I. X-RAY MINERALOGY DATA FROM THE ARGENTINE BASIN—LEG 36 DEEP SEA DRILLING PROJECT[1]

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METHOD

Semiquantitative determinations of the mineral composition of bulk samples, 2-20 μm, and <2 μm fractions were performed according to the methods described in the appendix of Volume 28.

The method of sample preparation, in brief, is as follows: Bulk samples are washed to remove seawater salts and are ground to less than 10 μm under butanol. A portion of the sediment is decalcified in a sodium-acetate-buffered, acetic-acid solution (*p*H 4.5). The residue is fractionated into 2-20 μm and <2 μm samples by wet-sieving and centrifugation. The 2-20 μm samples are ground to less than 10 μm. These three preparations are treated with trihexylamine acetate to expand the smectites. All samples are X-rayed as random powders.

The results of the X-ray diffraction analysis are presented in Tables 1 to 7. Table 8 contains the list of samples submitted for X-ray diffraction analysis, the subbottom depth of each sample which identifies the sample in Tables 1 to 7, a color description, and a sediment description of each sample.

The sediment description is based on a classification devised in the DSDP X-ray Mineralogy Lab for rapid smear-slide analysis of deep-sea sediments. The classification assumes four major sediment types: detrital (d), consisting of fragmented silicates and clay minerals; biogenous (b), consisting of skeletal debris; authigenic (a), common examples of which are zeolitites and chert; and chemical (c), primarily the iron-manganese colloids. The sediment types are given equivalent rank. Operationally a sediment is detrital if volumetrically $d + b > a + c$ and $d > b$; biogenous if $d + b > a + c$ and $b > d$; authigenic if $a + c > d + b$ and $a > c$: chemical if $a + c > d + b$ and $c > a$. Detrital sediments are further subdivided on the basis of texture into sand, silt, mud, and clay according to Folk's (1968) scheme.

Biogenous sediments are subdivided into siliceous ooze, calcareous siliceous ooze, siliceous calcareous ooze, and calcareous ooze in 25% increments of the components. The prefix *bio* is used when a biologic origin of the materials can be seen.

Authigenic and chemical sediments are given only gross descriptive terms such as chert or iron manganese colloid.

Components of other groups that appear in the major sediment type are acknowledged by modifiers to the sediment name according to the following scheme: components in concentrations of 2%-10% are used as adjectives or in conjunction with "bearing" (i.e., clayey and clay-bearings are synonymous), 10%-25% concentrations are termed "rich," 25%-50% concentrations are termed "abundant."

Mudrocks were named according to the classification of Blatt et al. (1972), which uses textural criteria for silt, mud, and clay and differentiates between fissile and nonfissile rocks. Thus, if abundant silt is visible, we have silt-shale or siltstone; if a grittiness is felt when chewed or scraped, we have mud-shale or mudstone; if no grittiness is felt, we have clay-shale or claystone. The term "argillite" is reserved for nonfissile mudrocks which show signs of incipient metamorphism.

A calcium carbonate cemented rock was called limestone, or chalk if only slightly cemented.

The *percent amorphous* is a measure of the weight fraction of amorphous material in each sample which commonly consists of biogenic silica, volcanic glass, palagonite, allophane, and organic material. The amorphous content is calculated from the total diffuse scatter of the sample. The method of calculation assumes that the diffuse scatter in excess of the diffuse scatter from the crystalline materials is proportional to the amorphous content. The diffuse scatter of the crystalline minerals is determined from the mineral calibration standards (see Volume 28). Ideally, the amorphous content varies between zero and 100%, but, in cases where the minerals in the sample have a higher degree of crystallinity than the calibration standards, negative values can result. The negative values are reported as blanks; these samples can be assumed to contain little or no amorphous material.

The crystalline minerals are quantified by the method of mutual ratios using peak heights and concentration factors derived from ratioing the diagnostic peaks of minerals with the major peak of quartz. Unquantifiable minerals, i.e., unidentified minerals and minerals for which standards are not available, are tentatively quantified using a hypothetical concentration factor of 3.0 which is applied to the major peak of the mineral. The concentrations of the quantifiable minerals is *summed to 100%*. The amorphous content and the unquantifiable minerals are *not* included in the total. The unquantifiable minerals are reported on a qualitative scale as trace (less than 5%), present (5%-25%), abundant (25%-65%), and major (greater than 65%).

The precision of the mineral determination is approximately ±1 weight percent of the amount present. Because of differences between crystallinity of the mineral calibration standards and the minerals in the samples and also diffraction peak interferences, the ac-

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TABLE 1
Results of X-Ray Diffraction Analysis, Hole 327

Sample Depth Below Sea Floor (m)	Amor.	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Clin.	Phil.	Bari.	Paly.	Amph.
Bulk Samples													
4.8	50.0	50.2	17.4	18.4	–	6.5	2.7	2.9	–	–	–	–	1.9
6.1	64.4	59.4	8.8	15.1	1.7	11.6	1.1	–	2.3	–	–	–	–
2-20 ym Fractions													
4.8	61.4	35.0	25.1	29.5	1.0	–	5.2	–	1.4	–	–	–	2.8
6.1	69.3	27.0	8.9	26.9	1.7	7.8	1.6	–	–	15.5	8.2	–	2.3
<2-20 ym Fractions													
4.8	80.8	21.3	9.3	16.4	–	13.8	7.6	23.0	–	–	–	6.4	2.0
6.1	84.8	10.3	6.9	12.3	1.7	15.5	1.8	51.6	–	–	–	–	–

curacy of the reported concentrations is often less than the precision of the method allows. In terms of the reported concentration, smectites may vary ±50%; micas, chlorites, cristobalite, tridymite, goethite may vary ±20%; kaolinite, amphibole, augite, the feldspars, the zeolites, palygorskite, sepiolite, apatite may vary ±10%; the minerals which have stable crystal lattices and are not members of solid-solution series (or typically have limited crystal-lattice substitution in the sedimentary environment) such as quartz, low-magnesium calcite, aragonite, dolomite, rhodochrosite, siderite, gibbsite, talc, barite, anatase, gypsum, anhydrite, halite, pyrite, hematite, magnetite, will vary less than ±5%.

The user of the X-ray mineralogy data should bear in mind that (1) the reported values are relative concentrations and that some adjustment has to be made for the amorphous content and the unquantifiable minerals to obtain the absolute concentrations, (2) in a homogeneous system of minerals, the mineral concentration *trends* are reliable because of the precision but when comparing mineral concentrations between different geographic regions or lithologic units additional information regarding the crystallinity of the minerals is required, (3) the representativeness of the samples selected for X-ray diffraction analysis is the responsibility of the shipboard scientists and any questions pertaining to this aspect should be directed to them.

DRILLING AND MUD USAGE

No drilling mud was used on Leg 36.

ACKNOWLEDGMENTS

The writers wish to acknowledge the excellent work of Paul D. Johnson in X-ray data acquisition and data processing, and of Tom W. Halverson, Jr., in sample preparation.

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TABLE 2
Results of X-Ray Diffraction Analysis, Hole 327A

