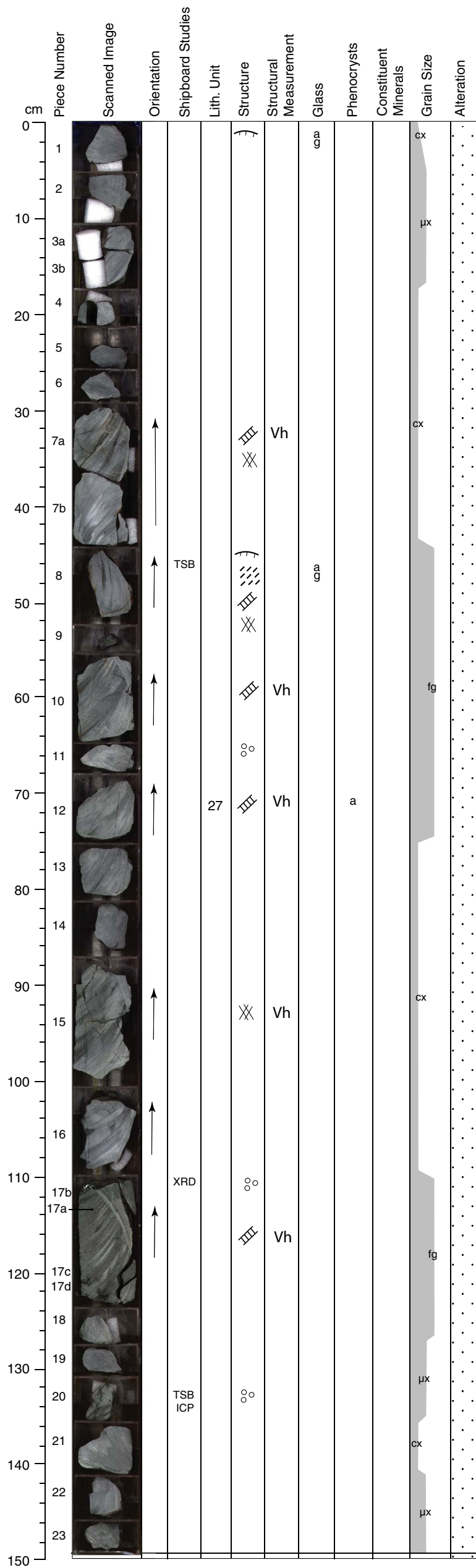


Core Photo



309-1256D-75R-1 (Section Top : 752.0 mbsf)


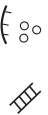
Volcanic Rock
UNIT: 27
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.
PIECES: 1-23 (igneous description based on Piece 12)
CONTACTS:
 Upper: glassy margin
 Lower: not recovered
COLOR: Black (2.5/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	1.0	0.2	0.5	Subhedral
Olivine:	0.1	0.8	0.2	0.5	Euhedral-anhedral (altered to saponite)

GROUNDMASS: Cryptocrystalline to fine-grained
VESICLES: Generally non-vesicular
ALTERATION: Dark gray slightly altered basalt with a mixed black and brown alteration halo adjacent to a vein in Piece 7a, and narrow black halos in several pieces.
VEINS: 0.1-0.3 mm of saponite with celadonite, iron oxyhydroxide, minor pyrite, and silica.
STRUCTURE: Veins and vein network in Pieces 7a, 10 and 15. Mostly nearly vertical veins.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1		↑		27		Vh	ca	a		cx μx	
10	2a											
10	2b											
20												
30												
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-75R-2 (Section top : 753.5 mbsf)

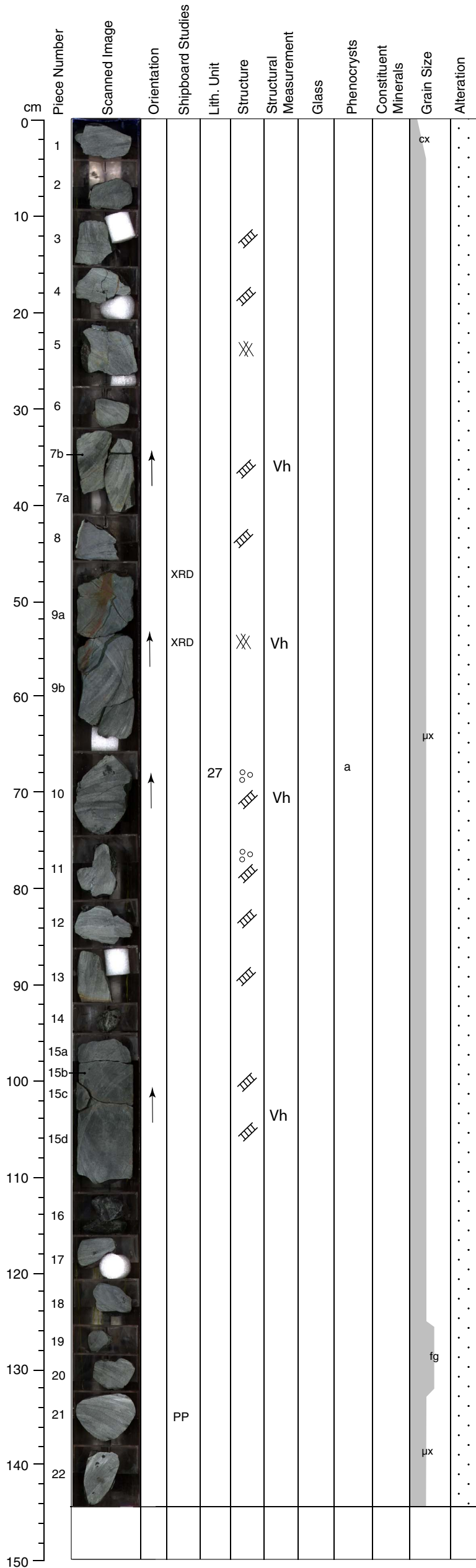
Volcanic Rock
UNIT: 27
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
PIECES: 1-2 (igneous description based on Piece 2)
CONTACTS: None
COLOR: Black (2.5/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	1.0	0.2	0.5	Subhedral
Olivine:	0.1	0.5	0.2	0.3	Euhedral-anhedral

GROUNDMASS: Cryptocrystalline to microcrystalline
VESICLES: Generally non-vesicular
ALTERATION: Dark gray slightly altered basalt with 0.2 mm veins of celadonite and iron oxyhydroxide.
STRUCTURE: Irregular planar veins in Piece 2.
ADDITIONAL COMMENTS: Plagioclase phenocrysts form clusters (glomeroporphyritic).



Core Photo



309-1256D-76R-1 (Section top : 753.9 mbsf)

Volcanic Rock

UNIT: 27

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-22 (igneous description based on Piece 10)

CONTACTS: None

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.5	0.2	0.3	Subhedral-anhedral
Olivine:	0.1	0.5	0.2	0.3	Subhedral-anhedral (altered)

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with some mixed black and brown alteration halos adjacent to some of the veins.

VEINS: Several 0.1 mm veins of saponite, iron hydroxides, celadonite, silica and minor pyrite; one thick (apparent thickness = 4 mm) celadonite vein in Piece 9.


STRUCTURE: Moderate fracturing; evenly distributed. Vein network in Pieces 5 and 9. Mostly steeply dipping celadonite bearing veins.

ADDITIONAL COMMENTS: Plagioclase phenocrysts form clusters (Glomeroporphyritic). Large skeletal olivine phenocryst in Piece 6.



Core Photo

309-1256D-76R-2 (Section top : 755.3 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1		↑	TSB ICP PP PMAG	27	III	Vh		a		cx	
10												
20												
30												
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock

UNIT: 27

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.

PIECES: 1

CONTACTS: None

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	<0.1	1	0.3	0.4	Subhedral-anhedral
Olivine:	<0.1	0.2	0.1	0.2	Subhedral (altered)

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

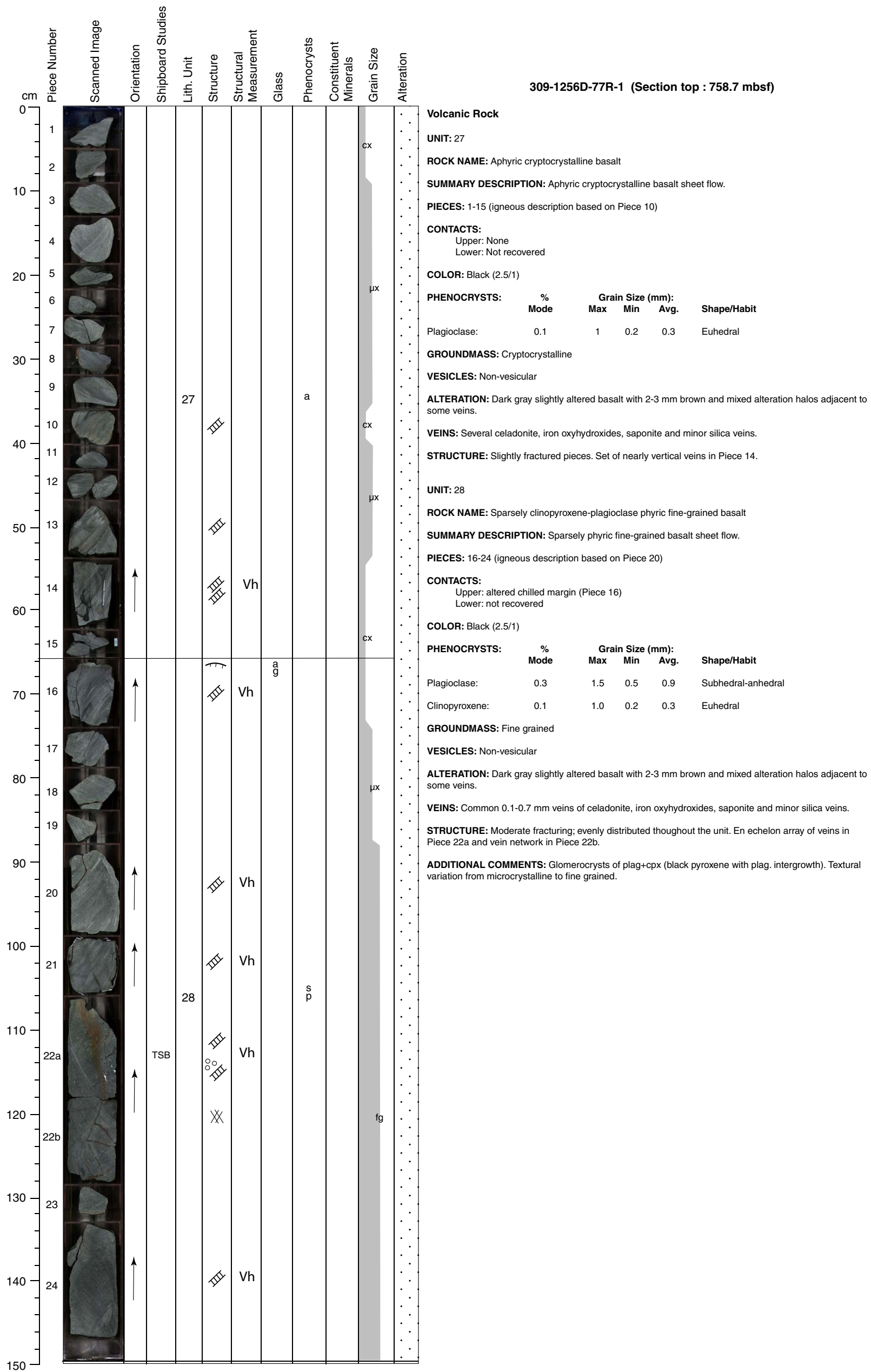
ALTERATION: Dark gray slightly altered basalt.

VEINS: Three 0.2 mm thick pyrite veins in Piece 1.

STRUCTURE: Two sulfide-bearing steeply dipping veins in Piece 1.



