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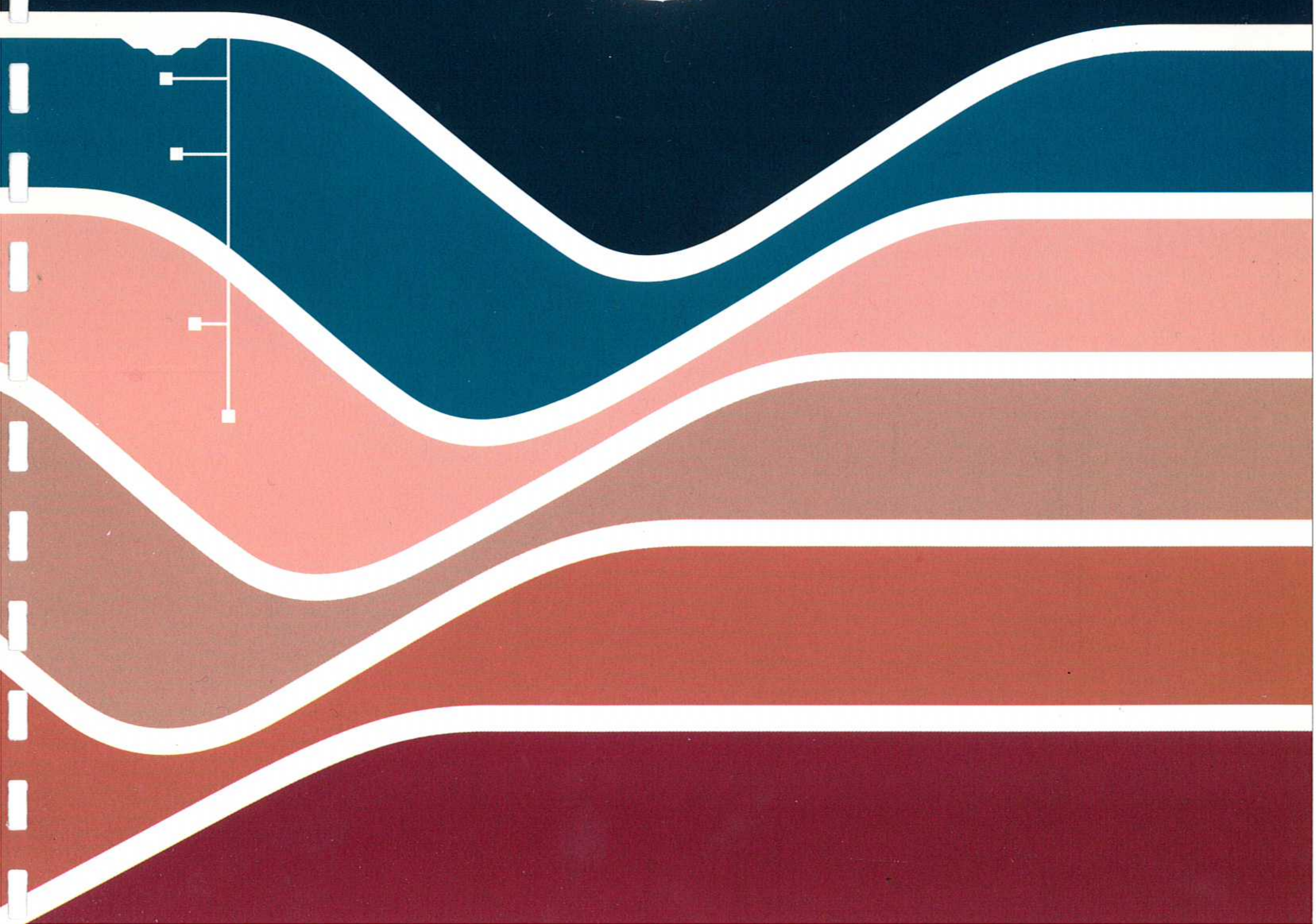
# MAGNETIC PETROPHYSICAL DATABASE FOR HAMERSLEY BASIN BIFS, WA

*P.W. Schmidt*



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# MAGNETIC PETROPHYSICAL DATABASE FOR HAMERSLEY BASIN BIFS, WA

*P.W. Schmidt*

Report to Hamersley Iron Pty Ltd
July 1998

CSIRO Division of Exploration and Mining
PO Box 136 North Ryde NSW Australia 1670

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## Executive Summary

The main purpose of this work was to carry out a magnetic petrophysical investigation of north dipping limbs to enable a definitive fold test of the remanence of Hamersley BIFs. The fold test is of paramount importance to determine whether the magnetic remanence was acquired before or after the Ophthalmian orogeny. This has important consequences for the interpretation of aeromagnetic data. North dipping limbs were required because the extant data from flat-lying and south dipping limbs do not distinguish between the two contending models for remanence acquisition. These models are, a) pre-folding, and b) post-folding with deflection into the bedding caused by strong magnetic anisotropy (also called magnetic refraction).

Fold tests are a very common "field test" applied in palaeomagnetism to determine if the remanent magnetisation is pre-folding or post-folding in age. The best grouping of remanence directions has been determined for low grade metamorphic areas by performing an appropriate statistical test and is shown to be pre-folding, i.e. the directions are better grouped after unfolding limbs (and remanent directions) to the horizontal.

The fold test indicates that in areas of low metamorphic grade the direction of the remanent magnetisation will vary with the structural attitude of the strata and this will have to be allowed for in magnetic modelling.

The remanence directions from higher grade areas, such as the Turner Syncline, are quite different from the pre-folding directions of low metamorphic grade areas. These magnetisations appear to have high negative (upwardly directed) inclinations, and were probably acquired after folding.

Results of several magnetic petrophysical studies of banded-iron formation from the Hamersley Basin have been combined in a database. The magnetic properties reported by Schmidt (1995) are generally supported, although incipiently weathered Marra Mamba IF samples from the Homestead Deposit have slightly depressed susceptibilities compared to fresh samples studied earlier.

The salient features of the magnetic properties of all units studied (Clark, 1987; Schmidt, 1995 and herein) are summarised below:

- Marra Mamba and lowest part of the Dales Gorge have highest susceptibilities (60,000 - 70,000 μG/Oe),
- Remanent intensities are highest in the Dales Gorge and the Weeli Wolli (40,000 - 60,000 μG),
- Koenigsberger ratios are predominantly above unity, between 1-2, indicating the importance of remanent magnetisation in Hamersley BIFs.

While magnetic susceptibility and anisotropy of magnetic susceptibility have been adequately characterised by earlier studies, it is recommended that remanent magnetisations used for magnetic modelling should take into account both structural attitude and metamorphic grade. Both remanent magnetisation and susceptibility anisotropy are important for magnetic modelling of Hamersley BIFs. Representative Koenigsberger ratios are typically ~1-2, depending on bedding attitude, and susceptibility parallel to bedding generally exceeds the susceptibility perpendicular to bedding by a factor of 2-3.

# 1.0 INTRODUCTION

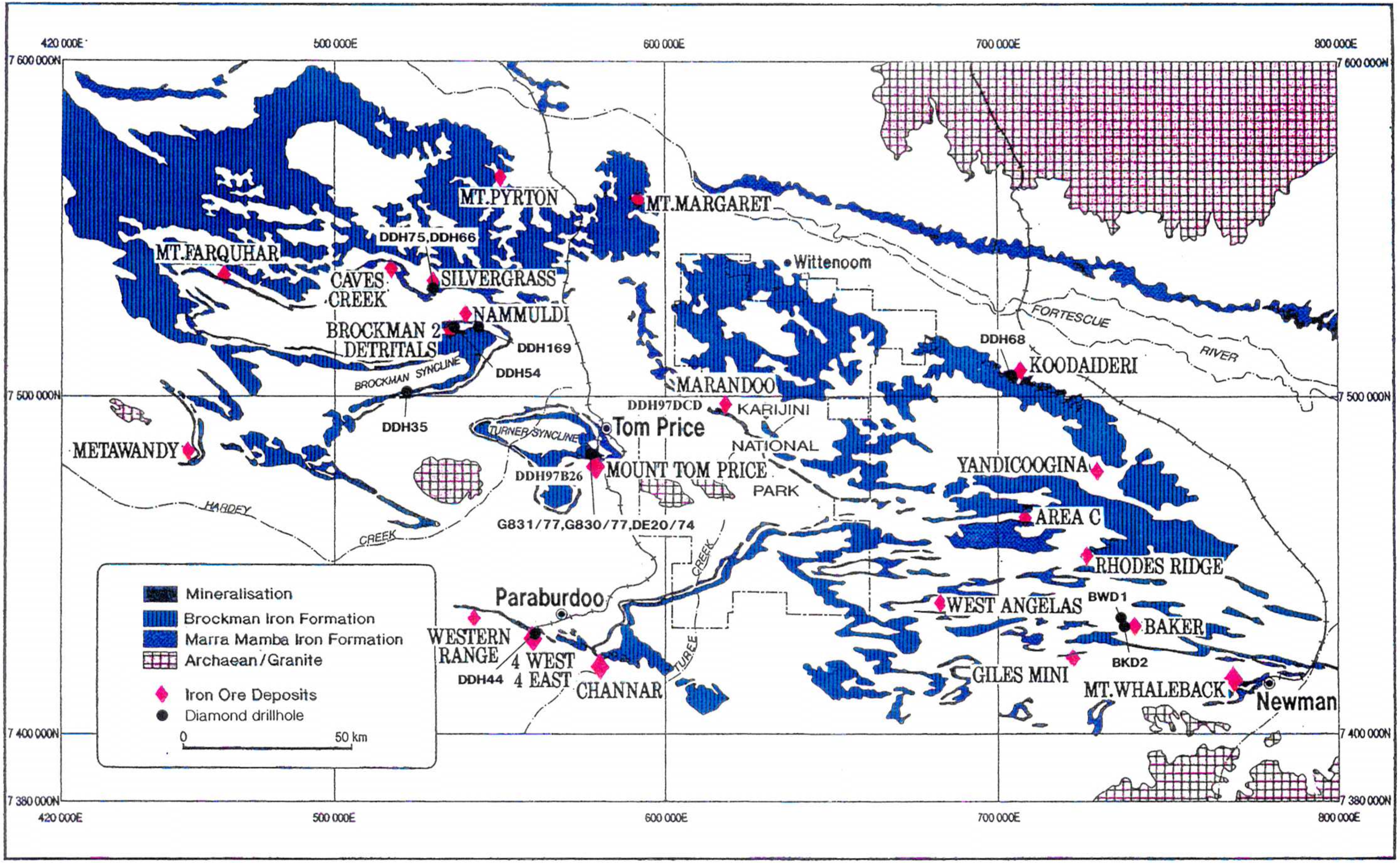
The purpose of carrying out petrophysical measurements is to assist interpretation of aeromagnetic surveys of the Hamersley Basin by characterising the magnetic properties of the major banded-iron formations (BIFs). The magnetic properties of interest are magnetic susceptibility, including the anisotropy of magnetic susceptibility (AMS), and magnetic remanence. An important aspect of the remanence has been determining if it pre-dates or post-dates the Ophthalmian Orogeny which is most appropriately addressed through studying fold tests of directions of remanence.

In a previous study of drill core samples (Schmidt, 1995) none of the cores sampled yielded suitable unaltered BIF samples to perform a definitive fold test. On the basis of flat-lying and south dipping strata, Clark and Schmidt (1986a) suggested that the magnetic remanence of the BIFs was pre-folding in areas of low grade metamorphism, although in areas of higher grade metamorphism such as the Turner Syncline, there was evidence that the remanence may be post folding. Later Li *et al.* (1993) suggested a model in which the remanence is post-folding but has been deflected strongly into the bedding plane by magnetic refraction, caused by strong anisotropy, to emulate pre-folding remanence. Schmidt and Clark (1994) presented a simple quantitative treatment of deflection and showed that although some deflection occured, it was not of the magnitude required by Li *et al.*'s model.

The pre-folding versus post-folding nature of the magnetic remanence has been further investigated by Clark (1987) and Schmidt (1995), using samples of Marra Mamba Iron Formation. Clark (1987) found a spectacular improvement in grouping after unfolding of the remanence directions of five specimens from a sample which showed small scale internal deformation. Schmidt (1995) noted from geometrical considerations that if Li *et al.*'s deflection model was correct the directions should be above the bedding plane for Bakers North but below the bedding plane at Paraburdoo. In fact, remanence directions at both these localities are predominantly above the bedding plane, although about 10 percent fall below the bedding plane. This last observation was important because it also militates against the deflection model since remanence directions deflected away from the palaeo-field towards the bedding plane would be expected to be all above or all below the bedding plane, but not both above and below. It seems unlikely that a direction could be deflected through the bedding plane.

The earlier study (Schmidt, 1995) recommended further work on BIF core from northerly or north-easterly dipping strata to refine the fold test and better identify pre- and post-folding remanence components. The implications for magnetic modelling of each of these scenarios are important since the remanence directions of the BIFs will behave quite differently for different bedding attitudes. This report combines the results of all earlier magnetic petrophysical studies (Clark and Schmidt, 1986a and b: Clark, 1987: Clark and Schmidt, 1994: Schmidt, 1995) with those of the present study.

The present study is of 45 oriented core samples from DDH 97B26EO12 (Turner Syncline south limb deposit B26), and 14 oriented core samples from DDH 97DCD180 (Jeerinah Anticline north limb Homestead deposit). The former DDH intersected Whaleback Shale and Dales Gorge Member BIF12 to BIF16 of the Brockman Iron Formation, while the latter DDH intersected the Mt Newman Member of the Marra Mamba BIF. Fig. 1 shows the location of drill holes studied previously and herein, while Fig.2 shows the stratigraphic level of all samples.



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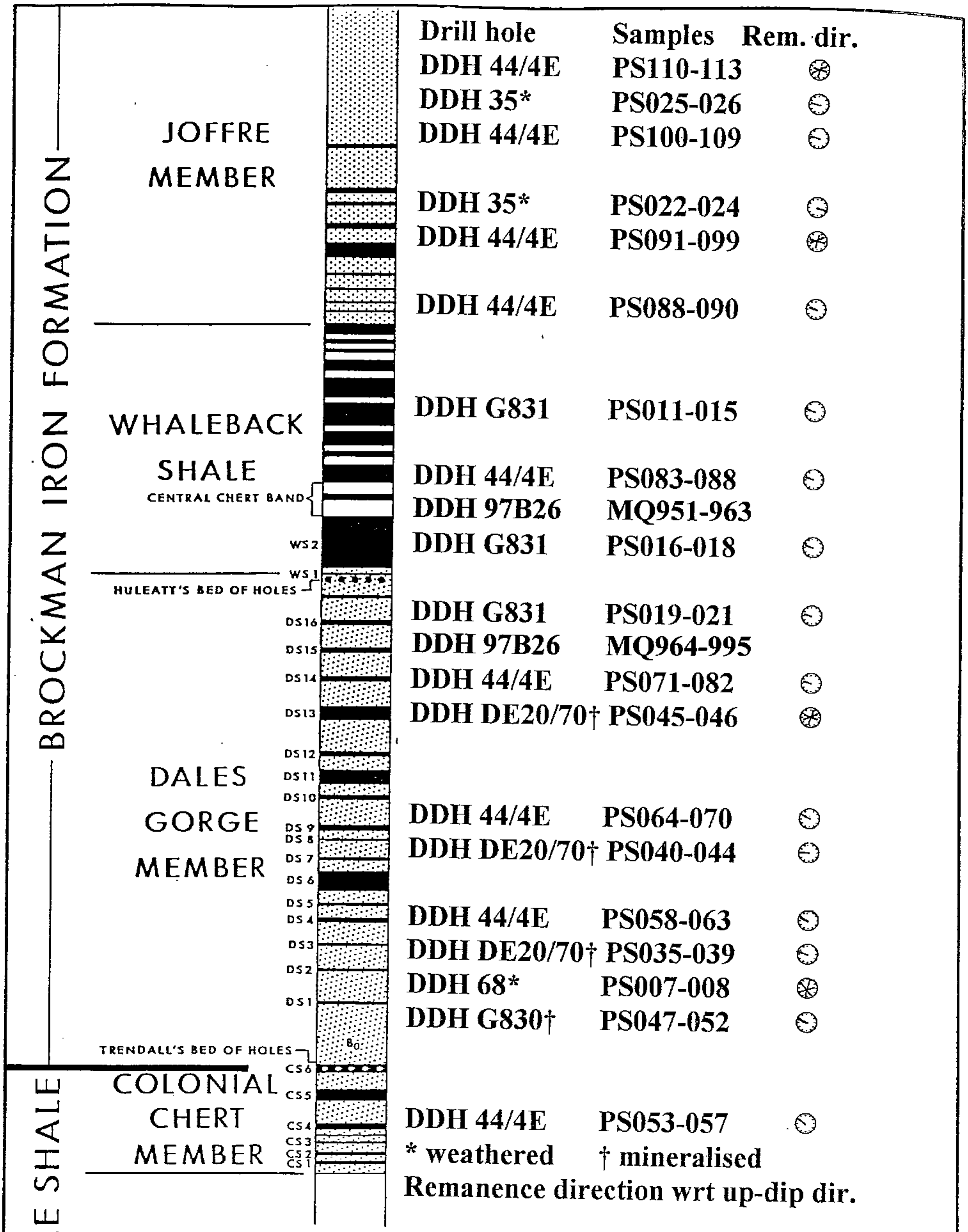
Sample Drillhole Location Map



| Drill hole | Samples | Rem. dir. |
|---|---|---|
| DDH 44/4E | PS110-113 | ⊛ |
| DDH 35* | PS025-026 | ⊝ |
| DDH 44/4E | PS100-109 | ⊝ |
| DDH 35* | PS022-024 | ⊝ |
| DDH 44/4E | PS091-099 | ⊛ |
| DDH 44/4E | PS088-090 | ⊝ |
| DDH G831 | PS011-015 | ⊝ |
| DDH 44/4E | PS083-088 | ⊝ |
| DDH 97B26 | MQ951-963 | |
| DDH G831 | PS016-018 | ⊝ |
| DDH G831 | PS019-021 | ⊝ |
| DDH 97B26 | MQ964-995 | |
| DDH 44/4E | PS071-082 | ⊝ |
| DDH DE20/70† | PS045-046 | ⊛ |
| DDH 44/4E | PS064-070 | ⊝ |
| DDH DE20/70† | PS040-044 | ⊝ |
| DDH 44/4E | PS058-063 | ⊝ |
| DDH DE20/70† | PS035-039 | ⊝ |
| DDH 68* | PS007-008 | ⊛ |
| DDH G830† | PS047-052 | ⊝ |
| DDH 44/4E | PS053-057 | ⊝ |

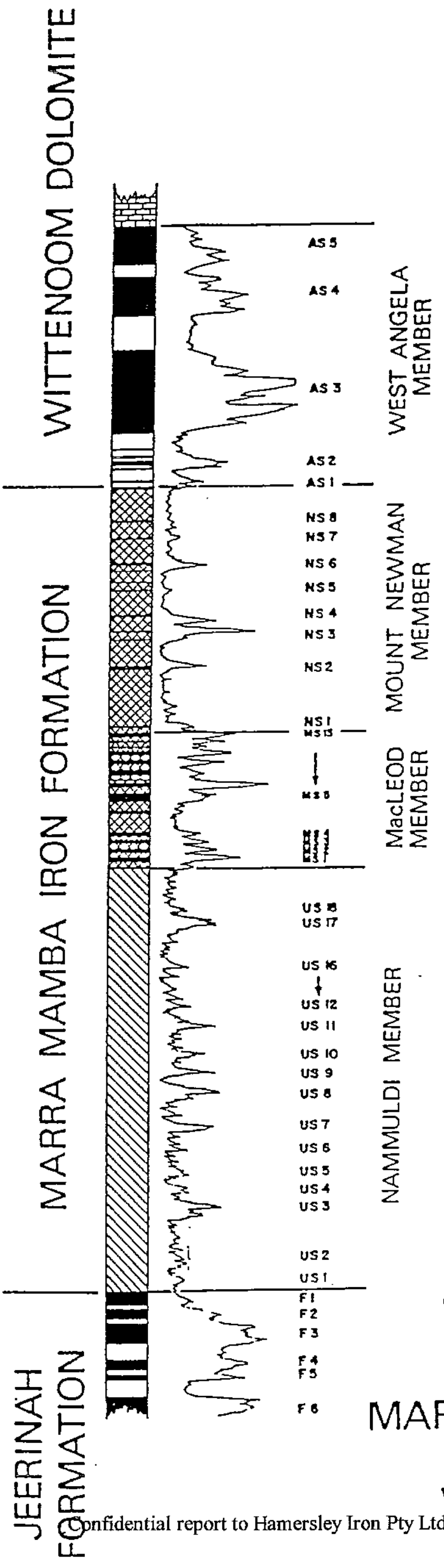
* weathered † mineralised

Remanence direction wrt up-dip dir.

CRA – IRON ORE DIVISION

COMPOSITE REFERENCE SECTION

**Brockman Iron Formation & Mt McRae Shale**



| **Drill hole** | **Samples** | **Rem. dir.** |
|---|---|---|
| **DDH 66*** | **PS003-004** | 🕙 |
| **DDH 97DCD** | **MQ996-1000, 901-909** | |
| **DDH 54*** | **PS001-002** | 🕛 |
| **DDH 169** | **PS009-010** | 🕓 |
| **DDH 75*** | **PS005-006** | 🕙 |
| **DDH BKD2** | **PS125-131** | 🕘 |
| **DDH BWD1** | **PS132-135** | ⊛ |

*** weathered † mineralised**

**Remanence direction wrt up-dip dir.**

CRA - IRON ORE DIVISION

GAMMA LOG REFERENCE SECTION

MARRA MAMBA IRON FORMATION

& part of

WITTENOOM DOLOMITE

## 2.0 METHODS AND PROCEDURES

Standard palaeomagnetic procedures (Collinson, 1983) were followed throughout this study. Core samples were oriented either directly by the "spike" mark, or by aligning the layering with the regional strata.

The cores were subsampled in the laboratory to yield specimens of nominal dimensions 25mm diameter and 20mm height. Remanent magnetizations were measured using a CTF cryogenic magnetometer. The CSIRO susceptibility bridge (Ridley and Brown, 1980) was used to measure absolute susceptibilities. The apparent susceptibility of strongly magnetic specimens is affected by self-demagnetization. The effective SI demagnetizing factor for the CSIRO bridge is equal to (length of gap - length of specimen)/length of gap = 0.13, being based on analysis of the reluctance of the magnetic circuit comprising the toroidal transformer-steel core and the gaps between the core and the specimen. True susceptibilities ($k_{ZZ}$) along the axis of the specimens were calculated from the apparent susceptibilities ( $k'_{ZZ}$) using $k_{ZZ} = k'_{ZZ}/(1 - 0.13k'_{ZZ})$.

Anisotropy of magnetic susceptibility was determined using an up-graded DIGICO anisotropy delineator whose performance exceeds that of the original. For strongly magnetic BIF samples, the alternative coil set provided with the anisotropy delineator for high susceptibility specimens was used. In this configuration the applied field is produced by a large Helmholtz coil set and the coils that normally provide the applied field are used for detection of the anisotropy signal, rather than the smaller pick-up coils, which are otherwise close to the specimen in order to maximize sensitivity when measuring weakly magnetic specimens. This configuration minimizes the effects of inhomogeneity of field and magnetization for high susceptibilities, when self-demagnetization becomes important. This instrument measures changes in susceptibilities along different directions, rather than absolute susceptibilities, which are measured independently on the susceptibility bridge.

The apparent susceptibility differences are reduced with respect to the intrinsic susceptibility differences by self-demagnetization of the quasi-spherical specimens, for which the SI demagnetizing factor is 1/3. The "bulk susceptibility" (the apparent susceptibility along the specimen z-axis) used to calculate principal susceptibilities and anisotropy ratios was $k_{ZZ}/(1 + k_{ZZ}/3)$. The intrinsic susceptibility tensor of the specimen can then be calculated from the measured susceptibility tensor by inverting the self-demagnetization correction.

There are a number of ways in which the susceptibility tensor can be visualised. The most intuitive is to plot the eigenvectors as the principal semi-axes of the anisotropy ellipsoid, and the eigenvalues in various ratios to quantify the anisotropy. Thus anisotropy magnitude (A) is defined as $k_1/k_3$, where $k_1$ and $k_3$ are the maximum principal susceptibility and minimum principal susceptibility respectively. Magnetic lineation is defined by $k_1/k_2$, and magnetic foliation is defined by $k_2/k_3$.

The orientation of the foliation, most important for investigating BIFs, is defined by the pole to the foliation which corresponds to the minimum susceptibility axis. Bulk susceptibility is defined by $(k_1+k_2+k_3)/3$. Another shape parameter, T, can be defined by using the logarithms, $n_i$, of the corresponding principal susceptibilities. $T = 2(n_1-n_3)/(n_2-n_3) -1$, and varies from -1 for a perfectly prolate ellipsoid to 1 for a perfectly oblate ellipsoid. The various elements are plotted against each other as anisotropy versus bulk susceptibility, lineation versus foliation and T versus A, to quickly enable patterns to be recognised and interpreted.

AF (alternating field) demagnetization was effected using the CSIRO three-axis tumbler housed within a 3m three-axis Helmholtz coil set or a Schonstedt GSD-1 demagnetizer enclosed within a mu-metal shield. Thermal demagnetisation was also carried out on all samples, after cooling to liquid nitrogen temperature (-196°C) and re-warming to room temperature. This low-temperature treatment is an effective means of demagnetising magnetically soft magnetite grains, such as those that may have been affected by drill core loggers' pencil magnets.

Finally, it is probably of benefit to discuss the units that the different magnetic properties are given in. When manipulating magnetic formulae, cgs units are easier to use than SI, primarily because factors of $4\pi$ do not appear. An example is given of calculating a Koenigsberger ratio in the different unit systems; SI is particularly cumbersome, especially because the industry choses to express Total Magnetic Intensity (TMI) in Tesla, which is really a flux-density or magnetic induction unit. In addition, because the exploration industry often uses remanence units of "J.gamma", these are adhered to, although their relationship to other systems is shown below.

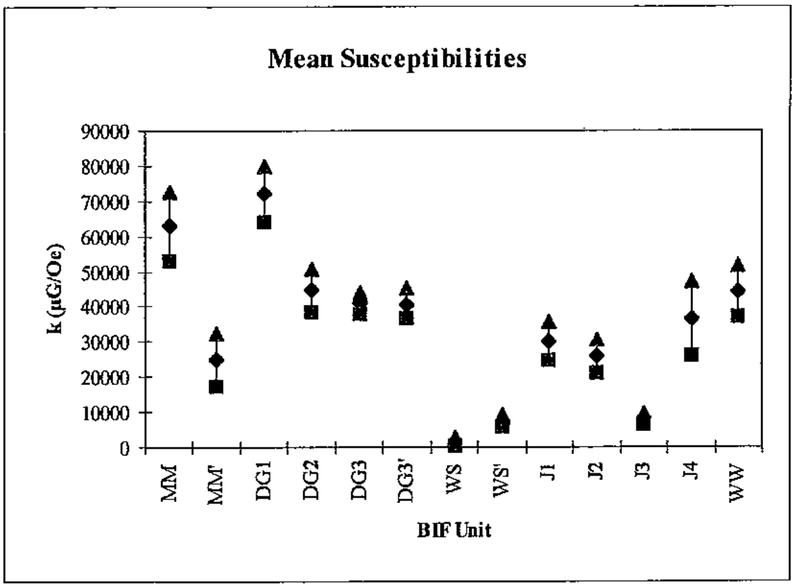


Figure 3. Bulk susceptibilities and standard errors of the main BIF units sampled, $k_{cgs} = 4\pi \times k_{SI}$. Present results (MM' and DG3') are compared to those reported by Schmidt (1995).

*Units*

- Susceptibility: the cgs unit is Gauss/Oersted (G/Oe) and all susceptibilities here are given in µG/Oe, i.e. $\times 10^{-6}$ G/Oe. As in SI, this is dimensionless but 1 cgs unit is greater than an SI unit by a factor of $4\pi$, i.e. $k_{cgs} = 4\pi \times k_{SI}$ (cf. 1″ = 25.4 mm).
- Remanent Magnetisation: the cgs unit of the intensity of magnetisation is Gauss (G), which is also often given as emu/cm$^3$. In SI, the unit of magnetisation is $Am^{-1}$

which is equivalent to $10^{-3}$ G, i.e. 1 $Am^{-1} = 10^{-3}$ G = $10^{-3}$ emc/cm$^3$. Some commercial modelling packages avoid using remanent magnetisation units by making use of the Koenigsberger ratio. The appealing simplicity of this approach is deceptive though, since calculating the Koenigsberger ratio requires familiarity with magnetisation units. The units used here, J.gamma, make Koenigsberger ratios easy to calculate when the magnetic field is expressed in gamma, where $J\gamma = 10^{-5}$ G = $10^{-2}$ $Am^{-1}$.

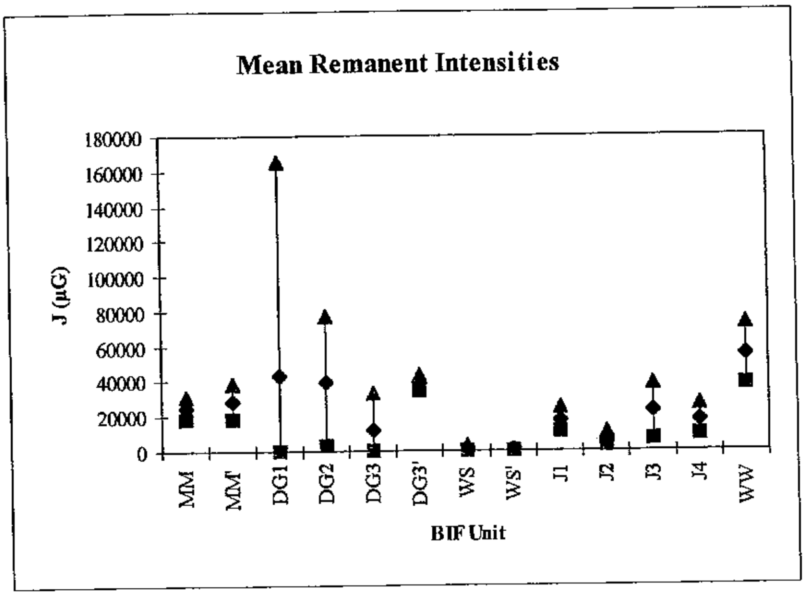


Figure 4. Magnetic remanences and standard errors of the major BIF units sampled, 1 $J\gamma = 10^{-5}$ G = $10^{-2}$ $Am^{-1}$. Present results (MM' and DG3') are compared to those reported by Schmidt (1995).

- The Koenigsberger ratio (Q) is a measure of the relative importance of remanent magnetisation compared to induced magnetisation and as such is fundamental to the interpretation of magnetic surveys in terms of the magnetic properties of rocks. The ratio Q is calculated by dividing the natural remanent magnetisation (NRM) intensity by the induced magnetisation intensity. The induced magnetisation is given by multiplying the susceptibility by the magnetising field (in this case the magnetising field is the geomagnetic field, 53,600 $\gamma$ = 0.536 Oe). It is emphasised that the SI value of 53,600 nT is magnetic induction, or flux density, and the equivalent SI magnetic field value, *in vacuo*, is equal to 42.7 $Am^{-1}$. Thus, the Q for the Weeli Wolli Formation in Table 1 of 2.31 is derived from 54,900$\gamma$ / (0.0443 G/Oe × 53,600$\gamma$). In cgs units Q is also fairly simply derived; 0.0549 G / (0.0629 G / Oe × 0.536 Oe). However, in SI units this calculation must be performed after first converting magnetic induction (measured in Tesla) to units of magnetic field (measured in $Am^{-1}$) and expressing NRM and susceptibility in SI units. As an example, again using the results for Weeli Wolli Formation in Table 1, the NRM intensity becomes 54.9 $Am^{-1}$, susceptibility becomes $4\pi \times 0.0443 = 0.557$ SI, and the field is given by the induction in nanoTesla (nT) divided by $\mu_0$, or $53{,}600 / (4\pi \times 10^{-7}) = 42.7$ $Am^{-1}$. Thus $Q_{SI} = 54.9 / (0.557 \times 42.7) = 2.31 = Q_{cgs}$. The convention of expressing magnetic survey measurements in induction units clearly complicates calculations of Q in SI units. For this reason most rock magnetic properties are still expressed in cgs units.

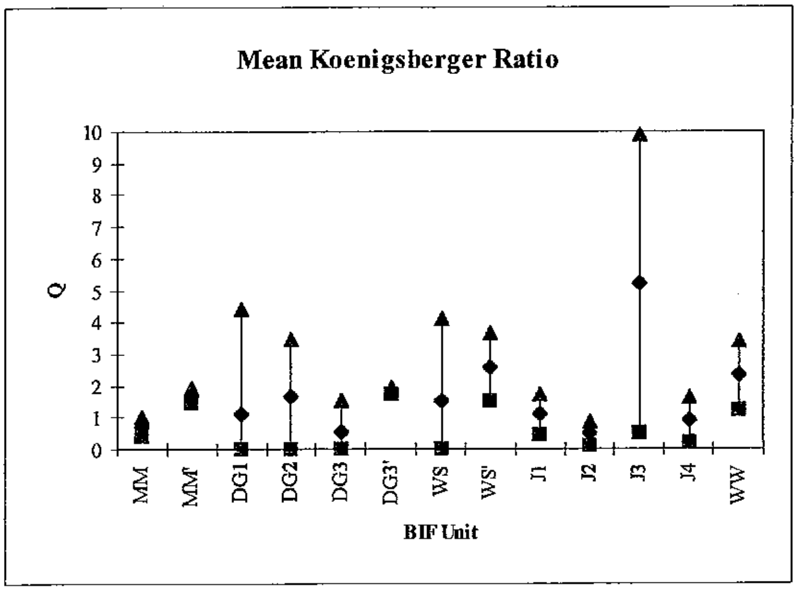


Figure 5. Koenigsberger ratios and standard errors for major BIF units sampled. Present results (MM' and DG3') are compared to those reported by Schmidt (1995).

Note that the procedure described above for calculating Q implicitly assumes isotropic susceptibility. When the susceptibility is anisotropic, as it is for BIFs, the bulk susceptibility can be used to provide an indicative Q. The actual *in situ* Koenigsberger ratio (remanent intensity/induced intensity) depends on the bedding attitude of the BIF unit (Clark and Schmidt, 1994).

## 3.0 RESULTS

The mean magnetic properties of individual BIF units from the DDHs are summarised in Table 1. Two PARADOX® databases contain all remanence and susceptibility data from previous studies. These include the declinations, inclinations and intensities of the remanent magnetisation vector means, and the declinations, inclinations and magnitudes of the susceptibility ellipsoid tensor means. For completeness the properties reported by Schmidt (1995) are also included. Throughout this report indicative Qs, using the bulk susceptibility to calculate the induced magnetisations, are given.

