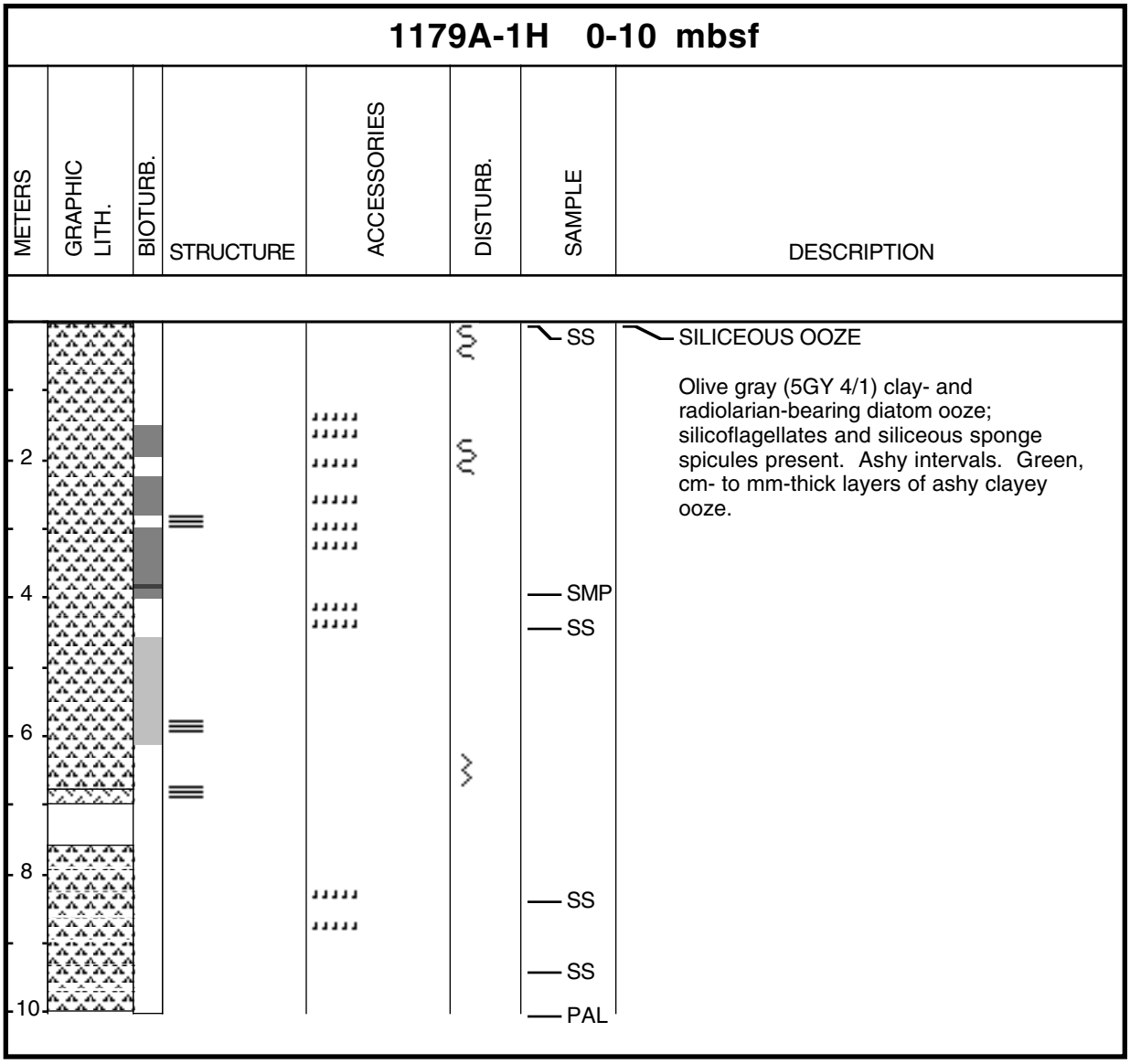
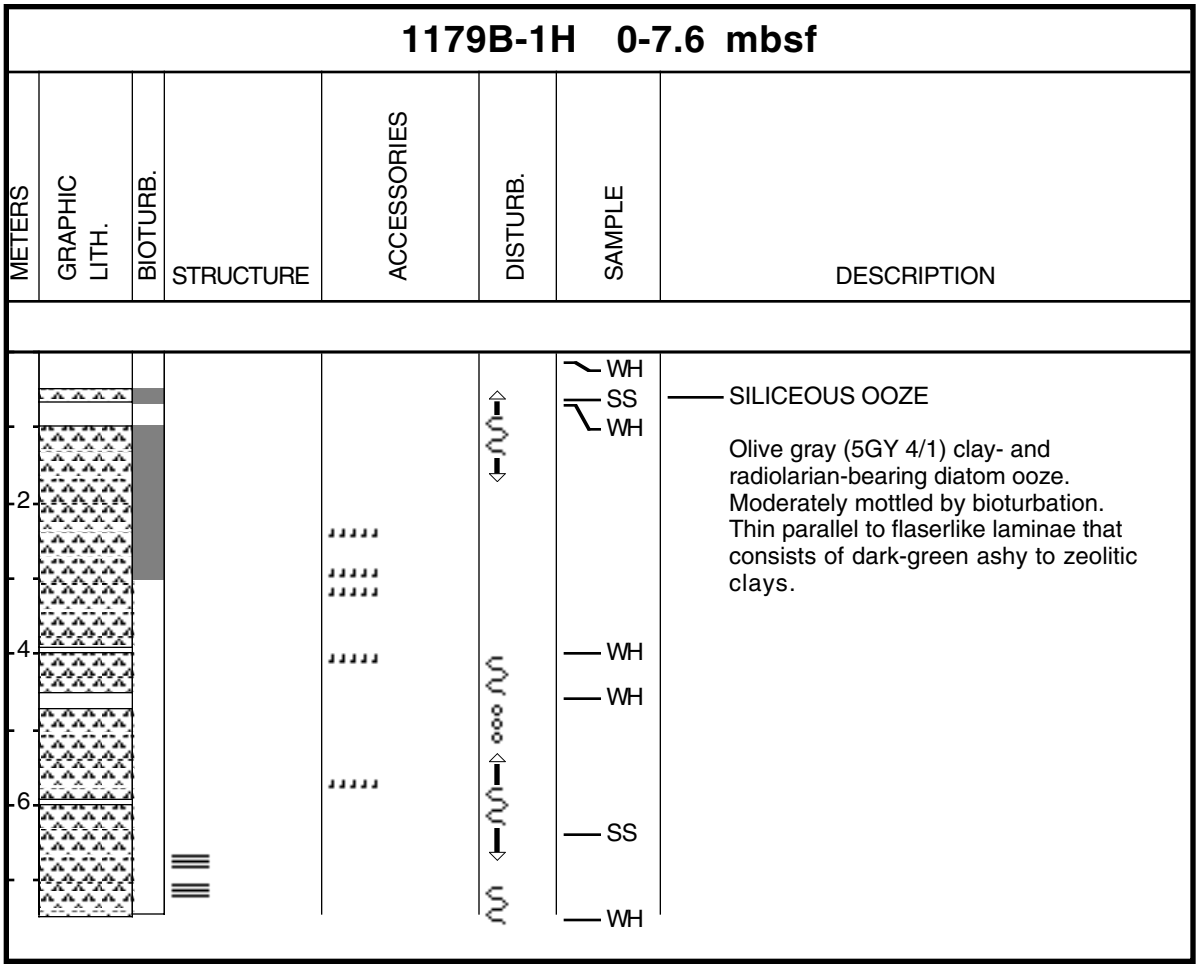
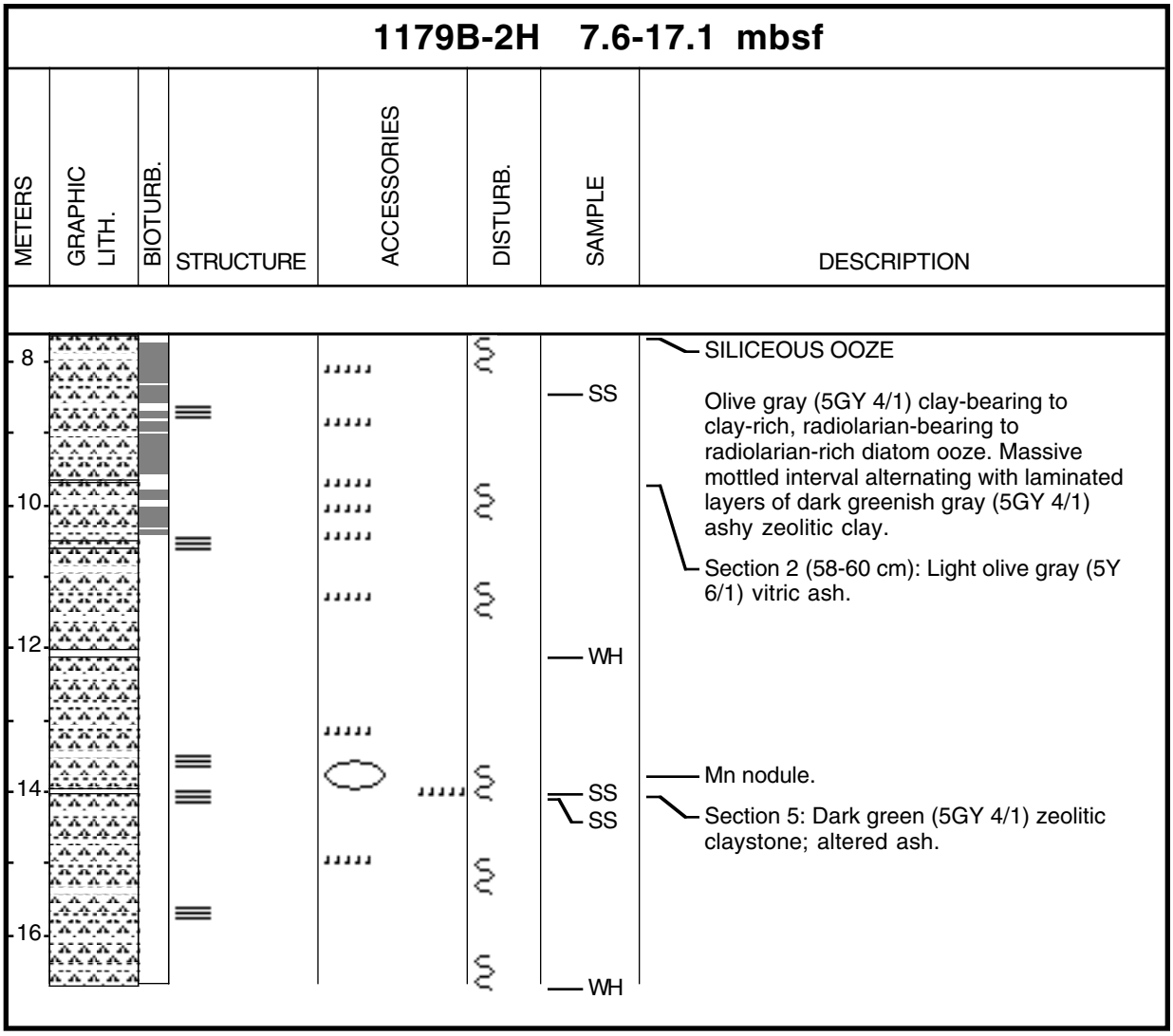
Core Photo


1179A-1H 0-10 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
2
4
6
8
10
SS
SMP
SS
SS
SS
PAL
SILICEOUS OOZE
Olive gray (5GY 4/1) clay- and radiolarian-bearing diatom ooze; silicoflagellates and siliceous sponge spicules present. Ashy intervals. Green, cm- to mm-thick layers of ashy clayey ooze.

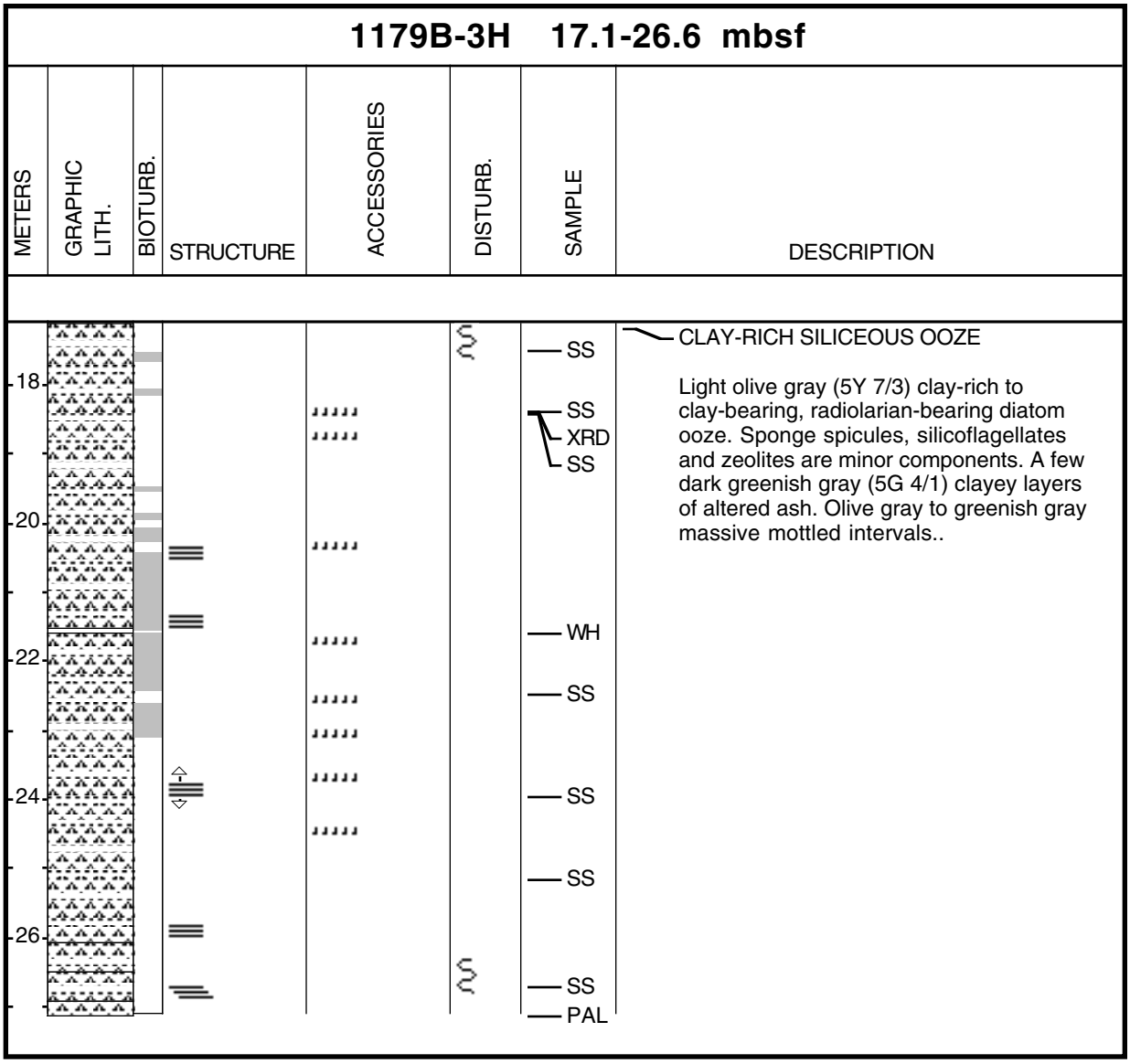
Core Photo


1179B-1H 0-7.6 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
2
4
6
WH
SS
WH
WH
WH
SS
WH
SILICEOUS OOZE
Olive gray (5GY 4/1) clay- and radiolarian-bearing diatom ooze. Moderately mottled by bioturbation. Thin parallel to flaserlike laminae that consists of dark-green ashy to zeolitic clays.

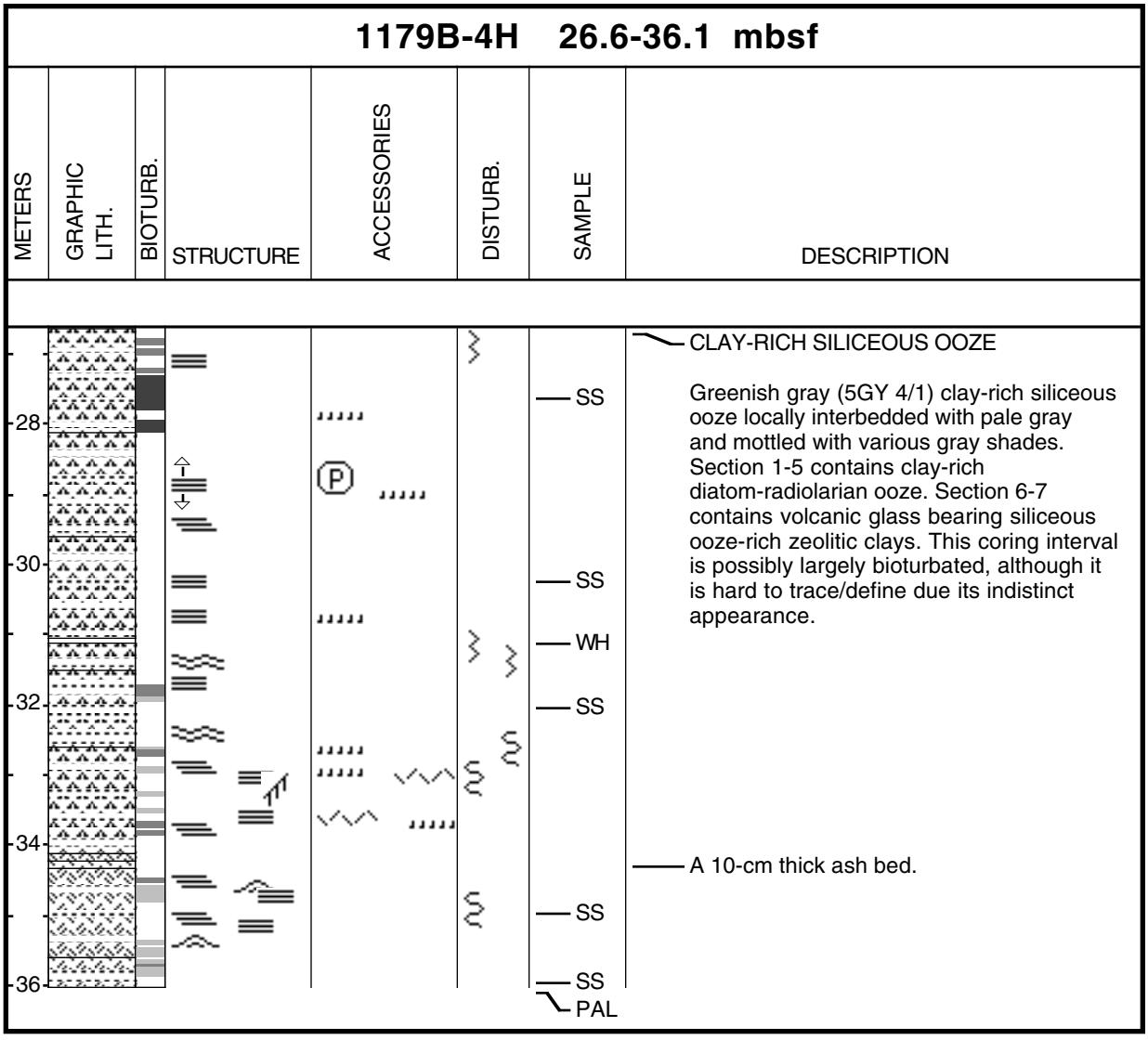
Core Photo


1179B-2H 7.6-17.1 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
8
10
12
14
16
SS
WH
SS
SS
WH
SILICEOUS OOZE
Olive gray (5GY 4/1) clay-bearing to clay-rich, radiolarian-bearing to radiolarian-rich diatom ooze. Massive mottled interval alternating with laminated layers of dark greenish gray (5GY 4/1) ashy zeolitic clay.
Section 2 (58-60 cm): Light olive gray (5Y 6/1) vitric ash.
Mn nodule.
Section 5: Dark green (5GY 4/1) zeolitic claystone; altered ash.

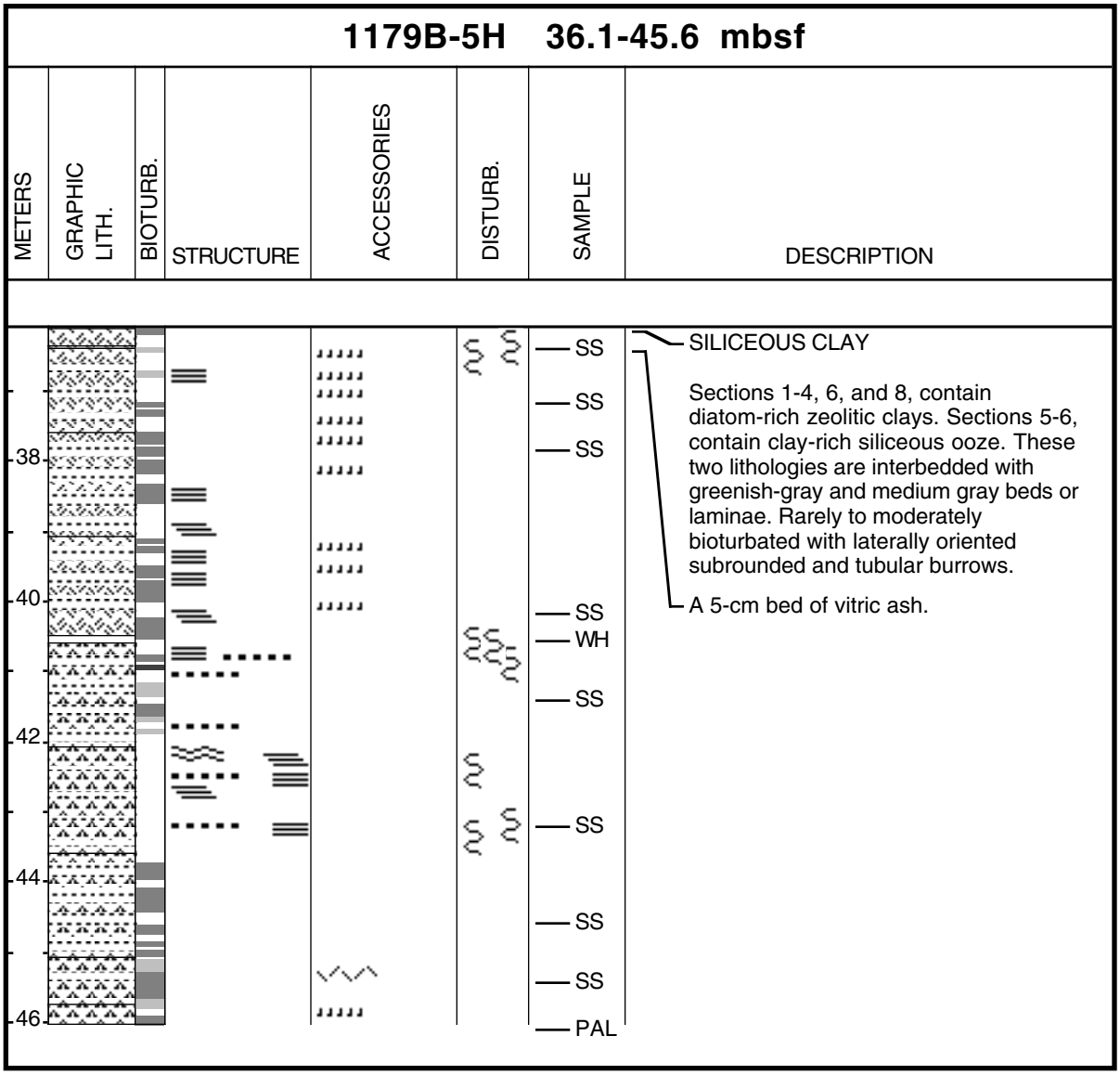
Core Photo


1179B-3H 17.1-26.6 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
18
20
22
24
26
SS
SS
XRD
SS
WH
SS
SS
SS
SS
PAL
CLAY-RICH SILICEOUS OOZE
Light olive gray (5Y 7/3) clay-rich to clay-bearing, radiolarian-bearing diatom ooze. Sponge spicules, silicoflagellates and zeolites are minor components. A few dark greenish gray (5G 4/1) clayey layers of altered ash. Olive gray to greenish gray massive mottled intervals..

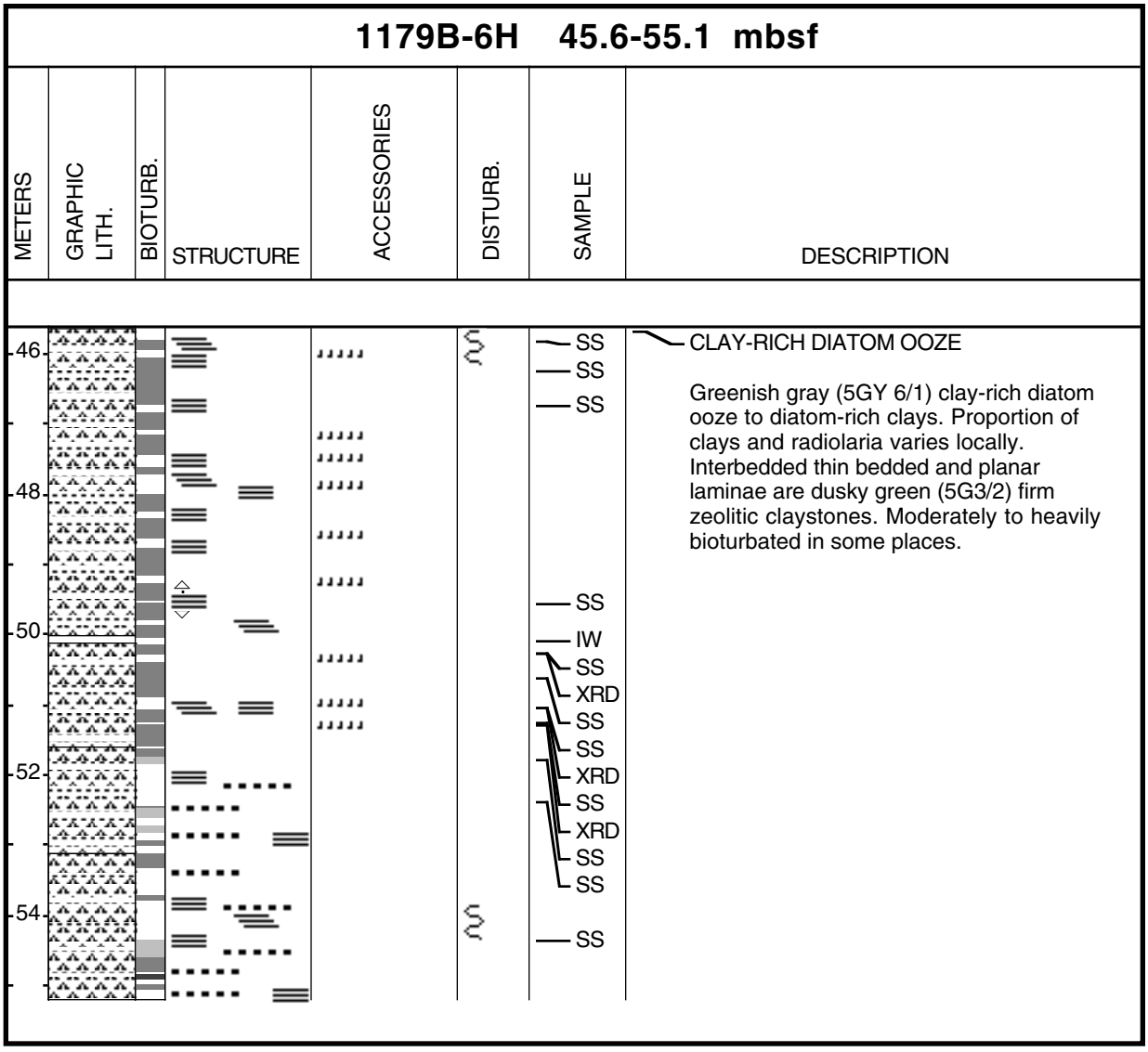
Core Photo


1179B-4H 26.6-36.1 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
28
30
32
34
36
P
SS
SS
WH
SS
SS
SS
PAL
CLAY-RICH SILICEOUS OOZE
Greenish gray (5GY 4/1) clay-rich siliceous ooze locally interbedded with pale gray and mottled with various gray shades. Section 1-5 contains clay-rich diatom-radiolarian ooze. Section 6-7 contains volcanic glass bearing siliceous ooze-rich zeolitic clays. This coring interval is possibly largely bioturbated, although it is hard to trace/define due its indistinct appearance.
A 10-cm thick ash bed.

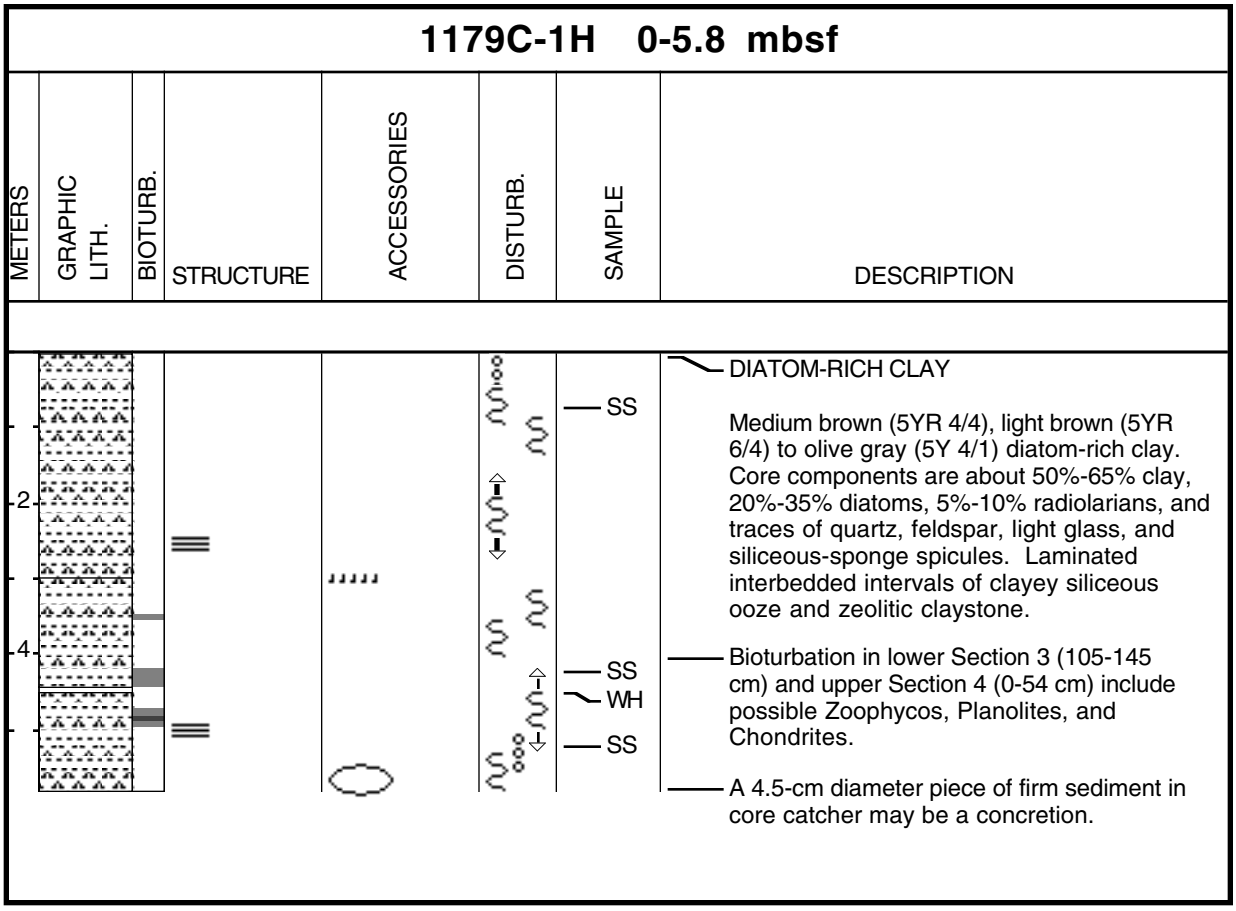
Core Photo


1179B-5H 36.1-45.6 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
38
40
42
44
46
SS
SS
SS
SS
WH
SS
SS
SS
SS
PAL
SILICEOUS CLAY
Sections 1-4, 6, and 8, contain diatom-rich zeolitic clays. Sections 5-6, contain clay-rich siliceous ooze. These two lithologies are interbedded with greenish-gray and medium gray beds or laminae. Rarely to moderately bioturbated with laterally oriented subrounded and tubular burrows.
A 5-cm bed of vitric ash.

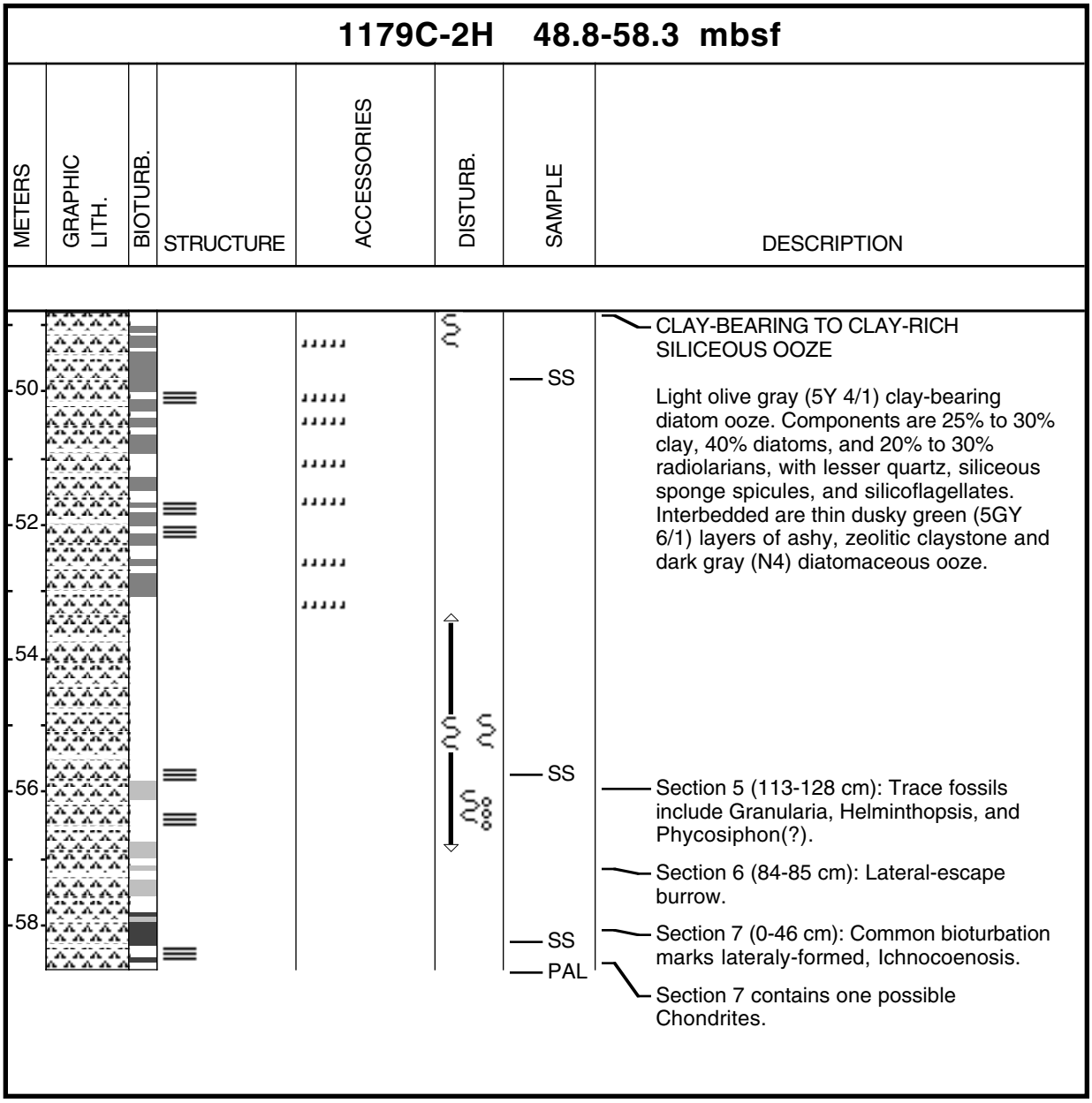
Core Photo


1179B-6H 45.6-55.1 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
46
48
50
52
54
SS
SS
SS
SS
IW
SS
XRD
SS
SS
XRD
SS
XRD
SS
SS
SS
CLAY-RICH DIATOM OOZE
Greenish gray (5GY 6/1) clay-rich diatom ooze to diatom-rich clays. Proportion of clays and radiolaria varies locally. Interbedded thin bedded and planar laminae are dusky green (5G3/2) firm zeolitic claystones. Moderately to heavily bioturbated in some places.

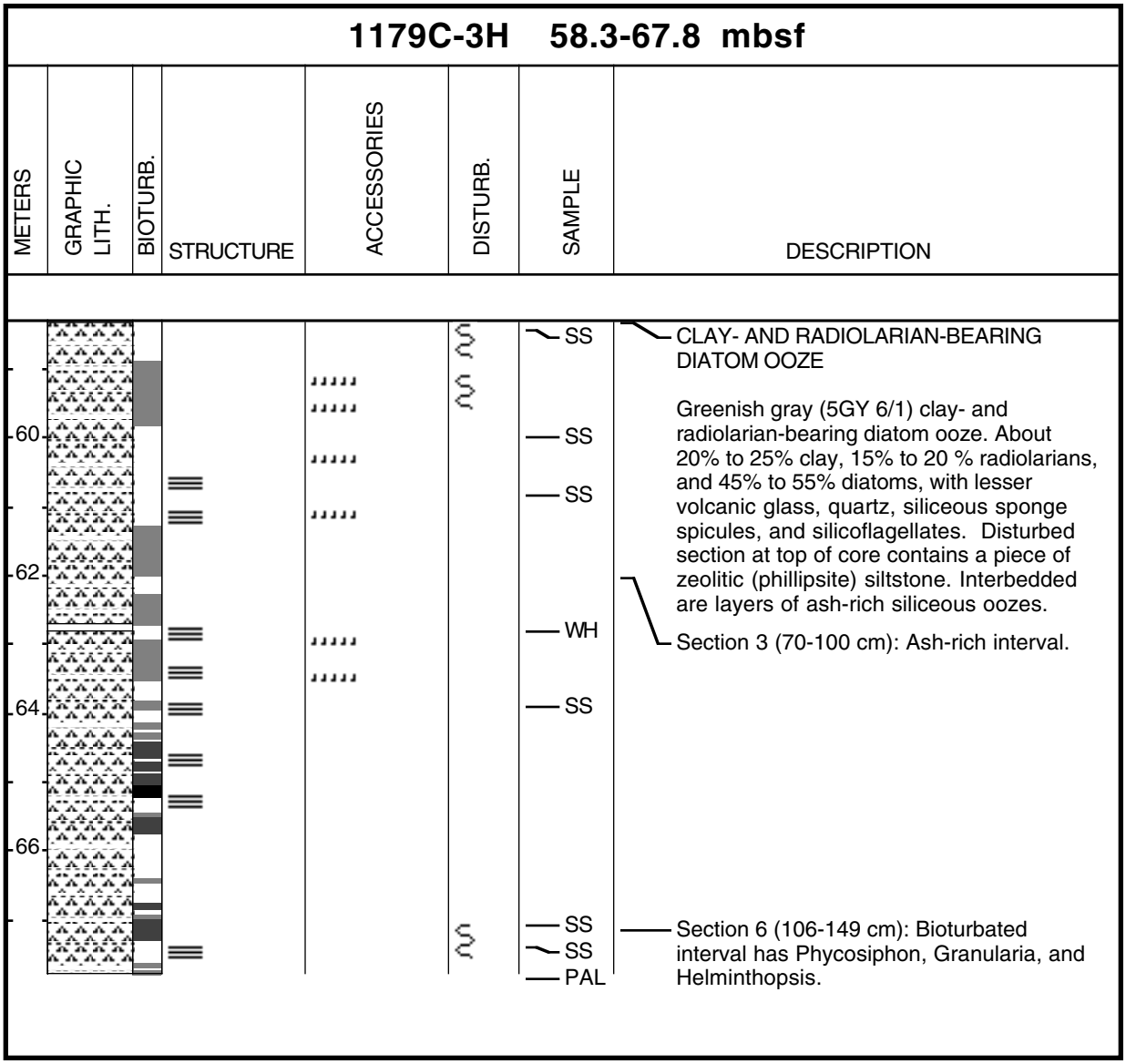
Core Photo


1179C-1H 0-5.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
2
4
SS
SS
WH
SS
DIATOM-RICH CLAY
Medium brown (5YR 4/4), light brown (5YR 6/4) to olive gray (5Y 4/1) diatom-rich clay. Core components are about 50%-65% clay, 20%-35% diatoms, 5%-10% radiolarians, and traces of quartz, feldspar, light glass, and siliceous-sponge spicules. Laminated interbedded intervals of clayey siliceous ooze and zeolitic claystone.
Bioturbation in lower Section 3 (105-145 cm) and upper Section 4 (0-54 cm) include possible Zoophycos, Planolites, and Chondrites.
A 4.5-cm diameter piece of firm sediment in core catcher may be a concretion.

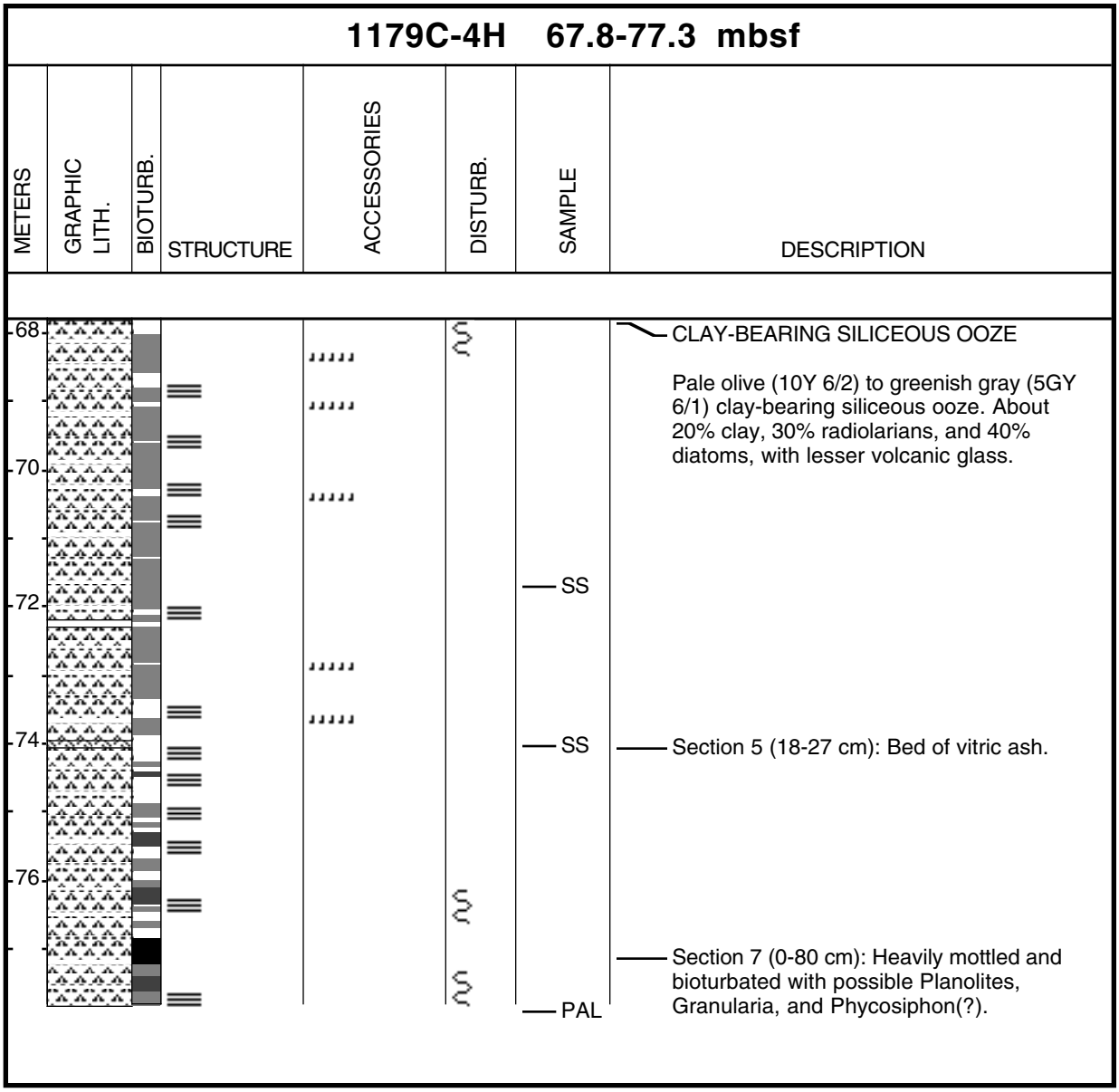
Core Photo


1179C-2H 48.8-58.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
50
52
54
56
58
SS
SS
SS
PAL
CLAY-BEARING TO CLAY-RICH SILICEOUS OOZE
Light olive gray (5Y 4/1) clay-bearing diatom ooze. Components are 25% to 30% clay, 40% diatoms, and 20% to 30% radiolarians, with lesser quartz, siliceous sponge spicules, and silicoflagellates. Interbedded are thin dusky green (5GY 6/1) layers of ashy, zeolitic claystone and dark gray (N4) diatomaceous ooze.
Section 5 (113-128 cm): Trace fossils include Granularia, Helminthopsis, and Phycosiphon(?).
Section 6 (84-85 cm): Lateral-escape burrow.
Section 7 (0-46 cm): Common bioturbation marks lateraly-formed, Ichnocoenosis.
Section 7 contains one possible Chondrites.

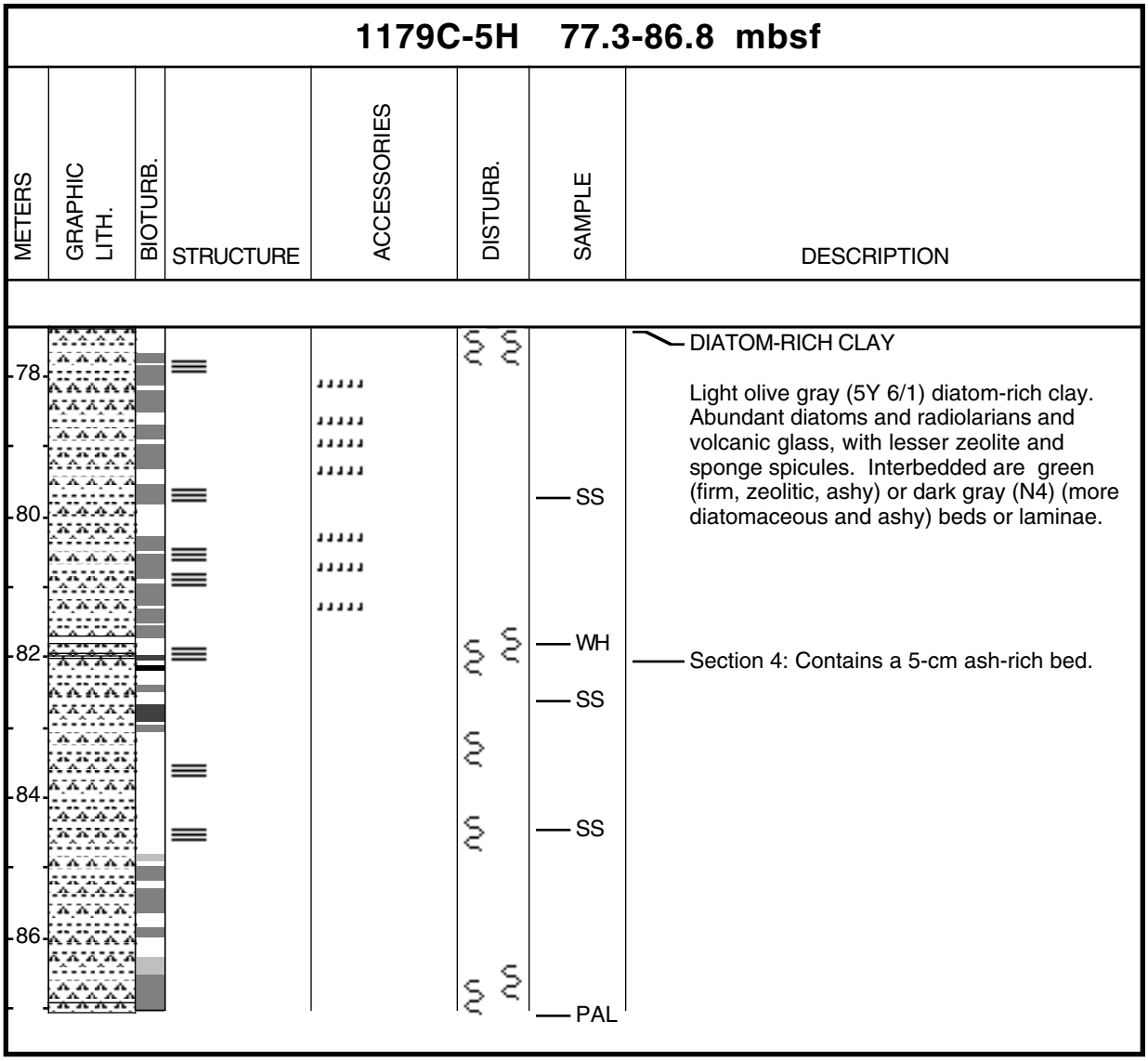
Core Photo


1179C-3H 58.3-67.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
60
62
64
66
SS
SS
SS
WH
SS
SS
SS
PAL
CLAY- AND RADIOLARIAN-BEARING DIATOM OOZE
Greenish gray (5GY 6/1) clay- and radiolarian-bearing diatom ooze. About 20% to 25% clay, 15% to 20 % radiolarians, and 45% to 55% diatoms, with lesser volcanic glass, quartz, siliceous sponge spicules, and silicoflagellates. Disturbed section at top of core contains a piece of zeolitic (phillipsite) siltstone. Interbedded are layers of ash-rich siliceous oozes.
Section 3 (70-100 cm): Ash-rich interval.
Section 6 (106-149 cm): Bioturbated interval has Phycosiphon, Granularia, and Helminthopsis.

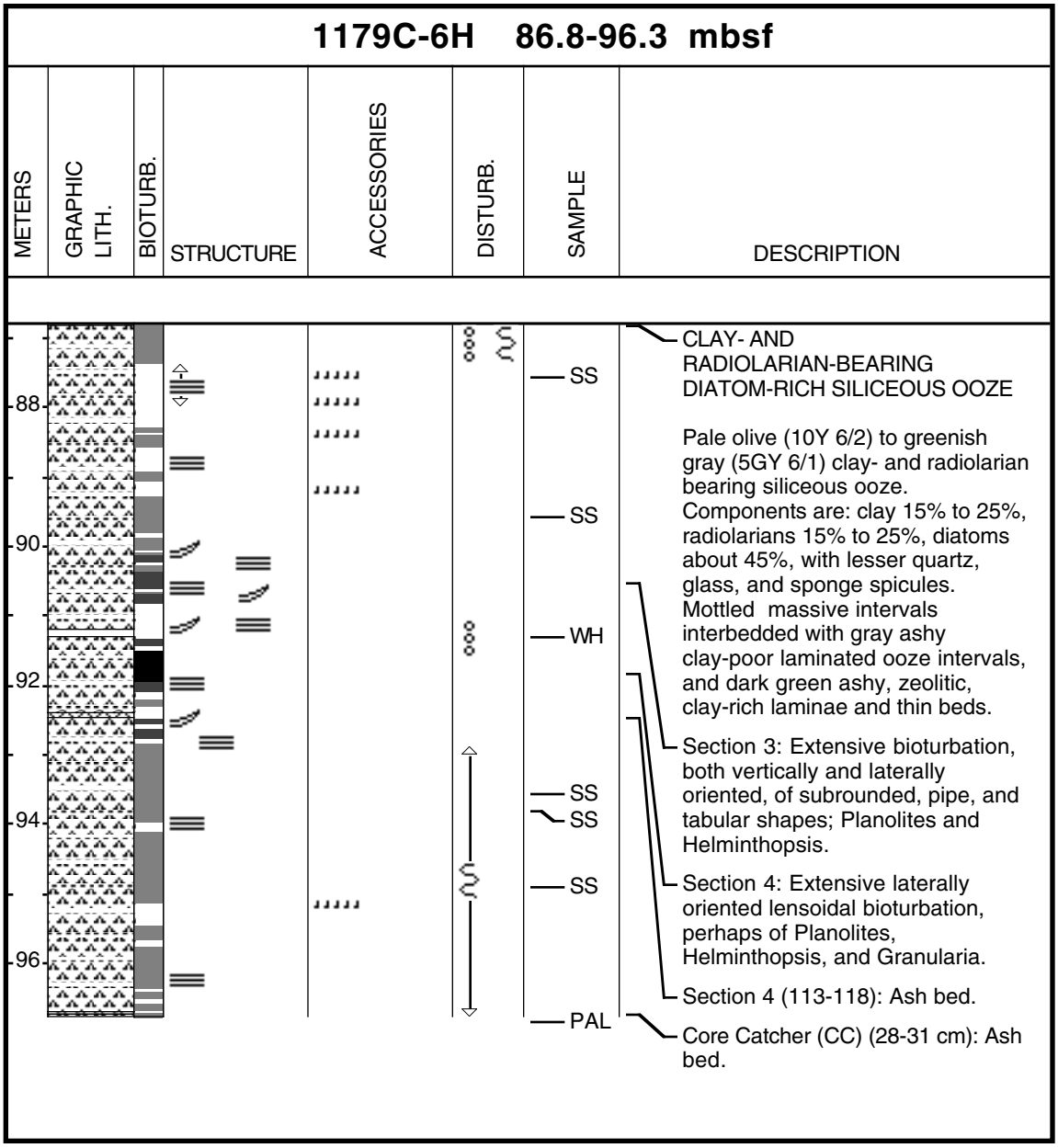
Core Photo


1179C-4H 67.8-77.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
68
70
72
74
76
SS
SS
PAL
CLAY-BEARING SILICEOUS OOZE
Pale olive (10Y 6/2) to greenish gray (5GY 6/1) clay-bearing siliceous ooze. About 20% clay, 30% radiolarians, and 40% diatoms, with lesser volcanic glass.
Section 5 (18-27 cm): Bed of vitric ash.
Section 7 (0-80 cm): Heavily mottled and bioturbated with possible Planolites, Granularia, and Phycosiphon(?).