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Dolo.	Rhod.[a]	Quar.	Chris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Paly.	Trid.	Clin.	Phil.	Anal.	Pyri.	Gibb.	Amph.
Bulk Samples																				
7.3	39.7	–	–	–	50.8	–	12.5	21.2	–	9.8	2.7	2.9	–	–	–	–	–	–	–	–
17.5	59.7	–	–	–	7.6	–	7.2	5.4	0.5	7.3	0.6	12.1	–	–	57.8	–	0.5	0.4	–	0.6
25.6	58.7	–	–	–	12.5	–	2.9	8.9	0.4	10.3	0.3	17.5	–	–	46.8	–	0.4	–	–	–
32.8	66.3	26.7	–	–	11.3	–	3.6	7.6	1.6	11.8	1.0	28.2	–	–	7.0	–	0.5	–	–	0.7
49.5	70.1	29.2	–	–	12.5	–	3.0	5.6	2.3	19.5	1.4	24.2	–	–	1.5	–	–	–	–	0.8
57.1	78.0	4.4	–	–	15.2	–	4.4	10.8	2.9	11.9	1.5	37.5	3.2	–	–	5.3	1.2	–	–	1.6
63.6	78.1	–	–	–	17.3	–	9.8	11.1	3.2	15.6	2.0	32.9	–	–	1.7	5.7	–	–	–	0.8
74.5	60.6	–	–	–	12.9	–	4.0	6.7	0.4	16.3	0.3	19.7	2.4	–	30.2	3.8	0.9	2.5	–	–
87.5	57.0	–	–	–	10.0	–	3.7	6.9	0.4	14.4	0.2	20.0	–	–	32.8	6.4	0.7	4.5	–	–
93.5	44.2	67.6	–	–	3.9	–	1.4	2.3	–	5.4	–	9.6	3.3	–	6.4	–	–	–	–	–
99.3	40.9	69.1	–	–	3.5	–	2.1	1.2	–	5.4	–	12.2	–	–	6.5	–	–	–	–	–
113.9	30.8	84.7	–	–	2.1	–	–	–	–	3.3	–	5.9	–	–	3.9	–	–	–	–	–
152.0	74.4	2.8	–	–	18.1	–	34.2	3.3	0.7	7.7	0.4	26.1	–	–	5.5	–	–	1.2	–	–
154.9	48.0	13.4	–	–	8.0	–	15.9	2.2	0.3	6.9	0.2	39.9	1.5	–	10.0	–	–	1.9	–	–
177.7	38.3	51.3	–	–	6.6	–	4.7	2.7	–	8.3	–	9.2	–	–	17.2	–	–	–	–	–
188.5	19.6	52.7	–	–	5.1	–	3.2	4.6	–	4.2	–	16.8	–	–	5.0	8.4	–	–	–	–
191.4	25.5	67.8	–	–	3.4	–	1.4	1.2	–	5.4	–	14.3	3.3	–	3.2	–	–	–	–	–
228.5	17.0	25.3	–	–	3.8	36.0	1.6	1.8	–	4.1	–	4.5	–	6.5	16.4	–	–	–	–	–
253.1	31.0	53.9	–	–	5.5	–	1.6	0.9	–	8.6	–	3.8	–	–	25.5	–	–	–	–	–
281.8	24.4	70.2	–	–	4.4	–	2.1	2.4	–	5.5	–	7.3	–	–	8.1	–	–	–	–	–
313.5	30.6	60.4	–	–	8.4	–	3.6	3.1	–	9.6	–	10.6	–	–	4.2	–	–	–	–	–
340.7	12.6	3.3	–	–	4.4	70.2	1.6	1.6	–	2.8	–	4.6	1.2	6.0	3.4	–	–	0.9	–	–
340.9	–	24.3	–	–	3.1	56.5	–	–	–	2.0	–	–	–	14.1	–	–	–	–	–	–
366.1	45.4	–	–	–	57.0	–	5.7	3.2	–	14.8	–	16.5	–	–	–	–	–	2.8	–	–
366.1	42.3	–	8.8	78.2	5.0	–	–	–	–	–	–	8.0	–	–	–	–	–	–	–	–
367.8	23.3	84.2	–	–	3.7	–	–	–	–	3.3	–	8.8	–	–	–	–	–	–	–	–
394.3	23.6	74.3	–	–	14.0	–	–	–	–	2.9	–	7.8	–	–	–	–	–	–	–	–
396.3	47.4	14.5	–	–	57.5	–	–	–	–	7.5	1.0	16.6	–	–	–	–	–	2.8	–	–
396.4	17.3	93.1	–	–	2.9	–	–	–	–	–	–	–	–	–	–	–	–	4.0	–	–
422.8	14.9	86.7	–	–	7.0	–	–	–	–	3.4	–	3.0	–	–	–	–	–	–	–	–
423.5	20.4	83.8	–	–	8.8	–	–	–	–	3.2	–	2.9	–	–	–	–	–	1.2	–	–
424.5	9.9	95.7	–	–	3.0	–	–	–	–	–	–	–	–	–	–	–	–	1.4	–	–
425.0	24.4	75.8	–	–	11.9	–	–	–	–	5.9	–	5.3	–	–	–	–	–	3.0	–	–
426.5	25.0	68.8	–	–	11.6	–	4.1	2.3	–	5.4	–	4.8	–	–	–	–	–	3.0	–	–
451.7	49.3	–	–	–	44.7	–	14.2	7.6	2.6	–	3.2	12.9	7.2	–	–	–	–	7.6	–	–
460.8	26.1	78.4	–	–	8.8	–	–	–	–	6.1	–	5.5	–	–	–	–	–	1.1	–	–
2-20 μm Fractions																				
7.3	65.5	–	–	–	31.0	–	14.1	27.6	0.9	8.5	2.9	–	2.6	–	–	–	–	–	–	2.5
17.5	32.8	–	–	–	10.5	–	2.6	6.0	0.5	6.9	0.6	6.1	–	–	64.9	–	1.1	–	–	0.7
25,6	30.5	–	–	–	15.2	–	6.3	6.7	0.5	8.3	0.6	3.7	–	–	53.2	4.1	0.9	–	–	0.6
32.8	56.8	–	–	–	19.4	–	5.2	11.9	1.8	15.2	1.1	17.1	–	–	21.2	5.5	0.6	–	–	0.8
49.5	75.4	–	–	–	25.5	–	7.1	11.4	3.3	16.9	1.6	23.4	2.6	–	2.2	7.5	–	–	–	1.1
57.1	76.6	–	–	–	17.8	–	7.0	14.8	4.4	15.7	1.2	33.0	3.5	–	1.7	–	–	–	–	0.8
63.6	75.4	–	–	–	26.4	–	10.2	15.7	4.3	17.2	2.6	13.6	–	–	1.1	7.7	–	–	–	1.1
74.5	40.0	–	–	–	18.2	–	4.7	9.1	0.5	16.0	0.7	7.7	–	–	35.8	4.9	0.6	1.8	–	–
87.5	34.5	–	–	–	13.8	–	4.3	8.6	0.8	9.5	0.5	4.2	–	–	45.5	3.8	0.9	8.1	–	–

