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NUMBER 8974

EL 2012 OOLDEA SOUTH

ANNUAL AND FINAL REPORTS FOR THE PERIOD
1/9/94 TO 29/7/98

Submitted by

Equinox Resources NL
1998

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ENVELOPE 8974

TENEMENT: EL 2012, Ooldea South

TENEMENT HOLDER: Equinox Resources NL

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SEPARATELY HELD DATA

DRILLHOLE SAMPLES (held by PIRSA Core Library)

For up to date information on available drillhole samples, contact the Supervisor, PIRSA Core Library and quote the Exploration Licence and drillhole number/s you wish to query.
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EQUINOX RESOURCES NL

"OOLDEA SOUTH"
EXPLORATION LICENCE EL2012
WESTERN GAWLER CRATON
SOUTH AUSTRALIA

Annual Technical Report
1st September 1994 - 31st August 1995

Preliminary Solid Geology Interpretation
Ground Magnetics
and
Target Generation

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SUMMARY

Following regional interpretation of SAEI aeromagnetic data in 1993 and preparation of 1:250,000 scale solid geology maps, several circular diatreme-like targets up to 1km in diameter were selected in the Ooldea South region for diamond exploration. An orientation ground magnetic survey was conducted over one of the negatively-polarised targets in November 1993 to confirm its ground position, size and magnetic response. It has a central core ca 500-600m in diameter with an amplitude of about 50-100nT and an outer rim ca 2km in diameter with an amplitude ca 200-300nT. The distribution of these potential diatremes may be controlled by structures like the Karari Fault Zone, as well as features such as transfer accommodation zones that developed during crustal extension leading up to the formation of the Bight, Polda and Duntroon Basins (ca 120 Ma).

This possible new diamond province is hosted by a paragneissic basement that developed during the late Kimban Orogeny and subsequent orogenic event(s) at ca 1,660 Ma from an early Proterozoic/Archaean protolith with several large semi-circular granitoid plutons of possible Mesoproterozoic age. One of these plutons occupies the SE quadrant of EL 2012, is weakly magnetic and ca 15-20km in diameter. Uplift and exhumation of the gneisses and granitoids is probably in part related to the development of the Karari and associated fault zones but they are now overlain by a veneer of Tertiary Nullarbor Limestone and associated sediments. Additional economic interest in the area may be attached to the Karari Fault Zone's potential for Au/Cu mineralisation and the potential for Au in the Archaean protolith.

Drill testing of targets will be undertaken when Native Title has been determined.

1.0 INTRODUCTION

Initial appraisal of appropriately processed South Australian Exploration Initiative (SAEI) aeromagnetic data in the latter part of 1993 led to the recognition of a series of small circular magnetic anomalies in the western extremities of the Gawler Craton, on the eastern margin of the Nullarbor Plain. Applications were promptly prepared for several areas including "Ooldea South" which is located approximately 15km south of the old Ooldea railway siding on the Transline, within the Moondrah (5236) 1:100,000 sheet area (Fig. 1; OOLDEA 1:250,000 sheet area).

The small, circular anomalies initially recognised are consistent with the types of intrusives (diatremes) in which diamonds occur. They intrude a large moderately-magnetic semicircular granitoid pluton and some are closely associated with a major Proterozoic crustal shear zone, the Karrari Fault Zone. The coicindence of a major shear zone with a possibly Mesoproterozoic granite pluton is consistent with models for Ernest Henry style copper-gold mineralisation. Southeast of the shear zone, the granitoid pluton intrudes rocks interpreted from the magnetics to represent Archaean gneisses similar to those in the Mulgathing-Commonwealth Hill region where significant gold mineralisation has recently been found by Dominion Mining Ltd. Therefore, in addition to diamonds, there is some potential for gold and copper-gold mineralisation in the Ooldea South tenement.

Exploration Licence EL 2012 has an area of 212 km^2 in level and treeless terrain (see Plate 1). Access via slightly overgrown graded tracks from Ooldea is good with little impediment, other than potential for tyre damage, to travelling cross-country. Extensive rabbit warrens also pose some risk, but are easily avoided.

The tenement is entirely within Nullarbor Regional Reserve and therefore subject to Native Title clearance before any field work can be undertaken. A Native Title Claim has been lodged over the region by the Mirning people. Upon advice from the Department of Mines and Energy, South Australia (MESA) in early 1995, Equinox Resources has been waiting for the South Australian State Native Title Tribunal and associated procedures to be established before making a "Non-claimant Application for Determination of Native Title". The tribunal and procedures have not yet been established so drill testing of target anomalies has been deferred.

2.0 METHODS

Careful evaluation of varied representations of the SAEI aeromagnetic data at scales from 1:500,000 to 1:50,000 was undertaken in order to produce a regional solid geology map of the area and to identify and delineate as closely as possible, all magnetic features that might be diatremes.

Regional evaluation of the area was undertaken at 1:250,000 using a pseudocolour relief-shaded total magnetic intensity (TMI) image generated from the SAEI data using ER-Mapper.. This included attempting to establish the character of bedrock in relation to suitable host lithologies, an assessment of the presence or otherwise of appropriate structural and magmatic environments, and magnetic features that would constitute targets for diamonds, Archaean Au and Proterozoic Au/Cu type deposits.

The characteristics sought for diamond exploration during this evaluation were:

> *Small (approx. 0.5 km to 3 km in diameter), roughly circular, positive or negative anomalies in the order of 5 to 50 nT, preferably defined by more than one flight line, and preferably also possessing some near field distortion in the total magnetic intensity such as might be expected in the near vicinity of a pipe-like feature (e.g. a rim around -ve or moat around +ve anomalies), perhaps with an asymmetric profile north to south.*

A relief-shaded colour TMI image, a relief-shaded grey-scale first vertical derivative image, and a detailed, closely-spaced colour-contour plan, all produced at a scale of 1:50,000 were used for target definition, and general assessment of the area. Initial target generation and interpretation were based on SAEI 400m line-spaced aeromagnetic data but infill data was acquired for part of the tenement (Fig. 2) early in 1995 and merged with the original SAEI data to produce a 200m line-spaced data set over the key target areas.

In the course of this work, readily available information concerning the potential character and age of basement lithologies, and the regional environment has been compiled. Much of the area immediately surrounding the EL has also been examined and further potential diatreme-like magnetic signatures recognised. A brief site visit in November 1993 was undertaken in order to evaluate access and ground conditions, and to make preliminary "compass and pace" ground magnetic traverses across the most prominent of the target anomalies (Target OS-1). These results are attached as Appendix A.

The recent and comprehensive Geological Survey of South Australia Bulletin 54 (Drexel, Preiss & Parker 1993) has been used as the primary reference for Precambrian nomenclature, dating and stratigraphy. For the sake of brevity this work has not been repeatedly cited below. The MESA State GIS database (now available on CD-ROM from the Regional Geology Branch) has also been extensively used to identify previous exploration in the region including summary logs

of previous drilling. This has been an invaluable dataset particularly during regional aeromagnetic interpretation.

3.0 RESULTS

3.1 Regional Geology

The Gawler Craton in southern South Australia is a crystalline basement terrane flanked on all sides by significantly younger sedimentary basin successions (Fig. 3). The oldest known rocks in the craton are granite-greenstone type terranes dated as latest Archaean to earliest Proterozoic. Several Palaeo- and Mesoproterozoic phases of tectonism and magmatism have reworked substantial parts the Archaean protolith. The region of interest is the western periphery of the craton, where sediments of the Neoproterozoic to Palaeozoic Officer Basin overlie parts of the craton, and the Tertiary Eucla Basin on-laps from the southwest.

Regional and detailed interpretative work based on the SAEI aeromagnetic data for other parts of the western Gawler Craton (Parker et al., 1994; Hammond & Parker, 1994) has resulted in the recognition of a set of significant high strain zones, the most significant of which closely correspond to major discontinuities previously recognised, including the Karari, Colona, and Coorabie Fault Zones. Outcrop of the Colona Fault Zone (Lake Tallacootra) and MESA diamond drill intersections in the Karrari Fault Zone (KFZ) indicate that the kinematics of these well developed demagnetised mylonite zones (see drilling below) is northwest-block-down with largely steeply-plunging, down-dip mineral lineations overprinted by predominantly sinistral strike-slip shearing.

These major northeast-trending discontinuities were visible in representations of the older Bureau of Mineral Resources (BMR; now AGSO) regional magnetic data and form the basis for subdivision, by the Department of Mines and Energy, South Australia (MESA), of the Gawler Craton into several fault-bounded "subdomains". The northwestern-most of the major discontinuities is the Karari Fault Zone, and is marked over significant parts of its length by very prominent, linear magnetic highs due to the incorporation of BIF into the mylonites. The Ooldea South EL straddles the trace of this structure, and thus lies partly within the Christie Subdomain adjacent to its southeast margin, and partly within the Nawa Subdomain, a portion of the Craton overlain by thin Officer Basin sediments.

The Christie Subdomain is characterised by high metamorphic grade gneisses predominantly of Archaean age and incorporating mafic gneisses (amphibolites), garnetiferous and calcsilicate para-gneisses, BIFs and, locally, ultramafic rocks. These are intruded by Palaeoproterozoic granitoids which have been deformed into major gneiss complexes, subsequently locally intruded by Mesoproterozoic granites, sheared and then intruded by major NW-trending mafic dyke swarms (see Table 1 below).

The Nawa Subdomain southwest of Ooldea is characterised by very high metamorphic grade quartz+saphirine+magnetite, magnetite+hypersthene+sillimanite and garnet-bearing granulites collectively referred to here as the Moondrah Gneiss. These are believed to represent metasediments of Palaeoproterozoic age deposited between ca 2,000 Ma and 1,656 Ma the timing of peak metamorphism (S.J. Daly and C.M. Fanning, pers. comm., 1995).

The KFZ and the related array of structures traverse the northwestern Gawler Craton, and are clearly relatively late in the overall tectonic history of the craton. They are best interpreted as the manifestation of a thrust stacking of the pre-existing gneisses above some detachment, if only

because the shear zone geometries (largely vertical movements) necessitate a flattening of these structures with depth

Reactivation of elements of the KFZ must have occurred in the late Neoproterozoic, at the time of the development of the Officer Basin and, in particular, the Tallaringa Trough, as the margins of the basin and trough closely follow the KFZ (Benbow, 1993). The Tallaringa Trough also contains Permian sediments so the KFZ was again actived during the late Palaeozoic. Tertiary reactivation of the KFZ in the vicinity of the EL may be indicated by geomorphic features in the Nullarbor Limestone (Eucla Basin) that also closely follow the fault zone, and probable splays thereof.

Archaean to Neoproterozoic phases of basin formation and orogenesis that need to be considered in relation to the Ooldea South region are listed below:

Table 1: Precambrian tectonic evolution of the western Gawler Craton

ca. 2,600-2,435 Ma	Formation of the Archaean Mulgathing Complex including deposition of paragneiss precursors and BIF ca 2,600 Ma, intrusion of mafic and ultramafic sills and dykes ca 2,600-2,500 Ma, and metamorphism and plutonism ca 2,435 Ma;
2,500 Ma	*Archaean/Palaeoproterozoic boundary;*
ca. 1,900-1,840 Ma	Basin formation on the eastern Gawler Craton (Hutchison Group - Wilgena Jaspilite) - may be represented in the Ooldea region by the Moondrah Gneiss although the latter could be as young as 1,670 Ma;
ca. 1,840 Ma	Early Kimban Orogeny (Barramundi Orogeny - Etheridge et al. 1987) - possibly represented by the oldest of the highly deformed undifferentiated granite gneisses in the Ifould Lake region;
ca. 1,730 Ma	Nundroo Complex mafic magmatogenesis - highly magnetic mafic gneisses and amphibolites;
ca. 1,700-1,680 Ma	Late Kimban Orogeny magmatogenesis represented by the Symons Granite NW of Tarcoola and augen granite gneiss at Ifould Lake (Pidinga Rockhole);
ca. 1,660 Ma	Restricted basin formation in the Wilgena Subdomain (Tarcoola Formation); very high grade metamorphism in the Nawa Subdomain recorded SW of Ooldea by the Moondrah Gneiss;
ca. 1,630-1,620 Ma	St Peter Suite magmatogenesis (& orogenesis) in the Streaky Bay region and SE of Coorabie Fault;
1,600 Ma	*Palaeoproterozoic/Mesoproterozoic boundary;*
ca. 1,595-1,585 Ma	Hiltaba Suite / Gawler Range Volcanics magmatogenesis (& minor extension? - Corunna Conglomerate on NE Eyre Peninsula);
ca. 1,570-1,530 Ma	Late shear zones (Karari, Colona and Coorabie Fault Zones);

ca. 1,550-1,530 Ma Spilsby Suite post-orogenic magmatism;

1,000 Ma *Mesoproterozoic/Neoproterozoic boundary;*

ca. 850 Ma Basin formation (Officer Basin & Adelaide Geosyncline - continuing through to ca. 500 Ma); formation of the NW-trending Gairdner Dyke Swarm in the Stuart Shelf Region and, possibly, NW-trending mafic dykes in the western Gawler Craton;

540 Ma *Neoproterozoic/Phanerozoic boundary;*

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The Ooldea South tenement is entirely within the Tertiary Eucla Basin and is characterised by outcrop of flat-lying Nullarbor Limestone. In Ooldea 3 DDH (Fig. 4), Nullarbor Limestone is only 16m thick but overlies 85m of Cambrian/Neoproterozoic Observatory Hill Formation sediments (predominantly mudstone) before going into Palaeoproterozoic basement (Parker, 1987). In two drillholes in the near vicinity of the EL (Fig. 4), Tertiary sediments vary from 26m thick to >62m. Summary geological logs for those two holes are:

PIN-R 10 (4.5 km east of northern part of EL)
latitude 30.7964 S and longitude 131.796630 E

0-1	Red silt (calcareous)	
1-18	Nullarbor Limestone	
18-26	Pidinga Formation	(lignitic sands)
26-29.8	Biotite-plagioclase-quartz-K-feldspar-muscovite gneiss	

ODH 13 A (In southwestern part of EL)
latitude 30.8741 S and longitude 131.619040 E

0-19	Nullarbor Limestone	
19-42	Wilson Bluff Limestone	
42-44	Hampton Sandstone	
44-62	Pidinga Formation	(sand & grit with lignite)

3.2 Previous Mineral Exploration and Drilling

Previous mineral exploration in the region focussed principally on exploration for Tertiary lignites and associated sedimentary "roll-front" uranium mineralisation (Chevron Exploration Corp. (MESA Open File Envelope 2183) and Pechiney (Aust.) Exploration Pty Ltd (MESA Open File Envelopes 2169 and 2504)). Amoco Minerals Aust. Co. (MESA Open File Envelopes 3855 and 4161) undertook regional exploration immediately north of the existing tenement for Olympic Dam style copper-uranium-gold and drilled two coincident gravity and aeromagnetic anomalies. Anomalous gold (400ppb @ 316-318m) was recorded in drillhole ORP 2 north of Watson but repeat fire assays only came back with 20ppb. Current exploration by Cosmo Developments Pty Ltd and Outback Mining and Oil Co. Pty Ltd on EL 2047 immediately north of EL 2012 is targeted on magnetite iron mineralisation reported in Ooldea 3 DDH (Parker, 1987).

Exploration drilling in the region for lignite and uranium reported sporadic intersections of basement. These include:
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WS-WB	Bottoms in Loongana Sandstone @ 100 m	(6.5 km west of EL)
PIN-R 9	22-43 m quartzofeldspathic gneiss	(9.5 km east of EL)
PIN-R 10	26-29.8 m biotite-plagioclase-quartz-K-feldspar-muscovite gneiss	
PIN-R 11	9.3-34 m quartz-feldspar-biotite gneiss	(12.5 km east of EL)
PIN-R 7	Bottoms in Pidinga Formation @ 51 m	(14 km east of EL)
625 1	92.2-92.4 m granitic rock (qz-mica-plag)	(10.5 km east-southeast)
PIN-R 17	17-28 m quartz-feldspar-biotite gneiss	(16 km east-northeast)
ORP 1	6-96 m granulite facies paragneiss	(22 km north of EL)
PDH 3	70-75 m quartzofeldspathic & mafic gneiss	(22 north-northeast)
PIN-R 18	Bottoms in Observatory Hill Fmn @ 100m	(22 north-northeast)
PIN-R 20	36-38.6 m biotite-quartz-feldspar gneiss	(23 km northeast of EL)

Stratigraphic diamond drilling by MESA, investigating prominent magnetic features close to the KFZ was undertaken 21.5 km to the northeast of the EL (Ooldea DDH 3; inclined 60° towards 290°), and 20 km north (Ooldea DDH 2, inclined 70° towards 360°).

OOLDEA 3 encountered a cover of 102 m of Tertiary ferruginous limey sands and Cambrian Observatory Hill Formation mudstone overlying a very thin regolith on fresh basement (Parker, 1987). In the drill core, the shallowest basement of K-feldspar-rich, relatively quartz-poor gneiss passes rapidly into mylonitic rock at 125 m with a steeply east-southeast dipping foliation inferred from core-foliation-lineation geometries. Significant retrogression, and a late, shallow-level movement history is evident in some of the core as striated chloritic seams which are commonly concordant, but locally discordant. Garnet is common and porphyroblastic K-feldspar is abundant in most of the core, the latter locally entirely retrogressed and hydrated to muscovite. Concordant magnetite banding occurs at about 350 to 370 m depth, a narrow zone of mafic gneiss at about 375 m, and porphyroclastic mylonites near the end of the core at about 380 m preserving unequivocal west-block-up shear sense indicators (in contrast to east-block-up shear sense described by Rankin et al., 1989).

OOLDEA 2 encountered diffusely and sometimes finely layered, garnetiferous quartzofeldspathic gneisses, identifiable from approximately 6 m, but weathered and ferruginised down to about 40 m. Interlaminated sapphirine+quartz+magnetite, hypersthene+sillimanite+magnetite and garnet-rich assemblages reputedly reflecting conditions of 8-10 kb and 950°C-1,000°C are reported from this core (Daly, 1987; Taylor, 1987). A Rb-Sr minimum age of ~1,700 Ma and a peak metamorphic SHRIMP U-Pb zircon age of 1656±9 Ma are also reported (S.J. Daly and C.M. Fanning, pers. comm., 1995).

From the available drilling information it can be argued that the depths of cover range from approximately 30 m to the east and northeast of the EL, to no less than 65 m in the southwest of the EL, and possibly up to the vicinity of 100m over much of the area.

In all of the drilling in the district, bedrock lithologies have consistently been high grade gneisses, with a significant proportion containing appreciable quantities of garnet, magnetite and lenses of mafic gneiss. Relatively few intersections have contained gneisses clearly derived from granitoids. It seems likely that most are paragneisses, derived from an old basin succession and probably repeatedly reworked during the Meso- and Palaeoproterozoic. In the core taken to the north of the EL (Ooldea 2) in which gneisses are sapphirine-bearing granulite facies rocks, the assemblages are relatively rare and reflect very H_2O-poor conditions during high grade metamorphism (Winkler, 1974) near the base of sialic crust (i.e. 30+ km depth). By contrast,

rocks outcropping east of the Karari Fault Zone at Ifould Lake are lower metamorphic grade and mid to upper crustal.

3.3 Exposure

Within the area of the EL (Plate 1), rounded, cobble and small boulder-sized "lumps" of Nullarbor Limestone are liberally scattered about the surface, but are absent from shallow drainage depressions. Outcrop of Nullarbor Limestone occurs sporadically throughout the area, particularly along the flanks of the shallow drainage depressions.

No basement outcrop is known, nor is likely given the depth of cover that is known from drilling in the area. Outcrops or surface material derived from exposure of Eucla Basin units other than the Nullarbor Limestone or of Officer Basin sediments are also unknown.

3.4 Aeromagnetics

The specifications of the original SAEI aeromagnetic data include a nominal line spacing of 400 m and a flying height of 60 m (Fig. 5). Experience has shown that, whereas such data are adequate for a meaningful regional interpretation of the geology, important details may not be discernible. Therefore, it was recommended that closer line spacing and finer gridding of the located data was required for very detailed interpretation.

200m line-spaced data were acquired at a nominal flying height of 60m and merged with the original 400m data during the past year but it has not yet been possible to re-interpret the region based on the merged data. Nonetheless, preliminary images have been produced and compared to the original datasets although direct comparison is not easily made due to the quite different processing specifications used by the contract image processors.

Based on the original 400m data, a regional solid geology map was produced at 1:250,000 scale (Fig. 6). The Karari Fault Zone is well defined in the imaged and contoured aeromagnetic data as a demagnetised zone, locally comparatively wide (i.e. > 1 km), but also locally entraining highly magnetic lenses, and as a zone clearly truncating other prominent magnetic trends and features. A number of splays from the main zone are also clearly defined. A major mylonite zone outcropping in the bed of Lake Tallacootra (to the southeast on the FOWLER 1:250,000 sheet area) has been directly correlated with similarly demagnetised zones in the same data set, providing credence to this assessment.

Some magnetic layering is evident in the basement gneisses, but only further, more detailed interpretative work in the future will define the structure inherent in the patterns. More apparent is the presence of a roughly circular area in which the average magnetic intensity is markedly higher, loosely coinciding with the area of the EL and extending to the southeast. It may be that this area of enhanced intensity marks the roof zone of a late, near surface granitoid body possibly of Mesoproterozoic age.

Significant depths of cover (>100 m) are generally indicated by a lessening in the gradients defining the edges of magnetic features, giving a slightly "out-of-focus" appearance to features in images over such areas. Such an effect is evident in the northwestern corner of the EL, from which a greater than 100 m depth of cover might be inferred.

3.5 Diatreme Targets

A critical result of the work to date is the identification of five features as being potential diatremes or pipe-like intrusive bodies within the EL area, and a further three to the southeast within what is now the Ifould West EL 2029. Based on the existing magnetic intensity data, these targets are (see Fig. 7 for locations):

Name:		*Location (AMG Zone 52):*	*Diameter:*	*Type:*
OOLDEA SOUTH 1	OS1	756350 mE - 6587600 mN	~ 900 m	-ve - strong
OOLDEA SOUTH 2	OS2	753600 mE - 6585150 mN	450-500 m	+ve - small
OOLDEA SOUTH 3	OS3	759400 mE - 6580300 mN	700-800 m	+ve - diffuse
OOLDEA SOUTH 4	OS4	760850 mE - 6582000 mN	~ 400 m	-ve - small
OOLDEA SOUTH 5	OS5	758700 mE - 6583250 mN	500-600 m	-ve

Targets in the Ifould West EL are

Name:		*Location (AMG Zone 52):*	*Diameter:*	*Type:*
IFOULD WEST 1	IF1	764050 mE - 6570900 mN	600-700 m	-ve - mild
IFOULD WEST 2	IF2	761250 mE - 6574800 mN	~ 550 m	-ve - small
IFOULD WEST 3	IF3	764800 mE - 6578350 mN	600-700 m	-ve

In general, the targets identified have been smaller than anticipated, some have had greater amplitudes but are nonetheless clear, and, in all examples, are apparently defined by more than one flight line. The least well defined target is OS3, whereas the largest anomaly in both size and amplitude, OS1, is a prominent negative feature and readily visible even in 1:500,000-scale images.

3.6 Ground Magnetics

Details of the "pace-and-compass" ground magnetic survey over the OS1 target are reported in the attached appendix (Appendix A). In the case of both traverses, the features observable in the aeromagnetic data are essentially duplicated by the ground-level profiles. The actual target in both profiles is the subtle but still *pronounced* dip in the central 600 m to 800 m of each profile, apparently smaller than is recorded by the aeromagnetics contours, because the profiles have in both cases probably failed to cross the exact centre of the target feature.

This very preliminary ground magnetics work has better than adequately verified the presence of a negative magnetic anomaly coincident with OS1 with a diameter of at least 500 m. It has a central core ca 500-600m in diameter with an amplitude of about 50-100nT and an outer rim ca 2km in diameter with an amplitude ca 200-300nT.

4.0 DISCUSSION

Of the five diatreme targets recognised in the area of the Ooldea South EL, three can be convincingly interpreted as pipe-like features, another is moderately convincing (OS5), and the last (OS3) is only mildly convincing, though still too interesting to leave uninvestigated. At least two and probably three further pipes occur in the Ifould West EL area. The nature and origin of these pipe-like features can not be readily predicted, and it should be emphasised at this point that diamondiferous diatremes are not the only pipe-like intrusives worthy of exploration interest.

REE-enriched carbonatite pipes are also a desirable exploration target under appropriate circumstances.

Two of the main targets (OS1 & OS2) are located along the KFZ, a major, steeply east dipping, and probably deep-seated structure, and further targets (OS4 & IF2) seem to lie along or adjacent to a splay of the KFZ. The overall scatter of pipes, however, defines a loose northwest-southeast array. One can currently only speculate on the factors controlling the distribution of these potential pipes. One possibility is that the trend so defined is roughly parallel to, and perhaps related to, a major transfer accommodation zone that developed at about 120 Ma along the now Kangaroo Island - western Victoria - Tasmania portion of the continental edge, during the earliest episodes of crustal extension in the now offshore Duntroon and Bight Basins.

The likely age of the protolith, and the tectonism that produced the gneissic character of the rocks is unclear, but it can be surmised from the reported Rb/Sr and U-Pb information that the gneissosity developed during a major orogenic event(s) at about 1,660 Ma from a protolith that includes Archaean and Palaeoproterozoic metasediments, granitoids and mafic intrusives which evolved during the Barramundi and late Kimban Orogenies. The question of how the lower crustal rocks known from Ooldea 2 have been uplifted to the surface is unclear. S-C fabrics reported by Rankin et al. (1989) from KFZ mylonites in Ooldea 3 imply that the SE block has been uplifted relative to the NW block but metamorphic grades and our own observations indicate down dip lineations in steeply northwest-dipping zones and west-block-up senses of shear. The KFZ and related structures including the Colona and Coorabie Fault Zones appear to have consistent geometries, become progressively younger westwards (Hammond & Parker, 1994) and could account for much of the uplift and exhumation of the deep crustal rocks exposed at about 1,570-1,530 Ma, if it is assumed that these shear zones flatten with depth and have thus accommodated thrust imbrication.

