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# 6. Data Report: Calcium Carbonate Stratigraphy from Sample Measurements and Diffuse Spectral Reflectance at Site 1090, ODP Leg 177[1]

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## ABSTRACT

A total of 776 sediment samples were measured for percent $CaCO_3$ using a coulometer. These data are compared with percent blue reflectance (450–550 nm) measured with the Oregon State University split-core analysis track. In previous studies percent blue reflectance has been an excellent proxy for percent $CaCO_3$ and in this study shows many of the main depositional trends (i.e., a 100-k.y. cycle, with a 55% reflectance range is evident in the upper 900 k.y., underlain by sediments exhibiting a 40-k.y. cycle with only a 30% reflectance range). Between ~21 and 5 Ma the average percent reflectance decreases from ~35% to ~8%. A similar decrease is also recorded between ~24 and 22 Ma.

Percent $CaCO_3$ trends closely match those of the percent blue spectral reflectance. This is especially well shown in the 100-k.y. cyclicity and in the interval between 24.5 and 21.5 Ma. In both intervals $CaCO_3$ analyses are abundant. An exception occurs in the interval between 2 and 5 meters composite depth (~193 and 240 k.y.). There, percent $CaCO_3$ and percent reflectance are out of phase. The lack of agreement is not likely to be due to a very wet core, in which water would dominate the spectral reflectance instead of sediment, or to problems with the composite depth slice. The discrepancy remains unexplained and provides clear evidence that when noninvasive measurements are used

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as proxies for chemical measurements they must be substantiated by the actual chemical or physical measurements.

## INTRODUCTION

This paper examines the relationship between spectral reflectance and $CaCO_3$ measurements. There are two objectives for doing this. First, to see if spectral reflectance values can be used as a proxy for $CaCO_3$ measurements, and second, to see if paleoceanographic changes can be identified and studied using spectral measurement which are both quicker and cheaper to obtain than $CaCO_3$ measurements. This investigation was carried out on sediments from Site 1090.

Site 1090 (42°54.8′S, 8°55.2′E) is located on the southern flank of the Agulhas Ridge in the central part of the Subantarctic Zone (Fig. F1). Although deep (3702 m of water), the site lies above the $CaCO_3$ compensation depth. It is near the present-day boundary between North Atlantic Deep Water (NADW, above) and Circumpolar Deep Water (CDW, below) (Fig. F2). Site 1090 is part of a three-site depth transect to intersect all of the major South Atlantic water masses. The other sites in this transect are Sites 1088 (2082 m) also on the Agulhas Ridge and Site 1089 (4620 m) in the Cape Basin.

Site 1090 was drilled to recover upper Miocene to Pleistocene sediments to investigate changes in the location of the Polar Front Zone, investigate changes in the mixing ratios of CDW and NADW, and investigate the response of the Southern Ocean to orbital forcing. In particular, it was hoped that this site would provide sediments that would allow the examination of phase relationships to climatic changes identified in the Northern Hemisphere.

Five holes were drilled, reaching a maximum depth of 397.5 meters below seafloor (mbsf) and middle Eocene age (~46 Ma). The Quaternary sediments consist of alternating foraminifer nannofossil ooze, diatom-bearing nannofossil ooze, and mud-bearing nannofossil ooze with several short hiatuses. A Miocene through early Pliocene hiatus, extending over 10 m.y. is marked by a lithologic change with white nannofossil ooze above and reddish, mud-rich nannofossil ooze below. Miocene and Oligocene sediments consist of mud-bearing diatom ooze and mud- and diatom-bearing nannofossil ooze and chalk. Opal-rich sediments dominate the upper Eocene interval, whereas calcareous sediments predominate in the middle Eocene sediments (Fig. F2). Here we present data comparing spectral reflectance and percent $CaCO_3$.

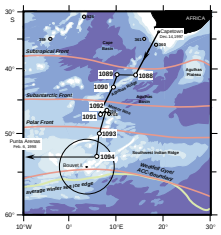
## METHODS AND DATA

All values are given in meters composite depth (mcd) or age. Depths given are from the top of the sampled interval. Composite depths are those determined by the Leg 177 Shipboard Party (Gersonde, Hodell, Blum, et al., 1999).

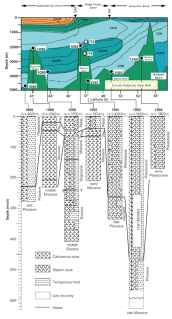
## AGE MODEL

The age model is based on biostratagraphic and paleomagnetic shipboard age picks published in the Leg 177 *Initial Reports* volume (Gersonde, Hodell, Blum, et al., 1999) and used to calculate sedimentation

F1. Leg 177 site location map, p. 8.




F2. Cross-section of Leg 177 transect, p. 9.



rates (Fig. F3; Table T1). Sedimentation rates were generally higher in the Quaternary, averaging almost 2 cm/k.y., but ranging from <1 to >6 cm/k.y. Below the hiatus (~70 mcd), sedimentation rates were considerably lower, averaging slightly >1 cm/k.y.

Ages from the shipboard age model were used in the program AGER developed by Philip Howell (pers. comm., 1999) at Brown University to assign ages to data presented in this paper.

## BULK DENSITY

Bulk density measurements are compared with $CaCO_3$ and spectral values. Bulk density was determined with the shipboard gamma ray attenuation (GRA) densitometer (Gersonde, Hodell, Blum, et al., 1999). In this study, the raw data were evaluated hole by hole. Adjacent measurements differing by more than ~8% in a single hole were eliminated. Then all Site 1090 data were combined and sorted by meters composite depth. A five-point running average was used to smooth the data (Table T2). The measurements are shown plotted vs. depth and weight percent $CaCO_3$ in Figure F4A and F4B. The weight percent $CaCO_3$ values roughly parallel the bulk density values.

## MOISTURE AND DENSITY

Moisture and density measurements were made during Leg 177 on selected samples at a rate of about one per core section following the procedures outlined in *ODP Technical Note* 26 (Blum, 1997). Samples were dried for 24 hr either in an oven at temperatures of 105°C or in a freeze-dryer.

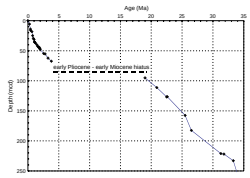
Dry density and water content data are given in Table T3 and plotted vs. depth in Figure F5A (0–250 mcd). These two parameters are inversely related, which is expected because they are both directly related to the dry mass of the solids (Blum, 1997). Plotting dry density and weight percent $CaCO_3$ vs. depth, shows no relationship between the two measurements (Fig. F5B, F5C).

## DIFFUSE SPECTRAL REFLECTANCE

Diffuse spectral reflectance measurements were made with the Oregon State University split-core analysis track (SCAT). This instrument or its prototype has been used to measure reflectance sediments during Leg 138 (Mix et al., 1992, 1995), Leg 154 (Harris et al., 1997; Harris and Mix, 1999), and Leg 162 (Ortiz et al., 1999) sediments. The instrument measures light reflected from split sediment core surfaces at a spectral resolution of 0.68 nm and spans wavelengths from 250 to 950 nm, thereby including the upper ultraviolet (UV), visible, and near-infrared wavelengths. The core is illuminated via a fiber-optic cable by two light sources, a deuterium lamp for the UV and a quartz-tungsten-halogen lamp for the visible and near-infrared (nIr) wavelengths.

During Leg 177, closely spaced measurements were converted to percent reflectance and averaged into four 100-nm-wide bands defined as (1) UV (250–350 nm), (2) blue (450–550 nm), (3) red (650–750 nm), and (4) nIr (850–950 nm) (Table T4). The signal is most reproducible in the red and blue wavelengths. Although values for these two wavelengths

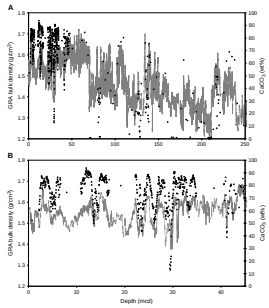
F3. Sedimentation rate based on Leg 177 shipboard age determinations, p. 10.



T1. Shipboard age determinations used to calculate sedimentation rates, p. 18.

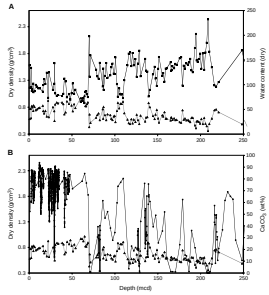
T2. Original and average shipboard GRA bulk density values, p. 19.

F4. Averaged GRA bulk density and weight percent $CaCO_3$ vs. depth, p. 11.



T3. Shipboard dry density and water content values made on selected sediment core samples, p. 20.

F5. Averaged dry density vs. dry water content for Site 1090 and averaged dry density and weight percent $CaCO_3$ vs. depth, p. 12.



have similar trends, they do show variations attributed to different components of the sediment (Fig. F6). The blue band is used for comparison to the $CaCO_3$ content of sediments because calcite has a somewhat higher reflectance at this wavelength than at longer wavelengths. Because of this, percent blue reflectance should be a better proxy for $CaCO_3$ (see Mix et al., 1995) (Figs. F7, F8).

## CALCIUM CARBONATE

The $CaCO_3$ content of the sediment column is a function of production, dissolution, and dilution. In ocean cores carbonate content closely parallels oxygen isotope stratigraphy and has been widely used for stratigraphic correlation and to interpret paleoceanographic changes (e.g., Hayes et al., 1969; Prell, 1978; Dunn et al., 1981; Gardner, 1982; Pisias et al., 1985; O'Connell, 1990).

A total of 776 $CaCO_3$ analyses is available for Site 1090, including 80 shipboard analyses on Hole 1090B (Table T5). The remaining analyses were done on samples from Holes 1090D and 1090E.

Samples were dried in a freeze-dryer, powdered, weighed to the nearest milligram, and analyzed for $CaCO_3$ using a Coulometrics $CO_2$ coulometer. The coulometer has an accuracy of 0.15% (±0.2 mg). The coulometrics titration technique measures all of the $CO_2$ that is liberated by acidifying and heating sediment samples in a closed system. To do this, the powdered samples are placed in a test tube that is attached to the coulometer, placed in a heat shield, and 2-N HCl is pumped into the test tube. The liberated $CO_2$ is transferred through scrubbers (solutions to remove interfering substances) by a $CO_2$-free gas into an absorption cell, where it is titrated through coulometric means. The absorption cell contains an aqueous medium of ethanolamine and a coulometric indicator. The interaction of the $CO_2$ and the cell solution creates a titratable acid. The coulometer forms a base electrically and titrates to an end point determined by the optical transmission of the indicator (Huffman, 1977). The pulse output was scaled and fed to a counter in terms of $CO_2$. A stable coulometer reading indicates that all of the $CO_2$ has been evolved and titrated. The reading was recorded and the results were calculated in micrograms carbon and $CaCO_3$ (weight percent $CaCO_3$ = percent $C_{inorg}$ × 8.334). This method of calculation assumes that all of the $CO_2$ is liberated from $CaCO_3$.

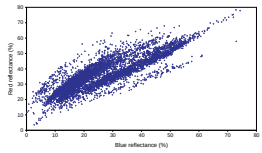
## DISCUSSION

The percent blue band reflectance varies from 0% to 70% and shows several trends. The consistently highest values (15% to 70%) and those with the most variation (55% reflectance range) are between 0 and 30 mcd corresponding to ~0. 9 m.y. (Figs. F7A, F8A, F8B). In most marine sediments, this Quaternary interval shows a strong 100-k.y. Milankovitch cycle. Although the possibility of such a cycle is visible in this record, it does not stand out. This may be caused by problems with the age model. Carbonate values in this interval range from ~10% to 75% and with the exception of the interval between 2 and 5 mcd, parallel the blue spectral reflectance values.

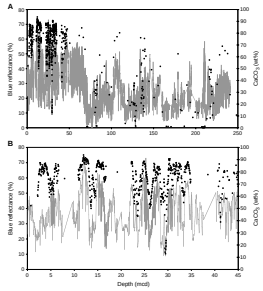
Between 2 and 5 mcd percent blue reflectance and percent $CaCO_3$ are out of phase. This could be due to a very wet core, but this is not likely

T4. Shipboard spectral reflectance values given as percent reflectance in 100-nm intervals, p. 23.

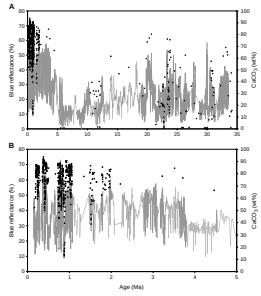
F6. Percent blue reflectance vs. percent red reflectance, p. 14.



F7. Percent blue reflectance and weight percent $CaCO_3$ vs. depth, p. 15.



F8. Percent blue reflectance and percent $CaCO_3$ vs. age and weight percent red reflectance and percent $CaCO_3$ vs. age, p. 16.



T5. Weight percent $CaCO_3$ values, p. 24.

as water content values for this interval measured for Holes 1090A and 1090B are similar to water content values in the rest of the core (Figs. **F4, F5;** Tables **T2, T3**). By contract, the percent carbonate values do show roughly the same trend as the GRA bulk density values (Fig. **F4B**). Alternatively, because water content and spectral reflectance were measured on samples from Hole 1090A, and the carbonate measurements were made on samples from Hole 1090D, it is possible that there is a problem with the composite splice. However, this is also not likely because the shipboard carbonate measurements, made on samples from Hole 1090B, are in agreement with the shore-based measurements made on samples from Hole 1090D. Thus, at this time there is no explanation for the discrepancy between carbonate and spectral reflectance between 2 and 5 mcd.

Between ~30 and 65 mcd (~0.9 and 3.8 m.y.), the range of variation in percent blue reflectance decreases (20% to 55%) and the cycles are much shorter (Fig. **F8B**), probably corresponding to the 40-k.y. Milankovitch cycle. Each of these cycles is defined by a sharp decrease in percent blue reflectance to close to 20%, with the rest of the cycle being above 40%. Similar cycles identified by a decrease on $g/cm^3$ are also observed in the GRA bulk density measurements (Fig. **F4A**).

