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CRA EXPLORATION PTY LTD

LAKE MARGARET EL 5/85

PROGRESS REPORT FOR 12 MONTHS TO 20 SEPTEMBER 1986

Author: W A Sheppard

Date: 10 September 1986

Submitted to: T W Dickson

Accepted by:

Copies: CRAE Hobart
CRAE Canberra
Department of Mines
Tasmania

REPORT NO: 14133

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1. SUMMARY

A UTEM survey has been completed at Howard's anomaly. Initial interpretation has outlined 4 anomalies for further investigation.

Extensive rock chip sampling carried out at Red Hills has obtained best results (peak values 7.2% Cu, 2.48 ppm Au) from old workings at the edge of a chloritic alteration pipe.

A regional programme of cyanide leach sampling to test the Owen Conglomerate for thin layer and fine Au mineralisation has commenced.

2. INTRODUCTION

This report covers all work carried out over Lake Margaret Exploration Licence 5/85 (Plan No TASh 3081) for the year ending 20 September 1986.

The area has had a long history of exploration being most recently intensively and extensively tested by the Renison-Getty partnership. Their work was largely conservative, however following a similar exploration philosophy to that adopted previously by Rio Tinto Australia and E.Z. Almost all previous exploration was for volcanogenic massive sulphide. Thorough and aggressive exploration for gold has never been carried out and most areas of known mineralisation still contain untested zones and extensions (Plan No TASh 2599).

In the first year of exploration, work by CRA Exploration has included regional cyanide leach sampling, UTEM surveying of the Howard's anomaly and extensive surface rock chip sampling at Red Hills.

3. CONCLUSIONS

The Lake Margaret area requires thorough and aggressive exploration for Au mineralisation. The Owen Conglomerate can be rapidly tested for fine and thin layer Au mineralisation using the cyanide leach technique. Current knowledge indicates that of the volcanic target areas, Dora and Red Hills have greatest potential for the discovery of a gold deposit. The potential in volcanic areas is for both stratabound and structurally controlled gold mineralisation.

Red Hills, Howard's anomaly, Selina and (possibly) Dora areas have greatest potential for volcanogenic massive sulphide ore discovery. Each area requires a thorough compilation of all previous exploration data and all geological data to establish drilling requirements and priorities. The Red Hills area, where diamond drillhole RH5 intersected 45% Pb+Zn and 6.5 g/t Au over 2.8m is given top priority.

4. RECOMMENDATIONS

1. A thorough compilation of all data from the Red Hills area is required to identify areas inadequately tested by drilling. This compilation should incorporate geophysical modelling, re-sampling and re-logging of diamond drillcore and a complete geochemical appraisal.

2. Aggressive follow-up of any cyanide leach sample anomalies should include follow-up stream geochemical study, thorough rock chip sampling and geological study prior to geophysical surveying and drilling.

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3. Additional drillcore from the Howard's anomaly area should be acquired from Goldfields for geological and geochemical study. Ground magnetic surveying and rock chip sampling are also required before interpretation of the UTEM anomalies identified there can be completed.

4. The Selina and Dora areas in the east of the EL require a complete review of all previous exploration data. This in conjunction with rock chip sampling and/or Wacker sampling as appropriate will identify drill targets or areas for UTEM surveying prior to drill testing.

5. GEOLOGY (Plan No TASh 3133)

The area is, for the most part, underlain by the Owen Conglomerate of Ordovician age, the overlying Gordon limestone is restricted to a synclinal area west of Lake Spicer. The relationship of the Owen Conglomerate to the underlying Cambrian volcanics is for the most part unconformable, however west of the Great Lyell Fault at Mount Julia, it is gradational and conformable. The Owen Conglomerate includes poorly graded conglomeratic units alternating with varying proportions of well graded and sorted sandy to silty intervals. It varies from green, chloritic to strongly haematitic. It is locally pyritic. Conglomeratic units vary from weakly deformed to displaying strongly flattened clasts. Quartz veining is locally intense.

Volcanic rocks of the Tyndall Group flank the central Owen Conglomerate. The Group includes quartz-feldspar-phyric lavas, tuffs, agglomerates and minor shales. This group which is now believed to host the Hellyer and Que River deposits hosts all recognised targets east of the Owen Conglomerate in the Lake Margaret area and probably also the Howard's anomaly.

The feldspar phyric volcanics of the Central Volcanic Sequence are poorly represented in the Lake Margaret EL being only recognised with certainty at Red Hills and in the Beatrice area southeast of Mount Sedgwick. The existence of Central Volcanic Sequence rocks at the Howard's anomaly is now uncertain.

6. GEOCHEMISTRY

Geochemical exploration has included rock chip sampling at Red Hills and regional Cyanide leach sampling to test for gold targets.

6.1 RED HILLS (Plan No TASh 3100)

Three target lithologies have been tested by rock chip sampling at Red Hills, namely the black shale horizon in the hangingwall of the host horizon, the siliceous zone to the north of the black shale and the chloritic alterations pipe in the footwall of the host horizon.

6.1.1 Black Shale Sampling

Sixteen rock samples of the black shale horizon were taken to test it primarily as a gold target. While gold was detected in most samples indicating a high background, results were disappointing. Peak values were 330/2300/390/0.04 ppm Cu/Pb/Zn/Au.

6.1.2 Siliceous Zone Sampling

Twenty rock samples tested the siliceous zone. Results were disappointing with peak values of 30/155/510 ppm Cu/Pb/Zn, no gold was detected in any samples.

6.1.3 Alteration Pipe Sampling

Fifty-four rock samples tested the alteration pipe primarily as a gold target. Best results were obtained from old workings in the extreme northwest of the pipe. Peak values from grab sampling were 72000/290/240/2400 ppm Cu/Pb/Zn/Au from massive pyritic blocks. A channel sample of bedrock over 0.5m gave 4150/390/115/2000 ppm Cu/Pb/Zn/Au from weathered massive sulphide and magnetitic wallrock. Away from these workings, only two samples contained in excess of 100 ppb Au with 680 ppb and 270 ppb respectively. In the course of sampling, a concentration of stockwork magnetite-pyrite-quartz veins was identified towards the northern end of the alteration pipe, however no marked increase in gold values was apparent in this area.

6.2 CYANIDE LEACH SAMPLING (Plan No TASh 3137)

To date, seventeen Cyanide leach samples have been taken to test the Owen Conglomerate for Au mineralisation. Essentially all easily accessible sites have been sampled. Completion of the survey must await the availability of helicopter transport. Results from sampling to date are awaited.

7. GEOPHYSICS (Plan Nos TASh 2909 & 3088)

Twenty-six line kilometres were surveyed with the UTEM system at Howard's anomaly to test for deep conductors in the southern half of the grid area where previous exploration had identified a lower 200m-400m sulphide zone overlain by a 100m-200m silver rich oxide facies zone. The aim of UTEM surveying of the northern area of the grid was to test for extensions of these zones. Details of the survey are presented in Appendix A.

Four anomalies have been identified. Interpretation of the data is at an early stage, thus the following comments are of a preliminary stage pending further geological study and drillcore acquisition. Anomalies "A" and "B" were previously identified by IP surveying and have been tested by diamond drilling. Anomaly "C" has been field checked and probably relates to shales at the Tyndall Group-Owen Conglomerate contact seen 100m due south of the anomaly. Black shales were found in outcrop in a road cut close to the location of anomaly "D" on line 32 giving a possible explanation for that anomaly. A bedrock source for this anomaly is currently favoured to a possible cultural cause.

8. FUTURE PROGRAMME

In spite of the long history of exploration, the Lake Margaret area remains one of the most prospective areas of the Mount Read Volcanic Belt. The potential for volcanogenic massive sulphide has long been recognised yet, established mineralizated zones, for example, Red Hills with a drill intersection of 45% Pb+Zn and 6.5 g/t Au over 2.8m, and Howard's anomaly with 4m of 251 g/t Ag, still have a

potential for significant ore discovery and require further testing (Plan No TASh 2599). Regional Au exploration has never been carried out prior to the programme of Cyanide leach sampling now in progress by CRAE.

8.1 REGIONAL EXPLORATION

To complete reconnaissance Cyanide leach sampling an additional 16 to 20 samples are required using helicopter access. While the prime aim of this work is to test the Owen Conglomerate for fine gold and thin layer gold deposits, sampling is being designed to test for previously unrecognised volcanic hosted targets also. The follow-up of anomalous catchments will involve thorough hammer prospecting and follow-up cyanide leach and -80 mesh stream sediment sampling. A programme of reconnaissance rock sampling of accessible outcrops will also be required, particularly in areas of poor drainage development. The completion of this phase of target definition will require an estimated 40 cyanide leach samples, 20 stream sediment samples and 200 rock samples.

