17. X-RAY MINERALOGY DATA FROM THE CENTRAL PACIFIC, LEG 33 DEEP SEA DRILLING PROJECT[1]

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METHODS

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 14. Tables 1 to 7 summarize the mineral data and provide stratigraphic information. The sediment ages, lithologic units, and nomenclature of the sediment types are from the DSDP Leg 32 hole summaries.

The complete list of samples from Leg 33 and their subbottom depths which were utilized in X-ray diffraction analysis are presented in Table 15. In a number of cases, two or more samples of similar lithology were composited. The composited samples are bracketed in Table 15. The samples are identified by their subbottom depths in Tables 1 to 14. The composited samples are identified by the subbottom depth of the stratigraphically uppermost sample of the composite.

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 fraction is calculated from the total diffuse scattering of the sample. The method of calculation assumes that the diffuse scatter in excess of the diffuse scatter from the crystalline minerals 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 fraction varies between 0 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 the ratio of 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 are summed to 100%. The amorphous fraction and 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 (>65%).

The precision of the mineral determinations is approximately ±1 weight percent of the amount present. Because of inevitable differences in the crystallinity of the mineral calibration standards and the minerals in the samples and also because of diffraction-peak interferences, the accuracy 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%; and kaolinite, amphibole, augite, the feldspars, the zeolites, palygorskite, sepiolite, apatite may vary ±10%. 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 not absolute concentrations and that some adjustment has to be made for the amorphous fraction and the unquantifiable minerals; (2) in a homogenous system of minerals, the mineral concentration trends are reliable because of the precision of the method, but when comparing mineral concentrations between different geographic regions or lithologic units additional information regarding the crystallinity of the minerals is required; and (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.

MINERAL NOTES

Twelve <2 μm samples with a high smectite content from Hole 315A and Site 316 were tested for the presence of nontronite and beidellite using the Green-Kelly method. The samples selected from Hole 315A were from 739.3, 779.2, 779.6, 788.5, and 932.7 meters; samples from Site 316 were from 515.4, 524.7, 533.6,

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TABLE 1
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology, Age, and X-Ray Diffraction Results, Site 314

Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20 μm Fraction Major Constituent			<2 μm Fraction Major Constituent		
			1	2	3	1	2	3	1	2	3
0.0	Brown	Quat.?	Clin.	Magn.	Goet.	Clin.	Magn.	Goet.	Mont.	Cris.	Goet.
0-45[a]	zeolitic		Phil.	Mica	Quar.	Phil.	Mica	Clin.	Mont.	Phil.	Mica
0-45[a]	clay		Phil.	Mica	Quar.	Phil.	Mica	Quar.	Mont.	Mica	Quar.

[a]Scrapings from outer drill collars.

TABLE 2
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology, Age, and X-Ray Diffraction Results, Hole 315

Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20 μm Fraction Major Constituent			<2 μm Fraction Major Constituent		
			1	2	3	1	2	3	1	2	3
1.3	Unit 1:	Pliocene to Quaternary	Calc.			Quar.	Mica	Plag.	Mont.	Mica	Quar.
3.9	Dark brown		Calc.			Quar.	Mica	Phil.	Mont.	Mica	Quar.
57.9	nanno-foram		Calc.			Bari.	Mica	Quar.	Mont.	Phil.	Mica
59.2	and		Calc.			Bari.	K-Fe.	Quar.	Mont.	Plag.	Quar.
61.9	nanno-rad		Calc.			Bari.	Mica	Plag.	Mont.	Phil.	Mica
65.5	oozes		Calc.			K-Fe.	Bari.	Plag.	Mont.	Phil.	Mica

562.9, 571.8, 610.5, and 771.2 meters (see Tables 10, 11, and 15 for sample identification).

The samples were saturated with lithium. Several samples were fractionated during centrifuging when it was evident that more than one population of clays was present. Randomly oriented mounts were prepared in duplicate. One set was heated for 12 hr at 300°C and treated with glycerol; the other set was only treated with glycerol.

Most of the samples contained montmorillonite which expanded to 17-18Å and collapsed to 10Å with heating.

The sample from Hole 315A, depth 779.2 meters, was found to consist largely of montmorillonite. The coarser portion of the <2 μm fraction contained a large component of mica-montmorillonite mixed-layer clay.

The samples from Site 316, depth 610.5 and 771.9 meters, contained a portion which expanded after heating, indicating the presence of the nontronite-beidellite series.

Large quantities of montmorillonite were detected in numerous 2-20 μm samples in Holes 315A, 316, 317A, and 318. A microscopic examination of several 2-20 μm samples revealed that they contained large quantities of birefringent, low-refractive-index aggregates which were presumed to contain the montmorillonite. The aggregates, which had survived the action of acetic acid in an ultrasonic bath, were also difficult to disperse in the microscope slide.

DRILLING AND MUD USAGE

Drilling mud containing montmorillonite and barite was used in Hole 315A between Cores 12 and 13 and Cores 18 and 19. An X-ray diffraction analysis of a sample of drilling mud from Leg 33 showed 88% montmorillonite, 5% barite, 2% quartz, 2% mica, and 2% feldspar. No samples were submitted from Core 13. The sample from Core 19 showed no traces of barite and no inordinate concentrations of montmorillonite.

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TABLE 3
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology, Age, and X-Ray Diffraction Results, Hole 315A

Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent 1	2	3	2-20 μm Fraction Major Constituent 1	2	3	<2 μm Fraction Major Constituent 1	2	3
76.6	Unit 2: Variegated nanno-foram and nanno-rad oozes	Middle Oligocene to upper Miocene	Calc.			Insuffic. residue			Mont.	Mica	Plag.
82.9			Calc.			Amph.	Bari.	Plag.	Mont.	Mica	Bari.
124.9			Calc.			Bari.	K-Fe.	Plag.	Mont.	Phil.	Bari.
142.6			Calc.			Bari.	K-Fe.	Plag.	Quar.	Mont.	Bari.
148.9			Calc.			Bari.	Chlo.	Pyri.	Mont.	Bari.	Mica
260.0			Calc.			Pyri.	Plag.	Mont.	Mont.	Paly.	K-Fe.
372.1			Calc.			Bari.	K-Fe.	Plag.	Mont.	Bari.	Quar.
465.9			Calc.			Bari.	K-Fe.	Plag.	Mont.	Bari.	Phil.
513.5			Calc.			Bari.	K-Fe.	Plag.	Mont.	Bari.	Quar.
591.0			Calc.			Bari.	Feld.	Quar.	Mont.	Bari.	K-Fe.
703.6			Calc.			Bari.	K-Fe.	Plag.	Mont.	Bari.	K-Fe.
731.3	Unit 3: Claystone, chert, and limestone	Campanian to lower Oligocene	Calc.			Clin.	Bari.	K-Fe.	Mont.	Bari.	Clin.
739.3			Quar.	Bari.	Mont.	Bari.	Mont.	K-Fe.	Mont.	K-Fe.	Plag.
741.4			Quar.	Calc.	Cris.	Cris.	Quar.	Trid.	Cris.	Quar.	Trid.
779.2			Quar.	Mica	Clin.	Quar.	Clin.	Mica	Quar.	Mont.	Mica
779.6			Quar.	Mica	Clin.	Clin.	Quar.	Mica	Quar.	Mont.	Mica
788.5			Quar.	Clin.	Cris.	Quar.	Clin.	Cris.	Mont.	Quar.	Cris.
797.1			Quar.	Clin.	Mica	Clin.	Quar.	Mica	Quar.	Mont.	Mica
799.2			Calc.	Quar.	Mica	Quar.	Clin.	Mica	Mont.	Quar.	Mica
808.6			Calc.	Quar.	Mica	Clin.	Quar.	K-Fe.	Quar.	Mont.	Mica
818.7			Calc.	Quar.	Mica	Clin.	Quar.	K-Fe.	Mont.	Quar.	Mica
826.9			Calc.	Quar.	Mica	Quar.	Mica	K-Fe.	Quar.	Mica	Mont.
830.0			K-Fe.	Plag.	Mont.	Insuffic. residue			Insuffic. residue		
836.8			Calc.			K-Fe.	Quar.	Plag.	Quar.	Mont.	Mica
837.0			Calc.	Clin.	Plag.	Clin.	K-Fe.	Quar.	Mont.	Quar.	Mica
850.5	Unit 4: Volcanic sand-stone and clay-stone interbed. With clayey limestone	Campanian	Plag.	Mont.	Calc.	Mont.	K-Fe.	Plag.	Mont.		
856.0			K-Fe.	Calc.	Mont.	K-Fe.	Mont.	Plag.	K-Fe.	Mont.	Plag.
858.3			Calc.	Mont.	K-Fe.	Mont.	K-Fe.	Plag.	Mont.	K-Fe.	Plag.
875.9			Calc.	Quar.	Mont.	Quar.	Mont.	K-Fe.	Quar.	Mont.	Mica
893.4			Calc.	Quar.	Clin.	Quar.	Clin.	K-Fe.	Quar.	Mont.	
911.3	Unit 5: Red-brown and blue-green ferr. claystones interbed. With graded volcanic sands	Unknown	Quar.	Calc.	Mont.	Quar.	K-Fe.	Mica	Quar.	Mont.	Mica
932.7			K-Fe.	Mont.	Clin.	K-Fe.	Mont.	Plag.	Mont.		
952.8			Quar.	Mica	Mont.	Quar.	Mica	Mont.	Quar.	Mica	Mont.
952.9			Calc.	Hema.	Mica	Quar.	Mica	Hema.	Mont.	Mica	Trid.
970.9			Mica	Mont.	Quar.	Quar.	Mica	Mont.	Mica	Quar.	Mont.
990.0			Quar.	Mont.	Hema.	Quar.	Hema.	Mont.	Mont.	Quar.	Hema.