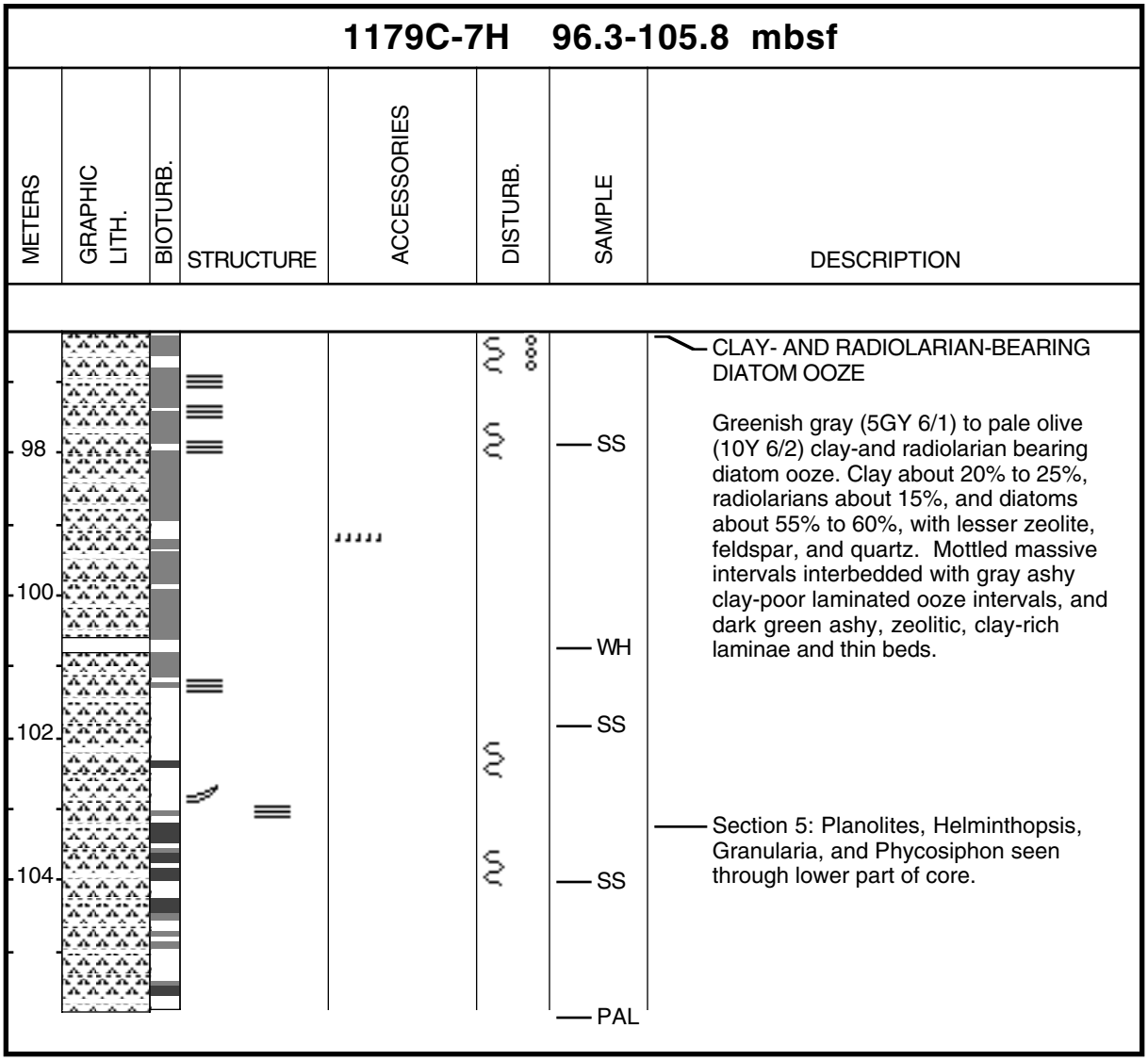
Core Photo


1179C-5H 77.3-86.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
78
80
82
84
86
SS
WH
SS
SS
PAL
DIATOM-RICH CLAY
Light olive gray (5Y 6/1) diatom-rich clay. Abundant diatoms and radiolarians and volcanic glass, with lesser zeolite and sponge spicules. Interbedded are green (firm, zeolitic, ashy) or dark gray (N4) (more diatomaceous and ashy) beds or laminae.
Section 4: Contains a 5-cm ash-rich bed.

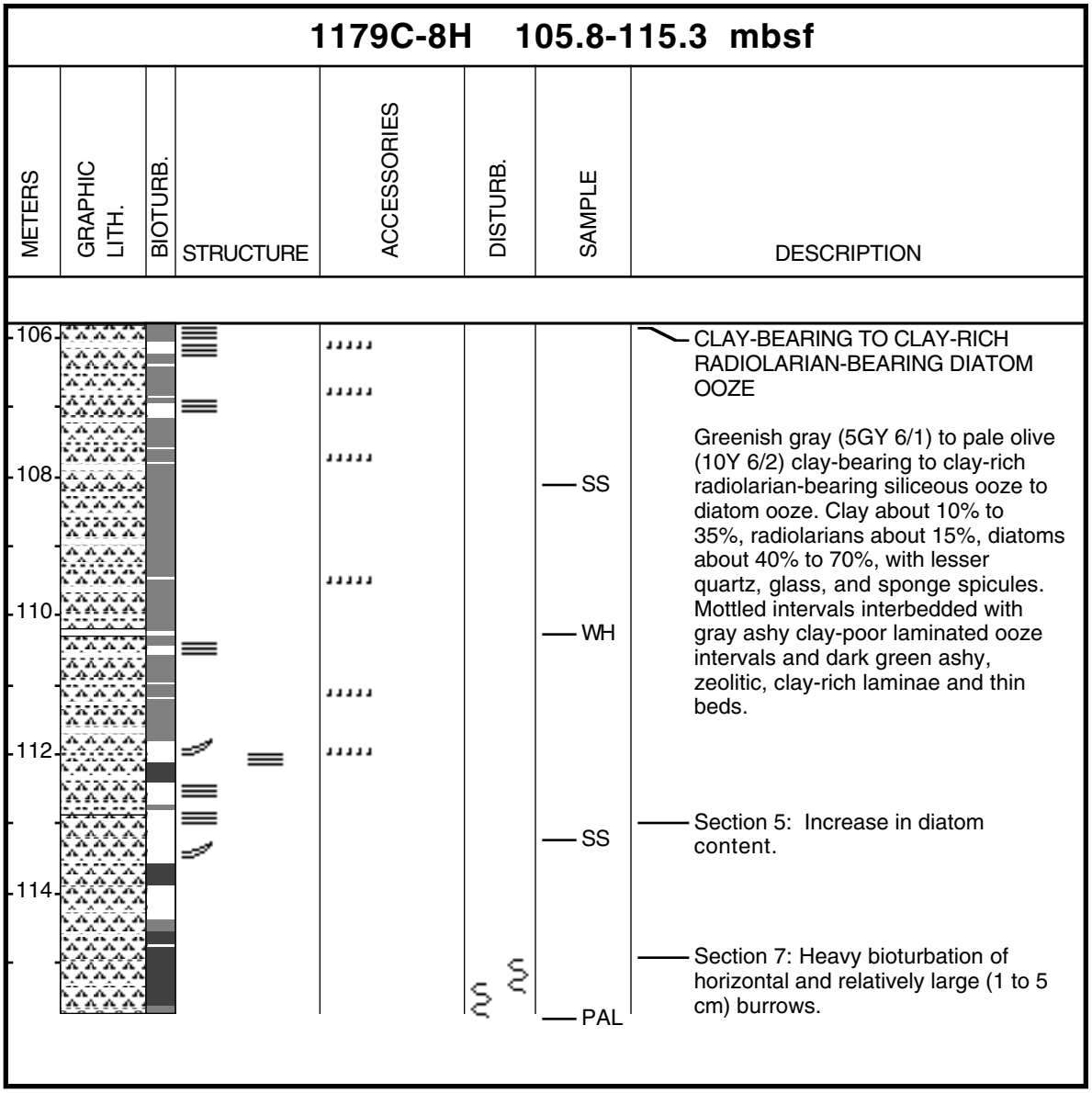
Core Photo


1179C-6H 86.8-96.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
88
90
92
94
96
SS
SS
WH
SS
SS
SS
PAL
CLAY- AND RADIOLARIAN-BEARING DIATOM-RICH SILICEOUS OOZE
Pale olive (10Y 6/2) to greenish gray (5GY 6/1) clay- and radiolarian bearing siliceous ooze. Components are: clay 15% to 25%, radiolarians 15% to 25%, diatoms about 45%, with lesser quartz, glass, and sponge spicules. Mottled massive intervals interbedded with gray ashy clay-poor laminated ooze intervals, and dark green ashy, zeolitic, clay-rich laminae and thin beds.
Section 3: Extensive bioturbation, both vertically and laterally oriented, of subrounded, pipe, and tabular shapes; Planolites and Helminthopsis.
Section 4: Extensive laterally oriented lensoidal bioturbation, perhaps of Planolites, Helminthopsis, and Granularia.
Section 4 (113-118): Ash bed.
Core Catcher (CC) (28-31 cm): Ash bed.

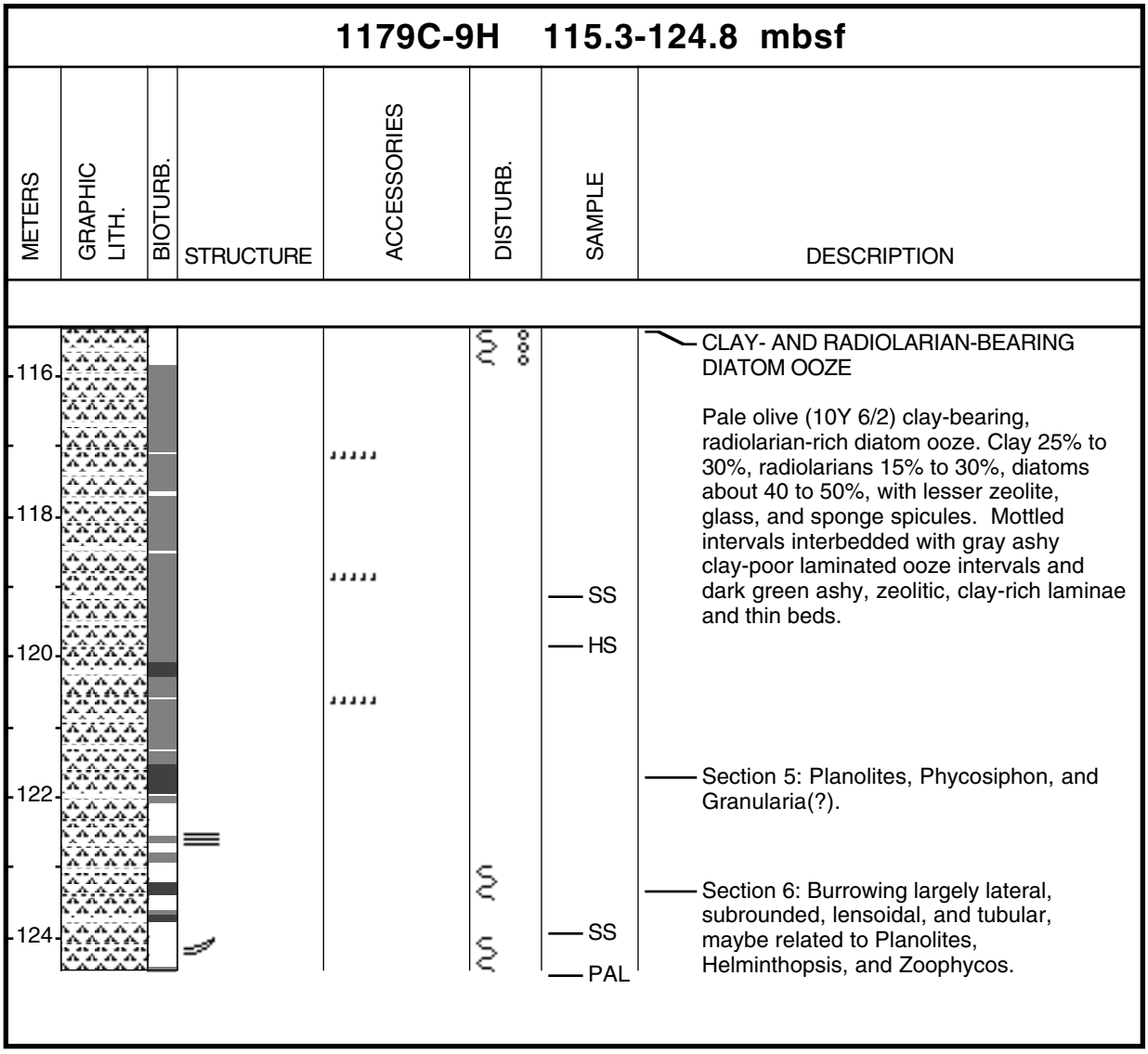
Core Photo


1179C-7H 96.3-105.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
98
100
102
104
SS
WH
SS
SS
PAL
CLAY- AND RADIOLARIAN-BEARING DIATOM OOZE
Greenish gray (5GY 6/1) to pale olive (10Y 6/2) clay-and radiolarian bearing diatom ooze. Clay about 20% to 25%, radiolarians about 15%, and diatoms about 55% to 60%, with lesser zeolite, feldspar, and quartz. Mottled massive intervals interbedded with gray ashy clay-poor laminated ooze intervals, and dark green ashy, zeolitic, clay-rich laminae and thin beds.
Section 5: Planolites, Helminthopsis, Granularia, and Phycosiphon seen through lower part of core.

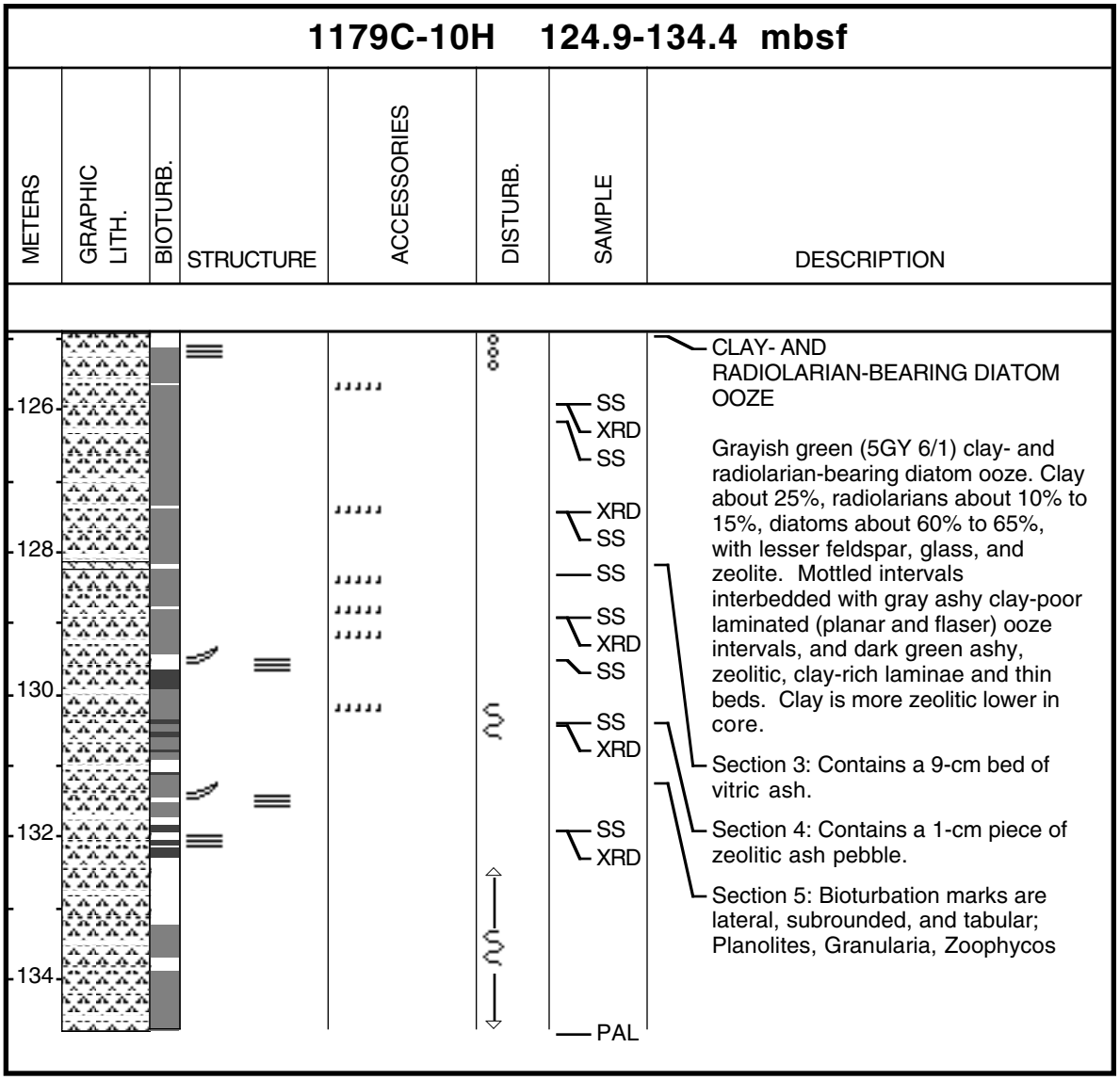
Core Photo


1179C-8H 105.8-115.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
106
108
110
112
114
SS
WH
SS
PAL
CLAY-BEARING TO CLAY-RICH RADIOLARIAN-BEARING DIATOM OOZE
Greenish gray (5GY 6/1) to pale olive (10Y 6/2) clay-bearing to clay-rich radiolarian-bearing siliceous ooze to diatom ooze. Clay about 10% to 35%, radiolarians about 15%, diatoms about 40% to 70%, with lesser quartz, glass, and sponge spicules. Mottled intervals interbedded with gray ashy clay-poor laminated ooze intervals and dark green ashy, zeolitic, clay-rich laminae and thin beds.
Section 5: Increase in diatom content.
Section 7: Heavy bioturbation of horizontal and relatively large (1 to 5 cm) burrows.

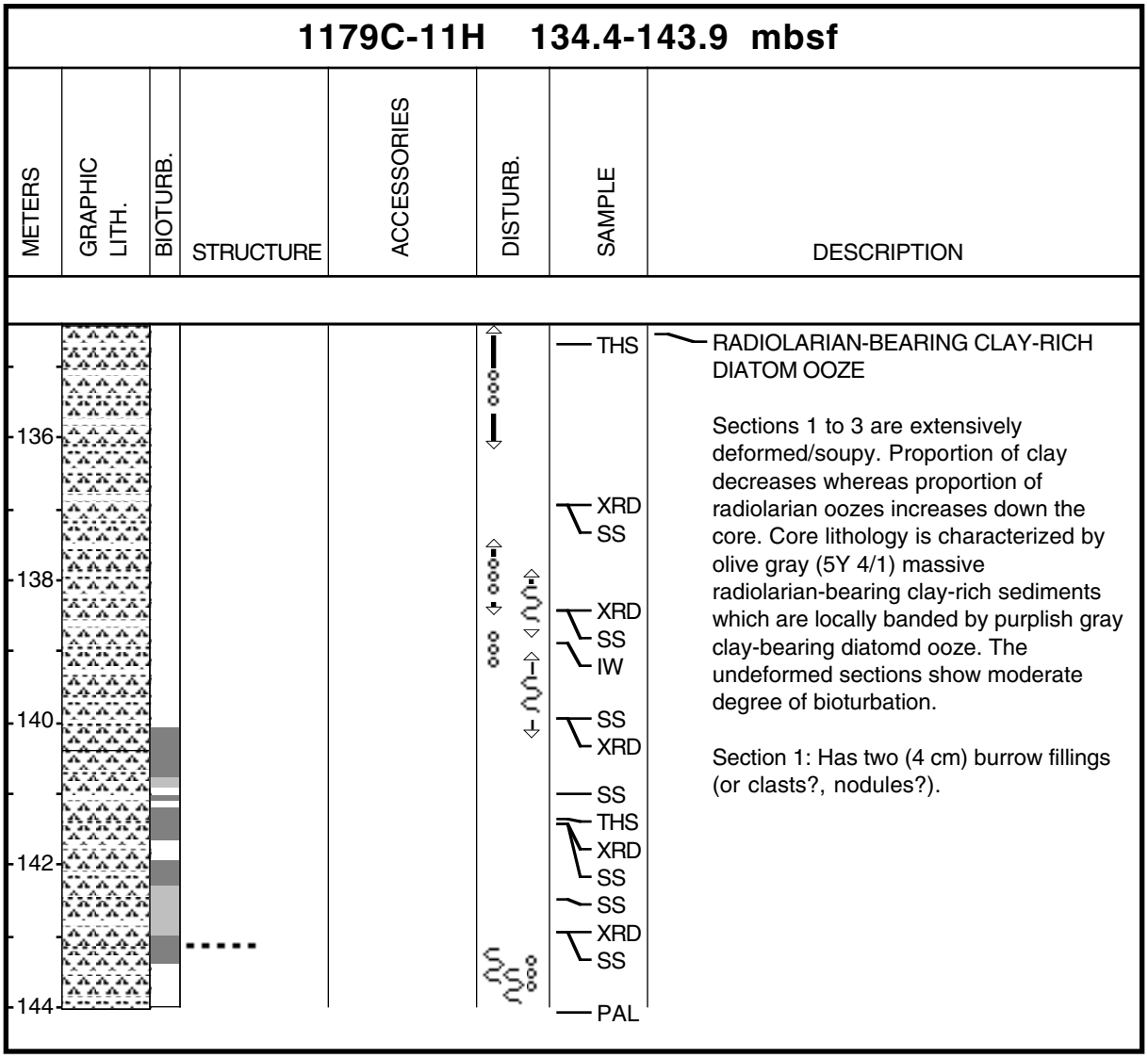
Core Photo


1179C-9H 115.3-124.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
116
118
120
122
124
SS
HS
SS
PAL
CLAY- AND RADIOLARIAN-BEARING DIATOM OOZE
Pale olive (10Y 6/2) clay-bearing, radiolarian-rich diatom ooze. Clay 25% to 30%, radiolarians 15% to 30%, diatoms about 40 to 50%, with lesser zeolite, glass, and sponge spicules. Mottled intervals interbedded with gray ashy clay-poor laminated ooze intervals and dark green ashy, zeolitic, clay-rich laminae and thin beds.
Section 5: Planolites, Phycosiphon, and Granularia(?).
Section 6: Burrowing largely lateral, subrounded, lensoidal, and tubular, maybe related to Planolites, Helminthopsis, and Zoophycos.

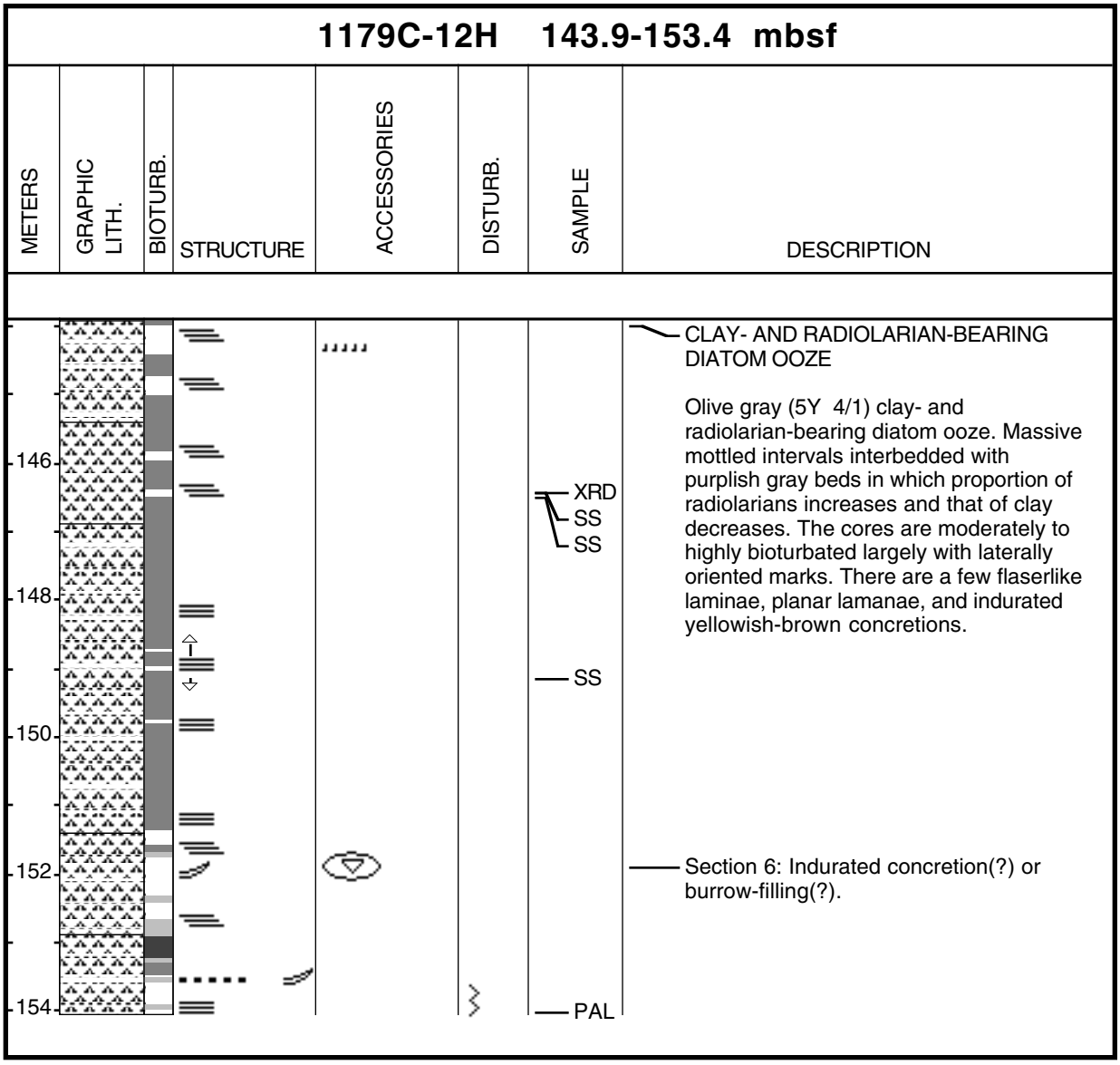
Core Photo


1179C-10H 124.9-134.4 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
126
128
130
132
134
SS
XRD
SS
XRD
SS
SS
XRD
SS
SS
XRD
SS
XRD
PAL
CLAY- AND RADIOLARIAN-BEARING DIATOM OOZE
Grayish green (5GY 6/1) clay- and radiolarian-bearing diatom ooze. Clay about 25%, radiolarians about 10% to 15%, diatoms about 60% to 65%, with lesser feldspar, glass, and zeolite. Mottled intervals interbedded with gray ashy clay-poor laminated (planar and flaser) ooze intervals, and dark green ashy, zeolitic, clay-rich laminae and thin beds. Clay is more zeolitic lower in core.
Section 3: Contains a 9-cm bed of vitric ash.
Section 4: Contains a 1-cm piece of zeolitic ash pebble.
Section 5: Bioturbation marks are lateral, subrounded, and tabular; Planolites, Granularia, Zoophycos

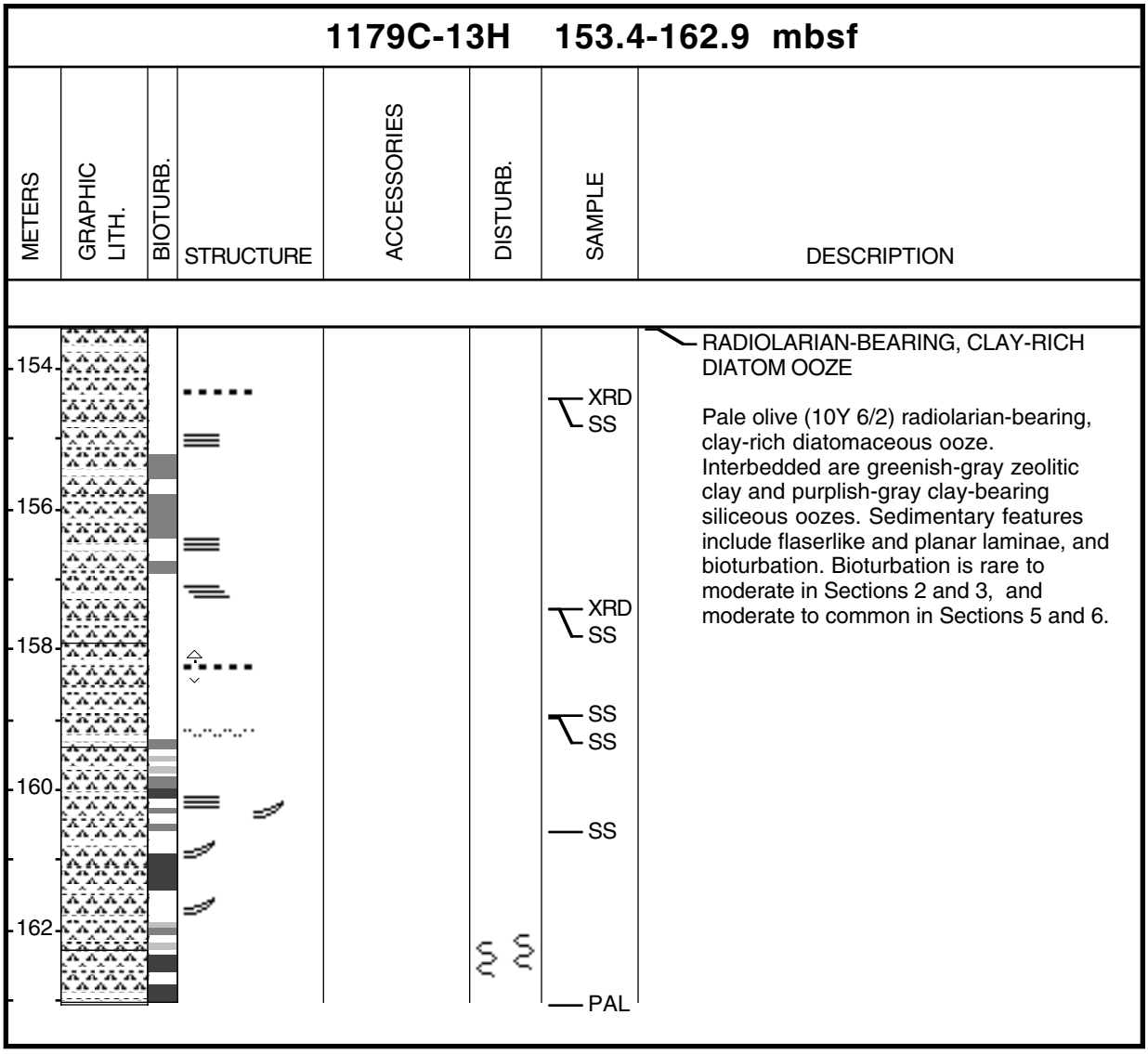
Core Photo


1179C-11H 134.4-143.9 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
136
138
140
142
144
THS
XRD
SS
XRD
SS
IW
SS
XRD
SS
THS
XRD
SS
SS
XRD
SS
PAL
RADIOLARIAN-BEARING CLAY-RICH DIATOM OOZE
Sections 1 to 3 are extensively deformed/soupy. Proportion of clay decreases whereas proportion of radiolarian oozes increases down the core. Core lithology is characterized by olive gray (5Y 4/1) massive radiolarian-bearing clay-rich sediments which are locally banded by purplish gray clay-bearing diatomd ooze. The undeformed sections show moderate degree of bioturbation.
Section 1: Has two (4 cm) burrow fillings (or clasts?, nodules?).

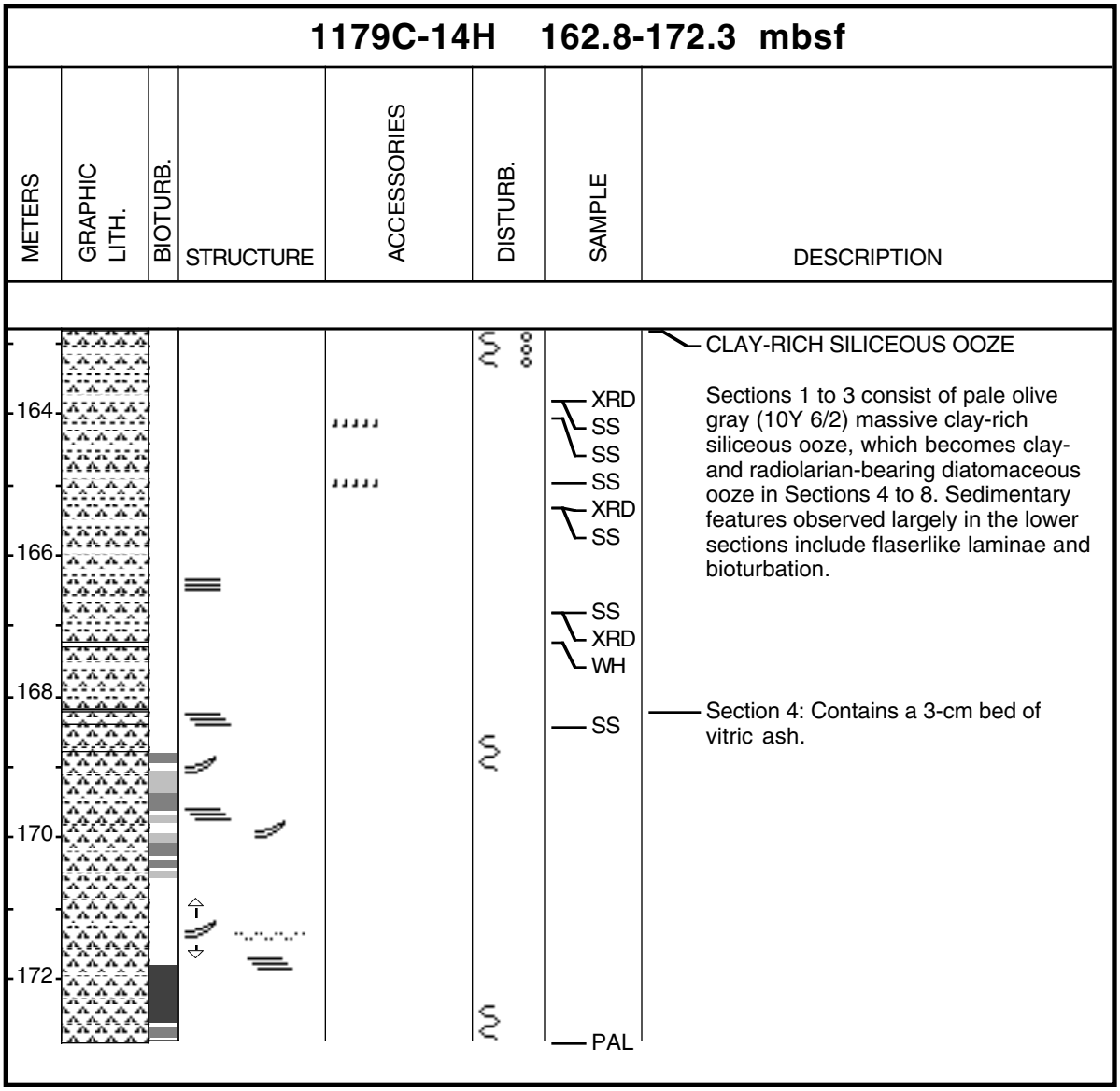
Core Photo


1179C-12H 143.9-153.4 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
146
148
150
152
154
XRD
SS
SS
SS
PAL
CLAY- AND RADIOLARIAN-BEARING DIATOM OOZE
Olive gray (5Y 4/1) clay- and radiolarian-bearing diatom ooze. Massive mottled intervals interbedded with purplish gray beds in which proportion of radiolarians increases and that of clay decreases. The cores are moderately to highly bioturbated largely with laterally oriented marks. There are a few flaserlike laminae, planar lamanae, and indurated yellowish-brown concretions.
Section 6: Indurated concretion(?) or burrow-filling(?).

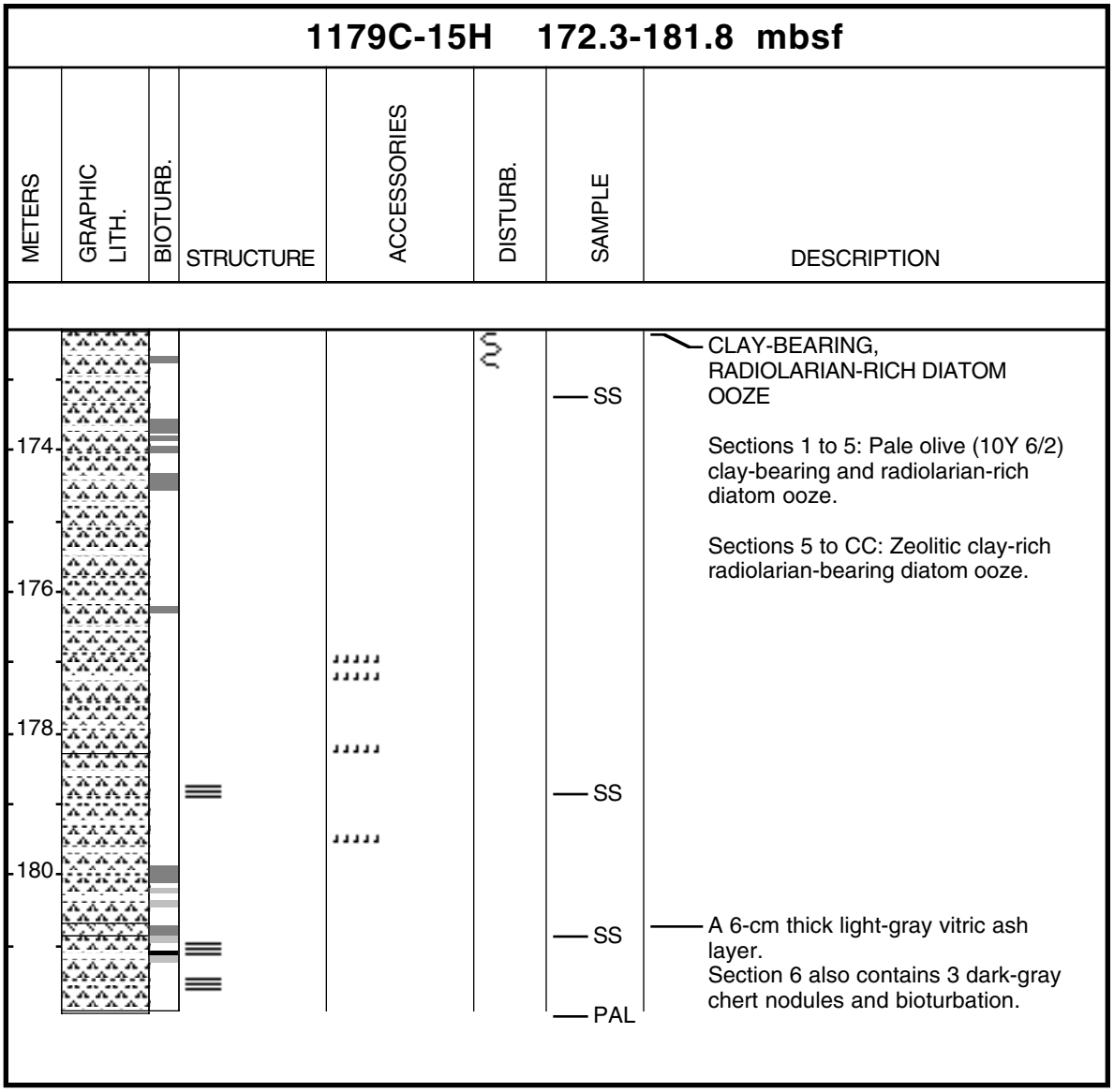
Core Photo


1179C-13H 153.4-162.9 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
154
156
158
160
162
XRD
SS
XRD
SS
SS
SS
SS
PAL
RADIOLARIAN-BEARING, CLAY-RICH DIATOM OOZE
Pale olive (10Y 6/2) radiolarian-bearing, clay-rich diatomaceous ooze. Interbedded are greenish-gray zeolitic clay and purplish-gray clay-bearing siliceous oozes. Sedimentary features include flaserlike and planar laminae, and bioturbation. Bioturbation is rare to moderate in Sections 2 and 3, and moderate to common in Sections 5 and 6.

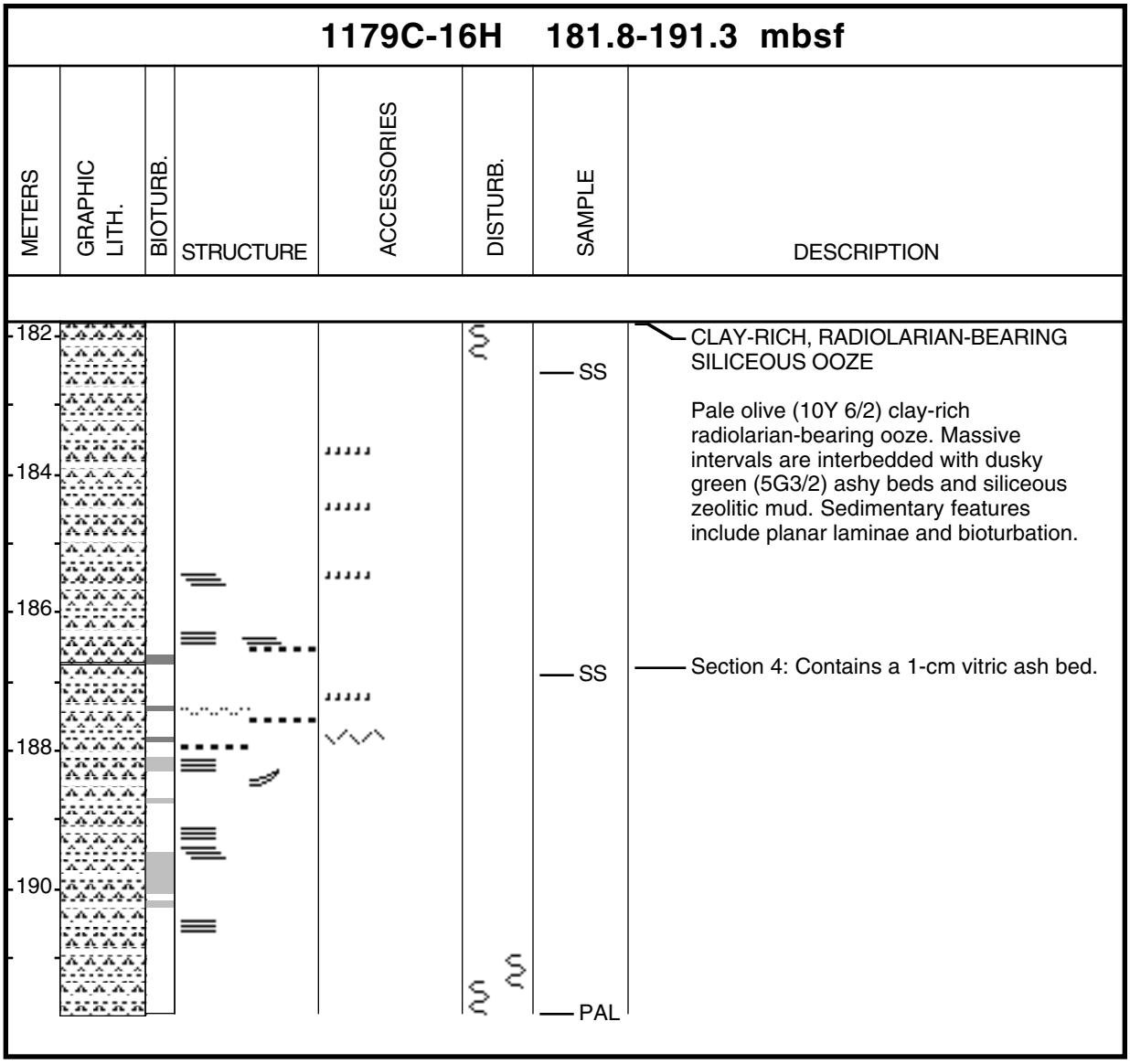
Core Photo


1179C-14H 162.8-172.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
164
166
168
170
172
XRD
SS
SS
SS
XRD
SS
SS
XRD
WH
SS
PAL
CLAY-RICH SILICEOUS OOZE
Sections 1 to 3 consist of pale olive gray (10Y 6/2) massive clay-rich siliceous ooze, which becomes clay- and radiolarian-bearing diatomaceous ooze in Sections 4 to 8. Sedimentary features observed largely in the lower sections include flaserlike laminae and bioturbation.
Section 4: Contains a 3-cm bed of vitric ash.

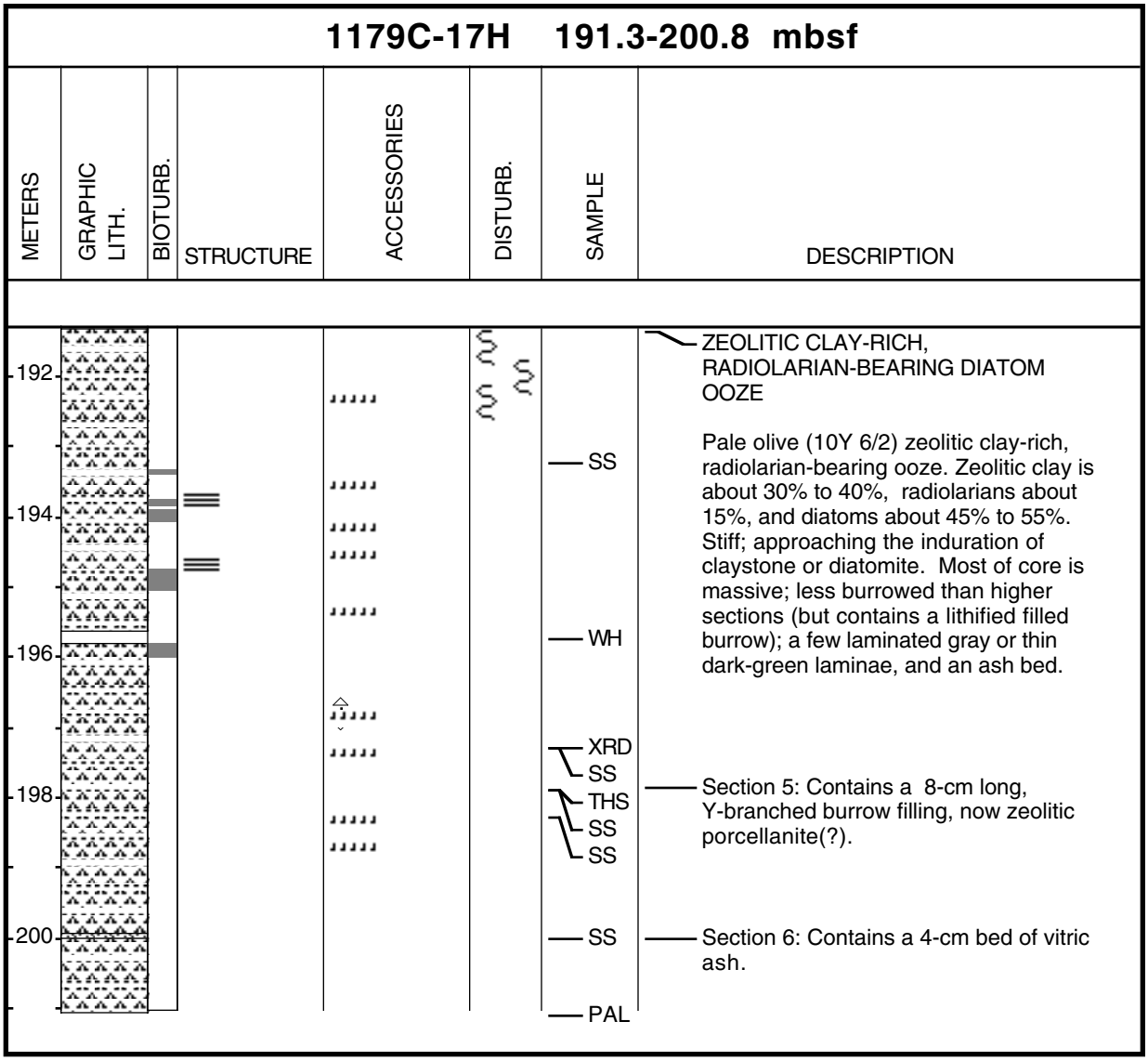
Core Photo


1179C-15H 172.3-181.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
174
176
178
180
SS
SS
SS
PAL
CLAY-BEARING, RADIOLARIAN-RICH DIATOM OOZE
Sections 1 to 5: Pale olive (10Y 6/2) clay-bearing and radiolarian-rich diatom ooze.
Sections 5 to CC: Zeolitic clay-rich radiolarian-bearing diatom ooze.
A 6-cm thick light-gray vitric ash layer.
Section 6 also contains 3 dark-gray chert nodules and bioturbation.

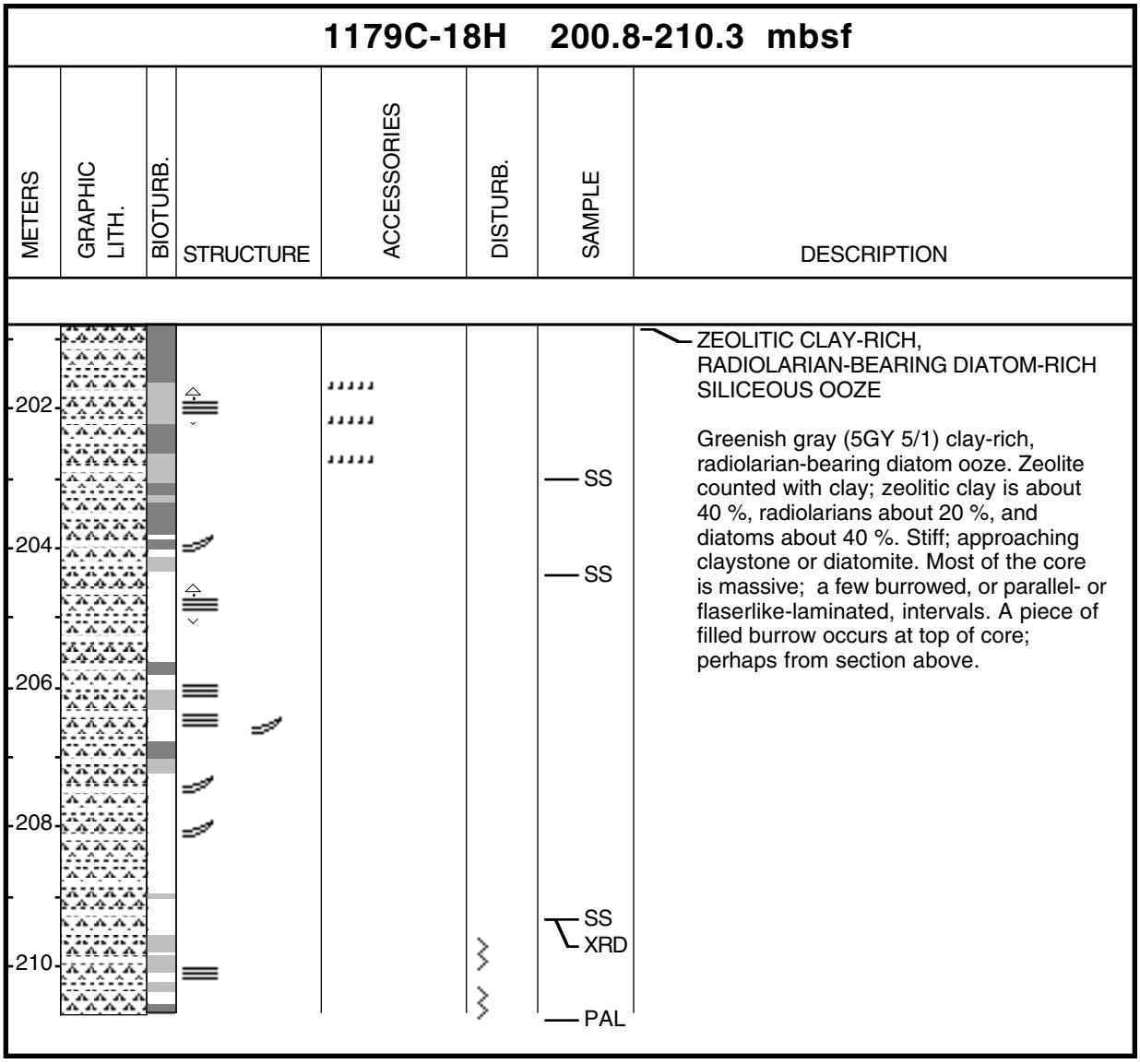
Core Photo


1179C-16H 181.8-191.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
182
184
186
188
190
SS
SS
PAL
CLAY-RICH, RADIOLARIAN-BEARING SILICEOUS OOZE
Pale olive (10Y 6/2) clay-rich radiolarian-bearing ooze. Massive intervals are interbedded with dusky green (5G3/2) ashy beds and siliceous zeolitic mud. Sedimentary features include planar laminae and bioturbation.
Section 4: Contains a 1-cm vitric ash bed.

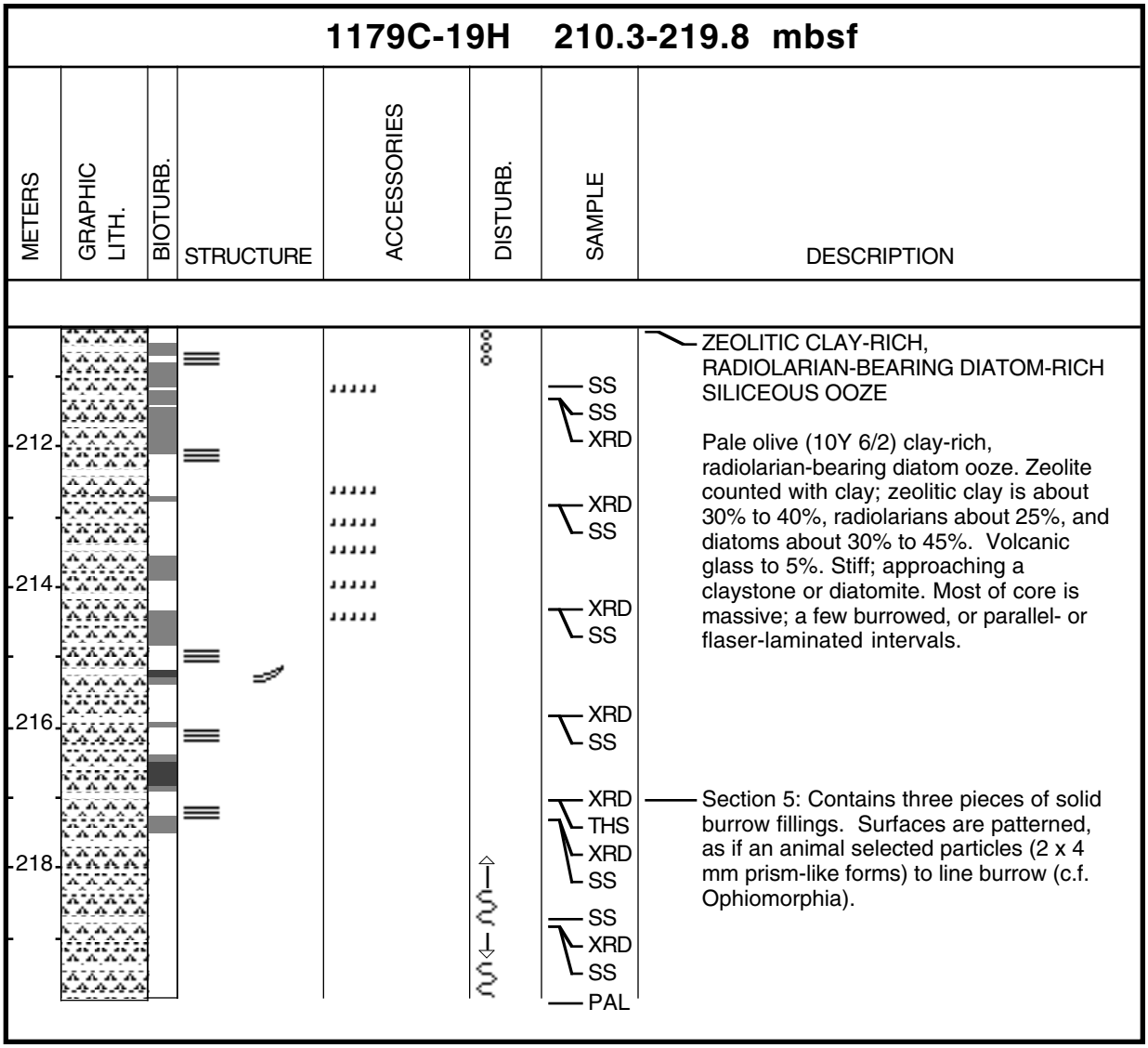
Core Photo


1179C-17H 191.3-200.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
192
194
196
198
200
SS
WH
XRD
SS
THS
SS
SS
SS
PAL
ZEOLITIC CLAY-RICH, RADIOLARIAN-BEARING DIATOM OOZE
Pale olive (10Y 6/2) zeolitic clay-rich, radiolarian-bearing ooze. Zeolitic clay is about 30% to 40%, radiolarians about 15%, and diatoms about 45% to 55%. Stiff; approaching the induration of claystone or diatomite. Most of core is massive; less burrowed than higher sections (but contains a lithified filled burrow); a few laminated gray or thin dark-green laminae, and an ash bed.
Section 5: Contains a 8-cm long, Y-branched burrow filling, now zeolitic porcellanite(?).
Section 6: Contains a 4-cm bed of vitric ash.

