

CONTENTS

843002

	<u>Page no.</u>
1. SUMMARY	1
2. INTRODUCTION	2
3. CONCLUSIONS	2
4. RECOMMENDATIONS	3
5. REGIONAL GEOLOGY	3
6. MINERALISATION	3
7. PREVIOUS EXPLORATION BY COMPETITORS	4
8. EXPLORATION BY MAJOR MINING LTD / CRAE PRIOR TO 9/11/93	4
9. EXPLORATION ACTIVITIES FOR THE PERIOD 9/11/93 TO 9/11/94	4
9.1 Exploration Philosophy	4
9.2 Firewood Siding Prospect	5
9.2.1 Introduction	5
9.2.2 Geology	5
9.2.3 Air-core drilling	5
9.2.4 Air-core Bottom-of-Hole Sampling	6
9.2.5 Proposed Exploration During 1995	7
9.3 Professor Range Prospect	
9.3.1 Introduction	7
9.3.2 Geology	7
9.3.3 Air-core drilling	8
9.3.4 Air-core Bottom-of-Hole Sampling	9
9.3.5 Proposed Exploration During 1995	10

9.4	Baura Prospect	10
9.4.1	Introduction	10
9.4.2	Geology	10
9.4.3	Wacker Bedrock Sampling	11
9.4.4	Proposed Exploration During 1995	11
9.5	Zinc Mineralisation in the Gordon Limestone	11
10.	ENVIRONMENT AND REHABILITATION	14
	REFERENCES	15
	KEYWORDS	15
	LOCATION	15
	LIST OF DPOs	15
	LIST OF APPENDICES	15
	LIST OF PLANS	16

I. SUMMARY

CRA Exploration Pty. Limited (CRAE) is exploring EL 34/88 for stratiform/stratabound carbonate-hosted Zn-Pb and surficial secondary Zn-Pb deposits derived from the decomposition of Ordovician Gordon Limestone.

Three carbonate-hosted Zn-Pb targets were selected for work during 1993; Firewood Siding, Professor Range and Baura.

At Firewood Siding, elevated Zn-Pb (up to 1.39% Zn and 1.09% Pb) in bedrock samples is developed near the upper limestone-quartzite contact extending from the N side of the Firewood Siding Fault a distance of 800m. Arsenic values are strongly enhanced and Fe is subtly elevated coincident with Zn-Pb, perhaps indicative of a geochemical alteration halo around primary mineralisation. Air-core drilling intersected up to 50m of decomposed dolomite altered carbonate. Zinc grades between 0.1% and 1.0% Zn were common. Better intercepts were:-

ZF4	4.0m to 12.0m	8.0m @ 1.4% Zn
ZF29	14.0m to 23.0m EOH	9.0m @ 1.9% Zn
ZF30	10.0m to 32.0m	22.0m @ 1.5% Zn

Results are improving to the N where swampy ground conditions precluded rig access.

Anomalous but patchy Zn up to 2% Zn was intersected over 1.4km strike length at the upper limestone-quartzite contact in air-core drilling at Professor Range. Geochemistry suggests weak to moderate ferroan dolomite alteration coincident with this mineralisation. The lower zone was unable to be adequately tested due to heavy Owen Conglomerate scree. One hole intersected intense but Zn-poor siderite alteration.

Bedrock sampling of the lower limestone-sandstone contact at Baura resulted in the identification of Zn-Fe-Mn alteration adjacent to the Firewood Siding Fault. Interestingly, Ag was also elevated, which is rare for the Rose Valley to Myrtle area.

Zinc mineralisation within the Gordon Limestone may be pre-Devonian in age, and therefore unrelated to the Tabberabberan Orogeny. Thickness variations of Ordovician clastic sequences underlying the limestone may represent stratigraphic pinchouts, or syn-sedimentary faults, that could be controlling the locations of ore.

Five targets are recognised for the carbonate-hosted Zn mineralisation in Gordon Limestone at Zeehan, subdivided by the stratigraphic interval in which they are hosted.

- stratabound at the lower limestone-sandstone contact
- stratabound at the upper limestone-quartzite contact
- stratabound within a sub-unit in the middle of the limestone sequence
- structurally controlled discordant mineralisation
- surficial "clay-hosted" accumulations developed above primary mineralisation

Presently the lower limestone-sandstone contact is considered most prospective. The major focus for exploration in 1995 will be directed toward identifying primary sulphide mineralisation in this stratigraphic position.

2. INTRODUCTION

Zeehan 2, EL 34/88 covers 34 sqkm located near Zeehan on the Tasmanian W coast (Plan Tv 630). EL 34/88 was granted to "His Grace, The Most Noble, The Duke of Avram" on 9th December 1988, and transferred to Major Mining Ltd on the 23rd November 1989. CRA Exploration Pty. Limited entered into a joint venture agreement with Major to explore EL 34/88, commencing on 23rd April 1991. Major Mining Ltd divested its interest in the joint venture to Allegiance Mining NL, with the exploration tenements transferred to CRAE (90%) and Allegiance (10%) as tenants in common on 22nd January 1994.

In line with statutory requirements EL 34/88 was reduced from 68 sqkm to 34 sqkm on 9/12/93, at the end of the fifth year of tenure.

During the period under review, the sixth year of tenure, CRAE has a statutory obligation to expend \$34000. This report details all exploration activities conducted within EL 34/88 by CRAE during 1994.

CRAE's principal commodity of interest in the Zeehan area is Zn. Ordovician Gordon Limestone is prospective for carbonate-hosted Zn-Pb, and secondary deposits derived from the decomposition of the carbonate. During 1994, these styles of mineralisation dominated the exploration focus and will continue to do so during 1995.

Secondary targets include stratabound shale-hosted Zn-Pb deposits, Ni mineralisation in ultramafic bodies, and skarn-type Zn-Pb deposits peripheral to the Heemskirk Granite.

Three carbonate-hosted Zn-Pb targets were selected for work during 1993; Firewood Siding, Professor Range and Baura (Plan Tv 443). Activities included air-core drilling and wacker geochemical sampling.

3. CONCLUSIONS

Zinc mineralisation intersected in air-core holes at Firewood Siding and Professor Range is part of widespread but low-level mineralisation within dolomitised carbonate at the Gordon Limestone - Crotty Quartzite contact. Values intersected lie within the 0.1% to 2% Zn range. It is possible that higher grade zones exist, but currently there are no criteria to allow effective target selection short of random drilling. Random or grid drilling has been demonstrated to be the most effective exploration method at several MVT deposits in Australia and overseas.

One hole at Professor Range intersected intense but Zn-poor siderite alteration at the lower Moina Sandstone - Gordon Limestone contact. A major change in thickness of the Ordovician clastics in the Professor Range area indicates the presence of a clastic pinchout or syn-depositional fault, that may control the location of mineralisation.

Zinc-anomalous siderite alteration intersected at the lower limestone-sandstone contact at Baura may represent part of a mineralised system controlled by the intersection of the Firewood Siding Fault and the Moina Sandstone - Gordon Limestone contact.

Exploration and research activities in the Zeehan area have indicated that Zn-Pb mineralisation within the Gordon Limestone may be pre-Devonian in age, and therefore unrelated to the Tabberabberan Orogeny. On this basis, it is possible that carbonate-hosted Zn-Pb mineralisation may be more widespread than that presently under evaluation at Zeehan.

Thickness variations of Ordovician clastic sequences underlying the limestone may represent stratigraphic pinchouts, or syn-sedimentary faults, that could be controlling the locations of ore.

Five targets are recognised for the carbonate-hosted Zn mineralisation in Gordon Limestone at Zeehan, subdivided by the stratigraphic interval in which they are hosted:-

- stratabound at the lower limestone-sandstone contact
- stratabound at the upper limestone-quartzite contact
- stratabound within a sub-unit in the middle of the limestone sequence
- structurally controlled discordant mineralisation
- surficial "clay-hosted" accumulations developed above primary mineralisation

Currently the lower limestone-sandstone contact is considered the most prospective for orebodies meeting CRA objectives.

4. RECOMMENDATIONS

Positive results for CRAE's carbonate-hosted Zn exploration activities in the Zeehan area demand an increased effort during 1995. Exploration should emphasise drilling as there are numerous quality targets requiring testing. Specifically the following actions are required.

Diamond drilling of Zn mineralised dolomite at Firewood Siding is recommended, two holes into the area of anomalous air-core drilling and one testing further N, in EL 28/88. Drilling will need to be helicopter-supported.

Two diamond holes at Professor Range are required to test the siderite alteration at the Gordon Limestone - Moina Sandstone contact and for mineralisation within the upper dolomite zone. Additional drilling may be warranted along the Professor Fault where thick scree precludes effective bedrock sampling.

At Baura prospect, diamond drilling is proposed to test anomalous Zn-Fe-Mn bedrock geochemistry at the Moina Sandstone - Gordon Limestone contact adjacent to the Firewood Siding Fault.

Bedrock sampling should be extended, initially at 400m x 25m spacing over the remainder of untested limestone areas within EL 34/88, specifically Amber Creek and King Billy areas. Consideration should be given to collecting gravity along the same grid to detect any large, blind Zn bodies.

5. REGIONAL GEOLOGY

A description of the regional geology is given in Parkinson (1993). A new Zeehan 1:50000 geological map has been published during the year which highlights the importance of thrust tectonics in the Zeehan area.

6. MINERALISATION

See Parkinson (1993).

7. PREVIOUS EXPLORATION BY COMPETITORS

See Parkinson (1993).

8. EXPLORATION BY MAJOR MINING LTD / CRAE PRIOR TO 9/11/93

Year 1, Year 2: Activities by Major Mining prior to CRAE's involvement are detailed in the relevant statutory reports. Field activities included a gradient array IP survey covering a small part of the Firewood Siding area.

Year 3: Exploration by CRAE on EL 34/88 prior to 9/11/91 focussed on a compilation and review of existing open-file data (Kratochvil, 1991). Emphasis was placed on identifying areas of limestone not explored in detail by Amoco-EZ. CRAE's initial exploration strategy aimed to test two underexplored blocks of Ordovician limestone, the Fen Creek and Mclean Creek areas. This approach was abandoned when it was realised there were more prospective targets with considerably easier access in the Badger River valley.

Year 4: CRAE's exploration strategy in 1992 aimed to test for primary carbonate mineralisation in Gordon Limestone where the unit was cut by the Firewood Siding Fault (Parkinson, 1992). Incomplete Amoco-EZ bedrock sampling returned up to 1.45% Zn in this area. The Firewood Siding Fault may have been a conduit for metal-rich fluids passing into the limestone, and as such the area of the fault/limestone contact is a prime focus for exploration.

Bedrock wacker sampling, dipole-dipole IP surveys, ground magnetometer traverses and reinterpretation of existing gravity data were completed. Line 9600E, between 5225N and 5400N showed over 0.1% Zn, up to 0.47% Pb and 0.32% Zn. Amoco-EZ produced 1.45% Zn from sampling in this vicinity. IP surveys identified several anomalies but it is unclear how they relate to known structure and stratigraphy. A circular gravity feature remains unexplained.

Year 5: CRAE continued to test for primary carbonate mineralisation in Gordon Limestone in the Firewood Siding area (Parkinson, 1993). Bedrock wacker sampling returned significantly elevated Zn-Pb up to 1.39% Zn and 1.09% Pb at or near the Gordon Limestone - Crotty Quartzite contact on the N side of the Firewood Siding Fault over a distance of 800m. Arsenic and Fe values were also enhanced coincident with the high Zn-Pb, suggesting a geochemical alteration halo may be developed around underlying mineralisation.

Wacker sample depths were commonly over 10m, and locally over 20m, suggesting thick development of potentially mineralised decomposed carbonate.

At the end of year 5, EL 34/88 was reduced from 68 sqkm to 34 sqkm.

9. EXPLORATION ACTIVITIES FOR THE PERIOD 9/11/93 TO 9/11/94

9.1 Exploration Philosophy

CRAE's principal commodity of interest in the Zeehan area is Zn. Ordovician Gordon Limestone is prospective for carbonate-hosted Zn-Pb, and secondary deposits derived from the decomposition of the carbonate. During 1994, these styles of mineralisation dominated the exploration focus and will continue to do so during 1995. Three carbonate-hosted Zn-Pb targets were selected for work during 1993; Firewood Siding, Professor Range and Baura (Plan Tv 443). Activities included air-core drilling and wacker geochemical sampling.

9.2 Firewood Siding Prospect

9.2.1 Introduction

Firewood Siding prospect is 12km S of Zeehan, straddling the Zeehan-Strahan road (Plan Tv 443). The Firewood Siding Fault intersects the limestone within the prospect area. This structure is one of a set of WNW linears called "enigmatic cross-structures". These features are clearly seen in magnetic data and satellite imagery, but are often elusive on the ground. A number of evenly-spaced "enigmatic cross-structures" cut Tasmania. It is likely that these linears are transfer faults that have controlled the tectonic architecture of Tasmania from the Late Proterozoic to at least the Devonian. These structures may have acted as major conduits to introduce metal-rich fluids into favourable stratigraphic or structural locations.

Amoco-EZ bedrock sampling returned up to 1.45% Zn, but no follow-up was initiated. Bedrock wacker sampling by CRAE returned significantly elevated Zn-Pb up to 1.39% Zn and 1.09% Pb at or near the Gordon Limestone - Crotty Quartzite contact on the N side of the Firewood Siding Fault over a distance of 800m. Arsenic and Fe values were also enhanced coincident with the high Zn-Pb, suggesting a geochemical alteration halo may be developed around underlying mineralisation.

Wacker sample depths were commonly over 10m, and locally over 20m, suggesting thick development of potentially mineralised decomposed carbonate.

Air-core drilling was conducted to test this thick decomposed for carbonated surficial Zn mineralisation.

9.2.2 Geology

Prospect geology is described in Parkinson (1993) and shown on Plan Tv 711.

9.2.3 Air-core drilling

Thirty-five reverse-circulation air-core drillholes totalling 708m were completed in Feb 1994 by Wallis Drilling from Western Australia. The rig used is a small system mounted on a Bombardier Muskeg snowmobile. The fully operational rig has a total weight of eight tonnes, with a ground pressure of less than 4psi, slightly greater than a human footprint. Air-core drilling relies on compressed air to return drill cuttings to the surface. No water (except natural groundwater) or muds are circulated and all cuttings are collected via a cyclone into bags. This rig and drilling system are ideal for testing soft formations in areas where vegetation is sensitive to disturbance.

Cuttings were collected at 2m intervals, with a 1-2kg sample "snatched" by hand for analysis. Samples were assayed at Analabs Burnie by AAS (aqua regia-perchloric acid digest) for Ag-Cu-Pb-Zn-Fe-Mn. Over-range values (0.5% Pb-Zn, 5% Fe) were reanalysed by AAS (aqua regia-perchloric-hydrofluoric acid digest). For samples with over 1% Zn, S was determined by Leco furnace.

Hole locations are shown on Plan Tv 711 and sections showing Zn-Fe geochemistry and geology are shown on Plans Tv 778 to Tv 781. Drill logs and assays are presented in Appendix 1.

Thick zones of near-surface clays and decomposed carbonate up to 50m deep were intersected over a zone about 100m wide immediately below the contact with Crotty Quartzite. Zinc values from this decomposed material are commonly in the range 0.1% to 2% Zn. Better results include:-

ZF4	4.0m to 12.0m	8.0m @ 1.4% Zn
ZF29	14.0m to 23.0m	9.0m @ 1.9% Zn
ZF30	10.0m to 32.0m	22.0m @ 1.5% Zn

Results are improving to the N where swampy ground conditions precluded rig access.

Carbonates are strongly dolomitised and have a porous granular appearance. Where S assays are available the analyses indicate significant pyrite is present.

Comparison of near-surface results with bottom-of-hole samples shows there is either strong enrichment of Zn in the decomposed layer, or equally strong dispersion from a local mineralised source. Diamond drilling beneath the decomposed layer is required to test whether stratabound mineralisation is developed at the upper contact with Crotty Quartzite.

9.2.4 Air-core Bottom-of-Hole Sampling

Where possible, a sample of the formation at the bottom of each air-core hole was collected for description and multi-element analysis. Two samples of approximately 50g each were collected for description and analysis. Samples were assayed at Analabs Perth by ICP-OES (aqua regia-perchloric-hydrofluoric acid digest) for Ag-Al-As-Ba-Ca-Cu-Fe-K-Mg-Mn-Pb-Zn. For samples with over 0.5% Zn, S was determined by Leco furnace. Assays are presented in Appendix 2.

Samples were logged by Tim Moody, seconded from CRAE Mount Isa. Moody's report, sample descriptions and assays are presented in Appendix 2. His work shows a complex pattern of variably altered limestones and dolomites (Plan Tv 868).

To complement the logging program, lithological discrimination was attempted using multi-element geochemistry. The following classifications were made:-

- siderite	>10% Fe	
- limestone	>20% Ca	<4% Mg
- dolomite	>12% Ca	>4% Mg
- impure carbonate	12-20% Ca	<4% Mg
- pelite (siltstone)	<12% Ca	>4% Al
- sandstone	<12% Ca	<4% Al

Scatterplots of Ca% vs Mg%, Ca% vs Al% and Al% vs K% with the lithological subdivisions are shown in Appendix 2 together with a statistical summary of the geochemistry of each lithological group for all CRAE air-core holes in the Zeehan area.

Results show this simple discriminant function effectively identifies the major lithologies and alteration trends within the limestone throughout the Zeehan area.

9.2.5 Proposed Exploration During 1995

Results indicate potential for primary Zn-Pb mineralisation to be developed at or near the Gordon Limestone - Crotty Quartzite contact. Diamond drilling is required to test for primary stratabound deposits beneath the best surface geochemical indications.

9.3 Professor Range Prospect

9.3.1 Introduction

Professor Range prospect is 10km S of Zeehan, extending SE from the Zeehan-Strahan road (Plan Tv 443). The Professor Range Fault bounds the SW limit of the limestone within the prospect area. This structure may have been active during Ordovician sedimentation, and may have acted as a conduit to introduce metal-rich fluids into favourable stratigraphic or structural locations.

Virtually no exploration had been completed at Professor Range by competitors. Amoco-EZ dug some costeans which returned moderately anomalous results, but there was no systematic bedrock geochemistry, nor any drilling.

9.3.2 Geology

Professor Range prospect comprises Gordon Limestone in the NE limb of a faulted NNW-plunging antiform. The W limb is the main Grieves to Myrtle area within EL 28/88 and EL 38/89. The Professor Range itself is a prominent ridge of Cambro-Ordovician Owen Conglomerate, overlain by Moina Sandstone, that dips moderately to the W. On the W side of the range the thickness of clastics is perhaps 1000m (Grieves area), but to the E the clastics pinch out against Middle-Late Cambrian Dundas Gp equivalents. On the NE limb of the antiform the clastics are not exposed. They have either been removed by later faulting, or else were only deposited to the W as a result of syn-sedimentary faulting. This structure is the Professor Range Fault.

Immediately NE of the range is a flat valley of Gordon Limestone, overlain by Crotty Quartzite that dips steeply NE. A maximum thickness of 400m for the limestone is indicated, compared with 600m on the W limb. Since the formation is not exposed it is unknown whether the base is removed by later faulting, or whether carbonate deposition was also controlled by syn-sedimentary faulting.

At Professor Range, four main sub-divisions in the limestone can be made, based on the air-core drilling:-

dolomite	50 - 100m thick	uppermost
carbonaceous siltstone	20 - 50m thick	
limestone (unaltered)	200 - 300m thick?	
siderite zone	0 - 10m thick?	lowest

The siderite zone may not be developed throughout as it was only intersected in one hole. The thickness of the lower unaltered limestone is an apparent value as part of the stratigraphy (including the siderite zone) may have been removed by faulting.

The Silurian Crotty Quartzite is only folded, and has not been cut by the Professor Range Fault. This lends weight to the argument that the Professor Range Fault was active during deposition of the Ordovician sequences, but had locked up some time prior to Silurian sedimentation.

The remainder of Siluro-Devonian sediments were deposited apparently unaffected by movement on the Professor Range Fault. The antiformal structure is the result of Devonian Tabberaberan deformation.

The Professor Range Fault continues NW into the Myrtle area of EL 28/88 where vein-style sphalerite mineralisation was intersected in costeans and air-core drilling. This is interpreted to be late-stage mineralisation, possibly Devonian in age. The source is unknown but may be remobilised from a more substantial stratabound body in the vicinity.

Quaternary scree from the Professor Range, and surficial peat cover the valley containing Gordon Limestone. The scree locally may exceed 10m. Beneath this cover the limestone is variably decomposed to a black carbonaceous pug, locally containing elevated Zn values. The degree of decomposition may be proportional to the strength of alteration or mineralisation in the carbonates.

Two possibilities arise from the depositional geometry of the Professor Range area, both with important economic implications for the location of ore deposits. The first is that the Ordovician clastics simply lap onto a Cambrian basement high, with the pinchout in the Professor Range area. This may give rise to situations analogous to Viburnum Trend (Missouri, USA), Silesia-Krakow (Poland), or Lennard Shelf (WA) where major Zn-Pb deposits are developed in carbonates overlying or adjacent to clastic pinchouts.

The second situation involving syn-sedimentary growth faulting may be similar to some Irish-style deposits such as Silvermines where the growth faults have focussed mineralising fluids.

Mapped geology is shown in Plan Tv 713.

9.3.3 Air-core drilling

A total of 102 reverse-circulation air-core drillholes totalling 1578m were completed in Dec 1993. Cuttings were collected at 2m intervals, with a 1-2kg sample "snatched" by hand for analysis. Samples were assayed at Analabs Burnie by AAS (aqua regia-perchloric acid digest) for Ag-Cu-Pb-Zn-Fe-Mn. Some samples were inadvertently analysed for As instead of Ag. Over-range values (0.5% Pb-Zn, 5% Fe) were reanalysed by AAS (aqua regia-perchloric-hydrofluoric acid digest). For samples with over 1% Zn, S was determined by Leco furnace.

Hole locations are shown on Plan Tv 713 and sections showing Zn-Fe geochemistry and geology are shown on Plans Tv 751 to Tv 760. Drill logs and assays are presented in Appendix 3.

Results show a zone of dolomitised limestone 50m to 100m thick at the upper contact with Crotty Quartzite with elevated Zn geochemistry up to 2% Zn. Best intersections include:-

ZR15	6.0 to 10.0m	4m @ 2.05% Zn
ZR95	20.0 to 26.0m	6m @ 1.65% Zn

Values obtained from the dolomitised zone are anomalous, but fairly typical for this stratigraphic position.

Of possibly greater significance is an intersection of siderite altered carbonate near the base of the limestone in hole ZR102. A 12m interval exceeding 20% Fe was recorded, although Zn values were below 300ppm over the same zone. No other holes intersected the siderite zone, although thick scree on the flanks of Professor Range precluded effective testing. The siderite zone may have been removed by displacement on the Professor Range Fault.

9.3.4 Air-core Bottom-of-Hole Sampling

Where possible, a sample of the formation at the bottom of each air-core hole was collected for description and multi-element analysis. Two samples of approximately 50g each were collected for description and analysis. Samples were assayed at Analabs Perth by ICP-OES (aqua regia-perchloric-hydrofluoric acid digest) for Ag-Al-As-Ba-Ca-Cu-Fe-K-Mg-Mn-Pb-Zn. For samples with over 0.5% Zn, S was determined by Leco furnace. Assays are presented in Appendix 2.

To date, samples have not been logged. Lithological discrimination was attempted using multi-element geochemistry. Lithological classifications are as given in section 9.2.4.

Scatterplots of Ca% vs Mg%, Ca% vs Al% and Al% vs K% with the lithological subdivisions are shown in Appendix 2 together with a statistical summary of the geochemistry of each lithological group for all CRAE air-core holes in the Zeehan area.

Results show a simple discriminant function using Fe-Ca-Mg-Al-K effectively identifies the major lithologies and alteration trends within the limestone throughout the Zeehan area. At Professor Range, four main sub-divisions in the limestone can be made:-

dolomite	50 - 100m thick	uppermost
carbonaceous siltstone	20 - 50m thick	
limestone (unaltered)	200 - 300m thick?	
siderite zone	0 - 10m thick?	lowest

The siderite zone may not be developed throughout as it was only intersected in one hole. The thickness of the lower unaltered limestone is an apparent value as part of the stratigraphy (including the siderite zone) may have been removed by faulting.

9.3.5 Proposed Exploration During 1995

The interpreted structural setting at the time of deposition of the Ordovician sequences flags this prospect as significant. Unfortunately results to date are not particularly encouraging. It is crucial to understand the three dimensional character of the pinch-out or syn-depositional fault to effectively explore this zone.

One diamond hole is required to test for primary stratabound mineralisation at the Crotty Quartzite contact. Widely spaced diamond holes are also required to probe the lower contact for mineralisation associated with the siderite alteration, and to determine the nature of the boundary with the Professor Range.

9.4 Baura Prospect

9.4.1 Introduction

Baura prospect is 13km S of Zeehan, 2km SW of Grieves prospect (Plan Tv 443). The Firewood Siding Fault intersects the lower limestone - sandstone contact within the prospect area, and may have been a major conduit to introduce metal-rich fluids into this favourable stratigraphic setting.

Amoco-EZ completed 400m x 25m spaced wacker geochemistry, and gravity and UTEM surveys in the area, but did not test the lower limestone - sandstone contact where it extends S from Grieves to the Firewood Siding Fault. Two holes were drilled, ZB1004 and ZB1005, to test a UTEM anomaly with elevated Zn geochemistry along the Firewood Siding Fault. A similar sequence to that at Grieves was encountered, i.e. Oolitic carbonate passing down into siderite altered carbonate, then stratabound clays, and ending in sandstone. Strong siderite alteration was detected, up to 30% Fe and 1.4% Mn, but Zn values were below 500 ppm.

9.4.2 Geology

Baura prospect is the SW continuation of the stratigraphy at Grieves prospect. A thick sequence of Moina Sandstone and Owen Conglomerate, perhaps in excess of 1000m, forms a plateau SE of the prospect. On the W side of the Firewood Siding Fault, the clastic sequence appears considerably thinner (as mapped on the Strahan 1:50000 sheet), possibly indicating the fault was active syn-depositionally.

Gordon Limestone overlies the sandstones, and is approximately 600m thick at Baura. The lowermost part of the limestone sequence, as intersected in ZB1005 comprises basal clays overlain by stratabound siderite altered carbonate, followed by oolitic carbonate.

Silurian Crotty Quartzite overlies the limestone, but the formation is not present in the prospect area.

The sequence was folded during the Devonian Tabberaberan Orogeny to produce an open N-plunging synform, with the W limb disrupted by the Firewood Siding Fault. There are very few dip measurements on the prospect, but the E and W limbs are generally steep.

Erosion has reduced the limestone to rare outcrops in Quaternary gravel-covered valleys between ridges of sandstone and quartzite. Gravels may be up to 5m thick. In-situ weathering has further degraded the limestone to a black decarbonated clay. This weathering surface is variable in depth but may locally reach 30m, averaging 3-10m.

9.4.3 Wacker Bedrock Sampling

Thirty wacker samples were collected at 200m x 25m spacing over the Moina Sandstone - Gordon Limestone contact in an effort to identify any siderite alteration and associated Zn mineralisation (Appendix 4). Samples were assayed at Analabs Burnie by AAS (aqua regia-perchloric acid digest) for Ag-As-Cu-Pb-Zn-Fe-Mn. Sampling was effective but very slow and high cost, calculated to be about \$20/m. Geochemical plans of combined air-core and wacker bedrock sampling for Zn-Pb-Fe-Mn-As covering the Rose Valley to Professor Range area are included (Plans Tv 878 to Tv 882).

Strongly elevated Fe-Mn-Zn was detected on lines 62200E and 62370E, closest to the Firewood Siding Fault. Peak values of 2394 ppm Zn, 37.5% Fe, 1.2% Mn, 240 ppm As and 10 ppm Ag were recorded. The Ag values may be significant as this element is rarely detectable in the Rose Valley to Myrtle area, except where sulphide mineralisation is present.

9.4.4 Proposed Exploration During 1995

Diamond drilling is warranted to determine whether percent levels of Zn are developed within the siderite alteration zone. No additional wacker sampling is planned given the difficult conditions and high cost.

9.5 Zinc Mineralisation in the Gordon Limestone

CRAE's exploration and research activities directed at locating carbonate-hosted Zn-Pb mineralisation within Gordon Limestone at Zeehan have led to a number of mineralisation styles being recognised. The following discussion is a synthesis of CRAE's current level of knowledge, gained from work throughout the Zeehan area.

CRAE's exploration activities in the Zeehan area have indicated that Zn-Pb mineralisation within the Gordon Limestone may be pre-Devonian in age, and therefore unrelated to the Tabberabberan Orogeny. On this basis, it is possible that carbonate-hosted Zn-Pb mineralisation may be more widespread than that presently under evaluation at Zeehan.

The Gordon Limestone originally occupied a large area, deposited at the close of a major period of tectonic activity that produced the metal-rich Mount Read Volcanics. During and immediately before carbonate deposition the tectonic regime was still unstable, evidenced by rapid changes in stratigraphic thickness of Ordovician strata. Hydrothermal systems may have continued to emit metals into this system, focussed by basement irregularities and syn-sedimentary faults.

The present Gordon Limestone exposure is a vestige of Devonian deformation. Ordovician mineralisation may have a distribution totally independent of the well-documented Devonian systems.

Five targets are recognised for the carbonate-hosted Zn mineralisation in Gordon Limestone at Zeehan, subdivided by the stratigraphic interval in which they are hosted (Figure):-

- stratabound at the lower limestone-sandstone contact
- stratabound at the upper limestone-quartzite contact
- stratabound within a sub-unit in the middle of the limestone sequence
- structurally controlled discordant mineralisation
- surficial "clay-hosted" accumulations developed above primary mineralisation

Stratabound at the lower limestone-sandstone contact

Mineralisation at Grieves and Mariposa falls into this category. Alteration located at Blackjacks, Pyramid and Professor Range may also belong to this deposit type.

This position is characterised by carbonaceous and/or ferruginous clays resting on the Moina Sandstone, in turn overlain by a massive siderite zone. The siderite zone passes stratigraphically upward either gradationally or abruptly into unaltered and unmineralised limestone. The clay layer may be up to 50m thick and the siderite zone up to 25m thick. Both may contain Zn mineralisation up to several percent. The clay and siderite zone are laterally quite uniform and it may be that the mineralisation is actually stratiform.

Mineralisation of this style has an alteration halo that is both visually and geochemically distinct. This halo, characterised by vuggy, broken or massive recrystallised Fe-carbonate and Fe-rich clays, may extend laterally hundreds of metres beyond the main Zn mineralisation, and thus presents a considerably larger target than the mineralised core. Lateral alteration geochemistry is reflected by Fe-Mn-As-Zn. Stratigraphically above the mineralised core is a weaker halo of elevated Zn (\pm As).

Ore mineralogy, based on work at Grieves, is complex with a mixture of zincian siderite and minor sphalerite in the siderite zone, and a Zn-clay with minor to moderate amounts of sphalerite in the clay zone. It is not known whether this is a regional characteristic of this position.

The stratiform character, replacive style of alteration/mineralisation, intense Fe-Mn alteration, and reasonably predictable geometry suggest similarities to Navan or Reocin.

Stratabound at the upper limestone-quartzite contact

Low-grade but widely anomalous zones from Firewood Siding, Grieves, Professor Range, Sunny Corner, and Mariposa are examples of this type.

Upper zone mineralisation occurs near the contact between the limestone and overlying Crotty Quartzite. Mineralisation is not closely bound to the upper quartzite contact, but may "wander" up to 100m stratigraphically below the contact.

Mineralisation appears characterised by widespread but low-level Zn in the 0.1% to 2% Zn range. None of the prospects tested has revealed a higher-grade core, although given the limited drilling it is entirely possible high-grade cores may exist. Limited mineralogy suggests all Zn to be as sphalerite.

Air-core drilling shows the mineralised zones to be comprised of clays and decomposed carbonate. Rare fresher material is usually a granular recrystallised dolomite, and can be ferroan. Intense siderite alteration is absent. A detailed geochemical study of the alteration has not been completed.

The upper zone style may be occurring within karstic structures formed by Ordovician weathering before deposition of the Crotty Quartzite. This setting is analogous to Bleiberg or Cracow-Silesia.

Stratabound in a middle sub-unit of the limestone sequence

Currently two occurrences fall into this grouping, Grieves middle zone, and Oceana. Apart from their stratigraphic concurrence, these two deposits may not share many other similarities.

The mineralised middle sub-unit is equidistant from the upper and lower contacts, although facies variations may affect the location at other prospects. Mineralisation is breccia hosted, and in the case of Grieves has a linear aspect. For Grieves there is very little indication of proximity to mineralisation as there is virtually no alteration outside the breccia zone itself.

Mineralogy at Grieves is a mixture of zincian siderite and sphalerite. Oceana is dominated by galena with subordinate (?) sphalerite. There is also intense siderite alteration at Oceana, presumably containing Zn?

Zinc grades at both prospects are high, locally forming massive sulphide.

There has been insufficient work completed at Grieves middle zone to suggest any controlling mechanisms.

Structurally controlled discordant mineralisation

Most mineralisation in the Zeehan area is structurally controlled. Mineralisation at the historic Mariposa mine, and at Myrtle belong to this type. Possibly some of the mineralisation at Oceana is also structurally controlled.

Structurally controlled mineralisation may occur at any stratigraphic level. It appears to be late-stage filling of brittle fractures. Alteration of wall-rocks is absent, and the gangue to mineralisation may be pure calcite. Mineralisation within the structures is patchily distributed. Ore minerals are coarse-grained sulphides.

Devonian deformation is the likely cause of the fracturing and mineralisation. Potential deposit size is small, although the presence of discordant mineralisation may indicate a nearby stratabound source. Late-stage structurally controlled deposits *per se* are not currently considered a valid CRAE target.

Surficial "clay-hosted" accumulations developed above primary mineralisation

Surficial Zn accumulations within decomposed carbonate was CRAE's original target for carbonate exploration at Zeehan. All currently tested prospects were selected due to the presence of known surficial mineralisation.

It has now been conclusively demonstrated that the surficial mineralisation occupies the surface trace of underlying stratabound mineralisation. Geometry of the surficial deposits are therefore dependent on the shape and extent of this underlying mineralisation. Depth extent of the Zn-rich clays and decomposed carbonates averages 10m to 20m, but have been reported to be over 100m at Oceana.

A thin layer of decomposed carbonate exists over large areas of limestone, but this layer only thickens and becomes substantially Zn-rich as "basement" mineralisation is approached. Areas of +0.1% Zn in the clay layer are regionally extensive, indicating substantial dispersions from the primary zone. Clay thickness and Zn grade may be useful vectors toward primary zones. Geochemically inert peat and gravels up to 5m thick obscure the clays and limestone over virtually the entire trace of the Gordon Limestone.

Zinc ore mineralogy is dominantly to exclusively sphalerite.

Because of their restriction to the surface zone, the potential size of the surficial deposits is somewhat limited. They are probably unlikely to be a CRA target in themselves. Their main attraction is their usefulness as an indicator of the underlying primary mineralisation. If a large primary deposit suitable to CRAE's requirements can be identified, then the surficial deposits would possibly be an easy way to generate short-term cash-flow whilst the major deposit was being developed.

Zinc-rich clay deposits overlying primary carbonate mineralisation have been described at Tynagh and Silvermines.

10. ENVIRONMENT AND REHABILITATION

A number of activities conducted during 1994 have impacted on the environment. These include:-

- air-core drilling at Firewood Siding
- air-core drilling at Professor Range
- bedrock sampling at Baura

Rehabilitation of disturbance included:-

- filling air-core holes
- removing excess air-core cuttings from sites

Drill sites and grid lines will naturally revegetate. No permanent new access tracks were created. Where possible, low-impact technologies were employed in exploration.

One problem area may be Firewood Siding where an excavator and the air-core rig were bogged in very soft ground. The soupy nature of the surface there means that little can be done to repair damage apart from allowing the swamp to naturally level and revegetate. The ground is too sloppy to effectively re-seed. Erosion is not a problem.

REFERENCES

- KRATOCHVIL M. 1991: EL 34/88 Henty, Tasmania. Statutory progress report for the period ending 9th November 1991. *CRAE Report No. 17635.*
- PARKINSON R.G. 1992: Zeehan No. 2 EL 34/88. Report on exploration for the fourth year of tenure, 9/11/91 TO 9/10/92. *CRAE Report No. 18359.*
- PARKINSON R.G. 1993: Zeehan No. 2 EL 34/88. Report on exploration for the fifth year of tenure, 9/10/92 TO 9/11/93. *CRAE Report No. 19285.*

KEYWORDS

TASMANIA, ORDOVICIAN, GORDON LIMESTONE, WACKER SAMPLING, AIR-CORE DRILLING, ZINC, LEAD.

