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NUMBER 8981

EL 1952 CARAWA

ANNUAL AND FINAL REPORT FOR THE PERIOD
27/7/94 TO 22/11/95

Submitted by

Livre Holdings Pty Ltd
1995

MINES AND ENERGY
SOUTH AUSTRALIA

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ENVELOPE 8981

TENEMENT: EL 1952 Carawa

TENEMENT HOLDER: Livre Holdings Pty Ltd

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SEPARATELY HELD DATA

DRILLHOLE SAMPLES (Held by MESA Core Library):

For up to date information on available drillhole samples, contact the Supervisor, MESA Core Library and quote the Exploration Licence and drillhole numbers you wish to query.
CAR01-1, 02-1, 03-1, 04-1, 05-1, 06-1, 07-1, 09-2, 09-3, 10-1, 10-2, 10-3, 15-1.

FIRST ANNUAL AND FINAL REPORT FOR EXPLORATION LICENCE 1952 CARAWA, S.A.

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OCTOBER 1995

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1. INTRODUCTION & SUMMARY

This report covers all the exploration within Exploration Licence 1952, Carawa, in the north western part of the Eyre Peninsula. The target commodity is diamonds beneath a cover of Quaternary and Tertiary sediments. Given the expected thick (>50m) cover, the exploration approach was to use the recently available SAEI A3 aerial magnetic survey data to locate and drill test possible kimberlitic type rocks.

During the term of the Licence, work has included acquiring of the aerial A3 magnetic data from MESA, imaging and interpretation of this data by a geophysical consultant, detailed ground magnetics over the isolated magnetic anomalies, limited heavy mineral loam sampling in the north, diamond core drilling with subsequent petrology, geochemistry (elements Cu, Pb, Zn, As, Co, Bi, Sb, Cr, Ca, K, Mg, Ni, P, Sr, & Au, 17 samples, and V, Nb, Ta, U, Ce, La, Nd, Th, Y, & Yb, 4 samples), and heavy mineral analysis (one hole). One palynological sample was also collected. A number of possible indicator grains from both the loam samples and the drillhole were microprobed to confirm their identity.

Eight magnetic targets drill intersected were from the Proterozoic Gawler Craton. One drillhole did not reach the target due to difficult drilling conditions (CAR4-1). Following a review of the data from the drilling, it was concluded that while the testing is not comprehensive, no evidence of kimberlite or diamonds exists within the Licence area. In a letter to the Department dated the 21 September 1995 the Licence was surrendered. A total of $139440 has been spent on the Carawa Project.

2. TITLE

An Exploration Licence Application 250/93 over the Carawa (5733) 1:100,000 map sheet area was made by Helix Resources NL during June 1993. The applicant was subsequently changed to Livre Holdings Pty Ltd, following the sale all the diamond tenements held by Helix to Diamond Ventures NL (Livre Holdings Pty Ltd is a wholly owned subsidy of Diamond Ventures NL).

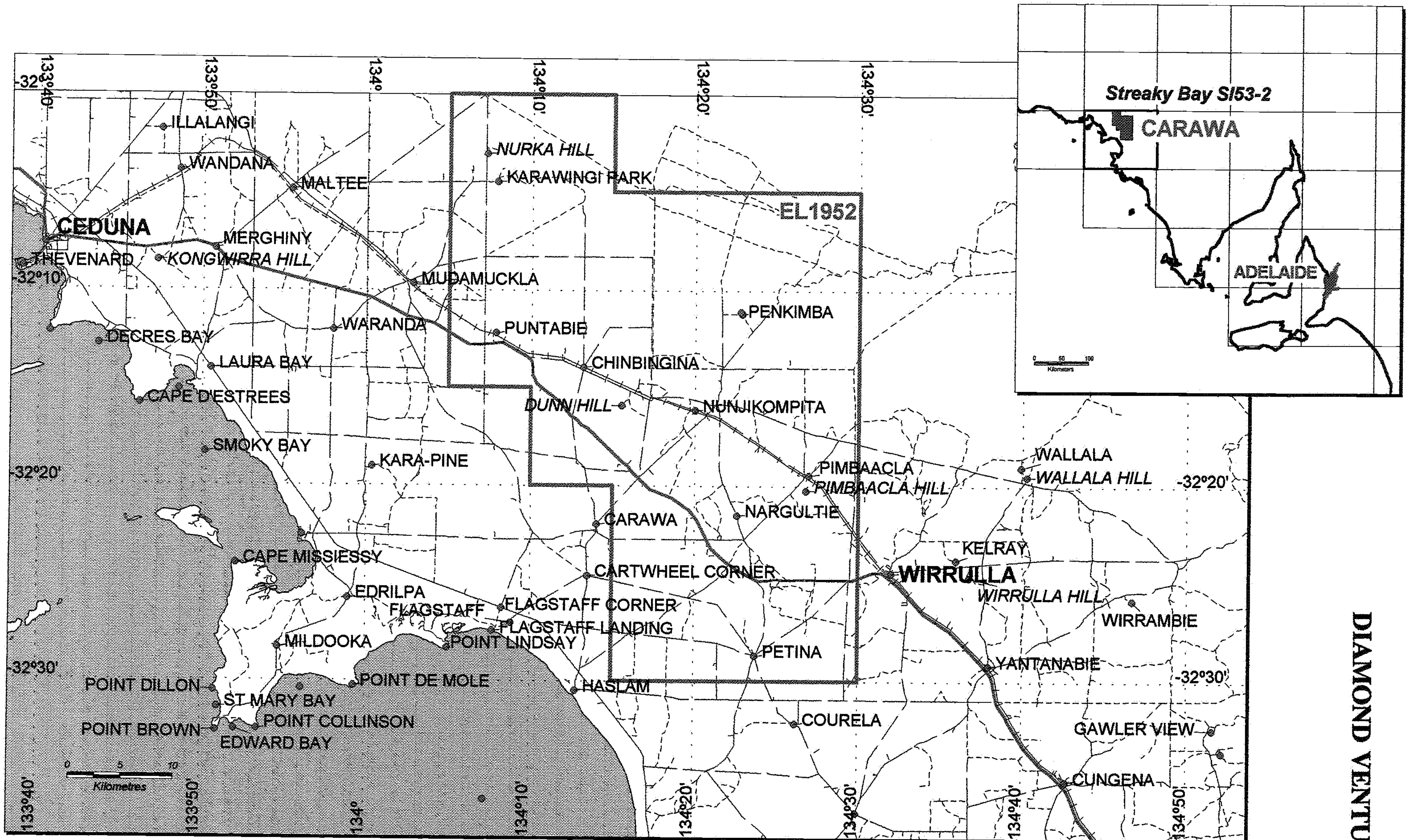
The Exploration Licence Application was granted as Exploration Licence 1952 by the Department of Mines and Energy on the 27 July 1994 for one year. On the 27 September 1994 the Director of Mineral Exploration approved the reduction of the Licence from 2282 to 1595 km^2 (30.1% reduction) following a proposal by Diamond Ventures.

The Licence was renewed for a further one year, but subsequently the remaining entire Licence was surrendered by Diamond Ventures in a letter dated the 21 September 1995.

3. WORK COMPLETED

During the term of the Licence, work has included acquiring the aerial A3 magnetic data from MESA, imaging and interpretation of this data by Diamond Ventures geophysical consultant, detailed ground magnetics over the isolated magnetic anomalies, limited heavy mineral loam sampling and microprobing, diamond core drilling with subsequent petrology, geochemistry, heavy mineral analysis and microprobing (one hole). One palynological sample was also collected.

A quick search had shown that previous exploration for diamonds within the Licence area was not existent, probably due to the perceived excessive deep cover. The limited diamond exploration within the Streaky Bay region is summarised in Rankin & Flint (1991) and consists of reconnaissance sampling in the Gawler Ranges (40km east from EL1952) by Stockdale Prospecting Limited.



CARAWA PROJECT

LOCATION MAP

FIGURE 1

DIAMOND VENTURES NL

3.1 AERIAL GEOPHYSICAL INTERPRETATION

The digital data was obtained following the release of the A3 South Australian Exploration Initiative (SAEI) aerial survey flown by the South Australian Department of Mines and Energy. Hungerford Geophysical Consultants Pty Ltd was engaged to provide interpretation of this data to indicate the location of possible kimberlitic type targets. The final report is provided as Appendix 1.

Following griding to a mesh size of 100 metres, Hungerford examined the total magnetic field, field filtered and high pass filtering, plus analytic signed images. The western and south west part of the Licence contained no kimberlitic type anomalies chosen for further work. This interpretation was used to surrender early this part of the Licence area. Many observed weak anomalies were considered likely to be accumulations of maghemite in the surficial sands.

In the remaining part of the Licence, a short list of ten targets were selected, six being small kimberlite-type anomalies. Two anomalies, CAR-7 and CAR-8, were located in shallow cover, and loam sampling was considered sufficient to test these anomalies, the rest would require drilling.

On the plots by Hungerford a further five lower priority targets had been circled. One of these additional anomalies, CAR-15 was chosen for further work. One was outside of the current Licence (CAR-14) and therefor not eligible, while CAR-11, 12, and 13 were in the Pureba Conservation Park. While drilling would be permitted in the Park, the Native Title determination would have needed to be settled. It was decided this procedure was too lengthy at this stage in the exploration. These two sites would have been considered for further work if it were not for the Native Title determination process.

3.2 LOAM SAMPLING

Examination of the available open file drill data reveals that the Gawler Craton basement is relatively shallow (<40m) in the northern part of the Exploration Licence. This area is also covered in thick scrub making ground magnetic surveys slow and difficult without line clearing. Thus this area was considered more suitable to testing by heavy mineral loam sampling. This technique was proven quite successful in similar stratigraphy by proving that kimberlites were in the local region prior to drilling magnetic targets (Mitchell, 1992) at the Elliston Kimberlite Field (200km to the south east).

A series of five loam samples were collected near and over the northern CAR-7 and CAR-8 anomalies that were delineated by Hungerford. The samples were treated and processed in the Perth laboratory of Diamond Ventures by screening, tabling, TBE flotation, followed by visual observation. Sample details including AMG coordinates are provided in Appendix 5, together with the heavy mineral data sheets for each sample. Figures 2 and 3 show the location of the loam samples.

All five loam samples were negative for indicator grains. To confirm, seven garnets (2 from CA-02, 2 from CA-03, 1 from CA-04, and 2 from CA-05), two ilmenites from CA-05, and a pyroxene from CA-03 were microprobed (Appendix 6, note grains with different prefixes are from other projects). All grains were confirmed by the microprobe analysis not to be of further interest.

3.3 GROUND MAGNETIC SURVEYS

During March 1995, nine aerial magnetic anomalies were covered by ground magnetic surveys. All the grids consisted of 100 metre spaced north south lines, and with east west tie lines. Readings were all 10 metres apart using a GeoMetrics G856 proton precession magnetometer. Diurnal corrections were made by using

a second G856 base station magnetometer reading at 30 second intervals.

As can be seen from Table 1, over sixty line kilometres of magnetic data was collected. Appendix 2 provides the ground magnetic survey contour plans for each anomaly, showing cultural features, and the final locations for the following drilling.

TABLE 1 Magnetic anomalies covered by ground magnetics & drilling.

ANOMALY	NUMBER LINES	GRID m (EWxNS)	LINE km	HOLES DRILLED	DRILLED METRES
CAR-01	15	800x800	9.2	1	128.6
CAR-02	12	600x700	5.73	1	51.7
CAR-03	10	600x600	4.84	1	137.8
CAR-04	12	800x800	7.42	1	34.0
CAR-05	10	600x800	6.2	1	82.5
CAR-06	12	800x800	8.0	1	73.6
CAR-09	10	620x600	5.04	2	47.7, 39.8
CAR-10	20	1050x1100	11.53	3	25.9, 33.4, 49.0
CAR-15	10	600x600	4.84	1	66.4
TOTAL	**111**	**506.7 ha**	**62.70**	**12**	**770.4m**

3.4 DRILLING

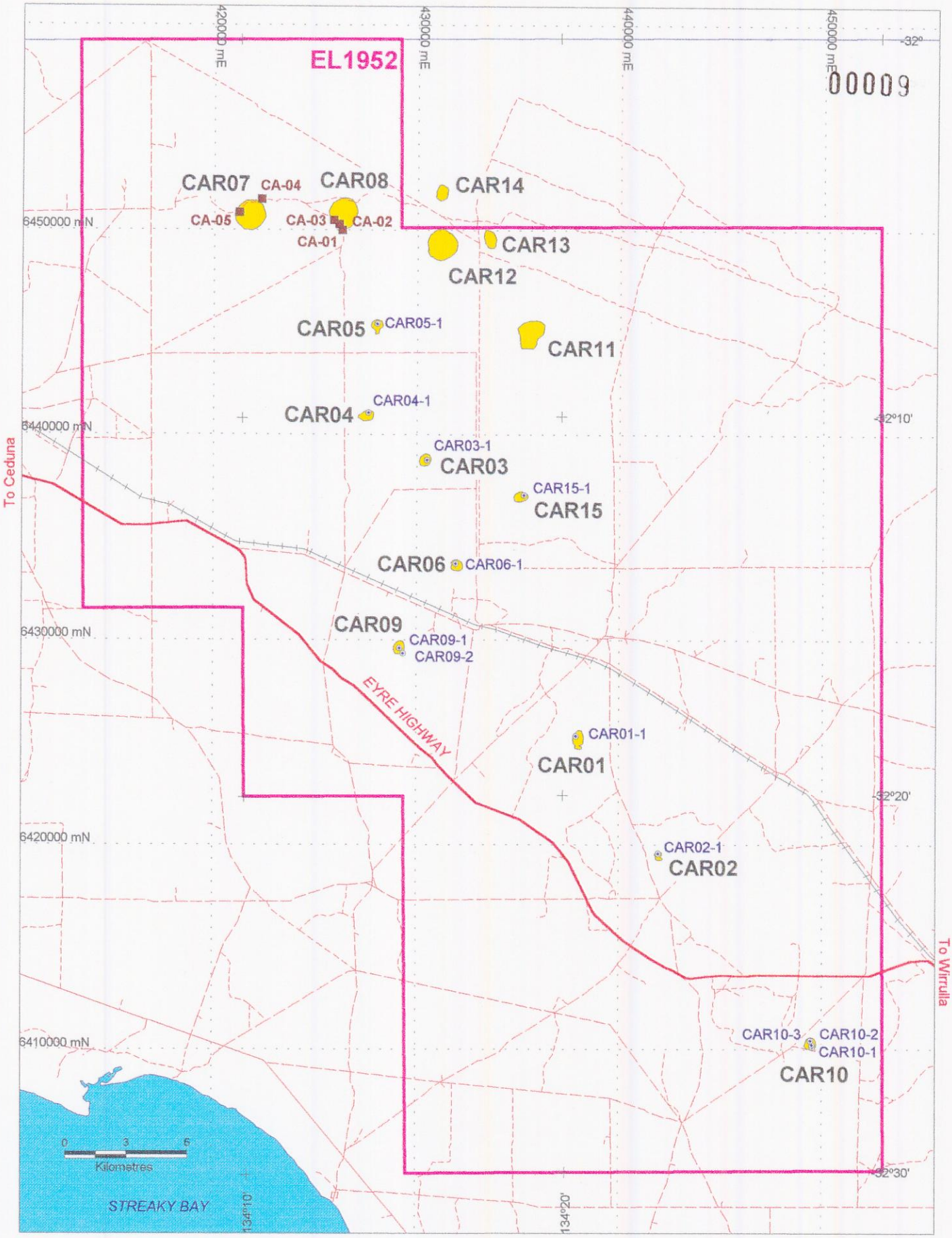
All of the ground magnetic grid anomalies were NQ diamond cored using open hole rotary precollars. One anomaly, CAR4, was abandoned due to flowing sands. All the drillogs are presented as Appendix 3. The drillogs provide the AMG coordinates (Zone 53H) for each hole, and Figure 2 show the locations. Local grid locations are provided on each of the ground magnetic contour plans provided as Appendix 2. Drilling was by Strata Exploration Pty Ltd from Adelaide.

The cores have all been lodged with the Department of Mines & Energy Core Library in Glenside. Table 2 provides the number of holes, and the meterage drilled into each anomaly site.

3.4.1 Petrology

Petrological examinations were made on representative samples from the core samples. The detailed descriptions by consultant petrologist Dr Jane Barron are provided as Appendix 4. Table 2 provides a summary of the lithologies encountered. The sample from drillhole CAR10-1, 25.8m was also examined by J. Stiefenhofer from AARL (Pty) Limited. This extra examination is also provided within Appendix 4.

The petrology confirms that the magnetic units intersected are non prospective metamorphic units within the Gawler Craton. The only sample of interest was the CAR10 samples which contained unusual amounts of apatite.



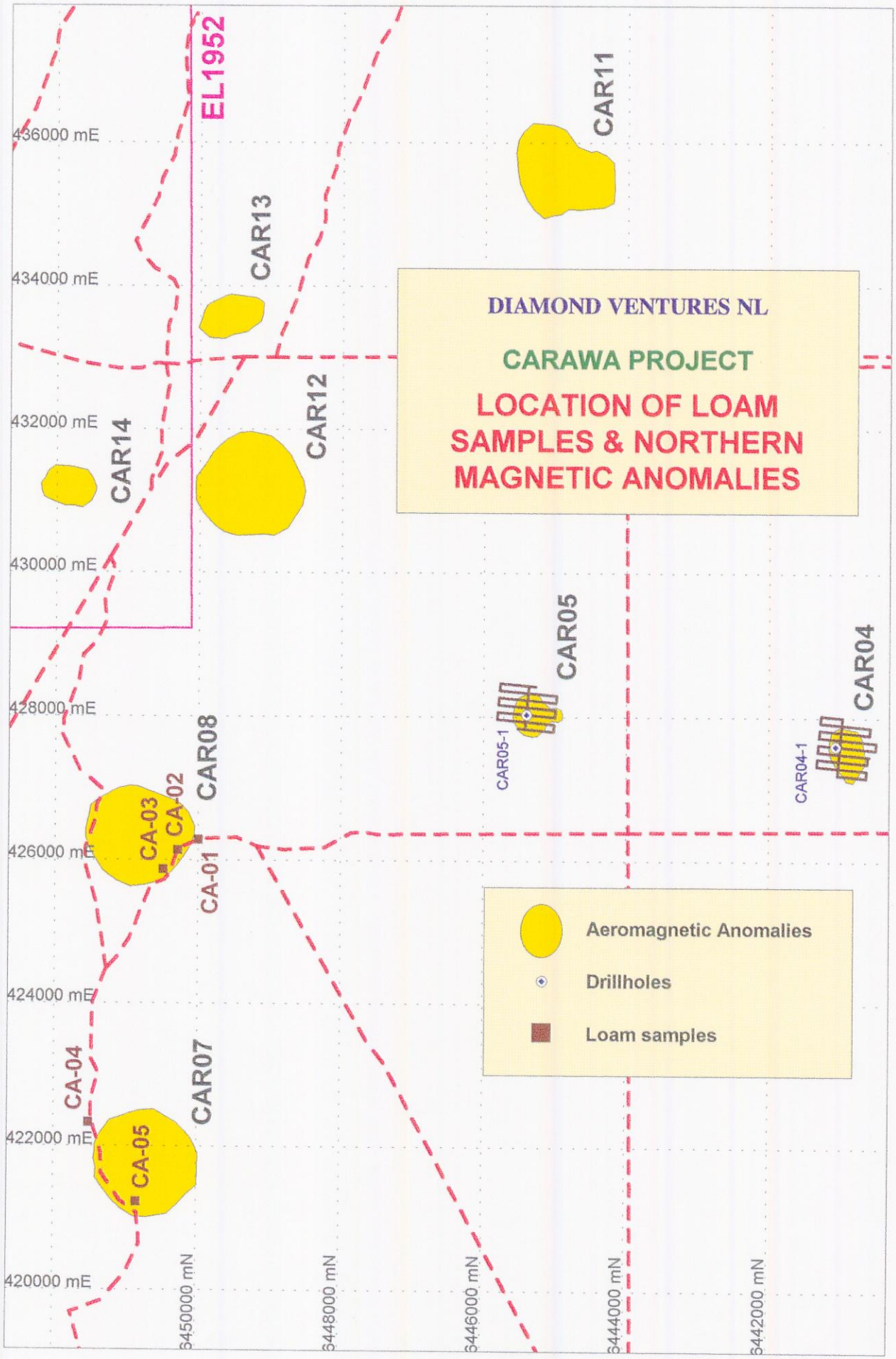
DIAMOND VENTURES NL

CARAWA PROJECT

MAGNETIC ANOMALIES, DRILLHOLES, AND LOAM SAMPLES

- Aeromagnetic Anomalies
- Drillholes
- Loam samples

FIGURE 2


EL1952
CAR11
CAR13
CAR12
CAR14
CAR05
CAR04
CAR08
CAR07
CAR05-1
CAR04-1
CA-01
CA-02
CA-03
CA-04
CA-05
436000 mE
434000 mE
432000 mE
430000 mE
428000 mE
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6444000 mN
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DIAMOND VENTURES NL
CARAWA PROJECT
LOCATION OF LOAM SAMPLES & NORTHERN MAGNETIC ANOMALIES
Aeromagnetic Anomalies
Drillholes
Loam samples

FIGURE 3

TABLE 2. Summary of petrological descriptions.		
DRILLHOLE	INTERVAL	SUMMARY
CAR1-1	115.45m	Partly graphic granite pegmatite.
	128.55m	Amphibole & biotite rich quartz monzodiorite.
CAR2-1	22.7m	Coarse grained granite gneiss.
	36.0m	Course grained feldspathic granite.
CAR3-1	136.35m	Medium grained K-feldspar granite.
	137.2m	Medium grained roughly equigranular aplite.
CAR5-1	81.3m	Course grained granite & biotite rich diorite gneiss.
CAR6-1	73.6m	Medium to Course grained K-feldspar megacrystic granite.
CAR9-1	47.5m	Course grained biotite bearing granodiorite.
CAR9-2	36.3m	Medium grained biotite cordierite-K-feldspar-plagioclase gneiss.
	38.0m	Biotite- and altered cordierite-bearing (gneissic) granitic rock.
CAR10-1	25.8m	Strongly foliated albite-biotite-magnetite-apatite amphibolite.
CAR10-2	33.0m	Strongly metamorphosed gabbro? with abundant apatite.
CAR10-3	43.7m	Strongly foliated biotite-magnetite-apatite rich amphibolite.

3.4.2 Heavy Mineral Sampling

Two samples from the rotary open hole collar of drillhole CAR03-1 were collected for heavy mineral examination. The two intervals, 127-129m and 132-133m are from near the base of the Pidinga Formation, within the Narlaby Palaeochannel as delineated by Rankin & Flint (1991). The samples were treated and processed in the Perth laboratory of Diamond Ventures by screening, tabling, TBE flotation, followed by observation, similar to the loam samples. Details on the samples are in Appendix 5, together with the resultant heavy mineral data sheets for the two samples.

Sample CAR3-1 127-129m contained some grains that resembled picroilmenites and Cr-spinels, thus the sample was recorded as positive for kimberlitic type indicators. The lower sample was negative. Also a number of garnets from each interval considered interesting were separated. Thus 2 garnets, 4 spinels, and 6 ilmenites from 127-129m, and 2 garnets and 2 ilmenites from 132-133m were sent to Microbeam Services in Melbourne for microprobing in conjunction with the grains from the loam samples.

The four grains tentatively identified as Cr-spinel from 127-129m were all were shown by microprobe to be very low in Cr (Cr_2O_3 all below 0.2%) and not of interest. The four possible picroilmenites from interval 127-129m, and two check ilmenites from 132-133m , were also shown by the microprobe to be common ilmenites and of no further interest. As a final check two garnets from each interval were also microprobed and which confirmed the overall low diamond prospectivity (all group 3 garnets). All microprobe analyses are provided in Appendix 6.

Thus no heavy minerals of kimberlitic interest were recovered from the lower CAR03-1 stratigraphy. The only heavy mineral in any real amount was topaz (2 & 3 % of the concentrates). The range of heavy minerals recovered is very similar to that recorded for the Pidinga Formation in Rankin & Flint (1991, page 19).

3.4.3 Geochemistry

Representative small splits were taken from each core section for chemical analysis. The seventeen samples were dispatched to Australian Laboratory Services Pty Ltd in Brisbane for assay of the elements Cu, Pb, Zn, As, Co, Bi, Sb, Cr, Ca, K, Mg, Ni, P, Sr, and Au (Batch ST11840). All the gold assays were below the detection limit (<0.1ppm).

The petrological report on the CAR10 core showed the unit has significant apatite (7%), which was confirmed by the assay of significant amounts of P (1.62%, 1.04%, 1.38 %). Given this mineralogy, it was considered worthwhile assaying the four CAR10 pulps from the earlier analysis for V, Nb, Ta, U, Ce, La, Nd, Th, Y, and Yb (Batch ST12067). While some elements from this second batch of elements were elevated, none warranted further work. All chemical analyses are provided as Appendix 7.

3.4.4 Palynological Sample

A sample from drillhole CAR3-1 was sent to Dr N.F. Alley in the Department of Mines and Energy in an attempt to verify its age. The sample was from the mudstone intersected at 84-88m, just above the lower unit sampled for heavy minerals. The report on the sample is provided as Appendix 8. The sample is Late Eocene, therefor confirming the sample is from within the Pidinga Formation. The presence of dinoflagellates indicates a marginal marine setting for this sample.

4. CONCLUSIONS & RECOMMENDATIONS

Given the depth of the recent surfical cover (generally expected the Tertiary cover will be in the order of 50 to 100 metres depth) surface or loam sampling was not considered likely to pinpoint individual targets. Therefor the program has relied on using magnetics alone to obtain targets for drilling. The exception was in the northern part of the Licence where cover was in the order of twenty metres or less. Here five loam samples, taken near magnetic anomalies CAR-7 and CAR-8 would be expected to contain indicator grains if present. All samples were negative after confirmation using microprobe.

In the deeper regions to the south, the drilling intersected non prospective magnetite rich units within the Proterozoic Gawler Craton which were causing the observed magnetic anomalies. The lithologies have been confirmed by petrology and chemistry. Two heavy mineral samples from the coarser lower part of the Pidinga Formation were examined, and after confirmation by microprobe, are considered negative for kimberlitic type minerals.

The basement samples were assayed for a range of metals, including gold, but none returned significant amounts. Thus it appears that the targets drilled are also not prospective for metals.

It is concluded that while the testing is not comprehensive, no evidence of kimberlitic type rocks, or diamonds exists within the Licence area, and therefore the Licence be surrendered.

5. EXPENDITURE

The entire total expenditure for the Carawa Project up to the end of October 1995 has been;

Analysis	$5113
Drilling	$43986
Geophysical	$2750
Vehicle	$4196
Travel & Accommodation	$5185
Maps & publications	$82
Salaries & Labour	$48401
Administration	$11969
Rehabilitation	$1220
Freight & Couriers	$376
Consumables	$4267
Consultants	$1895
TOTAL	**$139440**

6. REFERENCES

MITCHELL, M.S., 1992. EL1672 Elliston. Progress and final reports from 28 February 1991 to 27 May 1992 by Stockdale Prospecting Limited. South Australia Department of Mines & Energy Open File Envelope 8527.

RANKIN, L.R., & FLINT, R.B., 1991. Streaky Bay 1:250,000 Geological Exploratory Notes, Sheet SI53-2. Geological Survey of South Australia.

Appendix 1

00014

HUNGERFORD

GEOPHYSICAL

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P T Y L T D

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LIVRE HOLDINGS

CARAWA ELA 250-93

GEOPHYSICAL INTERPRETATION

BY HUNGERFORD GEOPHYSICAL CONSULTANTS PTY LTD

NIGEL HUNGERFORD

20 JULY 1994

20 July, 1994

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LIVRE HOLDINGS

CARAWA ELA 250-93

GEOPHYSICAL INTERPRETATION

BY HUNGERFORD GEOPHYSICAL CONSULTANTS PTY LTD

INTRODUCTION

ELA 250-93 is situated on the South-western part of the Gawler Craton, South Australia. The south-west corner occurs over Streaky Bay (Fig.1). A number of shallow holes were drilled by CEC (in the 1950's for Uranium?), indicating that Quarternary sands (frequently dunes) cover much of the ELA to depths of generally 50 metres.

Access is good with the Eyre Highway and main railway crossing the ELA. Off road access may not be so easy especially in dune country.

The area is geologically prospective for diamonds, Lower Proterozoic (Broken Hill Type) Pb/Zn, ironstone-hosted Proterozoic Cu/Au, and greenstone-hosted Au.

GEOPHYSICAL DATA

SADME have recently flown semi-detailed aeromagnetics as part of the SA Government initiative. Line spacing was 400 metres along N-S lines and the magnetic sensor was at 80m above the surface. For this study, data gridded to a mesh size of 100 metres were used for post-processing and imaging.