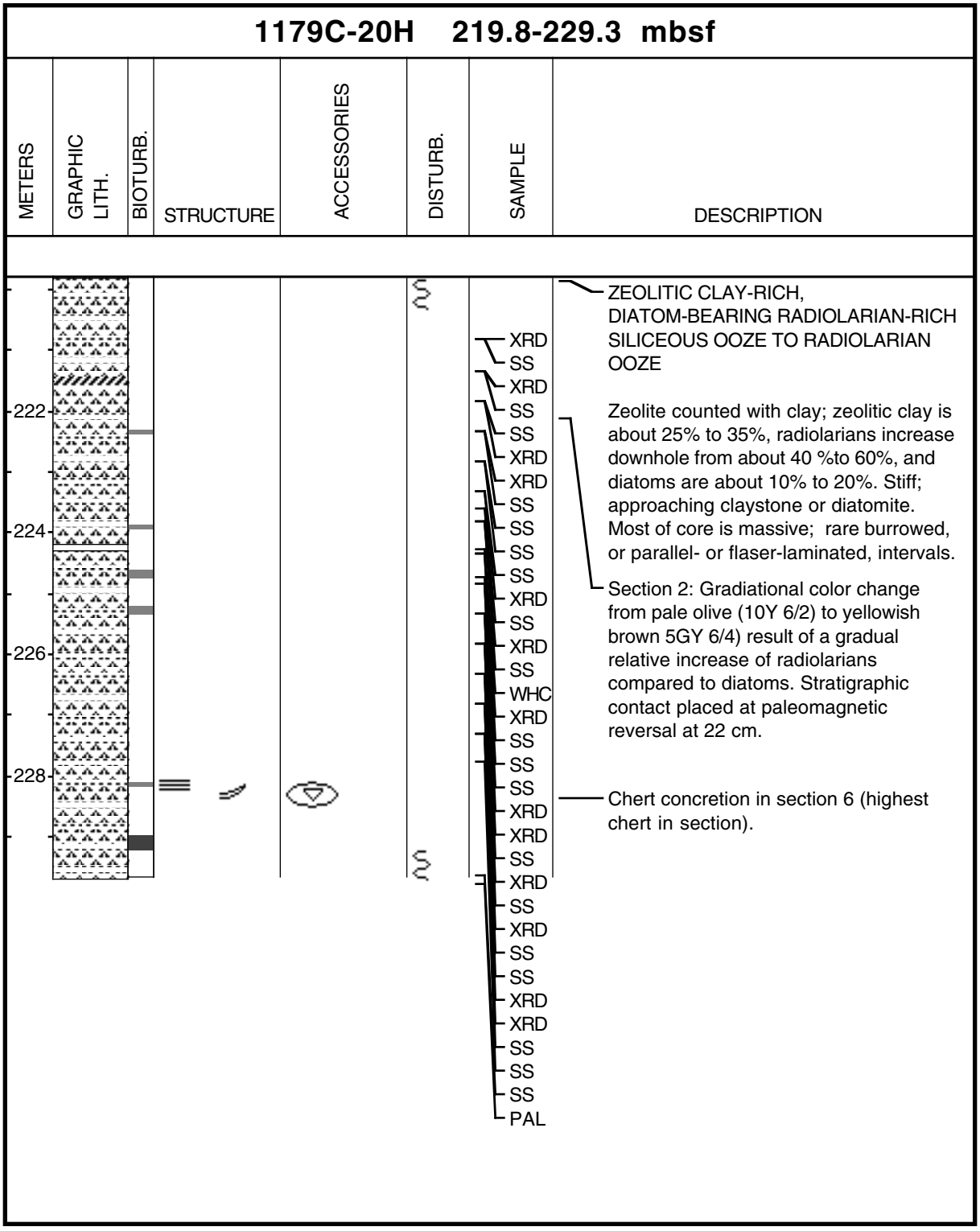
Core Photo


1179C-18H 200.8-210.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
202
204
206
208
210
SS
SS
SS
XRD
PAL
ZEOLITIC CLAY-RICH, RADIOLARIAN-BEARING DIATOM-RICH SILICEOUS OOZE
Greenish gray (5GY 5/1) clay-rich, radiolarian-bearing diatom ooze. Zeolite counted with clay; zeolitic clay is about 40 %, radiolarians about 20 %, and diatoms about 40 %. Stiff; approaching claystone or diatomite. Most of the core is massive; a few burrowed, or parallel- or flaserlike-laminated, intervals. A piece of filled burrow occurs at top of core; perhaps from section above.

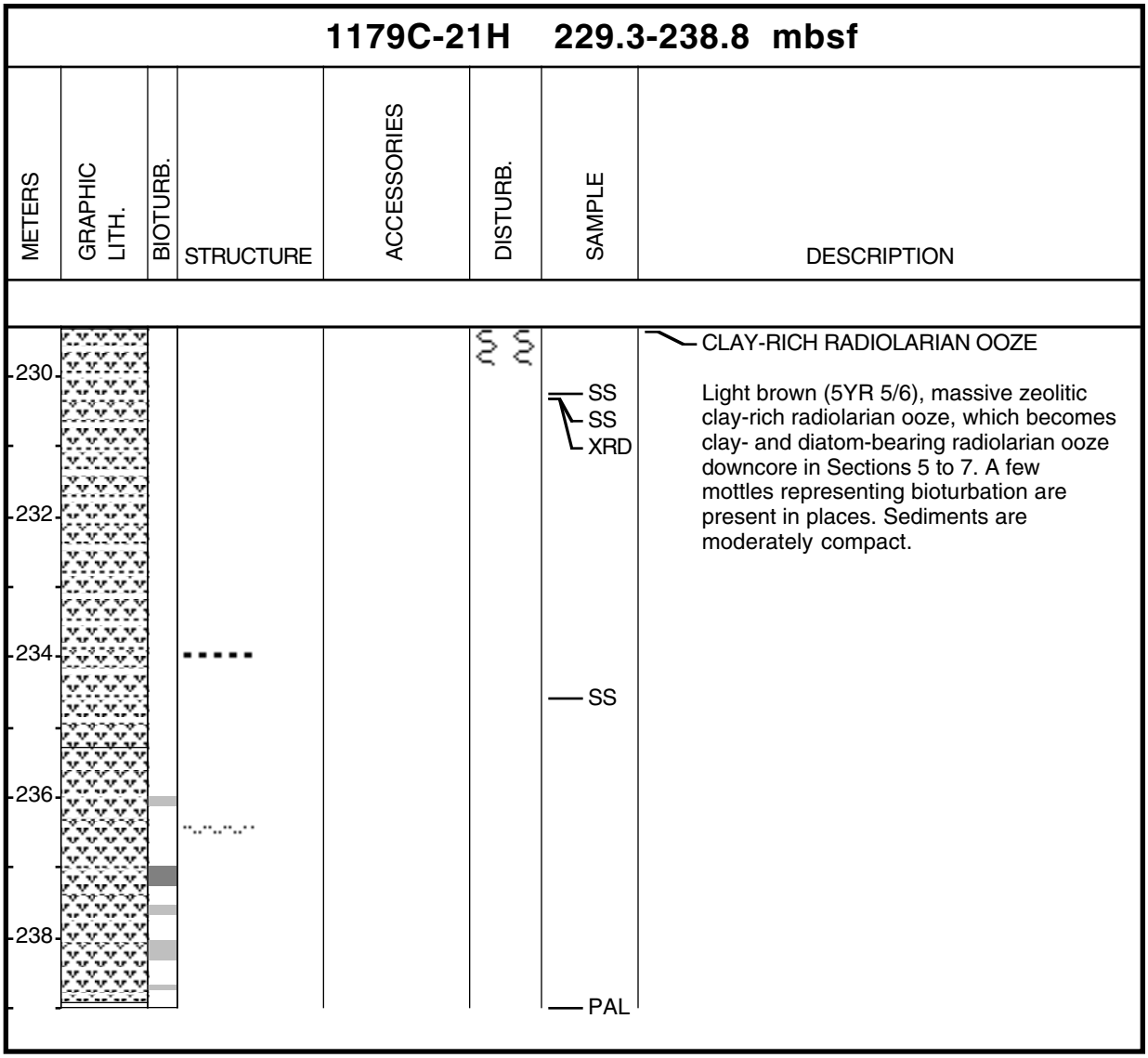
Core Photo


1179C-19H 210.3-219.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
212
214
216
218
SS
SS
XRD
XRD
SS
XRD
SS
XRD
SS
XRD
THS
XRD
SS
SS
XRD
SS
PAL
ZEOLITIC CLAY-RICH, RADIOLARIAN-BEARING DIATOM-RICH SILICEOUS OOZE
Pale olive (10Y 6/2) clay-rich, radiolarian-bearing diatom ooze. Zeolite counted with clay; zeolitic clay is about 30% to 40%, radiolarians about 25%, and diatoms about 30% to 45%. Volcanic glass to 5%. Stiff; approaching a claystone or diatomite. Most of core is massive; a few burrowed, or parallel- or flaser-laminated intervals.
Section 5: Contains three pieces of solid burrow fillings. Surfaces are patterned, as if an animal selected particles (2 x 4 mm prism-like forms) to line burrow (c.f. Ophiomorphia).

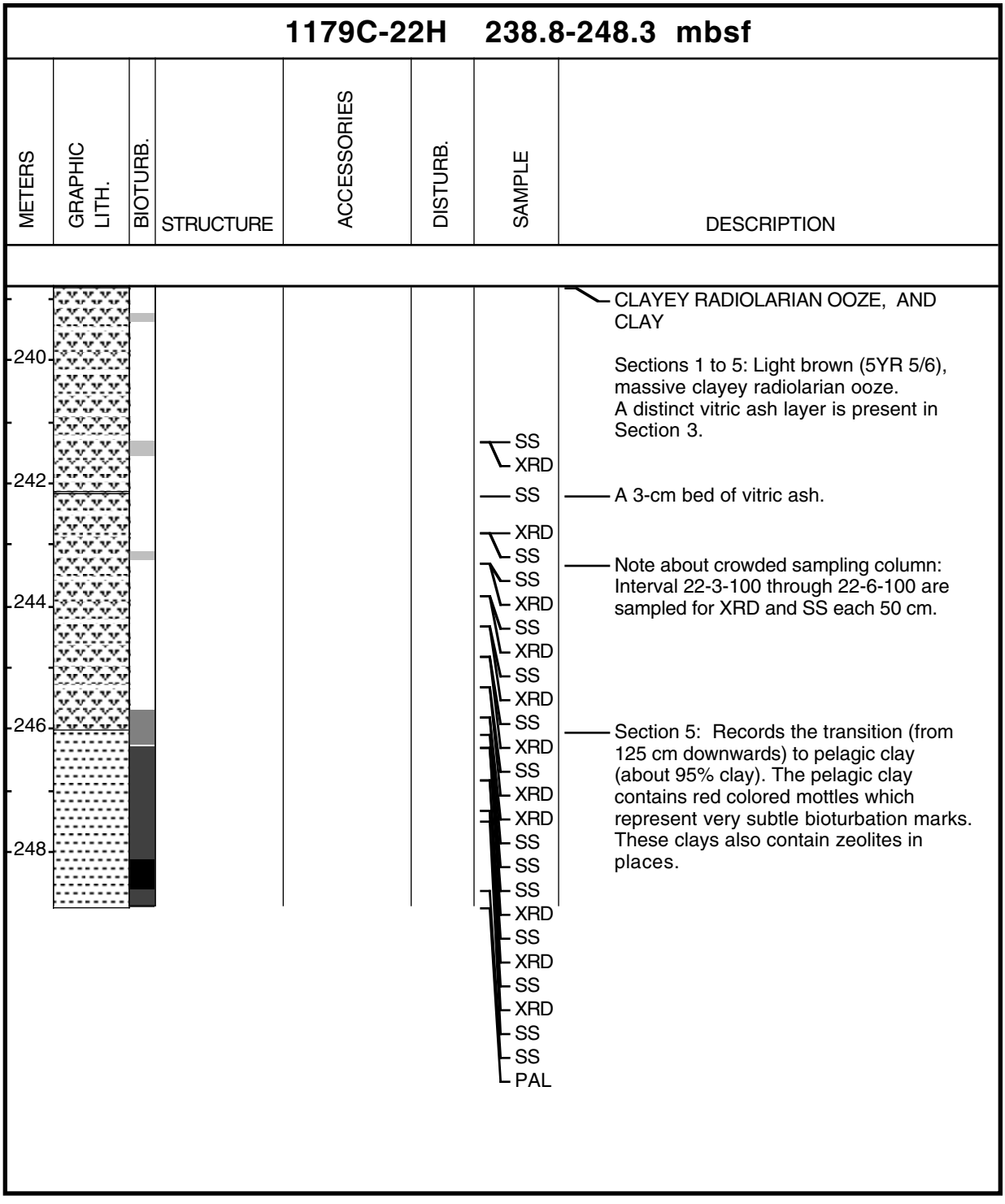
Core Photo


1179C-20H 219.8-229.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
222
224
226
228
XRD
SS
XRD
SS
SS
XRD
XRD
SS
SS
SS
SS
XRD
SS
XRD
SS
WHC
XRD
SS
SS
SS
XRD
XRD
SS
XRD
SS
XRD
SS
SS
XRD
XRD
SS
SS
SS
PAL
ZEOLITIC CLAY-RICH, DIATOM-BEARING RADIOLARIAN-RICH SILICEOUS OOZE TO RADIOLARIAN OOZE
Zeolite counted with clay; zeolitic clay is about 25% to 35%, radiolarians increase downhole from about 40 %to 60%, and diatoms are about 10% to 20%. Stiff; approaching claystone or diatomite. Most of core is massive; rare burrowed, or parallel- or flaser-laminated, intervals.
Section 2: Gradiational color change from pale olive (10Y 6/2) to yellowish brown 5GY 6/4) result of a gradual relative increase of radiolarians compared to diatoms. Stratigraphic contact placed at paleomagnetic reversal at 22 cm.
Chert concretion in section 6 (highest chert in section).

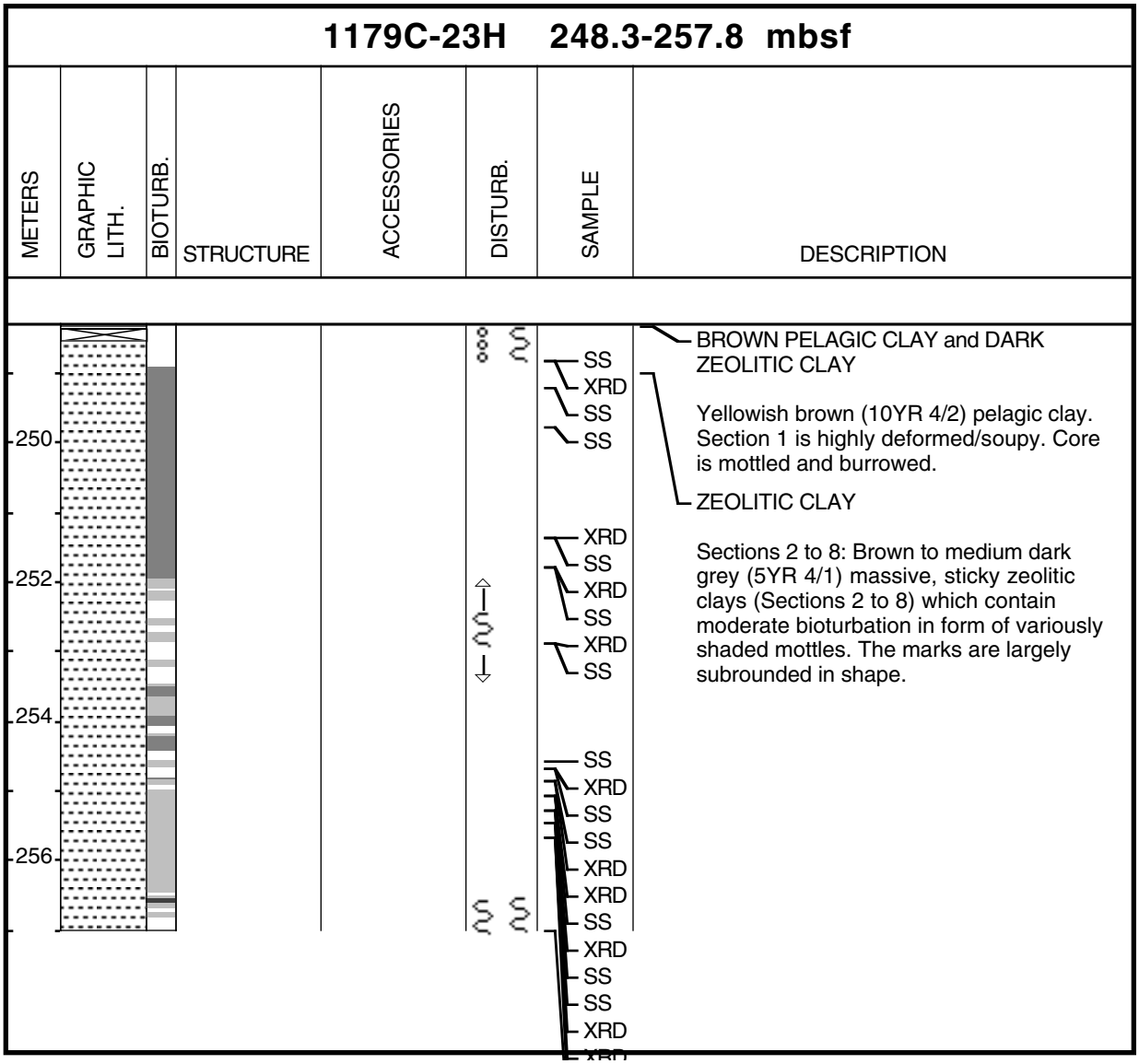
Core Photo


1179C-21H 229.3-238.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
230
232
234
236
238
SS
SS
XRD
SS
PAL
CLAY-RICH RADIOLARIAN OOZE
Light brown (5YR 5/6), massive zeolitic clay-rich radiolarian ooze, which becomes clay- and diatom-bearing radiolarian ooze downcore in Sections 5 to 7. A few mottles representing bioturbation are present in places. Sediments are moderately compact.

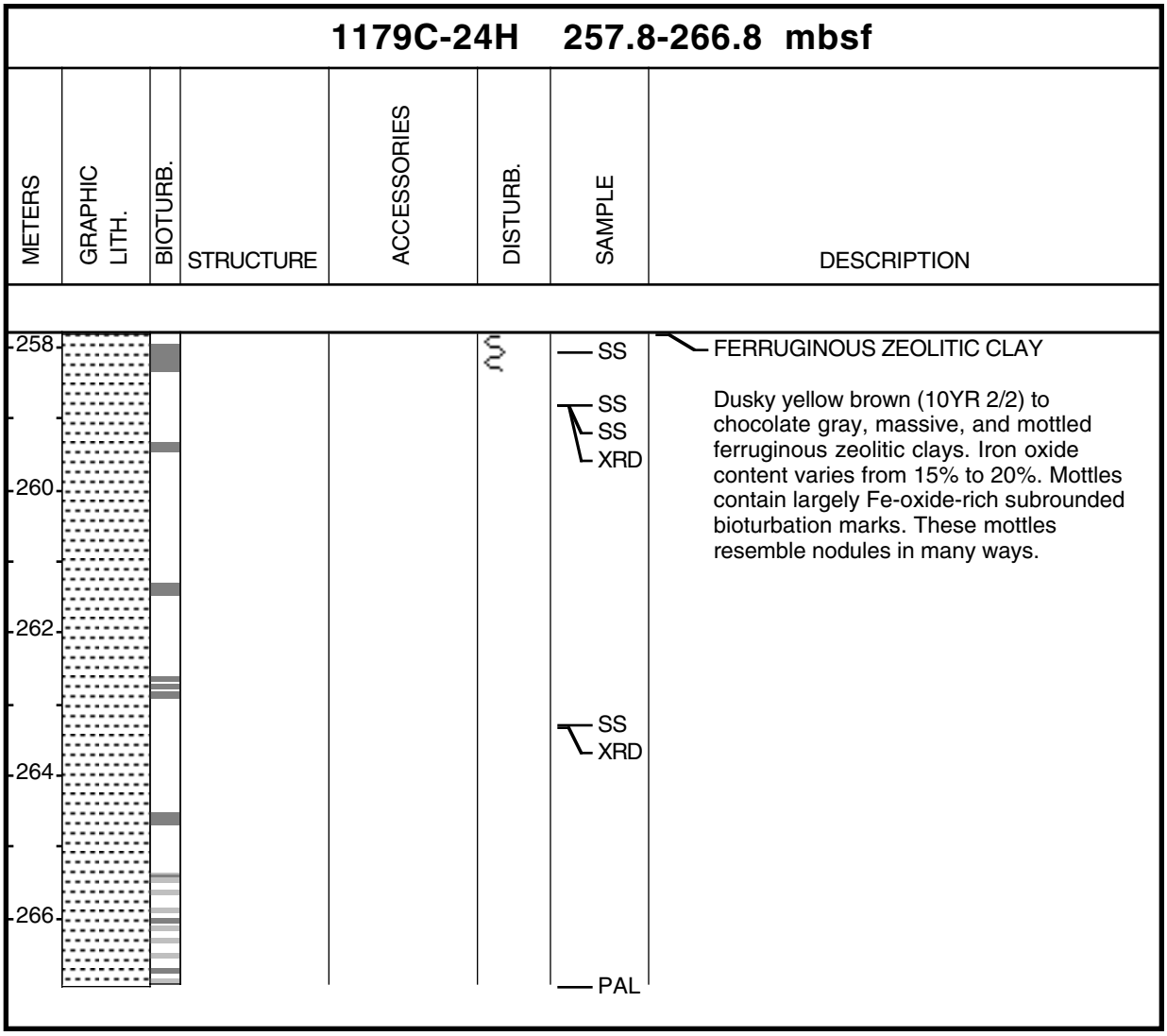
Core Photo


1179C-22H 238.8-248.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
240
242
244
246
248
SS
XRD
SS
XRD
SS
SS
XRD
SS
XRD
SS
XRD
SS
XRD
XRD
SS
SS
SS
XRD
SS
XRD
SS
XRD
SS
SS
PAL
CLAYEY RADIOLARIAN OOZE, AND CLAY
Sections 1 to 5: Light brown (5YR 5/6), massive clayey radiolarian ooze.
A distinct vitric ash layer is present in Section 3.
A 3-cm bed of vitric ash.
Note about crowded sampling column: Interval 22-3-100 through 22-6-100 are sampled for XRD and SS each 50 cm.
Section 5: Records the transition (from 125 cm downwards) to pelagic clay (about 95% clay). The pelagic clay contains red colored mottles which represent very subtle bioturbation marks. These clays also contain zeolites in places.

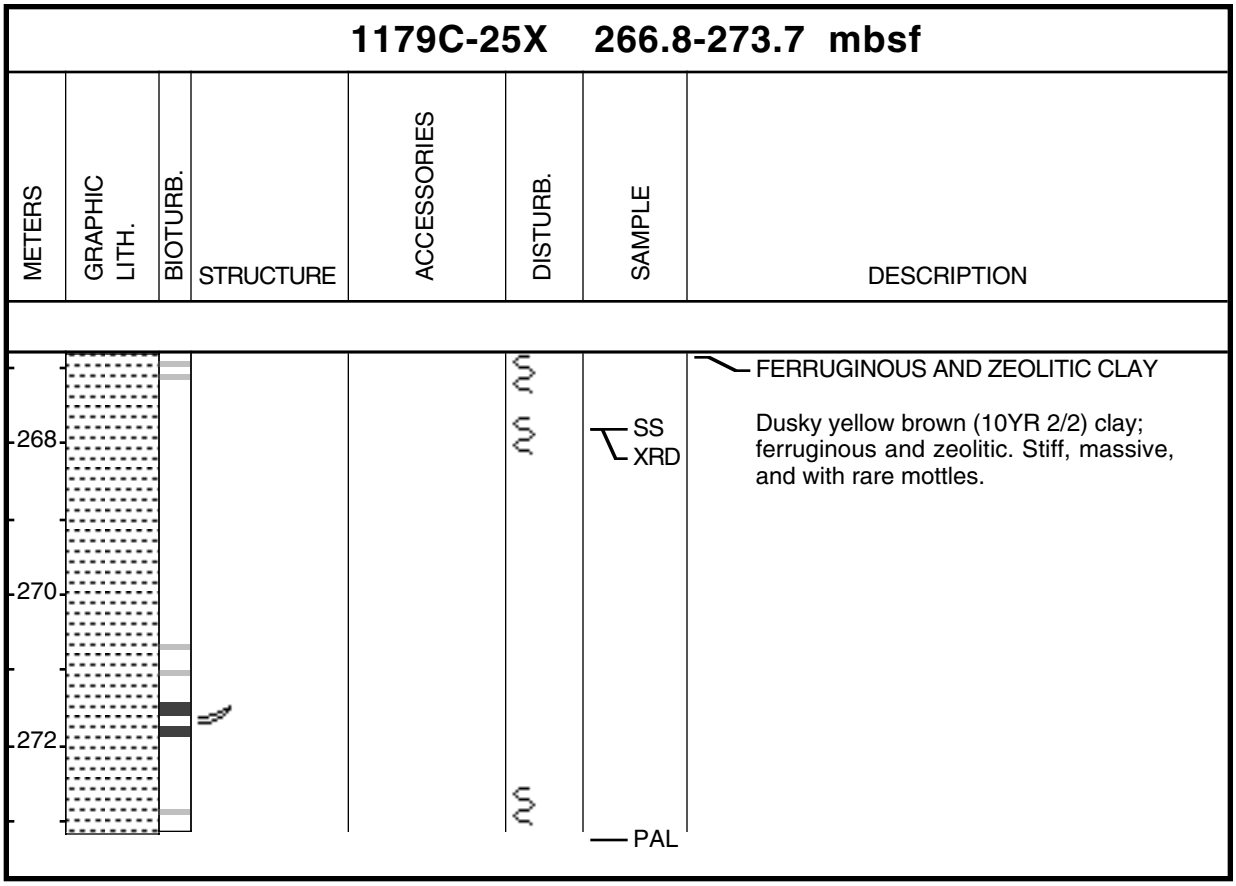
Core Photo


1179C-23H 248.3-257.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
250
252
254
256
SS
XRD
SS
SS
XRD
SS
XRD
SS
XRD
SS
SS
XRD
SS
SS
XRD
XRD
SS
XRD
SS
SS
XRD
BROWN PELAGIC CLAY and DARK ZEOLITIC CLAY
Yellowish brown (10YR 4/2) pelagic clay. Section 1 is highly deformed/soupy. Core is mottled and burrowed.
ZEOLITIC CLAY
Sections 2 to 8: Brown to medium dark grey (5YR 4/1) massive, sticky zeolitic clays (Sections 2 to 8) which contain moderate bioturbation in form of variously shaded mottles. The marks are largely subrounded in shape.

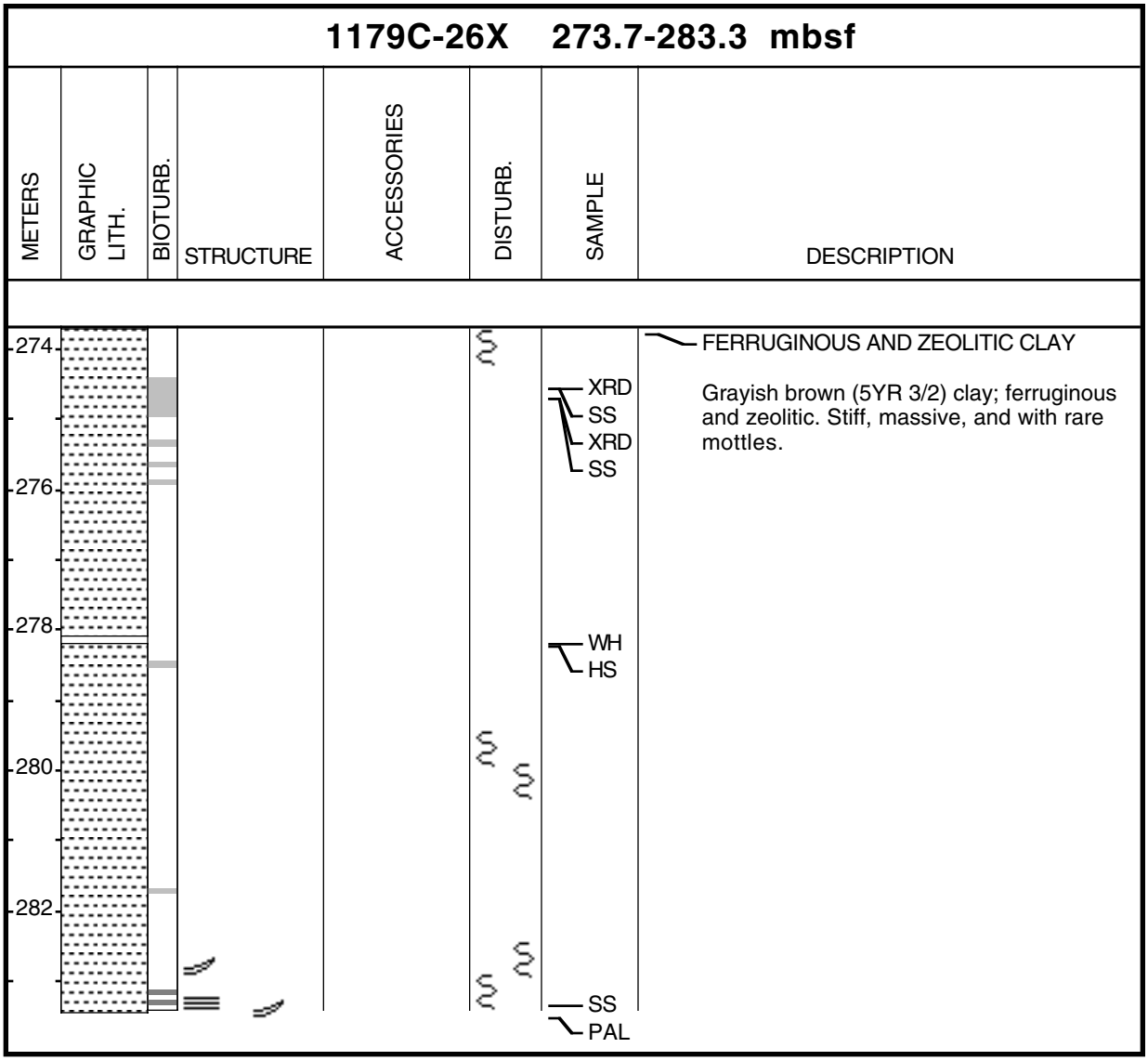
Core Photo


1179C-24H 257.8-266.8 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
258
260
262
264
266
SS
SS
SS
XRD
SS
XRD
PAL
FERRUGINOUS ZEOLITIC CLAY
Dusky yellow brown (10YR 2/2) to chocolate gray, massive, and mottled ferruginous zeolitic clays. Iron oxide content varies from 15% to 20%. Mottles contain largely Fe-oxide-rich subrounded bioturbation marks. These mottles resemble nodules in many ways.

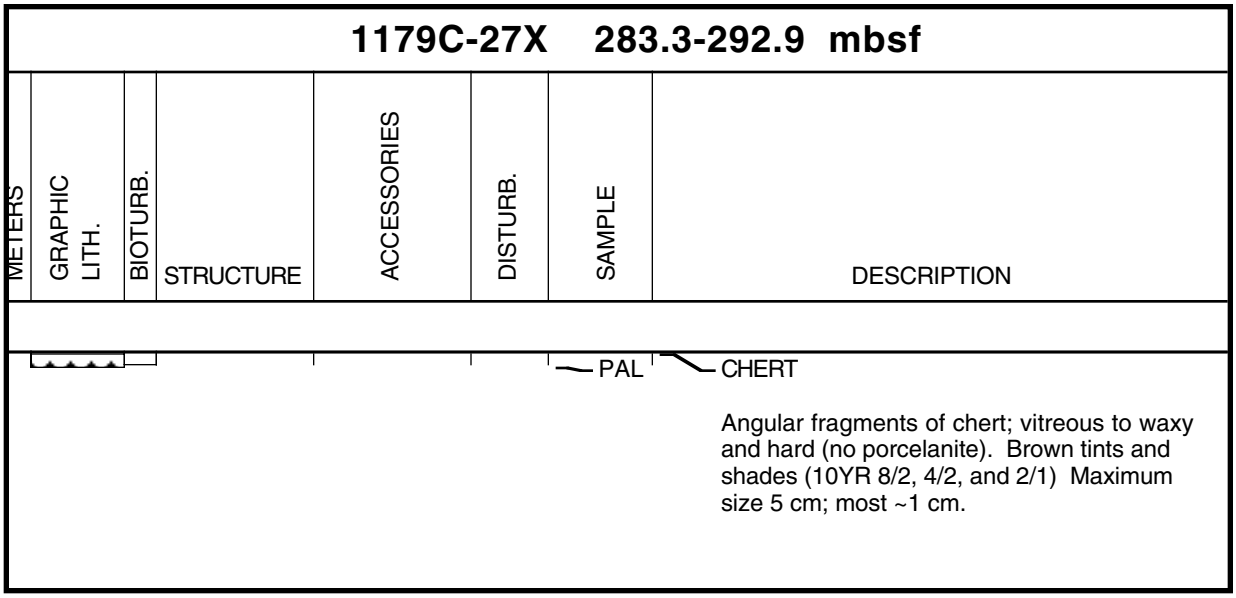
Core Photo


1179C-25X 266.8-273.7 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
268
270
272
SS
XRD
PAL
FERRUGINOUS AND ZEOLITIC CLAY
Dusky yellow brown (10YR 2/2) clay; ferruginous and zeolitic. Stiff, massive, and with rare mottles.

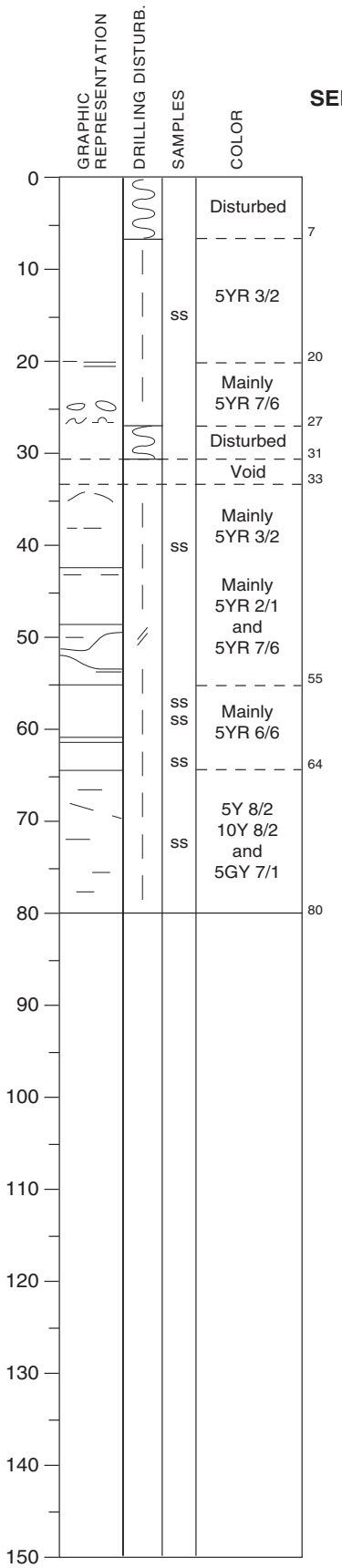
Core Photo


1179C-26X 273.7-283.3 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
274
276
278
280
282
XRD
SS
XRD
SS
WH
HS
SS
PAL
FERRUGINOUS AND ZEOLITIC CLAY
Grayish brown (5YR 3/2) clay; ferruginous and zeolitic. Stiff, massive, and with rare mottles.

Core Photo


1179C-27X 283.3-292.9 mbsf
METERS
GRAPHIC LITH.
BIOTURB.
STRUCTURE
ACCESSORIES
DISTURB.
SAMPLE
DESCRIPTION
PAL
CHERT
Angular fragments of chert; vitreous to waxy and hard (no porcelanite). Brown tints and shades (10YR 8/2, 4/2, and 2/1) Maximum size 5 cm; most ~1 cm.

Core Photo



VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-1R-1

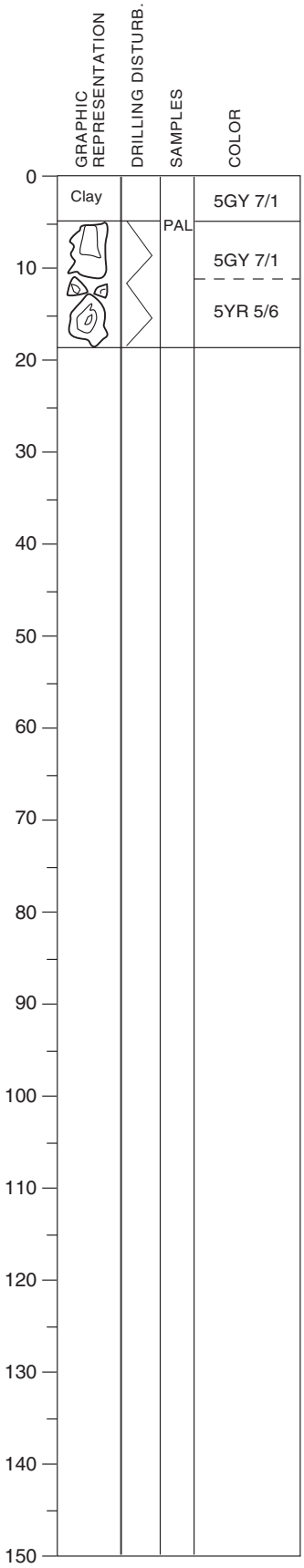
This section is cuttings recovered from the drilled/washed interval.
Please note that although the section was described, there maybe no true stratigraphic order or structure to this section.

CLAY (slightly to moderately zeolitic)

Sharp color contrasts may represent recovery rather than initial positions.

0-7	Disturbed.
7-20	Grayish brown (5YR 3/2) zeolitic clay similar to lithology near base of Hole 1179C.
20-27	Reddish yellow (5YR 7/6) and adjacent tints zeolitic clay. Two pieces of porcellanite are present in this interval.
27-31	Disturbed.
31-33	Void
33-55	Layered (pseudo-layers(?) from drilling?) clay. Mainly grayish brown (5YR 3/2), some brownish black (5YR 2/1) 0.5 cm layers. Two distinct and 3 or 4 indistinct reddish yellow (5YR 7/6) layers.
55-64	Reddish yellow (5YR 6/6) zeolitic clay with grayer and orange layers.
64-80	Zeolite-bearing clays with approximately 0.5 cm thick gray and pale green layers. Colors include pale yellow (5Y 8/2), pale greenish yellow (10Y 8/2), light greenish gray (5GY 7/1) and similar tints.

Core Photo



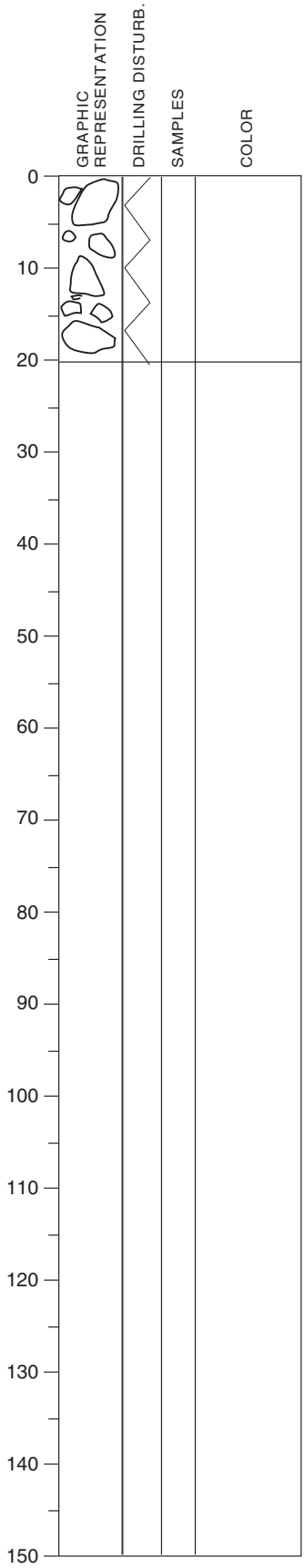
VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-1R-CC

CLAYS (0-4.5 cm)
Very light olive gray (5GY 7/1), soft, apparently massive clays.

CHERT (4.5-18 cm)
Very light olive gray and medium brown (5GY 7/1 and 5YR 5/6), very hard, compact with sub-conchoidal fractures.

Core Photo



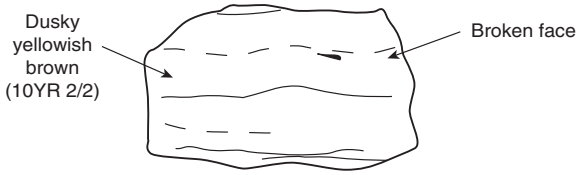
VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-2R-CC

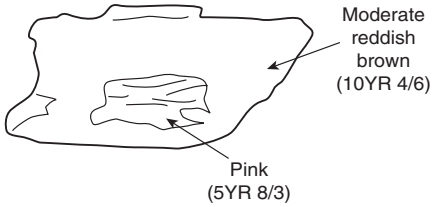
CHERT
Several pieces of waxy to vitreous, hard chert.
Three largest pieces are approximately 3 x 3 x 5 cm in size.
Others are smaller pieces.

Colors are dusky yellowish brown (10YR 2/2), with faint lighter laminae. (This lithology is in deeper cores 3R and especially in 4R.)

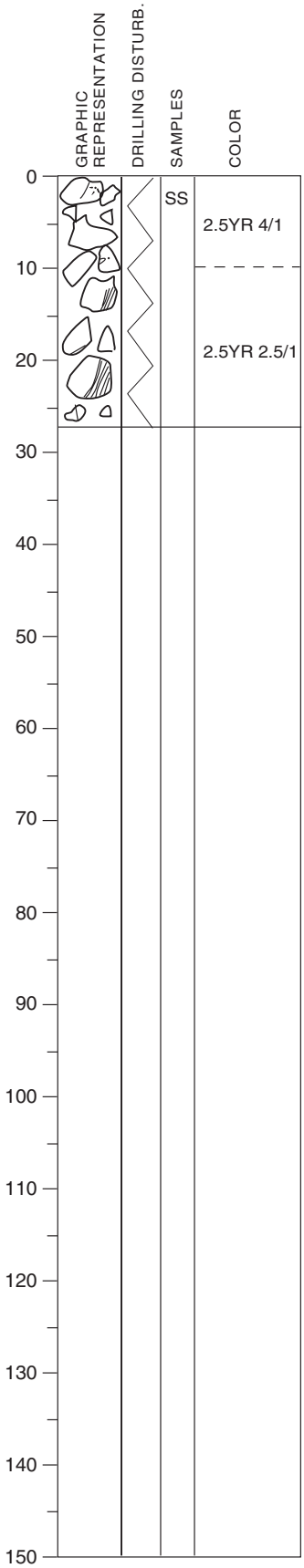
Example:



Some other colors are reddish yellow (5YR 6/6), dark yellowish orange (10YR 6/6), moderate reddish brown (10YR 4/6), and pink (5YR 8/3).



Core Photo



VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-3R-CC

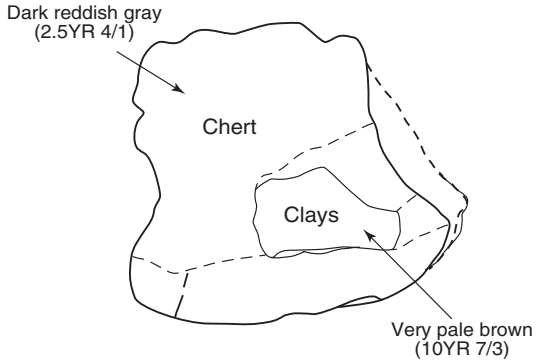
CHERT

Highly fragmented, deep dark brown color, hard and compact with sub-conchoidal fractures.

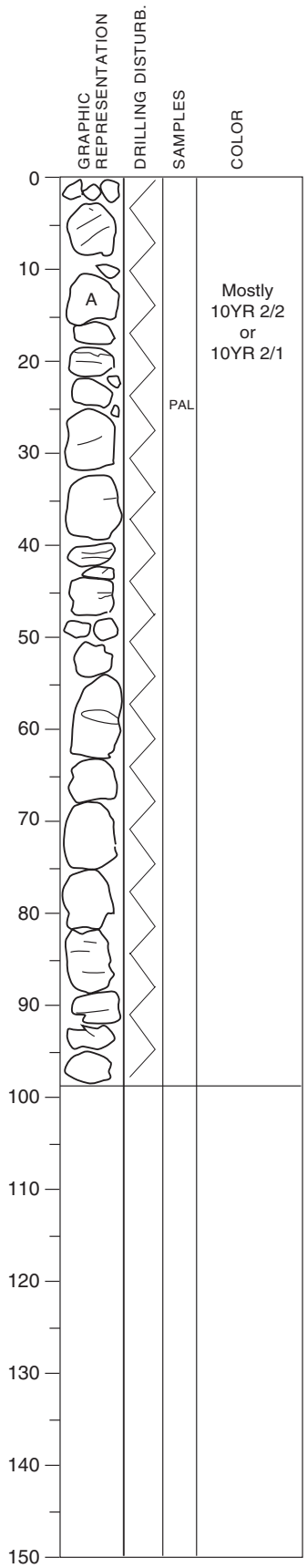
Thin bands are present in some pieces.

A smear slide was made from brownish gray, soft sediment attached to the first piece at about the top (sketch below). It is composed of clays with chert fragments.

Enlarged view of the piece at 0-2.5 cm



Core Photo



VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-4R-1

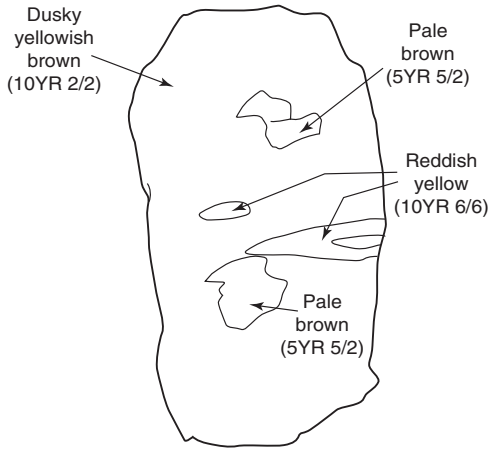
CHERT

18 pieces of 2-cm minimum dimension and 9 smaller pieces.

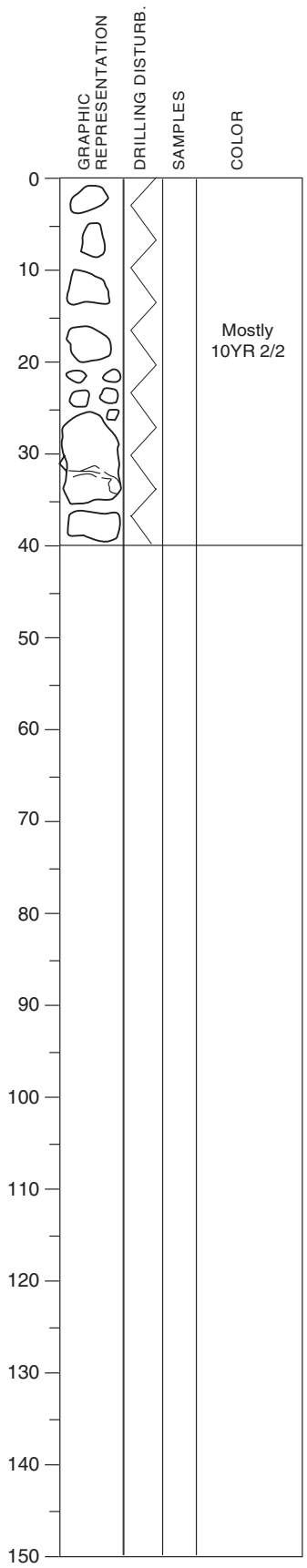
Some show layers (or former horizontal burrows?)

Most pieces are dusky yellowish brown (10YR 2/2) or brownish black (10YR 2/1) except Piece A (11-17 cm), which is lighter brown (5YR 5/6).

Piece at 57-64 cm shows mottle(?) and brecciation as below.



Core Photo



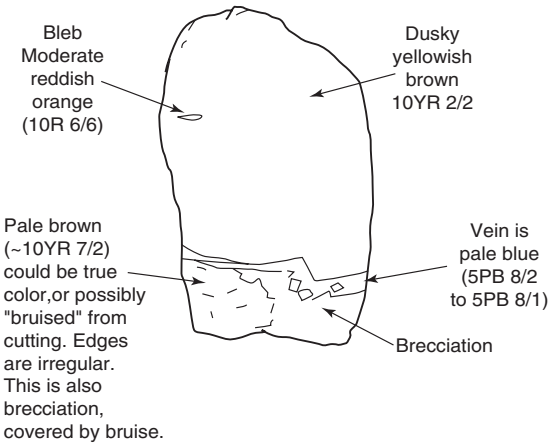
VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-5R-1

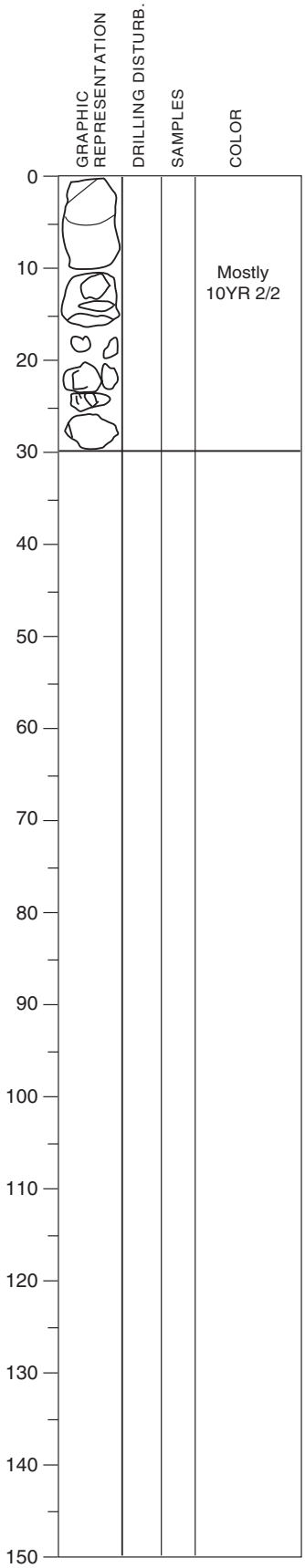
CHERT

One large (see sketch), five >3 cm, and five small pieces. Color is mostly dusky yellowish brown (10YR 2/2).

Detailed features of the large piece at 27-36 cm is shown below.



Core Photo



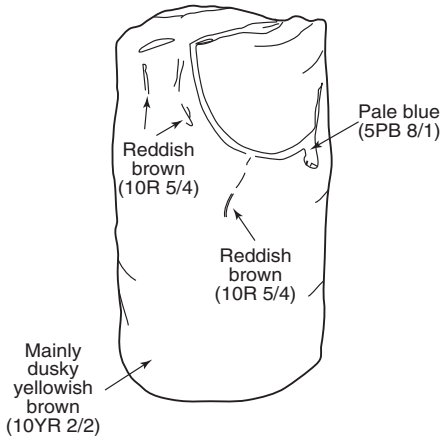
VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-5R-CC

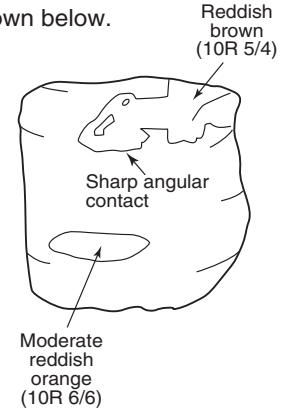
CHERT

Main dusky yellow brown (10YR 2/2). Some moderate yellowish brown (10YR 5/4) in angular contact, some 1-cm thick eliptical areas of moderate reddish orange (10R 6/6).

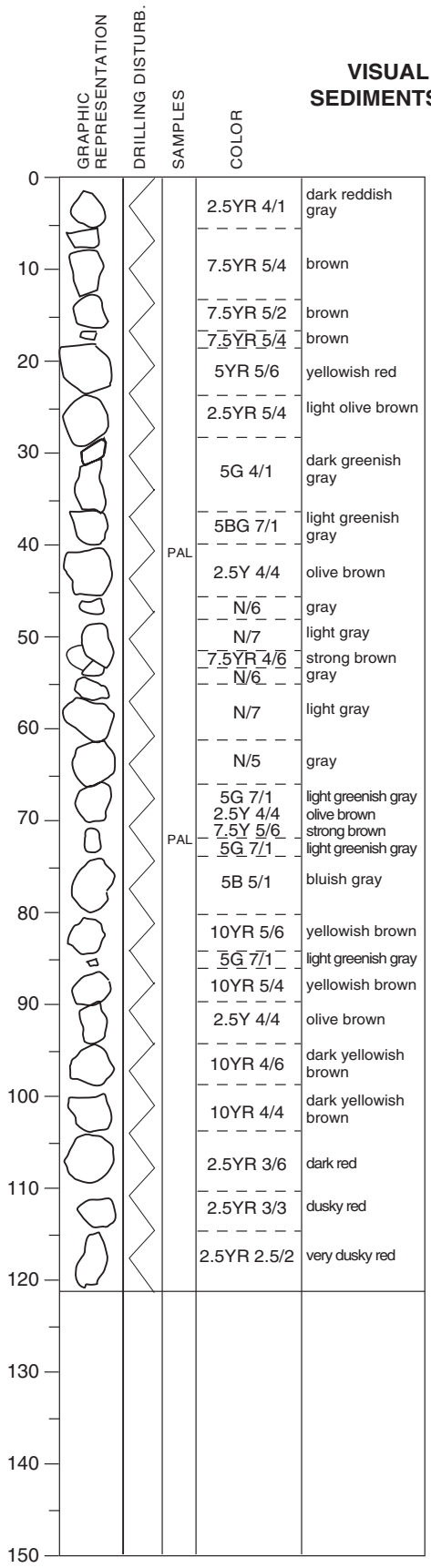
Largest piece at 0-10 cm is shown below.