TABLE 4
Summary of X-Ray Mineralogy Samples, Sample Depth, Lithology, Age, and X-Ray Diffraction Results, Site 316

Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20 μm Fraction Major Constituent			<2 μm Fraction Major Constituent		
			1	2	3	1	2	3	1	2	3
0.8	Unit 1:[a]	a	Calc.			Bari.	Quar.	Plag.	Mont.	Quar.	Plag.
2.7	Unit 2:	Mid to late Mio.	Calc.			Bari.	Quar.	Plag.	Mont.	Quar.	Mica
155.3	calc. and		Calc.			Bari.	Phil.	Quar.	Mont.	Bari.	Plag.
268.3	siliceous oozes and chalk		Calc.	K-Fe.		Bari.	K-Fe.	Plag.	Mont.	Quar.	Chlo.
391.8	Unit 3:	Paleocene to lower Miocene	Calc.			K-Fe.	Plag.	Bari.	Mont.	Phil.	Plag.
448.6	Siliceous chalk,		Calc.			K-Fe.	Plag.	Quar.	Mont.	Mica	K-Fe.
469.3	limestone, and		Dolo.	Clin.	Mont.	Clin.	K-Fe.	Bari.	Mont.	Quar.	K-Fe.
486.5	dolomite		Calc.			Clin.	Bari.	Quar.	Cris.	Mont.	Mica
495.9			Cris.	Calc.	Trid.	Cris.	Quar.	Trid.	Cris.	Trid.	
515.4			Calc.			Quar.	Mica	K-Fe.	Mont.	Paly.	Mica
524.7			Calc.			Quar.	Mica	Paly.	Mont.	Paly.	Mica
533.6			Calc.			Quar.	Mica	Bari.	Mica	Mont.	Quar.
553.3			Calc.			Quar.	K-Fe.	Mica	Mont.	Mica	Quar.
562.9			Calc.			Quar.	K-Fe.	Mica	Mont.	Mica	Quar.
571.8			Calc.			Quar.	K-Fe.	Bari.	Mont.	Mica	Quar.
573.6			Calc.			Quar.	Bari.	Mica	Mont.	Quar.	Mica
583.1	Unit 4:	Late Cretaceous	Calc.	Quar.		Quar.	Clin.	Mica	Quar.	Clin.	Mica
584.4	Volcaniclastic		Quar.	Mica	Calc.	Quar.	Clin.	K-Fe.	Mont.	Quar.	Mica
587.4	breccia		Calc.	Quar.		Quar.	Mica	K-Fe.	Quar.	Mont.	Mica
609.8	and graded		Calc.	Quar.		Quar.	K-Fe.	Mica	Mont.	Quar.	Mica
610.5	sandstone,		Calc.	Mont.		Mont.	Clin.	K-Fe.	Mont.		
613.6	chalk, and		Calc.	Quar.		Quar.	K-Fe.	Mica	Quar.	Mont.	Mica
630.6	limestone		Calc.	Mont.	Quar.	Mont.	Quar.	Mica	Mont.	Quar.	Mica
638.4			Calc.	Quar.		Quar.	Clin.	K-Fe.	Quar.	Mont.	Mica
641.8			Calc.	K-Fe.	Plag.	K-Fe.	Hema.	Clin.	Mont.	K-Fe.	Plag.
642.1			Calc.	Mont.	K-Fe.	K-Fe.	Hema.	Clin.	Mont.	K-Fe.	Hema.
667.1			Calc.			Mont.	Clin.	K-Fe.	Mont.	Quar.	Mica
668.1			Calc.	Mont.		K-Fe.	Quar.	Mont.	Mont.	Quar.	K-Fe.
686.7			Calc.			Quar.	K-Fe.	Mica	Mont.	Quar.	Mica
704.5			Calc.	Mont.	K-Fe.	K-Fe.	Quar.	Mica	Mont.		
705.7			Calc.	Quar.		Insuffic. residue			Insuffic. residue		
727.0			Calc.	K-Fe.	Mont.	K-Fe.	Hema.	Plag.	Mont.	Geot.	K-Fe.
744.8			Calc.	K-Fe.	Plag.	K-Fe.	Magn.	Pyri.	Mont.	K-Fe.	Anal.
771.2			Calc.	Mont.	K-Fe.	Mont.	K-Fe.	Quar.	Mont.		
830.3			Calc.	K-Fe.		K-Fe.	Quar.	Mica	Mica	Quar.	K-Fe.

[a]Interbedded calcareous and siliceous oozes; Quaternary.

TABLE 5
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology, Age, and X-Ray Diffraction Results Hole 317A

Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20 μm Fraction Major Constituent			<2 μm Fraction Major Constituent		
			1	2	3	1	2	3	1	2	3
554.2	Unit 2: Foram-nanno oozes and chalk with black chert	Aptian to early Oligocene	Calc.	Clin.	Mica	Clin.	Quar.	K-Fe.	Mont.	Mica	K-Fe.
564.5			Calc.	Quar.		K-Fe.	Quar.	Mica	Quar.	K-Fe.	Mica
576.9			Calc.	Quar.	K-Fe.	K-Fe.	Quar.	Mica	Mica	Quar.	K-Fe.
585.0			Paly.	K-Fe.	Quar.	K-Fe.	Mica	Quar.	Paly.	Mont.	Mica
602.4			Calc.	Cris.	Quar.	Cris.	Quar.	Bari.	Cris.	Trid.	Quar.
623.3			Cris.	Calc.	Trid.	Cris.	K-Fe.	Trid.	Cris.	Trid.	Mont.
644.1			Calc.	Mont.	K-Fe.	Clin.	K-Fe.	Plag.	Mont.	K-Fe.	Plag.
651.0	Unit 3: Volcaniclastic sandstones and siltstones	Unknown	Mont.	Plag.	Clin.	Plag.	Mont.	Quar.	Mont.	Plag.	
670.0			Mont.	Anal.		Mont.	Anal.		Mont.	Anal.	
698.6			Mont.	Sani.	Anal.	Mont.	Anal.	Sani.	Mont.	Sani.	Anal.
727.7			Mont.	K-Fe.	Plag.	K-Fe.	Mont.	Plag.	Mont.	Feld.	
755.9			Mont.	Hema.	Quar.	Mont.	Feld.	Hema.	Mont.	Hema.	
756.7			Mont.	Sani.	Anal.	Mont.	Sani.	Hema.	Mont.	Hema.	
757.4			Mont.	Sani.		Mont.	Sani.	Anal.	Mont.	Sani.	
759.4			Mont.	Anal.	Sani.	Mont.	Sani.		Mont.	Sani.	
777.7			Mont.	Sani.	Anal.	Mont.	Sani.	Anal.	Mont.	Sani.	
778.1			Mont.	Sani.	Calc.	Mont.	Sani.	Anal.	Mont.		
779.6			Mont.	Sani.	Anal.	Mont.	Sani.	Anal.	Mont.	Sani.	
821.1			Mont.	Anal.	Sani.	Mont.	Sani.	Anal.	Mont.	Sani.	
849.9			Mont.	Anal.	Sani.	Mont.	Sani.	Anal.	Mont.	Sani.	Anal.
887.4			Mont.	Anal.		Anal.	Mont.	Sani.	Mont.	Anal.	
887.4			Mont.	Anal.		Mont.	Sani.	Anal.	Mont.	Hema.	
927.5	Basalts with siltstones	Unknown	Plag.	Mont.	Hema.	Plag.	Quar.	Hema.	Mont.	Plag.	Mica

TABLE 6
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology, Age, and X-Ray Diffraction Results, Hole 317B

Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20 μm Fraction Major Constituent			<2 μm Fraction Major Constituent		
			1	2	3	1	2	3	1	2	3
0.3	Unit 1: Nanno-foram oozes and chalk	Early Oligocene to Quaternary	Calc.			Bari.	Plag.	K-Fe.	Mont.	Plag.	Bari.
27.4			Calc.			Bari.	K-Fe.	Plag.	Mont.	K-Fe.	
65.7			Calc.			Bari.	K-Fe.	Plag.	Mont.	Apat.	Bari.
102.2			Calc.			Bari.	Plag.	K-Fe.	Bari.	K-Fe.	Mont.
141.2			Calc.			K-Fe.	Bari.	Mont.	Mont.	K-Fe.	Mica
179.5			Calc.			Bari.	K-Fe.	Plag.	Mont.	Bari.	Mica
220.7			Calc.			Psil.			Psil.	Gyps.	
227.1			Calc.			Plag.	Quar.	Mica	Mont.	Mica	Quar.
266.8			Calc.			Clin.	K-Fe.	Mica	Mont.	Mica	Quar.
312.4	Unit 2: As in Hole 317A	Mid. Eocene to early Olig.	Calc.			Insuffic. residue			Mont.	Mica	Chlo.
352.0			Calc.			Clin.	Bari.	K-Fe.	Mont.	Mica	K-Fe.
389.4			Calc.			Clin.	K-Fe.	Bari.	Cris.	Mont.	Mica

TABLE 7
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology, Age, and X-Ray Diffraction Results, Site 318

Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent 1	2	3	2-20μm Fraction Major Constituent 1	2	3	<2μm Fraction Major Constituent 1	2	3
1.3	Unit 1:[a]	a	Calc.	Arag.		Dolo.	Phil.	Plag.	Mont.	K-Fe.	Plag.
93.7	Unit 2: Foram-nanno ooze	Up. Mio to Up. Plio.	Calc.			Insuffic. residue			Mont.	Plag.	K-Fe.
122.5			Calc.			Insuffic. residue			Insuffic. residue		
179.7			Calc.			Bari.	Plag.	K-Fe.	Mont.	Bari.	
266.5	Unit 3: Foram-nanno chalk	Up. Olig. to Lr. Mio	Calc.			Bari.	K-Fe.	Mica	Mont.	K-Fe.	Bari.
350.8			Calc.			Quar.	Plag.	Mica	Mont.	K-Fe.	Quar.
407.5	Unit 4: Nanno-foram limestone	Up. Eo. to Up. Olig.	Calc.			Clin.	K-Fe.	Quar.	Mont.	K-Fe.	Plag.
492.7			Calc.			Clin.	K-Fe.	Hema.	Mont.	K-Fe.	Clin.
578.5	Unit 5: Limestone, siltstone, and graded sandstone	Lower Eocene to Middle Eocene	Calc.			Clin.	K-Fe.	Mont.	Mont.	K-Fe.	Plag.
581.1			Calc.	Clin.		Clin.	K-Fe.	Plag.	Mont.		
615.8			Mont.	Calc.	K-Fe.	Clin.	Mont.	K-Fe.	Mont.	K-Fe.	Plag.
630.7			Mont.	Calc.	K-Fe.	Mont.	K-Fe.	Plag.	Mont.		
665.6			Mont.	Plag.	K-Fe.	Mont.	K-Fe.	Clin.	Mont.	K-Fe.	Plag.
703.8			K-Fe.	Clin.	Mont.	Clin.	K-Fe.	Mont.	Mont.	K-Fe.	Plag.
734.5			Mont.	Calc.	Clin.	K-Fe.	Plag.	Mont.	Mont.	K-Fe.	Plag.

