DEPARTMENT OF MINES AND ENERGY

GEOLOGICAL SURVEY

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SOUTH AUSTRALIAN STEEL AND ENERGY PROJECT

COOBER PEDY IRON ORE INVESTIGATION

Review of previous company exploration on the Billa Kalina and Coober Pedy 1:250 000 map sheets

by

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Mineral Resources

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P POLITO and
M B DAVIES

This report is a summary of exploration of the Coober Pedy Ridge and Mt Woods Inlier, northern Gawler Craton for the period up to 1993, extracted from data on open file with the emphasis on data referring to the iron ore potential of the region.

The association of widespread alteration, Cu-Au mineralization and large volumes of magnetite begs comparison with the neighbouring Olympic Dam deposit and with the class of worldwide Proterozoic alteration systems with associated mineralization, including significant iron accumulations in a continental, late tectonic environment.

INTRODUCTION

This report was prepared as a summary of open file material made available from past exploration programmes across the Coober Pedy Ridge and Mt Woods inlier. It encompasses eight 1:100 000 map sheets (YERADA, PHILLIPSON, COOBER PEDY, ENGENINA, JUMBUCK, WOORONG, INGOMAR and PEAK) and two 1 : 250 000 map sheets (COOBER PEDY and BILLA KALINA). The brief was to gather data that related to the iron ore resources of the region and to comment on the salient geological features as relate to the iron enrichments. Open file references were obtained from MESA's bibliographic retrieval system SAMREF.

GEOLOGICAL SETTING

The northern Gawler Craton is a basement complex comprising Archaean to Palaeoproterozoic metasediments and Mesoproterozoic intrusives. A total magnetic intensity (TMI) image of the area is presented in Figure 3 and a basement and tectonic interpretation shown in Figure 4. The areas of interest in this report are the two major aeromagnetic complexes associated with the Coober Pedy Ridge and the Mount Woods Inlier.

Basement outcrop within these areas is sparse, restricted to the Mount Woods Inlier (figure 4) and to a small outcrop at Fitzgerald Dam, south of Coober Pedy. There is also sparse outcrop over the area of the Archaean Mulgathing complex, on the southern half of the Coober Pedy 1:250 000 sheet.

The Coober Pedy Ridge comprises Palaeoproterozoic paragneisses with quartz-magnetite-spinel-feldspar-pyroxene banded iron formations interlayered with quartz feldspar-orthopyroxene-garnet granulite, quartz-feldspar-garnet-cordierite gneiss and pyroxene-plagioclase-hornblende calcsilicates (Mason, 1995).

The Mount Woods Inlier comprises Palaeoproterozoic to Mesoproterozoic metasediments, deformed granitoids and granites. Rock types include banded iron formation, paragneisses, metapelites, migmatites and orthogneisses (Flint and Benbow, 1977). These metasediments have been intruded by the porphyritic, foliated Engenina Adamellite during the Palaeoproterozoic and by the non-foliated Balta Granite during the Mesoproterozoic.

Relatively shallow basement rocks are overlain by Permian to Recent sediments.

DISCUSSION

Exploration on the areas of the Coober Pedy Ridge and Mt Woods Inlier aeromagnetic complexes has been for stratiform/stratabound basemetal and gold associated with banded iron formation, with exploration targeted on associated linear magnetic anomalies and for Olympic Dam type mineralization with exploration targeted on associated equidimensional magnetic anomalies with near coincident gravity anomalies. Almost invariably the exploration procedure involved carrying out reconnaissance ground magnetic and gravity surveys over selected targets, with follow up drill testing if warranted. Exploration has not been targeted specifically for iron ore, so consequently there has been no systematic grid drilling, nor regular whole rock analyses of iron-rich intersections.

The Manxman prospect is chosen as an example of the potential for an iron ore resource. Figure 5 shows the Manxman aeromagnetic anomaly (5 km x 1.5 km) originally targeted for magnetite hosted Cu-Au mineralization. Basement is covered by 70-100 metres of sedimentary cover. Though no attempt has been made to estimate the size of the iron ore resource from drilling, Table 1 lists the intersections and Fe% for some drillholes, the most promising being DD86EN35, with 220 metres of >35% Fe intersected.

Petrological examinations suggest Manxman may represent an iron-rich skarn developed around a gabbro, with the magnetite possibly replacing favourable hosts. Alteration is ubiquitous, with potassic, chloritic, sericitic, carbonate and serpentinite alteration with late stage clay, sericite alteration.

Magnetite rich intervals have been reported from drillholes sited on examples of the linear magnetic anomalies, also possibly representing skarn deposits, for instance, Cairn Hill (strike length of about 9 kms). The Hawks Nest prospect represents a significant iron ore resource of Palaeoproterozoic Banded Iron Formation and is the subject of a report in preparation, detailing the results of exploration by MESA in 1995-96. The Peculiar Knob prospect has also been drilltested by MESA, in 1995, with a report in preparation. CRAE open file information has defined a near surface haematite ore resource. Interestingly the associated magnetic anomaly is due to remanent magnetization, a point to be borne in mind during exploration, as the form and orientation of any remanently magnetized body will affect its magnetic signature.

The geological characteristics of the iron accumulations, which may be described as magnetite associated with potassic, serpentinite, chloritic, sericitic, carbonate alteration, with Cu-Au mineralization and with Mesoproterozoic granitic and gabbroic intrusions, begs a comparison to the alteration system at the neighbouring Olympic Dam deposit and to the class of worldwide occurrences of Proterozoic alteration systems with associated mineralization in an anorogenic tectonic environment (Hitzman et al). An example of a major iron ore deposit belonging to this class is the magnetite-apatite-actinolite deposit of the Kiruna district in northern Sweden (Frietsch).

The bulk of the exploration from 1981 to 1993 was carried out by CRAE Pty Ltd and is reported in Open File Envelopes 4248 and 6732. Since 1993 exploration has continued with this data presently on closed file status.

Appendix 1 contains the summaries of the exploration activities for the period up to 1993.

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TABLE 1
MANXMAN

DRILLHOLE	NORTHING	EASTING	INCLINATION	DEPTH TO BASEMENT	TD (m)	%Fe	INTERVAL (m)
DD86EN24	6717800	538000	60to180°	110	226.1	39.8	159-191(31)
DD86EN25	6717420	537950	55to0°	110	367.5	44.2 44.9 46.7 46.3	130.1-160.1(30) 228.2-240.6(12) 294.5-323.6(29) 347.8-359.8(12)
DD86EN35	6717620	538000	55to0°	110	621.9	>35	300-520(220)
DD86EN36	6717350	538180	55to0°	111	350.6	67	252-254(2)
DD87EN41	6718960	538600	55to180°	115	138	46.6	132.6-138(5)
DD89EN60	6717550	537800	60to0°	80	344	46.8 35.5 44.1	80.4-100(20) 199-217(18) 226-245(19)
DD89EN61	6717550	537400	60to0°	98.3	480	44.6 66.3	231-270(39) 417-451(34)

GLOSSARY:

DTB	-	Depth To Basement
TD	-	Total Depth
EOH	-	End of Hole
BNR	-	Basement not reached
RC	-	Reverse Circulation
BIF	-	Banded Iron Formation
BHT	-	Broken Hill Type
Ep	-	Epidote
Pyx	-	Pyroxene
Qtz	-	Quartz
Fspar	-	Feldspar
Kspar	-	Potassium Feldspar
Ga	-	Garnet
Bt	-	Biotite
Mt	-	Magnetite
Hem	-	Haematite
Pl	-	Plagioclase
Sill	-	Sillimanite
Chl	-	Chlorite
Ap	-	Apatite
Hbl	-	Hornblende
Ca	-	Calcite
And	-	Andalusite
Tr	-	Tremolite
Ilm	-	Ilmenite
Serp	-	Serpentine
Cpy	-	Chalcopyrite
Amph	-	Amphibole

APPENDIX 1

SUMMARY, OPEN FILE ENVELOPES

COMPANY:	BHP MINERALS OF BROKEN HILL PROPRIETARY COMPANY LTD
TENEMENT:	EL 1712 Brumby Creek EL 1725 Coober Pedy EL 1719 Lake Woorong EL 1718 Safari EL 1758 Lake Phillipson
ENVELOPE:	8434
PREVIOUS WORK:	SADME (RB) DELHI PETROLEUM LTD (ENV) NEWMONT PTY LTD (ENV) CRAE (ENV)
1:250 000 SHEET:	BILLA KALINA, COOBER PEDY, MURLOOCOPPIE
1:100 000 SHEET:	ENGENINA, COOBER PEDY, PHILLIPSON, YERADA
TARGET:	Base Metals associated with BIF. Cu-Au mineralisation in brecciated, massive magnetic. Broken Hill style Pb-Zn-Ag.
AGE/ROCK UNITS:	Archaean, Early Proterozoic, Mid Proterozoic.
STRUCTURAL CONTROL:	Targets were selected to test thickened fold hinges, stratigraphic intervals, eg interpreted exhalative horizons and sulphide mineralisation related to BIF's.
EXPLORATION SUMMARY:	Geological reconnaissance resulted in a revised stratigraphic column for the Mt. Woods inlier. A magnetic susceptibility survey was conducted on a variety of lithologies to help define magnetic targets. Using CRAE data, a series of EM inversions were completed in order to test the apparent resistivity of the overburden sediments. Fifty four aeromagnetic targets were selected for ground magnetic recovery and each target was numerically named; ie, Anomaly 1, Anomaly 2, etc... Detailed ground magnetic grids were completed at Cairn Hill, Dingo and Eagle prospects. 41 anomalies were computer modelled resulting in 479 Aircore holes (totalling 20,170 m), 52 Reverse Circulation (RC) holes (totalling 8472 m) and 10 Diamond Drill holes (totalling 2217.7 m). U-Pb zircon dating of samples from the 1991 drilling program was completed. 49 line/km of moving loop and 12.5 line/km of fixed loop electromagnetic (TEM) data was collected at Cairn Hill. A gravity survey was completed over the Dingo and Eagle Prospects. Down hole EM data was collected from most holes at Cairn Hill and Eagle. All basement samples were assayed for Cu, Pb, Zn, Au and Ag. Extended analyses were completed on selected intervals. Selected samples were analysed for heavy minerals in 1991 and 1992. REE analysis for La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, and Y were completed on selected samples from the 1993 drilling program. Fe and P were added to the "standard" suite of elements assayed for in 1993.

PROSPECTS/MINERALISATION/ DRILLING RESULTS:

Anomaly 1 (524500E, 6779000N)

A two line ground magnetic grid was completed at this anomaly. No further work was recommended by BHP.

Anomaly 2 Cairn Hill (511600E, 6758700N)

Previous exploration by CRAE intercepted anomalous Cu-Au-Ni-Co-Zn within massive magnetite horizons. BHP identified a rapid change in magnetic intensity along an horizon of Banded Iron Formation after a ground magnetic survey and targeted one particular highly magnetic anomaly. RC hole CR9102 (BNR, TD 260 m), was followed up by CR9103 (DTB 20m, TD 167 m). Intersections include, 3 intervals of Qtz-Mt BIF, massive Mt and Qtz-Bt-Fspar-Mt gneiss. Anomalous Cu (8600 ppm), Au (1.1 ppm), Co (128 ppm) was intersected between 128-152 m (including 2 m @ 5.25% Cu, 0.9 g/t Au) in massive Mt. 51 line/km of ground magnetics followed this discovery. A follow up aircore drilling programme consisting of 18 drill holes to basement encountered elevated Cu (up to 6900 ppm) around CR9103. A moving loop EM survey was completed at Cairn Hill. RC hole CR9216 (DTB 56m, TD 188m) intersected 4 horizons of massive Mt ±Ap-Qtz-Py-Cpy-Amph, amphibolite and granite. Three zones totaling 42m with grades >0.5% Cu and anomalous in Ag and Au were detected. CR9217 (DTB 44m, TD 190m), intersected 3 massive Mt horizons. 16m of 0.32% Cu exists. CR9218 (DTB 44m, TD 142m) intersected massive Mt, Mt-Qtz rock and granite. Elevated Cu was detected. CR9219 (DTB 30m, TD 184m), intersected numerous zones of Qtz-Fspar-Bt±Mt gneiss, BIF, Qtz-Mt rock, 2 massive Mt horizons and a post tectonic granite. 24m of anomalous Cu averaging 0.36% and elevated Au exist. CR9220 (DTB 28m, TD 180m), intersected numerous Qtz-Fspar-Mt gneiss zones, 2 massive Mt horizons, Qtz-Mt rock and massive amphibolite. 42m of 0.55% Cu and elevated Ag and Au exist. A prospect drilling programme consisting of 269 aircores to basement totalling 6,003m were drilled in 1993. Strong Cu anomalies were detected in many holes. Eight of these aircore holes intersected Fe assaying >30%. Four holes intersected >45% Fe. CD93001 (DTB 36.5m, TD 300m), intersected anomalous Cu (>2300 ppm) between 223.6-236.3m in massive Mt. CD93002 (DTB 14.5m, TD 200m), intersected sub-economic Cu (0.7%) and Au (0.24 g/t) between 14.5-47.8m in massive magnetite gneiss. Anomalous Fe averaged 40.19% between 14.5m-23m and 44.29% between 23.0-51.8m. CD93007 (DTB 23m, TD 360m), intersected sub-economic Cu (0.95%) and Au (1.02 g/t) between 216.5-225.5m in massive Mt which assayed 37.1% between 216.5-237.0m. CD93008 (DTB 39m, TD 284m), intersected anomalous Cu (794 ppm) associated with anomalous Fe (38.3%) between 258.0-259.5m. Down hole EM was completed on the RC and diamond holes. Petrology exists on all holes. Work continues at Cairn Hill.

Anomaly 3 (524000E, 6736900N)
Aeromagnetics outlined an area of structurally thickened Mt Woods type BIF. A 2 line ground magnetic grid helped position drill hole CR9104 which intercepted Mt. Woods ?BIF, Spire Hills syn-tectonic Granite, Black Hills Granite and Bt-Qtz-Fspar-Mt Gneiss No anomalous geochemistry was detected.

Anomaly 4 (534500E, 6750000N)
A 2 line ground magnetic grid was completed and RC drilled. CR93007 (DTB 34m, TD 280m) intercepted Qtz-Kspar-Bt ±Mt gneiss, Mica-Qtz-Fspar schist and granitic gneiss. Elevated Zn (100 ppm) between 170-172m in mica-Qtz-Mt rock and Fe up to 25.6% between 184-186m exist.

Anomaly Eagle (542100E, 6745000N)
A structurally thickened hinge of Mt Woods Fm was targeted for Zn-Pb-Cu-Au mineralisation at Drill hole CR9105 intercepted anomalous Zn (645 ppm), Pb (117 ppm) Cu (303 ppm) and P (951 ppm) in a Mt rich Gneiss. An extensive ground magnetic grid was later completed. 121 Aircore holes (5608m) to basement were drilled in 1992. Sub economic Pb and Zn anomalies were found to be associated with ferruginous haematitic gossans. A gravity survey (79 line/km) was completed. Pb isotope analysis was conducted on 2 aircore samples to determine the presence or otherwise of uranium. RC drill hole CR9201 (DTB 62m, TD 247m) intersected mica-Qtz-Fspar schist and Qtz-Fspar-Bt granite with elevated Cu (210 ppm) between 88-90m. CR9202 (DTB 44m, TD 195m) intersected Qtz-Mt BIF, Qtz-Fspar-Bt gneiss, granitic gneiss, pegmatite and Qtz-Mt-Bt gneiss. No anomalous geochemistry was detected. CR9221 (DTB 48m, TD 297m), intersected 3 zones of Fe > 31% between 156-160m, 162-172m and 250-297m. Zn was mildly anomalous at 210 ppm between 100-102m in granite. CR9222 (DTB 38m, TD 258m), intersected 2 zones of Fe > 30% between 42-56m and 134-146m One intercept of 41% Fe between 104-112m exists. Elevated Zn (250 ppm in amphibolite) exists. CR9223 (DTB 32m, TD 300m), intersected anomalous Zn (510 ppm in amphibolite) between 122-124m and 263 ppm (in graphitic schist) between 260 -266m. A further 101 aircore holes to basement (3,791m), were completed in 1993. Elevated Zn, Pb and Cu is extensive (including 2m @ 1.76% Zn in calc-silicate). CR93006 (DTB 32m, TD 120m), intersected anomalous Zn (1985 ppm) and Pb (965 ppm) in calcsilicate, between 30-34m. Diamond drill hole, CD93003 (DTB 45m, TD 121m), intersected elevated Zn (126 ppm) and anomalous Fe (35.7%) in BIF between 73.0-79.0m. CD93004 (DTB 32m, TD 186m), intersected 6 zones of anomalous Zn and Pb in marble up to 550 ppm and 250 ppm respectively. CD93005 (DTB 53m, TD 131m), intersected anomalous Zn (495 ppm) in marble between 121-129m. CD93006 (DTB 49m, TD 174m) intersected 4 zones of anomalous Zn and Pb in marble up to 1840 ppm and 1480 ppm respectively. Petrology on CR9105, CR9222, CD93003, CD93004, CD93005 exists. Down hole EM results exist for holes CR9221, CR9222, CR9223, CD93004, CD93005, CD93006.

Anomaly 6 (549000E, 6748000N)

A 2 lines ground magnetic grid was completed at this anomaly. No further work was recommended.

Anomaly 7 Dingo (502000E, 6785000N)
Interpreted stacked horizons of Qtz-Mt BIF lithologies were followed up with an extensive ground magnetic grid. RC hole CR9106 (DTB 62m, TD 154m) intersected anomalous Zn (516 ppm), Pb (85 ppm) and Cu (73 ppm) in a garnetiferous meta-arkose. Petrology exists. 9 aircore drill holes detected anomalous Zn (610 ppm) and Pb (250 ppm) around CR9106. A grid of 73 aircores to basement was completed. A semi-regional gravity survey was completed totalling 188.5 line/km. A further 61 aircores to basement (totalling 3746m) along the E-W striking gravity ridge aimed at determining the significance of the Zn anomaly. Geochemical anomalies were not encouraging (Max. 260 ppm Zn, 175 ppm Pb, 320 ppm Cu). Exploration is continuing.

Anomaly 8 (499500E, 6750000N)
Two lines of ground magnetics were completed over a magnetic "Bulls-Eye" within a Mt Woods BIF horizon. RC hole CR9101 (DTB 90m, TD 154m) intersected specular hematite, meta-BIF and meta-Fe rich pelite. Iron was not assayed for. No anomalous geochemistry was detected.

Anomaly 9 (490000E, 6750000N)
A 4 line ground magnetic grid was completed at this anomaly. No further work was recommended.

Anomaly 10 (480000E, 6750000N)
A 6 line ground magnetic grid was completed over a non-magnetic, structurally complex fold within a section of interpreted Mt Woods BIF. Two RC holes CR9107 (DTB 54m, TD 160m) and CR9108 (DTB 67m, TD 104m) intercepted Qtz-Bt-Arenite, Black Hills Granite, Qtz-Fspar-Bt Gneiss and Fspar-Qtz-Bt leucocratic gneiss. Anomalous Cu (490 ppm), Pb (52 ppm) and Zn (100 ppm) was encountered in CR9107 between 54-56m.