LOCATION

QUEENSTOWN	SK55-5	1:250000
PIEMAN	7914	1:100000
ZEEHAN	7914-S	1:50000

LIST OF DPOs

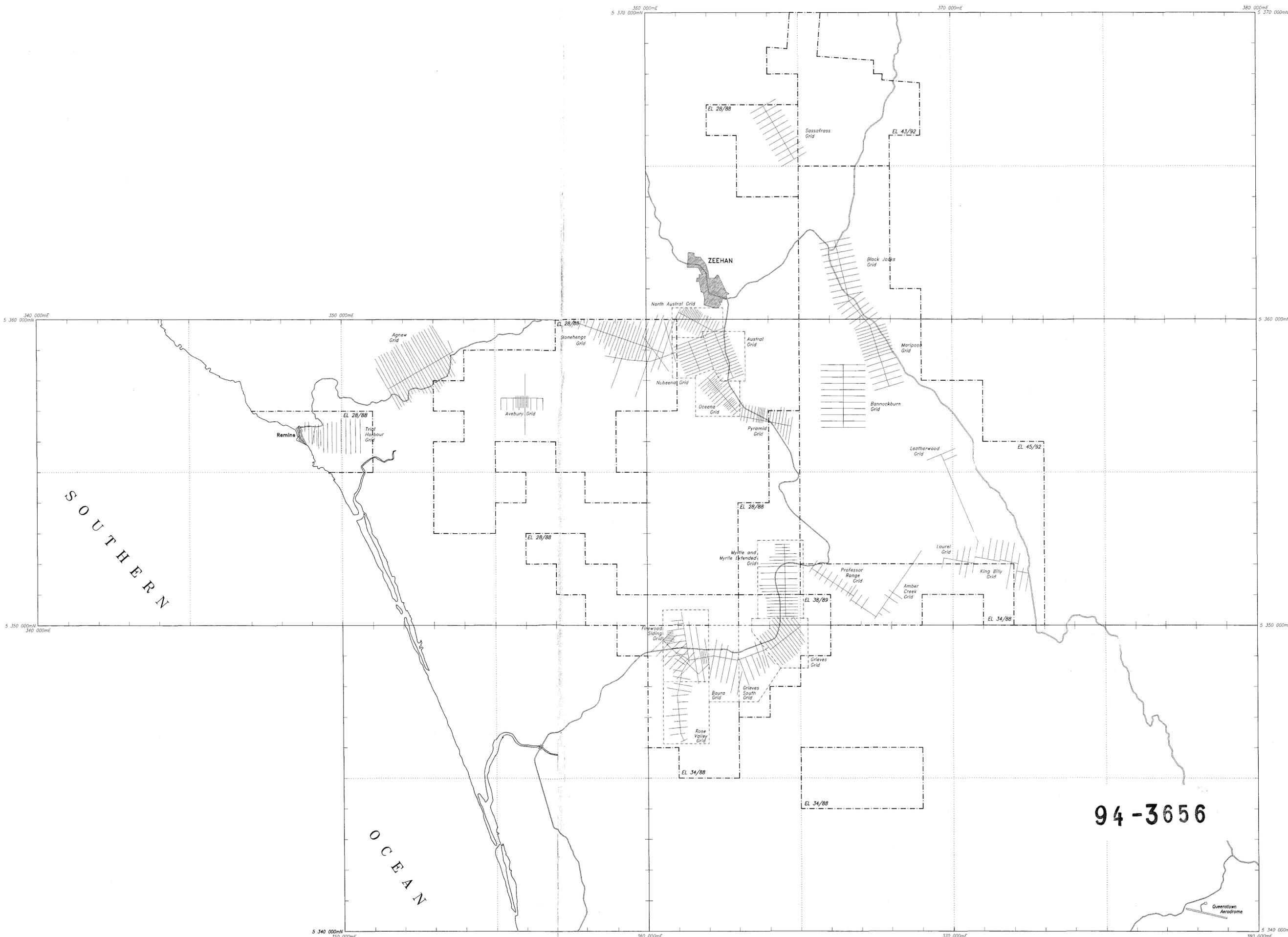
77132, 77133, 77135, 77136, 77137, 77651, 77660, 77666, 77668, 77670

LIST OF APPENDICES

- APPENDIX 1: Firewood Siding air-core drill logs and geochemistry
- APPENDIX 2: T. Moody report - alteration patterns. Firewood Siding and Professor Range air-core end-of-hole sample descriptions and geochemistry.
- APPENDIX 3: Professor Range air-core drill logs and geochemistry
- APPENDIX 4: Baura prospect wacker sampling ledgers and geochemistry

LIST OF PLANS

<u>Plan no:</u>	<u>Title:</u>	<u>Scale:</u>
Tv 630	Zeehan 2 EL 34/88 Recommendations for Partial Relinquishment 68km ² to 34km ²	1:100,000
Tv 443	Zeehan Area Grid and Prospect Location Plan	1:50,000
Tv 711	Zeehan 2 EL 34/88 Firewood Siding Prospect Drill hole Location Plan	1:2,500
Tv 778	Zeehan No. 2 EL 34/88 Firewood Siding Prospect Section 60,050E Fe+Zn Geochemistry	1:500
Tv 779	Zeehan No. 2 EL 34/88 Firewood Siding Prospect Section 60,100E Fe+Zn Geochemistry	1:500
Tv 780	Zeehan No. 2 EL 34/88 Firewood Siding Prospect Section 60,150E Fe+Zn Geochemistry	1:500
Tv 781	Zeehan No. 2 EL 34/88 Firewood Siding Prospect Section 60,200E Fe+Zn Geochemistry	1:500
Tv 868	Zeehan 2 EL 34/88 Firewood Siding Geology interpreted from end of hole air-core samples	1:100,000
Tv 713	Zeehan 2 EL 34/88 Professor Range Prospect Drill hole Location Plan	1:2,500
Tv 751	Zeehan 2 EL 34/88 Professor Range Prospect Section 50500N Iron and Zinc Geochemistry	1:1,000
Tv 878	Zeehan EL 28/88, EL 34/88 and EL 38/89 Bedrock Geochemistry - Zn ppm	1:25,000
Tv 879	Zeehan EL 28/88, EL 34/88 and EL 38/89 Bedrock Geochemistry - Pb ppm	1:25,000
Tv 880	Zeehan EL 28/88, EL 34/88 and EL 38/89 Bedrock Geochemistry - Fe%	1:25,000
Tv 881	Zeehan EL 28/88, EL 34/88 and EL 38/89 Bedrock Geochemistry - Mn ppm	1:25,000
Tv 882	Zeehan EL 28/88, EL 34/88 and EL 38/89 Bedrock Geochemistry - As ppm	1:25,000



94-3656

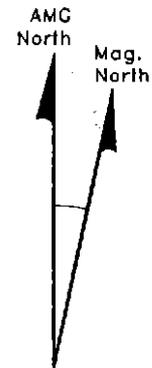
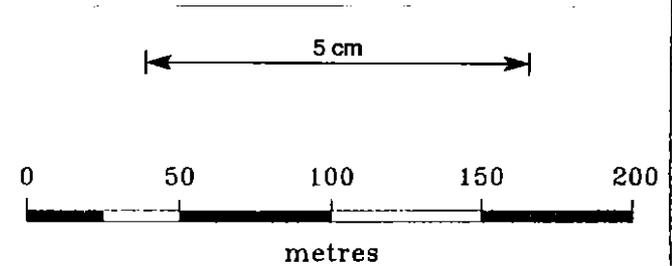
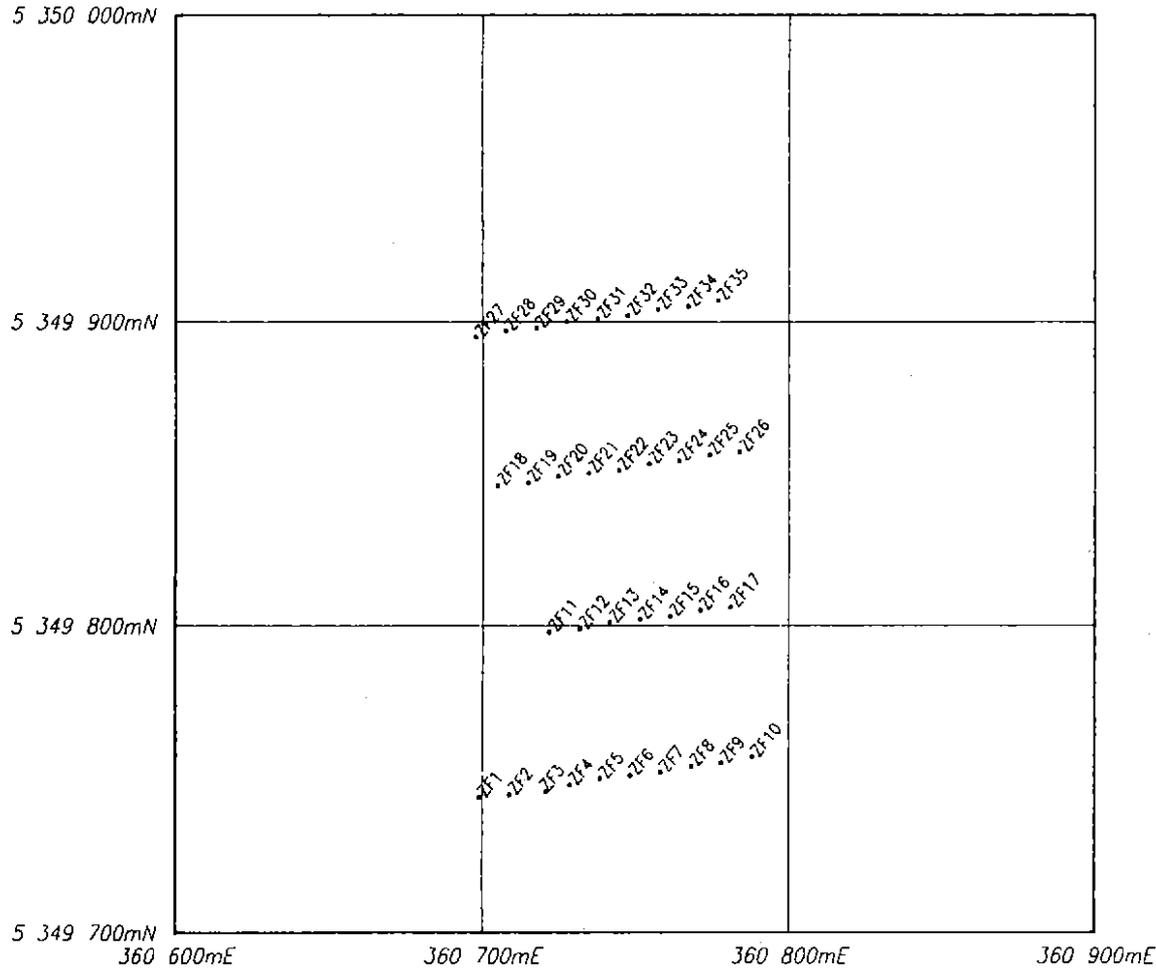
843021

** NOTE **
 Contiguous grids are internally consistent, however the relative position of groups of grids may vary.

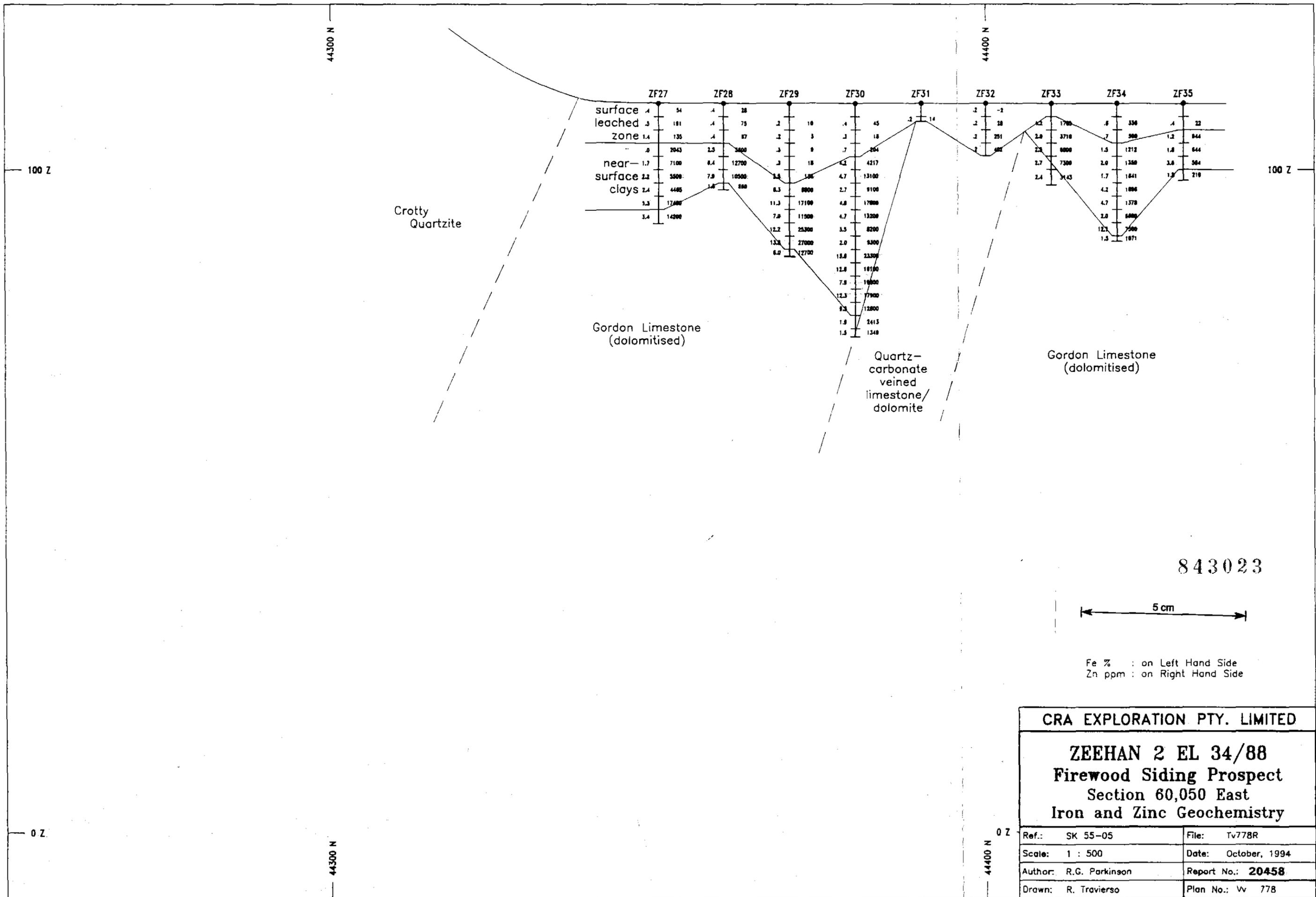


CRA EXPLORATION PTY. LIMITED	
ZEEHAN AREA Western Tasmania	
Grid & Prospect Location Plan	
Ref.: SK55 - 5	File: ZEEHAN\443
Scale: 1 : 50,000	Date: November 1994
Author: R. Parkinson	Report No.: 20458
Drawn: R. Travieso	Plan No.: Tv 443

843022



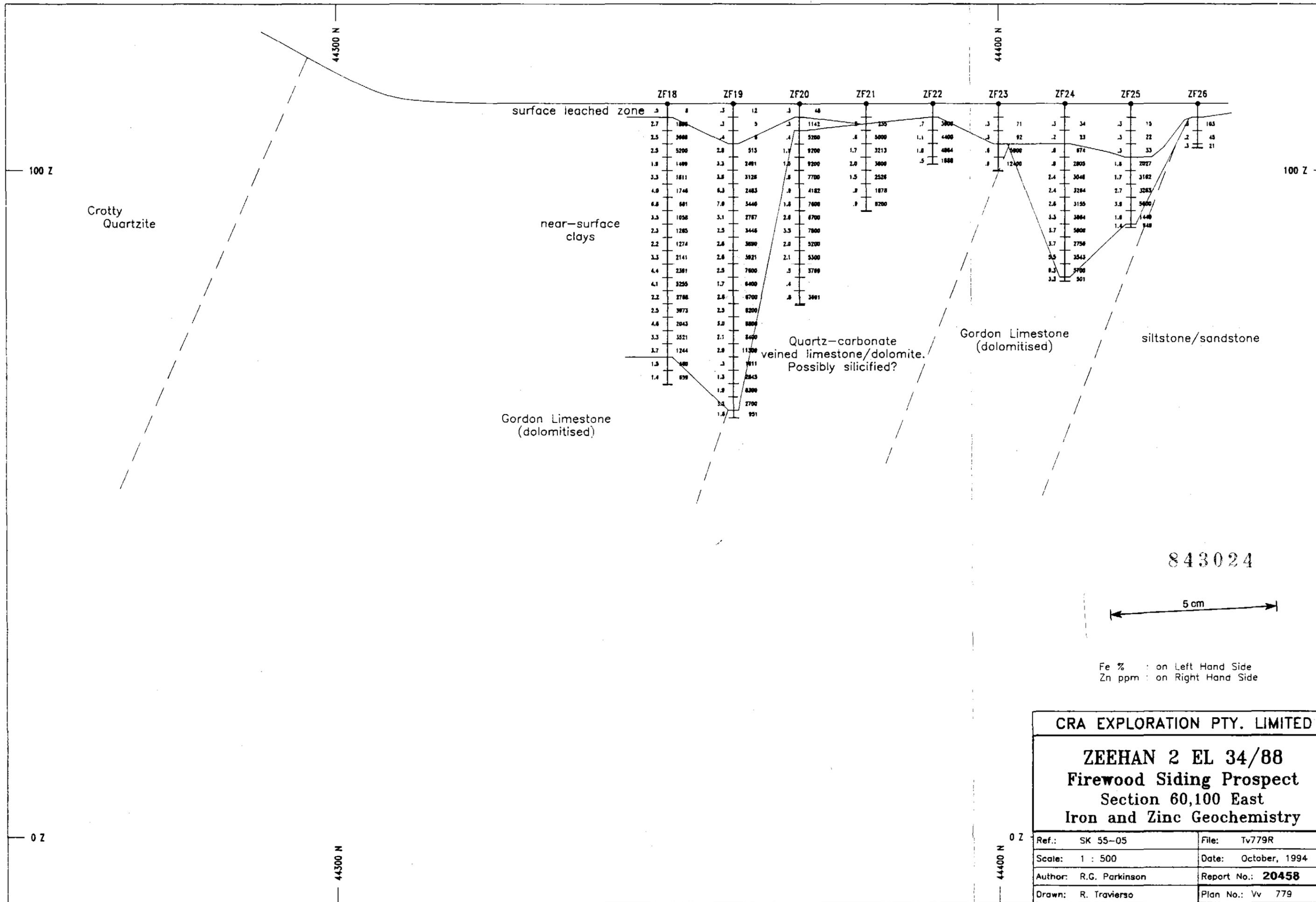
CRA EXPLORATION PTY. LIMITED	
ZEEHAN 2 EL 34/88 FIREWOOD SIDING PROSPECT DRILLHOLE LOCATION PLAN	
Ref.: SK 55-05	File: Zeehan2\711
Scale: 1 : 2,500	Date: June 1994
Author: R.G. Parkinson	Report No.: 20458
Drawn: R. Traverso	Plan No.: Tv 711



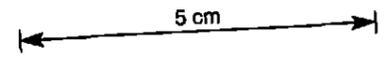
CRA EXPLORATION PTY. LIMITED

ZEEHAN 2 EL 34/88
 Firewood Siding Prospect
 Section 60,050 East
 Iron and Zinc Geochemistry

Ref.: SK 55-05	File: Tv778R
Scale: 1 : 500	Date: October, 1994
Author: R.G. Parkinson	Report No.: 20458
Drawn: R. Travieso	Plan No.: Wv 778



843024

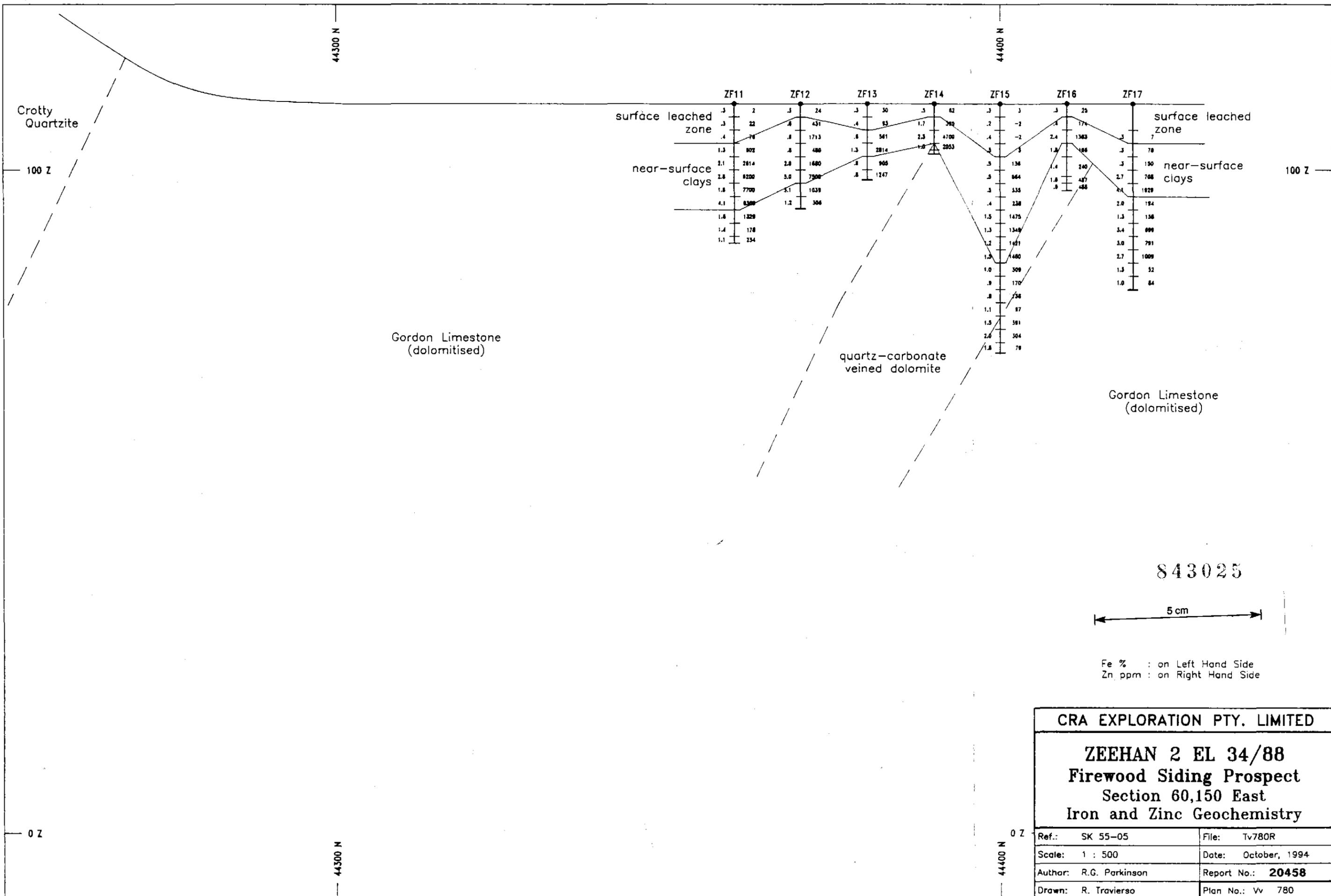


Fe % : on Left Hand Side
Zn ppm : on Right Hand Side

CRA EXPLORATION PTY. LIMITED

ZEEHAN 2 EL 34/88
Firewood Siding Prospect
Section 60,100 East
Iron and Zinc Geochemistry

Ref.: SK 55-05	File: Tv779R
Scale: 1 : 500	Date: October, 1994
Author: R.G. Parkinson	Report No.: 20458
Drawn: R. Travieso	Plan No.: Vv 779

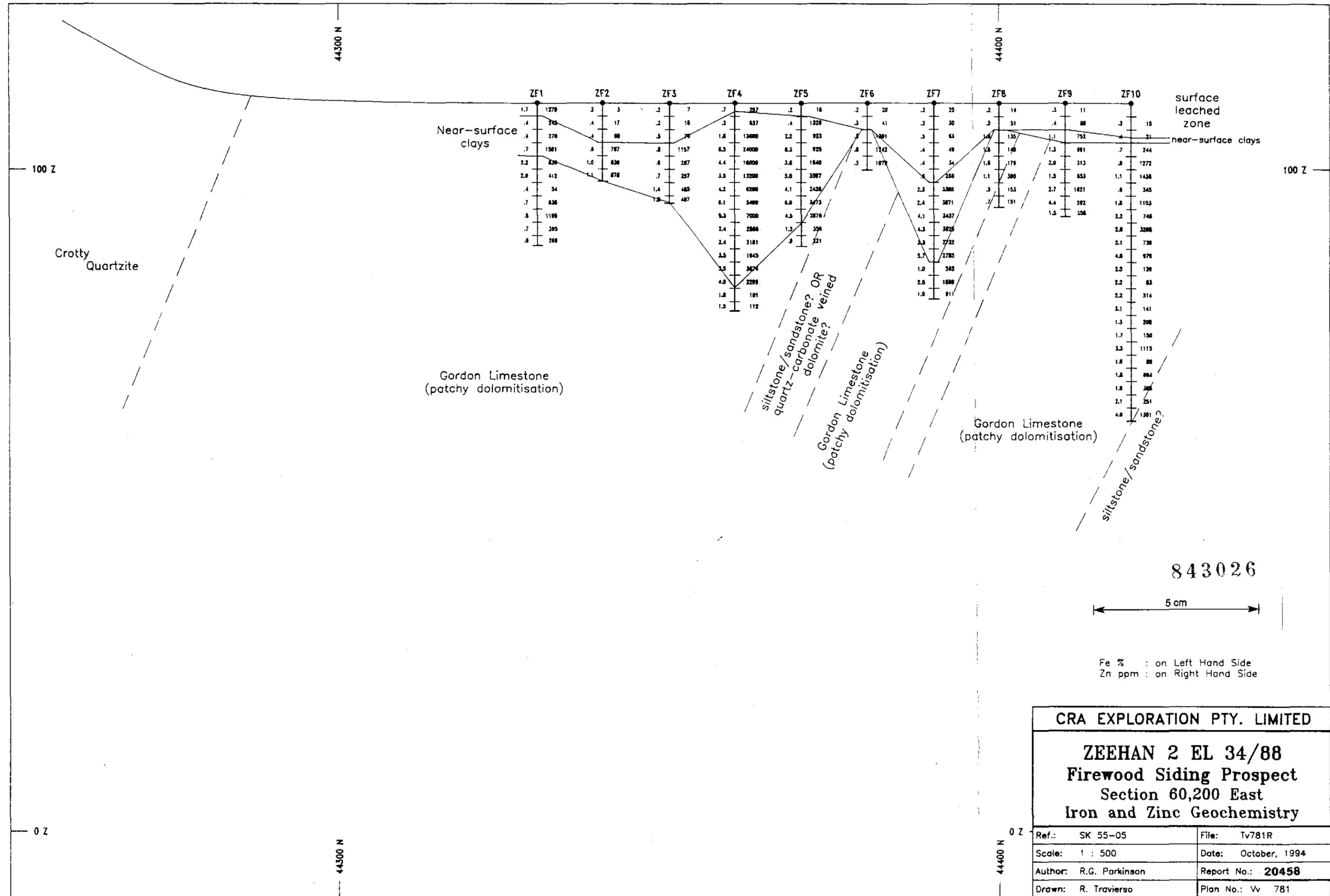


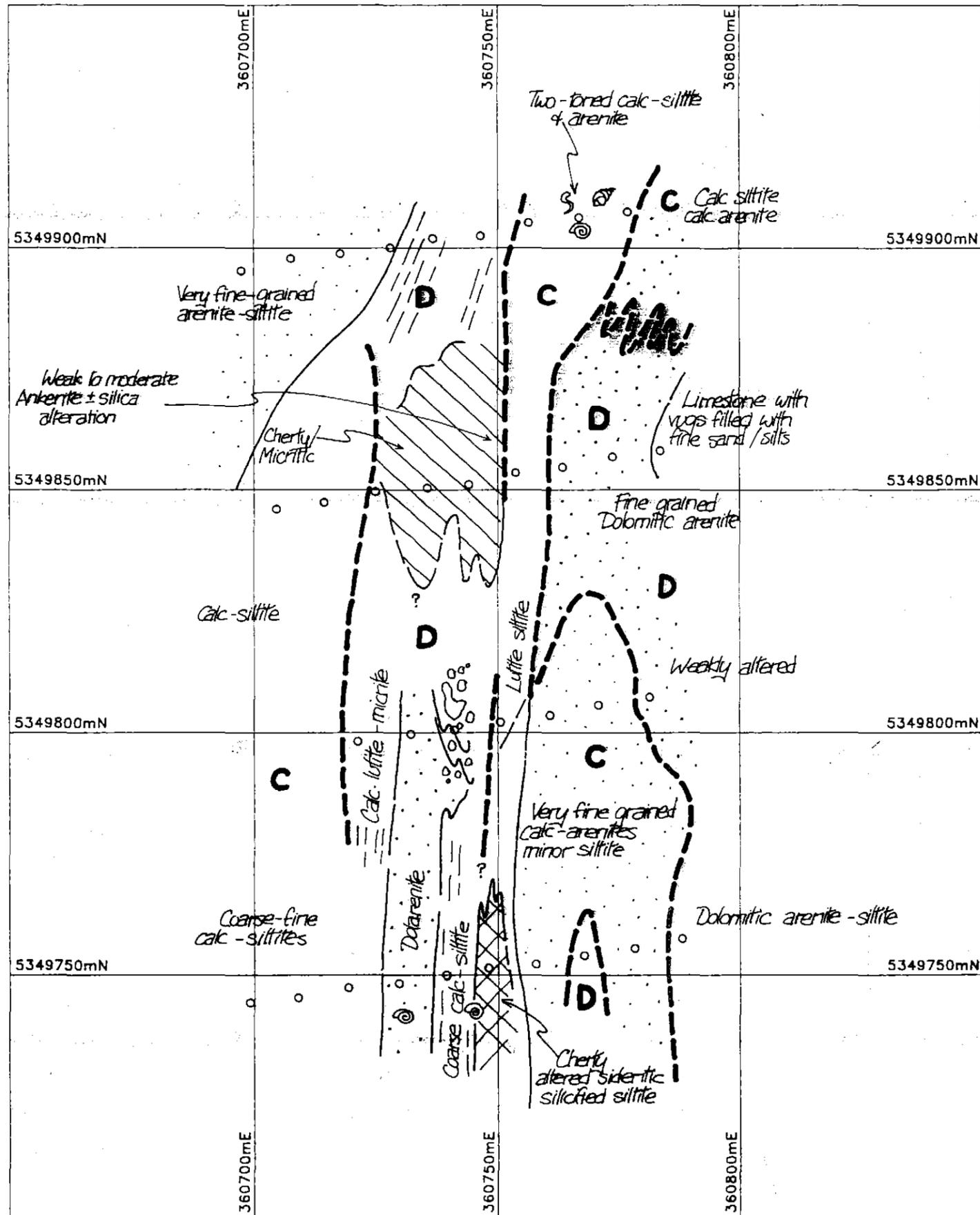
843025

5 cm

Fe % : on Left Hand Side
Zn ppm : on Right Hand Side

CRA EXPLORATION PTY. LIMITED	
ZEEHAN 2 EL 34/88	
Firewood Siding Prospect	
Section 60,150 East	
Iron and Zinc Geochemistry	
Ref.: SK 55-05	File: Tv780R
Scale: 1 : 500	Date: October, 1994
Author: R.G. Parkinson	Report No.: 20458
Drawn: R. Traverso	Plan No.: Vv 780

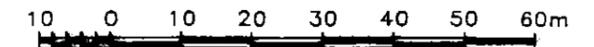
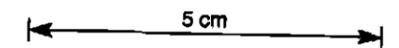




LEGEND

- Aircore drillhole
- ⊙ Calcareous Limestone
- ⊙ Dolomitic / Non-calcareous Limestone
- ⊙ Fossil / bioturbation
- ⊙ Weak-moderate alteration (Ankerite)
- ⊙ Moderate-strong alteration (Ank + Siderite)

843027



CRA EXPLORATION PTY LIMITED				
ZEEHAN 2 EL34/88 FIREWOOD SIDING				
GEOLOGY INTERPRETED FROM END OF HOLE AIR CORE SAMPLES				
AUTHOR	DRAWN	DATE	SCALE	REPORT
T. Moody	C. Scullard	12/5/94	1:1000	20458
REF. Queenstown SK55-05		SUB-DIR	PLAN No.	
		(file)	Tv868	

94-3656

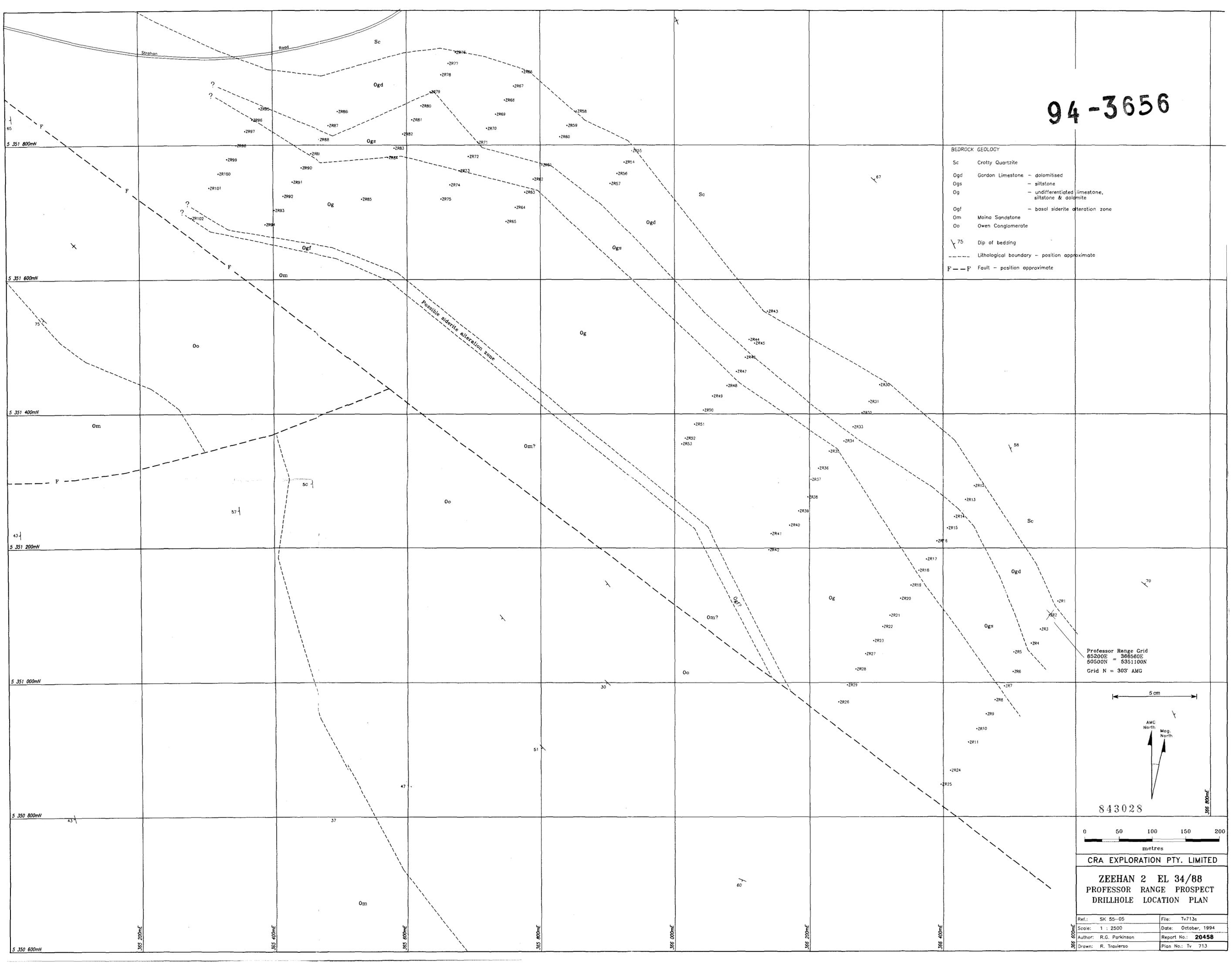
BEDROCK GEOLOGY

- Sc Crotty Quartzite
- Ogd Gordon Limestone - dolomitised
- Ogs - siltstone
- Og - undifferentiated limestone, siltstone & dolomite
- Ogf - basal siderite alteration zone
- Om Moira Sandstone
- Oo Owen Conglomerate

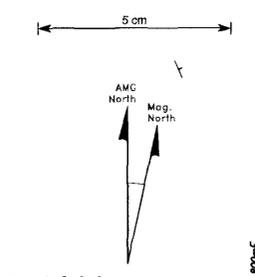
75 Dip of bedding

--- Lithological boundary - position approximate

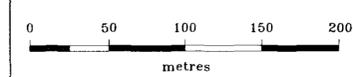
F--F Fault - position approximate



Professor Range Grid
 65200E = 365600E
 50500N = 5351100N
 Grid N = 303' AMG



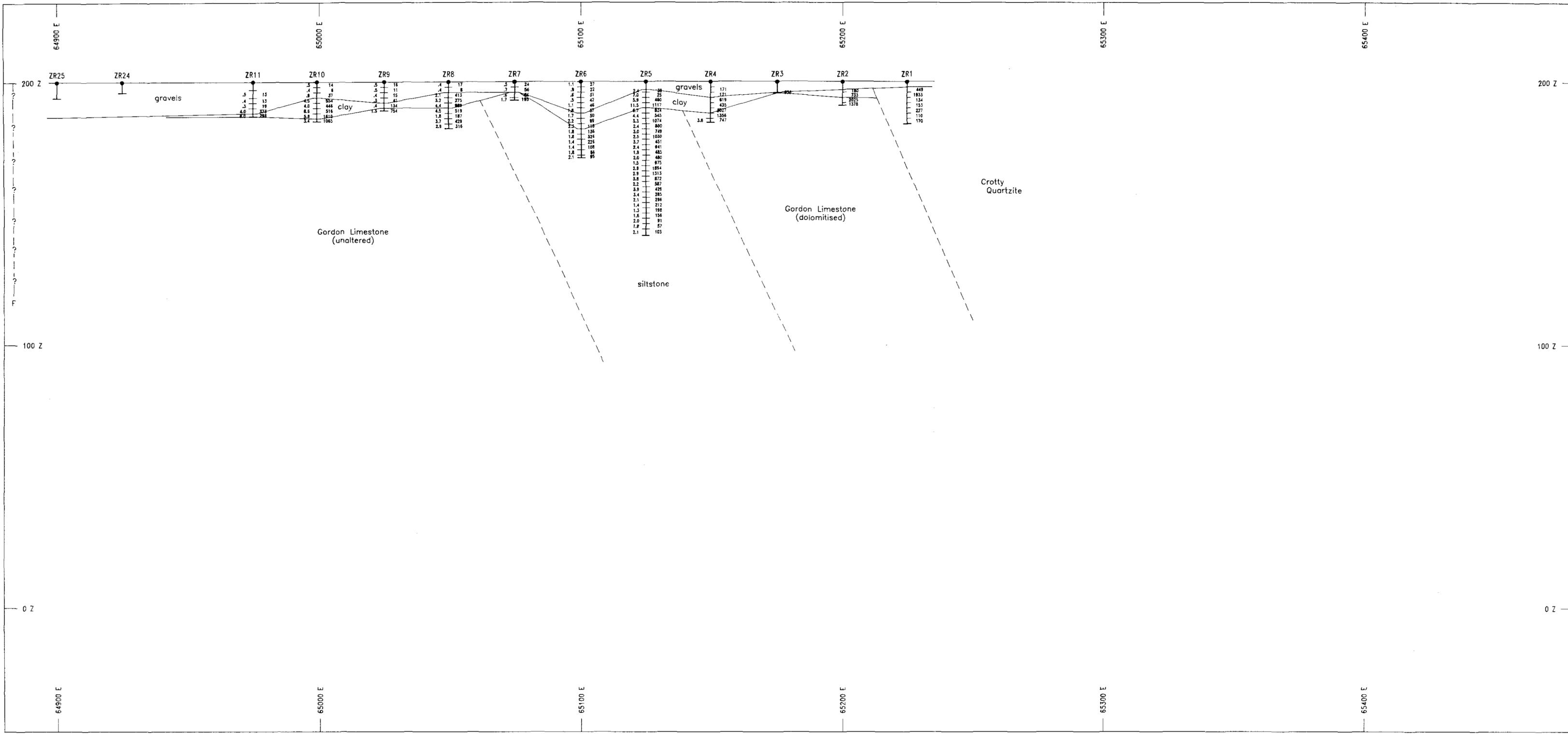
843028



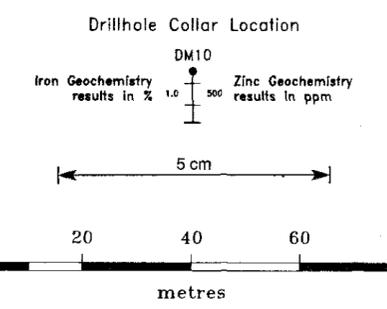
CRA EXPLORATION PTY. LIMITED

ZEEHAN 2 EL 34/88
 PROFESSOR RANGE PROSPECT
 DRILLHOLE LOCATION PLAN

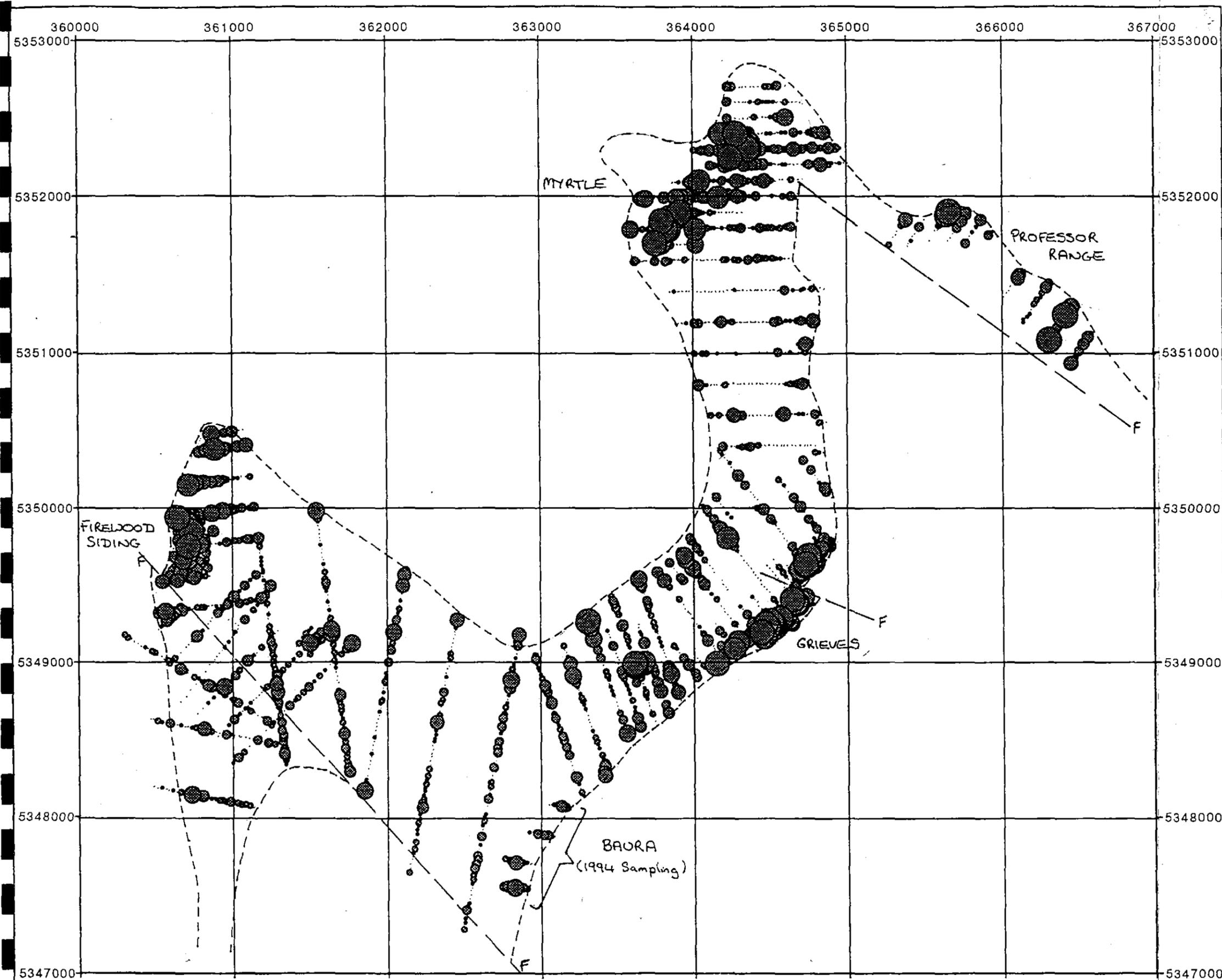
Ref.: SK 55-05	File: Tv713s
Scale: 1 : 2500	Date: October, 1994
Author: R.G. Parkinson	Report No.: 20458
Drawn: R. Traverso	Plan No.: Tv 713



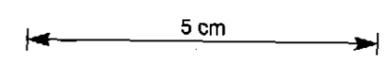
843029



CRA EXPLORATION PTY. LIMITED	
ZEEHAN 2 EL 34/88	
Professor Range Prospect	
Section 50,500 North	
Iron and Zinc Geochemistry	
Ref.: Queenstown Sk 55-05	File: Tv571R
Scale: 1 : 1000	Date: October, 1994
Author: R.G. Parkinson	Report No.: 20458
Drawn: R. Traverso	Plan No.: Tv 751