Piece at 10-16 cm is shown below.



Core Photo



191-1179D-6R-1

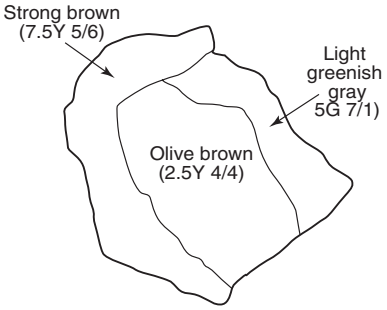
CHERT

Highly fragmented/brecciated, very hard and compact. Remarkable range of colors as shown. The color variations can be a range of chemical environments.

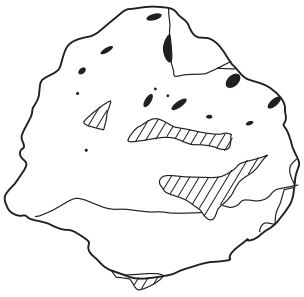
Some pieces have bands/vein of mineralization and/or diagenetic alteration, which are unique in color, luster, and pattern.

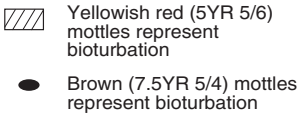
Some pieces contain mottles representing bioturbation. Both laterally and vertically oriented mottles range from mm to 4 cm in size and are subrounded, elongated, or tubular. The ichnogenera include Planolites, Zoophycos, and Teichichnus.

Enlarged view of the piece at 66-70 cm

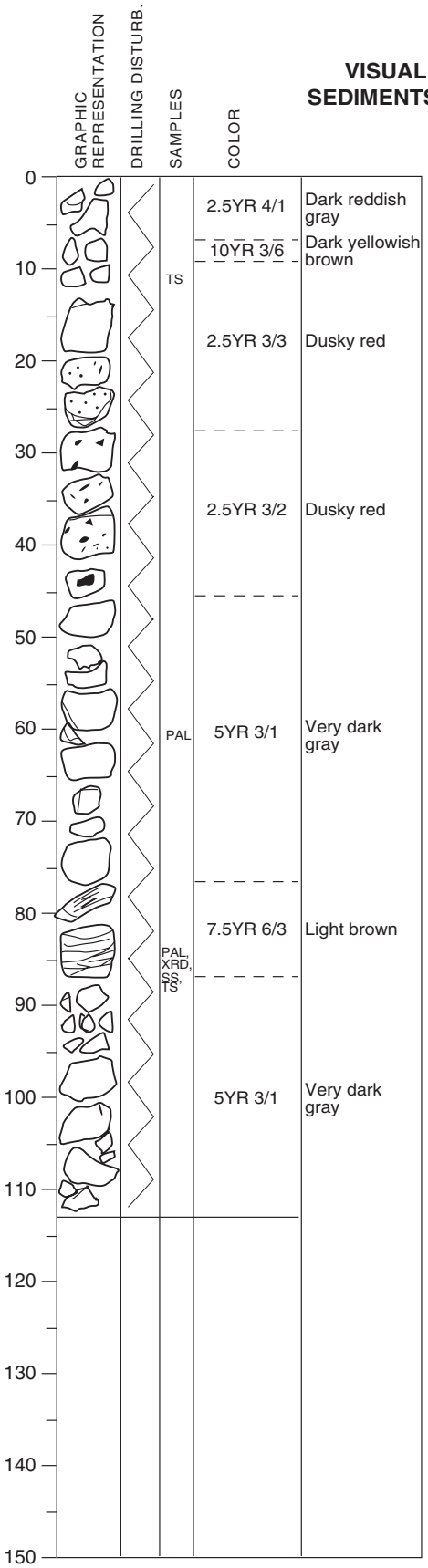


Mottles in the piece at 95-99 cm





Core Photo



191-1179D-7R-1

CHERT

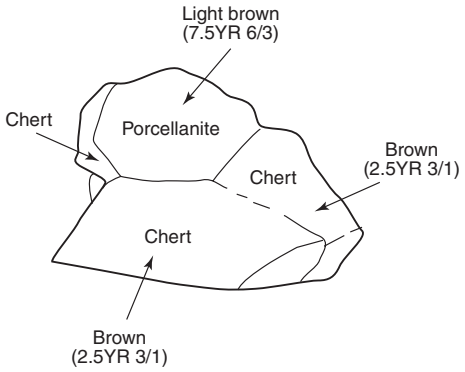
Highly fragmented or brecciated, hard and compact, with sub-conchoidal fractures.

Color variations may reflect various chemical environments. A few mineralized bands or veins are present, which vary in color from the host chert and the sediments.

Two pieces of light brownish gray (7.5YR 4/3) porcellanite with dark gray bands/laminae) are present at around 78-86 cm.

Mottles that represent ichnofossils are present between 21 and 45 cm. Most mottles are subrounded and mm to 1 cm in size.The ichnogenera include Planolites, Granularia, and Phycosiphon(?).

Enlarged view of the piece at 78-81 cm



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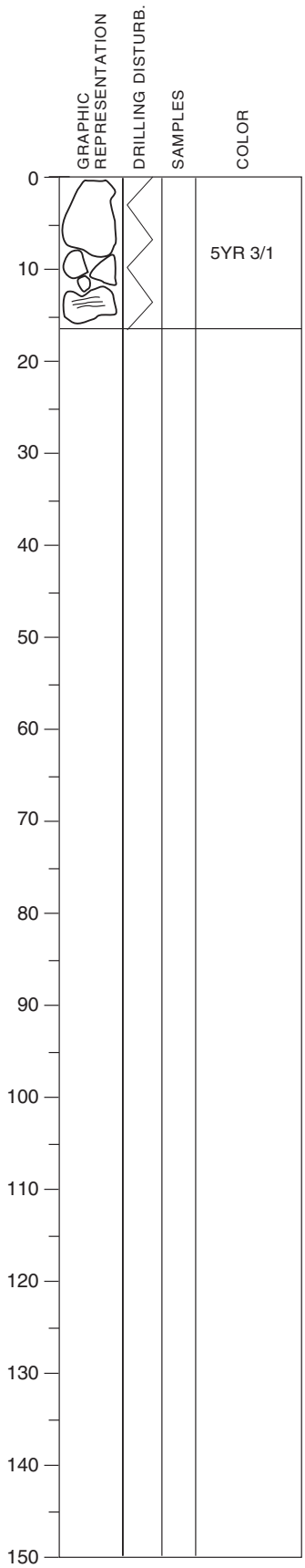


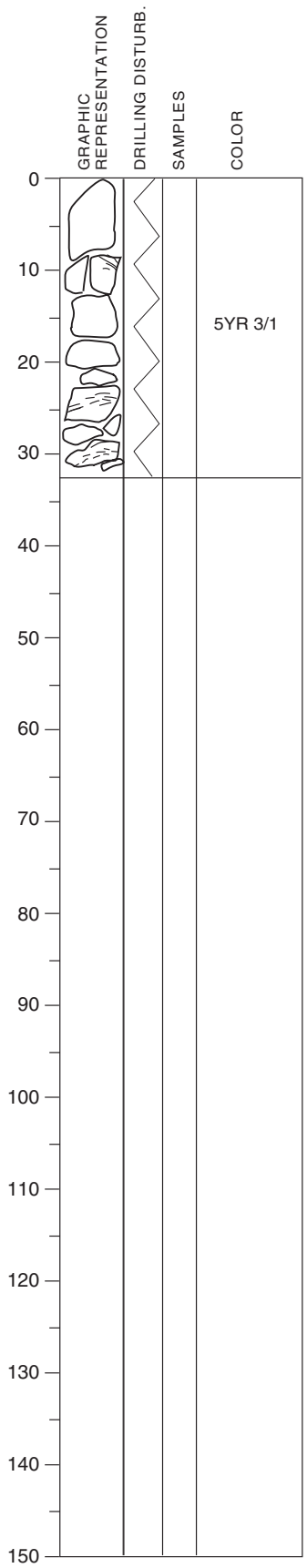
VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-7R-CC

CHERT

Five dark gray (5YR 3/1), highly fragmented/brecciated, very hard and compact pieces with conchoidal fractures.

Core Photo



VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

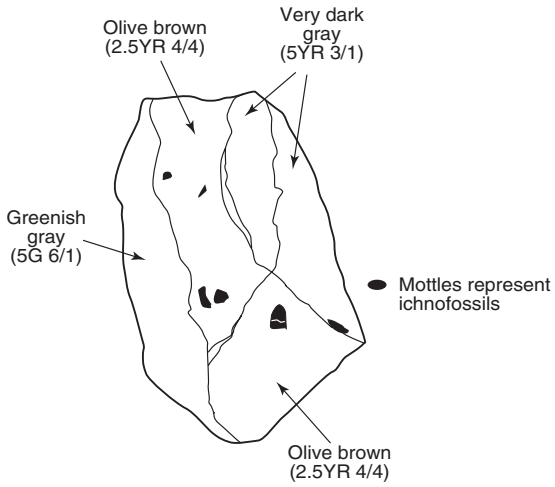
191-1179D-8R-CC

CHERT

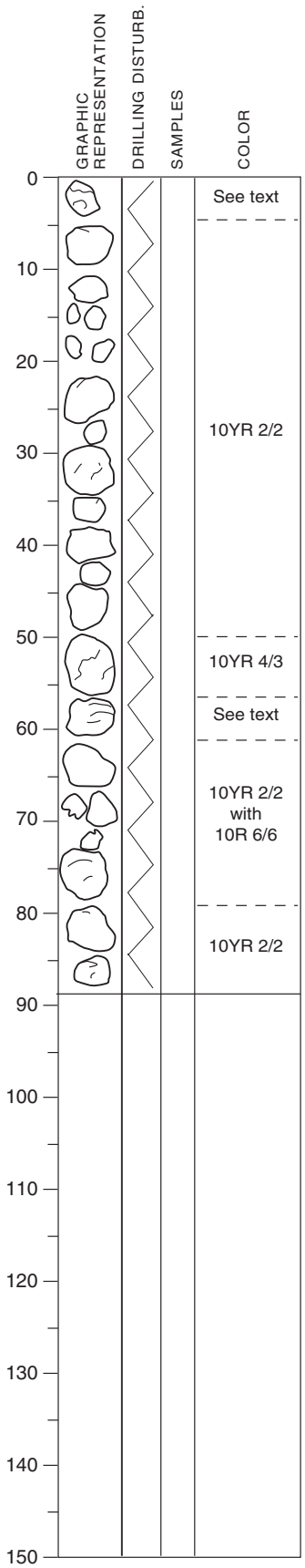
Eleven highly fragmented/brecciated, very hard, and compact pieces with unique sub-conchoidal fractures. Most pieces are very dark gray (5YR 3/1) except left side of the piece at around 8-12 cm. This piece includes a few mottles which represent ichnofossils (see sketch below).

The bottom part of the two large pieces show very thin white (2.5Y 8/0) bands.

Enlarged view of the piece at 8-12 cm



Core Photo



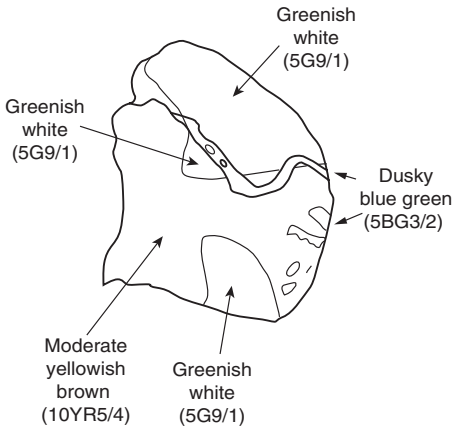
VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-9R-1

CHERT

Several 5- to 6-cm diameter pieces and several smaller pieces. Color is mainly dusky yellowish brown (10YR 2/2) except the top piece (0-4 cm) which is brownish green and green similar to Core 6R at about 110 cm. This piece is dull greenish white masses in waxy yellowish brown color, both of which are cut by 2 mm blue-green veinlet and irregular areas as shown below.

Scale: x1



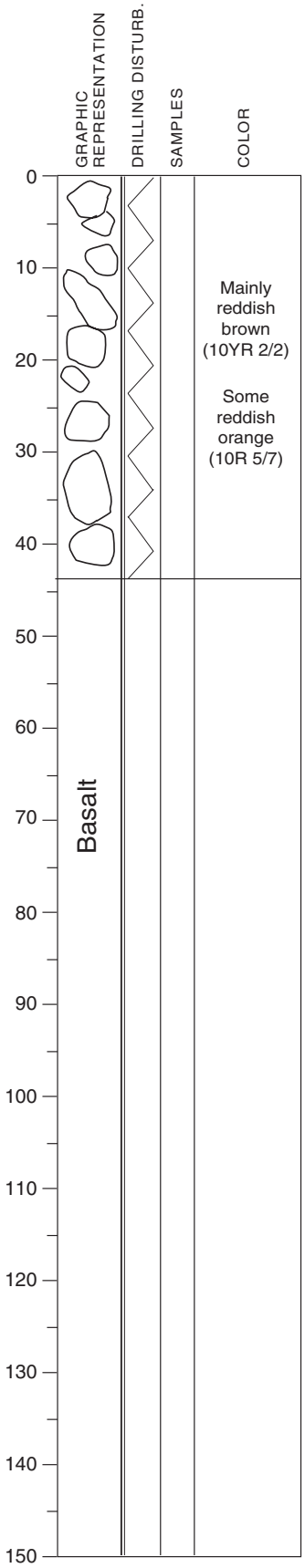
Piece at 50-56 cm is moderate to dark yellowish brown (10YR 4/3) with white veinlets.

Piece at 56-61 cm has quartz(?)-lined vugs in breccia

Scale: x2

Pieces between 61 and 78 cm have moderate reddish-orange (10R 6/6) veinlets, blebs, and layers(?).

Core Photo

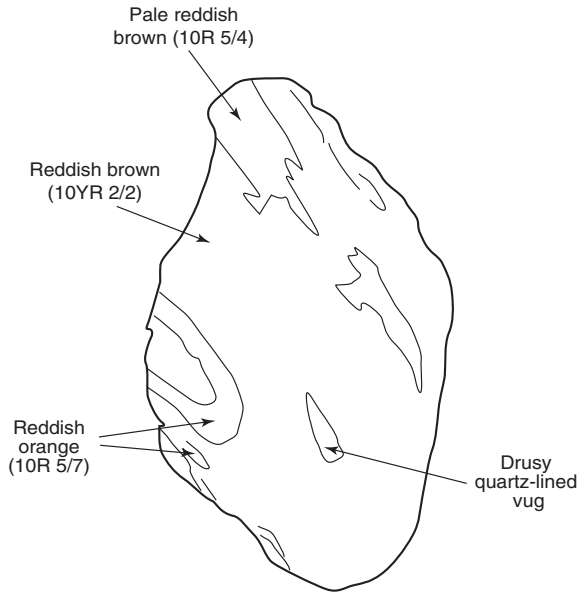


VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-10R-1

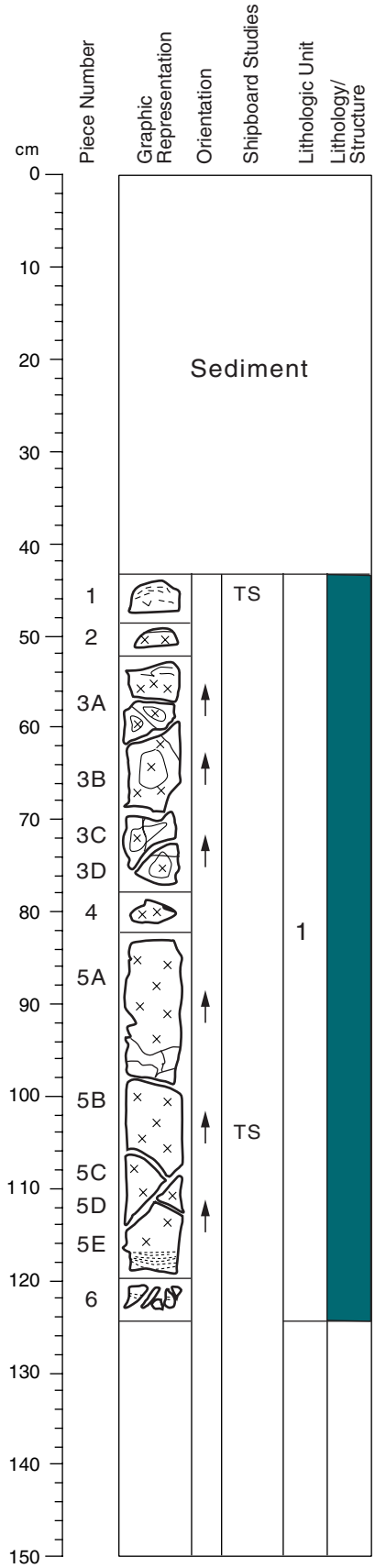
CHERT

Nine pieces with mainly reddish brown (10YR2/2) and yellowish brown (10R 5/7) shades. The reddish orange bands and ovals are especially prominent in a piece at 10-17 cm as shown below.



No evidence of baking at base of chert.

Core Photo



191-1179D-10R-1 (Section top: 367.50 mbsf)

Sediment 0-42 cm at top of section.

UNIT 1: APHYRIC BASALT

Pieces: 1 to 6

CONTACTS: None observed.

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.1	0.4	0.25	subhedral
Olivine:	<1	0.05	0.3	0.15	subhedral

GROUNDMASS: Fine-grained. 40% to 60% plagioclase (subhedral, partly lath-like); 30% to 50% clinopyroxene (anhedral); 2% to 4% magnetite (skeletal crystals, grains); 5% to 10% glass (microcrystalline).

VESICLES: <1%, 0.1 mm in diameter, filled with secondary minerals.

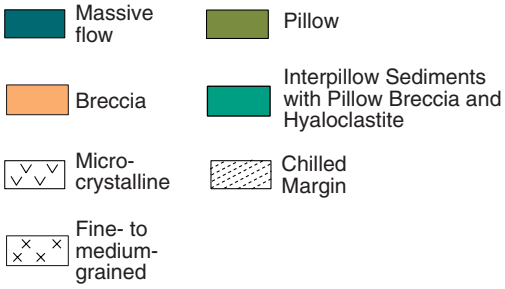
COLOR: Mostly dark gray, partly greenish gray.

STRUCTURE: Massive flow.

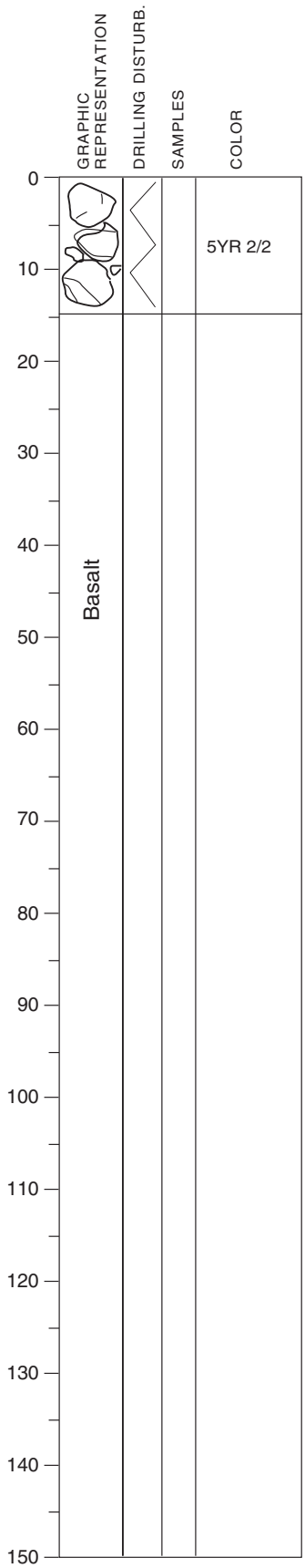
ALTERATION: Moderate.

VEINS/FRACTURES: Randomly oriented, <2 mm wide, filled with reddish brown Fe-oxyhydroxide minerals, smectite, and celadonite.

COMMENTS: Though the contact was not recovered, top of the basement was considered to be situated at this point.



Core Photo



VISUAL CORE DESCRIPTION
SEDIMENTS/SEDIMENTARY ROCKS

191-1179D-11R-1

CHERT

Pieces lie on basalt. Actual contact was not recovered.

Three pieces of mostly brownish-black (5YR 2/1) to dusky brown (5YR 2/2) color, approximately 5 cm in size, and some 1 to 3 cm size chips. The pieces are vitreous, hard, and dense.

Some features include:

0-5 cm Top larger piece has some irregular masses (non-planar contacts) of porcellanite, which is pinkish gray (5YR 8/1), to light brownish gray (5YR 6/1), microporous (sticks to tongue, dull luster, and scratched by steel).

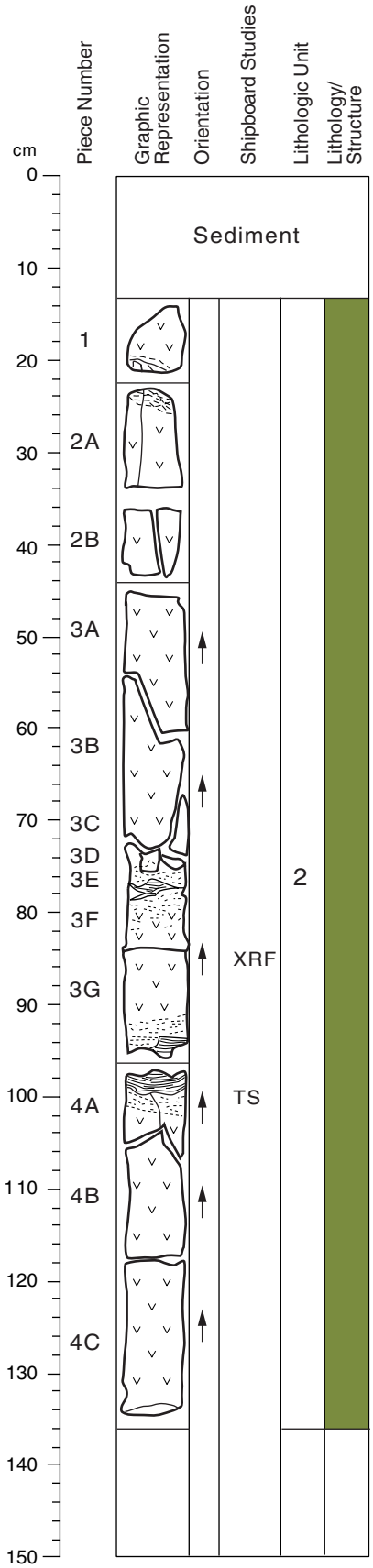
10-15 cm Bottom larger piece has some pale yellowish brown (10YR 1/2) irregular elongate mottles, 1-mm diameter to 3 x 20 mm in size, and a few sub-horizontal quartz veins up to 2 mm thick. Drusy opening remains in one of these veins.

A piece has some irregular lenses (mottling?) of moderate reddish orange (10R 6/6) color.

A piece is light greenish gray (5G 8/1) porcellanite.

Note: mottles may represent burrows (ichnofossils).

Core Photo



191-1179D-11R-1 (Section top: 377.1 mbsf)

Sediment 0-12 cm at top of section.

UNIT 2: APHYRIC BASALT

Pieces: 1 to 4C

CONTACTS: Between upper pillow (Piece 3F) and lower pillow (Piece 3G).

PHENOCRYSTS: % Grain Size (mm):

	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.1	0.6	0.3	subhedral
Olivine:	~1	2	1	~1	anhedral

GROUNDMASS: Fine-grained, partially interstitial. 50% plagioclase (subhedral, in part lath-like); 30% to 40% clinopyroxene (anhedral); 3% to 5% magnetite (grains, skeletal crystals); ~10% glass (microcrystalline, oxidized).

VESICLES: Very scarce in the upper pillow. Relatively common in the lower part, sometimes filled with chlorite/smectite.

COLOR: Gray.

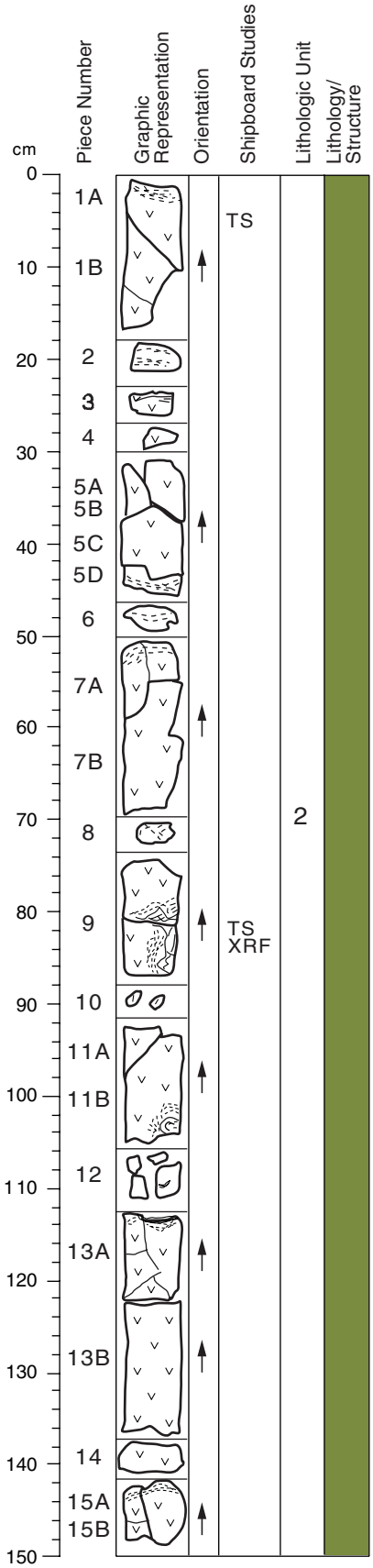
STRUCTURE: Three pillow layers, separated by interpillow material.

ALTERATION: Fresh.

VEINS/FRACTURES: Few, 1-2 mm thick, filled with calcite and chlorite.

COMMENTS: Each pillow shows recrystallized glass rims up to 10 mm. Between pillows is interpillow material (calcite + chlorite ± hematite).

Core Photo



191-1179D-11R-2 (Section top: 378.46 mbsf)

UNIT 2: APHYRIC BASALT

Pieces: 1 to 15B

CONTACTS: Contact between upper and lower pillow within Piece 9C.

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.04	0.3	0.2	subhedral
Olivine:	~1	2	1	~1	anhedral

GROUNDMASS: Fine-grained. 50% to 60% plagioclase (subhedral, very thin needles); 30% to 40% clinopyroxene (xenomorphic, mesostasis); 2% to 5% magnetite (grains, skeletal crystals); ~10% glass (microcrystalline).

VESICLES: Occasional to scarce.

COLOR: Gray.

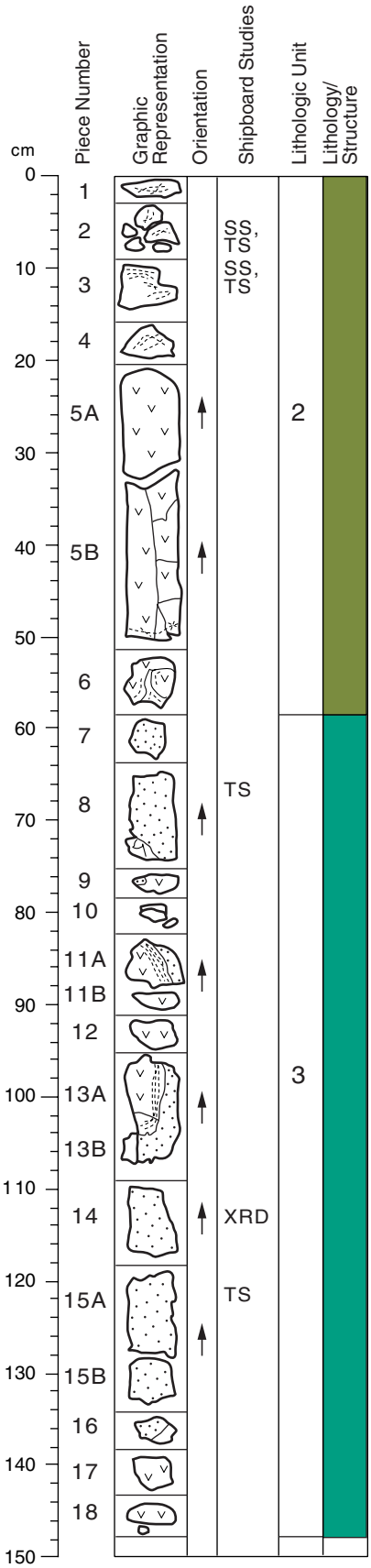
STRUCTURE: Two pillows.

ALTERATION: Fresh.

VEINS/FRACTURES: Sporadic, maximum 2 mm thick, filled with calcite and celadonite.

COMMENTS: Recrystallized glass rims at pillow borders (10-15 mm), interpillow material between pillows.

Core Photo



191-1179D-12R-1 (Section top: 386.7 mbsf)

UNIT 2: APHYRIC BASALT

Pieces: 1 to 6

CONTACTS: Chilled pillow margin at the base of Piece 6.

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1				
Olivine:	~1				

GROUNDMASS: Mostly fine-grained, partly microcrystalline or glassy.

VESICLES: <1%, 0.1 mm in diameter, filled with secondary minerals.

COLOR: Dark grayish green.

STRUCTURE: Pillow.

ALTERATION: Slight.

VEINS/FRACTURES: Nearly vertical and nearly horizontal oriented, <0.1 mm wide, filled with calcite.

UNIT 3: INTERPILLOW SEDIMENTS WITH PILLOW BRECCIA AND HYALOCLASTITE

Pieces: 7 to 18

CONTACTS: Contact with sediment in Pieces 8, 11A and 13A.

GROUNDMASS: Fine-grained.

VESICLES: None.

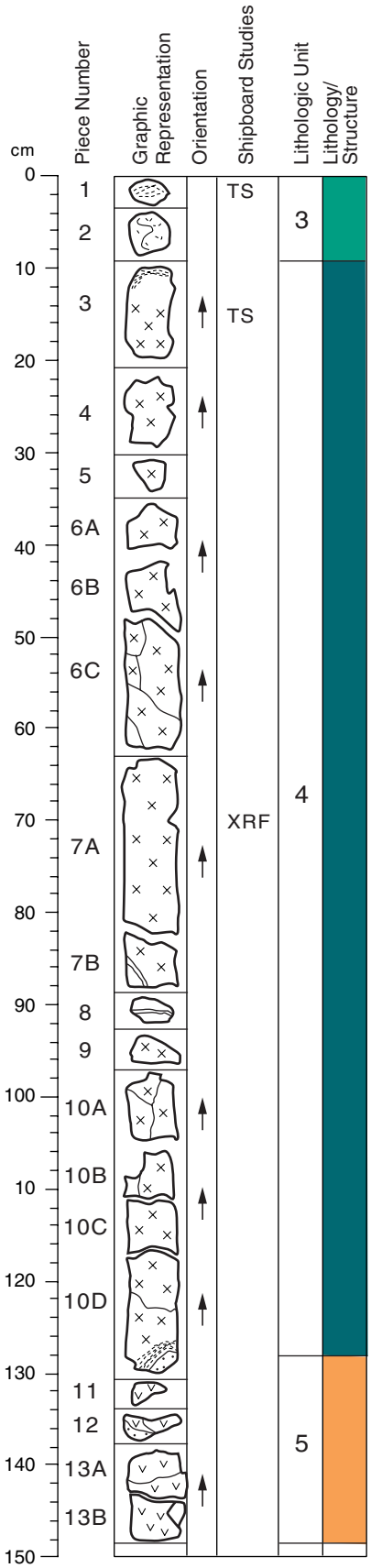
COLOR: Light brownish yellow or light pinkish brown.

STRUCTURE: Interpillow material; calcareous sediment with pillow breccia and hyaloclastite.

ALTERATION: Slight.

VEINS/FRACTURES: Randomly oriented, <1.0 mm wide, filled with carbonates.

Core Photo



191-1179D-12R-2 (Section top: 388.2 mbsf)

UNIT 3: INTERPILLOW SEDIMENTS WITH PILLOW BRECCIA AND HYALOCLASTITE

Pieces: 1 and 2

CONTACTS: None observed.

GROUNDMASS: Fine-grained.

VESICLES: Scarce.

COLOR: Dark greenish gray.

ALTERATION: Slight.

UNIT 4: APHYRIC BASALT

Pieces: 3 to 10D

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Upper contact:	12R	2	3	top (0)
Lower contact:	12R	2	10D	13

CONTACTS: Chilled margins in Pieces 10D and 12.

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.7	1.6	1.2	subhedral
Olivine:	<<1	0.05	0.15	0.10	anhedral

GROUNDMASS: Mainly fine-grained, partly microcrystalline.

VESICLES: <2.0 mm in diameter, only in Piece 3.

COLOR: Mostly dark greenish gray. Upper part is dark grayish green.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Randomly oriented, <3.5 mm wide, filled with calcite.

UNIT 5: PILLOW BRECCIA

Pieces: 10D to 13B

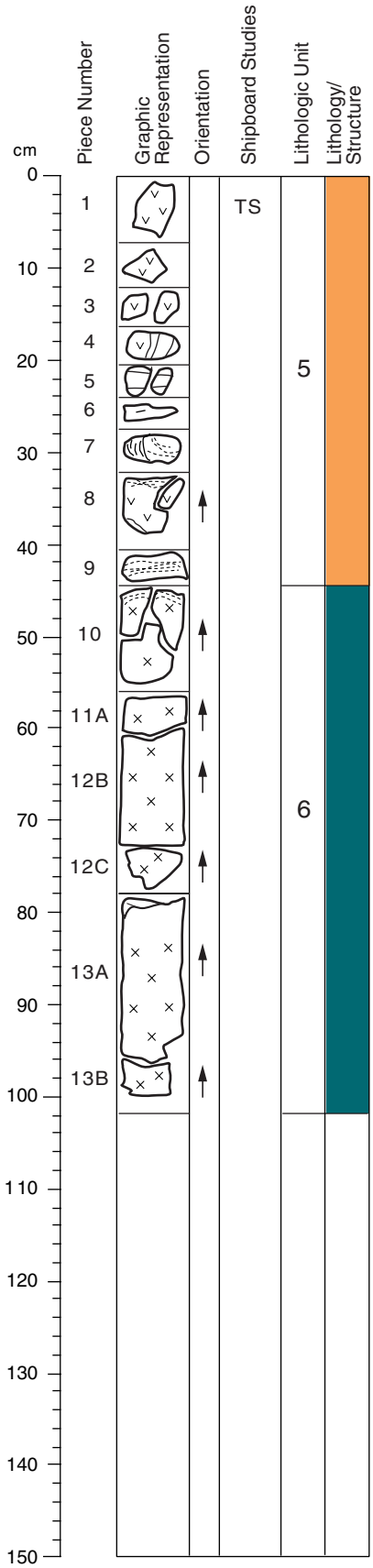
COLOR: Matrix: brown to white; pebbles: gray.

STRUCTURE: Pillow breccia.

ALTERATION: Slight.

VEINS/FRACTURES: Four veins, <2.5 mm wide, filled with calcite.

Core Photo



191-1179D-12R-3 (Section top: 389.7 mbsf)

UNIT 5: PILLOW BRECCIA

Pieces: 1 to 9

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.3	1.2	0.6	subhedral
Olivine:	<<1	0.03	0.12	0.05	anhedral

GROUNDMASS: Fine-grained to microcrystalline.

COLOR: Dark grayish green, yellowish to grayish red.

STRUCTURE: Pillow breccia.

ALTERATION: Moderate to high.

COMMENTS: Pieces 1, 2, and 8: altered basalt. Pieces 4 to 7 and 9: altered basalt is attached to chert/calcite/zeolite.

UNIT 6: APHYRIC BASALT

Pieces: 10 to 13B

Interval Location:	Core	Section	Piece
Upper contact:	12R	3	10
Lower contact:	12R	3	13B

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.2	1.6	0.8	subhedral
Olivine:	<1	0.05	0.3	0.15	anhedral

GROUNDMASS: Fine-grained. ~60% plagioclase (subhedral to lath-like); ~20% clinopyroxene (anhedral); 3% to 4% magnetite (grains, skeletal crystals); 15% to 20% glass (microcrystalline).

VESICLES: Moderately common, filled mostly with smectite/celadonite, and less commonly with calcite.

COLOR: Gray.

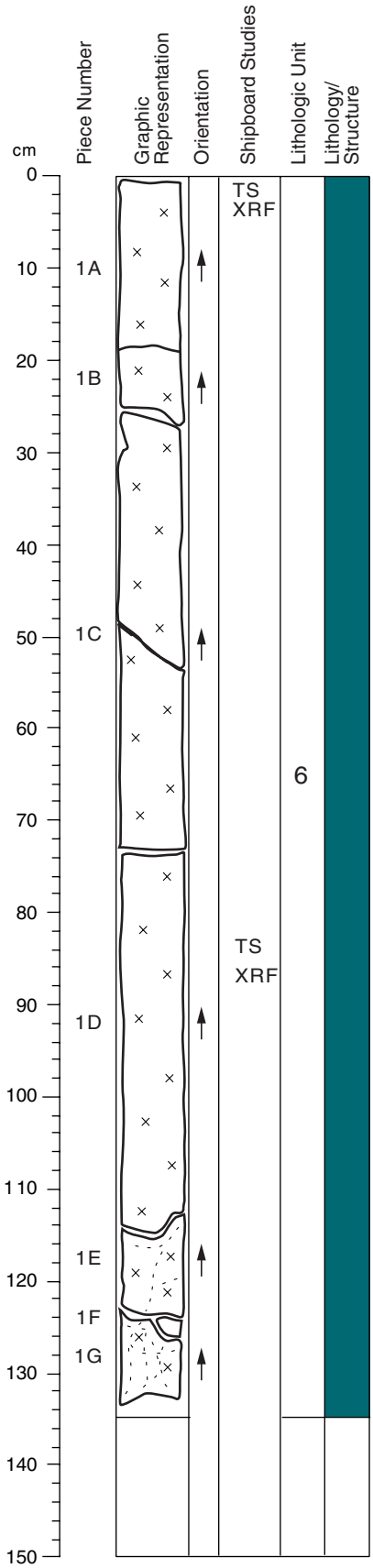
STRUCTURE: Massive flow.

ALTERATION: Slight; moderate in Piece 10.

VEINS/FRACTURES: Few calcite/celadonite veinlets (1 to 2 mm thick).

COMMENTS: A new lava-flow begins with Piece 10.

Core Photo



191-1179D-12R-4 (Section top: 390.71 mbsf)

UNIT 6: APHYRIC BASALT

Pieces: 1A to 1G

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.2	1.6	0.8	subhedral
Olivine:	<1	0.08	0.3	0.15	anhedral

GROUNDMASS: Fine-grained, plagioclase and clinopyroxene (~ 60:40); 2% to 4% magnetite (skeletal crystals, grains); 10% to 20% glass (recrystallized, microcrystalline).

VESICLES: Few, mostly filled with calcite, celadonite, and smectite.

COLOR: Gray.

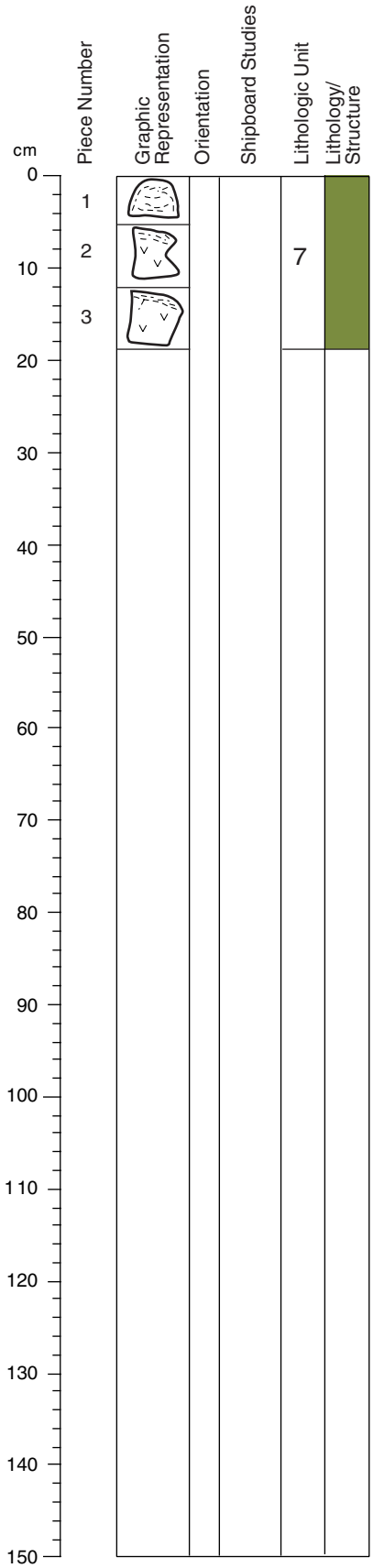
STRUCTURE: Massive flow.

ALTERATION: Fresh.

VEINS/FRACTURES: Some, filled with calcite/zeolite and celadonite, <1 to 5 mm thick.

COMMENTS: The upper 10 to 12 cm of Piece 1A is clearly finer grained and has many vesicles. This may be the upper rim zone of the lava flow.

Core Photo



191-1179D-12R-5 (Section top: 392.05 mbsf)

UNIT 7: APHYRIC BASALT

Pieces: 1 to 3

GROUNDMASS: Fine-grained to microcrystalline, plagioclase and clinopyroxene (~1:1).

VESICLES: Few.

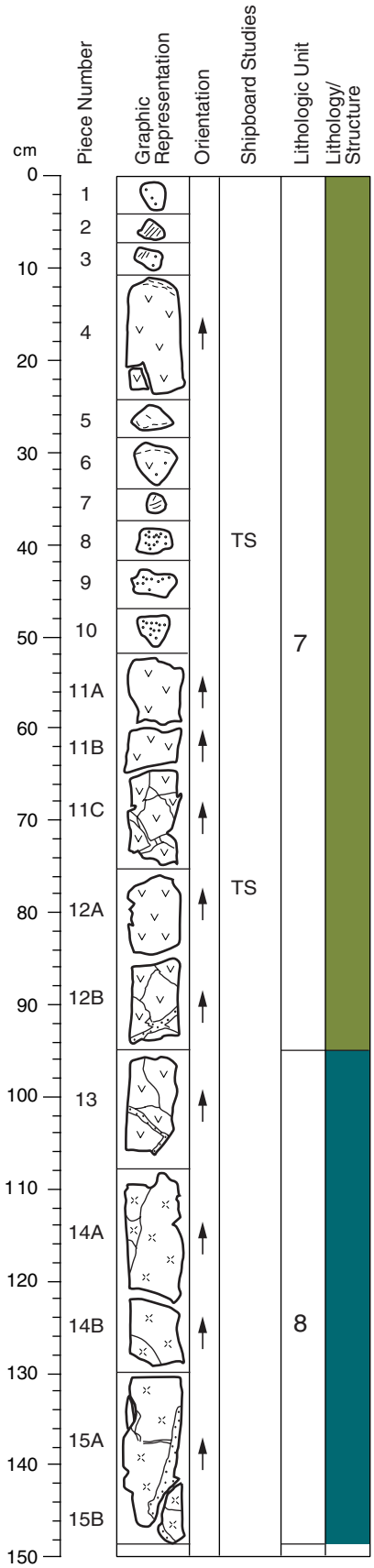
COLOR: Greenish gray.

STRUCTURE: Pillow.

ALTERATION: Moderate.

VEINS/FRACTURES: None.

Core Photo



191-1179D-13R-1 (Section top: 390.4 mbsf)

UNIT 7: APHYRIC BASALT

Pieces: 1 to 15B

CONTACTS: Chilled pillow margin.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.1	0.4	0.25	subhedral
Olivine:	<1	0.05	0.15	0.10	anhedral

GROUNDMASS: Microcrystalline to fine-grained. 50% to 60% plagioclase (very thin needles); 20% to 30% clinopyroxene (subhedral to anhedral); 3% to 5% magnetite (skeletal crystals, grains); 10% to 20% glass (microcrystalline).

VESICLES: Scarce.

COLOR: Greenish gray.

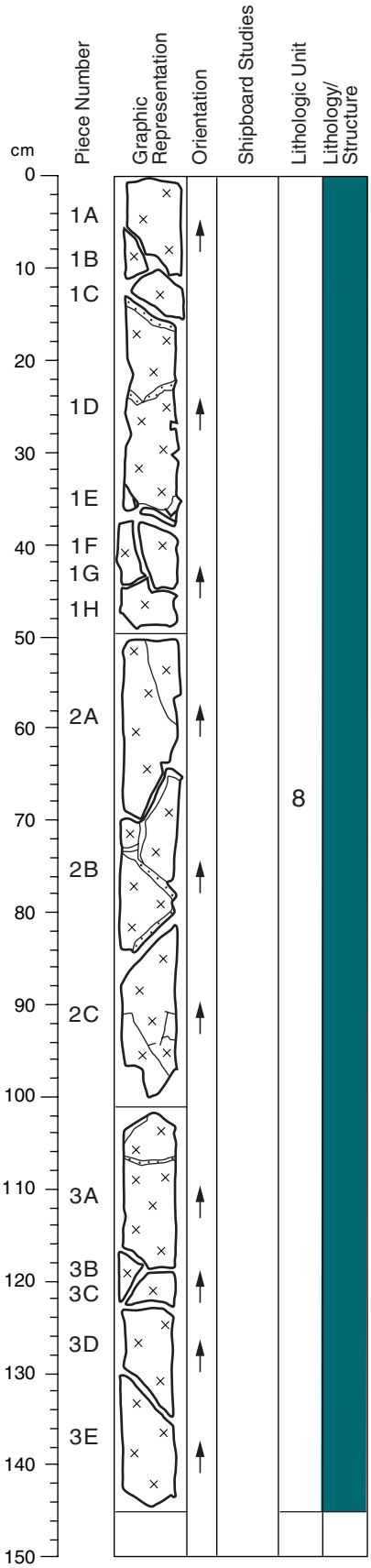
STRUCTURE: Pillow.

ALTERATION: Slight.

VEINS/FRACTURES: None.

COMMENTS: Chilled margins in Piece 8.

Core Photo



191-1179D-13R-2 (Section top: 391.9 mbsf)

UNIT 8: APHYRIC BASALT

Pieces: 1A to 3E

CONTACTS: None observed.

GROUNDMASS: Fine-grained.

VESICLES: Scarce.

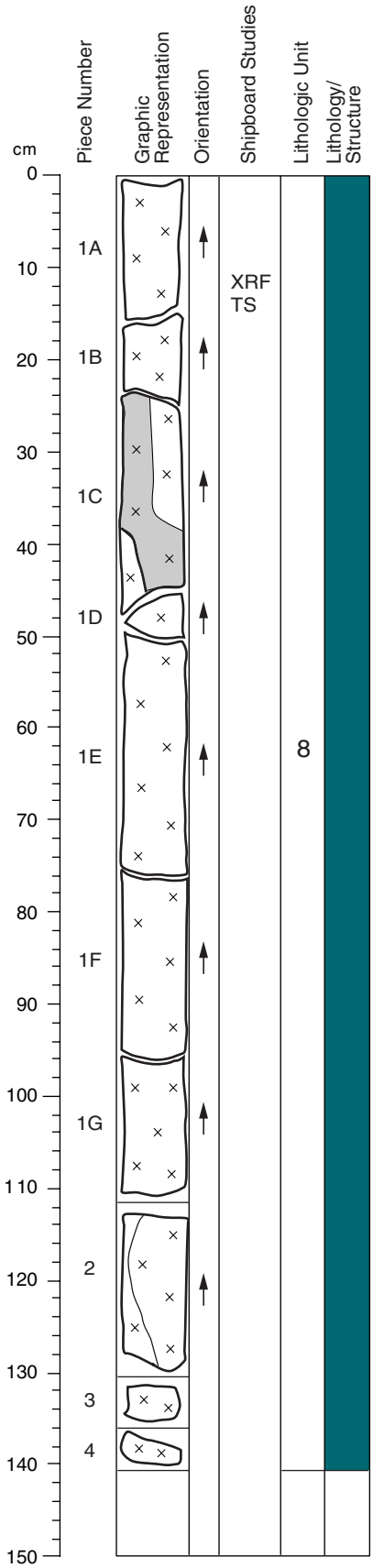
COLOR: Dark greenish gray, partly yellowish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Randomly oriented, <6.0 mm wide, filled with calcite and celadonite/smectite.

Core Photo



191-1179D-13R-3 (Section top: 393.36 mbsf)

UNIT 8: APHYRIC BASALT

Pieces: 1A to 4

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Olivine:	<1	0.05	0.25	0.10	anhedral

GROUNDMASS: Fine-grained; 50% to 60% plagioclase (subhedral, often lath-like); 30% to 25% clinopyroxene (anhedral); 3% to 4% magnetite (grains, skeletal crystals); 10% to 15% glass (microcrystalline).

VESICLES: Very scarce.

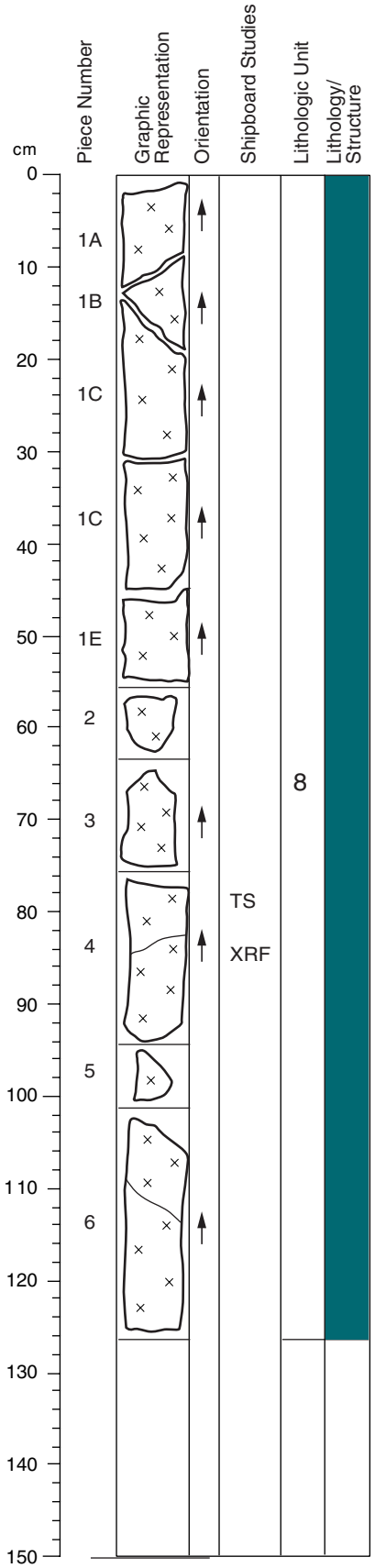
COLOR: Gray.

STRUCTURE: Massive flow.

ALTERATION: Fresh to slightly altered. (Fe oxidation halo surrounding calcite-veinlets).

VEINS/FRACTURES: some veinlets (1 to 3 mm), filled with smectite/celadonite.

Core Photo



191-1179D-13R-4 (Section top: 394.77 mbsf)

UNIT 8: APHYRIC BASALT

Pieces: 1A to 6

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.10	0.3	0.2	subhedral

GROUNDMASS: fine-grained; 60% to 65% plagioclase (subhedral, partly lath-like); 30% to 25% clinopyroxene (subhedral to anhedral); 3% to 5% magnetite (grains, skeletal crystals); ~10% glass (microcrystalline).

VESICLES: Irregular, moderate; filled partially with chlorite, and with calcite/zeolite.

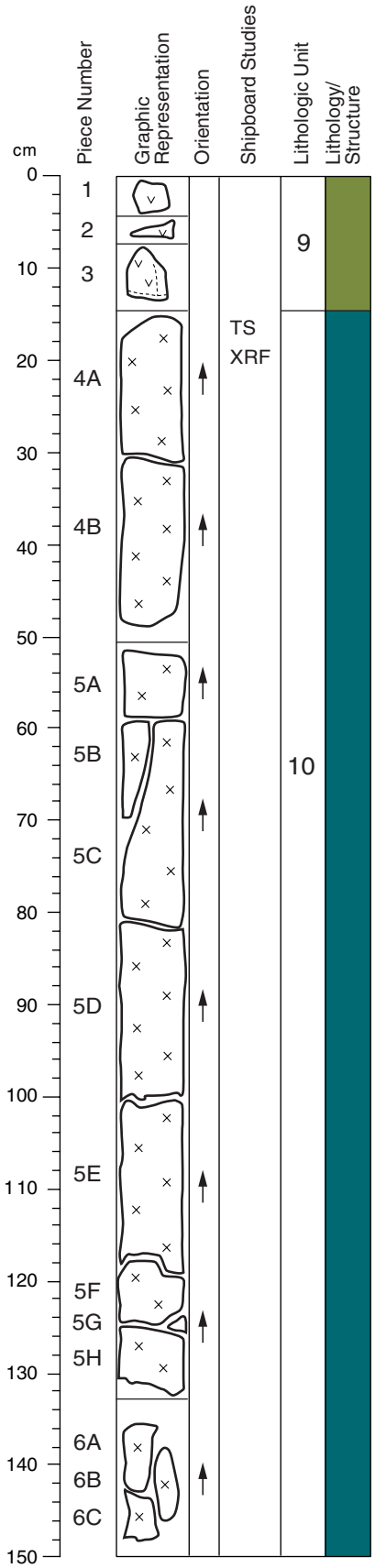
COLOR: Gray with partial light- brown coloration due to Fe oxidation/infiltration.

STRUCTURE: Massive flow.

ALTERATION: Fresh to slight.

VEINS/FRACTURES: Some calcite veinlets (1 to 2 mm thick).

Core Photo



191-1179D-14R-1 (Section top: 396.4 mbsf)

UNIT 9: APHYRIC BASALT

Pieces: 1 to 3

GROUNDMASS: Fine-grained to microcrystalline.

VESICLES: None.

COLOR: Gray.

STRUCTURE: Relict of pillow(?).

ALTERATION: Slight.

VEINS/FRACTURES: None.

UNIT 10: APHYRIC BASALT

Pieces: 4A to 6C

Interval Location:	Core	Section	Piece
Upper contact:	14 R	1	4A
Lower contact:	14 R	1	6C

CONTACTS: Relict on top of Piece 4A.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	<<1			0.8	subhedral

GROUNDMASS: Fine-grained. ~60% plagioclase subhedral); 30% to 35% clinopyroxene (subhedral to anhedral); 2% to 3% magnetite (skeletal crystals, grains); ~10% glass (microcrystalline).