Anomaly 11 (465000E, 6758000N)
A 4 line ground magnetic grid was completed over an interpreted skarn. RC hole CR9116 (DTB 58m, TD 100m), intercepted Qtz-Fspar-Bt arenite and interlayered Mt Woods BIF and Qtz-Mt-Amph-Ap BIF.

Anomaly 12 (467000E, 6768000N)
A 4 line ground magnetic grid was used to position a stratigraphic hole through a metasedimentary sequence. Two RC holes, CR9109 (DTB 80m, TD 133m) and CR9117 (DTB 106m, TD 200m) intersected, meta-semipelite, Ga-Qtz-Bt-Fspar gneiss, calc-silicate granofels and Ga rich calc-silicate granofels CR9117 was drilled deeper and intersected Qtz-Bt-Fspar-Ga Gneiss, Skylark Hills Granite, Qtz-Mt BIF and Qtz-Fspar-Mt gneiss. Petrology exists on RC chips.

Anomaly 13 (459500E, 6780500N)

A 5 line ground magnetic grid was completed over an interpreted isolated linear magnetic high within a Qtz-Mt BIF horizon. RC hole CR9112 (DTB 96m, TD 120m), intercepted Spire Hills Syn-tectonic Granite and Qtz-Bt-Ga gneiss. Petrology exists on RC chips.

Anomaly 14 (471500E, 6773000N)
A non-magnetic section within a variably magnetic horizon of meta-sediment was interpreted from aeromagnetics. A 5 line ground magnetic grid was completed. Two RC holes were drilled. CR9110 (DTB 84m, TD160m), intercepted Skylark Hills granite, Pl-Bt-Kspar-Ga-Qtz gneiss, Qtz-Bt-Ga-Mt gneiss, Qtz-Fspar-Bt granitic gneiss and Qtz-Mt-Bt gneiss. CR9111 (DTB 120m, TD 161m), intercepted Qtz-Fspar gneiss, Calc-silicate granofels, Pl-Bt-Ga-Mt-Py gneiss and Qtz-Bt-Ga gneiss. Petrology exists on both holes. Heavy minerals were sampled for with minimal success.

Anomaly 15 (451500E, 6777000N)
A 4 line ground magnetic grid was not followed up by BHP.

Anomaly 16 (452000E, 6761700N)
A 5 line ground magnetic grid helped position RC hole CR9115 (DTB 40m, TD 156m) over an interpreted isoclinally folded, thickened Mt Woods Fm. Intercepts include a repeated stratigraphy of Qtz-Fspar-Mt granofels (petrology shows hercynite, sillimanite, corundum and sapphirine present), retrogressive granofels, Qtz-Fspar-Bt-Mt quartzite, Skylark Hills Granite, Qtz-Fspar-Bt granulite and a meta-pelite with Mt-Hem-Sill-Bt-Zr. No anomalous geochemistry was detected.

Anomaly 17 (446500E, 6771500N)
A rapid increase in magnetic intensity along a folded horizon of interpreted Mt Woods Fm was covered by a 4 line ground magnetic grid. RC hole CR9114 (DTB 60m, TD 156m) intersected Py rich arenite, Qtz-Mt-Fspar Meta BIF, Fspar-Mt-Ap-Ga-Amph granulite, Mt Woods Fm and Skylark Hills Granite. Anomalous Cu (162 ppm) and Zn (112 ppm) between 58-66m was detected. Petrology exists on drill chips.

Anomaly 18 (445000E, 6765700N)
A 5 line ground magnetic grid helped position diamond drill hole CD93009 (DTB 72m, TD 224m). Elevated Cu (105 ppm) between 86-87.5m in Mt-Ga-Qtz-Fspar gneiss and Fe (19.6%) between 47-55m in Mt bearing gneiss were detected.

Anomaly 19 (434000E, 6778000N)
Aeromagnetic data outlined 2 geological structures, i) A fold nose within folded, stacked Qtz-Mt horizon and ii) A fold limb showing variable magnetic response. A 7 line ground magnetic grid was completed and RC drilled. CR9118 (DTB 174m, TD 210m), intercepted Spire Hills syntectonic Granite, Qtz-Bt gneiss, Black Hills Granite and Qtz-Fspar-Bt-Sill-Ga-Mt gneiss. Anomalous Cu (420 ppm) between 194-196m was detected. Heavy mineral analysis exists. CR9119 (DTB 74m, TD 104m), intercepted Qtz-Pl-Bt gneiss, Skylark Hills Granite with massive Mt layers, pegmatite and

amphibolite. Petrology exists on chips from both holes. U-Pb dating on clear zircons from CR9119 indicate an age of deformation (to granulite facies) at 1565 ±8 Ma.

Anomaly 20 (432000E, 6762000N)
An interpreted highly magnetic, structurally thickened fold nose within a Mt Woods Fm horizon was covered by a 4 line ground magnetic grid. RC hole CR9207 (DTB 38m, TD 174m), intercepted Mt-Chl quartzite, Qtz-Fspar-Mt granite, pegmatite and Mt-Hem-Qtz rock.

Anomaly 21 (438500E, 6760000N)
A 3 line ground magnetic grid was not followed up by BHP.

Anomaly 22 (447000E, 6774645N)
An increase in magnetic intensity within a moderately magnetic suite of Qtz-Mt BIF was covered by a 4 line ground magnetic grid. RC hole CR9113 (DTB 90m, TD 108m), intercepted Spire Hills syn-tectonic Granite, Meta-Qtz Diorite and Qtz-Bt-Mt Arenite. Petrology exists on chips.

Anomaly 23 (420500E, 6761500N)
A 4 line ground magnetic survey was not followed up by BHP.

Anomaly 24 (420000E, 6771500N)
A 4 line ground magnetic survey was not followed up by BHP.

Anomaly 25 (419000E, 6777000N)
A folded, structurally thickened, moderately magnetic horizon within weakly magnetic metasediments was interpreted from aeromagnetics and followed up with a 4 line ground magnetic grid. RC hole CR9122 (DTB 62m, TD 166m) intercepted a complex assemblage of arenite, amphibolite, Ga-Qtz-Mt rock, Qtz-Chl rock, Qtz-Fspar Pegmatite, Skylark Hills Granite and Moonlight Granulite. The entire length of core is logged pyrite rich (2-10%). Petrology suggests that much of the pyrite is also pyrrhotite. Anomalous Cu (430 ppm) and Au (0.16 ppm) exists between 98-100m.

Anomaly 26 (420000E, 6782000N)
An interpreted structurally complex Qtz-Mt horizon within the Karari Mylonite Zone was covered by a 9 line ground magnetic grid. RC hole CR9120 (DTB 124m, TD 131m) intercepted Qtz-Mt gneiss. RC hole CR9121 (DTB 68m, TD 86m) intercepted Mt bearing Spire Hills syn-tectonic Granite. Petrology on both holes exists.

Anomaly 27 (414000E, 6772000N)
An interpreted horizon of highly magnetic Mt Woods Fm across a major fault was covered by a 7 line ground magnetic grid. RC hole CR9123 (BNR, TD 68m) was redrilled ie CR9125 (DTB 66m, TD 105m), and intercepted Mt Woods Fm, Spire Hills Syntectonic Granite, Ga sandstone, massive Mt, Ga-Qtz-Bt-Fspar gneiss and pegmatite with most lithologies often repeated. Petrology exists. U-Pb dating of zircons within the Ga-Qtz-Bt-Fspar gneiss revealed a maximum age for sedimentation to be 1750 Ma±

Anomaly 28 (410000E, 6770000N)
A structurally repeated, tightly folded Mt Woods Fm was interpreted from aeromagnetics and a 6 line ground magnetic grid was completed. RC hole CR9124 (DTB 64m, TD 128m) intercepted Spire Hills syn-tectonic granite with 5 intervals of Mt Woods Fm interpreted to be xenoliths within the intrusive.

Anomaly 29 (400500E, 6758500N)
A 4 line ground magnetic survey was not followed up by BHP.

Anomaly 30 (401000E, 6763500N)
A folded nose exhibiting a rapid decrease in magnetic response along a Mt Woods Fm horizon was interpreted from aeromagnetics. A 3 line ground magnetic grid was completed. RC hole CR9215 (DTB 162m, TD 205m), intercepted Fspar-Qtz-Mt diorite and Qtz-Pl-Ap diorite.

Anomaly 31 (398500E, 6771500N)
A 3 line ground magnetic grid was positioned on a magnetic bulls eye within interpreted Spire Hills syn-tectonic granite. RC hole CR9126 (BNR, TD 175m), was redrilled ie CR93003 (DTB 182m, TD 217m), which intersected Qtz-Fspar-Amph-Mt gneiss, pyroxene-Qtz-Mt mafic rock and Amph-Pyx-Pl mafic rock. Anomalous Cu (180 ppm) was detected between 198-204m in Py-Qtz-Mt mafic rock. Heavy minerals were sampled for.

Anomaly 32 (373000E 6778000N)
A 4 line ground magnetic grid was positioned over a suspected Early Proterozoic terrane on the northern side of the Tallaringa Trough. RC hole CR9127 (BNR, TD119m) was redrilled ie CR9214 (DTB 236m, TD 264m) and intercepted Qtz-Mt and Pyx-Qtz-Ap BIF. Petrology exists on CR9214.

Anomaly 33
This anomaly was later incorporated into Anomaly 5 (EAGLE) grid.

Anomaly 34 (524000E, 6769500N)
A 4 line ground magnetic grid was positioned over an interpreted intrusive but, was not followed up.

Anomaly 35 (503000E, 6763500N)
A 6 line ground magnetic grid positioned over an interpreted intrusive ironstone was not followed up by BHP.

Anomaly 36 (491500E, 6782000N)
A 4 line ground magnetic grid incorporating anomaly 37 targeted a Qtz-Mt-Ga horizon. RC hole CR9212 (DTB 135m, TD 184m), intersected Ga-Qz-Fspar-Bt gneiss ±Mt. Petrology exists.

Anomaly 37 (491000E, 6783000N)
A 4 line ground magnetic grid incorporating anomaly 36 targeted a Qtz-Mt-Ga horizon. RC hole CR9213 (DTB 132m, TD 208m), intersected Fspar-Qtz-Bt ±Mt gneiss. Petrology exists.

Anomaly 38 (480000E, 6757500N)
A 5 line ground magnetic grid was positioned over an interpreted amphibolite to help position a stratigraphic hole which may contain base metals. No further work was undertaken.

Anomaly 39 (472000E, 6785000N)
A interpreted syntectonic granite/iron formation was covered by a 6 line ground magnetic grid. RC hole CR93001 (DTB 172m, TD 279m) intercepted a Qtz-Kspar-Ga ±amph ±chl gneiss. Elevated Zn (88 ppm) was encountered between 226-228m in Qtz-Amph-Ga-Chl Gneiss.

Anomaly 40 (462500E, 6777500N)
A stratigraphic hole through interpreted syntectonic granite/amphibolite was positioned with the help of a 5 line ground magnetic grid. RC hole CR9209 (DTB 140m, TD 164m) intercepted Qtz-Fspar-Bt granite.

Anomaly 41 (452000E, 6752500N)
A 3 line ground magnetic grid was positioned over an interpreted horizon of Mt Woods Fm. RC hole CR9208 (DTB 76m, TD 112m), intersected Qtz-Bt-Hbl diorite and Qtz-Fspar-Bt-Mt granofels. Petrology exists.

Anomaly 42 (452500E, 6782500N)
A 5 line ground magnetic grid was positioned over an interpreted syntectonic granite to help position a stratigraphic hole. RC hole CR9110 (DTB 112m, TD 116m), intersected granitic gneiss. CR9211 (DTB 100m, TD 102m) intersected Qtz-Fspar-Bt gneiss.

Anomaly 43 (410500E, 6767500N)
A 4 line ground magnetic grid was positioned over a folded section along interpreted Mt Woods Fm. No further work was completed.

Anomaly 44 (408500E, 6778500N)
A 4 line ground magnetic grid positioned over an interpreted Ga-Qtz-Mt horizon was not followed up.

Anomaly 45 (410500E, 6789500N)
A 2 line ground magnetic grid positioned over an interpreted mafic intrusion was not followed up.

Anomaly 46 (391000E, 6788000N)

A base metal target within an interpreted banded iron formation was covered by a 4 line ground magnetic grid. RC hole CR9203 (DTB 218m, TD 272m) intersected Qtz-Bt-Fspar granofels, Qtz-Mt-Hem rock, and massive Qtz-Mt rock. Petrology exists. Anomalous Zn (up to 280 ppm) between 48-250m is present.

Anomaly 47 (412000E, 6755000N)
Cu-Au mineralisation associated with intrusive ironstone on a regional fault was targeted at this anomaly. A 6 line ground magnetic grid helped position RC hole CR9206 (DTB 72m, Td 195m). Intersections include Qtz-Fspar-Bt gneiss, Mt-Qtz-Fspar gneiss, and Qtz-Mt rock. Petrology exists.

Anomaly 48 (428000E, 6761000N)
A 2 line ground magnetic grid was used to enhance an interpreted intrusive ironstone along a regional fault, thought to be associated with Cu-Au mineralisation. RC hole CR9205 (DTB 46m, TD 167m) intersected Qtz-Fspar-amph gneiss, Fspar-Qtz Bt granite, Qtz-Pyx-Mt granofels, Qtz-Mt ±Pyx/amph/Bt and Qtz-hbl-fspar gneiss. Anomalous Cu (490 ppm) is present between 148-152m in pyritic Ga quartzite. Petrology exists.

Anomaly 49 (429000E, 6757000N)
A cluster of intrusions along a regional fault were covered by a 4 line ground magnetic grid. RC hole CR9204 (DTB 44m, TD 146m) intersected Qtz-Mt quartzite, Qtz-Amph-Bt gneiss, pyritic granite, Py-Qtz-Fspar-Hem granulite, and numerous Qtz-Fspar-Mt gneiss units ±Bt/Ep/Ga. Petrology exists.

Anomaly 50 (425000E, 6772000N)
A 2 line ground magnetic grid was used to enhance a possible BHT target. RC hole CR93002 (DTB 82m, TD 196m) intersected Qtz-Pl-Bt-amph-pyx ortho-amphibolite, Qtz-Amph-Ca meta-sediment, foliated granite and Amph-Ga-Mt metasediment. Anomalous Cu (320 ppm), Pb (145 ppm) and Zn (240 ppm) between 92-94m in Qtz-Bt-Ga granofels and Ag (9 g/t) between 142-144m in Qtz-Ga-Ca granofels was detected.

Anomaly 51 (431500E, 6773000N)
A 2 line ground magnetic grid was completed but not followed up.

Anomaly 52 (395000E, 6791500N)
A 3 line ground magnetic grid was completed but not followed up.

Anomaly 53 (528000E, 6731500N)
A 4 line ground magnetic grid positioned over an interpreted BHT target was RC drilled. CR93008 (DTB 4m, TD 228m) intersected Qtz-Fspar-mica ±Mt gneiss, granitic gneiss and Ga-Qtz-Fspar Bt ±Mt gneiss. Anomalous Cu (380 ppm) between 212-214m in Ga-Qtz-Fspar-Mt rock and Fe up to 19.6% between 98-100m exists.

Anomaly 54 (529000E, 6742000N)

A 7 line ground magnetic grid was placed over an interpreted BHT target. CR93004 (DTB 38m, TD 250m) intersected Qtz-Mt-Fspar gneiss, Qtz-Mt-Ca calc-silicate, ?interbedded massive Mt, BIF and quartzite and mica schists. Elevated Cu (127 ppm) exists between 216-220m in Bt-Fspar schist, and 22m of anomalous Fe (33.3%) exists between 116-138m. CR93005 (DTB 26m, TD 170m), intersected Qtz-mica-Ga ±Hem schist, Mt bearing Quartzite, altered Mt, massive Mt, Qtz-Ep-Mt ±Amph-Ga calc-silicate, Mica-Qtz-Mt schists and granite. Elevated Zn (197 ppm) between 34-38m in Qtz-Chl-Mt rock and Cu (420 ppm) between 144- 146m in mica schist exist. Two zones of anomalous Fe > 32% totalling 14m exist between 34-50m.

COMPANY: NEWMONT PTY LTD and BROKEN HILL PTY LTD/DAMPIER MINING COMPANY (later) NEWMONT PTY LTD and GETTY OIL DEVELOPMENT CO. LTD

TENEMENT/YEAR:

EL 303	BIRTHDAY HILL	-	Newmont 1977
EL 304	DANAE HILL	-	Newmont 1977-78
EL 305	THE TWINS	-	Dampier 1977-78
EL 326	MT SANDY	-	Newmont 1977-78
EL 327	CODNA HILL	-	Newmont/Dampier 1977-78
EL 335	MARGARET CREEK	-	Newmont/Dampier 1977-79
EL 340	CADAREE HILL		
EL 341	WILLIAM CREEK		
EL 564	WILLIAM CREEK (replaced EL 335)	-	Getty 1979-81

ENVELOPE: 2981, 3017, 3031, 3055, 3090, 3259, 3804

1:250 000 SHEET: BILLA KALINA

1:100 000 SHEET: PEAK, BON BON

TARGET: Stuart Shelf Hosted, Zambian Type, Cu/Au/Co. Olympic Dam style mineralisation.

AGE/ROCK UNITS:
Cretaceous Bulldog Shale
Simmens Quartzite
Woomera Shale Member
Whyalla Sandstone
Tapley Hill Formation
Sturtian Glacial Sequence
Cleve Metamorphics

STRUCTURE: Under the understanding that the newly discovered Olympic Dam Cu -Au deposit was hosted in Stuart Shelf sediments, Newmont and partners targeted structural traps within Cretaceous sediments searching for Mt. Gunson Type and/or Zambian Type Cu/Co/Au mineralisation. Basement was not drilled extensively.

EXPLORATION SUMMARY: Reconnaissance gridding over each EL consisting of ground magnetics and gravity surveying was completed by Solo Geophysics. 17 drill holes were positioned over coincident magnetic and gravity highs. Rotary and diamond drilling was used. Density testing on selected samples from the drill cores was completed. Holes were subjected to radiometric logging. Geochemical assaying for a comprehensive range of elements including Cu, Pb, Zn, Au, Ag, As, Sn and Ni was completed. Petrology exists on selected samples.

PROSPECTS/MINERALISATION/ DRILLING RESULTS:

Mirikata Anomaly (524000E, 6697000N)
A 3 line ground magnetic and gravity grid was positioned over a "bulls-eye" anomaly but was not drilled because interpretations suggested that basement was at a shallow depth and that it was probably an amphibolite dyke or banded iron formation.

Mt Woods Prospect (537800E, 6726000N)
A four line ground magnetic grid was completed and gravity surveyed. Two rotary/diamond drill holes were completed. SR-4 (DTB 83.1m, TD 102.5m) intersected Chl-Ga-Qtz-Fspar gneiss with thin Mt-Hem banding. Samples were sent to Amdel for bulk density determination. SR-10 (BNR, TD 55.4m) bottomed in a blue-grey marl with a pebble and conglomerate base. Both holes were logged using a scintillometer.

Coolawarra Prospect (559210E, 6776450N)
A gravity and magnetic grid detailing a regional gravity anomaly and coincident magnetic high was rotary/diamond drilled. Hole SR-2 (DTB 119.6m, TD 130m) intersected a Qtz-Bt-Fspar-Ga gneiss. Elevated Zn (100 ppm) at the Cretaceous shale-weathered pyritic gneiss unconformity exists. Samples were sent to Amdel for bulk density determination. SR-3 (BNR, TD 380m) bottomed in Cretaceous Shales. Drilling was terminated due to difficult conditions. Both holes were radiometrically logged.

