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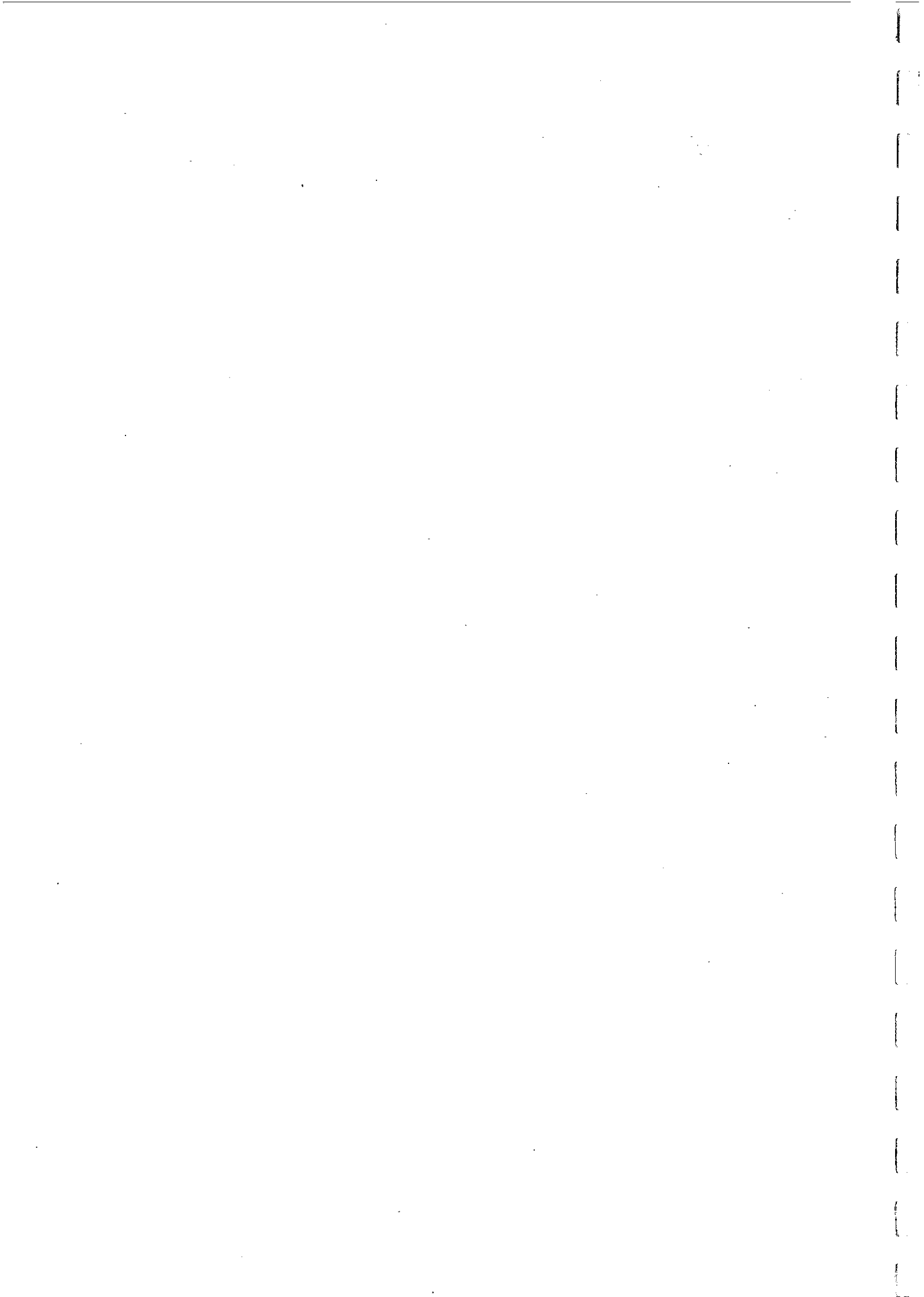
**CATALOGUE OF MAGNETIC PROPERTIES OF
AUSTRALASIAN ROCKS III**

**(AMIRA PROJECT 78/P96B: APPLICATIONS
OF ROCK MAGNETISM)**

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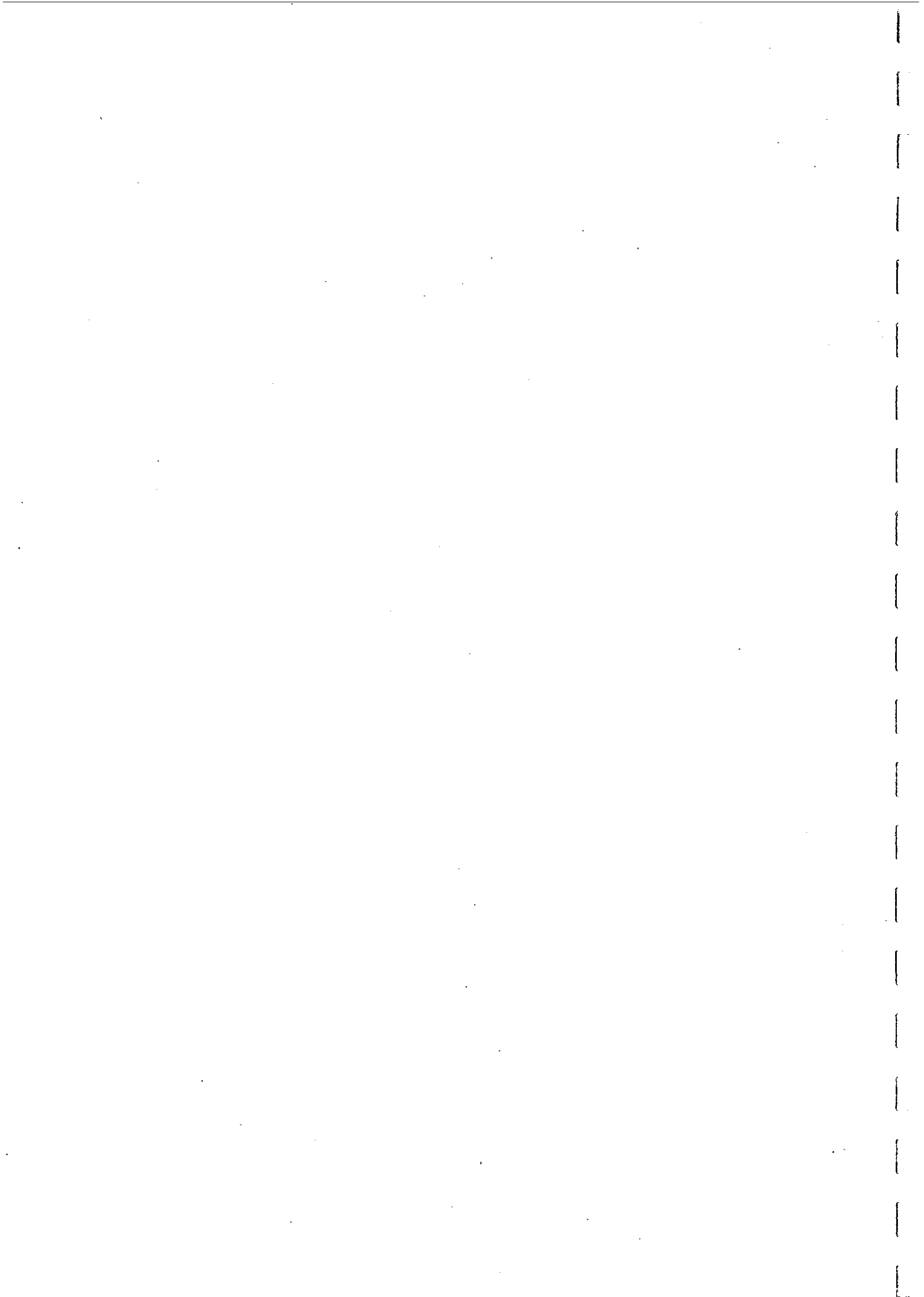
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INTRODUCTION

This catalogue lists basic magnetic properties of rock samples collected during the course of AMIRA projects 78/P96, 78/P96A and 78/P96B (Applications of Rock Magnetism), as well as samples submitted by companies for proprietary studies and samples collected for other research projects of the CSIRO Rock Magnetism Group at North Ryde. The precise locations and other identifying details of the samples are not given if this information could violate confidentiality. In many cases, however, this information is no longer sensitive and, wherever possible, extra information about the location and geological setting of the samples is given in the remarks section of the data files.

The information contained herein is presented as two catalogues: the lithology index and the map sheet index. In the lithology index the files are classified according to rock type and within each lithological category samples are listed in order of increasing age. Within each lithology/age category samples are listed according to 1:250,000 map sheet area, given in alphabetical order. In order, the lithological categories are:

- basalt/dolerite/spilite
- rhyolite/dacite/andesite
- gabbro/norite
- diorite/monzonite
- granite/granodiorite
- ultramafic
- amphibolite/basic granulite
- acid granulite
- quartz-magnetite/bif
- massive magnetite
- massive haematite
- sulphide ore
- disseminated pyrrhotite
- disseminated magnetite
- sediments
- metasediments
- skarn
- laterite/gossan.

The format for the lithology index is:

lithology

| | | | | |
|-----------|---|---|---|---|
| Age | k | J | Q | A |
| Map Sheet | | | | |

Remarks.....

Here, k is the bulk susceptibility in microgauss/Oersted (i.e. k= cgs (emu) susceptibility x 10⁶), J is the NRM intensity in microgauss (10 microgauss = 1 gamma), Q is the Koenigsberger ratio (Q = remanent intensity/induced intensity = J/kF, where F is the geomagnetic field in Oersteds (1 Oe = 10⁵ gammas)), and A

is the anisotropy parameter (A = major susceptibility/minor susceptibility). All quantities are given in the form:

mean
(minimum-maximum).

The map sheet index lists data in alphabetical order of 1:250,000 sheet area. Within each map sheet area the data are listed in order of increasing age. The format for the map sheet index is:

Map Sheet

| | | | | |
|-----------|---|---|---|---|
| Lithology | k | J | Q | A |
| Age | | | | |

Remarks.....

This catalogue has been created using a computerised database, which will facilitate regular updating during the course of AMIRA project 78/P96C and will enable manipulation of the data to produce catalogues in various formats, as desired by participating sponsors.

LITHOLOGY

| Age & Map Sheet | basalt/dolerite/spilite | | | A |
|--|-------------------------|-----------------------|---------------------|------|
| | k | J | Q | |
| Tertiary Burnie, TAS basalt | 1300 (110-4300) | 1870 (1180-2560) | 1.6 | |
| Tertiary Burnie, TAS basalt | 600 | 3740 | 10.9 | |
| Tertiary Burnie, TAS basalt | 930 (720-1140) | 2920 (1780-4050) | 4.9 (4.0-5.7) | |
| Tertiary Burnie, TAS basalt | 560 (200-1460) | 7500 (285-37000) | 22.0 (1.0-71.0) | |
| Tertiary Burnie, TAS basalt | 1680 (330-4760) | 26200 (4830-81800) | 17.0 (6.0-27.0) | |
| Tertiary Dubbo, NSW basalt | 150 (130-160) | 3080 (2550-3800) | 37.0 (27.0-50.0) | |
| Tertiary Sydney, NSW basalt | 1040 (30-2870) | 840 (10-1800) | 2.0 (0.5-3.8) | |
| Cretaceous Collie, WA Bunbury Basalt | 170 | 5000 | 49.0 | |
| Jurassic Burnie, TAS dolerite | 170 (90-240) | 1500 (230-2720) | 11.0 (4.0-18.0) | 1.04 |

LITHOLOGY

basalt/dolerite/spilite

| Age & Map Sheet | k | J | Q | A |
|--|---------------------|-----------------------|-------------------|------|
| Ordovician Forbes, NSW | 130 | 755 | 9.3 | 1.03 |
| dolerite | | | | |
| Cambrian Burnie, TAS | 60 (30-70) | 9 (1-40) | 0.3 (0.2-1.4) | |
| spilite, Dundas tramway | | | | |
| Cambrian Burnie, TAS | 47 | 20 (1-40) | 0.1 (0.0-1.4) | 1.01 |
| spilite, Dundas tramway | | | | |
| Late Proterozoic? Ashton, WA | 3200 (60-8000) | 17000 (70-46000) | 5.8 (2.4-11.5) | |
| dolerite | | | | |
| Proterozoic Darwin, NT | 90 | 1 | | 1.02 |
| metadolerite | | | | |
| Proterozoic Mt Isa, QLD | 7300 (930-15000) | 26700 (50- 130500) | 6.5 (0.0-20.0) | 1.11 |
| metabasalts (Eastern Creek Volcanics) | | | | |
| Proterozoic Port Augusta, SA | 6020 | 1640 | 0.4 | |
| Proterozoic Widgiemooltha, WA | 5050 | 1370 | 0.4 | 1.01 |
| interior of dolerite dyke cutting Archaean greenstones at Kambalda. | | | | |
| Proterozoic Widgiemooltha, WA | 60 | 7 | 0.2 | 1.07 |
| chilled margin of dolerite dyke, intruding Archaean greenstones at Kambalda. | | | | |

LITHOLOGY

basalt/dolerite/spilite

| Age & Map Sheet | k | J | Q | A |
|--|----------------------|----------------------|---------------------|---------------------|
| Lower Proterozoic Turee Creek, WA | 90 | 2 | | 1.00 |
| dolerite sill intruding S-dipping Weeli Wolli Formation (bif) at Paraburadoo. Vector mean NRM direction: dec=300, inc=-47. | | | | |
| Lower Proterozoic Walhallow, NT | 5900 (4700-7200) | 570 (450-700) | 0.2 (0.1-0.2) | |
| basalt, Towalla Formation? | | | | |
| Archaean Kalgoorlie, WA | 4980 (980-11100) | 1620 (40-4800) | 0.5 (0.0-1.1) | 1.19 (1.10-1.27) |
| Golden Mile Dolerite, metamorphosed to greenschist grade. Vector mean NRM direction: dec=45, inc=+42. NRM is stable and of dual polarity but lies close to DDH axis. The measured NRM may be drilling-induced and therefore unrepresentative. | | | | |
| Archaean Kalgoorlie, WA | 7790 (4080-10380) | 590 (150-1600) | 0.1 (0.0-0.6) | 1.05 (1.03-1.06) |
| Golden Mile Dolerite, unaltered, metamorphosed to mid-greenschist grade, from Kalgoorlie. GMD units 4?, 6?, 7? | | | | |
| Archaean Kalgoorlie, WA | 3730 (70-12220) | 300 (2-990) | 0.1 (0.0-0.4) | 1.22 (1.02-2.19) |
| Golden Mile Dolerite (units 1, 3, 4, 7-10), metamorphosed to mid-greenschist grade. Hannan Lake area. | | | | |
| Archaean Kalgoorlie, WA | 4060 (3040-4840) | 120 | | 1.10 (1.06-1.14) |
| Hannan Lake Serpentinite (deuteroically altered, metamorphosed to mid-greenschist grade) from Kalgoorlie. | | | | |
| Archaean Kalgoorlie, WA | 790 (40-2160) | 14200 (130-37700) | 31.0 (30.0-47.0) | 1.20 (1.14-1.22) |
| hydrothermally altered, mineralised, porphyritic and pillow basalts, containing pyrrhotite and pyrite. NRM is carried by pyrrhotite and is a stable, ancient, monocomponent remanence, apparently directed N and shallow down. Samples from Ora Banda. | | | | |

LITHOLOGY

basalt/dolerite/spillite

| Age & Map Sheet | k | J | Q | A |
|----------------------------|-----------------|-----------------|-------------------|---------------------|
| Archaean Kalgoorlie, WA | 100 (80-130) | 400 (40-870) | 7.0 (1.0-12.0) | 1.05 (2.03-1.06) |

unaltered basalts from Ora Banda. NRM apparently steep up, but is possibly affected by drilling-induced piezoremanence.

| | | | | |
|--------------------------|------|------|-----|------|
| Archaean Norseman, WA | 1750 | 6680 | 6.6 | 1.29 |
|--------------------------|------|------|-----|------|

magnetic altered (quartz-veined) plagioclase phenocrystic basalt, metamorphosed to mid-amphibolite grade, from Norseman. The NRM may reflect drilling-induced piezoremanence and may be unrepresentative.

| | | | | |
|--------------------------|----------------|---------------|------------------|---------------------|
| Archaean Norseman, WA | 86 (66-114) | 35 (26-49) | 0.7 (0.4-1.0) | 1.01 (1.00-1.02) |
|--------------------------|----------------|---------------|------------------|---------------------|

weakly magnetic basalts (unaltered/quartz-veined/carbonate-sericite altered) from Norseman, metamorphosed to mid-amphibolite grade. NRMs are possibly contaminated by drilling-induced piezoremanence and may be unrepresentative.

| | | | | |
|--------------------------|-----|------|-----|------|
| Archaean Norseman, WA | 470 | 2000 | 7.3 | 1.37 |
|--------------------------|-----|------|-----|------|

schistose, carbonate-sericite altered, basalt from Norseman, metamorphosed to mid-amphibolite grade. NRM possibly reflects drilling-induced piezoremanence and may be unrepresentative.

| | | | | |
|--------------------------|------------------|------------------|------------------|---------------------|
| Archaean Norseman, WA | 250 (100-280) | 640 (430-790) | 4.4 (2.7-6.9) | 1.33 (1.28-1.40) |
|--------------------------|------------------|------------------|------------------|---------------------|

moderately magnetic unaltered basalts (plagioclase phenocrystic/plagioclase-phyric) from Norseman, metamorphosed to mid-amphibolite grade. NRMs possibly reflect drilling-induced piezoremanence and may be unrepresentative.

| | | | | |
|-------------------------------|----------------------|-----|--|---------------------|
| Archaean Widgiemooltha, WA | 7120 (4750-11370) | 350 | | 1.09 (1.03-1.17) |
|-------------------------------|----------------------|-----|--|---------------------|

dolerites (plagioclase phenocrysts, pyroxene phenocrysts, pyroxene-phyric), from Kambalda, within the medium grade (low amphibolite facies) zone of the Norseman-Wiluna greenstone belt. J estimated by AF cleaning of NRM (contam. by drill. piezorem.).

rhyolite/dacite/andesite

| | | | | |
|--|----------------------|-------------------|------------------|---------------------|
| U.Oligocene-Lower Miocene Bouganville I. South, PNG | 8800 (5100-13050) | 600 (190-1800) | 0.1 (0.0-0.3) | 1.05 (1.05-1.18) |
|--|----------------------|-------------------|------------------|---------------------|

andesite flows with dual remanence polarity. JMEAN for normal polarity=1030 and for reversed polarity=190. Mean cleaned remanence direction (converted to N polarity): dec=351, inc=-40.