Potential for Au and Cu mineralisation along the main Karari Fault Zone and splays is illustrated by some of the material encountered in Ooldea 3. In particular some magnetite-bearing parts of the core also contain richly red-coloured K-feldspar bands which are strongly reminiscent of "red-rock" alteration reported from the Ernest Henry deposit in Queensland. Other portions of the core suggest significant fluid access into the zone (e.g. alteration of K-feldspar to muscovite), thus some potential for mineralisation in the KFZ.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Five potential diatreme targets have been identified within the area of the EL, with a further three in the area immediately adjacent to the southeast. The eight potential diatremes identified here may represent a new diatreme province hitherto not recognised.

This possible new province is hosted by a paragneissic basement that developed during the late Kimban Orogeny and subsequent orogenic event(s) at ca 1,660 Ma from an early Proterozoic/Archaean protolith. Uplift and exhumation of the gneisses is probably in part related to the development of the Karari and associated fault zones. The distribution of these potential diatremes may be controlled by structures like the KFZ, as well as features such as transfer accommodation zones that developed during crustal extension leading up to the formation of the Bight, Polda and Duntroon Basins (ca 120 Ma). Additional economic interest in the area may be attached to the Karari Fault Zone's potential for Au/Cu mineralisation.

Following detailed interpretation of the merged 400m and 200m aeromagnetic datasets and review of targets, it is recommended to undertake a drilling program to test all the identified targets as well as any Cu-Au targets.

The order of priority of the targets currently defined within the Ooldea South EL area is:

1. OOLDEA SOUTH 1
2. OOLDEA SOUTH 2
3. OOLDEA SOUTH 4
4. OOLDEA SOUTH 5
5. OOLDEA SOUTH 3

In closing it must be emphasised that these are very exciting targets in a hitherto unrecognised province that will not be difficult to delineate and explore, and which represent immense potential returns.

6.0 REFERENCES

Benbow, M.C., 1993. Explanatory Notes for the TALLARINGA 1:250,000 Geological Map. *South Australia. Geological Survey.*

Daly, S.J., 1987. Ooldea 2 well-completion report. *South Australia. Geological Survey.* Unpublished Report 87/48.

Drexel, J.F., Preiss, W.V. and Parker, A.J., 1993. Geology of South Australia. Volume 1, The Precambrian. *South Australia. Geological Survey.* Bulletin 54.

Etheridge, M.A., Rutland, R.W.R. and Wyborn, L.A.I., 1987, Orogenesis and Tectonic Process in the Early to Middle Proterozoic of Northern Australia, *In* Kröner, A. (ed.) Proterozoic Lithospheric Evolution. *American Geophysical Union Geodynamics Series*, 17, 131-147.

Hammond, R.L. and Parker A.J., 1994. "Tallala Hill" Exploration Licence 1894, Western Gawler Craton, South Australia - Solid Geology Interpretation from SAEI Aeromagnetic Data and Target Generation. Equinox Resources NL. Unpublished Annual Report, December 1994.

Parker, A.J., 1987. Ooldea 3 well-completion report and tectonic modelling. *South Australia. Geological Survey.* Unpublished Report 87/94.

Parker, A.J., Hammond, R.L. and Teasdale, J.P., 1994. "Poondinga Rock Water" Exploration Licence 1893, Western Gawler Craton, South Australia - Preliminary Solid Geology Interpretation from SAEI Aeromagnetic Data, Target Generation and Geological Field Mapping Report. Equinox Resources NL. Unpublished Annual Report, December 1994.

Rankin, L.R., Martin, A.R. and Parker, A.J., 1989. Early Proterozoic history of the Karari Fault Zone, northwest Gawler Craton, South Australia. *Australian J. Earth Sciences* 36:123-133.

Taylor, M.J., 1987. Metamorphism, petrology and geochemistry of the Ooldea 2 drillcore and Lake Ifould area. Unpublished B.Sc (Hons) thesis, University of Adelaide.

Winkler, H.G.F., 1974. *Petrogenesis of Metamorphic Rocks.* Third Edition, Springer-Verlag Berlin, Heidelberg, New York, 320 pp.

APPENDIX A

Consultant's report on preliminary ground magnetics

GEOSURVEYS AUSTRALIA PTY LTD
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OOLDEA SOUTH EXPLORATION LICENSE
WESTERN GAWLER CRATON
SOUTH AUSTRALIA

Preliminary Ground Magnetic Survey

AUTHOR: A John Parker

CLIENT: Equinox Resources N.L.

DATE: 31st December 1993

INTRODUCTION

A reconnaissance ground magnetic survey across a small circular magnetic anomaly located at approximately 756050mE, 6588000mN, AMG Zone 52, Moondrah (5236) 1:100 000 map sheet (approximately 42km SSW of Ooldea Railway Siding), was undertaken on 13th November 1993.

A base station, marked by a small stone cairn, was established at the approximate centre of the anomaly and was designated 2000mW, 2000mN. The location of this cairn, as determined by GPS, is

Two traverses, each approximately 3km long, were made through the base station, one E-W and the other N-S. Readings were taken at 25m intervals along each line.

Data were collected using a GEM Systems GSM-19 'Overhauser Effect' proton-precession memory magnetometer and down-loaded into a PC-based spreadsheet upon completion of the survey.

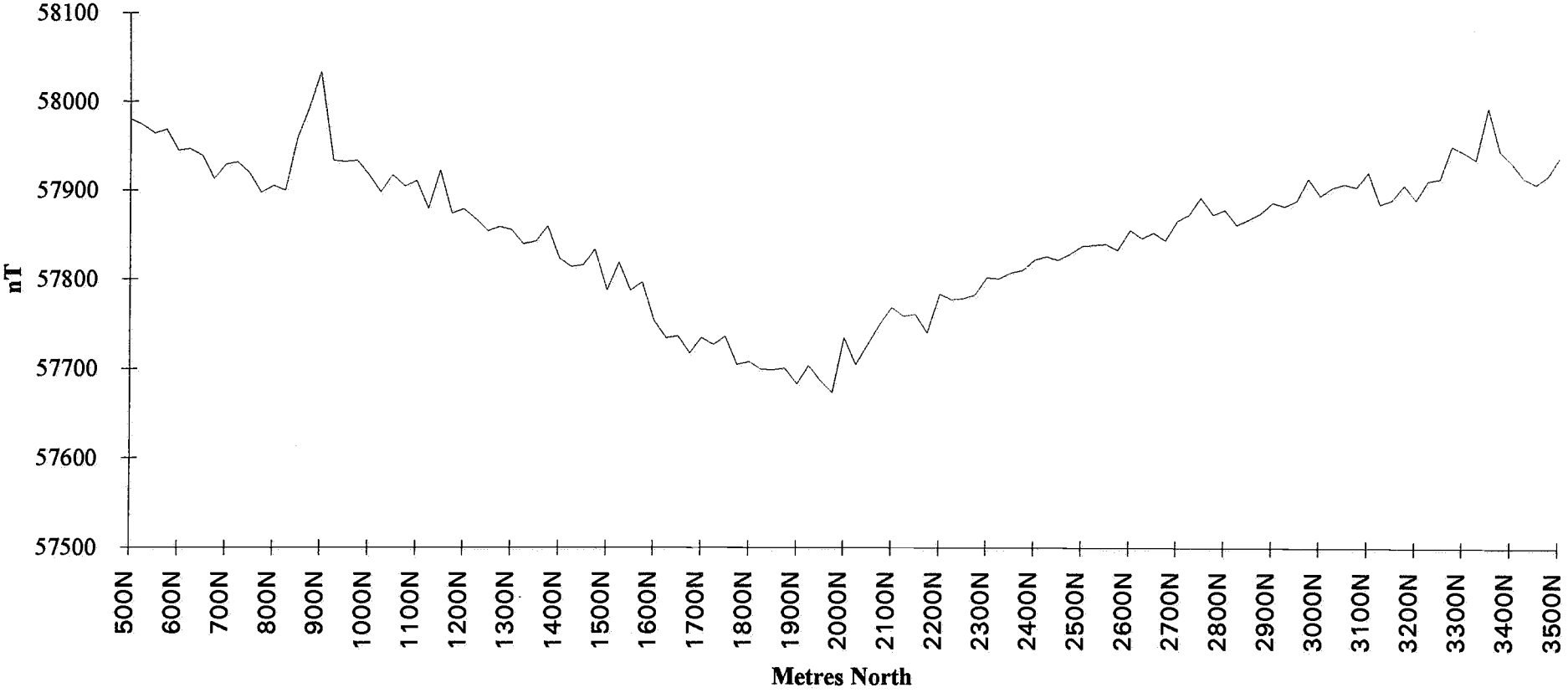
RESULTS

Although there was some drift due to diurnal variation of the earth's magnetic field (see base station chart), no attempt has been made at this stage to remove those effects from the raw data.
Data are presented both in their raw form and as a standard Lotus 1-2-3 spreadsheet file in which the raw data, in particular station co-ordinates, have been tidied up. Charts have been prepared for each traverse and are presented as simple X-Y plots and Excel chart files.

The ground magnetic data confirm the presence of a distinct magnetic low about 2km in diameter and maybe with a slightly magnetic rim. The amplitude of the anomaly is about 200-300nT but it may comprise two separate features, a smaller ca. 500-600m diameter central core with an amplitude of about 50-100nT and an outer rim. From the E-W line (Line 2000N), it is clear that the centre of the anomaly is slightly offset about 400m east of the base station. The western edge is relatively sharply defined but the eastern, northern and southern margins are defined by gentle gradients with small spikes at the break in slope to the regional background.

It is recommended that a detailed ground magnetic grid be undertaken over the anomaly to more clearly define its extent and internal structure. Line spacing should be no greater than 50m and station intervals 5m apart. The grid should be 4km square centred on location 1600mW, 1900mN relative to the existing data.

Ooldea South Ground Magnetics
Anomaly A - Line 2000W



Geosurveys Australia Pty Ltd

December 1993

0018

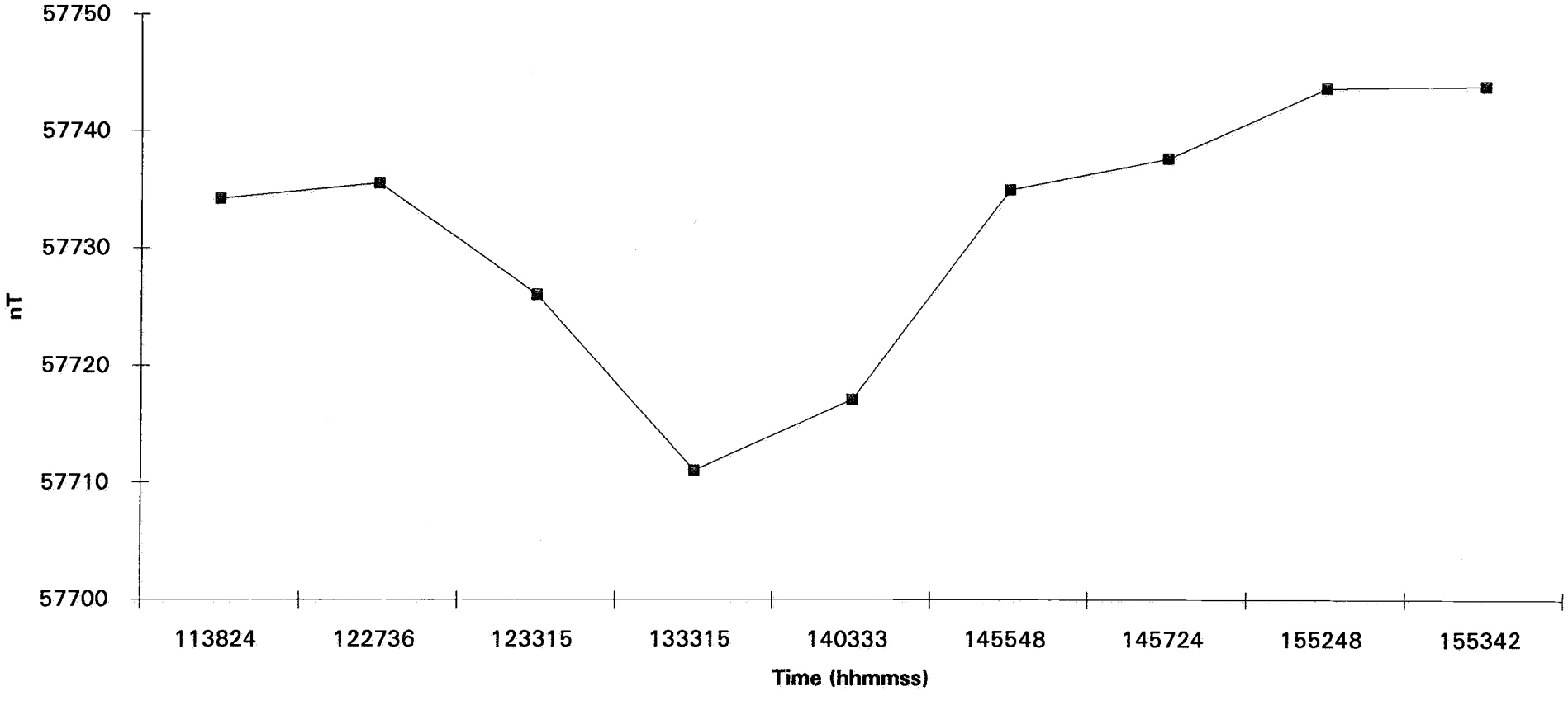
Ooldea South Ground Magnetics
Anomaly A - Line 2000N

Geosurveys Australia Pty Ltd

December 1993

0019

Ooldea South Ground Magnetics
Anomaly A - Base Station - 13th November 1993



OOLDEA SOUTH and IFOULD WEST
Exploration licences

Ooldea 1:250,000 Map Sheet
South Australia

Fig. 1

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EQUINOX RESOURCES NL

0021

EL 2012

EL 2029

NULLARBOR PLAIN

RANGE

OOLDEA HILL

TRANS AUSTRALIA RAILWAY

Ooldea

Ooldea Well

Watson

Quarry

Dismantled

Historic marker

Gauge 1.435m

Boundary of Maralinga Prohibited Area

Boundary of Disused Nullarbor Plain

Reid No1 Bore (Abandoned)

Small shallow vegetated depressions

Numerous small shallow vegetated depressions

Numerous small sandridges

Average height of sandridges 3 metres

Average height of sandridges 6 metres

Average height of sandridges 10 metres

Average height of sandridges 20 metres

to Yalata

GM KG

GL KF

UTM GRID ZONE DESIGNATION 52J

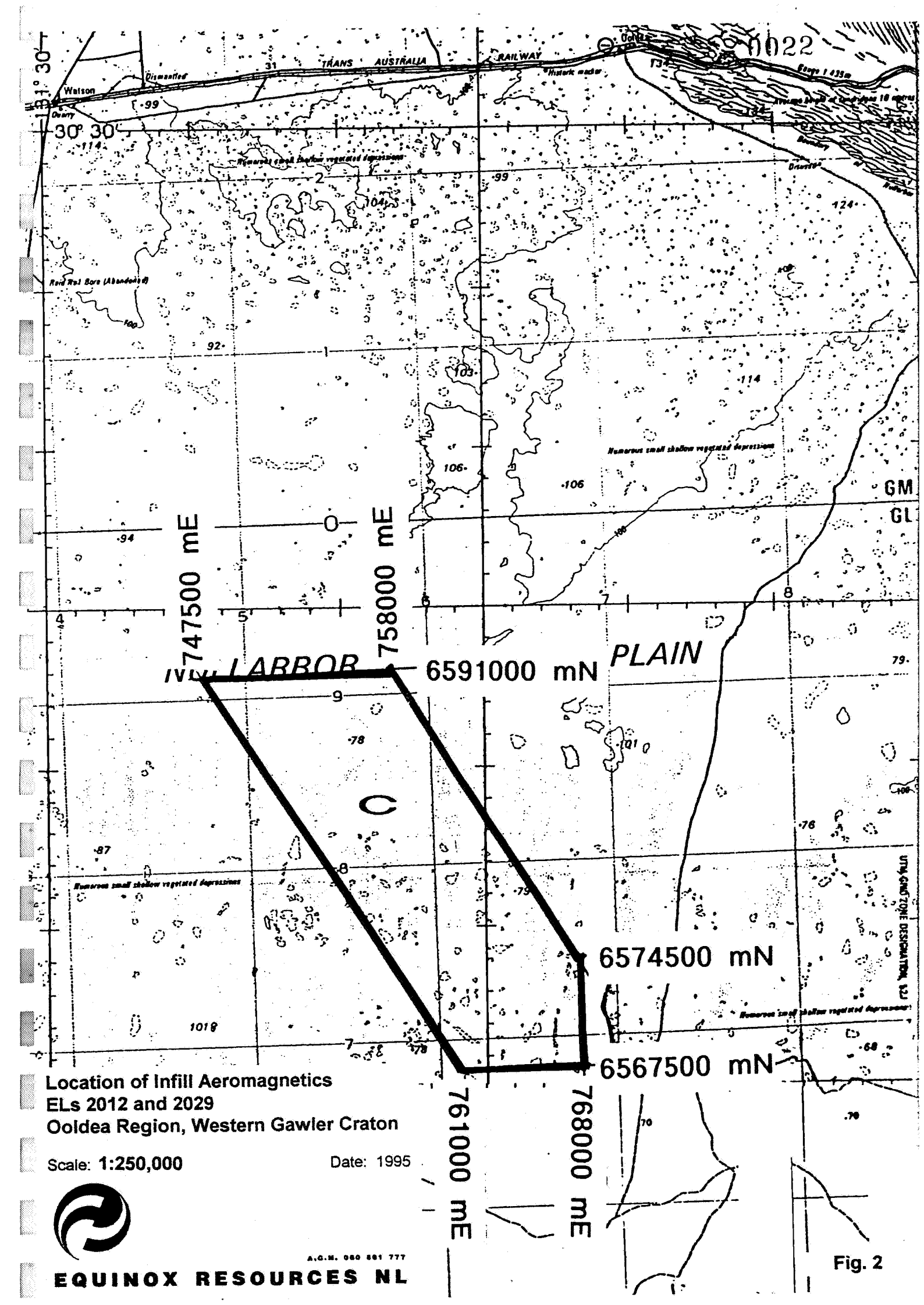
UTM GRID ZONE DESIGNATION 53J

30° 30'

31° 00'

45'

132° 00'



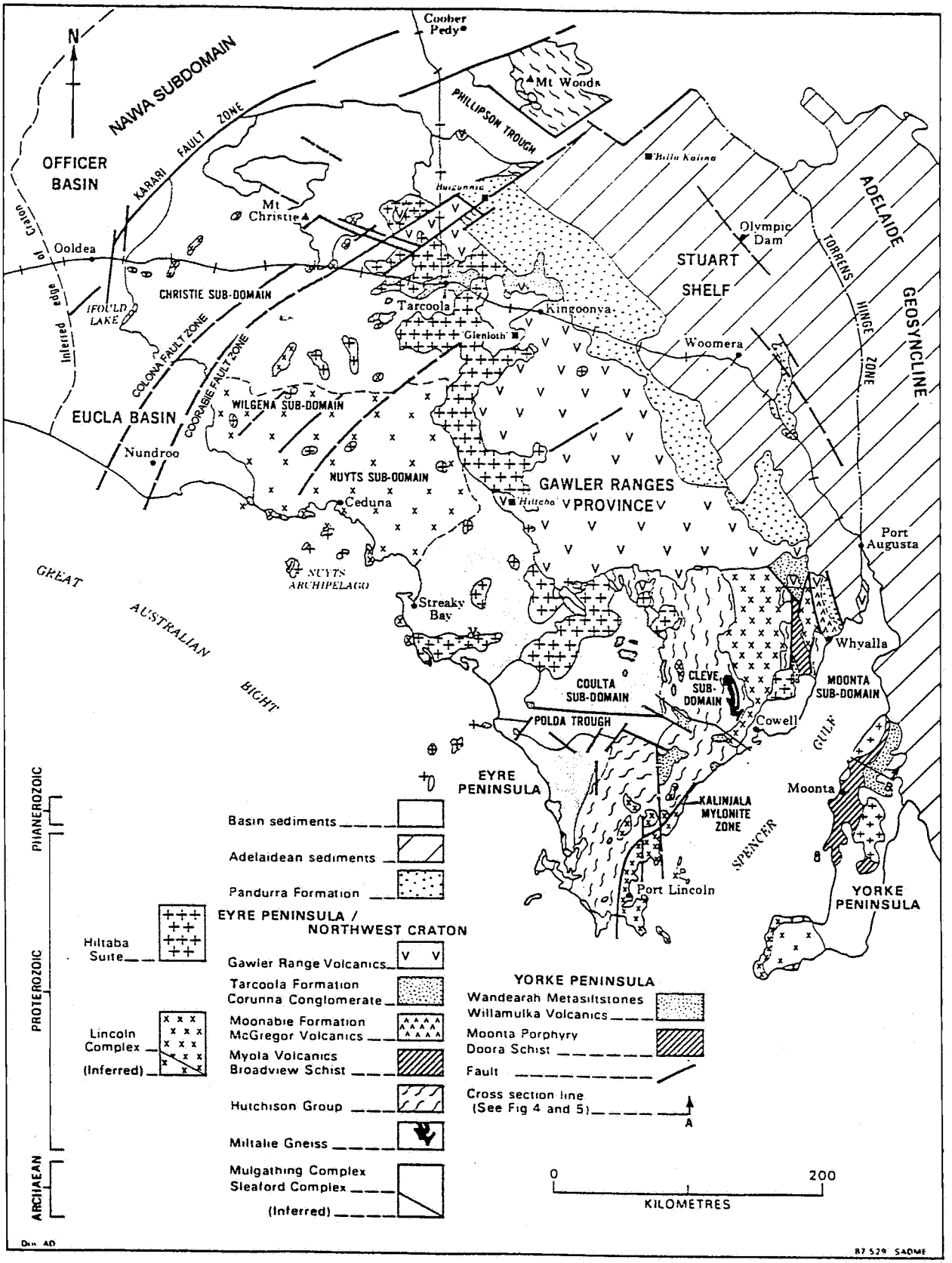
Location of Infill Aeromagnetics
ELs 2012 and 2029
Ooldea Region, Western Gawler Craton

Scale: **1:250,000** Date: 1995

A.C.N. 060 691 777

EQUINOX RESOURCES NL

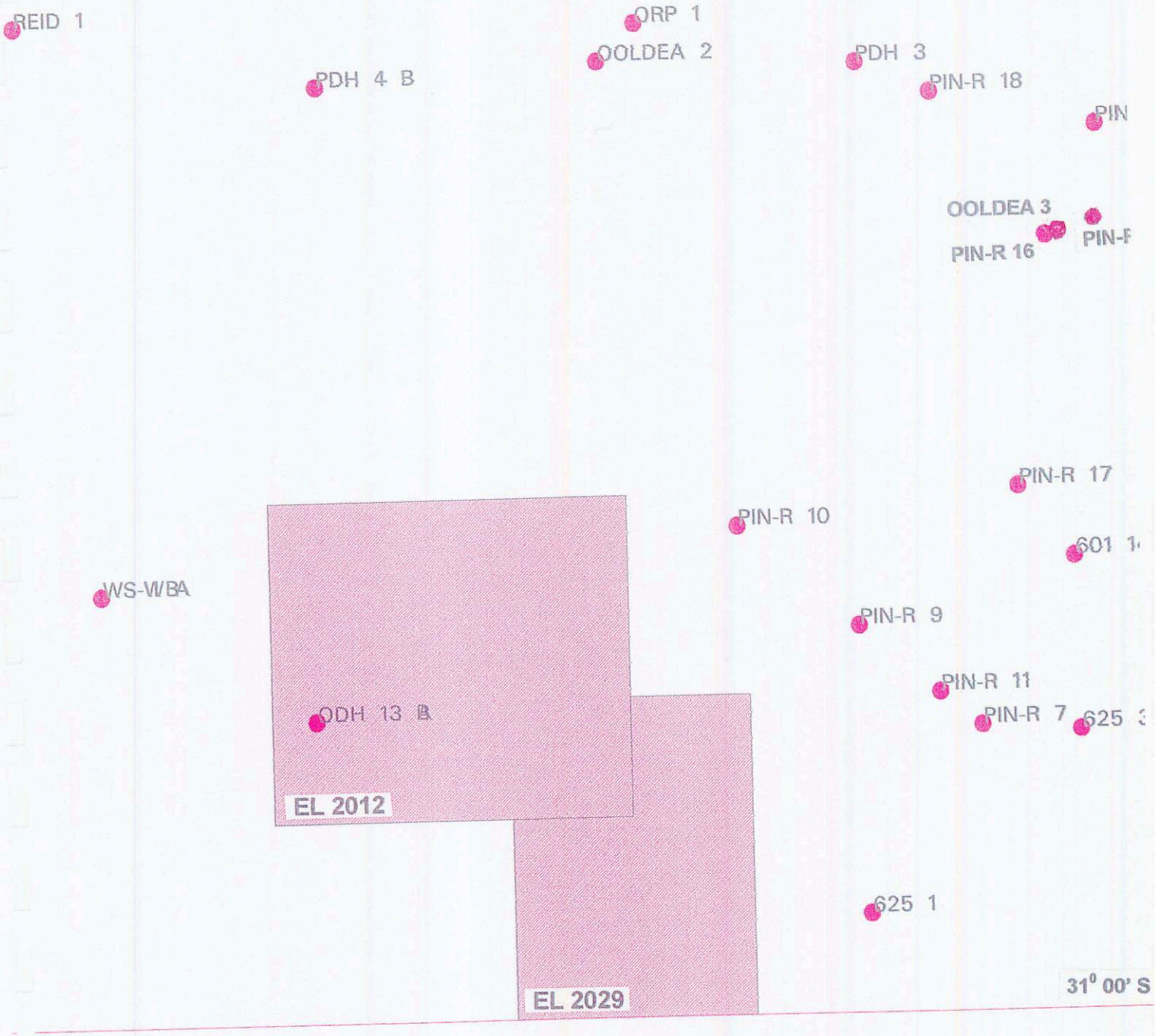
Fig. 2



Simplified Tectonic Map of the Gawler Craton

EQUINOX RESOURCES NL

Fig. 3



Previous Mineral Exploration Drilling
Ooldea Region, Western Gawler Craton
Not to Scale

