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HEEMSKIRK FALLS EL 30/79

INITIAL GEOCHEMICAL EVALUATION OF

AERIAL EM ANOMALIES

MICROFILMED

OPEN FILE

Author : J. G. Purvis
(J. G. Purvis & Associates Pty.
Limited)

Date : 25th May, 1984.

Submitted To : T. W. Dickson

Accepted By : *T.W. Dickson*

Copies To : CRAE Canberra
CRAE Hobart
CRAE Burnie
Mines Department, Tasmania

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CRAE Report No. 12647

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1. SUMMARY

An initial geochemical evaluation by rock and stream sediment sampling was undertaken on 19 aerial EM anomalies within EL 30/79.

Most of the anomalies were found to be due to pyritic and carbonaceous sediments within the Oonah Quartzite and Slate Formation of Upper Proterozoic to Lower Cambrian age. Despite severe geochemical sampling problems caused by leaching and surface lag gravels, enough reliable samples were collected from about half the anomalies to amply demonstrate the lack of economically - important metals in the Oonah Formation. This is despite the widespread and relatively abundant pyrite in these rocks.

Three EM anomalies of unknown causes occur within or adjacent to sediments over lying the Oonah Formation. As these rocks host much of the mineralisation in the Zeehan - Renison Bell area, these anomalies are of more interest. Further sampling is recommended on two of them.

Further examination is also recommended of minor indications of possible weak and/or deeply buried Sn-Ag-Pb-Zn mineralisation of "Zeehan Style", which are centered on the middle to lower reaches of Big Ben and Piney Creeks. Two magnetic anomalies in this area disturb the otherwise - flat magnetic pattern over the Oonah Formation, and may be due to mineralisation.

2. INTRODUCTION

Fifteen sq. km of the old Mines Department Reserve SP 1974 No. 141, situated 5km to the NW of Zeehan, was incorporated into the Heemskirk Falls EL 30/79 in September 1983.

Although 18 aerial EM anomalies were delineated over the Reserve in a survey flown in April 1975 for Pacminex Pty. Limited, neither Pacminex or CRAE had previously had the opportunity to carry out follow-up work on them.

This report documents the results of the initial geochemical evaluation of these 18 anomalies and an additional anomaly located on the EL 8km NW of Renison Bell. The work was carried out at the request of Mr. T. W. Dickson, CRAE's Chief Geologist - Tasmania.

Field work was undertaken between 2nd April and 8th May 1984, and involved the collection of 105 stream sediment and 188 rock chip samples. Detailed geological notes were compiled during traversing, and a small programme of orientation geochemical sampling was carried out to gauge the effects of the strong surface leaching in this area.

3. CONCLUSIONS

1. The EM anomalies within the Oonah Quartzite and Slate Formation are due to bands of pyritic and carbonaceous sediments.
2. From the uniformly-low geochemical sample results and almost total absence of visible basemetal sulphides, it is concluded that the Oonah Formation in this area lacks any potential for significant mineralisation of syngenetic or shale - hosted type.
3. The few indications of mineralisation that have been found fit a pattern suggestive of weak Sn-Ag-Pb-Zn mineralisation of epigenetic style similar to that at Zeehan.

Magnetic anomalies are present in the area of these indications and the possibility exists of significant mineralisation at depth. Further evaluation of this possibility is warranted.

4. EM anomalies 17 and 18 in the Dunkleys Tramway area could be due to responses within rocks overlying the Oonah Formation. Sampling of these anomalies was inadequate due to geochemical and access problems. Further sampling is justified.

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5. Pacminex EM anomaly 115, 8km NW of Renison Bell, occurs in sediments overlying the Oonah Formation. Much of the anomaly lies over an area of alluvium possibly underlain by carbonates. However, as this part of the anomaly lies within an HEC exempt area and will be underwater when the Lower Pieman dam fills, no further work can be justified.
 6. Much of the geochemical follow up work conducted by Pacminex in 1975-76 on EM anomalies elsewhere within EL 30/79, was clearly rendered ineffective by the geochemical problems of leaching and lag gravels. These anomalies must be considered incompletely tested.

4. RECOMMENDATIONS

1. Preliminary evaluation of the potential for "Zeehan Style" mineralisation in the Piney Creek / Big Ben Creek area by :
 - a) evaluation of the regional and local geophysical setting with particular emphasis on the magnetics, to try and establish likely depths to any significant mineralisation.
 - b) examination of core from the Mines Dept. drillhole Zeehan No.1; and a search of the Department's files for more data, particularly the lodes discussed by Taylor(1950).*
 2. Further sampling of EM anomaly 17 by power augering on a small grid, and on anomaly 18 by bulldozing a track over the anomaly.
 3. No further work should be undertaken on EM anomalies within the Oonah Formation on EL 30/79.
- * These lodes not located during the present survey.

5. GEOLOGY

5.1 Oonah Quartzite and Slate Formation

(Upper Proterozoic to Lower Cambrian).

This formation occupies almost all of the area surveyed. It comprises a remarkably uniform sequence of grey to black, variably carbonaceous and pyritic, siltstones, shales and 'quartzites' (quartz-mica sandstones). Apart from rare zones of sedimentary breccias, no other rock types occur.

Bedding is well developed and regular. The rocks are folded but generally the folding is not particularly tight. Dips are normally $+45^{\circ}$. The area does not seem to be greatly affected by faulting.

All rock types contain pyrite which is mostly disseminated, with some on joints and rarely in veins + quartz. Traces of basemetal sulphides are exceedingly rare. Occasional thin beds of semi-massive and massive pyrite occur, also radially-structured nodules of pyrite. The largest massive sulphide lens noted was 2.5m x 0.4m and occurred within a fine breccia unit that was otherwise devoid of pyrite.

In zones of carbonaceous shales and siltstones, the latter are notably more pyritic and pyrite deposition appears to have been at least partly controlled by porosity factors possibly during diagenesis.

5.2 Cambrian Sediments

These rocks overly the Oonah Formation along the eastern margins of the EL. They are of some significance as they host much of the mineralisation at Renison and at Zeehan.

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Their exact relationship with the Oonah Formation is the subject of some debate. They are variously assigned to the Oonah Formation itself, the Success Creek Group or the Crimson Creek Formation.

During this survey these rocks were traversed at EM anomaly 115, NW of Renison Bell. Here, the sediments are characterised by siltstones ranging from black to pale red or green, and quartz-mica sandstones. Minor black shales, cherts and impure carbonate mudstones are also present. Some rocks are slightly pyritic. The variability of the sediments marks a major change from the Oonah Formation, and they would appear to be part of the Success Creek Group.

EM anomalies 17 and 18 near the Dunkleys Tramway may lie within rocks overlying the Oonah Formation but outcrop in this area is very sparse.

5.3 Zeehan Glacial Formation - Permian

This flat lying Formation of soft pebbly mudstone overlies the Oonah Formation in the southern part of the EL. The maximum thickness noted was 5m+. EM anomalies 8 and 10 occur over this formation - undoubtedly caused by responses in the Oonah Formation rocks beneath.

6. GEOCHEMISTRY

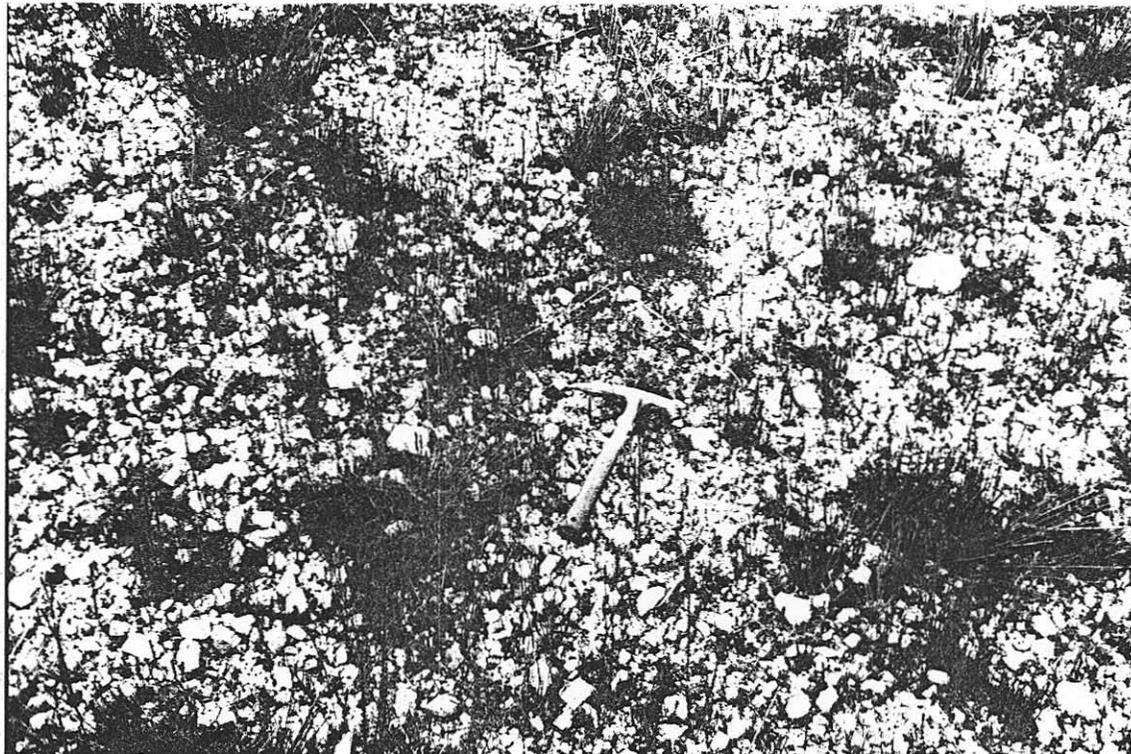
There are two major problems confronting geochemical exploration on the Oonah Formation. The first is the widespread development of a highly leached lag gravel layer up to 1m thick. The lag is composed of fragments of vein quartz and leached quartzite (see photos). The second problem is the intense leaching of the bedrock to depths up to 8m or more, although the average is around 1 - 3m (see photos). The leaching is most intense on the ridges and essentially absent in the beds of the creeks where sulphides are visible in outcrop.

Initially it had been proposed to power-auger holes to bedrock to test the EM anomalies. However, in most cases the auger could not penetrate the lag gravel, and where it did it was stopped in the leached bedrock.

A small programme of orientation sampling was therefore undertaken to determine if any metals were retained in the leached zone. Profiles down recent roadcuts on EM anomalies 6, 7 and 8 were sampled at various depths. The sampling was confined to steeply dipping sections and the same beds were sampled within each profile (see photos).

The results (see Appendix 3), show that all metals surveyed (Cu, Pb, Zn, Ag, Fe, Sn, W) are almost totally depleted in the leached zone. The vertical interval between a leached sample assaying <5ppm Cu, Pb, Zn, and an unleached sample of the same bed assaying 20ppm Cu, 80 Pb, 165 Zn, can be as little as 0.4m. This highlights the necessity to get beneath the zone of leaching in sampling, which restricted testing of the EM anomalies to chip sampling of roadcuts and creek exposures.

Although the stream sediment survey was persisted with the results are not reliable, being understated to varying degrees. This is due to the high proportion of lag gravel material in most sediment samples. It was noticeable that even in catchments where siltstones and shales were predominant in outcrop, the float in the creeks was generally dominated by quartzite and vein quartz, largely derived from the leached lag gravels. In the heads of the smaller creeks the lag was often the only visible contributor to the sediment.



Quartz lag exposed on surface.



Typical profile showing peat layer overlying thick development of lag gravel comprising quartz and leached quartzite fragments.

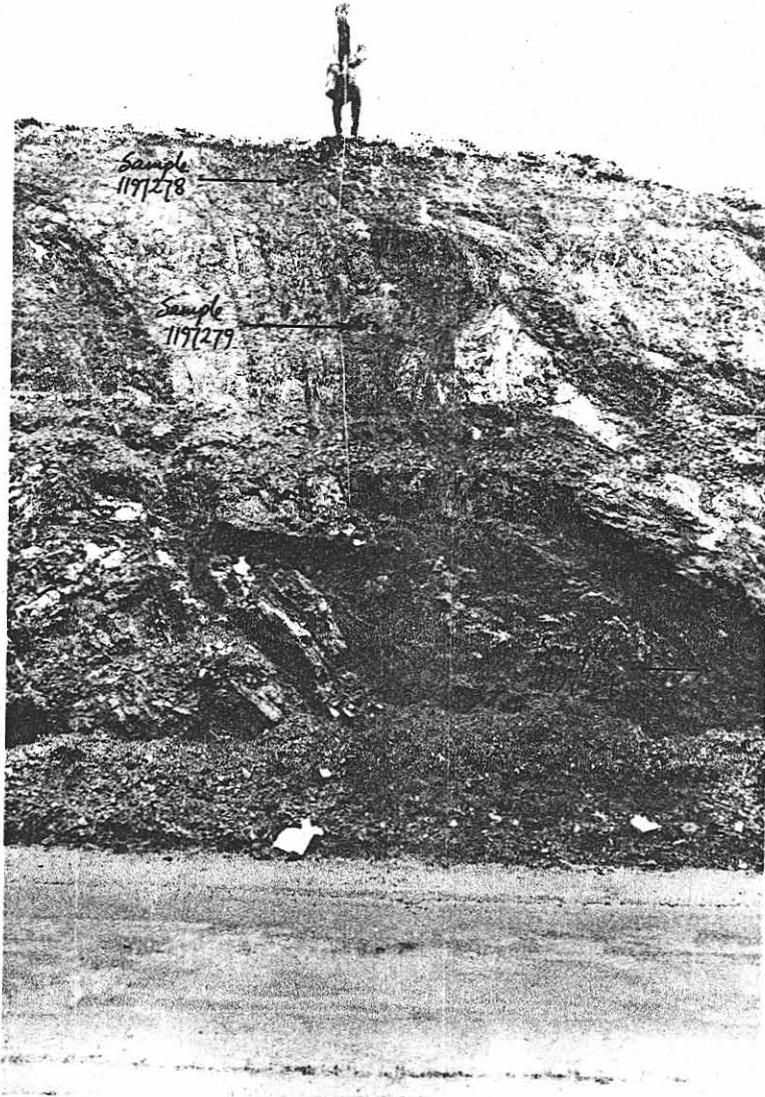


Sediment Sample Site 1197116



Sediment Sample Site 1197126

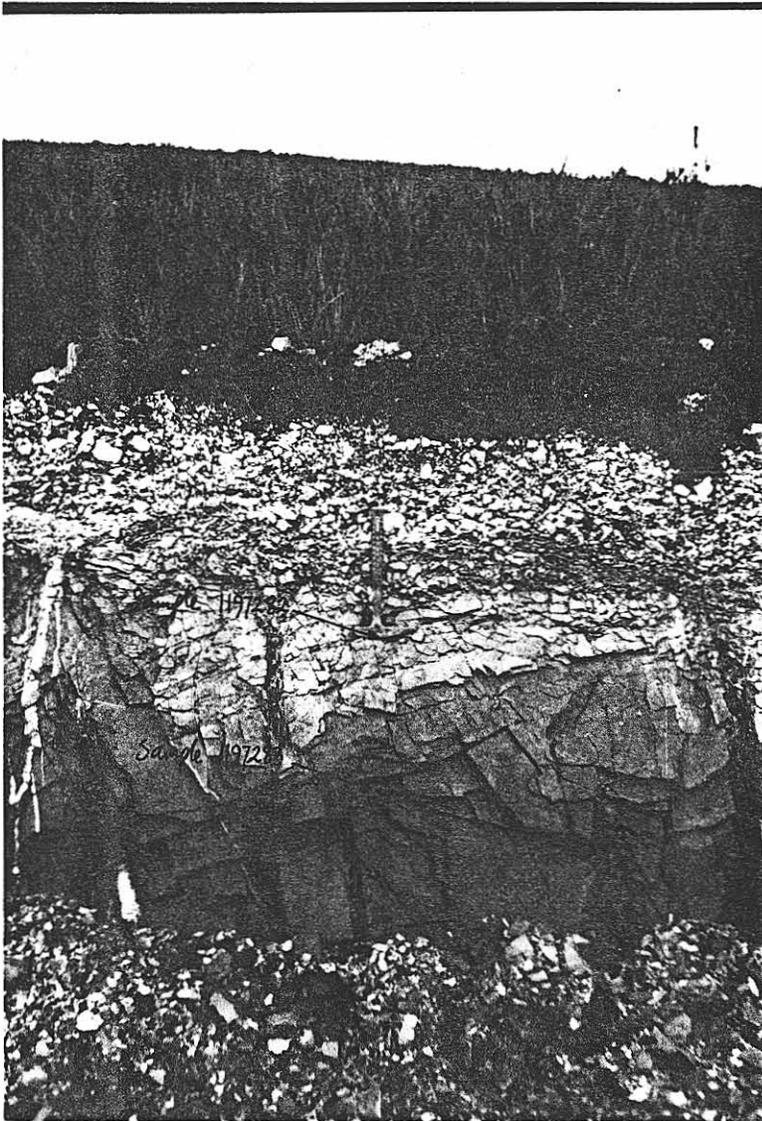
TYPICAL SEDIMENT SAMPLE SITES



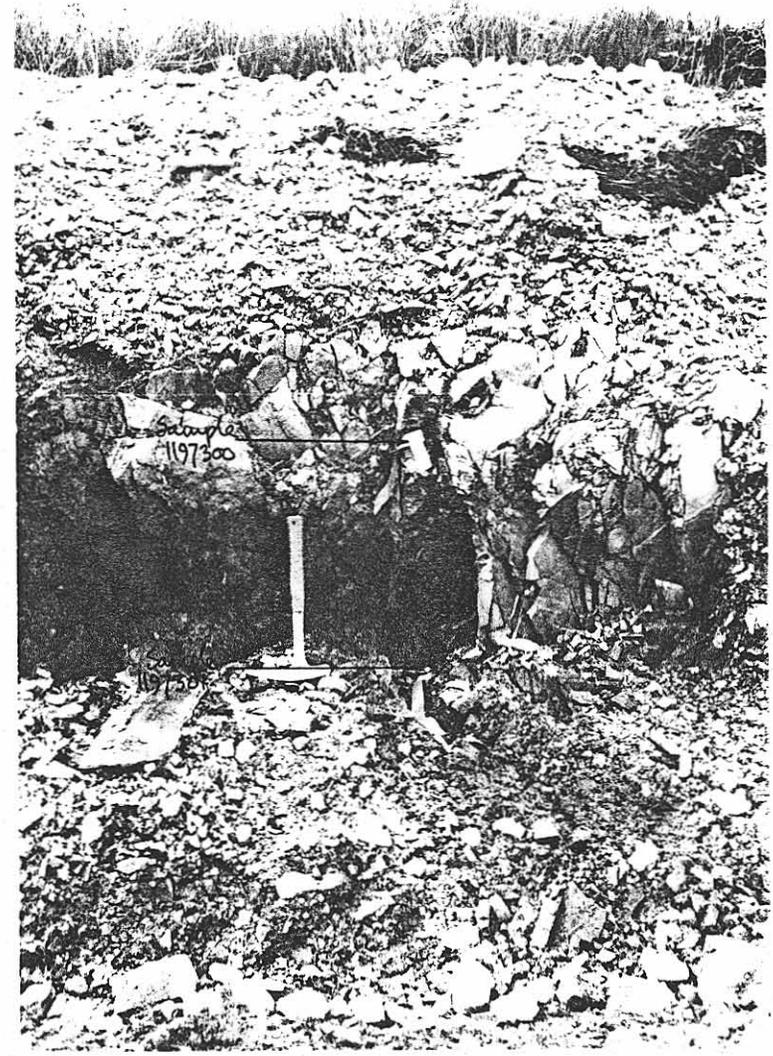
Geochemical orientation sampling. EM anomaly 6. Profile B.



Typical leached profile over carbonaceous siltstone and quartzites.



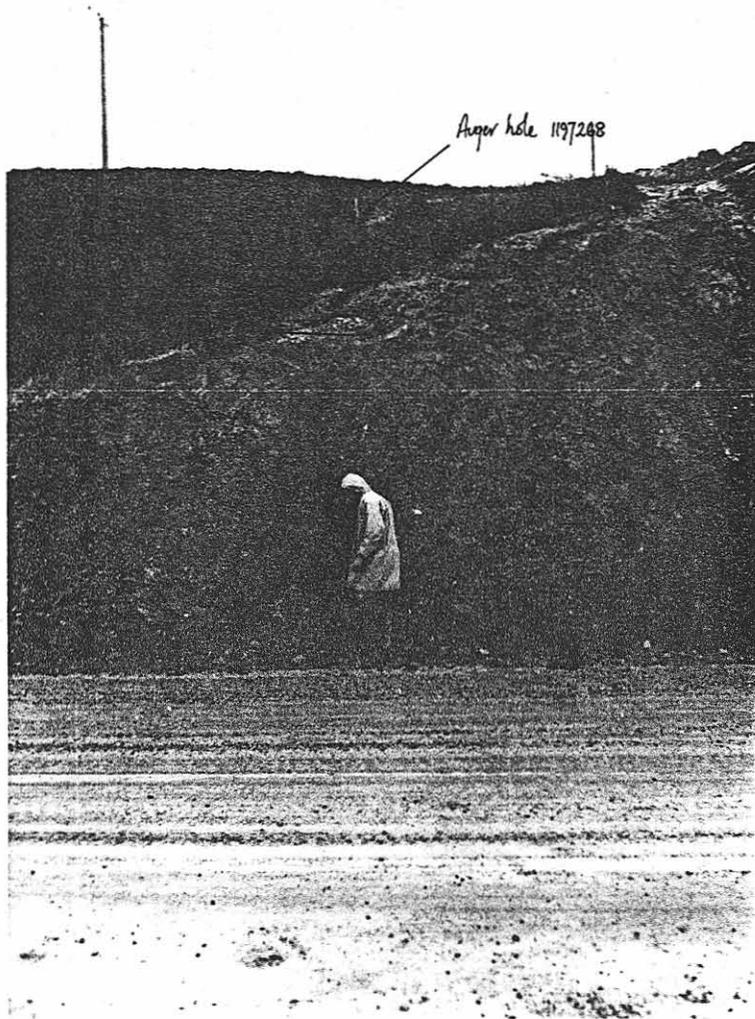
Profile A



Profile B

GEOCHEMICAL ORIENTATION SAMPLING

EM ANOMALY 7



GEOCHEMICAL ORIENTATION SAMPLING

EM ANOMALY 8

Profile A

Profile B

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7. DISCUSSION OF RESULTS

Results are shown on the plans and in Appendix One.

7.1 EM Anomalies 1 - 16, Old Mines Dept. Reserve Area

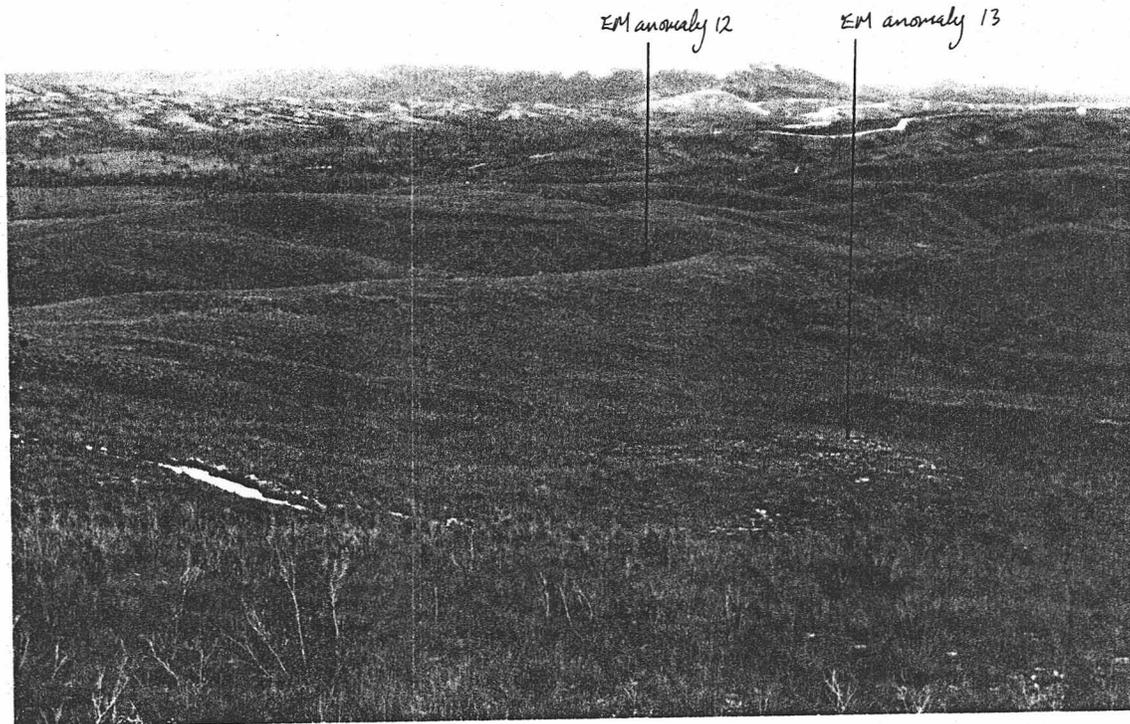
The geochemical sampling results from the Oonah Formation in the areas of these anomalies are extremely low with few exceptions. Due to the lack of unleached exposures, wholly reliable samples were obtained from only about half the anomalies. However, the sampling was sufficient to preclude the possibility that any of the anomalies are due to concentrations of economically significant sulphides.

