24. X-RAY MINERALOGY DATA, SOUTHERN INDIAN OCEAN—LEG 26 DEEP SEA DRILLING PROJECT[1]

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METHODS

Semiquantitative determinations of the mineral composition of bulk samples, 2-20μ fractions, and <2μ fractions were performed according to the methods described in the reports for Legs 1 and 2 and in Appendix III of Volume 4 of the Initial Reports of the Deep Sea Drilling Project. The mineral analyses of the 2-20μ and <2μ fractions were performed on carbonate-free residues.

The X-ray-mineralogy results of this study are summarized in Tables 1 through 9. The mineralogy data are presented in Tables 10 through 20. Sediment ages, lithologic units, and nomenclature of the sediment types in Tables 1 through 9 are from the DSDP Leg 26 Hole Summaries and from a subsequent update supplied by Dr. T. A. Davies, DSDP. The stratigraphic positions of samples submitted for X-ray-diffraction analysis from Leg 26 are listed in Tables 1 through 9. The sample depth (in meters) below the sea floor in Tables 1 through 9 identifies the samples as they are reported in Tables 10 through 20.

Several unidentified minerals were detected in Leg 26 samples. Their abundances were determined on a semiqualitative basis using a hypothetical mineral intensity factor of 3.0. Unidentified minerals are reported on a ranked, semiqualitative scale outlined as follows: trace, <5%; present, 5 to 25%; abundant, 25 to 65%; major, <65%. Although a certain quantity of the unidentified minerals is implied, their concentration is not included in the concentrations of the identified minerals, which are summed to 100%.

DRILLING MUD USAGE

Drilling mud, containing montmorillonite and barite, was used on Leg 26 as follows:

No mud was used at Sites 251, 252, 254, 255, 256, or 257. In Hole 250A drilling mud was used between Core 23 and Core 24; in Hole 253 between Core 33 and Core 34; and in Hole 258 between Core 17 and Core 18. Most samples submitted for X-ray-diffraction analysis do not occur close to intervals in which drilling mud was used. Barite does not occur in samples potentially contaminated by drilling mud, and montmorillonite abundances are not inordinate in any of these samples.

MINERAL NOTES

Garnet was found at Site 251 in pure calcite chalk (Sample 251A-29-2, 20-22 cm) overlying basalt. The garnet occurred as euhedral crystals, 2-5μ in diameter, loose as well as encased in calcite masses. The diffraction pattern closely resembles grossularite and has been tentatively identified to be hydrogrossularite by Dr. D. R. C. Kempe (this volume, Chapter 25).

The garnet was accompanied by an unusual occurrence of augites in the <2μ fraction. The presence of about 78% augite was unequivocably determined in the diffraction pattern of the sample but could not be confirmed optically because of the fine-grained nature of the sample.

Augite was also found in large quantities in all samples submitted for X-ray-diffraction analysis from Site 252 (Tables 3 and 14). Augite was positively identified in the diffraction patterns of these samples. An optical examination showed that the crystalline component of the sample contained a large quantity of stubby, light green to colorless grains with good cleavage in two nearly orthogonal directions, highly inclined extinction and with all refractive indexes above 1.64. These grains were taken to be augite. Some of the grains showed saw-tooth etching on the ends of the cleavage fragments.

Anorthoclase and adularia were identified in the diffraction patterns of samples from the volcaniclastic sediments at Sites 253 and 254. The patterns match those of JCPDS 9-473 and 19-921, respectively. Optical confirmation could not be made because most of the sample consisted of devitrified glass and microcrystalline aggregates of uncertain origin with very few large, single-crystal grains present. Mordenite (JCPDS 11-155) was detected in a few samples from the Site 253 volcaniclastic sediments (Table 15).

Halite was frequently detected in the <2μ fraction. This was found to be due to a contamination which was introduced during the sample preparation and should therefore be excluded from the total mineral content. The diffraction pattern of halite does not seriously interfere with other minerals and all minerals present in detectable concentrations have been reported in every case.

Montmorillonite was found frequently in the 2-20μ fraction. Microscopic examination of numerous samples showed that these preparations were not contaminated with <2μ material but rather they contained microcrystalline aggregates which are presumed to be totally or in part made up of montmorillonite.

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TABLE 1
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology and Age of Lithologic Units, and X-Ray Diffraction Results, Site 250

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20μ Fraction Major Constituent			<2μ Fraction Major Constituent		
				1	2	3	1	2	3	1	2	3
250-1-1, 93-95	0.9	Unit 1	Quaternary	Mont.	Mica	Quar.	Mica	Quar.	K-Fe.	Mont.	Mica	Kaol.
250-1-4, 100-102	5.5	Clayey coccolith		Calc.	Quar.	Mont.	Quar.	Mica	Plag.	Mont.	Mica	Kaol.
250-1-5, 100-102	7.0	ooze and coccolith		Mont.	Quar.	Mica	Quar.	Mica	Plag.	Mont.	Kaol.	Mica
250-2-6, 135-137	17.9	detrital silty clay		Quar.	Mica	Mont.	Quar.	Mica	Plag.	Mont.	Mica	Quar.
250A-1-2, 30-32	56.3	Unit 1	Quaternary	Calc.	Mont.	Mica	Quar.	Mica	Plag.	Mont.	Quar.	Mica
250A-1-3, 32-34	57.8	Clayey coccolith		Mont.	Mica	Quar.	Quar.	Mica	Plag.	Mont.	Quar.	Mica
250A-3-6, 122-124	82.2	ooze and coccolith detrital silty clay		Calc.	Mont.	Mica	Quar.	Mica	Kaol.	Mont.	Kaol.	Quar.
250A-4-4, 144-146	117.4	Unit 2A	Upper	Mont.	Mica	Quar.	Quar.	Mica	Plag.	Mont.	Quar.	Kaol.
250A-6-3, 90-92	191.4	Detrital clays with	Miocene-	Mica	Quar.	Mont.	Quar.	Mica	Plag.	Mont.	Mica	Quar.
250A-7-1, 10-12	235.1	minor coccolith and	upper	Mica	Mont.	Quar.	Quar.	Mica	Plag.	Mica	Mont.	Quar.
250A-7-5, 96-98	242.0	clay-rich coccolith	Pliocene	Mica	Mont.	Quar.	Quar.	Mica	Plag.	Mont.	Mica	Quar.
250A-8-1, 30-32	292.3	ooze		Mica	Mont.	Quar.	Quar.	Mica	Plag.	Mont.	Mica	Quar.
250A-9-2, 140-142	351.9			Mont.	Quar.	Mica	Quar.	Mica	Plag.	Mont.	Mica	Quar.
250A-10-2, 10-12	407.6	Unit 2B	Lower-	Mica	Quar.	Mont.	Quar.	Mica	Plag.	Mica	Mont.	Quar.
250A-11-1, 30-32	463.3	Detrital clays	middle	Quar.	Mica	Mont.	Quar.	Mica	Plag.	Mont.	Mica	Quar.
250A-11-5, 120-122	470.2		Miocene	Quar.	Mica	Mont.	Quar.	Plag.	Mica	Mont.	Mica	Quar.
250A-13-1, 75-77	568.3			Quar.	Mica	Mont.	Quar.	Plag.	Mica	Mont.	Mica	Quar.
250A-13-1, 128-130	568.8	Unit 3	Lower-	Quar.	Mica	Mont.	Quar.	Plag.	Mica	Quar.	Mica	Mont.
250A-14-2, 22-24	607.2	Detrital clays	middle	Mont.	Quar.	Mica	Quar.	Plag.	Mica	Mont.	Quar.	Mica
250A-15-2, 91-93	626.9		Miocene	Quar.	Mont.	Mica	Quar.	K-Fe.	Mica	Mont.	Mica	Quar.
250A-17-2, 110-112	646.1			Quar.	Mica	Mont.	Quar.	Mica	Plag.	Mont.	Mica	Paly.
250A-19-2, 33-35	664.3	Unit 4	Coniacian	Paly.	Mica	Quar.	Quar.	Plag.	K-Fe.	Mont.	Mica	Paly.
250A-21-2, 104-106	684.0	Detrital clays	through	Paly.	Mont.	Quar.	Quar.	Plag.	Mica	Mont.	Paly.	Quar.
250A-23-1, 95-97	701.5		lower Miocene	Cris.	Trid.		Cris.	Trid		Cris.	Trid.	
250A-24-2, 130-132	712.8	Unit 5	Coniacian	Paly.	Mont.	Quar.	Quar.	Mica	Plag.	Mont.	Paly.	Quar.
250A-25-1, 22-24	719.7	Detrital clays		Paly.	Mont.	Quar.	Quar.	Mica	K-Fe.	Mont.	Paly.	Mica

TABLE 2
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology and Age of Lithologic Units, and X-Ray Diffraction Results, Site 251

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20μ Fraction Major Constituent			<2μ Fraction Major Constituent		
				1	2	3	1	2	3	1	2	3
251-1-1, 94-96	0.9	Unit 1 Nannoplankton ooze	Quaternary	Calc.			Quar.	Plag.	Mica	Mont.	Mica	Quar.
251-3-1, 126-128	12.8	Unit 2A Nannoplankton ooze	Upper Pliocene through Quaternary	Calc.			Quar.	Plag.	Mica	Mont.	Mica	Quar.
251-3-3, 30-32	14.8			Calc.			Quar.	Plag.	Mica	Mont.	Quar.	Mica
251-5-5, 70-72	37.2			Calc.			Quar.	Plag.	Mica	Mont.	Mica	Quar.
251-7-6, 50-52	57.5			Calc.			Quar.	Plag.	Mica	Mont.	Quar.	Mica
251-10-5, 22-24	84.2			Calc.			Quar.	Plag.	Mica	Mont.	Mica	Quar.
251A-1-6, 30-32	85.8	Unit 2A Nannoplankton ooze	Upper Pliocene	Calc.			Quar.	Plag.	Mica	Mica	Mont.	Quar.
251A-4-6, 20-22	114.2	Unit 2B Nannoplankton ooze with increased detrital components	Upper Miocene-lower Pliocene	Calc.			Quar.	Plag.	Mica	Mont.	Mica	Quar.
251A-6-6, 20-22	133.2			Calc.			Quar.	Plag.	Mica	Mont.	Mica	Quar.
251A-9-4, 20-22	158.7			Calc.			Quar.	Plag.	Mica	Mont.	Mica	Quar.
251A-12-6, 20-22	228.2			Calc.			Quar.	Mica	Plag.	Mont.	Mica	Quar.
251A-15-3, 28-30	309.3	Unit 3 Nannoplankton ooze	Lower and middle Miocene	Calc.			Quar.	Plag.	Mica	Mont.	Mica	Quar.
251A-18-1, 57-59	373.1			Calc.			Quar.	Mica	Plag.	Mont.	Mica	Quar.
251A-20-6, 25-27	399.3			Calc.			Quar.	Mica	Plag.	Mont.	Mica	Quar.
251A-22-3, 100-102	414.5			Calc.			Quar.	Mica	Plag.	Mont.	Mica	Quar.
251A-24-4, 134-136	435.3			Calc.			Quar.	Mica	Plag.	Mont.	Mica	Quar.
251A-26-4, 3-5	453.0			Calc.			Quar.	Mica	Plag.	Paly.	Mont.	Quar.
251A-26-4, 120-122	454.2	Unit 4 Nanno chalk	Lower Miocene	Calc.			Quar.	Plag.	Mica	Mica	Quar.	Mont.
251A-29-2, 20-22	478.7	Unit 5 Calcite (micarb) chalk	Lower Miocene	Calc.			U-9	Augi.		Augi.	Mont.	U-9

TABLE 3
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology and Age of Lithologic Units, and X-Ray Diffraction Results, Site 252

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20μ Fraction Major Constituent			<2μ Fraction Major Constituent		
				1	2	3	1	2	3	1	2	3
252-2-2, 30-32	1.8	Unit 1 Radiolarian clay and silty clay	Quaternary	Plag.	Augi.	K-Fe.	Augi.	Plag.	K-Fe.	Mont.	Plag.	Mica
252-2-3, 73-75	3.7			Augi.	Plag.	Mont.	Augi.	Plag.	Quar.	Mont.	Pyri.	Mica
252-4-6, 120-122	103.7	Unit 2 Diatom-bearing radiolarian clay	Miocene through Quaternary	Augi.	Plag.	Mont.	Augi.	Plag.	Quar.	Mont.	Mica	Plag.
252-6-3, 120-122	194.2			Augi.	Plag.	Mont.	Augi.	Plag.	Quar.	Mont.	Plag.	Mica
252-7-2, 138-140	240.4			Augi.	Mont.	Plag.	Augi.	Plag.	Quar.	Mont.	Mica	Plag.

