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40. MAGNETOSTRATIGRAPHY AND THE NATURE OF MAGNETIC REMANENCE IN PLATFORM/PERIPLATFORM CARBONATES, QUEENSLAND PLATEAU, AUSTRALIA[1]

Donald F. McNeill,[2] Thierry S. Guyomard,[2] and Teresa B. Hawthorne[3]

ABSTRACT

Paleomagnetic and rock-magnetic analyses from discrete samples of carbonate sites on the Queensland Plateau were used to determine magnetic polarity reversal stratigraphy and the nature of magnetization in these sediments. Magnetic polarity zones were correlated with the geomagnetic polarity time scale in the upper portions of cores at Sites 812 through 814, usually back to a late Pliocene age. Loss of reliable directional data was coincidental with a major decrease in magnetic intensity, below which, no stable polarity zones could be identified. The intensity reduction is either an in-situ alteration of magnetic grains, or an input signal representing progressive increase in the magnetic component of Queensland Plateau sediments. Although not conclusive at this point, the geochemical conditions and differing age of intensity reduction support the former hypothesis. Rock-magnetic analysis of carbonate sediments suggests that ultrafine-grained magnetite or maghemite crystals is an important carrier of remanence and may be biogenic in origin. Application of a recently calibrated anhysteretic remanent magnetization test to assess configuration of single-domain crystal within a natural matrix indicates that cementation (ooze-chalk-limestone) may be important in post-depositional changes affecting magnetostatic grain interaction.

INTRODUCTION

The Queensland Plateau and adjacent slopes were sampled at five sites during Ocean Drilling Program (ODP) Leg 133 (Fig. 1). As part of a multidisciplinary development of a chronostratigraphic framework, shipboard and shore-based paleomagnetic measurements were performed. The Shipboard Scientific Party hoped that the magnetostratigraphy could be used to refine age dates on both regional and global events recorded in the sediments of the plateau. The main objective of these paleomagnetic analyses was to determine magnetic polarity zones and the position of the magnetic polarity reversals. These reversal boundaries could then be correlated to the geomagnetic polarity time scale (GPTS). These time markers, in correlation with other biostratigraphic and chemostratigraphic markers, could then be used to age-date these events.

At some sites, shipboard measurements yielded a preliminary reversal stratigraphy. This magnetostratigraphy was, in most cases, limited to the upper five or six cores. Below these measurable cores, the directional data usually became scattered and irregular. Natural remanent magnetization (NRM) intensity usually showed a significant decrease at about the same depth as the loss of legible directional data. Because of the large amount of core recovery, only NRM and one alternating field (AF) demagnetization step were performed on board the ship.

Objectives of this land-based study thus, were: (1) to attempt to extend farther downcore a correlative reversal stratigraphy below the shipboard-determined zone of directional data loss; (2) to confirm available shipboard reversal stratigraphy for use in providing chronostratigraphic tie-points for late Pliocene and Pleistocene depositional, tectonic, and oceanographic events; (3) to assess the zone of rapid intensity decrease with respect to either *in-situ* destruction of remanence carrying minerals or a change in magnetic mineral source; and (4) to contribute to the data base regarding the magnetization of carbonate sediments.

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[2] Division of Marine Geology and Geophysics, Rosenstiel School of Marine and Atmospheric Science, University of Miami, 4600 Rickenbacker Cswy., Miami, FL 33149-1098, U.S.A.

[3] Geologisches Institut, ETH-Zentrum, CH 8092 Zurich, Switzerland.

LABORATORY METHODS

All rock-magnetic analyses were conducted at the California Institute of Technology using a 2G Enterprises 760 magnetometer. All paleomagnetic measurements were performed using a 2G Enterprises 755 magnetometer at the University of Miami, Rosenstiel School.

Coercivity Spectral Analysis

Rock-magnetic analysis consisted of coercivity spectral analysis using a superconducting magnetometer. The sequence of analysis involved: (1) measurement of sample NRM; (2) sample demagnetization at 100 mT; (3) anhysteretic remanent magnetization (ARM) acquisition at 100 mT with field bias of 0, 0.5, 1.0, 1.5, and 2.0 mT; (4) AF demagnetization of ARM; (5) induced remanent magnetization (IRM) pulse at 200 mT; (6) AF demagnetization (21 steps) of IRM; and (7) IRM saturation (31 steps). The results of these steps were then plotted as either ARM acquisition or as the coercivity spectral analysis plot. These steps also permitted us to perform a modified Lowrie-Fuller test (Lowrie and Fuller, 1971) to help indicate single-domain magnetite/maghemite or a coarser component.

From this stepwise coercivity spectral analysis, the following parameters were defined: saturation magnetization (J_S), bulk coercive force (H_C), saturation remanent magnetization (J_r), and the "*R*" value percent for the IRM and AF of IRM intersect.

Anhysteretic Remanent Magnetization Test

Anhysteretic remanent magnetization analysis was performed systematically downcore through the major units. For each sample, the ARM data at each bias field step was plotted vs. the ratio of ARM to maximum IRM value. This ARM plot, calibrated for freeze-dried, noninteracting, single-domain bacterial magnetite vs. highly interacting, single-domain, chiton magnetite (upper and lower open circles in plot, respectively), is an excellent indicator of the magnetostatic interacting status of grains within the natural rock matrix.

The work of Cisowski (1981) with interactive and noninteractive single-domain magnetite forms the basis for the ARM test. When used in conjunction with the IRM of a sample, the magnitude of the ARM relative to the total IRM is a sensitive indicator of the packing geometry and arrangement of the magnetic grains within a natural matrix. The mechanics of the ARM test revolve around the fact that

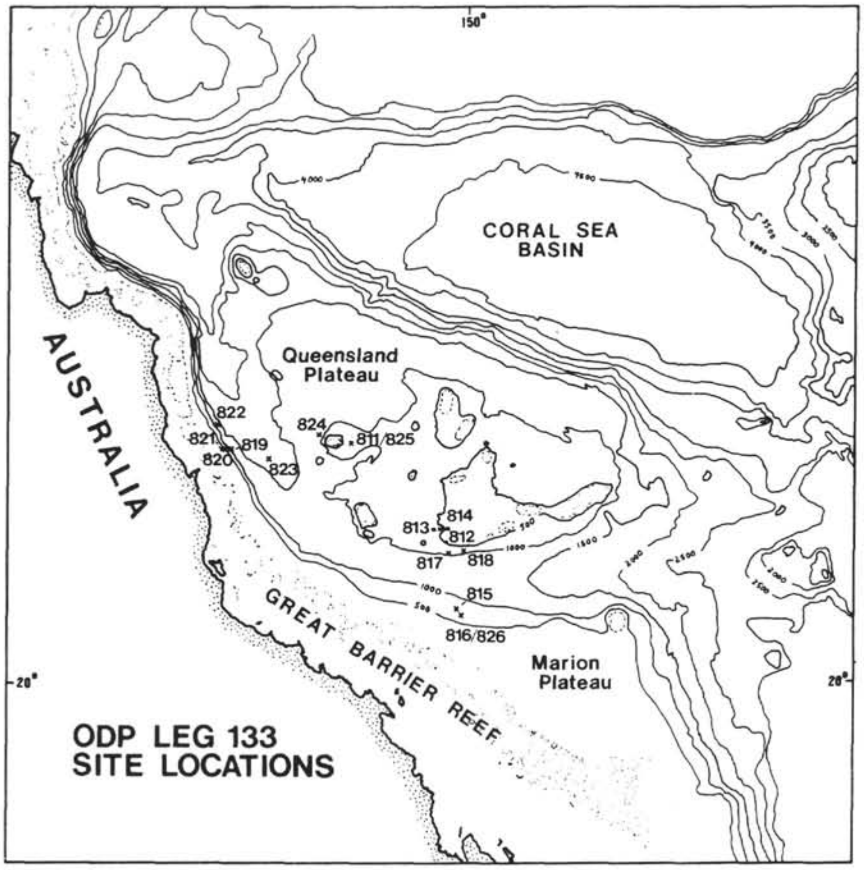

Figure 1. Location of core sites from Leg 133. Sites 812 through 814 and 818 are discussed here.

isolated crystals or linear chains gain ARM strongly in weakly biasing fields, but the clustered highly interactive grains only gain a weak ARM (Cisowski, 1981, Diaz Ricci et al., 1991). Thus, the nature of the ARM acquisition can be used in rock samples to assess the degree of interacting and noninteracting magnetic grains (McNeill et al., 1991). The ARM test employed during this study is based on the two end-members of noninteracting, freeze-dried, bacterial magnetite (crystal chains), and the highly interacting magnetite from chiton teeth (tight grain clusters). In addition, recent work to calibrate the intermediate regions of these two end members has helped to quantify the physical changes in grain arrangement and their position on the ARM diagram (McNeill et al., 1991).

Demagnetization Methodology and Data Plots

The IRM pulse magnetizer that was used for the ODP analyses is similar to that described by Kirschvink (1983). Alternating field demagnetization employed a LC oscillating circuit within a magnetically shielded coil. For ARM acquisition experiments, a uniform biasing field from 0.2 to 2 mT, in increments of 0.2 mT, was used on initially demagnetized samples. IRM, AF of IRM, and ARM curves are normalized to the maximum value of IRM of each sample (as in Diaz Ricci et al., 1991). It is these plots of IRM and AF of IRM vs. the externally applied field that were used to determine coercivities and ARMs for the magnetostatic interaction analyses.

TEM Examination of Magnetic Grain Separates and Electron Diffraction

Magnetic separates were isolated following the technique of Chang and Kirschvink (1985) and Kirschvink and Chang (1987) and used successfully in both lithified and unlithified carbonates by McNeill (1990). The magnetic separates were examined on a Phillips 300 transmission electron microscope at 80 and 100 kV. Examination of the magnetic grains in Holes 812A and 812C was conducted on representative lithologies, based on the shipboard NRM magnetic intensity and on the rock-magnetic test results. In addition, TEM examination pre- and post-treatments with buffered sodium dithionite (Kirschvink, 1981) was used to help assess qualitatively the magnetite/maghemite relationship within the single-domain crystals.

SEM Matrix Characterization

Identification of general carbonate matrix types was conducted through scanning electron microscope (SEM) examination. An ISI DS130 dual scan SEM was used to characterize the periplatform and deep-sea oozes, chalk, and limestone. Samples were mounted on a standard SEM stub and sputter-coated with palladium.

Paleomagnetic Methodology and Sample Classification

All oriented samples collected on board the ship were measured using a 2G Enterprises cryogenic magnetometer that was located within a magnetically shielded room at the Rosenstiel School, University of Miami. Samples were collected in standard plastic cubes, approximately 6 cm^3 in size. After measurement of NRM, samples were demagnetized at progressively higher alternating fields, usually at 5 to 10 mT steps, depending on the magnitude of intensity reduction. Sample demagnetization was concluded when either the sample became too weak to measure or became magnetically unstable.

A least-squares analysis (similar to Kirschvink, 1980) of paleomagnetic data was used to determine sample inclination angle. Based on sample response to AF demagnetization, maximum angular deviation (MAD) values, measurement errors, and least-squares results, samples were grouped into three classes. Class A samples were those that exhibited stronger NRM remanence ($>5 \times 10^{-7}$ emu/cm^3), near-linear decay to the origin during demagnetization, low error angles during measurement, and low MAD angles after least-squares processing (usually 5° or less). Class B samples usually had slightly lower intensities, MAD values usually between 5° and 20°, and contained what appeared to be a partially stable decay component during demagnetization. Class B samples exhibited high error angles and instability during higher AF demagnetization steps. Inclination polarity was determined on the initial component and must be interpreted with caution. Class C samples were those that exhibited complete or almost complete instability, with high measurement error angles, highly variable inclination and declination components, and low repeatability of inclination and declination values. Principal component analysis was often not possible, or performed on a few data points, with MAD values usually in excess of 20°. These samples usually exhibited weak NRM intensities ($<1 \times 10^{-7}$ emu/cm^3) and decayed rapidly upon AF demagnetization. Class C sample data were discarded and were not used for polarity interpretations.

Polarity reversal boundaries were correlated with the GPTS of Berggren et al. (1985).

Iron Geochemistry

Iron chemical analyses followed the methodology of Leslie et al. (1990). The analysis procedure consisted of:

1. Hydroxylamine hydrochloride digestion: Samples, standard, and blanks were weighed to the nearest milligram in a 50-mL erlenmeyer flask. Approximately 25 mL of a 1 M hydroxylamine hydrochloride 25% (vol/vol) acetic acid solution was added, and samples were shaken on a wrist shaker for 4 hr. Following digestion, the solutions were filtered (0.22-μm filter paper) and the supernatant volume was determined.

2. Buffered sodium dithionite digestion: Samples, standards, and blanks were weighed to the nearest milligram directly into 50 mL erlenmeyer flasks, and approximately 25 mL of a sodium dithionite solution was added. The solution was made by adding 12.5 g sodium dithionite to a 250-mL solution of 0.35 M acetic acid and 0.2 M sodium citrate buffered to a pH of 4.8. The samples were then digested on a wrist shaker for 1 hr and filtered (0.22-μm filter paper). The supernatant volume was then determined.

3. Atomic absorption method: A Perkin Elmer 1100 AA spectrophotometer was used for AA analyses. After trial dilution runs, an optimal 1:1 dilution was made by adding 5 mL of sample, 100 μL of a 4% lanthanum chloride solution and 200 μL of 6 N HCl to 10 mL volumetric flasks. Deionized water was added until a volume of 10 mL was reached. The extra solutions were added to reduce viscosity of the acetic acid. Per digestion, one sample was spiked with three different concentrations of either a standard Mn or Fe solution to determine linearity of the concentration/absorption relationship. Once linearity was determined, the samples were run in a series. All absorption readings were compared with the blanks. Duplicate readings were taken and values averaged. All concentrations then were determined relative to the blank and the sample that was spiked.

RESULTS

Magnetization of Carbonate Sediments

Magnetic Intensity Results

Shipboard whole-core measurements and shore-based discrete sample analyses indicate that the carbonate sediments cored during Leg 133 exhibit weak to moderate magnetic moments (Fig. 2). In general, the core analyses show a relatively strongly magnetized shallow upper zone, followed by a transition zone of decreasing intensities, and underlain by relatively weak magnetic intensities throughout much of the core (Figs. 3 and 4). In all sites, intensity is usually reduced by at least one order of magnitude within the top 25 mbsf, and sometimes by as shallow as 15 mbsf (Table 1). These sediments containing this intensity decrease are between 2.5 and 3.5 m.y. in age, based on biostratigraphy and magnetostratigraphy (Shipboard Scientific Party, 1991). Whole-core magnetic susceptibility often shows a similar decrease downhole (Fig. 5). One notable exception was Hole 813A, which exhibited a zone of increased NRM and AF intensities between about 50 and 80 mbsf (Fig. 3). Hole 818B did not show the same intensity profile as the shallower sites (812-814). Instead, the intensity is low throughout most of the core (Fig. 4).

In the large majority of analyses, samples responded to AF demagnetization with uniform decay (Fig. 6). For some of the weaker, unstable samples, magnetic moments increased after high field AF steps. A few samples had partial response to AF demagnetization before stabilizing and remaining constant with respect to magnetic intensity (Fig. 6).

Rock Magnetic Results

Coercivity analysis and associated hysteresis properties of carbonate samples from Sites 812, 814, 817, and 818 were used to characterize the nature of magnetization in and around the Queensland Plateau, northeastern Australia. Rock-magnetic characterization can be used to determine the type of remanence carrying minerals, which help to confirm depositional remanence, to assess changes to that remanence, and to help identify the potential for remagnetization. Parameters calculated from coercivity analysis include (1) saturation magnetization (J_S), which is the magnetization induced in the sample upon exposure to a large, saturating magnetic field; (2) saturation remanent magnetization (J_r), the magnetization remaining after removal of the saturation field; (3) bulk coercive force (H_C), which is the field necessary to reduce the induced magnetization to zero; (4) the "*R*" value of Cisowski (1981), which is the IRM and AF of IRM crossover and is thought to be indicative of both magnetostatic grain interaction and oxidation of single-domain magnetite grains; and (5) the modified Lowrie-Fuller test that compares the median destructive field (MDF) of AF of IRM with the MDF of AF of ARM, which is usually indicative of single-domain and multidomain grain size.

Sites 812 and 814 have the highest number of rock-magnetic analyses and provide characterization of the magnetic components downcore (Table 2). Sites 817 and 818 have only a few spot analyses for comparison (Table 2).

Holes 812A and 812C

The most striking feature at this site is the distinct difference in magnetic properties between the top of the core (to about 10 mbsf) and the remainder of the core (Fig. 2). This trend is similar to the intensity reduction transition measured on board the ship and in the laboratory and discussed above. Both J_S and J_r (to a lesser extent) showed decreases downward from Core 1H (Table 2). Bulk coercive force, H_C, increased abruptly beneath Core 1H (Table 2), from values as low as 119 mT (Core 1H) to fields in excess of 224 mT. All samples measured at Site 812 pass the Lowrie-Fuller test. "*R*" values measured in the 10 samples show a progressive downhole decrease, with highest values in Core 1H (38%–45%) to a low of 26% in Core 18X.

Hole 814A

Six samples were collected from Hole 814A for rock magnetic analyses. Similar to Site 812, Hole 814A shows distinct differences in magnetic properties from the top several cores downward (Table 2). J_S and J_r have distinct decreases downhole. Coercivity values have a trend similar to Site 812, with H_C showing a slight increase downhole. All samples in this core pass the modified Lowrie-Fuller test,

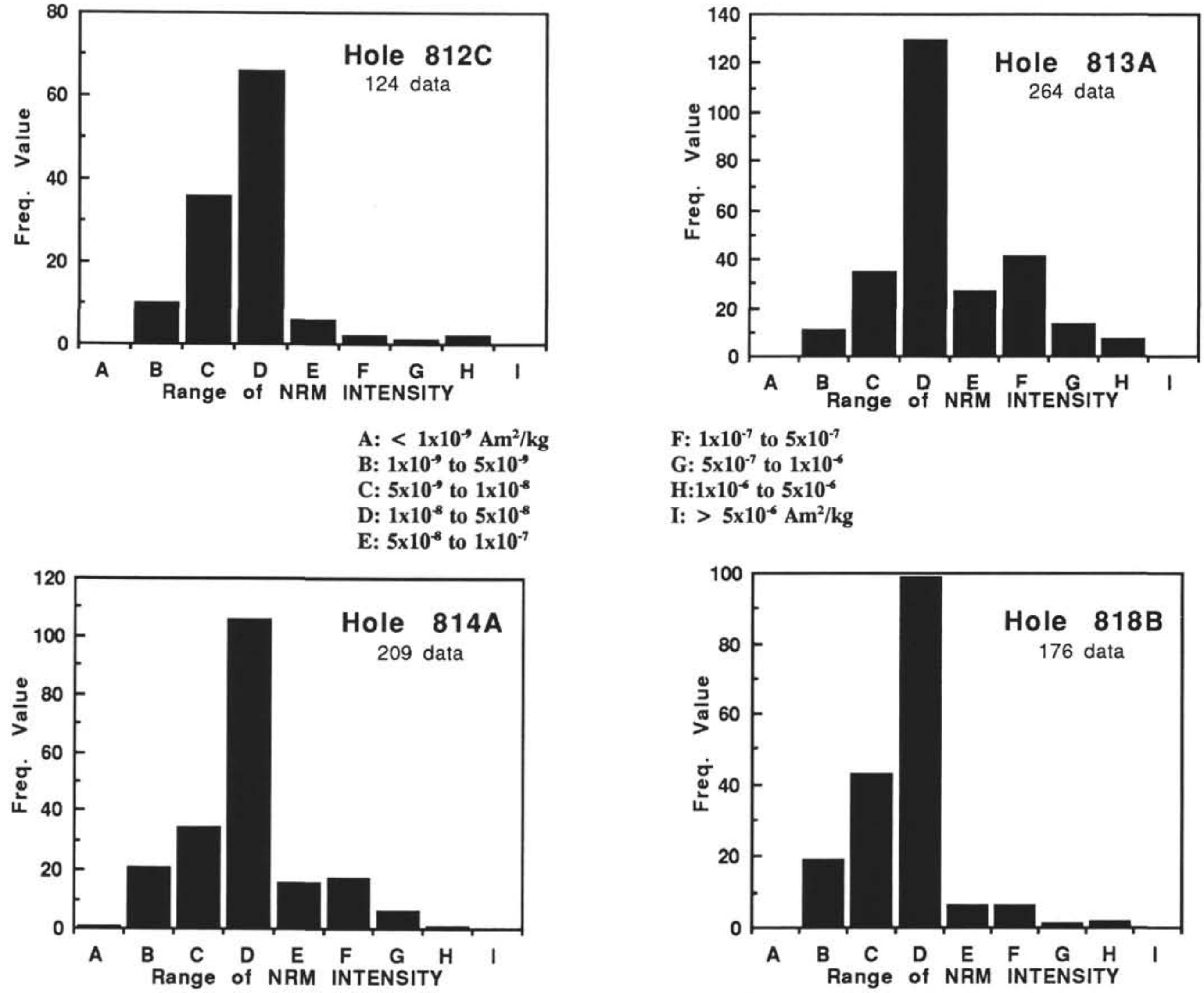

Figure 2. Histogram of natural remanent magnetization intensities measured on discrete samples from Sites 812 through 814. Note the generally low intensity in many of these carbonate samples.

with the MDF of AF of IRM larger than AF of ARM (Fig. 7). "*R*" values also exhibit a downward- decreasing trend, with a large decrease occurring between Cores 3H and 6H.

Holes 817A, 817C, and 817D

Five samples were collected from Site 817 that represent a lower slope of the Queensland Plateau. In general, J_S and J_r values are similar to Sites 812 and 814, except that two samples did not reach magnetic saturation at 1 tesla. Values of *HC* are greater than the two shallower holes, often in excess of 220 mT (Table 2). Two samples from Site 817 fail the modified Lowrie-Fuller test (133-817B-5H-1 and 817A-29X-2), the remaining three pass. "*R*" values ranged from 25% to 42% and are within the same range as Sites 814 and 812.

Hole 818B

Only one sample from Site 818 was measured (Table 2). This sample fails the Lowrie-Fuller test, which indicates a dominantly multidomain magnetic remanence. Saturation and coercivity values are similar to Site 817.

Table 1. Summary of depth and NRM intensity above and below the zone of reduction.

Hole	Depth to Intensity Reduction (mbsf) and Age (Ma)	Intensity Above Boundary (Am^2/kg [mA/m])	Intensity Below Boundary (Am^2/kg[mA/m])
812A	30 (>2–<3.5 Ma)	7.0×10^{-7} (1.2) to 3.0×10^{-8} (0.05)	$<2 \times 10^{-8}$ (0.03)
812C	30 (>2–<3.5 Ma)	7.0×10^{-7} (1.2) to 3.0×10^{-8} (0.05)	$<2 \times 10^{-8}$ (0.03)
813A[1]	12 (<0.73 Ma)	$\sim 7 \times 10^{-7}$ (1.2)	$\sim 3 \times 10^{-8}$ (0.05)
813A[2]	85 (>2.6–<3.5 Ma)	$\sim 3 \times 10^{-7}$ (0.5)	$<2 \times 10^{-8}$ (0.03)
814A	50–60 (>2.5 Ma)	3×10^{-7} (0.5)	$<2 \times 10^{-8}$ (0.03)

ARM Test Results

Anhysteretic remanent magnetization acquisition tests were performed for 22 carbonate samples as part of the general rock-magnetic characterization (Table 3). ARM acquisition in single-domain-bearing sediments is a function of the degree of magnetostatic interactions

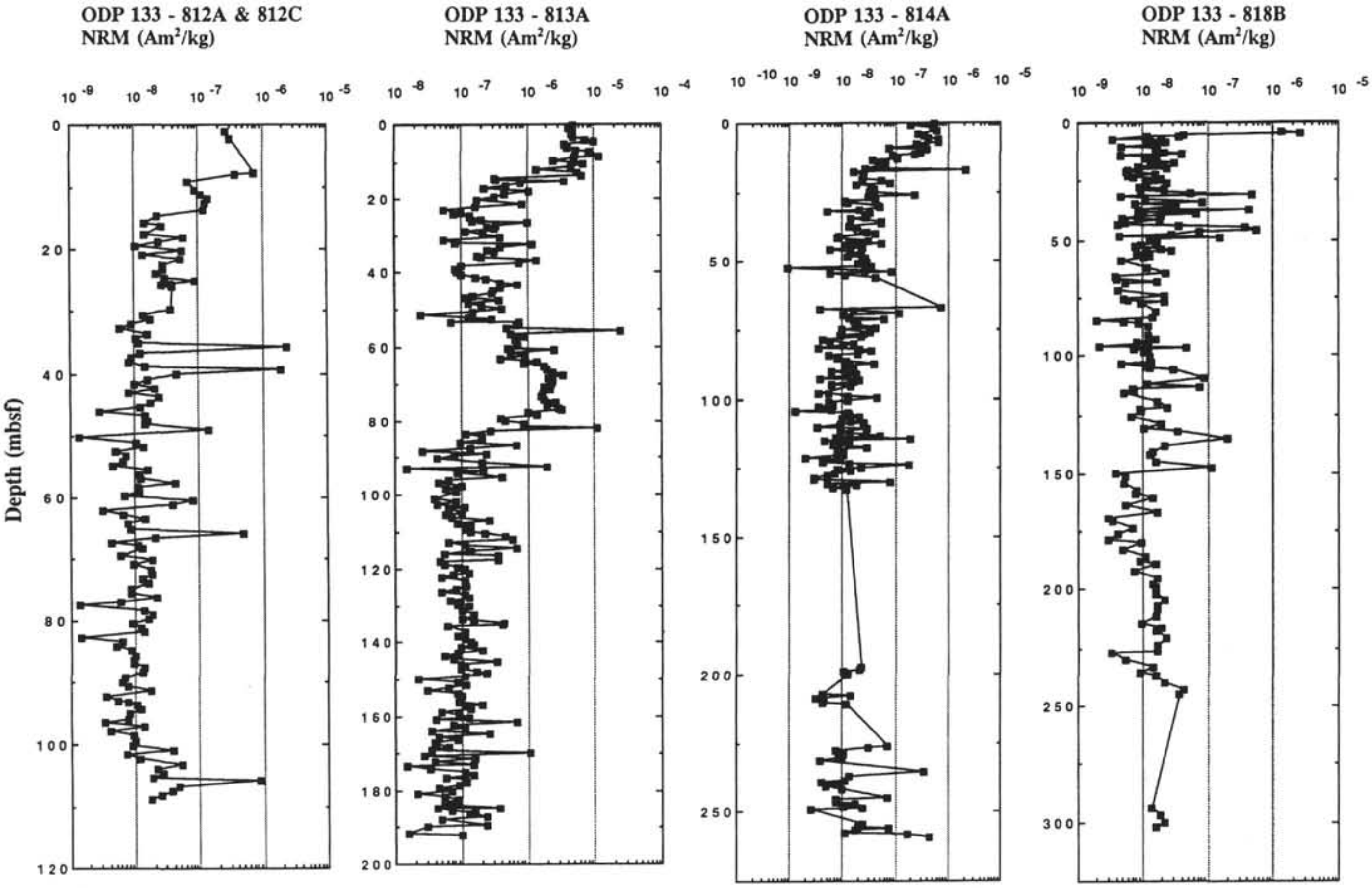

Figure 3. Summary of NRM intensities from Sites 812 through 814 and 818, measured from discrete samples in a magnetically shielded environment. NRM moments usually show a transition from higher intensity near the top of the core, to significantly lower intensity downcore.

Table 2. Rock-magnetic characteristics of carbonate samples from the Queensland Plateau.

Core, section	Initial moment (emu)	"R" value (%)	Max. ARM/IRM @ 1.5 mT (%)	H_C (mT)	Jr (emu)	Js (emu)
812C 12 CC	1.18×10^{-6}	30	21	185	1.03×10^{-5}	2.9×10^{-4}
812A 18 CC	5.26×10^{-7}	26	19	192	8.91×10^{-6}	4.8×10^{-4}
812C-1 01	1.27×10^{-6}	38	48	119	3.43×10^{-6}	9.4×10^{-4}
812A 05 01	1.98×10^{-8}	28	23	>224	3.61×10^{-6}	1.9×10^{-4}
812C 01 01	1.13×10^{-6}	45	58	159	6.80×10^{-6}	1.0×10^{-3}
812C 13 03	4.22×10^{-8}	29	20	189	4.64×10^{-7}	1.5×10^{-5}
812C 01 01	1.33×10^{-6}	44	58	125	5.27×10^{-5}	8.0×10^{-4}
812C 03 02	9.66×10^{-8}	31	20	184	2.68×10^{-6}	2.1×10^{-4}
812C 07 03	8.43×10^{-8}	31	58	187	2.42×10^{-6}	1.7×10^{-4}
812C 10 01	3.37×10^{-8}	27	20	190	7.72×10^{-7}	6.6×10^{-5}
814A 01 01	1.58×10^{-6}	43	67	112	1.05×10^{-5}	1.3×10^{-3}
814A 03 02	7.64×10^{-8}	45	65	125	6.07×10^{-6}	1.0×10^{-4}
814A 13 02	1.89×10^{-8}	27	25	216	2.35×10^{-7}	4.3×10^{-6}
814A 11 01	3.68×10^{-8}	36	23	151	1.09×10^{-7}	2.1×10^{-4}
814A 11 05	2.06×10^{-8}	33	26	164	6.83×10^{-8}	1.8×10^{-6}
814A 12 02	7.60×10^{-8}	28	20	202	3.39×10^{-7}	9.7×10^{-6}
817D 26 01	1.85×10^{-7}	32	19	>224	1.86×10^{-5}	2.7×10^{-4}
817C 05 01	1.08×10^{-8}	42	37	>224	1.06×10^{-5}	6.4×10^{-5}
817A 29 02	2.86×10^{-7}	39	35	220	6.84×10^{-6}	5.4×10^{-5}
817D 26 01	1.85×10^{-7}	32	19	>224	1.86×10^{-5}	2.7×10^{-4}
817D 38 01	1.125×10^{-6}	25	15	151	2.35×10^{-6}	1.0×10^{-4}
818B 06 01	8.99×10^{-9}	46	37	>224	4.78×10^{-6}	3.8×10^{-5}
824A MUD	6.74×10^{-8}	38	47	124	6.89×10^{-7}	$>5.4\times10^{-5}$
824A 15 06	4.31×10^{-8}	31	25	201	3.55×10^{-7}	1.1×10^{-5}
824A MUD1	1.34×10^{-8}	34	30	>178	4.39×10^{-7}D	$>4.3\times10^{-5}$

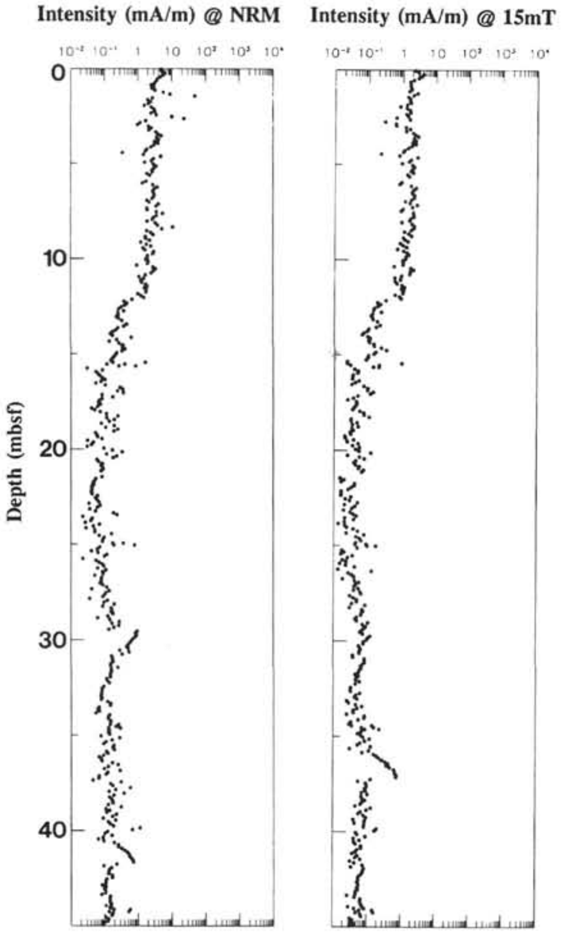

Figure 4. Shipboard NRM and AF 15 mT intensity profile from Hole 814A. Similar intensity profiles were measured from discrete samples.