The located data (ie profile data) were finally obtained at a late stage in this work from SADME. However the data are not correctly formatted for use in GEOSOFT so they have only been used for individual lines.

Although radiometrics were also flown by SADME they have not been processed. These data are unlikely to be useful except for regolith mapping, although they might possibly indicate small outcrops of basement rocks.

The AGSO Gravity data have been used to assist the interpretation, but the 8km station spacing means that only regional information can be obtained.

REGIONAL SETTING

(Note: the enclosed images are nominally at 1:100,000 and can be plotted at that scale if a suitable colour printer is available. At present they are plotted to fit A3 paper and are at a scale of 1:250,000).

Image 1 (IM.1) shows the total magnetic field in colour with a shade from the east. Also shown is a north-south magnetic profile (+ve to east).

The strong magnetic anomalies in the north-east are due to Hiltaba Suite Proterozoic granites with distinctive ovoid or semi-circular shapes. (They have been drilled by CEC). Most of the south-west half of the area appears to be underlain by Archean/Proterozoic granites and gneisses. This supposition is based on the CEC drilling results, and the texture and shape of the magnetic responses.

Through the centre of the image there is a broad NW-SE trend of quite magnetic rocks with a lower magnetic background. This area may be composed of metasediments and volcanics. At the north-west end, the strong linear anomalies could be composed of mafic volcanics (eg amphibolites?).

In the south-eastern part, there is a distinctive oval zone that is much less magnetic. It could be a reversely magnetised granite but the lack of a magnetite-rich aureole suggests otherwise. It could well be a Proterozoic (?) sedimentary basin, fault-bounded along its north-eastern margin, which itself is offset by what appears to be a sinistral SW-NE striking fault.

At the south-eastern corner of the EL is a complexly folded sequence that may well be a greenstone belt.

Also shown on IM.1 are linears derived from viewing greyscale gradient images from different shade directions. The linears in the north-western quadrant mainly trend SW-NE, whereas those elsewhere have a NW-SE trend. These seem to intersect mainly on the north central part of the EL. In some cases the linears are caused by reversely magnetised dykes. The structural significance of these linears is unclear but their intersections may provide foci for intrusions including kimberlites.

The gravity image (IM.2) suggests the presence of more mafic (including granodioritic) rocks to the south-east (higher density). The Hiltaba (Proterozoic), and Archean granites are likely to be less dense, although the former do seem to vary in relative density than most rock types throughout the Gawler Province.

IM.3 shows the magnetic field filtered so as to show the deeper and larger magnetic sources such as the granite batholiths in the north-east and west.

Conversely, high pass filtering, as in IM.4 enhances the shallower magnetic sources. It can readily be seen that there are literally hundreds of small magnetic anomalies throughout the E.L.

TARGETS

In order to further enhance isolated magnetic anomalies, the analytic signal was imaged (IM.5). This acts as a combination high pass filter and reduction to the pole. It also shows reversely magnetised sources (total field lows) as highs, so reversely magnetised kimberlites will appear as positive anomalies.

Clearly IM.5 shows a multiplicity of targets which need to be prioritised. Many of these isolated anomalies are likely to be accumulations of maghemite in the surficial sands. Note that many occur over deeper magnetic sources so their occurrence may be a weathering effect.

The anomalies recommended for follow-up are plotted on Figs 1 and 2. They lie along the central low magnetic (metasediment?) zone, primarily in the area of intersecting linears. Anomalies have not been selected where they occur over the interpreted granite or granite gneiss since there are possibly less likely hosts for Kimberlites. Further magnetic anomalies can be readily followed-up on the basis of the analytic signal plot, if this is thought not to be the case.

IM.1 includes a magnetic profile running north-south through the ELA. This profile is also included separately (Fig 3). Clearly the identification of individual Kimberlites from magnetic anomalies is a difficult task in this area, especially low amplitude anomalies.

Following is a list of anomalies that should be drill tested. Amplitudes vary from 50 to 750 nT. AMG locations are ±100 metres.

Anomaly 1 (6425230N, 438000E)

Probably the most distinctive anomaly of all since it stands out against a low magnetic background. Although it has an amplitude of 100nT which is considerably less than that of BHP's large Cannington Pb/Zn deposit in Queensland (about 700nT), it's general magnetic setting is very similar. Cannington is thought to occur within Lower Proterozoic metasediments (probably arenites/quartzites) and has a large component of pyrrhotite in addition to galena and sphalerite, which makes it conductive and magnetic.

Anomaly 2 (6419360N, 442040E)

Occurs at the southern end of the large central magnetic low and has an amplitude of 100nT.

Anomaly 3 (6438790N, 430500E)

A 60nT anomaly on a SW-NE linear, in the less magnetic 'corridor'.

Anomaly 4 (6440900N, 427600E)

A 60nT anomaly on a W-E linear, in the less magnetic 'corridor'. Close to an old CEC drill hole that intersected Archean (?) rocks.

Anomaly 5 (6445360N, 428070E)

A relatively strong 120nT anomaly.

Anomaly 6 (6433720N, 4322000E)

A 50nT anomaly on the edge of the 'low magnetic corridor'.

Anomaly 7 (6450830N, 421220E)

This is a double anomaly with amplitudes of 50 and 120nT. The Euler Deconvolution processing indicates these anomalies to have likely pipe-like shapes.

Anomaly 8 (6450330N, 426150E)

On the total field map it is an anomaly of about 150nT. However the Euler Deconvolution shows it to be a circular feature.

Anomaly 9 (6429550N, 429160E)

A 90nT anomaly situated in what may be granite gneiss terrain.

Anomaly 10 (6410160N, 449600E)

This anomaly has the highest intensity of any within the EL, of 750nT. It appears to lie on a folded sequence which extends south beyond the EL boundary. As such it may well be part of a greenstone belt, including mafic volcanics (eg basalts) which would be prospective for gold. The aeromag line spacing of 400 metres is not presently sufficient to clearly define structure and therefore targets. A more detailed magnetic survey (100 metres line spacing) would be preferable.

FOLLOW-UP

For the Kimberlite-type anomalies (2 to 7), 4 lines of ground magnetics per anomaly is recommended. Each aeromag anomaly should be located with a GPS receiver, then the mag survey should be done on 100 metre lines each 1 km long at 10m spacing using chain and compass. Each anomaly should take no more than a day to survey, but 10 days should be allowed in case there are access problems (at $800 per day = $8,000 excluding mobilisation).

Preferably anomaly 1 should be gridded so that EM can be carried out in addition to magnetics. Lower Proterozoic Pb/Zn deposits can occur adjacent to or along strike of magnetic horizons such as BIF's so that EM will indicate the location of any massive sulphides that may be present.

Anomaly 8 which may occur in a greenstone belt requires a larger magnetic grid in order to define structure and subsequent drill targets. A grid of 8 x 5 kms would be required.

Ground magnetic surveys commonly appear to be cheaper to run, but it may be more cost-effective to use a Heli-mag system such as that used by Geo Instruments. Such a system could survey these several anomalies in only two or three days, and with much greater accuracy.

Cost of a helimag survey is about $2,500 per day and approx $3,000 mobilisation and installation. This is comparable to ground magnetic surveys and can be done quicker. It might then be appropriate to cover more anomalies than I have presently suggested.

PLOTS

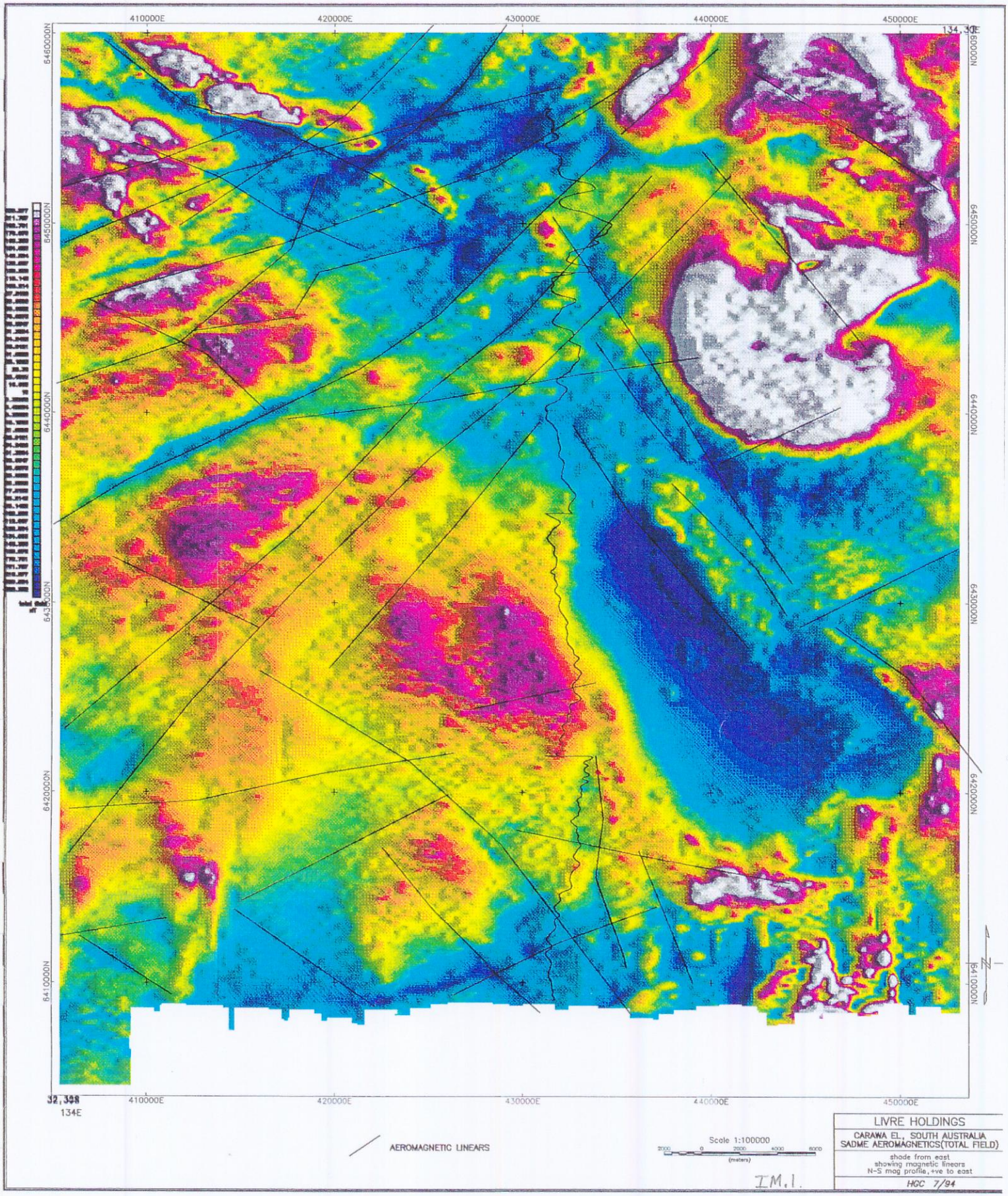
The images can be plotted at 1:100,000 scale if required. Cost can be discussed, - the actual printing is via a local company with a suitable HP Design Jet colour printer.

CONCLUSIONS

The SADME aeromagnetic data over the EL has revealed many low amplitude anomalies, within an Archean/Proterozoic terrain. A number of these have been selected for follow-up as Kimberlite targets on the basis of amplitude, location with respect to known geology, and geophysical characteristics.

It is recommended that these anomalies be located using ground or helimag, prior to drill testing. Since there is likely to be overburden of the order of 50 metres, it may be necessary to geophysically model the anomalies to provide an accurate drill target.

There are at least 2 possible base metal targets identified. Base metal analyses should be carried out on the drill chips in addition to theidentification of kimberlite indicator minerals.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LIVRE HOLDINGS
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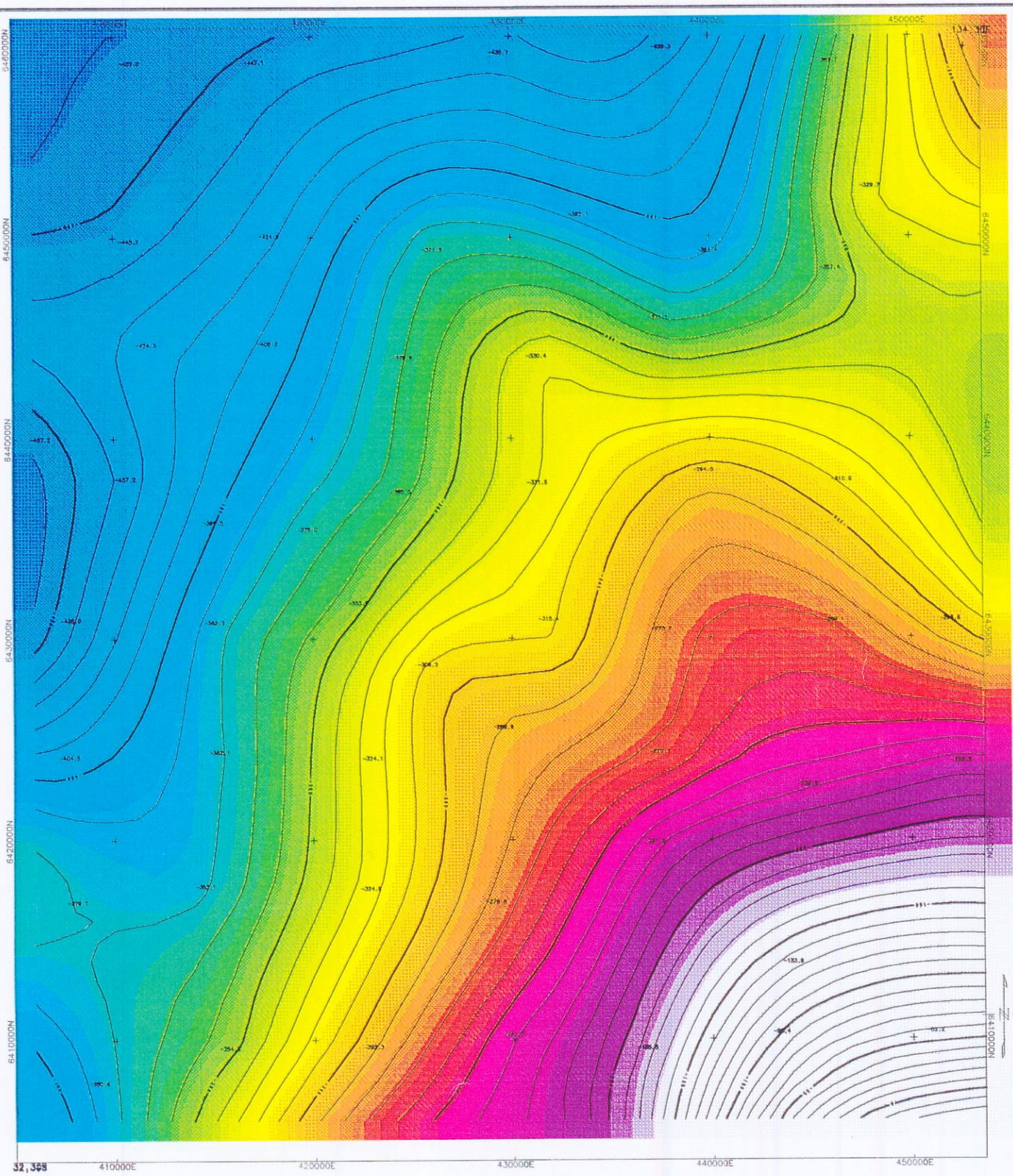

LIVRE HOLDINGS

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CI=10.50gu

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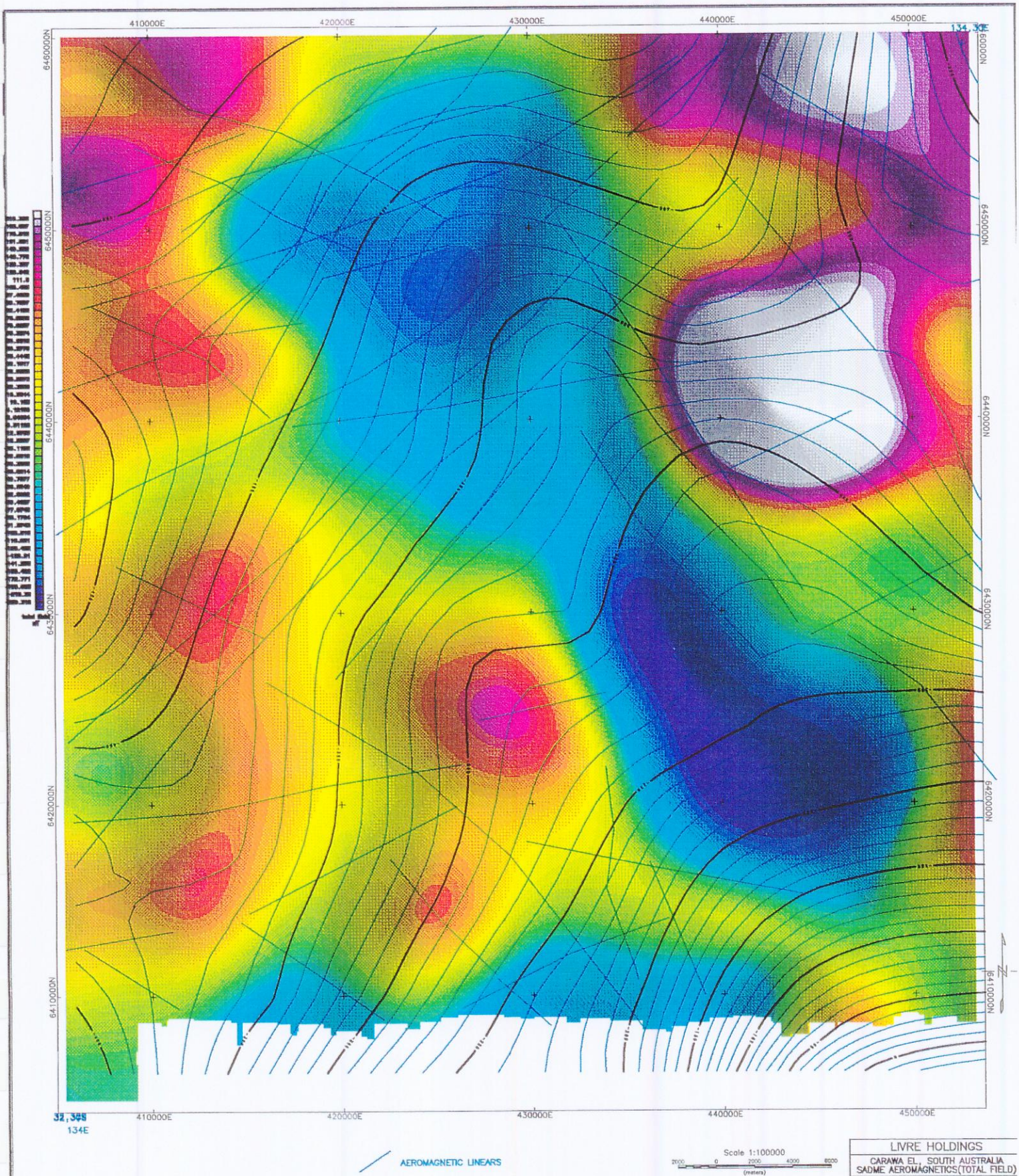
IM2

00023



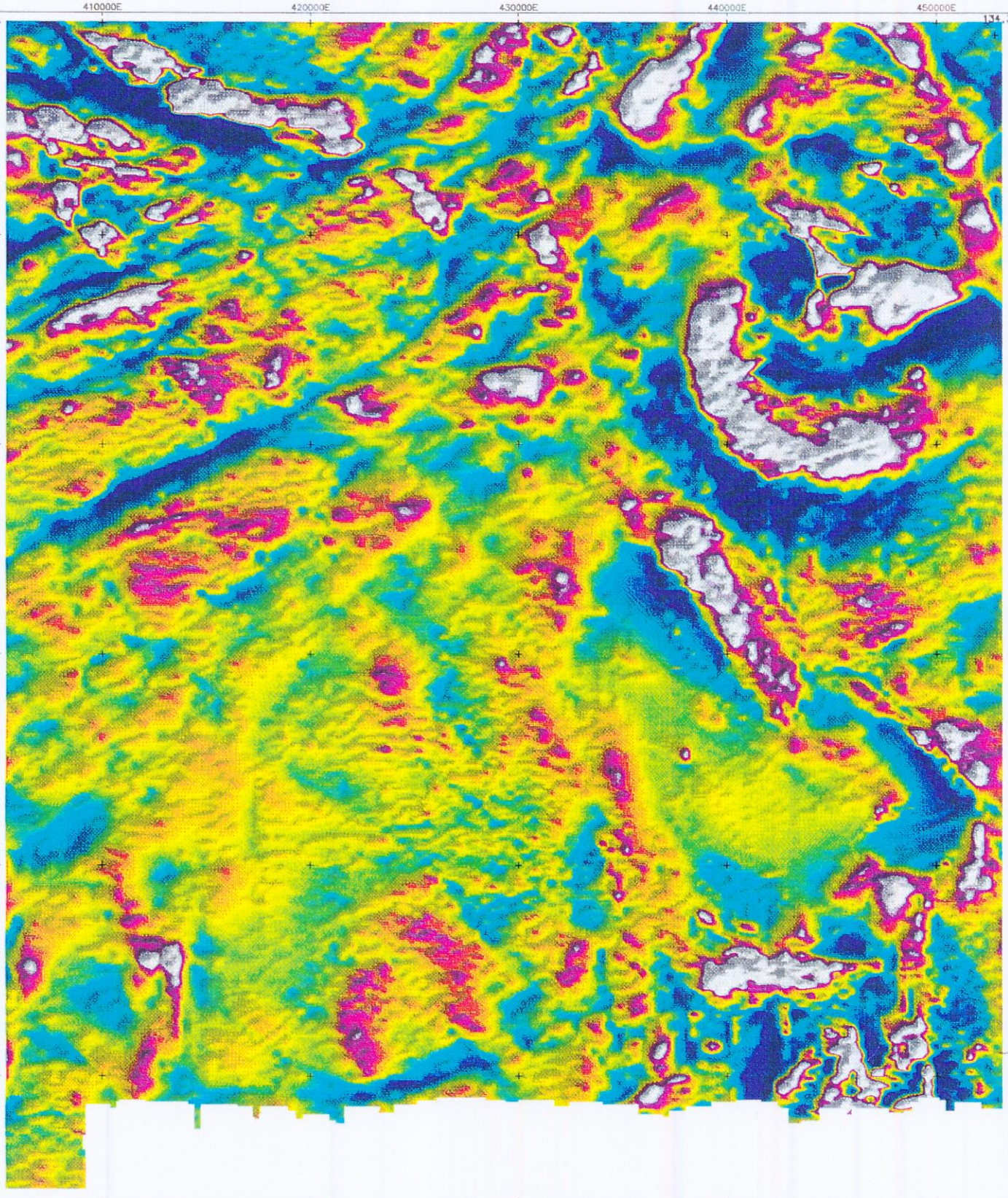
IM3

LIVRE HOLDINGS

CARAWA EL, SOUTH AUSTRALIA
SADME AEROMAGNETICS(TOTAL FIELD)

10km LOW PASS FILTER

HGC 7/94



LIVRE HOLDINGS

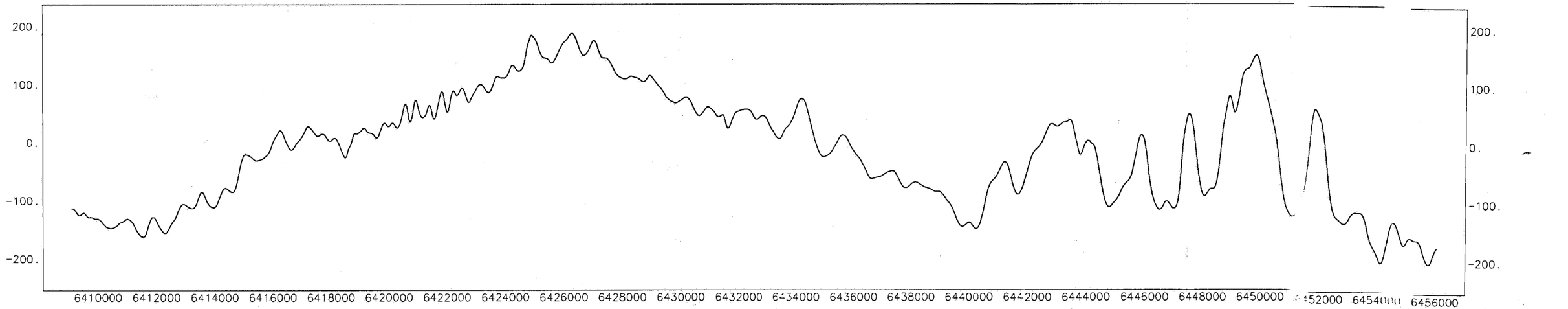
CARAWA EL, SOUTH AUSTRALIA
SADME AEROMAGNETICS