This conclusion is confirmed by observations made during traversing of the near-total absence of any sulphides other than pyrite, and the abundance of carbonaceous and pyritic sediments in the areas of the anomalies. It is clear these are the cause of the EM anomalies.

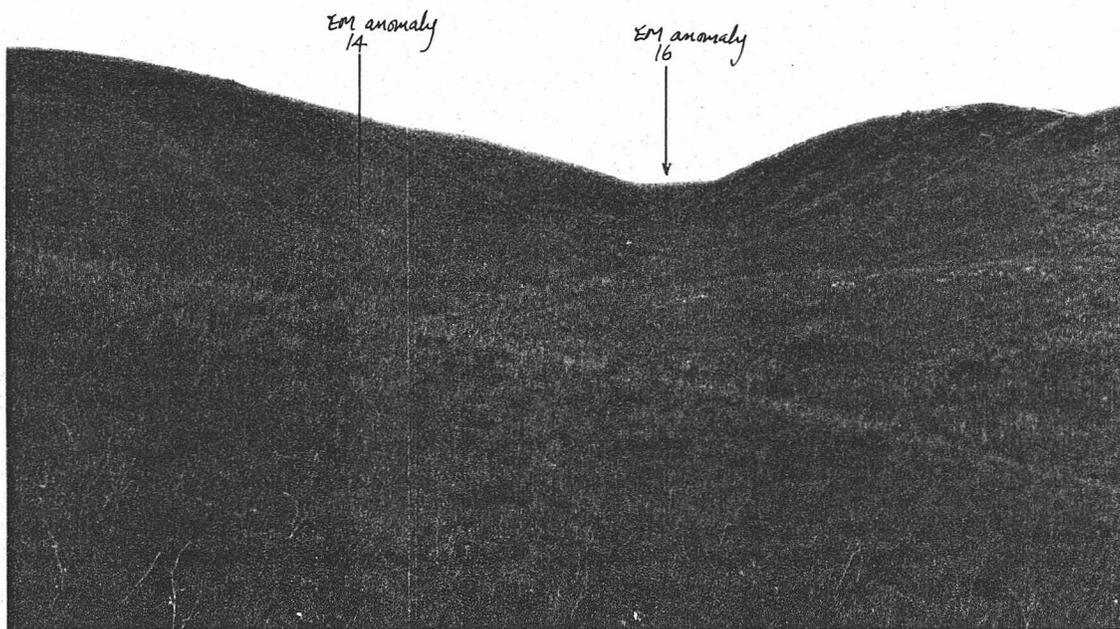
Anomaly 5 is slightly unusual in that it coincides exactly with a short NS trending fault which shows clearly on aerial photographs, and on the ground as a series of small shallow depressions. No float or outcrops of interest were noted here.

Rare traces of chalcopyrite and galena were noted while sampling highly pyritic and carbonaceous sediments on anomaly 6, but the rock chip sample results although better than usual for the Oonah Formation, were still insignificant (up to 320ppm Cu, 155 Pb and 75 Zn). Old alluvial workings occur in a small creek draining west from this anomaly (the only signs of prospecting noted anywhere on the area surveyed), but no gold, tin or tungsten values were obtained from the sampling.

Insignificant traces of gold (up to 0.015ppm in stream sediments and 0.085ppm in rocks), occur in several discrete areas eg. around anomalies 12, 13, and 14.



View looking west over EM anomalies 12 & 13.



View looking north-east over EM anomalies 14 & 16.

Here, the gold values are associated with elevated barium values (up to 5000ppm in stream sediments and 660ppm in rocks).

7.2 EM Anomalies 17 & 18, Old Mines Dept. Reserve Area

The exact locations of these anomalies is doubtful due to errors in the Pacminex base map. Part of anomaly 17 appears to lie over a zone of reddish-brown ferruginous clayey soil that is definitely not derived from any normal rock type of the Oonah Formation. The underlying rock type may belong to the Cambrian sedimentary sequence which occurs in the Dunkleys Tramway area immediately to the east.

Anomaly 18, adjacent to the Dunkleys Tramway, may also occur within the Cambrian sequence.

Both anomalies were not properly sampled during this survey due to poor access and thick vegetation. Limited gridding and power augering is suggested for anomaly 17, and using a bulldozer to expose bedrock for sampling is recommended at anomaly 18.

7.3 Indications of 'Zeehan Style' Sn-Ag-Pb-Zn Mineralisation

Quartz lodes with basemetal and tin mineralisation, and a series of low-order Pb/Sn rock and sediment geochemical anomalies, occur in deeply-incised tributaries on the northern side of Big Ben and Piney Creeks. These indications may be of some significance as they occur peripheral to two magnetic anomalies that were briefly examined by CRAE in 1982.

During the current survey a mineralised quartz-siderite vein approximately 0.5m wide was found in a small tributary of Big Ben Creek (see Geological Plan). Selected samples of the vein assayed up to 14% Zn, 0.33% Cu, 0.27% Pb, 0.07% Sn and 37ppm Ag. Values up to 70ppm Sn and 550ppm Pb (for rocks), and 80ppm Sn (for stream sediments), were obtained from pyritic and limonite-encrusted Oonah rocks

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in the vicinity of the vein and in two creeks 1.5km to the NW. (The latter were sampled to check values of 480ppm Pb and 200ppm Pb obtained by Pacminex from samples of limonite encrustations. The comprehensive sampling carried out in this survey produced results of lower tenor - see Geochemical Plans).

Approximately 2.5km to the SE of the mineralised vein mentioned above, Taylor (1950) reported similar Pb-Zn-Cu-Ag-(Sn?)- mineralised quartz lodes in crushed zones up to 12m wide within Oonah sediments. These lodes were not found during this survey, but they may have been the target of the Mines Dept. drillhole Zeehan 1, drilled in 1979. The location of this drillhole is shown on the Geological Plan.

The magnetic anomalies, mineralised veins and weak geochemical anomalies, all combine to suggest that weak and/or deep 'Zeehan Style' epigenetic Sn-Ag-Pb-Zn mineralisation may be present in the area centered on the middle to lower reaches of Big Ben and Piney Creeks. Before further field exploration is contemplated more data should be collected with the principal aim of resolving the likely depth of any significant mineralisation. It is suggested that this be done by:

1. Analysis of the regional and local geophysical data (including the ground magnetic survey carried out by the Mines Dept.).
2. Examination of the drillcore from the Mines Dept. drillhole Zeehan 1, and a search of the Departments files for details of their surveys and of Taylor's lodes.

7.4 EM Anomaly 117, NW of Renison Bell

There were no significant results from the stream sediment and rock sampling in the vicinity of this anomaly, 8km NW of Renison Bell. The sediments here are too variable to be part of the Oonah Formation and appear to be part of the overlying Success Creek Group (see section 5.2). Minor disseminated pyrite is present. A 10mm thick band of massive pyrite, and a piece of limonite gossan, were the best indications of mineralisation noted.

Some of the sediments contain carbonate, and outcropping in low-lying area are fine grained clayey sediments - possibly strongly impure carbonates. Much of the EM anomaly occurs over an alluvial flat and it is conceivable that carbonates underly the gravels. However, as the flat is within an HEC exempt area and will be flooded when the Lower Pieman Dam fills, no further testing of the anomaly can be justified.

7.5 Comments on Pacminex's 1974-76 Work

Pacminex followed up EM anomalies outside the area of the Mines Dept. Reserve with a programme of stream sediment, soil and rock chip sampling. Given the problems of leaching and lag gravels (outlined in section 6), it is clear from their sample descriptions that much of the sampling was ineffective. This is particularly true of the hand-augered soil samples which appear to have been from within the lag in almost all cases. Many of the rock samples were from leached outcrops on ridges.

With the possible exception of anomaly 142 in the Dunkleys Tramway area where the sampling appears to have been more effective, all the EM anomalies sampled by Pacminex should be regarded as untested. However, as already pointed out, anomalies occurring within the Oonah Formation are not worthy of follow up.

The anomalous sediment values obtained by Pacminex along Big Ben Creek are due to contamination from tailings of the old Montana Mine which choke the upper reaches of this creek.

J. G. Purvis.

Peter Temby for J.G.P.

8. REFERENCES

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Weber, G.W. 1983 Re Heemskirk EL 30/79, Zeehan. CRAE Unpublished Memorandum.

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9. KEYWORDS

Copper, Lead, Zinc, Silver, Tin, Black shale - pyritic,
Shale hosted type, Precambrian Proterozoic - up, Cambrian,
Geochem - drainage, Geochem - rock, Geochem - orientation.

10. LOCATION

Queenstown 1:250,000 sheet SH55-5.

11. LIST OF PLANS

<u>Plan No.</u>		<u>Scale</u>
TASh 1688	Heemskirk Falls EL 30/79 Locality Plan	1:100 000
TASh 2007	Heemskirk Falls EL 30/79 Showing areas evaluated in April-May 1984	1:100 000
TASh 2041	Heemskirk Falls EL 30/79 Geology Plan	1:15 840
TASh 2042	Heemskirk Falls EL 30/79 Sample Locations	1:15 840

12. LIST OF APPENDICES

- Appendix 1. Geochemical Sample Results.
- Appendix 2. Geochemical Sample Descriptions.
- Appendix 3. Geochemical Orientation Sampling Profiles.

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APPENDIX 1

GEOCHEMICAL SAMPLE RESULTS

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Sample Number	LOCATION		SAMPLE DESC.					SITE DESCRIPTION										ROCK TYPE										METAL CONTENT ppm / %										Geological Observations
	AMG Co-ordinates		S. Type	Mesh	% Gravel	% Sand	% Silt	Organic	Width (m)	Flow	Bank	Catchment	Vegetation	Staining	Contam.	Sit. Rating	Outcrop	Maj. Float	Min. Float	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn	Sn / W	Ba								
	East	North																																				
1197101	358500	5367300	4	64	25	10	1	3	F	B	5	T	N	N	G	-	QTZT	QTVN		2	5	15	<1		<1	0.31	20	<5	<10	120								
197102	358500	5367450		80	15	4	1	3	F	A	5	T	N	N	G	-	QTZT	QTVN		5	5	10	<1		<1	0.51	25	<5	10	60								
197105	358650	5367600		70	25	4	1	3	F	A	4	T	N	N	G	BLSH	QTZT	QTVN	Y	2	5	15	<1		<1	0.58	30	<5	20	50	ofc. BLSH ± 5% py in sandy bed							
1197107	358750	5367650		65	30	4	1	2	F	A	4	T	N	N	G	-	QTZT	QTVN		2	20	15	<1	<0.003	<1	0.45	30	<5	20	20								
1197108	358800	5367600		75	15	5	5	1	F	A	1	O	N	N	G	-	QTZT	QTVN		2	5	10	<1	0.010	<1	0.71	35	<5	30	5000								
1197109	358900	5367550		70	20	5	5	1	F	B	0.5	O	N	N	G	BLSH	-	-	Y	2	5	15	<1	<0.003	<1	0.67	35	<5	20	840	ofc. BLSH ± py in sandy beds							
1197111	359000	5367400		20	55	20	5	0.5	S	B	0.2	O	N	N	M	BLSH	QTVN	BLSH	Y	5	10	15	<1	<0.003	<1	1.52	30	<5	10	810	ofc. BLSH ± 5% py on joints.							
1197113	359100	5367450		60	35	5	5	1	S	B	0.2	T	N	N	M	BLSH	BLSH	QTZT		5	15	10	<1	0.010	<1	1.56	35	<5	10	560								
1197114	359300	5367450		30	40	25	5	0.5	S	A	0.1	O	N	N	G	-	BLSH	QTZT		5	5	10	<1	<0.003	<1	1.00	30	<5	10	70								
1197116	359000	5367600		70	20	5	5	3	F	B	0.5	R	N	N	G	QTZT	QTZT	QTVN	Y	5	5	15	<1	<0.003	<1	0.82	40	<5	20	130	ofc. QTZT ± minor py.							
1197117	359100	5367700		65	25	5	5	3	F	B	0.5	R	N	N	G	QTZT	QTZT	QTVN		2	5	10	<1		<1	0.49	25	<5	10	210								
1197118	359200	5367750		85	10	5	-	2	F	B	0.4	T	N	N	G	QTZT	QTZT	BLSH		2	5	15	<1	0.005	<1	0.78	30	<5	20	270								
1197120	359350	5367750		60	25	10	5	1	F	A	0.4	T	N	N	G	BLSH	QTZT	BLSH	Y	2	5	15	<1		<1	0.76	35	<5	30	90	ofc. 5-10% py in BLSH + SILT.							
1197124	359550	5367750		65	20	10	5	1	F	A	0.3	T	N	N	G	-	QTZT	QTVN		5	<5	10	1		<1	0.63	30	<5	20	40								
1197126	359700	5367800		65	25	5	5	1	F	C	0.2	T	N	N	G	BLSH	QTZT	QTVN		2	5	5	1		<1	0.58	25	<5	20	<10								
1197128	359900	5367850		70	20	5	5	0.5	F	B	0.1	T	N	N	G	SILT	QTZT	QTVN	Y	2	5	5	1	<0.003	<1	0.51	30	<5	20	<10	ofc. Qtz-mica SILT ± 10% py							
1197130	360400	5368350		-	50	30	20	1	P	N	0.1	T	N	N	P	-	-	-		2	5	5	1		<1	0.48	35	<5	10	210								
1197132	360450	5368600		15	60	20	5	0.5	S	B	0.1	O	N	N	P	-	QTVN	QTZT		2	<5	15	1		<1	0.61	55	5	10	180								
1197133	360600	5368650		30	45	20	5	2	F	A	0.7	R	N	N	M	-	QTVN	QTZT		2	5	5	1	<0.003	<1	0.38	60	5	<10	30								
1197134	360350	5368650		5	60	30	5	0.5	S	A	0.1	O	N	N	P	-	QTVN	QTZT		2	5	15	<1	<0.003	<1	0.44	25	<5	10	30								

GEOCHEMICAL STREAM SEDIMENT SAMPLING LEDGER

DETECTION LIMIT

ANALYTICAL METHOD

Cu	Pb	Zn	Ag	Au	As	Fe	Mn	Sn	Ba
2	5	2	1	0.003	1	0.001	5	5	10
ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF

Tenement Name: HEEMSKIRK FALLS EL 30/79

Project: FOLLOW UP OF EM ANOMALIES AMG Zone: 5

Sheet No. 1

Area / Prospect: FORMER MINES DEPT RESERVE

DPO's: 30250,

Laboratory: ALS, BRISBANE

Map / Photo Ref: QUEENSTOWN SK 55-5

Sample No's: 1197101 134

Collected By: G. PURVIS Date: APRIL 1984

TASMANIA

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Sample Number	LOCATION		SAMPLE DESC.					SITE DESCRIPTION							ROCK TYPE										METAL CONTENT ppm / %										Geological Observations
	AMG Co-ordinates		S. Type	Mesh	% Gravel	% Sand	% Silt	Organic	Width (m)	Flow	Bank	Catchment	Vegetation	Staining	Contam.	Sit. Refing	Outcrop	Maj. Float	Min. Float	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn	Sn / w	Ba					
	East	North																																	
1197135	360200	5368450	A	15	50	30	5	0.3	S	B	0.1	O	N	N	M	-	SILT	QTZ		2	5	10	<1		<1	0.36	20	<5	<10	40					
197136	360200	5368700	..	65	25	5	5	0.3	S	A	0.1	T	N	N	M	-	QTZ	QTZ	Y	2	5	15	<1	<0.003	<1	0.45	25	<5	20	50	Float: Black mica SILT & minor py				
1197137	360200	5367500	..	40	35	15	10	0.5	F	B	0.1	O	N	N	M	BLSH	BLSH	QTZ	Y	2	5	10	<1		<1	0.46	30	<5	20	40	of: 2.5m x 0.4m MASSIVE PY LENS IN BLSH.				
197139	360100	5367500	..	60	25	10	5	0.5	F	B	0.1	O	N	N	M	BLSH	BLSH	QTZ	Y	2	5	15	1		<1	0.77	35	<5	20	140	of: BLSH & minor joint py.				
1197141	360200	5367350	..	65	20	10	5	1	F	C	0.2	T	N	N	G	BLSH	BLSH	QTZ	Y	2	<5	10	<1	<0.003	<1	0.53	25	<5	20	100	of: Trace py in black SILT & BLSH				
1197142	360150	5367150	..	70	15	10	5	2	F	B	0.3	T	N	N	G	SILT	QTZ	BLSH	Y	2	5	15	<1		<1	0.69	35	<5	30	70	of: Trace py in SILT.				
1197144	360050	5367100	..	65	20	5	10	1	S	C	0.1	T	N	N	M	SILT	QTZ	SHAL	Y	2	5	10	<1		<1	0.80	30	<5	20	90	of: SILT & SHAL & minor py.				
1197146	360200	5366950	..	70	20	5	5	2	F	C	0.4	T	N	N	G	QTZ	QTZ	SHAL	Y	2	<5	15	<1	<0.003	<1	0.57	25	<5	10	120					
1197148	360000	5366900	..	40	35	15	10	0.3	S	B	0.1	O	N	N	M	SHAL	SHAL	QTZ	Y	2	<5	10	<1		<1	0.50	20	<5	10	30					
1197149	360000	5366700	..	50	30	15	5	1.5	S	A	0.2	R	N	N	G	BLSH	QTZ	QTZ	Y	2	5	10	<1		<1	0.54	30	<5	20	30					
1197151	359900	5366600	..	60	25	10	5	2	F	B	0.3	R	FEH	N	G	BLSH	QTZ	QTZ	Y	2	5	10	<1	<0.003	<1	0.41	25	<5	<10	30					
1197153	359850	5366500	..	65	20	10	5	2	S	B	0.3	F	N	N	G	-	QTZ	BLSH	Y	2	5	5	<1		<1	0.44	20	<5	10	30					
1197154	359800	5366400	..	70	15	10	5	2	F	A	0.4	F	N	N	G	-	QTZ	QTZ	Y	2	5	15	<1	<0.003	<1	0.25	15	<5	10	20					
1197155	359650	5366350	..	55	20	15	10	3	F	B	0.5	F	N	N	G	SILT	QTZ	QTZ	Y	2	5	20	<1		<1	0.57	30	<5	10	40					
1197156	359400	5366400	..	50	25	15	10	2	S	A	0.7	F	N	N	G	-	QTZ	QTZ	Y	2	5	10	<1	0.010	<1	0.25	15	<5	<10	10					
1197157	359500	5366850	..	50	25	15	10	0.5	F	B	0.1	O	N	N	G	-	QTZ	QTZ	Y	2	5	10	<1		<1	0.46	20	<5	10	30					
1197159	359400	5366750	..	65	20	10	5	4	S	C	0.1	T	N	N	G	-	QTZ	QTZ	Y	2	5	10	<1		<1	0.29	15	<5	<10	20					
1197160	359400	5366650	..	65	15	10	10	2	F	B	0.2	T	N	N	G	-	QTZ	QTZ	Y	2	5	10	<1		<1	0.38	15	<5	10	50					
1197162	359300	5366550	..	70	20	5	5	1	F	B	0.3	T	N	N	G	QTZ	QTZ	QTZ	Y	2	5	10	<1	<0.003	<1	0.85	40	<5	30	60	of: QTZ & 5% dissemin py.				
1197165	359000	5366750	..	55	20	15	10	0.5	S	C	0.1	O	FEH	N	G	BLSH	QTZ	BLSH	Y	2	5	10	<1		<1	1.33	30	<5	10	100	of: BLSH & minor py				
GEOCHEMICAL STREAM SEDIMENT SAMPLING LEDGER															DETECTION LIMIT					2	5	2	1	0.003	1	0.001	5	5	10	10					
															ANALYTICAL METHOD					ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF						

Tenement Name: HEEMSKIRK FALLS EL 30/79	Project: FOLLOW-UP OF EM ANOMALIES AMG Zone 5	Sheet No.: 2
Area / Prospect: FORMER MINES DEPT RESERVE	DPO's: 30250	Laboratory: ALS, BRISBANE
Map / Photo Ref: QUEENSTOWN SK 55 S	Sample Nos: 1197135 145	Collected By: G PURVIS Date: APR 11 1984

TASMANIA

CRA EXPLORATION PTY. LTD.

193026

SS

Sample Number	LOCATION		SAMPLE DESC.				SITE DESCRIPTION								ROCK TYPE				METAL CONTENT ppm / %										Geological Observations			
	AMG Co-ordinates		S. Type	Mesh	% Gravel	% Sand	% Silt	Organic	Width	Flow	Bank	Catchment	Vegetation	Staining	Contam.	Sit. Rating	Outcrop	Maj. Float	Min. Float	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn		Sn / W	Ba	
	East	North																														
1197167	358750	5366800	14	4	60	25	10	5	0.5	S	C	0.1	O	N	N	G	BLSH	QTZT	QTVW	Y	2	<5	5	<1		<1	0.30	10	<5	<10	80	ok: BLSH ± limonite, QTZT ± py
1197172	358200	5367000	..	..	15	40	30	15	0.3	S	N	0.1	O	N	N	P	-	QTVN	BLSH		2	5	5	<1	0.005	<1	0.25	15	<5	<10	20	
1197174	357300	5368600	..	..	65	20	10	5	0.5	S	A	0.2	O	N	N	G	-	QTZT	QTVN		5	<5	15	1		<1	0.39	25	10	20	50	
1197176	357500	5368700	..	..	40	35	15	10	0.5	S	A	0.3	O	N	N	G	-	QTVN	QTZT		5	<5	10	1		2	0.27	15	<5	<10	20	
1197177	357500	5368800	..	..	30	45	15	10	0.5	S	B	0.3	T	N	N	G	QTZT	QTVN	QTZT		5	<5	10	1	<0.003	<1	0.31	15	<5	<10	<10	
1197178	357500	5368950	..	..	65	20	10	5	0.5	S	A	0.2	O	N	N	G	QTZT	QTZT	QTVN		5	5	10	1		<1	1.33	30	<5	10	20	
1197179	357650	5369000	..	..	70	15	10	5	1	F	B	0.5	O	N	N	G	QTZT	QTZT	QTVN		2	<5	10	1		<1	0.36	15	<5	10	20	
1197180	357650	5369100	-	-	60	20	15	5	0.8	F	B	0.2	T	N	N	G	BLSH	QTZT	BLSHY		2	<5	15	1		2	0.36	15	<5	<10	120	float: BLSH + SILT ± minor py
1197182	357750	5369150	..	..	65	25	10	-	1.5	F	B	0.7	T	N	N	G	QTZT	QTZT	QTVN		2	<5	10	1		<1	0.37	20	<5	<10	30	
1197183	357850	5369250	..	..	75	15	10	-	3	F	B	0.7	T	FEL	N	G	QTZT	QTZT	QTVN		2	<5	15	2		1	0.65	20	<5	10	80	
1197184	357950	5369300	..	..	70	20	10	-	2	F	B	0.8	T	FEL	N	G	SHAL	QTZT	SHALY		10	<5	15	1	0.003	<1	0.60	20	<5	10	70	ok: Grey shale, also BLSH ±
1197186	358050	5369250	..	..	70	20	10	-	2	F	B	0.8	T	N	N	G	QTZT	QTZT	QTVN		5	<5	10	1	<0.003	<1	0.40	15	<5	<10	40	25x10mm nodules of massive
1197189	358100	5369150	..	..	70	20	10	-	1.5	F	B	0.7	T	FEL	N	G	QTZT	QTZT	QTVN		2	<5	15	1		<1	0.35	15	<5	10	30	
1197190	358050	5368950	..	..	60	25	15	-	1	S	B	0.4	T	N	N	G	QTZT	QTZT	QTVN		2	<5	20	1	<0.003	<1	0.49	20	<5	10	50	
1197191	358150	5369000	..	..	70	15	10	5	1	F	C	0.3	T	N	N	G	QTZT	QTZT	QTVN		2	<5	15	<1	<0.003	<1	0.35	15	<5	<10	30	
1197192	358300	5369000	..	..	70	15	10	5	0.5	S	C	0.1	T	N	N	G	QTZT	QTZT	BLSH		2	<5	25	1		3	0.78	20	<5	<10	280	
1197193	358450	5368900	..	..	5	60	25	10	0.3	S	N	0.1	T	N	N	P	-	-	-		2	<5	10	<1		<1	0.34	15	<5	10	10	
1197194	358350	5368800	..	..	45	25	20	10	0.3	S	A	0.1	T	N	N	M	-	QTZT	BLSH		2	<5	10	<1		<1	0.27	15	<5	<10	<10	
1197195	358050	5368700	..	..	-	50	40	10	0.5	S	N	0.1	O	N	N	P	-	-	-		2	<5	5	<1		<1	0.25	15	<5	<10	<10	
1197196	358000	5368650	..	..	10	50	30	10	0.3	S	N	0.2	O	N	N	P	-	QTVN	QTZT		2	5	15	1		<1	0.26	15	<5	<10	<10	

GEOCHEMICAL STREAM SEDIMENT SAMPLING LEDGER

DETECTION LIMIT

ANALYTICAL METHOD

Cu	Pb	Zn	Ag	Au	As	Fe	Mn	Sn	Ba
2	5	2	1	0.003	1	0.001	5	5	10
ICP	KP	ICP	ICP	AAS	KP	ICP	ICP	XRF	XRF

Tenement Name: HEEMSKIRK FALLS EL 30/79

Project: FOLLOW UP OF EM ANOMALIES AMG Zone: 5

Sheet No: 3

Area / Prospect: FORMER MINES DEPT RESERVE

DPO's: 30250, 31902

Laboratory: ALS, BRISBANE

Map / Photo Ref: DIXPENISTON SK 55 5

Sample Nos: 1197167 191

Collected By: G P JPVIA

Date: APR 11 1984

193027

CRA EXPLORATION PTY. LTD.