Figs. 3 to 5 are plots of mean magnetic properties, bulk susceptibilities, remanent intensities and Koenigsberger ratios, and their standard errors for each BIF unit and the Whaleback Shale. The abbreviations for the units, from the lowest to the highest stratigraphically are: MM - Marra Mamba and MM' - Marra Mamba this study, DG1 - Dales Gorge 1, DG2 - Dales Gorge 2, DG3 - Dales Gorge 3 and DG3' - Dales Gorge 3 this study, WS - Whaleback Shale, J1 - Joffre 1, J2 - Joffre 2, J3 - Joffre 3, J4 - Joffre 4 and WW - Weeli Wolli.

It will be noted that the susceptibility of the Marra Mamba samples collected for the present study are significantly less than those from the previous study. This is most probably a result of the slight, but significant, weathering (see the core logs for DDH 97DCD180 in the appendix). The weathering has not affected the remanent magnetisations however, which are in excellent agreement with those of the previous study (Fig. 4). This accords with our previous experience dealing with BIFs throughout the Yilgarn and the Hamersley Basin (Clark and Schmidt, 1994), that the effects of weathering are greater on susceptibility than on remanent intensities. This tends to increase the Koenigberger ratio which is evident in Fig. 5.

0.4
5.2
7.8
2.80

**Table 1 Magnetic Properties of individual BIF Units DDH 44, BKD2, 97B26EO12, 97DCD180 (fresh BIF)**

| Unit | Samples | N | D, I, J (γ) | Ellipsoid Axes | Bulk | A | L | F | Q |
|---|---|---|---|---|---|---|---|---|---|
| WW<br>44/4E | PS114-118<br>120-123 | 28 | 316,-34,5486 | Max 116,19,45847<br>Int 222,38,44584<br>Min 5,45,29684 | 40039 | 1.54 | 1.03 | 1.50 | 2.60 |
| J4<br>44/4E | PS110-113 | 13 | 301,-39,1765 | Max 103,10,43070<br>Int 205,47,40822<br>Min 4,40,25949 | 36614 | 1.66 | 1.06 | 1.57 | 0.90 |
| J3<br>44/4E | PS100-109 | 24 | 326,-31,2271 | Max 100,9,10367<br>Int 206,31,9984<br>Min 5,56,3459 | 7937 | 3.00 | 1.04 | 2.89 | 5.30 |
| J2<br>44/4E | PS91-99 | 21 | 279,-45,669 | Max 106,5,33930<br>Int 198,25,31869<br>Min 4,63,11643 | 25814 | 2.91 | 1.06 | 2.74 | 0.48 |
| J1<br>44/4E | PS89-90 | 7 | 334,-44,1775 | Max 271,3,41177<br>Int 179,23,37309<br>Min 9,66,12026 | 30171 | 3.42 | 1.10 | 3.10 | 1.10 |
| WS<br>44/4E | PS83-88 | 11 | 334,-14,142 | Max 212,31,2343<br>Int 114,12,2264<br>Min 5,56,617 | 1742 | 3.80 | 1.04 | 3.67 | 1.50 |
| WS′<br>B26 | MQ956-<br>963 | 8 | 313,-70,507 | Max 312,8,7755<br>Int 50,44,7100<br>Min 214,44,5932 | 6928 | 1.31 | 1.09 | 1.20 | 1.46 |
| DG3<br>44/4E | PS71-82 | 43 | 316,-24,1177 | Max 196,23,49882<br>Int 104,5,49201<br>Min 0,66,23867 | 40983 | 2.09 | 1.01 | 2.06 | 0.54 |
| DG3′<br>B26 | MQ964-<br>995 (excl.<br>983) | 31 | 206,-67,3421 | Max 335,30,52400<br>Int 87,34,50300<br>Min 215,42,36200 | 46300 | 1.45 | 1.04 | 1.39 | 1.40 |
| DG2<br>44/4E | PS64-70 | 23 | 298,-23,3971 | Max 178,23,56711<br>Int 269,2,56415<br>Min 4,66,20695 | 44607 | 2.74 | 1.01 | 2.73 | 1.70 |
| DG1<br>44/4E | PS58-63 | 14 | 315,-33,4349<br>3230 | Max 173,21,92472<br>Int 264,3,87495<br>Min 4,67,35954 | 71974 | 2.57 | 1.06 | 2.43 | 1.10 |
| MM<br>BKD2 | PS125-131 | 31 | 334,-40,2462 | Max 269,5,69298<br>Int 174,43,67225<br>Min 5,46,52239 | 62921 | 1.33 | 1.03 | 1.29 | 0.73 |
| MM′<br>DCD<br>180 | MQ1000,<br>MQ901-<br>908 | 9 | 315,-2,2914 | Max 275,2,39700<br>Int 6,20,37800<br>Min 181,70,25300 | 34267<br>48594 | 1.57<br>0.61 | 1.05 | 1.49 | 1.60 |
| FWZ<br>44/4E | PS53-57 | 15 | 316,-15,6226 | Max 274,2,50187<br>Int 183,17,49716<br>Min 11,72,19898 | 39934 | 2.52 | 1.01 | 2.50 | 2.90 |

1.17

N=number of samples, D=declination, I=inclination, J=remanent intensity, A=anisotropy, L=lineation, F=foliation, Q=Koenigsberger ratio

used 2.56
DG 1.21

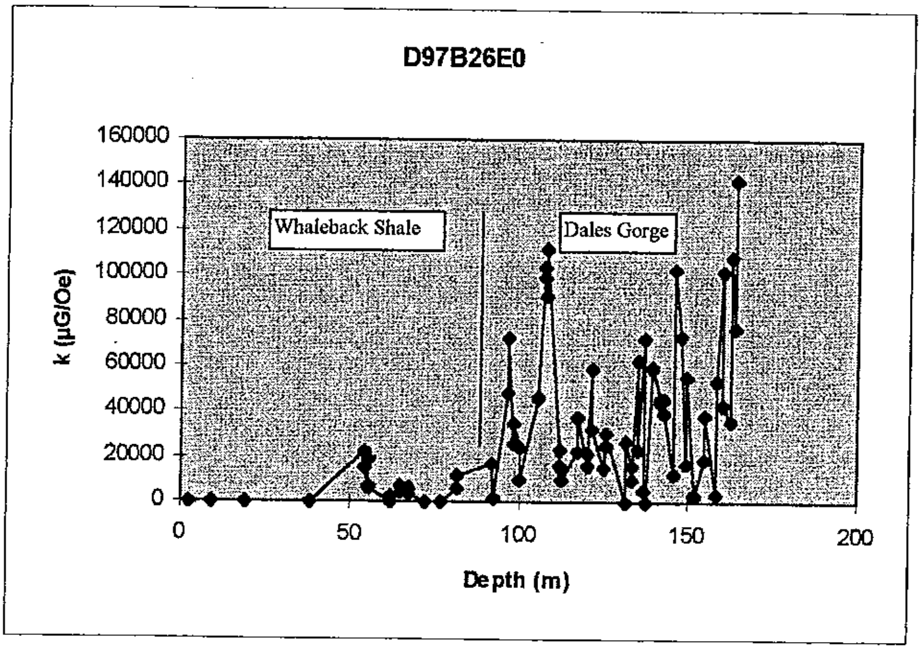


Fig. 6 Susceptibility (µG/Oe) versus depth for DDH 97B26EO12. Vertical bar marks boundary between Whaleback Shale and the top of the Dales Gorge Member.

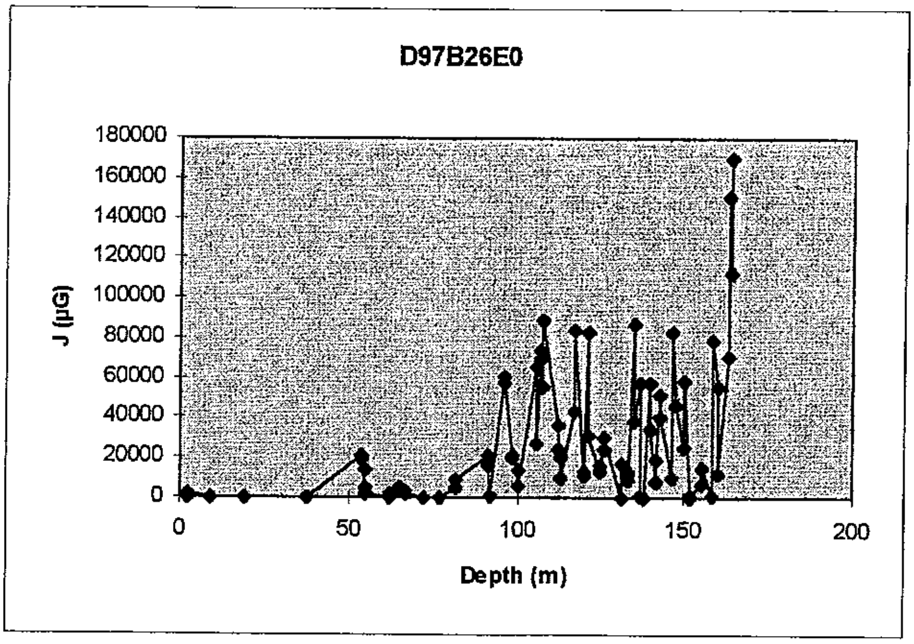


Fig. 7 Remanent magnetisation (µG) versus depth for DDH 97B26EO12. See Fig. 6 for stratigraphy.

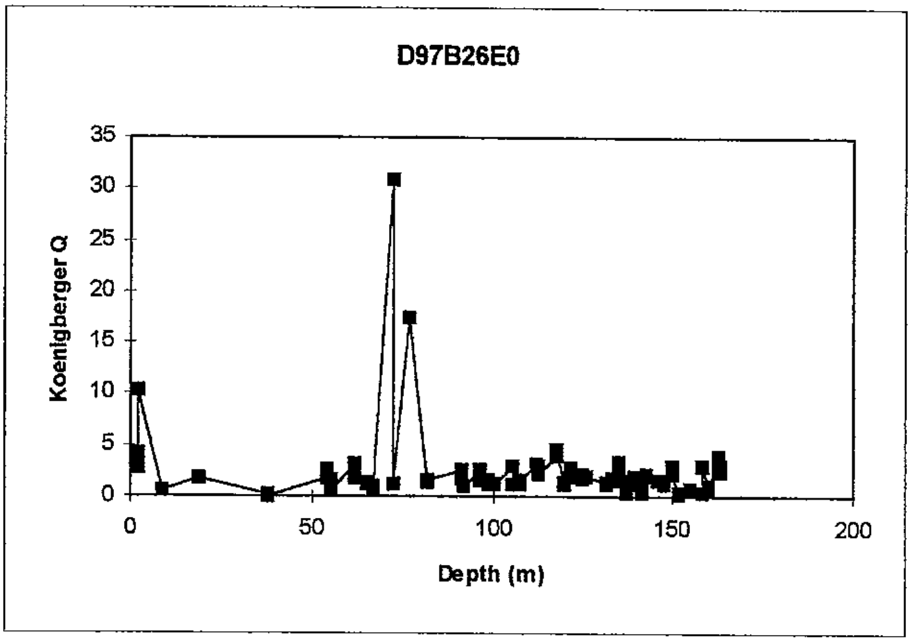


Fig. 8 Koenigsberger ratio (Q) versus depth for DDH 97B26EO12. See Fig. 6 for stratigraphy.

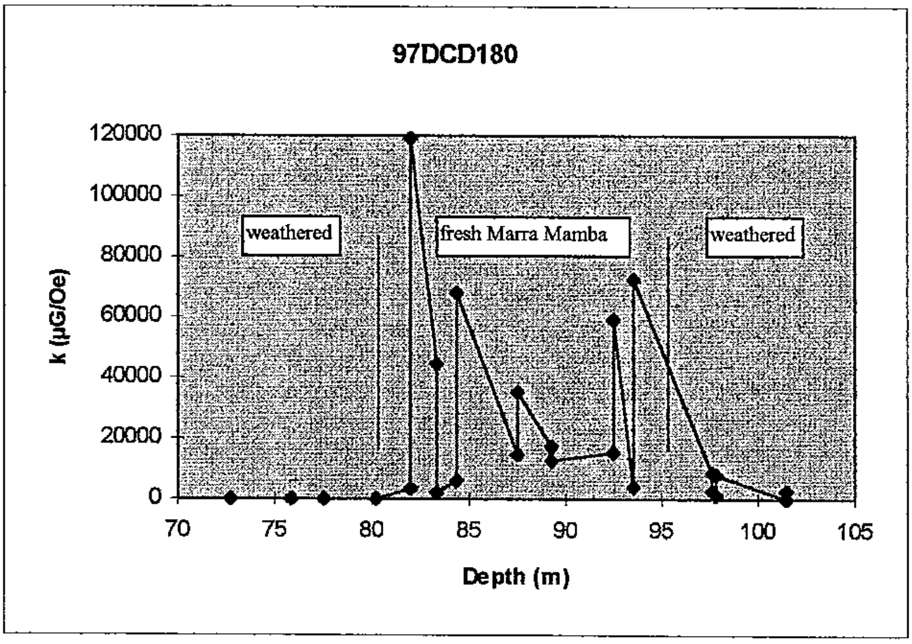


Fig. 9 Susceptibility (µG/Oe) versus depth for DDH 97DCD180. The vertical bars mark the boundaries between weathered and relatively fresh Marra Mamba.

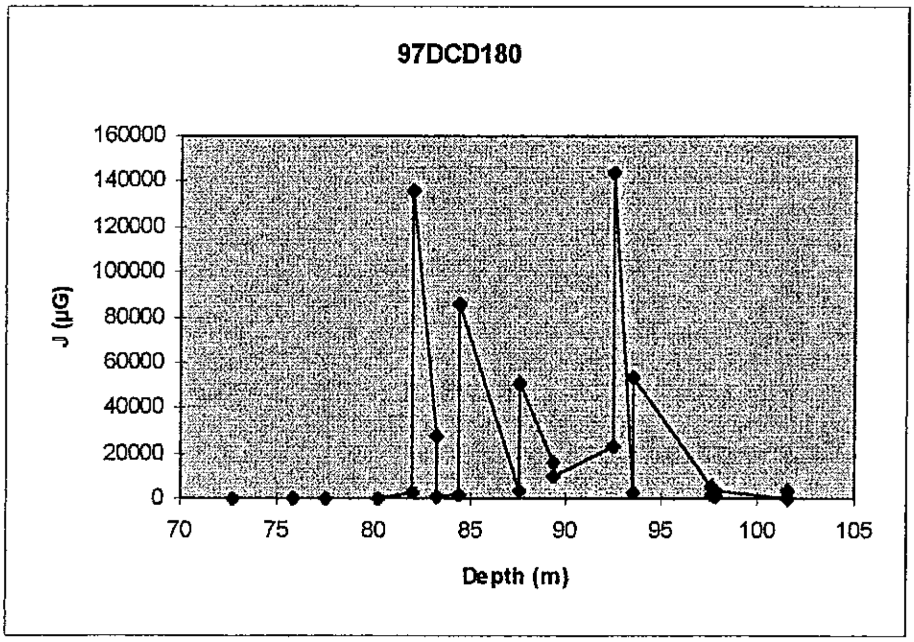


Fig. 10 Remanent magnetisation (µG) versus depth for DDH 97DCD180. See Fig. 9 for the boundary between weathered and fresh(er) Marra Mamba.

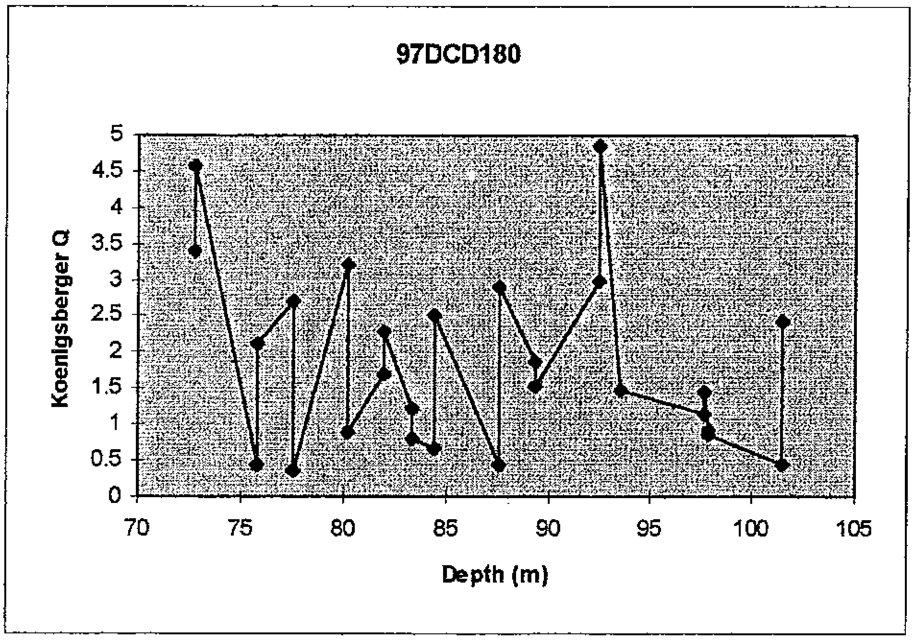


Fig. 11 Koenigsberger ration (Q) versus depth for DDH 97DCD180. See Fig. 9 for the boundary between weathered and fresh(er) Marra Mamba.

Comparing the properties of Dales Gorge 3 from DDH 97B26EO12 with those from the previous study the mean susceptibility is almost exactly the same while the mean remanent intensity found herein is towards towards the high end of those observed before (Figs. 3 and 4). Likewise the Koenigsberger ratio is somewhat higher than observed before, although only slightly. The BIF from DDH 97B26EO12 was very fresh and we would not expect any deleterious effects due to weathering.

In all sampled holes a few specimens exhibited anomalously high Koenigsberger ratios ($Q > 5$). These outlying values are evident in Figs. 8 and 11. Such high Koenigsberger ratios reflect exposure of the specimens to strong magnetic fields, presumably during logging with pencil magnets, and are not representative of the *in situ* properties. After low temperature treatment, or AF demagnetisation to 200 Oe, the Q's of these specimens decrease to values more consistent with the uncontaminated majority of samples. Overall, remanence makes a substantial, generally dominant contribution to the magnetisation of the BIFs. Representative Koenigsberger ratios are typically 1-2. Susceptibility anisotropy is also important (A = 2-3 typically).

## 4.0 TIMING OF BIF REMANENCE

The specific problem of pre-folding versus post-folding remanence of the BIFs arose during modelling of aeromagnetic survey data (Clark and Schmidt, 1986b). Because the remanence appeared to be largely along strike, i.e. low inclination and directed to the northwest, magnetic models were not extremely sensitive to its direction. Schmidt and Embleton (1985) found evidence for both pre-folding and post-folding remanence in Pilbara rocks, which correlated with locality and metamorphic grade. Modelling of limbs around the Turner Syncline (Clark and Schmidt, 1986b) came to a similar conclusion. It was suggested that the remanence around the Turner Syncline may be post-folding, while elsewhere, in lower metamorphic-grade regions the remanence is pre-folding.

**Table 2 Summary of Fold Test**

| Locality | N | $D_h$(°) | $I_h$(°) | k | $\alpha_{95}$(°) | $D_b$(°) | $I_b$(°) | k | $\alpha_{95}$ (°) |
|---|---|---|---|---|---|---|---|---|---|
| Wittenoom | 20 | 307.5 | -10.5 | 14.1 | 9.0 | 307.5 | -10.5 | 14.1 | 9.0 |
| Paraburdoo | 21 | 292.2 | -39.1 | 59.3 | 8.5 | 314.0 | -4.7 | 31.0 | 5.8 |
| Bakers North | 8 | 310.0 | -39.0 | 15.8 | 14.4 | 323.0 | -4.0 | 21.5 | 12.2 |
| Homestead | 12 | 313.2 | -2.8 | 16.8 | 10.9 | 310.4 | -17.1 | 16.8 | 10.9 |
| Mean | 4 | 306.2 | -22.9 | 15.5 | 24.1 | 313.7 | -9.0 | 102 | 10.4 |

Note: subscript h refers to present horizontal, i.e. *in situ*, while b refers to bedding, or unfolded. Symbols N, k, and $\alpha_{95}$ refer to number of samples, the precision parameter and the radius of the cone of 95% confidence (Fisher 1953).

Clark and Schmidt (1986a) and Schmidt and Clark (1994) provide evidence that the remanences of the main BIFs are pre-folding at Wittenoom and Paraburdoo. This evidence is based on actual measurements of remanence and anisotropy of magnetic susceptibility (AMS) on many core samples. Schmidt and Clark (1994) present a quantitative method to correct for the anisotropy of the BIF, and show that these corrections are small given the demonstrably low-inclination palaeomagnetic field prevalent at BIF times.

On the other hand, Li *et al.* (1993) presented a phenomenological model which appeals to deflection through the effects of AMS to explain why remanence directions of some structures are different, although, as they claim, the remanence may have formed after folding with structures similar to those that exist now. Li *et al.* (1993) appeal to a qualitative model where the magnetising field is almost completely deflected into the bedding planes of the BIFs. A definitive test to differentiate between the quantitative and the phenomenological models, requiring fresh BIF from suitable drill core, was therefore formulated (Schmidt, 1995). This test depended on acquiring fresh (unmineralised and unweathered) BIF samples from strata with a variety of attitudes, especially north dipping. Pre-folding remanence should there be inclined down to the north, while post-folding remanence should be upward directed.

The samples collected for the present study were from north dipping strata. DDH 97B26EO12 penetrated Whaleback Shale and the topmost section of the Dales Gorge Member (BIF16 to BIF12), while DDH 97DCD180 penetrated the Marra Mamba IF. Cleaned directions of remanent magnetisations of Dales Gorge and Marra Mamba IF from this study are plotted in Fig. 12.

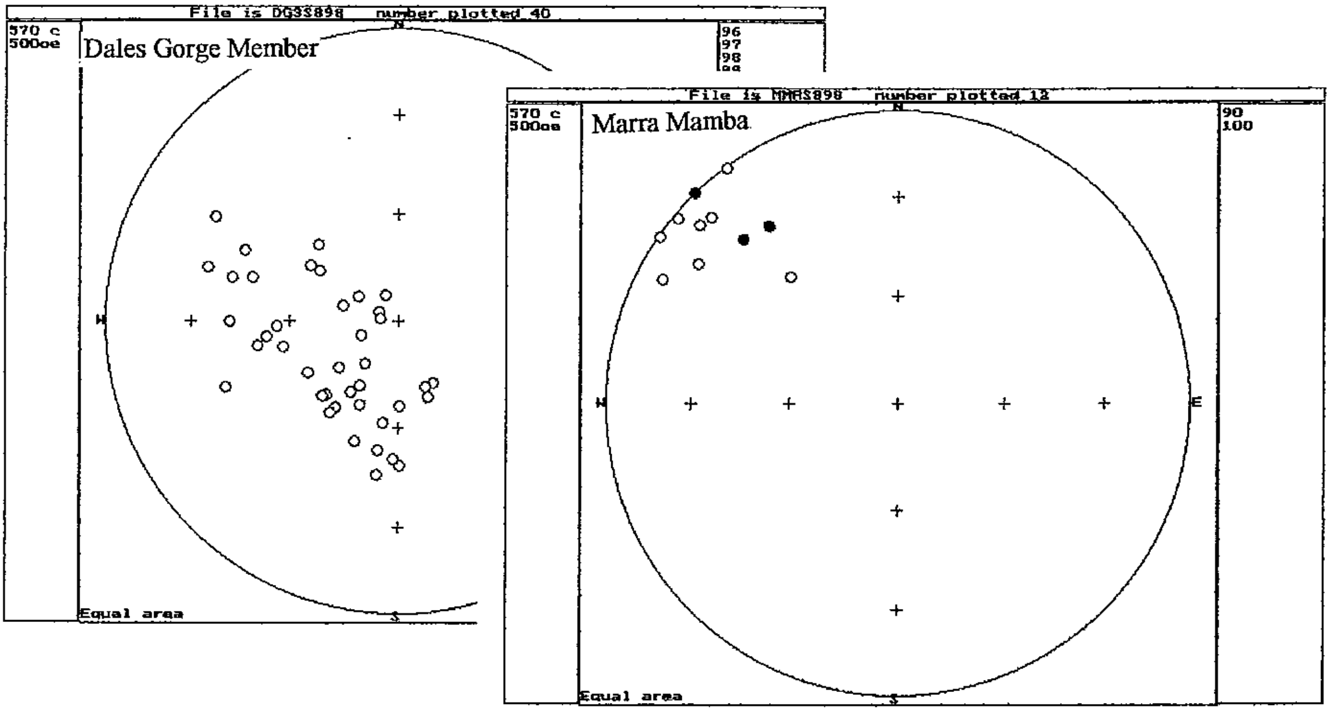


Fig. 12 Cleaned remanence directions from Dales Gorge and Marra Mamba IF.

*Low-grade Metamorphic Areas:* Table 2 summarises *in situ* cleaned directions from the Brockman IF (Wittenoom and Paraburdoo - Clark and Schmidt, 1986a and b) and the Marra Mamba IF (Bakers North - Clark, 1987 and Homestead, present study). Note that the Paraburdoo $\alpha_{95}$ decreases on tilt correction because strata intersected by DDH42 and DDH44 have different dips. Although not statistically significant this constitutes an internal fold test. A similar finding was made by Clark (1987) working on the Marra Mamba samples from Bakers North. The directions are plotted on equal-area projections in Fig. 13.

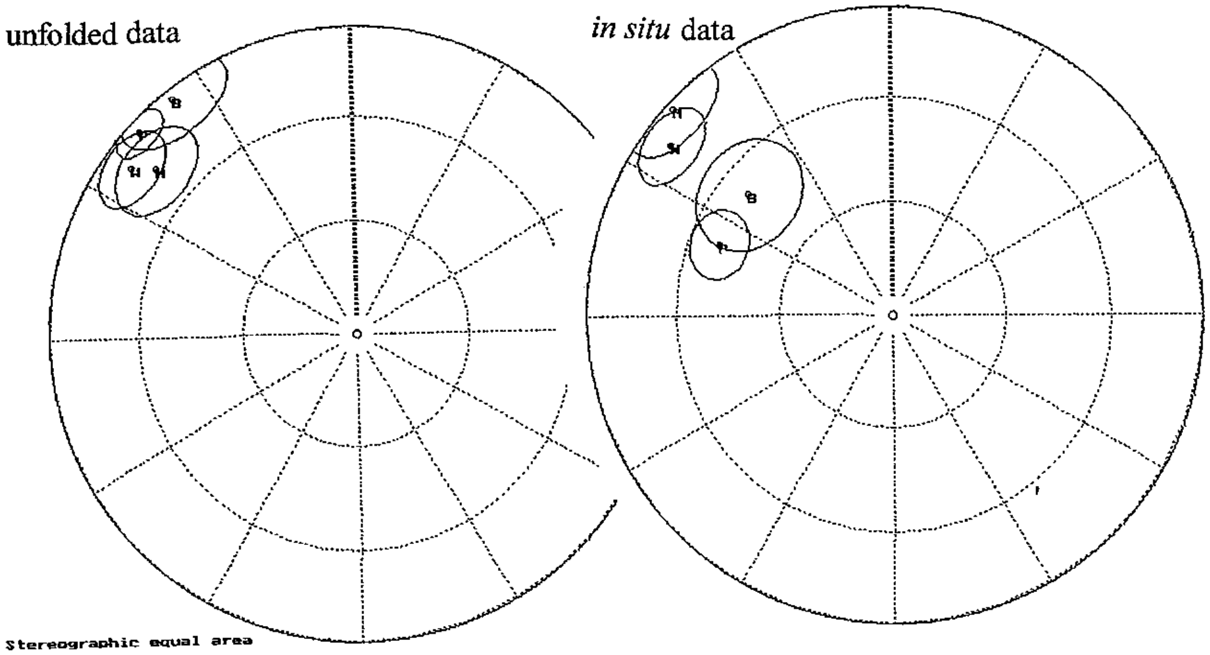


Fig 13 Fold test for remanence directions from Brockman and Marra Mamba IF.

Applying a McFadden and Jones (1981) fold test to these data yields a positive result at the 99% confidence level. The McFadden and Jones test statistic has values of 13.223 for the *in situ* data, and 2.65 for the unfolded data. Compared to $F_{6,114} = 2.966$ at the 0.99 level, these values are interpreted as indicating that the null hypothesis of a common mean direction cannot be rejected after unfolding, whereas it is readily rejected for the *in situ* data. Therefore all the available evidence suggests that BIFs in low-grade metamorphic areas acquired their remanent magnetisations before the Ophthalmian Orogeny.

*High(er)-grade Metamorphic Areas:* In this study and in previous studies the remanent magnetisation of samples from around the Turner Syncline appears to be quite different from that in low-metamorphic grade areas. A comparison of the remanence observed from DDH 20/74 (Schmidt, 1995, and Table 3) with that from DDH 97B26EO12 (Table 1) shows that they have characteristically steeper inclinations than remanence of BIF from low metamorphic grade areas.

Bearing in mind the suggestion of Clark and Schmidt (1986b), that magnetic modelling required pre-folding remanence in low metamorphic grade areas and post-folding remanence around the Turner Syncline, it is not surprising that directions of remanent magnetisation from fresh drill core samples from low- and high-grade areas are quite distinctive. It is noted however that the directions found from within the Turner Syncline are not simply syn- or post-folding Ophthalmian overprint directions that have been observed in the underlying Fortescue Volcanics (Schmidt and Embleton, 1985) or the Wittenoom Dolomite (Li *et al.*, 1993). The directions observed here appear to be of much steeper inclinations. Differentiating between the Ophthalmian overprint directions and those found here would have been difficult solely from magnetic modelling, since the magnetisation parallel to strike does not contribute to the observed magnetic anomaly. However, having a better idea of the remanent magnetisation around the Turner Syncline should allow for the development of better models.

*The Deflection Model:* The highly significant fold test presented above also enables differentiation between Li *et al.*'s deflection model and the pre-folding model (Clark and Schmidt, 1986a). As argued above, for areas of low metamorphic grade there does not seem to be any evidence for significant deflection of post-folding remanent magnetisation into the bedding plane.

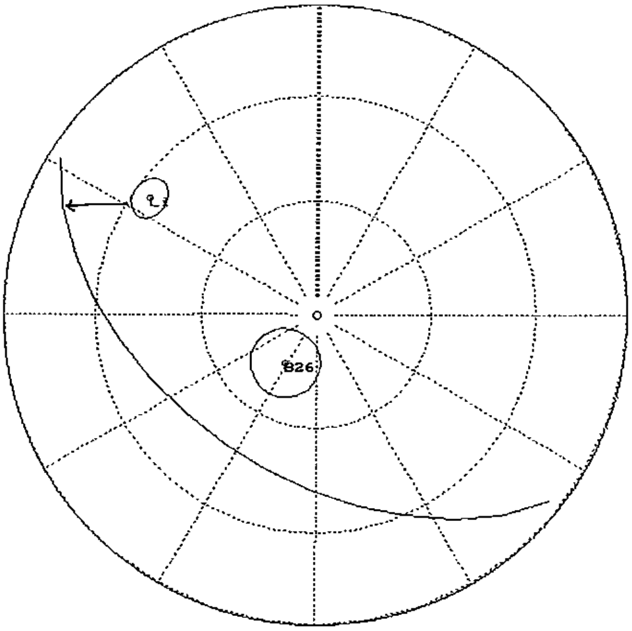


Fig. 14 Comparison of remanence directions predicted by Li *et al.* (1993) and those observed herein from DDH 97B26EO12.

Nevertheless the remanence observed herein (from DDH 97B26EO12) appears to be quite distinctive from that of low metamorphic grade areas, and it is therefore worth considering whether this remanence may have been deflected towards the bedding plane. This requires a comparison of the predicted trajectory of the deflected Ophthalmian overprint direction with the actual observed direction. Using the bedding plane, as defined by the intermediate and maximum principal susceptibility axes (see Appendix), and the Ophthalmian overprint direction determined by Li *et al.* (1993), we can construct a trajectory of directions expected if the deflection model was correct.

This is done in Fig. 14 which also shows the mean direction of remanence found herein for samples 97B26EO12. The observed direction and predicted direction are 90° apart. Therefore Li *et al.*'s deflection model cannot be sustained either for low metamorphic areas or for the Turner Syncline.

It is recommended that for magnetic modelling a pre-folding remanent magnetisation be used in low metamorphic grade areas, and a post-folding remanent magnetisation, steep upwardly inclined to the southwest, be used for areas of similar metamorphic grade to the Turner Syncline.

**Table 3 Magnetic Properties of Units from Mineralised DDH 20/74**

| Unit | Samples | N | D, I, J (γ) | Ellipsoid Axes | Bulk | A | L | F |
|---|---|---|---|---|---|---|---|---|
| DG3 | PS045-046 | 5 | 303,-62,21.1 | Max 200,45,1023 | | | | |
| 20/74 | | | | Int 79,26,1019 | 1010 | 1.04 | 1.00 | 1.03 |
| | | | | Min 330,32,987 | | | | |
| DG2 | PS041-044 | 9 | 241,-77,694 | Max 167,8,42991 | | | | |
| 20/74 | | | | Int 259,13,41195 | 40409 | 1.16 | 1.04 | 1.11 |
| | | | | Min 46,74,37042 | | | | |
| DG1 | PS035-044 | 18 | 278,-48,959 | Max 135,7,115220 | | | | |
| 20/74 | | | | Int 227,15,114553 | 110272 | 1.14 | 1.01 | 1.13 |
| | | | | Min 21,73,101044 | | | | |

## 5.0 CONCLUSIONS

Results of several magnetic petrophysical studies of banded-iron formation from the Hamersley Basin have been combined in a database. The data and their implications are discussed in detail and a cohesive interpretation provided. The magnetic properties reported by Schmidt (1995) are generally supported, although incipiently weathered Marra Mamba IF samples from Homestead have slightly depressed susceptibilities compared to fresh samples studied earlier.

Following several lines of evidence including modelling of aeromagnetic survey data, a regional palaeomagnetic fold test, a small scale (intra-sample) fold test and the disposition of remanence directions above and below bedding planes of varying dip, a pre-folding timing for the magnetic remanence in areas of low metamorphic grade is strongly favoured. The directions of remanence from low grade metamorphic areas are compatible with acquisition prior to Ophthalmian folding in a shallow northwesterly direction.

The original suggestion that the remanent magnetisations of low grade metamorphic areas and high(er) grade metamorphic areas maybe intrinsically different is supported by this study. The directions of remanence from higher grade areas, such as the Turner Syncline, are quite different. These magnetisations appear to have high negative (upwardly directed) inclinations, and were probably acquired after folding.

While magnetic susceptibility and anisotropy of magnetic susceptibility have been adequately characterised by earlier studies, it is recommended that remanent magnetisations used for magnetic modelling should take into account both structural attitude and metamorphic grade.