TABLE 2 – *Continued*

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Dolo.	Rhod.[a]	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Paly.	Trid.	Clin.	Phil.	Anal.	Pyri.	Gibb.	Amph.
93.5	51.5	–	–	–	17.3	–	4.9	9.9	0.5	14.4	0.3	13.9	3.0	–	29.9	4.8	1.1	–	–	–
99.3	49.3	–	–	–	16.3	–	5.9	10.9	0.5	10.3	0.3	10.2	1.4	–	37.4	4.6	0.5	1.7	–	–
113.9	51.1	–	–	–	18.4	–	5.6	12.2	0.6	11.5	0.4	11.4	1.6	–	31.8	5.1	0.6	1.0	–	–
152.0	36.7	–	–	–	22.3	–	38.8	5.2	1.3	9.0	–	13.3	–	–	8.9	–	–	1.1	–	–
154.9	39.5	–	–	–	15.1	–	22.6	5.5	0.5	8.5	0.3	16.0	–	–	25.7	–	–	5.9	–	–
177.7	28.9	–	–	–	16.6	–	16.8	3.9	–	11.4	–	6.1	2.8	–	41.8	–	0.5	–	–	–
188.5	35.5	–	–	–	24.2	–	7.3	14.6	–	16.1	–	11.4	–	–	25.7	–	0.7	–	–	–
191.4	41.1	–	–	–	24.8	–	11.4	13.0	0.7	20.0	0.5	17.8	–	–	11.8	–	–	–	–	–
228.5	25.5	–	–	–	13.2	14.6	6.9	5.5	–	7.3	–	6.5	–	2.9	43.1	–	–	–	–	–
253.1	28.4	–	–	–	19.2	–	0.1	6.9	–	10.6	–	7.0	–	–	40.7	5.3	1.2	–	–	–
281.8	41.1	–	–	–	23.5	–	7.3	9.0	–	17.6	–	11.4	–	–	31.2	–	–	–	–	–
313.5	47.6	–	–	–	30.9	–	8.0	9.1	–	16.8	–	3.6	–	–	13.7	8.4	–	–	–	–
340.7	10.2	–	–	–	11.6	47.3	1.8	3.1	–	5.6	–	3.6	–	6.4	15.6	3.2	–	1.8	–	–
340.9	–	–	–	–	5.6	79.5	2.0	2.3	–	2.7	0.3	1.9	–	5.1	0.3	–	–	0.2	–	–
366.1	41.4	–	–	–	68.1	–	6.7	3.8	–	8.8	–	7.8	–	–	–	–	–	4.9	–	–
366.1	25.5	–	–	93.2	6.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
367.8	44.6	–	–	–	33.4	–	5.1	4.8	–	15.5	0.6	29.6	–	–	1.3	8.9	–	0.8	–	–
394.3	41.6	–	–	–	68.4	–	6.7	3.8	–	8.8	1.2	7.8	–	–	–	–	–	3.3	–	–
396.3	39.6	–	–	–	68.1	–	6.7	3.8	–	8.8	–	7.8	–	–	–	–	–	4.9	–	–
396.4	28.7	–	–	–	30.5	–	4.5	2.5	–	7.9	7.9	14.0	–	–	–	–	–	40.2	–	–
422.8	42.7	–	–	–	57.3	–	8.3	4.7	–	11.0	1.0	–	–	–	–	–	–	17.7	–	–
423.5	33.5	–	–	–	46.9	–	13.7	9.1	–	15.0	–	5.3	–	–	–	–	–	10.0	–	–
424;5	27.7	–	–	–	39.4	–	7.8	6.7	–	15.4	1.4	4.6	–	–	–	–	–	24.8	–	–
425.0	36.7	–	–	–	48.5	–	14.1	8.0	–	15.5	0.9	2.7	–	–	–	–	–	10.3	–	–
426.5	33.5	–	–	–	42.7	–	9.9	5.9	–	13.8	–	4.9	3.4	–	–	–	–	19.5	–	–
451.7	27.6	–	–	–	40.6	–	12.8	7.9	2.3	20.9	2.2	–	6.4	–	–	–	–	6.8	–	–
460.8	46.4	–	–	–	41.9	–	12.5	5.9	–	19.1	1.5	12.1	–	–	–	–	–	7.1	–	–
<2 μm Fractions																				
7.3	90.8	–	–	–	18.4	–	11.0	13.3	2.3	13.7	1.4	24.4	4.2	–	3.0	6.8	–	–	–	1.0
17.5	73.2	–	–	–	7.7	–	6.0	3.4	1.0	11.2	0.6	61.0	–	–	7.3	–	1.0	–	–	0.7
25.6	70.8	–	–	–	7.7	–	5.6	2.3	0.5	11.5	0.6	55.8	–	–	6.2	8.4	–	–	0.2	1.2
32.8	78.2	–	–	–	9.8	–	6.7	5.2	0.5	8.7	0.6	57.2	–	–	1.9	8.7	–	–	–	0.6
49.5	84.1	–	–	–	11.5	–	8.0	4.0	3.5	10.5	1.4	52.4	–	–	0.8	5.2	1.2	–	–	1.6
57.1	84.8	–	–	–	7.3	–	4.3	4.2	1.9	7.6	1.2	52.0	8.0	–	2.6	8.7	–	–	0.4	1.9
63.6	87.5	–	–	–	26.2	–	15.6	12.6	9.1	29.2	5.6	–	–	–	–	–	–	–	–	1.7
74.5	60.5	–	–	–	4.3	–	1.3	1.0	0.5	7.0	0.3	74.1	2.9	–	2.1	4.7	–	1.3	0.5	–
87.5	72.4	–	–	–	22.2	–	8.4	10.0	2.1	–	2.5	–	11.4	–	13.7	18.5	–	8.5	–	2.7
93.5	68.8	–	–	–	8.3	–	4.9	2.9	0.5	16.0	0.3	56.2	1.4	–	4.0	4.5	–	–	–	–
113.9	68.9	–	–	–	7.2	–	2.9	2.9	0.5	12.4	0.3	65.1	2.8	–	–	4.5	0.5	0.8	–	–
152.0	46.1	–	–	–	4.9	–	6.0	1.0	0.5	4.5	0.3	81.3	–	–	–	–	–	–	–	0.7
154.9	38.7	–	–	–	4.2	–	5.4	1.8	–	4.2	–	77.4	1.3	–	5.0	–	–	0.8	–	–
177.7	40.6	–	–	–	4.5	–	3.4	1.7	–	7.0	–	73.3	2.5	–	3.6	4.0	–	–	–	–
188.5	39.3	–	–	–	3.9	–	2.4	1.8	–	5.3	–	81.0	–	–	1.3	4.2	–	–	–	–
191.4	46.8	–	–	–	5.7	–	2.5	3.0	0.4	6.9	0.3	70.8	2.4	6.3	1.7	–	–	–	–	–
228.5	25.7	–	–	–	4.3	39.1	2.8	2.0	–	4.2	–	36.5	–	5.0	5.9	–	–	–	–	0.3
253.1	41.2	–	–	–	7.5	31.0	2.2	2.6	–	9.7	–	31.7	3.0	1.9	10.0	–	–	–	–	0.4
281.8	39.7	–	–	–	5.9	15.1	1.4	2.0	–	5.7	–	68.8	–	–	1.1	–	–	–	–	–
313.5	38.4	–	–	–	11.8	29.2	4.0	2.3	–	6.1	–	44.1	–	–	2.6	–	–	–	–	–
340.7	19.5	–	–	–	4.7	67.5	0.4	0.6	–	2.4	–	13.4	1.8	7.0	1.4	–	–	0.5	–	0.3

340.9	23.3	–	–	–	1.1	84.1	0.7	0.7	–	1.2	–	3.1	0.7	8.3	1.4	–	–	–	–	–
366.1	53.7	–	–	–	44.7	–	3.2	1.3	–	14.9	–	26.4	7.3	–	–	–	–	2.2	–	–
366.1	85.4	–	–	–	34.1	–	–	–	–	–	2.4	38.4	–	–	–	–	–	–	–	–
367.8	83.2	–	–	–	19.6	–	1.5	1.5	–	10.5	–	51.4	6.5	–	2.1	7.0	–	–	–	–
394.3	48.3	–	–	–	47.1	–	–	–	–	9.3	–	41.3	–	–	–	–	–	2.3	–	–
396.3	50.6	–	–	–	42.8	–	–	–	–	8.5	–	13.4	1.8	7.0	1.4	–	–	0.5	–	0.3
396.4	54.3	–	–	–	31.6	–	–	–	–	8.6	–	38.2	–	–	–	–	–	21.6	–	–
422.8	53.8	–	–	–	40.4	–	2.0	1.2	–	13.4	0.7	38.2	–	–	–	–	–	4.0	–	–
423.5	59.9	–	–	–	41.6	–	6.3	3.5	–	16.4	–	29.2	–	–	–	–	–	3.1	–	–
424.5	65.9	–	–	–	32.9	–	0.7	2.0	–	11.3	0.6	32.1	5.6	–	–	9.0	–	5.9	–	–
425.0	55.3	–	–	–	38.6	–	2.7	2.2	–	15.4	–	31.9	6.3	–	–	–	–	2.9	–	–
426.5	53.0	–	–	–	30.5	–	1.7	1.8	–	12.3	–	40.1	7.6	–	–	–	–	6.1	–	–
451.7	66.3	–	–	–	22.7	–	5.5	3.6	3.7	33.0	2.3	23.4	4.1	–	–	–	–	1.8	–	–
460.8	63.1	–	–	–	25.2	–	4.1	2.3	–	19.9	1.0	46.7	–	–	–	–	–	0.7	–	–

[a]Rhodochrosite with siderite component. Peaks (and intensities) are 3.62 (19), 2.89 (100), 2.36 (9), 2.15 (11), 1.975 (9), 1.752 (7), 1.743 (15).