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1		↑						s		cx	
2a	2a		↑									
2b	2b		↑				Vh		pm			
2c	2c		↑									
3	3		↑									
4	4		↑		28	○○ 	Vh		Ed		μx	
5	5		↑			○○ 			pm			
6	6		↑								cx	
7	7		↑			○○ XX	Vh		Ed		μx	
8	8		↑	TSB ICP					sd		cx	
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-77R-2 (Section top : 760.2 mbsf)

Volcanic Rock

UNIT: 28

ROCK NAME: Moderately plagioclase-clinopyroxene-phyric microcrystalline basalt

SUMMARY DESCRIPTION: Moderately phyric microcrystalline basalt sheet flow.

PIECES: 1-8 (igneous description based on Piece 4)

CONTACTS: None

COLOR: Black (2.5/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	2.0	1	0.1	0.5	Euhedral to anhedral
Olivine:	0.1	0.4	0.1	0.3	Euhedral to anhedral
Clinopyroxene:	3.0	0.3	0.1	0.2	Euhedral to subhedral

PHENOCRYSTS:

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray, slightly altered basalt with several mixed and brown alterations halos.

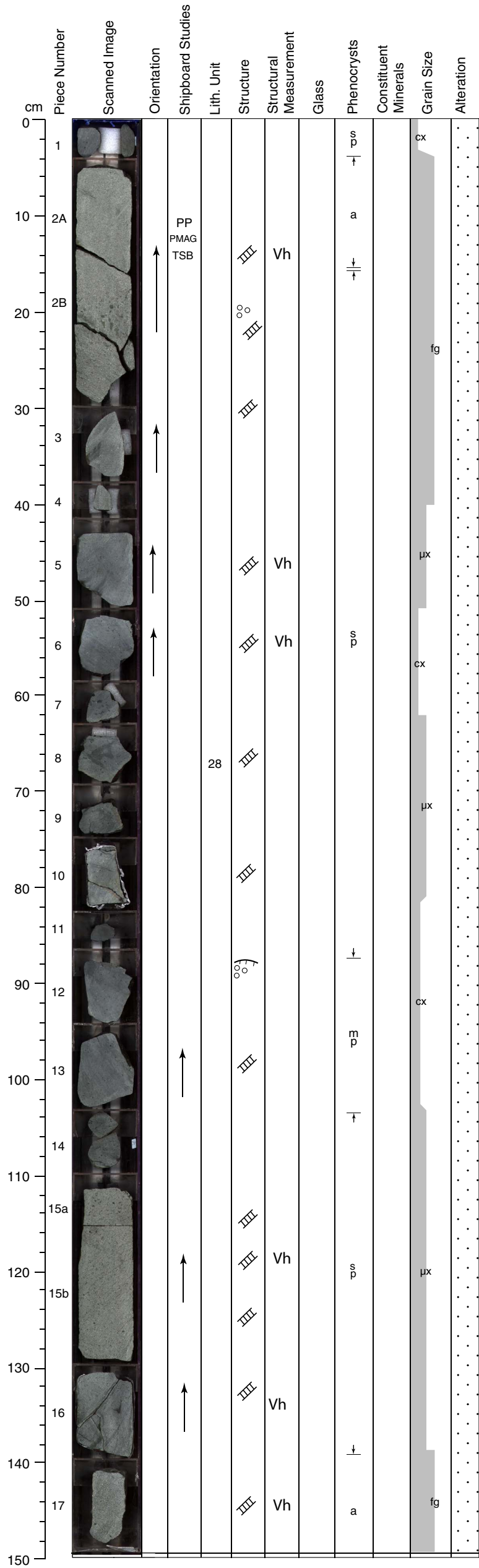
VEINS: 0.1- 0.3 mm thick veins of iron-oxyhydroxide, celadonite, saponite, silica and minor sulfides.

STRUCTURE: Moderate fracturing; evenly distributed throughout the core. Veins with mostly irregular morphology.

ADDITIONAL COMMENTS: Piece 4 contains glomerophyric plagioclase-clinopyroxene and fresh olivine phenocrysts. Other olivine crystals are replaced by saponite.



Core Photo



309-1256D-78R-1 (Section top : 763.5 mbsf)

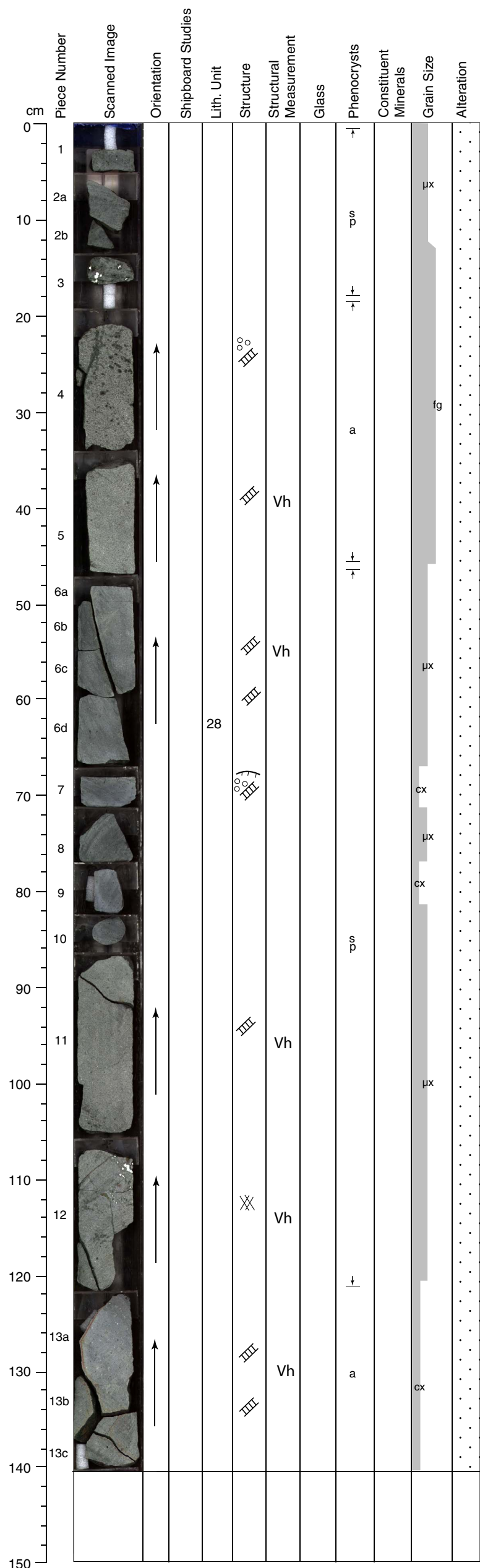
Volcanic Rock
UNIT: 28
ROCK NAME: Moderately plagioclase-clinopyroxene phyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Moderately phyric cryptocrystalline basalt sheet flow.
PIECES: 1-17 (igneous description based on Piece 13)
CONTACTS: None
COLOR: Black (2.5/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	2	1	0.2	0.5	Subhedral
Olivine:	0.5	0.5	0.1	0.2	Anhedral and altered
Clinopyroxene:	3	1.5	0.2	0.3	Euhedral-subhedral

GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with several 1.5-8 mm brown and black halos.
VEINS: Common 0.1-0.4 mm veins of saponite, celadonite, iron oxyhydroxides, and pyrite.
STRUCTURE: Moderate veining; evenly distributed. Vein set in Piece 15. Steeply dipping veins in Pieces 5, 6 and 8.
ADDITIONAL COMMENTS: Glomerocrysts of plagioclase+clinopyroxene (olivine?). Segregation vesicles filled by fine dark groundmass or by saponite.



Core Photo



309-1256D-78R-2 (Section top : 765.0 mbsf)

Volcanic Rock
UNIT: 28
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow
PIECES: 1-13 (igneous description based on Piece 5)
CONTACTS: None
COLOR: Very dark gray (3/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	1.5	0.5	0.6	Subhedral
Olivine:	0.1	0.5	0.3	0.4	Anhedral, altered to saponite
Clinopyroxene:	0.5	0.5	0.3	0.3	Euhedral

CRYSTAL SIZE: Fine grained
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt, with common 0.8-2 mm black and mixed halos in Pieces 9, 12, and 13
VEINS: Common 0.1-0.6 mm veins of saponite, iron oxyhydroxides, pyrite and minor silica
STRUCTURE: Slight fracturing; evenly distributed. Vein network with alteration in Piece 12.
ADDITIONAL COMMENTS:
 A few large (3 mm) circular vesicles filled with celadonite/saponite.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
0-10	1a 1b		↑		28	⊗			ps			
10-15	2		↑	TSB		⊗		a	↑			
15-20	3		↑	TSB XRD		⊗		a				
20-25	4		↑			⊗						
25-30	5		↑			⊗						
30-35	6		↑		29A	⊗	Vh		a		cx	
35-40	7		↑			⊗	Vh					
40-45	8a		↑			⊗						
45-50	8b		↑			⊗			↓			
50-150												

309-1256D-78R-3 (Section top : 766.4 mbsf)

Volcanic Rock

UNIT: 28

ROCK NAME: Moderately plagioclase-clinopyroxene phyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Moderately phyric cryptocrystalline basalt sheet flow.

PIECES: 1

CONTACTS:
Upper: none
Lower: not recovered

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	2	0.9	0.5	0.7	Euhedral-subhedral
Olivine:	0.5	1.3	0.5	0.5	Euhedral, altered to saponite
Clinopyroxene:	4	1	0.1	0.3	Euhedral

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

STRUCTURE: Vein network in Piece 1.

ADDITIONAL COMMENTS:
Iron oxyhydroxide vein network. Glomerocrysts of clinopyroxene, olivine and plagioclase.

UNIT: 29A

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.

PIECES: 2-8 (igneous description based on Piece 7)

CONTACTS:
Upper: breccia/chilled margin (Pieces 2, 3, 4)
Lower: none

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.5	1	0.5	1	Euhedral-subhedral

GROUNDMASS: Cryptocrystalline

VESICLES: Generally non-vesicular. Microvesicles (<1mm) filled with celadonite.

ALTERATION: Dark gray slightly altered basalt, with several 0.2-7 mm brown, black and mixed halos

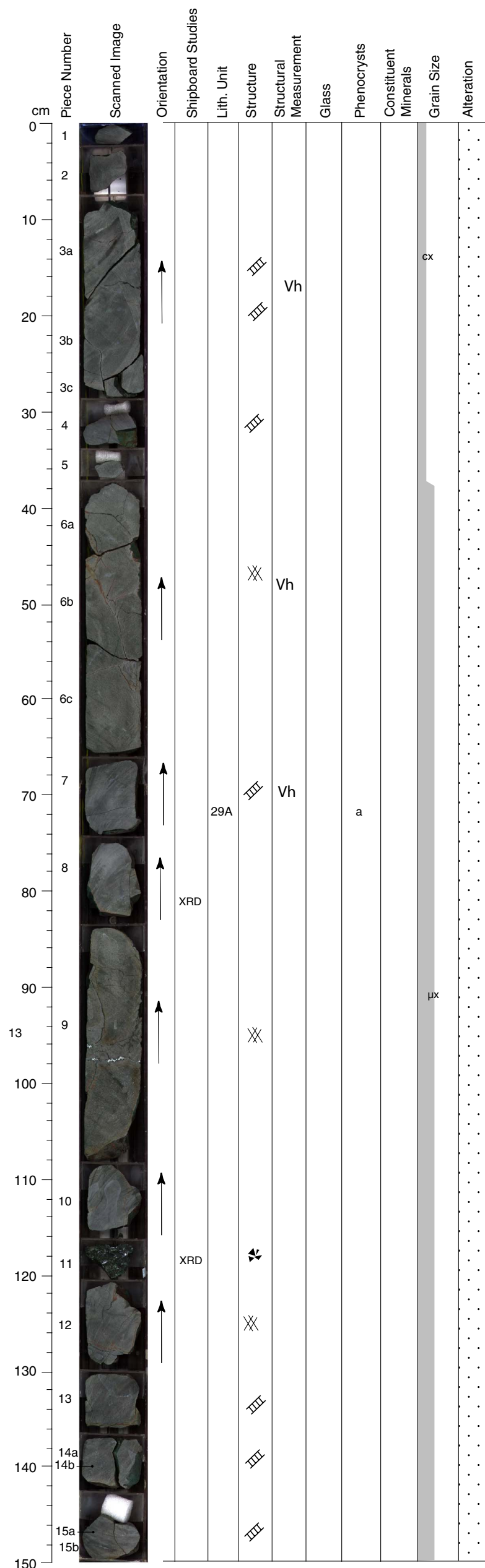
VEINS: Common 0.1-1.3 mm veins of saponite, celadonite, iron oxyhydroxides, silica, and minor pyrite

STRUCTURE: Moderate fracturing, heterogeneously distributed. Breccia and vein network in Pieces 2 and 3.