8.2 RED HILLS

Diamond drillholes RH5, RH12, RH13, RH14R and RH15 have been obtained from Goldfields (Plan No TASh 2953). Detailed logging and groove sampling of this core will be carried out. A diamond drillhole to test the siliceous zone north of RH12 is planned. Rock-chip sampling of the chloritic alteration pipe indicates the possible presence of a prospective horizon for Au mineralisation requiring testing. Exploration of this target will include detailed

ground magnetics and surface examination, and Wacker sampling where cover is deep north of the old mine workings. Thorough three dimensional modelling of the area incorporating geophysical, geochemical and geological compilation will be completed to select areas for further drill testing in search of gold and base metal massive sulphide mineralisation. An isotope and lithogeochemical study may be carried out to confirm that the area has a major potential for exhalative massive sulphide. A positive result from such a study will justify additional testing by deep, virtually "blind" drilling. An estimated 50 Wacker samples, 550 rock samples (including groove samples) and 5 line kms of magnetic surveying will be required in addition to personnel time to establish the drilling requirements within the Red Hills area.

8.3 HOWARD'S ANOMALY

Diamond drillhole HA8 has been obtained from Goldfields, an additional 3 drillholes will be obtained for geological and geochemical study. A ground magnetic survey is required over the northern end of the UTEM grid. Following this work a complete appraisal of the Howard's anomaly area will be undertaken along the lines of that proposed for the Red Hills area. Prior to establishing the drilling requirements for the area, 10 line kms of magnetic surveying and 400 rock samples (including groove samples) will be required in addition to personnel time.

8.4 EASTERN TARGETS

At Selina the target areas are first, a northern 2.2 km strike length of the Eastern Pyrite Zone. This Pb-Zn depleted pyrite zone resembles the footwall alteration zone of the Rosebery deposit. Two drillholes by Goldfields failed to intersect the stratigraphic top of this zone thus this target remains inadequately tested. Second, a southern zone of thin glacial cover contains an untested 1 km extension of the Eastern Pyrite Zone. Geochemical indications from previous exploration indicate that these two areas are primarily base metal rather than Au targets. Within the Dora area however, the primary target is strataform gold within mineralised lavas of a rhyolitic dome and within the volcanics along the margins of this dome. Mineralised specimens from old workings at Dora have returned up to 2 g/t Au.

Following a complete review of the geology and all data from previous exploration, a programme to test these eastern targets will be established. The programme will involve Wacker and rock chip sampling as appropriate with prime targets being tested by UTEM surveying prior to drill testing.

9. LOCATION

Queenstown 1:250 000 sheet SK55-5

10. KEYWORDS

Cambrian, Ordovician, Acid, Intermediate, Shale, Dome, Geochem-drainage, Geochem-Rock, Geophys-EM

11. LIST OF PLANS

Plan No		Scale
TASh 2599	Lake Margaret EL 5/85 Exploration Areas	1:100 000
TASh 2909	Lake Margaret EL 5/85 Howard's Anomaly Geology Plan	1:5 000
TASh 2953	Lake Margaret EL 5/85 Red Hills Prospect Drillhole and Grid Location Plan	1:5 000
TASh 3081	Lake Margaret EL 5/85 Location Plan	1:1 000 000
TASh 3088	Lake Margaret EL 5/85 Howard's Anomaly UTEM Anomalies	1:5 000
TASh 3100	Lake Margaret EL 5/85 Red Hills Prospect Geological Interpretation Plan and Rock Chip Geochemistry	1:5 000
TASh 3133	Lake Margaret EL 5/85 Geological Compilation after K D Corbett 1984	1:50 000
TASh 3137	Lake Margaret EL 5/85 Exploration Areas and Cyanide Leach Sample Sites	1:100 000

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Appendix 1 Results of a UTEM survey over the Howards Anomaly Grid - Lake Margaret EL 5/85; Memo by T von Strokirch

Appendix 2 Rock Sample geochemical data sheets

APPENDIX 1

Results of a UTEM survey over the Howard's Anomaly Grid - Lake Margaret EL 5/85; Memo by T von Strokirch

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4 July 1986

Memorandum to: W A SHEPPARD

Copy to: T W DICKSON

From: T von STROKIRCH

RESULTS OF A UTEM SURVEY OVER THE HOWARDS ANOMALY GRID

LAKE MARGARET EL 5/85

AIMS

The Howards anomaly grid lies within an area of Cambrian volcanics north of the Mt Lyell deposit. The grid is bounded to the east by Ordovician conglomerates and to the west by boundary of the exploration licence. The grid area has been extensively explored for base metals in the past with particular concentration on the southern half of the grid. Disseminated sulphides have been found in a number of locations and a small lead/zinc mine (the Tyndall Mine) existed near the middle of the grid. It is felt that the previous exploration will have adequately explored the prospect to a depth of at least 50 metres. Our programme is designed to improve on this and to extend the area previously prospected somewhat to the west with a technique designed to find deeply buried conductive massive sulphide bodies using a technique which should be minimally disturbed by minor surface variations in conductivity as might be produced by the glacial cover.

PROGRAMME

Twenty-six kilometres of line were surveyed with the UTEM system. A further eighteen and a half kilometres of line was cut or re-established for loop lines. The amount of loop lines was kept to a minimum by using the UTEM system which was selected because of its capacity for extremely large loops in rugged terrain and because of its proven record in similar conditions elsewhere in Tasmania.

Some line cutting costs were saved by utilising existing lines cut by Goldfields Exploration, though in some cases this results in unnecessary kinks and bends in the lines. This also resulted in the lines being at a somewhat unusual angle to the loops and it was necessary for the contractor (Lamontagne Geophysics) to alter their data processing programs somewhat to cope. The same line numbers as used by Goldfields were kept as the lines, while approximately 200 metres apart, are by no means accurate. An arbitrary easting of 1000E was assigned at the EL boundary to enable us to easily tie the data in to the UTEM loop edge and to avoid confusion with the somewhat variable Goldfields coordinate system.

The 200m distance between lines was considered appropriate as it is believed that this spacing should locate any anomaly due to a body large enough to be of interest to CRAE.

SURVEY PARAMETERS

The UTEM III system of Lamontagne Geophysics was used to record the vertical component of the magnetic field. No other components were measured. Readings were taken at twenty five metre spacings up to 1000 metres from the loops. Five loops were surveyed all told. A frequency of 26.23 Hz was used.

DATA PRESENTATION

All the data was presented by the contractor as continuously normalised profiles along the lines. Print outs of continuously normalised data were also received and a copy of the raw data with noise spikes removed was placed on 9 track tape.

An anomaly position map was prepared showing the position, depth to top of each anomaly and the last channel on which it occurs.

PROBLEMS

Severe problems were encountered throughout the program because of cultural noise caused by high tension power lines, ordinary power lines and the large amount of work going on on the HEC Newton Creek project. The Newton Creek site office and camp actually line on the grid between lines 26N and 27N. A number of equipment problems also caused delays and confusion during the survey.

The first difficulty encountered was a break in the coil which was erratically intermittent and gave wildly varying signal levels. When this was repaired a fault developed in the stacking system which could not be repaired and thereafter all readings had to be taken with 2^{10} stacks and no higher. This is not in itself a serious problem as it just meant that if there was any doubt in the operators mind more readings had to be taken. A further problem was found in the coil which required that channels 10 and 9 needed to have their window widths shortened in order to get meaningful results.

These problems added to the extremely high level of cultural cum geologic noise resulted in a survey which required a lot of repeat work in order to produce the best possible data. This data is still far and away the noisiest that I have ever seen from UTEM. Lamontagne Geophysics has agreed to return in the beginning of the 1986-87 field season for a test survey when their equipment has been serviced, in order to make sure that there is no chance that the equipment is at fault.

Two different types of noise have been provisionally ascribed to cultural effects. One produces a random spikiness typical of what one normally thinks of as noise. The other results in positive spikes at early channels and a response that oscillates in sign in late channels. This oscillation is quite predictable in that channel 5 is typically positive, channel 4 negative, channel 3 positive and channel 2 negative again. The predictability of this effect is strange and tends to make one suspect instrument problems, though similar effects have been recorded elsewhere and indeed a much more extreme effect was recorded at Hellyer using the EM37 system. Lamontagne Geophysics have promised to set their Canadian research team to work to try and solve this problem. In the meantime Jim MacNae of Lamontagne has developed a computer processing technique to remove this second form of noise. This has some success but may be inclined to remove late time anomalies as well and thus has only been sparingly referred to in the interpretation.

INTERPRETATION

Due to the aforementioned levels of noise it was very difficult to get good quantitative interpretation of the data and indeed it was in many cases difficult to see whether there was any late time response associated with a contact feature at all. Notwithstanding these problems a number of anomalies were recognised. These are labelled alphabetically on the anomaly plan. A description of these major anomalous trends follows:-

Anomaly A

This anomaly is 1600m long trend along the same line as that previously tested by drillholes HA7 and HA8 and probably the same line as that mined in the Tyndall Mine though the anomalous trend does appear to lie slightly to the west of the mine (50m). This anomalous trend has previously been detected by IP and indeed by the RTAE Turam survey in the 50's.

It typically shows the form of a contact with the anomaly position being the western edge of a more conductive and probably also more chargeable zone which is of the order of 150m wide possible broadening on Lines 21 and 22N.