Below ~70 mcd, both the percent blue reflectance values and the GRA bulk density values decrease sharply (Figs. **F4A, F7A**). This corresponds to the lower Pliocene–lower Miocene hiatus. Percent $CaCO_3$ measurements in this interval are scarce. However, those that are available correlate well with the percent blue reflectance.

In the remaining core, both the percent blue reflectance values and the GRA bulk density values continue to show similar trends, although the detail and magnitude of the changes are different. Below ~160 mcd, when very low percent $CaCO_3$ values (~1%) are encountered, the percent blue reflectance does not indicate as much of a decrease, having values of over 15%. This is in contrast to the very low carbonate values encountered just below the lower Pliocene–lower Miocene hiatus, where percent blue reflectance values were <5%. This is the opposite of the correlation between the low percent carbonate measurements with the GRA bulk density values. The low carbonate correlation is much better in the older sediments (210 mcd) than at the hiatus at 70 mcd (Fig. **F4A**).

## CONCLUSIONS

Diffuse spectral reflectance, both blue and red, is a good proxy for $CaCO_3$ in these three-component (carbonate, biogenic silica, and terrigenous) Antarctic sediments.

The out-of-phase relationship between $CaCO_3$ and diffuse spectral reflectance between 2 and 5 mcd cannot be explained at this time.

## ACKNOWLEDGMENTS

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**Figure F1.** Leg 177 site location map (from Gersonde, Hodell, Blum, et al., 1999).

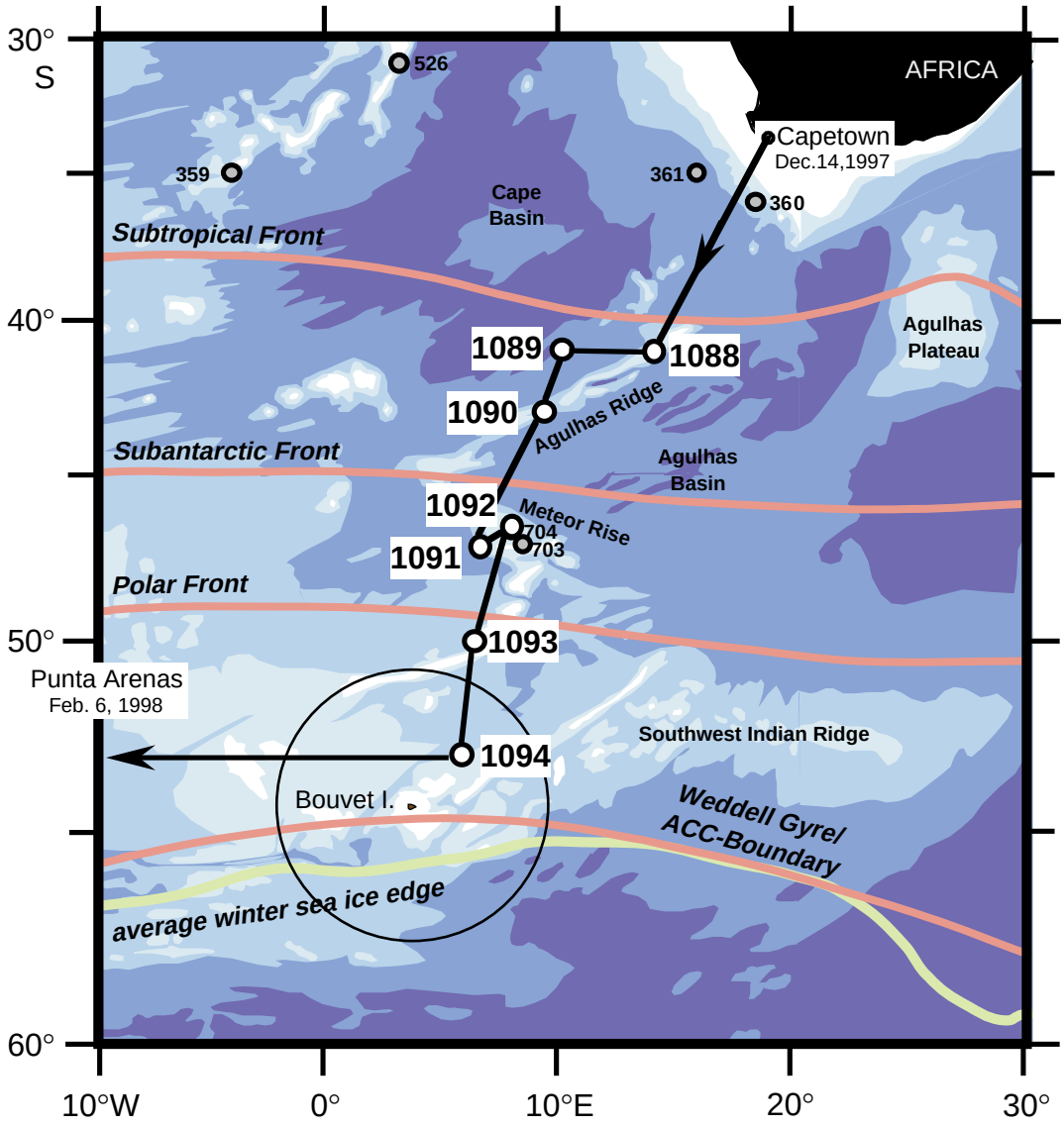

**Figure F2.** Cross-section of Leg 177 transect (see Fig. F1, p. 8) showing site locations, water mass structure and topography (top), and lithologic summary of the eight sites cored during Leg 177 (bottom) (from Gersonde, Hodell, Blum, et al., 1999). NADW = North Atlantic Deep Water, CDW = Circumpolar Deep Water, AABW = Antarctic Bottom Water, AAIW = Antarctic Intermediate Water, SASW = Subantarctic Surface Water, SAF = Subantarctic Front, PF = Polar Front. w.d. = water depth.

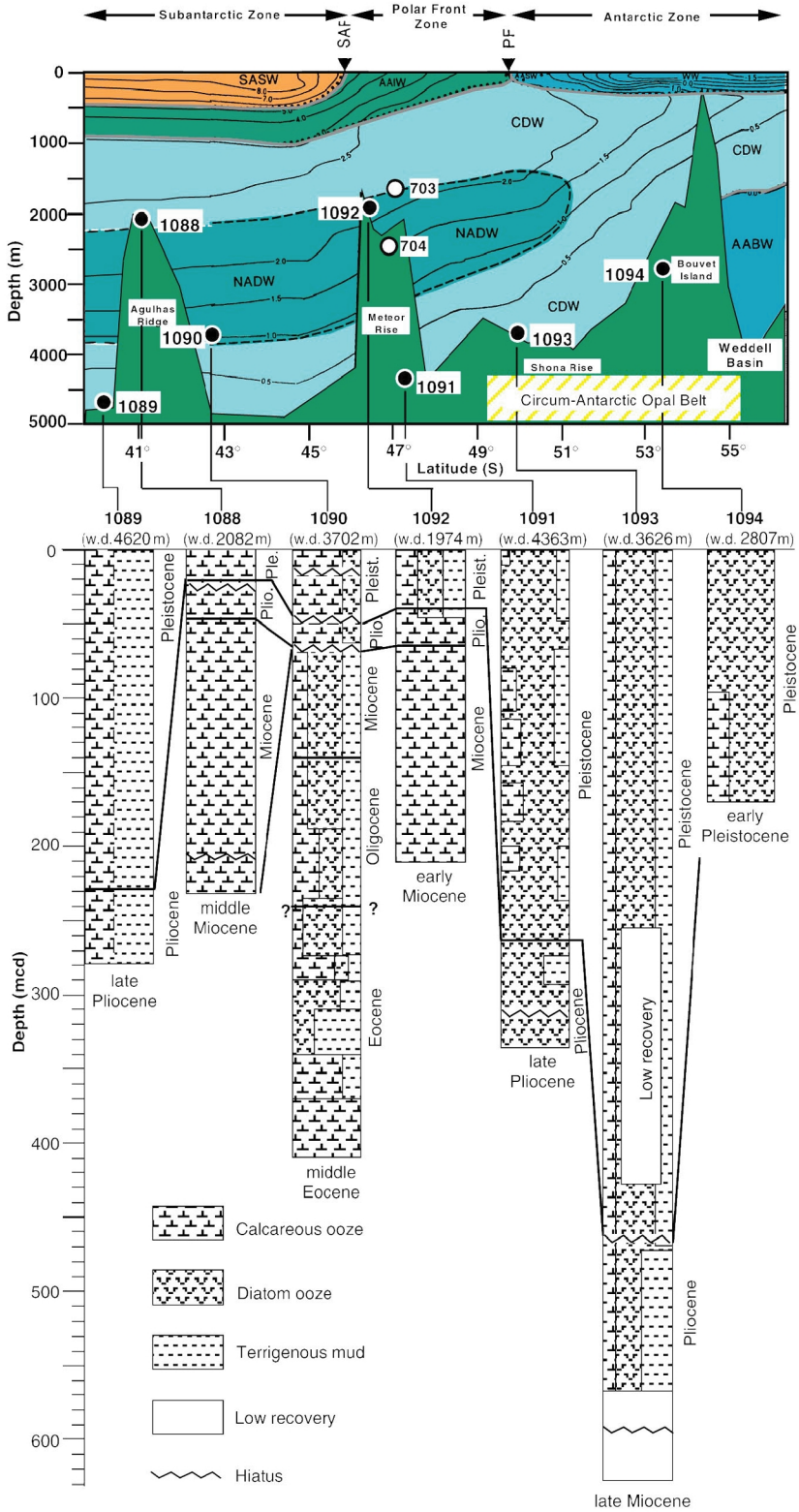

**Figure F3.** Sedimentation rate based on Leg 177 shipboard age determinations (from Gersonde, Hodell, Blum, et al., 1999).

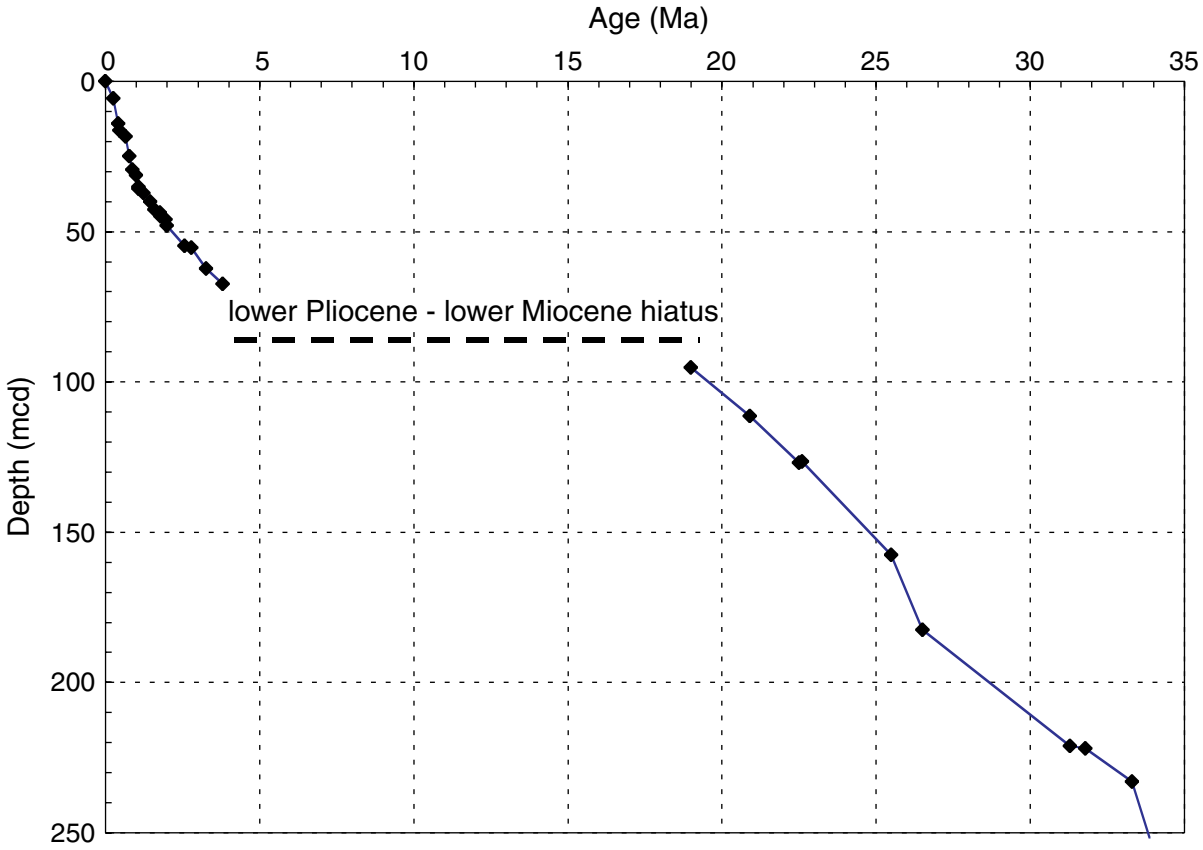

**Figure F4.** Averaged shipboard GRA bulk density (solid line) values (from Gersonde, Hodell, Blum, et al., 1999) and weight percent $CaCO_3$ (dots) vs. depth. **A.** 0–250 mcd. **B.** 0–45 mcd.

