							3780 N 4760 E	Pale brown sticky clay loam with 'gossan' (limonite) frags and pieces of qtz mica schist	
932444	S	"	"		B-C	"	0.9m		X	X	20	0.5						190	4143 N 4910 E	Yellow grey f.g.r. clay - siltstone/shale.	
932445	S	"	"		C	"	0.7m		30	130	275	0.5							160	4147 N 4896 E	Yellow grey clay with brown siltstone frags.
932446	S	"	"		C	"	0.4m		15	75	220	0.5							320	4148 N 4890 E	Black Mn oxides over yellow siltstone rock.
932447	S	"	"		B	"	0.5m		X	5	15	0.5							35	4165 N 4864 E	Grey and brown silty clay
932448	S	"	"		C	"	0.6m		5	55	50	0.5							75	4182 N 4856 E	Yellow and grey siltstone beneath grey silty clay.

\* 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

C.R.A. LOCATION GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS PROSPECT No. 177 Sample numbers 932449-459 Collected by G. BROADBENT / K. BRENNAN Sheet no. 3 of 9  
 Area / Prospect ATLAS GRID AREA Date 19/5/82  
 Map / Photo reference TAS h 108 / 107 Analysed by ANALABES DPO no. 30118, 30119  
 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	Mo	Mn	Au	Ba				
932449	S	Hard Auger		B	Horizon	0.3m		5	5	15	0.5					150	ATLAS GRID 4126N 4846E	Grey silty clay.		
932450	S	"	"	B	"	0.4m		X	X	10	X					X	4214N 4828E	Pale grey siltstone; 10 m above Ad. 2.		
932451	S	"	"	C	"	0.5m		35	30	60	0.5					490	C0711311	Pale yellow micaceous siltstone. Start increase to west at 40 m intervals; along contour.		
932452	S	"	"	C	"	0.9m		16	6	36	0.2						40 m	Orange-yellow silty clay.		
932453	S	"	"	C	"	0.8m		28	11	37	0.3						80 m	Rusty brown sandy siltstone.		
932454	S	"	"	B-C	"	1.1m		40	30	60	0.5					130	180 m	Brown basalt soil over yellowish mic. siltstone		
932455	S	"	"	C	"	0.5m		25	20	30	0.5					330	160 m	Yellow-brown siltstone.		
932456	S	"	"	C	"	0.9m		45	130	370	0.5					330	200 m	Grey micaceous siltstone + qtz frags with limonite		
932457	S	"	"	C	"	0.9m		45	55	60	0.5					330	240 m	Yellow and grey micaceous siltstone.		
932458	S	"	"	B	"	1.1m		50	20	130	0.5					180	280 m	Brown clay loam with limonite frags.		
932459	S	"	"	B	"	1.1m		60	25	100	0.5					160	320 m	Brown clay loam - basalt soil.		

\* 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 = calcareous

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS Prospect No. 177 Sample numbers 932460-470 Collected by G. BRADDOCK / K. BRENNAN Sheet no. 4 of 9  
 Area / Prospect ATLAS GRID AREA Date 19/5/82  
 Map / Photo reference TAS h 107 Analysed by P.N.A.L.A.B.S. DPO no. 30118  
 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	Mo	Mn	Au	Ba				
		o/c sample type ***																		
		s sample type ****																		
932460	S	Hand	Auger	B	Horizon	1.1m		70	20	135	0.5							360m	Brown clay loam with minor gte frags.	
932461	S	"	"	B	"	1.1m		75	25	145	X							400m	Red-brown clay-basalt soil with minor Gneissite siltstone frags.	
932462	S	"	"	B	"	1.1m		65	25	100	0.5							440m	Red-brown basalt loam	
932463	S	"	"	C	"	0.6m		40	45	90	X							480m	Qtz, pale grey siltstone + black micaceous shale frags.	
932464	S	"	"	C	"	0.75m		55	20	85	0.5							520m	Yellowish micaceous silty clay.	
932465	S	"	"	B	"	1.1m		75	20	175	0.5							CA706314 560m.	Brown clay loam with basalt frags.	
932466	S	"	"	C	"	1.0m		55	430	1200	1.0							ATLAS GRID AREA. 4224 N 4818 E	Brown cellular gasser frags in light grey clay loam.	
932467	S	"	"	C	"	0.8m		5	20	40	X							4237 N 4803 E	Pale brown mic. sandy loam.	
932468	S	"	"	C	"	0.6m		20	30	55	X							4240 N 4793 E	Grey mic. silty shale.	
932469	S	"	"	C	"	0.6m		5	5	25	X							4259 N 4785 E	Yellow and grey siltstone in pale brown silty loam.	
932470	S	"	"	C	"	0.3m		10	30	45	X							4265 N 4775 E	Yellow and grey clay with sandy siltstone frags.	

\* 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

596042

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS PROSPECT No. 177 Sample numbers 932471-481 Collected by C. BRADGENT / K. BRENNAN Sheet no. 5 of 9  
 Area / Prospect ATLAS GRID AREA / A.L. GENERAL Date 19/5/82  
 Map / Photo reference TAS h 107 Analysed by ANALABS DPO no. 30.1.8, 30.1.9  
 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	Mo	Mn	Au	Ba		
		o/c sample type ***																
		s sample type ****																
932471	S	Hand Auger	B-C	Union	0.5M			10	10	25	X					230	4261N 4758E	ATLAS GRID AREA Yellow and grey clay
932472	S	"	"	C	"	0.4M		5	30	15	X					150	4258N 4745E	Yellow clay with micaceous siltstone frags.
932473	S	"	"	C	"	0.3M		10	25	40	X					320	4258N 4730E	Yellow clay with grey mic silty schist.
932474	S	"	"	C	"	0.9M		65	785	290	1.0					210	4303N 4804E	Yellow sandy clay.
932475	S	"	"	C	"	0.6M		5	25	20	0.5					260	4313N 4788E	Yellow sandy siltstone.
932476	S	"	"	C	"	0.6M		30	550	165	0.5					160	4299N 4817E	Yellow micaceous sandy clay.
932477	S	"	"	C	"	0.7M		25	2200	70	0.5					120	4291N 4820E	Orange-yellow micaceous sandstone
932478	S	"	"	C	"	0.8M		20	12	63	0.1						CR706314 0	Yellow/brown siltstone.
932479	S	"	"	C	"	0.8M		17	8	89	0.2						40m	Start of westerly traverse at 40m interval. Yellow-brown sandy clay.
932480	S	"	"	C	"	1.1M		52	5	190	0.1						80m	Brown sandy clay.
932481	S	"	"	C	"	1.1M		50	5	162	0.1						120m	Brown silty clay.

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

C.R.A. EXPLORATION GEOCHEMICAL SAMPLE LOCATION

Tenement name ATLAS PROSPECT No. 177 Sample numbers 932482-492 Collected by G. BRADBEAT/K BRENNAN Sheet no. 6 of 9  
 Area / Prospect EL. GENERAL; South from Atlas Grid Date 19/5/87  
 Map / Photo reference TAS h 107 Analysed by A.N.A.L.A.B.S. DPO no. 30119  
 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	Mn	Au		
		oc	o/c sample type ***															
		f	s sample type ****															
932482	S		Hand Auger	B	min	0.8m		64	4	144	0.2						160m	Brown clay
932483	S		"	"	B	"	0.6m		37	5	115	0.1					200m	Brown clay
932484	S		"	"	C	"	0.9m		14	4	107	0.2					240m	Brown gravelly clay; in small gully.
932485	S		"	"	C	"	0.8m		41	13	48	0.1					260m	Yellow-brown siltstone
932486	S		"	"	C	"	1.1m		26	27	59	0.2					300m	Yellow-brown siltstone
932487	"		"	"	C	"	0.6m		22	19	69	0.2					340m	Yellow-brown siltstone
932488	S		"	"	C	"	0.8m		15	14	56	0.2					380m	Yellow-brown silty clay
932489	S		"	"	C	"	0.8m		11	17	79	0.2					420m END of CR 702315	Yellow-brown silty clay
932490	S		"	"	C	"	0.2		28	13	84	0.2					CR 710310 0m	Brown/yellow silty clay
932491	S		"	"	C	"	0.8m		38	38	51	0.3					40m	Brown/yellow siltstone
932492	S		"	"	C	"	0.2		23	14	50	0.2					80m	Brown/yellow siltstone

START EASTERLY TRANSVERSE ALONG CREEK AT 40m INTERVALS

\* 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 LIST

Tenement name Atlas Prospect No. 177 Sample numbers 932493-495 Collected by G. Broadbent/K. Brennan Sheet no. 7 of 9  
 Area / Prospect South of Atlas Grid Area 498-505 Date 19/5/82  
 Map / Photo reference TAS h 107 Analysed by ANALABS DPO no. 30119  
 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	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
932493	S	Hand Auger C Horizon 0.6m							40	31	60	0.2						120m.	Brown/yellow silty clay.
932494	S	"	"	"	"	"	0.3m		30	20	53	0.2						160m	Yellow-brown clay over siltstone
932495	S	"	"	"	"	"	0.4m		11	15	79	0.1						200m.	Grey yellow mic. clay.
932498	S	"	"	"	"	"	0.4m		10	14	29	0.2						240m.	Yellow clay.
932499	S	"	"	"	"	"	0.8m		7	18	20	0.2						280m.	Yellow clay.
932500	S	"	"	"	"	"	0.6m		13	13	43	0.2						320m.	Yellow brown clay with siltstone frags
932501	S	"	"	"	"	"	0.8m		5	5	25	0.1						360m.	Grey-yellow clay.
932502	S	"	"	"	"	"	0.4m		4	3	21	0.2						400m.	Grey-brown mottled clay.
932503	S	"	"	"	"	"	0.5m		24	22	34	0.1						440m.	Brown-yellow clay
932504	S	"	"	"	"	"	0.4m		18	12	52	0.1						480m.	Yellow-gray clay.
932505	S	"	"	"	"	"	0.5m		5	2	23	0.1						520m.	Grey mic. clay.

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

Tenement name ATLAS PROSPECT No. 177 Sample numbers 932506, 507, 520-528 Collected by K. BRENNAN Sheet no. 8 of 9  
 Area / Prospect South of Atlas Grid Area + line 200 m N of Atlas Grid Datum Date 19/5/82  
 Map / Photo reference TAS h.107 Analysed by ANALABS DPO no. 3.0119  
 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	Mn	Au		
		oc	o/c sample type ***															
		f	s sample type ****															
932506	S		Hand	Auger	C	Horizon	0.7m		3	3	13	0.1					560 m.	Grey/white silty clay.
932507	S		"	"	C	"	0.7m		6	4	27	0.1					600m. END CO.715309	Grey silty clay.
932520	S		C	Auger (Hand)			0.4		14	13	39	0.2					20 m.	Yellow-orange silty clay
932521	S		Hand	Auger	C		0.5		12	2	36	0.2					40 m	Yellow-orange siltstone fragments.
932522	S		"	"	"	"	0.4		21	17	81	0.2					60 m	Yellow-orange siltstone fragments.
932523	S		"	"	"	"	0.4		15	12	49	0.1					80 m	" " " "
932524	S		"	"	"	"	0.8		13	23	45	0.2					100 m	" " " "
932525	S		"	"	"	"	0.9		23	81	142	0.2					120 m	" " " "
932526	S		"	"	B	"	1.1		38	22	76	0.1					140 m	Grey micaceous siltstone.
932527	S		"	"	C	"	0.5		13	11	43	0.1					160 m	Yellow-orange siltstone fragments.
932528	S		"	"	C	"	0.7		39	40	43	0.2					180 m	" " " "

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

Traverse line to 3050 start from track ± 200 m north of 5000N 5000E, Atlas Grid.

C.R.A. E LORATION GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS PROSPECT No. 177 Sample numbers 932529-538 Collected by K. Brennan Sheet no. 9 of 9  
 Area / Prospect E.L. General Date 19/5/87  
 Map / Photo reference TAS h 107 Analysed by ANALABS DPO no. 30119  
 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	Mn	Au			
		oc	o/c sample type ***																
		f	s sample type ****						Depth (m)										
932529	S		Hand Auger Samples				C	0.7										200 m	Yellow-orange micaceous siltstone fragments.
932530	S		"	"			"	C	1.1									220 m	" " " " "
932531	S		"	"			"	"	0.9									240 m	" " " " "
932532	S		"	"			"	"	0.3									260 m	Grey micaceous siltstone
932533	S		"	"			"	"	0.5									280 m	Yellow-grey micaceous shale.
932534	S		"	"			"	"	0.5									300 m	Grey micaceous siltstone
932535	S		"	"			"	"	0.7									320 m	" " "
932536	S		"	"			"	"	0.9									340 m	Yellow-grey shale.
932537	S		"	"			"	"	0.9									360 m	Yellow-grey micaceous siltstone.
932538	S		"	"			"	"	0.8									400 m	Orange-yellow micaceous clay.

\* 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 km?

C.R.A. LOCATION . GEOCHEMICAL SAMPLE L. GER

Tenement name ATLAS EL 1/77 No. 973079 - 089 Sample numbers 973079 - 089 Collected by G. Broadbent / D. Stutterd Sheet no. 1  
 Area / Prospect ATLAS GRID Date 4.2.82  
 Map / Photo reference TAS 6108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au			
		o/c sample type ***																
		s sample type ****																
973079	S	Power Auger			C Horizon	0.5m		5	X	30	X	-	10	-			5000N 5000E	Orange Sandy clay
080	S	"	"		C "	0.6m		15	X	75	X	-	55	-			5000N 4875E	Chips of grey and yellow siltstone.
081	S	"	"		B "	0.7m		15	35	90	X	-	20	-			5000N 4830E	Grey sandy textured soil with qtz and minor limonite.
082	S	"	"		B "	0.8m		X	X	15	X	-	10	-			5000N 4837E	Grey sandy soil with qtz chips.
083	S	"	"		B "	1.0m		X	X	15	X	-	5	-			5000N 4825E	Grey sandy soil with white qtz - totally leached.
084	S	"	"		B "	0.5m		X	X	10	X	-	15	-			5000N 4812E	Grey sandy soil ± minor qtz and qtzite rubble.
085	S	"	"		B "	0.7m		X	5	10	X	-	15	-			5000N 4800E	Grey leached qtz and qtzite 'lag' gravel
086	S	"	"		B "	0.4m		X	X	10	X	-	10	-			5000N 4787E	Grey sandy leached soil
087	S	"	"		B "	0.6		X	X	15	X	-	15	-			5000N 4775E	Grey sandy clay with qtz and mica schist frags.
088	S	"	"		C "	1.0m		X	X	30	X	-	15	-			5000N 4762SE	Grey micaceous siltstone frags.
089	S	"	"		B-C "	1.0m		X	X	15	X	-	5	-			5000N 4730E	Grey qtz mica schist.

\* 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 = calcareous

C.R.A. LOCATION GEOCHEMICAL SAMPLE L GER

Tenement name ATLAS No. 1/72 Sample numbers 973090-100 Collected by G. BRODENT / I. HALL / D. S. Sheet no. 2  
 Area / Prospect ATLAS GRID Date 4-2-82  
 Map / Photo reference TAS h 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au			
		o/c sample type ***																
		s sample type ****																
473090	S	Power	Auger	B	Horizon	1.0m		X	X	15	X	-	10	-	5000N	Leached grey qtz gravel.		
															4725E			
091	S	"	"	C	"	0.8m		5	X	15	X	-	10	-	5000N	Yellow clay - siltstone?		
															4700E			
092	S	"	"	C	"	0.7m		35	65	415	X	-	120	-	5000N	Orange-yellow sandstone		
															4675E			
093	S	"	"	B	"	0.6m		5	X	45	X	-	60	-	5000E	Brown sticky clay from bed of small gully.		
															4650E			
094	S	"	"	C	"	0.9m		10	X	45	X	-	80	-	5000N	Pale yellow-grey micaceous shale		
															4625E	Grey mica schist frags, sandy textured.		
095	S	"	"	C	"	0.9m		X	X	25	X	-	15	-	5000N	Grey mica schist frags, sandy textured		
															4600E			
096	S	"	"	C	"	0.6m		20	X	75	X	-	65	-	5000N	Yellow-orange sandy clay.		
															4575E			
097	S	"	"	B-C	"	0.4m		X	X	15	X	-	5	-	4800N	Pale grey silty clay.		
															5000E			
098	S	"	"	B-C	"	0.7m		X	X	25	X	-	10	-	4800N	Yellow-grey clay loam with orange-grey siltstone rubble.		
															4975E			
099	S	"	"	C	"	0.9m		X	X	15	X	-	10	-	4800N	Pale grey bleached sandy clay with qtz rubble.		
															4950E			
100	S	"	"	C	"	1.0m		X	X	35	X	-	10	-	4800N	Pale grey and orange mic. siltstones and shales.		
															4925E			

\* 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 = collector oc = outcrop

C.R.A. LOCATION . GEOCHEMICAL SAMPLE L. 3ER

Tenement name ATLAS No. 1/22 Sample numbers 973101 → 111 Collected by S.B./I.H./O.S. Sheet no. 3  
 Area / Prospect ATLAS GRID Date 4-2-82  
 Map / Photo reference TAB. h. 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au			
973101.	S	Power Auger C Horizon 0.9							5	X	20	X	-	10	-	4800N 4900E	Orange yellow sandy clay.	
102	S	"	"	C	"	0.8m		X	X	15	X	-	5	-	4850N 4875E	White leached qtz-mica schist rubble.		
103	S	"	"	B	"	1.0m		X	X	15	X	-	5	-	4800N 4862E	White angular qtz gravel.		
104	S	"	"	B	"	1.0m	/	X	5	10	X	-	10	-	4800N 4850E	Brown sandy qtz lag gravel.		
105	S	"	"	B	"	1.0m		X	X	15	X	-	5	-	4800N 4837E	Grey sandy leached clay with qtz gravel.		
106	S	"	"	C	"	0.7		10	X	30	X	-	20	-	4600N 5000E	Orange-yellow sandy clay		
107	S	"	"	C	"	0.6		5	X	25	X	-	5	-	4600N 4975E	Yellow-grey clay-siltstone + mica schist		
108	S	"	"	C	"	0.5		X	X	25	X	-	10	-	4600N 4950E	Grey-yellow mic. siltstone		
109	S	"	"	C	"	0.6		X	X	25	X	-	10	-	4600N 4925E	Grey sandy clay ± qtz, mica schist		
110	S	"	"	C	"	0.7		X	X	10	X	-	X	-	4600N 4912E	Grey sandy clay ± qtz		
111	S	"	"	C	"	0.6		X	X	15	X	-	5	-	4600N 4900E	White micaceous clay ± qtz		

\* 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. LOCATION . GEOCHEMICAL SAMPLE L. SER

Tenement name ATLAS No. 117 Sample numbers 973112 - 122 Collected by GB/I.H./DS. Sheet no. 4  
 Area / Prospect ATLAS GOLD Date 10.2.82  
 Map / Photo reference Tp 4108 Analysed by ANALABS DPO no. 30132  
 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	Mn	Au		
		oc	o/c sample type ***															
		f	s sample type ****															
973112	S		Power Auger		B	Homem	0.5		X	X	15	X	-	5	-	4600N 4875E	Grey-white greasy mic. loam.	
113	S		"	"	"	"	0.4		X	X	10	X	-	10	-	4600N 4862E	Pale gray mic. sandy loam.	
114	S		"	"	v	"	0.6		X	X	20	X	-	10	-	4600N 4850E	Quartz gravel.	
115	S		"	"	"	"	0.9m		X	X	15	X	-	10	-	4600N 4837E	Grey sandy loam with qtz.	
116	S		"	"	v	"	0.8		X	X	10	X	-	10	-	4600N 4825E	Grey qtz gravel road.	
117	S		"	"	B	"	0.6		5	X	15	X	-	10	-	4600N 4800E	Orange-yellow sandstone	
118	S		"	"	C	"	0.7		15	120	145	X	-	45	-	4600N 4787E	Orange sandy clay.	
119	S		"	"	C	"	0.6		5	X	10	X	-	5	-	4600N 4775E	Pale orange-grey silty clay	
120	S		"	"	C	"	0.5		10	X	25	X	-	5	-	4600N 4762E	Yellow and orange mic. siltstones	
121	S		"	"	C	"	0.4		X	X	5	X	-	10	-	4600N 4750E	Pale gray mic. clay	
122	S		"	"	C	"	0.8		15	10	35	X	-	85	-	4600N 4725E	Orange-yellow mic. siltstone with minor Mn oxides	

\* 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. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 1/77. Sample numbers 973, 123-133 Collected by G. BROADBENT Sheet no. 5  
 Area / Prospect ATLAS GRID Date 10.2.82  
 Map / Photo reference TAS h. 108 Analysed by ANALABS DPO no. 30132  
 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	Mn	Au			
		oc	o/c sample type ***																
		f	s sample type ****																
973, 123	S		poor	angst	C	horiz	0.6m		X	X	15	X	-	15	-			4600N 4700E	Orange yellow silty clay.
124	S		"	"	C	"	0.7m		5	X	40	X	-	1900	-			4600N 4675E	Yellow-grey mic. shale
125	S		"	"	C	"	1.0m		10	40	15	X	-	105	-			4600N 4650E	Orange-yellow mic. shale.
126	S		"	"	C	"	1.1m		10	X	15	X	-	15	-			4600N 4625E	Yellow-grey mic. shale.
127	S		"	"	C	"	0.9m		5	X	15	X	-	10	-			4600N 4600E	Grey mica schist
128	S		"	"	C	"	0.6m		5	X	10	X	-	10	-			4600N 4575E	Pale grey sandy clay ± qtz.
129	S		"	"	C	"	0.4		X	X	10	X	-	10	-			4600N 4550E	Pale grey sandy loam ± qtz
130	S		"	"	C	"	0.8		10	X	25	X	-	10	-			4400N 5000E	Orange-yellow sandy loam
131	S		"	"	C	"	0.7		5	5	45	X	-	15	-			4400N 4975E	Greyish-yellow sandy loam.
132	S		"	"	C	"	0.6		5	X	15	X	-	10	-			4400N 4950E	Pale grey mic. loam
133	S		"	"	C	"	1.0		5	X	20	X	-	10	-			4400N 4925E	Orange mic. clay.