[a]Nannofossil-foraminiferal ooze with graded shell beds; Quaternary.

TABLE 8
Results of X-Ray Diffraction Analysis, Site 314

Sample Depth Below Sea Floor	Amor.	Dolo.	Quar.	K-Fe.	Cris.	Plag.	Mica	Chlo.	Goet.	Paly.	Mont.	Trid.	Clin.	Phil.	Gyps.	Sepi.	Magn.	Cupr.[a]	Anat.
Bulk Sample																			
0.0	75.9	–	3.8	2.0		–	1.4		16.4	–	12.0		31.5	–		–	18.2	14.7	
0 to 45[b]	59.8	–	9.3	–		9.3	13.9		4.6	–	6.4		9.3	39.4		4.8	3.0	–	
0 to 45[b]	52.2	–	13.2	–		7.2	18.3		2.6	1.7	5.6		2.6	45.0		2.7	0.3	–	
2-20 μm Fraction																			
0.0	52.8		5.2	4.0		–	3.9	–	10.8	–	–		50.7	–		–	18.2	7.2	–
0 to 45	24.5		11.7	–		8.1	14.2	1.6	7.0	–	2.2		13.1	37.7		1.0	3.4	–	–
0 to 45	25.3		18.7	–		9.9	21.5	2.4	–	1.9	–		3.9	38.5		2.6	–	–	0.6
<2 μm Fraction																			
0.0	73.3		3.2		16.0	–	–	–	15.9	–	39.4	4.5	4.0	–	–	–	12.2	4.7	
0 to 45	71.0		9.7		–	–	11.3	–	8.2	–	31.8	–	1.0	30.0	–	4.2	3.7	–	
0 to 45	77.3		14.3		–	13.7	20.8	3.4	–	7.3	27.3	–	–	7.7	0.2	4.9	–	–	

[a]Abbreviation Cupr. is for Cuprite. This may be a contaminant as the bent drill bit was torched off to recover the sample.
[b]Aggregated mud samples of uncertain depth.

TABLE 9
Results of X-Ray Diffraction Analysis, Hole 315

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Paly.	Mont.	Clin.	Phil.	Gyps.	Bari.	Amph.	Anat.
Bulk Sample																
1.30	20.4	99.7	0.3										–	–		
3.90	24.7	99.5	0.3										0.2	–		
57.90	47.6	97.3	1.1										0.3	1.2		
59.20	26.8	99.7	0.3										–	–		
61.90	26.9	99.1	0.3										–	0.6		
65.50	19.0	100.0	–										–	–		
2-20 μm Fraction																
1.30	87.6		27.6	7.7	16.9	–	25.8	5.9	–	2.3	–	–		13.9	–	–
3.90	86.7		28.2	–	16.7	–	18.7	3.5	–	–	–	18.1		14.3	–	0.5
57.90	89.8		10.4	3.4	8.1	–	13.9	6.9	–	7.0	–	3.9		46.4	–	–
59.20	86.7		15.8	16.3	10.6	–	13.4	2.7	–	2.5	–	–		37.1	1.5	–
61.90	83.8		7.8	9.3	9.3	1.3	10.3	1.9	5.7	8.2	0.5	–		45.8	–	–
65.50	91.6		13.1	24.3	15.8	–	15.6	9.1	–	–	–	–		22.2	–	–
<2 μm Fraction																
1.30	86.3		18.1	2.6	7.7	4.2	21.8	2.9	4.7	32.6		–	1.0	4.5	–	
3.90	88.9		16.7	–	9.1	–	17.7	2.2	–	35.3		11.7	4.1	2.1	1.2	
57.90	84.2		7.8	–	5.6	–	8.5	–	7.2	40.2		24.1	1.7	4.9	–	
59.20	86.0		10.3	7.4	12.0	1.8	7.7	2.1	–	51.6		–	1.7	5.3	–	
61.90	84.4		8.0	2.3	6.5	–	8.3	1.7	3.2	51.9		11.8	–	6.4	–	
65.50	85.5		8.1	0.7	4.9	–	8.4	4.5	–	54.8		13.1	1.6	3.9	–	

TABLE 10
Results of X-Ray Diffraction Analysis, Hole 315A

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Dolo.	Arag.	Feld.[a]	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Goet.	Paly.	Mont.	Trid.	Clin.	Phil.	Pyri.	Hema.	Gyps.	Bari.	Amph.	Gibb.	Magn.
Bulk Samples																									
76.6	20.5	100.0	–	–		–	–	–	–		–				–	–	–			–	–	–			–
82.90	17.3	99.7	–	–		0.3	–	–	–		–				–	–	–			–	–	–			–
124.90	19.2	100.0	–	–		–	–	–	–		–				–	–	–			–	–	–			–
142.60	19.7	99.4	–	–		0.2	–	–	–		–				–	–	–			–	–	0.4			–
148.90	20.8	99.2	–	–		0.2	–	–	–		–				–	–	–			–	–	0.6			–
260.00	18.7	100.0	–	–		–	–	–	–		–				–	–	–			–	–	–			–
372.10	18.7	98.6	–	–		0.1	–	–	–		–				–	–	–			0.9	–	0.3			–
465.90	17.1	100.0	–	–		–	–	–	–		–				–	–	–			–	–	–			–
513.50	12.1	100.0	–	–		–	–	–	–		–				–	–	–			–	–	–			–
591.00	10.2	100.0	–	–		–	–	–	–		–				–	–	–			–	–	–			–
703.60	18.2	100.0	–	–		–	–	–	–		–				–	–	–			–	–	–			–
731.30	10.0	98.4	–	–		0.2	–	–	–		–				–	–	0.5			–	–	0.9			–
739.30	88.3	61.7	–	–		3.9	–	–	–		2.3				14.4	–	–			–	–	17.7			–
741.40	13.7	26.7	–	–		48.1	22.3	–	–		–				–	2.9	–			–	–	–			–
779.20	74.8	14.6	–	–		23.6	–	8.7	6.6		12.4				14.9	–	13.8			–	0.5	5.1			–
779.60	73.3	–	–	–		25.9	–	5.0	6.1		22.8				16.9	–	21.1			–	0.4	1.8			–
788.50	66.0	–	–	–		26.6	12.1	3.8	3.2		16.0				14.0	–	24.3			–	–	–			–
797.10	48.1	–	–	–		28.8	–	7.2	4.7		17.0				11.3	–	27.0			–	1.5	2.4			–
799.20	34.2	88.3	–	–		4.6	–	0.6	0.4		3.1				1.5	–	1.5			–	–	–			–
808.60	44.7	76.6	–	–		8.7	–	1.2	0.8		5.7				2.9	–	4.1			–	–	–			–
875.90	32.8	77.2	–	–		8.9	–	1.2	0.7		4.0				7.4	–	0.6			–	–	–			–
893.40	47.2	50.4	–	–		36.8	–	1.6	1.6		2.2				3.4	–	4.2			–	–	–			–
911.30	56.4	17.1	–	–		48.2	–	6.4	4.2		12.3				6.9	–	2.9			1.9	–	–			–
932.70	45.7	–	–	–		0.6	–	43.9	4.1		0.9				32.4	–	16.9			1.2	–	–			–
952.80	51.8	–	–	–		75.8	–	–	–		14.8				9.4	–	–			–	–	–			–
952.90	44.5	93.6	–	–		–	–	–	–		2.3				1.2	–	–			2.9	–	–			–
970.90	45.3	–	–	8.0		19.9	–	2.9	1.4		36.0				31.3	–	0.4			–	0.1	–			–
990.00	70.8	–	–	–		53.9	–	4.1	1.9		2.5				24.2	–	–			13.4	–	–			–
2-20 μm Fraction																									
82.90	86.1				–	7.9	–	–	10.1		9.1	–	–	–	–	–	–	–	–	–	–	11.2	61.7	–	–
124.90	96.1				–	5.7	–	19.6	13.4		9.6	–	–	–	–	–	–	–	–	–	–	51.7	–	–	–
142.60	90.8				–	2.4	–	10.4	6.8		–	–	–	–	–	–	–	–	4.1	–	–	76.3	–	–	–
148.90	97.4				–	8.4	–	–	–		16.2	20.0	–	–	–	–	–	–	13.6	–	–	41.8	–	–	–
260.00	76.9				–	2.1	–	–	40.4		3.5	–	–	–	9.0	–	–	–	43.2	–	–	1.8	–	–	–
372.10	95.5				–	6.1	–	15.7	13.6		–	–	–	–	–	–	–	–	8.7	–	–	55.9	–	–	–
465.90	94.6				–	4.4	–	14.3	12.4		–	–	–	–	–	–	–	–		–	–	68.8	–	–	–
513.50	91.5				–	–	–	22.9	4.7		–	–	–	–	–	–	–	–	–	–	–	72.4	–	–	–
591.00	95.2				15.2	5.9	–	–	–		–	–	–	–	–	–	–	–	–	–	–	78.9	–	–	–
703.60	88.5				–	1.0	–	13.8	13.8		6.1	2.2	–	–	6.7	–	–	7.6	–	–	0.1	48.7	–	–	–
731.30	37.6				–	1.9	–	8.2	5.4		3.4	–	–	–	5.7	–	57.5	–	–	–	–	17.8	–	–	–
739.30	90.3				–	6.9	–	13.2	10.3		–	–	–	–	18.5	–	–	–	–	–	–	51.0	–	–	–
741.40	13.5				–	35.6	56.7	–	–		–	–	–	–	–	7.6	–	–	–	–	–	–	–	–	–
779.20	59.6				–	28.6	–	8.7	9.5		12.4	–	–	–	8.1	–	24.3	–	–	–	–	8.4	–	–	–
779.60	48.7				–	25.1	–	11.9	8.3		13.3	–	–	–	5.1	–	36.3	–	–	–	–	–	–	–	–
788.50	47.3				–	26.7	15.5	5.1	3.6		4.4	–	12.5	–	6.3	–	25.7	–	–	–	–	–	–	–	–
797.10	37.3				–	25.1	–	9.2	6.0		11.2	0.7	–	–	4.0	–	43.8	–	–	–	–	–	–	–	–
799.20	53.2				–	40.8	–	9.5	5.4		18.5	–	–	–	6.1	–	19.7	–	–	–	–	–	–	–	–
808.60	36.8				–	28.6	–	12.7	6.6		7.4	–	–	–	–	–	44.7	–	–	–	–	–	–	–	–
818.70	47.6				–	23.6	–	17.0	5.9		6.8	–	–	–	4.3	–	42.4	–	–	–	–	–	–	–	–
826.90	49.2				–	36.5	–	19.7	2.3		23.4	–	–	–	5.0	–	13.2	–	–	–	–	–	–	–	–
836.80	44.6				–	25.6	–	31.0	10.2		9.9	0.7	–	–	0.7	–	14.3	–	–	7.4	–	–	–	0.3	–
837.00	41.1				–	9.7	–	9.8	6.4		5.7	–	–	–	5.5	–	55.6	–	–	–	–	–	–	–	7.3
850.50	34.5				–	–	–	7.1	37.3		1.2	–	–	0.8	47.6	–	2.3	–	–	–	–	–	–	–	3.8
856.00	23.8				–	–	–	66.5	11.7		1.0	–	–	–	12.2	–	3.9	–	–	–	–	–	–	–	4.7
858.30	38.2				–	1.1	–	36.8	5.8		1.6	–	–	–	49.0	–	5.6	–	–	–	–	–	–	–	–
875.90	48.0				–	53.2	–	10.1	3.8		15.3	–	–	–	16.7	–	–	–	–	–	–	–	–	–	0.9
893.40	44.6				–	69.5	–	6.4	3.9		5.9	–	–	–	3.9	–	9.4	–	–	–	–	–	–	–	1.0