TABLE 3
Results of X-Ray Diffraction Analysis, Hole 328

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Paly.	Trid.	Clin.	Phil.	Gibb.	Amph.
Bulk Samples																
2.6	65.4	–	37.1	–	11.4	19.4	1.1	14.9	2.1	11.1	–	–	1.5	–	–	1.5
7.1	58.6	–	29.0	–	11.9	21.1	1.7	19.5	6.5	6.9	–	–	1.2	–	–	2.3
9.0	55.1	–	31.3	–	14.3	21.6	0.9	20.8	1.1	7.4	–	–	1.2	–	–	1.2
15.2	66.7	–	27.5	–	13.7	19.8	0.8	17.2	0.5	13.6	4.7	–	1.1	–	–	1.1
19.7	61.8	–	22.4	–	10.8	20.2	0.7	17.1	0.9	19.4	5.7	–	1.8	–	–	0.9
21.1	58.5	–	20.4	–	6.6	19.8	0.6	18.6	0.8	25.4	5.3	–	1.7	–	–	0.8
22.6	58.5	–	17.4	–	5.6	20.7	–	20.2	–	26.9	6.2	–	2.2	–	–	0.7
23.2	59.6	–	18.9	–	6.4	19.6	1.2	20.6	1.1	22.0	5.1	–	4.1	–	–	0.8
24.1	57.6	–	16.9	–	3.9	21.5	1.1	19.8	0.7	18.7	4.6	–	2.2	–	–	0.7
24.6	61.1	–	17.5	–	6.0	21.2	0.6	20.6	1.1	25.2	4.8	–	2.3	–	–	0.8
25.7	58.7	–	20.0	–	4.2	19.3	0.6	17.3	0.8	28.1	7.1	–	1.7	–	–	0.9
47.2	68.7	–	21.1	–	3.5	15.2	2.0	23.0	1.7	29.9	–	–	2.7	–	–	0.9
47.5	68.1	–	21.1	–	4.8	12.7	2.1	20.1	1.3	27.5	5.7	–	3.7	–	–	0.9
48.7	67.2	–	21.9	–	7.2	13.6	2.1	25.1	1.3	22.3	–	–	5.6	–	–	0.9
49.6	63.4	–	21.6	–	7.6	14.1	1.4	23.2	1.7	19.3	3.8	–	6.4	–	–	0.9
50.1	65.1	–	20.0	–	5.6	13.4	2.0	25.1	1.6	21.0	–	–	11.4	–	–	–
50.6	61.0	–	15.9	–	3.7	7.8	2.1	20.6	0.7	30.1	–	–	12.9	4.8	–	1.4
51.2	61.5	–	15.2	–	4.3	8.3	1.0	24.9	0.6	23.1	–	–	12.7	9.1	–	0.7
51.6	62.8	–	12.4	–	2.1	14.4	1.7	16.7	1.1	30.5	4.8	–	12.2	3.9	0.2	–
52.1	59.6	–	15.8	–	4.5	9.1	1.6	24.4	1.6	19.6	4.3	–	14.5	4.7	–	–
52.7	63.0	–	17.4	–	5.0	9.5	1.7	19.5	1.8	26.5	4.8	–	7.7	5.2	–	0.8
96.5	51.3	–	15.1	–	4.9	7.7	2.0	17.8	1.2	44.5	5.5	–	1.3	–	–	–
142.5	46.3	–	15.8	–	4.0	5.0	1.0	14.0	1.0	46.6	7.2	–	0.7	4.7	–	–
142.8	52.6	3.9	15.4	–	4.4	5.0	1.5	13.9	1.3	52.5	–	–	0.7	–	–	1.4
193.6	48.1	–	15.7	–	3.6	4.0	2.1	16.2	1.6	47.3	4.3	–	0.7	4.6	–	–
238.2	41.8	–	14.5	–	3.1	3.7	1.4	13.9	0.6	53.2	5.3	–	–	4.3	–	–
290.0	44.1	–	15.9	–	5.6	4.5	2.5	17.2	0.9	49.9	2.8	–	0.7	–	–	–
292.2	44.4	–	15.5	–	4.3	3.4	1.5	17.1	1.3	55.6	–	–	0.7	–	–	0.7
337.8	47.5	–	17.1	23.3	6.5	4.7	1.6	15.8	0.7	30.2	–	–	–	–	–	–
338.0	36.5	–	12.3	29.4	2.7	3.0	0.8	11.4	0.7	26.4	3.2	8.4	1.0	–	–	0.5
338.8	49.8	–	23.3	–	5.1	5.0	1.5	16.6	1.4	47.2	–	–	–	–	–	–
364.7	49.6	–	35.4	–	3.7	3.2	–	14.6	–	43.2	–	–	–	–	–	–
367.8	43.3	–	37.1	–	2.6	3.2	–	12.3	1.4	37.3	6.1	–	–	–	–	–
388.0	45.4	–	54.9	–	2.8	1.6	–	10.8	1.0	28.9	–	–	–	–	–	–
389.1	48.5	–	32.3	–	5.1	3.8	–	20.0	1.2	37.5	–	–	–	–	–	–
389.2	46.2	–	22.4	–	5.2	3.3	3.4	16.9	1.3	43.7	3.8	–	–	–	–	–
2-20 μm Fractions																
2.6	52.2	–	36.8	–	16.8	27.5	1.1	12.2	2.7	–	–	–	1.4	–	–	1.4
7.1	47.5	–	34.1	–	14.9	28.1	2.0	11.2	4.3	–	2.8	–	1.3	–	–	1.3
9.0	56.7	–	33.4	–	17.1	27.2	1.0	13.5	1.2	4.0	–	–	1.3	–	–	1.3
15.2	14.0	–	32.8	–	20.5	28.0	–	10.8	1.5	–	–	–	3.2	–	–	3.2
19.7	49.5	–	29.7	–	17.8	29.3	0.9	14.0	0.6	5.3	2.5	–	–	–	–	–
21.1	47.4	–	27.4	–	7.7	28.2	0.8	18.6	1.0	8.3	4.6	–	2.2		–	1.1
22.6	46.7	–	28.6	–	7.4	29.4	0.9	19.4	0.5	10.4	–	–	2.3	–	–	1.2
23.2	41.6	–	28.4	–	7.8	26.4	0.8	22.9	0.5	5.1	4.7	–	2.3	–	–	1.1
24.1	45.6	–	22.2	–	16.2	24.8	0.7	16.6	0.8	0.4	5.6	–	2.7	–	–	0.9

24.6	44.8	–	26.7	–	8.8	27.2	0.8	21.6	1.0	6.4	4.4	–	2.1	–	–	1.1
25.7	50.5	–	31.2	–	6.4	31.8	0.9	21.0	0.6	5.6	–	–	1.2	–	–	1.2
47.2	63.1	–	35.9	–	12.3	19.9	1.1	19.3	1.3	4.3	3.0	–	2.9	–	–	–
47.5	59.6	–	32.6	–	10.1	20.1	2.0	22.2	1.2	7.9	–	–	3.9	–	–	–
48.7	58.8	–	36.1	–	9.3	20.1	1.1	19.6	1.4	6.5	–	–	5.8	–	–	–
49.6	40.8	–	25.5	–	8.5	22.4	1.6	22.2	1.0	–	–	–	8.8	–	–	–
50.1	41.7	–	28.5	–	4.4	19.9	2.6	21.0	1.6	5.1	–	–	17.0	–	–	–
50.6	39.2	–	25.6	–	3.2	12.0	2.3	19.1	1.4	4.6	4.3	–	20.6	6.9	–	–
51.2	42.2	–	25.0	–	7.8	11.0	1.5	18.7	0.5	4.5	–	–	23.2	6.8	–	1.0
51.6	45.5	–	18.6	–	7.1	19.2	1.2	14.3	1.1	9.3	4.8	–	19.3	5.2	–	–
52.1	42.2	–	23.4	–	4.8	11.7	1.4	22.3	1.3	7.1	–	–	21.7	6.4	–	–
52.7	49.5	–	27.9	–	7.1	13.0	1.7	20.6	1.6	11.7	–	–	8.9	7.5	–	–
96.5	45.0	–	28.9	–	10.5	15.1	2.6	21.4	1.6	10.4	7.2	–	2.3	–	–	–
142.5	45.6	–	31.6	–	8.2	10.9	2.8	21.0	2.3	13.1	7.7	–	2.5	–	–	–
142.8	45.0	–	25.9	–	9.3	10.5	3.1	20.9	1.9	26.3	–	–	2.1	–	–	–
193.6	47.2	–	35.8	–	10.8	12.2	4.2	21.2	1.9	12.6	–	–	1.4	–	–	–
238.2	45.7	–	33.0	–	10.0	9.5	3.9	24.2	1.8	17.6	–	–	–	–	–	–
290.0	42.8	–	37.1	–	11.1	11.6	3.3	21.9	2.0	13.0	–	–	–	–	–	–
292.2	43.6	–	31.5	–	9.7	9.2	2.8	21.2	1.2	24.5	–	–	–	–	–	–
337.8	41.6	–	33.8	–	10.3	9.7	3.0	22.5	0.6	20.0	–	–	–	–	–	–
338.0	24.9	–	25.8	27.8	6.6	6.8	1.5	15.6	1.0	13.9	–	–	1.0	–	–	–
338.8	36.0	–	40.5	–	10.2	9.2	2.4	21.3	2.2	14.2	–	–	–	–	–	–
364.7	38.1	–	48.6	–	9.7	8.3	–	19.2	–	14.2	–	–	–	–	–	–
367.8	30.2	–	48.5	–	8.2	6.8	–	15.8	1.7	11.2	7.8	–	–	–	–	–
388.0	40.0	–	63.7	–	6.3	5.4	–	12.4	1.1	11.1	–	–	–	–	–	–
388.1	32.2	–	48.7	–	7.2	6.9	–	22.2	0.9	14.1	–	–	–	–	–	–
389.2	34.2	–	41.9	–	12.5	8.3	3.6	21.8	2.3	9.7	–	–	–	–	–	–
<2 µm Fractions																
2.6	73.9	–	20.2	–	9.5	13.3	2.1	18.5	2.6	24.7	5.7	–	1.8	–	0.6	0.9
7.1	71.7	–	20.0	–	10.4	14.9	2.0	21.0	8.7	14.7	5.5	–	0.9	–	–	1.8
9.0	71.0	–	12.3	–	4.5	8.3	3.6	19.2	0.8	44.0	5.0	–	1.2	–	–	1.2
15.2	74.1	–	18.9	–	4.6	10.1	1.3	19.0	0.8	36.4	5.4	–	1.7	–	–	1.7
19.7	69.6	–	11.7	–	3.4	7.7	1.3	14.8	0.8	49.0	6.1	–	0.6	3.9	0.2	0.6
21.0	65.8	–	8.1	–	4.3	7.6	0.9	13.7	1.1	59.0	4.8	–	0.6	–	–	–
22.6	65.3	–	5.4	–	2.6	4.6	1.4	13.8	0.6	63.2	7.8	–	–	–	–	0.6
23.2	72.0	–	9.6	–	1.8	9.2	2.5	19.4	1.0	44.2	9.1	–	3.3	–	–	–
24.1	60.6	–	7.1	–	0.6	7.3	1.4	12.6	0.6	62.7	5.2	–	2.5	–	–	–
24.6	61.9	–	6.3	–	3.6	6.8	1.3	13.7	0.8	60.2	4.8	–	1.7	–	0.2	0.6
25.7	71.1	–	12.0	–	3.6	11.6	1.9	17.2	0.6	50.5	2.6	–	–	–	–	–
47.2	71.1	–	10.6	–	1.3	4.5	1.2	16.8	1.0	49.1	4.6	–	2.2	7.5	–	1.1
47.5	61.7	–	5.0	–	2.3	1.8	2.4	11.8	1.5	67.5	5.3	–	2.5	–	–	–
48.7	59.5	–	5.4	–	2.6	2.9	2.5	9.0	1.2	73.0	–	–	3.3	–	–	–
49.6	61.3	–	10.5	–	2.4	4.6	4.0	16.1	2.0	47.0	5.5	–	8.0		–	–
50.1	61.8	–	4.7	–	2.1	2.8	1.9	9.9	0.9	63.3	6.7	–	3.2	4.4	–	–
50.6	58.0	–	4.0	–	0.4	1.5	3.0	9.0	1.2	71.8	6.9	–	2.0	–	0.2	–
51.2	54.9	–	5.3	–	0.9	2.3	1.9	11.5	0.6	62.0	3.8	–	3.1	8.3	0.4	–
51.6	53.5	–	3.3	–	–	1.4	1.4	10.4	1.4	67.6	6.4	–	3.1	4.2	0.2	0.6
52.1	51.8	–	3.8	–	2.1	1.3	1.4	9.3	1.1	69.6	1.3	–	1.2	8.2	–	0.6