LITHOLOGY

| Age & Map Sheet | rhyolite/dacite/andesite | | | |
|---|--------------------------|------------------|------------------|------|
| | k | J | Q | A |
| Miocene May River, PNG | 2060 | 110 (80-140) | 0.1 (0.0-0.1) | 1.04 |
| Horse Andesite Porphyry | | | | |
| Carboniferous Atherton, QLD | 340 | 640 | 7.0 | |
| rhyodacite (Featherbed Volcanics) | | | | |
| Devonian Atherton, QLD | 630 | 140 | 0.4 | |
| volcanic agglomerate | | | | |
| Cambrian Burnie, TAS | 2180 | 9810 | 7.1 | |
| andesite | | | | |
| Cambrian Burnie, TAS | 4440 (2600-7050) | 300 (200-440) | 0.1 (0.0-0.1) | |
| andesitic Mt Read Volcanics | | | | |
| Proterozoic Port Augusta, SA | 2490 | 365 | 0.2 | |
| andesite/rhyolite | | | | |
| Lower Proterozoic? Tennant Creek, NT | 145 | 340 | 4.6 | |
| quartz-feldspar porphyry, possibly part of basement to Middle Proterozoic Warramunga Group. Source of Explorer 154 anomaly? | | | | |
| Lower Proterozoic? Tennant Creek, NT | 830 | 1500 | 3.2 | |
| quartz-feldspar porphyry, possibly in basement to Middle Proterozoic Warramunga Group. Source of Explorer 157 anomaly? | | | | |
| gabbro/norite | | | | |
| | 30 | 205 | 12.0 | |

LITHOLOGY

gabbro/norite

| Age & Map Sheet | k | J | Q | A |
|--|---------------------|---------------------|--------------------|---------------------|
| Cambrian? Burnie, TAS | 160 | 2900 (590-6200) | 28.0 (7.0-58.0) | 1.06 (1.04-1.10) |
| gabbro | | | | |
| Archaean Kalgoorlie, WA | 1800 (1430-2180) | 2870 (2390-3420) | 2.8 (2.7-2.9) | 1.04 (1.03-1.04) |
| magnetite+titanohaematite+haematite+ilmenite-bearing granophyric tonalite phase of folded differentiated gabbroic sill, near Kunanalling. NRM stable, ancient, changes polarity along strike. Vector mean NRM direction: dec=341, inc=-15. | | | | |
| Archaean Kalgoorlie, WA | 10 | 6 | 1.1 | 1.44 |
| hydrothermally altered quartz gabbro from Ora Banda. | | | | |
| Archaean Kalgoorlie, WA | 1030 (890-1170) | 4730 (2850-6630) | 7.9 (5.5-9.8) | 1.03 (1.05-1.05) |
| magnetite+haematite+ilmenite-bearing granophyric tonalite phase of folded differentiated gabbroic sill, near Kunanalling. NRM stable, ancient, dual polarity. Vector mean NRM of reversed section has dn:dec=139, inc=+6 | | | | |
| Archaean Kalgoorlie, WA | 30 | 72 | 4.1 | 1.00 |
| gabbroic unit within basalts, from Ora Banda. | | | | |
| Archaean Kalgoorlie, WA | 40 | 5 | 0.2 | |
| metagabbro (Black Flag Gabbro) | | | | |
| Archaean Kalgoorlie, WA | 1290 (230-2340) | 320 (160-470) | 0.4 (0.3-1.1) | 1.28 (1.16-1.29) |
| quartz gabbros from Ora Banda. | | | | |
| Archaean Norseman, WA | 1000 | 480 | 0.8 | 1.44 |
| magnetic pyroxene-phyric gabbro from Norseman within the mid-amphib-olite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning. | | | | |

LITHOLOGY

gabbro/norite

| Age & Map Sheet | k | J | Q | A |
|---|----------------------|------------------|------------------|---------------------|
| Archaean Norseman, WA | 7300 | 390 | | 1.20 |
| strongly magnetic plagioclase phenocrystic gabbro (unaltered) from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning. | | | | |
| Archaean Norseman, WA | 110 (80-150) | 130 (10-340) | 2.1 (0.2-4.0) | 1.01 (1.00-1.02) |
| weakly magnetic, unaltered olivine gabbro, pyroxene-phyric, pyroxene phenocrystic, and plagioclase phenocrystic gabbros from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Repres. NRMs est. by AF cleaning. | | | | |
| Archaean Widgiemooltha, WA | 3130 | 160 | | 1.17 |
| hydrothermally altered plagioclase-phyric gabbro from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. NRM contaminated by drilling piezoremanence. Representative J estimated by AF cleaning | | | | |
| Archaean Widgiemooltha, WA | 9170 (8320-10020) | 300 (230-360) | | 1.14 (1.13-1.14) |
| unaltered plagioclase phenocryst and magnetite phenocryst gabbros from Kambalda, within the medium-grade (lower amphibolite) zone of Norseman-Wiluna greenstone belt. NRMs contaminated by drilling piezo-remanence: rep. values determined by AF cleaning. | | | | |
| Archaean Youanmi, WA | 2300 (160-7600) | 500 (30-2300) | 1.1 (0.5-4.6) | |
| gabbro | | | | |

diorite/monzonite

| | | | | |
|--|----------------------|------------------|-----------|---------------------|
| Pliocene Bouganville I. South, PNG | 6900 (2600-11250) | 250 (120-510) | (0.1-0.1) | 1.06 (1.06-1.07) |
| leucocratic quartz diorite. Both polarities of remanence are present. | | | | |
| Pliocene Bouganville I. South, PNG | 5190 | 3150 | 1.5 | 1.10 |
| biotite diorite. Normally magnetised, NRM direction: dec=347, inc=-34. | | | | |

LITHOLOGY

diorite/monzonite

| Age & Map Sheet | k | J | Q | A |
|--|---------------------|--------------------|------------------|---------------------|
| Miocene May River, PNG | 2100 (1530-2620) | 50 (25-70) | | 1.08 (1.07-1.09) |
| Horse Microdiorite | | | | |
| Miocene May River, PNG | 360 | 18 | 0.1 | 1.03 |
| Koki Diorite Porphyry | | | | |
| Devonian Narromine, NSW | 3300 | 290 | 0.1 | 1.11 |
| diorite | | | | |
| Silurian Narromine, NSW | 5480 | 43900 | 16.0 | |
| monzonite | | | | |
| Ordovician Forbes, NSW | 2630 | 17870 | 10.9 | 1.13 |
| diorite | | | | |
| Ordovician Forbes, NSW | 730 | 1080 | 4.0 | 1.08 |
| diorite | | | | |
| Late Proterozoic? Tennant Creek, NT | 490 (150-830) | 1400 (340-2430) | 5.2 (4.6-5.7) | |
| quartz-feldspar porphyry | | | | |
| Proterozoic Barton, SA | 2 | 2 | 1.8 | |
| diorite from the central Gawler Craton. | | | | |
| Archaean? Early Prot? Collier, WA | 3740 (2290-5190) | 2670 (970-4480) | 1.3 (0.8-1.6) | |
| quartz diorites, possibly within basement to the Bangemall Basin. Vector mean NRM direction: dec=182, inc=-61. | | | | |

LITHOLOGY

diorite/monzonite

| Age & Map Sheet | k | J | Q | A |
|--------------------------|---------------------|-------------------|------------------|---------------------|
| Archaean Norseman, WA | 5450 (3810-7080) | 960 (320-3810) | 0.3 (0.0-0.7) | 1.40 (1.14-1.66) |

hornblende diorite (unaltered/deuterically altered) from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna green-stone belt. Representative NRMs estimated by AF cleaning.

| | | | | |
|-------------------------------|---------------------|----|--|---------------------|
| Archaean Widgiemooltha, WA | 3980 (2470-5500) | 50 | | 1.08 (1.05-1.14) |
|-------------------------------|---------------------|----|--|---------------------|

unaltered diorite from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. NRMs are contaminated by drilling-induced piezoremanence. Representative remanence values estimated by AF cleaning.

granite/granodiorite

| | | | | |
|-------------------------|------------------|------------------|------------------|--|
| Permian Dorrigo, NSW | 11 | 7 | 1.1 | |
| Walcha Road Adamellite | | | | |
| Permian Dorrigo, NSW | 230 | 7 | | |
| Moonbi Adamellite | | | | |
| Permian Dorrigo, NSW | 60 | 6 | 0.2 | |
| granite | | | | |
| Permian Dorrigo, NSW | 16 | 2 | 0.2 | |
| Uralla Granite | | | | |
| Permian Dorrigo, NSW | 80 (30-140) | 120 (5-290) | 3.2 (0.7-8.5) | |
| granite | | | | |
| Permian Dorrigo, NSW | 590 (280-900) | 520 (290-750) | 2.7 (0.6-4.8) | |
| granite | | | | |

LITHOLOGY

granite/granodiorite

| Age & Map Sheet | k | J | Q | A |
|--|------|------|------|---|
| Permian Dorrigo, NSW | 17 | 2 | 0.2 | |
| Tilbuster Granodiorite | | | | |
| Permian Dorrigo, NSW | 240 | 11 | | |
| Congi Creek Adamellite | | | | |
| Permian Dorrigo, NSW | 120 | 890 | 14.0 | |
| granite | | | | |
| Carboniferous Atherton, QLD | 1090 | 1950 | 4.3 | |
| Devonian Burnie, TAS | 3 | 1 | 0.7 | |
| quartz porphyry | | | | |
| Devonian Burnie, TAS | 1 | 4 | 6.4 | |
| quartz-feldspar porphyry | | | | |
| Devonian Burnie, TAS | 7 | | | |
| Silurian Forbes, NSW | 50 | | | |
| granodiorite | | | | |
| Middle Proterozoic Tennant Creek, NT | 25 | | | |
| quartz porphyroid intruding Warrego host rocks | | | | |

LITHOLOGY

granite/granodiorite

| Age & Map Sheet | k | J | Q | A |
|---|---------------|------------------|---------------------|------|
| Middle Proterozoic Tennant Creek, NT | 64 (60-68) | 1 (0-2) | | |
| quartz feldspathoid intruding Warrego host rocks | | | | |
| Proterozoic Barton, SA | 15 (10-20) | 180 (115-270) | 16.0 (16.0-17.0) | |
| leucogranite from the central Gawler Craton. | | | | |
| Proterozoic Billa Kalina, SA | 55900 | 58400 | 1.8 | 1.17 |
| haematite-rich granite (+magnetite), near massive haematite mineralisation within metasediments. NRM direction is steep up. | | | | |
| Proterozoic Billa Kalina, SA | 8300 | 1130 | 0.2 | 1.12 |
| magnetite-bearing granite, near massive haematite mineralisation within metasediments | | | | |

ultramafic

| | | | | |
|-------------------------------------|------|---------------|-------------------|------|
| Tertiary Lennard River, WA | 30 | 50 (2-170) | 3.0 (0.2-10.0) | |
| lamproite | | | | |
| Tertiary Lennard River, WA | 65 | 210 | 6.7 | |
| olivine lamproite | | | | |
| Silurian? Narromine, NSW | 2760 | 680 | 0.5 | 1.13 |
| pyroxene hornblendite, Mt Derriwong | | | | |
| Silurian? Narromine, NSW | 6480 | 3760 | 0.7 | 1.10 |
| hornblende pyroxenite, Mt Derriwong | | | | |

LITHOLOGY

ultramafic

| Age & Map Sheet | k | J | Q | A |
|---|----------------------|------------------------|-------------------|---------------------|
| Cambrian Burnie, TAS | 6720 (5300-7900) | 22900 (3150-62000) | 4.5 (0.8-11.9) | 1.32 (1.26-1.40) |
| Cambrian Burnie, TAS | 3400 (900-11800) | 7200 (340-40800) | 2.4 (0.6-6.3) | 1.30 (1.10-1.90) |
| serpentinised | | | | |
| Cambrian Burnie, TAS | 36 | 3 | 0.1 | 1.00 |
| weathered | | | | |
| Late Proterozoic Norseman, WA | 8700 (6000-10600) | 23500 (14600-38200) | 5.4 (2.6-10.8) | |
| kimberlitic | | | | |
| Proterozoic Barton, SA | 1220 (690-2740) | 2100 (1000-5400) | 3.0 (2.5-3.5) | |
| hornblendite from the central Gawler Craton. | | | | |
| Proterozoic? Lissadell, WA | 14 | 7 | 0.9 | |
| siliceous (contaminated) olivine lamproite | | | | |
| Archaean Kalgoorlie, WA | 5540 (510-10560) | 1940 (1230-2650) | 0.6 (0.4-4.2) | 1.12 (1.12-1.17) |
| magnetite-bearing ultramafics from Ora Banda. | | | | |
| Archaean Kalgoorlie, WA | 32 | 10 | 0.5 | 1.08 |
| foliated ultramafic from Ora Banda. | | | | |
| Archaean Norseman, WA | 7570 (6060-9090) | 120 (120-120) | | 1.26 (1.15-1.36) |
| tremolite-chlorite ultramafic from Norseman, within the mid-amphibol-ite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning | | | | |

LITHOLOGY

ultramafic

| Age & Map Sheet | k | J | Q | A |
|--|---------------------|------|------|---------------------|
| Archaean Norseman, WA | 4660 | 4 | | 1.08 |
| unaltered/deuterically altered peridotite from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning. | | | | |
| Archaean Widgiemooltha, WA | 5400 (2720-6330) | 1170 | 0.3 | 0.15 (1.11-1.18) |
| unaltered or deuterically altered spinifex-textured/tremolite-chlorite ultramafics from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. Representative remanence estimated by AF cleaning. | | | | |
| Archaean Widgiemooltha, WA | 3830 | 380 | 0.1 | 1.35 |
| peridotite (altered pillow lava?) from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. NRM contaminated by drilling-induced piezoremanence. Representative remanence estimated by AF cleaning | | | | |
| amphibolite/basic granulite | | | | |
| Proterozoic Billa Kalina, SA | 10400 | 8710 | 1.4 | 1.18 |
| magnetite-bearing amphibolite, near massive haematite mineralisation hosted by metasediments. NRM has shallow inclination. | | | | |
| Proterozoic Broken Hill, NSW | 75 | 310 | 7.0 | 1.08 |
| amphibolite within Thorndale Composite Gneiss(?), 4.5 km NE of Farmcote homestead, Redan-Farmcote area (EL 1067) | | | | |
| Proterozoic Darwin, NT | 660 | 30 | 0.1 | 1.26 |
| Lower Proterozoic Broken Hill, NSW | 170 | 2070 | 21.0 | 1.06 |
| orthopyroxene-bearing amphibolite (ax) in Cues Formation, Thackaringa Group, from SE limb of Round Hill Synform, SW of Round Hill Shaft | | | | |

LITHOLOGY

amphibolite/basic granulite

| Age & Map Sheet | k | J | Q | A |
|---|---------------------|---------------------|------------------|---------------------|
| Lower Proterozoic Broken Hill, NSW | 730 | 510 | 1.2 | |
| garnet amphibolite, Parnell Formation?, Broken Hill Group, close to the Eastern lode horizon of the Rise and Shine area. NRM direction: dec=359, inc=-12. | | | | |
| Lower Proterozoic Broken Hill, NSW | 4290 (1960-6610) | 2000 (4960-5050) | 0.8 (1.3-4.4) | |
| magnetic amphibolites adjacent to magnetite-rich metasediments, near the top of the Broken Hill Group, from the Western Lode succession of the Rise and Shine area. NRM directions are scattered. | | | | |
| Lower Proterozoic Broken Hill, NSW | 100 (80-120) | 6 (0-19) | 0.1 (0.0-0.3) | |
| weakly magnetic amphibolites of the Broken Hill Group, from the Western Lode succession of the Rise and Shine area. | | | | |
| Lower Proterozoic Broken Hill, NSW | 73 (29-94) | 2 (0-14) | (0.0-0.2) | |
| amphibolites of the Broken Hill Group, from the northern Rupee Trend area. | | | | |
| Archaean Kalgoorlie, WA | 74 (69-81) | 3 (0-7) | (0.0-0.1) | 1.10 (1.07-1.13) |
| pyrite-bearing amphibolites, hosting auriferous sulphide mineralisation, from Great Ophir, Davyhurst area. Magnetic foliation parallel to schistosity (dips 30N). | | | | |
| Archaean Kalgoorlie, WA | 91 (89-93) | 95 (94-96) | 1.8 (1.7-1.8) | 1.45 (1.43-1.47) |
| hydrothermally altered amphibolites, hosting auriferous sulphide mineralisation, Great Ophir, Davyhurst area. Magnetic foliation parallel to schistosity (dips 30N). | | | | |
| acid granulite | | | | |
| Proterozoic Barton, SA | 17 (14-21) | 3 (2-5) | 0.2 (0.1-0.3) | |

gneisses from the central Gawler Craton.

LITHOLOGY

acid granulite

| Age & Map Sheet | k | J | Q | A |
|--|-----------------|-------------|------------------|---------------------|
| Proterozoic Broken Hill, NSW | 350 (50-650) | 610 | 3.0 (0.0-3.2) | 1.14 (1.03-1.24) |
| "Potosi" Gneiss (BG1:quartz+feldspar+biotite gneiss with abundant, very coarse garnet porphyroblasts) from Mine Antiform East of Thompson Shaft | | | | |
| Proterozoic Broken Hill, NSW | 15 | 19 | 2.2 | 1.09 |
| non-magnetic "Redan Gneiss" (Pl:leucocratic sodic plagioclase+quartz+K-feldspar gneiss), 1km East of Oak's Tank, Redan-Farmcote area (EL 1067). NRM direction: dec=296, inc=+78. | | | | |
| Lower Proterozoic Broken Hill, NSW | 18 | | | 1.10 |
| "Lord's Hill Granite Gneiss" (BG2:quartz+feldspar+biotite gneiss with garnet poikiloblasts and feldspar augen), Hanging Wall Synform, Northern Leases, Rasp Ridge Gneiss of Thackaringa Group. | | | | |
| Lower Proterozoic Broken Hill, NSW | 27 (21-36) | 1 (0-10) | (0.0-0.5) | |
| biotite and garnet-bearing quartzofeldspathic gneiss ("Potosi Gneiss"), from the northern Rupee Trend area. | | | | |
| Lower Proterozoic Broken Hill, NSW | 75 | | | |
| biotite and garnet-bearing quartzofeldspathic gneiss (Bm-BG) of the Cues Formation, Thackaringa Group, from the Thorndale Prospect. | | | | |
| Lower Proterozoic Broken Hill, NSW | 21 | 1 | | |
| leucocratic quartzofeldspathic gneiss (Lq) of the Cues Formation (Thackaringa Group), from the northern Rupee Trend area. | | | | |
| Lower Proterozoic Broken Hill, NSW | 5 (3-8) | | 0.2 (0.1-0.4) | |
| leucocratic quartzofeldspathic gneisses (Lq, Lf) from the Broken Hill Group, within the Western Lode succession of the Rise and Shine area. | | | | |

LITHOLOGY

acid granulite

| Age & Map Sheet | k | J | Q | A |
|---------------------------------------|------------|---|------------------|---|
| Lower Proterozoic Broken Hill, NSW | 4 (3-4) | | 0.1 (0.0-0.2) | |

leucocratic quartzofeldspathic gneisses of the Broken Hill Group, from the northern Rupeë Trend area.

| | | | | |
|---------------------------------------|------|-----|-----|--|
| Lower Proterozoic Broken Hill, NSW | 4210 | 665 | 0.2 | |
|---------------------------------------|------|-----|-----|--|

magnetite-rich biotite and garnet-bearing quartzofeldspathic gneiss (BG), adjacent to mineralisation within the Parnell Formation, Broken Hill Group. NRM direction: dec=227, inc=+2.

quartz-magnetite/bif

| | | | | |
|---------------------------------|--------------------------|------------------------|------------------|---------------------|
| Proterozoic Billa Kalina, SA | 190000 (1000- 387000) | 55000 (150- 175000) | 0.6 (0.1-8.8) | 1.57 (1.04-2.63) |
|---------------------------------|--------------------------|------------------------|------------------|---------------------|

magnetite-bearing bif. Vector mean NRM direction: dec=169, -46.

| | | | | |
|---------------------------------|--------------------------|------------------------|------------------|---------------------|
| Proterozoic Billa Kalina, SA | 190000 (1000- 387000) | 55000 (150- 175000) | 0.6 (0.1-8.8) | 1.57 (1.04-2.63) |
|---------------------------------|--------------------------|------------------------|------------------|---------------------|

magnetite-bearing bifs. Vector Mean NRM direction: dec=169, inc=-46.

| | | | | |
|---------------------------------|-------|--------|------|--|
| Proterozoic Broken Hill, NSW | 14800 | 350000 | 41.0 | |
|---------------------------------|-------|--------|------|--|

quartz-magnetite, The Tors, Farmcote area, EL 1067 (Thackaringa Group?) High NRM and Q may be due to lightning.

| | | | | |
|---------------------------------|-------|-------|-----|------|
| Proterozoic Broken Hill, NSW | 18000 | 15700 | 1.5 | 1.21 |
|---------------------------------|-------|-------|-----|------|

Broken Hill bif, Parnell Formation, Broken Hill Group, SE of Imperial Ridge, Northern Leases.

| | | | | |
|---------------------------|-------|-------|-----|------|
| Proterozoic Darwin, NT | 92000 | 56000 | 1.5 | 2.20 |
|---------------------------|-------|-------|-----|------|

| | | | | |
|---------------------------|--------|-------|-----|--|
| Proterozoic Darwin, NT | 117000 | 41300 | 0.7 | |
|---------------------------|--------|-------|-----|--|

LITHOLOGY

| Age & Map Sheet | quartz-magnetite/bif | | | A |
|---|-----------------------------|---------------------------|---------------------|---------------------|
| | k | J | Q | |
| Lower Proterozoic Bonney Well, NT | 211000 | 749000 | 7.0 | |
| Lower Proterozoic Bonney Well, NT | 145000 (120000- 170000) | 150000 (26300- 274000) | 1.8 (0.4-3.2) | |
| bif | | | | |
| Lower Proterozoic Broken Hill, NSW | 74000 | 3600000 | 84.0 | |
| quartz-magnetite, NE of Mulculca homestead, Farmcote area, EL 1070, Thackaringa Group? High NRM and Q may be due to lightning. | | | | |
| Lower Proterozoic Broken Hill, NSW | 8590 | 940 | 0.1 | |
| quartz-magnetite with pyrrhotite, in psammitic/psammopelitic compo- site gneiss of the Thackaringa Group, from the BMX Prospect. NRM direction: dec=28, inc=-59. | | | | |
| Lower Proterozoic Broken Hill, NSW | 30800 | 32300 | 1.8 | |
| Broken Hill-type bif, within the Parnell Formation?, Broken Hill Group, close to the Eastern lode horizon of the Rise and Shine area. NRM direction: dec=227, inc=+2. | | | | |
| Lower Proterozoic Mt Bruce, WA | 28000 (200-80000) | 104000 (7000- 273000) | 97.0 (7.0-277.0) | |
| Marra Mamba Formation (bif), Hamersley Group. | | | | |
| Lower Proterozoic Mt Bruce, WA | 930 (60-12400) | 6500 (3-15050) | 13.0 (0.1-77.0) | 1.19 |
| unmineralised, weathered Hamersley Group bifs from surface exposures around Tom Price . Vector mean NRM direction: dec=295, inc=-26 (lightning-affected samples omitted). | | | | |
| Lower Proterozoic Newman, WA | 79300 (7700- 237000) | 91500 (4350- 266000) | 2.3 (0.6-4.4) | 1.72 (1.39-2.20) |
| fresh Marra Mamba Formation bif, Hamersley Group. Vector mean NRM direction is: dec=310, inc=-43. The samples come from the S-dipping limb of a major structure. The NRM is possibly pre-folding. The direction wrt palaeohorizontal is: dec=323, inc=-8. | | | | |

LITHOLOGY

| Age & Map Sheet | k | J | Q | A |
|---|-------------------------|-----------------------------|--------------------|---------------------|
| Lower Proterozoic Roy Hill, WA | 140000 | 430000 | 5.7 | 2.06 |
| bif | | | | |
| Lower Proterozoic Roy Hill, WA | 12100 | 27500 | 4.3 | 2.48 |
| haematite-rich bif | | | | |
| Lower Proterozoic Roy Hill, WA | 520000 | 1620000 | 5.9 | 2.04 |
| magnetite-rich bif | | | | |
| Lower Proterozoic Turee Creek, WA | 40000 | 57300 | 2.7 | 1.60 |
| fresh Weeli Wolli Formation, Hamersley Group. Vector mean NRM direction: dec=306, inc=-38 (S-dipping unit at Paraburdoo). | | | | |
| Lower Proterozoic Turee Creek, WA | 660 (30-2320) | 60 (20-170) | 0.1 (0.1-2.0) | 1.18 |
| oxidised outcropping Marra Mamba Formation (bif), Hamersley Group, from Paraburdoo. Vector mean NRM direction: dec=283, inc=-57 (lightning-affected samples omitted). | | | | |
| Lower Proterozoic Turee Creek, WA | 43300 | 36200 | 1.6 | 1.69 |
| fresh Joffre Member, Brockman Iron Formation, Hamersley Group, from Paraburdoo. Vector mean NRM direction: dec=284, inc=-26 (S-dipping unit). | | | | |
| Lower Proterozoic Turee Creek, WA | 57600 | 24200 | 0.7 | 2.12 |
| fresh Dales Gorge Member, Brockman Iron Formation, Hamersley Group, from Paraburdoo. Vector mean NRM direction: dec=294, inc=-20 (from S-dipping unit). | | | | |
| Lower Proterozoic Yardea, SA | 80000 (9000- 163000) | 380000 (104000- 640000) | 12.0 (5.0-20.0) | 1.53 (1.26-1.74) |
| magnetite-bearing carbonate bif | | | | |

