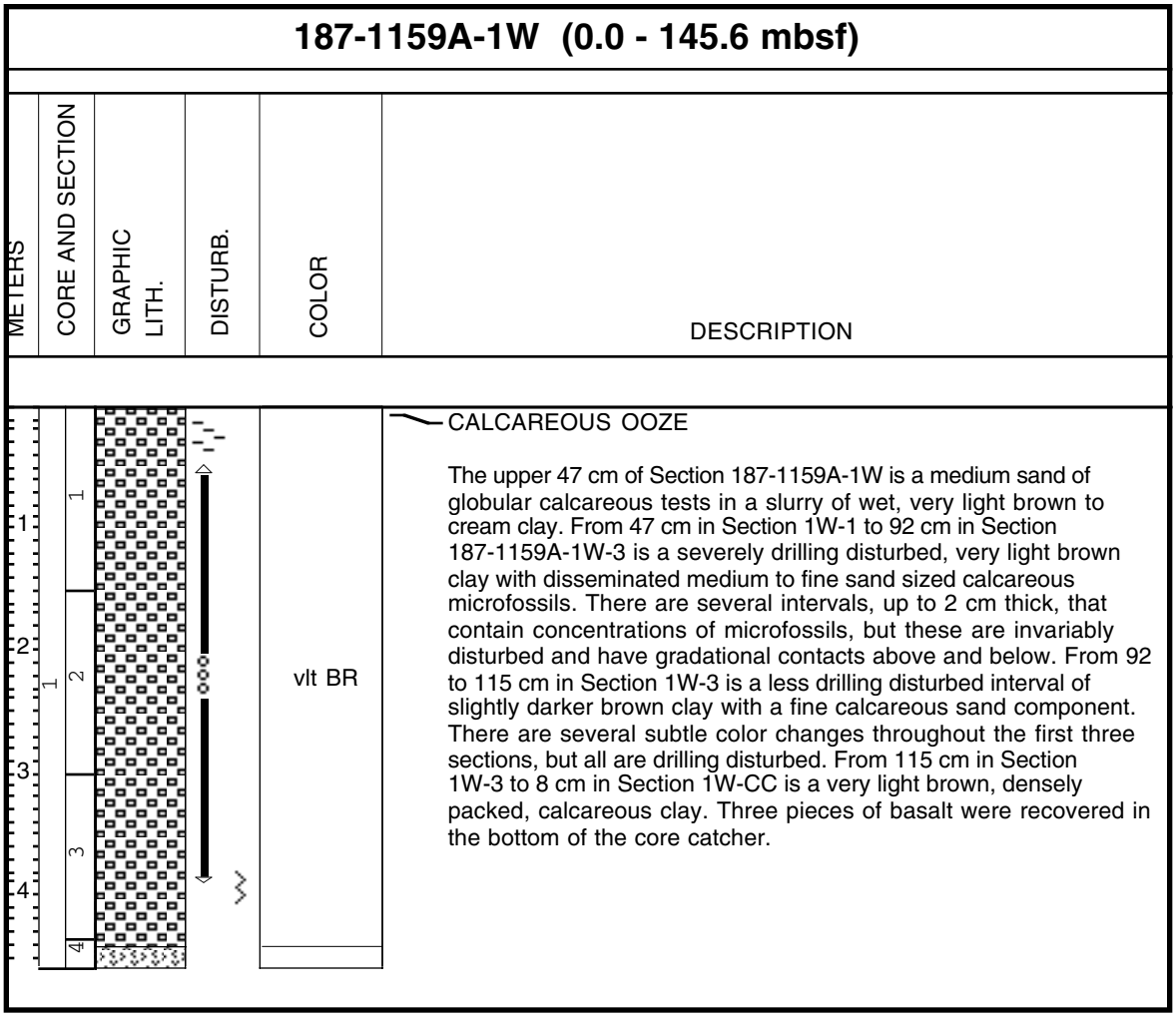
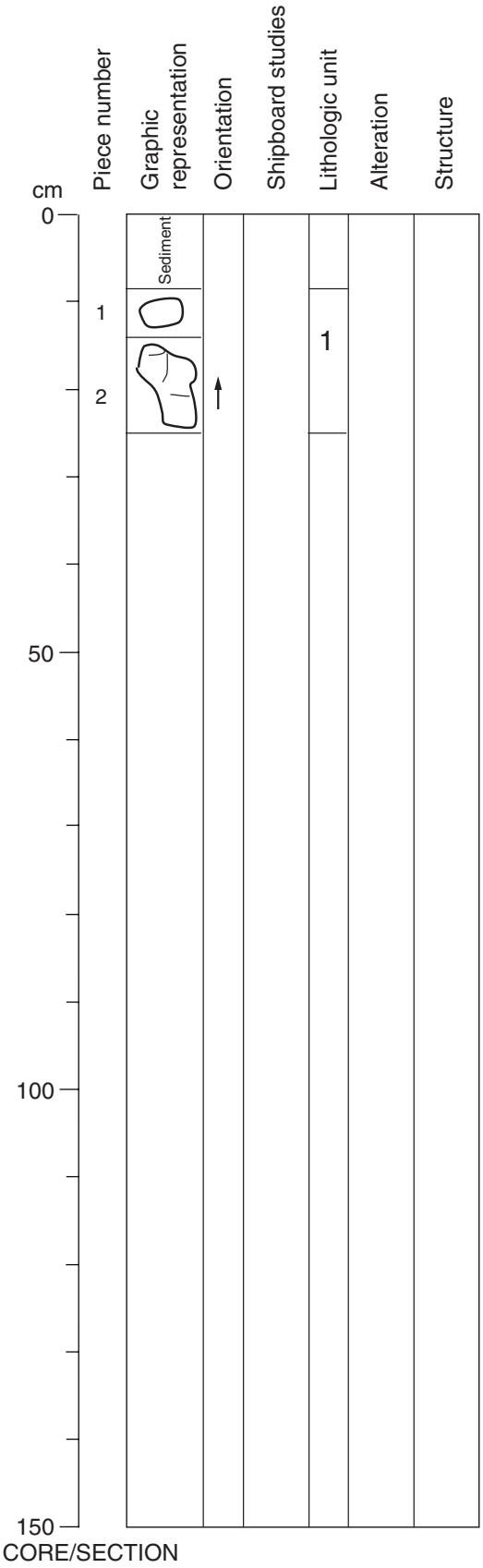
Core Photo


187-1159A-1W (0.0 - 145.6 mbsf)
METERS
CORE AND SECTION
GRAPHIC LITH.
DISTURB.
COLOR
DESCRIPTION
1
2
3
4
1
2
3
4
vlt BR
CALCAREOUS OOZE
The upper 47 cm of Section 187-1159A-1W is a medium sand of globular calcareous tests in a slurry of wet, very light brown to cream clay. From 47 cm in Section 1W-1 to 92 cm in Section 187-1159A-1W-3 is a severely drilling disturbed, very light brown clay with disseminated medium to fine sand sized calcareous microfossils. There are several intervals, up to 2 cm thick, that contain concentrations of microfossils, but these are invariably disturbed and have gradational contacts above and below. From 92 to 115 cm in Section 1W-3 is a less drilling disturbed interval of slightly darker brown clay with a fine calcareous sand component. There are several subtle color changes throughout the first three sections, but all are drilling disturbed. From 115 cm in Section 1W-3 to 8 cm in Section 1W-CC is a very light brown, densely packed, calcareous clay. Three pieces of basalt were recovered in the bottom of the core catcher.

Core Photo



187-1159A-1W-CC

UNIT 1: APHYRIC BASALT

PIECES 1-2

GROUNDMASS: Microcrystalline

COLOR: Medium gray

VESICLES:

Abundance	Size (mm)			Shape
%	avg.	max.	min.	
1	0.8	1	<0.5	round

Filling: Is variable even in individual pieces, vecicles may be lined, partially filled or entirely filled Fe oxyhydroxide, Mn oxide, yellow-tan, green or light gray clay. Two vesicles were also found to be filled with cryptocrystalline silica.