EULER SOLUTIONS
-SI=2; DEPTH<200m
COLOUR:10km HIPASS FILTER

HGC 7/94

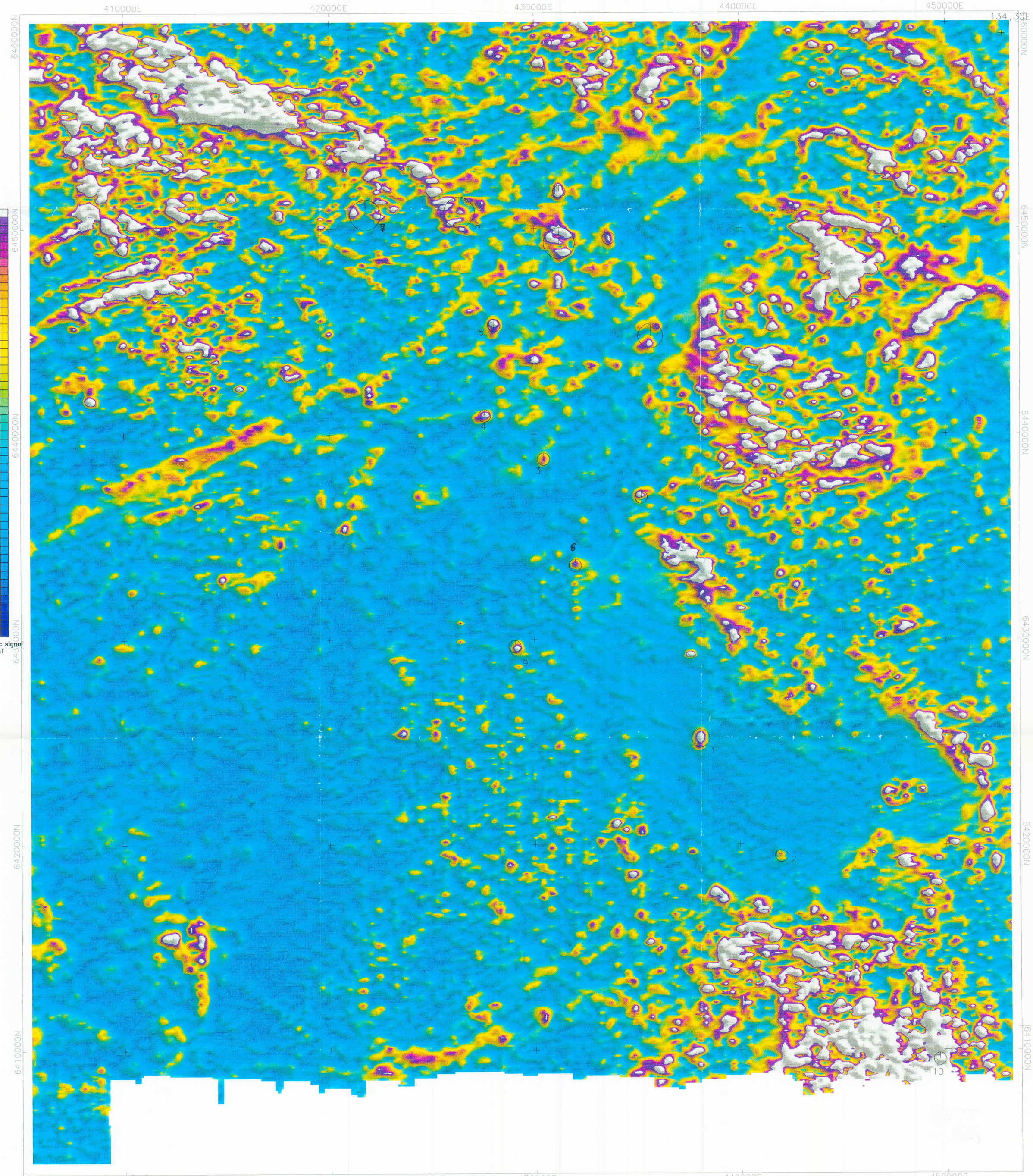
IM.4

Line 431200



CARAWA, LINE 431200E

8981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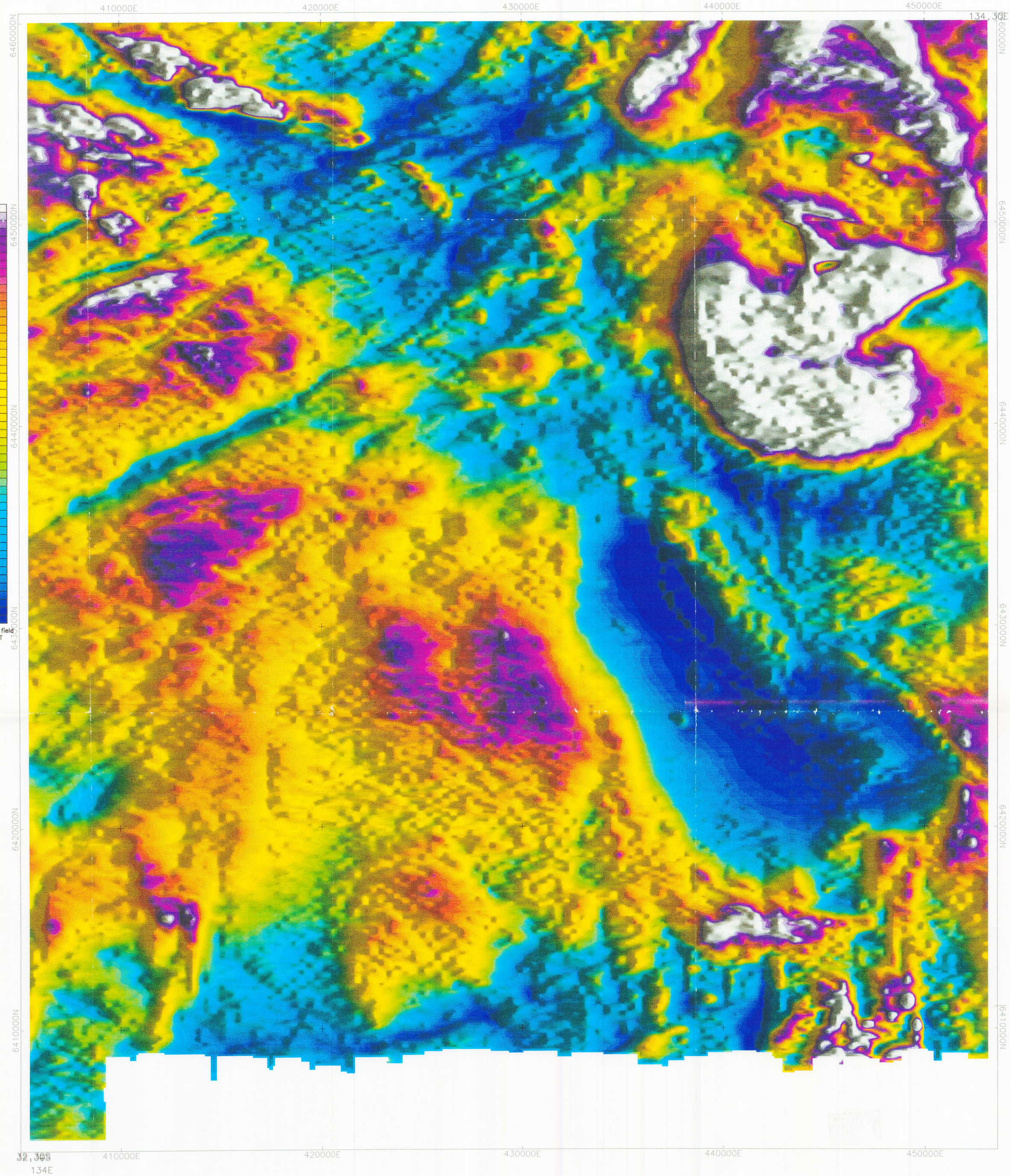
analytic signal
nT
1
2
3
4
5
6
7
8
9
10
32.30S
134E
Scale 1:100000
2000 0 2000 4000 6000
(meters)
LIVRE HOLDINGS
CARAWA EL, SOUTH AUSTRALIA
SADME AEROMAGNETICS(TOTAL FIELD)
ANALYTIC SIGNAL
shade from north-east
N. Hungerford 8/94

8981-1

8981-2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192.701
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-77.8189
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-95.1428
-102.206
-112.067
-122.594
-134.055
-143.383
-156.976
-172.701
-191.757
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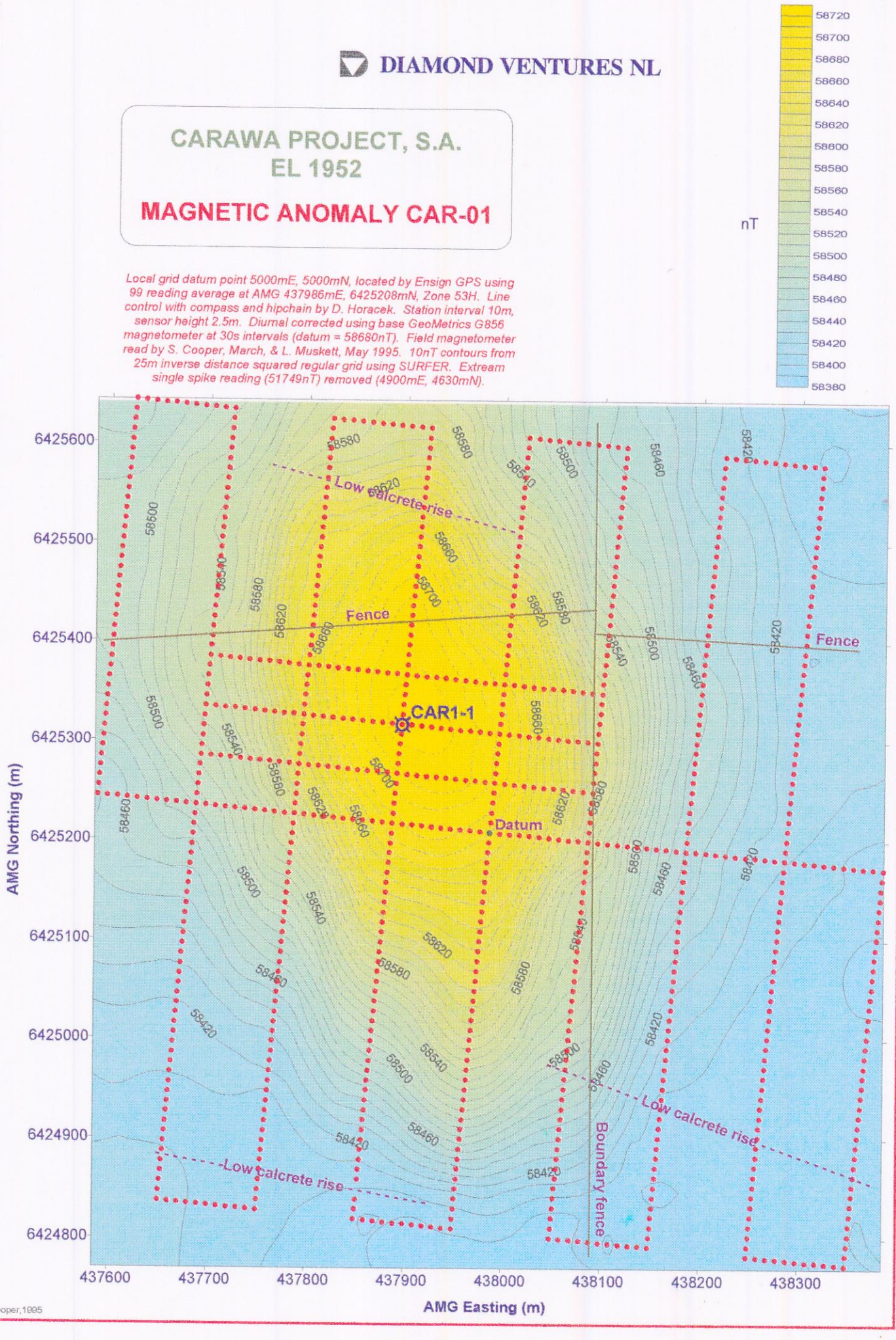
-298.232
total field
nT
32, 30S
134E
Scale 1:100000
2000 0 2000 4000 6000
(meters)
LIVRE HOLDINGS
CARAWA EL, SOUTH AUSTRALIA
SADME AEROMAGNETICS(TOTAL FIELD)
shade from east
N. Hungerford 8/94

8981-2

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-01

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 437986mE, 6425208mN, Zone 53H. Line control with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base GeoMetrics G856 magnetometer at 30s intervals (datum = 58680nT). Field magnetometer read by S. Cooper, March, & L. Muskett, May 1995. 10nT contours from 25m inverse distance squared regular grid using SURFER. Extream single spike reading (51749nT) removed (4900mE, 4630mN).

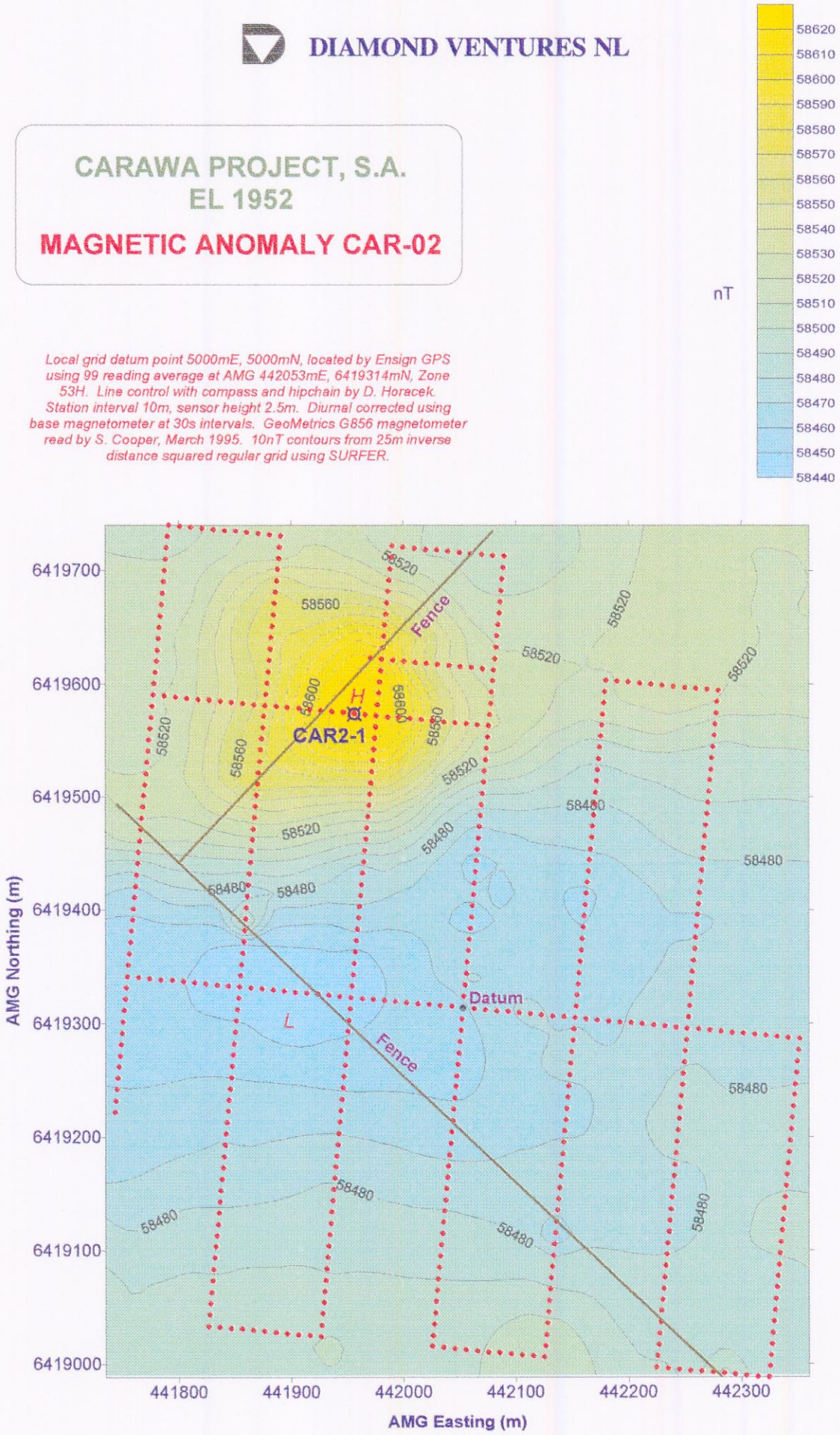


Cooper, 1995

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-02

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 442053mE, 6419314mN, Zone 53H. Line control with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base magnetometer at 30s intervals. GeoMetrics G856 magnetometer read by S. Cooper, March 1995. 10nT contours from 25m inverse distance squared regular grid using SURFER.

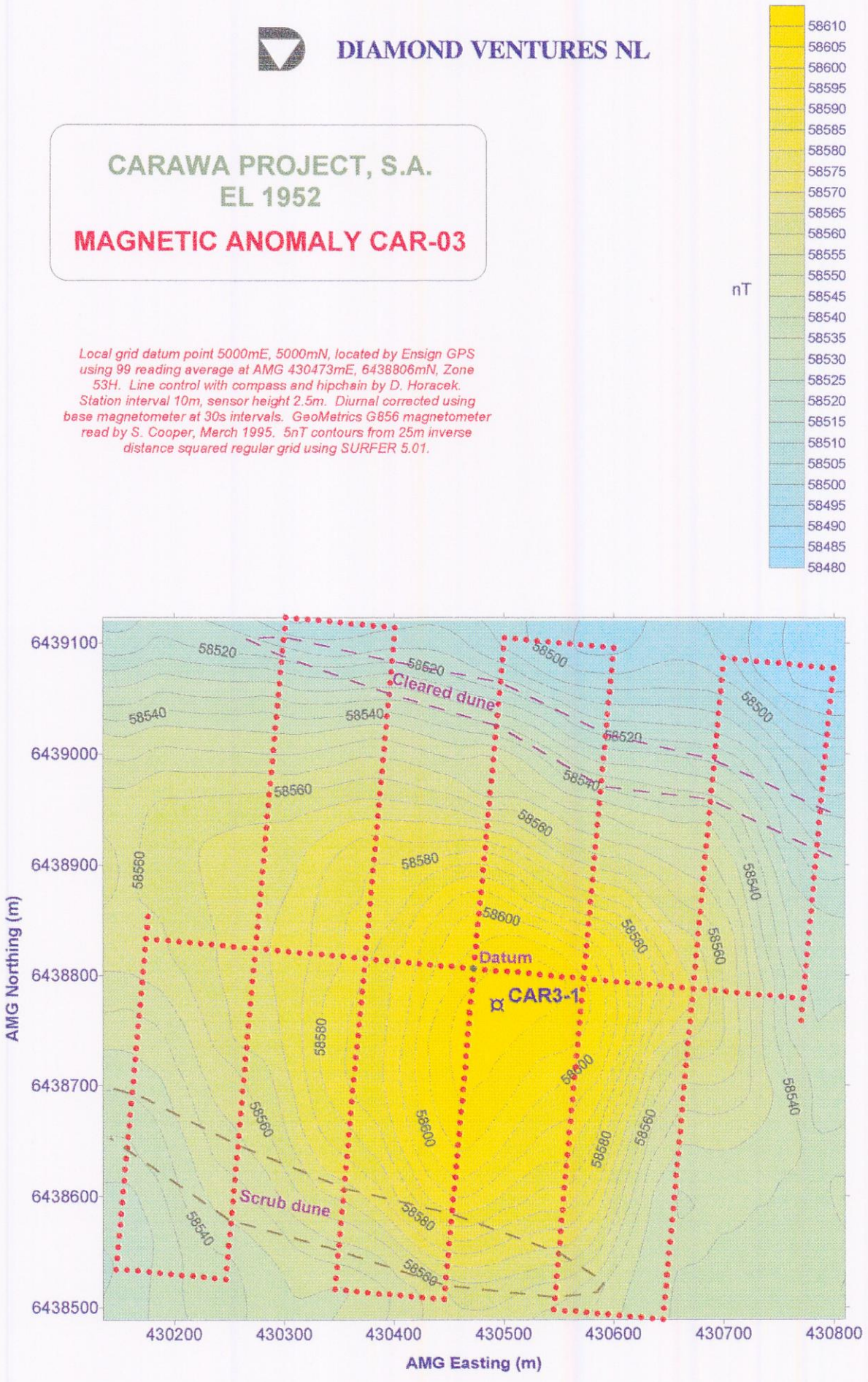


Cooper, 1995

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-03

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 430473mE, 6438806mN, Zone 53H. Line control with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base magnetometer at 30s intervals. GeoMetrics G856 magnetometer read by S. Cooper, March 1995. 5nT contours from 25m inverse distance squared regular grid using SURFER 5.01.

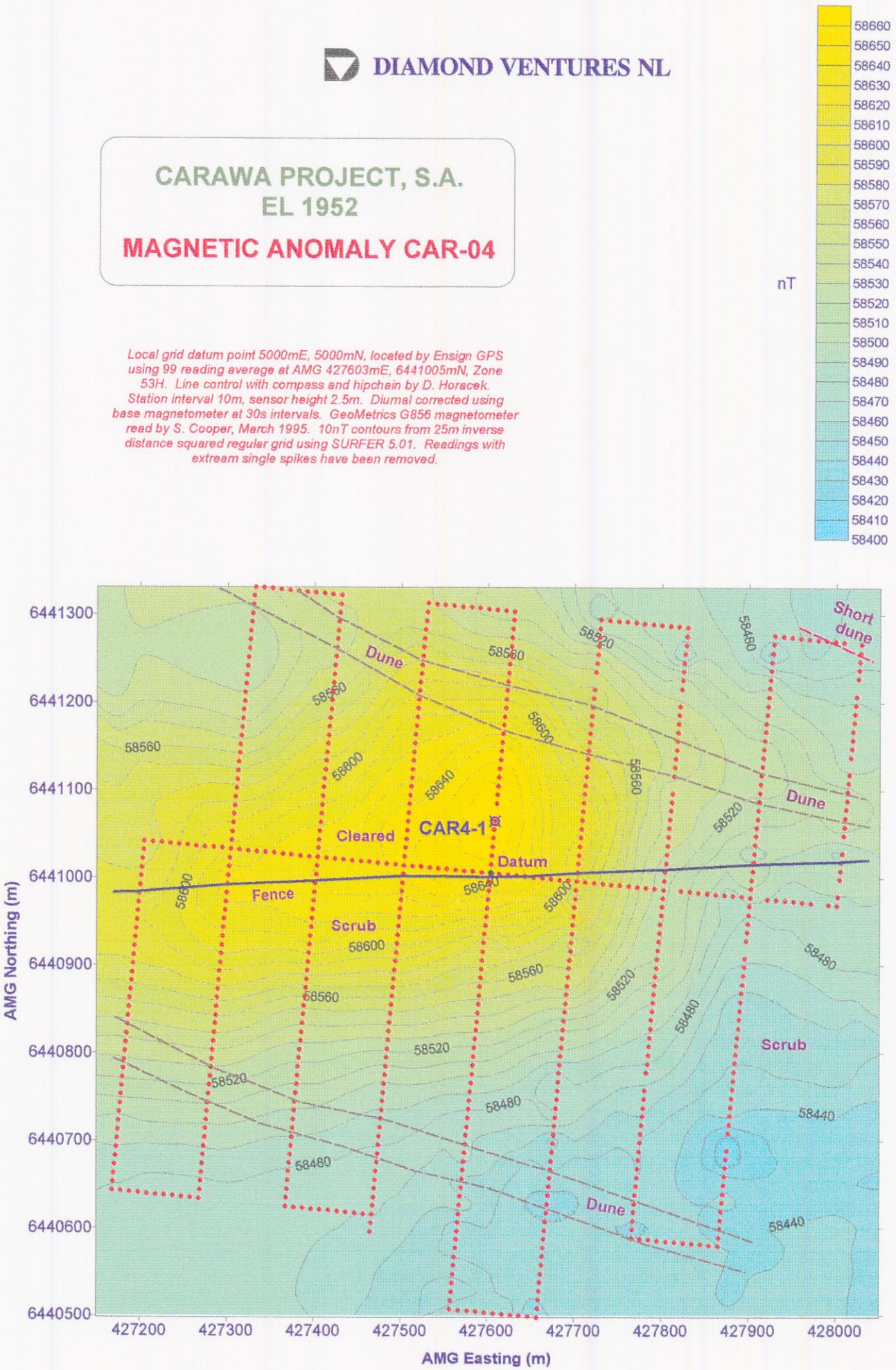


S. Cooper, 1995

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-04

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 427603mE, 6441005mN, Zone 53H. Line control with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base magnetometer at 30s intervals. GeoMetrics G856 magnetometer read by S. Cooper, March 1995. 10nT contours from 25m inverse distance squared regular grid using SURFER 5.01. Readings with extream single spikes have been removed.

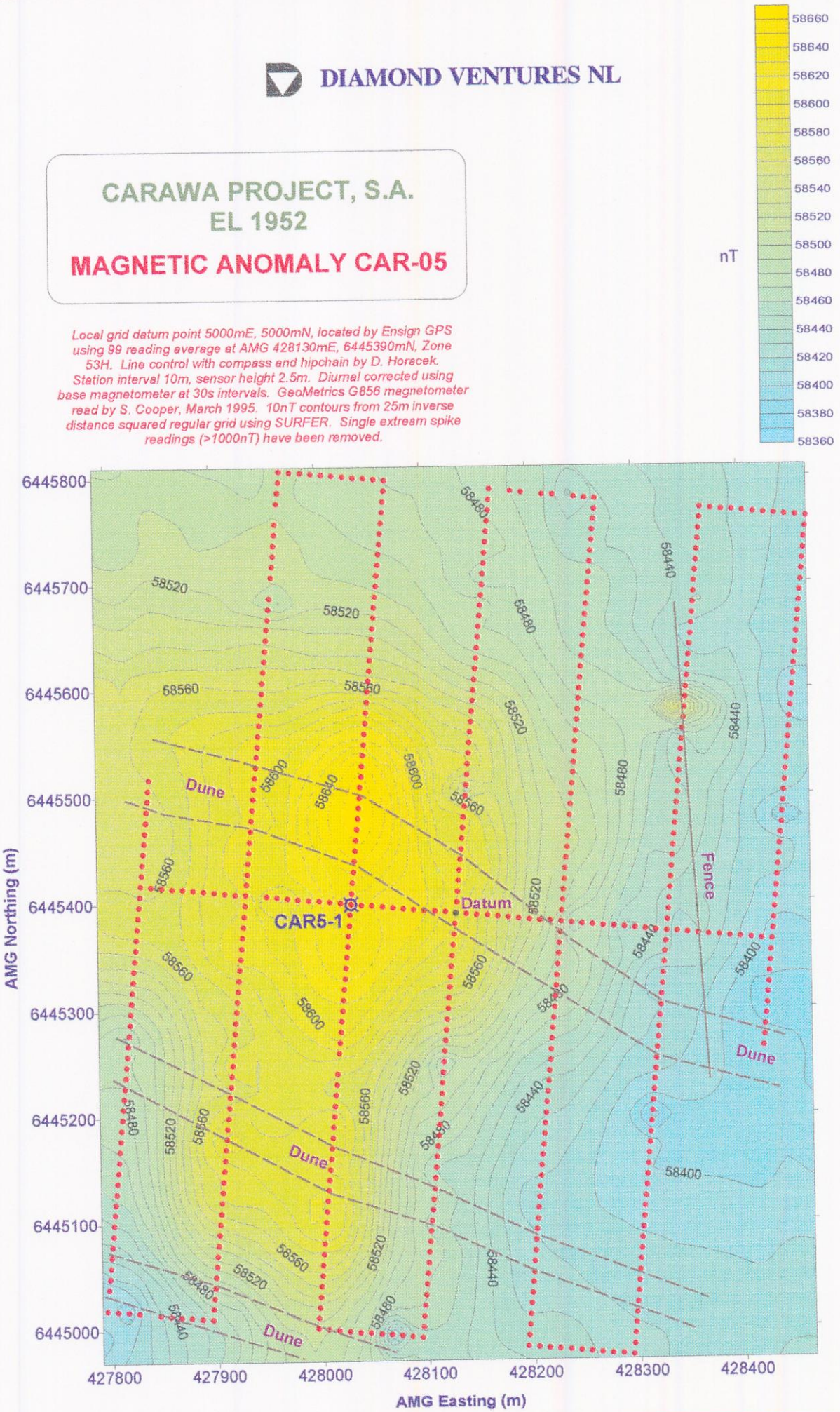


S. Cooper, 1995

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-05

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 428130mE, 6445390mN, Zone 53H. Line control with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base magnetometer at 30s intervals. GeoMetrics G856 magnetometer read by S. Cooper, March 1995. 10nT contours from 25m inverse distance squared regular grid using SURFER. Single extream spike readings (>1000nT) have been removed.

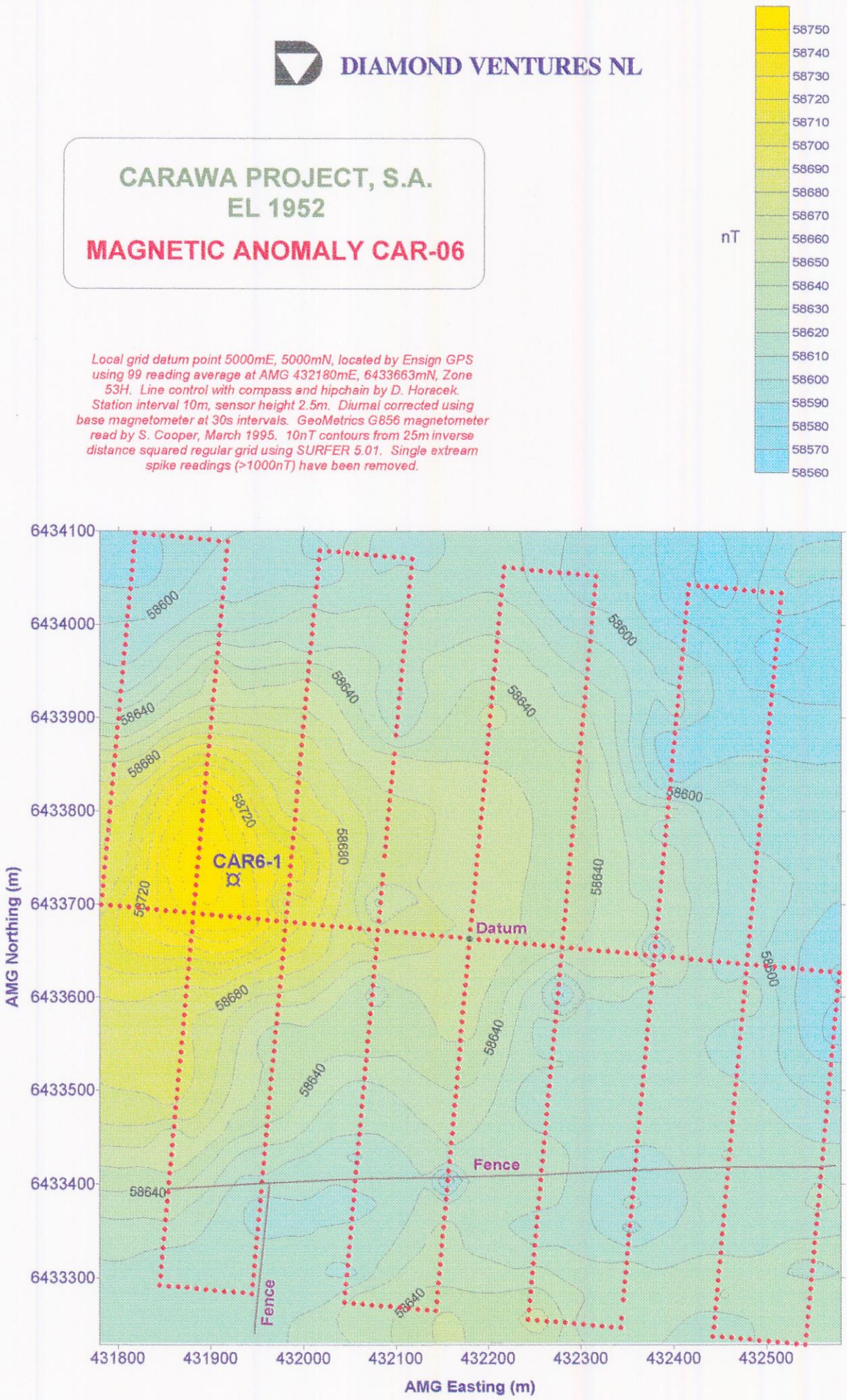


S. Cooper, 1995

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-06

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 432180mE, 6433663mN, Zone 53H. Line control with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base magnetometer at 30s intervals. GeoMetrics G856 magnetometer read by S. Cooper, March 1995. 10nT contours from 25m inverse distance squared regular grid using SURFER 5.01. Single extream spike readings (>1000nT) have been removed.