911.30	41.6	–	56.8	–	11.0	7.7		10.0	–	–	–	3.6	–	7.9	–	–	1.8	–	–	–	–	1.3
932.70	50.6	–	1.0	–	58.1	11.1		1.0	–	–	–	23.8	–	3.0	–	–	2.1	–	–	–	–	–
952.80	41.5	–	90.0	–	–	–		6.8	–	–	–	3.2	–	–	–	–	–	–	–	–	–	–
952.90	37.1	–	92.2	–	–	–		4.7	–	–	–	–	–	–	–	–	3.1	–	–	–	–	–
970.90	49.2	–	70.9	–	1.7	2.8		17.8	–	–	–	6.7	–	–	–	–	–	–	–	–	–	–
990.00	59.6	–	43.2	–	9.1	3.3		11.1	1.8	–	–	15.3	–	–	–	–	16.1	–	–	–	–	–
<2 µm Fraction																						
76.6	58.2		7.9	–	7.3	9.1	–	15.6	–	–	–	55.9	–	–	–	4.2	–	–	–		–	–
82.90	83.5		6.1	–	1.2	3.3	1.4	9.6	–	–	7.4	56.2	–	–	3.4	2.4	–	1.6	7.5		–	–
124.90	89.0		4.4	–	–	–	–	4.5	3.7	–	–	63.7	–	–	12.8	–	–	1.1	9.8		–	–
142.60	92.0		48.0	–	5.2	4.5	–	2.4	2.0	–	–	27.6	–	–	–	–	–	0.5	9.9		–	–
148.90	87.3		3.5	–	7.5	6.1	–	7.9	1.3	–	–	62.8	–	–	–	–	–	–	10.9		–	–
260.00	80.9		4.3	–	4.9	3.9	–	3.9	1.9	–	6.0	68.9	–	–	–	2.9	–	0.6	-2.6		–	–
372.10	94.4		11.6	–	7.7	10.0	–	8.6	3.5	–	–	31.0	–	–	–	3.9	–	1.6	22.1		–	–
465.90	92.8		11.4	–	2.0	6.8	–	6.6	3.0	–	–	27.7	–	–	14.5	–	–	0.9	26.4		0.6	–
513.50	82.7		6.4	–	5.1	3.7	–	2.6	3.5	–	–	52.7	–	–	6.0	–	–	0.9	19.1		–	–
591.00	89.3		5.9	–	11.3	6.1	–	4.8	2.8	–	–	51.5	–	–	–	–	–	–	17.6		–	–
703.60	78.2		5.3	–	9.7	7.6	–	–	2.6	–	–	53.4	–	–	–	–	–	–	21.4		–	–
731.30	63.0		1.4	–	10.3	8.1	–	–	–	–	–	39.8	–	15.4	–	–	–	0.2	24.7		–	–
739.30	84.3		8.8	–	9.8	9.8	–	–	–	–	–	63.1	–	–	–	–	–	0.7	7.8		–	–
741.40	20.4		11.1	78.4	–	–	–	–	–	–	–	2.7	7.8	–	–	–	–	–	–		–	–
779.20	78.2		31.2	–	9.0	6.8	–	14.6	–	–	–	27.4	–	7.2	–	–	–	–	3.8		–	–
779.60	74.4		31.1	–	8.6	6.1	–	19.7	–	–	–	21.2	–	13.4	–	–	–	–	–		–	–
788.50	70.2		30.0	14.2	–	1.1	–	8.9	–	9.0	–	35.7	–	0.8	–	–	–	0.3	–		–	–
797.10	70.9		33.2	–	7.0	3.2	–	19.1	–	–	–	25.9	–	8.6	–	–	–	0.1	2.9		–	–
799.20	73.1		32.5	–	10.4	1.9	–	17.2	–	–	–	34.9	–	2.8	–	–	–	0.2	–		–	–
808.60	71.6		35.9	–	5.6	1.5	–	26.4	–	–	–	27.7	–	2.9	–	–	–	–	–		–	–
818.70	67.7		32.7	–	5.1	3.1	–	12.1	–	–	–	44.9	–	1.8	–	–	–	0.3	–		–	–
826.90	72.6		38.4	–	4.9	4.5	–	28.6	–	–	–	22.7	–	0.8	–	–	–	–	–		–	–
836.80	58.1		45.4	–	3.5	1.4	–	4.2	–	–	–	39.5	–	4.0	–	–	1.7	0.2	–		–	–
837.00	57.5		13.3	–	2.6	2.8	–	5.8	–	–	–	74.0	–	1.6	–	–	–	–	–		–	–
850.50	92.0		–	–	–	–	–	–	–	–	–	100.0	–	–	–	–	–	–	–		–	–
856.00	57.3		0.4	–	55.3	6.7	–	4.8	–	–	–	28.0	–	1.2	–	–	–	–	–		–	3.5
858.30	60.5		1.9	–	17.5	3.2	–	–	–	–	–	77.4	–	–	–	–	–	–	–		–	–
875.90	58.2		58.2	–	5.1	1.5	–	13.9	–	–	–	21.3	–	–	–	–	–	–	–		–	–
893.40	54.4		75.3	–	1.7	1.1	–	1.7	–	–	–	19.2	–	0.6	–	–	–	–	–		–	0.5
911.30	57.0		63.6	–	3.6	2.4	–	9.6	–	–	–	19.3	–	1.5	–	–	–	–	–		–	–
932.70	84.3		–	–	–	–	–	–	–	–	–	100.0	–	–	–	–	–	–	–		–	–
952.80	2.8		–	11.2	–	–	–	27.6	–	–	–	45.1	16.1	–	–	–	–	–	–		–	–
952.90	54.9		75.7	–	–	–	–	8.9	–	–	–	11.5	–	–	–	–	3.9	–	–		–	–
970.00	37.6		24.2	–	–	0.8	–	51.6	–	–	–	23.4	–	–	–	–	–	–	–		–	–
990.00	60.8		36.8	–	1.8	2.0	–	2.8	–	–	–	45.0	–	–	–	–	11.5	–	–		–	–

[a]Undifferentiated feldspar.