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

\*\* Stream sediment description fl = flour m?/ oc = outcrop wi = with thin l =

C.R.A. LOCATION GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 177 Sample numbers 973134-144 Collected by G.B./H./D.S. Sheet no. 6  
 Area / Prospect ATLAS GRID Date 10.2.82  
 Map / Photo reference TAS h109 Analysed by ANALABS DPO no. 30132  
 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	Mn			Au	
		o/c sample type ***																	
		s sample type ****																	
973134	S		Powder Auger		C	Horizon	1.1m		X	45	15	X	-	5	-			4400N 4900E	White bleached mic. clay.
135	S		"	"	B	"	1.1m		X	X	15	X	-	5	-			4400N 4875E	Brown sandy clay ± qtz.
136	S		"	"	B	"	1.0m		X	X	10	0.1	-	10	-			4400N 4862E	Pale brown sandy clay.
137	S		"	"	B	"	1.0		X	X	10	0.1	-	10	-			4400N 4850E	Brown sandy clay ± qtz
138	S		"	"	B	"	1.0		X	X	10	0.1	-	10	-			4400N 4837E	Grey sandy clay ± qtz.
139	S		"	"	B	"	1.0		X	X	10	0.1	-	X	-			4400N 4825E	White mic. clay.
140	S		"	"	C	"	1.1		X	480	10	0.8	-	5	-			4400N 4812E	Brown sandy clay loam ± qtz frags.
141	S		"	"	C	"	1.1		X	20	20	0.1	-	5	-			4400N 4800E	Pale grey mic. clay.
142	S		"	"	B+C	"	1.1		X	75	15	0.2	-	5	-			4400N 4797E	Dark brown sticky clay
143	S		"	"	B	"	1.1		X	X	10	0.1	-	5	-			4400N 4775E	Dark brown sticky clay.
144	S		"	"	B	"	1.1		X	20	25	X	-	X	-			4400N 4762E	Dark brown mic. clay - shale?

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

C.R.A. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 177 Sample numbers 973145 - 155 Collected by C.B./I.H./D.S. Sheet no. 7  
 Area / Prospect ATLAS CRD Date 10.2.82  
 Map / Photo reference TASH 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
973145	S	Power Auger			B	H	1.0		X	X	10	X	-	10	-			4400N 4750E	Brownish-grey greasy textured mic. clay.
146	S	"	"		B	"	1.0		5	X	15	X	-	5	-			4400N 4737E	White greasy mic. clay.
147	S	"	"		B	"	1.0		5	X	15	0.1	-	10	-			4400N 4725E	Pale brown silty clay.
148	S	"	"		B-C	"	1.0		5	X	15	X	-	10	-			4400N 4700E	Grey mic. clay.
149	S	"	"		C	"	0.4		5	X	20	X	-	70	-			4400N 4670E	Brown mic. clay - siltstone.
150	S	"	"		C	"	0.6		10	15	55	X	-	610	-			4400N 4650E	Brown sandy mic. clay.
151	S	"	"		C	"	0.5		10	X	65	0.1	-	90	-			4400N 4625E	Yellow-brown mic. siltstone.
152	S	"	"		C	"	0.6		5	5	30	X	-	30	-			4400N 4600E	Pale yellow mic. siltstone
153	S	"	"		C	"	0.6		5	X	35	X	-	30	-			4400N <del>4575E</del> 4575E	Pale yellow silty clay.
154	S	"	"		C	"	0.6m		5	5	45	X	-	75	-			4400N 4550E	Pale yellow-grey silty clay.
155	S	"	"		C	"	0.7		50	X	25	X	-	15	-			4300N 5000E	Yellow mic. siltstone

\* 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 = soil type ca = soil texture pH = soil pH

C.R.A. LOCATION GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 172 Sample numbers 973156-166 Collected by C.B./I.H./D.S. Sheet no. 8

Area / Prospect ATLAS GRAD Date 10.2.82

Map / Photo reference TASH 108 Analysed by ANALABS DPO no. 30132

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	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
973 156	s	Power Auger C horizon 0.9m							10	X	40	0.1	-	15	-			4300N 4975E	Yellow mic. siltstone
157	S	"	"	C	"	0.5		10	5	30	0.1	-	10	-			4300N 4950E	Pale yellow/grey mic. clay.	
158	S	"	"	C	"	0.6		25	X	125	0.1	-	15	-			4300N 4925E	Orange and yellow-grey mic siltstone	
159	S	"	"	"	"	0.7		5	15	55	X	-	25	-			4300N 4900E	Orange and yellow sandy clay.	
160	S	"	"	C	"	0.7		10	35	35	X	-	15	-			4300N 4887E	Orange sticky clay.	
161	S	"	"	C	"	0.6		5	15	15	X	-	10	-			4300N 4875E	Orange + white siltstone	
162	S	"	"	C	"	0.7		10	25	55	X	-	25	-			4300N 4862E	Orange mic. clay.	
163	S	"	"	"	"	0.8		10	100	10	X	-	10	-			4300N 4850E	Orange mic. clay.	
164	S	"	"	"	"	0.5		5	120	10	X	-	20	-			4300N 4837E	Orange mic. siltstone.	
165	S	"	"	C	"	0.7		20	310	400	X	-	80	-			4300N 4825E	Orange mic. siltstone	
166	S	"	"	C	"	0.6		15	355	135	0.3	-	185	-			4300N 4812E	Orange crumbly textured clay-dolomite?	

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

Tenement name ATLAS C.R.A. LOCATION GEOCHEMICAL SAMPLE LISTER  
 Area / Prospect ATLAS GRID No. 177 Sample numbers 97367-177 Collected by G.B./I.H./D.S. Sheet no. 9  
 Map / Photo reference TAS. b. 108 Analysed by ANANABS Date 10.2.82  
 A 02143 DPO no. 20132

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations	
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au				
		o/c sample type ***																	
		s sample type ****																	
973 167	S	Paved Area B Horizon 0.4							X	10	X	X	-	35	-			4300N 4792E	Pale grey micaceous loam.
168	S	"	"	B	"	0.4		10	80	30	0.2	-	50	-			4300N 4775E	Yellowish brown siltstone, mica schist	
169	S	"	"	C	"	1.0M		10	20	45	X	-	525	-			4300N 4750E	Sticky yellow clay ± qtz gravel	
170	S	"	"	C	"	0.8		5	35	25	X	-	45	-			4300N 4725E	Yellow-orange sticky clay with brownish mic. siltstone frags.	
171	S	"	"	C	"	0.6		5	15	X	X	-	15	-			4300N 4700E	Yellow-grey mic. siltstone.	
172	S	"	"	C	"	0.6		X	15	5	0.1	-	X	-			4300N 4675E	grey qtz-mica schist	
173	S	"	"	C	"	0.7		X	X	15	0.1	-	10	-			4300N 4650E	Yellow-grey shaly qtz mica schist	
174	S	"	"	C	"	0.8		10	20	20	X	-	60	-			4300N 4625E	Yellow-grey qtz mica schist.	
175	S	"	"	C	"	0.3		X	10	5	X	-	X	-			4200N 5000E	Pale grey mic. clay.	
176	S	"	"	C	"	0.6		X	10	X	X	-	X	-			4200N 4975E	Pale grey mic. clay.	
177	S	"	"	C	"	0.5		X	X	X	0.4	-	X	-			4200N 4950E	Pale grey mic. sandy siltstone.	

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

C.R.A. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATHAS No. 172 Sample numbers 173, 178, 188 Collected by G. S. / I. H. / P. S. Sheet no. 10  
 Area / Prospect ATHAS GRID 327-230 Date 10.2.82  
 Map / Photo reference TAS 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au			
		o/c sample type ***																
		s sample type ****																
773178	S	Power Auger	B	Horizon	0.5		X	X	X	X	-	X	-	4200N 4925E	Pale yellow-grey silty clay.			
179	S	"	"	B	"	0.6	X	X	X	X	-	X	-	4000N 4900E	Pale grey sticky mic. shale.			
180	S	"	"	B	"	0.8	X	X	5	X	-	15	-	4200N 4887E	Pale grey leached sandy soil - alluvium?			
181	S	"	"	C	"	0.7	230	1.70	585	0.6	-	810	-	4200N 4895E	Yellow-greenish grey sticky clay with silty shale frags and one fragment banded galena.			
182	S	"	"	C	"	0.8	25	295	130	0.2	-	5	-	4200N 4862E	Pale grey bleached clay ± chert.			
183	S	"	"	B	"	0.9	5	20	5	X	-	X	-	4200N 4850E	Grey leached sandy clay ± qtz.			
184	S	"	"	B	"	0.7	X	X	X	X	-	X	-	4200N	} Pale grey mic. sandy clay.			
Repeat 327	S	"	"	"	"	"	X	5	10	0.1	-	15	-	4831E		Pale grey mic. sandy clay		
185	S	"	"	"	"	0.8	X	X	X	0.1	-	X	-	4200N	} White sandy clay with abundant qtz.			
Repeat 328	S	"	"	"	"	1.0	X	X	10	0.1	-	20	-	4825E		" " " " " "		
186	S	"	"	"	"	0.8	10	10	35	0.1	-	X	-	4200N	} White and yellow sandy clay ± qtz			
Repeat 329	S	"	"	BAC	"	1.4m	15	55	75	0.1	-	10	-	4812E		Yellow sandy clay ± qtz.		
187	S	"	"	B	"	0.7	X	X	X	0.1	-	X	-	4200N	} White sandy clay ± qtz			
Repeat 330	S	"	"	"	"	0.9m	X	X	X	0.1	-	10	-	4800E		" " " " " "		
188	S	"	"	B	"	0.6	X	X	X	0.1	-	X	-	4200N 4787E	White silty clay loam			

\* 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 km<sup>2</sup>

C.R.A.F. LOCATION . GEOCHEMICAL SAMPLE LISTER

Tenement name ATLAS No. 177 Sample numbers 973189-199; 221 Collected by C. S. I. H. / P. S. Sheet no. 11  
 Area / Prospect ATLAS GR-10 Date 10.2.82  
 Map / Photo reference TAS h. 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au		
		o/c sample type ***															
		s sample type ****															
973189	S	Power	Auger	C horizon		0.4		5	25	15	X	-	380	-	4100N 4715E	White mic. sandy loam.	
190	S	"	"	C "		0.6		10	X	10	X	-	X	-	4100N 5000E	Yellow-orange mic. clay.	
191	S	"	"	C "		0.8		X	X	5	X	-	X	-	4100N 4715E	Pale yellow-grey mic. siltstone	
192	S	"	"	C "		0.7		10	X	15	X	-	20	-	4100N 4950E	Rich orange-yellow mic. siltstone.	
193	S	"	"	B-C "		0.8.		X	5	10	X	-	5	-	4100N 4925E	Pale greyish yellow and orange sandy clay.	
194	S	"	"	C "		0.7		35	125	395	0.2	-	2250	-	4100N 4900E	Orange stiff clay with brownish ochre.	
195	S	"	"	C "		1.0m		15	10	130	0.1	-	1350	-	4100N 4837E	Orange-brown clay ± limonite frags.	
221	S	"	"	C "		0.8m		5	260	95	0.5	-	3400	-	4100N 4875E	Brown sandy loam ± limonite frags.	
196	S	"	"	C "		0.9m		X	X	X	X	-	25	-	4100N 4862E	Pale brown leached sandy loam ± qtz frags.	
197	S	"	"	C "		0.8		X	50	5	X	-	15	-	4100N 4650E	Yellow-brown mic. sandstone	
198	S	"	"	C "		0.7		10	130	25	X	-	145	-	4100N 4837E	Brown-orange silty loam with qtz, limonite	
199	S	"	"	C "		0.7		X	80	45	X	-	1150	-	4100N 4825E	Pale brown sandy loam ± limonite.	

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

C.R.A.F. LOCATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 1177 Sample numbers 973200, 211-220 Collected by G.B./I.H./D.S. Sheet no. 12  
 Area / Prospect ATLAS GRID Date 18.2.82  
 Map / Photo reference TAS h.10.8 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au			
		o/c sample type ***																
		s sample type ****																
973200	S	Power Auger			C Horizon	0.9m		10	200	45	0.3	-	140	-		4100N 4812E	Yellow-gray mic. shale.	
211	S	"	"		C "	0.7m		X	160	20	X	-	15	-		4100N 4800E	Pale grey mic. siltstone, minor qtz	
212	S	"	"		C "	0.6m		X	X	5	0.1	-	15	-		4100N 4775E	Pale grey/yellow sandy loam.	
213	S	"	"		C "	0.6		X	X	15	X	-	15	-		4100N 4750E	Pale yellow-brown mic. siltstone	
214	S	"	"		C "	0.7		5	X	50	0.2	-	25	-		4100N 4725E	Grey mic. silty shale.	
215	S	"	"		C "	0.6		X	X	25	0.1	-	15	-		4100N 4700E	Brown slightly gossanous siltstone	
216	S	"	"		C "	0.9		5	X	40	0.3	-	80	-		4100N 4675E	Pale brown slightly spotted mic. siltstone	
217	S	"	"		C "	0.8		5	X	40	0.2	-	85	-		4100N 4650E	Yellow mic. siltstone	
218	S	"	"		C "	1.0.		65	X	145	0.2	-	1350	-		4000N 5000E	Dark grey weak basalt.	
219	S	"	"		C "	0.8		20	5	50	0.2	-	285	-		4000N 4975E	Yellow-brown sticky clay-basalt.	
220	S	"	"		C "	0.7		5	5	30	0.3	-	20	-		4000N 4950E	Yellow sticky clay-basalt.	

\* 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 LIST

Tenement name ATLAS No. 177 Sample numbers 973222-232 Collected by G.B. I.H. D.S. Sheet no. 13  
 Area / Prospect ATLAS GRD Date 18.2.82  
 Map / Photo reference TAS h 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn			Au	
222	S	Power Auger			Chromium		0.8m		5	5	35	0.3	-	55	-		4000N 4925E	Orange-yellow sticky clay - basalt? or dol?
23	S	"	"		C		1.0m		10	5	40	0.2	-	70	-		4000N 4912E	Yellow mic. siltstone
24	S	"	"		C		1.0		10	15	35	0.3	-	75	-		4000N 4900E	" " "
25	S	"	"		C		0.7		25	10	65	0.3	-	210	-		4000N 4887E	Dark orange clay ± limonite - basalt.
26	S	"	"		C		0.6		95	X	170	0.2	-	1450	-		4000N 4875E	Hard orange clay ± basalt frags.
27	S	"	"		C		0.7		50	X	100	0.3	-	3900	-		4000N 4868E	Dark reddish-brown clay - basalt
28	S	"	"		C		0.6		45	X	115	0.3	-	1400	-		4000N 4850E	Reddish brown clay lower basalt.
29	S	"	"		C		0.5		40	5	105	0.3	-	650	-		4000N 4825E	Red-brown clay - basalt.
30	S	"	"		C		0.8		45	5	85	0.3	-	665	-		4000N 4800E	Red brown clay ± basalt frags.
31	S	"	"		C		0.9		X	15	45	0.3	-	15	-		4000N 4775E	Pale yellow-grey mic. siltstone.
32	S	"	"		C		0.8		35	30	115	0.2	-	205	-		4000N 4750E	Yellow - orange siltstone.

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

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 177 Sample numbers 973233-243 Collected by G.B. / I.H. / D.S. Sheet no. 14  
 Area / Prospect ATLAS GRID Date 18.2.82  
 Map / Photo reference TASH 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au		
973233	s	Pool	Anger	C	Horizon	0.9m		10	15	35	0.3	-	70	-	4000N 4725E	Grayish-orange sandy clay	
34	s	"	"	C	"	0.9		5	15	35	0.3	-	55	-	4000N 4700E	Grayish-orange sandy clay	
35	s	"	"	C	"	0.6		10	15	35	0.3	-	235	-	4000N 4675E	Gray and yellow mic. clay.	
36	s	"	"	C	"	0.7		10	10	40	0.1	-	285	-	4000N 4650E	Gray mic. silty sandstone	
37	s	"	"	C	"	0.8		5	10	35	0.2	-	55	-	4000N 4625E	Gray mic sandy siltstone	
38	s	"	"	C	"	0.7		10	5	30	0.2	-	80	-	4000N 4600E	Yellow gray mic sandy loam.	
39	s	"	"	C	"	1.0m		75	X	110	0.2	-	485	-	3900N 5000E	Basalt clay loam.	
40	s	"	"	C	"	0.9		80	X	110			650		3900N 4975E	Brown clay loam - basalt.	
41	s	"	"	C	"	0.7		15	10				165		3900N 4950E	Pale gray-yellow sandy clay.	
42	s	"	"	C	"	1.1		50	15				685		3900N 4925E	Brown basaltic clay & siltstone	
43	s	"	"	"	"	1.0		15	35				230		3900N 4912E	Pale gray mic. siltstone beneath basalt soil.	

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

\*\* Stream sed sample description fl = flow m<sup>3</sup>/hr wi = width m

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 107 Sample numbers 973244-254 Collected by G.B./I.H./D.S. Sheet no. 15  
 Area / Prospect ATLAS GRID Date 18.2.82  
 Map / Photo reference TAS h.108 Analysed by ANALABS DPO no. 30152  
 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	Mo	Mn	Au				
973244	S	Power Auger			C horizon		1.0m		30	X	45	0.4	-	130	-			3900N 4900E	Pale grey mic. siltstone
45	S	"	"		C v		1.0		65	X	105	0.3	-	420	-			3900N 4887E	Basalt clay loam.
46	S	"	"		C v		0.9		60	S	105	0.3	-	355	-			3900N 4875E	Basalt clay loam.
47	S	"	"		C v		1.0		70	X	130	0.3	-	495	-			3900N 4862E	Basalt frags in red clay.
48	S	"	"		C v		1.1		5	S	15	0.1	-	20	-			3900N 4850E	White sandy clay beneath basalt soil.
49	S	"	"		C "		1.0		75	S	150	0.1	-	1950	-			3900N 4837E	Brown sticky clay ± Mn oxides - basalt?
50	S	"	"		C "		0.9		70	S	125	0.2	-	990	-			3900N 4825E	Basalt loam.
51	S	"	"		C "		1.2		80	S	140	0.2	-	830	-			3900N 4812E	" "
52	S	"	"		C "		1.1		55	S	55	0.2	-	290	-			3900N 4800E	Orange clay - basalt.
53	S	"	"		C "		0.9		35	240	55	0.2	-	180	-			3900N 4787E	Orange-brown sticky clay ± qtz frags.
54	S	"	"		C v		0.6		10	60	25	0.2	-	45	-			3900N 4775E	Yellow-orange mic. sandy clay.