SS

TASMANIA

Sample Number	LOCATION		SAMPLE DESC.				SITE DESCRIPTION							ROCK TYPE			METAL CONTENT ppm / %										Geological Observations				
	AMG Co-ordinates		S. Type	Mesh	% Gravel	% Sand	% Silt	Organic	Width	Flow	Bank	Catchment	Vegetation	Staining	Confam	Silt Rating	Outcrop	Maj. Float	Min. Float	LOOK	Cu	Pb	Zn	Ag	Au	As		Fe %	Mn	Sn / W	Ba
	East	North																													
1197198	357900	5368500	4	15	60	20	5	0.3	S	N	0.1	O	N	N	M	-	QTVN	QTZT		2	5	10	1		<1	0.27	15	5	<10	<10	
197199	358750	5369250	..	65	20	10	5	2	F	B	0.2	T	FEL	N	G	QTZT	QTZT	QTVN		2	10	10	<1		2	0.37	20	5	<10	20	
1197201	358800	5369150	..	65	20	10	5	1	S	B	0.2	O	N	N	G	QTZT	QTZT	QTVN		2	5	10	1		1	0.30	15	5	<10	20	
197202	358900	5369000	..	25	40	25	10	0.3	S	A	0.1	O	N	N	M	-	QTVN	QTZT		5	10	5	1		1	0.27	20	5	10	20	
1197203	358200	5368050	..	65	20	10	5	0.8	S	A	0.2	O	N	N	G	QTZT	QTZT	QTVN		2	5	5	1		1	0.32	15	5	<10	10	
1197204	358150	5367950	..	45	35	15	5	0.3	S	N	0.2	O	N	N	M	-	QTZT	QTVN		5	<5	5	1		2	0.19	10	5	<10	10	
1197205	357900	5367750	..	40	35	15	10	1.5	S	C	0.1	T	FEN	N	G	QTZT	QTZT	BLSH Y		2	<5	5	2	<0.003	3	0.45	15	5	<10	30	Sp: QTZT ± py. Float: BLSH ± py
1197209	357850	5367750	..	70	20	5	5	1.5	F	A	0.4	T	FEL	N	G	-	QTZT	QTVN		2	<5	5	1	<0.003	2	0.45	20	15	<10	40	
197210	357700	5367750	..	60	20	10	10	0.5	S	B	0.1	O	FEN	N	M	QTZT	QTZT	QTVN		2	<5	5	1		4	0.57	20	5	<10	90	
1197212	357700	5367850	..	60	25	10	5	2.5	F	C	0.3	F	FEL	N	G	QTZT	QTZT	QTVN Y		2	<5	5	2		1	0.30	15	5	<10	40	Sp: Up to 15% py in QTZT.
1197214	357600	5367900	..	65	20	10	5	1	S	C	0.1	O	FEL	N	G	QTZT	QTZT	QTVN Y		2	<5	5	1		2	0.25	15	5	10	40	Sp: Trace py in QTZT.
1197215	357650	5368000	..	65	20	10	5	3	F	A	0.3	F	N	N	G	-	QTVN	QTZT		5	<5	5	1		<1	0.42	30	5	25	40	
1197216	357700	5368050	..	50	30	15	5	3	S	C	0.1	F	N	N	G	-	BLSH	QTVN Y		2	<5	5	1		1	0.34	20	5	10	60	yellow brown clay on west bank
1197218	357500	5368100	..	70	20	10	-	0.5	S	B	0.2	T	FEL	N	G	-	QTZT	QTVN		2	<5	10	1		2	0.65	25	5	10	130	
1197219	357350	5368150	..	75	15	5	5	1	F	B	0.1	T	FEL	N	G	QTZT	QTZT	QTVN Y		2	<5	5	2		<1	0.39	20	5	10	40	Sp: QTZT ± grey shales ± py.
1197221	357600	5368200	..	40	30	20	10	0.3	S	B	0.1	O	N	N	M	-	QTVN	QTZT		2	<5	2	1		<1	0.19	10	5	<10	30	
1197222	356350	5369150	..	75	15	10	-	0.5	S	C	0.1	O	N	N	G	QTZT	QTZT	QTVN		2	<5	10	1		2	0.39	20	5	10	220	
1197223	356100	5368900	..	60	25	10	5	2	S	B	0.1	T	FEL	N	G	QTZT	QTZT	QTVN		2	<5	5	1		<1	0.32	25	5	20	30	
197224	356200	5368650	..	65	20	10	5	3	F	C	0.2	R	FEN	N	G	QTZT	QTZT	QTVN Y		5	<5	15	1	<0.003	1	0.54	35	5	15	40	Sp: QTZ vein ± 20% specularite 3% py, 2% anatase, 1% sp. Float: grey pyrite silt.
1197229	356400	5368750	..	70	20	5	5	1.5	S	C	0.1	R	N	N	G	QTZT	QTZT	QTVN Y		2	<5	5	<1		<1	0.30	20	5	<10	50	

GEOCHEMICAL STREAM SEDIMENT SAMPLING LEDGER

DETECTION LIMIT

ANALYTICAL METHOD

Cu	Pb	Zn	Ag	Au	As	Fe %	Mn	Sn	W	Ba
2	5	2	1	0.003	1	0.001	5	5	10	10
KP	KP	KP	KP	AAS	KP	KP	KP	XRF	XRF	

Tenement Name: HEEMSKIRK FALLS EL 30/79

Project: FOLLOW UP OF EM ANOMALIES AMG Zone 5

Sheet No: 4

Area / Prospect: FORMER MINES DEPT RESERVE

DPO's: 31902

Laboratory: ALS, BRISBANE.

193028

TASMANIA

CRA EXPLORATION PTY. LTD.

SS

Sample Number	LOCATION		SAMPLE DESC.				SITE DESCRIPTION										ROCK TYPE										METAL CONTENT ppm / %										Geological Observations
	AMG Co-ordinates		S. Type	Mesh	% Gravel	% Sand	% Silt	Organk	Width	Flow	Bank	Catchment	Vegetation	Staining	Contam.	Sit. Rating	Outcrop	Maj. Float	Min. Float	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn	Sn / W	Ba							
	East	North																																			
97230	356450	5368450	4	55	25	15	S	1	F	B	0.1	T	FEL	N	G	QTZT	QTZT	QTVN	Y	5	5	10	1		7	1.98	60	<5	35	90	Float: Weakly sensitive SILT						
97231	356700	5367800		65	20	10	S	1	S	B	0.1	T	FEL	N	G	QTZT	QTZT	QTVN	Y	2	<5	5	1	0.010	1	0.24	15	<5	<10	40	Float: BLSH & bands of massive py						
97233	356750	5367750		65	20	10	S	0.3	S	B	0.1	D	FEL	N	G	BLSH	QTZT	QTVN	Y	2	<5	5	1	0.010	1	0.40	25	<5	20	50	Flc: Minor py in BLSH.						
97235	356800	5367500		70	10	10	S	0.5	S	C	0.1	D	N	N	M	QTZT	QTZT	BLSH	Y	2	<5	5	1		4	0.50	20	<5	10	100	Flc: BLSH interbeds & dissem						
1197237	357050	5367350		60	25	10	S	1	S	B	0.1	T	FEL	N	G	BLSH	QTZT	QTVN	Y	2	<5	5	<1		3	0.40	20	<5	10	80	Flc: BLSH + SILT & 10% dissem						
97245	355850	5368200		15	50	25	S	0.5	P	N	0.1	D	FEL	N	P	QTZT	QTZT	QTVN		2	<5	5	<1		1	0.37	15	<5	<10	40							
1197247	355650	5368400		65	20	10	S	0.5	S	C	0.1	D	FEL	N	M	QTZT	QTVN	QTZT		5	<5	5	<1	0.005	<1	0.33	20	<5	15	30							
197248	355300	5367700		55	25	10	S	0.5	S	A	0.1	D	N	N	G	QTZT	QTZT	QTVN		2	<5	5	<1		<1	0.20	15	<5	10	40							
197249	355300	5367650		65	25	10	-	0.5	F	A	0.2	D	FEL	N	G	QTZT	QTZT	QTVN	Y	5	<5	10	<1	<0.003	2	0.63	30	<5	<10	210	Alluvial sluicing workings adja						
1197250	355550	5367650		50	25	15	S	0.5	S	B	0.1	D	FEL	N	P	QTZT	QTZT	QTVN		2	<5	5	<1		<1	0.25	20	<5	<10	20							
1197251	355550	5367550		25	45	20	S	2	S	A	0.1	D	N	N	P	-	QTVN	QTZT		2	<5	5	1		<1	0.23	20	<5	<10	20							
1197252	355500	5367500		65	20	10	S	0.5	S	A	0.1	D	N	P	G	BLSH	BLSH	QTVN	Y	20	30	15	1	<0.003	5	1.12	65	<5	15	200	Flc: 5% py in BLSH. Alluvial work at sample site. Roadworks 200m upst						
197259	356200	5367500		30	45	20	S	1	S	B	0.1	T	N	P	G	-	QTVN	BLSH	Y	5	50	25	1		2	0.46	40	<5	<10	80	Poss contamination from old road						
197260	356300	5367500		60	25	15	-	3	F	C	0.7	R	N	D	P	QTZT	QTZT	BLSH	Y	10	90	75	1		8	0.99	85	5	20	200	Heavy contamination of fine frag from new road works 150m upst						
197264	360650	5367000		40	35	15	S	2	S	A	0.1	R	N	N	M	-	QTZT	QTVN		2	<5	5	<1		<1	0.26	20	<5	10	20							
197265	360700	5367000		40	30	20	S	3	S	A	0.1	R	N	N	M	-	QTZT	QTVN		5	<5	5	<1	<0.003	<1	0.57	40	<5	30	50							
1197322	363350	5375950		70	15	15	-	5	F	C	1.4	R	FEL	N	G	SILT	SILT	SSUD	Y	5	<5	25	1		6	1.32	45	<5	<10	240	Float: 5% py in black of rose sst.						
1197324	363100	5376000		60	20	20	-	2	F	A	0.1	R	N	N	G	-	SSUD	SILT		10	<5	30	1	<0.003	12	3.08	180	<5	<10	220							
1197325	363050	5375950		65	20	15	-	3	F	B	1.1	R	N	N	G	-	SILT	SSUD	Y	10	<5	25	1	<0.003	8	2.28	90	<5	<10	170	Float: clayey sediment & 10mm band of massive py.						
1197326	362850	5376050		63	20	17	-	3	F	A	1.1	R	FEL	N	G	SILT	SILT	SSUD		10	<5	20	1		6	2.18	100	<5	<10	210							

GEOCHEMICAL STREAM SEDIMENT SAMPLING LEDGER

DETECTION LIMIT

ANALYTICAL METHOD

2	5	2	1	0.003	1	0.001	5	5	10	10
ICP	ICP	ICP	ICP	AAS	ICP	ICP	KP	XRF	XRF	

Tenement Name: HEEMSKIRK FALLS EL 30/79

Area / Prospect: FORMER MINES DEPT RESERVE

Map / Photo Ref: QUEENSTOWN SK 55-5

Project: FOLLOW UP OF EM ANOMALIES AMG Zone: 5

DPO's: 30379, 31902

Sample No's: 1197230 - 326

Sheet No.: 5

Laboratory: ALS, BRISBANE

Collected By: G PURVIS

Date: APRIL 1984

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Sample Number	LOCATION		SAMPLE DESC.					SITE DESCRIPTION							ROCK TYPE				METAL CONTENT ppm / %										Geological Observations		
	AMG Co-ordinates		S. Type	Mesh	% Gravel	% Sand	% Silt	Organic	Width	Flow	Bank	Catchment	Vegetation	Staining	Contam.	Sit. Rating	Outcrop	Maj. Float	Min. Float	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn		Sn / W	Ba
	East	North																													
1197327	362600	5376050	4	60	15	25	-	5	F	C	1.0	R	N	N	G	SILT	SILT	SSUD		5	<5	10	<1		5	1.20	100	<5	<10	150	
197367	355650	5370050	"	75	15	8	2	3	F	C	0.8	R	N	N	G	QTZT	QTZT	QTVM		5	<5	5	<1		1	0.82	40	<5	<10	60	
1197373	355350	5370000	"	65	20	10	5	5	F	C	0.9	R	N	N	G	QTZT	QTZT	QTVM		2	<5	2	<1	<0.003	1	0.45	20	<5	<10	30	
197378	355350	5370450	"	75	15	8	2	6	F	C	1.7	R	FEH	N	G	BSH	QTZT	SILT	Y	5	<5	10	1	0.003	5	1.52	45	35	<10	130	nk: 1-2% py in BSH and black SILT, Fe staining of float etc. Much Fe and sulphide staining on flcs upstream
1197384	355200	5370500	"	65	20	10	5	6	F	C	1.8	R	FEL	N	G	QTZT	QTZT	SILT	Y	5	<5	10	<1	0.010	4	1.39	40	30	<10	120	

GEOCHEMICAL STREAM SEDIMENT SAMPLING LEDGER

DETECTION LIMIT
ANALYTICAL METHOD

2	5	2	1	0.003	1	0.001	5	5	10	10
ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF	

Tenement Name: **HEEMSKIRK FALLS EL 38/79**
 Area / Prospect: **FORMER MINES DEPT RESERVE**
 Map / Photo Ref: **DIRENSTOWN SK 55-5**

Project: **FOLLOW UP OF EM ANOMALIES** AMG Zone: **5**
 DPO's: **30379**
 Sample No's: **1197327-384**

Sheet No.: **6**
 Laboratory: **ALS, BRISBANE**
 Collected By: **G PURVIS** Date: **APRIL 1984**

193030

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F

Sample Number	LOCATION						ROCK TYPE		MINERALISATION							METAL CONTENT ppm / %										Geological Observations		
	Co-ordinates AMG / Grid		Exposure	S. Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn		Sn / W	Ba
	East	North				From	To																					
1197103	358500	5367300	0	G	-	-	-	BLSH	SILT	-	D	DS	MYRT	-	-	-	-	2	10	5	<1		9	1.45	40	<5 <10	60	
1197104	358600	5367500	0	G	-	-	-	BLSH	SILT	-	D	DS	MYRT	-	-	-	-	10	5	5	1		10	1.02	30	<5 <10	260	
1197106	358650	5367600	0	G	-	-	-	BLSH	SILT	-	D	DS	MYRT	-	-	-	-	<2	5	5	<1		4	0.90	20	<5 10	110	Pyrite mainly in silty interbeds
1197110	358900	5367550	0	G	-	-	-	SSUD	-	-	D	DS	MYRT	-	-	-	-	10	<5	10	<1		7	1.66	25	<5 <10	300	These black carbonaceous sst
1197112	359000	5367400	0	G	-	-	-	BLSH	-	-	D	FL	MYRT	-	-	-	-	5	<5	5	1		5	0.92	50	<5 <10	490	
1197115	359200	5367450	0	G	-	-	-	QTZT	-	-	D	FL	MYRT	-	-	-	-	<2	5	5	<1	0.020	5	1.00	115	<5 <10	140	
1197119	359200	5367750	0	G	-	-	-	QTZT	SILT	-	D	DS	MYRT	-	-	-	-	20	20	10	<1		10	1.44	90	<5 <10	260	Rocks carbonaceous + black
1197121	359200	5367750	0	G	-	-	-	QTZT	QTZT	-	N	-	-	-	-	-	-	<2	5	10	<1		3	0.58	20	<5 <10	60	
1197122	359300	5367750	0	C	10	-	-	BLSH	SILT	-	D	DS	MYRT	-	-	-	-	5	<5	10	1	0.003	10	1.04	20	<5 <10	430	Pyrite in sandy interbeds
1197123	359350	5367750	0	G	-	-	-	BLSH	SILT	-	D	DS	MYRT	-	-	-	-	15	<5	10	1	0.003	9	1.53	50	<5 <10	660	Bedded pyrite in silty interbeds
1197125	359550	5367750	0	G	-	-	-	SILT	-	-	A	SM	MYRT	-	-	-	-	15	10	15	1		8	2.59	110	<5 <10	300	Black siltstone ± semi-massive p. in beds up to 5mm.
1197127	359700	5367800	0	G	-	-	-	SILT	-	-	D	FL	MYRT	-	-	-	-	20	15	45	1		9	2.68	420	<5 <10	470	
1197129	359900	5367850	0	G	-	-	-	SILT	QTZT	-	A	SM	MYRT	-	-	-	-	15	40	40	1		18	2.71	45	<5 <10	190	Py in semi-massive bands to 4m
1197138	360200	5367500	0	C	0.4	-	-	SULP	-	-	A	MG	MYRT	-	-	-	-	10	90	15	2	0.003	6	17.4	5	<5 <10	260	Irregular lens of massive py 2.5x1
1197140	360100	5367500	0	G	-	-	-	SILT	BLSH	-	T	FL	MYRT	-	-	-	-	5	<5	10	1		12	1.75	40	<5 <10	430	
1197143	360150	5367150	0	G	-	-	-	SILT	-	-	T	DS	MYRT	-	-	-	-	5	<5	15	1		8	1.73	65	<5 <10	460	Minor py in thin carbonaceous b.
1197145	360050	5367100	0	G	-	-	-	BLSH	SILT	-	T	DS	MYRT	-	-	-	-	5	<5	35	1		10	2.75	40	<5 <10	410	
1197147	360000	5366900	0	G	-	-	-	SILT	BLSH	-	N	-	-	-	-	-	-	5	<5	30	1		7	3.34	45	<5 <10	440	
1197150	360000	5366700	0	G	-	-	-	BLSH	-	-	N	-	-	-	-	-	-	10	<5	15	1		10	1.00	15	<5 <10	540	
1197152	359900	5366600	0	G	-	-	-	SILT	BLSH	-	N	-	-	-	-	-	-	10	10	60	1		10	2.64	65	<5 <10	800	Marked iron staining

GEOCHEMICAL ROCK SAMPLING LEDGER

DETECTION LIMIT	2	5	2	1	0.003	1	0.001	5	5	10	10
ANALYTICAL METHOD	ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF	

Tenement Name: HEEMSKIRK FALLS EL 30/79

Project: FOLLOW UP OF EM ANOMALIES AMG Zone: 5

Sheet No.: 1

Area / Prospect: FORMER MINES DEPT RESERVE

DPO's: 30375

Laboratory: ALS BRISBANE

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Sample Number	LOCATION							ROCK TYPE			MINERALISATION							METAL CONTENT ppm / %										Geological Observations
	Co-ordinates AMG / Grid		Exposure	S. Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn	Sn / W	Ba	
	East	North				From	To																					
1197158	359550	5366900	0	G	-	-	-	BLSH	-	-	N	-	-	-	-	-	2	<5	10	1		10	1.32	35	<5	<10	630	
1197161	359400	5366650	0	G	-	-	-	SILT BLSH	-	-	N	-	-	-	-	-	<2	<5	10	1		7	0.99	15	<5	<10	400	
1197163	359300	5366550	0	G	-	-	-	QTZT	-	-	D	DS	Pyrt	-	-	-	<2	<5	5	<1		4	0.60	15	<5	<10	70	
1197164	359300	5366550	0	G	-	-	-	BLSH	-	-	N	-	-	-	-	-	<2	<5	5	1		3	0.39	15	<5	<10	370	
1197166	359000	5366750	0	G	-	-	-	BLSH	SILT	-	T	DS	Pyrt	-	-	-	<2	<5	10	1		7	1.03	80	<5	<10	390	
1197168	358750	5366800	0	G	-	-	-	BLSH	SILT	-	T	DS	Pyrt	-	-	-	2	<5	10	1		10	1.02	25	<5	<10	370	
1197169	358650	5366750	0	G	-	-	-	QTZT	-	-	T	FL	ARMY	-	-	-	<2	<5	2	<1		2	0.24	15	<5	<10	50	
197170	358650	5366750	F	G	-	-	-	QTZT	-	-	A	DS	Pyrt	ARMY	-	-	20	<5	2	<1	<0.003	8	0.50	15	<5	<10	40	
197171	358600	5366950	F	G	-	-	-	QTZT	-	-	D	DS	Pyrt	ARMY	-	-	<2	<5	10	<1	<0.003	9	0.42	10	<5	<10	100	
1197173	358450	5366400	F	G	-	-	-	BLSH	SILT	-	T	FL	Pyrt	-	-	-	<2	10	10	1		8	0.53	15	<5	<10	320	Roadbed material - from 300m S.
1197175	357300	5368600	0	G	-	-	-	BLSH	-	-	N	-	-	-	-	-	25	<5	30	3	0.003	105	2.00	100	<5	<10	440	
1197181	357650	5369100	F	G	-	-	-	BLSH	SILT	-	T	DS	Pyrt	-	-	-	5	<5	5	2		28	0.74	5	<5	<10	190	
1197185	357950	5369300	0	G	-	-	-	BLSH	-	-	A	PD	Pyrt	-	-	-	30	15	40	1	0.005	300	5.21	90	<5	<10	510	25x10mm nodule of massive py.
1197187	358050	5369200	F	G	-	-	-	Goss	-	-	A	BW	LIMN	-	-	-	10	45	60	3		26	40.8	170	<5	<10	20	Fragment of recent 'pan' deposit.
1197188	358050	5369200	0	G	-	-	-	BLSH	SILT	-	D	DS	Pyrt	-	-	-	15	20	20	1		36	1.40	30	<5	<10	170	5% py.
1197197	358000	5368650	F	G	-	-	-	Goss	-	-	A	BW	LIMN	-	-	-	10	45	30	2	<0.003	<1	40.5	270	<5	<10	30	Fragment of recent 'pan' deposit.
197200	358750	5369250	0	G	-	-	-	QTZT	QTNW	-	A	FL	LIMN	-	-	-	20	<5	10	<1	<0.003	26	2.33	120	<5	<10	130	Iron stained fractured QTZT
1197206	357900	5367750	0	G	-	-	-	QTZT	-	-	D	DS	Pyrt	LIMN	-	-	10	5	15	<1		18	1.61	100	<5	<10	400	Pyritic QTZT ± limonite on joints
1197207	357900	5367750	F	G	-	-	-	BLSH	-	-	D	DS	Pyrt	-	-	-	2	<5	5	<1	0.003	10	0.70	10	<5	<10	310	Graphitic shale ± 2-3% py.
1197208	357900	5367750	0	G	-	-	-	Goss	-	-	A	BW	LIMN	-	-	-	5	45	30	2		44	31.8	140	<5	<10	90	Recent 'pan' on flcs of QTZT.
GEOCHEMICAL ROCK SAMPLING LEDGER							DETECTION LIMIT										2	5	2	1	0.003	1	0.001	5	5	10	10	
							ANALYTICAL METHOD										ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF		
Tenement Name: HEEMSKIRK FALLS EL 30/79							Project: FOLLOW UP OF EM ANOMALIES AMG Zone: S										Sheet No.: 2											
Area / Prospect: FORMER MINES DEPT RESERVE							DPO's: 30375, 31902										Laboratory: ALS, BRISBANE											
Tap / Photo Ref: QUEENSTOWN SK 55-S							Sample No's: 1197158-208										Collected By: G. PURVIS Date: APRIL 1984											