Hawks Nest Prospect (Kingoonya 1:2500 000: 518000E, 6680000N)
A three line ground magnetic and gravity grid was completed. Three rotary/diamond drill holes were completed. SR-7 (DTB 65.7m, TD 67.2m) intersected Chl-mica schists. SR-9 (DTB 71.4m, TD 90.5m) intersected a Pl-Qtz lithic wacke and pyritic arkosic wacke (Cleve metamorphics?). Elevated Cu (100 ppm) and Pb (300 ppm) were detected in lithic, arkosic wacke. SR-15 (BNR, TD 111.5) bottomed in dark grey pyritic shales. Petrology exists. Each hole was radiometrically logged.

McDouall Peak Prospect (515000E, 6694000N)
A four line ground magnetic and gravity survey indicated that basement depths were too shallow to warrant drilling for sediment hosted base metals.

Danae Hill Prospect (587000E, 6708600N)
Drill hole SR-1 (DTB 158.8m, TD 171m) was positioned on a coincident gravity-magnetic high. Sparse secondary pyrite after marcasite is present in a poorly sorted sandstone above a basement of epidote amphibolite (a retrograde metamorphic product of dolerite?) ±Pyrite-Pyrrhotite. Elevated Zn (up to 300 ppm) and Cu (100 ppm) were detected at the Cretaceous-dolerite basement unconformity. Density determination and radiometric logging of the core was completed. SR-5 (DTB 195.5m, TD 199m) intersected a fine grained epidote amphibolite (a retrograde metamorphic product of Qtz dolerite?). SR-16 (DTB

227.1m, TD 241m) intersected epidote amphibolite (similar to the above).

Cadaree Hill Prospect (Warrina 1 : 250 000)
A ground magnetic grid outlined a broad 400 gamma anomaly coincident with a gravity high. SR-14 (BNR, TD 195m) was terminated in dark grey silty mudstone.

Anna Creek Prospect (614150E, 6788900N)
A ground magnetic grid failed to find any magnetic features. SR-13 (BNR, TD 47.9m) was stopped in medium to coarse grained sandstone.

Mt. Morgan Anomaly (635750E, 6705100N)
SR-6 (BNR, TD 889.5m) passed through Woomera Shale Member, Whyalla Sandstone, transitional beds, Tapley Hill Fm and the Sturtian Sedimentary Sequence. The hole was geophysically logged by SADME, for Gamma, neutron, density, self potential and point resistivity logs.

Joe's Anomaly (Curdimurka 1 : 250 000)
SR-17/2 (BNR, TD 1500m) passed through Cretaceous Bulldog Shale, transitional to Simmens Quartzite, Woomera Shale Member, Whyalla Sandstone, Tapley Hill Formation and Sturtian Glacial Sequence

One Tree Bore Anomaly (640000E, 6760000N)
SR-8 (BNR, TD 100.6m) was stopped prematurely in dolomitic sandstone and dolomite.

Mt. Allalone (620050E, 6751600N)
SR-11 (BNR, TD 103.9m) was abandoned in hard fine grained sandstone. SR-12 (BNR, TD 97.3m) terminated in fine grained sandstone.

COMPANY: AFMECO AND BROKEN HILL PROPRIETARY LTD

TENEMENT: EL 621 WIRRIDA BASEMENT STUDY (1980-83)
EL 1009 AFMECO and BHP JOINT VENTURE

ENVELOPE: 3839

1:250 000 SHEET: COOBER PEDY

1:100 000 SHEET: WOORONG, INGOMAR

TARGET: Base metals and stratigraphic information of basement

AGE/ROCK UNITS:

STRUCTURE: Gravity and magnetic highs coinciding with shallow basement was the preliminary focus of this project.

EXPLORATION SUMMARY: Reconnaissance of available outcrop was completed with radiometric monitoring, rock and water sampling. A 1200 km x 1500 km aeromagnetic survey was flown by Aerodata Services Pty. Ltd. 118 line/km of gravity profiles were tested by 25 aircores totalling 967m. These holes were later deepened 1-3 metres by diamond drilling. Initial drilling was conducted along existing roads and holes were positioned on gravity and magnetic highs. Petrology exists on all samples from these cores. A second phase drilling program targeted 5 anomalies thought to be possible kimberlites. Loam samples were taken and analysed for kimberlitic indicator minerals but results were negative. Sixteen holes were drilled using a rotary air-blast rig. Heavy minerals were assayed for. Samples were analysed for Ag, As, U, Th, Ba, Sr, V, Y, Sn, Mo, Cu, Pb, Zn, Ni, Co ,Cr. Whole rock analysis for major elements also exist.

PROSPECT/MINERALISATION/ DRILLING RESULTS:

COM-1
(DTB 44.5m, TD 46.5m) Basement intercepted is Bt-leptite gneiss. No anomalous geochemistry was detected.

COM-2
(DTB 54m, TD 54.5m) Basement of altered Ga-Bt tonalitic gneiss. No anomalous geochemistry was detected.

COM-3
(DTB 40m, TD 41.5m) Basement of amphibolite. No anomalous geochemistry was detected.

COM-4
(DTB 24m, TD 25m) Basement of Bt-leptite gneiss. No anomalous geochemistry was detected.

COM-5
(DTB 42.8m, TD 46m) Basement of porphyroclastic mylonite. No anomalous geochemistry was detected.

COM-6
(DTB 36m, TD 38m) Intercepted the contact between a Ga-Bt-Qz-Pl gneiss and a granite gneiss. No anomalous geochemistry was detected.

COM-7
(DTB 33.5m, TD 35m) Basement of Bt-Ga granodioritic gneiss. Anomalous Ba (920 ppm)is present.

COM-8
(DTB 33.5m, TD 35m) Basement of Bt-Ga granodioritic gneiss. Anomalous Ba (1050 ppm) exists.

COM-9
(DTB 37.5m, TD38.5m) Basement of Bt-Ga tonalitic gneiss. Elevated Zn (110 ppm) is present.

COM-10
(DTB 24m, TD 25.5m) Basement of Bt-Ga tonalitic gneiss. No anomalous geochemistry was detected.

COM-11
(DTB 37m, TD 39.5m) Basement of Qz-Fspar metasomatic gneiss. Elevated Ba (1750 ppm) and Fe (14.4%) exists.

COM-12
(DTB 48.8m, TD 50m) Terminated in altered microgabbro. Elevated Cu (160 ppm) and Ni (235 ppm) exists.

COM-13
(DTB 35.5m, TD 37m) Basement of cataclastically deformed granite gneiss. Elevated Ba (1600 ppm) and Fe (14.8%) is present.

COM-14
(DTB 14.2m, TD 16.6m) Alkali granitic gneiss. Elevated Ba (1400 ppm) is present.

COM-15
(DTB 41.2m, TD 43.5m) Basement of cataclastically deformed granite gneiss. No anomalous geochemistry was detected.

COM-16
(DTB 33.3m, TD 34.9m) Basement of altered Bi-Ga tonalitic gneiss. Elevated Zn (105 ppm) exists.

COM-17
(DTB 22m, TD 24m) Basement in deformed basic granolite. Elevated Zn (105 ppm) is present.

COM-18
(DTB 36.2m, TD 37m) Basement in Bt-Ga tonalitic gneiss. No anomalous geochemistry was detected.

COM-19
(DTB 42.8m, TD 43.5m) Basement of Kspar-Bt-Hbl-Pl schist. No anomalous geochemistry was detected.

COM-20
(DTB 35.6m, TD37m) Basement of And-Bt-Ga-Pl-Qz gneiss. Elevated Zn (150 ppm) is present.

COM-21
(DTB 32.8m, TD 35.5m) Basement of Bt-Ga granodioritic gneiss. No anomalous geochemistry was detected.

COM-22
(DTB 50.1m, TD 51.6m) Basement of sericitized Pl-leptite. No anomalous geochemistry was detected.

COM-23
(DTB 59.5m, TD 61m) Basement of chloritised basalt. Elevated Cu (175 ppm), Zn (100 ppm), and Ni (100 ppm) is present.

COM-24
(DTB 65.2m, TD 66m) Basement of Ga-Bt tonalitic gneiss. Elevated Zn (130 ppm) and Fe (10.0%) exists.

COM-25
(DTB 42m, TD 43.5m) Basement of Ga-Bt tonalitic gneiss. No anomalous geochemistry was detected.

KIMBERLITE TARGETS

Anomaly 1
Four percussion drill holes failed to reach basement due to collapsing sands. PCH-1 (BNR, TD 18m) intercepted clay and quartz fragments. PCH-2 (BNR, TD 22m) bottomed in clay and quartz fragments. PCH-3 (BNR, TD 19m) was terminated in clay. PCH-4 (BNR, TD 10m) was terminated in clay.

Anomaly 2
Percussion hole PCH-10 (DTB 22m, TD 24m) intersected intermediate volcanics with elevated Cu (170 ppm). PCH-11 (BNR, TD 20m) was abandoned in clay due to difficult drilling, however elevated Cu (>130 ppm) is present between 14-16m. PCH-12 (BNR, TD 27m) bottomed in weathered magnetic dolerite and contains Elevated Cu (120 ppm).

Anomaly 3
Three percussion drill holes terminated in weathered basement. PCH-7 (BNR, TD 36m), PCH-8 (BNR, TD 24m) and PCH-9 (BNR, TD 20m) all terminated in clay and weathered ultramafics. Analysis reveals anomalous Zn (20m @ 203 ppm)

and Ni (20m @ 842 ppm) in PCH-7, anomalous Zn (16m @ 230 ppm) and Ni (8m @ 437 ppm) in PCH-8 and anomalous Cu (10m @ 113 ppm), Zn (10m @ 480 ppm)) and Ni (10m @ 730 ppm) in PCH-9. Petrology suggests that the rocks have undergone retrograde metamorphism from an ultramafic, with relict textures suggesting pyroxenites.

Anomaly 4
Three shallow percussion holes were all abandoned due to difficult drilling. PCH-13 (BNR, TD 6m) and PCH-14 (BNR, TD 8m) terminated in ferricrete. Hole PCH-15 (BNR, TD 6m) bottomed in a calcrete-silcrete rock.

Anomaly 5
Both percussion holes PCH-5 (DTB 12m, TD 14m) and PCH-6 (DTB 10m, TD 12m) terminated in a magnetic coarse grained undescribed igneous rock.

COMPANY: ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC

TENEMENT: EL 592 HAWKS NEST

ENVELOPE: 3772-1977/78

1:250 000 SHEET: KINGOONYA

1:100 000 SHEET: PEAK AND BON BON

TARGET: OLYMPIC DAM STYLE Cu, U, Au

AGE/ROCK UNITS:

STRUCTURE:

EXPLORATION SUMMARY:

PROSPECTS/MINERALISATION/ DRILLING RESULTS:

HAWKS NEST PROSPECT (512000E, 6680000N)

ESSO's intention with Hawks Nest was to test the intersection of two major structures which are apparent on magnetic and gravity data. These structures are a NE-SW trending feature extending for several hundred kilometres which intersects a WNW-ESE trending feature of similar dimensions. A 10 line ground magnetic and gravity grid, totalling 89 line km, was completed over this prospect. This includes the extensions to two traverses originally established for Newmont P/L. (Traverse positioning is questionable because of compass errors known to occur during the collection of this data.) Ten vertical percussion holes totalling 570m were drilled along one north-south traverse. Drill hole HN1 (DTB 10m, TD 60m) intersected banded iron formation. Anomalous Zn (up to 465 ppm) exists between 54-56m. HN2 (DTB 20m, TD 48m) intersected Fspar gneiss and Fspar-amph gneiss. Elevated Zn and anomalous Cu (ave. 387 ppm) exists between 31-40m. HN3 (DTB 24m, TD 60m) intersected haematitic shale-schist over BIF. Elevated Zn occurs in parts. HN4 (DTB 24m, TD 36m) intersected banded iron formation. No anomalous geochemistry was detected. HN5 (DTB 45m, TD 60m) intersected haematitic shales and schists. No anomalous geochemistry was noted. HN6 (DTB 32m, TD 36m) intersected banded iron formation. No anomalous geochemistry was detected. HN7 (DTB 43m, TD 72m) intersected a metapelite, siltstone and arenite ±pyrite. Anomalous Zn up to 410 ppm, occurs toward the base of this hole. HN8 (DTB 38.5m, TD 42m) intersected banded iron formation. Anomalous Zn (760 ppm) exists between 39-40m. HN9 (DTB 60m, TD 78m) intersected a metapelite, siltstone and arenite ±pyrite with Chl-Qz alteration.

No anomalous geochemistry was detected. HN10 (DTB 32m, TD 78m) intersected BIF, quartz-sericite ±Chl schist/quartzite and mottled metavolcanics. Elevated Pb and Zn is common throughout this hole. After careful reviewing and interpretation of the data it was decided to relinquish the licence.

COMPANY: CRAE PTY LTD

TENEMENT:

EL 1330	(LEONARD RISE)
EL 1324	(LAGOON WATERHOLE)
EL 1323	(LONESOME DAM)
EL 822	(ENGENINA) later replaced by EL 1145 and later by EL 1494
EL 1494	(ENGENINA)
EL 1106	(BALTA BALTANA) replaced part of EL 822
EL 1184	(DARBIES BORE) later replaced by EL 1277
EL 1089	(GOODE) later replaced by EL 1277
EL 1277	(HAWKS NEST) replaced the rationalised EL's 1184 and 1089

ENVELOPE:

6732	1986-90. EL1323, 1324, 1325, 1326, 1330, 1331
4248	1981-93. EL812, 1106, 1145, 1239, 1494
5431	1983-89. Hawks Nest
6992	1983-88. EL 1145, 1239, 1445, 1106
8304	1986-90. EL1323, 1324
5047	1983-85. EL5047

1:250 000 SHEET:
COOBER PEDY
BILLA KALINA
KINGOONYA
TARCOOLA

1:100 000 SHEET:
PHILLIPSON
COOBER PEDY
ENGENINA
PEAK
BON BON

TARGET:
ROXBY DOWNS STYLE MINERALISATION
IRON ORE
TENANT CREEK TYPE MINERALISATION
DIAMONDS

AGE/ROCK UNITS:

STRUCTURE:

EXPLORATION SUMMARY:

PROSPECTS/MINERALISATION/ DRILLING RESULTS:

Mount Brady (LR) (505200E, 6773000N)
Several reversely polarised magnetic anomalies along a 10 km long zone of faulting were targeted for Roxby Downs style mineralisation or a possible carbonatite. Two lines (totalling 22 line/km) of ground magnetics helped position two drill holes. DD88LR19 (DTB 64m, TD 240.45m) intersected a sequence of pegmatite skarns and sulphidic and brecciated magnetite. Anomalous Cu (0.925% at 136.7-137.5m), P (2.07% at 94.8-95.5m) and Fe (>53.9% at 174.95-177.65m) were detected.

DD88LR20 (DTB 85m, TD 292m) intersected similar lithologies to DD88LR 19. Carbonatite material was also identified. Anomalous Cu (0.257% at 147.5-149m), P (0.98% at 265.8-266.7m), Fe (>58% at 96.4-98.5m) and REE (1057 ppm at 132-133.2m) exist. Further work included more ground magnetics and a sirotem survey. Drill hole DD89LR21 (DTB 82.75m, TD 275.5m) also intersected skarn lithologies with elevated Cu (0.27%) and P (0.69%) in sulphidic Mt and Mt-Ca-phlogopitic skarn. DD89LR22 (DTB 90m, TD161.5m) intersected a layered gabbro. Anomalous Cu (456 ppm) and Zn 1280 ppm were detected between 130-134m. A further 51.5 km of sirotem and one gravity traverse were completed and drill hole DD89LR23 (BNR, TD 57m) subsequently drilled. Weathered mafic lithologies were noted in core prior to the hole being abandoned. Interpretation of the geophysics suggests that a fairly uniform gabbro body with weak sulphidic magnetite skarn associated with an E-W fault is responsible for the anomalies tested. Petrology suggests a high pressure (>7 Kbars) and temperature (>700°C) environment existed. No further work was recommended.

Douglas Prospect (LR) (502000E, 6754000N)
A non-linear magnetic knot, possibly representing a Roxby Downs type body was covered by 3 lines of ground magnetics totalling 24.5 km. Similar responses in magnetics from other areas indicated that disrupted magnetite gneisses with no mineralisation were the source of the response.

Snaefell Prospect (LR) (502700E, 6748545N)
A 5km long linear magnetic anomaly associated with a regional gravity high, was covered by 2 lines totalling 6 km of ground magnetics. Diamond drill hole DD87LR1 (DTB 46m, TD 242m), intersected a sequence of felsic-mt-ga gneisses with no anomalous geochemistry intersected. No further work was recommended.

Tynwald (LR) (470500E, 6762000N)
A 6 km long linear anomaly, thought to be a prospective iron ore deposit was covered with 3 lines totalling 17 km of ground magnetics. Drill testing of similar anomalies indicated that the magnetic response was probably due to a fault bound basement high of magnetite rich gneiss and as a result no further work was completed on the prospect.

Groudle Prospect (LR) (467600E, 6764000N)
Two lines totalling 8.5 km of ground magnetics and gravity were recovered over a 1 km wide hole of subdued gravity and magnetic response. Initially thought to be hydrothermal alteration within a block of high gravity and magnetics, the prospect was down graded after further processing of airborne data indicated that the feature was probably a magnetite gneiss unit.

Castletown Prospect (LR) (463500E, 6759400N)
Two lines of ground magnetics (totalling 6.5 km) were positioned over a linear magnetic anomaly thought to be a possible Roxby Downs type deposit. Drill testing of similar anomalies on other prospects indicated that the magnetic response was due to a magnetite rich gneiss. Further processing of aeromagnetic data suggested that the anomaly was probably a basement high between faulted basins. No further work was completed.

Rankins Dam (LR) (458400E, 6754000N)
A discrete magnetic high associated with a gravity high was covered with two lines of ground magnetics. Further processing of aeromagnetic data and similar anomalies from other prospects indicated that this anomaly was probably a fault bound basement high. No further work was recommended.

Leonard Rise (LR) (465000E, 6759400N)
An isolated magnetic high, possibly a Roxby Downs type deposit, was covered by 3 lines of ground magnetics totaling 17 km. Further processing of aeromagnetic data indicated that this anomaly was part of a larger magnetic linear feature, probably a Mt gneiss and no further work was undertaken.

Ramsey Prospect (LR) (464500E, 6765700N)
A 5 km long elevated magnetic response on the edge of a block with a generally high magnetic relief was covered by 3 lines of gravity and ground magnetics totalling approx. 17 km. The anomaly was drill tested with hole DD87LR2 (DTB 72m, TD 202.67m), which intersected a sequence of Chl-Mt rich gneiss with no significant geochemical anomalies.

Injabreck (LR) (462850E, 6768000N)
A gravity anomaly associated with a subdued magnetic response was targeted for Roxby Downs type mineralisation. Four traverses of ground magnetics and gravity totalling 15.5 km was completed over the anomaly. Drill hole DD87LR3 (DTB 74. 8m, TD 243.7m) intersected a suite of alkali gabbros, felsic and basic pegmatites and amphibole units. Petrology on selected samples determined the presence of minor pyrrhotite, pyrite and chalcopyrite. This was reflected in the geochemistry which indicated elevated Cu (253 ppm), Ni, Cr and Pd. It was concluded that the gravity response was explained by the gabbroic body and in view of the low assays, no further work was recommended.