As with all the features in this area, anomaly A appears to channel power line noise giving an oscillating anomaly in late times. On line 23N there is possibly a small discrete conductor at the crossover position as marked on the map. It is the depth of this body that is marked. It is possible that it has a time constant of .6ms but this is more speculation than interpretation.

By line 24N the body has widened to become a source at least 80m wide centred on 1540E. At this stage there is some evidence of a discrete body at a somewhat greater depth lying somewhere under the contact at 1485E at a depth to top not exceeding 85m. This might conceivably have been a drill target were it not for the fact the holes HA7 and HA8 are on either side of it and appear to limit the possible extend of an ore body.

On line 25N the anomaly is poorly defined and due only to the contact. On line 26N the conductivity contrast at the contact is somewhat increased but the anomaly is again due only to the contact.

On line 27N the contact is well defined and the conductive zone has a width of 175-200 metres. There is no sign of a discrete conductor.

On line 28N the contact is well defined though the whereabouts of the eastern edge is not defined.

On line 29N the conductive zone width once again shows up as a 50m wide zone with no sign of a separate conductor within. Why the anomaly changes character so distinctly from line to line is not clear to me. It must either be due to varying surficial cover or to varying amounts of weathering. In any case the major point is that the UTEM has detected no unexplained conductors at depth along this feature.

Anomaly B

This feature is at least a kilometre long and is again due to a contact. Once again the anomaly has been tested by drilling as it is probably intersected by HA3, HA4, HA5 and HA6. This seems to leave little scope for finding an ore body along its length.

On line 19N there are three small anomalies present. I am unsure as to which of them represents the continuation of the anomaly B trend but they all appear to be of poor conductivity though the easternmost anomaly at 2080E is slightly more conductive than the others.

On line 20N at 2020E there is a very sharp response due to a weak surficial conductor or conductive change. The anomaly is definitely based on a contact with a more conductive unit extending some 75m to the east.

The response on line 21N is similar though not so well defined.

On line 22N at 1875N there is a peak on the UTEM. As I don't understand what this means I am somewhat at a loss to interpret it. I presume that there is a contact at the crossover position, and this contact must lie close to the surface (almost outcropping) but past that I can only guess that the most conductive material east of the contact lies close to it and that the rocks grade into more resistive less altered rocks further to the east. I see no indication that there is any major conductor present.

On lines 23N and 29N the contact is becoming less evident, presumably as the level of alteration to the east is decreasing.

Anomaly C

This anomaly lies on the northern two lines of the grid and has not previously been spotted on any geophysical surveys. As it is open to the north it is of unknown extent but as much as six hundred metres would fit within the EL bounds.

The anomaly on line 37N is of a strange form again. In this case it indicates that there is a conductor present at the contact at 1425E. The anomaly is possibly of quite a long decay constant but it is upset by the oscillating in late times. The depth to top is

of the order of 50 to 60 metres. This anomaly is worthy of some further investigation though it is mapped as under conglomerate and may be difficult to sample.

On line 38N at 1410E the anomaly has the appearance again of being due to the western margin of a somewhat more conductive and perhaps chargeable zone extending for perhaps 50m. The anomaly is oscillating strongly in late times notwithstanding the distance from the nearest power line.

Both these anomalies, in particular the one on line 38N, look very similar to the anomalies A & B which have been drill tested without success so I hold little hope for them as lead/zinc targets.

Anomaly D

This anomaly is due to a new power line that has gone in for the HEC work. It doesn't occur on any of our plans. Curiously enough D roughly coincides with an old IP trend. As my only indication of the presence of a power line is the report of the Lamontagne Geophysics field crew it would probably be worth having the next person on the grid check to see whether there really are power lines at these points. The anomaly looks suspiciously as if it might be due to the contact with a narrow chargeable zone so it would be worth having a look but in any case the interpreted depths are all shallow so we are unlikely to be able to advance on the work of previous explorers.

CONCLUSION

The UTEM located no incontrovertible evidence of major conductors in the grid area. It relocated the shallow features picked up by earlier work and also located a small new feature of similar response - namely anomaly C. Notwithstanding the noisy poor quality data I feel that we should be able to see any major conductors unless they are located directly under the power lines or at greater than 100m depth and directly under one of the shallow conductive zones and in the latter case they would still have to be of a particularly low conductivity. It thus appears that there are no major sulphide bodies in the area that can be located by UTEM.

While not a major conductor, anomaly C probably needs to be followed up as there is evidence of disseminated silver and perhaps gold in the area so an alteration zone or pyritic unit under the conglomerate might well be of interest.

T von STROKIRCH

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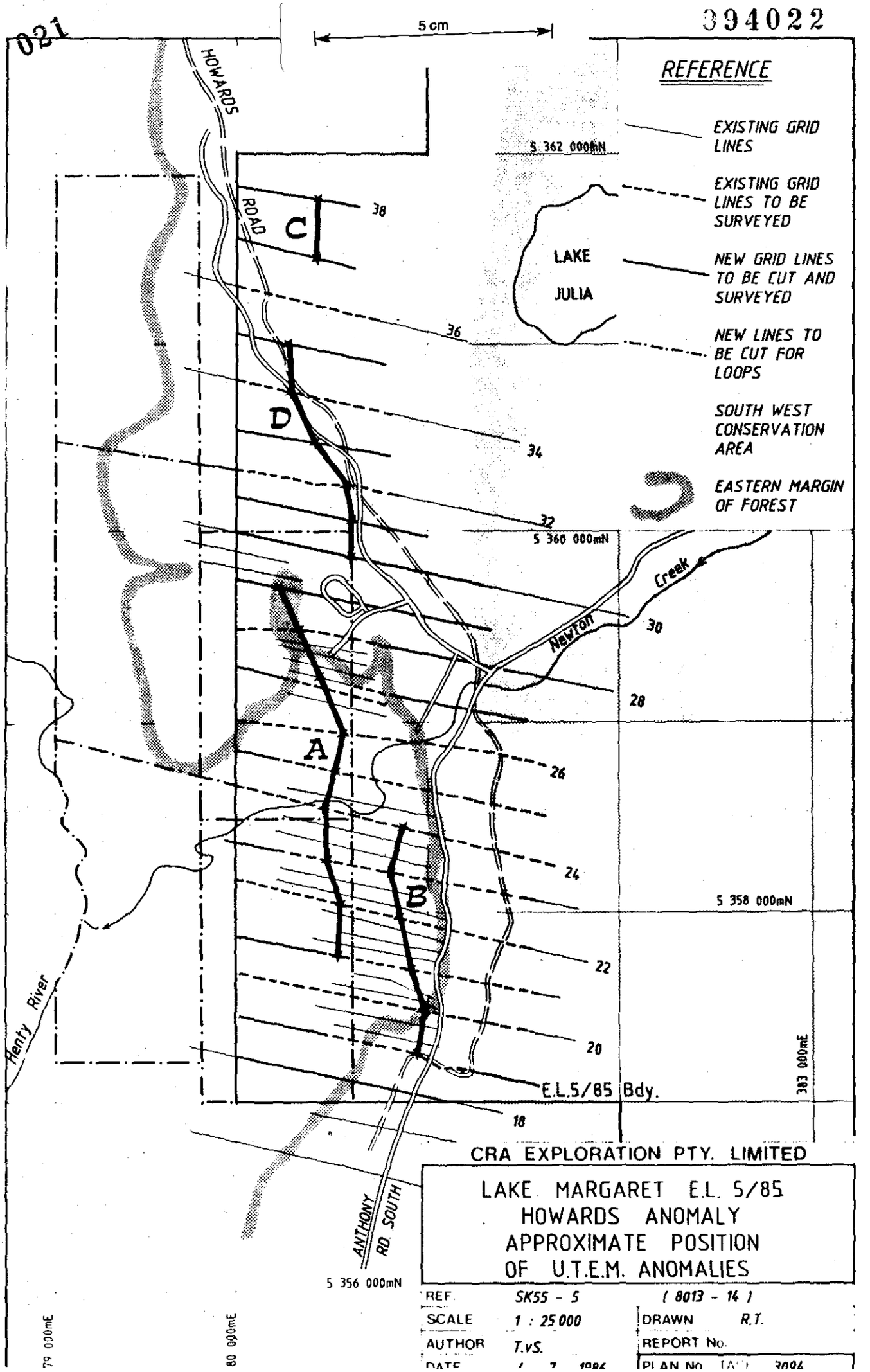

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LAKE MARGARET E.L. 5/85
HOWARDS ANOMALY
APPROXIMATE POSITION
OF U.T.E.M. ANOMALIES

REF.	SK55 - 5	(8013 - 14)	
SCALE	1 : 25 000	DRAWN	R.T.
AUTHOR	T.vS.	REPORT No.	
DATE	/ 7 1986	PLAN No. (A1)	3094

APPENDIX 2

Rock Sample Geochemical Data Sheets

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SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au ppm	Geological Observations
1055621			↑	2050	20	90	3	9	6.02	210	0.06	Host Loiza rocks including magnetite rock and sediments
1055622			Bulk Rock Chip	1.29%	10	75	5	5	4.95	240	0.20	Quartz rich sample; quartz veining through the magnetite rock; sulphidic.
1055623	Collected from workings at 382440E 5365850N			7.20%	130	230	25	580	26.2	–	0.94	Banded sulphidic sample of semi massive to massive sulphides, dominantly pyrite
1154950			↓	6.40%	290	195	37	760	23.5	–	2.48	As for 1055623
DETECTION LIMIT				2	5	2	1	1	0.01	5	0.01	
ANALYTICAL METHOD				←			1CP80		→		FA/AA 209	