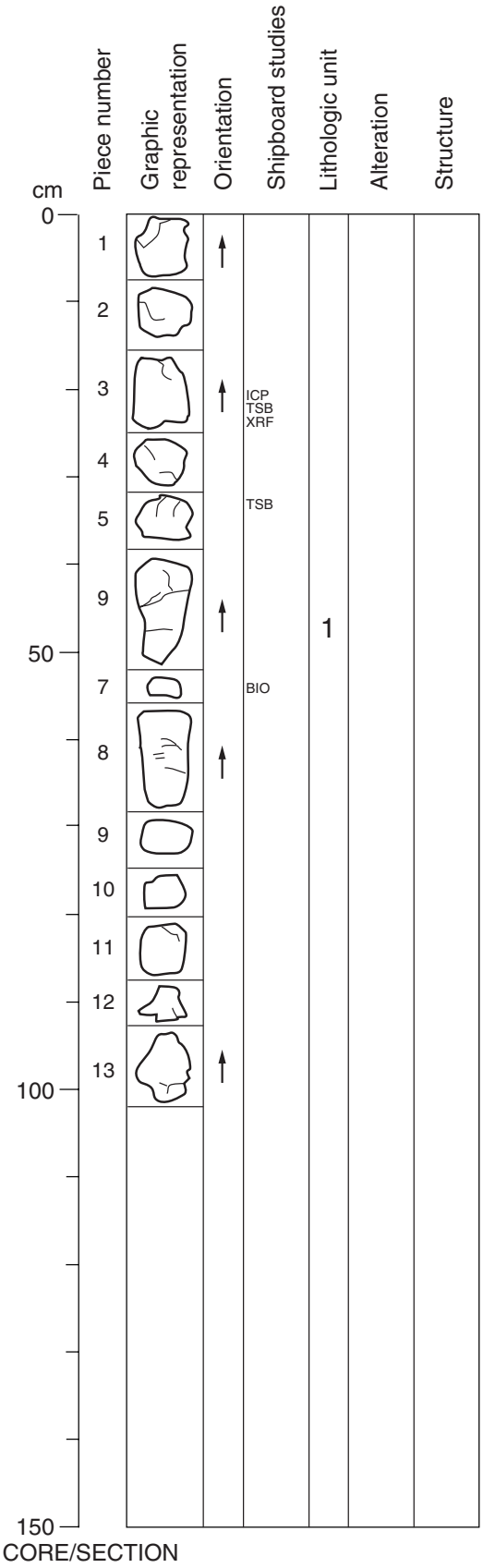
VEINS/FRACTURES: Piece 2 has a 1 mm wide fracture which cuts through two vesicles. Cryptocrystalline silica lines the walls of the fracture and infills the two vesicles.

ALTERATION: Along one side of Piece 2 there is an oxidized margin, orange-brown in color, 2 mm thick. On the outer surface adjacent to this margin there is a patchy coating of light tan clay with Mn oxide spots, < 0.5 mm in diameter.

STRUCTURE: None

ADDITIONAL COMMENTS: The top 8.5 cm of this section is light tan calcareous clay. Piece 1 is pebble sized and has rounded not drill outer surfaces. The top of Piece 2 has a ~8 mm wide tan-brown band of large (~1 mm in diameter) coalesced spherulites.

Core Photo



187-1159A-2R-1

UNIT 1: APHYRIC BASALT

PIECES 1-13

INTERNAL CONTACTS: Piece 5 has an ~1 mm thick glassy rind with a 1 cm wide dark gray band of small (~0.1 mm in diameter) coalesced spherulites followed by a 5 mm wide tan-brown band of larger (~1 mm in diameter) coalesced spherulites. Piece 3 (oriented) also has a small 3 mm wide tan-brown band of larger (~1 mm in diameter) coalesced spherulites on the top of the piece.

GROUNDMASS: Microcrystalline

COLOR: Medium gray to dark gray

VESICLES:

Abundance	**Size** (mm)			**Shape**
%	**avg.**	**max.**	**min.**	
1-2	0.8	1.2	~0.5	round to oval

Filling: Variable even within individual pieces. Most commonly lined with white or light green clay. Some vesicles are lined with green clay and filled with Mn oxide. Occasionally vesicle is filled with crystalline quartz.

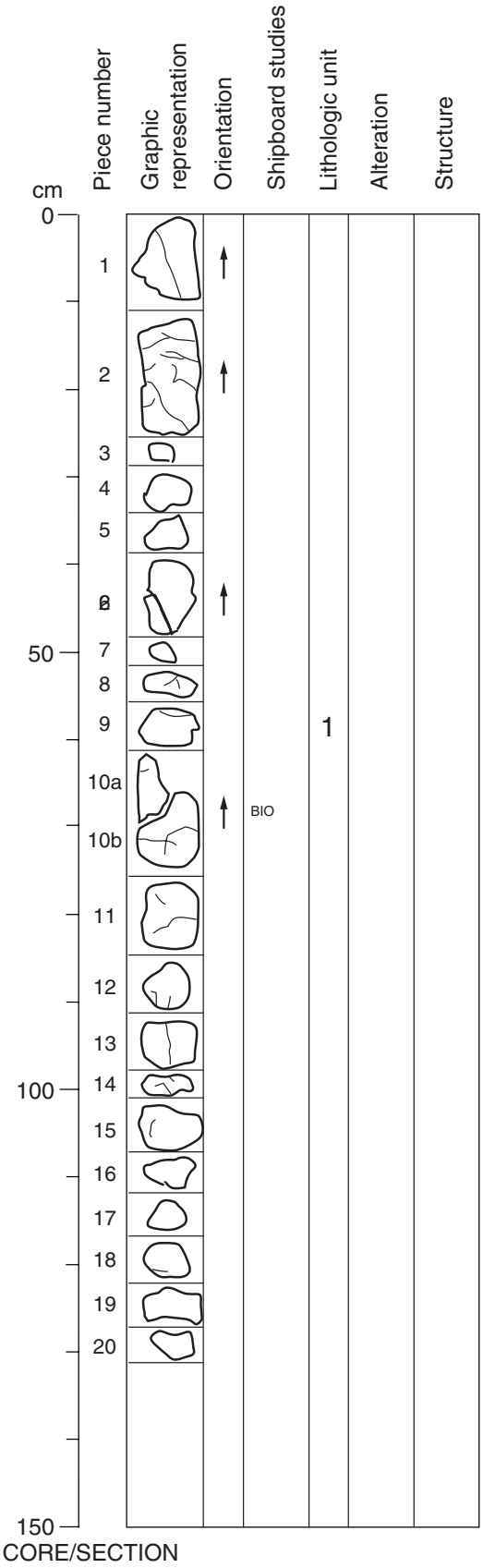
VEINS/FRACTURES: The bottom of Piece 3 (oriented) has a small fracture <1 mm wide that is partially filled with crystalline quartz. Small <1 mm wide open fractures occur in Pieces 4, 6, 11, and 12. Large elongate vugs, up to 1.7 cm long and 5 mm wide, are found in the center of Piece 8 and contain crystalline quartz and Mn oxide.

ALTERATION: Overall the section is slightly to moderately altered with most alteration occurring as oxidized margins ~1 mm wide. The groundmass also has spotty Fe-staining. Pieces 7, 9, 10, 11, 12, and 13 are pebble-to cobble-sized and do not have drilled outer surfaces.

STRUCTURE: None

ADDITIONAL COMMENTS: Rare phenocrysts of plagioclase and olivine up to 2 mm in size are found throughout the section. Cr-spinel up to 1 mm in diameter is also observed associated with plagioclase and in the groundmass of Piece 5.

Core Photo



187-1159A-3R-1

UNIT 1: APHYRIC BASALT

PIECES 1-20

INTERNAL CONTACTS: Pieces 1, 9, 10a, 12, 13, 16, 17, and 18 all have chilled margin sequences. The chilled margins in Pieces 1, 9, 10a, 12, 16, and 18 consist of two zones, a black zone of small (~0.1 mm in diameter) coalesced spherulites. These zones range in size from 3 cm wide in Piece 3 to 7 mm wide in Piece 9, followed by a tanish-brown zone of larger coalesced spherulites (~1 mm in diameter). These zones range in size from 2 cm wide in Piece 12 to 5 mm wide in Piece 18. Pieces 13 and 17 only contain the tanish-brown zone of larger (~1 mm in diameter) coalesced spherulites which range in size from 1.2 cm wide in Piece 13 to 1.3 cm wide in Piece 17.

GROUNDMASS: Microcrystalline

COLOR: Medium gray to dark gray

VESICLES:

Abundance	Size (mm)			Shape
%	avg.	max.	min.	
1-2	0.5	0.8	<0.5	round

Filling: Variable even within individual pieces comprising is green clay, tanish-yellow clay, Fe oxyhydroxide, Mn oxide and quartz. Most commonly they are lined with clay and infilled with Mn oxide.