LITHOLOGY

quartz-magnetite/bif

| Age & Map Sheet | k | J | Q | A |
|---|---------------------------|----------------------------|------------------|---------------------|
| Lower Proterozoic Yardea, SA | 38200 | 54000 | 2.5 | |
| quartz-magnetite | | | | |
| Archaean Kirkalocka, WA | 5550 | 31600 | 98.0 | 1.64 |
| weathered outcropping bif. NRM is lightning-affected and is unrepresentative. The AF cleaned remanence direction is: dec=94, inc=+32. | | | | |
| Archaean Kirkalocka, WA | 2260 | 51700 | 40.0 | 1.12 |
| weathered outcropping bif. NRM is contaminated by lightning and is unrepresentative. | | | | |
| Archaean Kirkalocka, WA | 35000 | 82700 | 4.1 | 3.90 |
| fresh bif from underground. NRM is hard, ancient, monocomponent remanence with direction: dec=231, inc=-63. | | | | |
| Archaean Norseman, WA | 99000 (30500- 184000) | 23300 (1050-44700) | 0.4 (0.0-1.2) | 1.94 (1.34-2.40) |
| banded cherty sediment (bif) from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRMs estimated by AF cleaning. | | | | |
| Archaean Widgiemooltha, WA | 86400 | 1360 | | 1.18 |
| cherty sediment (bif) from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. NRM contaminated by drilling-induced piezoremanence. Representative remanence estimated by AF cleaning. | | | | |
| massive magnetite | | | | |
| Middle Proterozoic? Green Swamp Well, NT | 382000 (95000- 850000) | 321000 (112000- 580000) | 2.1 (1.3-2.6) | |
| magnetite lode (more magnetic) and quartz-magnetite lode from the Explorer 142 ironstone, hosted by Warramunga Group(?) sediments of the Western extension of the Rover Field. | | | | |

LITHOLOGY

massive magnetite

| Age & Map Sheet | k | J | Q | A |
|--|------------------------------|-----------------------------|------------------|---------------------|
| Middle Proterozoic Tennant Creek, NT | 487000 (2400-1650000) | 179700 (3100- 560100) | 0.7 (0.2-2.4) | |
| Warrego Cu/Au/Bi orebody (massive magnetite + sulphides, quartz-mt, quartz-haematite, chlorite-magnetite). Mean magnetic properties agree well with properties inferred from detailed modelling. Vector mean NRM direction: dec=312, inc=-76. | | | | |
| Middle Proterozoic Tennant Creek, NT | 484000 (354000- 615000) | 272000 (267000- 362000) | 1.1 (0.8-2.0) | |
| Argo orebody. Vector mean NRM direction: dec=196, inc=-64. | | | | |
| Middle Proterozoic Tennant Creek, NT | 186000 (170- 499000) | 73000 (60- 255000) | 0.7 (0.4-1.7) | |
| West Gibbet ironstone (massive magnetite, chloritic magnetite, siliceous magnetite, quartz haematite). Modelling indicates ironstone is very discontinuous (approx. 36% of mineralised zone). | | | | |
| Middle Proterozoic Tennant Creek, NT | 127000 (21000- 313000) | 139000 (35000- 377500) | 2.8 (1.1-6.7) | |
| magnetite-haematite lode with quartz and minor sulphides, Rover ironstone within Warramunga Group | | | | |
| Middle Proterozoic Tennant Creek, NT | 231000 (146000- 314000) | 78900 (62000-96900) | 0.6 (0.6-0.8) | |
| Tennant Creek-style ironstone. Vector mean NRM direction: dec=21, inc=-47. NRM consists of two components: a soft component with dec=28, inc=-56; and a hard component with dec=82, inc=+62. | | | | |
| Middle Proterozoic Tennant Creek, NT | 2092500 (530000-6300000) | 500000 (138200-1184000) | 0.4 (0.3-2.2) | |
| massive magnetite ironstone from the main Tennant Creek Field. NRM direction: dec=335, inc=-47. | | | | |
| Middle Proterozoic Tennant Creek, NT | 136000 (98000- 173000) | 112000 (101000- 136000) | 1.6 (1.5-2.0) | 1.11 (1.14-1.15) |
| pyrrhotitic massive magnetite ironstone orebody from the main Tennant Creek Field. Vector mean NRM direction: dec=313, inc=-45. The NRM reflects partial self-reversal due to magnetostatic interaction between mt and po. Mag. fol. dips steeply N. | | | | |

LITHOLOGY

massive magnetite

| Age & Map Sheet | k | J | Q | A |
|---|-----------------------------|-----------------------------|------------------|------|
| Middle Proterozoic Tennant Creek, NT | 142700 | 50700 | 0.3 | |
| magnetite-rich magnetite-haematite-jasper-dolomite lode from the Rover 4 ironstone, hosted by Warramunga Group sediments. | | | | |
| Middle Proterozoic Tennant Creek, NT | 820000 (131000-1140000) | 270000 (45400- 555000) | 0.6 (0.3-1.3) | |
| magnetite ore from a Tennant Creek Field orebody. Vector mean NRM direction: dec=130, inc=-82. | | | | |
| Middle Proterozoic Tennant Creek, NT | 535000 | 97000 | 0.3 | |
| massive magnetite from Explorer 198 ironstone, in Main Tennant Creek Field, between Gecko and Orlando orebodies. Modelling suggests bulk susceptibility of ironstone is approx. 0.3 G/Oe. Lower k is probably due to presence of haematite in much of body. | | | | |
| Lower Proterozoic Lander River, NT | 850000 | 580000 | 1.3 | |
| mineralised massive magnetite | | | | |
| Lower Proterozoic Lander River, NT | 148000 (95000- 200000) | 191000 (112000- 270000) | 2.5 (2.3-2.6) | |
| semi-massive to massive magnetite | | | | |
| Lower Proterozoic Tennant Creek, NT | 540000 | 97000 | 0.3 | 1.04 |
| Lower Proterozoic Tennant Creek, NT | 472500 (95000- 850000) | 346000 (112000- 580000) | 1.8 (1.3-2.3) | |
| Late Archaean Moora, WA | 2350000 | 3600000 | 2.6 | |

LITHOLOGY

massive haematite

| Age & Map Sheet | k | J | Q | A |
|---|----------------------|---------------------------|-----------------------|---------------------|
| Middle Proterozoic? Green Swamp Well, NT | 275 | 700 | 5.0 | |
| haematite-rich bif from the Explorer 142 ironstone, hosted by Warramunga Group(?) sediments in the Western extension of the Rover Field. | | | | |
| Middle Proterozoic Tennant Creek, NT | 120 (75-170) | 245 (40-640) | 3.1 (1.0-7.4) | |
| haematite lode from Rover 1 ironstone, hosted by Warramunga Group. | | | | |
| Middle Proterozoic Tennant Creek, NT | 2430 (1050-3800) | 1460 (620-2300) | 2.3 (0.3-4.3) | |
| haematite-rich magnetite-haematite-jasper-dolomite lode from the Rover 4 ironstone, hosted by Warramunga Group sediments. | | | | |
| Proterozoic Billa Kalina, SA | 1000 (640-1670) | 81200 (5500- 228000) | 138.0 (13.0-231.0) | 1.40 |
| massive (60%-90%) haematite (1-5mm crystals after magnetite), plus quartz and haematite quartzite breccia fragments. NRM is stable, ancient, directed very steep up. | | | | |
| Proterozoic Billa Kalina, SA | 17600 (280-32100) | 140000 (36000- 227000) | 13.0 (3.0-1230.0) | 1.17 (1.04-1.44) |
| massive haematite with magnetite and maghaemite intergrowths and inclusions. High Q values are due to microstructure of magnetic grains. NRM is stable, ancient, directed steep up. | | | | |
| Proterozoic Kingoonya, SA | 3900 (100-19100) | 7800 (120-35400) | 5.5 (0.8-21.0) | |
| mineralised haematite breccia | | | | |
| Proterozoic? Turee Creek, WA | 12700 | 470000 | 70.0 | |
| haematite ore: magnetite inclusions within recrystallised, coarse-grained haematite from the Channar deposit. | | | | |
| Lower Proterozoic? Mt Bruce, WA | 2230 (50-14600) | 1700 (50-13300) | 1.4 (0.2-8.8) | 1.24 |
| Tom Price haematite ore/oxidised bif, containing variable amounts of residual magnetite. Vector mean NRM direction: dec=323, inc=-16. NRMs are quite scattered and have dual polarity. Palaeomagnetism suggests prolonged ore formation at Tom Price. | | | | |

LITHOLOGY

massive haematite

| Age & Map Sheet | k | J | Q | A |
|--|-----------------|------------------|--------------------|---------------------|
| Lower Proterozoic? Mt Bruce, WA | 710 | 950 | 2.5 | 1.03 |
| Tom Price haematite ore/mineralised bif. Vector mean NRM direction: dec=294, inc=-8. | | | | |
| Lower Proterozoic? Turee Creek, WA | 2510 | 310 | 2.3 | 1.04 |
| Marra Mamba ore from Paraburdoo. Vector mean NRM direction: dec=270, inc=-30. | | | | |
| Lower Proterozoic? Turee Creek, WA | 110 (30-200) | 650 (40-1750) | 11.0 (1.5-23.0) | 1.00 (1.00-1.00) |
| Paraburdoo haematite ore/mineralised bif. Vector mean NRM direction: dec=310, inc=-26. | | | | |
| Lower Proterozoic? Turee Creek, WA | 5390 | 28700 | 9.9 | 1.21 |
| magnetic Marra Mamba ore (containing residual magnetite), from Paraburdoo. Vector mean NRM direction: dec=348, inc=+7. | | | | |

sulphide ore

| | | | | |
|-----------------------------------|-------|-------|------|------|
| Upper Palaeozoic Bathurst, NSW | 30000 | 39400 | 2.3 | |
| semi-massive po | | | | |
| Upper Palaeozoic Cobar, NSW | 4300 | 67000 | 27.0 | 1.44 |
| Elura pyrrhotitic ore | | | | |
| Upper Palaeozoic Cobar, NSW | 12 | | | |
| Elura siliceous ore | | | | |
| Upper Palaeozoic Cobar, NSW | 70 | 1 | 0.1 | |
| Elura pyritic ore | | | | |

LITHOLOGY

sulphide ore

| Age & Map Sheet | k | J | Q | A |
|---|-----------------------|-------------------------|------------------|---------------------|
| Carboniferous Atherton, QLD | 30000 | 400000 | 27.0 | |
| massive po | | | | |
| Devonian Burnie, TAS | 2790 (1990-3580) | 3800 (3420-4180) | 2.4 (1.5-3.3) | 1.47 (1.36-1.57) |
| semi-massive pyrrhotite, Sn ore hosted by Cambrian dolomite. | | | | |
| Devonian Burnie, TAS | 5070 (3310-6820) | 3820 (2380-5260) | 1.2 | 2.00 (1.60-2.30) |
| semi-massive pyrrhotite, Sn ore hosted by Cambrian dolomite. | | | | |
| Devonian Burnie, TAS | 15300 (4600-21400) | 51400 (6100- 112000) | 4.4 (2.1-8.3) | 2.10 (1.70-2.30) |
| massive pyrrhotite, Sn ore hosted by Cambrian dolomite. | | | | |
| Devonian Burnie, TAS | 280 (130-430) | 290 (10-560) | 1.2 (0.2-2.2) | |
| massive intermediate pyrrhotite, Mt Lindsay. | | | | |
| Devonian Burnie, TAS | 6800 (3700-11600) | 4500 (2850-6500) | 1.0 (0.9-1.2) | 2.50 |
| semi-massive pyrrhotite, Sn ore hosted by Cambrian dolomite | | | | |
| Devonian Burnie, TAS | 9450 | 3450 | 0.6 | |
| massive intermediate pyrrhotite + magnetite, Mt Lindsay. | | | | |
| Devonian Burnie, TAS | 7700 (4600-10700) | 12200 (4700-19700) | 2.3 (1.6-2.9) | 1.46 (1.39-1.53) |
| semi-massive pyrrhotite, Sn ore hosted by Cambrian dolomitic silt-stone | | | | |
| Devonian Burnie, TAS | 7320 | 8300 | 1.8 | 1.45 |
| massive po veins in shale wall rock | | | | |

LITHOLOGY

sulphide ore

| Age & Map Sheet | k | J | Q | A |
|--|-----------------------|-------------------------|------------------|---------------------|
| Devonian Burnie, TAS | 5080 (3130-11610) | 4530 (2850-6500) | 2.1 (0.9-2.2) | |
| pyrrhotitic ore | | | | |
| Devonian Burnie, TAS | 11600 (3900-19000) | 51400 (6100- 111800) | 5.6 (2.5-9.4) | |
| pyrrhotitic Sn ore | | | | |
| Devonian Burnie, TAS | 7900 (5000-10800) | 12200 (4700-19700) | 2.2 (1.5-2.9) | |
| pyrrhotitic Sn ore | | | | |
| Devonian Burnie, TAS | 7120 | 8300 | 1.9 | |
| pyrrhotitic Sn mineralisation in Cambrian Red Rock Member | | | | |
| Devonian Burnie, TAS | 1530 (120-4210) | 1600 (80-5260) | 1.4 (0.5-2.3) | |
| pyrrhotitic Sn mineralisation in Cambrian dolomite (disseminated to semi-massive) | | | | |
| Devonian Cobar, NSW | 4940 (780-7460) | 5050 (3770-24160) | 1.8 (2.0-9.0) | |
| Elura pyrrhotitic ore, with scattered NRM directions due to multi-component remanence (probably reflecting self-reversal). This is not representative of the bulk of the pyrrhotitic core of the orebody. Vector mean NRM direction: dec=139, inc=-16. | | | | |
| Cambrian? Devonian? Burnie, TAS | 12600 (5900-23100) | 21300 (5400-41200) | 2.6 (1.7-3.2) | 1.80 (1.30-2.30) |
| massive pyrrhotite | | | | |
| Cambrian? Devonian? Burnie, TAS | 6400 | 8200 | 2.3 | 1.39 |
| massive pyrrhotite | | | | |

LITHOLOGY

sulphide ore

| Age & Map Sheet | k | J | Q | A |
|---|------------------------|--------------------------|--------------------|---------------------|
| Proterozoic Pine Creek, NT | 1550 | 65600 | 86.0 | |
| semi-massive pyrrhotite in black shale | | | | |
| Proterozoic Pine Creek, NT | 1840 | 14500 | 17.0 | |
| semi-massive pyrrhotite in black shale | | | | |
| Proterozoic Pine Creek, NT | 1550 | 16310 | 22.0 | |
| semi-massive pyrrhotite in black shale | | | | |
| Proterozoic Pine Creek, NT | 29000 (10000-48000) | 115000 (4000- 225000) | 14.0 (1.0-26.0) | |
| pyrrhotitic ore | | | | |
| Proterozoic Pine Creek, NT | 10300 (3600-17000) | 70000 (22000- 118000) | 10.5 (7.0-14.0) | |
| pyrrhotitic ore | | | | |
| Lower Proterozoic Cloncurry, QLD | 3000 (480-4400) | 6300 (800-10800) | 3.9 (3.2-4.9) | |
| Dugald lode, Dugald River | | | | |
| Lower Proterozoic Cloncurry, QLD | 13800 | 47500 | 13.0 | |
| Lower Proterozoic Pine Creek, NT | 3000 (1700-5400) | 12600 (2100-18200) | 10.0 (2.0-21.0) | 1.56 (1.27-1.94) |
| semi-massive pyrrhotite | | | | |
| Archaean Kalgoorlie, WA | 80 (60-100) | 5 (1-9) | 0.1 (0.0-0.2) | 1.13 (1.10-1.15) |
| pyritic mineralised (gold-bearing) zone, within chlorite schists and amphibolites, at Great Ophir, Davyhurst area. Magnetic foliation parallel to schistosity (dips 30N). | | | | |

LITHOLOGY

sulphide ore

| Age & Map Sheet | k | J | Q | A |
|---|---------------------|------------------------|---------------------|---------------------|
| Archaeon Kalgoorlie, WA | 2100 (1160-3030) | 30000 (21700-42600) | 25.0 (24.0-32.0) | 1.52 (1.51-1.53) |
| auriferous lode horizon (pyrrhotite+/-pyrite-bearing tremolite-chlorite schists) from Homeward Bound, Davyhurst area. NRM is stable ancient remanence with vector mean direction: dec=158, inc=-26. Mag. foliation parallel to schistosity (dips 70W) | | | | |
| disseminated pyrrhotite | | | | |
| Carboniferous Atherton, QLD | 1380 | 960 | 1.2 | |
| Devonian Burnie, TAS | 1800 | 7340 | 6.5 | |
| in Cambrian Dalcoath Member. | | | | |
| Lower Devonian Cobar, NSW | 500 (120-1190) | 6700 (500-35700) | 23.0 (3.0-103.0) | |
| disseminated pyrrhotite within metasediments of the Cobar Supergroup. Vector mean NRM direction: dec=230, inc=-48. | | | | |
| Lower Devonian? Nyngan, NSW | 290 (100-720) | 610 (350-4630) | 3.7 (4.6-18.7) | |
| Amphitheatre Group? sediments with disseminated pyrrhotite. Vector mean NRM direction: dec=69, inc=+51. NRM directions are scattered, with declinations from NE to SE and steep negative to steep positive inclinations. | | | | |
| Palaeozoic Cobar, NSW | 100 (50-140) | 850 (210-2360) | 14.0 (3.3-32.0) | 1.32 |
| Cambrian? Devonian? Burnie, TAS | 2930 | 2520 | 1.4 | 1.33 |
| mineralised Cambrian dolomitic siltstone | | | | |

LITHOLOGY

disseminated pyrrhotite

| Age & Map Sheet | k | J | Q | A |
|--------------------------------------|------------------|--------------------|--------------------|---------------------|
| Cambrian? Devonian? Burnie, TAS | 490 | 5010 | 10.0 | |
| Cambrian? Devonian? Burnie, TAS | 560 | 7690 | 22.0 | |
| Cambrian Burnie, TAS | 2640 | 2520 | 1.5 | |
| mineralised Renison Bell Member | | | | |
| Cambrian? Burnie, TAS | 370 (100-700) | 2220 (250-6040) | 12.0 (1.0-32.0) | 1.51 (1.29-1.77) |
| Cambrian? Devonian? Burnie, TAS | 1220 | 3370 | 6.4 | |
| in Cambrian Crimson Creek Formation. | | | | |
| Proterozoic Geraldton, WA | 1910 | 7300 | 7.2 | |
| in granulites | | | | |
| Proterozoic Mt Isa, QLD | 1380 (0-710) | | 1.1 | 1.42 |
| in Urquart Shale | | | | |
| Proterozoic Port Augusta, SA | 2960 | 2670 | 1.6 | |
| Archaean Kalgoorlie, WA | 300 (100-650) | 2000 (250-4120) | 11.5 (4.0-22.0) | 1.32 (1.16-1.55) |

mineralised pyrrhotite+pyrite-bearing tremolite-chlorite and chlorite schists from Homeward Bound, Davyhurst area. NRM SSE and shallow up. Magnetic foliation parallel to schistosity (dips steeply W).

LITHOLOGY

disseminated pyrrhotite

| Age & Map Sheet | k | J | Q | A |
|-------------------------------|-----------------|--------------------|---------------------|---|
| Archaean? The Granites, NT | 115 (70-160) | 4230 (750-7760) | 71.0 (9.0-213.0) | |

pyrrhotite-bearing schists from the Mt Charles Beds, Tanami Complex, hosting gold mineralisation. Vector mean NRM direction: dec=148, inc=-85.

disseminated magnetite

| | | | | |
|------------------------------------|-----------------------|-----------------------|-------------------|---------------------|
| Cambrian? Devonian? Burnie, TAS | 290 | 14400 | 107.0 | |
| Cambrian? Devonian? Burnie, TAS | 7920 | 9240 (1680-16800) | 2.1 (0.4-3.6) | |
| Cambrian Burnie, TAS | 12300 (1000-39600) | 33520 (7100-80600) | 8.4 (3.2-11.8) | 1.27 (1.05-1.61) |

disseminated magnetite+pyrrhotite

| | | | | |
|------------------------------------|-------|-------|------|------|
| Cambrian? Devonian? Burnie, TAS | 650 | 11670 | 27.0 | |
| Middle Proterozoic Menindee | 32300 | 7050 | 0.4 | 1.25 |

magnetic metasediments in Lower Proterozoic

| | | | | |
|-------------------------------------|--------------------|-------------------|------------------|------|
| Middle Proterozoic Menindee, NSW | 7690 (50-20290) | 1940 (10-3790) | 0.4 (0.0-1.1) | 1.25 |
|-------------------------------------|--------------------|-------------------|------------------|------|

in Lower Proterozoic metasediments.

| | | | | |
|----------------------------------|---------------------|--------------------|------------------|---------------------|
| Middle Proterozoic Rudall, WA | 18300 (70-52800) | 7200 (10-33050) | 0.9 (0.1-3.2) | 2.30 (1.20-2.85) |
|----------------------------------|---------------------|--------------------|------------------|---------------------|

magnetite-rich pyritic mineralised schists of the Rudall Metamorphic Complex. Mean NRM direction: dec=177, inc=-61. Both remanence polarities present ("normal" predominates). Strong magnetic foliation parallel to schistosity.