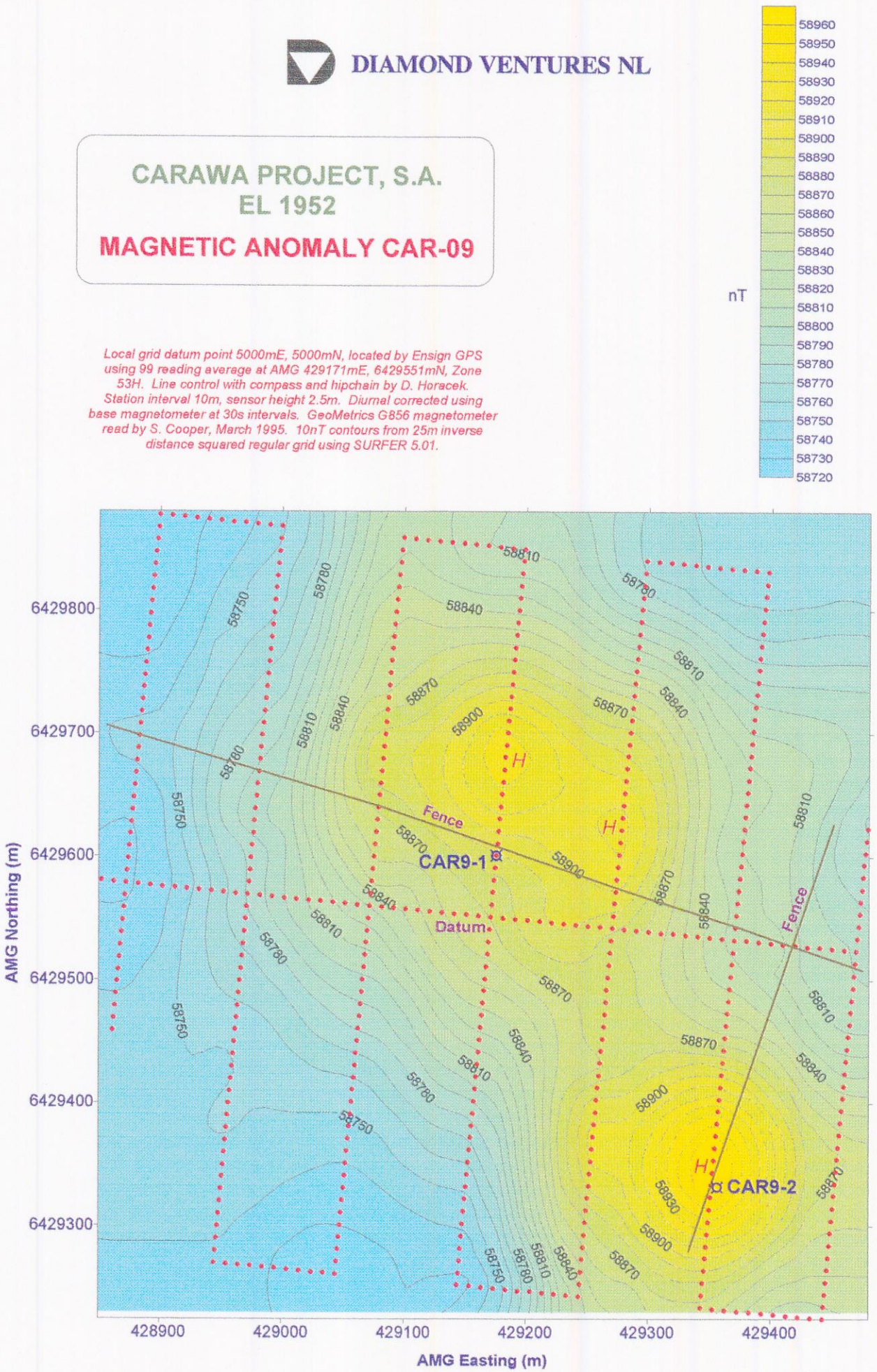


S. Cooper, 1995

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-09

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 429171mE, 6429551mN, Zone 53H. Line control with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base magnetometer at 30s intervals. GeoMetrics G856 magnetometer read by S. Cooper, March 1995. 10nT contours from 25m inverse distance squared regular grid using SURFER 5.01.

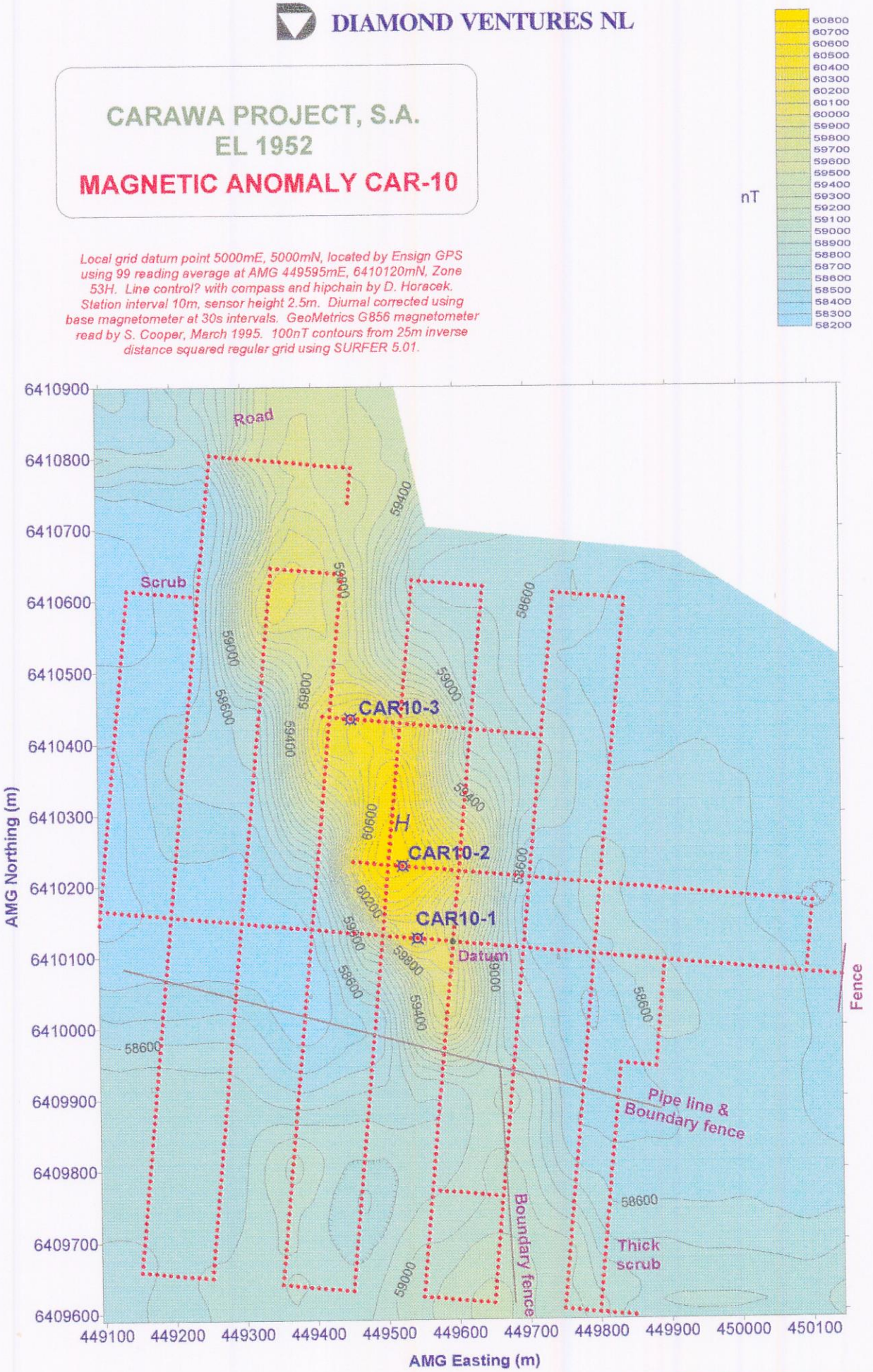


S. Cooper, 1995

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-10

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 449595mE, 6410120mN, Zone 53H. Line control? with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base magnetometer at 30s intervals. GeoMetrics G856 magnetometer read by S. Cooper, March 1995. 100nT contours from 25m inverse distance squared regular grid using SURFER 5.01.

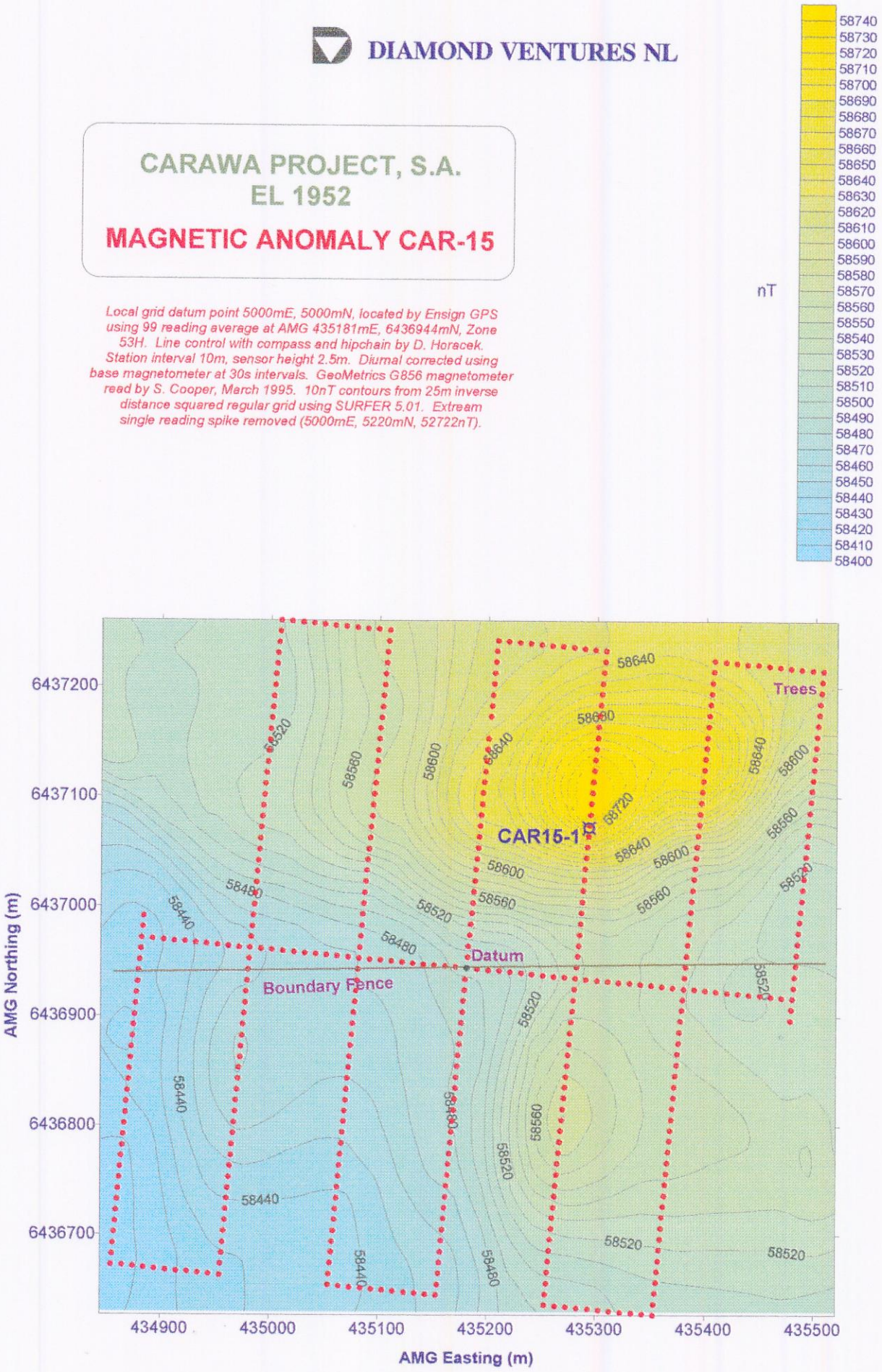


S. Cooper, 1995

DIAMOND VENTURES NL

CARAWA PROJECT, S.A.
EL 1952
MAGNETIC ANOMALY CAR-15

Local grid datum point 5000mE, 5000mN, located by Ensign GPS using 99 reading average at AMG 435181mE, 6436944mN, Zone 53H. Line control with compass and hipchain by D. Horacek. Station interval 10m, sensor height 2.5m. Diurnal corrected using base magnetometer at 30s intervals. GeoMetrics G856 magnetometer read by S. Cooper, March 1995. 10nT contours from 25m inverse distance squared regular grid using SURFER 5.01. Extream single reading spike removed (5000mE, 5220mN, 52722nT).



Cooper,1995

Appendix 3

Project:	Carawa, EL1952.	**Anomaly:**	CAR01.
Hole No.:	CAR01-1.	**Date:**	28 April to 1 May 1995
Local Grid:	4900mE, 5100mN.	**Orientation:**	Vertical
AMG:	437896mE, 6425317mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-102m, diamond core (NQ) 102-128.6m.		

Collar Samples.

0-0.7m	Top soil.
0.7-3m	Calcrete - Generally white/cream in colour, the calcrete is found as fragments of what were previously more massive units. Concretionary textures are commonly observed due to its gradual deposition in the upper horizons, and typically these have developed around many small, and dark coloured fine grained/cherty clasts. Additionally, the calcrete is extremely hard, and proved to be a considerable problem throughout the drilling programme.
3-7m	As above & organic material.
7-9m	Fine sands and clay, brown/orange in colour & contamination of calcrete.
9-13m	Medium grained, consolidated sandstone fragments, with a pale coloured, possibly carbonaceous matrix.
13-23m	Arenite - Medium grained quartz-rich sandstone held in a red/brown matrix & minor siliceous material.
23-55m	As above & coarser individual quartz grains 2/3mm in size, displaying various habits from well-rounded to angular.
55-65m	Deep red in colour prior to washing, containing quartz-rich sandstone with individual crystals of quartz.
65-75m	Pale brown in colour prior to washing, but the same mineralogy.
75-85m	Green/grey in colour prior to washing, the sample contains quartz-rich sandstone.
85-87m	Green in colour, this sample contains the same sands as above, but also minute clusters of pyritohedra pyrite crystals.
87-97m	As above, but no visible pyrite
97-102m	As above & minor mica.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
102	102.9	-	0	102-102.3m. Predominately a felsic lithology with >90% feldspar, and a matrix of quartz, muscovite, possibly biotite and opaques. Within the unit a banded metamorphic fabric is present indicating that the lithology is, or was, in a state of re-equilibrium, altering to a gneissic assemblage. 102.3-102.8m. Possibly faulted against the above is a mesocratic intermediate unit of diorite. It is also undergoing re-equilibrium as the feldspars are altering to clay, a fact which is supported by the presence of considerable chlorite. Typically, quartz is rare and muscovite abundant.
102.9	103.5	0.15	222	102.8-103m. Faulted contact. Granitic unit with phenocrysts of feldspar up to 2cm. and a matrix of quartz, feldspar and mica. This unit is competent, unlike the intermediate material which is weak and therefore unstable. 103-103.1m. Faulted contact with intermediate. 103.1-103.2m. Faulted contact with granitic material, which now contains magnetite.
103.5	104.5	-	223	103.2-104.35m. Faulted contact with intermediate. 104.35-104.7m. Faulted contact with granitic material.
104.5	105.4	0.35	45	104.7-107.2m. Shear zone of intermediate material containing xenoliths of granitic material.
105.4	105.8	0.15	41	
105.8	107.3	-	47	107.2-107.3m. Faulted contact with granitic material.
107.3	108.2	0.40	57	107.3-108.4m. Contact with intermediate material.
108.2	109.7	1.10	118	108.4-111.3m. Intermediate material becomes competent due enrichment in iron, this also gives the rock a red colouration.

109.7	110.9	0.20	72	
110.9	111.5	-	32	111.3-111.5m. Granitic material probably of the same unit above. However, this unit has undoubtably been subjected to a greater degree of alteration, with coarse grained anhedral feldspar development in a finer grained matrix.
111.5	112.0	0.40	-	111.5-112.8m. Faulted contact with intermediate material.
112.0	112.2	-	-	
112.2	113.5	0.15	68	112.8-113.2m. Faulted contact with granitic material. However, the fault axis in this section is steeply inclined at 70-80 degrees to the horizontal, unlike all the previous faults which are typically 45 degrees. 113.2-113.5m. Contact with intermediate material.
113.5	115.1	-	15	113.5-115.9m. Contact with granitic material.
115.1	116.4	-	12	115.9-116.45m. Faulted contact with intermediate material.
116.4	118.0	-	40	116.45-117m. Contact with granitic material. 117-117.25m. Faulted contact with intermediate material. 117.25-17.75m. Faulted contact with granitic material. 117.75-118.25m. Faulted contact with intermediate material.
118.0	118.8	-	45	118.25-123.25m. This section is cut by many faults, resulting in a complex structure of alternating slices of the predominant rock types. Additionally, the combined unit is further cut by veins of both quartz and feldspar.
118.8	119.2	+0.20	82	
119.2	121.2	0.10	216	
121.2	124.2	-	793	123.25-123.55m. Bleached intermediate. 123.55-123.9m. Fine grained leucocratic lens, seemingly not of the same origin as the previously described acidic rocks. 123.55-126m. Intermediate.
124.2	127.2	-	672	126-127.7m. Contact with granitic material.
127.2	128.6 EOH	-	486	127.7-128.6m. Brecciated granitic material-possible shear zone?

Project:	Carawa, EL1952.	**Anomaly:**	CAR02.
Hole No.:	CAR02-1.	**Date:**	2 & 3 May 1995
Local Grid:	4880mE, 5250mN.	**Orientation:**	Vertical
AMG:	441956mE, 6419574mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-22.5m, diamond core (NQ) 22.5-51.7m.		

Collar Samples.

0-6m	Calcrete (see notes from previous hole).
6-8m	Fine unconsolidated sands, apparently poorly sorted due to the presence of coarser quartz crystals. Boundary also indicated by colouration change to an orange/brown.
8-14m	Competent fragments of the above sands.
14-16m	As above regardless of colour change to a v.pale brown.
16-22m	Predominately quartz crystals with sandstone fragments (basement?)
22-22.5m	As above & fragments of feldspar.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
22.5	23.4	-	0	22.5-25m. A leucocratic lithology composed predominately of quartz and yellow feldspars, with an opaque phase which is weathering, possibly an iron oxide, and minor sulphide. The quartz and feldspar, which are largely intergrown, typically display anhedral crystal habits. While although competent, the rock itself shows evidence of faulting, along which considerable iron staining has occurred.
23.4	23.5	-	0	
23.5	24.5	-	0	
24.5	24.8	-	0	
24.8	26.5	0.10	8	25-26.5m. This is the same unit, however, the colour of the feldspars has altered to a deep red over a gradational contact.
26.5	29.5	-	211	26.5-30m. Once again there is a gradational colour change, in this horizon the rock is predominately pale grey in colour.
29.5	32.5	-	966	30-35.5m. In this horizon the rock has reverted to the red colouration.
32.5	34.4	-	261	
34.4	36.5	0.10	5527	35.5-51.7m. At this point the rock is highly sheared and extremely magnetic, the latter being due to the concentration of magnetite. The red/pink feldspars are very angular and surrounded by a matrix of quartz, feldspar and magnetite. The linear habit of the magnetite indicates that its been sheared into thin horizons, and/or possibly that its been re-mobilised or introduced into the system at the time of shearing. This shear extends for 2.5m before returning to the red granitic material previously described. However, a further shear zone between 42.5-43m also exists, unlike the above it is not rich in its magnetite content, but does indicate that all three mineral phases have been re-mobilised during the shearing. The red granite is dominant to the EOH, with the magnetite becoming more stable with depth.
36.5	39.2	-	3216	
39.2	40.9	-	201	
40.9	42.5	-	1409	
42.5	45.5	-	150	
45.5	48.5	-	667	
48.5	51.7 EOH	-	732	

Project:	Carawa, EL1952.	**Anomaly:**	CAR03.
Hole No.:	CAR03-1.	**Date:**	11 to 13 May 1995
Local Grid:	5025mE, 4970mN.	**Orientation:**	Vertical
AMG:	430495mE, 6438774mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-133m, diamond core (NQ) 133-137.8m.		

Collar Samples.

0-2m	Top soil.
2-6m	Calcrete (see previous notes).
6-14m	Fine, well sorted, and unconsolidated sands with a v.fine/clay matrix.
14-16m	As above & minor fragments of fine, well sorted arenite.
16-18m	As above & individual med.grained, sub-rounded quartz crystals.
18-70m	Fine unconsolidated sands, with minor opaques and contamination from above.
70-76m	Fine/med.grained sands which are rich in feldspar and therefore dark red/brown in colour.
76-82m	Med.grained sands composed of quartz, feldspar, and lithics. The grains are generally angular, and there is little or no matrix, making the unit porous and grain supported.
82-84m	Fine/med.sands relatively richer in quartz and subsequently lighter in colour.
84-88m	Clay, dark brown in colour.
88-96m	Med.grained quartz sands which are well sorted and display various habits.
96-133m	Very clean coarse grained sands?, composed mainly of irregular shaped quartz, feldspar, and organics. The unit is well sorted, grain supported, with no apparent matrix, and subsequently will be very porous. The unit may be the upper horizon of the underlying basement?

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
133	134.4	-	0	133-134.4m. A med.grained lithology with phenocrysts of anhedral-subhedral feldspars, which often display zoning. The matrix is composed of quartz and feldspar, the latter of which is commonly breaking down to a clay assemblage. Chloritic alteration is occurring, and the unit is cut by faults along which iron staining has occurred. Towards the base fine mafic banding can be seen, indicating that the unit is/has undergone a degree of metamorphism.
134.4	135.9	0.7	0	134.4-136.15m. Extreme alteration of the feldspars into a clay assemblage has made the unit unconsolidated, and mineral identification impossible.
135.9	137.8 EOH	-	343 @ 136.75m 2023 @ 137.0m 1842 @ 137.2m 2016 @ 137.6m 852 @ 137.7m	136.15-136.65m. Med.grained mesocratic rock which displays a strong metamorphic fabric. It consists of zoned white alkali feldspars of various habits, quartz, magnetite, other opaques, and minor metallic minerals. 136.65-136.9m. Med.grained leucocratic rock which is rich in pink/red feldspar, lesser quartz, and minor opaques. The quartz and the feldspars are commonly intergrown with embayed crystal boundaries, and therefore generally anhedral in habit. The opaques are evenly disseminated through the rock and are not obviously magnetic, however, some do appear platey and presumably these are biotite. The boundary between this and the above unit is not faulted, but a sharp and intergrown. Therefore the original units were either two igneous bodies which while still ductile mixed to a limited extent, or possibly two sedimentary horizons. There is no evidence of chilled margins, but these could have been overprinted by the subsequent metamorphism and recrystallisation. 136.9m-E.O.H. This unit is composed mainly of alkali feldspars with minor quartz, magnetite, and other opaques. It has a strong metamorphic banded texture, therefore classifying it as a gneiss. In other horizons the banding is absent, but the mineralogy remains the same. Once again the contact between the unit and the above is not faulted, and the same characteristics apply as previously described.

Project:	Carawa, EL1952.	**Anomaly:**	CAR04.
Hole No.:	CAR04-1.	**Date:**	7 May 1995
Local Grid:	5000mE, 5060mN.	**Orientation:**	Vertical
AMG:	427609mE, 6441065mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-34m, hole abandoned.		

Collar Samples.

0-8m:	Calcrete (see previous notes).
8-12m:	Fine unconsolidated sands, generally brown in colour and matrix supported, although weakly, by a v.fine/clay material
12-14m	The colour of the sample is somewhat paler due to the presence of med.grained quartz crystals within the sands.
14-18m	As above, however the sands are becoming more consolidated
18-34m E.O.H.	Predominately med.grained, well rounded, well sorted, and grain supported quartz crystals which have little or no matrix. Minor fragments of sandstone and fine sand are present, but these may be contamination. These sands due to their lack of matrix, their rounded habit, and degree of sorting, are obviously very porous and the reason as to why water circulation while drilling could not be attained - hole abandoned at 34m.

Project:	Carawa, EL1952.	**Anomaly:**	CAR05.
Hole No.:	CAR05-1.	**Date:**	8 to 11 May 1995
Local Grid:	4900mE, 5000mN.	**Orientation:**	Vertical
AMG:	428030mE, 6445399mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-77m, diamond core (NQ) 77-82.5m.		

Collar Samples.

0-6m:	Calcrete (see previous notes).
6-10m	Very fine unconsolidated sands with minor quartz crystals up to 0.5mm. Generally the sands are poorly sorted and matrix supported, although weakly, by a clay material.
10-14m	Quartz-rich yellow and white sands. Both appear to be reasonably consolidated, but it is difficult to elucidate as to whether they are grain or matrix supported. Individual quartz crystals are still present as previously described.
14-16m	Unconsolidated quartz sands in a clay matrix. Additionally there are poorly sorted but consolidated sands in a green, possibly crystalline matrix.
16-20m	Med/coarse quartz-rich sands with minor feldspar.
20-22m	As above & fine sands in a yellow matrix.
22-24m	Unconsolidated med.grained quartz sands.
24-30m	As above, no evidence of a matrix and therefore clast supported.
30-54m	Difficult to ascertain what is prominent, generally however it is composed of quartz displaying angular to sub-rounded habits, feldspar, and sandstone fragments.
54-66m	As above, with fragments of fine sandstone and coarser quartz crystals up to 0.7mm.
66-74m	Brown coloured feldspar-rich sands with minor quartz.
74-76m	As above & white clay.
76-77m	White clay, possible weathered basement.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
77.0	77.6	0.15	18 @ 77.0m	70-77.7m. Fragments of coarsely grained recrystallised quartz can be found at the top of the core. However, this passes into a med.grained quartz, feldspar, and lithic assemblage held in a pale brown matrix, it is greatly weathered and subsequently incompetent.
77.6	77.7	-		
77.7	78.5	-	18 @ 78.0m	77.7-79m. The same unit is now veined with an opaque mineral phase, and by the recrystallised quartz. It is still considerably weathered and is stained with iron along many of the veins and fractures.
78.5	78.8	0.10		79-80.5m. The same unit continues but is less weathered, and therefore more competent. It is composed of pink/red feldspars which display subhedral to anhedral habits, and which are held in a med.grained matrix of quartz, mica, and opaques. Along many of the fractures chlorite is found, while many of the feldspars are being overprinted by an acicular mineral which appears to be actinolite. Pyrite cubes are also present, but these form a minor phase.
78.8	79.8	0.25		
79.8	80.2	-	121 @ 80.0m	

80.2	81.5	+0.40	3571 @ 81.0m	80.5-E.O.H. Once again the same unit continues, this time however the degree of metamorphism is considerably greater. Gneissic banding has developed, and magnetite forms opaque, and highly magnetic stringers cutting through the unit. The feldspars have rounded and vague crystal boundaries due to replacement, and in addition to the quartz, have become engulfed by an opaque mineralogy. In other horizons the quartz and feldspar have developed into an anhedral mosaic of coarsely grained minerals, and generally these areas are devoid of opaques. Subsequently, such regions do not have the same magnetic characteristics as the more mafic rich areas. This is obviously a high grade metamorphic rock, displaying the characteristics of both a schist and a gneiss, while its original rock type is difficult to ascertain.
81.5	82.1	-	3926 - 81.3m	
82.1	82.5 EOH	-	1812 @ EOH	

Project:	Carawa, EL1952.	**Anomaly:**	CAR06.
Hole No.:	CAR06-1.	**Date:**	15 & 16 May 1995
Local Grid:	4740mE, 5040mN.	**Orientation:**	Vertical
AMG:	431925mE, 6433727mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-71m, diamond core (NQ) 71-73.6m.		

Collar Samples.