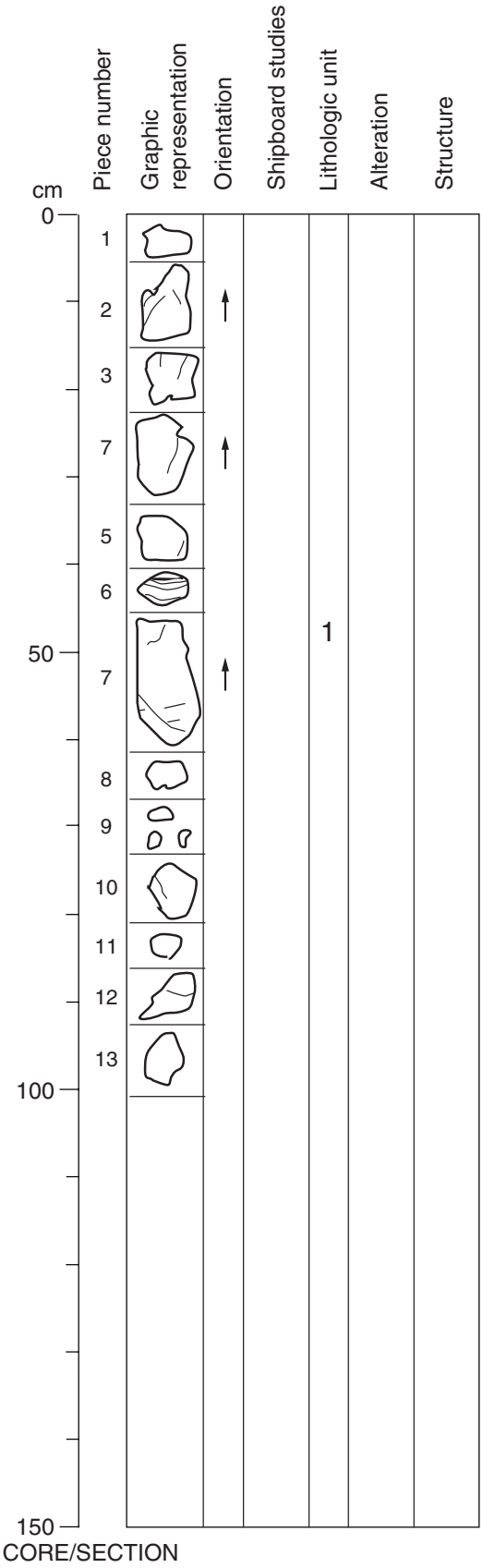
VEINS/FRACTURES: Pieces 1 and 2 have small ~0.2 mm wide fractures which are lined with quartz. Piece 10b has a 0.5 mm wide branching quartz vein which crosses the entire piece. An open fracture ~0.25 mm wide was found in Piece 3.

ALTERATION: Oxidized halos are found around the fractures in Pieces 1 and 2 that are 1 mm and 4 mm wide, respectively. The quartz vein in Piece 10b has a "bleached" halo ~ 2 mm wide. Pieces 8, 9, and 15 have oxidized margins ranging from 4 mm wide in Piece 9 to 1 mm wide in Piece 8. The outer surfaces adjacent to these margins typically have a patchy coating of tan to gray clay with associated Mn oxide spots <0.5 mm in diameter.

STRUCTURE: High occurrence of chilled margins suggests these sections penetrated a pillow lava sequence.

ADDITIONAL COMMENTS: Pieces 3, 4, 5, 7, 8, 12, 13, 16, 17, 18, 19, and 20 are pebble- to cobble-sized pieces that do not have drilled outer surfaces.

Core Photo



187-1159A-4R-1

UNIT 1: APHYRIC BASALT

PIECES 1-13

INTERNAL CONTACTS: Piece 6 is a 2.2 cm thick glass rind with a 1.7 cm wide dark gray band of small (~0.1 mm in diameter) coalesced spherulites. Piece 7 has a thin <1 mm glass rind followed by a 5 mm wide dark gray band of small (~0.1 mm in diameter) coalesced spherulites followed by a 2.2 cm wide tan-brown band of larger (~1 mm in diameter) spherulites and coalesced spherulites.

GROUNDMASS: Microcrystalline

COLOR: Medium gray

VESICLES:

Abundance	Size (mm)			Shape
%	avg.	max.	min.	
1-2	0.8	1.2	~0.5	round to oval

Filling: All vesicles are either filled or lined with white yellowish or light green clay. Some vesilcles are lined with green clay and then filled with Mn oxide. Others are partly filled with Mn oxide. Some Mn oxide lined vesicles in Piece 7 have soft, metallic shiny material in the center which is probably unoxidized manganese. Crystalline quartz filled vesicle in Piece 8.

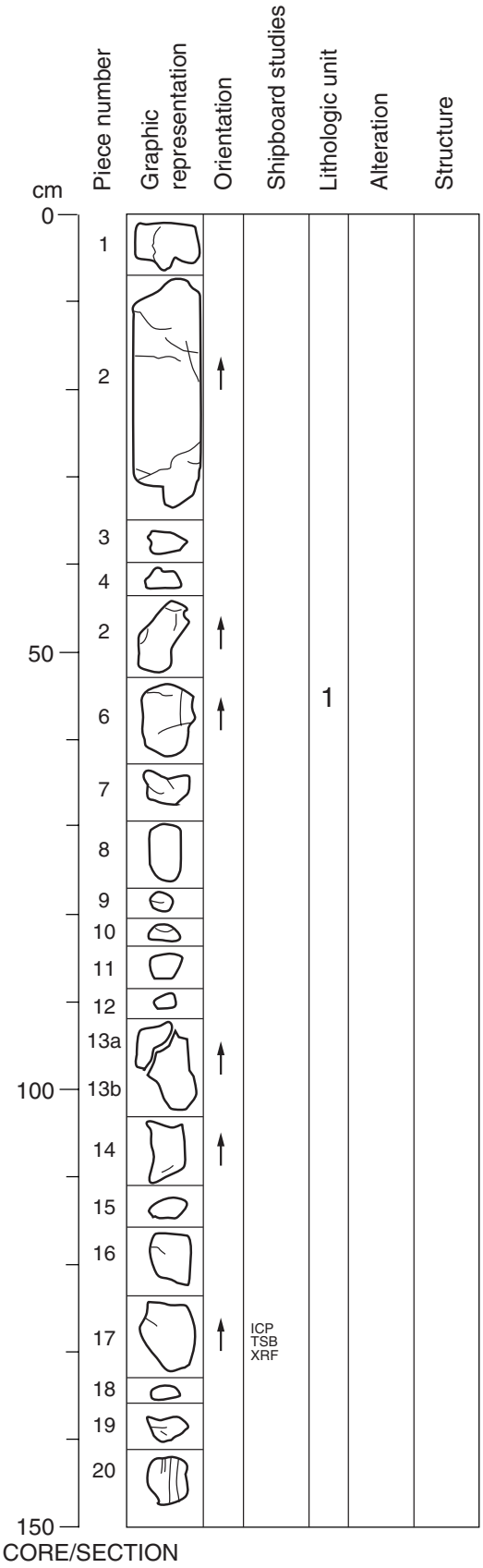
VEINS/FRACTURES: Small open fractures, usually less than 0.5 mm dissect the basalt irregularly throughout the section. Piece 7 has a 3 cm long and 3 mm wide open fracture through the chilled margin that is lined with cryptocrystalline silica and crystalline quartz growing perpendiculat to the fracture walls.

ALTERATION: Overall the section is slightly to moderately altered with the highest degree of alteration along <2 mm wide oxidized margins, where the ground mass is largely (20%-30%) replaced by smectite and Fe oxyhydroxides. Elsewhere, the groundmass has a spotty Fe-staining, that appears to form a network. Piece 1, 4, 5, 7, 8, 11, and 12 have 8%-10% , Piece 2 and 10 have 5%-8% and Piece 3 1%-4% Fe-staining. The degree of Fe-staining decrease in Pieces 2, 7, 8, 10, 11, and 13 from the edges of the pieces towards the interior.

STRUCTURE: Pillow lava

ADDITIONAL COMMENTS: Rare phenocrysts of plagioclase and olivine up to 1 mm in size were found throughout the section. In most cases olivine is partly altered to smectite, but plagioclase is fresh throughout.