ADDITIONAL COMMENTS:
Top of the sheet flow is brecciated (Pieces 2 and 3) with chilled margins at the upper and lower edges of the pieces and with altered glass. Veins that cut the breccia are filled by celadonite and silicate minerals. Veins and alteration halos also in Pieces 4-7.



Core Photo



309-1256D-79R-1 (Section top : 769.6 mbsf)

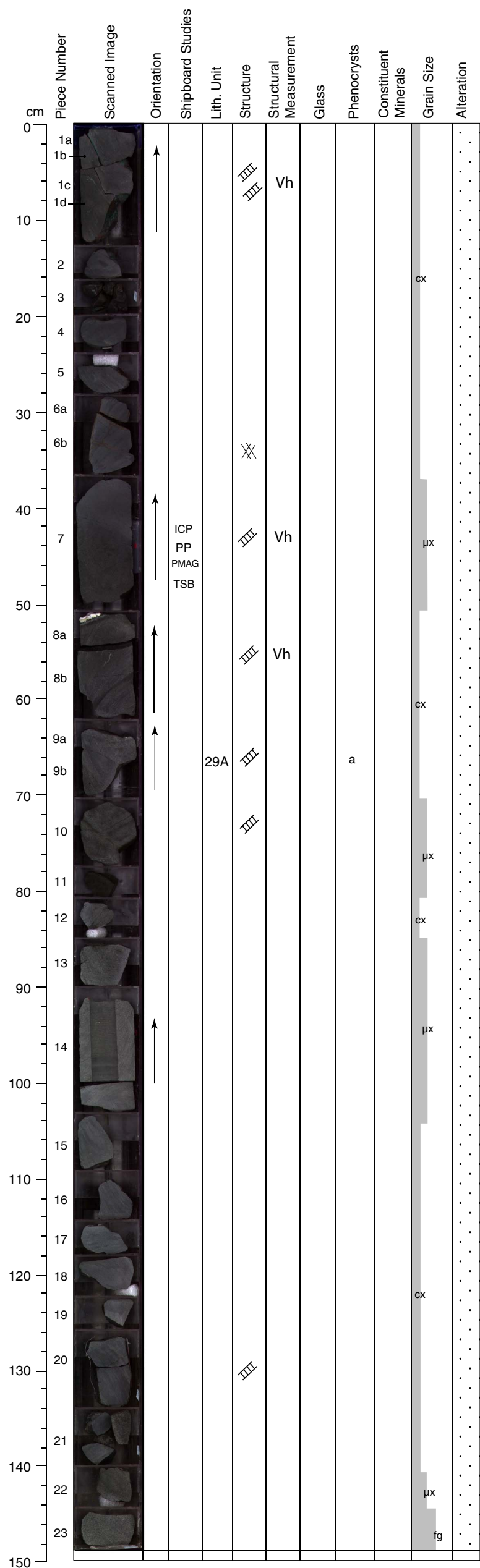
Volcanic Rock
UNIT: 29A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
PIECES: 1-15 (igneous description is based on Piece 8)
CONTACTS: None
COLOR: Black (2.5/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.5	0.5	0.2	0.3	Euhedral-subhedral, completely altered to saponite

GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with common 0.3-14 mm black and mixed halos
VEINS: Very common 0.1-0.5 mm veins of celadonite, iron oxyhydroxides, saponite and silica
STRUCTURE: High fracturing; evenly distributed. Vein network in Pieces 6, 9 and 12.
ADDITIONAL COMMENTS: Piece 11 is an altered hyaloclastite.



Core Photo



309-1256D-79R-2 (Section top : 771.1 mbsf)

Volcanic Rock
UNIT: 29A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
PIECES: 1-23 (igneous description based on Piece 15)
CONTACTS: None
COLOR: Black (2.5/1)
PHENOCRYSTS:




	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.5	0.4	0.2	0.3	Euhedral-subhedral

GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with several 0.1-2-mm black and mixed alteration halos.
VEINS: Common 0.1-0.3 mm veins of celadonite, iron oxyhydroxides, saponite and minor pyrite. One 5 mm vein filled with silica in Piece 8.
STRUCTURE: Moderate fracturing; evenly distributed. Vein network in Piece 6.



Core Photo

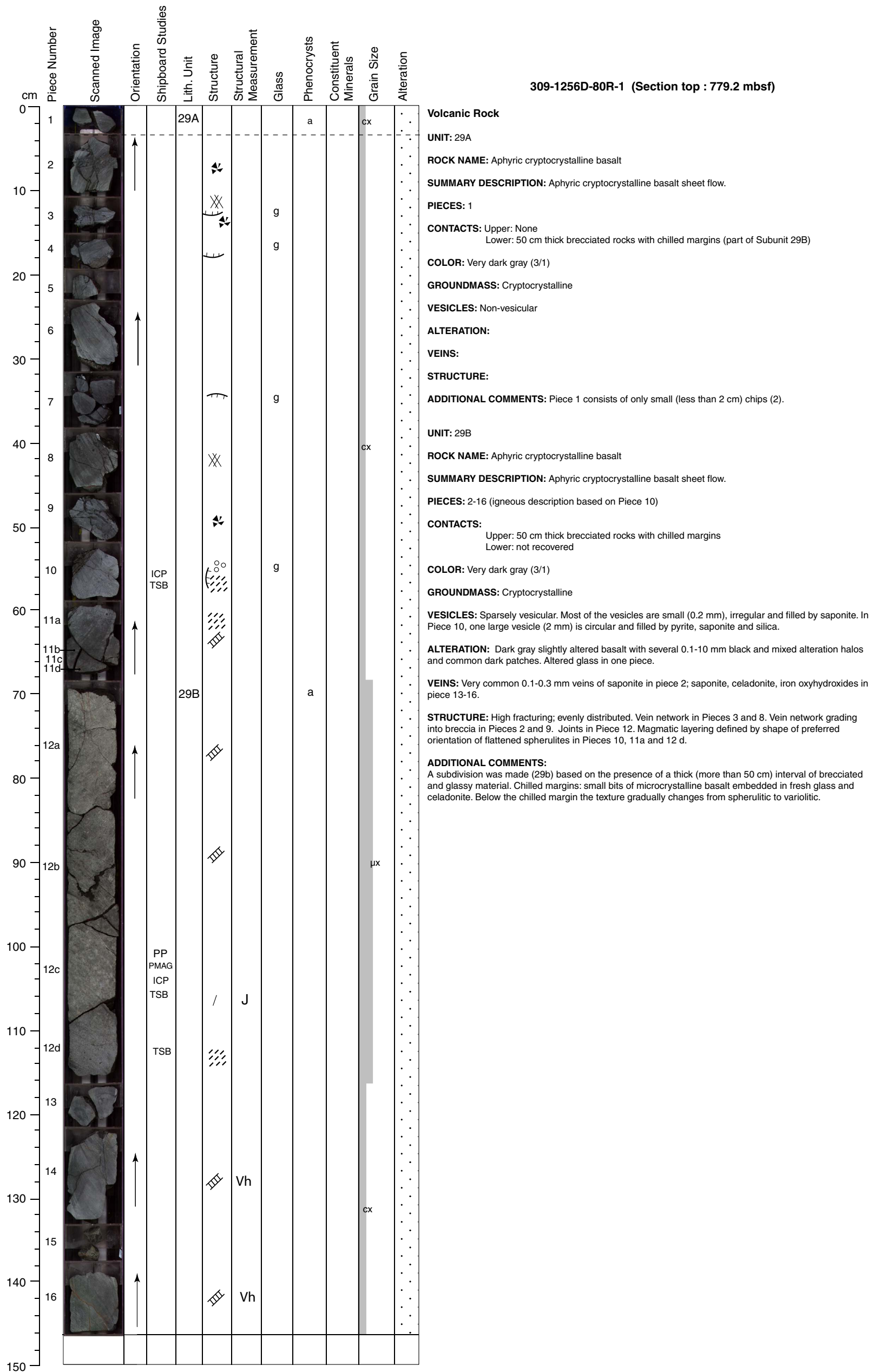
309-1256D-79R-3 (Section top : 772.6 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1											
0	2				29A				a		fg	
10	3					III						
20												
30												
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock
UNIT: 29A
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.
PIECES: 1-3 (igneous description based on Piece 2)
CONTACTS: None
COLOR: Black (2.5/1)
GROUNDMASS: Fine grained
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered with several dark patches.
VEINS: One 0.1 mm vein filled with saponite in piece 3.
STRUCTURE: Two veins in Piece 3.

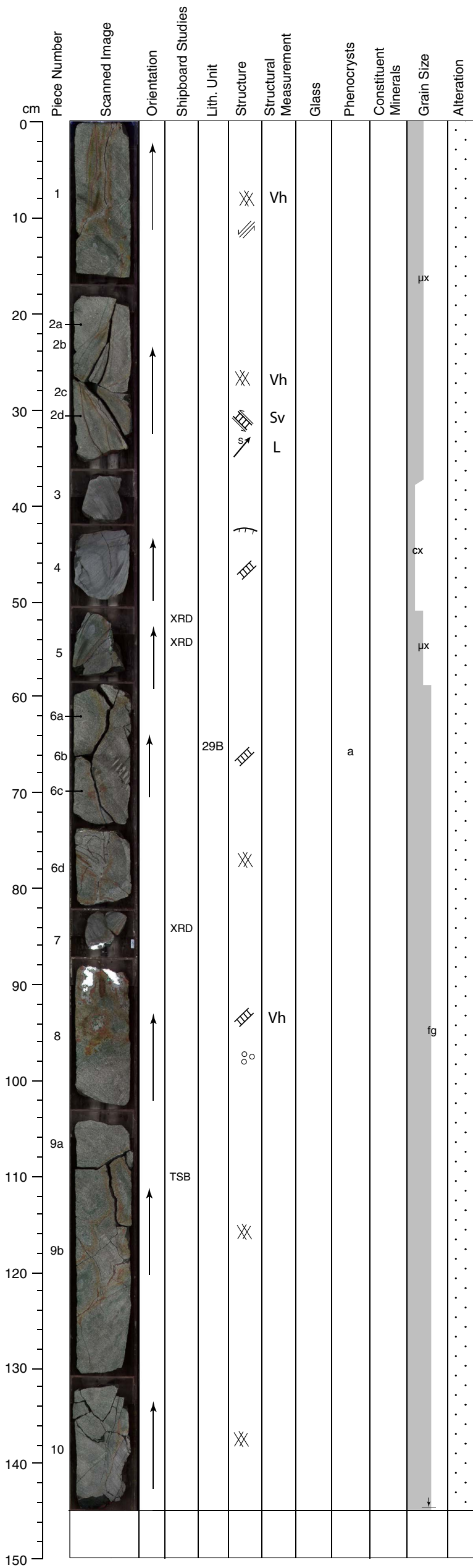


Core Photo



Core Photo

309-1256D-80R-2 (Section top : 780.67 mbsf)



Volcanic Rock

UNIT: 29B

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-10 (igneous description based on Piece 1)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with several 1-18 mm dark green and mixed alteration halos.