0-2m	Calcrete (see previous notes).
2-4m	Fine/med., poorly sorted sands which are generally unconsolidated and grain supported.
4-10m	V.poorly sorted sands held in a red/brown v.fine/clay matrix.
10-12m	As above & fragments of white arenite.
12-14m	As above, but no arenite.
14-34m	Fine/med., moderately sorted sands held in little or no matrix. The grains vary in habit from angular to rounded, while the unit in general is grain supported and unconsolidated.
34-36m	Red/brown clay.
36-48m:	The same unit as found between 14-34m.
48-54m	Poorly sorted fine sands held in a matrix of variously coloured clays. Additionally, a high percentage of unidentified opaque minerals are present giving the sample its dark colouration.
54-60m	Fragments of dark brown and fine grained sandstone, with clay.
60-62m	Fine sands in a yellow clay matrix.
62-70m	White clay.
70-71m	Blue/white clay.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
71.0	72.4	-	3 @ 71.1m	71-71.35m. Fine grained intergrowths of anhedral quartz and feldspar with disseminated opaques, some of which are biotite. The feldspars, which are white in colour, are in the preliminary stages of breaking down as they are v.soft, however, presently no clay has developed. The unit is faulted, and along which quartz veins have developed.
72.4	72.5	-	1 @ 72.1m	71.35-E.O.H. A coarse grained granitic/gneiss rock containing phenocrysts of brown alkali feldspar in a matrix of quartz, feldspar, biotite, and magnetite with increasing depth. Some of the feldspars display subhedral habits and zoning, whereas the remainder do not. However, all the feldspars are competent, and therefore not breaking down, unlike the above unit. Feldspar veins cut the unit, and recrystallisation is evident with the development of a banded metamorphic fabric.
72.5	73.6 EOH	-	50 @ 73.1m 1108 @ 73m	

Project:	Carawa, EL1952.	**Anomaly:**	CAR09.
Hole No.:	CAR09-1.	**Date:**	4 & 5 May 1995
Local Grid:	5000mE, 5050mN.	**Orientation:**	Vertical
AMG:	429176mE, 6429601mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-22.5m, diamond core (NQ) 22.5-29.4m, open hole 29.4-43.5m,diamond core (NQ) 43.5-47.7m.		

Collar Samples.

0-6m	Calcrete (see previous notes).
6-14m	Fine unconsolidated sands.
14-16m	Consolidated fragments of the above & fragments of white fine/med. Quartz-rich sands - arenite.
16-20m	As above & individual quartz crystals <0.5mm.
20-22.5m	Fine sands with no arenite.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
22.5	23.7	-	0	22.5-22.9m. Friable fine/med.sands, mod.sorted, subangular-rounded in habit, held in an orange/brown matrix.
23.7	24.7	0.30	0	22.9-26.7m. Bleached, poorly consolidated quartz-rich sandstone predominates, gradually becoming more consolidated with depth.The unit displays various habits
24.7	26.7	0.85	0	and degrees of sorting, and is generally matrix supported. Structures are limited to faulting and subsequent brecciation, in addition to iron-rich laminations.
26.7	29.4	1.2	0	26.7-29.4m. Red/brown fine arkosic sandstone which is poorly sorted, grain supported and generally unconsolidated.

Rotary Samples.

29.4-33m	As above.
33-39m	As above & quartz crystals.
39-41m	Colour white/l.brown due arenite clasts predominating.
41-43.5m	Mainly quartz with yellow feldspars-possible weathered basement?

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
43.5	45.2	-	0 23@ 44.7m 76@ 44.9m 1820 @ 45.1m	43.5-43.8m. Fine grained leucocratic rock composed mainly of pink alkali feldspar with quartz and minor muscovite-no opaques. Felsite/micro granite.
45.2	47.7 EOH	-	1904@- 45.3m 1712 @ 45.7m 1998 @ 46.2m 3169 @ 47.2m 1971 @ 47.7m.	43.8-47.7m. Contact with granitic material composed of subhedral feldspar phenocrysts (2cm) and a matrix of intergrown quartz, feldspar, muscovite and biotite - mica granite. The unit is commonly fractured, and characterised by an increasing amount of magnetite with depth.

Project:	Carawa, EL1952.	**Anomaly:**	CAR09.
Hole No.:	CAR09-2.	**Date:**	6 May 1995
Local Grid:	5200mE, 4800mN.	**Orientation:**	Vertical
AMG:	429352mE, 6429334mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-32m, diamond core (NQ) 32.6-39.8m.		

Collar Samples.

0-4m	Calcrete (see previous notes).
4-14m	Fine unconsolidated sands identified in sample due to colour change in sample prior to washing.
14-22m	Fine/med.consolidated fragments of arenite held in a carbonaceous matrix.
22-30m	Fine/med.consolidated sandstone in an orange/brown matrix.
30-32m	White alkali feldspar with quartz - basement?

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
32.6	33.8	0.60	0 @ <33.7m 11 @ 33.7m	32.6-33.8m. Med.grained and pale grey feldspar-rich rock, with minor quartz throughout and opaques (biotite?) at depth. The feldspars generally form anhedral habits with the occasional crystal being subhedral. Additionally they form a phenocrystal phase with crystals up to 1cm, but typically they average around 3mm.
33.8	36.8	-	83 @ 34.3m 121 @ 35.3m 282 @ 36.4m 2215 @ 36.6m	33.8-36m. This is the same unit as above, but it is brown in colour, more porphyritic, biotite and possibly muscovite are more abundant, and a secondary opaque phase is present forming around the primary crystal boundaries. Banding in the rock is also very apparent, and may represent relic bedding, thus making this an S-type granite? There are also minor sulphides. 36-36.5m. Banded schist consisting of quartz, feldspar, mica, and tabular opaques of hornblende, which in places appear to have been replaced by chlorite. Amphibolite schist.
36.8	39.8 EOH	-	10420 @ 37.0m 8397 @ 38.0m 3700 @ 39.7m	36.65-39.8m. This unit is a feldspar-rich rock with phenocrysts up to 2/3cm. The crystals are rounded and poorly developed, and obviously in a state of disequilibrium. The matrix which surrounds the phenocrysts is composed of quartz, feldspar and magnetite, and the magnetite is commonly oxidizing. The rock type at the top of the core is also present, as is the banding previously described.

Project:	Carawa, EL1952.	**Anomaly:**	CAR10.
Hole No.:	CAR10-1.	**Date:**	17 May 1995
Local Grid:	4950mE, 5000mN.	**Orientation:**	Vertical
AMG:	449545mE, 6410125mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-23.5m, diamond core (NQ) 23.5-25.9m.		

Collar Samples.

0-2m	Top soil.
2-8m	Calcrete (see previous notes).
8-10m	Fine, moderately sorted sands in a brown clay matrix.
10-12m	As above & minor quartz crystals <1mm.
12-16m	As above & consolidated fragments of the same sands.
16-20m	Dark brown sample with clays, quartz, and mica - possible basement?
20-23.5m	Quartz, feldspar, mica, and opaques, with lesser amounts of clay.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
23.5	24.7	-	172	23.5-24.8m. A mesocratic rock with a pronounced schistosity. Quartz and white alkali feldspars are intergrown, and appear to be the original components of what is now a mica rich lithology. In addition there is a blue, and possibly metallic phase which is difficult to identify.
24.7	25.8	-	187	24.8-25.5m. Quartz and feldspar become rarer with depth, and therefore the rock becomes more mafic. Flakes of biotite dominate the mineralogy, thus classifying the unit as a biotite schist. 25.5-E.O.H. The rock is now melanocratic in appearance, and strongly magnetic. The blue coloured mineral now forms a major part of the unit, and there is a considerable density difference in this section of core towards the core higher in the profile. Whether it is the magnetic phase is difficult to ascertain, but there is no obvious magnetite present, therefore its possible that it may be specular haematite?
25.8	25.9 EOH	-	12316	

Project:	Carawa, EL1952.	**Anomaly:**	CAR10.
Hole No.:	CAR10-2.	**Date:**	17 & 18 May 1995
Local Grid:	4920mE, 5100mN.	**Orientation:**	Vertical
AMG:	449525mE, 6410227mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-23m, diamond core (NQ) 23-33.4m.		

Collar Samples.

0-6m:	Calcrete (see previous notes).
6-10m:	Fine unconsolidated and consolidated sands, the latter being weakly bonded by a clay matrix. Minor med.grained quartz crystals are also present.
10-23m	As above, with the addition of mica flakes and minor fragments of the blue mineral previously found in the last drill hole.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
23.0	24.7	0.15	0 @ 23.0m 604 @ 23.5m	23-E.O.H. At the top of the core recrystallised siliceous material as found at CAR 05 can be found, and this is cut by fine veins of opaque minerals giving the rock a metamorphic fabric. The rock passes quickly into a schist, containing quartz, feldspar, biotite, and other opaques, this is the same unit as found in the previous hole. A considerable amount of the core is iron stained, but it has remained competent. Additionally, the unit is commonly cut by quartz veins, such as those previously described, however, in these horizons they contain small blue coloured opals. This unit remains until the E.O.H.
24.7	27.5	-	680 @ 24.5m 868 @ 25.5m	
27.5	29.4	-	1586 @ 27.4m 1737 @ 28.4m	
29.4	32.4	-	2265 @ 29.4m	
32.4	33.4 EOH	-	6538 @ 32.5m	

Project:	Carawa, EL1952.	**Anomaly:**	CAR10.
Hole No.:	CAR10-3.	**Date:**	18 & 19 May 1995
Local Grid:	4820mE, 5300N.	**Orientation:**	60° towards 090° magnetic
AMG:	449443mE, 6410435mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-21.5m, diamond core (NQ) 21.5-49.0m.		

Collar Samples.

0-6m	Calcrete (see previous notes).
6-14m	Fine, moderately sorted sands in a clay matrix.
14-18m	As above & individual crystals of quartz.
18-20m	As above & consolidated fragments of the same sands.
20-21.5m	Quartz, feldspar, mica, and opaques, with white clay.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
21.5	22.8	-	91 @ 22m	21.5-22.1m. Fine grained mafic schist, with schistosity steeply inclined, and an occasional band of coarse feldspar. 22.1-22.8m. Augen Gneiss. Augen shaped feldspars up to 1cm in length are found in a matrix of quartz and opaques.
22.8	25.9	0.3	76 @ 22.8m	22.8-25.8m. Mafic schist as above, but here it is cut by quartz veins.
25.9	26.5	-	378 @ 24m	25.8m-35.7m. This unit is a banded gneiss, composed generally of feldspar and very minor quartz and opaques. The opaques form fine lineations in the rock and give it its banded texture, and they are at the same inclination, and possibly orientation, as the schistosity. Presumably the same metamorphism has caused both textures, and therefore its also possible that the units represent different relic sedimentary horizons.
26.5	28.3	-	5285 @ 27m	
28.3	30.7	-	227 @ 28.5m	
30.7	32.6	-		
32.6	33.2	-		
33.2	33.5	-		
33.5	34.1	-		
34.1	34.6	-		
34.6	36.8	-		35.7-38.1m. Mafic schist.
36.8	38.2	-	2039 @ 37m	38.1-41.8m. Banded gneiss. This unit clearly shows that the units are not faulted against one another.
38.2	38.9	-		
38.9	39.7	-	1510 @ 39m	41.8-EOH. Mafic schist. This unit is cut by many quartz veins, some of which contain iron sulphide and possibly the copper oxide cuprite. It is highly magnetic, probably due a high concentration of magnetite. However, this rock also has a blue lustre and obviously contains the same mineral as the previous two drill holes, but the identity of the mineral is still unresolved.
39.7	42.8	-		
42.8	49.0 EOH	-	15025 @ 43m 12593 @ 48.5m	

Project:	Carawa, EL1952.	**Anomaly:**	CAR15.
Hole No.:	CAR15-1.	**Date:**	14 & 15 May 1995
Local Grid:	5100mE, 5138mN.	**Orientation:**	Vertical
AMG:	435293mE, 6437072mN.	**Geologist:**	L. Muskett
Drill Method:	Open hole 0-62m, diamond core (NQ) 62.3-66.4m.		

Collar Samples.

0-2m	Calcrete (see previous notes).
2-8m	Fine, well sorted sand held in a orange/brown clay matrix.
8-10m	Red/brown coloured clay, with fragments of fine grained, yellow sandstone.
10-14m	Red/brown and cream coloured clays.
14-18m	Fine grained sands held in yellow fine/clay matrix.
18-22m	Difficult to determine predominant lithology. The section is composed of sandstone fragments, clay, siliceous material, and quartz crystals.
22-28m	Med.grained, well sorted, and grain supported sands, which display various habits.
28-30m	Difficult to determine predominant lithology. The section is composed of quartz, clay, and sandstone fragments.
30-60m	Coarse, angular quartz-rich sands with a minor to absent clay matrix.
60-62m	Yellow clay.

Diamond Core.

Start (m)	End (m)	Lost (m)	Mag. Sus.	Notes
62.3	62.6	-	12533 @ 62.4m	62.3-E.O.H.. The entire core is composed of the same lithology. Meso-melanocratic in appearance, the unit contains considerable opaques, especially magnetite, but also quartz, feldspar, chlorite, and minor sulphide. Relic phenocrysts of feldspar display a metamorphic replacement texture, but there is no banding or obvious foliation as seen in some of the other rocks. Classification of this rock in the field is difficult, however, it is obviously metamorphic, and the presence of chlorite indicates that it is of greenschist facies.
62.6	64.0	-	12895 @ 63.4m	
64.0	64.2	-	13771 @ 64.4m	
64.2	65.5	-	13243 @ 65.4m	
65.5	66.4 EOH	-	13167 @ 66.4m	

Appendix 4

00049

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Our ref: D11/94/852
Your ref: Purchase Order numbers 0555 (3 May, 1995) and 0556 (10 May, 1995).

Petrological examination of seven drill core samples (CAR 1-1 115.45m; CAR 1-1 128.55m; CAR 2-1 22.7m; CAR 2-1 36.0m; CAR 9-1 47.5m; CAR 9-2 36.3m; CAR 9-2 38.0m), from the Carawa Project EL1952, Gawler Craton, South Australia.

Report No: D11/94/852 30 May, 1995

For: Diamond Ventures NL

J. Barron

Dr B.J. Barron
Consulting Petrologist

Sample No. CAR 1-1 128.55 m

Rock Type Partly selectively altered and partly recrystallised, amphibole- and biotite-rich, quartz monzodiorite.

Hand Specimen A coarse grained, mottled white and dark green-grey, granular and friable drill core sample, for which K-feldspar staining gave patchy positive results for parts of the white fraction. The rock is faintly magnetic.

Thin Section This sample has undergone partial metamorphic recrystallisation, but retains a clear, once holocrystalline hypidiomorphic granular intrusive igneous relict texture. This texture is marked by abundant unoriented stout plagioclase laths that vary in length from less than 1.3 mm up to more than 3 mm. The plagioclase retains recognisable magmatic zoning, with central cores that are heavily clouded with fine sericite and minor granular epidote. Interstitial anhedral patches are filled with perthitic K-feldspar (microcline) and granular quartz. Both the microcline and quartz show domains of distinct metamorphic recrystallisation, and anhedral patches of microcline commonly show myrmekitic margins.

The dark green-grey patches of the hand specimen comprise aggregates of anhedral intergrown blue-green amphibole (probably a hornblende), and ragged biotite flakes that are partly converted to olive green chlorite. These ;mafic aggregates are distinctly spongy (poikilitic, and poikiloblastic), enclosing numerous anhedral inclusions of quartz, feldspars, apatite, zircon and opaque oxides.

An approximate primary modal composition for this sample could be as follows; plagioclase 55%; K-feldspar 8%; quartz 10%; amphibole 10%; biotite 10%; once ?titaniferous opaque oxides 5%: and < 2%; accessory apatite, zircon and sphene.

The sample may be described as a partly selectively altered and partly recrystallised, amphibole- and biotite-rich, quartz monzodiorite.

Sample No. CAR 1-1 115.45 m

Rock Type Coarse grained partly graphic granite pegmatite, with minor clay alteration.

Hand Specimen A very coarse grained somewhat friable feldspathic pink-grey drill core sample with conspicuous white argillic vein-like patches. K-feldspar staining gave very strong positive results for about 70% of the offcut surface.

Thin Section This is a coarse grained (pegmatitic) granitic sample, with an allotriomorphic granular to graphic texture. Grain size is variable, and reaches more than 3 cm in the present section. Anhedral crystals of strongly perthitic microcline predominate, and these have distinctly graphic rims where they are intergrown with quartz. The microcline also encloses sparse small subhedral crystals of albite.

The anhedral coarse grained microcline-rich domains are separated by domains of granular, partly ?recrystallised (0.15 mm) quartz intergrown strongly clay-clouded albitic plagioclase and microcline. The clay appears to be low birefringent kaolinite.

The sample contains minor accessory muscovite as ragged flakes enclosed within K-feldspar, rare degraded anhedral opaque oxides, and small metamict euhedral zircon crystals.

An approximate modal composition for the present section is as follows; K-feldspar 70%; quartz 20%; and albite 10%; with accessory muscovite, opaque oxides and metamict zircon.

The sample may be described as a coarse grained partly graphic granite pegmatite, with minor clay alteration.

Sample No. CAR 2-1 22.7 m

Rock Type Strongly recrystallised and foliated, coarse grained granite 'gneiss'.

Hand Specimen A coarse to fine grained pink-grey feldspathic drill core sample with dark grey somewhat subparallel lenses marking a wavy foliation. K-feldspar staining gave strong positive results for abundant patches within the pink fraction of the sample.

Thin Section Strong metamorphic recrystallisation and foliation has affected this sample. However there are preserved in several domains stout subhedral prismatic shaped albitised and sericite-bearing plagioclase prisms, and coarse anhedral perthitic microcline crystals that clearly once were part of a granitic intrusive igneous parent rock. These relict feldspar grains and aggregates reach 5 mm grain size in the present section, but commonly show branching narrow zones of fine recrystallisation, dislocation and fracture. They are intergrown with abundant quartz rich domains that are recrystallised to granular or granoblastic aggregates with an average grain size of about 0.3 mm. The quartz rich domains, although irregular, have somewhat subparallel elongate wavy lensed shapes.

Narrow wavy lenses of strongly recrystallised biotite mark relict mafic domains. Several retain poor outlines of large ragged igneous biotite flakes that are now deformed and drawn out parallel to the wavy foliation. The biotite in such sites is partly converted to clay, and encloses patches of leucoxene-altered granular sphene. An approximate composition for the granitic igneous parent

is as follows; quartz 35%; albitised plagioclase 20%; K-feldspar 40%; and biotite 5%.

The sample may be described as a strongly recrystallised and foliated, coarse grained granite 'gneiss'.

Sample No. CAR 2-1 36.0 m

Rock Type Partly deformed and recrystallised, coarse grained feldspathic granite.

Hand Specimen A coarse grained granular red-brown granitic drill core sample with sparse dark grey mafic crystal sites. K-feldspar staining gave strong positive results for coarse anhedral crystal sites and clusters.

Thin Section Relict hypidiomorphic granular texture is quite well preserved in this felsic granitic rock, in spite of strong but partly selective metamorphic recrystallisation. It retains a primary grain size that varies from less than 1.5 mm up to more than 5 mm in the present section. Feldspar crystals and clusters have undergone only partial fine grained metamorphic recrystallisation, particularly along grain boundaries and narrow cleavage or fracture surfaces. On the other hand quartz is selectively recrystallised forming a mosaic with an average grain size of about 0.2 mm.

An approximate primary modal composition could have been as follows; quartz 35%; plagioclase 25%; K-feldspar 35%; oxides 3%; altered mafic silicates < 1%; and < 1% accessory zircon and minor apatite.

The plagioclase is albite, commonly with central zones that are quite heavily clouded with sericite. Many of the elongate plagioclase prisms

(show deformed and bent twin lamellae, as well as fractured grains with small) displacements. K-feldspar is strongly perthitic microcline, with branching narrow zones of finely recrystallised grains. Anhedral oxide grains reach 2 mm across and commonly are rimmed with dusty sphene indicating a titaniferous composition. The oxides could contain unusual elements since they enclose abundant small zircon euhedra. The euhedral zircon crystals show narrow epitaxial rims of zircon overgrowth in optical continuity with the host grains. This overgrowth possibly could date the metamorphic event while the core zircon could represent primary magmatic crystallisation. Small ragged biotite flakes are partly chlorite-altered.

The sample is a partly deformed and recrystallised, coarse grained feldspathic granite.

Sample No. CAR 9-1 47.5 m

Rock Type Little-altered coarse grained biotite bearing granodiorite.

Hand Specimen A coarse grained, mottled pale pink-grey to pale grey granitic drill core sample in which K-feldspar staining gave positive results for anhedral pink grains accounting for about 12% of the present offcut area.

Thin Section Hypidiomorphic granular texture is evident in this granitic intrusive igneous rock, that has not undergone significant metamorphic recrystallisation. The sample has a variable grain size, mostly within the size range 0.6 mm up to 5 mm, but with an average size of about 1.5 mm.

It has the following approximate modal mineralogy; quartz 35%; plagioclase 45%; K-feldspar 12%; biotite 5%; opaque oxides 3%; and accessory apatite, zircon, sphene and traces of allanite.

Unlike the previous sample CAR 2-1 36.0 m, the quartz in the present sample is not recrystallised, but granular and anhedral. Some coarse grains show strain shadows, with trails of dusty solid and fluid inclusions. Plagioclase crystals are subhedral with distinct compositional zoning, and patchy distribution of sericite clouding. Clusters of relatively coarse grained ragged sericite flakes, minor carbonate and epidote are developed in several sericite-clouded plagioclase crystal sites. Anhedral K-feldspar (perthitic microcline) is distinctly poikilitic containing rounded quartz blebs, small plagioclase laths, as well as sphene, oxides, and biotite. Some marginal patches are myrmekitic.

Ragged biotite flakes show minor chlorite alteration and commonly are intergrown with interstitial quartz. They occur in clusters with anhedral oxides, accessory apatite and zircon.

The sample is a little-altered coarse grained biotite bearing granodiorite.

Sample No. CAR 9-2 36.3 m

Rock Type Distinctly compositionally banded, and well foliated, medium grained, biotite - altered cordierite-K-feldspar-plagioclase gneiss.

Hand Specimen A distinctly compositionally layered medium grained well foliated drill core sample in which alternating dark grey (mafic rich) and pale brown-grey (feldspar rich) bands vary in thickness from 1 mm up to more than 1 cm. K-feldspar staining gave strong positive results for the pale brown-grey felsic bands.

Thin Section Granular to granoblastic recrystallised metamorphic texture, and an average grain size of about 0.35 mm is characteristic in this sample. However, there are preserved relict blastophenocrysts and some glomeroporphyritic

aggregates, up to 2 mm grain size, of prismatic shaped, once compositionally zoned plagioclase that is now albitised and heavily clouded by dusty sericite and fine granular epidote. Also present are rare relict, somewhat irregular shaped plagioclase crystals that retain some primary magmatic zoning. Other recognisable relict textural features are not preserved.

The conspicuous compositional layering of the hand specimen mostly is defined by sharp variation in the proportion of biotite flakes in adjacent bands. The ragged ~ 0.2 mm long biotite flakes account of up to 35% of some layers, and are well aligned parallel to the compositional layering and the foliation which they define. The biotite-rich layers contain approximately equal major proportions of biotite, quartz, plagioclase ± oxides (partly hematite-altered), apatite, and accessory epidote and sericite. In strongly felsic layers biotite decreases to less than 5%, and the granular felsic material comprises almost equally abundant granular quartz, plagioclase, K-feldspar (microcline), as well as abundant elongate lensed sites now selectively filled with pale yellow stained low birefringent layer silicates. These sites almost certainly once were cordierite. Sphene and opaque oxides once again are accessory. Several narrow, crosscutting, vein like fracture zones are marked by strong development of patchy epidote and sericite.

This sample could have had a mixed sedimentary/tuffaceous parent of feldspathic composition, but now may be described accurately only in terms of its present strongly recrystallised metamorphic mineralogy as a distinctly compositionally banded and well foliated, medium grained, biotite-altered cordierite-K-feldspar-plagioclase gneiss.

Sample No.	CAR 9-2 38.0 m
Rock Type	Partly selectively altered, K-feldspar megacrystic, deformed, irregularly foliated and partly recrystallised, biotite- and altered cordierite-bearing (gneissic) granitic rock, with a variable grain size and mineral distribution.

Hand Specimen A very coarse but uneven grained pink-grey granitic drill core sample. K-feldspar staining gives strong positive results for very coarse anhedral grains (up to 2 mm across) and aggregates, separated by irregular pale pink-grey fine grained granular domains throughout which are patches and wavy black trails of ?biotite, possibly defining a wavy foliation.

Thin Section Coarse (up to 2 cm) K-feldspar 'megacrysts' and clusters are characteristic of this partly recrystallised and foliated granitic rock. The 'megacrysts' are strongly perthitic anhedral microcline, that is also strongly poikilitic, enclosing numerous small (~ 0.3 mm), irregular patches of quartz, plagioclase laths, and sparse ragged biotite flakes.

The microcline 'megacrysts' are set within a somewhat granular and party recrystallised matrix fraction, with an average grain size of about 0.3 mm. This fraction contains subhedral prismatic albitised plagioclase (up to 3 mm grain size), commonly with central zones now converted to sericite. Such crystals most likely are of a relict igneous nature. They are set in a mosaic of anhedral interlocking to partly granular and granoblastic quartz, intergrown with plagioclase, microcline, patches of myrmekite and sparse anhedral clay-altered patches that once could have contained cordierite. The latter is associated with clusters of partly chlorite-altered biotite flakes, anhedral opaque oxides and abundant accessory apatite and zircon. In several domains clusters of biotite flakes poorly define a possible wavy foliation, bending around the coarse feldspar grains and aggregates.

The sample may be described as a partly selectively altered, K-feldspar megacrystic, deformed, irregularly foliated and partly recrystallised, biotite- and altered cordierite-bearing (gneissic) granitic rock, with a variable grain size and mineral distribution.

DR B.J. BARRON
Petrologist

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Tel: (02) 449.5839

Our ref: D11/94/859
Your ref: Purchase Order No. 0560, 24th May 1995

Petrological examination of eight drill core samples from the Carawa project, EL 1952, South Australia.

Report No: D11/94/859 22 June, 1995

For: Livre Holdings Pty Ltd

J. Barron

Dr B.J. Barron
Consulting Petrologist

Sample No. CAR 03-1 136.35 m

Rock Type Mildly selectively altered, medium grained, once-biotite-bearing granite containing sparse K-feldspar (microcline) megacrysts.

Hand Specimen A medium to coarse grained, mottled dark grey and pale grey drill core sample for which K-feldspar staining gave strong positive results. K-feldspar forms abundant anhedral medium sized grains as well as sparse subhedral stout prismatic poikilitic megacrysts reaching 1.5 cm long. The rock is not magnetic.

Thin Section Holocrystalline hypidiomorphic granular texture is characteristic of this granitic intrusive igneous rock. In addition it is sparsely 'megacrystic' containing an aggregate of stout subhedral K-feldspar (microcline) more than 1 cm long in the present section. The microcline is perthitic and strongly poikilitic, containing abundant small (up to 1 mm) clouded and partly sericitised albite prisms, sparse anhedral quartz grains and several coarse sericite flakes.

The granitic host rock has an average grain size of about 1.5 mm, and has the following approximate modal composition; quartz 35%; K-feldspar 30%; plagioclase 30%; and about 5% of degraded mica crystal sites.

Stout subhedral plagioclase prisms and aggregates are albitised, but probably once were compositionally zoned since central domains are heavily clouded, and contain dusty sericite. Quartz and K-feldspar (perthitic microcline) on the other hand, form a mosaic of anhedral interlocking grains. Quartz commonly is weakly strained and encloses trails of minute fluid inclusions. The sample contains minor accessory sulphides, rare oxides, apatite and zircon.

There is a narrow zone of branching vein-like microfractures (only 0.015 mm wide) that are filled with fine granular to subradial K-feldspar ± zeolite ± patches of low birefringent clay and traces of sulphides. Dusty oxides and sulphides penetrate narrow fractures and certain grain boundaries.

The rock is a mildly selectively altered, medium grained, once-biotite-bearing granite containing sparse K-feldspar (microcline) megacrysts.

Sample No. CAR 03-1 137.2 m

Rock Type Weakly selectively altered, medium grained and more or less equigranular aplite.

Hand Specimen A rather massive medium grained, granular, patchy pink to mid grey drill core sample for which K-feldspar staining gave very strong positive results. Staining shows a weak narrow compositional banding (possibly magmatic flow banding). The rock is weakly magnetic.

Thin Section This sample shows a more or less equigranular ophitic (allotriomorphic granular) texture, with an average grain size of about 0.4 mm, but with some grains reaching 1 mm.

An approximate modal composition is as follows; K-feldspar 40%; quartz 30%; and plagioclase 30%.