\* 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 = calcareous

C.R.A. LOCATION GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 177 Sample numbers T13255-265 Collected by G.B./J.H./D.S. Sheet no. 16  
 Area / Prospect ATLAS GRID Date 18.2.82  
 Map / Photo reference TAS h 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au			
		o/c sample type ***																
		s sample type ****																
978255	S	Power Auger		C Horizon		0.6m		5	20	25	X	-	20	-			3900N 4750E	Yellow-orange mic. sandstone
56	S	"	"	C "		0.6		20	15	45	0.2	-	85	-			3900N 4725E	Orange-yellow mic sandy loam ± qtz
57	S	"	"	C "		0.6		10	15	50	0.1	-	120	-			3900N 4700E	Orange sandy loam.
58	S	"	"	C "		0.7		20	10	45	0.2	-	60	-			3900N 4675E	Pale yellow-grey mic. siltstone
59	S	"	"	C "		0.5		25	10	70	0.1	-	105	-			3900N 4650E	Orange-grey mic. sandy clay.
60	S	"	"	C "		0.5		5	X	15	0.2	-	45	-			3900N 4625E	Orange mic. sandy siltstone
61	S	"	"	C "		0.7		5	25	25	0.1	-	15	-			3900N 4600E	Yellow mic. sandy clay.
62	S	"	"	C "		0.9		20	10	35	0.2	-	20	-			3900N 4575E	Yellow mic. sandy clay.
63	S	"	"	C "		0.4		10	15	35	0.1	-	25	-			3900N 4550E	Grey sandy soil ± qtz.
64	S	"	"	C "		1.0m		30	10	175	0.1	-	1.10%	-			3860N 4925E	Grey sandy clay ± mic siltstone
65	S	"	"	B "		0.3		20	20	515	0.1	-	3750	-			3860N 4900E	Orange clay - dolomite?

\* 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 = channel bank

C.R.A. LOCATION GEOCHEMICAL SAMPLE L' GER

Tenement name ATLAS No. 1177 Sample numbers 973266-276 Collected by A.B./I.H./D.S. Sheet no. 17  
 Area / Prospect ATLAS GRID Date 18.2.82  
 Map / Photo reference TAS h 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au			
		o/c sample type ***																
		s sample type ****																
473266	S	Power Auger			C Horizon	1.0m		25	20	145	0.1	-	200	-		3860N 4882E	Yellow-grey sandy clay ± mic shale frags.	
67	S	"	"	C	"	0.7		60	70	180	0.3	-	1450	-		3860N 4875E	Yellow sticky clay ± brown ferrug siltstone	
68	S	"	"	C	"	0.8		40	45	120	0.3	-	1100	-		3860N 4862E	Brown sticky basaltic clay ± dolomite	
69	S	"	"	C	"	0.9		35	55	195	0.2	-	1400	-		3860N 4850E	Brown clay ± quartz frags.	
70	S	"	"	C	"	1.0		45	40	115	0.3	-	415	-		3860N 4831E	Brown clay ± ferrug. mic. sandstone	
71	S	"	"	C	"	1.0		65	15	105	0.3	-	445	-		3860N 4825E	Dark brown clay ± basalt frags.	
72	S	"	"	C	"	0.8		95	10	165	X	-	1400	-		3860N 4812E	Brown clay basalt soil.	
73	S	"	"	C	"	0.8		105	15	220	0.1	-	1450	-		3860N 4800E	Brown clay " "	
74	S	"	"	C	"	0.7		65	15	95	0.2	-	425	-		3860N 4797E	" " " "	
75	S	"	"	C	"	0.8		55	230	135	0.8	-	285	-		3860N 4775E	Yellow brown sticky clay ± gossan frags. (same loc. as 869037)	
76	S	"	"	C	"	0.8		20	40	200	0.3	-	1.25%	-		3860N 4762E	Brown sandy clay ± gossan frags.	

\* 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 cr = contact

C.R.A. LOCATION GEOCHEMICAL SAMPLE LAGER

Tenement name ATLAS No. 77 Sample numbers 973277-287 Collected by G.B./I.H./D.S. Sheet no. 18

Area / Prospect ATLAS GRD Date 18.2.82

Map / Photo reference TAS h. 10.8 Analysed by ANALABS DPO no. 30132

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	Mn	Au			Cr	Fe	V
		oc	o/c sample type ***																		
		f	s sample type ****																		
973277	S		Power Auger		C	Horizon 0.7		5	70	35	0.1	-	175	-				3860N 4750E	Yellow sticky clay loam.		
78	S		"	"	C	" 1.0		X	30	20	0.1	-	115	-				3860N 4737E	Yellow sandy clay ± mic grey shala. (close to 932406)		
79	S		Power Auger		C	Horizon 0.7m		40	10	50	0.1	-	170	-	280	16.0%	135	3800N 5006E	Basalt loam.		
80	S		"	"	C	" 0.8		70	10	115	0.1	-	405	-	310	14.0%	170	3800N 4950E	" "		
81	S		"	"	C	" 1.0		10	10	30	0.2	-	25	-	95	2.0%	70	3800N 4925E	Pale grey mic. siltstone.		
82	S		"	"	C	" 0.8		40	15	55	0.3	-	275	-	195	7.6%	125	3800N 4900E	Red-brown mic. siltstone		
83	S		"	"	C	" 0.7		20	15	50	0.1	-	1450	-	90	5.4%	60	3800N 4857E	Pale yellow-grey qtz mica sandstone		
84	S		"	"	C	" 0.3		25	460	235	1.0	-	235%	-	35	9.0%	120	3800N 4875E	Sandy clay ± gossar fragments.		
85	S		"	"	C	" 0.4		45	125	310	0.3	-	6450	-	75	7.15%	65	3800N 4862E	Yellow weath. dolomite.		
86	S		"	"	C	" 0.6		35	95	405	0.4	-	610	-	140	7.25%	105	3800N 4850E	Yellow weath. dolomite.		
87	S		"	"	C	" 0.8		20	170	425	0.5	-	8000	-	80	6.35%	105	3800N 4837E	Brown sticky clay ± gossar frags.		

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

\*\* Stream sed. sample description fl = flow m3/sec wi = width m al = alluvial

Tenement name ATLAS C.R.A. LOCATION GEOCHEMICAL SAMPLE LOCATION No. 177 Sample numbers 973288-298 Collected by C.B./I.H./D.S. Sheet no. 19  
 Area / Prospect ATLAS GRID Map / Photo reference TAS h. 108 Analysed by ANALABS Date 18.2.82  
 A 02143 DPO no. 30132

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %											Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au	Fe	Cr	V			
		o/c sample type ***																			
		s sample type ****																			
973288	S	Power Auger	Chlorination				0.4m		15	135	315	0.6	-	1650	-	4.6%	90	105	3800N 4825E	Brown clay ± gossan frags.	
89	S	"	"	C	"		0.7		45	40	145	0.2	-	3700	-	6.8%	190	120	3800N 4812E	Dark grey sticky clay ± shale frags.	
90	S	"	"	C	"		0.7		55	270	190	0.8	-	665	-	7.5%	65	70	3800N 4806E	Yellow-brown sandy loam.	
91	S	"	"	C	"		0.1		75	300	335	3.7	-	3050	-	9.3%	70	175	3800N 4787E	Sticky yellow clay ± gossan frags.	
92	S	"	"	C	"		0.7		125	1450	105	12.8	-	920	-	3.1%	85	80	3800N 4775E	Grey sticky w. dolomite.	
93	S	"	"	C	"		0.6		40	300	70	0.8	-	105	-	4.2%	60	65	3800N 4762E	Yellow clay ± mic. sandstone frags.	
94	S	"	"	C	"		0.7		30	60	145	0.3	-	285	-	6.6%	50	75	3800N 4750E	Yellow-orange sandy clay.	
95	S	"	"	C	"		0.6		35	160	185	0.4	-	195	-	4.1%	70	105	3800N 4737E	Yellow-grey clay ± sandy siltstones.	
96	S	"	"	C	"		0.6		55	10	85	0.3	-	645	-	6.5%	120	90	3800N 4725E	Greyish orange mic. sandstone.	
97	S	"	"	C	"		0.7		20	35	115	0.5	-	405	-	3.4%	90	85	3800N 4700E	Sticky pale brown sandy loam.	
98	S	"	"	C	"		0.5		15	5	50	0.1	-	15	-	1.4%	40	55	3800N 4675E	Brown sandy loam ± mic. sandy siltstone.	

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

C.R.A.F. LOCATION GEOCHEMICAL SAMPLE L' GER

Tenement name ATLAS No. 1/17 Sample numbers 973299-309 Collected by L.H./D.S./G.B. Sheet no. 20  
 Area / Prospect ATLAS CR.D Date 18.2.82  
 Map / Photo reference TAS h 108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au	Cr	Fe	V			
		o/c sample type ***																			
		s sample type ****																			
973299	S	Power Auger	C	Horizon		0.5		15	15	50	0.3	-	420	-	50	5.75%	60	3500N 4650E	Yellow sandy clay.		
300	S	"	"	C	"	0.8		10	X	15	0.2	-	20	-	70	3.55%	90	3500N 4625E	Yellow + grey mic. sandstone		
01	S	"	"	C	"	0.7		10	10	25	0.1	-	20	-	100	4.00%	110	3500N 4600E	" " " "		
02	S	"	"	C	"	0.7		25	15	40	0.3	-	25	-	90	2.10%	105	3500N 4575E	Pale yellow/grey mic shale/siltstone		
03	S	"	"	C	"	0.9		25	5	15	0.2	-	15	-	100	3.15%	85	3500N 4580E	Pale yellow grey mic. sandy clay.		
04	S	"	"	C	"	0.8		65	5	85	X	-	275	-	-	275		3700N 5000E	Beach clay loam		
05	S	"	"	C	"	0.9		35	X	145	X	-	355	-	-	355		3700N 4950E	" " "		
06	S	"	"	C	"	0.8		35	10	115	0.4	-	3200	-	-	3200		3700N 4925E	" " "		
07	S	"	"	C	"	1.0		30	X	70	0.2	-	115	-	-	115		3700N 4900E	" " "		
08	S	"	"	C	"	0.9		65	10	110	X	-	330	-	-	330		3700N 4875E	" " "		
09	S	"	"	C	"	1.0		70	10	80	X	-	300	-	-	300		3700N 4850E	" " "		

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

\*\* Stream sed sample description C = flow net W = water

C.R.A.T. LOCATION, GEOCHEMICAL SAMPLE L' GER

Tenement name ATLAS No. 177 Sample numbers 973310 - 320 Collected by I.H. D.S. Sheet no. 21

Area / Prospect ATLAS GRID Date 18.2.82

Map / Photo reference TAS h 108 Analysed by ANALABS DPO no. 30132

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	Mo	Mn	Au	Cr	Fe			
		o/c sample type ***																		
		s sample type ****																		
473310	S	Power	Auger	C	Horizon	1.0m		60	10	85	X	-	385	-	-	-	3700N 4925E	Basalt clay loam		
311	S	"	"	C	"	1.0		45	10	70	0.1	-	170	-	-	-	3700N 4600E	" " "		
302	S	"	"	C	"	1.1		45	5	55	0.1	-	105	-	-	-	3700N 4715E	" " "		
313	S	"	"	C	"	0.9		45	X	55	X	-	165	-	-	-	3700N 4750E	" " "		
314	S	"	"	C	"	1.0		50	5	70	X	-	255	-	-	-	3700N 4725E	" " "		
315	S	"	"	C	"	0.8		65	5	90	0.1	-	1300	-	-	-	3700N 4700E	" " "		
316	S	"	"	C	"	1.1		80	5	120	X	-	395	-	-	-	3700N 4676E	" " "		
307	S	"	"	C	"	1.3		85	X	165	0.1	-	1350	-	-	-	3700N 4650E	" " "		
318	S	"	"	C	"	0.7		55	5	85	0.1	-	490	-	-	-	3700N 4625E	" " "		
319	S	"	"	C	"	0.8		50	10	65	X	-	200	-	-	-	3700N 4600E	" " "		
320	S	"	"	C	"	1.0		50	5	70	0.1	-	170	-	-	-	3700N 4575E	" " "		

\* 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 = cobbles

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE LIST

Tenement name ATLAS No. 1/77 Sample numbers 973321 - 326 Collected by G.B./I.H./D.S. Sheet no. 22  
 Area / Prospect ATLAS GRID Date 18.2.82  
 Map / Photo reference TAS L108 Analysed by ANALABS DPO no. 30132  
 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	Mo	Mn	Au			
		o/c sample type ***																
		s sample type ****																
973321	S	Power Auger			C Horizon	1.0m		45	10	80	0.1	-	225	-			3700N 4550E	Brown basalt clay loam.
22	S	"	"		AB "	0.8m		X	X	10	0.2	-	10	-			4500N 4780E	Reddish-brown sticky peaty clay.
23	S	"	"		A-B "	0.9m		X	X	15	0.1	-	15	-			4500N 4762E	Red-brown peaty clay, bottomed on white bleached qtz gravel.
24	S	"	"		A-B "	0.7m		X	X	15	0.3	-	5	-			4500N 4750E	As above, N <sup>o</sup> 973323.
25	S	"	"		A-B "	0.4m		X	5	15	0.4	-	10	-			4500N 4737E	Pale brown-grey sandy clay.
26	S	"	"		C "	0.9m		5	20	30	0.1	-	115	-			3860N 4725E	Micaceous grey shale.

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

C.R.A. E LORATION . GEOCHEMICAL SAMPLE LE IER

Tenement name: ROCKY CAPE No. 1/77 Sample numbers: 913388-398 Collected by: G. BROADBENT Sheet no. 1/2  
 Area / Prospect: ATLAS GRID AREA - Re sampling of power auger holes Date: 20.3.82  
 Map / Photo reference: ..... Analysed by: ANALABS DPO no. 30134  
 A 02143

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %										Grid ref	Geological Observations
		fl	wi	sl	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au	V	Ba			
		o/c sample type ***																		
		s sample type **** Depth.																		
913388								5	17	19	0.1		8					4400N	Dark brown micaceous clay - qtz-seicite.	
																		4762E	muscovite rock?	
389								2	6	4	0.4		6					4400N	Dark brown micaceous clay, as above	
																		475E		
390								6	250	21	0.3		5					4400N	Dark grey micaceous shale.	
																		4787E		
391								1	45	14	0.3		9					4400N	Pale grey micaceous schist/shale.	
																		4800E		
392								12	460	13	1.1		18					4400N	Dark brown sticky clay loam.	
																		4812E		
393								3	40	4	<0.1		3					4400N	White micaceous clay - shale/siltstone?	
																		4825E		
394								4	168	18	<0.1		3					4400N	Yellow-grey weath. dolomite, minor chert.	
																		4837E		
395	<del>ss</del>	2.0m					2.0m	<1	9	4	<0.1		<1					4400N	Yellow sandy clay - interbedded siltstone/dolomite?	
																		4850E		
396		2.3m					2.3m	1	10	5	<0.1		3					4400N	Yellow-grey weath dolomite, minor chert frags.	
																		4850E		
397							1.3m	1	7	9	<0.1		4					4400N	Pale grey -> brown micaceous shale.	
																		4862E		
913398							1.8m	5	8	9	<0.1		9					4400N	Yellow sandy micaceous clay - dolomite/shale?	
																		4875E		

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

C.R.A. E LORATION . GEOCHEMICAL SAMPLE LE IER

Tenement name ROCKY CAPE No. 1/77 Sample numbers 973399 - 405 Collected by G. BROADBENT Sheet no. 2/2  
 Area / Prospect ATLAS GRID Resampling by hand / Power Auger Date 20.3.82  
 Map / Photo reference ..... Analysed by ANALABS DPO no. 30134  
 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	Mo	Mn	Au					
		o/c sample type ***																		
		s sample type ****																		
973399	Hand / Power Auger Samples							1	6	5	<0.1		3					4400N	Pale grey micaceous shale.	
																		4837E		
400								1	20	3	<0.1		6					4400N	Pale grey micaceous shale.	
																			4900E	
401								2	5	5	<0.1		6						4600N	White flinted siltstone and grey shale.
																		4812E		
402							1	4	7	<0.1		10						4600N	Grey micaceous shale	
																		4825E		
403							<1	1	3	<0.1		7						4600N	Grey micaceous siltstone	
																		4837E		
404							<1	3	5	<0.1		<1						4600N	grey micaceous siltstone	
																		4862E		
973405								6	3	30	<0.1		1.7%					4370N	Brown sticky chocolate coloured loam in	
																		5150E	side of creek - basalt?	

\* 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 km<sup>2</sup>

C.R.A. EXPLORATION . GEOCHEMICAL SAMPLE REGISTER

Tenement name ATLAS No 1/77 Sample numbers 973715-723 Collected by C. BRODENT Sheet no. ....  
 Area / Prospect SOK TRVERSE OFF JUNCTION ROAD Date 1.6.82  
 Map / Photo reference TAS h. 107 Analysed by ANALABS DPO no. 30147

Sample No.	Type	ss channel **						Carbon	Metal content ppm or %								Grid ref	Geological Observations
		fl	wi	al	co	ca	pH		Cu	Pb	Zn	Ag	Mo	Mn	Au			
		o/c sample type ***																
		s sample type **** Depth Horizon																
973715	S	hard	hgr		0.4m	C		25	145	400	<0.5							START LINE FROM CQ744361 BEARING 300° magnetic
716	S	"	"		0.6m	C		100	80	510	<0.5							30m. Orange sticky clay with dolomite and chat frags
																		40m. Brown and black Mn rich material with dolomite frags and pieces of vein quartz.
717	S	"	"		0.7m	C		20	100	165	<0.5							50m. Orange and grey silty clay with mica schist frags
718	S	"	"		0.5m	C		20	10	50	0.5							60m. Yellow sandy clay - quartz.
719	S	"	"		0.7m	C		5	5	25	<0.5							80m. Beige silty clay with mica schist fragments
720	S	"	"		1.0m	C		10	10	50	<0.5							100m. Sticky orange micaceous clay with quartz frags.
721	S	"	"		0.7m	C		15	10	45	0.5							120m. Pale brown silty loam with reddish sandy pit stones and grey qtz mica schist.
722	S	"	"		0.8m	C		15	10	60	<0.5							END of 140m <sup>CQ744362</sup> Yellow sticky micaceous clay.

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

APPENDIX II

PETROLOGICAL DESCRIPTIONS

072

596073

**Central Mineralogical Services**



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

Mr. G. Broadbent  
Geologist  
C.R.A. Exploration Pty. Ltd.  
P.O. Box 138  
BURNIE / TAS. 7320

5th July, 1982.

REPORT CMS 82/6/10

YOUR REFERENCE:	D.P.O. No. 30146
DATE RECEIVED:	16th June, 1982
SAMPLE NOS.:	6 Samples
SUBMITTED BY:	G. Broadbent
WORK REQUESTED:	Petrology

Copy to:  
The Chief Geologist  
C.R.A. Exploration Pty. Ltd.  
G.P.O. Box 384D  
MELBOURNE / VIC. 3001

Copy & Invoice to:  
Administration Officer  
C.R.A. Exploration Pty. Ltd.  
P.O. Box 138  
BELLERIVE / TAS. 7018

*per H.W. Fander*

H.W. Fander, M. Sc.

073

REPORT CMS 82/6/10

Arthur Lineament Rock Samples

Six rock samples were received for petrological examination; thin-sections were prepared and offcuts were subjected to carbonate stain tests, where necessary. The rocks are briefly described in the accompanying table.

Summary

Five of the six rocks can be categorised as "black shale" facies sediments, typically comprising mixed chemical and fine clastic types, all with carbonaceous matter. Metamorphic effects are minimal, especially in the dolostones, and are restricted to recrystallization and the development of schistosity in the micaceous (i.e. incompetent) portions of 973680 and 973698; in fact, the metamorphic grade hardly extends beyond "low" metamorphism.

However, sample 973702 is completely out of context with the other rocks; it is a high-grade gneiss, assigned to the upper amphibolite facies, and is of igneous origin; prior to metamorphism, the rock was a coarsely crystalline mafic type with abundant ferromagnesian minerals, i.e. verging on ultramafic composition, in the nature of a picrite or melagabbro, and in its present form it is certainly incompatible with the others. It could represent a locally dynamically metamorphosed intrusive rather than being a product of regional metamorphism.

H.W. Fander, M. Sc.

