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## EL 2143 AND EL 2818

## MOUNT IRWIN AND MOUNT HOWE

## ANNUAL REPORTS TO LICENCE SURRENDER FOR THE PERIOD 8/1/96 TO 31/10/2003

Submitted by
Stephen Toteff, Expectation Pty Ltd, AMF Holdings Ltd and
Andrew Drummond and Associates Pty Ltd
2004



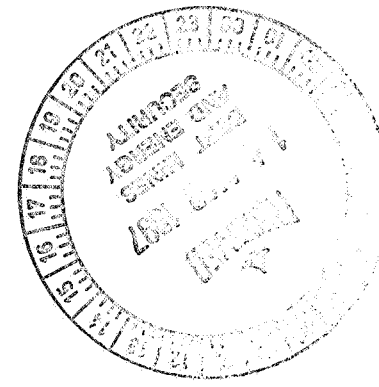
**Enquiries**: Customer Services
Ground Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

PRIMARY INDUSTRIES AND RESOURCES SA

PO Box 261
Magill SA 5072
4/3/97

The Director-General
Mines and Energy South Australia
PO Box 151
Eastwood SA
5063



Dear Sir,

re EL 2143 " Mt Irwin"

Please find enclosed the first annual report for this tenement.

Yours Faithfully,

S. Toteff

Stephen Toteff.

# *Aramont Pty Ltd*

*ACN 003 192 498*

*(Also trading as MINESOFT SYSTEMS)*

***CONSULTING GEOLOGISTS***

*99 Amalfi Drive Isle of Capri Qld 4217 Australia*

*Voice: 61 7 55385 384*

*Fax: 61 7 55926 410*

*E-mail: panthony@onthenet.com.au*


## FAX TRANSMISSION COVER SHEET

***Date:*** *17 October, 1997*

***To:*** *Martin Fowkes, AGS*

***Fax:*** *08 9414 1277*

***Subject:*** *Expectation Pty Ltd*
*Airmag Surveys-Musgrave Block, SA*
*Els 2143, 2391 and 2437*

***Sender:*** *Paul Anthony*

*YOU SHOULD RECEIVE [1] PAGE(S), INCLUDING THIS COVER SHEET.*
*IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL 61755385384*

Martin

MESA in Adelaide advised me that they require the following information on the airborne magnetic surveys of the above areas recently completed.

"A copy of the data in ASEG-GDF format on exabyte tape as well as hard copy flight path plots and TMI and radiometric images are also required..."

You are authorised to release the information to MESA on our behalf. If you have any queries please contact George Kwitko or Jeff Valentine at Company Exploration, Minerals Division. Please let me know when the data has been sent to MESA.

Paul .

Paul Anthony

Ca1/0469

AUSTRALIAN
GEOPHYSICAL
SURVEYS

14 October 1997

MESA
Mineral Division
191 Greenhill Road
Parkside
South Australia 5063

**Attn: Mr George Kwitko and Mr Jeff Valentine**

**Re: Expectation Leases**

Please find enclosed an Exabyte format located data tape for Expectations leases in SA as requested by Mr Paul Anthony.

Regards

Cathy Anderson

enc.

Rang 11/12/97.
Will send correct data on CD
Rang again 5/3/98

C97/04693

A Quality Certified Australian Company

AUSTRALIAN GEOPHYSICAL SURVEYS PTY LTD (A.C.N. 072 751 056)
3 Baron Way, Jandakot, WA 6164 • Tel: (08) 9414 1266 • Fax: (08) 9414 1277
Email: austsurv@wantree.com.au

EL 2143 Report for the 12 month period ending 7 January 1997

INTRODUCTION: El 2143, of 462 sq. km, was granted on 8 January 1996 for a period of 12 months; the tenement was renewed , with a significant reduction (approx. 60 sq. km), for 6 months and will now expire on 8 July 1997 (Fig. 1). Exploration targets are base and precious metals in the Birksgate Complex and the ultramafics of the Giles Complex which intrude it.

WORK COMPLETED: During the previous 12 months attention has focussed on an area of subcropping quartzites, outlined in reconnaissance mapping by Aberfoyle Resources in early 1995. Six soil traverses were sampled (Fig. 2).

Generally, residual soil development was found to be poor to non-existent - possibly eroded. A variable thickness of coarse sands and minor gravels overlie the residual soils and weathered bedrock, with depths of residual soils being in the range 20 to 180 cm. Near the quartzite exposures, local scree wedges present a problem for auger sampling.

A total of 99 soil samples and 5 weathered bedrock samples were collected. Weathered bedrock was frequently reached with a hand auger, lithologies recognised being magnetite and garnet-bearing quartzites, quartzo-feldspathic gneisses, granitoids, basic dykes (unfoliated) and minor ?mafic gneisses.

Regional airborne magnetics is of around 1.5 km line spacing and lacks the resolution to map out units within the Birksgate Complex or even identify possible ultramafic bodies of significant size which may be prospective for platinoids or nickel.

FUTURE WORK: Soil samples are being analysed for Cu, Pb, Zn, Ni and Au. Any anomalous results will be followed up with more detailed sampling.

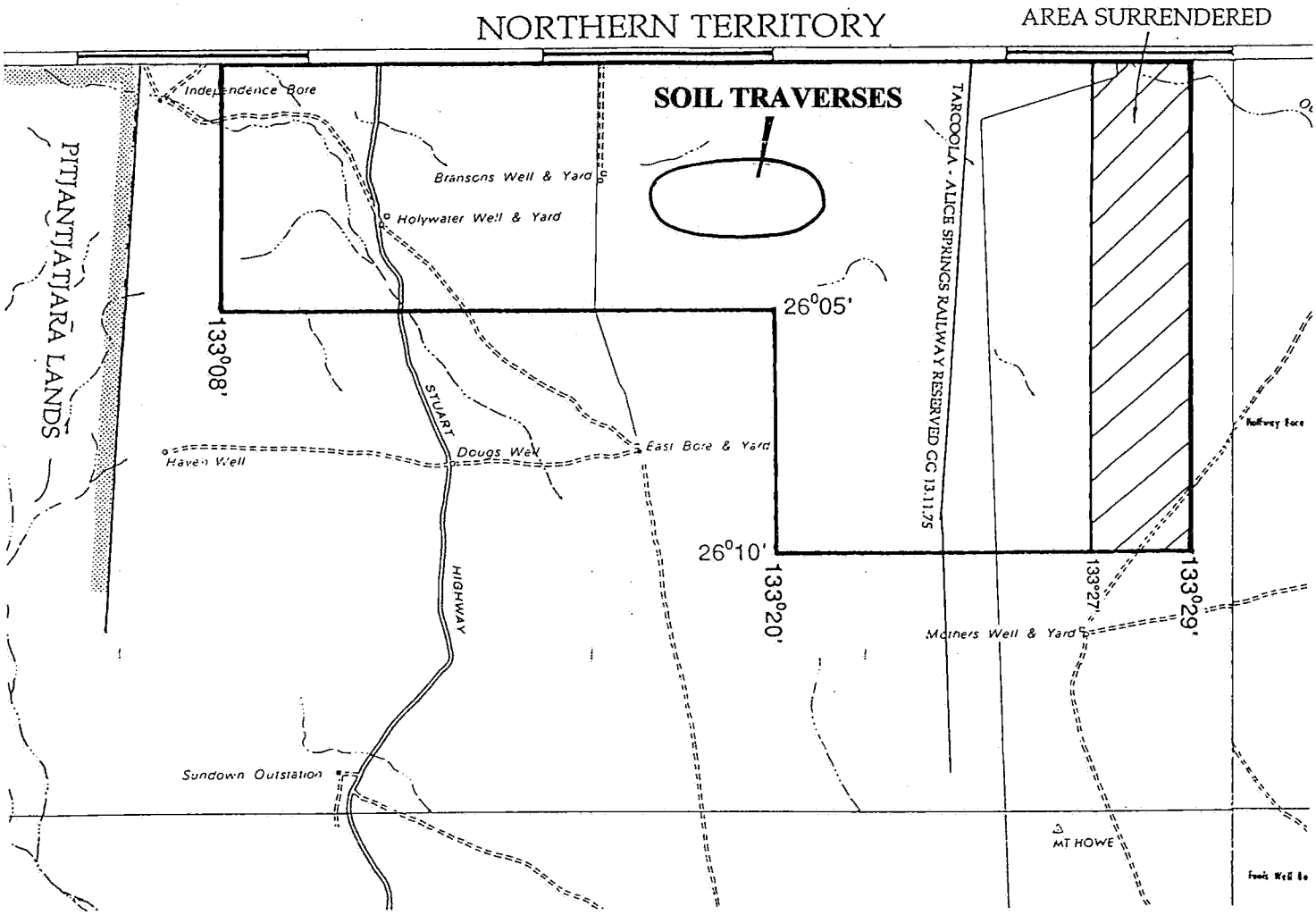
As most of the tenement is masked by transported cover, probably dominantly coarse sands, some samples will be collected for partial extraction techniques, probably utilizing the relatively new mobile metal ion, MMI, technique. The traverses to be sampled are yet to be determined but will be influenced by the above soil results and to some extent, available airborne magnetics.

EXPENDITURE: During the previous 12 month period, a total of $12,436.26 was spent on exploration. Details are given overleaf.

EL 2143

EXPENDITURE FOR THE 12 MONTH PERIOD ENDING 7 JANUARY 1997.

| | |
|---|---|
| GEOLOGY | $3,450 |
| GEOCHEMISTRY | $3,300 |
| VEHICLE | $1,624.05 |
| FUEL | $459.46 |
| MATERIALS and EQUIPMENT | $1,342.50 |
| TENURE | $1,513 |
| ACCOMMODATION and FOOD | $741.30 |
| PHOTOCOPYING | $5.95 |
| TOTAL | $12,436.26. |




EL 2143

LOCALITY PLAN

Fig. 1

325000mE 326000mE 327000mE 328000mE 329000mE 330000mE 331000mE 332000mE 333000mE 334000mE 335000mE 336000mE

7120000mN
7119000mN
7118000mN
7117000mN
7116000mN
7115000mN
7114000mN

Calcrete S/C
sand
calcrete s/c, rare s/c gf bi gneiss
rare ft granite gneiss occ. v. silic ± mt com. basic dykes 773527
rare o/c gf bi gneiss com. calcrete float
calcrete s/c rare gf bi gneiss float
granitic gneiss
calcrete, rare s/c gf ± mt gneiss, occas. v. siliceous 773550
Loc froct., tr py? in qtze 773528
V. sparse o/c Q. qtze
fl. ferrug., Qor qtze (fractured?) 7735298
tr- few % gt in qtze 773529
Qvn min. qtze dis mt min. feld. 773467
(+) warren: Q feld. bi granitoid
sand cover
wk. layered dolerite, dis mt, feld. bands 773464
f.g. qf bi mt rock 773465
en gh plunging folds
ft subcrop mostly qtz vns
v. sparse o/c qtze
rare qtze with f.g. dis gt (~5%) 773531
com. Qvn
rare ft qf gneiss
soil cover
?qtzite
m.g. granite (warren)
?qtzite
qtze min gt 773532
qtze 773466 tr. mt.
open folds: plunge 30°-60/120° also local mesoscopic folds with SW dipping limbs
mg gt in qtze 773533
qtze s/c
qtze/Qvn tr mt feld
qtze Q dis mt
s/c Qtz mt (tr)
mg qf(bi) gneiss, min. gt
773539
773535
qtze s/c, dis mt, feld, mic gt, s/c numerous to E
Fe ox s/c 773535
773536
Qvn min mt qtze
Qvn, qtze to few % dis mt feld 773489
mt qtze 773488
773493(dis gt feld)
gt+mt aggregates in qtze 773490, 491
773540
773495 feld. mt. qtze
773494
qtze, tr mt open ?folds
qtze with gt, mt
773496
coarser Q min mt feld
773499
dec. o/c (mainly Q)
small o/c mt qtze, feld bands 773497(b/c) 773498(float) min gt>mt
dev qtze (mainly Q)
Qvn, tr mt
rare ?qtze
inc. b/c
rare s/c
Qvn s/c, min qtze
N.B. mirror coarse mt+gt aggregates
relict clasts of qtze in dyke rock
sand cover s/c qtze
7m width in s/c cg Q. qtze with dis mt, gt
qf bi gneiss min gt
32
sand cover
13m dyke in (rare s/c)
10m dyke qf gneiss
Qvn min. qtze with dis mt, feld, tr? gt
poor s/c qtze, Qvn (15%exp)
v. poor Qvn. min. fold qtze
mg qtze, dis feld trmt 773523
v. rare o/c Qvn tr qtze
warren: cg fract qtze? with com. feld. min bi tr mt Fe stained 773522
rare ironstone fl. 772538
Qvn v. min qtze
rare s/c Q. ? qtze
qtze dis. f. mg feld tr ~ 10%, mt to 3%
sand cover
Qvn v. min. feld qtze v. poor o/c
½m wide o/c qtze, dis. mt. feld
? F
calcrete + minor granitoid, tr. gt ? 773524
sand, cover & occ. basic dykes
rare ironstone fl 773541
qtze/Qvn s/c
Qvn min qtze
sand cover
min. dis gt in qtze 773521
com. gt bearing 773520
Qvn min qtze
poor o/c Qvn min qtze
mainly Qvn, tr mt 773519
qtze dis ?gt
Qvn/qtze
rare sl. ? MnO stained qtze with dis feld, min mt ?gt 773518
dis mt, feld
qtze, occas. with mt (tr 10%), feld (→ granite gneiss), gt (tr > 5%) 773517
qtze dis mt ± gt, feld
v. poor o/c
margin of exposure
rare gos. patches over 1 sq.m. (poor o/c) 773516
Qvn
qtze, min gt 773515
Qvn/qtze poor o/c
com. feld. qtze
(11) 7735168
dis mt, feld
qtze/Qvn s/c ? granite
qtze, Q s/c
poor o/c Qvn min qtze
rare Qvn s/c
Qvn rare qtze
sand cover
loc. com qtze
cover
open folding
qtze 773480 Qvn dis mt
773481
sand cover
qtze with feld mt tr ? spinels 773511
Qvn. min. qtze 773482 tr. dis. mt (too few %)
mainly Qvn
(v. poor o/c)
Qvn rare qtze poor o/c
s/c Qvn/qtze
min. qtze with few %. mt, rare gt fg? spinel 773515 fold to 15%, tr 1% biotite
/dyke truncated against Qvn margin faulted contact)
?F
qtze, dis mt, gt 773514
fract. qtze 773513
glassy qtze, mt fe few %, tr bio.
Qvn/qtze
min. feld
qtze, min. feld., rare gt ? 773512
sand cover
Qvn/qtze common v. feld qtze → qfbi gneiss
Qvn s/c tr mt
sand cover
v. sparse s/c Qvn (? min. qtze) basic dykes
v. poor o/c
Qvn granite gneiss, isodinal recumbent folds ax. planes ~ 25-30° → 240°
milky Qvn
improving o/c
Qvn, qtze min-tr mt, feld
poor s/c Qvn, rare qtze
qtze, ± mt, gt 773505
? gt mt rich, v. feld zone in qtze 773507 adj ? sz (773508)
773506 tr sprall ? in qtze
? sz
cover
cg Qvn/qtze s/c
qtze, feld tr 15% ± dis mt sand
cg Qmin dis mt (± qtze)
rare s/c mg fract unfol granitoid with bi 773510
qtze/Qvn
qf gneiss
qtze/Qvn dis mt
Qvn, rare mt, milky Q
773478
773479
v feld 773477
qtze dis mt, bi

- LEGEND -

| | |
|---|---|
| 773523 | Crude chip sample location |
| 773749 | Lag (pisolite) sample location |
| 20 / 30 | Orientation of layering in glassy quartzite, with magnetite streaking lineation |
| qtze | Quartzite |
| Qvn | Quartz vein |
| mt | Magnetite |
| gt | Garnet |

soil traverse

SCALE 1:20,000

METRES 500 0 500 1000 1500 METRES

# EL 2143 MT. IRWIN

South Australia

SG 53-9

**SOIL TRAVERSES completed in 12 month period ending 7 January 1997.**

Scale : 1:20,000

Date : Feb. 97

Fig. 2

S.TOTEFF

**AMF HOLDINGS LIMITED**

A.C.N. 008 071 403

**Head Office :**
**15/305 Victoria Avenue**
**Chatswood NSW 2069**

**Telephone : (08) 9412 3855**
**Facsimile : (08) 9412 3866**

**Perth Office :**
**68 Sycamore Drive**
**Duncraig WA 6023**

**Telephone : (08) 9246 1213**
**Facsimile : 08) 9243 0445**

**E-mail : drummond@q-net.net.au**

(Please reply to : Perth Office)

# ANNUAL TECHNICAL REPORT

## EL 2143

## MT IRWIN

## PERIOD TO 7/7/98

.....
Andrew Drummond
Perth
29 September 1998

AMF98141

## 1. Airborne Geophysical Survey

The entire Exploration Licence was subject to an airborne geophysical survey. The contractor was Australian Geophysical Surveys Pty Ltd ("AGS").

The specifications of the survey were as follows :

1.1 Survey Specifications

| | | | |
|---|---|---|---|
| (1) | Flight Line Direction | 000° - 180° | AMG |
| (2) | Flight Line Spacing | 200 | Metres |
| (3) | Tie Line Direction | 090° - 270° | AMG |
| (4) | Tie Line Spacing | 2000 | Metres |
| (5) | Survey Altitude (Mean Terrain Clearance) | 60 | Metres |

AGS endeavoured to maintain the specified mean terrain clearance, however, in areas of terrain the decision of the pilot in regard to a safe flying height was final.

(6) Magnetics

| | | | |
|---|---|---|---|
| (a) | Sample Rate | 0.1 | Second |
| (b) | Sample Interval | 7 | Metres |

A minimum line length of six (6) km was required and lines which were less than six (6) km were normally extended to achieve the six (6) km line length.

(7) Total Survey Distance

The total survey distance was approximately 2300 kms.

The digital data were despatched to PIRSA by AGS.

## 2. Geophysical Interpretation and Target Generation

AMF requested Barrett Geophysical Consultants Pty Ltd to undertake an interpretation of the geophysical data. Its report is presented as an Appendix to this Report. Note that nine maps referred to by Barrett are not included in this Report to PIRSA. Not only are they bulky, but future researchers are likely to wish to generate plots to suit their particular requirements.

The interpreted targets have subsequently been reviewed by several independent consulting firms including Andrew Drummond & Associates, Aramont Pty Ltd and Terence Willsteed and Associates. The aim is to firm up the prospectivity in order to enhance capital raising potential for rigorous exploration of the tenement

At this early stage, AMF is very encouraged by the results, which can be summarised as follows.

**Zone 2** (Figure 1) is particularly interesting, exhibiting numerous belts of shearing/faulting. The shear zones themselves are potential hosts to mineralisation and thus are future exploration targets. Some 16 local magnetic high anomalies with shallow sources (less than 50m in those so far modelled) could possibly represent base metal and associated magnetite mineralisation and so are of high interest. The features could also represent kimberlites but possibly the intensity of the anomalies may be too high. There are zones of de-magnetisation where possibly the original magnetite has been altered to hematite due to the passage of hydrothermal solutions along shear zones. Alteration is indicative of mineralisation and is prospective for the occurrence of gold and other minerals.

Uranium anomalies require ground checking.

**Zone 4** is of lesser interest than Zone 2 in that there is only one discrete magnetic anomaly indicated and only two smallish de-magnetised zones are interpreted to be present. A strong uranium anomaly is the second highest anomaly recorded in the survey and is located on flat ground so appears to be real. It needs ground confirmation. Zone 4 is structurally complex which is a favourable attribute in itself. North and north-east trending zones probably represent more mafic sequences of the basemen Birksgate Complex.