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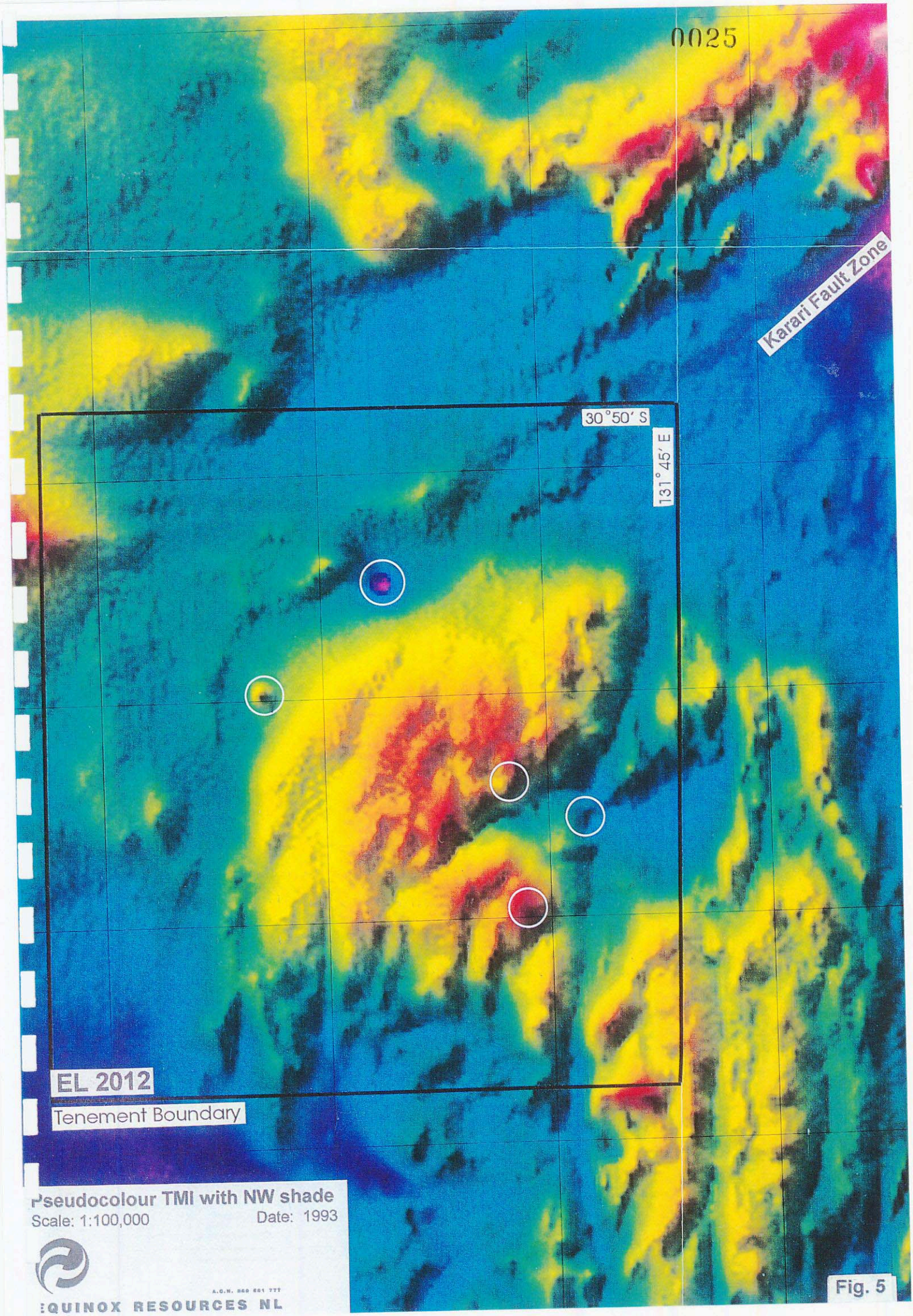
A.C.N. 060 581 777

Fig. 4



Pseudocolour TMI with NW shade
Scale: 1:100,000 Date: 1993

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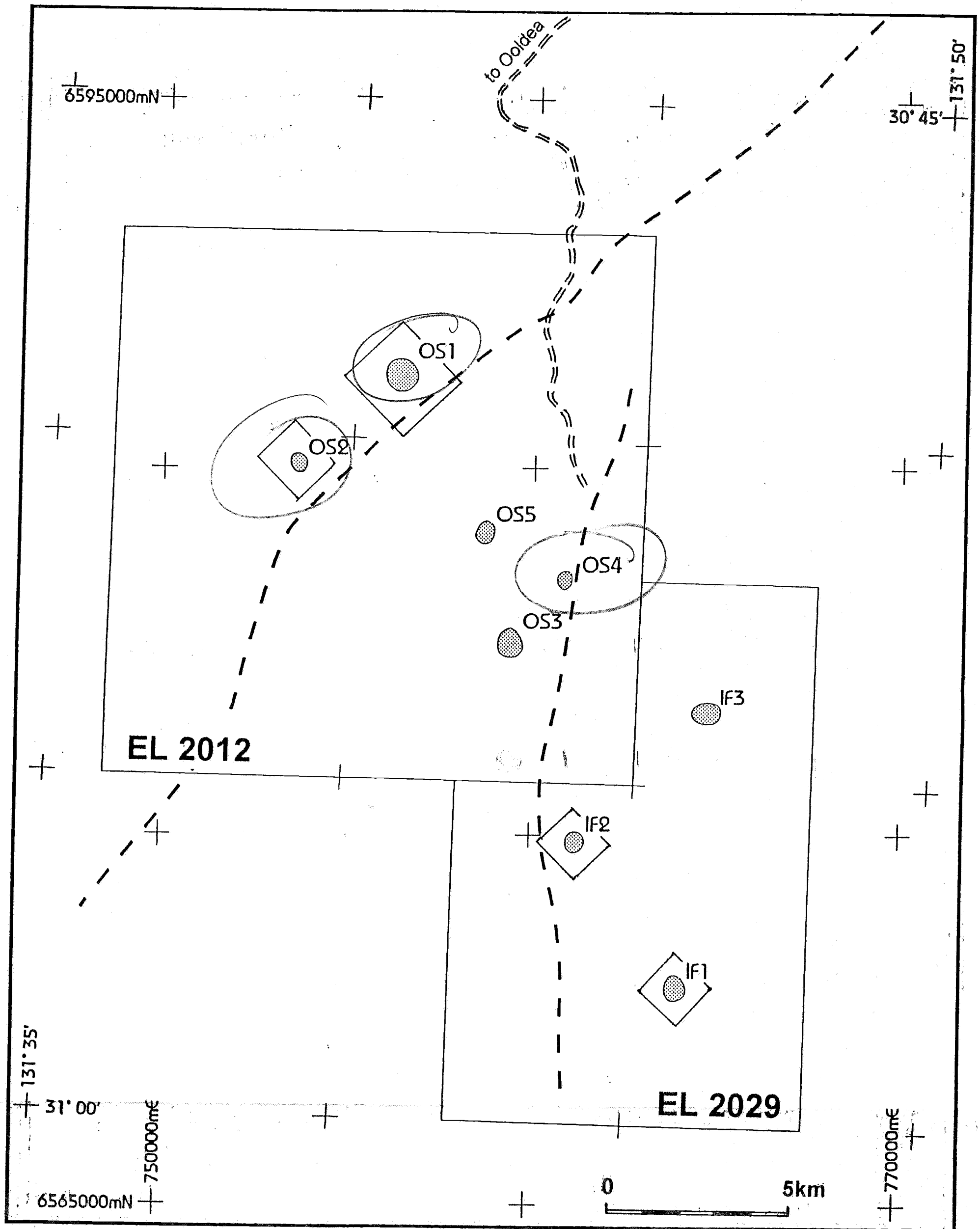
A.C.N. 060 661 777

Fig. 5



Track

Aeromagnetics derived probable diatreme target

Approximate trace of shear zone

Exploration Licence

Priority target area

Equinox Resources N.L.

OOLDEA SOUTH

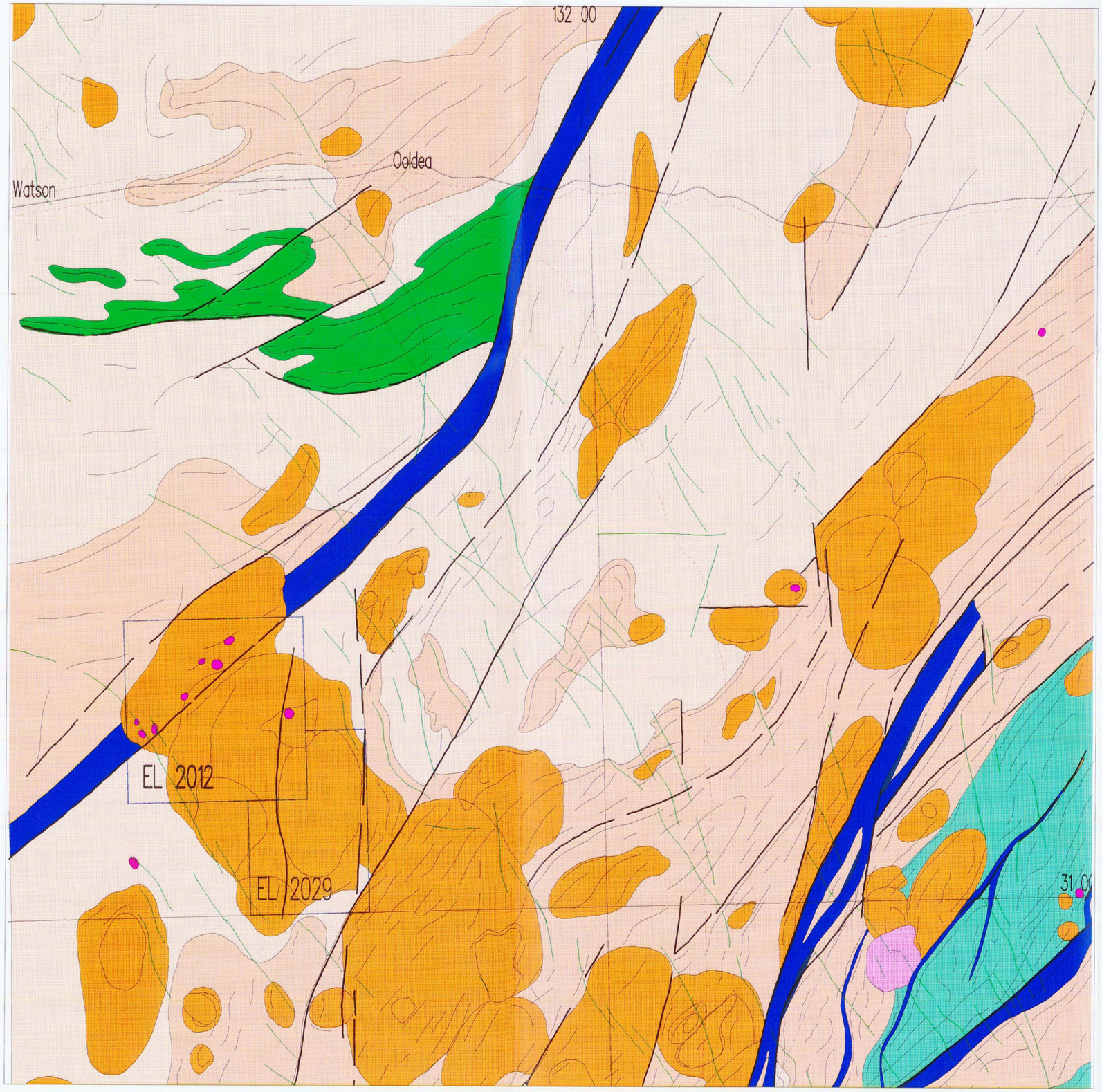
TARGET LOCATION PLAN
(Inc. Ifould West EL)

Scale 1:100,000 Date: 24/1/95

Fig. 7

Plate 1. Regional topography and vegetation, Target OS-1

Western Gawler Craton Regional Aeromagnetic Interpretation Map



REFERENCE

- Thick Tertiary sediments
- Small mafic plug or diatreme
- Mylonite – shear zone
- Hiltaba Suite granite – undeformed
- Circular magnetic granitoid or mafic intrusion
- Undifferentiated massive granite – unfoliated ?Mesoproterozoic
- Granite gneiss – weakly magnetic
- Nundroo Complex – magnetic mafic and felsic gneiss; amphibolite
- Clastic sediments (? Tarcoola Formation)
- Undifferentiated granite gneiss and paragneiss – nonmagnetic (includes Archaean and Palaeoproterozoic protolith)
- Moondrah Gneiss – Palaeoproterozoic metasediments and BIF
- Archaean paragneiss (garnetiferous), BIF and mafic/ultramafic gneiss

- Trend Lines
- Faults
- Mafic dykes
- Railway
- Highway
- Track
- Equinox EL boundaries

N

10 km

Scale: 1:250 000

Projection: AMG Zone 53

Produced by GEOSURVEYS AUSTRALIA Pty Ltd for EQUINOX RESOURCES NL

8974-1

FIG. 6

A.C.N. 060 581 777

EQUINOX RESOURCES NL

"OOLDEA SOUTH"
EXPLORATION LICENCE EL2012
WESTERN GAWLER CRATON
SOUTH AUSTRALIA

Annual Technical Report
1st September 1995 - 31st August 1996

Revised Solid Geology Interpretation

A. J. Parker
and
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SUMMARY

Previous work included regional interpretation of SAEI aeromagnetic data, preparation of 1:250,000 scale solid geology maps, identification of circular diatreme-like aeromagnetic anomalies up to 1km in diameter, reconnaissance ground magnetics and a local infill aeromagnetic survey. Based on this work, it is proposed that this area represents a possible new diamond province hosted by a paragneissic Archaean to Mesoproterozoic basement with additional potential for Au and/or Au/Cu mineralisation.

Because the tenement falls within Nullarbor Regional Reserve, it is subject to Native Title Determination. Native Title Claims have been lodged over the area by the Mirning Aboriginal Corporation and Maralinga Tjarutja. Therefore, no field work has been undertaken.

A revised interpretation of aeromagnetic data has been completed as part of a PhD project being supported by Equinox Resources. That interpretation includes some new geochronological information dating the age of metamorphism and deformation in the gneisses at about 1685 Ma.

1.0 INTRODUCTION

Initial appraisal of South Australian Exploration Initiative (SAEI) aeromagnetic data in the latter part of 1993 led to the recognition of a series of small circular magnetic anomalies in the western extremities of the Gawler Craton, on the eastern margin of the Nullarbor Plain approximately 15km south of the old Ooldea railway siding on the Transline, within the Moondrah (5236) 1:100,000 sheet area (Fig. 1; OOLDEA 1:250,000 sheet area).

The small circular anomalies are consistent with the types of intrusives (diatremes) in which diamonds occur and they intrude a variety of Archaean to Mesoproterozoic rocks including a large moderately-magnetic semicircular granitoid pluton, the Karrari Fault Zone and Archaean gneisses similar to those in the Mulgathing-Commonwealth Hill region where significant gold mineralisation has been found by the Resolute-Samantha - Dominion Mining Gawler Joint Venture.

Exploration Licence EL 2012 has an area of 212 km^2 in level and treeless terrain. Access via slightly overgrown graded tracks from Ooldea is good.

The tenement is entirely within Nullarbor Regional Reserve and therefore subject to Native Title clearance before any field work can be undertaken. Native Title Claims have been lodged over the region by the Mirning Aboriginal Corporation (NNTT claim number WC95/34) and Maralinga Tjarutja (NNTT claim number SC96/1).

2.0 METHODS

Continued evaluation of varied representations of the SAEI aeromagnetic data at scales from 1:500,000 to 1:50,000 has been undertaken in order to produce a regional solid geology map of the area and to identify and delineate as closely as possible, all magnetic features that might be diatremes or targets for Ernest Henry style Cu-Au mineralisation.

Initial target generation and interpretation were based on SAEI 400m line-spaced aeromagnetic data but infill data was acquired for part of the tenement early in 1995 and merged with the original SAEI data to produce a 200m line-spaced data set over the key target areas.

In the course of this work, readily available information concerning the potential character and age of basement lithologies has been compiled by examining drillcore from Ooldea #2 and Ooldea #3 diamond drillholes and by mapping outcrop in the Ifould Lake area.

3.0 RESULTS

3.1 Regional Geology

The regional geology and tectonic framework of the Gawler Craton in southern South Australia are summarised in the previous annual technical report for Ooldea South (Parker & Hammond, 1995) and in Drexel et al. (1993).

EL 2012 is dissected by a major northeast-trending discontinuity, the Karrari Fault Zone (KFZ) and thus lies partly within the Christie Subdomain and partly within the Nawa Subdomain.

The Christie Subdomain is characterised by low-P, high-T, granulite facies gneisses predominantly of Archaean age (ca. 2,425 Ma) but intruded by Palaeoproterozoic (ca. 1,685-1,670 Ma) granitoids which have been deformed into major gneiss complexes, subsequently locally intruded by Mesoproterozoic granites then sheared to form major mylonite zones.

The Nawa Subdomain southwest of Ooldea is characterised by extremely high metamorphic grade granulite facies gneisses (ca. 1000^{0}C, 8-10kb) collectively referred to here as the Moondrah Gneiss. These are believed to represent metasediments of Palaeoproterozoic age deposited between ca 2,425 Ma and 1,689$\pm$6 Ma the timing of peak metamorphism (J. Teasdale, pers. comm., 1996).

3.2 Aeromagnetics

Based on the original 400m SAEI data, a regional solid geology map has been produced at 1:100,000 scale and reproduced here at 1:250,000 scale (Fig. 2). Unlike demagnetised mylonite zones to the southeast, the Karari Fault Zone is well defined in imaged aeromagnetic data as a variably magnetised zone, locally comparatively wide (i.e. > 1 km), entraining highly magnetic lenses of quartz-magnetite gneiss. The KFZ has a strong magnetic layering over most of its length but in the area of the Ooldea South tenement this layering appears to be cut by a weakly magnetic semi-circular intrusive and completely demagnetised. This could be a zone of intense hematite alteration.

Gneisses in the Christie Subdomain southeast of the KFZ can be subdivided on the basis of their magnetic character into two groups: weakly magnetic gneisses similar in character to the Archaean Christie Gneiss of the Mulgathing Complex near Challenger and moderately magnetic gneisses of mixed granitic and mafic composition as characterised by Proterozoic orthogneisses in the Ifould lake area. Magnetic layering is evident in both groups and this is strongest in and adjacent to the mylonitic shear zones. The predominant regional trend of layering is northeast.

Gneisses in the Nawa Subdomain northwest of the KFZ, Moondrah Gneiss, are magnetically similar to those of the Christie Subdomain despite being of higher metamorphic grade. Magnetic layering is more east-west oriented but swings around to northeast adjacent to the KFZ.

In both the Nawa and Christie Subdomains, there are several roughly circular regions interpreted to represent near-surface, late to post-tectonic granitoids possibly of Mesoproterozoic age. These intrusives have little or no fabric and cross-cut the regional magnetic layering. There are

no intense magnetic anomalies either within or around the margins of these intrusives so the potential for Ernest Henry style mineralisation is considered low.

The youngest magnetic units in the Ooldea region are several long NW-trending mafic dykes which locally cut the KFZ although a couple of dykes appear to be displaced along the fault zone.

4.0 CONCLUSIONS

Since the entire tenement is covered by Tertiary Nullarbor Limestone, the popular calcrete sampling technique is not suitable for gold exploration. Partial extraction soil analysis may work but the depth of soil cover is very thin and sandy across most of the EL and hence also not particularly suitable or practical.

Therefore, the primary exploration tool is going to be aeromagnetic interpretation followed by RAB/aircore drilling.

Five potential diatreme targets have been identified within the area of the EL, and the Archaean gneisses of the Christie Subdomain are potential hosts for Challenger-style gold mineralisation. Additional economic interest in the area may be attached to the Karari Fault Zone's potential for Au/Cu mineralisation particularly where the KFZ is cut and intensely demagnetised by a late granitoid intrusive.

5.0 REFERENCES

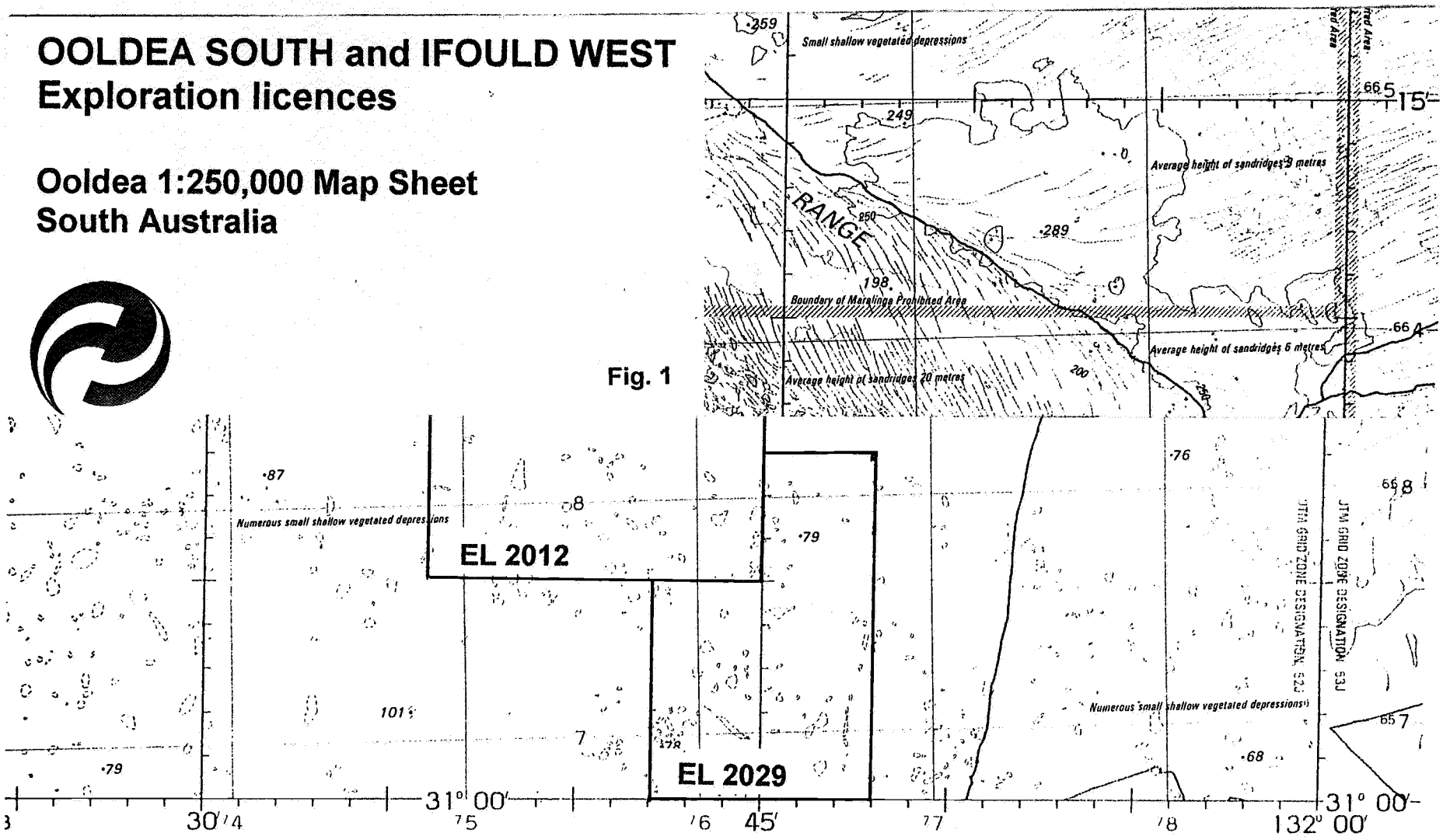
Drexel, J.F., Preiss, W.V. and Parker, A.J., 1993. Geology of South Australia. Volume 1, The Precambrian. *South Australia. Geological Survey.* Bulletin 54.

Parker, A.J. and Hammond, R.L., 1995. "Ooldea South" Exploration Licence EL2012, Western Gawler Craton, South Australia - Preliminary Solid Geology Interpretation, Ground Magnetics and Target Generation. Equinox Resources NL. Unpublished Annual Technical Report, October 1995.