5 cm

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Project : QUEENSTOWN - ZEEHAN	1 : 250 000 Sheet : QUEENSTOWN	AMG Zone :	Sheet No. : 1/1
Tenement : LAKE MARGARET EL 5/83	DPO's : 32030		Laboratory : ALS BRISBANE
Area / Prospect : RED HILLS			Collected By : SIC + TVS Date : MAY 1986

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SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	ANALYSES Cu	Pb	Zn	Ag	As	Fe %	Mn	Au ppb	Geological Observations
54551	382 820	5 365 780	Outcrop Rock chip	80	<5	115	2	<1	12.8	580	3	chloritized volcanic with some vein qtz + magnetite
52	382 815	5 365 800	–	10	15	90	1	125	10.7	480	<3	– -- schist - vein pyrite (2%)
53	382 795	5 365 830	..	40	15	100	2	75	12.1	410	<3	vein pyrite within chloritized volcanic, often schistose
54	382 795	5 365 830	vein chip/channel	120	30	60	2	315	15.9	180	<3	chip sample of vein pyrite
55	382 775	5 365 855	Outcrop Rock chip	45	<5	100	2	<1	22.4	510	<3	chloritized volcanic with magnetite plus vein pyrite
56	382 745	5 365 860	–	135	<5	60	2	34	18.4	410	<3	– – – vein pyrite
57	382 715	5 365 875	–	110	<5	75	2	2	18.1	210	<3	strongly pyritic fractured zone in chloritized volcanic + minor qtz.
58	382 685	5 365 870	–	155	<5	115	2	2	17.9	230	<3	strongly pyritic ductile fracture zone with vein qtz within chloritized volcanic
59	382 660	5 365 855	–	110	210	160	2	5	15.1	250	<3	pyritic fractures in locally cleaved + brecciated chloritized volcanic
60	382 635	5 365 835	-	140	145	110	2	3	15.1	200	<3	chloritized volcanic with pyritic fractures containing quartz
61	382 620	5 365 840	float grab	215	<5	50	3	<1	37.1	30	40	oxidized block of chloritized volcanic
62	382 610	5 365 845	Rock chip	270	1100	130	4	25	14.2	215	20	chloritized volcanic with pyritic fractures
63	382 610	5 365 855	float grab	425	270	25	5	<1	25.2	35	30	30% pyrite in vein quartz
64	382 590	5 365 870	Rock chip outcrop	415	60	180	2	12	12.0	350	65	minor pyrite in fracture zone of now less chloritized volcanic
65	382 560	5 365 875	–	135	5	110	2	2	8.03	215	<3	- -
66	382 525	5 365 900	–	125	<5	130	2	<1	11.2	230	<3	chloritized fractured volcanic with pyrite in fractures and magnetite prominent
67	382 540	5 365 920	–	3050	<5	150	3	3	10.8	325	155	" " pyroclastic with some pyritic fractures
68	382 445	5 365 925	Rockchip dump.	-	<5	240	–	395	39.6	180	1.44 ppm	Massive sulphide (Cpy/py) from adit 1N, Red Hills
69	382 545	5 365 890	Rockchip outcrop	4350	120	95	3	6	13.0	285	270	chloritized fractured volcanic with pyrite and magnetite
54570	382 940	5 365 715	outcrop + float chip	850	<5	80	2	<1	35.7	275	15	Pyrite, haematite + magnetite rich chloritic tuff
DETECTION LIMIT				2	5	2	1	1	0.01	5	0.01	
ANALYTICAL METHOD				←			IC580			→	PM205	

5 cm

Project: Lake Margaret (Queenstown - Zeehan)	1:250 000 Sheet: Queenstown AMG Zone:	Sheet No.: 1/3
Tenement: E.L. 5/85	DPO's 31971	Laboratory: ALS BRISBANE
Area / Prospect: Red Hills		Collected By: Bill Sheppard Date: 15/7/86

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SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au ppb	Geological Observations
				ANALYSES								
154571	382 915	5 365 730	outcrop and float chip	130	10	105	1	<1	10·6	510	<3	Chloritic haematized tuffs with minor hyalite silicification.
72	382 890	5 365 745	"	115	20	135	1	<1	13·1	590	<3	" " " " " " " " " "
73	382 875	5 365 765	"	170	35	85	1	9	6·72	370	<3	" " " " " " " " " "
74	382 850	5 365 775	"	275	10	75	1	16	7·06	335	<3	" " " " " " " " " "
75	382 845	5 365 460	"	190	<5	55	<1	16	10·0	110	<3	Weakly chloritic acid hyroclastic and rhyolite
76	382 855	5 365 490	"	230	<5	110	1	<1	7·23	155	<3	" " " " " " " " " "
77	382 850	5 365 520	"	120	10	160	1	4	8·44	260	<3	" " " " " " " " " "
78	382 835	5 365 550	"	165	<5	115	1	<1	7·29	190	<3	" " " " " " " " " "
79	382 835	5 365 570	"	145	<5	135	1	<1	7·42	280	<3	Becoming more chloritic - hyroclastic and rhyolite(?)
80	382 825	5 365 600	"	135	<5	130	1	<1	7·00	270	5	" " " " " " " " " "
81	382 820	5 365 625	"	145	20	100	1	11	7·08	310	20	" " " " " " " " " "
82	382 850	5 365 635	"	50	<5	155	1	<1	8·57	645	15	" " " " " " " " " " vein qtz. common
83	382 855	5 365 665	"	75	<5	135	1	<1	5·09	390	5	" " " " " " " " " "
84	382 815	5 365 690	"	140	40	165	1	49	9·59	515	20	Pyritic rhyolite
85	382 835	5 365 710	"	70	<5	90	1	6	9·39	325	<3	Chloritic volcanic
86	382 825	5 365 735	"	155	15	155	1	83	10·7	535	5	" "
87	382 830	5 365 760		75	15	135	1	12	6·2	520	<3	" "
88	382 445	5 365 925	float from dump	1400	<5	135	1	3	6·02	415	65	Vein quartz associated sulphides
89	382 445	5 365 925	"	1050	<5	120	2	11	9·02	370	30	Magnetite - chlorite host rock with minor sulphides
154590	382 445	5 365 925	"	1200	<5	100	1	3	7·94	210	20	" " " " " " " " " "
DETECTION LIMIT				2	5	2	1	1	0·01	5	3	
ANALYTICAL METHOD				←			IC580	→			PM205	

9940026

5 cm

Project: Lake Margaret (Queenstown - Zeehan) | 1 250 000 Sheet: Queenstown | AMG Zone: | Sheet No.: 2/3

Tenement: E.L. 5/85 | DPO's: 31971 | Laboratory: ALS BRISBANE

Area / Prospect: Red Hills | Collected By: Bill Reed | Date: 15/1/91

CRA EXPLORATION PTY. LTD.

026

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	ANALYSES Cu	Pb	Zn	Ag	As	Fe %	Mn	Au ppb	Geological Observations
1154591	382 675	5 365 350	outcrop + float chip	130	<5	80	1	10	14·9	160	35	moderately chloritic hyroclastic; siliceous + ferruginous.
92	382 700	5 365 325	-	155	5	80	1	1	16·0	105	680	- - - - - - - - - - - - - -
93	382 445	5 365 925	½m Channel	4150	390	115	15	570	20·7	150	2·00 ppm	Rotten massive hyrite, siliceous horblyry, chloritized volcanic locally magnetic
94	382 650	5 365 250	Outcrop Rock chip	110	15	70	1	10	8·07	80	100	weakly chloritized horblyry some Fe oxide in fractures
95	382 780	5 365 220	"	350	10	45	2	10	7·04	55	40	" " " (hyroclastic?), no mineral noted
96	382 730	5 365 230	-	125	5	85	<1	12	5·03	210	10	" - - - - - - -
98	382 560	5 365 235	Rock chip from dump	220	<5	55	1	56	6·65	360	10	chloritized horblyritic volcanics, trace of hyrite
99	382 560	5 365 235	-	110	<5	65	<1	3	4·65	470	<3	- - - - - - -
1154600	382 710	5 365 300	outcrop float chip	125	<5	55	<1	<1	4·47	160	5	Moderately chloritic hyroclastic; siliceous + ferruginous.
DETECTION LIMIT				2	5	2	1	1	0·01	5	3	
ANALYTICAL METHOD				←			1C580			→	Pm205	

9940027

5 cm

Project : Lake Margaret (Queenstown - Zeehan) | 1 : 250 000 Sheet : Queenstown | AMG Zone : | Sheet No. : 3/3

Tenement : EL 5/85 | DPO's : 31971 | Laboratory : ACS BRISBANE

Area / Prospect : Red Hills | Collected By : Bill Stafford | Date : 15/7/86

CRA EXPLORATION PTY. LTD.