VESICLES: Few, filled with celadonite, and calcite/zeolite.

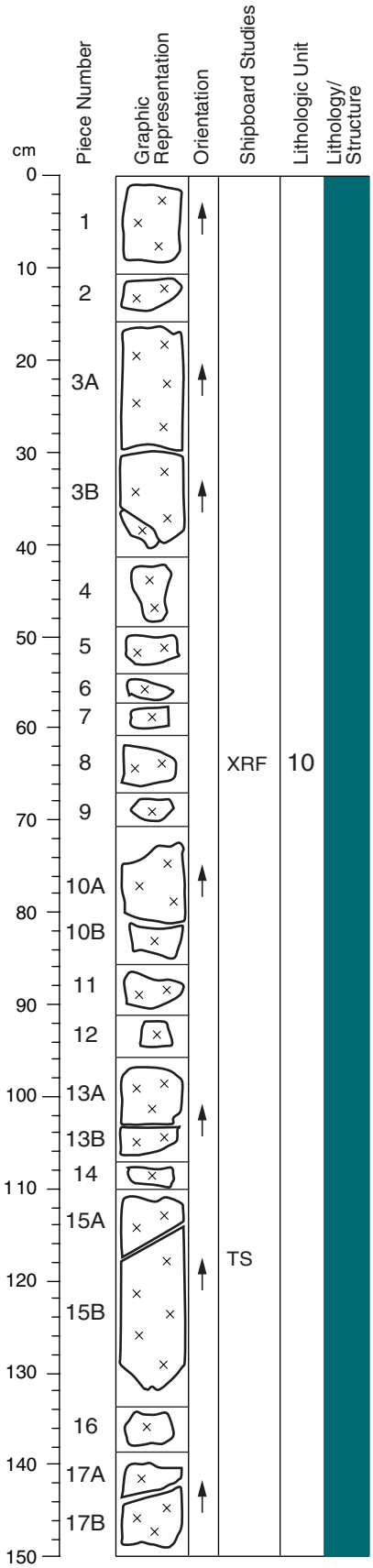
COLOR: Gray, in part light brownish.

STRUCTURE: Massive flow.

ALTERATION: Fresh to slight.

VEINS/FRACTURES: Irregular, 1 to 3 mm thick, filled with smectite.

Core Photo



191-1179D-14R-2 (Section top: 397.9 mbsf)

UNIT 10: APHYRIC BASALT

Pieces: 1 to 17B

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.2	0.8	0.4	subhedral

GROUNDMASS: Fine-grained; ~60% plagioclase (subhedral); 30% to 35% clinopyroxene (subhedral to anhedral); 2% to 3% magnetite (grains, skeletal crystals); 10% to 15% glass (recrystallized, microcrystalline).

VESICLES: Scarce and irregular, mainly filled with celadonite, partly additional smectite and pyrite.

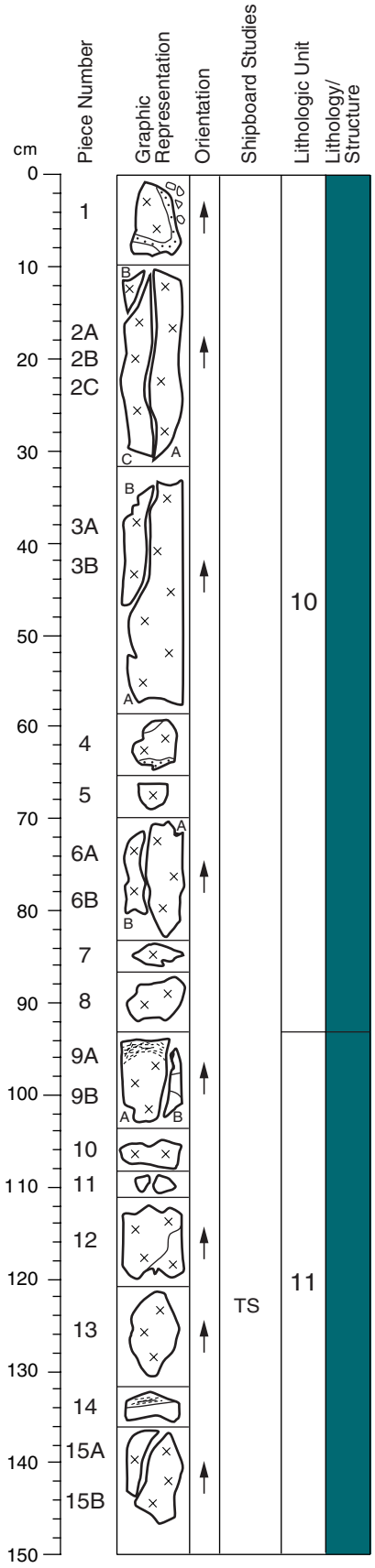
COLOR: Gray, partly light brownish.

STRUCTURE: Massive flow.

ALTERATION: Fresh to slight.

VEINS/FRACTURES: In Pieces 1 and 2. Up to 10 mm thick, filled with calcite/zeolite and chlorite. In other pieces veins are 1 to 5 mm thick, and filled with calcite/zeolite.

Core Photo



191-1179D-14R-3 (Section top: 399.4 mbsf)

UNIT 10: APHYRIC BASALT

Pieces: 1 to 8

CONTACTS: None observed.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.15	0.8	0.5	subhedral

GROUNDMASS: Fine-grained. 50% to 60% plagioclase (subhedral); ~30% clinopyroxene (subhedral to anhedral); 3% to 4% magnetite (skeletal crystals, grains); ~20% glass (microcrystalline).

VESICLES: Scarce, <0.5 mm in diameter, filled with celadonite/smectite.

COLOR: Greenish gray, partly pale brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate.

VEINS/FRACTURES: Few, randomly oriented, <0.5 mm wide, filled with smectite.

UNIT 11: APHYRIC BASALT

Pieces: 9A to 15B

Interval Location:	Core	Section	Piece	Depth (cm) Depth in Piece (mbsf)
Upper contact:	14R	3	9A	top(0)

CONTACTS: Chilled flow margin.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.15	0.8	0.5	subhedral

GROUNDMASS: Fine-grained, partly microcrystalline. 50% plagioclase (subhedral); 20% to 25% clinopyroxene (subhedral to anhedral); 3% to 4% magnetite (skeletal crystals, grains); 25% to 30% glass (microcrystalline).

VESICLES: Scarce, <0.3 mm in diameter, filled with secondary minerals.

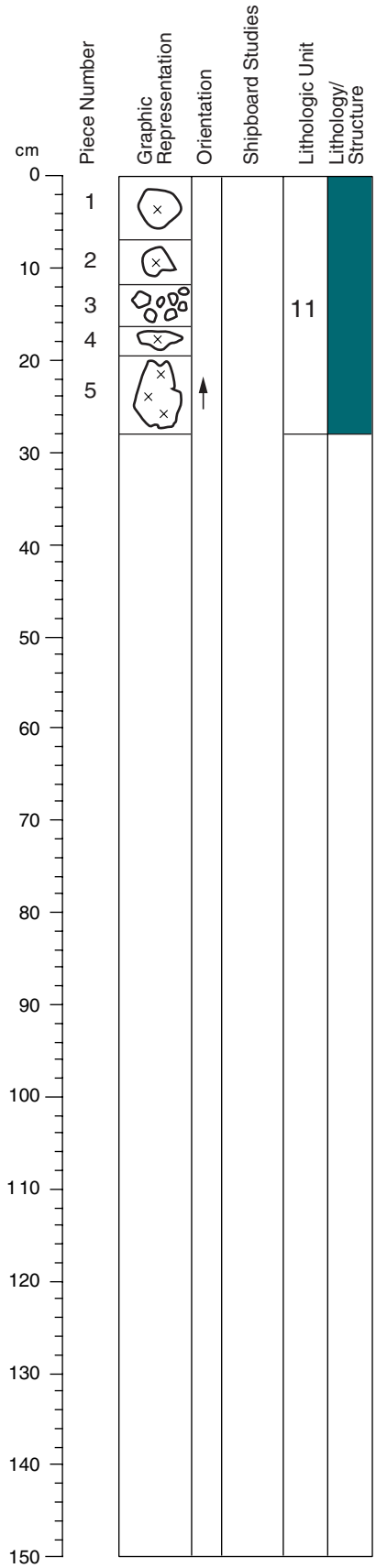
COLOR: Dark greenish gray, partly pale brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate.

VEINS/FRACTURES: Randomly oriented, <10 mm wide, filled mainly with calcite.

Core Photo



191-1179D-14R-4 (Section top: 400.9 mbsf)

UNIT 11: APHYRIC BASALT

Pieces: 1 to 5

CONTACTS: None observed.

GROUNDMASS: Fine-grained.

VESICLES: Scarce.

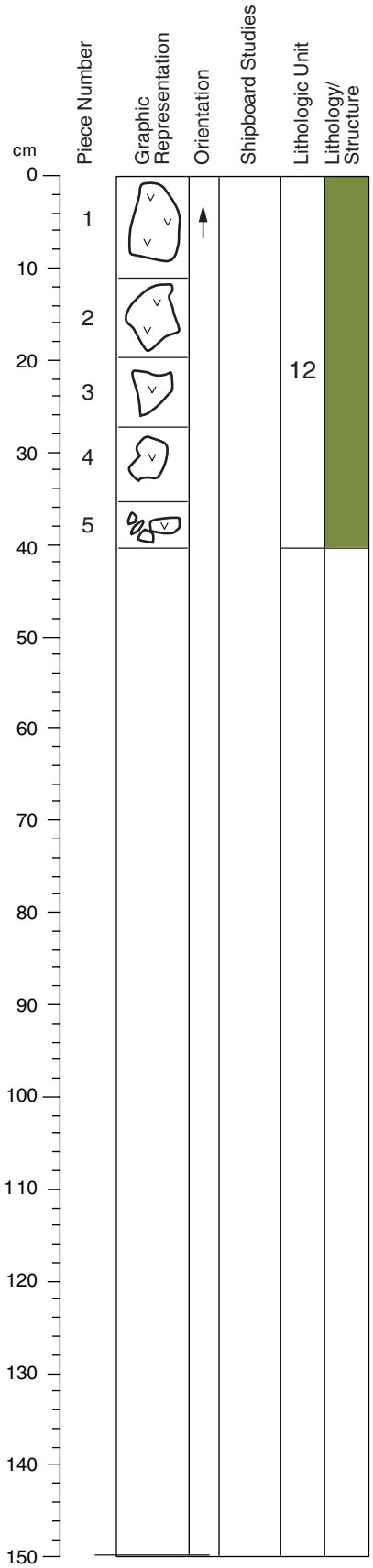
COLOR: Dark greenish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: None.

Core Photo



191-1179D-15R-1 (Section top: 406.0 mbsf)

UNIT 12: APHYRIC BASALT

Pieces: 1 to 5

GROUNDMASS: Fine-grained; ~60% plagioclase, ~40% clinopyroxene.

VESICLES: Very scarce, filled with chlorite and calcite/zeolite.

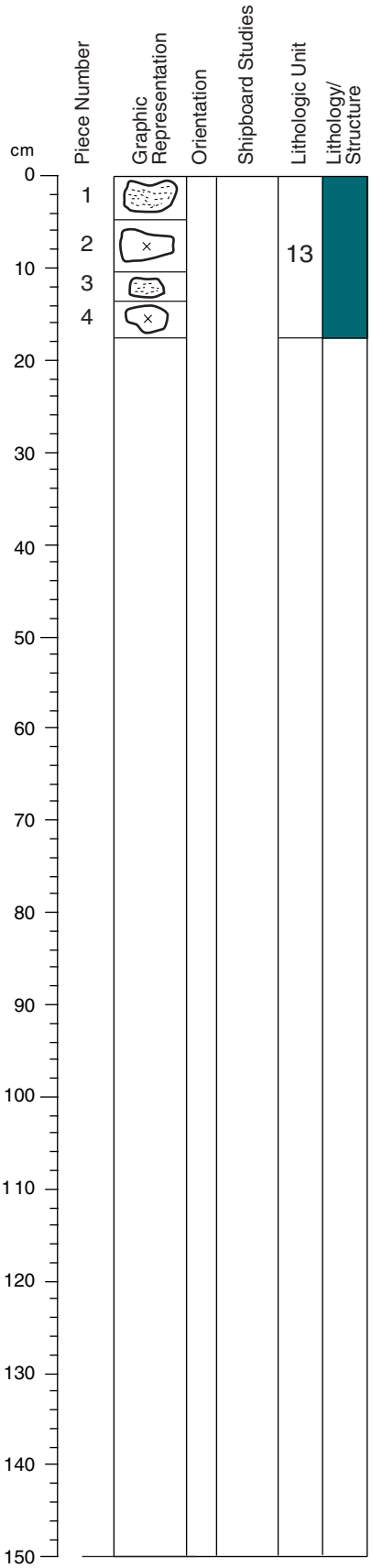
COLOR: Gray.

STRUCTURE: Relict of pillow(?).

ALTERATION: Fresh to slight.

VEINS/FRACTURES: Only one; <1 mm, filled with calcite/zeolite.

Core Photo



191-1179D-16R-1 (Section top: 415.7 mbsf)

UNIT 13: APHYRIC BASALT

Pieces: 1 to 4

GROUNDMASS: Fine-grained; ~65% plagioclase, ~35% clinopyroxene.

VESICLES: Very scarce, filled with calcite/zeolite.

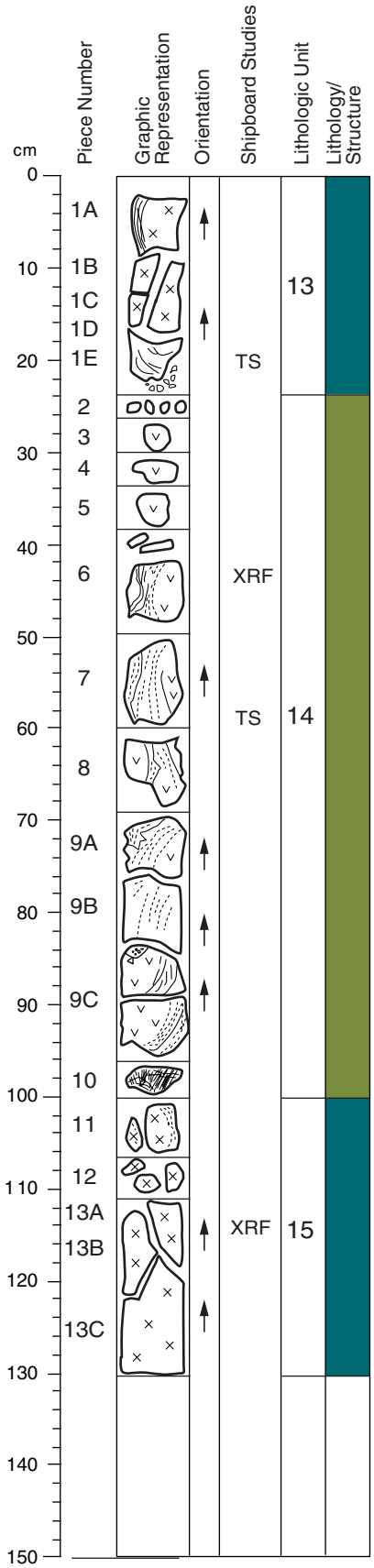
COLOR: Gray to dark gray.

STRUCTURE: Relict of lava flow.

ALTERATION: Fresh to slight.

VEINS/FRACTURES: Two veins, <1 mm, filled with calcite/zeolite.

Core Photo



191-1179D-17R-1 (Section top: 418.87 mbsf)

UNIT 13: APHYRIC BASALT

Pieces: 1A to 1E

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Lower contact:	17R	1	1E	4

CONTACTS: At ~ 20 cm contact between flow with chilled margin above and pillow with interpillow material below

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	0.3	1.0		0.4	subhedral

GROUNDMASS: Cryptocrystalline to fine-grained; Main components plagioclase and clinopyroxene.

VESICLES: Scarce.

COLOR: Brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Fresh to slight.

VEINS/FRACTURES: Scarce, filled with chlorite, calcite, zeolite.

UNIT 14: APHYRIC BASALT

Pieces: 2 to 10

Interval Location:	Core	Section	Piece
Upper contact:	17R	1	2
Lower contact:	17R	1	10
Thickness (m):	0.75		

CONTACTS: Upper and lower contact of a pillow.

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	<1	0.10	0.8	0.5	subhedral
Olivine:	<<1	0.03	0.10	0.05	anhedral

GROUNDMASS: Fine-grained, microcrystalline in the recrystallized glass rims; 10% to 15% plagioclase (subhedral); ~5% clinopyroxene (anhedral, mesostasis); ~2% magnetite (very fine grains); ~80% glass (microcrystalline).

VESICLES: None.

COLOR: Brownish gray.

STRUCTURE: Pillow.

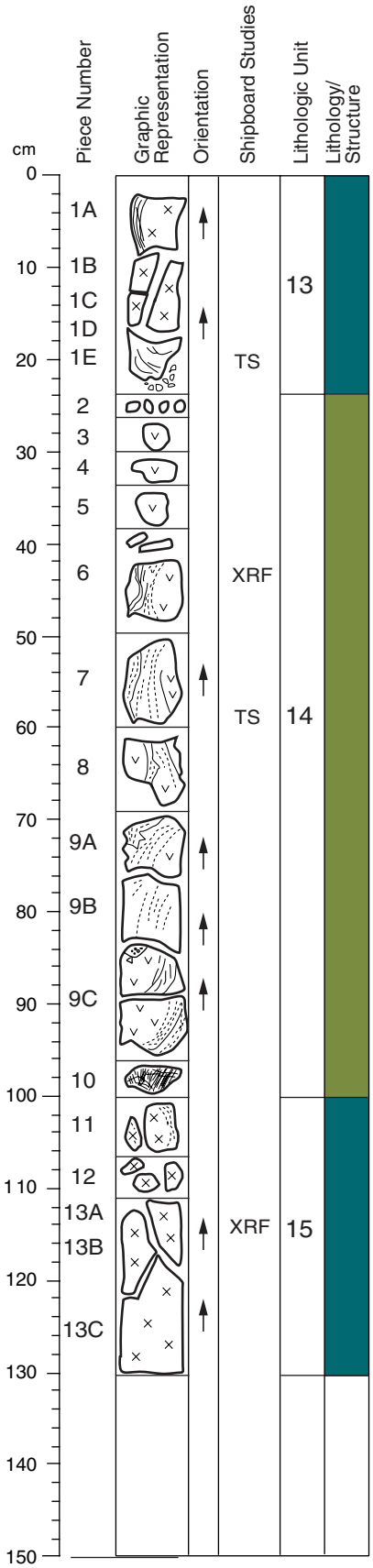
ALTERATION: Slight to fresh.

VEINS/FRACTURES: None.

COMMENTS: Recrystallized glass rim on the pillow flank (between Pieces 6 and 9E). Upper interpillow material is green to dark green amorphous material. The lower interpillow material is light pink (calcite) with small celadonite fragments.

UNIT 15 (see next page)

Core Photo



191-1179D-17R-1 (Cont'd)

UNIT 15: APHYRIC BASALT

Pieces: 11 to 13C

Interval Location:	Core	Section	Piece
Upper contact:	17R	1	11
Lower contact:	17R	1	13C

GROUNDMASS: Fine-grained; plagioclase and clinopyroxene.

VESICLES: None.

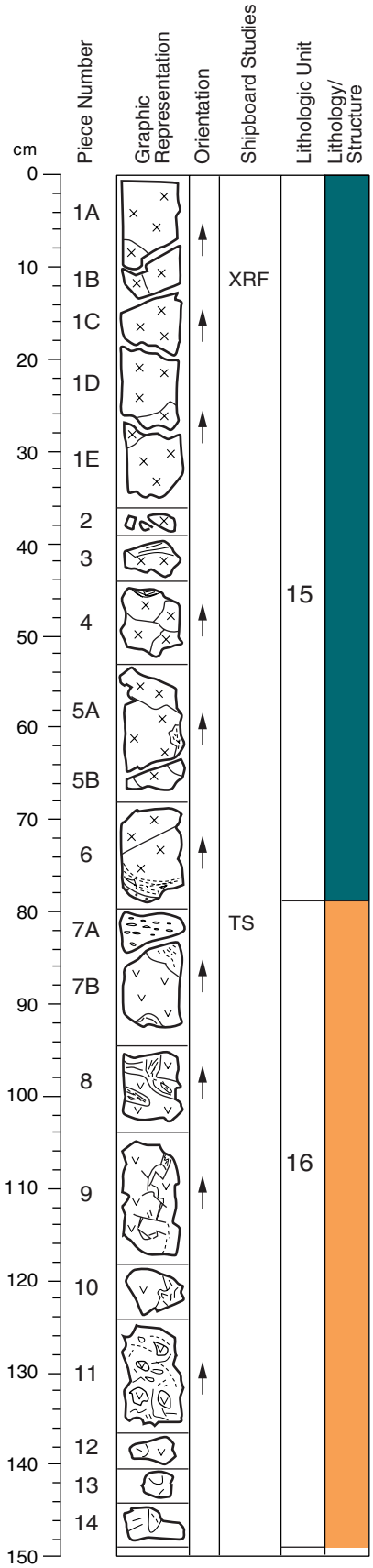
COLOR: Dark gray.

STRUCTURE: Massive flow.

ALTERATION: Fresh.

VEINS/FRACTURES: Very scarce.

Core Photo



191-1179D-17R-2 (Section top: 420.1 mbsf)

UNIT 15: APHYRIC BASALT

Pieces: 1A to 6

				Depth (cm)
Interval Location:	Core	Section	Piece	in Piece
Lower contact:	17R	2	6	base (9)

CONTACTS: Chilled margin on base of Piece 6

GROUNDMASS: Fine-grained to microcrystalline.

VESICLES: Scarce.

COLOR: Dark gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Randomly oriented, <2.5 mm wide; filled with calcite and other secondary minerals.

UNIT 16: APHYRIC BASALT AND HYALOCLASTITE

Pieces: 7A to 14

				Depth (cm)
Interval Location:	Core	Section	Piece	in Piece
Upper contact:	17R	2	6	base(9)

CONTACTS: Sedimentary contact at the base of Piece 6.

GROUNDMASS: Fine-grained.

VESICLES: None.

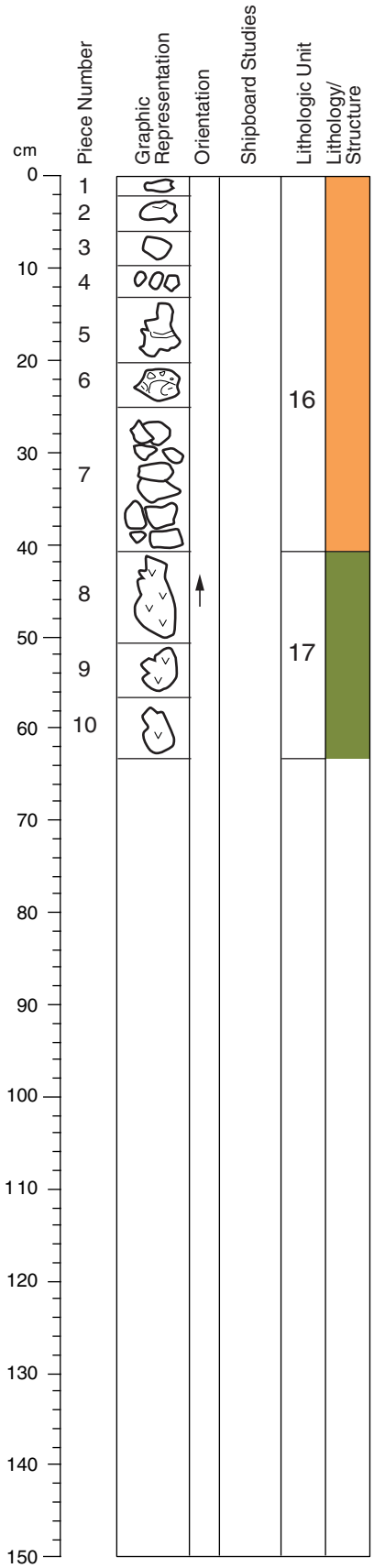
COLOR: Dark gray.

STRUCTURE: Pillow breccia.

ALTERATION: The interior of each basalt piece is slightly altered, and glassy fragments of hyaloclastite are partly altered.

COMMENTS: All basalt pieces are of microcrystalline aphyric basalt, <10 cm in size, angular to subangular. Matrix is hyaloclastite, composed of glassy fragments and carbonate.

Core Photo



191-1179D-17R-3 (Section top: 421.6 mbsf)

UNIT 16: APHYRIC BASALT AND HYALOCLASTITE

Pieces: 1 to 7

CONTACTS: Sedimentary contact in Piece 2.

STRUCTURE: Mixture of basalt pieces from pillows and hyaloclastite pieces from interpillow material.

ALTERATION: Basalt pieces are slightly altered, glassy fragments of hyaloclastite are partly altered.

UNIT 17: APHYRIC BASALT

Pieces: 8 to 10

CONTACTS: Not observed.

PHENOCRYSTS:

	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	0.5	0.8		0.3	euhedral

GROUNDMASS: Microcrystalline.

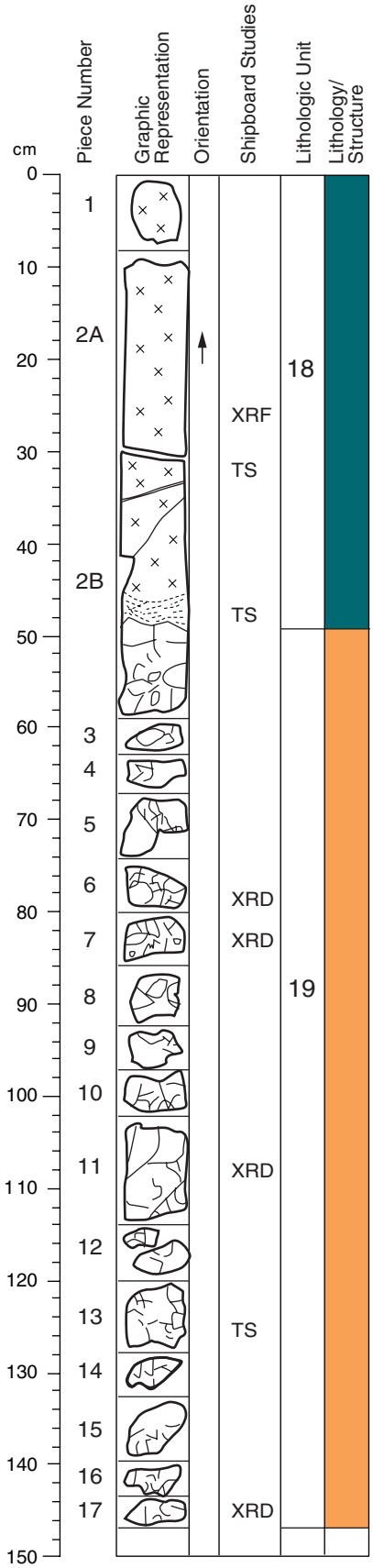
VESICLES: Scarce, <0.3 mm in diameter, filled with clay and calcite.

COLOR: Dark gray to dark greenish gray.

STRUCTURE: Pillow.

ALTERATION: Slight.

Core Photo



191-1179D-18R-1 (Section top: 425.3 mbsf)

UNIT 18: APHYRIC BASALT

Pieces: 1 to 2B (48 cm)

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Lower contact:	18R	1	2B	48

CONTACTS: Within Piece 2B, at 48 cm, contact between flow-basalt above and basalt (pillow) breccia below, contact zone marked by ~20 mm recrystallized glass rim.

GROUNDMASS: Fine-grained; 50% plagioclase (subhedral, partly lath-like) ; 30% to 35% clinopyroxene (anhedral); 3% to 5% magnetite (grains, skeletal crystals); 15% to 20% glass (recrystallized).

VESICLES: None.

COLOR: Greenish gray.

STRUCTURE: Massive flow.

ALTERATION: Fresh.

VEINS/FRACTURES: 3 very small calcite/smectite veinlets (<1 mm thick).

UNIT 19: BASALT BRECCIA

Pieces: 2B (50 cm) to 17

Interval Location:	Core	Section	Piece
Upper contact:	18R	1	2B
Lower contact:	18R	1	17

GROUNDMASS: Fine-grained.

VESICLES: None.

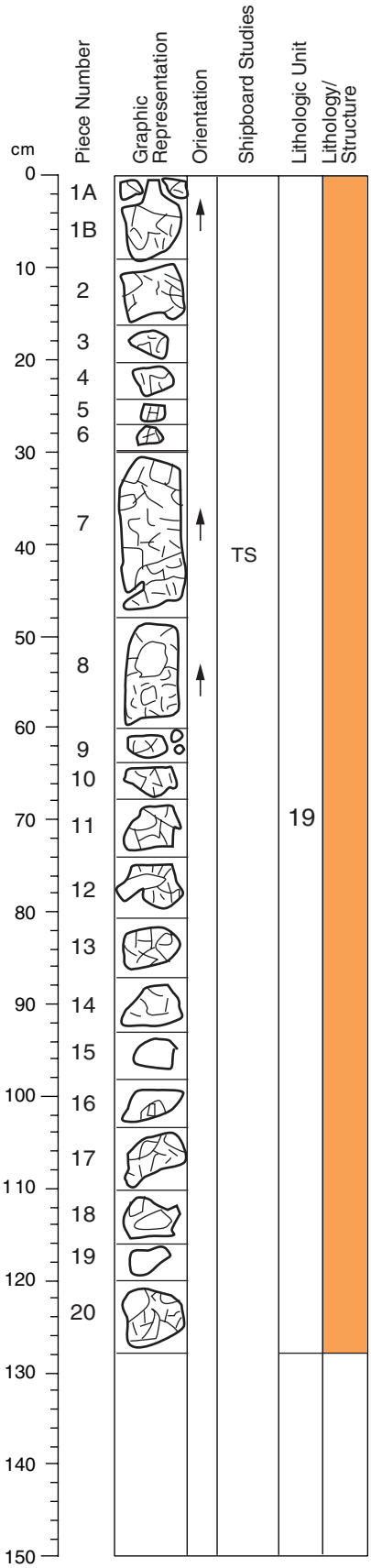
COLOR: Grayish brown, green and white.

STRUCTURE: Basalt (pillow) breccia.

ALTERATION: Moderate to high.

COMMENTS: Angular or rounded, microcrystalline basalt and partly altered palagonite pieces (1-40 mm in diameter) are embedded into matrix with amorphous green layers and small pieces with celadonite and calcite. Irregular cavities are filled with calcite and celadonite.

Core Photo



191-1179D-18R-2 (Section top: 426.77 mbsf)

UNIT 19: BASALT BRECCIA

Pieces: 1 to 20

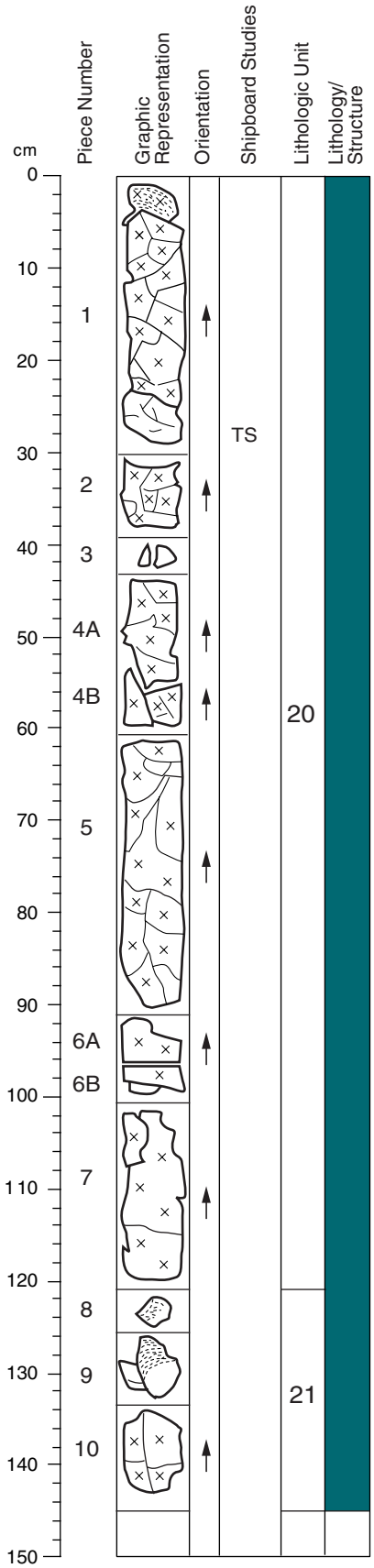
COLOR: Basalt and palagonite pieces are grayish brown. Intercalation includes dark green, brownish green, and subordinated white.

STRUCTURE: Basalt (pillow) breccia.

ALTERATION: Moderate to high.

COMMENTS: See Unit 19 in Section 18R-1, Pieces 2B to 17.

Core Photo



191-1179D-18R-3 (Section top: 428.05 mbsf)

UNIT 20: APHYRIC BASALT

Pieces: 1 to 7

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Upper contact:	18R	3	1	Top (0)

GROUNDMASS: Mostly fine-grained, partly microcrystalline.

VESICLES: Scarce.

COLOR: Gray, and partly brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Randomly oriented forming a network, mostly <3.0 mm wide, filled with calcite and Fe-oxyhydroxide.

UNIT 21: APHYRIC BASALT

Pieces: 8 to 10

CONTACTS: Chilled margins in Pieces 8 and 9.

GROUNDMASS: Mostly fine-grained, partly microcrystalline.

VESICLES: None.

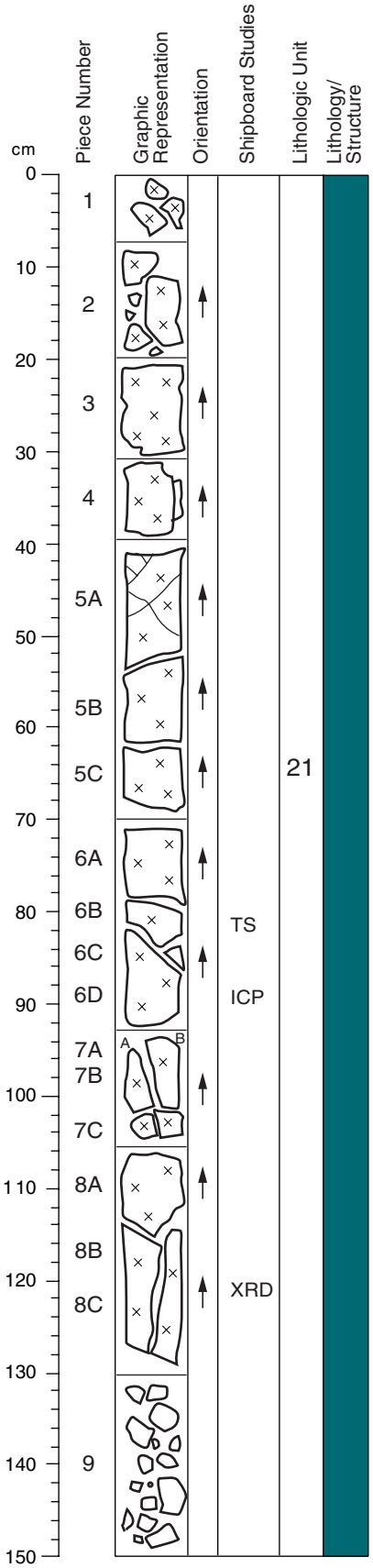
COLOR: Gray to greenish gray, partly brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Three veins, <1.0 mm wide, filled with calcite.

Core Photo



191-1179D-18R-4 (Section top: 429.47 mbsf)

UNIT 21: APHYRIC BASALT

Pieces: 1 to 9

CONTACTS: Not observed.

GROUNDMASS: Fine-grained.

VESICLES: None.

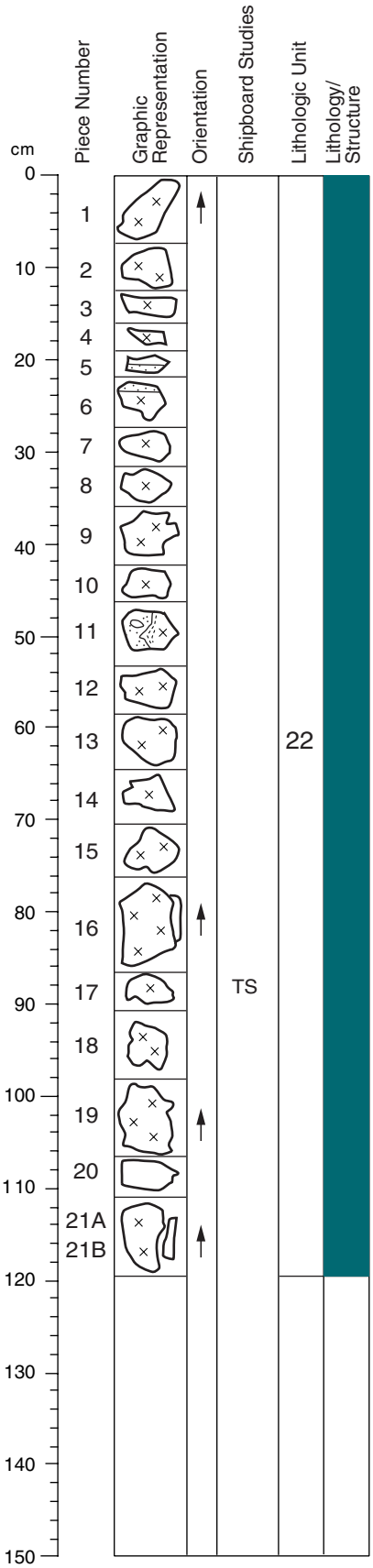
COLOR: Gray, grayish green along veins.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Randomly oriented, <2.0 mm filled with calcite and celadonite.

Core Photo



191-1179D-19R-1 (Section top: 434.9 mbsf)

UNIT 22: APHYRIC BASALT

Pieces: 1 to 21B

CONTACTS: Not observed.

GROUNDMASS: Fine-grained.

VESICLES: None.

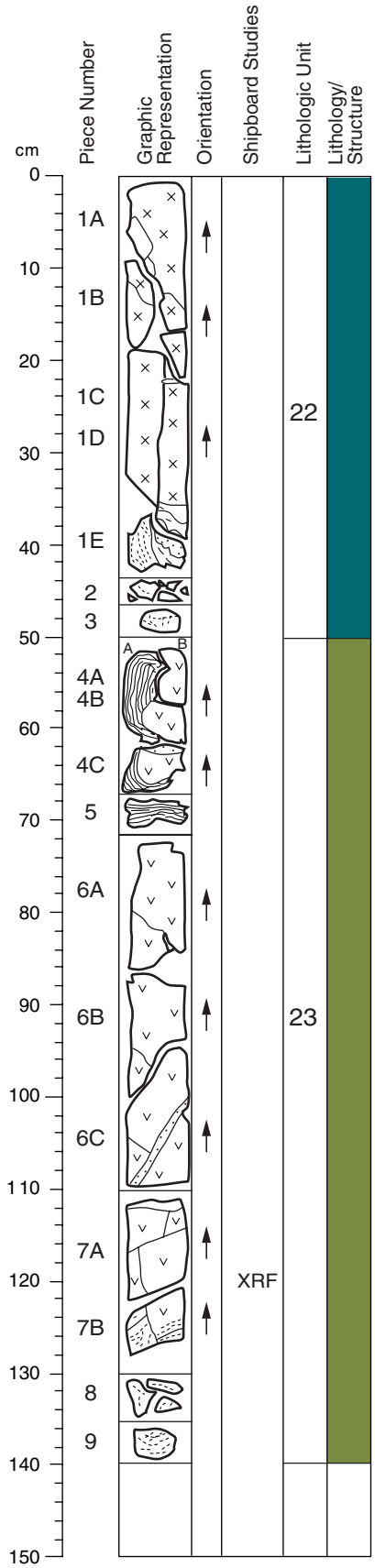
COLOR: Gray to greenish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: One distinct vein, 3.0 mm wide, filled with brown to dark brown Fe-oxyhydroxide and smectite.

Core Photo



191-1179D-19R-2 (Section top: 436.09 mbsf)

UNIT 22: APHYRIC BASALT

Pieces: 1 to 3

CONTACTS: Chilled margin in Piece 1E.

GROUNDMASS: Microcrystalline to fine-grained.

VESICLES: Scarce, <0.5 mm in diameter, filled with celadonite.

COLOR: Greenish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Vertical, <3.5 mm wide, filled with calcite, celadonite/smectite, and Fe-oxyhydroxide.

UNIT 23: APHYRIC BASALT AND HYALOCLASTITE

Pieces: 4A to 9

				Depth (cm)
Interval Location:	Core	Section	Piece	in Piece
Lower contact:	19R	2	9 base	(3)

CONTACTS: Chilled margins in Pieces 4A, 4B, 4C, and at the base of Piece 9

GROUNDMASS: Fine-grained to microcrystalline.

VESICLES: Scarce.

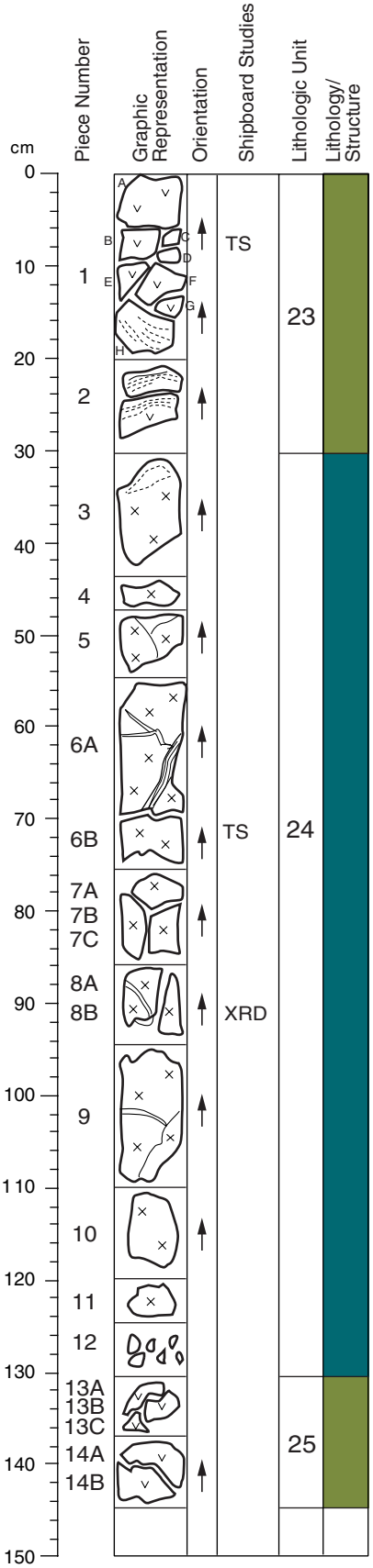
COLOR: Greenish gray.

STRUCTURE: Pillow basalt and interpillow material.

ALTERATION: Slight.

VEINS/FRACTURES: Randomly oriented, <5.0 mm wide, filled with calcite, celadonite, smectite, and Fe-oxyhydroxide.

Core Photo



191-1179D-19R-3 (Section top: 437.52 mbsf)

UNIT 23: APHYRIC BASALT

Pieces: 1 to 2

CONTACTS: None

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	0.5	0.4		0.2	subhedral

GROUNDMASS: Fine-grained; plagioclase (subhedral, partly lath-like) and clinopyroxene (anhedral).

VESICLES: Rare, filled with calcite or zeolite.

COLOR: Gray.

STRUCTURE: Pillow.

ALTERATION: Slight.

VEINS/FRACTURES: Some, <1 to 2 mm, filled with calcite and zeolite.

UNIT 24: APHYRIC BASALT

Pieces: 3 to 12

Interval Location:	Core	Section	Piece
Upper contact:	19R	3	3
Lower contact:	19R	3	12

CONTACTS: None.

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	0.5	0.4		0.3	subhedral

GROUNDMASS: Fine-grained; ~60% plagioclase (subhedral, partly lath-like), ~40% clinopyroxene (anhedral).

VESICLES: Very rare.

COLOR: Greenish gray.

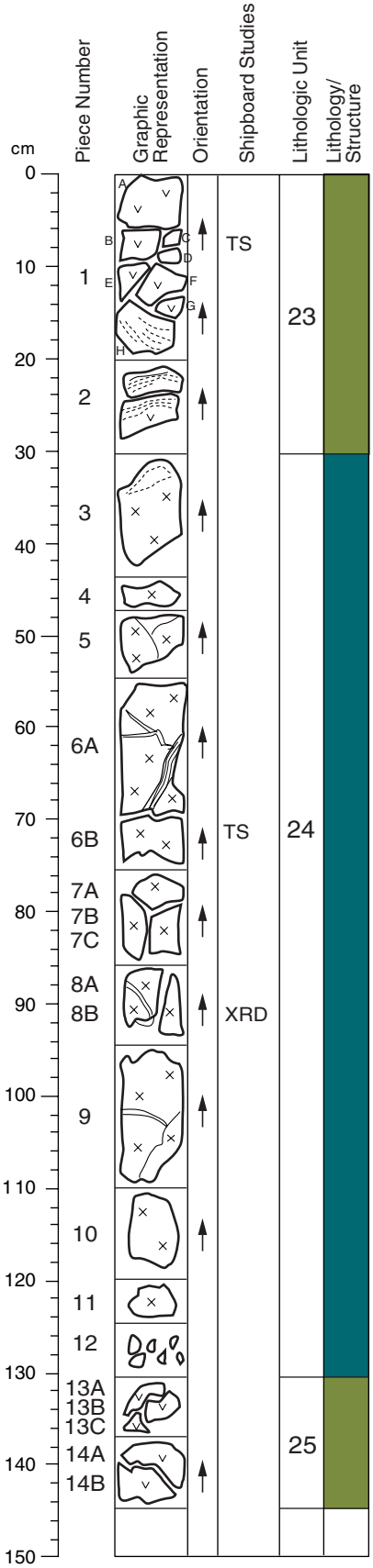
STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: One vein, 5-6 mm wide, filled with green to brown amorphous material.

Unit 25 (see next page)

Core Photo



191-1179D-19R-3 (Cont'd)

UNIT 25: APHYRIC BASALT

Pieces: 13A to 14B

Interval Location:	Core	Section	Piece
Upper contact:	19R	3	13A
Lower contact:	19R	3	14B

GROUNDMASS: Fine-grained; ~60% plagioclase, ~40% clinopyroxene.

VESICLES: Very rare.

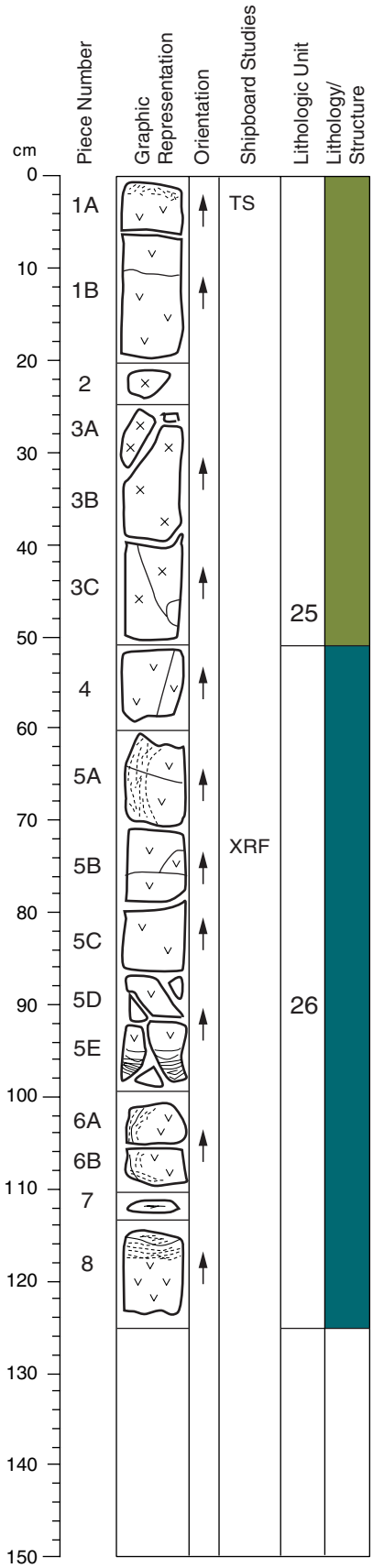
COLOR: Dirty brown.

STRUCTURE: Pillow.

ALTERATION: Slight.

VEINS/FRACTURES: Few, filled with calcite/zeolite (<1-2 mm thick).

Core Photo



191-1179D-20R-1 (Section top: 444.6 mbsf)

UNIT 25: APHYRIC BASALT

Pieces: 1A to 6B

CONTACTS: Contact between upper pillow and lower flow at 110 cm, marked by changes in grain size and a small zone with chlorite, zeolite, and amorphous material.

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	0.5	1.6		0.5	subhedral
Olivine:	0.5	1.2		0.4	euhedral

GROUNDMASS: Fine-grained; 40% to 45% plagioclase (dominantly lath-like), 20% to 25% clinopyroxene (anhedral), 5% olivine (skeletal), and 20% to 30% cryptocrystalline glassy matrix.

VESICLES: Few, filled with calcite.

COLOR: Dark gray to brownish gray.

STRUCTURE: Pillow.

ALTERATION: Slight.

VEINS/FRACTURES: Few, <1 to 3 mm, filled with calcite/zeolite, and chlorite.

UNIT 26: APHYRIC BASALT

Pieces: 7 to 8

Interval Location:	Core	Section	Piece
Upper contact:	20R	1	7
Lower contact:	20R	1	8

CONTACTS: Contact at 110 cm between the pillow above and a lava flow below.

GROUNDMASS: Fine-grained; 60% to 65% plagioclase (lath-like), 35% to 40% clinopyroxene (anhedral).

VESICLES: Very few, filled with calcite.

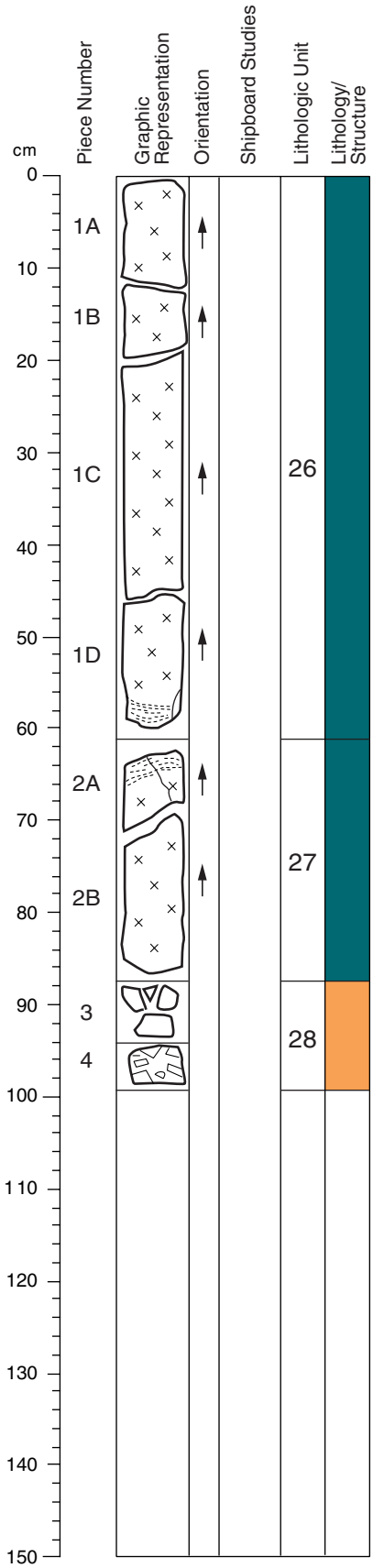
COLOR: Dark gray to brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Very few, <2 mm thick, filled with calcite.

Core Photo



191-1179D-20R-2 (Section top: 445.85 mbsf)

UNIT 26: APHYRIC BASALT

Pieces: 1A to 1D

	Core	Section	Piece	Depth (cm) in Piece
Interval Location:				
Lower contact:	20R	2	1D	base(14)

CONTACTS: Chilled margin at the base of piece 1D.

GROUNDMASS: Fine-grained.

VESICLES: 1% to 5%, <0.5 mm in diameter, filled with calcite and celadonite.

COLOR: Dark brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight to moderate.

VEINS/FRACTURES: Randomly oriented, <2.0 mm wide, filled with mainly calcite.

UNIT 27: APHYRIC BASALT

Pieces: 2A and 2B

	Core	Section	Piece	Depth (cm) in Piece
Interval Location:				
Upper contact:	20R	2	2A	top(0)

CONTACTS: Chilled margin on top of Piece 2A.

GROUNDMASS: Fine-grained.

VESICLES: 1% to 2%, <0.5 mm in diameter, filled with celadonite and calcite.

COLOR: Dark brownish gray to greenish gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate to high.

VEINS/FRACTURES: Randomly oriented, <1.0 mm wide, filled with calcite.

UNIT 28: VOLCANIC BRECCIA

Pieces: 3 and 4

CONTACTS: Not observed.

GROUNDMASS: Fine-grained, glassy.

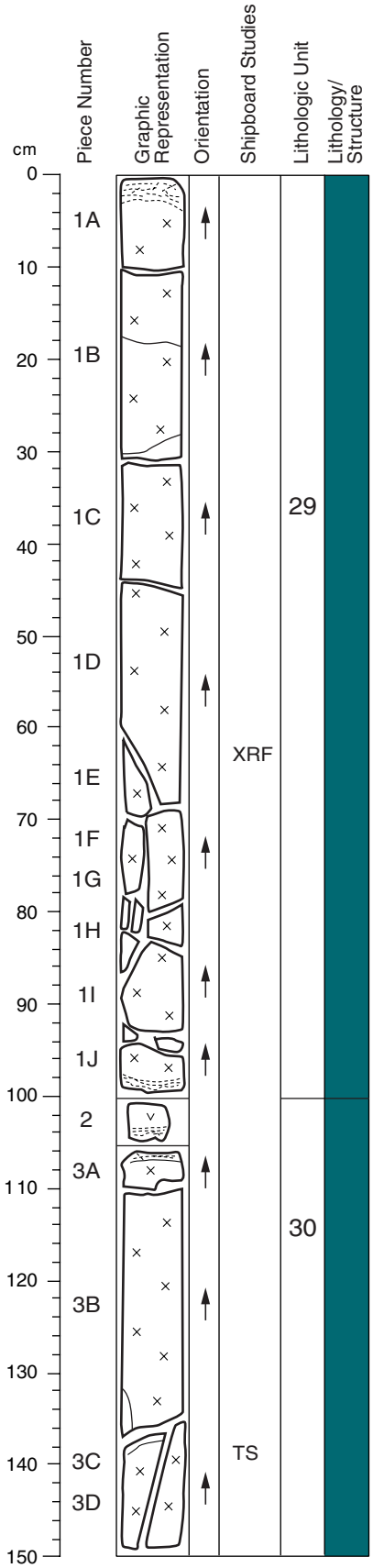
COLOR: Dark greenish gray.

STRUCTURE: Volcanic breccia.

ALTERATION: Moderate.

COMMENTS: Fresh glass fragments in breccia.