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074

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Central Mineralogical Services Comments
973 680 (T.S. 42450)	<u>Dolomitic Micaceous Metachert</u> . Clear, micro-crystalline quartz, numerous dolomite rhombs, parallel parting planes of muscovite-chlorite.	Micaceous laminae are schistose; other parts relatively unaffected.	Scattered sand-size clastic quartz grains. Carbonaceous matter (trace).	Rock was a dolomitic chert with argillaceous partings or laminae; mild metamorphism virtually restricted to these.
973 698	<u>Metachert/Schist</u> . Interbedded bands/lenses of dolomitic chert and fine carbonaceous, sericitic, quartzose schist, finely crenulated and broadly folded.	Chert unmetamorphosed; shale bands all schistose, parallel to original bedding.	Traces of fine pyrite.	Secondary cleavage, due to crenulations, makes angle of 60°-70° with first cleavage and bedding.
973 700	<u>Dolostone</u> . Largely composed of finely crystalline cloudy dolomite, lightly pigmented with carbon films; numerous authigenic quartz veins/patches.	Uniformly micro-crystalline; some intraformational brecciation.	Quartz veins contain clear dolomite younger than host rock.	Probably a dolomitised limestone, in which volume reduction/brecciation followed by quartz-dolomite veining.
973 701	<u>Dolostone</u> . Massive, finely-crystalline dolomite grains with interlocking textures, and thin subparallel carbonaceous streaks.	Weak bedding indicated by carbon streaks. Fine-grained.	Veins of coarse stressed quartz with clear dolomite and albite laths.	Very similar to 973700, with less quartz veining. Essentially unmetamorphosed.
973 702	<u>Augite-Actinolite Gneiss</u> . Very large crystals of augite (relict phenocrysts) in lineated matrix of actinolite needles, chlorite flakes, andesine, quartz.	Pronounced coarse gneissic fabric; relict porphyritic textures.	Streaks of dense white leucoxene (ex oxide opaques). Granular epidote.	Appears to be a meta-igneous rock, possibly a picrite or melagabbro, partly altered, then metamorphosed (amphibolite facies).
973 703 (T.S. 42455)	<u>Quartzose Dolostone</u> . About 70 % micro-crystalline dolomite, intergrown with 30 % fine clear quartz and authigenic euhedral feldspar.	Weak compositional banding, accentuated by pigmentation. Fine-grained.	Ultrafine carbon associated with dolomite. Authigenic pyrite, ?chalcopyrite.	Very similar to the other dolostone and all part of the chert-black shale dolostone facies. Not metamorphosed.

APPENDIX III

ATLAS SIROTEM SURVEY

076

596077



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

25th November, 1982.

Memorandum To: G. BROADBENT  
Copy: T. W. DICKSON  
From: M. F. FLIS  
Subject: ATLAS SIROTEM SURVEY

INTRODUCTION

Attached is the contractors report on the Sirotem transient electromagnetic survey carried out on the Atlas grid.

DISCUSSION

Anomalous responses, for the configuration used here, should consist of a cross-over in the vertical component (Hz) coincident with a peak in the horizontal (E-W) component (Hx). As can be seen from the data profiles there certainly are't any obvious anomalies on any of the lines. Even so, the following comments are pertinent.

Line 3900mN (fig 2,3)

An apparent base level change occurs in the Hx data at around 4825mE. This corresponds with a basalt occurrence.

Line 4000mN (fig 4,5)

A small, short lived, anomaly occurs at 4725mE in both components of the data. There is no obvious cause for the response, however, it is of no interest.

Line 4200mN (fig 6,7)

Data on this line is relatively noisy. A very minor response occurs at 4775mE in the Hz data but is not reflected in the Hx data. It is probably due to overburden.

077

The anomaly seen at 4925mE on the Hx data is due to the proximity of the transmission loop (at 4950mE) although this effect is not seen on other lines.

Line 4300mN (fig 8,9)

A broad, low amplitude, ambiguous response is seen on this line. The cross-over occurs at around 4750mE, yet the peak in the Hx data may be taken as 4825mE with a major contact (?) at 4750mE. Rapid decay of this anomaly indicates a poor quality shallow conductor. The significance of this anomaly is enhanced by the presence of the 'Atlas Gossan' at around 4820mE.

Line 4400mN (fig 10,11)

A very minute response in the Hz data at 4700mE may be due to a creek situated at 4675mE. No coherent response occurs anywhere else on the line.

GENERAL

The survey failed to detect the presence of any conductor which could be attributed to the 'Atlas Gossan'. A small response was detected over this gossan although it was extremely weak.

Doubt must be expressed about the competence of the equipment to be used in the "Turam" mode as was done here. This was the first time Sirotem had been used in a large - loop/roving receiver configuration apart from test surveys at Mt. Lyell for E.Z. It is noted that in those tests the survey failed to detect known mineralisation previously mapped by grounded-wire Turam. (J.Bishop, pers.comm.)

RECOMMENDATIONS

The low amplitude response associated with the gossan should be verified by a check E.M. survey - possibly a frequency domain system.

M.F.FLIS

OPERATIONAL REPORT ON A  
SIROTEM TRANSIENT EM SURVEY  
NEAR SOMERSET, TASMANIA,  
FOR  
C.R.A. EXPLORATION LIMITED

TABLE OF CONTENTS

	<u>PAGE</u>
1. INTRODUCTION	1
2. SURVEY EQUIPMENT	1
3. SURVEY DETAILS	1
4. PRESENTATION OF DATA	3

APPENDIX

A. SURVEY EQUIPMENT
B. LOOP CONFIGURATIONS
C. PRESENTATION OF DATA FORMATS

LIST OF TABLES

TABLE 1 TRAVERSE DETAILS	2
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LIST OF FIGURES

Figure 1	Transmitter Loops
Figure 2	Voltage Profiles, Line 3900N, Vertical Component
Figure 3	Voltage Profiles, Line 3900N, E-W Component
Figure 4	Voltage Profiles, Line 4000N, Vertical Component
Figure 5	Voltage Profiles, Line 4000N, E-W Component
Figure 6	Voltage Profiles, Line 4200N, Vertical Component
Figure 7	Voltage Profiles, Line 4200N, E-W Component
Figure 8	Voltage Profiles, Line 4300N, Vertical Component
Figure 9	Voltage Profiles, Line 4300N, E-W Component
Figure 10	Voltage Profiles, Line 4400N, Vertical Component
Figure 11	Voltage Profiles, Line 4400N, E-W Component

080

1. INTRODUCTION

Between 12th and 15th April, 1982, a SIROTEM Transient EM survey was carried out near Somerset, Tasmania for C.R.A. Exploration Limited. The Party Chief was David Pickering.

2. SURVEY EQUIPMENT

One MKII SIROTEM unit complete with accessory cables.  
One RVR-1 Roving Receiver coil with 500 metres of connecting cable.

3. SURVEY DETAILS

The survey was run over 5 lines on the Atlas Grid, located near Somerset, Tasmania. A summary of the lines surveyed is given in Table 1.

This area was surveyed using a fixed transmitter roving receiver loop configuration. For this configuration a large transmitter loop, in this case, 400 metres by 200 metres, is laid out, usually to one side of the area of interest. The receiver coil is then moved along each survey line in turn, with measurements being taken at set intervals, in this case 50 metres. At each station a reading of the vertical component and the horizontal component parallel to the survey line was taken. Prime advantages of this technique as opposed to say, coincident loops, are that the wires do not have to be moved through the bush. This is particularly an advantage in areas of rough terrain or, as was the case here, where the bush is very thick. Two transmitter loops were used as shown in figure 1.

081

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TABLE 1

TRAVERSE DETAILS

<u>Line</u>	<u>Range</u>	<u>Station Interval Metres</u>	<u>Stations</u>
3900N	4675E - 4925E	50	6
4000N	4650E - 4925E	50	7
4200N	4650E - 4900E	25	11
4300N	4675E - 4925E	50	6
4400N	4650E - 4925E	25	12

082

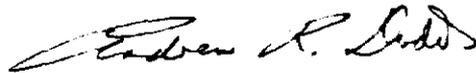
596083

All readings resulted from the stacking and averaging of 512 double pulses, that is effectively 1024 decay curves. Additionally, two readings were taken at each station as a further check on survey accuracy. It is evident from the quality of these repeats that the data are accurate down to a level of approximately 1 microvolt per amp, and reasonable even below this level.

4. PRESENTATION OF DATA

The data are presented as voltage profiles of the response for each component at a scale of 1:2,500.

Respectfully submitted,  
GEOEX PTY. LTD.



A.R. DODDS  
Senior Geophysicist

No: 82759

5th May, 1982

ARD/pcl

A. SURVEY EQUIPMENT

The SIROTEM equipment consists of a console, power pack, loop cable and connecting leads. SIROTEM has been designed to measure the transient decay over a larger number of channels than other instruments of this type, and to later time delays than ever previously possible. The particular advantage of later times is the ability to record conductors underlying highly conductive overburden and/or highly conductive surrounding hosts. SIROTEM records the transient over 32 contiguous channels out to a maximum time delay of 165 milliseconds. Table 1 gives the specific delay times for each channel. The instrument is very sensitive and has a low inherent noise. It has a degree of ambient noise rejection capability due to its ability to stack up to 4096 ( $2^{12}$ ) separate readings to obtain the output average. This is performed simultaneously over all channels so that the background noise is common to all channels at the time of measurement. The readings corrected for output current variation are produced automatically on a printer. As opposed to dial readings, they are thereby objective, operator independent and in ready hard-copy form.

The instrument also has a significant amount of in-built data processing capability due to the incorporation of a microprocessor. Thus apparent resistivities - the resistivity the ground would have, were it homogeneous, to yield the response measured - can optionally be printed out for each channel in addition to the voltages.

B. LOOP CONFIGURATIONS

The standard loop configurations used for SIROTEM surveys are diagrammed in Figure A1.

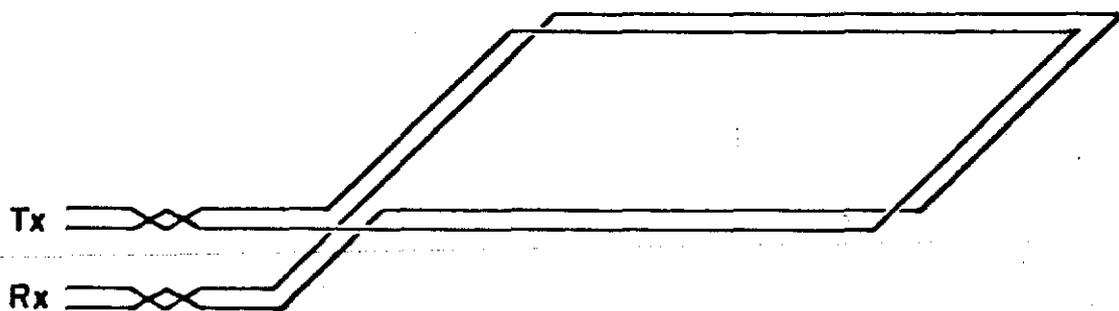
084

TABLE A1

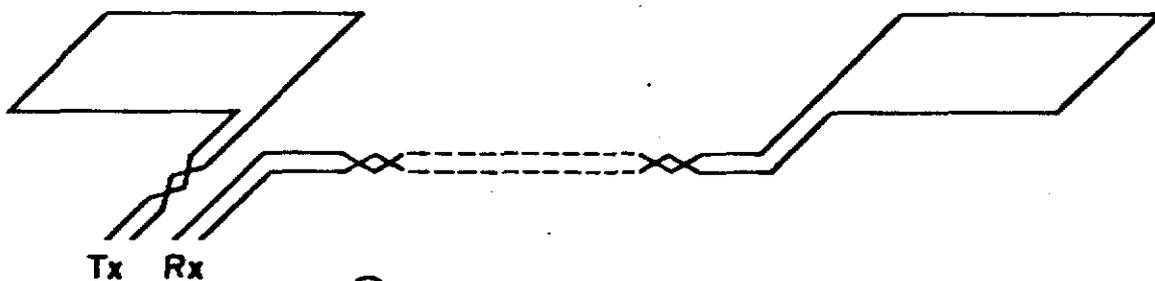
596085

CHANNEL DELAY TIMES AND INTEGRATION WIDTHS

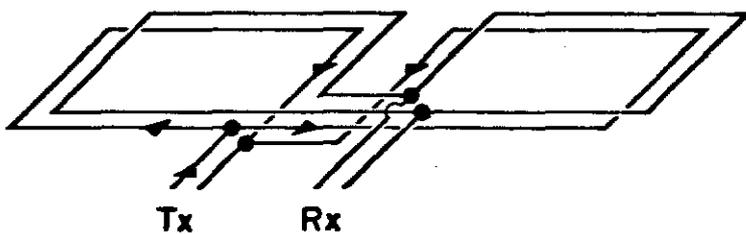
Channel No.	Nominal Mean Delay (msecs)	Nominal Width (msecs)	Actual Integration Window (msecs)
1	0.4	0.4	0.25 - 0.6
2	0.8	0.4	0.65 - 1.0
3	1.2	0.4	1.05 - 1.4
4	1.6	0.4	1.45 - 1.8
5	2.0	0.4	1.85 - 2.2
6	2.6	0.8	2.25 - 3.0
7	3.4	0.8	3.05 - 3.8
8	4.2	0.8	3.85 - 4.6
9	5.0	0.8	4.65 - 5.4
10	5.8	0.8	5.45 - 6.2
11	7.0	1.6	6.25 - 7.8
12	8.6	1.6	7.85 - 9.4
13	10.2	1.6	9.45 - 11.0
14	11.8	1.6	11.05 - 12.6
15	13.4	1.6	12.65 - 14.2
16	15.8	3.2	14.25 - 17.4
17	19.0	3.2	17.45 - 20.6
18	22.2	3.2	20.65 - 23.8
19	25.4	3.2	23.85 - 27.0
20	28.6	3.2	27.05 - 30.2
21	33.4	6.4	30.25 - 36.6
22	39.8	6.4	36.65 - 43.0
23	46.2	6.4	43.05 - 49.4
24	52.6	6.4	49.45 - 55.8
25	59.0	6.4	55.85 - 62.2
26	68.6	12.8	62.25 - 75.0
27	81.4	12.8	75.05 - 87.8
28	94.2	12.8	87.85 - 100.6
29	107.0	12.8	100.65 - 113.4
30	119.8	12.8	113.45 - 126.2
31	139.0	25.6	126.25 - 151.8
32	164.6	25.6	151.85 - 177.4



(i) COINCIDENT LOOPS  
(DISPLACED LOOPS)



(ii) SEPARATED LOOPS



(iii) FIGURE 8 LOOPS

Figure A.1 Loop Configurations.

The most commonly used configuration for reconnaissance work is the coincident transmitter-receiver loop configuration. For this configuration, the transmitter and receiver loops are separated by a negligible distance or may even use the same wire. The loops are normally square with side length ranging from 25 - 200 metres, 100 metres being the most commonly used size. Adequate coverage is normally given by a station spacing of half the loop dimension, that is with a 50% overlap. Results of modelling studies, and experience, indicate that the depth penetration varies with the loop size and is, to an order of magnitude, equal to it. Thus with 100 metre square loops a depth penetration of the order of 100 metres can be expected.

The main advantages of the coincident loop configuration are that the wires are simple to move and thus a satisfactory data production rate can be achieved. Also the resulting data is relatively easy to interpret. The major disadvantage is that the configuration couples well with horizontal conductors, such as conductive overburden, so that the response from steeply dipping bedrock conductors can be swamped in the early channels. However, experience has shown that bedrock conductors usually result in satisfactory anomalies in the later channels, when the response from the overburden has died away. It might also be regarded as a disadvantage that the response for a narrow, steeply dipping conductor can be double-peaked, with a low response when the loops are directly over the conductor and high responses half a loop dimension to either side of the conductor itself. This can make the interpretation less obvious.

A variation of the coincident loop configuration has been devised for situations where the surface resistivities are very high or, more importantly, where strongly magnetic material is present in the immediate vicinity of the surface and close to the wires. This configuration is called the displaced loop configuration and is the same as coincident loops except that the transmitter and receiver loops are

087

off-set from each other by a distance of approximately 2 metres. Although more cumbersome to use than the coincident loop configuration, this method has the advantage that the results are guaranteed free from the contaminating effects of near-wire materials, and thus encourage more confident and more detailed interpretation.

Another frequently used layout is the separated loop configuration, also shown in Figure A1. For this configuration the transmitter and receiver loops are separated by distance, ranging from 1-3 loop dimensions, the loops themselves being usually 50 or 100 metres square. The station interval varies from a half to one loop dimension.

The separated loop configuration is rather more cumbersome in field use than coincident loops and requires more wire laid out on the ground. However, it has the advantages that it couples less well with conductive overburden, at least in the early channels, and also produces an anomaly directly over the conductor, which can simplify interpretation considerably. It might be regarded as an advantage also that anomalies with this configuration have a negative polarity and frequently stand out more clearly with standard plotting techniques. A disadvantage of the configuration is that the response from a homogeneous or two-layer half space is more complex, with a change in polarity frequently occurring between early and late channels. Additionally the effect of a vertical or steeply dipping change in sub-surface resistivity can cause a response which looks like the anomaly from a discrete conductor.

The third basic loop configuration, which is less commonly used, is the figure eight configuration, as shown in Figure A1-C. This configuration was designed specifically to maintain the advantages of coincident loops, but also increase the coupling to vertical conductors. The wires are

088

coincident but have a more complex figure eight pattern. The configuration is, therefore quite cumbersome to use in the field, but has the advantages that vertical conductors couple rather better than with coincident loops and, most significantly, an anomaly is produced directly over the conductor, as well as minor anomalies on either side. This configuration is normally only used in detailing or specific interest situations.

### C. DATA PRESENTATION FORMATS

The standard data presentation is of the instrument output of normalised transient voltages, in units of microvolt/amp, plotted as profiles for each line, with a linear horizontal distance scale and a logarithmic vertical voltage scale. This convention allows the full range of voltages to be plotted on a reasonable sized graph and still allows the major features on each decay profile to be easily seen. Error bars are plotted to show the range of recorded values for each station and each delay time and provide an estimate of the accuracy of the reading.

One disadvantage of the above plotting technique is that variations in the voltage level from channel to channel are not evident. This can be overcome by calculating the apparent resistivities and plotting these on a resistivity time-distance plot. The horizontal scale is again a linear distance scale. The vertical scale in this case plots the channel delay times on a logarithmic scale. The value of the apparent resistivity is plotted at the intersection of the station location and the relevant channel number, and the results then contoured. Since there is a relationship between the delay time and the depth penetration for a given reading, the resistivity time-distance plots provide the diagrammatic representation of the resistivity layering

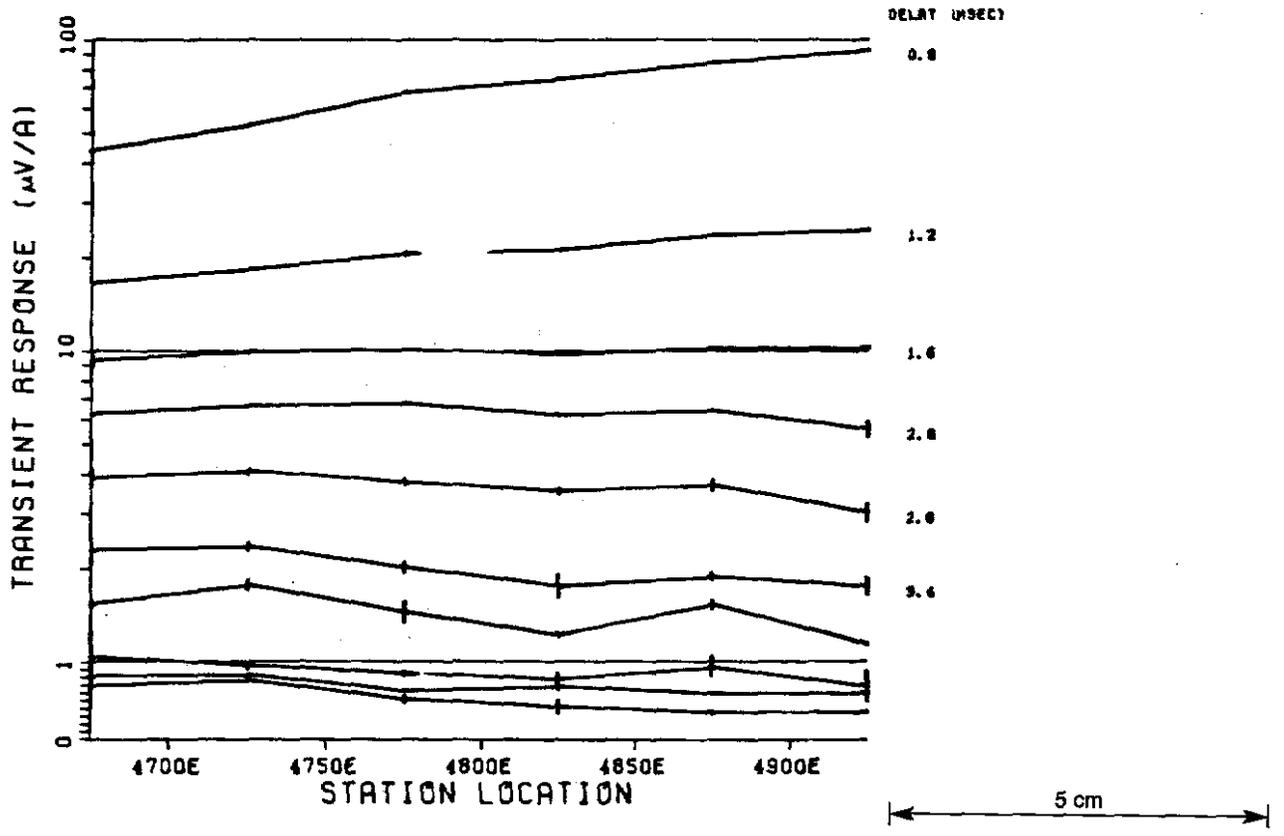
in the ground in the absence of finite conductors.