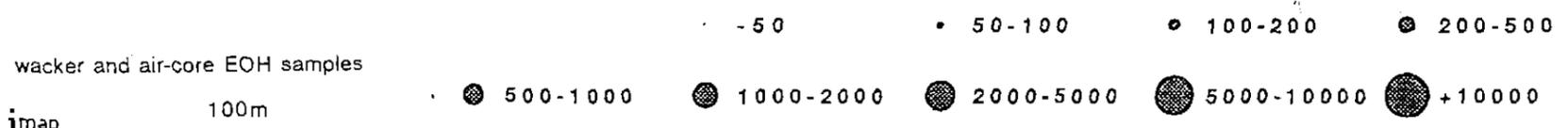


843030



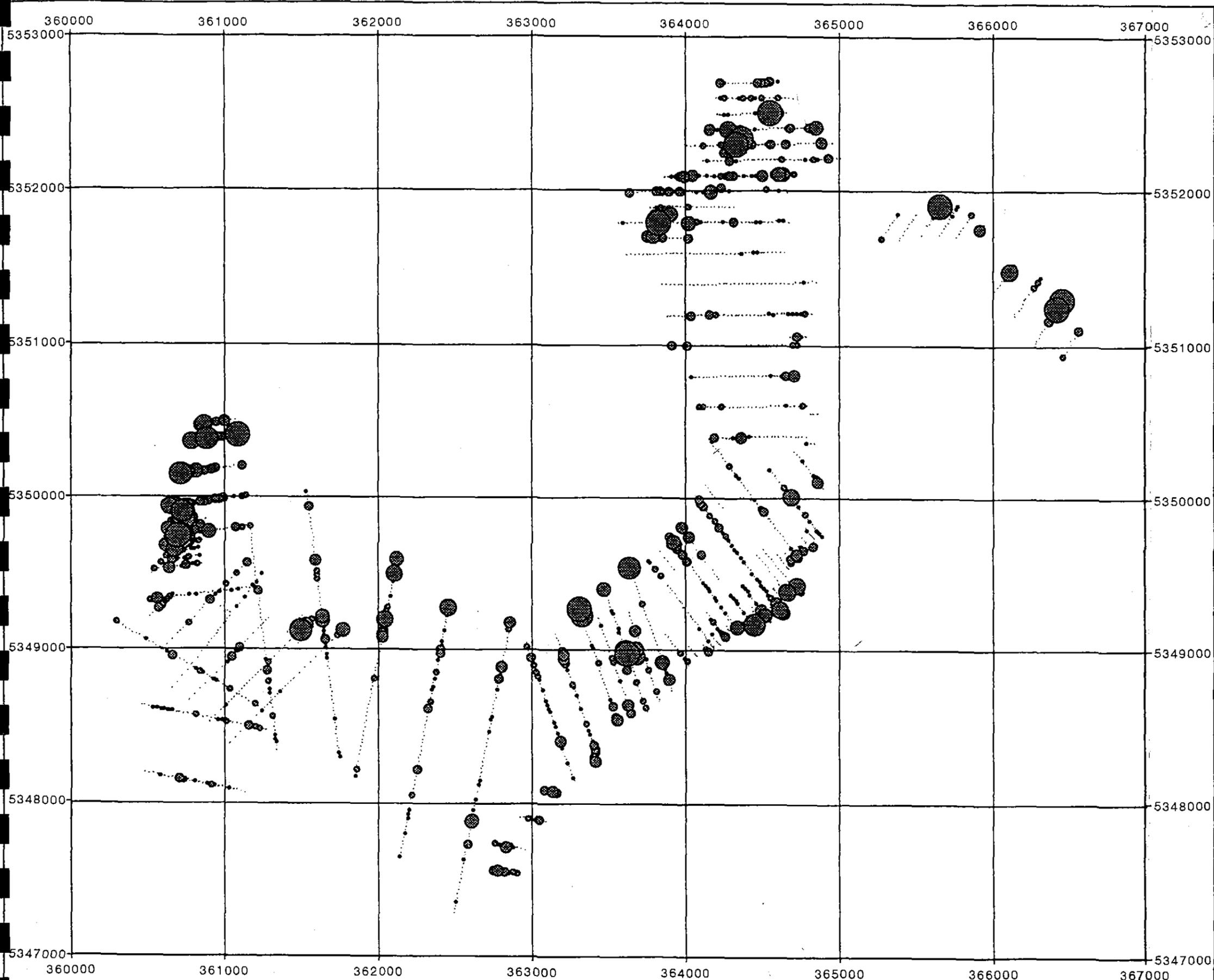
GRA Exploration Pty Limited

ZEEHAN EL28/88, EL34/88 & EL38/89
BEDROCK GEOCHEMISTRY - Zn ppm



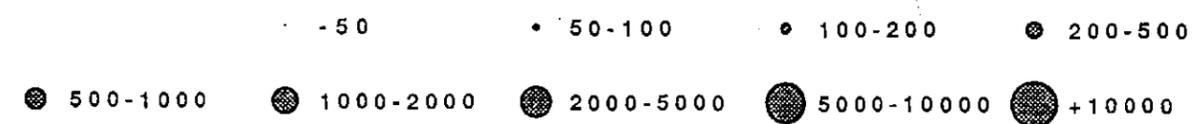
jmap 100m

Geol: RGP	Scale: 1:25000	Report: 20458
Drawn: RGP	Date: 10/11/94	Plan: Tv 878



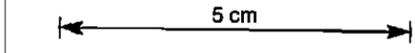
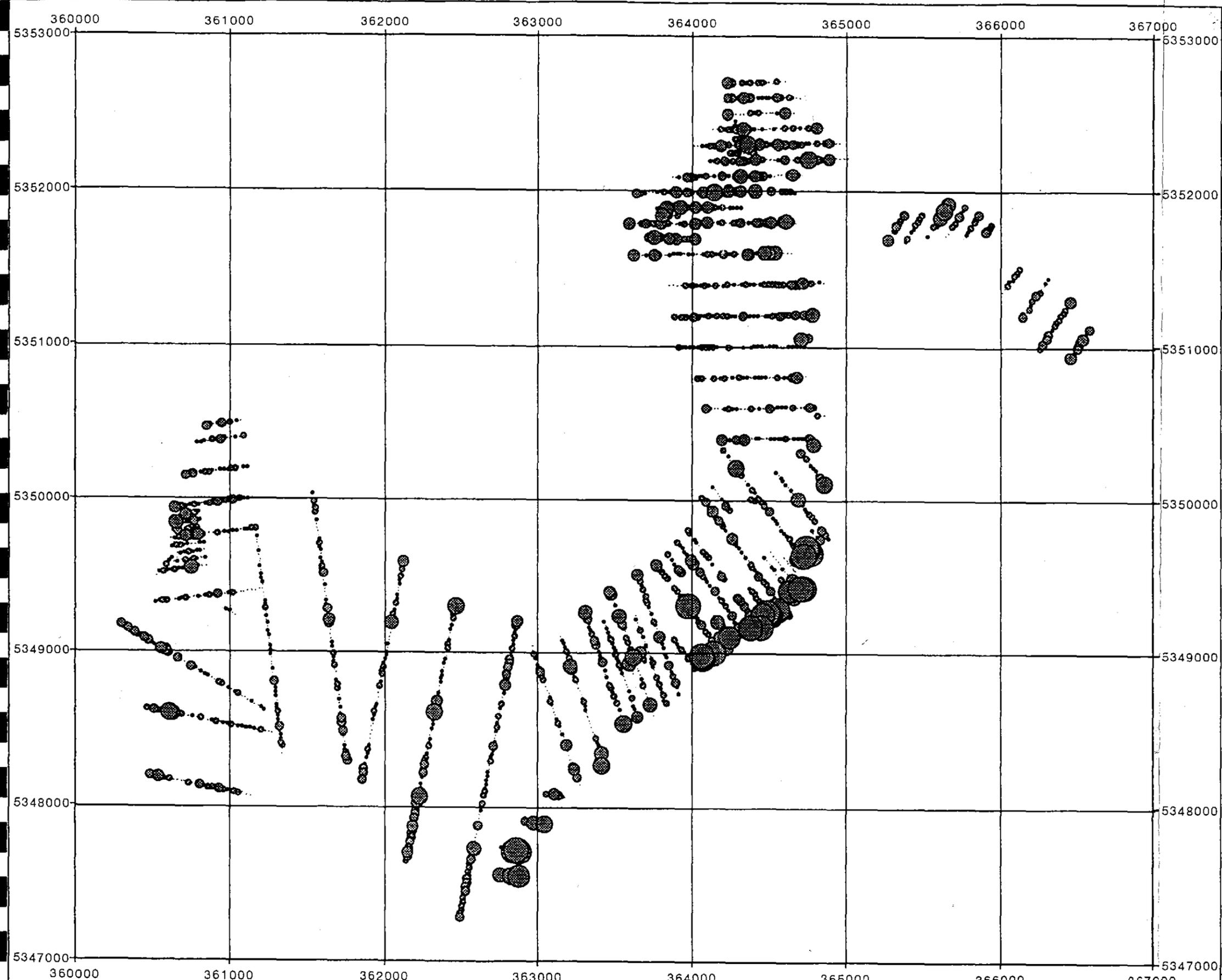
5 cm

wacker and air-core EOH samples



jmap 100m

CRA Exploration Pty Limited		
ZEEHAN EL28/88, EL34/88 & EL38/89		
BEDROCK GEOCHEMISTRY - Pb ppm		
Geol: RGP	Scale: 1:25000	Report: 20458
Drawn: RGP	Date: 10/11/94	Plan: Tv 879



CRA Exploration Pty Limited

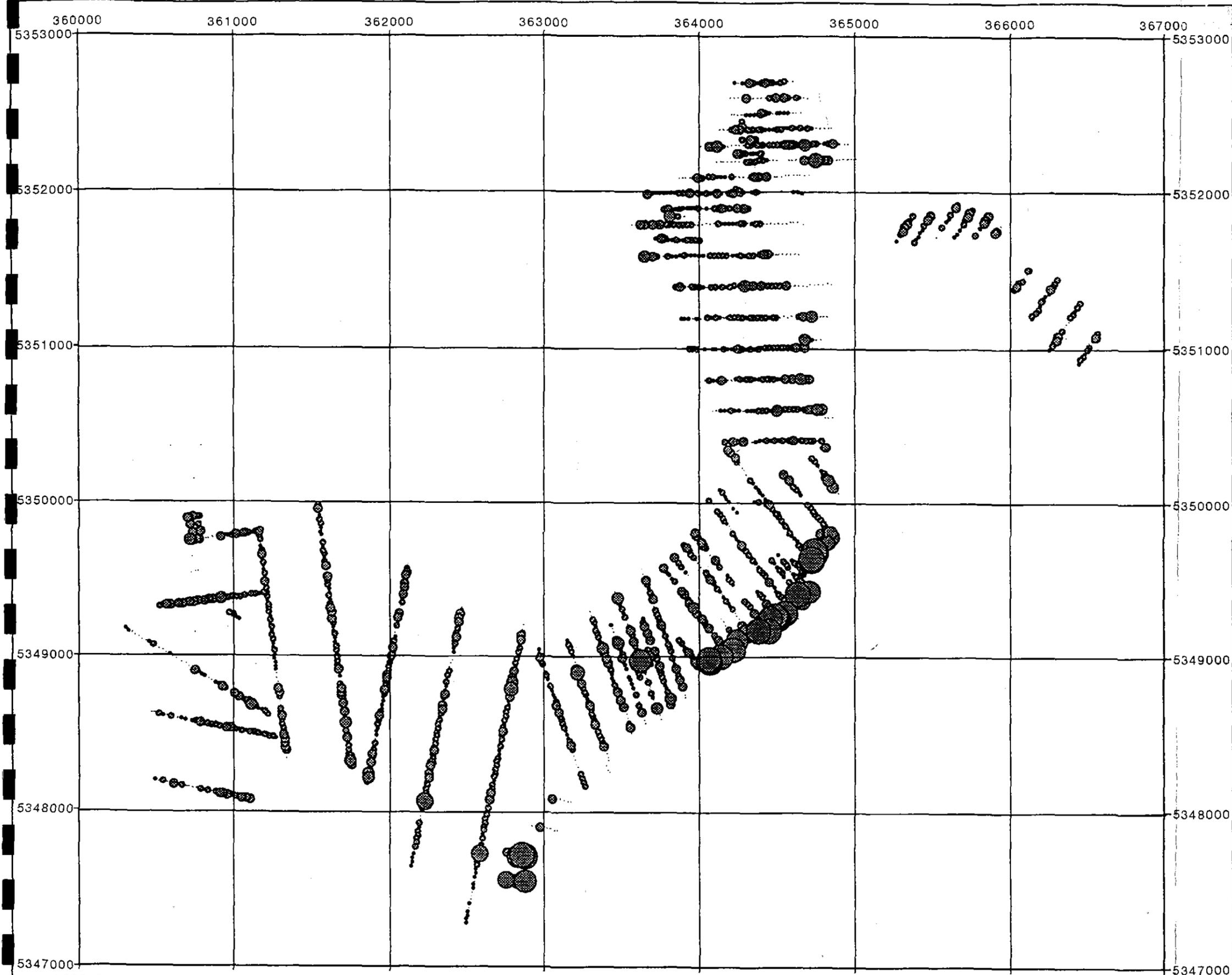
ZEEHAN EL28/88, EL34/88 & EL38/89
BEDROCK GEOCHEMISTRY - Fe%

wacker and air-core EOH samples

jmap 100m

- -0.5
- 0.5-1.0
- 1.0-2.0
- 2.0-3.0
- 3.0-5.0
- 5.0-10.0
- 10.0-20.0
- 20.0-30.0
- +30.0

Geol: RGP	Scale: 1:25000	Report: 20458
Drawn: RGP	Date: 10/11/94	Plan: Tv 880



5 cm

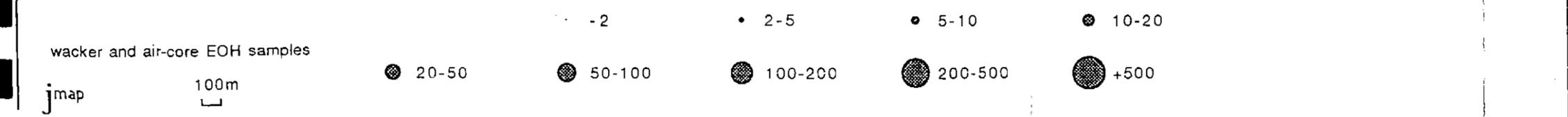
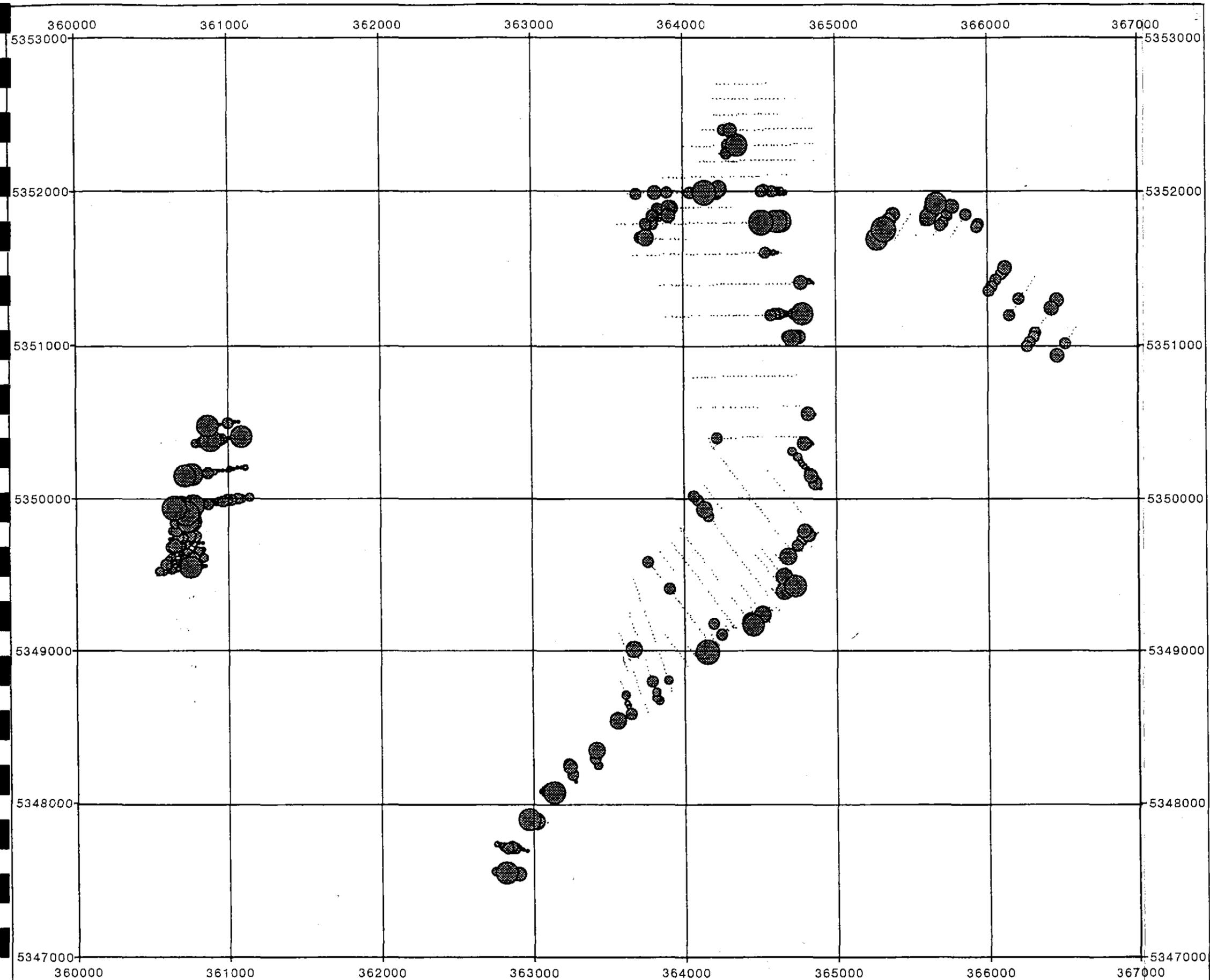
CRA Exploration Pty Limited

ZEEHAN EL28/88, EL34/88 & EL38/89
BEDROCK GEOCHEMISTRY - Mn ppm

- wacker and air-core EOH samples
- -50
 - 50-100
 - 100-200
 - 200-500
 - 500-1000
 - 1000-2000
 - 2000-5000
 - 5000-10000
 - +10000

jmap 100m

Geol: RGP	Scale: 1:25000	Report: 20458
Drawn: RGP	Date: 10/11/94	Plan: Tv 88(



- 2
- 2-5
- 5-10
- 10-20
- 20-50
- 50-100
- 100-200
- 200-500
- +500

5 cm

CRA Exploration Pty Limited		
ZEEHAN EL28/88, EL34/88 & EL38/89		
BEDROCK GEOCHEMISTRY - As ppm		
Geol: RGP	Scale: 1:25000	Report: 20458
Drawn: RGP	Date: 10/11/94	Plan: Tv 882

APPENDIX 1:

Firewood Siding air-core drill logs and geochemistry



C R A EXPLORATION PTY. LIMITED

ACN 000 057 125

UNIT 1, 23 BELL STREET, PRESTON, VICTORIA 3072, AUSTRALIA

P.O. BOX 8093

NORTHLAND CENTRE 3072

TELEPHONE: 480 1866

FAX: (03) 484 1375

28th September 1994

MEMO TO: R.G. PARKINSON

FROM: L. VESKA

FIREWOOD SIDING PROSPECT - AIR-CORE DRILLING 1993/94

35 aircore drillholes were completed at the Firewood Siding prospect during the 1993/1994 field season. Four lines (at 50 metres line spacing) were drilled at a hole spacing of 10 metres.

Drilling was centred on the western limb of a north-plunging anticline, the upper portion of the Gordon Limestone, near the contact with the Crotty Quartzite being focussed upon.

Drillholes ZF27 - ZF30 on the most northern line, 60050E, intersected Fe-altered and weakly mineralized limestone, occurring beneath an irregular, near-surface leached, clay-rich zone. Drillhole ZF4, on line 60200E, intersected isolated mineralisation (8m @ 1.4% Zn), illustrating the patchy nature of zinc mineralisation which appears to characterise this prospect.

APPENDIX B: FIREWOOD SIDING PROSPECT. DRILLHOLE LOCATION DATABASE.								
Hole	Full Name	AMG E	AMG N	Local E	Local N	Depth	Azimuth	Incl.
ZF1	AC94ZF1	360698.9	5349744.0	60200	44330	21.5	0	-90
ZF2	AC94ZF2	360708.8	5349745.4	60200	44340	11.8	0	-90
ZF3	AC94ZF3	360718.7	5349746.8	60200	44350	15.1	0	-90
ZF4	AC94ZF4	360728.6	5349748.2	60200	44360	31.4	0	-90
ZF5	AC94ZF5	360738.5	5349749.6	60200	44370	21.6	0	-90
ZF6	AC94ZF6	360748.4	5349751.0	60200	44380	10.1	0	-90
ZF7	AC94ZF7	360758.3	5349752.4	60200	44390	29.6	0	-90
ZF8	AC94ZF8	360768.2	5349753.7	60200	44400	15.7	0	-90
ZF9	AC94ZF9	360778.1	5349755.1	60200	44410	17.1	0	-90
ZF10	AC94ZF10	360788.0	5349756.5	60200	44420	48.0	0	-90
ZF11	AC94ZF11	360721.7	5349797.7	60150	44360	21.0	0	-90
ZF12	AC94ZF12	360731.6	5349799.1	60150	44370	15.8	0	-90
ZF13	AC94ZF13	360741.5	5349800.5	60150	44380	11.5	0	-90
ZF14	AC94ZF14	360751.4	5349801.9	60150	44390	7.6	0	-90
ZF15	AC94ZF15	360761.3	5349803.3	60150	44400	37.6	0	-90
ZF16	AC94ZF16	360771.2	5349804.7	60150	44410	13.1	0	-90
ZF17	AC94ZF17	360781.1	5349806.0	60150	44420	28.1	0	-90
ZF18	AC94ZF18	360704.8	5349845.8	60100	44350	42.1	0	-90
ZF19	AC94ZF19	360714.7	5349847.2	60100	44360	47.1	0	-90
ZF20	AC94ZF20	360724.6	5349848.6	60100	44370	30.2	0	-90
ZF21	AC94ZF21	360734.5	5349850.0	60100	44380	16.1	0	-90
ZF22	AC94ZF22	360744.4	5349851.4	60100	44390	9.1	0	-90
ZF23	AC94ZF23	360754.3	5349852.8	60100	44400	10.1	0	-90
ZF24	AC94ZF24	360764.2	5349854.2	60100	44410	26.6	0	-90
ZF25	AC94ZF25	360774.1	5349855.6	60100	44420	18.5	0	-90
ZF26	AC94ZF26	360784.0	5349856.9	60100	44430	6.6	0	-90
ZF27	AC94ZF27	360697.8	5349895.3	60050	44350	18.1	0	-90
ZF28	AC94ZF28	360707.7	5349896.7	60050	44360	13.0	0	-90
ZF29	AC94ZF29	360717.6	5349898.1	60050	44370	23.1	0	-90
ZF30	AC94ZF30	360727.6	5349899.5	60050	44380	35.2	0	-90
ZF31	AC94ZF31	360737.5	5349900.9	60050	44390	2.7	0	-90
ZF32	AC94ZF32	360747.4	5349902.3	60050	44400	7.9	0	-90
ZF33	AC94ZF33	360757.3	5349903.7	60050	44410	12.3	0	-90
ZF34	AC94ZF34	360767.2	5349905.1	60050	44420	20.8	0	-90
ZF35	AC94ZF35	360777.1	5349906.5	60050	44430	11.6	0	-90

ROCKCHIP AND DRILLING CODES

22/2/1994

BMR LITH

Rock code as per published geological map
For time designation use:-

Q Quaternary	M Permian	P Proterozoic
T Tertiary	C Carboniferous	A Archaean
	S Silurian	
K Cretaceous	D Devonian	
R Triassic	O Ordovician	
J Jurassic	E Cambrian	

FIELD ID

Field term for rock type
Broad groupings are:-

S Sedimentary	I Intrusive	C Surficial
M Metamorphic	E Extrusive	O Others

SEDIMENTARY

Sog Conglomerate	Sls Limestone	Sw Wacke
Sss Sandstone	Sdl Dolomite	Sag Agglomerate/mixtite
Ssi Siltstone		
Ssh Shale	Sch Chert	Sbx Breccia
Sbs Black shale	Sif BF	

METAMORPHIC

Msl Slate	Mq Quartzite	Mmg Migmatite
Mph Phyllite	Mm Marble	
Msc Schist	Ma Amphibolite	
Mbs Graphitic schist	Mcs Calcisilicate	Msk Skarn
Mgn Gneiss	Mh Hornfels	

INTRUSIVE IGNEOUS

If Felsic undiff.	li Intermed undiff.	Iu Ultramafic
Ifp Felsic porphyry	lip Intermed porph	Ius Serpentinite
Iap Aplite	Im Mafic undiff.	
Igr Granite	Ido Diorite	Ipg Pegmatite
Igd Granodiorite	Igb Gabbro	

EXTRUSIVE IGNEOUS

Ery Rhyolite	Ean Andesite	Et Tuff undiff
Edc Dacite	Eb Basalt	Eft Felsic tuff
		Emt Mafic tuff

SURFICIAL (COVER) MATERIAL

Ca Alluvium	Clt Laterite	Csg Gossan
Coo Colluvium	Csp Pisolites	
Cs Sand	Csf Ironstone	Coy Clay
Cbs Black soil	Csi Silcrete	
Cg Gravel	Cd Calcrete	Cv Vegetation/peat

OTHERS

Ovq Vein quartz	Omy Mylonite	Oms Massive sulphide
Ovc Vein carbonate	Obx Breccia	Oxc Contamination
Ovs Vein sulphide	Of Fault gouge	Ox Unknown

TEXTURAL CODES

WEATHERING/SURFICIAL FEATURES

We Weathered	Fe Ferruginous
Bf Bleached	Fo Fe ox in fract
Le Leached	

MINERALISATION/ALTERATION FEATURES

Gs Gossanous	Vs Vein sulphide	Al Altered
Vn Veined	Cs Dissem sulph	Sl Silicified
Vc Vein carbonate	Fs Fracture sulph	
Vq Vein quartz	Bs Banded sulph	Di Disseminated

GEOLOGICAL FEATURES

Bd Bedded	Fr Fractured	Po Porphyritic
Bn Banded	Ib Interbedded	Sc Schistose
Bx Brecciated	Lm Laminated	Sh Sheared
F Fissile (slaty)	Ma Massive	Vu Vuggy

DIAGNOSTIC MINERALOGY

PRIMARY MINERALISATION

Ga Galena	Py Pyrite	Ni Ni sulphides
Sp Sphalerite	Po Pyrrhotite	
Cp Chalcopyrite	Su Unknown sulph	

SECONDARY MINERALISATION

Ls Lead secondaries	Cs Copper sec.	Ni Ni secondaries
Zs Zinc "	Us Uranium "	

ALTERATION/DIAGNOSTIC MINERALS

Cy Clay	Ha Haematite	Gt Garnet
Ep Epidote	Mt Magnetite	Ky Kyanite
Cc Carbonate	Js Jarosite	To Tourmaline
Sd Siderite/Ankerite	Mn Manganese mins	Cl Chlorite
Di Dolomite		

COLOUR CODES

L Light	A Banded	M Mottled
D Dark		
N Black	P Purple	V Green
G Grey	R Red	K Pink
B Brown	O Orange	E Blue
W White	Y Yellow	S Silver

Appendix I: Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Appendix I: Firewood Siding Prospect. Air-core drilling ledgers and geochemistry.																
DPO 77651																
Hole	DFrom	DTo	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF1	0.0	2.0	3984121	Qha	Ccy			B	Peaty	-1	32	1.69	51	1103		1279
ZF1	2.0	4.0	3984122	Og	Ccy			LYBG		-1	38	0.41	18	3843		245
ZF1	4.0	6.0	3984123	Og	Ccy			GLG		5	89	0.4	15	9600		270
ZF1	6.0	8.0	3984124	Og	CcySlS			GDG	Granular altered? carbonate	4	98	0.71	19	14900		1501
ZF1	8.0	10.0	3984125	Og	SlS	Al	Sd	DGY	Weak altn	-1	44	2.22	41	1227		839
ZF1	10.0	12.0	3984126	Og	SlS Ccy	Fe		DGO		-1	28	2	38	814		412
ZF1	12.0	14.0	3984127	Og	Ccy			DG		-1	45	0.42	25	4404		54
ZF1	14.0	16.0	3984128	Og	SlS			G	Granular altered? carbonate	-1	17	0.71	96	755		638
ZF1	16.0	18.0	3984129	Og	SlS Ccy			G	Granular altered? carbonate	-1	10	0.75	120	506		1169
ZF1	18.0	20.0	3984130	Og	SlS			DG	Granular altered? carbonate	-1	3	0.7	248	84		395
ZF1	20.0	21.5	3984131	Og	SlS	Vc		G	Granular altered? carbonate	-1	2	0.58	185	93		269
ZF2	0.0	2.0	3984132	Qha	Ccy			B	Peaty	-1	2	0.2	8	29		3
ZF2	2.0	4.0	3984133	Og	Ccy			LB		-1	4	0.4	16	1891		17
ZF2	4.0	6.0	3984134	Og	Ccy			LB		-1	30	0.44	14	3550		68
ZF2	8.0	8.0	3984135	Og	Ccy			G		1	35	0.56	12	2656		767
ZF2	8.0	10.0	3984136	Og	Ccy			DG		-1	30	0.98	16	1413		839
ZF2	10.0	11.8	3984137	Og	Ccy			DG		-1	32	1.06	17	1444		878
ZF3	0.0	2.0	3984138	Qha	CcyCa			B	Peaty	-1	-2	0.2	6	20		7
ZF3	2.0	4.0	3984139	Qha	CcyCa			B	Peaty	-1	5	0.21	7	409		18
ZF3	4.0	6.0	3984140	Og	Ccy			LYB		-1	24	0.47	20	1378		76
ZF3	6.0	8.0	3984141	Og	Ccy			MBG		1	46	0.78	17	11700		1157
ZF3	8.0	10.0	3984142	Og	Ccy			MBG		1	48	0.55	16	2987		287
ZF3	10.0	12.0	3984143	Og	Ccy			DG	Plastic	1	79	0.72	17	3210		257
ZF3	12.0	14.0	3984144	Og	Ccy			DG	Soupy	-1	60	1.41	24	2270		485
ZF3	14.0	15.1	3984145	Og	Ccy			DG	Plastic	-1	36	1.78	30	991		487
ZF4	0.0	2.0	3984146	QhaOg	Ccy			DB+OB		-1	19	0.73	17	3133		257
ZF4	2.0	4.0	3984147	Og	Ccy			OB		-1	62	0.34	10	2177		637
ZF4	4.0	6.0	3984148	Og	Ccy			MBG		1	30	1.56	13	2961	2.4	13600
ZF4	6.0	8.0	3984149	Og	Ccy			MOBG		-1	20	6.52	15	1534	8.5	24000
ZF4	8.0	10.0	3984150	Og	Ccy			G	Minor contam from cyclone	-1	26	4.42	13	1728	5.9	16000
ZF4	10.0	12.0	3984151	Og	Ccy			MOBG	Plastic	-1	22	3.54	23	921	4.3	13200
ZF4	12.0	14.0	3984152	Og	Ccy			MOBG	Plastic	1	24	4.17	39	647		6200
ZF4	14.0	16.0	3984153	Og	Ccy			MOBG	Plastic	-1	19	6.13	21	1330		5400
ZF4	16.0	18.0	3984154	Og	Ccy			DG	Plastic	-1	20	9.25	24	1372		7000
ZF4	18.0	20.0	3984155	Og	Ccy			DG	Plastic	1	24	2.38	33	888		2866
ZF4	20.0	22.0	3984156	Og	Ccy			DG	Plastic	-1	19	2.38	52	304		2181
ZF4	22.0	24.0	3984157	Og	Ccy			DG		-1	20	3.47	62	307		1945
ZF4	24.0	26.0	3984158	Og	Ccy			DG	Plastic	-1	17	3.53	47	452		3674
ZF4	26.0	28.0	3984159	Og	CcySlS			DG+G	Granular altered? carbonate	-1	15	4.04	52	278		2299

843039

Appendix : Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF4	28.0	30.0	3984160	Og	Sls			G	Granular altered? carbonate	-1	6	1.83	63	37		101
ZF4	30.0	31.4	3984161	Og	Sls	Vu		G	Granular altered? carbonate	-1	5	1.47	195	19		112
ZF5	0.0	2.0	3984162	QhaOg	Ccy			DB+YB		-1	4	0.23	5	18		18
ZF5	2.0	4.0	3984163	Og	Ccy			OB+G		-1	40	0.45	10	2036		1326
ZF5	4.0	6.0	3984164	Og	Ccy			DG		-1	22	2.21	34	410		923
ZF5	6.0	8.0	3984165	Og	Ccy			DG		-1	17	6.32	39	98		925
ZF5	8.0	10.0	3984166	Og	Ccy			G		-1	19	3.59	60	109		1940
ZF5	10.0	12.0	3984167	Og	Ccy			MBG		-1	18	2.99	40	162		3597
ZF5	12.0	14.0	3984168	Og	Ccy			MBG		-1	21	4.06	39	165		2426
ZF5	14.0	16.0	3984169	Og	Ccy			DG		-1	33	6.02	40	487		3473
ZF5	16.0	18.0	3984170	Og	Ccy			DG		1	24	4.54	75	374		2676
ZF5	18.0	20.0	3984171	Og	Sls			G	Granular altered? carbonate	-1	5	1.3	172	50		354
ZF5	20.0	21.6	3984172	Og	Sls			G	Granular altered? carbonate	-1	4	0.92	254	54		221
ZF6	0.0	2.0	3984173	QhaOg	CgCcy			DB+YB		-1	2	0.24	12	45		20
ZF6	2.0	4.0	3984174	Og	CcySls			YB+G		-1	9	0.29	11	117		41
ZF6	4.0	6.0	3984175	Og	SlsCcy	WeFe		YG+MYG		1	23	0.65	10	2445		1391
ZF6	6.0	8.0	3984176	Og	SlsCcy	Al	Sd	YG+MGB		-1	30	0.79	13	1659		1242
ZF6	8.0	10.1	3984177	Og	SlsSbx	AlFe	Sd	YG		-1	40	0.26	6	1186		1070
ZF7	0.0	2.0	3984178	Qha	Ccy			B	Peaty	-1	8	0.33	11	78		25
ZF7	2.0	4.0	3984179	Og	Ccy			YB		-1	15	0.32	13	185		30
ZF7	4.0	6.0	3984180	Og	Ccy			YB		-1	27	0.46	18	406		63
ZF7	6.0	8.0	3984181	Og	Ccy			LG		-1	23	0.41	15	427		49
ZF7	8.0	10.0	3984182	Og	Ccy			GLG		-1	18	0.4	14	175		34
ZF7	10.0	12.0	3984183	Og	Ccy			LB		-1	31	0.56	16	687		288
ZF7	12.0	14.0	3984184	Og	Ccy			MLBDG		-1	19	2.27	26	264		3395
ZF7	14.0	16.0	3984185	Og	Ccy			MLBDG		-1	17	2.39	26	378		3871
ZF7	16.0	18.0	3984186	Og	Ccy			DG	Plastic	-1	16	4.05	31	208		3437
ZF7	18.0	20.0	3984187	Og	Ccy			DG	Plastic	-1	20	4.33	29	558		3025
ZF7	20.0	22.0	3984188	Og	Ccy			DG		-1	19	3.29	31	474		2732
ZF7	22.0	24.0	3984189	Og	CcySls			DG+G	Granular altered? carbonate	-1	24	5.72	64	583		2785
ZF7	24.0	26.0	3984190	Og	Sls	Al	Sd	YG	Granular altered carbonate	-1	6	0.98	273	138		565
ZF7	26.0	28.0	3984191	Og	Sls			G	Granular altered? carbonate	-1	10	1.98	274	299		1869
ZF7	28.0	29.6	3984192	Og	SlsCcy			G	Granular altered? carbonate	-1	9	1	229	272		911
ZF8	0.0	2.0	3984193	Qha	Ccy			B	Peaty	-1	5	0.23	13	57		14
ZF8	2.0	4.0	3984194	Og	Ccy			OB		-1	18	0.53	18	187		51
ZF8	4.0	6.0	3984195	Og	Sls			G		-1	20	1.6	38	119		135
ZF8	6.0	8.0	3984196	Og	Sls			G		-1	18	1.62	40	29		140
ZF8	8.0	10.0	3984197	Og	SlsCcy			G		-1	18	1.64	34	30		179
ZF8	10.0	12.0	3984198	Og	Sls	Al	Sd	YG	Granular altered carbonate	-1	17	1.06	19	51		390
ZF8	12.0	14.0	3984199	Og	Sls	Al	Sd	OG		-1	8	0.49	12	28		153
ZF8	14.0	15.7	3984200	Og	Sls	AlBrDs	SdPy	AOG	Granular altered carbonate	-1	13	0.74	11	25		151

Appendix : Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF9	0.0	2.0	3985101	Qha	Ccy			B	Peaty	-1	5	0.28	13	21		11
ZF9	2.0	4.0	3985102	Qha	Ccy			B	Peaty	-1	33	0.44	11	162		88
ZF9	4.0	6.0	3985103	Og	Ccy			DB		-1	24	1.15	11	223		752
ZF9	6.0	8.0	3985104	Og	CcySls			DGB+B		-1	20	1.3	15	145		691
ZF9	8.0	10.0	3985105	Og	Sls	We		G		-1	22	2.02	19	118		313
ZF9	10.0	12.0	3985106	Og	CcySls			MGB+G		-1	21	1.45	13	181		653
ZF9	12.0	14.0	3985107	Og	Ccy			MDBG		-1	24	2.65	19	335		1621
ZF9	14.0	16.0	3985108	Og	CcySls			DG+G	Granular altered? carbonate	-1	20	4.4	67	119		592
ZF9	16.0	17.1	3985109	Og	Sls	Vc		G		-1	6	1.52	350	87		358
ZF10	0.0	2.0		Qha	CgCcy			B	Peaty							
ZF10	2.0	4.0	3985110	QhaOg	Ccy			LB		-1	4	0.34	13	36		15
ZF10	4.0	6.0	3985111	Og	SlsCcy	FeWe		OG+OB		-1	4	0.39	14	24		21
ZF10	6.0	8.0	3985112	Og	Sls	Fo		OG		-1	40	0.71	16	152		244
ZF10	8.0	10.0	3985113	Og	SlsCcy	Fo		OG+OB		-1	32	0.88	16	247		1272
ZF10	10.0	12.0	3985114	Og	CcySls			G+OG		-1	20	1.06	17	216		1438
ZF10	12.0	14.0	3985115	Og	SlsCcy			G		-1	8	0.55	10	50		345
ZF10	14.0	16.0	3985116	Og	CcySls			G+DG	Granular altered? carbonate	-1	17	1.77	22	162		1103
ZF10	16.0	18.0	3985117	Og	Sls			DG	Granular altered? carbonate	-1	21	2.18	40	67		746
ZF10	18.0	20.0	3985118	Og	CcySls			G+DG	Granular altered? carbonate	-1	24	2.04	20	808		3268
ZF10	20.0	22.0	3985119	Og	CcySls			G+DG	Granular altered? carbonate	-1	21	5.14	26	84		739
ZF10	22.0	24.0	3985120	Og	CcySls			G+DG	Granular altered? carbonate	-1	20	4.62	29	172		979
ZF10	24.0	26.0	3985121	Og	SlsCcy	We	Cy	G	Granular altered? carbonate	-1	19	2.52	39	24		139
ZF10	26.0	28.0	3985122	Og	SlsCcy	We	Cy	G	Granular altered? carbonate	-1	19	2.25	44	21		83
ZF10	28.0	30.0	3985123	Og	Sls	We	Cy	G	Granular altered? carbonate	-1	20	2.21	39	46		314
ZF10	30.0	32.0	3985124	Og	Sls	We	Cy	G	Granular altered? carbonate	-1	22	3.09	46	29		141
ZF10	32.0	34.0	3985125	Og	Sls	We	Cy	G	Granular altered? carbonate	-1	15	1.3	31	57		208
ZF10	34.0	36.0	3985126	Og	Sls	We?		DG	Granular altered? carbonate	-1	18	1.71	34	39		150
ZF10	36.0	38.0	3985127	Og	Sls	We	Cy	DG	Granular altered? carbonate	-1	19	3.29	39	118		1115
ZF10	38.0	40.0	3985128	Og	Sls	We	Cy	DG	Granular altered? carbonate	-1	19	1.94	64	36		89
ZF10	40.0	42.0	3985129	Og	Sls	We	Cy	DG	Granular altered? carbonate	-1	16	1.76	36	113		694
ZF10	42.0	44.0	3985130	Og	Sls	We	Cy	DG	Granular altered? carbonate	-1	17	1.86	41	103		385
ZF10	44.0	46.0	3985131	Og	Sls	We	Cy	DG	Granular altered? carbonate	-1	16	2.07	43	83		251
ZF10	46.0	48.0	3985132	Og	Sls	We	Cy	DG	Granular altered? carbonate	-1	18	4.03	41	318		1301
ZF11	0.0	2.0	3985133	Og	CgCbs					-1	6	0.3	13	104		2
ZF11	2.0	4.0	3985134	Og	CgSls			DB		-1	7	0.33	13	171		22
ZF11	4.0	6.0	3985135	Og	Ccy			LM		3	99	0.43	17	219		76
ZF11	6.0	8.0	3985136	Og	Ccy			N		1	60	1.28	19	19300		602
ZF11	8.0	10.0	3985137	Og	Ccy			N		-1	31	2.14	38	4801		2614
ZF11	10.0	12.0	3985138	Og	Ccy			N		1	31	2.62	32	6400		6200
ZF11	12.0	14.0	3985139	Og	Ccy			NLB		2	33	1.62	21	4700		7700
ZF11	14.0	16.0	3985140	Og	Ccy			N		1	27	4.09	73	1966		6300
ZF11	16.0	18.0	3985141	Og	SlsOvc		SpDs	DG		-1	12	1.6	177	383		1329
ZF11	18.0	20.0	3985142	Og	SlsOvc			DGLG	fibrous calcite veining.	-1	7	1.38	147	46		178
ZF11	20.0	21.0	3985143	Og	SlsOvc			LGDG	graphitic, "wispy" Sls.	-1	7	1.09	138	84		234

843041

Appendix : Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF12	0.0	2.0	3985144	Og	Ccy			LBW		-1	16	0.35	17	1762		24
ZF12	2.0	4.0	3985145	Og	Ccy			LMN		1	64	0.64	19	4458		431
ZF12	4.0	6.0	3985146	Og	Ccy			M		-1	30	0.86	29	8500		1713
ZF12	6.0	8.0	3985147	Og	Ccy			M		3	55	0.83	24	4809		480
ZF12	8.0	10.0	3985148	Og	Ccy			LBG		1	25	2.02	39	6800		1680
ZF12	10.0	12.0	3985149	Og	Ccy			LBG	lesser grey clay intercalations.	1	30	4.96	30	2532		7500
ZF12	12.0	14.0	3985150	Og	Sls			DGLG		-1	12	3.1	500	585		1039
ZF12	14.0	15.8	3985151	Og	Sls	Ma	PyDs	DG	trace pyr.	-1	7	1.24	369	97		306
ZF13	0.0	2.0	3985152	Og	CcyCg			LB		-1	8	0.32	14	248		30
ZF13	2.0	4.0	3985153	Og	CcyOvq	Vu		M		1	19	0.38	14	2473		93
ZF13	4.0	6.0	3985154	Og	Ccy			LM		4	53	0.59	17	1663		561
ZF13	6.0	8.0	3985155	Og	Ccy			N		1	40	1.26	23	2338		2814
ZF13	8.0	10.0	3985156	Og	SlsCcy	We		DGN	porous Sls	1	35	0.9	34	2488		905
ZF13	10.0	11.5	3985157	Og	SlsOvc			LG	graphitic, "wispy" Sls.	-1	35	0.79	38	2219		1247
ZF14	0.0	2.0	3985158	Og	CcyCbs			LB		-1	13	0.5	20	855		82
ZF14	2.0	4.0	3985159	Og	Ccy			M		1	53	1.71	22	3228		395
ZF14	4.0	6.0	3985160	Og	Ccy			NW		-1	30	2.3	28	9000		4700
ZF14	6.0	7.0	3985161	Og	Sls	We		N	porous Sls	-1	28	1.03	28	1941		2053
ZF14	7.0	7.6		Og	Sls			DGG								
ZF15	0.0	2.0	3985162	Og	CcyCbs			DB		-1	5	0.3	16	52		3
ZF15	2.0	4.0	3985163	Og	Ccy			DB		-1	4	0.22	15	70		-2
ZF15	4.0	6.0	3985164	Og	Ccy			DB	sandy (gritty) clay.	-1	6	0.39	19	48		-2
ZF15	6.0	8.0	3985165	Og	Ccy			LBW		-1	3	0.26	13	86		3
ZF15	8.0	10.0	3985166	Og	Ccy			LB		-1	17	0.54	23	171		136
ZF15	10.0	12.0	3985167	Og	CcySls			LBG		-1	17	0.54	23	332		664
ZF15	12.0	14.0	3985168	Og	CcySlsOvq	Bx		LGDG	Ovq breccia cement.	-1	69	0.54	23	1906		335
ZF15	14.0	16.0	3985169	Og	CcySls			LBDG	"wispy" graphitic Sls.	-1	74	0.42	10	866		238
ZF15	16.0	18.0	3985170	Og	Ccy			M		-1	23	1.47	28	952		1475
ZF15	18.0	20.0	3985171	Og	Ccy	Ds	Ga	G	trace of galena.	-1	25	1.26	31	1070		1349
ZF15	20.0	22.0	3985172	Og	CcySlsOvc	We		G		-1	24	1.24	52	999		1421
ZF15	22.0	24.0	3985173	Og	CcyOvc			G	poor return.	-1	24	1.53	53	870		1460
ZF15	24.0	26.0	3985174	Og	SlsOvcOvq		Sp	DG	trace We sphalerite.	-1	6	0.99	189	128		309
ZF15	26.0	28.0	3985175	Og	SlsOvc			DGG		-1	4	0.89	224	40		170
ZF15	28.0	30.0	3985176	Og	SlsOvcOvc			DGG		-1	6	0.79	201	33		138
ZF15	30.0	32.0	3985177	Og	SlsOvc			DG		-1	5	1.1	205	27		97
ZF15	32.0	34.0	3985178	Og	SlsCcy	Ds	Sp	G	Sphaleritic We Sls.	-1	10	1.55	131	154		391
ZF15	34.0	36.0	3985179	Og	Sls	We	Sp	DG	trace of sphalerite	-1	17	2.02	68	118		304
ZF15	36.0	37.6	3985180	Og	Sls	Vu		G		-1	18	1.81	72	28		79
ZF16	0.0	2.0	3985181	Og	CbsCgCcy			DB		-1	16	0.34	17	306		25
ZF16	2.0	4.0	3985182	Og	Ccy			YB		-1	16	0.37	16	413		174
ZF16	4.0	6.0	3985183	Og	Ccy			M		-1	19	2.44	28	349		1383