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe %	Mn	Au ppm
1055624	382235	5365550	Gully Rock Chip	330	280	85	2	65	2.45	240	<0.01
625	382255	5365450		40	390	140	2	30	4.61	590	0.01
626	382310	5365230		65	310	30	1	24	1.28	50	0.01
627	382330	5365035		60	640	125	2	38	6.65	990	0.01
628	382350	5364850		80	165	55	2	240	3.37	330	0.01
629	382380	5364850		15	115	185	1	17	4.50	2450	0.01
630	382250	5364290		40	105	45	1	13	1.65	95	<0.01
631	382250	5364290		30	260	90	1	42	2.65	320	<0.01
632	382300	5364110		30	320	80	1	40	2.47	430	0.03
633	382300	5364110		20	430	240	2	22	4.85	1300	<0.01
634	382350	5363900		35	380	95	1	15	4.67	1100	<0.01
635	382350	5363900		25	300	390	2	10	3.14	1100	0.04
636	382295	5364640		40	120	40	1	26	1.32	50	0.01
637	382350	5364560		30	120	90	1	17	4.73	280	<0.01
638	382400	5363700		50	360	50	2	26	2.37	580	0.01
639	382400	5363700		100	2300	370	3	32	4.17	530	0.01
DETECTION LIMIT				2	5	2	1	1	0.01	5	0.01
ANALYTICAL METHOD				←			IC580	→			FA209

Geological Observations

All samples are from the mapped shale horizon at Red Hills prospect. The samples are bulked rock chips collected along traverses at approximately 200m spacings. Rocks consist of dark grey to black shale which is often pyritic and occasionally silicified.

5 cm

Project : QUEENSTOWN - ZEEHAN

1 : 250 000 Sheet : QUEENSTOWN AMG Zone :

Sheet No. : 1/1

Tenement : LAKE MARGARET EL 5/85

DPO's : 32029

Laboratory : ALS

Area / Prospect : RED HILLS SHALE HORIZON - DAVIS CHIP SAMPLING

Collected By : SKEATES Date : MAY 1985

994029

CRA EXPLORATION PTY. LTD.

0.28

SAMPLE NUMBER	LOCATION Easting	LOCATION Northing	Sample Type	Cu	Pb	Zn	Ag	As	Fe	Mn	Au
1154928	382185	5365750	Rock Chip	20	50	5	<1	7	0.53	30	<0.01
1154929	382150	5365850		10	65	195	<1	10	1.36	360	<0.01
930	382160	5365850		10	95	510	<1	9	2.28	2050	<0.01
931	382140	5365955		5	20	65	<1	5	1.50	160	<0.01
932	382115	5365955		10	15	115	<1	7	2.56	830	<0.01
933	382100	5366055		10	15	60	<1	4	2.14	680	<0.01
934	382120	5366055		2	15	35	<1	6	1.26	545	<0.01
935	382140	5366055		30	155	30	<1	7	0.93	335	<0.01
936	382120	5366150		5	30	60	<1	9	1.60	460	<0.01
937	382110	5366150		15	25	85	<1	7	2.29	175	<0.01
938	382095	5366150		5	40	80	<1	4	1.94	435	<0.01
939	382095	5366250		10	25	50	<1	4	2.46	155	<0.01
940	382110	5366250		10	20	45	<1	5	1.4	285	<0.01
941	382125	5366250		10	40	65	<1	4	1.46	385	<0.01
942	382095	5366350		15	10	30	<1	9	0.99	150	<0.01
943	382110	5366350		5	20	45	<1	9	0.69	110	<0.01
944	382130	5366350		5	20	75	<1	7	1.49	310	<0.01
946	382090	5366445		15	55	60	<1	7	1.46	225	<0.01
947	382125	5366445		5	55	220	<1	6	1.44	760	<0.01
948	382110	5366525		10	30	160	<1	5	1.57	760	<0.01
DETECTION LIMIT				2	5	2	1	1	0.01	5	0.01
ANALYTICAL METHOD				←			IC580		→		FA/209

Geological Observations

All samples are from the mapped siliceous zone at Red Hills prospect. The samples are bulkhead rock chips collected across the siliceous zone at 100m intervals. The rocks sampled vary from acid rhyolite to ignimbrite tuffs, some have a brecciated texture and a foliation is evident throughout the zone. The rocks are weakly silicified in relation to the surrounding rocks however coarse quartz veins are present (possibly devitrification features). There are iron rich patches throughout the zone but overall the unit appears to be iron poor.

5 cm

Project : QUEENSTOWN - ZEEHAN.
1 : 250 000 Sheet : QUEENSTOWN
AMG Zone :
Sheet No. : 1/1

Tenement : LAKE MARGARET EL 5/85
DPO's : 32028
Laboratory : ALS BRISBANE

Area / Prospect : RED HILLS SILICEOUS ZONE - ROCK CHIP SAMPLING
Collected By : SJC + TJS
Date : MAY 1986

Best intersection 2.8m a 45% Pb & Zn, & 6.5g/t Au
Possible extensions to North untested.
Drill core to be tested for Au. 2.4g/t Au obtained from edge of chloritic alteration pipe.

SELINA NORTH

Pyritic Zone similar to Footwall Alteration at Rosebery open to South.

OWEN CONGLOMERATE
Exposures to be tested for Au Mineralization
Cyanide leach sampling in progress.

SELINA SOUTH

DORA

Dome Situation similar to Red Hills. Stratiform Au (Base Metal) potential.

BEATRICE

Fractured & Silicified Volcanics Au potential.
Results awaited from Cyanide leach sampling.

RED HILLS

HOWARDS

North extensions to Base Metal Sulphide Zones tested by U.T.E.M.
U.T.E.M. Survey data currently being evaluated.

SOUTHWEST CONSERVATION AREA

PROPOSED EXPLORATION AREA

029

994030

5 cm

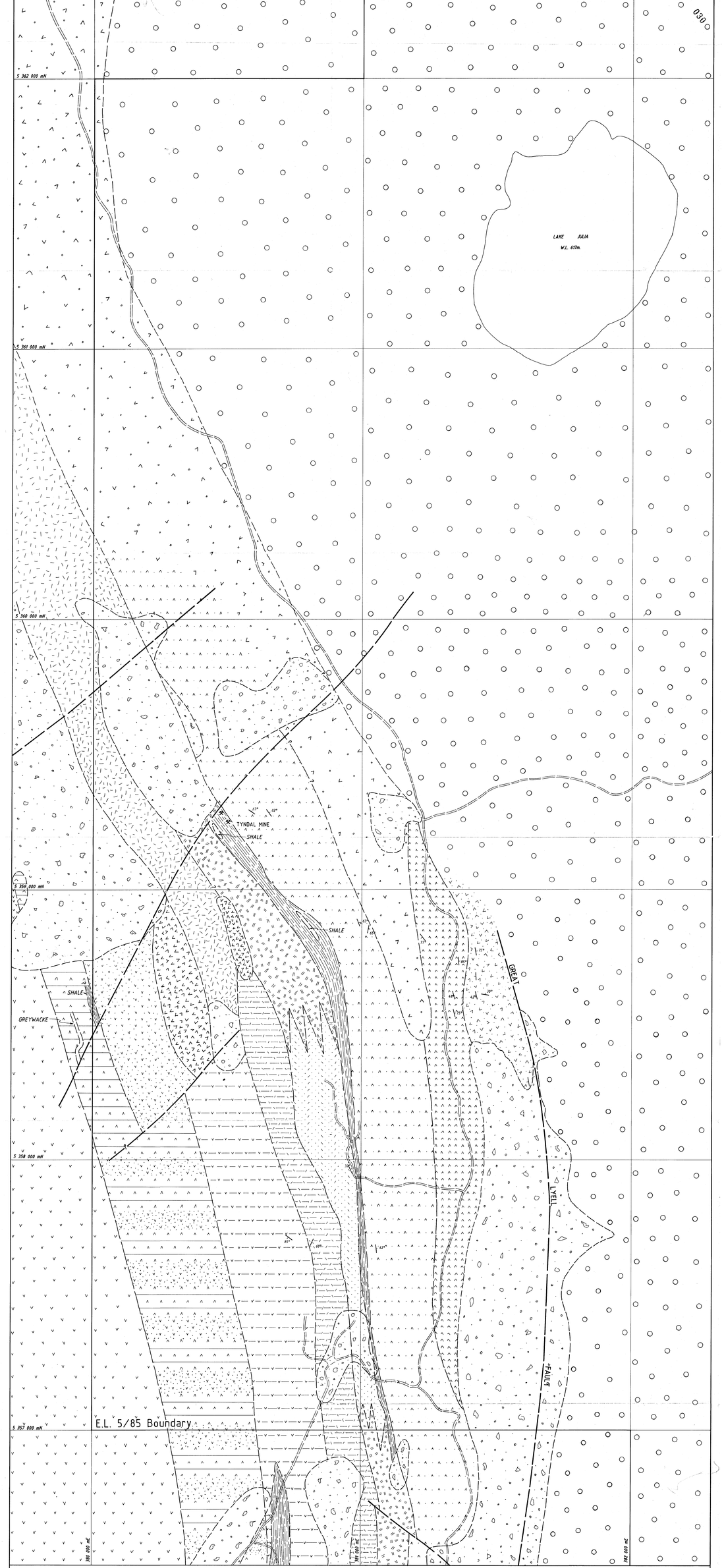
CRA EXPLORATION PTY. LIMITED

LAKE MARGARET E.L. 5/85

EXPLORATION AREAS

REF.	SK55 - 3		(8013 - 8014)
SCALE	1 : 100.000	DRAWN	R.T.
AUTHOR	W.A.S.	REPORT No.	14133
DATE	9 - 9 - 1986	PLAN No. TASh	2599

86-2586



Legend

GLACIAL OVERBURDEN

OWEN CONGLOMERATE CORRELATE

MEDIUM – COARSE GRAINED VOLCANICLASTIC SANDSTONES; MINOR CHERT & ASH FLOWS (ACID CRYSTAL LITHIC TUFFS)

FLOW BANDED AUTOBRECCIATED RHYOLITES: FINE – COARSE GRAINED FELSIC TUFFS.