LITHOLOGY

disseminated magnetite

| Age & Map Sheet | k | J | Q | A |
|--|----------------------|---------------------|------------------|------|
| Middle Proterozoic Tennant Creek, NT | 80 (60-100) | 50 (5-95) | 1.0 (0.1-1.9) | |
| mineralised sediments within Warramunga Group (siltstones metamorphosed to greenschist grade), adjacent to Rover 1 ironstone. | | | | |
| Middle Proterozoic Tennant Creek, NT | 2380 (1710-3040) | 84 (79-103) | (0.0-0.1) | |
| magnetic sediment (magnetite-bearing Warramunga Group) adjacent to main Tennant Creek Field massive magnetite+pyrrhotite ironstone. Vector mean NRM direction: dec=321, inc=-71. | | | | |
| Middle Proterozoic Tennant Creek, NT | 28500 | 3000 | 0.2 | |
| magnetic sediment (magnetite-rich Warramunga Group sediment) adjacent to a Tennant Creek Main Field orebody. NRM direction is: dec=222, inc=0. | | | | |
| Middle Proterozoic Tennant Creek, NT | 1360 (550-2160) | 150 (60-240) | 0.2 (0.2-0.2) | |
| mineralised chloritic slate in Warrego mine (sulphide-bearing) | | | | |
| Proterozoic Darwin, NT | 4500 | 210 | 0.1 | 1.29 |
| Proterozoic Mt. Phillips, WA | 42400 | 16800 | 0.7 | |
| magnetite arenite | | | | |
| Proterozoic Port Augusta, SA | 9700 (4430-15000) | 2540 (1860-3220) | 0.5 (0.3-0.7) | |
| Lower Proterozoic Lander River, NT | 2200 (280-4500) | 400 (230-700) | 1.8 (0.1-5.0) | |
| in Lower Proterozoic metasediments | | | | |

LITHOLOGY

| Age & Map Sheet | k | J | Q | A |
|---|------------------------|-------------------------|------------------|---------------------|
| disseminated magnetite | | | | |
| Lower Proterozoic Tennant Creek? | 10140 (280-20000) | 135000 (700- 270000) | 3.8 (2.6-5.0) | |
| disseminated to semi-massive magnetite | | | | |
| Lower Proterozoic Tennant Creek? | 3090 (1630-4540) | 260 (225-280) | 0.2 (0.1-0.3) | |
| magnetic sediments | | | | |
| Lower Proterozoic Whyalla, SA | 9800 | 4200 | 0.7 | |
| magnetite-rich chert | | | | |
| Archaeon? The Granites, NT | 39900 (17300-62500) | 5700 (3380-7760) | 0.2 (0.1-0.8) | |
| magnetite-rich schists from the Mt Charles Beds, Tanami Complex, hosting gold mineralisation. Vector mean NRM direction: dec=34, inc=-71. | | | | |
| sediments | | | | |
| Devonian Atherton, QLD | 10 | 8 | 1.6 | |
| Cambrian Burnie, TAS | 4 | 4 | 1.6 | |
| quartzite | | | | |
| Cambrian Burnie, TAS | 180 (120-270) | 130 (80-170) | 1.3 (1.0-2.3) | 1.16 (1.09-1.26) |
| dolomite containing pyrrhotite adjacent to ore | | | | |
| Cambrian Burnie, TAS | 20 (16-24) | 1 | (0.0-1.0) | 1.01 |
| Dundas sediments | | | | |

LITHOLOGY

sediments

| Age & Map Sheet | k | J | Q | A |
|--|---------------|--------------|------------------|---------------------|
| Cambrian Burnie, TAS | 80 | 14 | 0.4 | |
| chert | | | | |
| Cambrian Burnie, TAS | 37 | 1 | | |
| Crimson Creek Formation | | | | |
| Cambrian Burnie, TAS | 50 (24-92) | 30 (1-97) | 0.4 (0.1-1.7) | |
| Red Rock Member | | | | |
| Cambrian Burnie, TAS | 60 (31-86) | 50 (3-97) | 0.9 (0.1-1.7) | 1.18 (1.06-1.29) |
| red chert | | | | |
| Cambrian Burnie, TAS | 100 | 3 | | |
| dolomite | | | | |
| Cambrian Burnie, TAS | 50 (24-92) | 30 (1-97) | 0.5 (0.1-1.7) | |
| Red Rock Member | | | | |
| Cambrian Burnie, TAS | 23 | 1 | 0.1 | 1.02 |
| dolomite | | | | |
| Middle Proterozoic Tennant Creek, NT | 40 (35-45) | 30 (3-58) | 1.5 (0.1-2.6) | |
| Warramunga Group sediments. Vector mean NRM direction: dec=185, inc=-28. | | | | |
| Proterozoic Lissadell, WA | 10 | 80 | 17.0 | |
| sandstone | | | | |

LITHOLOGY

sediments

| Age & Map Sheet | k | J | Q | A |
|-----------------------------------|-----|------|-----|------|
| Proterozoic Mt Isa, QLD | 18 | 18 | 1.5 | 1.14 |
| shale | | | | |
| Lower Proterozoic Mt Bruce, WA | 820 | 3150 | 7.2 | 1.09 |

ferruginous shale, between mineralised bifs of the Hamersley Group, from Tom Price.
Vector mean NRM direction: dec=266, inc=+1.

| | | | | |
|--------------------------------------|------------------|--|--|--|
| Lower Proterozoic Turee Creek, WA | 780 (65-2800) | | | |
|--------------------------------------|------------------|--|--|--|

Wyloo Conglomerate containing abundant clasts of Hamersley Group bifs, from outcrop near the Paraburdoo mine. NRMs and susceptibility axes are very scattered.

| | | | | |
|-------------------------------------|---|---|-----|--|
| Lower Proterozoic Wallhallow, NT | 3 | 1 | 0.7 | |
| sandstone | | | | |

| | | | | |
|-------------------------------------|----|--|--|--|
| Lower Proterozoic Wallhallow, NT | -1 | | | |
| carbonaceous shale (diamagnetic) | | | | |

metasediments

| | | | | |
|--------------------------------------|------------------|----------------|------------------|--|
| Devonian Atherton, QLD | 15 | 6 | 0.5 | |
| hornfels | | | | |
| Devonian Cobar, NSW | 460 | 30 | 0.1 | |
| Ordovician Narromine, NSW | 670 (20-5600) | 110 (1-300) | 1.0 (0.0-6.2) | |
| basic schists and calcsilicate rocks | | | | |

LITHOLOGY

metasediments

| Age & Map Sheet | k | J | Q | A |
|--|---------------------|---------------------|------------------|---------------------|
| Cambrian Burnie, TAS | 240 | 7450 | 49.0 | 1.16 |
| hornfels adjacent to Devonian quartz porphyry dyke. | | | | |
| Upper Proterozoic Geraldton, WA | 420 | 70 | 0.2 | 1.08 |
| magnetic granulites | | | | |
| Middle Proterozoic? Green Swamp Well, NT | 3090 (1630-4540) | 250 (225-280) | 0.2 (0.1-0.3) | |
| greenschist grade magnetic sediments of the Warramunga Group(?), hosting the Explorer 142 ironstone, in the Western extension of the Rover Field. NRM direction: dec=240, inc=-40. | | | | |
| Middle Proterozoic Rudall, WA | 2080 (1000-3150) | 770 (340-1350) | 0.7 (0.6-0.8) | 1.67 (1.54-1.78) |
| schists of the Rudall Metamorphic Complex. NRM reflects stable ancient components of dual polarity. Vector mean NRM direction: dec=77, inc=+48. Strong magnetic foliation parallel to schistosity. | | | | |
| Middle Proterozoic Tennant Creek, NT | 8200 (100-82200) | 590 (5-5400) | 0.1 (0.1-2.5) | 1.26 (1.05-1.63) |
| magnetic sediments in Warrego mine. Vector mean NRM direction: dec=209, inc=-34. Magnetic foliation subparallel to cleavage, strong magnetic lineation parallel to orebody plunge. | | | | |
| Middle Proterozoic Tennant Creek, NT | 3530 (3160-3890) | 1890 (1850-2000) | 1.0 (0.9-1.2) | |
| magnetic sediments (diagenetic magnetite-bearing Warramunga Group) Explorer 99, near Peko mine. Vector mean NRM direction: dec=6, inc=-45, dominated by VRM. Magnetic foliation dips 70 to 350T, lineation is E and subhorizontal. | | | | |
| Middle Proterozoic Tennant Creek, NT | 1560 (650-3340) | 70 (40-3210) | (0.0-0.6) | 1.34 (1.07-1.62) |
| magnetic sediments (diagenetic magnetite-bearing siltstones of the Warramunga Group), in the Argo mine. Vector mean NRM direction: (dec=1, inc=-53), reflecting VRM overprinting minor hard component: dec=323, inc=-38. Mag. fol. parallel to cleavage. | | | | |

LITHOLOGY

metasediments

| Age & Map Sheet | k | J | Q | A |
|---|--------------------|-----------------|------------------|---------------------|
| Middle Proterozoic Tennant Creek, NT | 1400 (80-2820) | 180 (1-1800) | 0.2 (0.0-1.2) | 1.22 (1.08-1.32) |
| magnetic sediments adjacent to Explorer 50 ironstone (diagenetic magnetite-bearing siltstones of the Warramunga Group, metamorphosed to greenschist grade). Mean NRM dn: dec=103, inc=+13, reflecting ESE down hard compnt overprinting steep up compnt. | | | | |
| Middle Proterozoic Tennant Creek, NT | 450 | 1060 | 4.6 | |
| haematite-rich magnetic sediment (diagenetic haematite+magnetite-bearing Warramunga Group sediments, metamorphosed to greenschist grade). NRM direction: dec=44, inc=+50, reflecting minor VRM overprinting hard compnt: dec=96, inc=+56. No clear fabric. | | | | |
| Middle Proterozoic Tennant Creek, NT | 2700 (50-9320) | 510 (6-1930) | 0.3 (0.0-0.4) | 1.13 (1.11-1.55) |
| haematite shale, Warramunga Formation, metamorphosed to greenschist grade, adjacent to Explorer 50 ironstone. Mean NRM direction: dec=17, inc=-55, reflecting ESE down hard component overprinted by steep up component. Mag. fol. parallel to cleavage. | | | | |
| Middle Proterozoic Tennant Creek, NT | 1340 (430-2540) | 250 (30-620) | 0.3 (0.0-0.5) | |
| magnetic sediments (diagenetic magnetite-bearing siltstones of the Warramunga Group, metamorphosed to greenschist grade), hosting Argo orebody (Explorer 46 DDHs). | | | | |
| Middle Proterozoic Tennant Creek, NT | 500 (80-1000) | 100 (60-160) | 0.4 (0.2-1.5) | |
| magnetic sediments (diagenetic magnetite-bearing Warramunga Group) from Explorer 79, near Peko mine. Vector mean NRM dn: dec=40, inc=-60, dominated by VRM. Magnetic foliation dips 70 to 350T, parallel to cleavage, lineation is subvertical. | | | | |
| Middle Proterozoic Tennant Creek, NT | 14700 | 3900 | 0.5 | |
| magnetic sediment (diagenetic magnetite-bearing Warramunga Group sediment, metamorphosed to greenschist grade), near Eldorado orebody. NRM direction: dec=26, inc=-40, reflecting VRM overprinting E steep down compnt. | | | | |
| Middle Proterozoic Tennant Creek, NT | 260 (40-470) | 35 (4-65) | 0.2 (0.2-0.3) | 1.09 (1.07-1.09) |
| magnetic sediments (diagenetic magnetite-bearing siltstones of the Warramunga Formation, metamorphosed to greenschist grade), adjacent to West Gibbet ironstone. Vector mean NRM direction: dec=357, inc=-66, reflecting VRM overprinting steep up component. | | | | |

LITHOLOGY

metasediments

| Age & Map Sheet | k | J | Q | A |
|---|---------------------|---------------------|--------------------|------|
| Middle Proterozoic Tennant Creek, NT | 7300 (560-18400) | 450 (70-1010) | 0.2 (0.1-0.2) | |
| chloritic slate, Warrego mine | | | | |
| Proterozoic Billa Kalina, SA | 19800 | 5090 | 0.4 | 1.10 |
| haematitic granite gneiss (+ magnetite), hosting massive haematite mineralisation. NRM soft and subhorizontal, cleaning reveals steep up hard remanence component. | | | | |
| Proterozoic Billa Kalina, SA | 19200 | 36800 | 3.3 | 1.48 |
| magnetite quartzite, hosting massive haematite mineralisation. NRM is stable, ancient , steep up. | | | | |
| Proterozoic Billa Kalina, SA | 2320 | 260 | 0.1 | 1.09 |
| haematite quartzite, hosting massive haematite body. NRM is stable and steep up. | | | | |
| Proterozoic Billa Kalina, SA | 520 (440-590) | 3170 (1500-5600) | 10.0 (2.0-22.0) | 1.45 |
| haematitic quartzite (host rock for massive haematite mineralisation). NRM direction: dec=201, inc=-60. | | | | |
| Proterozoic Billa Kalina, SA | 10380 | 5200 | 0.8 | 1.05 |
| felsic to granite gneiss (foliated to massive, chloritic and haematitic with thin coarse-grained haematite veins). NRM direction: dec=76, inc=-39. | | | | |
| Proterozoic Billa Kalina, SA | 24 | 2100 | 161.0 | 1.12 |
| foliated, weakly haematitic quartz-feldspar-mica felsic gneiss (host rock for massive haematite mineralisation). NRM direction: dec=31, inc=+5. | | | | |
| Proterozoic Darwin, NT | 50 | 50 | 2.3 | 1.10 |

LITHOLOGY

metasediments

| Age & Map Sheet | k | J | Q | A |
|--|-----------------------|--------------------|------------------|---------------------|
| Proterozoic Maitland, SA | 26500 (5100-65400) | 1100 (50-9200) | (0.0-0.3) | 1.34 (1.00-1.88) |
| magnetic schists and gneisses (biotite and magnetite-rich quartzo-feldspathic gneisses/schists, quartz-feldspar rock (felsite). Vector mean NRM direction: dec=46, inc=-37. NRM is soft and unstable. | | | | |
| Lower Proterozoic Broken Hill, NSW | 40 | | | 1.06 |
| psammopelitic schist and psammopelitic composite gneiss from the Sundown Group, F2 synform SE of Silver Peak Shaft, Northern Leases. | | | | |
| Lower Proterozoic Broken Hill, NSW | 28 | 1 | 0.1 | 1.11 |
| retrogressed micaceous schist (rm) from Globe-Vauxhall Schist Zone at Silver Peak Shaft, Northern Leases | | | | |
| Lower Proterozoic Broken Hill, NSW | 55 (8-250) | 40 (0-600) | 1.3 (0.0-4.1) | |
| drill core samples of Broken Hill Group metasediments (pelitic topsammitic schists and composite gneisses, variably retrogressed) from near the Eastern lode horizon, Rise and Shine area. Vector mean NRM direction: dec=101, inc=70. | | | | |
| Lower Proterozoic Broken Hill, NSW | 4900 | 1330 | 0.4 | |
| magnetite-rich psammopelitic to psammitic composite gneiss, within a magnetic metasedimentary horizon (containing magnetic amphibolites), near the top of the Broken Hill Group in the Western Lode succession of the Rise and Shine area. | | | | |
| Lower Proterozoic Broken Hill, NSW | 24 (15-35) | 2 (0-15) | 0.1 (0.0-1.3) | |
| metasediments of the Purnamoota Subgroup, Broken Hill Group (Mine Sequence), near the Eastern Lode of the Rise and Shine area. Rock types range from pelitic to psammitic schists and composite gneisses. | | | | |
| Lower Proterozoic Broken Hill, NSW | 1680 (230-3130) | 4600 (180-9320) | 4.7 (0.8-5.1) | |
| magnetite-bearing metasediments of the Cues Formation (Thackaringa Group), from the northern Rupee Trend area. | | | | |

LITHOLOGY

metasediments

| Age & Map Sheet | k | J | Q | A |
|---|---------------|-------------|------------------|---|
| Lower Proterozoic Broken Hill, NSW | 35 | 3 | 0.1 | |
| garnet-bearing psammitic to psammopelitic composite gneiss of the Thackaringa Group, from the BMX Prospect. | | | | |
| Lower Proterozoic Broken Hill, NSW | 1290 | 430 | 0.5 | |
| magnetite and pyrrhotite-bearing mineralised psammopelite of the Thackaringa Group, from the BMX Prospect. NRM direction: dec=281, inc=-61. | | | | |
| Lower Proterozoic Broken Hill, NSW | 21 (9-32) | 6 (0-44) | 0.5 (0.0-4.0) | |
| pelitic to psammitic schists of the Broken Hill Group, from the northern Rupee Trend area. | | | | |
| Lower Proterozoic Broken Hill, NSW | 31 (14-49) | 1 (0-3) | | |
| pelitic to psammitic metasediments (with minor pyrrhotite) of the Cues Formation, Thackaringa Group, from the Thorndale Prospect. | | | | |
| Lower Proterozoic Broken Hill, NSW | 27 (18-38) | 2 (0-53) | 0.1 (0.0-4.5) | |
| pelitic to psammitic schists and composite gneisses of the Broken Hill Group, from the Western Lode succession of the Rise and Shine area. | | | | |
| Lower Proterozoic Broken Hill, NSW | 75 | 18 | 0.4 | |
| psammitic to psammopelitic composite gneiss (with minor pyrrhotite) of the Thackaringa Group, from the BMX Prospect. | | | | |
| Lower Proterozoic Broken Hill, NSW | 24 (11-46) | 1 (0-4) | (0.0-0.1) | |
| pelitic to psammopelitic schists of the Sundown Group, Rise and Shine area. | | | | |
| Lower Proterozoic Broken Hill, NSW | 27 (21-40) | 2 (0-14) | 0.1 (0.0-0.8) | |
| weakly magnetic pelitic to psammopelitic schists of the Sundown Group, from the northern Rupee Trend area. | | | | |

LITHOLOGY

metasediments

| Age & Map Sheet | k | J | Q | A |
|---|---------------------------|-------------------------|------------------|---------------------|
| Lower Proterozoic Broken Hill, NSW | 200 | 6 | | |
| mineralised psammitic to pelitic schist containing magnetite and pyrrhotite, within the Parnell Formation, Broken Hill Group, from the northern Rupee Trend area. | | | | |
| Lower Proterozoic Broken Hill, NSW | 1640 | 290 | 0.2 | |
| psammitic metasediment (with minor pyrrhotite) of the Cues Formation (Thackaringa Group) from the Thorndale Prospect. | | | | |
| Lower Proterozoic Broken Hill, NSW | 900 (850-940) | 2150 (490-4780) | 4.1 (1.0-8.8) | |
| magnetic pelitic to psammopelitic metasediments of the Sundown Group, from the northern Rupee Trend area. | | | | |
| Lower Proterozoic Cloncurry, QLD | 140 | 180 | 2.5 | |
| black slate | | | | |
| Lower Proterozoic Cloncurry, QLD | 220 | 540 | 4.8 | |
| graphitic black slate | | | | |
| Lower Proterozoic Cloncurry, QLD | 6 | 21 | 6.5 | |
| spotted black slate | | | | |
| Lower Proterozoic Olary, SA | 120400 (12700- 228000) | 69000 (7300- 132000) | 1.0 (1.0-1.0) | 1.12 (1.12-1.27) |
| magnetic schists from the Olary?/Willyama? Block. NRMs steep up. | | | | |
| Lower Proterozoic Whyalla, SA | 50 (10-120) | 30 (2-120) | 0.9 (0.3-4.0) | |
| dolomite, marble, calcsilicate, chert | | | | |

LITHOLOGY

metasediments

| Age & Map Sheet | k | J | Q | A |
|----------------------------|-----------------|----------------|------------------|---------------------|
| Archaean Kalgoorlie, WA | 120 (50-260) | 30 (15-190) | 0.4 (0.1-3.0) | 1.20 (1.04-1.42) |

unmineralised tremolite-chlorite schists (unaltered and hydrothermally altered) from Homeward Bound, Davyhurst area. Magnetic foliation parallel to schistosity (dips steeply W).

| | | | | |
|----------------------------|---------------|----------------|------------------|---------------------|
| Archaean Kalgoorlie, WA | 91 (85-96) | 115 (2-230) | 2.2 (0.0-4.1) | 1.33 (1.09-1.57) |
|----------------------------|---------------|----------------|------------------|---------------------|

chlorite schists, hosting sulphide mineralisation at Great Ophir, Davyhurst area. Magnetic foliation parallel to schistosity (dips 30N).

| | | | | |
|--------------------------|----|-----|-----|--|
| Archaean Norseman, WA | 80 | 150 | 3.2 | |
|--------------------------|----|-----|-----|--|

metasedimentary baked contact of ultramafic dyke (unknown age)

| | | | | |
|--------------------------|------|------|------|------|
| Archaean Norseman, WA | 1540 | 9260 | 10.4 | 1.27 |
|--------------------------|------|------|------|------|

metasediment from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning.

skarn

| | | | | |
|---------------------------|------------------------|-----------------------|------------------|------|
| Miocene May River, PNG | 21400 (17100-25700) | 10900 (2400-19300) | 1.5 (0.3-2.8) | 1.13 |
|---------------------------|------------------------|-----------------------|------------------|------|

Frieda Complex

| | | | | |
|-------------------------|-------|--------|-----|--|
| Devonian Burnie, TAS | 61000 | 121400 | 3.7 | |
|-------------------------|-------|--------|-----|--|

magnetite skarn

| | | | | |
|-------------------------|-----|-------|------|--|
| Devonian Burnie, TAS | 660 | 18300 | 25.0 | |
|-------------------------|-----|-------|------|--|

| | | | | |
|-------------------------|------------------------|--------------------------|------------------|--|
| Devonian Burnie, TAS | 72600 (57500-87800) | 172000 (17100-327000) | 3.2 (0.5-5.9) | |
|-------------------------|------------------------|--------------------------|------------------|--|