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Sample Number	LOCATION						ROCK TYPE		MINERALISATION							METAL CONTENT ppm / %										Geological Observations			
	Co-ordinates AMG / Grid		Exposure	S. Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn		Sn	Ba	
	East	North				From	To																						W
197211	357700	5367750	OG	-	-	-	Goss	-	-	A	BL	FeOX	-	-	-	-	Y	2	25	15	1		90	13.8	100	<5	<10	70	Thin iron 'pan' on faces of QTZ
1197213	357700	5367850	OG	-	-	-	QTZT	QTVM	-	A	DS	PyRT	-	-	-	-	Y	5	5	70	<1		8	1.44	40	<5	<10	80	10-15% dissemin + joint-filling
197220	357350	5368150	OG	-	-	-	SHAL	-	-	T	FL	PyRT	MAK	LIMN	-	-	Y	25	<5	70	1		12	3.04	120	<5	<10	450	Minor joint-filling py in shales
1197225	356200	5368650	OG	-	-	-	BLSH	QTZT	-	A	-	LIMN	-	-	-	-	Y	5	50	115	1		5	3.52	380	<5	<10	400	Highly iron-stained faces.
197226	356200	5368650	FG	-	-	-	QTVM	-	-	A	VN	SPEC	PyRT	CHM	S	Y	2050	3400	630%	29	0.085	26	15.6	1.32%	<5	<10	40	Mineralised qtz vein. Loss barite.	
1197227	356200	5368650	FG	-	-	-	QTVM	QTZT	-	A	VN	LIMN	SPEC	PyRT	S	Y	3300	2750	14.0%	37		70	16.1	8800	<5	<10	30	As above, in quartz. Trace cp.	
1197228	356200	5368650	OG	-	-	-	QTVM	-	-	A	VN	SPEC	PyRT	CHM	-	Y	1000	2350	1.46%	15	0.010	14	6.36	1950	<5	<10	70	Probable source samples 226+2	
1197232	356700	5367800	FG	-	-	-	BLSH	-	-	A	MS	PyRT	-	-	-	-	Y	10	10	80	1	<0.003	5	0.91	40	<5	<10	220	5-10% py - thin bands + massive no
1197234	356750	5367750	OG	-	-	-	BLSH	SILT	-	T	DS	PyRT	LIMN	-	-	-	Y	30	50	260	2	0.003	170	5.52	60	<5	<10	540	Minor py. Fe stains due to mica
1197236	356800	5367500	OG	-	-	-	BLSH	SILT	-	D	DS	PyRT	-	-	-	-	Y	15	<5	30	1		28	1.51	30	<5	<10	320	
1197238	357050	5367350	OG	-	-	-	BLSH	SILT	-	A	DS	PyRT	-	-	-	-	Y	15	<5	25	1		9	0.99	20	<5	<10	340	10% py.
1197239	357100	5367900	FG	-	-	-	QTZT	BLSH	-	D	DS	PyRT	-	-	-	-	Y	50	15	25	<1		30	0.76	20	<5	<10	220	2% py - disseminated.
1197240	357100	5367900	FG	-	-	-	QTZT	QTVM	-	D	DS	PyRT	CHM	-	-	-	Y	40	15	20	1	<0.003	4	0.89	10	<5	<10	90	5% py, trace cp.
1197241	357100	5367900	FG	-	-	-	QTZT	QTVM	-	A	SM	PyRT	-	-	-	-	Y	15	15	10	1		70	4.22	10	<5	<10	110	10% py, some in semi-massive bc
1197242	357100	5368000	FG	-	-	-	QTZT	-	-	D	DS	PyRT	-	-	-	-	Y	35	35	15	1		28	4.40	10	<5	<10	440	2-3% py - dissem + on fractures.
1197243	357150	5367800	FG	-	-	-	BLSH	-	-	T	FL	PyRT	-	-	-	-	Y	165	45	40	2	<0.003	22	1.36	30	<5	<10	570	2% py - dissem + on fractures
1197244	357550	5367400	OC	7	0	7	BLSH	QTZT	-	D	DS	PyRT	LIMN	-	-	-	Y	25	<5	10	1		30	1.07	20	<5	<10	150	Fe-stained pyritic BLSH + QTZ.
1197246	355850	5368200	OG	-	-	-	QTZT	-	-	T	-	LIMN	-	-	-	-	Y	5	5	25	1	<0.003	3	1.95	140	<5	<10	200	Fe-stained micaceous QTZT
1197253	355500	5367500	OG	-	-	-	BLSH	SILT	SEB	D	DS	PyRT	-	-	-	-	Y	10	15	20	1	<0.003	10	1.40	70	<5	<10	240	5% py - dissem + joint filling
1197254	355650	5367350	OG	-	-	-	BLSH	SILT	-	A	DS	PyRT	-	-	-	-	Y	165	90	15	1	<0.003	28	3.65	40	<5	<10	260	10-15% dissem py. Semi-massive beds to 30mm J

GEOCHEMICAL ROCK SAMPLING LEDGER	DETECTION LIMIT					2	5	2	1	0.003	1	0.001	5	5	10	10
	ANALYTICAL METHOD					ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF	

Tenement Name: HEEMSKIRK FALLS EL 30/79	Project: FOLLOW UP OF EM ANOMALIES AMG Zone 5	Sheet No.: 3
Area / Prospect: FORMER MINES DEPT RESERVE	DPO's: 31902	Laboratory: ALS, BRISBANE
Map / Photo Ref: QUEENSTOWN SK 55-5	Sample No's	Collected By: G PURVIS Date: APRIL 1984

193034 R

TASMANIA CRA EXPLORATION PTY. LTD.

Sample Number	LOCATION						ROCK TYPE			MINERALISATION							METAL CONTENT ppm / %								Geological Observations			
	Co-ordinates AMG / Grid		Exposure	S. Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %		Mn	Sn / W	Ba
	East	North				From	To																					
1197281	356150	5367400	O G	-	-	-	SILT	-	-	D DS	PKRT	-	-	-	-	-	30	<5	15	<1		28	2.4	200	<5	<10	490	Orientation sample. Weakly leached SILT ± 5-10% py
1197282	357600	5367200	O G	-	-	-	SILT	BLSH	-	N	-	-	-	-	-	-	2	<5	10	<1		2	0.52	20	<5	<10	120	" " Leached SILT
1197283	357600	5367200	O G	-	-	-	SILT	BLSH	-	T FL	PKRT	-	-	-	-	-	2	<5	<2	<1		3	0.33	10	<5	<10	160	" " Black pyritic SILT
1197284	356200	5367400	O C	20	0	20	BLSH	SILT	-	D DS	PKRT	-	-	-	-	-	60	40	15	1		12	1.18	160	<5	<10	300	2% py in BLSH and black SILT
1197285	356200	5367400	O C	20	20	40	SILT	BLSH	CHLR	D DS	PKRT	-	-	-	-	-	30	50	75	1		9	1.80	330	<5	<10	420	5-7% py - dissem, + in veins ± qt
1197286	356150	5367450	O C	20	40	60	SILT	BLSH	-	D DS	PKRT	-	-	-	-	-	320	70	55	1	0.003	16	1.85	250	<5	<10	350	5-10% py - dissem + in veins ± qt
1197287	356150	5367450	O C	20	60	80	SILT	BLSH	CHLR	D DS	PKRT	-	-	-	-	-	30	<5	25	1		10	2.36	330	<5	<10	440	5% py as above. 4m long basic dy
1197288	356150	5367450	O C	20	80	100	BLSH	SILT	CHLR	A DS	PKRT	-	-	-	-	-	35	<5	20	1		9	2.24	400	<5	<10	380	10% py - dissem and on joints
1197289	356100	5367450	O C	20	100	120	BLSH	SILT	-	A DS	PKRT	CHPY	-	-	-	-	40	10	35	1	0.003	7	2.28	450	<5	<10	330	10% py as above. Trace of mje
1197290	356100	5367450	O C	20	120	140	SILT	BLSH	CHLR	D DS	PKRT	-	-	-	-	-	35	15	45	1		10	2.66	560	<5	<10	340	5-7% py in black SILT + BLSH
1197291	356050	5367500	O C	16	140	156	SILT	BLSH	CHLR	D DS	PKRT	-	-	-	-	-	65	<5	35	1		10	2.14	410	<5	<10	380	5-7% py as above.
1197292	355850	5367450	O C	25	0	25	BLSH	-	-	D DS	PKRT	-	-	-	-	-	130	40	20	2		14	1.52	90	<5	<10	350	5-7% py
1197293	355800	5367400	O C	25	25	50	BLSH	SILT	-	D DS	PKRT	-	-	-	-	-	85	45	15	1	<0.003	12	1.28	60	<5	<10	320	5-7% py - dissem + on joints
1197294	355800	5367400	O C	25	50	75	BLSH	SILT	-	D DS	PKRT	-	-	-	-	-	60	155	40	1		12	1.09	40	<5	<10	290	5-7% py as above
1197295	355700	5367350	O C	17	135	152	SILT	SHAL	-	T	-	LIMN	-	-	-	-	10	<5	10	<1	0.003	3	0.90	60	<5	<10	300	Leached SILT + shales ± Fe stain
1197296	355650	5367350	O C	25	170	195	BLSH	QTZT	-	D DS	PKRT	-	-	-	-	-	95	40	5	<1	<0.003	14	1.12	40	<5	<10	250	5-7% py - dissem and in qtz ve
1197297	356250	5367400	O C	15	0	15	BLSH	QTZT	SILC	D DS	LIMN	PKRT	-	-	-	-	45	100	45	1		18	1.59	90	<5	<10	330	Minor py in Fe-stained BLSH + Qtz
1197298	356250	5367400	O C	15	15	30	QTZT	BLSH	SILC	D DS	LIMN	PKRT	-	-	-	-	30	70	15	1	<0.003	7	1.58	350	<5	<10	350	Fe and sulphide stained QTZT + BLS
1197299	357700	5367150	O C	21	43	64	BLSH	QTZT	-	D DS	PKRT	-	-	-	-	-	25	<5	5	<1		9	0.87	20	<5	<10	360	
1197300	357700	5367150	O G	-	60	-	QTZT	-	-	N	-	-	-	-	-	-	<2	<5	<2	<1	<0.003	1	0.22	10	<5	<10	60	Orientation sample. Leached QTZT

GEOCHEMICAL ROCK SAMPLING LEDGER	DETECTION LIMIT					2	5	2	1	0.003	1	0.001	5	5	10	10
	ANALYTICAL METHOD					ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF	

Tenement Name: HEEMSKIRK FALLS EL 30/79	Project: FOLLOW UP OF EM ANOMALIES AMG Zone: 5	Sheet No.: 5
Area / Prospect: FORMER MINES DEPT RESERVE	DPO's: 31901, 31902	Laboratory: ALS, BRISBANE
Map / Photo Ref: QUEENSTOWN SK 55-5	Sample No's: 1197281 - 300	Collected By: G PURVIS Date: APRIL 1984

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Sample Number	LOCATION						ROCK TYPE			MINERALISATION						METAL CONTENT ppm / %										Geological Observations		
	Co-ordinates AMG / Grid		Exposure	S Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	L.O.D.	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn		Sn / W	Ba
	East	North				From	To																					
1197301	357700	5367150	D	G	-	60	-	QTZT	-	-	T	FL	PyRT	-	-	-	Y	20	80	165	<1	0.003	3	0.43	20	⁵₁₀	60	Orientation sample. Unbleached QTZT ± py on joints.
1197302	357600	5367200	D	C	33	119	152	SILT	BLSH	-	T	DS	PyRT	-	-	-	-	20	10	15	<1		7	0.85	40	⁵₁₀	270	
1197303	357550	5367350	D	C	5	182	187	QTZT	BLSH	-	T	FL	PyRT	-	-	-	Y	25	<5	5	1		5	0.80	20	⁵₁₀	270	2-3% py on joints.
1197304	357500	5368400	F	G	-	-	-	QTZT	-	-	-	-	LIMN	-	-	-	Y	10	<5	10	<1		5	0.34	10	⁵₁₀	80	QTZT ± sulphide stains.
1197305	357600	5366900	F	G	-	-	-	BLSH	-	-	D	DS	PyRT	-	-	-	Y	35	<5	25	2		26	3.14	340	⁵₁₀	520	7% py in bedded dissemination.
1197306	358600	5366950	O	C	5	0	5	BLSH	-	-	-	-	-	-	-	-	-	2	<5	5	1		3	0.31	10	⁵₁₀	370	
1197307	358600	5366950	O	G	-	-	-	QTZT	-	-	D	DS	PyRT	-	-	-	Y	5	10	5	1		8	2.87	5	⁵₁₀	160	5% dissemin py - some semi-massive bands to 10mm slightly bleached.
1197308	358600	5367050	O	G	-	-	-	BLSH	-	-	-	-	-	-	-	-	Y	5	<5	10	2		4	0.36	10	⁵₁₀	480	
1197309	359000	5367400	O	C	1.5	0	1.5	BLSH	-	-	D	DS	PyRT	-	-	-	Y	2	<5	5	1		4	1.18	10	⁵₁₀	360	5% py - dissemin + on fractures.
1197310	359050	5367350	O	C	5	-	-	BLSH	SILT	-	D	DS	PyRT	-	-	-	Y	15	<5	10	1		6	1.18	30	⁵₁₀	290	5% py - disseminated
1197311	359050	5367350	O	G	-	-	-	BLSH	SILT	-	D	DS	PyRT	-	-	-	Y	5	<5	10	1		6	1.17	10	⁵₁₀	380	10% py - disseminated
1197312	359200	5367250	O	G	-	-	-	SILT	BLSH	-	D	DS	PyRT	-	-	-	Y	20	15	10	1	<0.003	9	1.51	50	⁵₁₀	430	10% py in SILT, 3-5% in BLSH.
1197313	359200	5367250	O	G	-	-	-	BLSH	SILT	-	D	DS	PyRT	-	-	-	-	20	<5	15	1		9	1.85	50	⁵₁₀	630	
1197314	359350	5367200	O	G	-	-	-	SHAL	SILT	-	D	DS	PyRT	-	-	-	-	25	20	30	<1	0.003	10	1.76	100	⁵₁₀	470	
1197315	360150	5367950	O	C	12	0	12	BLSH	SILT	-	T	DS	PyRT	LIMN	-	-	-	2	25	10	<1	0.005	10	1.21	20	⁵₁₀	310	
1197316	360150	5367950	O	C	12	12	24	BLSH	SILT	-	T	DS	PyRT	-	-	-	-	5	35	5	<1	0.005	6	0.92	10	⁵₁₀	260	
1197317	360150	5368000	O	G	-	-	-	BLSH	SILT	-	-	-	LIMN	-	-	-	Y	20	20	5	1		20	1.82	10	⁵₁₀	380	Prominent Fe stains on spc.
1197318	360150	5368000	O	C	3	-	-	BLSH	SILT	-	-	-	LIMN	-	-	-	Y	100	25	35	1		36	6.10	10	⁵₁₀	380	Prominent Fe stains on spc.
1197319	356000	5367500	O	C	25	-	-	SILT	BLSH	-	T	DS	PyRT	LIMN	-	-	Y	30	<5	30	2	<0.003	7	1.77	190	⁵₁₀	400	Minor dissemin and bedded py.
1197320	356100	5367550	O	C	6	0	6	BLSH	SILT	-	D	DS	PyRT	LIMN	-	-	Y	20	40	15	2		8	1.08	60	⁵₁₀	370	Highly sulphide-stained section.
GEOCHEMICAL ROCK SAMPLING LEDGER							DETECTION LIMIT						2	5	2	1	0.003	1	0.001	5	⁵₁₀	10						
							ANALYTICAL METHOD						ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF						

Tenement Name: HEEMSKIRK FALLS EL 30/79	Project: FOLLOW UP OF EM ANOMALIES AMG Zone 5	Sheet No: 6
Area / Prospect: FORMER MINES DEPT RESERVE	DPO's: 31901, 31902	Laboratory: ALS, BRISBANE

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Sample Number	LOCATION					ROCK TYPE			MINERALISATION							METAL CONTENT ppm / %										Geological Observations				
	Co-ordinates AMG / Grid		Exposure	S. Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn		Sn / W	Ba		
	East	North				From	To																							
1197321	356050	5367550	O	C	3	51	54	BLSH	SILT	-	D	DS	PKRT	LIMN	-	-	-	Y	25	20	15	1		5	1.00	80	<5	<10	290	Highly sulphide-stained section.
1197323	363350	5375950	F	G	-	-	-	SSUD	-	-	D	DS	PKRT	-	-	-	-	Y	10	10	35	1		34	2.88	75	<5	<10	150	5% py in black gneiss sst.
1197328	362750	5376000	O	G	-	-	-	Goss	-	-	A	BL	LIMN	-	-	-	-	Y	25	45	50	2		24	30.0	155	<5	<10	90	Red, thick limonite 'pan' on flcs.
1197329	362800	5376050	O	G	-	-	-	BLSH	-	-	D	DS	PKRT	-	-	-	-	-	20	25	15	2		14	3.94	35	<5	<10	710	
1197330	362950	5375950	F	G	-	-	-	SSUD	-	-	D	DS	PKRT	-	-	-	-	-	5	10	25	1		10	1.36	25	<5	<10	160	
1197331	363050	5375950	F	G	-	-	-	Goss	-	-	A	BL	LIMN	-	-	-	-	Y	70	195	45	2	0.003	105	35.3	20	<5	<10	130	Genuine cellular limonite gossa.
1197332	363050	5375950	F	G	-	-	-	SULP	-	-	A	MS	PKRT	-	-	-	-	Y	125	65	90	3	0.003	90	34.2	60	<5	<10	470	10mm band massive py in clayey.
1197333	363050	5376150	F	G	-	-	-	SSUD	-	-	D	DS	PKRT	-	-	-	-	Y	10	15	50	1	0.003	10	4.99	300	<5	<10	40	These sst & goss calc-silicate affini.
1197334	363050	5376150	F	G	-	-	-	SSUD	-	-	D	DS	PKRT	-	-	-	-	Y	10	10	35	1		9	3.74	90	<5	<10	10	As above, 1-2% py.
1197335	363050	5376250	O	G	-	-	-	SILT	-	-	T	FL	PKRT	CHPY	-	-	-	Y	10	5	30	1		8	2.82	95	<5	<10	70	Minor py + cp on joints in black sl.
1197336	363150	5378000	O	G	-	-	-	SHAL	-	-	T	DS	PKRT	-	-	-	-	Y	20	400	30	2		90	2.06	115	<5	<10	260	Crushed grey shales & sulphide str.
1197337	360000	5367550	O	C	3	-	-	SILT	SHAL	-	D	DS	PKRT	-	-	-	-	-	5	<5	20	1		12	2.56	50	<5	<10	240	
1197338	360100	5367550	O	C	2	-	-	SHAL	-	-	T	DS	PKRT	-	-	-	-	-	5	<5	15	1		10	2.12	40	<5	<10	320	
1197339	360200	5367500	O	G	-	-	-	BREC	-	-	-	MS	PKRT	-	-	-	-	Y	10	<5	20	1	0.005	12	1.80	35	<5	10	280	Rounded nodules massive py to 10.
1197340	360200	5367500	O	G	-	-	-	SILT	-	-	A	MS	PKRT	-	-	-	-	Y	10	60	10	1	<0.003	115	6.64	10	<5	<10	160	100x15mm lens massive py.
1197341	360200	5367500	O	C	15	-	-	GRIT	SILT	-	T	DS	PKRT	-	-	-	-	-	2	<5	5	1	0.003	9	1.03	15	<5	<10	290	
1197342	360250	5367600	O	C	2	-	-	SILT	BLSH	-	-	-	LIMN	-	-	-	-	Y	2	<5	10	1		7	0.64	10	<5	<10	380	Minor iron stains on flcs.
1197343	360250	5367600	O	G	-	-	-	QTZT	-	-	A	FL	PKRT	-	-	-	-	Y	2	25	15	<1		30	2.09	25	<5	10	10	10% py - dissem + on joints.
1197344	360300	5367650	O	C	1	-	-	SILT	BLSH	-	T	DS	PKRT	-	-	-	-	-	5	<5	15	1		7	0.91	80	<5	10	210	
1197345	360250	5367700	O	G	-	-	-	SILT	BLSH	-	-	-	LIMN	-	-	-	-	Y	5	<5	25	1		12	1.25	65	<5	<10	320	Iron staining on flcs.

GEOCHEMICAL ROCK SAMPLING LEDGER

DETECTION LIMIT	2	5	2	1		1	0.001	5	5	10
ANALYTICAL METHOD	ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF

Tenement Name: HEENSKIRK FALLS EL 30/79	Project: FOLLOW UP OF EM ANOMALIES AMG Zone 5	Sheet No: 7
Area / Prospect: FORMER MINES DEPT RESERVE	DPO's: 30378, 31902	Laboratory: ALS, BRISBANE

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Sample Number	LOCATION						ROCK TYPE			MINERALISATION							METAL CONTENT ppm / %										Geological Observations		
	Co-ordinates AMG / Grid		Exposure	S. Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn	Sn		Ba	
	East	North				From	To																						W
1197346	356500	5368800	0	C	3	31	34	SHAL	SILT	CHRT	T	DS	PKRT	-	-	-	-	10	<5	25	1		8	1.95	85	<5	<10	240	
1197347	356500	5368800	0	G	-	56	-	QTZT	-	-	D	DS	PKRT	-	-	-	-	10	<5	25	1	0.003	8	0.94	15	70	<10	160	
1197348	356500	5368800	0	G	-	70	-	QTZT	-	-	D	DS	PKRT	-	-	-	-	5	<5	20	1	<0.003	9	0.92	20	25	<10	160	
1197349	356450	5368750	0	G	-	115	-	SILT	QTZT	-	D	FL	PKRT	-	-	-	-	40	<5	25	1		8	1.39	15	10	<10	190	
1197350	356400	5368750	0	C	1	130	131	QTZT	-	-	D	DS	PKRT	-	-	-	-	10	<5	5	<1		5	0.62	20	5	<10	110	
1197351	356400	5368750	0	C	3	155	158	QTZT	QTNV	-	T	DS	LIMN	PKRT	-	-	-	2	<5	30	1	0.003	6	2.07	120	15	<10	180	Iron stained sp. Minor py. sl leach
1197352	356350	5368700	0	G	-	172	-	SILT	QTZT	-	T	FL	PKRT	-	-	-	-	20	<5	40	1		10	3.19	380	<5	<10	260	
1197353	356350	5368700	0	G	-	178	-	SILT	SHAL	-	D	DS	PKRT	-	-	-	-	25	25	30	1		10	4.27	290	<5	<10	250	5-7% py - dissem on joints
1197354	356350	5368700	0	G	-	190	-	GSSS	-	-	A	BLW	PEOX	-	-	-	-	10	550	65	2		6	17.5	1100	5	<10	250	Red iron oxide 'pan' on spcs.
1197355	356300	5368650	0	G	-	279	-	QTZT	-	-	D	DS	PKRT	-	-	-	-	15	<5	20	<1		6	0.80	45	<5	<10	90	
1197356	356250	5368650	0	F	G	400	-	QTZT	-	CHRT	D	DS	PKRT	-	-	-	-	15	15	30	1		18	2.65	230	<5	<10	90	
1197357	356250	5368650	0	G	-	402	-	BLSH	-	-	D	DS	PKRT	-	-	-	-	10	25	40	3		40	4.85	125	<5	<10	430	
1197358	359100	5367450	0	G	-	30	-	SILT	-	-	D	DS	PKRT	-	-	-	-	30	25	20	2		14	1.50	100	<5	<10	420	
1197359	359100	5367450	0	G	-	37	-	BLSH	-	-	-	-	LIMN	-	-	-	-	2	<5	20	1		12	0.66	25	<5	<10	540	Iron stained BLSH.
1197360	359100	5367450	0	C	2	55	57	BLSH	SILT	-	T	DS	PKRT	LIMN	-	-	-	25	10	20	2	0.005	14	1.56	50	<5	<10	500	
1197361	359100	5367450	0	C	2	69	71	BLSH	SILT	-	D	DS	PKRT	LIMN	-	-	-	20	15	15	2	0.005	16	1.98	95	<5	<10	410	
1197362	359150	5367450	0	C	1	85	86	BLSH	-	-	-	-	LIMN	-	-	-	-	5	<5	10	1	0.003	10	1.68	20	<5	<10	370	Iron stained highly graphitic shal
1197363	359150	5367450	0	G	-	100	-	SILT	-	-	D	NM	PKRT	-	-	-	-	40	20	20	2	0.015	28	2.22	125	<5	<10	390	5% py in veins in graphitic siltite.
1197364	359350	5367450	0	C	11	280	291	BLSH	SILT	-	T	DS	PKRT	LIMN	-	-	-	10	<5	20	2	0.003	10	1.35	25	<5	<10	290	
1197365	359400	5367500	0	G	-	-	-	BLSH	SILT	-	T	DS	PKRT	-	-	-	-	15	<5	15	1	<0.003	7	0.68	15	<5	<10	290	

GEOCHEMICAL ROCK SAMPLING LEDGER	DETECTION LIMIT										2	5	2	1	0.003	1	0.001	5	5	10	10
	ANALYTICAL METHOD										ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF	

Tenement Name: HEEMSKIRK FALLS EL 30/79	Project: FOLLOW UP OF EM ANOMALIES AMG Zone: 5	Sheet No.: 8
Area / Prospect: FORMER MINES DEPT RESERVE	DPD's: 30378,	Laboratory: ALS, BRISBANE