TABLE 4
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology and Age of Lithologic Units, and X-Ray Diffraction Results, Site 253

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20μ Fraction Major Constituent			<2μ Fraction Major Constituent		
				1	2	3	1	2	3	1	2	3
253-1-2, 115-117	2.6	Unit 1 Nannoforam ooze	Quaternary	Calc.			Quar.	Gyps.	Mica	Mica	Quar.	Mont.
253-5-6, 70-72	45.7	Unit 2 Foraminiferal-nannoplankton ooze	Upper Eocene through Pliocene	Calc.			Insufficient residue			Insufficient residue		
253-7-2, 87-88	58.9			Calc.			Insufficient residue			Mica	Quar.	Mont.
253-9-4, 93-95	80.9			Calc.			K-Fe.	Quar.	Mica	Paly.	Mont.	K-Fe.
253-11-2, 93-95	96.9			Calc.			Insufficient residue			Insufficient residue		
253-13-2, 93-95	115.9			Calc.			K-Fe.	Quar.	Mica	Paly.	Mont.	
253-16-6, 139-141	150.9			Calc.			Clin.	Gyps.	Mont.	Mont.		
253-17-2, 114-116	154.1	Unit 3 Vitric volcanic ash and lapilli with calcareous components	Middle Eocene	Mont.	Plag.	Magn.	Mont.	Magn.	Plag.	Mont.		
253-18-2, 92-94	163.4			Calc.	Mont.		Mont.	Plag.		Mont.		
253-18-4, 8-10	165.6			Calc.	Mont.	Augi.	Mont.	Augi.		Mont.	Augi.	
253-20-2, 100-102	182.5			Calc.	Mont.		Mont.	Pyri.		Mont.		
253-23-2, 93-95	210.9			Calc.	Mont.	Phil.	Mont.	Phil.		Mont.	Phil.	
253-25-2, 93-95	229.9			Mont.	Calc.	Phil.	Mont.	Phil.		Mont.		
253-30-1, 110-112	270.6			Calc.	Clin.		Clin.	Plag.	Mont.	Mont.	Mica	
253-31-2, 110-112	281.6			Calc.	Mont.	Clin.	Mont.	Plag.	Clin.	Mont.		
253-36-1, 130-132	327.8			Mont.	Clin.		Clin.	Mont.		Mont.		
253-38-1, 96-98	346.5			Mont.	Calc.	Clin.	Mont.	Clin.	Magn.	Mont.		
253-40-2, 45-47	366.5			Mont.	Calc.		Mont.	Anal.		Mont.		
253-42-2, 135-137	386.4			Mont.	Clin.		Mont.	Clin.		Mont.		
253-44-2, 8-10	404.1			Mont.	Calc.		Mont.			Mont.		
253-46-2, 100-102	424.0			Mont.	Calc.		Mont.	Clin.	Anal.	Mont.		
253-48-2, 56-58	442.6			Mont.	Anal.	Calc.	Mont.	Anal.		Mont.		
253-49-2, 58-59	452.1			Mont.	Anal.		Mont.	Anal.		Mont.		
253-51-2, 41-43	470.9			Mont.	Calc.	Clin.	Mont.	Anal.	Clin.	Mont.		
253-52-2, 135-137	481.3			Mont.	Anal.	Calc.	Anal.	Mont.		Mont.		
253-54-2, 121-123	500.2			Mont.	Anal.	Calc.	Mont.	Anal.		Mont.		
253-56-2, 117-119	519.2			Mont.	Kaol.		Mont.	Clin.	Quar.	Mont.		
253-57-2, 68-71	547.2			Mont.	Cris.		Mont.	Cris.		Mont.	Cris.	

TABLE 5
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology and Age of Lithologic Units, and X-Ray Diffraction Results, Site 254

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent 1	2	3	2-20μ Fraction Major Constituent 1	2	3	<2μ Fraction Major Constituent 1	2	3
254-2-2, 92-94	7.9	Unit 1 Coccolith foram ooze	Pliocene-Quaternary	Calc.			Insufficient residue			Mont.	Mica	Quar.
254-2-5, 92-94	12.4	Unit 2A Foram-rich coccolith ooze	Middle Miocene through Pliocene	Calc.			Insufficient residue			Mont.		
254-4-2, 92-94	26.9			Calc.						Mont.	Mica	
254-7-5, 94-96	59.9			Calc.						Quar.	Mont.	
254-10-5, 10-12	87.6			Calc.						Mica	Mont.	Quar.
254-18-5, 92-94	154.9	Unit 2C Calcareous ooze	Lower Miocene	Calc.			Phil.			Mont.	Mica	Quar.
254-20-2, 54-56	169.0	Unit 2D Foram and coccolith micarb ooze	Oligocene	Calc.			Anal.	Phil.	Mont.	Mont.	Magn.	
254-20-2, 125-127	169.8			Calc.			Phil.	Mont.	Magn.	Mont.	Magn.	Magn.
254-24-1, 110-111	210.6	Unit 4 Sandy and silty clays and silty sands and pebble conglomerates	Upper Eocene or lower Oligocene	Mont.	Phil.	Pyri.	Mont.	Pyri.		Mont.		
254-25-5, 70-72	225.7			Mont.	Phil.	Pyri.	Pyri.	Mont.	Phil.	Mont.		
254-27-3, 123-125	242.2			Mont.	Pyri.	Phil.	Pyri.	Phil.	Clin.	Mont.	Pyri.	Pyri.
254-30-1, 120-125	267.7			Mont.			Mont.			Mont.		

TABLE 6
Summary of X-Ray Mineralogy Sample, Sample Depth, Lithology and Age of Lithologic Unit, and X-Ray Diffraction Results, Site 255

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent 1	2	3	2-20μ Fraction Major Constituent 1	2	3	<2μ Fraction Major Constituent 1	2	3
255-5-1, 130-132	43.3	Unit 1 Nannoplankton foram ooze	Lower Miocene	Calc.			Phil.	Quar.	Anal.	Quar.	V-2	

TABLE 7
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology and Age of Lithologic Units, and X-Ray Diffraction Results, Site 256

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent 1	2	3	2-20μ Fraction Major Constituent 1	2	3	<2μ Fraction Major Constituent 1	2	3
256-1-5, 89-91	6.9	Unit 1 Detrital clays	Albian through Quaternary	Mont.	Kaol.	Mica	Quar.	Mica	Kaol.	Mont.	Quar.	Kaol.
256-3-5, 45-47	54.0			Mont.	Kaol.	Mica	Mica	Quar.	Mont.	Mont.	Kaol.	Quar.
256-4-6, 120-122	94.2			Mont.	Kaol.	Mica	Mica	Mont.	Quar.	Mont.	Kaol.	Mica
256-5-4, 85-87	128.9			Mica	Mont.	Kaol.	Quar.	Mica	K-Fe.	Mica	Mont.	Quar.
256-7-3, 127-129	213.3			Cris.	Clin.	Mica	Cris.	Clin.	Quar.	Cris.	Quar.	Mont.
256-8-5, 105-107	244.6			Clin.	Cris.	Mica	Clin.	Quar.	K-Fe.	Cris.	Mont.	Mica
256-9-1, 133-135	248.3			Calc.	Mont.	Quar.	Quar.	Mont.	K-Fe.	Mont.	Quar.	K-Fe.

TABLE 8
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology and Age of Lithologic Units, and X-Ray Diffraction Results, Site 257

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20μ Fraction Major Constituent			<2μ Fraction Major Constituent		
				1	2	3	1	2	3	1	2	3
257-1-5, 93-95	6.9	Unit 1A Detrital clay and coccolith detrital clay	Cretaceous and Tertiary	Mont.	Mica	Quar.	Quar.	Plag.	Mica	Mont.	Quar.	Mica
257-2-2, 128-130	12.3			Mont.	Mica	Kaol.	Quar.	Mica	Clin.	Mont.	Kaol.	Mica
257-3-3, 116-118	51.7			Mont.	Kaol.	Mica	Quar.	Mica	Kaol.	Mont.	Quar.	Kaol.
257-4-4, 24-26	90.2			Mont.	Clin.	Mica	Clin.	Mica	Quar.	Mont.	Cris.	Clin.
257-5-2, 93-95	125.9			Clin.	Mont.	Mica	Clin.	Mont.	Quar.	Mont.	Clin.	Cris.
257-6-1, 133-135	162.8			Mont.	Clin.	Mica	Clin.	K-Fe.	Mica	Mont.	Clin.	K-Fe.
257-7-2, 93-95	201.9	Unit 1B Detrital clay	Middle Albian	Mont.	Calc.	K-Fe.	K-Fe.	Mica	Quar.	Insufficient residue		
257-8-2, 92-94	239.5			Mont.	K-Fe.	Quar.	K-Fe.	Quar.	Mont.	Mont.	Quar.	K-Fe.
257-9-2, 104-106	249.5	Unit 1C Detrital clay	? Cretaeous	Mont.	Quar.		Mont.	Quar.	Mica	Mont.	Mica	Quar.
257-10-1, 92-94	257.4			Mont.	Quar.	Mica	Quar.	Mont.	Mica	Quar.	Mont.	