Moina Wrigglite

LITHOLOGY

skarn

| Age & Map Sheet | k | J | Q | A |
|------------------------------------|---------------------------|---------------------------|--------------------|---------------------|
| Devonian Burnie, TAS | 151000 (27000- 303000) | 211000 (48000- 700000) | 4.0 (0.4-14.0) | |
| magnetite skarn | | | | |
| Cambrian Burnie, TAS | 12300 (960-39600) | 33500 (7100-80600) | 8.4 (3.2-11.8) | 1.27 (1.05-1.61) |
| magnetite + pyrrhotite bearing | | | | |
| Cambrian? Devonian? Burnie, TAS | 72600 | 172000 | 3.2 | |
| magnetite skarn | | | | |
| Cambrian Burnie, TAS | 370 | 2200 (250-6000) | 12.0 (1.0-32.0) | 1.51 (1.29-1.77) |
| pyrrhotite skarn | | | | |
| Proterozoic Huckitta, NT | 79200 | 6300 | 0.1 | |
| magnetite skarn | | | | |

laterite/gossan

| | | | | |
|---|------|-------|------|------|
| ? Broken Hill, NSW | 1810 | 14400 | 14.0 | |
| gossan developed on sulphide-bearing quartz-magnetite rock. Fencegossan, line 1800E, drill section 1070N, EL 780, Redan/Farmcote area. NRM direction: dec=66, inc=+2. | | | | |
| Tertiary Broken Hill, NSW | 35 | 70 | 3.5 | 1.01 |
| haematite ferricrete (Czf), 1.5 km ESE of Farmcote homestead, EL 1067, Redan/Farmcote area. NRM direction: dec=15, inc=-66. | | | | |
| Tertiary Broken Hill, NSW | 4600 | 4470 | 1.7 | 1.10 |
| maghaemite ferricrete (Czf), SW of Edna's Tank, EL 1070, Redan/Farmcote area. NRM direction: dec=199, inc=-22 (hybrid direction, reflecting normal and reversed components) | | | | |

LITHOLOGY

laterite/gossan

| Age & Map Sheet | k | J | Q | A |
|---|----------------------|--------------------------|---------------------|---|
| Tertiary Cobar, NSW | 60 | 110 | 3.1 | |
| gossan | | | | |
| Tertiary? Southern Cross, WA | 80 | 7 | 0.1 | |
| gossan: Great Victoria oxidised ore (haematite bearing) | | | | |
| Tertiary? Southern Cross, WA | 9340 | 8740 | 1.6 | |
| laterite (maghaemite-haematite-magnetite bearing) | | | | |
| Tertiary? Southern Cross, WA | 100 | 24 | 0.4 | |
| gossan: Resurrection oxidised ore (haematite bearing) | | | | |
| Tertiary? Southern Cross, WA | 70 | 22 | 0.5 | |
| laterite (haematite-bearing), Great Victoria | | | | |
| Tertiary? Southern Cross, WA | 2900 (1550-4200) | 70000 (40000- 100000) | 43.0 (41.0-44.0) | |
| gossan: Grand National oxidised ore (haematite+maghaemite+magnetite bearing) | | | | |
| Tertiary? Tennant Creek, NT | 3100 (200-11700) | 7000 (9100-88300) | 4.4 (15.0-363.0) | |
| gossan developed on Peko orebody, consisting mainly of haematite (partly altered to goethite) in quartz gangue, with remnant cores of magnetite. Low vector mean NRM due to very scattered directions. High Qs prob. due to lightning and not representative. | | | | |
| Tertiary? Tennant Creek, NT | 9200 (1860-35300) | 23000 (16600- 124500) | 4.9 (2.5-131.0) | |
| gossan developed over Explorer 205 ironstone. NRM directions very scattered and Q values very high, reflecting lightning strikes. In situ remanence much lower than indicated by NRMs, but nevertheless affects ground magnetic anomaly. | | | | |

LITHOLOGY

laterite/gossan

| Age & Map Sheet | k | J | Q | A |
|---------------------------------------|------|-------|------|---|
| Lower Proterozoic Broken Hill, NSW | 1560 | 30200 | 33.0 | |

quartz-secondary iron oxides (after iron sulphides) rock (qf), Thackaringa Group?, 2 km N of Byron Tank, EL 780, Redan/Farmcote area. NRM direction: dec=303, inc=-30.

| | | | | |
|---------------------------------------|---------------|----------------|------------------|--|
| Lower Proterozoic Broken Hill, NSW | 34 (22-45) | 70 (30-140) | 3.5 (2.4-5.2) | |
|---------------------------------------|---------------|----------------|------------------|--|

quartz-secondary iron oxide (after iron sulphides) rocks of the Cues Formation (Thackaringa Group), from the northern Rupee Trend area.

MAP

Ashton, WA

| Lithology & Age | k | J | Q | A |
|--|-------------------|---------------------|-------------------|---|
| basalt/dolerite/spilite Late Proterozoic? | 3200 (60-8000) | 17000 (70-46000) | 5.8 (2.4-11.5) | |

dolerite

Atherton, QLD

| | | | | |
|--|------|-----|-----|--|
| disseminated pyrrhotite Carboniferous | 1380 | 960 | 1.2 | |
|--|------|-----|-----|--|

| | | | | |
|---------------------------------------|------|------|-----|--|
| granite/granodiorite Carboniferous | 1090 | 1950 | 4.3 | |
|---------------------------------------|------|------|-----|--|

| | | | | |
|---|-----|-----|-----|--|
| rhyolite/dacite/andesite Carboniferous | 340 | 640 | 7.0 | |
|---|-----|-----|-----|--|

rhyodacite (Featherbed Volcanics)

| | | | | |
|-------------------------------|-------|--------|------|--|
| sulphide ore Carboniferous | 30000 | 400000 | 27.0 | |
|-------------------------------|-------|--------|------|--|

massive po

| | | | | |
|---------------------------|----|---|-----|--|
| metasediments Devonian | 15 | 6 | 0.5 | |
|---------------------------|----|---|-----|--|

hornfels

| | | | | |
|--------------------------------------|-----|-----|-----|--|
| rhyolite/dacite/andesite Devonian | 630 | 140 | 0.4 | |
|--------------------------------------|-----|-----|-----|--|

volcanic agglomerate

| | | | | |
|-----------------------|----|---|-----|--|
| sediments Devonian | 10 | 8 | 1.6 | |
|-----------------------|----|---|-----|--|

MAP

Barton, SA

| Lithology & Age | k | J | Q | A |
|--|--------------------|---------------------|---------------------|---|
| acid granulite? Proterozoic | 17 (14-21) | 3 (2-5) | 0.2 (0.1-0.3) | |
| gneisses from the central Gawler Craton. | | | | |
| diorite/monzonite Proterozoic | 2 | 2 | 1.8 | |
| diorite from the central Gawler Craton. | | | | |
| granite/granodiorite Proterozoic | 15 (10-20) | 180 (115-270) | 16.0 (16.0-17.0) | |
| leucogranite from the central Gawler Craton. | | | | |
| ultramafics Proterozoic | 1220 (690-2740) | 2100 (1000-5400) | 3.0 (2.5-3.5) | |
| hornblendite from the central Gawler Craton. | | | | |

Bathurst, NSW

| | | | | |
|----------------------------------|-------|-------|-----|--|
| sulphide ore Upper Palaeozoic | 30000 | 39400 | 2.3 | |
| semi-massive po | | | | |

Billa Kalina, SA

| | | | | |
|---|-------|-------|-----|------|
| amphibolite/basic granulite Proterozoic | 10400 | 8710 | 1.4 | 1.18 |
| magnetite-bearing amphibolite, near massive haematite mineralisation hosted by metasediments. NRM has shallow inclination. | | | | |
| granite/granodiorite Proterozoic | 55900 | 58400 | 1.8 | 1.17 |
| haematite-rich granite (+magnetite), near massive haematite mineralisation within metasediments. NRM direction is steep up. | | | | |
| granite/granodiorite Proterozoic | 8300 | 1130 | 0.2 | 1.12 |
| magnetite-bearing granite, near massive haematite mineralisation within metasediments | | | | |

MAP

Billa Kalina, SA

| Lithology & Age | K | J | Q | A |
|---|----------------------|---------------------------|-----------------------|---------------------|
| massive haematite Proterozoic | 17600 (280-32100) | 140000 (36000- 227000) | 13.0 (3.0-1230.0) | 1.17 (1.04-1.44) |
| massive haematite with magnetite and maghaemite intergrowths and inclusions. High Q values are due to microstructure of magnetic grains. NRM is stable, ancient, directed steep up. | | | | |
| massive haematite Proterozoic | 1000 (640-1670) | 81200 (5500- 228000) | 138.0 (13.0-231.0) | 1.40 |
| massive (60%-90%) haematite (1-5mm crystals after magnetite), plus quartz and haematite quartzite breccia fragments. NRM is stable, ancient, directed very steep up. | | | | |
| metasediments Proterozoic | 19800 | 5090 | 0.4 | 1.10 |
| haematitic granite gneiss (+ magnetite), hosting massive haematite mineralisation. NRM soft and subhorizontal, cleaning reveals steep up hard remanence component. | | | | |
| metasediments Proterozoic | 19200 | 36800 | 3.3 | 1.48 |
| magnetite quartzite, hosting massive haematite mineralisation. NRM is stable, ancient, steep up. | | | | |
| metasediments Proterozoic | 2320 | 260 | 0.1 | 1.09 |
| haematite quartzite, hosting massive haematite body. NRM is stable and steep up. | | | | |
| metasediments Proterozoic | 520 (440-590) | 3170 (1500-5600) | 10.0 (2.0-22.0) | 1.45 |
| haematitic quartzite (host rock for massive haematite mineralisation). NRM direction: dec=201, inc=-60. | | | | |
| metasediments? acid granulite? Proterozoic | 10380 | 5200 | 0.8 | 1.05 |
| felsic to granite gneiss (foliated to massive, chloritic and haematitic with thin coarse-grained haematite veins). NRM direction: dec=76, inc=-39. | | | | |
| metasediments? acid granulite? Proterozoic | 24 | 2100 | 161.0 | 1.12 |
| foliated, weakly haematitic quartz-feldspar-mica felsic gneiss (host rock for massive haematite mineralisation). NRM direction: dec=31, inc=+5. | | | | |

MAP

Billa Kalina, SA

| Lithology & Age | k | J | Q | A |
|-------------------------------------|--------------------------|------------------------|------------------|---------------------|
| quartz-magnetite/bif Proterozoic | 190000 (1000- 387000) | 55000 (150- 175000) | 0.6 (0.1-8.8) | 1.57 (1.04-2.63) |

magnetite-bearing bif. Vector mean NRM direction: dec=169,-46.

| Lithology & Age | k | J | Q | A |
|-------------------------------------|--------------------------|------------------------|------------------|---------------------|
| quartz-magnetite/bif Proterozoic | 190000 (1000- 387000) | 55000 (150- 175000) | 0.6 (0.1-8.8) | 1.57 (1.04-2.63) |

magnetite-bearing bifs. Vector Mean NRM direction: dec=169,inc=-46.

Bonney Well, NT

| Lithology & Age | k | J | Q | A |
|---|--------|--------|-----|---|
| quartz-magnetite/bif Lower Proterozoic | 211000 | 749000 | 7.0 | |

| Lithology & Age | k | J | Q | A |
|---|-----------------------------|---------------------------|------------------|---|
| quartz-magnetite/bif Lower Proterozoic | 145000 (120000- 170000) | 150000 (26300- 274000) | 1.8 (0.4-3.2) | |

bif

| Lithology & Age | k | J | Q | A |
|--|-----------------------------|---------------------------|------------------|---|
| quartz-magnetite/bif Lower Proterozoic? | 145000 (120000- 170000) | 150000 (26000- 274000) | 1.8 (0.4-3.2) | |

bif and bif-lode from the Explorer 42 "ironstone" body, East of the Rover Field.

Bouganville I. South, PNG

| Lithology & Age | k | J | Q | A |
|---|----------------------|-------------------|------------------|---------------------|
| rhyolite/dacite/andesite U.Oligocene-Lower Miocene | 8800 (5100-13050) | 600 (190-1800) | 0.1 (0.0-0.3) | 1.05 (1.05-1.18) |

andesite flows with dual remanence polarity. JMEAN for normal polarity=1030 and for reversed polarity=190. Mean cleaned remanence direction (converted to N polarity): dec=351, inc=-40.

| Lithology & Age | k | J | Q | A |
|-------------------------------|----------------------|------------------|-----------|---------------------|
| diorite/monzonite Pliocene | 6900 (2600-11250) | 250 (120-510) | (0.1-0.1) | 1.06 (1.06-1.07) |

leucocratic quartz diorite. Both polarities of remanence are present.

| Lithology & Age | k | J | Q | A |
|-------------------------------|------|------|-----|------|
| diorite/monzonite Pliocene | 5190 | 3150 | 1.5 | 1.10 |

biotite diorite. Normally magnetised, NRM direction: dec=347,inc=-34.

MAP

Broken Hill, NSW

| Lithology & Age | k | J | Q | A |
|---|-----------------|-------|------------------|---------------------|
| laterite/gossan ? | 1810 | 14400 | 14.0 | |
| gossan developed on sulphide-bearing quartz-magnetite rock. Fencegossan, line 1800E, drill section 1070N, EL 780, Redan/Farmcote area. NRM direction: dec=66, inc=+2. | | | | |
| laterite/gossan Tertiary | 35 | 70 | 3.5 | 1.01 |
| haematite ferricrete (Czf), 1.5 km ESE of Farmcote homestead, EL 1067, Redan/Farmcote area. NRM direction: dec=15, inc=-66. | | | | |
| laterite/gossan Tertiary | 4600 | 4470 | 1.7 | 1.10 |
| magmaemite ferricrete (Czf), SW of Edna's Tank, EL 1070, Redan/Farmcote area. NRM direction: dec=199, inc=-22 (hybrid direction, reflecting normal and reversed components) | | | | |
| acid granulite Proterozoic | 350 (50-650) | 610 | 3.0 (0.0-3.2) | 1.14 (1.03-1.24) |
| "Potosi" Gneiss (BG1: quartz+feldspar+biotite gneiss with abundant, very coarse garnet porphyroblasts) from Mine Antiform East of Thompson Shaft | | | | |
| acid granulite Proterozoic | 15 | 19 | 2.2 | 1.09 |
| non-magnetic "Redan Gneiss" (Pl: leucocratic sodic plagioclase+quartz+K-feldspar gneiss), 1km East of Oak's Tank, Redan-Farmcote area (EL 1067). NRM direction: dec=296, inc=+78. | | | | |
| amphibolite/basic granulite Proterozoic | 75 | 310 | 7.0 | 1.08 |
| amphibolite within Thorndale Composite Gneiss(?), 4.5 km NE of Farmcote homestead, Redan-Farmcote area (EL 1067) | | | | |
| quartz-magnetite/bif Proterozoic | 18000 | 15700 | 1.5 | 1.21 |
| Broken Hill bif, Parnell Formation, Broken Hill Group, SE of Imperial Ridge, Northern Leases. | | | | |

MAP

Broken Hill, NSW

| Lithology & Age | k | J | Q | A |
|---|---------------|-------------|------------------|------|
| quartz-magnetite/bif Proterozoic | 14800 | 350000 | 41.0 | |
| quartz-magnetite, The Tors, Farmcote area, EL 1067 (Thackaringa Group?) High NRM and Q may be due to lightning. | | | | |
| acid granulite Lower Proterozoic | 21 | 1 | | |
| leucocratic quartzofeldspathic gneiss (Lq) of the Cues Formation (Thackaringa Group), from the northern Rupee Trend area. | | | | |
| acid granulite Lower Proterozoic | 18 | | | 1.10 |
| "Lord's Hill Granite Gneiss" (BG2: quartz+feldspar+biotite gneiss with garnet poikiloblasts and feldspar augen), Hanging Wall Synform, Northern Leases, Rasp Ridge Gneiss of Thackaringa Group. | | | | |
| acid granulite Lower Proterozoic | 27 (21-36) | 1 (0-10) | (0.0-0.5) | |
| biotite and garnet-bearing quartzofeldspathic gneiss ("Potosi Gneiss"), from the northern Rupee Trend area. | | | | |
| acid granulite Lower Proterozoic | 75 | | | |
| biotite and garnet-bearing quartzofeldspathic gneiss (Bm-BG) of the Cues Formation, Thackaringa Group, from the Thorndale Prospect. | | | | |
| acid granulite Lower Proterozoic | 4210 | 665 | 0.2 | |
| magnetite-rich biotite and garnet-bearing quartzofeldspathic gneiss (BG), adjacent to mineralisation within the Parnell Formation, Broken Hill Group. NRM direction: dec=227, inc=+2. | | | | |
| acid granulites Lower Proterozoic | 4 (3-4) | | 0.1 (0.0-0.2) | |
| leucocratic quartzofeldspathic gneisses of the Broken Hill Group, from the northern Rupee Trend area. | | | | |

MAP

Broken Hill, NSW

| Lithology & Age | k | J | Q | A |
|---|---------------------|---------------------|------------------|-----------|
| acid granulites Lower Proterozoic | 5 (3-8) | | 0.2 (0.1-0.4) | |
| leucocratic quartzofeldspathic gneisses (Lq, Lf) from the Broken Hill Group, within the Western Lode succession of the Rise and Shine area. | | | | |
| amphibolite/basic granulite Lower Proterozoic | 170 | 2070 | 21.0 | 1.06 |
| orthopyroxene-bearing amphibolite (ax) in Cues Formation, Thackaringa Group, from SE limb of Round Hill Synform, SW of Round Hill Shaft | | | | |
| amphibolite/basic granulite Lower Proterozoic | 730 | 510 | 1.2 | |
| garnet amphibolite, Parnell Formation?, Broken Hill Group, close to the Eastern lode horizon of the Rise and Shine area. NRM direction: dec=359, inc=-12. | | | | |
| amphibolite/basic granulite Lower Proterozoic | 4290 (1960-6610) | 2000 (4960-5050) | 0.8 (1.3-4.4) | |
| magnetic amphibolites adjacent to magnetite-rich metasediments, near the top of the Broken Hill Group, from the Western Lode succession of the Rise and Shine area. NRM directions are scattered. | | | | |
| amphibolite/basic granulite Lower Proterozoic | 100 (80-120) | 6 (0-19) | 0.1 (0.0-0.3) | |
| weakly magnetic amphibolites of the Broken Hill Group, from the Western Lode succession of the Rise and Shine area. | | | | |
| amphibolite/basic granulite Lower Proterozoic | 73 (29-94) | 2 (0-14) | | (0.0-0.2) |
| amphibolites of the Broken Hill Group, from the northern Rupee Trend area. | | | | |
| laterite/gossan Lower Proterozoic | 1560 | 30200 | 33.0 | |
| quartz-secondary iron oxides (after iron sulphides) rock (qf), Thackaringa Group?, 2 km N of Byron Tank, EL 780, Redan/Farmcote area. NRM direction: dec=303, inc=-30. | | | | |
| laterite/gossan Lower Proterozoic | 34 (22-45) | 70 (30-140) | 3.5 (2.4-5.2) | |
| quartz-secondary iron oxide (after iron sulphides) rocks of the Cues Formation (Thackaringa Group), from the northern Rupee Trend area. | | | | |

MAP

Broken Hill, NSW

| Lithology & Age | k | J | Q | A |
|---|--------------------|--------------------|------------------|------|
| metasediments Lower Proterozoic | 40 | | | 1.06 |
| psammopelitic schist and psammopelitic composite gneiss from the Sundown Group, F2 synform SE of Silver Peak Shaft, Northern Leases. | | | | |
| metasediments Lower Proterozoic | 28 | 1 | 0.1 | 1.11 |
| retrogressed micaceous schist (rm) from Globe-Vauxhall Schist Zone at Silver Peak Shaft, Northern Leases | | | | |
| metasediments Lower Proterozoic | 21 (9-32) | 6 (0-44) | 0.5 (0.0-4.0) | |
| pelitic to psammitic schists of the Broken Hill Group, from the northern Rupee Trend area. | | | | |
| metasediments Lower Proterozoic | 31 (14-49) | 1 (0-3) | | |
| pelitic to psammitic metasediments (with minor pyrrhotite) of the Cues Formation, Thackaringa Group, from the Thorndale Prospect. | | | | |
| metasediments Lower Proterozoic | 4900 | 1330 | 0.4 | |
| magnetite-rich psammopelitic to psammitic composite gneiss, within a magnetic metasedimentary horizon (containing magnetic amphibol-ites), near the top of the Broken Hill Group in the Western Lode succession of the Rise and Shine area. | | | | |
| metasediments Lower Proterozoic | 27 (18-38) | 2 (0-53) | 0.1 (0.0-4.5) | |
| pelitic to psammitic schists and composite gneisses of the Broken Hill Group, from the Western Lode succession of the Rise and Shine area. | | | | |
| metasediments Lower Proterozoic | 1680 (230-3130) | 4600 (180-9320) | 4.7 (0.8-5.1) | |
| magnetite-bearing metasediments of the Cues Formation (Thackaringa Group), from the northern Rupee Trend area. | | | | |
| metasediments Lower Proterozoic | 1290 | 430 | 0.5 | |
| magnetite and pyrrhotite-bearing mineralised psammopelite of the Thackaringa Group, from the BMX Prospect. NRM direction: dec=281, inc=-61. | | | | |

MAP

Broken Hill, NSW

| Lithology & Age | k | J | Q | A |
|---|---------------|---------------|------------------|---|
| metasediments Lower Proterozoic | 55 (8-250) | 40 (0-600) | 1.3 (0.0-4.1) | |
| drill core samples of Broken Hill Group metasediments (pelitic topsammitic schists and composite gneisses, variably retrogressed) from near the Eastern lode horizon, Rise and Shine area. Vector meanNRM direction: dec=101, inc=70. | | | | |
| metasediments Lower Proterozoic | 24 (15-35) | 2 (0-15) | 0.1 (0.0-1.3) | |
| metasediments of the Purnamoota Subgroup, Broken Hill Group (MineSequence), near the Eastern Lode of the Rise and Shine area. Rocktypes range from pelitic to psammitic schists and compositegneisses. | | | | |
| metasediments Lower Proterozoic | 35 | 3 | 0.1 | |
| garnet-bearing psammitic to psammopelitic composite gneiss of theThackaringa Group, from the BMX Prospect. | | | | |
| metasediments Lower Proterozoic | 75 | 18 | 0.4 | |
| psammitic to psammopelitic composite gneiss (with minor pyrrhotite) of the Thackaringa Group, from the BMX Prospect. | | | | |
| metasediments Lower Proterozoic | 24 (11-46) | 1 (0-4) | (0.0-0.1) | |
| pelitic to psammopelitic schists of the Sundown Group, Rise andShine area. | | | | |
| metasediments Lower Proterozoic | 27 (21-40) | 2 (0-14) | 0.1 (0.0-0.8) | |
| weakly magnetic pelitic to psammopelitic schists of the SundownGroup, from the northern Rupee Trend area. | | | | |
| metasediments Lower Proterozoic | 200 | 6 | | |
| mineralised psammitic to pelitic schist containing magnetite andpyrrhotite, within the Parnell Formation, Broken Hill Group, fromthe northern Rupee Trend area. | | | | |
| metasediments Lower Proterozoic | 1640 | 290 | 0.2 | |
| psammitic metasediment (with minor pyrrhotite) of the Cues Formation(Thackaringa Group) from the Thorndale Prospect. | | | | |

MAP

Broken Hill, NSW

| Lithology & Age | k | J | Q | A |
|------------------------------------|------------------|--------------------|------------------|---|
| metasediments Lower Proterozoic | 900 (850-940) | 2150 (490-4780) | 4.1 (1.0-8.8) | |

magnetic pelitic to psammopelitic metasediments of the Sundown Group, from the northern Rupee Trend area.

| | | | | |
|---|-------|-------|-----|--|
| quartz-magnetite/bif Lower Proterozoic | 30800 | 32300 | 1.8 | |
|---|-------|-------|-----|--|

Broken Hill-type bif, within the Parnell Formation?, Broken Hill Group, close to the Eastern lode horizon of the Rise and Shine area. NRM direction: dec=227, inc=+2.

| | | | | |
|---|------|-----|-----|--|
| quartz-magnetite/bif Lower Proterozoic | 8590 | 940 | 0.1 | |
|---|------|-----|-----|--|

quartz-magnetite with pyrrhotite, in psammitic/psammopelitic compo- site gneiss of the Thackaringa Group, from the BMX Prospect. NRM direction: dec=28, inc=-59.

| | | | | |
|---|-------|---------|------|--|
| quartz-magnetite/bif Lower Proterozoic | 74000 | 3600000 | 84.0 | |
|---|-------|---------|------|--|

quartz-magnetite, NE of Mulculca homestead, Farmcote area, EL 1070, Thackaringa Group? High NRM and Q may be due to lightning.