Core Photo



187-1159A-5R-1

UNIT 1: APHYRIC BASALT

PIECES 1-20

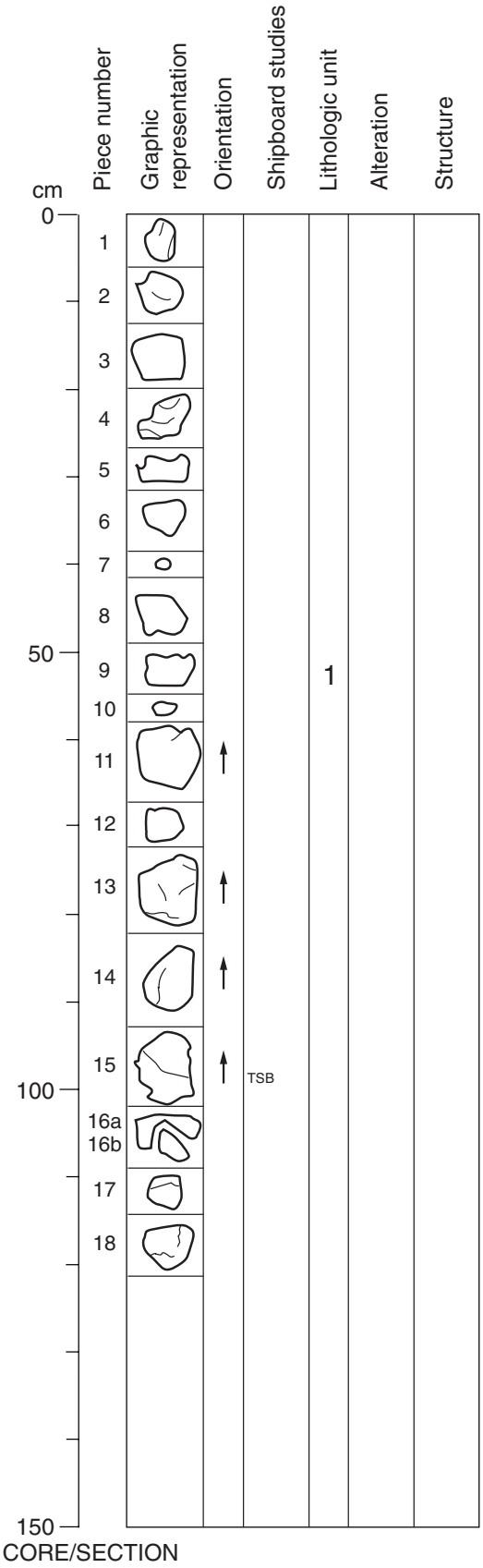
INTERNAL CONTACTS: Inner part of chilled margin on Piece 5, 6,7, 8, 13A, 14,17, and 18, consist of discrete to coalesced spherulites. Piece 1 has a small amount of shiny black glass at the top. The chilled margins are most complete on Pieces 5 and 8 where they range from 3 to 4 cm wide, respectively. On the other pieces the chilled margins range from 0.5 to 2 cm. Most pieces have an outer dark gray band and an inner tan brown band of small (~0.1 mm in diameter) and large (~1 mm in diameter) coalesced spherulites, respectively.
GROUNDMASS: Microcrystalline
COLOR: Medium gray

VESICLES:

Abundance	Size (mm)			Shape
%	avg.	max.	min.	
1	0.8	1.2	~0.5	round to oval

Filling: Vesicles are unfilled or lined with Fe oxyhydroxide +/- clay. Some are totally filled with greenish clay and lined with Fe oxyhydroxide. In the upper part of Piece 2 there are vugs from 0.5 - 1 cm in diameter, partially or totally filled with silica or yellowish to green clay and lined with Fe oxyhydroxide and Mn oxide.
VEINS/FRACTURES: Thin veins (<<1 mm) in Pieces 1, 2, 5, 6, 9, 10, 14, 17, and 19, filled with Fe oxyhydroxide and/or silica, and/or green clay. Piece 17 has a 1.5 cm long and 1 mm wide silica vein through the chilled margin. Three open fractures, less than 0.5 wide, in Piece 2. Fracture surfaces, coated with silica and dendritic Mn oxide, are present as parts of the outer surface of many pieces.
ALTERATION: Overall the section is moderately altered. In Piece 2 within the upper 11 cm that contain vugs and around fractures, the groundmass is partially replaced (30%) by Fe oxyhydroxide and yellow-green clay. Elsewhere, the groundmass has patches of dark green clay. The highest degree of alteration is within 4-5 mm wide oxidized margins in Piece 6, 13A,14, and 16, where the adjacent outer surface is a fracture surface (Piece 14 and 16) or cuts coalesced spherulites in chilled margin (Piece 6 and 13A). Here the groundmass is 80-100% replaced by Fe oxyhydroxide and clay. Alteration elsewhere consists predominantly of patchy replacement of groundmass phases (2%-20%) by Fe oxyhydroxides and clay. In many cases the patches form thin, arcuate, wavy patterns, suggesting that they may outline quench crystallization textures.
STRUCTURE: Pillow lava
ADDITIONAL COMMENTS: Rare phenocrysts of plagioclase and olivine up to 1 mm in size were found throughout the section. In most cases olivine is partly altered to clay.

Core Photo



187-1159A-5R-2

UNIT 1: APHYRIC BASALT

PIECES 1-18

INTERNAL CONTACTS: Piece 17 has a thin <1 mm glass rind with a 6 mm wide dark gray band of small (~0.1 mm in diameter) coalesced spherulites followed by an 8 mm wide tan-brown band of larger (~1 mm in diameter) coalesced spherulites. Chilled margins grading from dark gray bands of small coalesced spherulites to tan-brown bands of larger coalesced spherulites are present in Piece 8, 13, 14, 16, and 18.

GROUNDMASS: Microcrystalline

COLOR: Medium gray

VESICLES:

Abundance	Size (mm)			Shape
%	avg.	max.	min.	
1-2	0.8	1.2	~0.5	round to oval

Filling: Vesicles in Pieces 1 through 12 are either filled or lined with yellowish or light green clay or Mn-oxide. In Pieces 13 through 18 unfilled or lined (Mn oxide/clay) vesicles dominate over filled vesicles.

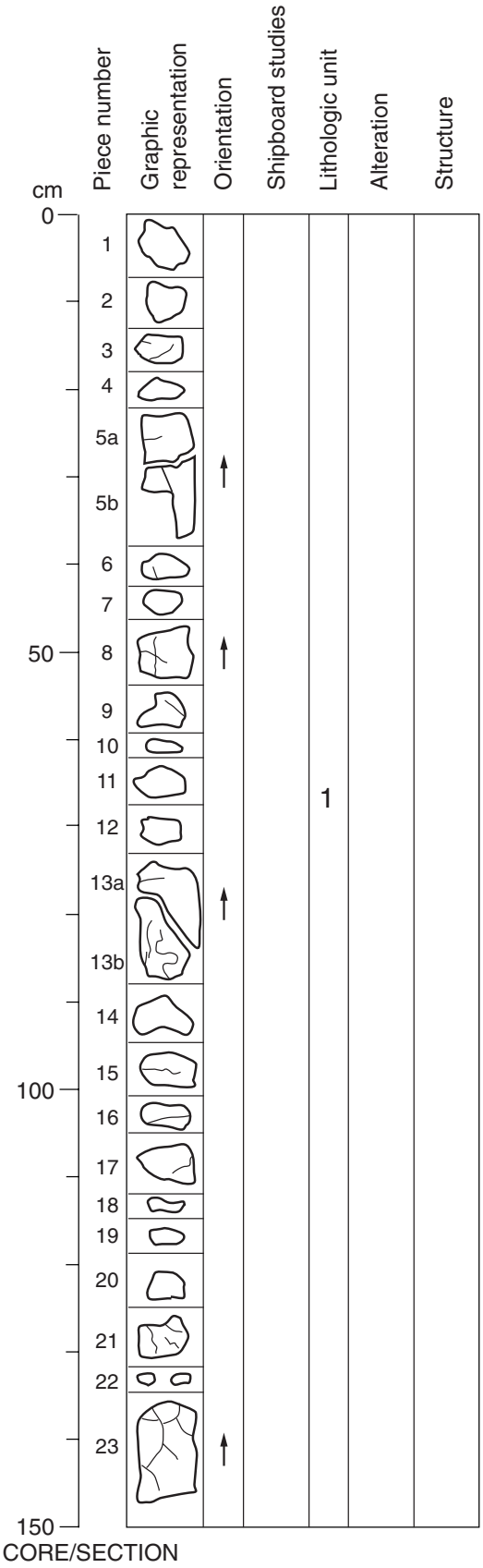
VEINS/FRACTURES: Open fractures dissect Pieces 15 and 16, the latter being surrounded by a 4 mm wide buff alteration halo that highlights spherulites. Small open fractures, usually not longer than 0.5 cm dissect the basalt irregularly throughout the section and are often lined with Mn oxide.

ALTERATION: Overall the section is slightly to moderately altered. Up to 2 mm wide alteration halos with (20%-30%) groundmass replaced by smectite and Fe oxyhydroxides on the edges of Pieces 5, 6, 12, 13, 14, and15. The groundmass is variably affected by iron staining throughout. Iron staining is strongest (6%-10%) in Pieces 2, 3, 4, 5, 9, 11, and 16; it is lowest (1%-6%) in Pieces 6, 8, 12, 13, 14, 15, 17, and 18.

STRUCTURE: Not distinguishable

ADDITIONAL COMMENTS: Rare phenocrysts of plagioclase and olivine up to 1 mm in size were found throughout the section. Olivine is partly altered to smectite and is freshest in the lower half of the section. Plagioclase is fresh throughout except for Fe-staining in places.

Core Photo



187-1159A-6R-1

UNIT 1: APHYRIC BASALT

PIECES 1-23

INTERNAL CONTACTS: Although no clear glass was recovered, chilled margins consisting of dark gray bands of small (~0.1 mm in diameter) coalesced spherulites to tan-brown larger (~1 mm in diameter but can reach up to 2 mm) coalesced spherulites occur on Pieces 2, 4, 5, 6,11, and 13. The chilled margins are most complete on Pieces 5 and 13 where they range from 2.5 to 4.5 cm wide, respectively.