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# APPENDIX I

# INVENTORY OF DRILL HOLES AND SAMPLES

# KEY

| | |
|---|---|
| □ | lost core |
| ▬ | magnetite mesoband |
| ◇◇◇◇◇◇ | siderite plates, fibrous iron-silicates and crocidolite in a matrix of crystalline riebeckite, iron-silicates and goethite mesoband |
| ▬ | hematite mesoband |
| ▒ | goethite (±limonite) mesoband |
| 0 0 0 | calcite vugs |
| ◎ | cherty, goethitic and hematitic spherules |
| ~ | veins |

## Shale and Carbonates

| | |
|---|---|
| ░ | friable clays |
| ▒ | pink, white clays (weathered shale) |
| ⁚ | yellow or pale-green shale |
| ┅ | dark-green shale |
| □ | chert mesoband<br>or massive chert |
| ▓ | breccia (chert clasts in goetite matrix) |
| ☰ | interlayered / banded shale-chert |
| ◇ | carbonate-rich shale |
| ◇ | interlayered / banded chert-siderite |

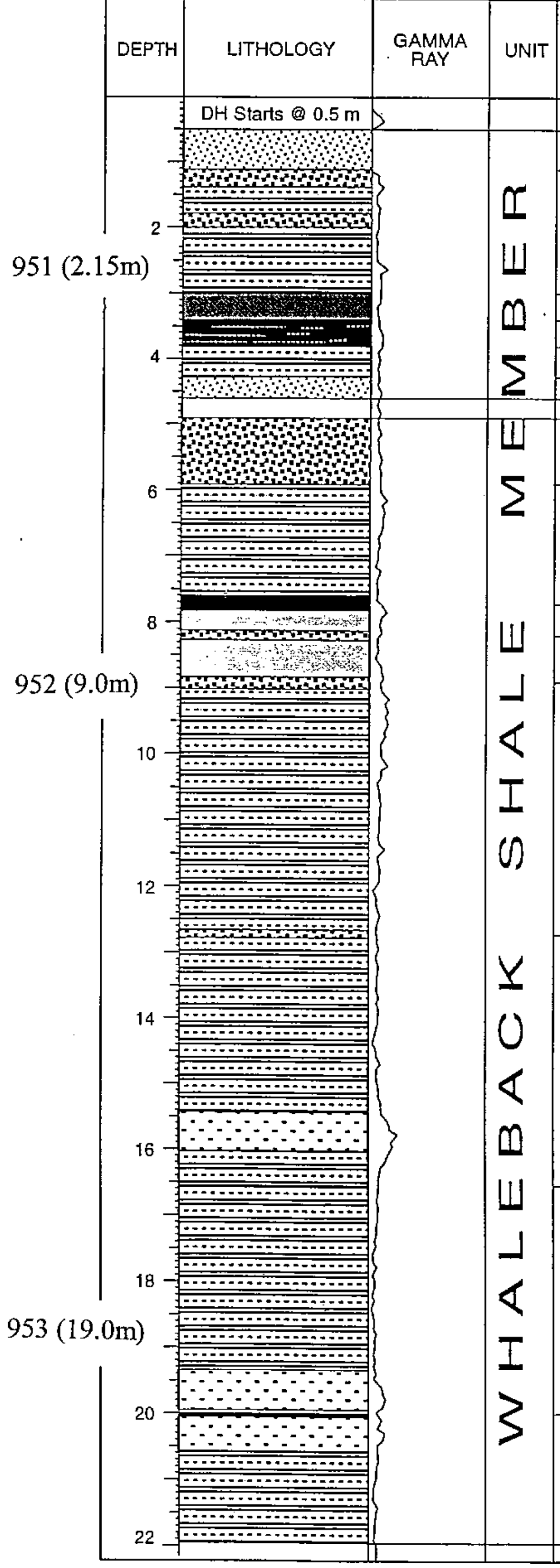
## BIF

| | |
|---|---|
| ☰ | chert-magnetite(±hematite) BIF<br>(±<5% siderite) |
| ◇ | chert-siderite-magnetite(±haematite) BIF |
| ◇ | siderite-magnetite(±haematite) BIF |
| ▨ | chert-siderite-riebeckite-magnetite±hematite BIF |
| ◇ | interbanded siderite-magnetite-hematite BIF and shale |
| ◇ | interbanded chert-siderite-magnetite±hematite BIF and shale |
| ▨ | chert-riebeckite-magnetite-hematite BIF and shale |
| ◇ | interbanded carbonate-rich shale and siderite-magnetite-hematite BIF |

# HAMERSLEY RANGE

LOCATION: Tom Price
Hole No: D97B26OE12
Total depth: 163.2 m

DATE: 24-25/2/98
Rock Units: Whaleback - Dales Gorge
Page No. 1



| MAG SUS | DESCRIPTIONS / COMMENTS |
|---|---|
| | PRE COLLAR |
| 70 - 630 | friable weathering clays (goethite-rich) + chert fragments |
| 50 - 2900 | interlayered chert and weathered shale, in parts brecciated with chert fragments in a clay matrix (goethite-rich) |
| ~50 | goethite mesoband |
| ~50 | hematite mesoband interlayered with brecciated chert bands |
| 40 - 260 | interlayered chert and weathered shale, with brecciated chert bands |
| 10 - 20 | friable white-yellow clay (goethite-rich) + minor chert fragments |
| | LOST CORE |
| 20 - 340 | brecciated chert fragments in a clay matrix (goethite-rich) |
| 30 - 50 | interlayered chert and weathered shale (goethite- and hematite-rich)<br>increasingly friable<br>increasing % hematite in clays and as microbands in chert |
| ~70 | hematite mesoband ± goethite micobands |
| ~190 | breccia with cm clasts in clay matrix |
| 50 - 100 | |
| ~50 | breccia with cm clasts in clay matrix |
| 40 - 100 | interlayered, microbanded grey-white chert (thinner bands locally brecciated) and weathered shale (goethite-rich, and hematite-rich in patches). Quite friable rock |
| <40 | breccia with cm clasts in clay matrix |
| 60 - 90 | interlayered microbanded grey-white chert (thinner bands locally brecciated) and weathered shale (goethite-rich, and hematite-rich in patches). Quite friable rock<br>massive limonitic shale |
| 45 - 110 | micro-mesobanded chert (with minor hematite microbands within) and weathered shale (goethite-rich, and hematite-rich in patches). Liesegang banding in white shale prominent. In places, faint primary banding is observed in weathered shale. More consolidated than overlying rocks<br>massive limonitic shale |
| 60 - 65 | massive limonitic shale<br>As above, but more goethite-limonite rich and less hematite. Mainly white-yellow clays interbanded with fractured chert bands |

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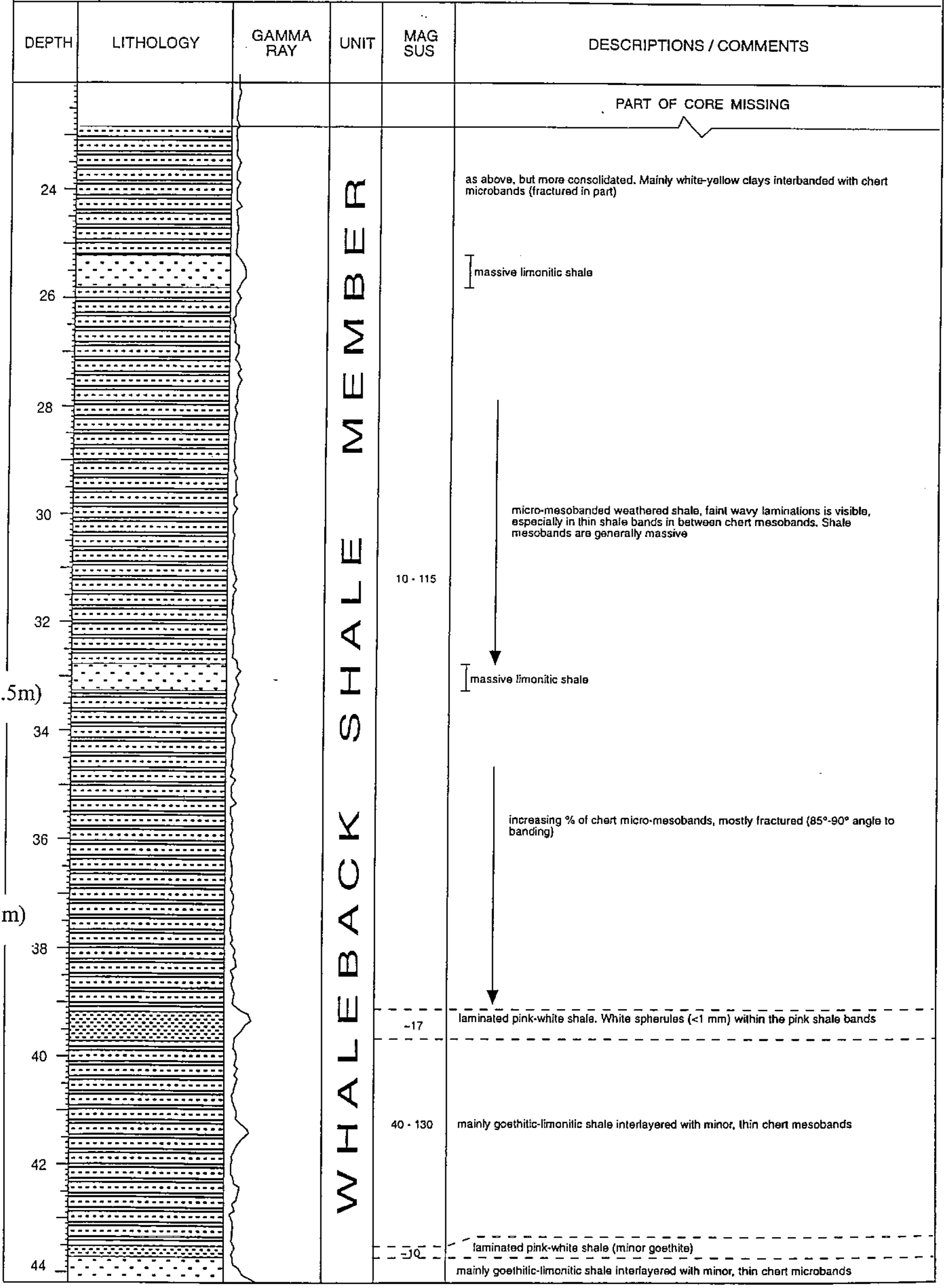

PART OF CORE MISSING

as above, but more consolidated. Mainly white-yellow clays interbanded with chert microbands (fractured in part)

massive limonitic shale

micro-mesobanded weathered shale, faint wavy laminations is visible, especially in thin shale bands in between chert mesobands. Shale mesobands are generally massive

massive limonitic shale

954 (33.5m)

increasing % of chert micro-mesobands, mostly fractured (85°-90° angle to banding)

955 (37.8m)

laminated pink-white shale. White spherules (<1 mm) within the pink shale bands

mainly goethitic-limonitic shale interlayered with minor, thin chert mesobands

laminated pink-white shale (minor goethite)

mainly goethitic-limonitic shale interlayered with minor, thin chert microbands

# HAMERSLEY RANGE

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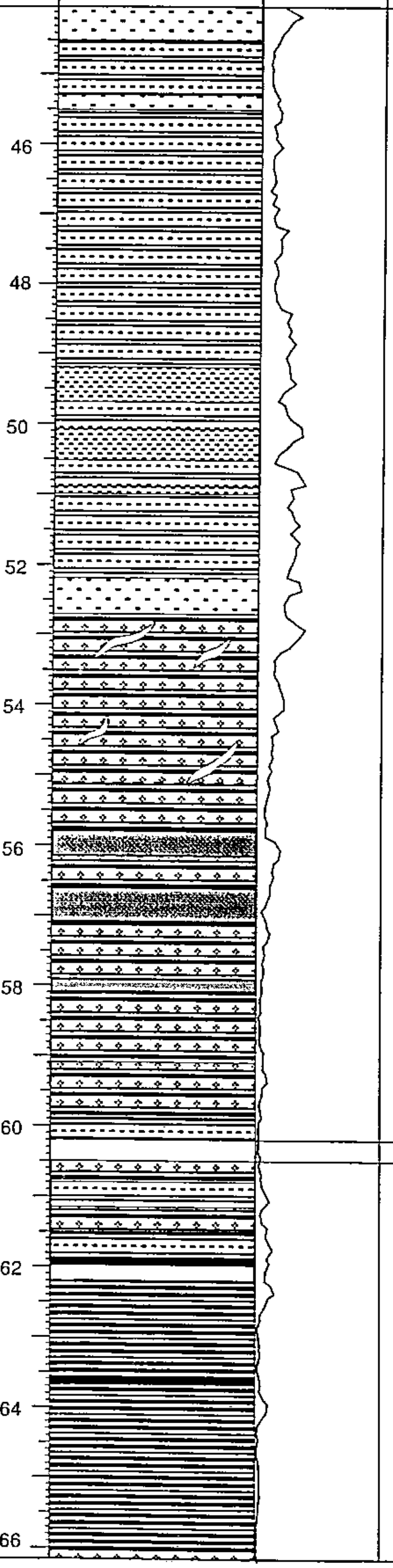
DATE: 24-25/2/98
Rock Units: Whaleback - Dales Gorge
Page No. 3



956 (54m)
957 (55m)
58 (62m)
959 (65.1m)

| MAG SUS | DESCRIPTIONS / COMMENTS |
|---|---|
| | fragments of massive limonitic shale |
| | massive limonitic shale |
| 40 - 200 | mainly goethitic-limonitic shale interlayered with minor, thin chert microbands |
| 0 | pink-white banded shale, with minor limonite (yellow), with black (in part iridescent tarnish) crystals lining fracture surfaces |
| 250 - 340 | banded chert and yellow-white shale (limonitic) with minor magnetite micorbands. Weakly magnetic |
| <20 | mottled pink-white shale, with red-earthy hematite filled fractures |
| ~10 | mottled, pink-white shale mesoband |
| 30 - 860 | mesobanded yellow shale (limonitic) and chert, with minor magnetite bands |
| ~16 | massive, yellow-white shale (limonitic) |
| ~2000 | chert-goethite (after ?siderite)-magnetite-hematite BIF, with minor cross-cutting quartz veins<br>WS BIF1 |
| ~15000 | BIF banding parallel to core length |
| ~8000 | |
| 80 - 300 | massive goethite |
| ~40 | massive goethite |
| ~50 | massive goethite |
| | weathered chert-goethite(siderite)-magnetite-hematite BIF interlayered chert and goethite (±limonite). Thick bands of 10-30 cm |
| 3000 - 8000 | chert-magnetite±hematite BIF, with <5 % goethite (weathered ?siderite) |
| ~20 | interlayered chert and goethite (±limonite) |
| | LOST CORE |
| 6 - 25 | weathered, yellow shale (limonitic) with minor chert mesobands throughout. Laminations in shale partly preserved |
| 0 | magnetite mesoband<br>20 cm chert mesoband |
| ~100<br>~650 | slightly weathered chert-magnetite-hematite(red) BIF with minor goethite (<10 %, weathered ?siderite) |
| | magnetite mesoband |
| ~6000<br>~9500<br>~2500<br>~6500 | weathered chert-magnetite-hematite(red) BIF with minor goethite (<10 %, weathered ?siderite), increasing % magnetite bands |

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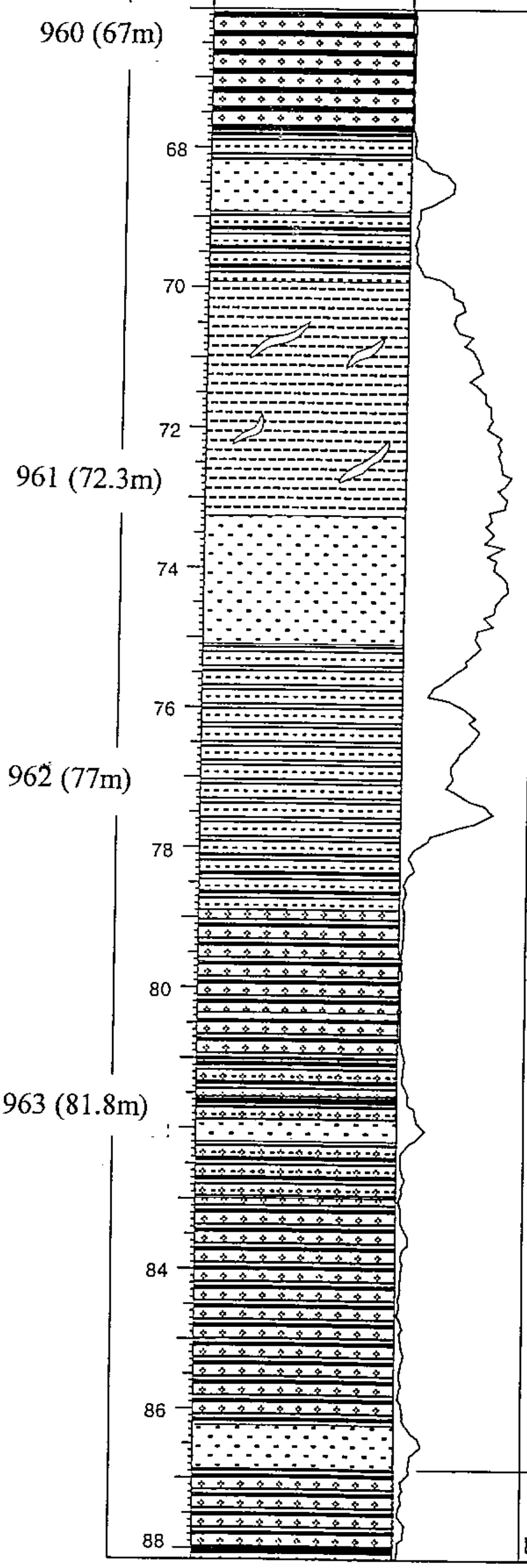

| UNIT | MAG SUS | DESCRIPTIONS / COMMENTS | |
|---|---|---|---|
| WHALEBACK SHALE MEMBER | 500 - 1500 | slightly weathered siderite (45%)-magnetite (35%) BIF with minor chert bands (thin, laminated red-hematite within siderite mesobands), | |
| | | weathered, banded chert (white)-siderite (yellow)-hematite shale | |
| | 40 - 70 | limonitic shale, faint laminations visible at base | |
| | 10 - 45 | weathered banded chert (white)-siderite (yellow)-hematite BIF, and shale | |
| | 10 - 38 | laminated dark-green shale, with minor, cross-cutting quartz veins | WS1 |
| | 16 - 28 | limonitic shale, partly laminated. Fragmented at base | |
| | <50 | micro-mesobanded chert-siderite-hematite shale, minor magnetite | |
| | 400 - 2400 | weathered, banded cherty BIF and shale, with thin magnetite±hematite bands | WS BIF2 |
| | 4500 - 28000 | weathered chert-siderite-magnetite±hematite BIF, magnetite-hematite bands are generally thiner (≤1 cm), banded with ~1-2 cm chert-siderite mesobands. Partly fractured along banding plane | |
| | <5000 | shale±magnetite mesoband | |
| | 5000 - 15000 | | |
| | 1000 - 5400 | weathered, banded chert-siderite BIF and shale | |
| | 10000 | concentration of magnetite microbands | |
| | ~900 | banded chert-siderite shale, with thin magnetite-hematite bands fractures lined with lime-green clay mineral | WS2 |
| | 1100 - 3000 | | WS BIF2 |
| | 15000 - 23000 | chert-siderite-magnetite-hematite BIF (10% siderite), fractured | |
| | 1000 - 6000 | banded chert-siderite shale, with thin magnetite-hematite bands fractures lined with lime-green clay mineral | WS2 |
| DGM BIF16 | ~5100 | slightly weathered chert-siderite-magnetite-hematite BIF, thicker chert bands 1-4 cm | |

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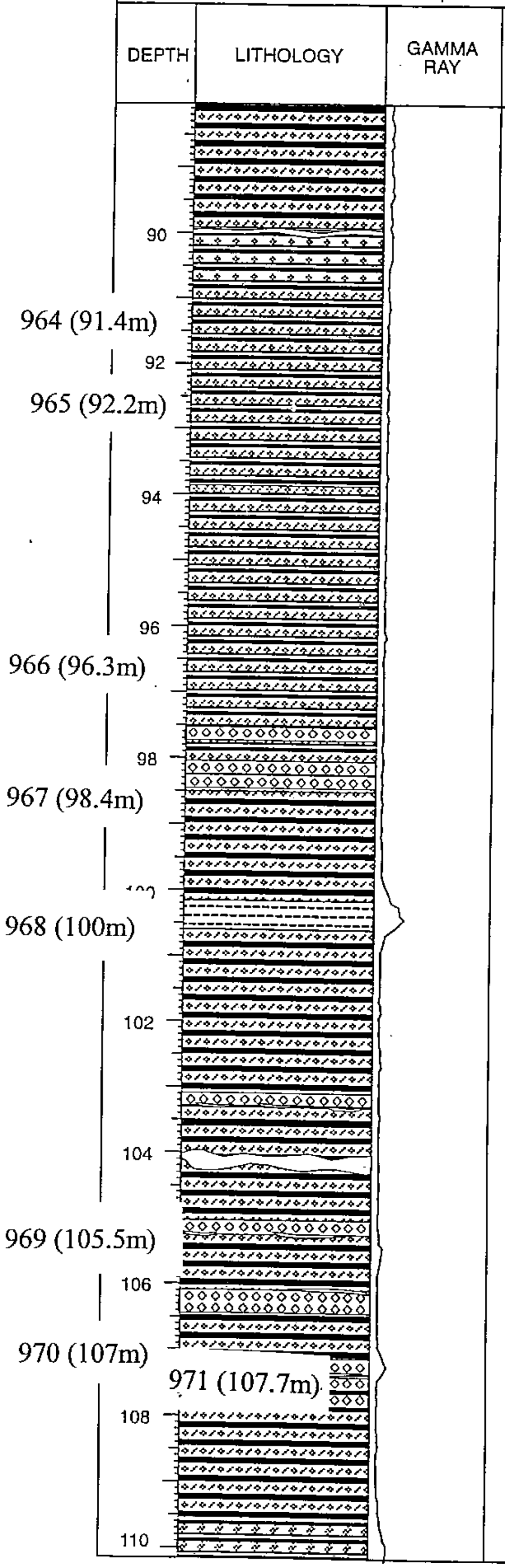

| UNIT | MAG SUS | DESCRIPTIONS / COMMENTS |
|---|---|---|
| DGM | 7000 - 32000 | first blue-grey BIF, with siderite-riebeckite-magnetite±hematite bands with minor chert matrix. More consolidated than overlying units. Thiner magnetite±hematite bands are crenulated |
| | | 3 cm subparallel calcite vein |
| | 7000 - 22000 | slightly weathered, chert-siderite-magnetite-hematite BIF, with less magnetite than immediately overlying blue-grey BIF. Bands are generally ≤1 cm thick, and core is fragmented. Riebeckite concentration is low |
| | | concentration of crocidolite fibres |
| | 10000 - 92000<br>ave >40000 | microbanded, blue-grey, chert-siderite-riebeckite-magnetite±hematite BIF. The magnetite bands are generally finer than thicker chert, siderite, riebeckite bands (up to 2 cm), becoming more mesobanded towards the base. The hematite occurs mainly as steel-grey bands associated with the magnetite bands, but more commonly with the silicate-carbonate horizons. Thinner bands are commonly crenulated, but thin magnetite bands can also be fragmented. High concentrations of ribeckite throughout, with fibrous riebekite (crocidolite) more pronounced in tension gashes and at fold hinges of crenulations |
| | | 1-2 mm crocidolite fibres |
| | 10000 - 92000<br>ave >40000 | micro-mesobanded, blue-grey, chert-siderite-riebeckite-magnetite±hematite BIF. Three mesobands containing siderite plates, fibrous iron-silicates and crocidolite in a matrix of crystalline riebeckite and iron-silicates and goethite, can be found near the base<br>1-2cm Magnetite-hematite mesobands |
| B16 | | laminated dark-green shale mesoband |
| | 10000 - 77000<br>ave ≤55000 | mesobanded, blue-grey, siderite-riebeckite-magnetite±hematite BIF, with minor podiform chert. Carbonate mesobands can get upto 4 cm. Podiform chert becomes more pronounced towards the base |
| | | 3 cm calcite vein sub-parallel to banding top and bottom contact uneven |
| | 16000 - 82000<br>ave ≤40000<br>2 readings >100000 | interlayered siderite (+ankerite?)-riebeckite-magnetite±hematite BIF and shale, with minor chert bands, generally podiform. Carbonate mesobands upto 4 cm, some mesobands contain siderite plates, fibrous iron-silicates and crocidolite in a matrix of crystalline riebeckite and iron-silicates are common. Podiform chert becomes more pronounced towards the base. Thin (1-2 mm), sub-parallel to parallel calcite veining is common at the boundaries of these mesobands |
| | -62000 | microbanded carbonate-chert-magnetite BIF and shale |

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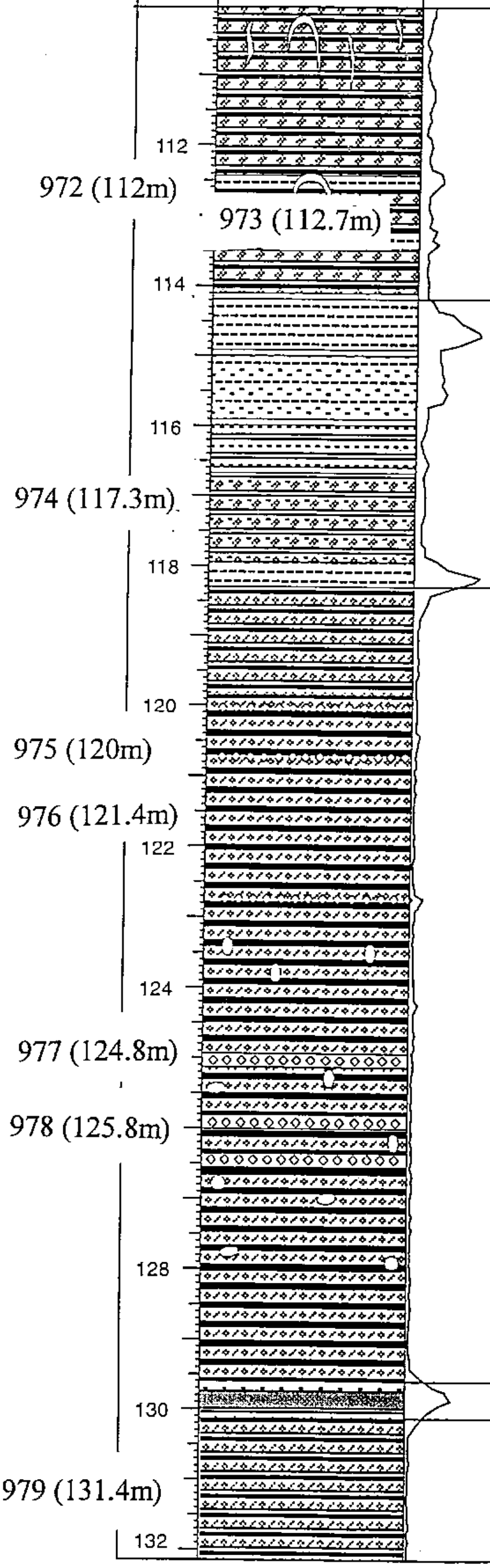
Rock Units: Whaleback - Dales Gorge
Page No. 6



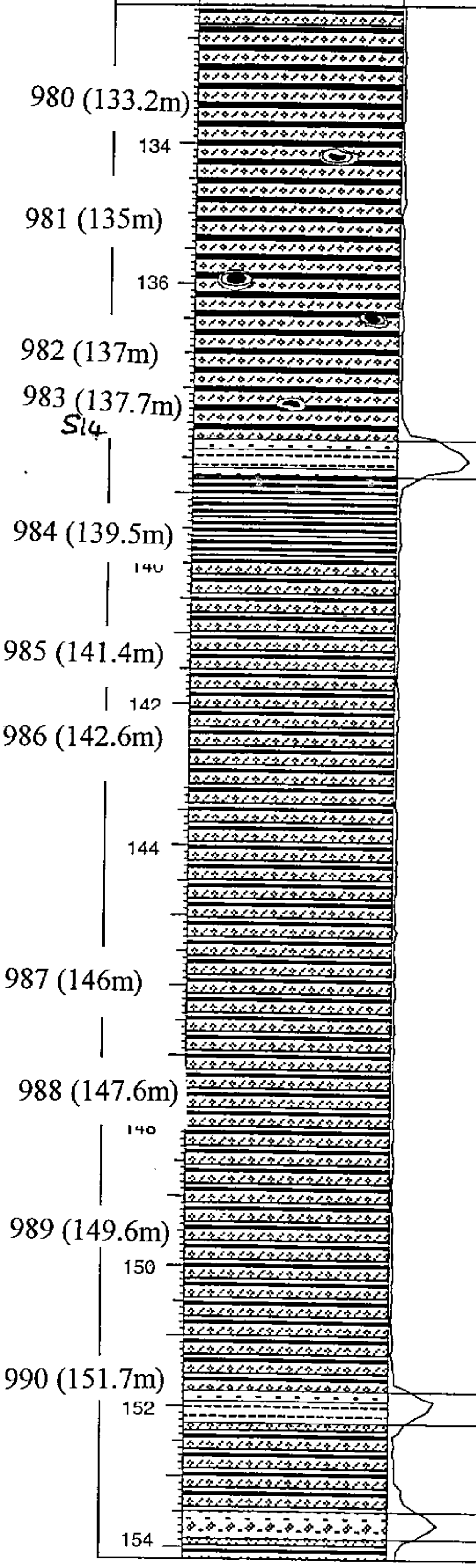
972 (112m)
973 (112.7m)
974 (117.3m)
975 (120m)
976 (121.4m)
977 (124.8m)
978 (125.8m)
979 (131.4m)

| UNIT | MAG SUS | DESCRIPTIONS / COMMENTS |
|---|---|---|
| B16 | 1800 - 42000 | microbanded siderite-hematite±magnetite BIF and shale, with minor, cross-cutting calcite veins. Fairly magnetic near the top, but becoming less toward the base. Riebeckite is absent |
| | 1800 | laminated dark-green shale mesoband |
| | | banded dark-green shale mesoband |
| | 1800 - 3100<br>ave 4000 | |
| | 100 - 2400 | banded dark-green shale mesoband |
| | | chert mesoband |
| S16 | 100 - 3400 | laminated dark-green shale with thin carbonate-rich microbands, and minor thin magnetite bands |
| | ← 26000 | interlayered dark-green and light-green shale<br>slightly weathered (mainly goethite-hematite-white clays) |
| | | carbonate- and hematite-rich light-green shale |
| | 5000 - 36000 | micro-mesobanded siderite-magnetite-hematite BIF and shale, with minor, sub-parallel calcite veins in shale bands. Becoming more magnetic towards the base. Small carbonate rhombs (<1 mm) throught-out and particularly in shale bands. Riebeckite is absent |
| | | laminated dark-green shale |
| B15 | 25000 - 65000 | very blue-grey chert-siderite-riebeckite-magnetite±hematite BIF, riebeckite-rich rock. Mostly mesobanded magnetite interbanded with thiner chert-sidrite bands |
| | 5000 - 84000<br>ave 50000 | blue-grey, mesobanded, siderite-riebeckite-magnetite-hematite BIF, with minor chert bands. Bands are internally laminated, and the hematite-rich (both red-earthy hematite and steel-grey hematite) mesobands commonly have high angled fractures. Carbonate rhombs (≤1 mm) are common and are usually concentrated near or in siderite mesobands. Mesobands containing siderite plates, fibrous iron-silicates and crocidolite in a matrix of crystalline riebeckite and iron-silicates are also common throughtout this rock |
| | -44000 | siderite-riebeckite-magnetite±hematite BIF. Interbanded siderite-riebeckite mesobands and magnetite±hematite microbands (<1 cm) |
| S15 | 550 - 800 | fissile, weathered yellow to pale-green limonitic shale, with a fluorescent green mineral coating fracture surfaces |
| | 450 - 750 | massive goethite mesoband, after ?carbonate |
| | | mesobanded chert and goethite (after ?carbonate), with thin magnetite bands increasing towards the base |
| B14 | 10000 - 96000 | blue-grey, mesobanded, chert-siderite-riebeckite-magnetite-hematite BIF. Hematite-rich (steel-grey siliceous hematite) mesobands commonly have high angled fractures. Carbonate rhombs (≤1 mm) usually concentrated near or at siderite mesobands. |

# HAMERSLEY RANGE

LOCATION: Tom Price
Hole No: D97B26OE12
Total depth: 163.2 m

DATE: 24-25/2/98
Rock Units: Whaleback - Dales Gorge
Page No. 7

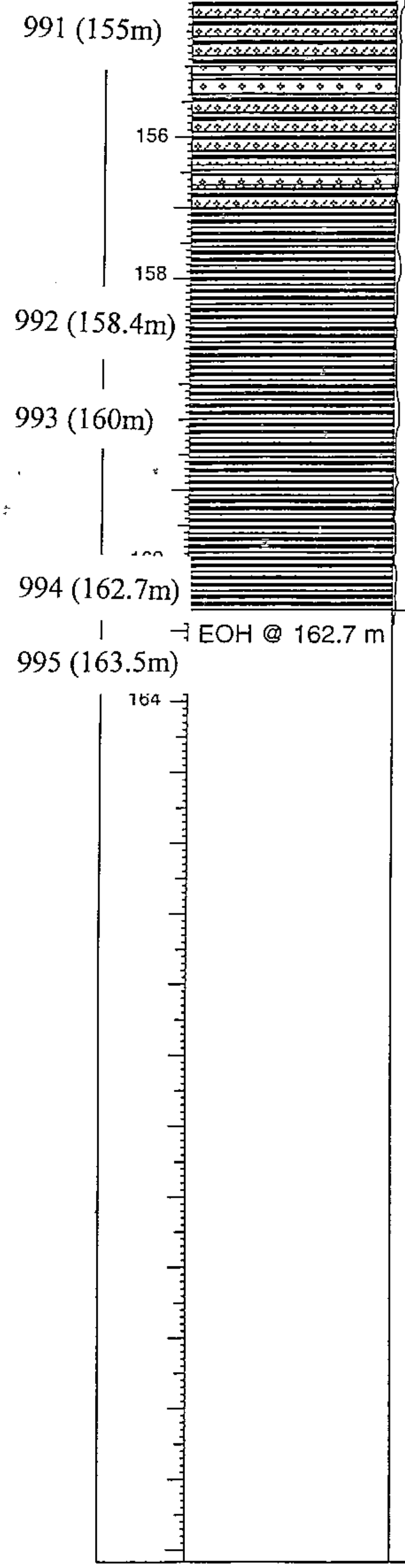


| UNIT | MAG SUS | DESCRIPTIONS / COMMENTS |
|---|---|---|
| | | blue-grey, mesobanded, chert-siderite-riebeckite-magnetite-hematite BIF. |
| B14 | ave 40000 | blue-grey, mesobanded, siderite-riebeckite-magnetite-hematite BIF, with minor chert bands. Cherty- goethitic-hematitic-pyritic nodules / spherules (ave 1 cm) are common throughout. Pyritic in parts, with ≤1 mm pyrite cubes, usually concentrated near or at siderite mesobands. |
| S14 | 100 - 820 | friable pale-green, pyritic shale. Pyrite cyrstals range from 1-2 mm<br>laminated dark-green pyritic shale<br>interbanded pale-green, pyritic shale mesobands, chert mesobands and minor magnetite±hematite microbands |
| | 10000 - 80000<br>ave 40000 | blue-grey, chert-riebeckite-magnetite-hematite BIF, with minor siderite (<10%). Minor, fine-grain pyrite microbands in parts. |
| B13 | 10000 - 82000<br>ave 50000 | blue-grey, chert-riebeckite±siderite-magnetite-hematite BIF, in parts sidrite-rich. The magnetite-hematite bands are generally thiner than the chert-riebeckite-siderite bands. B13 has generally less hemaite than B4<br>crocidolite-rich zone<br>generally 1-2 cm mesobands<br>thicker (upto 10 cm) riebeckite bands are common<br>high-angled fractures in hematite-rich mesobands |
| S13 | ~10000<br>~6200 | pale-green shale with magnetite±hematite microbands<br>laminated dark-green shale with minor pyrite-rich microbands |
| B12 | 1000 - 6200 | interbanded cherty BIF and shale, in parts sidrite-rich.<br>slightly weathered |
| S13 | <1000 | carbonate-rich, pale-green shale |