Burnie, TAS

| | | | | |
|-------------------------------------|--------------------|---------------------|-----|--|
| basalt/dolerite/spilite Tertiary | 1300 (110-4300) | 1870 (1180-2560) | 1.6 | |
|-------------------------------------|--------------------|---------------------|-----|--|

basalt

| | | | | |
|-------------------------------------|-----|------|------|--|
| basalt/dolerite/spilite Tertiary | 600 | 3740 | 10.9 | |
|-------------------------------------|-----|------|------|--|

basalt

| | | | | |
|-------------------------------------|--------------------|-----------------------|--------------------|--|
| basalt/dolerite/spilite Tertiary | 1680 (330-4760) | 26200 (4830-81800) | 17.0 (6.0-27.0) | |
|-------------------------------------|--------------------|-----------------------|--------------------|--|

basalt

| | | | | |
|-------------------------------------|-------------------|---------------------|--------------------|--|
| basalt/dolerite/spilite Tertiary | 560 (200-1460) | 7500 (285-37000) | 22.0 (1.0-71.0) | |
|-------------------------------------|-------------------|---------------------|--------------------|--|

basalt

MAP

Burnie, TAS

| Lithology & Age | k | J | Q | A |
|---|-----------------------|-------------------------|------------------|------|
| sulphide ore Devonian | 5080 (3130-11610) | 4530 (2850-6500) | 2.1 (0.9-2.2) | |
| pyrrhotitic ore | | | | |
| sulphide ore Devonian | 7900 (5000-10800) | 12200 (4700-19700) | 2.2 (1.5-2.9) | |
| pyrrhotitic Sn ore | | | | |
| sulphide ore Devonian | 1530 (120-4210) | 1600 (80-5260) | 1.4 (0.5-2.3) | |
| pyrrhotitic Sn mineralisation in Cambrian dolomite (disseminated to semi-massive) | | | | |
| sulphide ore Devonian | 11600 (3900-19000) | 51400 (6100- 111800) | 5.6 (2.5-9.4) | |
| pyrrhotitic Sn ore | | | | |
| sulphide ore Devonian | 7120 | 8300 | 1.9 | |
| pyrrhotitic Sn mineralisation in Cambrian Red Rock Member | | | | |
| basalt/dolerite/spilite Cambrian | 60 (30-70) | 9 (1-40) | 0.3 (0.2-1.4) | |
| spilite, Dundas tramway | | | | |
| basalt/dolerite/spilite Cambrian | 47 | 20 (1-40) | 0.1 (0.0-1.4) | 1.01 |
| spilite, Dundas tramway | | | | |
| disseminated magnetite Cambrian? Devonian? | 290 | 14400 | 107.0 | |
| disseminated magnetite Cambrian? Devonian? | 7920 | 9240 (1680-16800) | 2.1 (0.4-3.6) | |

MAP

Burnie, TAS

| Lithology & Age | k | J | Q | A |
|--|-----------------------|-----------------------|--------------------|---------------------|
| disseminated magnetite Cambrian | 12300 (1000-39600) | 33520 (7100-80600) | 8.4 (3.2-11.8) | 1.27 (1.05-1.61) |
| disseminated magnetite+pyrrhotite | | | | |
| disseminated magnetite Cambrian? Devonian? | 650 | 11670 | 27.0 | |
| disseminated pyrrhotite Cambrian? Devonian? | 2930 | 2520 | 1.4 | 1.33 |
| mineralised Cambrian dolomitic siltstone | | | | |
| disseminated pyrrhotite Cambrian? Devonian? | 490 | 5010 | 10.0 | |
| disseminated pyrrhotite Cambrian? Devonian? | 560 | 7690 | 22.0 | |
| disseminated pyrrhotite Cambrian | 2640 | 2520 | 1.5 | |
| mineralised Renison Bell Member | | | | |
| disseminated pyrrhotite Cambrian? | 370 (100-700) | 2220 (250-6040) | 12.0 (1.0-32.0) | 1.51 (1.29-1.77) |
| disseminated pyrrhotite Cambrian? Devonian? | 1220 | 3370 | 6.4 | |
| in Cambrian Crimson Creek Formation. | | | | |
| gabbro/norite Cambrian? | 160 | 2900 (590-6200) | 28.0 (7.0-58.0) | 1.06 (1.04-1.10) |
| gabbro | | | | |

MAP

Burnie, TAS

| Lithology & Age | k | J | Q | A |
|---|---------------------|------------------|------------------|---------------------|
| metasediments Cambrian | 240 | 7450 | 49.0 | 1.16 |
| hornfels adjacent to Devonian quartz porphyry dyke. | | | | |
| rhyolite/dacite/andesite Cambrian | 2180 | 9810 | 7.1 | |
| andesite | | | | |
| rhyolite/dacite/andesite Cambrian | 4440 (2600-7050) | 300 (200-440) | 0.1 (0.0-0.1) | |
| andesitic Mt Read Volcanics | | | | |
| sediments Cambrian | 4 | 4 | 1.6 | |
| quartzite | | | | |
| sediments Cambrian | 180 (120-270) | 130 (80-170) | 1.3 (1.0-2.3) | 1.16 (1.09-1.26) |
| dolomite containing pyrrhotite adjacent to ore | | | | |
| sediments Cambrian | 20 (16-24) | 1 | (0.0-1.0) | 1.01 |
| Dundas sediments | | | | |
| sediments Cambrian | 80 | 14 | 0.4 | |
| chert | | | | |
| sediments Cambrian | 37 | 1 | | |
| Crimson Creek Formation | | | | |
| sediments Cambrian | 50 (24-92) | 30 (1-97) | 0.4 (0.1-1.7) | |
| Red Rock Member | | | | |

MAP

Burnie, TAS

| Lithology & Age | k | J | Q | A |
|-------------------------------------|-----------------------|-----------------------|--------------------|---------------------|
| sediments Cambrian | 60 (31-86) | 50 (3-97) | 0.9 (0.1-1.7) | 1.18 (1.06-1.29) |
| red chert | | | | |
| sediments Cambrian | 100 | 3 | | |
| dolomite | | | | |
| sediments Cambrian | 50 (24-92) | 30 (1-97) | 0.5 (0.1-1.7) | |
| Red Rock Member | | | | |
| sediments Cambrian | 23 | 1 | 0.1 | 1.02 |
| dolomite | | | | |
| skarn Cambrian | 370 | 2200 (250-6000) | 12.0 (1.0-32.0) | 1.51 (1.29-1.77) |
| pyrrhotite skarn | | | | |
| skarn Cambrian | 12300 (960-39600) | 33500 (7100-80600) | 8.4 (3.2-11.8) | 1.27 (1.05-1.61) |
| magnetite + pyrrhotite bearing | | | | |
| skarn Cambrian? Devonian? | 72600 | 172000 | 3.2 | |
| magnetite skarn | | | | |
| sulphide ore Cambrian? Devonian? | 12600 (5900-23100) | 21300 (5400-41200) | 2.6 (1.7-3.2) | 1.80 (1.30-2.30) |
| massive pyrrhotite | | | | |
| sulphide ore Cambrian? Devonian? | 6400 | 8200 | 2.3 | 1.39 |
| massive pyrrhotite | | | | |

MAP

Burnie, TAS

| Lithology & Age | k | J | Q | A |
|------------------------|---------------------|-----------------------|-------------------|---------------------|
| ultramafic Cambrian | 36 | 3 | 0.1 | 1.00 |
| weathered | | | | |
| ultramafic Cambrian | 3400 (900-11800) | 7200 (340-40800) | 2.4 (0.6-6.3) | 1.30 (1.10-1.90) |
| serpentinised | | | | |
| ultramafic Cambrian | 6720 (5300-7900) | 22900 (3150-62000) | 4.5 (0.8-11.9) | 1.32 (1.26-1.40) |

Cloncurry, QLD

| | | | | |
|------------------------------------|--------------------|---------------------|------------------|--|
| metasediments Lower Proterozoic | 140 | 180 | 2.5 | |
| black slate | | | | |
| metasediments Lower Proterozoic | 6 | 21 | 6.5 | |
| spotted black slate | | | | |
| metasediments Lower Proterozoic | 220 | 540 | 4.8 | |
| graphitic black slate | | | | |
| sulphide ore Lower Proterozoic | 13800 | 47500 | 13.0 | |
| sulphide ore Lower Proterozoic | 3000 (480-4400) | 6300 (800-10800) | 3.9 (3.2-4.9) | |
| Dugald lode, Dugald River | | | | |

MAP
Cobar, NSW

| Lithology & Age | k | J | Q | A |
|---|--------------------|----------------------|---------------------|------|
| laterite/gossan Tertiary | 60 | 110 | 3.1 | |
| gossan | | | | |
| sulphide ore Upper Palaeozoic | 70 | 1 | 0.1 | |
| Elura pyritic ore | | | | |
| sulphide ore Upper Palaeozoic | 12 | | | |
| Elura siliceous ore | | | | |
| sulphide ore Upper Palaeozoic | 4300 | 67000 | 27.0 | 1.44 |
| Elura pyrrhotitic ore | | | | |
| metasediments Devonian | 460 | 30 | 0.1 | |
| sulphide ore Devonian | 4940 (780-7460) | 5050 (3770-24160) | 1.8 (2.0-9.0) | |
| <p>Elura pyrrhotitic ore, with scattered NRM directions due to multi-component remanence (probably reflecting self-reversal). This is not representative of the bulk of the pyrrhotitic core of the orebody. Vector mean NRM direction: dec=139, inc=-16.</p> | | | | |
| disseminated pyrrhotite Lower Devonian | 500 (120-1190) | 6700 (500-35700) | 23.0 (3.0-103.0) | |
| <p>disseminated pyrrhotite within metasediments of the Cobar Supergroup. Vector mean NRM direction: dec=230, inc=-48.</p> | | | | |
| disseminated pyrrhotite Palaeozoic | 100 (50-140) | 850 (210-2360) | 14.0 (3.3-32.0) | 1.32 |

MAP

Collie, WA

| Lithology & Age | k | J | Q | A |
|--|---------------------|--------------------|------------------|---|
| basalt/dolerite/spilite Cretaceous | 170 | 5000 | 49.0 | |
| Bunbury Basalt | | | | |
| diorite/monzonite Archaean? Early Prot? | 3740 (2290-5190) | 2670 (970-4480) | 1.3 (0.8-1.6) | |

quartz diorites, possibly within basement to the Bangemall Basin. Vector mean NRM direction: dec=182, inc=-61.

Darwin, NT

| | | | | |
|--|--------|-------|-----|------|
| amphibolite/basic granulite Proterozoic | 660 | 30 | 0.1 | 1.26 |
| basalt/dolerite/spilite Proterozoic | 90 | 1 | | 1.02 |
| metadolerite | | | | |
| disseminated magnetite Proterozoic | 4500 | 210 | 0.1 | 1.29 |
| metasediments Proterozoic | 50 | 50 | 2.3 | 1.10 |
| quartz-magnetite/bif Proterozoic | 92000 | 56000 | 1.5 | 2.20 |
| quartz-magnetite/bif Proterozoic | 117000 | 41300 | 0.7 | |

MAP

Dorrigo, NSW

| Lithology & Age | k | J | Q | A |
|---------------------------------|------------------|------------------|------------------|---|
| granite/granodiorite Permian | 60 | 6 | 0.2 | |
| granite | | | | |
| granite/granodiorite Permian | 80 (30-140) | 120 (5-290) | 3.2 (0.7-8.5) | |
| granite | | | | |
| granite/granodiorite Permian | 230 | 7 | | |
| Moonbi Adamellite | | | | |
| granite/granodiorite Permian | 16 | 2 | 0.2 | |
| Uralla Granite | | | | |
| granite/granodiorite Permian | 11 | 7 | 1.1 | |
| Walcha Road Adamellite | | | | |
| granite/granodiorite Permian | 590 (280-900) | 520 (290-750) | 2.7 (0.6-4.8) | |
| granite | | | | |
| granite/granodiorite Permian | 17 | 2 | 0.2 | |
| Tilbuster Granodiorite | | | | |
| granite/granodiorite Permian | 240 | 11 | | |
| Congi Creek Adamellite | | | | |
| granite/granodiorite Permian | 120 | 890 | 14.0 | |
| granite | | | | |

MAP

Dubbo, NSW

| Lithology & Age | k | J | Q | A |
|-------------------------------------|------------------|---------------------|---------------------|---|
| basalt/dolerite/spilite Tertiary | 150 (130-160) | 3080 (2550-3800) | 37.0 (27.0-50.0) | |

basalt

Forbes, NSW

| | | | | |
|----------------------------------|----|--|--|--|
| granite/granodiorite Silurian | 50 | | | |
|----------------------------------|----|--|--|--|

granodiorite

| | | | | |
|---------------------------------------|-----|-----|-----|------|
| basalt/dolerite/spilite Ordovician | 130 | 755 | 9.3 | 1.03 |
|---------------------------------------|-----|-----|-----|------|

dolerite

| | | | | |
|---------------------------------|------|-------|------|------|
| diorite/monzonite Ordovician | 2630 | 17870 | 10.9 | 1.13 |
|---------------------------------|------|-------|------|------|

diorite

| | | | | |
|---------------------------------|-----|------|-----|------|
| diorite/monzonite Ordovician | 730 | 1080 | 4.0 | 1.08 |
|---------------------------------|-----|------|-----|------|

diorite

Geraldton, WA

| | | | | |
|------------------------------------|-----|----|-----|------|
| metasediments Upper Proterozoic | 420 | 70 | 0.2 | 1.08 |
|------------------------------------|-----|----|-----|------|

magnetic granulites

| | | | | |
|--|------|------|-----|--|
| disseminated pyrrhotite Proterozoic | 1910 | 7300 | 7.2 | |
|--|------|------|-----|--|

in granulites

Green Swamp Well, NT

| | | | | |
|--|-----|-----|-----|--|
| massive haematite Middle Proterozoic? | 275 | 700 | 5.0 | |
|--|-----|-----|-----|--|

haematite-rich bif from the Explorer 142 ironstone, hosted by Warramunga Group (?)
sediments in the Western extension of the Rover Field.

MAP

Green Swamp Well, NT

| Lithology & Age | k | J | Q | A |
|--|---------------------------|-----------------------------|------------------|---|
| massive magnetite Middle Proterozoic? | 382000 (95000- 850000) | 321000 (112000- 580000) | 2.1 (1.3-2.6) | |

magnetite lode (more magnetic) and quartz-magnetite lode from the Explorer 142 ironstone, hosted by Warramunga Group(?) sediments of the Western extension of the Rover Field.

| | | | | |
|--------------------------------------|---------------------|------------------|------------------|--|
| metasediments Middle Proterozoic? | 3090 (1630-4540) | 250 (225-280) | 0.2 (0.1-0.3) | |
|--------------------------------------|---------------------|------------------|------------------|--|

greenschist grade magnetic sediments of the Warramunga Group(?), hosting the Explorer 142 ironstone, in the Western extension of the Rover Field. NRM direction: dec=240, inc=-40.

Huckitta, NT

| | | | | |
|----------------------|-------|------|-----|--|
| skarn Proterozoic | 79200 | 6300 | 0.1 | |
|----------------------|-------|------|-----|--|

magnetite skarn

Kalgoorlie, WA

| | | | | |
|---|---------------|---------------|------------------|---------------------|
| amphibolite/basic granulite Archaean | 91 (89-93) | 95 (94-96) | 1.8 (1.7-1.8) | 1.45 (1.43-1.47) |
|---|---------------|---------------|------------------|---------------------|

hydrothermally altered amphibolites, hosting auriferous sulphide mineralisation, Great Ophir, Davyhurst area. Magnetic foliation parallel to schistosity (dips 30N).

| | | | | |
|---|---------------|------------|---------|---------------------|
| amphibolite/basic granulite Archaean | 74 (69-81) | 3 (0-7) | 0.0-0.1 | 1.10 (1.07-1.13) |
|---|---------------|------------|---------|---------------------|

pyrite-bearing amphibolites, hosting auriferous sulphide mineralisation, from Great Ophir, Davyhurst area. Magnetic foliation parallel to schistosity (dips 30N).

| | | | | |
|-------------------------------------|----------------------|-------------------|------------------|---------------------|
| basalt/dolerite/spilite Archaean | 7790 (4080-10380) | 590 (150-1600) | 0.1 (0.0-0.6) | 1.05 (1.03-1.06) |
|-------------------------------------|----------------------|-------------------|------------------|---------------------|

Golden Mile Dolerite, unaltered, metamorphosed to mid-greenschist grade, from Kalgoorlie. GMD units 4?, 6?, 7?

| | | | | |
|-------------------------------------|---------------------|-------------------|------------------|---------------------|
| basalt/dolerite/spilite Archaean | 4980 (980-11100) | 1620 (40-4800) | 0.5 (0.0-1.1) | 1.19 (1.10-1.27) |
|-------------------------------------|---------------------|-------------------|------------------|---------------------|

Golden Mile Dolerite, metamorphosed to greenschist grade. Vector mean NRM direction: dec=45, inc=+42. NRM is stable and of dual polarity but lies close to DDH axis. The measured NRM may be drilling-induced and therefore unrepresentative.