TABLE 3 – *Continued*

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Paly.	Trid.	Clin.	Phil.	Gibb.	Amph.
52.7	52.5	–	4.2	–	0.4	1.3	0.9	9.1	1.1	67.0	6.2	–	1.8	8.0	–	–
96.5	34.2	–	2.9	–	0.9	0.9	0.9	6.3	0.9	82.6	3.9	–	0.6	–	–	–
142.5	58.4	–	9.1	–	3.0	2.2	4.0	17.0	1.4	62.1	–	–	1.2	–	–	–
142.8	37.5	–	8.0	–	5.8	3.3	1.7	9.5	1.0	70.7	–	–	–	–	–	–
193.6	55.1	–	9.5	–	2.9	2.3	3.1	15.7	1.2	58.8	2.1	–	1.0	3.5	–	–
238.2	48.2	–	7.6	–	1.7	1.6	2.1	9.5	1.0	69.8	2.3	–	0.6	3.8	–	–
290.0	40.9	–	8.3	–	3.1	2.0	1.2	9.3	0.8	69.3	2.3	–	–	3.7	–	–
292.2	53.5	–	7.0	–	1.4	1.3	0.9	10.0	0.6	68.2	4.9	–	1.8	4.0	–	–
337.8	47.7	–	6.6	26.5	1.3	1.1	0.7	5.8	0.7	57.4	–	–	–	–	–	–
338.0	35.7	–	5.5	44.7	0.8	1.2	0.5	4.6	0.5	39.5	2.8	–	–	–	–	–
338.8	54.4	–	12.4	–	3.0	1.7	1.8	9.9	0.8	66.3	–	–	–	4.0	–	–
364.7	50.2	–	18.5	–	1.5	1.2	–	5.4	–	70.1	3.3	–	–	–	–	–
367.8	47.5	–	26.9	–	0.6	0.8	–	5.6	–	61.5	4.6	–	–	–	–	–
388.0	50.2	–	37.7	–	–	–	–	7.7	–	54.6	–	–	–	–	–	–
389.1	49.2	–	13.1	–	1.1	1.3	–	8.0	–	70.3	6.2	–	–	–	–	–
389.2	53.9	–	12.3	–	2.4	0.5	2.4	9.6	1.5	71.3	–	–	–	–	–	–

TABLE 4
Results of X-Ray Diffraction Analysis, Hole 328B

Sample Depth Below Sea Floor (m)	Amor.	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Paly.	Clin.	Hema.	Apat.	Amph.	Anat.
Bulk Samples														
42.2	65.2	23.5	7.6	12.1	2.2	29.7	1.4	20.6	–	2.9	–	–	–	–
49.1	67.8	17.6	2.2	12.0	2.4	26.4	1.8	17.6	9.8	10.2	–	–	–	–
50.4	67.8	17.7	5.1	8.7	2.4	24.3	1.9	26.4	–	13.6	–	–	–	–
63.1	60.9	18.4	5.0	6.3	6.5	25.1	2.6	32.9	–	3.1	–	–	–	–
436.3	29.4	2.4	48.5	3.7	–	1.4	–	42.8	–	–	–	–	–	1.3
442.3	57.8	28.3	3.0	2.5	2.6	11.7	–	36.3	–	–	–	15.6	–	–
442.9	48.8	29.2	4.5	2.5	1.7	13.8	1.1	47.1	–	–	–	–	–	–
443.6	51.1	28.0	4.3	2.4	3.3	16.9	1.0	36.8	–	–	7.3	–	–	–
2-20 μm Fractions														
42.2	52.9	38.2	13.6	19.8	1.1	22.9	1.4	–	–	3.0	–	–	–	–
49.1	42.3	29.5	6.0	15.4	2.6	21.8	1.1	3.5	–	20.0	–	–	–	–
50.4	42.2	29.9	7.7	16.5	1.8	22.1	1.7	–	–	20.3	–	–	–	–
63.1	44.9	33.4	6.8	8.6	7.9	31.1	2.4	5.9	–	3.9	–	–	–	–
436.3	14.2	4.3	86.9	3.0	–	2.4	0.3	2.1	–	–	–	–	–	1.0
442.3	43.4	37.7	5.7	4.3	2.2	14.9	–	22.0	–	–	–	13.2	–	–
442.9	34.9	43.5	8.5	6.1	2.5	19.6	2.3	17.4	–	–	–	–	–	–
443.6	36.9	46.1	9.1	5.1	2.6	14.9	0.8	13.2	–	–	8.2	–	–	–
<2 μm Fractions														
42.2	65.9	9.0	1.7	3.0	4.5	20.1	0.8	53.5	7.4	–	–	–	–	–
49.1	64.2	5.2	0.8	1.9	3.5	11.1	0.9	62.4	9.6	4.0	–	–	0.7	–
50.4	61.0	4.3	–	1.5	2.6	11.7	1.6	66.3	8.6	3.5	–	–	–	–
63.1	58.6	6.1	1.8	1.5	10.5	10.7	0.7	67.4	–	1.4	–	–	–	–
436.3	27.6	1.4	–	–	–	–	0.3	96.5	–	–	–	–	–	1.8
442.3	50.2	22.7	2.4	1.4	0.7	9.6	0.9	41.1	–	–	–	21.3	–	–
442.9	46.4	20.9	3.4	1.9	2.6	10.3	0.8	60.1	–	–	–	–	–	–
443.6	53.8	23.1	3.7	2.1	2.9	11.4	1.3	49.1	–	–	6.3	–	–	–