# HAMERSLEY RANGE

LOCATION: Tom Price
Hole No: D97B26OE12
Total depth: 163.2 m

DATE: 24-25/2/98
Rock Units: Whaleback - Dales Gorge
Page No. 8

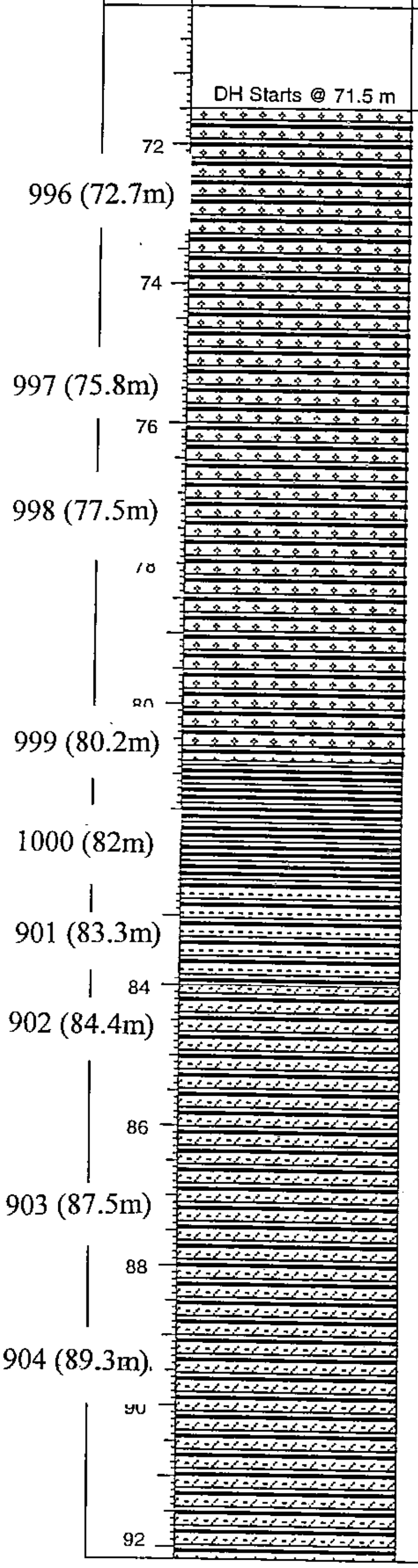


| UNIT | MAG SUS | DESCRIPTIONS / COMMENTS |
|---|---|---|
| B12 | 20000 - >100000<br>ave 60000 | blue-grey, chert-siderite-riebeckite-magnetite-hematite BIF, and minor carbonate-rich shale partings<br>chert-siderite zone, riebeckite poor<br>chert-siderite zone, low riebeckite concentration |
|  | 20000 - >100000<br>ave 60000 | blue-grey, microbanded chert-riebeckite-magnetite-hematite BIF, and minor siderite (<10 %) |

# HAMERSLEY RANGE

LOCATION: Tom Price
Hole No: 97DCD108
Total depth: 30.5 m

DATE: 24-25/2/98
Rock Units: Marra Mamba Iron Formation
Page No. 1

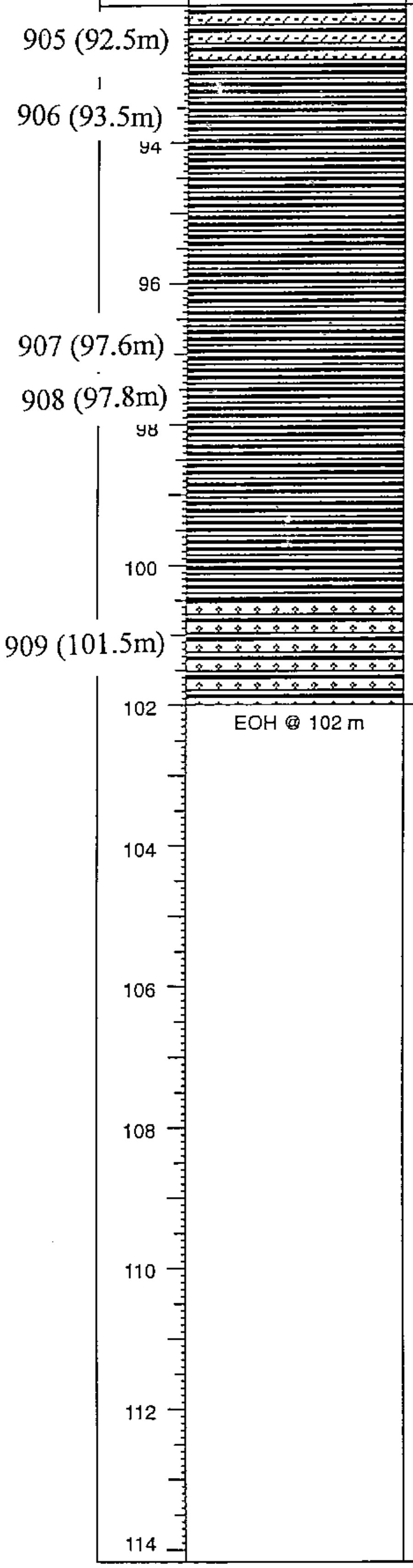


| MAG SUS | DESCRIPTIONS / COMMENTS |
|---|---|
| | PRECOLLAR |
| 50 - 200<br>← ~820<br>← ~20<br>← 1000 - 96000 | weathered<br>weathered chert-siderite-red hematite-magnetite BIF, in parts with minor chloritised clay partings and quartz vugs subparallel to banding. Banded chert-siderite mesobands, and hematite-magnetite microbands with occasional 10-30 cm mesobands comprising of several thin hematite-magnetite microbands (commonly crenulated). Most of the siderite (weathered to goethite) occurs as rhombs (commonly cavities) in chert bands. Hematite is more common than magnetite (thus low magnetic susceptibility) and occurs as both red-earthy (more common) and steel-grey siliceous varieties |
| 14000 - 82000 | slightly weathered chert-magnetite±red hematite BIF. Banded chert-siderite mesobands, and magnetite±hematite microbands with occasional mesobands comprising of several thin magnetite-hematite microbands (commonly crenulated). Hematite occurs as the red-earthy and steel-grey siliceous varieties |
| 5000 - >100000 | slightly weathered chert-riebeckite-magnetite±red hematite BIF with minor chloritised clay mesobands. Magnetite-hematite generally finely banded and crenulated. Fine-grained pyrite cubes can be found throughout, particularly associated with the clay. Hematite occurs as the red-earthy and steel-grey varieties. Minor riebeckite |
| 8000 - >100000<br>ave 40000 | slightly weathered, mesobanded chert-riebeckite-magnetite±red hematite BIF and minor chloritised clay. Hematite occurs as the red-earthy and steel-grey varieties, and mesobands commonly contain high angled fractures. Riebeckite-rich rock, and with rare 10-30 cm thick goethite (after ?carbonates) mesobands. Pyrite nodules (≤1 cm) are commonly associated with the chloritised clay partings. Bleached and silicified crocidolite commonly found in intension gashes and partings parallel to banding |

# HAMERSLEY RANGE

LOCATION: Tom Price
Hole No: 97DCD108
Total depth: 30.5 m

DATE: 24-25/2/98
Rock Units: Marra Mamba Iron Formation
Page No. 2



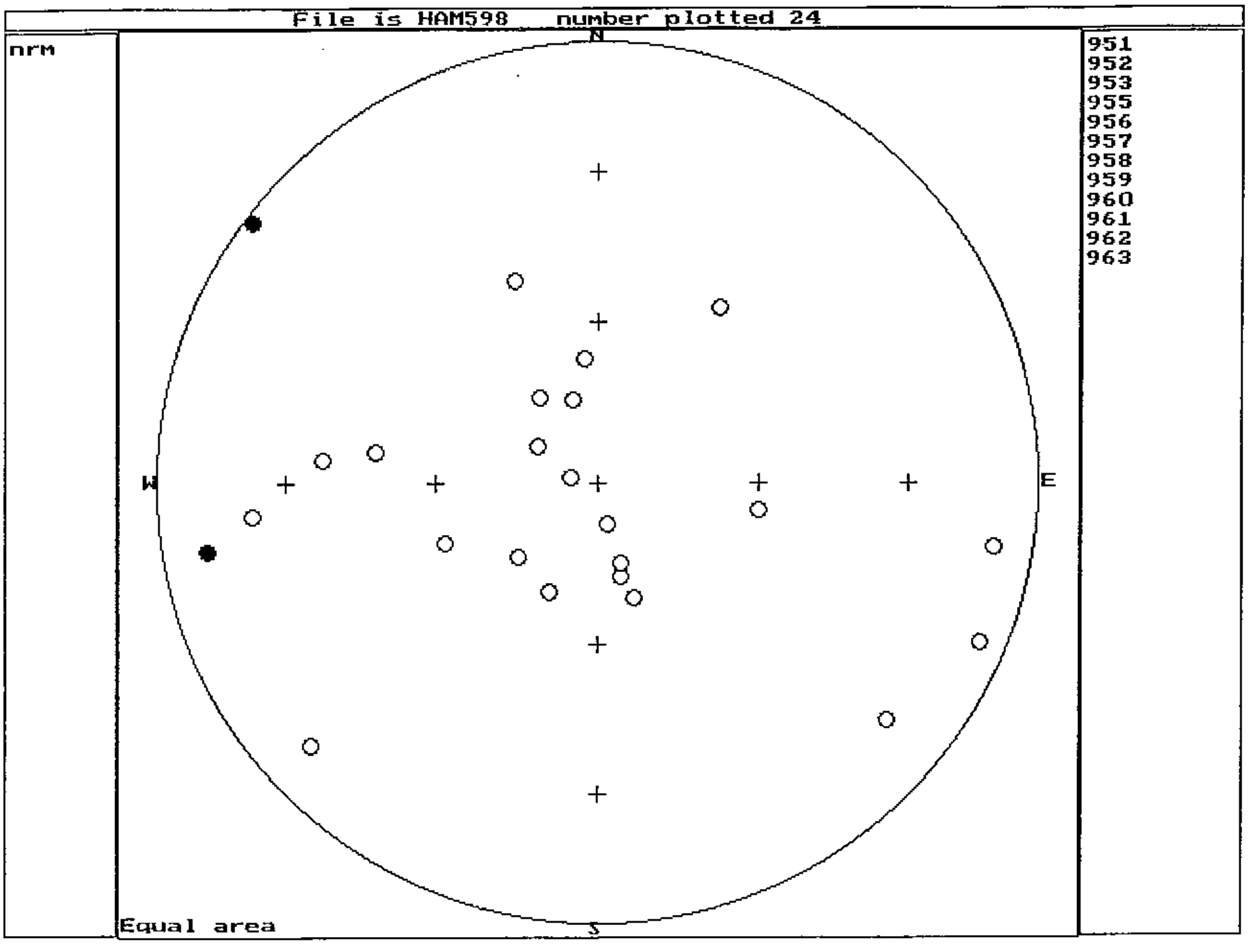
| DEPTH | LITHOLOGY | UNIT | MAG SUS | DESCRIPTIONS / COMMENTS |
|---|---|---|---|---|
| | | | 5000 - 20000 | slightly weathered, mesobanded chert-hematite-magnetite BIF, little or no riebeckite. Hematite occurs as both red-earthy mesobands (more common) and steel-grey (associated with magnetite bands) micro-mesobands<br>becoming more goethitic and hematitic<br>slightly weathered becoming more weathered toward the base |
| | | | <10000 | weathered, micro-mesobanded chert-siderite-red hematite-magnetite BIF. Hematite occurs as the red-earthy and steel-grey siliceous varieties, however, red-earthy hematite (red orcher) bands are generally massive. |

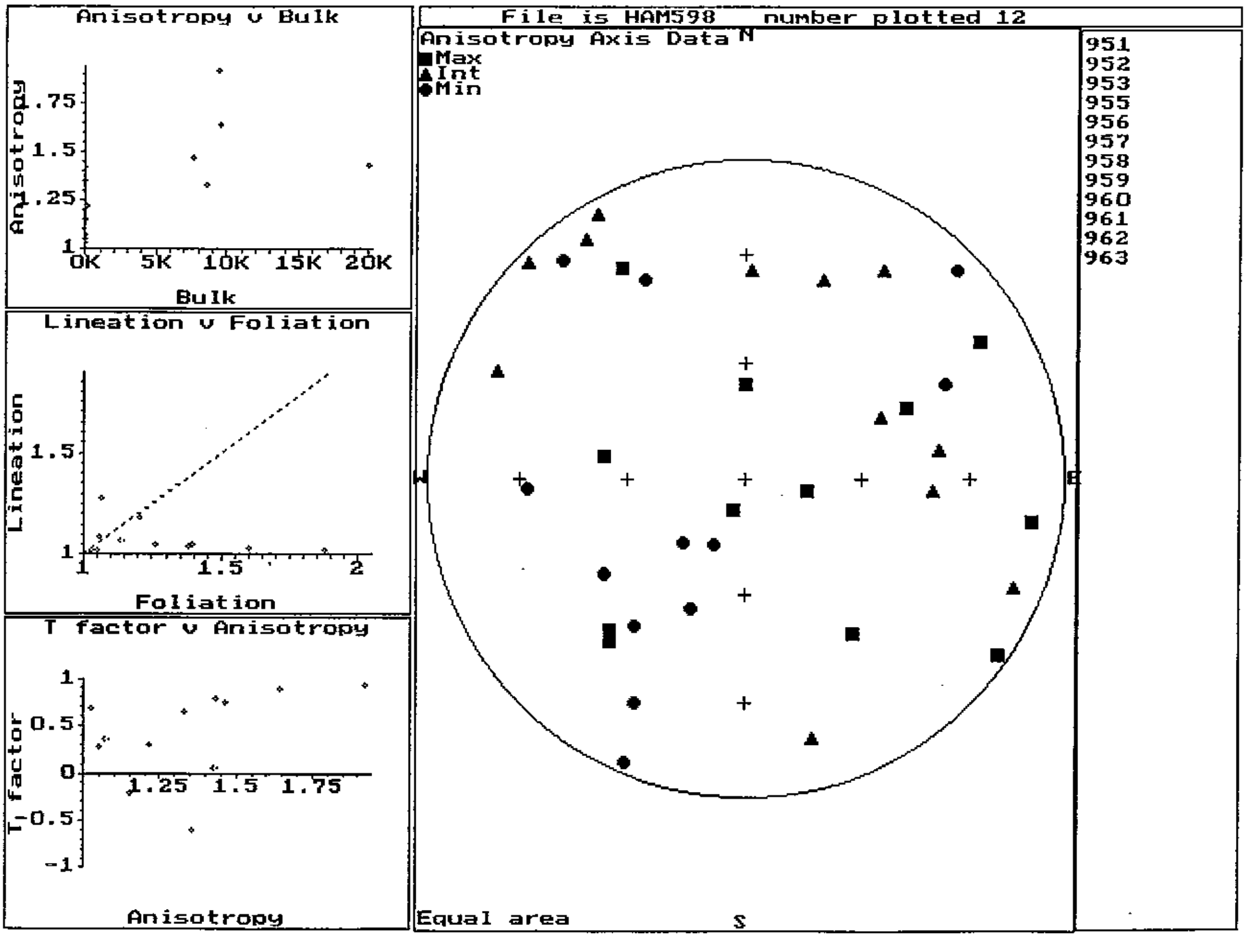
# APPENDIX II

# PLOTS OF ANISOTROPY ELEMENTS AND REMANENCE

## Whaleback Shale'

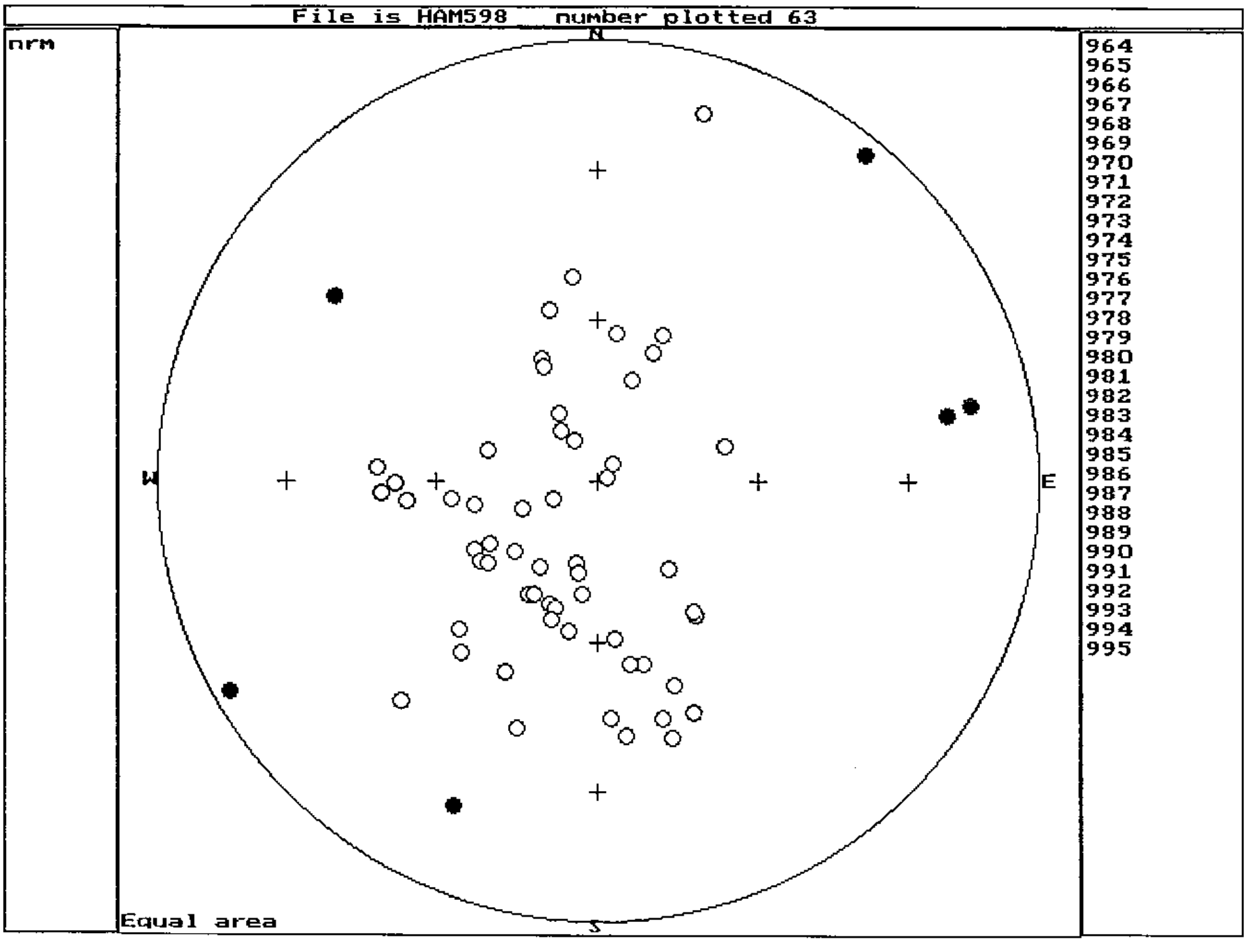
Natural Remanent Magnetisation (NRM and Anisotropy of Magnetic Susceptibility (AMS)

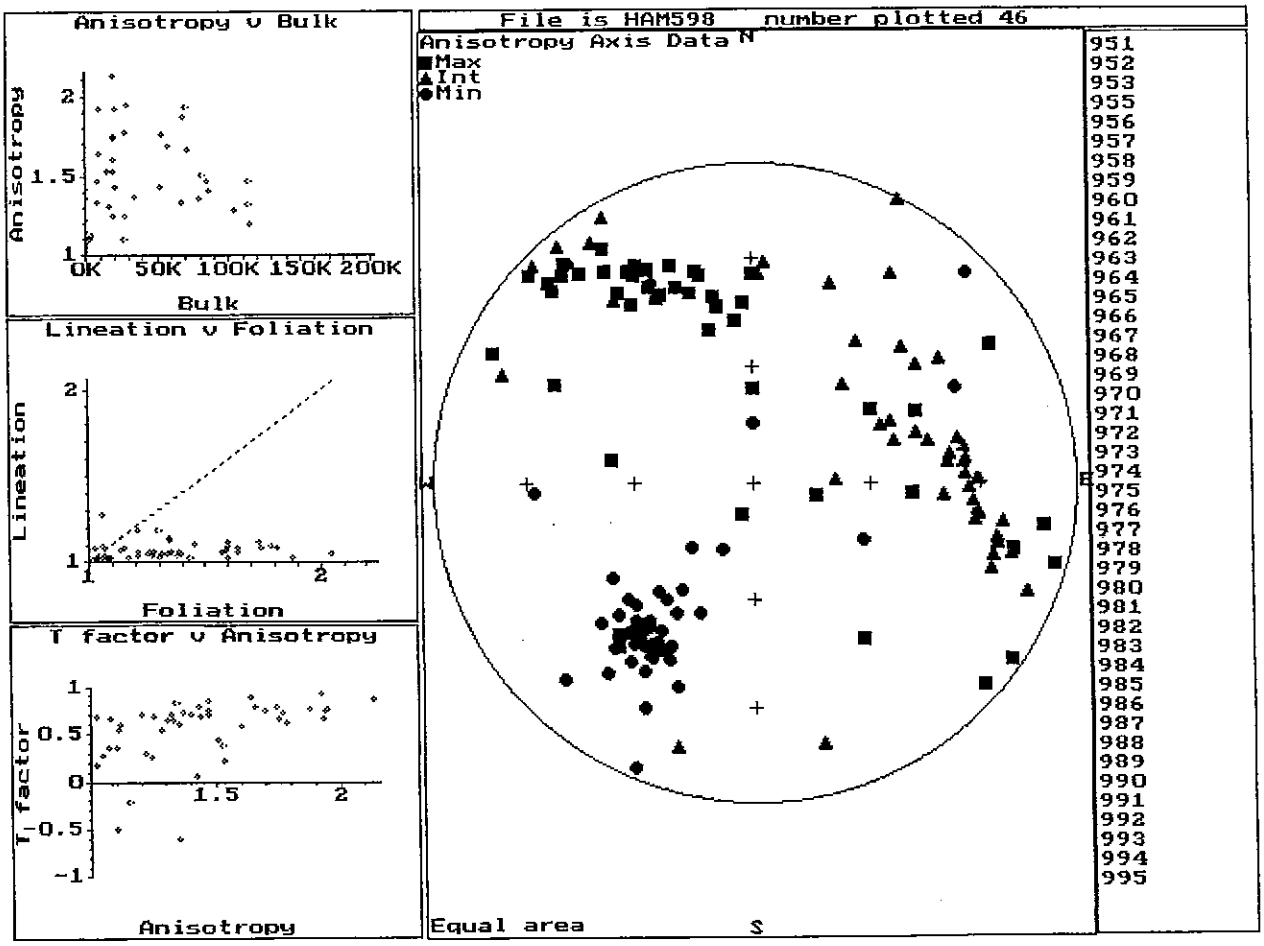




# Dales Gorge 3′

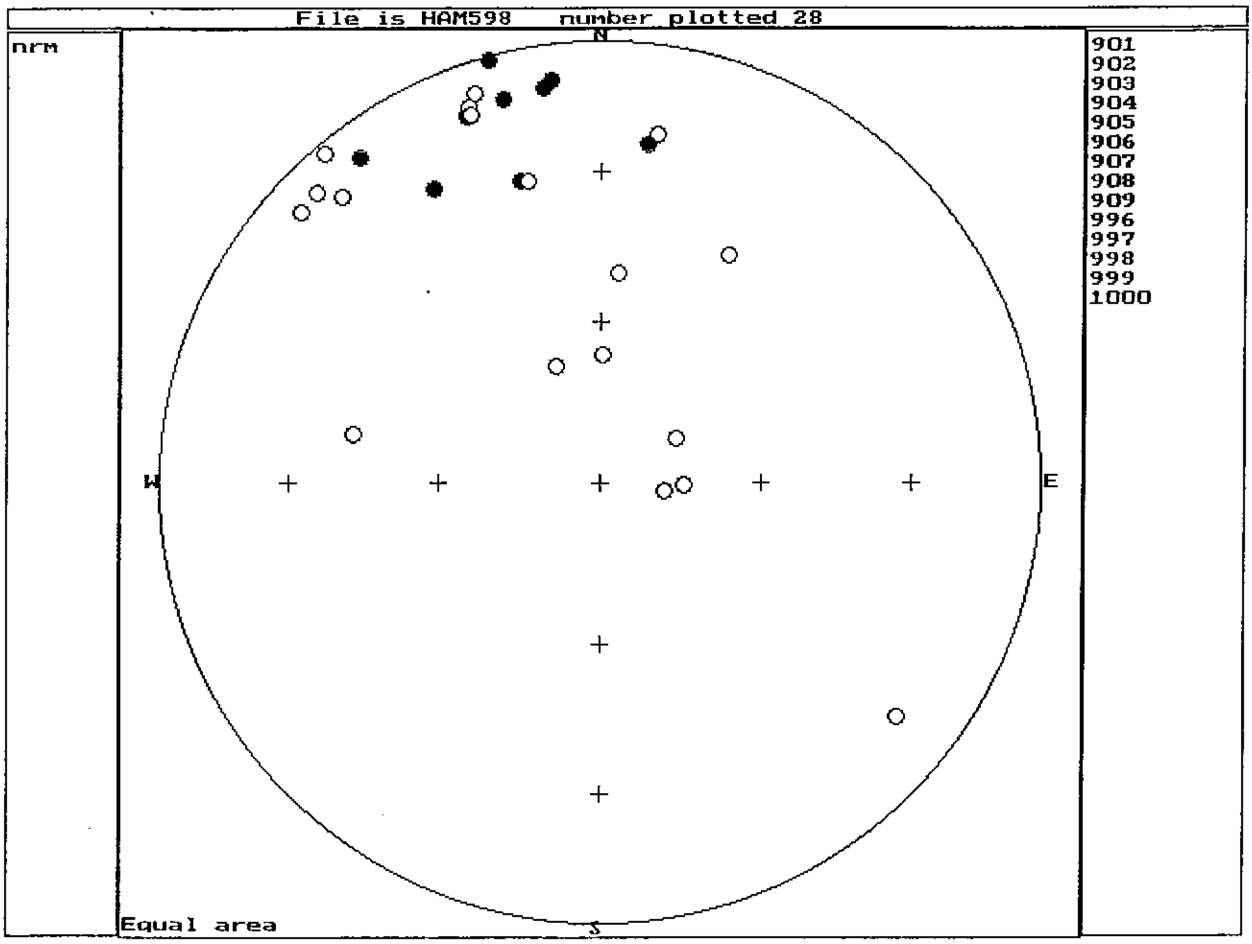
Natural Remanent Magnetisation (NRM and Anisotropy of Magnetic Susceptibility (AMS)

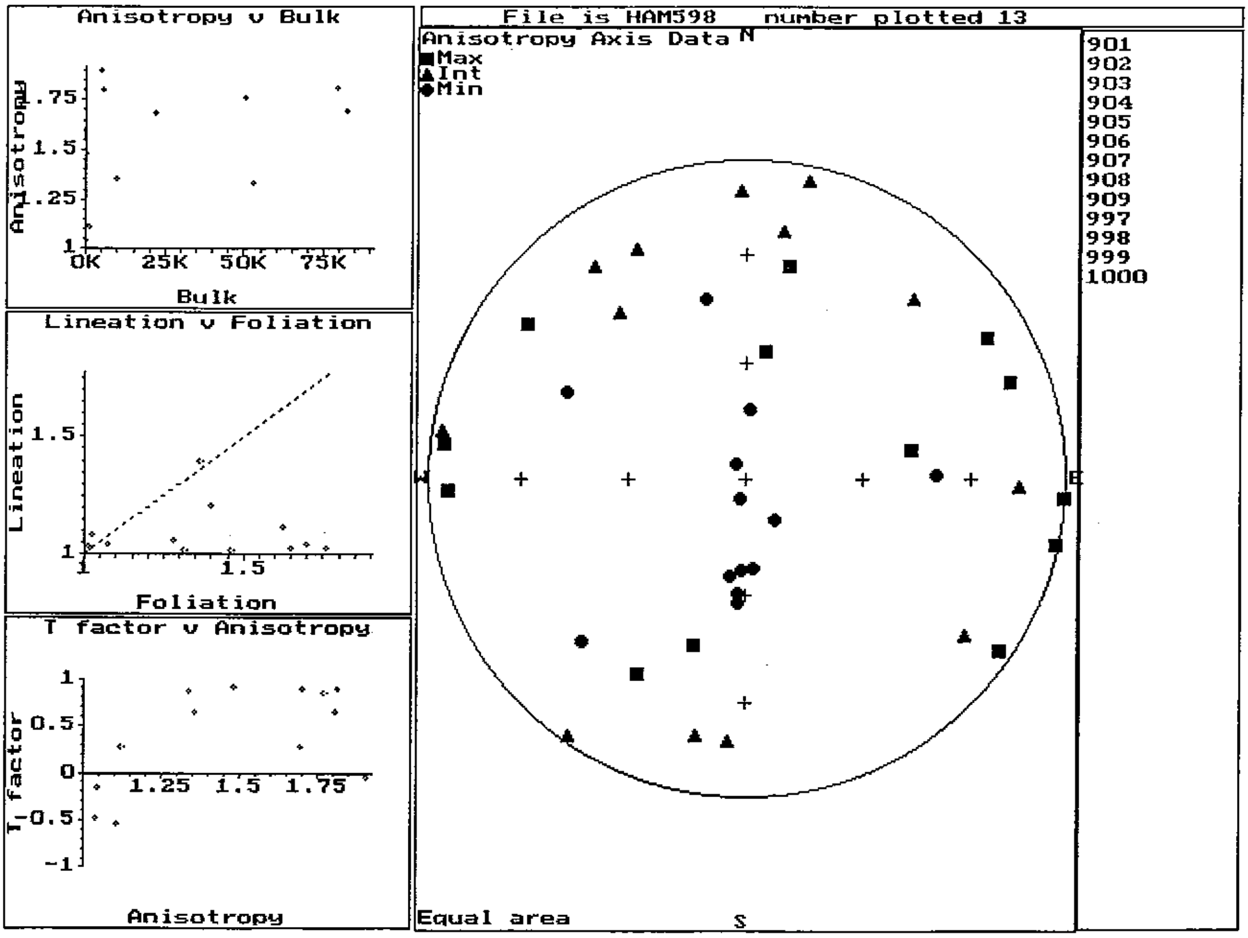




Marra Mamba'

Natural Remanent Magnetisation (NRM and Anisotropy of Magnetic Susceptibility (AMS)