Core Photo



191-1179D-20R-3 (Section top: 446.85 mbsf)

UNIT 29: APHYRIC BASALT

Pieces: 1A to 1J

				Depth (cm)
Interval Location:	Core	Section	Piece	in Piece
Upper contact:	20R	3	1A	top(0)

CONTACTS: Contact between upper lava flow and lower pillow at 100 cm.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Olivine:	1.5	0.6		0.3	euhedral
Cr-spinel	0.1			0.2	euhedral

GROUNDMASS: Fine-grained, ophitic; 60% to 65% plagioclase (dominantly lath-like), 35% to 40% clinopyroxene.

VESICLES: 5% to 10% in Pieces 1A and 1B, filled with zeolite, smectite/celadonite, and calcite.

COLOR: Dark gray to brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Few, ~1 mm thick, filled with zeolite, calcite, and smectite/celadonite.

UNIT 30: APHYRIC BASALT

Pieces: 2 to 3D

CONTACTS: Contact at 100 cm between upper and lower lava flow.

GROUNDMASS: Fine-grained; 60% to 65% plagioclase, 35% to 40% clinopyroxene.

VESICLES: Only few.

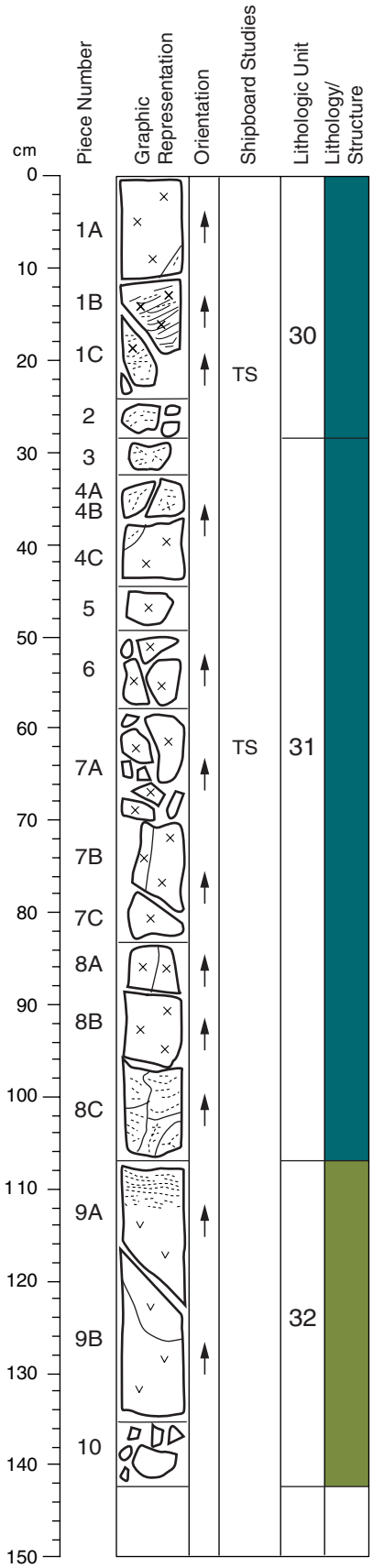
COLOR: Dark gray to brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Very few.

Core Photo



191-1179D-20R-4 (Section top: 448.35 mbsf)

UNIT 30: APHYRIC BASALT

Pieces: 1A to 2

CONTACTS: Contact between upper and lower flow at ~25 cm, marked by a change in grain size (finer in the lower flow), but the real contact is not present (due to core loss).

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Olivine:	0.5	0.8		0.2	euhedral

GROUNDMASS: Microcrystalline to fine-grained; ~60% plagioclase, ~40% clinopyroxene.

VESICLES: None.

COLOR: Brownish gray to dark gray.

STRUCTURE: Massive flow.

ALTERATION: Slight to moderate.

VEINS/FRACTURES: Few (<1-2 mm), filled with zeolite, calcite, and smectite/celadonite.

UNIT 31: SPARSELY OLIVINE PHYRIC BASALT

Pieces: 3 to 8C

Interval Location:	Core	Section	Piece
Upper contact:	20R	4	3
Lower contact:	20R	4	8C

CONTACTS: Upper contact at 25 cm, lower contact at 107 cm.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Olivine:	1.5	0.8		0.3	euhedral

GROUNDMASS: Fine-grained, subophitic; ~55% plagioclase (lath-like), ~40% clinopyroxene and 2% olivine.

VESICLES: Only in Pieces 4C and 5 (3% to 5%).

COLOR: Dark gray to brownish gray.

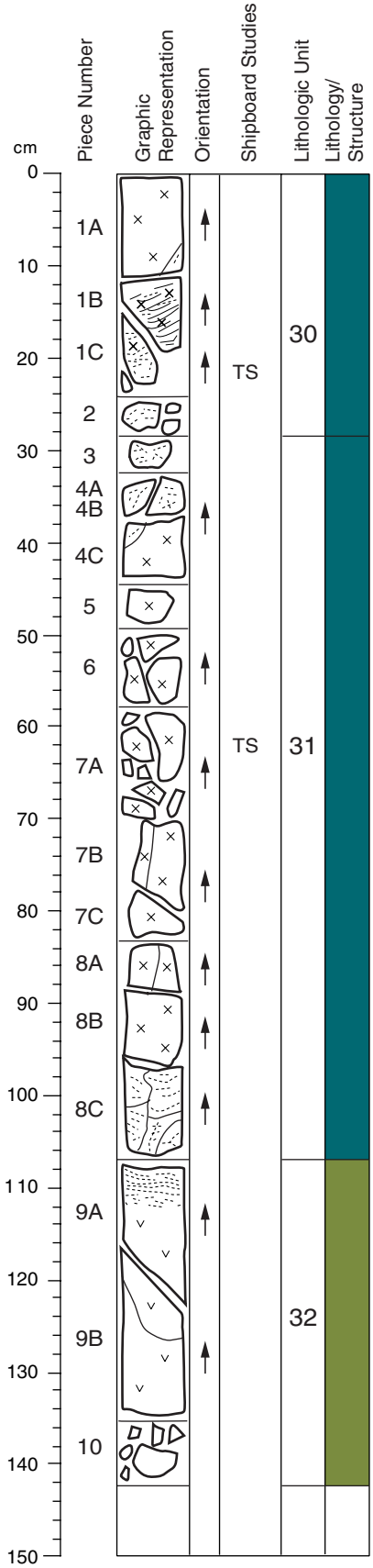
STRUCTURE: Massive flow.

ALTERATION: Slight to moderate.

VEINS/FRACTURES: Very few.

UNIT 32 (see next page)

Core Photo



191-1179D-20R-4 (Cont'd)

UNIT 32: APHYRIC BASALT

Pieces: 9A to 10

Interval Location:	Core	Section	Piece
Upper contact:	20R	4	9A
Lower contact:	20R	4	10

CONTACTS: Contact between lava flow and pillow at 107 cm.

GROUNDMASS: Fine-grained, subophitic; ~60% lath-like plagioclase, ~40% clinopyroxene.

VESICLES: None.

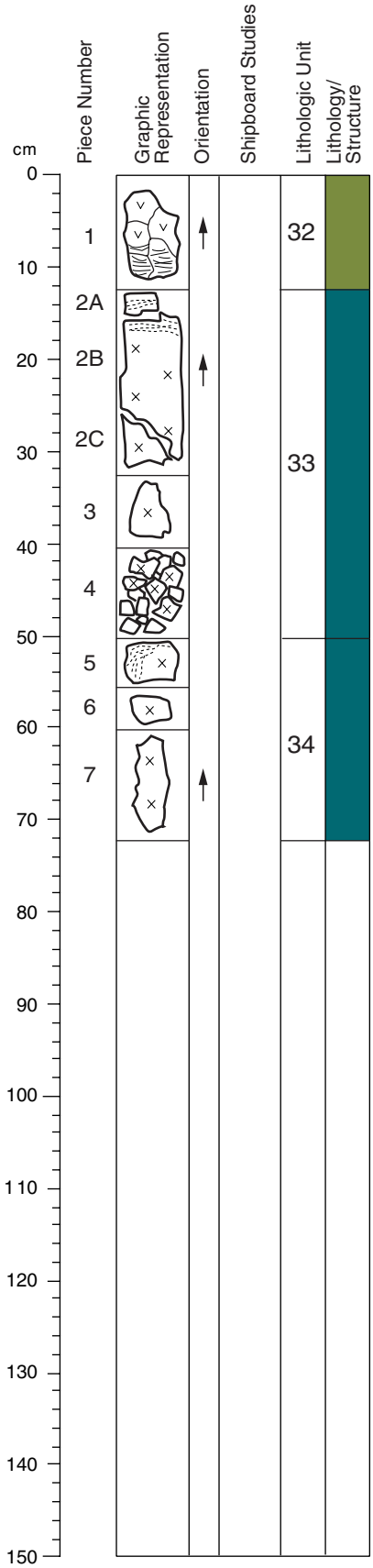
COLOR: Brownish gray to dark gray.

STRUCTURE: Pillow.

ALTERATION: Slight to moderate.

VEINS/FRACTURES: Very few.

Core Photo



191-1179D-20R-5 (Section top: 449.77 mbsf)

UNIT 32: APHYRIC BASALT

Pieces: 1

				Depth (cm)
Interval Location:	Core	Section	Piece	in Piece
Lower contact:	20R	5	1	base(9)

CONTACTS: Chilled margin at the base of Piece 1.

GROUNDMASS: Fine-grained.

VESICLES: 2% to 5%, <0.5 mm in diameter, filled with calcite, celadonite and/or saponite.

COLOR: Dark brownish gray.

STRUCTURE: Pillow.

ALTERATION: Moderate.

VEINS/FRACTURES: Few, <0.2 mm wide, filled with calcite. Fracturing is distinct especially in Piece 1.

UNIT 33: APHYRIC BASALT

Pieces: 2A to 4

				Depth (cm)
Interval Location:	Core	Section	Piece	in Piece
Upper contact:	20R	5	2A	top(0)

CONTACTS: Chilled margin on top of Piece 2A.

GROUNDMASS: Fine-grained.

VESICLES: 2% to 10%, <0.5 mm in diameter, filled with calcite, celadonite and/or saponite.

COLOR: Dark brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate.

VEINS/FRACTURES: One vein, <0.5 mm wide, filled with calcite.

UNIT 34: APHYRIC BASALT

Pieces: 5 to 7

				Depth (cm)
Interval Location:	Core	Section	Piece	in Piece
Upper contact:	20R	5	5	top(0)

CONTACTS: Chilled margin on top of Piece 5.

GROUNDMASS: Fine-grained.

VESICLES: 2% to 5%, 0.5 mm in diameter, filled with calcite, celadonite and/or saponite.

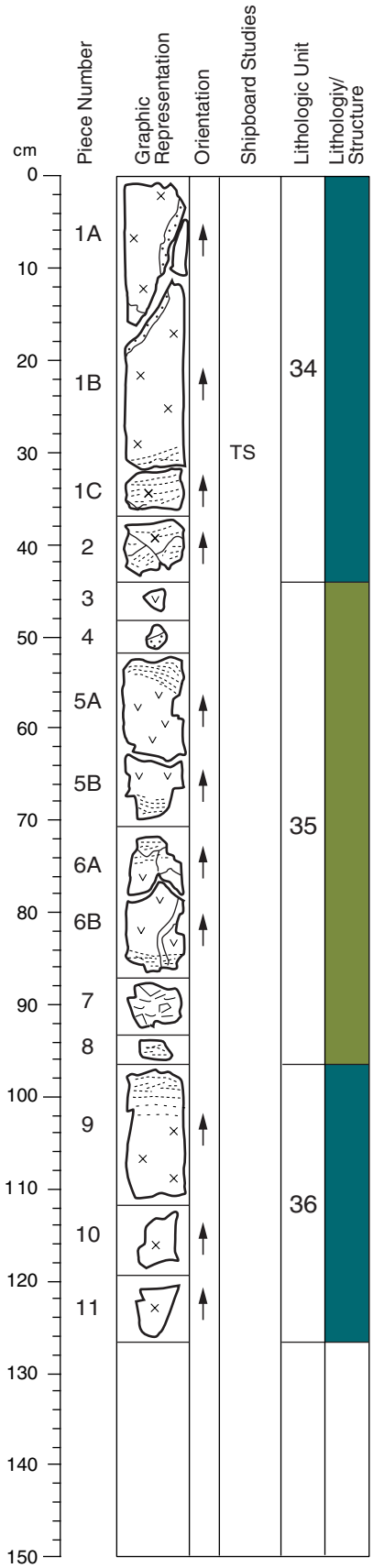
COLOR: Dark brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate.

VEINS/FRACTURES: Randomly oriented, <0.2 mm wide, filled with calcite, celadonite and/or saponite.

Core Photo



191-1179D-21R-1 (Section top: 454.2 mbsf)

UNIT 34: APHYRIC BASALT

Pieces: 1A to 2

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Lower contact:	21R	1	2	base(5)

CONTACTS: Chilled margin at the base of piece 2.

PHENOCRYSTS:	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Olivine:	1.5	0.7		0.2	euhedral
Clinopyroxene	0.5	0.2		0.2	subhedral

GROUNDMASS: Fine-grained, partly microcrystalline.

VESICLES: 2% to 5%, <0.5 mm in diameter, filled with chlorite, celadonite and/or saponite.

COLOR: Dark brownish gray, partly dark gray.

STRUCTURE: Massive flow.

ALTERATION: Slight to moderate.

VEINS/FRACTURES: One distinct vein, 5.0 mm wide, filled with calcite and zeolite.

UNIT 35: APHYRIC BASALT AND HYALOCLASTITE

Pieces: 3 to 8

CONTACTS: Pillow chilled margins in Pieces 5A, 6A and 6B.

GROUNDMASS: Fine-grained, partly microcrystalline.

VESICLES: 2% to 5%, <0.5 mm in diameter.

COLOR: Dark brownish gray, partly dark gray.

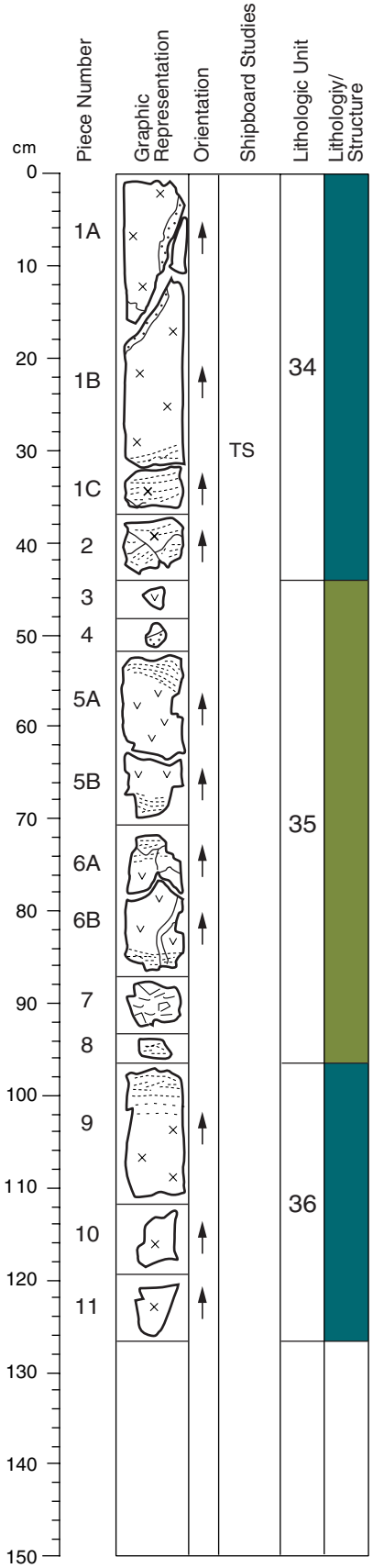
STRUCTURE: Pillow structure with interpillow material such as hyaloclastite.

ALTERATION: Moderate.

VEINS/FRACTURES: Nearly horizontally oriented thin calcite veins 5 mm wide in Piece 6B.

UNIT 36 (see next page)

Core Photo



191-1179D-21R-1 (Cont'd)

UNIT 36: APHYRIC BASALT

Pieces: 9 to 11

	Core	Section	Piece	Depth (cm) in Piece
Interval Location:				
Upper contact:	21R	2	9	top(0)

CONTACTS: Chilled margin on top of Piece 9.

GROUNDMASS: Fine-grained, partly microcrystalline.

VESICLES: 2% to 5%, <0.5 mm in diameter, filled with calcite, celadonite and/or saponite.

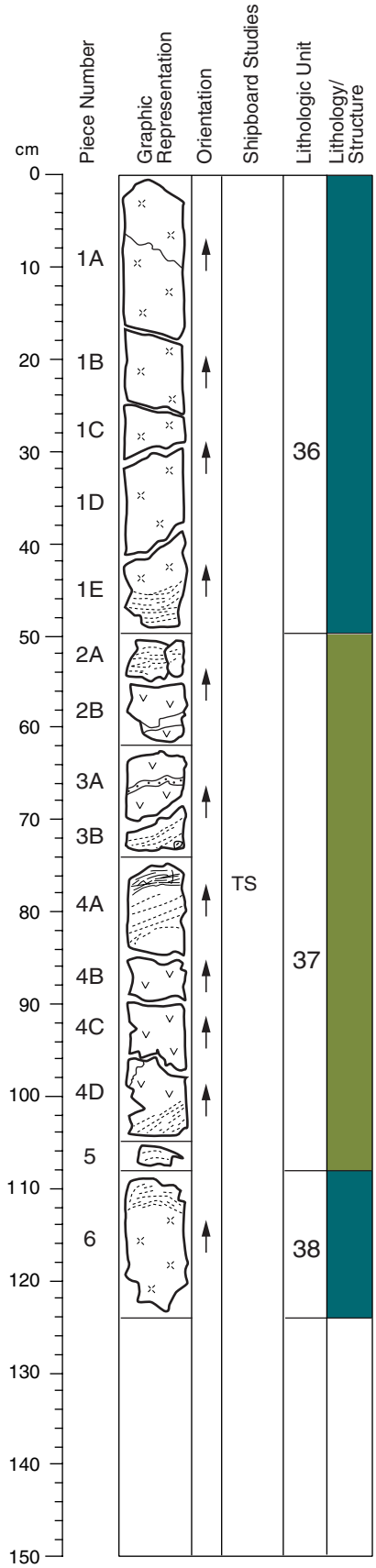
COLOR: Dark brownish gray to yellowish gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate.

VEINS/FRACTURES: Nearly horizontally oriented veins, mostly <0.5 mm wide, filled with calcite.

Core Photo



91-1179D-21R-2 (Section top: 455.46 mbsf)

UNIT 36: APHYRIC BASALT

Pieces: 1A to 1E

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Lower contact:	21R	2	1E	base(9)

CONTACTS: Chilled margin at the base of Piece 1E.

GROUNDMASS: Fine-grained, partly microcrystalline.

VESICLES: 1% to 2%, <0.5 mm in diameter, filled with chlorite, celadonite and/or saponite.

COLOR: Dark brownish gray.

STRUCTURE: Massive lava flow.

ALTERATION: Slight.

VEINS/FRACTURES: Nearly horizontally oriented, <2.0 mm wide, filled with calcite and zeolite.

UNIT 37: APHYRIC BASALT AND HYALOCLASTITE

Pieces: 2A to 5

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Upper contact:	21R	2	2A	top(0)

CONTACTS: Chilled pillow margins in Pieces 2A, 3B, 4A and 4D.

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Olivine:	2	0.6		0.4	euhedral

GROUNDMASS: Mostly fine-grained, partly microcrystalline to glassy.

VESICLES: 1% to 2%, <0.5 mm in diameter, filled with zeolite and other secondary minerals.

COLOR: Dark gray to dark brownish gray, partly dark greenish gray.

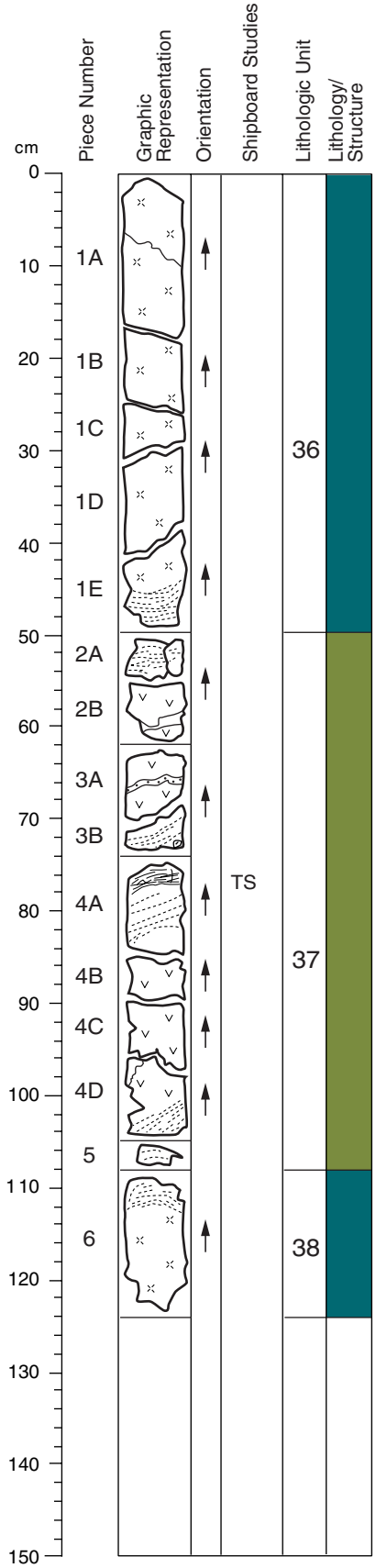
STRUCTURE: Pillow with interpillow material such as hyaloclastite.

ALTERATION: Moderate.

VEINS/FRACTURES: Oriented in nearly vertical and horizontal directions, <2.5 mm wide, filled with calcite and zeolite.

UNIT 38 (see next page)

Core Photo



191-1179D-21R-2 (Cont'd)

UNIT 38: APHYRIC BASALT

Pieces: 6

	Core	Section	Piece	Depth (cm) in Piece
Interval Location:				
Upper contact:	21R	2	6	top(0)

CONTACTS: Chilled margin on top of Piece 6.

GROUNDMASS: Mostly fine-grained, partly microcrystalline.

VESICLES: 2% to 5%, <0.5 mm in diameter, filled with calcite, celadonite, and/or saponite.

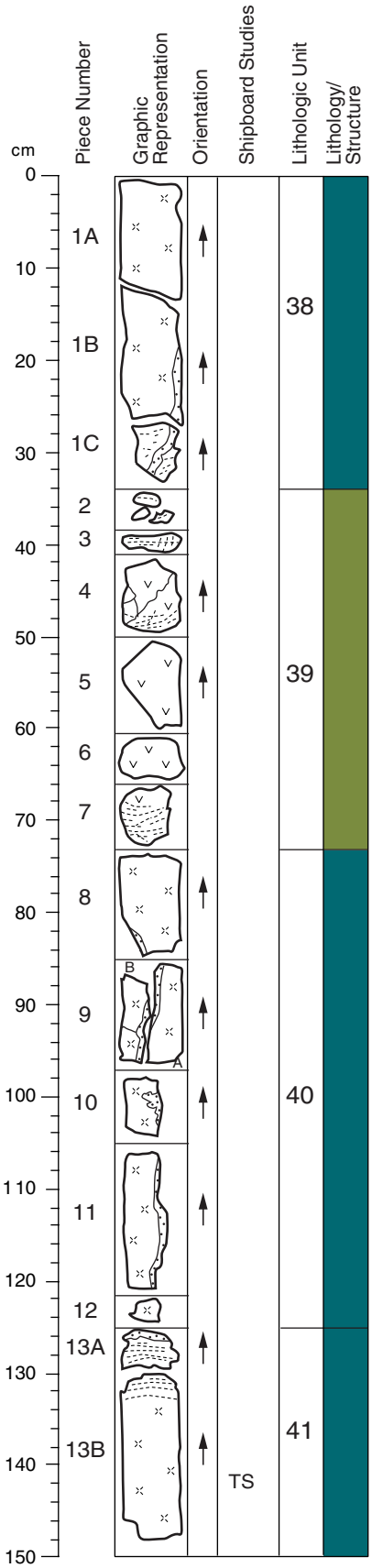
COLOR: Yellowish gray to dark gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate.

VEINS/FRACTURES: Two nearly vertical calcite veins, <1.0 mm wide.

Core Photo



191-1179D-21R-3 (Section top: 456.71 mbsf)

UNIT 38: APHYRIC BASALT

Pieces: 1A to 1C

	Core	Section	Piece	Depth (cm) in Piece
Interval Location:	21R	3	1C	
Lower contact:				base(6)

CONTACTS: Chilled margin at the base of Piece 1C.

GROUNDMASS: Fine-grained to microcrystalline.

VESICLES: < 1%, 0.5 mm in diameter, filled with secondary minerals such as celadonite and/or saponite.

COLOR: Dark gray to dark brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Five veins, randomly oriented, <7.0 mm wide, filled with calcite and zeolite.

UNIT 39: APHYRIC BASALT

Pieces: 2 to 7

CONTACTS: Chilled pillow margins in Pieces 4 and 7.

GROUNDMASS: Microcrystalline to fine-grained.

VESICLES: 1% to 2%, <0.3 mm in diameter, filled with secondary minerals such as celadonite and/or saponite.

COLOR: Dark gray to dark brownish gray.

STRUCTURE: Pillow.

ALTERATION: Moderate.

VEINS/FRACTURES: Five veins, <1.5 mm wide, filled with calcite and zeolite.

UNIT 40: APHYRIC BASALT

Pieces: 8 to 12

CONTACTS: Not observed.

GROUNDMASS: Fine-grained.

VESICLES: 1% to 5%, <0.5 mm in diameter, filled with chlorite, celadonite and/or saponite.

COLOR: Dark brownish gray to greenish gray, partly yellowish gray.

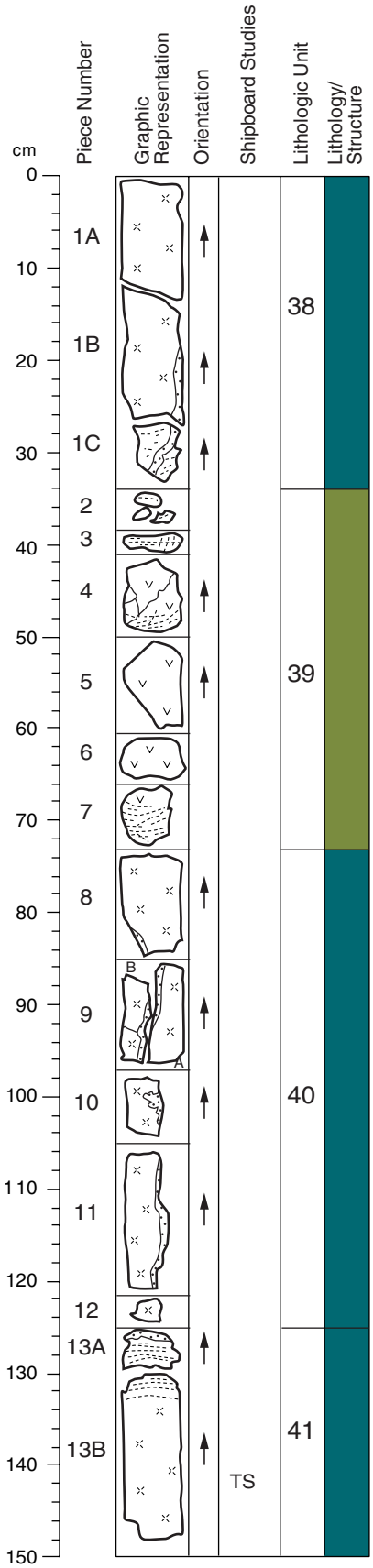
STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: One, nearly vertical, <1.2 mm wide, filled with calcite and zeolite.

UNIT 41 (see next page)

Core Photo



191-1179D-21R-3 (Cont'd)

UNIT 41: APHYRIC BASALT

Pieces: 13A and 13B

CONTACTS: Chilled margin at the top of Piece 13A.

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	0.2			0.5	subhedral
Olivine:	0.5	0.6		0.3	euhedral
Cr-spinel	0.1	0.25		0.2	euhedral

GROUNDMASS: Fine-grained, partly microcrystalline.

VESICLES: 2% to 5%, <0.5 mm in diameter, filled with zeolites/smectite and microcrystalline material.

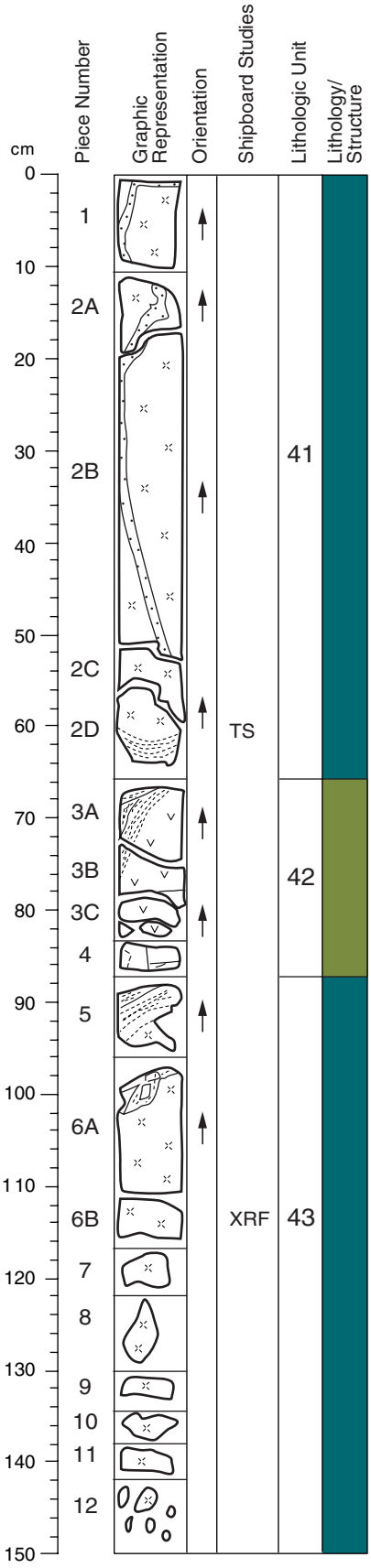
COLOR: Yellowish gray and dark greenish gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate.

VEINS/FRACTURES: Nearly horizontally and/or nearly vertically oriented veins, <1.0 mm wide, filled with calcite and zeolite.

Core Photo



191-1179D-21R-4 (Section top: 458.21 mbsf)

UNIT 41: APHYRIC BASALT

Pieces: 1 to 2D

CONTACTS: Chilled margins at 65 cm between upper flow and the lower pillow .

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Min	Avg.	Shape/Habit
Plagioclase:	0.5	0.5		0.3	subhedral
Olivine:	0.5	2		0.2	euhedral

GROUNDMASS: Fine-grained, subophitic; ~50% plagioclase (dominantly lath-like), ~40% clinopyroxene (anhedral) and 5% olivine.

VESICLES: Few.

COLOR: Dark gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Few veinlets with calcite.

UNIT 42: APHYRIC BASALT

Pieces: 3A to 4

CONTACTS: Contact between upper flow and pillow at 65 cm. Contact between pillow and the lower flow at 87 cm. The latter has ~20 mm recrystallized glassy rim.

GROUNDMASS: Fine-grained, subophitic; ~60% plagioclase (dominantly lath-like), ~40% clinopyroxene.

VESICLES: Very few.

COLOR: Dark greenish gray to brown gray.

STRUCTURE: Pillow.

ALTERATION: Slight to moderate.

VEINS/FRACTURES: Some veinlets filled with calcite.

UNIT 43: APHYRIC BASALT

Pieces: 5 to 12

CONTACTS: Contact between pillow (above) and the lower flow at 87 cm. The surface rim of the basalt flow consists of ~20 mm recrystallized glass.

GROUNDMASS: Fine-grained, subophitic; ~60% plagioclase (dominantly lath-like), ~40% clinopyroxene.

VESICLES: Very few.

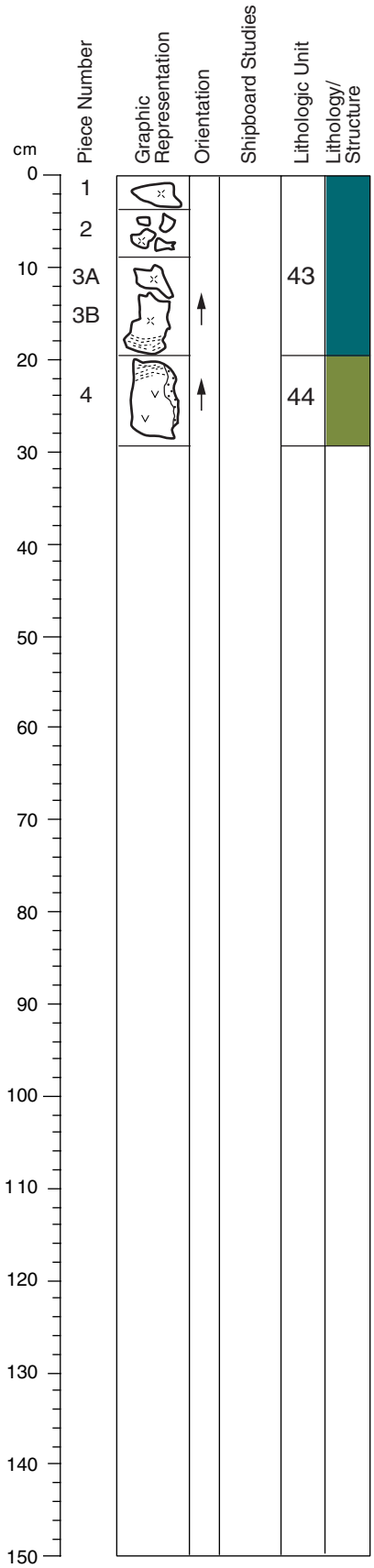
COLOR: Brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight to moderate.

VEINS/FRACTURES: Very few.

Core Photo



191-1179D-21R-5 (Section top: 459.71 mbsf)

UNIT 43: APHYRIC BASALT

Pieces: 1 to 3B

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Lower contact:	21R	5	3B	base(6)

CONTACTS: Chilled margin at the base of Piece 3B.

GROUNDMASS: Fine-grained, partly microcrystalline.

VESICLES: 1% to 2%, <0.3 mm in diameter, filled with secondary minerals.

COLOR: Dark gray to dark brownish gray, partly yellowish gray.

STRUCTURE: Massive flow.

ALTERATION: Moderate.

VEINS/FRACTURES: Three veins, <1.0 mm wide, filled with secondary minerals.

UNIT 44: APHYRIC BASALT

Pieces: 4

Interval Location:	Core	Section	Piece	Depth (cm) in Piece
Upper contact:	21R	5	4	top (0)

CONTACTS: Chilled pillow margin at the top of Piece 4.

GROUNDMASS: Fine-grained, partly microcrystalline.

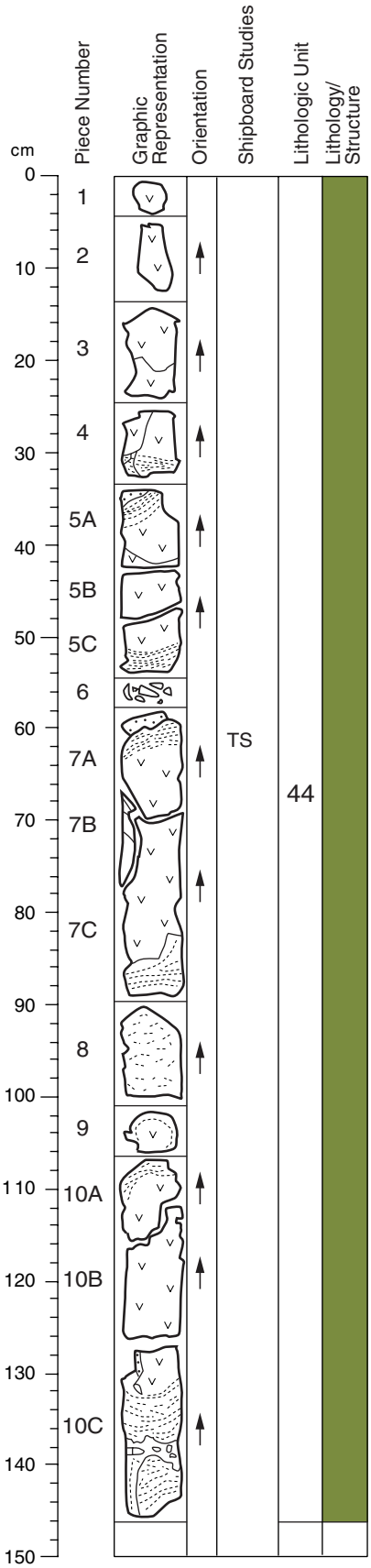
VESICLES: 1% to 2%, <0.5 mm in diameter, filled with secondary minerals.

COLOR: Yellowish gray to dark gray.

STRUCTURE: Pillow.

ALTERATION: Slight.

Core Photo



191-1179D-22R-1 (Section top: 463.8 mbsf)

UNIT 44: SPARSELY OLIVINE PLAGIOCLASE PHYRIC BASALT AND HYALOCLASTITE

Pieces: 1 to 10C

CONTACTS: Chilled pillow margins in Pieces 4, 5A, 5C, 7A, 7C, 8, 9, 10A and 10C.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	1	0.4		0.2	subhedral
Olivine:	1	0.3		0.2	euhedral

GROUNDMASS: Fine-grained to microcrystalline, partly glassy.

VESICLES: 2% - 5%, <0.5 mm in diameter, filled with smectite and calcite.

COLOR: Dark gray, yellowish gray in altered part.

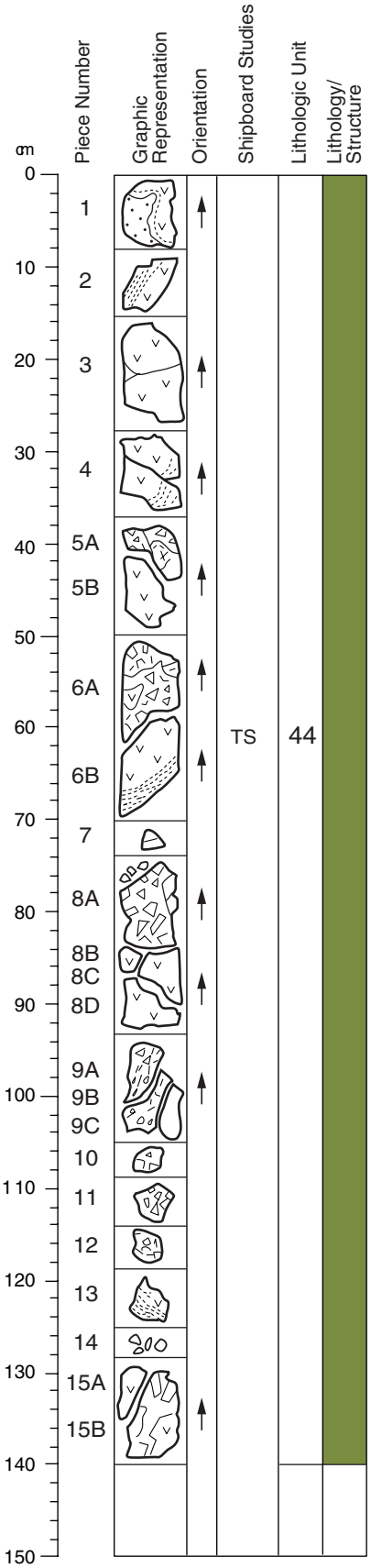
STRUCTURE: Pillow and interpillow materials.

ALTERATION: Moderate.

VEINS/FRACTURES: Nearly vertically oriented, <5 mm wide, mainly filled with calcite.

COMMENTS: Interpillow materials are mostly hyaloclastite.

Core Photo



191-1179D-22R-2 (Section top: 465.27 mbsf)

UNIT 44: APHYRIC BASALT AND INTERPILLOW HYALOCLASTITE

Pieces: 1 to 15B

CONTACTS: Pillow margins in Pieces 1, 2, 6B.

PHENOCRYSTS:

	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Olivine:	0.5	0.4		0.2	euhedral

GROUNDMASS: Microcrystalline to fine-grained.

VESICLES: 1% to 2%, <0.5 mm in diameter, filled with celadonite and calcite.

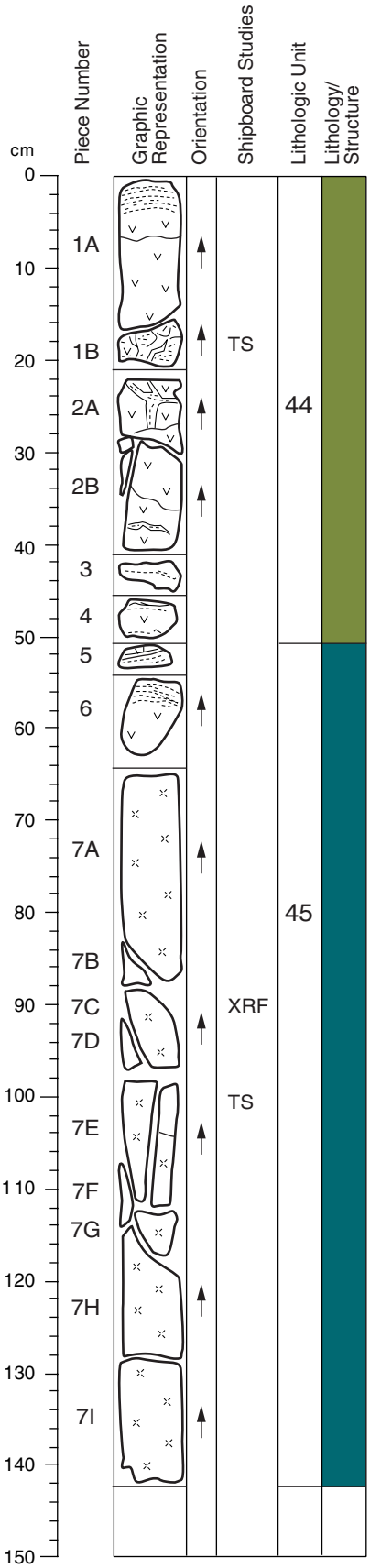
COLOR: Brownish gray to greenish gray.

STRUCTURE: Pillow and interpillow materials. Pieces 7 to 15B pillow breccia.

ALTERATION: Moderate.

VEINS/FRACTURES: Randomly oriented, <1.5 mm wide, filled with calcite.

Core Photo



191-1179D-22R-3 (Section top: 466.68 mbsf)

UNIT 44: APHYRIC BASALT

Pieces: 1A to 4

CONTACTS: Upper contact of pillow at the top of Piece 1A (0 cm). Lower contact of pillow with the basalt flow of Unit 45 at base of Piece 4. Contact is marked by a decrease in grain size and 10-15 mm of recrystallized glass.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Olivine:	0.5	0.6		0.3	euhedral

GROUNDMASS: Microcrystalline to fine-grained; ~45% plagioclase (dominantly lath-like), ~30% clinopyroxene, 2% olivine, and cryptocrystalline matrix.

VESICLES: Scarce, filled with calcite, celadonite, and smectite.

COLOR: Brownish gray.

STRUCTURE: Pillow.

ALTERATION: Slight.

VEINS/FRACTURES: Some veins up to 20 mm with calcite.

UNIT 45: APHYRIC BASALT

Pieces: 5 to 7I

CONTACTS: Contact between pillow of Unit 44 (Piece 4) and flow (Piece 5), marked by decreasing grain size and recrystallized glass rim.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Olivine:	0.5	1.8		0.6	euhedral
Cr-spinel	0.1	0.2		0.2	euhedral

GROUNDMASS: Fine-grained; ~50% plagioclase, ~40% clinopyroxene, and 5% olivine.

VESICLES: Very scarce (0.5%).

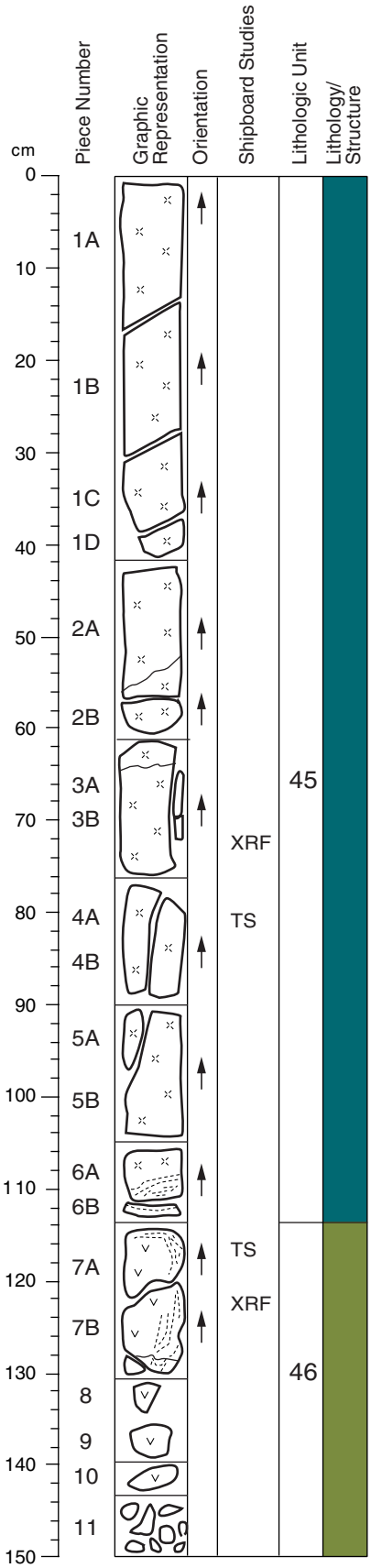
COLOR: Brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Scarce (<<1 to 1 mm).

Core Photo



191-1179D-22R-4 (Section top: 468.1 mbsf)

UNIT 45: SPARSELY OLIVINE PHYRIC BASALT

Pieces: 1 to 6B

CONTACTS: Contact between upper lava flow and lower pillow at 114 cm (Piece 6B and Piece 7A). Contact marked by a decrease in grain size in the flow and recrystallized glass rim in the pillow.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	0.5	2		0.8	euhedral/prismatic
Olivine:	1	0.25		0.2	euhedral

GROUNDMASS: Medium-grained, ophitic; ~55% plagioclase (lath-like), ~40% clinopyroxene and 5% olivine.

VESICLES: Very scarce (0.5%).

COLOR: Brownish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight.

VEINS/FRACTURES: Very few.

UNIT 46: APHYRIC BASALT

Pieces: 7A to 11

CONTACTS: Contact between upper lava flow and lower pillow at 114 cm (between Piece 6B and Piece 7A). Contact marked by a decrease in grain size in the flow and recrystallized glass rim in the pillow.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	0.5			0.2	euhedral

GROUNDMASS: Fine-grained; ~50% plagioclase, ~35% clinopyroxene, 5% olivine and cryptocrystalline interstices.

VESICLES: Some, filled with calcite and indeterminable material.

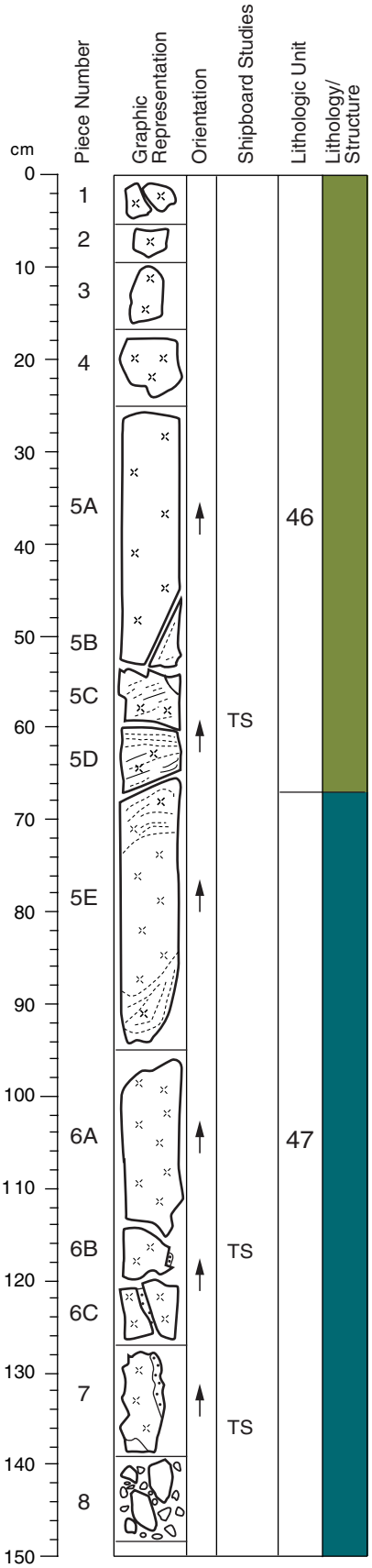
COLOR: Brownish to reddish gray.

STRUCTURE: Pillow.

ALTERATION: Slight.

VEINS/FRACTURES: very few, filled with calcite.

Core Photo



191-1179D-22R-5 (Section top: 469.6 mbsf)

UNIT 46: APHYRIC BASALT

Pieces: 1 to 5D

CONTACTS: Small lower contact in Piece 5D.

PHENOCRYSTS:	%	Grain Size (mm):			
	Mode	Max	Min	Avg.	Shape/Habit
Plagioclase:	0.5	1.2		0.5	subhedral prismatic
Olivine:	0.5	1.2		0.4	euhedral

GROUNDMASS: Fine-grained to microcrystalline.

VESICLES: 2% to 5%, <1.0 mm in diameter, filled with calcite, chlorite, celadonite and smectite.

COLOR: Brownish gray to greenish gray.

STRUCTURE: Pillow.

ALTERATION: Moderate.

VEINS/FRACTURES: Several veins (mostly <2.0 mm wide), filled with calcite.

UNIT 47: APHYRIC BASALT

Pieces: 5E to 8

CONTACTS: Upper contact (5 to 10 mm) of the lava flow in Piece 5E.

GROUNDMASS: Medium-grained, ophitic.

VESICLES: ~5% in pieces 6A to 7, filled with calcite.

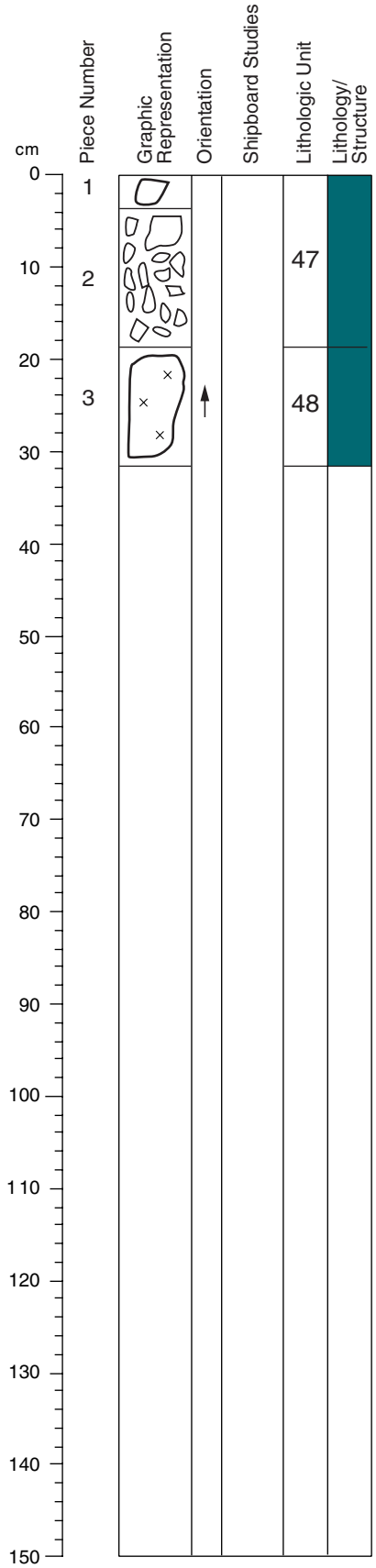
COLOR: Greenish gray.

STRUCTURE: Massive flow.

ALTERATION: Slight to moderate.

VEINS/FRACTURES: Randomly oriented, up to 5 mm thick, filled with calcite and zeolite.

Core Photo



191-1179D-22R-6 (Section top: 471.1 mbsf)

UNIT 47: APHYRIC BASALT

Pieces: 1 and 2

GROUNDMASS: Fine-grained.

COLOR: Greenish gray.

STRUCTURE: Massive flow.

ALTERATION: High.

COMMENTS: Many small crumbled pieces, but the flow texture is clearly recognizable.

UNIT 48: APHYRIC BASALT

Pieces: 3

CONTACTS: None.

GROUNDMASS: Fine-grained; ~60% plagioclase (lath-like), ~40% clinopyroxene.

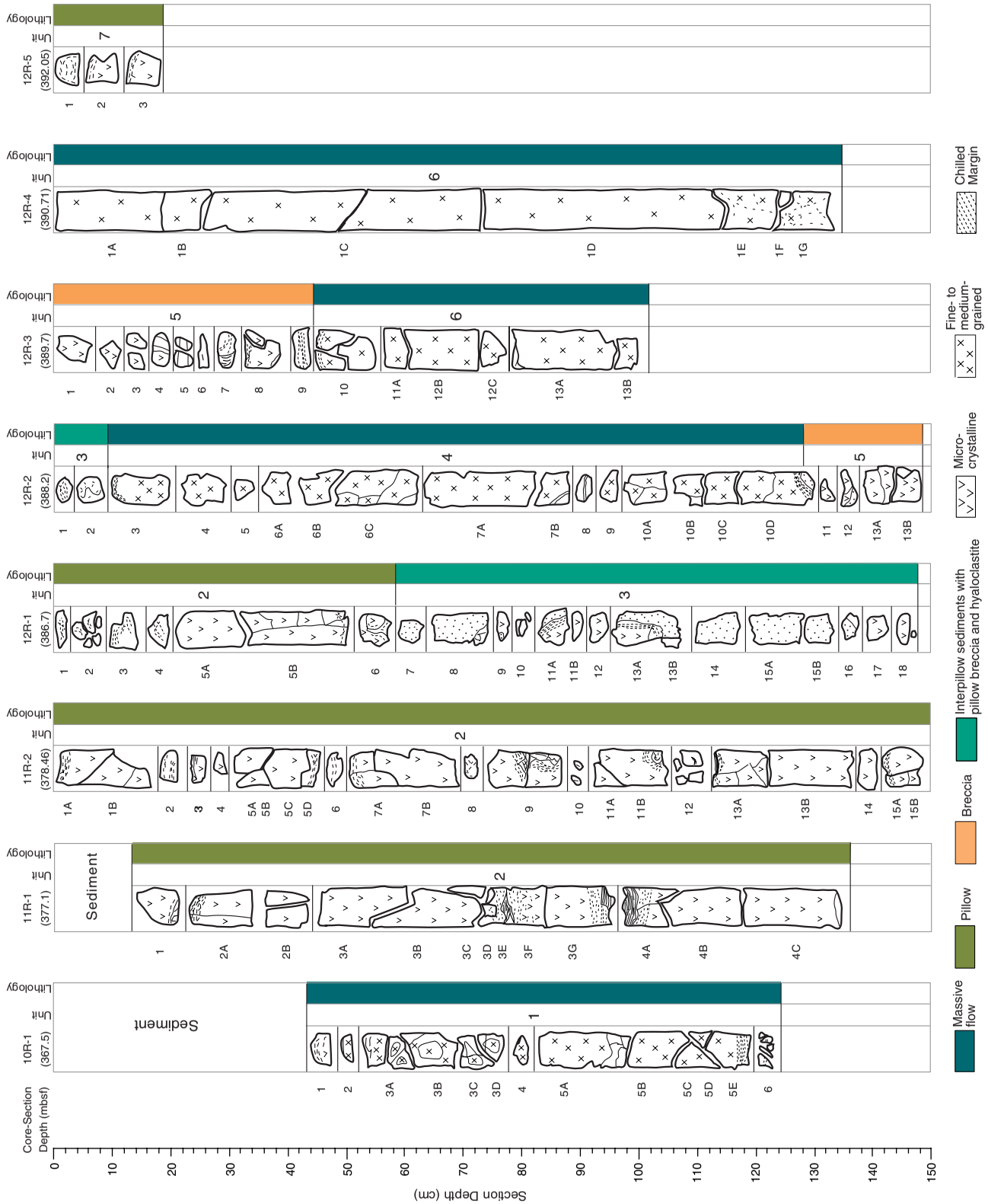
VESICLES: ~5%, filled with calcite and smectite/celadonite.