TABLE 11
Results of X-Ray Diffraction Analysis, Site 316

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Dolo.	Feld.[a]	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Goet.	Paly.	Mont.	Trid.	Clin.	Phil.	Anal.	Hema.	Pyri.	Gibb.	Gyps.	Bari.	Augi.	Magn.	U-2[b]
Bulk Sample																										
0.80	31.8	97.6	–	–	0.4	–	–	–		1.4				–	–	–		–	–	–	–	–	0.6		–	–
2.70	15.8	99.8	–	–	0.2	–	–	–		–				–	–	–		–	–	–	–	–	–		–	–
155.30	20.8	100.0	–	–	–	–	–	–		–				–	–	–		–	–	–	–	–	–		–	–
268.30	21.6	94.5	–	–	0.2	–	3.5	1.1		–				–	–	–		–	–	0.7	–	–	–		–	–
391.80	29.8	99.1	–	–	0.2	–	–	–		–				–	–	–		–	–	–	–	–	0.7		–	–
448.60	20.5	100.0	–	–	–	–	–	–		–				–	–	–		–	–	–	–	–	–		–	–
469.30	55.2	–	83.4	–	0.8	–	1.3	0.9		3.3				3.0	–	5.6		–	–	–	–	–	1.7		–	–
486.50	22.5	97.4	0.5	–	0.3	–	–	–		–				–	–	1.8		–	–	–	–	–	–		–	–
495.90	-7.3	34.6	–	–	5.3	47.1	–	–		1.0				–	11.9	–		–	–	–	–	–	–		–	–
515.40	11.5	98.1	0.3	–	1.7	–	–	–		–				–	–	–		–	–	–	–	–	–		–	–
524.70	10.0	99.8	–	–	0.2	–	–	–		–				–	–	–		–	–	–	–	–	–		–	–
533.60	13.1	98.9	–	–	0.7	–	–	–		–				–	–	–		–	–	–	–	–	0.4		–	–
553.30	29.0	96.2	–	–	1.6	–	0.8	0.5		1.0				–	–	–		–	–	–	–	–	–		–	–
562.90	20.3	98.5	–	–	0.8	–	–	–		–				–	–	–		–	–	–	–	–	0.7		–	–
571.80	21.4	96.3	–	–	1.0	–	–	–		–				0.9	–	–		–	–	–	–	–	1.8		–	–
573.60	8.7	98.8	–	–	1.2	–	–	–		–				–	–	–		–	–	–	–	–	–		–	–
583.10	20.6	78.4	–	–	19.2	–	–	–		–				–	–	2.4		–	–	–	–	–	–		–	–
584.40	74.6	16.3	–	–	36.1	–	5.4	5.2		17.5				10.0	–	9.3		–	–	–	–	0.2	–		–	–
587.40	10.6	95.2	–	–	3.2	–	–	–		1.6				–	–	–		–	–	–	–	–	–		–	–
609.80	24.8	81.7	–	–	15.1	–	–	–		1.4				1.5	–	0.4		–	–	–	–	–	–		–	–
610.50	52.1	52.0	–	–	0.3	–	–	–		–				46.7	–	1.0		–	–	–	–	–	–		–	P
613.60	9.0	97.1	–	–	2.2	–	–	–		–				0.7	–	–		–	–	–	–	–	–		–	–
630.60	16.0	91.3	–	–	2.3	–	–	–		–				6.2	–	0.2		–	–	–	–	–	–		–	–
638.40	13.4	96.0	–	0.3	2.7	–	–	–		–				0.6	–	0.4		–	–	–	–	–	–		–	–
641.80	20.4	80.5	–	–	0.1	–	7.4	4.8		1.1				4.3	–	0.4		–	1.2	–	–	–	–		0.1	–
642.10	35.3	66.2	–	–	0.8	–	7.8	4.2		1.3				13.6	–	2.2		–	3.4	–	–	–	0.5		–	P
667.10	16.4	98.2	–	–	0.7	–	–	–		–				1.1	–	–		–	–	–	–	–	–		–	–
668.10	18.8	95.5	–	0.3	0.7	–	–	–		–				3.5	–	–		–	–	–	–	–	–		–	P
686.70	7.7	98.0	–	–	1.4	–	–	–		–				0.6	–	–		–	–	–	–	–	–		–	–
704.50	25.9	78.5	–	–	0.6	–	6.2	1.8		0.9				11.6	–	–		–	0.4	–	–	–	–		–	–
705.70	44.3	77.6	0.1	–	9.3	–	2.0	1.6		5.9				3.4	–	–		–	–	–	–	–	–		–	–
727.00	38.9	58.4	–	–	0.9	–	20.0	6.2		1.3				6.7	–	0.5		–	4.9	–	–	–	–		1.1	–
744.80	44.7	73.1	–	–	1.0	–	13.1	2.9		–				6.1	–	–		0.4	–	2.3	–	0.1	–		0.9	P
771.20	38.7	41.8	–	–	2.5	–	12.7	0.7		–				30.7	–	–		9.6	1.3	–	0.7	–	–		–	P
830.30	15.5	95.1	–	–	1.5	–	2.2	–		0.9				0.4	–	–		–	–	–	–	–	–		–	–
2-20 μm Fraction																										
0.80	86.9				22.3	–	5.7	20.4	–	11.9	1.6	–	–	6.0	–	–	–	–	–	0.9	–		31.1	–	–	–
2.70	92.2				27.9	–	13.5	20.3	–	12.4	4.4	–	–	–	–	1.4	–	–	–	–	–		20.0	–	–	–
155.30	96.3				13.3	–	4.6	7.0	–	–	4.4	–	–	8.1	–	2.8	15.3	–	–	–	–		44.5	–	–	–
268.30	95.2				10.3	–	17.8	17.4	–	–	–	–	–	–	–	–	–	–	–	–	–		54.5	–	–	–
391.80	95.2				13.1	–	31.9	20.8	5.1	13.5	–	–	–	–	–	–	–	–	–	–	–		15.7	–	–	–
448.60	95.8				16.0	–	28.0	18.2	–	14.1	–	–	–	–	–	–	–	–	9.5	–	–		14.1	–	–	–
469.30	32.9				13.4	–	14.8	9.8	–	5.2	–	–	–	–	–	42.0	–	–	–	–	–		14.8	–	–	–
486.50	32.4				9.3	–	7.6	5.7	–	2.3	–	–	–	–	–	64.9	–	–	–	–	–		10.2	–	–	–
495.90	-19.8				14.7	80.0	–	–	–	–	–	–	–	–	5.4	–	–	–	–	–	–		–	–	–	–
515.40	66.1				30.5	–	14.4	6.3	–	21.6	1.6	–	12.0	2.5	–	–	–	–	–	–	–		11.0	–	–	–
524.70	57.6				30.3	–	15.7	2.3	–	23.1	1.2	–	18.1	1.4	–	–	–	–	–	–	–		8.0	–	–	–
533.60	40.1				40.2	5.3	13.7	6.3	–	18.7	1.0	–	–	0.9	–	–	–	–	–	0.1	–		13.8	–	–	–
553.30	49.6				41.2	–	23.1	7.7	–	16.5	1.9	–	–	–	–	–	–	–	–	0.8	–		0.8	7.9	–	–
562.90	49.9				33.6	–	24.6	7.1	–	16.5	1.2	–	–	2.1	–	0.5	–	–	–	0.2	0.2		14.1	–	–	–
571.80	50.0				32.4	–	19.6	6.6	1.0	17.0	–	–	3.3	2.1	–	–	–	–	–	0.3	–		17.6	–	–	–
573.60	45.8				38.0	–	9.2	6.0	–	17.7	0.9	–	–	4.0	–	–	–	–	–	0.8	–		23.3	–	–	–
583.10	38.7				73.0	–	–	–	–	3.6	–	–	–	–	–	23.4	–	–	–	–	–		–	–	–	–
584.40	43.6				46.8	–	12.9	8.4	–	11.3	–	–	–	0.6	–	19.9	–	–	–	–	–		–	–	–	–
587.40	44.6				57.6	–	12.8	8.3	–	17.8	1.5	–	–	1.3	–	0.7	–	–	–	–	–		–	–	–	–
609.80	45.4				43.8	–	14.9	7.2	–	13.6	1.0	–	–	2.4	–	13.3	–	–	–	–	–		4.0	–	–	–
610.50	39.6				1.7	–	2.6	1.2	–	3.6	–	–	–	81.0	–	6.2	–	–	–	–	–		–	–	3.7	P
613.60	43.7				58.1	–	15.0	5.9	0.9	11.4	–	–	–	–	–	–	–	–	5.2	–	–		3.5	–	–	–
630.60	42.2				27.0	–	7.6	3.3	–	8.8	–	–	–	44.2	–	8.2	–	–	–	–	–		0.9	–	–	P
638.40	35.6				39.8	–	16.0	6.2	0.5	8.1	–	–	–	1.1	–	21.0	–	–	6.1	–	–		1.4	–	–	TR
641.80	34.7				3.3	–	44.3	6.4	–	5.9	–	–	1.0	4.2	–	11.6	–	–	17.3	–	–		–	–	6.0	–

642.10	38.2	3.1	–	43.1	4.4	–	5.6	–	4.9	–	7.0	–	13.2	–	–	16.7	–	–		–	–	1.9	P
667.10	46.1	13.7	–	15.6	12.1	–	8.3	–	–	–	25.8	–	17.7	–	–	5.6	–	–		–	–	1.4	P
668.10	45.6	20.2	–	32.4	4.6	1.0	12.9	–	–	–	16.8	–	2.8	–	–	8.8	–	–		–	–	0.5	TR
686.70	38.4	45.7	–	27.2	6.8	–	14.8	–	–	–	–	–	–	–	–	4.6	–	–		–	–	0.9	–
704.50	33.0	7.3	–	68.8	3.2	–	7.2	–	–	–	2.4	–	1.4	–	–	6.8	–	–		–	–	3.0	–
727.00	28.9	5.1	–	57.0	7.6	–	4.5	–	–	–	1.6	–	3.5	–	–	13.9	–	–		1.4	–	5.3	–
744.80	37.7	5.2	–	61.9	6.6	–	3.0	1.0	–	–	–	–	–	–	0.5	–	7.5	–		–	–	14.4	–
771.20	22.9	7.9	–	36.9	3.6	–	4.9	–	–	–	38.0	–	–	–	7.8	0.8	–	–		–	–	–	P
830.30	17.3	26.4	–	58.0	5.4	–	8.5	–	–	–	–	–	1.8	–	–	–	–	–		–	–	–	–
<2 μm Fraction																							
0.80	88.7	15.3	–	8.3	11.6	8.7	7.5	–	–	–	43.3	–	–	–	–	–	–	–	0.3	5.1		–	–
2.70	79.5	9.8	–	5.4	6.5	2.8	8.3	2.5	–	–	63.2	–	–	–	–	–	–	–	0.2	1.6		–	–
155.30	92.9	8.1	–	10.7	13.2	–	3.7	4.9	–	–	43.6	–	–	–	–	–	–	0.6	0.5	14.6		–	–
268.30	91.4	10.9	–	7.8	5.1	–	–	9.0	–	–	58.0	–	–	–	–	–	–	–	–	9.4		–	–
391.80	81.6	5.9	–	7.3	7.8	–	8.1	2.1	–	–	51.8	–	1.1	11.5	–	–	–	–	0.3	4.2		–	–
448.60	79.1	5.2	–	9.2	6.0	–	10.8	1.7	–	–	60.6	–	0.9	–	–	1.8	–	–	–	3.8		–	–
469.30	75.6	13.0	–	10.6	6.9	–	5.6	–	–	–	51.5	–	2.9	–	–	4.6	0.8	–	0.2	3.8		–	–
486.50	35.3	1.8	60.7	1.1	0.8	–	6.5	–	–	–	25.5	1.9	1.0	–	–	–	–	–	0.1	0.8		–	–
495.90	-11.4	1.5	82.2	–	–	–	0.4	–	–	–	–	15.8	–	–	–	–	–	–	–	–		–	–
515.40	76.1	11.0	–	2.8	–	–	14.6	3.4	–	21.3	43.3	–	1.2	–	–	–	–	0.6	1.8	–		–	–
524.70	61.5	6.6	–	–	–	–	22.4	–	–	25.3	45.3	–	–	–	–	–	–	–	0.4	–		–	–
533.60	71.8	17.0	4.6	5.2	3.1	–	36.5	1.8	–	–	26.9	–	0.6	–	–	0.5	0.9	0.3	0.2	2.5		–	–
553.30	77.5	18.3	–	10.9	4.0	–	23.8	1.8	–	–	36.8	–	–	–	–	3.0	0.8	0.3	0.3	–		–	–
562.90	74.1	10.7	–	1.0	2.3	–	20.7	1.4	–	–	49.3	–	–	9.4	–	1.1	0.9	0.3	0.3	2.8		–	–
571.80	73.4	12.8	–	4.4	3.8	–	15.0	1.9	–	10.2	39.0	–	0.6	6.6	–	–	–	0.4	–	5.2		–	–
573.60	73.8	32.1	–	1.9	1.2	–	17.0	2.2	–	–	39.0	–	–	–	–	–	1.8	0.4	0.2	4.1		–	–
583.10	57.2	88.1	–	–	–	–	5.5	–	–	–	–	–	6.4	–	–	–	–	–	–	–		–	–
584.40	74.8	37.2	–	6.3	4.3	–	12.8	–	–	–	38.4	–	1.0	–	–	–	–	–	–	–		–	–
587.40	59.8	59.0	–	1.3	–	–	10.8	–	–	–	28.9	–	–	–	–	–	–	–	–	–		–	–
609.80	52.6	24.6	–	1.8	1.0	–	6.2	–	–	–	65.7	–	0.5	–	–	–	–	–	0.3	–		–	–
610.50	49.8	0.8	–	–	–	–	–	–	–	–	99.2	–	–	–	–	–	–	–	–	–		–	P
613.60	56.4	51.3	–	–	–	–	8.4	–	–	–	40.1	–	–	–	–	–	–	–	0.2	–		–	–
630.60	59.2	26.0	–	2.0	0.9	–	3.8	–	–	–	66.5	–	0.5	–	–	–	–	–	0.2	–		–	P
638.40	55.6	61.3	–	2.3	1.5	–	3.8	–	–	–	29.6	–	1.2	–	–	–	–	–	0.2	–		–	P
641.80	31.6	2.7	–	5.2	4.4	–	1.8	–	–	–	80.7	–	1.4	–	–	2.9	–	–	0.2	–		0.7	P
642.10	34.8	2.1	–	18.8	4.9	–	1.3	–	–	–	59.9	–	5.4	–	–	7.0	–	–	0.2	–		0.8	P
667.10	47.3	13.5	–	1.7	0.8	–	3.9	–	–	–	79.5	–	–	–	–	–	–	–	0.5	–		–	P
668.10	43.1	10.1	–	3.5	2.3	–	1.6	–	–	–	78.5	–	0.4	–	–	2.6	–	–	0.8	–		0.7	P
686.70	55.3	33.0	–	3.7	1.0	–	4.4	–	–	–	57.5	–	–	–	–	–	–	–	0.4	–		–	–
704.50	28.2	1.8	–	1.2	0.8	–	–	–	–	–	96.2	–	–	–	–	–	–	–	0.1	–		–	P
727.00	35.4	0.9	–	6.5	2.5	–	–	–	8.5	–	77.6	–	0.5	–	–	3.3	–	–	0.1	–		–	P
744.80	54.2	–	–	8.1	2.6	–	–	–	–	–	85.6	–	–	–	3.4	–	–	–	0.3	–		–	P
771.20	38.8	0.4	–	–	–	–	–	–	–	–	96.9	–	–	–	0.5	2.3	–	–	–	–		–	P
830.30	65.7	22.7	–	13.8	5.1	–	58.2	–	–	–	–	–	–	–	–	–	–	–	0.2	–		–	–