# APPENDIX III

# LISTING OF ANISOTROPY DATA

| DDH # | Sample # | Depth (m) | Ellipsoid | Dec | Inc | k | | Bulk | A | L | F |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | | | Max | 246 | 8 | 1229 | | | | | |
| | PS001 | 223.45 | Int | 152 | 25 | 1218 | | 1180 | 1.126 | 1.009 | 1.116 |
| | | | Min | 352 | 63 | 1092 | | | | | |
| | | | Max | 113 | 10 | 2631 | | | | | |
| | PS002 | 222.7 | Int | 209 | 28 | 2625 | | 2494 | 1.181 | 1.002 | 1.179 |
| | | | Min | 5 | 60 | 2227 | | | | | |
| 66 | | | Max | 157 | 61 | 467 | | | | | |
| | PS003 | 204.3 | Int | 248 | 1 | 463 | | 463 | 1.016 | 1.009 | 1.006 |
| | | | Min | 340 | 30 | 460 | | | | | |
| | | | Max | 164 | 14 | 595 | | | | | |
| | PS004 | 206.6 | Int | 72 | 8 | 590 | | 591 | 1.013 | 1.008 | 1.005 |
| | | | Min | 312 | 74 | 587 | | | | | |
| 75 | | | Max | 30 | 19 | 184 | | | | | |
| | PS005 | 215.3 | Int | 252 | 65 | 182 | | 182 | 1.021 | 1.007 | 1.013 |
| | | | Min | 126 | 15 | 180 | | | | | |
| | | | Max | 16 | 15 | 230 | | | | | |
| | PS006 | 213.85 | Int | 285 | 6 | 228 | | 227 | 1.032 | 1.009 | 1.023 |
| | | | Min | 175 | 74 | 223 | | | | | |
| 68 | | | Max | 202 | 38 | 1120 | | | | | |
| | PS007 | 94.4 | Int | 106 | 8 | 1115 | | 1093 | 1.072 | 1.004 | 1.067 |
| | | | Min | 6 | 52 | 1045 | | | | | |
| | | | Max | 147 | 6 | 212 | | | | | |
| | PS008 | 97.4 | Int | 237 | 6 | 210 | | 210 | 1.028 | 1.011 | 1.017 |
| | | | Min | 13 | 82 | 206 | | | | | |
| 169 | | | Max | 205 | 20 | 276 | | | | | |
| | PS009 | 294 | Int | 80 | 58 | 273 | | 273 | 1.02 | 1.01 | 1.01 |
| | | | Min | 305 | 24 | 270 | | | | | |
| | | | Max | 138 | 15 | 68.8 | | | | | |
| | PS010 | 292.3 | Int | 38 | 35 | 66.6 | | 66.6 | 1.071 | 1.033 | 1.036 |
| | | | Min | 247 | 51 | 64.3 | | | | | |
| 831/77 | | | Max | 212 | 27 | 56491 | | | | | |
| | PS011 | 280.3 | Int | 114 | 15 | 55484 | | 42912 | 3.37 | 1.018 | 3.31 |
| | | | Min | 359 | 59 | 16762 | | | | | |
| | | | Max | 256 | 19 | 35146 | | | | | |
| | PS012 | 291.8 | Int | 148 | 40 | 33954 | | 26583 | 3.3 | 1.035 | 3.188 |
| | | | Min | 5 | 43 | 10649 | | | | | |
| | | | Max | 221 | 47 | 125228 | | | | | |
| | PS013 | 300.8 | Int | 100 | 26 | 119307 | | 103560 | 1.893 | 1.05 | 1.804 |
| | | | Min | 352 | 32 | 66146 | | | | | |
| | | | Max | 250 | 22 | 29160 | | | | | |
| | PS014 | 306.9 | Int | 128 | 51 | 23749 | | 19992 | 4.127 | 1.228 | 3.361 |
| | | | Min | 353 | 28 | 7066 | | | | | |
| | | | Max | 252 | 12 | 78396 | | | | | |
| | PS015 | 318.2 | Int | 153 | 35 | 74540 | | 64039 | 2 | 1.052 | 1.902 |
| | | | Min | 357 | 53 | 39182 | | | | | |
| | | | | | | | | | | | |
| 831/77 | | | Max | 257 | 18 | 68387 | | | | | |
| | PS016 | 327.55 | Int | 149 | 44 | 67944 | | 59024 | 1.679 | 1.007 | 1.668 |
| | | | Min | 3 | 41 | 40740 | | | | | |
| | | | Max | 231 | 47 | 1196 | | | | | |
| | PS017 | 348.6 | Int | 105 | 29 | 1180 | | 1148 | 1.119 | 1.014 | 1.104 |
| | | | Min | 357 | 29 | 1068 | | | | | |
| | | | Max | 216 | 25 | 1337 | | | | | |
| | PS018 | 354.3 | Int | 120 | 13 | 1258 | | 1171 | 1.458 | 1.063 | 1.371 |
| | | | Min | 5 | 62 | 917 | | | | | |
| | | | Max | 108 | 18 | 3166 | | | | | |
| | PS019 | 363 | Int | 212 | 37 | 3041 | | 2883 | 1.297 | 1.041 | 1.246 |
| | | | Min | 357 | 47 | 2441 | | | | | |
| | | | Max | 158 | 44 | 2550 | | | | | |
| | PS020 | 365.75 | Int | 256 | 9 | 2522 | | 2448 | 1.122 | 1.011 | 1.11 |
| | | | Min | 355 | 45 | 2272 | | | | | |
| | | | Max | 194 | 31 | 1420 | | | | | |
| | PS021 | check bag | Int | 100 | 6 | 1383 | | 1329 | 1.202 | 1.027 | 1.17 |
| | | | Min | 0 | 58 | 1182 | | | | | |
| 35 | | | Max | 292 | 12 | 77.2 | | | | | |
| | PS022 | 392 | Int | 32 | 41 | 67.6 | | 67.1 | 1.365 | 1.141 | 1.196 |
| | | | Min | 189 | 46 | 56.5 | | | | | |
| | | | Max | 118 | 28 | 68.4 | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PS023 | 283 | Int | 10 | 30 | 66.9 | | 65.8 | 1.104 | 1.024 | 1.079 |
| | | | Min | 242 | 47 | 62 | | | | | |
| | | | Max | 45 | 43 | 101 | | | | | |
| | PS024 | 349.7 | Int | 234 | 47 | 97.4 | | 98 | 1.052 | 1.034 | 1.017 |
| | | | Min | 314 | 1 | 95.8 | | | | | |
| | | | Max | 248 | 21 | 947 | | | | | |
| | PS025 | 237.8 | Int | 140 | 39 | 922 | | 910 | 1.103 | 1.027 | 1.074 |
| | | | Min | 359 | 43 | 859 | | | | | |
| | | | Max | 227 | 24 | 85.1 | | | | | |
| | PS026 | 176.8 | Int | 96 | 56 | 81.2 | | 80.1 | 1.149 | 1.048 | 1.097 |
| | | | Min | 328 | 23 | 74.1 | | | | | |
| Hand | | | Max | 188 | 12 | 374 | | | | | |
| Sample | PS027 | | Int | 76 | 61 | 370 | | 369 | 1.028 | 1.013 | 1.015 |
| | | | Min | 284 | 27 | 364 | | | | | |
| | | | Max | 222 | 10 | 1228 | | | | | |
| | PS028 | | Int | 315 | 19 | 1199 | | 1203 | 1.038 | 1.024 | 1.014 |
| | | | Min | 106 | 69 | 1183 | | | | | |
| | | | Max | 53 | 8 | 725 | | | | | |
| | PS029 | | Int | 322 | 5 | 716 | | 712 | 1.04 | 1.013 | 1.027 |
| | | | Min | 199 | 81 | 697 | | | | | |
| | | | Max | 188 | 11 | 1586 | | | | | |
| | PS030 | | Int | 98 | 2 | 1573 | | 1568 | 1.026 | 1.008 | 1.018 |
| | | | Min | 359 | 79 | 1546 | | | | | |
| | | | Max | 227 | 5 | 18670 | | | | | |
| | PS031 | | Int | 137 | 1 | 18209 | | 16942 | 1.338 | 1.025 | 1.305 |
| | | | Min | 33 | 85 | 13949 | | | | | |
| | | | | | | | | | | | |
| Hand | | | Max | 125 | 6 | 10689 | | | | | |
| Sample | PS032 | | Int | 34 | 6 | 10505 | | 10246 | 1.12 | 1.018 | 1.101 |
| | | | Min | 259 | 81 | 9543 | | | | | |
| | | | Max | 110 | 0 | 5695 | | | | | |
| | PS033 | | Int | 200 | 0 | 5604 | | 5535 | 1.073 | 1.016 | 1.057 |
| | | | Min | 315 | 90 | 5305 | | | | | |
| | | | Max | 101 | 26 | 3962 | | | | | |
| | PS034 | | Int | 257 | 61 | 3921 | | 3855 | 1.076 | 1.01 | 1.065 |
| | | | Min | 6 | 10 | 3681 | | | | | |
| | | | Max | 102 | 5 | 191255 | | | | | |
| | PS035 | | Int | 194 | 15 | 188265 | | 182229 | 1.144 | 1.016 | 1.126 |
| | | | Min | 356 | 74 | 167168 | | | | | |
| 20/74 | | | Max | 323 | 36 | 196463 | | | | | |
| | PS036 | 385.2 | Int | 59 | 7 | 186610 | | 186112 | 1.121 | 1.053 | 1.065 |
| | | | Min | 158 | 53 | 175262 | | | | | |
| | | | Max | 237 | 12 | 172819 | | | | | |
| | PS037 | 379.9 | Int | 146 | 7 | 170361 | | 158880 | 1.295 | 1.014 | 1.277 |
| | | | Min | 24 | 76 | 133459 | | | | | |
| | | | Max | 189 | 56 | 252834 | | | | | |
| | PS038 | 384.15 | Int | 98 | 1 | 251637 | | 247267 | 1.065 | 1.005 | 1.06 |
| | | | Min | 8 | 34 | 237331 | | | | | |
| | | | Max | 131 | 21 | 175441 | | | | | |
| | PS039 | 377.2 | Int | 228 | 17 | 168524 | | 159472 | 1.305 | 1.041 | 1.253 |
| | | | Min | 354 | 62 | 134452 | | | | | |
| | | | Max | 174 | 10 | 153454 | | | | | |
| | PS040 | 368.5 | Int | 266 | 8 | 149007 | | 140554 | 1.287 | 1.03 | 1.25 |
| | | | Min | 33 | 77 | 119201 | | | | | |
| | | | Max | 224 | 17 | 13993 | | | | | |
| | PS041 | 361 | Int | 131 | 8 | 12941 | | 12883 | 1.194 | 1.081 | 1.105 |
| | | | Min | 18 | 71 | 11715 | | | | | |
| | | | Max | 23 | 12 | 1166 | | | | | |
| | PS042 | 353.5 | Int | 291 | 9 | 1140 | | 1145 | 1.034 | 1.022 | 1.011 |
| | | | Min | 167 | 75 | 1128 | | | | | |
| | | | Max | 144 | 16 | 56967 | | | | | |
| | PS043 | 342.9 | Int | 238 | 16 | 54398 | | 53148 | 1.185 | 1.047 | 1.131 |
| | | | Min | 10 | 67 | 48079 | | | | | |
| | | | Max | 355 | 10 | 136170 | | | | | |
| | PS044 | 346.1 | Int | 260 | 28 | 123325 | | 123037 | 1.242 | 1.104 | 1.125 |
| | | | Min | 102 | 60 | 109615 | | | | | |
| | | | Max | 198 | 46 | 1614 | | | | | |
| | PS045 | 339.6 | Int | 89 | 17 | 1592 | | 1581 | 1.051 | 1.014 | 1.036 |
| | | | Min | 345 | 39 | 1537 | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Max | 59 | 38 | 641 | | | | | |
| | PS046 | 334.9 | Int | 205 | 47 | 629 | | 629 | 1.042 | 1.019 | 1.022 |
| | | | Min | 315 | 18 | 615 | | | | | |
| | | | | | | | | | | | |
| 830/77 | | | Max | 202 | 34 | 187765 | | | | | |
| | PS047 | 404.8 | Int | 104 | 11 | 178396 | | 174118 | 1.202 | 1.053 | 1.142 |
| | | | Min | 360 | 54 | 156192 | | | | | |
| | | | Max | 84 | 7 | 75677 | | | | | |
| | PS048 | 400.2 | Int | 182 | 49 | 73501 | | 71049 | 1.183 | 1.03 | 1.149 |
| | | | Min | 348 | 40 | 63970 | | | | | |
| | | | Max | 270 | 3 | 66532 | | | | | |
| | PS049 | 398.7 | Int | 177 | 47 | 63570 | | 60405 | 1.302 | 1.047 | 1.244 |
| | | | Min | 2 | 43 | 51113 | | | | | |
| | | | Max | 115 | 4 | 69485 | | | | | |
| | PS050 | 398.3 | Int | 208 | 37 | 68328 | | 65017 | 1.214 | 1.017 | 1.194 |
| | | | Min | 20 | 53 | 57238 | | | | | |
| | | | Max | 180 | 28 | 1385 | | | | | |
| | PS051 | 389.5 | Int | 271 | 2 | 1375 | | 1318 | 1.159 | 1.007 | 1.15 |
| | | | Min | 4 | 62 | 1195 | | | | | |
| | | | Max | 274 | 9 | 17921 | | | | | |
| | PS052 | 385.5 | Int | 173 | 49 | 1769 | | 1739 | 1.082 | 1.013 | 1.068 |
| | | | Min | 11 | 40 | 1656 | | | | | |
| 44/4E | | | Max | 262 | 16 | 9965 | | | | | |
| | PS053 | 525 | Int | 166/19/7994 | | | | 7743 | 1.891 | 1.247 | 1.517 |
| | | | Min | 30/65/5269 | | | | | | | |
| | | | Max | 249/6/33503 | | | | | | | |
| | PS054 | 520.6 | Int | 158/11/31706 | | | | 26313 | 2.44 | 1.057 | 2.309 |
| | | | Min | 7/78/13731 | | | | | | | |
| | | | Max | 284 | 7 | 25525 | | | | | |
| | PS055 | 514.5 | Int | 191 | 20 | 22198 | | 18284 | 3.581 | 1.15 | 3.114 |
| | | | Min | 33 | 69 | 7128 | | | | | |
| | | | Max | 113 | 10 | 2631 | | | | | |
| | PS056 | 506.9 | Int | 165 | 17 | 108516 | | 88279 | 2.24 | 1.006 | 2.227 |
| | | | Min | 26 | 72 | 48439 | | | | | |
| | | | Max | 183 | 17 | 81106 | | | | | |
| | PS057 | 503.5 | Int | 273 | 1 | 77770 | | 61725 | 3.084 | 1.043 | 2.957 |
| | | | Min | 6 | 74 | 26300 | | | | | |
| | | | Max | 176 | 22 | 104304 | | | | | |
| | PS058 | 498.3 | Int | 267 | 4 | 83476 | | 74403 | 2.944 | 1.25 | 2.356 |
| | | | Min | 6 | 68 | 35428 | | | | | |
| | | | Max | 178 | 25 | 92087 | | | | | |
| | PS059 | 492.9 | Int | 86 | 4 | 84282 | | 69287 | 2.924 | 1.093 | 2.676 |
| | | | Min | 349 | 65 | 31491 | | | | | |
| | | | Max | 133 | 9 | 102066 | | | | | |
| | PS060 | 487.8 | Int | 226 | 23 | 95201 | | 84452 | 1.82 | 1.072 | 1.697 |
| | | | Min | 21 | 65 | 56090 | | | | | |
| | | | Max | 167 | 14 | 123598 | | | | | |
| | PS061 | 478.5 | Int | 258 | 4 | 120379 | | 99250 | 2.299 | 1.027 | 2.239 |
| | | | Min | 5 | 75 | 53774 | | | | | |
| | | | Max | 192 | 23 | 89198 | | | | | |
| | PS062 | 471.2 | Int | 100 | 4 | 84513 | | 67654 | 3.049 | 1.055 | 2.889 |
| | | | Min | 1 | 67 | 29251 | | | | | |
| | | | | | | | | | | | |
| 44/4E | | | Max | 262 | 7 | 66682 | | | | | |
| | PS063 | 467 | Int | 169 | 25 | 64416 | | 49961 | 3.55 | 1.035 | 3.429 |
| | | | Min | 6 | 64 | 18786 | | | | | |
| | | | Max | 94 | 0 | 92058 | | | | | |
| | PS064 | 461.3 | Int | 184 | 25 | 88021 | | 72141 | 2.533 | 1.046 | 2.422 |
| | | | Min | 4 | 65 | 36345 | | | | | |
| | | | Max | 275 | 1 | 19531 | | | | | |
| | PS065 | 453.5 | Int | 184 | 21 | 18311 | | 14300 | 3.862 | 1.067 | 3.621 |
| | | | Min | 7 | 69 | 5057 | | | | | |
| | | | Max | 184 | 19 | 57656 | | | | | |
| | PS066 | 450 | Int | 93 | 3 | 54023 | | 42328 | 3.767 | 1.067 | 3.53 |
| | | | Min | 354 | 71 | 15305 | | | | | |
| | | | Max | 239 | 14 | 34413 | | | | | |
| | PS067 | 446.9 | Int | 144 | 21 | 33101 | | 25670 | 3.625 | 1.04 | 3.486 |
| | | | Min | 1 | 65 | 9495 | | | | | |
| | | | Max | 196 | 24 | 63238 | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | PS068 | 437.9 | Int | 105 | 2 | 61850 | | 50965 | 2.274 | 1.022 | 2.224 |
| | | | Min | 10 | 66 | 27807 | | | | | |
| | | | Max | 165 | 26 | 87282 | | | | | |
| | PS069 | 431.9 | Int | 260 | 10 | 80705 | | 66150 | 2.865 | 1.082 | 2.649 |
| | | | Min | 10 | 62 | 30464 | | | | | |
| | | | Max | 249 | 12 | 53348 | | | | | |
| | PS070 | 424.8 | Int | 156 | 17 | 49326 | | 41266 | 2.526 | 1.002 | 1.179 |
| | | | Min | 13 | 69 | 21123 | | | | | |
| | | | Max | 114 | 5 | 76516 | | | | | |
| | PS071 | 420.1 | Int | 206 | 25 | 74539 | | 64807 | 1.764 | 1.027 | 1.719 |
| | | | Min | 12 | 64 | 43366 | | | | | |
| | | | Max | 153 | 28 | 67332 | | | | | |
| | PS072 | 413.2 | Int | 247 | 7 | 64251 | | 56352 | 1.797 | 1.048 | 1.715 |
| | | | Min | 351 | 61 | 37473 | | | | | |
| | | | Max | 134 | 13 | 8665 | | | | | |
| | PS073 | 406.9 | Int | 228 | 19 | 8583 | | 7130 | 2.054 | 1.005 | 2.045 |
| | | | Min | 11 | 67 | 4142 | | | | | |
| | | | Max | 202 | 28 | 59119 | | | | | |
| | PS074 | 403.2 | Int | 107 | 10 | 56833 | | 50082 | 1.724 | 1.04 | 1.657 |
| | | | Min | 360 | 60 | 34295 | | | | | |
| | | | Max | 118 | 13 | 37116 | | | | | |
| | PS075 | 397.5 | Int | 213 | 22 | 36838 | | 31065 | 1.929 | 1.008 | 1.915 |
| | | | Min | 359 | 64 | 19242 | | | | | |
| | | | Max | 251 | 6 | 58462 | | | | | |
| | PS076 | 391.7 | Int | 159 | 21 | 57589 | | 47686 | 2.165 | 1.015 | 2.133 |
| | | | Min | 357 | 68 | 27006 | | | | | |
| | | | Max | 212 | 25 | 47630 | | | | | |
| | PS077 | 383.8 | Int | 117 | 11 | 46737 | | 38631 | 2.213 | 1.019 | 2.171 |
| | | | Min | 5 | 62 | 21526 | | | | | |
| | | | Max | 181 | 22 | 47134 | | | | | |
| | PS078 | 378.5 | Int | 91 | 2 | 45442 | | 37932 | 2.221 | 1.037 | 2.141 |
| | | | Min | 357 | 68 | 21221 | | | | | |
| | | | | | | | | | | | |
| 44/4E | | | Max | 182 | 26 | 75271 | | | | | |
| | PS079 | 372.5 | Int | 91 | 2 | 69662 | | 60310 | 2.091 | 1.081 | 1.935 |
| | | | Min | 357 | 64 | 35996 | | | | | |
| | | | Max | 124 | 15 | 41191 | | | | | |
| | PS080 | 370.2 | Int | 220 | 21 | 40386 | | 29370 | 6.305 | 1.02 | 6.181 |
| | | | Min | 0 | 64 | 6534 | | | | | |
| | | | Max | 185 | 11 | 85051 | | | | | |
| | PS081 | 354.7 | Int | 176 | 2 | 77545 | | 61496 | 3.885 | 1.097 | 3.542 |
| | | | Min | 17 | 79 | 21892 | | | | | |
| | | | Max | 258 | 8 | 35004 | | | | | |
| | PS082 | 350.2 | Int | 165 | 25 | 30921 | | 29996 | 1.455 | 1.132 | 1.285 |
| | | | Min | 4 | 64 | 24062 | | | | | |
| | | | Max | 109 | 8 | 1190 | | | | | |
| | PS083 | 343.3 | Int | 203 | 28 | 1127 | | 981 | 1.905 | 1.056 | 1.804 |
| | | | Min | 182 | 65 | 6742 | | | | | |
| | | | Max | 352 | 52 | 42.3 | | | | | |
| | PS084 | 341.3 | Int | 257 | 4 | 41.2 | | 41.5 | 1.029 | 1.024 | 1.005 |
| | | | Min | 165 | 38 | 41 | | | | | |
| | | | Max | 213 | 31 | 20368 | | | | | |
| | PS085 | 339.7 | Int | 115 | 13 | 19404 | | 14139 | 7.7 | 1.05 | 7.335 |
| | | | Min | 6 | 56 | 2645 | | | | | |
| | | | Max | 174 | 26 | 164 | | | | | |
| | PS086 | 331.6 | Int | 265 | 2 | 147 | | 125 | 2.602 | 1.113 | 2.339 |
| | | | Min | 360 | 64 | 63 | | | | | |
| | | | Max | 169 | 60 | 2541 | | | | | |
| | PS087 | 327.4 | Int | 47 | 17 | 2526 | | 2529 | 1.009 | 1.006 | 1.003 |
| | | | Min | 309 | 24 | 2519 | | | | | |
| | | | Max | 13 | 45 | 41.4 | | | | | |
| | PS088 | 320.8 | Int | 210 | 43 | 38.6 | | 37 | 1.336 | 1.073 | 1.246 |
| | | | Min | 112 | 9 | 30.9 | | | | | |
| | | | Max | 247 | 4 | 46596 | | | | | |
| | PS089 | 316.2 | Int | 183 | 26 | 43657 | | 33632 | 4.378 | 1.067 | 4.101 |
| | | | Min | 12 | 64 | 10644 | | | | | |
| | | | Max | 267 | 1 | 34105 | | | | | |
| | PS090 | 309.3 | Int | 176 | 19 | 28979 | | 25555 | 2.511 | 1.177 | 2.134 |
| | | | Min | 0 | 71 | 13581 | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Max | 203 | 24 | 24445 | | | | | |
| | PS091 | 303 | Int | 110 | 5 | 23504 | | 18422 | 3.342 | 1.04 | 3.213 |
| | | | Min | 8 | 65 | 7315 | | | | | |
| | | | Max | 88 | 6 | 21793 | | | | | |
| J2 | PS092 | 298.5 | Int | 355 | 20 | 20210 | | 16045 | 3.555 | 1.078 | 3.297 |
| | | | Min | 192 | 69 | 6130 | | | | | |
| | | | Max | 117 | 12 | 29659 | | | | | |
| | PS093 | 291 | Int | 213 | 27 | 28317 | | 22100 | 3.563 | 1.047 | 3.402 |
| | | | Min | 5 | 60 | 8323 | | | | | |
| | | | Max | 121 | 13 | 93428 | | | | | |
| | PS094 | 283.8 | Int | 218 | 25 | 85958 | | 68332 | 3.648 | 1.087 | 3.357 |
| | | | Min | 7 | 61 | 25609 | | | | | |
| | | | | | | | | | | | |
| 44/4E | | | Max | 265 | 6 | 61088 | | | | | |
| | PS095 | 279.7 | Int | 171 | 32 | 57364 | | 48988 | 2.143 | 1.065 | 2.012 |
| | | | Min | 5 | 57 | 28513 | | | | | |
| | | | Max | 137 | 18 | 58123 | | | | | |
| | PS096 | 273 | Int | 232 | 17 | 54816 | | 43579 | 3.266 | 1.06 | 3.08 |
| | | | Min | 3 | 65 | 17797 | | | | | |
| | | | Max | 103 | 6 | 14970 | | | | | |
| | PS097 | 269.9 | Int | 196 | 27 | 14368 | | 11175 | 3.575 | 1.042 | 3.431 |
| | | | Min | 2 | 62 | 4187 | | | | | |
| | | | Max | 113 | 10 | 33454 | | | | | |
| | PS098 | 263.3 | Int | 208 | 26 | 31424 | | 24602 | 3.747 | 1.065 | 3.519 |
| | | | Min | 4 | 62 | 8929 | | | | | |
| | | | Max | 261 | 10 | 15480 | | | | | |
| | PS099 | 257.8 | Int | 166 | 26 | 14989 | | 11712 | 3.316 | 1.033 | 3.211 |
| | | | Min | 10 | 62 | 4668 | | | | | |
| | | | Max | 98 | 1 | 15245 | | | | | |
| | PS100 | 246.9 | Int | 189 | 33 | 14641 | | 11419 | 3.486 | 1.041 | 3.348 |
| | | | Min | 6 | 57 | 4373 | | | | | |
| | | | Max | 92 | 0 | 6914 | | | | | |
| | PS101 | 251.8? | Int | 182 | 26 | 6635 | | 5668 | 2.001 | 1.042 | 1.921 |
| | | | Min | 0 | 63 | 3455 | | | | | |
| | | | Max | 174 | 24 | 11532 | | | | | |
| | PS102 | 239.1 | Int | 265 | 1 | 10908 | | 8747 | 1.551 | 1.012 | 1.539 |
| | | | Min | 359 | 65 | 3801 | | | | | |
| | | | Max | 198 | 14 | 18267 | | | | | |
| | PS103 | 234.1 | Int | 295 | 25 | 17330 | | 13779 | 3.182 | 1.054 | 3.019 |
| | | | Min | 81 | 61 | 5741 | | | | | |
| | | | Max | 96 | 20 | 10500 | | | | | |
| | PS104 | 229.4 | Int | 197 | 27 | 9744 | | 8106 | 2.576 | 1.078 | 2.391 |
| | | | Min | 335 | 55 | 4075 | | | | | |
| | | | Max | 119 | 19 | 3871 | | | | | |
| | PS105 | 223.7 | Int | 218 | 25 | 3791 | | 3001 | 2.888 | 1.021 | 2.828 |
| | | | Min | 356 | 58 | 1340 | | | | | |
| | | | Max | 181 | 29 | 9206 | | | | | |
| | PS106 | 215.9 | Int | 272 | 1 | 8856 | | 6784 | 4.02 | 1.04 | 3.867 |
| | | | Min | 4 | 61 | 2290 | | | | | |
| | | | Max | 219 | 31 | 5107 | | | | | |
| | PS107 | 208 | Int | 121 | 13 | 4553 | | | 1.181 | 1.002 | 1.179 |
| | | | Min | 11 | 56 | 600 | | | | | |
| | | | Max | 115 | 11 | 8942 | | | | | |
| | PS108 | 204.5 | Int | 213 | 35 | 8446 | | 6930 | 2.627 | 1.059 | 2.482 |
| | | | Min | 10 | 53 | 3403 | | | | | |
| | | | Max | 273 | 6 | 12309 | | | | | |
| | PS109 | 198.2 | Int | 175 | 50 | 11392 | | 8937 | 3.958 | 1.081 | 3.663 |
| | | | Min | 8 | 39 | 3110 | | | | | |
| | | | Max | 267 | 3 | 2970 | | | | | |
| | PS110 | 187.6 | Int | 172 | 57 | 2848 | | | 1.181 | 1.002 | 1.179 |
| | | | Min | 359 | 33 | 419 | | | | | |
| | | | | | | | | | | | |
| 44/4E | | | Max | 114 | 17 | 42519 | | | | | |
| | PS111 | 185? | Int | 220 | 42 | 39233 | | 33040 | 2.448 | 1.084 | 2.259 |
| | | | Min | 8 | 44 | 17368 | | | | | |
| | | | Max | 111 | 22 | 29451 | | | | | |
| | PS112 | 182.4 | Int | 226 | 45 | 29116 | | 25208 | 1.727 | 1.012 | 1.707 |
| | | | Min | 4 | 37 | 17057 | | | | | |
| | | | Max | 100 | 8 | 111042 | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | PS113 | 176 | Int | 199 | 49 | 104673 | | 97640 | 1.438 | 1.061 | 1.356 |
| | | | Min | 3 | 40 | 77203 | | | | | |
| | | | Max | 105 | 10 | 73907 | | | | | |
| | PS114 | 175.3 | Int | 206 | 48 | 69131 | | 61573 | 1.773 | 1.069 | 1.659 |
| | | | Min | 6 | 41 | 41683 | | | | | |
| | | | Max | 153 | 29 | 73790 | | | | | |
| | PS115 | 159 | Int | 254 | 19 | 64355 | | 64479 | 1.335 | 1.147 | 1.164 |
| | | | Min | 13 | 54 | 55292 | | | | | |
| | | | Max | 139 | 12 | 70335 | | | | | |
| | PS116 | 153 | Int | 233 | 17 | 69608 | | 63453 | 1.395 | 1.01 | 1.381 |
| | | | Min | 14 | 69 | 50415 | | | | | |
| | | | Max | 278 | 4 | 19931 | | | | | |
| | PS117 | 147.7 | Int | 187 | 17 | 17256 | | 16365 | 1.674 | 1.155 | 1.449 |
| | | | Min | 20 | 72 | 11909 | | | | | |
| | | | Max | 210 | 30 | 50622 | | | | | |
| | PS118 | 145.4 | Int | 113 | 12 | 46588 | | 42067 | 1.746 | 1.087 | 1.607 |
| | | | Min | 4 | 57 | 28993 | | | | | |
| | | | Max | 305 | 35 | 301 | | | | | |
| | PS119 | 141.5 | Int | 202 | 18 | 291 | | 293 | 1.043 | 1.033 | 1.01 |
| | | Dolerite | Min | 90 | 50 | 288 | | | | | |
| | | | Max | 209 | 60 | 70236 | | | | | |
| | PS120 | 129.5 | Int | 97 | 13 | 69485 | | 54806 | 2.844 | 1.011 | 2.814 |
| | | | Min | 0 | 27 | 24696 | | | | | |
| | | | Max | 267 | 4 | 5300 | | | | | |
| | PS121 | 126.3 | Int | 173 | 42 | 5239 | | 4812 | 1.367 | 1.015 | 1.348 |
| | | | Min | 2 | 47 | 3896 | | | | | |
| | | | Max | 95 | 17 | 4611 | | | | | |
| | PS122 | 118.7 | Int | 209 | 53 | 4424 | | 4205 | 1.203 | 1.034 | 1.179 |
| | | | Min | 354 | 31 | 3581 | | | | | |
| | | | Max | 174 | 51 | 16782 | | | | | |
| | PS123 | 116.3 | Int | 272 | 6 | 15648 | | 13272 | 2.272 | 1.073 | 2.118 |
| | | | Min | 7 | 38 | 7387 | | | | | |
| | | | Max | 56 | 5 | 105 | | | | | |
| | PS124 | 51.8 | Int | 162 | 73 | 100 | | 99 | 1.124 | 1.049 | 1.071 |
| | | | Min | 324 | 17 | 93 | | | | | |
| BKD2 | | | Max | 109 | 19 | 9658 | | | | | |
| | PS125 | 135.2 | Int | 204 | 13 | 9509 | | 9351 | 1.087 | 1.016 | 1.07 |
| | | | Min | 327 | 67 | 8885 | | | | | |
| | | | Max | 106 | 21 | 41732 | | | | | |
| | PS126 | 139.6 | Int | 222 | 48 | 39563 | | 37486 | 1.339 | 1.055 | 1.27 |
| | | | Min | 1 | 34 | 31163 | | | | | |
| | | | | | | | | | | | |
| BKD2 | | | Max | 217 | 58 | 93372 | | | | | |
| | PS127 | 142.4 | Int | 110 | 11 | 91111 | | 86047 | 1.268 | 1.025 | 1.237 |
| | | | Min | 14 | 30 | 73659 | | | | | |
| | | | Max | 269 | 3 | 71429 | | | | | |
| | PS128 | 144.8 | Int | 178 | 19 | 65584 | | 62906 | 1.382 | 1.089 | 1.269 |
| | | | Min | 8 | 71 | 51703 | | | | | |
| | | | Max | 260 | 14 | 135964 | | | | | |
| | PS129 | 148 | Int | 157 | 43 | 130704 | | 120392 | 1.439 | 1.042 | 1.383 |
| | | | Min | 3 | 44 | 94507 | | | | | |
| | | | Max | 98 | 5 | 42092 | | | | | |
| | PS130 | 150.9 | Int | 191 | 34 | 40602 | | 37496 | 1.413 | 1.037 | 1.363 |
| | | | Min | 0 | 55 | 29794 | | | | | |
| | | | Max | 246 | 22 | 127202 | | | | | |
| | PS131 | 157.9 | Int | 142 | 30 | 125772 | | 114808 | 1.391 | 1.011 | 1.375 |
| | | | Min | 7 | 51 | 91451 | | | | | |
| BWD1 | | | Max | 236 | 11 | 14441 | | | | | |
| | PS132 | 156.5 | Int | 139 | 32 | 13414 | | 12383 | 1.554 | 1.077 | 1.443 |
| | | | Min | 344 | 56 | 9293 | | | | | |
| | | | Max | 267 | 16 | 238 | | | | | |
| | PS133 | 155.5 | Int | 0 | 10 | 212 | | 218 | 1.158 | 1.124 | 1.03 |
| | | | Min | 122 | 71 | 206 | | | | | |
| | | | Max | 200 | 60 | 180 | | | | | |
| | PS134 | 158.3 | Int | 104 | 4 | 175 | | 176 | 1.037 | 1.028 | 1.01 |
| | | | Min | 12 | 30 | 173 | | | | | |
| | | | Max | 133 | 15 | 117 | | | | | |
| | PS135 | 161.5 | Int | 247 | 56 | 116 | | 114 | 1.085 | 1.013 | 1.071 |
| | | | Min | 34 | 30 | 108 | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Max | 174 | 61 | 98.9 | | | | | |
| | PS136 | 165.6 | Int | 271 | 4 | 95.1 | | 93.9 | 1.128 | 1.041 | 1.084 |
| | | | Min | 3 | 29 | 87.7 | | | | | |
| | | | | | | | | | | | |
| DDH # | Sample # | Depth (m) | Ellipsoid | Dec | Inc | k | | Bulk | A | L | F |
| D97B26EO12 | | | Max | 219.6 | 34.28 | 44.099 | | | | | |
| | MQ951 | 2.15 | Int | 94.07 | 40.45 | 43.917 | | 44 | 1.026 | 1.004 | 1.022 |
| | | | Min | 333.55 | 30.78 | 43 | | | | | |
| | | | Max | 145.06 | 40.04 | 3.4628 | | | | | |
| | MQ952 | 9 | Int | 21.55 | 33.32 | 2.9335 | | 2.9 | 1.424 | 1.18 | 1.206 |
| | | | Min | 267.06 | 32.24 | 2.4 | | | | | |
| | | | Max | 0.97 | 65.43 | 40.153 | | | | | |
| | MQ953 | 19 | Int | 112.06 | 9.35 | 39.325 | | 39 | 1.068 | 1.021 | 1.046 |
| | | | Min | 205.98 | 22.51 | 38 | | | | | |
| | | | Max | 221.66 | 36.43 | 32.845 | | | | | |
| | MQ955 | 37.8 | Int | 65.09 | 51.19 | 32.285 | | 32 | 1.049 | 1.017 | 1.031 |
| | | | Min | 320.35 | 11.57 | 31 | | | | | |
| | | | Max | 197.46 | 81.73 | 22531 | | | | | |
| | MQ956 | 54 | Int | 314.88 | 3.83 | 21690 | | 20000 | 1.433 | 1.039 | 1.379 |
| | | | Min | 45.38 | 7.32 | 16000 | | | | | |
| | | | Max | 59.39 | 15.49 | 11146 | | | | | |
| | MQ957 | 55.1 | Int | 326.5 | 10.3 | 10852 | | 9600 | 1.645 | 1.027 | 1.602 |
| | | | Min | 204.12 | 71.26 | 6800 | | | | | |
| | | | Max | 65.77 | 43.64 | 201.26 | | | | | |
| | MQ958 | 62 | Int | 330.97 | 5.02 | 188.07 | | 180 | 1.216 | 1.07 | 1.137 |
| | | | Min | 235.76 | 45.92 | 170 | | | | | |
| | | | Max | 124.72 | 3.37 | 9595.4 | | | | | |
| | MQ959 | 65.1 | Int | 33.32 | 22.52 | 9124.4 | | 8600 | 1.328 | 1.052 | 1.263 |
| | | | Min | 222.77 | 67.2 | 7200 | | | | | |
| | | | Max | 98.6 | 9.58 | 11250 | | | | | |
| | MQ960 | 67 | Int | 1.88 | 34.74 | 10994 | | 9400 | 1.922 | 1.023 | 1.878 |
| | | | Min | 201.82 | 53.58 | 5900 | | | | | |
| | | | Max | 279.78 | 53.28 | 6.2403 | | | | | |
| | MQ961 | 72.3 | Int | 165.36 | 17.14 | 4.8928 | | 5.2 | 1.354 | 1.275 | 1.061 |
| | | | Min | 64.54 | 31.35 | 4.6 | | | | | |
| | | | Max | 101.41 | 73.61 | 10.771 | | | | | |
| | MQ962 | 77 | Int | 293.6 | 16.04 | 9.8911 | | 10 | 1.15 | 1.089 | 1.056 |
| | | | Min | 202.65 | 3.28 | 9.4 | | | | | |
| | | | Max | 330.01 | 24.23 | 8704.1 | | | | | |
| | MQ963 | 81.8 | Int | 80.94 | 38.43 | 8288.9 | | 7600 | 1.467 | 1.05 | 1.397 |
| | | | Min | 216.23 | 41.85 | 5900 | | | | | |
| | | | Max | 332.01 | 24.01 | 23006 | | | | | |
| | MQ964 | 91.4 | Int | 83.33 | 39.22 | 20827 | | 19000 | 1.602 | 1.105 | 1.451 |
| | | | Min | 219.03 | 41.24 | 14000 | | | | | |
| | | | Max | 93.78 | 48.79 | 1497.6 | | | | | |
| | MQ965 | 92.2 | Int | 323.27 | 29.64 | 1478.9 | | 1500 | 1.081 | 1.013 | 1.068 |
| | | | Min | 217.3 | 25.81 | 1400 | | | | | |
| | | | Max | 330.71 | 26.01 | 95515 | | | | | |
| | MQ966 | 96.3 | Int | 79.93 | 34.01 | 92908 | | 84000 | 1.473 | 1.028 | 1.433 |
| | | | Min | 211.82 | 44.71 | 65000 | | | | | |
| | | | Max | 327.88 | 14.03 | 30066 | | | | | |
| | MQ967 | 98.4 | Int | 72.74 | 45.75 | 29061 | | 28000 | 1.215 | 1.035 | 1.209 |
| | | | Min | 225.39 | 40.87 | 24000 | | | | | |
| | | | Max | 104.84 | 18.34 | 26863 | | | | | |
| | MQ968 | 100 | Int | 3.28 | 31.15 | 24961 | | 25000 | 1.102 | 1.076 | 1.024 |
| | | | Min | 220.67 | 52.74 | 24000 | | | | | |
| | | | Max | 348.8 | 39.93 | 59165 | | | | | |
| | MQ969 | 105.5 | Int | 99.21 | 22.62 | 55868 | | 52000 | 1.436 | 1.059 | 1.356 |
| | | | Min | 210.89 | 41.56 | 41000 | | | | | |
| | | | Max | 319.76 | 10.57 | 122640 | | | | | |
| | MQ970 | 107 | Int | 56.14 | 30.77 | 119310 | | 11000 | 1.203 | 1.028 | 1.17 |
| | | | Min | 213.01 | 57.08 | 100000 | | | | | |
| | | | Max | 313.28 | 5.54 | 113460 | | | | | |
| | MQ971 | 107.7 | Int | 47.5 | 37.18 | 107340 | | 100000 | 1.283 | 1.057 | 1.214 |
| | | | Min | 216.08 | 52.27 | 88000 | | | | | |
| | | | Max | 345.54 | 31.93 | 35727 | | | | | |
| | MQ972 | 112 | Int | 97.31 | 30.76 | 33237 | | 29000 | 1.946 | 1.075 | 1.81 |
| | | | Min | 220.53 | 42.63 | 18000 | | | | | |
| | | | Max | 334.11 | 26.3 | 23248 | | | | | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MQ973 | 112.7 | Int | 84.1 | 34.67 | 22259 | | 19000 | 2.138 | 1.044 | 2.047 |
| | | | Min | 215.76 | 43.86 | 11000 | | | | | |
| | | | Max | 325.22 | 27.96 | 32651 | | | | | |
| | MQ974 | 117.3 | Int | 77.29 | 35.29 | 29349 | | 27000 | 1.781 | 1.112 | 1.601 |
| | | | Min | 206.75 | 41.92 | 18000 | | | | | |
| | | | Max | 325.69 | 20.46 | 23255 | | | | | |
| | MQ975 | 120 | Int | 76.21 | 43.22 | 21908 | | 19000 | 1.744 | 1.061 | 1.643 |
| | | | Min | 217.61 | 39.75 | 13000 | | | | | |
| | | | Max | 333.19 | 35.48 | 85401 | | | | | |
| | MQ976 | 121.4 | Int | 91.33 | 33.5 | 78474 | | 69000 | 1.941 | 1.088 | 1.783 |
| | | | Min | 210.99 | 36.79 | 44000 | | | | | |
| | | | Max | 314.77 | 11.58 | 18711 | | | | | |
| | MQ977 | 124.8 | Int | 53.65 | 37 | 17868 | | 17000 | 1.309 | 1.047 | 1.25 |
| | | | Min | 210.31 | 50.63 | 14000 | | | | | |
| | | | Max | 326.64 | 33.06 | 37341 | | | | | |
| | MQ978 | 125.8 | Int | 82.78 | 34.09 | 35841 | | 33000 | 1.369 | 1.042 | 1.314 |
| | | | Min | 205.4 | 38.54 | 27000 | | | | | |
| | | | Max | 297.14 | 31.66 | 67.191 | | | | | |
| | MQ979 | 131.4 | Int | 27.18 | 0.06 | 65.649 | | 64 | 1.11 | 1.023 | 1.085 |
| | | | Min | 117.29 | 58.34 | 61 | | | | | |
| | | | Max | 339.02 | 34.4 | 23013 | | | | | |
| | MQ980 | 133.2 | Int | 94.7 | 32.34 | 21007 | | 19000 | 1.751 | 1.095 | 1.598 |
| | | | Min | 215.45 | 38.93 | 13000 | | | | | |
| | | | Max | 354.06 | 47.34 | 82746 | | | | | |
| | MQ981 | 135 | Int | 105.39 | 18.53 | 78529 | | 70000 | 1.66 | 1.054 | 1.576 |
| | | | Min | 209.89 | 36.76 | 50000 | | | | | |
| | | | Max | 334.65 | 34.98 | 89249 | | | | | |
| | MQ982 | 137 | Int | 88.95 | 30.46 | 84098 | | 80000 | 1.354 | 1.061 | 1.276 |
| | | | Min | 208.6 | 40.06 | 66000 | | | | | |
| | | | Max | 317.78 | 13.33 | 46.199 | | | | | |
| | MQ983 | 137.7 | Int | 86.08 | 69.08 | 45.704 | | 46 | 1.026 | 1.011 | 1.015 |
| | | | Min | 223.93 | 15.83 | 45 | | | | | |
| | | | Max | 346.17 | 33.33 | 73350 | | | | | |
| | MQ984 | 139.5 | Int | 98.28 | 29.79 | 71615 | | 67000 | 1.335 | 1.024 | 1.304 |
| | | | Min | 219.56 | 42.21 | 55000 | | | | | |
| | | | Max | 357.3 | 42.56 | 63799 | | | | | |
| | MQ985 | 141.4 | Int | 110.13 | 22.91 | 59074 | | 53000 | 1.769 | 1.08 | 1.638 |
| | | | Min | 219.93 | 38.7 | 36000 | | | | | |
| | | | Max | 131.42 | 5.25 | 67284 | | | | | |
| | MQ986 | 142.6 | Int | 36.27 | 44.32 | 63035 | | 57000 | 1.694 | 1.067 | 1.587 |
| | | | Min | 226.73 | 45.2 | 40000 | | | | | |
| | | | Max | 105.34 | 3.66 | 18559 | | | | | |
| | MQ987 | 146 | Int | 196.31 | 14.82 | 15669 | | 15000 | 1.535 | 1.184 | 1.296 |
| | | | Min | 1.82 | 74.72 | 12000 | | | | | |
| | | | Max | 342.3 | 37.56 | 94739 | | | | | |
| | MQ988 | 147.6 | Int | 99.58 | 30.8 | 84367 | | 81000 | 1.511 | 1.123 | 1.346 |
| | | | Min | 216.53 | 37.24 | 63000 | | | | | |
| | | | Max | 296.91 | 10.15 | 22025 | | | | | |
| | MQ989 | 149.6 | Int | 42.12 | 55.7 | 19361 | | 19000 | 1.527 | 1.138 | 1.342 |
| | | | Min | 200.39 | 32.36 | 14000 | | | | | |
| | | | Max | 314.07 | 14.74 | 2833.1 | | | | | |
| | MQ990 | 151.7 | Int | 65.07 | 53.72 | 2747.7 | | 27000 | 1.101 | 1.031 | 1.067 |
| | | | Min | 214.5 | 32.29 | 2600 | | | | | |
| | | | Max | 57.7 | 54.28 | 21584 | | | | | |
| | MQ991 | 155 | Int | 320.81 | 4.93 | 19898 | | 20000 | 1.245 | 1.085 | 1.148 |
| | | | Min | 227.31 | 35.27 | 17000 | | | | | |
| | | | Max | 359.47 | 34.78 | 83798 | | | | | |
| | MQ992 | 158.4 | Int | 106.91 | 23.33 | 77953 | | 69000 | 1.874 | 1.075 | 1.743 |
| | | | Min | 223.46 | 46.01 | 45000 | | | | | |
| | | | Max | 349.27 | 42.76 | 129300 | | | | | |
| | MQ993 | 160 | Int | 102.87 | 23.41 | 122450 | | 110000 | 1.468 | 1.056 | 1.39 |
| | | | Min | 212.73 | 38.13 | 88000 | | | | | |
| | | | Max | 345.06 | 48.55 | 124900 | | | | | |
| | MQ994 | 162.7 | Int | 104.21 | 23.28 | 120130 | | 110000 | 1.322 | 1.04 | 1.271 |
| | | | Min | 209.86 | 32.08 | 95000 | | | | | |
| | | | Max | 332.83 | 31.3 | 96060 | | | | | |
| | MQ995 | 163.5 | Int | 87.32 | 34.29 | 91466 | | 85000 | 1.402 | 1.05 | 1.335 |
| | | | Min | 212.18 | 39.97 | 68000 | | | | | |
| | | | Max | 79.68 | 46.24 | 53.993 | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | MQ997 | 75.8 | Int | 190.75 | 19 | 52.463 | | 53 | 1.039 | 1.029 | 1.01 |
| | | | Min | 296.13 | 37.61 | 52 | | | | | |
| | | | Max | 208.49 | 30.61 | 10.708 | | | | | |
| | MQ998 | 77.5 | Int | 322.7 | 34.72 | 10.287 | | 10 | 1.117 | 1.041 | 1.073 |
| | | | Min | 88.52 | 40.18 | 9.6 | | | | | |
| | | | Max | 9.14 | 56.22 | 86.068 | | | | | |
| | MQ999 | 80.2 | Int | 125.71 | 16.66 | 84.045 | | 84 | 1.042 | 1.024 | 1.017 |
| | | | Min | 225.04 | 28.45 | 83 | | | | | |
| | | | Max | 124.23 | 3.95 | 6646.4 | | | | | |
| | MQ1000 | 82 | Int | 214.38 | 2.08 | 4745.7 | | 5000 | 1.903 | 1.401 | 1.359 |
| | | | Min | 332.08 | 85.54 | 3500 | | | | | |
| 97DCD180 | | | Max | 93.51 | 0.01 | 57828 | | | | | |
| | MQ901 | 83.3 | Int | 183.51 | 18.18 | 56869 | | 53000 | 1.337 | 1.017 | 1.315 |
| | | | Min | 3.48 | 71.82 | 43000 | | | | | |
| | | | Max | 11.73 | 32.07 | 96010 | | | | | |
| | MQ902 | 84.4 | Int | 279.32 | 3.84 | 93397 | | 82000 | 1.696 | 1.028 | 1.65 |
| | | | Min | 183.23 | 57.65 | 57000 | | | | | |
| | | | Max | 267.73 | 7.32 | 59648 | | | | | |
| | MQ903 | 87.5 | Int | 359.11 | 10.59 | 57394 | | 50000 | 1.764 | 1.039 | 1.679 |
| | | | Min | 143.68 | 77.08 | 34000 | | | | | |
| | | | Max | 276.61 | 5.22 | 27706 | | | | | |
| | MQ904 | 89.3 | Int | 8.78 | 22.57 | 22939 | | 22000 | 1.691 | 1.208 | 1.4 |
| | | | Min | 174.31 | 66.77 | 16000 | | | | | |
| | | | Max | 69.78 | 12.81 | 94297 | | | | | |
| | MQ905 | 92.5 | Int | 334.69 | 21.3 | 91690 | | 79000 | 1.809 | 1.028 | 1.759 |
| | | | Min | 188.7 | 64.82 | 52000 | | | | | |
| | | | Max | 101.95 | 0.32 | 6854.8 | | | | | |
| | MQ906 | 93.5 | Int | 11.92 | 5.16 | 6166.8 | | 5600 | 1.805 | 1.112 | 1.624 |
| | | | Min | 195.51 | 84.83 | 3800 | | | | | |
| | | | Max | 305.25 | 16.85 | 11309 | | | | | |
| | MQ907 | 97.6 | Int | 42.83 | 23.53 | 10709 | | 10000 | 1.355 | 1.056 | 1.283 |
| | | | Min | 182.98 | 60.44 | 8300 | | | | | |
| | | | Max | 197.09 | 44.25 | 1070.2 | | | | | |
| | MQ908 | 97.8 | Int | 91.65 | 15.29 | 988.53 | | 1000 | 1.109 | 1.083 | 1.024 |
| | | | Min | 347.52 | 41.76 | 970 | | | | | |
| | | | Max | 59.36 | 13.14 | 74.333 | | | | | |
| | MQ909 | 101.5 | Int | 324.74 | 19.03 | 73.281 | | 66 | 1.48 | 1.014 | 1.459 |
| | | | Min | 181.97 | 66.58 | 50 | | | | | |