The K-feldspar is weakly perthitic microcline lightly clouded with dusty hematite, and forms an interlocking granular intergrowth of anhedral grains with quartz. Most albitised plagioclase also is anhedral with patchy argillic clouding and sparse development of wispy sericite. Accessory sites of small ragged biotite flakes now are converted to chlorite and sericite and enclose clusters of

small zircon crystals, and sphene-altered oxides. Sparse granular opaque oxides (~ 0.03 mm) also are accessory, and most likely are magnetite since the rock is faintly magnetic. Accessory secondary phases include clusters of anhedral epidote, sericite flakes, patches of sphene, and grain-boundary-located patches of translucent limonitic oxides.

The sample may be identified as a weakly selectively altered, medium grained and more or less equigranular aplite.

Sample No. CAR 05-1 81.3 m

Rock Type Partly recrystallised (gneissic) coarse grained granite/ medium grained biotite rich diorite.

Hand Specimen A mottled dark grey to pale grey drill core sample that appears to be grain size, and possibly compositionally banded. It comprises a coarse grained fraction containing abundant stout pale grey feldspar crystal sites set in a somewhat meagre dark grey matrix, and a medium grained fraction containing abundant pale grey feldspar crystal sites, set throughout a conspicuously foliated dark grey matrix. K-feldspar staining gave strong positive results for numerous anhedral grains in the coarse fraction, but not for the medium grained fraction. The rock is not magnetic.

Thin Section The coarse fraction of this sample retains a hypidiomorphic granular granitic texture, and clearly had an acidic intrusive igneous parent, that has undergone partial patchy metamorphic recrystallisation. Relict coarse crystal sites reach 3 mm across, and include subhedral plagioclase prisms, some of which retain relict igneous compositional zoning. Most contain patches of epidote and sericite, as well as sparse ragged biotite flakes. K-feldspar is anhedral, strongly poikilitic microcline enclosing abundant small inclusions of quartz,

plagioclase, biotite, chlorite and epidote. Intergrown quartz also is anhedral but also shows distinct strain shadows and patches of fine metamorphic recrystallisation. Minor wispy biotite and sericite form a weak wavy foliation, bending around the coarse relict igneous grains.

An approximate modal composition for this fraction is as follows; quartz 35%; plagioclase 35%; K-feldspar 20%; biotite 5%; sericite 3%; and minor accessory (< 2%); sphene, oxides, apatite and zircon.

There is a rather sharp boundary with a second but related fraction, that lacks K-feldspar and could have had a plagioclase rich intrusive igneous parent with an average grain size of about 1.5 mm. Several elongate prismatic plagioclase laths retain relict magmatic compositional zoning, but generally the plagioclase is partly clouded by patchy sericite, and granular epidote. This fraction contains only minor recrystallised quartz but abundant ragged metamorphic biotite defining a distinct wavy foliation. Opaque oxides and apatite are common accessory phases.

The sample may be described as a partly recrystallised (gneissic) coarse grained granite/medium grained biotite rich diorite.

Sample No. CAR 06-1 73.6 m

Rock Type Medium to coarse grained, and partly K-feldspar 'megacrystic' granite, with minor selective alteration confined to plagioclase and biotite.

Hand Specimen A medium to coarse grained granitic drill core sample with approximately equal major proportions of pale grey and pink-grey feldspars, and quartz with subordinate black mafic clusters. K-feldspar staining gave strong

positive results for coarse anhedral pink K-feldspar crystals up to 1 cm grain size. The sample is not magnetic.

Thin Section This is a holocrystalline intrusive igneous rock with a distinct hypidiomorphic granular texture. It has a variable grain size from less than 1 mm up to more than 1 cm, and with an average grain size of about 2 mm.

The following approximate modal composition is characteristic; quartz 25%; K-feldspar 35%; plagioclase 35%; biotite 3%; and about 2% of opaque oxides.

Plagioclase forms stout prismatic crystals that show distinct compositional magmatic zoning. Some are quite heavily clouded by dusty inclusions, sericite, epidote and traces of carbonate, particularly in selected compositional zones. Small plagioclase prisms, generally less than 1 mm commonly form inclusions in poikilitic anhedral K-feldspar. The latter is perthitic microcline, with some marginal lobate myrmekitic patches. Sparse anhedral 'megacrystic' K-feldspar shows simple twins, and is distinctly poikilitic enclosing mainly plagioclase as well as sparse rounded quartz grains and minor ragged biotite. Granular anhedral quartz is intergrown with the K-feldspar, and contains sparse trails of minute fluid inclusions. Sparse small ragged biotite flakes are partly converted to sericite, chlorite and sphene. Apatite and zircon are minor accessory phases.

The sample is undeformed, and may be described as a medium to coarse grained, and partly K-feldspar 'megacrystic' granite, with minor selective alteration confined to plagioclase and biotite.

Sample No. CAR 10-1 25.8 m

Rock Type Coarse grained apatite and magnetite rich mafic intrusive igneous rock, most likely of alkaline affinity, that has

undergone strong metamorphic recrystallisation and foliation. It is now a strongly foliated albite-biotite-magnetite-apatite amphibolite.

Hand Specimen A friable, medium to coarse grained strongly foliated, dark grey to almost black drill core sample, containing scattered coarse grained pale grey (?feldspar) crystals and clusters. K-feldspar staining proved negative. The sample is quite strongly magnetic.

Thin Section Strong metamorphic recrystallisation and foliation has affected this rock, and largely obscures primary textural and mineralogical features. Nevertheless, there are preserved numerous coarse (more than 3 mm long) prismatic crystals of mostly albitised plagioclase with (several plagioclase crystals could show relict compositional zoning), and barely recognisable mafic crystal sites that are now completely recrystallised. Some albitised plagioclase prisms bent and deformed, but many contain clouds of crystallographically oriented minute solid inclusions, as well as patches of clouded clay and sericite. Stout, once subhedral but now mostly anhedral mafic crystal sites now are converted to dense aggregates of metamorphic recrystallised amphibole. Some sites contain colourless twinned magnesium amphibole (possibly cummingtonite) centrally, with blue-green (?alkali) amphibole peripherally. Most mafic crystal sites now are dominated by recrystallised blue-green amphibole.

The coarse feldspar and mafic crystal sites tend to form lenses separated by elongate wavy foliated zones that bend around the coarse crystal aggregates. The foliated zones contain abundant patchy biotite and elongate anhedral patches of opaque oxides that are strongly poikilioblastic, containing prismatic crystals of apatite up to 2 mm long, that are also subparallel to the wavy foliation.

A very approximate modal composition for the rock is as follows; (relict) albitised plagioclase 25%; recrystallised amphibole rich mafic crystal sites 20%; metamorphic biotite 15%; opaque oxides 25%; and apatite 15%.

The rock retains a poorly preserved coarse grained holocrystalline intrusive igneous relict texture, and an unusually mafic and apatite rich composition, suggesting strong alkaline affinity. (It could be worth checking for high Ti and V etc in oxides, and for associated recrystallised rocks of ijolitic to ?carbonatitic affinity).

The sample may be identified as a coarse grained apatite and magnetite rich mafic intrusive igneous rock, most likely of alkaline affinity, that has undergone strong metamorphic recrystallisation and foliation. It is now a strongly foliated albite-biotite-magnetite-apatite amphibolite.

Sample No. CAR 10-2 33.0 m

Rock Type Strongly metamorphosed (partly recrystallised and foliated), medium to coarse grained intrusive igneous rock of alkaline affinity and mafic primary composition (gabbro or even ?ijolite), with abundant and conspicuous apatite.

Hand Specimen A mottled dark green-grey to pale green-grey medium grained drill core sample that is strongly foliated. K-feldspar staining gave weak patchy positive results. The rock is quite strongly magnetic.

Thin Section Strong metamorphic recrystallisation and foliation have affected this sample, but in spite of this a recognisable medium to coarse grained holocrystalline hypidiomorphic granular texture is preserved of a mafic intrusive igneous parent rock. Primary grain size varies from less than 0.4 mm up to more than 3 mm, and the rock is dominated by stout unoriented prisms of albitised plagioclase intergrown with subordinate and generally finer grained subhedral to interstitial and anhedral mafic crystal sites.

The coarse albitised plagioclase crystals contain clouds of dusty pale brown solid inclusions, as well as patches and trails of wispy sericite and carbonate. Several of the coarse crystals once could have been compositionally zoned, while other elongate prismatic crystals show bent and deformed multiple twin lamellae. (Could this phase once have been nepheline?).

Although most primary mafic crystal sites are strongly recrystallised, in several there remains relict primary pale brown clinopyroxene, commonly with partial narrow rims of green aegirine, and outer rims of metamorphic blue-green amphibole. The clinopyroxene is partly converted to patchy carbonate and wispy metamorphic amphibole. Elsewhere mafic crystal sites are completely converted to green, and blue-green metamorphic amphibole.

Interstitial relict primary phases include anhedral opaque oxides enclosing stout prisms of apatite, as well as anhedral clouded patches of K-feldspar.

In several areas of the section oxide patches are lensed and drawn out parallel to a wavy foliation and are set in similarly foliated lenses of dense biotite flakes, fine grained recrystallised patches of quartz and abundant fine grained somewhat foliated patches of fibrous blue-green amphibole.

An approximate primary composition for this rock could have been as follows; albitised plagioclase (and/or ?nepheline) 40%; mafic crystal sites, amphibole-altered, and relict clinopyroxene) 20%; biotite 15%; opaque oxides 10%; apatite 10%; and K-feldspar < 5%.

This sample is somewhat similar to the previous sample CAR 10-1 25.8 m. It may be identified as a strongly metamorphosed (partly recrystallised and foliated), medium to coarse grained intrusive igneous rock of

alkaline affinity and mafic primary composition (gabbro or even ?ijolite), with abundant and conspicuous apatite.

Sample No. CAR 10-3 43.7 m

Rock Type Strongly foliated medium grained biotite-, magnetite- and apatite-rich amphibolite, possibly derived from a mafic alkaline igneous parent.

Hand Specimen A very strongly foliated medium grained almost black drill core sample that is moderately magnetic. K-feldspar staining proved negative.

Thin Section Recognisable relict textures are not preserved in this intensely foliated and recrystallised metamorphic rock. However, it is clearly mineralogically related to the previous samples CAR 10-1 25.8 m and CAR 10-2 33.0 m.

The present rock has an average grain size of about 0.25 mm and a strongly foliated to partly granoblastic metamorphic texture, and has the following approximate modal mineralogy; blue-green amphibole (?hornblende) 55%; biotite 20%; apatite 12%; opaque oxides 12%; and ~ 1% accessory quartz.

Dense aggregates of the blue-green amphibole form somewhat augen-shaped patches around which bend lenses of biotite defining the strong wavy foliation. Anhedral patches of opaque oxides also are drawn out parallel to the foliation and are located within both amphibole- and biotite-rich domains. Stout subhedral crystals of apatite have a more or less even distribution throughout the rock, and commonly form poikilitic inclusions in ?titaniferous opaque oxides. Several very narrow discontinuous lensed layers contain granular quartz intergrown with all the other phases present.

The rock may be described as a strongly foliated medium grained biotite-, magnetite- and apatite-rich amphibolite, possibly derived from a mafic alkaline igneous parent.

STOCKDALE

AUS95/035

AARL

M/95X1577
KR95/0366

m18094

THE PETROGRAPHY OF A SAMPLE FROM DRILL HOLE CAR 10-1, TENEMENT EL1952, STREAKY BAY 1:250 000, SOUTH AUSTRALIA

J. Stiefenhofer

SAMPLE DETAILS:

OCCNUM:	601/266/UR001/1	SAMPNUM:	AB3971
ANOMNUM:		OCCNAME:	CAR10-1

CONSIGNMENT STATUS:

DATE RECEIVED: 20/09/95

JOB TYPE	PRESENT STATUS
Petrography	This report

CLASSIFICATION:

ROCK TYPE : Amphibolite/meta-gabbro
FACIES : Metamorphic
TEXTURE : Nematoblastic, lepidoblastic
MINERALOGY : Hornblende-biotite-apatite-magnetite(?)-plagioclase
NOTE : See summary and remarks

REMARKS:

MACROCRYSTS : None observed
PHENOCRYSTS : None observed
VEINS : Magnetite(?)

27 September, 1995
JS/GHR/MDW/sk

SUMMARY

Sample AB3971, collected from a depth of 25.8 metres, was submitted for petrographic analysis. Hand sample examination reveals a magnetite(?)-rich, metamorphosed rock consisting of feldspar, a greenish amphibole, mica, and notably visible apatite. A vague fabric is visible. A free-swinging magnet is attracted by the sample, thereby confirming the possible presence of magnetite.

Thin section examination confirms the above observations and reveals a very fresh metamorphic rock consisting of prominent green to brown pleochroic hornblende, brown pleochroic biotite, twinned and recrystallised plagioclase, strikingly coarse and abundant apatite and abundant magnetite(?), intimately associated with the above minerals.

The hornblendes range in size from ±0.08mm to 0.5mm in length and exhibit textures ranging from granoblastic to nematoblastic. The biotite is of similar size range compared to that of amphibole and occurs as pools, lenses and single grains throughout the sample. A lepidoblastic texture is often present. The plagioclase may occur as twinned and recrystallised plates up to 3mm in size. Twinning has in part been destroyed by metamorphism and the grain boundaries may be embayed or sutured. Apatite is unusually abundant and exhibits typical six-sided basal sections and prismatic laths up to 2mm in length and is clearly visible in hand specimen. The cracked and broken appearance of some of the larger apatite grains suggest that they may have crystallised during the initial stages of metamorphism. The entire sample has been pervasively veined by magnetite(?) which commonly encloses all of the above-mentioned minerals.

Sample AB3971 is classified as an unrelated amphibolite or meta-gabbroic rock. Although apatite commonly occurs in these rock types, the abundance thereof in this particular sample is unusual and the reason for this unknown at this point. The abundance of apatite will result in elevated REE-contents in the rock, as is shown by the appended geochemical results. No obvious "kimberlitic" or other high-interest features are visible in this sample.

RECOMMENDATIONS

No further work is recommended.

AUTHOR: J. Stiefenhofer

M. de Wit
GEOLOGICAL MANAGER

KEYWORDS	:	petrology, amphibolite, unrelated, meta-gabbro
DATABANK INDEX	:	18.2.4
AARL PROJECT NO.	:	R/95/226
ORIGIN	:	3013
TYPE	:	102

DISTRIBUTION LIST:

Head Office (x2)
KRSL (x1)

1995 CARAWA PROJECT SAMPLES

DIAMOND VENTURES NL

SAMPLE No	TYPE	AMG mE	AMG mN	No BAGS	RATING	LOCATION	COMMENTS
CA-01	Loam	426283	6449996	2	Very poor	South of CAR8 magnetic anomaly, east of track	Sandy red soil with calcrete boulders
CA-02	Loam	426138	6450277	2	Very poor	Near CAR8 magnetic anomaly, west of track	Sandy red soil with calcrete boulders
CA-03	Loam	425866	6450478	2	Very poor	Near CAR8 magnetic anomaly, west of track	Sandy red soil with calcrete boulders
CA-04	Loam	422325	6451505	2	Very poor	Near CAR7 magnetic anomaly, north of track	Sandy red soil with minor calcrete fragments
CA-05	Loam	421225	6450836	2	Very poor	East of CAR7 magnetic anomaly, south of track	Sandy red soil, beside sand dune in low land
CAR3 127-129m	Drill chip	430495	6438774	1		Anomaly CAR3, local grid 5025mE,4970mN, depth 127-129m	Very clean coarse grained irregular shaped guartz & feldspar sands
CAR3 132-133m	Drill chip	430495	6438774	1		Anomaly CAR3, local grid 5025mE,4970mN, depth 132-133m	Very clean coarse grained irregular shaped guartz & feldspar sands
7	**Samples**			**12**	**Bags**		

Appendix 5

00072

FORM IDL

00073

LABORATORY DATA SHEET

SAMPLE NO. CA-01

WEIGHTS:

1.0	_____	g
0.8	<1	g
0.5	<1	g
0.4	_____	g
0.3	<1	g
0.25	_____	g
TOTAL	1	g

SINGLE CHECK ☒
DOUBLE CHECK ☐
AUDIT ☐

Indicator vial ☐
Interesting vial ☐
SEM vial ☐
TO PROBE:

Positive (Kimberlite Indicators): ☐
Positive (Economic Minerals): ☐
Negative: ☒

Observed Fractions: -1+0.3
Comments: Synthetic diamond recovery 9+0.5

KIMBERLITE/LAMPROITE INDICATORS

	+2	+1	+0.8	+0.5	+0.4	+0.3	-0.3	WEAR	KIMB ?	FORM
DIAMOND										
CHROME DIOP.										
CHROMITE										
PHLOGOPITE										
PICROILMENITE										
PYROPE										

DETAILED DESCRIPTIONS

MINERAL	LUSTRE (PRIMARY SURFACE)	LUSTRE (FRESH FRACTURE)	OTHER

ECONOMIC MINERALS (Wt. % of Initial Wt.)

CASSITERITE	CU-CARBONATES	GOLD	SCHEELITE	MONAZITE	

OTHER MINERALS (Vol. % after TBE)

ALMANDINE		MAGNETITE		AMPHIBOLE		LEUCOXENE	rare
ANDRADITE		PLEONASTE		ANATASE		MAGNESITE	
GROSSULAR		SPINEL		ANDALUSITE	trace	PREHNITE	
SPESSARTINE				APATITE		SILLIMANITE	
				BARITE		SPHENE	
CLINOPYROXENE		HEMATITE		BIOTITE		STAUROLITE	rare
DIOPSIDE		ILMENITE		BROOKITE		TOURMALINE	trace
OLIVINE		LIMONITE	95%	CORUNDUM synthetic	trace	ZIRCON	rare
ORTHOPYROXENE		PYRITE		GORCEIXITE		QUARTZ	rare
		PYROLUSITE		EPIDOTE	rare	ROCK FRAGMENTS	5%
		RUTILE	rare	KYANITE	trace	- Fe shale/sandstone	
				CARBONATE	rare		

OBSERVER /MINERALOGIST: LHS DATE COMPLETED: 12/6/95

FORM IDL

LABORATORY DATA SHEET

SAMPLE NO. CA-02

WEIGHTS:

1.0	_____	g
0.8	<1	g
0.5	<1	g
0.4	_____	g
0.3	<1	g
0.25	_____	g
TOTAL	1	g

SINGLE CHECK ☒
DOUBLE CHECK ☐
AUDIT ☐

Indicator vial ☐
Interesting vial ☒ gt
SEM vial ☐
TO PROBE:

Positive (Kimberlite Indicators): ☐
Positive (Economic Minerals): ☐
Negative: ☒

Observed Fractions: -1+0.3
Comments:

KIMBERLITE/LAMPROITE INDICATORS

	+2	+1	+0.8	+0.5	+0.4	+0.3	-0.3	WEAR	KIMB ?	FORM
DIAMOND										
CHROME DIOP.										
CHROMITE										
PHLOGOPITE										
PICROILMENITE										
PYROPE										

DETAILED DESCRIPTIONS

MINERAL	LUSTRE (PRIMARY SURFACE)	LUSTRE (FRESH FRACTURE)	OTHER

ECONOMIC MINERALS (Wt. % of Initial Wt.)

CASSITERITE	CU-CARBONATES	GOLD	SCHEELITE	MONAZITE	

OTHER MINERALS (Vol. % after TBE)

ALMANDINE	rare	MAGNETITE		AMPHIBOLE	rare	LEUCOXENE	
ANDRADITE		PLEONASTE		ANATASE	rare	MAGNESITE	
GROSSULAR		SPINEL		ANDALUSITE	trace	PREHNITE	
SPESSARTINE	rare	GAHNITE	rare	APATITE		SILLIMANITE	
				BARITE		SPHENE	
CLINOPYROXENE		HEMATITE		BIOTITE		STAUROLITE	rare
DIOPSIDE		ILMENITE		BROOKITE		TOURMALINE	trace
OLIVINE		LIMONITE	90%	CORUNDUM synthetic	trace	ZIRCON	trace
ORTHOPYROXENE		PYRITE		GORCEIXITE		QUARTZ	trace
		PYROLUSITE		EPIDOTE		ROCK FRAGMENTS	10%
		RUTILE		KYANITE	trace	- Fe shale/sandstone	

OBSERVER /MINERALOGIST: LHS DATE COMPLETED: 12/6/95

FORM IDL

LABORATORY DATA SHEET

SAMPLE NO. CA-03

WEIGHTS:

1.0	_____	g
0.8	<1	g
0.5	<1	g
0.4	_____	g
0.3	<1	g
0.25	_____	g
TOTAL	1	g

SINGLE CHECK ☒
DOUBLE CHECK ☐
AUDIT ☐

Indicator vial ☐
Interesting vial ☒ gt(1)
SEM vial ☐
TO PROBE:

Positive (Kimberlite Indicators): ☐
Positive (Economic Minerals): ☐
Negative: ☒

Observed Fractions: -1+0.3
Comments:

KIMBERLITE/LAMPROITE INDICATORS

	+2	+1	+0.8	+0.5	+0.4	+0.3	-0.3	WEAR	KIMB ?	FORM
DIAMOND										
CHROME DIOP.										
CHROMITE										
PHLOGOPITE										
PICROILMENITE										
PYROPE										

DETAILED DESCRIPTIONS

MINERAL	LUSTRE (PRIMARY SURFACE)	LUSTRE (FRESH FRACTURE)	OTHER

ECONOMIC MINERALS (Wt. % of Initial Wt.)

CASSITERITE	CU-CARBONATES	GOLD	SCHEELITE	MONAZITE	

OTHER MINERALS (Vol. % after TBE)

ALMANDINE	rare	MAGNETITE		AMPHIBOLE	rare	LEUCOXENE	rare
ANDRADITE		PLEONASTE		ANATASE		MAGNESITE	
GROSSULAR		SPINEL		ANDALUSITE	rare	PREHNITE	
SPESSARTINE				APATITE		SILLIMANITE	
				BARITE		SPHENE	
CLINOPYROXENE	rare	HEMATITE		BIOTITE		STAUROLITE	rare
DIOPSIDE		ILMENITE		BROOKITE		TOURMALINE	trace
OLIVINE		LIMONITE	20%	CORUNDUM synthetic	trace	ZIRCON	5%
ORTHOPYROXENE		PYRITE		GORCEIXITE		QUARTZ	5%
		PYROLUSITE		EPIDOTE	rare	ROCK FRAGMENTS	70%
		RUTILE	rare	KYANITE	rare	- Fe shale/sandstone	

OBSERVER /MINERALOGIST: LHS DATE COMPLETED: 12/6/95

FORM IDL

LABORATORY DATA SHEET

SAMPLE NO. CA-04

00076

WEIGHTS:

1.0		g
0.8	<1	g
0.5	<1	g
0.4		g
0.3	<1	g
0.25		g
TOTAL	1	g

SINGLE CHECK ☒
DOUBLE CHECK ☐
AUDIT ☐

Indicator vial ☐
Interesting vial ☒ gt(1)
SEM vial ☐
TO PROBE:

Positive (Kimberlite Indicators): ☐
Positive (Economic Minerals): ☐
Negative: ☒

Observed Fractions: -1+0.3
Comments:

KIMBERLITE/LAMPROITE INDICATORS

	+2	+1	+0.8	+0.5	+0.4	+0.3	-0.3	WEAR	KIMB ?	FORM
DIAMOND										
CHROME DIOP.										
CHROMITE										
PHLOGOPITE										
PICROILMENITE										
PYROPE										

DETAILED DESCRIPTIONS

MINERAL	LUSTRE (PRIMARY SURFACE)	LUSTRE (FRESH FRACTURE)	OTHER

ECONOMIC MINERALS (Wt. % of Initial Wt.)

CASSITERITE	CU-CARBONATES	GOLD	SCHEELITE	MONAZITE	

OTHER MINERALS (Vol. % after TBE)

ALMANDINE		MAGNETITE		AMPHIBOLE		LEUCOXENE	rare
ANDRADITE		PLEONASTE		ANATASE		MAGNESITE	
GROSSULAR		SPINEL		ANDALUSITE	trace	PREHNITE	
SPESSARTINE	rare	GAHNITE	rare	APATITE		SILLIMANITE	
				BARITE		SPHENE	
CLINOPYROXENE		HEMATITE		BIOTITE		STAUROLITE	
DIOPSIDE		ILMENITE		BROOKITE		TOURMALINE	trace
OLIVINE		LIMONITE	20%	CORUNDUM		ZIRCON	2%
ORTHOPYROXENE		PYRITE	rare	GORCEIXITE		QUARTZ	3%
		PYROLUSITE		EPIDOTE	rare	ROCK FRAGMENTS	75%
		RUTILE	rare	KYANITE	rare	- SR-R Fe shale/sandstone	
				CARBONATE	rare		
				SHELL	rare		

OBSERVER /MINERALOGIST: LHS DATE COMPLETED: 12/6/95

FORM IDL

LABORATORY DATA SHEET

SAMPLE NO. CA-05 00077

WEIGHTS:

1.0	_____	g
0.8	2	g
0.5	2	g
0.4	_____	g
0.3	2	g
0.25	_____	g
TOTAL	6	g

SINGLE CHECK ☒
DOUBLE CHECK ☐
AUDIT ☐

Indicator vial ☐
Interesting vial ☒ gt
SEM vial ☐
TO PROBE:

Positive (Kimberlite Indicators): ☐
Positive (Economic Minerals): ☐
Negative: ☒

Observed Fractions: -1+0.3
Comments: Synthetic diamond recovery 10+0.5

KIMBERLITE/LAMPROITE INDICATORS

	+2	+1	+0.8	+0.5	+0.4	+0.3	-0.3	WEAR	KIMB ?	FORM
DIAMOND										
CHROME DIOP.										
CHROMITE										
PHLOGOPITE										
PICROILMENITE										
PYROPE										

DETAILED DESCRIPTIONS

MINERAL	LUSTRE (PRIMARY SURFACE)	LUSTRE (FRESH FRACTURE)	OTHER

ECONOMIC MINERALS (Wt. % of Initial Wt.)

CASSITERITE	CU-CARBONATES	GOLD	SCHEELITE	MONAZITE	

OTHER MINERALS (Vol. % after TBE)

ALMANDINE	rare	MAGNETITE		AMPHIBOLE		LEUCOXENE	rare
ANDRADITE		PLEONASTE		ANATASE		MAGNESITE	
GROSSULAR		SPINEL		ANDALUSITE	trace	PREHNITE	
SPESSARTINE	rare	GAHNITE	rare	APATITE		SILLIMANITE	
				BARITE		SPHENE	
CLINOPYROXENE	rare	HEMATITE		BIOTITE		STAUROLITE	rare
DIOPSIDE		ILMENITE	rare	BROOKITE		TOURMALINE	trace
OLIVINE		LIMONITE	20%	CORUNDUM synthetic	rare	ZIRCON	
ORTHOPYROXENE		PYRITE		GORCEIXITE		QUARTZ	rare
		PYROLUSITE		EPIDOTE	rare	ROCK FRAGMENTS	80%
		RUTILE	rare	KYANITE	rare		

OBSERVER /MINERALOGIST: LHS DATE COMPLETED: 12/6/95

FORM IDL

LABORATORY DATA SHEET

SAMPLE NO. CAR-3 (127-129m) 00078

WEIGHTS:

1.0		g
0.8	3	g
0.5	5	g
0.4		g
0.3	4	g
0.25		g
TOTAL	12	g

SINGLE CHECK ☒
DOUBLE CHECK ☐
AUDIT ☐

Indicator vial ☐
Interesting vial ☒ gt
SEM vial ☐
TO PROBE:

Positive (Kimberlite Indicators): ☒
Positive (Economic Minerals): ☐
Negative: ☐

Observed Fractions: -1+0.3
Comments: Probing recommended for indicators.

KIMBERLITE/LAMPROITE INDICATORS

	+2	+1	+0.8	+0.5	+0.4	+0.3	-0.3	WEAR	KIMB ?	FORM
DIAMOND										
CHROME DIOP.										
CHROMITE										
PHLOGOPITE										
PICROILMENITE (?)						4		F	POSS	ANHEDRAL/SUBHEDRAL
PYROPE										
CR SPINEL (?)						4		F	POSS	ANHEDRAL

DETAILED DESCRIPTIONS

MINERAL	LUSTRE (PRIMARY SURFACE)	LUSTRE (FRESH FRACTURE)	OTHER
PICROILMENITE (?)	DULL	SUBMETALLIC	Brittle conchoidal fracture. Broken grains; three of which have hint of
			crystal faces. Wear is not obvious. Typical kimberlitic sufaces are absent.
			Probing recommended. Fresh. Possibly kimberlitic.
CR SPINEL (?)	DULL	SUBMETALLIC	Subrounded & subangular anhedral grains. Typical kimberlitic features
			are absent. These grains give light grey-brown streaks and translucent
			brown shards when crushed. Fresh. Possibly kimberlitic.

ECONOMIC MINERALS (Wt. % of Initial Wt.)