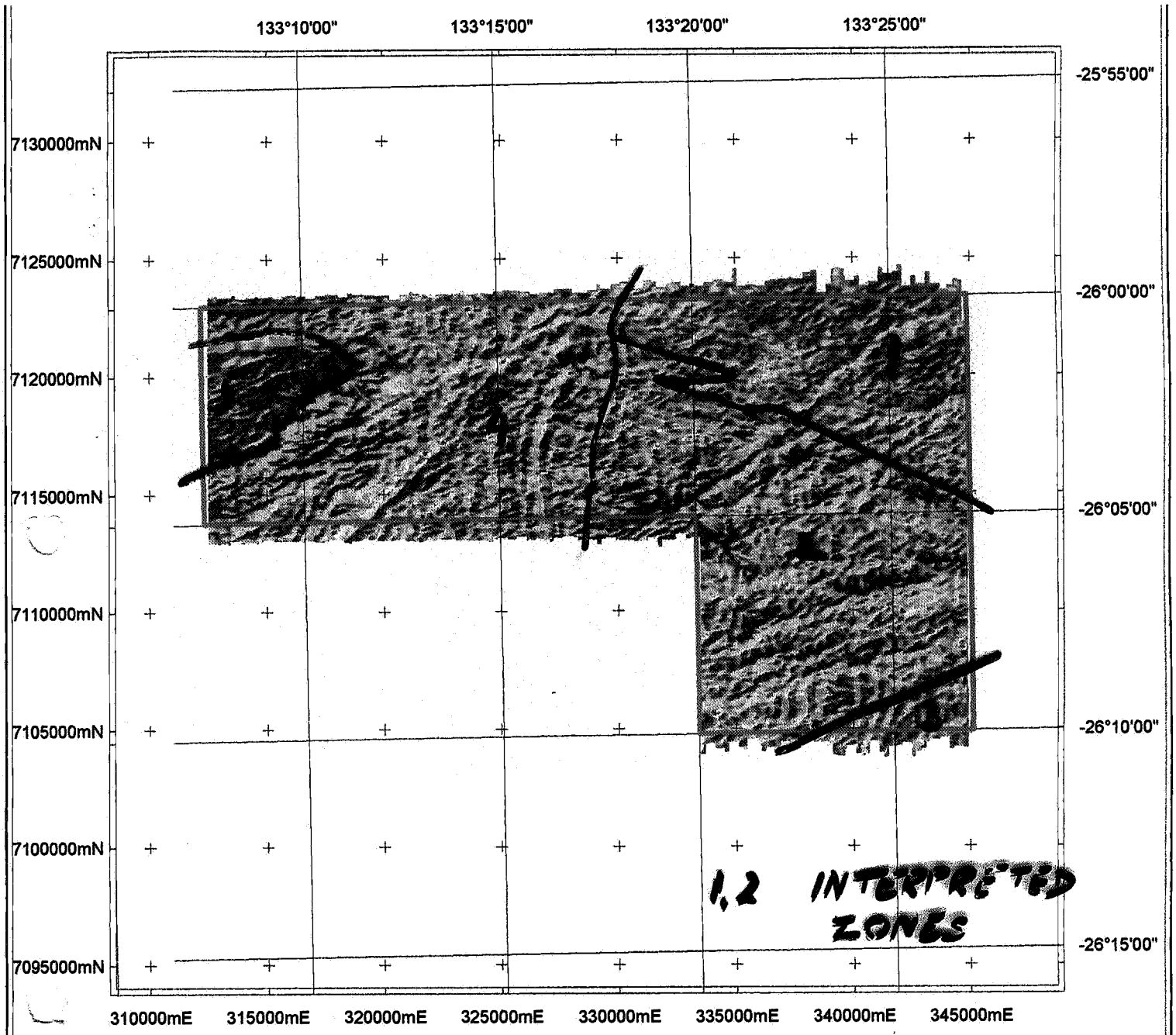
Finally the strongest magnetic feature in the EL is that designated as **Zone 5** in the north-western corner of the tenement. It is possibly a wide, very long and thick (800m or so) ultramafic or layered intrusive of the Giles Complex and is prospective for the occurrence of copper-nickel and or platinum group metals. The depth of the body is about 170 metres.

# EXPENDITURE STATEMENT

Expenditure was previously reported as $35,379

Additional costs have been :

| | |
|---|---|
| • Investigation by previous tenement holder, S Toteff (estimate and not previously reported). Included soil sampling traverses | $15,000 |
| • Review of anomalies by consultant geological groups (estimate) | $4,500 |
| Total | 54,879 |
| • Overheads at 10% | 5,488 |
| | $60,367 |

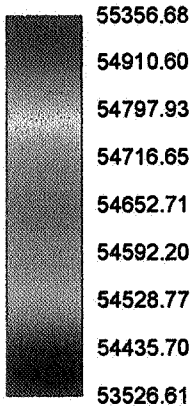





Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.




**EL 2143**

**166 Traverses : 2,071.94 Kms**
**10 Tielines : 221.81 Kms**
**Total : 2,293.75 Kms**

| EXPECTATION NL | |
|---|---|
| EL 2143 | |
| Preliminary Magnetics | |
| A.G.S. | 15-07-1997 |

# APPENDIX

## EL2143, MT IRWIN AREA

## MUSGRAVE BLOCK, SOUTH AUSTRALIA

## INTERPRETATION OF AIRBORNE GEOPHYSICAL DATA

by

D.M. Barrett PhD AIG

Consulting Geophysicist
Perth, Australia

October, 1997

Barrett
Geophysical
Exploration
Consultants
Pty Ltd
ACN 074461677

6 Yolande Place
City Beach WA 6015
Australia
Tel: (+61 8) 9385-9947
Fax: (+61 8) 9385-7767
Mob: 0419 047 677

# EL 2143, MT. IRWIN AREA

# MUSGRAVE BLOCK, SOUTH AUSTRALIA

# INTERPRETATION OF AIRBORNE GEOPHYSICAL DATA

A Report for Expectation Pty. Ltd.

by

D. M. Barrett PhD AIG

Consulting Geophysicist
Perth, Australia

October 1997

# TABLE OF CONTENTS

## LIST OF MAPS

All maps are at a scale of 1:50,000.

Map 1 Colour contour map of the total magnetic intensity.

Map 2 Colour contour map of the first vertical derivative of the total magnetic intensity.

Map 3 Pseudocolour image of the TMI draped with the TMI intensity shaded from the NE.

Map 4 Pseudocolour image of the TMI draped with the TMI intensity shaded from the NW.

Map 5 Greyscale image of the first vertical derivative of the TMI.

Map 6 Pseudocolour image of the total radiometric count.

Map 7 Ternary RGB radiometric plot.

Map 8 Pseudocolour image of the uranium channel.

Map 9 Interpretation map of the geophysical data.

## INTRODUCTION

During August 1997, Australian Geophysical Surveys of Perth carried out an airborne magnetic and radiometric survey over EL 2143 on behalf of Expectation Pty. Ltd. Processing of the data was done by Baigent Geosciences Pty. Ltd. The survey was flown along north to south lines with a flight line spacing of 100 m and a terrain clearance of 60 m. Further information regarding the survey specifications may be found in Appendix 2.

The Musgrave Block comprises mostly high grade, Mesoproterozoic, metamorphic rocks. The area within the tenement is largely covered by Quaternary soils and there is very little outcrop of the basement lithologies. In some recent mapping, S Toteff (private communication) has identified magnetite-bearing quartzites and basic dykes on the property.

At the request of Mr Paul Anthony of Aramont Pty. Ltd., an interpretation was made of the survey data. The results of this interpretation are presented in this report.

## DATA PROCESSING

The airborne data was supplied by Baigent Geosciences as located and gridded digital data on CD-Rom. A number of pixel maps and contour maps of the data were prepared using Geosoft and ER-Mapper software. Three magnetic anomalies were modelled using the Potent inversion programme.

## RESULTS

Overview of the Magnetic Data

The magnetic data shows an intricate pattern of short wavelength anomalies with a distinctive texture. The texture is due mainly to sets of intersecting faults, which break a variably magnetic basement into a tessellated pattern of blocks. The faults themselves are often loci of reduced magnetic response due to the destruction of magnetic minerals. Some of the faults, or possibly shear zones, cutting through the property are prominent magnetic lows with apparent widths of 100 to 200 m. Similar responses are often observed with granitoid rocks in many geological environments is Australia, including the Gawler Craton. The larger NE-trending faults form a parallel set to regional structures such as the Ferdinand and Intersection Faults.

A prominent magnetic high with an amplitude of 2000 nT is located along the western margin of the survey. This anomaly is caused by a magnetic unit distinct from the remainder of those on the property.

Overview of the Radiometric data

The radiometric data are dominated by the response of the Quaternary cover. There is an elevation change of about 100 m across the property with a generally gentle downward slope from west to east. The broad drainage areas (Map 7) have radiometric responses that are elevated in potassium, probably reflecting higher concentrations of clay minerals.

The Bi 214 channel (uranium) shows a spotty pattern with a few isolated areas having an increased uranium response. The maximum uranium/background ratio for these areas varies between 3 to 5. While such ratios would not be considered large, they could be of potential interest.

Description of Specific Magnetic Zones and Anomalies

An interpretation overlay of the data is shown in Map 9.

Zone 1

A zone of moderate magnetic response with typical anomaly amplitudes in the range of 400 to 500 nT. The basement is fairly uniformly magnetised, and the anomalies arise mainly from the presence of lineaments with reduced magnetic response interpreted to mark faults or shear zones. One prominent NE structure, F1, parallels the Intersection Fault.

The general uniformity of the magnetic response implies that the basement rocks, presumably Birksgate Complex, are fairly uniform in composition within this zone.

Zone 1 is terminated along the south west by the conspicuous, linear magnetic low, F2, trending 295 degrees. This slightly curved lineament is interpreted to be a fault or shear zone. The change of magnetic amplitude across it means that the rocks on either side are of different susceptibility, which signifies that the displacement is vertical as well as horizontal. This fault clearly offsets the NE structures and appears to be one of the youngest structures in the area.

Zone 2

This large zone extends southwards from interpreted fault F2, to near the southern limit of the survey. Its western boundary is marked by a subtle change in amplitude.

The magnetic amplitudes in this zone are generally lower than in Zone 1 suggesting that while the basement is also composed of Birkdale Complex, it may be more felsic in composition. The magnetic response is however variable pointing to the presence of several litho types. The relative uniformity of some of the magnetic anomalies such as D and E, indicate broad zones of similar rock type akin to the basement of Zone 1. In other areas are more isolated, small anomalies of higher amplitude such as Anomalies B and C. Groups of similar anomalies lie to the west and south of B and to the North of C.

Inversion models for Anomalies B and C may be found in Appendix 1. Vertical, cylindrical bodies, ellipsoidal in cross section were used to model both anomalies and induced magnetism only was assumed. The modelling results are summarised below:

| Anom. No. | AMG E (m) | AMG N (m) | Amplitude (nT) | Depth (m) | A-axis (m) | B-axis (m) | Depth extent (m) | Suscep. (SI) |
|---|---|---|---|---|---|---|---|---|
| B | 341485 | 7109518 | 400 | 50 | 150 | 97 | 150 | 0.18 |
| C | 331477 | 7116080 | 300 | 25 | 121 | 300 | 250 | 0.04 |

Both anomalies were effectively registered on only one flight line leading to the relatively small horizontal dimensions of the causative bodies. The bodies are both shallow, the depth being interpreted depth below ground surface. The apparent susceptibilities are moderate to high and are equivalent to about 1% to a few % magnetite by volume.

The anomalies may not all relate to similar rock types. Some are isolated and equi-dimensional, while others resemble a culmination in a linear trend.

Anomalies such as these are of potential interest as they may relate to base metal mineralisation containing magnetite or possibly kimberlites. Several companies including Caldera Resources are exploring for diamond-bearing diatremes in the north of South Australia, particularly on the Abminga sheet. Although some interesting magnetic anomalies (Robinson and Barrett 1995) are being followed up, information is still awaited regarding positive exploration results. The relatively large amplitudes of the anomalies considered here make it less likely that they are kimberlite-related.

The magnetic fabric of Zone 2 is dominated by linear lows interpreted to be faults and shear zones. The largest of these is F3 which trends 060 degrees and appears to be a continuation of F1 in Zone 1 which has been displaced across structure F2. F3 is a regional structure visible on regional magnetic data published by the Dept. of Mines and Energy, South Australia (MESA).

In association with the larger lineaments are a number of areas of low magnetic response such as F, G, H and I. In these areas the magnetism of the rocks has been noticeably reduced possibly by fluid introduction along the faults. Helix Resources and other companies exploring for gold in the Gawler Craton are targeting structures with geophysical signatures, in particular demagnetised portions of regional shear zones. These zones of demagnetisation apparently reflect the replacement of magnetite by haematite during brecciation and alteration processes in a mainly granitoid host rock. Although the gold potential of the Musgrave Block has yet to be established, these zones are of potential interest for gold and base metal deposits.

The western side of Zone 2 contains a number of narrow, curvi-linear anomalies trending ENE to WNW. These features are more numerous in Zone 4 and are thought to be basic dykes including the Alcurra dyke swarm. S. Toteff has also mapped magnetite-bearing quartzites in the area and some of

these magnetic features may relate to these. These features are probably more numerous than shown in Map 9, but they are not always easy to identify in a magnetic background of substantial amplitude. They can also be confused with faults and vice versa.

Zone 2 contains the largest uranium anomaly, J, recorded during the survey. Although not particularly large, this anomaly has a peak uranium count of 57 cps against a background count of about 10 cps and is associated with a topographic high recorded in the digital terrain model. The DTM topography at this location looks slightly suspicious and I asked the contractors to re-check their data. They state that the aircraft climbed rapidly at this location to avoid a radio mast. In itself this should not invalidate the DTM or radiometric data but it is possible that the altitude corrections applied to the radiometrics may not have been able to follow the rapid change in aircraft height. In summary, although there is some doubt about the validity of the uranium reading at location J, this small anomaly requires ground checking.

Zone 3

Lying along the southern limits of the survey area, this is a zone of moderate and flat response. The basement is considered to be composed of predominantly one litho type of the Birksgate Complex.

Zone 4

Covering the western half of the survey area, this zone is similar to Zone 2 with a variety of magnetic responses. A characteristic feature is the appearance of north and north east trending, positive, curvi-linear anomalies of moderate amplitude. These anomalies are disrupted by faulting and cut by the basic dyke systems. The are considered to represent extensive, more mafic units in the Birksgate Complex.

Zone 4 contains two areas of demagnetisation, K and L which may be of interest though they are not directly associated with regional structures as in the case of Zone 2.

A uranium anomaly at the position M is the second largest recorded during the survey. Located on flat ground, it has a uranium count of 56 cps on a background of 15 cps.

Zone 5

This is the large, extensive anomaly A, lying along the western margin of the survey. With an amplitude of more than 2000 nT, this is the largest anomaly recorded during the survey.

An inversion model for one traverse across this anomaly may be found in Appendix 1. The shape of the anomaly is what would be generated by a wide, slab-like body of considerable thickness. The interpreted thickness of some 800 m is not well determined but the body is clearly of substantial size. The interpreted apparent susceptibility of 0.1 SI units is at the high end of the range for amphibolites and basic granulites. Anomaly A is thought to arise from one of the intrusives of the Giles Complex.

The extensive magnetic low bordering the anomaly to the south is a part of the anomaly itself rather than a zone of demagnetisation.

## CONCLUSIONS AND RECOMMENDATIONS

The airborne geophysical survey over EL 2143 has provided a good base for initial exploration. Apart from one extensive anomaly considered to arise from an intrusive of the Giles Complex, the area is underlain mainly by rock units of the Birksgate Complex which have been intensely faulted and sheared.

The geophysical data reveals a number of features of interest that may provide exploration opportunities and include:

1) Regional faults and shear zones – conduits for mineralising fluids.
2) Zones of demagnetisation, often associated with large fault/shear zones – areas of alteration.
3) Isolated magnetic anomalies, and amplitude culminations along magnetic trends – possible base metal or kimberlite targets.
4) An intrusion of the Giles Complex – possible Nickel-Copper and PGE's in an ultramafic, layered intrusive.
5) Two areas of elevated uranium response – possible uranium targets.

Although only a limited number of anomalies were modelled and these indicated shallow sources, inspection of the magnetic maps suggests that none of the basement in the survey area is very deep. The above areas provide a focus for initial exploration activities. The uranium anomalies should be ground checked with a scintillometer or gamma ray spectrometer. It is recommended that magnetic modelling should be undertaken over any magnetic features prior to more advanced follow up such as drilling. In specific cases, a limited ground magnetic survey should be carried out over the area of interest.