GROUNDMASS: Microcrystalline

COLOR: Dark gray

VESICLES:

Abundance	Size (mm)			Shape
%	avg.	max.	min.	
1	1	1.5	~0.5	round

Filling: Vesicle fillings are variable, even within individual pieces. These can range from unfilled to thin linings of blue or white cryptocrystalline silica, yellow to pale green clay or Fe oxyhydroxides to complete fillings of clays ranging from yellowish green, orange-brown to dark green. In Piece 13 unfilled vesicles occur near the top of the zone of coalesced spherulites; further down into the chilled margin the vesicles are lined with a pale green clay; toward the bottom of the piece they are concentrically filled with orange-brown Feoxyhydroxides + clay rims and cores of very dark green clay.

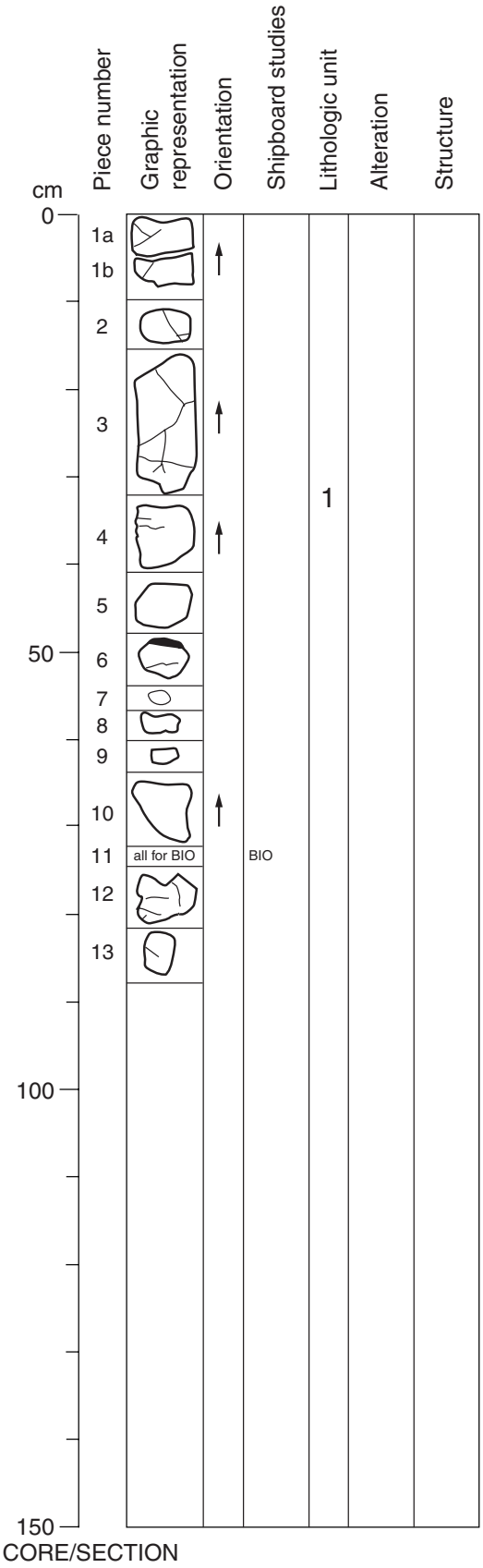
VEINS/FRACTURES: Fractures occur in Pieces 3, 5, 6, 8, 13, 15, 16, 17, 20, 21, and 23. Based on the appearance of pieces that have broken along fractures, these are probably lined with thin films of white or blue cryptocrystalline silica, clay and/or Mn oxide.

ALTERATION: Overall the section is slightly altered. Alteration consists predominantly of patchy replacement of groundmass phases by Fe oxyhydroxides and clay. However, in many cases the patches form thin, arcuate, wavy patterns, suggesting that these may be outlining sheaf or plumose quench crystallization textures. Pieces 5b, 7, 8, 11, 14, and 21 have narrow alteration halos (3-7 mm wide) along part of the outside edges of the piece.

STRUCTURE: Not distinguishable

ADDITIONAL COMMENTS: Rare phenocrysts of olivine up to 1 mm in size occur rarely.

Core Photo



187-1159A-6R-2

UNIT 1: APHYRIC BASALT

PIECES 1-13

INTERNAL CONTACTS: Glass (<1 mm thick) was recovered in Pieces 4, 6, 7 and 12. Pieces 4, 6, 7, and 12 also contain chilled margins consisting of dark gray bands of small (~0.1 mm in diameter) coalesced spherulites ranging from 2.1 cm wide in Piece 7 to 3 mm wide in Piece 4, followed by tan-brown bands of larger (~1 mm in diameter) coalesced spherulites.

GROUNDMASS: Microcrystalline

COLOR: Medium gray to dark gray

VESICLES:

Abundance	Size (mm)			Shape
%	avg.	max.	min.	
1	1	1.5	~0.5	round

Filling: Vesicle fillings are variable, even within individual pieces. These can range from unfilled to thin linings of blue or white cryptocrystalline silica, yellow to pale green clay or Fe oxyhydroxides to complete fillings of clays ranging from yellowish green, to orange-brown to dark green. Large vesicles up to 0.5 cm occur in the oxidized margin of Piece 5.

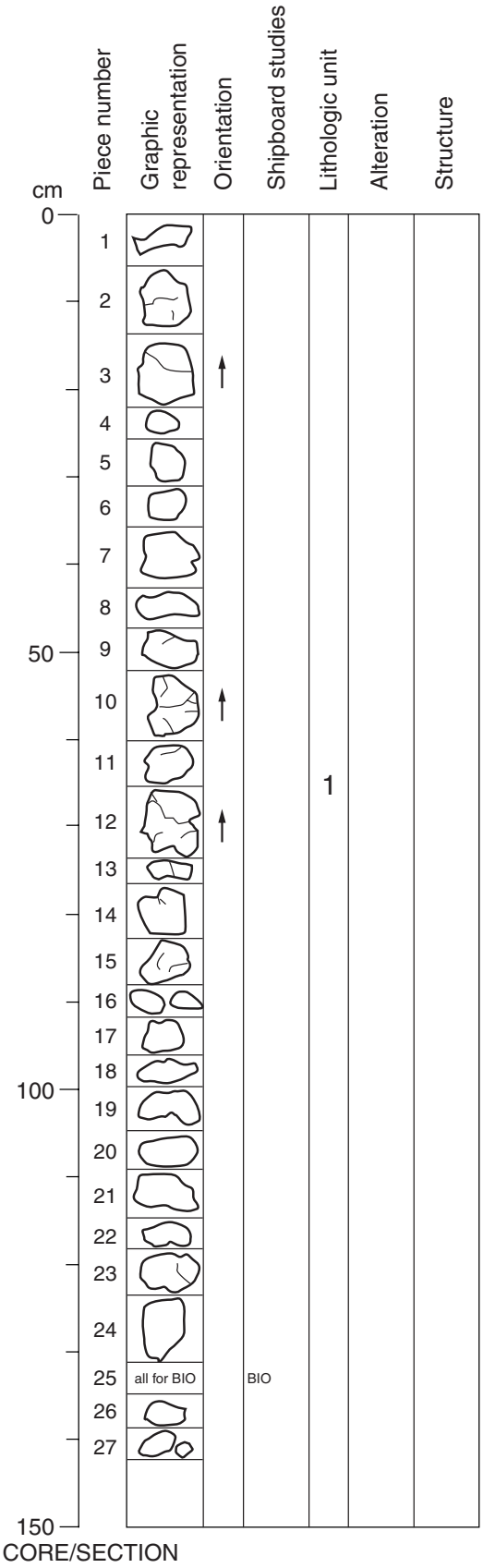
VEINS/FRACTURES: Fractures occur in Pieces 1, 3, 6, 8, and 12. Based on the appearance of pieces that have broken along fractures, these are probably lined with thin films of white or blue cryptocrystalline silica, Fe oxyhydroxide, clay and/or Mn oxide. Some fractures are surrounded by an alteration halo ranging from 1 mm to 5 mm. The outside of Pieces 2, 3, 4, 5, and 12 have patchy coatings of quartz and light pink clay with Mn oxide spots <0.5 mm in diameter.

ALTERATION: Overall the section is slightly altered. Alteration consists predominantly of patchy replacement of groundmass phases by Fe oxyhydroxides and clay. Pieces 1, 2, 3, 4, 5, 6, 7, and 12 present oxidized margins ranging in size from 2 mm to 15 mm.

STRUCTURE: Pillow lavas

ADDITIONAL COMMENTS: Rare phenocrysts of plagioclase (up to 2 mm) occur in Pieces 3, 7, 12 and 13, rare olivine phenocrysts occur throughout the section. Piece 10 is a light brown hyaloclastite breccia with a clay matrix. It consists of angular clasts composed mainly (95%) of glass surrounded by palagonite, which range in thickness from less than 0.5 mm to 3 mm. They vary in size from 1.5 cm to less than 1 mm. The remaining 5% consists of angular aphyric basalt fragments. The matrix is composed of light brown to tan clay with sparse, small (<1 mm) Mn oxide spots disseminated throughout the piece.