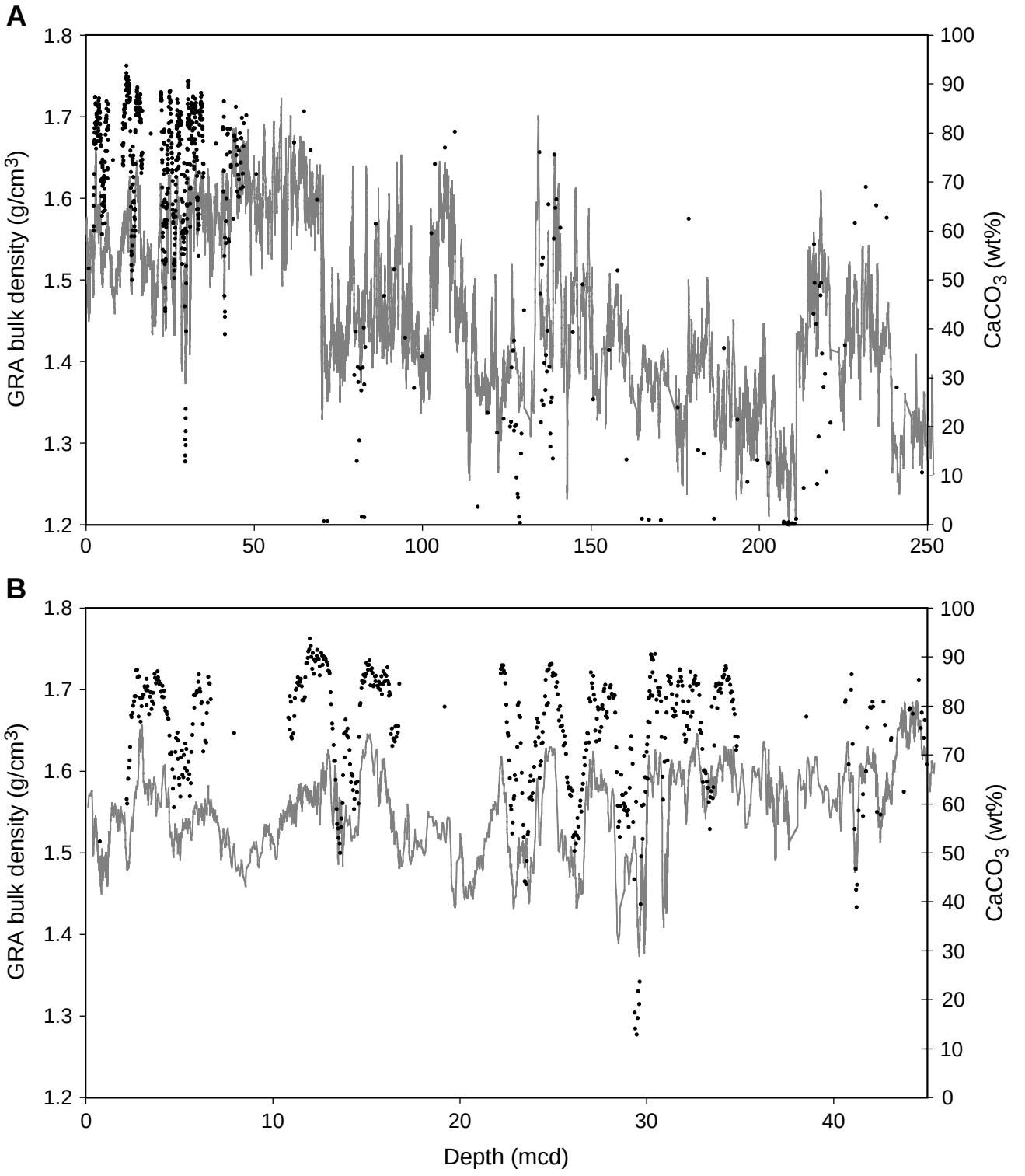

**Figure F5. A.** Averaged dry density (triangles) vs. dry water content (dots) for Site 1090. **B.** Averaged dry density (triangles) and weight percent $CaCO_3$ (dots) vs. depth for 0–250 mcd. (Continued on next page.)

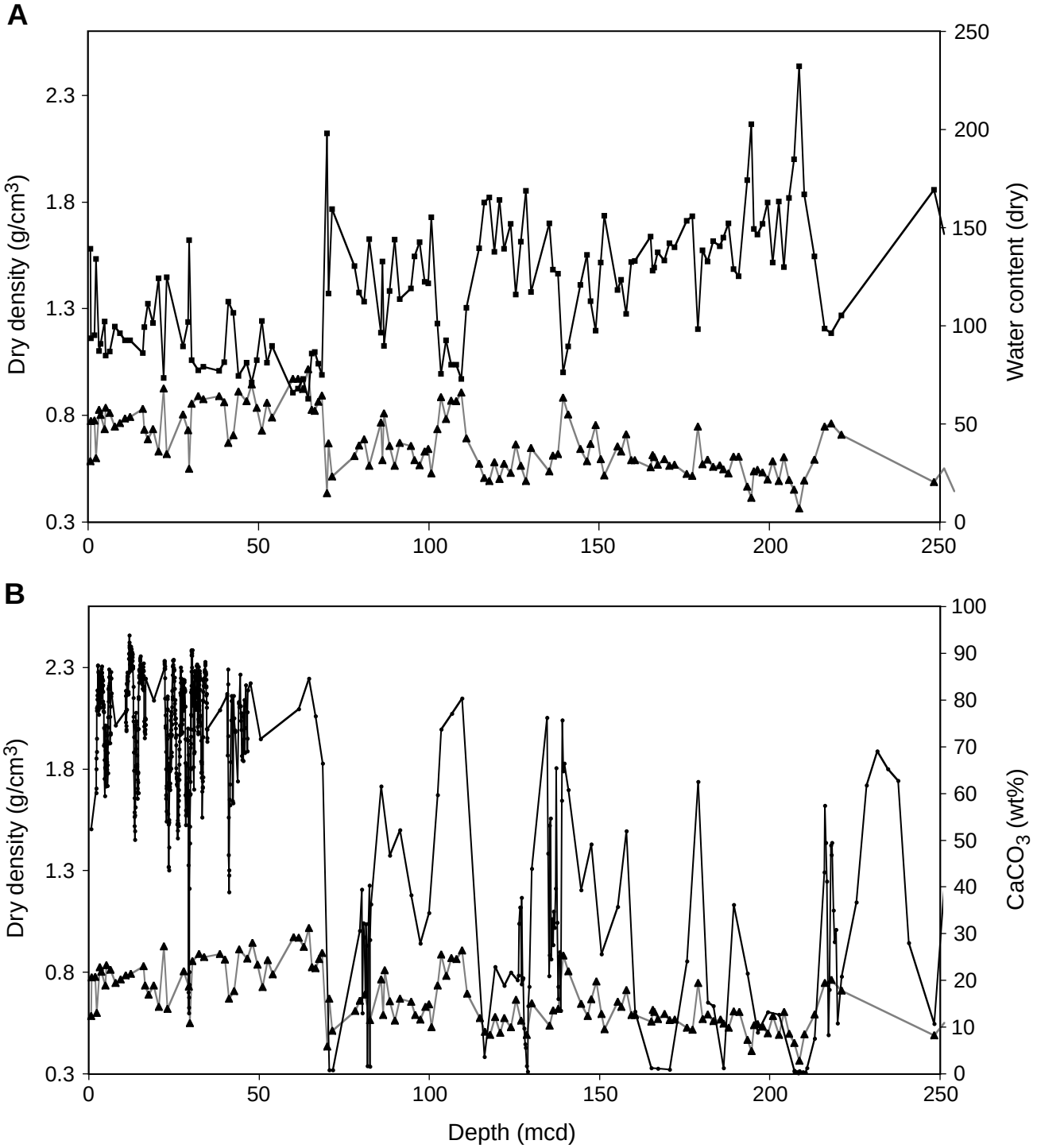

**Figure F5 (continued).** C. Averaged dry density (triangles) and weight percent $CaCO_3$ (dots) vs. depth for 0–45 mcd.

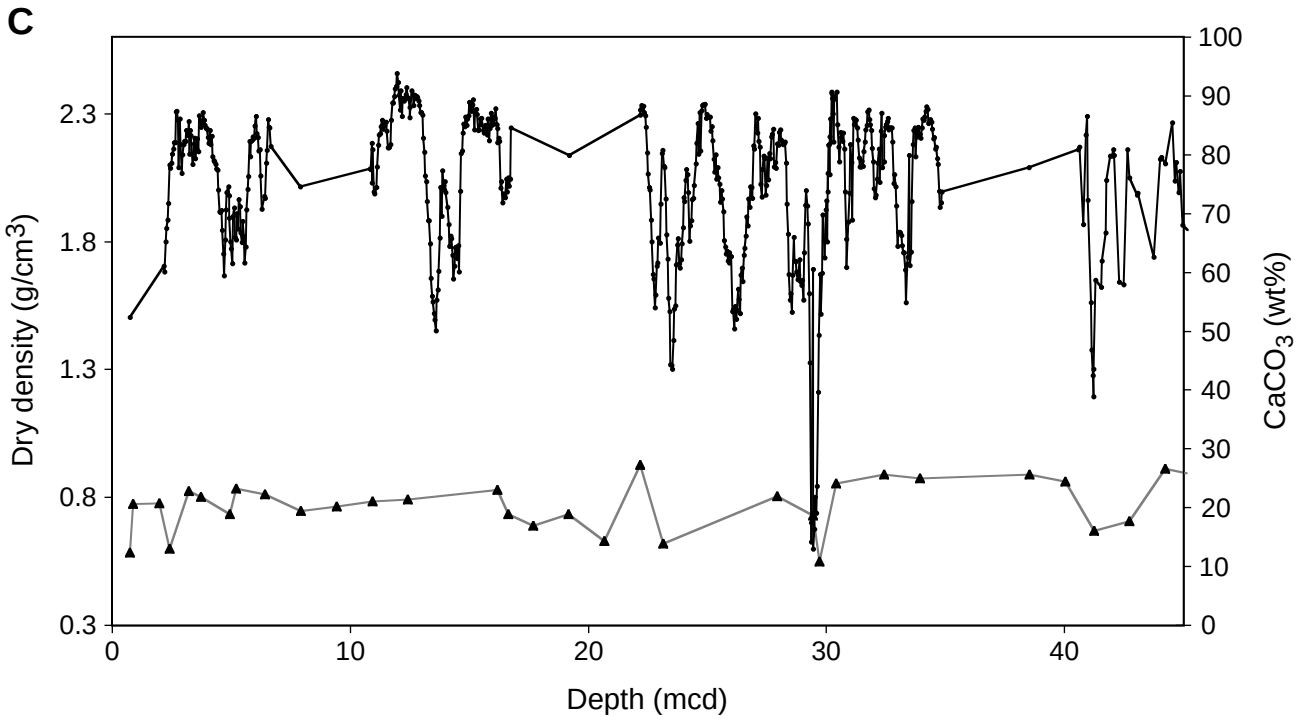

**Figure F6.** Percent blue reflectance (450–550 nm) vs. percent red reflectance (650–750 nm) (from Gersonde, Hodell, Blum, et al., 1999).

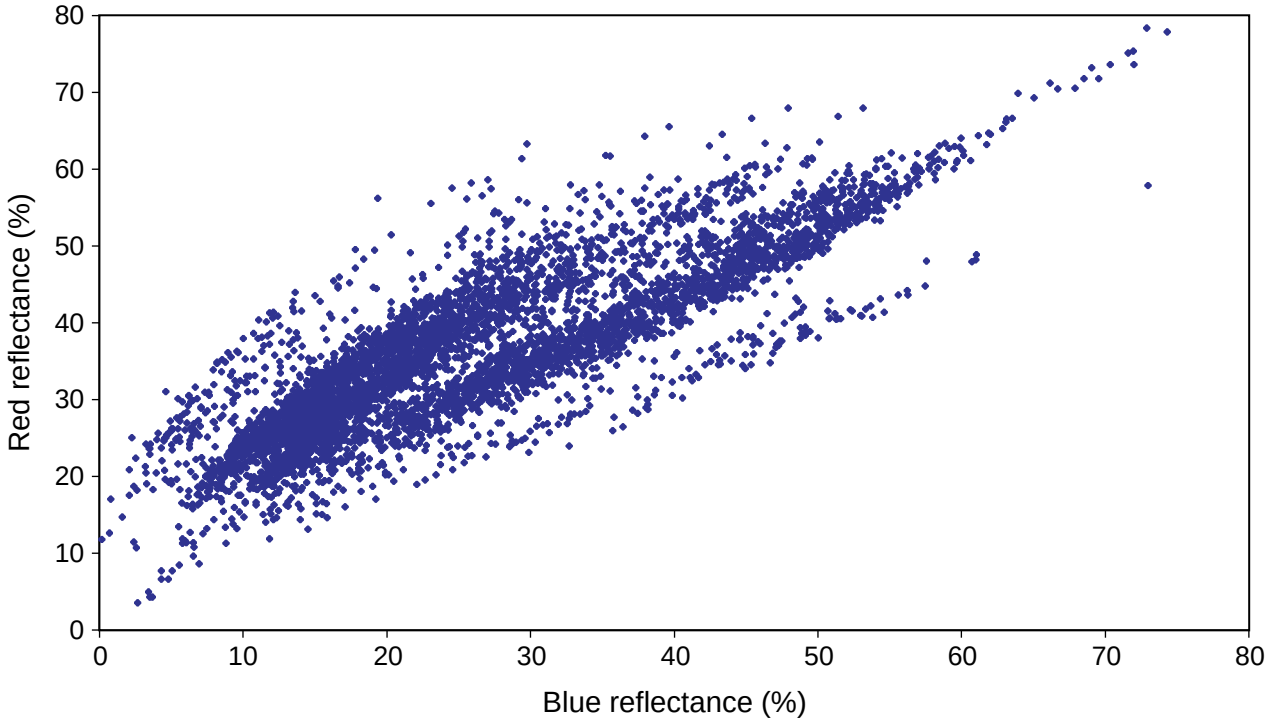

**Figure F7.** Percent blue reflectance (450–550 nm) (solid line) and weight percent $CaCO_3$ (dots) vs. depth. **A.** 0–250 mcd. **B.** 0–45 mcd.