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Sample Number	LOCATION						ROCK TYPE			MINERALISATION							METAL CONTENT ppm / %										Geological Observations	
	Co-ordinates AMG / Grid		Exposure	S. Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn	Sn / W		Ba
	East	North				From	To																					
197366	355650	5370050	0	G	-	30	-	SHAL	SILT	-	T DS	PYRT	-	-	-	-	20	<5	55	2		14	3.68	240	<5	<10	280	
197368	355550	5370050	0	G	-	138	-	Goss	-	-	A BW	FeOx	-	-	-	Y	5	65	25	1	<0.003	870	14.5	65	<5	<10	30	Brown iron oxide 'pan' coating sp.
197369	355550	5370050	0	G	-	150	-	QTZT	-	-	T DS	PYRT	-	-	-	-	10	<5	35	1		8	1.35	40	<5	<10	120	
197370	355500	5370050	0	G	-	170	-	QTZT	QTZT	-	T W	GRAP	-	-	-	Y	5	<5	15	<1		30	1.33	35	<5	<10	90	10mm qtz-carb vein c grey mineral
197371	355350	5370000	0	G	-	184	-	SHAL	SILT	-	T	LIMN	-	-	-	Y	5	<5	30	1		9	2.00	55	<5	<10	400	0.3m crush zone z iron stains associated c fault.
197372	355350	5370000	0	G	-	215	-	QTZT	QTZT	-	T W	GRAP	-	-	-	Y	<2	10	15	1		4	1.08	80	<5	<10	50	Joint fillings - qtz-carb-grey min
197374	355650	5370050	0	G	-	30	-	Goss	-	-	A BW	FeOx	-	-	-	Y	2	35	80	2		95	14.0	520	<5	<10	100	Thin red iron oxide 'pan' on sp.
197375	355450	5370400	0	G	-	-	-	QTZT	-	-	D DS	PYRT	-	-	-	-	2	10	20	1		75	2.13	30	<5	<10	90	
197376	355450	5370500	0	G	-	-	-	BLSH	-	-	A	LIMN	-	-	-	Y	25	25	15	2		22	3.63	20	<5	<10	220	Highly Fe-stained BLSH c gossanous fracture
197377	355400	5370550	0	G	-	-	-	Goss	-	-	A BW	LIMN	-	-	-	Y	10	60	110	3	<0.003	<1	19.1	7250	<5	<10	90	Orange limonite ooze on sp.
197379	355400	5370550	0	G	-	-	-	SILT	BLSH	-	D DS	PYRT	LIMN	-	-	-	10	5	30	2		9	1.90	65	<5	<10	240	
197380	355350	5370450	0	G	-	-	-	BLSH	SILT	-	D DS	PYRT	LIMN	-	-	-	5	5	20	1	0.003	6	1.38	30	<5	<10	200	
197381	355350	5370450	0	G	-	-	-	Goss	-	-	A BW	LIMN	-	-	-	Y	15	85	25	2	0.005	16	22.1	25	<5	<10	<10	Thick orange limonite ooze on sp.
197382	355350	5370450	0	G	-	-	-	QTZT	-	-	D DS	PYRT	LIMN	-	-	-	2	<5	15	<1		5	0.65	25	<5	<10	20	
197383	355300	5370450	0	G	-	-	-	QTZT	QTZT	-	D DS	PYRT	LIMN	-	-	-	2	<5	15	<1	0.005	3	0.72	100	<5	<10	60	
197385	359200	5367750	0	C	25	0	25	QTZT	SILT	-	T DS	PYRT	-	-	-	-	10	<5	10	1	<0.003	12	0.84	25	<5	<10	210	
197386	359300	5367750	0	C	10	80	90	BLSH	SILT	-	D DS	PYRT	-	-	-	-	15	5	15	2	<0.003	12	1.57	65	<5	<10	420	
197387	359300	5367750	0	C	20	110	130	SILT	BLSH	-	T DS	PYRT	-	-	-	-	10	<5	10	1	<0.003	6	0.96	15	<5	<10	410	
197388	359350	5367750	0	C	10	160	170	SILT	BLSH	-	D DS	PYRT	-	-	-	-	20	<5	15	1	<0.003	7	1.36	45	<5	<10	470	
197389	359350	5367750	0	C	15	225	240	SILT	BLSH	-	D DS	PYRT	-	-	-	Y	20	<5	15	1	0.005	8	1.95	130	<5	<10	390	3-5% dissemin vein py. At 226m beds of massive py up to 20mm.

GEOCHEMICAL ROCK SAMPLING LEDGER	DETECTION LIMIT										2	5	2	1		1	0.001	5	5	10	10
	ANALYTICAL METHOD										ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF	

Tenement Name: HEEMSKIRK FALLS EL 30/79 Project: FOLLOW UP OF EM ANOMALIES AMG Zone: 5 Sheet No.: 9

Area / Prospect: FORMER MINES DEPT RESERVE DPO's: 30378, 31903 Laboratory: ALS, BRISBANE

038

193039

R

TASMANIA CRA EXPLORATION PTY. LTD.

Sample Number	LOCATION					ROCK TYPE			MINERALISATION							METAL CONTENT ppm / %										Geological Observations		
	Co-ordinates AMG / Grid		Exposure	S. Type	Width (m)	Interval		Major Rock	Minor Rock	Alteration	Visible	Style	Major	Minor	Minor	Gangue	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn		Sn / W	Ba
	East	North				From	To																					
1197390	359350	5367750	0	G	-	226	-	SULP	BLSH	-	A	MS	PYRT	-	-	SILTY	45	25	15	2	0.003	14	5.50%	50	<5	<10	320	Sample of massive py beds + lenses
1197391	359400	5367750	0	C	10	255	265	SILT	-	-	D	DS	PYRT	-	-	-	15	<5	15	1	<0.003	8	1.91	270	<5	<10	300	
1197392	359400	5367750	0	C	16	277	293	SILT	BLSH	-	T	DS	PYRT	-	-	-	15	<5	5	1	0.003	6	0.81	30	<5	<10	270	
1197393	359450	5367750	0	C	16	309	325	SILT	BLSH	-	T	DS	PYRT	-	-	-	30	<5	20	1	<0.003	9	1.35	35	<5	<10	470	

GEOCHEMICAL ROCK SAMPLING LEDGER	DETECTION LIMIT										2	5	2	1	0.003	1	0.001	5	5	10	10
	ANALYTICAL METHOD										ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF	
Tenement Name: HEEMSKIRK FALLS EL 30/79					Project: FOLLOW UP OF EM ANOMALIES AMG Zone 5					Sheet No.: 10											
Area / Prospect: FORMER MINES DEPT RESERVE					DPO's: 31903					Laboratory: ALS, BRISBANE											
Map / Photo Ref: TRENSTOWN SK 55 5					Sample No's: 1197390 393					Collected By: G PURVIS					Date: MAY 1984						

039

193040

S

CRA EXPLORATION PTY. LTD.

ASMANIA

Sample Number	SOIL DESCRIPTION										BEDROCK					METAL CONTENT ppm / %										Geological Observations	
	Co-ordinates AMG / Grid		Depth (m)	Colour	Horizon	% Rock	% Sand	% Silt	% Clay	Organic	Soil Type	Rock Type	Alteration	Vis. Min.	Min. Type	LOOK	Cu	Pb	Zn	Ag	Au	As	Fe %	Mn	Sn / W		Ba
	East	North																									
197131	360400	5368350	0.1	Orange	B	-	-	-	100	-	R	-	-	-	-	15	25	45	4	<0.003	<1	8.84	90	^S <10	130		
1197217	357700	5368050	0.1	Brown	B	-	-	-	100	-	R	-	-	-	-	5	15	40	1		7	11.5	70	^S <10	170		
197268	358380	5366150	1.4	Grey	WB	100	-	-	-	-	R	BLSH	-	-	Y	2	<5	10	<1		2	0.31	20	^S <10	390	Layer upper hSte. Leached bedrock.	
1197269	358300	5366150	0.4	Green	WB	100	-	-	-	-	R	QTZT	-	-	Y	<2	<5	10	<1		2	0.31	10	^S <10	340	Layer upper hSte. Leached bedrock.	

GEOCHEMICAL SOIL SAMPLING LEDGER

DETECTION LIMIT	2	5	2	1	0.003	1	0.001	5	^S 10	10
ANALYTICAL METHOD	ICP	ICP	ICP	ICP	AAS	ICP	ICP	ICP	XRF	XRF

Tenement Name: HEMSKIRK FALLS EL 30/79

Project: FOLLOW UP OF EM ANOMALIES AMG Zone: 5

Sheet No: 1

Area / Prospect: FORMER MINES DEPT RESERVE

DPO's: 30250, 31901

Laboratory: ALS, BRISBANE

Map / Photo Ref: INTERSTITIAL SK 55 S

Sample No's: 1197 21 2

Collected By: G PURVIS Date: APRIL 1984

040

193041

APPENDIX 2

GEOCHEMICAL SAMPLE DESCRIPTIONS

GRA EXPLORATION PTY. LIMITED

STREAM SEDIMENT SAMPLE FIELD SHEET

SAMPLE NUMBER	LOCATION		SAMPLE DESCRIPTION							SITE DESCRIPTION							GEOLOGY					GEOLOGICAL OBSERVATIONS			
	East	North	Zone	Sample Size	Gravel %	Sand %	Silt %	Clay %	Org %	Width	Gradient	Flow	Banks	Channel	Staining	Contam.	Site	Outcrop	Flora		Min/Alt		Slope	Look	Veget.
																			Major	Minor					
1197101	358500	5367300	5	4mm	64	25	10	-	1	3	S	F	B	W	N	N	G	-	QTZT	QTVN	-	-	-	T	
1197102	358500	5367450	5	4mm	80	15	4	-	1	3	S	F	A	W	N	N	G	-	QTZT	QTVN	-	-	-	T	
1197105	358650	5367600	5	4mm	70	25	4	-	1	3	4-9	F	A	W	N	N	G	BLSH	QTZT	QTVN	DSSL	-	Y	T	1/2 BLACK SHALE WITH 5% PY IN SANDY BEDS
1197107	358750	5367650	5	4mm	65	30	4	-	1	2	4	F	A	W	N	N	G	-	QTZT	QTVN	-	-	-	T	
1197108	358800	5367600	5	4mm	75	15	5	-	5	1	1	F	A	W	N	N	G	-	QTZT	QTVN	-	-	-	O	
1197109	358900	5367550	5	4mm	70	20	5	-	5	1	0.5	F	B	W	N	N	G	BLSH	-	-	DSSL	-	Y	O	1/2 BLACK SHALE WITH PY IN SANDY LAMINAE
1197111	359000	5367400	5	4mm	20	55	20	-	5	0.5	0.2	S	B	W	N	N	M	BLSH	QTVN	BLSH	VEIN	-	Y	O	1/2 BLACK SHALE WITH 5% PY ON JOINTS
1197113	359100	5367450	5	4mm	60	35	5	-	5	1	0.2	S	B	W	N	N	M	BLSH	BLSH	QTZT	-	-	-	T	
1197114	359300	5367450	5	4mm	30	40	25	-	5	0.5	0.1	S	A	W	N	N	G	-	BLSH	QTZT	-	-	-	O	
1197116	359000	5367600	5	4mm	70	20	5	-	5	3	0.5	F	B	W	N	N	G	QTZT	QTZT	QTVN	DSSL	-	Y	R	1/2 QUARTZITE WITH MINOR PY.
1197117	359100	5367700	5	4mm	65	25	5	-	5	3	0.5	F	B	W	N	N	G	QTZT	QTZT	QTVN	-	-	-	R	
1197118	359200	5367750	5	4mm	85	10	5	-	-	2	0.4	F	B	W	N	N	G	QTZT	QTZT	BLSH	-	-	-	T	
1197120	359350	5367750	5	4mm	60	25	10	-	5	1	0.4	F	A	W	N	N	G	BLSH	QTZT	BLSH	DSSL	-	Y	T	1/2 BLACK SHALE AND SILTSTONE, 5-10% PY.
1197124	359550	5367750	5	4mm	65	20	10	-	5	1	0.3	F	A	W	N	N	G	-	QTZT	QTVN	-	-	-	T	
1197126	359700	5367800	5	4mm	65	25	5	-	5	1	0.2	F	C	W	N	N	G	BLSH	QTZT	QTVN	-	-	-	T	
1197128	359900	5367850	5	4mm	70	20	5	-	5	0.5	0.1	F	B	W	N	N	G	SILT	QTZT	QTVN	DSSL	-	Y	T	1/2 QTZ-MICA SILTSTONE WITH 10% PY.
1197130	360400	5368350	5	NOT SIEVED	-	50	30	10	10	1	0.1	P	K	N	N	N	P	-	-	-	-	-	-	T	
1197132	360450	5368600	5	4mm	15	60	20	-	5	0.5	0.1	S	B	N	N	N	P	-	QTVN	QTZT	-	-	-	O	
1197133	360600	5368650	5	4mm	30	45	20	-	5	2	0.7	F	A	N	N	N	M	-	QTVN	QTZT	-	-	-	R	
1197134	360350	5368650	5	NOT SIEVED	5	60	30	-	5	0.5	0.1	S	A	N	N	N	P	-	QTVN	QTZT	-	-	-	O	
1197135	360200	5368450	5	NOT SIEVED	15	50	30	-	5	0.3	0.1	S	B	N	N	N	M	-	SILT	QTVN	-	-	-	O	
1197136	360200	5368700	5	4mm	65	25	5	-	5	0.3	0.1	S	A	B	N	N	M	-	QTVN	QTZT	DSSL	-	Y	T	FLOAT: BLACK MICACEOUS SILTSTONE WITH MINOR PY
1197137	360200	5367500	5	4mm	40	35	15	-	10	0.5	0.1	F	B	W	N	N	M	BLSH	BLSH	QTZT	MSSL	-	Y	O	1/2 2.5m x 0.4m MASSIVE PYRITE LENS IN BLSH
1197139	360100	5367500	5	4mm	60	25	10	-	5	0.5	0.1	F	B	W	N	N	M	BLSH	BLSH	QTZT	VEIN	-	Y	O	1/2 BLSH WITH MINOR PY ON JOINTS.
1197141	360200	5367350	5	4mm	65	20	10	-	5	1	0.2	F	C	W	N	N	G	BLSH	BLSH	QTZT	VEIN	-	Y	T	1/2 BLACK MICACEOUS SILT + BLSH, TRACE PY.
1197142	360150	5367150	5	4mm	70	15	10	-	5	2	0.3	F	B	W	N	N	G	SILT	QTZT	BLSH	DSSL	-	Y	T	1/2 TRACE PY IN SILT ON CARBONACEOUS PARTING
1197144	360050	5367100	5	4mm	65	20	5	-	10	1	0.1	S	C	W	N	N	M	SILT	QTZT	SHAL	DSSL	-	Y	T	1/2 SILT + SHAL WITH MINOR PY.

PROJECT HEEMSKIRK FALLS

1:250 000 SHEET QUEENSTOWN SK 55-5 COLLECTED BY J.G. PURVIS

TENEMENT EL 30/79

SAMPLE NOS 1197101-144 DATE APRIL 1984

INVESTIGATION FOLLOW-UP OF AERIAL EM ANOMALIES DPO

30250



SAMPLE NUMBER	LOCATION			SAMPLE DESCRIPTION					SITE DESCRIPTION							GEOLOGY				GEOLOGICAL OBSERVATIONS					
	East	North	Zone	Sample Type	Gravel %	Sand %	Silt %	Clay %	Org %	Width	Gradient	Flow	Bank	Channel	Shading	Contam.	Site	Outcrop	Flot.		Major Pyrite	Min/Air	Scint	Look	Veget.
1197146	360200	5366950	5	-4mm	70	20	5	-	5	2	0.4	F	C	D	N	N	G	QTZT	QTZT	SHAL		-	-	-	T
1197148	360000	5366900	5	-4mm	40	35	15	-	10	0.3	0.1	S	B	W	N	N	M	SHAL	SHAL	QTVN		-	-	-	O
1197149	360000	5366700	5	-4mm	50	30	15	-	5	1.5	0.2	S	A	N	N	N	G	BLSH	QTZT	QTVN		-	-	-	R
1197151	359900	5366600	5	-4mm	60	25	10	-	5	2	0.3	F	B	W	FEL	N	G	BLSH	QTVN	QTZT		-	-	-	R
1197153	359850	5366500	5	-4mm	65	20	10	-	5	2	0.3	S	B	W	N	N	G	-	QTZT	BLSH		-	-	-	F
1197154	359800	5366400	5	-4mm	70	15	10	-	5	2	0.4	F	A	W	N	N	G	-	QTVN	QTZT		-	-	-	F
1197155	359650	5366350	5	-4mm	55	20	15	-	10	3	0.5	F	B	W	N	N	G	SILT	QTVN	QTZT		-	-	-	F
1197156	359400	5366400	5	-4mm	50	25	15	-	10	2	0.7	S	A	N	N	N	G	-	QTZT	QTVN		-	-	-	F
1197157	359500	5366850	5	-4mm	50	25	15	-	10	0.5	0.1	F	B	W	N	N	G	-	QTZT	QTVN		-	-	-	O
1197159	359400	5366750	5	-4mm	65	20	10	-	5	4	0.1	S	C	D	N	N	G	-	QTZT	QTVN		-	-	-	T
1197160	359400	5366650	5	-4mm	65	15	10	-	10	2	0.2	F	B	W	N	N	G	-	QTZT	QTVN		-	-	-	T
1197162	359300	5366550	5	-4mm	70	20	5	-	5	1	0.3	F	B	W	N	N	G	QTZT	QTZT	QTVN	DSSL	-	-	Y	T of QTZT WITH 5% DISSEM PY.
1197165	359000	5366750	5	-4mm	55	20	15	-	10	0.5	0.1	S	C	D	FEL	N	G	BLSH	QTZT	BLSH	DSSL	-	-	Y	O of BLSH WITH MINOR PY AND LIMONITE
1197167	358750	5366800	5	-4mm	60	25	10	-	5	0.5	0.1	S	C	W	N	N	G	BLSH	QTZT	QTVN	DSSL	-	-	Y	O of BLSH WITH LIMONITE, QTZT WITH MIN PY
1197172	358200	5367000	5	-4mm	15	40	30	-	15	0.3	0.1	S	N	B	N	N	P	-	QTVN	BLSH		-	-	-	O
1197174	357300	5368600	5	-4mm	65	20	10	-	5	0.5	0.2	S	A	W	N	N	G	-	QTZT	QTVN		-	-	-	O
1197176	357500	5368700	5	-4mm	40	35	15	-	10	0.5	0.3	S	A	W	N	N	G	-	QTVN	QTZT		-	-	-	O
1197177	357500	5368800	5	-4mm	30	45	15	-	10	0.5	0.3	S	B	W	N	N	G	QTZT	QTVN	QTZT		-	-	-	T
1197178	357500	5368850	5	-4mm	65	20	10	-	5	0.5	0.2	S	A	W	N	N	G	QTZT	QTZT	QTVN		-	-	-	O
1197179	357650	5369000	5	-4mm	70	15	10	-	5	1	0.5	F	B	W	N	N	G	QTZT	QTZT	QTVN		-	-	-	O
1197180	357650	5369100	5	-4mm	60	20	15	-	5	0.8	0.2	F	B	W	N	N	G	BLSH	QTZT	BLSH	DSSL	-	-	Y	T Flot. BLSH AND SILT WITH MINOR PY.
1197182	357750	5369150	5	-4mm	65	25	10	-	-	1.5	0.7	F	B	W	N	N	G	QTZT	QTZT	QTVN		-	-	-	T
1197183	357850	5369250	5	-4mm	75	15	10	-	-	3	0.7	F	B	W	FEL	N	G	QTZT	QTZT	QTVN		-	-	-	T
1197184	357950	5369300	5	-4mm	70	20	10	-	-	2	0.8	F	B	W	FEL	N	G	SHAL	QTZT	SHAL	MSSL	-	-	Y	T McGREY SHAL. ALSO BLSH WITH 25x10mm NODULE OF MASSIVE PYRITE.
1197186	358050	5369250	5	-4mm	70	20	10	-	-	2	0.8	F	B	W	N	N	G	QTZT	QTZT	QTVN		-	-	-	T
1197189	358100	5369150	5	-4mm	70	20	10	-	-	1.5	0.7	F	B	W	FEL	N	G	QTZT	QTZT	QTVN		-	-	-	T
1197190	358050	5368950	5	-4mm	60	25	15	-	-	1	0.4	S	B	W	N	N	G	QTZT	QTZT	QTVN		-	-	-	T

PROJECT HEEMSKIRK FALLS

1:250 000 SHEET

QUEENSTOWN SK 55-S

COLLECTED BY

J.G. PURVIS

TENEMENT EL 30/79

SAMPLE NO'S

1197146 - 190

DATE

APRIL 1984

INVESTIGATION FOLLOW-UP OF AERIAL EM

DPO:

30250

ANOMALIES



SAMPLE NUMBER	LOCATION			SAMPLE DESCRIPTION						SITE DESCRIPTION										GEOLOGY				GEOLOGICAL OBSERVATIONS			
	East	North	Zone	Sample Size	Gravel %	Sand %	Silt %	Clay %	Org %	Width	Gradient	Flow	Bank	Channel	Shading	Contam.	Site	Outcrop	Flint		Major	Minor	Min/Alt		Scint	Look	Veget.
1197191	358150	5369000	5	4MM	70	15	10	-	5	1	0.3	F	C	W	N	N	G	QTZT	QTZT	QTVN			-	-	-	T	
1197192	358300	5369000	5	4MM	70	15	10	-	5	0.5	0.1	S	C	W	N	N	G	QTZT	QTZT	BLSH			-	-	-	T	
1197193	358450	5368900	5	NOT SERVED	5	60	25	-	10	0.3	0.1	S	N	N	N	N	P	-	-	-			-	-	-	T	
1197194	358350	5368800	5	4MM	45	25	20	-	10	0.3	0.1	S	A	W	N	N	M	-	QTZT	BLSH			-	-	-	T	
1197195	358050	5368700	5	NOT SERVED	-	50	40	-	10	0.5	0.1	S	N	N	N	N	P	-	-	-			-	-	-	O	
1197196	358000	5368650	5	4MM	10	50	30	-	10	0.3	0.2	S	N	N	N	N	P	-	QTVN	QTZT			-	-	-	O	
1197198	357900	5368500	5	4MM	15	60	20	-	5	0.3	0.1	S	N	N	N	N	M	-	QTVN	QTZT			-	-	-	O	
1197199	358750	5369250	5	4MM	65	20	10	-	5	2	0.2	F	B	D	FEL	N	G	QTZT	QTZT	QTVN			-	-	-	T	
1197201	358800	5369150	5	4MM	65	20	10	-	5	1	0.2	S	B	W	N	N	G	QTZT	QTZT	QTVN			-	-	-	O	
1197202	358900	5369000	5	4MM	25	40	25	-	10	0.3	0.1	S	A	W	N	N	M	-	QTVN	QTZT			-	-	-	O	
1197203	358200	5368050	5	4MM	65	20	10	-	5	0.8	0.2	S	A	W	N	N	G	QTZT	QTZT	QTVN			-	-	-	O	
1197204	358150	5367950	5	4MM	45	35	15	-	5	0.3	0.2	S	N	N	N	N	M	-	QTZT	QTVN			-	-	-	O	
1197205	357900	5367750	5	4MM	40	35	15	-	10	1.5	0.1	S	C	D	FEL	N	G	QTZT	QTZT	BLSH		DSSL	-	Y	T	ok: PYRITIC QTZT. Flint: PYRITIC BLSH.	
1197209	357850	5367750	5	4MM	70	20	5	-	5	1.5	0.4	F	A	W	FEL	N	G	-	QTZT	QTVN			-	-	-	T	
1197210	357700	5367750	5	4MM	60	20	10	-	10	0.5	0.1	S	B	W	FEL	N	M	QTZT	QTZT	QTVN			-	-	-	O	
1197212	357700	5367850	5	4MM	60	25	10	-	5	2.5	0.3	F	C	W	FEL	N	G	QTZT	QTZT	QTVN		DSSL	-	Y	F	ok: PYRITE UP TO 15% IN QTZT	
1197214	357600	5367900	5	4MM	65	20	10	-	5	1	0.1	S	C	D	FEL	N	G	QTZT	QTZT	QTVN		DSSL	-	Y	O	ok: TRACE PYRITE IN QTZT.	
1197215	357650	5368000	5	4MM	65	20	10	-	5	3	0.3	F	A	W	N	N	G	-	QTVN	QTZT			-	-	-	F	
1197216	357700	5368050	5	4MM	50	30	15	-	5	3	0.1	S	C	W	N	N	G	-	BLSH	QTVN			-	-	Y	F	West bank is yellow-brown clay.
1197218	357500	5368100	5	4MM	70	20	10	-	-	0.5	0.2	S	B	W	FEL	N	G	-	QTZT	QTVN			-	-	-	T	
1197219	357350	5368150	5	4MM	75	15	5	-	5	1	0.1	F	B	W	FEL	N	G	QTZT	QTZT	QTVN		VEIN	-	Y	T	ok: Gray shales c py on joints, within	
1197221	357600	5368200	5	4MM	40	30	20	-	10	0.3	0.1	S	B	W	N	N	M	-	QTVN	QTZT			-	-	-	O	
1197222	356350	5369150	5	4MM	75	15	10	-	-	0.5	0.1	S	C	D	N	N	G	QTZT	QTZT	QTVN			-	-	-	O	
1197223	356100	5368900	5	4MM	60	25	10	-	5	2	0.1	S	B	W	FEL	N	G	QTZT	QTZT	QTVN			-	-	-	T	
1197224	356200	5368650	5	4MM	65	20	10	-	5	3	0.2	F	C	D	FEL	N	G	QTZT	QTZT	QTVN		VEIN	-	Y	R	ok: float: Qtz vein c 20% specularite, 3% py, 2% arsenopy, 1% cp. float: grey pyritic siltstone.	
1197229	356400	5368750	5	4MM	70	20	5	-	5	1.5	0.1	S	C	D	N	N	G	QTZT	QTZT	QTVN		DSSL	-	Y	R		
1197230	356450	5368450	5	4MM	55	25	15	-	5	1	0.1	F	B	W	FEL	N	G	QTZT	QTZT	QTVN		SERC	-	-	-	T	