Doug Barrett

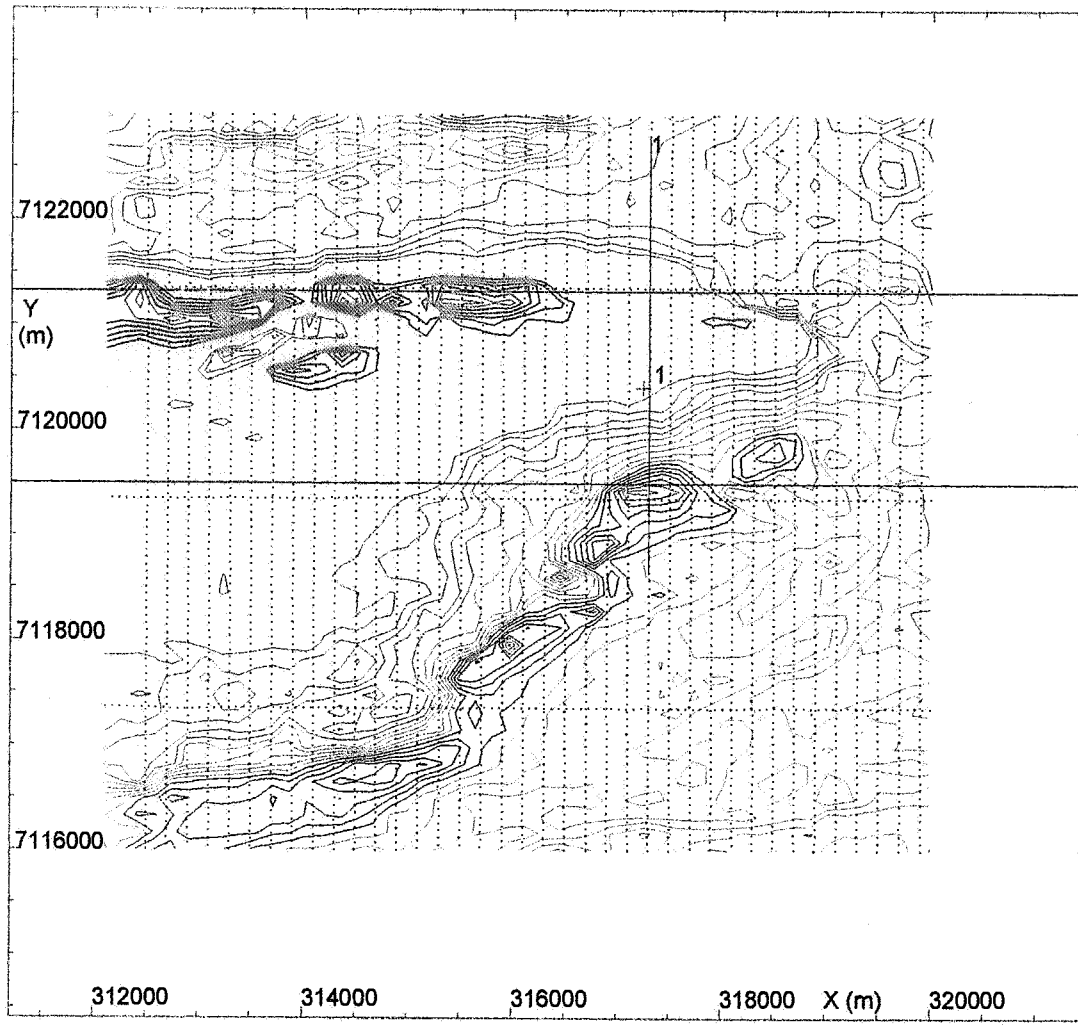
October 1997

## REFERENCE

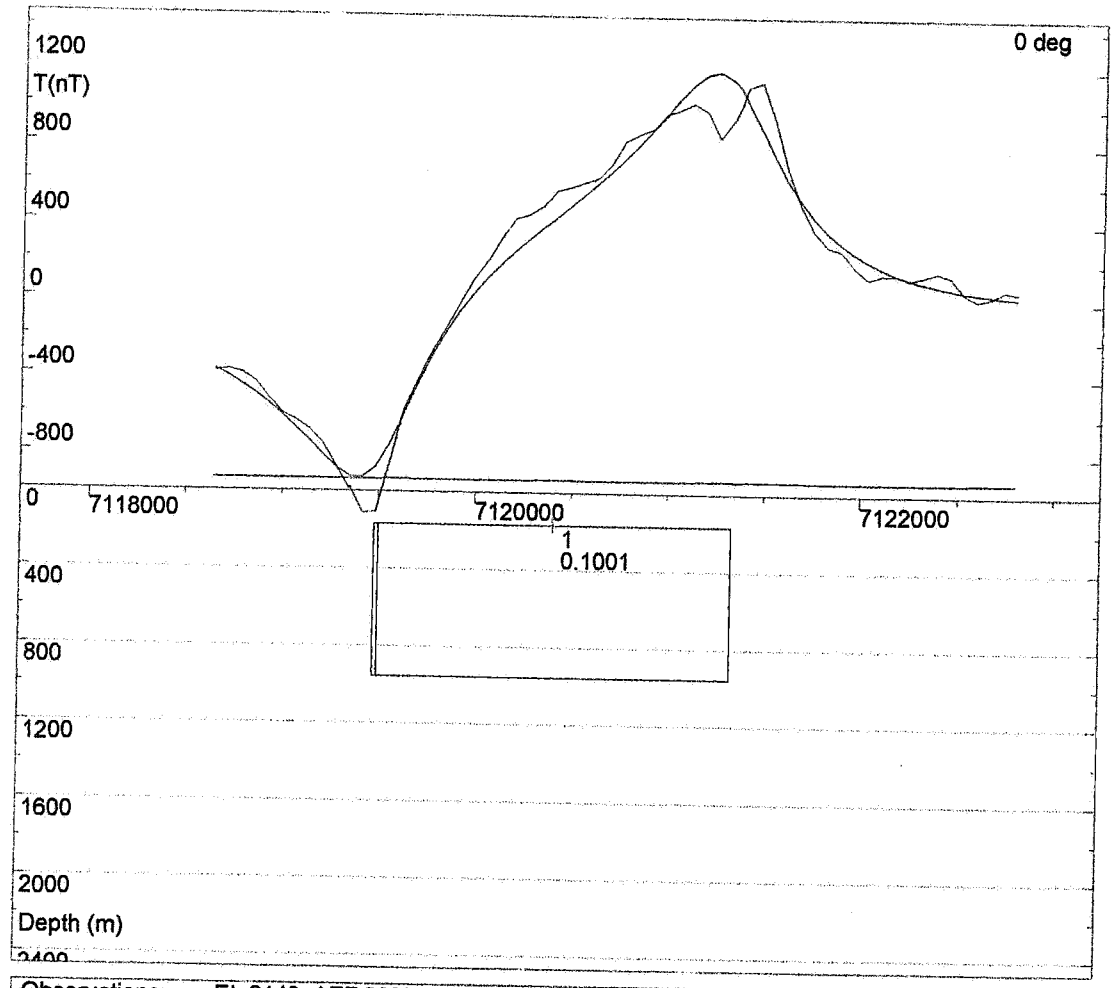
Robinson, S H and Barrett, D M (1995) Interpretation and field investigation of some aeromagnetic anomalies from the Abminga area, South Australia, Explor. Geophysics, vol. 26, pp269-275.

# APPENDIX 1

INVERSION MODELS FOR THREE SELECTED ANOMALIES.




| | |
|---|---|
| Observations: | EL 2143, AEROMAGNETIC DATA - ANOMALY A |
| Model: | MODEL 1 : RECTANGULR PRISM |
| Contours of: | Observed field; Contour intervals: 100.0000, 500.0000 nT |
| POTENT v3.09 | Plan drawn at 12:13 16/10/1997 for Barrett Geophysical Exploration Consultants P |




Observations: EL 2143, AEROMAGNETIC DATA - ANOMALY A
Profile #1;
Model: MODEL 1 : RECTANGULR PRISM
Calculation mode: Total Magnetic Intensity

Observed: ———— Calculated: ————
Residual: Individual body: ————

POTENT v3.09 Profile drawn at 12:13 16/10/1997 for Barrett Geophysical Exploration Consultants

EXPECTATION PTY LTD
EL 2143, AEROMAGNETIC SURVEY – ANOMALY A
MODEL 1 : RECTANGULAR PRISM

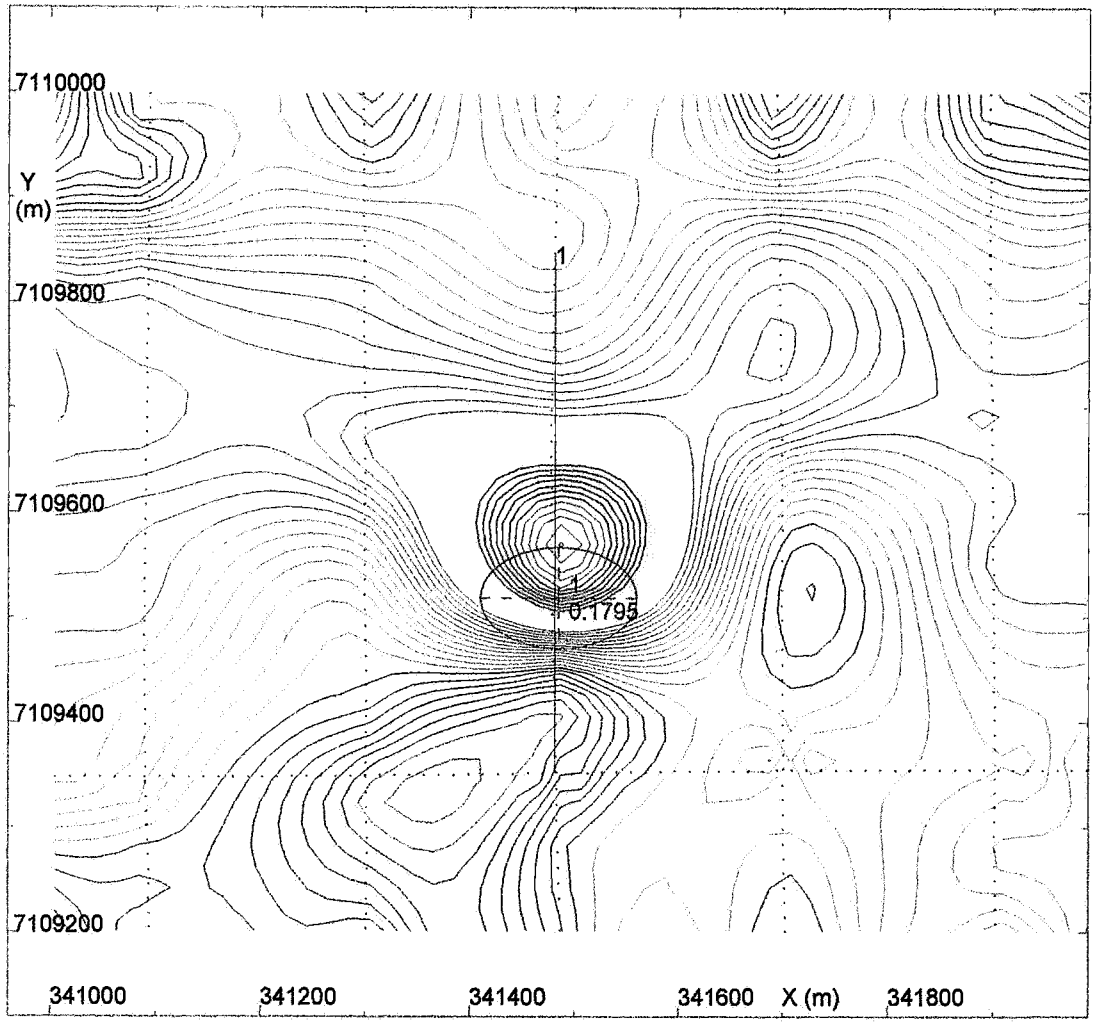
POTENT v3.09 Model Summary Report created at Perth
for Barrett Geophysical Exploration Consultants Pty Ltd

Inducing field - Intensity = 55000
Azimuth = 5
Inclination = -58

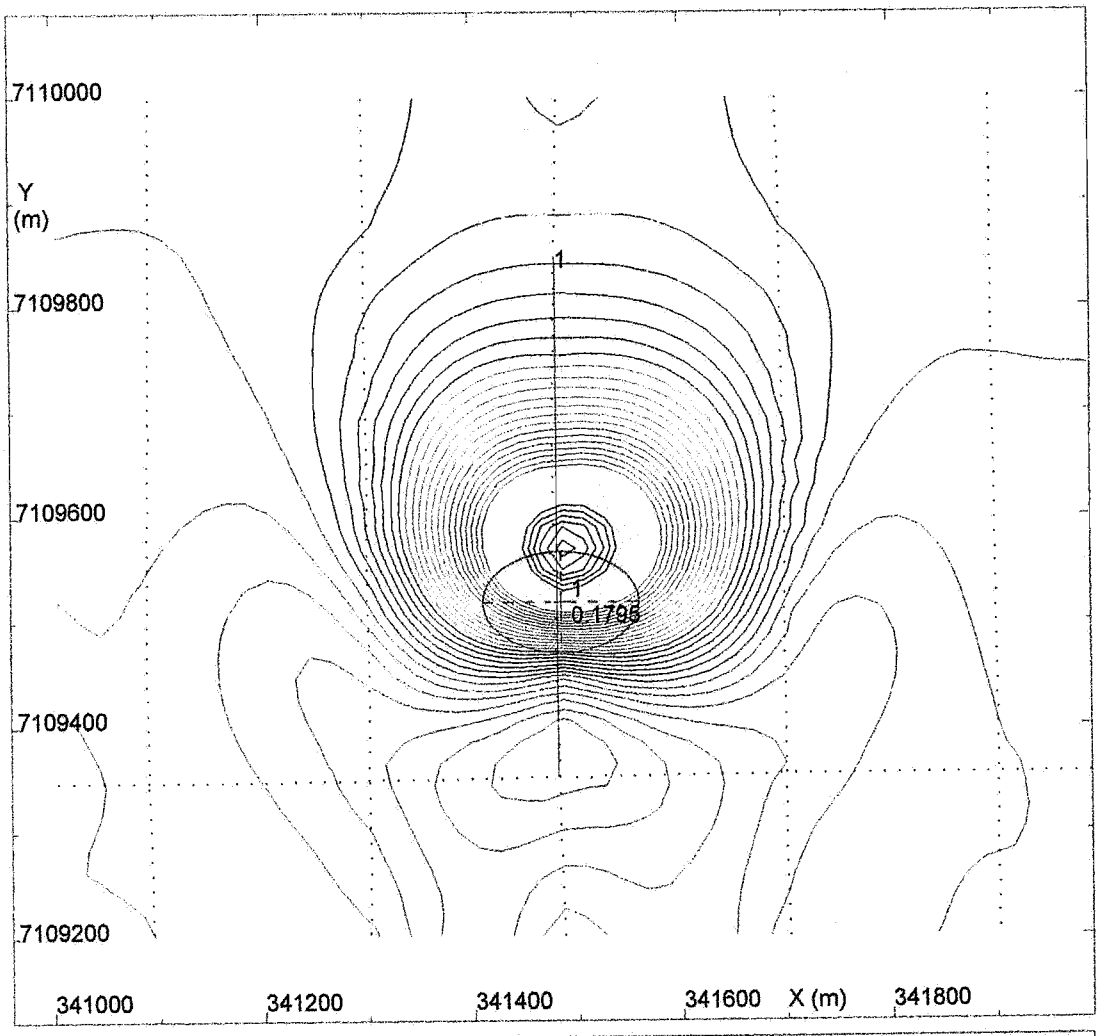
Body type abbreviations and the shape parameters have the following significance:
Rect RECTANGULAR PRISM A = width, B = length, C = height

Model title: MODEL 1 : RECTANGULR PRISM

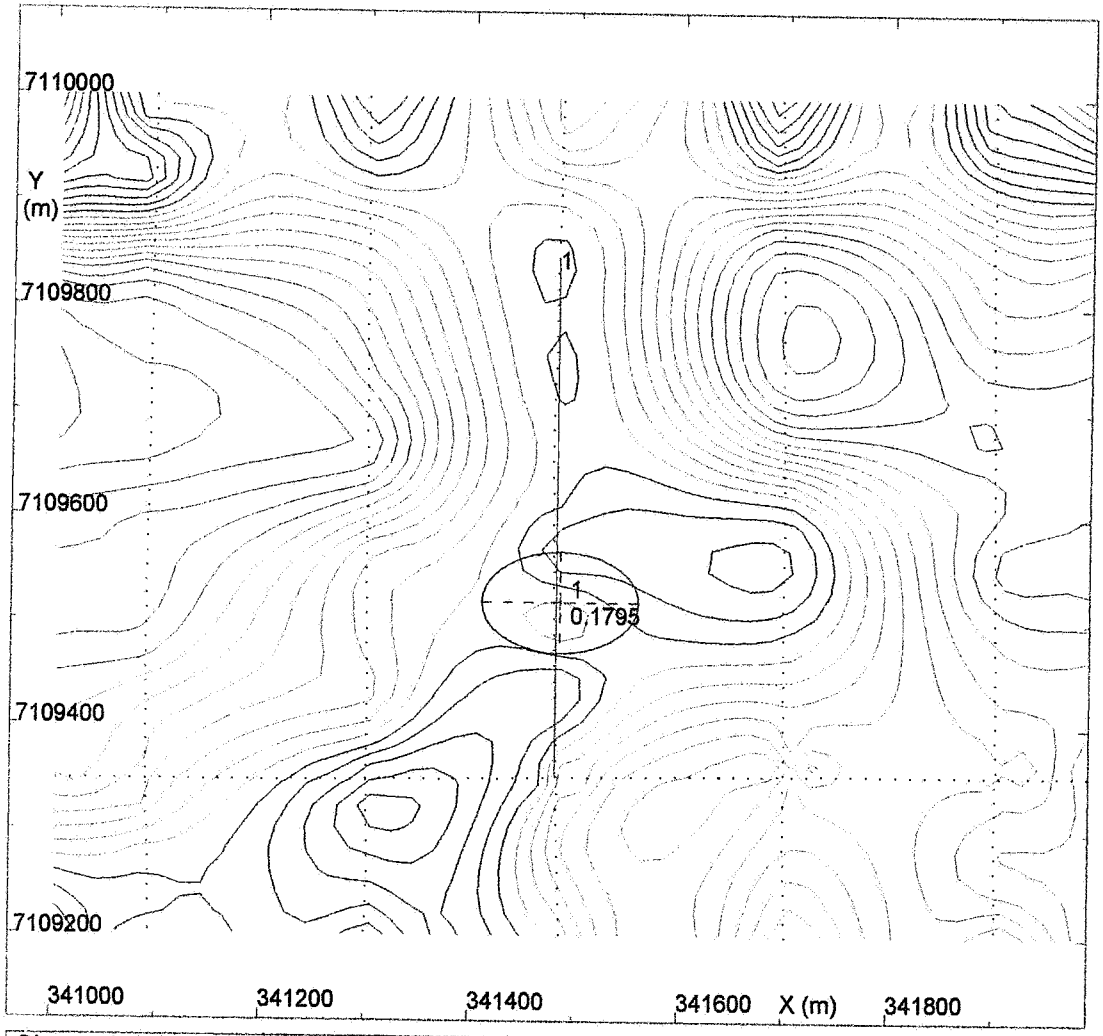
| No. | Type | X | Y | Depth | Strike | Dip | Plunge | Susc. | A | B | C | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m | m | m | deg | deg | deg | SI | | | | |
| 1 | Rect | 317242 | 7120404 | 169 | 0 | 90 | 0 | 0.1001 | 30000.00 | | 1828.68 | 788.42 |




| | |
|---|---|
| Observations: | EL 2143, AEROMAGNETIC DATA - ANOMALY B |
| Model: | MODEL 1 : CYLINDRICAL BODY |
| Contours of: | Observed field; Contour intervals: 10.0000, 70.0000 nT |
| POTENT v3.09 | Plan drawn at 13:00 16/10/1997 for Barrett Geophysical Exploration Consultants P |




| | |
|---|---|
| Observations: | EL 2143, AEROMAGNETIC DATA - ANOMALY B |
| Model: | MODEL 1 : CYLINDRICAL BODY |
| Contours of: | Calculated field; Contour intervals: 10.0000, 70.0000 nT |
| POTENT v3.09 | Plan drawn at 13:09 16/10/1997 for Barrett Geophysical Exploration Consultants P |




| | |
|---|---|
| Observations: | EL 2143, AEROMAGNETIC DATA - ANOMALY B |
| Model: | MODEL 1 : CYLINDRICAL BODY |
| Contours of: | Residual field; Contour intervals: 10.0000, 70.0000 nT |
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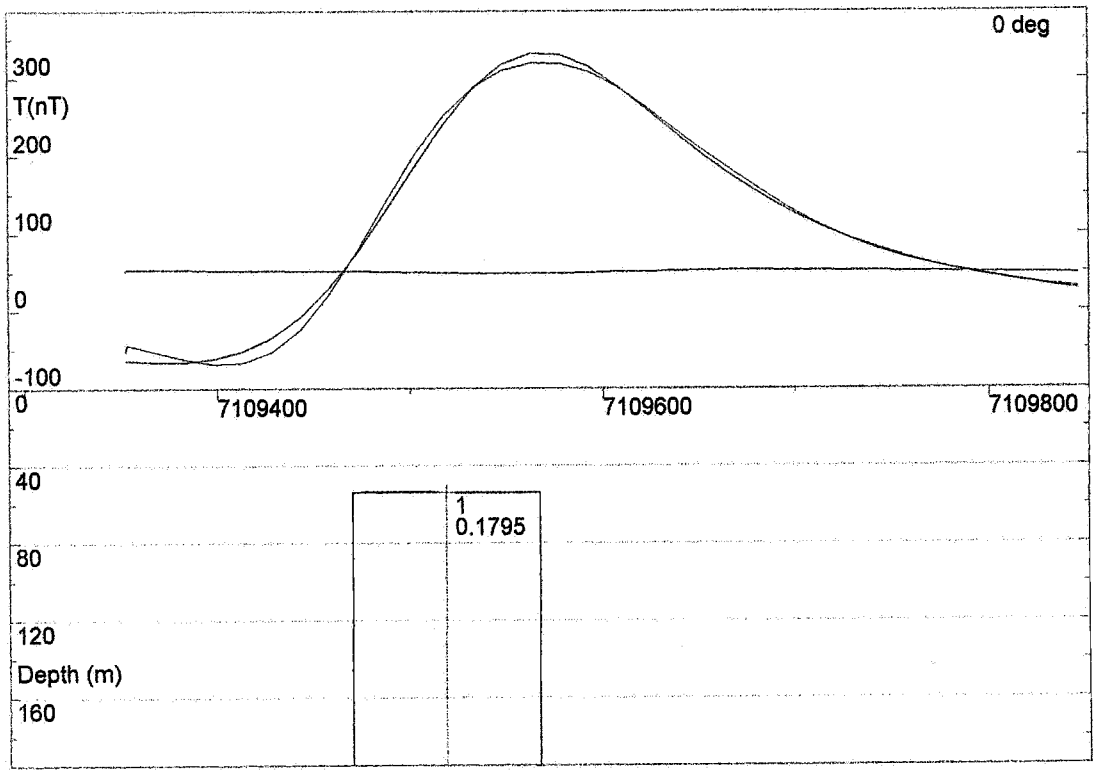



Observations: EL 2143, AEROMAGNETIC DATA - ANOMALY B
Profile #1;
Model: MODEL 1 : CYLINDRICAL BODY
Calculation mode: Total Magnetic Intensity