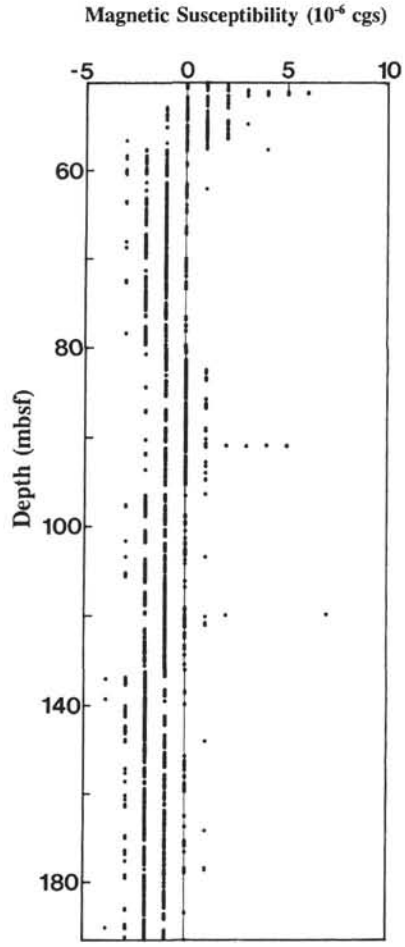

Figure 5. Shipboard magnetic susceptibility record (measured at 10-cm intervals) from Hole 813A. The susceptibility record often exhibited the same pattern of gradual decreases as seen in the magnetic intensity core profiles.

between the grains (Cisowski, 1981). For example, ARM acquisition is considerably easier in grain geometries that exhibit low interactions, and the reverse is true for grains having a high degree of interaction. In recent work Diaz-Ricci et al. (1991) and McNeill et al. (1991) sought to calibrate two end members that consisted of highly interacting single-domain magnetite from chiton teeth, and noninteracting single-domain magnetite from freeze-dried bacteria. The ARM plots (Fig. 8) show both the noninteracting, single-domain magnetite crystals (upper open circles) and the highly interacting, single-domain magnetite crystals (lower open circles).

ARM data from carbonate samples on and around the Queensland Plateau can be divided into two general classifications, based on the ease of acquisition (Fig. 9). The first is the unconsolidated oozes, which generally show higher ARM/max IRM acquisition (data at 1.5 mT used for comparative purposes). Samples near the top of each core have a considerably higher noninteracting component (Table 3) within the unconsolidated ooze samples. The second general grouping, those having a relatively harder ARM acquisition, occurred in the partially cemented oozes and chalks and cemented limestone (Table 3).

Magnetostatic interactions appear to be influenced by the degree of cementation. The ARM acquisition at 1.5 mT bias relative to the maximum IRM decreases with decreasing water content and/or increased cementation to chalk (Fig. 10).

Magnetic Grain Separation Results

Magnetic grains separated from samples in Holes 812A and 812C, both above and below the intensity reduction zone, were examined with the transmission electron microscope (TEM) to determine the type, nature, and status of remanence-carrying minerals. Both zones contained magnetic grains that were separable from the carbonate matrix, although the TEM sample grids often contained some degree of carbonate contamination. In general, magnetic extracts from the zone of higher intensity showed crystals that were more electron dense and with sharper crystal edges (Figs. 11A and 11B) than those from the zone of reduced intensity. Furthermore, samples from the higher intensity zone often showed crystals that contained within some unknown matrix, perhaps organic (?), as it exhibited no crystalline structure with electron diffraction. Within the zone of lower intensity, crystals were generally less electron dense, had poorly defined crystal boundaries, and often appeared internally corroded (Figs. 11C and 11D).

Examination of eight grids under the TEM failed to indicate a large component of magnetic grains in excess of 0.1 μm. Thus, most of the grains are thought to be in the single-domain size range for either magnetite or maghemite. Measurement of grain dimensions from 26 grains that exhibited crystal structure similar to known magnetite crystals showed a mean grain length (0.08 μm) and axial width ratio (0.72 μm) within the single-domain stability field (Fig. 12) of Butler and Banerjee (1975).

Iron Geochemistry Results

Ten sediment samples from Hole 812A were analyzed for selected iron fractions. Results of the iron analysis (Table 4) indicate significant downhole changes (Fig. 13). Samples from Hole 812A were chosen because shipboard core magnetic measurements indicated a

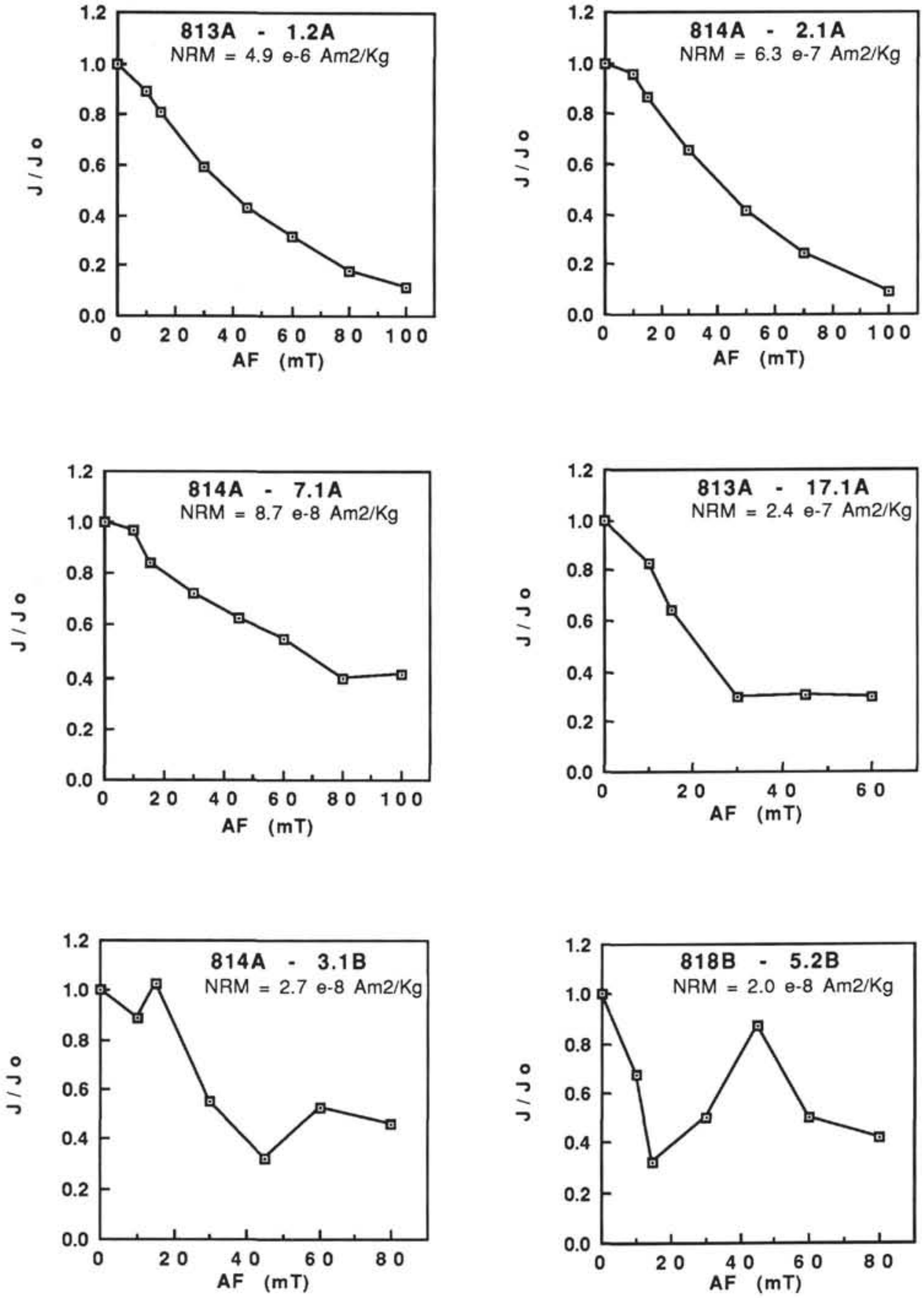

Figure 6. Typical J/J_o plots from carbonate samples at Sites 812 through 814. Most samples responded to AF demagnetization. Magnetically weak and unstable samples often showed irregular patterns with increasing AF demagnetization.

considerable and steady decrease, from mid 10^{-6} Am^2/kg to high 10^{-8} Am^2/kg (Fig. 13).

Fraction 1 was ascertained using a hydroxylamine hydrochloride digestion method and represents easily reducible ferric iron, such as that bound to ferrihydrite, lepidocrocite, and amorphous goethite. The hydroxylamine hydrochloride digestion solubilizes Fe^{+2} and Fe^{+3}, which are loosely bound and adsorbed to silicates. We have assumed here that silicate content is extremely low and that the iron's source is iron oxides and/or iron hydroxides. Fraction 1 values show a slight decrease between 0.3 and 3.3 mbsf, followed by a slight increase to about 0.03 wt% at around 6.5 mbsf, where it remains fairly uniform through 22.3 mbsf depth.

Fraction 2 is the weight percent of fraction 1, ferric iron plus crystalline-bound ferric iron, including maghemite, hematite, and crystalline goethite. Fraction 2 iron was determined through buffered sodium dithionite digestion. Of interest then, is the fraction 2 weight percent minus fraction 1 weight percent to yield crystalline iron weight percent. The crystalline iron weight percent (Fig. 13), increases from near-surface values of 0.015 wt%, to a maximum at around 3.3 mbsf, coincident with the low in fraction 1 (Fig. 13). From 3.3 to about 10 mbsf, the crystalline iron decreases to less than 0.01 wt%. Below, it decreases even more (Fig. 13).

Unfortunately, the two assay methods do not digest magnetite. Thus, direct evidence (besides TEM photomicrographs) for magnetite

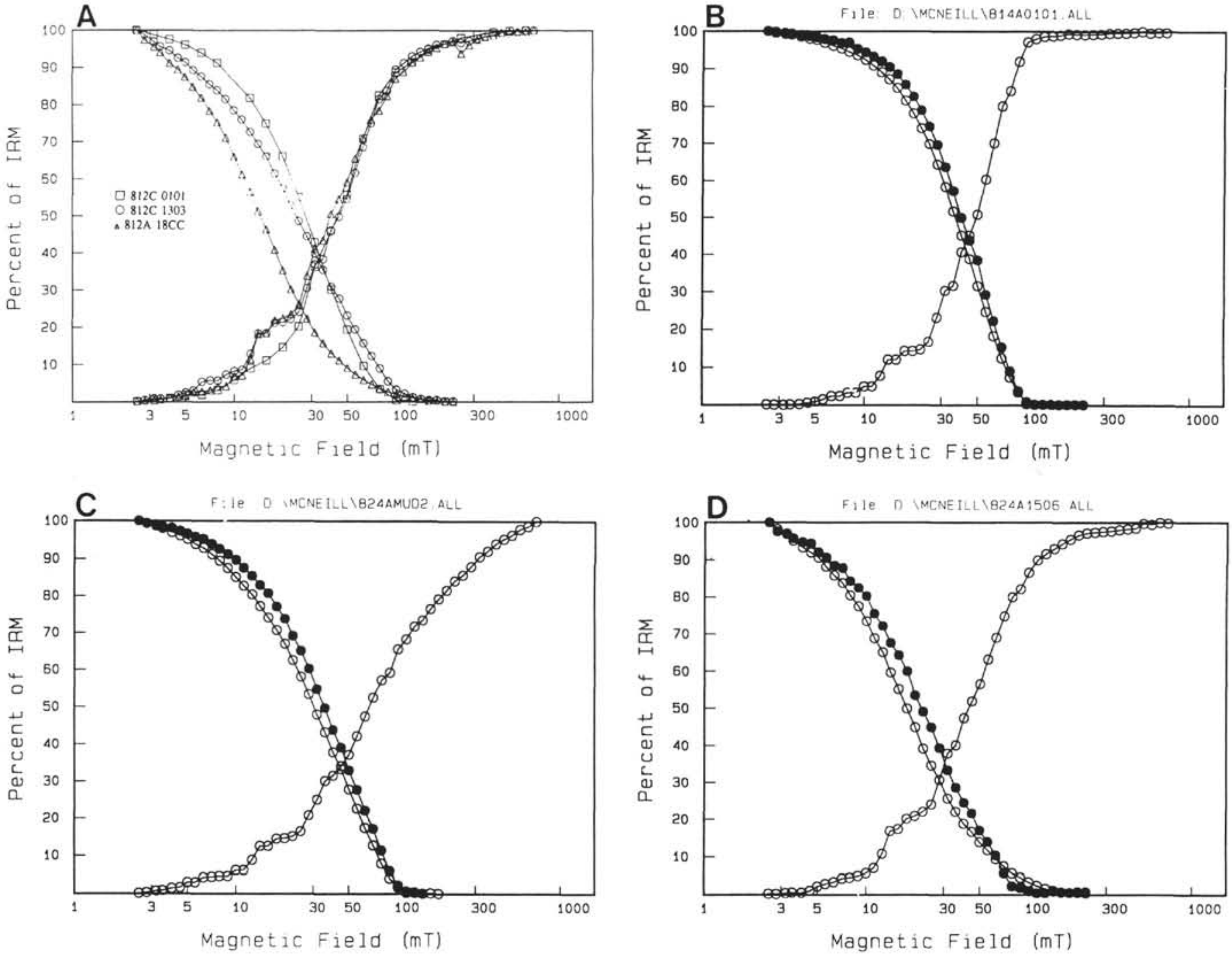

Figure 7. Coercivity spectral analysis plots of carbonate samples from the Queensland Plateau. Samples from Plateau Sites 812 through 814 passed the modified Lowrie-Fuller test, which suggests a single-domain magnetite/maghemite remanence carrier. **A.** Site 812. **B.** Hole 814A, 1H-1. **C.** Hole 824A mudline. **D.** Hole 824A, 15H-6.

alteration is not presented here. Analyses for total iron or total ferric iron concentrations need to be performed.

Paleomagnetic Results

Discrete paleomagnetic samples collected from Sites 812, 813, 814, and 818 were measured using a superconducting magnetometer and were subjected to progressive AF demagnetization. Most all samples responded to this type of demagnetization. Based on the type of response to progressively higher AF demagnetization, measurement error, and sample intensity, samples were classified into one of three groups. "A" samples were those that showed generally linear decay during most of the AF steps. These samples were usually the ones having higher intensity (Appendix A, Fig. 14). "B" samples were those that had one stable, measurable decay component during progressive demagnetization. This stable component usually occurred at the beginning of the demagnetization sequence and often became weak and/or unstable at higher AF fields (Fig. 14). "C" samples showed no stable directional data, high measurement error angles, nonrepeatable directional measurements, and usually had no more than two or three reliable demagnetization steps (Fig. 14). In most cases, these C samples could not be used for polarity determination because of the low reliability of the measurement steps. A tentative polarity was assigned to the C samples when inclination measurements were either all normal or all reversed, although not relied upon for magnetostratigraphy. Many samples were so weak and/or unstable that no least-squares analysis of the data was even attempted. These samples are indicated by a "C" designation.

In general, most of the shore-based data were unable to resolve additional polarity zones. Most of the samples measured were designated as C samples and thus generally were unreliable for polarity determination.

Site 812

Samples were analyzed from both Holes 812A (0–23 mbsf) and 812C (18–109 mbsf) at this site (Appendix A, Fig. 15). Samples ranged in intensity from mid 10^{-7} Am^2/kg in the upper portion of the cores, to the low 10^{-8} Am^2/kg below about 20 mbsf (Fig. 3). Of the 138 samples measured at this site, 99 (72%) were grouped as C, 27 (20%) as B, and 12 (9%) as A.

Several zones of consistent polarity were determined in the upper section of the core, to about 27 mbsf, where a hardground was encountered. Below about 29 mbsf, sample intensities were weak, and most samples were grouped in the C category. A few scattered B and A samples occur below 29 mbsf, but are usually isolated, and, thus,

Table 3. ARM acquisition values and lithology for Queensland Plateau carbonate samples.

Hole, core, section	Depth (mbsf)	ARM/IRM at 1.5 mT	Lithologic description
133-			
-812C-1H-1, 8–10 (cm)	0.10	58	Ooze
-812C-1H-1, 13–15 (cm)	0.15	60	Ooze
-812C-1H-1	1.0	48	Ooze
-812C-3H-2	19	25	Ooze
-812A-5X-1	29	22	Chalk
-812C-7H-3	52	23	Chalk
-812C-10H-1	77	20	Chalk
-812C-12H-CC	105	20	Chalk/dolomite
-812C-13H-4	111	45	Uncemented ooze/dolomite
-812A-18X-CC	150	18	Chalk
-814A-1H-1	1.0	65	Ooze
-814A-3H-2	18	65	Ooze
-814A-11H-1	86	23	Chalk/ooze
-814A-11H-5	93	26	Chalk/ooze
-814A-12H-2	98	27	Chalk
-814A-13H-2	107	29	Chalk
-817D-26R-1	495	19	Limestone
-818B-6H-1	47	38	Ooze

Note: The ARM/maxIRM percentage has been taken for comparison purposes at 1.5 mT.

Table 4. Summary of iron geochemical analyses from Hole 812A.

Depth (mbsf)	Fraction 1 ferric Fe (wt%)	Crystalline Fe (wt%) [fraction 2-1]	Fraction 2 ferric and crystalline Fe (wt%)
0.300	0.021	0.015	0.036
1.800	0.020	0.014	0.034
3.300	0.012	0.041	0.053
6.500	0.028	0.029	0.057
9.600	0.034	0.005	0.039
13.300	0.028	0.006	0.034
14.800	0.029	0.005	0.034
17.110	0.034	0.003	0.037
19.300	0.032	0.002	0.034
22.300	0.031	0.001	0.032

Notes: Fraction 1 = hydroxylamine hydrochloride digestion,, easily reducible ferric iron (bound to ferrihydrite, lepidocrocite, and amorphous goethite.

Fraction 2 = buffered sodium dithionite digestion, Fraction 1 ferric iron plus crystalline bound ferric iron, including maghemite, hematite, crystalline goethite.

make polarity determination nearly impossible (Fig. 15). The general instability and "soft" nature of remanence is shown by the low median destructive field for the Site 812 samples (Fig. 16).

Using the method of Kono (1980), A and B samples (n = 39) in Holes 812A and 812C had a true inclination angle of 28.3° with a k precision parameter of 11.8 and an alpha-95 of 7.4°.

Site 813

Two hundred and sixty-four discrete samples were analyzed from Hole 813A to confirm and to refine the magnetic polarity reversal zones (Appendix A, Fig. 17). NRM intensities range from the high 10^{-7} Am^2/kg in the top 15 m of the core, to the mid 10^{-8} Am^2/kg between 15 and 55 mbsf, back to mid 10^{-7} Am^2/kg between 55 and 80 mbsf, and stabilize near the low 10^{-8} Am^2/kg for the remainder of the core (Fig. 3). The intensity profile remains similar after low field AF demagnetization. Of the 264 samples, 43 (16%) were grouped as A samples, 61 (23%) as B samples, and 160 (61%) as C samples. Based on NRM intensities, the modal class fell in the 5×10^{-8} to 1×10^{-8} Am^2/kg.

Polarity results are presented in Figure 17. Zones of reliable polarity determination (A and B samples) are correlative to the zone of higher intensity. In this case, from 0 to about 40 mbsf and from about 54 to 82 mbsf, a fairly reliable polarity was measured. In the intermediate zone, and below about 82 mbsf, most of the samples were C or C′ types, and generally unreliable for polarity determination.

Median destructive field using AF demagnetization ranges from 30 to 50 mT in the stronger intensity parts of the core and in the weaker parts, from 10 to 30 mT, usually (Fig. 16). Likewise, the maximum angular deviation (MAD) from least squares analyses was considerably lower in the zones of higher intensity, and vice versa in the weak zones (Appendix B).

True inclination at this site was calculated as 35.5° (A and B samples, n = 106), with a k value of 13.1 and an alpha-95 value of 3.9°.

Site 814

Two hundred and three discrete samples were collected from Hole 814A to confirm the tentative shipboard magnetostratigraphy and in an attempt to define other reliable polarity zones. Results from Hole 814A (Appendix A, and Fig. 18) indicates that the NRM intensities decrease downward from mid 10^{-7} Am^2/kg near the top, to low 10^{-8} Am^2/kg at about 70 mbsf and below. This general profile is similar to the ones at Sites 813 and 812. Of the 203 samples analyzed, 14 (7%) were grouped as A samples, 48 (24%) as B samples, and 141 (69%) as C samples. As in Sites 812C and 813A, the modal class from NRM intensities was 5×10^{-8} to 1×10^{-8} Am^2/kg.

Zones of polarity could only be determined in the upper 45 m of the core (Fig. 18) because of the low intensity and general instability of the magnetic remanence. Polarity was based on reversals in inclination angle only. Below 45 mbsf, the high number of C samples and zones of no recovery (56–67 mbsf, >133 mbsf) precluded polarity determination.

Based on AF demagnetization, median destruction field ranged anywhere from about 40 or 50 mT in the upper, higher intensity samples, to less than 10 mT in many of the weaker samples (Fig. 16; Appendix B). Least-squares analysis of samples that had a stable component was used to determine inclination angle. The MAD in the stronger A and B samples ranges from about 2° to more than 20° (Appendix B).

True inclination angle, using the method of Kono (1980) for A and B samples (n=62), was considerably higher than the axial dipole value (31.4°) for the core location. The samples had a k value of 7.3 and an alpha-95 value of 7.1°.

Hole 818B

Hole 818B was sampled at a less than 1-m interval in an attempt to establish magnetic polarity zones based on inclination angle. Hole 818B exhibited very low NRM intensity values (Fig. 5, Appendix A), and many samples were below or near the sensitivity of the magnetometer before AF demagnetization. NRM intensity was usually near the low 10^{-8} Am^2/kg level throughout much of the core, with a modal class of 1×10^{-8} to 5×10^{-8} Am^2/kg.

Polarity results from Hole 818B are shown in Figure 19. Except for a few samples in the top two cores, no continuous polarity zones of more than four samples were delineated. Due to the weak and unstable nature of the samples below about 60 mbsf, only reconnaissance analyses were performed. Of the 176 samples measured from Hole 818B, only 6 (3.4%) A samples and 34 (19.3%) B samples were amenable to polarity determination. The 40 A and B samples were used to calculate a true inclination (Kono, 1980) of 31°, with a k value of 8.6 and alpha-95 of 8.1°.

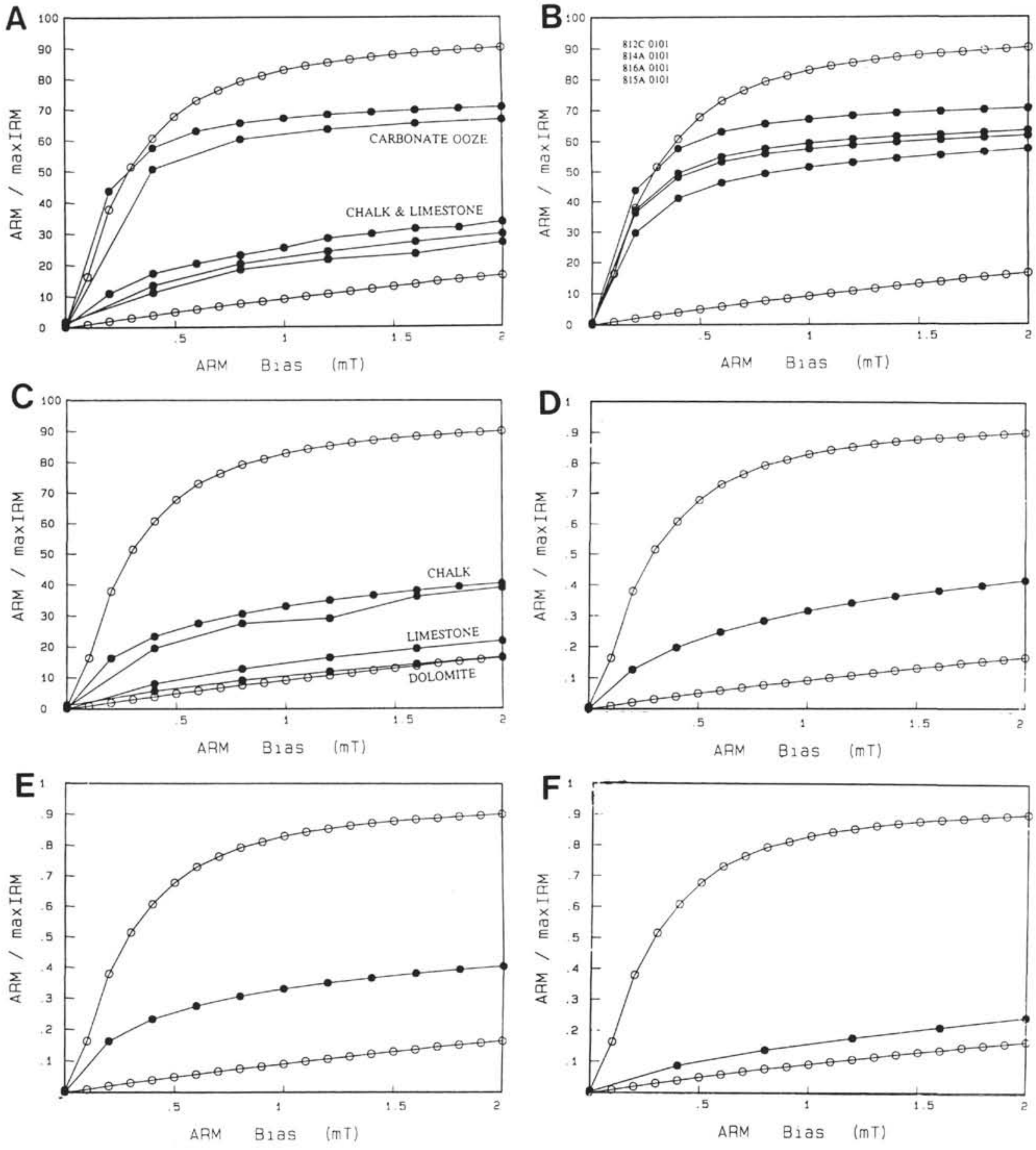

Figure 8. ARM plots of carbonate samples from the Queensland Plateau. Near-surface samples exhibit a highly noninteracting configuration, which suggests a biogenic magnetite source. **A.** Hole 814A, 3H-2. **B.** As shown. **C.** Site 817. **D.** Hole 818B, 6H-1. **E.** Hole 817C, 5H-1. **F.** Hole 812C, 12H-CC.

DISCUSSION

Remanence-carrying Minerals

Rock-magnetic data and direct electron-microscopy observations suggest that either magnetite or maghemite is the dominant remanence-carrying mineral in the carbonate sediments. Coercivity spectral plots (Fig. 5) and rock-magnetic characteristics (Table 2) are similar to other single-domain magnetite(maghemite?)- bearing limestones (McNeill, 1990). Coercivity values (21–31 mT, Table 2) are consistent for magnetite/maghemite-dominated carbonates. In the pure carbonate sites, the median destructive field of the ARM is consistently greater than that of the IRM, thus passing the modified Lowrie-Fuller test and suggesting single-domain magnetite/maghemite. The range of saturation remanent magnetization, measured in samples from Sites 812 and 814 (Table 2), is consistent with those measured from carbonate sediments dominated by living bacteria and biogenic single-domain magnetite ($Jr = 4 \times 10^{-7}$ to 5×10^{-6} emu) (McNeill, 1990; McNeill, unpubl. data, 1991).

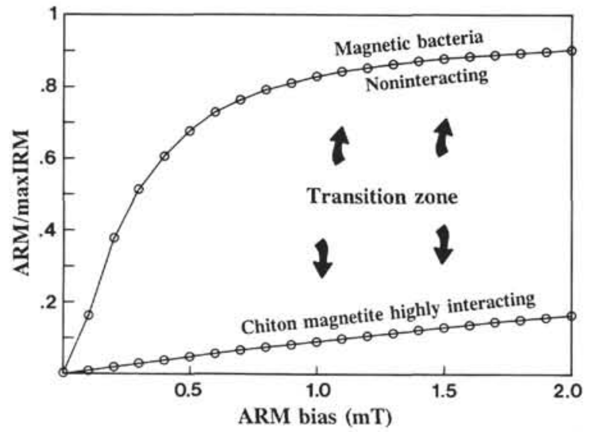

Figure 9. End-member calibration of noninteracting, single-domain magnetite from freeze-dried bacteria and highly interacting magnetite from chiton teeth. Recent work involves calibration of the intermediate transition zone between the two (McNeill et al., 1991).