It is also possible to plot the apparent resistivities for a given channel on a plan map, thereby showing the lateral variations over the whole grid of the response at a given time delay. On such plan contours the early channels tend to represent the near-surface or overburden resistivity variations while the later channels show more of the bedrock response and less response from the overburden.



091

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INSTRUMENT : SIABTEM  
 CONFIGURATION: 200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (RVR) SURVEY  
 READING INTERVAL 50M

SCALE : 1:2500  
 DATE : 14/4/82  
 MAP : SOMERSET, TAS.

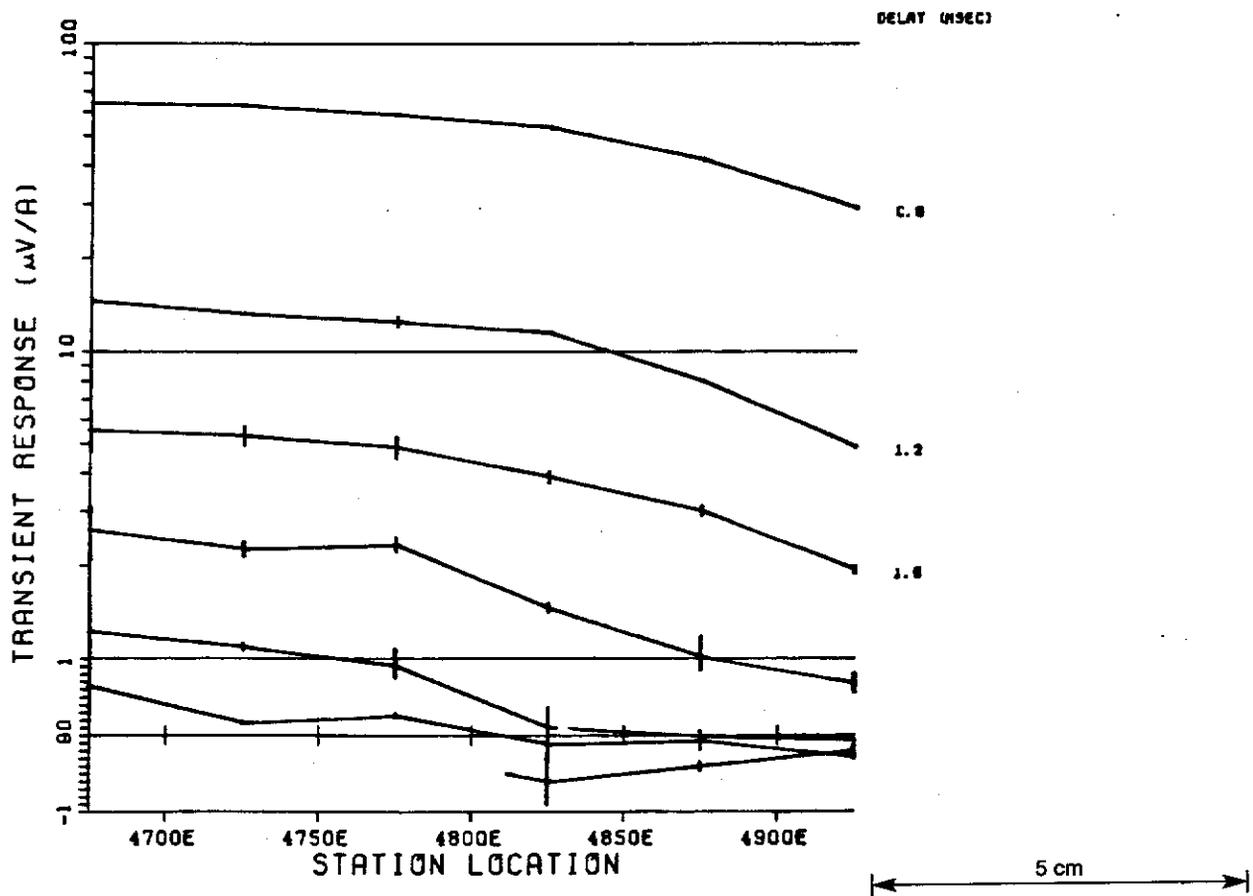
C. R. A. EXPLORATION PTY. LTD.  
 TRANSIENT E. M. PROFILE  
 NE 3900N (LOOP 2), VERT. COMP., PROSPECT ATLAS



FIG 2

092

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INSTRUMENT : SIROTEM  
 CONFIGURATION: 200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (AVR) SURVEY  
 READING INTERVAL 50M

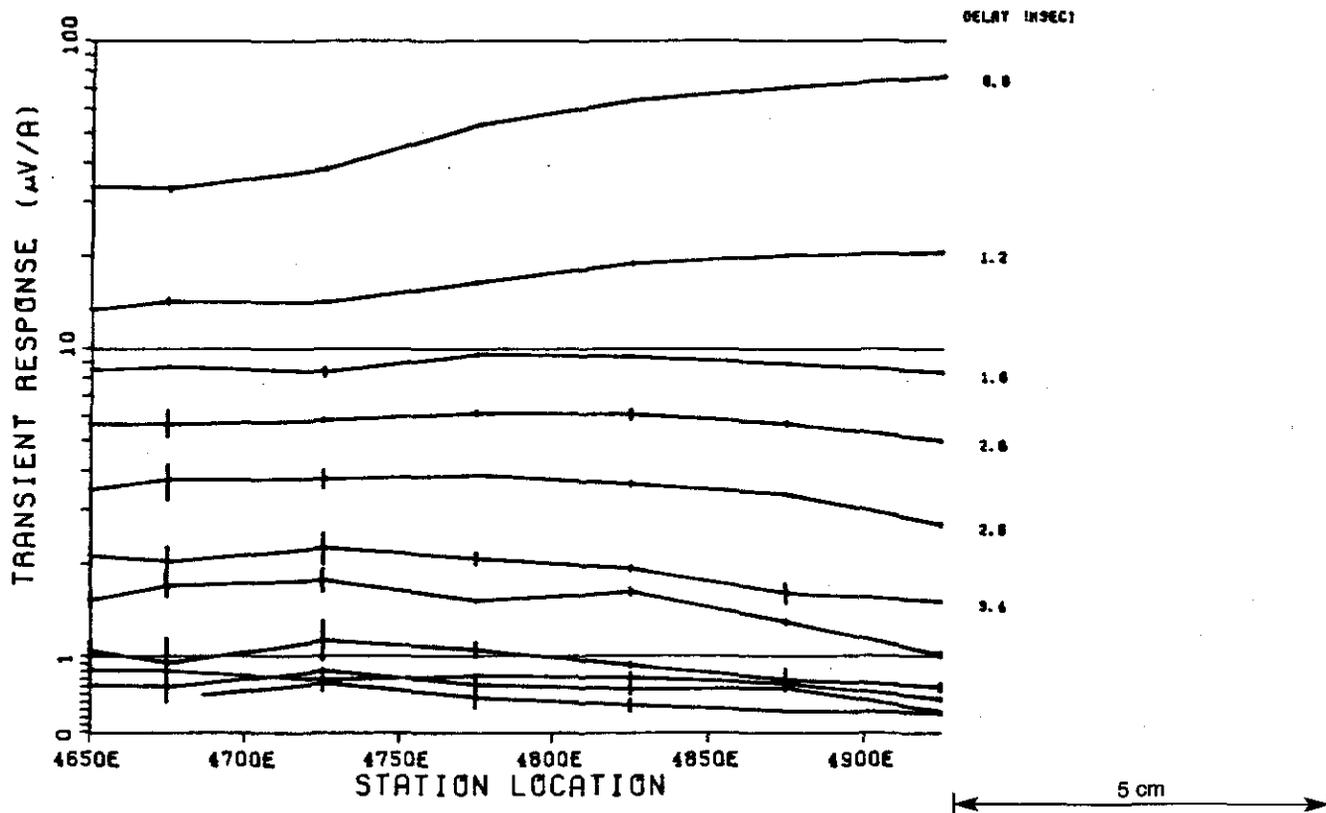
SCALE: 1:2500  
 DATE: 14/4/82  
 MAP: SOMERSET, TAS.

C. R. A. EXPLORATION PTY. LTD.  
 TRANSIENT E. M. PROFILE

LINE 3900N (LOOP 2), E-W COMP., PROSPECT ATLAS



FIG. 3



INSTRUMENT :SIROTEM  
 CONFIGURATION:200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (AVR) SURVEY  
 READING INTERVAL 50M

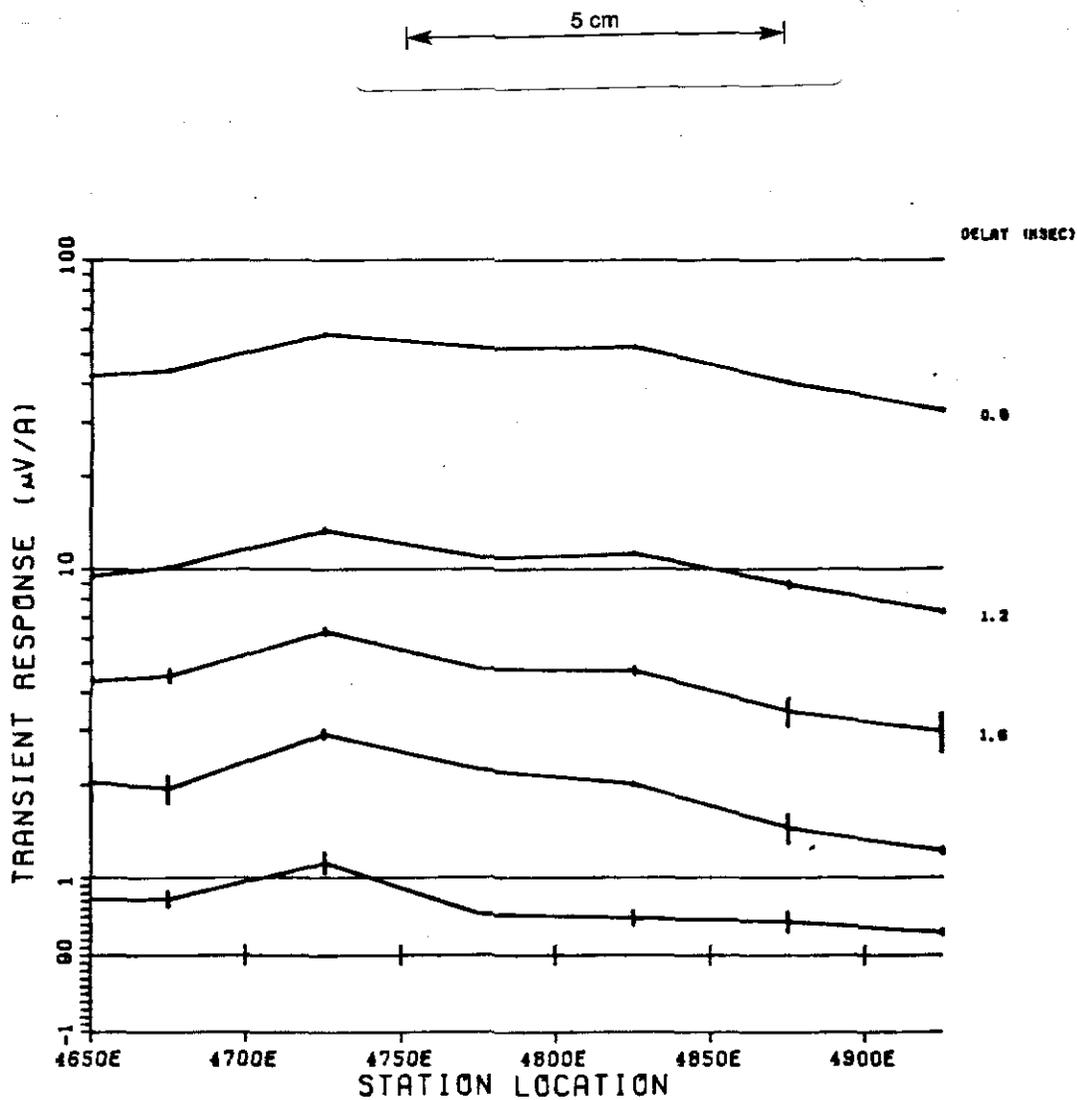
SCALE : 1:2500  
 DATE : 13/4/82  
 MAP : SOMERSET, TAS.

C. R. A. EXPLORATION PTY. LTD.  
 TRANSIENT E. M. PROFILE

NE 4000N (LOOP 2), VERT. COMP., PROSPECT ATLAS



FIG. 4



INSTRUMENT : SIROTEM  
 CONFIGURATION : 200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (RVR) SURVEY  
 READING INTERVAL 50M

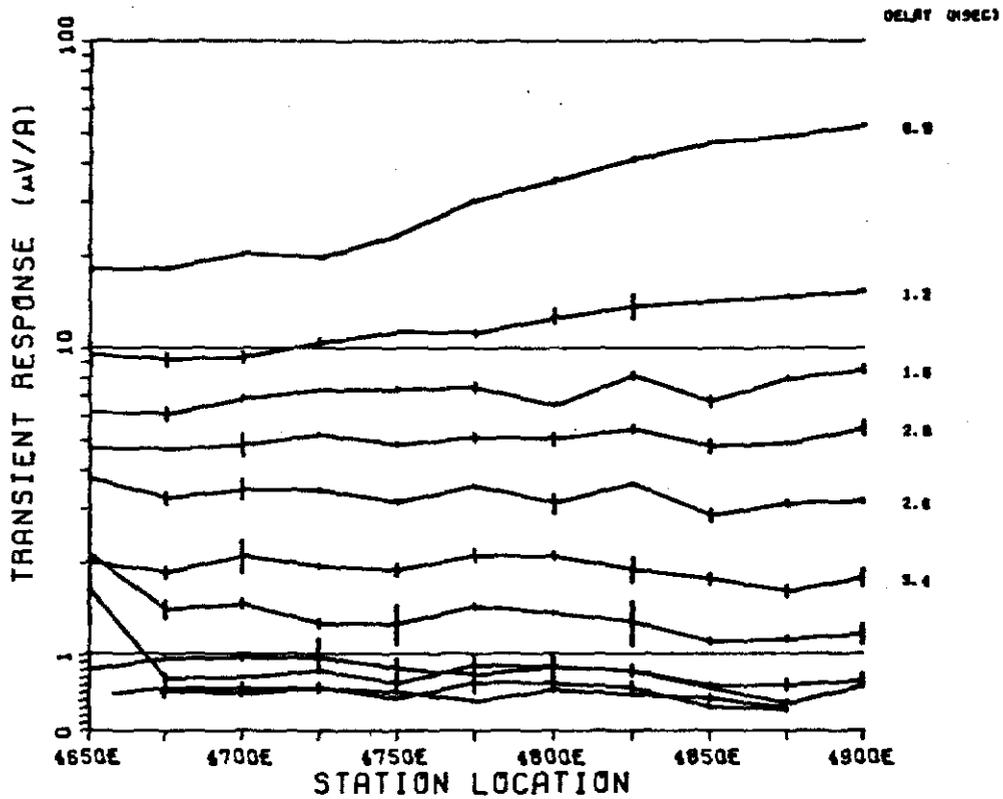
SCALE : 1:2500  
 DATE : 13/4/82  
 MAP : SOMERSET, TAS.

C. R. A. EXPLORATION PTY. LTD.  
 TRANSIENT E. M. PROFILE  
 INE 4000N (LOOP 2), E-W COMP., PROSPECT ATLAS



FIG. 5

5 cm



INSTRUMENT : SIOTEM  
 CONFIGURATION : 200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (AVR) SURVEY  
 READING INTERVAL 25M

SCALE : 1:2500  
 DATE : 13/4/82  
 MAP : SOMERSET, TAS.

C. R. A. EXPLORATION PTY. LTD.  
 TRANSIENT E.M. PROFILE

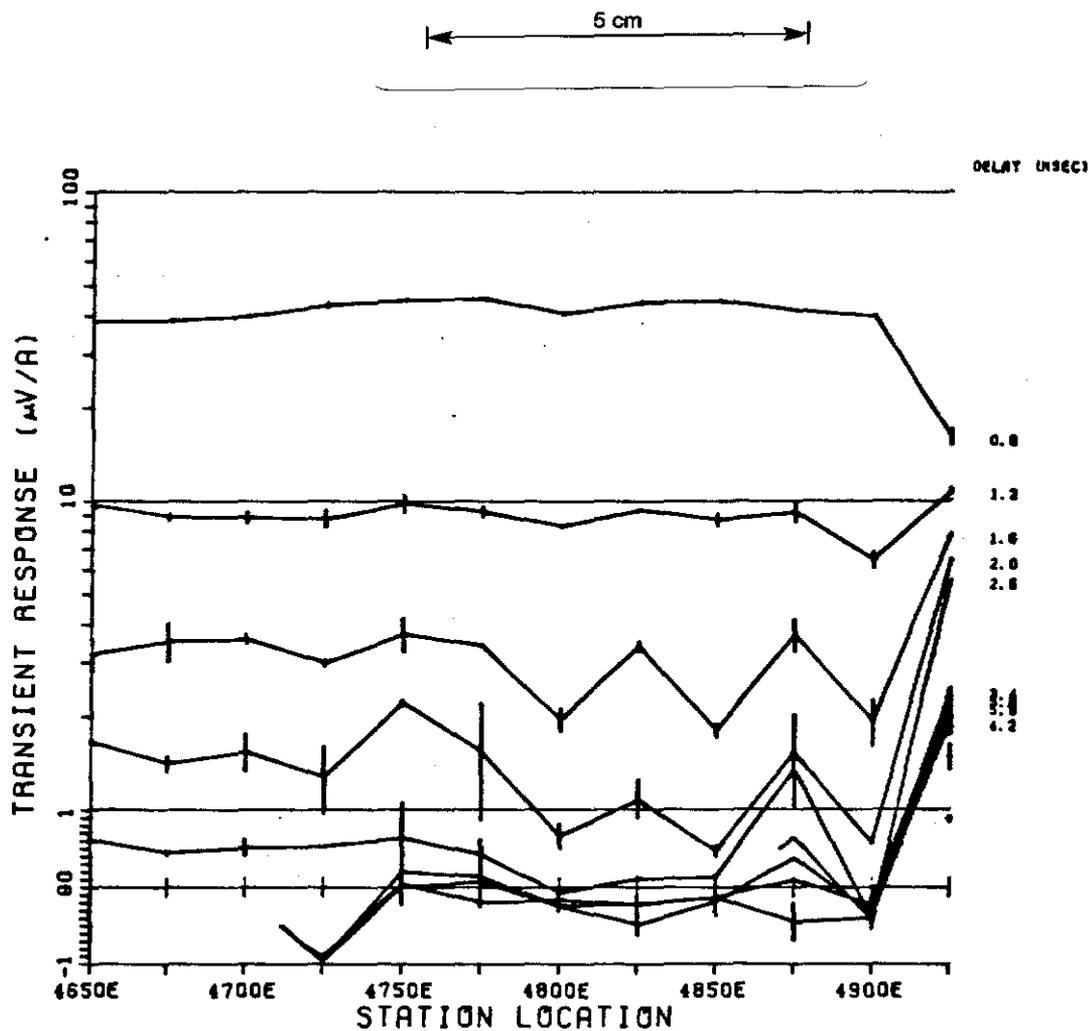
LINE 4200N (LOOP 1), VERT. COMP., PROSPECT ATLAS



FIG. 6

096

596097



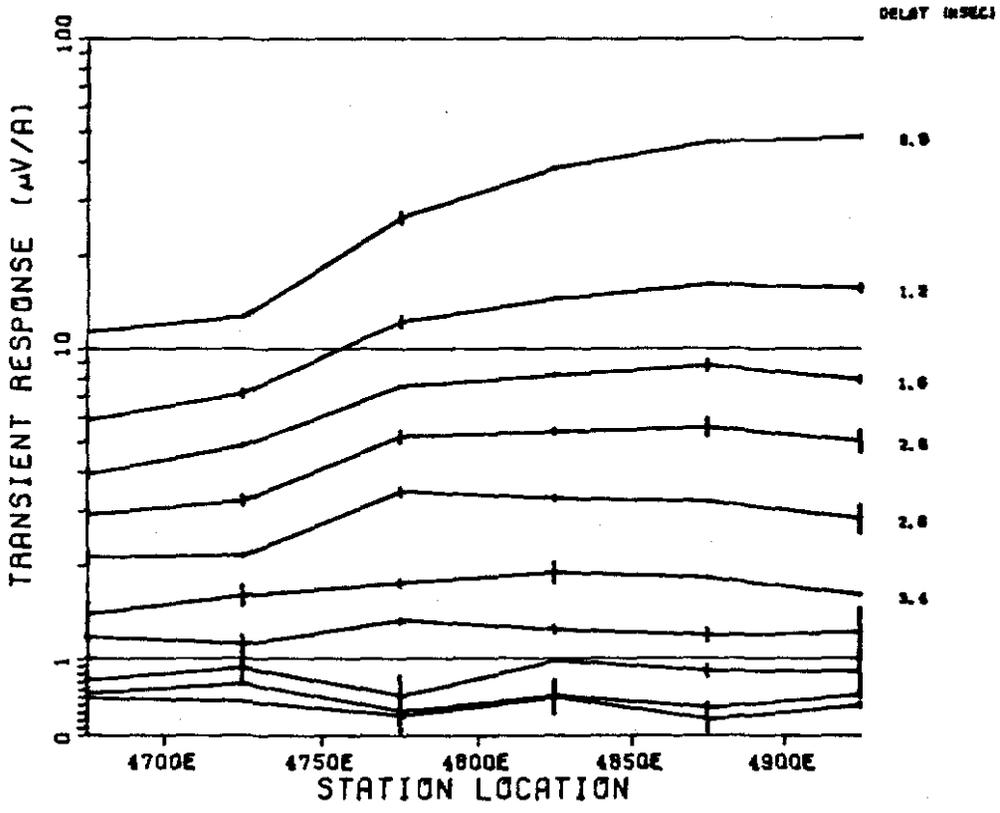
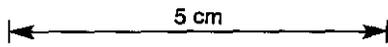
INSTRUMENT : SIROTEM  
 CONFIGURATION : 200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (AVR) SURVEY  
 READING INTERVAL 25M

SCALE : 1:2500  
 DATE : 13/4/82  
 MAP : SOMERSET, TAS.