CASSITERITE	CU-CARBONATES	GOLD	SCHEELITE	MONAZITE	

OTHER MINERALS (Vol. % after TBE)

ALMANDINE	rare	MAGNETITE		AMPHIBOLE	rare	LEUCOXENE	rare
ANDRADITE		PLEONASTE		ANATASE	rare	MAGNESITE	
GROSSULAR	rare	SPINEL		ANDALUSITE	rare	PREHNITE	
SPESSARTINE	trace			APATITE		SILLIMANITE	
				BARITE		SPHENE	rare
CLINOPYROXENE		HEMATITE	rare	BIOTITE		STAUROLITE	trace
DIOPSIDE		ILMENITE	trace	BROOKITE		TOURMALINE	trace
OLIVINE		LIMONITE	rare	CORUNDUM		ZIRCON	rare
ORTHOPYROXENE		PYRITE*		GORCEIXITE			trace
		PYROLUSITE		EPIDOTE		ROCK FRAGMENTS*	97%
		RUTILE	rare	KYANITE	rare	- sulphide-bearing; includes	
				TOPAZ	3%	framboidal pyrite	

OBSERVER /MINERALOGIST: LHS DATE COMPLETED: 12/6/95

FORM IDL

LABORATORY DATA SHEET

00079

SAMPLE NO. CAR-3 (132-133m)

WEIGHTS:

1.0	_____	g
0.8	2	g
0.5	2	g
0.4	_____	g
0.3	3	g
0.25	_____	g
TOTAL	7	g

SINGLE CHECK ☒
DOUBLE CHECK ☐
AUDIT ☐

Indicator vial ☐
Interesting vial ☒ gt
SEM vial ☐
TO PROBE:

Positive (Kimberlite Indicators): ☐
Positive (Economic Minerals): ☐
Negative: ☒

Observed Fractions: -1+0.3
Comments:

KIMBERLITE/LAMPROITE INDICATORS

	+2	+1	+0.8	+0.5	+0.4	+0.3	-0.3	WEAR	KIMB ?	FORM
DIAMOND										
CHROME DIOP.										
CHROMITE										
PHLOGOPITE										
PICROILMENITE										
PYROPE										

DETAILED DESCRIPTIONS

MINERAL	LUSTRE (PRIMARY SURFACE)	LUSTRE (FRESH FRACTURE)	OTHER

ECONOMIC MINERALS (Wt. % of Initial Wt.)

CASSITERITE	CU-CARBONATES	GOLD	SCHEELITE	MONAZITE	

OTHER MINERALS (Vol. % after TBE)

ALMANDINE	rare	MAGNETITE	rare	AMPHIBOLE		LEUCOXENE	rare
ANDRADITE		PLEONASTE		ANATASE	rare	MAGNESITE	
GROSSULAR		SPINEL		ANDALUSITE	rare	PREHNITE	
SPESSARTINE	trace			APATITE		SILLIMANITE	
				BARITE		SPHENE	rare
CLINOPYROXENE		HEMATITE		BIOTITE		STAUROLITE	trace
DIOPSIDE		ILMENITE	trace	BROOKITE		TOURMALINE	rare
OLIVINE		LIMONITE		CORUNDUM		ZIRCON	rare
ORTHOPYROXENE		PYRITE*		GORCEIXITE		QUARTZ	trace
		PYROLUSITE		EPIDOTE		ROCK FRAGMENTS*	98%
		RUTILE	rare	KYANITE	rare	- pyrite-bearing	
				TOPAZ	2%		

OBSERVER /MINERALOGIST: LHS DATE COMPLETED: 13/6/95

Appendix 6

DIAMOND VENTURES MICROPROBE REPORT

07-06-1995

GARNETS

oxide concentration,sig/k and cations

	CA02	CA02	CA03	CA03	CA04	CA05	CA05
	2	3	4	5	6	7	8
SiO2	37.329	35.873	36.891	35.835	34.855	35.737	35.738
TiO2	0.044	0.057	0.056	0.071	0.000	0.010	0.020
Fe2O3	0.000	0.242	0.000	0.000	0.000	0.000	0.000
Al2O3	22.113	20.963	21.596	62.968	20.637	21.985	21.405
Cr2O3	0.000	0.000	0.151	0.103	0.046	0.000	0.023
MgO	8.046	5.684	8.471	0.117	1.884	6.928	7.292
CaO	1.199	5.645	0.784	0.000	0.625	1.037	2.443
MnO	4.185	1.718	0.735	0.020	20.556	0.833	2.185
FeO	26.088	27.376	29.363	0.201	19.472	31.909	29.113
ZnO	0.065	0.000	0.000	0.107	0.205	0.000	0.000
Na2O	0.050	0.026	0.000	0.000	0.013	0.004	0.000
total	99.119	97.584	98.047	99.422	98.293	98.443	98.219
Si	5.873	5.815	5.869	4.683	5.826	5.749	5.754
Ti	0.005	0.007	0.007	0.007	0.000	0.001	0.002
Fe	0.000	0.029	0.000	0.000	0.000	0.000	0.000
Al	4.100	4.005	4.049	9.698	4.065	4.168	4.062
Cr	0.000	0.000	0.019	0.011	0.006	0.000	0.003
Mg	1.887	1.373	2.008	0.023	0.469	1.661	1.750
Ca	0.202	0.980	0.134	0.000	0.112	0.179	0.421
Mn	0.558	0.236	0.099	0.002	2.910	0.114	0.298
Fe	3.432	3.711	3.906	0.022	2.722	4.293	3.920
Zn	0.008	0.000	0.000	0.010	0.025	0.000	0.000
Na	0.015	0.008	0.000	0.000	0.004	0.001	0.000
total	16.080	16.164	16.091	14.456	16.139	16.166	16.210
Fe+Mn/Fe+Mn+Mg=	67.90	74.19	66.60	51.49	92.31	72.62	70.68
Si sig/k	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Ti sig/k	9.4	8.9	9.6	10.9	9.5	9.7	9.9
Al sig/k	1.0	1.0	1.0	0.6	1.0	1.0	1.0
Cr sig/k	27.7	30.2	20.0	25.8	22.9	31.6	24.3
Mg sig/k	1.8	2.1	1.7	10.5	3.6	1.9	1.9
Ca sig/k	4.3	2.1	5.1	15.4	5.6	4.6	3.1
Mn sig/k	4.6	7.0	10.4	25.8	2.1	9.7	6.3
Fe sig/k	1.9	1.8	1.8	14.6	2.1	1.7	1.8
Zn sig/k	15.6	15.1	15.6	15.6	13.9	15.8	15.8
Na sig/k	17.4	18.9	25.8	23.0	19.3	18.3	20.9
D&S	5	5	5	0	3	5	5

	CAR127/9	CAR127/9	CAR132/3	CAR132/3	HL05	HL06	HL06
	9	10	11	12	13	14	15
SiO2	34.216	34.873	34.203	34.288	39.700	41.087	40.185
TiO2	0.178	0.362	0.168	0.258	0.011	0.554	0.486
Fe2O3	0.000	0.609	0.000	0.000	0.000	0.364	0.000
Al2O3	20.040	19.472	20.167	19.940	19.676	21.473	21.653
Cr2O3	0.000	0.059	0.082	0.140	5.756	2.186	2.542
MgO	0.573	0.512	0.632	1.208	19.781	21.051	20.417
CaO	0.784	1.630	0.909	0.669	6.045	4.641	5.167
MnO	25.725	27.388	26.111	24.268	0.318	0.184	0.048
FeO	15.983	12.550	15.617	16.176	7.005	6.583	8.079
ZnO	0.077	0.140	0.255	0.000	0.159	0.000	0.000
Na2O	0.054	0.000	0.049	0.040	0.004	0.043	0.036
total	97.630	97.595	98.193	96.987	98.455	98.166	98.613
Si	5.820	5.903	5.792	5.835	5.837	5.939	5.838
Ti	0.023	0.046	0.021	0.033	0.001	0.060	0.053
Fe	0.000	0.078	0.000	0.000	0.000	0.040	0.000
Al	4.018	3.885	4.025	4.000	3.409	3.658	3.708
Cr	0.000	0.008	0.011	0.019	0.669	0.250	0.292
Mg	0.145	0.129	0.160	0.307	4.335	4.536	4.421
Ca	0.143	0.296	0.165	0.122	0.952	0.719	0.804
Mn	3.707	3.927	3.745	3.498	0.040	0.023	0.006
Fe	2.274	1.777	2.212	2.302	0.861	0.796	0.982
Zn	0.010	0.018	0.032	0.000	0.017	0.000	0.000
Na	0.018	0.000	0.016	0.013	0.001	0.012	0.010
total	16.158	16.067	16.179	16.129	16.122	16.033	16.114
Fe+Mn/Fe+Mn+Mg=	97.63	97.79	97.39	94.98	17.21	15.28	18.26
Si sig/k	0.9	0.9	0.9	0.9	0.8	0.8	0.8
Ti sig/k	7.6	6.5	8.0	7.1	10.6	5.9	6.2
Al sig/k	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Cr sig/k	27.7	22.4	22.9	20.9	4.6	7.4	6.8
Mg sig/k	6.0	6.1	5.8	4.5	1.1	1.1	1.1
Ca sig/k	5.1	3.7	4.8	5.5	2.0	2.3	2.2
Mn sig/k	1.9	1.9	1.9	2.0	12.5	14.6	16.4
Fe sig/k	2.3	2.5	2.3	2.3	3.5	3.5	3.3
Zn sig/k	15.1	14.2	13.1	14.4	15.4	15.6	21.3
Na sig/k	16.7	18.3	16.5	16.0	19.3	15.3	16.5
D&S	3	3	3	3	11	1	1

DIAMOND VENTURES MICROPROBE REPORT

07-06-1995

CHROMITES

oxide concentration,sig/k and cations

	DO53	DO53	DO53	DO53	DO53	DO53	DO53
	3	4	5	6	7	8	9
V2O5	0.000	0.000	0.251	0.000	0.136	0.000	0.000
SiO2	0.037	0.064	0.132	0.059	0.082	2.110	0.014
TiO2	0.026	0.105	0.057	0.000	0.035	0.000	0.115
Fe2O3	0.000	0.000	0.000	0.000	0.000	58.977	0.000
Al2O3	2.843	3.046	1.614	1.821	5.151	0.145	1.885
Cr2O3	68.561	67.687	68.755	69.517	66.395	0.038	70.945
MgO	11.594	8.040	9.600	9.319	7.930	0.027	10.848
CaO	0.000	0.036	0.000	0.019	0.019	0.087	0.032
MnO	3.453	1.233	0.492	2.543	1.155	1.350	0.433
FeO	7.397	8.100	8.043	6.403	8.387	25.239	10.501
NiO	0.247	0.000	0.179	0.000	0.049	0.243	0.066
ZnO	5.787	11.561	10.763	9.658	8.848	0.000	5.579
Na2O	0.173	0.250	0.250	0.270	0.175	0.036	0.206
K2O	0.000	0.016	0.002	0.004	0.000	0.016	0.022
total	100.118	100.138	100.138	99.613	98.362	88.268	100.646
V	0.000	0.000	0.046	0.000	0.025	0.000	0.000
Si	0.010	0.018	0.037	0.016	0.023	0.720	0.004
Ti	0.005	0.022	0.012	0.000	0.007	0.000	0.024
Fe	0.000	0.000	0.000	0.000	0.000	15.154	0.000
Al	0.913	1.003	0.530	0.599	1.691	0.058	0.605
Cr	14.765	14.947	15.134	15.348	14.624	0.010	15.288
Mg	4.707	3.347	3.984	3.879	3.293	0.014	4.407
Ca	0.000	0.011	0.000	0.006	0.006	0.032	0.009
Mn	0.797	0.292	0.116	0.601	0.273	0.390	0.100
Fe	1.685	1.892	1.873	1.495	1.954	7.207	2.393
Ni	0.054	0.000	0.040	0.000	0.011	0.067	0.014
Zn	1.164	2.384	2.213	1.991	1.820	0.000	1.123
Na	0.092	0.136	0.135	0.146	0.095	0.024	0.109
K	0.000	0.006	0.001	0.002	0.000	0.007	0.008
total	24.192	24.058	24.121	24.083	23.822	23.683	24.084
Fe / Fe+Mg=	26.36	36.11	31.98	27.82	37.24	99.81	35.19
Cr / Cr+Al=	94.18	93.71	96.62	96.24	89.63	15.01	96.19
V sig/k	22.9	30.2	22.9	30.2	22.9	28.9	27.7
Si sig/k	8.4	7.9	7.3	8.0	7.7	3.2	8.1
Ti sig/k	8.5	7.7	8.2	9.0	8.3	9.1	7.7
Al sig/k	2.8	2.7	3.6	3.4	2.1	8.8	3.3
Cr sig/k	1.4	1.4	1.4	1.3	1.4	24.3	1.3
Mg sig/k	1.6	2.0	1.8	1.8	2.0	12.6	1.7
Ca sig/k	13.1	10.9	14.3	12.3	12.4	9.9	11.3
Mn sig/k	4.8	7.3	9.7	5.4	7.3	7.3	9.9
Fe sig/k	3.3	3.2	3.2	3.5	3.1	1.1	2.8
Ni sig/k	13.0	14.4	12.1	13.3	12.9	13.4	13.7
Zn sig/k	4.4	3.2	3.3	3.5	3.6	12.5	4.4
Na sig/k	11.4	9.9	10.0	9.7	11.0	16.9	11.4
K sig/k	15.3	13.5	13.9	15.4	16.2	13.9	13.3

	DO55	DO55	CAR127/9	CAR127/9	CAR127/9	CAR127/9	HL05A
	31	32	33	34	35	36	37
V2O5	0.000	0.000	0.096	0.000	0.000	0.019	0.020
SiO2	0.018	0.007	35.850	33.301	34.573	36.266	0.052
TiO2	0.006	0.104	0.540	0.560	0.481	0.522	0.026
Fe2O3	0.000	0.000	37.236	37.373	35.329	37.698	2.093
Al2O3	3.543	3.986	4.133	5.600	5.770	4.700	26.937
Cr2O3	67.741	66.448	0.000	0.086	0.108	0.000	39.407
MgO	6.079	7.663	0.584	0.475	0.495	0.967	11.615
CaO	0.000	0.000	0.731	1.465	1.366	0.898	0.000
MnO	0.000	0.000	0.000	0.062	0.000	0.080	0.117
FeO	20.066	19.719	19.595	20.899	19.994	19.407	17.778
NiO	0.124	0.050	0.026	0.000	0.000	0.145	0.212
ZnO	0.659	0.392	0.593	0.641	0.316	0.893	0.151
Na2O	0.074	0.010	0.457	0.475	0.493	0.420	0.000
K2O	0.000	0.000	1.263	1.269	1.718	1.682	0.014
total	98.310	98.379	101.104	102.206	100.643	103.697	98.422
V	0.000	0.000	0.014	0.000	0.000	0.003	0.003
Si	0.005	0.002	8.093	7.548	7.857	7.994	0.013
Ti	0.001	0.022	0.092	0.095	0.082	0.087	0.005
Fe	0.000	0.000	6.325	6.374	6.042	6.253	0.389
Al	1.181	1.316	1.100	1.496	1.545	1.221	7.847
Cr	15.147	14.712	0.000	0.015	0.019	0.000	7.701
Mg	2.562	3.198	0.196	0.160	0.168	0.318	4.279
Ca	0.000	0.000	0.177	0.356	0.333	0.212	0.000
Mn	0.000	0.000	0.000	0.012	0.000	0.015	0.024
Fe	4.746	4.618	3.699	3.961	3.800	3.578	3.675
Ni	0.028	0.011	0.005	0.000	0.000	0.026	0.042
Zn	0.138	0.081	0.099	0.107	0.053	0.145	0.028
Na	0.041	0.006	0.200	0.209	0.217	0.180	0.000
K	0.000	0.000	0.364	0.367	0.498	0.473	0.004
total	23.849	23.966	20.364	20.700	20.614	20.505	24.010
Fe / Fe+Mg=	64.94	59.08	94.97	96.12	95.77	91.84	46.20
Cr / Cr+Al=	92.77	91.79	0.00	1.01	1.24	0.00	49.53
V sig/k	27.7	26.7	23.6	31.6	33.3	28.9	27.7
Si sig/k	8.6	8.2	0.8	0.9	0.9	0.8	9.1
Ti sig/k	8.7	7.6	5.5	5.5	5.7	5.5	9.0
Al sig/k	2.5	2.4	2.3	2.0	1.9	2.1	0.9
Cr sig/k	1.4	1.4	22.4	20.4	21.8	25.8	1.8
Mg sig/k	2.2	2.0	6.2	6.6	6.8	5.1	1.6
Ca sig/k	13.3	11.6	5.2	3.8	3.9	4.7	13.9
Mn sig/k	14.0	16.0	20.9	16.4	19.3	20.0	14.4
Fe sig/k	2.1	2.1	1.3	1.3	1.4	1.3	2.1
Ni sig/k	13.4	14.0	15.8	15.4	14.6	13.6	11.7
Zn sig/k	9.4	10.2	9.4	10.0	11.0	9.4	12.3
Na sig/k	16.5	17.7	9.4	8.7	9.0	9.6	23.0
K sig/k	14.0	15.4	4.2	4.2	3.6	3.7	15.8

DIAMOND VENTURES MICROPROBE REPORT

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ILMENITES

oxide concentration,sig/k and cations

	DO54	DO54	DO54	DO54	DO54	DO54	DO54
	3	4	5	6	7	8	9
V2O5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nb2O5	0.494	0.260	0.026	0.104	0.440	0.468	0.312
SiO2	0.000	0.045	0.027	0.093	0.000	0.020	0.114
TiO2	50.787	49.715	52.181	53.340	49.133	48.648	53.931
ZrO2	0.019	0.130	0.001	0.000	0.166	0.129	0.071
Fe2O3	9.363	9.086	8.143	5.922	9.985	11.184	6.045
Al2O3	0.367	0.299	0.758	0.367	0.166	0.087	0.823
Cr2O3	0.293	2.015	0.012	0.625	1.128	1.986	0.388
MgO	11.310	11.410	11.873	12.564	7.572	10.099	12.599
CaO	0.019	0.002	0.051	0.025	0.027	0.000	0.023
MnO	0.298	0.325	0.208	0.353	0.268	0.224	0.153
FeO	25.606	25.202	26.090	25.768	31.065	26.519	26.649
NiO	0.017	0.126	0.134	0.000	0.075	0.058	0.292
ZnO	0.148	0.025	0.148	0.000	0.000	0.000	0.222
Na2O	0.020	0.025	0.065	0.000	0.026	0.020	0.000
K2O	0.009	0.000	0.000	0.000	0.009	0.013	0.000
total	98.750	98.665	99.717	99.161	100.060	99.455	101.622
V	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nb	0.011	0.006	0.001	0.002	0.010	0.010	0.006
Si	0.000	0.002	0.001	0.004	0.000	0.001	0.005
Ti	1.801	1.767	1.823	1.863	1.773	1.735	1.842
Zr	0.000	0.003	0.000	0.000	0.004	0.003	0.002
Fe	0.332	0.323	0.285	0.207	0.360	0.399	0.207
Al	0.020	0.017	0.042	0.020	0.009	0.005	0.044
Cr	0.011	0.075	0.000	0.023	0.043	0.074	0.014
Mg	0.795	0.804	0.822	0.870	0.541	0.714	0.853
Ca	0.001	0.000	0.003	0.001	0.001	0.000	0.001
Mn	0.012	0.013	0.008	0.014	0.011	0.009	0.006
Fe	1.010	0.996	1.014	1.001	1.246	1.052	1.012
Ni	0.001	0.005	0.005	0.000	0.003	0.002	0.011
Zn	0.005	0.001	0.005	0.000	0.000	0.000	0.007
Na	0.002	0.002	0.006	0.000	0.002	0.002	0.000
K	0.001	0.000	0.000	0.000	0.001	0.001	0.000
total	4.002	4.014	4.015	4.005	4.004	4.007	4.010
Fe / Fe+Mg=	55.96	55.33	55.23	53.50	69.73	59.57	54.26
Cr / Cr+Al=	34.83	81.88	1.03	53.36	82.00	93.88	24.02
V sig/k	14.2	15.3	14.3	16.2	15.1	13.3	14.3
Nb sig/k	19.3	22.9	31.6	25.8	20.4	20.4	21.8
Si sig/k	9.3	8.8	8.7	8.7	9.1	8.7	8.0
Ti sig/k	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Zr sig/k	7.8	7.3	7.1	7.3	6.7	6.9	7.4
Al sig/k	6.4	7.0	4.9	6.5	7.6	8.8	4.7
Cr sig/k	15.8	7.2	23.6	12.0	9.7	7.4	14.3
Mg sig/k	1.6	1.6	1.6	1.5	2.0	1.7	1.5
Ca sig/k	11.8	11.9	11.0	12.0	11.1	12.6	12.0
Mn sig/k	13.9	12.8	14.6	13.5	13.7	14.0	15.4
Fe sig/k	1.6	1.6	1.6	1.7	1.5	1.6	1.7
Ni sig/k	14.7	14.0	12.9	14.0	14.7	14.1	11.3
Zn sig/k	12.9	14.3	12.9	13.9	13.7	14.0	12.3
Na sig/k	17.2	16.9	16.0	17.4	17.2	18.9	18.9
K sig/k	14.8	15.6	16.0	15.6	14.2	13.7	15.8

	DO54	DO54	DO54	DO55	CA05	CA05	CAR12Z/9
	10	11	12	13	14	15	16
V2O5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nb2O5	0.156	0.182	0.547	0.130	0.186	0.101	0.000
SiO2	0.057	0.027	0.014	0.000	12.996	0.451	30.887
TiO2	48.560	52.258	33.232	53.636	52.727	66.144	0.522
ZrO2	0.087	0.159	0.308	0.117	0.418	0.032	0.116
Fe2O3	10.052	7.759	34.425	5.402	0.000	0.000	60.663
Al2O3	0.242	0.360	0.144	0.464	11.127	0.455	4.702
Cr2O3	2.817	0.000	2.452	0.187	0.074	0.060	0.011
MgO	9.547	10.161	3.723	10.724	2.005	0.087	0.463
CaO	0.032	0.000	0.011	0.008	0.204	0.229	1.355
MnO	0.224	0.198	0.114	0.234	12.969	0.840	0.123
FeO	27.927	28.935	24.393	29.295	4.310	24.674	2.838
NiO	0.175	0.000	0.050	0.008	0.000	0.109	0.017
ZnO	0.147	0.000	0.085	0.000	0.000	0.000	0.288
Na2O	0.010	0.040	0.000	0.000	2.373	0.000	0.478
K2O	0.009	0.000	0.000	0.033	1.081	0.015	0.960
total	100.042	100.079	99.498	100.238	100.470	93.197	103.423
V	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Nb	0.003	0.004	0.012	0.003	0.003	0.002	0.000
Si	0.003	0.001	0.001	0.000	0.532	0.022	1.275
Ti	1.731	1.843	1.259	1.879	1.624	2.422	0.016
Zr	0.002	0.004	0.008	0.003	0.008	0.001	0.002
Fe	0.359	0.274	1.305	0.189	0.000	0.000	1.884
Al	0.014	0.020	0.009	0.025	0.537	0.026	0.229
Cr	0.106	0.000	0.098	0.007	0.002	0.002	0.000
Mg	0.674	0.710	0.280	0.745	0.122	0.006	0.028
Ca	0.002	0.000	0.001	0.000	0.009	0.012	0.060
Mn	0.009	0.008	0.005	0.009	0.450	0.035	0.004
Fe	1.107	1.135	1.028	1.141	0.148	1.005	0.098
Ni	0.007	0.000	0.002	0.000	0.000	0.004	0.001
Zn	0.005	0.000	0.003	0.000	0.000	0.000	0.009
Na	0.001	0.004	0.000	0.000	0.188	0.000	0.038
K	0.001	0.000	0.000	0.002	0.056	0.001	0.051
total	4.024	4.003	4.011	4.003	3.679	3.538	3.695
Fe / Fe+Mg=	62.16	61.52	78.59	60.50	54.81	99.41	77.78
Cr / Cr+Al=	88.63	0.00	91.95	21.32	0.44	8.12	0.15
V sig/k	14.9	13.5	10.1	13.7	17.2	14.2	33.3
Nb sig/k	23.6	22.9	17.4	25.0	27.7	24.3	33.3
Si sig/k	8.5	8.6	8.5	9.6	1.3	5.5	0.9
Ti sig/k	0.7	0.7	0.9	0.7	0.7	0.6	5.4
Zr sig/k	6.7	6.9	6.2	7.0	6.3	7.5	7.1
Al sig/k	7.3	6.3	8.5	5.7	1.4	5.8	2.1
Cr sig/k	6.2	22.9	6.4	16.7	21.3	19.6	25.8
Mg sig/k	1.8	1.7	2.8	1.7	3.5	11.0	6.7
Ca sig/k	12.0	12.4	11.8	12.3	8.5	7.3	3.9
Mn sig/k	14.6	13.6	16.4	14.2	2.7	9.6	16.2
Fe sig/k	1.6	1.6	1.3	1.6	4.2	1.9	1.3
Ni sig/k	11.5	15.3	15.1	13.5	18.0	14.0	14.0
Zn sig/k	12.9	13.7	12.6	13.9	17.7	13.3	11.3
Na sig/k	18.9	17.7	20.9	21.3	4.3	20.0	9.3
K sig/k	16.0	14.2	13.4	13.4	4.4	14.0	4.7

	CAR127/9 17	CAR127/9 18	CAR127/9 19	CAR127/9 20	CAR127/9 21	CAR132/3 22	CAR132/3 23
V2O5	0.096	0.076	0.114	0.000	0.000	0.194	0.000
Nb2O5	0.085	0.000	0.000	0.279	0.000	0.000	1.113
SiO2	31.635	31.244	32.163	0.065	0.141	38.029	0.059
TiO2	0.518	0.548	0.544	63.884	61.070	0.528	60.164
ZrO2	0.000	0.144	0.121	0.074	0.141	0.000	0.033
Fe2O3	58.063	61.882	61.095	0.000	0.000	53.775	0.000
Al2O3	4.866	4.291	3.983	0.445	0.447	4.101	0.308
Cr2O3	0.000	0.000	0.063	0.096	0.000	0.000	0.012
MgO	0.752	0.857	0.748	0.044	0.291	0.503	0.018
CaO	1.037	0.831	0.671	0.054	0.093	0.687	0.029
MnO	0.027	0.053	0.026	3.375	1.400	0.089	10.753
FeO	2.529	1.935	1.965	23.458	28.242	2.378	21.788
NiO	0.009	0.000	0.017	0.092	0.000	0.060	0.058
ZnO	0.491	0.563	0.614	0.000	0.000	0.670	0.147
Na2O	0.432	0.544	0.461	0.010	0.076	0.293	0.071
K2O	1.490	1.446	1.410	0.000	0.000	1.194	0.009
total	102.030	104.414	103.995	91.876	91.901	102.501	94.562
V	0.003	0.002	0.003	0.000	0.000	0.005	0.000
Nb	0.002	0.000	0.000	0.006	0.000	0.000	0.025
Si	1.313	1.278	1.314	0.003	0.007	1.519	0.003
Ti	0.016	0.017	0.017	2.398	2.326	0.016	2.261
Zr	0.000	0.003	0.002	0.002	0.003	0.000	0.001
Fe	1.814	1.904	1.879	0.000	0.000	1.616	0.000
Al	0.238	0.207	0.192	0.026	0.027	0.193	0.018
Cr	0.000	0.000	0.002	0.004	0.000	0.000	0.000
Mg	0.047	0.052	0.046	0.003	0.022	0.030	0.001
Ca	0.046	0.036	0.029	0.003	0.005	0.029	0.002
Mn	0.001	0.002	0.001	0.143	0.060	0.003	0.455
Fe	0.088	0.066	0.067	0.979	1.196	0.079	0.911
Ni	0.000	0.000	0.001	0.004	0.000	0.002	0.002
Zn	0.015	0.017	0.019	0.000	0.000	0.020	0.005
Na	0.035	0.043	0.037	0.001	0.008	0.023	0.007
K	0.079	0.075	0.073	0.000	0.000	0.061	0.001
total	3.697	3.702	3.682	3.572	3.654	3.596	3.692
Fe / Fe+Mg=	65.19	55.93	59.29	99.69	98.19	72.48	99.89
Cr / Cr+Al=	0.00	0.00	1.06	12.64	0.00	0.00	2.52
V sig/k	22.9	26.7	27.7	14.9	13.1	23.6	15.1
Nb sig/k	28.9	37.8	33.3	20.9	28.9	30.2	12.9
Si sig/k	0.9	0.9	0.9	7.7	7.7	0.8	7.9
Ti sig/k	5.3	5.4	5.4	0.7	0.7	5.4	0.7
Zr sig/k	8.0	7.4	7.5	6.8	6.7	8.0	7.0
Al sig/k	2.1	2.2	2.3	6.0	5.8	2.3	6.7
Cr sig/k	25.0	26.7	21.8	22.9	25.8	25.0	26.7
Mg sig/k	5.8	5.3	5.7	12.7	8.1	6.5	12.9
Ca sig/k	4.4	4.8	5.3	10.8	9.5	5.3	10.2
Mn sig/k	23.6	18.6	17.7	5.0	7.6	17.7	2.9
Fe sig/k	1.3	1.3	1.3	1.9	1.8	1.4	2.0
Ni sig/k	13.7	16.2	16.4	13.5	15.3	14.7	14.0
Zn sig/k	10.6	9.8	9.3	14.4	13.0	10.0	12.2
Na sig/k	9.2	8.8	9.5	20.9	16.0	10.9	16.9
K sig/k	3.9	3.9	4.0	17.2	14.8	4.3	13.9