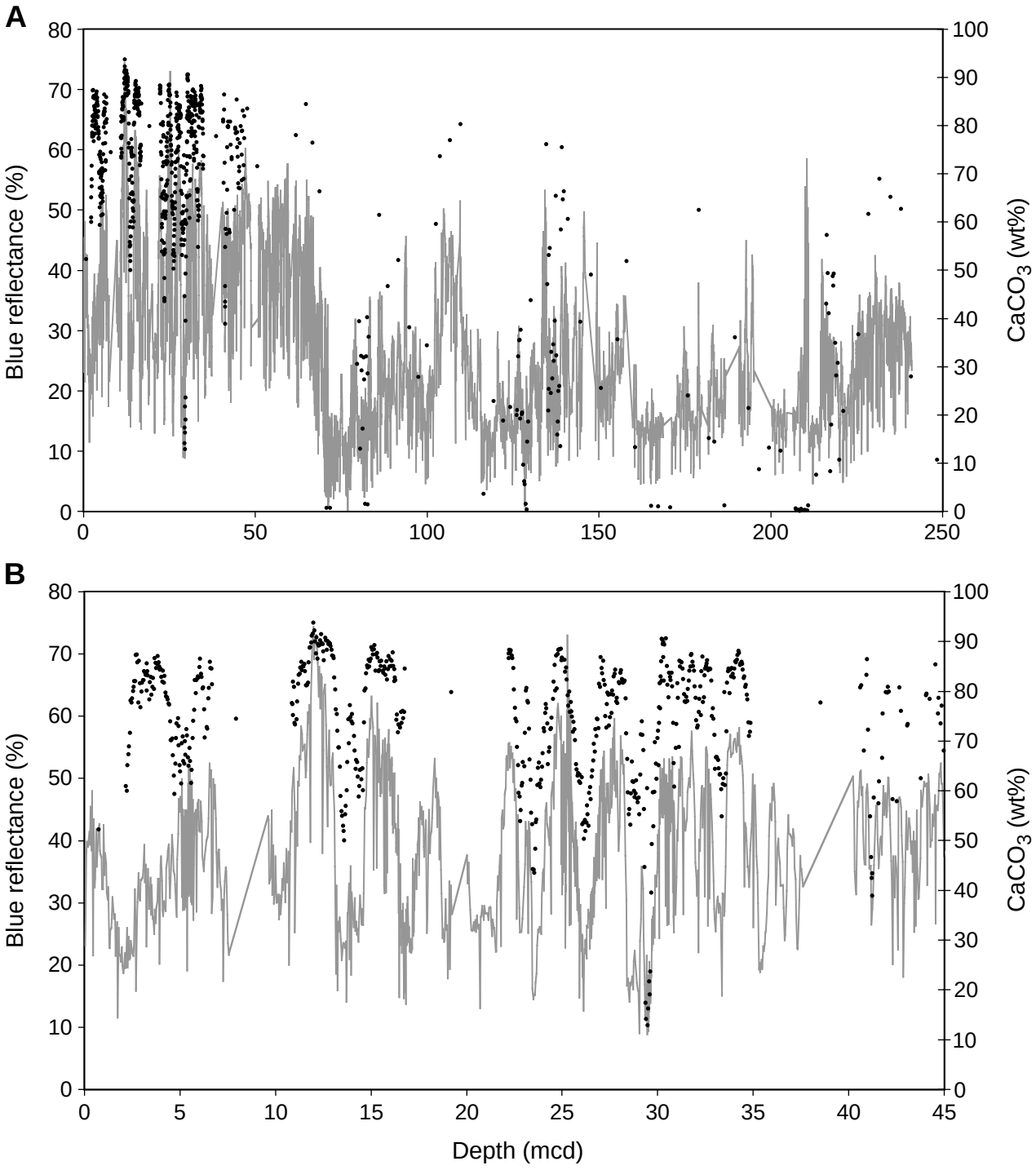

**Figure F8.** Percent blue reflectance (450–550 nm) and weight percent $CaCO_3$ vs. age. **A.** 0–35 Ma. **B.** 0–5 Ma. (Continued on next page.)

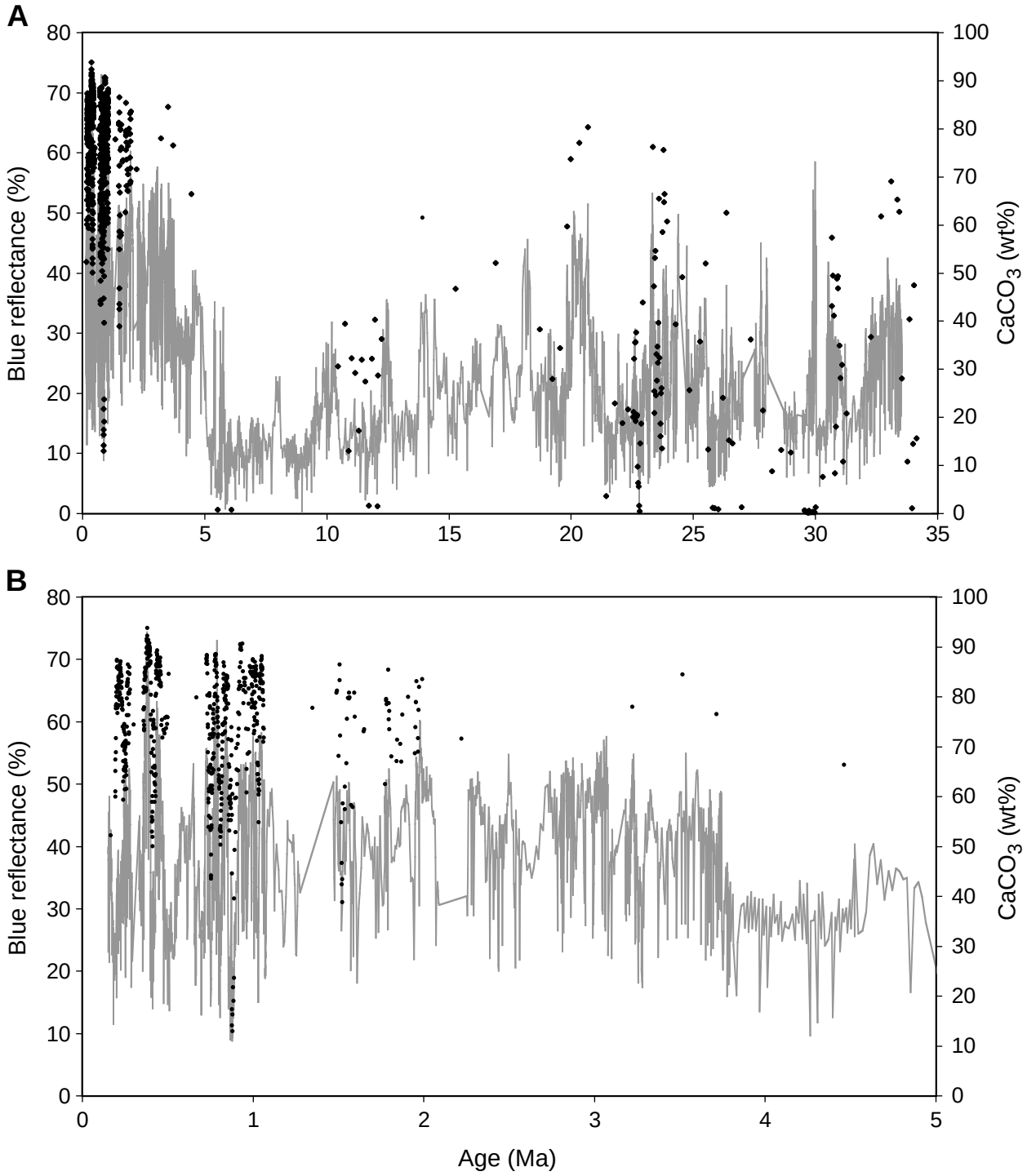

**Figure F8 (continued).** C. Percent blue reflectance (450–550 nm) and weight percent $CaCO_3$ vs. age for 0–1 Ma. D. Percent red reflectance (650–750 nm) and weight percent $CaCO_3$ vs. age for 0–1 Ma.

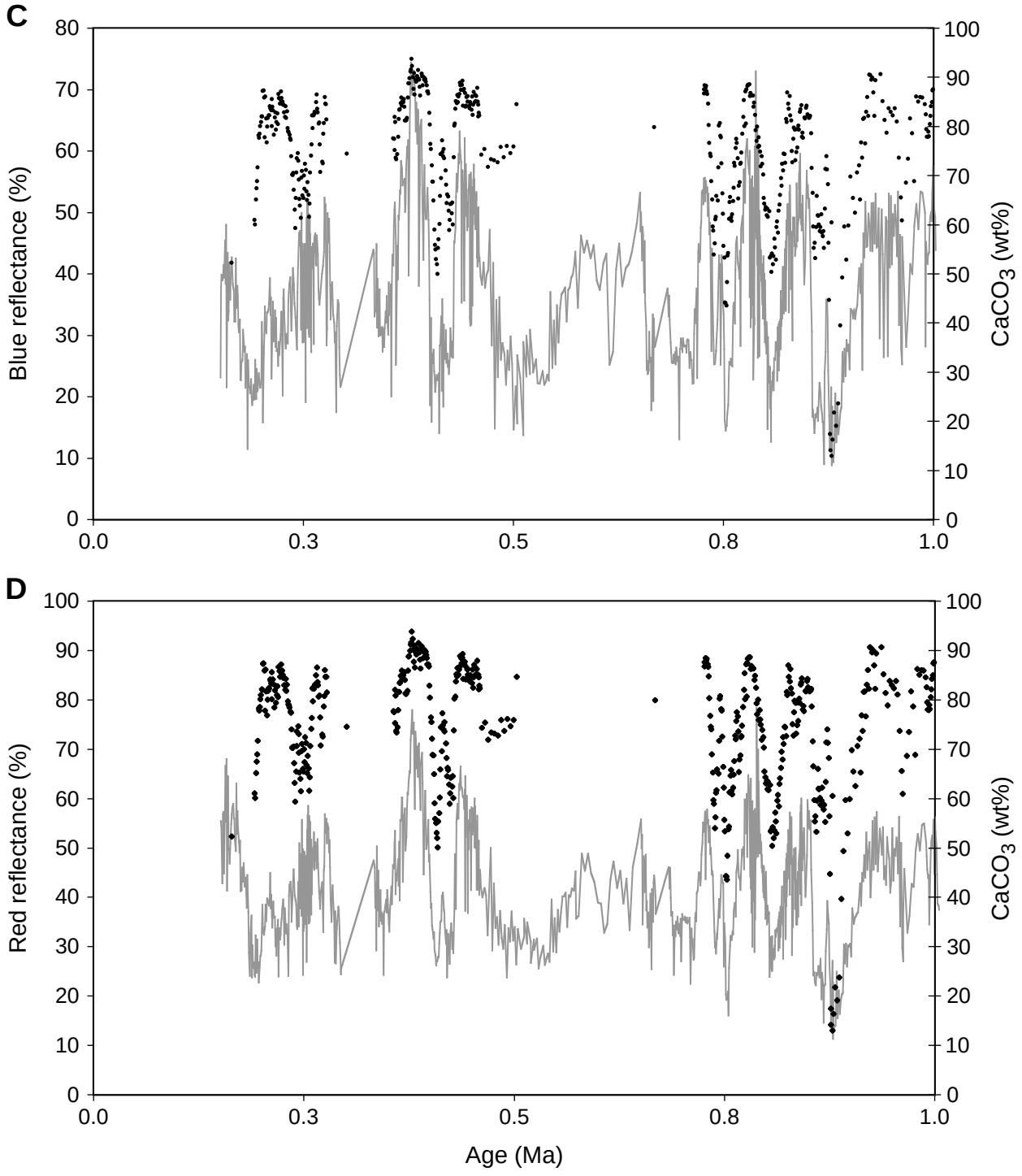

**Table T1.** Shipboard age determinations used to calculate sedimentation rates.

| Age (Ma) | Depth (mbsf) | Depth (mcd) | Code | Event abbreviation | Event/Zone/Chron | Sedimentation rates (cm/k.y.) |
|---|---|---|---|---|---|---|
| 0.26 | 5.75 | 5.75 | CN | FO | *E. huxleyi* | 2.21 |
| 0.42 | 12.35 | 14.15 | DIAT | BOT | *T. lentiginosa* Subzone b | 5.25 |
| 0.46 | 14.55 | 16.3 | CN | LO | *P. lacunosa* | 5.38 |
| 0.65 | 15.43 | 18.3 | DIAT | TOP | *A. ingens* Subzone c | 1.05 |
| 0.78 | 18.6 | 24.89 | PMAG | BOT | C1n (Brunhes) | 5.07 |
| 0.88 | 27 | 29.51 | CN | LO | *R. asanoi* | 4.62 |
| 0.99 | 25 | 31.31 | PMAG | TOP | C1r.1n (Jaramillo) | 1.64 |
| 1.07 | 28.05 | 35.23 | PMAG | BOT | C1r.1n (Jaramillo) | 4.90 |
| 1.08 | 32.78 | 35.84 | CN | FO | *R. asanoi* | 6.10 |
| 1.24 | 33.53 | 37.14 | CN | LO | *Geph.* large (>5.5 µm) | 0.81 |
| 1.46 | 36.71 | 40.01 | CN | FO | *Geph.* large (>5.5 µm) | 1.30 |
| 1.60 | 39.65 | 42.81 | CN | LO | *C. macintyrei* | 2.00 |
| 1.77 | 35.65 | 43.7 | PMAG | TOP | C2n (Olduvai) | 0.52 |
| 1.80 | 41.45 | 44.91 | DIAT | TOP | *P. barboi* Zone | 4.03 |
| 1.95 | 37.9 | 45.95 | PMAG | BOT | C2n (Olduvai) | 0.69 |
| 2.00 | 39.8 | 47.97 | DIAT | TOP | *T. kolbei-F. matuyamae Z.* | 4.04 |
| 2.58 | 46.9 | 54.72 | PMAG | BOT | C2r (Matuyama) | 1.16 |
| 2.80 | 50.37 | 55.38 | DIAT | TOP | *T. insigna* Subzone a | 0.30 |
| 3.26 | 54.15 | 62.32 | DIAT | TOP | *F. interfrigidara* Zone | 1.51 |
| 3.80 | 63.9 | 67.46 | DIAT | BOT | *F. interfrigidara* Zone | 0.95 |
| 19.00 | 85.15 | 95.29 | DIAT | LO | *T. spumellaroides* | hiatus |
| 20.90 | 101.9 | 111.41 | DIAT | BOT | *T. fraga* Zone | 0.85 |
| 22.60 | 116.9 | 126.51 | DIAT | BOT | *T. spumellaroides* Zone | 0.89 |
| 25.50 | 150.56 | 157.63 | DIAT | LO | *R. vigilans* | 1.07 |
| 26.50 | 174.9 | 182.59 | DIAT | BOT | *R. gelida* Zone | 2.50 |
| 31.30 | 213.9 | 221.2 | CN | LO | *R. umbilica* | 0.80 |
| 31.80 | 214.08 | 221.93 | CN | LO | *I. recurvus* | 0.15 |
| 33.30 | 221.1 | 232.06 | CN | Acme | *Clausicoccus* spp. | 0.68 |
| 34.20 | 250.1 | 262.09 | CN | LO | *D. saipanensis* | 3.34 |
| 36.00 | 289.5 | 301.49 | CN | FO | *I. recurvus* | 2.19 |
| 38.00 | 349.12 | 361.11 | CN | FO | *R. bisecta* | 2.98 |
| 43.10 | 372.58 | 384.57 | CN | LO | *Nannotetrina* spp. | 0.46 |

Notes: Code abbreviations: DIAT = diatom, CN = calcareous nannofossil, PMAG = magnetic polarity, RAD = radiolarians. Event abbreviations: FO = first occurrence, LO = last occurrence, RE = reentrance, TOP = top of zone, BOT = bottom of zone. Shipboard age determinations taken from Gersonde, Hodell, Blum, et al., 1999.