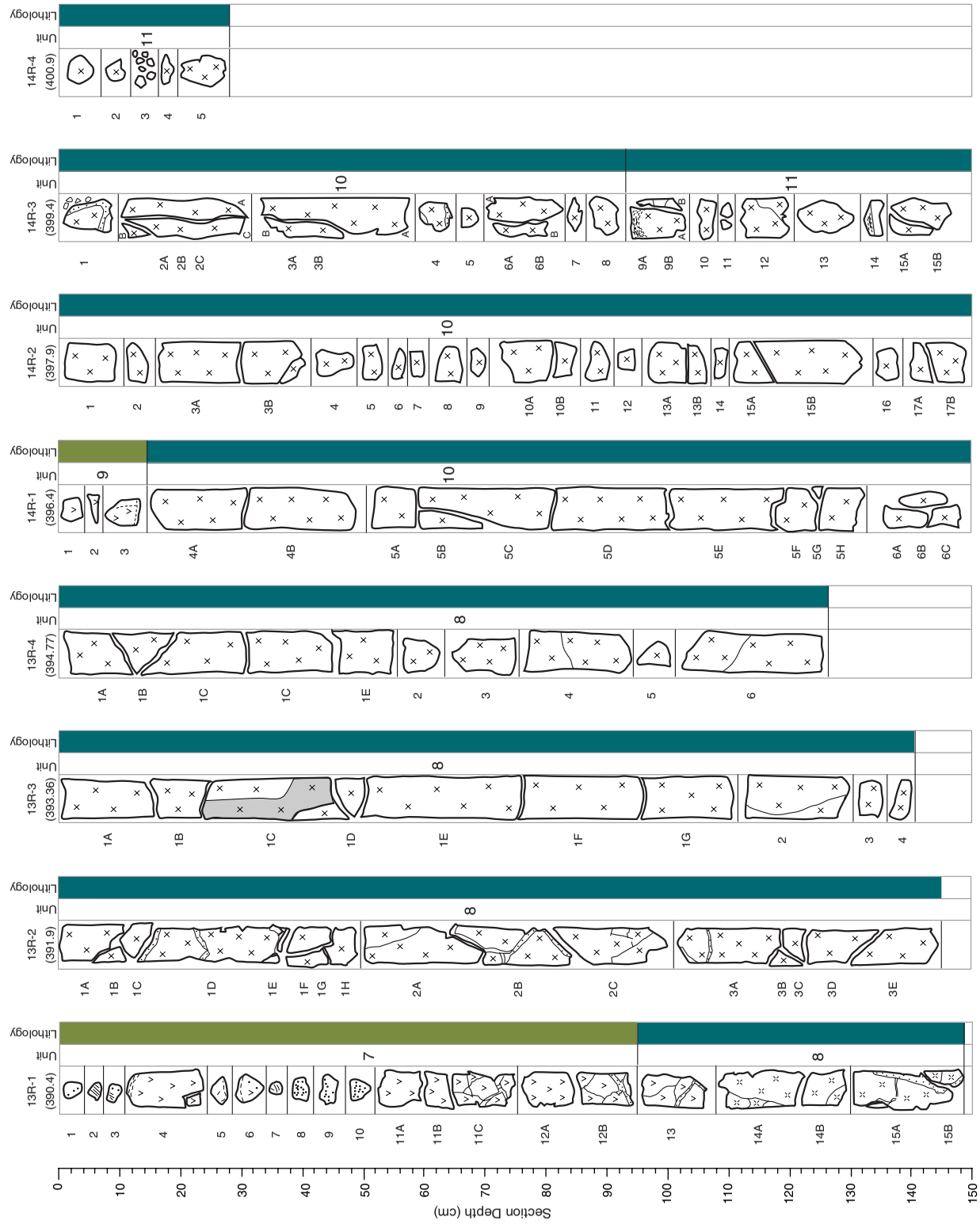
COLOR: Greenish to brownish gray.

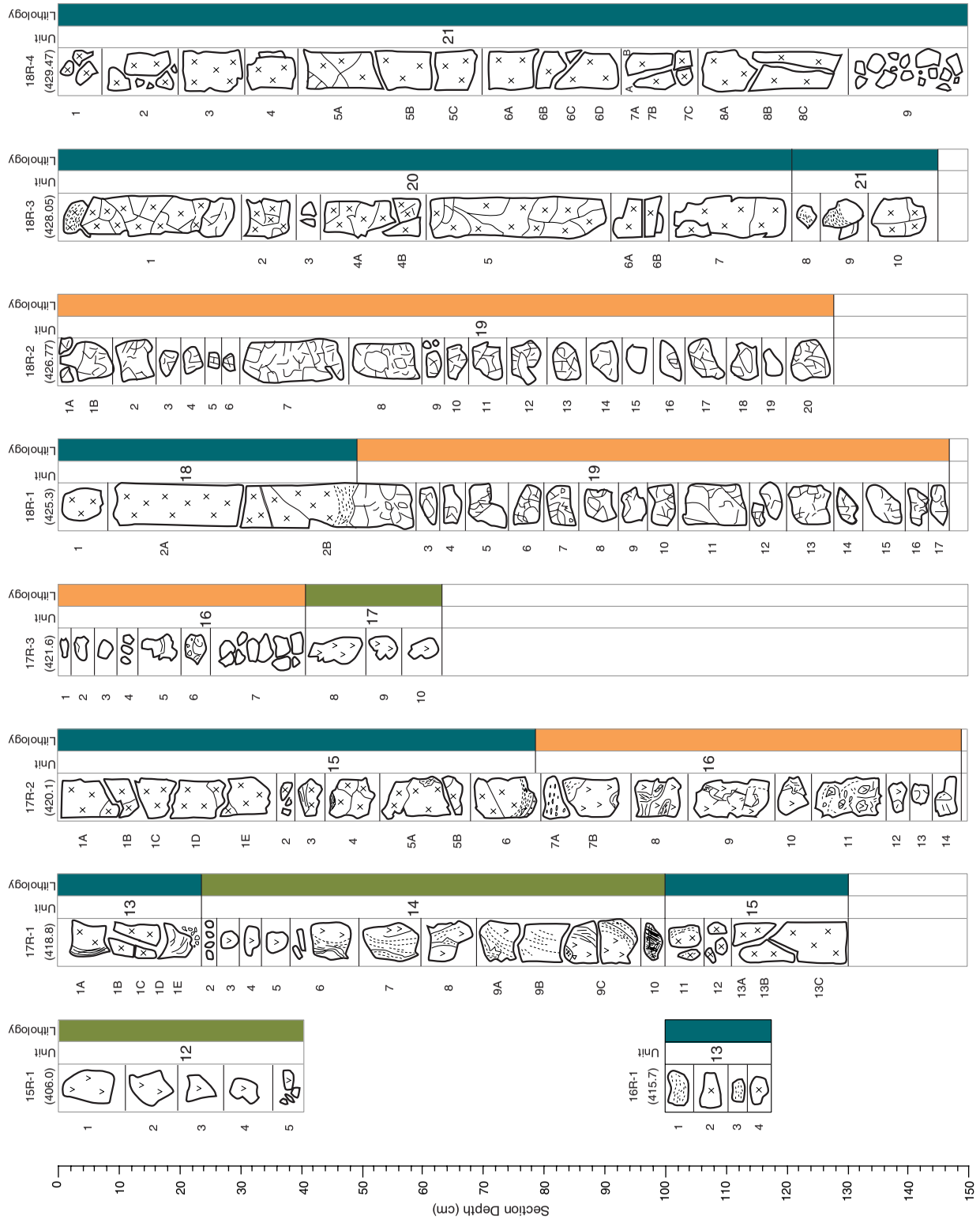
STRUCTURE: Flow or pillow.

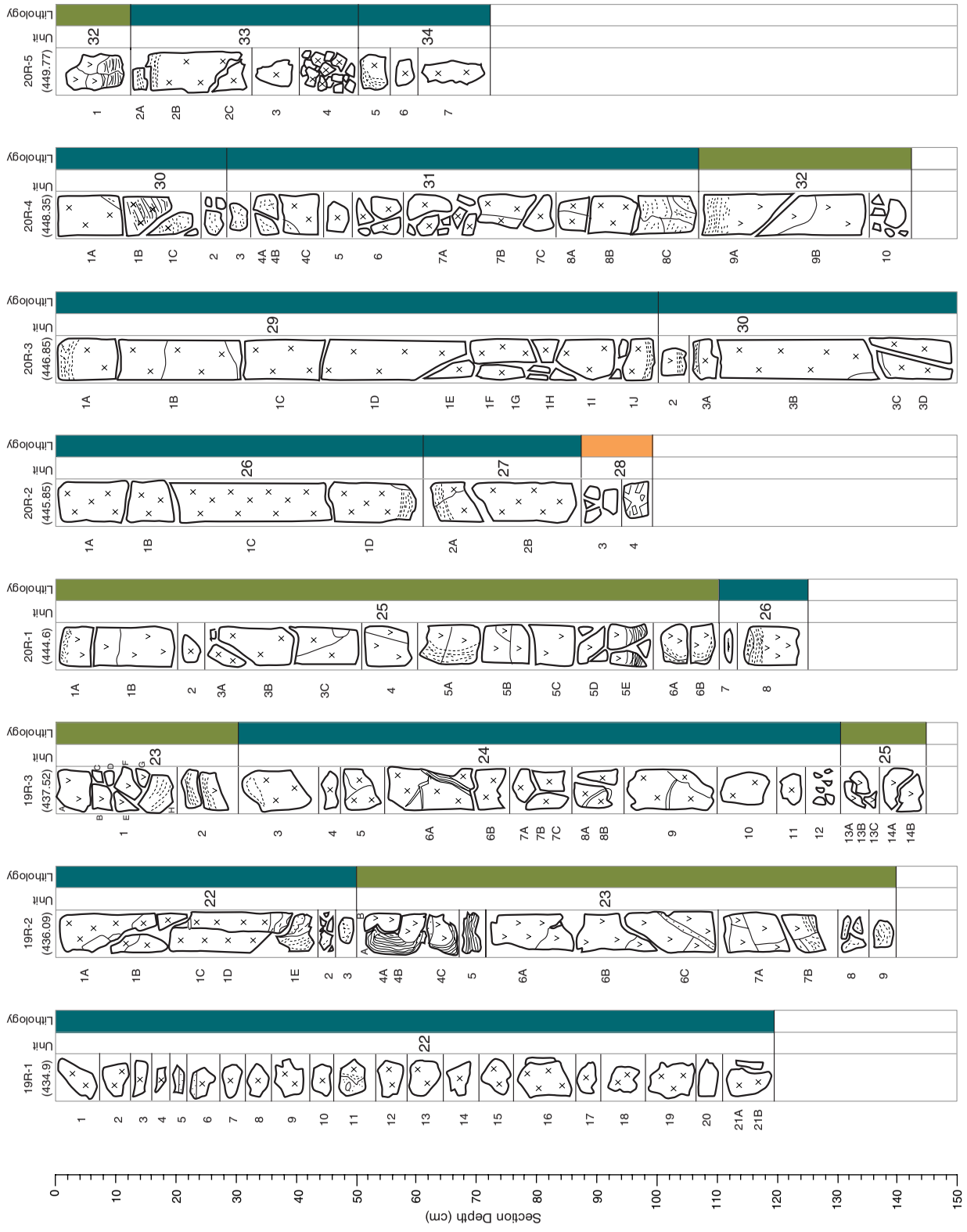
ALTERATION: Slight.

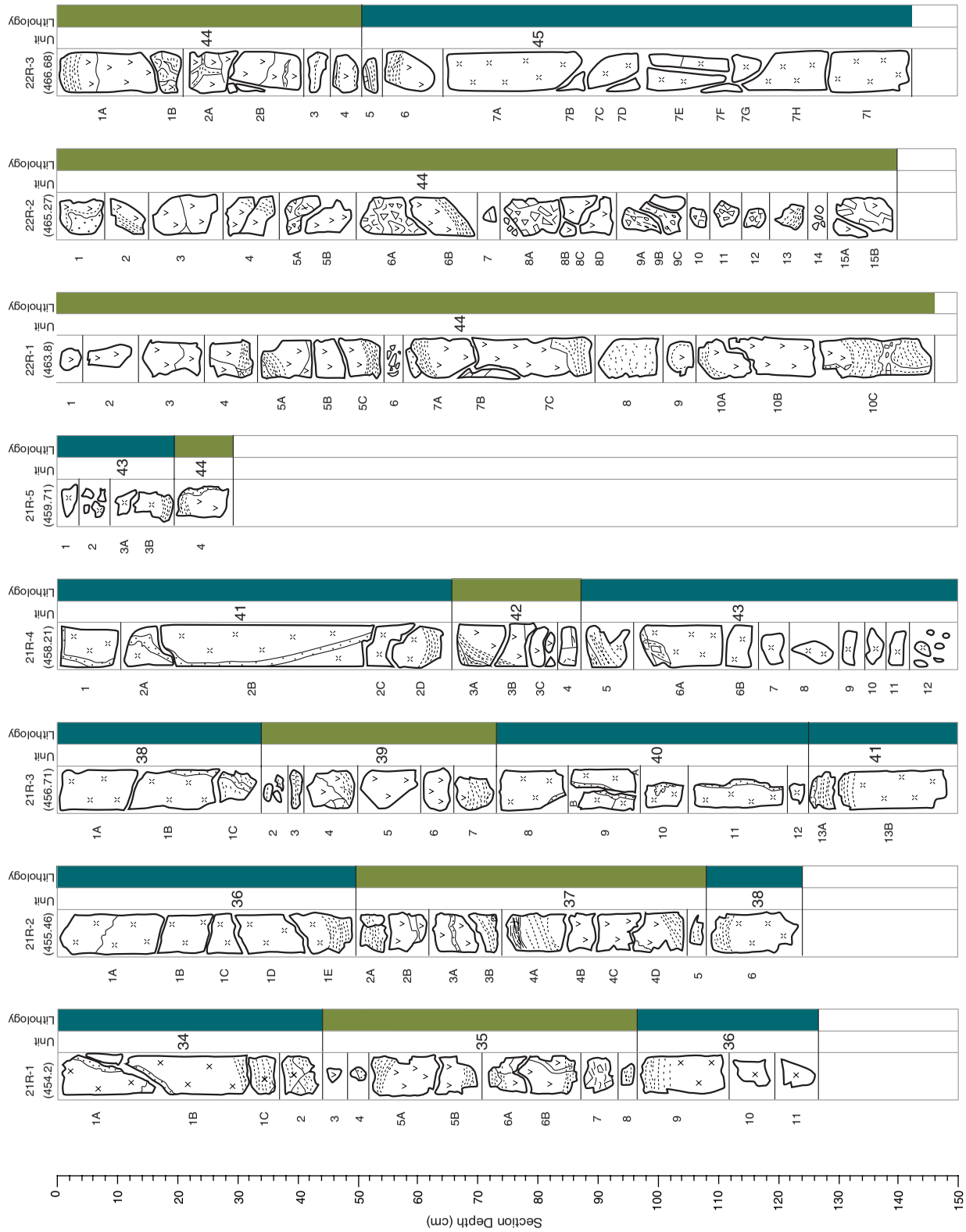
VEINS/FRACTURES: Few, <<1 to 1 mm, filled with secondary minerals.

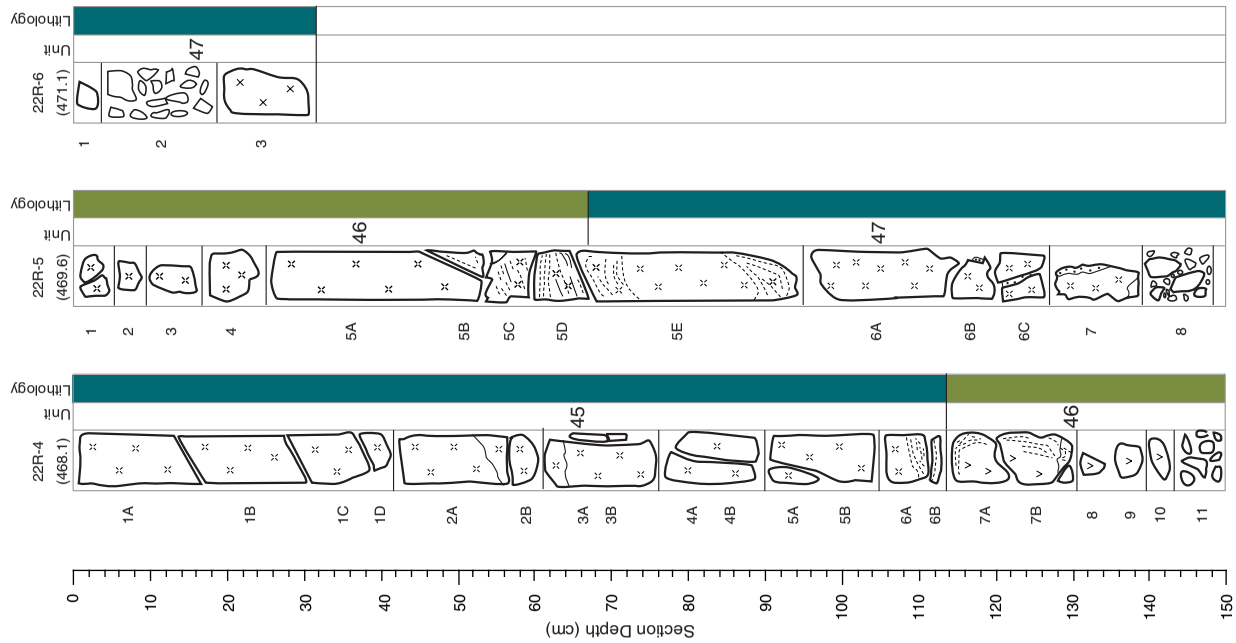

Core-Section
Depth (mbsf)
Lithology
Unit
10R-1 (367.5)
11R-1 (377.1)
11R-2 (378.46)
12R-1 (386.7)
12R-2 (388.2)
12R-3 (389.7)
12R-4 (390.71)
12R-5 (392.05)
Sediment
Section Depth (cm)
Massive flow
Pillow
Breccia
Interpillow sediments with pillow breccia and hyaloclastite
Micro-crystalline
Fine- to medium-grained
Chilled Margin


14R-4 (400.9)
13R-3 (399.4)
14R-2 (397.9)
14R-1 (396.4)
13R-4 (394.77)
13R-3 (393.36)
13R-2 (391.9)
13R-1 (390.4)
Lithology
Unit
Section Depth (cm)


Lithology
Unit
18R-4 (429.47)
18R-3 (428.05)
18R-2 (426.77)
18R-1 (425.3)
17R-3 (421.6)
17R-2 (420.1)
17R-1 (418.8)
15R-1 (406.0)
16R-1 (415.7)
Section Depth (cm)


Lithology
Unit
20R-5 (449.77)
20R-4 (448.35)
20R-3 (446.85)
20R-2 (445.85)
20R-1 (444.6)
19R-3 (437.52)
19R-2 (436.09)
19R-1 (434.9)
Section Depth (cm)


Section Depth (cm)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
22R-3 (466.68)
22R-2 (465.27)
22R-1 (463.8)
21R-5 (459.71)
21R-4 (458.21)
21R-3 (456.71)
21R-2 (455.46)
21R-1 (454.2)
Unit
Lithology


Lithology
Unit
22R-6 (471.1)
47
1
2
3
Lithology
Unit
22R-5 (469.6)
46
47
1
2
3
4
5A
5B
5C
5D
5E
6A
6B
6C
7
8
Lithology
Unit
22R-4 (468.1)
45
46
1A
1B
1C
1D
2A
2B
3A
3B
4A
4B
5A
5B
6A
6B
7A
7B
8
9
10
11
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
Section Depth (cm)

											Minerals											Biogenic									
Site	Hole	Core	CT	Section	Top	Depth	Lithology	Sand	Silt	Clay	Accessory Minerals (1)	Dolomite	Carbonate (35)	Clay (47)	Fe Oxide (68)	Feldspar (71)	Opaques (140)	Plagioclase (159)	Quartz (172)	Volcanic Glass (81)	Zeolite (222)	Coccolith (51)	Diatoms (58)	Dinoflagellate (59)	Fish Remains (74)	Foraminifers (78)	Nannofossils (132)	Radiolarians (173)	Silic Sponge Spicules (185)	Silicoflagellates (189)	Comments
1179	A	1	H	1	0	0.00	D	50	42	8	*			8	*			*		*			70		*			15	2	5	Siliceous ooze (Clay and silicoflagellate-bearing, radiolarian-rich diatom ooze)
1179	A	1	H	3	92	3.92	D	55	30	15				22	*		*	*	3				70					2	3		Siliceous ooze. Radiolarians are fragmented
1179	A	1	H	4	41	4.41	M	55	30	15				19	*	3				15			60						3		Ashy diatomaceous clay
1179	A	1	H	7	76	8.36	D	80	15	5				5					3	92											Ash
1179	B	1	H	1	60	0.60	D	50	40	10				12	2	*	*		1	5			75					5		*	Siliceous ooze (Clay, ash and radiolarian-bearing diatom ooze) Silt is mainly fragments of diatoms
1179	B	1	H	2	105	2.55	D	65	30	5				5			*		1	3			85					3	3	*	Diatom ooze
1179	B	1	H	5	34	6.34	D	65	20	15				15				2	1				65					10	2		Siliceous ooze
1179	B	1	H	CC	0	7.43	D	45	45	10	*			10	*	*	*		1	1			70		*			13	2	3	Clay and silicoflagellate-bearing radiolarian-rich diatom ooze. Accessory mineral: blue but not hornblende
1179	B	2	H	1	80	8.40	D	55	25	20				20		*			4	4			65					5	2		Clay-rich diatom ooze
1179	B	2	H	2	60	9.70	M	70	30	0						2			3	95											Vitric ash
1179	B	2	H	3	149	12.09	D	50	40	10	*			10			*	*	1	1			70					13	5	*	Clay-bearing radiolarian-rich diatom ooze. Accessory mineral is pyroxene
1179	B	2	H	5	39	13.99	D	15	35	50				50		*			*	3	40		3		*			3	1		Zeolitic clay
1179	B	2	H	5	42	14.02	D	33	20	47				47					5	6	26		10		*			2	4		Zeolitic clay. Zeolite is phillipsite
1179	B	2	H	6	69	15.79	D	9	21	70				30					3	15	20		26					4	2		Siliceous clay
1179	B	3	H	1	40	17.50	D	40	40	20				20		*			1	3			69					2	5		Clay-bearing diatom ooze
1179	B	3	H	1	128	18.38	M	10	35	55				50			*		1	10	37		1					1	*		Zeolitic claystone (one of green ashy clays). Clots of clay, (~100 micrometers) with elongate laths (5-80 micrometers) through them, presumably clay and zeolite replacement of glass. Masses, 40-50 micrometer-size, of zeolite are in the clay clots
1179	B	3	H	1	132	18.42	D	50	15	35				35		*			3	2			50		*			5	5		Clay-rich diatom ooze
1179	B	3	H	4	85	22.45	M	10	45	45				45					1	10	30		10					1	3		Zeolitic claystone. One of the dark green firm clay beds
1179	B	3	H	5	80	23.90	M	30	30	40				40		*	*		1	6	5		43					3	2	*	Clay-rich siliceous ooze. A light brownish gray layer
1179	B	3	H	6	54	25.14	D	22	30	48				36			1		3	8	4		28					12	8		Clayey siliceous ooze
1179	B	3	H	7	60	26.70	D	25	30	45				33					4	5	11		36					3	8		Clayey siliceous ooze
1179	B	3	H	CC	0	26.93	D	62	30	8				8			*	*	*				84					5	3	*	Diatom ooze
1179	B	4	H	1	100	27.60	D	45	35	20				20		*	*		1	6	2		58					10	3	*	Glass and radiolarian-bearing clay-rich diatom ooze. Some radiolarians have dark coatings
1179	B	4	H	3	59	30.19	D	50	25	25				24	*		*		1	10			55					10			Siliceous ooze
1179	B	4	H	4	89	31.99	D	10	40	50				25			1		8	6			45					9	5	1	Clay-bearing diatom ooze
1179	B	4	H	5	8	32.68	D	20	50	30			*	25			1		1	3	1		60					6	2	1	Clay-bearing diatom ooze. Reflected light on framboid-shaped opaque minerals, thought to be pyrite, shows no metallic brassy color. Some very fine silt-sized (~3-5 micrometers) high-birefringent carbonate grains might be nannofossils, but no obvious shapes. Most volcanic glass is light, but some is brown
1179	B	4	H	6	81	34.91	D	35	35	30				30		3				25	34		5					3			Ashy zeolitic clay
1179	B	4	H	7	30	35.90	D	30	30	40				20		*	1		11	5			52					10	1	*	Clay-bearing diatom ooze
1179	B	5	H	1	30	36.40	M	85	15	*						5	*		1	94											Vitric ash. Accessory mineral is pyroxene
1179	B	5	H	1	107	37.17	D	40	10	50				50		*			*	1	2		40					4	3	*	Diatom-rich clay. Zeolite is phillipsite
1179	B	5	H	2	25	37.85	D	30	10	60				60		*	*		1	5	2		26					3	2	1	Diatom-rich clay. Zeolite is phillipsite
1179	B	5	H	3	106	40.16	D	30	5	65				65		*			*	2	*		27					5	1		Diatom-rich clay. Zeolite is phillipsite
1179	B	5	H	4	80	41.40	D	40	5	55				55		*	*		*	1	*		40					4		*	Diatom-rich clay. Zeolite is phillipsite
1179	B	5	H	5	111	43.21	D	30	34	36				25					3	2			55					4	10	1	Siliceous ooze. Diatoms well preserved
1179	B	5	H	6	97	44.57	D	15	25	60				60		*	*			3			25					12			Diatom-rich clay
1179	B	5	H	7	32	45.42	D	15	45	40				40						*			55					5			Siliceous ooze

											Minerals											Biogenic									
Site	Hole	Core	CT	Section	Top	Depth	Lithology	Sand	Silt	Clay	Accessory Minerals (1)	Dolomite	Carbonate (35)	Clay (47)	Fe Oxide (68)	Feldspar (71)	Opaques (140)	Plagioclase (159)	Quartz (172)	Volcanic Glass (81)	Zeolite (222)	Coccolith (51)	Diatoms (58)	Dinoflagellate (59)	Fish Remains (74)	Foraminifers (78)	Nannofossils (132)	Radiolarians (173)	Silic Sponge Spicules (185)	Silicoflagellates (189)	Comments
1179	B	6	H	1	18	45.78	M	55	35	10		35		10					1				40					10	4		Dolomite-rich siliceous ooze
1179	B	6	H	1	60	46.20	D	65	5	30				30					1	8	1		40					18	2	*	Clay-rich siliceous ooze. Zeolite: phillipsite
1179	B	6	H	1	110	46.70	D	50	10	40				40					1	3	*		45		*			10	1		Clay-rich diatom ooze. Many broken radiolarian spines. Zeolite: phillipsite
1179	B	6	H	3	91	49.51	D	50	15	35				35			*		1	4			50					6	3	1	Clay-rich diatom ooze. Radiolarians mainly broken
1179	B	6	H	4	11	50.21	D	15	65	20				20			*		4				50					20	2	4	Clay- and radiolarian-bearing diatom ooze
1179	B	6	H	4	49	50.59	D	60	20	20		10		18					3				65					2	1	1	Clay- and dolomite-bearing diatom ooze
1179	B	6	H	4	89	50.99	D	20	50	30				30			2		10	5	2		40					10	1	*	Clay-rich diatom ooze. Adjacent to a dark-green ashy clay lamina. Zeolite is phillipsite
1179	B	6	H	4	113	51.23	M	30	60	10				10			3		8	30	2		35					10	2	*	Ash-rich siliceous ooze. Next to a green clay lamina
1179	B	6	H	4	113	51.23	M	80	20	0	1								4	95											Vitric ash (in the ashy part). Brown accessory mineral might be hornblende
1179	B	6	H	5	14	51.74	D	55	10	35				35		*			1	2	*	*	45					13	3	1	Clay-rich diatom ooze. Zeolite: phillipsite
1179	B	6	H	5	75	52.35	D	15	35	50				26					2	2	10		40					13	5	2	Clay-bearing siliceous ooze. Zeolite: phillipsite
1179	B	6	H	6	121	54.31	D	21	46	33				9					1		2		45					34	6	3	Siliceous ooze. Silicoflagellates well preserved
1179	B	6	H	7	49	55.09	D	36	53	11				8						2			44					38	5	3	Siliceous ooze

											Minerals										Biogenic components						Rock	
Site	Hole	Core	CT	Section	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Accessory Minerals (1)	Dolomite	Clay (47)	Fe Oxide (68)	Feld-spar (71)	Opaques (140)	Plagioclase (159)	Quartz (172)	Volcanic Glass (81)	Zeolite (222)	Diatoms (58)	Fish Remains (74)	Nannofossils (132)	Radiolarians (173)	Silic Sponge Spicules (185)	Silicoflagellates (189)	Rock Frag.	Comments
1179	C	1	H	1	70	0.70	D	40	10	50	*		50		1	*		1	1	2	32			10	3			Diatom-rich clay. Accessory mineral is pyroxene
1179	C	1	H	3	119	4.19	D	30	15	55			53		*			2	2		34			5	4			Diatom-rich clay
1179	C	1	H	4	68	5.18	D	35	20	45			33		1	1		3	2		50			5	5			Clay-rich diatom ooze
1179	C	2	H	1	100	49.80	D	65	10	25			25		*			1	2		40			27	4	1		Clay and radiolarian-bearing diatom ooze. Includes brown glass
1179	C	2	H	5	11	54.91	D	60	15	25			25		*			1	*		37			30	5	2		Clayey siliceous ooze. Radiolarians mainly broken
1179	C	2	H	5	87	55.67	D	55	15	30			30		*			1	*		40			22	6	1		Clay and radiolarian-rich diatom ooze
1179	C	2	H	7	40	58.20	D	60	15	25			25		1			1	1		40			25	6	1		Clay and radiolarian-rich diatom ooze. Radiolarian tests, and many spines
1179	C	3	H	1	12	58.42	M	6	90	4		80	4					3	8		5			*	*			Dolomitic concretion?? Piece of firm lithology in drilling-distrubed ooze at top of core
1179	C	3	H	1	128	59.58	M	10	30	60			50			*		20	10	20				*				Quartzose zeolitic clay. A thin dark green clay layer
1179	C	3	H	2	25	60.05	D	70	15	15			15		1			1	*		65			14	3	1		Clay and radiolarian-bearing diatom ooze
1179	C	3	H	2	87	60.67	D	65	15	20			20		*			1			60			16	2	1		Clay and radiolarian-rich diatom ooze
1179	C	3	H	2	99	60.79	D	30	50	20		25	10			*		3			50			11	1	*		Calcareous diatom ooze
1179	C	3	H	3	75	62.05	D	70	5	25			25		*	*		*	25	*	45			5	*			Ash and clay-rich siliceous ooze
1179	C	3	H	4	104	63.84	M	30	40	30		8	4						1		38			45	3	1		Radiolarian-rich diatom ooze
1179	C	3	H	6	125	67.05	D	40	42	18			20							5	45			20	7	3		Siliceous ooze
1179	C	3	H	7	7	67.37	D	35	40	25			24			*			3	8	57			5	2	1		Diatom ooze
1179	C	3	H	CC	0	67.70	D	65	15	20			20			*	*		1	2	55			19	3			Clay and radiolarian-rich diatom ooze
1179	C	4	H	3	90	71.70	D	70	10	20			20	*	2			2	5		40	*		28	2	1		Clay-rich siliceous ooze
1179	C	4	H	5	20	74.00	M	90	5	5	*		5		1			*	94		*					*		Vitric ash. Accessory mineral is hornblende. Whole and broken diatoms and radiolarian spines
1179	C	5	H	2	90	79.70	D	55	20	25			25	*	2			2	12		40			15	3	1		Ash-bearing clay-rich siliceous ooze. Accessory mineral pyroxene(?). Mostly broken spines and broken tests of radiolarians
1179	C	5	H	6	50	85.30	D	38	43	19									2	2	66			24	4	2		Radiolarian-rich diatom ooze
1179	C	6	H	1	75	87.55	D	65	10	25			25		1	*		1	2		45	*		22	3	1		Clay and radiolarian-rich diatom ooze
1179	C	6	H	2	126	89.56	M	90	7	3	*		3			1		*	35		35	*		23	3			Ash-rich siliceous ooze. A light colored mottle. Accessory mineral is hornblende. Mainly broken radiolarians
1179	C	6	H	4	90	92.20	M	30	60	10		5	8			*		8	*	1	45		*	25	8			Radiolarian-rich diatom ooze. Small amount of carbonate is present. Zeolite: phillipsite(?)
1179	C	6	H	4	116	92.46	M	80	20	*					1	1		3	95									Vitric ash. Grains of light glass, many with inclusions (opaque minerals) and pipe vesicles
1179	C	6	H	5	73	93.53	D	75	10	15			15		1	*		1	5		45			30	3	*		Clay-bearing siliceous ooze
1179	C	6	H	6	57	94.87	D	70	10	20			20		1			2	2		55			14	6			Clay and radiolarian-bearing diatom ooze. Mostly silt-sized quartz
1179	C	7	H	2	7	97.87	D	65	15	20			20		1				1	3	60			15				Radiolarian-bearing siliceous ooze
1179	C	7	H	4	101	101.81	D	50	25	25			25		1	*		1	*	1	55			17				Siliceous ooze
1179	C	7	H	6	18	103.98	D	40	35	25			25		3					2	55			15				Siliceous ooze
1179	C	8	H	2	80	108.10	D	50	15	35			35		2	*			2		40			18	3			Clay-rich siliceous ooze
1179	C	8	H	5	140	113.20	D	10	68	22			10						2	1	70			13	3	1		Siliceous ooze
1179	C	9	H	3	80	119.10	D	16	32	52			30							3	46			18	3			Clayey siliceous ooze
1179	C	9	H	6	110	123.90	D	23	41	36			23						2	2	41			29	3			Radiolarian-rich diatom ooze
1179	C	10	H	1	100	125.80	D	25	65	10	*		5					3	2		65	*		20	5	*		Radiolarian-bearing diatom ooze. Brown accessory minerals might be hornblende
1179	C	10	H	1	125	126.05	D	35	40	25			25		3				3		55			14				Siliceous ooze
1179	C	10	H	2	100	127.30	D	25	65	10			7			*		2	*		65			19	5	2		Radiolarian-bearing diatom ooze
1179	C	10	H	3	38	128.18	D	35	35	30			25							10	55			10				Radiolarian-bearing diatomaceous ooze. Zeolite: phillipsite
1179	C	10	H	3	100	128.80	D	30	55	15			9			*		3	*	1	55			25	6	1		Radiolarian-bearing diatom ooze. Zeolite: phillipsite
1179	C	10	H	4	8	129.38	D	54	20	26			25		*					3	60			12				Radiolarian-bearing diatomaceous ooze

											Minerals										Biogenic components						Rock	
Site	Hole	Core	CT	Section	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Accessory Minerals (1)	Dolomite	Clay (47)	Fe Oxide (68)	Feld-spar (71)	Opaques (140)	Plagioclase (159)	Quartz (172)	Volcanic Glass (81)	Zeolite (222)	Diatoms (58)	Fish Remains (74)	Nannofossils (132)	Radiolarians (173)	Silic Sponge Spicules (185)	Silicoflagellates (189)	Rock Frag.	Comments
1179	C	10	H	4	98	130.28	M	70	25	5			5						50	40	5							Volcanic glass-bearing zeolite mudstone. From an indurated pebble in the section
1179	C	10	H	4	100	130.30	D	30	50	20			8			*		2	*	1	60			23	4	2		Radiolarian-bearing diatom ooze. Zeolite: phillipsite
1179	C	10	H	5	57	131.37	D	40	35	25			25		*				*		60			15				Radiolarian-bearing diatom ooze
1179	C	10	H	5	100	131.80	D	25	60	15			9			*		5		4	60	1		20		1		Radiolarian-bearing diatom ooze. Zeolite: phillipsite
1179	C	11	H	2	100	136.80	D	30	50	20			6			*		2		*	55	*		30	6	1		Radiolarian-rich diatom ooze. Zeolite: phillipsite. Trace of brown volcanic glass included
1179	C	11	H	3	100	138.30	D	20	70	10			7					2	*		60			22	8	1		Radiolarian-bearing diatom ooze
1179	C	11	H	4	100	139.80	D	20	70	10			5			1		1	1		65			24	3	*		Radiolarian-bearing diatom ooze
1179	C	11	H	5	55	140.85	D	60	15	25			25		*			1	1		50			21	1	1		Radiolarian and clay-rich diatom ooze
1179	C	11	H	5	99	141.29	D	25	65	10		1	8			*		2		*	60			23	5	1		Radiolarian-bearing diatom ooze Polycrystalline dolomite has high birefringence
1179	C	11	H	6	56	142.36	D	60	15	25			25		*			*	*		55			15	3	2		Radiolarian-bearing clay-rich diatom ooze
1179	C	11	H	6	100	142.80	D	30	50	20			8					2	2		60			25	3	*		Radiolarian-bearing diatom ooze. Quartz is in the 5-micrometer range. Trace of brown volcanic glass included
1179	C	12	H	2	100	146.30	D	20	65	15			5			1		1	*	*	65			21	6	1		Radiolarian-bearing diatom ooze. Zeolite: phillipsite
1179	C	12	H	2	106	146.36	D	42	48	10			5					1	*	*	50			39	4	1		Radiolarian-rich diatom ooze
1179	C	12	H	4	72	149.02	D	21	44	35			20						2		50			20	6	2		Clay and radiolarian-bearing diatom ooze
1179	C	13	H	1	100	154.30	D	25	60	15			10			*		2	1		60			21	5	1		Radiolarian-bearing diatom ooze
1179	C	13	H	3	100	157.30	D	20	65	15			10			*		2	*		60			21	6	1		Radiolarian-bearing diatom ooze
1179	C	13	H	4	99	158.79	D	55	10	35			35		2			1			50			11	1			Clay-rich radiolarian bearing diatom ooze. The slicker of the alternating slick and rough intervals
1179	C	13	H	4	105	158.85	D	55	10	35			35		2			1			50			10	2			Clay-rich radiolarian-bearing diatom ooze. The rougher of the alternating slick and rough intervals. No significant compositional difference between the two
1179	C	13	H	5	116	160.46	M	35	50	15			15		1			1		40	30			12	1			Diatom-rich zeolitic mud
1179	C	14	H	1	100	163.80	D	25	55	20			12			*		3	1	2	55			20	6	1		Radiolarian-bearing diatom ooze
1179	C	14	H	1	123	164.03	D	14	34	52			36						2	4	40			14	4			Clayey siliceous ooze
1179	C	14	H	2	66	164.96	M	35	40	25			25			2		3		10	40	*		14	5	1		Zeolitic clay and radiolarian-bearing diatom-rich siliceous ooze. Dark green sample. Much of clay is in clots. Zeolite is phillipsite and in clay clots. Some opaque materials are in organic shapes (coated radiolarian fragments?)
1179	C	14	H	2	100	165.30	D	30	55	15			10			*		2	*		55			26	6	1		Radiolarian-bearing diatom ooze
1179	C	14	H	3	100	166.80	D	15	65	20			12			*		4		2	50	*		25	5	2		Clay and radiolarian-bearing diatom ooze. Zeolite (phillipsite) is in some clay clots
1179	C	14	H	4	111	168.41	D	41	46	13			8						1	2	50			32	5	2		Radiolarian-bearing diatom ooze
1179	C	14	H	4	145	168.75	D	25	55	20			15			*		5	*	15	40			21	4	*		Clay and radiolarian-bearing diatom and radiolarian-rich siliceous ooze. Zeolite (phillipsite) is in clots of clay, and coating(?) adhering to some radiolarians(?)
1179	C	15	H	1	90	173.20	D	50	20	30			20		1				1	*	45			30	2	1		Clay-bearing radiolarian-rich diatom ooze. Mainly spines of radiolarians
1179	C	15	H	5	55	178.85	D	55	15	30			30		1				1		45			19	2	2		Zeolitic clay-rich radiolarian-bearing diatom ooze. Clay is possibly zeolitic
1179	C	15	H	6	105	180.85	M	60	31	9			4						95	1								Vitric ash
1179	C	16	H	1	70	182.50	D	8	41	51			40						1	4	38			13	4			Clay-rich siliceous ooze
1179	C	16	H	4	60	186.90	M	7	38	55			32						2	25	25			13	3			Siliceous zeolitic mud
1179	C	17	H	2	41	193.21	D	40	30	30			40		*				*		45			15	*			Zeolitic clay-rich radiolarian-rich diatom ooze. Clay is slightly zeolitic

											Minerals										Biogenic components						Rock	
Site	Hole	Core	CT	Section	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Accessory Minerals (1)	Dolomite	Clay (47)	Fe Oxide (68)	Feld-spar (71)	Opaques (140)	Plagioclase (159)	Quartz (172)	Volcanic Glass (81)	Zeolite (222)	Diatoms (58)	Fish Remains (74)	Nannofossils (132)	Radiolarians (173)	Silic Sponge Spicules (185)	Silicoflagellates (189)	Rock Frag.	Comments
1179	C	17	H	5	56	197.86	M	45	45	10			10						15	75								Zeolitic porcellanite. Glass is deeply corroded or etched, both light and dark (brown). Texture less than usual, as the piece of hard burrow-fill was scraped to provide smear slide
1179	C	17	H	5	99	198.29	D	45	30	25			30								55	1		13	1	*		Zeolitic clay-rich, radiolarian-bearing diatom ooze. Fine zeolite counted in clay
1179	C	17	H	6	119	199.99	M	75	20	5	*		5		2				88	5								Vitric ash. Zeolite is phillipsite
1179	C	18	H	2	70	203.00	M	15	68	17			9						3	70	11			6	1			Siliceous zeolitic mud
1179	C	18	H	3	56	204.36	D	11	42	47			32							7	35			21	5			Zeolitic clay-rich siliceous ooze
1179	C	18	H	6	100	209.30	D	25	50	25			20			*		4	*	5	45			22	4	*		Clay and radiolarian-bearing diatom and radiolarian-rich siliceous ooze. Much of clay is in clots. Zeolite: phillipsite(?)
1179	C	19	H	1	80	211.10	D	40	30	30			37		1				5		30			25	1	1		Zeolitic clay-rich siliceous ooze. Clay: zeolitic alteration
1179	C	19	H	1	100	211.30	D	25	50	25			20			*		3	*	6	45			21	4	1		Clay and radiolarian-bearing diatom and radiolarian-rich siliceous ooze. Zeolite (phillipsite) is in clay clots, mainly in and on radiolarians
1179	C	19	H	2	100	212.80	D	35	35	30			20					4	*	10	40	*		18	6	2		Clay and radiolarian-bearing diatom and radiolarian-rich siliceous ooze. Zeolite (phillipsite) is coatings on radiolarians
1179	C	19	H	3	100	214.30	D	20	55	25			20			1		2		10	40			22	4	1		Clay and radiolarian-bearing diatom-rich siliceous ooze. Opaque minerals are irregular masses. Zeolite: phillipsite
1179	C	19	H	4	100	215.80	D	30	50	20			15					2		8	50			20	4	1		Clay and radiolarian-rich diatom ooze. Zeolite: phillipsite
1179	C	19	H	5	100	217.30	D	25	55	20			12			1		2		12	45			23	4	1		Zeolitic clay and radiolarian-bearing diatom-rich siliceous ooze. Zeolite (phillipsite) includes one coated large broken siiliceous spicule; other masses in clay and radiolarians
1179	C	19	H	6	90	218.70	D	40	30	30			30						1		45			23	1			Zeolitic clay and radiolarian-rich diatom ooze. Clay is zeolitic
1179	C	19	H	6	100	218.80	D	40	30	30			15			1		2		20	40			18	4	*		Zeolitic clay and radiolarian-bearing diatom-rich siliceous ooze. Zeolite (phillipsite) is also present in and on radiolarians
1179	C	20	H	1	100	220.80	D	20	55	25			20					3		12	33			30	2	*		Zeolitic clay-bearing radiolarian ooze
1179	C	20	H	2	1	221.31	D	40	35	25			20					1		10	10			58	1			Zeolitic clay-bearing radiolarian ooze
1179	C	20	H	2	50	221.80	D	50	25	25			20					1		15	17	*		45	2			Zeolitic clay and diatom-bearing radiolarian ooze. Zeolite (phillipsite)
1179	C	20	H	2	100	222.30	D	45	30	25			15			*		1		20	10			50	4	*		Zeolitic clay-rich radiolarian ooze. Zeolite (phillipsite) includes coatings of radiolarians and coating piece of tube-vesicle glass
1179	C	20	H	3	1	222.81	D	40	35	25			20			1		1	*	10	15	*		50	3	*		Zeolitic clay and diatom-rich radiolarian ooze. Zeolite: phillipsite
1179	C	20	H	3	50	223.30	D	40	35	25			10					1		10	15			60	3	1		Zeolitic clay and diatom-brg radiolarian ooze. Much of zeolite (phillipsite) is in or on radiolarians
1179	C	20	H	3	77	223.57	D	55	15	30	1		35		1						22			40	1	*		Zeolitic clay-rich, diatom-bearing radiolarian ooze. Clay masses are being zeolitized (z. counted as clay). In addition, some large (fine-sand-size) crystals of zeolite (phillipsite) present. More radiolarians than in most of slides. Accessory mineral: pyroxene(?). Most of radiolarians are fragments
1179	C	20	H	3	100	223.80	D	40	30	30	*		20			*		1	*	6	14			55	4	*		Clay and diatom-bearing radiolarian ooze. One grain of brown accessory mineral (hornblende?). Zeolite: phillipsite
1179	C	20	H	4	1	224.31	D	20	55	25	*		20			1		1	3	15	14			40	5	1		Zeolitic clay and diatom-bearing radiolarian-rich siliceous ooze. Zeolite (phillipsite). Accessory mineral maybe hornblende
1179	C	20	H	4	40	224.70	M	60	15	25			25						2		10	*		60	2	1		Radiolarian ooze. Most of radiolarians are fragments
1179	C	20	H	4	50	224.80	D	30	45	25			18					1	3	10	24			40	4	*		Zeolitic clay and diatom-bearing radiolarian-rich siliceous ooze. Zeolite (phillipsite) epitaxial. Present on elongate grains of glass (and radiolarians). Volcanic glass is mostly light colored ~0.5 mm grains, but also include few brown grains. Few silicoflagellates are present, but a more diverse flora than in most smear slides here
1179	C	20	H	4	100	225.30	D	30	45	25			15					*	2	10	23			45	4	1		Zeolitic clay and diatom-bearing, radiolarian-rich siliceous ooze. Zeolite (phillipsite) is in or on radiolarians

											Minerals										Biogenic components						Rock	
Site	Hole	Core	CT	Section	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Accessory Minerals (1)	Dolomite	Clay (47)	Fe Oxide (68)	Feld-spar (71)	Opaques (140)	Plagioclase (159)	Quartz (172)	Volcanic Glass (81)	Zeolite (222)	Diatoms (58)	Fish Remains (74)	Nannofossils (132)	Radiolarians (173)	Silic Sponge Spicules (185)	Silicoflagellates (189)	Rock Frag.	Comments
1179	C	20	H	5	1	225.81	D	20	60	20			15					*		10	20	*		50	4	1		Zeolitic clay and diatom-bearing radiolarian ooze. Zeolite (phillipsite) is in or on radiolarians
1179	C	20	H	5	50	226.30	D	30	40	30			18					*	1	10	20			47	3	1		Zeolitic clay and diatom-bearing radiolarian ooze. Light and dark volcanic glass. Zeolite (phillipsite) is in or on radiolarians
1179	C	20	H	5	100	226.80	D	30	40	30			20					1		12	15			48	4	*		Zeolitic clay and diatom-bearing radiolarian ooze. Light and dark volcanic glass. Zeolite (phillipsite) is in or on radiolarians and on sponge spicule
1179	C	20	H	5	150	227.30	D	30	45	25			20					*	1	12	18			45	3	1		Zeolitic clay and diatom-bearing radiolarian ooze. Light and dark volcanic glass. Zeolite (phillipsite) is in or on radiolarians
1179	C	20	H	6	45	227.75	D	45	20	35			35		*						15			47	2	1		Zeolitic clay-rich radiolarian ooze. Clay is zeolitic
1179	C	20	H	CC	0	229.54	D	55	20	25			25		*	*			*		17	*		55	1	2		Clay and diatom bearing radiolarian ooze. Clay is zeolitic
1179	C	21	H	1	90	230.20	D	60	10	30			30		1				2		13	*		50	2	2		Clay-rich radiolarian ooze. Zeolite is growing in clay. Volcanic glass includes dark colored
1179	C	21	H	1	100	230.30	D	45	35	20			15					1	2	15	12			50	4	1		Zeolitic clay and diatom-bearing radiolarian ooze. Zeolite (phillipsite) is in or on radiolarians and on sponge spicules
1179	C	21	H	4	76	234.56	D	26	48	26			18					*		2	34			42	4	*		Diatom-rich radiolarian ooze
1179	C	22	H	2	100	241.30	D	40	30	30			20					*	4	20	13			40	3	*		Zeolitic clay-rich diatom-bearing radiolarian ooze. Zeolite (phillipsite) is on several grains of glass, in and on radiolarians and/or on sponge spicules
1179	C	22	H	3	40	242.20	M	80	15	5			5		5	*			90			*						Vitric ash. Light colored glass. Opaque mineral
1179	C	22	H	3	150	243.30	D	40	30	30			25			*		*	*	20	18			35	2	*		Zeolitic clay and radiolarian-bearing siliceous ooze. Zeolite: phillipsite
1179	C	22	H	4	50	243.80	D	25	45	30			20							12	15			50	3	*		Zeolitic clay and diatom-bearing radiolarian ooze
1179	C	22	H	4	100	244.30	D	30	40	30			18			1		1	1	15	10			50	3	1		Zeolitic clay-rich radiolarian ooze. Zeolite: phillipsite
1179	C	22	H	4	150	244.80	D	40	30	30			20						3	20	15			40	2	*		Zeolitic clay-rich radiolarian ooze. Zeolite (phillipsite) is in or on radiolarians
1179	C	22	H	5	50	245.30	D	10	50	40			33					*	*	25	3			35	4	*		Radiolarian-rich zeolitic clay. Zeolite: phillipsite
1179	C	22	H	5	100	245.80	D	5	30	65			60			4		*		30		*		5	1			Zeolitic clay
1179	C	22	H	5	127	246.07	D	3	10	87			87		1	*						1		10	1			Slightly siliceous clay. Opaline tests and sponge spicules are corroded (rounded edges). Fragments of radiolarians
1179	C	22	H	5	150	246.30	D	*	20	80			75			1		*	*	20		*		3	1	*		Zeolitic clay. Zeolite: phillipsite
1179	C	22	H	6	50	246.80	D	0	30	70			70			1		1	*	25				2	1			Zeolitic clay. Zeolite: phillipsite
1179	C	22	H	6	100	247.30	D	0	20	80			70			1		1	1	25		*		2	*			Zeolitic clay. Zeolite: phillipsite
1179	C	22	H	6	118	247.48	D	1	3	96			96		1	*			1			2						Pelagic clay. Mainly dark volcanic glass. Very fine-grained zeolite counted with clay
1179	C	22	H	7	82	248.62	D	5	10	85			85						5	10								Pelagic clay (slightly zeolitic and ashy clay)
1179	C	23	H	1	50	248.80	D	0	20	80			70			4		1	2	23								Zeolitic clay. Zeolite: phillipsite
1179	C	23	H	2	25	249.19	D	1	99				99			1						*						Zeolitic clay
1179	C	23	H	2	82	249.76	M	25	25	50			50						10	40								Ashy zeolitic mudstone. Orangish pink mottle. Zeolite more coarse-grained than in adjacent clay
1179	C	23	H	3	90	251.34	D	0	20	80			70			5		2	2	21		*			*			Zeolitic clay
1179	C	23	H	3	130	251.74	D	0	20	80			70			5				25		*			*			Zeolitic clay. Zeolite (phillipsite) is present commonly as clots on opaque minerals
1179	C	23	H	4	90	252.84	D	0	20	80			70			3			1	26								Zeolitic clay. Light colored volcanic glasses are as shards. One grain of brown, blocky (hyaloclastite?) in volcanic glass. Zeolite: phillipsite
1179	C	23	H	5	90	254.34	D	0	20	80			70			6				24								Zeolitic clay. Zeolite: phillipsite
1179	C	23	H	5	110	254.54	D	0	12	88			88			1				10		1						Zeolitic clay. Fine-grained; most of it coated with clay
1179	C	23	H	5	120	254.64	D	0	20	80			70			4			1	25								Zeolitic clay. Volcanic glasses are light shards; some pipe vesicles. Much of zeolite (phillipsite) is on opaque minerals and on glass

											Minerals										Biogenic components						Rock	
Site	Hole	Core	CT	Section	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Accessory Minerals (1)	Dolomite	Clay (47)	Fe Oxide (68)	Feld-spar (71)	Opaques (140)	Plagioclase (159)	Quartz (172)	Volcanic Glass (81)	Zeolite (222)	Diatoms (58)	Fish Remains (74)	Nannofossils (132)	Radiolarians (173)	Silic Sponge Spicules (185)	Silicoflagellates (189)	Rock Frag.	Comments
1179	C	23	H	5	142	254.86	M	0	20	80			70			4			*	26								Zeolitic clay. Orange mottle. Seems same as surrounding clay. Volcanic glass includes trace of light and brown glass. Zeolite: phillipsite
1179	C	23	H	6	10	255.04	D	0	20	80			70			2			*	28								Zeolitic clay. Zeolite: phillipsite
1179	C	23	H	6	30	255.24	D	0	20	80			70			3			1	26		*						Zeolitic clay. Zeolite: phillipsite
1179	C	23	H	6	50	255.44	D	0	20	80			73			3		*	*	24								Zeolitic clay
1179	C	23	H	6	70	255.64	D	*	20	80			75			3			1	21		*						Zeolitic clay. Some opaque minerals have grain size of 0.12 mm diameter, but most are fine silt size
1179	C	24	H	1	26	258.06	M	1	18	81			81			1			2	15		1						Zeolitic clay. Silt-sized, light volcanic glass. Zeolite grains (besides clay)
1179	C	24	H	1	100	258.80	D	0	30	70			65			15			*	20		*						Zeolitic clay. Most of opaque minerals range from a few micrometers up to ~50-micrometer-size
1179	C	24	H	4	98	263.28	D	5	20	75			75	18		2				5								(Ferruginous) zeolitic clay. Abundant Fe-oxide grains, mainly in very fine and fine (100-200 micrometer range) silt size
1179	C	24	H	4	100	263.30	D	0	15	85			75			8			*	17		*						Zeolitic clay
1179	C	25	X	1	100	267.80	D	0	20	80			75	15		3			1	5		1						Ferrugineous clay. Fe-oxide: What used to be called golden globules are abundant. Size is about 15 micrometers
1179	C	26	X	1	85	274.55	D	0	20	80			75	15		3			1	6								Ferrugineous clay. Fe-oxide: golden globules
1179	C	26	X	1	100	274.70	D		15	85			80	6		10			1	3								Clay. Fe-oxide: golden globules
1179	C	26	X	CC	15	283.34	M	4	12	84			84		4	*			10	2								Ashy clay (ash-bearing pelagic clay). Sample taken from the 1-cm light colored bed. Volcanic glass is mainly silt size
1179	D	1	R	1	25	281.25	M	0	2	98			98	1	*	*			1			*						Zeolitic clay. The reddish yellow lithology. Count fine zeolite in clay
1179	D	1	R	1	39	281.39	M	0	4	96			96	1		1						2						Zeolitic clay. The gray brown lithology. Count fine zeolite in clay
1179	D	1	R	1	56	281.56	M	1	15	84			84	*						15		1						Zeolitic clay. The reddish lithology. Small (fine and very fine silt-sized) zeolite laths are distinctive
1179	D	1	R	1	57	281.57	M	0	5	95			95							5		*						(Slightly zeolitic) clay. The grayer lithology. Zeolite crystals more needle-like than laths in the reddish lithology (1R-1, 56 cm)
1179	D	1	R	1	62	281.62	M	4	3	93			93						4			3						Zeolitic clay. Orangish layer. Clay is considerably zeolitized
1179	D	1	R	1	70	281.70	M	4	24	72			72			*				25		3						Zeolitic clay. Greenish gray lithology. Some zeolitic grains have grown to sand size (about 0.10 mm)
1179	D	3	R	CC	15	300.35	M	6	14	80			90			*			2								8	Zeolitic clay. Rock fragments are authigenic chert masses. Clay is zeolitic. Chert is present as leptispheres, up to 0.20 micrometers (not detrital)
1179	D	7	R	1	85	339.45	M						62			1			1	5		*		30	1			(Porcellanite) knife scraping. Most radiolarians are now replaced by chalcedony(?), but some remain opal. Opaline fragments also present. Majority of them have opaque masses inside. Shapes are mostly spherical (maximum 0.35 mm), elipses (0.21 to 0.3 mm), spiked and three tiered (0.1 mm high). Zeolite (clinoptilolite?) is laths or needles, ~5 micrometers long with low birefringence.