TABLE 9
Summary of X-Ray Mineralogy Samples, Sample Depths, Lithology and Age of Lithologic Units, and X-Ray Diffraction Results, Site 258

Sample (Interval in cm)	Sample Depth Below Sea Floor (m)	Lithology	Age	Bulk Sample Major Constituent			2-20μ Fraction Major Constituent			<2μ Fraction Major Constituent		
				1	2	3	1	2	3	1	2	3
258-1-5, 46-48	6.5	Unit 1 Sponge-, micarb-, and foram-bearing coccolith ooze	Upper Miocene through Quaternary	Calc.	Arag.		Quar.	K-Fe.	Mica	Kaol.	Mont.	Mica
258-3-1, 93-95	48.4			Calc.			Quar.	K-Fe.	Mica	Kaol.	Mica	Mont.
258-4-1, 134-136	86.8			Calc.	Quar.		Quar.	K-Fe.	Kaol.	Mont.	Kaol.	Mica
258-6-5, 120-122	149.7	Unit 2A Foram and micarb-bearing chalks	Coniacian and Santonian	Calc.	Mont.		Quar.	Bari.	Mica	Cris.	Mont.	
258-10-2, 60-62	201.6			Calc.	Mont.	Cris.	Mont.	Cris.	Bari.	Cris.	Mont.	Bari.
258-12-4, 130-132	240.3	Unit 2B Coccolith micarb chalk	Cenomanian Turonian and Coniacian	Cris.	Mont.	Calc.	Cris.	Mont.		Cris.	Mont.	
258-14-1, 4-5	263.0			Cris.	Clin.	Mont.	Cris.	Clin.	Bari.	Cris.	Mont.	
258-14-1, 54-55	263.5	Unit 3 Detrital clays	Late Albian	Cris.	Clin.	Mont.	Clin.	Cris.	Bari.	Cris.	Mont.	
258-15-2, 121-123	284.7			Mont.	Cris.		Clin.	Mont.	Kaol.	Mont.	Kaol.	Quar.
258-16-5, 114-116	308.1	Unit 4 Ferruginous detrital clays	Middle and late Albian and indet. Cretaceous	Mont.	Calc.	Kaol.	Mont.	Cris.	Quar.	Mont.	Cris.	Mica
258-17-5, 135-137	327.4			Mont.	Cris.	Calc.	Mont.	Cris.	Mica	Cris.	Mont.	Quar.
258-18-2, 103-105	341.5			Cris.	Mont.	Calc.	Cris.	Quar.		Cris.	Mont.	
258-21-1, 16-18	405.7			Cris.	Mont.	Quar.	Cris.	Quar.	Mont.	Cris.	Mica	Quar.
258-22-5, 70-72	441.7			Mont.	Quar.		Quar.	Mont.	Mica	Quar.	Mont.	Kaol.
258-23-2, 92-94	474.4			Mont.	Kaol.		Mont.	Kaol.	Mica	Mont.	Kaol.	Quar.
258-24-5, 53-55	516.5	Unit 5 Glauconite detrital silty clay	Indet. Cretaceous	Calc.	Mont.		Mont.	K-Fe.	Pyri.	Mont.	Kaol.	Mica
258-25-2, 88-90	521.9			Kaol.	K-Fe.	Mont.	K-Fe.	Magn.	Hema.	Kaol.	Mont.	Hema.

TABLE 10
Results of X-Ray Diffraction Analysis, Hole 250

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Gibb.
Bulk Samples													
1	0.0-9.0	0.9	84.6	75.9	–	16.0	7.5	5.8	7.8	19.1		43.8	–
		5.5	80.7	69.8	48.3	12.8	4.1	5.7	7.2	9.8		12.2	–
		7.0	85.8	77.7	–	25.0	7.0	8.0	13.9	20.1		25.2	0.8
2	9.0-18.5	17.9	85.5	77.3	15.6	22.0	6.5	8.1	9.9	18.4		18.4	1.1
2-20μ Fraction													
1	0.0-9.0	0.9	75.9	62.3		22.5	15.3	13.6	6.9	29.6	–	12.2	–
		5.5	72.5	57.0		33.1	10.9	18.8	10.2	24.2	1.5	–	1.3
		7.0	70.6	54.1		29.1	11.1	14.4	8.4	28.2	1.7	5.8	1.3
2	9.0-18.5	17.9	72.1	56.3		36.6	13.5	18.7	6.2	22.6	1.3	–	1.1
$<2\mu$ Fraction													
1	0.0-9.0	0.9	83.4	74.0		5.2	–	–	8.2	13.2		73.4	–
		5.5	85.6	77.5		14.6	–	6.6	15.3	19.1		43.3	1.0
		7.0	86.6	79.0		13.2	5.7	6.6	14.8	13.6		45.2	1.0
2	9.0-18.5	17.9	87.5	80.5		16.3	4.8	5.9	11.8	16.8		43.6	0.7

TABLE 11
Results of X-Ray Diffraction Analysis, Hole 250A

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	Dolo.	Side.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Paly.	Trid.	Clin.	Pyri.	Gibb.	Hali.
Bulk Samples																					
1	54.5-64.0	56.3	84.5	75.9	22.2	–	–	17.1	–	4.1	7.5	10.5	18.9	–	19.0	–	–	–	–	0.6	–
		57.8	85.3	77.0	–	–	–	23.4	–	3.3	6.5	6.5	24.4	2.3	24.5	8.4	–	–	–	0.7	–
3	73.5-83.0	82.2	78.2	66.0	42.0	–	–	10.2	–	4.0	4.4	10.4	11.6	–	17.5	–	–	–	–		–
4	111.5-121.0	117.4	85.6	77.5	10.2	0.8	–	19.5	–	4.2	6.7	12.7	21.9	–	24.0	–	–	–	–	–	–
6	187.5-197.0	191.4	85.6	77.5	–	–	–	23.4	–	–	11.8	10.5	31.5	–	22.6	–	–	–	–	–	–
7	235.0-243.5	235.1	86.4	78.7	–	–	–	21.0	–	10.7	7.9	11.1	24.7	–	24.7	–	–	–	–	–	–
		242.0	83.7	74.5	6.0	–	4.4	19.5	–	7.8	6.4	10.5	24.5	–	20.9	–	–	–	–	–	–
8	292.0-301.5	292.3	83.9	74.8	–	–	–	20.6	–	6.6	9.1	11.0	26.5	–	26.2	–	–	–	–	–	–
9	349.0-358.5	351.9	84.4	75.7	–	–	–	23.6	–	7.5	7.1	11.9	23.3	–	26.6	–	–	–	–	–	–
10	406.0-415.5	407.6	86.8	79.3	–	–	–	26.7	–	7.8	8.5	10.0	30.2	–	16.9	–	–	–	–	–	–
11	463.0-472.5	463.3	84.0	75.0	–	–	–	33.0	–	5.7	8.1	1.7	26.0	3.2	22.3	–	–	–	–	–	–
		470.2	83.8	74.6	–	–	–	33.4	–	7.6	10.0	2.1	26.5	3.9	16.5	–	–	–	–	–	–
13	567.5-577.0	568.3	84.1	75.2	–	–	–	29.1	–	6.1	10.9	2.7	25.8	2.1	23.3	–	–	–	–	–	–
		568.8	84.7	76.2	–	–	–	32.2	–	6.9	11.4	1.7	31.8	2.6	13.4	–	–	–	–	–	–
14	605.5-615.0	607.2	83.8	74.7	–	–	–	22.6	–	8.0	3.1	7.1	22.5	3.1	33.6	–	–	–	–	–	–
15	624.5-634.0	626.9	84.1	75.2	–	–	–	22.3	–	16.2	10.8	8.1	21.2	–	21.5	–	–	–	–	–	–
17	643.5-653.0	646.1	87.1	79.8	–	–	–	24.4	–	6.8	8.9	6.2	18.4	–	18.4	17.0	–	–	–	–	–
19	662.5-672.0	664.3	87.3	80.2	–	–	–	19.0	–	6.5	6.2	2.2	23.0	1.2	13.6	28.3	–	–	–	–	–
21	681.5-691.0	684.0	83.0	73.5	–	–	–	18.9	–	3.5	3.7	–	9.3	–	29.3	35.3	–	–	–	–	–
23	700.5-710.0	701.5	90.6	85.3	–	–	–	5.1	69.6	–	–	–	–	–	4.2	7.3	13.8	–	–	–	–
24	710.0-719.5	712.8	86.0	78.1	–	–	–	14.9	–	5.9	3.8	–	11.4	–	30.3	30.8	–	3.0	–	–	–
25	719.5-729.0	719.7	89.9	84.2	–	–	–	19.0	–	6.6	3.8	–	5.2	–	21.3	44.1	–	–	–	–	–
2-20μ Fraction																					
1	54.5-64.0	56.3	71.7	55.7	–	–	–	37.0	–	12.2	17.7	9.9	22.6	–	–	–	–	–	–	0.6	–
		57.8	69.3	52.0	–	–	–	32.8	–	12.9	16.5	9.1	26.1	1.3	–	–	–	–	–	1.3	–
3	73.5-83.0	82.2	72.2	56.5	–	–	–	29.7	–	15.5	14.7	16.7	21.0	–	–	–	–	–	1.6	0.7	–
4	111.5-121.0	117.4	70.7	54.3	–	–	–	34.2	–	14.0	15.6	11.4	22.6	0.7	–	–	–	–	0.9	0.6	–
6	187.5-197.0	191.4	64.8	45.1	–	–	–	34.8	–	12.7	22.3	2.8	25.9	1.4	–	–	–	–	–	–	–
7	235.0-243.5	235.1	66.5	47.7	–	–	–	34.2	–	13.0	18.4	4.6	27.3	1.2	–	–	–	–	1.3	–	–
		242.0	68.8	51.3	–	–	–	34.1	–	14.7	17.2	6.9	26.4	0.7	–	–	–	–	–	–	–
8	292.0-301.5	292.3	66.7	47.9	–	–	–	37.7	–	13.4	18.3	4.8	24.4	1.4	–	–	–	–	–	–	–
9	349.0-358.5	351.9	66.8	48.1	–	–	–	38.2	–	13.4	18.1	4.0	25.1	1.2	–	–	–	–	–	–	–
10	406.0-415.5	407.6	64.1	44.0	–	–	–	42.7	–	12.6	18.3	1.5	23.8	1.1	–	–	–	–	–	–	–