843042

Appendix : Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF16	6.0	8.0	3985184	Og	Sls	We	Sp	DG	porous, We Sls, trace of sphalerite.	-1	16	1.84	78	43		186
ZF16	8.0	11.0	3985185	Og	Sls			LGG		-1	14	1.43	50	67		240
ZF16	11.0	12.0	3985186	Og	Sls	Al	SdSp	LGW	ankeritic	-1	13	1.57	41	34		457
ZF16	12.0	13.1	3985187	Og	Sls	Al	SdSp	G	pervasively altered granular carbonate.	-1	9	0.94	22	18		488
ZF17	0.0	4.0		Og	CbsCgCcy			B								
ZF17	4.0	6.0	3985188	Og	Ccy			M		-1	10	0.26	12	117		7
ZF17	6.0	8.0	3985189	Og	Ccy			DM		-1	17	0.35	16	159		78
ZF17	8.0	10.0	3985190	Og	CcySls		Sp	GDG	trace of sphalerite	-1	15	0.35	15	140		150
ZF17	10.0	12.0	3985191	Og	Ccy			DBN		-1	18	2.65	22	124		708
ZF17	12.0	14.0	3985192	Og	Ccy			M		-1	16	4.11	21	403		1929
ZF17	14.0	16.0	3985193	Og	CcySls			MDG	porous Sls	-1	14	1.97	23	48		194
ZF17	16.0	18.0	3985194	Og	Sls		Sp	DGLG	porous Sls, trace sphalerite	-1	13	1.33	29	35		158
ZF17	18.0	20.0	3985195	Og	SlsCcy			DGLG	brachiopod fossil cast present.	-1	16	3.39	27	66		699
ZF17	20.0	22.0	3985196	Og	CcySls			MG		-1	18	3.03	64	149		791
ZF17	22.0	24.0	3985197	Og	SlsOvc	Vu		G		-1	8	2.75	203	103		1009
ZF17	24.0	26.0	3985198	Og	Sls	Vu	Sp		trace of sphalerite.	-1	4	1.27	264	11		52
ZF17	28.0	28.0	3985199	Og	Sls			DGLG		-1	3	1.03	278	8		84
ZF17	28.0	28.1		Og	SlsOvc			DGG								
ZF18	0.0	2.0	3985200	Og	CgCbs					-1	25	0.48	26	60		8
ZF18	2.0	4.0	3985201	Og	Ccy			DG		1	41	2.65	26	3746		1860
ZF18	4.0	6.0	3985202	Og	Ccy			DG/N		1	25	2.55	27	2560		3966
ZF18	6.0	8.0	3985203	Og	CcySls			N		1	25	2.54	25	1519		5200
ZF18	8.0	10.0	3985204	Og	Ccy			N		-1	23	1.93	29	254		1499
ZF18	10.0	12.0	3985205	Og	CcySls	We		N/DG		-1	20	3.28	33	77		1811
ZF18	12.0	14.0	3985206	Og	CcySls	We		DGDB	porous Sls	-1	21	3.99	29	173		1746
ZF18	14.0	16.0	3985207	Og	SlsCcy			DG/N		-1	16	6.76	33	76		861
ZF18	16.0	18.0	3985208	Og	Ccy			G		-1	16	3.5	27	109		1058
ZF18	18.0	20.0	3985209	Og	Ccy		Py	G	vughy pyrite frags present.	-1	18	2.32	27	160		1265
ZF18	20.0	22.0	3985210	Og	CcySls	We		G		-1	19	2.22	32	112		1274
ZF18	22.0	24.0	3985211	Og	Ccy	We		G/DG		-1	18	3.3	30	211		2141
ZF18	24.0	26.0	3985212	Og	Ccy		Py	G		-1	16	4.45	31	257		2391
ZF18	26.0	28.0	3985213	Og	Ccy			G		1	18	4.05	27	523		3255
ZF18	28.0	30.0	3985214	Og	Ccy			DG		-1	17	2.19	26	302		2768
ZF18	30.0	32.0	3985215	Og	Ccy		Py	GLG	dissem. v-line grained pyr.	1	21	2.53	32	729		3973
ZF18	32.0	34.0	3985216	Og	CcySls			DG		-1	20	4.64	40	301		2043
ZF18	34.0	36.0	3985217	Og	Ccy		Py	DGN	trace pyrite euhedra.	1	21	3.34	45	695		3521
ZF18	36.0	38.0	3985218	Og	Ccy		Py	N	trace dissem. pyr.	-1	17	3.68	39	59		1244
ZF18	38.0	40.0	3985219	Og	SlsCcy		Py	G/N	weakly pyritic	-1	5	1.51	149	50		360
ZF18	40.0	42.1	3985220	Og	SlsOvc		Py	GLG	trace dissem. pyr.	-1	3	1.36	233	33		659
ZF19	0.0	2.0	3985221	Og	CcyCbs			LB		-1	5	0.34	18	32		12
ZF19	2.0	4.0	3985222	Og	Ccy			LB/W		1	3	0.28	14	27		5
ZF19	4.0	6.0	3985223	Og	Ccy			LM		2	43	0.41	15	565		8

Appendix : Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF19	6.0	8.0	3985224	Og	Sls		Py	DG	moderately pyr. veined.	1	43	2.83	28	4981		513
ZF19	8.0	10.0	3985225	Og	Sls	We	Py	DG	pyr. veined.	1	23	3.26	37	3529		2491
ZF19	10.0	12.0	3985226	Og	Sls	We	Py	DG	abundant pyr. veining.	1	28	3.62	40	3188		3126
ZF19	12.0	14.0	3985227	Og	Sls	We	Py	DG	mod. pyr.	1	19	6.31	35	543		2483
ZF19	14.0	16.0	3985228	Og	SlsOvc		Py	DG		1	18	7.03	29	1173		3440
ZF19	16.0	18.0	3985229	Og	Ccy		Py	DG		1	18	3.07	24	750		2767
ZF19	18.0	20.0	3985230	Og	Ccy			M		-1	18	2.48	24	727		3446
ZF19	20.0	22.0	3985231	Og	Ccy			DG		1	21	2.58	34	1017		3890
ZF19	22.0	24.0	3985232	Og	Ccy			DGN		1	21	2.56	29	1153		3921
ZF19	24.0	26.0	3985233	Og	Ccy		GaPy	DGV	trace dissem. galena, pyr.	1	32	2.45	39	2527		7600
ZF19	26.0	28.0	3985234	Og	Ccy	Ds	PyGa	G	as above.	1	30	1.7	28	2844		6400
ZF19	28.0	30.0	3985235	Og	Ccy			G		1	30	2.56	38	2009		6700
ZF19	30.0	32.0	3985236	Og	CcySls	We		DG		1	31	2.48	44	2324		8200
ZF19	32.0	34.0	3985237	Og	Ccy			G		1	30	3.03	39	4300		8800
ZF19	34.0	36.0	3985238	Og	Ccy			G		1	25	2.08	30	2849		8400
ZF19	36.0	38.0	3985239	Og	Ccy		Py	DG	mod. pyr.	3	49	2.9	21	9900	4.65	11300
ZF19	38.0	40.0	3985240	Og	OvqSls			LG		1	14	0.28	9	1273		1611
ZF19	40.0	42.0	3985241	Og	Ccy			M		1	20	1.28	21	1010		2845
ZF19	42.0	44.0	3985242	Og	CcySls			G		2	27	1.87	20	3500		8300
ZF19	44.0	46.0	3985243	Og	Ccy			N		-1	20	3.15	32	614		2700
ZF19	46.0	47.1	3985244	Og	SlsOvc			DG/G		-1	11	1.64	125	300		951
ZF20	0.0	2.0	3985245	Og	CcyObs			LBW		1	7	0.32	16	41		48
ZF20	2.0	4.0	3985246	Og	Ccy			LM		1	26	0.28	12	1268		1142
ZF20	4.0	6.0	3985247	Og	CcyOvq			LG		1	30	0.44	12	4100		5200
ZF20	6.0	8.0	3985248	Og	OvqCcy			LG	sparry cavity fill quartz.	1	25	1.11	11	2475		9200
ZF20	8.0	10.0	3985249	Og	Ccy			M		1	39	1.03	13	4000		9200
ZF20	10.0	12.0	3985250	Og	CcySls			MG		1	59	0.55	11	6800		7700
ZF20	12.0	14.0	3985251	Og	CcyOvcOvq			MG		1	27	0.93	15	3495		4182
ZF20	14.0	16.0	3985252	Og	CcyOvq			G		1	25	1.63	20	2798		7600
ZF20	16.0	18.0	3985253	Og	CcyOvqSls			DG		1	25	2.56	30	1445		6700
ZF20	18.0	20.0	3985254	Og	Ccy			DG		1	24	3.55	37	3632		7800
ZF20	20.0	22.0	3985255	Og	OvqCcy			LG		1	21	2	30	5200		5200
ZF20	22.0	24.0	3985256	Og	OvqSlsCcy			DG		1	20	2.12	21	1369		5300
ZF20	24.0	26.0	3985257	Og	OvqSls			DG		-1	9	0.49	11	505		3769
ZF20	26.0	28.0	3985258	Og	OvqSls	Al	SdSp	G	1% sphalerite.	1	10	0.45	10	1045	1.1	13400
ZF20	28.0	30.0	3985259	Og	OvqSls	Al	SdSp	G	trace sphalerite.	3	33	0.8	12	2122		3691
ZF20	30.0	30.2		Og	SlsOvq	Al	SdSpGa	G	minor sphal., gal.							
ZF21	0.0	2.0		Og	Obs											
ZF21	2.0	4.0	3985260	Og	SlsCcy	We		DGDB		2	174	0.21	10	944		235
ZF21	4.0	6.0	3985261	Og	CcySlsOvq			DG		1	103	0.64	11	7600		5000
ZF21	6.0	8.0	3985262	Og	CcyOvq	Al	SdSpPy	DG	trace of sulphides	-1	16	1.72	20	4728		3213
ZF21	8.0	10.0	3985263	Og	OvqCcy	Al	Sd	G		1	84	2.05	19	7100		3800
ZF21	10.0	12.0	3985264	Og	OvqSlsCcy			DG		1	87	1.46	7	8300		2526

Appendix : Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF21	12.0	14.0	3985265	Og	OvqCcySlS			M		1	18	0.93	7	2809		1878
ZF21	14.0	16.0	3985266	Og	CcyOvq			G		1	43	0.87	17	5800		8200
ZF21	16.0	16.1		Og	SlS			DG								
ZF22	0.0	2.0		Og	Cbs											
ZF22	2.0	4.0	3985267	Og	CcySlS	We		DM		1	37	0.73	13	6900		3900
ZF22	4.0	6.0	3985268	Og	CcyOvq		Sd	M		1	23	1.14	12	6500		4400
ZF22	6.0	8.0	3985269	Og	Ccy			DM		1	23	1.04	15	6300		4864
ZF22	8.0	9.1	3985270	Og	SlSovq	Bx		DG	breccia texture present locally.	-1	33	0.51	9	2749		1888
ZF23	0.0	2.0		Og	Cbs											
ZF23	2.0	4.0	3985271	Og	Ccy			LM		1	10	0.33	16	187		71
ZF23	4.0	6.0	3985272	Og	Ccy			LM		3	37	0.26	12	394		92
ZF23	6.0	8.0	3985273	Og	Ccy			LM		2	84	0.61	15	17700		5900
ZF23	8.0	10.0	3985274	Og	OvqOvcSlS		Sd		minor patchy ferrug. alt.	1	86	0.89	16	5900	1.8	12400
ZF23	10.0	10.1		Og	SlS			DG/LG								
ZF24	0.0	2.0		Og	Cbs											
ZF24	2.0	4.0	3985275	Og	Ccy			DBN		-1	6	0.29	15	46		34
ZF24	4.0	6.0	3985276	Og	Ccy			DBN		-1	4	0.22	15	35		23
ZF24	6.0	8.0	3985277	Og	SlS	We		DBG		1	24	0.6	20	750		674
ZF24	8.0	10.0	3985278	Og	Ccy			LM		1	35	0.82	20	937		2805
ZF24	10.0	12.0	3985279	Og	Ccy			DG		1	28	2.44	32	1330		3046
ZF24	12.0	14.0	3985280	Og	Ccy			DG/LB		2	28	2.4	30	1688		3264
ZF24	14.0	16.0	3985281	Og	Ccy			G		1	24	2.59	35	1047		3155
ZF24	16.0	18.0	3985282	Og	Ccy		Py	DG	trace pyr.	-1	18	3.31	41	328		3864
ZF24	18.0	20.0	3985283	Og	Ccy			N		-1	21	3.71	38	816		5900
ZF24	20.0	22.0	3985284	Og	Ccy			DVG		-1	23	3.66	43	684		2756
ZF24	22.0	24.0	3985285	Og	CcySlS			VG/DG		-1	36	5.48	47	649		3543
ZF24	24.0	26.0	3985286	Og	Ccy			DM		1	42	9.34	49	1093		5700
ZF24	26.0	26.6	3985287	Og	SlS		SdPy	G	minor ferrug. (ankeritic) frags. present	-1	13	3.3	160	130		501
ZF25	0.0	2.0		Og	Cbs											
ZF25	2.0	4.0	3985288	Og	Ccy			DBN	ferrug. clay	-1	3	0.28	13	29		15
ZF25	4.0	6.0	3985289	Og	CcySlSovq			LBLG		-1	4	0.27	14	44		22
ZF25	6.0	8.0	3985290	Og	Ccy			LM		-1	50	0.35	16	121		33
ZF25	8.0	10.0	3985291	Og	Ccy			DM		1	74	1.62	27	2204		2027
ZF25	10.0	12.0	3985292	Og	Ccy			DM		1	52	1.73	28	2165		3162
ZF25	12.0	14.0	3985293	Og	Ccy			G		1	29	2.66	39	1476		3263
ZF25	14.0	16.0	3985294	Og	Ccy			GM		1	28	3.87	55	2581		5600
ZF25	16.0	18.0	3985295	Og	Ccy			DM		-1	26	1.64	33	1029		1449
ZF25	18.0	18.5	3985296	Og	SlSCcyOvc		Sd	DG/G	minor ankeritic? frags.	-1	21	1.44	56	716		949
ZF26	0.0	2.0		Og	Cbs											
ZF26	2.0	4.0	3985297	Og	CcyCg			DB		-1	7	0.31	15	81		103

843045

Appendix : Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	Dto	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF26	4.0	6.0	3985298	Og	CgSls			DG		-1	6	0.25	11	69		45
ZF26	6.0	6.6	3985299	Og	Sls			LG	limonitic Sls frags.	-1	7	0.31	15	47		21
ZF27	0.0	2.0	3985300	Og	CcyObs			LB		-1	3	0.42	17	218		54
ZF27	2.0	4.0	3985301	Og	Ccy			LB		-1	8	0.51	19	388		191
ZF27	4.0	6.0	3985302	Og	Ccy			LB	sticky clay	-1	25	0.41	16	362		135
ZF27	6.0	8.0	3985303	Og	Ccy			LBG		1	67	0.96	19	1859		2043
ZF27	8.0	10.0	3985304	Og	Ccy			M		1	21	1.7	19	1123		7100
ZF27	10.0	12.0	3985305	Og	Ccy			GM		1	22	2.17	24	1051		5500
ZF27	12.0	14.0	3985306	Og	Ccy			GM		-1	20	2.37	25	1002		4465
ZF27	14.0	16.0	3985307	Og	Ccy			G		2	30	5.3	39	5000	5.95	17400
ZF27	16.0	18.1	3985308	Og	SlsOvcOvq			G		2	20	3.39	283	5300	4.1	14200
ZF28	0.0	2.0	3985309	Og	Ccy			LBW		-1	4	0.39	20	108		28
ZF28	2.0	4.0	3985310	Og	Ccy			LGW		1	10	0.37	17	1411		75
ZF28	4.0	6.0	3985311	Og	Ccy			LGW		1	29	0.37	15	791		87
ZF28	6.0	8.0	3985312	Og	CcySls			DGLG		3	93	2.5	22	10100		5800
ZF28	8.0	10.0	3985313	Og	Ccy			DGM		1	43	6.36	35	1330	7.55	12700
ZF28	10.0	12.0	3985314	Og	Ccy			DGM		-1	18	7.94	104	219	9.15	10500
ZF28	12.0	13.0	3985315	Og	SlsOvq		Sp	G/LG	trace sphalerite	-1	7	1.75	420	79		890
ZF29	0.0	2.0		Og	Obs											
ZF29	2.0	4.0	3985316	Og	Ccy			DBN		-1	5	0.21	12	18		10
ZF29	4.0	6.0	3985317	Og	Ccy			LBDB	minor sandy clay	-1	3	0.19	10	29		3
ZF29	6.0	8.0	3985318	Og	Ccy			LGW		-1	5	0.32	17	45		9
ZF29	8.0	10.0	3985319	Og	Ccy			LM		-1	18	0.32	16	65		18
ZF29	10.0	12.0	3985320	Og	Ccy			DG/LB		7	1120	2.49	25	1150		138
ZF29	12.0	14.0	3985321	Og	Ccy			DGLB	lesser LT BN clay interbeds	1	276	8.27	28	1968		8800
ZF29	14.0	16.0	3985322	Og	CcySls			DG		1	99	11.3	35	1723	13.4	17100
ZF29	16.0	18.0	3985323	Og	SlsCcy	Al	SpSd	G	1-2% sphalerite	-1	37	7.01	36	1199	8.4	11500
ZF29	18.0	20.0	3985324	Og	Ccy			DM		1	28	12.2	40	2503	16.8	25300
ZF29	20.0	22.0	3985325	Og	Ccy			DG		2	36	13.8	40	5200	18.9	27000
ZF29	22.0	23.0	3985326	Og	Ccy			DG		1	22	5.98	113	2886	7.2	12700
ZF29	23.0	23.1		Og	SlsOvq		PySp	DG	pyrite/sphalerite frags 1-2%.							
ZF30	0.0	2.0		Og	CbsCcy			DB								
ZF30	2.0	4.0	3985327	Og	Ccy			LB		-1	3	0.42	20	31		45
ZF30	4.0	6.0	3985328	Og	Ccy			LBG		-1	6	0.35	17	28		18
ZF30	6.0	8.0	3985329	Og	Ccy			DGM		1	104	0.7	18	359		204
ZF30	8.0	10.0	3985330	Og	Ccy		Py	N	weakly pyritic	1	106	4.24	30	4546		4217
ZF30	10.0	12.0	3985331	Og	Ccy			N/LB		4	211	4.67	28	11800	6.5	13100
ZF30	12.0	14.0	3985332	Og	Ccy			N		1	70	2.72	29	2804		9100
ZF30	14.0	16.0	3985333	Og	Ccy			DGN		2	72	4.93	24	8900	6.9	17800
ZF30	16.0	18.0	3985334	Og	Ccy			DG		2	51	4.69	35	3800	6.1	13200
ZF30	18.0	20.0	3985335	Og	Ccy			DM		1	30	3.48	20	2452		8200

843046

Appendix : Firewood Siding prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZF30	20.0	22.0	3985336	Og	Ccy			DM	lesser ferrug. frags.	1	26	1.96	14	1718		9300
ZF30	22.0	24.0	3985337	Og	Ccy		Py	DG/M	minor coarse gr. pyritic frags.	1	20	13.6	18	3600	16.2	23300
ZF30	24.0	26.0	3985338	Og	SlsCcy	Al	PySd	DG	trace of sphalerite	2	20	12.6	23	5700	15.1	16100
ZF30	26.0	28.0	3985339	Og	Ccy			DM		3	41	7.87	27	8000	9.95	19800
ZF30	28.0	30.0	3985340	Og	Ccy			DG		2	37	12.3	22	2602	15.3	17900
ZF30	30.0	32.0	3985341	Og	Ccy			DG		1	32	9.54	23	2352	10.4	12800
ZF30	32.0	34.0	3985342	Og	SlsOvq		PySp	G/LG	dissem pyr, Sp. minor.	-1	12	1.85	182	537		2413
ZF30	34.0	35.2	3985343	Og	SlsOvc			DG		-1	7	1.54	302	72		1349
ZF31	0.0	2.0		Og	CbsCcy											
ZF31	2.0	2.7	3985344	Og	SlsOvq	Bx		LG	trace breccia texture	-1	3	0.19	12	18		14
ZF32	0.0	2.0	3985345	Og	CbsCgCcy			DBN		-1	4	0.24	14	20		-2
ZF32	2.0	4.0	3985346	Og	OvqCcy			DB		1	33	0.17	9	65		28
ZF32	4.0	6.0	3985347	Og	SlsOvqCcy	We		DG		1	85	0.24	12	866		251
ZF32	6.0	7.9	3985348	Og	SlsOvcOvq			DG		1	86	0.23	9	1473		402
ZF33	0.0	2.0		Og	Cbs			DG								
ZF33	2.0	4.0	3985349	Og	Ccy			DBN		-1	32	4.23	20	878		1785
ZF33	4.0	6.0	3985350	Og	SlsCcy	We		DG		-1	29	2.03	17	1032		3710
ZF33	6.0	8.0	3985351	Og	Ccy			DG	sandy clay	1	26	2.47	15	1228		6000
ZF33	8.0	10.0	3985352	Og	CcySls			DM		-1	19	2.72	21	989		7300
ZF33	10.0	12.3	3985353	Og	SlsOvc			LG/G		-1	31	2.43	74	874		3143
ZF34	0.0	2.0		Og	Cbs											
ZF34	2.0	4.0	3985354	Og	Ccy			DG/LB		-1	60	0.56	29	264		336
ZF34	4.0	6.0	3985355	Og	Ccy			DG/LB		-1	79	0.71	27	881		500
ZF34	6.0	8.0	3985356	Og	Ccy			DG/LB		-1	43	1.54	25	588		1212
ZF34	8.0	10.0	3985357	Og	Ccy			DG		-1	29	1.97	33	546		1350
ZF34	10.0	12.0	3985358	Og	Ccy			DM		-1	27	1.71	26	621		1641
ZF34	12.0	14.0	3985359	Og	Ccy			DG		-1	31	4.17	41	557		1696
ZF34	14.0	16.0	3985360	Og	Ccy			DG		-1	28	4.65	35	451		1378
ZF34	16.0	18.0	3985361	Og	Ccy			G		1	32	1.97	21	4300		6600
ZF34	18.0	20.0	3985362	Og	CcySls			GB/LG		-1	24	12.7	21	3600		7500
ZF34	20.0	20.8	3985363	Og	Sls	Al	SdSp	DG	trace sphalerite, minor ank. alteration.	-1	7	1.49	219	261		1071
ZF35	0.0	2.0		Og	Cbs											
ZF35	2.0	4.0	3985364	Og	Ccy			LB/DB		-1	8	0.41	22	61		22
ZF35	4.0	6.0	3985365	Og	Ccy			DM		-1	51	1.21	27	1150		944
ZF35	6.0	8.0	3985366	Og	Ccy			DM		-1	29	1.8	44	367		644
ZF35	8.0	10.0	3985367	Og	CcySls	We		DM		-1	20	3.61	47	104		504
ZF35	10.0	11.6	3985368	Og	SlsOvc			DG/G		-1	10	1.77	145	33		219

843047

Appendix : Firewood siding prospect. Multi-element geochemistry of air-core EOH samples.

Appendix : Firewood Siding Prospect. Multi-element geochemistry of air-core end of hole samples.																
DPO 77660																
Hole	Sampno	east	north	Ag	Al%	As	Ba	Ca%	Cu	Fe%	K%	Mg%	Mn	Pb	Zn	S%
ZF1	3986027	360699	5349744	-5	0.25	-25	11	35.50	11	0.20	0.11	0.69	63	-50	37	
ZF2	3986028	360709	5349745	-5	1.47	-25	68	24.10	9	0.89	0.79	5.65	97	-50	17	
ZF3	3986029	360719	5349747	-5	0.85	-25	49	29.20	7	0.46	0.47	2.68	68	-50	-5	
ZF4	3986030	360729	5349748	-5	3.13	-25	190	12.80	5	1.28	1.78	6.48	234	-50	60	
ZF5	3986031	360739	5349750	-5	0.62	-25	35	26.70	8	0.67	0.32	5.07	175	-50	69	
ZF6	3986032	360748	5349751	-5	1.35	33	205	0.09	47	0.30	0.48	0.10	-15	1720	1590	
ZF7	3986033	360758	5349752	-5	0.46	-25	21	26.60	7	0.54	0.22	6.87	248	57	272	
ZF8	3986034	360768	5349754	-5	4.76	-25	332	0.06	6	0.80	2.18	0.33	-15	-50	146	
ZF9	3986035	360778	5349755	-5	1.69	-25	101	19.70	5	1.65	0.89	8.11	345	-50	336	
ZF10	3986036	360788	5349757	-5	11.40	29	518	0.28	13	1.97	4.95	0.76	48	-50	119	
ZF11	3986037	360722	5349798	-5	0.72	-25	35	30.90	7	0.43	0.38	2.55	95	-50	45	
ZF12	3986038	360732	5349799	-5	2.69	-25	149	16.00	-5	1.17	1.50	8.37	365	-50	222	
ZF13	3986039	360741	5349800	-5	1.43	-25	94	22.00	5	0.80	0.78	6.72	116	-50	54	
ZF14	3986040	360751	5349802	-5	5.07	-25	331	8.74	8	1.67	2.66	4.35	75	-50	635	
ZF15	3986041	360761	5349803	-5	5.99	-25	381	6.11	7	1.94	3.09	3.23	170	-50	28	
ZF16	3986042	360771	5349805	-5	1.99	-25	152	0.67	-5	0.87	1.10	0.21	-15	-50	17	
ZF17	3986043	360781	5349806	-5	1.61	-25	88	18.50	5	1.30	0.86	9.27	239	-50	43	
ZF18	3986044	360705	5349846	-5	1.88	30	97	24.10	8	1.02	1.10	4.36	141	-50	194	
ZF19	3986045	360715	5349847	-5	2.15	-25	131	26.20	10	1.14	1.28	2.09	307	-50	73	
ZF20	3986046	360725	5349849	-5	0.92	26	219	0.08	16	0.43	0.39	0.07	-15	3740	3500	
ZF21	3986047	360735	5349850	-5	0.75	-25	135	0.04	7	0.37	0.30	0.05	-15	630	507	
ZF22	3986048	360744	5349851	-5	0.47	-25	166	0.05	-5	0.29	0.11	0.01	-15	780	350	
ZF23	3986049	360754	5349853	-5	0.93	-25	99	0.03	22	0.23	0.29	0.05	-15	702	199	
ZF24	3986050	360764	5349854	-5	3.58	-25	206	10.50	10	2.07	1.85	5.13	172	267	339	
ZF25	3986051	360774	5349856	-5	1.42	-25	75	19.90	8	0.68	0.68	7.83	83	167	293	
ZF26	3986052	360784	5349857	-5	0.54	-25	169	0.05	-5	0.19	0.11	0.03	-15	-50	6	
ZF27	3986053	360698	5349895	-5	2.23	-25	88	13.30	7	1.71	1.14	7.41	329	847	1220	
ZF28	3986054	360708	5349897	-5	2.20	-25	102	17.00	8	2.05	1.15	9.40	404	118	985	
ZF29	3986055	360718	5349898	-5	2.27	75	70	14.10	18	3.70	0.76	8.21	119	963	5100	4.50
ZF30	3986056	360728	5349900	-5	1.73	-25	110	17.80	6	1.04	0.94	9.56	335	-50	360	
ZF31	3986057	360737	5349901	-5	0.74	-25	201	0.06	-5	0.19	0.28	0.07	-15	-50	12	
ZF32	3986058	360747	5349902	-5	2.01	-25	211	0.04	15	0.27	0.46	0.08	-15	2720	1160	
ZF33	3986059	360757	5349904	-5	0.63	-25	28	23.80	6	0.69	0.32	7.38	159	-50	68	
ZF34	3986060	360767	5349905	-5	2.10	-25	104	12.90	7	1.66	1.09	4.75	189	116	674	
ZF35	3986061	360777	5349906	-5	3.09	-25	152	13.10	7	1.49	1.47	5.28	137	-50	161	

843048

APPENDIX 2:

T. Moody report - alteration patterns. Firewood Siding and
Professor Range air-core end-of-hole sample descriptions and
geochemistry.



33 Commercial Road, Mount Isa. Q. 4825 (P.O. Box 1339)

Ph: (077) 43 6355
Fax: (077) 43 5166

October 1994

Memorandum to : R.G. Parkinson
copy : D.C. Fielding
D. Morris
from : T.C. Moody

ZEEHAN CARBONATE-HOSTED Zn-(Pb-Ag) MINERALISATION
& ALTERATION PATTERNS

Summary:

A zoned hydrothermal alteration pattern is associated with carbonate-hosted zinc mineralisation in the Zeehan area, Tasmania. The characterisation of the alteration pattern provides a vector for potentially locating high-grade Zn-(Pb-Ag) mineralisation within a broader assemblage of altered limestones.

Alteration characteristics include:

- Zonation from unaltered or "calcite-dominated" limestones to altered "dolomitised" limestones which include an outer dolomite zone (weak alteration), ankerite-dolomite zone (moderate alteration) and siderite-ankerite zone (intense alteration) associated with increasing Zn-Pb-Ag mineralisation.
- Disseminated or pervasive carbonate mineral species become more Zn, Mg, Fe and Mn rich as alteration intensifies.
- Hydrothermal maturation of organic material to pyrobitumen and/or mobilisation of hydrocarbon material is associated with alteration and mineralisation.
- Disseminated, vein and replacement style zinc, lead, silver, iron and rare copper sulphides and barite mineralisation increase with increasing alteration.

Areas of silicification have also been identified, although not as useful as an indicator of proximity to zinc mineralisation. Character of the alteration varies according to primary lithology, porosity and limestone facies distribution.

There is potentially a close spatial relationship of zinc mineralisation in the Gordon Limestone to basement relief or flanks of basement highs in the underlying Moina Sandstone (e.g. as indicated at the Grieves Prospect). There is also some suggestion that faulting and possibly folding/transpression may have influenced mineralisation as indicated at the Sunny Corner and Bannockburn Prospects. Sulphide-pyrobitumen bearing stylolites are also interpreted to indicate some mobilisation of sulphide with hydrocarbon material during deformation.

The alteration style and mineralisation characteristics appear more similar to the Irish-type zinc ore deposits than classic MVT type mineralisation. Petrographic and XRD analyses support this conclusion.

Alteration and mineralisation logged in some EZ and Amoco core appears to belong to the peripheral alteration assemblage and occasionally intersected significant mineralisation. Systematic logging of limestone facies and alteration types in all these drill holes is warranted, to possibly determine vectors to blind base metal mineralisation.

Introduction:

This report details the results of an examination of alteration associated with Ordovician Gordon Limestone-hosted zinc-mineralisation in Western Tasmania at the Grieves, Sunny Corner, Firewood Siding, Mariposa, Myrtle, Bannockburn and Pyramid Prospects. This has involved detailed examination of air core end-of-hole samples, logging recent CRAE diamond drill holes, minor re-logging and sampling diamond drill holes completed by EZ and Amoco and minor field checking. Ledgers for the end-of-hole sample descriptions are provided ~~in the report.~~

~~Several drill core and hand specimen samples were collected for petrographic, XRD and probe analyses to help identify and characterise the geochemistry of the alteration phases associated with the zinc mineralisation. Brief sample descriptions, drill hole and depth information supplied for the petrographic study are provided in Appendix 2. Details of the results of this study are provided in a report by Ashley (1994).~~

The aim of this report is to describe the alteration styles and spatial distribution of the alteration at some of the prospects from which the data was collected. Maps showing the inferred geology and alteration associated with several of the Zeehan Prospects are provided in Plans Tv 865-869. Firewood Siding Tv 868.

Alteration Characteristics:

An alteration pattern is recognised associated with zinc mineralisation at each of the CRAE zinc-carbonate prospects examined. The Oceana Deposit in the same district exhibits similar alteration characteristics.

The pattern of increasing alteration and Zn-Pb-Ag mineralisation includes:

- Un-mineralised limestones typically display weak dolomitisation and diagenetic silica alteration. Organic matter is less thermally mature than in altered limestones associated with zinc mineralisation.
- *Dolomite zone.* Involves subtle fine grained pervasive dolomitisation and re crystallisation characterised by weak/slow reactivity to dilute HCl. This process may have involved some introduction of carbonate into some less carbonatic facies, rare vein/fracture-hosted Zn-Pb mineralisation and possibly an increase in bituminous stylolites (?due to calcite dissolution);

- *Ankerite-Dolomite zone.* This includes increased and coarser recrystallised dolomite alteration and introduction of fine-medium grained sparry ferroan dolomite and ankerite. Dolomite and ankerite veining and brecciation increase approaching high grade base metal mineralisation. This zone is associated occasionally with development of saddle dolomite lined voids, destruction of primary textures or fabrics and minor disseminated and vein-hosted pyrite±galena±sphalerite±chalcocopyrite±marcasite. In the ankerite-dolomite and dolomite zones, field discrimination between ankerite and dolomite is not precise. Visual indicators for this pervasive dolomite ankerite mineralisation include bone or cream coloured veins and/or oxidation of exposed limestones or cut surfaces to a cream colour. In fresh samples the altered limestones in this zone become inert or very weakly reactive to dilute HCl, specific gravity and veining/fracturing increase, and blocky rhombs of bone/opaque ankerite or dolomite can be observed under 10x and 25x magnification.;
- *Siderite-Ankerite zone.* Characterised by intense pervasive iron-carbonate (siderite and ankerite±dolomite) alteration and replacement (completely obliterating primary textures), local intense solution and fracture-controlled brecciation, colloform banded carbonate replacement, sparry colourless calcite, rare barite veining, pervasive and vein/open-space sphalerite-galena-(pyrite) mineralisation. Limestones in this zone may also decompose to a poorly consolidated puggy carbonaceous material (yellow or brownish when zinc mineralised). This alteration is most obvious in the silty-sandy clastic and oolitic limestone facies. In black lutites or "black matrix breccias"/ wackestones the alteration and very fine grained *high-grade zinc carbonate & sulphide mineralisation may be very difficult to identify with the naked eye* (e.g. ~~sample 0070000, Appendix 2, 3, 4, 11, 1994~~). Higher grade mineralisation is indicated by inertness to dilute HCl, breccia texture in some samples and oxidation of core or chips to a chocolate brown colour on exposed surfaces.

~~Example of siderite-ankerite alteration zone shown in photo 1 to 4 from diamond drill hole DDF1046~~

Organic material/bituminous material in fractures and brown organic staining is more common immediately peripheral to the iron-carbonate alteration zones. Thermal alteration of organic material to pyrobitumen is intimately associated with zinc carbonate and sulphide mineralisation. At least two generations of stylolite development are present with an early set developed along bedding and later "post" stylolite steeply cross cutting the earlier set. The post stylolites contain pyrobitumen and locally traces of pyrite and sphalerite suggesting later deformation linked timing of some of the sphalerite mineralisation.

The petrographic and electron microprobe data highlight the following:

- The limestones are dominantly composed of clastic material often containing preserved fossil fragments and a dark pigmentation due to organic material.
- Almost all mineralised samples submitted have been pervasively altered to dolomite/ferroan dolomite-ankerite assemblages.

- High grade zinc-lead mineralisation is spatially associated with intense hydrothermal zincian-manganous-magnesian siderite, ankerite and local illite-sericite alteration, and volume decrease creating void space.
- Ore-related sulphide mineralisation generally partially succeeds Zn-Mn-Mg-Fe carbonate mineralisation but may partly overlap with a later phase of sparry sulphide-free iron carbonate and calcite mineralisation.
- Sulphide mineralisation is often intimately associated with pyrobitumen aggregates.
- The sulphide mineralisation probably accompanied increased sulfur fugacity, copper activity and salinity during replacement of earlier Zn, Mg, Mn carbonates.
- Sphalerite is generally a pale-coloured, transparent, low-Fe species or has a dark colour due to chalcopyrite disease in the most intensely altered limestones (consistent with Sedex or Irish type mineralisation).
- The most sulphide rich samples also contain traces of marcasite, tetrahedrite and chalcopyrite.
- Some pyrite may have a biogenic or diagenetic origin and was subsequently recrystallised during alteration and ore-related mineralisation.
- Finer grained-silty limestone facies are apparently more susceptible to alteration and mineralisation (e.g. samples 2070008, 2070009, 2070010).
- There is some evidence for migration of organic material coincident with sulphide mineralisation (sample 2070011).
- There is potential for significant silver credits with zinc mineralisation in zones of intense alteration.

Distribution of Alteration:

The strongest alteration is most common immediately above the Moina Sandstone and immediately beneath the Crotty Quartzite, but may occur at several levels in the stratigraphy. The alteration is apparently asymmetric and may correspond to an alteration-mineralising front/migration pathway. Boundaries between the alteration zones may also be sharp. The intense alteration and associated base metal mineralisation is often associated with basin margin facies near reef, slope and back-reef mud facies immediately overlying apparent irregularities in the underlying Moina Sandstone and higher in the stratigraphy. This may reflect preparation of limestones by early porosity associated with dolomitisation, limestone composition (finer grained facies more susceptible to alteration), primary and solution porosity, faults and basement architecture (indicated by limestone facies distribution).

The Moina Sandstone is locally haematitic and oxidised (e.g. Pyramid Prospect), and often weathered near the contact with the overlying Gordon Limestone sequence (e.g. Grieves Prospect). The sandstones are a possible source of iron and oxidised fluids potentially important in the ore mineralisation process. The porous nature of the altered, often oolitic, limestone near the base of the Gordon Limestone may have facilitated deep weathering or ground water activity. This may be responsible for development of soft limestone pug to considerable depth.

The association of hydrothermal maturation of organic matter to pyrobitumen observed both in core and thin section, demonstrate alteration and zinc-lead-silver mineralisation are associated with a thermal anomalism. This may be verified by vitrinite reflectance studies and hydrocarbon maturation indices.

Comparison with Irish Carbonate-hosted Base metal Deposits:

The Zeehan carbonate-hosted deposits have many similarities with the Irish Zn-Pb-Ag mineralisation, including:

- Mineralisation is hosted by basin margin marine facies deposited during a marine transgression, including platform muds and mixed shallow-water carbonate facies - micritic, oolitic, argillaceous;
- Blanket bogs overlie some of the deposits in Ireland and Zeehan which are also locally mineralised;
- Tectonism and alteration are probably coincident with basin subsidence/deformation as indicated by similar matrix material in both cavity- and fracture-fill material, and in the altered host;
- Proximity to thermal anomalies;
- Stronger similarities with Sedex class deposits than MVT, indicated by significant silver and minor copper, structural control on ore distribution, and absence of fluorite;
- Similar metal zonation and enrichment characteristics, including high Fe, S, Mn, As, Ba, Zn, Pb, Ag \pm Cu associated with most intense alteration;
- Black matrix breccias have been described at Lisheen and Silvermines.

These similarities suggest a similar exploration rationale may be applied.

Discussion and Recommendations:

Zinc mineralisation at Zeehan is associated with well developed hydrothermal alteration systems. The limestone facies are a mix of impure clastic limestones variably endowed with organic material in reef, back reef, fore reef and slope facies. Distribution of the various facies is related to morphology of the underlying Moina Sandstone and basement architecture.

The limestones hosting the zinc-lead mineralisation have been regionally dolomitised and overprinted by ankerite-ferroan dolomite alteration with Zn-Mn-Mg rich siderite, dolomite and ankerite closer to sulphide mineralisation. Sulphide and sparry carbonate mineralisation replace the limestones and overprint earlier zinc carbonate mineralisation in zones of most intense alteration, probably associated with increasing salinity of hydrothermal brines and sulfur activity. Hydrothermal maturation of organic material has accompanied ore related mineralisation and alteration. Some sulphide mineralisation has probably accompanied deformation associated with intense fracturing, post-stylolite development, folding and at least local hydrocarbon migration. Some mineralisation may have accumulated in brine/hydrocarbon trap sites such as fold hinges and pinch-out structures.

Genesis of the deposits is most akin to the Irish type and Sedex class deposits, hence similar exploration rationale for these deposits are valid at Zeehan.

The maps compiled from end-of-hole air core sample information and minor field reconnaissance provide only an approximate guide to the two dimensional distribution of alteration associated with zinc-lead mineralisation at the various prospects examined. The maps are highly interpretive and could be greatly improved with more detailed mapping, incorporation of diamond drill hole information and more detailed air core drilling.

There is room for a large high-grade carbonate-hosted Zn-Pb deposit within the region. With the wealth of information available in diamond drill holes, it is possible to piece together facies variation and alteration pattern, distribution of Pb-Zn mineralisation and limestone facies on a regional scale. New targets for bedrock carbonate-hosted Zn deposits or extensions to known mineralisation in the Zeehan region may arise from a broader view of the region stepping away from the known mineralisation (e.g. wide spaced air-core drill traverses), applying some of the knowledge exposed in this report and guides provided in a previous report by D. Taylor (CRAE Report 14590). Detailed logging of the facies and alteration types of the EZ and Amoco drill holes is recommended.

Interpretation of the alteration mineralogy and discrimination between calcite, dolomite and siderite may be assisted in the field by using dilute HCl and staining samples with Alizarin Red S. Features such as destruction of primary limestone texture, inert or weak reactivity to dilute HCl, increased specific gravity, veining, brecciation and sulphide mineralisation are obvious field criteria for identifying potential zinc mineralisation.