Site 1179 Sediment Thin Section Descriptions

Thin Section Number	Site	Hole	Core	Type	Section	Top (cm)	Bottom (cm)	Depth (mbsf)	Clay (%)	Opaque Minerals (%)	Quartz (%)	Calcite (%)	Dolomite (%)	Zeolite (%)	Siliceous microfossils (%)	Rock Name	Comments
2	1179	C	11	H	1	26	30	134.56	10			70			20	Burrow filling	The birefringent grains that do not effervesce are dolomite by analogy with XRD of Thin Section 19H-5, 65 cm. Grains are irregular (no clear crystal faces or cleavage visible). Diatoms are within the epoxy. Siliceous microfossils includes other siliceous fragments.
3	1179	C	11	H	5	91	95	141.21	10		tr	75			15	Burrow filling	Cross section of a burrow from a set of 3 thin sections in burrow fillings. This one has more pore space than 11H-1, 26 cm; has some gray isotropic masses resembling a tangle of threads. Dolomite is by analogy with XRD of Thin Section 19H-5, 65 cm. Siliceous microfossils are mainly diatoms.
4	1179	C	17	H	5	56	58	197.86	10		tr	75			15	Burrow filling	Cross section of large burrow as 11H-1, 26 cm and 11H-5, 91 cm. Some carbonate is as large as 90-100 micrometers (fine sand size). It is difficult to differentiate the various kinds of siliceous fragments.
54	1179	C	19	H	5	65	70	217.0					near 100			Dolomitic burrow filling	The Ophiomorphia-like burrow filling. Dark oval pelloids 2 to 3 mm in diameter, in lighter intergranular dolomite (cement). Grain size of dolomite in both pelloids and cement is ~20 to ~70 micrometers. Many ghosts of diatoms (edge on) and radiolarians are present. Note: In attempt to grind slide thinner, most material was lost. An XRD of this burrow shows dolomite (highest 7 peaks:d is slightly higher for each).
55	1179	D	7	R	1	80	85	339.4			100					Chert	Mosaic of anhedral quartz. Grain size is ~8 to 25 micrometers. Some grains show as sheaves of chalcedonic quartz. A few oval to circular areas of contrasted grain-size may represent ghosts of former microfossils.
56	1179	D	7	R	1	80	85	339.4	50	15*	25+8**			1 (sheaf)	1 (radiolaran)	Porcellanite	Ghosts of radiolarians (0.03 to 0.2 mm diameter), and some spiral/ coiled foraminifers, most of which are now chalcedonic quartz in groundmass of silty clay, but some radiolarians are still in opal stage. Quartz silt is about 0.01 mm. Clay is unidentifiable. Trace of fish remains are present. *Black streaks parallel to bedding are apparently opaque minerals, not organic matter. **25% of quartz is chalcedonic; 8% detrital(?).

191-1179C-1H-1, 27-30 cm, TS #1 **Unit I** **OBSERVER:** **Y. Hayasaka**

ROCK NAME: **Pebble of moderately olivine phyric basalt in sediment**
WHERE SAMPLED: **Sediment**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Intersertal, fluidal**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	5	7	0.3	2	1		euhedral	partly altered, forming clay minerals
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	55	55	0.05	0.60	0.40		euhedral, lath-like	
Pyroxene	10	10	0.02	0.10	0.05		subhedral	
Olivine								
Magnetite	<1	<1						
Glass or cryptocrystalline matrix		25						partly devitrified

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Clay					replacing olivine and glass	
Calcite					filling vesicles	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles				2.4	1.5	Calcite	

COMMENTS : Sediment thin section.

Photomicrograph : **1-cross-5**; representative texture

191-1179C-19H-1, 0-3 cm, TS #5 **Unit I** **OBSERVER:** **Y. Hayasaka**

ROCK NAME: **Pebble of andesite or andesitic welded tuff in sediment**
WHERE SAMPLED: **Sediment**
GRAIN SIZE: **Glassy**
TEXTURE: **Welded, glassy**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	6	8	0.4	1.2	0.8		subhedral	fragmented
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase								
Pyroxene								
Olivine								
Magnetite								
Glass or cryptocrystalline matrix		92					partly devitrified forming quartz	

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Quartz					filling vein, replacing glass	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vein						Quartz	

COMMENTS : Sediment thin section. Subrounded morphology and existence of quartz vein show that the pebble might have been derived not directly by volcanic eruption but by secondary process.

Photomicrograph: **2-open-5**; representative texture, showing plagioclase phenocrysts cutted by quartz veins.
3-cross-5; representative texture, showing plagioclase phenocrysts cutted by quartz veins.

191-1179D-10R-1, 44-46 cm (Pc1), TS #6 **Unit 1** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow top, chilled margin**
GRAIN SIZE: **Fine-grained to microcrystalline**
TEXTURE: **Hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.1	0.2	0.15		prisms	subhedral; partly corroded, groundmass inclusions
Pyroxene								
Olivine	<1	<1	0.1	0.3	0.2		crystals, subhedral	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	40-50	40-50	0.01	0.4	0.2		needles, very thin	fresh, twinned
Pyroxene	30-50	30-50					anhedral	mesostasis
Olivine								
Magnetite	2-3	2-3	0	0.01			skeletal crystals, grains	
Glass or cryptocrystalline matrix	5-10							microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	~1		0.1	0.5	0.3	smectite, celadonite	

COMMENTS : The larger part of the thin section is impregnated by FeOOH.

Photomicrograph:
4-cross-5; glomeroporphyritic texture
5-cross-5; glomeroporphyritic texture
6-open-5; representative texture
87-open-10; plagioclase rosette with some clinopyroxene in clinopyroxine-plagioclase matrix
88-open-10; plagioclase bundle with some clinopyroxine grains
89-open-10; recrystallized glass; radial clinopyroxene clusters and plagioclases

191-1179D-10R-1, 102-104 cm (Pc 5B), TS #7 **Unit 1** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow bottom**
GRAIN SIZE: **Fine-grained to microcrystalline**
TEXTURE: **Subophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.1	0.4	0.25		prisms	partly corroded, groundmass inclusions
Pyroxene								
Olivine	<1	<1	0.05	0.2	0.1		subhedral crystals	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	50-60	50-60	0.01	0.4	0.2		very fine needles	fresh, twinned
Pyroxene	30-40	30-40					mesostasis	anhedral
Olivine								
Magnetite	3-4	3-4	0.01	0.02			skeletal crystals, grains	irregular grain rows
Glass or cryptocrystalline matrix	~10							microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Celadonite + smectite	1 to 2	0.04	0.8	0.2	groundmass	lobate, in part vermicular

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	~1		0.1	0.5	0.3	mainly FeOOH, subordinate celadonite	

COMMENTS :

Photomicrograph: **7-open-5**; representative texture

191-1179D-11R-1, 99-101 cm (Pc 4A), TS #8 **Unit 2** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Pillow rim**
GRAIN SIZE: **Fine-grained to microcrystalline**
TEXTURE: **Hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.1	0.6	0.3		prisms	partly corroded, groundmass inclusions
Pyroxene								
Olivine	<1	<1	0.1	0.35	0.2		euhedral crystals	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	~50	~50	0.01	0.5	0.1		very fine needles	fresh, twinned
Pyroxene	30-40	30-40					anhedral	mesostasis
Olivine								
Magnetite	3-5	3-5	0.01	0.01			skeletal crystals, grains	irregular grain rows
Glass or cryptocrystalline matrix	~10							microcrystalline, oxidized (red-brown)

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Celadonite+smectite	<1				plagioclase, spot-like in glass-matrix	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	<1					mainly FeOOH, subordinated celadonite+smectite	

COMMENTS : Partly perlitic structure, in part impregnated by FeOOH.

Photomicrograph:
8-open-20; vesicle filled with celadonite
9-cross-20; vesicle filled with celadonite
10-open-20; olivine microphenocrysts
11-open-5; representative texture
74-open-20; olivine and plagioclase replaced by smectite

191-1179D-11-R-2, 4-7 cm (Pc 1A), TS #9 **Unit 2** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Pillow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic to hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.04	0.3	0.15		prisms	partly corroded
Pyroxene								
Olivine	<1	<1	0.07	0.2	0.1		crystals, euhedral to subhedral	totally altered
Chromite or Cr-spinel	<<1							
GROUNDMASS								
Plagioclase	50-60	50-60	0.01	1	0.2		very thin needles	fresh, twinned
Pyroxene	30-40	30-40					anhedral	mesostasis
Olivine								
Magnetite	2-5	2 - 5	0.01	0.01			skeletal crystals, grains	mesostasis, microcrystalline
Glass or cryptocrystalline matrix	~10						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Celadonite+smectite	<1	0.08	0.4	0.2	groundmass	irregular shapes

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	~1					celadonite+smectite, in part FeOOH	

COMMENTS :

Photomicrograph: **12-open-5**; representative texture

191-1179D-11R-2, 81-83 cm (Pc 9), TS #10 — **Unit 2** — **OBSERVER:** **CDW**

ROCK NAME: **Aphyric hyalobasalt; calcite vein/interpillow**
WHERE SAMPLED: **Pillow rim, chilled margin**
GRAIN SIZE: **Microcrystalline to fine-grained**
TEXTURE: **Hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.2	1	0.6		crystals	fresh, not corroded, groundmass inclusions
Pyroxene								
Olivine	<1	<1	0.05	0.2	0.1		crystals	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	~10	~10	0.03	1.8	0.3		very thin needles	fresh, twinned
Pyroxene								
Olivine								
Magnetite	1-3	1-3	0.01	0.01			grains, skeletal crystals	irregular grain rows
Glass or cryptocrystalline matrix	~90	~90						spherulitic recrystallized

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	100	0.4	2	1	vein filling	intercrystallized aggregates

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	1-2		0.15	0.35	0.25	celadonite	

COMMENTS : Intensely impregnated by FeOOH; perlitic structure.

Photomicrograph: **13-open-5**; representative texture
14-cross-63; apatite inclusion in clinopyroxene

191-1179D-12R-2, 1-3 cm (Pc 1A), TS #11 **Unit 3** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric hyalobasalt**
WHERE SAMPLED: **Pillow rim, chilled margin**
GRAIN SIZE: **Cryptocrystalline to microcrystalline**
TEXTURE: **Hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.1	0.8	0.4		crystals	considerably corroded
Pyroxene								
Olivine	1-2	1-2	0.01	0.2	0.05		crystals	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	~20	~20	0.01	0.1	0.05		very thin needles	
Pyroxene								
Olivine								
Magnetite	0-2	0-2	0.01	0.02			crystal skeletons	
Glass or cryptocrystalline matrix	70-80						meostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Celadonite	2-3	0.05	0.15	0.1	groundmass	lobate contour
Smectite	~1	0.05	0.15	0.1	groundmass, plagioclase	irregular replacement
Calcite		0.08	1.6	0.8	vein filling	with celadonite and smectite

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS

COMMENTS : Impregnated by FeOOH.

Photomicrograph: **15-open-5**; representative texture
90-open-5; smectite patches, vesicles and feeder fissure

191-1179D-12R-2, 13-15cm (Pc 3), TS #12 **Unit:4** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow top**
GRAIN SIZE: **Fine-grained to microcrystalline**
TEXTURE: **Subophitic to hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.7	1.6	1.2		crystals	fresh, twinned
Pyroxene								
Olivine	<<1	<<1	0.05	0.15	0.1		crystals	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	40-50	40-50	0.01	0.4	0.05		very thin needles	fresh, twinned
Pyroxene	30-40	30-40					anhedral	mesostasis
Olivine								
Magnetite	2-4	2-4	0.01	0.1			grains, skeletal crystals	
Glass or cryptocrystalline matrix	~10						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite	1-2	0.04	0.3	0.15	groundmass	lobate texture

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	2-3		0.15	3.2	1	smectite (celadonite, calcite)	spherulitic, partly colloform

COMMENTS :

Photomicrograph: **16-open-5**; representative texture
75-open-10; vesicles filled with smectite and celadonite

191-1179D-12R-3, 4-7 cm (Pc 1), TS #13 **Unit 5** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Pillow interior**
GRAIN SIZE: **Fine-grained to microcrystalline**
TEXTURE: **Hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.3	1.2	0.6		crystals	fresh, partly corroded
Pyroxene								
Olivine	<<1	<<1	0.03	0.12	0.05		crystals	subhedral to anhedral, totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	15-20	15-20	0.01	0.5	0.1		very thin needles	fresh, twinned: subordinated glomerocrysts
Pyroxene	5-10	5-10					anhedral	mesostasis
Olivine								
Magnetite	1-2	1-2	0.01	0.1	0.02		grains, skeletal crystals	distributed dust-like
Glass or cryptocrystalline matrix	~70						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite, celadonite	2-3	0.05	0.3	0.15	groundmass	lobate

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	~1		0.1	0.4	0.2	smectite, celadonite	spherulitic

COMMENTS :

Photomicrograph: **17-open-5**; representative texture

191-1179D-12R-4, 0-2 cm (Pc 1A), TS #14 **Unit 6** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.2	1.6	0.8		crystals, a few are zoned	fresh, partly corroded
Pyroxene								
Olivine	<1	<1	0.05	0.3	0.15		crystals, subhedral	predominantly altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	60-65	60-65	0.01	0.8	0.2		very thin needles	fresh, twinned
Pyroxene	~20	~20					anhedral	mesostasis
Olivine								
Magnetite	3-4	3-4	0.01	0.1	0.02		grains, skeletal crystals	statistically distributed
Glass or cryptocrystalline matrix	15-20						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite, celadonite	2-3	0.04	0.4	0.2	groundmass	spotty
Calcite	<1	0.04	0.1	0.05	groundmass	
Calcite		0.5	1		veins	some smectite at vein walls

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	1-2		0.1	0.4	0.2	celadonite, further calcite	

COMMENTS :

Photomicrograph: **18-open-5**; representative texture
76-cross-5; plagioclase phenocrysts

191-1179D-12R-4, 83-86 cm (Pc 1D), TS #15						**Unit 6**	**OBSERVER:**	**CDW**
ROCK NAME:	**Aphyric basalt**							
WHERE SAMPLED:	**Flow interior**							
GRAIN SIZE:	**Fine-grained**							
TEXTURE:	**Subophitic**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase	<1	<1	0.2	1	0.6		crystals, partly skeletal	fresh, partly corroded
Pyroxene								
Olivine	<1	<1	0.08	0.3	0.1		crystals, subhedral	nearly totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	50-60	50-60	0.01	0.6	0.2		very thin needles	fresh, twinned
Pyroxene	~30		0.02	0.2	0.1		subhedral to anhedral	
Olivine								
Magnetite	2 to 4	2 to 4	0.01	0.1	0.03		grains, skeletal crystals	
Glass or cryptocrystalline matrix	10 to 15						mesostasis	microcrystalline

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Celadonite	1 to 2	0.05	1.4		groundmass	lobate shape
Smectite	~1	0.06	1		groundmass	lobate
Calcite		0.4	1.2	1	veins	additionally some celadonite

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	<1		0.1	0.4	0.2	celadonite, additionally calcite, subordinate smectite	

COMMENTS : Some small apatites within clinopyroxene and plagioclase, 3 small zircons within clinopyroxene.

Photomicrograph:
19-open-5; representative texture
20-cross-5; representative texture
77-open-10; calcite-celadonite vein in basalt with smectite
91-open-5; celadonite and smectite replacement patches

191-1179D-13R-1, 36-40 cm (Pc 8), TS #16 **Unit:7** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Pillow rim**
GRAIN SIZE: **Fine-grained to microcrystalline**
TEXTURE: **Hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.1	0.6	0.4		crystals	mostly fresh, some not corroded, some nearly totally corroded
Pyroxene								
Olivine	<1	<1	0.05	0.3	0.1		crystals, subhedral	strongly to totally corroded
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	~10	~10	0.01	0.16	0.05		very thin needles	fresh, twinned
Pyroxene	50-60	50-60	0.02	0.05	0.03		subhedral to anhedral	mesostasis
Olivine								
Magnetite	3-5		0.01	0.05	0.03		grains, skeletal crystals	
Glass or cryptocrystalline matrix	30-40						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite	~1	0.04	0.1	0/06	groundmass + plagioclase	lobate

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	2-3		0.05	0.16	0.1	celadonite and smectite	

COMMENTS :

Photomicrograph: **21-open-5**; representative texture
92-open-10; plagioclase phenocrysts with inclusions and smectite

191-1179D-13 R-1, 76-78 cm (Pc 12A), TS #17						**Unit 7**	**OBSERVER:**	**CDW**
ROCK NAME:	**Aphyric basalt**							
WHERE SAMPLED:	**Near pillow rim**							
GRAIN SIZE:	**Fine-grained**							
TEXTURE:	**Pseudo-ophitic to subophitic**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase	<1	<1	0.1	0.4	0.25		crystals	mostly altered
Pyroxene								
Olivine	<1	<1	0.05	0.15	0.1		subhedral crystals	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	50-60	50-60	0.01	0.5	0.2		very thin needles	fresh, twinned
Pyroxene	20-30	20-30	0.02	0.1	0.05		subhedral to anhedral	mesostasis
Olivine								
Magnetite	3-5	3-5	0.01	0.05	0.03		skeletal crystals, grains	only within glass
Glass or cryptocrystalline matrix	10-20						mesostasis	microcrystalline

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Smectite, celadonite	<1	0.03	0.08	0.05	groundmass	lobate shape
Calcite	95		0.3	0.005	interpillow-material	remaining 5%: ore and former glass

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	1-2		0.04	0.2		smectite, celadonite	

COMMENTS :

Photomicrograph: **22-open-5**; representative texture

191-1179D-13 R-3, 14-16 cm (Pc 1A), TS #18 **Unit 8** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	<1	<1	0.05	0.25	0.1		subhedral crystals	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	50-60	50-60	0.01	0.4	0.2		very thin needles	fresh, twinned
Pyroxene	25-30	25-30	0.02	0.12	0.06		subhedral to anhedral	mesostasis
Olivine								
Magnetite	3-4	3-4	0.01	0.15	0.05		grains, skeletal crystals	
Glass or cryptocrystalline matrix	10-15						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite, celadonite	~1	0.05	0.25		groundmass	lobate, partly vein-like

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	<1		0.1	0.25		smectite, celadonite	a few also with calcite

COMMENTS :

Photomicrograph: **23-open-5**; representative texture
24-cross-5; representative texture

191-1179D-13 R-4, 77-79 cm (Pc 4), TS #19 **Unit 8** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic to ophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.1	0.3	0.2		crystals	mostly altered
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	60-65	60-65	0.01	0.8	0.2		very thin needles	fresh, twinned
Pyroxene	25-30	25-30	0.01	0.15	0.06		subhedral to anhedral	mesostasis
Olivine								
Magnetite	3-5	3-5	0.01	0.4	0.1		grains, skeletal crystals	
Glass or cryptocrystalline matrix	~10						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	~1				groundmass	irregular patches

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	1-2		0.1	1.2	0.3	calcite	

COMMENTS : Especially well developed magnetite skeleton crystals.

Photomicrograph: **25-open-5**; representative texture
26-cross-5; representative texture

191-1179D-14 R-1, 15-17 cm (Pc 4A), TS #20 | **Unit 10** | **OBSERVER:** | **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic to ophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<<1	<<1			0.8		crystal, euhedral	broken, clinopyroxene inclusions
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	~60	~60	0.01	1.2	0.4		very fine needles	fresh, twinned
Pyroxene	30-35	30-35	0.01	0.3	0.1		subhedral to anhedral	mesostasis
Olivine								
Magnetite	2-3	2-3	0.01	0.8	0.2		grains, skeletal crystals	
Glass or cryptocrystalline matrix	~10						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite	2-3	0.02	0.6	0.2	groundmass	
Calcite	~2	0.02	0.2	0.1	groundmass	
Smectite		0.1	1	0.6	vein	additionally FeOOH

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	<1		1	2	1.5	celadonite, partly calcite	at the wall somewhat smectite

COMMENTS : Some small apatites within clinopyroxene.

Photomicrograph: **27-open-5**; representative texture
28-cross-5; representative texture

191-1179D-14 R-2, 117-119 cm (Pc 15B), TS #21 | **Unit 10** | **OBSERVER:** | **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic to ophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.2	0.8	0.4		subhedral crystals	strongly corroded
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	~60	~60	0.01	0.6	0.3		very fine needles	fresh, twinned
Pyroxene	30-35	30-35	0.01	0.2	0.1		subhedral to anhedral	mesostasis
Olivine								
Magnetite	2-3	2-3	0.01	0.2	0.05		grains, skeletal crystals	
Glass or cryptocrystalline matrix	10-15						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite	<1	0.04	0.6	0.2	groundmass	
Calcite + FeOOH	<1	0.02	0.2	0.1	groundmass	infiltration on one margin

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	~1		0.3	1.6	1	celadonite, also calcite and collomorphic hematite grains	

COMMENTS : Some small apatites. One zircon with halo in clinopyroxene. Hematite in addition to magnetite.

Photomicrograph:
29-open-5; representative texture
30-cross-5; representative texture
31-open-20; close-up of groundmass texture
78-open-5; vesicles filled with smectite, celadonite, and goethite/hematite
79-open-63; zircon crystal in clinopyroxene

191-1179D-14 R-3, 122-124 cm (Pc 13),TS #22) **Unit 11** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic to hyalopilitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.15	0.8	0.5		crystals	strongly corroded
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	50	50	0.01	0.45	0.2		very fine needles	fresh, twinned
Pyroxene	~20-25	~20-25	0.01	0.2	0.1		subhedral to anhedral	mesostasis
Olivine								
Magnetite	3-4	3-4	0.01	0.15	0.05		grains, skeletal crystals	
Glass or cryptocrystalline matrix	25-30						mesostasis	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite	2-3	0.05	0.5	0.2	groundmass	
Celadonite	1	0.05	0.15	0.1	groundmass	
Calcite	~1	0.1	0.3	0.2	groundmass	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	<1				1.2	celadonite + calcite	

COMMENTS :

Photomicrograph: **32-open-5**; representative texture

191-1179D-17 R-1, 58-60 cm (Pc 7), TS #23 **Unit 14** **OBSERVER:** **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Pillow interior**
GRAIN SIZE: **Fine-grained to microcrystalline**
TEXTURE: **Hyalopilitic to subophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<1	<1	0.1	0.8	0.5		crystals	nearly totally altered
Pyroxene								
Olivine	<<1	<<1	0.03	0.1	0.05		subhedral crystals	totally altered
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	10-15	10-15	0.01	0.4	0.15		very fine needles	
Pyroxene	~5	~5					anhedral	mesostasis
Olivine								
Magnetite	~2	~2	0.01	0.02	0.01		very fine grains	within glass
Glass or cryptocrystalline matrix	~80						groundmass	microcrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Celadonite	<1	0.02	0.1	0.05	groundmass, partially plagioclase	lobate
Smectite	<1				groundmass	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	<1		0.04	0.06	0.05	celadonite, smectite	

COMMENTS : Intensely impregnated by FeOOH.

Photomicrograph: **33-open-5**; representative texture

191-1179D-17 R-2, 81-83 cm (Pc 7A), TS #24 | **Unit 16** | **OBSERVER:** | **CDW**

ROCK NAME: **Interpillow material**
WHERE SAMPLED: **At top of pillow**
GRAIN SIZE:
TEXTURE: **Breccia**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
Calcite	~20		0.05	2.5	1			
GROUNDMASS								
Plagioclase								
Pyroxene								
Olivine								
Magnetite								
Glass or cryptocrystalline matrix	~80		0.6	20			angular clasts, in part irregularly rounded	devitrification, beginning in places, partly calcite and FeOOH impregnation

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	<1			0.02	veinlets	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS

COMMENTS :

Photomicrograph: **34-open-2.5**; representative texture showing hyaloclastite with basaltic glass and carbonate matrix

191-1179D-18 R-1, 31-35 cm (Pc 2B) TS #25 | **Unit 18** | **OBSERVER:** | **CDW**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow bottom**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	50	50	0.01	0.4	0.15		very fine needles	
Pyroxene	30-35	30-35	0.01	0.2	0.1		anhedral	mesostasis
Olivine								
Magnetite	3-5	3-5	0.01	0.1	0.05		grains, skeletal crystals	
Glass or cryptocrystalline matrix	15-20						groundmass	recrystallized

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite	3-4	0.02	0.1	0.05	groundmass	oxidated or FeOOH-impregnated
Celadonite	<1	0.02	0.1	0.05	groundmass	
Calcite		0.05	2	1	two veins (0.5-4 mm thick) *	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles			0.04	0.12	0.08	smectite, partly celadonite	

COMMENTS : * A third vein is ~3 mm thick and has some pumpellyite and more FeOOH and hematite; in addition to hematite, magnetite is in the groundmass.

Photomicrograph: **35-open-5**; representative texture
36-open-5; Fe-oxyhydroxide vein

191-1179D-18R-1,47-54 cm (Pc 2B), TS #26 **Unit 17** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Pillow rim**
GRAIN SIZE: **Cryptocrystalline to microcrystalline, partly glassy**
TEXTURE: **Glassy, microspherulitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0.5	0.5	0.2	0.8	0.3		euhedral, prismatic	
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	0.5	1	0.05	0.2	0.1		acicular, skeletal	
Pyroxene								
Olivine								
Magnetite								
Glass or cryptocrystalline matrix		98						partly devitrified

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	2				filling veins	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS

COMMENTS : Palagonite deglassing at the borders and beside fissures. Fragments are cemented by calcite and zeolite. Chilled margin with calcite vein.

Photomicrograph: **37-open-10**; glassy and microspherulitic texture

191-1179D-18R-1,125-127 cm (Pc 13), TS #27						**Unit 18**	**OBSERVER:**	**Hayasaka**
ROCK NAME:	**Hyaloclastite in calcareous matrix**							
WHERE SAMPLED:	**Interpillow materials**							
GRAIN SIZE:	**Cryptocrystalline**							
TEXTURE:	**Glassy to cryptocrystalline**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase								
Pyroxene								
Olivine								
Magnetite								
Glass or cryptocrystalline matrix		100						partly devitrified

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Calcite	2				filling veins	
Zeolite	<1				filling veins	

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**

COMMENTS : Interpillow material with volcanic breccia, pillow breccia, hyaloclastite, and calcareous matrix. Palagonite partly deglassed.

Photomicrograph: **38-open-5**; basaltic glass and calcareous matrix with zeolite crystals in the interpillow material

191-1179D-18R-2, 41-43 cm (Pc 7A), TS #28 — **Unit 18** — **OBSERVER:** **Hayasaka**

ROCK NAME: **Hyaloclastite**
WHERE SAMPLED: **Interpillow material**
GRAIN SIZE:
TEXTURE: **Hyaloclastite**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase								
Pyroxene								
Olivine								
Magnetite								
Glass or cryptocrystalline matrix		100					partly devitrified	

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Zeolite+smectite	2				filling veins, replacing plagioclase	
Calcite	5				filling veins	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS

COMMENTS :

Photomicrograph: **39-open-2.5**; hyaloclastite with glassy fragments and calcareous matrix

191-1179D-18R-3, 28-30 cm (Pc 1), TS #29						**Unit 19**	**OBSERVER:**	**Hayasaka**
ROCK NAME:	**Aphyric basalt**							
WHERE SAMPLED:	**Flow interior**							
GRAIN SIZE:	**Microcrystalline**							
TEXTURE:	**Microcrystalline, intersertal**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	25	30	0.01	0.2	0.1		skeletal	
Pyroxene	15	20	0.01	0.2	0.1	Augite	skeletal	
Olivine								
Magnetite	1	3	0.01	0.01	0.01		subhedral	
Glass or cryptocrystalline matrix	46	46					interstitial	mainly cryptocrystalline

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Celadonite	2-3				filling vesicles, replacing plagioclase	
Leucoxene	1				replacing pyroxene	

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	2				0.1	smectite, celadonite	

COMMENTS :

Photomicrograph: **40-open-5**; microcrystalline intersertal texture

191-1179D-18R-4, 80-82 cm (Pc 6B), TS #30						**Unit 20**	**OBSERVER:**	**Hayasaka**
ROCK NAME:	**Aphyric basalt**							
WHERE SAMPLED:	**Flow interior**							
GRAIN SIZE:	**Fine-grained**							
TEXTURE:	**Intersertal, subophytic**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	45	50	0.05	0.5	0.2		subhedral, prismatic	partly skeletal
Pyroxene	30	35	0.01	0. 1	0.05	Augite	subhedral, equant	
Olivine								
Magnetite	1	2	0.01	0.03	0.02			
Glass or cryptocrystalline matrix		12						

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Celadonite	1				filling vesicles and veins	
Calcite	1-2				replacing groundmass	
Leucoxene	<1				replacing pyroxene	

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	1						celadonite + smectite

COMMENTS : Vein is filled with celadonite and calcite.

Photomicrograph: **41-open-5**; intersertal, subophitic texture

191-1179D-19R-1, 86-89 cm (Pc 17), TS #31						**Unit 21**	**OBSERVER:**	**Hayasaka**
ROCK NAME:	**Aphyric basalt**							
WHERE SAMPLED:	**Flow interior**							
GRAIN SIZE:	**Fine-grained**							
TEXTURE:	**Intersertal, intergranular**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	45	55	0.05	0.5	0.2		subhedral, prismatic, skeletal	
Pyroxene	30	40	0.01	0.1	0.05	Augite	subhedral, equant	
Olivine								
Magnetite	<1	2	0.01	0.3	0.02			
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Smectite	2				filling vesicles	
Goethite	<1				replacing magnetite	
Leucoxene	<1				replacing pyroxene	

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	1				0.1	smectite	

COMMENTS :

Photomicrograph: **42-open-5**: representative groudmass showing intersertal texture
43-cross-20; close-up of groundmass showing coeval crystal growth of plagioclase and clinopyroxene
93-open-63; apatite in plagioclase

191-1179D-19R-3, 5-7 cm (Pc 1B), TS #32 **Unit 22** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Microcrystalline**
TEXTURE: **Intersertal**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	<0.5	<0.5	0.2	0.4	0.25		subhedral	
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	30	35	0.01	0.2	0.1		prismatic, skeletal	
Pyroxene	15	20	0.02	0.08	0.04	Augite	anhedral	
Olivine								
Magnetite	0	1	0.01	0.02	0.01		subhedral	
Glass or cryptocrystalline matrix		44						mainly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Celadonite, smectite	1-2				replacing plagioclase	
Hematite	1				replacing magnetite	
Calcite	2				filling veins	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	1-2		0.1	0.2	0.15	celadonite	

COMMENTS :

Photomicrograph: **44-open-5**; representative groundmass texture

191-1179D-19R-3, 70-73 cm (Pc 6B), TS #33 **Unit 23** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Subophitic, intergranular**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
plagioclase			0.2	0.4	0.3		subhedral	
pyroxene								
olivine								
chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	40	50	0.02	0.4	0.3		subhedral, prismatic	partly skeletal
Pyroxene	30	40	0.02	0.2	0.06	Augite	anhedral, equant	
Olivine								
Magnetite	1	2	0.01	0.02	0.01		subhedral	
Glass or cryptocrystalline matrix		5						

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite	1				replacing groundmass	
Leucoxene: 0.5%	<1				replacing pyroxene	
Hematite	1				replacing magnetite	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	1		0.1	0.2	0.15	celadonite+smectite	

COMMENTS :

Photomicrograph: **45-cross-5**; representative groundmass texture

191-1179D-17R-1, 19-22 cm (Pc 1C), TS #34 **Unit 13** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Pillow or flow margin**
GRAIN SIZE: **Cryptocrystalline**
TEXTURE: **Cryptocrystalline, microspherulitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0.3	0.5	0.2	1	0.4		subhedral, prismatic	
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	2	10	0.01	0.2	0.1			
Pyroxene	0.5	5	0.01	0.1	0.05	Augite		
Olivine								
Magnetite	1	2	0.01	0.02	0.01			
Glass or cryptocrystalline matrix		82						mainly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Zeolite	<1				filling veins	
Calcite	2				filling veins	
Hematite	1				replacing magnetite	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	~1		0.01	0.1	0.05	zeolite?	

COMMENTS : impregnated with FeOOH

Photomicrograph: **46-open-5**; representative texture

191-1179D-20R-1, 3-6 cm (Pc 1A), TS #35 **Unit:24** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow top**
GRAIN SIZE: **Microcrystalline to fine-grained**
TEXTURE: **Intersertal**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0	0.5 -1.0	0.3	1.6	0.8		subhedral	
Pyroxene								
Olivine	0	0.5	0.2	1.2	0.4		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	40	45	0.02	1.2	0.8		acicular, skeletal	
Pyroxene	15	21	0.01	0.2	0.1	Augite	anhedral, equant	
Olivine	0	5	0.02	0.4	0.2		euhedral, skeletal	completely altered and change into iddingsite
Magnetite	1	2	0.01	0.03	0.02		subhedral	
Glass or cryptocrystalline matrix		26						mainly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	1-2				patches in groundmass	
Iddingsite	3				pseudomorph after olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	<1		0.2	0.6	0.3	calcite	

COMMENTS : Vein filled with calcite.

Photomicrograph: **47-open-5**; representative groundmass texture
48-open10; olivine phenocryst

191-1179D-20R-3, 139-142 cm (Pc 3D), TS #36 **Unit 29** **OBSERVER:** **Hayasaka**

ROCK NAME: **Sparsely olivine phyric basalt**
WHERE SAMPLED: **Pillow interior**
GRAIN SIZE: **Fine to medium-grained**
TEXTURE: **Subophitic, intergranular**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	0	1.5	0.2	0.6	0.3		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel	<0.1	<0.2	0.2	0.25	0.2		euhedral	
GROUNDMASS								
Plagioclase	45	55	0.3	1.6	1		acicular, skeletal	
Pyroxene	30	40	0.05	0.2	0.1	Augite	anhedral	
Olivine	0	2	0.05	0.3	0.2		acicular, skeletal	completely altered and changed to iddingsite
Magnetite	1	1.5	0.01	0.03	0.02		subhedral	partly change into hematite
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Smectite	2				replacing groundmass	
Celadonite	1				filling vein	
Calcite	<1				filling vein	
Leucoxene, iddingsite						

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	3-4		0.3	1	0.7	celadonite > smectite	

COMMENTS :

Photomicrograph: **49-open-2.5**; vein containing basaltic fragments with calcite matrix
50-open-5; representative texture containing olivine microphenocrysts and skeletal groundmass plagioclase

191-1179D-20R-4, 21-23cm (Pc 1C), TS #37						**Unit 29**	**OBSERVER:**	**Hayasaka**
ROCK NAME:	**Aphyric basalt**							
WHERE SAMPLED:	**Pillow rim**							
GRAIN SIZE:	**Cryptocrystalline to microcrystalline**							
TEXTURE:	**Microspherulitic, variolitic**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	0	0.5 - 1.0	0.2	0.8	0.25		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	15	25	0.01	0.5	0.3		acicular, skeletal	
Pyroxene	10	15	0.01	0.05	0.02	Augite	acicular, subhedral	forming variole
Olivine	0	3	0.02	0.9	0.5		subhedral, acicular	completely altered and changed to iddingsite
Magnetite	<0.5	0.5	0.01	0.03	0.02		subhedral	very small particles
Glass or cryptocrystalline matrix		56						

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Calcite	<1				filling veins	
Iddingsite	3				pseudomorph after olivine	

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	0.5		0.2	0.6	0.3	calcite	

COMMENTS : Highly altered.

Photomicrograph: **51-open-5**; representative texture containing olivine microphenocrysts and skeletal olivine and plagioclase in groundmass
80-open-10; variolitic plumose plagioclase crystallites

191-1179D-20R-4, 63-67cm (Pc 7A), TS #38						**Unit 30**	**OBSERVER:**	**Hayasaka**
ROCK NAME:	**Sparsely olivine phyric basalt**							
WHERE SAMPLED:	**Flow interior**							
GRAIN SIZE:	**Fine-grained**							
TEXTURE:	**Subophitic, variolitic**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	0	1.5	0.2	0.8	0.3			completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	35	55	0.04	1.6	0.4			
Pyroxene	20	40	0.02	0.4	0.2	Augite		
Olivine	0	3	0.1	0.8	0.4			completely altered and changed to iddingsite
Magnetite	0.5	1	0.01	0.05	0.03			
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Celadonite	1				replacing groundmass	
Calcite	1				replacing groundmass	
Iddingsite	3				pseudomorph after olivine	

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	~1		0.3	0.8	0.4	calcite, celadonite, smectite	

COMMENTS :

Photomicrograph: **52-open-5**; representative texture containing olivine microphenocrysts and acicular plagioclase in groundmass

191-1179D-21R-1, 28-31cm (Pc 1C), TS #39						**Unit 33**	**OBSERVER:**	**Hayasaka**
ROCK NAME:	**Sparsely olivine phyric basalt**							
WHERE SAMPLED:	**Flow bottom**							
GRAIN SIZE:	**Fine-grained**							
TEXTURE:	**Microspherulitic, variolitic**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase								
Pyroxene	0.5	0.5	0.2	0.2	0.2	ti-Augite		
Olivine	0	1.5	0.2	0.7	0.2		euhedral	completely changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	25	50	0.01	0.4	0.2		subhedral, acicular, skeletal	
Pyroxene	25	45	0.01	0.2	0.1	Augite	anhedral	
Olivine	0	2	0.05	0.3	0.2		acicular, skeletal	completely changed to iddingsite
Magnetite	<0.5	1	0.01	0.02	0.01			
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Iddingsite	2-3				pseudomorph after olivine	

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	1		0.2	0.5	0.3	calcite + zeolite	

COMMENTS :

Photomicrograph: **53-open-5**; representative texure consisting many fans of diverging plagioclase needles with augite crystals in the interstices
81-open-20; plagioclase clusters with clinopyroxene and magnetite

191-1179D-21R-2, 76-79 cm (Pc 4A), TS #40 **Unit:36** **OBSERVER:** **Hayasaka**

ROCK NAME: **Sparsely olivine phyric basalt**
WHERE SAMPLED: **Pillow rim**
GRAIN SIZE: **Glassy to microcrystalline**
TEXTURE: **Glassy, cryptocrystalline, microcrystalline, microspherulitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	1	2	0.2	1	0.4		euhedral	partly altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase								
Pyroxene								
Olivine								
Magnetite								
Glass or cryptocrystalline matrix		98						mostly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Clay	1				filling vesicles	
Calcite	2				filling veins	
Zeolite	<1				filling veins	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	1		0.3	0.6	0.5	calcite	

COMMENTS :

Photomicrograph:
54-open-5; representative texture containing olivine microphenocrysts
55-open-20; fresh glass and olivine phenocrysts
82-open-10; plagioclase skeleton within clinopyroxene crystallite matrix
83-open-20; skeletal clinopyroxene crystallites
84-open-63; skeletal clinopyroxene crystallites

191-1179D-21R-3, 141-144 cm (Pc 13B), TS #41 **Unit 40** **OBSERVER:** **Hayasaka**

ROCK NAME: **cryptocrystalline**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine- to medium-grained**
TEXTURE: **Subophitic, variolitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0.2	0.2			0.5		subhedral	only one grain
Pyroxene								
Olivine	0	0.5	0.2	0.6	0.3		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel	0.1	0.2	0.2	0.25	0.2			three grains in the slide
GROUNDMASS								
Plagioclase	35	50	0.06	2.2	1.2		subhedral, acicular, skeletal	
Pyroxene	20	44	0.02	0.2	0.1	Augite	anhedral	
Olivine	0	4	0.1	0.6	0.2		acicular, skeletal	completely altered and changed to iddingsite
Magnetite	<0.5	1	0.01	0.04	0.02			
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	2				filling veins	
Iddingsite	<1				pseudomorph after olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	10		0.3	0.8	0.4	zeolite + amorphous material	cryptocrystalline

COMMENTS : Moderately altered.

Photomicrograph: **56-open-5**; representative texture. Acicular plagioclase crystals forming varioles.

191-1179D-21R-4, 59-62 cm (Pc 2D), TS #42 **Unit:40** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow bottom**
GRAIN SIZE: **Cryptocrystalline to microcrystalline**
TEXTURE: **Cryptocrystalline, microspherulitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0	0.5	0.2	0.5	0.3		subhedral	
Pyroxene	0							
Olivine	0	0.5 - 1.0	0.1	2	0.2		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	10	40	0.01	0.4	0.2		acicular, skeletal	
Pyroxene	10	30	0.01	0.1	0.02	Augite	acicular, subhedral	
Olivine	0	5	0.1	1.2	0.6		acicular, skeletal	completely altered and changed to iddingsite
Magnetite	0.5	1	0.01	0.03	0.02		subhedral	
Glass or cryptocrystalline matrix		23						mostly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	2				filling veins	
Iddingsite	4-5				pseudomorph after olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	3-4		0.2	0.4	0.3	calcite > celadonite	

COMMENTS : Moderate to highly altered.

Photomicrograph: **57-open-5**; representative texture, containing skeletal olivine crystals altered to iddingsite
58-open-5; glassy part

191-1179D-22R-1, 59-61cm (Pc 6A), TS #43 — **Unit 43** — **OBSERVER:** **Hayasaka**

ROCK NAME: **Sparsely olivine plagioclase phyric basalt**
WHERE SAMPLED: **Pillow rim**
GRAIN SIZE: **Glassy to cryptocrystalline**
TEXTURE: **Microspherulitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0.2	1	0.2	0.4	0.25		euhedral, prismatic	highly altered to clay minerals
Pyroxene								
Olivine	0	1	0.2	0.3	0.25		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	3	7	0.01	0.4	0.1		acicular, skeletal	
Pyroxene	2	6	0.01	0.1	0.05	Augite	subhedral	
Olivine	0	5	0.1	0.3	0.2		acicular, skeletal	completely altered and changed to iddingsite
Magnetite								
Glass or cryptocrystalline matrix		80						mostly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	1				filling vein	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	3		0.2	0.6	0.4	smectite > calcite	

COMMENTS : Moderate to highly altered.

Photomicrograph: **59-open-5**; representative texture showing microspherules

191-1179D-22R-2, 63-66 cm (Pc 6B), TS #44 **Unit 43** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Brecciated pillow interior**
GRAIN SIZE: **Fine-grained**
TEXTURE: **Variolitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	0	0.5 - 1.0	0.2	0.5	0.3		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	20	40	0.05	0.4	0.2		acicular, skeletal	
Pyroxene	10	30	0.01	0.1	0.05	Augite	anhedral	
Olivine	0	5	0.1	0.6	0.3		acicular, skeletal	completely altered and changed to iddingsite
Magnetite	0.5	1	0.01	0.03	0.02			
Glass or cryptocrystalline matrix		24						mostly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	3				filling veins	
Iddingsite	2-3				pseudomorph after olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	2-3		0.3	0.8	0.5	calcite, celadonite, FeOOH	

COMMENTS :

Photomicrograph: **60-open-5**; representative texture with olivine microphenocrysts and skeletal groundmass crystals

191-1179D-22R-3, 18-20 cm (Pc 1B), TS #45 **Unit 43** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Pillow rim**
GRAIN SIZE: **Microcrystalline to fine-grained**
TEXTURE: **Varioritic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	0	0.5 - 1.0	0.2	0.6	0.3		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	25	40	0.01	0.9	0.4		acicular, skeletal	
Pyroxene	15	30	0.01	0.2	0.1	Augite	subhedral	
Olivine	0	2	0.05	0.3	0.2		skeletal	completely altered and changed to iddingsite
Magnetite	0.5	1	0.01	0.03	0.02		subhedral	
Glass or cryptocrystalline matrix		26						mostly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	<1				filling veins	
Iddingsite	2				pseudomorph after olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicular	3		0.2	0.5	0.3	calcite, celadonite, smectite, FeOOH	

COMMENTS :

PHOTOMICROGRAPH : **61-open-5**; representative texture with olivine microphenocrysts and skeletal groundmass crystals

191-1179D-22R-3, 100-102 cm (Pc 7E), TS #46 **Unit 44** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Microcrystalline**
TEXTURE: **Variolitic, intersertal**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	0	0.5 - 1.0	0.3	1.8	0.6		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel	0.1	0.1	0.2	0.25	0.2		euhedral	
GROUNDMASS								
Plagioclase	25	45	0.02	1.4	0.8		acicular, skeletal	
Pyroxene	20	35	0.05	0.3	0.2	Augite	anhedral	
Olivine	0	5	0.1	0.8	0.4		skeletal	completely altered and changed to iddingsite
Magnetite	0.5	1	0.01	0.05	0.02		euhedral	
Glass or cryptocrystalline matrix		13						mostly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	2				replacing groundmass	
Iddingsite	3				pseudomorph after olivine	
	<1					

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	~2		0.2	0.5	0.3	calcite, celadonite	

COMMENTS :

Photomicrograph: **62-open-5**; representative groundmass with microphenocryst of chromium spinel, and skeletal plagioclase and olivine

191-1179D-22R-4, 80-82 cm (Pc 4A), TS #47 | **Unit 45** | **OBSERVER:** | **Hayasaka**

ROCK NAME: **Sparsely olivine phyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine- to medium-grained**
TEXTURE: **Subophitic, intergranular**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0.5 - 1.0	0.5 - 1.0	0.6	3	1.2		subhedral, prismatic	
Pyroxene								
Olivine	0	1	0.2	0.25	0.2		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	40	50	0.1	4	1.5		acicular, skeletal	
Pyroxene	35	40	0.02	0.2	0.1	Augite	anhedral	
Olivine	0	5	0.1	0.7	0.4		skeletal	completely altered and changed to iddingsite
Magnetite	1	2	0.01	0.04	0.02		subhedral	
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	2	0.2	0.5	0.3	filling veins	
Iddingsite	3-4				pseudomorph after olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	0.5		0.15	0.4	0.2	calcite	

COMMENTS :

Photomicrograph: **63-open-5**; representative texture
64-open-20; closeup of groundmass. The brownish color of clinopyroxene indicates its Ti-rich composition.

191-1179D-22R-5, 58-60 cm (Pc 5D), TS #48						**Unit 46**	**OBSERVER:**	**Hayasaka**
ROCK NAME:	**Aphyric basalt**							
WHERE SAMPLED:	**Flow interior**							
GRAIN SIZE:	**Microcrystalline to fine-grained**							
TEXTURE:	**Microspherulitic, variolitic**							

PRIMARY MINERALOGY	**PERCENT PRESENT**	**PERCENT ORIGINAL**	**SIZE (mm) min.**	**max.**	**av.**	**APPROX. COMP.**	**MORPHOLOGY**	**COMMENTS**
PHENOCRYSTS								
Plagioclase	< 0.5	0.5 - 1.0	0.3	0.9	0.4		euhedral	
Pyroxene	0	< 0.5			0.1		subhedral	
Olivine	0	< 0.5	0.2	0.4	0.25		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	25	40	0.01	0.6	0.3		acicular, skeletal	
Pyroxene	25	30	0.01	0.2	0.05	Augite	anhedral	
Olivine	0	3	0.1	0.7	0.3		skeletal	completely altered and changed to iddingsite
Magnetite	1	2	0.01	0.03	0.02			
Glass or cryptocrystalline matrix		25						mostly cryptocrystalline

SECONDARY MINERALOGY	**PERCENT**	**SIZE (mm) min.**	**max.**	**av.**	**REPLACING / FILLING**	**COMMENTS**
Calcite	2				filling veins	
Iddingsite	2-3				pseudomorph after olivine	

VESICLES/ CAVITIES	**PERCENT**	**LOCATION**	**SIZE (mm) min.**	**max.**	**av.**	**FILLING / MORPHOLOGY**	**COMMENTS**
Vesicles	5		0.2	0.7	0.4	calcite>celadonite, FeOOH	

COMMENTS :

Photomicrograph: **65-open-5**; representative texture with skeletal olivine altered to iddingsite, and acicular plagioclase crystals forming microspherules

191-1179D-22R-5, 114-116 cm (Pc 6B), TS #49 **Unit 46** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine- to medium-grained**
TEXTURE: **Subophitic, intergranular**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0.5 - 1	0.5 - 1.0	0.6	2	1.2		subhedral	
Pyroxene								
Olivine	0	0.5	0.2	0.6	0.35		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel	< 0.1	< 0.1					euhedral	
GROUNDMASS								
Plagioclase	45	50	0.3	2.5	1.1		subhedral, acicular, skeletal	
Pyroxene	35	40	0.05	2	0.9	Augite	anhedral	
Olivine	0	5	0.05	0.6	0.4		euhedral, skeletal	completely altered and changed to iddingsite
Magnetite	0.5	1	0.01	0.15	0.05		subhedral	
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	~1				veinlet	
Iddingsite	~1				pseudomorph after olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	7		0.5	1.6	1	calcite > celadonite, FeOOH: additional cryptocrystalline material	

COMMENTS :

Photomicrograph:
66-open-5; representative texture
67-cross-5; representative texture
68-open-20; celadonite vein and plagioclase phenocryst

191-1179D-22R-4, 115-117 cm (Pc 7A), TS #50 **Unit 45** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt or basaltic glass**
WHERE SAMPLED: **Pillow rim**
GRAIN SIZE: **Glass to cryptocrystalline**
TEXTURE: **Glassy, cryptocrystalline, microspherulitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine	0	0.5 - 1.0	0.05	0.4	0.25		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase	5	10	0.05	0.4	0.2		skeletal	
Pyroxene	3	5	0.01	0.1	0.05	Augite	anhedral	
Olivine	0	5	0.1	0.5	0.3		skeletal	completely altered and changed to iddingsite
Magnetite								
Glass or cryptocrystalline matrix		80						mainly cryptocrystalline

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	~1				veins	
Iddingsite	2-3				pseudomorph after olivine	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	~3		0.2	0.5	0.3	calcite, cryptocrystalline material	

COMMENTS :

Photomicrograph: **69-open-5**; representative texture with microspherules, olivine phenocrysts, and devitrified glass

191-1179D-22R-5, 135-137 cm (Pc 7), TS #51 **Unit 46** **OBSERVER:** **Hayasaka**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **Flow interior**
GRAIN SIZE: **Fine- to medium-grained**
TEXTURE: **Subophitic**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase	0.5	0.5	0.5	1.8	1		subhedral, prismatic	
Pyroxene								
Olivine	0	0.5	0.2	0.6	0.4		euhedral	completely altered and changed to iddingsite
Chromite or Cr-spinel	0.1	0.1	0.15	0.25	0.2		euhedral	
GROUNDMASS								
Plagioclase	40	50	0.15	1.4	1.1		acicular, skeletal	
Pyroxene	35	42	0.1	1.2	0.25	Augite	anhedral	
Olivine	0	5	0.1	0.4	0.2		skeletal	completely altered and changed to iddingsite
Magnetite	0.5	1.5	0.01	0.1	0.04		subhedral	
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Calcite	~1				veins	
Iddingsite	~1				pseudomorph after olivine	
Celadonite	1				replacing groundmass	

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	15		0.5	2.4	1.2	calcite >> zeolite, celadonite	

COMMENTS :

Photomicrograph:
70-open-5; representative texture
71-open-20; Chromium-spinel
85-cross-2.5; two vesicles filled with calcite and zeolite
86-cross-5; two vesicles filled with calcite and zeolite

191-1179D-12R-1, 65-67 cm (Pc 8), TS #52 **Unit 3** **OBSERVER:** **Hayasaka**

ROCK NAME: **Interpillow material**
WHERE SAMPLED: **Interpillow material**
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase								
Pyroxene								
Olivine								
Magnetite								
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS

COMMENTS :

Photomicrograph: **72-open-5**; calcareous sediment with fragments of basaltic glass

191-1179D-12R-1, 120-122 cm (Pc 15A), TS #53 **Unit 3** **OBSERVER:** **Hayasaka**

ROCK NAME: **Calcareous sediment**
WHERE SAMPLED:
GRAIN SIZE:
TEXTURE:

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	max.	av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Pagioclase								
Pyroxene								
Olivine								
Chromite or Cr-spinel								
GROUNDMASS								
Plagioclase								
Pyroxene								
Olivine								
Magnetite								
Glass or cryptocrystalline matrix								

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	max.	av.	REPLACING / FILLING	COMMENTS

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	max.	av.	FILLING / MORPHOLOGY	COMMENTS

COMMENTS :

Photomicrograph: **73-open-5**; calcareous sediments containing microfossils and fragments of basaltic glass