DIAMOND VENTURES MICROPROBE REPORT

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PYROXENES

oxide concentration,sig/k and cations

	DO53	DO53	DO54	DO54	DO55	DO55	CA03
	4	5	6	7	8	9	10
SiO2	52.035	52.144	53.581	52.796	53.529	52.410	0.003
TiO2	0.513	0.467	0.256	0.414	0.428	0.328	0.000
Fe2O3	2.979	2.368	1.672	0.984	1.425	4.384	53.771
Al2O3	3.995	3.115	4.895	3.488	3.575	3.605	53.693
Cr2O3	0.664	0.588	1.013	1.179	1.203	0.998	0.000
MgO	15.342	16.106	15.910	16.012	16.232	17.225	2.148
CaO	20.882	21.822	20.131	20.759	21.218	20.763	0.043
MnO	0.138	0.089	0.020	0.178	0.079	0.197	1.268
FeO	1.275	1.581	0.760	1.668	1.531	0.000	0.000
ZnO	0.041	0.095	0.068	0.027	0.000	0.000	39.279
Na2O	1.521	0.926	1.995	1.396	1.438	1.388	0.994
K2O	0.027	0.020	0.020	0.007	0.000	0.010	0.017
total	99.412	99.321	100.321	98.908	100.658	101.308	151.216
Si	1.904	1.912	1.923	1.932	1.926	1.880	0.000
Ti	0.014	0.013	0.007	0.011	0.012	0.009	0.000
Fe	0.082	0.065	0.045	0.027	0.039	0.118	1.278
Al	0.172	0.135	0.207	0.150	0.152	0.152	1.999
Cr	0.019	0.017	0.029	0.034	0.034	0.028	0.000
Mg	0.837	0.880	0.851	0.874	0.871	0.921	0.101
Ca	0.819	0.857	0.774	0.814	0.818	0.798	0.001
Mn	0.004	0.003	0.001	0.006	0.002	0.006	0.034
Fe	0.039	0.048	0.023	0.051	0.046	0.000	0.000
Zn	0.001	0.003	0.002	0.001	0.000	0.000	0.916
Na	0.108	0.066	0.139	0.099	0.100	0.097	0.061
K	0.001	0.001	0.001	0.000	0.000	0.000	0.001
total	4.000	4.000	4.002	3.999	4.000	4.009	4.391
Fe / Fe+Mg=	4.45	5.17	2.63	5.51	5.02	0.00	0.00
Si sig/k	0.7	0.7	0.7	0.7	0.7	0.7	10.0
Ti sig/k	6.2	6.3	7.8	6.7	6.5	7.0	9.3
Al sig/k	2.2	2.5	2.0	2.4	2.3	2.3	0.7
Cr sig/k	12.9	13.6	10.4	9.9	10.0	10.6	31.6
Mg sig/k	1.3	1.2	1.2	1.2	1.2	1.2	3.7
Ca sig/k	1.2	1.1	1.2	1.2	1.2	1.2	12.0
Mn sig/k	17.4	19.6	19.6	17.7	22.9	18.6	7.8
Fe sig/k	4.6	4.8	6.0	5.7	5.4	5.3	4.4
Zn sig/k	15.6	14.8	16.2	16.0	17.2	18.0	1.9
Na sig/k	4.8	6.0	4.2	5.0	4.9	4.9	5.1
K sig/k	15.3	16.7	16.9	16.9	20.9	15.4	13.9

Appendix 7

AUSTRALIAN LABORATORY SERVICES P/L

A.C.N. 009 936 029

00088

ANALYTICAL REPORT

CONTACT: MR S COOPER
CLIENT: LIVRE HOLDINGS PTY LTD
ADDRESS: 1ST FLR 691 BURKE ROAD
CAMBERWELL VIC 3124

LABORATORY: STAFFORD
BATCH NUMBER: ST11840
SUB BATCH: 0
No. OF SAMPLES: 25
DATE RECEIVED: 26/05/95
DATE COMPLETED: 31/05/95

ORDER No.: 400 SAMPLE TYPE: CORE PROJECT:

SAMPLE NUMBER	ELEMENT UNIT METHOD L.O.R.	Cu ppm IC587 5	Pb ppm IC587 5	Zn ppm IC587 5	As ppm IC587 5	Co ppm IC587 5	Bi ppm IC587 5
CAR 01-1 103.18M		11	47	17	10	94	<5
CAR 01-1 124.85M		26	14	69	8	47	<5
CAR 01-1 115.50M		7	46	15	5	101	<5
CAR 02-1 22.7M		5	35	5	8	83	<5
CAR 02-1 36M		6	33	55	7	97	<5
CAR 03-1 137.2M		<5	34	31	9	90	<5
CAR 03-1 136.35M		6	23	7	10	98	<5
CAR 05-1 81.3M		13	15	39	10	75	<5
CAR 09-1 47.5M		<5	19	37	10	92	<5
CAR 09-2 36.3M		10	21	47	11	27	<5
CAR 09-2 38		28	27	63	10	58	<5
CAR 06-1 73.6M		6	26	31	9	76	<5
CAR 15-1 66.3M		62	<5	70	11	45	<5
CAR 10-1 25.8M		13	<5	209	12	65	<5
CAR 10-2 33M		19	<5	113	15	35	<5
CAR 10-3 43.7M		49	<5	205	11	53	<5
CAR 10-3 45M		6	<5	7	6	170	<5
PAC 112M		19	20	59	22	20	<5
PAE-1 77M		122	16	165	14	43	<5
PAG 77M		32	105	645	39	28	<5
PAG 91M		29	17	20	10	31	<5
PAU 70M		28	16	167	16	39	<5
PAN 98M		33	30	62	25	14	<5
PAN 140M		160	14	190	24	36	<5
PAN 147M		17	17	263	21	44	<5

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A.C.N. 009 936 029

ANALYTICAL REPORT

CONTACT: MR S COOPER
CLIENT: LIVRE HOLDINGS PTY LTD
ADDRESS:
1ST FLR 691 BURKE ROAD
CAMBERWELL VIC 3124

LABORATORY: STAFFORD
BATCH NUMBER: ST11840
SUB BATCH: 0
No. OF SAMPLES: 25
DATE RECEIVED: 26/05/95
DATE COMPLETED: 31/05/95

ORDER No.: 400 SAMPLE TYPE: CORE PROJECT:

SAMPLE NUMBER	ELEMENT / UNIT / METHOD / L.O.R.	Sb ppm IC587 5	Cr ppm IC587 5	Ca % IC587 0.01	K % IC587 0.01	Mg % IC587 0.01	Ni ppm IC587 5
CAR 01-1 103.18M		<5	<5	0.06	2.92	<0.01	<5
CAR 01-1 124.85M		<5	18	1.30	1.48	0.62	11
CAR 01-1 115.50M		<5	<5	0.11	2.33	0.01	<5
CAR 02-1 22.7M		<5	<5	0.08	1.77	<0.01	<5
CAR 02-1 36M		<5	<5	0.22	2.20	<0.01	<5
CAR 03-1 137.2M		<5	<5	0.17	2.90	0.06	<5
CAR 03-1 136.35M		<5	<5	0.31	1.81	0.01	5
CAR 05-1 81.3M		<5	5	1.47	1.20	0.22	<5
CAR 09-1 47.5M		<5	<5	1.06	1.00	0.20	<5
CAR 09-2 36.3M		<5	<5	1.40	1.47	0.19	<5
CAR 09-2 38		<5	6	0.85	1.64	0.23	<5
CAR 06-1 73.6M		<5	<5	0.67	1.66	0.13	<5
CAR 15-1 66.3M		<5	189	4.10	1.05	3.12	123
CAR 10-1 25.8M		<5	18	5.25	0.90	1.79	15
CAR 10-2 33M		<5	17	5.50	1.04	2.11	6
CAR 10-3 43.7M		<5	26	5.77	1.24	4.30	6
CAR 10-3 45M		<5	<5	0.08	0.03	0.06	<5
PAC 112M		<5	71	3.53	1.62	3.08	33
PAE-1 77M		<5	47	1.68	0.62	1.97	54
PAO 77M		<5	78	2.63	2.02	3.08	40
PAO 91M		<5	30	12.90	0.09	5.75	<5
PAU 70M		<5	27	1.92	1.29	1.31	30
PAN 98M		<5	77	4.33	2.22	3.92	34
PAN 140M		<5	71	2.55	1.03	3.70	51
PAN 147M		<5	108	1.82	1.05	3.76	70

COMMENTS:

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ANALYTICAL REPORT

CONTACT: MR S COOPER
CLIENT: LIVRE HOLDINGS PTY LTD
ADDRESS: 1ST FLR 691 BURKE ROAD
CAMBERWELL VIC 3124

LABORATORY: STAFFORD
BATCH NUMBER: ST11840
SUB BATCH: 0
No. OF SAMPLES: 25
DATE RECEIVED: 26/05/95
DATE COMPLETED: 31/05/95

ORDER No.: 400 SAMPLE TYPE: CORE PROJECT:

SAMPLE NUMBER	ELEMENT UNIT METHOD L.O.R.	P ppm IC587 10	Sr ppm IC587 10	Au ppm PM201 0.1	Au PM201 ppm CHECKS 0.1		
CAR 01-1 103.18M		42	10	<0.1			
CAR 01-1 124.85M		1460	441	<0.1			
CAR 01-1 115.50M		36	13	<0.1			
CAR 02-1 22.7M		86	35	<0.1			
CAR 02-1 36M		44	31	<0.1			
CAR 03-1 137.2M		175	152	<0.1			
CAR 03-1 136.35M		87	193	<0.1			
CAR 05-1 81.3M		320	473	<0.1			
CAR 09-1 47.5M		327	418	<0.1			
CAR 09-2 36.3M		1830	431	<0.1			
CAR 09-2 38		1180	217	<0.1			
CAR 06-1 73.6M		178	275	<0.1			
CAR 15-1 66.3M		1840	563	<0.1			
CAR 10-1 25.8M		1.62%	306	<0.1			
CAR 10-2 33M		1.04%	424	<0.1			
CAR 10-3 43.7M		1.38%	94	<0.1			
CAR 10-3 45M		187	<10	<0.1			
PAC 112M		995	59	<0.1			
PAE-1 77M		1580	93	<0.1			
PAD 77M		804	52	<0.1			
PAD 91M		136	55	<0.1			
PAU 70M		1900	130	<0.1			
PAN 98M		820	66	<0.1			
PAN 140M		1190	35	<0.1	<0.1		
PAN 147M		989	66	<0.1	<0.1		

COMMENTS:

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ANALYTICAL REPORT

CONTACT: MR S COOPER
CLIENT: LIVRE HOLDINGS PTY LTD
ADDRESS:
1ST FLR 691 BURKE ROAD
CAMBERWELL VIC 3124

LABORATORY: STAFFORD
BATCH NUMBER: ST11840
SUB BATCH: 0
No. OF SAMPLES: 25
DATE RECEIVED: 26/05/95
DATE COMPLETED: 31/05/95

ORDER No.: 400 SAMPLE TYPE: QUALITY CONTROL PROJECT:

SAMPLE NUMBER	ELEMENT UNIT METHOD L.O.R.	Cu ppm IC587 5	Pb ppm IC587 5	Zn ppm IC587 5	As ppm IC587 5	Co ppm IC587 5	Bi ppm IC587 5
*** CAR 09-1 47.5M		<5	19	43	12	100	<5
*** PAE-1 77M		120	18	164	15	44	<5
*** PAO 77M		27	92	564	36	24	<5

COMMENTS:
Results which appear on this report are routine laboratory checks for QUALITY CONTROL purposes.

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00092

ANALYTICAL REPORT

CONTACT: MR S COOPER
CLIENT: LIVRE HOLDINGS PTY LTD
ADDRESS:
1ST FLR 691 BURKE ROAD
CAMBERWELL VIC 3124

LABORATORY: STAFFORD
BATCH NUMBER: ST11840
SUB BATCH: 0
No. OF SAMPLES: 25
DATE RECEIVED: 26/05/95
DATE COMPLETED: 31/05/95

ORDER No.: 400 SAMPLE TYPE: QUALITY CONTROL PROJECT:

SAMPLE NUMBER	ELEMENT / UNIT / METHOD / L.O.R.	Sb ppm IC587 5	Cr ppm IC587 5	Ca % IC587 0.01	K % IC587 0.01	Mg % IC587 0.01	Ni ppm IC587 5
*** CAR 09-1 47.5M		<5	6	1.16	1.05	0.21	5
*** PAE-1 77M		<5	48	1.70	0.65	2.00	60
*** PAO 77M		<5	69	2.29	1.99	2.65	34

COMMENTS:

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AUSTRALIAN LABORATORY SERVICES P/L

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ANALYTICAL REPORT

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LABORATORY: STAFFORD
BATCH NUMBER: ST11840
SUB BATCH: 0
No. OF SAMPLES: 25
DATE RECEIVED: 26/05/95
DATE COMPLETED: 31/05/95

ORDER No.: 400 SAMPLE TYPE: QUALITY CONTROL PROJECT:

SAMPLE NUMBER	ELEMENT UNIT METHOD L.O.R.	P ppm IC587 10	Sr ppm IC587 10				
*** CAR 09-1 47.5M		322	408				
*** PAE-1 77M		1650	100				
*** PAO 77M		766	46				

COMMENTS:

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ADDRESS:
1ST FLR 691 BURKE ROAD
CAMBERWELL VIC 3124

LABORATORY: STAFFORD
BATCH NUMBER: ST12067
SUB BATCH: 0
No. OF SAMPLES: 4
DATE RECEIVED: 22/06/95
DATE COMPLETED: 04/07/95

ORDER No.: 0566 SAMPLE TYPE: PULP PROJECT:

SAMPLE NUMBER	ELEMENT UNIT METHOD L.O.R.	V ppm MS532 1	Nb ppm MS532 0.2	Ta ppm MS532 0.2	U ppm MS532 0.1	Ce ppm MS532 0.1	La ppm MS532 0.1
CAR 10-1 25.8M		793	2.8	0.4	0.4	124	50.3
CAR 10-2 33.0M		197	0.6	<0.2	0.7	94.8	40.1
CAR 10-3 43.7M		392	1.2	<0.2	0.7	119	49.4
CAR 10-3 45.0M		21	0.4	<0.2	0.2	6.4	3.6

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LABORATORY: STAFFORD
BATCH NUMBER: ST12067
SUB BATCH: 0
No. OF SAMPLES: 4
DATE RECEIVED: 22/06/95
DATE COMPLETED: 04/07/95

ORDER No.: 0566 SAMPLE TYPE: PULP PROJECT:

SAMPLE NUMBER	ELEMENT UNIT METHOD L.O.R.	Nd ppm MS532 0.1	Th ppm MS532 0.1	Y ppm MS532 0.1	Yb ppm MS532 0.1		
CAR 10-1 25.8M		96.5	1.8	80.2	4.9		
CAR 10-2 33.0M		68.6	3.3	55.8	4.1		
CAR 10-3 43.7M		86.2	2.3	71.1	4.6		
CAR 10-3 45.0M		3.0	0.3	2.0	0.2		

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Appendix 8

00096

DEPARTMENT OF MINES AND ENERGY

GEOLOGICAL SURVEY

SOUTH AUSTRALIA

REPORT BOOK

PALYNOLOGICAL DATING AND CORRELATION OF LATE EOCENE SEDIMENTS FROM THE EUCLA BASIN, SOUTH AUSTRALIA. DIAMOND VENTURES NL.

N F ALLEY

Biostratigraphy

OCTOBER, 1995 DME

Palynological dating and correlation of Late Eocene sediments from the Eucla Basin, South Australia.
Diamond Ventures NL.

Neville F. Alley

Summary

A sample from CAR3 No. 1 Well on Eyre Peninsula is Late Eocene in age and correlative with the marginal marine upper part of the Pidinga Formation.

Introduction

One sample of cuttings from 84-88 m depth in CAR3 No. 1 Well, Eyre Peninsula, was submitted by Diamond Ventures NL, Camberwell, Victoria, for palynological dating.

The laboratory processing was undertaken by Laola Pty. Ltd., Perth, and the microscope analyses and dating by Neville F. Alley, Principal Geologist, Mines and Energy, South Australia.

The data were processed and details presented graphically using Stratabugs 1.2 and CorelDraw 5 software.

General composition of the palynofloras (Fig. 1)

The sample produced a palynoflora of good yield and preservation.

The palynoflora is dominated by *Nothofagidites* pollen, especially the *Brassospora* group (*N. deminutus/ emarcidus/ falcatus/heterus/incrassatus/vansteenisii* species). Other common taxa are *Haloragacidites harrisii* and the conifers *Microcachryidites antarcticus* and *Podocarpidites ellipticus*. Although the *Proteacidites* group forms only a small percentage of the overall palynoflora, it is reasonably diverse in species.

A relatively small amount of marine microplankton (dinoflagellates) is present with moderate species diversity.

Dating and correlation

The presence of *Triorites magnificus* indicates a correlation with the largely Late Eocene Middle *Nothofagidites asperus* spore-pollen Zone of Stover and Partridge (1973, 1982; Fig 2). This species makes its oldest appearance at the base of the zone and is largely restricted in its time range to that zone. A marginal marine setting is indicated by the presence of the marine microplankton.

This designation is supported by the presence of the relatively diverse assemblage of the genus *Proteacidites*, in particular the species *P. grandis*, *P. kopiensis* and *P. pachypolus*, which are common associates of *T. magnificus* and are largely extinct by the latest Eocene.

The palynoflora is very similar to those of Late Eocene age in the eastern Eucla Basin (Alley and Benbow, 1989; Alley and Beecroft, 1993). Because of its age and the presence of the marine microplankton the sediment is correlative with the upper part of the Pidinga Formation which is widespread in the Eucla Basin, underlying the Early to Middle Tertiary carbonates and occurring in palaeochannels several hundred kilometres inland from the coast (Fig. 2; Alley and Beecroft, 1993; Benbow *et al.*, 1995). Deposition was undoubtedly related to the Tortachilla Transgression of McGowran (1989) which was a major sea level rise in the Late Eocene leading to deposition of the upper part of the Pidinga Formation (Alley and Beecroft, 1993).

Conclusions

The sample is Late Eocene in age and correlates with the upper marginal marine part of the Pidinga Formation in the Eucla Basin.

References

Alley, N.F. and Benbow, M.C., 1989. Late Eocene palynofloras from the Pidinga Formation, SADME Ooldea Range 6, eastern Eucla Basin. *South Australia. Geological Survey. Quarterly Geological Notes,* 111, 2-12.

Alley, N.F. and Beecroft, A., 1993. Foraminiferal and palynological evidence from the Pidinga Formation and its bearing on Eocene sea level events and palaeochannel activity, eastern Eucla Basin, South Australia. *Memoir Association of Australasian Palaeontologists 15*, 375-393.

Benbow, M.C., Lindsay, J.M. and Alley, N.F., 1995. Eucla Basin and Palaeodrainage. *In* Drexel, J.F. and Preiss, W.V. (Eds.) The geology of South Australia. Volume 2. The Phanerozoic. *South Australia. Department of Mines and Energy. Bulletin, 54*, 178-186.

McGowran, B., 1989. The later Eocene transgressions in southern Australia. *Alcheringa,* 13, 45-68.

Stover, L.E. and Partridge, A.D., 1973. Tertiary and Late Cretaceous spores and pollen from the Gippsland Basin, southeastern Australia. *Royal Society of Victoria. Proceedings 85*, 237-286.

Stover, L.E. and Partridge, A.D., 1982. Eocene spore-pollen from the Werillup Formation, Western Australia. *Palynology 6*, 69-95.

DIAMOND VENTURERS

Department of Mines and Energy
Parkside, South Australia

DIAMOND VENTURERS CAR3 NO. 1

84.00m CU

Samples

Tertiary pollen and spores

- Araucariacites australis
- Baculatisporites comaumensis
- Baculatisporites disconformis
- Banksieaeidites arcuatus
- Beaupreaidites elegansiformis
- Casuarinidites cainozoicus
- Clavatipollenites glarius
- Cupanieidites orthoteichus
- Cyathidites australis
- Cyathidites minor
- Cyathidites paleospora
- Dacrycarpites australiensis
- Dilwynites granulatus
- Dilwynites tuberculatus
- Ericipites crassiexinus
- Gleicheniidites circinidites
- Haloragacidites harrisii
- Ilexpollenites anguloclavatus
- Ischyosporites gremius
- Lilliacidites aviemorensis
- Lilliacidites lanceolatus
- Lygistepollenites florinii
- Microcachryidites antarcticus
- Milfordia homeopunctata
- Nothofagidites brachyspinulosus
- Nothofagidites deminutus
- Nothofagidites emarcidus
- Nothofagidites falcatus
- Nothofagidites heterus
- Nothofagidites incrassatus
- Nothofagidites vansteensii
- Osmundacidites wellmanii
- Parvisaccites catastus
- Periporopollenites demarctus
- Phyllocladidites mawsonii
- Phyllocladidites ovalis
- Phyllocladidites reticulosaccatus
- Podocarpidites ellipticus
- Podocarpidites magnificus
- Proteacidites annularis
- Proteacidites grandis
- Proteacidites kopiensis
- Proteacidites obscurus
- Proteacidites pachypolus
- Proteacidites pseudomoides
- Proteacidites rynthius
- Proteacidites simplex
- Rhoipites sphaerica
- Rugulatisporites mallatus
- Santalumidites cainozoicus
- Sapotaceoidaepollenites rotundus
- Trichotomosulcites subgranulatus
- Tricolporites adelaidensis
- Tricolporites leuros
- Tricolporites prolata
- Triorites magnificus
- Verrucatosporites cristatus
- Verrucatosporites kopukuensis
- Verrucatosporites speciosus

Figure 1

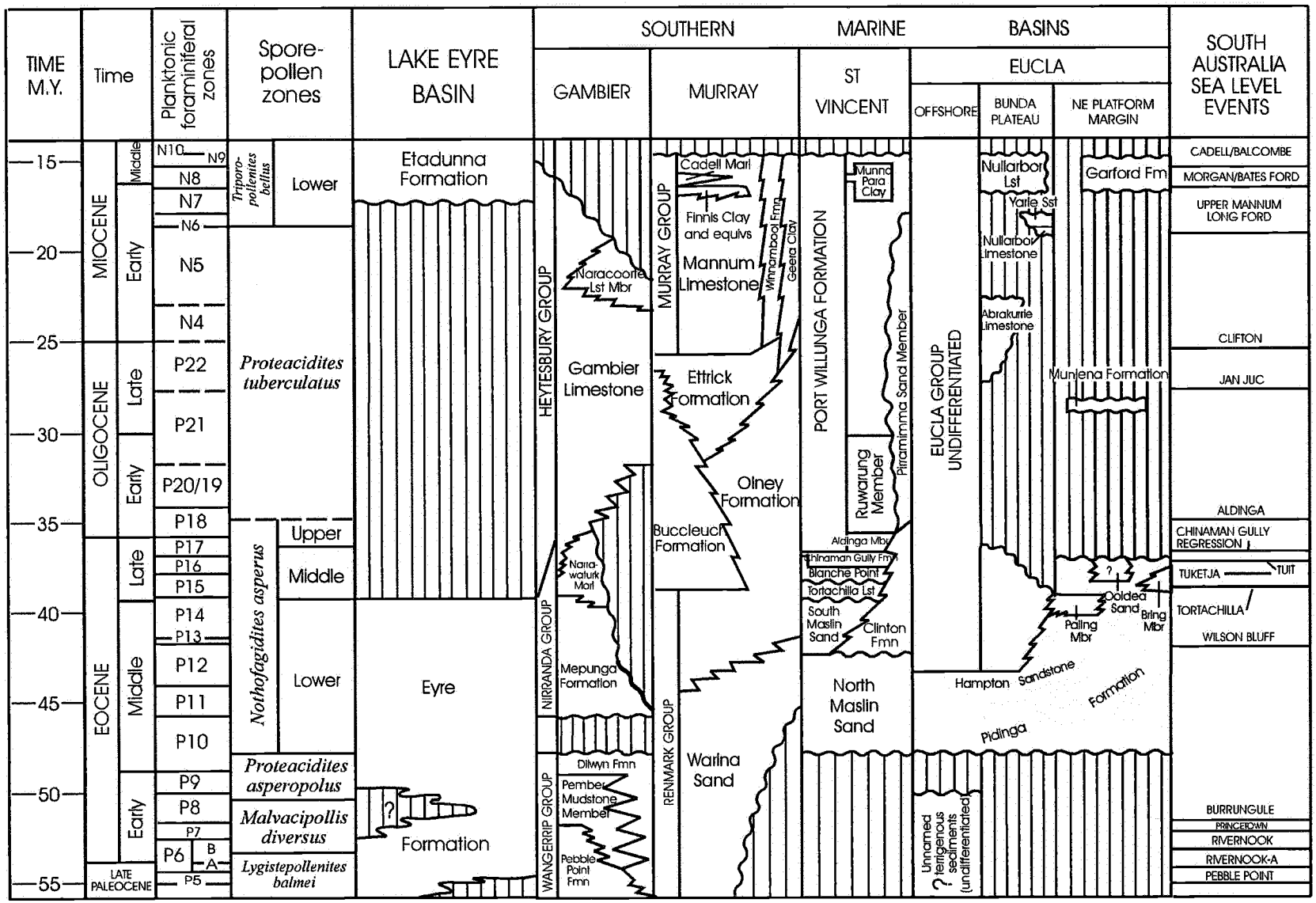
TIME M.Y.
Time
Planktonic foraminiferal zones
Spore-pollen zones
LAKE EYRE BASIN
SOUTHERN MARINE BASINS
GAMBIER
MURRAY
ST VINCENT
EUCLA
OFFSHORE
BUNDA PLATEAU
NE PLATFORM MARGIN
SOUTH AUSTRALIA SEA LEVEL EVENTS
MIOCENE
OLIGOCENE
EOCENE
LATE PALEOCENE
Middle
Early
Late
Lower
Upper
N10
N9
N8
N7
N6
N5
N4
P22
P21
P20/19
P18
P17
P16
P15
P14
P13
P12
P11
P10
P9
P8
P7
P6
B
A
P5
Triporo-pollenites bellus
Proteacidites tuberculatus
Nothofagidites asperus
Proteacidites asperopolus
Malvacipollis diversus
Lygistepollenites balmei
Etadunna Formation
Eyre Formation
HEYTESBURY GROUP
NIRRANDA GROUP
WANGERRIP GROUP
RENMARK GROUP
MURRAY GROUP
PORT WILLUNGA FORMATION
EUCLA GROUP UNDIFFERENTIATED
Naracoorte Lst Mbr
Gambier Limestone
Mepunga Formation
Dilwyn Fmn
Pember Mudstone Member
Pebble Point Fmn
Narra-waturk Marl
Cadell Marl
Finnis Clay and equivs
Mannum Limestone
Ettrick Formation
Buccleuch Formation
Olney Formation
Warina Sand
Winnambool Fmn
Geera Clay
Munna Para Clay
Ruwarung Member
Pirramimma Sand Member
Aldinga Mbr
Chinaman Gully Fmn
Blanche Point
Tortachilla Lst
South Maslin Sand
Clinton Fmn
North Maslin Sand
Unnamed ferrigenous sediments (undifferentiated)
Nullarbor Lst
Yatte Sst
Nullarbor Limestone
Abrakurrie Limestone
Garford Fm
Munjena Formation
Ooldea Sand
Bring Mbr
Paling Mbr
Hampton Sandstone
Formation
Pidinga
CADELL/BALCOMBE
MORGAN/BATES FORD
UPPER MANNUM LONG FORD
CLIFTON
JAN JUC
ALDINGA
CHINAMAN GULLY REGRESSION
TUKETJA
TUIT
TORTACHILLA
WILSON BLUFF
BURRUNGULE
PRINCETOWN
RIVERNOOK
RIVERNOOK-A
PEBBLE POINT
15
20
25
30
35
40
45
50
55

Figure 2