OOLDEA SOUTH and IFOULD WEST
Exploration licences

Ooldea 1:250,000 Map Sheet
South Australia

Fig. 1

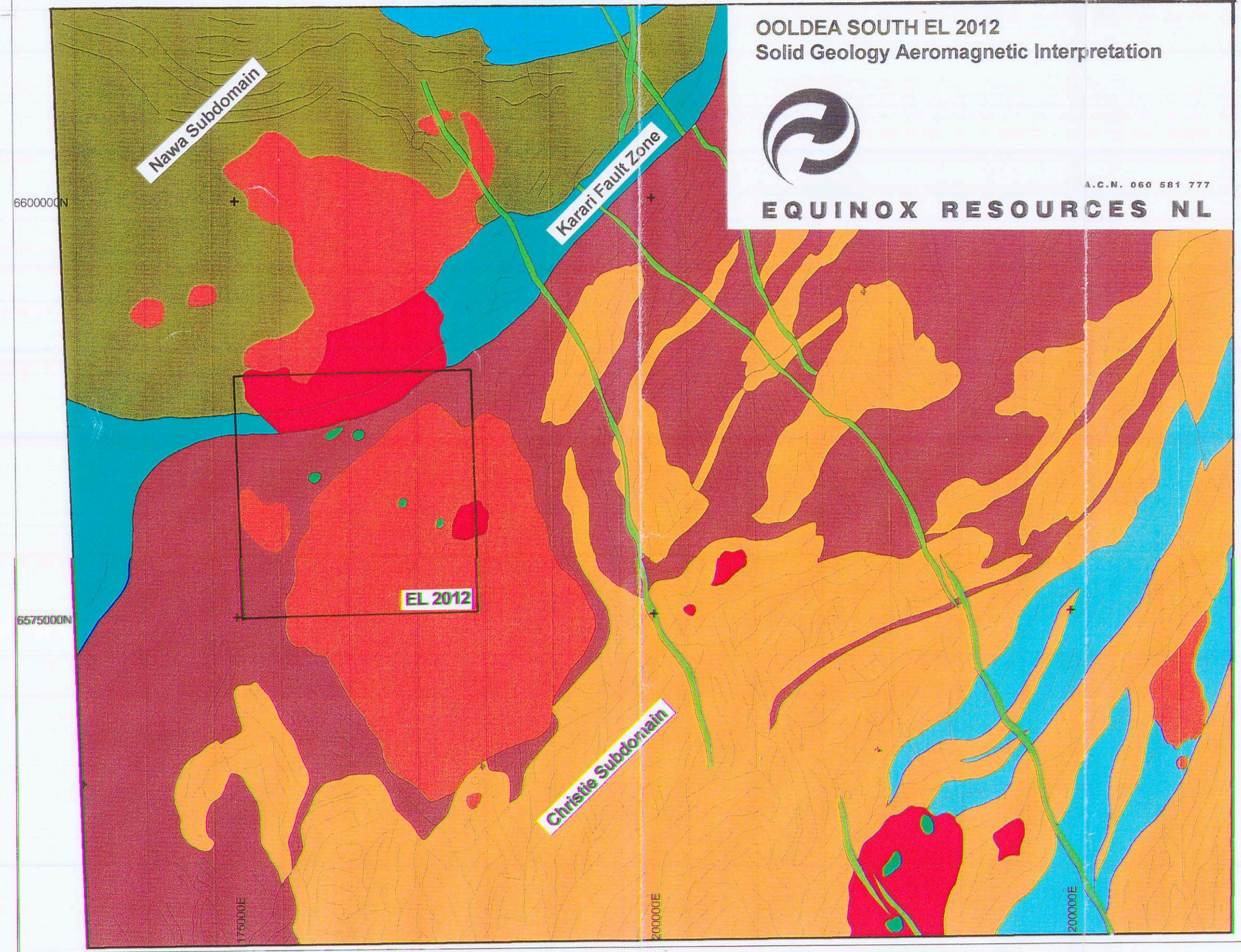


0034

OOLDEA SOUTH EL 2012
Solid Geology Aeromagnetic Interpretation

A.C.N. 060 581 777

EQUINOX RESOURCES NL



MAFIC DYKES – Gairdner Dyke Swarm

MYLONITE ZONE – Magnetically intense, Fe-rich mylonites

MYLONITE ZONE – Magnetically weak mylonites

MAFIC PLUGS

MOONDRAH GNEISS – Undifferentiated, Fe-poor paragneiss and orthogneiss

MOONDRAH GNEISS – Magnetically intense, Fe-rich, high granulite facies paragneiss (metamorphosed age of 1689±6Ma)

POST-TECTONIC GRANITOIDS – Magnetically weak plutonic intrusives

LATE TECTONIC GRANITOIDS – Moderate magnetic intensity

EARLY TECTONIC INTRUSIVES – Complex, variably deformed series of dolerites, diorites, granodiorites and granites, exposed in the Lake Ifould area (~1683Ma)

ARCHAEAN GNEISS – Undifferentiated, granulite facies paragneiss, reworked and retrogressed by later tectonism (deformed & metamorphosed at ~2424Ma)

FAULT

LITHOLOGICAL BOUNDARY, TREND LINE

THE UNIVERSITY OF ADELAIDE

Department of Geology & Geophysics

Interpretation by J.P.Teasdale, May 1998

Produced from 1:100,000 scale Total Magnetic Intensity and First Vertical Derivative images of South Australian Exploration Initiative (SAEI) data

Data used with permission of MESA (Mines & Energy, South Australia)

Universal Transverse Mercator Projection
AMG Zone 53, AGD66

0035

EQUINOX
RESOURCES NL
ACN 060 581 777

October 9, 1997

Mr G. Kwitco
Mineral Exploration Division
Department of Mineral and Energy Resources, SA
Locked Bag 60
Adelaide Mail Centre SA 5810

Dear George,

Re: EL 2012, Annual Technical Report, 1st Sept 1996 - 31st August 1997

The Ooldea South region, EL 2012, is recognised by Equinox Resources as having potential for Au and Cu/Au mineralisation either within relic Archaean rocks, Proterozoic granitoids or associated with the Karari Fault Zone, and for diamonds within diatremes represented by small, intense aeromagnetic anomalies.

Because EL 2012 falls entirely within Nullabor Regional Reserve and is subject to Native Title Claims, no field work has been undertaken on the tenement. Discussions and plenary meetings with the Native Title Tribunal, Aboriginal Legal Rights Movement, Far West Coast Native Title Working Group, Department of Environment and Natural Resources and local Aboriginal communities at Ceduna have continued and an "Area Clearance and Native Title Mining Agreement" has now been completed, signed by Equinox and is awaiting signatures from the ALRM and representatives of the NT Claimants. It is expected that this will be signed in the relatively near future and we understand that an area clearance survey has already been undertaken although we have not yet received the anthropologist's report.

Surface geophysical and geochemical sampling programs and drill testing of priority targets will be undertaken as soon as clearances have been granted, documents including the NT Agreement have been signed, received and registered under Part 9B of the *Mining Act*, and work programs have been approved by MESA and DENR.

Because we haven't been able to undertake any field activities in the last year and all work has been focussed on establishing the NT Agreement, there is nothing new to add to previous technical reports. We therefore seek to waive the requirement to produce a detailed technical report for the year ending 31st August 1997.

Yours sincerely,

Dr A. J. Parker
Regional Manager, SA

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A.C.N. 060 581 777

EQUINOX RESOURCES NL

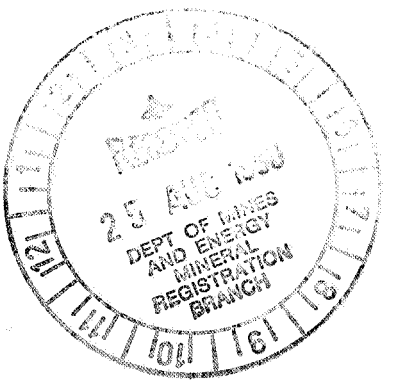
"OOLDEA SOUTH" EXPLORATION LICENCE EL2012 WESTERN GAWLER CRATON SOUTH AUSTRALIA

Annual and Final Technical Report 1st September 1997 - 25th June 1998

Ground Magnetics
and
Drilling

by

A. J. Parker
Geosurveys Australia Pty Ltd



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SUMMARY

Previous exploration by Equinox Resources NL included review of existing open file information, regional interpretation of SAEI aeromagnetic data, acquisition of infill aeromagnetic data to 200m line spacing and target generation.

Several circular diatreme-like targets up to 1km in diameter were identified in the Ooldea South region for diamond exploration. The distribution of these potential diatremes may be controlled by structures like the major NE-trending craton-scale Karari Fault Zone which extends through the tenement.

Because EL 2012 is within Nullarbor Regional Reserve and subject to Native Title Claims lodged by the Mirning and Maralinga Tjarutja communities, it was necessary to establish a Native Title agreement as per Part 9B of the *SA Mining Act* before field operations could be undertaken.

Negotiations in relation to establishing a Native Title and Access agreement continued for over three years but in October 1997 an agreement was signed with the relevant communities enabling field work to begin within the EL.

In February-March 1998, a Declaration of Environmental Factors was prepared and approved for ground magnetics and drilling in Nullarbor Regional Reserve. Ground magnetics was undertaken over three targets, OS-1, OS-2 and OS-4, in late March and three aircore drillholes, one on each target, were drilled in early April. All holes were drilled to fresh basement which was intersected at, respectively, 94.5m, 73m and 85m. Fresh basement was overlain by 7-10m of saprolite, 11-30m of lignitic sand (Pidinga Fmn), 23-36m of fine grained orange sand, 22-27m of Nullarbor Limestone and 1-2m of Quaternary silty calcareous clay.

Basement at OS-1 comprised altered olivine basalt with MORB affinities, at OS-2 it comprised altered hornblende peridotite similar to ultramafics at Aristarchus (Mulgathing Complex) and at OS-4 it comprised plagioclase-rich diorite. None of the basement samples had chemical signatures of typical carbonatites, kimberlites or lamproites.

Because of the potentially extensive cover of Nullarbor Limestone and Tertiary sand, calcrete and/or soil sampling is unlikely to be successful. No further exploration is recommended.

1.0 INTRODUCTION

Initial appraisal of South Australian Exploration Initiative (SAEI) aeromagnetic data in 1993 led to the recognition of a series of small circular magnetic anomalies in the western extremities of the Gawler Craton on the eastern margin of the Nullarbor Plain. Exploration License applications were promptly prepared for several areas including "Ooldea South" which is located approximately 15km south of the old Ooldea railway siding on the Transline, within the Moondrah (5236) 1:100,000 sheet area (Fig. 1; OOLDEA 1:250,000 sheet area).

The small circular anomalies are consistent with the types of intrusives (diatremes) in which diamonds occur and they intrude a variety of Archaean to Mesoproterozoic rocks including a large moderately-magnetic semicircular granitoid pluton, the Karrari Fault Zone and Archaean gneisses similar to those in the Mulgathing-Commonwealth Hill region where significant gold mineralisation has been found by the Resolute-Samantha - Dominion Mining Gawler Joint Venture.

Exploration Licence EL 2012 has an area of 212 km^2 in level and treeless terrain. Access via slightly overgrown graded tracks from Ooldea is good.

The tenement is entirely within Nullarbor Regional Reserve and therefore subject to Native Title (NT) clearance before any field work could be undertaken; there are no historic pastoral leases over the EL. Native Title Claims have been lodged over the region by R.W. Lawrie on behalf of the Mirning Community and by various people on behalf of the Maralinga Tjarutja but whilst these have been accepted by the Native Title Tribunal (NTT) there has not yet been any determination.

In 1997, discussions commenced with the Far West Coast Working Group which was formed by NT claimants to coordinate discussions with farming, mining and other interest groups. A Plenary meeting was called by the NTT in April 1997 and held in Ceduna. Equinox attended that meeting and made a presentation to claimants and their representatives. Subsequently, a draft area access agreement was prepared.

Following extensive discussions and negotiations between the Aboriginal Legal Rights Movement (ALRM), legal representatives for Equinox (Minter Ellison), and legal representatives for the various claimants, agreement was finally reached and, in late October 1997, that agreement was signed by elders of each of the NT claimants at a formal meeting held at the Head of the Bight.

The agreement was primarily an area clearance agreement and laid down the parameters for undertaking Aboriginal heritage site inspections. Site inspections by members of the NT claimants were conducted under the guidance of their anthropologists in late 1997 and the tenement was formally cleared for ground geophysical surveys, calcrete sampling and drilling (Appendix A).

Previous investigations, regional geology, regional aeromagnetic interpretation and target generation are discussed in the 1995 and 1996 Annual Reports (Parker & Hammond, 1995; Parker & Teasdale, 1996).

2.0 METHODS

Work undertaken in 1997-1998 included:

- extensive negotiation and establishment of an "Area Clearance and Native Title Mining Agreement" with NT claimants
- Aboriginal heritage site clearances over the whole EL but with particular reference to proposed drillsites
- preparation of a Declaration of Environmental Factors
- ground geophysics over anomalies OS-1, OS-2 and OS-4
- RAB/aircore drilling over anomalies OS-1, OS-2 and OS-4, and
- preparation of an environmental report after drilling.

Temporary photo control points were set up at the drillsites to monitor environmental rehabilitation (Appendix F).

3.0 RESULTS

3.1 Ground magnetics

Circular aeromagnetic anomalies OS-1, OS-2 and OS-4 (Fig. 1) located at, respectively, 756400mE 6587550mN, 753600mE 6585200mN and 760900mE 6582000mN (AMG Zone 52) were identified for ground geophysics to locate the centres of the magnetic anomalies for subsequent drilling.

Ground magnetic surveys were completed over all three targets for a total of 18 line kms. At OS-1, a semi-circular negative magnetic anomaly approximately 700m in diameter and ca. 1100nT was defined (Fig.2; Appendix B). At OS-2, a small circular positive magnetic anomaly approximately 300m in diameter and ca. 600nT was defined (Fig. 3) and, at OS-4, a more subtle negative magnetic anomaly approximately 300m in diameter and ca. 300nT was defined (Fig. 4).

3.2 Drilling

Three DHs for a total of 260m were completed successfully into aeromagnetic anomalies OS-1, OS-2 and OS-4 on Ooldea South. The upper 20-30m through Nullarbor Limestone was drilled by RAB hammer but all holes were completed into fresh bedrock to blade refusal by aircore. Drilling was done by Johannsen Drilling using a small 4x4 truck-mounted Edson 2000 multi-purpose drilling rig. Drillhole locations are given in AMG Zone 52 (AGD84) coordinates (Table 1).

Table 1: Location of drillhole collars

Prospect	Hole Number	AMG Easting	AMG Northing	Date Start	Date Finish	Dip	Total Depth	Method	Logged By	Notes
OS-1	OSAC-1	756410	6587560	01-04-98	02-04-98	vertical	96	RAB/AC	A J Parker	RAB to 27m; AC to EOH; water injection from 44m
		30.8173	131.6803							
OS-2	OSAC-2	753570	6585190	02-04-98	02-04-98	vertical	78	RAB/AC	A J Parker	RAB to 17m; AC to EOH; water injection from 45m
		30.8390	131.6512							
OS-4	OSAC-3	760890	6581960	03-04-98	03-04-98	vertical	86	RAB/AC	A J Parker	RAB to 9m; AC to EOH
		30.8668	131.7285							

All DHs were plugged, backfilled and raked over and sample pits were backfilled and raked over after sampling. Photographs were taken before and after drilling at all drillsites to monitor rehabilitation (Appendix F)

3.3 Drilling - Geology

At Ooldea South anomaly OS-1, drilling (OSAC-1) in the centre of the ground magnetic anomaly intersected (Appendix C):

0-2m	Silty calcareous caly and soil
2-23m	NULLARBOR LIMESTONE: massive to vuggy, fine-grained, off-white to yellow, fossiliferous crystalline limestone
23-55m	HAMPTON SAND: pale orange, generally fine-grained, well sorted, well rounded unconsolidated sand

55-88m	PIDINGA FORMATION: dark brown to black, fine-grained, well sorted, well rounded lignitic sand and massive lignite
88-95m	Saprolite: pale grey, weathered bedrock
95-96m	Altered dolerite or basalt: massive dark grey non-magnetic dolerite with subophitic texture and strong hematite alteration along grain boundaries, disseminated & in veinlets; disseminated pyrite; network of thin black chlorite/opaq veinlets
86m EOH	

OSAC-2 drilled over the centre of anomaly OS-2 and OSAC-3 drilled over anomaly OS-4 both intersected a similar Tertiary sequence (Appendix C) before ending in, respectively, massive medium-grained pyritic magnetic gabbro or peridotite (73-78m) and massive unfoliated non-magnetic greenish white plagioclase-rich diorite (85-86m) composed mainly of white plag + opaq + disseminated pyrite (up to 5%) + apple green amphibole with local thin veinlets of pale green feldspar/calcite + pyrite.

3.4 Drilling - Petrology

Petrology of basement rock chips from drillhole OSAC-1 on anomaly OS-1 describes them as altered probable olivine basalt comprising fine grained ophitic plagioclase and clinopyroxene and abundant 1mm-size patches of greenish-brown clay interpreted to represent former olivine (Appendix D). Hematite and trace low-temperature pyrite are the main accessories.

OSAC-2 drilled on anomaly OS-2 intersected a highly magnetic altered hornblende peridotite with cumulus olivine and pyroxene and post-cumulus poikolitic hornblende and phlogopite. The olivine is represented by serpentine-magnetite pseudomorphs and there is rare sulphide. This rock is compared to an early Proterozoic ultramafic intrusion in Archaean gneisses at Aristarchus northwest of Tarcoola.

OSAC-3 drilled on anomaly OS-4 intersected a carbonate-flooded plagioclase-rich mafic intrusive. The rock is now predominantly calcite but contains fragments of plagioclase, hornblende, biotite and opaque oxide suggesting a mafic precursor. Carbonate flooding represents pervasive replacement which appears broadly secondary-primary rather than supergene. The samples were checked for possible carbonatite indicators but did not contain any.

3.5 Drilling - Geochemistry

To assist with petrological identification of bottom-hole samples, whole-rock silicate analyses were determined on a suite of 3 samples (Appendix E). None of the samples contained anomalous Ti or REEs to support a kimberlitic origin. OS-1 and OS-2 samples were of mafic to ultramafic composition while the OS-3 sample was carbonate rich.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Although several potential diatreme targets have been identified within the area of EL 2012 and may represent a new diatreme province hitherto not recognised, drilling did not intersect any kimberlitic or such material with potential for diamond exploration. It appears that all the magnetic anomalies are due to variably magnetised basaltic to ultramafic intrusions. OS-1 is clearly reversely magnetised.

Fresh basement was overlain by 7-10m of saprolite, 11-30m of lignitic sand (Pidinga Fmn), 23-36m of fine grained orange sand, 22-27m of Nullarbor Limestone and 1-2m of Quaternary silty calcareous clay. No significant mineralisation was recorded. The thickness of Nullarbor Limestone and other potential Tertiary sediments across the EL is not conducive to successful calcrete sampling.

Based on these results it is concluded that the circular aeromagnetic targets are unlikely to represent kimberlitic or diamondiferous diatremes and exploration for gold, base metals and nickel etc will be severely constrained by the Tertiary cover. Therefore, no further work on EL2012 is recommended.

5.0 REFERENCES

Daly, S.J., Tonkin, D.G., Purvis, A.C. and Shi, Z., 1995. Colona drilling program. *South Australia. Department of Mines and Energy.* Open File Envelope 8768.

Parker, A.J. and Teasdale, J.T., 1996. "Ooldea South" Exploration Licence EL 2012, Annual Technical Report, 1st September 1995 - 31st August 1996: Revised Solid Geology Interpretation. Equinox Resources NL. Unpublished Annual Technical Report, August 1996.

Parker, A.J. and Hammond, R.L., 1995. "Ooldea South" Exploration Licence EL 2012, Western Gawler Craton, South Australia - Preliminary Solid Geology Interpretation, Ground Magnetics and Target Generation. Equinox Resources NL. Unpublished Annual Technical Report, October 1995.

Appendix A

Aboriginal Heritage Site Clearances

Equinox EL 2012
Work Area Clearance
West Coast Working Group

Date: 29/9/97
Lease: Equinox 2012
Claimant groups: Maralinga Tjarutja, Mirning, Wirangu, Yalata
Clearances proposed by: Maralinga Tjarutja, Mirning, Wirangu, Yalata
Clearances given: Category 1.
Field reconnaissance: The field party crossed the Nullarbor Plain north and west of the lease area.
Cultural heritage defined:
The lease area is located in part of the treeless portion of the Nullarbor Plain. This area was rarely inhabited in the past and is not culturally sensitive. The Treeless Plain does, however, contain a number of caves and blow holes, which are associated with a generic mythology of significance to Pitjantjatjara people from Maralinga and Yalata.
Clearances recommended:
Category 1: Exploration may proceed across the lease. If any blowholes and caves are encountered they should be accurately located and given a 250 m. berth during the exploration program.

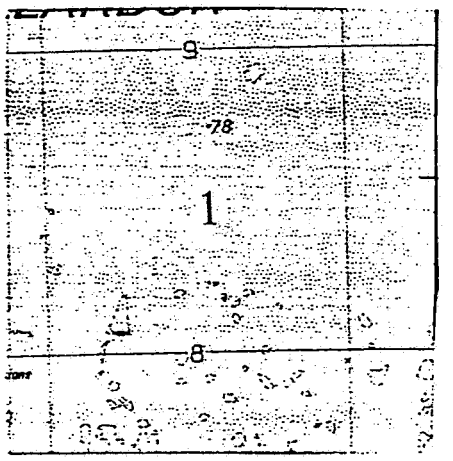
13/10/97

With Compliments

John,
clearances from
the first survey, as
discussed. Feel free
to ring Scott with queries
on 0886 872099. Regards,
Caroline

ABORIGINAL LEGAL RIGHTS MOVEMENT INC.
NATIVE TITLE UNIT
321 – 325 King William Street, Adelaide, South Australia 5000
Telephone: 8212 1244 After Hours: 8211 8824

EQUINOX EL2012



Notes to Accompany Clearances

30/9/97

The following clearances should be read mindful of the following observations.

1. These clearances are the results of a field **reconnaissance** and not detailed long term field investigation.

2. As such the clearances feature **broad** zones of sensitivity. Each of these zones may contain a number of specific sites or they may reflect a large homogeneous cultural landscape - as may be associated with significant myth lines.

3. The reconnaissance clearances have the advantage of allowing large areas of country to be cleared for exploration in a relatively **quick** time frame but have a number of disadvantages. Two obvious ones are that:

   (a) Some sites may have been missed. Companies must therefore take extreme care in the bush. They should avoid anything that looks like an Aboriginal sites and are encouraged to report any possible Aboriginal sites to the Aboriginal Legal Rights Movement. Each company should also remember that Aboriginal sites are protected by the South Australian *Aboriginal Heritage Act 1988* - even if the sites are not previously known and are not registered by the State. In other words, any site that is damaged is the company's problem and could result in a substantial fine and significant delays to the exploration program.

   (b) Large areas have been categorised for protection. The extent of some of these areas may disturb some companies but such companies should be mindful that there is a trade off between the speed with which a clearance can be undertaken and the detail which can accompany each clearance. The quicker the clearance is done, the more general it must be. The longer a clearance takes, the more precise it can be - but the longer it will take before exploration may begin.

   The reconnaissance for the accompanying Work Area Clearances necessitates a conservative approach to site protection. Some of the exclusion zones may be larger than ultimately necessary and may be **modified** with subsequent field work.

4. Remember also that the current management recommendations are typically geared towards **low impact** calcrete sampling and that any escalation of the exploration program must be discussed with the ALRM and be contingent on advise of the Working Group or their consultants.

Work Area Clearance Categories

Category One: Low cultural sensitivity	the area is cleared for the stated exploration program and is likely to remain cleared through subsequent stages of exploration.
Category Two: Moderate cultural sensitivity	the area is cleared for the stated exploration program, but may require further investigation if the exploration program is to intensify.
Category Three: High cultural sensitivity	the area cannot be cleared for exploration until more field work has been undertaken.
Category Four: Very high cultural sensitivity	the area has not been cleared for exploration and is unlikely to be cleared for exploration.