Niarbyl (LR) (455600E, 6766500N)
One traverse of gravity and ground magnetics (totalling 2.5 km) was completed over a gravity anomaly associated with an area of subdued magnetics. Similar geophysical responses at other prospects which were drill tested resulted in gabbro bodies being found. No further work was undertaken.

Thunderstorm Creek (LR) (455000E, 6766500N)
An isolated, discrete magnetic anomaly was covered by a single ground magnetic traverse (totalling 2.5 km). Further processing of aeromagnetic data indicated that the prospect was part of a larger regional linear high, possibly a magnetite gneiss. No further work was undertaken.

Onchan Prospect (LR) (449100E, 6764500N)
Three lines of ground magnetics and gravity surveying were completed over an area displaying narrow zones of depressed magnetics cutting across a zone of high magnetic relief. Further processing of aeromagnetic data suggested that the prospect was more linear, within a curvilinear zone which, along with an associated gravity high, suggested it was a small gabbro body. No further work was undertaken.

Peel Prospect (LR) (447500E, 6762000N)
One ground magnetic and gravity (total 6 km) traverse was completed over a 2 km wide, circular magnetic feature with a coincident gravity anomaly. Drilling of similar anomalies elsewhere revealed that such responses were due to gabbro bodies. No further work was completed.

Braddon (LR) (442500E, 6762500N)
Two traverses of ground magnetics (totalling 4.5 km) were completed over a discrete magnetic anomaly. Further processing of aeromagnetic data indicated that the anomaly was part of a larger magnetic, linear, probably magnetite gneiss. No further work was recommended.

Peppercorn Prospect (LR) (489800E, 6771000N)
An isolated magnetic anomaly at the intersection of two interpreted intrusive bodies was covered by 4 lines of ground magnetics (totalling 10.3 km), one line of gravity (totalling 4 km) and one line of sirotem (totalling 4.5 km). Drill hole DD89LR24 penetrated a sequence of felsic-magnetite gneisses containing Kspar-pl-qtz-hem and mt with pegmatite breccia bands. Anomalous U (10 ppm), Th (523 ppm), Ce (777 ppm) and La (446 ppm) were noted but not significant enough to warrant further work to be undertaken.

Kalahari Prospect (LR) (478000E, 6761600N)
An isolated gravity anomaly with no associated magnetic anomaly was covered by 12 km of ground magnetics and gravity. The gravity feature was drilled with three holes. PD89LR25 (BNR, TD 29m) and PD89LR26 (BNR, TD37m) failed to intersect basement due to unconsolidated sands. Drill hole DD89LR27 (DTB 35m, TD 60m) penetrated a gabbroic gneiss. The gabbro lithologies were considered dense enough to explain the gravity anomaly. No anomalous geochemistry was noted and as a result no further work was recommended.

Robin Rise (LR) (452600E, 6752500N)
A coincident magnetic and gravity high was covered by 14.3 km of ground magnetics and gravity. The results indicated a general basement high with only a small gravity anomaly lying at the intersection of a NW trending dyke and EW faulting of the Wallira Trough. No further work was recommended.

Kimberlite Prospects (LR)-CPRM34-75, CPRM77, CPRM78, CPRM80-83, CPRM85 and CPRM86
Each of these prospects were discrete dipolar magnetic anomalies which were thought to represent kimberlitic diatremes. In most cases a ground magnetic traverse was completed across each prospect. All the prospects were covered by heli-mag. Thirteen of the prospects were tested with fifteen percussion holes. CPRM72 (488100E, 6738500N) was drilled. PD87LR4 (DTB 42, TD 47m) bottomed in Amph-pl-mt and rare k-spar rock. Elevated Cu (140 ppm) was detected in the basement. CPRM71 (483200E, 6739000N) was drilled. PD87LR5 (BNR, TD 13m) and completed in sand due to a lost hammer bit. PD87LR6 (DTB 38.5, TD 45m) intersected K-spar-qtz-chl gneiss. PD87LR7 (DTB 34, TD 45m) intersected k-spar-amph-qtz rock. Both were drilled at CPRM71 (483000E, 6739440N). CPRM64 (500400E, 6758700N) was drilled in PD87LR8 (BNR, TD 70m) which bottomed in Mesozoic sediments. CPRM61 (486700E, 6756100N) was drilled in PD87LR9 (BNR, TD 60m) and bottomed in Mesozoic sediments. One 0.4mm chromite crystal was recovered from a bulk sample. CPRM57 (474300E, 6756500N) was drilled in PD87LR10 (BNR, TD 64.5m) and intersected weathered Amph-Kspar-Chl-rock. One 0.8mm picroilmenite was recovered. CPRM58 (475700E, 6757300N) was drilled in PD87LR11 (DTB 49, TD 55m) and bottomed in Amph-chl-pl-Mt rock. CPRM53 (474000E, 6766500N) was drilled in PD87LR12 (BNR, TD 60m). CPRM51 (468900E, 6768300N) was drilled in PD87LR13 (BNR, TD 60m). CPRM85 (466500E, 6771200N) was drilled in PD87LR14 (BNR, TD 60m). These holes were abandoned in Mesozoic sediments. CPRM48 (465600E, 6772200N) was drilled in PD87LR15 (BNR, TD 60m) and bottomed in Mesozoic sediments, returning one 0.4mm pyrope crystal. CPRM77 (448600E, 6772700N) was drilled in PD87LR16 (BNR, TD 60m) and bottomed in Mesozoic sediments. CPRM44 (467400E, 6779650N) was drilled in PD87LR17 (BNR, TD 90m) and bottomed in Mesozoic sediments. It returned one 0.5mm chromite crystal. CPRM49 (479180E, 6779455N) was drilled in PD87LR18 (BNR, TD 76m) and bottomed in Mesozoic sediments. No anomalous geochemistry was reported from these holes. No further work was undertaken for kimberlite diatremes in the licence area.

CPRR562 and CPRR569
Two coincident U and Th channel anomalies were detected to the east of the Stuart Highway. They were found to be coincident with a creek bed and therefore probably reflect heavy mineral accumulations. As a result no further work was undertaken.

LADY ISABELLA PROSPECT (LW) (425800E, 6765550N)
A discrete, 1 km wide magnetic anomaly which coincides with a regional gravity anomaly was drill tested by two holes. The magnetic anomaly appears as a disruptive knot along a regional east-west linear trend. One 2.5 km ground magnetic traverse was completed. Drill hole PD87LW1 (DTB 38m, TD 245m), intersected Mt-Qz-Fspar-Bt rock, Mt-Qz-Fspar-Bt-Ga rock and Qz-Mt-Fspar-Bt gneiss. No anomalous geochemistry was reported. PD87LW2 (DTB 40m, TD 151m) intersected weathered Qz-Fspar-Mt-Bt gneiss, Chl-Mt-Bt-Ca gneiss, Qz-Mt-Bt-Fspar gneiss, Mt-Qz gneiss, and gneiss with variable quantities of Qz-Mt-Fspar-Bt. Anomalous Fe to 39.5% exists between 88-90m, but otherwise, the prospect is geochemically uninteresting.

CRAIGNEISH PROSPECT (LW) (423300E, 6767100N)
A coincident 1 km wide magnetic and gravity anomaly was covered by 2, 3 km ground magnetic traverses. However, no drilling was conducted.

LADY ISABELLA EAST PROSPECT (LW) (427200E, 6767000N)
This anomaly was interpreted to be a "crush zone" lying adjacent to an inflection of the regional magnetic trends. A 7 mgal gravity anomaly was detected immediately along strike, north of the magnetic source. It was thought that the whole anomaly was possibly caused by skarn developments at contact boundaries. 11.3 km of ground magnetics was completed over the anomaly. Drill hole PD89LW18 (DTB 43m, TD 100m) intersected Qtz-Ga-Mt gneiss, Mt-Hblend gneiss, Qz-Bt-Pl-Amph-Ga-Chl gneiss. Anomalous As (380 ppm) and Fe (44.3%) were assayed at 16-18 m in a powdery iron rich silt. Hole PD89LW19 (DTB 49m, TD 111m) intersected Qz-Kspar-Bt-Ga gneiss, Kspar-Qz-Mt-Bt-Ga gneiss. No anomalous geochemistry was detected. Petrology on samples from these drill holes indicates that metamorphism reached upper granulite facies (pigeonite).

SONORA PROSPECT (LW) (417500E, 6783000N)
Interpretation of aeromagnetic data indicated a possible stacking of BIF units. 2 ground magnetic traverses totalling 7.8km, were completed. Further interpretation indicated that the unit is more spread out than previously thought and the prospect was down graded.

NAMIB (LW) (410200E, 6790000N)
A discrete magnetic anomaly at the intersection of 2 major magnetic lineaments/faults was covered by 10.4 km of ground magnetics and 7.5 km of gravity. Due to a contradiction in DTB estimates made using the gravity and magnetic data, no further work was recommended.

RUSHEN PROSPECT (LW) (432000E, 6770000N)
A 4-5 mgal discrete bouguer gravity anomaly, inconsistent with the regional variation in gravity was targeted by 4 lines of ground magnetics totalling 12 km and 2 lines of sirotem, totalling 6 km. Sirotem data indicated that a deep and conductive overburden fill channel probably existed. No further work was recommended.

BALLAUGH PROSPECT (LW) (413000E, 6749800N)
An isolated, 5000 nT, 3 km long magnetic anomaly positioned against an inferred fault zone was covered by one 2.5 km long ground magnetic traverse. No further work was carried out.

BARULE PROSPECT (LW) (413300E, 6769500N)
A 2 km long zone of suppressed magnetic response within an area of high magnetic response was thought to be a possible hematite body altered from magnetite. One 2 km line of ground magnetics was completed. No further work was undertaken.

BRIDE PROSPECT (LW) (410500E, 6769500N)
A 3 km long, linear magnetic body with a 10 000 nT anomaly was targeted as a possible iron ore prospect. Two ground magnetic traverses totalling 6.1 km were completed. No further work was carried out.

JURBY PROSPECT (LW) (419400E, 6765000N)
A 3 km long linear anomaly was covered by one, 2 km ground magnetic traverse. Interpretation of the data resulted in no further work being recommended.

KIRK MICHAEL PROSPECT (LW) (414100E, 6769000N)
A 4 km long linear magnetic anomaly was covered by one ground magnetic traverse. No further work was completed.

LAXEY PROSPECT (LW) (422300E, 6767100N)
A large gravity anomaly in an area 2.5 km across displaying highly disturbed magnetic relief was covered by one, 8 km ground magnetic line. The area was thought to be an iron rich intrusive similar to Olympic Dam, but no further work was recommended.

MAUGHOLD PROSPECT (LW) (411000E, 6749800N)
An isolated, 5000 nT, 3 km long magnetic anomaly positioned against an inferred fault zone at was covered by two ground magnetic traverses totalling 4.5 km. No further work was carried out.

NAFUD PROSPECT (LW) (420700E, 6760500N)
Several discrete peripheral magnetic bodies, thought to be BIF were targeted for iron ore and BIF hosted Au and base metals. Two ground magnetic traverses totalling 6.7 km were completed. The prospect was down graded because of the low gravity response. No further was recommended.

KIMBERLITE TARGETS-CPRM1-CPRM33, CPRM76, CPRM79 and CPRM84

Each of these prospects were discrete dipolar magnetic anomalies thought to represent kimberlitic diatremes. In most cases a ground magnetic traverse was completed across each. All prospects were covered by heli-mag. Fifteen were tested with fifteen percussion holes. CPRM3 (417250E, 6773950N) was drilled in PD87LW8 (BNR, TD 77m). CPRM4 (407650E, 6774320N) was drilled in PD87LW10 (BNR, TD 68m). CPRM5 (408350E, 6774850N) was drilled in PD87LW9 (BNR, TD 68m). CPRM10 (417250E, 6773950N) was drilled in PD87LW3 (BNR, TD 68.5m). All 4 holes were abandoned in Mesozoic sediments. CPRM12 (418940E, 6779470N) was drilled in PD87LW12 (DTB 51, TD 55m) and intersected a Bt-Qz-talc-Fspar rock. CPRM13 (418410E, 6778375N) was drilled in PD87LW13 (DTB 49, TD 53m) and intersected Fspar-Bt-Qz-Ga rock. CPRM15 (423960E, 6778815N) was drilled in PD87LW15 (BNR, TD 78m) and abandoned in Mesozoic sediments. CPRM20 (422300E, 6775000N) was drilled in PD87LW4 (BNR, TD 52m) and abandoned in Mesozoic sediments. One indicator mineral, pyrope, was detected from a bulk sample. CPRM21 (425810E, 6776510N) was drilled in PD87LW16 (DTB 63, TD 67m) and intersected Fspar-Qz-Bt-talc gneiss. CPRM25 (431350E, 6773550N) was drilled in PD87LW17 (DTB 78, TD 82m) and intersected a Mt-Bt-Qz-Fspar rock. CPRM29 (406300E, 6758350N) was drilled in PD87LW7 (DTB 54, TD 58m) and intersected Qz-Fspar-Bt gneiss. CPRM76 (409800E, 6774250N) was drilled in PD87LW11 (BNR, TD 61.5m) and intersected mesozoic sediments. CPRM79 (420540E, 6755550N) was drilled in PD87LW5 (DTB 50, TD 54m) and intersected a weathered Qz-Fspar-Bt gneiss. PD87LW6 (DTB 43.5, TD 47.5m) was also drilled at CPRM79. It intersected weathered Qz-Fspar-Bt talc rock. All of these holes were analysed for microdiamonds and indicator minerals. However only PD87LW4 tested positive, for one indicator mineral. No other geochemistry has been recorded for these holes. Due to these poor results, no further work was undertaken for kimberlite diatremes in the licence area.

LONESOME DAM PROSPECT (LD) (397500E, 6751500N)

A major, 16 000 nT magnetic anomaly (trough to peak) and an adjacent 6000nT peak to the South, adjacent to a 6000 nT trough, coincident with a small 1-2 mgal gravity high was targeted as a possible Roxby Downs type prospect or an iron ore deposit. Four traverses of ground magnetics and gravity data were completed. The prospect was interpreted as a magnetite rich gneiss bordering the Phillipson Trough.

NATIONAL PROSPECT (LD) (374800E, 6778000N)

A linear magnetic feature along the edge of the Tallaringa Trough and giving a distinct 6000 nT high, coincident with a 1-2 mgal gravity anomaly was targeted as a possible Roxby Downs type prospect. Three lines totalling 10.5 km of ground magnetics and gravity were completed over the anomaly. The prospect was

later down graded, being interpreted as a probable magnetite rich gneiss.

SAHARA PROSPECT (LD) (382000E, 6758000N)
An array of cross-cutting shears along a linear magnetic horizon indicating a possible crush zone, was covered by a semi regional gravity survey (11, 1 km spaced traverses with 400m spacings). The prospect was down graded after no gravity anomalies were found to exist.

KIMBERLITE TARGETS LDO1-LDO5 (LD)
Five discrete dipolar magnetic anomalies were covered by ground magnetics and examined as possible kimberlite pipes. LDO1 (395000E, 6784400N) was covered by 4.7 km of ground magnetics. Drill Hole PD88LD1 (BNR, TD 88m) was terminated in quartz sands. LDO2 (381300E, 6774700N) was covered by 9.1 km of ground magnetics, LDO3 (385700E, 6781450N) by 4.9 km of ground magnetics, LDO4 (387450E 6782800N) by 3.9 km of ground magnetics, LDO5 (396800E, 6786400N) by 7.2 km of ground magnetics. None were drill tested.

BASELINE 10 (EN) (521400E, 6751500N)
Diamond drill hole DD86EN32 (DTB 80.9, TD 210.8m) was positioned along regional baseline "10" to test a magnetic body with a 60°west dip. A Mt-granite gneiss, meta BIF and K altered gneiss were intersected. Fe up to 32% was detected within the meta BIF horizon.

BLUE BIRD PROSPECT (EN) (533500E, 6720000N)
A 4 line ground magnetic grid totalling 20 km was completed. Diamond drill hole DD86EN26 (DTB 121m, TD 283.5m) intercepted Qz-Fspar-Mt gneiss, granitic gneiss, banded Qz-Mt gneiss, massive Mt-Qz gneiss and Mt-Qz-Fspar gneiss. A best intersection of 2m @ 32.9% Fe exists at 233.2m. Down hole geophysics was conducted at this prospect.

BLUE DUCK PROSPECT (EN) (550500E, 6714000N)
An 800 nT magnetic anomaly coincident with a 3.5 mgal gravity anomaly was covered by ground magnetics. Diamond drill hole DD92EN64 (DTB 88m, TD 188m) intersected magnetite, marble, and calc silicates (skarns). No anomalous geochemistry was recorded.

CAIRN HILL PROSPECT (EN) (515000E, 6759200N)
A 3 km long magnetic body was tested for stratabound, BIF hosted base metals. The prospect covers an area of approximately 9 km x 3 km. Thirty two rock chip samples were collected and analysed. A total of 128 km of ground magnetics was completed over the prospect. 42.5 km of ground gravity was completed along the same traverses as the ground magnetics. A helicopter borne gravity survey was completed over the prospect. A total of 18.7 km of ground radiometrics was collected over eleven discrete anomalies within the prospect area. The area was drilled by eleven percussion holes to basement (EN47-EN58) and one

diamond drill hole. Diamond drill hole DD86EN33 (DTB 15.9m, TD 118.1m) intersected a Kspar-Pl-Qz granite, Fspar-Qz-Bt-Mt gneiss and two zones of massive Mt with sulphide mineralisation. Zone 1 (35.8m -37.2m) assayed up to 1700 ppm Cu and 38% Fe and zone 2 (66.3m-73.1m) assayed up to 920 ppm Cu, 435 ppm Zn and 50% Fe. Drill hole PD89EN47 (DTB 31m, TD 32m) intercepted Qz-Kspar-Bt gneiss. No anomalous geochemistry. Drill hole PD89EN48 (DTB 25m, TD 30m) intersected a weathered granitic gneiss. No anomalous geochemistry. Drill hole PD89EN49 (DTB 27m, TD 35m) intersected a monzonite over granodiorite. PD89EN50 (DTB 28m, TD 40m) intersected a Qz-Fspar-Bt gneiss. Anomalous Th (600 ppm), U (35 ppm), La (352 ppm) and Ce (595 ppm) occur between 31-33m. Drill hole PD89EN51 (DTB 21m, TD 24m) intersected a Qz-Bt-Fspar gneiss. PD89EN52 (DTB 28m, TD 30m) intersected Qz-Bt-Chl-Fspar gneiss. PD89EN53 (DTB 30m, TD 33m) intersected a Qz-Fspar-Bt-Chl gneiss. Drill hole PD89EN54 (DTB 37m, TD 40m) intersected ?Balta Granite. PD89EN55 (DTB 22m, TD 26m) intersected an assemblage of Qz-Kspar-Bt-Tr-Ep-Chl rocks. Drill hole PD89EN56 (BNR, TD 47m) was terminated in the Mount Toodina Fm. PD89EN57 (BNR, TD 100m) was terminated in a fine grained sandstone. Drill hole PD89EN58 (DTB 22m, TD 26m) intersected a Qz-Kspar-Bt-Tr gneiss. Geochemistry was very limited, with some holes remaining untested. No further work was recommended.