Separation and examination of magnetic particles were performed for a few samples using the technique of Chang and Kirschvink (1984). Transmission electron micrographs of the separated particles confirms the occurrence of ultrafine-grained magnetite or maghemite (Fig. 11). In Sites 812 and 814, no coarser magnetic components were recognized during complete grid scans under the TEM. The single-domain grains observed in the TEM are similar in crystal dimensions to known biogenic magnetites (Fig. 12).

Anhysteretic remanent magnetization results also suggest single-domain magnetite. In the upper 2 to 3 m of the cores (Holes 812A and 812C, 814A), the magnetic components appear to have low magnetostatic interaction status, similar to biogenic chains of single-domain magnetite. This highly noninteracting status appears to be lost with depth, as more interacting configurations become dominant.

R values measured in the pure carbonate sites decrease abruptly below the core's top 1 or 2 m. This decrease can perhaps be attributed to both increased magnetostatic interaction and oxidation of the magnetite. Oxidation of the magnetite to maghemite may contribute to the lowering of the *R* value. During drilling and logging at the Queensland Plateau sites, a downward flow of water was measured in the upper portion of the platform (see Volume 133, *Init. Repts.*). Subsequently, strontium isotope ($^{87}Sr/^{86}Sr$) measurements of platform fluids confirm modern seawater flushing through the platform (see Elderfield et al., this volume), which may have promoted oxidation to maghemite.

Diagenesis of Magnetic Remanence

The decrease in magnetic intensity common to most of the Queensland Plateau carbonate sites may perhaps be partially explained by the transformation/alteration of an originally magnetite remanence carrier. Based on the geochemical data presented here, the evidence for the destruction of magnetite remains circumstantial. However, the observed downcore increase in ferric iron (fraction 1) does indicate the formation of a ferric oxyhydroxide phase. We have assumed that the sediments are void of any silicates, which may have provided loosely bound Fe^{+2} and Fe^{+3} that was adsorbed in them. Thus, the decrease in crystalline ferric oxides (fraction 2) downcore and the increase in frac- tion 1 ferric iron suggest an increase in ferric oxyhydroxide phase(s) at the expense of ferric oxide phase(s). Although both iron fractions analyzed are ferric (same oxidation state of iron), the observed changes in concentration (loss in magnetic intensity) may have been caused by the authigenesis of ferrihydrite ($5Fe_2O_3 \cdot 9H_2O$) or lepidocrocite ($\gamma FeOOH$) from a maghemite (γFe_2O_3) precursor phase caused by hydration in the presence of water. The rapid flow of water through the platform sediments may have contributed to these reactions.

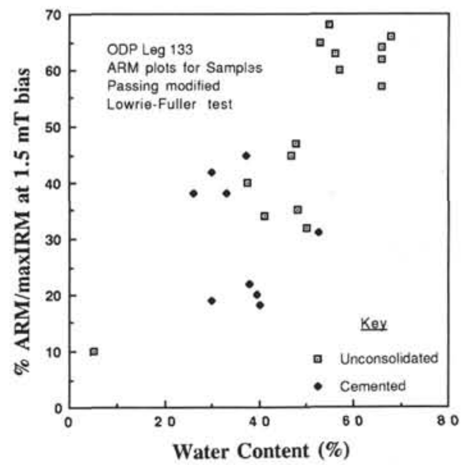

Figure 10. Plot of ARM acquisition value at 1.5 mT vs. natural water content determined from shipboard analysis. The degree of magnetostatic interaction appears to be correlative with porosity reduction through formation of cement crystals.

The potential of reducing conditions in the Queensland Plateau Sites 811 through 814 appeared to be unlikely. Several lines of evidence that suggest the absence of early reduction/dissolution of magnetic minerals and/or present-day reducing conditions include (1) the extremely low total organic carbon (<0.15%) in the sediments; (2) total solid- phase sulfur concentrations in the sediments below detection limits of the NCS analyzer (Shipboard Scientific Party, 1991); (3) present day sulfate values in the sediment of 28 to >31 mM; and (4) the complete absence of pyrite or other iron-sulfide minerals. These data and observations coupled with the available iron-geochemical data, tend to support current conditions favorable for oxidation. Furthermore, these conditions appear to have been prevalent since the time of deposition.

Remanence Decrease with Depth

All the Queensland Plateau carbonate sites exhibit a decrease of at least one order of magnitude downcore, usually within the top 50 mbsf. Two hypotheses regarding this decrease are (1) a change in source and amount of magnetic minerals deposited, or (2) a preservation/destruction relationship with burial/subsidence. The timing of this intensity decrease in Sites 812 to 814 using magnetostratigraphy and biostratigraphy is between about 2.5 and 3.5 Ma. (Table 1). This age range represents the base of the decrease in intensity, where intensity values below approach low 10^{-8} Am^2/kg. The first hypothesis might include the influx of single-domain grains of either magnetite or maghemite, or an increase in conditions favorable to in situ accumulation of single-domain magnetite(?) grains. The onset of Northern Hemisphere glaciation and the initiation of high-frequency changes in sea level may have contributed to mobilization of ultrafine-grained magnetic material since 3.5 Ma. Initial results from cores near the Great Barrier Reef (Sites 819 through 822) indicate an increased influx of magnetic material associated with lowstands(?) of sea level (see Barton et al., this volume). The mobilization and redeposition of magnetic grains, coupled with biogenic grains, may have provided a differential source. The second hypothesis invokes progressive alteration of a remanence source generated near the sediment/water interface. This alteration might be through either oxidation of the single-domain magnetite to maghemite, or formation of iron-hydroxides (see following section). The coercivity spectra suggest that the magnetic grains underwent some degree of oxidation as saturation became slightly higher and demagnetization of IRM became easier, with response to lower fields.

Alternatively, a combination of the two involving subsidence of the platform and improved preservation potential may have contributed to higher remanence. The transition zone between higher and lower

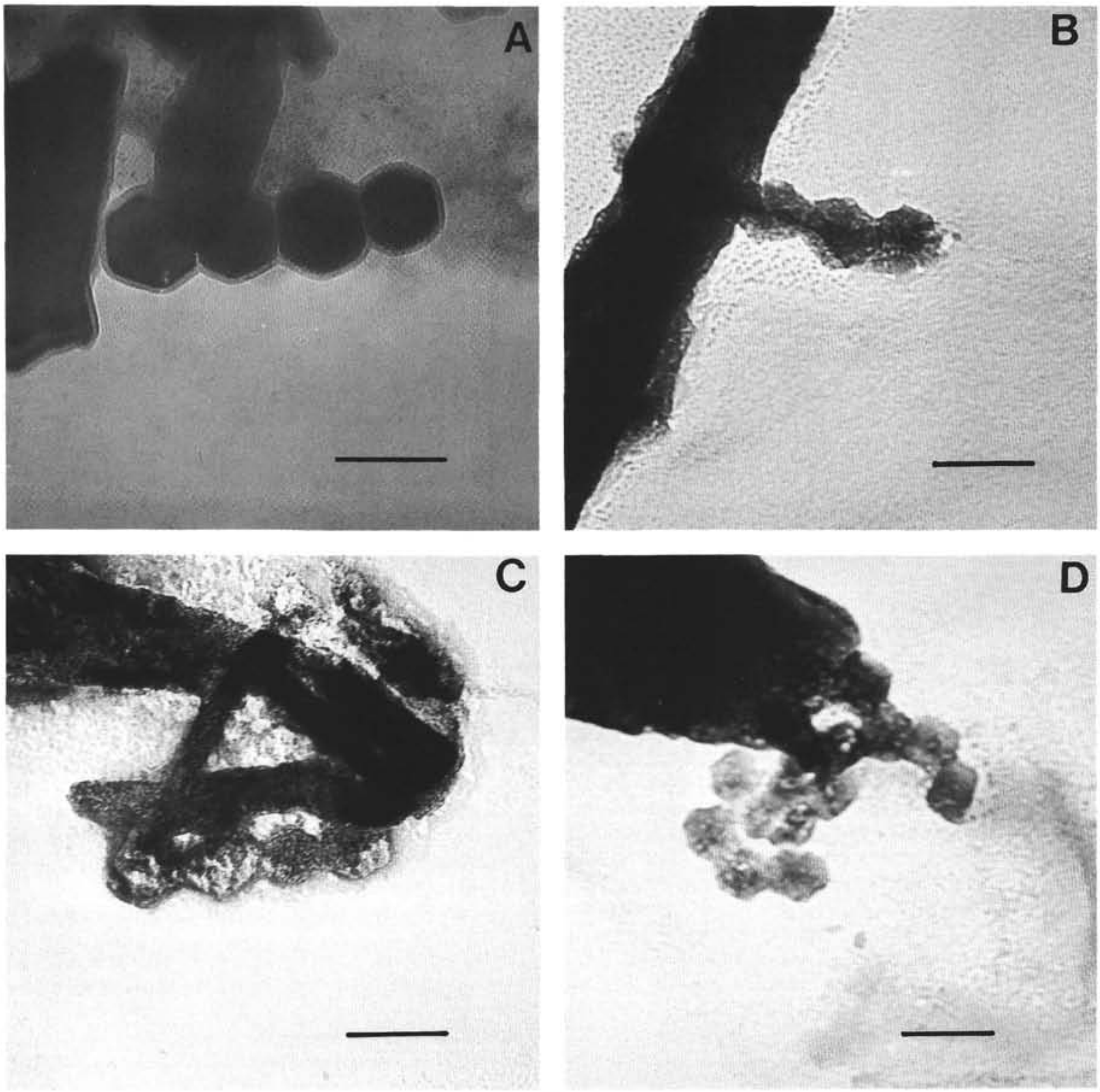

Figure 11. TEM photomicrographs of magnetic components separated from Holes 812A and 812C. **A.** 812A, 2H-2. **B.** 812C, 9H-1. **C** and **D.** 812C, 6H-1. Magnetic crystals within the zone of higher intensity exhibit well-define crystal edges and uniform electron density. Separates within the low intensity zone often show diffuse crystal boundaries and variations in electron density. Scale bar is 0.1 µm in all four photomicrographs.

remanence is closely correlative to the timing of platform subsidence which created a change from neritic to bathyal conditions. An increase in platform subsidence and the associated increase in water depth may have favored the formation and preservation of the magnetic minerals.

ARM Acquisition: Implications for Paleomagnetism

One observation that was noted regarding ARM acquisition was the transition from more noninteracting (ooze) to interacting status (chalk) with progressive cementation (Fig. 20, Table 3). Although these initial results will need to be followed up with more detailed work, a preliminary interpretation suggests that secondary cementation may have had some slight effect on the changing magnetic grain configuration. As of now, the magnitude of this change on directional data is undetermined, but probably was very minor. It appears as if the transition from noninteracting to more interacting status paralleled the transition from ooze to chalk to limestone. This progressive cementation, as discussed by Schlanger and Douglas (1974), can be in a rough sense related to depth. The carbonate samples from the Queensland Plateau Sites 812, 814, and 817 (Fig. 21) show this general trend. This relationship also is suggested in the decrease in porosity (decrease in water content) associated with cementation and burial (Fig. 10). The degree of cementation is highly variable, and the actual transition may be better defined by a steplike progression, instead of a simple depth relationship.

Examination of the carbonate matrix between the noninteracting and highly interacting grain configuration suggests that the transition to the more interacting configuration may have been influenced by cementation and/or recrystallization. The carbonate ooze consists of completely uncemented, very fine-grained micrite, coccoliths, foraminifers, pteropods, and fragments. The moderately to well-cemented chalks show a fabric that may have been completely dominated by secondary cements (Fig. 22). These cements may have acted to modify the more chainlike configuration of biogenically formed magnetite/maghemite to more interacting configurations through physical movement that is associated with cementation.

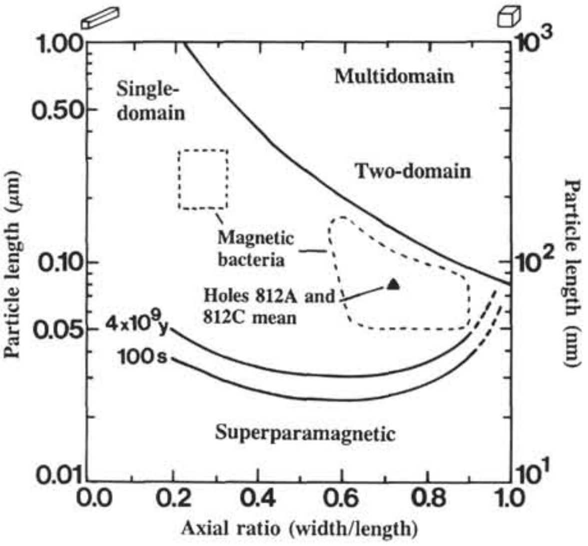

Figure 12. Mean crystal dimensions for 26 grains plotted on the stability diagram of Butler and Banerjee (1975). The size range is similar to that of known biogenic magnetite compiled by McNeill et al. (1988).

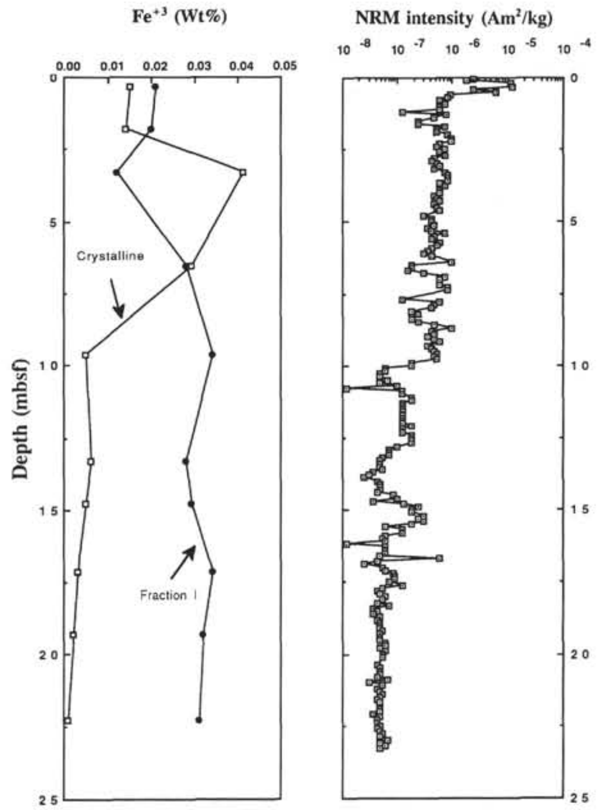

Figure 13. Summary of iron geochemistry and magnetic intensity from Hole 812A. Post-depositional alteration may have had significant effect on grain preservation and the ability to carry a stable magnetic remanence.

Magnetostratigraphic Correlation

Site 812

Magnetostratigraphic correlation from shore based analysis confirms several of the preliminary reversal boundaries (Table 5), as correlated with the available biostratigraphic datums. Resolvable during the land based study was the Brunhes/Matuyama boundary at 13 mbsf in Hole 812A, and the top of the Olduvai subchron at about 23.7 mbsf and the base of the Olduvai at about 26 mbsf in Hole 812C. The Jaramillo event was not resolved because of the relatively few samples across this zone (estimated to be about 2 m from shipboard data); only one C sample suggested normal polarity in this interval. Below the hardground at about 28 mbsf, no definitive polarity zones could be determined confidently with successive B or A samples (Fig. 15).

The true inclination calculated for the A and B samples (n=39) was 28.3°, which is slightly shallower than the axial dipole value of about 33° calculated from the existing site latitude.

Site 813

Shore-based analysis of discrete samples in a magnetically shielded environment failed to extend the shipboard-determined polarity deeper down the hole. However, analysis did confirm the preliminary reversal datums (Table 5). These boundaries are now placed at: Brunhes/Matuyama at ~17 mbsf, the top and bottom of the Jaramillo event at ~20 and ~26 mbsf, the top and bottom of the Olduvai at 35 to 36 mbsf and 39 mbsf, and the top of the Gauss(?) at ~54 mbsf. The base of the Gauss and the intermediate reversed zones within the Gauss remain uncertain (Fig. 17). Below about 80 mbsf, the high number of C samples precludes determination and correlation of reversal zones within the existing biostratigraphic framework.

Hole 814A

Shore-based analysis of samples from Hole 814A confirmed the shipboard magnetic reversal stratigraphy and refined the positioning of reversal boundaries (Table 5, Fig. 18). In conjunction with existing biostratigraphic zones, the following reversal boundaries were correlated to the geomagnetic polarity time scale: (1) the Brunhes/ Matuyama boundary is located at approximately 14 mbsf; (2) the top and bottom of the Jaramillo event were placed at approximately 16 and 19 mbsf, respectively; (3) the Olduvai normal subchron ranges from about 29 to 32 mbsf; (4) from 32 to about 43.5 mbsf, reverse polarity may have dominated and has been interpreted, and is interpreted to represent the lower section of the Matuyama Chron; and (5) normal polarity below 43.5 mbsf correlates with the Gauss normal chron; however, the base of the Gauss was not identified due to increasing unreliability of samples downcore and a gap of no recovery from 56 to 67 mbsf.

Hole 818B

The absence of any well-defined polarity zones precluded magnetostratigraphic dating at this site. The scattered vertical distribution of the relatively few A and B samples, in conjunction with the extremely low and unstable remanence, was the primary contributor to this absence of reversal stratigraphy. The fairly low *k* value of the A and B samples probably reflects the absence and instability of remanence in this periplatform setting.

CONCLUSIONS

1. Magnetic remanence in the Queensland Plateau carbonate sediments is carried by single-domain crystals of either magnetite or maghemite. These crystals (as observed under the TEM) are similar in size and configuration to known biogenic magnetic crystals.

2. Magnetic intensity decreases abruptly with depth in the carbonate sediments, sometimes up to two orders of magnitude from values at the core top. This decrease in remanence may be the result of oxidation of magnetite to maghemite, and/or the formation of ferrihydrites. Preservation potential may have also changed with continued platform subsidence or subsidence rate, and had some effect on the geochemical regimes. The remanence difference may also be source-related, although the rock-magnetic results and TEM observations of magnetic separates show no distinct differences in composition.

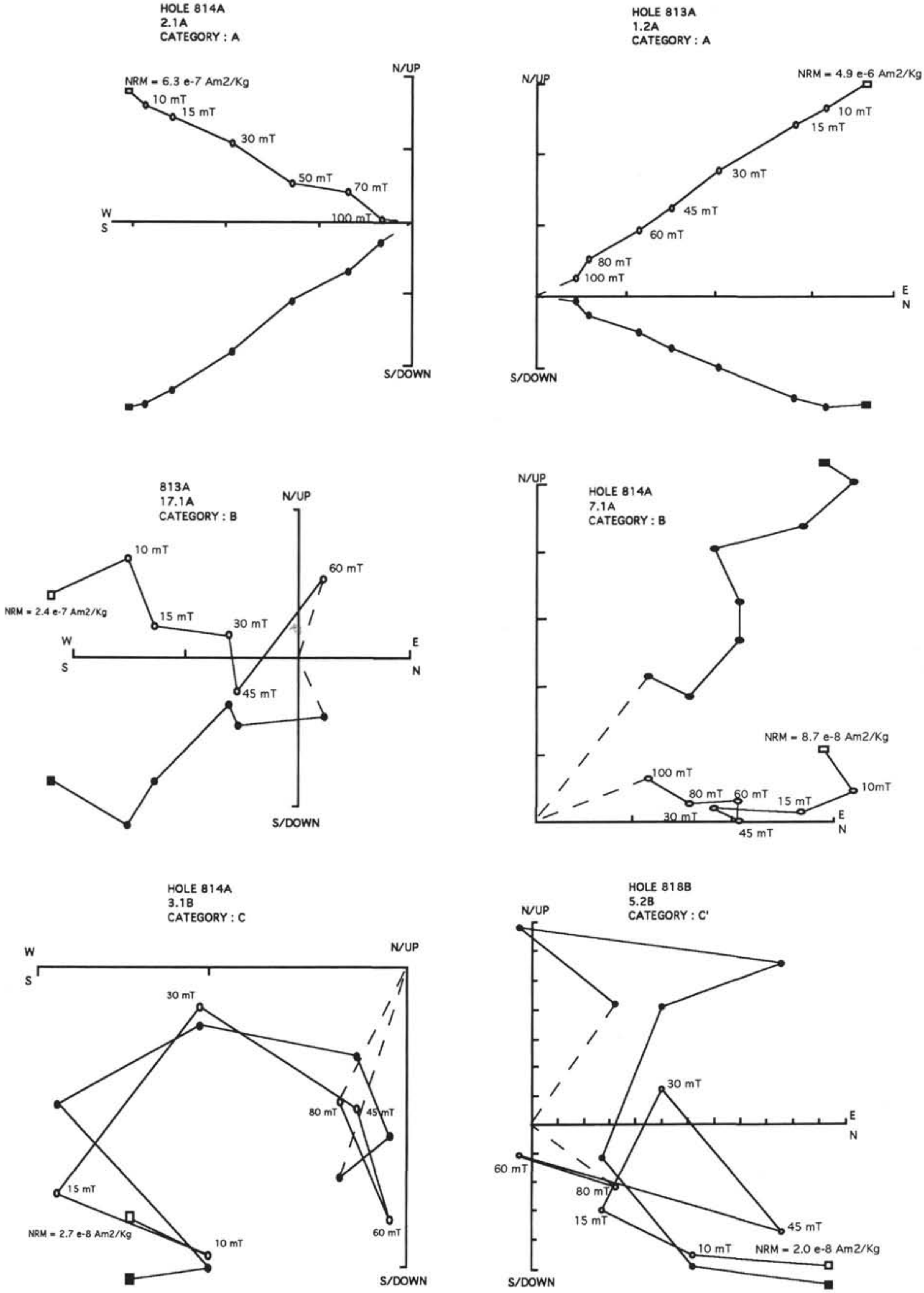

Figure 14. Representative orthogonal plots of A, B, C, and C′ samples from the carbonate sediments of the Queensland Plateau. Most samples fell under the C or C′ category and generally were unusable for magnetostratigraphic purposes.

3. Application of a recently calibrated ARM test on Queensland Plateau carbonate sediments tentatively indicated that the magnetic grain configuration underwent transition from highly noninteracting to more magnetostatic interacting. Chainlike configurations, likely related to a biogenic source, are common in the uncemented, high-water-content oozes. As the sediment became more cemented, the interacting status increased, perhaps from physical chain breakage with cement crystal growth. A similar situation has been reported in Holocene shallow-water carbonates.

4. The above-mentioned downhole intensity decrease and loss of magnetic remanence limit application of magnetostratigraphy. In the upper sections of Sites 812 to 814, where stable remanence is present, magnetic reversals have been correlated with the GPTS. The transition to weak and/or unstable remanence is thought to occur within the 2.48 to 3.5 Ma. time period, concomitant with subsidence from neritic to bathyal depth.

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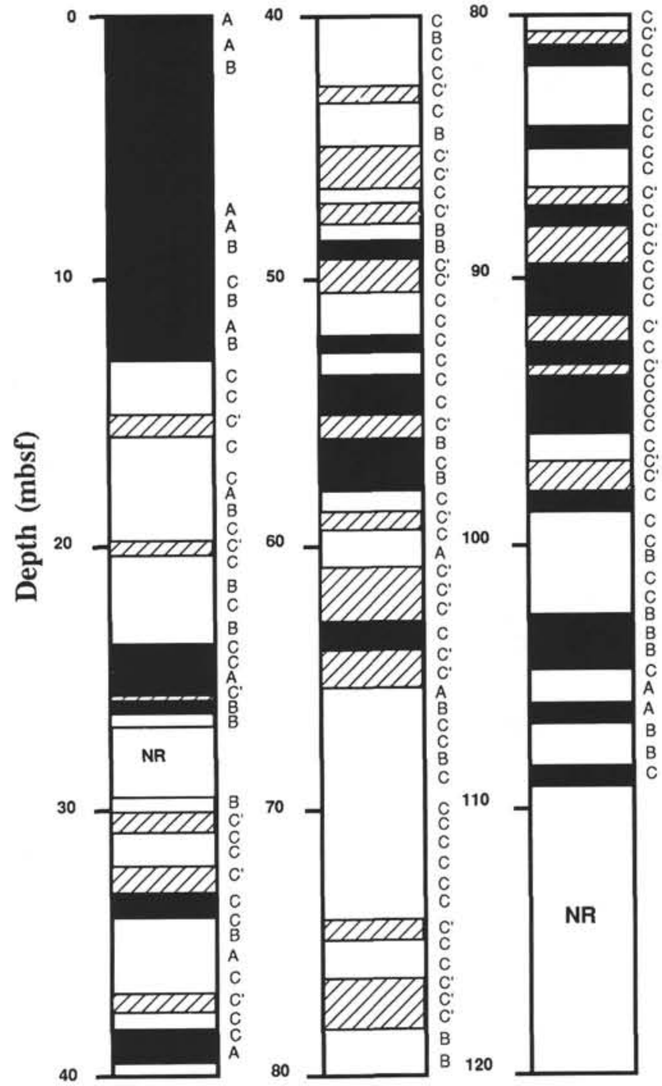

Figure 15. Summary of magnetic polarity zones and distribution of paleomagnetic samples for Holes 812A and 812C. The low magnetic intensity and instability of many C and C′ samples precluded assignment of polarity zones below the upper 30 mbsf.

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Ms 133SR-263

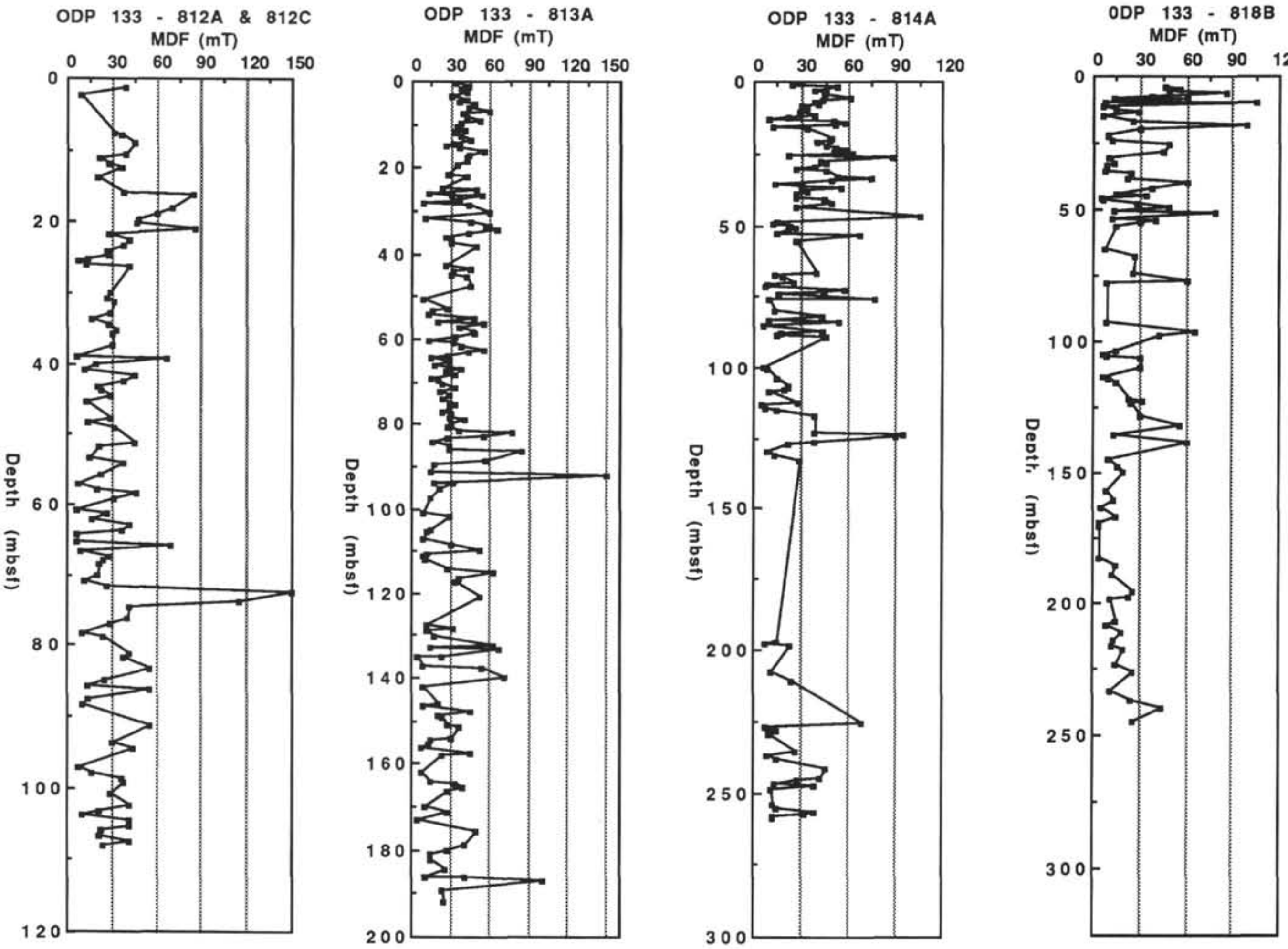

Figure 16. Downcore plot of median destructive field (MDF) after AF demagnetization. Most samples responded to progressively increased AF field demagnetization.