Observed: ———— Calculated: ————
Residual: Individual body: ————

POTENT v3.09 Profile drawn at 13:00 16/10/1997 for Barrett Geophysical Exploration Consultants

EXPECTATION PTY LTD
EL 2143, AEROMAGNETIC SURVEY – ANOMALY B
MODEL 1 : CYLINDRICAL BODY

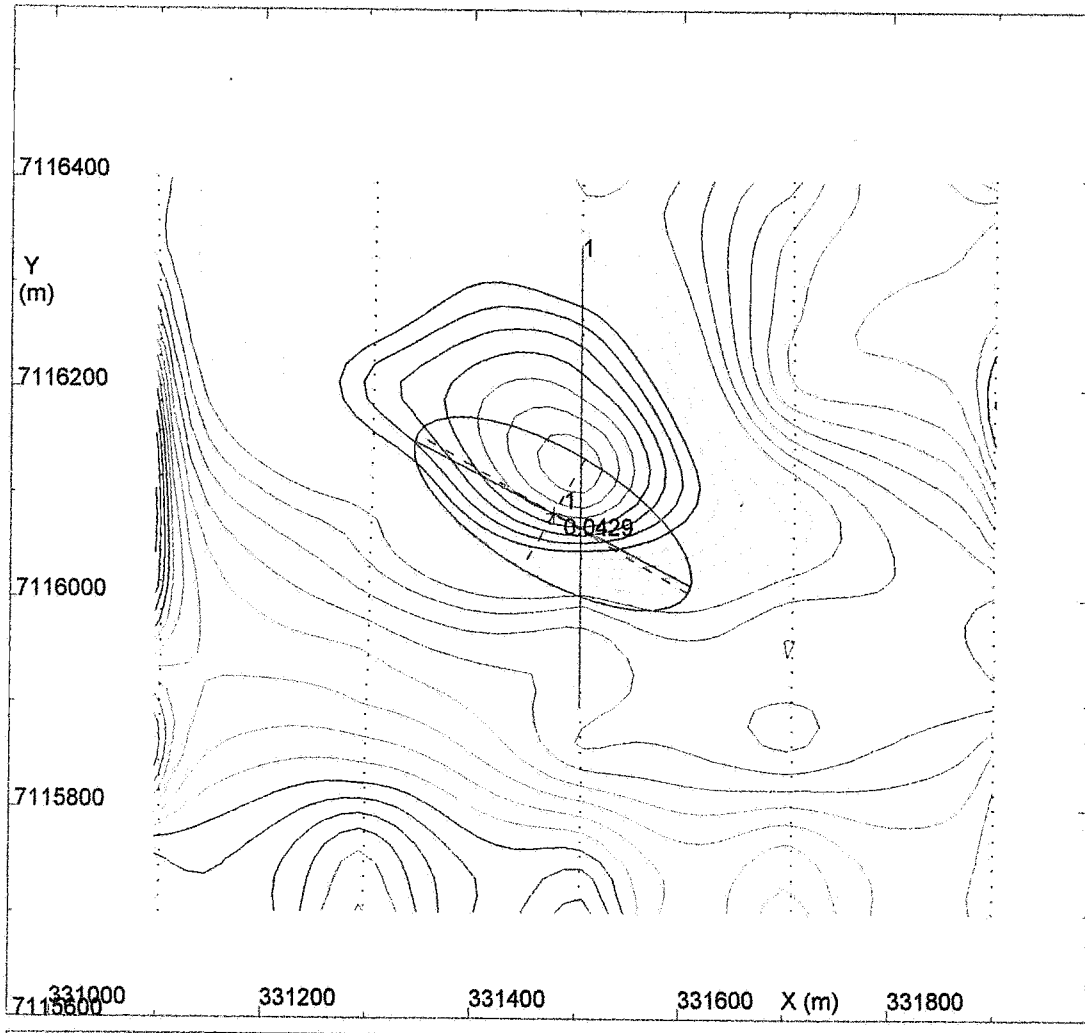
POTENT v3.09 Model Summary Report created at Perth
for Barrett Geophysical Exploration Consultants Pty Ltd

Inducing field - Intensity = 55000
Azimuth = 5
Inclination = -58

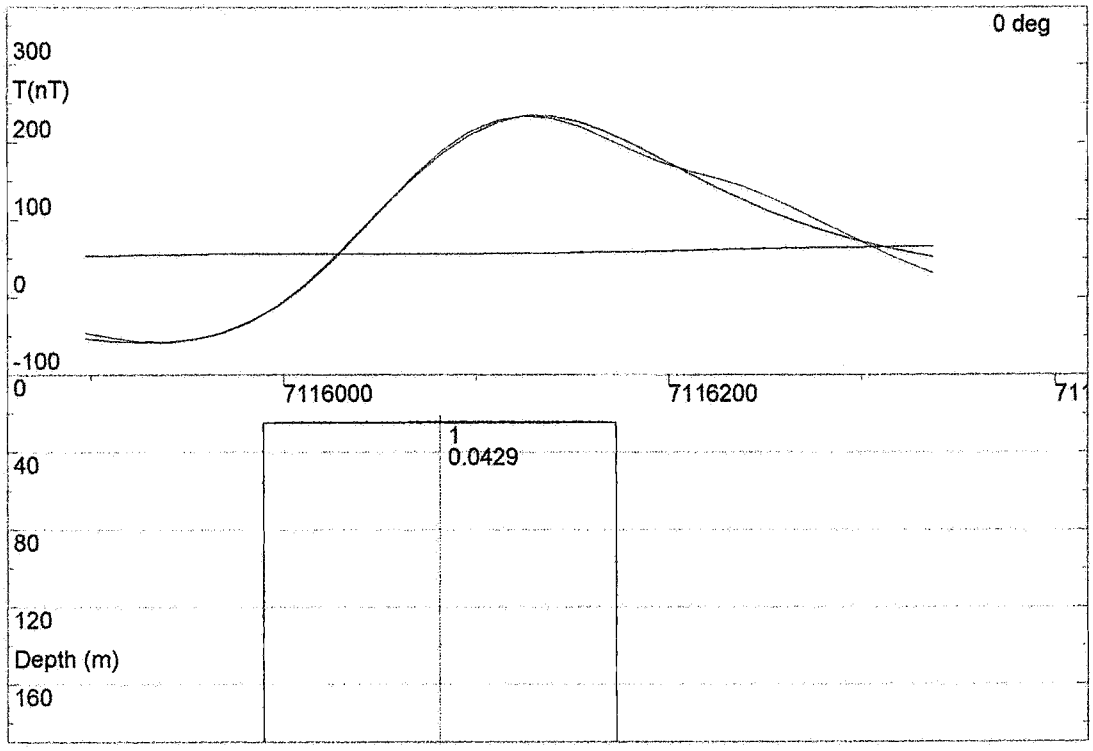
Body type abbreviations and the shape parameters have the following significance:
Cylndr CYLINDER A, B are axes lengths; C = thickness; D = slope

Model title: MODEL 1 : CYLINDRICAL BODY

| No. | Type | X | Y | Depth | Strike | Dip | Plunge | Susc. | A | B | C | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m | m | m | deg | deg | deg | SI | | | | |
| 1 | Cylndr | 341485 | 7109518 | 53 | 0 | 90 | 0 | 0.1795 | 150.00 | 96.80 | 148.92 | 90.00 |




| | |
|---|---|
| Observations: | EL 2143, AEROMAGNETIC DATA - ANOMALY C |
| Model: | MODEL 1 : CYLINDRICAL BODY |
| Contours of: | Observed field; Contour intervals: 20.0000, 80.0000 nT |
| POTENT v3.09 | Plan drawn at 14:01 16/10/1997 for Barrett Geophysical Exploration Consultants P |




Observations: EL 2143, AEROMAGNETIC DATA - ANOMALY C
Profile #1;
Model: MODEL 1 : CYLINDRICAL BODY
Calculation mode: Total Magnetic Intensity

Observed: ..... —————— Calculated: ——————
Residual: Individual body: ——————

POTENT v3.09 Profile drawn at 14:02 16/10/1997 for Barrett Geophysical Exploration Consultants

EXPECTATION PTY LTD
EL 2143, AEROMAGNETIC SURVEY – ANOMALY C
MODEL 1 : CYLINDRICAL BODY

POTENT v3.09 Model Summary Report created at Perth
for Barrett Geophysical Exploration Consultants Pty Ltd

Inducing field - Intensity = 55000
Azimuth = 5
Inclination = -58

Body type abbreviations and the shape parameters have the following significance:
Cylndr CYLINDER A, B are axes lengths; C = thickness; D = slope

Model title: MODEL 1 : CYLINDRICAL BODY

| No. | Type | X | Y | Depth | Strike | Dip | Plunge | Susc. | A | B | C | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m | m | m | deg | deg | deg | SI | | | | |
| 1 | Cylndr | 331477 | 7116080 | 24 | 120 | 90 | 0 | 0.0429 | 121.17 | 300.00 | 252.47 | 90.00 |

## APPENDIX 2

AIRBORNE SURVEY SPECIFICATIONS

Area : EL 2143
Company Flown by: Australian Geophysical Surveys
Company Flown for: Expectation Pty Ltd.
Company Processed: Baigent Geosciences Pty. Ltd.

AIRBORNE SURVEY EQUIPMENT:

| | |
|---|---|
| Aircraft | Beechcraft Baron VH-WDE |
| Magnetometer | Scintrex CS-2 Caesium Vapour |
| Magnetometer Resolution | 0.001 nT |
| Magnetometer Compensation | RMS AADC operating in real time |
| Magnetometer Sample Interval | 0.1 seconds (approx 7.0 metres) |
| Data Acquisition | PICODAS |
| Data Recording | 1 Gbyte Hard Disk |
| Spectrometer | Exploranium GR820 |
| Crystal Size | 33.6lt downward array |
| Spectrometer Sample Interval | 1.0 Seconds (approx 70 metres) |
| Flight Path Record | VHS Colour Video System |
| GPS Navigation System | NovAtel |
| | with Racal real time differential correction |

AIRBORNE SURVEY SPECIFICATIONS:

| | |
|---|---|
| Flight Line Direction | 000 - 180 degrees |
| Flight Line Separation | 200 metres |
| Tie Line Direction | 090 - 270 degrees |
| Tie Line Separation | 1000 metres |
| Terrain Clearance | 60 metres (MTC) |

Survey flown August 1997
Australian Geophysical Surveys job number 064

Data are in UTM Grid Zone 53

MAGNETIC DATA CORRECTIONS:

Diurnal variations removed
IGRF(1995) updated to 1997.66 removed
Average survey base station value of 5000 nT added to datum

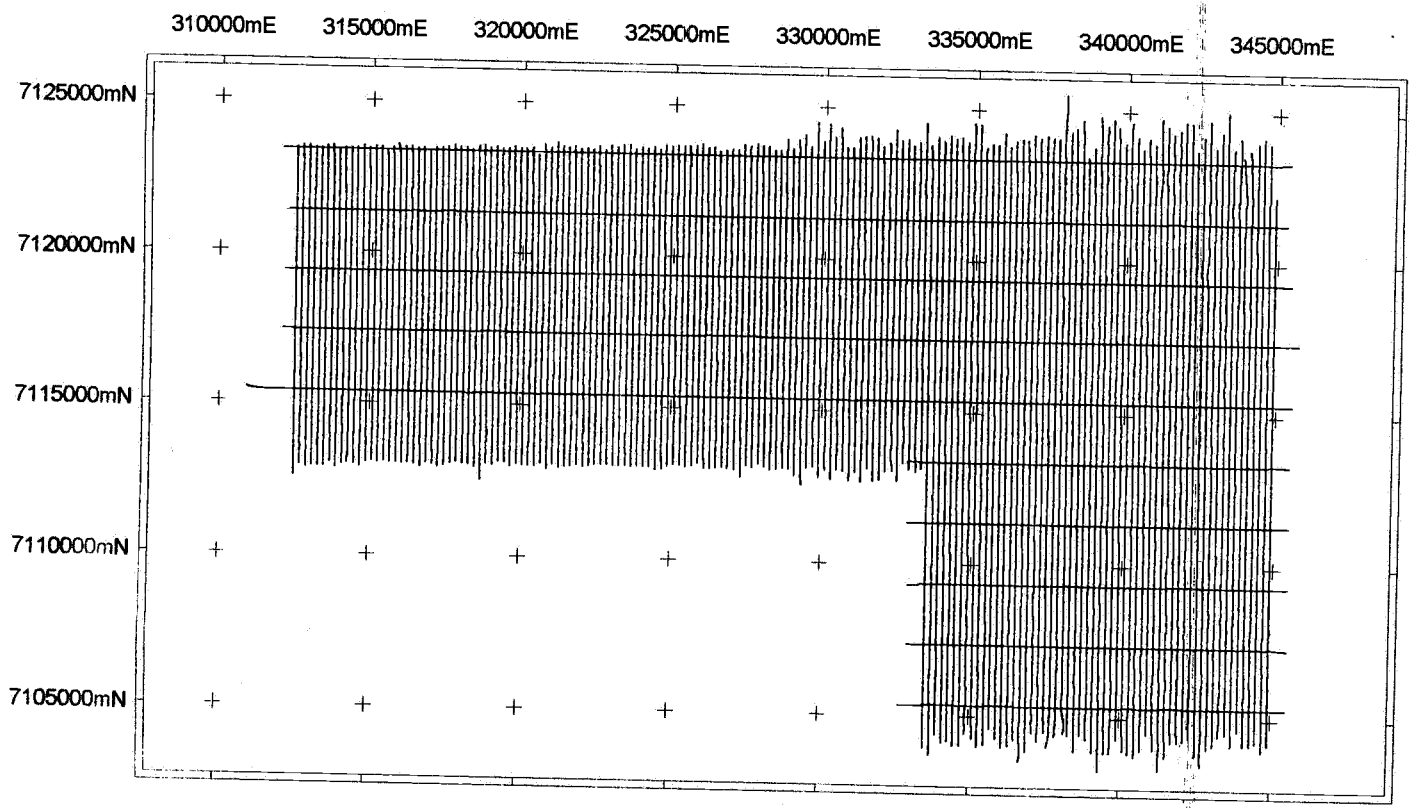
RADIOMETRIC CORRECTIONS AND COEFFICIENTS:

Data has been corrected for aircraft and cosmic backgrounds.
Height corrected to a constant datum of 60 metres,
minimum height of 20 and a maximum of 300 metres.
Data has also been corrected for channel interaction and radon minimized.

| | Tot.Count | Potassium | Uranium | Thorium |
|---|---|---|---|---|
| Arcft Bkg | 92.2 | 9.68 | 3.75 | 5.96 |
| Cosmic Bkg | 0.6415 | 0.0355 | 0.0281 | 0.0371 |
| Height Attn | -0.0087 | -0.00111 | -0.00630 | -0.0091 |

STRIPPING RATIOS:

Alpha = 0.3243, Beta = 0.4299, Gamma = 0.8264, a = 0.234



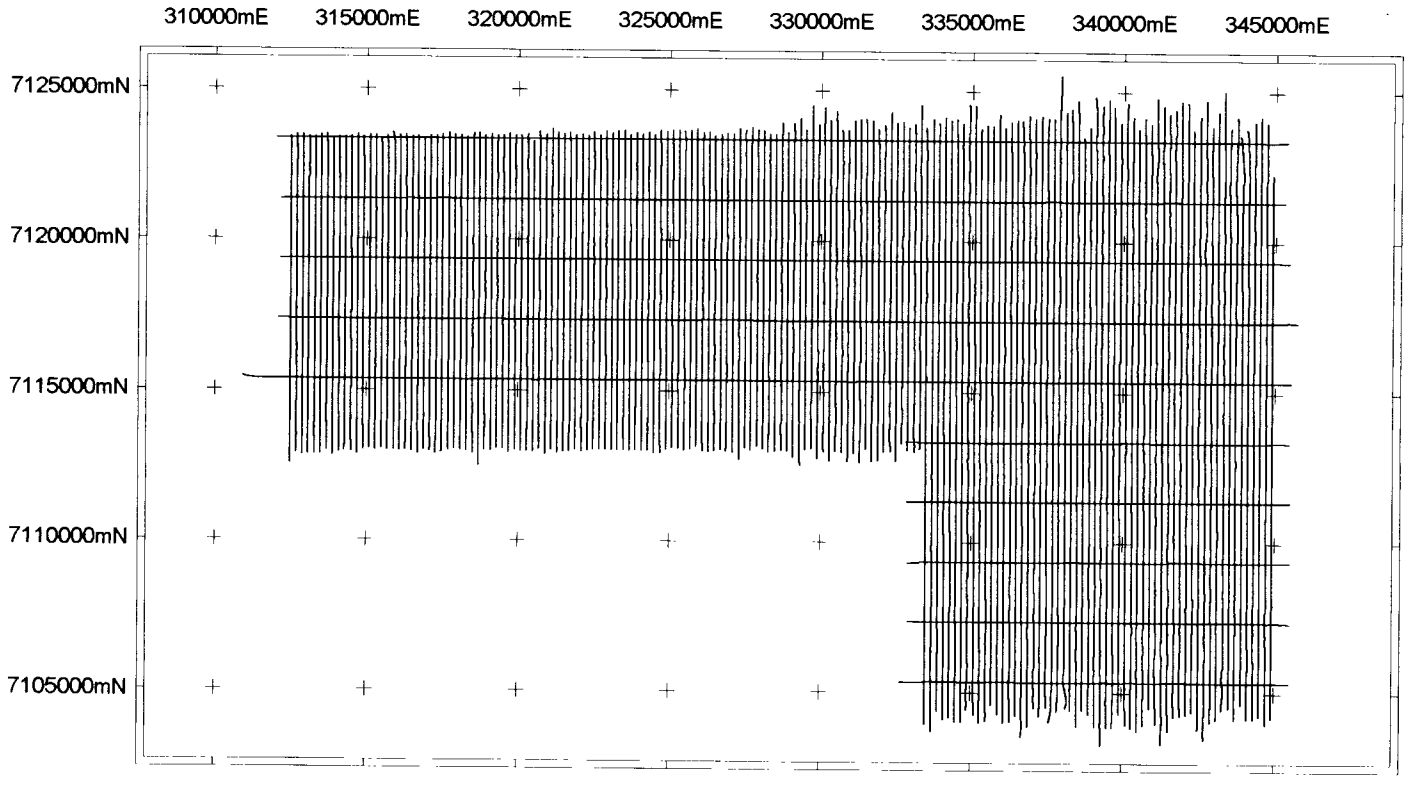

try EC2231.

Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| Expectation Pty Ltd | |
|---|---|
| Flight Path Plot | |
| EL 2143 | |
| 1064 | |

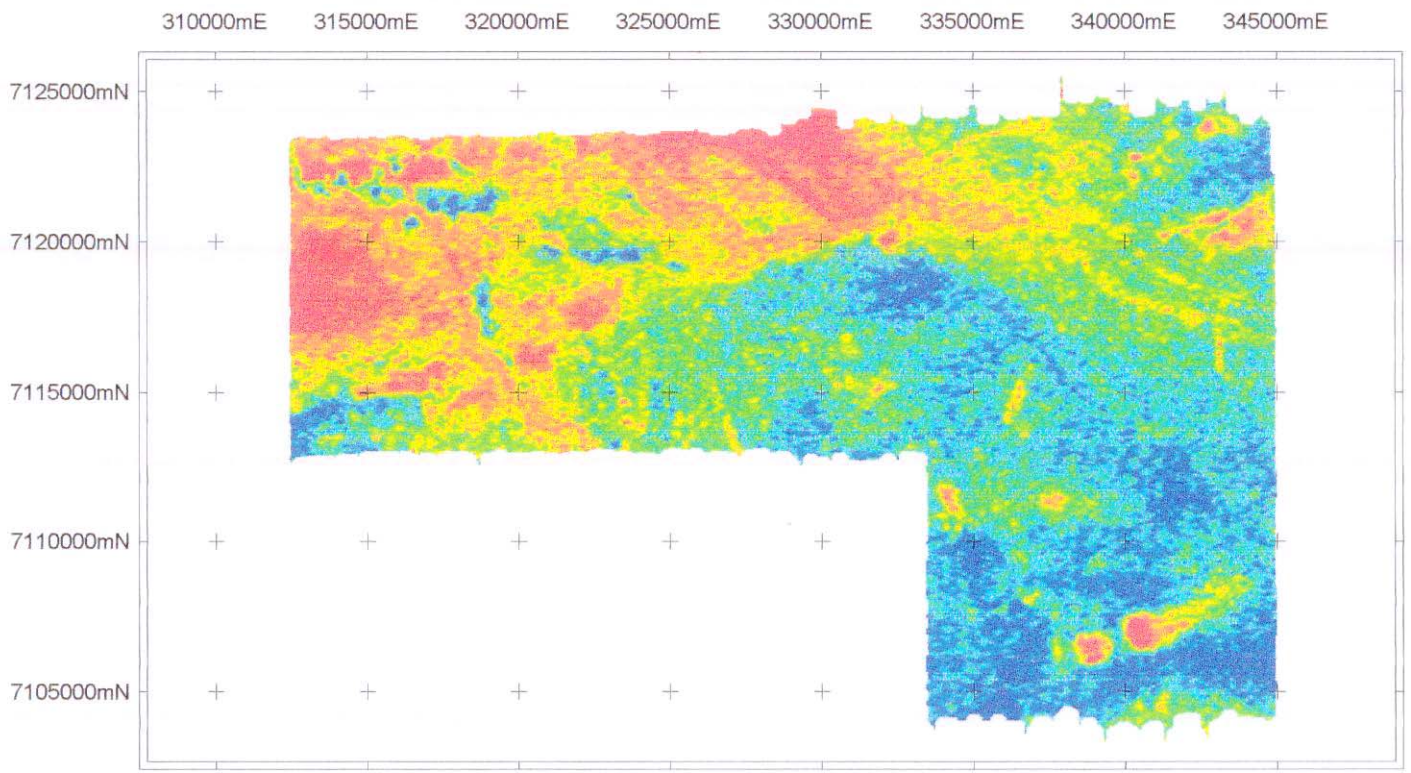



Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| |
|---|
| Expectation Pty Ltd |
| Flight Path Plot |
| EL 2143 |
| 1064 |

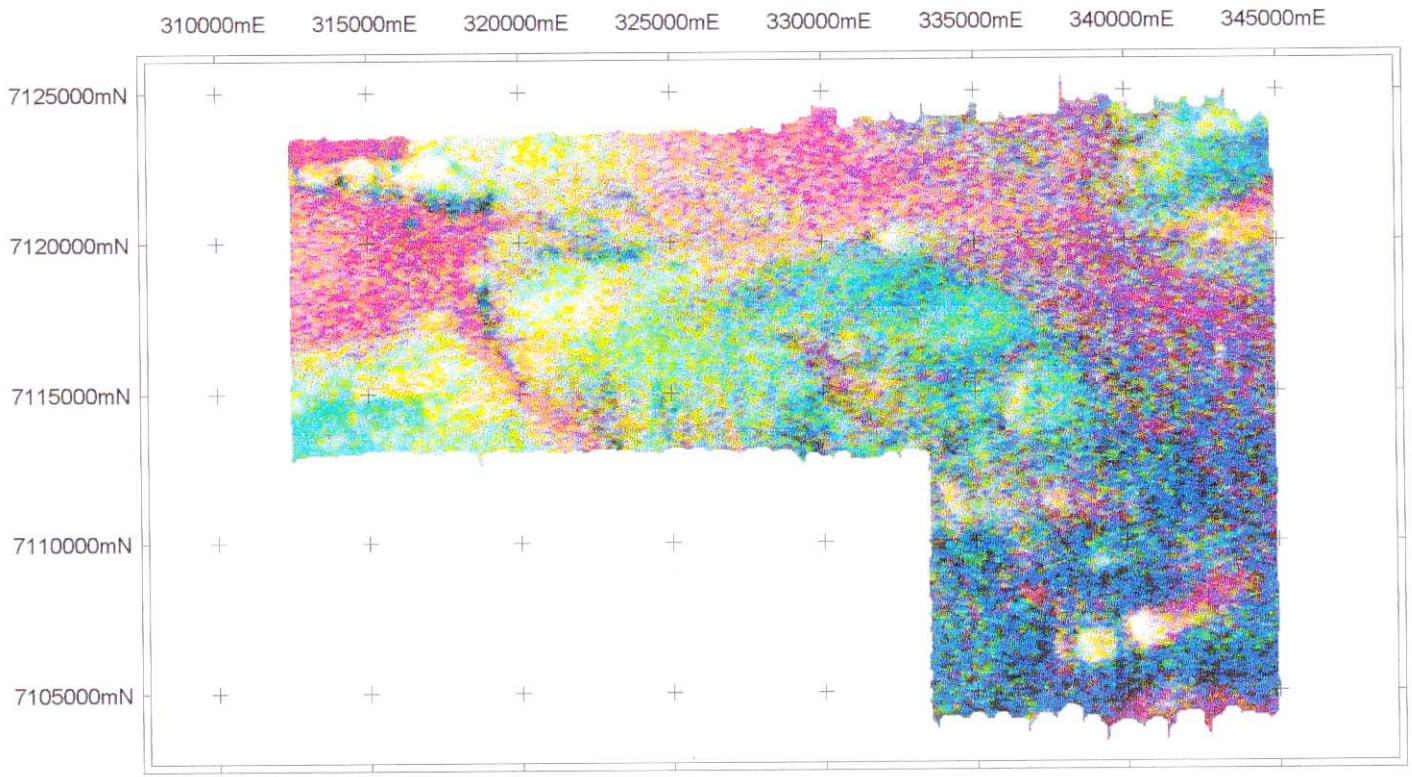



Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| Expectation Pty Ltd | |
|---|---|
| Potassium | |
| EL 2143 | |
| 1064 | |

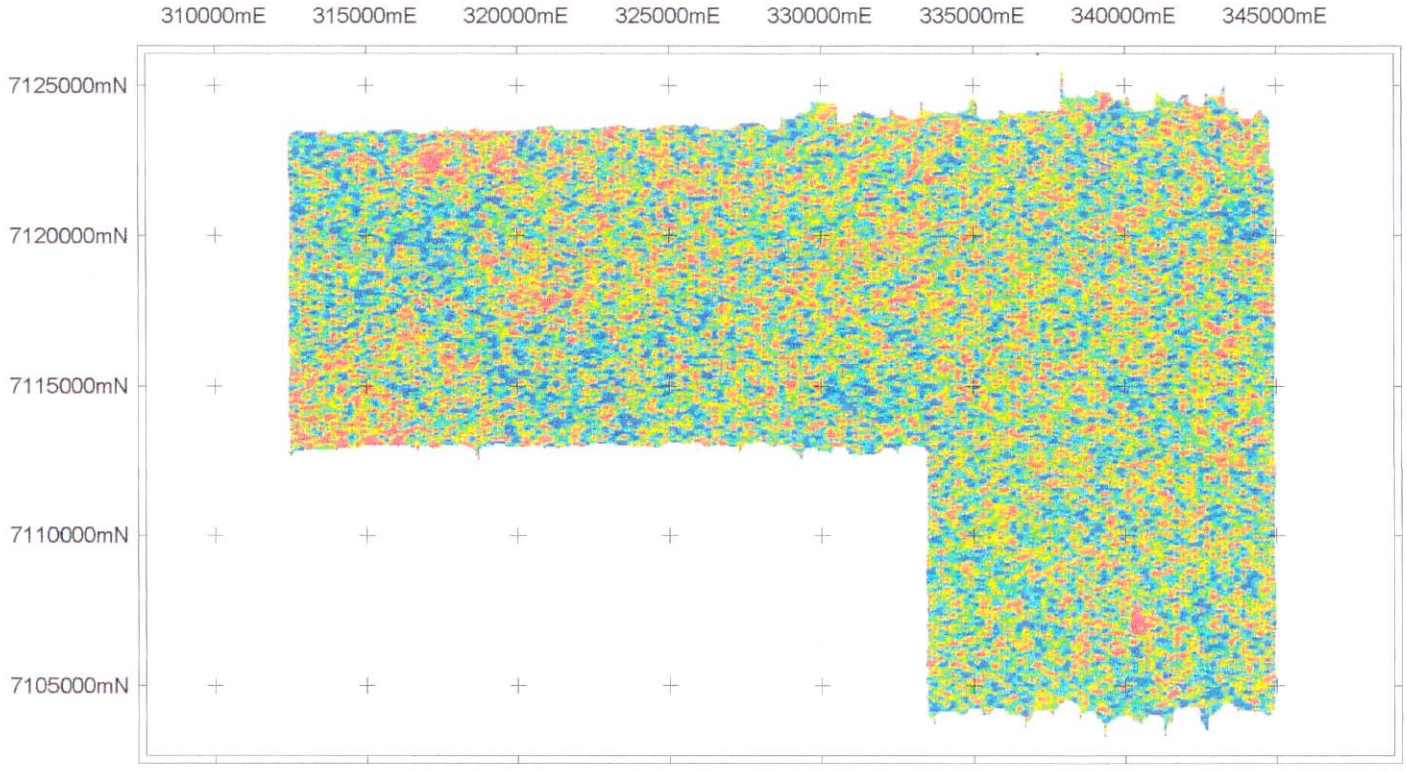



Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| Expectation Pty Ltd | |
|---|---|
| Radiometric RGB Image | |
| EL 2143 | |
| 1064 | |

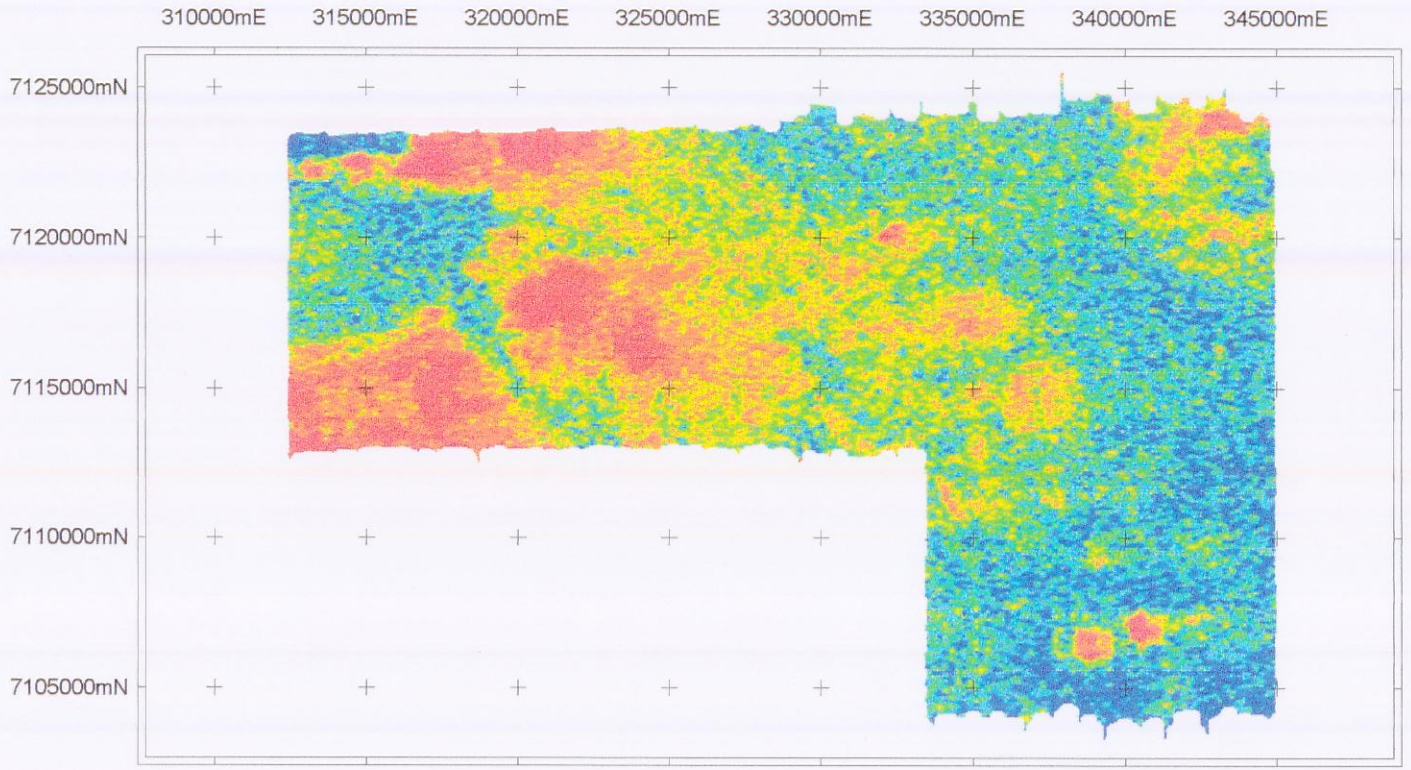



Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| Expectation Pty Ltd | |
|---|---|
| Uranium | |
| EL 2143 | |
| 1064 | |

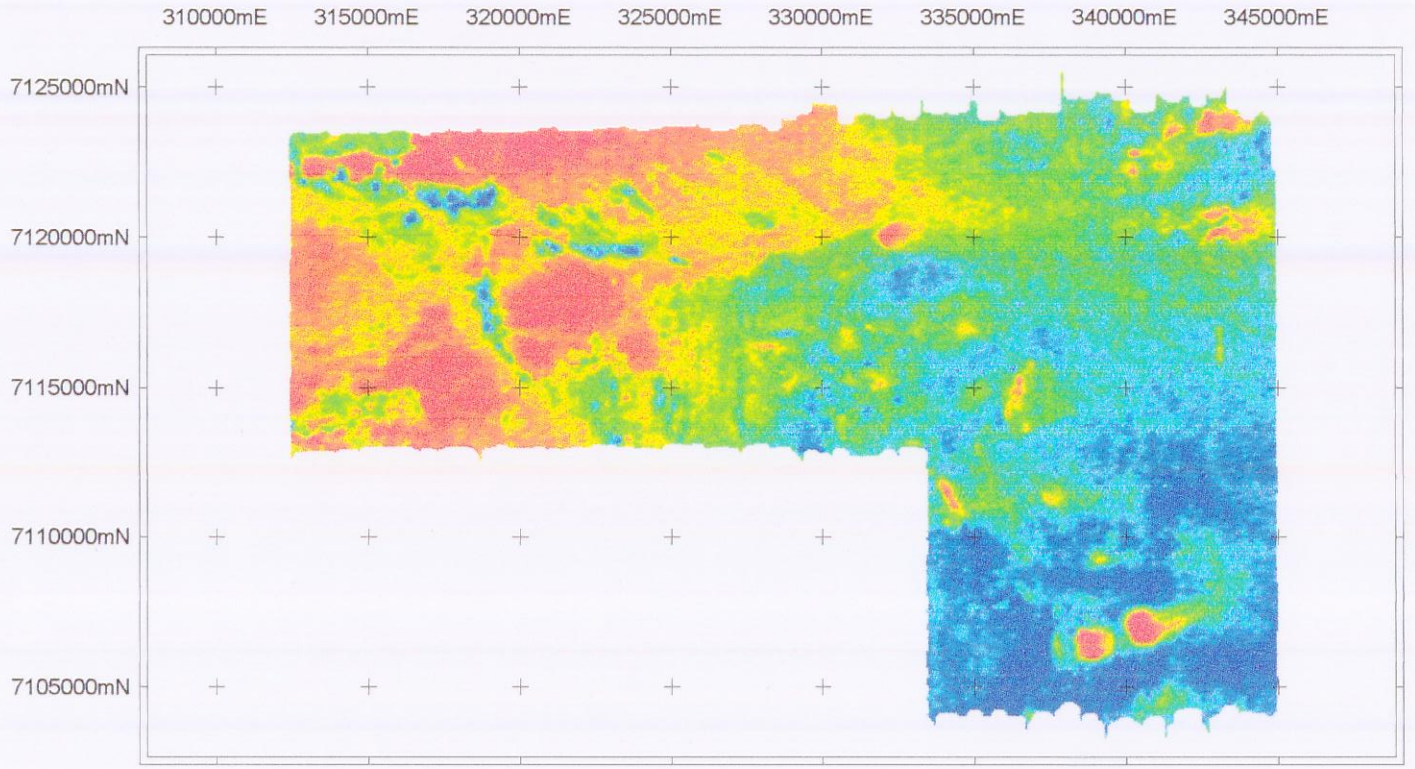



Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| Expectation Pty Ltd | |
|---|---|
| Thorium | |
| EL 2143 | |
| 1064 | |

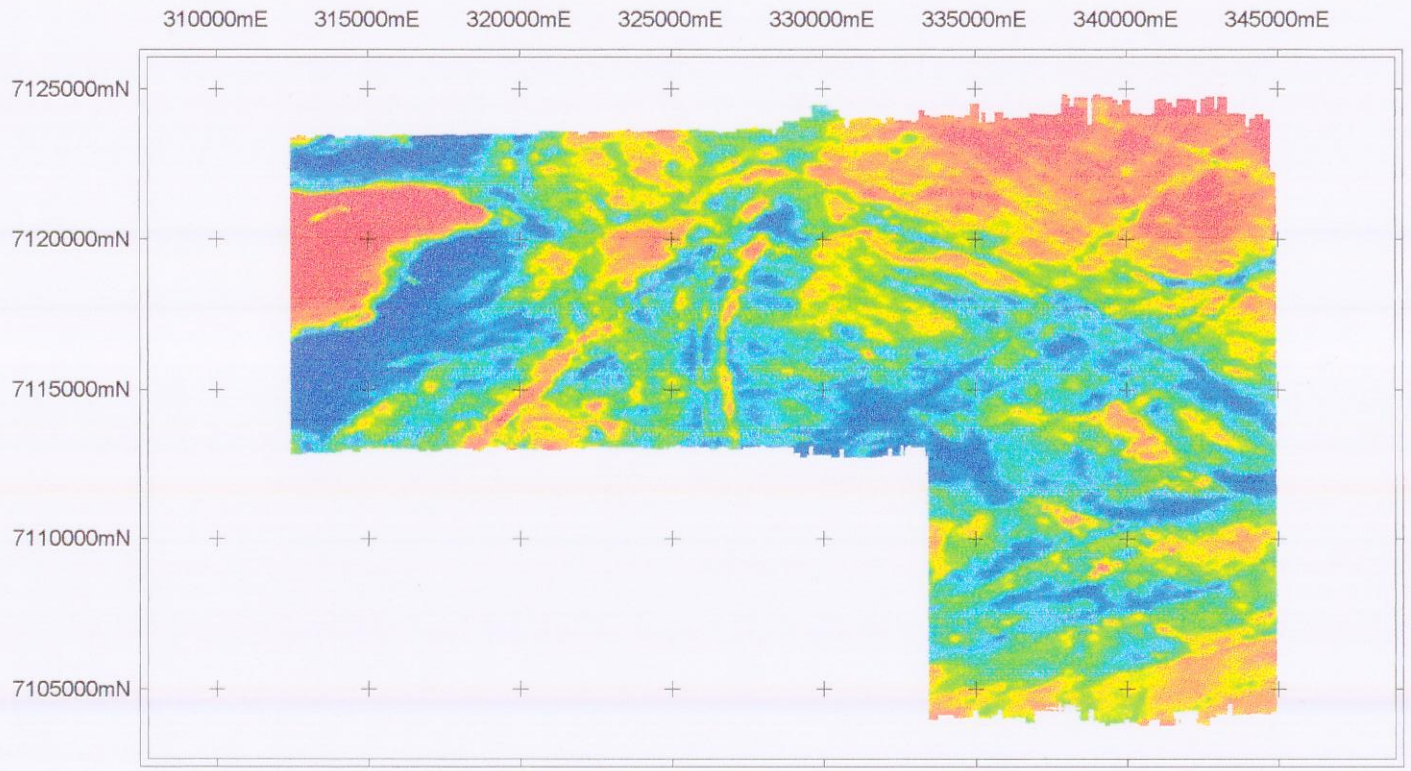



Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| Expectation Pty Ltd | |
|---|---|
| Total Count | |
| EL 2143 | |
| 1064 | |