# APPENDIX IV

# LISTING OF REMANENCE DATA

| DDH # | Sample # | Depth (m | Dec | Inc | J (µG) | J (mA/m) | k (µG/Oe | SI (10^-5 | Q | Rock type |
|---|---|---|---|---|---|---|---|---|---|---|
| 54 | PS001a | 223.45 | 355.8 | -43.7 | 1822.3 | 1822.3 | 2162.48 | 2716.08 | 1.68538 | Marra Mamba Newman Member BIF6? |
| 54 | PS001b | 223.45 | 5 | -49.6 | 139.51 | 139.51 | 72.73 | 91.3489 | 3.83638 | Marra Mamba Newman Member BIF6? |
| 54 | PS002a | 222.7 | 348.2 | -39.3 | 7499.6 | 7499.6 | 6833.19 | 8582.49 | 2.19505 | Marra Mamba Newman Member BIF6? |
| 54 | PS002b | 222.7 | 7.4 | -58.2 | 98.491 | 98.491 | 121.876 | 153.076 | 1.61625 | Marra Mamba Newman Member BIF6? |
| 54 | PS002c | 222.7 | 341.7 | -29 | 13.875 | 13.875 | 23.026 | 28.9207 | 1.20516 | Marra Mamba Newman Member BIF6? |
| 66 | PS003 | 204.3 | 337.8 | -35 | 1890.7 | 1890.7 | 465.186 | 584.274 | 8.12879 | Marra Mamba Newman Member BIF8? |
| 66 | PS004a | 206.6 | 290.9 | -34.2 | 2035 | 2035 | 806.241 | 1012.64 | 5.04812 | Marra Mamba Newman Member BIF8? |
| 66 | PS004b | 206.6 | 286.1 | -32.7 | 2088.8 | 2088.8 | 531.781 | 667.917 | 7.85587 | Marra Mamba Newman Member BIF8? |
| 66 | PS004c | 206.6 | 277.8 | -28.4 | 2068.8 | 2068.8 | 425.078 | 533.898 | 9.73374 | Marra Mamba Newman Member BIF8? |
| 75 | PS005a | 215.3 | 299.2 | 34.9 | 225.91 | 225.91 | 94.555 | 118.761 | 4.77838 | Marra Mamba Newman Member BIF2? |
| 75 | PS005b | 215.3 | 290.2 | 1.3 | 637.08 | 637.08 | 223.846 | 281.151 | 5.69213 | Marra Mamba Newman Member BIF2? |
| 75 | PS005c | 215.3 | 311.1 | -38.6 | 514.75 | 514.75 | 228.37 | 286.833 | 4.50804 | Marra Mamba Newman Member BIF2? |
| 75 | PS006a | 213.85 | 279.8 | -45.1 | 1043.4 | 1043.4 | 221.179 | 277.801 | 9.43489 | Marra Mamba Newman Member BIF2? |
| 75 | PS006b | 213.85 | 291.1 | -35.4 | 1242.6 | 1242.6 | 224.92 | 282.5 | 11.0493 | Marra Mamba Newman Member BIF2? |
| 68 | PS007a | 94.4 | 216.9 | -20.9 | 803.03 | 803.03 | 157.678 | 198.044 | 10.1857 | Dales Gorge Member BIF2? |
| 68 | PS007b | 94.4 | 240.1 | -67.5 | 223.83 | 223.83 | 239.951 | 301.378 | 1.86563 | Dales Gorge Member BIF2? |
| 68 | PS008a | 97.35 | 53.4 | -68.3 | 117.9 | 117.9 | 92.448 | 116.115 | 2.55062 | Dales Gorge Member BIF2? |
| 68 | PS008b | 97.35 | 40 | -46.5 | 427.92 | 427.92 | 233.302 | 293.027 | 3.66838 | Dales Gorge Member BIF2? |
| 68 | PS008c | 97.35 | 35.2 | -44.8 | 497.48 | 497.48 | 293.723 | 368.916 | 3.38741 | Dales Gorge Member BIF2? |
| 169 | PS009a | 294 | 128.1 | -23.5 | 399.22 | 399.22 | 148.782 | 186.87 | 5.36651 | Marra Mamba Newman Memeber BIF6? |
| 169 | PS009b | 294 | 135.4 | -29.2 | 711.4 | 711.4 | 315.259 | 395.965 | 4.51311 | Marra Mamba Newman Memeber BIF6? |
| 169 | PS009c | 294 | 130 | -27.3 | 643.75 | 643.75 | 354.071 | 444.713 | 3.63628 | Marra Mamba Newman Memeber BIF6? |
| 169 | PS010a | 292.3 | 104.9 | -29.3 | 239.61 | 239.61 | 36.647 | 46.0286 | 13.0767 | Marra Mamba Newman Memeber BIF6? |
| 169 | PS010b | 292.3 | 101 | -7.7 | 419 | 419 | 82.939 | 104.171 | 10.1038 | Marra Mamba Newman Memeber BIF6? |
| 169 | PS010c | 292.3 | 91.3 | -5.8 | 694.82 | 694.82 | 98.123 | 123.242 | 14.1622 | Marra Mamba Newman Memeber BIF6? |
| 169 | PS010d | 292.3 | 118.4 | -32.4 | 86.559 | 86.559 | 43.571 | 54.7252 | 3.97324 | Marra Mamba Newman Memeber BIF6? |
| 831 | PS011a | 280.3 | 309.8 | -27.5 | 23361 | 23361 | 23317.9 | 29287.3 | 2.00369 | Whale Back Shale 2 |
| 831 | PS011b | 280.3 | 346 | -36.4 | 4111.5 | 4111.5 | 7019.05 | 8815.92 | 1.17153 | Whale Back Shale 2 |
| 831 | PS011c | 280.3 | 281.3 | -17.2 | 74453 | 74453 | 53378.1 | 67042.9 | 2.78964 | Whale Back Shale 2 |
| 831 | PS011d | 280.3 | 287 | -18.8 | 26353 | 26353 | 26549.6 | 33346.3 | 1.98519 | Whale Back Shale 2 |
| 831 | PS012a | 291.8 | 340.5 | -51.2 | 6612.4 | 6612.4 | 20719.2 | 26023.3 | 0.63829 | Whale Back Shale 2 |
| 831 | PS012b | 291.8 | 329.4 | -49.1 | 7238.7 | 7238.7 | 18614.7 | 23380.1 | 0.77774 | Whale Back Shale 2 |
| 831 | PS012c | 291.8 | 306.3 | -33.8 | 15995 | 15995 | 30054.4 | 37748.3 | 1.0644 | Whale Back Shale 2 |
| 831 | PS013a | 300.8 | 294.5 | -61.2 | 51110 | 51110 | 83936.5 | 105424 | 1.21782 | Whale Back Shale 2 |
| 831 | PS013b | 300.8 | 289.6 | -18.5 | 35817 | 35817 | 131784 | 165521 | 0.54357 | Whale Back Shale 2 |
| 831 | PS014a | 306.9 | 287.8 | -26.2 | 99510 | 99510 | 40666.8 | 51077.4 | 4.89392 | Whale Back Shale 2 |
| 831 | PS014b | 306.9 | 185.5 | -83.9 | 248.16 | 248.16 | 781.139 | 981.111 | 0.63538 | Whale Back Shale 2 |
| 831 | PS015a | 318.2 | 261 | 9.1 | 53446 | 53446 | 68955.5 | 86608.1 | 1.55016 | Whale Back Shale 2 |
| 831 | PS015b | 318.2 | 252.1 | 21.2 | 89825 | 89825 | 83082.6 | 104352 | 2.16231 | Whale Back Shale 2 |
| 831 | PS015c | 318.2 | 240.8 | 21.3 | 1486 | 1486 | 4411.21 | 5540.48 | 0.67374 | Whale Back Shale 2 |
| 831 | PS016a | 327.5 | 277.2 | -35 | 43278 | 43278 | 66185.5 | 83129 | 1.30778 | Whale Back Shale 1 |
| 831 | PS016b | 327.5 | 297.9 | -59.7 | 38662 | 38662 | 54130.3 | 67987.6 | 1.42848 | Whale Back Shale 1 |
| 831 | PS016c | 327.5 | 282.6 | -38.3 | 48444 | 48444 | 54597.7 | 68574.7 | 1.77458 | Whale Back Shale 1 |
| 831 | PS016d | 327.5 | 313.4 | -49.5 | 48984 | 48984 | 63277 | 79475.9 | 1.54824 | Whale Back Shale 1 |
| 831 | PS016e | 327.5 | 317 | -49.2 | 39416 | 39416 | 43713.9 | 54904.7 | 1.80336 | Whale Back Shale 1 |
| 831 | PS017a | 348.6 | 306.3 | -60.4 | 709.28 | 709.28 | 1636.6 | 2055.57 | 0.86677 | Whale Back Shale 1 |
| 831 | PS017b | 348.6 | 299.7 | -38.7 | 759.88 | 759.88 | 1264.29 | 1587.95 | 1.20207 | Whale Back Shale 1 |
| 831 | PS017c | 348.6 | 281.7 | 5.1 | 666.31 | 666.31 | 961.418 | 1207.54 | 1.3861 | Whale Back Shale 1 |
| 831 | PS017d | 348.6 | 245.1 | -18.5 | 779.52 | 779.52 | 784.831 | 985.748 | 1.98647 | Whale Back Shale 1 |
| 831 | PS018a | 354.3 | 11.5 | 51.9 | 20.327 | 20.327 | 3.001 | 3.76926 | 13.5468 | Whale Back Shale 1 |
| 831 | PS018b | 354.3 | 296.5 | 16.7 | 4.749 | 4.749 | 95.898 | 120.448 | 0.09904 | Whale Back Shale 1 |
| 831 | PS018c | 354.3 | 41.1 | -44 | 12.571 | 12.571 | 293.1 | 368.134 | 0.08578 | Whale Back Shale 1 |
| 831 | PS018d | 354.3 | 252.1 | 63.6 | 1815 | 1815 | 3644.27 | 4577.2 | 0.99608 | Whale Back Shale 1 |
| 831 | PS019a | 363 | 251.7 | -60.6 | 841.45 | 841.45 | 1272.01 | 1597.64 | 1.32303 | Dales Gorge Member BIF 16 |
| 831 | PS019b | 363 | 252.4 | -57.8 | 1683.2 | 1683.2 | 3412.67 | 4286.31 | 0.98644 | Dales Gorge Member BIF 16 |
| 831 | PS019c | 363 | 254 | -61.9 | 2189.5 | 2189.5 | 3505.31 | 4402.67 | 1.24925 | Dales Gorge Member BIF 16 |
| 831 | PS020a | 365.7 | 262.8 | -15.4 | 568.83 | 568.83 | 195.208 | 245.181 | 5.82794 | Dales Gorge Member BIF 16 |
| 831 | PS020b | 365.7 | 264.5 | -16.8 | 264.06 | 264.06 | 1152.99 | 1448.15 | 0.45804 | Dales Gorge Member BIF 16 |
| 831 | PS020c | 365.7 | 227.1 | -40.5 | 394.31 | 394.31 | 969.005 | 1217.07 | 0.81385 | Dales Gorge Member BIF 16 |
| 831 | PS020d | 365.7 | 95 | 33.9 | 1248.8 | 1248.8 | 7323.74 | 9198.62 | 0.34103 | Dales Gorge Member BIF 16 |
| 831 | PS021a | 372.9 | 296.1 | 16.6 | 494.48 | 494.48 | 1099.53 | 1381.01 | 0.89944 | Dales Gorge Member BIF 16 |
| 831 | PS021b | 372.9 | 317.5 | 59.6 | 385.96 | 385.96 | 1662.96 | 2088.67 | 0.46419 | Dales Gorge Member BIF 16 |
| 831 | PS021c | 372.9 | 299.6 | 48.8 | 415.52 | 415.52 | 1637.33 | 2056.49 | 0.50756 | Dales Gorge Member BIF 16 |
| 831 | PS021d | 372.9 | 281.9 | 16.2 | 227.35 | 227.35 | 860.942 | 1081.34 | 0.52814 | Dales Gorge Member BIF 16 |
| 831 | PS021e | 372.9 | 293.5 | 41.7 | 279.54 | 279.54 | 982.366 | 1233.85 | 0.56912 | Dales Gorge Member BIF 16 |
| 35 | PS022a | 392 | 145.6 | -26.7 | 157.4 | 157.4 | 64.037 | 80.4305 | 4.91591 | Joffre Member J2 |
| 35 | PS022b | 392 | 139.8 | -12.2 | 191.75 | 191.75 | 60.416 | 75.8825 | 6.34766 | Joffre Member J2 |
| 35 | PS023a | 283 | 293.8 | -34.6 | 942.8 | 942.8 | 98.518 | 123.739 | 19.1396 | Joffre Member J2 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 35 | PS023b | 283 | 280.7 | -43.1 | 254.46 | 254.46 | 56.451 | 70.9025 | 9.01525 | Joffre Member J2 |
| 35 | PS023c | 283 | 243 | -67.5 | 66.918 | 66.918 | 38.857 | 48.8044 | 3.44432 | Joffre Member J2 |
| 35 | PS024a | 349.7 | 144.6 | 22 | 449.41 | 449.41 | 88.003 | 110.532 | 10.2135 | Joffre Member J2 |
| 35 | PS024b | 349.7 | 141.6 | 25 | 209.11 | 209.11 | 120.437 | 151.269 | 3.47252 | Joffre Member J2 |
| 35 | PS024c | 349.7 | 148.3 | 30.1 | 209.08 | 209.08 | 67.047 | 84.211 | 6.23682 | Joffre Member J2 |
| 35 | PS024d | 349.7 | 146.9 | 5 | 213.77 | 213.77 | 114.801 | 144.19 | 3.72418 | Joffre Member J2 |
| 35 | PS024e | 349.7 | 130.6 | 9.1 | 463.6 | 463.6 | 104.606 | 131.385 | 8.86374 | Joffre Member J2 |
| 35 | PS025a | 237.8 | 132.4 | -8.1 | 3017 | 3017 | 1186.37 | 1490.07 | 5.08612 | Joffre Member J3 |
| 35 | PS025b | 237.8 | 133.3 | -10.2 | 930.97 | 930.97 | 605.091 | 759.994 | 3.07712 | Joffre Member J3 |
| 35 | PS026a | 176.8 | 300.2 | -42.1 | 22.081 | 22.081 | 69.882 | 87.7718 | 0.63195 | Joffre Member J3 |
| 35 | PS026b | 176.8 | 303.9 | -54.8 | 49.57 | 49.57 | 47.128 | 59.1928 | 2.10363 | Joffre Member J3 |
| 35 | PS026c | 176.8 | 302.6 | -61.6 | 196.21 | 196.21 | 91.976 | 115.522 | 4.26655 | Joffre Member J3 |
| 35 | PS026d | 176.8 | 1.3 | -74 | 137.66 | 137.66 | 94.718 | 118.966 | 2.90673 | Joffre Member J3 |
| 35 | PS026e | 176.8 | 305.5 | -62.9 | 144.75 | 144.75 | 100.124 | 125.756 | 2.89141 | Joffre Member J3 |
| Hand sam | PS027a | | 297.4 | 12.1 | 3319.2 | 3319.2 | 386.33 | 485.23 | 17.1832 | Southern Ridge East BIF |
| Hand sam | PS027b | | 297.5 | 12.2 | 3435.8 | 3435.8 | 351.015 | 440.875 | 19.5764 | Southern Ridge East BIF |
| Hand sam | PS028a | | 215 | 34.6 | 8829.6 | 8829.6 | 1352.56 | 1698.82 | 13.0561 | Southern Ridge East BIF |
| Hand sam | PS028b | | 174.3 | 17 | 14711 | 14711 | 1024.44 | 1286.69 | 28.7202 | Southern Ridge East BIF |
| Hand sam | PS028c | | 352.4 | 14.7 | 15522 | 15522 | 1179.61 | 1481.59 | 26.3171 | Southern Ridge East BIF |
| Hand sam | PS029a | | 273.4 | 37.6 | 6317.6 | 6317.6 | 655.565 | 823.39 | 19.2738 | 100m W SR East BIF |
| Hand sam | PS029b | | 121.6 | 65.9 | 6883.7 | 6883.7 | 845.367 | 1061.78 | 16.2857 | 100m W SR East BIF |
| Hand sam | PS029c | | 90.6 | 46.6 | 4977 | 4977 | 591.047 | 742.355 | 16.8413 | 100m W SR East BIF |
| Hand sam | PS030a | | 258.6 | -46.2 | 19392 | 19392 | 1472.68 | 1849.68 | 26.3357 | 100m W SR East BIF |
| Hand sam | PS030b | | 262.5 | -55.6 | 11235 | 11235 | 1347.18 | 1692.05 | 16.6793 | 100m W SR East BIF |
| Hand sam | PS030c | | 264.2 | -54.1 | 16222 | 16222 | 1714.57 | 2153.49 | 18.9226 | 100m W SR East BIF |
| Hand sam | PS030d | | 342.6 | -49.7 | 12965 | 12965 | 1653.86 | 2077.25 | 15.6784 | 100m W SR East BIF |
| Hand sam | PS031a | | 7.9 | -73.6 | 3571.5 | 3571.5 | 9655.03 | 12126.7 | 0.73982 | West Pit East BIF |
| Hand sam | PS031b | | 354.2 | -76.3 | 4811.1 | 4811.1 | 14618 | 18360.2 | 0.65825 | West Pit East BIF |
| Hand sam | PS031c | | 22.9 | -68.1 | 4285.3 | 4285.3 | 13241 | 16630.7 | 0.64728 | West Pit East BIF |
| Hand sam | PS031d | | 33.3 | -82.9 | 5188.7 | 5188.7 | 17684.4 | 22211.6 | 0.58681 | West Pit East BIF |
| Hand sam | PS031e | | 33 | -70.4 | 3280 | 3280 | 11691.7 | 14684.8 | 0.56108 | West Pit East BIF |
| Hand sam | PS031f | | 15.5 | -77.5 | 4809.3 | 4809.3 | 17025.4 | 21383.9 | 0.56495 | West Pit East BIF |
| Hand sam | PS032a | | 328.6 | -81.8 | 2170.8 | 2170.8 | 7721.73 | 9698.49 | 0.56226 | West Pit East BIF |
| Hand sam | PS032b | | 142.3 | -76.7 | 4553.3 | 4553.3 | 14405.1 | 18092.8 | 0.63218 | West Pit East BIF |
| Hand sam | PS032c | | 81.1 | -73 | 3425.5 | 3425.5 | 12071.6 | 15162 | 0.56753 | West Pit East BIF |
| Hand sam | PS032d | | 164.5 | -83.1 | 684.77 | 684.77 | 4077.4 | 5121.22 | 0.33589 | West Pit East BIF |
| Hand sam | PS033a | | 340.5 | -76.2 | 1603.2 | 1603.2 | 7148.18 | 8978.12 | 0.44856 | Syncline-S BIF |
| Hand sam | PS033b | | 327.9 | -67.1 | 1268.8 | 1268.8 | 4135.46 | 5194.13 | 0.61362 | Syncline-S BIF |
| Hand sam | PS033c | | 167.4 | -61.7 | 1117.6 | 1117.6 | 3660.82 | 4597.99 | 0.61057 | Syncline-S BIF |
| Hand sam | PS033d | | 167.5 | -76.4 | 1695.2 | 1695.2 | 7620.1 | 9570.85 | 0.44493 | Syncline-S BIF |
| Hand sam | PS033e | | 174 | -65 | 1186.3 | 1186.3 | 3961.63 | 4975.81 | 0.59889 | Syncline-S BIF |
| Hand sam | PS034a | | 303.3 | -67.4 | 1606.8 | 1606.8 | 3203.14 | 4023.14 | 1.00327 | Syncline-S BIF |
| Hand sam | PS034b | | 309.9 | -71.5 | 1822.5 | 1822.5 | 4015.69 | 5043.7 | 0.90769 | Syncline-S BIF |
| Hand sam | PS034c | | 308.8 | -71.2 | 2060.1 | 2060.1 | 4547.51 | 5711.67 | 0.90603 | Syncline-S BIF |
| 20/74 | PS035a | 384.85 | 303.7 | -46.5 | 47357 | 47357 | 168713 | 211904 | 0.56139 | Dales Gorge Member BIF0 |
| 20/74 | PS036a | 385.2 | 102.5 | -64.3 | 73998 | 73998 | 182870 | 229685 | 0.8093 | Dales Gorge Member BIF0 |
| 20/74 | PS037a | 379.9 | 5.9 | -53.3 | 28177 | 28177 | 122361 | 153685 | 0.46056 | Dales Gorge Member BIF1 |
| 20/74 | PS037b | 379.9 | 335.4 | -34 | 62930 | 62930 | 148902 | 187020 | 0.84526 | Dales Gorge Member BIF1 |
| 20/74 | PS038a | 384.15 | 343.2 | -42.4 | 53820 | 53820 | 262969 | 330289 | 0.40933 | Dales Gorge Member BIF1 |
| 20/74 | PS038b | 384.15 | 109.6 | 29.7 | 271410 | 271410 | 232910 | 292535 | 2.3306 | Dales Gorge Member BIF1 |
| 20/74 | PS039 | 377.2 | 240.7 | 33.3 | 45157 | 45157 | 142708 | 179242 | 0.63286 | Dales Gorge Member BIF2 |
| 20/74 | PS040a | 368.5 | 263 | -41.2 | 14574 | 14574 | 50043.1 | 62854.1 | 0.58246 | Dales Gorge Member BIF4 |
| 20/74 | PS040b | 368.5 | 301.8 | -53.6 | 44785 | 44785 | 191730 | 240813 | 0.46717 | Dales Gorge Member BIF4 |
| 20/74 | PS041a | 361 | 267.3 | -63.5 | 3302.5 | 3302.5 | 14360.4 | 18036.6 | 0.45995 | Dales Gorge Member BIF6 |
| 20/74 | PS041b | 361 | 255.1 | -42.5 | 2802.6 | 2802.6 | 9520.25 | 11957.4 | 0.58877 | Dales Gorge Member BIF6 |
| 20/74 | PS042a | 353.5 | 89.3 | -20.2 | 491.54 | 491.54 | 1220.08 | 1532.41 | 0.80575 | Dales Gorge Member BIF? |
| 20/74 | PS042b | 353.5 | 90.4 | -5.3 | 328.16 | 328.16 | 1039.23 | 1305.27 | 0.63155 | Dales Gorge Member BIF? |
| 20/74 | PS043a | 342.9 | 247.6 | -66.1 | 5128.8 | 5128.8 | 34427.6 | 43241.1 | 0.29795 | Dales Gorge Member BIF10 |
| 20/74 | PS043b | 342.9 | 224.4 | -28.9 | 7472.9 | 7472.9 | 35898.1 | 45088 | 0.41634 | Dales Gorge Member BIF10 |
| 20/74 | PS043c | 342.9 | 276 | -72 | 14053 | 14053 | 73836.6 | 92738.7 | 0.38065 | Dales Gorge Member BIF10 |
| 20/74 | PS043d | 342.9 | 265.1 | -77.2 | 7979 | 7979 | 52726.2 | 66224.1 | 0.30266 | Dales Gorge Member BIF10 |
| 20/74 | PS044 | 346.1 | 300.5 | -55 | 26003 | 26003 | 113389 | 142416 | 0.45865 | Dales Gorge Member BIF9 |
| 20/74 | PS045a | 339.6 | 236.3 | -20 | 463.56 | 463.56 | 920.44 | 1156.07 | 1.00726 | Dales Gorge Member BIF? |
| 20/74 | PS045b | 339.6 | 231.8 | -46.1 | 682.33 | 682.33 | 2242.14 | 2816.12 | 0.60864 | Dales Gorge Member BIF? |
| 20/74 | PS046a | 334.9 | 24.4 | -3.5 | 64.273 | 64.273 | 629.975 | 791.249 | 0.20405 | Dales Gorge Member BIF12 |
| 20/74 | PS046b | 334.9 | 323.8 | 25.8 | 534.9 | 534.9 | 630.326 | 791.689 | 1.69722 | Dales Gorge Member BIF12 |
| 20/74 | PS046c | 334.9 | 353.5 | 36.8 | 195.21 | 195.21 | 636.647 | 799.629 | 0.61324 | Dales Gorge Member BIF12 |
| 20/74 | PS047a | 404.8 | 311.1 | -31.5 | 92342 | 92342 | 258646 | 324860 | 0.71404 | Dales Gorge Member BIF6 |
| 20/74 | PS047b | 404.8 | 299.1 | -12.1 | 124040 | 124040 | 230515 | 289527 | 1.0762 | Dales Gorge Member BIF6 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 20/74 | PS047c | 404.8 | 108.4 | -6.1 | 237020 | 237020 | 85852 | 107830 | 5.5216 | Dales Gorge Member BIF6 | |
| 20/74 | PS047d | 404.8 | 294.5 | -11.9 | 312690 | 312690 | 212543 | 266954 | 2.94237 | Dales Gorge Member BIF6 | |
| 20/74 | PS047e | 404.8 | 302.2 | -9.1 | 204200 | 204200 | 134136 | 168475 | 3.04468 | Dales Gorge Member BIF6 | |
| 20/74 | PS047f | 404.8 | 281.1 | -12.5 | 210540 | 210540 | 80420.8 | 101008 | 5.23596 | Dales Gorge Member BIF6 | |
| 20/74 | PS048a | 400.2 | 293 | -79.5 | 49545 | 49545 | 93758.9 | 117761 | 1.05686 | Dales Gorge Member BIF7 | |
| 20/74 | PS048b | 400.2 | 267.4 | 11.6 | 289690 | 289690 | 99699.3 | 125222 | 5.81128 | Dales Gorge Member BIF7 | |
| 20/74 | PS048c | 400.2 | 268.5 | -2.5 | 304490 | 304490 | 74099.9 | 93069.5 | 8.21836 | Dales Gorge Member BIF7 | |
| 20/74 | PS048d | 400.2 | 276 | -17 | 129060 | 129060 | 37398.2 | 46972.1 | 6.90194 | Dales Gorge Member BIF7 | |
| 20/74 | PS048e | 400.2 | 4.6 | -19.8 | 14574 | 14574 | 42694.9 | 53624.8 | 0.6827 | Dales Gorge Member BIF7 | |
| 20/74 | PS049a | 398.7 | 292.2 | -81.3 | 14483 | 14483 | 66374.5 | 83366.4 | 0.4364 | Dales Gorge Member BIF7 | |
| 20/74 | PS049b | 398.7 | 28.6 | -77.2 | 10690 | 10690 | 54657.8 | 68650.2 | 0.39116 | Dales Gorge Member BIF7 | |
| 20/74 | PS049c | 398.7 | 312.4 | -79.2 | 10586 | 10586 | 66421.3 | 83425.2 | 0.31875 | Dales Gorge Member BIF7 | |
| 20/74 | PS049d | 398.7 | 281.2 | -67 | 7820.7 | 7820.7 | 43824.4 | 55043.4 | 0.35691 | Dales Gorge Member BIF7 | |
| 20/74 | PS050a | 398.3 | 266.7 | 80.9 | 5804.4 | 5804.4 | 37363 | 46927.9 | 0.3107 | Dales Gorge Member BIF7 | |
| 20/74 | PS050b | 398.3 | 344.5 | 89.4 | 6893.2 | 6893.2 | 47497.6 | 59656.9 | 0.29025 | Dales Gorge Member BIF7 | |
| 20/74 | PS050c | 398.3 | 179.1 | 81.6 | 14451 | 14451 | 98928.3 | 124254 | 0.29215 | Dales Gorge Member BIF7 | |
| 20/74 | PS051a | 389.5 | 307.4 | -62.6 | 399.11 | 399.11 | 1824.24 | 2291.25 | 0.43756 | Dales Gorge Member BIF9 | |
| 20/74 | PS051b | 389.5 | 292.2 | -39.8 | 222.35 | 222.35 | 939.914 | 1180.53 | 0.47313 | Dales Gorge Member BIF9 | |
| 20/74 | PS051c | 389.5 | 306.2 | -62.8 | 329.29 | 329.29 | 943.774 | 1185.38 | 0.69782 | Dales Gorge Member BIF9 | |
| 20/74 | PS052a | 385.5 | 301.6 | 55.5 | 368.05 | 368.05 | 1282.49 | 1610.81 | 0.57396 | Dales Gorge Member BIF10 | |
| 20/74 | PS052b | 385.5 | 295.4 | 60.8 | 692.52 | 692.52 | 2141.94 | 2690.27 | 0.64663 | Dales Gorge Member BIF10 | |
| 20/74 | PS052c | 385.5 | 312.5 | 63.5 | 457.14 | 457.14 | 2003.54 | 2516.45 | 0.45633 | Dales Gorge Member BIF10 | |
| 20/74 | PS052d | 385.5 | 306 | 54.3 | 413.59 | 413.59 | 1467.59 | 1843.29 | 0.56363 | Dales Gorge Member BIF10 | |
| 20/74 | PS053a | 385.5 | 356.8 | -62.7 | 13802 | 13802 | 14121.9 | 17737.1 | 1.9547 | McRae Shale | |
| 44/4 | PS053b | 525 | 323 | -8.9 | 5828.9 | 5828.9 | 2708.57 | 3401.97 | 4.30404 | McRae Shale | |
| 44/4 | PS053c | 525 | 318.8 | -4.3 | 2984.4 | 2984.4 | 844.301 | 1060.44 | 7.06952 | McRae Shale | |
| 44/4 | PS054a | 520.6 | 106.4 | -0.9 | 22230 | 22230 | 12654.1 | 15893.5 | 3.51349 | McRae Shale | |
| 44/4 | PS054b | 520.6 | 120.3 | 7.2 | 106610 | 106610 | 16408.9 | 20609.6 | 12.9942 | McRae Shale | |
| 44/4 | PS055a | 520.6 | 342.1 | -3.6 | 7857.6 | 7857.6 | 6138.58 | 7710.06 | 2.56007 | McRae Shale | |
| 44/4 | PS055b | 514.5 | 349.3 | -13.3 | 11473 | 11473 | 12592.1 | 15815.7 | 1.82225 | McRae Shale | |
| 44/4 | PS055c | 514.5 | 317.3 | -1.8 | 29622 | 29622 | 10829.7 | 13602 | 5.47053 | McRae Shale | |
| 44/4 | PS055d | 514.5 | 327.7 | 21.8 | 2402.8 | 2402.8 | 7153.57 | 8984.89 | 0.67178 | McRae Shale | |
| 44/4 | PS056a | 506.9 | 13 | -24.7 | 89005 | 89005 | 66191.5 | 83136.6 | 2.68932 | McRae Shale | |
| 44/4 | PS056b | 506.9 | 50.4 | -19.3 | 33953 | 33953 | 23818.2 | 29915.7 | 2.85101 | McRae Shale | |
| 44/4 | PS056c | 506.9 | 22.7 | -34 | 57452 | 57452 | 72080 | 90532.5 | 1.59412 | McRae Shale | |
| 44/4 | PS057a | 503.5 | 212.2 | 2.6 | 39713 | 39713 | 27936.9 | 35088.7 | 2.84305 | McRae Shale | |
| 44/4 | PS057b | 503.5 | 215.5 | 13 | 43123 | 43123 | 16793 | 21092 | 5.13583 | McRae Shale | |
| 44/4 | PS057c | 503.5 | 205.6 | 22.1 | 56442 | 56442 | 47501.4 | 59661.8 | 2.37643 | McRae Shale | |
| 44/4 | PS058a | 498.3 | 263.5 | -49.6 | 14150 | 14150 | 35433 | 44503.9 | 0.79869 | Dales Gorge Member BIF0 | |
| 44/4 | PS058b | 498.3 | 287.1 | -34.6 | 33998 | 33998 | 54964.7 | 69035.7 | 1.23708 | Dales Gorge Member BIF0 | |
| 44/4 | PS059a | 492.9 | 332.6 | -36.3 | 93412 | 93412 | 47779.3 | 60010.8 | 3.91015 | Dales Gorge Member BIF0 | |
| 44/4 | PS059b | 492.9 | 314.3 | -28.3 | 56620 | 56620 | 36413.5 | 45735.4 | 3.10983 | Dales Gorge Member BIF0 | |
| 44/4 | PS060a | 487.8 | 208.1 | 16.6 | 106720 | 106720 | 111854 | 140488 | 1.90821 | Dales Gorge Member BIF1 | |
| 44/4 | PS060b | 487.8 | 176 | 15.9 | 30433 | 30433 | 14307.1 | 17969.8 | 4.25424 | Dales Gorge Member BIF1 | |
| 44/4 | PS061a | 478.5 | 325.1 | -26.7 | 75822 | 75822 | 75640.9 | 95004.9 | 2.00479 | Dales Gorge Member BIF2 | |
| 44/4 | PS061b | 478.5 | 327.2 | -25.5 | 30936 | 30936 | 41311.8 | 51887.6 | 1.49768 | Dales Gorge Member BIF2 | |
| 44/4 | PS062a | 471.2 | 327 | -23.6 | 40155 | 40155 | 25073 | 31491.7 | 3.20304 | Dales Gorge Member BIF? | |
| 44/4 | PS062b | 471.2 | 337 | -31.5 | 77488 | 77488 | 58427.1 | 73384.5 | 2.65247 | Dales Gorge Member BIF? | |
| 44/4 | PS062c | 471.2 | 347 | -29.9 | 38995 | 38995 | 31525.6 | 39596.1 | 2.47387 | Dales Gorge Member BIF? | |
| 44/4 | PS063a | 467 | 332.7 | -29.9 | 85052 | 85052 | 40443.3 | 50796.8 | 4.20599 | Dales Gorge Member BIF4 | |