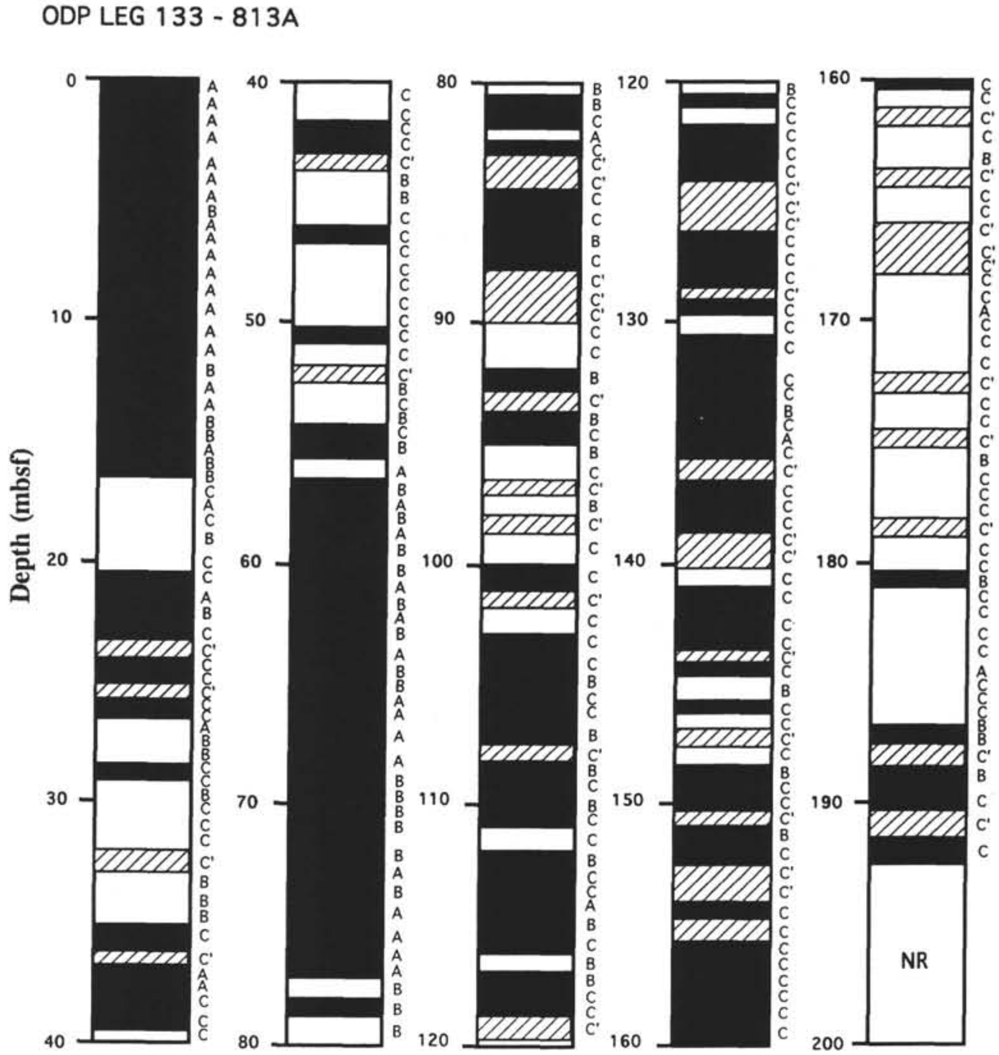

Figure 17. Summary of magnetic polarity zones and distribution of paleomagnetic samples for Site 813. Zones of reliable polarity determination are correlative to the zone of higher magnetic intensity.

Table 5. Summary of magnetostratigraphic reversal boundaries for Sites 812 through 814.

		Hole		
Reversal	Age	812	813A	814A
Brunhes/Matuyama	0.78	13	17	14
Matuyama/Jaramillo	0.91	15(?)	20	16
Jaramillo/Matuyama	0.98	16(?)	26	19
Matuyama/Olduvai	1.66	23.7	35-36(?)	29
Olduvai/Matuyama	1.88	26	39	32
Matuyama/Gauss	2.47	—	54(?)	43.5

Note: Poorly defined boundaries have a question mark signifying the uncertainty.

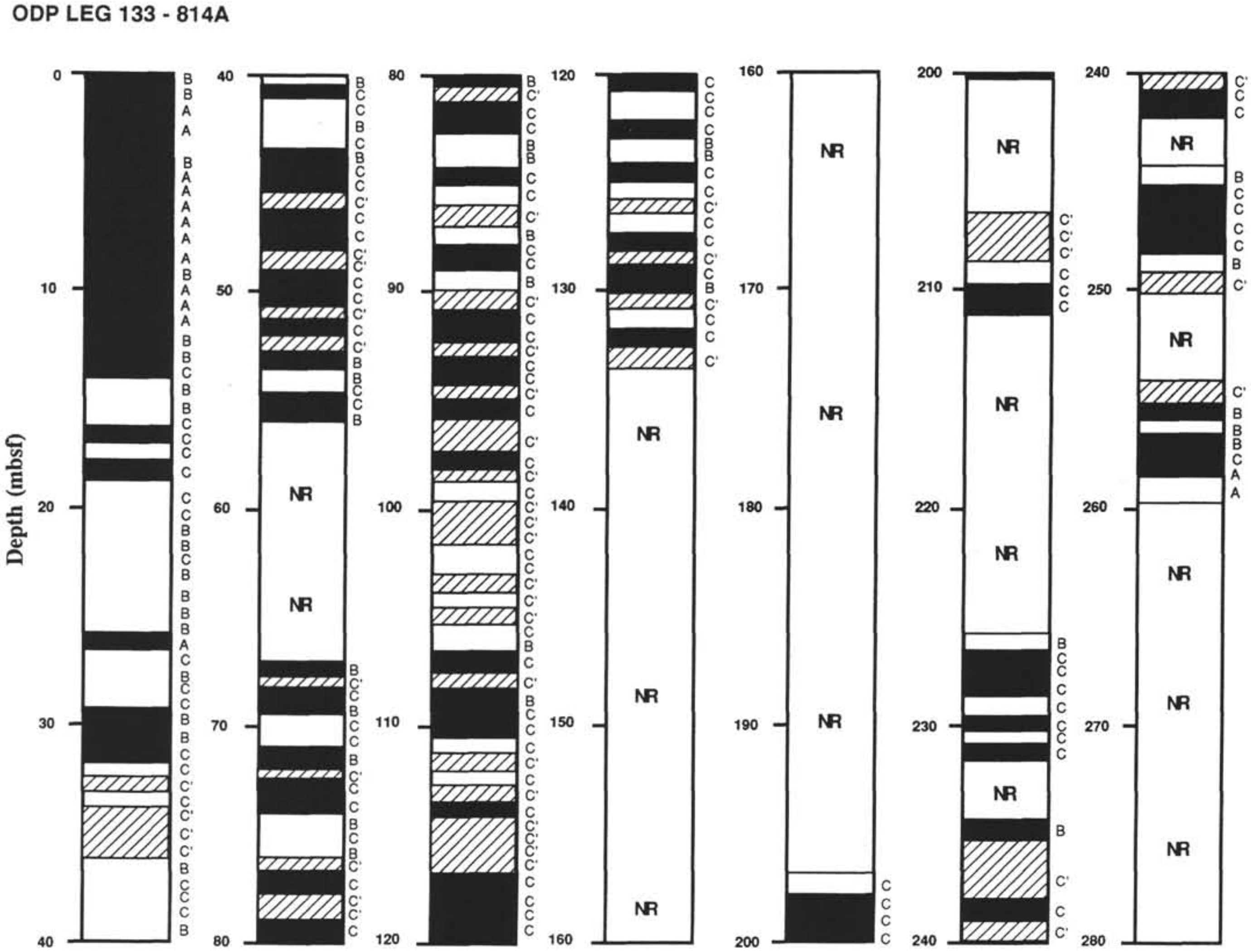

Figure 18. Summary of magnetic polarity zones and distribution of paleomagnetic samples for Site 814. Polarity zones were determined from the top 45 m of the core.

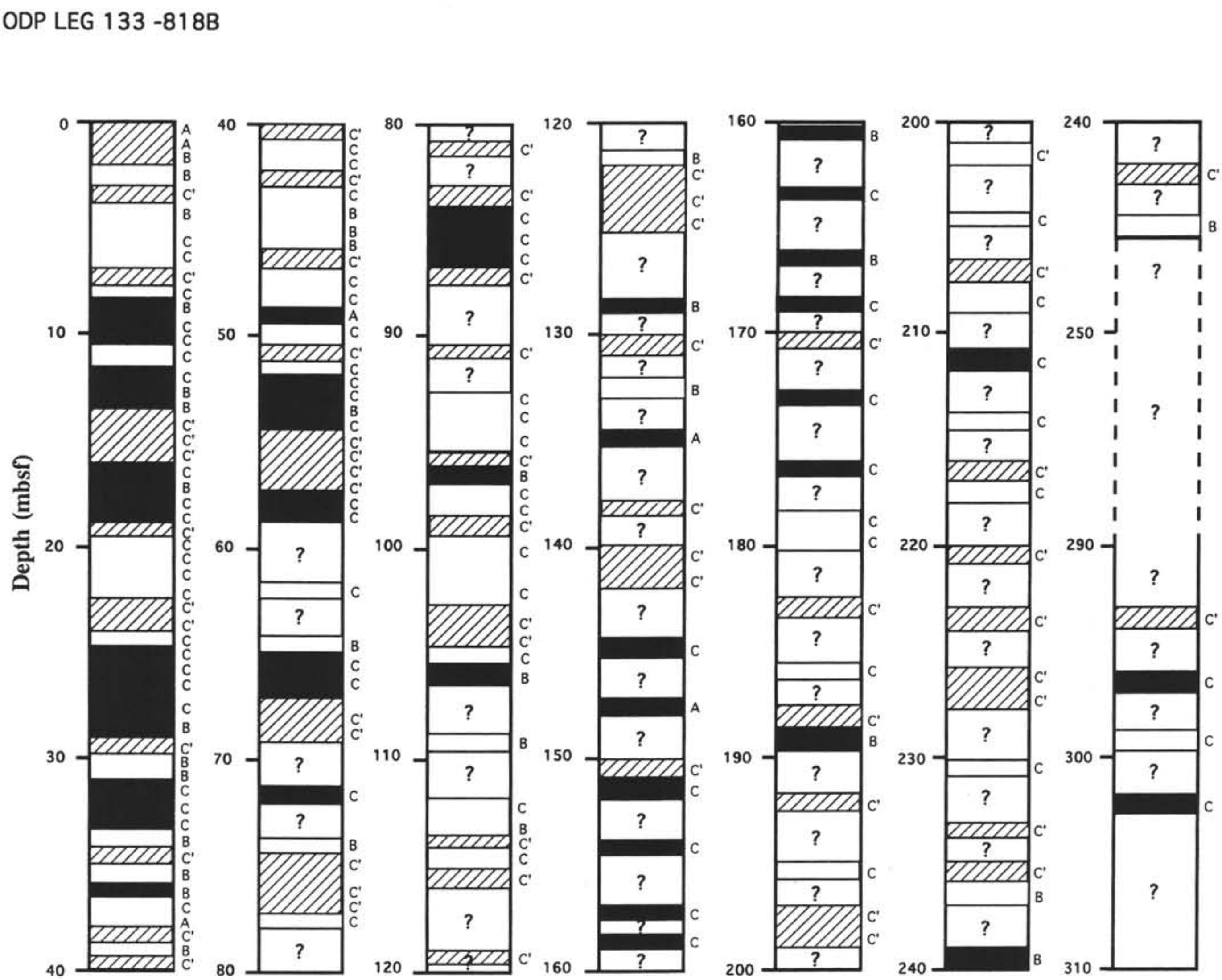

Figure 19. Summary of magnetic polarity zones and distribution of paleomagnetic samples for Hole 818B. This hole had extremely low intensities, and no reliable polarity zones could be determined.

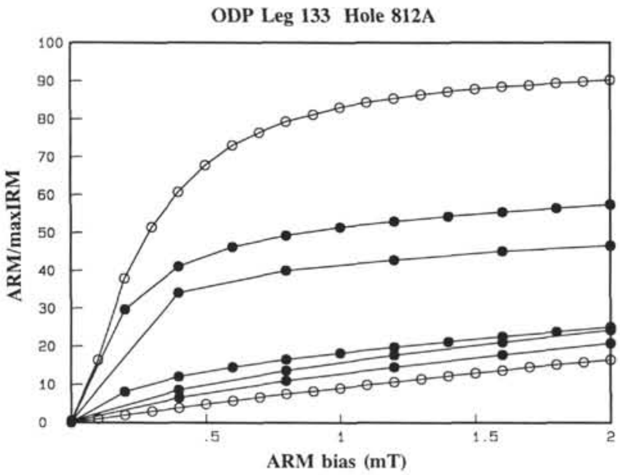

Figure 20. ARM acquisition plot showing the transition from more noninteracting unconsolidated sediments to a more interacting magnetostatic configuration with progressive cementation.

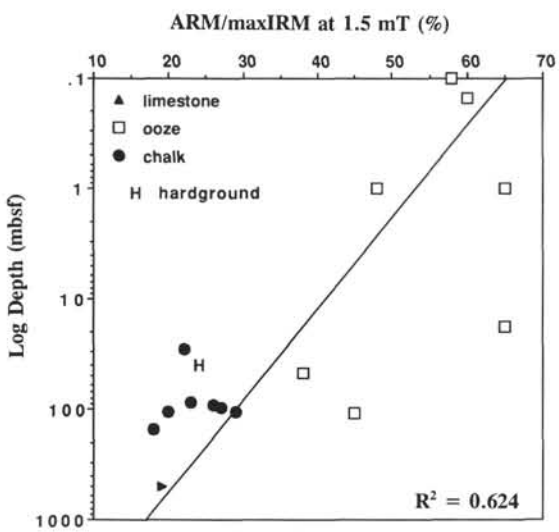

Figure 21. Plot of ARM vs. depth for Leg 133 carbonate samples. The progressive increase in cementation with depth relationship may be responsible for this general trend.

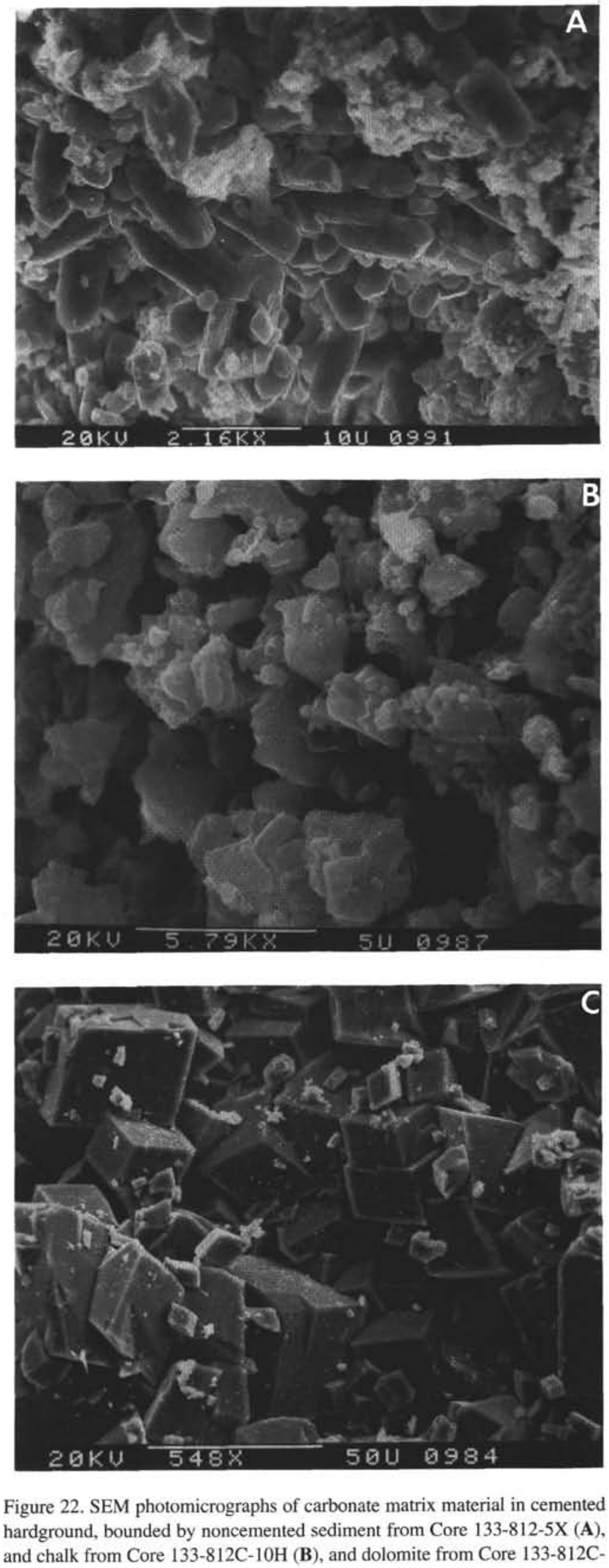

Figure 22. SEM photomicrographs of carbonate matrix material in cemented hardground, bounded by noncemented sediment from Core 133-812-5X (**A**), and chalk from Core 133-812C-10H (**B**), and dolomite from Core 133-812C-13H (**C**).

APPENDIX A

Shore-based sample summary showing sample location, sample depth, NRM intensity, maximum AF demagnetization step, and median destructive field.

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	MAX. AF (mT)	MDF (mT)
1	HOLE 812A: 1	1	128-130	1.100B	1.280	1.8e-6	2.6e-7	80	39
2	1	2	91-93	1.200B	2.410	2.1e-6	3.0e-7	30	9
3	2	2	122-124	2.200B	7.620	5.3e-6	7.6e-7	80	32
4	2	3	9-11	2.300A	7.990	2.6e-6	3.7e-7	80	36
5	2	3	110-112	2.300B	9.000	4.7e-7	6.7e-8	80	46
6	2	4	111-113	2.400B	10.510	6.0e-7	8.6e-8	100	39
7	2	5	21-23	2.500A	11.110	7.5e-7	1.1e-7	60	21
8	2	5	109-111	2.500B	11.990	9.6e-7	1.4e-7	80	28
9	2	6	19-21	2.600A	12.590	9.0e-7	1.3e-7	100	37
10	2	6	139-141	2.600C	13.790	8.6e-7	1.2e-7	100	20
11	2	7	72-74	2.700B	14.620	1.6e-7	2.3e-8	80	-
12	3	1	139-141	3.100B	15.920	9.7e-8	1.4e-8	80	38
13	3	2	40-42	3.200A	16.300	1.9e-7	2.7e-8	100	85
14	3	3	40-42	3.300A	17.800	1.0e-7	1.4e-8	45	-
15	HOLE 812C: 3	1	118-121	3.100B	18.080	4.0e-7	5.7e-8	120	70
16	3	2	38-39	3.200 A	18.780	1.7e-7	2.4e-8	120	60
17	3	2	118-121	3.200B	19.580	7.4e-8	1.1e-8	120	48
18	3	3	38-39	3.300A	20.280	3.9e-7	5.6e-8	90	47
19	3	3	118-121	3.300B	21.080	9.6e-8	1.4e-8	120	86
20	3	4	38-39	3.400A	21.780	3.7e-7	5.3e-8	75	28
21	3	4	118-121	3.400B	22.580	2.0e-7	2.9e-8	90	42
22	3	5	38-39	3.500A	23.280	2.0e-7	2.9e-8	90	38
23	3	5	118-121	3.500B	24.080	1.5e-7	2.1e-8	90	26
24	3	6	38-39	3.600A	24.780	2.1e-7	3.0e-8	75	28
25	3	6	75-77	3.600B	25.150	6.0e-7	8.6e-8	75	14
26	3	6	118-121	3.600C	25.580	2.6e-7	3.7e-8	60	7
27	3	7	3-5	3.700A	25.930	1.9e-7	2.7e-8	60	12
28	3	7	30-32	3.700B	26.200	2.7e-7	3.9e-8	90	41
29	5	1	40-42	5.100A	29.900	2.5e-7	3.6e-8	60	29
30	5	1	117-119	5.100B	30.700	9.5e-8	1.4e-8	90	26
31	5	2	40-42	5.200A	31.400	1.2e-7	1.7e-8	75	32
32	5	2	125-127	5.200B	32.200	6.2e-8	8.9e-9	75	-
33	5	3	32-35	5.300A	32.900	4.2e-8	6.0e-9	60	29
34	5	3	120-122	5.300B	33.700	1.1e-7	1.6e-8	60	16
35	5	4	40-42	5.400A	34.400	7.2e-8	1.0e-8	60	28
36	5	4	115-117	5.400B	35.200	8.2e-8	1.2e-8	60	33
37	5	5	26-28	5.500A	35.900	1.6e-5	2.3e-6	150	30
38	5	5	115-117	5.500B	36.700	8.6e-8	1.2e-8	90	-
39	5	6	40-42	5.600A	37.400	6.1e-8	8.7e-9	90	30
40	5	6	115-117	5.600B	38.200	5.5e-8	7.9e-9	45	-
41	5	7	40-42	5.700A	38.900	1.0e-7	1.4e-8	45	6
42	6	1	40-42	6.100A	39.400	1.3e-5	1.9e-6	150	67
43	6	1	115-117	6.100B	40.150	3.1e-7	4.4e-8	60	19
44	6	2	40-42	6.200A	40.900	1.1e-7	1.6e-8	60	11
45	6	2	118-121	6.200B	41.680	6.9e-8	9.9e-9	60	45
46	6	3	40-42	6.300A	42.400	1.4e-7	2.0e-8	60	38
47	6	3	118-121	6.300B	43.180	5.6e-8	8.0e-9	60	20
48	6	4	40-42	6.400A	43.900	1.7e-7	2.4e-8	110	23
49	6	4	118-121	6.400B	44.680	1.2e-7	1.7e-8	60	29
50	6	5	40-42	6.500A	45.400	8.6e-8	1.2e-8	60	13
51	6	5	118-121	6.500B	46.180	2.0e-8	2.9e-9	60	-
52	6	6	40-42	6.600A	46.900	1.0e-7	1.4e-8	60	-
53	6	6	118-121	6.600B	47.680	1.1e-7	1.6e-8	60	29
54	6	7	31-33	6.700A	48.310	1.0e-7	1.4e-8	60	14
55	7	1	60-62	7.100A	49.100	1.0e-6	1.4e-7	150	31
56	7	1	119-121	7.100B	49.690	-	-	150	-
57	7	2	30-32	7.200A	50.300	9.6e-9	1.4e-9	60	-
58	7	2	191-121	7.200B	51.190	7.2e-8	1.0e-8	60	45
59	7	3	39-41	7.300A	51.890	9.2e-8	1.3e-8	60	21
60	7	3	119-121	7.300B	52.690	3.6e-8	5.1e-9	60	-
61	7	4	30-32	7.400A	53.300	5.1e-8	7.3e-9	45	15
62	7	4	119-121	7.400B	54.190	4.5e-8	6.4e-9	45	38
63	7	5	40-41	7.500A	54.900	3.2e-8	4.6e-9	45	-
64	7	5	112-114	7.500B	55.620	1.1e-7	1.6e-8	80	23
65	7	6	30-32	7.600A	56.300	8.2e-8	1.2e-8	45	-
66	7	6	119-121	7.600B	57.190	8.4e-8	1.2e-8	45	7
67	7	7	30-31	7.700A	57.800	2.9e-7	4.1e-8	80	20
68	8	1	37-38	8.100A	58.370	7.5e-8	1.1e-8	60	47
69	8	1	119-121	8.100B	59.190	8.2e-8	1.2e-8	80	32
70	8	2	37-38	8.200A	59.870	4.7e-8	6.7e-9	60	-
71	8	2	119-121	8.200B	60.690	5.5e-7	7.9e-8	45	6
72	8	3	37-38	8.300A	61.370	2.7e-7	3.9e-8	60	27
73	8	3	119-121	8.300B	62.190	2.2e-8	3.1e-9	45	16
74	8	4	37-38	8.400A	62.870	4.5e-8	6.4e-9	60	42
75	8	4	119-121	8.400B	63.690	1.0e-7	1.4e-8	100	37
76	8	5	37-38	8.500A	64.370	5.3e-8	7.6e-9	45	6
77	8	5	119-121	8.500B	65.190	5.9e-8	8.4e-9	45	6
78	8	6	37-38	8.600A	65.870	3.4e-6	4.9e-7	150	69
79	8	6	119-121	8.600B	66.690	1.4e-7	2.0e-8	45	9
80	8	7	37-38	8.700A	67.370	3.0e-8	4.3e-9	45	28
81	9	1	40-42	9.100A	67.900	7.5e-8	1.1e-8	60	24
82	9	1	88-90	9.100B	68.380	9.0e-8	1.3e-8	45	21

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	MAX. AF (mT)	MDF (mT)
83	9	2	40-42	9.200A	69.400	4.1e-8	5.9e-9	45	-
84	9	2	118-120	9.200B	70.180	1.3e-7	1.9e-8	45	20
85	9	3	40-42	9.300A	70.900	6.6e-8	9.4e-9	45	11
86	9	3	118-120	9.300B	71.680	1.2e-7	1.7e-8	80	27
87	9	4	40-42	9.400A	72.400	1.3e-7	1.9e-8	150	150
88	9	4	118-120	9.400B	73.180	8.8e-8	1.3e-8	120	-
89	9	5	40-42	9.500A	73.900	1.1e-7	1.6e-8	120	115
90	9	5	118-120	9.500B	74.680	5.8e-8	8.3e-9	60	42
91	9	6	40-42	9.600A	75.400	5.8e-8	8.3e-9	60	-
92	9	6	118-120	9.600B	76.180	1.5e-7	2.1e-8	90	40
93	9	7	40-52	9.700A	76.900	4.2e-8	6.0e-9	45	29
94	10	1	39-41	10.100A	77.390	9.8e-9	1.4e-9	60	-
95	10	1	119-120	10.100B	78.190	9.5e-8	1.4e-8	45	10
96	10	2	39-41	10.200A	78.890	1.3e-7	1.9e-8	45	24
97	10	2	119-120	10.200B	79.690	1.1e-7	1.6e-8	45	-
98	10	3	39-41	10.300A	80.390	6.2e-8	8.9e-9	80	-
99	10	3	119-120	10.300B	81.190	8.4e-8	1.2e-8	80	42
100	10	4	39-41	10.400A	81.890	9.6e-8	1.4e-8	60	38
101	10	4	119-120	10.400B	82.690	9.9e-9	1.4e-9	60	-
102	10	5	39-41	10.500A	83.390	4.4e-8	6.3e-9	60	55
103	10	5	119-120	10.500B	84.190	3.6e-8	5.1e-9	30	-
104	10	6	39-41	10.600A	84.890	5.9e-8	8.4e-9	45	25
105	10	6	119-120	10.600B	85.690	6.9e-8	9.9e-9	45	14
106	10	7	39-41	10.700A	86.390	6.4e-8	9.1e-9	80	55
107	11	1	39-41	11.100A	86.890	6.4e-8	9.1e-9	60	-
108	11	1	117-120	11.100B	87.670	9.4e-8	1.3e-8	80	14
109	11	2	39-41	11.200A	88.390	9.0e-8	1.3e-8	45	10
110	11	2	117-120	11.200B	89.170	4.9e-8	7.0e-9	45	-
111	11	3	39-41	11.300A	89.890	4.4e-8	6.3e-9	60	-
112	11	3	117-120	11.300B	90.670	5.2e-8	7.4e-9	80	-
113	11	4	39-41	11.400A	91.390	1.2e-7	1.7e-8	100	56
114	11	4	117-120	11.400B	92.170	2.4e-8	3.4e-9	45	-
115	11	5	39-41	11.500A	92.890	3.7e-8	5.3e-9	30	-
116	11	5	80-82	11.500B	93.300	5.2e-8	7.4e-9	60	-
117	11	5	117-120	11.500C	93.670	7.3e-8	1.0e-8	60	30
118	11	6	39-41	11.600A	94.390	8.4e-8	1.2e-8	60	44
119	11	6	117-120	11.600B	95.170	5.6e-8	8.0e-9	30	-
120	11	7	39-41	11.700A	95.890	5.2e-8	7.4e-9	60	-
121	12	1	39-41	12.100A	96.390	2.3e-8	3.3e-9	60	-
122	12	1	117-119	12.100B	97.170	9.2e-8	1.3e-8	45	7
123	12	2	39-41	12.200A	97.890	2.8e-8	4.0e-9	45	17
124	12	2	117-119	12.200B	98.670	6.7e-8	9.6e-9	60	37
125	12	3	39-41	12.300A	99.390	6.9e-8	9.9e-9	45	38
126	12	3	117-119	12.300B	100.170	6.2e-8	8.9e-9	45	-
127	12	4	39-41	12.400A	100.890	2.7e-7	3.9e-8	60	29
128	12	4	117-119	12.400B	101.670	5.1e-8	7.3e-9	45	-
129	12	5	39-41	12.500A	102.390	8.2e-8	1.2e-8	60	42
130	12	5	117-119	12.500B	103.170	3.7e-7	5.3e-8	45	21
131	12	6	39-41	12.600A	103.890	1.5e-7	2.1e-8	45	10
132	12	6	117-119	12.600B	104.670	1.9e-7	2.7e-8	120	42
133	12	7	39-41	12.700A	105.390	1.3e-7	1.9e-8	80	42
134	13	1	40-42	13.100A	105.900	6.1e-6	8.7e-7	60	23
135	13	1	119-121	13.100B	106.690	3.3e-7	4.7e-8	60	22
136	13	2	40-42	13.200A	107.400	2.5e-7	3.6e-8	120	41
137	13	2	113-115	13.200B	108.130	1.8e-7	2.6e-8	60	24
138	13	3	40-42	13.300A	108.900	1.2e-7	1.7e-8	60	-