VEINS: Common 0.1-0.3 mm veins of saponite, iron oxyhydroxides, minor pyrite and silica.

STRUCTURE: Moderate fracturing. Curved and irregular veins.

Core Photo

309-1256D-80R-3 (Section top : 782.12 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1											
2	2					III						
10											cx	
20			↑	TSB		III						
30					29B	////			a		μx	
40												
50	8a		↑			/// XX	Vh				fg	
60	8b											
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock

UNIT: 29B

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow

PIECES: 1-8 (igneous description based on Piece 3)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Cryptocrystalline

VESICLES: Generally non-vesicular. When vesicles do occur (up to 3 mm) they are filled with saponite.

ALTERATION: Dark gray slightly altered basalt with common 2-10 mm black, light gray, and mixed alteration halos.

VEINS: Common 0.1-0.5 veins of saponite, iron oxyhydroxides and celadonite.

STRUCTURE: Moderate fracturing; evenly distributed. System of anastomosing veins in Piece 8. Magmatic layering in Piece 5.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1							g ca				
2	2											
10	3											
20	4											
30	6										cx	
40	8				29B				a			
50	9						Vh					
60	12			XRD								
70	14											
80	15						Vh				cx	
90												
100												
110												
120												
130												
140												
150												

309-1256D-81R-1 (Section top : 788.8 mbsf)

Volcanic Rock

UNIT: 29B

ROCK NAME: Aphyric glassy to cryptocrystalline basalt

SUMMARY DESCRIPTION: Aphyric glassy to cryptocrystalline pillow basalt and sheet flow.

PIECES: 1-15 (igneous description based on the Piece 4)

CONTACTS: None

COLOR: Black (2.5/1)

GROUNDMASS: Glassy to cryptocrystalline

VESICLES: Sparsely vesicular. Pipe vesicles in the inner part of the Piece 4, filled with saponite.

ALTERATION: Dark gray slightly altered basalt with several 1-8 mm black and mixed alteration halos

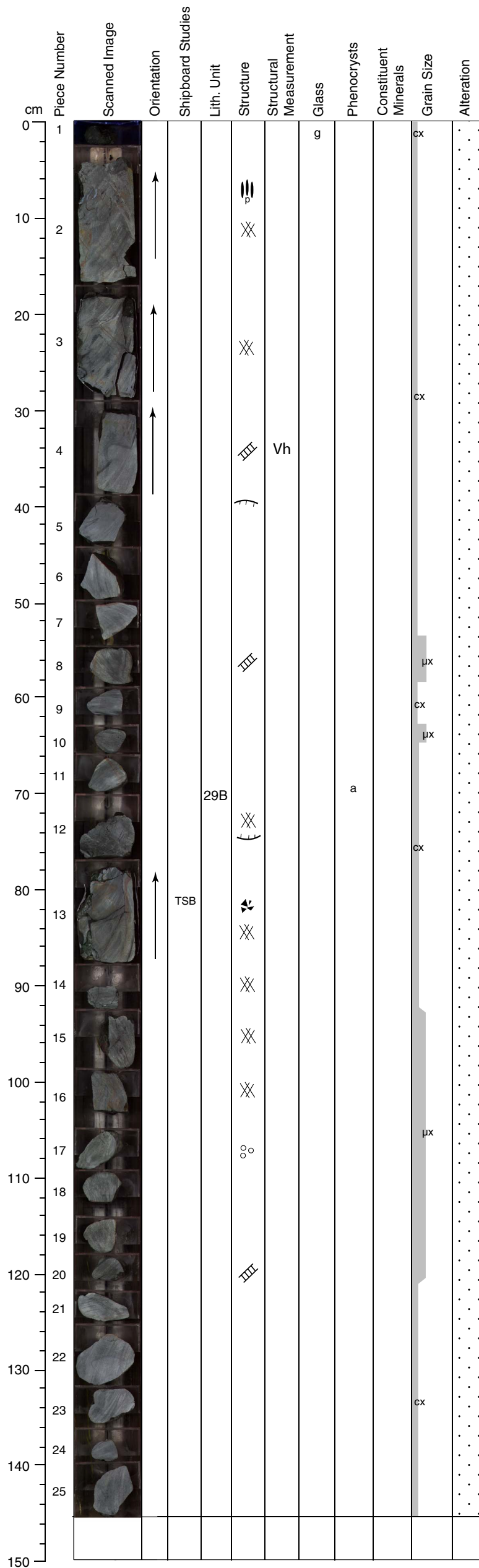
VEINS: Common 0.1-0.3 mm veins of saponite, celadonite, iron oxyhydroxides. Two pyrite veins in Piece 8.

STRUCTURE: Moderate fracturing, heterogeneously distributed. Vein network in Piece 9; set of nearly vertical veins in Piece 15.

ADDITIONAL COMMENTS: From the edge to the inner part, groundmass texture changes from glassy to variolitic to hypocrySTALLINE. The chilled margin glass layers are folded and define a magmatic foliation in Piece 1. Curved chilled margin in Piece 4.



Core Photo



309-1256D-82R-1 (Section top : 792.2 mbsf)

Volcanic Rock
UNIT: 29B
ROCK NAME: Aphyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.
PIECES: 1-25 (igneous description based on Piece 5)
CONTACTS: None
COLOR: Black (2.5/1)
GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with very common 1-18 mm black, brown and mixed (including dark green) alteration halos.
VEINS: Very common 0.1-0.5 mm veins of saponite, iron oxyhydroxides, celadonite and minor silica.
STRUCTURE: Moderate fracturing, evenly distributed. Vein network in Pieces 2, 3 and 15. Vein network grading into breccia in Pieces 12, 13, 14 and 16. En-echelon tension gashes filled with silica in Piece 2.
ADDITIONAL COMMENTS: Piece 1 is a hyaloclastite with fresh glassy clasts and celadonite in the matrix. Pieces 5 and 12 have altered chilled margins. Piece 2 has pipe vesicles.

Core Photo

309-1256D-82R-2 (Section top : 793.66 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
0-10	1a		↑			III	Vh				µx	
10-20	1b				29B				a			
20-25	1c					III	Vh				fg	
25-30	1d					III	Vh					
30-150												

Volcanic Rock

UNIT: 29B

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.

PIECES: 1 (igneous description based on Piece 1b)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Fine grained

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with several 1-18 mm dark green and mixed alteration halos.

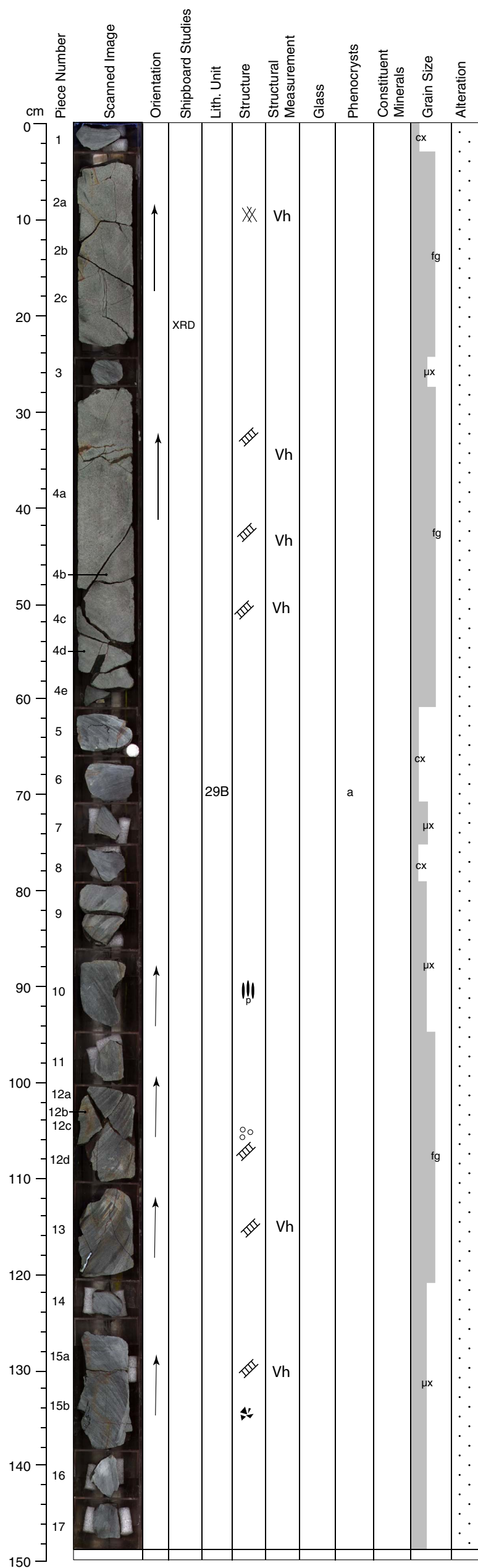
VEINS: Common 0.1-0.3 mm veins of saponite, iron oxyhydroxides, minor pyrite and silica.

STRUCTURE: Moderate fracturing. Curved and irregular veins.



Core Photo

309-1256D-83R-1 (Section top : 799.2 mbsf)



Volcanic Rock

UNIT: 29B

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-17 (igneous description based on Piece 10)

CONTACTS: None

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.3	0.3	0.1	0.3	Euhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular. Some pipe vesicles are filled with saponite.

ALTERATION: Dark gray slightly altered basalt with common 0.5-9 mm brown and mixed alteration halos.

VEINS: Rare 0.1 mm veins of saponite and iron oxyhydroxides.

STRUCTURE: Moderate fracturing, evenly distributed. Vein network in Piece 2.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1										µx	
1	2										cx	
10	3										µx	
10	4				29B				a		fg	
20	5										cx	
30												
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-83R-2 (Section top : 800.7 mbsf)

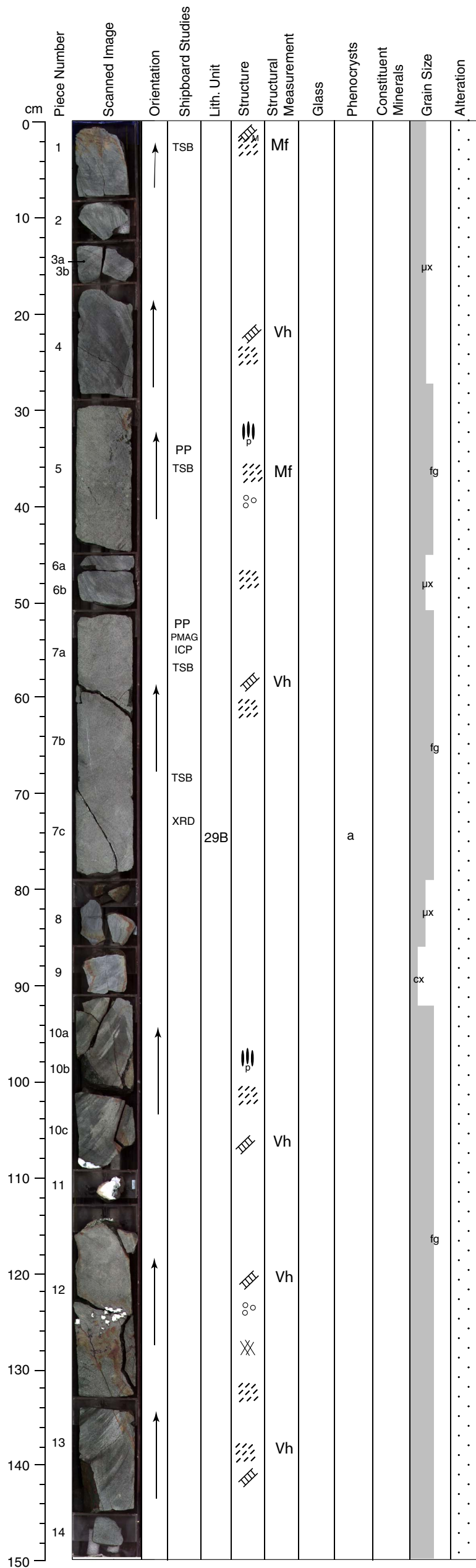
Volcanic Rock
UNIT: 29B
ROCK NAME: Aphyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.
PIECES: 1-5 (igneous description based on Piece 2)
CONTACTS: None
COLOR: Very dark gray (3/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.8	0.3	0.5	Euhedral-subhedral

GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular
ALTERATION:
VEINS: Very common 0.1-0.5 mm veins of iron oxyhydroxides, saponite, celadonite and silica
STRUCTURE: Breccia in Piece 5.
ADDITIONAL COMMENTS: Piece 5 is brecciated, cracks are filled with white, green, or brown secondary minerals



Core Photo



309-1256D-84R-1 (Section top : 801.8 mbsf)

Volcanic Rock

UNIT: 29B

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-14 (igneous description based on Piece 6)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.1	0.5	0.3	0.4	Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Sparse irregular vesicles (0.5 mm) in Pieces 5 and 12. Pipe vesicles filled with secondary minerals (saponite) in Pieces 5 and 10. Other Pieces are non-vesicular.