| 44/4 | PS063b | 467 | 338.2 | -26.6 | 43453 | 43453 | 14249.2 | 17897.1 | 6.09899 | Dales Gorge Member BIF4 | |
| 44/4 | PS063c | 467 | 330.8 | -28 | 113520 | 113520 | 27981.2 | 35144.4 | 8.11401 | Dales Gorge Member BIF4 | |
| 44/4 | PS064a | 461.3 | 167.2 | 15.3 | 231540 | 231540 | 26045.5 | 32713.1 | 17.7797 | Dales Gorge Member BIF5 | |
| 44/4 | PS064b | 461.3 | 167 | 16.7 | 295400 | 295400 | 44396 | 55761.4 | 13.3075 | Dales Gorge Member BIF5 | |
| 44/4 | PS064c | 461.3 | 161.8 | 11.8 | 266550 | 266550 | 64495.1 | 81005.8 | 8.26575 | Dales Gorge Member BIF5 | |
| 44/4 | PS064d | 461.3 | 162.3 | -1 | 110140 | 110140 | 46951.3 | 58970.8 | 4.69167 | Dales Gorge Member BIF5 | |
| 44/4 | PS065a | 453.5 | 309.4 | -27.1 | 2605.5 | 2605.5 | 2323.15 | 2917.88 | 2.24308 | Dales Gorge Member BIF6 | |
| 44/4 | PS065b | 453.5 | 321.4 | -18.2 | 30888 | 30888 | 10618.3 | 13336.6 | 5.81787 | Dales Gorge Member BIF6 | |
| 44/4 | PS065c | 453.5 | 263.9 | -7.2 | 11292 | 11292 | 9034.75 | 11347.6 | 2.49968 | Dales Gorge Member BIF6 | |
| 44/4 | PS065d | 453.5 | 306.6 | -18.8 | 11019 | 11019 | 5187.28 | 6515.22 | 4.24847 | Dales Gorge Member BIF6 | |
| 44/4 | PS066a | 450 | 310.1 | -29.1 | 10606 | 10606 | 5029.79 | 6317.42 | 4.21727 | Dales Gorge Member BIF7 | |
| 44/4 | PS066b | 450 | 329.4 | -20.3 | 76000 | 76000 | 33394.9 | 41944 | 4.55159 | Dales Gorge Member BIF7 | |
| 44/4 | PS066c | 450 | 325.9 | -25.3 | 47254 | 47254 | 13560.3 | 17031.7 | 6.96947 | Dales Gorge Member BIF7 | |
| 44/4 | PS066d | 450 | 325.8 | -23 | 74713 | 74713 | 27041.3 | 33963.9 | 5.52584 | Dales Gorge Member BIF7 | |
| 44/4 | PS067a | 446.9 | 299.9 | 4.6 | 136720 | 136720 | 14034.3 | 17627 | 19.4837 | Dales Gorge Member BIF? | |
| 44/4 | PS067b | 446.9 | 175.2 | 26.9 | 156760 | 156760 | 15689 | 19705.4 | 19.9834 | Dales Gorge Member BIF? | |
| 44/4 | PS067c | 446.9 | 189.7 | 40.7 | 177240 | 177240 | 11580 | 14544.5 | 30.6113 | Dales Gorge Member BIF? | |
| 44/4 | PS068a | 437.9 | 303.4 | -14.4 | 442160 | 442160 | 74170.2 | 93157.7 | 11.9229 | Dales Gorge Member BIF9 | |
| 44/4 | PS068b | 437.9 | 289.4 | -22.9 | 294590 | 294590 | 12496.8 | 15696 | 47.1465 | Dales Gorge Member BIF9 | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44/4 | PS068c | 437.9 | 305.4 | -21.2 | 357090 | 357090 | 14558 | 18284.9 | 49.0574 | Dales Gorge Member BIF9 | | |
| 44/4 | PS069a | 431.9 | 331.6 | -38.2 | 73511 | 73511 | 71663.1 | 90008.9 | 2.05157 | Dales Gorge Member BIF10 | | |
| 44/4 | PS069b | 431.9 | 297.2 | -39.7 | 25932 | 25932 | 39401.1 | 49487.8 | 1.31631 | Dales Gorge Member BIF10 | | |
| 44/4 | PS069c | 431.9 | 313.8 | -15.4 | 46974 | 46974 | 16850.9 | 21164.7 | 5.57525 | Dales Gorge Member BIF10 | | |
| 44/4 | PS070a | 424.8 | 5.5 | -22.9 | 277280 | 277280 | 31061.4 | 39013.2 | 17.8537 | Dales Gorge Member BIF11 | | |
| 44/4 | PS070b | 424.8 | 45.6 | -11.2 | 172580 | 172580 | 18590.9 | 23350.2 | 18.5661 | Dales Gorge Member BIF11 | | |
| 44/4 | PS071a | 420.1 | 175.2 | 5.4 | 109110 | 109110 | 46080.1 | 57876.6 | 4.73566 | Dales Gorge Member BIF12 | | |
| 44/4 | PS071b | 420.1 | 144.1 | 16 | 223280 | 223280 | 52401.5 | 65816.3 | 8.52189 | Dales Gorge Member BIF12 | | |
| 44/4 | PS072a | 413.2 | 333.1 | -28.3 | 45148 | 45148 | 23738.8 | 29815.9 | 3.80373 | Dales Gorge Member BIF12 | | |
| 44/4 | PS072b | 413.2 | 331.5 | -43.9 | 84711 | 84711 | 64783.4 | 81368 | 2.61521 | Dales Gorge Member BIF12 | | |
| 44/4 | PS073a | 406.9 | 279.2 | -0.8 | 7006.2 | 7006.2 | 5452.6 | 6848.47 | 2.56986 | Dales Gorge Member BIF13 | | |
| 44/4 | PS073b | 406.9 | 287.7 | -4.5 | 8396.8 | 8396.8 | 6036.79 | 7582.2 | 2.78188 | Dales Gorge Member BIF13 | | |
| 44/4 | PS073c | 406.9 | 285.1 | -4.5 | 4019.9 | 4019.9 | 2943.35 | 3696.84 | 2.73152 | Dales Gorge Member BIF13 | | |
| 44/4 | PS074a | 403.2 | 289.1 | -4 | 99115 | 99115 | 72723.1 | 91340.2 | 2.72582 | Dales Gorge Member BIF13? | | |
| 44/4 | PS074b | 403.2 | 288.3 | -16.3 | 60863 | 60863 | 24024.7 | 30175 | 5.06671 | Dales Gorge Member BIF13? | | |
| 44/4 | PS074c | 403.2 | 283.9 | 1.3 | 64629 | 64629 | 51822.1 | 65088.5 | 2.49427 | Dales Gorge Member BIF13? | | |
| 44/4 | PS074d | 403.2 | 281.9 | -1.1 | 38881 | 38881 | 13500.7 | 16956.9 | 5.75984 | Dales Gorge Member BIF13? | | |
| 44/4 | PS075a | 397.5 | 307.6 | -22.5 | 64749 | 64749 | 31921.5 | 40093.4 | 4.05676 | Dales Gorge Member BIF14 | | |
| 44/4 | PS075b | 397.5 | 306 | -25.5 | 12545 | 12545 | 6728.11 | 8450.5 | 3.72913 | Dales Gorge Member BIF14 | | |
| 44/4 | PS075c | 397.5 | 300.2 | -21.6 | 68984 | 68984 | 29163 | 36628.8 | 4.73092 | Dales Gorge Member BIF14 | | |
| 44/4 | PS076a | 391.7 | 226.7 | 11.3 | 47035 | 47035 | 12268.3 | 15409 | 7.66774 | Dales Gorge Member BIF15 | | |
| 44/4 | PS076b | 391.7 | 217.5 | 6.9 | 44723 | 44723 | 24575.3 | 30866.6 | 3.63966 | Dales Gorge Member BIF15 | | |
| 44/4 | PS076c | 391.7 | 197.7 | 9.3 | 68755 | 68755 | 30179.2 | 37905.1 | 4.55645 | Dales Gorge Member BIF15 | | |
| 44/4 | PS076d | 391.7 | 283.1 | -20.1 | 67558 | 67558 | 41794.5 | 52493.9 | 3.23287 | Dales Gorge Member BIF15 | | |
| 44/4 | PS076e | 391.7 | 297 | -28.6 | 79231 | 79231 | 47330.8 | 59447.5 | 3.34797 | Dales Gorge Member BIF15 | | |
| 44/4 | PS077a | 393.8 | 250.9 | 12.6 | 387880 | 387880 | 46579.3 | 58503.6 | 16.6546 | Dales Gorge Member BIF15 | | |
| 44/4 | PS077b | 393.8 | 251.1 | 15.5 | 70922 | 70922 | 21619.7 | 27154.3 | 6.56087 | Dales Gorge Member BIF15 | | |
| 44/4 | PS077c | 393.8 | 238.8 | 17.3 | 144850 | 144850 | 13098.9 | 16452.2 | 22.1163 | Dales Gorge Member BIF15 | | |
| 44/4 | PS078a | 378.5 | 344.2 | -28 | 86806 | 86806 | 25541.9 | 32080.6 | 6.79715 | Dales Gorge Member BIF16 | | |
| 44/4 | PS078b | 378.5 | 339.5 | -24.3 | 70707 | 70707 | 20658 | 25946.4 | 6.84548 | Dales Gorge Member BIF16 | | |
| 44/4 | PS078c | 378.5 | 350.3 | -34.7 | 41892 | 41892 | 18266.3 | 22942.4 | 4.58681 | Dales Gorge Member BIF16 | | |
| 44/4 | PS078d | 378.5 | 349.7 | -32 | 66989 | 66989 | 27141.5 | 34089.7 | 4.93628 | Dales Gorge Member BIF16 | | |
| 44/4 | PS078e | 378.5 | 346.5 | -36.2 | 65183 | 65183 | 32881.3 | 41298.9 | 3.96475 | Dales Gorge Member BIF16 | | |
| 44/4 | PS079a | 372.5 | 100.4 | 14 | 349040 | 349040 | 40995.4 | 51490.2 | 17.0283 | Dales Gorge Member BIF16 | | |
| 44/4 | PS079b | 372.5 | 120.5 | 12.9 | 443400 | 443400 | 49329.6 | 61958 | 17.977 | Dales Gorge Member BIF16 | | |
| 44/4 | PS079c | 372.5 | 99.2 | 10.2 | 305390 | 305390 | 42871.3 | 53846.3 | 14.2468 | Dales Gorge Member BIF16 | | |
| 44/4 | PS079d | 372.5 | 93.2 | -0.8 | 285480 | 285480 | 40216.8 | 50512.4 | 14.197 | Dales Gorge Member BIF16 | | |
| 44/4 | PS080a | 370.2 | 241.4 | 6.6 | 74247 | 74247 | 21906 | 27514 | 6.77868 | Dales Gorge Member BIF16 | | |
| 44/4 | PS080b | 370.2 | 231.1 | 11.5 | 33865 | 33865 | 12574.9 | 15794.1 | 5.38611 | Dales Gorge Member BIF16 | | |
| 44/4 | PS080c | 370.2 | 168.9 | 25.1 | 16873 | 16873 | 16666.7 | 20933.4 | 2.02475 | Dales Gorge Member BIF16 | | |
| 44/4 | PS080d | 370.2 | 218.5 | 9.1 | 18840 | 18840 | 7621.17 | 9572.19 | 4.94412 | Dales Gorge Member BIF16 | | |
| 44/4 | PS080e | 370.2 | 143.1 | 28.4 | 18936 | 18936 | 7904.83 | 9928.46 | 4.791 | Dales Gorge Member BIF16 | | |
| 44/4 | PS081a | 354.7 | 141.7 | 11.4 | 57489 | 57489 | 23134.8 | 29057.3 | 4.96992 | Whaleback Shale 1 BIF | | |
| 44/4 | PS081b | 354.7 | 185.5 | 16.3 | 92017 | 92017 | 25557.3 | 32100 | 7.20083 | Whaleback Shale 1 BIF | | |
| 44/4 | PS082a | 350.2 | 323.1 | -19.7 | 55599 | 55599 | 33047.3 | 41507.4 | 3.36481 | Whaleback Shale 2 | | |
| 44/4 | PS082b | 350.2 | 33.7 | -18.3 | 3506 | 3506 | 3504.06 | 4401.1 | 2.00111 | Whaleback Shale 2 | | |
| 44/4 | PS082c | 350.2 | 321.1 | -13.8 | 8453 | 8453 | 33483.9 | 42055.7 | 0.5049 | Whaleback Shale 2 | | |
| 44/4 | PS082d | 350.2 | 335.1 | -21.3 | 57140 | 57140 | 29765.5 | 37385.4 | 3.83935 | Whaleback Shale 2 | | |
| 44/4 | PS083a | 343.3 | 328.3 | -34.6 | 612.63 | 612.63 | 1059.69 | 1330.97 | 1.15624 | Whaleback Shale 2 | | |
| 44/4 | PS083b | 343.3 | 15.5 | -42.5 | 791.47 | 791.47 | 426.712 | 535.95 | 3.70962 | Whaleback Shale 2 | | |
| 44/4 | PS084a | 341.3 | 153.8 | -54.9 | 0.25392 | 0.25392 | 16.994 | 21.3445 | 0.02988 | Whaleback Shale 2 | | |
| 44/4 | PS084b | 341.3 | 21.8 | 52.2 | 0.56794 | 0.56794 | 66.589 | 83.6358 | 0.01706 | Whaleback Shale 2 | | |
| 44/4 | PS085a | 339.7 | 128.7 | 22.4 | 16464 | 16464 | 8243.89 | 10354.3 | 3.99423 | Whaleback Shale 2 | | |
| 44/4 | PS086a | 331.6 | 91.3 | -25 | 154.89 | 154.89 | 233.07 | 292.736 | 1.32913 | Whaleback Shale 2 | | |
| 44/4 | PS086b | 331.6 | 112.4 | 12.9 | 1.3361 | 1.3361 | 8.075 | 10.1422 | 0.33092 | Whaleback Shale 2 | | |
| 44/4 | PS086c | 331.6 | 177.9 | 19.4 | 1.47 | 1.47 | 5.721 | 7.18558 | 0.5139 | Whaleback Shale 2 | | |
| 44/4 | PS087 | 327.4 | 126.1 | 27.1 | 0.24653 | 0.24653 | 9.52 | 11.9571 | 0.05179 | Whaleback Shale 2 | | |
| 44/4 | PS088a | 320.8 | 9.4 | -27 | 22.45 | 22.45 | 39.09 | 49.097 | 1.14863 | Joffre Member J1 | | |
| 44/4 | PS088b | 320.8 | 317.8 | -35.3 | 1.7947 | 1.7947 | 40.478 | 50.8404 | 0.08868 | Joffre Member J1 | | |
| 44/4 | PS089a | 316.2 | 327.2 | -38.1 | 12617 | 12617 | 14070.8 | 17672.9 | 1.79336 | Joffre Member J1 | | |
| 44/4 | PS089b | 316.2 | 328.2 | -30 | 20165 | 20165 | 13260.6 | 16655.3 | 3.04134 | Joffre Member J1 | | |
| 44/4 | PS089c | 316.2 | 348.4 | -27.4 | 23380 | 23380 | 10714.6 | 13457.6 | 4.36413 | Joffre Member J1 | | |
| 44/4 | PS089d | 316.2 | 347.8 | -34.6 | 54304 | 54304 | 29881.1 | 37530.6 | 3.63468 | Joffre Member J1 | | |
| 44/4 | PS090a | 309.3 | 321.9 | -40.7 | 1884.7 | 1884.7 | 4827.05 | 6062.78 | 0.78089 | Joffre Member J1 | | |
| 44/4 | PS090b | 309.3 | 319.4 | -42.8 | 8497.5 | 8497.5 | 16042 | 20148.7 | 1.05941 | Joffre Member J1 | | |
| 44/4 | PS090c | 309.3 | 122.6 | -82.9 | 10270 | 10270 | 24606.1 | 30905.2 | 0.83475 | Joffre Member J1 | | |
| 44/4 | PS091a | 303 | 242.3 | 9.3 | 6175.8 | 6175.8 | 20471.6 | 25712.4 | 0.60335 | Joffre Member J2 | | |
| 44/4 | PS091b | 303 | 264.6 | -62.5 | 17.866 | 17.866 | 66.702 | 83.7777 | 0.5357 | Joffre Member J2 | | |
| 44/4 | PS092a | 298.5 | 234.6 | 6.4 | 3989.7 | 3989.7 | 13814.5 | 17351 | 0.57761 | Joffre Member J2 | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44/4 | PS092b | 298.5 | 280.3 | -14.5 | 2937.2 | 2937.2 | 2555.99 | 3210.32 | 2.29829 | Joffre Member J2 | | |
| 44/4 | PS093a | 291 | 331.5 | -35.2 | 26815 | 26815 | 19015.6 | 23883.6 | 2.82031 | Joffre Member J2 | | |
| 44/4 | PS093b | 291 | 332.6 | -32.4 | 7852.1 | 7852.1 | 3949.62 | 4960.72 | 3.97613 | Joffre Member J2 | | |
| 44/4 | PS093c | 291 | 105.6 | -72.6 | 7978.2 | 7978.2 | 4614.86 | 5796.26 | 3.45762 | Joffre Member J2 | | |
| 44/4 | PS093d | 291 | 182.8 | -70.5 | 25644 | 25644 | 26034.7 | 32699.6 | 1.96998 | Joffre Member J2 | | |
| 44/4 | PS094a | 283.8 | 225.1 | 29.2 | 41712 | 41712 | 39981.4 | 50216.6 | 2.08657 | Joffre Member J2 | | |
| 44/4 | PS095a | 279.7 | 207.6 | -30.9 | 3921.5 | 3921.5 | 12195.1 | 15317.1 | 0.64313 | Joffre Member J2 | | |
| 44/4 | PS095b | 279.7 | 270.2 | -53.3 | 23947 | 23947 | 61977.9 | 77844.2 | 0.77276 | Joffre Member J2 | | |
| 44/4 | PS096a | 273 | 322.8 | -28.2 | 48094 | 48094 | 38648.1 | 48542.1 | 2.48881 | Joffre Member J2 | | |
| 44/4 | PS096b | 273 | 200.2 | -58.7 | 20904 | 20904 | 10504.8 | 13194 | 3.97989 | Joffre Member J2 | | |
| 44/4 | PS097a | 269.9 | 313.3 | -12.6 | 13254 | 13254 | 8801.39 | 11054.5 | 3.0118 | Joffre Member J2 | | |
| 44/4 | PS097b | 269.9 | 319.2 | -19 | 6519.8 | 6519.8 | 4018.95 | 5047.8 | 3.24453 | Joffre Member J2 | | |
| 44/4 | PS098a | 263.3 | 117.5 | 31.7 | 36639 | 36639 | 25534.3 | 32071.1 | 2.86979 | Joffre Member J2 | | |
| 44/4 | PS098b | 263.3 | 273.5 | 9 | 22462 | 22462 | 9931.89 | 12474.4 | 4.52321 | Joffre Member J2 | | |
| 44/4 | PS098c | 263.3 | 163.8 | -10.4 | 16315 | 16315 | 6567.03 | 8248.19 | 4.96876 | Joffre Member J2 | | |
| 44/4 | PS099a | 257.8 | 5.1 | -37.5 | 12941 | 12941 | 9920.16 | 12459.7 | 2.60903 | Joffre Member J2 | | |
| 44/4 | PS099b | 257.8 | 314.7 | -39.7 | 9678.4 | 9678.4 | 8889.36 | 11165 | 2.17753 | Joffre Member J2 | | |
| 44/4 | PS099c | 257.8 | 348.2 | -34.1 | 6180.2 | 6180.2 | 2191.88 | 2753 | 5.63919 | Joffre Member J2 | | |
| 44/4 | PS100a | 246.9 | 327 | -29.3 | 5600.2 | 5600.2 | 2708.52 | 3401.9 | 4.13525 | Joffre Member J3 | | |
| 44/4 | PS100b | 246.9 | 327.6 | -34.7 | 27243 | 27243 | 12286.6 | 15432 | 4.43458 | Joffre Member J3 | | |
| 44/4 | PS101a | 251.8 | 30.3 | -36.9 | 7916.3 | 7916.3 | 4034.26 | 5067.04 | 3.92453 | Joffre Member J3 | | |
| 44/4 | PS101b | 251.8 | 338.7 | -36.8 | 9387.1 | 9387.1 | 3280.89 | 4120.79 | 5.72229 | Joffre Member J3 | | |
| 44/4 | PS101c | 251.8 | 3 | -34.6 | 16444 | 16444 | 4991.96 | 6269.91 | 6.58819 | Joffre Member J3 | | |
| 44/4 | PS102a | 239.1 | 308.5 | -41.5 | 180.95 | 180.95 | 114.148 | 143.37 | 3.17045 | Joffre Member J3 | | |
| 44/4 | PS102b | 239.1 | 16.3 | -37 | 89.658 | 89.658 | 87.275 | 109.617 | 2.05461 | Joffre Member J3 | | |
| 44/4 | PS102c | 239.1 | 25.1 | -22.6 | 39131 | 39131 | 15167.1 | 19049.9 | 5.15999 | Joffre Member J3 | | |
| 44/4 | PS103a | 234.1 | 311.6 | 24.2 | 41.572 | 41.572 | 130.587 | 164.017 | 0.63669 | Joffre Member J3 | | |
| 44/4 | PS103b | 234.1 | 0.5 | -22.2 | 9920.7 | 9920.7 | 7015.81 | 8811.85 | 2.8281 | Joffre Member J3 | | |
| 44/4 | PS103c | 234.1 | 302.1 | -17.1 | 2581.8 | 2581.8 | 9434.49 | 11849.7 | 0.54731 | Joffre Member J3 | | |
| 44/4 | PS103d | 234.1 | 309.1 | -9.5 | 8598.1 | 8598.1 | 17395.8 | 21849.1 | 0.98853 | Joffre Member J3 | | |
| 44/4 | PS104a | 229.4 | 289.2 | -7.2 | 2273.4 | 2273.4 | 2650.75 | 3329.34 | 1.71529 | Joffre Member J3 | | |
| 44/4 | PS104b | 229.4 | 316.4 | -19.1 | 3802.4 | 3802.4 | 15019.6 | 18864.6 | 0.50633 | Joffre Member J3 | | |
| 44/4 | PS104c | 229.4 | 296.4 | 1.1 | 229.5 | 229.5 | 314.939 | 395.563 | 1.45743 | Joffre Member J3 | | |
| 44/4 | PS105a | 223.7 | 347.5 | -46 | 477.9 | 477.9 | 270.553 | 339.815 | 3.53276 | Joffre Member J3 | | |
| 44/4 | PS105b | 223.7 | 328.9 | -40.8 | 10209 | 10209 | 5663.81 | 7113.74 | 3.605 | Joffre Member J3 | | |
| 44/4 | PS105c | 223.7 | 313.1 | -46.6 | 219.45 | 219.45 | 133.707 | 167.936 | 3.28255 | Joffre Member J3 | | |
| 44/4 | PS106a | 215.9 | 308.8 | -44.7 | 109.79 | 109.79 | 89.48 | 112.387 | 2.45396 | Joffre Member J3 | | |
| 44/4 | PS106b | 215.9 | 306.6 | -30.8 | 5738.5 | 5738.5 | 4972.21 | 6245.1 | 2.30823 | Joffre Member J3 | | |
| 44/4 | PS106c | 215.9 | 86.1 | -5.2 | 3451.5 | 3451.5 | 4237.05 | 5321.73 | 1.6292 | Joffre Member J3 | | |
| 44/4 | PS106d | 215.9 | 76.7 | -49.2 | 4364.3 | 4364.3 | 6184.85 | 7768.17 | 1.41129 | Joffre Member J3 | | |
| 44/4 | PS107a | 208 | 78.4 | -8.4 | 47091 | 47091 | 3834.45 | 4816.06 | 24.5621 | Joffre Member J3 | | |
| 44/4 | PS107b | 208 | 334.5 | 48 | 133.57 | 133.57 | 179.561 | 225.529 | 1.48774 | Joffre Member J3 | | |
| 44/4 | PS108a | 204.5 | 336.9 | -43.6 | 14747 | 14747 | 10257 | 12882.8 | 2.8755 | Joffre Member J3 | | |
| 44/4 | PS108b | 204.5 | 316.9 | -41.4 | 539.01 | 539.01 | 237.06 | 297.747 | 4.54746 | Joffre Member J3 | | |
| 44/4 | PS109a | 198.2 | 323.7 | -43.8 | 14815 | 14815 | 4586.4 | 5760.51 | 6.46041 | Joffre Member J3 | | |
| 44/4 | PS109b | 198.2 | 318.4 | -34.8 | 381050 | 381050 | 17590.8 | 22094 | 43.3239 | Joffre Member J3 | | |
| 44/4 | PS109c | 198.2 | 316.6 | -39.9 | 74740 | 74740 | 10018.1 | 12582.7 | 14.921 | Joffre Member J3 | | |
| 44/4 | PS109d | 198.2 | 304.4 | -35.2 | 305.21 | 305.21 | 84.707 | 106.392 | 7.20625 | Joffre Member J3 | | |
| 44/4 | PS110a | 187.6 | 279 | -14.7 | 872.76 | 872.76 | 506.53 | 636.202 | 3.44603 | Joffre Member J4 | | |
| 44/4 | PS110b | 187.6 | 273.5 | -1.2 | 5840.8 | 5840.8 | 1922.9 | 2415.16 | 6.07499 | Joffre Member J4 | | |
| 44/4 | PS110c | 187.6 | 284.4 | -10.3 | 5063.8 | 5063.8 | 2600.5 | 3266.23 | 3.89448 | Joffre Member J4 | | |
| 44/4 | PS110d | 187.6 | 265.5 | 1.3 | 11030 | 11030 | 3461.34 | 4347.45 | 6.37325 | Joffre Member J4 | | |
| 44/4 | PS111a | 185 | 306.6 | -34.3 | 17024 | 17024 | 12084.8 | 15178.5 | 2.81742 | Joffre Member J4 | | |
| 44/4 | PS111b | 185 | 309.9 | -34.3 | 48182 | 48182 | 31289.5 | 39299.6 | 3.07976 | Joffre Member J4 | | |
| 44/4 | PS111c | 185 | 310 | -37.9 | 63715 | 63715 | 44029.7 | 55301.3 | 2.89418 | Joffre Member J4 | | |
| 44/4 | PS112a | 182.4 | 312.3 | -32.7 | 22290 | 22290 | 34703.5 | 43587.6 | 1.2846 | Joffre Member J4 | | |
| 44/4 | PS112b | 182.4 | 312.8 | -12.6 | 6827.2 | 6827.2 | 21075 | 26470.2 | 0.6479 | Joffre Member J4 | | |
| 44/4 | PS112c | 182.4 | 303.3 | -23.3 | 6854.2 | 6854.2 | 18938.1 | 23786.2 | 0.72385 | Joffre Member J4 | | |
| 44/4 | PS113a | 176 | 86.6 | -60.2 | 59919 | 59919 | 109450 | 137470 | 1.09491 | Joffre Member J4 | | |
| 44/4 | PS113b | 176 | 101.8 | -40.2 | 68355 | 68355 | 115116 | 144586 | 1.18759 | Joffre Member J4 | | |
| 44/4 | PS113c | 176 | 95.8 | -33.4 | 50425 | 50425 | 56041.8 | 70388.4 | 1.79955 | Joffre Member J4 | | |
| 44/4 | PS114a | 175.3 | 319.2 | -62.8 | 36734 | 36734 | 43975.6 | 55233.3 | 1.67065 | Weeli Wolli Iron Formation | | |
| 44/4 | PS114b | 175.3 | 310.1 | -56.2 | 50092 | 50092 | 56866.2 | 71423.9 | 1.76175 | Weeli Wolli Iron Formation | | |
| 44/4 | PS114c | 175.3 | 302.8 | -43.8 | 98849 | 98849 | 79764.8 | 100185 | 2.47851 | Weeli Wolli Iron Formation | | |
| 44/4 | PS114d | 175.3 | 302.7 | -45.4 | 76209 | 76209 | 49942.4 | 62727.6 | 3.05188 | Weeli Wolli Iron Formation | | |
| 44/4 | PS115a | 159 | 296.4 | 5.5 | 98544 | 98544 | 136205 | 171073 | 1.447 | Weeli Wolli Iron Formation | | |
| 44/4 | PS115b | 159 | 275.6 | 5.9 | 46687 | 46687 | 56508.7 | 70975 | 1.65238 | Weeli Wolli Iron Formation | | |
| 44/4 | PS115c | 159 | 278.2 | 6 | 25824 | 25824 | 39865.1 | 50070.6 | 1.29557 | Weeli Wolli Iron Formation | | |
| 44/4 | PS115d | 159 | 279.9 | 4.8 | 2118 | 2118 | 4598.74 | 5776.01 | 0.92112 | Weeli Wolli Iron Formation | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 44/4 | PS115e | 159 | 281.2 | 9.4 | 61198 | 61198 | 65917.2 | 82792 | 1.85681 | Weeli Wolli Iron Formation | |
| 44/4 | PS116a | 153 | 320.7 | -35.7 | 9395.8 | 9395.8 | 9869.71 | 12396.4 | 1.90397 | Weeli Wolli Iron Formation | |
| 44/4 | PS116b | 153 | 328.4 | -24 | 87134 | 87134 | 95820.4 | 120350 | 1.81869 | Weeli Wolli Iron Formation | |
| 44/4 | PS117a | 147.7 | 348 | -62.7 | 2847.7 | 2847.7 | 3769.17 | 4734.08 | 1.51105 | Weeli Wolli Iron Formation | |
| 44/4 | PS117b | 147.7 | 348.3 | -64.5 | 3042.1 | 3042.1 | 5426.61 | 6815.83 | 1.12118 | Weeli Wolli Iron Formation | |
| 44/4 | PS117c | 147.7 | 350.2 | -52.8 | 5108.1 | 5108.1 | 7497.99 | 9417.47 | 1.36253 | Weeli Wolli Iron Formation | |
| 44/4 | PS117d | 147.7 | 333.3 | -30.7 | 22993 | 22993 | 26601.7 | 33411.8 | 1.72868 | Weeli Wolli Iron Formation | |
| 44/4 | PS117e | 147.7 | 296.7 | -29.7 | 14823 | 14823 | 18788.2 | 23598 | 1.57791 | Weeli Wolli Iron Formation | |
| 44/4 | PS118a | 145.4 | 342.9 | -39.2 | 13470 | 13470 | 17400.8 | 21855.3 | 1.54821 | Weeli Wolli Iron Formation | |
| 44/4 | PS118b | 145.4 | 340 | -39.4 | 8082 | 8082 | 8947.31 | 11237.8 | 1.80658 | Weeli Wolli Iron Formation | |
| 44/4 | PS118c | 145.4 | 358.6 | -51.6 | 64213 | 64213 | 79176.8 | 99446 | 1.62202 | Weeli Wolli Iron Formation | |
| 44/4 | PS119a | 141.5 | 338.4 | 30.7 | 7.2454 | 7.2454 | 90.799 | 114.044 | 0.15959 | Weeli Wolli Iron Formation | |
| 44/4 | PS119b | 141.5 | 305.2 | 70.5 | 16.032 | 16.032 | 172.124 | 216.188 | 0.18628 | Weeli Wolli Iron Formation | |
| 44/4 | PS119c | 141.5 | 77.5 | 83 | 64.18 | 64.18 | 614.436 | 771.732 | 0.20891 | Weeli Wolli Iron Formation | |
| 44/4 | PS120a | 129.5 | 298.5 | -50.5 | 267000 | 267000 | 45395.6 | 57016.9 | 11.7633 | Weeli Wolli Iron Formation | |
| 44/4 | PS120b | 129.5 | 302.8 | -47.2 | 273750 | 273750 | 71256.4 | 89498 | 7.68352 | Weeli Wolli Iron Formation | |
| 44/4 | PS120c | 129.5 | 306.4 | -46.9 | 266660 | 266660 | 65404.6 | 82148.1 | 8.15417 | Weeli Wolli Iron Formation | |
| 44/4 | PS121 | 126.3 | 298 | -30.1 | 2006.2 | 2006.2 | 4507.47 | 5661.39 | 0.89017 | Weeli Wolli Iron Formation | |
| 44/4 | PS122a | 118.7 | 253.6 | -59.4 | 478.06 | 478.06 | 1950.76 | 2450.15 | 0.49013 | Weeli Wolli Iron Formation | |
| 44/4 | PS122b | 118.7 | 53.7 | -49.1 | 13219 | 13219 | 6473.94 | 8131.27 | 4.08376 | Weeli Wolli Iron Formation | |
| 44/4 | PS123a | 116.3 | 161.5 | 57.1 | 39503 | 39503 | 31571.8 | 39654.2 | 2.50242 | Weeli Wolli Iron Formation | |
| 44/4 | PS123b | 116.3 | 18.3 | 18.3 | 2846.5 | 2846.5 | 3862.06 | 4850.74 | 1.47409 | Weeli Wolli Iron Formation | |
| 44/4 | PS123c | 116.3 | 11.3 | 2.4 | 3505.7 | 3505.7 | 4119.95 | 5174.66 | 1.70182 | Weeli Wolli Iron Formation | |
| 44/4 | PS124a | 51.8 | 310.8 | -50 | 140.69 | 140.69 | 92.761 | 116.508 | 3.03339 | Weeli Wolli Iron Formation | |
| 44/4 | PS124b | 51.8 | 303.7 | -45.2 | 346.85 | 346.85 | 105.519 | 132.532 | 6.57417 | Weeli Wolli Iron Formation | |