Appendix B

Ground Magnetic Data

Ooldea South Ground Magnetic Survey - 27 March 1998
Target OS1

Time: Central Daylight Saving

Ooldea 250K Sheet

Proton Precession Magnetometer: PPM-3

Diurnal Shift: Co-ord: 756400E 6587600N

11.05	56939	**13.40**	56981
12.15	56982	**16.45**	56984
12.30	56986		

Easting	6587400N	Time	6587600N	Time	6587800N	Time	Northing	756400E	Time
754900			57980	13.20			6586100	58069	18.50
754910			57987				6586110	58064	
754920			57981				6586120	58068	
754930			57981				6586130	58053	
754940			57986				6586140	58061	
754950			57979				6586150	58063	
754960			57993				6586160	58053	
754970			57998				6586170	58039	
754980			57985				6586180	58046	
754990			57990				6586190	58041	
755000			57982				6586200	58041	
755010			57979				6586210	58047	
755020			57973				6586220	58043	
755030			57947				6586230	58035	
755040			57961				6586240	58035	
755050			57938				6586250	58034	
755060			57942				6586260	58022	
755070			57943				6586270	58043	
755080			57940				6586280	58042	
755090			57926				6586290	58020	
755100			57924				6586300	58011	
755110			57913				6586310	58032	
755120			57911				6586320	58026	
755130			57913				6586330	58020	
755140			57900				6586340	58014	
755150			57889				6586350	58020	
755160			57882				6586360	58020	
755170			57876				6586370	58005	
755180			57878				6586380	58024	
755190			57866				6586390	58019	
755200			57872				6586400	58027	
755210			57866				6586410	58019	
755220			57864				6586420	58023	
755230			57844				6586430	58006	
755240			57862				6586440	58017	
755250			57845				6586450	57993	
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755270			57835				6586470	58022	
755280			57824				6586480	58005	

Easting	6587400N	Time	6587600N	Time	6587800N	Time	Northing	756400E	Time
755290			57816				6586490	58013	
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755310			57825				6586510	57980	
755320			57831				6586520	57991	
755330			57818				6586530	57992	
755340			57812				6586540	58006	
755350			57802				6586550	58005	
755360			57800				6586560	57998	
755370			57809				6586570	57994	
755380			57809				6586580	58012	
755390			57816				6586590	57992	
755400			57798				6586600	57981	
755410			57790				6586610	57981	
755420			57782				6586620	57996	
755430			57787				6586630	58005	
755440			57782				6586640	58008	
755450			57791				6586650	58011	
755460			57784				6586660	57992	
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755500			57770				6586700	57974	
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755580			57762				6586780	57952	
755590			57765				6586790	57975	
755600			57788				6586800	57961	
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755670			57749				6586870	57961	
755680			57750				6586880	57945	
755690			57742				6586890	57953	
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755720			57700				6586920	57933	
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755740			57725				6586940	57925	
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Easting	6587400N	Time	6587600N	Time	6587800N	Time	Northing	756400E	Time
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756800	57740		57740		57740		6588000	57692	
756810	57745		57746		57738		6588010	57694	
756820	57744		57750		57759		6588020	57696	
756830	57747		57746		57757		6588030	57709	
756840	57754		57745		57776		6588040	57710	
756850	57764		57748		57753		6588050	57699	
756860	57765		57752		57757		6588060	57718	
756870	57771		57757		57755		6588070	57721	
756880	57783		57763		57762		6588080	57724	
756890	57780		57813		57755		6588090	57729	
756900	57776	14.20	57772		57760	15.15	6588100	57744	
756910			57771				6588110	57743	
756920			57769				6588120	57751	
756930			57773				6588130	57749	
756940			57780				6588140	57755	
756950			57781				6588150	57756	
756960			57791				6588160	57754	
756970			57797				6588170	57767	
756980			57797				6588180	57756	
756990			57791				6588190	57765	
757000			57792				6588200	57756	
757010			57792				6588210	57763	
757020			57793				6588220	57763	
757030			57794				6588230	57754	
757040			57796				6588240	57753	
757050			57799				6588250	57758	
757060			57805				6588260	57752	
757070			57807				6588270	57763	
757080			57813				6588280	57764	
757090			57830				6588290	57768	
757100			57820				6588300	57759	
757110			57815				6588310	57755	
757120			57811				6588320	57756	
757130			57812				6588330	57762	
757140			57821				6588340	57765	
757150			57815				6588350	57764	
757160			57821				6588360	57763	
757170			57811				6588370	57767	
757180			57818				6588380	57768	
757190			57820				6588390	57765	
757200			57819				6588400	57764	
757210			57821				6588410	57755	
757220			57820				6588420	57775	
757230			57829				6588430	57769	
757240			57831				6588440	57794	
757250			57828				6588450	57809	
757260			57824				6588460	57793	
757270			57823				6588470	57780	
757280			57826				6588480	57787	

Easting	6587400N	Time	6587600N	Time	6587800N	Time	Northing	756400E	Time
757290			57828				6588490	57816	
757300			57826				6588500	57786	
757310			57823				6588510	57782	
757320			57822				6588520	57805	
757330			57825				6588530	57874	
757340			57826				6588540	57927	
757350			57817				6588550	57884	
757360			57834				6588560	57869	
757370			57839				6588570	57861	
757380			57843				6588580	57866	
757390			57843				6588590	57864	
757400			57842				6588600	57853	
757410			57833				6588610	57839	
757420			57840				6588620	57829	
757430			57833				6588630	57823	
757440			57857				6588640	57794	
757450			57838				6588650	57806	
757460			57828				6588660	57811	
757470			57839				6588670	57797	
757480			57840				6588680	57794	
757490			57847				6588690	57799	
757500			57840				6588700	57793	
757510			57847				6588710	57804	
757520			57847				6588720	57807	
757530			57833				6588730	57818	
757540			57836				6588740	57810	
757550			57840				6588750	57801	
757560			57840				6588760	57814	
757570			57841				6588770	57822	
757580			57839				6588780	57823	
757590			57836				6588790	57818	
757600			57838				6588800	57830	
757610			57842				6588810	57828	
757620			57842				6588820	57823	
757630			57847				6588830	57814	
757640			57849				6588840	57816	
757650			57844				6588850	57821	
757660			57847				6588860	57821	
757670			57849				6588870	57816	
757680			57846				6588880	57824	
757690			57849				6588890	57827	
757700			57852				6588900	57827	
757710			57848				6588910	57817	
757720			57855				6588920	57842	
757730			57856				6588930	57832	
757740			57855				6588940	57820	
757750			57855				6588950	57828	
757760			57853				6588960	57831	
757770			57863				6588970	57822	
757780			57866				6588980	57830	

Easting	6587400N	Time	6587600N	Time	6587800N	Time	Northing	756400E	Time
757790			57866				6588990	57834	
757800			57862				6589000	57842	
757810			57862				6589010	57840	
757820			57835				6589020	57846	
757830			57857				6589030	57834	
757840			57856				6589040	57850	
757850			57857				6589050	57853	
757860			57859				6589060	57837	
757870			57864				6589070	57848	
757880			57857				6589080	57858	
757890			57858				6589090	57867	15.45
757900			57857	12.00			6589100		

Ooldea South Ground Magnetic Survey - 28 March 1998

Target: OS2

Time: Central Daylight Saving

Ooldea 250K Sheet

Proton Precession Magnetometer: PPM-3

Diurnal Shift: Co-ord: 753600E 6585200N

09.20	58417
10.35	58518
10.55	58406
11.40	58416

Easting	6585000N	Time	6585200N	Time	6585400N	Time	Northing	753600E	Time
752600			57856	11.25			6584200	57891	12.30
752610			57852				6584210	57881	
752620			57854				6584220	57874	
752630			57855				6584230	57857	
752640			57857				6584240	57859	
752650			57854				6584250	57858	
752660			57859				6584260	57850	
752670			57850				6584270	57853	
752680			57852				6584280	57851	
752690			57861				6584290	57860	
752700			57852				6584300	57862	
752710			57856				6584310	57855	
752720			57862				6584320	57857	
752730			57870				6584330	57872	
752740			57872				6584340	57881	
752750			57887				6584350	57877	
752760			57866				6584360	57867	
752770			57873				6584370	57865	
752780			57865				6584380	57877	
752790			57860				6584390	57890	
752800			57852				6584400	57888	
752810			57841				6584410	57885	
752820			57851				6584420	57876	
752830			57851				6584430	57880	

Easting	6585000N	Time	6585200N	Time	6585400N	Time	Northing	753600E	Time
752840			57851				6584440	57898	
752850			57860				6584450	57898	
752860			57851				6584460	57895	
752870			57853				6584470	57880	
752880			57856				6584480	57892	
752890			57858				6584490	57878	
752900			57855				6584500	57892	
752910			57850				6584510	57894	
752920			57854				6584520	57902	
752930			57872				6584530	57894	
752940			57857				6584540	57894	
752950			57839				6584550	57896	
752960			57856				6584560	57892	
752970			57848				6584570	57888	
752980			57860				6584580	57883	
752990			57860				6584590	57884	
753000			57870				6584600	57885	
753010			57860				6584610	57888	
753020			57856				6584620	57884	
753030			57851				6584630	57886	
753040			57860				6584640	57878	
753050			57863				6584650	57879	
753060			57852				6584660	57885	
753070			57856				6584670	57882	
753080			57871				6584680	57885	
753090			57871				6584690	57895	
753100	57829	16.40	57857		57920	15.50	6584700	57894	
753110	57847		57861		57938		6584710	57915	
753120	57858		57885		57933		6584720	57893	
753130	57863		57875		57979		6584730	57892	
753140	57844		57869		57968		6584740	57909	
753150	57830		57882		57925		6584750	57912	
753160	57843		57883		57948		6584760	57912	
753170	57825		57885		57949		6584770	57908	
753180	57834		57873		57926		6584780	57920	
753190	57842		57880		57959		6584790	57916	
753200	57838		57878		57977		6584800	57931	
753210	57841		57885		57997		6584810	57938	
753220	57831		57889		57980		6584820	57964	
753230	57841		57884		57991		6584830	57939	
753240	57841		57889		57996		6584840	57948	
753250	57853		57906		57983		6584850	57958	
753260	57905		57899		57931		6584860	57955	
753270	57857		57915		57960		6584870	57963	
753280	57860		57917		57943		6584880	57961	
753290	57869		57931		57935		6584890	57988	
753300	57878		57938		57959		6584900	57986	
753310	57886		57947		57965		6584910	57993	
753320	57908		57959		57954		6584920	57994	
753330	57915		57972		57953		6584930	57992	

Easting	6585000N	Time	6585200N	Time	6585400N	Time	Northing	753600E	Time
753340	57923		57993		57984		6584940	58009	
753350	57935		58025		57947		6584950	58004	
753360	57951		58052		57969		6584960	58016	
753370	57960		58074		57959		6584970	58037	
753380	57962		58099		57994		6584980	58039	
753390	57971		58136		57988		6584990	58056	
753400	57994		58157		57977		6585000	58080	
753410	57990		58191		57977		6585010	58083	
753420	57978		58212		57988		6585020	58076	
753430	57990		58232		57969		6585030	58123	
753440	57993		58258		57982		6585040	58113	
753450	57994		58274		57984		6585050	58118	
753460	58004		58305		57927		6585060	58123	
753470	58003		58326		57987		6585070	58138	
753480	58001		58341		57978		6585080	58158	
753490	58013		58368		57996		6585090	58181	
753500	58024		58392		57972		6585100	58186	
753510	58027		58400		58009		6585110	58215	
753520	58026		58413		57993		6585120	58243	
753530	58029		58431		58001		6585130	58289	
753540	58029		58448		58029		6585140	58320	
753550	58037		58464		58048		6585150	58341	
753560	58038		58465		58034		6585160	58360	
753570	58048		58474		58010		6585170	58393	
753580	58059		58470		58026		6585180	58419	
753590	58054		58440	10.55	57996	15.20	6585190	58428	
753600	58067		58417	09.20	57995	14.10	6585200	58416	11.40
753610	58060		58388		58023		6585210	58369	13.10
753620	58069		58350		58038		6585220	58352	
753630	58073		58304		58015		6585230	58325	
753640	58055		58267		57997		6585240	58301	
753650	58035		58232		57970		6585250	58279	
753660	58032		58202		57985		6585260	58258	
753670	58030		58169		57975		6585270	58224	
753680	58010		58146		57987		6585280	58193	
753690	58005		58126		57968		6585290	58147	
753700	58006		58103		57976		6585300	58112	
753710	58016		58090		57938		6585310	58089	
753720	57998		58052		58005		6585320	58055	
753730	57998		58059		57959		6585330	58029	
753740	58000		58040		57949		6585340	58007	
753750	57990		58033		57938		6585350	57988	
753760	57998		58017		57965		6585360	57974	
753770	57981		58012		57954		6585370	57950	
753780	57965		58005		57972		6585380	57946	
753790	57970		57995		57928		6585390	57944	
753800	57980		57993		57933		6585400	57927	
753810	57959		57991		57957		6585410	57920	
753820	57955		57990		57935		6585420	57910	
753830	57951		57986		57969		6585430	57901	

Easting	6585000N	Time	6585200N	Time	6585400N	Time	Northing	753600E	Time
753840	57959		57986		57950		6585440	57906	
753850	58040		57988		57946		6585450	57905	
753860	58021		57992		57966		6585460	57900	
753870	57978		57980		57958		6585470	57903	
753880	57960		57971		57968		6585480	57889	
753890	57945		57982		57927		6585490	57878	
753900	57928		57956		57943		6585500	57880	
753910	57927		57961		57971		6585510	57872	
753920	57923		57953		57969		6585520	57870	
753930	57930		57944		57966		6585530	57878	
753940	57932		57954		57928		6585540	57857	
753950	57931		57949		57965		6585550	57883	
753960	57931		57948		57939		6585560	57858	
753970	57938		57949		57959		6585570	57869	
753980	57939		57941		57966		6585580	57851	
753990	57932		57932		57955		6585590	57851	
754000	57944		57934		57984		6585600	57867	
754010	57954		57930		57950		6585610	57866	
754020	57956		57937		57949		6585620	57854	
754030	57944		57945		57973		6585630	57861	
754040	57940		57948		57930		6585640	57852	
754050	57935		57955		58004		6585650	57858	
754060	57936		57948		58004		6585660	57863	
754070	57941		57945		57999		6585670	57843	
754080	57956		57952		57962		6585680	57849	
754090	57936		57954		57971		6585690	57841	
754100	57930	16.20	57942		57978	15.10	6585700	57828	
754110			57945				6585710	57841	
754120			57942				6585720	57852	
754130			57943				6585730	57867	
754140			57940				6585740	57845	
754150			57956				6585750	57864	
754160			57950				6585760	57846	
754170			57957				6585770	57840	
754180			57954				6585780	57850	
754190			57966				6585790	57850	
754200			57962				6585800	57845	
754210			57969				6585810	57828	
754220			57974				6585820	57829	
754230			57970				6585830	57834	
754240			57982				6585840	57822	
754250			57980				6585850	57850	
754260			57987				6585860	57836	
754270			57980				6585870	57843	
754280			57969				6585880	57842	
754290			57968				6585890	57844	
754300			57977				6585900	57855	
754310			57958				6585910	57837	
754320			57951				6585920	57853	
754330			57963				6585930	57864	

Easting	6585000N	Time	6585200N	Time	6585400N	Time	Northing	753600E	Time
754340			57963				6585940	57867	
754350			57959				6585950	57862	
754360			57960				6585960	57861	
754370			57958				6585970	57845	
754380			57957				6585980	57861	
754390			57964				6585990	57840	
754400			57946				6586000	57828	
754410			57961				6586010	57832	
754420			57960				6586020	57825	
754430			57960				6586030	57838	
754440			57964				6586040	57821	
754450			57969				6586050	57836	
754460			57965				6586060	57824	
754470			57978				6586070	57831	
754480			57972				6586080	57830	
754490			57964				6586090	57843	
754500			57966				6586100	57821	
754510			57969				6586110	57822	
754520			57970				6586120	57822	
754530			57969				6586130	57821	
754540			57977				6586140	57830	
754550			57978				6586150	57825	
754560			57983				6586160	57841	
754570			57988				6586170	57824	
754580			57990				6586180	57830	
754590			57990				6586190	57840	
754600			58002	10.20			6586200	57815	14.00

Ooldea South Ground Magnetic Survey - 29 March 1998

Target: OS4

Time: Central Standard

Ooldea 250K Sheet

Proton Precession Magnetometer: PPM-3

Diurnal Shift: Co-ord: 760800E 6582000N

08.35	57656	**10.50**	57629
09.45	57640	**11.55**	57623
10.20	57619	**13.45**	57650

Easting	6581800N	Time	6582000N	Time	6582200N	Time	Northing	760800E	Time
							6581400	57871	10.40
							6581410	57873	
							6581420	57873	
							6581430	57872	
							6581440	57860	
							6581450	57860	
							6581460	57851	
							6581470	57847	
							6581480	57858	

Easting	6581800N	Time	6582000N	Time	6582200N	Time	Northing	760800E	Time
							6581490	57894	
760300	57947		57907	09.40	57835	13.40	6581500	57906	12.30
760310	57972		57905		57835		6581510	57930	
760320	57967		57902		57838		6581520	57901	
760330	57947		57903		57840		6581530	57897	
760340	57953		57897		57835		6581540	57874	
760350	57957		57901		57845		6581550	57895	
760360	57971		57898		57837		6581560	57987	
760370	57957		57905		57832		6581570	57953	
760380	57953		57904		57827		6581580	57919	
760390	57947		57893		57834		6581590	57903	
760400	57968		57956		57831		6581600	57899	
760410	57972		57829		57837		6581610	57885	
760420	58001		57893		57839		6581620	57886	
760430	57950		57885		57831		6581630	57879	
760440	58015		57923		57819		6581640	57874	
760450	57967		57894		57829		6581650	57875	
760460	57948		57888		57835		6581660	57879	
760470	57934		57876		57841		6581670	57863	
760480	57953		57872		57856		6581680	57869	
760490	58005		57879		57923		6581690	57865	
760500	57984		57867		57872		6581700	57868	
760510	58024		57854		57834		6581710	57855	
760520	57978		57839		57840		6581720	57850	
760530	57987		57852		57836		6581730	57839	
760540	57938		57834		57841		6581740	57835	
760550	57965		57839		57837		6581750	57825	
760560	58002		57826		57829		6581760	57847	
760570	57980		57829		57826		6581770	57833	
760580	57946		57834		57832		6581780	57815	
760590	57953		57824		57832		6581790	57804	
760600	57938		57842		57820		6581800	57792	
760610	57957		57846		57814		6581810	57781	
760620	58016		57815		57815		6581820	57766	
760630	57946		57806		57815		6581830	57758	
760640	57932		57793		57810		6581840	57742	
760650	57917		57792		57810		6581850	57720	
760660	57950		57795		57810		6581860	57705	
760670	57912		57785		57803		6581870	57688	
760680	57888		57790		57804		6581880	57680	
760690	57856		57778		57798		6581890	57661	
760700	57870		57756		57793		6581900	57654	
760710	57850		57739		57787		6581910	57645	
760720	57857		57756		57785		6581920	57622	
760730	57887		57723		57781		6581930	57608	
760740	57875		57706		57787		6581940	57586	
760750	57872		57694		57771		6581950	57577	
760760	57837		57674		57772		6581960	57575	
760770	57859		57664		57774		6581970	57589	
760780	57851		57689		57772		6581980	57590	

Easting	6581800N	Time	6582000N	Time	6582200N	Time	Northing	760800E	Time
760790	57886		57643	09.10	57772	13.40	6581990	57583	10.20
760800	57831		57656	08.35	57756	12.00	6582000	57619	09.50
760810	57834		57602		57770		6582010	57631	
760820	57846		57594		57765		6582020	57634	
760830	57858		57558		57762		6582030	57644	
760840	57843		57541		57770		6582040	57656	
760850	57829		57528		57758		6582050	57670	
760860	57838		57502		57757		6582060	57677	
760870	57824		57491		57755		6582070	57682	
760880	57800		57479		57740		6582080	57693	
760890	57778		57483		57745		6582090	57697	
760900	57763		57481		57740		6582100	57720	
760910	57767		57489		57744		6582110	57712	
760920	57783		57508		57746		6582120	57721	
760930	57790		57529		57793		6582130	57724	
760940	57778		57544		57748		6582140	57729	
760950	57762		57565		57741		6582150	57735	
760960	57795		57581		57741		6582160	57733	
760970	57775		57605		57734		6582170	57738	
760980	57813		57624		57731		6582180	57740	
760990	57831		57646		57730		6582190	57744	
761000	57810		57668		57742		6582200	57745	
761010	57795		57689		57741		6582210	57750	
761020	57770		57702		57739		6582220	57750	
761030	57785		57733		57738		6582230	57753	
761040	57798		57743		57731		6582240	57750	
761050	57775		57746		57745		6582250	57765	
761060	57770		57745		57736		6582260	57783	
761070	57787		57741		57753		6582270	57787	
761080	57782		57745		57730		6582280	57782	
761090	57792		57759		57727		6582290	57781	
761100	57791		57767		57718		6582300	57779	
761110	57836		57755		57706		6582310	57761	
761120	57787		57760		57723		6582320	57763	
761130	57817		57770		57735		6582330	57762	
761140	57817		57789		57725		6582340	57754	
761150	57844		57776		57723		6582350	57765	
761160	57716		57763		57707		6582360	57749	
761170	57855		57772		57711		6582370	57746	
761180	57806		57775		57720		6582380	57733	
761190	57832		57778		57730		6582390	57753	
761200	57830		57776		57720		6582400	57759	
761210	57797		57779		57742		6582410	57760	
761220	57838		57782		57743		6582420	57761	
761230	57806		57767		57730		6582430	57761	
761240	57826		57778		57728		6582440	57761	
761250	57816		57783		57731		6582450	57730	
761260	57860		57777		57727		6582460	57752	
761270	57865		57762		57717		6582470	57749	
761280	57826		57760		57728		6582480	57740	

Easting	6581800N	Time	6582000N	Time	6582200N	Time	Northing	760800E	Time
761290	57773		57773		57729		6582490	57735	
761300	57788	11.10	57795	09.05	57719	12.15	6582500	57733	11.40
							6582510	57730	13.10
							6582520	57730	
							6582530	57737	
							6582540	57735	
							6582550	57722	
							6582560	57717	
							6582570	57713	
							6582580	57707	
							6582590	57712	
							6582600	57708	10.10

Appendix C

Drillhole Logs

Ooldea South Drilling Program - Drillhole Logs

Hole Number	From (m)	To (m)	Lithology	Colour	Texture	Grain size	Alteration	Mineral'n	Veining	Description
OSAC-1	0	2	soil	br						Silty calcareous clay with scattered calcrete coated limestone gravel & boulders
	2	19	lst	off-wh	mass	fg				NULLARBOR LIMESTONE: massive fossiliferous limestone with red-brown clay infilling fractures at top; locally pale pinkish; trace Mn dendrites & coatings along fractures; limonite staining from 15m down
	19	23	lst (clay)	p-och	mass	fg				NULLARBOR LIMESTONE: pale yellowish to ochre fossiliferous limestone with red-brown clay bands & scattered mg quartz grains at base
	23	25	s-clay	kh						Massive khaki-green clay with scattered mg subrounded quartz grains
	25	33	sand	or		f-cg				HAMPTON SAND: poorly sorted sub- to well rounded quartz sand
	33	38	sand	or-cr		f-mg				HAMPTON SAND: well sorted well rounded quartz sand; local polished quartz grains
	38	40	sand	or		f-cg				HAMPTON SAND: poorly sorted sub- to well rounded coarsening downwards quartz sand
	40	55	sand	or		f-mg				HAMPTON SAND: variably to well sorted, rounded quartz sand; local cg quartz sand
	55	64	lig sand	bl-ch		vfg		lig		PIDINGA FORMATION: black to chocolate brown, very fine lignitic to oily quartz sand with local massive lignite beds
	64	65	sand	br		vfg		(lig)		PIDINGA FORMATION: dark brown, well sorted, lignitic quartz sand
	65	73	lig sand	bl-ch		vfg		lig		PIDINGA FORMATION: lignitic quartz sand with local massive lignite
	73	74	sand	br		mg		(lig)		PIDINGA FORMATION: dark brown, well sorted, well rounded lignitic quartz sand
	74	84	lig sand	bl-ch		vfg		lig		PIDINGA FORMATION: soupy lignitic quartz sand with local massive lignite
	84	88	sand	gy		fg				Grey, well rounded, well sorted quartz sand
	88	94.5	sap (dior)	gr-gy	mass	mg	(hem/lim)	(py)		Massive saprolitic clay with relic mg texture & local greenish grey diorite RX - massive plag-amph/chl/serp-opaq with local disseminated pyrite (up to 2%) and trace hem-lim alteration
	94.5	96	dior	gy	mass	fg	hem	py	chl/opaq, hem	Massive dark grey diorite/dolerite with subophitic texture and strong hematite alteration along grain boundaries, disseminated & in veinlets; disseminated pyrite; network of thin black chl/opaq veinlets

Ooldea South Drilling Program - Drillhole Logs

Hole Number	From (m)	To (m)	Lithology	Colour	Texture	Grain size	Alteration	Mineral'n	Veining	Description
OSAC-2	0	1	soil	cr-br						Silty calcareous clay with scattered calcrete coated limestone gravel & boulders
	1	21	lst	off-wh	mass	fg				NULLARBOR LIMESTONE: massive fossiliferous limestone with red-brown clay infilling fractures at top; locally pale pinkish; local brick red karstic breccia & vuggy cavities
	21	22	lst	y	mass	fg				NULLARBOR LIMESTONE: pale yellowish to ochre fossiliferous limestone
	22	27	lst	off-wh	mass	fg				NULLARBOR LIMESTONE: fossiliferous limestone
	27	31	clay (lst)	kh						Massive khaki-green clay with woody stems & soft friable limestone
	31	36	sand	off-wh		f-cg				HAMPTON SAND: poorly sorted subangular to rounded quartz sand
	36	43	sand	or		f-mg				HAMPTON SAND: variably to well sorted, rounded quartz sand; local cg quartz sand; locally polished quartz
	43	54	sand	kh-or-tan		vfg				HAMPTON SAND: well sorted, well rounded quartz sand
	54	60	lig sand	ch-bl		vfg				PIDINGA FORMATION: chocolate brown to black well sorted & well rounded quartz sand with local lignite; thin (few cm) silicified sandstone at 59.5
	60	65	lig sand	ch-br		fg				PIDINGA FORMATION: well sorted & well rounded quartz sand with local lignite
	65	73	sap (gb)	gr-gy	mass	mg				Massive saprolitic clay with scattered RX of massive mg gabbroic anorthosite & gabbro; magnetic from ca 68m down
	73	78	gb	d-gy	mass	m-fg	hem	py	chl (felds)	Massive, heavy, dark greenish grey gabbro; predominantly hbl/px (>50%) + plag + mag; vfg disseminated pyrite; some veinlets are slickensided

Ooldea South Drilling Program - Drillhole Logs

Hole Number	From (m)	To (m)	Lithology	Colour	Texture	Grain size	Alteration	Mineral'n	Veining	Description
OSAC-3	0	1.5	soil	cr-br to r-br						Silty calcareous clay with scattered calcrete coated limestone gravel & boulders
	1.5	29	lst	off-wh	mass	fg				NULLARBOR LIMESTONE: massive fossiliferous limestone with red-brown clay infilling fractures at top; locally pale pinkish; local brick red karstic breccia, vuggy cavities & travertine; quartz sand increasing from 27m down
	29	30	clay	kh		vfg (grit)				Ochre to pale khaki greenclay with minor angular quartz grit
	30	33	sand	or		f-mg				HAMPTON SAND: poorly sorted subangular to rounded quartz sand; locally cg to gritty
	33	42	sand	gy		f-vfg				Pale grey well sorted rounded quartz sand with rare lignite fragments
	42	54	sand	gy		vfg				Pale grey well sorted well rounded quartz sand with scattered lignite fragments (<5%)
	54	56	sand	or		vfg		(lig)		Orange well sorted rounded quartz sand
	56	70	lig sand	bl-ch		vfg		lig		PIDINGA FORMATION: chocolate brown to black well sorted & well rounded quartz sand with local lignite
	70	73	sand	gy (br)		m-cg		(lig)		PIDINGA FORMATION: graded (coarsening down) sub- to well rounded quartz sand with trace lignite
	73	76	lig sand	ch		vfg		lig		PIDINGA FORMATION: chocolate brown lignitic quartz sand with local pyrite & ironstone concretions or aggregates
	76	85	sap	gy	mass	vfg (mg)		(py)		Massive grey saprolitic clay with relic granitic texture and local massive mg granodioritic RX from 83m
	85	86	grd	gr-wh	mass	mg		py	chl-felds-py	Massive unfoliated greenish white granodiorite or diorite composed mainly of white plag + opaq + disseminated pyrite (up to 5%) + apple green amph; local thin veinlets of pale green chl/felds + pyrite

Appendix D

Drillhole Petrology

Pontifex & Associates Pty. Ltd.