ENGENINA CREEK PROSPECT (EN) (510200E, 6764950N)

This prospect was selected as a possible kimberlite target. Field work included limited ground magnetics and loam sampling which tested negative. RC drill hole 83ERC2 (DTB 50m, TD 51m) tested a 1000 nT magnetic anomaly and intersected a Qz-Fspar gneiss with accessory zircons.

HAT HILL PROSPECT (EN) (519000E, 6735800N)

An interpreted deep seated magnetic anomaly was covered by 2 lines of ground magnetics and one line of gravity to test for Roxby Downs-Tennant Creek type mineralisation. Further interpretation of the data resulted in no further work being recommended.

JOES DAM PROSPECT (EN) (544000E, 6716500N)

A large equidimensional aeromagnetic anomaly was defined as being a cluster of discrete anomalies. The prospect was nominally split into two areas, southern and northern. A regional gravity survey was completed over the prospect followed by a detailed ground magnetic survey. The northern anomaly was percussion drilled in RD/PD84EN6 (DTB 104m, TD 224m). Intercepted was a Mt rich gabbro containing accessory Bt-Ap-Ilm. Intervals of up to 80% Mt in gabbro and massive Mt bands containing up to 20% Py, Cpy and Po were are common. Encouraging iron intervals include 6m of Fe averaging 58.68%. P2O5 is also elevated. However, anomalous intervals include, 12m of Cu @ 389 ppm and 8m of Au @ .32 ppm, within the

sulphidic magnetite. The southern anomaly was also percussion drilled. Drill hole RD/PD84EN7 (DTB 74m, TD 128m) intersected massive Hem and Mt between 74-128m. 54m of iron averaging 56.86% Fe. Best intersections of Cu includes 10m @ 920 ppm. Drill hole RD/PD84EN9 (DTB 72m, TD 151m) intersected six zones of massive Mt with up to 20% sulphides within a Mt rich gabbro. Best intersections include 8m averaging 54.8% Fe between 80-88m and 7m averaging 63.32% Fe between 144-151m. Cu is anomalous for most of the hole including 4m @ 1670 ppm. RD/PD84EN10 (DTB 72m, TD 176m) intersected Hem. and massive Mt in a Mt rich Gabbro. Sulphide rich intervals are common. Best intersections include 6m averaging 50.46% Fe between 72-78m and 30m averaging 50.66% Fe between 94-124m. Anomalous Cu and Co exist for most of the hole. Intervals include 16m of Cu @ 997 ppm and Co @ 195 ppm. RD/PD84EN14 (DTB 72m, TD 256m) intersected Hem., massive Mt, Mt rich volcanics and Mt-Ilm-Ap-Py gabbro. One intersection of magnetite averages 63.2% Fe for 64m between 72-146m. Anomalous Cu and Co exist for most of the hole. Maximum values include 2m @ 810 ppm Cu and 225 ppm Co.

JOES DAM WEST PROSPECT (EN) (541500E, 6718200N)
This prospect was targeted as a potential Tennant Creek type deposit with its discrete but moderately sized magnetic anomaly. Four lines of ground magnetics, one line of gravity and a single line of sirotem was centred around RC hole 83ERC20 (DTB 98m, TD 101m) which intercepted a massive Mt and Qz gneiss with Cpy stringers. Analysis and petrology confirm the presence of Cu (1050 ppm) as Cpy. Percussion hole RD/PD84EN1 (DTB 100m, TD 370m) intercepted Qz-Fspar-Mt-Bt microgneiss with horizons exceeding 80% Mt. Two zones of sulphide mineralisation assayed 1.92% Cu and 0.28 ppm Au between 212-220m and 1.52% Cu and 0.34 ppm Au between 272-274m. Encouraging Fe intersections include, 36m of Fe averaging 56.2%, between 100-136m, 6m averaging 62.6% Fe and 14m averaging 62.3% Fe. P2O5 is also elevated. Drill hole RD/PD85EN15 (DTB 102m, TD 300m) intersected Mt breccia, Qz-Mt gneiss, Mt-Bt-Qz gneiss and massive Mt with sulphide mineralisation. Best intervals include 8m averaging 59.55% Fe between 125.6-133.6m. 7.35m @ 2100 ppm Cu was detected. Elevated Ni (2m @ 410 ppm), Au (2m @ 0.84 ppm), Ce, (6m @ 430 ppm) and La (6m @ 500 ppm) were also detected. Drill hole RD/PD85EN16 (DTB 188m, TD 204m) intersected Qz-Fspar-Bt gneiss and Bt-Chl-Kspar-Hem gneiss. No anomalous geochemistry was detected. RD/DD85EN17 (DTB 91.1m, TD 286m) intersected Hem-Mt breccia, Qz-Fspar-Bt-Mt gneiss and massive Mt with sulphides. Anomalous Cu (54.1m @ 1300 ppm and 28.2m @ 730 ppm), Zn (2m @ 3900 ppm), Au (4m @ 0.54 ppm) and Co (22m @ 135 ppm) exist. RD/PD85EN18 (DTB 94m, TD 295m) intercepted a Mt rich microgneiss which gives way to a massive Mt breccia with sulphide mineralisation. A one metre interval was assayed for Fe and returned 50.7% from 147.35m. Anomalous Cu (10m @ 1300 ppm), Ce (6m @ 370

ppm) and La (6m @ 175 ppm) exists. Petrology exists on samples from most holes.

KENNEDY'S PROSPECT (EN) (532500E, 6729800N)
Three discrete magnetic highs making up one satellite high west of a larger gravity high known to be a gabbroic intrusion were targeted as possible mineralised breccias. Two of the three highs were thought to be Fe rich breccias, the third a gabbro. Six lines of ground magnetics and **gravity** were completed over the prospect. Percussion drill hole PD92EN62 (DTB45m, TD 85m) intercepted a mafic granulite gabbro. PD92EN63 (DTB 34m, TD 80m) intercepted a mafic gabbro and possibly a mafic granulite. No anomalous geochemistry was detected.

MANXMAN 'A' PROSPECT (EN) (538000E, 6718000N)
Ground magnetics and gravity, totalling 88.5 km was completed. Fourteen diamond drill holes and one percussion hole were drilled. The magnetic target was found to be a steeply dipping (~80°S) iron rich body consisting of massive and brecciated Mt and Hem. Grades of >50% Fe are common but contain high phosphorous and sulphur impurities. Anomalous Cu-Au mineralisation, averaging 0.2-0.3% and <2ppm respectively is associated with the brecciated Mt-Hem intersections. DD86EN24 (DTB 110m, TD 226.1m) intersected Hem-Chl breccia, Qz-Fspar breccia with Mt, Py and carbonate veinlets, massive Mt with 15% sulphides and acid volcanics. Thirty two metres averaging 39.8% Fe (including 3.5m @ 45.6%) exist from 159m. Cu up to 0.35% (159 -193m) and Au up to 2.5 ppm between 217-219m is also anomalous. DD86EN25 (DTB 110m, TD 367.5m) intersected Hem-Chl gneiss, brecciated quartzite, massive magnetite with 10% sulphides, laminated siliceous rock and acid igneous volcanics. Five zones of massive Mt greater than 10m thick exist. Best intervals include, 30m averaging 44.17% Fe from 130.1m, 22.4m averaging 44.9% Fe from 218.2m, 29.1m averaging 46.7% Fe from 294.5m and 12m averaging 46.28% Fe from 347.8m. Cu up to 0.60% (353-359m) and Au up to 1.5 ppm (336.6-338.1m) exist. DD86EN34 (DTB 158m, TD 203.3m) intersected magnetite rich gneiss and haematitic breccia. Fe up to 27% and Cu up to 310 ppm were detected. Drill hole DD86EN35 (DTB 110m, TD 621.9m) was designed to test DD86EN24 and DD86EN25. Intersections of Mt gneiss, massive Mt with sulphide mineralisation and felsic gneisses were encountered. Analysis revealed Cu up to 0.8% between 140-141m and Fe mostly above 35% between 300-520m. DD86EN36 (DTB 111m, TD 350.6m) intersected a metasedimentary gneiss, Mt breccia, altered gneiss, massive Mt and pelitic gneiss. Fe assayed up to 67 % between 252-254m, but was mostly around 30% for other magnetite rich zones. DD86EN37 (DTB 132m, TD 372.4m) intersected alternating psammitic gneiss, massive Hem-Mt, pegmatitic veins, pelitic gneiss and dolomitic breccia. Fe assaying up to 59.8% between 268.9 -269.3m, but mostly below 39% between 176 -235m. Cu up to 1890 ppm and Au 0.68 ppm exists at 286.6-288m in altered gneiss. Au up to 8.4 ppm occurs between 334-335m. Drill hole DD87EN40 (DTB 99m, TD

314.47m) intersected Kspar-Qz-Pl gneiss, coarse grained Hem/Mt with pegmatite veining, massive Hem-Mt and Kspar-Bt-Qz gneiss. Horizons of Fe up to 63.5% (175.1-189.7m) occurs within a zone averaging 43% Fe (129-213m). DD88EN41 (DTB 115m, TD 138m) intersected interbanded Hem-Mt breccia, Hem-Mt rock with porphyritic pegmatite containing potassic altered K-spar, and Hem-Mt gneiss. Encouraging assays include 1m @ 60.1% Fe from 118.3m and 5.4m averaging 46.6% Fe from 132.6m. PD88EN42 (DTB 92, TD 127m) intersected a marble-Qtz-Mt-amph rock and Mt-Amph-Qz-Pyx gneiss. Fe assaying 31.1% was intersected between 123-127m. Drill hole DD88EN43 (DTB 110, TD 594m) intersected altered gneisses, sulphidic Mt breccia, Kspar-Qz-Plag gneiss, porphyry and quartzite. Fe assaying between 15-55% exists between 120-180m, and between 180-460m averages 45% Fe. Cu averaging 0.23% (including 8 one metre intervals > 0.5%, exist between 110-398.8m. One other interval averages 0.39% Cu (including 1m @ 0.72%) between 456-466m. Generally Cu ranges between the high hundreds and low thousands ppm for the remainder of the hole. Anomalous Au up to 2 ppm (but mostly below 0.1 ppm) exists throughout the hole. DD88EN44 (DTB 112.7, TD 307m) intercepted Mt-Hem rich porphyry, granulite, pegmatite veining, porphyry with > 55% Hem-Mt and brecciated Chl-Mt-Hem-Ca containing sulphides. Numerous 2m and 4m wide bands of >40% Fe occur throughout the hole with one horizon as wide as 14.1m at 266.91m. Elevated Cu is not so widespread with a best intersection of 0.25m assaying at 1420 ppm. Drill hole DD88EN45 (DTB 138, TD 400m) intersected Qz-Bt-Phlog-Gar-Mt-Amph gneiss and Kspar-Qz-Ser-Bt-Mt-Hem gneiss with pegmatite veining. Anomalous Fe intervals >40% occur occasionally. Cu and Au is commonly elevated but rarely anomalous, one 1.5m interval assaying 0.61% Cu and 0.296ppm Au exists at 318.95m. DD89EN59 (DTB 114.9, TD 208.9m) intersected Hem breccia, Kspar-Qz-Hem-Chl gneiss, granulite with massive Hem-Mt breccias, and Bt-Chl-Plag-Ser-Qz-Mt gneiss. Intersections averaging 45% Fe exist between 144.9m-153.8m. DD89EN60 (DTB 80, TD 344m) intersected Mt-Hem-Chl breccias, Hem-Mt-Chl rock, Qz-Fspar gneiss, granulite, sulphidic Mt breccia Chl-Mt breccia and felsic gneiss. Anomalous Cu exists for much of the hole with one 71.75m horizon averaging 0.25% Cu from 145m (including 2m @ 1.09% Cu from 162m). Iron rich zones are common with better intersections including, 16.6m averaging 46.75% Fe from 80.4m, 17.75m averaging 35.5% Fe from 199m and 18.85m averaging 44.1% from 226.1m, DD89EN61 (DTN 98.3, TD 480m) intersected scattered zones of sulphidic Mt breccia within a granite, adamellite felsic gneisses and granulites. Au up to 0.56ppm was assayed between 231-239m, Cu averages 0.35% between 231-250m and Fe averages 44.6% between 231-269.5m and 66.3%* Fe between 416.8-451.3m. Down hole geophysics and petrology is available on most holes.

* Averages are based on geochemical results outlined in envelope 4248. It was noted that for drill hole DD89EN61, atomic absorption spectroscopy (AAS) analysed some samples to

contain as much as 75.1% Fe. It may be expected that errors of this nature may occur during Fe analyses when using AAS.

MANXMAN 'B' PROSPECT (EN) (541000E, 6721560N)
Aeromagnetic data and previous drilling by Delhi Petroleum Ltd. for iron ore outlined a possible shallow dipping series of magnetic units. A ground magnetic and gravity survey was completed and later drilled. Drill hole DD86EN38 (DTB 62.4, TD 306m) intersected psammitic gneiss ±Hem and Chl, massive Hem., sugary Hem. with Qz grains, felsic gneiss and pegmatitic and granitic units. Two elevated iron horizons were intersected. 21.57m averaging 36.05% Fe (including 3m @ 44.9% Fe) occurs from 104.75m and 4.18m averaging 37.55% Fe exists from 198m.

MT. BRADY EAST PROSPECT (EN) (508000E, 6773550N)
A cluster of negative anomalies thought to be due to a shallow source of inverse remanent magnetism was covered by ground magnetics and a sirotem survey of 33.5 km. Drill hole 83ERC1 (DTB 29.5, TD 42m), intercepted brecciated gneiss and Mt-Ilm norite. Diamond drill hole DD89EN46 intersected Plag-Pyx-Mt-Bt rock, gabbro, gabbro with Chl-Calc alterations, and Chl-Ep-Py rich gabbro. No elevated geochemistry occurs. Petrology exists for this hole.

MT WOODS NORTH-WEST PROSPECT (EN) (526000E, 6761400N)
Aeromagnetic data suggested magnetic stacking at the extreme end of the Cairn Hill linear horizon represented BIF hosted stratiform mineralisation. Three lines of ground magnetics, were completed, but, no further work was undertaken.

MT WOODS SOUTH PROSPECT (EN) (533000E, 6752000N)
Targeting BIF hosted stratiform mineralisation, four lines of ground magnetics, were completed, but, no further work was undertaken.

MW6 PROSPECT (EN)
Previous work by Delhi Petroleum Ltd. suggested the potential for a large iron ore deposit. 2.5 km of ground magnetics and gravity were completed revealing a 15,000 nT and 1.5 mgal anomaly. No further work was carried out.

PECULIAR KNOB (EN) (537000E, 6726700N)
An aeromagnetic anomaly of 34,000nT suggested the presence of a massive magnetite deposit dipping ~50°to the N-W. Ground recovery included soil sampling, ground magnetics and in-loop sirotem. RC drill hole 83ERC14 (DTB 19, TD 32m) was drilled to test the anomaly and was followed up by diamond drill hole RD/DD85EN19 (DTB 24m, TD 100m) which intersected a massive Hem-Qz gneiss. Analysis revealed high grade iron ore grading 64.5% Fe, between 24-48.8m, 38.8% Fe between 48.8-60.5m and 64.5% Fe between 60.5-71.4m. RD/DD85EN20 (DTB 22.4m, TD296.6m) intercepted two zones of massive hematite within an altered gneissic granite, Hem-Qz gneiss and Chl-Fspar-Qz-Hem gneiss. Zone 1 was not assayed for Fe. The second zone assayed 61.8% Fe between 210.7m and 273.5m. A true width of 36m massive hematite has been indicated from this drill hole. DD85EN21 (DTB 20, TD 139.06m) intercepted a weathered Qz-Fspar-sericite gneiss, Qz-Fspar-Bt-Chl interlayered granite, felsic gneiss and a massive hematite horizon averaging 59.16% Fe between 109-124m. Dip estimates from this hole indicated the ore body dips ±80°N-W. Drill hole DD85EN22 (DTB 30.8, TD 190.1m) intersected weathered gneiss, haematitic -chl quartzite, granitic gneiss with Hem-Mt-Qz gneiss interlayers which included four thin bands between 118-140.1m with assays grading up to 65.9% Fe and Qz-Fspar-Bt-sericite-Chl gneiss. This hole failed to prove any lateral extent to the main hematite body. Petrology exists.

PENRHYN PROSPECT (EN) (513250E, 6746000N)
Two semi regional ground magnetic traverses (lines 8 and 9) were carried out over this prospect during CRAE regional survey of EL1145. Diamond drill hole DD86EN31 (DTB 38, TD 179.8m) was sited at 513050E, 6746000N prior to any detailed ground work or interpretation and intersected Mt rich gneiss with minor Chl and potassic alteration, Ga rich gneiss and leucocratic gneiss. Geochemical analysis indicated that Fe up to 38% was present between 38-89m. Anomalous Au and Ag occurred between 39.9-41.4m grading at 3.7 ppm and 15 ppm respectively. Arsenic up to 1150 ppm was detected between 89.6 and 91.4m. The Au-Ag-As mineralisation is hosted in a potassic and chloritic altered gneiss. Down hole geophysics was completed on this hole. Three lines of ground magnetics and a helicopter borne gravity survey were completed. Drill hole DD87EN39 (DTB 33, TD 110.9m) was sited at 513500E, 6746000N (450m east of DD86EN31) based on this data and intersected granitic gneiss with Chl-Serp alteration and Calc veining, Ga gneiss, and brecciated gneiss with Calc and sulphide infilling. Analysis indicated Fe up to 38% between 198-200m, Cu up to 900 ppm between 131-132m and Au up to 0.133 ppm between 125.4-126m. No further work was completed.

PLATEAU PROSPECT (EN) (550500E, 6726500N)
A ground magnetic and gravity surveys were completed. Interpretation of the data suggested a gabbroic body and no further work was carried out.

PROSPECT 'K' (EN) (534000E, 6733500N)
A 9 km ground magnetic and gravity survey was completed to extend the existing "B" baseline. No further work was carried out.

R1 PROSPECT (EN-BB) (543500E, 6739850N)
Two lines totalling 11 km of ground magnetics and gravity data were carried out. Interpretation of a coincident magnetic and gravity anomaly led to two RC holes being completed. 83ERC13 (DTB 41.5, TD 64.5m) intercepted mica schist, ?carbonatite and aplite. Zn up to 200 ppm was detected between 45.5-46.5m. 83ERC15 (DTB 59, TD 59.2) intercepted ferroan dolomite, chloritic schist and quartzite. No anomalous geochemistry was detected.

R2 PROSPECT (EN) (531700E, 6739450N)
Two lines of ground magnetics were completed over a magnetic body. No further work was undertaken.

R3 PROSPECT (EN) (514000E, 6749000N)
One 2 km line of ground magnetics and a gravity survey resulted in RC hole 83ERC3 (DTB 13, TD 36m). The target was a small coincident magnetic, gravity anomaly displaced from a larger deeper magnetic body. Intersected was a carbonatitic and Mt rich, serpentinised dunite, containing small flakes of native Cu and carbonatitic ultramafics. 83ERC4 (BNR, TD 33m) bottomed in very weathered gneiss. No anomalous geochemistry was detected. 83ERC5 (DTB 29, TD 47.5m) intersected a carbonatitic quartz diorite. No anomalous geochemistry was detected. 83ERC6 (DTB 13, TD 24m) intersected a carbonate altered Bt-Fspar gneiss. Zn up to 200 ppm was detected at 22-23m. 83ERC7 (DTB 32, TD 34.5m) intersected a Qz-Fspar-gneiss with Chl-Carb alteration. No anomalous geochemistry was detected. 83ERC8 (DTB 23, TD 24m) intersected Balta Granite (Qz-Kspar-Pl-Bt-Ga). No anomalous geochemistry was detected.