It is possible that not all the zinc resources have been identified at the Oceana Carbonate-hosted Pb-Zn deposit

T.C. Moody
Project Geologist

Firewood siding - air-core EOH sample ledger

APPENDIX 2: Firewood Siding prospect. Air-core EOH sample ledger.						
HOLE No	GSOLITH	FIELDID	TEXTURE	ALTMIN	COLOUR	COMMENTS
ZF 1	Og	Sls			G	Crse calc-siltite, stylonitic
ZF 2	Og	Sls	Fr	CcSd	G	Calc-siltite
ZF 3	Og	Sls			MDG-G	Crse calc-siltite, stylonitic
ZF 4	Og	Scl	VuAl		G	dol-siltite/vfg. dol-arenite; Vu possibly dissolved fossils
ZF 5	Og	Sls			GDG	G crse calc-siltite with brocken fossils, G calc-lutite
ZF 6	Og	Sls?	Al?		DGB	Cherty altd? siltite; ?sideritic-silicified
ZF 7	Og	Sls			GLG	F.g. calc-arenite
ZF 8	Og	SssScl	Fs	Py	G	F.g. arenite/dol-arenite
ZF 9	Og	Sls	BxVn	Cc	G-DG	V.f.g. calc-arenite
ZF 10	Og	SssSsi			DG	Graphitic v.f.g. sandst.-siltst., ?weakly dolomitic
ZF 11	Og	Sls			G	Stylonitic calc-lutite, locally micritic/recrystallised
ZF 12	Og	Sls	Ma		G	F.g. dol-arenite
ZF 13	Og	Sls	Vn	Cc	GDG	Crse.g. grainst./corallite?; irreg. interspersed DG calc-siltite
ZF 14	Og	SlsScl			MG-DG	calc-dol siltite-lutite
ZF 15	Og	SssSls	Fs	Py	G	V.f.g. sandst./de-carbonated calc-arenite-siltite
ZF 16	Og	Sss			G	V.f.g. sandst./de-carbonated calc-arenite
ZF 17	Og	Scl	VuAl?		DG	Leached porous dol-arenite, weakly altd.
ZF 18	Og	Sls	Fs	Py	MDG-G	Calc-siltite
ZF 19	Og	SlsScl			DG	Crse. dol-siltite-calc-siltite
ZF 20	Og	SclSsi?	Al?VnDs	QzPy	DG	Micritic siltstone/dol-siltite; cherty silicification; pervasive mod. ankerite alteration
ZF 21	Og	SclSsi?	Al?VnDs	QzPy	DG	Micritic siltstone/dol-siltite; cherty silicification; pervasive weak ankerite? alteration
ZF 22	Og	Sls?	AlVn	Qz	G-DG	Siltite-lutite decarbonated-weakly altd?; weak-mod.silicified
ZF 23	Og	SsiScl	Ma		G	Siltstone/dol-siltite
ZF 24	Og	Scl	Vn	CcQzPy	G	v.f.g.dol-arenite
ZF 25	Og	SlsScl	Vn	Cc	G	V.f.g.dol-calc-arenite
ZF 26	Og	Sls	We		LB	decarbonated/oxidized limestone; vughs filled with siltstone-arenite; 1 fossil?
ZF 27	Og	SsiSss			G	v.f.g Sst-Sl.; weakly altd?; decarbonated limestone
ZF 28	Og	SsiSss			G	v.f.g Sst-Sl.; weakly altd?; decarbonated limestone
ZF 29	Og	SsiSss	Vn	QzPy	G	v.f.g. sandstone-siltstone
ZF 30	Og	SclSsi	Vn	PyQzSp	G-DG	Crse. siltstone/weakly dolomitic siltstone; rare sphalerite
ZF 31	Og	Sls	We		LB	Weathered limestone
ZF 32	Og	Ssi	Vn	Qz	DG	siltstone
ZF 33	Og	SclSls	Al		DGLG	2-toned irreg. Bn DG calc-siltite & LG siltite-arenite
ZF 34	Og	Sls			DGLG	2-toned irreg. Bn DG calc-siltite & LG siltite-arenite; abundant spiral gastropod fossils
ZF 35	Og	Sls			GDG	Carbonaceous calc-siltite & calc-arenite

843056

APPENDIX : Firewood Siding prospect. Multi-element geochemistry of air-core EOH samples.

APPENDIX : Firewood Siding prospect. Multi-element geochemistry of air-core bottom-of-hole samples																	
DPO 77660																	
Lithology is calculated from analyses																	
	Siderite	>10% Fe															
	Limestone	>20% Ca	<4% Mg														
	Dolomite	>12% Ca	>4% Mg														
	Impure carb.	12 - 20% Ca	<4% Mg														
	Pelite	<12% Ca	>4% Al														
	Sandstone	<12% Ca	<4% Al														
Hole No.	Sample	east	north	Lithology	Ag	Al%	As	Ba	Ca%	Cu	Fe%	K%	Mg%	Mn	Pb	Zn	S%
ZF1	3986027	360698.9	5349744.0	limestone	-5	0.25	-25	11	35.50	11	0.20	0.11	0.69	63	-50	37	
ZF2	3986028	360708.8	5349745.4	dolomite	-5	1.47	-25	68	24.10	9	0.89	0.79	5.65	97	-50	17	
ZF3	3986029	360718.7	5349746.8	limestone	-5	0.85	-25	49	29.20	7	0.46	0.47	2.68	68	-50	-5	
ZF4	3986030	360728.6	5349748.2	dolomite	-5	3.13	-25	190	12.80	5	1.28	1.78	6.48	234	-50	60	
ZF5	3986031	360738.5	5349749.6	limestone	-5	0.62	-25	35	26.70	8	0.67	0.32	5.07	175	-50	69	
ZF6	3986032	360748.4	5349751.0	sandstones	-5	1.35	33	205	0.09	47	0.30	0.48	0.10	-15	1720	1590	
ZF7	3986033	360758.3	5349752.4	limestone	-5	0.46	-25	21	26.60	7	0.54	0.22	6.87	248	57	272	
ZF8	3986034	360788.2	5349753.7	pelites	-5	4.76	-25	332	0.06	6	0.80	2.18	0.33	-15	-50	146	
ZF9	3986035	360778.1	5349755.1	dolomite	-5	1.69	-25	101	19.70	5	1.65	0.89	8.11	345	-50	336	
ZF10	3986036	360788.0	5349756.5	pelites	-5	11.40	29	518	0.28	13	1.97	4.95	0.76	48	-50	119	
ZF11	3986037	360721.7	5349797.7	limestone	-5	0.72	-25	35	30.90	7	0.43	0.38	2.55	95	-50	45	
ZF12	3986038	360731.6	5349799.1	dolomite	-5	2.69	-25	149	16.00	-5	1.17	1.50	8.37	365	-50	222	
ZF13	3986039	360741.5	5349800.5	dolomite	-5	1.43	-25	94	22.00	5	0.80	0.78	6.72	116	-50	54	
ZF14	3986040	360751.4	5349801.9	pelites	-5	5.07	-25	331	8.74	8	1.67	2.66	4.35	75	-50	635	
ZF15	3986041	360761.3	5349803.3	pelites	-5	5.99	-25	381	6.11	7	1.94	3.09	3.23	170	-50	28	
ZF16	3986042	360771.2	5349804.7	sandstones	-5	1.99	-25	152	0.67	-5	0.87	1.10	0.21	-15	-50	17	
ZF17	3986043	360781.1	5349806.0	dolomite	-5	1.61	-25	88	18.50	5	1.30	0.86	9.27	239	-50	43	
ZF18	3986044	360704.8	5349845.8	dolomite	-5	1.88	30	97	24.10	8	1.02	1.10	4.38	141	-50	194	
ZF19	3986045	360714.7	5349847.2	limestone	-5	2.15	-25	131	26.20	10	1.14	1.28	2.09	307	-50	73	
ZF20	3986046	360724.6	5349848.6	sandstones	-5	0.92	26	219	0.08	16	0.43	0.39	0.07	-15	3740	3500	
ZF21	3986047	360734.5	5349850.0	sandstones	-5	0.75	-25	135	0.04	7	0.37	0.30	0.05	-15	630	507	
ZF22	3986048	360744.4	5349851.4	sandstones	-5	0.47	-25	166	0.05	-5	0.29	0.11	0.01	-15	780	350	
ZF23	3986049	360754.3	5349852.8	sandstones	-5	0.93	-25	99	0.03	22	0.23	0.29	0.05	-15	702	199	
ZF24	3986050	360764.2	5349854.2	sandstones	-5	3.58	-25	206	10.50	10	2.07	1.85	5.13	172	267	339	
ZF25	3986051	360774.1	5349855.6	dolomite	-5	1.42	-25	75	19.90	8	0.68	0.68	7.83	83	167	293	
ZF26	3986052	360784.0	5349856.9	sandstones	-5	0.54	-25	169	0.05	-5	0.19	0.11	0.03	-15	-50	6	
ZF27	3986053	360697.8	5349895.3	dolomite	-5	2.23	-25	88	13.30	7	1.71	1.14	7.41	329	847	1220	
ZF28	3986054	360707.7	5349896.7	dolomite	-5	2.20	-25	102	17.00	8	2.05	1.15	9.40	404	118	985	
ZF29	3986055	360717.6	5349898.1	dolomite	-5	2.27	75	70	14.10	18	3.70	0.76	8.21	119	963	5100	4.50
ZF30	3986056	360727.6	5349899.5	dolomite	-5	1.73	-25	110	17.80	6	1.04	0.94	9.56	335	-50	360	
ZF31	3986057	360737.5	5349900.9	sandstones	-5	0.74	-25	201	0.06	-5	0.19	0.28	0.07	-15	-50	12	
ZF32	3986058	360747.4	5349902.3	sandstones	-5	2.01	-25	211	0.04	15	0.27	0.46	0.08	-15	2720	1160	
ZF33	3986059	360757.3	5349903.7	dolomite	-5	0.63	-25	28	23.80	6	0.69	0.32	7.38	159	-50	68	
ZF34	3986060	360767.2	5349905.1	dolomite	-5	2.10	-25	104	12.90	7	1.66	1.09	4.75	189	116	674	
ZF35	3986061	360777.1	5349906.5	dolomite	-5	3.09	-25	152	13.10	7	1.49	1.47	5.28	137	-50	161	

843057

APPENDIX : Professor Range prospect. Multi-element geochemistry of air-core EOH samples.

APPENDIX : Professor Range prospect. Multi-element geochemistry of air-core bottom-of-hole samples																	
DPO 77137																	
Lithology is calculated from analyses																	
	Siderite	>10% Fe															
	Limestone	>20% Ca	<4% Mg														
	Dolomite	>12% Ca	>4% Mg														
	Impure carb.	12 - 20% Ca	<4% Mg														
	Pelite	<12% Ca	>4% Al														
	Sandstone	<12% Ca	<4% Al														
Hole No.	Sample	east	north	Lithology	Ag	Al%	As	Ba	Ca%	Cu	Fe%	K%	Mg%	Mn	Pb	Zn	S%
ZR1	3912218	366573.6	5351120.9	sandstones	-5	0.98	-25	66	0.01	8	2.47	0.42	0.07	-15	-50	171	
ZR2	3912219	366560.0	5351100.0	dolomite	-5	1.78	-25	115	20.10	13	0.93	0.80	11.10	180	418	602	
ZR3	3912220	366546.4	5351079.0	dolomite	-5	0.24	-25	26	23.00	21	0.61	0.09	11.60	201	-50	27	
ZR4	3912221	366532.8	5351058.0	sandstones	-5	2.57	-25	157	10.10	14	4.40	1.06	5.02	62	-50	547	
ZR5	3912222	366506.6	5351045.2	pelites	-5	4.61	-25	460	2.03	12	1.34	2.85	1.08	48	-50	42	
ZR6	3912223	366505.5	5351016.1	pelites	-5	6.01	25	398	4.90	17	2.15	3.01	2.01	131	-50	451	
ZR7	3912224	366491.9	5350995.1	pelites	-5	5.87	-25	366	9.76	19	2.24	2.40	3.02	170	-50	124	
ZR8	3912225	366478.3	5350974.2	limestone	-5	1.38	-25	69	31.40	25	0.79	0.63	1.27	96	-50	112	
ZR9	3912226	366464.7	5350953.2	dolomite	-5	1.57	-25	64	21.00	19	1.39	0.70	6.03	126	-50	81	
ZR10	3912227	366450.5	5350931.4	impure carbonate	-5	4.58	80	306	13.10	30	3.85	1.78	2.08	138	121	1630	
ZR11	3912228	366437.5	5350911.3	limestone	5	0.90	-25	35	30.30	25	0.68	0.37	1.39	91	-50	17	
ZR12	3912229	366446.7	5351292.8	dolomite	8	1.33	84	86	13.70	86	4.99	0.54	7.52	124	13900	3670	
ZR13	3912230	366433.1	5351271.8	dolomite	-5	1.36	-25	92	14.90	18	0.71	0.63	8.49	181	123	598	
ZR14	3912231	366416.8	5351246.6	pelites	12	4.69	94	161	2.65	369	1.00	1.20	1.46	64	26500	26200	3.09
ZR15	3912232	366405.9	5351229.9	dolomite	-5	3.93	-25	214	13.50	21	1.64	1.87	6.00	139	-50	1300	
ZR16	3912233	366391.1	5351210.8	sandstones	-5	3.76	-25	233	8.78	15	1.76	1.35	1.75	171	-50	112	
ZR17	3912234	366375.9	5351183.7	pelites	-5	6.28	-25	412	0.28	19	1.34	2.75	0.48	16	-50	62	
ZR18	3912235	366365.0	5351167.0	sandstones	-5	3.06	-25	161	6.46	15	1.56	1.17	0.94	39	307	457	
ZR19	3912236	366353.1	5351144.9	impure carbonate	-5	4.44	-25	185	17.70	23	1.44	1.94	1.04	39	-50	113	
ZR20	3912237	366337.8	5351125.0	impure carbonate	-5	3.61	-25	127	19.10	23	0.82	1.38	1.12	116	-50	20	
ZR21	3912238	366321.5	5351099.9	sandstones	-5	0.88	-25	36	3.17	15	0.95	0.32	0.48	33	-50	40	
ZR22	3912239	366310.6	5351083.1	dolomite	-5	3.19	43	138	12.20	22	2.75	1.36	5.50	232	-50	16200	3.19
ZR23	3912240	366296.9	5351062.1	dolomite	-5	2.05	30	76	13.40	20	2.29	0.84	5.14	258	-50	360	
ZR27	3912241	366284.4	5351042.8	pelites	-5	5.70	-25	200	9.85	24	1.64	2.02	3.96	115	-50	68	
ZR28	3912242	366269.7	5351020.2	pelites	-5	4.02	35	196	9.23	22	2.37	1.69	3.23	132	-50	35	
ZR29	3912243	366256.7	5350996.5	impure carbonate	-5	6.46	33	228	12.60	23	1.33	2.75	1.84	93	-50	27	
ZR30	3912244	366306.2	5351443.6	dolomite	-5	0.74	-25	67	19.70	16	0.67	0.34	11.00	161	93	365	
ZR31	3912245	366289.9	5351418.5	dolomite	-5	0.49	-25	40	19.70	13	0.53	0.22	11.30	140	142	733	
ZR32	3912246	366279.0	5351401.7	dolomite	-5	0.60	-25	45	19.20	15	0.40	0.28	10.90	138	55	52	
ZR33	3912247	366265.4	5351380.7	dolomite	-5	0.34	-25	28	19.20	15	0.34	0.14	11.00	203	118	144	
ZR34	3912248	366251.8	5351359.7	pelites	-5	6.49	-25	511	0.31	22	1.28	3.57	0.40	99	-50	51	
ZR35	3912249	366229.8	5351344.2	limestone	-5	2.24	-25	143	26.50	23	2.38	0.92	1.31	82	-50	151	
ZR36	3912250	366213.4	5351319.1	limestone	6	0.61	-25	30	32.00	21	0.44	0.24	1.27	102	-50	158	
ZR37	3912251	366202.5	5351302.3	dolomite	-5	2.91	32	166	16.50	16	1.82	1.32	6.03	199	-50	36	

APPENDIX : Professor Range prospect. Multi-element geochemistry of air-core EOH samples.

Hole No.	Sample	east	north	Lithology	Ag	Al%	As	Ba	Ca%	Cu	Fe%	K%	Mg%	Mn	Pb	Zn	S%
ZR38	3912252	366197.3	5351275.9	sandstones	-5	1.12	-25	50	9.92	12	0.92	0.51	4.59	78	-50	24	
ZR39	3912253	366183.7	5351254.9	dolomite	-5	3.12	-25	129	16.50	17	1.63	1.42	4.12	179	-50	80	
ZR40	3912254	366170.1	5351233.9	limestone	5	0.68	-25	25	34.80	21	0.46	0.24	0.65	105	-50	63	
ZR41	3912255	366143.9	5351221.2	dolomite	-5	3.42	-25	182	13.30	18	1.98	1.36	5.56	140	-50	50	
ZR42	3912257	366140.3	5351197.3	sandstones	-5	3.00	38	133	5.10	20	2.57	0.99	2.07	62	-50	99	
ZR44	3912258	366111.3	5351510.6	dolomite	-5	0.75	73	58	19.90	19	0.71	0.35	11.20	156	116	643	
ZR45	3912259	366119.6	5351505.2	dolomite	-5	0.93	33	71	18.30	17	1.01	0.40	10.40	186	321	724	
ZR46	3912260	366106.0	5351484.2	pelites	-5	6.31	30	428	0.07	38	1.05	3.37	0.39	27	4600	1380	
ZR47	3912261	366092.4	5351463.2	pelites	-5	8.17	42	642	0.09	28	1.00	4.27	0.44	18	56	102	
ZR48	3912262	366078.8	5351442.3	limestone	6	1.10	-25	73	31.60	22	0.72	0.51	1.56	149	51	36	
ZR49	3912263	366056.8	5351426.7	dolomite	-5	2.14	29	148	22.00	18	0.96	0.98	4.58	109	-50	41	
ZR50	3912264	366043.2	5351405.8	dolomite	-5	2.55	-25	123	21.00	14	1.35	1.23	4.59	204	-50	19	
ZR51	3912265	366029.6	5351384.8	limestone	7	0.19	32	8	36.10	19	0.21	-0.05	0.21	142	-50	19	
ZR53	3912266	366010.5	5351355.5	sandstones	-5	1.47	35	91	0.02	16	0.48	0.67	0.07	-15	-50	35	
ZR54	3912267	365925.0	5351774.6	pelites	-5	7.36	31	503	0.22	34	1.44	4.62	0.72	19	-50	62	
ZR55	3914513	365935.9	5351791.4	sandstones	-5	1.55	41	88	0.02	21	1.75	0.65	0.07	24	-50	28	
ZR56	3912268	365914.1	5351757.9	dolomite	-5	3.62	-25	216	14.10	10	2.10	1.68	7.33	348	569	441	
ZR57	3912269	365904.3	5351742.8	dolomite	-5	3.97	-25	244	14.00	9	2.43	1.90	4.10	249	-50	16	
ZR58	3912270	365854.8	5351850.1	dolomite	-5	1.13	48	59	18.80	13	2.17	0.47	10.80	246	150	544	
ZR59	3912271	365841.1	5351829.1	dolomite	-5	1.21	-25	102	19.60	6	1.12	0.55	11.10	402	-50	41	
ZR60	3912272	365830.2	5351812.3	dolomite	-5	2.94	-25	111	17.50	9	1.47	1.19	6.69	300	-50	76	
ZR61	3912273	365803.0	5351770.4	pelites	-5	4.10	-25	373	2.55	6	1.30	2.83	1.18	55	-50	54	
ZR62	3912274	365789.4	5351749.4	pelites	-5	6.75	-25	593	0.08	7	0.78	4.64	0.61	17	-50	15	
ZR63	3912275	365776.9	5351730.1	limestone	-5	1.07	-25	45	25.00	12	0.67	0.54	6.44	109	-50	24	
ZR64	3912276	365762.2	5351707.5	sandstones	-5	2.80	-25	64	8.29	7	0.44	0.73	0.86	27	-50	275	
ZR66	3912277	365773.6	5351908.7	sandstones	-5	2.40	53	255	0.03	32	1.04	0.85	0.19	17	57	362	
ZR67	3912278	365760.0	5351887.8	dolomite	-5	0.78	-25	32	20.60	12	0.70	0.30	11.00	127	52	806	
ZR68	3912279	365748.4	5351868.8	dolomite	-5	2.47	-25	123	17.00	8	0.72	1.18	9.15	200	-50	221	
ZR69	3912280	365732.8	5351845.8	dolomite	-5	3.90	30	278	12.20	10	2.38	1.96	6.56	255	61	630	
ZR70	3912281	365719.1	5351824.9	dolomite	-5	0.62	-25	26	24.00	9	0.60	0.25	8.48	112	-50	38	
ZR71	3912282	365705.5	5351803.9	impure carbonate	-5	3.62	27	225	15.80	12	1.41	1.76	2.31	129	-50	207	
ZR72	3912283	365691.9	5351782.9	pelites	-5	11.90	44	612	0.43	10	1.69	5.04	0.87	47	-50	41	
ZR73	3912284	365678.3	5351762.0	limestone	5	0.28	-25	13	31.70	12	0.29	0.11	1.28	79	-50	29	
ZR74	3912285	365664.7	5351741.0	limestone	5	0.97	-25	50	35.10	14	0.28	0.50	0.32	68	-50	22	
ZR75	3912286	365651.1	5351720.0	limestone	-5	0.59	-25	28	35.00	14	0.30	0.28	0.47	65	-50	12	
ZR76	3912287	365673.4	5351938.0	sandstones	-5	1.28	25	214	0.05	44	0.63	0.51	0.12	18	119	130	
ZR77	3912288	365662.5	5351921.3	sandstones	13	3.31	295	193	4.14	115	9.70	1.29	2.31	116	3920	3790	
ZR78	3912289	365651.6	5351904.5	dolomite	11	1.92	34	91	16.80	27	1.45	0.86	9.73	355	11300	19200	2.28
ZR79	3912290	365635.3	5351879.3	siderite	-5	5.98	167	101	0.26	29	10.10	2.98	0.63	41	644	5720	11.30
ZR80	3912291	365621.7	5351858.4	limestone	-5	3.66	27	156	20.90	10	1.31	1.57	3.48	118	-50	91	
ZR81	3912292	365608.0	5351837.4	pelites	-5	6.50	188	271	5.13	17	5.91	2.98	2.32	59	74	254	
ZR82	3912293	365594.4	5351816.4	pelites	-5	4.91	49	415	1.88	-5	1.61	3.28	1.15	61	-50	151	
ZR83	3912294	365580.8	5351795.5	pelites	-5	6.78	-25	523	0.01	14	1.17	4.10	0.66	15	-50	46	
ZR84	3912295	365571.6	5351781.2	limestone	-5	2.93	-25	143	24.80	13	1.10	1.39	2.61	116	-50	16	
ZR85	3912296	365531.8	5351720.0	sandstones	-5	1.39	-25	70	9.11	6	0.55	0.64	0.26	30	-50	10	

APPENDIX : Professor Range prospect. Multi-element geochemistry of air-core EOH samples.

Hole No.	Sample	east	north	Lithology	Ag	Al%	As	Ba	Ca%	Cu	Fe%	K%	Mg%	Mn	Pb	Zn	S%
ZR86	3912297	365497.0	5351849.9	dolomite	-5	1.05	-25	45	20.20	5	1.09	0.47	9.56	303	-50	20	
ZR87	3912298	365483.3	5351829.0	dolomite	-5	1.96	-25	102	19.90	5	1.27	0.99	6.89	334	-50	16	
ZR88	3912299	365469.7	5351808.0	pelites	-5	7.47	-25	516	0.45	10	1.80	4.04	0.76	47	-50	392	
ZR89	3912300	365456.1	5351787.0	pelites	-5	5.31	-25	325	4.81	7	1.58	2.56	1.45	138	-50	38	
ZR90	3914501	365442.5	5351766.1	limestone	-5	1.46	-25	80	27.20	8	0.70	0.64	0.77	87	-50	36	
ZR91	3914502	365428.9	5351745.1	limestone	-5	1.55	-25	73	26.30	8	0.90	0.73	3.37	87	-50	7	
ZR92	3914503	365415.3	5351724.1	limestone	-5	0.36	-25	17	29.00	6	0.26	0.16	0.51	58	-50	83	
ZR93	3914504	365401.6	5351703.2	sandstones	-5	3.57	-25	188	3.82	-5	1.25	1.53	1.38	76	-50	16	
ZR94	3914505	365388.0	5351682.2	limestone	-5	1.12	-25	70	28.00	6	0.62	0.42	0.97	112	-50	8	
ZR95	3987614	365380.4	5351854.1	dolomite	-5	2.63	52	115	13.50	12	2.89	1.21	7.12	153	62	1180	
ZR96	3914506	365369.5	5351837.3	limestone	-5	1.00	-25	39	28.60	9	0.43	0.46	1.57	57	-50	61	
ZR97	3914507	365358.6	5351820.5	impure carbonate	-5	3.22	86	157	16.60	7	1.42	1.50	2.63	195	-50	164	
ZR98	3914508	365345.0	5351799.6	dolomite	-5	2.04	30	113	17.70	-5	1.27	1.00	7.86	232	-50	17	
ZR99	3914509	365331.4	5351778.6	pelites	-5	4.82	-25	297	9.74	7	2.62	2.14	3.83	284	-50	23	
ZR100	3914510	365317.8	5351757.6	impure carbonate	-5	1.80	1030	197	15.10	19	1.86	0.72	0.17	338	-50	31	
ZR101	3914511	365304.2	5351736.7	limestone	-5	0.36	37	23	35.20	24	0.34	0.17	0.36	108	-50	6	
ZR102	3914512	365277.5	5351691.9	sandstones	-5	3.38	209	93	0.06	62	4.56	1.17	0.12	57	125	119	

APPENDIX 3:

Professor Range air-core drill logs and geochemistry

APPENDIX 3: PROFESSOR RANGE PROSPECT. DRILLHOLE LOCATION DATABASE.								
Hole	Full Name	AMG E	AMG N	Local E	Local N	Depth	Azimuth	Incl.
ZR1	AC93ZR1	366573.6	5351120.9	65225	50500	16.0	0	-90
ZR2	AC93ZR2	366560.0	5351100.0	65200	50500	9.0	0	-90
ZR3	AC93ZR3	366546.4	5351079.0	65175	50500	4.3	0	-90
ZR4	AC93ZR4	366532.8	5351058.0	65150	50500	15.5	0	-90
ZR5	AC93ZR5	366506.6	5351045.2	65125	50515	58.5	0	-90
ZR6	AC93ZR6	366505.5	5351016.1	65100	50500	29.0	0	-90
ZR7	AC93ZR7	366491.9	5350995.1	65075	50500	7.0	0	-90
ZR8	AC93ZR8	366478.3	5350974.2	65050	50500	17.8	0	-90
ZR9	AC93ZR9	366464.7	5350953.2	65025	50500	11.0	0	-90
ZR10	AC93ZR10	366450.5	5350931.4	64999	50500	15.1	0	-90
ZR11	AC93ZR11	366437.5	5350911.3	64975	50500	13.2	0	-90
ZR12	AC93ZR12	366446.7	5351292.8	65300	50700	8.1	0	-90
ZR13	AC93ZR13	366433.1	5351271.8	65275	50700	2.8	0	-90
ZR14	AC93ZR14	366416.8	5351246.6	65245	50700	6.2	0	-90
ZR15	AC93ZR15	366405.9	5351229.9	65225	50700	12.5	0	-90
ZR16	AC93ZR16	366391.1	5351210.8	65201	50702	57.7	0	-90
ZR17	AC93ZR17	366375.9	5351183.7	65170	50700	7.0	0	-90
ZR18	AC93ZR18	366365.0	5351167.0	65150	50700	8.8	0	-90
ZR19	AC93ZR19	366353.1	5351144.9	65125	50698	5.5	0	-90
ZR20	AC93ZR20	366337.8	5351125.0	65100	50700	4.8	0	-90
ZR21	AC93ZR21	366321.5	5351099.9	65070	50700	5.7	0	-90
ZR22	AC93ZR22	366310.6	5351083.1	65050	50700	17.0	0	-90
ZR23	AC93ZR23	366296.9	5351062.1	65025	50700	18.0	0	-90
ZR24	AC93ZR24	366410.2	5350869.3	64925	50500	4.0	0	-90
ZR25	AC93ZR25	366396.6	5350848.4	64900	50500	6.0	0	-90
ZR26	AC93ZR26	366244.0	5350971.3	64920	50695	5.5	0	-90
ZR27	AC93ZR27	366284.4	5351042.8	65002	50700	7.8	0	-90
ZR28	AC93ZR28	366269.7	5351020.2	64975	50700	14.8	0	-90
ZR29	AC93ZR29	366256.7	5350996.5	64948	50698	24.6	0	-90
ZR30	AC93ZR30	366306.2	5351443.6	65350	50900	18.5		-90
ZR31	AC93ZR31	366289.9	5351418.5	65320	50900	7.8		-90
ZR32	AC93ZR32	366279.0	5351401.7	65300	50900	3.6	0	-90
ZR33	AC93ZR33	366265.4	5351380.7	65275	50900	14.0	0	-90
ZR34	AC93ZR34	366251.8	5351359.7	65250	50900	46.5	0	-90
ZR35	AC93ZR35	366229.8	5351344.2	65225	50910	6.5	0	-90
ZR36	AC93ZR36	366213.4	5351319.1	65195	50910	11.0	0	-90
ZR37	AC93ZR37	366202.5	5351302.3	65175	50910	10.5	0	-90
ZR38	AC93ZR38	366197.3	5351275.9	65150	50900	4.3	0	-90
ZR39	AC93ZR39	366183.7	5351254.9	65125	50900	12.5	0	-90
ZR40	AC93ZR40	366170.1	5351233.9	65100	50900	8.5	0	-90
ZR41	AC93ZR41	366143.9	5351221.2	65075	50915	12.0	0	-90
ZR42	AC93ZR42	366140.3	5351197.3	65053	50905	21.0	0	-90
ZR43	AC93ZR43	366138.5	5351552.5	65350	51100	2.0	0	-90
ZR44	AC93ZR44	366111.3	5351510.6	65300	51100	17.2	0	-90
ZR45	AC93ZR45	366119.6	5351505.2	65300	51090	6.0	0	-90
ZR46	AC93ZR46	366106.0	5351484.2	65275	51090	9.0	0	-90
ZR47	AC93ZR47	366092.4	5351463.2	65250	51090	10.5	0	-90
ZR48	AC93ZR48	366078.8	5351442.3	65225	51090	18.4	0	-90
ZR49	AC93ZR49	366056.8	5351426.7	65200	51100	8.2	0	-90
ZR50	AC93ZR50	366043.2	5351405.8	65175	51100	6.0	0	-90
ZR51	AC93ZR51	366029.6	5351384.8	65150	51100	8.0	0	-90

Hole	Full Name	AMG E	AMG N	Local E	Local N	Depth	Azimuth	Incl.
ZR52	AC93ZR52	366015.9	5351363.8	65125	51100	1.5	0	-90
ZR53	AC93ZR53	366010.5	5351355.5	65115	51100	8.0	0	-90
ZR54	AC93ZR54	365925.0	5351774.6	65420	51400	54.0	0	-90
ZR55	AC93ZR55	365935.9	5351791.4	65440	51400	39.0	0	-90
ZR56	AC93ZR56	365914.1	5351757.9	65400	51400	33.0	0	-90
ZR57	AC93ZR57	365904.3	5351742.8	65382	51400	29.0	0	-90
ZR58	AC93ZR58	365854.8	5351850.1	65445	51500	19.3	0	-90
ZR59	AC93ZR59	365841.1	5351829.1	65420	51500	5.5	0	-90
ZR60	AC93ZR60	365830.2	5351812.3	65400	51500	4.0	0	-90
ZR61	AC93ZR61	365803.0	5351770.4	65350	51500	8.0	0	-90
ZR62	AC93ZR62	365789.4	5351749.4	65325	51500	0.8	0	-90
ZR63	AC93ZR63	365776.9	5351730.1	65302	51500	2.4	0	-90
ZR64	AC93ZR64	365762.2	5351707.5	65275	51500	2.2	0	-90
ZR65	AC93ZR65	365748.6	5351686.5	65250	51500	0.5	0	-90
ZR66	AC93ZR66	365773.6	5351908.7	65450	51600	29.8	0	-85
ZR67	AC93ZR67	365760.0	5351887.8	65425	51600	9.6	0	-90
ZR68	AC93ZR68	365746.4	5351866.8	65400	51600	1.2	0	-90
ZR69	AC93ZR69	365732.8	5351845.8	65375	51600	10.5	0	-90
ZR70	AC93ZR70	365719.1	5351824.9	65350	51600	2.2	0	-90
ZR71	AC93ZR71	365705.5	5351803.9	65325	51600	25.1	0	-90
ZR72	AC93ZR72	365691.9	5351782.9	65300	51600	54.0	0	-90
ZR73	AC93ZR73	365678.3	5351762.0	65275	51600	12.0	0	-90
ZR74	AC93ZR74	365664.7	5351741.0	65250	51600	3.0	0	-90
ZR75	AC93ZR75	365651.1	5351720.0	65225	51600	1.0	0	-90
ZR76	AC93ZR76	365673.4	5351938.0	65420	51700	8.0	0	-90
ZR77	AC93ZR77	365662.5	5351921.3	65400	51700	21.8	0	-90
ZR78	AC93ZR78	365651.6	5351904.5	65380	51700	14.3	0	-90
ZR79	AC93ZR79	365635.3	5351879.3	65350	51700	11.9	0	-90
ZR80	AC93ZR80	365621.7	5351858.4	65325	51700	13.9	0	-90
ZR81	AC93ZR81	365608.0	5351837.4	65300	51700	13.1	0	-90
ZR82	AC93ZR82	365594.4	5351816.4	65275	51700	53.5	0	-90
ZR83	AC93ZR83	365580.8	5351795.5	65250	51700	6.0	0	-90
ZR84	AC93ZR84	365571.6	5351781.2	65233	51700	20.7	0	-90
ZR85	AC93ZR85	365531.8	5351720.0	65160	51700	1.5	0	-90
ZR86	AC93ZR86	365497.0	5351849.9	65250	51800	20.0	0	-90
ZR87	AC93ZR87	365483.3	5351829.0	65225	51800	20.0	0	-90
ZR88	AC93ZR88	365469.7	5351808.0	65200	51800	36.0	0	-90
ZR89	AC93ZR89	365456.1	5351787.0	65175	51800	45.7	0	-90
ZR90	AC93ZR90	365442.5	5351766.1	65150	51800	30.0	0	-90
ZR91	AC93ZR91	365428.9	5351745.1	65125	51800	10.7	0	-90
ZR92	AC93ZR92	365415.3	5351724.1	65100	51800	1.0	0	-90
ZR93	AC93ZR93	365401.6	5351703.2	65075	51800	17.0	0	-90
ZR94	AC93ZR94	365388.0	5351682.2	65050	51800	14.5	0	-90
ZR95	AC93ZR95	365380.4	5351854.1	65190	51900	26.8	0	-90
ZR96	AC93ZR96	365369.5	5351837.3	65170	51900	10.2	0	-90
ZR97	AC93ZR97	365358.6	5351820.5	65150	51900	17.8	0	-90
ZR98	AC93ZR98	365345.0	5351799.6	65125	51900	32.5	0	-90
ZR99	AC93ZR99	365331.4	5351778.6	65100	51900	25.2	0	-90
ZR100	AC93ZR100	365317.8	5351757.6	65075	51900	12.0	0	-90
ZR101	AC93ZR101	365304.2	5351736.7	65050	51900	9.2	0	-90
ZR102	AC93ZR102	365277.5	5351691.9	64998	51898	54.0	0	-90

ROCKCHIP AND DRILLING CODES

22/2/1994

BMRLITH

Rock code as per published geological map
For time designation use:-

Q	Quaternary	M	Permian	P	Proterozoic
T	Tertiary	C	Carboniferous	A	Archaean
		S	Silurian		
K	Cretaceous	D	Devonian		
R	Triassic	O	Ordovician		
J	Jurassic	E	Cambrian		

FIELD ID

Field term for rock type
Broad groupings are:-

S	Sedimentary	I	Intrusive	C	Surficial
M	Metamorphic	E	Extrusive	O	Others

SEDIMENTARY

Sog	Conglomerate	Sls	Limestone	Sw	Wacke
Sss	Sandstone	Sdl	Dolomite	Sag	Agglomerate/mixtite
Sst	Siltstone	Sch	Chert	Sbx	Breccia
Ssh	Shale	Sif	BIF		
Sbs	Black shale				

METAMORPHIC

Msl	Slate	Mq	Quartzite	Mmg	Migmatite
Moh	Phyllite	Mm	Marble		
Msc	Schist	Ma	Amphibolite		
Mbs	Graphitic schist	Mcs	Calcsilicate	Msk	Skarn
Mgn	Gneiss	Mh	Hornfels		

INTRUSIVE IGNEOUS

If	Felsic undiff.	li	Intermed undiff.	lu	Ultramafic
Ifp	Felsic porphyry	lio	Intermed porph	lus	Serpentinite
Iap	Aplite	lm	Mafic undiff.	lpg	Pegmatite
Igr	Granite	lda	Dolerite		
Igd	Granodiorite	lgb	Gabbro		

EXTRUSIVE IGNEOUS

Ery	Rhyolite	Ean	Andesite	Et	Tuff undiff
Ecc	Dacite	Eb	Basalt	Eft	Felsic tuff
				Emt	Mafic tuff

SURFICIAL (COVER) MATERIAL

Ca	Alluvium	Cit	Laterite	Csg	Gossan
Coa	Colluvium	Csp	Pisolites	Ccy	Clay
Cs	Sand	Cst	Ironstone	Cv	Vegetation/peat
Cbs	Black soil	Csi	Silcrete		
Cg	Gravel	Cd	Calcrete		

OTHERS

Ovq	Vein quartz	Omy	Mylonite	Oms	Massive sulphide
Ovc	Vein carbonate	Obx	Breccia	Oxc	Contamination
Ovs	Vein sulphide	Of	Fault gouge	Ox	Unknown

TEXTURAL CODES

WEATHERING/SURFICIAL FEATURES

We	Weathered	Fe	Ferruginous
Bl	Bleached	Fo	Fe ox in fract
Le	Leached		

MINERALISATION/ALTERATION FEATURES

Gs	Gossanous	Vs	Vein sulphide	Al	Altered
Vn	Veined	Ds	Dissem sulph	S	Silicified
Vc	Vein carbonate	Fs	Fracture sulph		
Vq	Vein quartz	Bs	Banded sulph	Di	Disseminated

GEOLOGICAL FEATURES

Ed	Bedded	Fr	Fractured	Po	Porphyritic
Bn	Banded	ib	Interbedded	Sc	Schistose
Bx	Brecciated	Lm	Laminated	Sh	Sheared
F	Fissile (slatey)	Ma	Massive	Vu	Vuggy

DIAGNOSTIC MINERALOGY

PRIMARY MINERALISATION

Ga	Galena	Py	Pyrite	Ni	Ni sulphides
Sp	Sphalerite	Po	Pyrrhotite		
Cp	Chalcopyrite	Su	Unknown sulph		

SECONDARY MINERALISATION

Ls	Lead secondaries	Cs	Copper sec.	Ni	Ni secondaries
Zs	Zinc "	Us	Uranium "		

ALTERATION/DIAGNOSTIC MINERALS

Cy	Clay	He	Haematite	Gt	Garnet
Ep	Epidote	Mt	Magnetite	Ky	Kyanite
Cc	Carbonate	Js	Jarosite	To	Tourmaline
Sd	Siderite/Ankerite	Mn	Manganese mins	Cl	Chlorite
Di	Dolomite				

COLOUR CODES

L	Light	A	Banded	M	Mottled
D	Dark				
N	Black	P	Purple	V	Green
G	Grey	R	Red	K	Pink
B	Brown	O	Orange	E	Blue
W	White	Y	Yellow	S	Silver

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Appendix : Professor Range Prospect. Air-core drilling ledgers and geochemistry.										As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Att/Min	Colour	Comments							
ZR1	0.0	2.0			Qha	Cg											
ZR1	2.0	4.0	3909196	77666	Sc	Ccy			DG								449
ZR1	4.0	6.0	3909197	77666	Sc	CcyMq			DG	lesser Mq		-1	31	2.86	23	61	1933
ZR1	6.0	8.0	3909198	77666	Sc	Mq						-1	11	0.88	12	29	134
ZR1	8.0	10.0	3909199	77666	Sc	Mq						-1	11	1.2	19	24	153
ZR1	10.0	12.0	3909200	77666	Sc	Mq						-1	14	1.49	19	16	227
ZR1	12.0	14.0	3912301	77666	Sc	Mq						-1	9	0.91	17	13	110
ZR1	14.0	16.0	3912302	77666	Sc	Mq		Py		trace Py		-1	9	1.02	13	11	170
ZR2	0.0	3.0			Qoz	Coo											
ZR2	3.0	4.0	3912303	77666	Og	Ccy						-1	16	0.52	44	211	180
ZR2	4.0	6.0	3912304	77666	Og	Ccy		Py	DG	limestone brecciated + trace Py		-1	46	0.51	28	1472	733
ZR2	6.0	8.0	3912305	77666	Og	Sls			DG	granular limestone		-1	57	0.57	44	1205	2025
ZR2	8.0	9.0	3912306	77666	Og	Sls		Py	DG	calc-arenite + trace Py		-1	39	0.89	151	1333	1378
ZR3	0.0	4.0			Qoz	Coo											
ZR3	4.0	4.3	3912307	77666	Og	Sls			DG	mottled calc-arenite		-1	26	2.32	69	304	658
ZR4	0.0	2.0			Qoz	Coo											
ZR4	2.0	4.0	3912308	77666	Qoz	Ccy			LG	clay + qtzite frags		-1	8	0.58	16	23	171
ZR4	4.0	6.0	3912309	77666	Sc	Ccy			LG	clay + qtz frags		-1	12	0.69	16	56	121
ZR4	6.0	8.0	3912310	77666	Og	Ccy			LG			-1	18	2.52	27	335	819
ZR4	8.0	10.0	3912311	77666	Og	Ccy			DG			-1	20	2.48	22	287	435
ZR4	10.0	12.0	3912312	77666	Og	CcySls		Py	DG	clay minor limestone		-1	14	10.4	17	315	3027
ZR4	12.0	14.0	3912313	77666	Og	Sls		Py	DG	granular limestone		-1	11	8.3	17	231	1356
ZR4	14.0	15.5	3912314	77132	Og	SlsCcy		Py	DG		75		12	3.8	50	58	747
ZR5	0.0	3.0			Qoz	Coo											
ZR5	3.0	4.0	3912315	77132	Og	CcySls			DG	minor calc-arenite	50		30	2.43	31	95	39
ZR5	4.0	6.0	3912316	77132	Og	CcySls			DG	minor calc-arenite	50		18	6.96	46	78	25
ZR5	6.0	8.0	3912317	77132	Og	CcySls			DG	contains granular limestone	50		21	5.88	25	108	460
ZR5	8.0	10.0	3912318	77132	Og	Ccy			DG	contains qtzite frags	75		17	11.5	32	128	1117
ZR5	10.0	12.0	3912319	77132	Og	Sls				fine granular limestone frags	125		24	6.65	35	181	824
ZR5	12.0	14.0	3912320	77132	Og	Sls				fine granular limestone frags	75		19	4.39	35	92	545
ZR5	14.0	16.0	3912321	77132	Og	Sls				fine calc-arenite frags	75		18	3.3	31	91	1074
ZR5	16.0	18.0	3912322	77132	Og	Sls					50		19	2.38	38	52	600
ZR5	18.0	20.0	3912323	77132	Og	Sls				limestone very light	75		18	3.02	32	57	749
ZR5	20.0	22.0	3912324	77132	Og	Sls		Py		limestone very light	75		19	2.47	35	51	1030
ZR5	22.0	24.0	3912325	77132	Og	Sls		Py		limestone very light	100		17	3.69	35	59	451
ZR5	24.0	26.0	3912326	77132	Og	Sls		Py		some light grey clay	50		20	2.37	35	29	941
ZR5	26.0	28.0	3912327	77132	Og	Sls				some light grey clay	50		22	1.85	29	30	485
ZR5	28.0	30.0	3912328	77132	Og	Sls				some light grey clay	75		17	1.98	36	35	480
ZR5	30.0	32.0	3912329	77132	Og	SlsCcy		Py		some clay	75		13	1.54	29	25	975
ZR5	32.0	34.0	3912330	77132	Og	Sls				also fine brown sand	100		11	2.94	25	20	1894
ZR5	34.0	36.0	3912331	77132	Og	Sls				also fine brown sand	100		13	2.87	26	26	1313
ZR5	36.0	38.0	3912332	77132	Og	Sls		Py		some brown sand nodules	125		11	3.79	27	26	872
ZR5	38.0	40.0	3912333	77132	Og	Sls		Py		no clay	75		11	2.24	27	32	587
ZR5	40.0	42.0	3912334	77132	Og	Sls		Py			75		11	3.91	31	29	429
ZR5	42.0	44.0	3912335	77132	Og	Sls		Py			100		10	3.39	24	17	285
ZR5	44.0	46.0	3912336	77132	Og	Sls		Py		also fine silt	75		11	2.13	33	22	296
ZR5	46.0	48.0	3912337	77132	Og	SlsCcy		Py		some DG clay	50		11	1.36	29	26	212
ZR5	48.0	50.0	3912338	77132	Og	SlsCcy		Py		some DG clay	75		13	1.32	33	28	198
ZR5	50.0	52.0	3912339	77132	Og	Sls	Vn			some vein qtz	50		12	1.63	28	29	156
ZR5	52.0	54.0	3912340	77132	Og	Sls	Vn			some vein qtz	75		13	2.02	37	29	91
ZR5	54.0	56.0	3912341	77132	Og	Sls	Vn			vein qtz+brown clay	-50		15	1.87	49	24	57