MAP

Kalgoorlie, WA

| Lithology & Age | k | J | Q | A |
|--|---------------------|----------------------|---------------------|---------------------|
| basalt/dolerite/spilite Archaean | 3730 (70-12220) | 300 (2-990) | 0.1 (0.0-0.4) | 1.22 (1.02-2.19) |
| Golden Mile Dolerite (units 1,3,4,7-10), metamorphosed to mid-greenschist grade. Hannan Lake area. | | | | |
| basalt/dolerite/spilite Archaean | 4060 (3040-4840) | 120 | | 1.10 (1.06-1.14) |
| Hannan Lake Serpentinite (deuterically altered, metamorphosed to mid-greenschist grade) from Kalgoorlie. | | | | |
| basalt/dolerite/spilite Archaean | 790 (40-2160) | 14200 (130-37700) | 31.0 (30.0-47.0) | 1.20 (1.14-1.22) |
| hydrothermally altered, mineralised, porphyritic and pillow basalts, containing pyrrhotite and pyrite. NRM is carried by pyrrhotite and is a stable, ancient, monocomponent remanence, apparently directed N and shallow down. Samples from Ora Banda. | | | | |
| basalt/dolerite/spilite Archaean | 100 (80-130) | 400 (40-870) | 7.0 (1.0-12.0) | 1.05 (2.03-1.06) |
| unaltered basalts from Ora Banda. NRM apparently steep up, but is possibly affected by drilling-induced piezoremanence. | | | | |
| disseminated pyrrhotite Archaean | 300 (100-650) | 2000 (250-4120) | 11.5 (4.0-22.0) | 1.32 (1.16-1.55) |
| mineralised pyrrhotite+pyrite-bearing tremolite-chlorite and chlorite schists from Homeward Bound, Davyhurst area. NRM SSE and shallow up. Magnetic foliation parallel to schistosity (dips steeply W). | | | | |
| gabbro/norite Archaean | 1800 (1430-2180) | 2870 (2390-3420) | 2.8 (2.7-2.9) | 1.04 (1.03-1.04) |
| magnetite+titanohaematite+haematite+ilmenite-bearing granophyric tonalite phase of folded differentiated gabbroic sill, near Kunanall-ing. NRM stable, ancient, changes polarity along strike. Vector mean NRM direction: dec=341, inc=-15. | | | | |
| gabbro/norite Archaean | 10 | 6 | 1.1 | 1.44 |
| hydrothermally altered quartz gabbro from Ora Banda. | | | | |

MAP

Kalgoorlie, WA

| Lithology & Age | k | J | Q | A |
|---|---------------------|------------------------|---------------------|---------------------|
| gabbro/norite Archaean | 1030 (890-1170) | 4730 (2850-6630) | 7.9 (5.5-9.8) | 1.03 (1.05-1.05) |
| magnetite+haematite+ilmenite-bearing granophyric tonalite phase offolded differentiated gabbroic sill, near Kunanalling. NRM stable, ancient, dual polarity. Vector mean NRM of reversed section has dn:dec=139, inc=+6 | | | | |
| gabbro/norite Archaean | 30 | 72 | 4.1 | 1.00 |
| gabbroic unit within basalts, from Ora Banda. | | | | |
| gabbro/norite Archaean | 40 | 5 | 0.2 | |
| metagabbro (Black Flag Gabbro) | | | | |
| gabbro/norite Archaean | 1290 (230-2340) | 320 (160-470) | 0.4 (0.3-1.1) | 1.28 (1.16-1.29) |
| quartz gabbros from Ora Banda. | | | | |
| metasediments?metavolcanics? Archaean | 120 (50-260) | 30 (15-190) | 0.4 (0.1-3.0) | 1.20 (1.04-1.42) |
| unmineralised tremolite-chlorite schists (unaltered and hydrotherm- ally altered) from Homeward Bound, Davyhurst area. Magnetic foliat- ion parallel to schistosity (dips steeply W). | | | | |
| metasediments?metavolcanics? Archaean | 91 (85-96) | 115 (2-230) | 2.2 (0.0-4.1) | 1.33 (1.09-1.57) |
| chlorite schists, hosting sulphide mineralisation at Great Ophir, Davyhurst area. Magnetic foliation parallel to schistosity (dips 30N). | | | | |
| sulphide ore Archaean | 80 (60-100) | 5 (1-9) | 0.1 (0.0-0.2) | 1.13 (1.10-1.15) |
| pyritic mineralised (gold-bearing) zone, within chlorite schists and amphibolites, at Great Ophir, Davyhurst area. Magnetic foliation parallel to schistosity (dips 30N). | | | | |
| sulphide ore Archaean | 2100 (1160-3030) | 30000 (21700-42600) | 25.0 (24.0-32.0) | 1.52 (1.51-1.53) |
| auriferous lode horizon (pyrrhotite+/-pyrite-bearing tremolite-chlorite schists) from Homeward Bound, Davyhurst area. NRM is stable ancient remanence with vector mean direction: dec=158, inc=-26. Mag. foliation parallel to schistosity (dips 70W) | | | | |

MAP

Kalgoorlie, WA

| Lithology & Age | k | J | Q | A |
|---|---------------------|---------------------|------------------|---------------------|
| ultramafic Archaean | 32 | 10 | 0.5 | 1.08 |
| foliated ultramafic from Ora Banda. | | | | |
| ultramafics Archaean | 5540 (510-10560) | 1940 (1230-2650) | 0.6 (0.4-4.2) | 1.12 (1.12-1.17) |
| magnetite-bearing ultramafics from Ora Banda. | | | | |

Kingoonya, SA

| | | | | |
|----------------------------------|---------------------|---------------------|-------------------|--|
| massive haematite Proterozoic | 3900 (100-19100) | 7800 (120-35400) | 5.5 (0.8-21.0) | |
| mineralised haematite breccia | | | | |

Kirkalocka, WA

| | | | | |
|---|-------|-------|------|------|
| quartz-magnetite/bif Archaean | 5550 | 31600 | 98.0 | 1.64 |
| weathered outcropping bif. NRM is lightning-affected and is unrepresentative. The AF cleaned remanence direction is: dec=94, inc=+32. | | | | |
| quartz-magnetite/bif Archaean | 2260 | 51700 | 40.0 | 1.12 |
| weathered outcropping bif. NRM is contaminated by lightning and is unrepresentative. | | | | |
| quartz-magnetite/bif Archaean | 35000 | 82700 | 4.1 | 3.90 |
| fresh bif from underground. NRM is hard, ancient, monocomponent remanence with direction: dec=231, inc=-63. | | | | |

Lander River, NT

| | | | | |
|---|--------------------|------------------|------------------|--|
| disseminated magnetite Lower Proterozoic | 2200 (280-4500) | 400 (230-700) | 1.8 (0.1-5.0) | |
| in Lower Proterozoic metasediments | | | | |

MAP

Lander River, NT

| Lithology & Age | k | J | Q | A |
|--|---------------------------|-----------------------------|------------------|---|
| massive magnetite Lower Proterozoic | 148000 (95000- 200000) | 191000 (112000- 270000) | 2.5 (2.3-2.6) | |

semi-massive to massive magnetite

| | | | | |
|--|--------|--------|-----|--|
| massive magnetite Lower Proterozoic | 850000 | 580000 | 1.3 | |
|--|--------|--------|-----|--|

mineralised massive magnetite

Lennard River, WA

| | | | | |
|------------------------|----|---------------|-------------------|--|
| ultramafic Tertiary | 30 | 50 (2-170) | 3.0 (0.2-10.0) | |
|------------------------|----|---------------|-------------------|--|

lamproite

| | | | | |
|------------------------|----|-----|-----|--|
| ultramafic Tertiary | 65 | 210 | 6.7 | |
|------------------------|----|-----|-----|--|

olivine lamproite

Lissadell, WA

| | | | | |
|--------------------------|----|----|------|--|
| sediments Proterozoic | 10 | 80 | 17.0 | |
|--------------------------|----|----|------|--|

sandstone

| | | | | |
|----------------------------|----|---|-----|--|
| ultramafic Proterozoic? | 14 | 7 | 0.9 | |
|----------------------------|----|---|-----|--|

siliceous (contaminated) olivine lamproite

Maitland, SA

| | | | | |
|---|-----------------------|-------------------|-----------|---------------------|
| metasediments? acid granulite? Proterozoic | 26500 (5100-65400) | 1100 (50-9200) | (0.0-0.3) | 1.34 (1.00-1.88) |
|---|-----------------------|-------------------|-----------|---------------------|

magnetic schists and gneisses (biotite and magnetite-rich quartzo-feldspathic gneisses/schists, quartz-feldspar rock (felsite). Vector mean NRM direction: dec=46, inc=-37. NRM is soft and unstable.

MAP

May River, PNG

| Lithology & Age | k | J | Q | A |
|-------------------------------------|------------------------|-----------------------|------------------|---------------------|
| diorite/monzonite Miocene | 2100 (1530-2620) | 50 (25-70) | | 1.08 (1.07-1.09) |
| Horse Microdiorite | | | | |
| diorite/monzonite Miocene | 360 | 18 | 0.1 | 1.03 |
| Koki Diorite Porphyry | | | | |
| rhyolite/dacite/andesite Miocene | 2060 | 110 (80-140) | 0.1 (0.0-0.1) | 1.04 |
| Horse Andesite Porphyry | | | | |
| skarn Miocene | 21400 (17100-25700) | 10900 (2400-19300) | 1.5 (0.3-2.8) | 1.13 |
| Frieda Complex | | | | |

Menindee, NSW

| | | | | |
|--|--------------------|-------------------|------------------|------|
| disseminated magnetite Middle Proterozoic | 7690 (50-20290) | 1940 (10-3790) | 0.4 (0.0-1.1) | 1.25 |
| in Lower Proterozoic metasediments. | | | | |
| disseminated magnetite Middle Proterozoic | 32300 | 7050 | 0.4 | 1.25 |
| magnetic metasediments in Lower Proterozoic | | | | |

Moorra, WA

| | | | | |
|------------------------------------|---------|---------|-----|--|
| massive magnetite Late Archaean | 2350000 | 3600000 | 2.6 | |
|------------------------------------|---------|---------|-----|--|

Mt Bruce, WA

| | | | | |
|---|--------------------|--------------------|------------------|------|
| massive haematite Lower Proterozoic? | 2230 (50-14600) | 1700 (50-13300) | 1.4 (0.2-8.8) | 1.24 |
|---|--------------------|--------------------|------------------|------|

Tom Price haematite ore/oxidised bif, containing variable amounts of residual magnetite. Vector mean NRM direction: dec=323, inc=-16. NRMs are quite scattered and have dual polarity. Palaeomagnetism suggests prolonged ore formation at Tom Price.

MAP

Mt Bruce, WA

| Lithology & Age | k | J | Q | A |
|---|-----|-----|-----|------|
| massive haematite Lower Proterozoic? | 710 | 950 | 2.5 | 1.03 |

Tom Price haematite ore/mineralised bif. Vector mean NRM direction: dec=294, inc=-8.

| | | | | |
|---|----------------------|--------------------------|---------------------|--|
| quartz-magnetite/bif Lower Proterozoic | 28000 (200-80000) | 104000 (7000- 273000) | 97.0 (7.0-277.0) | |
|---|----------------------|--------------------------|---------------------|--|

Marra Mamba Formation (bif), Hamersley Group.

| | | | | |
|---|-------------------|-------------------|--------------------|------|
| quartz-magnetite/bif Lower Proterozoic | 930 (60-12400) | 6500 (3-15050) | 13.0 (0.1-77.0) | 1.19 |
|---|-------------------|-------------------|--------------------|------|

unmineralised, weathered Hamersley Group bifs from surface exposures around Tom Price . Vector mean NRM direction: dec=295, inc=-26 (lightning-affected samples omitted).

| | | | | |
|--------------------------------|-----|------|-----|------|
| sediments Lower Proterozoic | 820 | 3150 | 7.2 | 1.09 |
|--------------------------------|-----|------|-----|------|

ferruginous shale, between mineralised bifs of the Hamersley Group, from Tom Price. Vector mean NRM direction: dec=266, inc=+1.

Mt Isa, QLD

| | | | | |
|--|---------------------|-----------------------|-------------------|------|
| basalt/dolerite/spilite Proterozoic | 7300 (930-15000) | 26700 (50- 130500) | 6.5 (0.0-20.0) | 1.11 |
|--|---------------------|-----------------------|-------------------|------|

metabasalts (Eastern Creek Volcanics)

| | | | | |
|--|-----------------|--|-----|------|
| disseminated pyrrhotite Proterozoic | 1380 (0-710) | | 1.1 | 1.42 |
|--|-----------------|--|-----|------|

in Urquart Shale

| | | | | |
|--------------------------|----|----|-----|------|
| sediments Proterozoic | 18 | 18 | 1.5 | 1.14 |
|--------------------------|----|----|-----|------|

shale

Mt. Phillips, WA

| | | | | |
|---------------------------------------|-------|-------|-----|--|
| disseminated magnetite Proterozoic | 42400 | 16800 | 0.7 | |
|---------------------------------------|-------|-------|-----|--|

magnetite arenite

MAP

Narromine, NSW

| Lithology & Age | k | J | Q | A |
|--------------------------------------|------------------|----------------|------------------|------|
| diorite/monzonite Devonian | 3300 | 290 | 0.1 | 1.11 |
| diorite | | | | |
| diorite/monzonite Silurian | 5480 | 43900 | 16.0 | |
| monzonite | | | | |
| ultramafic Silurian? | 6480 | 3760 | 0.7 | 1.10 |
| hornblende pyroxenite, Mt Derriwong | | | | |
| ultramafic Silurian? | 2760 | 680 | 0.5 | 1.13 |
| pyroxene hornblendite, Mt Derriwong | | | | |
| metasediments Ordovician | 670 (20-5600) | 110 (1-300) | 1.0 (0.0-6.2) | |
| basic schists and calcsilicate rocks | | | | |

Newman, WA

| | | | | |
|---|-------------------------|-------------------------|------------------|---------------------|
| quartz-magnetite/bif Lower Proterozoic | 79300 (7700- 237000) | 91500 (4350- 266000) | 2.3 (0.6-4.4) | 1.72 (1.39-2.20) |
|---|-------------------------|-------------------------|------------------|---------------------|

fresh Marra Mamba Formation bif, Hamersley Group. Vector mean NRM direction is: dec=310, inc=-43. The samples come from the S-dipping limb of a major structure. The NRM is possibly pre-folding. The direction wrt palaeohorizontal is: dec=323, inc=-8.

Norseman, WA

| | | | | |
|-------------------------------------|----------------------|------------------------|-------------------|---------------------|
| ultramafic Late Proterozoic | 8700 (6000-10600) | 23500 (14600-38200) | 5.4 (2.6-10.8) | |
| kimberlitic | | | | |
| basalt/dolerite/spilite Archaean | 250 (100-280) | 640 (430-790) | 4.4 (2.7-6.9) | 1.33 (1.28-1.40) |

moderately magnetic unaltered basalts (plagioclase phenocrystic/plagioclase-phyric) from Norseman, metamorphosed to mid-amphibolite grade. NRMs possibly reflect drilling-induced piezoremanence and maybe unrepresentative.

MAP

Norseman, WA

| Lithology & Age | k | J | Q | A |
|---|---------------------|-------------------|------------------|---------------------|
| basalt/dolerite/spilite Archaean | 470 | 2000 | 7.3 | 1.37 |
| schistose, carbonate-sericite altered, basalt from Norseman, metamorphosed to mid-amphibolite grade. NRM possibly reflects drilling-induced piezoremanence and may be unrepresentative. | | | | |
| basalt/dolerite/spilite Archaean | 86 (66-114) | 35 (26-49) | 0.7 (0.4-1.0) | 1.01 (1.00-1.02) |
| weakly magnetic basalts (unaltered/quartz-veined/carbonate-sericite altered) from Norseman, metamorphosed to mid-amphibolite grade. NRMs are possibly contaminated by drilling-induced piezoremanence and maybe unrepresentative. | | | | |
| basalt/dolerite/spilite Archaean | 1750 | 6680 | 6.6 | 1.29 |
| magnetic altered (quartz-veined) plagioclase phenocrystic basalt, metamorphosed to mid-amphibolite grade, from Norseman. The NRM may reflect drilling-induced piezoremanence and may be unrepresentative. | | | | |
| diorite/monzonite Archaean | 5450 (3810-7080) | 960 (320-3810) | 0.3 (0.0-0.7) | 1.40 (1.14-1.66) |
| hornblende diorite (unaltered/deuterically altered) from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna green-stone belt. Representative NRMs estimated by AF cleaning. | | | | |
| gabbro/norite Archaean | 7300 | 390 | | 1.20 |
| strongly magnetic plagioclase phenocrystic gabbro (unaltered) from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning. | | | | |
| gabbro/norite Archaean | 110 (80-150) | 130 (10-340) | 2.1 (0.2-4.0) | 1.01 (1.00-1.02) |
| weakly magnetic, unaltered olivine gabbro, pyroxene-phyric, pyroxene phenocrystic, and plagioclase phenocrystic gabbros from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna green-stone belt. Repres. NRMs est. by AF cleaning. | | | | |
| gabbro/norite Archaean | 1000 | 480 | 0.8 | 1.44 |
| magnetic pyroxene-phyric gabbro from Norseman within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning. | | | | |

MAP

Norseman, WA

| Lithology & Age | k | J | Q | A |
|---|--------------------------|-----------------------|------------------|---------------------|
| metasediments Archaean | 1540 | 9260 | 10.4 | 1.27 |
| metasediment from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning. | | | | |
| metasediments Archaean | 80 | 150 | 3.2 | |
| metasedimentary baked contact of ultramafic dyke (unknown age) | | | | |
| quartz-magnetite/bif Archaean | 99000 (30500- 184000) | 23300 (1050-44700) | 0.4 (0.0-1.2) | 1.94 (1.34-2.40) |
| banded cherty sediment (bif) from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRMs estimated by AF cleaning. | | | | |
| ultramafic Archaean | 7570 (6060-9090) | 120 (120-120) | | 1.26 (1.15-1.36) |
| tremolite-chlorite ultramafic from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning | | | | |
| ultramafic Archaean | 4660 | 4 | | 1.08 |
| unaltered/deuterically altered peridotite from Norseman, within the mid-amphibolite grade zone of the Norseman-Wiluna greenstone belt. Representative NRM estimated by AF cleaning. | | | | |

Nyngan, NSW

| | | | | |
|--|------------------|-------------------|-------------------|--|
| disseminated pyrrhotite Lower Devonian? | 290 (100-720) | 610 (350-4630) | 3.7 (4.6-18.7) | |
| Amphitheatre Group? sediments with disseminated pyrrhotite. Vector mean NRM direction: dec=69, inc=+51. NRM directions are scattered, with declinations from NE to SE and steep negative to steep positive inclinations. | | | | |

Olary, SA

| | | | | |
|--|---------------------------|-------------------------|------------------|---------------------|
| metasediments Lower Proterozoic | 120400 (12700- 228000) | 69000 (7300- 132000) | 1.0 (1.0-1.0) | 1.12 (1.12-1.27) |
| magnetic schists from the Olary?/Willyama? Block. NRMs steep up. | | | | |

MAP

Pine Creek, NT

| Lithology & Age | k | J | Q | A |
|--|------------------------|--------------------------|--------------------|---------------------|
| sulphide ore Proterozoic | 1550 | 16310 | 22.0 | |
| semi-massive pyrrhotite in black shale | | | | |
| sulphide ore Proterozoic | 1550 | 65600 | 86.0 | |
| semi-massive pyrrhotite in black shale | | | | |
| sulphide ore Proterozoic | 1840 | 14500 | 17.0 | |
| semi-massive pyrrhotite in black shale | | | | |
| sulphide ore Proterozoic | 10300 (3600-17000) | 70000 (22000- 118000) | 10.5 (7.0-14.0) | |
| pyrrhotitic ore | | | | |
| sulphide ore Proterozoic | 29000 (10000-48000) | 115000 (4000- 225000) | 14.0 (1.0-26.0) | |
| pyrrhotitic ore | | | | |
| sulphide ore Lower Proterozoic | 3000 (1700-5400) | 12600 (2100-18200) | 10.0 (2.0-21.0) | 1.56 (1.27-1.94) |
| semi-massive pyrrhotite | | | | |

Port Augusta, SA

| | | | | |
|--|----------------------|---------------------|------------------|--|
| basalt/dolerite/spilite Proterozoic | 6020 | 1640 | 0.4 | |
| disseminated magnetite Proterozoic | 9700 (4430-15000) | 2540 (1860-3220) | 0.5 (0.3-0.7) | |

MAP

Port Augusta, SA

| Lithology & Age | k | J | Q | A |
|---|------|------|-----|---|
| disseminated pyrrhotite Proterozoic | 2960 | 2670 | 1.6 | |
| rhyolite/dacite/andesite Proterozoic | 2490 | 365 | 0.2 | |
| andesite/rhyolite | | | | |

Roy Hill, WA

| | | | | |
|---|--------|---------|-----|------|
| quartz-magnetite/bif Lower Proterozoic | 140000 | 430000 | 5.7 | 2.06 |
| bif | | | | |
| quartz-magnetite/bif Lower Proterozoic | 12100 | 27500 | 4.3 | 2.48 |
| haematite-rich bif | | | | |
| quartz-magnetite/bif Lower Proterozoic | 520000 | 1620000 | 5.9 | 2.04 |
| magnetite-rich bif | | | | |

Rudall, WA

| | | | | |
|--|---------------------|--------------------|------------------|---------------------|
| disseminated magnetite Middle Proterozoic | 18300 (70-52800) | 7200 (10-33050) | 0.9 (0.1-3.2) | 2.30 (1.20-2.85) |
|--|---------------------|--------------------|------------------|---------------------|

magnetite-rich pyritic mineralised schists of the Rudall Metamorphic Complex. Mean NRM direction: dec=177, inc=-61. Both remanence polarities present ("normal" predominates). Strong magnetic foliation parallel to schistosity.

| | | | | |
|-------------------------------------|---------------------|-------------------|------------------|---------------------|
| metasediments Middle Proterozoic | 2080 (1000-3150) | 770 (340-1350) | 0.7 (0.6-0.8) | 1.67 (1.54-1.78) |
|-------------------------------------|---------------------|-------------------|------------------|---------------------|

schists of the Rudall Metamorphic Complex. NRM reflects stable ancient components of dual polarity. Vector mean NRM direction: dec=77, inc=+48. Strong magnetic foliation parallel to schistosity.

MAP

Southern Cross, WA

| Lithology & Age | k | J | Q | A |
|--|---------------------|--------------------------|---------------------|---|
| laterite/gossan Tertiary? | 80 | 7 | 0.1 | |
| gossan: Great Victoria oxidised ore (haematite bearing) | | | | |
| laterite/gossan Tertiary? | 9340 | 8740 | 1.6 | |
| laterite (maghaemite-haematite-magnetite bearing) | | | | |
| laterite/gossan Tertiary? | 100 | 24 | 0.4 | |
| gossan: Resurrection oxidised ore (haematite bearing) | | | | |
| laterite/gossan Tertiary? | 70 | 22 | 0.5 | |
| laterite (haematite-bearing), Great Victoria | | | | |
| laterite/gossan Tertiary? | 2900 (1550-4200) | 70000 (40000- 100000) | 43.0 (41.0-44.0) | |
| gossan: Grand National oxidised ore (haematite+maghaemite+magnetite bearing) | | | | |

Sydney, NSW

| | | | | |
|-------------------------------------|-------------------|------------------|------------------|--|
| basalt/dolerite/spilite Tertiary | 1040 (30-2870) | 840 (10-1800) | 2.0 (0.5-3.8) | |
| basalt. | | | | |

Tennant Creek, NT

| | | | | |
|------------------------------|---------------------|----------------------|---------------------|--|
| laterite/gossan Tertiary? | 3100 (200-11700) | 7000 (9100-88300) | 4.4 (15.0-363.0) | |
|------------------------------|---------------------|----------------------|---------------------|--|

gossan developed on Peko orebody, consisting mainly of haematite (partly altered to goethite) in quartz gangue, with remnant cores of magnetite. Low vector mean NRM due to very scattered directions. High Qs prob. due to lightning and not representative.