11	463.0-472.5	463.3	61.2	39.4	–	–	–	45.8	–	10.8	19.2	–	22.8	1.3	–	–	–	–	–	–	–
		470.2	63.5	42.9	–	–	–	49.1	–	11.0	20.5	1.0	17.5	0.8	–	–	–	–	–	–	–
13	567.5-577.0	568.3	61.8	40.3	–	–	–	48.3	–	13.7	21.2	0.6	15.6	0.6	–	–	–	–	–	–	–
		568.8	57.8	34.1	–	–	–	50.5	–	11.3	23.5	–	13.4	1.2	–	–	–	–	–	–	–
14	605.5-615.0	607.2	59.0	35.9	–	–	–	52.1	–	14.6	16.7	0.8	14.9	0.9	–	–	–	–	–	–	–
15	624.5-634.0	626.9	63.9	43.6	–	–	–	35.2	–	22.7	17.2	2.5	22.5	–	–	–	–	–	–	–	–
17	643.5-653.0	646.1	64.9	45.2	–	–	–	42.1	–	13.9	19.7	2.8	20.4	1.0	–	–	–	–	–	–	–
19	662.5-672.0	664.3	67.4	49.1	–	–	–	37.6	–	19.9	20.8	–	19.3	2.4	–	–	–	–	–	–	–
21	681.5-691.0	684.0	62.1	40.8	–	–	–	45.6	–	13.1	17.8	–	15.1	1.8	–	6.6	–	–	–	–	–
23	700.5-710.0	701.5	87.4	80.4	–	–	–	4.7	72.2	1.7	2.3	–	1.3	–	–	4.5	13.3	–	–	–	–
24	710.0-719.5	712.8	75.0	60.9	–	–	–	31.4	–	9.2	14.6	–	24.8	–	9.8	–	–	10.3	–	–	–
25	719.5-729.0	719.7	76.5	63.2	–	–	–	33.2	–	20.1	15.8	–	28.0	3.0	–	–	–	–	–	–	–
<2μ Fraction																					
1	54.5-64.0	56.3	85.8	77.9	–	–	–	16.2	–	5.0	3.5	13.5	15.1	–	45.7	–	–	–	–	0.8	–
		57.8	85.1	76.7	–	–	–	17.7	–	6.0	4.7	13.1	14.4	–	36.7	7.4	–	–	–	–	–
3	73.5-83.0	82.2	86.0	78.2	–	–	–	12.5	–	3.3	3.8	13.2	11.5	–	55.7	–	–	–	–	–	–
4	111.5-121.0	117.4	86.5	78.8	–	–	–	14.6	–	3.7	5.4	13.0	12.2	–	48.0	–	–	–	–	–	3.1
6	187.5-197.0	191.4	87.8	81.0	–	–	–	15.7	–	6.6	7.2	8.2	17.6	–	38.8	–	–	–	–	–	5.9
7	235.0-243.5	235.1	83.2	73.8	–	–	–	15.2	–	7.1	4.7	10.9	29.5	–	25.4	–	–	–	–	–	7.3
		242.0	89.0	82.8	–	–	–	15.3	–	4.3	2.8	13.2	18.7	–	45.7	–	–	–	–	–	–
8	292.0-301.5	292.3	85.5	77.4	–	–	–	15.1	–	6.2	2.7	10.7	20.0	–	43.6	–	–	–	–	–	1.7
9	349.0-358.5	351.9	83.5	74.3	–	–	–	17.5	–	7.9	7.4	10.1	23.9	–	29.3	–	–	–	–	–	3.9
10	406.0-415.5	407.6	85.5	77.4	–	–	–	16.5	–	7.4	4.1	7.1	37.0	–	24.4	–	–	–	–	–	3.5
11	463.0-472.5	463.3	84.3	75.4	–	–	–	20.4	–	5.9	5.3	7.6	24.6	–	34.1	–	–	–	–	–	2.1
		470.2	86.0	78.1	–	–	–	20.9	–	5.8	4.2	7.3	24.9	–	31.7	–	–	–	–	–	5.2
13	567.5-577.0	568.3	85.7	77.6	–	–	–	19.1	–	5.8	4.7	2.6	25.2	–	31.2	–	–	–	–	–	9.2
		568.8	86.6	79.0	–	–	–	27.8	–	5.1	6.4	6.4	27.2	–	19.2	–	–	–	–	–	7.8
14	605.5-615.0	607.2	88.0	81.3	–	–	–	22.6	–	8.0	3.1	7.1	22.5	3.1	33.6	–	–	–	–	–	–
15	624.5-634.0	626.9	87.4	80.3	–	–	–	11.5	–	6.5	–	8.4	22.5	–	41.7	–	–	–	–	–	9.4
17	643.5-653.0	646.1	87.9	81.1	–	–	–	16.9	–	5.5	4.3	7.7	20.0	–	28.5	17.1	–	–	–	–	–
19	662.5-672.0	664.3	88.9	82.6	–	–	–	9.5	–	5.7	2.4	2.3	23.5	0.8	33.2	22.7	–	–	–	–	–
21	681.5-691.0	684.0	85.8	77.8	–	–	–	18.0	–	–	–	–	12.8	–	36.2	33.0	–	–	–	–	–
23	700.5-710.0	701.5	94.0	90.7	–	–	–	1.5	73.4	–	–	–	–	–	5.7	5.1	12.6	–	–	–	1.7
24	710.0-719.5	712.8	86.7	79.2	–	–	–	9.4	–	–	–	–	8.0	–	52.9	29.8	–	–	–	–	–
25	719.5-729.0	719.7	88.1	81.3	–	–	–	8.5	–	2.5	–	–	9.5	–	50.6	29.0	–	–	–	–	–

TABLE 12
Results of X-Ray Diffraction Analysis, Hole 250A

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.
Bulk Samples												
1	0.0-2.0	0.9	54.1	28.2	95.8	1.7	–	1.1	–	1.4	–	–
3	11.5-21.0	12.8	51.5	24.3	99.6	0.4	–	–	–	–	–	–
		14.8	57.1	33.0	96.8	1.8	–	–	–	1.4	–	–
5	30.5-40.0	37.2	51.2	23.8	98.4	0.5	–	–	–	1.1	–	–
7	49.5-59.0	57.5	52.2	25.3	98.7	1.3	–	–	–	–	–	–
10	78.0-87.5	84.2	62.9	42.0	98.2	1.8	–	–	–	–	–	–
2-20μ Fraction												
1	0.0-2.0	0.9	68.8	51.3	–	33.8	11.0	25.9	–	25.4	3.9	–
3	11.5-21.0	12.8	72.0	56.3	–	46.9	10.0	22.0	–	19.2	1.9	–
		14.8	75.4	61.6	–	48.3	8.4	25.8	2.9	13.1	1.4	–
5	30.5-40.0	37.2	77.6	65.0	–	44.0	9.1	23.8	–	20.6	2.5	–
7	49.5-59.0	57.5	77.8	65.4	–	42.5	10.1	26.0	–	19.6	1.8	–
10	78.0-87.5	84.2	71.8	55.9	–	42.8	9.8	25.5	–	20.0	1.9	–
$<2\mu$ Fraction												
1	0.0-2.0	0.9	95.2	92.5	–	19.1	–	14.7	10.1	21.2	–	34.9
3	11.5-21.0	12.8	88.5	82.0	–	9.9	3.7	4.4	7.5	10.3	–	64.3
		14.8	92.9	88.9	–	22.2	–	11.0	8.0	15.7	–	43.1
5	30.5-40.0	37.2	94.5	91.5	–	13.1	–	11.8	10.5	25.3	–	39.3
7	49.5-59.0	57.5	88.2	81.6	–	16.6	–	8.3	8.3	15.0	–	51.8
10	78.0-87.5	84.2	93.7	90.1	–	23.5	5.3	12.2	9.8	23.5	–	25.6

TABLE 13
Results of X-Ray Diffraction Analysis, Hole 251A

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	U–9[a]	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Paly.	Pyri.	Augi.
Bulk Samples																
1	78.0-87.5	85.8	50.7	22.9	99.1	–	0.9	–	–	–	–	–	–	–	–	–
4	106.5-116.0	114.2	49.9	21.7	99.0	–	1.0	–	–	–	–	–	–	–	–	–
6	125.5-135.0	133.2	53.8	27.8	99.4	–	0.6	–	–	–	–	–	–	–	–	–
9	154.0-163.5	158.7	52.9	26.4	99.0	–	1.0	–	–	–	–	–	–	–	–	–
12	220.5-230.0	228.2	51.2	23.7	98.9	–	1.1	–	–	–	–	–	–	–	–	–
15	306.0-315.5	309.3	51.2	23.8	99.0	–	1.0	–	–	–	–	–	–	–	–	–
18	372.5-382.0	373.1	49.8	21.6	97.1	–	1.0	–	–	–	1.9	–	–	–	–	–
20	391.5-401.0	399.3	56.6	32.2	92.9	–	2.1	–	–	–	2.9	2.1	–	–	–	–
22	410.5-420.0	414.5	54.0	28.1	98.8	–	1.2	–	–	–	–	–	–	–	–	–
24	429.5-439.0	435.3	61.3	39.6	88.8	–	4.2	1.2	1.5	–	4.2	–	–	–	–	–
26	448.5-458.0	453.0	54.2	28.4	95.6	–	2.0	–	–	–	2.4	–	–	–	–	–
		454.2	56.3	31.8	93.2	–	3.3	–	–	–	3.5	–	–	–	–	–
29	477.0-486.5	478.7	47.4	17.8	82.9	13.2	–	–	–	–	–	–	–	–	–	3.9
2-20μ Fraction																
1	78.0-87.5	85.8	61.9	40.4	–	–	35.6	9.2	26.4	–	25.2	3.5	–	–	–	–
4	106.5-116.0	114.2	75.3	61.5	–	–	43.8	9.1	23.7	–	21.3	2.1	–	–	–	–
6	125.5-135.0	133.2	77.9	65.5	–	–	39.4	11.2	21.2	–	19.2	1.7	7.3	–	–	–
9	154.0-163.5	158.7	72.5	57.0	–	–	35.0	13.5	25.5	–	22.8	2.1	–	–	1.2	–
12	220.5-230.0	228.2	76.9	63.9	–	–	39.2	10.1	21.3	1.8	25.4	1.1	–	–	1.2	–
15	306.0-315.5	309.3	77.8	65.2	–	–	35.3	7.8	33.8	4.0	19.2	–	–	–	–	–
18	372-5-382.0	373.1	59.2	36.2	–	–	45.0	14.9	15.2	4.1	20.8	–	–	–	–	–
20	391.5-401.0	399.3	70.6	54.1	–	–	42.1	13.4	14.4	–	23.0	1.3	5.7	–	–	–
22	410.5-420.0	414.5	66.8	48.1	–	–	47.6	9.4	18.5	–	22.4	2.0	–	–	–	–
24	429.5-439.0	435.3	72.4	56.8	–	–	42.1	12.3	19.2	0.3	24.2	1.9	–	–	–	–
26	448.5-458.0	453.0	66.8	48.2	–	–	40.1	12.7	19.3	–	25.6	2.3	–	–	–	–
		454.2	64.2	44.0	–	–	46.2	12.7	20.0	–	19.9	1.2	–	–	–	–
29	477.0-486.5	478.7	51.0	23.4	–	93.0	–	–	–	–	–	–	–	–	–	7.0
< 2μ Fraction																
1	78.0-87.5	85.8	91.3	86.4	–	–	22.0	10.5	5.4	11.9	25.5	–	24.7	–	–	–
4	106.5-116.0	114.2	90.6	85.3	–	–	12.1	–	9.8	–	36.8	–	41.3	–	–	–
6	125.5-135.0	133.2	90.9	85.8	–	–	11.7	3.3	6.8	7.9	26.3	–	44.0	–	–	–
9	154.0-163.5	158.7	93.9	90.4	–	–	18.3	7.7	8.5	11.5	24.8	–	29.3	–	–	–
12	220.5-230.0	228.2	93.0	89.1	–	–	14.8	10.5	5.8	8.8	27.0	–	33.1	–	–	–
15	306.0-315.5	309.3	87.0	79.8	–	–	9.0	5.5	4.2	5.3	19.2	–	56.9	–	–	–
18	372.5-382.0	373.1	93.4	89.7	–	–	12.1	–	5.7	8.3	29.5	–	44.3	–	–	–
20	391.5-401.0	399.3	91.6	86.8	–	–	12.4	6.4	2.5	5.0	27.5	–	46.2	–	–	–
22	410.5-420.0	414.5	93.0	89.0	–	–	14.9	–	4.2	7.2	29.5	–	44.2	–	–	–
24	429.5-439.0	435.3	89.2	83.2	–	–	13.5	2.1	4.9	6.4	28.3	–	44.7	–	–	–
26	448.5-458.0	453.0	90.8	85.6	–	–	12.9	–	3.0	4.6	9.8	–	30.2	39.6	–	–
		454.2	91.5	86.8	–	–	21.4	9.7	3.9	7.0	39.4	–	18.7	–	–	–
29	477.0-486.5	478.7	63.6	43.1	–	5.8	0.8	–	–	–	–	–	15.8	–	–	77.6

[a]This mineral has been identified to be a garnet close in composition to grossularite. Diffraction peaks at 2.67A, 2.98A, and 1.59A, among others. An intensity factor of 2.49 was determined from the (420) peak of grossularite.