843005

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTc	Sampno	DPO	MATLith	FieldID	Texture	Ait/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR5	56.0	58.5	3912342	77132	Og	Sls	Vn	Py		vein qtz+strongly foliated	-50		18	2.14	42	41		103
ZR6	0.0	2.0	3912343	77132	Qoz	Cg			LG	Owen talus?	-50		4	1.07	14	155		27
ZR6	2.0	4.0	3912344	77132	Qoz	Cg			LG	Owen talus?	-50		10	0.88	12	233		22
ZR6	4.0	6.0	3912345	77132	Qoz	Cg				Owen talus?	-50		23	0.55	12	64		31
ZR6	6.0	8.0	3912346	77132	QozOg	CgSls				Owen talus some limestone	-50		34	0.5	22	61		42
ZR6	8.0	10.0	3912347	77132	QozOg	CgSls				Owen talus some limestone	-50		56	1.15	21	97		46
ZR6	10.0	12.0	3912348	77132	Qoz	Cg					50		29	1.83	31	69		57
ZR6	12.0	14.0	3912349	77132	Og	Sls	foliated			shaley calc-arenite	50		26	1.68	28	57		50
ZR6	14.0	16.0	3912350	77132	Og	Ccy			DG		50		21	2.25	33	52		99
ZR6	16.0	18.0	3912351	77132	Og	Ccy			DG	few limestone frags	50		21	2.27	34	58		118
ZR6	18.0	20.0	3912352	77132	Og	Sls				granular calc-arenite	50		17	1.79	33	42		136
ZR6	20.0	22.0	3912353	77132	Og	Sls					-50		17	1.78	28	43		328
ZR6	22.0	24.0	3912354	77132	Og	Sls					-50		15	1.37	26	32		226
ZR6	24.0	26.0	3912355	77132	Og	Sls					-50		17	1.42	27	28		108
ZR6	26.0	28.0	3912356	77132	Og	Sls				some dark grey clay	-50		17	1.76	38	33		66
ZR6	28.0	29.0	3912357	77132	Og	Sls					-50		17	2.07	129	28		95
ZR7	0.0	2.0	3912358	77132	Qoz	Cg			LG	contains sst frags	-50		20	0.52	19	15		24
ZR7	2.0	4.0	3912359	77132	QozOg	CgSls			DB	contains calc-arenite frags	-50		29	0.68	21	25		56
ZR7	4.0	6.0	3912360	77132	Og	Sls				calc-arenite	-50		30	0.64	22	40		86
ZR7	6.0	7.0	3912361	77132	Og	Sls					-50		20	1.7	120	28		195
ZR8	0.0	2.0	3912362	77132	Qoz	Cg				rounded conglomerate pebbles	-50		11	0.41	19	11		17
ZR8	2.0	4.0	3912363	77132	Qoz	Cg				sandstone frags dominate	-50		12	0.44	23	13		8
ZR8	4.0	6.0	3912364	77132	Og	Ccy			DG	clays dominant	-50		19	2.11	34	43		413
ZR8	6.0	8.0	3912365	77132	Og	CcySls			DG	clays dominant increasing calc-arenite	-50		24	3.17	38	76		275
ZR8	8.0	10.0	3912366	77132	Og	CcySls			DG	clays dominant increasing calc-arenite	50		27	4.45	37	251		989
ZR8	10.0	12.0	3912367	77132	Og	CcySls		Py		lesser clay, calc-arenite	50		27	4.48	42	114		519
ZR8	12.0	14.0	3912368	77132	Og	CcySls			DG	lesser clay, calc-arenite, qtzite frags	-50		11	1.75	126	52		187
ZR8	14.0	16.0	3912369	77132	Og	CcySls			DG	DG clay, calc-arenite, qtzite frags	50		16	3.67	109	153		429
ZR8	16.0	17.8	3912370	77132	Og	SlsCcy				calc-arenite, lesser DG clay	-50		13	2.91	135	136		316
ZR9	0.0	2.0	3912371	77132	Qoz	Og			LB	qtz sandstone frags dominant	-50		8	0.54	29	9		16
ZR9	2.0	4.0	3912372	77132	Qoz	Cg				qtz sandstone frags dominant	-50		7	0.51	20	9		11
ZR9	4.0	6.0	3912373	77132	Qoz	Og				qtz sandstone frags dominant, DB clay	-50		32	0.41	26	18		15
ZR9	6.0	8.0	3912374	77132	QozOg	CcyCg			DB	DB clay + qtz+sandstone	-50		45	0.29	17	36		41
ZR9	8.0	10.0	3912375	77132	Og	CcySls			DG	DG clay, calc-arenite	-50		28	0.36	19	113		134
ZR9	10.0	12.0	3912376	77132	Og	CcySls			DG	DG clay, calc-arenite	-50		23	1.3	14	118		754
ZR10	0.0	2.0	3912377	77132	Qoz	Og				qtz, sandstone in LB clay	-50		8	0.51	17	16		14
ZR10	2.0	4.0	3912378	77132	Qoz	Og				qtz, sandstone frags only	-50		7	0.38	14	7		6
ZR10	4.0	6.0	3912379	77132	Og	Ccy			DG	clay, qtz sandstone frags also	50		31	0.88	22	56		37
ZR10	6.0	8.0	3912380	77132	Og	Ccy			DG	clay, qtz sandstone frags also	200		33	4.52	34	98		554
ZR10	8.0	10.0	3912381	77132	Og	Ccy			DG	more clay	175		37	4.02	32	91		446
ZR10	10.0	12.0	3912382	77132	Og	Ccy			DG	clay, few rock frags	475		29	8.62	33	51		516
ZR10	12.0	14.0	3912383	77132	Og	CcySls			DG	clay + fine calc-arenite frags	225		28	5.84	87	335		1610
ZR10	14.0	15.1	3912384	77132	Og	Sls		Py		calc-arenite, vein qtz, abundant Py	50		21	3.36	122	165		1065
ZR11	0.0	3.0			Qoz	Og				qtz, sandstone gravel								
ZR11	3.0	5.0	3912385	77132	Qoz	Og				qtz, sandstone gravel, some LB clay	-50		7	0.52	17	13		15
ZR11	6.0	8.0	3912386	77132	Qoz	Og				qtz, sandstone gravel, calc-arenite present	-50		8	0.4	22	8		13
ZR11	8.0	10.0	3912387	77132	Qoz	Og				qtz, sandstone gravel, some DG clay	-50		16	0.32	18	15		19
ZR11	10.0	12.0	3912388	77132	Qoz	Og				qtz, sandstone gravel	175		26	4.02	28	34		373
ZR11	12.0	13.2	3912389	77132	Og	CcySls			DG	clay calc-arenite increased at bottom of hole	200		27	8	43	45		298
ZR12	0.0	4.0	3912390	77132	Oha	Ccy			Y	clay + crotly qtzite frags	50		20	1.21	18	57		40
ZR12	4.0	6.0	3912391	77132	Og	Ccy			DG	DG clay few rock frags	175		26	8.71	29	1046		2729
ZR12	6.0	8.2	3912392	77132	Og	SlsCcy		Py		calc-arenite lesser clay	100		43	6.67	27	5100		6600
ZR13	0.0	2.0			Oha	Mq				qtzite gravels								

843006

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	F#%	Mn ppm	Pb ppm	S%	Zn ppm
ZR13	2.0	3.4	3912393	77132	Og	Sls				calc-arenite, lesser gravel	50		7	0.52	59	51		392
ZR14	0.0	2.0	3912394	77132	Qha	CcyMq			LG	clay + crotty qtzite frags	-50		7	0.26	18	52		31
ZR14	2.0	4.0	3912395	77132	Og	Sls	Vn	Py		calc-arenite + vein qtz	-50		240	0.51	15	1516		3066
ZR14	4.0	6.2	3912396	77132	Og	SlsCcy		Py		calc-arenite, little clay	100		533	1.74	72	15600	2.96	16400
ZR15	0.0	2.0	3912397	77132	Qha	CcyMq			LB	clay + crotty qtzite frags, some DG clay	-50		28	0.57	13	57		37
ZR15	2.0	4.0	3912398	77132	Qha	CcyMq			LB	clay + crotty qtzite frags	50		98	0.94	20	139		343
ZR15	4.0	6.0	3912399	77132	Og	CcyMq			DG	clay + crotty qtzite frags	100		20	3.41	20	192		2275
ZR15	6.0	8.0	3912400	77132	Og	CcyMq			DG	clay + crotty qtzite frags	100		24	3.62	31	2700	4.94	20300
ZR15	8.0	10.0	3912401	77132	Og	CcySls			DG	clay + calc-arenite, which is foliated	125		22	6.98	51	1200	7.92	20900
ZR15	10.0	12.5	3912402	77132	Og	SlsCcy				calc-arenite, minor clay	100		17	3.5	97	340		6900
ZR16	0.0	2.0	3912403	77132	Qha	CcyMq			DB	clay + qtzite frags	50		14	0.52	16	17		53
ZR16	2.0	4.0	3912404	77132	Qha	CcyMq			DB	peaty clay + qtzite sandstone frags	50		55	2.15	29	35		93
ZR16	4.0	6.0	3912405	77132	Og	CcySls			DG	clay + calc-arenite	50		38	4.23	26	50		328
ZR16	6.0	8.0	3912406	77132	Og	CcySls			DG	clay + calc-arenite, vein qtz	125		16	8.9	27	43		510
ZR16	8.0	10.0	3912407	77132	Og	CcySls			DG	clay + calc-arenite	125		18	8.32	24	265		3013
ZR16	10.0	12.0	3912408	77132	Og	CcySls			DG	clay + calc-arenite, some qtzite also	100		24	4.01	46	313		3434
ZR16	12.0	14.0	3912409	77132	Og	CcySls			DG	clay + calc-arenite	100		18	4.98	39	165		1878
ZR16	14.0	16.0	3912410	77132	Og	CcySls			DG	clay, foliated calc-arenite	100		22	5.99	58	77		324
ZR16	16.0	18.0	3912411	77132	Og	CcySls			DG	clay, foliated calc-arenite	75		20	4.3	58	71		179
ZR16	18.0	20.0	3912412	77132	Og	Sls		Py		calc-arenite	75		28	6.59	60	257		2049
ZR16	20.0	22.0	3912413	77132	Og	SlsCcy				granular calc-arenite, minor clay	175		44	6.37	62	794		7800
ZR16	22.0	24.0	3912414	77132	Og	SlsCcy				granular calc-arenite, minor clay	200		61	6.59	52	804	7.31	13000
ZR16	24.0	26.0	3912415	77132	Og	SlsCcy				granular calc-arenite, minor clay	175		28	3.03	38	182		1344
ZR16	26.0	28.0	3912416	77132	Og	SlsCcy		Py	DG	calc-arenite, some DG clay	150		25	1.96	31	90		668
ZR16	28.0	30.0	3912417	77132	Og	SlsCcy			DG	calc-arenite, some DG clay	150		22	1.94	25	273		884
ZR16	30.0	32.0	3912418	77132	Og	SlsCcy			DG	calc-arenite, some DG clay, vein qtz	125		19	1.82	27	129		793
ZR16	32.0	34.0	3912419	77132	Og	SlsCcy			DG	calc-arenite, increased DG clay	125		20	3.71	31	121		905
ZR16	34.0	36.0	3912420	77132	Og	Sls	Vn	Py	DG	calc-arenite, vein qtz present	125		22	5.3	33	224		2436
ZR16	36.0	38.0	3912421	77132	Og	Sls	Vn	Py	DG	calc-arenite, vein qtz present, DG clay	125		20	3.84	30	169		2162
ZR16	38.0	40.0	3912422	77132	Og	Sls	Vn		DG	calc-arenite, vein qtz present	100		14	1.34	33	48		243
ZR16	40.0	42.0	3912423	77132	Og	SlsCcy			DG	calc-arenite, DG clay	100		15	1.44	32	301		572
ZR16	42.0	44.0	3912424	77132	Og	Sls	Vn		DG	calc-arenite, some vein qtz	100		13	1.53	39	51		177
ZR16	44.0	46.0	3912425	77132	Og	Sls	Vn	Py	DG	calc-arenite, some vein qtz	100		12	1.55	34	51		119
ZR16	46.0	48.0	3912426	77132	Og	Sls			DG	calc-arenite	75		12	1.46	36	36		110
ZR16	48.0	50.0	3912427	77132	Og	Sls			DG	calc-arenite	50		9	0.99	27	24		96
ZR16	50.0	52.0	3912428	77132	Og	SlsCcy	Fi		DG	calc-arenite, some DG clay	75		13	1.57	29	32		86
ZR16	52.0	54.0	3912429	77132	Og	Sls	Fi			calc-arenite, some vein qtz, Py along foliation	75		10	1.24	28	26		73
ZR16	54.0	56.0	3912430	77132	Og	Sls	Fi			calc-arenite, Py along foliation, some vein qtz	50		9	1.64	102	25		100
ZR16	56.0	57.7	3912431	77132	Og	Sls	Fi			calc-arenite, Py along foliation	50		7	2.08	195	24		104
ZR17	0.0	2.0	3912432	77132	Qha	CcyMq			O	clay + qtzite frags	50		11	4.05	24	21		21
ZR17	2.0	4.0	3912433	77132	Og	CcySls			LG	clay + frags of foliated calc-arenite	-50		10	1.73	20	12		21
ZR17	4.0	6.0	3912434	77132	Og	CcySls			DB	clay + frags of foliated calc-arenite	-50		14	2.08	26	13		27
ZR17	6.0	7.0	3912435	77132	Og	SlsCcy	Fi	Py	DG	calc-arenite, some DB clay	-50		11	1.56	22	13		32
ZR18	0.0	2.0	3912436	77132	Qha	CcyMq			LY	clay + sandstone qtzite frags	-50		8	0.86	19	8		13
ZR18	2.0	4.0	3912437	77132	Qha	CcyMq			LG	clay + rounded qtz pebbles	-50		14	0.75	13	7		11
ZR18	4.0	6.0	3912438	77132	Qha	CcyMq			Y	mottled clay, sandstone qtz frags	50		26	1.45	21	1725		1542
ZR18	6.0	8.0	3912439	77132	Qha	CcySls			DG	clay some calc-arenite frags	50		12	1.57	18	914		678
ZR18	8.0	8.8	3912440	77132	Qha	Cg				qtz, ssl + at base of hole calc-arenite frags	50		11	1.24	57	434		563
ZR19	0.0	2.0	3912441	77132	Qha	CcyCg			LG	clay + rounded qtz sandstone pebbles	50		18	0.7	15	37		39
ZR19	2.0	4.0	3912442	77132	Qha	CcyCg			LG	clay + rounded qtz sandstone pebbles	-50		19	0.71	22	21		55
ZR19	4.0	5.5	3912443	77132	Og	CcyCg			DG	clay + calc-arenite+conglomerate frags	50		15	1.09	43	17		54
ZR20	0.0	2.0	3912444	77132	Qha	CcyMq			LG	clay + frags of sandstone qtz	-50		18	0.7	15	20		20
ZR20	2.0	4.0	3912445	77132	Qha	CcyMq			LG	clay + frags of sandstone qtz	-50		19	0.68	15	17		36

843067

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hoie	DFrom	DTe	Sampno	DPO	MRTLith	FieID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR20	4.0	4.8	3912446	77132	Qha	CcySis			DG	mottled clay some calc-arenite frags	50			13	0.85	25	18	24
ZR21	0.0	2.0	3912447	77132	Qha	CcyMq			LG	clay + qtz sandstone frags	50		35	0.85	19	24		31
ZR21	2.0	4.0	3912448	77132	Qha	CcyMq			LG	clay + qtz sandstone frags	50		28	0.76	21	16		20
ZR21	4.0	5.7	3912449	77132	Og	CcySis			DG	clay + calc-arenite frags	50		11	1.15	24	13		13
ZR22	0.0	2.0	3912450	77132	Qha	CcyMq			LB	clay + qtz sandstone frags	50		35	0.8	21	23		28
ZR22	2.0	4.0	3912451	77132	Qha	CcyMq			LB	clay + qtz sandstone frags	50		11	0.68	19	14		16
ZR22	4.0	6.0	3912452	77132	Qha	CcySsh			LB	clay + shale frags	75		16	1.31	45	11		30
ZR22	6.0	8.0	3912453	77132	Og	CcySss			DG	clay + sandstone qtz frags	-50		18	1.05	44	47		504
ZR22	8.0	10.0	3912454	77132	Og	Sls	Vn		DG	calc-arenite some vein qtz	-50		15	1.42	126	42		62
ZR22	10.0	12.0	3912455	77132	Og	Sls	Vn	Py	DG	calc-arenite some vein qtz	-50		8	1.6	168	36		235
ZR22	12.0	14.0	3912456	77132	Og	Sls	Vn	Py	DG	calc-arenite some vein qtz	-50		10	1.3	130	51		131
ZR22	14.0	16.0	3912457	77132	Og	Sls	Vn	Py	DG	calc-arenite some vein qtz	50		9	1.35	138	55		382
ZR22	16.0	17.0	3912458	77132	Og	Sls	Vn	Py	DG	calc-arenite some vein qtz	50		8	1.75	224	33		148
ZR23	0.0	2.0	3912459	77132	Qha	CcySss			LB	clay sandstone qtz frags	-50		8	0.66	25	18		22
ZR23	2.0	4.0	3912460	77132	Qha	CcySss			LB	clay sandstone qtz frags	-50		4	0.52	29	7		25
ZR23	4.0	6.0	3912481	77132	Qha	CcySss			LB	clay sandstone qtz frags	-50		-2	0.32	18	6		13
ZR23	6.0	8.0	3912462	77132	Og	Ccy			DG	increase in DG clay	-50		5	0.42	27	16		18
ZR23	8.0	10.0	3912463	77132	Og	Sls			DG	calc-arenite only	-50		14	1.34	34	28		222
ZR23	10.0	12.0	3912464	77132	Og	Sls			DG	calc-arenite only	75		22	1.65	53	38		96
ZR23	12.0	14.0	3912465	77132	Og	Sls	Fi	Py	DG	calc-arenite, Py along foliation	-50		15	1.17	85	40		162
ZR23	14.0	16.0	3912466	77132	Og	Sls	Fi	Py	DG	calc-arenite, Py along foliation	-50		16	1.14	124	45		861
ZR23	16.0	18.0	3912467	77132	Og	Sls	Fi	Py	DG	calc-arenite, Py along foliation	50		16	1.03	150	43		969
ZR24	0.0	4.0			Qha	Og												
ZR25	0.0	6.0			Qha	Cg												
ZR26	0.0	5.5			Qha	Cg												
ZR27	0.0	2.0			Qha	Cg												
ZR27	2.0	4.0	3912468	77132	Qha	CcySss			LB	clay + sandstone qtz frags	-50		3	0.31	25	5		10
ZR27	2.0	6.0	3912469	77132	Qha	CcySss			LB	clay + sandstone qtz frags	-50		15	0.27	19	17		16
ZR27	6.0	7.8	3912470	77132	Og	CcySis		Py	DG	clay + calc-arenite	-50		44	0.85	25	66		153
ZR28	0.0	2.0			Qha	Og												
ZR28	2.0	4.0	3912471	77132	Qha	CcySss			LB	clay with sandstone qtz frags	-50		2	0.58	22	14		17
ZR28	4.0	6.0	3912472	77132	Qha	CcySss			LB	clay with sandstone qtz frags	-50		2	0.36	23	7		12
ZR28	6.0	8.0	3912473	77132	Og	Sls			DG	calc-arenite + some sandstone + qtzite	-50		2	0.2	17	3		9
ZR28	8.0	10.0	3912474	77132	Og	Sls	Vn	Py	DG	calc-arenite some vein qtz	-50		47	0.33	23	6		28
ZR28	10.0	12.0	3912475	77132	Og	Sls	Vn	Py	DG	calc-arenite some vein qtz, some pale clay	-50		44	0.93	21	49		107
ZR28	12.0	14.0	3912476	77132	Og	Sls			DG	only calc-arenite frags	75		22	1.3	38	36		419
ZR28	14.0	14.8	3912477	77132	Og	Sls			DG	only calc-arenite frags, some vein qtz	-50		12	1.4	105	16		89
ZR29	0.0	2.0			Qha	Cg												
ZR29	2.0	4.0	3912478	77132	Qha	CcySss			DB	clay + qtz sandstone frags	-50		3	0.36	27	3		10
ZR29	4.0	6.0	3912479	77132	Qha	CcySss			DB	clay + qtz sandstone frags	-50		5	0.27	11	6		16
ZR29	6.0	8.0	3912480	77132	Og	CcySss			DG	clay + qtz sandstone calc-arenite frags	75		29	1.41	30	29		46
ZR29	8.0	10.0	3912481	77132	Og	CcySss			DG	clay + qtz sandstone frags	250		39	0.62	17	18		193
ZR29	10.0	12.0	3912482	77132	Og	CcySis			DG	clay + calc-arenite frags, some qtzite	250		15	1.4	24	16		357
ZR29	12.0	14.0	3912483	77132	Og	CcySis			DG	clay + calc-arenite frags	75		12	1.29	17	18		95
ZR29	14.0	16.0	3912484	77132	Og	SlsCcy		Py	DG	calc-arenite, minor DG clay	50		16	2.01	28	21		67
ZR29	16.0	18.0	3912485	77132	Og	CcySis		Py	DG	clay + calc-arenite frags	50		21	1.68	31	31		72
ZR29	18.0	20.0	3912486	77132	Og	Ccy			DG	mostly clay	-50		15	1.33	35	26		50
ZR29	20.0	22.0	3912487	77132	Og	CcySis		Py	DG	clay some calc-arenite frags	50		13	1.69	38	27		69
ZR29	22.0	24.0	3912488	77132	Og	Sls	Vn		DG	calc-arenite + vein qtz, abundant carbonate	-50		8	1.54	102	21		35
ZR29	24.0	24.6	3912489	77132	Og	Sls	Vn		DG	calc-arenite + vein qtz	-50		9	1.69	111	22		29
ZR30	0.0	4.0			Qha	Cg												
ZR30	4.0	5.0	3912501	77133	Qha	Cg					-50		13	0.57	20	212		147
ZR30	5.0	6.0	3912501	77133	Og	Sls			DG	calc-arenite	-50		13	0.57	20	212		147

243068

Appendix : Professor Ranga prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	All/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	%	Zn ppm
ZR30	6.0	8.0	3912502	77133	Og	SlsCoy		Py	DG	calc-arenite, lesser DG clay, poor recovery	75		38	1.55	40	1222		3926
ZR30	8.0	10.0	3912503	77133	Og	SlsCoy		Py	DG	calc-arenite, lesser DG clay, poor recovery	75		26	1.93	51	744		3519
ZR30	10.0	12.0	3912504	77133	Og	CoySls		Py	DG	granular calc-arenite, lesser DG clay, poor recovery	-50		6	1.03	147	82		780
ZR30	12.0	14.0	3912505	77133	Og	CoySls			DG	granular calc-arenite, lesser DG clay, poor recovery	-50		6	1.71	153	320		1085
ZR30	14.0	16.0	3912506	77133	Og	Sls	Vn		DG	calc-arenite, thin carbonate veining	-50		4	0.97	180	190		651
ZR30	16.0	18.0	3912507	77133	Og	Sls	Vn		DG	calc-arenite, thin carbonate veining	-50		3	0.93	166	109		471
ZR30	18.0	18.5	3912508	77133	Og	Sls	Vn		DG	calc-arenite, thin carbonate veining	60		5	1.14	153	142		909
ZR31	0.0	2.0	3912509	77133	Og	Coy			LB		-50		10	0.62	27	39		52
ZR31	2.0	4.0	3912510	77133	Og	CoySls			LB	lesser DG calc-arenite	-50		4	0.54	115	81		190
ZR31	4.0	6.0	3912511	77133	Og	Sls	Vn		G	calc-arenite, carbonate veined	-50		4	0.53	127	51		112
ZR31	6.0	7.8	3912512	77133	Og	Sls	Vn		G	calc-arenite, carbonate & qtz veined	75		5	0.66	163	1618		2085
ZR32	0.0	2.0			Qha	Cg												
ZR32	2.0	3.8	3912514	77133	Og	Coy			DG		-50		29	0.54	44	298		351
ZR33	0.0	4.0			Qha	Cg												
ZR33	4.0	6.0	3912515	77133	Og	SlsCoy			DG	lesser DG clay	-50		11	0.37	23	21		37
ZR33	6.0	8.0	3912516	77133	Og	SlsCoy			DG	lesser DG clay	50		57	1.47	37	1345		1421
ZR33	8.0	10.0	3912517	77133	Og	SlsCoy	Vn	Py	DG	lesser DG clay, nodular Py, qtz veined	50		123	1.19	62	12900		5200
ZR33	10.0	12.0	3912518	77133	Og	SlsCoy	Vn	Py	DG	lesser DG clay, nodular Py, qtz veined	50		44	1.23	112	6100		3900
ZR33	12.0	14.0	3912519	77133	Og	Sls	Vn		MG	granular Sls, qtz veined	-50		23	0.98	90	948		1725
ZR34	0.0	2.0			Qha	Cg												
ZR34	2.0	4.0	3912520	77133	Og	Coy			W	lesser DG granular Sls	-50		12	0.57	21	57		25
ZR34	4.0	6.0	3912521	77133	Og	Sls			DG	granular	-50		123	1.18	34	915		221
ZR34	6.0	8.0	3912522	77133	Og	Sls			DG	granular	-50		64	1.46	38	1142		261
ZR34	8.0	10.0	3912523	77133	Og	Sls			DG	granular	-50		68	1.54	30	525		313
ZR34	10.0	12.0	3912524	77133	Og	Sls			DG	granular	50		16	1.8	31	276		367
ZR34	12.0	14.0	3912525	77133	Og	SlsCoy		Py	DG	granular, minor DG clay	50		15	1.8	29	86		252
ZR34	14.0	16.0	3912526	77133	Og	SlsCoy			DG	granular, minor DG clay	50		18	1.78	27	65		183
ZR34	16.0	18.0	3912527	77133	Og	SlsCoy			DG	granular, minor DG clay	-50		17	1.93	26	39		151
ZR34	18.0	20.0	3912528	77133	Og	Sls			G	calc-arenite	-50		20	1.52	25	32		79
ZR34	20.0	22.0	3912529	77133	Og	SlsCoy	Ds	Py	G	calc-arenite, minor DG clay	-50		17	1.63	24	38		84
ZR34	22.0	24.0	3912530	77133	Og	SlsCoy	Os	Py	G	calc-arenite, minor DG clay	-50		16	1.61	25	29		169
ZR34	24.0	26.0	3912531	77133	Og	Sls	Os	Py	G	calc-arenite	-50		17	1.57	25	25		211
ZR34	26.0	28.0	3912532	77133	Og	Sls	Os		G	calc-arenite	-50		16	1.29	25	31		192
ZR34	28.0	30.0	3912533	77133	Og	Sls	Os	Py	G	calc-arenite, weak foliation	-50		17	1.4	26	21		191
ZR34	30.0	32.0	3912534	77133	Og	Sls			DG	calc-arenite	-50		17	1.44	27	21		120
ZR34	32.0	34.0	3912535	77133	Og	Sls			DG	calc-arenite	-50		19	1.44	27	27		97
ZR34	34.0	36.0	3912536	77133	Og	Sls			DG	calc-arenite	-50		16	1.48	29	23		91
ZR34	36.0	38.0	3912537	77133	Og	Sls			DG	calc-arenite	-50		13	1.54	38	97		158
ZR34	38.0	39.0	3912538	77133	Og	Sls		Py	DG	calc-arenite, trace line Py	-50		14	1.46	37	522		669
ZR34	39.0	42.0	3912539	77133	Og	Sls		Py	DG	calc-arenite, trace line Py	-50		13	1.39	33	64		324
ZR34	42.0	44.0	3912540	77133	Og	Sls		Py	DG	calc-arenite, trace line Py	-50		13	1.73	33	184		404
ZR34	44.0	46.0	3912541	77133	Og	Sls		Py	DG	calc-arenite, trace line Py	-50		11	1.45	31	169		240
ZR34	46.0	48.5	3912542	77133	Og	Sls		Py	DG	calc-arenite, trace line Py	-50		13	1.51	49	122		188
ZR35	0.0	2.0	3912543	77133	Og	Coy			LB		-50		5	0.5	15	17		19
ZR35	2.0	4.0	3912544	77133	Og	Coy			DG		-50		18	1.6	30	26		834
ZR35	4.0	6.0	3912545	77133	Og	Coy			DG		-50		18	1.79	31	118		497
ZR35	6.0	6.5	3912546	77133	Og	Sls		Py	DG	skeletal	-50		19	2.09	38	105		870
ZR36	0.0	2.0			Qha	Cg												
ZR36	2.0	4.0	3912547	77133	Qoz	Coo				clay + rounded qtz - talus	-50		22	0.81	15	31		88
ZR36	4.0	6.0	3912548	77133	Qoz	Coo				clay + rounded qtz - talus	-50		28	1.25	30	44		138
ZR36	6.0	8.0	3912549	77133	Og	CoySls	Vn		DG	lesser DG calc-arenite - prominent qtz veining	-50		16	1.54	149	28		80
ZR36	8.0	10.0	3912550	77133	Og	Coy			DB	gritty	-50		19	1.28	67	33		176
ZR36	10.0	11.0	3912551	77133	Og	Coy			DB	gritty, lesser MG pitted Sls	-50		23	1.18	55	41		153

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	All/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR37	0.0	2.0			Qoz	Coo												
ZR37	2.0	4.0	3912552	77133	Og	Coy			W		-50		30	0.6	23	36		71
ZR37	4.0	6.0	3912553	77133	Og	CoySls			DG	lesser MG granular Sls	-50		24	1.36	20	41		99
ZR37	6.0	8.0	3912554	77133	Og	Coy			MWLB		-50		21	1.75	27	32		97
ZR37	8.0	10.0	3912555	77133	Og	Sls			MG		-50		14	1.45	46	28		68
ZR37	10.0	10.5	3912556	77133	Og	Sls		Py	MG		50		16	1.73	142	44		70
ZR38	0.0	2.0			Qha	Cg												
ZR38	2.0	4.0	3912557	77133	Og	Coy			DBGD	peaty	-50		16	1.45	21	38		163
ZR38	4.0	4.3	3912558	77133	Og	Sls	Vn		G	calc-arenite + vein glz	-50		11	1.16	92	12		37
ZR39	0.0	2.0	3912559	77133	Qha	Coy			B	peaty	-50		4	0.2	15	-3		11
ZR39	2.0	4.0			Qoz	Coo												
ZR39	4.0	6.0	3912560	77133	Qoz	Coy			LB		-50		5	0.23	18	-3		2
ZR39	6.0	8.0	3912561	77133	Qoz	Coy			LB, DG	gritty	-50		9	0.34	20	15		23
ZR39	8.0	10.0	3912562	77133	Og	Coy			DG		-50		20	0.93	28	36		112
ZR39	10.0	12.0	3912563	77133	Og	Coy			DG	minor strongly foliated DG calc-arenite	50		23	1.42	43	162		868
ZR39	12.0	12.5	3912564	77133	Og	Sls			DG	calc-arenite	-50		12	1.89	180	115		466
ZR40	0.0	2.0			Qoz													
ZR40	2.0	4.0	3912565	77133	Og	Coy			B	gritty	-50		11	0.25	15	12		11
ZR40	4.0	6.0	3912566	77133	Og	CoySls			B	gritty, lesser N decomposed Sls	-50		31	0.71	51	41		57
ZR40	6.0	8.0	3912567	77133	Og	Coy			B		-50		47	1.21	26	73		179
ZR40	8.0	8.5	3912568	77133	Og	Sls	Ovc		DG	calc-arenite	50		52	1.03	33	57		145
ZR41	0.0	2.0			Qoz													
ZR41	2.0	4.0	3912569	77133	Og	Coy			MWB		-50		11	0.28	18	6		26
ZR41	4.0	6.0	3912570	77133	Og	CoySls			DB	lesser DG calc-arenite	125		31	1.02	18	41		261
ZR41	6.0	8.0	3912571	77133	Og	Sls			N	decomposed	250		27	1.68	18	20		759
ZR41	8.0	10.0	3912572	77133	Og	Sls	Ovc, Fi	Py	N	carbonaceous	75		29	1.05	53	23		124
ZR41	10.0	12.0	3912573	77133	Og	Sls	Ovc, Fi	Py	N	carbonaceous	50		19	1.23	94	17		498
ZR42	0.0	2.0			Qoz	Coo												
ZR42	2.0	4.0	3912574	77133	Og	Coy			N		-50		44	0.25	19	37		29
ZR42	4.0	6.0	3912575	77133	Og	CoySls			DG	lesser DG calc-arenite	150		163	1.5	27	179		230
ZR42	6.0	8.0	3912576	77133	Og	CoySls			B	lesser DG calc-arenite	150		115	1.17	21	125		434
ZR42	8.0	10.0	3912577	77133	Og	SlsCoy	Fi		DG	minor DG clay	75		34	1.25	33	32		486
ZR42	10.0	12.0	3912578	77133	Og	Coy			G	gritty	75		31	1.1	34	26		938
ZR42	12.0	14.0	3912579	77133	Og	Coy			G	gritty	50		31	3.15	39	26		354
ZR42	14.0	16.0	3912580	77133	Og	Sls	Fi	Py	DG	calc-arenite	75		29	1.9	48	26		809
ZR42	16.0	18.0	3912581	77133	Og	Sls		Py	DG	granular	50		22	1.26	41	26		1348
ZR42	18.0	20.0	3912582	77133	Og	Sls		Py	DG	granular	50		20	0.87	37	20		476
ZR42	20.0	21.0	3912583	77133	Og	Sls	Ovc, Ovc	Py	DG	granular	-50		14	1.23	100	10		86
ZR43	0.0	2.0	3912584	77133	Sc	Mq					-50		3	0.38	23	5		14
ZR44	0.0	2.0	3912585	77133	Og	Coy			DG	gritty, organic material	125		33	1.16	34	738		1403
ZR44	2.0	4.0	3912586	77133	Og	SlsCoy			G	lesser GB clay	50		8	0.81	170	146		327
ZR44	4.0	6.0	3912587	77133	Og	SlsCoy			G	lesser GB clay	425		37	2.06	132	1667		2129
ZR44	6.0	8.0	3912588	77133	Og	CoySls			DG	lesser G calc-arenite	275		29	1.25	107	1439		1538
ZR44	8.0	10.0	3912589	77133	Og	Sls			G	calc-arenite	200		9	1.09	153	429		1859
ZR44	10.0	12.0	3912590	77133	Og	Sls		Py	G	calc-arenite	200		13	1.13	169	403		1428
ZR44	12.0	14.0	3912591	77133	Og	Sls		Py	G	calc-arenite	200		24	0.91	155	484		1287
ZR44	14.0	16.0	3912592	77133	Og	Sls	Ovc		G	calc-arenite	100		6	0.53	145	138		497
ZR44	16.0	17.2	3912593	77133	Og	Sls	Ovc		G	calc-arenite	150		8	0.84	187	357		2233
ZR45	0.0	2.0			Qha	Cg												
ZR45	2.0	4.0	3912594	77133	Qha	Cg					-50		60	0.92	35	2380		648
ZR45	4.0	6.0	3912595	77133	Og	Sls			LG	granular	-50		16	1.25	188	667		1451
ZR46	0.0	2.0	3912596	77133	Og	Coy			MWG		-50		6	0.4	14	165		176
ZR46	2.0	4.0	3912597	77133	Og	CoySls			B	lesser DG calc-arenite	-50		7	0.36	16	90		36

843070

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR46	4.0	6.0	3912596	77133	Og	Sls	Fi		DG		-50		27	0.98	23	2960		1754
ZR46	6.0	8.0	3912599	77133	Og	Sls	Fi		DG		-50		48	1.07	24	3262		1359
ZR46	8.0	9.0	3912600	77133	Og	Sls	Fi		DG		-50		53	1.31	27	4508		1311
ZR47	0.0	2.0	3912601	77133	Qha	Coy			LB		-50		5	0.34	21	28		19
ZR47	2.0	4.0	3912602	77133	Og	Coy			MLBG		-50		12	0.59	16	50		26
ZR47	4.0	6.0	3912603	77133	Og	SlsCoy	Fi		G	lesser DG clay	-50		16	2.55	26	124		301
ZR47	6.0	8.0	3912604	77133	Og	SlsCoy	Fi, Ovc		G	lesser DG clay	-50		15	1.34	18	81		113
ZR47	8.0	10.5	3912605	77133	Og	Sls	Bn	Py	G		50		25	1.46	23	36		121
ZR48	0.0	2.0	3912606	77133	Og	CoySls			B	minor G calc-arenite	-50		17	0.29	18	24		23
ZR48	2.0	4.0	3912607	77133	Og	SlsCoy	Fi		G	lesser B clay	-50		27	0.3	13	34		127
ZR48	4.0	6.0	3912608	77133	Og	SlsCoy	Fi		G	lesser B clay	-50		19	1.02	38	24		171
ZR48	6.0	8.0	3912609	77133	Og	SlsCoy	Fi		G	lesser B clay	-50		13	0.87	31	22		142
ZR48	8.0	10.0	3912610	77133	Og	CoySls			B	lesser DG calc-arenite	-50		22	1.27	27	36		230
ZR48	10.0	12.0	3912611	77133	Og	Coy			GB	gritty	-50		24	3.24	30	57		175
ZR48	12.0	14.0	3912612	77133	Og	Coy			GB	gritty	50		20	3.3	30	53		303
ZR48	14.0	16.0	3912613	77133	Og	Coy			GB	gritty	75		18	3.76	48	84		610
ZR48	16.0	18.4	3912614	77133	Og	Coy			GB	gritty, EOH in DG calc-arenite + carbonate stockwork	200		20	7.32	43	215		863
ZR49	0.0	2.0	3912615	77133	Qha	Og			DB		-50		4	0.26	17	4		32
ZR49	2.0	4.0	3912616	77133	Og	Coy			MLD	gritty	-50		5	0.23	24	7		11
ZR49	4.0	6.0	3912617	77133	Og	Coy			MLD	gritty	-50		30	0.29	20	106		135
ZR49	6.0	8.2	3912618	77133	Og	Coy			DG	lesser Ssl	50		29	2.73	28	115		1625
ZR50	0.0	2.0	3912619	77133	Qha	CoyMq			DB	clay + crotty qtzite frags	-50		24	0.44	11	24		78
ZR50	2.0	4.0	3912620	77133	Og	CoyMq			DG	clay occasional qtzite frags	-50		15	2.03	155	29		117
ZR50	4.0	6.0	3912621	77133	Og	Sls		Py	DG	calc-arenite frags with vein qtz	-50		26	0.81	15	297		325
ZR51	0.0	2.0	3912622	77133	Qha	CoySls			DG	clay + calc-arenite + qtzite frags	-50		9	0.3	11	47		23
ZR51	2.0	4.0	3912623	77133	Qha	CoyCg			Y	clay + rounded qtz frags	450		25	5.33	15	170		373
ZR51	4.0	6.0	3912624	77133	Og	CoySls			DG	clay + carbonate frags	1875		19	7.85	38	122		370
ZR51	6.0	8.0	3912625	77133	Og	Sls			W	frags of white carbonate	75		5	0.79	177	10		77
ZR52	0.0	1.5			Qha	Cg												
ZR53	0.0	2.0			Qha	Cg				qtz sandstone gravels								
ZR53	2.0	4.0	3912626	77133	Og	Coy			DG	clays + few rock frags	150		24	3.06	19	27		139
ZR53	4.0	6.0	3912627	77133	Og	CoySls			DGB	clay + calc-arenite frags	250		26	3.44	24	28		150
ZR53	6.0	8.0	3912628	77133	Og	Sls	Vn		WDG	carbonate veined calc-arenite, + DG clay	275		16	7.54	104	21		105
ZR54	0.0	2.0	3912629	77133	Qha	CoyMq			DB	clay + qtzite frags	-50		4	0.39	13	20		14
ZR54	2.0	4.0	3912630	77133	Qha	Coy			DGY	mottled clay	50		168	2.49	15	1217		161
ZR54	4.0	6.0	3912631	77133	Og	CoySls			DGDB	clay + small calc-arenite frags	100		29	3.76	22	8500		2500
ZR54	6.0	8.0	3912632	77133	Og	CoyMq			DG	clay, minor qtzite	50		28	3.12	26	6300		2500
ZR54	8.0	10.0	3912633	77133	Og	CoySls			DG	clay + calc-arenite frags	75		23	4.23	24	3166		1874
ZR54	10.0	12.0	3912634	77133	Og	CoySls			DG	clay + calc-arenite frags	50		24	3.77	36	1219		997
ZR54	12.0	14.0	3912635	77133	Og	CoySls			DG	clay + calc-arenite frags	-50		20	3.56	40	309		247
ZR54	14.0	16.0	3912636	77133	Og	CoySls			DG	increased calc-arenite frags	250		18	6.36	35	169		672
ZR54	16.0	18.0	3912637	77133	Og	CoySls			DG	increased calc-arenite frags	50		19	3.26	36	200		665
ZR54	18.0	20.0	3912638	77133	Og	Coy			DG	clay with qtz frags	-50		17	2.5	26	1129		991
ZR54	20.0	22.0	3912639	77133	Og	Coy			DG	just clay	100		15	3.59	20	3199		977
ZR54	22.0	24.0	3912640	77133	Og	Coy			DG	just clay	-50		18	2.83	34	939		1118
ZR54	24.0	26.0	3912641	77133	Og	Coy			DG	just clay	-50		18	2.42	33	687		885
ZR54	26.0	28.0	3912642	77133	Og	CoySls			DGLG	mottled clay + calc-arenite frags	-50		19	1.55	20	686		856
ZR54	28.0	30.0	3912643	77133	Og	CoySls			DG	clay + calc-arenite frags	-50		22	1.72	22	231		606
ZR54	30.0	32.0	3912644	77133	Og	CoySls			DG	clay + calc-arenite frags	-50		20	1.53	22	83		329
ZR54	32.0	34.0	3912645	77133	Og	CoySls			DG	mottled clay + calc-arenite frags	-50		21	1.28	19	933		681
ZR54	34.0	36.0	3912646	77133	Og	CoySls			DG	clay + calc-arenite frags	50		22	1.88	52	249		382
ZR54	36.0	38.0	3912647	77133	Og	CoySls			DG	clay + calc-arenite frags	50		20	2.22	61	506		464
ZR54	38.0	40.0	3912648	77133	Og	Coy			DG	mottled clay few rock frags	50		25	2.67	54	1907		811