ALTERATION: Dark gray slightly altered basalt with several 0.2-4 mm brown and mixed alteration halos. Common saponite amygdales and one large silica amygdale in Piece 12.

VEINS: Several 0.1-0.4 mm veins of iron oxyhydroxides, saponite and minor silica and pyrite

STRUCTURE: Moderate fracturing, evenly distributed. Vein network in Piece 12. Magmatic planar foliation in Pieces 1, 4, 5, 6, 7, 10, 12, and 13. Nearly vertical preferred orientation of vesicles in Piece 5.

ADDITIONAL COMMENTS: In Piece 1, magmatic veins, filled with small clinopyroxene, are parallel to the alteration features.

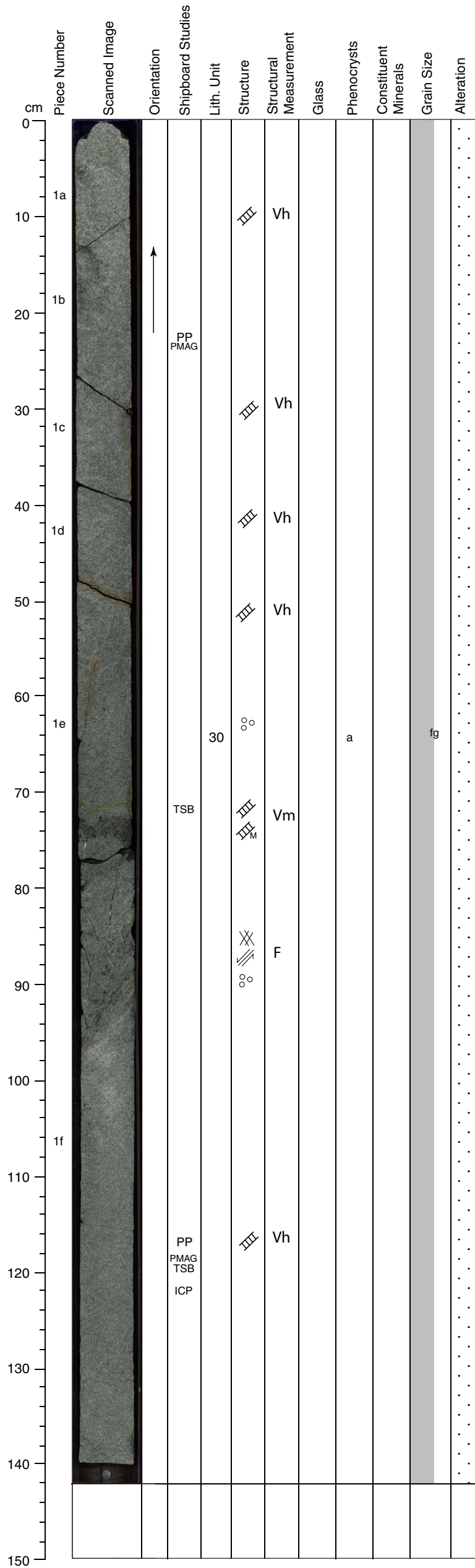


Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration	
0													Volcanic Rock
0													UNIT: 29B
0													ROCK NAME: Aphyric cryptocrystalline basalt
0													SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.
0													PIECES: 1-9 (igneous description based on Piece 1)
0													CONTACTS:
0													Upper: none
0													Lower: not recovered (rubble)
0													COLOR: Black (2.5/1)
0													GROUNDMASS: Cryptocrystalline
0													VESICLES: Generally non-vesicular. A few small (0.5 mm) irregular vesicles in Piece 3.
0													ALTERATION: Dark gray slightly altered basalt with several 2-4 mm black, brown and mixed alteration halos
0													VEINS: Several 0.1 mm veins of iron oxyhydroxides, celadonite and saponite
0													STRUCTURE: Moderate fracturing. Y-shaped veins in Piece 1.
0													ADDITIONAL COMMENTS: Piece 3 has a chilled margin. From the outer to the inner part, its texture varies from spherulitic (0.5 mm in size spherulites embedded in altered glass) to hypocrystalline.
0					29B	III			a		cx		Volcanic Rock
0													UNIT: 30
0													ROCK NAME: Aphyric fine-grained basalt
0													SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.
0													PIECES: 10-11 (igneous description based on Piece 11)
0													CONTACTS:
0													Upper: not recovered
0													Lower: none
0													COLOR: Very dark gray (3/1)
0													GROUNDMASS: Fine grained
0													VESICLES: Non-vesicular
0					30				a		fg		STRUCTURE: No evident structures.
10	1a		↑			III							
10	1b												
20	2					III							
20	3					III							
20	4a					III							
20	4b					III							
30	5												
40	6		↑										
50	7					III							
50	8												
60	9												
70	10		↑										
80	11												

Core Photo

309-1256D-85R-1 (Section top : 811.4 mbsf)



Volcanic Rock

UNIT: 30

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.

PIECES: 1 (igneous description based on Piece 1e)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Fine grained

VESICLES: Generally non-vesicular (segregation vesicles in Pieces 1e and 1f)

ALTERATION: Dark gray slightly altered basalt with several 7-20 mm mixed alteration halos. Common amygdales of saponite, minor iron oxyhydroxides and pyrite.

VEINS: Several 0.1-0.4 mm veins of saponite, iron oxyhydroxides and minor silica and pyrite.

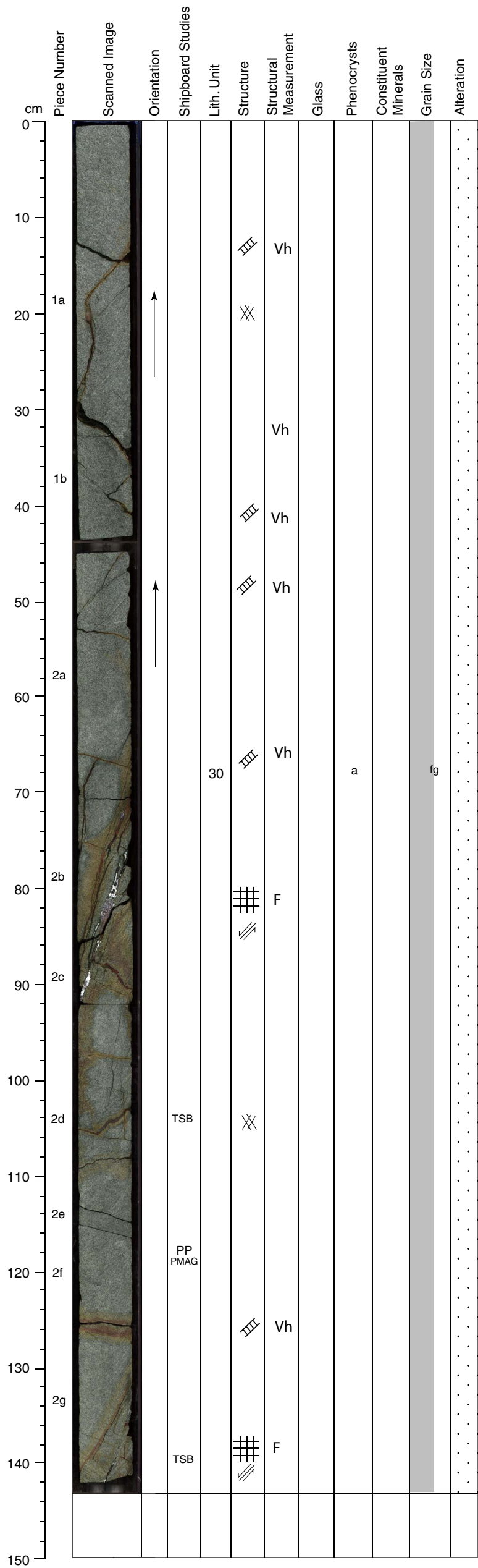
STRUCTURE: Moderate fracturing, heterogeneously distributed. Vein network grades into a cataclastic fault zone in Piece 1f. Nearly horizontal late magmatic vein in Piece 1e.

ADDITIONAL COMMENTS: In Piece 1e, a 2 cm thick magmatic vein is identified by:

- change in color (Black 2.5/1);
- altered vesicles along the contact;
- more abundant clinopyroxene and olivine than plagioclase crystals;
- smaller and more anhedral plagioclase crystals.



Core Photo



309-1256D-85R-2 (Section top : 812.82 mbsf)

Volcanic Rock

UNIT: 30

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.

PIECES: 1-2 (igneous description based on Piece 1a)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Fine grained

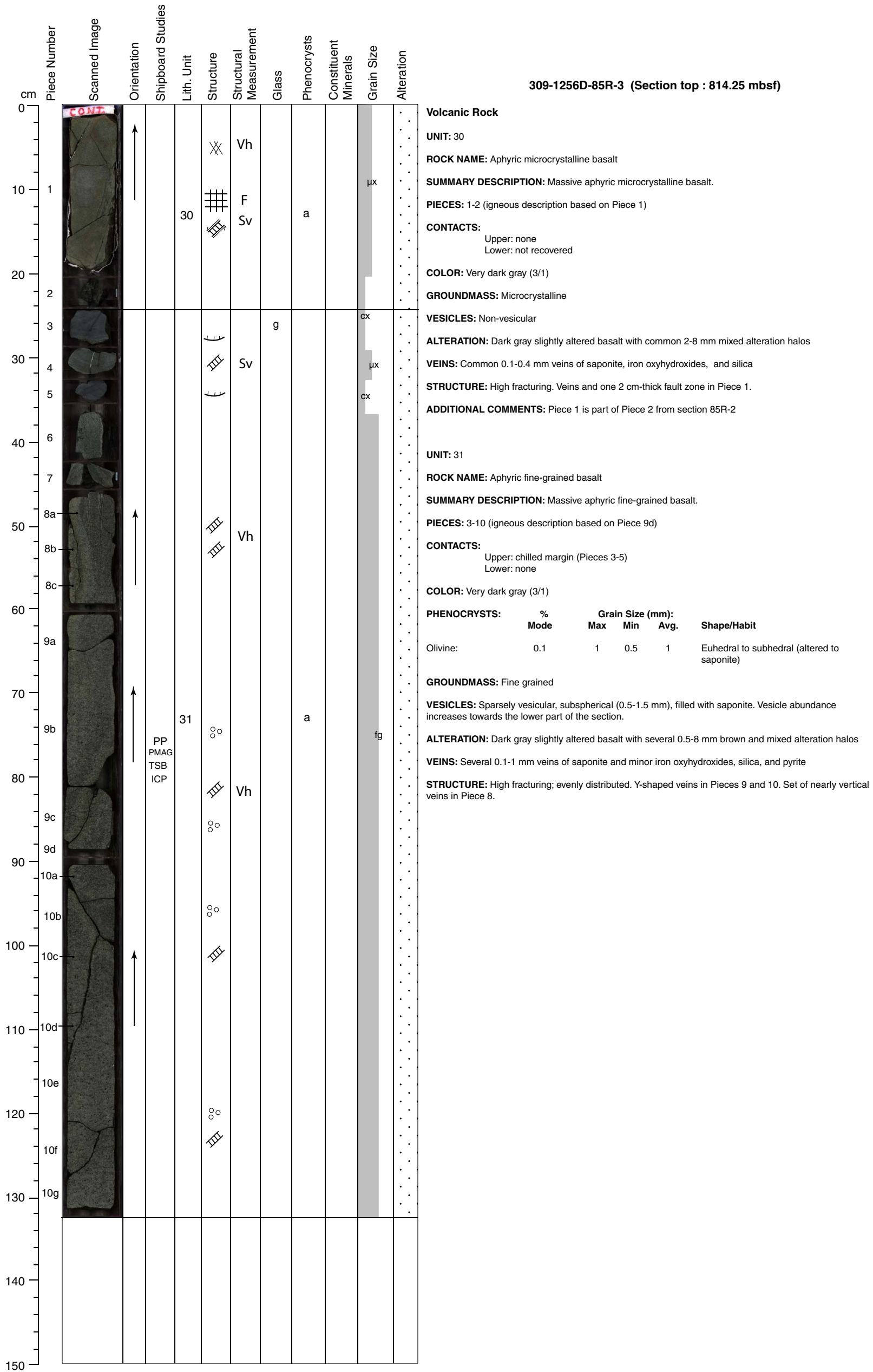
VESICLES: Generally non-vesicular

ALTERATION: Dark gray slightly altered basalt with several brown and common 3-25 mm mixed alteration halos.