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	Max.AF (mT)	MDF (mT)
1	1	1	44-46	1.100A	0.44	4.8e-6	6.9e-7	60	34
2	1	1	127-129	1.100B	1.27	4.2e-6	6.0e-7	100	44
3	1	2	41-43	1.200A	1.91	4.9e-6	7.0e-7	100	38
4	1	2	114-116	1.200B	2.64	4.6e-6	6.6e-7	100	42
5	1	3	40-42	1.300A	3.40	5.0e-6	7.1e-7	100	30
6	1	3	128-130	1.300B	4.28	7.2e-6	1.0e-6	100	42
7	1	4	30-32	1.400A	4.80	1.0e-5	1.4e-6	120	36
8	1	4	80-82	1.400B	5.30	3.7e-6	5.3e-7	120	48
9	2	1	42-44	2.100A	6.12	3.9e-6	5.6e-7	100	44
10	2	1	117-119	2.100B	6.87	5.5e-6	7.9e-7	120	60
11	2	2	39-41	2.200A	7.59	8.3e-6	1.2e-6	120	39
12	2	2	120-122	2.200B	8.40	1.2e-5	1.7e-6	120	42
13	2	3	41-43	2.300A	9.11	5.2e-6	7.4e-7	120	53
14	2	3	119-121	2.300B	9.89	2.5e-6	3.6e-7	120	38
15	2	4	41-43	2.400A	10.61	7.0e-6	1.0e-6	120	35
16	2	4	120-122	2.400B	11.40	4.7e-6	6.7e-7	100	41
17	2	5	41-43	2.500A	12.11	1.4e-6	2.0e-7	100	34
18	2	5	120-122	2.500B	12.90	5.8e-6	8.3e-7	100	38
19	2	6	41-43	2.600A	13.61	6.5e-6	9.3e-7	100	45
20	2	6	68-70	2.600C	14.40	3.2e-7	4.6e-8	100	32
21	2	7	10-12	2.700A	14.80	3.4e-7	4.9e-8	100	26
22	2	7	41-43	2.700B	15.11	3.6e-6	5.1e-7	80	37
23	3	1	40-42	3.100A	15.60	7.9e-7	1.1e-7	100	37
24	3	1	118-120	3.100B	16.38	4.9e-7	7.0e-8	120	56
25	3	2	40-42	3.200A	17.10	2.3e-7	3.3e-8	100	44
26	3	2	118-120	3.200B	17.88	1.1e-6	1.6e-7	100	42
27	3	3	40-42	3.300A	18.60	4.6e-7	6.6e-8	100	42
28	3	3	118-120	3.300B	19.38	3.3e-7	4.7e-8	100	35
29	3	4	51-53	3.400A	20.21	1.8e-7	2.6e-8	100	-
30	3	4	118-120	3.400B	20.88	-	-	100	-
31	3	5	40-42	3.500A	21.60	8.4e-7	1.2e-7	100	27
32	3	5	107-109	3.500B	22.27	1.7e-7	2.4e-8	120	42
33	3	6	50-52	3.600A	23.20	5.6e-8	8.0e-9	120	-
34	3	6	118-120	3.600B	23.88	1.0e-7	1.4e-8	120	-
35	3	7	10-12	3.700A	24.30	7.7e-8	1.1e-8	120	-
36	3	7	50-52	3.700B	24.70	1.4e-7	2.0e-8	120	24
37	4	1	39-41	4.100A	25.09	1.4e-7	2.0e-8	100	50
38	4	1	117-119	4.100B	25.87	2.0e-7	2.9e-8	100	13
39	4	2	10-12	4.200A	26.30	1.5e-7	2.1e-8	100	30
40	4	2	40-42	4.200B	26.60	1.0e-6	1.4e-7	120	54
41	4	2	117-119	4.200C	27.37	3.4e-7	4.9e-8	100	37
42	4	2	140-142	4.200D	27.60	2.5e-7	3.6e-8	120	34
43	4	3	48-50	4.300A	28.18	3.3e-7	4.7e-8	60	8
44	4	3	117-119	4.300B	28.87	1.2e-7	1.7e-8	60	43
45	4	4	48-50	4.400A	29.68	2.2e-7	3.1e-8	80	-
46	4	4	117-119	4.400B	30.37	4.0e-7	5.7e-8	150	60
47	4	5	38-40	4.500A	31.08	5.6e-8	8.0e-9	60	-
48	4	5	117-119	4.500B	31.87	8.2e-8	1.2e-8	30	10
49	4	6	41-43	4.600A	32.61	1.2e-6	1.7e-7	100	45
50	4	6	117-119	4.600B	33.37	3.9e-7	5.6e-8	100	59
51	4	7	41-43	4.700A	34.11	2.5e-7	3.6e-8	100	57
52	5	1	31-33	5.100A	34.51	3.2e-7	4.6e-8	100	66
53	5	1	116-118	5.100B	35.36	1.8e-7	2.6e-8	80	43
54	5	2	31-33	5.200A	36.01	2.1e-7	3.0e-8	80	26
55	5	2	114-116	5.200B	36.84	1.4e-6	2.0e-7	80	31
56	5	3	31-33	5.300A	37.51	7.4e-7	1.1e-7	80	30
57	5	3	115-117	5.300B	38.35	1.0e-7	1.4e-8	100	50
58	5	4	31-33	5.400A	39.01	8.2e-8	1.2e-8	45	-
59	5	4	115-117	5.400B	39.85	8.5e-8	1.2e-8	45	-
60	5	5	31-33	5.500A	40.51	1.0e-7	1.4e-8	80	-
61	5	5	124-126	5.500B	41.44	1.7e-7	2.4e-8	80	-
62	5	6	29-31	5.600A	41.99	2.4e-7	3.4e-8	80	-
63	5	6	115-117	5.600B	42.85	4.0e-7	5.7e-8	60	26
64	5	7	29-31	5.700A	43.49	7.2e-7	1.0e-7	60	45
65	6	1	40-42	6.100A	44.10	4.0e-7	5.7e-8	80	32
66	6	1	115-117	6.100B	44.85	3.1e-7	4.4e-8	80	31
67	6	2	40-42	6.200A	45.60	2.9e-7	4.1e-8	100	42
68	6	2	111-113	6.200B	46.31	1.5e-7	2.1e-8	80	-
69	6	3	37-39	6.300A	47.07	1.2e-7	1.7e-8	80	-
70	6	3	108-110	6.300B	47.78	3.7e-7	5.3e-8	150	45
71	6	4	38-40	6.400A	48.58	1.3e-7	1.9e-8	100	-
72	6	4	108-110	6.400B	49.28	2.0e-7	2.9e-8	120	-
73	6	5	39-42	6.500A	50.09	4.2e-7	6.0e-8	100	-
74	6	5	116-119	6.500B	50.86	1.5e-7	2.1e-8	60	8
75	6	6	39-42	6.600A	51.59	2.5e-8	3.6e-9	60	-
76	6	6	107-111	6.600B	52.27	1.3e-7	1.9e-8	60	-
77	6	7	16-19	6.700A	52.86	2.9e-7	4.1e-8	80	27
78	6	7	65-68	6.700B	53.35	7.3e-8	1.0e-8	80	-
79	7	1	42-44	7.100A	53.62	7.7e-7	1.1e-7	80	16
80	7	1	119-121	7.100B	54.39	7.0e-7	1.0e-7	80	13
81	7	2	40-42	7.200A	55.10	4.8e-7	6.9e-8	80	48
82	7	2	135-138	7.200B	56.05	2.5e-5	3.6e-6	80	20

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	Max.AF (mT)	MDF (mT)
83	7	3	40-43	7.300A	56.60	5.6e-7	8.0e-8	100	55
84	7	3	118-121	7.300B	57.38	9.0e-7	1.3e-7	100	37
85	7	4	40-42	7.400A	58.10	6.6e-7	9.4e-8	100	47
86	7	4	122-124	7.400B	58.92	6.8e-7	9.7e-8	100	48
87	7	5	42-44	7.500A	59.62	7.2e-7	1.0e-7	100	33
88	7	5	122-124	7.500B	60.42	5.1e-7	7.3e-8	100	13
89	7	6	40-42	7.600A	61.00	2.5e-6	3.6e-7	80	32
90	7	6	121-124	7.600B	61.91	5.6e-7	8.0e-8	100	38
91	7	7	40-42	7.700A	62.60	9.5e-7	1.4e-7	100	55
92	8	1	40-42	8.100A	63.10	3.9e-7	5.6e-8	80	44
93	8	1	121-123	8.100B	63.91	1.4e-6	2.0e-7	80	28
94	8	2	41-43	8.200A	64.61	8.8e-7	1.3e-7	80	14
95	8	2	120-122	8.200B	65.40	1.8e-6	2.6e-7	80	29
96	8	3	40-42	8.300A	66.10	2.0e-6	2.9e-7	80	18
97	8	3	122-124	8.300B	66.92	2.4e-6	3.4e-7	80	38
98	8	4	40-42	8.400A	67.60	3.4e-6	4.9e-7	80	26
99	8	4	123-125	8.400B	68.43	2.1e-6	3.0e-7	80	34
100	8	5	40-42	8.500A	69.10	2.4e-6	3.4e-7	80	15
101	8	5	123-125	8.500B	69.93	2.3e-6	3.3e-7	80	20
102	8	6	40-42	8.600A	70.60	1.8e-6	2.6e-7	80	23
103	8	6	122-124	8.600B	71.42	2.2e-6	3.1e-7	100	33
104	9	1	40-42	9.100A	72.60	1.7e-6	2.4e-7	80	22
105	9	1	122-124	9.100B	73.42	1.6e-6	2.3e-7	80	29
106	9	2	40-42	9.200A	74.10	1.8e-6	2.6e-7	80	24
107	9	2	122-124	9.200B	74.92	2.7e-6	3.9e-7	80	29
108	9	3	40-42	9.300A	75.60	2.0e-6	2.9e-7	80	34
109	9	3	122-124	9.300B	76.42	2.9e-6	4.1e-7	80	29
110	9	4	40-42	9.400A	77.10	3.2e-6	4.6e-7	80	24
111	9	4	122-124	9.400B	77.92	1.0e-6	1.4e-7	80	30
112	9	5	40-42	9.500A	78.60	1.4e-6	2.0e-7	80	29
113	9	5	100-102	9.500B	79.20	4.0e-7	5.7e-8	80	41
114	9	6	40-42	9.600A	80.10	4.6e-7	6.6e-8	80	30
115	9	6	120-122	9.600B	80.90	8.7e-7	1.2e-7	100	28
116	9	7	40-42	9.700A	81.60	8.6e-7	1.2e-7	100	37
117	10	1	40-42	10.100A	82.10	1.1e-5	1.6e-6	120	77
118	10	1	120-122	10.100B	82.90	2.8e-7	4.0e-8	120	56
119	10	2	40-42	10.200 A	83.60	1.2e-7	1.7e-8	80	28
120	10	2	120-122	10.200B	84.40	2.1e-7	3.0e-8	60	16
121	10	3	40-42	10.300A	85.10	2.0e-7	2.9e-8	60	29
122	10	3	120-122	10.300B	85.90	9.8e-8	1.4e-8	60	29
123	10	4	40-42	10.400A	86.60	6.9e-7	9.9e-8	100	85
124	10	4	122-124	10.400B	87.42	1.4e-7	2.0e-8	60	-
125	10	5	40-42	10.500A	88.10	2.6e-8	3.7e-9	60	-
126	10	5	120-122	10.500B	88.90	2.4e-7	3.4e-8	100	57
127	10	6	40-42	10.600A	89.60	7.9e-8	1.1e-8	60	18
128	10	6	120-122	10.600B	90.40	4.4e-8	6.3e-9	60	-
129	11	1	40-42	11.100A	91.60	2.0e-7	2.9e-8	80	14
130	11	1	120-122	11.100B	92.40	2.0e-6	2.9e-7	150	150
131	11	2	40-42	11.200A	93.10	1.5e-8	2.1e-9	60	-
132	11	2	120-122	11.200B	93.90	2.2e-7	3.1e-8	60	18
133	11	3	40-42	11.300A	94.00	8.6e-8	1.2e-8	60	32
134	11	3	120-122	11.300B	95.40	4.2e-7	6.0e-8	60	22
135	11	4	40-42	11.400A	96.10	6.4e-8	9.1e-9	60	-
136	11	4	120-122	11.400B	96.90	4.5e-8	6.4e-9	60	-
137	11	5	40-42	11.500A	97.60	1.0e-7	1.4e-8	45	14
138	11	5	120-122	11.500B	98.40	5.9e-8	8.4e-9	45	-
139	11	6	40-42	11.600A	99.10	8.1e-8	1.2e-8	45	-
140	12	1	40-42	12.100A	101.10	3.9e-8	5.6e-9	30	9
141	12	1	120-122	12.100B	101.91	8.4e-8	1.2e-8	30	29
142	12	2	40-42	12.200A	102.60	4.2e-8	6.0e-9	45	-
143	12	2	120-122	12.200B	103.40	1.1e-7	1.6e-8	45	-
144	12	3	40-42	12.300A	104.10	6.4e-8	9.1e-9	45	-
145	12	3	120-122	12.300B	104.90	1.0e-7	1.4e-8	45	15
146	12	4	40-42	12.400A	105.60	5.7e-8	8.1e-9	45	11
147	12	4	120-122	12.400B	106.40	7.2e-8	1.0e-8	45	-
148	12	5	40-42	12.500A	107.10	2.6e-7	3.7e-8	60	8
149	12	5	114-116	12.500B	107.84	8.6e-8	1.2e-8	45	-
150	12	6	40-42	12.600A	108.60	1.4e-7	2.0e-8	45	31
151	12	6	120-122	12.600B	109.40	1.2e-7	1.7e-8	45	-
152	12	7	30-32	12.700A	110.00	1.4e-7	2.0e-8	80	52
153	13	1	40-42	13.100A	110.60	2.3e-7	3.3e-8	80	11
154	13	1	120-122	13.100B	111.40	4.6e-7	6.6e-8	80	8
155	13	2	40-42	13.200A	112.10	5.9e-7	8.4e-8	100	10
156	13	2	120-122	13.200B	112.90	6.3e-8	9.0e-9	100	-
157	13	3	40-42	13.300A	113.60	1.1e-7	1.6e-8	60	-
158	13	3	120-122	13.300B	114.40	7.0e-7	1.0e-7	60	27
159	13	4	40-42	13.400A	115.10	1.4e-7	2.0e-8	80	63
160	13	4	120-122	13.400B	115.90	5.6e-8	8.0e-9	80	-
161	13	5	40-42	13.500A	116.60	3.5e-7	5.0e-8	80	37
162	13	5	120-122	13.500B	117.40	3.6e-7	5.1e-8	80	33
163	13	6	40-42	13.600A	118.10	4.8e-8	6.9e-9	45	-
164	13	6	120-122	13.600B	118.90	5.4e-8	7.7e-9	45	-

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	Max.AF (mT)	MDF (mT)
165	13	7	40-42	13.700A	119.60	8.7e-8	1.2e-8	45	-
166	14	1	40-42	14.100A	120.10	1.1e-7	1.6e-8	45	-
167	14	1	120-122	14.100B	120.90	1.3e-7	1.9e-8	80	53
168	14	2	40-42	14.200A	121.60	7.4e-8	1.1e-8	45	-
169	14	2	120-122	14.200B	122.40	4.9e-8	7.0e-9	45	-
170	14	3	40-42	14.300A	123.10	1.1e-7	1.6e-8	45	-
171	14	3	120-122	14.300B	123.90	1.1e-7	1.6e-8	45	-
172	14	4	40-42	14.400A	124.60	1.2e-7	1.7e-8	80	-
173	14	4	120-122	14.400B	125.40	8.2e-8	1.2e-8	80	-
174	14	5	40-42	14.500A	126.10	5.0e-8	7.1e-9	80	-
175	14	5	120-122	14.500B	126.90	1.1e-7	1.6e-8	45	-
176	14	6	40-42	14.600A	127.60	1.3e-7	1.9e-8	45	11
177	14	6	120-122	14.600B	128.40	6.7e-8	9.6e-9	45	32
178	14	7	40-42	14.700A	129.10	9.4e-8	1.3e-8	45	11
179	15	1	40-42	15.100A	129.60	8.8e-8	1.3e-8	45	-
180	15	1	96-98	15.100B	130.16	1.3e-7	1.9e-8	45	18
181	15	2	40-42	15.200A	131.10	1.0e-7	1.4e-8	45	-
182	15	3	20-22	15.300A	132.40	1.5e-7	2.1e-8	60	63
183	15	3	62-64	15.300B	132.82	1.5e-7	2.1e-8	60	14
184	15	3	124-126	15.300C	133.44	1.0e-7	1.4e-8	60	67
185	15	4	40-42	15.400A	134.10	1.5e-7	2.1e-8	80	-
186	15	4	120-122	15.400B	134.90	4.3e-7	6.1e-8	60	23
187	15	5	20-22	15.500A	135.40	6.2e-8	8.9e-9	60	-
188	15	5	100-102	15.500B	135.20	4.2e-7	6.0e-8	45	5
189	15	6	40-42	15.600A	137.10	1.1e-7	1.6e-8	45	9
190	15	6	121-123	15.600B	137.91	1.1e-7	1.6e-8	80	54
191	15	7	20-22	15.700A	138.40	8.5e-8	1.2e-8	45	-
192	16	1	42-44	16.100A	139.12	1.1e-7	1.6e-8	45	-
193	16	1	120-122	16.100B	139.90	1.4e-7	2.0e-8	80	71
194	16	2	42-44	16.200A	140.62	1.5e-7	2.1e-8	80	-
195	16	2	120-122	16.200B	141.40	9.4e-8	1.3e-8	60	-
196	16	3	42-44	16.300A	142.12	2.0e-7	2.9e-8	60	9
197	16	3	123-125	16.300B	142.93	8.6e-8	1.2e-8	60	-
198	16	4	42-44	16.400A	143.62	5.4e-8	7.7e-9	45	-
199	16	4	123-125	16.400B	144.43	7.4e-8	1.1e-8	45	-
200	16	5	44-46	16.500A	145.14	3.4e-7	4.9e-8	60	-
201	16	5	123-125	16.500B	145.93	9.4e-8	1.3e-8	45	20
202	16	6	44-46	16.600A	146.64	1.1e-7	1.6e-8	45	9
203	16	6	123-125	16.600B	147.44	9.8e-8	1.4e-8	45	-
204	16	7	44-46	16.700A	148.11	1.7e-7	2.4e-8	60	45
205	16	1	38-40	17.100A	148.58	2.4e-7	3.4e-8	60	21
206	17	1	121-123	17.100B	149.41	1.1e-7	1.6e-8	60	23
207	17	2	38-40	17.200A	150.08	2.2e-8	3.1e-9	45	-
208	17	2	121-123	17.200B	150.91	8.8e-8	1.3e-8	45	28
209	17	3	38-40	17.300A	151.58	1.2e-7	1.7e-8	60	37
210	17	3	121-123	17.300B	152.41	6.6e-8	9.4e-9	60	-
211	17	4	38-40	17.400A	153.08	3.0e-8	4.3e-9	45	-
212	17	4	121-123	17.400B	153.91	8.8e-8	1.3e-8	45	30
213	17	5	38-40	17.500A	154.58	1.0e-7	1.4e-8	45	14
214	17	5	121-123	17.500B	155.41	9.6e-8	1.4e-8	45	13
215	17	6	38-40	17.600A	156.08	9.2e-8	1.3e-8	45	7
216	17	6	121-123	17.600B	156.91	2.1e-7	3.0e-8	45	-
217	17	7	38-40	17.700A	157.58	1.1e-7	1.6e-8	60	45
218	18	1	40-42	18.100A	158.10	1.4e-7	2.0e-8	60	24
219	18	1	120-122	18.100B	158.90	5.0e-8	7.1e-9	45	-
220	18	2	40-42	18.200A	159.60	9.3e-8	1.3e-8	30	-
221	18	2	120-122	18.200B	160.40	1.3e-7	1.9e-8	30	-
222	18	3	40-42	18.300A	161.10	4.1e-8	5.9e-9	45	-
223	18	3	120-122	18.300B	161.90	6.7e-7	9.6e-8	45	7
224	18	4	40-42	18.400A	162.60	7.4e-8	1.1e-8	45	-
225	18	4	120-122	18.400B	163.40	1.1e-7	1.6e-8	60	-
226	18	5	40-42	18.500A	164.10	3.5e-8	5.0e-9	45	14
227	18	5	120-122	18.500B	164.90	2.6e-7	3.7e-8	45	33
228	18	6	40-42	18.600A	165.60	4.5e-8	6.4e-9	45	39
229	18	6	120-122	18.600B	166.40	8.5e-8	1.2e-8	30	28
230	18	7	40-42	18.700A	167.10	3.9e-8	5.6e-9	30	-
231	19	1	40-42	19.100A	167.60	4.0e-8	5.7e-9	30	-
232	19	1	120-122	19.100B	168.40	6.5e-8	9.3e-9	30	-
233	19	2	40-42	19.200A	169.10	3.5e-8	5.0e-9	30	-
234	19	2	120-122	19.200B	169.90	1.1e-6	1.6e-7	30	10
235	19	3	40-42	19.300A	170.60	2.8e-8	4.0e-9	30	-
236	19	3	120-122	19.300B	171.40	1.6e-7	2.3e-8	60	27
237	19	4	40-42	19.400A	172.10	3.8e-8	5.4e-9	45	-
238	19	4	120-122	19.400B	172.90	1.5e-7	2.1e-8	45	5
239	19	5	40-42	19.500A	173.60	1.5e-8	2.1e-9	15	-
240	19	5	120-122	19.500B	174.40	3.3e-8	4.7e-9	15	-
241	19	6	40-42	19.600A	175.10	1.1e-7	1.6e-8	80	-
242	19	6	120-122	19.600B	175.90	1.5e-7	2.1e-8	60	49
243	19	7	40-42	19.700A	176.60	5.9e-8	8.4e-9	45	-
244	19	1	40-42	20.100A	177.10	1.1e-7	1.6e-8	45	-
245	20	1	120-122	20.100B	177.90	1.2e-7	1.7e-8	80	-
246	20	2	40-42	20.200A	178.60	9.0e-8	1.3e-8	45	40

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	Max.AF (mT)	MDF (mT)
247	20	2	120-122	20.200B	179.40	4.6e-8	6.6e-9	45	-
248	20	3	40-42	20.300A	180.10	7.1e-8	1.0e-8	30	28
249	20	3	120-122	20.300B	180.90	2.1e-8	3.0e-9	30	14
250	20	4	40-42	20.400A	181.60	5.5e-8	7.9e-9	30	-
251	20	4	120-122	20.400B	182.40	8.8e-8	1.3e-8	45	14
252	20	5	40-42	20.500A	183.10	5.6e-8	8.0e-9	30	-
253	20	5	120-122	20.500B	183.90	7.1e-8	1.0e-8	45	-
254	20	6	40-42	20.600A	184.60	3.7e-7	5.3e-8	45	26
255	20	6	74-76	20.600B	184.94	4.3e-8	6.1e-9	45	-
256	20	6	120-122	20.600C	185.40	7.3e-8	1.0e-8	30	-
257	20	7	40-42	20.700A	186.10	1.6e-7	2.3e-8	30	10
258	21	1	10-12	21.100A	186.30	1.3e-7	1.9e-8	60	40
259	21	2	40-42	21.200A	187.20	2.4e-7	3.4e-8	100	100
260	21	3	40-42	21.300A	188.04	5.0e-8	7.1e-9	60	-
261	21	4	40-42	21.400A	189.54	2.4e-7	3.4e-8	60	24
262	21	4	79-81	21.400B	189.93	3.0e-8	4.3e-9	45	-
263	21	5	99-101	21.500A	191.63	1.6e-8	2.3e-9	30	-
264	21	6	10-12	21.600A	192.24	1.0e-7	1.4e-8	60	25

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	Max. Af (mT)	MDF (mT)
1	1	1	40-42	1.100A	0.40	3.80e-6	5.4e-7	80	29
2	1	1	120-122	1.100B	1.20	1.40e-6	2.0e-7	80	24
3	1	2	40-42	1.200A	1.90	3.60e-6	5.1e-7	100	53
4	1	3	40-42	1.300A	3.40	4.30e-6	6.1e-7	100	38
5	1	3	120-122	1.300B	4.20	1.90e-6	2.7e-7	100	45
6	1	4	40-42	1.400A	4.90	2.40e-6	3.4e-7	100	44
7	1	4	115-117	1.400B	5.65	2.90e-6	4.1e-7	100	61
8	2	1	40-42	2.100A	6.30	4.40e-6	6.3e-7	100	43
9	2	1	120-122	2.100B	7.10	4.40e-6	6.3e-7	100	39
10	2	2	40-42	2.200A	7.80	1.80e-6	2.6e-7	100	41
11	2	2	120-122	2.200B	8.60	2.50e-6	3.6e-7	100	30
12	2	3	40-42	2.300A	9.30	5.10e-7	7.3e-8	120	34
13	2	3	120-122	2.300B	10.10	2.80e-6	4.0e-7	120	32
14	2	4	40-42	2.400A	10.80	2.10e-6	3.0e-7	120	29
15	2	4	120-122	2.400B	11.60	1.60e-6	2.3e-7	120	39
16	2	5	40-42	2.500A	12.30	6.20e-7	8.9e-8	120	22
17	2	5	120-122	2.500B	13.10	7.50e-7	1.1e-7	70	9
18	2	6	40-42	2.600A	13.80	2.60e-7	3.7e-8	100	50
19	2	6	120-122	2.600B	14.60	4.70e-7	6.7e-8	100	58
20	2	7	40-42	2.700A	15.30	3.30e-7	4.7e-8	100	52
21	3	1	40-42	3.100A	15.80	3.40e-7	4.9e-8	100	12
22	3	1	120-122	3.100B	16.60	1.90e-7	2.7e-8	80	33
23	3	2	40-42	3.200A	17.30	1.50e-5	2.1e-6	80	-
24	3	2	120-122	3.200B	18.10	1.10e-7	1.6e-8	80	-
25	3	3	40-42	3.300A	18.80	-	-	-	-
26	3	3	120-122	3.300B	19.60	1.80e-7	2.6e-8	80	49
27	3	4	40-42	3.400A	20.30	1.70e-7	2.4e-8	80	48
28	3	4	120-122	3.400B	21.10	3.90e-7	5.6e-8	80	40
29	3	5	40-42	3.500A	21.80	5.60e-7	8.0e-8	80	-
30	3	5	120-122	3.500B	22.60	1.30e-7	1.9e-8	80	45
31	3	6	40-42	3.600A	23.30	2.50e-7	3.6e-8	80	52
32	3	6	120-122	3.600B	24.10	2.70e-7	3.9e-8	100	59
33	3	7	40-42	3.700A	24.80	2.80e-7	4.0e-8	100	50
34	4	1	40-42	4.100A	25.30	2.30e-7	3.3e-8	80	63
35	4	1	122-124	4.100B	26.12	1.60e-6	2.3e-7	80	21
36	4	2	40-42	4.200A	26.80	2.20e-7	3.1e-8	100	88
37	4	2	122-124	4.200B	27.62	2.90e-7	4.1e-8	100	42
38	4	3	40-42	4.300A	28.30	7.60e-8	1.1e-8	60	45
39	4	3	122-124	4.300B	29.12	8.70e-8	1.2e-8	60	-
40	4	4	40-42	4.400A	29.80	3.30e-7	4.7e-8	100	38
41	4	4	122-124	4.400B	30.62	3.60e-7	5.1e-8	100	26
42	4	5	40-42	4.500A	31.30	1.50e-7	2.1e-8	100	46
43	4	5	122-124	4.500B	32.12	3.70e-8	5.3e-9	30	-
44	4	6	40-42	4.600A	32.80	2.30e-7	3.3e-8	80	53
45	4	6	122-124	4.600B	33.62	2.00e-7	2.9e-8	80	75
46	4	7	40-42	4.700A	34.30	1.90e-7	2.7e-8	80	49
47	5	1	40-43	5.100A	34.80	1.00e-7	1.4e-8	80	-
48	5	1	120-123	5.100B	35.60	3.70e-7	5.3e-8	80	13
49	5	2	40-43	5.200A	36.30	3.90e-7	5.6e-8	80	30
50	5	2	120-123	5.200B	37.10	9.30e-8	1.3e-8	60	55
51	5	3	40-43	5.300A	37.80	1.30e-7	1.9e-8	60	30
52	5	3	120-123	5.300B	38.60	1.40e-7	2.0e-8	60	34
53	5	4	40-43	5.400A	39.30	2.00e-7	2.9e-8	60	26
54	5	4	120-123	5.400B	40.10	2.90e-7	4.1e-8	80	26
55	5	5	40-43	5.500A	40.80	6.10e-8	8.7e-9	60	44
56	5	5	120-123	5.500B	41.60	5.80e-8	8.3e-9	60	-
57	5	6	40-43	5.600A	42.30	2.10e-7	3.0e-8	60	49
58	5	6	120-123	5.600B	43.10	9.50e-8	1.4e-8	80	-
59	5	7	40-43	5.700A	43.80	3.70e-7	5.3e-8	100	26
60	6	1	40-43	6.100A	44.30	7.70e-8	1.1e-8	100	-
61	6	1	120-123	6.100B	45.12	1.70e-7	2.4e-8	100	-
62	6	2	40-43	6.200A	45.80	4.10e-8	5.9e-9	45	-
63	6	2	120-123	6.200B	46.62	1.00e-7	1.4e-8	45	-
64	6	3	40-43	6.300A	47.30	1.60e-7	2.3e-8	130	106
65	6	3	120-123	6.300B	48.12	8.90e-8	1.3e-8	60	-
66	6	4	40-42	6.400A	48.80	1.90e-7	2.7e-8	60	15
67	6	4	122-124	6.400B	49.62	1.70e-7	2.4e-8	60	12
68	6	5	40-42	6.500A	50.30	2.00e-7	2.9e-8	60	23
69	6	5	122-124	6.500B	51.12	1.40e-7	2.0e-8	60	26
70	6	6	40-42	6.600A	51.80	2.40e-7	3.4e-8	45	21
71	6	6	122-124	6.600B	52.62	6.30e-9	9.0e-10	60	-
72	6	7	40-42	6.700A	53.30	1.90e-7	2.7e-8	60	15
73	7	1	40-42	7.100A	53.80	6.10e-7	8.7e-8	100	67
74	7	2	40-42	7.200A	54.43	4.00e-8	5.7e-9	45	-
75	7	2	120-122	7.200B	55.23	7.90e-8	1.1e-8	45	-
76	7	3	40-42	7.300A	55.93	2.90e-7	4.1e-8	60	26
77	8	1	86-87	8.100A	57.66	-	-	-	-
78	9	1	71-73	9.100A	67.21	5.30e-6	7.6e-7	80	40
79	9	1	116-118	9.100B	67.66	2.60e-8	3.7e-9	80	13
80	9	2	39-41	9.200A	68.39	1.10e-7	1.6e-8	45	18
81	9	2	116-118	9.200B	69.16	8.40e-7	1.2e-7	45	-
82	9	3	39-41	9.300A	69.89	7.20e-8	1.0e-8	60	25