TABLE 5
Results of X-Ray Diffraction Analysis, Hole 329

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Trid.	Clin.	Pyri.	Bari.	Amph.
Bulk Samples															
1.6	56.2	–	51.4	–	12.9	14.6	–	10.2	1.9	9.0	–	–	–	–	–
52.1	73.6	46.8	14.8	–	4.6	13.9	0.9	6.0	2.2	7.2	–	1.2	2.3	–	–
74.3	68.1	55.2	10.9	–	5.2	11.8	1.0	6.8	1.3	6.1	–	–	1.7	–	–
93.5	57.7	64.4	6.7	–	7.9	5.6	1.2	2.6	0.7	6.9	–	–	0.9	–	3.1
111.8	73.9	50.5	10.2	–	8.1	12.0	0.9	4.3	1.2	7.6	–	1.3	1.5	–	2.5
169.4	64.4	59.0	7.7	–	7.3	7.3	1.1	4.8	0.7	8.6	–	–	0.8	–	2.9
169.4	64.2	60.5	8.7	–	3.8	8.5	1.1	4.9	0.7	6.6	–	1.5	0.8	–	2.9
192.0	75.0	58.5	9.1	–	3.8	9.6	1.1	7.4	1.4	6.6	–	–	2.7	–	–
418.5	19.8	25.5	2.8	47.8	0.8	0.9	–	2.1	0.3	–	19.8	–	–	–	–
456.6	–	38.0	1.9	40.9	–	–	–	–	–	–	19.2	–	–	–	–
458.1	13.6	78.7	1.0	14.8	–	–	–	–	–	5.5	–	–	–	–	–
459.8	–	53.1	0.3	29.9	–	–	–	–	–	–	16.6	–	–	–	–
460.0	1.4	50.3	0.6	34.7	–	–	–	–	–	1.8	12.6	–	–	–	–
460.7	17.9	89.6	1.1	–	–	–	–	–	–	–	–	–	–	–	–
2-20 μm Fractions															
1.6	69.4	–	39.6	–	8.3	34.1	1.2	8.2	3.8	4.8	–	–	–	–	–
52.1	81.8	–	34.0	–	9.8	34.4	–	7.7	4.9	–	–	1.5	4.7	–	3.0
74.3	77.2	–	31.0	–	8.9	36.3	1.0	7.0	2.6	6.2	–	1.4	4.3	–	1.4
93.5	79.3	–	33.6	–	9.6	36.1	1.1	10.1	2.8	–	–	–	6.6	–	–
111.8	84.0	–	31.3	–	9.6	39.0	2.2	7.5	2.8	–	–	1.5	4.6	–	1.5
169.4	79.6	–	31.3	–	9.0	34.7	1.0	9.4	2.6	4.2	–	2.8	3.5	–	1.4
169.4	78.4	–	29.0	–	14.8	33.6	1.0	8.6	2.4	5.8	–	1.3	2.4	–	1.3
192.0	85.4	–	26.8	–	16.8	32.4	1.0	8.8	1.8	5.9	–	1.3	4.0	–	1.3
418.5	32.1	–	9.7	69.0	3.5	4.9	–	2.0	0.4	–	10.6	–	–	–	–
456.6	14.9	–	2.3	75.2	0.8	1.3	–	–	–	–	20.4	–	–	–	–
458.1	24.6	–	7.7	60.9	2.1	6.3	–	3.9	0.3	7.5	6.3	3.0	–	2.1	–
459.8	12.7	–	2.5	75.1	1.2	1.3	–	0.5	–	0.9	18.0		–	0.5	–
460.0	24.3	–	3.4	82.6	1.8	2.0	–	1.2	–	2.6	6.5	–	–	–	–
460.7	45.7	–	22.0	–	4.6	21.8	–	13.7	1.3	29.8	–	1.8	–	5.0	–
<2 μm Fractions															
1.6	72.7	–	9.6	–	5.0	8.9	1.4	15.2	3.9	56.0	–	–	–	–	–
52.1	86.5	–	19.5	–	6.7	16.0	2.4	19.4	4.9	25.1	–	1.0	3.9	–	1.0
74.3	84.6	–	18.1	–	7.3	15.8	2.1	15.9	3.9	31.1	–	1.9	2.9	–	0.9
93.5	82.2	–	15.5	–	7.5	13.9	2.5	18.2	4.3	34.9	–	1.7	1.6	–	–
111.8	90.2	–	16.7	–	12.6	12.9	1.5	18.2	3.6	30.9	–	–	3.7	–	–
169.4	88.7	–	11.2	–	9.9	13.5	–	18.2	3.2	41.6	–	–	2.4	–	–
169.4	86.7	–	14.0	–	3.3	14.6	2.0	17.6	3.6	39.0	–	2.6	1.6	–	1.7
192.0	90.5	–	12.4	–	14.8	12.3	–	16.4	3.7	17.1	–	–	3.3	–	–
418.5	53.1	–	2.9	83.7	–	–	0.3	3.2	0.4	2.3	7.2	–	–	–	–
456.6	32.4	–	0.6	71.6	0.8	0.4	–	–	–	–	22.3	–	–	–	–
458.1	35.6	–	1.6	49.5	1.1	1.0	–	2.8	–	30.8	12.5	–	–	0.9	–
459.8	29.1	–	0.6	78.2	–	–	–	–	–	7.9	13.3	–	–	–	–
460.0	35.5	–	0.9	76.0	0.8	0.5	–	1.1	–	6.8	14.0	–	–	–	–
460.7	40.5	–	2.7	14.2	1.4	1.5	–	4.4	0.5	61.6	12.8	–	–	0.8	–