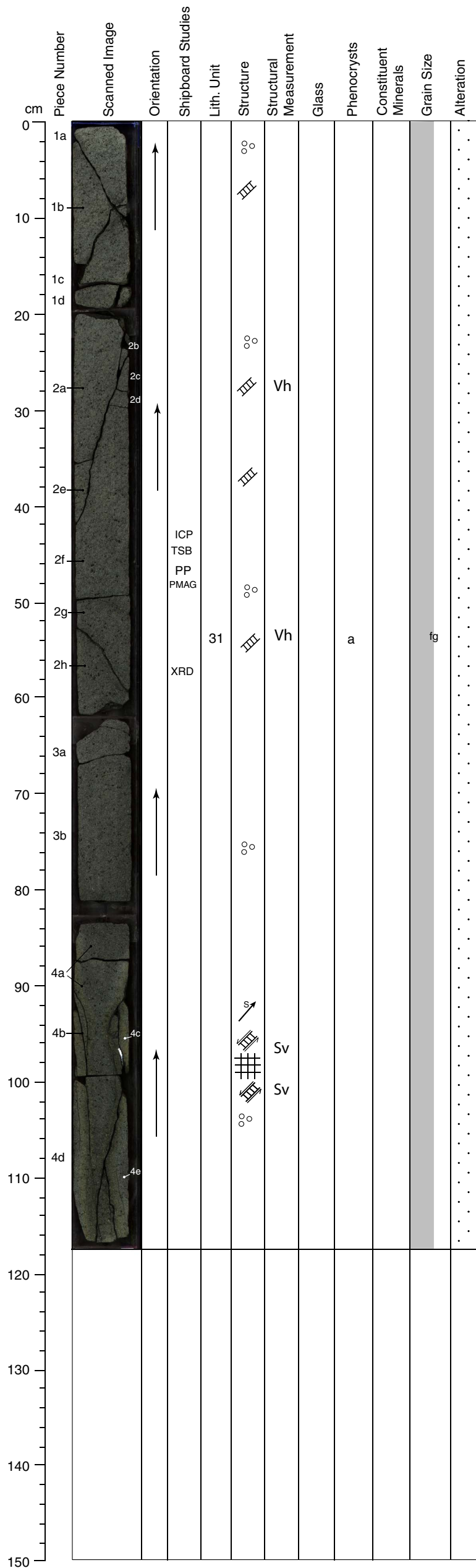
VEINS: Common 0.1-0.3 mm veins of iron oxyhydroxides, saponite, and minor silica.

STRUCTURE: Moderate to high fracturing, heterogeneously distributed, mostly concentrated in Piece 2. Two 3 cm-thick fault zones characterized by set of steeply dipping veins in Piece 2. One fault zone in Piece 2 has an apparent normal sense of shear.

Core Photo



Core Photo



309-1256D-85R-4 (Section top : 815.58 mbsf)

Volcanic Rock

UNIT: 31

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.

PIECES: 1-4 (igneous description based on Piece 2h)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.1	0.8	0.8	0.8	Anhedral

PHENOCRYSTS:

GROUNDMASS: Fine grained

VESICLES: Moderately vesicular (7%). The vesicles are spherical and filled with saponite. The size of the vesicles ranges from 0.05 mm to 0.2 mm in diameter.

ALTERATION: Dark gray slightly altered basalt with rare 7 mm brown and mixed alteration halos.

VEINS: Several 0.1-0.5 mm veins of saponite and very minor iron oxyhydroxides and silica.

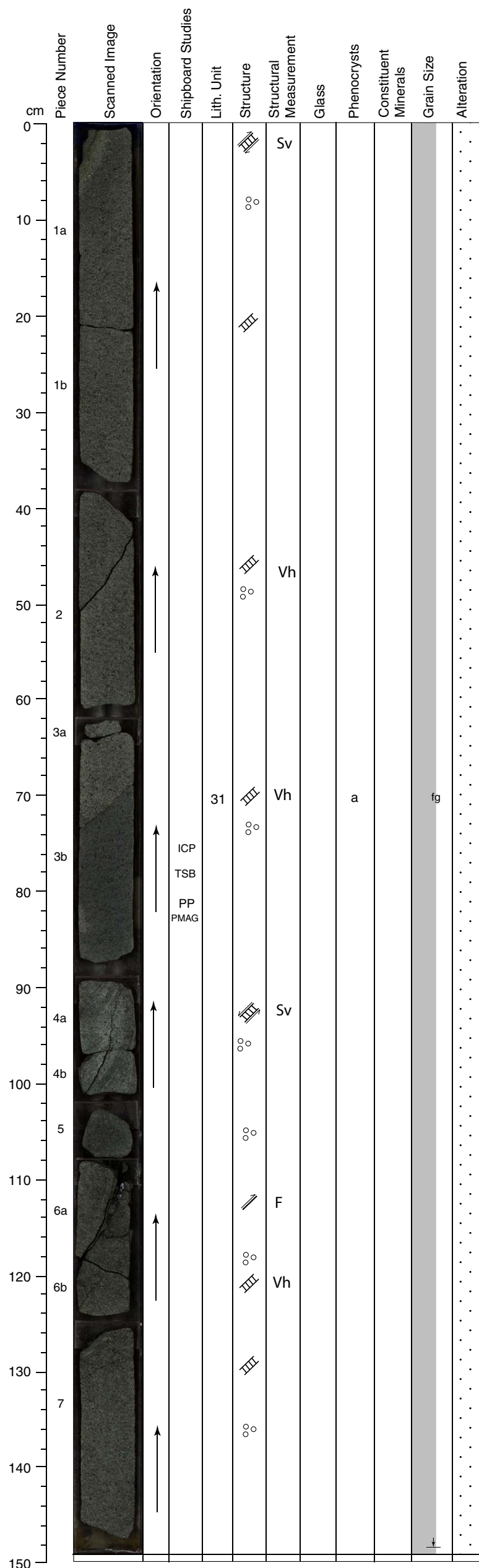
STRUCTURE: High fracturing; evenly distributed. Steeply dipping fault zone in Piece 4. Dip slip slickenfibers are consistent with a normal sense of shear along the fault zone in Piece 4. Y-shaped veins in Pieces 1 and 2.

ADDITIONAL COMMENTS: One (1) fresh olivine phenocryst is present on the edge of Piece 2h.



Core Photo

309-1256D-85R-5 (Section top : 816.75 mbsf)



Volcanic Rock

UNIT: 31

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.

PIECES: 1-7 (igneous description based on Piece 3b)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Fine grained

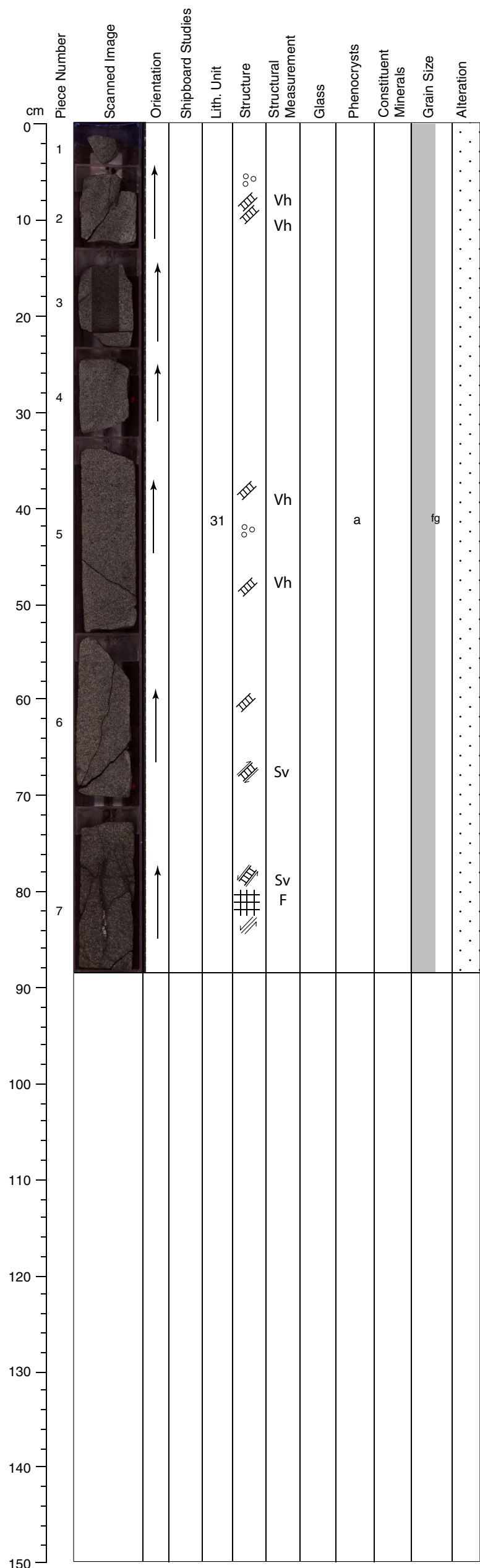
VESICLES: Sparsely vesicular. The vesicles (size 0.5-1.5 mm in diameter) are spherical to irregular. They are filled with saponite.

ALTERATION: Dark gray slightly altered basalt with one mixed alteration halo in Piece 1 and one light gray alteration halo in Piece 4.

VEINS: Several 0.1-0.7 mm veins of saponite with very minor iron oxyhydroxides, silica, and pyrite

STRUCTURE: Moderate fracturing; heterogeneously distributed. Steeply dipping fault zone with protocataclaste in Piece 6.

Core Photo



309-1256D-85R-6 (Section top : 818.25 mbsf)

Volcanic Rock

UNIT: 31

ROCK NAME: Aphyric fine grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine grained basalt.

PIECES: 1-7 (igneous description based on Piece 5)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.1	0.8	0.8	0.8	Anhedral (completely altered to saponite)

GROUNDMASS: Fine grained

VESICLES: Non-vesicular. The few vesicles present are spherical to irregular and filled with saponite. The size of the vesicles ranges from 0.01 mm to 0.15 mm in diameter.