PROJECT HEEMSKIRK FALLS 1:250 000 SHEET QUEENSTOWN SK55-S COLLECTED BY J.G. PURVIS
 TENEMENT EL 30/79 SAMPLE NOS 1197191 - 1197230 DATE APRIL 1984
 INVESTIGATION FOLLOW-UP OF EM ANOMALIES 30250, 31902



GRA EXPLORATION PTY LIMITED

STREAM SEDIMENT SAMPLE FIELD SHEET

SAMPLE NUMBER	LOCATION			SAMPLE DESCRIPTION						SITE DESCRIPTION							GEOLOGY			GEOLOGICAL OBSERVATIONS						
	East	North	Zone	Sample Type	Gravel %	Sand %	Silt %	Clay %	Org %	Width	Catchment	Flow	Banks	Channel	Staining	Contam.	Site	Outcrop	Float		Major	Min/Air	Scint	Look	Veget.	
																			Major	Minor						
1197231	356700	5367800	5	-4mm	65	20	10	-	5	1	0.1	S	B	W	FEL	N	G	QTZT	QTZT	QTVN		MSSL	-	Y	T	Float: BLSH ± bands + nodules of massive py
1197233	356750	5367750	5	-4mm	65	20	10	-	5	0.3	0.1	S	B	W	FEL	N	G	BLSH	QTZT	QTVN		DSSL	-	Y	O	dc: Minor py in Fe-stained BLSH
1197235	356800	5367500	5	-4mm	70	10	10	-	10	0.5	0.1	S	C	W	N	N	M	QTZT	QTZT	BLSH		DSSL	-	Y	O	dc: BLSH interbeds with dissem py
1197237	357050	5367350	5	-4mm	60	25	10	-	5	1	0.1	S	B	W	FEL	N	G	BLSH	QTZT	QTVN		DSSL	-	Y	T	dc: BLSH + SILT, both ± 10% dissem py
1197245	355850	5368200	5	NOT SERVED	15	50	25	-	10	0.5	0.1	P	N	B	FEL	N	P	QTZT	QTZT	QTVN		-	-	-	O	
1197247	355650	5368400	5	-4mm	65	20	10	-	5	0.5	0.1	S	C	W	FEL	N	M	QTZT	QTVN	QTZT		-	-	-	O	
1197248	355300	5367700	5	-4mm	55	25	10	-	10	0.5	0.1	S	A	W	N	N	G	QTZT	QTZT	QTVN		-	-	-	O	
1197249	355300	5367650	5	-4mm	65	25	10	-	10	0.5	0.2	F	A	W	FEL	N	G	QTZT	QTZT	QTVN		-	-	Y	O	Alluvial sluicing workings adjacent
1197250	355550	5367650	5	-4mm	50	25	15	-	10	0.5	0.1	S	B	W	FEL	N	P	QTZT	QTZT	QTVN		-	-	-	O	
1197251	355550	5367550	5	NOT SERVED	25	45	20	-	10	2	0.1	S	A	B	N	N	P	-	QTVN	QTZT		-	-	-	O	Possible contamination from new roadworks alluvial workings at sample site
1197252	355500	5367500	5	-4mm	65	20	10	-	5	0.5	0.1	S	A	W	N	P	G	BLSH	BLSH	QTVN		DSSL	-	Y	O	dc: 5% dissem + vein py in BLSH
1197259	356200	5367500	5	-4mm	30	45	20	-	5	1	0.1	S	B	W	N	P	G	-	QTVN	BLSH		-	-	Y	T	Possible contamination bank adjacent old road
1197260	356300	5367500	5	-4mm	60	25	10	5	-	3	0.7	F	C	D	N	D	P	QTZT	QTZT	BLSH		-	-	Y	R	Heavy contamination in fine fraction from new roadworks 150m upstream.
1197264	360650	5367000	5	-4mm	40	35	15	-	10	2	0.1	S	A	B	N	N	M	-	QTZT	QTVN		-	-	-	R	
1197265	360700	5367000	5	-4mm	40	30	20	-	10	3	0.1	S	A	W	N	N	M	-	QTZT	QTVN		-	-	-	R	
1197322	363350	5375950	5	-4mm	70	15	10	5	-	5	1.4	F	C	D	FEL	N	G	SILT	SILT	SSUD		DSSL	-	Y	R	Float: 5% py in one piece of black gneiss sst.
1197324	363100	5376000	5	-4mm	60	20	15	5	-	2	0.1	F	A	N	N	N	G	-	SSUD	SILT		-	-	-	R	
1197325	363050	5375950	5	-4mm	65	20	10	5	-	3	1.1	F	B	W	N	N	G	-	SILT	SSUD		MSSL	-	Y	R	Float: weathered clayey sediment ± 10mm band of massive py. Also 1 piece limonite gneiss.
1197326	362850	5376050	5	-4mm	63	20	15	2	-	3	1.1	F	A	W	FEL	N	G	SILT	SILT	SSUD		-	-	-	R	
1197327	362600	5376050	5	-4mm	60	15	20	5	-	5	1.0	F	C	D	N	N	G	SILT	SILT	SSUD		-	-	-	R	
1197367	355650	5370050	5	-4mm	75	15	8	-	2	3	0.8	F	C	D	N	N	G	QTZT	QTZT	QTVN		-	-	-	R	
1197373	355350	5370000	5	-4mm	65	20	10	-	5	5	0.9	F	C	D	N	N	G	QTZT	QTZT	QTVN		-	-	-	R	
1197378	355350	5370450	5	-4mm	75	15	8	-	2	6	1.7	F	C	D	FEH	N	G	BLSH	QTZT	SILT		DSSL	-	Y	R	Much iron staining of float and dc. dc: 1-2% py in BLSH and black SILT.
1197384	355200	5370500	5	-4mm	65	20	10	-	5	6	1.8	F	C	D	FEL	N	G	QTZT	QTZT	SILT		-	-	Y	R	Much iron and sulphide stains in fcs up then.

PROJECT HEEMSKRUK FALLS

1:250 000 SHEET

QUEENSTOWN SK55-S

COLLECTED BY J.G. PURVIS

TENEMENT EL 30/79

SAMPLE NO'S 1197231-384

DATE

APRIL 1984

INVESTIGATION FOLLOW-UP OF EM ANOMALIES

DPO: 30379, 31902



CRA EXPLORATION PTY LIMITE.

ROCK SAMPLE FIELD SHEET

193046

RK

SAMPLE NUMBER	SAMPLE LOCATION			SAMPLE DESCRIPTION				ROCK TYPE			MINERALISATION						GEOLOGICAL OBSERVATIONS						
	East	North	Zone/LG	Sample Type	From	To	Width	Exposure	Major	Minor	Alteration	Visible	Stable	Major	Minor	Minor	Gangue	Age	Grain Size	Texture	Colour	Notes	
1197103	358500	5367300	5	Grab	-	-	-	0	BLSH	SILT	-	D	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197104	358600	5367500	5	Grab	-	-	-	0	BLSH	SILT	-	D	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197106	358650	5367600	5	Grab	-	-	-	0	BLSH	SILT	-	D	DS	PYRT	-	-	-	AD	FG	-	-	Y	Pyrite mainly in silty interbeds.
1197110	358900	5367550	5	Grab	-	-	-	0	SSUD	-	-	D	DS	PYRT	-	-	-	AD	MG	-	-	Y	Quartzose black carbonaceous ss
1197112	359000	5367400	5	Grab	-	-	-	0	BLSH	-	-	D	FL	PYRT	-	-	-	AD	FG	-	-	-	
1197115	359200	5367450	5	Grab	-	-	-	0	QTZT	-	-	D	FL	PYRT	-	-	-	AD	MG	-	-	-	
1197119	359200	5367750	5	Grab	-	-	-	0	QTZT	SILT	-	D	DS	PYRT	-	-	-	AD	MG	-	-	Y	Rocks carbonaceous + black.
1197121	359200	5367750	5	Grab	-	-	-	0	QTVN	QTZT	-	N	-	-	-	-	-	AD	-	-	-	-	
1197122	359300	5367750	5	Chip	-	-	10	0	BLSH	SILT	-	D	DS	PYRT	-	-	-	AD	FG	-	-	Y	Pyrite in sandy + silty interbeds.
1197123	359350	5367750	5	Grab	-	-	-	0	BLSH	SILT	-	D	DS	PYRT	-	-	-	AD	FG	-	-	Y	Bedded pyrite in silty interbeds.
1197125	359550	5367750	5	Grab	-	-	-	0	SILT	-	-	A	SM	PYRT	-	-	-	AD	FG	-	-	Y	Black siltstone - semi-massive pyrite in beds up to 5mm.
1197127	359700	5367800	5	Grab	-	-	-	0	SILT	-	-	D	FL	PYRT	-	-	-	AD	FG	-	-	-	
1197129	359900	5367850	5	Grab	-	-	-	0	SILT	QTZT	-	A	SM	PYRT	-	-	-	AD	MG	-	-	Y	Pyrite in semi-massive bands to 4m.
1197138	360200	5367500	5	Chip	-	-	0.4	0	SULP	-	-	A	MS	PYRT	-	-	-	AD	FG	-	-	Y	Irregular lens massive py 2.5m x 0.4m.
1197140	360100	5367500	5	Grab	-	-	-	0	SILT	BLSH	-	T	FL	PYRT	-	-	-	AD	FG	-	-	-	
1197143	360150	5367150	5	Grab	-	-	-	0	SILT	-	-	T	DS	PYRT	-	-	-	AD	FG	-	-	Y	Minor pyrite in thin carbonaceous beds.
1197145	360050	5367100	5	Grab	-	-	-	0	BLSH	SILT	-	T	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197147	360000	5366900	5	Grab	-	-	-	0	SILT	BLSH	-	N	-	-	-	-	-	AD	FG	-	-	-	
1197150	360000	5366700	5	Grab	-	-	-	0	BLSH	-	-	N	-	-	-	-	-	AD	FG	-	-	-	
1197152	359900	5366600	5	Grab	-	-	-	0	SILT	BLSH	-	N	-	-	-	-	-	AD	FG	-	-	Y	Marked iron staining.
1197158	359550	5366900	5	Grab	-	-	-	0	BLSH	-	-	N	-	-	-	-	-	AD	FG	-	-	-	
1197161	359400	5366650	5	Grab	-	-	-	0	SILT	BLSH	-	N	-	-	-	-	-	AD	FG	-	-	-	
1197163	359300	5366550	5	Grab	-	-	-	0	QTZT	-	-	D	DS	PYRT	-	-	-	AD	MG	-	-	-	
1197164	359300	5366550	5	Grab	-	-	-	0	BLSH	-	-	N	-	-	-	-	-	AD	FG	-	-	-	
1197166	359000	5366750	5	Grab	-	-	-	0	BLSH	SILT	-	T	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197168	358750	5366800	5	Grab	-	-	-	0	BLSH	SILT	-	T	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197169	358650	5366750	5	Grab	-	-	-	0	QTZT	-	-	T	FL	ARPY	-	-	-	AD	FG	-	-	-	

PROJECT HEEMSKIRK FALLS 1:250000 SHEET QUEENSTOWN SK55-5 COLLECTED BY J.G. KUNIS DATE APRIL 1984
 TENEMENT EL 30/79 SAMPLE NO.S 1197103-169 LOCAL GRID CROSS REF _____
 INV. BY 31100N FOLLOW UP OF EM ANOMALIES 30375



CRA EXPLORATION PTY LIMITE

ROCK SAMPLE FIELD SHEET

193047

RK

SAMPLE NUMBER	SAMPLE LOCATION			SAMPLE DESCRIPTION				ROCK TYPE			MINERALISATION							GEOLOGICAL OBSERVATIONS						
	East	North	Zone/LG	Sample Type	From	To	Width	Exposure	Major	Minor	Alteration	Visible	Style	Major	Minor	Minor	Gangue		Age	Mineral	Grain Size	Texture	Colour	Looks
1197170	358650	5366750	5	Grab	-	-	-	F	QTZT	-	-	A	DS	PYRT	ARPY	-	-	AD	MG	-	-	-	-	-
1197171	358600	5366950	5	Grab	-	-	-	F	QTZT	-	-	D	DS	PYRT	ARPY	-	-	AD	MG	-	-	-	-	-
1197173	358450	5366400	5	Grab	-	-	-	F	BLSH	SILT	-	T	FL	PYRT	-	-	-	AD	FG	-	-	-	Y	Roadbed material - from top of 300m
1197175	357300	5368600	5	Grab	-	-	-	O	BLSH	-	-	N	-	-	-	-	-	AD	FG	-	-	-	-	-
1197181	357650	5369100	5	Grab	-	-	-	F	BLSH	SILT	-	T	DS	PYRT	-	-	-	AD	FG	-	-	-	-	-
1197185	357950	5369300	5	Grab	-	-	-	O	BLSH	-	-	A	PD	PYRT	-	-	-	AD	FG	-	-	-	Y	25x10mm nodule of massive py in
1197187	358050	5369200	5	Grab	-	-	-	F	GSSS	-	-	A	BW	LIMN	-	-	QUAR	QU	-	-	-	-	Y	Fragment of recent 'pan' deposit
1197188	358050	5369200	5	Grab	-	-	-	O	BLSH	SILT	-	D	DS	PYRT	-	-	-	AD	FG	-	-	-	Y	5% py in BLSH and black mica SILT
1197197	358000	5368650	5	Grab	-	-	-	F	GSSS	-	-	A	BW	LIMN	-	-	QUAR	QU	-	-	-	-	Y	Fragment of recent 'pan' deposit
1197200	358750	5369250	5	Grab	-	-	-	O	QTZT	QTVN	-	A	FL	LIMN	-	-	-	AD	MG	-	-	-	Y	Highly iron-stained, fractured QTZT
1197206	357900	5367750	5	Grab	-	-	-	O	QTZT	-	-	D	DS	PYRT	LIMN	-	-	AD	MG	-	-	-	Y	Pyritic QTZT & limonite on joints
1197207	357900	5367750	5	Grab	-	-	-	F	BLSH	-	-	D	DS	PYRT	-	-	-	AD	FG	-	-	-	Y	Graphitic shale & 2-3% disseminated py
1197208	357900	5367750	5	Grab	-	-	-	O	GSSS	-	-	A	BW	LIMN	-	-	-	QU	-	-	-	-	Y	2° iron 'pan' developed on QCS of QT
1197211	357700	5367750	5	Grab	-	-	-	O	GSSS	-	-	A	BW	FeOX	-	-	-	QU	-	-	-	-	Y	Soft, thin 2° iron 'pan' on QCS of QT
1197213	357700	5367850	5	Grab	-	-	-	O	QTZT	QTVN	-	A	DS	PYRT	-	-	-	AD	MG	-	-	-	Y	10-15% disseminated and joint-filling py
1197220	357350	5368150	5	Grab	-	-	-	O	SHAL	-	-	T	FL	PYRT	MARC	LIMN	-	AD	FG	-	-	-	Y	Dark grey shales & minor joint-filling
1197225	356200	5368650	5	Grab	-	-	-	O	BLSH	QTZT	-	A	-	LIMN	-	-	-	AD	FG	-	-	-	Y	Highly iron stained BLSH, QTZT & SILT
1197226	356200	5368650	5	Grab	-	-	-	F	QTVN	-	-	A	VN	SPEC	PYRT	CHPY	SIDR	AD	CG	-	-	-	Y	Mineralized QTVN. Possible barite & cassi
1197227	356200	5368650	5	Grab	-	-	-	F	QTVN	QTZT	-	A	VN	LIMN	SPEC	PYRT	SIDR	AD	CG	-	-	-	Y	As above in QTZT. Trace CHPY
1197228	356200	5368650	5	Grab	-	-	-	O	QTVN	-	-	A	VN	SPEC	PYRT	CHPY	-	AD	CG	-	-	-	Y	Probable source of samples 226, 227
1197232	356700	5367800	5	Grab	-	-	-	F	BLSH	-	-	A	MS	PYRT	-	-	-	AD	FG	-	-	-	Y	5-10% py as thin bands & nodules of
1197234	356750	5367750	5	Grab	-	-	-	O	BLSH	SILT	-	T	DS	PYRT	LIMN	-	-	AD	FG	-	-	-	Y	Minor py in BLSH. Fe stains due to massive sulf
1197236	356800	5367500	5	Grab	-	-	-	O	BLSH	SILT	-	D	DS	PYRT	-	-	-	AD	FG	-	-	-	-	-
1197238	357050	5367350	5	Grab	-	-	-	O	BLSH	SILT	-	A	DS	PYRT	-	-	-	AD	FG	-	-	-	Y	10% py in BLSH and black SILT
1197239	357100	5367900	5	Grab	-	-	-	F	QTZT	BLSH	-	D	DS	PYRT	-	-	-	AD	MG	-	-	-	Y	2% disseminated py in QTZT
1197240	357100	5367900	5	Grab	-	-	-	F	QTZT	QTVN	-	D	DS	PYRT	CHPY	-	-	AD	MG	-	-	-	Y	5% py, trace cp, disseminated & on fract
1197241	357100	5367900	5	Grab	-	-	-	F	QTZT	QTVN	-	A	SM	PYRT	-	-	-	AD	MG	-	-	-	Y	10% py some in bedded semi-massive

PROJECT HEEMSKIRK FALLS 1:250000 SHEET QUEENSTOWN SK55-5 COLLECTED BY J.G. PURVIS DATE APRIL 1984

TENEMENT EL 30/79 SAMPLE NO.S 1197170-241 LOCAL GRID CROSS REF

INVESTIGATION FURTHER UP OF EM ANOMALIES 11971 30375 3190



CRA EXPLORATION PTY LIMITE ROCK SAMPLE FIELD SHEET 193048 RK

SAMPLE NUMBER	SAMPLE LOCATION			SAMPLE DESCRIPTION					ROCK TYPE			MINERALISATION					GEOLOGICAL OBSERVATIONS							
	East	North	Zone/LG	Sample Type	From	To	Width	Exposure	Major	Minor	Alteration	Visible	Style	Major	Minor	Minor	gangue	Age	Mineral	Grain Size	Texture	Colour	Look	
1197242	357100	5368000	5	Grab	-	-	-	F	QTZT	-	-	D DS	FL	PYRT	-	-	-	AD	MG	-	-	Y	2-3% dissem py + minor py on fracture	
1197243	357150	5367800	5	Grab	-	-	-	F	BLSH	-	-	T FL	FL	PYRT	-	-	-	AD	FG	-	-	Y	2% py on joints + 2% py dissem.	
1197244	357550	5367400	5	Chip	D	7m	7	O	BLSH	QTZT	-	D DS	FL	PYRT	LIMN	-	-	AD	FG	-	-	Y	Highly Fe-stained pyritic BLSH + QTZ	
1197246	355850	5368200	5	Grab	-	-	-	O	QTZT	-	-	T -	FL	LIMN	-	-	-	AD	MG	-	-	Y	Highly Fe-stained micaceous QTZT	
1197253	355500	5367500	5	Grab	-	-	-	O	BLSH	SILT	SERC	D DS	FL	PYRT	-	-	-	AD	FG	-	-	Y	5% dissem and joint-filling qtz	
1197254	355650	5367350	5	Grab	-	-	-	O	BLSH	SILT	-	A DS	FL	PYRT	-	-	-	AD	MG	-	-	Y	10-15% dissem py. Also on fractures + in qtz veins. Sand beds semi-massive py to 30.	
1197255	355800	5367400	5	Grab	-	-	-	O	BLSH	SILT	-	D DS	FL	PYRT	-	-	-	AD	MG	-	-	Y	5-10% dissem py in black shales, siltst.	
1197256	356100	5367450	5	Grab	-	-	-	O	SSUD	-	-	D DS	FL	PYRT	-	-	-	AD	MG	-	-	Y	5% py in carbonaceous mica sst.	
1197257	356150	5367450	5	Grab	-	-	-	O	BLSH	QTVN	SERC	T VN	FL	PYRT	-	-	-	AD	FG	-	-	Y	5% py in veins ± qtz in crushed BLSH	
1197258	356150	5367400	5	Grab	-	-	-	O	BLSH	-	-	A SM	FL	PYRT	CHPY	-	QUAR	AD	FG	-	-	Y	15% py post fracture. In semi-massive beds up to 30mm, ± quartz matrix.	
1197261	356200	5367300	5	Grab	-	-	-	F	QTVN	BLSH	SERC	A VN	FL	PYRT	-	-	QUAR	AD	FG	-	-	Y	Qtz-py veins in crushed black shal.	
1197262	356250	5367450	5	Grab	-	-	-	F	QTZT	QTVN	SILC	T VN	FL	PYRT	GALN	SPHL	SIDR	AD	MG	-	-	Y	Silicified qtz-veined QTZT ± minor py. On and off ss in siderite grade.	
1197263	358100	5367250	5	Chip	D	4m	4	O	QTVN	QTZT	SILC	T VN	FL	PYRT	ARPY	-	QUAR	AD	MG	-	-	Y	Notable qtz veins up to 0.3m overlain 2-3% py in veins + host QTZT.	
1197266	361100	5367550	5	Grab	-	-	-	F															Target of Mines Dept DDM.	
1197267	361100	5367550	5	Grab	-	-	-	O																
1197270	358350	5366150	5	Chip	D	10m	10	O	QTZT	BLSH	-	T DS	FL	PYRT	-	-	-	AD	MG	-	-	-	-	-
1197271	358350	5366150	5	Chip	D	24m	14	O	BLSH	QTZT	-	D DS	FL	PYRT	-	-	-	AD	FG	-	-	Y	5% dissem py conc. in sandy beds	
1197272	358300	5366150	5	Chip	2A	34m	10	O	QTZT	QTVN	-	T VN	FL	PYRT	-	-	-	AD	MG	-	-	Y	Minor py assoc ± qtz veins	
1197273	358300	5366150	5	Chip	3A	49m	15	O	BLSH	QTZT	-	T DS	FL	PYRT	-	-	-	AD	FG	-	-	Y	2-3% py dissem + in qtz veins.	
1197274	358350	5366150	5	Grab	4m.	-	-	O	BLSH	-	-	N -	-	-	-	-	-	AD	FG	-	-	Y	Orientation sample. Creamy leached sh	
1197275	358350	5366150	5	Grab	4m	-	-	O	BLSH	-	-	T -	FL	LIMN	-	-	-	AD	FG	-	-	Y	Orientation sample. Unleached BLSH	
1197276	358300	5366150	5	Grab	26m	-	-	O	QTZT	QTVN	-	N -	-	-	-	-	-	AD	MG	-	-	Y	Orientation sample. Leached QTZT	
1197277	358300	5366150	5	Grab	26m	-	-	O	QTZT	QTVN	-	N -	-	-	-	-	-	AD	MG	-	-	Y	Orientation sample. Partly leached Qtz.	
1197278	355650	5367350	5	Grab	-	-	-	O	BLSH	-	-	N -	-	-	-	-	-	AD	FG	-	-	Y	Orientation sample. Creamy leached shal	
1197279	355650	5367350	5	Grab	-	-	-	O	BLSH	-	-	N -	-	-	-	-	-	AD	FG	-	-	Y	Orientation sample. Partially leached shal	
1197280	356150	5367400	5	Grab	-	-	-	O	SILT	-	-	N -	-	-	-	-	-	AD	MG	-	-	Y	Orientation sample. Leached siltstone	
1197281	356150	5367400	5	Grab	-	-	-	O	SILT	-	-	D DS	FL	PYRT	-	-	-	AD	MG	-	-	Y	Orientation sample. Siltstone ± 5-10% py.	