[a]Undifferentiated feldspar.

[b]U-2 = Major peak located at 3.50 A. This peak may be due to the presence of anatase. However, it may also be associated with the montmorillonite.

TABLE 12
Results of X-Ray Diffraction Analysis, Hole 317A

Sample Depth Below Sea Floor (m)	Amor.	Feld.[a]	Calc.	Dolo.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Paly.	Mont.	Trid.	Clin.	Phil.	Anal.	Hema.	Pyri.	Gibb.	Gyps.	Apat.	Bari.	Amph.	Magn.	Sani.[b]
Bulk Sample																										
554.20	41.2		82.9	–	2.5	–	1.5	0.8	–	3.0	–	–	–	–	7.8		–	–	–		–	–	1.5	–		–
564.50	7.4		97.8	–	2.2	–	–	–	–	–	–	–	–	–	–		–	–	–		–	–	–	–		–
576.90	52.5		78.2	–	8.3	–	7.3	–	–	5.9	–	–	–	–	–		–	–	–		0.4	–	–	–		–
585.00	56.9		–	–	9.7	–	10.8	–	–	–	0.9	63.3	7.8	–	1.4		–	–	–		–	6.0	–	–		–
602.40	7.1		43.7	0.3	5.9	42.2	–	–	–	–	–	–	–	5.5	–		–	–	0.1		0.2	–	2.0	–		–
623.30	-6.2		34.3	–	0.6	55.5	0.9	0.4	–	–	–	–	1.5	4.3	1.2		–	–	–		–	–	0.5	0.7		–
644.10	28.7		78.7	–	0.6	–	4.8	3.3	–	–	–	–	6.0	–	3.2		–	–	–		–	0.3	1.5	1.5		–
651.00	44.2		–	–	2.1	–	–	16.0	0.6	–	–	–	71.8	–	9.5		–	–	–		–	–	–	–		–
670.00	13.2		–	–	0.2	–	–	–	–	–	–	–	76.3	–	–		23.4	–	–		–	–	–	–		–
698.60	52.5		–	–	–	–	–	–	–	–	–	–	58.6	–	–		12.4	–	–		–	–	–	–		29.1
727.70	48.3		–	–	2.3	–	17.1	11.1	–	–	–	–	69.5	–	–		–	–	–		–	–	–	–		–
755.90	52.7		–	–	2.8	–	–	–	–	–	2.3	–	90.4	–	–		–	4.6	–		–	–	–	–		–
756.70	58.2		–	–	–	–	–	–	–	–	–	–	91.7	–	–		2.4	0.6	–		–	–	–	–		5.2
757.40	51.0		–	–	–	–	–	–	–	–	–	–	95.6	–	–		0.5	–	–		–	–	–	–		3.8
759.40	62.8		–	–	–	–	–	–	–	–	–	–	80.1	–	–		11.1	–	–		–	–	–	–		8.9
777.70	43.0		–	–	–	–	–	–	–	–	–	–	92.8	–	–		2.5	–	–		–	–	–	–		4.7
778.10	58.8		4.5	–	–	–	–	–	–	–	–	–	84.5	–	–		2.8	–	–		–	–	–	–		8.3
779.60	48.5		–	–	–	–	–	–	–	–	–	–	88.3	–			4.1	–	–		–	–	–	–		7.6
821.10	49.1		–	–	–	–	–	–	–	–	–	–	88.8	–			6.4	–	–		–	–	–	–		4.8
849.90	44.8		1.4	–	–	–	–	–	–	–	–	–	68.7	–			25.7	–	–		–	–	–	–		4.2
887.40	25.1		0.4	–	–	–	–	–	–	–	–	–	92.3	–			5.7	–	–		–	–	–	–		1.5
887.40	39.4		–	–	–	–	–	–	–	–	–	–	94.8	–	–		3.8	1.4	–		–	–	–	–		–
927.50	47.9		–	–	8.1	–	8.7	36.1	–	10.5	–	–	13.4		10.0		–	13.2	–		–	–	–	–		–
2-20 μm Fraction																										
554.20	30.1	–			16.6	–	9.6	5.9	–	9.0	–	–	1.0	–	45.0	3.8	0.8	–	–		–	–	8.3	–	–	–
564.50	24.0	–			43.0	–	47.8	4.0	–	5.2	–		–	–	–	–	–	–	–		–	–	–	–	–	–
576.90	31.4	–			34.6	–	42.6	1.1	–	20.0	0.8	–	–	–	–	–	–	–	–		–	–	–	–	0.9	–
585.00	49.7	–			20.7	–	23.7	2.8	–	21.0	1.7	4.1	10.5	–	6.9	–	–	–	–		–	8.6	–	–	–	–
602.40	-12.9	–			25.1	56.6	1.1	0.7	–	–	–	–	–	5.4	–	–	–	–	–		–	–	11.1	–	–	–
623.30	-33.4	–			2.3	75.8	6.1	2.1	–	–	–	–	0.9	8.6	0.7	–	–	–	–		–	0.7	1.5	1.3	–	–
644.10	21.2	–			3.1	–	23.3	15.2	–	–	–	–	3.3	–	33.8	–	–	–	–		–	1.6	9.5	10.2	–	–
651.00	49.1	–			5.7	–	–	54.8	0.5	–	–	–	37.0	–	2.0	–	–	–	–		–	–	–	–	–	–
670.00	3.0	–			0.3	–	1.7	–	–	–	–	–	52.1	–	–		45.9	–	–		–	–	–	–	–	–
698.60	45.6	–			–	–	–	–	–	–	–	–	56.1	–	–	–	22.9	–	–		–	–	–	–	–	20.9
727.00	63.7	–			3.7	–	46.2	20.9	–	–	–	–	29.1	–	–	–	–	–	–		–	–	–	–	–	–
755.90	59.1	6.5			4.4	–	–	–	–	–	–	–	83.6	–	–	–	–	5.5	–		–	–	–	–	–	–
756.70	64.6	–			–	–	–	–	–	–	–	–	87.3	–	–	–	–	5.5	–		–	–	–	–	–	7.1
757.40	66.6	–			–	–	–	–	–	–	–	–	76.5	–	–	–	3.7	–	–		–	–	–	–	–	19.3
759.40	62.0	–			–	–	–	–	–	–	–	–	91.5	–	–	–	–	–	–		–	–	–	–	–	8.5
777.70	64.8	–			–	–	–	–	–	–	–	–	66.6	–	–	–	7.6	–	–		–	–	–	–	–	25.8
778.10[c]	58.0	–			–	–	8.1	–	–	–	–	–	81.6	–	–	–	3.0	–	–		–	–	–	–	–	7.3
779.60	62.4	–			–	–	–	0.7	–	–	–	–	64.1	–	–	–	4.8	–	–		–	–	–	–	–	30.3
821.10	58.5	–			–	–	–	–	–	1.8	1.0	–	73.8	–	–	–	6.9	–	–		–	–	–	–	–	16.5
849.90	56.6	–			–	–	–	2.9	–	–	–	–	40.2	–	–	–	17.4	–	0.7		–	–	–	–	0.9	37.9
887.40	35.2	–			–	–	–	1.2	–	–	–	–	30.1	–	–	–	54.3	–	–		–	–	–	–	–	14.5
887.40	60.9	–			–	–	–	–	–	–	1.1	–	76.6	–	–	–	8.7	0.6	–		–	–	–	–	–	13.0
927.50	39.1	–			13.4	–	10.0	45.3	–	5.6	–	–	4.3	–	10.3	–	–	10.6	0.4		–	–	–	–	–	–