| BKD2 | PS125a | 135.2 | 70.9 | -3.8 | 1594.7 | 1594.7 | 13516.2 | 16976.4 | 0.23597 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS125b | 135.2 | 73.1 | -17 | 2035.5 | 2035.5 | 17033.8 | 21394.4 | 0.239 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS125c | 135.2 | 50.6 | -26.4 | 1959.2 | 1959.2 | 13588.6 | 17067.3 | 0.28836 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS125d | 135.2 | 33 | -22.9 | 1360 | 1360 | 11091.8 | 13931.3 | 0.24523 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS125e | 135.2 | 306.3 | -42.9 | 150.04 | 150.04 | 866.548 | 1088.38 | 0.34629 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS125f | 135.2 | 14 | -75.5 | 24.945 | 24.945 | 268.226 | 336.892 | 0.186 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS125g | 135.2 | 57.2 | -25.7 | 566.12 | 566.12 | 6627.16 | 8323.72 | 0.17085 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS126a | 139.6 | 311.2 | 45.7 | 5799.8 | 5799.8 | 27676.4 | 34761.6 | 0.41911 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS126b | 139.6 | 313.5 | -12.8 | 9672.6 | 9672.6 | 33798.1 | 42450.4 | 0.57238 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS126c | 139.6 | 298.8 | -25.2 | 7468.3 | 7468.3 | 42003.3 | 52756.2 | 0.35561 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS126d | 139.6 | 300 | -6.8 | 4724.2 | 4724.2 | 45349.4 | 56958.8 | 0.20835 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS127a | 142.4 | 334.9 | -69.7 | 50.477 | 50.477 | 261.611 | 328.583 | 0.38589 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS127b | 142.4 | 322 | -63.6 | 11716 | 11716 | 9822.54 | 12337.1 | 2.38553 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS127c | 142.4 | 324.6 | -65 | 91106 | 91106 | 105945 | 133067 | 1.71988 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS127d | 142.4 | 321.3 | -62.1 | 105020 | 105020 | 167111 | 209891 | 1.25689 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS127e | 142.4 | 330.9 | -65.8 | 77148 | 77148 | 159154 | 199898 | 0.96947 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS128a | 144.8 | 329 | -3.5 | 13.68 | 13.68 | 61.762 | 77.5731 | 0.44299 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS128b | 144.8 | 333.3 | 39.9 | 25041 | 25041 | 48032.4 | 60328.6 | 1.04267 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS128c | 144.8 | 329.4 | -3.4 | 84155 | 84155 | 123020 | 154513 | 1.36815 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS128d | 144.8 | 20.6 | -14.9 | 15940 | 15940 | 41511.8 | 52138.8 | 0.76798 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS129a | 148 | 311.3 | -18.4 | 34652 | 34652 | 127941 | 160694 | 0.54169 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS129b | 148 | 308.8 | -40.2 | 30628 | 30628 | 120950 | 151913 | 0.50646 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS129c | 148 | 322.5 | -46.9 | 63938 | 63938 | 124610 | 156511 | 1.02621 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS129d | 148 | 312.1 | -10.1 | 21864 | 21864 | 80589.1 | 101220 | 0.5426 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS130a | 150.9 | 310.2 | -40.5 | 6492.1 | 6492.1 | 38348.4 | 48165.6 | 0.33859 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS130b | 150.9 | 306.2 | -41.8 | 12659 | 12659 | 50795 | 63798.6 | 0.49843 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS130c | 150.9 | 296.3 | -33.8 | 2910.3 | 2910.3 | 10876.9 | 13661.3 | 0.53514 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS131a | 151.9 | 305.5 | -35.5 | 103380 | 103380 | 125597 | 157750 | 1.64622 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS131b | 151.9 | 323.5 | -43.4 | 67270 | 67270 | 100452 | 126168 | 1.33934 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS131c | 151.9 | 326.4 | -68 | 22654 | 22654 | 63280.6 | 79480.4 | 0.71599 | Marra Mamba Newman Member BIF1 | |
| BKD2 | PS131d | 151.9 | 324.7 | -57.7 | 51261 | 51261 | 130758 | 164232 | 0.78406 | Marra Mamba Newman Member BIF1 | |
| BWD1 | PS132a | 156.5 | 279.3 | -37.8 | 22142 | 22142 | 10709.1 | 13450.6 | 4.13519 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS132b | 156.5 | 229.5 | 39.6 | 4381.6 | 4381.6 | 9976.35 | 12530.3 | 0.8784 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS132c | 156.5 | 184.6 | -16.3 | 10854 | 10854 | 7545.11 | 9476.65 | 2.8771 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS132d | 156.5 | 164.7 | -17.9 | 12989 | 12989 | 14228 | 17870.3 | 1.82584 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS133a | 155.5 | 122.2 | -10.6 | 327.15 | 327.15 | 121.056 | 152.046 | 5.40494 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS133b | 155.5 | 126.1 | -33.2 | 416.7 | 416.7 | 398.373 | 500.356 | 2.09201 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS133c | 155.5 | 306.1 | -72.9 | 290.05 | 290.05 | 353.139 | 443.543 | 1.6427 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS133d | 155.5 | 291.2 | 63.4 | 54.447 | 54.447 | 109.156 | 137.1 | 0.9976 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS133e | 155.5 | 309 | 58 | 68.725 | 68.725 | 59.251 | 74.4193 | 2.31979 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS134a | 158.3 | 240.9 | -83.7 | 503.55 | 503.55 | 218.035 | 273.852 | 4.61898 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS134b | 158.3 | 239.7 | -68.3 | 682.89 | 682.89 | 271.625 | 341.161 | 5.02818 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS134c | 158.3 | 234.9 | -69.3 | 518.35 | 518.35 | 205 | 257.48 | 5.05707 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS134d | 158.3 | 222.9 | -58.2 | 435.5 | 435.5 | 177.566 | 223.023 | 4.90522 | Marra Mamba Newman Member BIF10 | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| BWD1 | PS134e | 158.3 | 205.2 | -60.6 | 274.6 | 274.6 | 157.301 | 197.57 | 3.4914 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS134f | 158.3 | 204.4 | -67.6 | 200.34 | 200.34 | 109.641 | 137.709 | 3.65447 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS134g | 158.3 | 204.8 | -72.1 | 227.51 | 227.51 | 106.625 | 133.921 | 4.26748 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS135a | 161.5 | 307.2 | -79.4 | 293.52 | 293.52 | 125.096 | 157.121 | 4.69272 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS135b | 161.5 | 334 | -76.6 | 424.56 | 424.56 | 188.687 | 236.991 | 4.50015 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS135c | 161.5 | 5 | -70.5 | 311.12 | 311.12 | 125.149 | 157.187 | 4.97199 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS135d | 161.5 | 341.7 | -83.7 | 49.38 | 49.38 | 47.226 | 59.3159 | 2.09122 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS135e | 161.5 | 33.7 | -70.5 | 176.96 | 176.96 | 83.658 | 105.074 | 4.23056 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS136a | 165.6 | 306.7 | 63.5 | 149.39 | 149.39 | 67.342 | 84.5816 | 4.43676 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS136b | 165.6 | 302.1 | 65.3 | 88.354 | 88.354 | 76.378 | 95.9308 | 2.3136 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS136c | 165.6 | 307.1 | 78.6 | 184.04 | 184.04 | 102.47 | 128.702 | 3.59208 | Marra Mamba Newman Member BIF10 | |
| BWD1 | PS136d | 165.6 | 171.4 | 79.4 | 271.09 | 271.09 | 138.834 | 174.376 | 3.90524 | Marra Mamba Newman Member BIF10 | |
| D97B26E | MQ0951a | 2.15 | 129.4 | -16.2 | 60.376 | 60.376 | 43.889 | 55.1246 | 2.7513 | weathered chert/shale | |
| D97B26E | MQ0951b | 2.15 | 112.5 | -6.4 | 204 | 204 | 97.55 | 122.523 | 4.18247 | weathered chert/shale | |
| D97B26E | MQ0951c | 2.15 | 99.4 | -9.5 | 1535.9 | 1535.9 | 297.067 | 373.116 | 10.3404 | weathered chert/shale | |
| D97B26E | MQ0952a | 9 | 260.1 | 11.1 | 0.78868 | 0.78868 | 2.995 | 3.76172 | 0.52666 | breccia/clasts/clay | |
| D97B26E | MQ0953b | 19 | 165.4 | -71.9 | 33.124 | 33.124 | 39.192 | 49.2252 | 1.69034 | massive limoniyic shale | |
| D97B26E | MQ0955b | 37.8 | 264.2 | -22.6 | 1.8939 | 1.8939 | 32.613 | 40.9619 | 0.11614 | weathered shale | |
| D97B26E | MQ0955c | 37.8 | 307 | 2.1 | 0.72895 | 0.72895 | 24.661 | 30.9742 | 0.05912 | weathered shale | |
| D97B26E | MQ0956a | 54 | 326.9 | -70.9 | 21048 | 21048 | 22425.7 | 28166.6 | 1.87713 | Whaleback Shale BIF1 | |
| D97B26E | MQ0956b | 54 | 344.2 | -74 | 18856 | 18856 | 15249.8 | 19153.8 | 2.47295 | Whaleback Shale BIF1 | |
| D97B26E | MQ0957a | 55.1 | 247.9 | -59.3 | 5342.6 | 5342.6 | 6796.77 | 8536.74 | 1.5721 | Whaleback Shale BIF1 | |
| D97B26E | MQ0957b | 55.1 | 203.5 | -67.8 | 14390 | 14390 | 18469.4 | 23197.6 | 1.55825 | Whaleback Shale BIF1 | |
| D97B26E | MQ0957c | 55.1 | 227.5 | -12.9 | 1754.5 | 1754.5 | 6572.23 | 8254.72 | 0.53391 | Whaleback Shale BIF1 | |
| D97B26E | MQ0958b | 62 | 285.1 | -85 | 280.22 | 280.22 | 174.994 | 219.792 | 3.20262 | Whaleback Shale BIF1 | |
| D97B26E | MQ0958c | 62 | 302.8 | -77 | 1989.1 | 1989.1 | 2290.9 | 2877.37 | 1.73652 | Whaleback Shale BIF1 | |
| D97B26E | MQ0959b | 65.1 | 278.3 | -47.6 | 4584.6 | 4584.6 | 7274.29 | 9136.51 | 1.26049 | Whaleback Shale BIF1 | |
| D97B26E | MQ0959c | 65.1 | 275 | -37.7 | 2833.7 | 2833.7 | 4116.24 | 5169.99 | 1.37684 | Whaleback Shale BIF1 | |
| D97B26E | MQ0960a | 67 | 337.8 | -48.9 | 2958 | 2958 | 6555.36 | 8233.53 | 0.90247 | Whaleback Shale BIF1 | |
| D97B26E | MQ0960b | 67 | 163 | -74.6 | 1645.2 | 1645.2 | 3938.55 | 4946.82 | 0.83543 | Whaleback Shale BIF1 | |
| D97B26E | MQ0961a | 72.3 | 354 | -66.6 | 36.756 | 36.756 | 2.384 | 2.9943 | 30.8356 | WS1 shale | |
| D97B26E | MQ0961c | 72.3 | 226.6 | -70 | 3.6635 | 3.6635 | 5.787 | 7.26847 | 1.26611 | WS1 shale | |
| D97B26E | MQ0962a | 77 | 35.1 | -49.8 | 91.37 | 91.37 | 10.558 | 13.2608 | 17.3082 | WS1 ht -shale | |
| D97B26E | MQ0963a | 81.8 | 166 | -82 | 4729.5 | 4729.5 | 6674.52 | 8383.2 | 1.41718 | Whaleback Shale BIF2 | |
| D97B26E | MQ0963b | 81.8 | 99.5 | -59.4 | 8885.1 | 8885.1 | 11649.1 | 14631.2 | 1.52546 | Whaleback Shale BIF2 | |
| D97B26E | MQ0964b | 91.4 | 240.4 | -63.8 | 21698 | 21698 | 16538.1 | 20771.8 | 2.62401 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0964c | 91.4 | 259 | -66.6 | 16168 | 16168 | 17270.9 | 21692.3 | 1.87228 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0965b | 92.2 | 344.8 | -56.9 | 689.58 | 689.58 | 1446.99 | 1817.42 | 0.95312 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0965c | 92.2 | 335.9 | -65.1 | 982.79 | 982.79 | 2081.88 | 2614.84 | 0.94414 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0966b | 96.3 | 190.9 | -61.5 | 60412 | 60412 | 47839.4 | 60086.2 | 2.52562 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0966c | 96.3 | 200.7 | -65.5 | 57412 | 57412 | 72216 | 90703.3 | 1.59001 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0967b | 98.4 | 334.9 | -66.3 | 19875 | 19875 | 25689 | 32265.4 | 1.54735 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0967c | 98.4 | 331.6 | -75.6 | 21497 | 21497 | 35042.8 | 44013.8 | 1.2269 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0968b | 100 | 23.9 | -63.8 | 14021 | 14021 | 24572.1 | 30862.6 | 1.14121 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0968c | 100 | 24.1 | -59.9 | 5717.9 | 5717.9 | 10208.1 | 12821.3 | 1.12027 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0969b | 105.5 | 262.8 | -62.6 | 66065 | 66065 | 45887.4 | 57634.6 | 2.87944 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0969c | 105.5 | 246.9 | -81.1 | 27756 | 27756 | 46378.5 | 58251.4 | 1.19693 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0970b | 107 | 194.4 | -74.3 | 69747 | 69747 | 98894.7 | 124212 | 1.41053 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0970c | 107 | 69.9 | -87.9 | 73574 | 73574 | 103634 | 130164 | 1.41989 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0971b | 107.7 | 324.8 | -78.3 | 55612 | 55612 | 91310.3 | 114686 | 1.21809 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0971c | 107.7 | 191.9 | -72.7 | 89356 | 89356 | 111351 | 139857 | 1.60494 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0972b | 112 | 205.6 | -50.2 | 36762 | 36762 | 23015.5 | 28907.5 | 3.19454 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0972c | 112 | 222.9 | -52 | 24497 | 24497 | 16094.2 | 20214.3 | 3.0442 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0973a | 112.7 | 173.3 | -41.5 | 20156 | 20156 | 14023.5 | 17613.5 | 2.87461 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0973b | 112.7 | 176.4 | -45.1 | 10364 | 10364 | 9853.66 | 12376.2 | 2.10358 | Dales Gorge Member BIF16 | |
| D97B26E | MQ0974b | 117.3 | 157 | -42.4 | 43920 | 43920 | 22038.7 | 27680.5 | 3.98573 | DGM S16 | |
| D97B26E | MQ0974c | 117.3 | 164.4 | -43.3 | 83471 | 83471 | 37281.9 | 46826 | 4.47783 | DGM S16 | |
| D97B26E | MQ0975b | 120 | 264.1 | -54.1 | 10844 | 10844 | 16285.7 | 20454.8 | 1.33172 | Dales Gorge Member BIF15 | |
| D97B26E | MQ0975c | 120 | 235.1 | -63.6 | 13215 | 13215 | 21161.1 | 26578.3 | 1.24899 | Dales Gorge Member BIF15 | |
| D97B26E | MQ0976b | 121.4 | 158.7 | -48.9 | 83275 | 83275 | 58568.2 | 73561.6 | 2.84369 | Dales Gorge Member BIF15 | |
| D97B26E | MQ0976c | 121.4 | 187.2 | -68.9 | 31313 | 31313 | 31789.5 | 39927.6 | 1.97002 | Dales Gorge Member BIF15 | |
| D97B26E | MQ0977b | 124.8 | 143.6 | -58.8 | 13337 | 13337 | 14918.6 | 18737.7 | 1.78797 | Dales Gorge Member BIF15 | |
| D97B26E | MQ0977c | 124.8 | 198.3 | -65.3 | 15834 | 15834 | 15133.3 | 19007.4 | 2.09261 | Dales Gorge Member BIF15 | |
| D97B26E | MQ0978b | 125.8 | 163.5 | -39.1 | 24565 | 24565 | 25008.2 | 31410.3 | 1.96455 | Dales Gorge Member BIF15 | |
| D97B26E | MQ0978c | 125.8 | 165.7 | -54.6 | 29973 | 29973 | 30585.7 | 38415.6 | 1.95994 | Dales Gorge Member BIF15 | |
| D97B26E | MQ0979b | 131.4 | 19.1 | -70 | 45.17 | 45.17 | 62.644 | 78.6809 | 1.44212 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0979c | 131.4 | 286.3 | -69 | 17081 | 17081 | 26944.2 | 33841.9 | 1.26788 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0980b | 133.2 | 79.2 | 20.2 | 12754 | 12754 | 16221.8 | 20374.6 | 1.57245 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0980c | 133.2 | 78.5 | 14.3 | 8639 | 8639 | 10211.8 | 12826 | 1.69197 | Dales Gorge Member BIF14 | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| D97B26E | MQ0981b | 135 | 173.6 | -60.3 | 86475 | 86475 | 62195.7 | 78117.8 | 2.78074 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0981c | 135 | 169.3 | -55.3 | 38788 | 38788 | 23336.7 | 29310.9 | 3.32421 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0982a | 137 | 228.9 | -69.8 | 57826 | 57826 | 72838.7 | 91485.4 | 1.58778 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0982b | 137 | 8 | -62.2 | 790.58 | 790.58 | 5168.65 | 6491.82 | 0.30591 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0983a | 137.7 | 39.4 | 4.5 | 2.8923 | 2.8923 | 45.235 | 56.8152 | 0.12788 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0983b | 137.7 | 16.3 | -14.3 | 1.1092 | 1.1092 | 45.538 | 57.1957 | 0.04872 | Dales Gorge Member BIF14 | |
| D97B26E | MQ0984b | 139.5 | 232.7 | -64.6 | 57622 | 57622 | 59263.1 | 74434.4 | 1.94462 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0984c | 139.5 | 249.8 | -75.3 | 34687 | 34687 | 60137.8 | 75533.1 | 1.15358 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0985b | 141.4 | 305.1 | 27.9 | 8122.7 | 8122.7 | 45383.9 | 57002.2 | 0.35795 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0985c | 141.4 | 198.2 | -40.7 | 19185 | 19185 | 43761.7 | 54964.7 | 0.87679 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0986a | 142.6 | 269.3 | -51.9 | 51446 | 51446 | 45867.9 | 57610.1 | 2.24322 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0986b | 142.6 | 273.9 | -48.6 | 39963 | 39963 | 38905.8 | 48865.7 | 2.05435 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0987b | 146 | 240.2 | 4.5 | 10555 | 10555 | 12949.1 | 16264 | 1.63023 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0987c | 146 | 203.9 | 20.3 | 83338 | 83338 | 103155 | 129563 | 1.61578 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0988a | 147.6 | 213.8 | -70.8 | 46860 | 46860 | 72966.4 | 91645.7 | 1.28443 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0989b | 149.6 | 143.3 | -59.8 | 25527 | 25527 | 16801.6 | 21102.8 | 3.03864 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0989c | 149.6 | 140.9 | -68.9 | 58689 | 58689 | 55276 | 69426.7 | 2.12349 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0990a | 151.7 | 41.6 | -85.7 | 403.29 | 403.29 | 3334.25 | 4187.82 | 0.24191 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0990b | 151.7 | 74.9 | -65.1 | 615.79 | 615.79 | 2657.19 | 3337.43 | 0.46349 | Dales Gorge Member BIF13 | |
| D97B26E | MQ0991b | 155 | 325.5 | -78.4 | 7158.8 | 7158.8 | 19134.6 | 24033.1 | 0.74826 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0991c | 155 | 332.5 | -81.3 | 15380 | 15380 | 38031.8 | 47767.9 | 0.8088 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0992b | 158.4 | 353.2 | -51.5 | 611.8 | 611.8 | 3308.19 | 4155.09 | 0.36987 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0992c | 158.4 | 266.6 | -49.2 | 78698 | 78698 | 53605.2 | 67328.1 | 2.93621 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0993a | 160 | 218.8 | -48.7 | 55379 | 55379 | 102277 | 128460 | 1.08292 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0993c | 160 | 221.6 | -33.4 | 11817 | 11817 | 43341.6 | 54437 | 0.5453 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0994b | 162.7 | 211 | -65.3 | 70720 | 70720 | 35815.7 | 44984.5 | 3.94911 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0994c | 162.7 | 239.5 | -66.7 | 151000 | 151000 | 108123 | 135802 | 2.79313 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0995b | 163.5 | 209.2 | -66.1 | 112000 | 112000 | 76742.6 | 96388.7 | 2.91885 | Dales Gorge Member BIF11? | |
| D97B26E | MQ0995c | 163.5 | 198.5 | -63 | 170000 | 170000 | 141736 | 178021 | 2.39882 | Dales Gorge Member BIF11? | |
| 97DCD1( | MQ0996b | 72.7 | 330.3 | 24.3 | 39.833 | 39.833 | 23.296 | 29.2598 | 3.41973 | MM weathered chert siderite | |
| 97DCD1( | MQ0996c | 72.7 | 319.9 | -2.9 | 133.78 | 133.78 | 58.583 | 73.5802 | 4.5672 | MM weathered chert siderite | |
| 97DCD1( | MQ0997a | 75.8 | 5 | -50.4 | 11.926 | 11.926 | 53.069 | 66.6547 | 0.44945 | MM weathered chert siderite | |
| 97DCD1( | MQ0997b | 75.8 | 353.1 | 8.8 | 206.51 | 206.51 | 194.893 | 244.786 | 2.11921 | MM weathered chert siderite | |
| 97DCD1( | MQ0998a | 77.5 | 345.6 | 11.3 | 214.73 | 214.73 | 159.258 | 200.028 | 2.69663 | MM weathered chert siderite | |
| 97DCD1( | MQ0998b | 77.5 | 9.3 | -21.1 | 1.7925 | 1.7925 | 10.105 | 12.6919 | 0.35477 | MM weathered chert siderite | |
| 97DCD1( | MQ0999b | 80.2 | 59.4 | -73.6 | 136.77 | 136.77 | 85.119 | 106.909 | 3.21362 | MM weathered chert siderite | |
| 97DCD1( | MQ0999c | 80.2 | 29.8 | -40.3 | 9.1152 | 9.1152 | 20.101 | 25.2469 | 0.90694 | MM weathered chert siderite | |
| 97DCD1( | MQ0100( | 82 | 345.1 | 0.8 | 2968.8 | 2968.8 | 3509.24 | 4407.6 | 1.69199 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0100( | 82 | 351.9 | 10.2 | 135985 | 135985 | 119194 | 149708 | 2.28174 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0901b | 83.3 | 339.7 | -12.4 | 27603 | 27603 | 44575.5 | 55986.8 | 1.23848 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0901c | 83.3 | 342 | -7.8 | 905.67 | 905.67 | 2202.63 | 2766.5 | 0.82236 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0902b | 84.4 | 281.4 | -42.1 | 2004.3 | 2004.3 | 5961.87 | 7488.11 | 0.67237 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0902c | 84.4 | 344.9 | 29.8 | 85493 | 85493 | 67876.4 | 85252.8 | 2.51908 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0903a | 87.5 | 128.1 | -15 | 3393.5 | 3393.5 | 14862 | 18666.7 | 0.45667 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0903b | 87.5 | 8.1 | 23.2 | 50865 | 50865 | 35032.1 | 44000.3 | 2.90391 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0904a | 89.3 | 312.1 | -9 | 16381 | 16381 | 17441.6 | 21906.6 | 1.87838 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0904b | 89.3 | 317.9 | -13.2 | 9790.9 | 9790.9 | 12796.6 | 16072.6 | 1.53023 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0905a | 92.5 | 315.5 | -8.6 | 23218 | 23218 | 15539.3 | 19517.3 | 2.9883 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0905c | 92.5 | 339.9 | 12.3 | 144000 | 144000 | 59414.5 | 74624.6 | 4.8473 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0906a | 93.5 | 340.5 | -10.5 | 2800.8 | 2800.8 | 3817.73 | 4795.07 | 1.46726 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0906b | 93.5 | 340.3 | -12.5 | 53376 | 53376 | 72556.8 | 91131.4 | 1.47129 | Marra Mamba BIF slight. weathered | |
| 97DCD1( | MQ0907b | 97.6 | 339.9 | -66.7 | 5104.1 | 5104.1 | 8970.77 | 11267.3 | 1.13794 | Marra Mamba BIF weathered | |
| 97DCD1( | MQ0907c | 97.6 | 91.5 | -74.4 | 1920.4 | 1920.4 | 2628.46 | 3301.34 | 1.46124 | Marra Mamba BIF weathered | |
| 97DCD1( | MQ0908a | 97.8 | 97 | -77.8 | 474.11 | 474.11 | 1017.97 | 1278.56 | 0.93149 | Marra Mamba BIF weathered | |
| 97DCD1( | MQ0908b | 97.8 | 1.7 | -66.2 | 3342 | 3342 | 7750.32 | 9734.4 | 0.86242 | Marra Mamba BIF weathered | |
| 97DCD1( | MQ0909a | 101.5 | 346.6 | -30.1 | 11.7 | 11.7 | 53.91 | 67.711 | 0.43406 | Marra Mamba BIF weathered | |
| 97DCD1( | MQ0909b | 101.5 | 323.5 | 8.9 | 3579.3 | 3579.3 | 2939.43 | 3691.93 | 2.43537 | Marra Mamba BIF weathered | |