Core Photo



187-1159A-7R-1

UNIT 1: APHYRIC BASALT

PIECES 1-27

INTERNAL CONTACTS: Pieces 1, 3, 4, 6, 12, 14, and 15 have glass/palagonite rinds that range in size from 4 mm thick in Piece 15 to <1 mm thick in Pieces 3, 4, and 6. Pieces 1, 2, 3, 4, 6, 10, 11, 14, 15, and 20 have chilled margin sequences that consist of two zones. The outer, black zone, is made up of small (~0.1 mm in diameter) coalesced spherulites. These zones range in size from 2 cm wide in Piece 20 to 5 mm wide in Pieces 1, 4, and 15. The inner, tan-brown zone, is made up of larger (~1 mm in diameter) coalesced spherulites. These zones range in size from 4 cm wide in Piece 2 to 8 mm wide in Piece 1. Piece 27 is a pebble sized hyaloclastite breccia made up of subrounded clasts 5 mm across (with the exception of one edge that consists of a 3 cm long by 4 mm wide glassy rind) in a pink to light tan clay matrix.

GROUNDMASS: Microcrystalline

COLOR: Medium gray to dark gray

VESICLES:

Abundance	Size (mm)			Shape
%	avg.	max.	min.	
1	0.3	1	<0.2	round to oval

Filling: Variable even in individual pieces. Vesicles are lined, partially filled or entirely filled with cryptocrystalline silica, bluish gray clay and green clay.

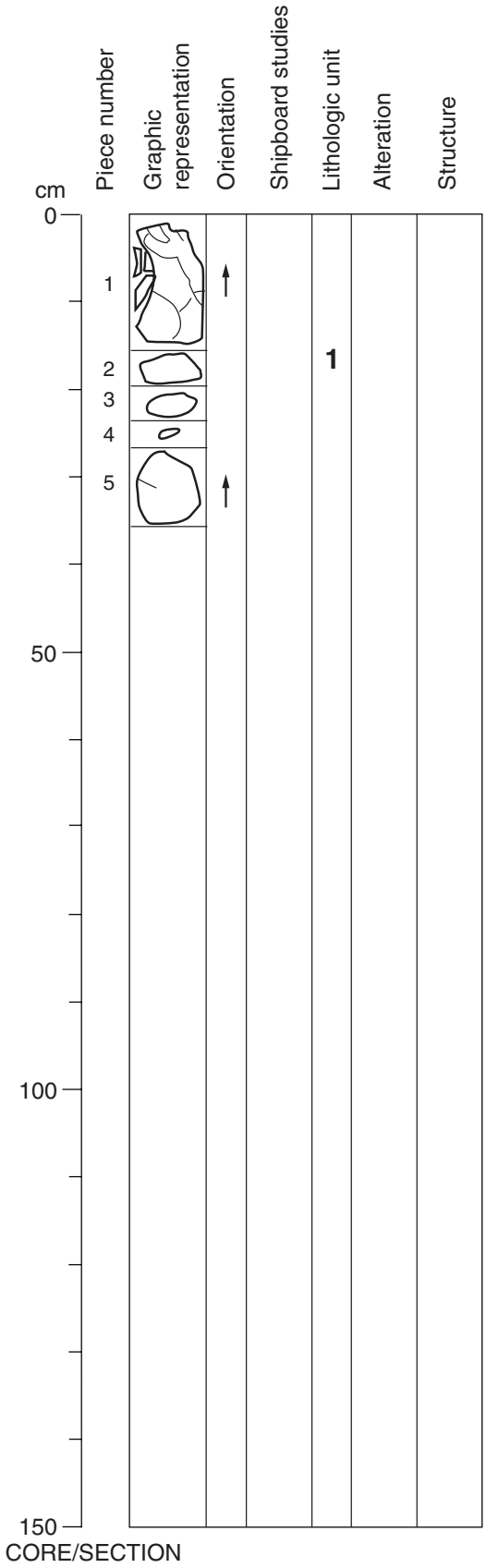
VEINS/FRACTURES: Pieces 8, 10, 11, 12, 15, and 23 have fractures ~0.3 mm wide that are lined with quartz.

ALTERATION: Pieces 2, 3, 4, 5, 8, 10, 11, 12, 14, 15, and 20 have oxidized margins that range in size from 6 mm wide in Piece 4 to 1 mm wide in Pieces 14 and 15. The outside of Pieces 1 and 6 have patchy coatings of light tan clay with Mn oxide spots <0.5 mm in diameter.

STRUCTURE: High occurrence of chilled margins suggests these sections penetrated a pillow lava sequence.

ADDITIONAL COMMENTS: Pieces 4, 5, 6, 7, 8, 11, 13, and 15 through 27 are pebble- to cobble-sized and do not have drilled outer surfaces.

Core Photo



187-1159A-7R-2

UNIT 1: APHYRIC BASALT

PIECES 1-5

INTERNAL CONTACTS: Pieces 1 and 2 have <1 mm thick rinds of glass/palagonite. Chilled margins are present in Pieces 1, 2, and 4. They occur as two zones, an outer black zone made up of small (<0.1 mm in diameter) coalesced spherulite and an inner tan-brown zone of larger (~1 mm in diameter) coalesced spherulites. Piece 1 has a 1 cm wide outer zone. Pieces 2 and 4 contain both zones with the outer one ranging in size from 1 cm to 1.4 cm, respectively, and an inner zone ranging from 1.6 cm to 4 mm, respectively.

GROUNDMASS: Microcrystalline

COLOR: Medium gray to dark gray

VESICLES:

Abundance	**Size** (mm)			**Shape**
%	**avg.**	**max.**	**min.**	
<1	0.5	0.9	<0.2	round

Filling: Variable even within pieces and are lined, partially filled or completely filled with green clay, bluish-gray clay or cryptocrystalline silica.

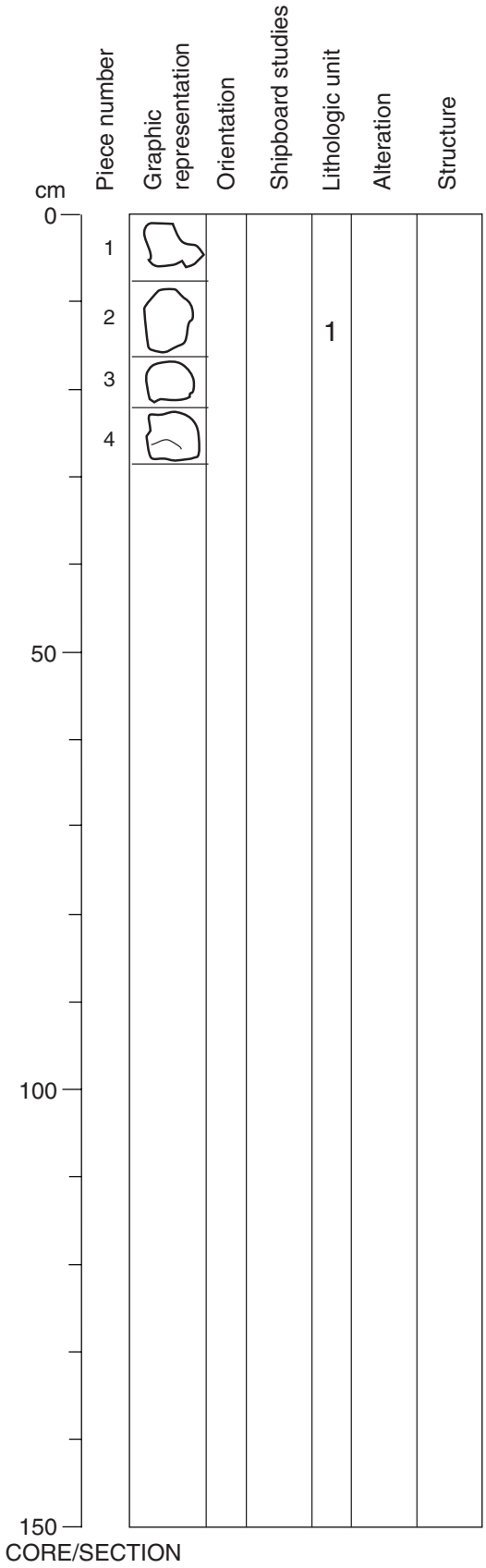
VEINS/FRACTURES: Piece 1 contains an open fracture (1 mm wide) that is partially lined with white cryptocrystalline silica and small Mn oxide spots (~0.2 mm in diameter). Piece 1 also contains a small (~0.2 mm wide) silica vein.

ALTERATION: The open fracture in Piece 1 has a 7 mm wide oxidized halo. The silica vein has 3 mm wide oxidation halo. Pieces 3 and 5 have oxidized margins 5 mm wide. The outer surface adjacent to the oxidized margin in Piece 5 has a patchy coating of tan-green clay with Mn oxide spots ~0.2 mm in diameter.

STRUCTURE: Chilled margins on a majority of pieces suggests this is a pillow lava sequence.