**Table T2.** Original and averaged shipboard GRA bulk density values.

| Leg | Site | Hole | Core | Type | Section | Top (cm) | Depth (mbsf) | Depth (mcd) | GRA bulk density ($g/cm^3$) | GRA bulk density, 5-pt average ($g/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 177 | 1090 | B | 1 | H | 1 | 10 | 0.1 | 0.1 | 1.538 | |
| 177 | 1090 | B | 1 | H | 1 | 12 | 0.12 | 0.12 | 1.546 | |
| 177 | 1090 | B | 1 | H | 1 | 14 | 0.14 | 0.14 | 1.567 | 1.5558 |
| 177 | 1090 | B | 1 | H | 1 | 16 | 0.16 | 0.16 | 1.562 | 1.564 |
| 177 | 1090 | B | 1 | H | 1 | 18 | 0.18 | 0.18 | 1.566 | 1.57 |
| 177 | 1090 | B | 1 | H | 1 | 20 | 0.2 | 0.2 | 1.579 | 1.57 |
| 177 | 1090 | B | 1 | H | 1 | 22 | 0.22 | 0.22 | 1.576 | 1.5716 |
| 177 | 1090 | B | 1 | H | 1 | 24 | 0.24 | 0.24 | 1.567 | 1.5722 |
| 177 | 1090 | B | 1 | H | 1 | 26 | 0.26 | 0.26 | 1.570 | 1.5714 |
| 177 | 1090 | B | 1 | H | 1 | 28 | 0.28 | 0.28 | 1.569 | 1.5696 |
| 177 | 1090 | B | 1 | H | 1 | 30 | 0.3 | 0.3 | 1.575 | 1.573 |
| 177 | 1090 | B | 1 | H | 1 | 32 | 0.32 | 0.32 | 1.567 | 1.5752 |
| 177 | 1090 | B | 1 | H | 1 | 34 | 0.34 | 0.34 | 1.584 | 1.5756 |
| 177 | 1090 | B | 1 | H | 1 | 36 | 0.36 | 0.36 | 1.581 | 1.5476 |
| 177 | 1090 | B | 1 | H | 1 | 38 | 0.38 | 0.38 | 1.571 | 1.5508 |
| 177 | 1090 | D | 1 | H | 1 | 4 | 0.04 | 0.38 | 1.435 | 1.5212 |
| 177 | 1090 | B | 1 | H | 1 | 40 | 0.4 | 0.4 | 1.583 | 1.5196 |
| 177 | 1090 | D | 1 | H | 1 | 6 | 0.06 | 0.4 | 1.436 | 1.4964 |
| 177 | 1090 | B | 1 | H | 1 | 42 | 0.42 | 0.42 | 1.573 | 1.5248 |
| 177 | 1090 | D | 1 | H | 1 | 8 | 0.08 | 0.42 | 1.455 | 1.4984 |
| 177 | 1090 | B | 1 | H | 1 | 44 | 0.44 | 0.44 | 1.577 | 1.5296 |
| 177 | 1090 | D | 1 | H | 1 | 10 | 0.1 | 0.44 | 1.451 | 1.5108 |
| 177 | 1090 | B | 1 | H | 1 | 46 | 0.46 | 0.46 | 1.592 | 1.5318 |
| 177 | 1090 | D | 1 | H | 1 | 12 | 0.12 | 0.46 | 1.479 | 1.5202 |
| 177 | 1090 | B | 1 | H | 1 | 48 | 0.48 | 0.48 | 1.560 | 1.5412 |
| 177 | 1090 | D | 1 | H | 1 | 14 | 0.14 | 0.48 | 1.519 | 1.5188 |
| 177 | 1090 | B | 1 | H | 1 | 50 | 0.5 | 0.5 | 1.556 | 1.5344 |
| 177 | 1090 | D | 1 | H | 1 | 16 | 0.16 | 0.5 | 1.480 | 1.5286 |
| 177 | 1090 | B | 1 | H | 1 | 52 | 0.52 | 0.52 | 1.557 | 1.534 |
| 177 | 1090 | D | 1 | H | 1 | 18 | 0.18 | 0.52 | 1.531 | 1.5312 |
| 177 | 1090 | B | 1 | H | 1 | 54 | 0.54 | 0.54 | 1.546 | 1.5452 |
| 177 | 1090 | D | 1 | H | 1 | 20 | 0.2 | 0.54 | 1.542 | 1.5422 |
| 177 | 1090 | B | 1 | H | 1 | 56 | 0.56 | 0.56 | 1.550 | 1.5414 |
| 177 | 1090 | D | 1 | H | 1 | 22 | 0.22 | 0.56 | 1.542 | 1.54 |
| 177 | 1090 | B | 1 | H | 1 | 58 | 0.58 | 0.58 | 1.527 | 1.5294 |
| 177 | 1090 | D | 1 | H | 1 | 24 | 0.24 | 0.58 | 1.539 | 1.5272 |
| 177 | 1090 | B | 1 | H | 1 | 60 | 0.6 | 0.6 | 1.489 | 1.5162 |
| 177 | 1090 | D | 1 | H | 1 | 26 | 0.26 | 0.6 | 1.539 | 1.525 |
| 177 | 1090 | B | 1 | H | 1 | 62 | 0.62 | 0.62 | 1.487 | 1.5132 |
| 177 | 1090 | D | 1 | H | 1 | 28 | 0.28 | 0.62 | 1.571 | 1.52 |
| 177 | 1090 | B | 1 | H | 1 | 64 | 0.64 | 0.64 | 1.480 | 1.5024 |
| 177 | 1090 | D | 1 | H | 1 | 30 | 0.3 | 0.64 | 1.523 | 1.5114 |
| 177 | 1090 | B | 1 | H | 1 | 66 | 0.66 | 0.66 | 1.451 | 1.4884 |
| 177 | 1090 | D | 1 | H | 1 | 32 | 0.32 | 0.66 | 1.532 | 1.5002 |
| 177 | 1090 | B | 1 | H | 1 | 68 | 0.68 | 0.68 | 1.456 | 1.4898 |
| 177 | 1090 | D | 1 | H | 1 | 34 | 0.34 | 0.68 | 1.539 | 1.5086 |
| 177 | 1090 | B | 1 | H | 1 | 70 | 0.7 | 0.7 | 1.471 | 1.4878 |
| 177 | 1090 | D | 1 | H | 1 | 36 | 0.36 | 0.7 | 1.545 | 1.5024 |
| 177 | 1090 | B | 1 | H | 1 | 72 | 0.72 | 0.72 | 1.428 | 1.4786 |
| 177 | 1090 | D | 1 | H | 1 | 38 | 0.38 | 0.72 | 1.529 | 1.495 |
| 177 | 1090 | B | 1 | H | 1 | 74 | 0.74 | 0.74 | 1.420 | 1.4686 |
| 177 | 1090 | D | 1 | H | 1 | 40 | 0.4 | 0.74 | 1.553 | 1.4898 |
| 177 | 1090 | B | 1 | H | 1 | 76 | 0.76 | 0.76 | 1.413 | 1.4662 |
| 177 | 1090 | D | 1 | H | 1 | 42 | 0.42 | 0.76 | 1.534 | 1.495 |
| 177 | 1090 | B | 1 | H | 1 | 78 | 0.78 | 0.78 | 1.411 | 1.4666 |
| 177 | 1090 | D | 1 | H | 1 | 44 | 0.44 | 0.78 | 1.564 | 1.4922 |
| 177 | 1090 | B | 1 | H | 1 | 80 | 0.8 | 0.8 | 1.411 | 1.4592 |
| 177 | 1090 | D | 1 | H | 1 | 46 | 0.46 | 0.8 | 1.541 | 1.4864 |
| 177 | 1090 | B | 1 | H | 1 | 82 | 0.82 | 0.82 | 1.369 | 1.4522 |
| 177 | 1090 | D | 1 | H | 1 | 48 | 0.48 | 0.82 | 1.547 | 1.481 |
| 177 | 1090 | B | 1 | H | 1 | 84 | 0.84 | 0.84 | 1.393 | 1.4496 |
| 177 | 1090 | D | 1 | H | 1 | 50 | 0.5 | 0.84 | 1.555 | 1.4878 |
| 177 | 1090 | B | 1 | H | 1 | 86 | 0.86 | 0.86 | 1.384 | 1.4616 |
| 177 | 1090 | D | 1 | H | 1 | 52 | 0.52 | 0.86 | 1.560 | 1.4966 |

Notes: From Gersonde, Hodell, Blum, et al. (1999). Only a portion of this table appears here. The complete table is available in **ASCII format.**

**Table T3.** Shipboard dry density and water content values made on selected sediment core samples. (See table note. Continued on next two pages.)