MAP

Tennant Creek, NT

| Lithology & Age | k | J | Q | A |
|------------------------------|----------------------|--------------------------|--------------------|---|
| laterite/gossan Tertiary? | 9200 (1860-35300) | 23000 (16600- 124500) | 4.9 (2.5-131.0) | |

gossan developed over Explorer 205 ironstone. NRM directions very scattered and Q values very high, reflecting lightning strikes. In situ remanence much lower than indicated by NRMs, but nevertheless affects ground magnetic anomaly.

| | | | | |
|--|------------------|--------------------|------------------|--|
| diorite/monzonite Late Proterozoic? | 490 (150-830) | 1400 (340-2430) | 5.2 (4.6-5.7) | |
|--|------------------|--------------------|------------------|--|

quartz-feldspar porphyry

| | | | | |
|--|---------------------|----------------|--|-----------|
| disseminated magnetite Middle Proterozoic | 2380 (1710-3040) | 84 (79-103) | | (0.0-0.1) |
|--|---------------------|----------------|--|-----------|

magnetic sediment (magnetite-bearing Warramunga Group) adjacent to a main Tennant Creek Field massive magnetite+pyrrhotite ironstone. Vector mean NRM direction: dec=321, inc=-71.

| | | | | |
|--|--------------------|-----------------|------------------|--|
| disseminated magnetite Middle Proterozoic | 1360 (550-2160) | 150 (60-240) | 0.2 (0.2-0.2) | |
|--|--------------------|-----------------|------------------|--|

mineralised chloritic slate in Warrego mine (sulphide-bearing)

| | | | | |
|--|----------------|--------------|------------------|--|
| disseminated magnetite Middle Proterozoic | 80 (60-100) | 50 (5-95) | 1.0 (0.1-1.9) | |
|--|----------------|--------------|------------------|--|

mineralised sediments within Warramunga Group (siltstones metamorphosed to greenschist grade), adjacent to Rover 1 ironstone.

| | | | | |
|--|-------|------|-----|--|
| disseminated magnetite Middle Proterozoic | 28500 | 3000 | 0.2 | |
|--|-------|------|-----|--|

magnetic sediment (magnetite-rich Warramunga Group sediment) adjacent to a Tennant Creek Main Field orebody. NRM direction is: dec=222, inc=0.

| | | | | |
|--|---------------|------------|--|--|
| granite/granodiorite Middle Proterozoic | 64 (60-68) | 1 (0-2) | | |
|--|---------------|------------|--|--|

quartz feldspathoid intruding Warrego host rocks

| | | | | |
|--|----|--|--|--|
| granite/granodiorite Middle Proterozoic | 25 | | | |
|--|----|--|--|--|

quartz porphyroid intruding Warrego host rocks

MAP

Tennant Creek, NT

| Lithology & Age | k | J | Q | A |
|---|------------------------------|-----------------------------|------------------|---|
| massive haematite Middle Proterozoic | 120 (75-170) | 245 (40-640) | 3.1 (1.0-7.4) | |
| haematite lode from Rover 1 ironstone, hosted by Warramunga Group. | | | | |
| massive haematite Middle Proterozoic | 2430 (1050-3800) | 1460 (620-2300) | 2.3 (0.3-4.3) | |
| haematite-rich magnetite-haematite-jasper-dolomite lode from the Rover 4 ironstone, hosted by Warramunga Group sediments. | | | | |
| massive magnetite Middle Proterozoic | 487000 (2400-1650000) | 179700 (3100- 560100) | 0.7 (0.2-2.4) | |
| Warrego Cu/Au/Bi orebody (massive magnetite + sulphides, quartz-mt, quartz-haematite, chlorite-magnetite). Mean magnetic properties agree well with properties inferred from detailed modelling. Vector mean NRM direction: dec=312, inc=-76. | | | | |
| massive magnetite Middle Proterozoic | 484000 (354000- 615000) | 272000 (267000- 362000) | 1.1 (0.8-2.0) | |
| Argo orebody. Vector mean NRM direction: dec=196, inc=-64. | | | | |
| massive magnetite Middle Proterozoic | 186000 (170- 499000) | 73000 (60- 255000) | 0.7 (0.4-1.7) | |
| West Gibbet ironstone (massive magnetite, chloritic magnetite, siliceous magnetite, quartz haematite). Modelling indicates ironstone is very discontinuous (approx. 36% of mineralised zone). | | | | |
| massive magnetite Middle Proterozoic | 127000 (21000- 313000) | 139000 (35000- 377500) | 2.8 (1.1-6.7) | |
| magnetite-haematite lode with quartz and minor sulphides, Rover ironstone within Warramunga Group | | | | |
| massive magnetite Middle Proterozoic | 231000 (146000- 314000) | 78900 (62000-96900) | 0.6 (0.6-0.8) | |
| Tennant Creek-style ironstone. Vector mean NRM direction: dec=21, inc=-47. NRM consists of two components: a soft component with dec=28, inc=-56; and a hard component with dec=82, inc=+62. | | | | |
| massive magnetite Middle Proterozoic | 2092500 (530000-6300000) | 500000 (138200-1184000) | 0.4 (0.3-2.2) | |
| massive magnetite ironstone from the main Tennant Creek Field. NRM direction: dec=335, inc=-47. | | | | |

MAP

Tennant Creek, NT

| Lithology & Age | k | J | Q | A |
|--|-----------------------------|-----------------------------|------------------|---------------------|
| massive magnetite Middle Proterozoic | 136000 (98000- 173000) | 112000 (101000- 136000) | 1.6 (1.5-2.0) | 1.11 (1.14-1.15) |
| pyrrhotitic massive magnetite ironstone orebody from the main Tennant Creek Field. Vector mean NRM direction: dec=313, inc=-45. The NRM reflects partial self-reversal due to magnetostatic interaction between mt and po. Mag. fol. dips steeply N. | | | | |
| massive magnetite Middle Proterozoic | 142700 | 50700 | 0.3 | |
| magnetite-rich magnetite-haematite-jasper-dolomite lode from the Rover 4 ironstone, hosted by Warramunga Group sediments. | | | | |
| massive magnetite Middle Proterozoic | 820000 (131000-1140000) | 270000 (45400- 555000) | 0.6 (0.3-1.3) | |
| magnetite ore from a Tennant Creek Field orebody. Vector mean NRM direction: dec=130 , inc=-82. | | | | |
| massive magnetite Middle Proterozoic | 535000 | 97000 | 0.3 | |
| massive magnetite from Explorer 198 ironstone, in Main Tennant Creek Field, between Gecko and Orlando orebodies. Modelling suggests bulk susceptibility of ironstone is approx. 0.3 G/Oe. Lower k is probably due to presence of haematite in much of body. | | | | |
| metasediments Middle Proterozoic | 8200 (100-82200) | 590 (5-5400) | 0.1 (0.1-2.5) | 1.26 (1.05-1.63) |
| magnetic sediments in Warrego mine. Vector mean NRM direction: dec=209, inc=-34 .Magnetic foliation subparallel to cleavage, strong magnetic lineation parallel to orebody plunge. | | | | |
| metasediments Middle Proterozoic | 1560 (650-3340) | 70 (40-3210) | 0.2 (0.0-0.6) | 1.34 (1.07-1.62) |
| magnetic sediments (diagenetic magnetite-bearing siltstones of the Warramunga Group) , in the Argo mine. Vector mean NRM direction: (dec=1, inc=-53), reflecting VRM overprinting minor hard component: dec=323, inc=-38. Mag. fol. parallel to cleavage. | | | | |
| metasediments Middle Proterozoic | 1400 (80-2820) | 180 (1-1800) | 0.2 (0.0-1.2) | 1.22 (1.08-1.32) |
| magnetic sediments adjacent to Explorer 50 ironstone (diagenetic magnetite-bearing siltstones of the Warramunga Group, metamorphosed to greenschist grade). Mean NRM dn: dec=103, inc=+13, reflecting ESE down hard component overprinting steep up component. | | | | |

MAP

Tennant Creek, NT

| Lithology & Age | k | J | Q | A |
|---|---------------------|---------------------|------------------|---------------------|
| metasediments Middle Proterozoic | 450 | 1060 | 4.6 | |
| haematite-rich magnetic sediment (diagenetic haematite+magnetite-bearing Warramunga Group sediments, metamorphosed to greenschist grade). NRM direction: dec=44, inc=+50, reflecting minor VRM overprinting hard compnt: dec=96, inc=+56. No clear fabric. | | | | |
| metasediments Middle Proterozoic | 2700 (50-9320) | 510 (6-1930) | 0.3 (0.0-0.4) | 1.13 (1.11-1.55) |
| haematite shale, Warramunga Formation, metamorphosed to greenschist grade, adjacent to Explorer 50 ironstone. Mean NRM direction: dec=17, inc=-55, reflecting ESE down hard component overprinted by steepup component. Mag. fol. parallel to cleavage. | | | | |
| metasediments Middle Proterozoic | 1340 (430-2540) | 250 (30-620) | 0.3 (0.0-0.5) | |
| magnetic sediments (diagenetic magnetite-bearing siltstones of the Warramunga Group, metamorphosed to greenschist grade), hosting Argoorebody (Explorer 46 DDHs). | | | | |
| metasediments Middle Proterozoic | 3530 (3160-3890) | 1890 (1850-2000) | 1.0 (0.9-1.2) | |
| magnetic sediments (diagenetic magnetite-bearing Warramunga Group) Explorer 99, near Peko mine. Vector mean NRM dn: dec=6, inc=-45, dominated by VRM. Magnetic foliation dips 70 to 350T, lineation is E and subhorizontal. | | | | |
| metasediments Middle Proterozoic | 14700 | 3900 | 0.5 | |
| magnetic sediment (diagenetic magnetite-bearing Warramunga Group sediment, metamorphosed to greenschist grade), near Eldorado orebody. NRM direction: dec=26, inc=-40, reflecting VRM overprinting E steepdown compnt. | | | | |
| metasediments Middle Proterozoic | 260 (40-470) | 35 (4-65) | 0.2 (0.2-0.3) | 1.09 (1.07-1.09) |
| magnetic sediments (diagenetic magnetite-bearing siltstones of the Warramunga Formation, metamorphosed to greenschist grade), adjacent to West Gibbet ironstone. Vector mean NRM direction: dec=357, inc=-66, reflecting VRM overprinting steep up component. | | | | |
| metasediments Middle Proterozoic | 7300 (560-18400) | 450 (70-1010) | 0.2 (0.1-0.2) | |
| chloritic slate, Warrego mine | | | | |

MAP

Tennant Creek, NT

| Lithology & Age | k | J | Q | A |
|---|---------------------------|-----------------------------|------------------|------|
| metasediments Middle Proterozoic | 500 (80-1000) | 100 (60-160) | 0.4 (0.2-1.5) | |
| magnetic sediments (diagenetic magnetite-bearing Warramunga Group) from Explorer 79, near Peko mine. Vector mean NRM dn: dec=40, inc=-60, dominated by VRM. Magnetic foliation dips 70 to 350T, parallel to cleavage, lineation is subvertical. | | | | |
| sediments Middle Proterozoic | 40 (35-45) | 30 (3-58) | 1.5 (0.1-2.6) | |
| Warramunga Group sediments. Vector mean NRM direction: dec=185, inc=-28. | | | | |
| disseminated magnetite Lower Proterozoic | 10140 (280-20000) | 135000 (700- 270000) | 3.8 (2.6-5.0) | |
| disseminated to semi-massive magnetite | | | | |
| disseminated magnetite Lower Proterozoic | 3090 (1630-4540) | 260 (225-280) | 0.2 (0.1-0.3) | |
| magnetic sediments | | | | |
| massive magnetite Lower Proterozoic | 540000 | 97000 | 0.3 | 1.04 |
| massive magnetite Lower Proterozoic | 472500 (95000- 850000) | 346000 (112000- 580000) | 1.8 (1.3-2.3) | |
| rhyolite/dacite/andesite Lower Proterozoic? | 830 | 1500 | 3.2 | |
| quartz-feldspar porphyry, possibly in basement to Middle Proterozoic Warramunga Group . Source of Explorer 157 anomaly? | | | | |
| rhyolite/dacite/andesite Lower Proterozoic? | 145 | 340 | 4.6 | |
| quartz-feldspar porphyry, possibly part of basement to Middle Proterozoic Warramunga Group. Source of Explorer 154 anomaly? | | | | |

MAP

The Granites, NT

| Lithology & Age | k | J | Q | A |
|-------------------------------------|------------------------|---------------------|------------------|---|
| disseminated magnetite Archaean? | 39900 (17300-62500) | 5700 (3380-7760) | 0.2 (0.1-0.8) | |

magnetite-rich schists from the Mt Charles Beds, Tanami Complex, hosting gold mineralisation. Vector mean NRM direction: dec=34, inc=-71.

| | | | | |
|--------------------------------------|-----------------|--------------------|---------------------|--|
| disseminated pyrrhotite Archaean? | 115 (70-160) | 4230 (750-7760) | 71.0 (9.0-213.0) | |
|--------------------------------------|-----------------|--------------------|---------------------|--|

pyrrhotite-bearing schists from the Mt Charles Beds, Tanami Complex, hosting gold mineralisation. Vector mean NRM direction: dec=148, inc=-85.

Turee Creek, WA

| | | | | |
|-----------------------------------|-------|--------|------|--|
| massive haematite Proterozoic? | 12700 | 470000 | 70.0 | |
|-----------------------------------|-------|--------|------|--|

haematite ore:magnetite inclusions within recrystallised, coarse-grained haematite from the Channar deposit.

| | | | | |
|--|----|---|--|------|
| basalt/dolerite/spilite Lower Proterozoic | 90 | 2 | | 1.00 |
|--|----|---|--|------|

dolerite sill intruding S-dipping Weeli Wolli Formation (bif) at Paraburdoo. Vector mean NRM direction: dec=300, inc=-47.

| | | | | |
|---|------|-----|-----|------|
| massive haematite Lower Proterozoic? | 2510 | 310 | 2.3 | 1.04 |
|---|------|-----|-----|------|

Marra Mamba ore from Paraburdoo. Vector mean NRM direction: dec=270, inc=-30.

| | | | | |
|---|------|-------|-----|------|
| massive haematite Lower Proterozoic? | 5390 | 28700 | 9.9 | 1.21 |
|---|------|-------|-----|------|

magnetic Marra Mamba ore (containing residual magnetite), from Paraburdoo. Vector mean NRM direction: dec=348, inc=+7.

| | | | | |
|---|-----------------|------------------|--------------------|---------------------|
| massive haematite Lower Proterozoic? | 110 (30-200) | 650 (40-1750) | 11.0 (1.5-23.0) | 1.00 (1.00-1.00) |
|---|-----------------|------------------|--------------------|---------------------|

Paraburdoo haematite ore/mineralised bif. Vector mean NRM direction: dec=310, inc=-26.

| | | | | |
|---|------------------|----------------|------------------|------|
| quartz-magnetite/bif Lower Proterozoic | 660 (30-2320) | 60 (20-170) | 0.1 (0.1-2.0) | 1.18 |
|---|------------------|----------------|------------------|------|

oxidised outcropping Marra Mamba Formation (bif), Hamersley Group, from Paraburdoo. Vector mean NRM direction: dec=283, inc=-57 (lightning-affected samples omitted).

MAP

Turee Creek, WA

| Lithology & Age | k | J | Q | A |
|---|-------|-------|-----|------|
| quartz-magnetite/bif Lower Proterozoic | 43300 | 36200 | 1.6 | 1.69 |

fresh Joffre Member, Brockman Iron Formation, Hamersley Group, from Paraburadoo.
Vector mean NRM direction: dec=284, inc=-26 (S-dipping unit).

| | | | | |
|---|-------|-------|-----|------|
| quartz-magnetite/bif Lower Proterozoic | 57600 | 24200 | 0.7 | 2.12 |
|---|-------|-------|-----|------|

fresh Dales Gorge Member, Brockman Iron Formation, Hamersley Group, from Paraburadoo.
Vector mean NRM direction: dec=294, inc=-20 (from S-dipping unit).

| | | | | |
|---|-------|-------|-----|------|
| quartz-magnetite/bif Lower Proterozoic | 40000 | 57300 | 2.7 | 1.60 |
|---|-------|-------|-----|------|

fresh Weeli Wollie Formation, Hamersley Group. Vector mean NRM direction: dec=306, inc=-38 (S-dipping unit at Paraburadoo).

| | | | | |
|--------------------------------|------------------|--|--|--|
| sediments Lower Proterozoic | 780 (65-2800) | | | |
|--------------------------------|------------------|--|--|--|

Wyloo Conglomerate containing abundant clasts of Hamersley Group bifs, from outcrop near the Paraburadoo mine. NRMs and susceptibility axes are very scattered.

Walhallow, NT

| | | | | |
|--|---------------------|------------------|------------------|--|
| basalt/dolerite/spilite Lower Proterozoic | 5900 (4700-7200) | 570 (450-700) | 0.2 (0.1-0.2) | |
|--|---------------------|------------------|------------------|--|

basalt, Towalla Formation?

| | | | | |
|--------------------------------|---|---|-----|--|
| sediments Lower Proterozoic | 3 | 1 | 0.7 | |
|--------------------------------|---|---|-----|--|

sandstone

| | | | | |
|--------------------------------|----|--|--|--|
| sediments Lower Proterozoic | -1 | | | |
|--------------------------------|----|--|--|--|

carbonaceous shale (diamagnetic)

Whyalla, SA

| | | | | |
|---|------|------|-----|--|
| disseminated magnetite Lower Proterozoic | 9800 | 4200 | 0.7 | |
|---|------|------|-----|--|

magnetite-rich chert

MAP

Whyalla, SA

| Lithology & Age | k | J | Q | A |
|---------------------------------------|----------------|---------------|------------------|---|
| metasediments Lower Proterozoic | 50 (10-120) | 30 (2-120) | 0.9 (0.3-4.0) | |
| dolomite, marble, calcsilicate, chert | | | | |

Widgiemooltha, WA

| | | | | |
|---|----------------------|------------------|-----|---------------------|
| basalt/dolerite/spilite Proterozoic | 60 | 7 | 0.2 | 1.07 |
| chilled margin of dolerite dyke, intruding Archaean greenstones at Kambalda. | | | | |
| basalt/dolerite/spilite Proterozoic | 5050 | 1370 | 0.4 | 1.01 |
| interior of dolerite dyke cutting Archaean greenstones at Kambalda. | | | | |
| basalt/dolerite/spilite Archaean | 7120 (4750-11370) | 350 | | 1.09 (1.03-1.17) |
| dolerites (plagioclase phenocrysts, pyroxene phenocrysts, pyroxene-phyric), from Kambalda, within the medium grade (low amphibolite facies) zone of the Norseman-Wiluna greenstone belt. J estimated by AF cleaning of NRM (contam. by drill. piezorem.). | | | | |
| diorite/monzonite Archaean | 3980 (2470-5500) | 50 | | 1.08 (1.05-1.14) |
| unaltered diorite from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. NRMs are contaminated by drilling-induced piezoremance. Representative remanence values estimated by AF cleaning. | | | | |
| gabbro/norite Archaean | 3130 | 160 | | 1.17 |
| hydrothermally altered plagioclase-phyric gabbro from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. NRM contaminated by drilling piezoremance. Representative J estimated by AF cleaning | | | | |
| gabbro/norite Archaean | 9170 (8320-10020) | 300 (230-360) | | 1.14 (1.13-1.14) |
| unaltered plagioclase phenocryst and magnetite phenocryst gabbros from Kambalda, within the medium-grade (lower amphibolite) zone of Norseman-Wiluna greenstone belt. NRMs contaminated by drilling piezo-remanence: rep. values determined by AF cleaning. | | | | |

MAP

Widgiemooltha, WA

| Lithology & Age | k | J | Q | A |
|--|---------------------|------|-----|---------------------|
| quartz-magnetite/bif Archaean | 86400 | 1360 | | 1.18 |
| cherty sediment (bif) from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. NRM contaminated by drilling-induced piezoremanence. Representative remanence estimated by AF cleaning. | | | | |
| ultramafics Archaean | 5400 (2720-6330) | 1170 | 0.3 | 0.15 (1.11-1.18) |
| unaltered or deuterically altered spinifex-textured/tremolite-chlorite ultramafics from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. Representative remanence estimated by AF cleaning. | | | | |
| ultramafics Archaean | 3830 | 380 | 0.1 | 1.35 |
| peridotite (altered pillow lava?) from Kambalda, within the medium-grade (lower amphibolite) zone of the Norseman-Wiluna greenstone belt. NRM contaminated by drilling-induced piezoremanence. Representative remanence estimated by AF cleaning | | | | |

Yardea, SA

| | | | | |
|---|-------------------------|-----------------------------|--------------------|---------------------|
| quartz-magnetite/bif Lower Proterozoic | 80000 (9000- 163000) | 380000 (104000- 640000) | 12.0 (5.0-20.0) | 1.53 (1.26-1.74) |
| magnetite-bearing carbonate bif | | | | |
| quartz-magnetite/bif Lower Proterozoic | 38200 | 54000 | 2.5 | |
| quartz-magnetite | | | | |

Youanmi, WA

| | | | | |
|---------------------------|--------------------|------------------|------------------|--|
| gabbro/norite Archaean | 2300 (160-7600) | 500 (30-2300) | 1.1 (0.5-4.6) | |
| gabbro | | | | |