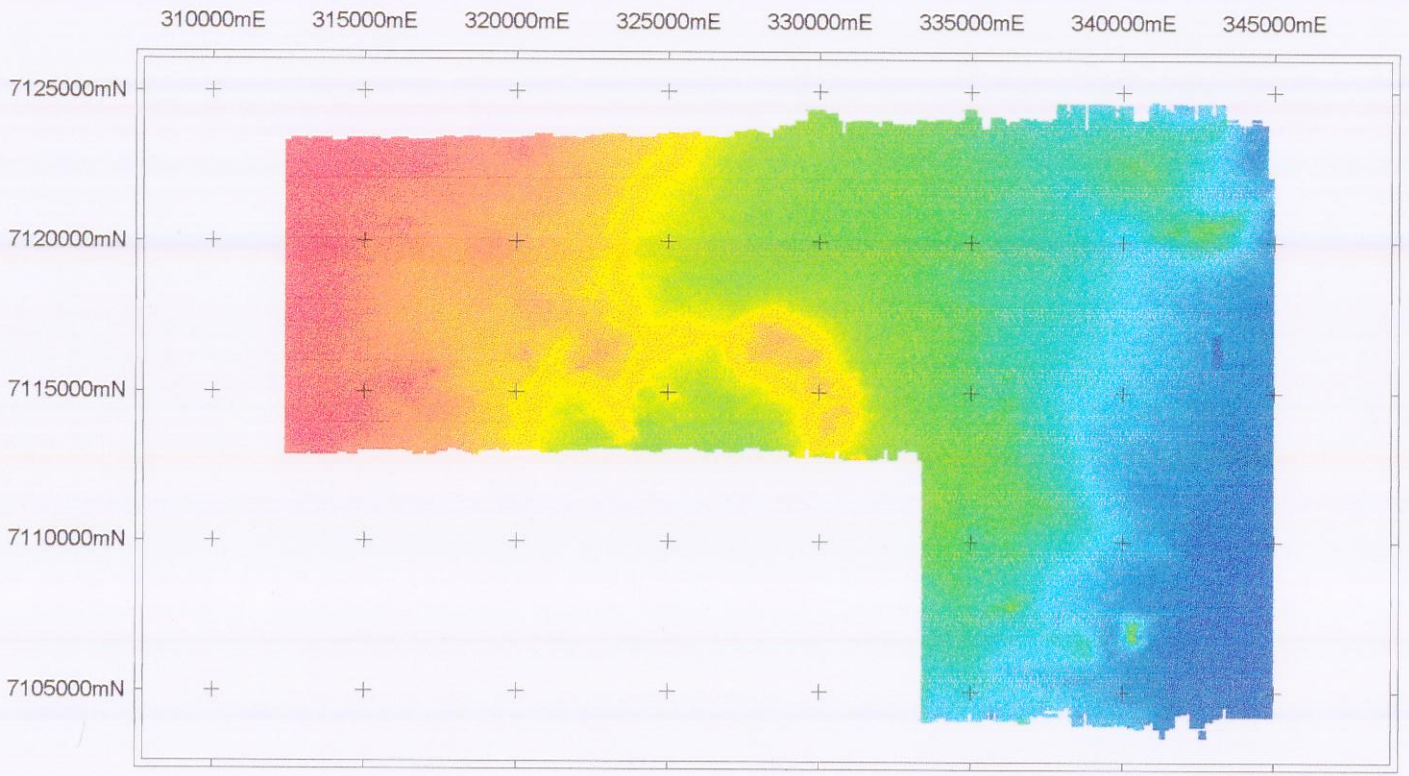



Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| Expectation Pty Ltd | |
|---|---|
| Total Magnetic Intensity<br>EL 2143 | |
| 1064 | |




Scale 1:250,000

0.0 2.0 4.0 6.0 8.0 10.0km

Projection: Transverse Mercator AMG Zone 53.

| Expectation Pty Ltd | |
|---|---|
| DTM | |
| EL 2143 | |
| 1064 | |

# MUSGRAVE BLOCK HOLDINGS LIMITED

A.C.N. 008 071 403

Head Office :
16/305 Victoria Avenue
Chatswood NSW 2067

Telephone : (02) 9412 3855
Facsimile : (02) 9412 3866

Perth Office :
**68 Sycamore Drive**
**Duncraig WA 6023**

**Telephone : (08) 9246 1213**
**Facsimile : (08) 9243 0445**
**E-mail : drummond@smartchat.net.au**


# ANNUAL REPORT

# EXPLORATION LICENCE EL2143

# MT IRWIN

# FOR THE YEAR

# TO

# 7 JULY 1999

## INTRODUCTION

This report covers the period from 8/7/98 to 7/7/99.

During the previous reporting period Musgrave Block Holdings Limited as Project Manager commissioned a detailed airborne geophysical survey, including both magnetics and radiometrics, and undertook initial interpretation.

During the year under review, the geophysical data was re-processed in order to search for possible diamondiferous intrusions, and fieldwork concentrated on geochemical assessment and determining the lithologies responsible for the different zones defined on the magnetics.

## TENEMENT AND MANAGEMENT MATTERS

EL2143 ("Mt Irwin") was granted to its applicant, Mr S Toteff, on 8 January 1996. Subsequently Mr Toteff entered into a Joint Venture arrangement with Expectation Pty Ltd a Perth-based private investment company. In turn AMF Holdings Limited, now renamed Musgrave Block Holdings Limited ("MBH"), has entered into an agreement with Expectation. MBH has been funding and managing exploration.

Mt Irwin was renewed until January 2000.

## WORK DONE

The tenement abuts the eastern edge of the Pitjantjatjara Lands. MBH has been negotiating with the Traditional Owners of the Lands and their representative executive concerning a widescale opening of the Pitjantjatjara Lands for exploration, and for a role for MBH within that framework.

While efforts have concentrated on these negotiations, effort and expenditure on Mt Irwin have been less than the minimum commitment level.

### 1. Reprocessing of Magnetics

MBH contracted Baigent Geophysics to re-process the magnetic data from the 1997 survey so as to seek signatures which may be indicative of diatremes. In turn, if diatremes were discovered, they would have potential to be of lamproitic or kimberlitic composition and to be diamondiferous.

MBH commissioned an upwards continuation technique as its management had found it to be a particularly suitable process in delineating low magnetic susceptibility contrast lamproites which had intruded magnetically quiet Palaeozoic sediments of the Canning Basin in the Ellendale area of Western Australia.

The application of the technique did not lead to the confident definition of targets.

While upward continuation is essentially a filtering process the Mt Irwin tenement essentially contains Musgrave metamorphic lithologies which either outcrop, or occur under a thin cover. In detail, the background magnetic variation is so high that it was found to mask any responses that might emanate from a weak susceptibility change from basement to a kimberlitic or lamproitic intrusion.

Any future diamond exploration will have to be by conventional stream sediment or loam sampling techniques.

## 2. Field Investigations

MBH undertook vehicular traverses and established that the tenement is suitable for appraisal by first pass surficial geochemical techniques.

Relatively fresh outcrop is not uncommon, and much of the tenement is underlain by residual weathered units. Where the lithologies are concealed by transported cover, the odd patches of fresh outcrop indicate that the cover is generally thin.

Calcrete concentrations within the transported soil profile are readily evident and will enable appraisal of the potential of the concealed basement.

MBH management, accompanied by a senior appraisal team from BHP Exploration spent several days on a geological and geochemical orientation of Mt Weir. It included visits to key areas proximal to the tenement to allow an understanding of Mt Weir within a broader geological framework. MBH is still awaiting the results of geochemical and petrological sampling programs carried out during this appraisal. They will be presented in the next Annual Report.

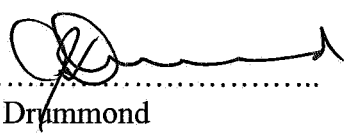
Of particular interest was an area of high magnetic response on the western edge of the tenement. It was defined as Unit 5 by Barrett Geophysical Consultants Pty Ltd in their assessment and interpretation of the aeromagnetic survey (maps presented in the previous Annual Report).

It occupies an easterly tapering wedge of about 25 sq km in extent. There is quite good outcrop within it of gabbro and the unit is most likely to be Giles Complex. Assuming this interpretation is correct this is the most easterly occurrence of it of which MBH is aware, and it significantly enhances the scope for eventual discovery of nickel and/or PGM mineralisation.

The regional magnetic data indicates that the gabbro extends westerly into, and across EL(a)157/97 which is in the Pitjantjatjara Lands and which is part of the MBH-Pitjantjatjara Mining Company Joint Venture.

**EXPENDITURE**

| | |
|---|---|
| Data acquisition and geophysical re-processing | $1,470 |
| Consultants and technical services | 28,240 |
| Travel and accommodation, field costs | 7,730 |
| Management and overheads at 10% | 3,740 |
| | $41,180 |



.....

A J Drummond
Managing Director
Perth
October 1999

# MUSGRAVE BLOCK HOLDINGS LIMITED

A.C.N. 008 071 403

Head Office :
16/305 Victoria Avenue
Chatswood NSW 2067

Telephone : (02) 9412 3855
Facsimile : (02) 9412 3866

Perth Office :
**68 Sycamore Drive**
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**Telephone : (08) 9246 1213**
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## ANNUAL TECHNICAL REPORT

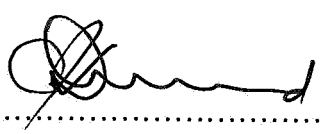
## EL 2143

## MT IRWIN

## PERIOD TO 7/7/1999







Andrew Drummond
Perth
12 July 2000

## 1. Geophysical Reprocessing

Andrew Drummond & Associates Pty Ltd commissioned re-processing of MBH's (previously AMF Holdings Ltd) aeromagnetic data which had been acquired during the previous year.

The aim was to use the process of Upwards Continuation in order to filter local anomalous responses from the regional background.

## 2. Geophysical Interpretation

The data ensuing from the Upwards Continuation was presented in stacked profile format. Each profile was examined in order to look for dipole responses which could be characteristic of kimberlitic intrusions. The strongly or nearly outcropping nature of the Musgrave Complex units in EL 2143 makes for very noisy magnetic data; and so identification of anomalous responses is not clear-cut. Nonetheless, several responses appeared encouraging.

After cross-referencing to published maps and aerial photography which was purchased from the Department of Environment, Heritage & Aboriginal Affairs several geophysical anomalies were discounted as being due to cultural effects.

At the co-ordinates tabulated below, anomalous responses require field follow-up.

| AMG Co-Ordinates of Upwards Continuation Aeromagnetic Anomalies | | |
|---|---|---|
| **Designator** | **Easting** | **Northing** |
| A | 338700 | 7106900 |
| B | 342700 | 7111900 |

## 3. Field Investigations

Several days were spent in the field with a senior evaluation team from BHP Exploration: it consisted of senior geological, geophysical and geochemical personnel. The particular aims were to evaluate the potential of the tenement to host major gold and Broken-Hill-style base metal deposits.

Of specific interest was the recognition that the highly magnetic Unit 4, as defined from MBH's detailed airborne geophysical survey (see last year's Annual Report) was of ultramafic to gabbroic character. It was interpreted as being a correlative of the Giles Complex intrusives and, as such, is prospective for nickel and platinum group elements deposits.

Samples were taken for petrological investigations, BLEG assaying and heavy mineral grain identification. Unfortunately, in a major downsizing of BHP's exploration group immediately after the field trip, the samples were not processed and no results are available.

The Upwards Continuation anomalies have yet to be field checked.

## 4. Follow-Up

MBH's plans for exploration in the Pitjantjatjara Lands and environs, in conjunction with the Aboriginal-owned Pitjantjatjara Mining Company, were thwarted by political agendas. No follow-up could be economically justified.

Po Box 261
Magill
SA 5072

13/10/00

Mr. Jeff Valentine
Company Exploration
Mineral Resources
GPO Box 1671
Adelaide SA 5001

Dear Jeff,

Re. EL 2143
Annual Technical Report to 7/1/00.

This is about the time when Manager of the project, Musgrave Block Holdings Pty Ltd (formerly Expectation Pty Ltd), was contemplating withdrawal from the JV. It seems they overlooked the reporting requirement. I believe, however, that during the 12 months period to 7 January 2000, very little was done. There is no technical data to report. I apologise for any inconvenience.

Regards,
Stephen Tobin.

# EL 2143

## SOUTH AUSTRALIA

## ANNUAL REPORT TO 7TH JANUARY 2001

Report by:

S. Toteff 21/2/01

Stephen Toteff, Ph D

# EL 2143 SOUTH AUSTRALIA
## Fifth annual report, to 7th January 2001

**INTRODUCTION:** This report outlines results of mineral exploration within EL 2143, situated in the eastern portion of the Musgrave Block and adjacent to the Northern Territory border.

**TENURE:** EL 2143, granted on 8th January 1996, expired on 7th January this year, and accordingly, an application was submitted for a replacement exploration licence. The new application (Fig. 1), of approximately 200 sq. km represents a reduction from the previous tenure by some 50%.

**JOINT VENTURE:** Since 1997, exploration on the tenement was managed by joint venture partner Expectation Pty Ltd (later Musgrave Block Holdings Pty Ltd). After expenditure of approximately $75,000 and flying a high quality airborne magnetic and radiometric survey, the company withdrew from the joint venture in mid-2000. Withdrawal was linked to the company being unable to raise exploration capital on the stock market, which was dependent on the granting of considerable exploration tenure within the Pitjantjatjara Lands. With fairly depressed mineral exploration activity throughout 2000, it has not been possible to secure a new partner, although there is some optimism for the 2001.

**WORK COMPLETED:** In 1999, Musgrave Block Holdings reported field confirmation of an interpreted ?layered intrusive (probable Giles Complex) in the western part of the tenement, as suggested in the geophysical consultant's report on the new airborne magnetic data (Barrett, 1997). Due to some unfortunate circumstances, however, petrological work on samples collected was never undertaken, and the samples lost to the joint venture.

Subsequent to their withdrawal, during the process of seeking a new joint venture partner for the tenement, it was realised that both petrological and geochemical encouragement would be advantageous. A field examination of the western portion of the tenement in November 2000, unfortunately provided evidence that the source of the western magnetic anomaly (Barrett's "Zone 5") is not a basic rock; on the contrary it is a granite intrusion, with visible magnetite (almost certainly Kulgera Suite). This interpretation is based mainly on observations in the hills situated just west of the tenement boundary, and immediately east of the Pitjantjatjara Lands. Some additional confirmation of a granitic source (although of lesser reliability) could be seen in shallow excavations along the western side of the new Stuart Highway, but otherwise exposure of granite in this part of the tenement is rare and limited to areas of subcrop of less than a few square metres close to the western boundary of the EL.

Bedrock exposure in the western part (indeed virtually all) of the tenement is almost exclusively limited to basic dykes (Alcurra Dyke Swarm) which are moderately to strongly magnetic, massive basic rocks that are very resistant to weathering. It is likely that subcropping

basic dykes, lacking any indications of their linearity, had been mistaken earlier for basics of the Giles Complex.

With the virtual absence of bedrock other than the basic dykes, surface sampling for indications of metal anomalism was limited to ironstone lag and calcrete, in addition to some small exposures of silicified ?bedrock in the vicinity of an interpreted fault along the northern margin of Zone 5 (see below). A total of 23 samples were analysed for base metals and Au. AMG co-ordinates and sample identification are listed in Table 1, and analytical results are provided in Appendices 1 and 2. No base metal anomalies are immediately evident from these results, although Au levels are interesting (to 0.07ppm).

In the field, ironstone samples were found to be mainly non-magnetic and no attempt was then made to separate non-magnetic from the relatively rare magnetic material. In hindsight, this was a mistake, as earlier sampling by Aberfoyle in 1995 had demonstrated that metal contents of the magnetic fraction (usually about 10% or less) was considerably higher than in the non-magnetic lag fragments. In fact some of the larger (and non-magnetic) ironstone fragments collected recently appeared to be ferricrete. A trial at AMDEL to separate the magnetic fraction from the now-pulverised samples using a Davis Tube proved impractical as only about 0.2% of the sample was found to consist of magnetic material (Appendix 3). Further lag sampling should aim to sample magnetic ironstone lag wherever possible.

Although calcrete results are not encouraging, the following should be considered in interpreting these. Silicification is evident in the area of sampling. Some is clearly a product of weathering processes and pedogenic, forming porcelainites, but in some cases silicified (possible) bedrock seems to also occur. Whether this is related to the former is unknown, nor is the possible affect on rock and therefore calcrete Au levels, including background, which might be very low. Initial analysis of calcrete at ANALABS using a detection limit of 1ppb was followed up with analysis at AMDEL using a much lower 0.05ppb D.L. (cyanide leach) on six of the nine samples to investigate this possibility of a very low Au background in the calcrete. The results show a greater range than those determined using the higher D.L. (0.8 - 5.5ppb compared with <1 - 2ppb).

A slightly curvilinear WNW-ESE trending fault interpreted from the airborne magnetics (Barrett, 1997) largely marks the northern limit of the above mentioned magnetic anomaly (Zone 5). If background Au levels in calcrete are indeed very low (around 0.5-1ppb) then it may be significant that the highest value (5.5ppb) was collected almost directly over this structure. Furthermore, ironstone lag (magnetic fraction) analysed by Aberfoyle (EL 2075) from near this structure, and about 3km to the SE of the calcrete sample, was anomalous in both Cu and Au (0.1% Cu, 0.08ppm Au). Some other lag samples from the vicinity were not, however, obviously anomalous. Nevertheless, it seems that additional calcrete and ironstone lag sampling is warranted, not only along the northern structure, but also across a NNE-trending fault interpreted south of Zone 5, intersecting the northern structure near the location of the Cu-Au anomalous lag sample (see Barrett, 1997).

# TABLE 1

## SAMPLES ANALYSED
(YEAR T0 7/1/01)
CLASSIFICATION AND AMG CO-ORDINATES (AGD 84 SYSTEM)

| Sample | Type | Co-ordinates E | N |
|---|---|---|---|
| C1 | C | 318870 | 7120940 |
| C2 | C | 316400 | 7119700 |
| C3 | C | 316171 | 7120240 |
| C4 | C | 316285 | 7120567 |
| C5 | C | 316685 | 7120549 |
| C6 | C | 317268 | 7121427 |
| C7 | C | 317408 | 7121323 |
| C8 | C | 317588 | 7121098 |
| C9 | C | 318313 | 7121092 |
| L1 | L | 316001 | 7118742 |
| L2 | L | 314530 | 7121588 |
| L2B | L | 316285 | 7120567 |
| L3 | L | 317268 | 7121427 |
| L4 | L | 317408 | 7121323 |
| L5A | L | 317588 | 7121098 |
| L5B | L | 312149 | 7116989 |
| L6 | L | 313071 | 7116227 |
| R1 | Rs | 314585 | 7121670 |
| R2 | Ri | 314708 | 7122007 |
| R3 | Ri | 316340 | 7120539 |
| R3A | Rs | 314708 | 7122007 |
| R12 | Ri | 319651 | 7120512 |
| R13 | Ri | 319880 | 7120824 |

C = calcrete; L = ironstone lag; Rs = silicified ? bedrock; Ri = ironstone float/ subcrop

**PROPOSED WORK:** In addition to continuing efforts to farm out the tenement, it is proposed, unless a farm out is secured quickly, to undertake further geochemical sampling on the tenement, with emphasis on the northern fault adjacent to magnetic zone 5, and over selected magnetic anomalies in the central part of the area where there is some potential for base metal mineralisation in the metasediments.

**EXPENDITURE:** Expenditure on EL 2143 during the 12 month period to 7th January 2001 was $10,695. Details are provided on the following page.

**REFERENCE:**

Barrett, D. M., 1997: EL 2143, Mt. Irwin area, Musgrave Block, South Australia. Interpretation of airborne geophysical data. A report for Expectation Pty Ltd.