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	Max. Af (mT)	MDF (mT)
83	9	3	116-118	9.300B	70.66	9.30e-8	1.3e-8	45	8
84	9	4	39-41	9.400A	71.39	4.40e-7	6.3e-8	60	7
85	9	4	116-118	9.400B	72.16	1.10e-7	1.6e-8	60	-
86	9	5	39-41	9.500A	72.89	1.20e-7	1.7e-8	60	58
87	9	5	116-118	9.500B	73.66	1.40e-7	2.0e-8	60	44
88	9	6	39-41	9.600A	74.39	2.90e-7	4.1e-8	60	16
89	9	6	116-118	9.600B	75.16	6.70e-8	9.6e-9	60	-
90	9	7	39-41	9.700A	75.89	2.30e-7	3.3e-8	100	77
91	10	1	40-42	10.100A	76.40	1.80e-7	2.6e-8	100	9
92	10	1	117-119	10.100B	77.17	6.50e-8	9.3e-9	60	-
93	10	2	40-42	10.200A	77.90	1.60e-7	2.3e-8	100	-
94	10	2	117-119	10.200B	78.67	3.00e-8	4.3e-9	45	-
95	10	3	40-42	10.300A	79.40	4.00e-8	5.7e-9	30	-
96	10	3	117-119	10.300B	80.17	1.10e-7	1.6e-8	30	13
97	10	4	40-42	10.400A	80.90	7.40e-8	1.1e-8	45	-
98	10	4	117-119	10.400B	81.67	2.50e-8	3.6e-9	45	-
99	10	5	40-42	10.500A	82.40	1.50e-7	2.1e-8	80	43
100	10	5	117-119	10.500B	83.17	2.50e-7	3.6e-8	30	10
101	10	6	40-42	10.600A	83.90	1.40e-7	2.0e-8	60	54
102	10	6	117-119	10.600B	84.67	3.80e-8	5.4e-9	60	-
103	10	7	40-42	10.700A	85.40	5.60e-8	8.0e-9	60	6
104	11	1	40-42	11.100A	85.90	-	-	-	-
105	11	1	118-120	11.100B	86.68	8.40e-8	1.2e-8	45	-
106	11	2	40-42	11.200A	87.40	2.70e-7	3.9e-8	100	43
107	11	2	118-120	11.200B	88.18	9.20e-8	1.3e-8	30	17
108	11	3	40-42	11.300A	88.90	7.70e-8	1.1e-8	15	14
109	11	3	118-120	11.300B	89.68	1.10e-7	1.6e-8	60	45
110	11	4	40-42	11.400A	90.40	4.40e-8	6.3e-9	60	-
111	11	4	118-120	11.400B	91.18	1.30e-7	1.9e-8	60	-
112	11	5	40-42	11.500A	91.90	8.90e-8	1.3e-8	30	-
113	11	5	80-82	11.500B	92.30	-	-	-	-
114	11	5	118-120	11.500C	92.68	2.70e-8	3.9e-9	30	-
115	11	6	40-42	11.600A	93.40	1.50e-7	2.1e-8	30	-
116	11	6	118-120	11.600B	94.18	1.10e-7	1.6e-8	60	-
117	11	7	40-42	11.700A	94.90	4.50e-8	6.4e-9	60	-
118	12	1	40-42	12.100A	95.40	1.00e-7	1.4e-8	30	-
119	12	1	39-40	12.100B	96.89	-	-	-	-
120	12	2	75-77	12.200A	97.25	-	-	-	-
121	12	2	145-147	12.200B	97.95	2.40e-8	3.4e-9	30	-
122	12	3	40-42	12.300A	98.40	3.80e-8	5.4e-9	45	-
123	12	3	117-119	12.300B	99.17	8.90e-8	1.3e-8	30	-
124	12	4	42-44	12.400A	99.92	3.10e-7	4.4e-8	30	6
125	12	4	117-119	12.400B	100.67	8.90e-8	1.3e-8	30	8
126	12	5	40-42	12.500A	101.40	3.80e-8	5.4e-9	30	-
127	12	5	117-119	12.500B	102.17	4.80e-8	6.9e-9	30	-
128	12	6	40-42	12.600A	102.90	2.50e-8	3.6e-9	30	-
129	12	6	117-119	12.600B	103.67	4.50e-8	6.4e-9	30	14
130	12	7	42-44	12.700A	104.42	9.20e-9	1.3e-9	20	-
131	13	1	42-44	13.100A	104.92	9.00e-8	1.3e-8	45	-
132	13	1	117-119	13.100B	105.67	9.20e-8	1.3e-8	30	-
133	13	2	42-44	13.200A	106.42	1.50e-7	2.1e-8	100	22
134	13	2	60-61	13.200B	106.60	-	-	-	-
135	13	2	117-119	13.200C	107.17	7.00e-8	1.0e-8	45	22
136	13	3	42-44	13.300A	107.92	9.80e-8	1.4e-8	30	19
137	13	3	117-119	13.300B	108.67	1.80e-7	2.6e-8	30	9
138	13	4	42-44	13.400A	109.42	6.60e-8	9.4e-9	30	-
139	13	4	117-119	13.400B	110.17	2.30e-8	3.3e-9	30	-
140	13	5	42-44	13.500A	110.92	2.00e-7	2.9e-8	30	-
141	13	5	117-119	13.500B	111.67	6.30e-8	9.0e-9	30	-
142	13	6	42-44	13.600A	112.42	9.40e-8	1.3e-8	30	28
143	13	6	117-119	13.600B	113.17	3.60e-7	5.1e-8	30	5
144	13	7	42-44	13.700A	113.92	5.30e-8	7.6e-9	15	-
145	14	1	44-46	14.100A	114.44	1.40e-6	2.0e-7	60	7
146	14	1	118-120	14.100B	115.18	3.10e-8	4.4e-9	60	14
147	14	2	39-41	14.200A	115.89	9.20e-8	1.3e-8	30	-
148	14	2	118-120	14.200B	116.68	4.60e-8	6.6e-9	45	-
149	14	3	39-41	14.300A	117.39	2.00e-7	2.9e-8	80	39
150	14	3	118-120	14.300B	118.18	5.80e-8	8.3e-9	30	-
151	14	4	39-41	14.400A	118.89	7.40e-8	1.1e-8	45	-
152	14	4	118-120	14.400B	119.68	5.50e-8	7.9e-9	30	-
153	14	5	39-41	14.500A	120.39	7.40e-8	1.1e-8	30	-
154	14	5	118-120	14.500B	121.18	1.40e-8	2.0e-9	30	-
155	14	6	39-41	14.600A	121.89	6.40e-8	9.1e-9	15	-
156	14	6	118-120	14.600B	122.68	2.90e-8	4.1e-9	15	-
157	14	7	39-41	14.700A	123.39	9.40e-8	1.3e-8	60	39
158	15	1	31-33	15.100A	123.81	1.30e-6	1.9e-7	150	95
159	15	1	121-123	15.100B	124.71	1.60e-7	2.3e-8	120	90
160	15	2	40-42	15.200A	125.40	5.50e-8	7.9e-9	30	-
161	15	2	121-123	15.200B	126.21	1.00e-7	1.4e-8	60	39
162	15	3	40-42	15.300A	126.90	5.10e-8	7.3e-9	45	21
163	15	3	121-123	15.300B	127.71	3.70e-8	5.3e-9	45	-
164	15	4	40-42	15.400A	128.40	2.00e-8	2.9e-9	45	-

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM (emu)	NRM (Am2/Kg)	Max. Af (mT)	MDF (mT)
165	15	4	121-123	15.400B	129.21	2.10e-8	3.0e-9	45	-
166	15	5	40-42	15.500A	129.90	5.60e-7	8.0e-8	60	8
167	15	5	129-131	15.500B	130.79	3.70e-8	5.3e-9	30	-
168	15	6	40-42	15.600A	131.40	1.30e-7	1.9e-8	60	13
169	15	6	121-123	15.600B	132.21	4.80e-8	6.9e-9	45	-
170	15	7	40-42	15.700A	132.90	8.40e-8	1.2e-8	60	29
171	23	1	40-42	23.100A	197.50	1.60e-7	2.3e-8	60	14
172	23	1	120-122	23.100B	198.30	1.50e-7	2.1e-8	60	7
173	23	2	40-42	23.200A	199.00	7.50e-8	1.1e-8	30	23
174	23	2	120-122	23.200B	199.80	8.70e-8	1.2e-8	30	-
175	24	1	40-42	24.100A	207.20	3.00e-8	4.3e-9	45	-
176	24	1	120-122	24.100B	208.00	1.00e-7	1.4e-8	30	11
177	24	2	40-42	24.200A	208.70	2.20e-8	3.1e-9	30	-
178	24	2	120-122	24.200B	209.50	3.20e-8	4.6e-9	15	-
179	24	3	40-42	24.300A	210.20	2.90e-8	4.1e-9	15	-
180	24	3	115-117	24.300B	210.95	8.10e-8	1.2e-8	30	24
181	26	1	40-42	26.100A	226.10	4.80e-7	6.9e-8	130	68
182	26	1	120-122	26.100B	226.90	2.20e-7	3.1e-8	45	7
183	26	2	40-42	26.200A	227.60	5.20e-8	7.4e-9	45	9
184	26	2	120-122	26.200B	228.40	7.20e-8	1.0e-8	45	15
185	26	3	40-42	26.300A	229.10	7.10e-8	1.0e-8	45	-
186	26	3	115-117	26.300B	229.85	6.10e-8	8.7e-9	45	9
187	26	4	40-42	26.400A	230.60	6.90e-8	9.9e-9	60	-
188	26	4	120-122	26.400B	231.40	2.60e-8	3.7e-9	45	-
189	27	1	40-42	27.100A	235.70	2.40e-6	3.4e-7	120	27
190	27	2	40-42	27.200A	237.20	9.30e-8	1.3e-8	60	8
191	27	3	40-42	27.300A	238.70	7.90e-8	1.1e-8	30	14
192	27	3	120-122	27.300B	239.50	2.80e-8	4.0e-9	45	-
193	27	4	40-42	27.400A	240.20	5.60e-8	8.0e-9	60	-
194	27	4	120-122	27.400B	241.00	3.40e-8	4.9e-9	30	-
195	27	5	40-42	27.500A	241.70	7.00e-8	1.0e-8	60	46
196	28	1	40-42	28.100A	245.00	5.00e-7	7.1e-8	80	42
197	28	1	120-122	28.100B	245.80	5.30e-8	7.6e-9	30	28
198	28	2	40-42	28.200A	246.50	5.20e-8	7.4e-9	45	-
199	28	2	120-122	28.200B	247.30	1.20e-7	1.7e-8	60	13
200	28	3	40-42	28.300A	248.00	7.50e-8	1.1e-8	45	39
201	28	3	120-122	28.300B	248.80	1.70e-7	2.4e-8	30	11
202	28	4	24-26	28.400A	249.34	1.80e-8	2.6e-9	30	-
203	29	1	40-42	29.100A	254.60	1.70e-7	2.4e-8	30	12
204	29	1	120-122	29.100B	255.40	1.40e-7	2.0e-8	60	14
205	29	2	40-42	29.200A	256.10	5.10e-7	7.3e-8	100	-
206	29	2	115-117	29.200B	256.85	1.20e-7	1.7e-8	80	39
207	29	3	40-42	29.300A	257.60	7.60e-8	1.1e-8	45	32
208	29	3	120-122	29.300B	258.40	1.20e-6	1.7e-7	30	12
209	29	4	40-42	29.400A	259.10	3.10e-6	4.4e-7	45	12

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM(emu)	NRM (Am2/Kg)	MAX. AF (mT)	MDF (mT)
1	1	1	50-52	1.100A	0.50	9.20e-6	1.3e-6	100	46
2	1	1	128-130	1.100B	1.28	1.80e-5	2.6e-6	100	56
3	1	2	50-52	1.200A	2.00	3.00e-7	4.3e-8	80	48
4	1	2	128-130	1.200B	2.78	2.60e-7	3.7e-8	120	86
5	1	3	50-52	1.300A	3.50	8.30e-8	1.2e-8	45	-
6	1	3	128-130	1.300B	4.28	1.40e-7	2.0e-8	60	37
7	1	4	50-52	1.400A	5.00	1.60e-7	2.3e-8	45	13
8	1	4	128-130	1.400B	5.78	1.20e-7	1.7e-8	30	7
9	1	5	50-52	1.500A	6.50	8.40e-8	1.2e-8	30	-
10	1	5	128-130	1.500B	7.28	2.40e-8	3.4e-9	30	-
11	1	6	50-52	1.600A	8.00	9.10e-8	1.3e-8	45	-
12	2	1	47-49	2.100A	8.87	1.60e-7	2.3e-8	80	60
13	2	2	50-52	2.200A	9.79	1.20e-7	1.7e-8	120	106
14	2	2	128-130	2.200B	10.57	3.30e-8	4.7e-9	45	-
15	2	3	49-51	2.300A	11.28	1.10e-7	1.6e-8	30	6
16	2	3	128-130	2.300B	12.07	1.20e-7	1.7e-8	30	-
17	2	4	50-52	2.400A	12.79	1.50e-7	2.1e-8	30	14
18	2	4	126-128	2.400B	13.55	2.90e-7	4.1e-8	100	29
19	2	5	50-52	2.500A	14.29	3.30e-8	4.7e-9	30	-
20	2	5	129-131	2.500B	15.08	1.20e-7	1.7e-8	30	6
21	2	6	50-52	2.600A	15.79	7.90e-8	1.1e-8	30	-
22	2	6	130-132	2.600B	16.59	1.00e-7	1.4e-8	60	-
23	2	7	50-52	2.700A	17.29	2.20e-7	3.1e-8	60	26
24	2	7	122-124	2.700B	18.01	9.50e-8	1.4e-8	80	-
25	3	1	49-51	3.100A	18.39	1.50e-7	2.1e-8	120	99
26	3	1	130-132	3.100B	19.20	6.00e-8	8.6e-9	45	-
27	3	2	49-51	3.200A	19.89	1.70e-7	2.4e-8	60	30
28	3	2	130-132	3.200B	20.70	4.20e-8	6.0e-9	60	-
29	3	3	49-51	3.300A	21.39	4.00e-8	5.7e-9	30	-
30	3	3	130-132	3.300B	22.20	1.10e-7	1.6e-8	30	10
31	3	4	49-51	3.400A	22.89	4.20e-8	6.0e-9	30	10
32	3	4	130-132	3.400B	23.70	5.20e-8	7.4e-9	45	-
33	3	5	49-51	3.500A	24.39	1.40e-7	2.0e-8	45	12
34	3	5	128-130	3.500B	25.18	8.20e-8	1.2e-8	80	-
35	3	6	58-60	3.600A	25.98	1.70e-7	2.4e-8	60	49
36	3	6	128-130	3.600B	26.68	8.20e-8	1.2e-8	30	-
37	4	1	49-51	4.100A	27.89	6.40e-8	9.1e-9	30	-
38	4	1	128-130	4.100B	28.68	1.50e-7	2.1e-8	45	45
39	4	2	49-51	4.200A	29.39	6.70e-8	9.6e-9	45	-
40	4	2	128-130	4.200B	30.18	3.90e-7	5.6e-8	120	-
41	4	3	49-51	4.300A	30.89	3.30e-6	4.7e-7	45	10
42	4	3	128-130	4.300B	31.68	3.30e-8	4.7e-9	0	-
43	4	4	49-51	4.400A	32.39	8.00e-8	1.1e-8	45	-
44	4	4	121-123	4.400B	33.11	7.70e-8	1.1e-8	45	13
45	4	5	49-51	4.500A	33.89	5.70e-7	8.1e-8	45	8
46	4	5	128-130	4.500B	34.68	5.60e-8	8.0e-9	45	-
47	4	6	49-51	4.600A	35.39	2.30e-7	3.3e-8	45	7
48	4	6	128-130	4.600B	36.18	2.00e-7	2.9e-8	60	24
49	4	7	54-56	4.700A	36.94	6.20e-8	8.9e-9	80	-
50	5	1	45-47	5.100A	37.35	3.00e-6	4.3e-7	120	-
51	5	1	128-130	5.100B	38.18	7.40e-8	1.1e-8	45	-
52	5	2	45-47	5.200A	38.85	4.80e-7	6.9e-8	45	22
53	5	2	128-130	5.200B	39.68	1.40e-7	2.0e-8	80	60
54	5	3	45-47	5.300A	40.35	6.10e-8	8.7e-9	45	-
55	5	3	128-130	5.300B	41.18	3.50e-8	5.0e-9	45	-
56	5	4	45-47	5.400A	41.85	1.30e-7	1.9e-8	45	38
57	5	4	128-130	5.400B	42.68	3.80e-8	5.4e-9	45	-
58	5	5	45-47	5.500A	43.35	2.90e-8	4.1e-9	45	-
59	5	5	128-130	5.500B	44.18	2.60e-7	3.7e-8	45	14
60	5	6	45-47	5.600A	44.85	2.60e-6	3.7e-7	60	34
61	5	6	128-130	5.600B	45.68	4.00e-6	5.7e-7	30	5
62	5	7	45-47	5.700A	46.35	5.20e-7	7.4e-8	30	6
63	6	1	128-130	6.100B	47.68	2.00e-7	2.9e-8	60	28
64	6	2	45-47	6.200A	48.35	3.10e-8	4.4e-9	60	-
65	6	2	128-130	6.200B	49.18	1.10e-6	1.6e-7	140	48
66	6	3	45-47	6.300A	49.85	9.10e-8	1.3e-8	30	-
67	6	3	128-130	6.300B	50.68	1.10e-7	1.6e-8	60	13
68	6	4	45-47	6.400A	51.35	1.20e-7	1.7e-8	80	79
69	6	4	128-130	6.400B	52.18	6.70e-8	9.6e-9	30	-
70	6	5	45-47	6.500A	52.85	5.50e-8	7.9e-9	60	-
71	6	5	128-130	6.500B	53.68	1.40e-7	2.0e-8	30	12
72	6	6	45-47	6.600A	54.35	2.00e-7	2.9e-8	80	40
73	6	6	128-130	6.600B	55.18	8.40e-8	1.2e-8	45	30
74	6	7	45-47	6.700A	55.85	5.90e-8	8.4e-9	30	-
75	7	1	40-42	7.100A	56.30	6.00e-8	8.6e-9	30	14
76	7	1	128-130	7.100B	57.18	9.10e-8	1.3e-8	60	-
77	7	2	40-42	7.200A	57.80	7.40e-8	1.1e-8	60	-
78	7	2	128-130	7.200B	58.68	3.30e-8	4.7e-9	30	-
79	7	5	40-42	7.500A	62.30	8.30e-8	1.2e-8	20	-
80	7	6	128-130	7.600B	64.68	1.60e-7	2.3e-8	15	7
81	8	1	48-50	8.100A	65.88	2.60e-8	3.7e-9	30	-
82	8	1	128-130	8.100B	66.68	2.80e-8	4.0e-9	30	-

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM(emu)	NRM (Am2/Kg)	MAX. AF (mT)	MDF (mT)
83	8	2	128-130	8.200A	68.18	1.20e-7	1.7e-8	60	27
84	8	3	48-50	8.300A	68.88	3.90e-8	5.6e-9	45	-
85	8	5	48-50	8.500A	71.88	2.90e-8	4.1e-9	30	-
86	8	6	128-130	8.600B	74.18	1.50e-7	2.1e-8	30	26
87	9	1	48-50	9.100A	75.38	3.60e-8	5.1e-9	45	-
88	9	1	128-130	9.100B	76.18	4.30e-8	6.1e-9	45	-
89	9	2	48-50	9.200A	76.88	1.50e-7	2.1e-8	80	60
90	9	2	128-130	9.200B	77.68	6.60e-8	9.4e-9	30	8
91	9	5	48-50	9.500A	81.38	1.10e-7	1.6e-8	40	-
92	9	6	134-136	8.600B	83.74	1.00e-7	1.4e-8	35	-
93	10	1	49-51	10.100A	84.89	1.40e-8	2.0e-9	30	-
94	10	1	128-130	10.100B	85.68	3.70e-8	5.3e-9	30	-
95	10	2	49-51	10.200A	86.39	6.00e-8	8.6e-9	30	-
96	10	2	128-130	10.200B	87.18	8.80e-8	1.3e-8	30	-
97	10	5	49-51	10.500A	90.89	8.60e-8	1.2e-8	20	-
98	10	6	128-130	10.600B	93.18	1.10e-7	1.6e-8	30	9
99	11	1	49-51	11.100A	94.39	5.90e-8	8.4e-9	30	-
100	11	1	126-128	11.100B	95.16	8.50e-8	1.2e-8	45	-
101	11	2	48-50	11.200A	95.88	1.50e-8	2.1e-9	30	-
102	11	2	126-128	11.200B	96.66	3.30e-7	4.7e-8	100	66
103	11	3	48-50	11.300A	97.38	5.10e-8	7.3e-9	30	-
104	11	3	126-128	11.300B	98.16	8.80e-8	1.3e-8	45	43
105	11	4	50-52	11.400A	98.90	7.50e-8	1.1e-8	0	-
106	11	5	53-55	11.500A	100.43	9.00e-8	1.3e-8	25	-
107	11	6	125-127	11.600B	102.65	9.50e-8	1.4e-8	40	-
108	12	1	48-50	12.100A	103.88	3.20e-8	4.6e-9	30	15
109	12	1	128-130	12.100B	104.68	7.80e-8	1.1e-8	30	6
110	12	2	48-50	12.200A	105.38	9.00e-8	1.3e-8	30	9
111	12	2	128-130	12.200B	106.18	2.10e-7	3.0e-8	60	30
112	12	5	48-50	12.500A	109.88	6.20e-7	8.9e-8	60	30
113	12	6	128-130	12.600B	112.18	8.40e-8	1.2e-8	35	-
114	13	1	48-50	13.100A	113.38	5.20e-7	7.4e-8	30	6
115	13	1	130-132	13.100B	114.20	5.00e-8	7.1e-9	30	10
116	13	2	48-50	13.200A	114.93	5.30e-8	7.6e-9	30	-
117	13	2	130-132	13.200B	115.75	3.70e-8	5.3e-9	30	15
118	13	5	49-51	13.500A	119.52	1.20e-7	1.7e-8	20	-
119	13	6	140-142	13.600B	121.93	1.70e-7	2.4e-8	30	23
120	14	1	49-51	14.100A	122.89	6.40e-8	9.1e-9	45	31
121	14	1	128-130	14.100B	123.68	6.70e-8	9.6e-9	45	24
122	14	3	49-51	14.300A	125.89	4.70e-8	6.7e-9	45	-
123	14	5	49-51	14.500A	128.89	1.40e-7	2.0e-8	60	30
124	14	6	85-87	14.600B	130.75	7.50e-8	1.1e-8	30	-
125	15	1	48-50	15.100A	132.38	2.50e-7	3.6e-8	80	56
126	15	3	48-50	15.300A	135.38	1.40e-6	2.0e-7	30	13
127	15	5	48-50	15.500A	138.38	1.50e-7	2.1e-8	80	60
128	15	6	128-130	15.600B	140.68	1.00e-7	1.4e-8	120	-
129	16	1	52-54	16.100A	141.92	9.20e-8	1.3e-8	45	-
130	16	3	49-51	16.300A	144.89	1.10e-7	1.6e-8	20	10
131	16	5	49-51	16.500A	147.89	8.00e-7	1.1e-7	45	16
132	16	6	141-143	16.600B	150.31	2.60e-8	3.7e-9	20	19
133	17	1	49-51	17.100A	151.39	3.80e-8	5.4e-9	20	-
134	17	3	49-51	17.300A	154.39	3.70e-8	5.3e-9	15	-
135	17	5	52-54	17.500A	157.42	5.70e-8	8.1e-9	15	9
136	17	6	50-52	17.600B	158.90	5.40e-8	7.7e-9	20	-
137	18	1	49-51	18.100A	160.89	1.00e-7	1.4e-8	15	13
138	18	3	48-50	18.300A	163.88	3.80e-8	5.4e-9	15	5
139	18	5	47-49	18.500A	166.87	1.20e-7	1.7e-8	25	15
140	18	6	127-129	18.600B	169.17	2.10e-8	3.0e-9	15	4
141	19	1	48-50	19.100A	170.38	2.40e-8	3.4e-9	15	4
142	19	3	47-49	19.300A	173.37	4.90e-8	7.0e-9	20	-
143	19	5	16-18	19.500A	176.06	2.90e-8	4.1e-9	15	-
144	19	6	127-129	19.600B	178.67	2.10e-8	3.0e-9	15	-
145	20	1	47-49	20.100A	179.87	6.80e-8	9.7e-9	30	-
146	20	3	47-49	20.300A	182.87	3.50e-8	5.0e-9	20	4
147	20	5	62-64	20.500A	186.02	7.90e-8	1.1e-8	15	14
148	20	6	128-130	20.600B	188.18	6.40e-8	9.1e-9	20	-
149	21	1	47-49	21.100A	189.37	1.10e-7	1.6e-8	15	12
150	21	3	47-49	21.300A	192.37	5.10e-8	7.3e-9	20	-
151	21	5	47-49	21.500A	195.37	1.20e-7	1.7e-8	35	26
152	21	6	129-131	21.600B	197.69	1.00e-7	1.4e-8	30	23
153	22	1	49-51	22.100A	198.89	1.10e-7	1.6e-8	20	11
154	22	3	49-51	22.300A	201.89	1.10e-7	1.6e-8	20	-
155	22	5	49-51	22.500A	204.89	1.50e-7	2.1e-8	20	-
156	22	6	119-120	22.600B	207.09	1.20e-7	1.7e-8	20	15
157	23	1	49-51	23.100A	208.39	1.20e-7	1.7e-8	20	8
158	23	3	49-51	23.300A	211.39	1.10e-7	1.6e-8	20	18
159	23	5	49-51	23.500A	214.39	6.70e-8	9.6e-9	20	13
160	23	6	128-130	23.600B	216.68	1.40e-7	2.0e-8	20	12
161	24	1	49-51	24.100A	217.89	1.10e-7	1.6e-8	30	20
162	24	3	49-51	24.300A	220.89	1.60e-7	2.3e-8	20	-
163	24	5	49-51	24.500A	223.89	1.20e-7	1.7e-8	20	15
164	24	6	128-130	24.600B	226.18	1.20e-7	1.7e-8	30	26

APPENDIX A (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE (#)	DEPTH (mbsf)	NRM(emu)	NRM (Am2/Kg)	MAX. AF (mT)	MDF (mT)
165	25	1	40-42	25.100A	227.30	2.30e-8	3.3e-9	30	-
166	25	3	40-42	25.300A	230.30	3.90e-8	5.6e-9	20	-
167	25	5	43-45	25.500A	233.30	1.00e-7	1.4e-8	20	11
168	25	6	129-131	25.600B	235.69	6.50e-8	9.3e-9	20	-
169	26	1	49-51	26.100A	236.89	1.10e-7	1.6e-8	45	24
170	26	3	49-51	26.300A	239.89	1.50e-7	2.1e-8	45	44
171	26	5	49-51	26.500A	242.89	3.00e-7	4.3e-8	45	-
172	26	6	128-130	26.600B	245.18	2.60e-7	3.7e-8	80	26
173	32	1	49-51	32.100A	293.89	9.90e-8	1.4e-8	15	15
174	32	3	49-51	32.300A	296.89	1.30e-7	1.9e-8	30	30
175	32	5	49-51	32.500A	299.89	1.50e-7	2.1e-8	40	40
176	32	6	129-131	32.600B	302.19	1.10e-7	1.6e-8	30	30
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APPENDIX B

Shore-based paleomagnetic results and interpretations for magnetic polarity, inclination angle, maximum angular deviation (MAD) error, sample classification, and least-squares data.