C. R. A. EXPLORATION PTY. LTD.  
 TRANSIENT E.M. PROFILE  
 INE 4200N (LOOP 1), E-W COMP., PROSPECT ATLAS



FIG. 7



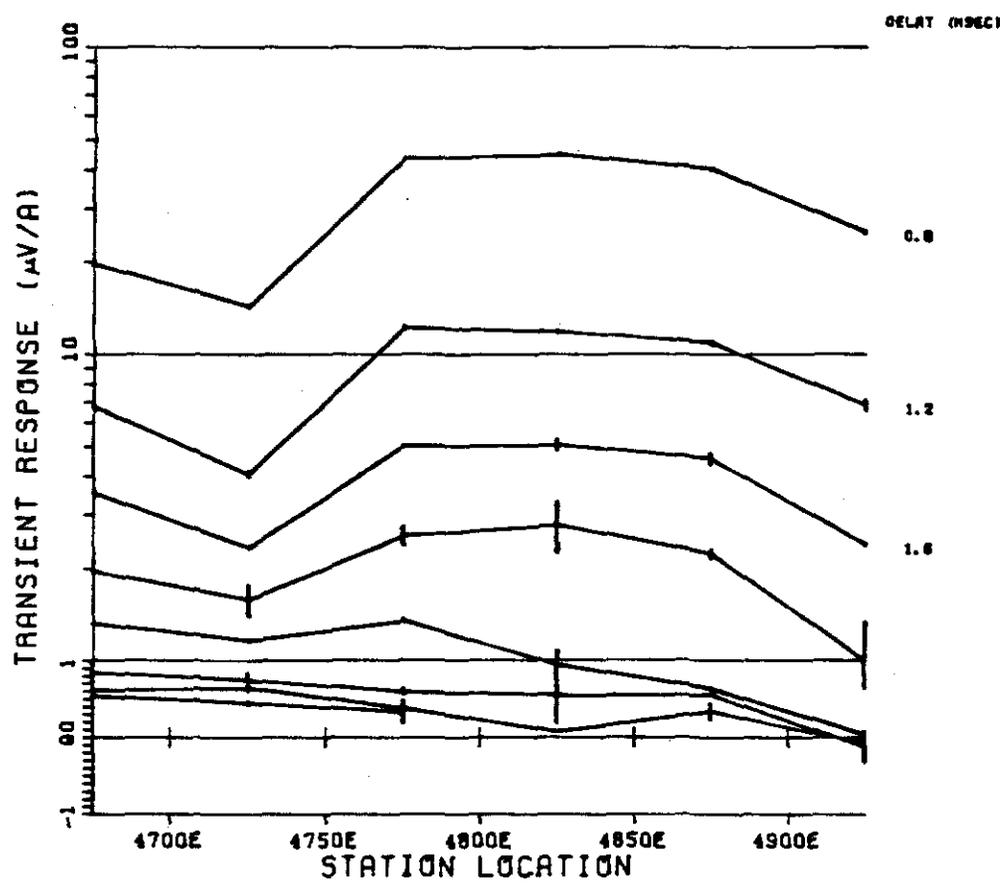
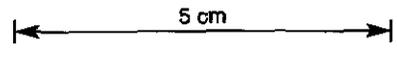
INSTRUMENT :SIROTEM  
 CONFIGURATION:200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (AVA) SURVEY  
 READING INTERVAL 50M

SCALE: 1:2500  
 DATE: 12/4/82  
 MAP: SOMERSET, TAS.

C. R. A. EXPLORATION PTY. LTD.  
 TRANSIENT E. M. PROFILE  
 4300N (LOOP 1), VERT. COMP., PROSPECT ATLAS



FIG. 8



INSTRUMENT : SIROTEM  
 CONFIGURATION : 200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (AV/R) SURVEY  
 READING INTERVAL 50M

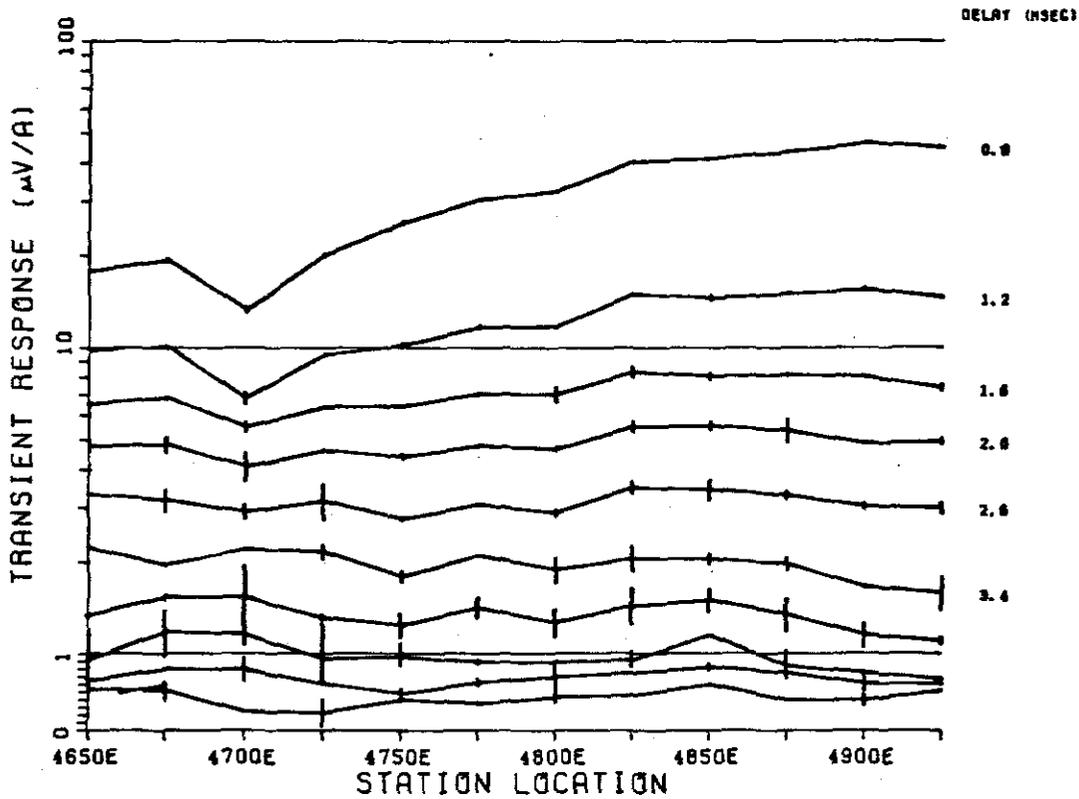
SCALE : 1:2500  
 DATE : 12/4/82  
 MAP : SOMERSET, TAS.

C.R.A. EXPLORATION PTY. LTD.  
 TRANSIENT E.M. PROFILE  
 INE 4300N (LOOP 1), E-W COMP., PROSPECT ATLAS



FIG. 9

5 cm



INSTRUMENT : SIROTEM  
 CONFIGURATION : 200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (AVR) SURVEY  
 READING INTERVAL 25M

SCALE : 1:2500  
 DATE : 12/4/82  
 MAP : SOMERSET, TAS.

C.R.A. EXPLORATION PTY. LTD.  
 TRANSIENT E.M. PROFILE  
 E 4400N (LOOP 1), VERT. COMP., PROSPECT ATLAS

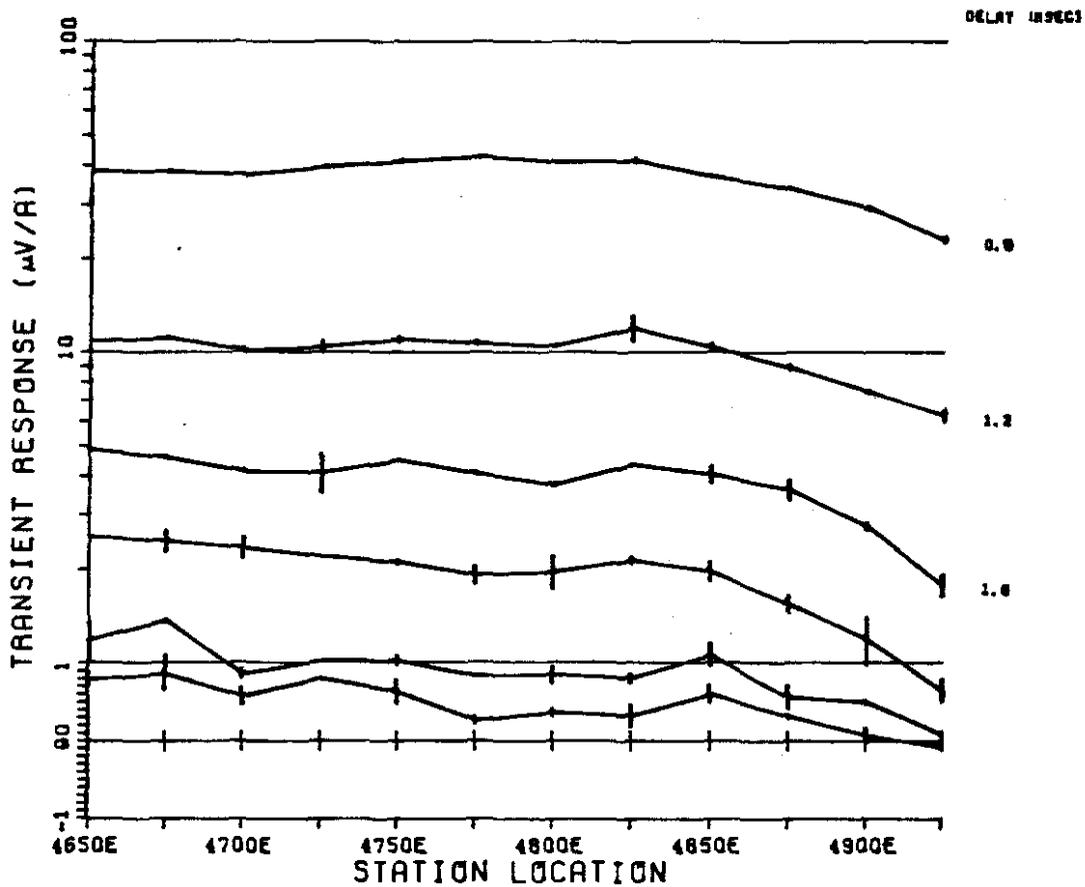


FIG. 10

100

596101

5 cm



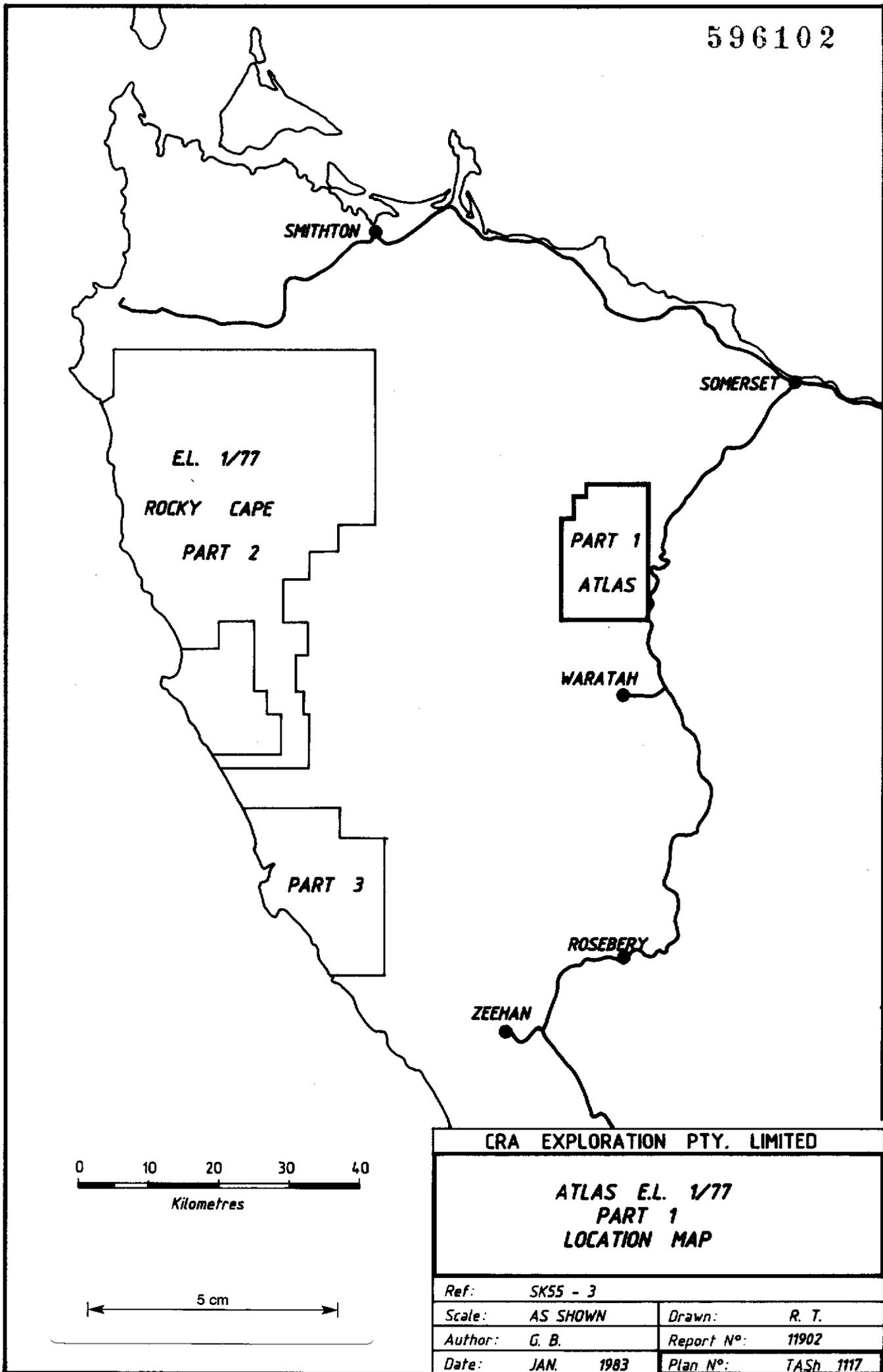
INSTRUMENT : SIRTEM  
 CONFIGURATION: 200M SQUARE TRANSMITTER LOOP,  
 TURAM MODE (AVR) SURVEY  
 READING INTERVAL 25M

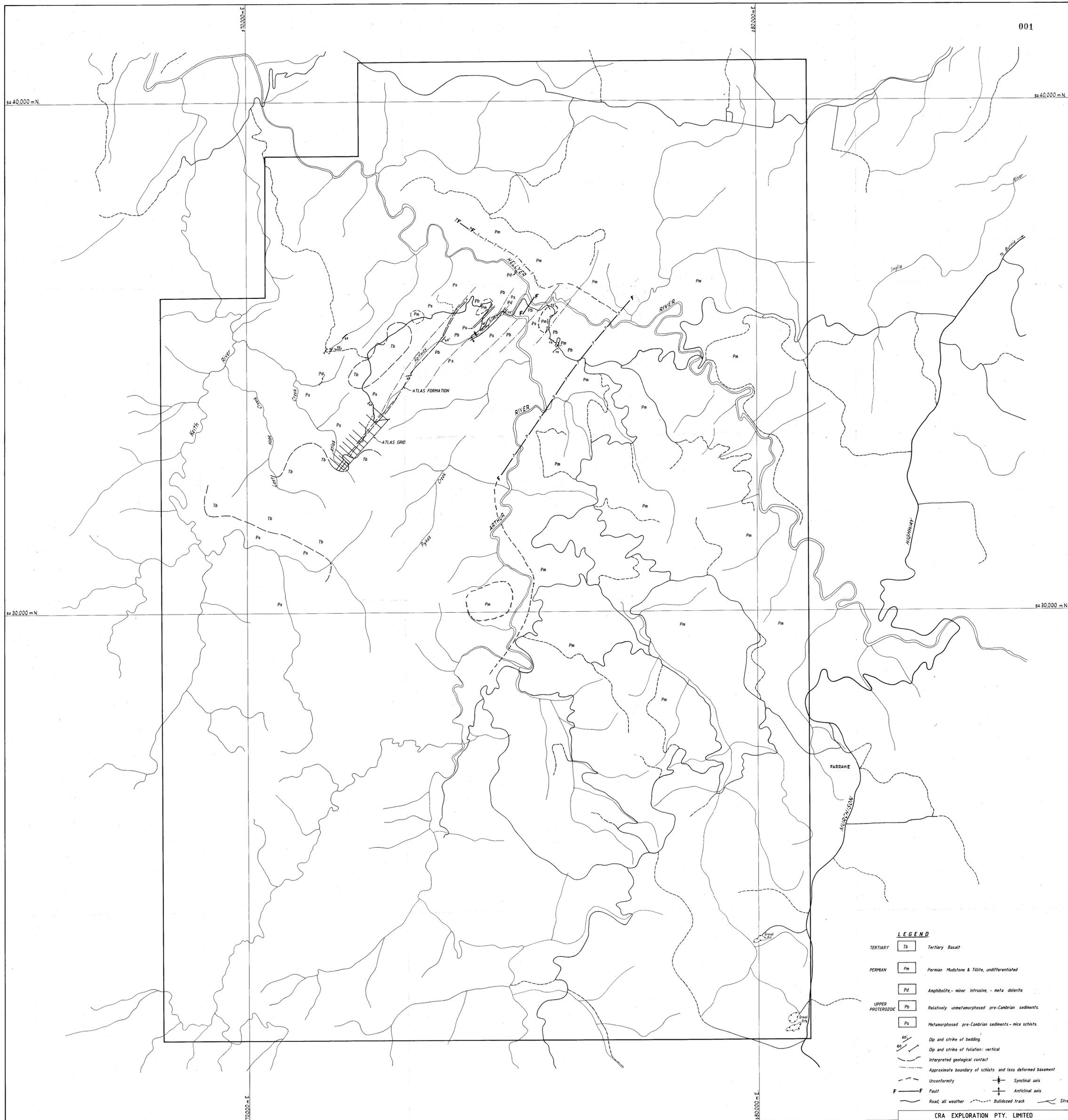
SCALE: 1:2500  
 DATE: 12/4/82  
 MAP: SOMERSET, TAS.