<2 μm Fraction

554.20	72.2	–	8.7	–	11.4	7.4	31.7		–	39.1	–	0.6	–	–	–	0.3.	–	0.8	–	–	–
564.50	48.2	–	36.3	–	35.6	2.3	24.1	1.8		–	–	–	–	–	–	–	–	–	–	–	–
576.90	78.6	–	25.6	–	23.9	1.6	27.6	2.0		18.3	–	–	–	–	–	–	–	–	–	1.0	–
585.00	48.7	–	3.6	–	2.2	–	7.7	–	66.7	17.3	–	0.2	–	–	0.1	–	1.9	0.3	–	–	–
602.40	-19.6	–	2.4	83.4	0.4	0.2	–	–	–	1.8	10.9	–	–	–	–	–	–	0.8	–	–	–
623.30	-23.9	–	0.2	83.0	1.0	0.6	–	–	–	2.9	10.2	0.2	–	–	–	–	0.5	1.0	0.4	–	–
644.10	33.9	–	2.3	–	9.1	6.1	–	0.2	–	78.3	–	2.0	–	–	–	–	0.3	–	1.6	–	–
651.00	44.4	–	–	–	–	6.5	–	–	–	93.3	–	–	–	–	–	0.2	–	–	–	–	–
670.00	22.8	–	–	–	–	–	–	–	–	86.4	–	–	13.6	–	–	–	–	–	–	–	–
698.60	49.2	–	–	–	–	–	–	–	–	88.9	–	–	3.4	–	–	–	–	–	–	–	7.7
727.00	48.4	5.1	0.4	–	–	–	–	–	–	94.5	–	–	–	–	–	–	–	–	–	–	–
755.90	45.1	–	–	–	–	–	–	–	–	96.7	–	–	–	3.1	–	0.2	–	–	–	–	–
756.70	41.6	–	–	–	–	–	–	–	–	97.1	–	–	–	2.9	–	–	–	–	–	–	–
757.40	34.0	–	–	–	–	–	–	–	–	97.7	–	–	–	–	–	–	–	–	–	–	2.3
759.40	90.6	–	–	–	–	–	–	–	–	96.6	–	–	–	–	–	–	–	–	–	–	3.4
777.70	40.9	–	–	–	–	–	–	–	–	96.2	–	–	0.6	–	–	–	–	–	–	–	3.2
778.10	32.6	–	–	–	–	–	–	–	–	100.0	–	–	–	–	–	–	–	–	–	–	–
779.60	41.5	–	–	–	–	–	–	–	–	95.2	–	–	–	–	–	–	–	–	–	–	4.8
821.10	86.3	–	–	–	–	–	–	–	–	94.2	–	–	–	–	–	–	–	–	–	–	5.8
849.90	81.7	–	–	–	–	1.2	–	–	–	82.4	–	–	3.0	–	–	–	–	–	–	–	13.3
887.40	84.0	–	–	–	–	–	–	–	–	95.6	–	–	3.1	–	–	–	–	–	–	–	1.2
887.40	42.0	–	–	–	–	–	–	–	–	92.7	–	–	–	7.3	–	–	–	–	–	–	–
927.50	48.9	–	3.4	–	5.3	18.2	18.0	–	–	39.2	–	0.8	–	15.1	–	–	–	–	–	–	–

[a]Undifferentiated feldspar.

[b]The abbreviation sani, is for sanidine.

[c]Sample contains two types of K-feldspar. They have been reported separately as K-spar and sanidine.

TABLE 13
Results of X-Ray Diffraction Analysis, Hole 317B

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Dolo.	Arag.	Feld.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Trid.	Clin.	Gibb.	Quar.	Gyps.	Apat.	Bari.	Psil.[a]	Magn.
Bulk Sample																					
0.30	23.4	100.0	–	–	–											–	–				
27.40	21.1	100.0	–	–	–											–	–				
65.70	26.5	100.0	–	–	–											–	–				
102.20	20.3	100.0	–	–	–											–	–				
141.20	17.3	100.0	–	–	–											–	–				
179.50	23.7	98.1	–	1.2	0.6											0.1	–				
220.70	35.7	99.3	0.4	–	–											–	0.2				
227.10	21.8	100.0	–	–	–											–	–				
266.80	29.5	100.0	–	–	–											–	–				
312.40	29.5	100.0	–	–	–											–	–				
352.30	17.4	100.0	–	–	–											–	–				
389.40	28.9	99.8	–	–	–											0.2	–				
2-20 µm Fraction																					
0.30	31.0					–	23.5	29.3		–	–	–		–		7.8			39.5	–	
27.40	10.5					–	39.4	15.4		–	–	–		–		5.5			39.7	–	
65.70	32.5					–	27.8	10.4		–	–	–		–		6.2			55.5	–	
102.20	80.8					–	8.4	26.9		–	–	–		2.1		2.1			60.5	–	
141.20	89.4					–	34.9	8.1		10.4	–	12.2		–		9.2			25.2	–	
179.50	91.9					–	29.9	11.3		–	–	–		–		11.3			47.5	–	
220.70	–					–	–	–		–	–	–		–		–			–	100.0	
227.10	94.8					–	7.0	28.1		22.7	2.7	–		–		22.7			16.8	–	
266.80	2.6					–	21.6	12.3		18.4	–	–		32.4		15.3			–	–	
352.30	32.3					–	19.4	11.2		6.9	–	3.1		25.7		9.1			24.7	–	
389.40	41.8					3.3	21.3	7.8		1.7	–	10.6		39.9		2.5			13.0	–	
<2 µm Fraction																					
0.30	90.2					–	14.7	22.7	4.4	–	–	29.2	–	–	–	6.8	–	–	22.2		–
27.40	74.9					–	12.7	5.5	–	–	–	73.6	–	–	–	1.0	0.4	–	6.9		–
65.70	73.0					–	6.0	2.7	–	–	–	73.0	–	–	–	1.3	0.3	7.6	7.5		1.5
102.20	84.5					–	14.6	7.0	–	9.7	5.1	11.5	–	1.6	1.5	4.4	–	–	44.4		–
141.20	74.2					–	7.6	3.7	–	6.4	2.3	72.0	–	–	–	2.6	0.7	–	4.8		–
179.50	66.5					–	3.5	2.7	1.0	4.4	–	79.9	–	–	–	1.8	0.4	–	6.3		–
220.70	93.8					–	–	–	–	–	–	–	–	–	–	–	2.3	–	–		–
227.10	84.9					–	–	–	–	19.7	–	64.1	–	–	–	9.6	–	–	6.6		–
266.80	69.5					–	4.6	3.0	1.1	15.3	–	65.8	–	5.1	–	5.1	–	–	–		–
312.40	70.5					–	2.3	1.1	–	15.9	3.6	71.0	–	3.4	–	2.9	–	–	–		–
352.30	84.9					–	8.1	5.3	–	9.8	–	58.9	–	6.2	–	5.9	–	–	5.9		–
389.40	45.2					54.1	0.8	0.5	–	4.8	–	31.4	4.5	0.9	–	3.0	–	–	–		–

[a]The abbreviation Psil. is for psilomelene.

TABLE 14
Results of X-Ray Diffraction Analysis, Site 318

Sample Depth Below Sea Floor (m)	Amor.	Calc.	Dolo.	Arag.	Feld.[a]	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Clin.	Phil.	Anal.	Hema.	Pyri.	Gibb.	Gyps.	Bari.	Amph.
Bulk Sample																					
1.30	39.4	80.4	1.0	18.6	–	–	–	–		–		–	–			–	–		–	–	–
93.70	27.0	99.5	0.5	–	–	–	–	–		–		–	–			–	–		–	–	–
122.50	31.0	99.6	0.4	–	–	–	–	–		–		–	–			–	–		–	–	–
179.80	25.2	100.0	–	–	–	–	–	–		–		–	–			–	–		–	–	–
266.50	30.3	100.0	–	–	–	–	–	–		–		–	–			–	–		–	–	–
350.80	30.8	100.0	–	–	–	–	–	–		–		–	–			–	–		–	–	–
407.50	25.0	100.0	–	–	–	–	–	–		–		–	–			–	–		–	–	–
492.70	29.7	99.5	0.3	–	–	0.2	–	–		–		–	–			–	–		–	–	–
578.50	27.2	98.9	–	–	0.9	0.2	–	–		–		–	–			–	–		–	–	–
581.10	34.7	94.0	–	–	1.2	0.3	–	–		–		–	4.5			–	–		–	–	–
615.80	10.2	31.6	–	–	–	2.1	11.6	4.1		1.3		43.1	6.2			–	–		–	–	–
630.70	45.7	13.5	–	–	–	6.8	11.8	4.7		–		63.2	–			–	–		–	–	–
665.60	69.4	5.6	–	–	–	0.6	9.4	13.2		–		68.3	1.3			1.6	–		–	–	–
703.80	58.3	4.8	–	–	–	2.0	55.4	10.1		–		12.2	14.8			–	–		–	–	0.7
743.50	41.2	2.96	–	–	–	1.0	9.1	4.4		1.1		33.5	20.4			–	0.4		–	–	0.6
2-20 μm Fraction																					
1.30	48.7		59.6			1.5	5.9	11.0	–	–	1.6	–	0.7	11.1	–	4.5	0.8			3.2	–
179.80	91.3		–			2.3	6.5	9.3	–	–	–	–	–	–	–	–	–			81.9	–
266.50	94.7		–			10.0	26.3	9.8	–	21.0	–	–	–	–	–	–	–			33.0	–
350.80	95.1		–			25.8	7.8	24.8	–	24.2	–	–	–	–	–	–	–			17.4	–
407.50	50.1		–			16.4	17.4	8.8	–	11.3	–	5.7	33.7	–	0.8	–	–			5.9	–
492.70	56.7		–			2.2	14.8	9.6	–	2.2	–	8.3	40.1	–	–	12.6	5.5			4.7	–
578.50	56.9		–			4.4	22.8	14.8	–	–	0.8	16.5	31.0	–	0.7	–	–			8.9	–
581.10	33.7		–			3.9	17.1	9.8	–	–	–	5.8	58.7	–	–	–	–			4.8	–
615.80	38.1		–			5.0	19.7	15.3	–	0.6	–	26.8	31.6	–	–	–	1.0			–	–
630.70	72.9		–			10.6	22.1	17.8	–	–	–	49.4	–	–	–	–	–			–	–
665.60	43.4		–			1.3	48.7	4.6	–	–	–	38.4	5.7	–	–	0.9	0.4			–	–
703.80	46.4		–			3.0	21.3	13.1	–	–	–	18.4	42.9	–	–	1.0	–			–	0.4
743.50	37.1		–			0.5	63.7	18.9	–	0.6	–	12.5	3.3	–	–	–	–			–	0.4
<2 μm Fraction																					
1.30	96.0					3.1	17.7	17.3				52.4	–			–	–	–	–	9.6	
93.70	87.8					5.3	11.9	12.9				58.6	–			–	–	–	–	11.4	
122.50[b]	–					–	–	–				–	–			–	–	–	–	–	
179.80	90.1					–	–	–				61.5	–			–	–	–	–	38.5	
266.50	89.9					3.2	10.8	7.0				68.9	–			–	–	–	–	10.1	
350.80	89.5					6.6	7.4	5.8				74.9	–			–	–	–	–	5.3	
407.50	73.3					1.2	2.6	2.1				92.1	2.0			–	–	–	–	–	
492.70	78.4					2.3	6.1	4.5				76.4	4.6			–	2.2	0.7	0.4	2.8	
578.50	79.2					2.2	11.0	7.2				67.3	6.0			–	–	–	–	–	
581.10	64.0					–	–	–				98.6	1.1			–	–	–	0.3	–	
615.80	71.0					1.4	15.6	8.9				65.4	5.7			3.0	–	–	–	–	
630.70	64.3					–	–	–				99.8	–			–	–	–	0.2	–	
665.60	71.3					0.5	16.5	12.2				69.3	0.7			0.1	0.7	–	–	–	
703.80	68.1					–	7.4	4.8				85.4	1.4			–	1.0	–	–	–	
743.50	41.3					–	3.1	2.0				94.2	0.6			–	–	–	–	–	

[a]Undifferentiated feldspar.