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
1	HOLE 812A : 1	1	128-130	1.100B	1.280	A	N	40.900	2.3	6	10-80
2	1	2	91-93	1.200B	2.410	B	N	33.000	17.7	4	0-30
3	2	2	122-124	2.200B	7.620	A	N	29.000	1.2	7	0-80
4	2	3	9-11	2.300A	7.990	A	N	37.600	4.5	7	0-80
5	2	3	110-112	2.300B	9.000	B	N	27.200	5.4	7	0-80
6	2	4	111-113	2.400B	10.510	C	N?	5.000	9.7	8	0-100
7	2	5	21-23	2.500A	11.110	B	N	24.100	10	6	0-60
8	2	5	109-111	2.500B	11.990	A	N	35.200	2.5	7	0-80
9	2	6	19-21	2.600A	12.590	B	N	6.500	10	8	0-100
10	2	6	139-141	2.600C	13.790	C	R?	-	-	-	-
11	2	7	72-74	2.700B	14.620	C	R?	-38.50	14.9	7	0-80
12	3	1	139-141	3.100B	15.920	C'	-	-	-	-	-
13	3	2	40-42	3.200A	16.300	C	R?	-	-	-	-
14	3	3	40-42	3.300A	17.800	C	R?	-	-	-	-
15	HOLE 812C : 3	1	118-121	3.100B	18.080	A	R	-28.4	3.6	10	0-100
16	3	2	38-39	3.200 A	18.780	B	R	-30.2	14.2	8	10-70
17	3	2	118-121	3.200B	19.580	C	R?	-39.2	20.6	3	10-30
18	3	3	38-39	3.300A	20.280	C	R?	-	-	-	-
19	3	3	118-121	3.300B	21.080	C	R?	-22.4	22.3	6	10-75
20	3	4	38-39	3.400A	21.780	B	R	-28.6	12.6	6	0-30/60-75
21	3	4	118-121	3.400B	22.580	C	R?	-30.9	20.4	6	0-60
22	3	5	38-39	3.500A	23.280	B	R	-19.6	3.2	3	10-30
23	3	5	118-121	3.500B	24.080	C	N?	60.9	17.4	3	0-15
24	3	6	38-39	3.600A	24.780	C	N?	58.5	17.4	5	0-45
25	3	6	75-77	3.600B	25.150	A	N	30.4	7.2	8	0-75
26	3	6	118-121	3.600C	25.580	C'	-	-	-	-	-
27	3	7	3-5	3.700A	25.930	B	N	38.6	17.0	6	0-60
28	3	7	30-32	3.700B	26.200	B	R	-44.9	14.7	7	0-75
29	5	1	40-42	5.100A	29.900	B	R	-6.1	16.5	6	0-35
30	5	1	117-119	5.100B	30.700	C'	-	-	-	-	-
31	5	2	40-42	5.200A	31.400	C	R?	-	-	-	-
32	5	2	125-127	5.200B	32.200	C	R?	-	-	-	-
33	5	3	32-35	5.300A	32.900	C'	-	-	-	-	-
34	5	3	120-122	5.300B	33.700	C	N?	40.7	7.6	3	0-15
35	5	4	40-42	5.400A	34.400	C	R?	-	-	-	-
36	5	4	115-117	5.400B	35.200	B	R	-48.0	6.2	3	0-15
37	5	5	26-28	5.500A	35.900	A	R	-11.2	1.7	11	0-150
38	5	5	115-117	5.500B	36.700	C	R?	-47.8	13.5	3	0-15
39	5	6	40-42	5.600A	37.400	C'	-	-	-	-	-
40	5	6	115-117	5.600B	38.200	C	R?	-	-	-	-
41	5	7	40-42	5.700A	38.900	C	N?	32.1	6.5	2	0-10
42	6	1	40-42	6.100A	39.400	A	N	9.7	1.5	8	0-70
43	6	1	115-117	6.100B	40.150	C	R?	-27.0	23.2	4	10-45
44	6	2	40-42	6.200A	40.900	B	R	-59.8	18.7	3	0-15
45	6	2	118-121	6.200B	41.680	C	R?	-71.1	9.5	3	10-30
46	6	3	40-42	6.300A	42.400	C	R?	-10.8	15.9	3	0-10/30
47	6	3	118-121	6.300B	43.180	C'	-	-	-	-	-
48	6	4	40-42	6.400A	43.900	C	R?	-17.8	11.6	4	0-30
49	6	4	118-121	6.400B	44.680	B	R	-69.3	12.5	5	10-60
50	6	5	40-42	6.500A	45.400	C'	-	-	-	-	-
51	6	5	118-121	6.500B	46.180	C'	-	-	-	-	-
52	6	6	40-42	6.600A	46.900	C	R?	-4.7	13.6	6	0-60
53	6	6	118-121	6.600B	47.680	C'	-	-	-	-	-
54	6	7	31-33	6.700A	48.310	B	R	-44.5	10.7	3	0-15
55	7	1	60-62	7.100A	49.100	B	N	1.9	19.3	10	0-150
56	7	1	119-121	7.100B	49.690	C'	-	-	-	-	-
57	7	2	30-32	7.200A	50.300	C'	-	-	-	-	-
58	7	2	191-121	7.200B	51.190	C	R?	-	-	-	-
59	7	3	39-41	7.300A	51.890	C	R?	-23.4	28.8	4	0-30
60	7	3	119-121	7.300B	52.690	C	N?	-	-	-	-
61	7	4	30-32	7.400A	53.300	C	R?	-58.7	28.7	3	0-15
62	7	4	119-121	7.400B	54.190	C	N?	1.7	18.1	5	0-45
63	7	5	40-41	7.500A	54.900	C	N?	-	-	-	-
64	7	5	112-114	7.500B	55.620	C'	-	-	-	-	-
65	7	6	30-32	7.600A	56.300	B	N	4.3	4.7	3	0-15
66	7	6	119-121	7.600B	57.190	C	N?	6.6	2.1	2	0-10
67	7	7	30-31	7.700A	57.800	B	N	0.4	9.0	6	0-60
68	8	11	37-38	8.100A	58.370	C	R?	-16.1	24.4	3	0-20
69	8	1	119-121	8.100B	59.190	C'	-	-	-	-	-
70	8	2	37-38	8.200A	59.870	C	R?	-	-	-	-
71	8	2	119-121	8.200B	60.690	A	R	-12.8	5.4	4	0-30
72	8	3	37-38	8.300A	61.370	C'	-	-	-	-	-
73	8	3	119-121	8.300B	62.190	C'	-	-	-	-	-
74	8	4	37-38	8.400A	62.870	C'	-	-	-	-	-
75	8	4	119-121	8.400B	63.690	C	N?	17.6	6.6	3	0/15-30
76	8	5	37-38	8.500A	64.370	C'	-	-	-	-	-
77	8	5	119-121	8.500B	65.190	C'	-	-	-	-	-
78	8	6	37-38	8.600A	65.870	A	R	-8.7	1.2	10	0-150
79	8	6	119-121	8.600B	66.690	B	R	-27.3	11.9	5	0-45
80	8	7	37-38	8.700A	67.370	C	R?	-	-	-	-
81	9	1	40-42	9.100A	67.900	C	R?	-58.0	20.9	4	0-30
82	9	1	88-90	9.100B	68.380	B	R	-35.3	19.8	5	0-45
83	9	2	40-42	9.200A	69.400	C	R?	-	-	-	-
84	9	2	118-120	9.200B	70.180	C	R?	-25.3	9.7	2	0-10
85	9	3	40-42	9.300A	70.900	C	R?	-	-	-	-
86	9	3	118-120	9.300B	71.680	C	R?	-10.6	8.2	4	10-45
87	9	4	40-42	9.400A	72.400	C	R?	-6.2	13.3	10	0-150
88	9	4	118-120	9.400B	73.180	C	R?	-38.0	5.1	3	10-30
89	9	5	40-42	9.500A	73.900	C	R?	-29.3	22.6	5	0-45
90	9	5	118-120	9.500B	74.680	C'	-	-	-	-	-
91	9	6	40-42	9.600A	75.400	C	R?	-	-	-	-
92	9	6	118-120	9.600B	76.180	C	R?	-6.7	12.1	4	0-30
93	9	7	40-52	9.700A	76.900	C'	-	-	-	-	-
94	10	1	39-41	10.100A	77.390	C'	-	-	-	-	-
95	10	1	119-120	10.100B	78.190	C'	-	-	-	-	-
96	10	2	39-41	10.200A	78.890	B	R?	-22.0	9.6	4	0-30
97	10	2	119-120	10.200B	79.690	B	R	-14.0	11.7	4	0-30

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
98	10	3	39-41	10.300A	80.390	C	R?	-43.4	12.9	3	10-30
99	10	3	119-120	10.300B	81.190	C'	-	-	-	-	-
100	10	4	39-41	10.400A	81.890	C	N?	-	-	-	-
101	10	4	119-120	10.400B	82.690	C	R?	-	-	-	-
102	10	5	39-41	10.500A	83.390	C	R?	-	-	-	-
103	10	5	119-120	10.500B	84.190	C	R?	-28.1	17.2	3	0-15
104	10	6	39-41	10.600A	84.890	C	N?	34.0	16.4	3	0-15
105	10	6	119-120	10.600B	85.690	C	R?	-	-	-	-
106	10	7	39-41	10.700A	86.390	C	R?	-33.9	8.6	5	0-45
107	11	1	39-41	11.100A	86.890	C'	-	-	-	-	-
108	11	1	117-120	11.100B	87.670	C	N?	-	-	-	-
109	11	2	39-41	11.200A	88.390	C'	-	-	-	-	-
110	11	2	117-120	11.200B	89.170	C'	-	-	-	-	-
111	11	3	39-41	11.300A	89.890	C	N?	-	-	-	-
112	11	3	117-120	11.300B	90.670	C	N?	-	-	-	-
113	11	4	39-41	11.400A	91.390	C	N?	16.1	20.9	4	0-30
114	11	4	117-120	11.400B	92.170	C'	-	-	-	-	-
115	11	5	39-41	11.500A	92.890	C	N?	-	-	-	-
116	11	5	80-82	11.500B	93.300	C'	-	-	-	-	-
117	11	5	117-120	11.500C	93.670	C	N	20.5	18.6	4	10-45
118	11	6	39-41	11.600A	94.390	C	N?	-	-	-	-
119	11	6	117-120	11.600B	95.170	C	N?	-	-	-	-
120	11	7	39-41	11.700A	95.890	C	N?	-	-	-	-
121	12	1	39-41	12.100A	96.390	C	R?	-	-	-	-
122	12	1	117-119	12.100B	97.170	C'	-	-	-	-	-
123	12	2	39-41	12.200A	97.890	C'	-	-	-	-	-
124	12	2	117-119	12.200B	98.670	C	N?	31.0	21.2	3	10-30
125	12	3	39-41	12.300A	99.390	C	R?	-7.0	8.1	4	0-30
126	12	3	117-119	12.300B	100.170	C	R?	-	-	-	-
127	12	4	39-41	12.400A	100.890	B	R	-49.9	6.0	4	0-30
128	12	4	117-119	12.400B	101.670	C	R?	-	-	-	-
129	12	5	39-41	12.500A	102.390	C	R?	-51.2	16.3	3	0-15
130	12	5	117-119	12.500B	103.170	B	N	28.1	7.0	4	0-30
131	12	6	39-41	12.600A	103.890	B	N	47.9	15.3	3	0-15
132	12	6	117-119	12.600B	104.670	B	N	51.3	23.3	7	0-80
133	12	7	39-41	12.700A	105.390	C	R?	-54.2	9.3	4	0-30
134	13	1	40-42	13.100A	105.900	A	R	-14.1	2.7	7	0-60
135	13	1	119-121	13.100B	106.690	A	N	15.5	7.5	6	0-60
136	13	2	40-42	13.200A	107.400	B	R	-13.1	11.5	5	0-45
137	13	2	113-115	13.200B	108.130	B	R	-4.7	11.5	4	0-30
138	13	3	40-42	13.300A	108.900	C	N?	16.3	12.6	4	0-30

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
1	1	1	44-46	1.100A	0.44	A	N	15.7	5.7	7	0-60
2	1	1	127-129	1.100B	1.27	A	N	19.1	3.7	8	0-100
3	1	2	41-43	1.200A	1.91	A	N	50.3	1.7	8	0-100
4	1	2	114-116	1.200B	2.64	A	N	41.5	5.4	8	0-100
5	1	3	40-42	1.300A	3.40	A	N	11.6	3.3	8	0-100
6	1	3	128-130	1.300B	4.28	A	N	30.9	3.0	8	0-100
7	1	4	30-32	1.400A	4.80	A	N	21.5	3.1	9	0-120
8	1	4	80-82	1.400B	5.30	B	N	29.9	10.1	9	0-120
9	2	1	42-44	2.100A	6.12	A	N	44.6	2.8	9	0-100
10	2	1	117-119	2.100B	6.87	A	N	29.0	3.0	9	0-120
11	2	2	39-41	2.200A	7.59	A	N	34.9	1.7	9	0-120
12	2	2	120-122	2.200B	8.40	A	N	43.3	2.6	9	0-120
13	2	3	41-43	2.300A	9.11	A	N	61.8	7.2	8	0-100
14	2	3	119-121	2.300B	9.89	A	N	37.6	9.2	9	0-120
15	2	4	41-43	2.400A	10.61	A	N	23.0	4.0	9	0-120
16	2	4	120-122	2.400B	11.40	A	N	40.6	5.4	8	0-100
17	2	5	41-43	2.500A	12.11	B	N	36.8	10.7	8	0-100
18	2	5	120-122	2.500B	12.90	A	N	31.7	4.2	8	0-100
19	2	6	41-43	2.600A	13.61	A	N	63.4	3.9	8	0-100
20	2	6	68-70	2.600C	14.40	B	N	17.3	10.5	8	0-100
21	2	7	10-12	2.700A	14.80	B	N	21.3	10.1	7	0-80
22	2	7	41-43	2.700B	15.11	A	N	40.1	2.2	7	0-80
23	3	1	40-42	3.100A	15.60	B	N	21.7	9.1	11	0-100
24	3	1	118-120	3.100B	16.38	B	N	33.4	18.6	9	0-100
25	3	2	40-42	3.200A	17.10	C	R?	-	-	-	-
26	3	2	118-120	3.200B	17.88	A	R	-34.0	3.4	8	0-100
27	3	3	40-42	3.300A	18.60	C	R?	-	-	-	-
28	3	3	118-120	3.300B	19.38	B	R	-43.2	11.9	8	0-100
29	3	4	51-53	3.400A	20.21	C	R?	-	-	-	-
30	3	4	118-120	3.400B	20.88	C	N?	-	-	-	-
31	3	5	40-42	3.500A	21.60	A	N	39.4	6.4	8	0-100
32	3	5	107-109	3.500B	22.27	B	N	55.0	19.3	9	0-120
33	3	6	50-52	3.600A	23.20	C	N?	-	-	-	-
34	3	6	118-120	3.600B	23.88	C'	-	-	-	-	-
35	3	7	10-12	3.700A	24.30	C	N?	-	-	-	-
36	3	7	50-52	3.700B	24.70	C	N?	-	-	-	-
37	4	1	39-41	4.100A	25.09	C'	-	-	-	-	-
38	4	1	117-119	4.100B	25.87	C	N?	-	-	-	-
39	4	2	10-12	4.200A	26.30	C	N?	-	-	-	-
40	4	2	40-42	4.200B	26.60	A	R	-25.8	5.3	9	10-120
41	4	2	117-119	4.200C	27.37	B	R	-31.7	9.4	10	0-100
42	4	2	140-142	4.200D	27.60	B	R	-27.5	14.1	10	0-100
43	4	3	48-50	4.300A	28.18	C	R?	-	-	-	-
44	4	3	117-119	4.300B	28.87	C	N?	-	-	-	-
45	4	4	48-50	4.400A	29.68	B	R	-3.5	10.8	9	0-80
46	4	4	117-119	4.400B	30.37	C	N?	-	-	-	-
47	4	5	38-40	4.500A	31.08	C	R?	-	-	-	-
48	4	5	117-119	4.500B	31.87	C	R?	-	-	-	-
49	4	6	41-43	4.600A	32.61	C'	-	-	-	-	-
50	4	6	117-119	4.600B	33.37	B	R	-22.7	8.3	7	20-100
51	4	7	41-43	4.700A	34.11	B	R	-35.7	14.6	7	10-100
52	5	1	31-33	5.100A	34.51	B	R	-39.5	7.7	7	10-100
53	5	1	116-118	5.100B	35.36	C	N?	-	-	-	-
54	5	2	31-33	5.200A	36.01	C'	-	-	-	-	-
55	5	2	114-116	5.200B	36.84	A	N	37.3	4.3	7	0-80
56	5	3	31-33	5.300A	37.51	A	N	44.9	4.2	7	0-80
57	5	3	115-117	5.300B	38.35	C	N?	-	-	-	-
58	5	4	31-33	5.400A	39.01	C	N?	-	-	-	-
59	5	4	115-117	5.400B	39.85	C	R?	-	-	-	-
60	5	5	31-33	5.500A	40.51	C	R?	-	-	-	-
61	5	5	124-126	5.500B	41.44	C	R?	-	-	-	-
62	5	6	29-31	5.600A	41.99	C	N?	-	-	-	-
63	5	6	115-117	5.600B	42.85	C	N?	-	-	-	-
64	5	7	29-31	5.700A	43.49	C'	-	-	-	-	-
65	6	1	40-42	6.100A	44.10	B	R	-30.2	8.7	8	0-60
66	6	1	115-117	6.100B	44.85	B	R	-22.0	8.6	7	0-45
67	6	2	40-42	6.200A	45.60	C	R?	-	-	-	-
68	6	2	111-113	6.200B	46.31	C	N?	-	-	-	-
69	6	3	37-39	6.300A	47.07	C	R?	-	-	-	-
70	6	3	108-110	6.300B	47.78	B	R	-47.2	22.0	7	0-80
71	6	4	38-40	6.400A	48.58	C	R?	-	-	-	-
72	6	4	108-110	6.400B	49.28	C	R?	-	-	-	-
73	6	5	39-42	6.500A	50.09	C	R?	-	-	-	-
74	6	5	116-119	6.500B	50.86	C	N?	-	-	-	-
75	6	6	39-42	6.600A	51.59	C	R?	-	-	-	-
76	6	6	107-111	6.600B	52.27	C'	-	-	-	-	-
77	6	7	16-19	6.700A	52.86	B	R	-16.8	18.4	6	10-80
78	6	7	65-68	6.700B	53.35	C	R?	-	-	-	-
79	7	1	42-44	7.100A	53.62	B	R	-57.7	12.3	6	0-60
80	7	1	119-121	7.100B	54.39	C	N?•	-	-	-	-
81	7	2	40-42	7.200A	55.10	B	N	31.4	8.0	7	0-80
82	7	2	135-138	7.200B	56.05	A	R	-46.1	3.4	7	0-80
83	7	3	40-43	7.300A	56.60	B	N	55.6	6.2	8	0-100
84	7	3	118-121	7.300B	57.38	A	N	39.2	4.9	8	0-100
85	7	4	40-42	7.400A	58.10	B	N	39.4	8.9	8	0-100
86	7	4	122-124	7.400B	58.92	A	N	46.8	3.8	7	0-80
87	7	5	42-44	7.500A	59.62	B	N	36.0	8.9	8	0-100
88	7	5	122-124	7.500B	60.42	B	N	30.3	17.0	7	0-80
89	7	6	40-42	7.600A	61.00	A	N	33.6	5.4	7	0-80
90	7	6	121-124	7.600B	61.91	B	N	40.9	6.5	6	0-60
91	7	7	40-42	7.700A	62.60	A	N	38.8	3.4	8	0-100
92	8	1	40-42	8.100A	63.10	B	N	34.5	14.5	7	0-80
93	8	1	121-123	8.100B	63.91	A	N	47.6	4.6	7	0-80
94	8	2	41-43	8.200A	64.61	B	N	77.1	11.3	7	0-80
95	8	2	120-122	8.200B	65.40	B	N	45.1	11.5	7	0-80
96	8	3	40-42	8.300A	66.10	A	N	43.3	4.8	7	0-80
97	8	3	122-124	8.300B	66.92	A	N	36.7	3.5	6	10-80

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
98	8	4	40-42	8.400A	67.60	A	N	28.1	3.0	7	0-80
99	8	4	123-125	8.400B	68.43	A	N	45.3	5.7	7	0-80
100	8	5	40-42	8.500A	69.10	B	N	25.0	10.6	7	0-80
101	8	5	123-125	8.500B	69.93	B	N	57.7	7.4	7	0-80
102	8	6	40-42	8.600A	70.60	B	N	22.7	7.4	7	0-80
103	8	6	122-124	8.600B	71.42	B	N	48.5	13.8	8	0-100
104	9	1	40-42	9.100A	72.60	B	N	8.5	8.0	6	10-80
105	9	1	122-124	9.100B	73.42	A	N	48.5	5.4	7	0-80
106	9	2	40-42	9.200A	74.10	B	N	35.6	7.3	7	0-80
107	9	2	122-124	9.200B	74.92	A	N	44.4	1.9	7	0-80
108	9	3	40-42	9.300A	75.60	A	N	68.4	4.7	7	0-80
109	9	3	122-124	9.300B	76.42	A	N	77.3	2.9	7	0-80
110	9	4	40-42	9.400A	77.10	A	N	43.6	5.2	7	0-80
111	9	4	122-124	9.400B	77.92	B (polarity?)	R	-19.5	7.7	7	0-80
112	9	5	40-42	9.500A	78.60	B	N	38.6	9.3	7	0-80
113	9	5	100-102	9.500B	79.20	B	R	-22.8	15.4	6	10-80
114	9	6	40-42	9.600A	80.10	B	R	-32.8	15.3	7	0-80
115	9	6	120-122	9.600B	80.90	B	N	72.0	10.5	7	0-80
116	9	7	40-42	9.700A	81.60	C	N?	-	-	-	-
117	10	1	40-42	10.100A	82.10	A	R	-33.1	4.9	9	0-120
118	10	1	120-122	10.100B	82.90	C	N?	-	-	-	-
119	10	2	40-42	10.200 A	83.60	C'	-	-	-	-	-
120	10	2	120-122	10.200B	84.40	C'	-	-	-	-	-
121	10	3	40-42	10.300A	85.10	C	N?	-	-	-	-
122	10	3	120-122	10.300B	85.90	C	N?	-	-	-	-
123	10	4	40-42	10.400A	86.60	B	N	13.4	7.7	8	0-100
124	10	4	122-124	10.400B	87.42	C	N?	-	-	-	-
125	10	5	40-42	10.500A	88.10	C'	-	-	-	-	-
126	10	5	120-122	10.500B	88.90	C'	-	-	-	-	-
127	10	6	40-42	10.600A	89.60	C'	-	-	-	-	-
128	10	6	120-122	10.600B	90.40	C	R?	-	-	-	-
129	11	1	40-42	11.100A	91.60	C	R?	-	-	-	-
130	11	1	120-122	11.100B	92.40	B	N	7.2	5.2	9	10-150
131	11	2	40-42	11.200A	93.10	C'	-	-	-	-	-
132	11	2	120-122	11.200B	93.90	B	N	53.3	28.5	6	0-60
133	11	3	40-42	11.300A	94.00	C	N?	29.2	34.7	8	0-60
134	11	3	120-122	11.300B	95.40	B	R	-3.8	7.9	6	0-60
135	11	4	40-42	11.400A	96.10	C	R?	-45.5	33.7	6	0-60
136	11	4	120-122	11.400B	96.90	C'	-	-	-	-	-
137	11	5	40-42	11.500A	97.60	B	R	-25.0	9.0	3	0-15
138	11	5	120-122	11.500B	98.40	C'	-	-	-	-	-
139	11	6	40-42	11.600A	99.10	C	R?	9.1	9.1	2	0-10
140	12	1	40-42	12.100A	101.10	C	N?	-	-	-	-
141	12	1	120-122	12.100B	101.91	C'	-	-	-	-	-
142	12	2	40-42	12.200A	102.60	C	R?	-	-	-	-
143	12	2	120-122	12.200B	103.40	C	N?	9.0	14.4	5	0-45
144	12	3	40-42	12.300A	104.10	C	N?	-	-	-	-
145	12	3	120-122	12.300B	104.90	B	N	19.3	17.9	5	0-45
146	12	4	40-42	12.400A	105.60	C	N?	25.8	20.4	5	0-45
147	12	4	120-122	12.400B	106.40	C	N?	-	-	-	-
148	12	5	40-42	12.500A	107.10	B	N	35.7	16.3	6	0-60
149	12	5	114-116	12.500B	107.84	C'	-	-	-	-	-
150	12	6	40-42	12.600A	108.60	B	N	13.4	9.8	5	0-45
151	12	6	120-122	12.600B	109.40	C	N?	15.4	7.4	3	0-15
152	12	7	30-32	12.700A	110.00	B	N	21.5	12.1	6	0-60
153	13	1	40-42	13.100A	110.60	C	N?	10.6	12.3	7	0-80
154	13	1	120-122	13.100B	111.40	C	R?	-5.4	5.2	3	0-15
155	13	2	40-42	13.200A	112.10	B	N	2.0	8.2	8	0-100
156	13	2	120-122	13.200B	112.90	C	N?	-	-	-	-
157	13	3	40-42	13.300A	113.60	C	N?	14.7	14.7	6	0-60
158	13	3	120-122	13.300B	114.40	A	N	10.9	8.7	5	0-45
159	13	4	40-42	13.400A	115.10	B	N	20.0	13.9	7	0-80
160	13	4	120-122	13.400B	115.90	C	N?	-	-	-	-
161	13	5	40-42	13.500A	116.60	B	R	-31.9	14.1	6	10-80
162	13	5	120-122	13.500B	117.40	B	N	8.2	9.1	7	0-80
163	13	6	40-42	13.600A	118.10	C	N?	-	-	-	-
164	13	6	120-122	13.600B	118.90	C	N?	-	-	-	-
165	13	7	40-42	13.700A	119.60	C'	-	-	-	-	-
166	14	1	40-42	14.100A	120.10	B	R	-8.8	15.4	5	0-45
167	14	1	120-122	14.100B	120.90	C	N?	9.5	18.0	5	0-45
168	14	2	40-42	14.200A	121.60	C	R?	-	-	-	-
169	14	2	120-122	14.200B	122.40	C	N?	-	-	-	-
170	14	3	40-42	14.300A	123.10	C	N?	5.4	17.4	4	0-30
171	14	3	120-122	14.300B	123.90	C	N?	4.9	19.6	5	0-45
172	14	4	40-42	14.400A	124.60	C'	-	-	-	-	-
173	14	4	120-122	14.400B	125.40	C'	-	-	-	-	-
174	14	5	40-42	14.500A	126.10	C'	-	-	-	-	-
175	14	5	120-122	14.500B	126.90	C	N?	1.8	6.8	5	0-45
176	14	6	40-42	14.600A	127.60	C	N?	22.6	19.3	4	0-30
177	14	6	120-122	14.600B	128.40	C	N?	-	-	-	-
178	14	7	40-42	14.700A	129.10	C'	-	-	-	-	-
179	15	1	40-42	15.100A	129.60	C	N?	31.4	17.1	5	0-45
180	15	1	96-98	15.100B	130.16	C	R?	-62.9	24.0	3	0-15
181	15	2	40-42	15.200A	131.10	C	N?	-	-	-	-
182	15	3	20-22	15.300A	132.40	C	N?	35.0	24.6	6	0-60
183	15	3	62-64	15.300B	132.82	C	N?	20.9	13.8	4	0-30
184	15	3	124-126	15.300C	133.44	B	N	11.9	13.4	5	0-45
185	15	4	40-42	15.400A	134.10	C	N?	37.5	20.1	6	0-60
186	15	4	120-122	15.400B	134.90	A	N	35.4	8.9	6	0-60
187	15	5	20-22	15.500A	135.40	C	N?	-	-	-	-
188	15	5	100-102	15.500B	136.20	C'	-	-	-	-	-
189	15	6	40-42	15.600A	137.10	C	N?	-	-	-	-
190	15	6	121-123	15.600B	137.91	C	N?	15.3	8.6	5	0-45
191	15	7	20-22	15.700A	138.40	C	N?	-	-	-	-
192	16	1	42-44	16.100A	139.12	C'	-	-	-	-	-
193	16	1	120-122	16.100B	139.90	C'	-	-	-	-	-
194	16	2	42-44	16.200A	140.62	C	R?	-26.9	19.3	4	0-30

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
195	16	2	120-122	16.200B	141.40	C	N?	25.6	12.6	6	0-60
196	16	3	42-44	16.300A	142.12	C	N?	17.0	23.1	4	0-30
197	16	3	123-125	16.300B	142.93	C	N?	19.1	16.3	6	0-60
198	16	4	42-44	16.400A	143.62	C'	-	-	-	-	-
199	16	4	123-125	16.400B	144.43	C	N?	-	-	-	-
200	16	5	44-46	16.500A	145.14	B	R	-32.4	8.4	4	0-30
201	16	5	123-125	16.500B	145.93	C	N?	18.6	8.9	5	0-45
202	16	6	44-46	16.600A	146.64	C	R?	-	-	-	-
203	16	6	123-125	16.600B	147.44	C'	-	-	-	-	-
204	16	7	44-46	16.700A	148.11	C	R?	-59.0	22.5	6	0-60
205	16	1	38-40	17.100A	148.58	B	N	28.5	10.4	5	0-45
206	17	1	121-123	17.100B	149.41	C	N?	-	-	-	-
207	17	2	38-40	17.200A	150.08	C	N?	-	-	-	-
208	17	2	121-123	17.200B	150.91	C'	-	-	-	-	-
209	17	3	38-40	17.300A	151.58	B	N	63.8	15.5	5	0-45
210	17	3	121-123	17.300B	152.41	C	N?	-	-	-	-
211	17	4	38-40	17.400A	153.08	C'	-	-	-	-	-
212	17	4	121-123	17.400B	153.91	C'	-	-	-	-	-
213	17	5	38-40	17.500A	154.58	C	N?	-	-	-	-
214	17	5	121-123	17.500B	155.41	C'	-	-	-	-	-
215	17	6	38-40	17.600A	156.08	C	N?	-	-	-	-
216	17	6	121-123	17.600B	156.91	C	N?	-	-	-	-
217	17	7	38-40	17.700A	157.58	C	N?	79.5	25.9	6	0-60
218	18	1	40-42	18.100A	158.10	C	N?	68.1	17.6	4	0-60
219	18	1	120-122	18.100B	158.90	C	N?	-	-	-	-
220	18	2	40-42	18.200A	159.60	C	N?	-	-	-	-
221	18	2	120-122	18.200B	160.40	C	N?	-	-	-	-
222	18	3	40-42	18.300A	161.10	C	R?	-	-	-	-
223	18	3	120-122	18.300B	161.90	C'	-	-	-	-	-
224	18	4	40-42	18.400A	162.60	C	R?	-	-	-	-
225	18	4	120-122	18.400B	163.40	B	R	-52.9	24.1	6	0-60
226	18	5	40-42	18.500A	164.10	C'	-	-	-	-	-
227	18	5	120-122	18.500B	164.90	C	R?	-	-	-	-
228	18	6	40-42	18.600A	165.60	C	R?	-	-	-	-
229	18	6	120-122	18.600B	166.40	C'	-	-	-	-	-
230	18	7	40-42	18.700A	167.10	C'	-	-	-	-	-
231	19	1	40-42	19.100A	167.60	C'	-	-	-	-	-
232	19	1	120-122	19.100B	168.40	C	R?	-	-	-	-
233	19	2	40-42	19.200A	169.10	C	R?	-	-	-	-
234	19	2	120-122	19.200B	169.90	A	R	-61.2	3.1	4	0-30
235	19	3	40-42	19.300A	170.60	C	R?	-	-	-	-
236	19	3	120-122	19.300B	171.40	C	R?	-	-	-	-
237	19	4	40-42	19.400A	172.10	C	R?	-	-	-	-
238	19	4	120-122	19.400B	172.90	C'	-	-	-	-	-
239	19	5	40-42	19.500A	173.60	C	R?	-	-	-	-
240	19	5	120-122	19.500B	174.40	C	R?	-	-	-	-
241	19	6	40-42	19.600A	175.10	C'	-	-	-	-	-
242	19	6	120-122	19.600B	175.90	B	R	-21.3	6.4	5	10-60
243	19	7	40-42	19.700A	176.60	C	R?	-	-	-	-
244	19	1	40-42	20.100A	177.10	C	R?	-	-	-	-
245	20	1	120-122	20.100B	177.90	C	R?	-25.0	8.0	4	0-30
246	20	2	40-42	20.200A	178.60	C'	-	-	-	-	-
247	20	2	120-122	20.200B	179.40	C	R?	-	-	-	-
248	20	3	40-42	20.300A	180.10	C	R?	-	-	-	-
249	20	3	120-122	20.300B	180.90	B	N	24.4	4.7	3	0-15
250	20	4	40-42	20.400A	181.60	C	R?	-	-	-	-
251	20	4	120-122	20.400B	182.40	C	R?	-	-	-	-
252	20	5	40-42	20.500A	183.10	C	R?	-	-	-	-
253	20	5	120-122	20.500B	183.90	C	R?	-28.7	11.9	5	0-45
254	20	6	40-42	20.600A	184.60	A	R	-7.5	3.6	4	0-30
255	20	6	74-76	20.600B	184.94	C	R?	-	-	-	-
256	20	6	120-122	20.600C	185.40	C	R?	-	-	-	-
257	20	7	40-42	20.700A	186.10	C	R?	-	-	-	-
258	21	1	10-12	21.100A	186.30	B	R	-23.4	11.4	4	10-45
259	21	2	40-42	21.200A	187.20	B	N	27.3	11.3	8	0-100
260	21	3	40-42	21.300A	188.04	C'	-	-	-	-	-
261	21	4	40-42	21.400A	189.54	B	N	29.7	16.1	5	0-45
262	21	4	79-81	21.400B	189.93	C	N?	-	-	-	-
263	21	5	99-101	21.500A	191.63	C'	-	-	-	-	-
264	21	6	10-12	21.600A	192.24	C	N	19.6	16.4	4	0-30