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0067

MINERALOGICAL REPORT No. 7607

by Alan C. Purvis, PhD. & Ian R. Pontifex MSc.

June 3, 1998

TO : Mr John Parker
Equinox Resources NL
334 Glen Osmond Road
MYRTLE BANK SA 5064

YOUR REFERENCE : Order No. S01058

MATERIAL : Bottom of hole core and chips

IDENTIFICATION : 40211 to 40216 (6)

WORK REQUESTED : Thin section preparation, and report.

SAMPLES & SECTIONS : Returned to you with this report.

PONTIFEX & ASSOCIATES PTY. LTD.

SUMMARY COMMENTS

Six end-of-hole core and chips are described in this report, from thin sections, with the chips mounted in epoxy before sectioning. The samples are apparently from two different areas as follows :

40211	OSAC-1	94-94.5m
40212	OSAC-1	95-96 m
40213	OSAC-2	76-78 m
40214	OSAC-3	85-86 m
40215	IFAC-1	100-102 m
40216	IFAC-2	108-109 m

Two of **the OSAC samples** have been flooded by carbonate. In 40211, residuals of altered basalt occur in a heterogeneous carbonate matrix of mainly massive microspherulitic to fibrous ?ankerite cut by later veins of siderite, then by even later stringers of dolomite? Objectively, this appears to represent extensive primary (?metasomatic) carbonate invasion (i.e. not apparently supergene), but it is anomalous that the basaltic rock chips in sample 40211 are texturally identical to the basaltic lithology in sample 40212 from only one metre deeper, (and appear therefore to be residuals of the 40212 bedrock). The carbonate alteration may indeed therefore be a "surface" phenomenon.

Residual fragments of albite, hornblende, minor quartz and opaque oxide occur in the carbonate matrix of 40214, suggesting a mafic to possible dioritic igneous bedrock protolith but there is no deeper sample in OSAC-3 to confirm this. Carbonate in this 40214 sample is mostly massive/patchy/microspherulitic, possibly but not necessarily supergene, and in the context of carbonate in vein 40211, seems more likely to be metasomatic.

The remaining OSAC sample (40213) is a hornblende peridotite of cumulus origin, with altered probable olivine (now serpentine), and pyroxene (now a colourless clinoamphibole, possibly cummingtonite and which may have been orthopyroxene) as cumulus minerals. [This sample is similar to cumulates at Aristarchus as previously described by this author for MESA].

The IFAC samples include a weakly altered hornblende-biotite-?clinopyroxene-rich mafic quartz monzodiorite (40215), which is similar to members of the Bradman Outstation Suite in and adjacent to the Malabooma Anorthosite Complex to the north of Tarcoola. This suite is typically anomalous in Cu and Zn. The other sample (40216) is a deformed and recrystallised granodiorite, with some broad similarities to members of the Bradman Outstation Suite, but on

clouded clinozoisite and the biotite by chlorite, epidote and rutile which suggests hydrolysis and exchange of K and Ca ions as follows:

1.

$$3\ CaAl_2Si_2O_8 + 2K^+ + 4H^+ = 2\ KAl_3Si_3O_{10}(OH)_2 + 3Ca^{2+}$$

This refers to sericitisation of the anorthite component of plagioclase.

2.

$$5\ KMg_3AlSi_3O_{10}(OH)_2 + 2Ca^{2+} + 3H^+ + 4H_2O = Mg_5Al_2Si_3O_{10}(OH)_8 + 3\ Mg_3Si_2O_5(OH)_4 + Ca_2Al_3Si_3O_{12}(OH) + 5K^+ + Mg^{2+} + 3SiO_2$$

This refers to the replacement of biotite by chlorite and epidote, using Ca released by the previous reaction. The balance between serpentine in the chlorite and Mg^{2+} released into the fluid is ambiguous, however.

GEOCHEMISTRY

Subsequent to writing this report, geochemical data were received from Equinox Resources NL for assessment. Discussion of these data is appended at the end of this report.

INDIVIDUAL DESCRIPTIONS

40211
OSAC-1, 94-94.5m

Scattered residual fragments of completely altered olivine basalt (as in 40212 below) within an extensive carbonate matrix of massive ?ankerite, later stockwork of probable siderite, even later stringers of ?calcite or dolomite. This carbonate possibly of broadly "primary metasomatic" origin, but a 'surface' carbonate horizon cannot be discounted.

Residual fragments of extensively altered (and possibly brecciated) rock, to 2mm in size, are scattered to form about 25% of this sample. These residuals are dominated by fine patchy chlorite and chloritic-clays, plus limonite staining ± fine carbonate and leucoxene and oxidised fine original oxide grains. They have a relict microcrystalline basaltic texture very similar to the [far less altered] lithology in this sample 40212 immediately below at 95-96m in this same drillhole, and are therefore interpreted as representing original olivine-basalt.

The greater bulk of this rock, as a matrix to the above residual fragments, consists of carbonate of at least two and probably three generations. The most abundant carbonate is massive fine fibrous to partly spherulitic apparent ankerite (according to its reaction to potassium ferricyanide/alizarin-red staining of the offcut). This is cut by several disjointed veins/stockwork of probable siderite, which do not stain and optically with a relatively high RI, and there are lesser later stage veins and stringers of clear microcrystalline carbonate (of low RI) which may be calcite or dolomite (but do not show distinctive reaction to the staining.

The precise genesis of this pervasive-replacement to mobilised vein-form carbonate is uncertain. Objectively its textural, including vein form complexity, indicate probable "primary" (metasomatic?) rather than supergene (which may be expected to be more typically "patchy-massive" and simpler micro to cryptocrystalline (although calcrete can include microspherulitic to fibrous carbonate). However, the extensive alteration of the incorporated basalt fragments is in stark contrast to relatively fresh basalt just 1m deeper in this hole, suggesting a posssible surface alteration effect, including the carbonate.

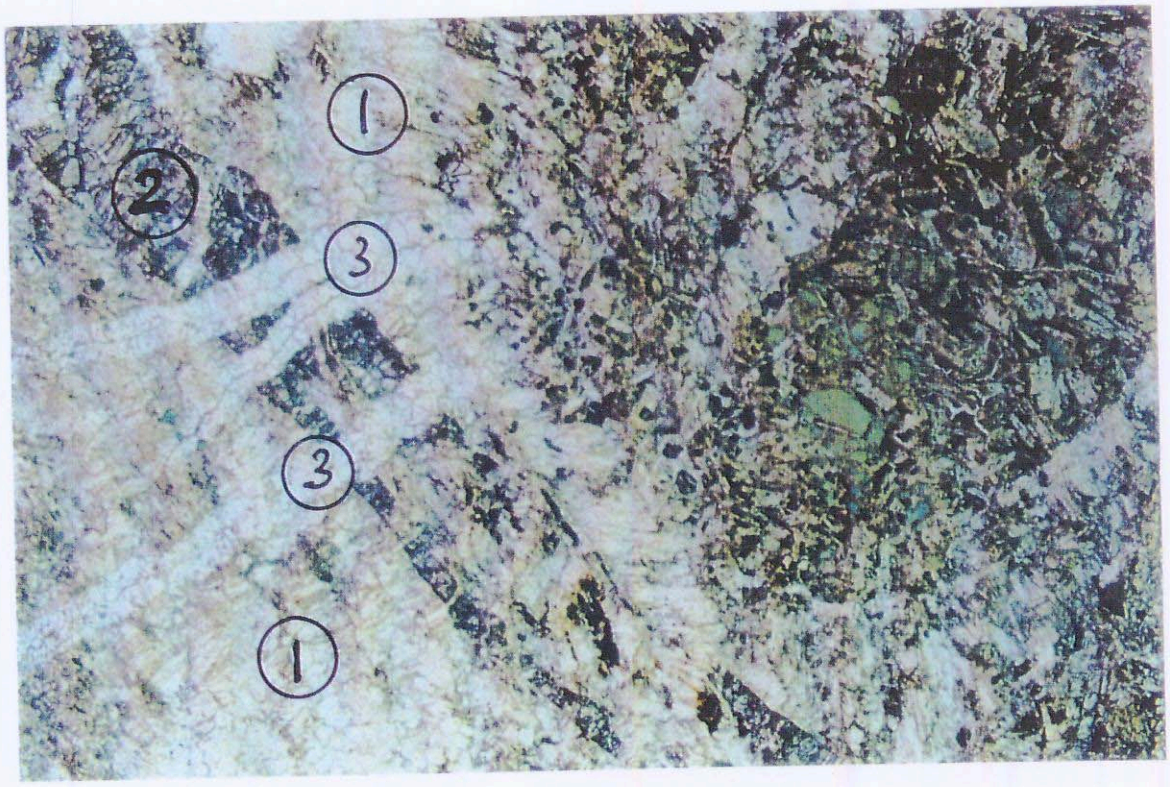


Fig 1 **40211** 0.45 mm

TS. OL. NE quadrant is a residual of altered basalt in a pervasive carbonate alteration matrix. This carbonate mass has three components :

① early massive fine to partly spherulitic
② later veins of siderite, dark with higher RI
③ latest veinlets of calcite or dolomite (clear)

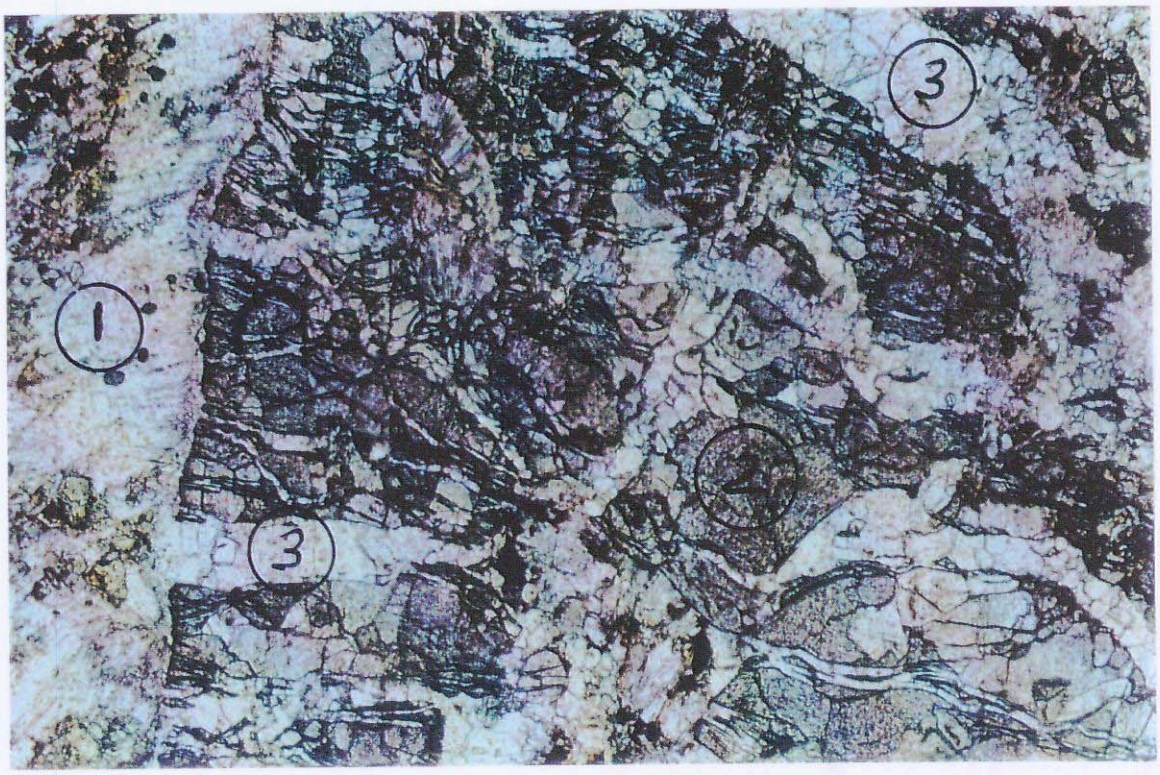


Fig 2 40211 0.18 mm

TS. OL. Further example of carbonate generations : ① massive ② darker siderite ③ clearer microcrystalline calcite, massive and vein form, or dolomite.

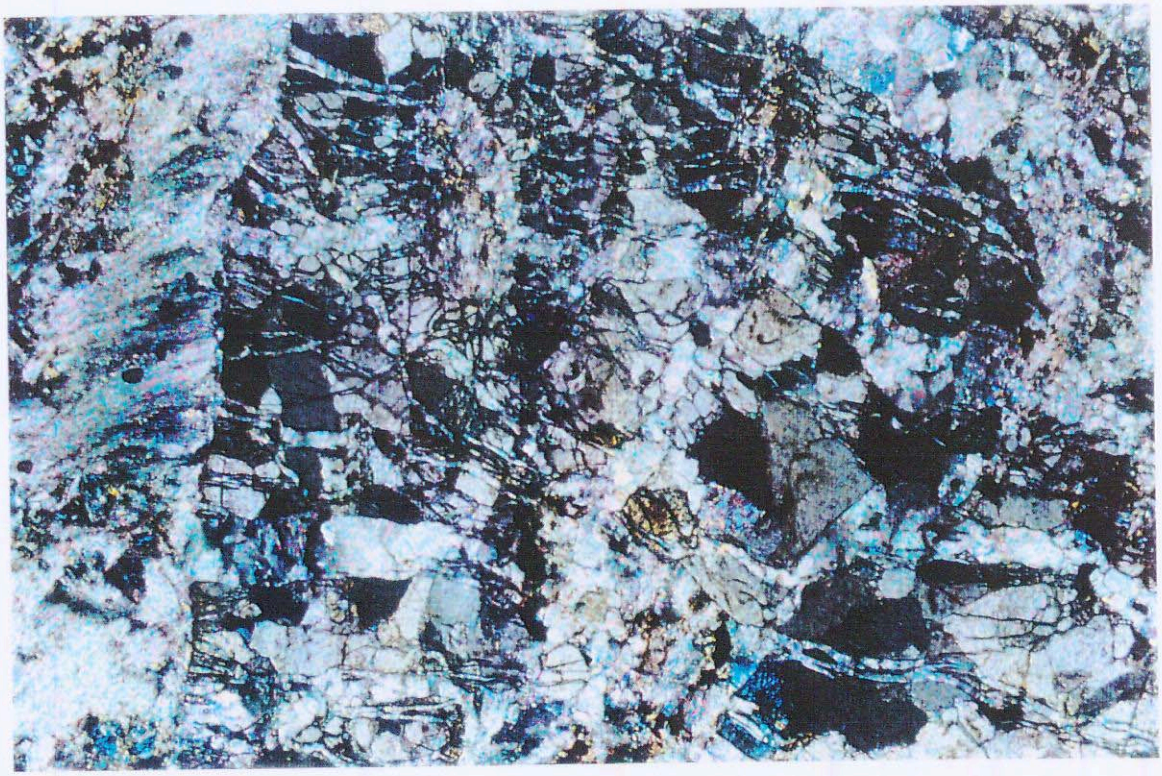


Fig 3 40211 0.18 mm

TS. Xnicols equivalent of Fig 2

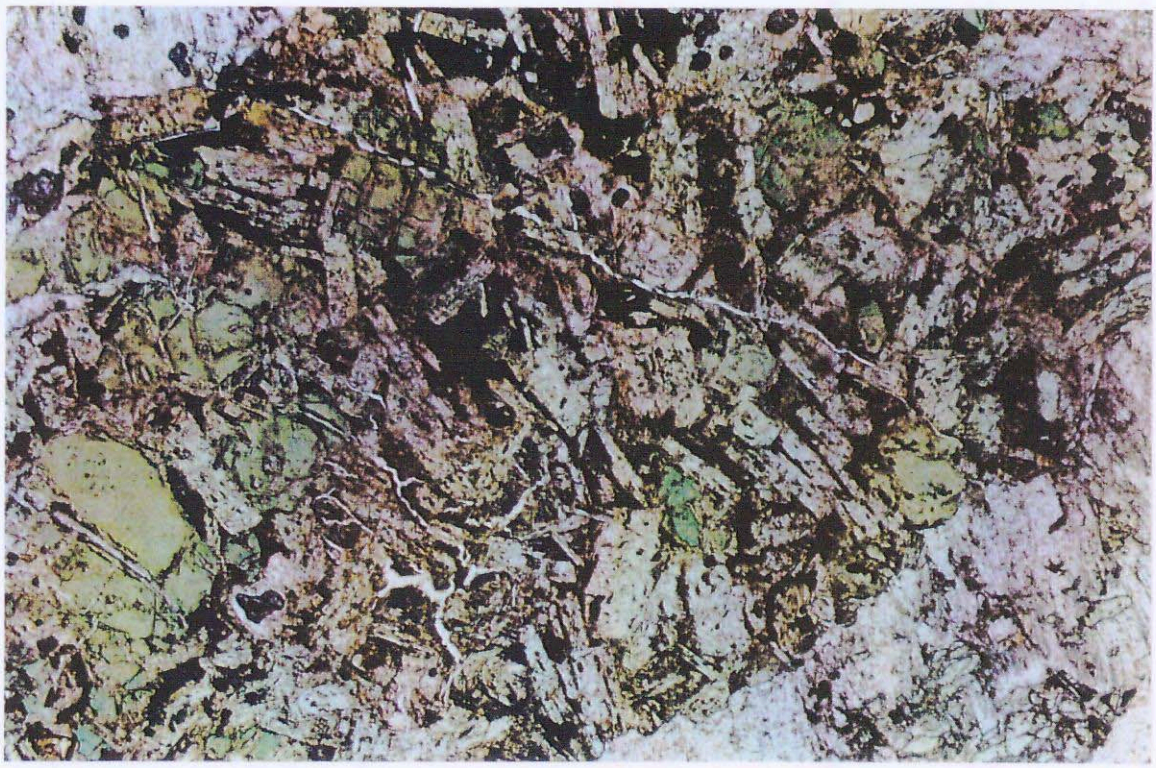


Fig 4 40211 0.18 mm

TS. OL. Detail of residual of altered basalt, typical texture of ex-plagioclase laths, and ex-ferromagnesians are chloritised, plus scattered opaque oxides.

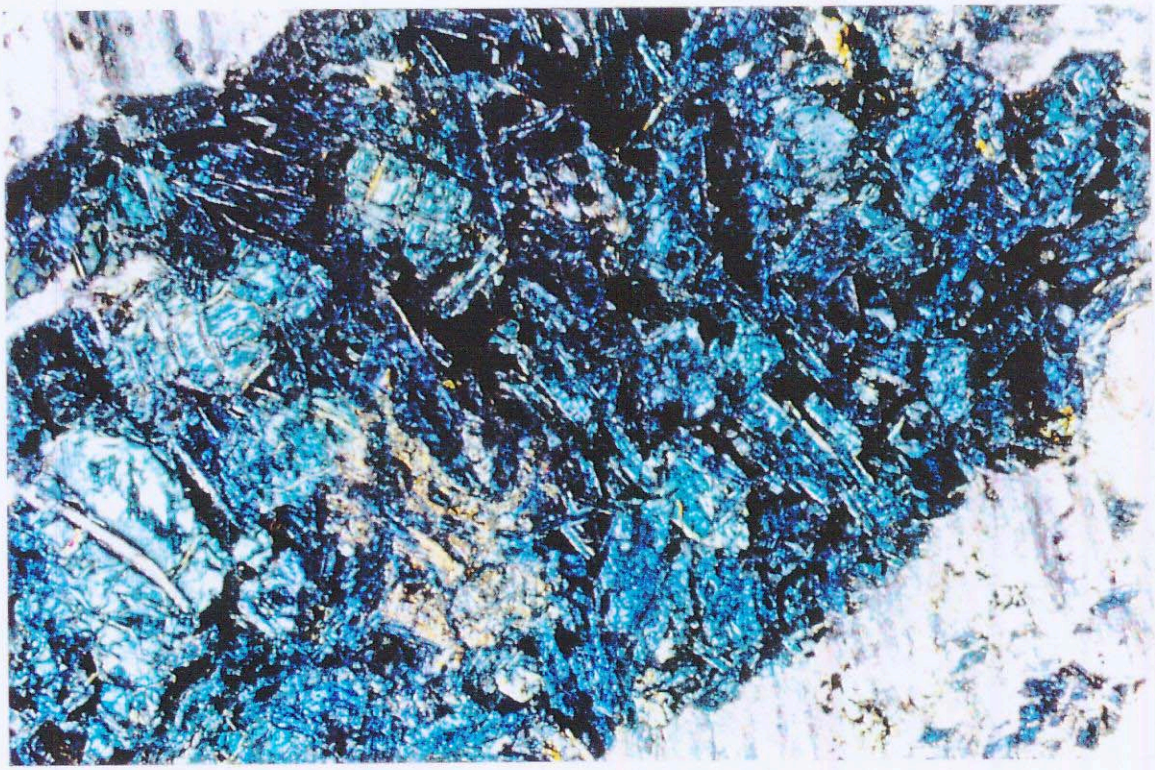


Fig 5 40211 0.18 mm

TS. Xnic equivalent of Fig 4 to highlight chloritic alteration.

40212 **Altered probable olivine basalt.**

OSAC-1, 95-96 m

Mineral	Vol %
Plagioclase	50-55%
Clinopyroxene	25%
Clays	15-20%
Oxide	5%
Pyrite	<1%

Plagioclase laths to 0.75 mm long dominate most of this rock, apart from some apparent segregations essentially composed of plagioclase laths about 1 mm long. There are also abundant ophitic grains of clinopyroxene, and patches of brownish clays, to 1 mm long. The clays seem to be most probably after olivine and have been replaced by green clays (less oxidised?) adjacent to narrow veins that are also filed by green clays. Granular to skeletal opaque oxides are disseminated and have been largely altered to hematite, but there is also rare low-temperature pyrite in some of the clay patches that seem to have replaced olivine.

Mineralogically and texturally this rock is interpreted as an altered olivine basalt.

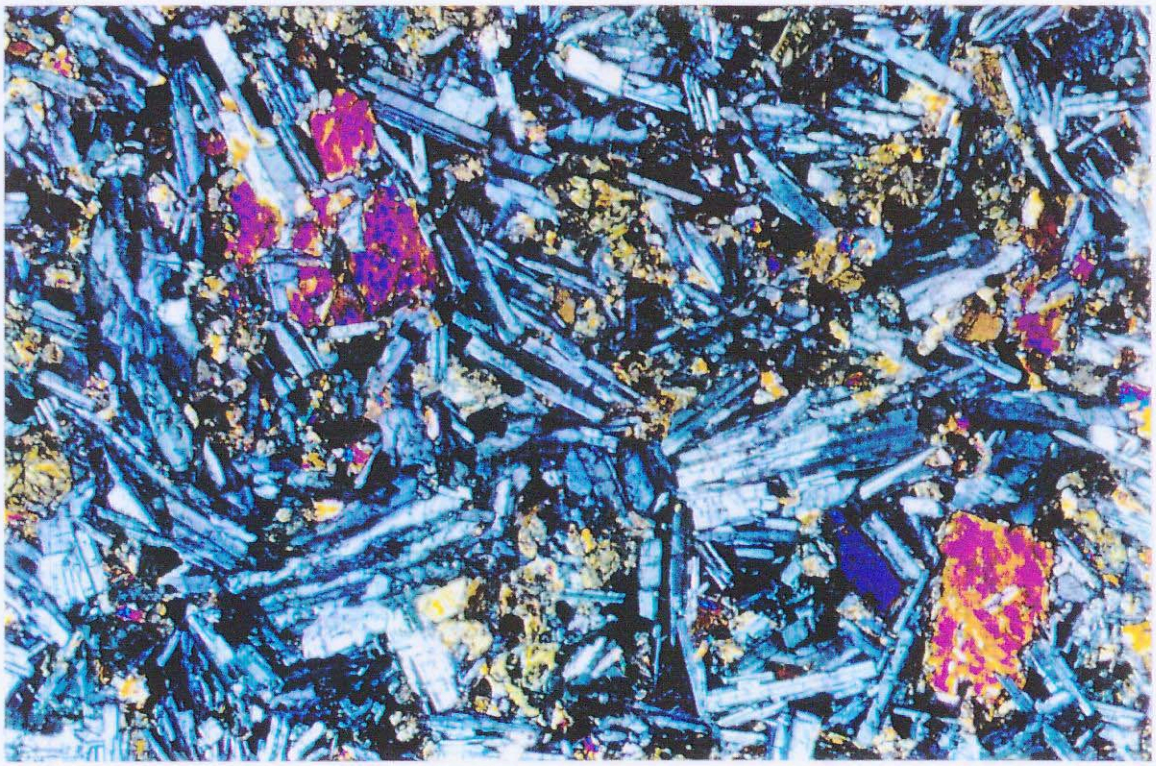


Fig 6 40212 0.18 mm

TS. Xnic. Basalt 1m deeper than the same residual basalt fragments in 40211, but in this sample, the basalt is remarkably fresh.