TABLE 6
Results of X-Ray Diffraction Analysis, Hole 330

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Trid.	Clin.	Pyri.	Amph.
Bulk Samples														
135.3	31.0	2.6	1.6	–	9.3	4.4	–	2.0	–	78.8	–	1.2	–	–
179.1	36.7	65.7	5.4	–	–	–	–	5.2	–	6.9	–	16.9	–	–
179.6	12.5	–	2.3	80.3	2.1	1.4	–	1.6	–	1.4	10.4	0.3	0.2	–
225.5	29.9	–	5.8	74.4	–	–	–	6.9	–	2.4	9.4	0.6	0.4	–
226.2	15.2	99.4	0.6	–	–	–	–	–	–	–	–	–	–	–
226.9	–	17.5	7.8	59.5	–	–	–	1.4	–	1.3	11.4	–	1.1	–
226.9	–	–	27.5	56.1	–	–	–	1.8	–	–	14.0	–	0.7	–
227.1	18.0	91.0	1.1	–	–	–	–	–	–	3.1	–	2.1	2.6	–
272.6	16.9	93.9	2.9	–	–	–	–	–	–	3.2	–	–	–	–
302.3	48.2	4.1	26.4	–	10.7	5.3	1.6	28.1	1.9	12.5	–	–	8.4	1.0
314.6	25.3	–	3.6	–	3.9	2.7	–	9.2	–	79.4	–	–	1.1	–
314.7	55.0	4.4	31.4	–	8.0	6.4	0.9	29.6	2.3	16.9	–	–	–	–
467.7	57.9	–	30.7	–	11.1	2.7	–	31.3	13.3	9.3	–	–	1.6	–
469.2	50.3	–	38.2	–	11.5	5.4	11.2	17.6	3.5	8.9	–	–	3.7	–
495.9	36.7	–	39.5	–	19.6	6.7	16.0	12.8	3.5	–	–	–	1.9	–
524.2	48.8	–	31.5	–	8.1	3.7	20.7	21.2	4.1	3.8	–	–	7.1	–
549.0	25.1	–	2.1	–	10.2	0.3	22.8	4.7	1.3	56.7	–	–	1.8	–
549.4	49.3	–	43.3	–	10.9	4.9	24.1	14.3	–	2.5	–	–	–	–
550.0	19.1	–	68.4	–	–	–	23.0	8.6	–	–	–	–	–	–
2-20 μm Fractions														
135.3	6.4	–	2.4	–	9.6	4.3	–	5.4	–	75.7	–	2.7	–	–
179.1	28.2	–	19.8	–	5.0	10.2	–	11.7	–	7.0	–	46.4	–	–
179.6	10.7	–	5.4	76.5	1.6	3.6	–	2.1	0.3	1.4	8.4	–	0.4	0.3
225.5	–	–	9.6	48.2	–	–	–	10.0	–	–	32.1	–	–	–
226.2	2.7	–	7.6	64.4	1.2	1.4	–	3.8	0.4	2.4	8.6	6.4	3.8	–
226.9	–	–	5.2	79.1	0.8	0.9	–	1.1	–	–	11.9	–	1.0	–
226.9	–	–	11.6	72.5	1.8	1.3	–	2.3	0.2	–	9.8	0.5	–	–
227.1	14.1	–	8.6	–	2.2	6.3	–	5.8	–	7.7	–	27.4	42.0	–
272.6	45.3	–	45.7	–	18.1	9.0	1.3	14.9	1.6	2.6	–	–	6.6	–
302.3	31.1	–	40.9	–	12.2	6.9	1.2	24.0	2.2	4.7	–	–	7.9	–
314.6	20.9	–	21.5	–	22.4	2.4	–	36.4	1.5	10.0	–	–	5.7	–
314.7	34.4	–	42.0	–	12.4	7.0	–	24.4	3.0	7.2	–	–	4.0	–
467.7	41.2	–	42.2	–	12.7	3.6	–	22.2	9.2	4.9	–	–	5.2	–
469.2	36.1	–	44.3	–	13.2	5.0	12.8	17.3	3.2	–	–	–	4.3	–
495.9	26.3	–	33.6	–	13.2	4.7	24.1	13.0	3.0	1.9	–	–	6.5	–
524.2	26.8	–	37.7	–	11.1	5.3	18.4	17.0	2.0	2.2	–	–	6.3	–
549.0	–	–	4.6	–	9.1	–	65.3	6.0	–	13.3	–	–	1.7	–
549.4	27.4	–	53.8	–	10.5	5.9	15.2	10.3	–	3.0	–	–	1.3	–
550.0	–	–	12.2	–	–	–	67.6	20.2	–	–	–	–	–	–
<2 μm Fractions														
135.3	–	–	–	–	–	–	–	–	–	100.0	–	–	–	–
179.1	42.8	–	3.6	–	1.7	2.0	–	5.7	–	84.4	–	2.7	–	–
179.6	39.7	–	1.8	80.9	1.7	1.2	–	2.3	0.3	6.1	5.5	–	0.2	–
225.5	28.7	–	2.8	67.3	–	–	–	2.5	–	12.9	14.4	–	–	–
226.2	73.1	–	3.2	57.4	–	–	–	4.2	–	14.1	17.7	1.3	2.2	–
226.9	16.9	–	1.3	77.4	0.8	0.7	–	1.6	–	–	17.9	–	0.4	–
226.9	22.6	–	3.1	82.2	0.9	1.0	–	2.8	–	1.5	8.1	–	0.4	–
227.1	36.1	–	1.8	–	0.9	1.5	–	3.4	0.3	84.8	–	5.3	2.1	–
272.6	68.6	–	21.0	–	9.4	2.7	2.1	23.2	1.7	37.1	–	0.9	1.1	0.9
302.3	62.8	–	23.5	–	9.0	3.7	0.8	30.5	1.9	30.1	–	–	0.6	–
314.6	31.4	–	–	–	–	–	–	1.2	–	98.8	–	–	–	–
314.7	61.6	–	19.9	–	7.8	3.2	0.6	24.8	1.6	41.5	–	–	0.5	–
467.7	66.1	–	22.8	–	10.3	2.2	7.5	32.2	8.4	16.6	–	–	–	–
469.2	66.7	–	20.0	–	7.0	1.3	19.2	26.2	5.1	20.6	–	–	0.6	–
495.9	58.6	–	15.5	–	4.5	1.0	38.7	21.5	5.3	11.7	–	–	1.8	–
524.2	61.2	–	15.1	–	5.5	1.6	23.4	26.3	4.3	23.4	–	–	0.4	–
549.0	30.7	–	0.3	–	–	–	19.5	2.0	–	78.2	–	–	–	–
549.4	49.2	–	20.8	–	3.3	1.3	47.3	13.1	–	14.3	–	–	–	–
550.0	26.2	–	3.6	–	–	–	81.4	15.0	–	–	–	–	–	–

TABLE 7
Results of X-Ray Diffraction Analysis, Hole 331

Sample Depth Below Sea Floor (m)	Amor.	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Clin.	Amph.
Bulk Samples										
6.6	56.7	27.8	10.0	24.2	1.7	16.8	3.6	11.6	2.2	2.2
2-20 μm Fractions										
6.6	40.8	38.4	9.5	27.0	1.1	12.5	4.1	4.4	1.5	1.5
<2 μm Fractions										
6.6	67.8	13.0	4.1	8.4	2.4	18.2	6.2	47.7	–	–

TABLE 8
Samples Submitted For X-Ray Diffraction Analysis, Leg 36

Sample (Interval in cm)	Depth Below Sea Floor (m)	GSA Color	GSA Color Code Number	Sediment Description
Hole 327				
1, CC	6.1	Dusky yellowish brown	10 YR 2/2	Iron manganese colloid calcareous micronodule bearing sandy mud
1-4, 27-30	4.8	Light olive-gray	5 Y 5/2	Micronodule bearing muddy sand
Hole 327A				
1-3, 24-25	7.3	Light olive-gray	5 YR 5/2	Micronodule bearing biosiliceous sandy mud
2-3, 98-99	17.5	Grayish orange	10 YR 7/4	Silty Mud
3-2, 108-109	25.6	Grayish orange	10 YR 7/4	Mud
4-1, 33-34	32.8	Yellowish gray	5 Y 7/2	Biosiliceous mud
5-5, 98-99	49.5	Light olive-gray	5 Y 5/2	Biosiliceous mud
6-4, 81-82	57.1	Greenish gray	5 GY 5/1	Biosiliceous mud
7-2, 112-113	63.6	Grayish olive	10 Y 4/2	Biosiliceous mud
8-3, 101-102	74.5	Olive-gray	5 Y 4/1	Biosiliceous mud
9-5, 102-103	87.5	Olive-black	5 Y 2/1	Glauconite-bearing mud
10-3, 97-98	93.5	Greenish gray	5 GY 6/1	Biocalcareous ooze
11-1, 32-33	99.3	Greenish gray	5 GY 6/1	Biocalcareous ooze
12-4, 93-94	113.9	Greenish gray	5 GY 6/1	Biocalcareous ooze
14-4, 95-97	152.0	Moderate brown	5 YR 4/4	Silty mud
14-6, 92-94	154.9	Dusky yellow-green	5 GY 5/2	Silty mud
15-2, 115-117	117.7	Pale yellowish orange	10 YR 6/2	Biocalcareous ooze
16-3, 102-104	118.5	Pale olive	10 Y 6/2	Biocalcareous ooze
16-5, 89-91	191.4	Light olive-gray	5 Y 6/1	Biocalcareous ooze
18-4, 101-106	228.5	Light olive-gray	5 Y 6/1	Biocalcareous mud
19-2, 60-64	253.1	2 distinct colors: Yellowish gray and pale yellowish brown	5 Y 8/1 10 YR 6/2	Biocalcareous mud
20-2, 76-78	281.8	Light olive-gray	5 Y 6/1	Biocalcareous ooze
21-4, 101-103	313.5	Light olive-gray	5 Y 6/1	Biocalcareous ooze
22-3, 120-122	340.7	Olive-black	5 Y 2/1	Calcareous silty mudstone
22-3, 139	340.9	Light gray	N7	Limestone
23-1, 105-107	366.1	Dark gray	N3	Mudstone
23-1, 111	366.1	Olive-gray	5 Y 4/1	Limestone
23-2, 131	367.8	Very light gray	N8	Limestone
24-1, 78	394.3	Olive-gray	5 Y 4/1	Limestone
24-2, 131-133	396.3	Brownish black	5 Y 2/1	Calcareous mudstone
24-2, 140-142	396.4	Light olive-gray	5 Y 5/1	Calcareous mudstone
25-1, 80-82	422.8	Olive-gray	5 Y 4/1	Calcareous mudstone
25-1, 148-150	423.5	Olive-gray	5 / 4/1	Calcareous mudstone
25-1, 95-97	424.5	Olive-gray	5 Y 4/1	Calcareous mudstone
25-2, 145	425.0	Olive-gray	5 Y 4/1	Calcareous mudstone