FINE GRAINED VOLCANICLASTIC SANDSTONE & CONGLOMERATES.

PINK – GREEN FELDSPARS – QUARTZ CRYSTAL LITHIC TUFFS & AGGLOMERATES: FELDSPAR QUARTZ PORPHYRY.

MEDIUM GRAINED ANDESITIC CRYSTAL LITHIC TUFFS, PHENOCRYSTS, FELDSPAR, CHLORITE MATRIX + MINOR GREY BLACK SHALES.

MEDIUM TO COARSE GRAINED HEMATITIC CRYSTAL LITHIC TUFFS PHENOCRYSTS OF FELDSPAR, FRAGMENTS OF HEMATITE. PRONOUNCED LACK OF CARBONATE.

HEMATITIC FINE – COARSE GRAINED LITHIC CRYSTAL TUFFS. FINE – MEDIUM GRAINED CHLORITE – HEMATITIC SEDIMENTS ± MAGNETITE: MINOR FELDSPAR CRYSTAL TUFFS ± PYRITE, ± HEMATITE: VARIABLE CARBONATE THROUGHOUT, CHANGING LATERALLY TO THE NORTH AND TO THE SOUTH.

MEDIUM TO COARSE GRAINED CRYSTAL LITHIC TUFFS. PHENOCRYSTS OF FELDSPAR VARIABLY HEMATITE & CHLORITE WITHIN THE MATRIX, ALBITIZATION OF LITHIC FRAGMENTS & PHENOCRYSTS, MINOR REWORKED TUFFS, GREYWACKES & CHERT.

SILICIFIED ANDESITIC CRYSTAL (LITHIC) TUFFS. DISSEMINATED PYRITE, VEINS CHLORITE.

ANDESITE FELDSPAR CRYSTAL LITHIC TUFFS ± CHLORITE, MINOR HEMATITE, MINOR SHALES: GREYWACKES INCREASING TO THE SOUTH

QUARTZ FELDSPAR PORPHYRITIC LAVAS & ASH FLOW AGGLOMERATES.

INTERMEDIATE FELDSPAR HORNBLENDE CRYSTAL LITHIC TUFFS.

ACID/INTERMEDIATE FINE – MEDIUM GRAINED ASH FLOW CRYSTAL LITHIC TUFFS. PHENOCRYSTS OF FELDSPAR & MINOR QUARTZ INTERBEDDED WITH GREYWACKE & GREY BLACK SHALES.

INTERMEDIATE FELDSPAR HORNBLENDE PORPHYRITIC LAVAS & INTRUSIVES.

5 cm

SCALE 1 : 5000

0 100 200 300 400 500m

994031

030

96-2586

CRA EXPLORATION PTY. LIMITED

LAKE MARGARET E.L. 5/85
HOWARDS ANOMALY
GEOLOGY PLAN

REF.	SK55 - 5		(8971 - 8974)
SCALE	1 : 5000	DRAWN	R.T.
AUTHOR	I.M.C.	REPORT No.	14133
DATE	5 - 3 - 1986	PLAN No. TASK	2909

994032

5 cm

SCALE 1: 5000

0 100 200 300 400 500m

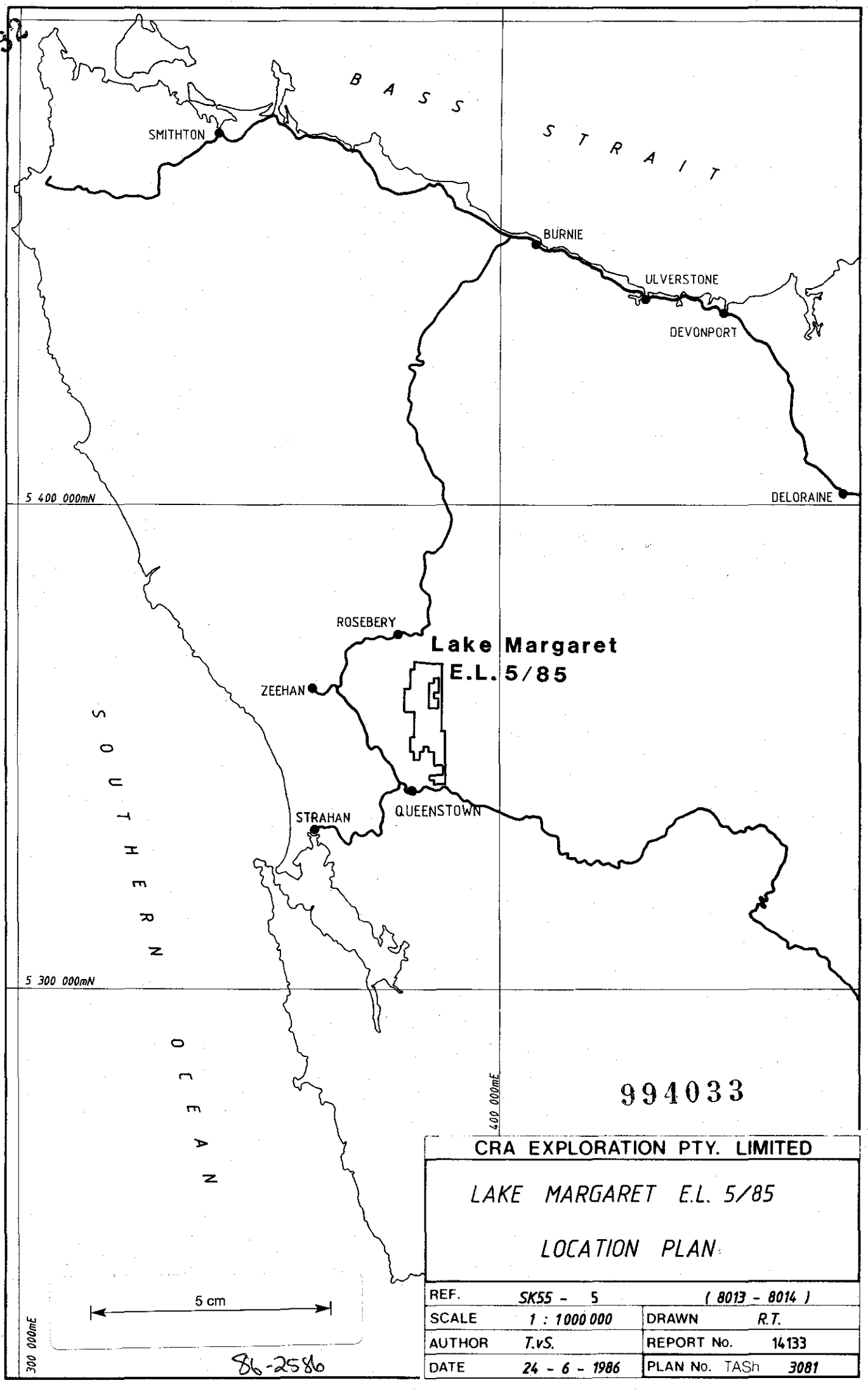
GN MN

031

CRA EXPLORATION PTY. LIMITED		
LAKE MARGARET E.L. 5/85 RED HILLS PROSPECT DRILL HOLE AND GRID LOCATION PLAN		
REF.	SK55 - 5	(8013 - 8014)
SCALE	1 : 5000	DRAWN R.T.
AUTHOR	I.v.S.	REPORT No. 14133
DATE	17 - 3 - 1986	PLAN No. TASh 2953

50-2580

032



994033

CRA EXPLORATION PTY. LIMITED

LAKE MARGARET E.L. 5/85

LOCATION PLAN

REF.	SK55 - 5	(8013 - 8014)	
SCALE	1 : 1000 000	DRAWN	R.T.
AUTHOR	T.vS.	REPORT No.	14133
DATE	24 - 6 - 1986	PLAN No. TASh	3081