C.R.A. EXPLORATION PTY. LTD.  
 TRANSIENT E.M. PROFILE

INE 4400N (LOOP 1), E-W COMP., PROSPECT ATLAS

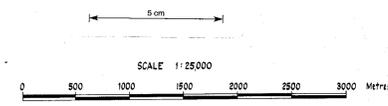






**LEGEND**

- TERTIARY Tb Tertiary Basalt
- PERMAN Pm Permian Mudstone & Tuffite, undifferentiated
- Pd Amphibolite - minor intrusive - meta dolerite
- UPPER PROTEROZOIC Pb Relatively unmetamorphosed pre-Cambrian sediments.
- Ps Metamorphosed pre-Cambrian sediments - mica schists.
- Dip and strike of bedding:
- Dip and strike of foliation: vertical
- Interpreted geological contact
- Approximate boundary of schists and less deformed basement
- Unconformity
- Fault
- Synclinal axis
- Anticlinal axis
- Road, all weather
- Bulldozed track
- Stream



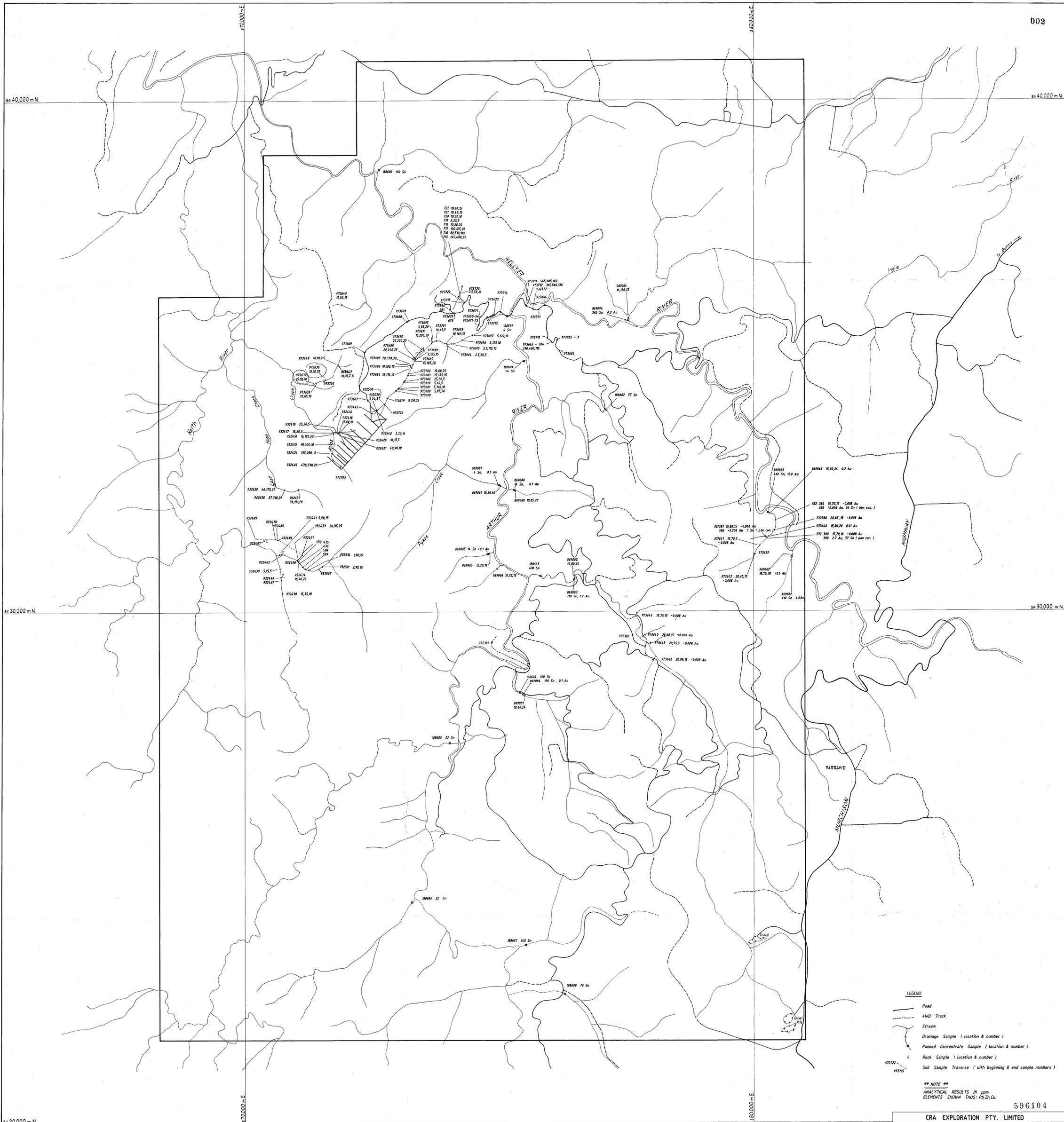
CRA EXPLORATION PTY. LIMITED

596103  
ATLAS E.L. 1/77  
(PART 1)

**GEOLOGY PLAN**

001

Geologist: G.S.	Scale: 1:25,000
Drawn: T.P.S.	Report No: 1992
Date: October 1980	Plan No: TASN 106



**LEGEND**

- Road
- - - LWD Track
- ~ Stream
- Drainage Sample (location & number)
- Panned Concentrate Sample (location & number)
- Rock Sample (location & number)
- Soil Sample Traverse (with beginning & end sample numbers)

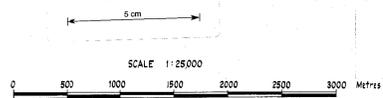
**\*\* NOTE \*\***  
ANALYTICAL RESULTS IN ppm.  
ELEMENTS SHOWN THUS: Pb, Zn, Cu

596104

CRA EXPLORATION PTY. LIMITED

ATLAS E.L. 1/77 (PART 1)  
ROCK SAMPLE LOCATIONS  
and DRAINAGE / SOIL GEOCHEMISTRY

002



geologist:	J.S.	scale:	1:25,000
drawn:	T.S.D.S.	report no:	7992
date:	October 1980	plot no:	7ASB 87

LEGEND

- Creek
- Costean
- Adit
- Inferred geological boundary
- Dip and strike of bedding / foliation.
- All weather Road
- Fault
- Sheared zone - faulted and crumpled

ROCK TYPE

- TERTIARY
  - Tertiary Basalt
  - Conglomerate
- PRE CAMBRIAN
  - Porous limonitic caprock ('gossan') presumably developed over weakly sulphidic dolomite.
  - 'Keith Beds' - Schistose metagreywackes, metasilstones and shales. (undifferentiated). The finer grain units have been virtually completely altered to qtz - muscovite - sericite schist; the schistosity / foliation appears to be parallel or sub - parallel to original bedding directions.

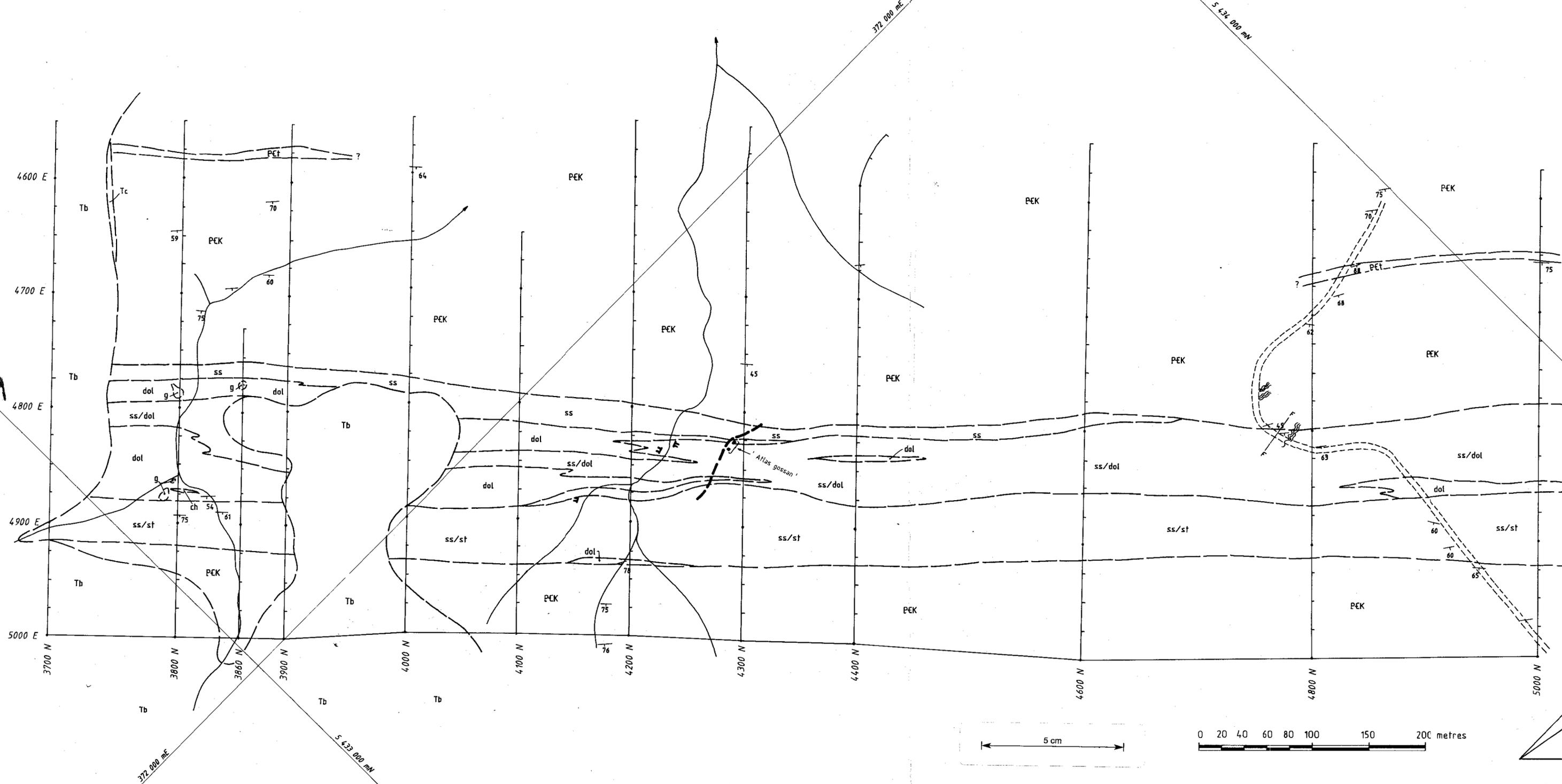
? Tuffaceous unit ? orange / brown micaceous well laminated spotted fine grain silty textured rock, with sheared interbedded dark grey fine grain qtz - muscovite layers (shales?) and stained with Mn oxides in weathered outcrop.

Laminated (1-2mm) grey and brown micaceous sandstone / siltstone well bedded with rare thin crumbly sandy textured ? tuffaceous or ? dolomitic beds to 20 cm. thick.

Interbedded grey/beige micaceous siltstone and/or lesser dolomite beds up to 10 cm. thick, with limonitic / ferruginous interbeds and rare black manganese rich beds to 0.3m. (The 'Atlas gossan', where exposed in the costean has up to 3 m thick manganese rich beds.)

Grey massive dolomite, crystalline and occasionally finely banded 2-10 mm. May have irregular clasts and discontinuous bands of black or grey chert.

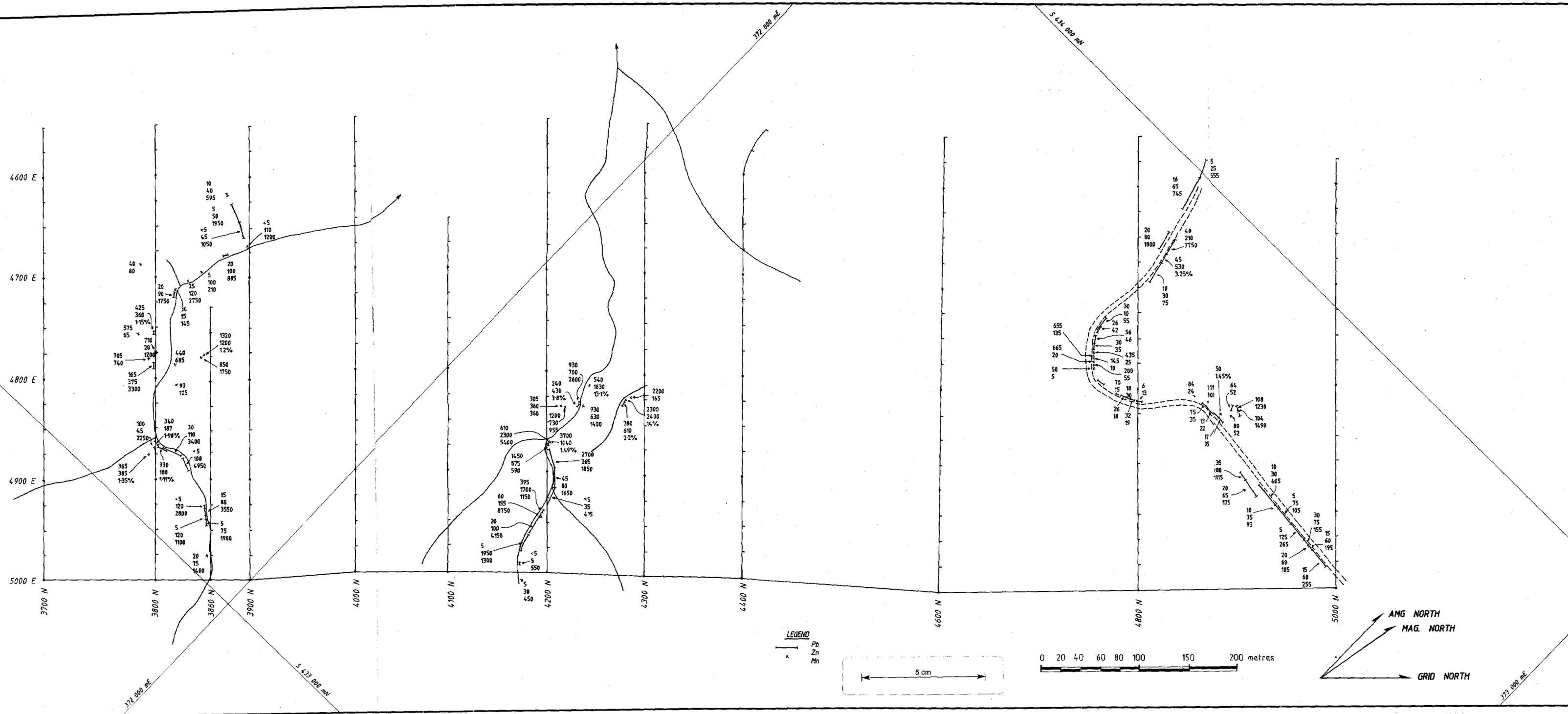
Orange or yellowish micaceous silty sandstone, massive and poorly : frequently brecciated and heated by anastomosing qtz - carbonate limonite veinlets 1 - 2 mm thick.



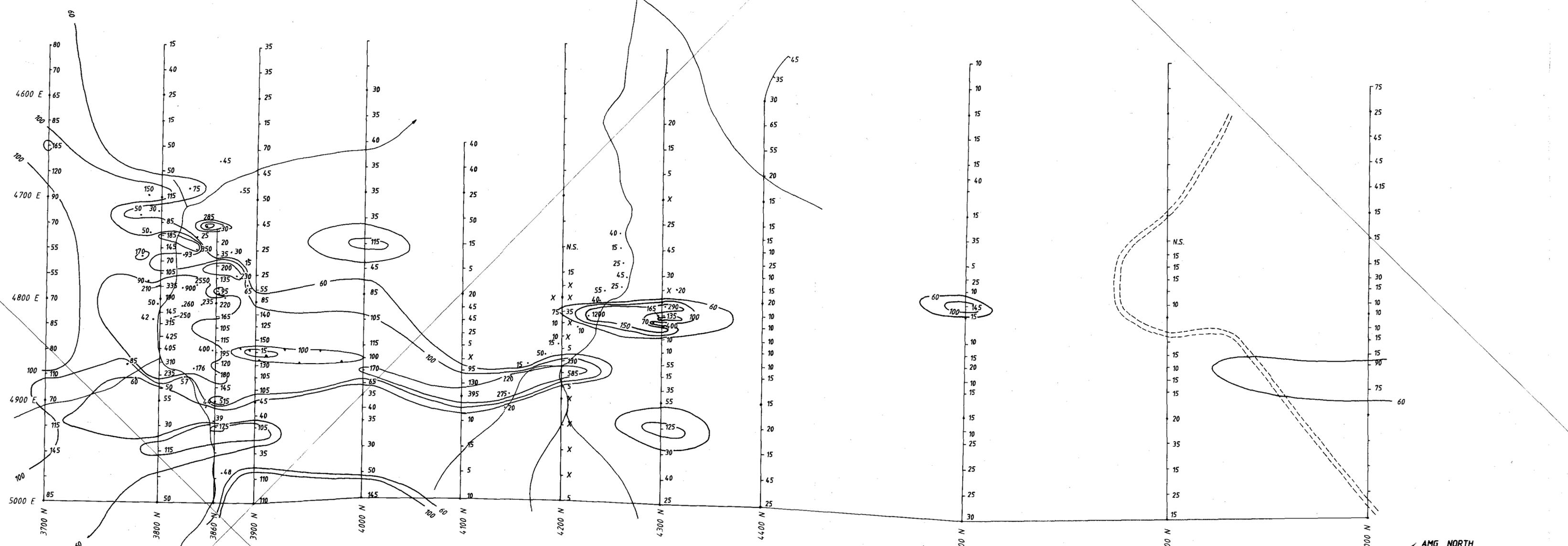
CRA EXPLORATION PTY. LIMITED

ATLAS PROSPECT  
Part of E.L. 1/77  
ATLAS GRID  
GEOLOGY PLAN. 003

Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 2 500	Report N°: 11902
Author: G. B.	Plan N°: TASH 934
Date: November 1982	



CRA EXPLORATION PTY. LIMITED	
ATLAS PROSPECT Part of E.L. 1/77 ATLAS GRID 004	
ROCK CHIP GEOCHEMISTRY	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 2 500	Report No. 11902
Author: G. B.	Plan No. TASH 935
Date: November 1982	