| Core, section, interval (cm) | Depth (mbsf) | Depth (mcd) | Water content (bulk) | Water content (dry) | Bulk density (g/cm³) | Dry density (g/cm³) | Grain density (g/cm³) | Porosity (%) | Void Ratio |
|---|---|---|---|---|---|---|---|---|---|
| 177-1090B- | | | | | | | | | |
| 1H-1, 74-76 | 0.74 | 0.74 | 58.2 | 139.1 | 1.394 | 0.583 | 2.805 | 79.2 | 3.809 |
| 177-1090A- | | | | | | | | | |
| 1H-1, 90-92 | 0.9 | 0.9 | 48.3 | 93.5 | 1.494 | 0.772 | 2.616 | 70.5 | 2.388 |
| 177-1090B- | | | | | | | | | |
| 1H-2, 50-52 | 2 | 2 | 48.8 | 95.2 | 1.512 | 0.775 | 2.766 | 72 | 2.571 |
| 177-1090A- | | | | | | | | | |
| 1H-2, 92-94 | 2.42 | 2.42 | 57.3 | 134 | 1.397 | 0.597 | 2.728 | 78.1 | 3.569 |
| 177-1090B- | | | | | | | | | |
| 1H-3, 74-76 | 3.24 | 3.24 | 46.5 | 87 | 1.542 | 0.824 | 2.755 | 70.1 | 2.342 |
| 177-1090A- | | | | | | | | | |
| 1H-3, 74-76 | 3.74 | 3.74 | 47.5 | 90.6 | 1.524 | 0.8 | 2.734 | 70.8 | 2.42 |
| 177-1090B- | | | | | | | | | |
| 2H-1, 74-76 | 4.94 | 4.94 | 50.5 | 102.1 | 1.481 | 0.733 | 2.718 | 73 | 2.709 |
| 177-1090A- | | | | | | | | | |
| 1H-4, 72-74 | 5.22 | 5.22 | 45.8 | 84.7 | 1.538 | 0.833 | 2.672 | 68.8 | 2.209 |
| 177-1090B- | | | | | | | | | |
| 2H-2, 74-76 | 6.44 | 6.44 | 46.4 | 86.7 | 1.513 | 0.811 | 2.584 | 68.6 | 2.188 |
| 2H-3, 74-76 | 7.94 | 7.94 | 49.9 | 99.5 | 1.488 | 0.746 | 2.71 | 72.5 | 2.633 |
| 2H-4, 74-76 | 9.44 | 9.44 | 49 | 96.2 | 1.497 | 0.763 | 2.691 | 71.7 | 2.527 |
| 2H-5, 74-76 | 10.94 | 10.94 | 48 | 92.4 | 1.507 | 0.783 | 2.669 | 70.7 | 2.409 |
| 2H-6, 74-76 | 12.44 | 12.44 | 48.1 | 92.5 | 1.524 | 0.791 | 2.778 | 71.5 | 2.509 |
| 3H-1, 74-76 | 14.44 | 16.19 | 46.3 | 86.1 | 1.542 | 0.828 | 2.731 | 69.7 | 2.297 |
| 3H-1, 120-122 | 14.9 | 16.65 | 49.8 | 99.2 | 1.458 | 0.732 | 2.515 | 70.9 | 2.436 |
| 3H-2, 74-76 | 15.94 | 17.69 | 52.6 | 111.1 | 1.451 | 0.687 | 2.703 | 74.6 | 2.932 |
| 3H-3, 74-76 | 17.44 | 19.19 | 50.3 | 101.3 | 1.478 | 0.734 | 2.682 | 72.6 | 2.654 |
| 3H-4, 74-76 | 18.94 | 20.69 | 55.4 | 124 | 1.408 | 0.629 | 2.634 | 76.1 | 3.19 |
| 3H-5, 74-76 | 20.44 | 22.19 | 42.3 | 73.2 | 1.601 | 0.925 | 2.727 | 66.1 | 1.949 |
| 3H-6, 20-22 | 21.4 | 23.15 | 55.5 | 124.7 | 1.386 | 0.617 | 2.479 | 75.1 | 3.018 |
| 4H-2, 74-76 | 25.44 | 27.95 | 47.2 | 89.5 | 1.52 | 0.802 | 2.683 | 70.1 | 2.346 |
| 4H-3, 74-76 | 26.94 | 29.45 | 50.4 | 101.7 | 1.47 | 0.729 | 2.636 | 72.4 | 2.618 |
| 4H-3, 100-102 | 27.2 | 29.71 | 58.9 | 143.4 | 1.337 | 0.549 | 2.382 | 76.9 | 3.336 |
| 4H-4, 20-22 | 27.9 | 30.41 | 45.2 | 82.5 | 1.555 | 0.852 | 2.719 | 68.6 | 2.189 |
| 4H-5, 74-76 | 29.94 | 32.45 | 43.6 | 77.3 | 1.576 | 0.889 | 2.703 | 67.1 | 2.04 |
| 4H-6, 74-76 | 31.44 | 33.95 | 44.1 | 79 | 1.565 | 0.874 | 2.687 | 67.5 | 2.073 |
| 5H-2, 74-76 | 34.94 | 38.55 | 43.5 | 76.9 | 1.573 | 0.889 | 2.678 | 66.8 | 2.012 |
| 5H-3, 74-76 | 36.44 | 40.05 | 44.8 | 81.3 | 1.56 | 0.86 | 2.717 | 68.3 | 2.158 |
| 5H-4, 74-76 | 37.64 | 41.25 | 52.9 | 112.3 | 1.421 | 0.669 | 2.514 | 73.4 | 2.757 |
| 5H-5, 74-76 | 39.14 | 42.75 | 51.6 | 106.6 | 1.459 | 0.706 | 2.668 | 73.5 | 2.778 |
| 5H-6, 74-76 | 40.64 | 44.25 | 42.6 | 74.3 | 1.588 | 0.911 | 2.689 | 66.1 | 1.951 |
| 6H-1, 74-76 | 42.94 | 46.55 | 44.8 | 81 | 1.565 | 0.865 | 2.738 | 68.4 | 2.167 |
| 6H-2, 74-76 | 44.44 | 48.05 | 41.5 | 71 | 1.615 | 0.944 | 2.737 | 65.5 | 1.898 |
| 6H-3, 74-76 | 45.94 | 49.55 | 45.2 | 82.5 | 1.524 | 0.835 | 2.554 | 67.3 | 2.057 |
| 6H-4, 74-76 | 47.44 | 51.05 | 50.6 | 102.4 | 1.47 | 0.726 | 2.657 | 72.7 | 2.659 |
| 6H-5, 74-76 | 48.94 | 52.55 | 44.8 | 81.1 | 1.552 | 0.857 | 2.665 | 67.8 | 2.11 |
| 6H-6, 74-76 | 50.44 | 54.05 | 47.3 | 89.7 | 1.495 | 0.788 | 2.544 | 69 | 2.228 |
| 7H-2, 74-76 | 53.94 | 60.24 | 39.6 | 65.7 | 1.607 | 0.97 | 2.566 | 62.2 | 1.647 |
| 7H-3, 74-76 | 55.44 | 61.74 | 40.5 | 68 | 1.627 | 0.969 | 2.716 | 64.3 | 1.804 |
| 7H-4, 74-76 | 56.94 | 63.24 | 42.1 | 72.8 | 1.595 | 0.923 | 2.687 | 65.7 | 1.911 |
| 7H-5, 74-76 | 58.44 | 64.74 | 38.6 | 62.8 | 1.653 | 1.016 | 2.69 | 62.2 | 1.649 |
| 8H-1, 74-76 | 61.94 | 65.65 | 46.2 | 85.8 | 1.531 | 0.824 | 2.66 | 69 | 2.228 |
| 8H-2, 22-24 | 62.92 | 66.63 | 46.4 | 86.6 | 1.529 | 0.819 | 2.67 | 69.3 | 2.258 |
| 8H-2, 122-124 | 63.92 | 67.63 | 44.6 | 80.6 | 1.558 | 0.862 | 2.687 | 67.9 | 2.116 |
| 8H-3, 74-76 | 64.94 | 68.65 | 42.9 | 75 | 1.561 | 0.892 | 2.572 | 65.3 | 1.885 |
| 8H-4, 74-76 | 66.44 | 70.15 | 66.4 | 197.9 | 1.288 | 0.433 | 2.636 | 83.6 | 5.093 |
| 8H-4, 124-126 | 66.94 | 70.65 | 53.8 | 116.4 | 1.442 | 0.667 | 2.748 | 75.7 | 3.123 |
| 8H-5, 74-76 | 67.94 | 71.65 | 61.4 | 159.4 | 1.327 | 0.511 | 2.508 | 79.6 | 3.903 |
| 9H-3, 94-96 | 74.64 | 78.33 | 56.6 | 130.3 | 1.401 | 0.608 | 2.692 | 77.4 | 3.426 |
| 9H-4, 74-76 | 75.94 | 79.63 | 53.9 | 116.8 | 1.423 | 0.657 | 2.612 | 74.9 | 2.978 |
| 9H-5, 74-76 | 77.44 | 81.13 | 52.9 | 112.1 | 1.456 | 0.687 | 2.765 | 75.2 | 3.028 |
| 9H-6, 74-76 | 78.94 | 82.63 | 59 | 144.1 | 1.374 | 0.563 | 2.71 | 79.2 | 3.813 |
| 10H-1, 122-124 | 81.42 | 85.99 | 49.1 | 96.3 | 1.5 | 0.764 | 2.714 | 71.8 | 2.552 |
| 10H-2, 22-24 | 81.92 | 86.49 | 57 | 132.7 | 1.369 | 0.588 | 2.478 | 76.3 | 3.213 |

**Table T3 (continued).**

| Core, section, interval (cm) | Depth (mbsf) | Depth (mcd) | Water content (bulk) | Water content (dry) | Bulk density ($g/cm^3$) | Dry density ($g/cm^3$) | Grain density ($g/cm^3$) | Porosity (%) | Void Ratio |
|---|---|---|---|---|---|---|---|---|---|
| 177-1090B- | | | | | | | | | |
| 10H-2, 72-74 | 82.42 | 86.99 | 47.3 | 89.7 | 1.531 | 0.807 | 2.754 | 70.7 | 2.411 |
| 10H-3, 74-76 | 83.94 | 88.51 | 54 | 117.6 | 1.426 | 0.655 | 2.646 | 75.2 | 3.038 |
| 10H-4, 74-76 | 85.44 | 90.01 | 59 | 143.9 | 1.368 | 0.561 | 2.645 | 78.8 | 3.719 |
| 10H-5, 74-76 | 86.94 | 91.51 | 53.1 | 113.4 | 1.427 | 0.669 | 2.576 | 74 | 2.852 |
| 11H-1, 110-112 | 90.8 | 94.79 | 54.3 | 119 | 1.434 | 0.654 | 2.737 | 76.1 | 3.182 |
| 11H-2, 74-76 | 91.94 | 95.93 | 57.5 | 135.3 | 1.385 | 0.588 | 2.646 | 77.8 | 3.496 |
| 11H-3, 74-76 | 93.44 | 97.43 | 58.7 | 142.4 | 1.369 | 0.565 | 2.627 | 78.5 | 3.653 |
| 11H-4, 74-76 | 94.94 | 98.93 | 55 | 122.3 | 1.398 | 0.629 | 2.529 | 75.1 | 3.021 |
| 11H-5, 22-24 | 95.92 | 99.91 | 54.9 | 121.5 | 1.419 | 0.641 | 2.673 | 76 | 3.172 |
| 11H-6, 18-20 | 96.78 | 100.77 | 60.8 | 155.2 | 1.343 | 0.527 | 2.603 | 79.8 | 3.944 |
| 11H-7, 46-48 | 98.56 | 102.55 | 50.2 | 101 | 1.476 | 0.734 | 2.661 | 72.4 | 2.624 |
| 12H-1, 74-76 | 99.94 | 103.61 | 43 | 75.5 | 1.553 | 0.885 | 2.545 | 65.2 | 1.875 |
| 12H-2, 74-76 | 101.44 | 105.11 | 48.1 | 92.6 | 1.503 | 0.781 | 2.653 | 70.6 | 2.399 |
| 12H-3, 74-76 | 102.94 | 106.61 | 44.5 | 80 | 1.56 | 0.867 | 2.687 | 67.7 | 2.101 |
| 12H-4, 74-76 | 104.44 | 108.11 | 44.4 | 80 | 1.556 | 0.864 | 2.663 | 67.5 | 2.081 |
| 12H-5, 74-76 | 105.94 | 109.61 | 42.2 | 72.9 | 1.568 | 0.906 | 2.558 | 64.6 | 1.822 |
| 12H-6, 74-76 | 107.44 | 111.11 | 52.2 | 109.1 | 1.447 | 0.692 | 2.632 | 73.7 | 2.803 |
| 13H-1, 74-76 | 109.44 | 114.85 | 58.2 | 139.4 | 1.369 | 0.572 | 2.578 | 77.8 | 3.51 |
| 13H-2, 74-76 | 110.94 | 116.35 | 61.9 | 162.7 | 1.324 | 0.504 | 2.535 | 80.1 | 4.027 |
| 13H-3, 74-76 | 112.44 | 117.85 | 62.3 | 165.4 | 1.3 | 0.49 | 2.351 | 79.2 | 3.798 |
| 13H-4, 74-76 | 113.94 | 119.35 | 57.9 | 137.5 | 1.375 | 0.579 | 2.604 | 77.8 | 3.496 |
| 13H-5, 74-76 | 115.44 | 120.85 | 62.1 | 163.9 | 1.321 | 0.501 | 2.522 | 80.1 | 4.037 |
| 13H-6, 50-52 | 116.7 | 122.11 | 58.2 | 139 | 1.368 | 0.572 | 2.569 | 77.7 | 3.488 |
| 14H-2, 74-76 | 120.44 | 124.09 | 60.3 | 151.7 | 1.328 | 0.528 | 2.419 | 78.2 | 3.584 |
| 14H-3, 74-76 | 121.94 | 125.59 | 53.7 | 115.9 | 1.431 | 0.663 | 2.65 | 75 | 2.999 |
| 14H-4, 74-76 | 123.44 | 127.09 | 58.8 | 142.8 | 1.362 | 0.561 | 2.577 | 78.2 | 3.595 |
| 14H-5, 74-76 | 124.94 | 128.59 | 62.8 | 168.6 | 1.316 | 0.49 | 2.531 | 80.6 | 4.167 |
| 14H-6, 74-76 | 126.44 | 130.09 | 53.9 | 117 | 1.399 | 0.645 | 2.445 | 73.6 | 2.794 |
| 15H-1, 120-122 | 128.9 | 135.39 | 60.3 | 152 | 1.348 | 0.535 | 2.596 | 79.4 | 3.854 |
| 15H-2, 74-76 | 129.94 | 136.43 | 56.2 | 128.5 | 1.396 | 0.611 | 2.614 | 76.6 | 3.28 |
| 15H-3, 74-76 | 131.44 | 137.93 | 55.8 | 126.4 | 1.4 | 0.618 | 2.612 | 76.3 | 3.223 |
| 15H-4, 74-76 | 132.94 | 139.43 | 43.2 | 76.2 | 1.553 | 0.881 | 2.558 | 65.5 | 1.902 |
| 15H-5, 74-76 | 134.44 | 140.93 | 47.2 | 89.3 | 1.52 | 0.803 | 2.679 | 70 | 2.336 |
| 16H-1, 74-76 | 137.94 | 144.59 | 54.7 | 120.7 | 1.417 | 0.642 | 2.641 | 75.7 | 3.112 |
| 16H-2, 120-122 | 139.9 | 146.55 | 57.6 | 135.9 | 1.377 | 0.584 | 2.592 | 77.5 | 3.442 |
| 16H-3, 74-76 | 140.94 | 147.59 | 52.9 | 112.5 | 1.414 | 0.665 | 2.471 | 73.1 | 2.713 |
| 16H-4, 74-76 | 142.44 | 149.09 | 49.3 | 97.3 | 1.487 | 0.754 | 2.657 | 71.6 | 2.524 |
| 16H-5, 74-76 | 143.94 | 150.59 | 56.9 | 132 | 1.377 | 0.594 | 2.528 | 76.5 | 3.258 |
| 16H-6, 22-24 | 144.92 | 151.57 | 60.9 | 155.9 | 1.326 | 0.518 | 2.456 | 78.9 | 3.74 |
| 17H-1, 122-124 | 147.92 | 155.42 | 54.2 | 118.1 | 1.423 | 0.652 | 2.634 | 75.2 | 3.039 |
| 17H-2, 74-76 | 148.94 | 156.44 | 55.2 | 123.4 | 1.405 | 0.629 | 2.601 | 75.8 | 3.135 |
| 17H-3, 74-76 | 150.44 | 157.94 | 51.5 | 106 | 1.466 | 0.711 | 2.7 | 73.7 | 2.796 |
| 17H-4, 74-76 | 151.94 | 159.44 | 57 | 132.5 | 1.37 | 0.589 | 2.482 | 76.3 | 3.211 |
| 17H-5, 34-36 | 153.04 | 160.54 | 57.1 | 133 | 1.369 | 0.588 | 2.48 | 76.3 | 3.22 |
| 18H-1, 122-124 | 157.42 | 165.2 | 59.2 | 145.4 | 1.362 | 0.555 | 2.615 | 78.8 | 3.712 |
| 18H-2, 22-24 | 157.92 | 165.7 | 56.2 | 128.1 | 1.397 | 0.613 | 2.619 | 76.6 | 3.276 |
| 18H-2, 74-76 | 158.44 | 166.22 | 56.5 | 129.6 | 1.384 | 0.603 | 2.542 | 76.3 | 3.219 |
| 18H-3, 22-24 | 159.42 | 167.2 | 57.9 | 137.3 | 1.345 | 0.567 | 2.361 | 76 | 3.165 |
| 18H-4, 72-74 | 161.42 | 169.2 | 57.1 | 133.2 | 1.383 | 0.593 | 2.595 | 77.1 | 3.375 |
| 18H-5, 74-76 | 162.94 | 170.72 | 58.7 | 142 | 1.363 | 0.563 | 2.576 | 78.1 | 3.572 |
| 18H-6, 74-76 | 164.44 | 172.22 | 58.3 | 139.9 | 1.359 | 0.566 | 2.505 | 77.4 | 3.422 |
| 19H-1, 60-62 | 166.3 | 175.79 | 60.5 | 153.4 | 1.328 | 0.524 | 2.44 | 78.5 | 3.656 |
| 19H-2, 74-76 | 167.94 | 177.43 | 60.9 | 155.6 | 1.318 | 0.515 | 2.379 | 78.3 | 3.615 |
| 19H-3, 86-88 | 169.56 | 179.05 | 49.5 | 98.2 | 1.476 | 0.745 | 2.607 | 71.4 | 2.499 |
| 19H-4, 72-74 | 170.92 | 180.41 | 58.1 | 138.4 | 1.357 | 0.569 | 2.47 | 77 | 3.34 |
| 19H-5, 72-74 | 172.42 | 181.91 | 57 | 132.7 | 1.376 | 0.591 | 2.53 | 76.6 | 3.28 |
| 20H-1, 72-74 | 175.92 | 183.53 | 58.8 | 142.9 | 1.355 | 0.558 | 2.518 | 77.8 | 3.514 |
| 20H-2, 122-124 | 177.92 | 185.53 | 58.4 | 140.5 | 1.357 | 0.565 | 2.502 | 77.4 | 3.432 |
| 20H-3, 74-76 | 178.94 | 186.55 | 59.1 | 144.8 | 1.334 | 0.545 | 2.373 | 77 | 3.356 |
| 20H-4, 74-76 | 180.44 | 188.05 | 60.3 | 152.1 | 1.327 | 0.526 | 2.411 | 78.2 | 3.581 |
| 20H-5, 74-76 | 181.94 | 189.55 | 56.3 | 128.8 | 1.383 | 0.605 | 2.523 | 76 | 3.172 |
| 20H-6, 74-76 | 183.44 | 191.05 | 55.6 | 125.1 | 1.36 | 0.604 | 2.303 | 73.8 | 2.813 |
| 21X-1, 74-76 | 185.44 | 193.49 | 63.5 | 174.2 | 1.275 | 0.465 | 2.227 | 79.1 | 3.787 |
| 21X-2, 50-52 | 186.7 | 194.75 | 67 | 202.6 | 1.244 | 0.411 | 2.205 | 81.4 | 4.362 |
| 21X-2, 120-122 | 187.4 | 195.45 | 59.9 | 149.2 | 1.338 | 0.537 | 2.462 | 78.2 | 3.586 |
| 21X-3, 74-76 | 188.44 | 196.49 | 59.4 | 146.5 | 1.341 | 0.544 | 2.456 | 77.8 | 3.514 |
| 21X-4, 74-76 | 189.94 | 197.99 | 60.3 | 151.8 | 1.334 | 0.53 | 2.465 | 78.5 | 3.655 |