# EL 2143

Expenditure for twelve months to 7/1/01

| | $ |
|---|---|
| GEOLOGY | 6,160 |
| GEOCHEMISTRY | 1,700 |
| VEHICLE, FUEL | 1,330 |
| TENURE | 1,505* |
| TOTAL | 10,695 |

* Includes $1,323.80 by Musgrave Block Holdings on 20/3/00, not previously listed

# APPENDIX 1

A N A L A B S

**Analabs Pty. Ltd.**
ACN 004 591 664
16 Sunbeam Road, Glynde
South Australia 5070
Telephone : (08) 8336 5099
Facsimile : (08) 8336 5564

Our reference : AD021200
Your reference : **122756**
Project code :
Date received : 23/11/00
Date reported : 28/11/00

Stephen Toteff

Stephen Toteff
PO Box 261
MAGILL

SA 5072
Australia

Number of pages of results : 3
Number of Samples : 23
First Sample : CALCRETE 1
Last Sample : R 13

Invoice to:

Electronic Data Transmission :
Modem / /
Facsimile / /
Disk Report / /

Results t

Results to:

Remarks :

Authorised by .....
On behalf of:

David Nelson
Laboratory Manager

The results in the following analytical report pertain to the samples provided to this laboratory for preparation and/or analysis as requested by the client.

A N A L A B S

Our reference : AD021200
Your reference : **122756**
Project code :
Report date : 28/11/00
Report Number : 00022659
Report status : Final
Page : 1 of 3

**Analabs Pty. Ltd.**
ACN 004 591 664
16 Sunbeam Road, Glynde
South Australia 5070
Telephone : (08) 8336 5099
Facsimile : (08) 8336 5564

# ANALYTICAL DATA

| Sample | Au | Au(R) | Au(S) | Cu | Ni | Co |
|---|---|---|---|---|---|---|
| CALCRETE 1 | 2 | 1 | -- | 6 | 6 | 3 |
| CALCRETE 2 | 1 | -- | -- | 4 | 4 | 3 |
| CALCRETE 3 | <1 | -- | -- | 4 | 4 | 3 |
| CALCRETE 4 | <1 | -- | -- | 7 | 6 | 4 |
| CALCRETE 5 | <1 | -- | -- | 3 | 2 | 2 |
| CALCRETE 6 | 1 | 1 | -- | 5 | 4 | 3 |
| CALCRETE 7 | <1 | -- | -- | 5 | 5 | 3 |
| CALCRETE 8 | <1 | -- | -- | 3 | 2 | 2 |
| CALCRETE 9 | <1 | -- | <1 | 2 | 3 | 2 |
| L 1 | - | - | - | - | - | - |
| L 2 | - | - | - | - | - | - |
| L 2B | - | - | - | - | - | - |
| L 3 | - | - | - | - | - | - |
| L 4 | - | - | - | - | - | - |
| L 5A | - | - | - | - | - | - |
| L 5B | - | - | - | - | - | - |
| L 6 | - | - | - | - | - | - |
| R 1 | - | - | - | - | - | - |
| R 2 | - | - | - | - | - | - |
| R 3 | - | - | - | - | - | - |
| R 3A | - | - | - | - | - | - |
| R 12 | - | - | - | - | - | - |
| R 13 | - | - | - | - | - | - |
| Method | P603 | P603 | P603 | A603 | A603 | A603 |
| Units | ppb | ppb | ppb | ppm | ppm | ppm |
| Detection Limit | 1 | 1 | 1 | 1 | 1 | 1 |

Notes: - = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

Our reference : AD021200
Your reference : **122756**
Project code :
Report date : 28/11/00
Report Number : 00022659
Report status : Final
Page : 2 of 3

**Analabs Pty. Ltd.**
ACN 004 591 664
16 Sunbeam Road, Glynde
South Australia 5070
Telephone : (08) 8336 5099
Facsimile : (08) 8336 5564

# ANALYTICAL DATA

| Sample | Au | Au(R) | Au(S) | Ag | Co | Cu |
|---|---|---|---|---|---|---|
| CALCRETE 1 | -- | -- | -- | - | - | - |
| CALCRETE 2 | - | - | - | - | - | - |
| CALCRETE 3 | - | - | - | - | - | - |
| CALCRETE 4 | - | - | - | - | - | - |
| CALCRETE 5 | - | - | - | - | - | - |
| CALCRETE 6 | - | - | - | - | - | - |
| CALCRETE 7 | - | - | - | - | - | - |
| CALCRETE 8 | - | - | - | - | - | - |
| CALCRETE 9 | - | - | - | - | - | - |
| L 1 | <0.01 | <0.01 | -- | 0.2 | 5.7 | 15.8 |
| L 2 | <0.01 | -- | -- | 0.1 | 6.5 | 27.0 |
| L 2B | 0.03 | -- | -- | 0.1 | 9.5 | 29.3 |
| L 3 | 0.04 | 0.03 | -- | 0.1 | 8.6 | 32.7 |
| L 4 | 0.02 | -- | -- | <0.1 | 8.5 | 33.4 |
| L 5A | 0.02 | -- | -- | <0.1 | 8.8 | 18.1 |
| L 5B | <0.01 | -- | -- | 0.2 | 7.1 | 26.2 |
| L 6 | 0.07 | 0.05 | -- | 0.1 | 9.2 | 30.0 |
| R 1 | <0.01 | -- | -- | <0.1 | 1.2 | 5.1 |
| R 2 | <0.01 | <0.01 | -- | 0.1 | 8.7 | 51.7 |
| R 3 | <0.01 | -- | -- | 0.1 | 8.5 | 17.0 |
| R 3A | 0.02 | -- | -- | 0.1 | 1.2 | 5.2 |
| R 12 | 0.02 | -- | -- | 0.1 | 6.8 | 37.3 |
| R 13 | 0.04 | -- | -- | 0.2 | 4.5 | 26.2 |
| Method | P649 | P649 | P649 | A649 | A649 | A649 |
| Units | ppm | ppm | ppm | ppm | ppm | ppm |
| Detection Limit | 0.01 | 0.01 | 0.01 | 0.1 | 0.5 | 0.5 |

Notes: - = not analysed. -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

A N A L A B S

Our reference : AD021200
Your reference : **122756**
Project code :
Report date : 28/11/00
Report Number : 00022659
Report status : Final
Page : 3 of 3

**Analabs Pty. Ltd.**
ACN 004 591 664
16 Sunbeam Road, Glynde
South Australia 5070
Telephone : (08) 8336 5099
Facsimile : (08) 8336 5564

# ANALYTICAL DATA

| Sample | Fe | Mn | Ni | Pb | Zn | |
|---|---|---|---|---|---|---|
| CALCRETE 1 | - | - | - | - | - | |
| CALCRETE 2 | - | - | - | - | - | |
| CALCRETE 3 | - | - | - | - | - | |
| CALCRETE 4 | - | - | - | - | - | |
| CALCRETE 5 | - | - | - | - | - | |
| CALCRETE 6 | - | - | - | - | - | |
| CALCRETE 7 | - | - | - | - | - | |
| CALCRETE 8 | - | - | - | - | - | |
| CALCRETE 9 | - | - | - | - | - | |
| L 1 | 26.970 | 423 | 9.8 | 10.7 | 20.2 | |
| L 2 | 24.920 | 303 | 11.7 | 11.1 | 28.7 | |
| L 2B | 37.920 | 403 | 13.9 | 17.7 | 46.4 | |
| L 3 | 35.160 | 579 | 22.0 | 19.4 | 38.9 | |
| L 4 | 34.420 | 527 | 19.1 | 14.4 | 47.8 | |
| L 5A | 29.520 | 872 | 7.5 | 20.2 | 28.1 | |
| L 5B | 33.100 | 388 | 24.1 | 12.7 | 48.0 | |
| L 6 | 25.650 | 585 | 53.7 | 11.0 | 39.5 | |
| R 1 | 1.870 | 127.0 | 3.4 | 3.5 | 2.9 | |
| R 2 | 26.130 | 157.0 | 20.2 | 28.8 | 37.7 | |
| R 3 | 23.880 | 187.0 | 7.5 | 0.8 | 53.6 | |
| R 3A | 1.980 | 97.0 | 3.2 | <0.5 | 4.7 | |
| R 12 | 21.280 | 160.0 | 12.8 | 2.6 | 55.7 | |
| R 13 | 29.280 | 190.0 | 9.0 | 4.2 | 21.4 | |
| Method | A649 | A649 | A649 | A649 | A649 | |
| Units | % | ppm | ppm | ppm | ppm | |
| Detection Limit | 0.001 | 0.5 | 0.5 | 0.5 | 0.5 | |

Notes: - = not analysed, -- = element not determined, I.S. = insufficient sample, L.N.R. = listed not received

# APPENDIX 2

amdel

This Laboratory is accredited by the National Association of Testing Authorities, Australia. The test(s) reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.

MINERAL CHEMISTRY

Amdel Laboratories Ltd
PO Box 338
Torrensville Plaza SA 5031
ABN 71 009 076 555

Telephone (08) 8416 5300
Facsimile (08) 8234 0321

Mr Stephen Toteff
PO Box 261
MAGILL SA 5072

# FINAL ANALYSIS REPORT

Your Order No:

Our Job Number: 0AD2674

Sample rec'd: 19/12/00

Results reported: 21/12/00

No. of samples: 6

Results apply to sample(s) as submitted by the client.

Report comprises a letter and report pages: 1 to 1

Approved Signature:

for
Alan Ciplys
Manager, Geoanalytical, Eastern Australia

Report Codes:
N.A. - Not Available
L.N.R. - Listed But Not Received
I.S. - Insufficient Sample

Distribution Codes:
CC - Carbon Copy
EM - Electronic Media
MM - Magnetic Media

amdel

Job: 0AD2674
O/N:

Final

ANALYTICAL REPORT

| SAMPLE | Au | Au Dup |
|---|---|---|
| C1 | 5.5 | -- |
| C2 | 1.2 | -- |
| C4 | 2.0 | -- |
| C6 | 2.5 | -- |
| C8 | 0.80 | 0.95 |
| C9 | 0.95 | -- |
| UNITS | ppb | ppb |
| DET.LIM | 0.05 | 0.05 |
| SCHEME | BLEG1C | BLEG1C |

# APPENDIX 3

amdel

Amdel Limited
Mineral Services

A.B.N. 30 008 127 802

Telephone (Aust): (08) 8416 5200
(Int): 61 8 8416 5200
Facsimile (Aust): (08) 8352 8243
(Int): 61 8 8352 8243

Osman Place
Thebarton
South Australia 5031
AUSTRALIA

PO Box 338
Torrensville Plaza
South Australia 5031
AUSTRALIA



15 January 2001

Steve Toteff
PO Box 261
MAGILL SA 5072

# REPORT G272ML00

## MAGNETIC SEPARATION OF TWO SAMPLES

| | |
|---|---|
| YOUR REFERENCE: | Note received 15/12/00 |
| SAMPLE IDENTIFICATION: | L4 and R12 |
| MATERIAL: | Pulverised rock |
| DATE RECEIVED: | 15 December 2000 |
| PROJECT MANAGER: | Frank Radke |

**Paul G Capps**
**Manager, Mineral Processing**

*FR:msm*

# MAGNETIC SEPARATION OF TWO SAMPLES

## 1. INTRODUCTION

Several samples were submitted by Steve Toteff for magnetic separation and chemical analysis of the magnetic product. It was requested that two of the samples (Samples L4 and R12) be tested to determine the amount of magnetic material which could be obtained in a reasonable amount of time.

## 2. PROCEDURE

Both samples L4 and R12 were separated in a Davis tube at an agitation rate of 60 strokes per minute and a magnetic field current of 1.0 amps. Each sample was fed through the Davis tube for approximately ½ hour. Each sample was weighed before separation and remaining sample weight after separation to determine the amount of material separated. The non-magnetic product was discarded and the magnetic product collected and weighed.

## 3. RESULTS

The amount of magnetic material obtained during separation of each sample in the Davis tube for ½ hour is as follows.

| Sample | Magnetic Product | |
|---|---|---|
| | Wt (g) | Wt % |
| L4 | 0.11 | 0.21 |
| R12 | 0.20 | 0.15 |

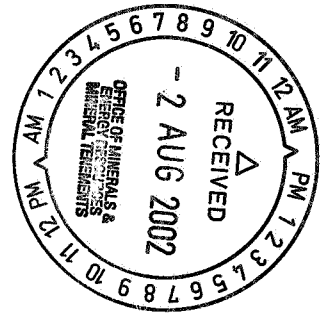
# EL 2818
# South Australia

## FIRST ANNUAL REPORT

### 12 MONTH PERIOD TO 7TH JUNE 2002

Report by S.Toteff, PhD.

July 2002



**Introduction**:

EL 2818, of 219 sq. km (Fig. 1) is situated on the eastern side of the Musgrave Block. The tenement was granted in June 2001, replacing EL 2143 of which it is approximately a 50% reduction. During the past 12 months, emphasis has been on seeking a joint venture partner (diamonds), but considerable field work, in combination with further processing and interpretation of the airborne magnetic data, has also been undertaken. There was an initial assessment of the Cu-Au potential of the western part of the area, as well as some additional evaluation of the Pb-Zn potential of the central portion of the tenement.

**Work completed**:

1. Research/ conceptual work:

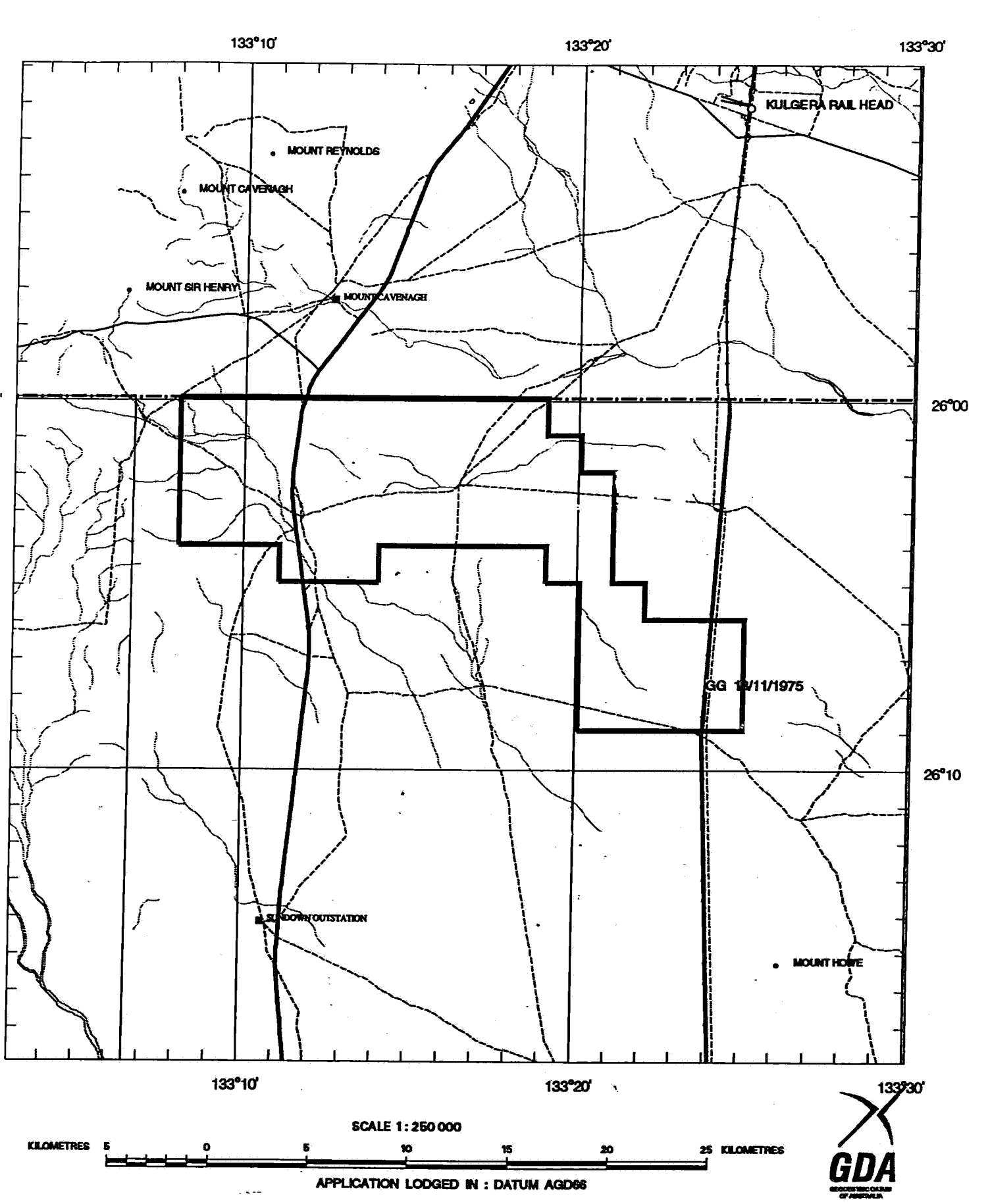
(a) *Diamonds*. Following literature research on diamond mineralisation, it is suggested that there exists potential for diamond occurrence within the tenement area. The geological setting of the region does not conform to the general observation or 'rule' that economic diamond-bearing kimberlite magmatism is restricted to Archaean cratons. Exceptions such as Argyle (lamproite-hosted) in a Proterozoic mobile belt exist, but here also, cratonisation (ca. 1800 Ma) occurred before lamproite magmatism (ca. 1200 Ma). But a peak in lamproite and related magmatism around 1200 Ma is recorded worldwide and therefore draws attention to the mafic/ultramafic magmatism of this age in the Musgrave Block. The Musgrave Orogeny occurred ca. 1200 Ma and was accompanied by mafic/ultramafic magnatism (Giles Complex) roughly distributed along an arcuate zone with associated gravity ridge attributed to relatively shallow mantle, localised by deep-seated faults. EL 2818 lies adjacent to this gravity ridge.. Deep-seated faults are also considered to have played important roles in tapping deep mantle sources, extending down into the stability field of diamond. It may not be too much of a digression from the above 'rule' on diamond occurrence to consider post-tectonic lamproite/kimberlite activity on the Musgrave Block, possibly accompanying mafic dykes (eg. Alcurra Dyke swarm through EL 2818). considered to be co-magmatic with the Giles Complex. Furthermore, recently available state gravity images indicate a "G2"-parallel structure situated well to the west of O'Driscoll's main G2 gravity lineament. The tenement lies virtually on this newly identified structure, with consequent positive implications for diamond potential.

Therefore it is considered that there is significant potential for diamond mineralisation in the tenement area. Clusters of roots zones of ~1200 Ma pipes are perhaps the favoured target. Younger periods of kimberlite/lamproite activity, again localised by the G2-parallel structure are, of course, not precluded, and would, of course, better fit the diamond "model".

No data on any previous sampling for diamond indicator minerals has been found, but is noted that drainage in the tenement area is mainly poor to non-existent and any previous sampling for these minerals would most likely have been too widely spaced to adequately assess the area.

Caldera Resources have examined and reprocessed the magnetic data from EL 2818. While declining to participate in a joint venture, Caldera have noted three targets of interest. Their positions are given below:

| Target | AMG co-ordinates | Shape (plan) |
|---|---|---|
| 1 | 7120800N, 313800E | dyke-like |
| 2 | 7118500N, 316650E | circular |
| 3 | 7109550N, 341450E | circular |


133°10'
133°20'
133°30'
KULGERA RAIL HEAD
MOUNT REYNOLDS
MOUNT CAVENAGH
MOUNT SIR HENRY
MOUNT CAVENAGH
26°00
GG 19/11/1975
26°10
SUNDOWN OUTSTATION
MOUNT HOWE
133°10'
133°20'
133°30'
SCALE 1: 250 000
KILOMETRES 5 0 5 10 15 20 25 KILOMETRES
APPLICATION LODGED IN : DATUM AGD66
GDA

EL 2818

(b) *Ni-Cu-PGE's.* The Ni-Cu-PGE potential of the Giles Complex is well known, with significant Ni discoveries in the western portion of the Musgrave Block. A review of the tenement's magnetics, and comparison with recently acquired magnetics from areas west of the EL where Giles complex intrusives have been mapped has concluded that substantial mafic/ultramafic intrusives probably occur in EL 2818 also. This conclusion is reinforced by the above-mentioned gravity ridge, its relationship to known Giles Complex bodies, and its proximity to the EL.