843071

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR54	40.0	42.0	3912649	77133	Og	Ccy			DG	mottled clay low rock frags	-50		28	2.25	43	2679		853
ZR54	42.0	44.0	3912650	77133	Og	Ccy			DGLG	mottled clays	-50		27	1.75	39	2150		1117
ZR54	44.0	46.0	3912651	77133	Og	Ccy			DGLG	mottled clays	-50		29	1.65	28	2475		936
ZR54	46.0	48.0	3912652	77133	Og	CcySls			DG	clay some calc-arenite frags	50		35	2.46	28	3267		2997
ZR54	48.0	50.0	3912653	77133	Og	CcySls		Py	DG	clay + increasing calc-arenite frags	100		39	2.89	44	2729		3096
ZR54	50.0	52.0	3912654	77133	Og	CcySls		Py	DG	clay + increasing calc-arenite frags	75		28	2.34	26	1005		939
ZR54	52.0	54.0	3912655	77133	Og	CcySls			DG	clay + increasing calc-arenite frags	-50		28	2.28	22	246		463
ZR55	0.0	2.0			Qha	Cg												
ZR55	2.0	4.0	3912656	77133	Qha	CcyMq			DB	clay + qtzite frags	-50		28	1.08	37	684		1664
ZR55	4.0	6.0	3912657	77133	Qha	Ccy			DB	clay only	-50		38	1.48	69	1123		2013
ZR55	6.0	8.0	3912658	77133	Og	CcySls			DG	clay + calc-arenite rock frags	-50		37	2.74	51	1422		1761
ZR55	8.0	10.0	3912659	77133	Og	Ccy			DGLB	DG clay dominant	-50		36	2.09	67	1108		1514
ZR55	10.0	12.0	3912660	77133	Og	Ccy			DGLB	DG clay dominant	75		38	3.14	37	996		1643
ZR55	12.0	14.0	3912661	77133	Og	Ccy			DGLB	DG clay dominant	100		49	5.72	45	807		1604
ZR55	14.0	16.0	3912662	77133	Og	Ccy			DG	mottled clay	100		37	4.07	63	650		1056
ZR55	16.0	18.0	3912663	77133	Og	CcySls	Vn		DG	clay + veined calc-arenite frags	325		54	4.13	31	2058		1486
ZR55	18.0	20.0	3912664	77133	Og	Ccy			DG	clay mottled DG, Y+B	125		42	3.46	32	1128		1306
ZR55	20.0	22.0	3912665	77133	Og	SlsCcy		Py	LG	calc-arenite frags, minor DG clay	275		28	1.95	13	99		174
ZR55	22.0	24.0	3912666	77133	Og	Sls			LG	granular calc-arenite frags	200		23	1.27	16	91		163
ZR55	24.0	26.0	3912667	77133	Og	Sls			LG	granular calc-arenite frags	225		24	1.47	11	55		89
ZR55	26.0	28.0	3912668	77133	Og	Sls		Py	LG	granular calc-arenite frags	175		57	2.26	19	35		102
ZR55	28.0	30.0	3912669	77133	Og	Sls		Py	LG	granular calc-arenite frags, LG clay	-50		63	0.91	11	28		118
ZR55	30.0	32.0	3912670	77133	Og	Sls		Py	LG	granular calc-arenite frags, LG clay	200		40	1.96	15	30		68
ZR55	32.0	34.0	3912671	77133	Og	Sls			LG	granular calc-arenite frags, LG clay	75		27	1.43	15	27		92
ZR55	34.0	36.0	3912672	77133	Og	Sls	Bn	Py	LG	layered calc-arenite+carbonate	-50		76	1.17	20	30		113
ZR55	36.0	38.0	3912673	77133	Og	Sls	Bn	Py	LG	layered calc-arenite+carbonate	-50		33	1.1	16	24		100
ZR55	38.0	39.0	3912674	77133	Og	Sls		Py	LG	calc-arenite + lots of Py	-50		15	1.16	16	21		59
ZR56	0.0	2.0	3912675	77133	Qha	CcyCg			LG	clay + rounded qtz pebbles	-50		3	0.48	13	9		10
ZR56	2.0	4.0	3912676	77133	Qha	CcyCg			YR	mottled clay + rounded qtz	-50		12	0.85	16	22		7
ZR56	4.0	6.0	3912677	77133	Og	Ccy			DGLG	clay some of which is green, + rounded qtz	75		213	9.62	17	1346		52
ZR56	6.0	8.0	3912678	77133	Og	Sls			DG	calc-arenite frags, some DG clay	-50		22	6.45	25	1346		725
ZR56	8.0	10.0	3912679	77133	Og	Ccy			DG	calc-arenite frags	-50		16	5.9	24	423		1373
ZR56	10.0	12.0	3912680	77133	Og	Sls			DG	calc-arenite frags	-50		21	2.61	21	101		1034
ZR56	12.0	14.0	3912681	77133	Og	Sls		Py	DG	calc-arenite frags	-50		21	2.43	20	38		547
ZR56	14.0	16.0	3912682	77133	Og	Sls		Py	DG	calc-arenite frags	-50		21	2.43	21	27		615
ZR56	16.0	18.0	3912683	77133	Og	Sls		Py	DG	calc-arenite frags	-50		22	2.81	17	12		787
ZR56	18.0	20.0	3912684	77133	Og	Sls		Py	DG	calc-arenite frags	-50		18	2.7	25	19		858
ZR56	20.0	22.0	3912685	77133	Og	Sls			DG	calc-arenite frags	-50		15	2.48	38	89		409
ZR56	22.0	24.0	3912686	77133	Og	SlsCcy			DG	granular calc-arenite, minor DG clay	50		20	2.79	42	41		72
ZR56	24.0	26.0	3912687	77133	Og	SlsCcy		Py	DG	granular calc-arenite, minor DG clay	-50		15	1.79	47	69		50
ZR56	26.0	28.0	3912688	77133	Og	SlsCcy		Py	DG	granular calc-arenite, minor DG clay	-50		16	2.19	156	25		34
ZR56	28.0	30.0	3912689	77133	Og	SlsCcy		Py	DG	granular calc-arenite, minor DG clay	-50		14	2.93	370	9		215
ZR56	30.0	32.0	3912690	77133	Og	SlsCcy		Py	DG	granular calc-arenite, minor DG clay	-50		8	2.39	390	149		75
ZR56	32.0	33.0	3912691	77133	Og	SlsCcy		Py	DG	granular calc-arenite, minor DG clay	-50		8	2.16	502	1579		485
ZR57	0.0	2.0			Qha	Cg				qtzite gravel								
ZR57	2.0	4.0	3912692	77133	Qha	CcyCg			LB	clay + qtzite frags	-50		2	0.23	14	17		11
ZR57	4.0	6.0	3912693	77133	Og	CcySls			DG	clay some calc-arenite frags	-50		52	1	16	200		42
ZR57	6.0	8.0	3912694	77133	Og	Sls			DG	only calc-arenite frags	-50		55	1.07	22	819		262
ZR57	8.0	10.0	3912695	77133	Og	Sls			DG	calc-arenite, some DG clay	-50		65	2.36	18	855		366
ZR57	10.0	12.0	3912696	77133	Og	Sls			DG	calc-arenite frags	75		61	4	23	1188		954
ZR57	12.0	14.0	3912697	77133	Og	Sls		Py	DG	calc-arenite frags	50		22	2.07	20	90		761
ZR57	14.0	16.0	3912698	77133	Og	Sls		Srd	DG	calc-arenite frags	-50		19	1.61	25	48		414
ZR57	18.0	18.0	3912699	77133	Og	Sls			DG	calc-arenite frags	-50		16	1.95	22	24		223

843072

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	All/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR57	18.0	20.0	3912700	77133	Og	Sls	Vn		DG	calc-arenite frags, vein carbonate	-50	15	1.3	25	19		68	
ZR57	20.0	22.0	3912701	77133	Og	Sls	Vn		DG	calc-arenite frags, vein carbonate	-50	15	2.29	24	19		145	
ZR57	22.0	24.0	3912702	77133	Og	Sls	Vn		DG	calc-arenite frags, vein carbonate	-50	19	1.38	34	19		36	
ZR57	24.0	26.0	3912703	77133	Og	Sls	Vn		DG	calc-arenite frags, vein carbonate	-50	13	1.99	160	15		30	
ZR57	26.0	28.0	3912704	77133	Og	Sls	Vn		DG	calc-arenite frags, vein carbonate	-50	11	2.69	280	11		48	
ZR57	28.0	29.0	3912705	77133	Og	Sls	Vn		DG	calc-arenite frags, vein carbonate	-50	9	2.43	274	10		26	
ZR58	0.0	2.0	3912706	77133	Cha	CcyMq			DB	clay + qtzite frags	-50	4	0.19	17	3		14	
ZR58	2.0	4.0	3912707	77133	Og	CcyMq			DG	clay + qtzite frags	-50	41	0.73	35	896		1138	
ZR58	4.0	6.0	3912708	77133	Og	CcySls			DG	clay + calc-arenite frags	-50	77	2.53	109	1279		1767	
ZR58	6.0	8.0	3912709	77133	Og	Ccy			DG	just clay	50	22	1.49	172	611		817	
ZR58	8.0	10.0	3912710	77133	Og	Sls			DG	brecciated calc-arenite	-50	4	1.03	345	166		444	
ZR58	10.0	12.0	3912711	77133	Og	Sls	Vn		DG	calc-arenite + vein carbonate	50	8	1.53	306	72		619	
ZR58	12.0	14.0	3912712	77133	Og	Sls	Vn		DG	calc-arenite + vein carbonate	50	7	1.67	322	93		762	
ZR58	14.0	16.0	3912713	77133	Og	SlsCcy			DG	calc-arenite frags + DB clay, cavity poor recovery	175	35	7.39	187	428		831	
ZR58	16.0	18.0	3912714	77133	Og	Ccy			DG	just clay	175	33	8.65	106	837		1898	
ZR58	18.0	19.3	3912715	77133	Og	Sls			DG	calc-arenite frags	50	13	2.55	224	134		337	
ZR59	0.0	2.0	3912716	77133	Og	Sls	Vn		DG	calc-arenite frags, some vein carbonate	-50	4	1.08	636	11		49	
ZR59	2.0	4.0	3912717	77133	Og	Sls	Vn		DG	calc-arenite frags, some vein carbonate, some vein qtz	-50	5	1.18	467	13		56	
ZR59	4.0	5.5	3912718	77133	Og	Sls	Vn		DG	calc-arenite frags, some vein carbonate, some vein qtz	-50	6	1.31	445	17		61	
ZR60	0.0	2.0	3912719	77133	Og	CcyCg			DG	clay + rounded qtz pebbles	-50	8	0.58	89	23		58	
ZR60	2.0	4.0	3912720	77133	Og	CcySls			DG	DG clay + calc-arenite frags	-50	8	1.16	258	14		106	
ZR61	0.0	2.0	3912721	77133	Og	CcySls			DG	clay + calc-arenite frags	-50	6	0.53	20	15		14	
ZR61	2.0	4.0	3912722	77133	Og	SlsCcy			DG	calc-arenite frags, minor DG clay	-50	13	0.88	19	27		54	
ZR61	4.0	6.0	3912723	77133	Og	Sls			DG	only calc-arenite frags	-50	21	1.49	22	28		86	
ZR61	8.0	8.0	3912724	77133	Og	Sls			DG	only calc-arenite frags	-50	14	1.73	53	20		68	
ZR62	0.0	0.8	3912725	77133	Og	Sls			DG	calc-arenite frags only, poor recovery	-50	15	0.81	25	20		18	
ZR63	0.0	2.0	3912726	77133	Og	Ccy			DG	clay few carbonate frags	50	14	1.44	34	45		420	
ZR63	2.0	2.4	3912727	77133	Og	SlsCcy			DG	calc-arenite frags, minor DG clay	-50	6	0.7	129	7		63	
ZR64	0.0	2.2	3912728	77133	Og	Sls			DG	lots of carbonate frags	-50	15	0.49	35	17		321	
ZR65	0.0	0.4			Og	Sls				not enough to be sampled								
ZR66	0.0	2.0	3912729	77133	Cha	CcyMq			DB	clay some qtzite frags	-50	5	0.39	19	4		29	
ZR66	2.0	4.0	3912730	77133	Cha	CcyMq			DB	clay some qtzite frags	-50	10	0.51	25	7		19	
ZR66	4.0	6.0	3912731	77133	Cha	CcyMq			DB	clay some qtzite and calc-arenite frags	-50	9	0.57	20	20		32	
ZR66	6.0	8.0	3912732	77133	Og	Sls			DG	calc-arenite frags only	-50	38	1.7	26	42		58	
ZR66	8.0	10.0	3912733	77133	Og	Sls			DG	calc-arenite frags only	-50	43	2.11	23	53		188	
ZR66	10.0	12.0	3912734	77133	Og	Sls	Vn	Py	DG	calc-arenite frags only, vein calc-arenite	50	63	3.45	24	72		496	
ZR66	12.0	14.0	3912735	77133	Og	Sls	Vn	Py	DG	calc-arenite frags only, vein carbonate	75	28	3.18	22	26		863	
ZR66	14.0	16.0	3912736	77133	Og	Sls			DG	calc-arenite frags only	75	29	4.47	31	41		756	
ZR66	16.0	18.0	3912737	77133	Og	SlsCcy			DG	calc-arenite frags, some DG clay	100	14	4.23	29	47		295	
ZR66	18.0	20.0	3912738	77133	Og	SlsCcy			DG	calc-arenite frags, some DG clay	50	11	2.13	30	19		263	
ZR66	20.0	22.0	3912739	77133	Og	SlsCcy			DG	calc-arenite frags, some DG clay	-50	8	1.33	12	18		165	
ZR66	22.0	24.0	3912740	77133	Og	SlsCcy		Py	DG	calc-arenite frags, some DV clay	-50	9	1.29	33	15		193	
ZR66	24.0	26.0	3912741	77133	Og	SlsCcy		Py	DG	calc-arenite frags, some DV clay, vein qtz	-50	11	1.53	22	29		184	
ZR66	26.0	28.0	3912742	77133	Og	Sls			DG	calc-arenite, vein qtz	50	16	1.58	35	47		384	
ZR66	28.0	29.8	3912743	77133	Og	Sls			DG	calc-arenite frags only	-50	31	0.98	12	42		326	
ZR67	0.0	2.0	3912744	77133	Cha	CcyMq			DGDB	clay + crotty qtzite frags	-50	19	0.38	21	18		25	
ZR67	2.0	4.0	3912745	77133	Og	Ccy			DG	clay + few rock frags	-50	85	0.33	15	179		175	
ZR67	4.0	6.0	3912746	77133	Og	CcySls			DG	clay + calc-arenite, qtzite frags	200	55	7.41	43	3200		8500	
ZR67	6.0	8.0	3912747	77133	Og	Ccy			DG	mottled clay	100	35	3.1	28	3100		8100	
ZR67	8.0	9.6	3912748	77133	Og	SlsCcy			DG	granular calc-arenite, some DG clay	-50	29	1.42	78	4000		7100	
ZR68	0.0	1.2	3912749	77133	Og	CcySls			DG	clay + calc-arenite at base of hole	-50	14	0.48	30	113		212	
ZR69	0.0	2.0	3912750	77133	Og	Ccy			DG	just clay	-50	5	0.41	30	14		35	
ZR69	2.0	4.0	3912751	77133	Og	Ccy			DG	just clay	-50	10	0.45	19	124		15	

843073

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR69	4.0	6.0	3912752	77133	Og	Sls			DG	increase in calc-arenite frags, lesser clay	75		25	1.42	102	47		654
ZR69	6.0	8.0	3912753	77133	Og	Sls			G	granular calc-arenite	-50		6	1.25	246	22		1353
ZR69	8.0	10.5	3912754	77133	Og	Sls			G	granular calc-arenite	-50		6	1.22	253	21		255
ZR70	0.0	2.2	3912755	77133	Og	Ccy			MMG		-50		5	0.45	15	38		81
ZR71	0.0	2.0	3912756	77133	Og	Sls			G	granular	-50		62	1.53	27	91		94
ZR71	2.0	4.0	3912757	77133	Og	Sls			G	granular	-50		22	2.03	32	48		296
ZR71	4.0	6.0	3912758	77133	Og	Sls			G	granular calc-arenite	-50		19	2.76	41	23		256
ZR71	6.0	8.0	3912759	77133	Og	Sls			G	granular calc-arenite	-50		18	1.81	55	21		72
ZR71	8.0	10.0	3912760	77133	Og	Sls	Fi		DG	medium calc-arenite	-50		17	1.77	61	21		72
ZR71	10.0	12.0	3912761	77133	Og	Sls	Fi		DG	medium calc-arenite	-50		17	1.89	63	22		71
ZR71	12.0	14.0	3912762	77133	Og	Sls	Fi		DG	medium calc-arenite	-50		15	1.85	56	18		81
ZR71	14.0	16.0	3912763	77133	Og	SlsCcy	Fi		DG	medium calc-arenite, lesser DG clay	50		14	3.36	39	23		176
ZR71	16.0	18.0	3912764	77133	Og	CcySls			DG	lesser DG weakly foliated calc-arenite	50		13	3.11	28	39		149
ZR71	18.0	20.0	3912765	77133	Og	CcySls	Vn	Oc	DG	lesser DG weakly foliated calc-arenite	50		13	2.63	25	41		119
ZR71	20.0	22.0	3912766	77133	Og	CcySls	Vn	Oc	DG	lesser DG weakly foliated calc-arenite	50		15	2.66	26	44		114
ZR71	22.0	24.0	3912767	77133	Og	CcySls	Vn	Oc	DG	lesser DG weakly foliated calc-arenite	-50		12	3.09	100	35		150
ZR71	24.0	25.1	3912768	77133	Og	Sls	FiVn	Oc	DG	fine calc-arenite	-50		9	1.86	156	20		112
ZR72	0.0	2.0	3912769	77133	Og	SlsCcy	Fi		G	calc-arenite, minor clay	-50		6	0.7	16	82		19
ZR72	2.0	4.0	3912770	77133	Og	SlsCcy	Fi		G	calc-arenite, minor clay	-50		32	1.14	14	66		136
ZR72	4.0	6.0	3912771	77133	Og	CcySls			G	minor Fi calc-arenite	-50		19	1.63	20	28		214
ZR72	6.0	8.0	3912772	77133	Og	CcySls			G	minor Fi calc-arenite	-50		17	1.34	14	29		149
ZR72	8.0	10.0	3912773	77133	Og	CcySls			G	minor Fi calc-arenite	-50		22	1.5	15	18		115
ZR72	10.0	12.0	3912774	77133	Og	CcySls	Vn	Oc	G	minor Fi calc-arenite	-50		31	2.35	35	30		498
ZR72	12.0	14.0	3912775	77133	Og	CcySls	Vn	Oc	G	minor Fi calc-arenite	-50		33	3.56	33	43		889
ZR72	14.0	16.0	3912776	77133	Og	CcySls	Vn	Oc	G	minor Fi calc-arenite	-50		28	2.52	39	23		456
ZR72	16.0	18.0	3912777	77133	Og	CcySls	Vn	Oc	G	minor granular Sls	-50		22	3.18	44	20		56
ZR72	18.0	20.0	3912778	77133	Og	Sls	Fi		DG	granular Sls	-50		21	1.92	44	20		195
ZR72	20.0	22.0	3912779	77133	Og	Sls	Fi		DG	granular Sls	-50		27	2.04	44	22		220
ZR72	22.0	24.0	3912780	77133	Og	Sls	Fi		DG	granular Sls	-50		18	1.92	43	19		77
ZR72	24.0	26.0	3912781	77133	Og	Sls	Fi		DG	granular Sls	-50		23	1.93	47	24		98
ZR72	26.0	28.0	3912782	77133	Og	Sls	Fi		DG	granular Sls	-50		24	2.04	56	35		300
ZR72	28.0	30.0	3912783	77133	Og	Sls	Fi	Py	DG	granular Sls	50		19	3.76	48	35		118
ZR72	30.0	32.0	3912784	77133	Og	SlsCcy	Fi	Py	DG	granular Sls, minor DG clay	-50		16	2.93	44	27		96
ZR72	32.0	34.0	3912785	77133	Og	Sls	Fi	Py	DG	granular Sls	-50		32	3.82	50	41		672
ZR72	34.0	36.0	3912786	77133	Og	SlsCcy	Fi		DG	granular Sls, minor DG clay	-50		19	1.91	49	22		101
ZR72	36.0	38.0	3912787	77133	Og	SlsCcy	Fi		DG	granular Sls, minor DG clay	-50		16	2.49	49	20		55
ZR72	38.0	40.0	3912788	77133	Og	Sls			DG	calc-arenite	-50		20	1.88	54	21		54
ZR72	40.0	42.0	3912789	77133	Og	Sls			DG	calc-arenite	-50		18	1.83	62	22		74
ZR72	42.0	44.0	3912790	77133	Og	Sls	Fi	Py	DG	medium calc-arenite	-50		16	1.75	58	19		42
ZR72	44.0	46.0	3912791	77133	Og	Sls	Fi	Py	DG	medium calc-arenite	-50		21	1.66	59	25		37
ZR72	46.0	48.0	3912792	77133	Og	Sls	Fi		DG	medium calc-arenite	-50		15	1.84	53	24		56
ZR72	48.0	50.0	3912793	77133	Og	Sls	Fi		DG	medium calc-arenite	-50		13	1.53	47	30		26
ZR72	50.0	52.0	3912794	77133	Og	Sls	Fi	Py	G	calc-arenite	-50		16	1.9	38	28		45
ZR72	52.0	54.0	3912795	77133	Og	Sls	Fi	Py	G	calc-arenite	-50		16	1.86	51	35		61
ZR73	0.0	2.0	3912796	77133	Og	Ccy			DG		-50		21	2.35	30	47		89
ZR73	2.0	4.0	3912797	77133	Og	CcySls			DG	minor Sls	50		22	3.52	38	40		156
ZR73	4.0	6.0	3912798	77133	Og	Ccy			LBOG	minor qtz?	-50		13	2.3	43	29		28
ZR73	6.0	8.0	3912799	77133	Og	CcySls			DG	minor Sls + Ovc	50		11	3.26	63	31		53
ZR73	8.0	10.0	3912800	77133	Og	SlsCcy			DG	calc-arenite, minor DG clay	-50		4	0.51	76	6		14
ZR73	10.0	12.0	3912801	77133	Og	CcySls			DG	minor calc-arenite + Ovc+ rounded qtz frags	-50		4	1.13	83	8		68
ZR74	0.0	2.0	3912802	77133	Oha	CcyCg			B	with rounded qtz frags	-50		7	0.5	23	17		19
ZR74	2.0	3.0	3912803	77133	Og	Sls	Fi, Ovc		DG	calc-arenite, lesser DG-V clay	-50		15	0.78	32	24		93
ZR75	0.0	1.0	3912804	77133	Og	Sls			DG	massive calc-arenite, also surficial B peaty clay	-50		5	0.93	38	16		20

843074

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Att/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR76	0.0	2.0		77133	Qha	Cg				qtzite gravel								
ZR76	2.0	4.0	3912805	77133	Qha	Ccy			B	peaty	-50	8	0.39	25	7			6
ZR76	4.0	6.0	3912806	77133	Qha	Ccy			B	peaty	-50	9	0.3	14	9			7
ZR76	6.0	8.0	3912807	77133	Sc	Mq					50	44	0.48	17	77			143
ZR77	0.0	2.0	3912808	77133	Og	Ccy			LB		-50	4	0.47	22	11			32
ZR77	2.0	4.0	3912809	77133	Og	Ccy			LB		-50	3	0.4	21	8			10
ZR77	4.0	6.0	3912810	77133	Og	CcySls			DG	lesser foliated DG medium calc-arenite	-50	41	0.85	26	113			347
ZR77	6.0	8.0	3912811	77133	Og	CcySls			LB	lesser foliated DG medium calc-arenite	100	29	3.2	34	122			1315
ZR77	8.0	10.0	3912812	77133	Og	Sls	Fi		DG	medium calc-arenite	600	20	10.33	31	62			2320
ZR77	10.0	12.0	3912813	77133	Og	Sls	Fi		DG	medium calc-arenite	225	21	5.94	45	66			1310
ZR77	12.0	14.0	3912814	77133	Og	Sls	Fi		DG	medium calc-arenite	278	18	8.33	30	129			1248
ZR77	14.0	16.0	3912815	77133	Og	Ccy			DG		150	22	5.54	37	134			906
ZR77	16.0	18.0	3912816	77133	Og	Ccy	Vn		DG	gritty	125	23	4.32	39	159			1275
ZR77	18.0	20.0	3912817	77133	Og	Ccy	Vn	PySd	DG	gritty	125	15	3.44	42	438			3180
ZR77	20.0	21.8	3912818	77133	Og	Sls	FiVn	Py			275	56	9.09	103	2252			3430
ZR78	0.0	2.0	3912819	77133	Qha	Ccy			LB	peaty	-50	27	0.56	22	12			15
ZR78	2.0	4.0	3912820	77133	Og	Ccy			LO	plastic	50	46	1.22	18	13			14
ZR78	4.0	6.0	3912821	77133	Og	Ccy			LO	plastic	50	25	0.91	18	14			7
ZR78	6.0	8.0	3912822	77133	Og	Ccy			DG		75	46	2.36	29	153			310
ZR78	8.0	10.0	3912823	77133	Og	Ccy		Py	DG		125	24	5.7	86	126			540
ZR78	10.0	12.0	3912824	77133	Og	Ccy			DG		100	25	5.98	70	2100			5100
ZR78	12.0	14.3	3912825	77133	Og	Sls				calc-arenite	50	18	1.76	386	9500	2.15		11000
ZR79	0.0	2.0	3912826	77133	Og	Ccy			LB	gritty	-50	6	0.57	48	88			155
ZR79	2.0	4.0	3912827	77133	Og	CcySls			LB	lesser G granular Sls	-50	2	0.45	27	34			39
ZR79	4.0	6.0	3912828	77133	Og	SlsCcy			DG	medium calc-arenite, minor B clay	-50	11	0.53	31	42			67
ZR79	6.0	8.0	3912829	77133	Og	Ccy			DG	gritty	-50	27	0.47	23	734			275
ZR79	8.0	10.0	3912830	77133	Og	Ccy			DG	gritty	-50	27	0.85	32	614			468
ZR79	10.0	11.9	3912831	77133	Og	Sls	Fi	Py	DG		100	18	4.91	98	339			1788
ZR80	0.0	2.0	3912832	77133	Og	Ccy			LBDB		-50	3	0.35	23	9			18
ZR80	2.0	4.0	3912833	77133	Og	Ccy			DGDB		-50	17	0.44	24	19			14
ZR80	4.0	6.0	3912834	77133	Og	Ccy			DG		50	137	0.94	26	340			61
ZR80	6.0	8.0	3912835	77133	Og	Ccy			DB+G	gritty	200	49	4.31	41	228			918
ZR80	8.0	10.0	3912836	77133	Og	Ccy			DG	gritty	125	27	4.43	57	113			1030
ZR80	10.0	12.0	3912837	77133	Og	CcySls			DG	plastic, minor massive DG medium calc-arenite	200	14	5.67	39	61			338
ZR80	12.0	13.9	3912838	77133	Og	Sls			DG	med calc-arenite, lr translucent O botryoidal min?	75	12	2.42	87	28			430
ZR81	0.0	2.0	3912839	77133	Qha	Ccy			LB	peaty	-50	2	0.45	23	3			14
ZR81	2.0	4.0	3912840	77133	Og	CcySls			LB	peaty, lesser G calc-arenite	75	24	0.31	15	28			17
ZR81	4.0	6.0	3912841	77133	Og	Sls			DG	calc-arenite, minor O rock frags	100	57	0.35	12	127			56
ZR81	6.0	8.0	3912842	77133	Og	Sls			DG	calc-arenite, minor O rock frags & DG clay	125	18	2.38	34	79			534
ZR81	8.0	10.0	3912843	77133	Og	SlsCcy			DG	calc-arenite, lesser DG clay	125	15	4.38	37	61			808
ZR81	10.0	12.0	3912844	77133	Og	Sls			LG	granular	100	23	2.5	76	34			176
ZR81	12.0	13.1	3912845	77133	Og	Sls	Ovc		MG	granular	50	9	2.1	112	20			135
ZR82	0.0	2.0	3912846	77135	Og	Ccy			WLB	minor organics	-50	-1	5	0.57	21	8		68
ZR82	2.0	4.0	3912847	77135	Og	Ccy			WLB	gritty	-50	-1	23	0.56	19	6		58
ZR82	4.0	6.0	3912848	77135	Og	CcySls			DG	minor LG calc-arenite	-50	-1	29	0.5	16	19		19
ZR82	6.0	8.0	3912849	77135	Og	SlsCcy			DG	granular, lesser DG clay	-50	-1	34	1.59	30	73		57
ZR82	8.0	10.0	3912850	77135	Og	Ccy			DG	gritty, poor recovery	-50	-1	26	1.83	28	61		78
ZR82	10.0	12.0	3912851	77135	Og	SlsCcy	Fi		DG	calc-arenite, lesser Dg clay	-50	-1	21	2.15	33	39		89
ZR82	12.0	14.0	3912852	77135	Og	SlsCcy	Fi		DG	calc-arenite, lesser Dg clay	-50	-1	19	2.32	32	35		250
ZR82	14.0	16.0	3912853	77135	Og	Sls	Fi		DG	calc-arenite	50	-1	15	1.96	37	32		279
ZR82	16.0	18.0	3912854	77135	Og	Sls			DG	granular calc-arenite	50	-1	15	1.73	44	27		182
ZR82	18.0	20.0	3912855	77135	Og	Sls	Fi		DG	granular calc-arenite	50	-1	13	1.59	47	25		135
ZR82	20.0	22.0	3912856	77135	Og	Sls	Fi		DG	granular calc-arenite, + rounded qtz pebbles	-50	-1	13	1.48	43	20		114

843075

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR82	22.0	24.0	3912857	77135	Og	Sls	Fi		DG	granular calc-arenite, + rounded qtz pebbles	50	-1	16	1.64	51	22		67
ZR82	24.0	26.0	3912858	77135	Og	Sls	FiVn		DG	granular calc-arenite	-50	-1	14	1.45	46	21		70
ZR82	26.0	28.0	3912859	77135	Og	Sls	FiVn	Py	DG	granular calc-arenite	50	-1	16	1.44	48	20		34
ZR82	28.0	30.0	3912860	77135	Og	Sls	FiVn	Py	DG	granular calc-arenite	-50	-1	14	1.49	44	16		25
ZR82	30.0	32.0	3912861	77135	Og	Sls	FiVn		DGR	calc-arenite	-50	-1	15	1.45	45	15		23
ZR82	32.0	34.0	3912862	77135	Og	Sls	FiVn		DGR	calc-arenite	-50	-1	13	1.46	46	17		49
ZR82	34.0	36.0	3912863	77135	Og	Sls	Fi	Py	DGR	calc-arenite	-50	-1	17	1.69	48	17		37
ZR82	36.0	38.0	3912864	77135	Og	Sls	Fi	Py	DGR	calc-arenite	-50	-1	15	1.62	51	17		27
ZR82	38.0	40.0	3912865	77135	Og	Sls	FiVn	Py	DGR	calc-arenite	-50	-1	20	1.78	69	20		67
ZR82	40.0	42.0	3912866	77135	Og	Sls	FiVn	Py	DGR	calc-arenite	-50	-1	15	1.58	51	20		73
ZR82	42.0	44.0	3912867	77135	Og	Sls	FiVn	Py	DGR	calc-arenite	-50	-1	15	1.6	47	18		34
ZR82	44.0	46.0	3912868	77135	Og	Sls	FiVn			calc-arenite	-50	-1	16	1.66	50	24		64
ZR82	46.0	48.0	3912869	77135	Og	Sls	Fi	Py		calc-arenite	50	-1	16	1.61	55	26		82
ZR82	48.0	50.0	3912870	77135	Og	Sls	FiVn	Py		calc-arenite	50	-1	15	1.54	51	25		66
ZR82	50.0	52.0	3912871	77135	Og	Sls	Fi			calc-arenite	-50	-1	15	1.39	53	24		57
ZR82	52.0	53.5	3912872	77135	Og	Sls	FiVn	Py		calc-arenite	-50	-1	11	1.63	101	19		138
ZR83	0.0	2.0	3912873	77135	Og	Ccy			LB		-50	-1	-2	0.48	21	4		7
ZR83	2.0	4.0	3912874	77135	Og	CcySls			LB	lesser DG medium calc-arenite	-50	-1	3	0.54	19	5		15
ZR83	4.0	6.0	3912875	77135	Og	Sls	Fi		DG	medium calc-arenite	-50	-1	19	0.96	28	21		42
ZR84	0.0	2.0	3912876	77135	Oha	Ccy			B	peaty	-50	-1	4	0.4	19	6		23
ZR84	2.0	4.0	3912877	77135	Og	Ccy			B	lesser B calc-arenite	-50	-1	30	0.49	19	23		20
ZR84	4.0	6.0	3912878	77135	Og	Ccy			B	lesser B calc-arenite	-50	-1	105	0.66	19	94		61
ZR84	6.0	8.0	3912879	77135	Og	Ccy			BG	gritty	-50	-1	70	1.07	24	80		74
ZR84	8.0	10.0	3912880	77135	Og	CcySls			DG	plastic, minor medium calc-arenite	-50	-1	22	2.23	26	28		66
ZR84	10.0	12.0	3912881	77135	Og	CcySls			DG	plastic, minor medium calc-arenite	50	-1	15	3.86	31	23		94
ZR84	12.0	14.0	3912882	77135	Og	CcySls		Py	DG	plastic, minor medium calc-arenite	-50	-1	17	4.53	34	36		139
ZR84	14.0	16.0	3912883	77135	Og	CcySls		Py	DG	plastic, minor medium calc-arenite	-50	-1	13	4.1	33	42		369
ZR84	16.0	18.0	3912884	77135	Og	SlsCcy	Fi		DG	massive calc-arenite, minor DG clay	-50	-1	12	2.26	122	23		103
ZR84	18.0	20.0	3912885	77135	Og	Ccy			DG	lesser calc-arenite	-50	-1	24	4.9	40	32		121
ZR84	20.0	20.7	3912886	77135	Og	Sls		Py	DG	calc-arenite	-50	-1	13	2.05	169	12		47
ZR85	0.0	1.5	3912887	77135	Og	SlsCcy			DG	calc-arenite, also LB clay	-50	-1	7	0.47	31	10		11
ZR86	0.0	2.0		77135	Oha	Cg												
ZR86	2.0	4.0	3912888	77135	Og	Ccy			DGG		75	1	43	6.2	27	895		155
ZR86	4.0	6.0	3912889	77135	Og	Ccy			N	friable	225	1	31	10.23	37	1014		3453
ZR86	6.0	8.0	3912890	77135	Og	CcySls	We	Py	N	lesser B decomposed Sls	275	1	14	11.94	24	245		3261
ZR86	8.0	10.0	3912891	77135	Og	CcySls	We	Py	N	lesser B decomposed Sls	250	1	26	8.43	41	548		2095
ZR86	10.0	12.0	3912892	77135	Og	Sls		Py	G	med-coarse granular calc-arenite, minor Fe? staining	200	1	22	5.2	59	232		1630
ZR86	12.0	14.0	3912893	77135	Og	Sls		Py	G	med-coarse granular calc-arenite, minor Fe? staining	350	-1	13	11.63	30	53		2182
ZR86	14.0	16.0	3912894	77135	Og	Ccy	Vn		DG		150	1	23	8.21	52	81		754
ZR86	16.0	18.0	3912895	77135	Og	Sls	Vn	Py	G	lesser DG clay	100	-1	20	7.16	113	99		398
ZR86	18.0	20.0	3912896	77135	Og	Sls	Os	Py	G	granular calc-arenite	-50	-1	5	1.36	255	10		61
ZR87	0.0	2.0	3912897	77135	Og	Ccy			B	Pealy	-50	-1	2	0.38	22	5		12
ZR87	2.0	4.0	3912898	77135	Og	Ccy			LG		-50	-1	4	0.41	20	5		12
ZR87	4.0	6.0	3912899	77135	Og	Ccy			MLGDG		-50	-1	54	0.95	36	128		49
ZR87	6.0	8.0	3912900	77135	Og	Ccy			MLGDG		75	-1	28	4.54	56	74		254
ZR87	8.0	10.0	3913701	77135	Og	Ccy			DG	Gritty	100	-1	21	5.14	42	105		1014
ZR87	10.0	12.0	3913702	77135	Og	Ccy		Py	DG	Gritty	175	-1	18	6.17	31	134		793
ZR87	12.0	14.0	3913703	77135	Og	Sls	Vn	Cc	G	calc-arenite minor carbonate vein, minor DG clay	50	-1	9	3.07	334	71		360
ZR87	14.0	16.0	3913704	77135	Og	Sls		Py	G	calc-arenite	-50	-1	4	1.31	487	9		33
ZR87	16.0	18.0	3913705	77135	Og	Sls	Vn	Cc	DG	carbonate veining	-50	-1	5	0.85	423	5		27
ZR87	18.0	20.0	3913706	77135	Og	Sls	Vn	Cc	DG	carbonate veining	-50	-1	7	1.33	395	9		38
ZR88	0.0	2.0	3913707	77135	Og	Ccy			LB		-50	-1	8	0.45	23	5		15
ZR88	2.0	4.0	3913708	77135	Og	CcySls			DG	Lesser decomp calc-arenite	50	-1	58	2.79	36	171		188