TABLE 14
Results of X-Ray Diffraction Analysis, Site 252

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Quar.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Anal.	Hema.	Pyri.	Augi.
Bulk Samples															
2	0.0-/9.5	1.8	88.7	82.4	12.3	17.1	22.3	3.4	12.0	–	12.8	–	3.0	–	17.2
		3.7	88.8	82.5	13.7	12.2	20.4	3.0	9.8	–	14.6	–	–	1.7	24.5
4	95.0-104.5	103.7	90.4	84.9	13.4	13.7	18.1	–	16.7	–	17.4	1.1	–	0.9	18.5
6	190.0-199.5	194.2	89.3	83.2	11.2	4.0	21.5	–	8.6	–	12.3	2.2	–	3.6	36.7
7	237.5-247.0	240.4	88.2	81.5	13.2	5.1	19.9	–	8.6	–	20.5	1.8	–	2.5	28.4
2-20μ Fraction															
2	0.0- 9.5	1.8	81.8	71.6	17.3	20.4	24.1	–	5.6	–	–	0.9	2.8	–	29.0
		3.7	78.9	67.0	15.6	14.2	20.7	–	3.8	0.9	–	1.0	–	13.2	30.7
4	95.0-104.5	103.7	86.1	78.3	20.8	9.2	24.2	–	7.4	–	–	1.5	–	1.8	35.1
6	190.0-199.5	194.2	80.8	69.9	10.0	4.7	22.7	–	5.8	2.3	8.2	2.1	–	2.1	41.9
7	237.5-247.0	240.4	83.8	74.7	15.0	7.0	24.3	–	10.9	–	8.9	1.7	–	1.4	30.8
$<2\mu$ Fraction															
2	0.0- 9.5	1.8	91.5	86.6	11.8	7.0	16.7	3.7	15.0	–	40.0	–	–	–	5.8
		3.7	89.7	83.8	12.1	9.0	10.5	3.3	12.5	–	23.5	–	–	21.1	8.1
4	95.0-104.5	103.7	92.4	88.2	10.6	8.5	11.8	2.2	13.3	2.4	44.7	–	–	–	6.5
6	190.0-199.5	194.2	93.4	89.6	11.7	9.9	18.0	–	13.9	–	34.6	–	–	2.7	9.2
7	237.5-247.0	240.4	92.5	88.3	13.2	5.2	14.3	–	21.7	–	34.3	–	–	2.1	9.2

TABLE 15
Results of X-Ray Diffraction Analysis, Site 253

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	U-10[a]	U-11[b]	Quar.	Cris.[c]	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.[d]	Paly.	Clin.	Phil.	Anal.	Pyri.	Gyps.	Bari.	Hali.	Augi.	Magn.	Anat.	Goet.[e]	U-1[f]	U-3[g]
Bulk Sample																													
1	0.0-9.0	2.6	51.7	24.6	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
5	37.5-47.0	45.7	46.9	17.1	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
7	56.5-66.0	58.9	45.6	15.0	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
9	75.5-85.0	80.9	48.0	18.8	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
11	94.5-104.0	96.9	51.2	23.7	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
13	113.5-123.0	115.9	86.0	78.2	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
16	142.0-151.5	150.9	56.1	31.3	99.3	–	–	–	–	–	–	–	–	–	–	–	0.7	–	–	–	–	–	–	–	–	–	–	–	–
17	151.5-161.0	154.1	90.1	84.6	–	P	–	5.4	–	–	27.1	–	–	–	56.7	–	–	–	–	–	–	–	–	–	10.9	–	–	–	–
18	161.0-170.5	163.4	80.0	68.9	73.1	P	–	0.5	–	–	4.0	–	–	–	22.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		165.6	89.1	83.0	37.2	P	–	–	–	–	8.6	–	–	–	33.7	–	–	–	–	1.3	–	–	–	19.2	–	–	–	–	–
20	180.0-189.5	182.5	70.2	53.5	85.8	T	–	–	–	–	2.5	–	–	–	11.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–
23	208.5-218.0	210.9	68.2	50.4	59.9	T	–	0.6	–	–	5.3	–	–	–	20.4	–	0.8	13.1	–	–	–	–	–	–	–	–	–	–	–
25	227.5-237.0	229.9	75.5	61.8	41.3	P	–	0.5	–	–	–	–	–	–	48.4	–	–	9.8	–	–	–	–	–	–	–	–	–	–	–
30	269.5-279.0	270.6	68.9	51.5	80.7	P	–	0.5	–	–	4.3	–	2.3	–	3.6	–	7.5	–	–	–	–	–	–	–	1.1	–	–	–	–
31	279.0-288.5	281.6	74.3	59.9	37.8	P	–	1.4	–	–	11.5	–	–	–	30.8	–	18.5	–	–	–	–	–	–	–	–	–	–	–	–
36	326.5-336.0	327.8	78.7	66.8	–	P	T	–	–	–	4.7	–	–	–	67.7	–	23.4	–	1.0	–	–	–	–	–	3.1	–	T	T	–
38	345.5-355.0	346.5	65.6	46.3	33.3	P	–	–	–	–	–	–	–	–	50.7	–	9.2	–	–	–	–	–	–	–	5.6	1.2	–	P	–
40	364.5-374.0	366.5	66.6	47.9	22.9	P	P	–	–	–	5.7	–	–	–	61.8	–	1.1	–	6.2	–	–	–	–	–	1.7	0.6	–	–	–
42	383.5-393.0	386.4	73.3	58.2	2.7	P	P	–	–	–	3.9	–	–	–	78.7	–	12.7	–	–	–	–	–	–	–	–	2.0	–	–	–
44	402.5-412.0	404.1	74.3	59.8	27.7	P	T	–	–	–	–	–	–	–	71.7	–	–	–	–	–	–	–	–	–	–	0.6	–	–	–
46	421.5-431.0	424.0	73.8	59.1	36.2	P	P	–	–	–	–	–	–	–	49.2	–	6.6	–	5.6	–	–	–	–	–	–	2.5	–	–	–
48	440.5-450.0	442.6	68.9	51.4	13.2	P	T	–	–	–	–	–	–	–	71.6	–	–	–	14.6	–	–	–	–	–	–	0.6	–	–	–
49	450.0-459.5	452.1	73.7	59.0	–	P	T	–	–	–	–	–	–	–	84.1	–	3.4	–	12.1	–	–	–	–	–	–	0.5	–	–	–
51	469.0-478.5	470.9	72.0	56.2	22.1	P	P	–	–	–	–	–	–	–	64.0	–	7.8	–	4.1	–	–	–	–	–	–	1.9	–	–	–
52	478.5-488.0	481.3	66.3	47.4	9.5	P	P	2.0	–	–	2.7	–	–	–	65.6	–	–	–	19.2	–	–	–	–	–	–	0.9	–	–	–
54	497.5-507.0	500.2	66.8	48.1	7.6	T	T	–	–	–	–	–	–	–	70.2	–	–	–	21.8	–	–	–	–	–	–	0.4	–	–	T
56	516.5-526.0	519.2	73.7	58.9	7.2	P	P	2.0	–	–	–	8.0	–	–	74.1	–	7.1	–	–	–	–	–	–	–	–	1.5	–	–	–
57	545.0-554.5	547.2	70.7	54.3	7.1	P	T	–	18.5	–	2.1	–	–	–	69.5	–	–	–	1.8	–	–	–	–	–	–	0.9	–	–	–
2-20μ Fraction																													
1	0.0-9.0	2.6	60.4	38.1	–	–	–	28.0	–	7.4	11.6	–	18.5	2.9	–	–	–	–	–	–	24.4	7.1	–	–	–	–	–	–	–
9	75.5-85.0	80.9	78.3	66.2	–	–	–	26.5	–	39.5	15.8	–	16.8	1.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
13	113.5-123.0	115.9	74.4	60.0	–	–	–	23.7	–	26.5	14.0	–	20.5	3.2	–	9.8	2.5	–	–	–	–	–	–	–	–	–	–	–	–
16	142.0-151.5	150.9	87.0	79.6	–	P	–	7.9	–	–	11.8	–	7.5	2.3	15.0	–	35.2	–	–	–	20.3	–	–	–	–	–	–	–	–
17	151.5-161.0	154.1	85.9	77.9	–	A	–	–	–	–	10.7	–	–	2.0	70.0	–	–	–	–	–	–	–	–	–	17.2	–	–	–	–
18	161.0-170.5	163.4	84.6	76.0	–	P	–	1.3	–	–	7.7	–	–	–	85.2	–	–	–	–	5.7	–	–	–	–	–	–	–	–	–
		165.6	89.0	82.8	–	P	–	–	–	–	5.7	–	–	–	68.0	–	–	–	–	5.8	–	–	–	20.5	–	–	–	–	–
20	180.0-189.5	182.5	80.7	69.9	–	P	–	–	–	–	3.4	–	–	–	84.2	–	2.0	–	–	10.5	–	–	–	–	–	–	–	–	–
23	208.5-218.0	210.9	78.4	66.2	–	A	–	0.6	–	–	–	–	–	–	60.2	–	1.4	37.7	–	–	–	–	–	–	–	–	–	–	–
25	227.5-237.0	229.9	78.0	65.6	–	A	–	2.4	–	–	–	–	–	–	70.0	–	2.8	22.4	–	2.4	–	–	–	–	–	–	–	–	–
30	269.5-279.0	270.6	74.5	60.1	–	A	–	1.0	–	–	15.4	–	4.3	6.9	13.0	–	53.9	–	–	–	–	–	–	–	5.5	–	–	–	–
31	279.0-288.5	281.6	71.8	56.0	–	P	–	1.9	–	–	18.6	–	–	–	63.2	–	15.3	–	–	0.9	–	–	–	–	–	–	–	–	–
36	326.5-336.0	327.8	72.7	57.3	–	T	T	–	–	–	5.5	–	–	–	41.8	–	47.1	–	1.0	2.4	–	–	–	–	2.3	–	T	P	–
38	345.5-355.0	346.5	65.0	45.3	–	A	T	–	–	–	6.3	–	2.9	–	61.1	–	17.7	–	–	–	–	–	–	–	9.7	2.3	–	P	–
40	364.5-374.0	366.5	57.9	34.2	–	P	P	–	–	–	–	–	–	–	74.7	–	5.6	–	19.2	–	–	–	–	–	–	0.5	–	–	–
42	383.5-393.0	386.4	68.2	50.3	–	P	A	–	–	–	–	–	–	–	81.0	–	15.9	–	–	–	–	–	–	–	–	3.1	–	–	–
44	402.5-412.0	404.1	67.4	49.1	–	P	P	–	–	–	–	–	–	–	96.5	–	2.9	–	–	–	–	–	–	–	–	0.5	–	–	–
46	421.5-431.0	424.0	66.1	47.0	–	P	P	–	–	–	–	–	–	–	51.8	–	28.0	–	13.0	–	–	–	–	–	–	7.2	–	–	–
48	440.5-450.0	442.6	62.2	41.0	–	P	P	–	–	–	–	–	–	–	56.7	–	4.6	–	36.2	–	–	–	–	–	–	2.5	–	–	–
49	450.0-459.5	452.1	68.3	50.5	–	P	P	–	–	–	13.1	–	–	–	54.9	–	6.4	–	24.6	–	–	–	–	–	–	0.9	–	–	–