40213
OSAC-2, 76-78 m

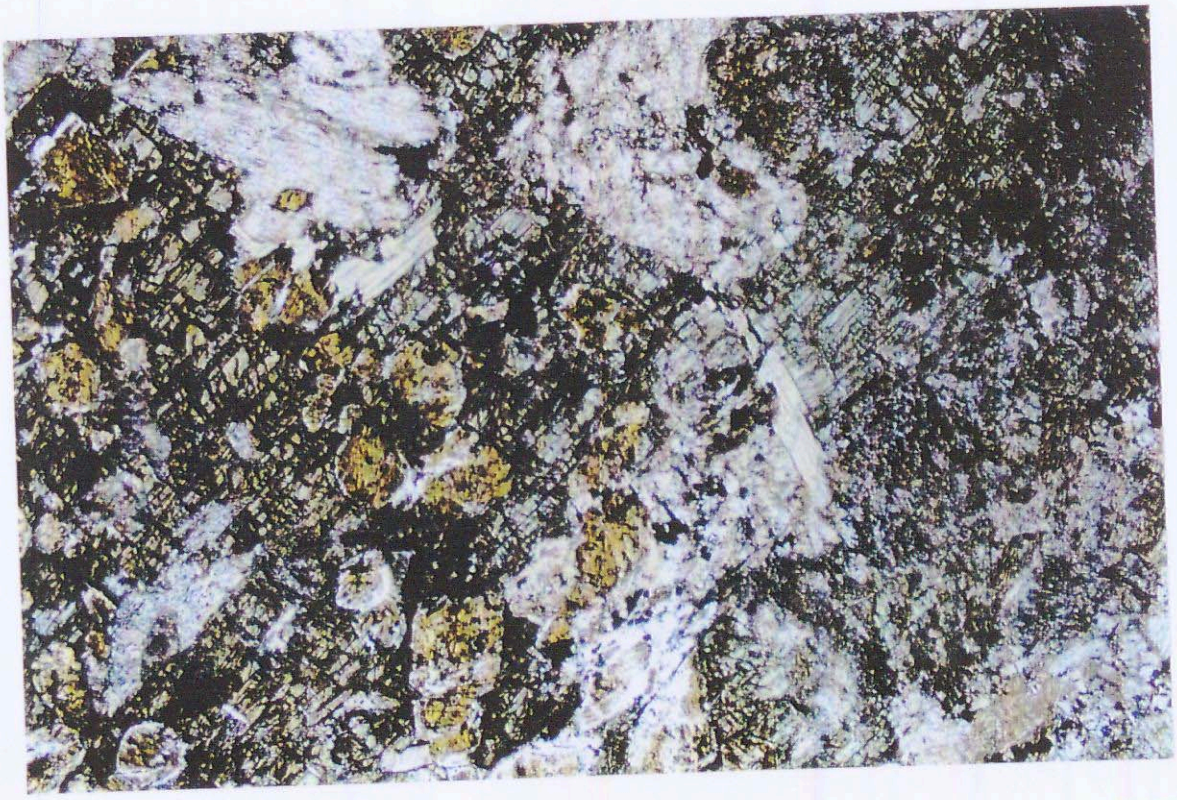
Altered hornblende peridotite, an olivine-pyroxene orthocumulate with postcumulus hornblende and phlogopite. [Compares with Aristarchus ultramafics.]

Mineral	Vol %
Hornblende	25-40%
Secondary amphibole	25-40%
Serpentine	5-25%
Magnetite	5-10%
Phlogopite	2-3%

These chips represent an ultramafic cumulate rock with abundant large poikilitic hornblende grains, to 10 mm in diameter, which compare with some of the ultramafic rocks at Aristarchus.

Aggregates of amphibole, possibly cummingtonite ± tremolite-actinolite, are common and seem to have replaced cumulus pyroxene grains (clinopyroxene and/or orthopyroxene?) to 5 mm long. There are also serpentine-(magnetite) pseudomorphs of cumulus olivine grains to 2 mm, and serpentine aggregates enclosing abundant patches of optically continuous hornblende. The amount of serpentine, and the amount of magnetite in the serpentine, varies within and between chips, and there are rare filaments of low-temperature sulphide. Flakes of green to brown phlogopite also occur to 2 mm long in various proportions in the different chips.

An original hornblende peridotite is suggested, with cumulus olivine and pyroxene and post-cumulus hornblende ± phlogopite (ol.pxChb,bi). The abundance of hornblende indicates a probable orthocumulate.



40213

0.45 mm

Fig 7

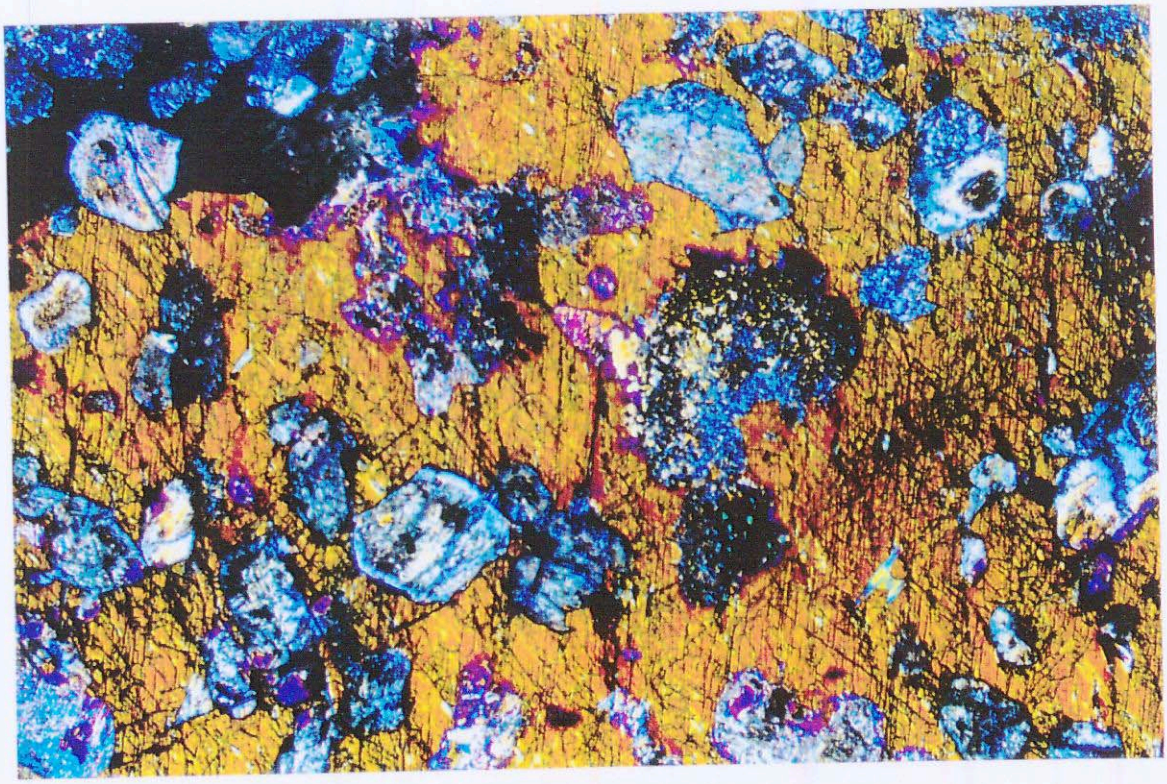
TS. OL. Altered hornblende peridotite orthocumulate, coarse poikilitic hornblende, greenish-black-ground crowded with "inclusions of brownish amphibole-altered ex-pyroxene crystals".

40213

0.45 mm

Fig 8

TS. OL. Further example of coarse poikilitic hornblende (~~yellow~~ green) studded with altered small crystals of ex-pyroxene.



40213

0.45 mm

Fig 9

TS. Xnic equivalent of Fig 8.

40214
OSAC-3, 85-86 m

Carbonate-flooded plagioclase-rich ?mafic possibly to dioritic rock, with hornblende and opaque oxide; also a vein of fractured albite flooded by a vein of calcite.

Massive fine patchy fibrous to spherulitic carbonate dominates this sample (65%), basically as a matrix. Texturally most of this carbonate compares with the possible ankerite in 40211, but it is more consistently fine spherulitic, also its response to staining, and the CaO assay suggests calcite (but this would need to be confirmed by SEM or geochemical analysis). In addition to patches of spherulitic aggregates, carbonate also forms irregular, discontinuous microstockworks of veinlets, through fractured residuals of rock.

This extensive carbonate matrix incorporates scattered fragments of plagioclase ± minor quartz and of opaque oxide, largely altered to leucoxene. Flakes of biotite and grains of olive-green hornblende are also disseminated, as single grains or as composites, locally with plagioclase and/or carbonate.

Within a carbonate vein there are a series of fragments rich in microcrystalline probable albite and this may have been a vein within the original rock.

The nature of the original lithology is uncertain but a mafic, possibly through to intermediate/dioritic igneous protolith is most likely. The carbonate flooding represents pervasive replacement, which as in 40211, appears broadly secondary-primary (rather than necessarily supergene).

Figs 10 & 11 **40214**

0.45 mm

TS. Xnic. Patchy microspherulitic carbonate incorporating relicts of ex-plagioclase-rich mafic seen as altered plagioclase, chloritised mafics, scattered opaque oxides. Exact genesis of carbonate uncertain.

APPENDIX

GEOCHEMISTRY

Chemical data has subsequently been supplied by Equinox for these samples (except 40211). The raw data, given below, was recast as mantle-normalised spidergrams and recalculated as a normative mineralogy, as discussed further in this section.

	40212	40213	40214	40215	40216
SiO_2	45.9	44.5	21.8	51.1	58.6
TiO_2	0.63	0.21	0.49	0.86	0.78
Al_2O_3	17.7	3.6	8.72	13.3	17.5
Fe_2O_3	6.69	11.2	3.3	9.23	6.71
MnO	0.11	0.13	0.2	0.16	0.09
MgO	7.38	23.8	3.22	8.9	2.42
CaO	7.25	8.48	31.4	8.54	1.37
Na_2O	2.31	0.61	0.84	2.8	4.77
K_2O	0.61	0.21	0.61	1.79	2.93
P_2O_5	0.1	0.09	0.23	0.43	0.28
LOI	7.64	5.75	27.8	1.75	3.47
	96.32	98.58	98.61	98.86	98.92
ppm					
Rb	11	2.5	6.5	26	67
Sr	135	240	330	850	190
Y	18	6	9	19	20
Zr	90	60	60	130	190
Ba	185	70	125	850	800
La	10	28	14	74	51
Ce	16	41	22	120	80

TABLE 1: RAW GEOCHEMICAL DATA FOR FIVE SAMPLES, REPORT NO. 7607

The analyses were made in order to asses the magma types represented by these rocks, with particular interest in possible carbonatites. However no samples with chemical signatures of typical carbonatites, kimberlites or lamproites (high rare earth elements, Nb or Sr) were seen to be present. Indeed, the carbonate-rich sample (40214, with 44% "normative" calcite) is poor in rare earth elements and Sr. The Nb analyses were inadequate in terms of detection limit for consideration but are all low compared to values expected in carbonatites.

Mantle-normalised spidergrams

The significant minor and trace elements were used to create mantle-normalised spidergrams as shown below.

These diagrams suggest that the basalt (40212) is an olivine tholeiite, possibly with MORB affinities, including a very high Al_2O_3/TiO_2 ratio (~28). However its light REE enrichment suggests an E-type MORB.

Sample 40213 is unusual in being depleted in Rb, Ba and K relative to REE, suggesting that there is a mineral in this sample that has accumulated REE. The Al_2O_3/TiO_2 ratio is similar to that seen in Aristarchus ultramafic rocks, however, and this may suggest some correlation, also indicated in the thin section description.

Sample 40214 has a broadly similar pattern to 40215 but depleted and it may be that 40214 is simply a calcite-flooded version of 40215. Both have positive P anomalies which is consistent with the high apatite content seen in sample 40215 in thin section. Similarities between 40214 and 40215, highlighted by the spidergrams, are also seen in the very similar mg# [atomic % Mg/(Mg+Fe)] of 65.9 and 65.6 respectively (equal within analytical error). Na/K ratios are also similar.

The analysed granitoid (40216) is more primitive than that seen in thin section, with high Zr and P, but a negative Sr anomaly. However Rb, Ba, K and La form a flattish pattern which is unusual for normal granitoids.

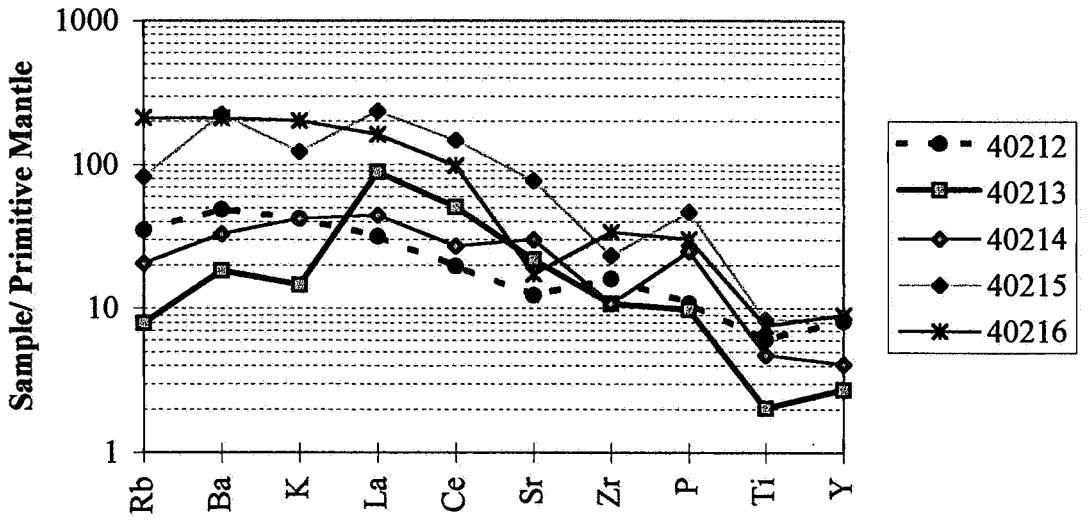


FIG. 1: MANTLE-NORMALISED SPIDERGRAMS (SEE TEXT, ABOVE, FOR DISCUSSION)

Normative mineralogies

The analyses were recalculated as "molecular" norms (roughly equivalent to volume % normative minerals). Two samples are clearly altered, with clays and clinopyroxene in 40212 recalculated as normative orthopyroxene and corundum (c), and abundant calcite in sample 40214. Some of the normative anorthite may represent clays + calcite. The granitoid has only 10% normative quartz and is thus different to that seen in thin section. The high content of normative corundum in this granitoid also suggests stronger sericite alteration than is seen in thin section, the 5.32% corundum representing possibly 18-19% sericite.

Sample 40213 has orthopyroxene and olivine in the norm, due to serpentinisation, but the high content of olivine and pyroxenes in the norm reflect the ultramafic character of the sample. The presence of normative olivine + orthopyroxene in 40215 may reflect the low silica contents of hornblende and biotite in this sample, which actually contains some quartz.

	40212	40213	40214	40215	40216
or	4.03	1.29	3.72	10.87	18.10
ab	23.21	5.71	7.79	25.85	44.79
an	39.53	6.74	18.82	18.96	5.20
c	0.36				5.32
il	0.98	0.31	0.70	1.23	1.14
mt	1.74	2.71	0.79	2.21	1.63
ap	0.23	0.20	0.49	0.92	0.61
cpx		29.22	23.93	17.38	
cc			44.24		
opx	28.97	21.21		17.01	12.52
ol		32.61		5.56	
q	0.93				10.69
	100	100	100.00	100	100

TABLE 2: RECALCULATED "MOLECULAR:" NORMS FOR SAMPLES, AS DISCUSSED ABOVE.
Minerals: orthoclase, albite, anorthite, corundum, ilmenite, magnetite, apatite, clinopyroxene, calcite, orthopyroxene, olivine, quartz.

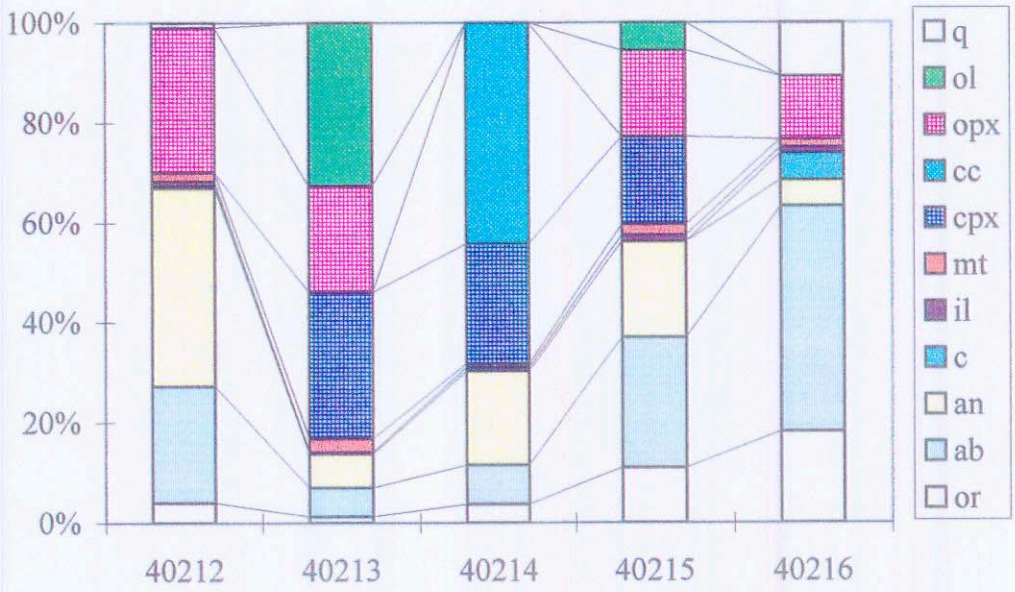


FIG. 2: NORMATIVE MINERALOGY OF FIVE SAMPLES, REPORT NO. 7607.

CONCLUSIONS

The chemistry suggests that this suite of samples include a low-Ti. High Al basalt with E-MORB affinities, a peridotite unusually enriched in light rare earth elements but possibly related to that at Aristarchus in the western Gawler Craton, a mafic monzogabbro to monzodiorite rich in rare earth elements and P, with calcite flooding in one sample diluting the rare earth elements and Sr. The final sample is a granitoid of uncertain affinities (the analysed samples seems to be less quartz-rich and more sericite-rich than that seen in thin section). No carbonatite, kimberlite of lamproite-related rocks were seen.

Appendix E

Drillhole Geochemistry

Drillhole Geochemistry - Trace Element Assays

Sample No.	Drillhole	From (m)	To (m)	Despatch #	Analytical Report #	Ag (ppm) DL=0.5	As (ppm) DL=1	Co (ppm) DL=1	Cu (ppm) DL=1	Ni (ppm) DL=1	Pb (ppm) DL=3	Zn (ppm) DL=1	Au (ppb) DL=1	Au Dp1 (ppb) DL=1	Mo (ppm) DL1	Cr (ppm) DL=2	Sb (ppm) DL=5	Bi (ppm) DL=5
67653	OSAC-1	88	89	S216	8AD0991	<0.5	<1	14	53	64	4	42	4	4	<1	125	<5	<5
67654	OSAC-1	89	90	S216	8AD0991	<0.5	2	19	190	73	8	51	4		<1	135	<5	<5
67655	OSAC-1	90	91	S216	8AD0991	<0.5	1	22	50	63	<3	49	1		2	195	<5	<5
67656	OSAC-1	91	92	S216	8AD0991	<0.5	2	60	85	175	4	115	3		<1	120	<5	<5
67657	OSAC-1	92	93	S216	8AD0991	<0.5	<1	70	125	200	<3	100	3		<1	140	<5	<5
67658	OSAC-1	93	94	S216	8AD0991	<0.5	1	80	42	220	<3	110	3		1	135	<5	<5
67659	OSAC-1	94	95	S216	8AD0991	<0.5	2	49	75	135	<3	72	2		<1	110	<5	<5
67660	OSAC-1	95	96	S216	8AD0991	<0.5	<1	18	51	58	<3	31	3		3	210	<5	<5
67665	OSAC-2	68	70	S216	8AD0991	<0.5	8	89	35	550	32	340	<1		1	1550	10	<5
67666	OSAC-2	70	72	S216	8AD0991	<0.5	8	90	19	360	8	160	<1		5	1200	5	<5
67667	OSAC-2	72	74	S216	8AD0991	<0.5	7	110	19	330	12	53	<1		3	1250	5	<5
67668	OSAC-2	74	75	S216	8AD0991	<0.5	6	88	18	280	10	44	<1		2	1150	5	<5
67669	OSAC-2	75	76	S216	8AD0991	<0.5	8	60	17	175	8	43	1		3	1050	5	<5
67670	OSAC-2	76	77	S216	8AD0991	<0.5	10	80	17	280	6	28	1		2	1200	5	<5
67671	OSAC-2	77	78	S216	8AD0991	<0.5	8	77	20	290	4	29	1		2	1200	5	<5
67677	OSAC-3	76	78	S216	8AD0991	<0.5	3	3	11	38	8	31	1		<1	450	<5	<5
67678	OSAC-3	78	80	S216	8AD0991	<0.5	<1	8	30	63	8	24	4		<1	320	<5	<5
67679	OSAC-3	80	82	S216	8AD0991	<0.5	2	22	125	155	6	75	2		<1	280	<5	<5
67680	OSAC-3	82	84	S216	8AD0991	<0.5	6	30	43	270	4	140	1		1	310	<5	<5
67681	OSAC-3	84	85	S216	8AD0991	<0.5	2	38	33	320	6	230	2		2	340	<5	<5
67682	OSAC-3	85	86	S216	8AD0991	<0.5	3	33	32	250	<3	175	1	2	3	340	<5	<5

Drillhole Geochemistry - Whole Rock Silicate Assays

Sample No.	Drillhole	From (m)	To (m)	Despatch #	Analytical Report #	Al2O3 (%) DL=0.01	CaO (%) DL=0.01	Fe2O3 (%) DL=0.01	K2O (%) DL=0.01	MgO (%) DL=0.01	MnO (%) DL=0.01	Na2O (%) DL=0.01	P2O5 (%) DL=0.01
40217	OSAC-1	95	96	S1059	8AD1269	17.7	7.25	9.69	0.61	7.38	0.11	2.31	0.11
40218	OSAC-2	72	78	S1059	8AD1269	3.6	8.48	11.2	0.21	23.8	0.13	0.61	0.09
40219	OSAC-3	85	86	S1059	8AD1269	8.72	31.4	3.3	0.61	3.22	0.2	0.84	0.23

Drillhole Geochemistry - Whole Rock Silicate Assays

Sample No.	SiO2 (%) DL=0.01	TiO2 (%) DL=0.01	LOI (%) DL=0.01	W (ppm) DL=3	Y (ppm) DL=1	Zr (ppm) DL=15	Ba (ppm) DL=10	Ce (ppm) DL=1	Cd (ppm) DL=3	La (ppm) DL=1	Nb (ppm) DL=10	Rb (ppm) DL=0.5	Sr (ppm) DL=5
40217	45.9	0.63	7.64	<3	18	90	185	16	<3	10	<10	11	135
40218	44.5	0.21	5.75	<3	6	60	70	41	<3	28	<10	2.5	240
40219	21.8	0.49	27.8	<3	9	60	125	22	<3	14	<10	6.5	330

Appendix F

Temporary Environmental Photo Control Points

Plate 1:Johannsen Drilling RAB/aircore drilling rig and support/water truck, OS-1 prospect, EL 2012.

Plate 2:Drilling in progress at OS-1. Sample pits were located between drill rig and Toyota on left.

Plate 3:Drilling in progress at OS-1. Sample pits were located between drill rig and Toyota on left.

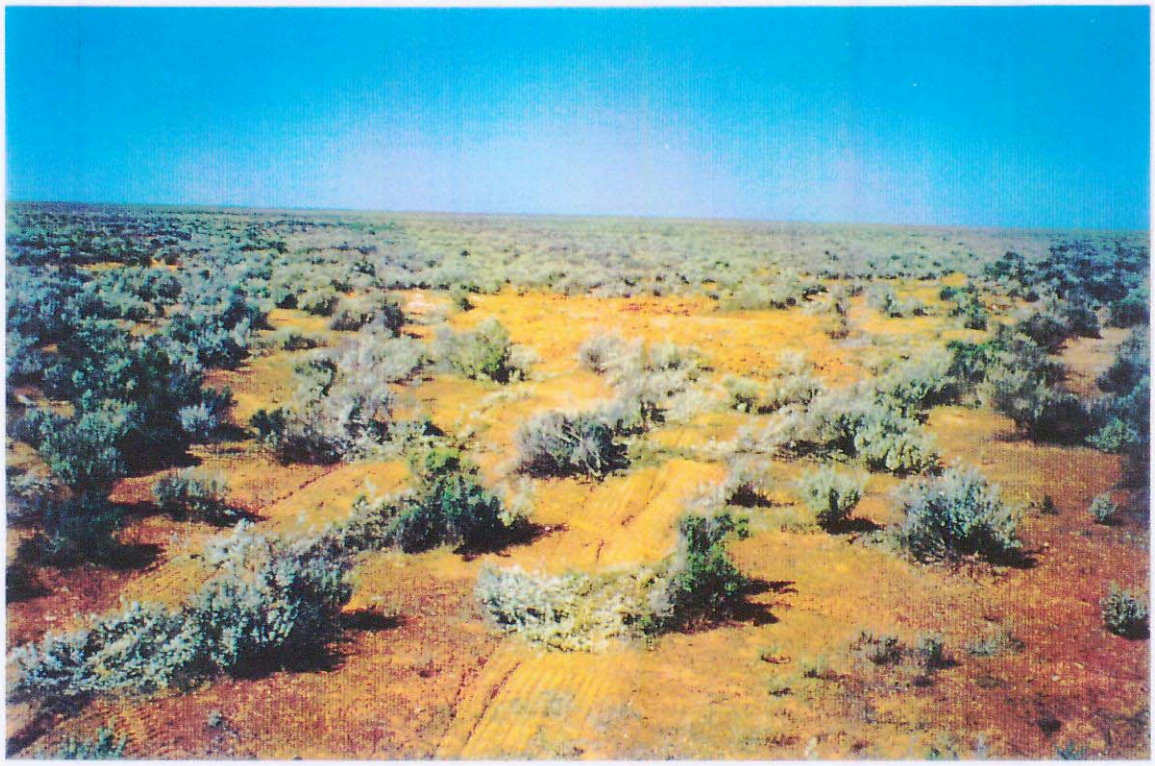


Plate 4:Drillsite at OS-1 prospect after plugging and backfilling the drillhole, cleanup and raking over. Sample pits were amongst saltbush just left of centre.