**Table T3 (continued).**

| Core, section, interval (cm) | Depth (mbsf) | Depth (mcd) | Water content (bulk) | Water content (dry) | Bulk density ($g/cm^3$) | Dry density ($g/cm^3$) | Grain density ($g/cm^3$) | Porosity (%) | Void Ratio |
|---|---|---|---|---|---|---|---|---|---|
| 177-1090B- | | | | | | | | | |
| 21X-5, 74-76 | 191.44 | 199.49 | 61.9 | 162.8 | 1.307 | 0.497 | 2.378 | 79.1 | 3.781 |
| 21X-6, 74-76 | 192.94 | 200.99 | 56.9 | 132.1 | 1.356 | 0.584 | 2.374 | 75.4 | 3.063 |
| 22X-1, 74-76 | 195.14 | 202.75 | 62 | 163.1 | 1.292 | 0.491 | 2.253 | 78.2 | 3.59 |
| 22X-2, 74-76 | 196.64 | 204.25 | 56.5 | 129.8 | 1.383 | 0.602 | 2.54 | 76.3 | 3.22 |
| 22X-3, 74-76 | 198.14 | 205.75 | 62.3 | 165 | 1.312 | 0.495 | 2.447 | 79.8 | 3.942 |
| 22X-4, 74-76 | 199.64 | 207.25 | 64.9 | 184.8 | 1.278 | 0.449 | 2.355 | 81 | 4.25 |
| 22X-5, 74-76 | 201.14 | 208.75 | 69.9 | 232.1 | 1.206 | 0.363 | 2.049 | 82.3 | 4.644 |
| 22X-6, 74-76 | 202.64 | 210.25 | 62.5 | 166.8 | 1.316 | 0.493 | 2.506 | 80.3 | 4.082 |
| 23X-1, 74-76 | 204.84 | 213.24 | 57.5 | 135.3 | 1.388 | 0.59 | 2.672 | 77.9 | 3.529 |
| 23X-3, 74-76 | 207.84 | 216.24 | 49.6 | 98.4 | 1.478 | 0.745 | 2.624 | 71.6 | 2.521 |
| 23X-5, 74-76 | 209.74 | 218.14 | 49 | 96.1 | 1.491 | 0.761 | 2.655 | 71.3 | 2.49 |
| 23X-7, 74-76 | 212.74 | 221.14 | 51.3 | 105.2 | 1.451 | 0.707 | 2.584 | 72.6 | 2.653 |
| 26X-3, 21-23 | 236.41 | 248.4 | 62.9 | 169.3 | 1.312 | 0.487 | 2.504 | 80.5 | 4.141 |
| 26X-5, 22-24 | 239.42 | 251.41 | 59.5 | 146.7 | 1.358 | 0.55 | 2.601 | 78.8 | 3.727 |
| 26X-7, 16-18 | 242.36 | 254.35 | 65.3 | 187.9 | 1.277 | 0.444 | 2.389 | 81.4 | 4.383 |
| 27X-1, 96-98 | 243.86 | 255.85 | 62.2 | 164.5 | 1.308 | 0.494 | 2.402 | 79.4 | 3.858 |
| 27X-2, 97-99 | 245.37 | 257.36 | 57.9 | 137.6 | 1.368 | 0.576 | 2.545 | 77.4 | 3.421 |
| 27X-4, 100-102 | 248.4 | 260.39 | 58.1 | 138.9 | 1.374 | 0.575 | 2.617 | 78 | 3.551 |
| 28X-3, 28-30 | 255.88 | 267.87 | 58.2 | 139.4 | 1.372 | 0.573 | 2.612 | 78.1 | 3.556 |
| 28X-4, 92-94 | 258.02 | 270.01 | 67.5 | 207.6 | 1.257 | 0.409 | 2.381 | 82.8 | 4.829 |
| 28X-7, 34-36 | 261.94 | 273.93 | 71 | 244.3 | 1.236 | 0.359 | 2.495 | 85.6 | 5.951 |
| 29X-1, 44-46 | 262.74 | 274.73 | 66.5 | 198.2 | 1.268 | 0.425 | 2.402 | 82.3 | 4.647 |
| 29X-3, 21-23 | 265.51 | 277.5 | 73.6 | 278.7 | 1.204 | 0.318 | 2.362 | 86.5 | 6.428 |
| 29X-5, 108-110 | 269.38 | 281.37 | 67.9 | 211.3 | 1.259 | 0.404 | 2.439 | 83.4 | 5.033 |
| 30X-1, 124-126 | 273.24 | 285.23 | 59.5 | 146.8 | 1.37 | 0.555 | 2.719 | 79.6 | 3.899 |
| 30X-3, 20-22 | 275.2 | 287.19 | 66.7 | 200.5 | 1.259 | 0.419 | 2.334 | 82.1 | 4.571 |
| 30X-6, 30-32 | 279.8 | 291.79 | 61.7 | 161.4 | 1.318 | 0.504 | 2.458 | 79.5 | 3.875 |
| 30X-6, 122-124 | 280.72 | 292.71 | 70.5 | 239.2 | 1.231 | 0.363 | 2.379 | 84.7 | 5.556 |
| 31X-3, 65-67 | 285.35 | 297.34 | 55.9 | 126.7 | 1.392 | 0.614 | 2.559 | 76 | 3.167 |
| 31X-4, 72-74 | 286.92 | 298.91 | 60.9 | 156 | | | | | |

Note: From Gersonde, Hodell, Blum, et al. (1999).

**Table T4.** Shipboard spectral reflectance values given as percent reflectance in 100-nm intervals.

| Site | Hole | Core | Type | Section | Interval (cm) Top | Interval (cm) Bottom | Depth (mbsf) | Depth (mcd) | Age (Ma) | 250–350 nm | 450–550 nm | 650–750 nm | 850–950 nm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1090 | A | 1 | H | 1 | 5 | 7 | 0.06 | 0.06 | 0.1516 | 61.53 | 23.07 | 55.46 | 63.34 |
| 1090 | A | 1 | H | 1 | 9 | 11 | 0.1 | 0.1 | 0.1524 | –9.99 | 37.83 | 54.5 | 63.16 |
| 1090 | A | 1 | H | 1 | 13 | 15 | 0.14 | 0.14 | 0.1531 | 41.52 | 39.83 | 42.79 | 63.8 |
| 1090 | A | 1 | H | 1 | 17 | 19 | 0.18 | 0.18 | 0.1539 | 42.37 | 38.91 | 56.68 | 65.4 |
| 1090 | A | 1 | H | 1 | 21 | 23 | 0.22 | 0.22 | 0.1547 | –9.99 | 39.71 | 57.21 | 65.39 |
| 1090 | A | 1 | H | 1 | 25 | 27 | 0.26 | 0.26 | 0.1554 | 63.35 | 41.39 | 44.74 | 66.74 |
| 1090 | A | 1 | H | 1 | 29 | 31 | 0.3 | 0.3 | 0.1562 | 36.99 | 39.31 | 57.26 | 65.82 |
| 1090 | A | 1 | H | 1 | 33 | 35 | 0.34 | 0.34 | 0.1570 | 80.25 | 45.4 | 66.59 | 76.41 |
| 1090 | A | 1 | H | 1 | 37 | 39 | 0.38 | 0.38 | 0.1577 | 38.01 | 38.37 | 55.36 | 63.84 |
| 1090 | A | 1 | H | 1 | 41 | 43 | 0.42 | 0.42 | 0.1585 | 68.52 | 47.94 | 67.95 | 76.09 |
| 1090 | A | 1 | H | 1 | 45 | 47 | 0.46 | 0.46 | 0.1592 | 47.39 | 21.46 | 41.26 | 61.43 |
| 1090 | A | 1 | H | 1 | 49 | 51 | 0.5 | 0.5 | 0.1600 | 53.86 | 43.38 | 64.46 | 74.47 |
| 1090 | A | 1 | H | 1 | 53 | 55 | 0.54 | 0.54 | 0.1608 | 47.67 | 32.4 | 49.75 | 58.52 |
| 1090 | A | 1 | H | 1 | 57 | 59 | 0.58 | 0.58 | 0.1615 | 53.72 | 33.89 | 49.77 | 57.72 |
| 1090 | A | 1 | H | 1 | 61 | 63 | 0.62 | 0.62 | 0.1623 | 49.91 | 41.82 | 46.76 | 68.97 |
| 1090 | A | 1 | H | 1 | 65 | 67 | 0.66 | 0.66 | 0.1630 | 67.14 | 35.78 | 52.1 | 59.72 |
| 1090 | A | 1 | H | 1 | 69 | 71 | 0.7 | 0.7 | 0.1638 | 52.43 | 39.3 | 54.84 | 63.02 |
| 1090 | A | 1 | H | 1 | 73 | 75 | 0.74 | 0.74 | 0.1646 | 40.86 | 41.65 | 56.67 | 65 |
| 1090 | A | 1 | H | 1 | 77 | 79 | 0.78 | 0.78 | 0.1653 | 45.91 | 42.65 | 57.97 | 64.37 |
| 1090 | A | 1 | H | 1 | 81 | 83 | 0.82 | 0.82 | 0.1661 | 71.78 | 38.35 | 58.9 | 68.97 |
| 1090 | A | 1 | H | 1 | 85 | 87 | 0.86 | 0.86 | 0.1669 | 48.94 | 37.77 | 55.93 | 64.48 |
| 1090 | A | 1 | H | 1 | 89 | 91 | 0.9 | 0.9 | 0.1676 | 68.51 | 37.24 | 55.85 | 65.78 |
| 1090 | A | 1 | H | 1 | 93 | 95 | 0.94 | 0.94 | 0.1684 | 59.63 | 32.16 | 51.67 | 61.38 |
| 1090 | A | 1 | H | 1 | 97 | 99 | 0.98 | 0.98 | 0.1691 | 59.33 | 32.16 | 49.31 | 58.76 |
| 1090 | A | 1 | H | 1 | 101 | 103 | 1.02 | 1.02 | 0.1699 | 29.4 | 42.48 | 62.97 | 71.92 |
| 1090 | A | 1 | H | 1 | 105 | 107 | 1.06 | 1.06 | 0.1707 | 64.54 | 34.44 | 52.84 | 61.11 |
| 1090 | A | 1 | H | 1 | 109 | 111 | 1.1 | 1.1 | 0.1714 | 31.65 | 37.98 | 57.46 | 65.9 |
| 1090 | A | 1 | H | 1 | 113 | 115 | 1.14 | 1.14 | 0.1722 | 23.56 | 36.23 | 54.13 | 61.54 |
| 1090 | A | 1 | H | 1 | 117 | 119 | 1.18 | 1.18 | 0.1730 | 38.92 | 31.7 | 51.12 | 59.69 |
| 1090 | A | 1 | H | 1 | 121 | 123 | 1.22 | 1.22 | 0.1737 | 35.94 | 30.48 | 49.05 | 57.84 |
| 1090 | A | 1 | H | 1 | 125 | 127 | 1.26 | 1.26 | 0.1745 | 47.88 | 32.49 | 51.4 | 50.16 |
| 1090 | A | 1 | H | 1 | 129 | 131 | 1.3 | 1.3 | 0.1752 | 19.31 | 22.75 | 41.23 | 49.86 |
| 1090 | A | 1 | H | 1 | 133 | 135 | 1.34 | 1.34 | 0.1760 | 51.62 | 22.63 | 41.4 | 50.45 |
| 1090 | A | 1 | H | 1 | 137 | 139 | 1.38 | 1.38 | 0.1768 | 36.9 | 25.57 | 45.94 | 54.83 |
| 1090 | A | 1 | H | 1 | 141 | 143 | 1.42 | 1.42 | 0.1775 | 60.51 | 25.98 | 43.09 | 50.16 |
| 1090 | A | 1 | H | 1 | 145 | 147 | 1.46 | 1.46 | 0.1783 | 66.11 | 28.16 | 45.05 | 51.25 |
| 1090 | A | 1 | H | 1 | 147 | 149 | 1.48 | 1.48 | 0.1787 | –9.99 | 30.89 | 46.93 | 52.48 |
| 1090 | A | 1 | H | 2 | 5 | 7 | 1.56 | 1.56 | 0.1802 | 52.97 | 27.34 | 42.19 | 47.79 |
| 1090 | A | 1 | H | 2 | 9 | 11 | 1.6 | 1.6 | 0.1810 | 20.24 | 28.1 | 43.93 | 49.52 |
| 1090 | A | 1 | H | 2 | 13 | 15 | 1.64 | 1.64 | 0.1817 | 48.94 | 21.42 | 40.6 | 46.58 |
| 1090 | A | 1 | H | 2 | 17 | 19 | 1.68 | 1.68 | 0.1825 | 36.8 | 23.67 | 37.85 | 42.89 |
| 1090 | A | 1 | H | 2 | 21 | 23 | 1.72 | 1.72 | 0.1832 | 47.09 | 26.88 | 44.42 | 50.07 |
| 1090 | A | 1 | H | 2 | 25 | 27 | 1.76 | 1.76 | 0.1840 | 52.56 | 11.47 | 36.97 | 43.62 |
| 1090 | A | 1 | H | 2 | 29 | 31 | 1.8 | 1.8 | 0.1848 | 72.4 | 25.92 | 28.72 | 44.97 |
| 1090 | A | 1 | H | 2 | 33 | 35 | 1.84 | 1.84 | 0.1855 | 42.37 | 21.52 | 25.81 | 41.73 |
| 1090 | A | 1 | H | 2 | 37 | 39 | 1.88 | 1.88 | 0.1863 | 23.56 | 21.6 | 24.04 | 38.96 |
| 1090 | A | 1 | H | 2 | 41 | 43 | 1.92 | 1.92 | 0.1870 | 53.86 | 20.49 | 32.54 | 39.35 |
| 1090 | A | 1 | H | 2 | 45 | 47 | 1.96 | 1.96 | 0.1878 | 33.52 | 22.84 | 36.29 | 43.76 |
| 1090 | A | 1 | H | 2 | 49 | 51 | 2 | 2 | 0.1886 | 27.48 | 19.89 | 23.74 | 38.81 |
| 1090 | A | 1 | H | 2 | 53 | 55 | 2.04 | 2.04 | 0.1893 | 41.89 | 18.63 | 30.23 | 29.83 |
| 1090 | A | 1 | H | 2 | 57 | 59 | 2.08 | 2.08 | 0.1901 | 53.47 | 19.47 | 25.68 | 26.03 |
| 1090 | A | 1 | H | 2 | 61 | 63 | 2.12 | 2.12 | 0.1909 | 50 | 21.91 | 26.74 | 25.97 |
| 1090 | A | 1 | H | 2 | 65 | 67 | 2.16 | 2.16 | 0.1916 | 69.95 | 19.5 | 24.37 | 24.05 |
| 1090 | A | 1 | H | 2 | 69 | 71 | 2.2 | 2.2 | 0.1924 | –104.02 | 19.56 | 23.83 | 24.18 |
| 1090 | A | 1 | H | 2 | 73 | 75 | 2.24 | 2.24 | 0.1931 | 44.51 | 25.97 | 32.2 | 33.72 |
| 1090 | A | 1 | H | 2 | 77 | 79 | 2.28 | 2.28 | 0.1939 | 14.56 | 19.58 | 24.66 | 25.06 |
| 1090 | A | 1 | H | 2 | 81 | 83 | 2.32 | 2.32 | 0.1947 | 5.32 | 24.49 | 31.38 | 31.13 |
| 1090 | A | 1 | H | 2 | 85 | 87 | 2.36 | 2.36 | 0.1954 | 31.65 | 20.8 | 25.64 | 25.43 |
| 1090 | A | 1 | H | 2 | 89 | 91 | 2.4 | 2.4 | 0.1962 | –2.83 | 21.18 | 26.78 | 26.93 |
| 1090 | A | 1 | H | 2 | 93 | 95 | 2.44 | 2.44 | 0.1970 | 63.11 | 23.81 | 22.67 | 29.18 |
| 1090 | A | 1 | H | 2 | 97 | 99 | 2.48 | 2.48 | 0.1977 | 45.98 | 22.57 | 26.3 | 25.53 |
| 1090 | A | 1 | H | 2 | 101 | 103 | 2.52 | 2.52 | 0.1985 | 38.92 | 21.88 | 27.99 | 28.72 |