SKYLARK PROSPECT (EN) (532000E, 6738500N)
Fifty two line kilometres of ground magnetics and gravity data (includes parts of baseline C, 5, 6 and 7) were completed. No further work was undertaken.

SKYLARK NORTH PROSPECT (EN) (525500E, 6740500N)
Four lines of ground magnetics targeting a shallow ?BIF unit adjacent to a granitic intrusion were completed. Drill hole DD86EN28 (DTB 52, TD 150m) intersected Qz-Bt gneiss, porphyritic gneiss ±Chl-K alteration and Qz-Mt veining. No anomalous geochemistry was detected. DD86EN29 (DTB 45, TD 174.4m) intercepted Qz-Mt gneiss, Mt calcarenite, Banded Qz-Mt, felsic gneiss and minor basalt. Elevated Fe (> 30% between

98-150m) and Mn (1.55% between 96-98m) occurs. DD86EN30 (DTB 5, TD 154.6m) intersected Mt-rich gneiss, brecciated Mt-Qz gneiss and Mt gneiss with dolerite alteration. Anomalous Fe up to 27% exists between 15 and 16m.

SKYLARK SOUTH PROSPECT (EN) (529500E, 6732000N)
Eight lines of ground magnetics testing variations within an adamellite were completed. No further work was undertaken.

WHITE HILL PROSPECT (EN) (538000E, 6722000N)
One, 5 km ground magnetic and gravity line was completed. Drill hole 83ERC21 (DTB 64, TD 85m) was completed. DD86EN23 was designed to test a coincident magnetic and gravity anomaly. It intersected Mt rich hornfels, gabbro with minor Mt, Qz-Mt-Amph-Bt hornfels and numerous pegmatite, magnetite and chloritic veins. All assay values were of low order. No further work was undertaken.

WHITE HILL CENTRAL PROSPECT (EN) (549000E, 6720000N)
Three lines of ground magnetics and one line of gravity were carried out. Modelling suggested that the magnetics are not discrete enough to follow up and the prospect was downgraded.

WHITE HILL EAST PROSPECT (EN) (550000E, 6715500N)
One line of ground magnetics was completed and modelled. The prospect was downgraded.

WHITE HILL NORTH PROSPECT (EN) (546000E, 6724400N)
Three lines totalling 6 km of ground magnetics and sirotem (TEM) data was completed. A very broad, weakly anomalous response was drilled as 83ERC22 (DTB 69, TD 75m). Intersections include anomalous Cu 800ppm, Pb 370ppm and Zn 310ppm detected at 72-73m. Similar anomalies closer to an intense magnetic bullseye on other traverses were targeted by drilling. RD/PD84EN2 (DTB 106, TD 148m) intersected Qz-Fspar-Bt gneiss and carbonaceous gneiss. Cu up to 0.14% was detected between 112-116m in a Bt-Fspar-Amph microgneiss. RD/PD84EN3 (DTB 84, TD 150m) intersected kaolinised Qz-Fspar-Bt granite, eleven metres of Hem-Mt-Qz rock with 1% sulphides, calc silicates, meta-carbonates and acid volcanics. Cu up to 0.86% was detected between 106-108m. RD/PD84EN4 (DTB 64, TD 122m) intercepted acid volcanics, Qz-Kspar-Bt gneiss and Bt gneiss. Cu up to 245 ppm was detected.

WHITE HILL NORTH EAST PROSPECT (EN) (551000E, 6723200N)

Four lines totalling 10 km of ground magnetics and sirotem (TEM) were completed. Two adjacent magnetic lows and a weakly anomalous but, persistent coincident sirotem response were drilled. RD/PD84EN5 (DTB 72, TD 128m) intersected a Hblend microgranite with extensive Kspar alteration and accessory Mt. One, 2 metre interval of 210 ppm Cu was detected.

WHITE HILL SOUTH PROSPECT (EN) (543000E, 6713450N)

Four lines totalling 9 km of ground magnetics and sirotem (TEM) were completed. A coincident sirotem-magnetic anomaly was drilled. RD/PD84EN8 (DTB 94, TD 136m) intercepted weathered carbonates with minor Chl-Mt-Amph. Mt content increased with depth. No anomalous geochemistry was detected.

WHITE HILL SOUTH EAST PROSPECT (EN) (546500E, 6713400N)

A one line ground magnetic traverse extending from the White Hill South Prospect was completed. Modelling and interpretation indicated a major negative response trending discordantly to the modelled shallow north dipping iron body. No further work was undertaken.

WHITE HILL WEST PROSPECT (EN) (541000E, 6724500N)

Four lines of ground magnetics and one line of gravity was completed over a gravity low. Two short strike length magnetic bodies adjacent to a main magnetic zone also exist. Drill hole RD/PD84EN11 (DTB 64, TD 136m) intersected Bt-Mt gneiss and Qz-Bt-Ga gneiss. Cu up to 270 ppm exists. RD/PD84EN12 (DTB 100, TD 148m) intersected Qz-Bt-Fspar volcanics, Mt veins and quartzitic metacarbonate. One 2m interval assayed 60.5% Fe. Three, 2 metre Cu intervals > 1100 ppm were detected. RD/PD84EN13 (DTB 64, TD136m) intersected Qz-Fspar-Bt gneiss, Bt gneiss and amphibolite. Anomalous Cu above 200 ppm exists for most of the hole.

KIMBERLITE PROSPECTS (EN)

Twenty two discrete dipolar magnetic anomalies were covered by ground magnetics and interpreted as kimberlite pipes. Ten targets were tested. 83ERC2 (DTB 50, TD 51m) intersected granitic gneiss with no anomalous geochemistry. 83ERC9 (DTB 15.5, TD 17m) intersected ?lamprophyre or metasomatised schist with Mt. Anomalous Cu up to 870 ppm was detected. 83ERC10 (DTB 29, TD 32m) intersected ?Balta Granite with no anomalous geochemistry. 83ERC11 (DTB 22.5, TD 39.5m) intersected metasiltstone. Anomalous Cu (190 ppm), Pb (100 ppm) and Zn (90 ppm) exist. 83ERC12 (DTB 20, TD 23m) intersected a granite with no anomalous geochemistry. 83ERC16 (DTB 41, TD 50.5m) intersected serpentinised ultramafic with 50% calcite. Background Cu (110 ppm) and Co (42 ppm) exist. 83ERC17

(BNR, TD 137m) bottomed in black carbonaceous clay. 83ERC18 (BNR, TD 85m) was terminated in black carbonaceous clay. 83ERC19 (DTB 107, TD 115.5m) intersected marble with vesuvianite, diopside, albite, scapolite and biotite. No anomalous geochemistry was detected. 83ERC23 (BNR, TD 153m) was terminated in clays.

BRANDISH PROSPECT (BB) (545200E, 6742500N)
Three ground magnetic lines were completed and drilled. DD87BB1 intersected Chl-Mt-Kspar-Bt rock and Mt-Kspar-Bt gneiss. No anomalous geochemistry was detected. DD87BB2 intersected ferruginous Mt-Kspar-Bt gneiss, Chl-Mt-Kspar-Bt gneiss, Chl-Bt-Qz-Fspar schist, Chl-Kspar-mica gneiss Fspar-Musc-Qz pegmatite, Mt-Kspar-Bt-Chl gneiss and Mt-Kspar-Bt-Ga gneiss. Elevated Fe (31.3%), Cu (427 ppm), Zn (715 ppm) La and Nd were detected over separate 2m intervals. Petrology exists.

A1 PROSPECT (GD) (Tarcoola, E, N)
A ground magnetic and gravity survey was conducted over an isolated magnetic anomaly immediately north of an interpreted fault. Drill hole 83GRC6 (DTB 115m, TD 115.5m) intersected Gawler Range Volcanics. No anomalous geochemistry was detected. 83GRC7 (DTB 99.4m, TD 99.5m) intersected Gawler Range Volcanics. No anomalous geochemistry was detected. Percussion drill hole RD/PD84GD1 intersected GRV rhyodacite, massive magnetite and magnetite rich GRV. Iron was not assayed. Au, Ag and Sn show patchy anomalous values.

KIMBERLITE TARGETS (GD) (TARCOOLA)
Fifteen discrete anomalies were ground magnetically surveyed and loam sampled. Five of these anomalies were drilled. 83GRC1 (DTB 36m, TD 39.5m) intersected Gawler Range Volcanics. 83GRC2 (DTB 68m, TD 70m) intersected a mildly magnetic granite. The remaining holes failed to penetrate basement. These were 83GRC3 (BNR, TD 62m), 83GRC4 (BNR, TD 30m), 83GRC5 (BNR, TD 102m). All holes were tested for kimberlitic indicator minerals, with all returned negative results.

HAWKS NEST PROSPECT (HN) (512000E, 6680000N)
A ground magnetic grid was completed at this prospect and was followed up by the collection of 398 rock chip samples. One line of SIROTEM was completed and showed the BIF to be a poor conductor. Seven gravity traverses were completed late in the programme. Grab samples from spoil heaps left by previous explorers revealed elevated Cu (200 ppm), Zn (300 ppm), Au (0.2 ppm) and Fe (48.5% as Fe_2O_3). Analysis of rock chip samples showed anomalous As, Fe, Zn, Mn, Pb, Cu and Sn. A 116 hole RAB drilling programme aggregating 3458m was completed across the prospect. A metasedimentary and BIF dominated sequence was intersected. Minor intervals of metabasics, volcaniclastics and chert horizons occur within the main lithologies. Maximum values of 4580 ppm Zn (with 560

ppm Pb), 900 ppm Pb (with 820 ppm Zn), 190 ppm Cu, 215 ppm Sn, 435 ppm Ni and 0.16 ppm Au were recorded. Following these results a 312.7 line km airborne magnetic and radiometric survey was completed by Geoterrex P/L. A detailed interpretation of this data was compiled. Three drill holes testing a significant gravity high on line 514000E were completed. Drill hole DD87/88HN1 (DTB 12.23m, TD 295.6m) was initially completed at 152m after intersecting brecciated and silicified BIF and massive brecciated Hem-Mt. No anomalous base metals values were detected, however, 11.32m averaging 67.0% Fe with low P_2O_5 between 106.68m and 118m was drilled. Deepening of this drill hole to test an unexplained gravity and magnetic high resulted in a further 113.2m of silicified BIF and 18.3m of massive-vuggy magnetic hematite being intersected. Extremely slow penetration and high bit wear resulted in this hole being terminated after only partially testing the gravity anomaly. Only Au was analysed from 152m onwards. No other Fe intervals were analysed by CRAE. PD87HN2 (DTB 10.5m, TD 250m) intersected silicified BIF, Hem ironstone and jasper BIF. Anomalous Fe appears to occur throughout the hole with estimations of an average assay grade of 38.3% Fe between 10m and 250m*. PD87HN3 (DTB 27.5m, TD 163.7m) intersected lateritic ironstone, Mt-Hem-Qz BIF and jasperlitic BIF. Anomalous Au assays (12m @ 0.8 ppm including 2m @ 2.02 ppm) were encountered from 66m. Elevated Fe (mostly >25%) occurs between 50m and 108m and increases to average 37.75% Fe (55.7m) for the remainder of the hole. Following these results an infill ground magnetic and gravity programme was completed to better define the above units. Following further ground magnetic and SIROTEM work around earlier RAB anomalies four more drill holes were completed north-west of the previous drilling. PD89HN4 (DTB 13m, TD 210m) intersected a Qz-mica schist, Qz-Bt-Fspar gneiss Qz-Bt-Amph-Kspar granitic gneiss and Qz-amph-bt gneissic schist. Elevated Zn is detectable in some horizons. PD89HN5 (DTB 3m, TD 15m) intersected silicified BIF. Anomalous Fe (12m @ 29.2%) exists between 3m and 15m PD89HN6 (DTB 3m, TD 79m) intersected 71m of BIF and 3m of gneiss. Anomalous Fe, mostly below 31.8% exists from 3m-43m whereupon it decreases rapidly. PD89HN7 (DTB 33m, TD 66m) intersected psammite/quartzite and a microgranite. Anomalous Pb (27m averaging 2275 ppm, including 1m @ 5500 ppm) and Zn (27m averaging 1929 ppm, including 1m @ 2950 ppm) were detected. No further work was recommended based on the conclusions that the elevated Pb-Zn was related to contact metamorphism and was too low grade to follow up. The potential for an high grade iron ore deposit was also dismissed based on further interpretation of the geophysical data.

* % Fe averages are estimated from samples taken along PD87HN2 at approximately 8-10m intervals allowing that lithological change is minimal.

DRESLEYS BORE PROSPECT (HN) (517600E, 6697000N)

A ground magnetic grid was positioned over an isolated magnetic anomaly. Geophysical interpretation suggested that depth to magnetic source exceeded 450m and the prospect was not followed up.

MIRRIKATA PROSPECT (HN) (520000E, 6697500N)
A ground magnetic grid was positioned over an isolated magnetic anomaly. Geophysical interpretation suggested that depth to magnetic source exceeded 450m and the prospect was not followed up.

COMPANY: DAMPIER MINING COMPANY LTD

TENEMENT/YEAR: EL 400 (1978-79)

ENVELOPE: 3334

1:250 000 SHEET: COOBER PEDY

1:100 000 SHEET: WOORONG

TARGET:

AGE/ROCK UNITS:

STRUCTURE:

EXPLORATION SUMMARY: ground magnetics, gravity, drilling, geochemistry for Co, Ni, Cr, V, Cu, Pb, Zn, Au, Ag, Nb, Ce, Ba, Sr, TiO2, and P2O5

MINERALISATION/ DRILLING RESULTS:

GINA PROSPECT (472500E, 6691000N)
Two lines totalling 17.16 km of ground magnetics was completed at this prospect. No further work was undertaken.

WIRRIDA PROSPECT (444000E, 6695000N)
A seven line ground magnetic and gravity grid was established 25 km WNW of the Commonwealth Hill Homestead. Three rotary drill holes were sited on gravity/magnetic targets. MW1 (DTB 20, TD 52.1m) intersected Qz-Bt-Fspar-Pyx-Hblende-Mt, diorite ±py on gabbro. No anomalous geochemistry was detected. 10 cms at the base of the hole was cored. MW2 (DTB 24, TD 56.3m) intersected a Qz-Bt-Fspar-Pyx-Hblende-Mt ±py diorite. 30 cms at the base of the hole was cored. Anomalous Pb and Zn (425 ppm and 100 ppm respectively) were detected between 52-54m. MW3 (DTB 26, TD 48.5m) intersected Bt-Fspar-Qz-Hblende-Mt±py diorite. No anomalous geochemistry was detected.

MUCKANIPPIE PROSPECT
(Tarcoola 1 : 250000, 420000E, 6675000N)
A five line ground magnetic and gravity grid was established 20 km south of the Commonwealth Hill homestead on the Tarcoola 1:250 000 map sheet. One rotary drill hole targeting a gravity and magnetic coincident high was completed. MM5 (DTB 42, TD 53m) intersected a coarse grained Qz-Bt diorite. No further work was undertaken.

COMPANY: NOBELEX NL

TENEMENT/YEAR: EL 288 1977-80

ENVELOPE: 3057

1:250 000 SHEET: COOBER PEDY
TALLARINGA

1:100 000 SHEET:

TARGET: RADIOMETRIC ANOMALIES

AGE/ROCK UNITS:

STRUCTURE:

EXPLORATION SUMMARY: EL covered Coober Pedy Sheet but exploration was on Tallaringa.

MINERALISATION/ DRILLING RESULTS

IL 1 PROSPECT (Tallaringa)
A 1000m x 900m grid was covered by total force magnetics and total count radiometrics. A near circular anomaly with an amplitude of 1000 nT was detected. Radiometrics succeeded in delineating the radiation associated with the salt crusted channelways. Geochemical sampling failed to detect anything above background levels. Diamond drill hole DDH 2 (DTB 32, TD 211.4m) intersected a sequence of pyroxene granulites of the quartz, perthite, hyperthene phase with various amounts of magnetite up to 2% occurring throughout. No anomalous geochemistry was detected.

IL 2 PROSPECT (Tallaringa)
A 700m x 500m grid was covered by total force magnetics and total count radiometrics. A small, intense near-circular anomaly with an amplitude of 860 nT was detected. Radiometrics succeeded in delineating the radiation associated with the salt crusted channelways. Geochemical sampling detected Zn slightly above background levels. Diamond drill hole DDH 1 (DTB 16.5, TD 191.79m) intersected a sequence of medium to fine grained pyroxene granulites of the quartz, perthite, hyperthene phase with various amounts of magnetite up to 5% occurring throughout. No anomalous geochemistry was detected.

IL 3 PROSPECT (Tallaringa)
A 350m x 200m grid was covered by total force magnetics and total count radiometrics. A small, elongate anomaly with an amplitude of 250 nT was detected. Radiometrics were generally dead, with only minor activity over the lake. Geochemical sampling failed to detect anything above background levels. No further work was recommended.

IL4 PROSPECT (Tallaringa)

An 800m x 500m grid was covered by total force magnetics and total count radiometrics. A shallow dyke body with a northerly dip was interpreted. Radiometrics failed to detect any activity.. Geochemical sampling failed to detect anything above background levels. No further work was recommended.

COMPANY: DELHI AUSTRALIAN PETROLEUM LTD

TENEMENT/YEAR: SML 45 1962-64, ENV213
SML 67 1964-65, ENV422

ENVELOPE: 213
422

1:250 000 SHEET: BILLA KALINA

1:100 000 SHEET: ENGENINA

TARGET:

AGE/ROCK UNITS:

STRUCTURE:

EXPLORATION SUMMARY:

MINERALISATION/ DRILLING RESULTS:

Delhi Australia Petroleum Co. Ltd., aimed to determine the mineralogical cause of the magnetic anomalies in the Mt Woods area. Two combined ground magnetic and gravity surveys were completed (Mt. Woods [535000E, 6755000N] and Mt. Woods South [547000E, 6723300N]) which indicated anomalies up to 15 000 gammas. Generalised mapping of the Mt Woods outcrop was completed and indicated a westward pitching synclinal fold involving micaceous granulites and quartzites. Rock chip samples were collected, analysed and petrographically examined. A drilling programme was conducted at the Mt. Woods South Anomaly. Mud drilling to basement and diamond coring confirmed the presence of significant concentrations of magnetite at a moderate depth. MW 1 (DTB 260 ft [79.2m], TD 477.7 ft [145.6m]) intersected Qtz-Mt diorite ±Py-Chl-Fspar and calcite, magnetite lenses up to 2m (approx. 7 ft), granitic gneiss ±Py-Mt-Cpy, Bt-Mt±Kspar±Qz diorite, banded hornfels and Mt amphibolite ±Cpy-Py. Anomalous Cu up to 330 ppm was detected from 336 ft [102.4m] to 343 ft [104.5m]. Anomalous Fe 66.8% and Cu 500 ppm exist at 396 ft [120.7m] and again at 414 ft [126.2m]. MW 2 (DTB 300 ft [91.4m], TD 326.1ft [99.42m]) intersected Qz-Mt quartzite and Qz-Fspar-Mt gabbro ±Py ±Chl. MW 3 (DTB 190 ft [57.9m], TD 236.1 ft [71.98m]) intersected Qz-Mt altered gabbro and Qz-Fspar-Mt gabbro ±Chl ±Py ±Calc ±flourescent Fspars and calcite. MW 4 (DTB 303 ft [92.3m], TD 306.9 ft [93.5m]) intersected metamorphosed limestone. MW 5 (DTB 160 ft [48.7m], TD 167 ft [50.9m]) intersected pyritic amphibole with Fspar laths, Mt-Py and calcite and altered gabbro. MW 6 (DTB 202 ft [61.5m], TD 211ft [64.3m]) intersected Qz-Fspar-Mt gneiss with specular hematite. MW 7 (DTB 288 ft [87.8m], TD 297'2 ft [90.6m]) intersected Hem-Mt hornfels and Qz-Mt aplite ± Py and mica. Incomplete reporting, confusing geochemical references, poorly labelled tables of geochemical data and

misidentification of key minerals and therefore rock types and geological environments make this envelope one to be cautious of.