ALTERATION: Dark gray slightly altered basalt

VEINS: Several 0.1-15 mm veins of saponite

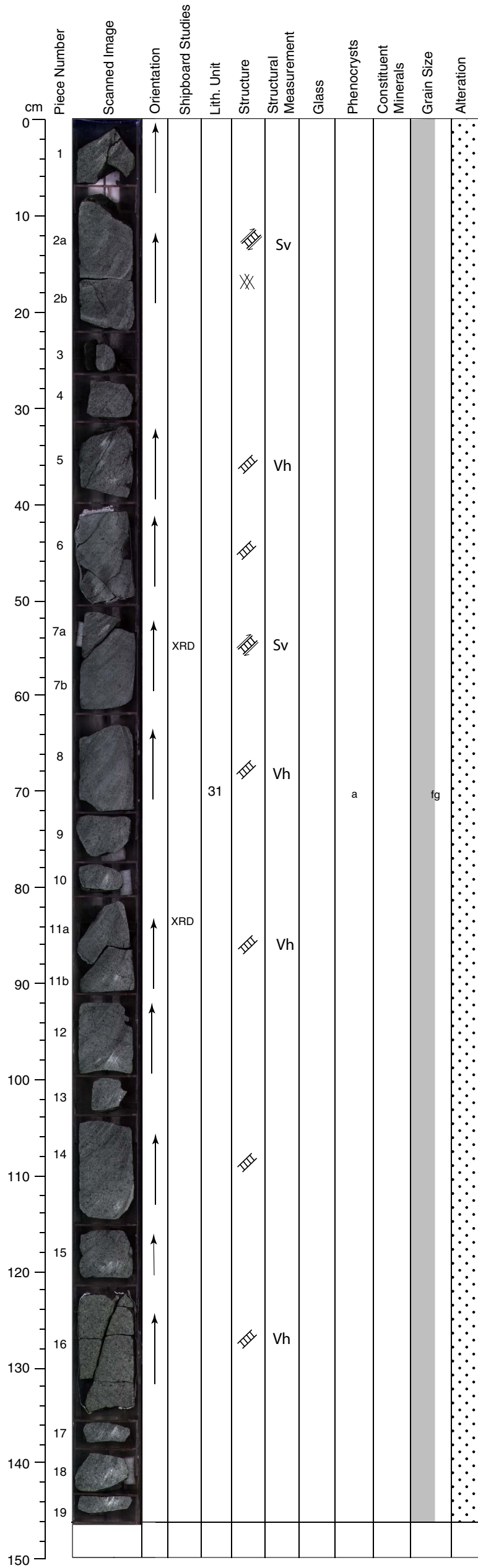
STRUCTURE: Moderate fracturing; heterogeneously distributed. Steeply dipping fault zone in Piece 7.

ADDITIONAL COMMENTS: Possible presence of altered olivine in the matrix. Piece 7 becomes more coarse with plagioclase abundance increasing in the groundmass.



Core Photo

309-1256D-86R-1 (Section top : 821.0 mbsf)

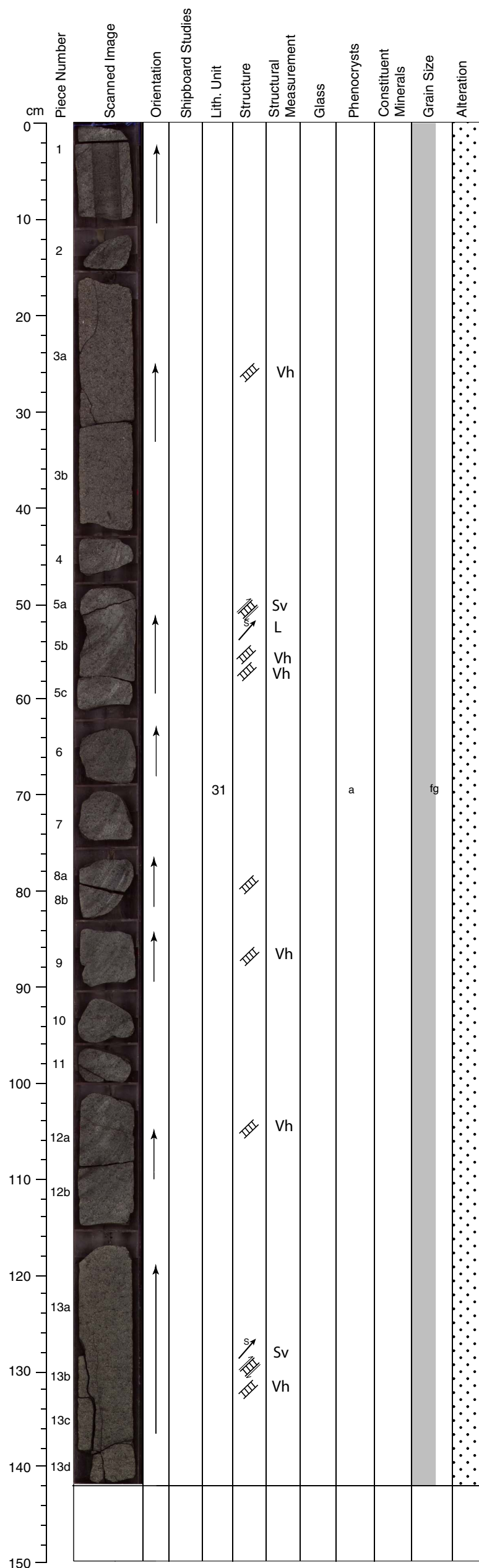


Volcanic Rock
UNIT: 31
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.
PIECES: 1-19 (igneous description based on Piece 8)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Fine grained
VESICLES: Non-vesicular. Rare spherical to irregular vesicles (0.1-0.2 mm in diameter) are filled with saponite. More vesicular than sections 2 and 3.
ALTERATION: Dark gray moderately altered basalt
VEINS: Several 0.1-0.5 mm veins of saponite and minor pyrite
STRUCTURE: Moderate fracturing, evenly distributed. Shear veins in Pieces 2 and 7. Y-shaped veins in Piece 6.



Core Photo

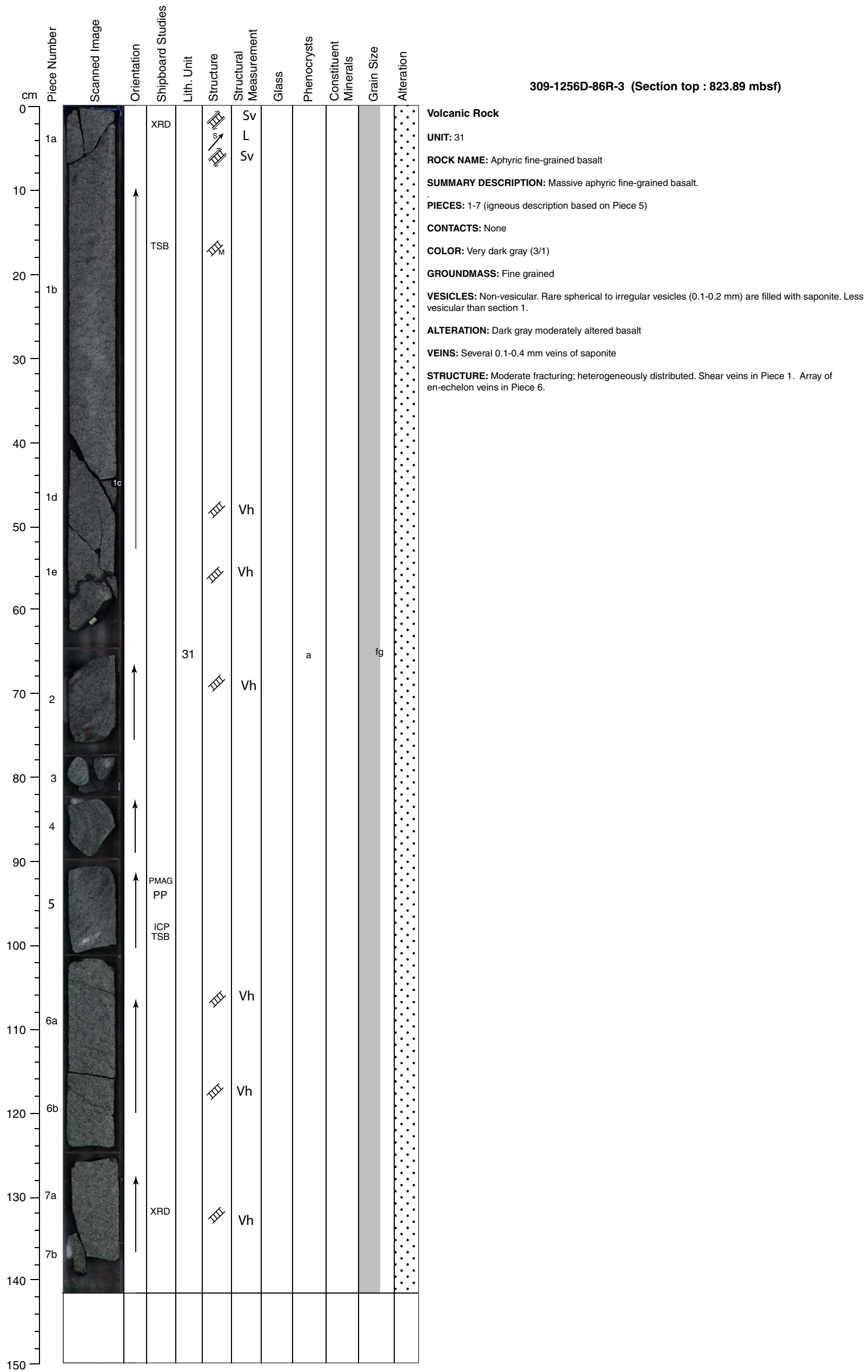
309-1256D-86R-2 (Section top : 822.47 mbsf)



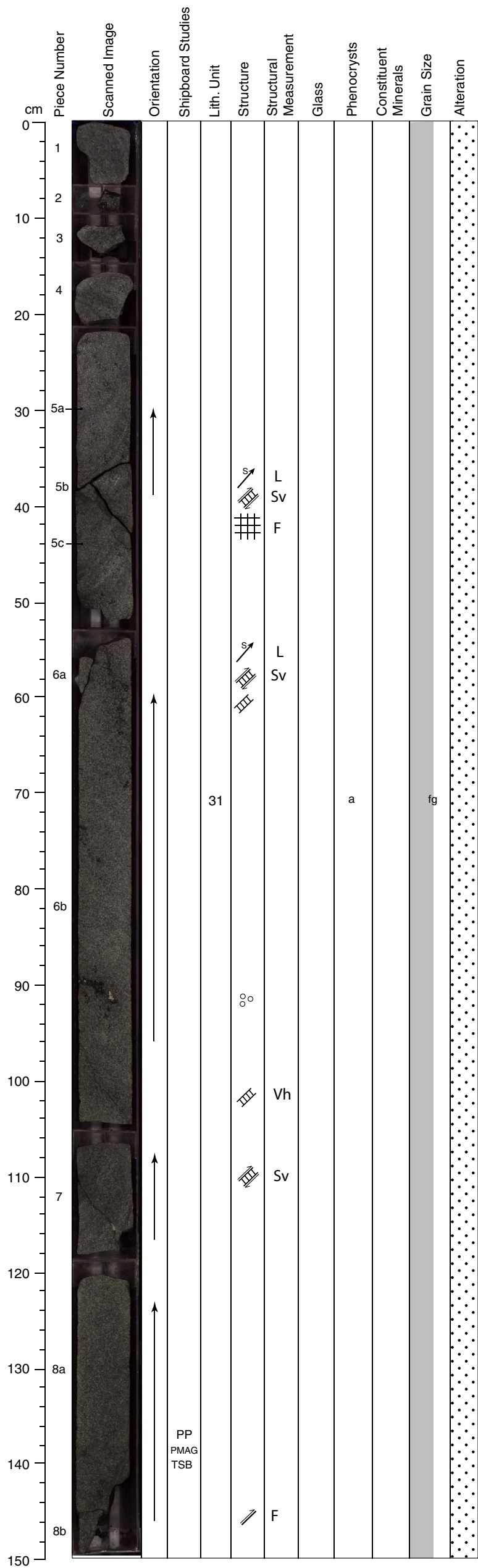
Volcanic Rock
UNIT: 31
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.
PIECES: 1-13 (igneous description based on Piece 6)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Fine grained
VESICLES: Non-vesicular. Rare spherical to irregular vesicles (size 0.1-0.5 mm in diameter) are filled with saponite.
ALTERATION: Dark gray moderately altered basalt
VEINS: Several 0.1-0.5 mm veins of saponite
STRUCTURE: Slight fracturing, heterogeneously distributed. Shear veins in Pieces 5 and 13. Set of nearly vertical veins in Piece 13.