Notes: From Gersonde, Hodell, Blum, et al. (1999). Only a portion of this table appears here. The complete table is available in **ASCII format.**

**Table T5.** Weight percent $CaCO_3$ values.

| Leg | Site Hole | | Core | Type | Section | Interval (cm) Top | Interval (cm) Bottom | Depth (mbsf) | Depth (mcd) | Age (Ma) | $CaCO_3$ (wt%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 177 | 1090 | B | 1 | H | 1 | 74 | 75 | 0.74 | 0.74 | 0.165 | 52.3 |
| 177 | 1090 | D | 1 | H | 2 | 33 | 34 | 1.83 | 2.17 | 0.192 | 61.004 |
| 177 | 1090 | D | 1 | H | 2 | 37 | 38 | 1.87 | 2.21 | 0.193 | 60.051 |
| 177 | 1090 | D | 1 | H | 2 | 41 | 42 | 1.91 | 2.25 | 0.193 | 65.143 |
| 177 | 1090 | D | 1 | H | 2 | 45 | 46 | 1.95 | 2.29 | 0.194 | 67.416 |
| 177 | 1090 | D | 1 | H | 2 | 49 | 50 | 1.99 | 2.33 | 0.195 | 68.923 |
| 177 | 1090 | D | 1 | H | 2 | 53 | 54 | 2.03 | 2.37 | 0.196 | 71.686 |
| 177 | 1090 | D | 1 | H | 2 | 57 | 58 | 2.07 | 2.41 | 0.196 | 78.198 |
| 177 | 1090 | D | 1 | H | 2 | 61 | 62 | 2.11 | 2.45 | 0.197 | 77.714 |
| 177 | 1090 | D | 1 | H | 2 | 65 | 66 | 2.15 | 2.49 | 0.198 | 78.546 |
| 177 | 1090 | D | 1 | H | 2 | 69 | 70 | 2.19 | 2.53 | 0.199 | 80.065 |
| 177 | 1090 | D | 1 | H | 2 | 73 | 74 | 2.23 | 2.57 | 0.199 | 80.953 |
| 177 | 1090 | D | 1 | H | 2 | 77 | 78 | 2.27 | 2.61 | 0.200 | 82.049 |
| 177 | 1090 | D | 1 | H | 2 | 81 | 82 | 2.31 | 2.65 | 0.201 | 82.021 |
| 177 | 1090 | D | 1 | H | 2 | 85 | 86 | 2.35 | 2.69 | 0.202 | 87.267 |
| 177 | 1090 | D | 1 | H | 2 | 89 | 90 | 2.39 | 2.73 | 0.202 | 87.395 |
| 177 | 1090 | D | 1 | H | 2 | 93 | 94 | 2.43 | 2.77 | 0.203 | 85.878 |
| 177 | 1090 | D | 1 | H | 2 | 97 | 98 | 2.47 | 2.81 | 0.204 | 77.800 |
| 177 | 1090 | D | 1 | H | 2 | 101 | 102 | 2.51 | 2.85 | 0.205 | 86.120 |
| 177 | 1090 | D | 1 | H | 2 | 105 | 106 | 2.55 | 2.89 | 0.206 | 81.670 |
| 177 | 1090 | D | 1 | H | 2 | 109 | 110 | 2.59 | 2.93 | 0.206 | 76.784 |
| 177 | 1090 | D | 1 | H | 2 | 113 | 114 | 2.63 | 2.97 | 0.207 | 79.934 |
| 177 | 1090 | D | 1 | H | 2 | 117 | 118 | 2.67 | 3.01 | 0.208 | 81.722 |
| 177 | 1090 | D | 1 | H | 2 | 121 | 122 | 2.71 | 3.05 | 0.209 | 82.287 |
| 177 | 1090 | D | 1 | H | 2 | 125 | 126 | 2.75 | 3.09 | 0.209 | 82.299 |
| 177 | 1090 | D | 1 | H | 2 | 129 | 130 | 2.79 | 3.13 | 0.210 | 84.089 |
| 177 | 1090 | D | 1 | H | 2 | 133 | 134 | 2.83 | 3.17 | 0.211 | 83.745 |
| 177 | 1090 | D | 1 | H | 2 | 137 | 138 | 2.87 | 3.21 | 0.212 | 83.278 |
| 177 | 1090 | B | 1 | H | 3 | 74 | 75 | 3.24 | 3.24 | 0.212 | 85.6 |
| 177 | 1090 | D | 1 | H | 2 | 141 | 142 | 2.91 | 3.25 | 0.212 | 80.134 |
| 177 | 1090 | D | 1 | H | 2 | 145 | 146 | 2.95 | 3.29 | 0.213 | 84.073 |
| 177 | 1090 | D | 1 | H | 2 | 147 | 148 | 2.97 | 3.31 | 0.214 | 83.256 |
| 177 | 1090 | D | 1 | H | 3 | 5 | 6 | 3.05 | 3.39 | 0.215 | 78.348 |
| 177 | 1090 | D | 1 | H | 3 | 9 | 10 | 3.09 | 3.43 | 0.216 | 81.873 |
| 177 | 1090 | D | 1 | H | 3 | 13 | 14 | 3.13 | 3.47 | 0.217 | 82.849 |
| 177 | 1090 | D | 1 | H | 3 | 17 | 18 | 3.17 | 3.51 | 0.217 | 79.376 |
| 177 | 1090 | D | 1 | H | 3 | 21 | 22 | 3.21 | 3.55 | 0.218 | 80.950 |
| 177 | 1090 | D | 1 | H | 3 | 25 | 26 | 3.25 | 3.59 | 0.219 | 82.727 |
| 177 | 1090 | D | 1 | H | 3 | 29 | 30 | 3.29 | 3.63 | 0.220 | 80.478 |
| 177 | 1090 | D | 1 | H | 3 | 33 | 34 | 3.33 | 3.67 | 0.220 | 86.627 |
| 177 | 1090 | D | 1 | H | 3 | 37 | 38 | 3.37 | 3.71 | 0.221 | 85.761 |
| 177 | 1090 | D | 1 | H | 3 | 41 | 42 | 3.41 | 3.75 | 0.222 | 84.649 |
| 177 | 1090 | D | 1 | H | 3 | 45 | 46 | 3.45 | 3.79 | 0.223 | 85.518 |
| 177 | 1090 | D | 1 | H | 3 | 49 | 50 | 3.49 | 3.83 | 0.223 | 87.129 |
| 177 | 1090 | D | 1 | H | 3 | 53 | 54 | 3.53 | 3.87 | 0.224 | 85.833 |
| 177 | 1090 | D | 1 | H | 3 | 57 | 58 | 3.57 | 3.91 | 0.225 | 85.025 |
| 177 | 1090 | D | 1 | H | 3 | 61 | 62 | 3.61 | 3.95 | 0.226 | 84.413 |
| 177 | 1090 | D | 1 | H | 3 | 65 | 66 | 3.65 | 3.99 | 0.226 | 84.469 |
| 177 | 1090 | D | 1 | H | 3 | 69 | 70 | 3.69 | 4.03 | 0.227 | 82.907 |
| 177 | 1090 | D | 1 | H | 3 | 73 | 74 | 3.73 | 4.07 | 0.228 | 81.950 |
| 177 | 1090 | D | 1 | H | 3 | 77 | 78 | 3.77 | 4.11 | 0.229 | 84.159 |
| 177 | 1090 | D | 1 | H | 3 | 81 | 82 | 3.81 | 4.15 | 0.230 | 81.768 |
| 177 | 1090 | D | 1 | H | 3 | 85 | 86 | 3.85 | 4.19 | 0.230 | 83.082 |
| 177 | 1090 | D | 1 | H | 3 | 89 | 90 | 3.89 | 4.23 | 0.231 | 79.700 |
| 177 | 1090 | D | 1 | H | 3 | 93 | 94 | 3.93 | 4.27 | 0.232 | 79.026 |
| 177 | 1090 | D | 1 | H | 3 | 97 | 98 | 3.97 | 4.31 | 0.233 | 78.827 |
| 177 | 1090 | D | 1 | H | 3 | 101 | 102 | 4.01 | 4.35 | 0.233 | 78.366 |
| 177 | 1090 | D | 1 | H | 3 | 105 | 106 | 4.05 | 4.39 | 0.234 | 77.547 |
| 177 | 1090 | D | 1 | H | 3 | 109 | 110 | 4.09 | 4.43 | 0.235 | 77.333 |
| 177 | 1090 | D | 1 | H | 3 | 113 | 114 | 4.13 | 4.47 | 0.236 | 73.980 |
| 177 | 1090 | D | 1 | H | 3 | 117 | 118 | 4.17 | 4.51 | 0.236 | 70.248 |
| 177 | 1090 | D | 1 | H | 3 | 121 | 122 | 4.21 | 4.55 | 0.237 | 70.148 |
| 177 | 1090 | D | 1 | H | 3 | 125 | 126 | 4.25 | 4.59 | 0.238 | 70.488 |
| 177 | 1090 | D | 1 | H | 3 | 129 | 130 | 4.29 | 4.63 | 0.239 | 67.120 |

Note: Only a portion of this table appears here. The complete table is available in **ASCII format.**