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR88	4.0	6.0	3913709	77135	Og	CoySls			DG	Lesser decomp calc-arenite	50	-1	22	4.71	41	76		346
ZR88	6.0	8.0	3913710	77135	Og	SlsCoy			DG	calc-arenite lesser DG clay	-50	-1	16	2.1	45	38		112
ZR88	8.0	10.0	3913711	77135	Og	CoySls			DG	Lesser DG calc-arenite Prominent carbonate veining	50	-1	19	2.38	52	36		116
ZR88	10.0	12.0	3913712	77135	Og	Coy			DG	Grilly	100	-1	22	3.04	41	54		806
ZR88	12.0	14.0	3913713	77135	Og	Coy			DG	Grilly	200	-1	20	4.56	37	97		675
ZR88	14.0	16.0	3913714	77135	Og	Coy			DG		100	-1	19	6.88	39	92		391
ZR88	16.0	18.0	3913715	77135	Og	Sls	Vn	Cc	DG	carbonate veining	50	-1	18	2.58	45	27		117
ZR88	18.0	20.0	3913716	77135	Og	Sls			DG		-50	-1	17	2.88	39	27		125
ZR88	20.0	22.0	3913717	77135	Og	Sls			DG		-50	-1	23	3.66	49	43		598
ZR88	22.0	24.0	3913718	77135	Og	Sls			DG	Weak foliation	-50	-1	23	2.15	53	32		147
ZR88	24.0	26.0	3913719	77135	Og	Sls	Vn		DG	carbonate	-50	-1	24	2.1	58	28		151
ZR88	26.0	28.0	3913720	77135	Og	Sls			DG		-50	-1	23	2.35	58	28		151
ZR88	28.0	30.0	3913721	77135	Og	SlsCoy			DG	Lesser DG clay	75	-1	23	5.35	53	45		185
ZR88	30.0	32.0	3913722	77135	Og	SlsCoy		Py	DG	Minor DG clay	-50	-1	19	2.52	50	35		74
ZR88	32.0	34.0	3913723	77135	Og	Sls			DG	calc-arenite Weak foliation	-50	-1	23	1.95	51	20		603
ZR88	34.0	36.0	3913724	77135	Og	Sls			DG	calc-arenite	-50	-1	16	1.81	53	16		70
ZR89	0.0	2.0	3913725	77135	Qha	Coy			B	Peaty	-50	-1	4	0.39	19	-3		7
ZR89	2.0	4.0	3913726	77135	Og	SlsCoy			DG	Lesser DG clay	-50	-1	30	0.94	19	49		43
ZR89	4.0	6.0	3913727	77135	Og	Sls			DG	calc-arenite	-50	-1	20	2	24	48		74
ZR89	6.0	8.0	3913728	77135	Og	Sls			DG	calc-arenite	-50	-1	17	3.03	27	38		109
ZR89	8.0	10.0	3913729	77135	Og	SlsCoy			DG	calc-arenite, minor DG clay	-50	-1	25	4.3	28	39		325
ZR89	10.0	12.0	3913730	77135	Og	CoySls			DG	Minor DG calc-arenite	-50	-1	15	2.96	28	28		143
ZR89	12.0	14.0	3913731	77135	Og	CoySls			DG	Minor DG calc-arenite	-50	-1	14	2	32	17		185
ZR89	14.0	16.0	3913732	77135	Og	Sls			LB	calc-arenite	-50	-1	13	1.25	23	8		37
ZR89	16.0	18.0	3913733	77135	Og	Sls			DG	calc-arenite	-50	-1	13	1.76	27	19		98
ZR89	18.0	20.0	3913734	77135	Og	Sls	Vn		DG	calc-arenite weakly foliated. Minor qtz veining+DG clay	-50	-1	11	1.53	22	20		73
ZR89	20.0	22.0	3913735	77135	Og	Sls	Vn		DG	calc-arenite weakly foliated. Minor qtz veining+DG clay	75	-1	12	1.47	21	20		79
ZR89	22.0	24.0	3913736	77135	Og	Sls	Vn		DG	calc-arenite weakly foliated. Minor qtz veining	-50	-1	17	1.41	19	11		52
ZR89	24.0	26.0	3913737	77135	Og	Sls			G	calc-arenite	-50	-1	13	1.86	26	10		48
ZR89	26.0	28.0	3913738	77135	Og	Sls			G	calc-arenite	-50	-1	13	1.82	27	16		46
ZR89	28.0	30.0	3913739	77135	Og	Sls	Vn		G	calc-arenite qtz veining	-50	-1	12	1.58	29	17		42
ZR89	30.0	32.0	3913740	77135	Og	Sls			G	calc-arenite	-50	-1	18	1.22	22	16		33
ZR89	32.0	34.0	3913741	77135	Og	Sls			G	calc-arenite	50	-1	19	1.47	21	17		46
ZR89	34.0	36.0	3913742	77135	Og	Sls			G	Granular calc-arenite	-50	-1	17	1.97	23	20		99
ZR89	36.0	38.0	3913743	77135	Og	Sls			G	Granular calc-arenite	-50	-1	18	1.54	31	22		93
ZR89	38.0	40.0	3913744	77135	Og	Sls			G	Granular calc-arenite Weakly foliated	-50	-1	17	1.96	97	23		450
ZR89	40.0	42.0	3913745	77135	Og	Sls	Vn		G	Granular calc-arenite Weakly foliated. Minor DG clay	-50	-1	19	1.75	39	26		188
ZR89	42.0	44.0	3913746	77135	Og	Sls	Vn		G	Granular calc-arenite Weakly foliated	-50	-1	16	1.44	47	18		88
ZR89	44.0	45.7	3913747	77135	Og	Sls	Vn		G	Granular calc-arenite Weakly foliated	-50	-1	20	2.33	195	17		645
ZR90	0.0	2.0	3913748	77135	Qha	Coy			B+DG	Lesser qtz gravels	-50	-1	3	0.46	24	-3		16
ZR90	2.0	4.0	3913749	77135	Og	Coy	We		DG	Decomp. limestone?	75	-1	24	3.76	43	41		56
ZR90	4.0	6.0	3913750	77135	Og	Coy	We		DG	Decomp. limestone?	50	-1	32	0.95	26	45		123
ZR90	6.0	8.0	3913751	77135	Og	Sls		Py	DG	calc-arenite	-50	-1	22	1.27	46	30		182
ZR90	8.0	10.0	3913752	77135	Og	Sls		Py	DG	calc-arenite	-50	-1	20	1.79	53	17		344
ZR90	10.0	12.0	3913753	77135	Og	SlsCoy			DG	calc-arenite + minor DG clay	50	2	20	1.83	55	12		110
ZR90	12.0	14.0	3913754	77135	Og	CoySls			DG	Minor DG calc-arenite	100	-1	25	4.19	54	12		76
ZR90	14.0	16.0	3913755	77135	Og	CoySls			DG	Minor DG calc-arenite	-50	2	30	1.8	52	12		61
ZR90	16.0	18.0	3913756	77135	Og	CoySls		Py	DG	Minor DG calc-arenite	50	-1	22	2.21	54	11		64
ZR90	18.0	20.0	3913757	77135	Og	Sls			DG	calc-arenite	-50	-1	25	1.83	50	12		141
ZR90	20.0	22.0	3913758	77135	Og	Sls			DG	calc-arenite	50	-1	19	2.26	47	15		73
ZR90	22.0	24.0	3913759	77135	Og	CoySls			DG	calc-arenite + minor clay	-50	-1	18	1.8	51	13		190
ZR90	24.0	26.0	3913760	77135	Og	CoySls	Vn		DG	calc-arenite + minor clay	50	-3	18	1.35	63	16		68
ZR90	26.0	28.0	3913761	77135	Og	CoySls	Vn	Py	DG	calc-arenite + minor clay	50	-1	21	2.16	48	17		170

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLth	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR90	28.0	30.0	3913762	77135	Og	CoySls	Vn		DG	Lesser DG fine grained calc-arenite	100	-1	17	4.89	74	24		153
ZR91	0.0	2.0	3913763	77135	Oha	CoyCg			DG	Minor qtz gravel	75	-1	10	2.37	43	17		415
ZR91	2.0	4.0	3913764	77135	Oha	CoyCg			DG	Minor qtz gravel	75	-1	11	2.44	40	17		120
ZR91	4.0	6.0	3913765	77135	Og	CoySls			DG	Lesser G calc-arenite	50	-1	10	2.91	76	15		64
ZR91	6.0	8.0	3913766	77135	Og	CoySls			DG	Lesser B calc-arenite	100	-1	9	4.6	88	12		47
ZR91	8.0	10.0	3913767	77135	Og	CoySls			DG	Lesser B calc-arenite + rounded qtz pebbels	-50	-1	5	1.36	163	-3		37
ZR91	10.0	10.7	3913768	77135	Og	CoySls			DG	Lesser B calc-arenite + rounded qtz pebbles	50	-1	5	1.06	136	-3		36
ZR92	0.0	1.0	3913769	77135	Cha	Cg			DB	Peaty + rdd qtz. EOH in DG calc-arenite + minor veining.	50	-1	8	0.53	42	-3		19
ZR93	0.0	2.0			Qoz	Coo												
ZR93	2.0	4.0	3913770	77135	Qoz	Coo			B	Rounded gravel	50	-1	4	0.34	22	4		15
ZR93	4.0	6.0	3913771	77135	Qoz	Coo			B	Rounded gravel	50	-1	7	0.38	31	-3		18
ZR93	6.0	8.0	3913772	77135	Qoz	Coo			LB	Peaty rounded qtz pebbels	-50	-1	3	0.27	18	-3		8
ZR93	8.0	10.0	3913773	77135	Qoz	Coo			LBV		-50	-1	6	0.3	26	-3		8
ZR93	10.0	12.0	3913774	77135	Qoz	Coo			DG	Rounded qtz gravel	-50	-1	2	0.25	16	3		13
ZR93	12.0	14.0	3913775	77135	Og	Coy			DG		-50	-1	15	0.39	24	23		53
ZR93	14.0	16.0	3913776	77135	Og	Sls			DG	calc-arenite	-50	-1	24	1.39	48	23		49
ZR93	16.0	17.0	3913777	77135	Og	Sls				Granular calc-arenite	-50	-1	15	1.47	95	9		31
ZR94	0.0	2.0			Qoz	Coo												
ZR94	2.0	4.0	3913778	77135	Og	SlsCoy?	We		N	Clay? Decomposed limestone.	-50	-1	22	0.21	12	4		24
ZR94	4.0	6.0	3913779	77135	Og	SlsCoy?	We		N	Clay? Decomposed limestone.	-50	-1	25	0.37	31	12		40
ZR94	6.0	8.0	3913780	77135	Og	SlsCoy?	We		N	Clay? Decomposed limestone.	-50	-1	16	0.23	13	23		19
ZR94	8.0	10.0	3913781	77135	Og	SlsCoy?	We		N	Clay? Decomposed limestone.	-50	-1	27	0.35	22	26		64
ZR94	10.0	12.0	3913782	77135	Og	SlsCoy?	We		N	Clay? Decomposed limestone.	50	-1	65	1.47	30	35		225
ZR94	12.0	14.5	3913783	77135	Og	Sls			N	Lesser granular calc-arenite Minor carbonate veining	50	-1	19	3.45	280	25		120
ZR95	0.0	2.0	3913784	77136	Oha	Coy			BLG	peaty clay		-1	22	0.28	16	4		12
ZR95	2.0	4.0	3913785	77136	Oha	CoySls			BLG	peaty clay some calc-arenite frags		-1	29	0.25	17	14		13
ZR95	4.0	6.0	3913786	77136	Og	Coy			DG	clay + minor frags		-1	47	2.09	34	385		393
ZR95	6.0	8.0	3913787	77136	Og	Coy			DG	clay + minor frags, some calc-arenite		1	34	4.67	37	342		964
ZR95	8.0	10.0	3913788	77136	Og	CoySls			DG	clay + increasing frags, some calc-arenite		1	32	10.3	31	638		2821
ZR95	10.0	12.0	3913789	77136	Og	CoySls			DG	clay + increasing frags, some calc-arenite		1	31	13.1	40	680		6100
ZR95	12.0	14.0	3913790	77136	Og	Coy			DG	clay low calc-arenite frags		1	30	7.68	46	312		2030
ZR95	14.0	16.0	3913791	77136	Og	SlsCoy			DG	calc-arenite frags, lesser DG clay		1	28	14.6	38	678		9900
ZR95	16.0	18.0	3913792	77136	Og	SlsCoy			DG	silty calc-arenite frags minor clay		1	18	9.08	19	470		3472
ZR95	18.0	20.0	3913793	77136	Og	SlsCoy	Vn		DG	calc-arenite, DG clay, vein qtz		1	28	10.3	37	218		3733
ZR95	20.0	22.0	3913794	77136	Og	CoySls			DG	DG clay some calc-arenite frags, vein qtz		1	30	11.5	44	184	15	18300
ZR95	22.0	24.0	3913795	77136	Og	CoySls			DG	clay sandy calc-arenite frags		1	21	13.3	43	172	15.9	20100
ZR95	24.0	26.0	3913796	77136	Og	Sls			DG	calc-arenite, trace Py, poor recovery		1	27	14.3	59	403	16.3	11100
ZR95	26.0	26.8	3913797	77136	Og	Sls			DG	calc-arenite, trace Py, poor recovery		-1	12	3.02	163	82		1579
ZR96	0.0	2.0	3913798	77136	Oha	CoyMq			DBLG	clay + qtzite frags		-1	5	0.3	20	8		16
ZR96	2.0	4.0	3913799	77136	Oha	CoyMq			LB	clay + qtzite frags		-1	9	0.3	21	10		21
ZR96	4.0	6.0	3913800	77136	Og	CoySls			DG	clay some calc-arenite frags		-1	19	0.32	20	24		33
ZR96	6.0	8.0	3913801	77136	Og	CoySls			DG	clay calc-arenite, qtzite, vein qtz frags		-1	24	0.43	23	69		120
ZR96	8.0	10.2	3913802	77136	Og	SlsCoy			DG	calc-arenite, some DG clay		-1	21	0.63	23	56		312
ZR97	0.0	2.0			Oha	Cg			DB	qtzite gravels								
ZR97	2.0	4.0			Oha	Cg			DB	qtzite gravels								
ZR97	4.0	6.0			Oha	Cg			DB	qtzite gravels								
ZR97	6.0	8.0	3913803	77136	Oha	Coy			DG	clay minor rock frags		-1	20	0.26	24	49		15
ZR97	8.0	10.0	3913804	77136	Og	Coy			DG	clay no frags		-1	33	0.56	21	144		137
ZR97	10.0	12.0	3913805	77136	Og	CoySls			DG	clay, calc-arenite qtzite frags		-1	25	0.35	24	95		169
ZR97	12.0	14.0	3913806	77136	Og	CoySls			DG	clay, calc-arenite qtzite frags		-1	23	1.35	35	62		566
ZR97	14.0	16.0	3913807	77136	Og	Sls	Vn		DG	calc-arenite, vein qtz+calcite, trace Py		-1	7	0.71	232	5		27
ZR97	16.0	17.8	3913808	77136	Og	SlsCoy	Vn		DG	calc-arenite, some DG clay+vein calcite		-1	12	1.02	209	22		166
ZR98	0.0	2.0			Oha	Cg			DB	qtzite gravels								

843078

Appendix : Professor Range prospect, Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR98	2.0	4.0			Qha	Cg			DB	qtzite gravels								
ZR98	4.0	6.0			Qha	Cg			DB	qtzite gravels								
ZR98	6.0	8.0	3913809	77136	Qha	CoySss			LG	clay + sandstone		-1	8	0.34	30	9		14
ZR98	8.0	10.0	3913810	77136	Qha	CoySss			LG	clay + sandstone		-1	12	0.33	27	12		12
ZR98	10.0	12.0	3913811	77136	Og	CoyMq			DG	clay some qtzite frags		-1	25	0.24	20	53		10
ZR98	12.0	14.0	3913812	77136	Og	CoySls			LGDB	clay + calc-arenite frags		-1	17	0.23	17	38		10
ZR98	14.0	16.0	3913813	77136	Og	CoySls			DGLG	mottled clay, calc-arenite frags		-1	23	0.23	16	52		15
ZR98	16.0	18.0	3913814	77136	Og	Sls			DG	calc-arenite frags only		-1	20	1.54	22	56		199
ZR98	18.0	20.0	3913815	77136	Og	Sls			DG	calc-arenite frags only		-1	17	4.45	27	24		498
ZR98	20.0	22.0	3913818	77136	Og	CoySls			DG	clay some calc-arenite frags		-1	17	3.49	37	28		287
ZR98	22.0	24.0	3913817	77136	Og	CoySls			DGv	clay some calc-arenite frags, vein qtz		-1	30	2.49	28	50		176
ZR98	24.0	26.0	3913818	77136	Og	CoySls			DG	clay some calc-arenite frags		-1	24	4.43	32	51		269
ZR98	26.0	28.0	3913819	77136	Og	CoySls			DG	clay some calc-arenite frags		-1	23	6.43	34	90		263
ZR98	28.0	30.0	3913820	77136	Og	CoySls			DG	clay some calc-arenite frags		-1	22	4.86	33	55		166
ZR98	30.0	32.5	3913821	77136	Og	CoySls			DG	clay some calc-arenite frags, larger at EOH		-1	18	4.14	46	49		171
ZR99	0.0	2.0	3913822	77136	Qha	Coy			BO	mottled clays		-1	21	0.98	18	20		22
ZR99	2.0	4.0	3913823	77136	Qha	Coy			O	just clays		-1	70	0.77	14	71		28
ZR99	4.0	6.0	3913824	77136	Qha	Coy			LGOB	mottled clays, qtz frags		-1	35	0.66	13	59		45
ZR99	6.0	8.0	3913825	77136	Qha	Coy			LGO	mottled clays		-1	28	0.51	12	45		33
ZR99	8.0	10.0	3913826	77136	Qha	Coy			LGO	mottled clays		-1	6	0.38	13	16		15
ZR99	10.0	12.0	3913827	77136	Og	CoySls			LGO	mottled clays, calc-arenite frags		-1	12	1.06	13	15		30
ZR99	12.0	14.0	3913828	77136	Og	CoySls			LGO	mottled clays, calc-arenite frags		-1	15	0.98	17	9		27
ZR99	14.0	16.0	3913829	77136	Og	CoySls			LGO	mottled clays, calc-arenite frags		-1	10	0.53	14	5		13
ZR99	16.0	18.0	3913830	77136	Og	CoySls			LGO	mottled clays, calc-arenite frags		-1	15	0.42	15	9		17
ZR99	18.0	20.0	3913831	77136	Og	CoySls			LGO	mottled clays, calc-arenite frags		-1	25	0.3	13	10		12
ZR99	20.0	22.0	3913832	77136	Og	CoySls			LGO	mottled clays, calc-arenite frags		-1	27	0.85	27	17		48
ZR99	22.0	24.0	3913833	77136	Og	CoySls			LGO	mottled clays, calc-arenite frags, vein qtz		-1	24	0.71	28	13		50
ZR99	24.0	25.2	3913834	77136	Og	CoySls			LGO	mottled clays, calc-arenite frags, vein qtz		-1	25	1.02	71	16		50
ZR100	0.0	2.0	3913835	77136	Qha	Coy			YB	mottled clays		-1	35	0.63	17	11		13
ZR100	2.0	4.0	3913836	77136	Qha	Coy			YB	mottled clays		-1	58	1.09	21	24		33
ZR100	4.0	6.0	3913837	77136	Og	Coy			DGY	just clays		-1	33	1.02	18	42		128
ZR100	6.0	8.0	3913838	77136	Og	CoySls			DG	clay minor calc-arenite frags		-1	18	4.27	27	61		562
ZR100	8.0	10.0	3913839	77136	Og	CoySls			DG	clay dominant, calc-arenite frags increasing		-1	13	2.38	64	23		191
ZR100	10.0	12.0	3913840	77136	Og	Sls	Vn		DG	calc-arenite frags, vein qtz		-1	8	1.73	220	7		59
ZR101	0.0	2.0	3913841	77136	Og	Coy			DG	just clay		-1	27	5.78	1047	18		288
ZR101	2.0	4.0	3913842	77136	Og	CoySls			DG	clay, calc-arenite frags		-1	21	8.57	1854	10		69
ZR101	4.0	6.0	3913843	77136	Og	Sls	Vn	Oc	LG	calc-arenite, calcite veins		-1	5	1.5	391	-3		17
ZR101	6.0	8.0	3913844	77136	Og	Sls	Vn	Oc	LG	calc-arenite, calcite veins		-1	3	0.64	203	3		9
ZR101	8.0	9.2	3913845	77136	Og	Sls	Vn	Oc	LG	calc-arenite, calcite veins		-1	3	1.04	361	3		7
ZR102	0.0	2.0																
ZR102	2.0	4.0	3913846	77136	Og	Coy			DG	clay only		-1	25	6.48	78	173		542
ZR102	4.0	6.0	3913847	77136	Og	Coy			DG	clay only		-1	31	5.99	65	385		651
ZR102	6.0	8.0	3913848	77136	Og	Coy			DG	clay only		-1	26	5.99	62	95		316
ZR102	8.0	10.0	3913849	77136	Og	Coy			DG	clay only		-1	26	8.04	71	186		480
ZR102	10.0	12.0	3913850	77136	Og	Coy			DG	clay only		-1	28	7.17	57	307		557
ZR102	12.0	14.0	3913851	77136	Og	Coy			DG	clay + frags of R mudstone		-1	32	7.94	464	125		343
ZR102	14.0	16.0	3913852	77136	Og	CoySls			DG	clay + frags of granular calc-arenite		-1	20	22.6	4990	129		203
ZR102	16.0	18.0	3913853	77136	Og	CoySls			DG	clay + frags of granular calc-arenite		-1	23	17.4	3846	129		215
ZR102	18.0	20.0	3913854	77136	Og	CoySls			DG	clay + frags of granular calc-arenite		-1	20	22.5	4675	118		185
ZR102	20.0	22.0	3913855	77136	Og	CoySls			DG	clay + frags of granular calc-arenite		-1	16	29.1	6800	213		161
ZR102	22.0	24.0	3913856	77136	Og	SlsCoy			DG	calc-arenite frags dominant, lesser clay		-1	19	27.9	6000	170		143
ZR102	24.0	26.0	3913857	77136	Og	CoySls			DG	clay dominant, lesser calc-arenite		-1	27	20.2	4041	121		223
ZR102	26.0	28.0	3913858	77136	Og	CoySls			DG	clay dominant, lesser calc-arenite		1	29	14.5	2603	97		136

843079

Appendix : Professor Range prospect. Air-core drilling ledgers and geochemistry.

Hole	DFrom	DTo	Sampno	DPO	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments	As ppm	Ag ppm	Cu ppm	Fe%	Mn ppm	Pb ppm	S%	Zn ppm
ZR102	28.0	30.0	3913859	77136	Og	CcySls			DG	clay dominant, lesser calc-arenite		1	38	10.4	1007	121		270
ZR102	30.0	32.0	3913860	77136	Og	CcySls			DG	clay dominant, lesser calc-arenite		1	44	6.66	281	143		249
ZR102	32.0	34.0	3913861	77136	Og	CcySls			DG	clay dominant, lesser calc-arenite		1	44	10.2	570	298		366
ZR102	34.0	36.0	3913862	77136	Og	CcySls			DG	clay dominant, lesser calc-arenite, some Y-LG clay		1	44	6.76	506	193		239
ZR102	36.0	38.0	3913863	77136	Og	CcySls			DG	clay dominant, lesser calc-arenite		1	41	10.2	412	255		553
ZR102	38.0	40.0	3913864	77136	Og	CcySls			DG	clay dominant, lesser calc-arenite		1	29	5.36	225	113		259
ZR102	40.0	42.0	3913865	77136	Og	CcySls			DG	clay dominant, lesser calc-arenite		-1	32	5.2	156	111		303
ZR102	42.0	44.0	3913866	77136	Og	CcySls			DG	clay dominant, lesser calc-arenite		-1	28	3.35	116	77		148
ZR102	44.0	46.0	3913867	77136	Og	SlsCcy			DG	calc-arenite frags dominant lesser clay		-1	24	3.85	125	38		94
ZR102	46.0	48.0	3913868	77136	Og	CcySls		Py	DG	clay dominant, some calc-arenite frags		-1	23	6.41	117	461		450
ZR102	48.0	50.0	3913869	77136	Og	CcySls			DG	clay dominant, some calc-arenite frags		-1	21	4.04	103	124		185
ZR102	50.0	52.0	3913870	77136	Og	CcySls			DG	clay dominant, some calc-arenite frags		-1	22	2.43	86	87		299
ZR102	52.0	54.0	3913871	77136	Og	CcySls	Vn	Cc	DG	clay dominant, some calc-arenite frags, vein calcite		1	34	5.79	104	86		229

843080

Appendix : Professor Range prospect. Multi-element geochemistry of air-core EOH samples.

Appendix : Professor Range Prospect. Multi-element geochemistry of air-core end of hole samples.																
DPO 77137																
Hole	Sampno	east	north	Ag	Al%	As	Ba	Ca%	Cu	Fe%	K%	Mg%	Mn	Pb	Zn	S%
ZR1	3912218	366574	5351121	-5	0.98	-25	66	0.01	8	2.47	0.42	0.07	-15	-50	171	
ZR2	3912219	366560	5351100	-5	1.78	-25	115	20.10	13	0.93	0.80	11.10	180	418	602	
ZR3	3912220	366546	5351079	-5	0.24	-25	26	23.00	21	0.61	0.09	11.60	201	-50	27	
ZR4	3912221	366533	5351058	-5	2.57	-25	157	10.10	14	4.40	1.06	5.02	62	-50	547	
ZR5	3912222	366507	5351045	-5	4.61	-25	460	2.03	12	1.34	2.85	1.08	48	-50	42	
ZR6	3912223	366506	5351016	-5	6.01	25	398	4.90	17	2.15	3.01	2.01	131	-50	451	
ZR7	3912224	366492	5350995	-5	5.87	-25	366	9.76	19	2.24	2.40	3.02	170	-50	124	
ZR8	3912225	366478	5350974	-5	1.38	-25	69	31.40	25	0.79	0.63	1.27	96	-50	112	
ZR9	3912226	366465	5350953	-5	1.57	-25	64	21.00	19	1.39	0.70	6.03	128	-50	81	
ZR10	3912227	366451	5350931	-5	4.58	80	308	13.10	30	3.85	1.78	2.08	138	121	1630	
ZR11	3912228	366437	5350911	5	0.90	-25	35	30.30	25	0.68	0.37	1.39	91	-50	17	
ZR12	3912229	366447	5351293	8	1.33	84	86	13.70	86	4.99	0.54	7.52	124	13900	3670	
ZR13	3912230	366433	5351272	-5	1.36	-25	92	14.90	18	0.71	0.63	8.49	181	123	598	
ZR14	3912231	366417	5351247	12	4.69	94	161	2.65	369	1.00	1.20	1.46	64	26500	26200	3.09
ZR15	3912232	366406	5351230	-5	3.93	-25	214	13.50	21	1.64	1.87	6.00	139	-50	1300	
ZR16	3912233	366391	5351211	-5	3.76	-25	233	8.78	15	1.76	1.35	1.75	171	-50	112	
ZR17	3912234	366376	5351184	-5	6.28	-25	412	0.28	19	1.34	2.75	0.48	16	-50	62	
ZR18	3912235	366365	5351167	-5	3.06	-25	161	6.46	15	1.56	1.17	0.94	39	307	457	
ZR19	3912236	366353	5351145	-5	4.44	-25	185	17.70	23	1.44	1.94	1.04	39	-50	113	
ZR20	3912237	366338	5351125	-5	3.61	-25	127	19.10	23	0.82	1.38	1.12	116	-50	20	
ZR21	3912238	366321	5351100	-5	0.88	-25	36	3.17	15	0.95	0.32	0.48	33	-50	40	
ZR22	3912239	366311	5351083	-5	3.19	43	138	12.20	22	2.75	1.36	5.50	232	-50	16200	3.19
ZR23	3912240	366297	5351062	-5	2.05	30	78	13.40	20	2.29	0.84	5.14	258	-50	360	
ZR27	3912241	366284	5351043	-5	5.70	-25	200	9.85	24	1.64	2.02	3.96	115	-50	68	
ZR28	3912242	366270	5351020	-5	4.02	35	196	9.23	22	2.37	1.69	3.23	132	-50	35	
ZR29	3912243	366257	5350996	-5	6.46	33	228	12.60	23	1.33	2.75	1.84	93	-50	27	
ZR30	3912244	366306	5351444	-5	0.74	-25	87	19.70	16	0.67	0.34	11.00	161	93	365	
ZR31	3912245	366290	5351418	-5	0.49	-25	40	19.70	13	0.53	0.22	11.30	140	142	733	
ZR32	3912246	366279	5351402	-5	0.60	-25	45	19.20	15	0.40	0.28	10.90	138	55	52	
ZR33	3912247	366265	5351381	-5	0.34	-25	28	19.20	15	0.34	0.14	11.00	203	118	144	
ZR34	3912248	366252	5351360	-5	6.49	-25	511	0.31	22	1.28	3.57	0.40	99	-50	51	
ZR35	3912249	366230	5351344	-5	2.24	-25	143	26.50	23	2.38	0.92	1.31	82	-50	151	
ZR36	3912250	366213	5351319	6	0.61	-25	30	32.00	21	0.44	0.24	1.27	102	-50	158	
ZR37	3912251	366203	5351302	-5	2.91	32	166	16.50	16	1.82	1.32	6.03	199	-50	36	
ZR38	3912252	366197	5351276	-5	1.12	-25	50	9.92	12	0.92	0.51	4.59	78	-50	24	
ZR39	3912253	366184	5351255	-5	3.12	-25	129	16.50	17	1.63	1.42	4.12	179	-50	80	

843081

Appendix : Professor Range prospect. Multi-element geochemistry of air-core EOH samples.

Hole	Sampno	east	north	Ag	Al%	As	Ba	Ca%	Cu	Fe%	K%	Mg%	Mn	Pb	Zn	S%
ZR40	3912254	366170	5351234	5	0.68	-25	25	34.80	21	0.46	0.24	0.65	105	-50	63	
ZR41	3912255	366144	5351221	-5	3.42	-25	182	13.30	18	1.98	1.36	5.56	140	-50	50	
ZR42	3912257	366140	5351197	-5	3.00	38	133	5.10	20	2.57	0.99	2.07	62	-50	99	
ZR44	3912258	366111	5351511	-5	0.75	73	58	19.90	19	0.71	0.35	11.20	156	116	643	
ZR45	3912259	366120	5351505	-5	0.93	33	71	18.30	17	1.01	0.40	10.40	186	321	724	
ZR46	3912260	366106	5351484	-5	6.31	30	428	0.07	38	1.05	3.37	0.39	27	4600	1380	
ZR47	3912261	366092	5351463	-5	8.17	42	642	0.09	28	1.00	4.27	0.44	18	56	102	
ZR48	3912262	366079	5351442	6	1.10	-25	73	31.60	22	0.72	0.51	1.56	149	51	36	
ZR49	3912263	366057	5351427	-5	2.14	29	148	22.00	18	0.96	0.98	4.58	109	-50	41	
ZR50	3912264	366043	5351406	-5	2.55	-25	123	21.00	14	1.35	1.23	4.59	204	-50	19	
ZR51	3912265	366030	5351385	7	0.19	32	8	36.10	19	0.21	-0.05	0.21	142	-50	19	
ZR53	3912266	366010	5351355	-5	1.47	35	91	0.02	16	0.48	0.67	0.07	-15	-50	35	
ZR54	3912267	365925	5351775	-5	7.36	31	503	0.22	34	1.44	4.62	0.72	19	-50	62	
ZR55	3914513	365936	5351791	-5	1.55	41	88	0.02	21	1.75	0.65	0.07	24	-50	28	
ZR56	3912268	365914	5351758	-5	3.62	-25	216	14.10	10	2.10	1.68	7.33	348	569	441	
ZR57	3912269	365904	5351743	-5	3.97	-25	244	14.00	9	2.43	1.90	4.10	249	-50	16	
ZR58	3912270	365855	5351850	-5	1.13	48	59	18.80	13	2.17	0.47	10.80	246	150	544	
ZR59	3912271	365841	5351829	-5	1.21	-25	102	19.60	6	1.12	0.55	11.10	402	-50	41	
ZR60	3912272	365830	5351812	-5	2.34	-25	111	17.50	9	1.47	1.19	6.69	300	-50	76	
ZR61	3912273	365803	5351770	-5	4.10	-25	373	2.55	6	1.30	2.83	1.18	55	-50	54	
ZR62	3912274	365789	5351749	-5	6.75	-25	593	0.08	7	0.78	4.64	0.61	17	-50	15	
ZR63	3912275	365777	5351730	-5	1.07	-25	45	25.00	12	0.67	0.54	6.44	109	-50	24	
ZR64	3912276	365762	5351707	-5	2.80	-25	64	8.29	7	0.44	0.73	0.86	27	-50	275	
ZR66	3912277	365774	5351909	-5	2.40	53	255	0.03	32	1.04	0.85	0.19	17	57	362	
ZR67	3912278	365760	5351888	-5	0.78	-25	32	20.60	12	0.70	0.30	11.00	127	52	806	
ZR68	3912279	365746	5351867	-5	2.47	-25	123	17.00	8	0.72	1.18	9.15	200	-50	221	
ZR69	3912280	365733	5351846	-5	3.90	30	278	12.20	10	2.38	1.96	6.56	255	61	630	
ZR70	3912281	365719	5351825	-5	0.62	-25	26	24.00	9	0.60	0.25	8.48	112	-50	38	
ZR71	3912282	365706	5351804	-5	3.62	27	225	15.80	12	1.41	1.76	2.31	129	-50	207	
ZR72	3912283	365692	5351783	-5	11.90	44	612	0.43	10	1.69	5.04	0.87	47	-50	41	
ZR73	3912284	365678	5351762	5	0.28	-25	13	31.70	12	0.29	0.11	1.28	79	-50	29	
ZR74	3912285	365665	5351741	5	0.97	-25	50	35.10	14	0.28	0.50	0.32	68	-50	22	
ZR75	3912286	365651	5351720	-5	0.59	-25	28	35.00	14	0.30	0.28	0.47	65	-50	12	
ZR76	3912287	365673	5351938	-5	1.28	25	214	0.05	44	0.63	0.51	0.12	18	119	130	
ZR77	3912288	365663	5351921	13	3.31	295	193	4.14	115	9.70	1.29	2.31	116	3920	3790	
ZR78	3912289	365652	5351904	11	1.92	34	91	16.80	27	1.45	0.86	9.73	355	11300	19200	2.26
ZR79	3912290	365635	5351879	-5	5.98	167	101	0.26	29	10.10	2.98	0.63	41	644	5720	11.30
ZR80	3912291	365622	5351858	-5	3.66	27	156	20.90	10	1.31	1.57	3.48	118	-50	91	
ZR81	3912292	365608	5351837	-5	6.50	188	271	5.13	17	5.91	2.98	2.32	59	74	254	

Appendix : Professor Range prospect. Multi-element geochemistry of air-core EOH samples.

Hole	Sampno	east	north	Ag	Al%	As	Ba	Ca%	Cu	Fe%	K%	Mg%	Mn	Pb	Zn	S%
ZR82	3912293	365594	5351816	-5	4.91	49	415	1.88	-5	1.61	3.28	1.15	61	-50	151	
ZR83	3912294	365581	5351795	-5	6.78	-25	523	0.01	14	1.17	4.10	0.66	15	-50	46	
ZR84	3912295	365572	5351781	-5	2.93	-25	143	24.80	13	1.10	1.39	2.61	116	-50	16	
ZR85	3912296	365532	5351720	-5	1.39	-25	70	9.11	6	0.55	0.64	0.26	30	-50	10	
ZR86	3912297	365497	5351850	-5	1.05	-25	45	20.20	5	1.09	0.47	9.56	303	-50	20	
ZR87	3912298	365483	5351829	-5	1.96	-25	102	19.90	5	1.27	0.99	6.89	334	-50	16	
ZR88	3912299	365470	5351808	-5	7.47	-25	516	0.45	10	1.80	4.04	0.76	47	-50	392	
ZR89	3912300	365456	5351787	-5	5.31	-25	325	4.81	7	1.58	2.56	1.45	138	-50	38	
ZR90	3914501	365442	5351766	-5	1.46	-25	80	27.20	8	0.70	0.64	0.77	87	-50	36	
ZR91	3914502	365429	5351745	-5	1.55	-25	73	26.30	8	0.90	0.73	3.37	87	-50	7	
ZR92	3914503	365415	5351724	-5	0.36	-25	17	29.00	6	0.26	0.16	0.51	58	-50	83	
ZR93	3914504	365402	5351703	-5	3.57	-25	188	3.62	-5	1.25	1.53	1.38	76	-50	16	
ZR94	3914505	365388	5351682	-5	1.12	-25	70	28.00	6	0.62	0.42	0.97	112	-50	8	
ZR96	3914506	365370	5351837	-5	1.00	-25	39	28.60	9	0.43	0.46	1.57	57	-50	61	
ZR97	3914507	365359	5351821	-5	3.22	86	157	16.60	7	1.42	1.50	2.63	195	-50	164	
ZR98	3914508	365345	5351800	-5	2.04	30	113	17.70	-5	1.27	1.00	7.86	232	-50	17	
ZR99	3914509	365331	5351779	-5	4.82	-25	297	9.74	7	2.62	2.14	3.83	284	-50	23	
ZR100	3914510	365318	5351758	-5	1.80	1030	197	15.10	19	1.86	0.72	0.17	338	-50	31	
ZR101	3914511	365304	5351737	-5	0.36	37	23	35.20	24	0.34	0.17	0.36	108	-50	6	
ZR102	3914512	365278	5351692	-5	3.38	209	93	0.06	62	4.56	1.17	0.12	57	125	119	

APPENDIX 4:

Baura prospect wacker sampling ledgers and geochemistry

APPENDIX 4: Baura Prospect. Wacker geochemistry

APPENDIX 4: Baura prospect. Wacker bedrock sampling ledgers and geochemistry													
Results in ppm (Fe In %)													
Sampno	DPO	LocalE	LocalN	AMGE	AMGN	Depth	Bedrock?	MRTLith	FieldID	Texture	Alt/Min	Colour	Comments
3987358	77670	61797	46850	363107	5348082	6.5	Y	Og	Sls	Fe		DG/N	Ferrug. calcilitite, + fine g/s rdd qtz sand concretions.
3987356	77668	61800	46800	363057	5348089	11	Y	Og	SlsCcy	We		DG	Calcite veined str. We Sls, approaching Ccy.
3987357	77668	61800	46825	363081	5348084	3.5	?	Og	Ccy	WeFe		N	Appears to contain a few percent str. We sphalerite.
3987359	77670	61800	46875	363131	5348075	8.4	Y	Og	Sls	Fe	Sp?	N/DB	Trace of sphalerite?
3987360	77670	61800	46900	363155	5348070	9.3	Y	Om	Sss	We		W/DG	Mixed sst + lesser clay: near gradat contact with Om?
3987361	77670	61800	46925	363180	5348065	4	Y	Om	Sss			W	Fine gr. quartzarenite.
3987362	77670	62000	46700	362921	5347912	11.5	N	Og	Ccy			N/DB	Compacted clays.
3987363	77670	62000	46725	362945	5347907	8	?	Og	Ccy			N	"Peaty" carbonaceous clay.
3987371	77670	62000	46750	362970	5347902	10.3	Y	Og	Sls	We		LG/W	Oolitic carbonate.
		62000	46775	362994	5347897	2	N		Cg				Hole abandoned- could not penetrate gravels.
3987372	77670	62000	46800	363019	5347893	9.5	Y	Og	SlsCcy	WeFe	SpSd	DB/DG	Ferruginous lst, minor sphalerite (or siderite?) clots.
3987384	77670	62000	46825	363043	5347888	5	?	Og	Ccy			OB/N	Distinctive OB cherty Ccy, lesser black clay.
3987365	77670	62000	46850	363068	5347883	1	Y	Om	Sss			KW	Coarse gr. quartzarenite.
3987366	77670	62000	46875	363092	5347878	1.1	Y	Om	Sss			KW	Med. gr. quartzarenite.
3987384	77670	62200	46575	362760	5347739	11	Y	Og	Sls	WeAl	Sd	G	Minor weak patchy ank. altered Sls.
3987377	77670	62200	46600	362784	5347734	18.5	Y	Og	Sls	Al	SdHm	YG/KG	Weak to mod. patchy sid-he altd Sls, ab. 2-3mm cc veining.
3987374	77670	62200	46675	362858	5347720	17	Y	Og	Sls	WeAl	Sd	LG/YG	Weak, patchy ank. altered lst.
3987370	77670	62200	46695	362878	5347716	8.8	?		CcySss			DB/G	Mottled Ccy, lesser indurated, lam, weakly ferrug. Sss.
3987369	77670	62200	46725	362907	5347711	2	Y	Og	SlsCcy	We		DG	Str. We Sls approaching Ccy.
3987367	77670	62200	46750	362932	5347706	1	N	Og	Ccy	Fe		DB/N	Sandy ferrug. Ccy.
3987368	77670	62200	46775	362956	5347701	1	Y	Om	Sss			W	Med. gr. quartzarenite.
3987376	77670	62210	46625	362807	5347720	8	Y	Og	Sls	Al	Sd	YG	Weak to mod. patchy ank. altd Sls, minor cc-(sid?) veining.
3987375	77670	62212	46650	362831	5347713	18	N	Og	Ccy			DG/N	Out of rods @ 18m, trace of YG Ccy present.
3987382	77670	62362	46725	362876	5347552	15	Y	Og	Sls	We		G/DG	Unaltered Sls.
3987383	77670	62366	46750	362900	5347543	3.5	Y	Om	CcySss			DG/N	Sst @ bottom, minor Fe-rich We veins in Ccy component.
3987378	77670	62370	46600	362752	5347568	12	Y	Og	Sls	We		G	Unaltered Sls.
3987379	77670	62370	46625	362776	5347563	5	Y	Og	Sls	Al	Sd	G/YG	Weak, patchy ank. altered Sls.
3987373	77670	62370	46650	362801	5347558	5.5	N	Og	SlsCcy	We		LG/LB	Ccy, minor black We Sls.
3987380	77670	62370	46675	362825	5347553	9	Y	Og	SlsCcy	Al?	SdPy	DB/N	Ankeritic, unconsolidated oolite sand @ bottom of interval.
3987381	77670	62370	46700	362850	5347549	7	Y	Og	Sls	We	Ga	GLB	Minor very f.g. dissem. galena visible.

APPENDIX 4: Baura Prospect, Wacker geochemistry

APPENDIX 4: Baura prospect. Wacker bedrock sampling ledgers and geochemistry																
Results in ppm (Fe in %)																
Sampno	DPO	LocalE	LocalN	AMGE	AMGN	Depth	Bedrock?	MRTLith	FieldID	Ag	As	Cu	Fe%	Mn	Pb	Zn
3987358	77670	61797	46850	363107	5348082	6.5	Y	Og	Sls	2	170	17	4.76	35	34	135
3987356	77668	61800	46800	363057	5348089	11	Y	Og	SlsCcy	-1	5.5	8	1.19	248	-3	29
3987357	77668	61800	46825	363081	5348084	3.5	?	Og	Ccy	-1	21.5	119	0.74	29	327	96
3987359	77670	61800	46875	363131	5348075	8.4	Y	Og	Sls	2	200	56	2.26	4	623	784
3987360	77670	61800	46900	363155	5348070	9.3	Y	Om	Sss	1	10	14	0.76	9	320	368
3987361	77670	61800	46925	363180	5348065	4	Y	Om	Sss	-1	2	4	0.19	0	9	71
3987362	77670	62000	46700	362921	5347912	11.5	N	Og	Ccy	-1	1	20	2.45	12	40	90
3987363	77670	62000	46725	362945	5347907	8	?	Og	Ccy	-1	1	11	0.37	6	43	44
3987371	77670	62000	46750	362970	5347902	10.3	Y	Og	Sls	2	240	4	6.7	416	104	228
		62000	46775	362994	5347897	2	N		Cg							
3987372	77670	62000	46800	363019	5347893	9.5	Y	Og	SlsCcy	2	150	23	6.6	36	85	360
3987364	77670	62000	46825	363043	5347888	5	?	Og	Ccy	2	1	17	11.1	26	469	310
3987365	77670	62000	46850	363068	5347883	1	Y	Om	Sss	-1	1	5	0.28	7	5	67
3987366	77670	62000	46875	363092	5347878	1.1	Y	Om	Sss	-1	1	3	0.26	3	8	46
3987384	77670	62200	46575	362760	5347739	11	Y	Og	Sls	1	8.5	7	0.82	380	181	168
3987377	77670	62200	46600	362784	5347734	18.5	Y	Og	Sls	1	5.5	9	1.21	362	69	147
3987374	77670	62200	46675	362858	5347720	17	Y	Og	Sls	4	26.5	8	37.5	12000	102	84
3987370	77670	62200	46695	362878	5347716	8.8	?		CcySss	4	25	12	32.6	10000	81	134
3987369	77670	62200	46725	362907	5347711	2	Y	Og	SlsCcy	10	5	10	0.55	2	40	77
3987367	77670	62200	46750	362932	5347706	1	N	Og	Ccy	-1	2	29	0.3	0	9	32
3987368	77670	62200	46775	362956	5347701	1	Y	Om	Sss	-1	2.5	3	0.28	0	6	29
3987376	77670	62210	46625	362807	5347720	8	Y	Og	Sls	2	12.5	11	1.38	165	60	207
3987375	77670	62212	46650	362831	5347713	18	N	Og	Ccy	4	30.5	19	20.6	8000	705	1207
3987382	77670	62362	46725	362876	5347552	15	Y	Og	Sls	3	44	24	22.7	8000	130	346
3987383	77670	62366	46750	362900	5347543	3.5	Y	Om	CcySss	2	51.5	49	1.25	28	117	111
3987378	77670	62370	46600	362752	5347568	12	Y	Og	Sls	2	15	7	9.2	3016	329	383
3987379	77670	62370	46625	362776	5347563	5	Y	Og	Sls	-1	13.5	6	2.07	546	704	698
3987373	77670	62370	46650	362801	5347558	5.5	N	Og	SlsCcy	2	15.5	14	0.54	4	75	147
3987380	77670	62370	46675	362825	5347553	9	Y	Og	SlsCcy	2	214	43	12.3	1275	346	2394
3987381	77670	62370	46700	362850	5347549	7	Y	Og	Sls	2	7	20	0.28	20	53	42