Plate 5: OS-2 drillsite, EL 2012, immediately prior to drilling.

Plate 6: Drillsite at OS-2 prospect after backfilling and cleanup. Sample pits were located on left of photo.

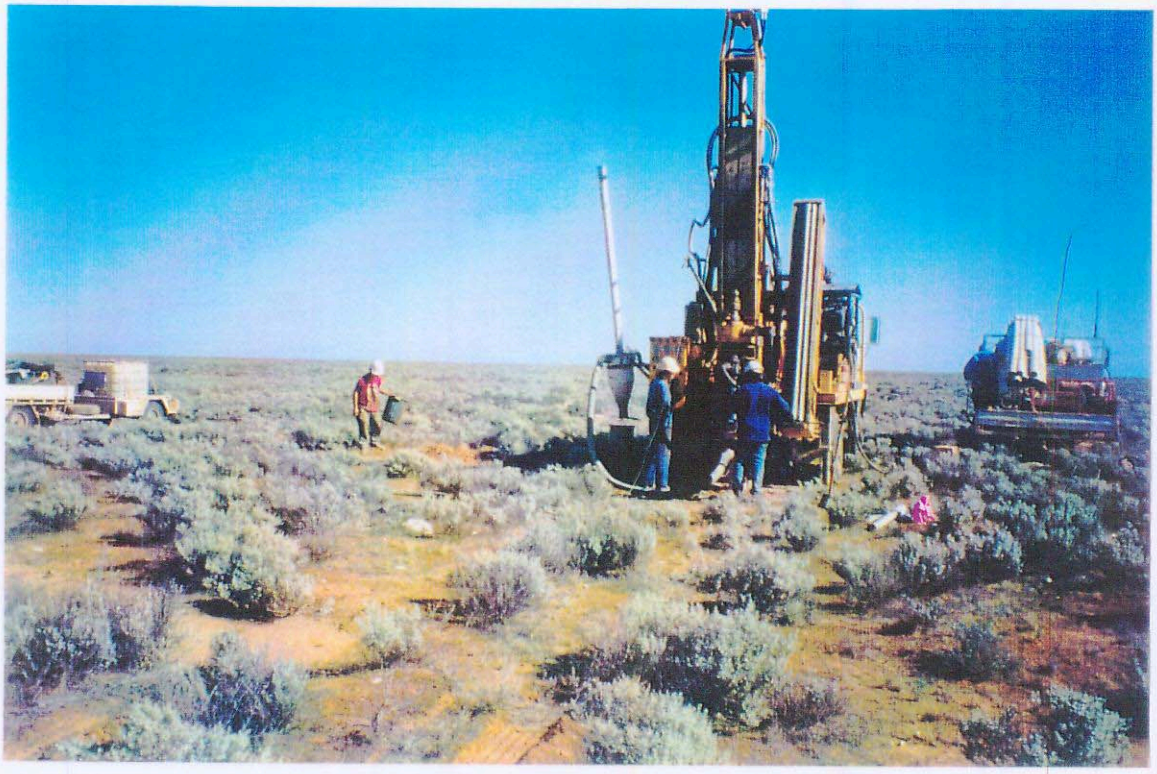


Plate 7: Drilling in progress at OS-4, EL 2012. Sample pits to left of rig.

Plate 8: Drillsite at OS-4 prospect after backfilling and cleanup. Drill rig has moved off drillsite and sample pits were located on left of photo.

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Ooldea 1:250,000 Map Sheet
South Australia

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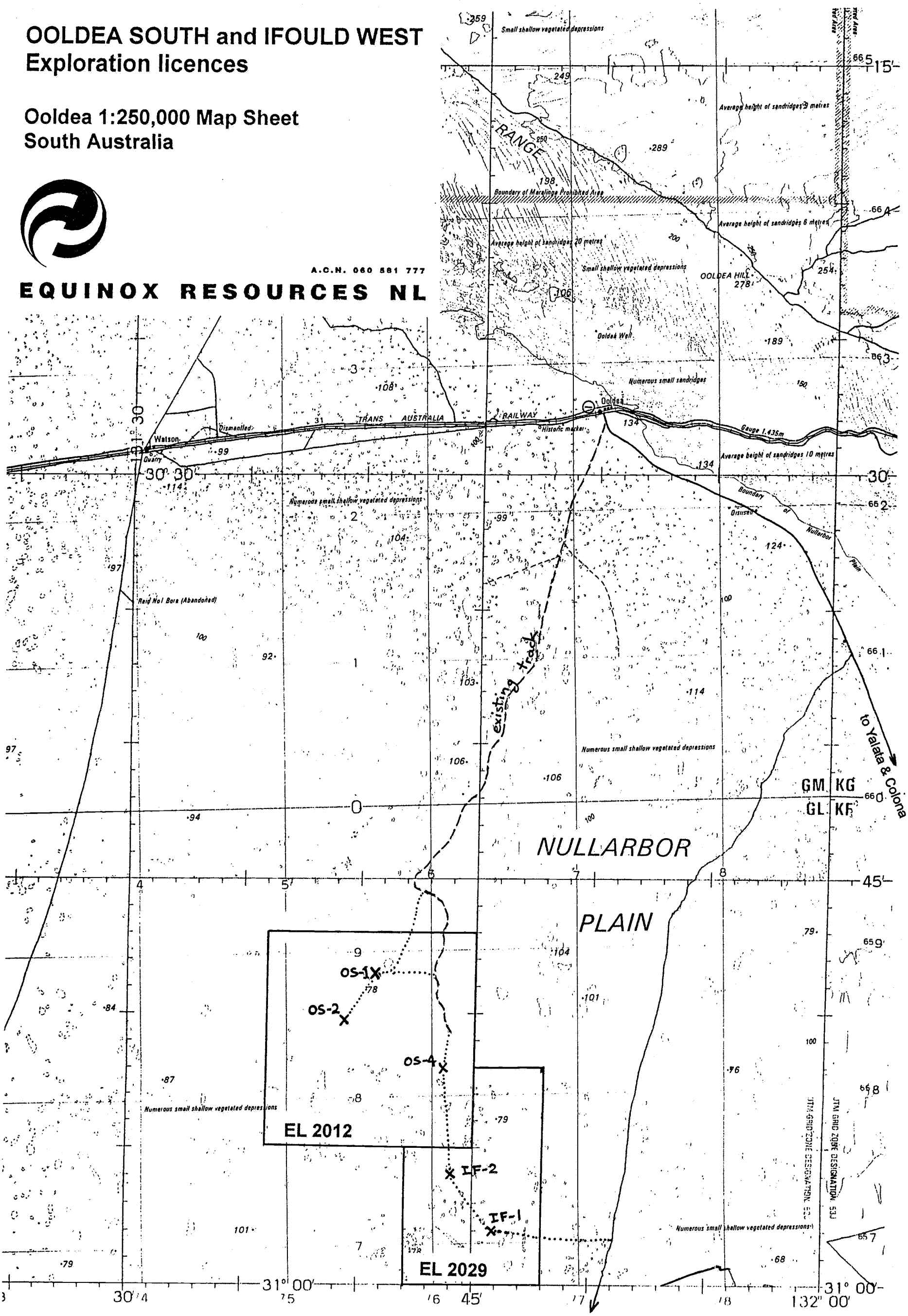


Reference

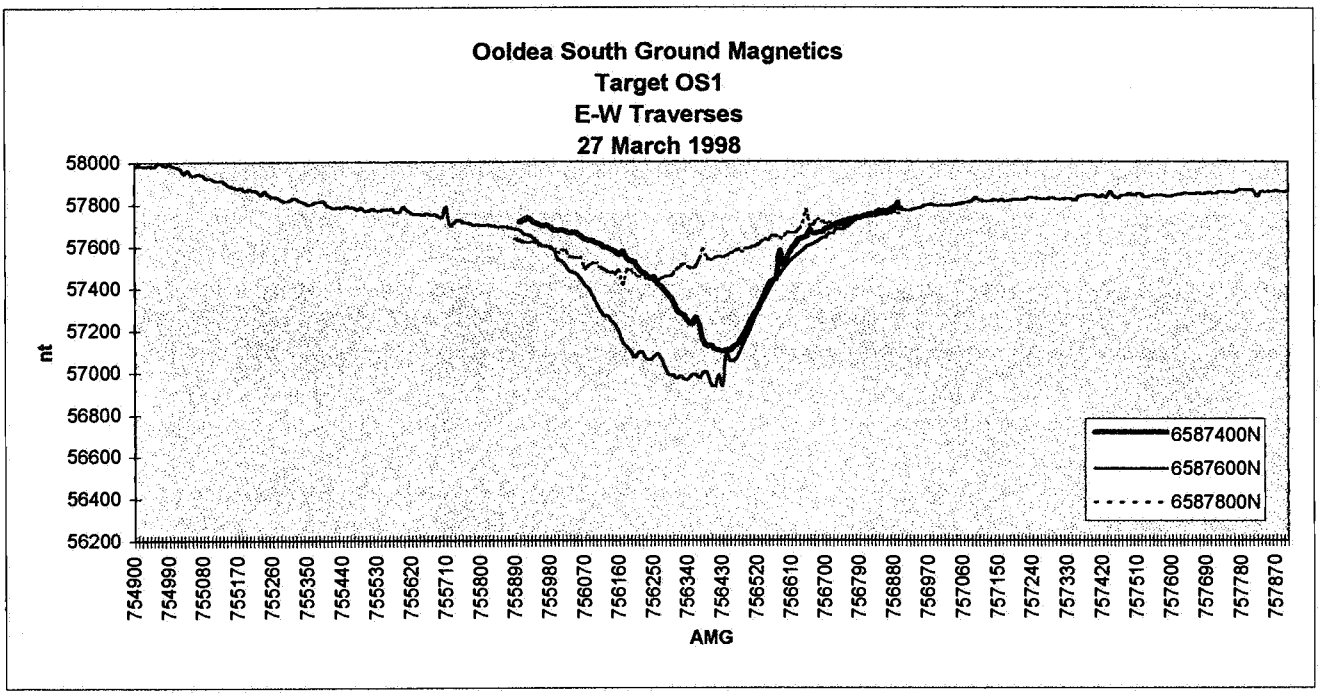
..... Approximate position of access route to drillholes

X Drillhole target

to Yalata

Scale: 1:250,000

Figure 1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E-W Traverses
27 March 1998
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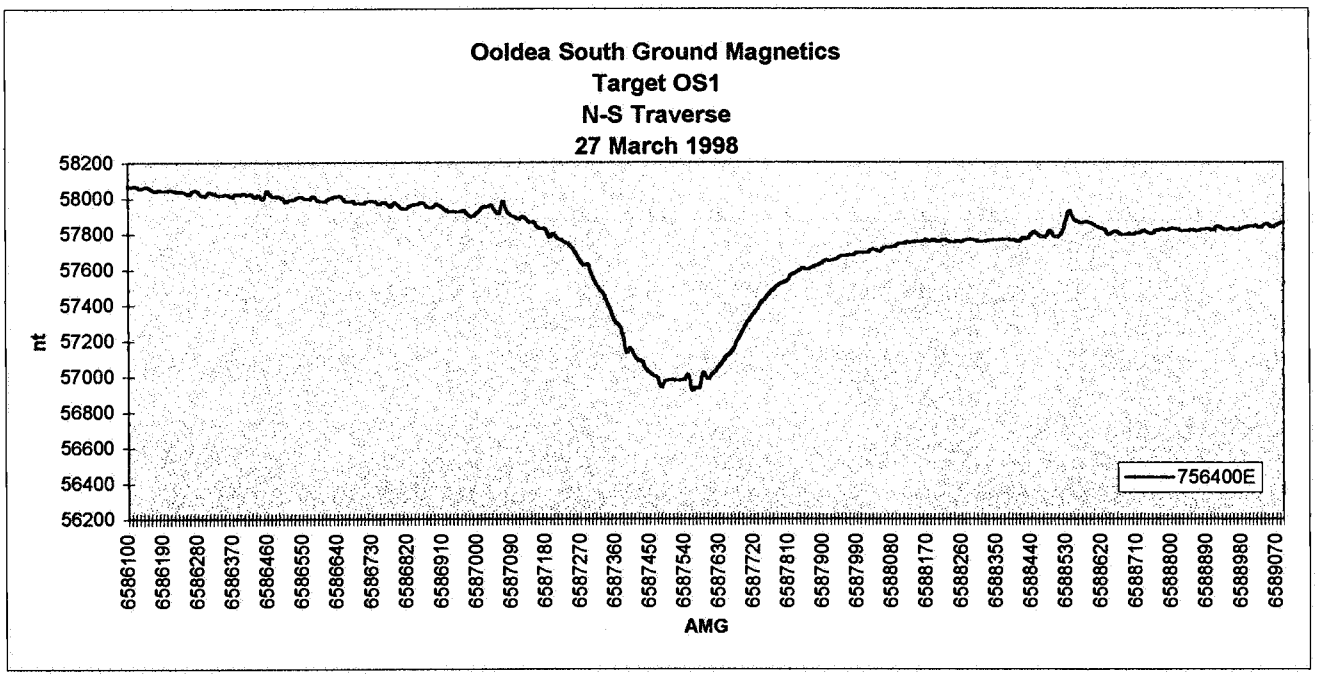
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Target OS1
N-S Traverse
27 March 1998
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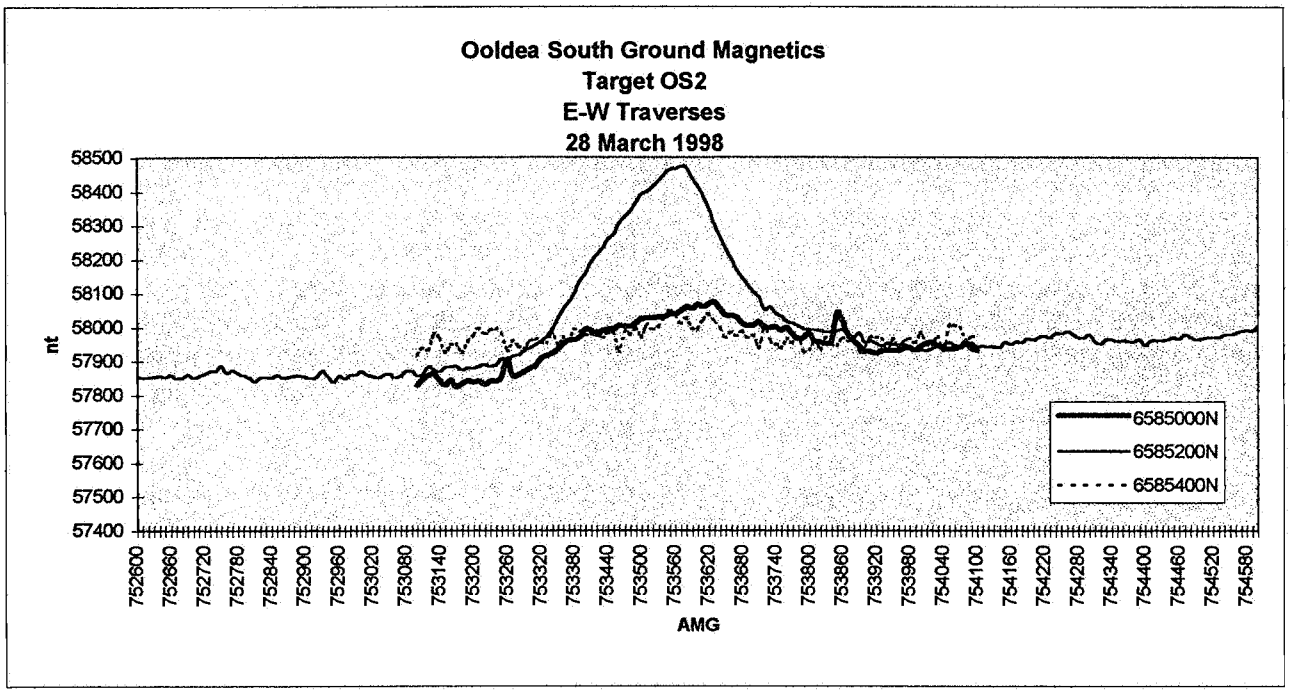

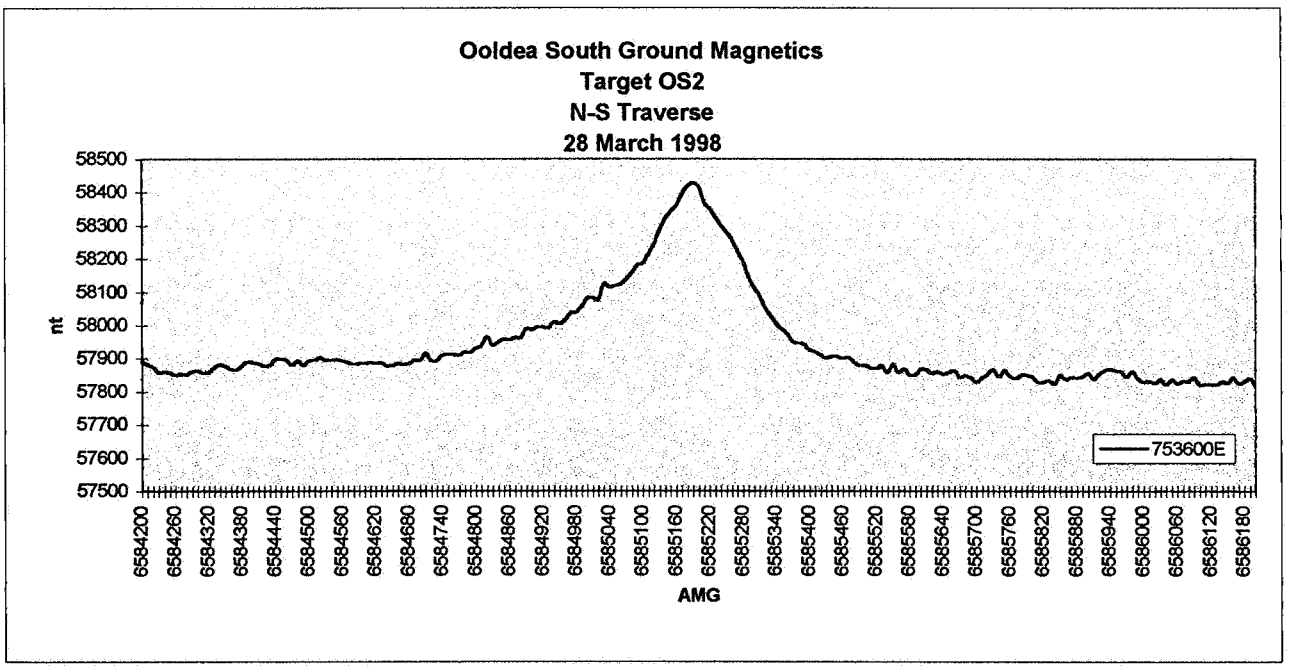

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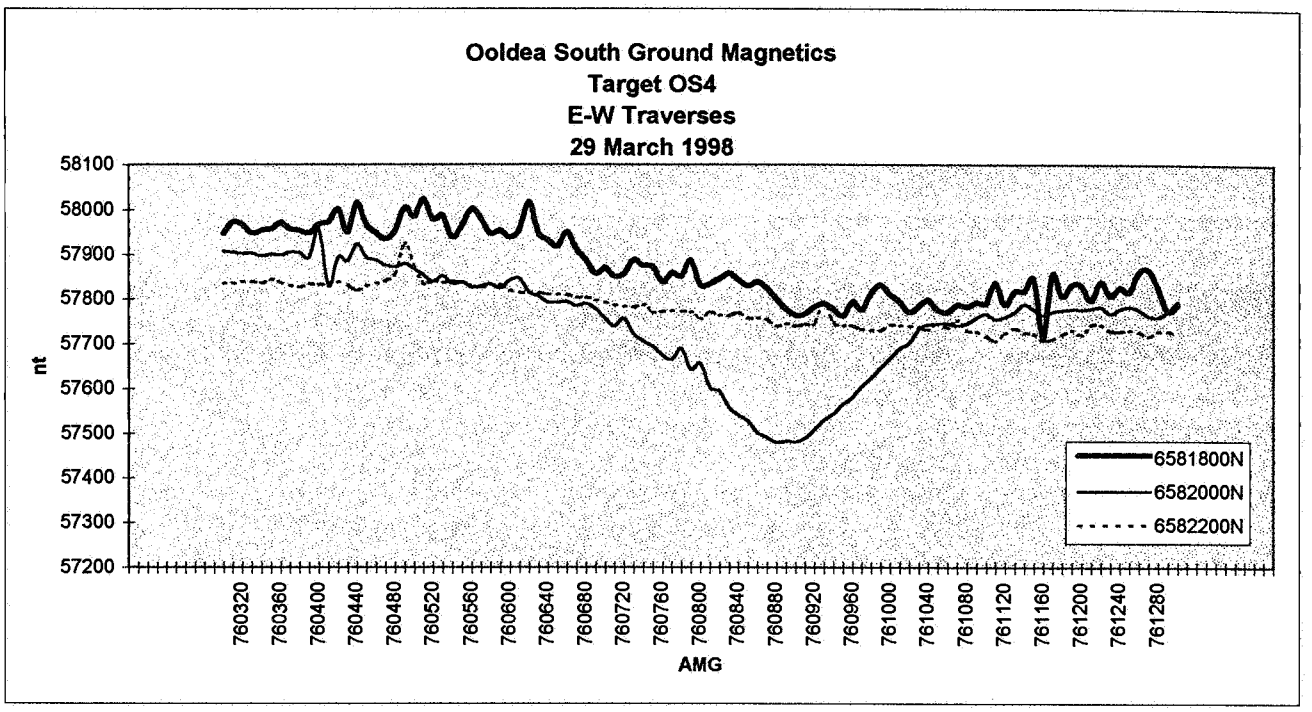
Figure 3



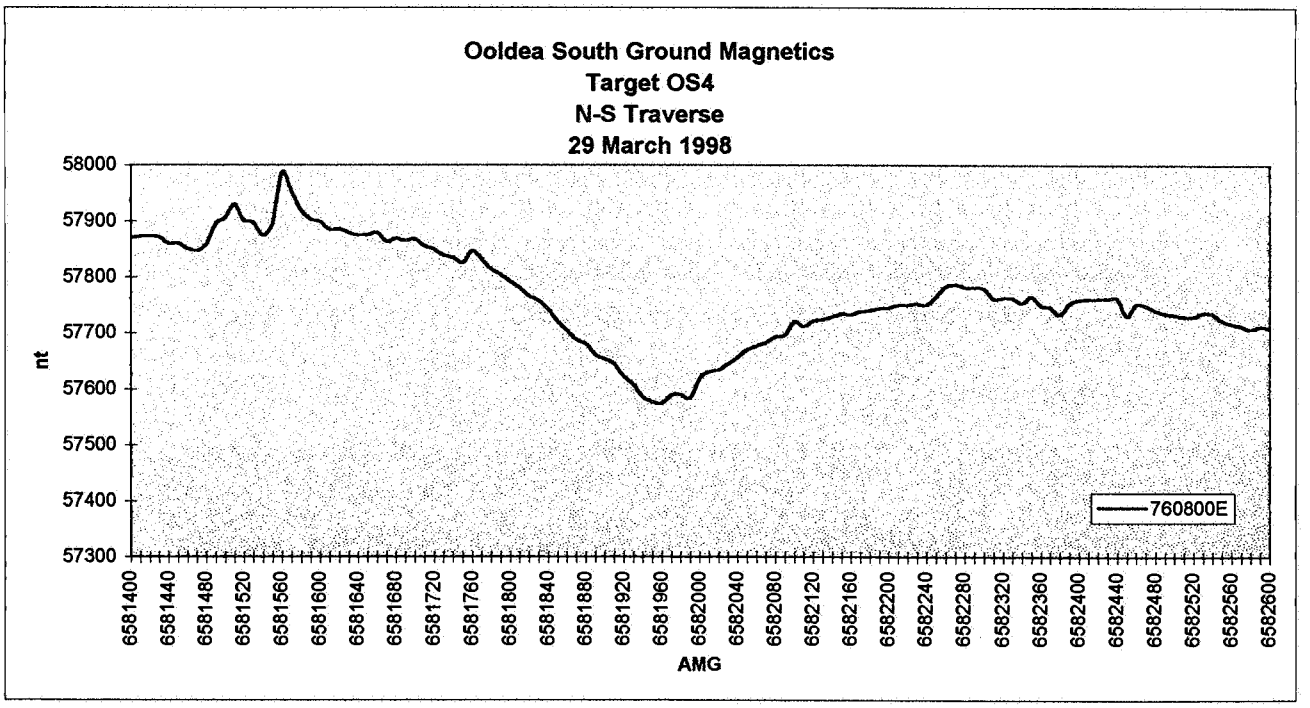


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Figure 4