COMPANY: CARPENTARIA EXPLORATION CO. PTY. LTD

TENEMENT/YEAR: EL 473 1979-81

ENVELOPE: 3516

1:250 000 SHEET: COOBER PEDY

1:100 000 SHEET: JUMBUCK

EXPLORATION SUMMARY:

MINERALISATION/ DRILLING RESULTS:

Commonwealth Hill-Jumbuck Prospect (380000E, 6688000N)

An airborne magnetic and radiometric survey over the licence area was completed and interpreted to define exploration targets. A helicopter-borne gravity survey was also completed. This was followed by 37 line km of ground magnetics positioned to enhance the airborne data. Drill hole CH1 (DTB 2.5, TD 100m) intersected Qz-Fspar±Mt granite, Hblende gabbro, Phlog-Amph-Fspar-Qz-mafic and olivine gabbro. CH2 (DTB 6, TD 30m) intersected granite ±Mt, olivine-Bt-Amph-Pyx-Mt gabbro mixed with Qz-Kspar granite ±Py. CH3 (DTB 14.5, TD 50m) intersected granite and gabbro lithologies apparently mixed. Granite composition: Pink Fspar-Qz±Mt. Gabbro composition: Qz-Fspar-Mt-Amph-Pyx-mica.Elevated Zn (160 ppm) was detected at 24-25m. CH4 (DTB 5, TD 50m) intersected Kspar-Qz granite, micaceous schist, and Fspar-Qz-mica-Mt granite. Elevated Cu (up to 150 ppm), Zn (up to 260 ppm), Ni (up to 180 ppm) and (Cr 190 ppm) exists between 16 -27m in the micaceous schist. CH5 (DTB 4, TD 50m) intersected weathered granite, granite and gabbro. Elevated Zn (270 ppm) occurs at 26 -28m. CH6 (DTB 8, TD 80m) intersected weathered granite, Fspar-Qz granite, mixed granite ±Mt and gabbro ±Mt. Elevated Zn occurs randomly throughout the hole. CH7 (DTB 6, TD 80m) intersected micaceous-Fspar-Qz granite, mixed granite and gabbro with 5% Mt, Hblende rich gabbro and gabbro with sulphides. Anomalous Ni (up to 270 ppm) exists between 68 -80m. CH8 (DTB 6, TD 50m) intersected Amph-Pyx Mt-Fspar gabbro. No geochemistry was performed. CH9 (DTB 4, TD50m) intersected Amph-Pyx-olivine-Mt-Fspar-Qz gabbro, Qz-Kspar granite and Qz-Fspar-?Hblende granite. No geochemistry was performed. CH10 (DTB 18, TD 140m) intersected Qz-Fspar-mafics±Bt±Chl granite and Amph-Pyx-Fspar-Qz ±Mt gabbro. CH11 (DTB 22, TD 180m) intersected mafic granite (dk green plagioclase), Kspar-Qz-Amph granite, Gabbro ±5% Mt, Hblende-Pyx-Mt gabbro, granite with Mt and sulphides, and mixed granite-gabbro. No anomalous geochemistry was detected. CH12 (DTB 15, TD 40m) intersected weathered granite and micaceous granite. No anomalous geochemistry was detected. CH13 (DTB 7, TD 182m) intersected weathered granite, micaceous granite, Amph-Pyx-olivine-Mt gabbro, mixed gabbro and granite, granite with 2% sulphides and

Kspar-Qz-Py-Mt-mafic granite. No anomalous geochemistry was detected. CH14 (DTB 6, TD 52.5m) intersected weathered granite, Micaceous-Kspar-Qz-Mt ?gabbro, mixed granite and gabbro, micaceous granite and Qz-Fspar-Mt granite. Elevated Cu (up to125 ppm) Zn (up to 155 ppm) and Ni (up to 85 ppm) exists between 24 -34m in a micaceous-Kspar-Qz-Mt ?gabbro. CH15 (DTB 2, TD 50m) intersected weathered granite Fspar-Qz-Bt granite and gabbro. Zn up to 330 ppm occurs between 16-18m in micaceous granite. CH16 (DTB 5, TD 178m) intersected weathered micro granite, Kspar-Qz-Bt-Mt granite, gabbro and gabbro with 5% Mt. Elevated Cu (150) Zn (160), Ni (190 ppm) and Mn (2900 ppm) exist between 30-32m. Down hole gamma logs were completed for holes CH1-CH4, CH6 -CH9. Petrology exists. Petrology indicates that all of these rocks have undergone regional metamorphism to upper amphibolite facies and retrogressive metamorphism. Pyroxene granulite and charnockite are the commonest rock type and probably represent highly metamorphosed gabbro and granite respectively.

COMPANY:	UTAH DEVELOPMENT COMPANY
TENEMENT:	SML 581 SML622 EL 14 EL 100 EL125 EL250 EL 433 EL806
DATE:	1971-1982
ENVELOPE:	
1:250 000 SHEET:	COOBER PEDY
1:100 000 SHEET:	PHILLIPSON WOORONG INGOMAR PEAK YERADA

EXPLORATION SUMMARY:

MINERALISATION/ DRILLING RESULTS:

Utah Development Company held tenements around Lake Phillipson for eleven years. During this time over 500 drill holes were drilled. Only 18 penetrated basement. Limited analysis was completed on these basement samples. To avoid doubling up of information the author refers the reader to report book 94/45.

COMPANY: DEPARTMENT OF MINES, SOUTH AUSTRALIA

TENEMENT:

DATE: 1969

ENVELOPE: RB70/40

1:250 000 SHEET: COOBER PEDY
MURLOOCOPPIE

1:100 000 SHEET:

EXPLORATION SUMMARY:

MINERALISATION/ DRILLING RESULTS:

Karkaro No 1 (28'35'58", 133'46'27")
Karkaro 1 (DTB 472.5m, TD 481.4m) was drilled in a gravity and seismically defined depression to verify suspected Permian sediments and to identify a shallow consistent refractor. Granitic, Fspar-Bt-Qtz after passing through Cretaceous, Jurassic and Permian sediments. Basement was intersected after passing through Cretaceous, Jurassic and Permian sediments. No geochemistry.

Mt Furner No 1 (28'6'15", 134'28'00")
Mt Furner 1 (DTB 549.3m TD 555.1m) was drilled in a depression known as the Murloocoppie gravity depression. Granitic gneiss basement was intersected after passing through Cretaceous, Jurassic and Permian sediments. No geochemistry.

Wallira No 1 (29'27'03", 134'04'31")
Wallira No 1 (DTB 216.4m, TD 220m) was drilled based on seismic profiles across the Coober Pedy gravity ridge. A granodioritic, Qtz-Plag-Bt gneiss was intersected after passing through Cretaceous, Jurassic and Permian sediments. No geochemistry.

Wallira No 2 (29'[20'26", 133'49'42")
Wallira No 2 (DTB 334.1m, TD 335.6m) was drilled based on seismic profiles across the Coober Pedy gravity ridge. An altered pyroxene granulite was intersected after passing through Cretaceous, Jurassic and Permian sediments. No geochemistry.

COMPANY: DEPARTMENT OF MINES, SOUTH AUSTRALIA

TENEMENT:

DATE: 1976

ENVELOPE: RB76/131

1:250 000 SHEET: COOBER PEDY

1:100 000 SHEET: COOBER PEDY

EXPLORATION SUMMARY:

MINERALISATION/ DRILLING RESULTS:

Rankins Dam (458500E, 6759500N)

Fourteen shallow drillholes were drilled at Rankins Dam to investigate a proposed ballast site for the Tarcoola-Alice Springs Railway. It was intended to locate a 200 000 m^3 deposit of limestone which was known to occur in the area. All drillholes failed to intersect basement. RD1 (BNR, TD9.5m). RD2 (BNR, TD 7m). RD3 (BNR, TD 14m) intersected 4.5m of limestone. RD4 (BNR, TD 5m) intersected 2.7m of limestone. RD5 (BNR, TD 4m). RD6 (BNR, TD 6m) intersected 5m of limestone. RD7 (BNR, TD 6m) intersected 1.3m of limestone. RD8 (BNR, TD 7m) intersected 1m of limestone. RD9 (BNR, TD5.5m) intersected 1m of limestone. RD10 (BNR, TD 6m). RD11 (BNR, TD 5m) intersected 3m of limestone. RD12 (BNR, TD 7m) intersected 4m of limestone. RD13 (BNR, TD 3.5m) and RD14 (BNR, TD 3m). Only four drillholes intersected limestone of 3m or more and the deposit was agreed to be of inadequate size.

COMPANY: DEPARTMENT OF MINES, SOUTH AUSTRALIA

TENEMENT:

DATE: 1971

ENVELOPE: RB71/127

1:250 000 SHEET: COOBER PEDY
MURLOOCOPPIE

1:100 000 SHEET:

EXPLORATION SUMMARY:

MINERALISATION/ DRILLING RESULTS: A shallow seismic refraction and ground magnetic survey of areas between Robin Rise and Mabel Creek was completed in 1971. Ninety one shot holes were drilled and blasted. However no geological information was recorded. One drillhole testing depth to basement was logged. CPB7 (DTB 31.7m, TD 34.3m) intersected Fspar-Qz-Pyx-Hblend rock. No geochemistry.

COMPANY: DEPARTMENT OF MINES, SOUTH AUSTRALIA

TENEMENT:

DATE: 1972

ENVELOPE: RB72/171

1:250 000 SHEET: COOBER PEDY
TARCOOLA
MURLOOCOPPIE
WINTINNA

1:100 000 SHEET:

EXPLORATION SUMMARY: Seismic surveying, site investigations of dolomite, GRV, granite, BIF, silcrete, silicified sandstone, jasper and creek gravels.

MINERALISATION/ DRILLING RESULTS: 117 seismic shotholes were logged. Bottom hole descriptions exist. All holes were terminated short of basement. Eight rotary air-core drillholes were drilled at the Perfection Well area. Two intersected basement. MPW1 (DTB 20.42m, TD 22.25m) intersected Qtz-Fspar porphyry. MPW3 (DTB 31.69m, TD 34.29m) intersected Fspar-Qtz Pyx-Hbl gneiss, of adamellite composition, ?Diamond drillholes were drilled to test ballast sites.

Birthday Ballast Site
DDH1 (DTB 0m, TD 19.81m) intersected Qtz-Fspar porphyry with rare pyrite, occasional hornblende blebs and limonitic staining. DH2 (DTB 0m, TD 20.12m) intersected Qtz-Fspar porphyry. DDH3 (DTB 0.86m, TD 19.81m) intersected Qtz-Fspar porphyry. No geochemistry.

Perfection Well Ballast Site (470000E, 6710500N)
DDH1 (DTB 0.06m, TD 19.81m) intersected Fspar porphyry.
DDH2 (DTB 1.02m, TD 19.81m) intersected Fspar porphyry.
DDH3 (DTB 0.10m, TD 19.6m) intersected Fspar porphyry.
Geochemistry exists.

COMPANY:	DEPARTMENT OF MINES, SOUTH AUSTRALIA
TENEMENT:	
DATE:	1975
ENVELOPE:	RB75/48
1:250 000 SHEET:	COOBER PEDY MURLOOCOPPIE
1:100 000 SHEET:	
EXPLORATION SUMMARY:	Diamond drilling along route proposed for Tarcoola-Alice Springs Railway.
MINERALISATION/ DRILLING RESULTS:	Thirty four diamond drillholes were completed along the proposed Tarcoola-Alice Springs Railway route between 27'30" and 133'45" and 452200E, 6758100N. All holes were drilled to eleven metres and were terminated in Bulldog Shale or Cadna-Owie Formation.

COMPANY:	DEPARTMENT OF MINES, SOUTH AUSTRALIA
TENEMENT:	
DATE:	1965
ENVELOPE:	RB61/30
1:250 000 SHEET:	COOBER PEDY
1:100 000 SHEET:	
EXPLORATION SUMMARY:	Percussion drilling and later rotary drilling for water near Coober Pedy.
MINERALISATION/ DRILLING RESULTS:	**(475000E, 6791000N) Stuart Range Bore No 3** (BNR, TD 622.8m) was drilled in 1961 for water and reached a depth of 250m before being backfilled to 170.7m and developed. The water cut was too saline for usage and the bore was abandoned. In 1964 the hole was deepened to explore for better quality water and to determine the depth to basement. The hole was terminated at 622.8m due to difficult drilling conditions, in a Permian boulder bed.

COMPANY:	DEPARTMENT OF MINES, SOUTH AUSTRALIA
TENEMENT:	
DATE:	1975
ENVELOPE:	RB72/120
1:250 000 SHEET:	COOBER PEDY
1:100 000 SHEET:	INGOMAR
EXPLORATION SUMMARY:	Diamond drilling along route proposed for Tarcoola-Alice Springs Railway.
MINERALISATION/ DRILLING RESULTS:	**(29'36'18", 134'45'22") Muddy Tank No 1 (**BNR, TD 123.7m) was rotary drilled to sample known fossiliferous late Jurassic clays. The hole bottomed in Mt Toodina Formation.

COMPANY: DEPARTMENT OF MINES, SOUTH AUSTRALIA

TENEMENT:

DATE: 1976

ENVELOPE: RB78/38

1:250 000 SHEET: COOBER PEDY
TALLARINGA

1:100 000 SHEET:

EXPLORATION SUMMARY: A comprehensive stratigraphic drilling investigation incorporated 16 drillholes. Holes were submitted for palynological identification, ash and moisture content of lignites, clay mineralogy identification, petrology, heavy mineral examination and geochemical analysis for U and Th.

MINERALISATION/ DRILLING RESULTS:

TPS1 (391029E, 6733936N)
(DTB 8.5, TD 31.2m) intersected Fspar-Qtz-mica granite.

TPS2 (438516E, 6730987N)
(DTB 30m, TD 30.8m) intersected granite.

TPS3 (435662E, 6733143N)
(BNR, TD 33.1m) bottomed in cobble bed and Qtz sands.

TPS4 (357967E, 6719636N)
(DTB 39m, TD 45.3m) bottomed in pyritic gneiss.

TPS5 (356795E, 6713751N)
(DTB 6m, TD 12.24m) bottomed in weathered chloritic granite.

TPS6 (357482E, 6717472N)
(BNR, TD 32m) bottomed in loose collapsing sands.

TPS7 (380000E, 6734864N)
(BNR, TD 33.45m) bottomed in pebble-gritty sands.

TPS8 (380601E, 6734915)
(BNR, TD 30.62m) bottomed in diamictic clays and sandy clays.

TPS9 (379180E, 6731719N)
(BNR, TD 42.75m) bottomed in sandy lignite.

TPS10 (357368E, 6725210N)
(DTB 13.2m TD 33.2m) intersected kaolinised Qtz-Fspar gneiss.

TPS11 (357390E, 6721851N)
(DTB 7.3m, TD 27.76m) intersected weathered and fresh Qtz-Fspar-Bt-Ga granite.

TPS12 (375964E, 6724984N)
(BNR, TD 36.75m) bottomed in black carbonaceous clay.

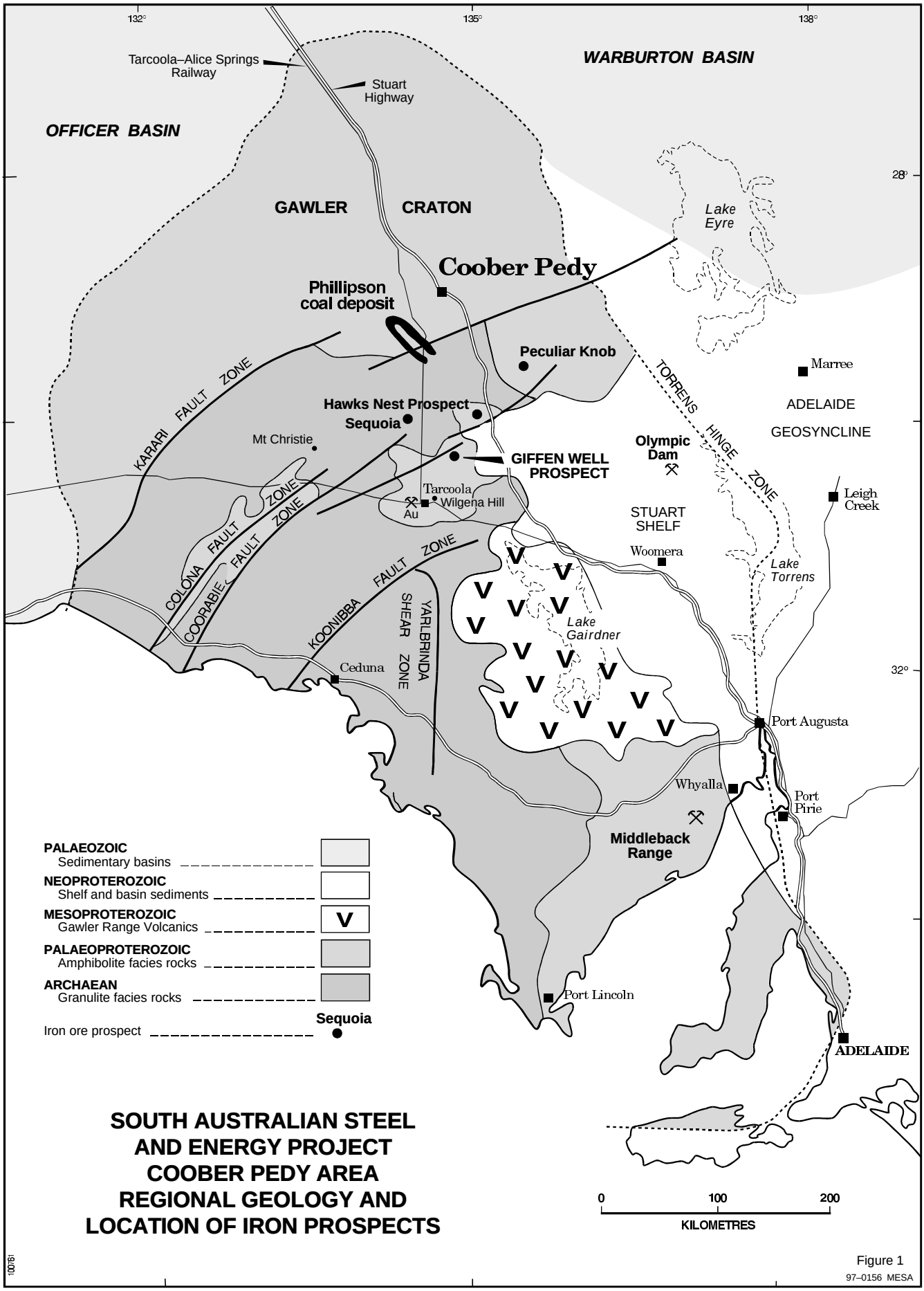
TPS13 (328724E, 6721347N)
(DTB, 13.5m, TD 17.9m) intersected Qtz-Fspar-Ga-Bt gneiss.