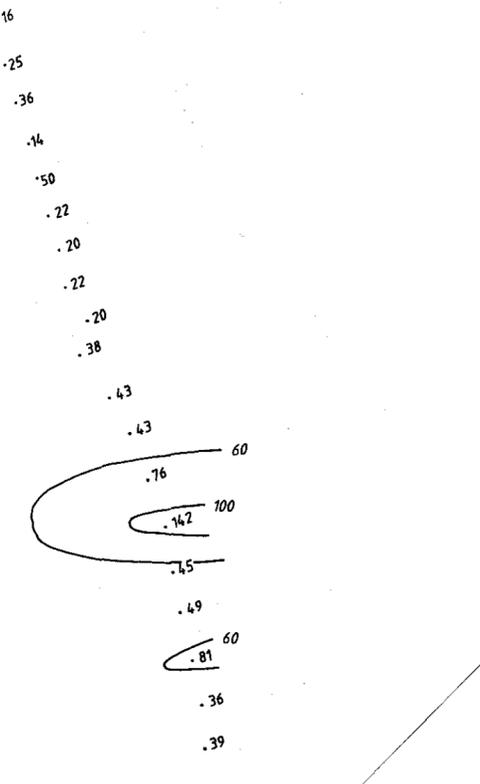


**LEGEND**  
 X DENOTES < 5 ppm  
 Contours: 60 ppm  
 100 ppm  
 150 ppm

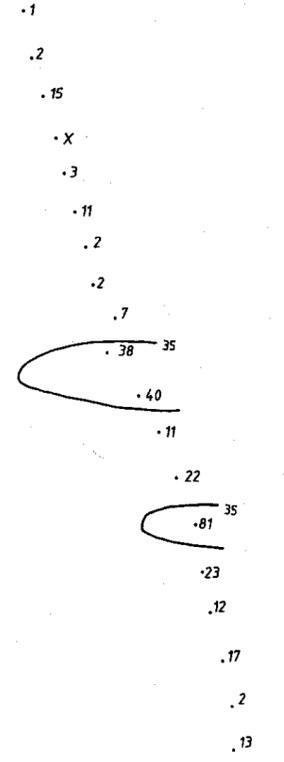
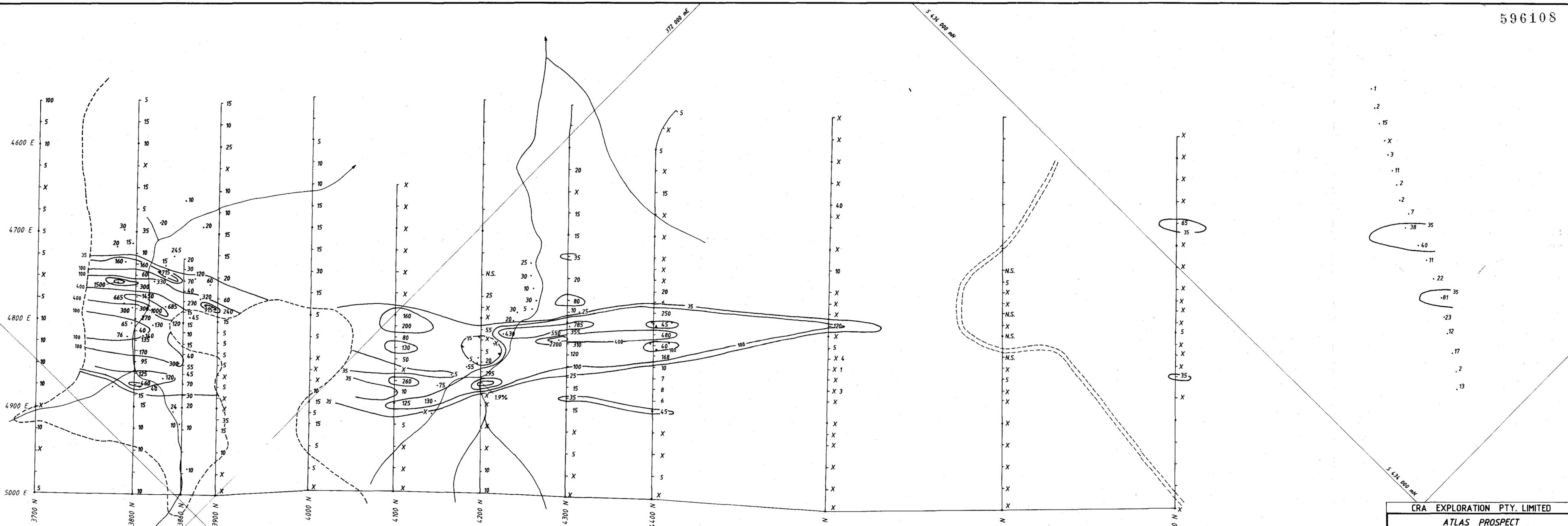
5 cm

0 20 40 60 80 100 150 200 metres

AMG NORTH  
 MAG. NORTH  
 GRID NORTH

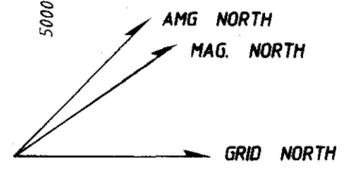
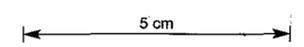


CRA EXPLORATION PTY. LIMITED	
ATLAS PROSPECT Part of E.L. 1/77 005	
Zn GEOCHEMISTRY (contoured)	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 2 500	Report N <sup>o</sup> : 11902
Author: G. B.	Plan N <sup>o</sup> : TASH 945
Date: November 1982	

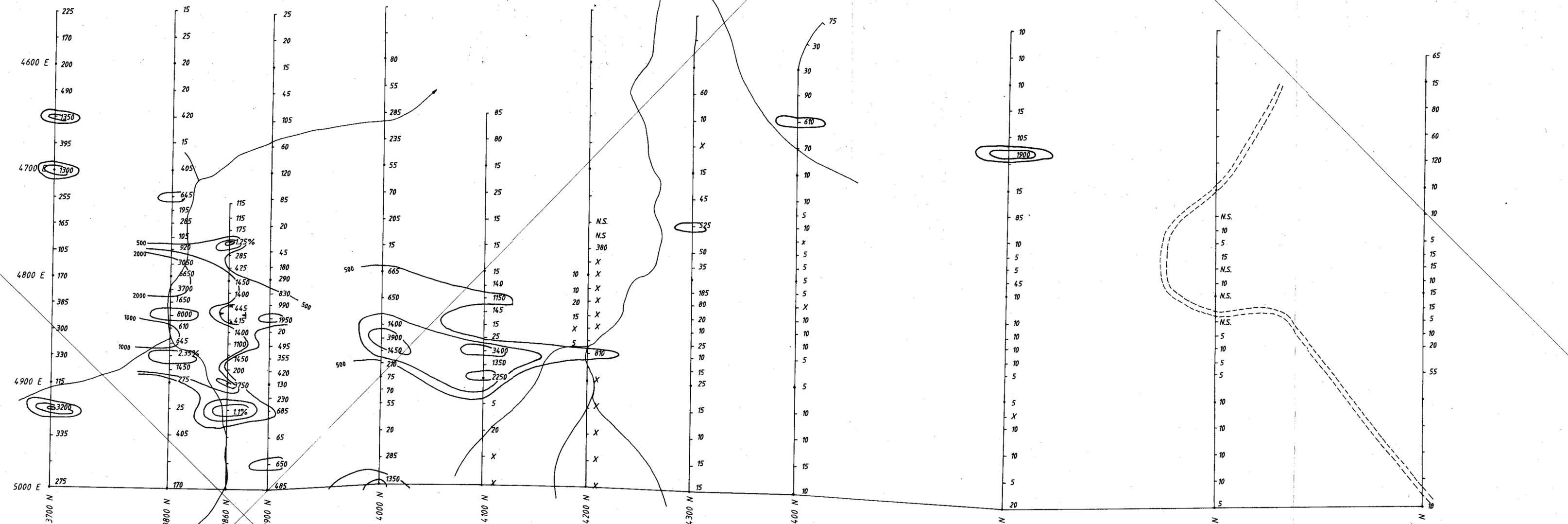


LEGEND

'X' Denotes < 5 ppm  
 Contours:  
 35 ppm  
 100 ppm  
 400 ppm  
 900 ppm



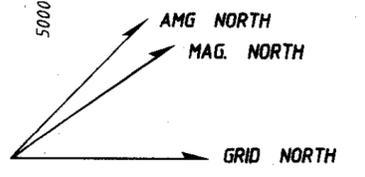
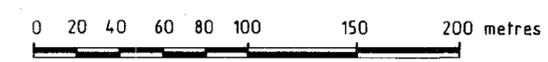
CRA EXPLORATION PTY. LIMITED	
ATLAS PROSPECT Part of E.L. 1/77 006	
ATLAS GRID	
SOIL Pb GEOCHEMISTRY (contoured)	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 2 500	Report N <sup>o</sup> : 11902
Author: G. B.	Date: November 1982
Plan N <sup>o</sup> : TASH 946	



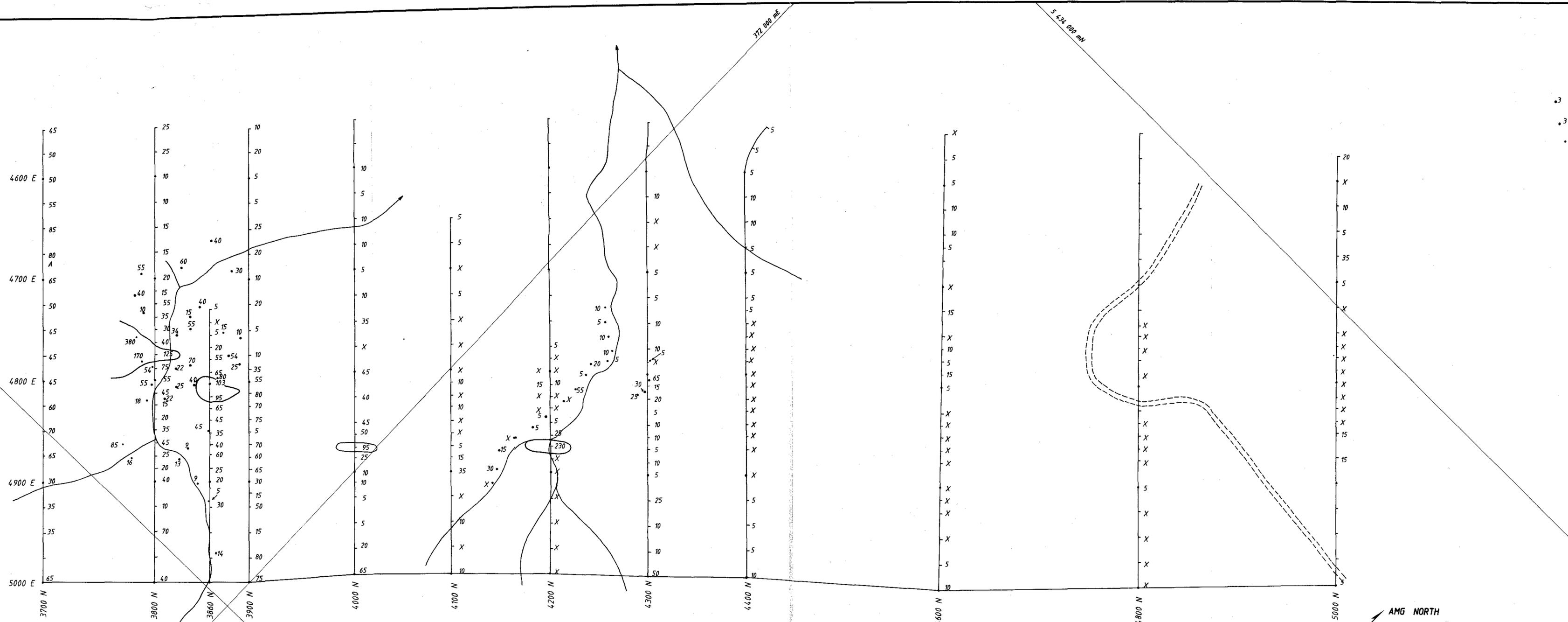
**LEGEND**

'X' Denotes < 5 ppm

CONTOURS: 500 ppm  
1000 ppm  
2000 ppm

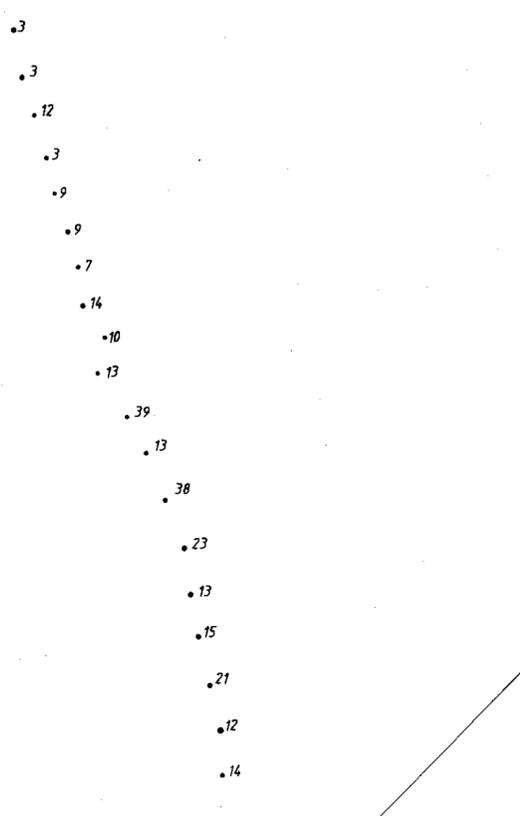
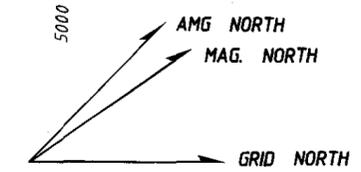
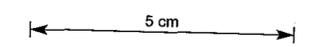
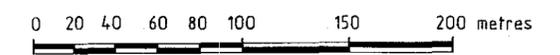


CRA EXPLORATION PTY. LIMITED	
ATLAS PROSPECT Part of E.L. 1/77 007 ATLAS GRID	
SOIL Mn GEOCHEMISTRY (contoured)	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 2 500	Report N°: 11902
Author: G. B.	Plan N°: TASH 947
Date: November 1982	

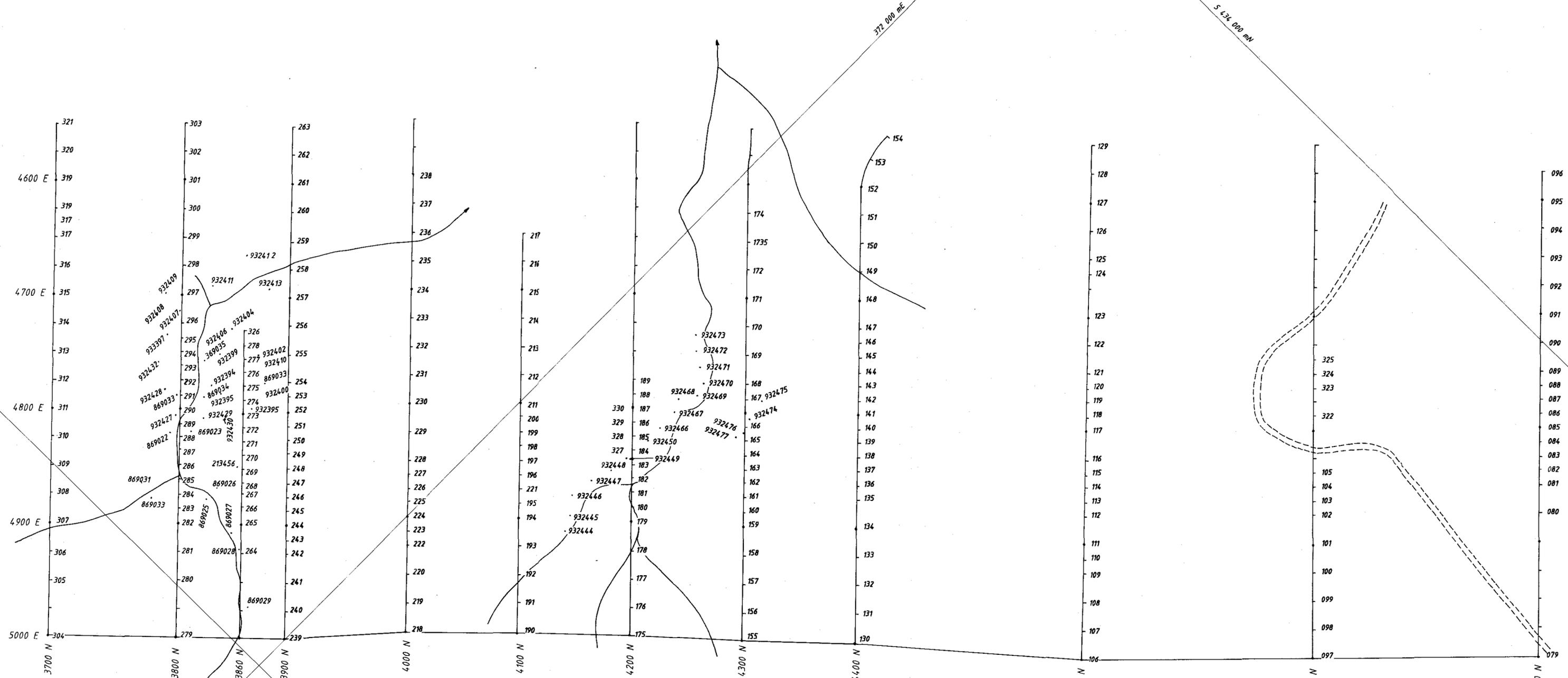


LEGEND

'X' Denotes < 5 ppm  
Threshold: 85 ppm

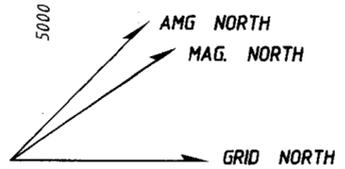


CRA EXPLORATION PTY. LIMITED	
ATLAS PROSPECT Part of E.L. 1/77 ATLAS GRID	
Cu SOIL GEOCHEMISTRY 008	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 2 500	Report N°: 11902
Author: G. B.	Plan N°: TASH 939
Date: November 1982	

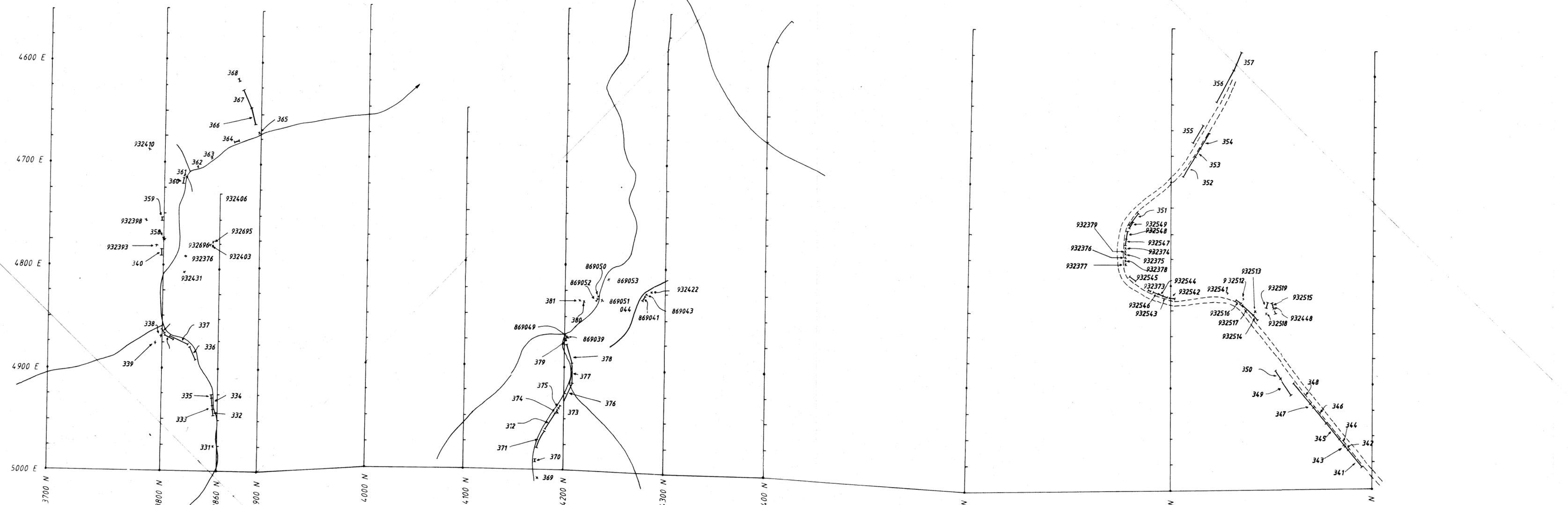


**\*\* NOTE \*\***  
 ALL SAMPLES NOT OTHERWISE  
 INDICATED ARE PREFIXED 973.....

5 cm



CRA EXPLORATION PTY. LIMITED	
ATLAS PROSPECT Part of E.L. 1/77 009	
ATLAS GRID SOIL SAMPLE LOCATIONS	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 2 500	Report N <sup>o</sup> : 11902
Author: G. B.	Plan N <sup>o</sup> : TASH 108
Date: JAN. 1983	

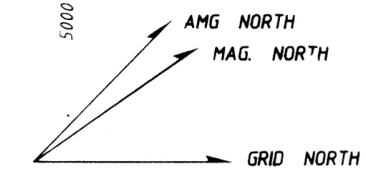


**LEGEND**  
 ——— ROCK CHIP  
 \* GRAB SAMPLE

All samples not otherwise indicated are prefixed 973.....



5 cm



CRA EXPLORATION PTY. LIMITED	
ATLAS PROSPECT Part of E.L. 1/77 ATLAS GRID	
010	
ROCK SAMPLE LOCATIONS	
Ref: SK55 - 3	Drawn: R. T.
Scale: 1 : 2 500	Report N°: 11902
Author: G. B.	Plan N°: TASH 109
Date: JAN. 1983	