TABLE 15 — *Continued*

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	U-10[a]	U-11[b]	Quar.	Cris.[c]	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.[d]	Paly.	Clin.	Phil.	Anal.	Pyri.	Gyps.	Bari.	Hali.	Augi.	Magn.	Anat.	Goet.[e]	U-1[f]	U-3[g]
51	469.0-478.5	470.9	67.2	48.7	–	P	P	–	–	–	–	–	–	–	60.3	–	16.9	–	20.2	–	–	–	–	–	–	2.7	–	–	–
52	478.5-488.0	481.3	58.1	34.5	–	P	P	–	–	–	–	–	–	–	44.2	–	–	–	54.1	–	–	–	–	–	–	1.7	–	–	–
54	497.5-507.0	500.2	70.3	53.6	–	P	T	1.1	–	–	–	–	–	–	85.7	–	–	–	12.5	–	–	–	–	–	–	0.8	–	–	T
56	516.5-526.0	519.2	74.6	60.3	–	P	P	11.9	–	–	–	1.2	–	–	59.8	–	15.2	–	–	4.4	–	–	–	–	–	7.5	–	T	–
57	545.0-554.5	547.2	71.2	55.0	–	P	T	–	43.9	–	1.0	–	–	–	50.3	–	–	–	3.8	–	–	–	–	–	–	1.0	–	–	–
<2μ Fraction																													
1	0.0-9.0	2.6	97.9	96.7	–	–	–	19.6	–	–	17.9	11.0	20.3	–	19.2	–	–	–	–	–	2.5	9.3	–	–	–	–	–	–	–
7	56.5-66.0	58.9	97.2	95.6	–	–	–	20.7	–	–	10.4	12.8	41.4	–	14.8	–	–	–	–	–	–	–	–	–	–	–	–	–	–
9	75.5-85.0	80.9	88.6	82.1	–	–	–	10.5	–	16.8	–	7.3	14.7	–	19.8	30.9	–	–	–	–	–	–	–	–	–	–	–	–	–
13	113.5-123.0	115.9	92.7	88.6	–	–	–	7.1	–	4.9	–	–	6.9	2.6	35.2	41.5	1.8	–	–	–	–	–	–	–	–	–	–	–	–
16	142.0-151.5	150.9	96.0	93.8	–	–	–	3.5	–	–	–	–	–	–	96.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–
17	151.5-161.0	154.1	88.6	82.2	–	–	–	–	–	–	–	–	–	–	90.7	–	–	–	–	–	–	–	6.4	–	2.9	–	–	–	–
18	161.0-170.5	163.4	91.5	86.7	–	–	–	–	–	–	–	–	–	–	91.8	–	–	–	–	–	1.4	–	6.9	–	–	–	–	–	–
		165.6	91.3	86.3	–	–	–	–	–	–	–	–	–	–	76.7	–	–	–	–	–	1.8	–	3.6	17.8	–	–	–	–	–
20	180.0-189.5	182.5	89.2	83.1	–	–	–	–	–	–	5.3	–	–	–	82.4	–	–	–	–	4.4	–	–	7.9	–	–	–	–	–	–
23	208.5-218.0	210.9	85.9	77.9	–	–	–	–	–	–	–	–	–	–	81.3	–	–	9.1	–	–	–	–	9.6	–	–	–	–	–	–
25	227.5-237.0	229.9	84.5	75.8	–	T	–	–	–	–	–	–	–	–	90.5	–	–	–	–	–	–	–	9.5	–	–	–	–	–	–
30	269.5-279.0	270.6	87.3	80.1	–	T	–	2.0	–	–	5.7	–	10.3	–	70.0	–	1.7	–	–	–	–	–	4.9	–	5.3	–	P	–	–
31	279.0-288.5	281.6	84.6	76.0	–	T	–	–	–	–	4.1	–	–	–	84.6	–	2.0	–	–	–	–	–	9.3	–	–	–	–	–	–
36	326.5-336.0	327.8	83.3	73.8	–	–	–	–	–	–	–	–	–	–	85.7	–	3.4	–	–	–	–	–	10.9	–	–	–	–	–	–
38	345.5-355.0	346.5	75.0	61.0	–	P	–	–	–	–	1.9	–	–	–	89.0	–	1.8	–	–	–	–	–	3.6	–	2.7	1.0	–	T	–
40	364.5-374.0	366.5	73.8	59.1	–	T	T	–	–	–	–	–	4.0	–	90.9	–	0.7	–	2.0	–	–	–	2.3	–	–	–	–	–	–
42	383.5-393.0	386.4	71.4	55.3	–	T	T	–	–	–	1.6	–	–	–	92.8	–	1.6	–	–	–	–	–	2.9	–	–	1.1	–	T	P
44	402.5-412.0	404.1	78.4	66.3	–	T	T	–	–	–	–	–	–	–	93.4	–	–	–	–	–	–	–	6.1	–	–	0.6	–	–	–
46	421.5-431.0	424.0	77.6	64.9	–	T	P	–	–	–	–	–	–	–	90.4	–	2.0	–	0.7	–	–	–	5.5	–	–	1.3	–	–	–
48	440.5-450.0	442.6	75.1	61.1	–	T	–	–	–	–	1.4	–	–	–	92.7	–	0.5	–	5.4	–	–	–	–	–	–	–	–	–	T
49	450.0-459.5	452.1	78.3	66.1	–	–	–	–	–	–	–	–	–	–	88.3	–	–	–	7.3	–	–	–	3.9	–	–	0.5	–	–	T
51	469.0-478.5	470.9	75.2	61.2	–	–	T	–	–	–	–	–	–	–	84.7	–	5.7	–	1.6	–	–	–	7.0	–	–	1.0	–	–	P
52	478.5-488.0	481.3	74.6	60.4	–	T	T	–	–	–	–	–	–	–	89.2	–	–	–	7.0	–	–	–	3.0	–	–	0.8	–	–	T
54	497.5-507.0	500.2	77.2	64.4	–	–	–	–	–	–	–	–	–	–	94.2	–	–	–	1.3	–	–	–	3.8	–	–	0.7	–	–	P
56	516.5-526.0	519.2	77.1	64.2	–	–	–	–	–	–	–	4.1	–	–	91.3	–	1.7	–	–	–	–	–	1.7	–	–	1.2	–	–	–
57	545.0-554.5	547.2	77.0	64.0	–	–	–	–	13.8	–	–	–	–	–	80.8	–	–	–	1.1	–	–	–	2.1	–	–	2.1	–	–	P

[a]Peaks at 3.23A and 2.145A among others. This mineral's peaks closely match those of anorthoclase (JCPDS 9-478). P = present; T = trace; A = abundant.

[b]Peaks at 3.30A, 3.76A, and 2.982A among others. This mineral's peaks closely match those of adularia (JCPDS 19-931). P = present; T = trace.

[c]Narrow peaks at 4.05A, 2.492A, and 2.843A among others.

[d]An unusual montmorillonite occurs with or in place of normal montmorillonite in many samples at and below 163.4M. It has narrow peaks at 13.3A, 1.540A, and 4.61A and a broad peak at 2.55-2.64A.

[e]P = present; T = trace.

[f]Peaks at 3.38A, 4.50A, and 3.46A among others; probably mordenite (JCPDS 6-239). P = present; T = trace.

[g]Peaks at 2.970A, 3.70A, and 7.28A. P = present; T = trace.

TABLE 16
Results of X-Ray Diffraction Analysis, Site 254

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	U-10[a]	U-11[b]	Quar.	Kaol.	Mica	Mont.	Clin.	Phil.	Anal.	Pyri.	Erio.	Gyps.	U-12[c]	Hali.	Magn.	Anat.	Goet.	U-6[d]
Bulk Samples																							
2	5.5-15.0	7.9	45.9	15.5	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		12.4	47.9	18.5	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4	24.5-34.0	26.9	46.8	16.9	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
7	53.0-62.5	59.9	47.0	17.2	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
10	81.5-91.0	87.6	45.9	15.5	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
18	148.0-157.5	154.9	51.2	23.7	97.6	–	–	–	–	–	–	–	2.4	–	–	–	–	–	–	–	–	–	–
20	167.0-176.5	169.0	50.7	22.9	100.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
		169.8	74.7	60.4	87.7	T	T	–	–	–	4.1	–	6.8	–	–	–	–	–	–	1.4	–	–	–
24	209.5-219.0	210.6	85.5	77.3	–	P	T	–	–	–	66.6	–	20.5	–	8.3	–	–	–	–	3.4	1.2	–	–
25	219.0-228.5	225.7	83.5	74.3	–	P	P	–	–	–	45.1	–	32.7	3.0	19.2	–	–	P	–	–	–	–	–
27	238.0-247.5	242.2	86.7	79.2	–	P	P	–	3.7	–	46.7	4.9	16.9	–	27.8	–	–	P	–	–	–	–	–
30	266.5-276.0	267.7	89.4	83.4	–	–	–	–	–	–	95.5	–	–	–	–	–	–	T	4.5	–	–	–	–
2-20μ Fraction																							
18	148.0-157.5	154.9	73.7	58.9	–	P	P	–	–	–	–	–	92.2	1.3	–	–	–	–	–	6.5	–	–	–
20	167.0-176.5	169.0	83.7	74.5	–	P	A	–	–	–	23.6	–	27.6	36.4	1.9	–	–	–	–	10.5	–	–	–
		169.8	83.4	74.1	–	P	P	–	–	–	20.9	–	68.0	3.0	–	–	–	–	–	8.2	–	–	–
24	209.5-219.0	210.6	79.7	68.3	–	A	P	–	–	–	60.2	–	5.2	–	28.2	–	–	–	–	4.9	1.4	–	–
25	219.0-228.5	225.7	71.5	55.5	–	P	P	–	–	–	24.6	–	20.1	5.8	33.1	16.5	–	T	–	–	–	–	–
27	238.0-247.5	242.2	73.3	58.3	–	P	P	–	–	–	14.1	21.3	27.2	–	37.4	–	–	P	–	–	–	–	–
30	266.5-276.0	267.7	79.0	67.1	–	–	–	–	–	–	100.0	–	–	–	–	–	–	A	–	–	–	T	–
< 2μ Fraction																							
2	5.5-15.0	7.9	97.8	96.6	–	–	–	15.3	–	28.0	35.9	–	–	–	–	–	10.4	–	10.4	–	–	–	–
		12.4	97.7	96.4	–	–	–	3.4	–	4.1	87.8	–	–	–	–	–	1.2	–	3.5	–	–	–	–
4	24.5-34.0	26.9	98.0	96.9	–	–	–	5.9	–	12.4	77.2	–	–	–	–	–	3.2	–	1.3	–	–	–	–
7	53.0-62.5	59.9	98.9	98.3	–	–	–	34.9	–	–	33.6	–	–	–	–	–	7.0	–	24.6	–	–	–	–
10	81.5-91.0	87.6	98.7	98.0	–	–	–	25.7	–	35.2	28.6	–	–	–	–	–	5.3	–	5.3	–	–	–	–
18	148.0-157.5	154.9	95.0	92.1	–	A	P	–	–	16.6	47.5	–	17.1	–	–	–	1.8	–	11.3	5.8	–	–	–
20	167.0-176.5	169.0	95.4	92.8	–	–	–	–	–	–	81.1	–	–	3.7	–	–	5.0	–	–	10.2	–	–	–
		169.8	91.8	87.3	–	P	P	–	–	–	56.7	–	–	–	–	–	–	–	23.1	20.1	–	–	–
24	209.5-219.0	210.6	86.7	79.2	–	–	–	–	–	–	85.7	–	–	–	1.6	–	–	–	11.2	–	1.4	–	–
25	219.0-228.5	225.7	85.1	76.8	–	–	–	–	–	–	87.5	–	–	–	5.2	–	–	–	7.3	–	–	–	–
27	238.0-247.5	242.2	87.6	80.6	–	P	P	–	5.4	–	55.1	2.9	2.9	–	16.4	–	–	–	17.3	–	–	–	–
30	266.5-276.0	267.7	82.0	71.9	–	–	–	–	–	–	62.2	–	–	–	–	–	–	–	37.8	–	–	P	A