[b]Dominant constituant was tungsten carbide contaminant. Sample also contained minor amounts of pyrite and goethite.

TABLE 15
Samples Used in X-Ray Diffraction Analysis, Leg 33 (Composited samples are bracketed)

Sample (Interval in cm)	Depth Below Sea Floor (m)
Site 314	
3, CC	
X	0-45
X	0-45
Hole 315	
1-1, 130-132	1.3
1-1, 135-137	1.4
1-2, 20-22	1.7
1-2, 88-90	2.4
1-3, 85-87	3.9
4-1, 143-145	57.9
4-2, 121-123	59.2
4-2, 135-137	59.4
4-3, 56-58	60.1
4-3, 85-87	60.4
4-4, 87-89	61.9
4-4, 116-118	62.2
4-5, 7-9	62.6
4-5, 130-132	63.8
4-6, 148-150	65.5
Hole 315A	
1-1, 108-110	76.6
1-5, 90-92	82.9
1-5, 95-97	83.0
1-6, 136-138	84.9
1-6, 142-144	84.9
2-1, 140-142	124.9
2-1, 145-147	125.0
3-1, 40-42	142.6
3-1, 68-70	142.9
3-3, 70-72	145.9
3-3, 74-76	146.0
3-5, 70-72	148.9
3-5, 138-140	149.6
4-3, 103-105	260.0
4-3, 117-119	260.2
5-2, 59-61	372.1
5-2, 144-146	373.0
6-1, 87-89	465.9
6-1, 92-94	465.9
6-2, 128-130	467.8
6-2, 140-142	467.9
7-1, 94-96	513.5
7-1, 100-102	513.5
7-2, 69-71	514.7
7-2, 98-100	515.0
8-2, 97-99	591.0
8-2, 101-103	591.0
9-1, 108-110	703.6
9-1, 120-122	703.7
10-1, 52-54	731.3
10-1, 70-72	731.4
10-1, 115-117	732.0
10-6, 100-102	739.3
10-6, 102-104	739.3
11-1, 134-136	741.4
11-1, 146-150	741.5
15-1, 114-116	779.2
15-2, 82-84	779.6
16-1, 101-103	788.5
17-1, 7-9	797.1

TABLE 15 – *Continued*

Sample (Interval in cm)	Depth Below Sea Floor (m)
19-2, 118-120	818.7
19-3, 52-53	819.5
20-1, 143-144	826.9
20-2, 96-97	828.0
20-4, 0-150	830.0
21-2, 32-34	836.8
21-2, 32-34	836.8
21-2, 46-47	837.0
22-4, 145-146	850.5
23-2, 49-51	856.0
23-3, 130-131	858.3
24-2, 136-137	875.9
25-1, 138-139	893.4
25-2, 72-74	894.2
25-3, 48-50	895.5
26-1, 26-28	911.3
26-1, 130-132	912.3
27-2, 119-120	932.7
28-3, 75-77	952.8
28-3, 85-87	952.9
29-2, 136-138	970.9
30-2, 148-150	990.0
Site 316	
1-1, 83-85	0.8
1-1, 85-88	0.9
1-2, 116-118	2.7
1-2, 118-120	2.7
2-2, 80-82.5	155.3
2-2, 82.5-85	155.3
3-1, 126-128	268.3
3-2, 72-74	269.2
4-1, 124-128	391.8
4-1, 128-131	393.3
5-1, 110-115	448.6
5-2, 101-104	450.0
7-2, 133-135	469.3
9-1, 100-102	486.5
10-1, 91-93	495.9
11-1, 135-138	515.4
12-1, 123-126	524.7
12-2, 15-17	525.2
13-1, 56-59	533.6
15-1, 101-103	553.3
16-1, 137-140	562.9
17-1, 77-80	571.8
17-2, 104-106	573.6
18-2, 109-111	583.1
18-3, 96-99	584.4
18-5, 84-86	587.4
19-1, 83-85	609.8
19-1, 146-150	610.5
19-4, 10-14	613.6
20-2, 112-114	630.6
21-1, 92-96	638.4
21-3, 25-29	640.8
21-3, 126-128	641.8
21-4, 8-11	642.1
23-1, 104-107	667.1
23-1, 54-56	668.1
24-2, 20-23	686.7
24-3, 63-66	688.6
25-1, 45-47	704.5
25-2, 20-22	705.7
26-3, 95-97	727.0
27-2, 141-146	744.8
28-1, 64-66	771.2

TABLE 15 – *Continued*

Sample (Interval in cm)	Depth Below Sea Floor (m)
30-2, 132-134	830.3
Hole 317A	
2-1, 22-24	554.2
2-1, 41-43	554.4
3-1, 103-105	564.5
3-1, 128-130	564.8
3-2, 25-27	565.3
3-2, 28-30	565.3
5-1, 93-95	576.9
6-2, 103-105	585.0
8-1, 90-92	602.4
10-2, 128-130	623.3
10-2, 130-132	623.3
12-4, 5-7	644.1
13-2, 49-51	651.0
15-2, 53-55	670.0
15-4, 102-104	673.5
18-2, 60-62	698.6
18-2, 72-74	698.7
20-3, 50-52	727.0
22-2, 84-86	755.9
22-3, 18-20	756.7
22-3, 86-88	757.4
22-4, 139-141	759.4
24-4, 70-72	777.7
24-4, 107-109	778.1
24-5, 113-115	779.6
26-1, 107-109	821.1
26-2, 25-27	821.8
28-1, 134-138	849.9
30-1, 88-92	887.4
33-3, 0-4	927.5
Hole 317B	
1-1, 20-22	0.3
1-1, 22-24	0.3
1-1, 101-102	1.1
1-2, 102-104	1.1
1-2, 29-31	1.9
1-6, 100-102	8.6
1-6, 102-104	8.6
4-2, 40-42	27.4
4-2, 43-45	27.4
4-3, 82-84	29.3
4-3, 85-87	29.4
8-2, 70-72	65.7
8-2, 73-75	65.7
8-4, 60-62	68.6
8-4, 63-65	68.6
12-1, 70-72	102.2
12-1, 73-75	102.2
12-3, 40-42	104.9
12-3, 43-45	104.9
12-5, 60-62	108.1
12-5, 63-65	108.1
16-1, 134-136	141.2
16-1, 136-138	141.2
16-2, 60-62	141.9
16-2, 62-64	141.9
16-4, 100-102	145.3
16-4, 103-105	145.3
16-6, 60-62	147.9
16-6, 62-64	147.9
20-2, 53-55	179.5
20-2, 98-100	180.0
20-4, 58-60	182.6
20-4, 60-62	182.6
20-6, 78-80	185.8
20-6, 81-83	185.8

TABLE 15 – *Continued*

Sample (Interval in cm)	Depth Below Sea Floor (m)
24-4, 70-90	220.7
25-2, 54-56	227.1
25-2, 56-58	227.1
25-4, 38-40	229.9
25-4, 52-54	230.0
25-6, 30-32	232.8
25-6, 48-50	233.0
29-3, 80-82	266.8
29-3, 82-84	266.8
29-5, 5-7	269.1
29-5, 13-15	269.1
34-2, 40-42	312.4
34-2, 43-45	312.4
34-5, 76-78	317.3
34-5, 86-88	317.4
38-3, 79-81	352.3
38-3, 82-84	352.3
38-4, 90-92	353.9
38-4, 93-95	353.9
42-2, 140-142	389.4
Site 318	
1-1, 129-132	1.3
1-2, 82-85	2.3
1-3, 65-70	3.7
1-3, 72-78	3.7
1-4, 65-72	5.2
1-4, 72-76	5.2
1-5, 94-103	7.0
4-1, 41-43	93.7
4-1, 45-47	93.8
4-2, 71-73	95.5
4-2, 74-76	95.6
4-3, 72-74	97.0
4-3, 74-76	97.1
4-4, 70-72	98.5
4-4, 74 76	98.6
4-5, 52-54	99.8
4-5, 56-58	99.9
4-6, 79-82	101.6
4-6, 83-82	101.6
5-1, 75-78	122.5
5-1, 78-80	123.9
7-1, 75-77	179.8
7-1, 78-80	179.8
7-2, 75-77	181.3
7-2, 80-82	181.3
7-3, 120-122	183.2
7-3, 123-125	183.2
7-4, 70-72	184.2
7-4, 72-74	184.2
10-2, 100-102	266.5
10-2, 106-108	266.6
10-3, 70-72	267.7
10-3, 72-75	267.7
13-1, 124-127	350.8
13-2, 33-35	351.3
15-1, 95-98	407.5
15-2, 126-129	409.3
18-1, 71-73	492.7
18-2, 137-139	494.9
21-1, 94-97	578.5
21-2, 18-20	579.2
21-3, 62-64	581.1
24-1, 25-29	615.8
25-4, 120-122	630.7
28-2, 106-110	665.6
30-2, 128-132	703.8
32-4, 0-3	743.5