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
1	1	1	40-42	1.100A	0.40	B	N	43.1	13.2	7	0-80
2	1	1	120-122	1.100B	1.20	B	N	48.0	8.4	7	0-80
3	1	2	40-42	1.200A	1.90	A	N	49.5	5.2	8	0-100
4	1	3	40-42	1.300A	3.40	A	N	52.6	3.3	8	0-100
5	1	3	120-122	1.300B	4.20	B	N	32.7	12.4	8	0-100
6	1	4	40-42	1.400A	4.90	A	N	48.2	4.0	8	0-100
7	1	4	115-117	1.400B	5.65	A	N	47.5	1.3	7	0-100
8	2	1	40-42	2.100A	6.30	A	N	38.5	2.7	7	0-100
9	2	1	120-122	2.100B	7.10	A	N	37.8	1.8	7	0-100
10	2	2	40-42	2.200A	7.80	A	N	52.5	6.1	7	0-100
11	2	2	120-122	2.200B	8.60	A	N	46.8	2.2	7	0-100
12	2	3	40-42	2.300A	9.30	B	N	34.7	10.8	8	0-120
13	2	3	120-122	2.300B	10.10	A	N	26.8	2.9	8	0-120
14	2	4	40-42	2.400A	10.80	A	N	50.5	5.5	8	0-120
15	2	4	120-122	2.400B	11.60	A	N	38.1	6.1	8	0-120
16	2	5	40-42	2.500A	12.30	B	N	47.7	11.9	8	0-120
17	2	5	120-122	2.500B	13.10	B	N	29.1	26.1	6	0-70
18	2	6	40-42	2.600A	13.80	C	N?	45.7	25.9	4	0-30
19	2	6	120-122	2.600B	14.60	B	R	-33.9	6.7	7	10-100
20	2	7	40-42	2.700A	15.30	B	R	-51.9	12.0	7	0-80
21	3	1	40-42	3.100A	15.80	C	R?	-16.0	26.5	5	0-50
22	3	1	120-122	3.100B	16.60	C	N?	28.1	20.0	7	0-80
23	3	2	40-42	3.200A	17.30	C	R?	-33.1	18.4	7	0-80
24	3	2	120-122	3.200B	18.10	C	N?	-	-	-	-
25	3	3	40-42	3.300A	18.80	-	-	-	-	-	-
26	3	3	120-122	3.300B	19.60	C	R?	-46.0	9.3	5	10-60
27	3	4	40-42	3.400A	20.30	C	R?	-	-	-	-
28	3	4	120-122	3.400B	21.10	B	R	-42.5	6.9	7	0-80
29	3	5	40-42	3.500A	21.80	B	R	-27.5	7.9	7	0-80
30	3	5	120-122	3.500B	22.60	C	R?	-	-	-	-
31	3	6	40-42	3.600A	23.30	B	R	-14.4	7.0	7	0-80
32	3	6	120-122	3.600B	24.10	B	R	-10.9	5.8	5	0-45
33	3	7	40-42	3.700A	24.80	B	R	-22.4	7.9	5	10-60
34	4	1	40-42	4.100A	25.30	B	R	-26.3	7.0	5	10-60
35	4	1	122-124	4.100B	26.12	A	N	28.2	4.0	6	0-60
36	4	2	40-42	4.200A	26.80	C	R?	-	-	-	-
37	4	2	122-124	4.200B	27.62	B	R	-22.1	19.7	8	0-100
38	4	3	40-42	4.300A	28.30	C	R?	-	-	-	-
39	4	3	122-124	4.300B	29.12	C	R?	-13.8	16.4	6	0-60
40	4	4	40-42	4.400A	29.80	B	N	47.8	10.7	6	0-60
41	4	4	122-124	4.400B	30.62	B	N	40.9	9.6	6	0-60
42	4	5	40-42	4.500A	31.30	C	N?	46.0	23.4	6	0-60
43	4	5	122-124	4.500B	32.12	C	R?	-	-	-	-
44	4	6	40-42	4.600A	32.80	C'	-	-	-	-	-
45	4	6	122-124	4.600B	33.62	C	R?	-	-	-	-
46	4	7	40-42	4.700A	34.30	C'	-	-	-	-	-
47	5	1	40-43	5.100A	34.80	C'	-	-	-	-	-
48	5	1	120-123	5.100B	35.60	C'	-	-	-	-	-
49	5	2	40-43	5.200A	36.30	B	R	-21.0	12.2	7	0-80
50	5	2	120-123	5.200B	37.10	C	R?	-	-	-	-
51	5	3	40-43	5.300A	37.80	C	R?	-	-	-	-
52	5	3	120-123	5.300B	38.60	C	R?	-3.4	18.9	6	0-60
53	5	4	40-43	5.400A	39.30	B	R	-23.0	12.4	5	0-45
54	5	4	120-123	5.400B	40.10	B	R	-15.5	8.7	6	0-60
55	5	5	40-43	5.500A	40.80	C	N?	-	-	-	-
56	5	5	120-123	5.500B	41.60	C	R?	-	-	-	-
57	5	6	40-43	5.600A	42.30	B	R	-17.9	18.7	5	0-45
58	5	6	120-123	5.600B	43.10	C	R?	-	-	-	-
59	5	7	40-43	5.700A	43.80	B	N	26.7	13.9	8	0-100
60	6	1	40-43	6.100A	44.30	C	N?	-	-	-	-
61	6	1	120-123	6.100B	45.12	C	N?	-	-	-	-
62	6	2	40-43	6.200A	45.80	C'	-	-	-	-	-
63	6	2	120-123	6.200B	46.62	C	N?	-	-	-	-
64	6	3	40-43	6.300A	47.30	C	N?	-	-	-	-
65	6	3	120-123	6.300B	48.12	C'	-	-	-	-	-
66	6	4	40-42	6.400A	48.80	C'	-	-	-	-	-
67	6	4	122-124	6.400B	49.62	C	N?	-	-	-	-
68	6	5	40-42	6.500A	50.30	C	N?	-	-	-	-
69	6	5	122-124	6.500B	51.12	C'	-	-	-	-	-
70	6	6	40-42	6.600A	51.80	C	N?	-	-	-	-
71	6	6	122-124	6.600B	52.62	C'	-	-	-	-	-
72	6	7	40-42	6.700A	53.30	B	N	53.8	8.5	4	0-30
73	7	1	40-42	7.100A	53.80	B	R	-58.3	5.3	8	0-100
74	7	2	40-42	7.200A	54.43	C	R?	-	-	-	-
75	7	2	120-122	7.200B	55.23	C	N?	-	-	-	-
76	7	3	40-42	7.300A	55.93	B	N	58.4	9.7	5	0-45
77	8	1	86-87	8.100A	57.66	-	-	-	-	-	-
78	9	1	71-73	9.100A	67.21	B	N	0.4	2.2	7	0-80
79	9	1	116-118	9.100B	67.66	C'	-	-	-	-	-
80	9	2	39-41	9.200A	68.39	C	N	44.5	15.3	4	0-30
81	9	2	116-118	9.200B	69.16	B	N	9.2	5.8	5	0-45
82	9	3	39-41	9.300A	69.89	C	R?	-	-	-	-
83	9	3	116-118	9.300B	70.66	C	R?	-	-	-	-
84	9	4	39-41	9.400A	71.39	B	N	2.1	8.2	6	0-60
85	9	4	116-118	9.400B	72.16	C'	-	-	-	-	-
86	9	5	39-41	9.500A	72.89	C	N?	-	-	-	-
87	9	5	116-118	9.500B	73.66	C	N?	-	-	-	-
88	9	6	39-41	9.600A	74.39	B	R	-61.0	12.8	5	0-45
89	9	6	116-118	9.600B	75.16	C	R?	-	-	-	-
90	9	7	39-41	9.700A	75.89	B	R	-39.1	22.1	-	0-100
91	10	1	40-42	10.100A	76.40	C'	-	-	-	-	-
92	10	1	117-119	10.100B	77.17	C	N?	-	-	-	-
93	10	2	40-42	10.200A	77.90	C'	-	-	-	-	-
94	10	2	117-119	10.200B	78.67	C'	-	-	-	-	-
95	10	3	40-42	10.300A	79.40	C	N?	-	-	-	-
96	10	3	117-119	10.300B	80.17	B	N	76.5	6.5	4	0-30
97	10	4	40-42	10.400A	80.90	C'	-	-	-	-	-

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
98	10	4	117-119	10.400B	81.67	C	N?	-	-	-	-
99	10	5	40-42	10.500A	82.40	C	N?	-	-	-	-
100	10	5	117-119	10.500B	83.17	B	R	-7.7	14.4	4	0-30
101	10	6	40-42	10.600A	83.90	B	R	-43.7	8.2	5	0-45
102	10	6	117-119	10.600B	84.67	C	N?	-	-	-	-
103	10	7	40-42	10.700A	85.40	C	R?	-	-	-	-
104	11	1	40-42	11.100A	85.90	-	-	-	-	-	-
105	11	1	118-120	11.100B	86.68	C'	-	-	-	-	-
106	11	2	40-42	11.200A	87.40	B	R	-10.7	11.7	7	0-80
107	11	2	118-120	11.200B	88.18	C	N?	-	-	-	-
108	11	3	40-42	11.300A	88.90	C	N?	-	-	-	-
109	11	3	118-120	11.300B	89.68	B	R	-28.9	11.5	5	0-45
110	11	4	40-42	11.400A	90.40	C'	-	-	-	-	-
111	11	4	118-120	11.400B	91.18	C	N?	-	-	-	-
112	11	5	40-42	11.500A	91.90	C	N?	-	-	-	-
113	11	5	80-82	11.500B	92.30	-	-	-	-	-	-
114	11	5	118-120	11.500C	92.68	C'	-	-	-	-	-
115	11	6	40-42	11.600A	93.40	C	N?	-	-	-	-
116	11	6	118-120	11.600B	94.18	C	N?	-	-	-	-
117	11	7	40-42	11.700A	94.90	C'	-	-	-	-	-
118	12	1	40-42	12.100A	95.40	C	N?	-	-	-	-
119	12	1	39-40	12.100B	96.89	-	-	-	-	-	-
120	12	2	75-77	12.200B	97.25	C'	-	-	-	-	-
121	12	2	145-147	12.200C	97.95	B	N	61.7	14.1	8	0-100
122	12	3	40-42	12.300A	98.40	C'	-	-	-	-	-
123	12	3	117-119	12.300B	99.17	C	R?	-	-	-	-
124	12	4	42-44	12.400A	99.92	C'	-	-	-	-	-
125	12	4	117-119	12.400B	100.67	C'	-	-	-	-	-
126	12	5	40-42	12.500A	101.40	C'	-	-	-	-	-
127	12	5	117-119	12.500B	102.17	C	R?	-	-	-	-
128	12	6	40-42	12.600A	102.90	C	R?	-	-	-	-
129	12	6	117-119	12.600B	103.67	C'	-	-	-	-	-
130	12	7	42-44	12.700A	104.42	C	R?	-	-	-	-
131	13	1	42-44	13.100A	104.92	C'	-	-	-	-	-
132	13	1	117-119	13.100B	105.67	C	R?	-	-	-	-
133	13	2	42-44	13.200A	106.42	B	R	-37.4	12.6	5	0-45
134	13	2	60-61	13.200B	106.60	-	-	-	-	-	-
135	13	2	117-119	13.200C	107.17	C	N?	-	-	-	-
136	13	3	42-44	13.300A	107.92	C'	-	-	-	-	-
137	13	3	117-119	13.300B	108.67	B	N	43.0	11.3	3	0-15
138	13	4	42-44	13.400A	109.42	C	N?	-	-	-	-
139	13	4	117-119	13.400B	110.17	C	N?	-	-	-	-
140	13	5	42-44	13.500A	110.92	C	R?	-	-	-	-
141	13	5	117-119	13.500B	111.67	C'	-	-	-	-	-
142	13	6	42-44	13.600A	112.42	C	R?	-	-	-	-
143	13	6	117-119	13.600B	113.17	C'	-	-	-	-	-
144	13	7	42-44	13.700A	113.92	C	N?	-	-	-	-
145	14	1	44-46	14.100A	114.44	C'	-	-	-	-	-
146	14	1	118-120	14.100B	115.18	C'	-	-	-	-	-
147	14	2	39-41	14.200A	115.89	C'	-	-	-	-	-
148	14	2	118-120	14.200B	116.68	C'	-	-	-	-	-
149	14	3	39-41	14.300A	117.39	C	N?	-	-	-	-
150	14	3	118-120	14.300B	118.18	C	N?	-	-	-	-
151	14	4	39-41	14.400A	118.89	C	N?	-	-	-	-
152	14	4	118-120	14.400B	119.68	C	N?	-	-	-	-
153	14	5	39-41	14.500A	120.39	C	N?	-	-	-	-
154	14	5	118-120	14.500B	121.18	C	R?	-	-	-	-
155	14	6	39-41	14.600A	121.89	C	R?	-	-	-	-
156	14	6	118-120	14.600B	122.68	C	N?	-	-	-	-
157	14	7	39-41	14.700A	123.39	B	R	-42.0	13.4	4	0-45
158	15	1	31-33	15.100A	123.81	B	R	-5.1	5.6	10	0-150
159	15	1	121-123	15.100B	124.71	C	N?	60.6	30.6	9	0-120
160	15	2	40-42	15.200A	125.40	C	R?	-	-	-	-
161	15	2	121-123	15.200B	126.21	C'	-	-	-	-	-
162	15	3	40-42	15.300A	126.90	C	R?	-	-	-	-
163	15	3	121-123	15.300B	127.71	C	N?	-	-	-	-
164	15	4	40-42	15.400A	128.40	C'	-	-	-	-	-
165	15	4	121-123	15.400B	129.21	C	N?	-	-	-	-
166	15	5	40-42	15.500A	129.90	B	N	1.1	4.6	4	0-30
167	15	5	129-131	15.500B	130.79	C'	-	-	-	-	-
168	15	6	40-42	15.600A	131.40	C	R?	-	-	-	-
169	15	6	121-123	15.600B	132.21	C	N?	-	-	-	-
170	15	7	40-42	15.700A	132.90	C'	-	-	-	-	-
171	23	1	40-42	23.100A	197.50	C'	-	-	-	-	-
172	23	1	120-122	23.100B	198.30	C	N?	-	-	-	-
173	23	2	40-42	23.200A	199.00	C	N?	-	-	-	-
174	23	2	120-122	23.200B	199.80	C	N?	-	-	-	-
175	24	1	40-42	24.100A	207.20	C'	-	-	-	-	-
176	24	1	120-122	24.100B	208.00	C'	-	-	-	-	-
177	24	2	40-42	24.200A	208.70	C'	-	-	-	-	-
178	24	2	120-122	24.200B	209.50	C	R?	-	-	-	-
179	24	3	40-42	24.300A	210.20	C	N?	-	-	-	-
180	24	3	115-117	24.300B	210.95	C	N?	-	-	-	-
181	26	1	40-42	26.100A	226.10	B	R	-44.6	6.8	9	0-130
182	26	1	120-122	26.100B	226.90	C	N?	-	-	-	-
183	26	2	40-42	26.200A	227.60	C	N?	-	-	-	-
184	26	2	120-122	26.200B	228.40	C	N?	-	-	-	-
185	26	3	40-42	26.300A	229.10	C'	-	-	-	-	-
186	26	3	115-117	26.300B	229.85	C'	-	-	-	-	-
187	26	4	40-42	26.400A	230.60	C'	-	-	-	-	-
188	26	4	120-122	26.400B	231.40	C	N?	-	-	-	-
189	27	1	40-42	27.100A	235.70	B	N	77.5	18.2	9	0-120
190	27	2	40-42	27.200A	237.20	C'	-	-	-	-	-
191	27	3	40-42	27.300A	238.70	C	N?	-	-	-	-
192	27	3	120-122	27.300B	239.50	C'	-	-	-	-	-
193	27	4	40-42	27.400A	240.20	C'	-	-	-	-	-
194	27	4	120-122	27.400B	241.00	C	N?	-	-	-	-

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
195	27	5	40-42	27.500A	241.70	C	N?	-	-	-	-
196	28	1	40-42	28.100A	245.00	B	R	-61.8	4.9	7	0-80
197	28	1	120-122	28.100B	245.80	C	N?	-	-	-	-
198	28	2	40-42	28.200A	246.50	C	N?	-	-	-	-
199	28	2	120-122	28.200B	247.30	C	N?	-	-	-	-
200	28	3	40-42	28.300A	248.00	C	N?	-	-	-	-
201	28	3	120-122	28.300B	248.80	B	R	-80.1	7.4	3	0-15
202	28	4	24-26	28.400A	249.34	C'	-	-	-	-	-
203	29	1	40-42	29.100A	254.60	C'	-	-	-	-	-
204	29	1	120-122	29.100B	255.40	B	N	45.2	7.1	4	0-30
205	29	2	40-42	29.200A	256.10	B	R	-80.6	10.1	8	0-100
206	29	2	115-117	29.200B	256.85	B	N	80.3	13.5	6	0-60
207	29	3	40-42	29.300A	257.60	C	N?	-	-	-	-
208	29	3	120-122	29.300B	258.40	A	N	69.3	4.1	4	0-30
209	29	4	40-42	29.400A	259.10	A	R	-80.8	2.1	5	0-45

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
1	1	1	50-52	1.100A	0.50	A	N	46.6	0.9	8	0-100
2	1	1	128-130	1.100B	1.28	A	N	42.1	1.6	8	0-100
3	1	2	50-52	1.200A	2.00	B	N	41.6	10.0	5	10-60
4	1	2	128-130	1.200B	2.78	B	R	63.1	24.8	8	0-120
5	1	3	50-52	1.300A	3.50	C'	-	-	-	-	-
6	1	3	128-130	1.300B	4.28	B	R	-29.7	10.6	5	0-45
7	1	4	50-52	1.400A	5.00	B	R	-39.3	6.9	3	0-15
8	1	4	128-130	1.400B	5.78	C	R?	-	-	-	-
9	1	5	50-52	1.500A	6.50	C	R?	-	-	-	-
10	1	5	128-130	1.500B	7.28	C'	-	-	-	-	-
11	1	6	50-52	1.600A	8.00	C'	-	-	-	-	-
12	2	1	47-49	2.100A	8.87	B	N	22.3	9.9	6	0-60
13	2	2	50-52	2.200A	9.79	C	N?	-	-	-	-
14	2	2	128-130	2.200B	10.57	C	N?	-	-	-	-
15	2	3	49-51	2.300A	11.28	C	R?	-	-	-	-
16	2	3	128-130	2.300B	12.07	C	N?	-	-	-	-
17	2	4	50-52	2.400A	12.79	B	N	60.3	15.4	4	0-30
18	2	4	126-128	2.400B	13.55	B	N	42.4	14.9	8	0-100
19	2	5	50-52	2.500A	14.29	C'	-	-	-	-	-
20	2	5	129-131	2.500B	15.08	C'	-	-	-	-	-
21	2	6	50-52	2.600A	15.79	C'	-	-	-	-	-
22	2	6	130-132	2.600B	16.59	C	N?	-	-	-	-
23	2	7	50-52	2.700A	17.29	B	N	18.9	17.7	6	0-60
24	2	7	122-124	2.700B	18.01	C	N?	-	-	-	-
25	3	1	49-51	3.100A	18.39	C	N?	-	-	-	-
26	3	1	130-132	3.100B	19.20	C'	-	-	-	-	-
27	3	2	49-51	3.200A	19.89	C	R?	-	-	-	-
28	3	2	130-132	3.200B	20.70	C	R?	-	-	-	-
29	3	3	49-51	3.300A	21.39	C	R?	-	-	-	-
30	3	3	130-132	3.300B	22.20	C	R?	-	-	-	-
31	3	4	49-51	3.400A	22.89	C'	-	-	-	-	-
32	3	4	130-132	3.400B	23.70	C'	-	-	-	-	-
33	3	5	49-51	3.500A	24.39	C	R?	-	-	-	-
34	3	5	128-130	3.500B	25.18	C	N?	-	-	-	-
35	3	6	58-60	3.600A	25.98	C	N?	-	-	-	-
36	3	6	128-130	3.600B	26.68	C	N?	-	-	-	-
37	4	1	49-51	4.100A	27.89	C	N?	-	-	-	-
38	4	1	128-130	4.100B	28.68	B	N	46.5	5.2	4	0-30
39	4	2	49-51	4.200A	29.39	C'	-	-	-	-	-
40	4	2	128-130	4.200B	30.18	B	R	-64.2	10.0	9	0-120
41	4	3	49-51	4.300A	30.89	B	R	-9.1	6.1	5	0-45
42	4	3	128-130	4.300B	31.68	C'	-	-	-	-	-
43	4	4	49-51	4.400A	32.39	C	N?	-	-	-	-
44	4	4	121-123	4.400B	33.11	C	N?	-	-	-	-
45	4	5	49-51	4.500A	33.89	B	R	-40.6	6.1	2	0-10
46	4	5	128-130	4.500B	34.68	C'	-	-	-	-	-
47	4	6	49-51	4.600A	35.39	B	R	-7.5	10.8	4	0-30
48	4	6	128-130	4.600B	36.18	B	N	12.5	7.8	4	0-30
49	4	7	54-56	4.700A	36.94	C	R?	-	-	-	-
50	5	1	45-47	5.100A	37.35	A	R	-15.7	2.2	9	0-120
51	5	1	128-130	5.100B	38.18	C'	-	-	-	-	-
52	5	2	45-47	5.200A	38.85	B	R	-15.1	3.9	4	0-30
53	5	2	128-130	5.200B	39.68	C'	-	-	-	-	-
54	5	3	45-47	5.300A	40.35	C'	-	-	-		-
55	5	3	128-130	5.300B	41.18	C	R?	-	-	-	-
56	5	4	45-47	5.400A	41.85	C	R?	-	-	-	-
57	5	4	128-130	5.400B	42.68	C'	-	-		-	-
58	5	5	45-47	5.500A	43.35	C	R?	-	-	-	-
59	5	5	128-130	5.500B	44.18	B	R	-39.7	8.1	4	0-30
60	5	6	45-47	5.600A	44.85	B	R	-0.5	1.6	6	0-60
61	5	6	128-130	5.600B	45.68	B	R	-2.5	5.7	4	0-30
62	5	7	45-47	5.700A	46.35	C'	-	-	-	-	-
63	6	1	128-130	6.100B	47.68	C	R?	-	-	-	-
64	6	2	45-47	6.200A	48.35	C	R?	-	-	-	-
65	6	2	128-130	6.200B	49.18	A	N	5.1	4.9	10	0-140
66	6	3	45-47	6.300A	49.85	C	R?	-	-	-	-
67	6	3	128-130	6.300B	50.68	C'	-	-	-	-	-
68	6	4	45-47	6.400A	51.35	C	R?	-	-	-	-
69	6	4	128-130	6.400B	52.18	C	N?	-	-	-	-
70	6	5	45-47	6.500A	52.85	C	N?	-	-	-	-
71	6	5	128-130	6.500B	53.68	B	N	35.0	7.2	4	0-30
72	6	6	45-47	6.600A	54.35	C	N?	-	-	-	-
73	6	6	128-130	6.600B	55.18	C'	-	-	-	-	-
74	6	7	45-47	6.700A	55.85	C'	-	-	-	-	-
75	7	1	40-42	7.100A	56.30	C'	-	-	-	-	-
76	7	1	128-130	7.100B	57.18	C'	-	-	-	-	-
77	7	2	40-42	7.200A	57.80	C	N?	-	-	-	-
78	7	2	128-130	7.200B	58.68	C	N?	-	-	-	-
79	7	5	40-42	7.500A	62.30	C	R?	-	-	-	-
80	7	6	128-130	7.600B	64.68	B	R	-9.0	8.1	4	0-15
81	8	1	48-50	8.100A	65.88	C	N?	-	-	-	-
82	8	1	128-130	8.100B	66.68	C	N?	-	-	-	-
83	8	2	128-130	8.200A	68.18	C'	-	-	-	-	-
84	8	3	48-50	8.300A	68.88	C	-	-	-	-	-
85	8	5	48-50	8.500A	71.88	C	N?	-	-	-	-
86	8	6	128-130	8.600B	74.18	B	R	-16.3	12.2	7	0-30
87	9	1	48-50	9.100A	75.38	C'	-	-	-	-	-
88	9	1	128-130	9.100B	76.18	C'	-	-	-	-	-
89	9	2	48-50	9.200A	76.88	C'	-	-	-	-	-
90	9	2	128-130	9.200B	77.68	C	R?	-	-	-	-
91	9	5	48-50	9.500A	81.38	C'	-	-	-	-	-
92	9	6	134-136	9.600B	83.74	C'	-	-	-	-	-
93	10	1	49-51	10.100A	84.89	C	N?	-	-	-	-
94	10	1	128-130	10.100B	85.68	C	N?	-	-	-	-
95	10	2	49-51	10.200A	86.39	C	N?	-	-	-	-
96	10	2	128-130	10.200B	87.18	C'	-	-	-	-	-
97	10	5	49-51	10.500A	90.89	C'	-	-	-	-	-

APPENDIX B (continued).

	CORE	SECTION	INTERVAL (cm)	SAMPLE #	DEPTH (mbsf)	CATEGORY	POLARITY	INCLINATION	MAD	NB. POINTS	INTERVAL AF.
98	10	6	128-130	10.600B	93.18	C	R?	-9.1	6.7	6	0-30
99	11	1	49-51	11.100A	94.39	C	R?	-	-	-	-
100	11	1	126-128	11.100B	95.16	C	R?	-	-	-	-
101	11	2	48-50	11.200A	95.88	C'	-	-	-	-	-
102	11	2	126-128	11.200B	96.66	B	N	19.0	7.9	8	0-100
103	11	3	48-50	11.300A	97.38	C	R?	-	-	-	-
104	11	3	126-128	11.300B	98.16	C	R?	-	-	-	-
105	11	4	50-52	11.400A	98.90	C'	-	-	-	-	-
106	11	5	53-55	11.500A	100.43	C	R?	-	-	-	-
107	11	6	125-127	11.600B	102.65	C	R?	-	-	-	-
108	12	1	48-50	12.100A	103.88	C'	-	-	-	-	-
109	12	1	128-130	12.100B	104.68	C'	-	-	-	-	-
110	12	2	48-50	12.200A	105.38	C	R?	-	-	-	-
111	12	2	128-130	12.200B	106.18	B	N	5.8	7.5	5	0-45
112	12	5	48-50	12.500A	109.88	B	R	-65.0	9.6	8	0-60
113	12	6	128-130	12.600B	112.18	C	R?	-	-	-	-
114	13	1	48-50	13.100A	113.38	B	R	-2.5	8.9	4	0-30
115	13	1	130-132	13.100B	114.20	C'	-	-	-	-	-
116	13	2	48-50	13.200A	114.93	C	R?	-	-	-	-
117	13	2	130-132	13.200B	115.75	C'	-	-	-	-	-
118	13	5	49-51	13.500A	119.52	C'	-	-	-	-	-
119	13	6	140-142	13.600B	121.93	B	R	-35.4	13.1	6	0-30
120	14	1	49-51	14.100A	122.89	C'	-	-	-	-	-
121	14	1	128-130	14.100B	123.68	C'	-	-	-	-	-
122	14	3	49-51	14.300A	125.89	C'	-	-	-	-	-
123	14	5	49-51	14.500A	128.89	B	N	39.6	15.2	7	0-45
124	14	6	85-87	14.600B	130.75	C'	-	-	-	-	-
125	15	1	48-50	15.100A	132.38	B	R	-54.3	10.2	6	15-80
126	15	3	48-50	15.300A	135.38	A	N	78.8	4.2	4	0-30
127	15	5	48-50	15.500A	138.38	C'	-	-	-	-	-
128	15	6	128-130	15.600B	140.68	C'	-	-	-	-	-
129	16	1	52-54	16.100A	141.92	C'	-	-	-	-	-
130	16	3	49-51	16.300A	144.89	C	N?	-	-	-	-
131	16	5	49-51	16.500A	147.89	A	N	22.2	5.5	7	0-45
132	16	6	141-143	16.600B	150.31	C'	-	-	-	-	-
133	17	1	49-51	17.100A	151.39	C	N?	-	-	-	-
134	17	3	49-51	17.300A	154.39	C	N?	-	-	-	-
135	17	5	52-54	17.500A	157.42	C	N?	-	-	-	-
136	17	6	50-52	17.600B	158.90	C	N?	-	-	-	-
137	18	1	49-51	18.100A	160.89	B	N	3.9	7.4	4	0-15
138	18	3	48-50	18.300A	163.88	C	N?	-	-	-	-
139	18	5	47-49	18.500A	166.87	B	N	16.7	14.8	6	0-25
140	18	6	127-129	18.600B	169.17	C	N?	-	-	-	-
141	19	1	48-50	19.100A	170.38	C'	-	-	-	-	-
142	19	3	47-49	19.300A	173.37	C	N?	-	-	-	-
143	19	5	16-18	19.500A	176.06	C	N?	-	-	-	-
144	19	6	127-129	19.600B	178.67	C	R?	-	-	-	-
145	20	1	47-49	20.100A	179.87	C	R?	-	-	-	-
146	20	3	47-49	20.300A	182.87	C'	-	-	-	-	-
147	20	5	62-64	20.500A	186.02	C	R?	-	-	-	-
148	20	6	128-130	20.600B	188.18	C'	-	-	-	-	-
149	21	1	47-49	21.100A	189.37	B	N	18.8	7.0	4	0-15
150	21	3	47-49	21.300A	192.37	C'	-	-	-	-	-
151	21	5	47-49	21.500A	195.37	C	R?	-	-	-	-
152	21	6	129-131	21.600B	197.69	C'	-	-	-	-	-
153	22	1	49-51	22.100A	198.89	C'	-	-	-	-	-
154	22	3	49-51	22.300A	201.89	C	R?	-	-	-	-
155	22	5	49-51	22.500A	204.89	C	R?	-	-	-	-
156	22	6	119-120	22.600B	207.09	C'	-	-	-	-	-
157	23	1	49-51	23.100A	208.39	C	R?	-	-	-	-
158	23	3	49-51	23.300A	211.39	C	N?	-	-	-	-
159	23	5	49-51	23.500A	214.39	C	R?	-	-	-	-
160	23	6	128-130	23.600B	216.68	C'	-	-	-	-	-
161	24	1	49-51	24.100A	217.89	C	R?	-	-	-	-
162	24	3	49-51	24.300A	220.89	C'	-	-	-	-	-
163	24	5	49-51	24.500A	223.89	C'	-	-	-	-	-
164	24	6	128-130	24.600B	226.18	C'	-	-	-	-	-
165	25	1	40-42	25.100A	227.30	C'	-	-	-	-	-
166	25	3	40-42	25.300A	230.30	C	R?	-	-	-	-
167	25	5	43-45	25.500A	233.30	C'	-	-	-	-	-
168	25	6	129-131	25.600B	235.69	C'	-	-	-	-	-
169	26	1	49-51	26.100A	236.89	B	R	-35.2	14.3	5	0-20
170	26	3	49-51	26.300A	239.89	B	N	17.7	15.7	7	0-45
171	26	5	49-51	26.500A	242.89	C'	-	-	-	-	-
172	26	6	128-130	26.600B	245.18	B	R	-26.8	17.1	7	0-60
173	32	1	49-51	32.100A	293.89	C'	-	-	-	-	-
174	32	3	49-51	32.300A	296.89	C	N?	-	-	-	-
175	32	5	49-51	32.500A	299.89	C	R?	-	-	-	-
176	32	6	129-131	32.600B	302.19	C	N?	-	-	-	-