[a]Peaks at 3.23Å and 2.145Å among others. This mineral's peaks closely match those of anorthoclase (JCPDS 9-478). A = abundant; P = present; T = trace.
[b]Peaks at 3.30Å, 3.76Å, and 2.982Å among others. This mineral's peaks closely match those of adularia (JCPDS 19-931). A = abundant; P = present; T = trace.
[c]Peaks at 2.743Å, 2.538Å, and 1.719Å among others. This mineral is ilmenite (JCPDS 3-781). A = abundant; P = present; T = trace.
[d]Narrow peaks at 9.60Å and 2.418Å.

TABLE 17
Results of X-Ray Diffraction Analysis, Site 255

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	Quar.	Phil.	Anal.	U-2[a]
Bulk Sample									
5	42.0-51.5	43.3	54.6	29.0	100.0	–	–	–	T
2-20μ Fraction									
5	42.0-51.5	43.3	80.2	69.0	–	29.8	62.2	8.0	A
$<2\mu$ Fraction									
5	42.0-51.5	43.3	96.5	94.6	–	100.0	–	–	M

[a]Peaks at 2.787Å, 2.689Å, and 1.836Å among others. Its peaks closely match those of wilkeite (JCPDS 6-454) and less closely those of apatite. A = abundant; M = major; T = trace.

TABLE 18
Results of X-Ray Diffraction Analysis, Site 256

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Chlo.	Mont.	Paly.	Trid.	Clin.	Anal.	Hema.	Gibb.	Hali.	U-4[a]
Bulk Sample																					
1	0.0-9.5	6.9	87.5	80.4	–	19.0	–	11.0	4.9	19.5	19.3	–	24.1	–	–	2.3	–	–	–	–	–
3	47.5-57.0	54.0	84.8	76.2	–	5.5	–	3.5	2.0	21.8	18.5	4.8	42.5	–	–	–	–	–	1.3	–	–
4	85.5-95.0	94.2	85.5	77.3	1.0	7.4	–	2.3	–	26.7	14.1	–	47.3	–	–	–	–	–	–	1.0	P
5	123.5-133.0	128.9	88.4	81.8	–	14.5	–	12.7	1.9	15.2	29.6	2.0	24.0	–	–	–	–	–	–	–	–
7	209.0-218.5	213.3	87.8	81.0	–	9.2	38.2	5.6	–	–	15.1	–	6.8	–	7.8	17.1	–	–	–	–	–
8	237.5-247.0	244.6	85.2	76.8	–	7.5	25.9	4.8	–	–	17.4	–	6.7	–	1.6	36.0	–	–	–	–	–
9	247.0-256.5	248.3	81.1	70.4	46.4	14.0	–	4.9	–	–	7.3	–	21.4	–	–	5.9	–	–	–	–	–
2-20μ Fraction																					
1	0.0-9.5	6.9	73.5	58.6	–	38.3	–	12.3	10.5	15.1	17.7	–	–	–	–	6.1	–	–	–	–	–
3	47.5-57.0	54.0	77.8	65.4	–	18.0	–	12.3	4.9	15.6	23.9	5.1	17.1	–	–	–	–	–	3.2	–	–
4	85.5-95.0	94.2	80.5	69.5	–	18.8	–	13.1	2.0	18.2	25.4	2.8	19.7	–	–	–	–	–	–	–	P
5	123.5-133.0	128.9	75.7	62.0	–	32.2	–	24.2	9.4	5.5	25.9	2.9	–	–	–	–	–	–	–	–	–
7	209.0-218.5	213.3	72.3	56.7	–	15.3	39.8	7.6	–	–	5.0	–	–	–	6.3	26.1	–	–	–	–	–
8	237.5-247.0	244.6	60.1	37.7	–	15.6	–	8.1	–	–	5.2	–	–	–	–	69.8	1.3	–	–	–	–
9	247.0-256.5	248.3	77.3	64.5	–	36.2	–	17.2	–	–	12.8	–	20.5	–	–	10.2	–	3.1	–	–	–
<2μ Fraction																					
1	0.0-9.5	6.9	88.7	82.4	–	20.0	–	0.6	2.2	14.2	9.6	–	29.4	13.8	–	1.6	–	–	–	8.7	–
3	47.5-57.0	54.0	86.3	78.6	–	11.0	–	5.4	3.8	27.2	9.4	2.8	27.4	–	–	–	–	–	2.2	10.8	–
4	85.5-95.0	94.2	85.8	77.8	–	8.6	–	4.8	–	16.4	16.4	–	40.5	–	–	–	–	–	–	13.2	P
5	123.5-133.0	128.9	85.9	78.0	–	19.1	–	10.0	–	8.8	28.1	–	23.4	–	–	–	–	–	–	10.7	–
7	209.0-218.5	213.3	82.6	72.9	–	10.6	50.5	6.5	–	–	6.3	–	9.2	–	4.5	8.6	–	–	–	3.8	–
8	237.5-247.0	244.6	86.7	79.2	–	4.3	37.8	6.5	–	–	11.9	–	24.8	–	5.5	3.6	–	–	–	5.6	–
9	247.0-256.5	248.3	86.5	78.9	–	27.4	–	8.7	–	–	4.2	–	35.1	–	–	1.6	–	–	–	23.0	–

[a]Narrow peaks at 4.63Å and 9.33Å. P = present.

TABLE 19
Results of X-Ray Diffraction Analysis, Site 257

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Mont.	Trid.	Clin.	Hema.	Bari.	Hali.	U-4[a]	U-5[b]	U-7[c]
Bulk Sample																				
1	0.0-9.5	6.9	88.4	81.9	–	21.2	–	5.4	10.2	5.8	21.3	36.1	–	–	–	–	–	–	–	–
2	9.5-19.0	12.3	84.3	75.4	–	9.6	–	4.1	1.8	11.2	21.5	43.6	–	8.2	–	–	–	–	–	–
3	47.5-57.0	51.7	83.2	73.8	–	8.1	–	2.9	–	12.0	9.4	67.7	–	–	–	–	–	T	–	–
4	85.5-95.0	90.2	84.1	75.1	–	4.1	5.9	3.0	1.2	–	18.3	40.2	1.3	26.0	–	–	–	–	–	–
5	123.5-133.0	125.9	87.1	79.9	–	4.8	13.5	5.8	2.0	4.6	18.4	24.2	2.3	24.3	–	–	–	–	–	–
6	161.5-171.0	162.8	84.5	75.7	–	9.3	–	11.1	2.1	–	19.1	39.2	–	19.2	–	–	–	–	–	–
7	199.5-209.0	201.9	81.3	70.7	18.8	8.4	–	10.0	–	4.8	8.2	49.8	–	–	–	–	–	–	–	–
8	237.5-247.0	239.9	81.4	70.9	5.3	8.2	–	9.1	–	7.0	5.8	64.6	–	–	–	–	–	–	–	–
9	247.0-256.5	249.5	78.2	66.0	–	22.5	–	4.8	1.5	–	3.0	64.8	–	–	3.4	–	–	–	–	–
10	256.5-263.0	257.4	76.9	63.9	–	34.5	–	2.7	–	–	8.2	49.8	–	–	4.7	–	–	–	–	–
2-20μ Fraction																				
1	0.0-9.5	6.9	81.1	70.4	–	42.3	–	8.5	15.3	3.2	12.7	9.9	–	8.2	–	–	–	–	–	–
2	9.5-19.0	12.3	71.5	55.5	–	30.1	–	5.4	3.7	8.9	20.9	13.3	–	17.7	–	–	–	–	–	–
3	47.5-57.0	51.7	70.8	54.5	–	31.2	–	7.9	2.9	14.8	28.7	14.4	–	–	–	–	–	P	–	–
4	85.5-95.0	90.2	59.9	37.4	–	10.2	–	3.7	2.9	–	11.5	7.2	–	64.5	–	–	–	–	–	–
5	123.5-133.0	125.9	65.6	46.2	–	9.9	–	9.1	1.6	4.0	8.3	11.2	–	56.0	–	–	–	–	–	–
6	161.5-171.0	162.8	66.3	47.3	–	12.9	–	19.0	2.3	3.9	13.6	8.0	–	40.4	–	–	–	–	–	–
7	199.5-209.0	201.9	77.0	64.1	–	17.2	–	37.7	2.3	7.6	23.1	12.1	–	–	–	–	–	–	–	–
8	237.5-247.0	239.9	76.2	62.8	–	19.2	–	40.0	–	10.6	11.5	18.7	–	–	–	–	–	–	–	–
9	247.0-256.5	249.5	74.0	59.4	–	26.9	–	16.3	1.9	–	20.6	29.8	–	–	3.2	1.4	–	–	–	–
10	256.5-263.0	257.4	68.3	50.5	–	56.6	–	10.8	–	–	13.9	15.1	–	–	3.6	–	–	–	–	–
$<2\mu$ Fraction																				
1	0.0-9.5	6.9	87.0	79.8	–	23.1	–	4.3	9.9	–	11.4	42.4	–	–	–	–	8.8	–	–	–
2	9.5-19.0	12.3	86.1	78.3	–	6.9	–	1.7	2.6	15.6	8.6	44.1	–	1.0	–	–	19.5	–	–	–
3	47.5-57.0	51.7	82.0	71.9	–	15.7	–	8.2	3.4	12.3	10.2	32.2	–	–	–	–	18.0	T	–	–
4	85.5-95.0	90.2	80.2	69.1	–	5.2	18.7	5.6	–	–	7.6	36.9	–	11.2	–	–	14.6	–	–	–
5	123.5-133.0	125.9	81.1	70.5	–	7.1	14.5	7.0	1.3	4.1	10.0	20.7	2.0	17.4	–	–	15.9	–	–	–
6	161.5-171.0	162.8	82.0	71.8	–	9.5	–	12.1	2.6	5.5	4.3	41.4	–	13.5	–	–	10.8	–	–	–
8	237.5-247.0	239.9	84.7	76.1	–	11.6	–	10.3	–	7.0	6.4	53.7	–	–	–	–	10.9	–	P	–
9	247.0-256.5	249.5	75.1	61.1	–	20.6	–	2.6	–	–	25.4	35.1	–	–	3.0	–	13.3	–	–	A
10	256.5-263.0	257.4	75.3	61.3	–	52.2	–	2.9	–	–	2.6	31.7	–	–	3.7	–	6.9	–	–	–

[a]Narrow Peaks at 4.63Å and 9.33Å. P = present; T = trace.
[b]Broad peaks at 3.00Å, 4.94Å, and 4.13Å among others. The peaks are similar in position, ratio, and shape to goethite and hematite. However, the unidentified mineral has several peaks not represented by goethite's or hematite's peaks. P = present.
[c]Very narrow peaks at 9.86Å, 2.492Å, and 1.700Å among others. A = abundant.