CRA EXPLORATION PTY LIMITE. ROCK SAMPLE FIELD SHEET 193049 RK

SAMPLE NUMBER	SAMPLE LOCATION		Zone/LG	SAMPLE DESCRIPTION				ROCK TYPE			MINERALISATION				GEOLOGICAL OBSERVATIONS								
	East	North		Sample Type	From	To	Width	Exposure	Major	Minor	Alteration	Visible	Stylite	Major	Minor	Minor	Ground	Age	Major St. Limit	Grain Size	Texture	Colour	Looks
1197282	357600	5367200	5	Grab	-	-	-	0	SILT	BLSH	-	N	-	-	-	-	AD	FG	-	-	Y	Orientation sample. Leached grey silt shale	
1197283	357600	5367200	5	Grab	-	-	-	0	SILT	BLSH	-	T	FL	PYRT	-	-	AD	FG	-	-	Y	Orientation sample. Black purple silt shale	
1197284	356200	5367400	5	Chip	0	20	20	0	BLSH	SILT	-	D	DS	PYRT	-	-	AD	FG	-	-	Y	2% py in black shales + siltstone	
1197285	356200	5367400	5	Chip	20	40	20	0	SILT	BLSH	CHLR	D	DS	PYRT	-	-	AD	MG	-	-	Y	5-7% py-dissen on fractures + veins	
1197286	356150	5367450	5	Chip	40	60	20	0	SILT	BLSH	-	D	DS	PYRT	-	-	AD	MG	-	-	Y	5-10% py as above.	
1197287	356150	5367450	5	Chip	60	80	20	0	SILT	BLSH	CHLR	D	DS	PYRT	-	-	AD	MG	-	-	Y	5% py as above. 4m basic dyke	
1197288	356150	5367450	5	Chip	80	100	20	0	BLSH	SILT	CHLR	A	DS	PYRT	-	-	AD	FG	-	-	Y	10% py-dissen and on joints	
1197289	356100	5367450	5	Chip	100	120	20	0	BLSH	SILT	-	A	DS	PYRT	CHPY	-	-	AD	FG	-	-	Y	10% py as above. Trace CHPY on joints
1197290	356100	5367450	5	Chip	120	140	20	0	SILT	BLSH	CHLR	D	DS	PYRT	-	-	AD	MG	-	-	Y	5-7% py in black siltstone + shales	
1197291	356050	5367500	5	Chip	140	156	16	0	SILT	BLSH	CHLR	D	DS	PYRT	-	-	AD	MG	-	-	Y	5-7% py in black siltstone + shales	
1197292	355850	5367450	5	Chip	0	25	25	0	BLSH	-	-	D	DS	PYRT	-	-	AD	FG	-	-	Y	5-7% py in highly carbonaceous sh	
1197293	355800	5367400	5	Chip	25	50	25	0	BLSH	SILT	-	D	DS	PYRT	-	-	AD	FG	-	-	Y	5-7% py-dissen + on joints	
1197294	355800	5367400	5	Chip	50	75	25	0	BLSH	SILT	-	D	DS	PYRT	-	-	AD	FG	-	-	Y	5-7% py-dissen + on joints	
1197295	355700	5367350	5	Chip	135	152	17	0	SILT	SHAL	-	T	-	LIMN	-	-	AD	MG	-	-	Y	Leached siltstone + shales - Fe stain	
1197296	355650	5367350	5	Chip	170	195	25	0	BLSH	QTZT	-	D	DS	PYRT	-	-	AD	MG	-	-	Y	5-7% py-dissen, on joints + in qtz.	
1197297	356250	5367400	5	Chip	0	15	15	0	BLSH	QTZT	SILC	D	DS	LIMN	PYRT	-	-	AD	MG	-	-	Y	Minor py in Fe-stained BLSH + QTZT
1197298	356250	5367400	5	Chip	15	30	15	0	QTZT	BLSH	SILC	D	DS	LIMN	PYRT	-	-	AD	MG	-	-	Y	Fe and sulphide-stained QTZT + BLSH
1197299	357700	5367150	5	Chip	43	64	21	0	BLSH	QTZT	-	D	DS	PYRT	-	-	AD	MG	-	-	-	-	
1197300	357700	5367150	5	Grab	60	-	-	0	QTZT	-	-	N	-	-	-	-	AD	MG	-	-	Y	Orientation sample. Leached QTZT	
1197301	357700	5367150	5	Grab	60	-	-	0	QTZT	-	-	T	FL	PYRT	-	-	AD	MG	-	-	Y	Orientation sample. Unleached QTZT - py on joints	
1197302	357600	5367200	5	Chip	119	152	33	0	SILT	BLSH	-	T	DS	PYRT	-	-	AD	MG	-	-	-	-	
1197303	357550	5367350	5	Chip	182	187	5	0	QTZT	BLSH	-	T	FL	PYRT	-	-	AD	MG	-	-	Y	2-3% py on joints in QTZT + BLSH	
1197304	357500	5368400	5	Grab	-	-	-	F	QTZT	-	-	-	-	LIMN	-	-	AD	MG	-	-	Y	QTZT - sulphide stains	
1197305	357600	5366900	5	Grab	-	-	-	F	BLSH	-	-	D	DS	PYRT	-	-	AD	FG	-	-	Y	7% py in bedded dissemination	
1197306	358600	5366950	5	Chip	0	5	5	0	BLSH	-	-	-	-	-	-	-	AD	FG	-	-	-	-	
1197307	358600	5366950	5	Grab	-	-	-	0	QTZT	-	-	D	DS	PYRT	-	-	AD	MG	-	-	Y	5% dissem py - some semi-massive bands to 10mm	
1197308	358600	5367050	5	Grab	-	-	-	0	BLSH	-	-	-	-	-	-	-	AD	FG	-	-	Y	slightly leached	

PROJECT HEEMSKIRK FALLS 1:250000 SHEET QUEENSTOWN SK55-S COLLECTED BY G. PURVIS DATE APRIL 1984
 TENEMENT EL 30/79 SAMPLE NO.S 1197282-308 LOCAL GRID CROSS REF 

CRA EXPLORATION PTY LIMITE ROCK SAMPLE FIELD SHEET 193050 RK

SAMPLE NUMBER	SAMPLE LOCATION			SAMPLE DESCRIPTION					ROCK TYPE			MINERALISATION						GEOLOGICAL OBSERVATIONS						
	East	North	Zone/LG	Sample Type	From	To	Width	Exposure	Major	Minor	Alteration	Visible	Style	Major	Minor	Minor	Gangue	Age	Mineral. Unit	Grain size	Texture	Colour	Look	
1197309	359000	5367400	5	Chip	0	1.5	15	0	BLSH	—	—	D	DS	PYRT	—	—	—	AD	FG	—	—	—	Y	5% dissemin py. Also on fractures
1197310	359050	5367350	5	Chip	—	—	5	0	BLSH	SILT	—	D	DS	PYRT	—	—	—	AD	FG	—	—	—	Y	5% dissemin py.
1197311	359050	5367350	5	Grab	—	—	—	0	BLSH	SILT	—	D	DS	PYRT	—	—	—	AD	FG	—	—	—	Y	10% dissemin py.
1197312	359200	5367250	5	Grab	—	—	—	0	SILT	BLSH	—	D	DS	PYRT	—	—	—	AD	MG	—	—	—	Y	10% dissemin py in SILT, 3-5% in BL.
1197313	359200	5367250	5	Grab	—	—	—	0	BLSH	SILT	—	D	DS	PYRT	—	—	—	AD	FG	—	—	—	—	—
1197314	359350	5367200	5	Grab	—	—	—	0	SHAL	SILT	—	D	DS	PYRT	—	—	—	AD	FG	—	—	—	—	—
1197315	360150	5367950	5	Chip	0	12	12	0	BLSH	SILT	—	T	DS	PYRT	LIMN	—	—	AD	FG	—	—	—	—	—
1197316	360150	5367950	5	Chip	12	24	12	0	BLSH	SILT	—	T	DS	PYRT	—	—	—	AD	FG	—	—	—	—	—
1197317	360150	5368000	5	Grab	—	—	—	0	BLSH	SILT	—	—	—	LIMN	—	—	—	AD	FG	—	—	—	Y	Prominent iron stains on d/c.
1197318	360150	5368000	5	Chip	—	—	3	0	BLSH	SILT	—	—	—	LIMN	—	—	—	AD	FG	—	—	—	Y	Prominent iron stains on d/c.
1197319	356000	5367500	5	Chip	—	—	25	0	SILT	BLSH	—	T	DS	PYRT	LIMN	—	—	AD	MG	—	—	—	Y	Minor dissemin + bedded py.
1197320	356100	5367550	5	Chip	0	6	6	0	BLSH	SILT	—	D	DS	PYRT	LIMN	—	—	AD	FG	—	—	—	Y	Highly sulphide-stained section.
1197321	356050	5367550	5	Chip	51	54	3	0	BLSH	SILT	—	D	DS	PYRT	LIMN	—	—	AD	FG	—	—	—	Y	Highly sulphide-stained section.
1197323	363350	5375950	5	Grab	—	—	—	F	SSUD	—	—	D	DS	PYRT	—	—	—	CM	MG	—	—	—	Y	Black gneiss sandstone 5% py.
1197328	362750	5376000	5	Grab	—	—	—	0	Goss	—	—	A	BN	LIMN	—	—	—	QU	—	—	—	—	Y	Red, thick limonite 'pan' on d/c.
1197329	362800	5376050	5	Grab	—	—	—	0	BLSH	—	—	D	DS	PYRT	—	—	—	CM	FG	—	—	—	—	—
1197330	362950	5375950	5	Grab	—	—	—	F	SSUD	—	—	D	DS	PYRT	—	—	—	CM	MG	—	—	—	—	—
1197331	363050	5375950	5	Grab	—	—	—	F	Goss	—	—	A	BN	LIMN	—	—	—	CM	—	—	—	—	Y	Genuine cellular limonite gossan
1197332	363050	5375950	5	Grab	—	—	—	F	SULP	—	—	A	MS	PYRT	—	—	—	CM	FG	—	—	—	Y	10mm band of massive py in clayed sh.
1197333	363050	5376150	5	Grab	—	—	—	F	SSUD	—	—	D	DS	PYRT	—	—	—	CM	MG	—	—	—	Y	Gneiss sst ± poss calc-silicate
1197334	363050	5376150	5	Grab	—	—	—	F	SSUD	—	—	D	DS	PYRT	—	—	—	CM	MG	—	—	—	Y	As above. 1-2% py.
1197335	363050	5376250	5	Grab	—	—	—	0	SILT	—	—	T	FL	PYRT	CHPY	—	—	CM	MG	—	—	—	Y	Minor py + cp on joints in black sil.
1197336	363150	5378000	5	Grab	—	—	—	0	SHAL	—	—	T	DS	PYRT	—	—	—	CM	FG	—	—	—	Y	Crushed grey shales ± sulphide stain
1197337	360000	5367550	5	Chip	—	—	3	0	SILT	SHAL	—	D	DS	PYRT	—	—	—	AD	MG	—	—	—	—	—
1197338	360100	5367550	5	Chip	—	—	2	0	SHAL	—	—	T	DS	PYRT	—	—	—	AD	FG	—	—	—	—	—
1197339	360200	5367500	5	Grab	—	—	—	0	BREC	—	—	—	MS	PYRT	—	—	—	AD	FG	—	—	—	Y	Rounded nodules massive py to 10mm
1197340	360200	5367500	5	Grab	—	—	—	0	SILT	—	—	A	MS	PYRT	—	—	—	AD	MG	—	—	—	Y	100x15mm lens massive py

PROJECT HEEMSKIRK FALLS 1:250000 SHEET QUEENSTOWN S 55-5 COLLECTED BY G. LURVIS DATE APRIL 1984
 TENEMENT EL 30/79 SAMPLE NO.S 1197309-340 LOCAL GRID CROSS REF _____
 INVESTIGATION FOLLOW UP OF EM ANOMALIES (1) (2) 2 901 3 917 3 0378



CRA EXPLORATION PTY LIMITE

ROCK SAMPLE FIELD SHEET

193051

RK

SAMPLE NUMBER	SAMPLE LOCATION		SAMPLE DESCRIPTION						ROCK TYPE			MINERALISATION				GEOLOGICAL OBSERVATIONS							
	East	North	Zone/LG	Sample Type	From	To	Width	Exposure	Major	Minor	Alteration	Visible	Style	Major	Minor	Minor	Gangue	Age	Mineral	Grain Size	Texture	Colour	Notes
1197341	360200	5367500	5	Chip	-	-	15	0	GRIT	SILT	-	T	DS	PYRT	-	-	-	AD	KG	-	-	-	
1197342	360250	5367600	5	Chip	-	-	2	0	SILT	BLSH	-	-	-	LIMN	-	-	-	AD	MG	-	-	-	Minor iron stains on fcs.
1197343	360250	5367600	5	Grab	-	-	-	0	QTZT	-	-	A	FL	PYRT	-	-	-	AD	KG	-	-	-	10% py on joints + dissem.
1197344	360300	5367650	5	Chip	-	-	1	0	SILT	BLSH	-	T	DS	PYRT	-	-	-	AD	MG	-	-	-	
1197345	360250	5367700	5	Grab	-	-	-	0	SILT	BLSH	-	-	-	LIMN	-	-	-	AD	MG	-	-	-	Iron staining on fcs.
1197346	356500	5368800	5	Chip	31	34	3	0	SHAL	SILT	CHLR	T	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197347	356500	5368800	5	Grab	56	-	-	0	QTZT	-	-	D	DS	PYRT	-	-	-	AD	MG	-	-	-	
1197348	356500	5368800	5	Grab	70	-	-	0	QTZT	-	-	D	DS	PYRT	-	-	-	AD	MG	-	-	-	
1197349	356450	5368750	5	Grab	115	-	-	0	SILT	QTZT	-	D	FL	PYRT	-	-	-	AD	MG	-	-	-	
1197350	356400	5368750	5	Chip	130	131	1	0	QTZT	-	-	D	DS	PYRT	-	-	-	AD	MG	-	-	-	
1197351	356400	5368750	5	Chip	155	158	3	0	QTZT	QTZN	-	T	DS	LIMN	PYRT	-	-	AD	MG	-	-	-	Iron stained fcs. Minor py. Sl leached
1197352	356350	5368700	5	Grab	172	-	-	0	SILT	QTZT	-	T	FL	PYRT	-	-	-	AD	MG	-	-	-	
1197353	356350	5368700	5	Grab	178	-	-	0	SILT	SHAL	-	D	DS	PYRT	-	-	-	AD	MG	-	-	-	5-7% py - dissem and on joints
1197354	356350	5368700	5	Grab	190	-	-	0	Goss	-	-	A	BL	FeOX	-	-	-	QU	-	-	-	-	Red iron oxide 'pan' on fcs.
1197355	356300	5368650	5	Grab	279	-	-	0	QTZT	-	-	D	DS	PYRT	-	-	-	AD	MG	-	-	-	
1197356	356250	5368650	5	Grab	400	-	-	F	QTZT	-	CHLR	D	DS	PYRT	-	-	-	AD	MG	-	-	-	
1197357	356250	5368650	5	Grab	402	-	-	0	BLSH	-	-	D	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197358	359100	5367450	5	Grab	30	-	-	0	SILT	-	-	D	DS	PYRT	-	-	-	AD	MG	-	-	-	
1197359	359100	5367450	5	Grab	37	-	-	0	BLSH	-	-	-	-	LIMN	-	-	-	AD	FG	-	-	-	Iron stained BLSH.
1197360	359100	5367450	5	Chip	55	57	2	0	BLSH	SILT	-	T	DS	PYRT	LIMN	-	-	AD	FG	-	-	-	
1197361	359100	5367450	5	Chip	69	71	2	0	BLSH	SILT	-	D	DS	PYRT	LIMN	-	-	AD	FG	-	-	-	
1197362	359150	5367450	5	Chip	85	86	1	0	BLSH	-	-	-	-	LIMN	-	-	-	AD	FG	-	-	-	Iron stained highly graphitic shale
1197363	359150	5367450	5	Grab	100	-	-	0	SILT	-	-	D	WN	PYRT	-	-	-	AD	MG	-	-	-	5% py in veins in graphitic siltstone
1197364	359350	5367450	5	Chip	280	291	11	0	BLSH	SILT	-	T	DS	PYRT	LIMN	-	-	AD	FG	-	-	-	
1197365	359400	5367500	5	Grab	-	-	-	0	BLSH	SILT	-	T	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197366	355650	5370050	5	Grab	30	-	-	0	SHAL	SILT	-	T	DS	PYRT	-	-	-	AD	FG	-	-	-	
1197368	355550	5370050	5	Grab	138	-	-	0	Goss	-	-	A	BL	FeOX	-	-	-	QU	-	-	-	-	Brown iron oxide 'pan' coating fcs.

PROJECT - HEEMSKIRK FALLS

1:250000 SHEET QUEENSTOWN SK55-5 COLLECTED BY G. JURVIS DATE MAY 1984

TENEMENT - EL 30/79

SAMPLE NO.S 1197341-368

LOCAL GRID CROSS REF



CRA EXPLORATION PTY LIMITE ROCK SAMPLE FIELD SHEET 193052 RK

SAMPLE NUMBER	SAMPLE LOCATION			SAMPLE DESCRIPTION				ROCK TYPE			MINERALISATION						GEOLOGICAL OBSERVATIONS							
	East	North	Zone/LS	Sample Type	From	To	Width	Exposure	Major	Minor	Alteration	Visible	Style	Major	Minor	Minor	gangue	Age	Matrix	Grain Size	Texture	Colour	Looks	
1197369	355550	5370050	5	Grab	150	-	-	0	QTZT	-	-	T DS	PYRT	-	-	-	-	AD	MG	-	-	-	-	
1197370	355500	5370050	5	Grab	170	-	-	0	QTVN	QTZT	-	T VN	GRAP?	-	-	-	CALC	AD	-	-	-	-	Y	10mm qtz-carb vein & grey mineral
1197371	355350	5370000	5	Grab	184	-	-	0	SHAL	SILT	-	T -	LIMN	-	-	-	-	AD	FG	-	-	-	Y	0.3m crush zone & iron stains assoc
1197372	355350	5370000	5	Grab	215	-	-	0	QTVN	QTZT	-	T VN	GRAP?	-	-	-	CALC	AD	-	-	-	-	Y	fault joint-fillings in QTZT-qtz-carb-g
1197374	355650	5370050	5	Grab	30	-	-	0	Goss	-	-	A BW	FEDX	-	-	-	-	DU	-	-	-	-	Y	Thin red iron oxide 'pan' on top
1197375	355450	5370400	5	Grab	-	-	-	0	QTZT	-	-	D DS	PYRT	-	-	-	-	AD	MG	-	-	-	-	
1197376	355450	5370500	5	Grab	-	-	-	0	BLSH	-	-	A -	LIMN	-	-	-	-	AD	FG	-	-	-	Y	Highly iron stained BLSH & gossan fracture
1197377	355400	5370550	5	Grab	-	-	-	0	Goss	-	-	A BW	LIMN	-	-	-	-	DU	-	-	-	-	Y	Orange limonite ooze on top
1197379	355400	5370550	5	Grab	-	-	-	0	SILT	BLSH	-	D DS	PYRT	LIMN	-	-	-	AD	FG	-	-	-	-	
1197380	355350	5370450	5	Grab	-	-	-	0	BLSH	SILT	-	D DS	PYRT	LIMN	-	-	-	AD	FG	-	-	-	-	
1197381	355350	5370450	5	Grab	-	-	-	0	Goss	-	-	A BW	LIMN	-	-	-	-	DU	-	-	-	-	Y	Orange, thick limonite ooze on top
1197382	355350	5370450	5	Grab	-	-	-	0	QTZT	-	-	D DS	PYRT	LIMN	-	-	-	AD	MG	-	-	-	-	
1197383	355300	5370450	5	Grab	-	-	-	0	QTZT	QTVN	-	D DS	PYRT	LIMN	-	-	-	AD	MG	-	-	-	-	
1197385	359200	5367750	5	Chip	0	25	25	0	QTZT	SILT	-	T DS	PYRT	-	-	-	-	AD	MG	-	-	-	-	
1197386	359300	5367750	5	Chip	80	90	10	0	BLSH	SILT	-	D DS	PYRT	-	-	-	-	AD	FG	-	-	-	-	
1197387	359300	5367750	5	Chip	110	130	20	0	SILT	BLSH	-	T DS	PYRT	-	-	-	-	AD	MG	-	-	-	-	
1197388	359350	5367750	5	Chip	160	170	10	0	SILT	BLSH	-	D DS	PYRT	-	-	-	-	AD	MG	-	-	-	-	
1197389	359350	5367750	5	Chip	225	240	15	0	SILT	BLSH	-	D DS	PYRT	-	-	-	-	AD	MG	-	-	-	Y	3-5% dissemin + vein py. At 226m beds of massive py up to 20mm.
1197390	359350	5367750	5	Grab	226	-	-	0	SULP	BLSH	-	A MS	PYRT	-	-	-	SILC	AD	FG	-	-	-	Y	Sample of massive py beds cleaned.
1197391	359400	5367750	5	Chip	255	265	10	0	SILT	-	-	D DS	PYRT	-	-	-	-	AD	MG	-	-	-	-	
1197392	359400	5367750	5	Chip	277	293	16	0	SILT	BLSH	-	T DS	PYRT	-	-	-	-	AD	MG	-	-	-	-	
1197393	359450	5367750	5	Chip	309	325	16	0	SILT	BLSH	-	T DS	PYRT	-	-	-	-	AD	FG	-	-	-	-	



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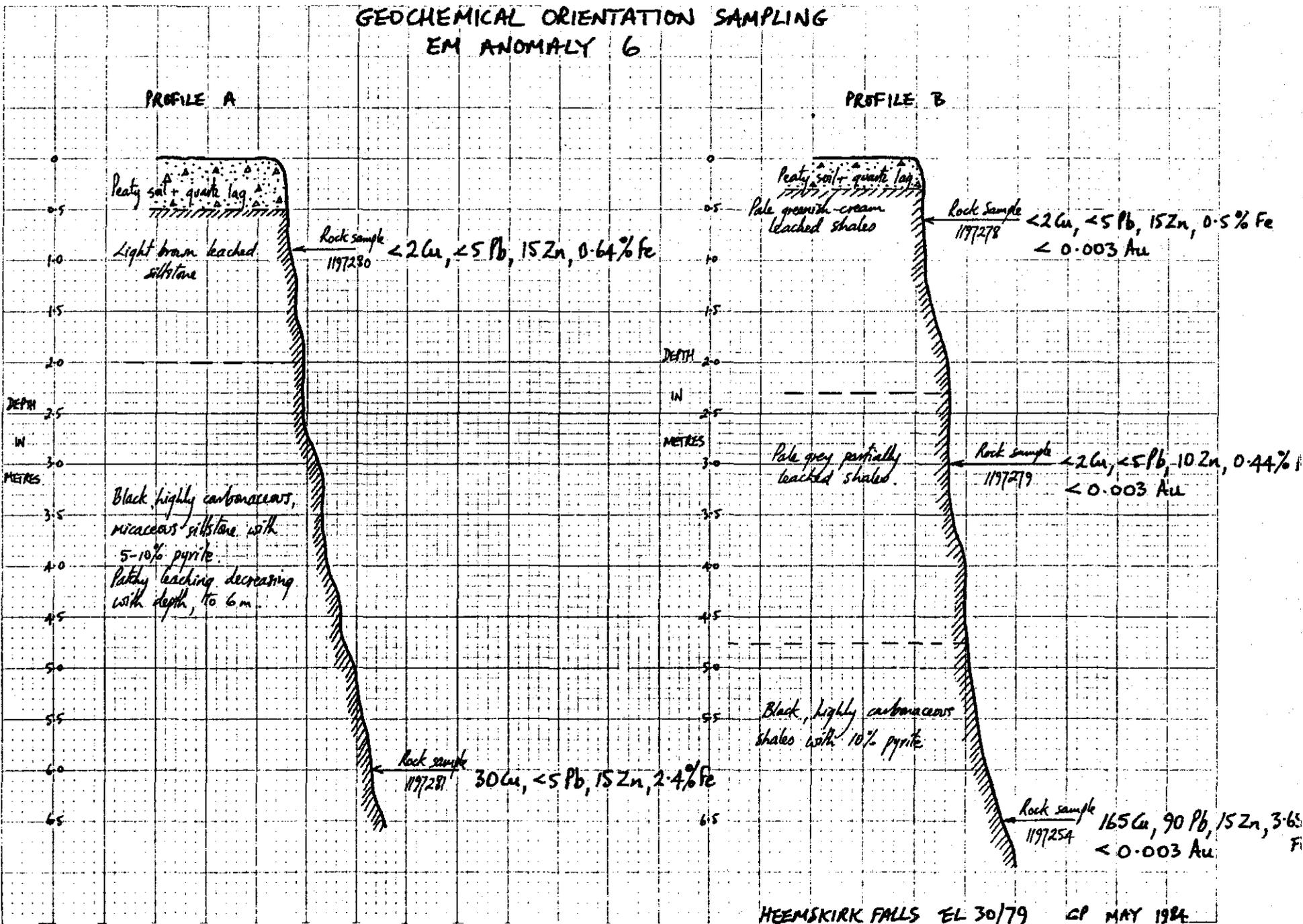
193054

APPENDIX 3

GEOCHEMICAL ORIENTATION

SAMPLING PROFILES

GEOCHEMICAL ORIENTATION SAMPLING EM ANOMALY 6



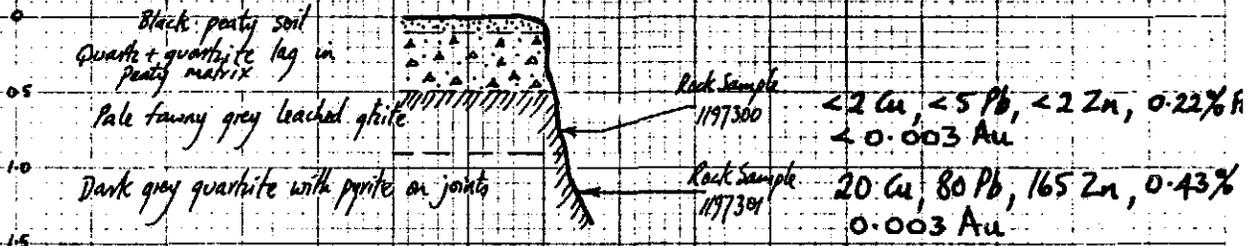
GEOCHEMICAL ORIENTATION SAMPLING

EM ANOMALY 7

PROFILE A.