TABLE 8 – *Continued*

Sample (Interval in cm)	Depth Below Sea Floor (m)	GSA Color	GSA Color Code Number	Sediment Description
Hole 327A – *Continued*				
25-3, 148-150	426.5	Olive-gray	5 Y 4/1	Calcareous mudstone
26-1, 120-122	451.7	Olive-gray	5 Y 3/2	Calcareous mud
Hole 328				
1-2, 107-108	2.6	Yellowish gray	5 Y 7/2	Biosiliceous silty mud
1-5, 107-108	7.1	Grayish olive	10 Y 4/2	Biosiliceous silty mud
2-1, 145-147	9.0	Dark yellowish brown	10 YR 4/2	Micronodule-bearing biosiliceous silty mud
2-6, 14-15	15.2	Yellowish gray	5 YR 7/2	Biosiliceous silty mud
3-2, 117-118	19.7	Grayish orange	10 YR 7/4	Micronodule-bearing biosiliceous silty mud
3-3, 113-114	21.1	Moderate yellowish brown	10 YR 5/4	Micronodule-bearing biosiliceous mud
3-4, 113-114	22.6	Moderate yellowish brown	10 YR 5/4	Biosiliceous mud
3-5, 14-15	23.2	Moderate yellowish brown	10 YR 5/4	Mud
3-5, 113-114	24.1	Moderate yellowish brown	10 YR 5/4	Micronodule-bearing mud
3-6, 10-11	24.6	Moderate yellowish brown	10 YR 5/4	Micronodule-bearing mud
3-6, 115-116	25.7	Dark yellowish brown	10 YR 4/2	Micronodule-bearing biosiliceous mud
4-2, 20-21	47.2	Grayish orange	10 YR 7/4	Iron manganese colloid micronodule-bearing biosiliceous mud
4-2, 50	47.5	Grayish orange	10 YR 7/4	Iron manganese colloid biosiliceous mud
4-3, 20-21	48.7	Moderate brown	10 YR 5/4	Micronodule-bearing biosiliceous mud
4-3, 113-114	49.6	Moderate yellowish brown	10 YR 5/4	Micronodule-bearing biosiliceous mud
4-4, 10-11	50.1	Dark yellowish brown	10 YR 4/2	Micronodule-bearing biosiliceous mud
4-4, 60-61	50.6	Moderate yellowish brown	10 YR 5/4	Micronodule-bearing mud
4-4, 114-115	51.2	Grayish orange	10 YR 7/4	Micronodule-bearing mud
4-5, 10-11	51.6	Moderate yellowish brown	10 YR 5/4	Micronodule-bearing mud
4-5, 60-61	52.1	Dark yellowish brown	10 YR 4/2	Micronodule-bearing mud
4-5, 123-125	52.7	Moderate yellowish brown	10 YR 5/4	Micronodule-bearing mud
5-3, 53-54	96.5	Dark yellowish brown	10 YR 4/2	Micronodule-bearing mud
6-2, 53-54	142.5	Light olive-gray	5 Y 5/2	Mud
6-2, 81-83	142.8	Olive-gray	5 Y 4/2	Mud
7-4, 111-112	193.6	Light olive-gray	5 Y 5/2	Mud
8-2, 118-119	238.2	Light olive-gray	5 Y 5/2	Mud
9-5, 72-73	290.0	Light olive-gray	5 Y 5/2	Mud
9-6, 142-144	292.2	Light olive-gray	5 Y 5/2	Mud
10-5, 124-126	337.8	Moderate brown	5 YR 4/4	Mud
10-5, 146-148	338.0	Light olive-gray	5 Y 5/2	Mud
10-6, 81-82	338.8	Olive-gray	5 Y 4/1	Micronodule (?) bearing mud (w/trace of heavies)
11-4, 119-121	364.7	Moderate brown	5 YR 3/4	Mudstone
11-6, 126-128	367.8	Olive-gray	5 Y 4/1	Mudstone
12-1, 45-48	388.0	Olive-gray	5 Y 4/1	Mudstone
12-2, 7-8	389.1	Moderate brown	5 YR 4/4	Mudstone
12-2, 17-18	389.2	Dark greenish gray	5 GY 4/1	Mudstone
Hole 328B				
4-5, 15-16	42.2	Moderate yellowish brown	10 YR 5/4	Micronodule-bearing biosiliceous mud

TABLE 8 – *Continued*

Sample (Interval in cm)	Depth Below Sea Floor (m)	GSA Color	GSA Color Code Number	Sediment Description
Hole 328B – *Continued*				
5-3, 10-11	49.1	Dark yellowish brown	10 YR 4/2	Micronodule-bearing biosiliceous mud
5-3, 134-135	50.4	Dark yellowish brown	10 YR 5/4	Micronodule-bearing mud
6-6, 63-64	63.1	Dark yellowish brown	10 YR 4/2	Micronodule-bearing mud
7-1, 74-75	436.3	Yellowish gray	5 Y 7/2	Silty mudstone
7-5, 81-82	442.3	Grayish red	10 R 4/2	Mudstone
7-5, 135-137	442.9	Olive-gray	5 Y 4/1	Mudstone
7-6, 63-64	443.6	Grayish red	10 R 4/2	Micronodule (Not Mn) rich mudstone
Hole 329				
1-2, 10-12	1.6	Grayish olive-green	5 GY 3/2	Glauconite-rich biosiliceous silty sand
6-4, 110-112	52.1	Pale olive	10 Y 6/2	Silty diatomaceous ooze
8-6, 128-130	74.3	Greenish gray	5 GY 6/1	Calcareous/biosiliceous ooze
10-6, 119-121	93.5	Greenish gray	5 GY 6/1	Calcareous/biosiliceous ooze
12-6, 30-32	111.8	Light olive-gray	5 Y 6/1	Calcareous/biosiliceous ooze
18-6, 86-88	169.4	Greenish gray	5 GY 6/1	Calcareous/biosiliceous ooze
18-6, 88-90	169.4	Greenish gray	5 GY 6/1	Calcareous/biosiliceous ooze
20-2, 101-105	192.0	Greenish gray	5 GY 6/1	Calcareous/biosiliceous ooze
31-1, 145	418.5	Medium gray	N 5	Chalk
33-2, 10-12	456.6	Pinkish gray	5 YR 8/1	Chalk
33-3, 06	458.1	Yellowish gray	5 Y 8/1	Chalk
33-4, 33-35	459.8	Yellowish gray	5 Y 8/1	Chalk
33-4, 48	460.0	Yellowish gray	5 Y 8/1	Chalk
33-4, 122	460.7	Yellowish gray	5 Y 8/1	Chalk
Hole 330				
1-4, 125-127	135.3	Very light gray	N 8	Silty mud
2, CC	179.6	Grayish black	N 2	Silty mudstone
2-2, 105-107	179.1	Greenish gray	5 GY 6/1	Clay-rich calcareous ooze
3, CC	227.1	(Mottled)		
		medium gray to	N 5	Limestone
		very light gray	N 8	Limestone
3-1, 148	225.5	Greenish black	5 GY 2/1	Glauconitic (?) mudstone
3-2, 68	226.2	Light olive-gray	5 Y 5/2	Limestone
3-2, 135	226.9	Light olive-gray	5 Y 6/1	Limestone
3-2, 141-143	226.9	Olive-black	5 Y 2/1	Diatom-bearing cherty siltstone
4-1, 135-115	272.6	Olive-gray	5 Y 4/1	Limestone
5-2, 80-82	302.3	Olive-black	5 Y 2/1	Iron manganese colloid-rich micarb mudstone
6-4, 61-63	314.6	Medium bluish gray	5 B 5/1	Iron manganese colloid-bearing mud
6-4, 66-68	314.7	Olive-black	5 Y 2/1	Iron manganese colloid-bearing micarb mud
12-5, 18-19	467.7	Olive-gray	5 Y 4/1	Iron manganese colloid-bearing mudstone
12-6, 15-17	469s2	Olive-gray	5 Y 4/1	Iron manganese colloid-bearing sandy siltstone
13-4, 135-137	495.9	Olive-black	5 Y 2/1	Micronodule-bearing silt
14-4, 120-121	524.2	Olive-black	5 Y 2/1	Silty mud
15-2, 44-46	549.0	Medium gray	N 5	Silty mudstone
15-2, 91-93	549.4	Olive-black	5 Y 2/1	Plant fragment-rich sandy silt

TABLE 8 – *Continued*

Sample (Interval in cm)	Depth Below Sea Floor (m)	GSA Color	GSA Color Code Number	Sediment Description
Hole 330 – *Continued*				
15-2, 147-148	550.0	(Mottled) very light gray to medium gray	N 8 and N 5	Silty sand
Hole 331				
1-4, 111-113	6.6	Olive-gray	5 Y 4/1	Silty mud