ADDITIONAL COMMENTS: Pieces 2, 3, and 4 are pebble-to cobble-sized and do not have drilled outer surfaces.

Core Photo



187-1159A-8G-1

UNIT 1: APHYRIC BASALT

PIECES 1-4

INTERNAL CONTACTS: Piece 1 has a complete chilled margin sequence which goes from an outer 1 mm thick glass/palagonite rind to a 1 cm wide black band of small (~0.1 mm in diameter) coalesced spherulites to a 5 mm wide band of larger (~1 mm in diameter) coalesced spherulites.
GROUNDMASS: Microcrystalline
COLOR: Medium gray to dark gray
VESICLES:

Abundance	**Size** (mm)			**Shape**
%	**avg.**	**max.**	**min.**	
<1	0.5	0.75	<0.2	round

Filling: Variable even within a single piece and can be lined, partially filled or completely filled by light green clay, yellow-tan clay or cryptocrystalline silica.
VEINS/FRACTURES: Piece 4 contains a small (0.2 mm wide) open fracture.
ALTERATION: The fracture in Piece 4 has a 1 mm wide oxidation halo. The outer surface of Piece 1 has a patchy coating of greenish-gray clay with small (~0.2 mm in diameter) Mn oxide spots.
STRUCTURE: None
ADDITIONAL COMMENTS: These pieces were collected in the core catcher, after attempted to resume coring, and represent pieces which collapsed into the hole after Core 1159A-7R was recovered from the hole. The hole was abandoned following this attempt.

187-1159A-2R-1, 20-24 cm (TS#52) **Unit:1** **OBSERVER:** **Russo**

ROCK NAME: **Aphric basalt**
WHERE SAMPLED: **pillow interior**
GRAIN SIZE: **microcrystalline**
TEXTURE: **sheaf quench texture**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Olivine								
Clinopyroxene								
GROUNDMASS								
Olivine	2		0.01	1	0.2		equant to euhedral	
Plagioclase	35							Sheaf quench textures, some swallowtail plagioclase.
Clinopyroxene								
Opaque Minerals								
Glass								
Mesostasis	55							Some brown staining (possibly palagonite).

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Clays	5				groundmass and filling along fractures	Yellow-green in color.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
Vesicles	3		0.1	1	0.2	smectite/ Fe oxyhydroxide	Some have a bulls-eye pattern alternating from yellow-green clay to Fe oxyhydroxide.

COMMENTS :

187-1159A-2R-1, 32-36 cm (TS#50) **Unit:1** **OBSERVER:** **Russo**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **pillow margin**
GRAIN SIZE: **microcrystalline**
TEXTURE: **cryptocrystalline quench to plagioclase spherulite quench texture**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Olivine								
Clinopyroxene								
GROUNDMASS								
Olivine	25						elongate quench growth	Olivine occurs as elongate to dendritic quench growths. Away from the margin lattern quench growths are common.
Plagioclase	35						sheaf texture	Plagioclase occurs as sheaf texture and as developed plagioclase spherulites.
Clinopyroxene								
Opaque Minerals								
Glass								
mesostasis	35							

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Clays	3				groundmass	Yellow-green in color.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
	2		0.06	1.1	0.5	calcite, yellow-green clay and Fe oxyhydroxide	

COMMENTS : Slide shows a transition starting at one edge from a cryptocrystalline quench texture (possibly immature drenditic olivine spherulites) to a zone of well developed plagioclase spherulites and then into more typical groundmass with plagioclase sheaf textures and elongate quench olivines.

187-1159A-5R-1, 127-131 cm (TS#53) **Unit:1** **OBSERVER:** **Russo**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **pillow interior**
GRAIN SIZE: **microcrystalline**
TEXTURE: **sheaf quench texture**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Olivine	<1						subhedral	Rare phenocrysts up to 1 mm.
Clinopyroxene								
GROUNDMASS								
Olivine	10		0.02	0.2	0.1		equant to elongate quench texture	
Plagioclase	40							Sheaf quench texture.
Clinopyroxene								
Opaque Minerals								
Glass								
Mesostasis	~50							

SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Clays	1				groundmass	Replaces groundmass in irregular bleb shaped clusters.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
	1		0.04	0.65	0.1	smectite	Round.

COMMENTS : Rock overall is fresh and extremely fine grained, making groundmass percentages difficult to estimate.

187-1159A-5R-2, 97-101 cm (TS#51) **Unit:1** **OBSERVER:** **Kempton**

ROCK NAME: **Aphyric basalt**
WHERE SAMPLED: **pillow margin**
GRAIN SIZE: **cryptocrystalline to microcrystalline**
TEXTURE: **sheaf quench texture**

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	APPROX. COMP.	MORPHOLOGY	COMMENTS
PHENOCRYSTS								
Plagioclase								
Olivine	<1	<1		0.5			skeletal, anhedral	Microphenocrysts only.
Clinopyroxene								
GROUNDMASS								
Olivine	5	5	0.02	0.2	0.1		equant to skeletal with elongate quench extensions that range from acicular to feathery to chain-link texture	Quench extensions (optically continuous) up to 0.6 mm long (aspect ratio 30:1).
Plagioclase	20	20					ranges from immature sheaf to fan shaped, with acicular to skeletal crystals	
Clinopyroxene	see mesostasis							Occurs as quench growth parallel and perpendicular to acicular plagioclase crystals in sheafs. The crystals are anhedral and elongate, usually about ~ 2 microns wide and 10-20 microns long.
Opaque Minerals	2	2		<2 microns			equant	
Glass								
Mesostasis	~70	75						Includes quench growth of olivine, clinopyroxene and plagioclase + glass.

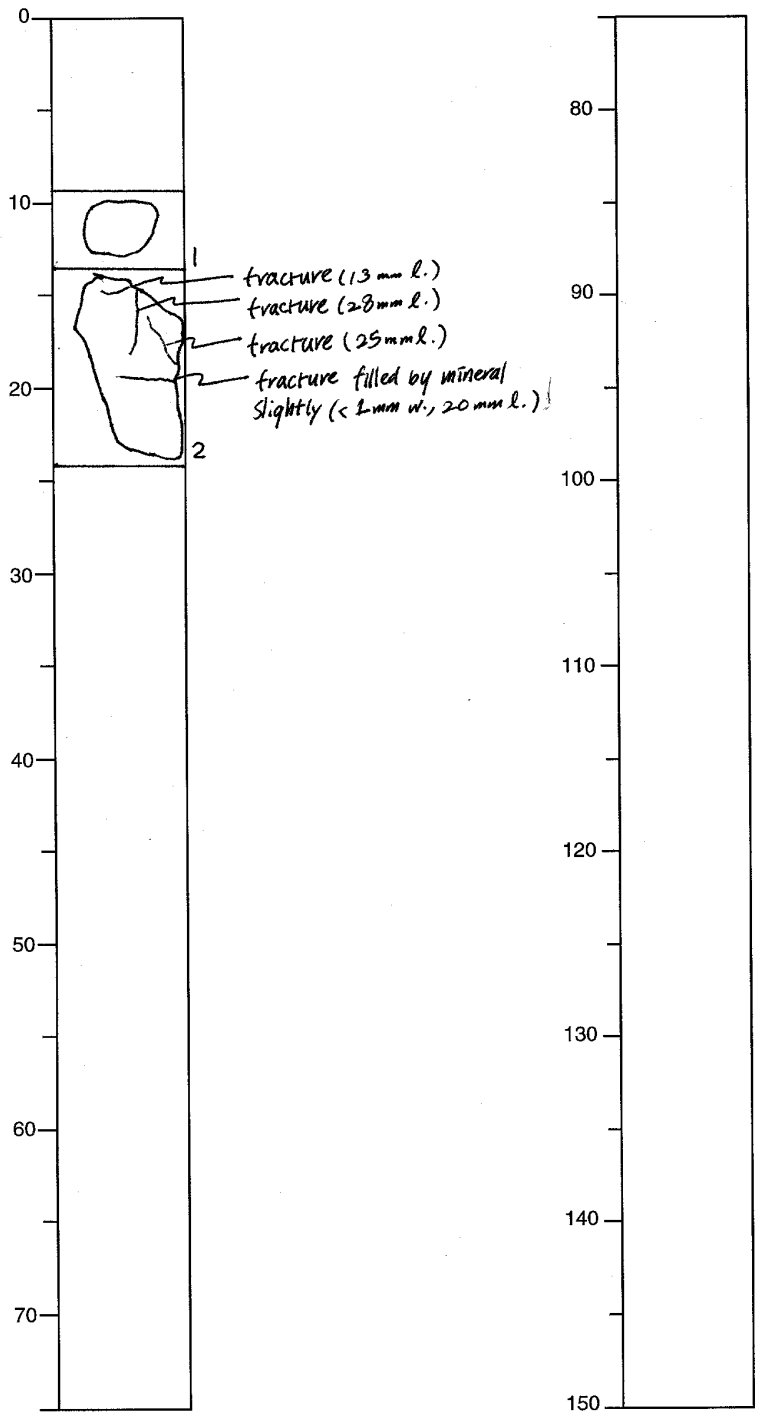
SECONDARY MINERALOGY	PERCENT	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	REPLACING / FILLING	COMMENTS
Clays	5				replacing groundmass and filling vesicles	Replaces groundmass in irregular bleb shaped clusters.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm) min.	SIZE (mm) max.	SIZE (mm) av.	FILLING / MORPHOLOGY	COMMENTS
	<1			0.3		smectite	Vesicle fillings are zoned, usually with darker brown material at the sides (Fe oxyhydroxides?) and orange to yellow-brown smectite core.