PROFILE B.



HEEMSKIRK FALLS EL 30/79 GP. MAY 1984

.612

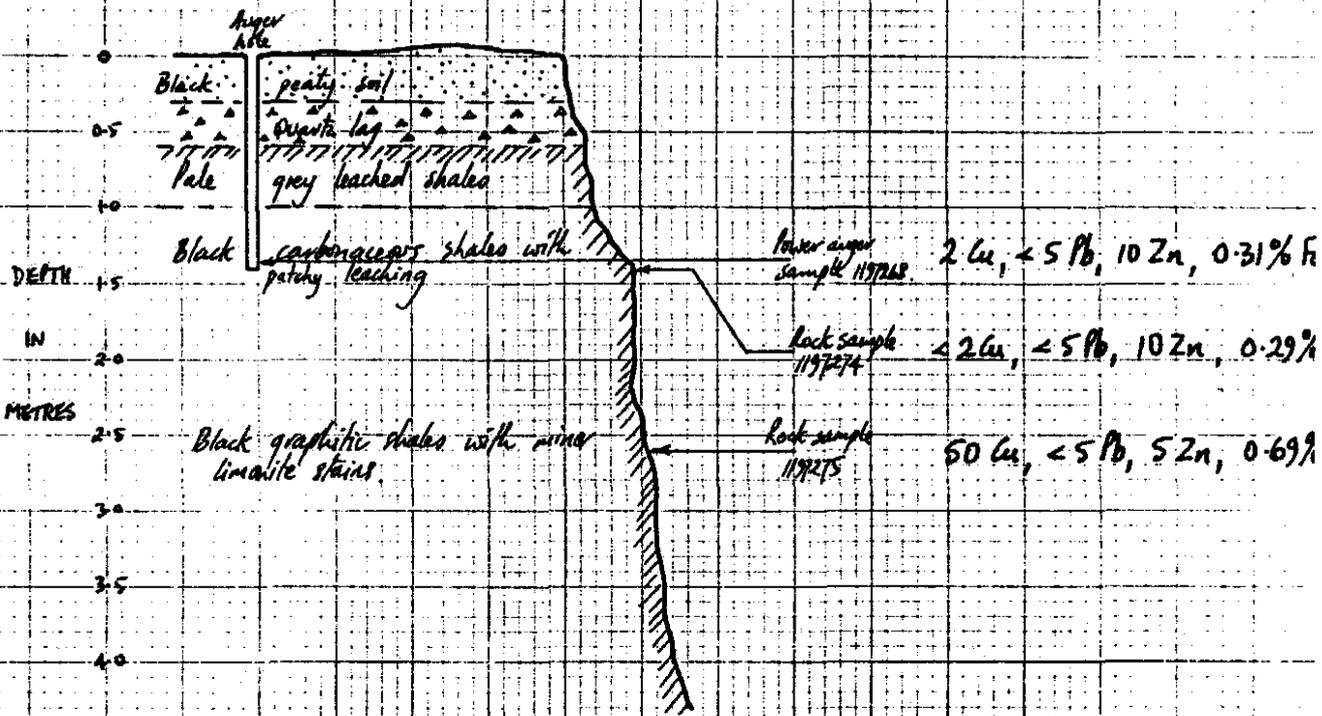
K-E 5 X 5 TO THE CE
KEUFFEL & ESSER
MADE IN U.S.A.

K-E 5 X 5 TO THE CE
KEUFFEL & ESSER
MADE IN U.S.A.

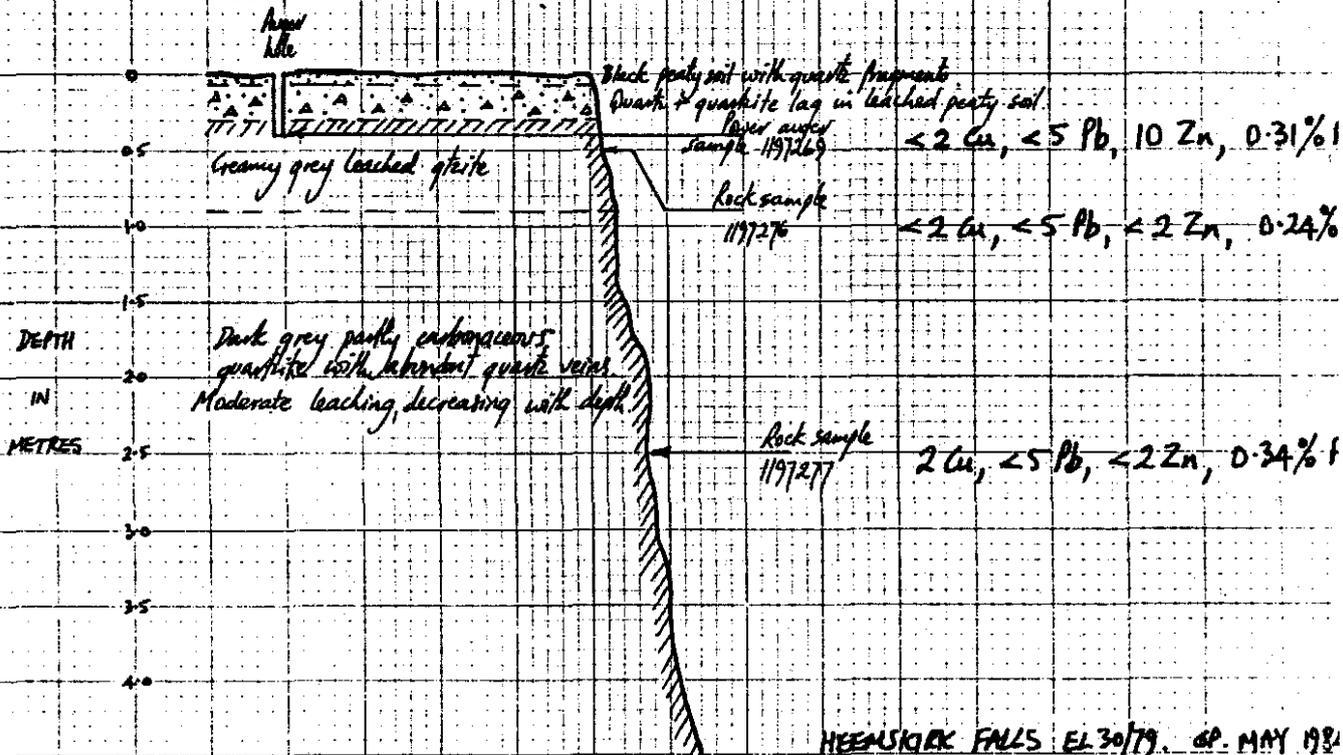
GEOCHEMICAL ORIENTATION SAMPLING

EM ANOMALY 8

PROFILE A



PROFILE B

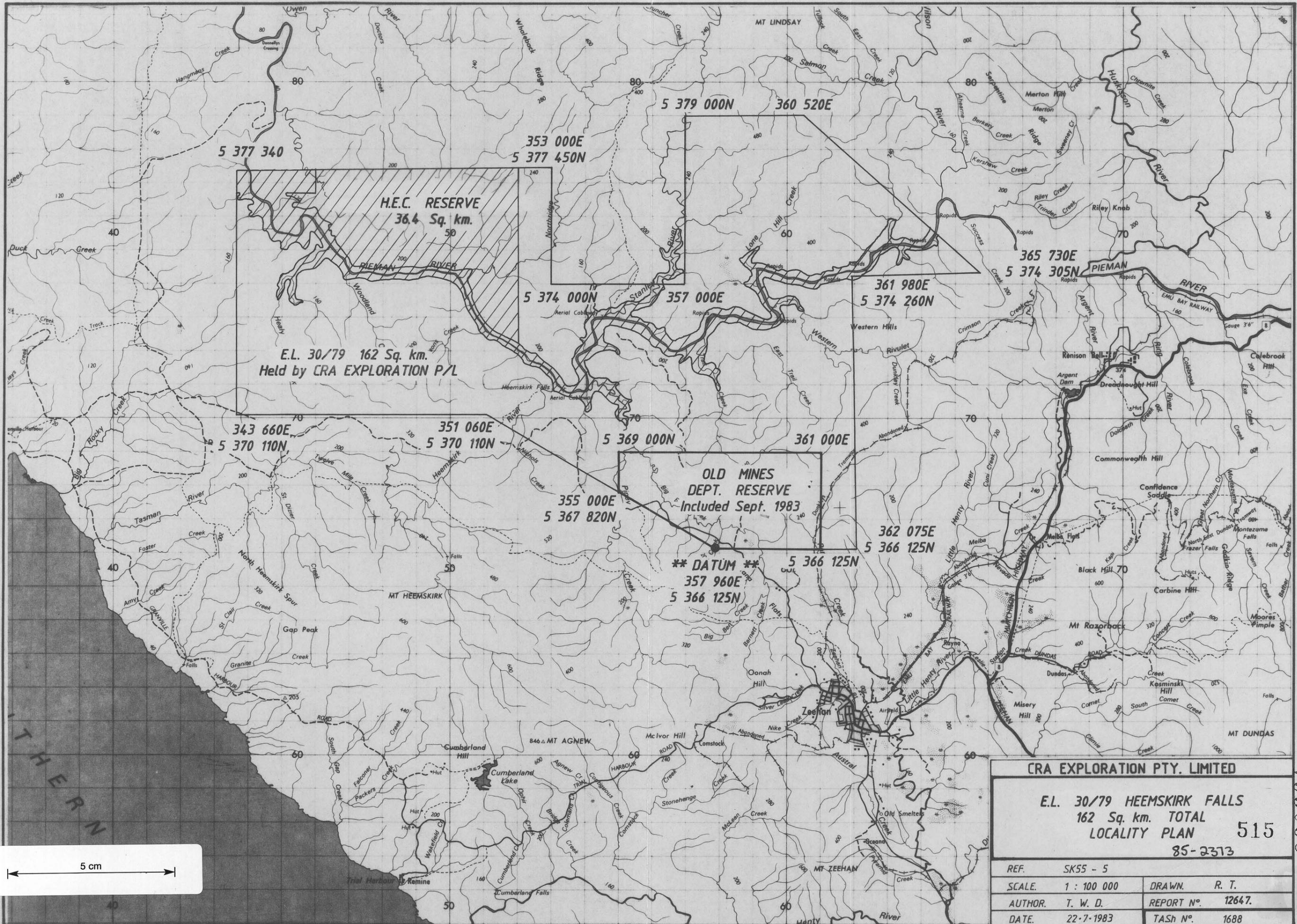


HEENSKIER FALLS EL 3079. GP. MAY 1981

.612

4ETER 18 X 24 CM. KEUFFEL & ESSER MADE IN U.S.A.

KOE 5 X 5 TO THE CE KEUFFEL & ESSER



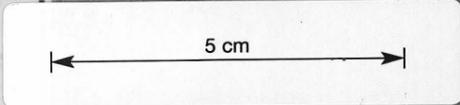
H.E.C. RESERVE
36.4 Sq. km.

E.L. 30/79 162 Sq. km.
Held by CRA EXPLORATION P/L

OLD MINES
DEPT. RESERVE
Included Sept. 1983

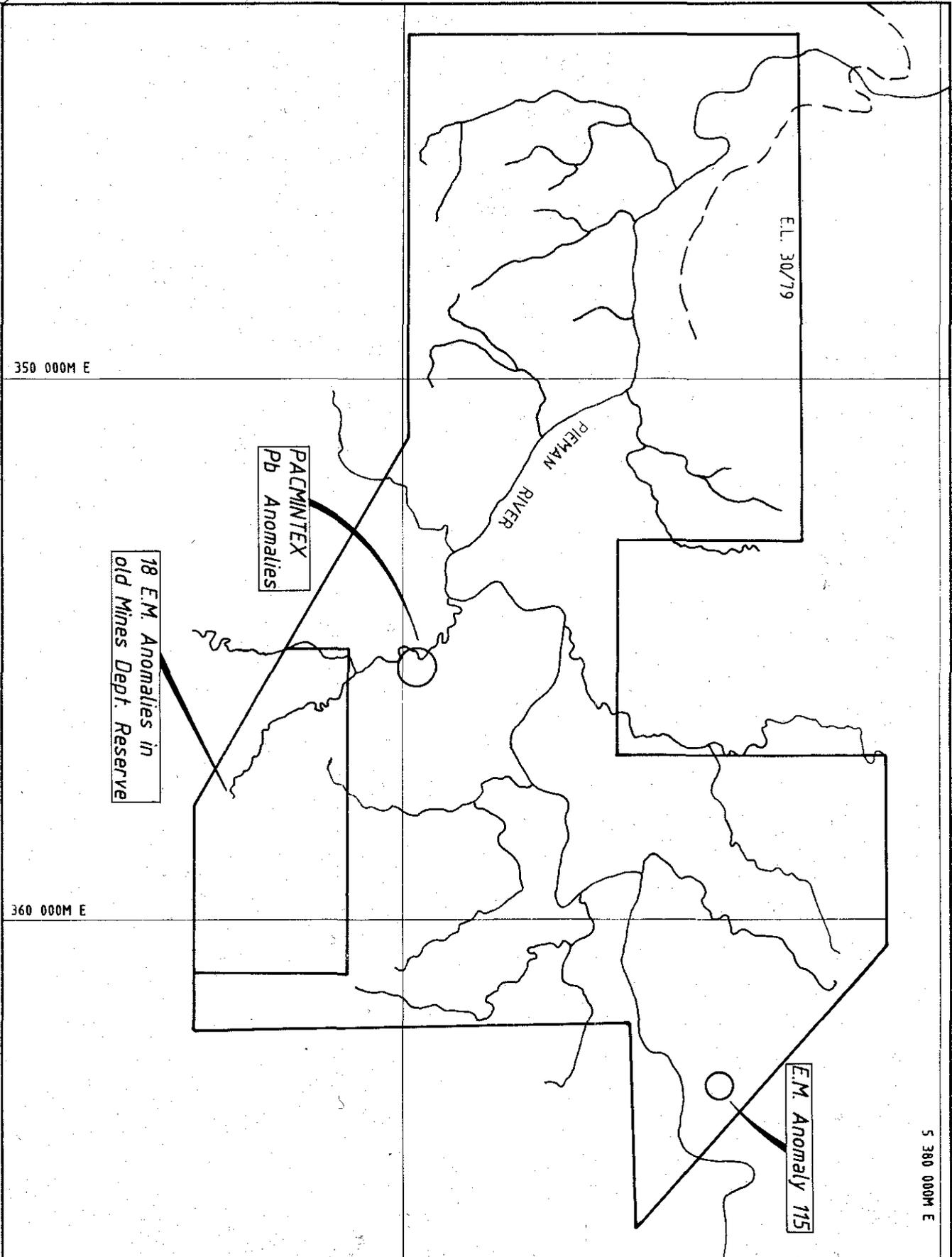
**** DATUM ****
357 960E
5 366 125N

CRA EXPLORATION PTY. LIMITED	
E.L. 30/79 HEEMSKIRK FALLS	
162 Sq. km. TOTAL	
LOCALITY PLAN 515	
85-2373	
REF.	SK55 - 5
SCALE.	1 : 100 000
AUTHOR.	T. W. D.
DATE.	22-7-1983
DRAWN.	R. T.
REPORT N°.	12647.
TASH N°.	1688



515
85-2373

051



CRA EXPLORATION PTY. LIMITED

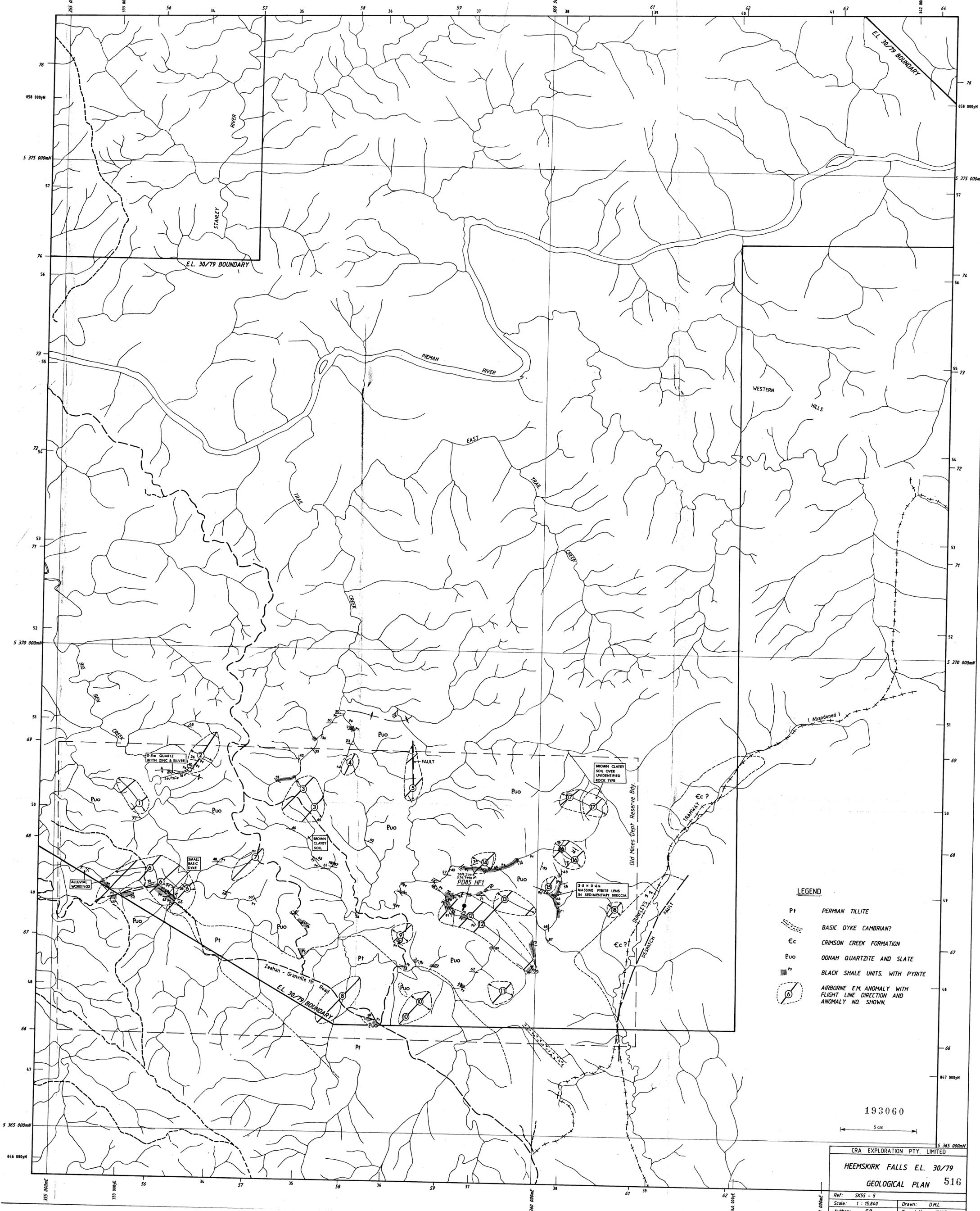
E.L. 30/79 HEEMSKIRK FALLS
SHOWING AREAS EVALUATED
IN APRIL - MAY 1984

REF.	SK55 - 5	
SCALE	1 : 100 000	DRAWN G.W.
AUTHOR	G.P.	REPORT No. 12647.
DATE	26 - 9 - 1984	PLAN No. TASH 2007

193059

5 cm

85-2313

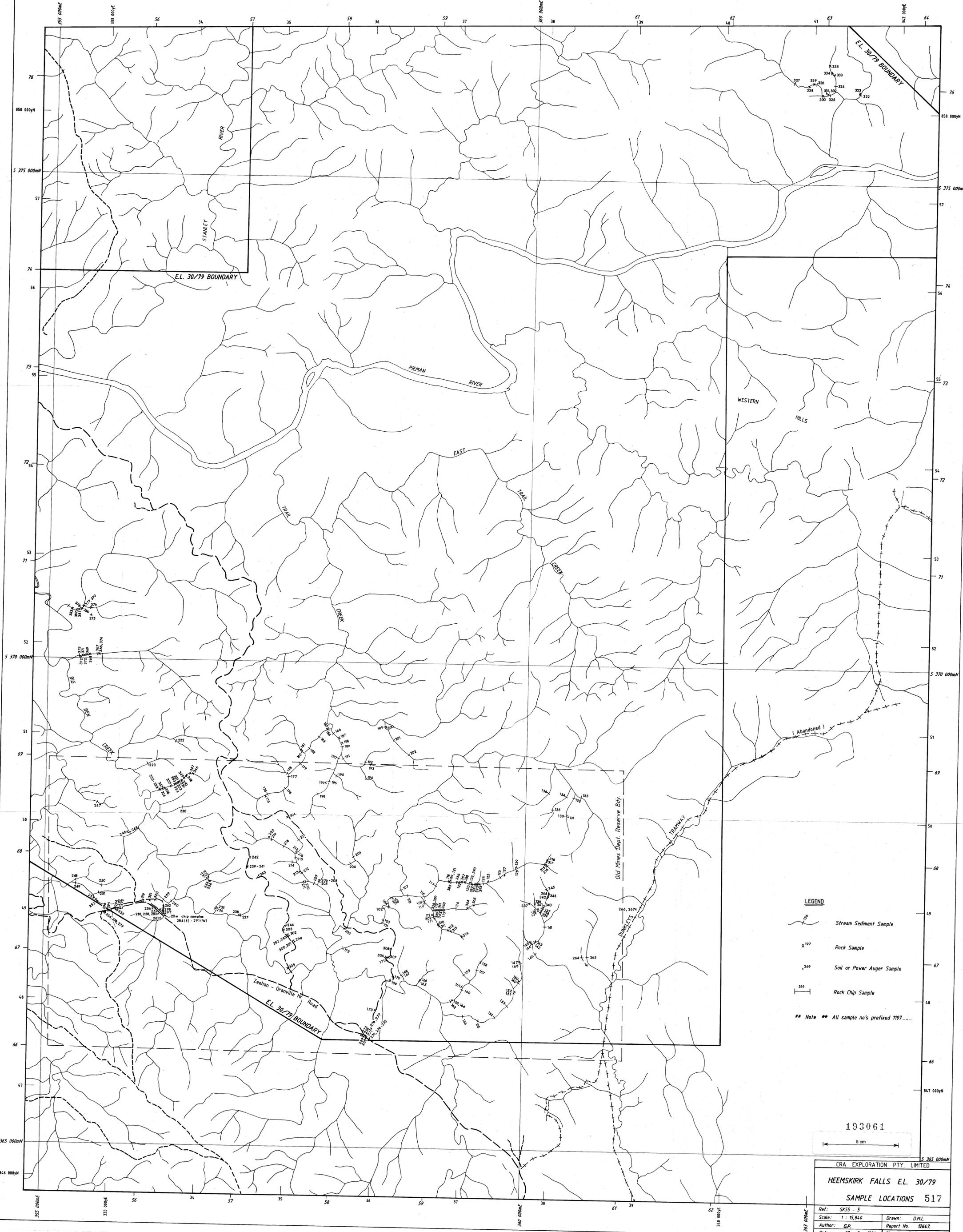


- LEGEND**
- Pt PERMIAN TILLITE
 - BASIC DYKE CAMBRIAN?
 - Ec CRIMSON CREEK FORMATION
 - Puo OONAH QUARTZITE AND SLATE
 - BLACK SHALE UNITS, WITH PYRITE
 - AIRBORNE E.M. ANOMALY WITH FLIGHT LINE DIRECTION AND ANOMALY NO. SHOWN.

193060

5 cm

CRA EXPLORATION PTY. LIMITED	
HEEMSKIRK FALLS E.L. 30/79	
GEOLOGICAL PLAN 516	
Ref: SKSS - 5	Drawn: D.M.L.
Scale: 1 : 15,840	Report No: 12647
Author: G.P.	Plan No: TASH 2041
Date: 27 - 9 - 1984	



LEGEND

- Stream Sediment Sample
- Rock Sample
- Soil or Power Auger Sample
- Rock Chip Sample

**** Note **** All sample no's prefixed 197.....

193061
5 cm

CRA EXPLORATION PTY. LIMITED
HEEMSKIRK FALLS E.L. 30/79
SAMPLE LOCATIONS 517

Ref: SK55 - 5	Drawn: D.M.L.
Scale: 1 : 15,840	Report No. 12647
Author: G.P.	Plan No. TASH 2042
Date: 27 - 9 - 1984	

85-2373