In contrast to earlier assumptions about this tenement, it is also concluded that these mafic intrusives are likely to be represented by magnetic lows, first suggested by CRAE in 1979 following regional magnetic interpretation.

Of immediate significance for EL 2818 is an ultramafic source to a magnetic low about 5 km south of the tenement. Discovered by CRAE in 1995 by shallow aircore drilling within EL 2020, and petrologically identified as troctolite/harzburgite with minor sulphides, this Giles Complex equivalent recorded anomalous Ni (to 3300 ppm in weathered zone) and 16 ppb Pd. Within EL 2818, anorthosite occurs in situ (exposed in small pit), and just west of the EL boundary there is float of metabronzitite. This re-interpretation of the magnetics consequently has significantly upgraded the Ni potential of EL 2818.

2. Field work:

*CuAu, Au, PbZn.* A number of interpreted demagnetised zones (= alteration?), shears and discrete magnetic highs, mostly identified by Barrett Geophysics (see EL 2143 reports) were assessed with soil and/or calcrete traverses. Most work was concentrated in the central part of the tenement. Reconnaissance sampling was undertaken over 15 discrete magnetic highs, and 8 interpreted demagnetised zones including shears. Sample locations are provided in Appendix 1.

At possibly a major proportion of sample sites, nature of the cover is uncertain and may be mostly transported, perhaps being granitic outwash sourced from the west, north and possibly east. No significant Cu, Pb, Zn or Au levels are evident in the batch of 52 samples of soil and calcrete selected for analysis (Appendix 2). Maxima reported from soils are: 39 ppm Cu, 7.5 ppm Pb, 37 ppm Zn, 40 ppm Ni, 3.6 ppb Au, with a maximum of 2.9 ppb Au in calcrete.

3. Magnetic interpretation: Apart from ongoing interpretation of existing images of the magnetic data, some further data processing has been carried out, assisting in identification of possible mafic intrusives (see above), and in resolution of the structure in the vicinity of the large oxidised granite body situated in the western part of the tenement, which has CuAu potential.

**Future work**: Following anticipated tranfer of ownership of the tenement to Terramin Australia Limited, an increased rate of expenditure is expected. Concentration will be on field assessment of the EL's Ni and CuAu potential with soil geochemistry where appropriate, and RAB drilling.

**Expenditure**:

A total of $26,850 has been spent on the tenement during the past 12 months. Details are provided below.

| | $ |
|---|---|
| GEOLOGY | 11,700 |
| GEOPHYSICS | 6,280 |
| GEOCHEMISTRY | 4,550 |
| VEHICLE/FUEL | 3,340 |
| TENURE | 980 |
| TOTAL | 26,850 |

# APPENDIX 1

EL 2818

Sample ledger OCTOBER - NOVEMBER 2001.

| SAMPLE ID | AMG CO-ORDINATES (AGD 84) E | N | TYPE c = calcrete s = soil L = Ironstone tag (mag. fraction) | DEPTH (cm) | COMMENTS |
|---|---|---|---|---|---|
| ANOM5-L01 | 330250 | 7118450 | L | | rare lag: v. small sample. |
| NOM5-S01 | " | " | S | 15-25 | quartzite fragments |
| " S02 | 330250 | 7118500 | S | 30-50 | |
| KC-01 | 328250 | 7120550 | C | 0-10 | some carbonaceous |
| KS-01 | " | " | S | 10-20 | calcrete common |
| KL-01 | " | " | L | | <<5% magnetite |
| KS-02 | 328050 | 7120550 | S | 15-25 | calcrete abundant |
| KS-03 | 328450 | 7120550 | S | 10-20 | calcrete below |
| KC02 | " | " | C | 20-25 | |
| KS-04 | 328650 | 7120550 | S | 35-55 | p-as. transported. no calcrete. |
| KS-05 | 328810 | 7120410 | S | 30-50 | " " |
| NOM6-S01 | 330280 | 7117550 | S | 45-60 | incr. weath. ? mafic l. part of sample. |
| " -S02 | 330280 | 7117600 | S | 45-60 | weathered - becomes intrusive? in l. part. |
| NOM7-S01 | 332340 | 7117300 | S | 40-50 | probably transported |
| " -S02 | 332340 | 7117350 | S | 50-65 | decomp. ? mafic l. part |
| NOM8-S01 | 331477 | 7116080 | S | 60-70 | angular qtz fragments |
| " -S02 | 331477 | 7116130 | S | 65-75 | " " |
| LS-01 | 326700 | 7118550 | S | 20-30 | calcrete at bottom + weathered. ? granite |
| L-01 | 326700 | 7118550 | L | | mag. fraction ~10% |
| LS-02 | 326623 | 7118306 | S | 50-60 | ? granite at bottom |
| LS-03 | 326900 | 7118550 | S | 40-50 | granite at bottom. minor calcrete |
| JS-01 | 325700 | 7116150 | S | 40-60 | Top 50 cm transported sand |

| SAMPLE ID | AMG CO-ORDINATES E | N | TYPE | DEPTH (cm) | COMMENTS |
|---|---|---|---|---|---|
| NS-02 | 325620 | 7116150 | S | 55-70 | mg. weath. granitoid in l. part. No calcrete. |
| VS-03 | 325780 | 7116150 | S | 45-60 | " " |
| S-01 | 322350 | 7115800 | S | 35-45 | weath. ?dolar. granitoid |
| S-02 | 322250 | 7115900 | S | 15-25 | " |
| S-03 | 322450 | 7115620 | S | 50-60 | com. calcrete in mg. granitoid. |
| VOM9-S01 | 322200 | 7116650 | S | 40-50 | 15-20 cm of decomp f-mg. granitoid at bottom |
| " -S02 | 322200 | 7116700 | S | 15-25 | weath fig granite at bottom. |
| 4L-01 | 321250 | 7119860 | L | | |
| 402-C1 | 319137 | 7118112 | C | 0-10 | |
| VOM10-S01 | 337340 | 7110900 | S | 60-70 | decomp. granitoid. Sand cover |
| " -S02 | 337340 | 7110950 | S | 70-80 | " " |
| VOM11-S01 | 337660 | 7110850 | S | 20-30 | weath. granite, v. minor calcrete |
| " -S02 | 337660 | 7110900 | S | 50-60 | sand over decomp. granitoid, minor calcrete. |
| VOM12-S01 | 337925 | 7110500 | S | 50-60 | " " |
| -S02 | 337925 | 7110550 | S | 50-60 | " " |
| -S03 | 338300 | 7110600 | S | 40-50 | " " |
| VOM13-S01 | 339200 | 7108980 | S | 70-80 | transp. Sand over calcreted? granite |
| VOM14-S01 | 339710 | 7109060 | S | 60-70 | ?? transported |
| -S02 | 339710 | 7109100 | S | 60-80 | ?mafic + qtz |

| SAMPLE ID | AMG CO-ORDINATES | | TYPE | DEPTH (cm) | COMMENTS |
|---|---|---|---|---|---|
| | E | N | | | |
| ANOM 15 - S01 | 341485 | 7109518 | S | 30 - 40 | ANOMALY 'B' OF D. BARRETT. calcrete + granite at base |
| " - S02 | 341485 | 7109568 | S | 35 - 45 | " " |
| AREA I - C1 | 339920 | 7111130 | C | 50 - 100 | NS TRAVERSE OVER INTERP. SZ |
| " - C2 | 339912 | 7110980 | C | 50 - 100 | |
| " - C3 | 339903 | 7110830 | C | 50 - 100 | 150M SPACING |
| " - C4 | 339892 | 7110680 | C | 0 - 50 | SAMPLING FROM |
| " - C5 | 339880 | 7110530 | C | 50 - 120 | RAILWAY CONSTRUCTION |
| " - C6 | 339873 | 7110380 | C | | PITS. |
| " - C7 | 339867 | 7110230 | C | 70 - 100 | |
| " - C8 | 339858 | 7110080 | C | 70 - 100 | S-end traverse |
| " - C9 | 339926 | 7111280 | C | 100 - 120 | |
| " - C10 | 339944 | 7111580 | C | 50 - 100 | 300 N of C9 |
| " - C11 | 339960 | 7111880 | C | | " - " C (N end traverse) |
| NOM 16 - S02 | 339400 | 7107180 | S | 50 - 60 | weath. ?basic dyke at base. |
| NOM 17 | | | | | TRANSPORTED SAND NO SAMPLES. |
| NOM 18 - S01 | 331390 | 7120150 | S | 60 - 70 | TRANSPORTED SAND OVER CLAYEY SOIL. |
| " - S02 | 331390 | 7120200 | S | 40 - 50 | Transp. sandy soil over calcrete nodules |
| " - C2 | 331390 | 7120200 | C | 50 - 55 | |
| NEAN - S01 | 320597 | 7120146 | S | 70 - 80 | ?transported soil over calcrete ± stone |
| " - C1 | 320597 | 7120146 | C | 80 - 85 | small sample - at base of soil hole. |
| EAN2 - S01 | 319690 | 7120651 | S | 60 - 80 | Sand over calcrete ± stone fragments |

| SAMPLE ID | AMG CO-ORDINATES E | N | TYPE | DEPTH (cm) | COMMENTS |
|---|---|---|---|---|---|
| NEAN2 - C1 | 319690 | 7120651 | C | 80 - 85 | AT BASE OF SOIL HOLE. |
| " - S02 | 319630 | 7120583 | S | | |
| " - C2 | 319630 | 7120583 | C | | calcrete at base of soil hole. |
| JEAN5 - S01 | 320000 | 7120950 | S | 70 - 80 | ?? transported |
| " - S02 | 320062 | 7121017 | S | 70 - 85 | " " |
| " - S03 | 320119 | 7121084 | S | 70 - 80 | ?? residual |
| JEAN6 - S01 | 319630 | 7121300 | S | 30 - 40 | ? resid. soil on calcrete |
| " - C1 | 319630 | 7121300 | C | 40 - 45 | base of above. |
| " - C2 | 319530 | 7121207 | C | 60 - 70 | ? transported soil above. |
| " - C3 | 319436 | 7121107 | C | 50 - 60 | " " |
| " - C4 | 319789 | 7121463 | C | 60 - 65 | transported sand above. |
| 4NEF1 - S01 | 321250 | 7118200 | S | 70 - 80 | transported sand above. |
| " - C1 | 321250 | 7118200 | C | 80 - 85 | |
| 4NEF2 - S01 | 321236 | 7118498 | S | 75 - 85 | poss. transported sand over. |
| 4NEF4 - S01 | 321210 | 7119094 | S | 50 - 60 | incr. calcrete. |
| " - C1 | 321210 | 7119094 | C | 60 - 70 | minor vein quartz ± tr. Fe oxides. |
| 4NEF5 - S01 | 321150 | 7119150 | S | 70 - 80 | |
| " - C1 | 321150 | 7119150 | C | 80 - 85 | |
| 4NEF6 - S01 | 321250 | 7119300 | S | 50 - 60 | |
| " - C1 | 321250 | 7119300 | C | 60 - 70 | some qtz fragments + ? granite |
| 4NEF7 - S01 | 321250 | 7119400 | S | 15 - 20 | 170 m north of sample 773452 |
| " - C1 | 321250 | 7119400 | C | 20 - 25 | Becomes massive. |
| " - L1 | 321250 | 7119400 | L | " | common lag, <<10% magnetic |

| SAMPLE ID | AMG CO-ORDINATES E | N | TYPE | DEPTH (cm) | COMMENTS |
|---|---|---|---|---|---|
| Z4NEF8-S01 | 321250 | 7119550 | S | 10 - 20 | |
| " -C1 | 321250 | 7119550 | C | | Common calcrete float |
| Z4NEF9-S01 | 321250 | 7119700 | S | 10 - 25 | |
| " -C1 | 321250 | 7119700 | C | 0 - 25 | abundant calcrete |
| Z4NE11-C1 | 321850 | 7119549 | C | 0 - 10 | interp. intersection of NW & NE faults. common calcrete. |

# APPENDIX 2

EL 2818
SOIL + CHLORETE

amdel

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MINERAL CHEMISTRY

Amdel Laboratories Ltd
PO Box 338
Torrensville Plaza SA 5031
ABN 71 009 076 555

Telephone (08) 8416 5300
Facsimile (08) 8234 0321

Mr Stephen Toteff
PO Box 261
MAGILL SA 5072

# FINAL ANALYSIS REPORT

Your Order No:

Our Job Number: 2AD0237A

Sample rec'd: 07/02/02

Results reported: 18/02/02

No. of samples: 51

Results apply to sample(s) as submitted by the client.

Report comprises a letter and report pages:A:1 to 1, B:1 to 1.

Approved Signature:

for
Alan Ciplys
Manager, Geoanalytical Central Region

Report Codes:
N.A. - Not Available
L.N.R. - Listed But Not Received
I.S. - Insufficient Sample

Distribution Codes:
CC - Carbon Copy
EM - Electronic Media
MM - Magnetic Media

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Job: 2AD0237A
O/N:

Final

# ANALYTICAL REPORT

| SAMPLE | Au | Au Dp1 | Cu | As |
|---|---|---|---|---|
| KC-01 | 1.9 | -- | 7.5 | 3.5 |
| KC-02 | 1.1 | 1.6 | 7.5 | 4.5 |
| Z402-C1 | 2.9 | -- | 7.0 | 4.0 |
| AREA I-C2 | 0.7 | -- | 15.0 | 3.0 |
| AREA I-C4 | 0.6 | -- | 5.5 | 2.0 |
| AREA I-C6 | 0.8 | -- | 12.0 | 2.0 |
| AREA I-C8 | 0.8 | -- | 12.0 | 2.5 |
| AREA I-C9 | 0.3 | -- | 36.0 | 2.5 |
| ANOM18-C2 | 1.3 | -- | 6.5 | 3.0 |
| NEAN2-C2 | 1.0 | -- | 10.5 | 4.0 |
| NEAN6-C2 | 1.5 | -- | 7.0 | 3.5 |
| Z4NEF1-C1 | 1.1 | -- | 15.5 | 6.5 |
| Z4NEF4-C1 | 0.3 | -- | 6.0 | 4.5 |
| Z4NEF5-C1 | 1.4 | -- | 6.0 | 3.5 |
| Z4NEF6-C1 | 1.7 | -- | 6.0 | 4.0 |
| Z4NEF7-C1 | 1.1 | -- | 10.0 | 5.5 |
| Z4NEF8-C1 | 1.3 | -- | 9.5 | 6.5 |
| Z4NEF9-C1 | 2.0 | -- | 9.0 | 6.0 |
| Z4NE11-C1 | 1.1 | 0.7 | 8.0 | 6.0 |
| NEAN2-C1 | 1.5 | -- | 8.0 | 4.0 |
| UNITS | ppb | ppb | ppm | ppm |
| DET.LIM | 0.1 | 0.1 | 0.2 | 0.5 |
| SCHEME | ARM1 | ARM1 | ARM1 | ARM1 |

amdel

Job: 2AD0237B
O/N:

Final

# ANALYTICAL REPORT

| SAMPLE | Au | Au Dp1 | Cu | Pb | Zn | Ni |
|---|---|---|---|---|---|---|
| ANOM5-501 | 1.5 | -- | 15.0 | 4.9 | 37.0 | 16 |
| KS-01 | 1.0 | -- | 7.0 | 4.8 | 34.0 | 8 |
| KS-02 | 1.2 | -- | 7.5 | 4.4 | 30.0 | 9 |
| KS-04 | 1.8 | -- | 7.0 | 5.0 | 25.0 | 9 |
| ANOM6-501 | 1.1 | -- | 21.5 | 3.7 | 25.5 | 24 |
| ANOM7-501 | 0.9 | -- | 19.0 | 5.0 | 22.5 | 16 |
| ANOM8-501 | 1.3 | -- | 39.0 | 6.5 | 25.5 | 15 |
| MS-01 | 0.5 | -- | 12.0 | 5.5 | 28.0 | 14 |
| NS-01 | 1.2 | 0.6 | 10.0 | 4.4 | 18.0 | 13 |
| NS-03 | 1.0 | -- | 13.5 | 4.3 | 21.0 | 14 |
| LS-02 | 0.3 | -- | 30.5 | 4.5 | 37.5 | 40 |
| ANOM9-501 | 2.1 | -- | 31.5 | 5.0 | 30.5 | 24 |
| ANOM10-501 | 0.8 | -- | 24.5 | 4.8 | 34.0 | 14 |
| ANOM11-501 | 0.7 | -- | 21.5 | 3.1 | 28.0 | 19 |
| ANOM12-502 | 0.5 | -- | 11.5 | 5.5 | 25.0 | 11 |
| ANOM13-501 | 1.7 | -- | 16.0 | 4.7 | 28.0 | 12 |
| ANOM14-502 | 1.1 | -- | 17.5 | 4.9 | 21.5 | 14 |
| ANOM15-501 | 2.1 | -- | 63 | 3.3 | 26.5 | 21 |
| ANOM16-502 | 0.9 | -- | 31.5 | 4.5 | 23.5 | 31 |
| ANOM18-501 | 1.0 | -- | 12.5 | 3.8 | 23.0 | 11 |
| NEAN2-501 | 0.6 | -- | 7.0 | 4.6 | 28.0 | 9 |
| NEAN5-501 | 0.7 | -- | 10.0 | 6.0 | 32.5 | 14 |
| NEAN5-503 | 1.4 | -- | 9.5 | 6.5 | 29.0 | 13 |
| NEAN6-501 | 3.6 | -- | 8.5 | 4.1 | 18.0 | 12 |
| Z4NEF1-501 | 1.5 | -- | 14.0 | 5.5 | 35.0 | 22 |
| Z4NEF2-501 | 1.8 | 2.0 | 12.5 | 7.5 | 34.0 | 16 |
| Z4NEF4-501 | 1.4 | -- | 9.5 | 6.0 | 29.5 | 14 |
| Z4NEF5-501 | 1.4 | -- | 7.0 | 4.5 | 24.5 | 13 |
| Z4NEF6-501 | L.N.R. | L.N.R. | L.N.R. | L.N.R. | L.N.R. | L.N.R. |
| Z4NEF7-501 | 0.8 | -- | 11.0 | 5.0 | 34.5 | 12 |
| Z4NEF8-501 | 0.6 | -- | 5.5 | 4.6 | 30.0 | 8 |
| Z4NEF9-501 | 0.7 | 0.3 | 9.0 | 5.0 | 32.5 | 11 |
| MS-02 | 1.7 | -- | 16.0 | 4.5 | 27.0 | 16 |
| ANOM12-501 | 1.0 | -- | 12.5 | 3.6 | 27.0 | 15 |
| UNITS | ppb | ppb | ppm | ppm | ppm | ppm |
| DET.LIM | 0.1 | 0.1 | 0.2 | 0.2 | 0.5 | 1 |
| SCHEME | ARM1 | ARM1 | ARM1 | ARM1 | ARM1 | ARM1 |

PO Box 261
Magill
SA 5072
31/8/03

Mineral Resources Records Officer
PIRSA
GPO Box 1671
Adelaide
SA 5001

Dear Sir, Annual Technical Report PE 7/6/03.

**EL 2818**

Please find enclosed report for six month period ending 7th June 2003. As there has been no new technical data generated in the past 12 months, technical work being limited to interpretation of images of airborne magnetic data, an annual report will not be submitted unless deemed essential.

Yours faithfully,

S. Toteff

Stephen Toteff

PO Box 261
Magill
SA 5072
31/10/03

Mr George Kwitko
Principal Geologist Company Exploration
Mineral Resources
PIRSA
GPO Box 1671
Adelaide
SA 5001


Dear George,

Having been unable to arrange a joint venture for the above tenement, so ensuring required expenditure levels, I wish to relinquish the EL. Unfortunately a number of false leads over the past several months delayed relinquishment well beyond the cut-off date that I had originally set. I thank Mineral Resources for their consideration over the past few years which have been difficult ones for the exploration industry generally.

Yours faithfully,

S. Toteff

Stephen Toteff