86-2586

033

5 362 000mN
5 361 000mN
5 360 000mN
5 359 000mN
5 358 000mN
5 357 000mN
379 000mE
380 000 mE
381 000 mE
382 000 mE

38N
37N
36N
35N
34N
33N
32N
31N
30N
29N
28N
27.6N
27.3N
27N
26.8N
26.6N
26.4N
29.2N
29.6N
25N
24.5N
24N
23.7N
23.4N
23N
22.5N
22.2N
22N
21.9N
21.6N
21.3N
21N
20.6N
20.2N
20N
19.7N
19.4N
19N
18N
17N
16N

5/C
4/52/C
6/20
5/15
5/30
3/18
4/30
5/31
5/C
6/C
6/C
7/C
8/C
9/45
8/C
5/70/C
8/52/C
7/C
9/C
8/35
7/40
7/C
7/20
7/15/C
9/C
8/C
7/40

A
B
C
D

Mount Julia
LAKE JULIA
W.L. 617m
TYNDAL MINE
Newton

E.L.5/85 Boundary

REFERENCE

- EXISTING GRID LINES
- EXISTING GRID LINES TO BE SURVEYED
- NEW GRID LINES TO BE CUT AND SURVEYED
- NEW LINES TO BE CUT FOR LOOPS
- WESTERN BOUNDARY OF SOUTH WEST CONSERVATION AREA
- EASTERN MARGIN OF FOREST
- INTERPRETED LINE OF ANOMALY
- 7/20 LATEST CHANNEL WITH RESPONSE / INTERPRETED DEPTH
- /C INTERPRETED AS CONTACT
- ** N.B. ** ANOMALY POSITION DERIVED FROM CONTINUOUSLY NORMALISED PLOTS.

994034

033

SCALE 1: 5000

0 100 200 300 400 500m

5 cm

86-2586

CRA EXPLORATION PTY. LIMITED

LAKE MARGARET E.L. 5/85
HOWARDS ANOMALY
U.T.E.M. ANOMALIES

REF.	SK55 - 5		(8013 - 4)
SCALE	1 : 5000	DRAWN	R.T.
AUTHOR	T.v.S.	REPORT No.	
DATE	25 - 6 - 1986	PLAN No. TASh	3088

5 367 000mN

5 366 000mN

5 365 000mN

5 364 000mN

5 363 000mN

381 000mE

382 000mE

383 000mE

034

SWAMP COVERED (BASIN ROCKS?)

SILICEOUS ZONE

CHLORITIC ALTERATION

PIPE

C.A. PIPE

LAKE WESTWOOD

E.L. 5/85 Boundary.

1154943			
Mo	5	Hg	<1
Ni	<5	Li	<10
S	<10	Be	<1
Sb	4	Bi	<5
Co	<5	Cd	<1
Cr	15	V	<5
Sr	5	B	<10

(results in ppm)

1154948				
	10	30	160	<1
	5	1.57	760	<0.01

	5	55	220	<1
1154947	6	1.44	760	<0.01
1154946	15	55	60	<1
	7	1.46	225	<0.01

1154942	15	10	30	<1
	9	0.99	150	<0.01
1154943	5	20	45	<1
	9	0.69	110	<0.01
1154944	5	20	75	<1
	7	1.49	310	<0.01

1154936	5	30	60	<1
	9	1.60	460	<0.01
1154937	15	25	85	<1
	7	2.29	175	<0.01
1154938	5	40	80	<1
	4	1.94	435	<0.01

1154939	10	25	50	<1
	4	2.46	155	<0.01
1154940	10	20	45	<1
	5	1.42	285	<0.01
1154941	10	40	65	<1
	4	1.46	385	<0.01

1154933	10	15	60	<1
	4	2.14	680	<0.01
1154934	2	15	35	<1
	6	1.26	545	<0.01
1154935	30	155	30	<1
	7	0.93	335	<0.01

1055621
1055622
1055623
1154568
1154588
1154589
1154590
1154950

1154931	5	20	65	<1
	5	1.50	160	<0.01
1154932	10	15	115	<1
	7	2.56	831	<0.01

1154929	10	65	195	<1
	10	1.36	360	<0.01
1154930	10	95	510	<1
	9	2.28	2050	<0.01

1154928	20	50	5	<1
	7	0.53	30	<0.01

1055624	330	280	85	2
	65	2.45	240	<0.01

1055625	40	390	140	2
	30	4.61	590	0.01

1055626	65	310	30	1
	24	1.28	50	0.01

1055627	60	640	125	2
	38	6.65	990	0.01

1055628	80	165	55	2
	240	3.37	330	0.01
1055629	15	115	185	1
	17	4.50	2450	0.01

1055636	40	120	40	1
	26	1.32	50	0.01

1055637	30	120	90	1
	17	4.73	280	<0.01

1055630	40	105	45	1
	13	1.65	95	<0.01
1055631	30	260	90	1
	42	2.65	320	<0.01

1055632	30	320	80	1
	40	2.47	430	0.03
1055633	20	430	240	2
	22	4.85	1300	<0.01

1055634	35	380	95	1
	15	4.67	1100	<0.01
1055635	25	300	390	2
	10	3.14	1100	0.04

1055638	50	360	50	2
	26	2.37	580	0.01
1055639	100	2300	370	3
	32	4.17	530	0.01

1N 2N 1W 2W 1E 2E 3E

1154567 1154593 1154555 1154574 1154575 1154592 1154600 1154595 1154594 1154598/99

* NOTE *
ALL RESULTS IN ppm
EXCEPT: Fe - %
Au - ppb

SAMPLE NUMBER	Cu	Pb	Zn	Ag	As	Fe	Mn	Au
1154551	80	<5	115	2	<1	12.8	580	3
1154552	10	15	90	1	125	10.7	480	<3
1154553	40	15	100	2	75	12.1	410	<3
1154554	120	30	60	2	315	15.9	180	<3
1154555	45	<5	100	2	<1	22.4	510	<3
1154556	135	<5	60	2	34	18.4	410	<3
1154557	110	<5	75	2	2	18.1	210	<3
1154558	155	<5	115	2	2	17.9	230	<3
1154559	110	10	160	2	5	15.1	250	<3
1154560	140	145	110	2	3	15.1	200	<3
1154561	215	<5	50	3	<1	37.1	30	40
1154562	270	1100	130	4	25	14.2	215	20
1154563	425	270	25	5	<1	25.2	35	30
1154564	415	60	180	2	12	12.0	350	65
1154565	135	5	110	2	2	8.03	215	<3
1154566	125	<5	130	2	<1	11.2	230	<3
1154567	3050	<5	150	3	3	10.8	325	155
1154568	-	<5	240	-	395	39.6	180	1440
1154569	4350	120	95	3	6	13.0	285	270
1154570	850	<5	80	2	<1	35.7	275	15
1154571	130	10	105	1	<1	10.6	510	<3
1154572	115	20	135	1	<1	13.1	590	<3
1154573	170	35	85	1	9	6.72	370	<3
1154574	275	10	75	1	16	7.06	335	<3
1154575	190	<5	55	<1	16	10.0	110	<3
1154576	230	<5	110	1	<1	7.23	155	<3
1154577	120	10	160	1	4	8.44	260	<3
1154578	165	<5	115	1	<1	7.29	190	<3
1154579	145	<5	135	1	<1	7.42	280	3
1154580	135	<5	130	1	<1	7.00	270	5
1154581	145	20	100	1	11	7.08	310	20
1154582	50	<5	155	1	<1	8.57	645	15
1154583	75	<5	135	1	<1	5.09	390	5
1154584	140	40	165	1	49	9.59	515	20
1154585	70	<5	90	1	6	9.39	325	<3
1154586	155	15	155	1	83	10.7	535	5
1154587	75	15	135	1	12	6.20	520	<3
1154588	1400	<5	135	1	3	6.02	415	65
1154589	1050	<5	120	2	11	9.02	370	30
1154590	1200	<5	100	1	3	7.94	210	20
1154591	130	<5	80	1	10	14.9	160	35
1154592	155	5	80	1	1	16.0	105	680
1154593	4150	390	115	15	570	20.7	150	2000
1154594	110	15	70	1	10	8.07	80	100
1154595	350	10	45	2	10	7.04	55	40
1154596	125	5	85	<1	12	5.03	210	10
1154598	220	<5	55	1	56	6.65	360	10
1154599	110	<5	65	<1	3	4.65	470	<3
1154600	125	<5	55	<1	<1	4.47	160	5
1154950	64000	290	195	37	760	23.5	210	2400
1055621	2050	20	90	3	9	6.02	210	60
1055622	12900	10	75	5	3	4.95	240	200
1055623	72000	130	230	25	580	26.2	260	940
1055637	40	90	80	-	-	-	-	-

N.B. Geology after Bradfield (1969), Poltock (1970-71)
Stevens-Hoare (1976), Brophy (1977),
Walter (1978), Eastoe (1982).

CU

Cu ppm	Pb ppm	Zn ppm	Ag ppm
As ppm	Fe %	Mn ppm	Au ppm

QUATERNARY

Glacial Morain, Conglomerate Scree & Alluvium.