TPS14 (323920E, 6719504N)
(DTB 23.5m, TD 29.8m) intersected Fspar-Qtz-Bt granodiorite.

TPS15 (330465E, 6762496N)
(BNR, TD 33.5m) bottomed in orange Qtz sand.

TPS16 (315734E, 6739596N)
(BNR, TD 35.8m) bottomed in grey siltstone and gritty clay.

COMPANY:	DEPARTMENT OF MINES, SOUTH AUSTRALIA
TENEMENT:	
DATE:	1961
ENVELOPE:	RB52/37
1:250 000 SHEET:	COOBER PEDY
1:100 000 SHEET:	
EXPLORATION SUMMARY:	Examination and reinterpretation of water bores sunk between 1887 and 1920.
MINERALISATION/ DRILLING RESULTS:	**Lake Phillipson Bore No 1 (29'45'58", 134'61'472")** Lake Phillipson Bore (DTB 957.3m, TD 963.7m) was drilled in 1905 by the Department of Mines and was logged by H Y L Brown. The hole passed through Lower Cretaceous mudstones, Jurassic sands, Lower Permian mudstone, coal, sandstone and boulder clays, Proterozoic feldspathic rock and chocolate coloured shales and ?Archaean granite. **Stuart Range No 1** Stuart Range No 1 (BNR, TD 203.6m) was drilled in 1919 and bottomed in Permian mudstones and siltstones. **Stuart Range No 2** Stuart Range No 2 (BNR, TD 304.8m) was drilled in 1920 and bottomed in Permian mudstones and siltstone.

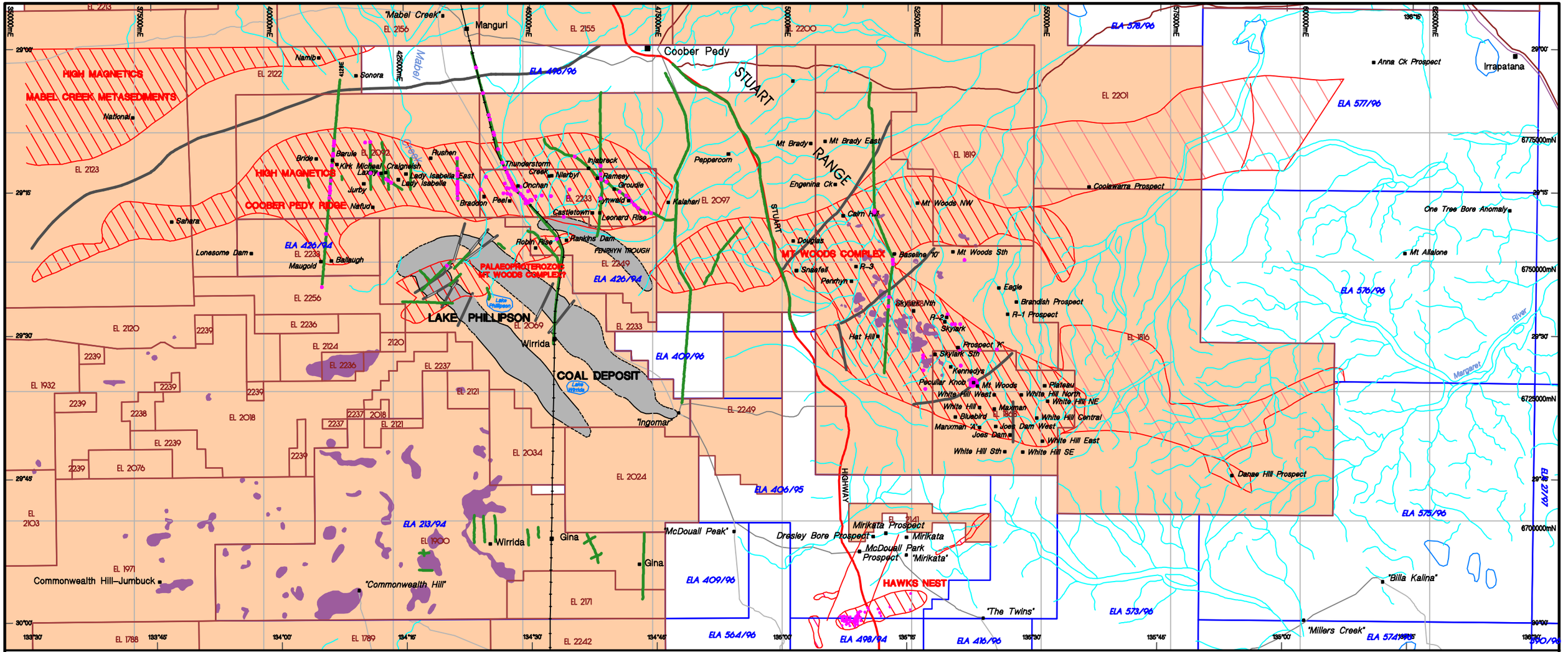


SOUTH AUSTRALIAN STEEL AND ENERGY PROJECT COOBER PEDY AREA REGIONAL GEOLOGY AND LOCATION OF IRON PROSPECTS

Figure 1

97–0156 MESA

10076i



LEGEND

- High magnetics areas
- Lower intensity magnetic areas
- Outcropping Archaean/Proterozoic basement
- Extent of major coal seams
- Exploration Licence boundary
- Exploration Licence Application boundary
- Fault
- Ground magnetic traverse
- Drillhole
- Prospect

Figure 2

South Australian Steel and Energy

LAND TENURE PLAN SHOWING PROSPECTS COOBER PEDY AND BILLA KALINA

1997–0164 MESA

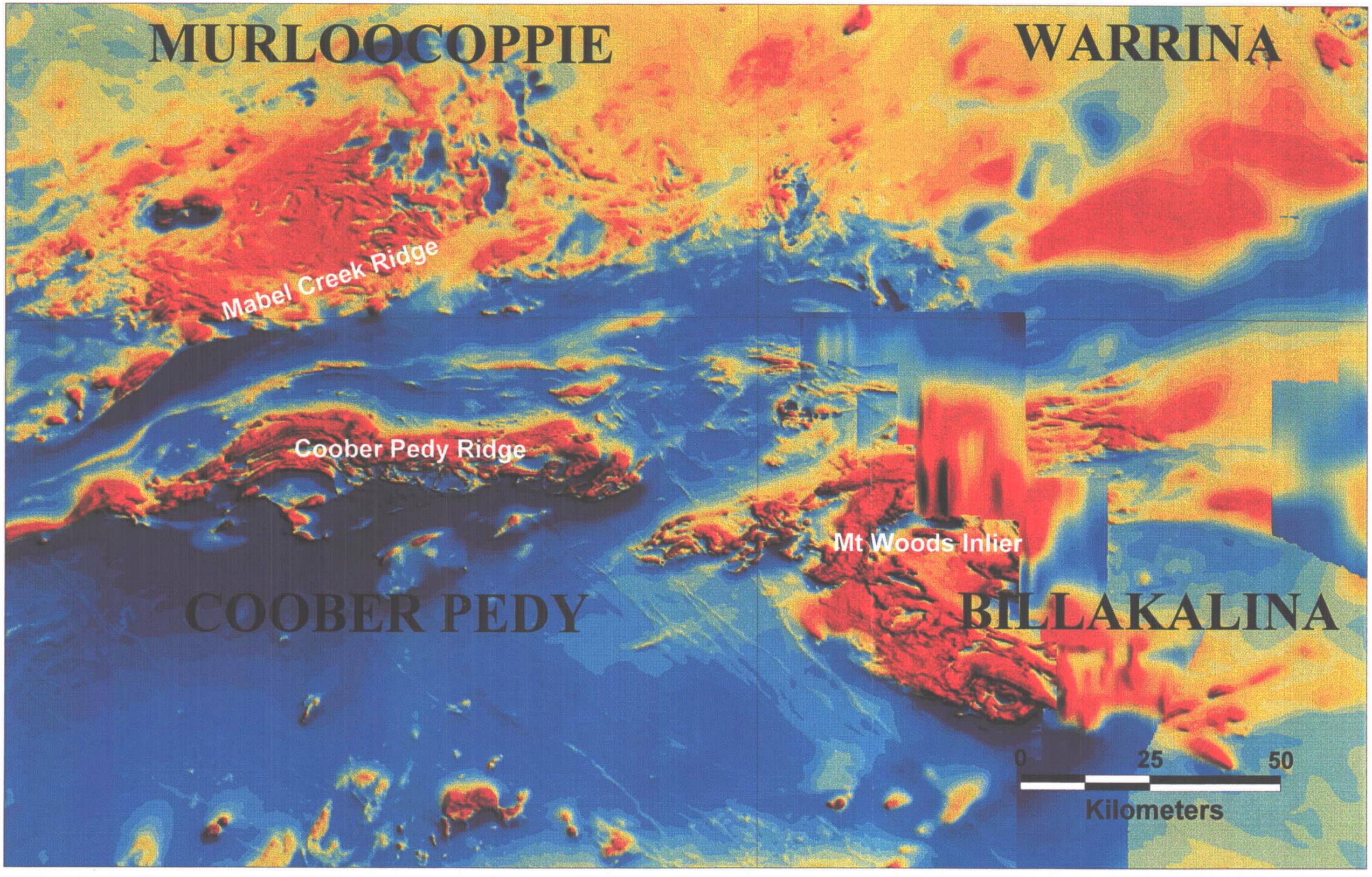
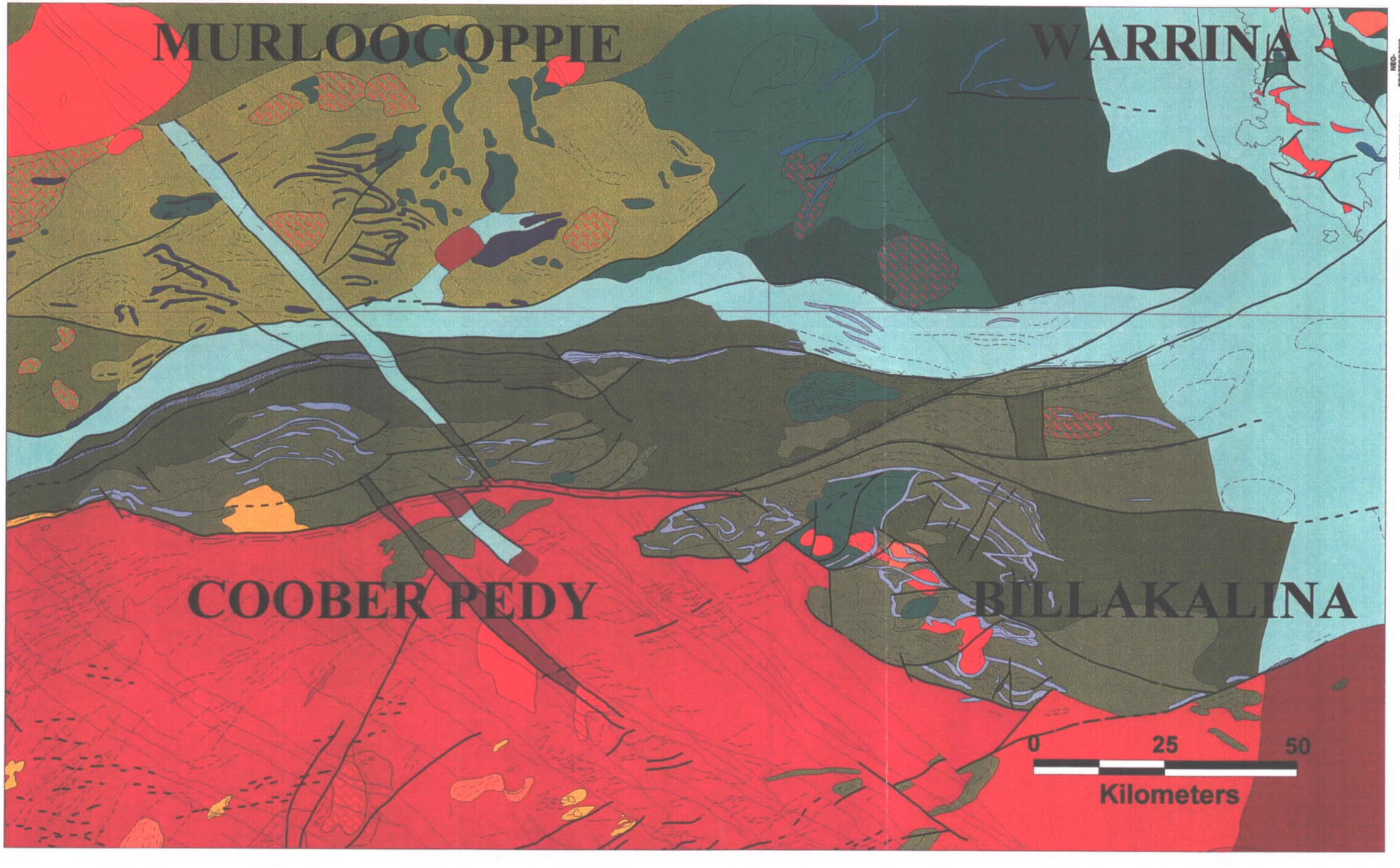


Fig. 3 Total Magnetic Intensity of the Coober Pedy Ridge-Mt. Woods Inlier region



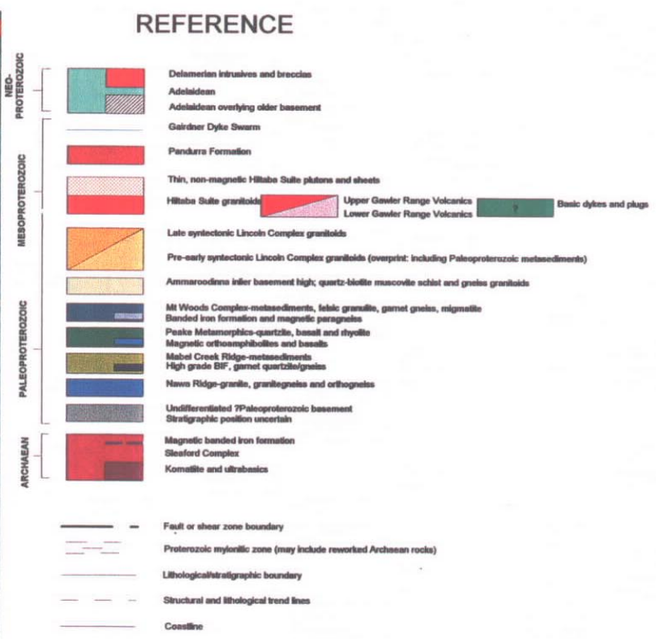
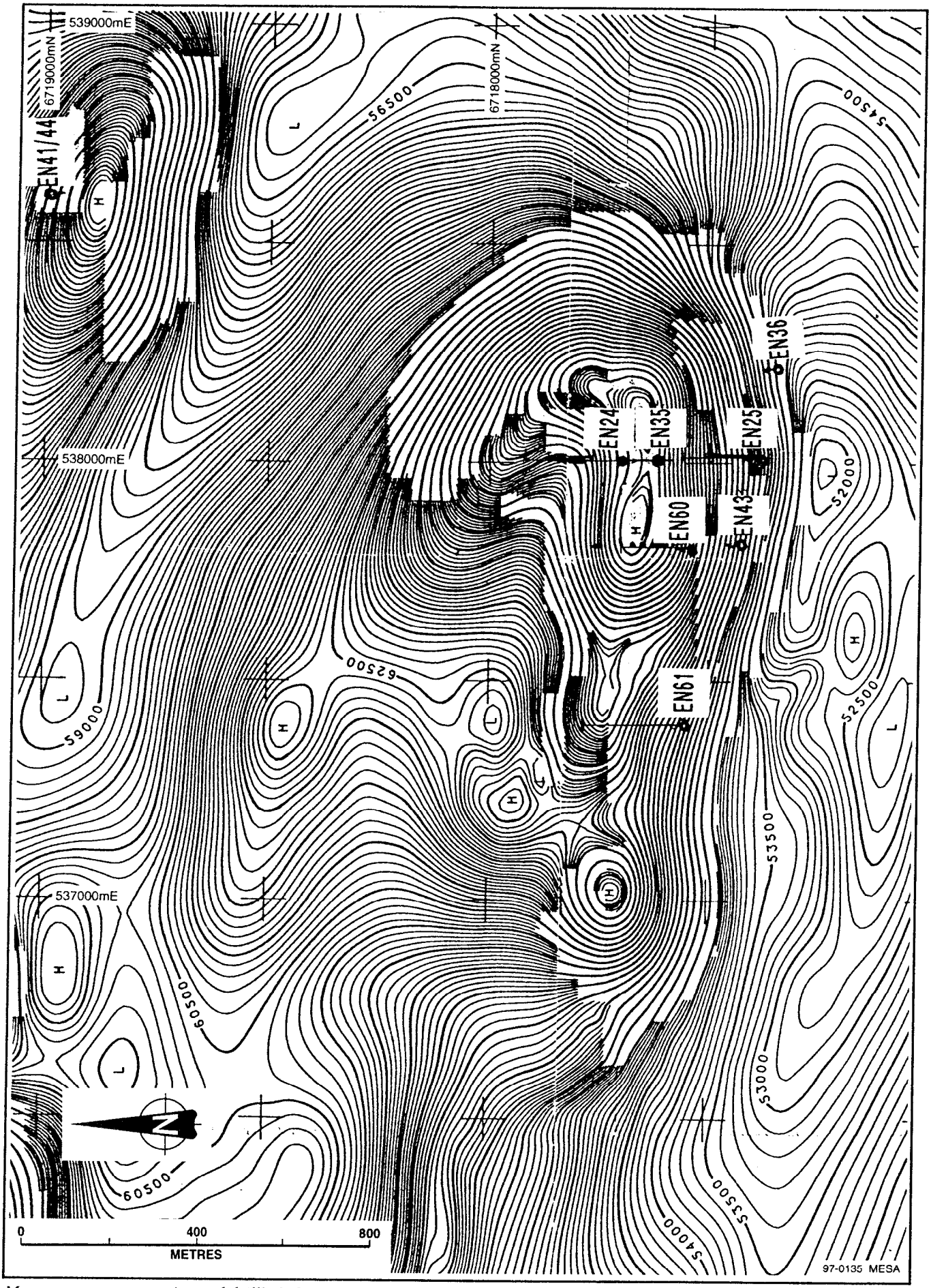


Fig. 4 Interpreted basement geology of the Coober Pedy Ridge-Mt. Woods Inlier region



Manxman aeromagnetics and drillhole locations

Fig.5