COMMENTS : Rock overall is fresh. Proportions of groundmass phases difficult to estimate because of predominance of quench crystallization morphologies.

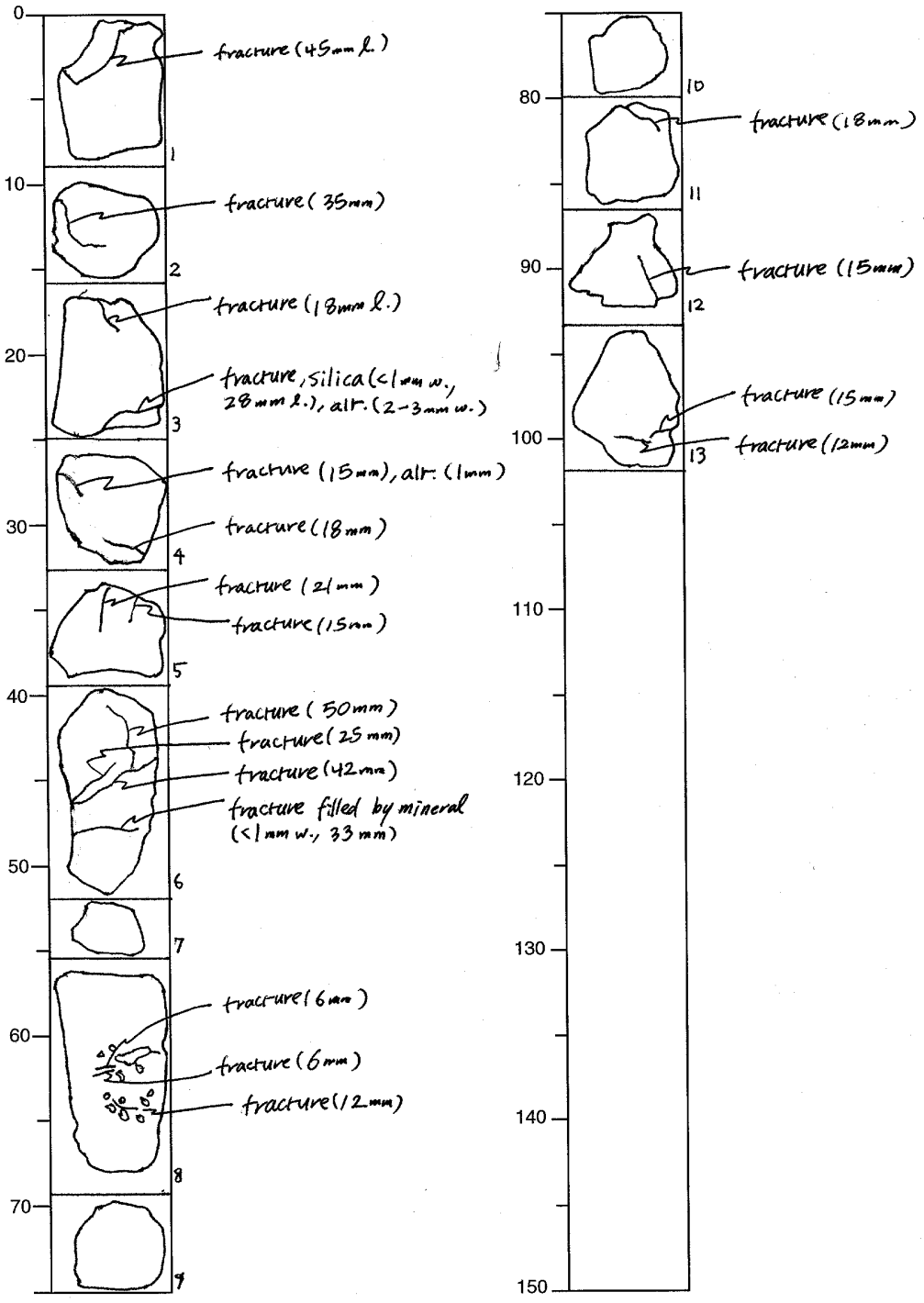
STRUCTURAL GEOLOGY DESCRIPTION

Leg	Hole	Core
187	1159A	1W



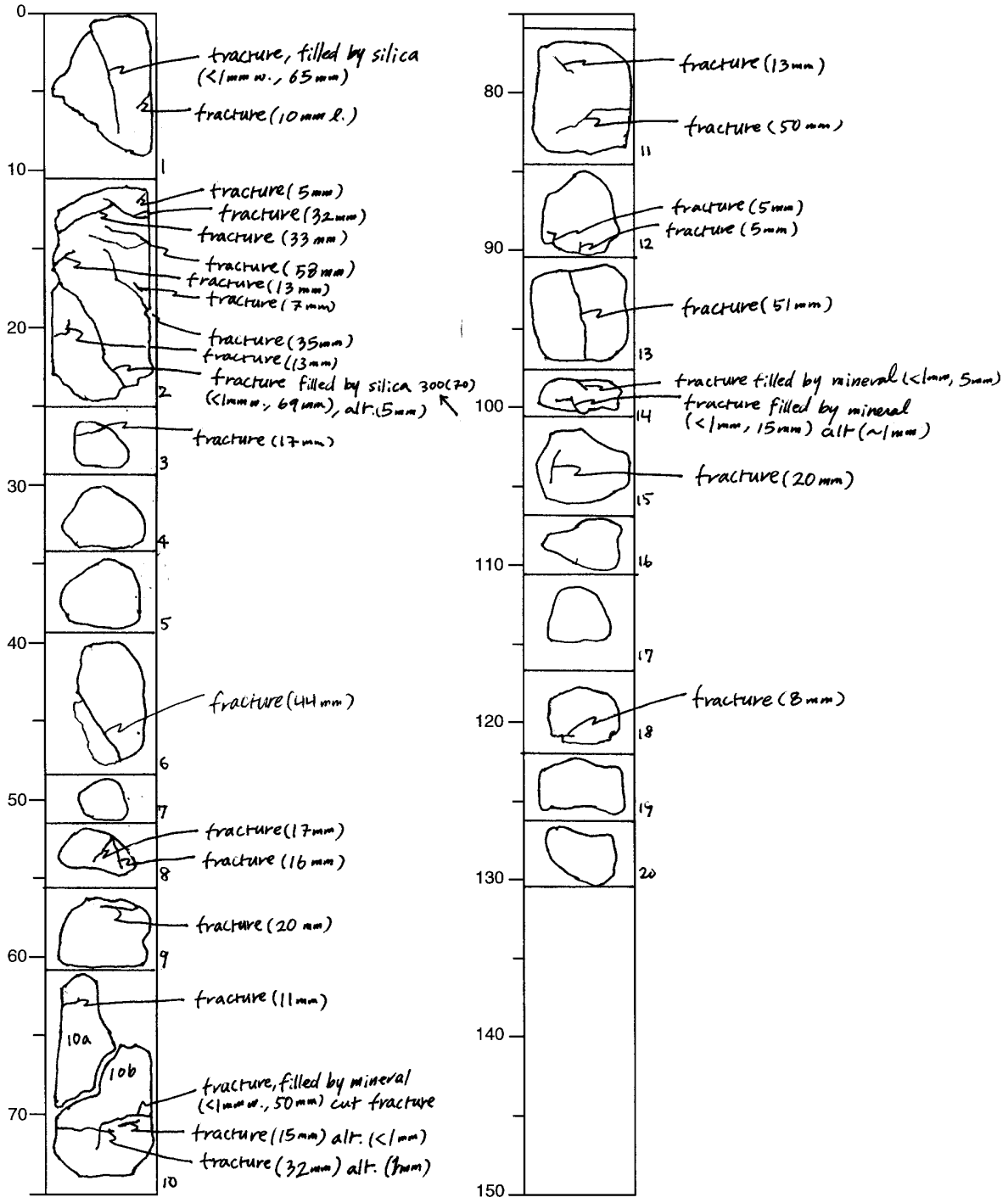
STRUCTURAL GEOLOGY DESCRIPTION

Leg	Hole	Core	Section	Observer
187	1159A	2R	1	H.S.



STRUCTURAL GEOLOGY DESCRIPTION

Leg	Hole	Core	Section	Observer
187	1159A	3R	1	



STRUCTURAL GEOLOGY DESCRIPTION

Leg	Hole	Core	Section	Observer
187	1159A	4R	1	H.S.