TABLE 20
Results of X-Ray Diffraction Analysis, Site 258

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	Arag.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Mont.	Trid.	Clin.	Hema.	Pyri.	Gyps.	Bari.	Hali.	Magn.	U-8[a]
Bulk Samples																						
1	0.0-9.5	6.5	63.1	42.4	76.3	16.1	1.8	–	3.7	–	–	–	–	–	–	–	2.0	–	–	–	–	–
3	47.5-57.0	48.4	57.2	33.2	95.4	–	4.6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
4	85.5-95.0	86.8	63.7	43.3	78.5	–	14.3	–	5.9	–	1.3	–	–	–	–	–	–	–	–	–	–	–
6	142.5-152.0	149.7	56.9	32.6	83.2	–	0.7	3.1	–	–	–	–	10.2	–	–	–	2.7	–	–	–	–	–
10	199.5-206.0	201.6	60.1	37.7	69.1	–	0.6	8.0	–	–	–	–	18.0	0.5	–	–	2.3	–	1.4	–	–	–
12	234.5-244.0	240.3	77.0	64.1	22.8	–	1.6	40.8	–	–	–	–	30.2	2.2	–	–	0.7	–	1.8	–	–	–
14	263.0-272.5	263.0	83.0	73.4	–	–	2.4	55.9	–	2.0	2.5	2.5	11.0	4.1	16.8	–	0.4	–	2.3	–	–	–
		263.5	82.7	73.0	–	–	3.8	46.9	–	–	3.5	2.3	19.1	0.7	19.4	–	–	–	4.3	–	–	–
15	282.0-291.5	284.7	79.5	67.9	6.4	–	3.7	20.0	–	–	6.9	4.6	55.6	0.6	1.2	–	–	–	1.0	–	–	–
16	301.0-310.5	308.1	73.7	58.9	18.3	–	3.8	6.5	–	–	9.2	3.8	56.2	–	2.2	–	–	–	–	–	–	–
17	320.0-329.0	327.4	80.7	69.8	10.1	–	4.3	27.4	–	–	6.4	6.7	43.8	1.3	–	–	–	–	–	–	–	–
18	339.0-348.5	341.5	83.7	74.5	8.6	–	2.7	59.5	–	–	3.5	3.9	17.9	3.2	0.7	–	–	–	–	–	–	–
21	405.5-415.0	405.7	79.6	68.1	–	–	12.0	39.2	1.7	–	4.7	7.4	30.8	4.1	–	–	–	–	–	–	–	–
22	435.0-444.5	441.7	77.1	64.2	–	–	17.8	–	–	–	5.1	4.6	71.3	–	–	–	1.2	–	–	–	–	–
23	472.0-481.5	474.4	76.1	62.7	–	–	5.5	–	–	–	16.1	6.5	71.9	–	–	–	–	–	–	–	–	–
24	510.0-519.5	516.5	81.6	71.2	57.6	–	1.4	–	6.3	–	5.8	–	23.3	–	–	–	5.6	–	–	–	–	–
25	519.5-525.0	521.9	90.6	85.3	–	–	3.3	–	15.6	–	57.2	–	13.0	–	–	10.9	–	–	–	–	–	P
2-20μ Fraction																						
1	0.0-9.5	6.5	80.0	68.7	–	–	41.1	–	22.5	6.8	7.5	11.4	–	–	4.5	–	6.3	–	–	–	–	–
3	47.5-57.0	48.4	78.9	67.0	–	–	57.3	–	15.8	5.3	7.4	11.1	–	–	3.1	–	–	–	–	–	–	–
4	85.5-95.0	86.8	77.6	65.0	–	–	55.9	–	20.3	–	11.9	8.9	–	–	2.9	–	–	–	–	–	–	–
6	142.5-152.0	149.7	71.4	55.2	–	–	29.6	9.2	3.3	1.4	–	14.7	10.0	2.7	8.1	–	6.2	–	15.0	–	–	–
10	199.5-206.0	201.6	80.3	69.3	–	–	7.4	34.4	–	–	–	4.5	38.2	3.7	0.9	–	0.9	–	10.0	–	–	–
12	234.5-244.0	240.3	79.7	68.3	–	–	7.3	64.1	1.5	1.0	–	4.5	12.5	3.3	0.8	–	–	–	5.1	–	–	–
14	263.0-272.5	263.0	70.7	54.2	–	–	3.6	57.3	–	–	1.5	1.8	–	4.6	22.0	–	0.8	–	8.3	–	–	–
		263.5	70.7	54.3	–	–	6.3	34.1	–	–	2.0	2.3	–	2.7	41.5	–	2.5	–	8.6	–	–	–
15	282.0-291.5	284.7	68.0	50.0	–	–	14.6	–	2.8	–	18.2	6.8	27.8	–	28.0	–	–	–	1.7	–	–	–
16	301.0-310.5	308.1	77.8	65.4	–	–	14.3	23.2	3.2	–	13.8	9.7	31.5	–	1.5	–	–	–	2.9	–	–	–
17	320.0-329.0	327.4	79.3	67.7	–	–	13.3	17.8	4.6	–	16.0	16.2	26.7	2.1	–	–	1.1	–	2.3	–	–	–
18	339.0-348.5	341.5	80.2	69.1	–	–	9.1	65.9	3.1	0.9	6.3	6.7	–	3.1	2.3	–	0.6	–	2.0	–	–	–
21	405.5-415.0	405.7	74.8	60.6	–	–	23.2	24.9	7.5	1.5	9.0	9.9	22.5	–	–	–	–	–	1.5	–	–	–
22	435.0-444.5	441.7	70.4	53.7	–	–	32.9	–	11.0	1.7	11.5	12.4	25.8	–	–	–	4.8	–	–	–	–	–
23	472.0-481.5	474.4	67.8	49.8	–	–	11.3	–	5.0	1.3	25.5	15.3	39.8	–	–	–	1.8	–	–	–	–	–
24	510.0-519.5	516.5	80.7	69.8	–	–	8.5	–	31.7	–	4.4	1.9	44.3	–	–	–	9.2	–	–	–	–	–
25	519.5-525.0	521.9	84.9	76.3	–	–	6.1	–	31.4	–	11.6	–	7.8	–	–	19.8	–	–	–	–	23.2	P

TABLE 20 – *Continued*

Core	Cored Interval Below Sea Floor (m)	Sample Depth Below Sea Floor (m)	Diff.	Amor.	Calc.	Arag.	Quar.	Cris.	K-Fe.	Plag.	Kaol.	Mica	Mont.	Trid.	Clin.	Hema.	Pyri.	Gyps.	Bari.	Hali.	Magn.	U-8[a]
$<2\mu$ Fraction																						
1	0.0-9.5	6.5	92.2	87.7	–	–	9.5	–	–	–	42.0	14.0	30.6	–	–	–	3.9	–	–	–	–	–
3	47.5-57.0	48.4	86.9	79.5	–	–	11.8	–	–	–	48.0	17.5	16.0	–	–	–	–	6.7	–	–	–	–
4	85.5-95.0	86.8	85.1	76.8	–	–	7.4	–	–	–	36.2	14.9	39.0	–	–	–	–	2.5	–	–	–	–
6	142.5-152.0	149.7	85.1	76.7	–	–	3.5	38.9	–	–	–	4.7	38.4	2.0	1.2	–	0.9	–	7.4	2.9	–	–
10	199.5-206.0	201.6	82.4	72.5	–	–	3.9	42.5	–	–	–	2.6	28.3	1.5	–	–	0.3	–	10.9	10.1	–	–
12	234.5-244.0	240.3	81.7	71.4	–	–	0.3	50.6	–	–	–	2.4	37.9	1.7	–	–	0.4	–	1.8	4.9	–	–
14	263.0-272.5	263.0	85.0	76.6	–	–	2.0	64.0	–	–	1.7	1.4	19.8	5.8	0.5	–	–	–	1.4	3.6	–	–
		263.5	89.0	82.9	–	–	5.5	64.9	–	–	2.2	–	15.2	6.5	–	–	0.6	–	3.0	2.0	–	–
15	282.0-291.5	284.7	79.4	67.9	–	–	12.5	10.3	–	–	13.5	4.0	40.2	–	6.5	–	–	–	4.4	8.6	–	–
16	301.0-310.5	308.5	84.0	74.9	–	–	5.0	30.0	–	–	6.7	15.2	32.2	–	–	–	–	–	2.2	8.7	–	–
17	320.0-329.0	327.4	81.8	71.6	–	–	8.7	42.5	–	–	4.9	3.0	29.8	1.7	–	–	–	–	1.7	7.7	–	–
18	339.0-348.5	341.5	84.3	75.5	–	–	1.9	67.0	–	–	1.7	0.8	17.3	4.0	–	–	–	–	0.9	6.5	–	–
21	405.5-415.0	405.7	80.6	69.7	–	–	11.0	38.8	–	–	2.5	14.4	10.4	–	–	–	–	–	–	22.8	–	–
22	435.0-444.5	441.7	84.7	76.1	–	–	43.8	–	–	–	8.2	4.6	12.7	–	–	–	–	–	–	30.6	–	–
23	472.0-481.5	474.4	80.2	69.1	–	–	8.9	–	–	–	19.0	6.6	52.2	–	–	–	–	–	–	13.4	–	–
24	510.0-519.5	516.5	94.2	90.0	–	–	–	–	–	–	12.4	11.8	59.2	–	–	–	–	–	–	16.6	–	–
25	519.5-525.0	521.9	93.0	89.0	–	–	2.1	–	–	–	59.5	–	21.4	–	–	11.9	–	–	–	5.0	–	–

[a]Narrow peaks at 2.753Å and 3.006Å among others. P = present.