UPPER CAMBRIAN - LOWER ORDOVICIAN

Owen Conglomerate

CAMBRIAN (MT. READ VOLCANICS)
TYNDALL GROUP

Volcaniclastic Sediments, Tuffs & Agglomerates.

? Quartz - phyric Lavas

CAMBRIAN (MT. READ VOLCANICS)
CENTRAL SEQUENCE

Black Shales with minor Tuffaceous Interbeds, variable graphite and/or pyrite / pyrrhotite content syngenetic base metal sulphides in basal sequence, especially to south.

Host Rock Horizon-host to massive sulphides RH5 fine grained volcaniclastic sediments (pelitic ash?) often siliceous ("cherty") base metal sulphide mineralization variable.

Pyroclastics - mineralized (from drill intersections) rhyolitic ignimbrites, variable welded, lithic, agglomeratic, ashy or undifferentiated. Disseminated sphalerite and minor galena mineralization.

5 cm

CENTRAL SEQUENCE

Pyroclastics - mostly unmineralized Rhyolitic ignimbrites, variably welded, lithic, agglomeratic, ashy or undifferentiated.

Red Hills Lava
rhyolitic often brecciated, with pyroclastic talus margin, massive pink-green chlorite-hematite-K-feldspar altered, pyrite- chalcopyrite-magnetite mineralization (weak stockwork).

994035

SCALE 1:5 000

0 100 200 300 400 500m

CRA EXPLORATION PTY. LIMITED		
LAKE MARGARET E.L. 5/85 RED HILLS PROSPECT GEOLOGICAL INTERPRETATION PLAN AND ROCK CHIP GEOCHEMISTRY		
REF.	SK55 - 5	(8013 - 8014)
SCALE	1 : 5000	DRAWN R.T.
AUTHOR	I.M.C. W.A.S.	REPORT No. 14133
DATE	14 - 7 - 1986	PLAN No. TASh 3100

035

5 370 000mN

380 000mE

390 000mE

MT MURCHISON

Murchison

€gr

Qc

€sr

CV

MT READ

RED HILLS

€tg

€p

The Gooseneck

Lake Selina

Lake Westwood

Lake Julia

HENTY FAULT

5 360 000mN

€u

NEWTON PEAK

Qpm

HOWARDS ANOMALY

FAULT

Lake Rolleston

CVa

MT TYNDALL

Lake Huntley

Lake Tyndall

Lake Dora

CVs

VSt

Leech Hill

LYELL

River

MT GEIKIE

Lake Mary

Og

Lake Spicer

Basin Lake

GREAT

5 350 000mN

Lake Margaret

P–J

MT SEDGWICK

LAKE MARGARET TOWNSHIP

Lake Beatrice

Marbl Bluff

COMSTOCK

CAPE HORN

S–D

RIVER

MT LYELL

NORTH LYELL

Ba

ward

PRINCE LYELL

THE BLOW

GORMANSTON

KING

QUEENSTOWN

5 340 000mN

LYEL

ORDOVICIAN

Og — Gordon Limestone Subgroup

Unconformity, disconformity, conformity

LATE CAMBRIAN – EARLY ORDOVICIAN

Oc — Owen Conglomerate and correlates

Unconformity, disconformity

CAMBRIAN – ?EOCAMBRIAN

SOUTH AND EAST OF HENTY FAULT ZONE

€tg — Tyndall Group and correlates–(late Middle to Late Cambrian)–mainly quartz–feldspar–phyric volcanics and volcaniclastic conglomerates

€sr — Sticht Range Beds – quartzwacke, siltstone, siliclastic conglomerate

Unconformity, ?disconformity

CV / CVa / CVs — Central Volcanic Sequence – rhyolitic to dacitic volcanics, mainly feldspar–phyric; Andesitic volcanics and intrusives; Shale–siltstone horizons

CAMBRIAN INTRUSIVE ROCKS

€gr — Granite

€p — Felsic porphyry – mostly quartz–feldspar–phyric

Unconformity

PRECAMBRIAN

€gn — Metamorphosed Precambrian of Tyennan region

994036

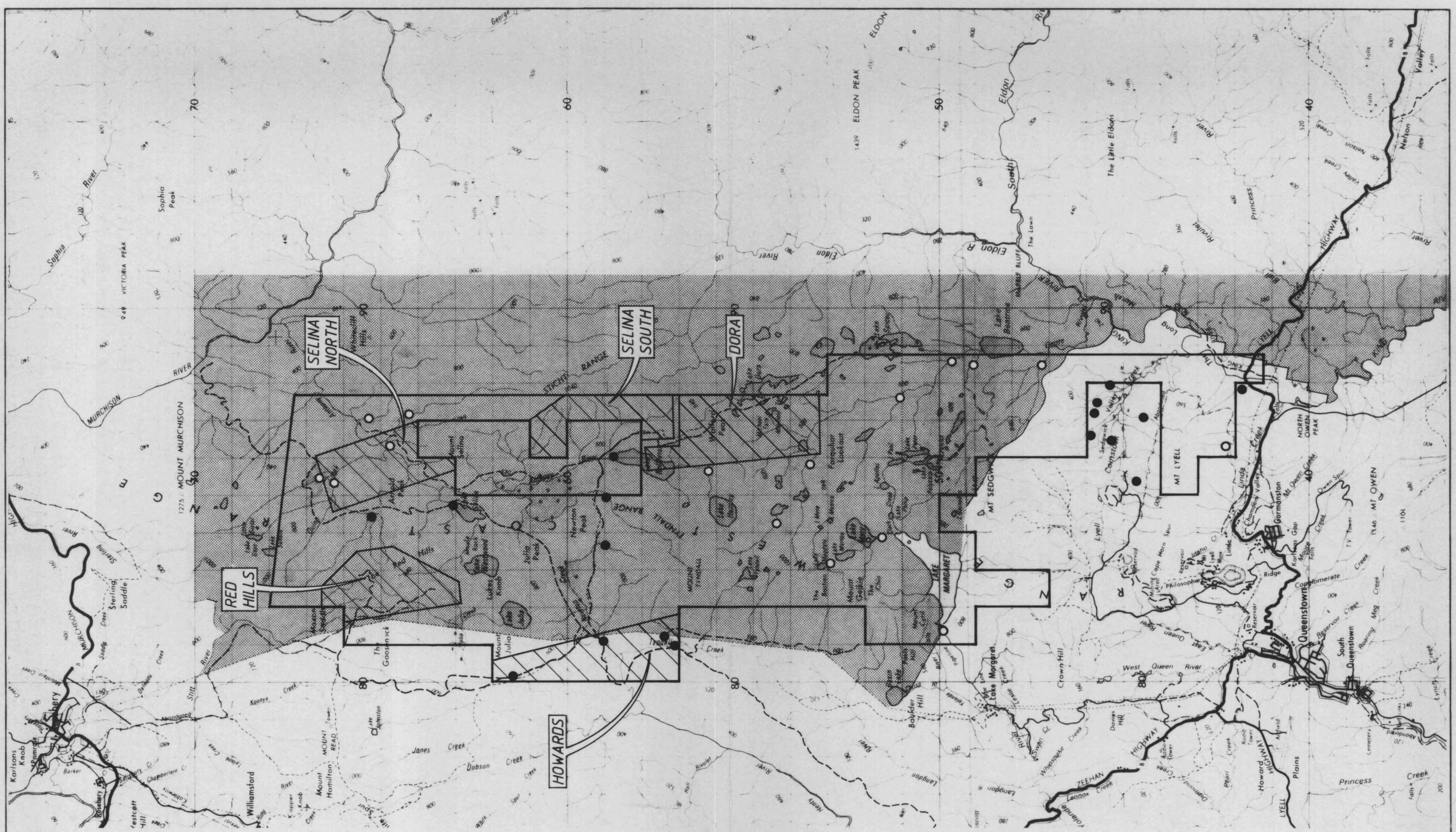
5 cm

CRA EXPLORATION PTY. LIMITED

LAKE MARGARET E.L. 5/85
GEOLOGICAL COMPILATION
After K.D. CORBETT. 1984

REF.	SK55 - 5	(8013 - 8014)	
SCALE	1 : 50 000	DRAWN	R.T.
AUTHOR	W.A.S.	REPORT No.	14133
DATE	26 - 8 - 1986	PLAN No. TASh	3133

86-2586



- ▩ SOUTHWEST CONSERVATION AREA
- ▨ PROPOSED EXPLORATION AREA
- ● *Cyanide leach sample taken*
- ○ *Site requiring Cyanide leach sampling*

994037

CRA EXPLORATION PTY. LIMITED

LAKE MARGARET E.L. 5/85 EXPLORATION AREAS & CYANIDE LEACH SAMPLE SITES

REF	SK55 - 3	(8013 - 8014)	
SCALE	1 : 100.000	DRAWN	R.T.
AUTHOR	W.A.S	REPORT No.	14133
DATE	9 - 9 - 1986	PLAN No. TASh	3137

86-2586

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