Core Photo



Core Photo



309-1256D-87R-1 (Section top : 830.6 mbsf)

Volcanic Rock

UNIT: 31

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.

PIECES: 1-8 (igneous description based on Piece 1)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Fine grained. Plagioclase clusters in groundmass (smaller than in section 2).

VESICLES: Non-vesicular

ALTERATION: Dark gray moderately altered basalt

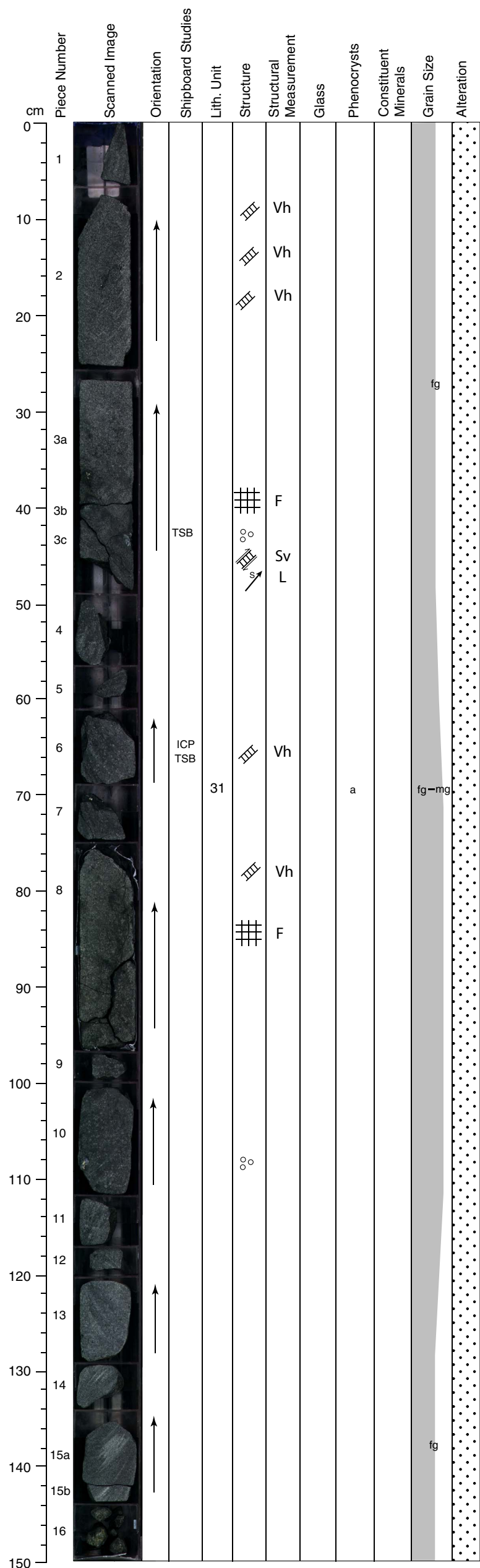
VEINS: Several 0.1-0.4 mm veins of saponite and minor pyrite

STRUCTURE: Moderate fracturing; heterogeneously distributed. Two microfaults in Pieces 5 and 8. Oblique slip shear veins in Piece 5.

ADDITIONAL COMMENTS: Clinopyroxene and altered olivine are present in the groundmass.



Core Photo

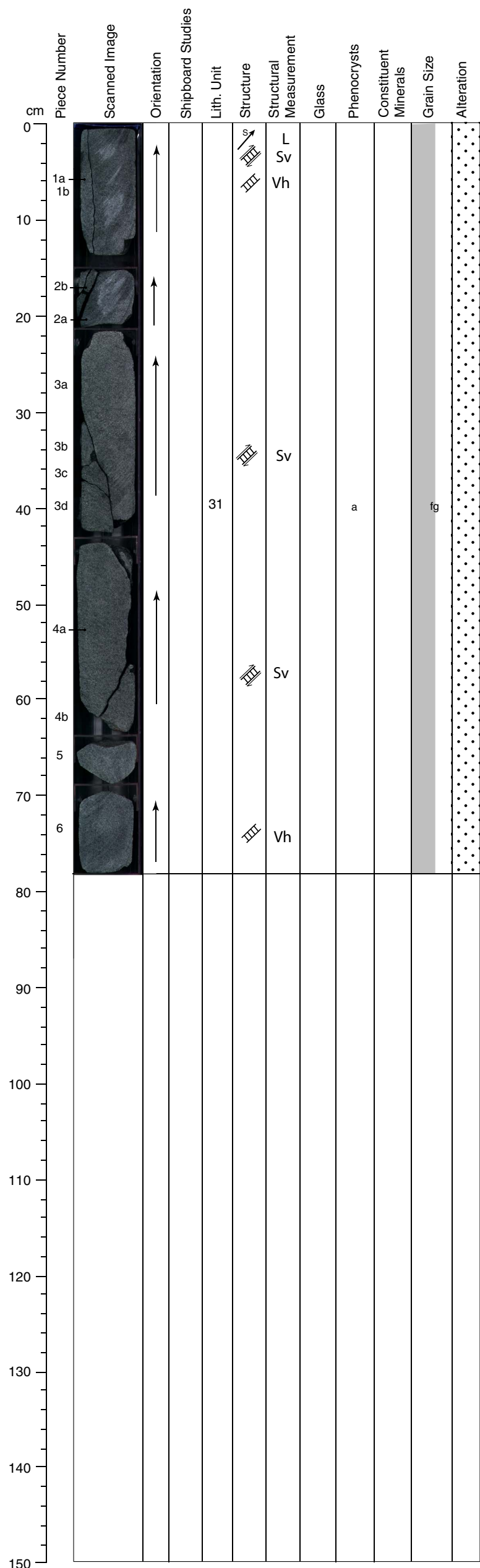


309-1256D-87R-2 (Section top : 832.1 mbsf)

Volcanic Rock
UNIT: 31
ROCK NAME: Aphyric fine- to medium-grained basalt
SUMMARY DESCRIPTION: Massive aphyric fine to medium-grained basalt.
PIECES: 1-16 (igneous description based on Piece 10a)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Fine to medium grained. The groundmass is generally fine-grained but in Pieces 4–12, grain size varies from fine to medium-grained, even within a single piece.
VESICLES: Non-vesicular
ALTERATION: Dark gray moderately altered basalt
VEINS: Several 0.1-0.5 mm veins of saponite and minor pyrite. One sulfide vein in Piece 7.
STRUCTURE: Moderate fracturing; heterogeneously distributed. Centimeter-thick fault zones in Pieces 3 and 8.
ADDITIONAL COMMENTS: Pieces 4 to 13 are characterized by a gradual textural change compared to the rest of Unit 31. The groundmass size slightly increases and plagioclase forms clusters.



Core Photo

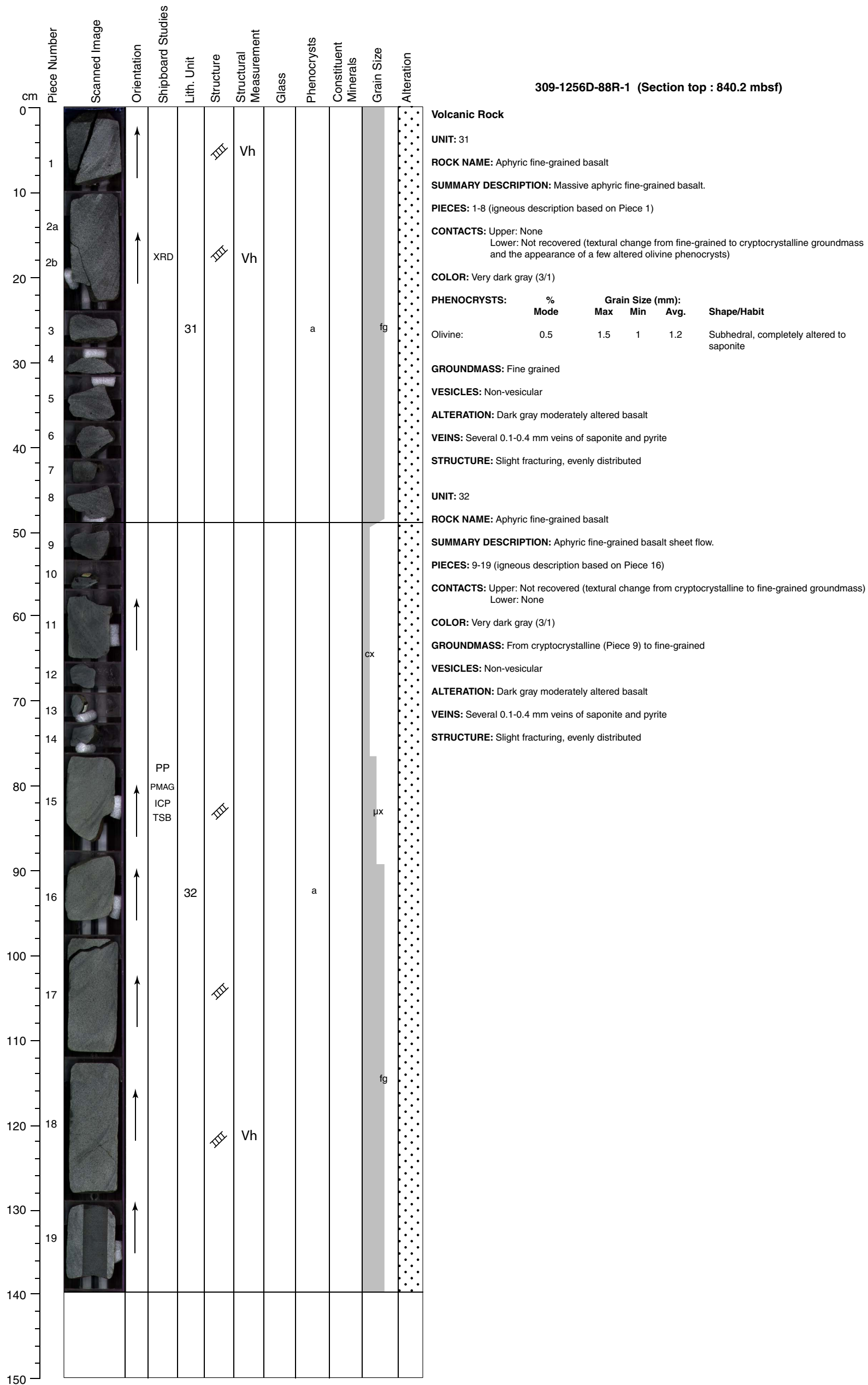


309-1256D-87R-3 (Section top : 833.6 mbsf)

Volcanic Rock
UNIT: 31
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.
PIECES: 1-6 (igneous description based on Piece 6)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Fine grained
VESICLES: Non-vesicular
ALTERATION: Dark gray moderately altered basalt.
VEINS: Several 0.1-0.3 mm veins of saponite and minor pyrite.
STRUCTURE: Moderate fracturing, evenly distributed. Oblique slip shear veins in Pieces 1, 3 and 4.



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration																		
0																														
0-10	1		↑																											
10-20	2		↑		32				a		fg																			
20-30	3		↑			Vh																								
30-150												<p>Volcanic Rock</p> <p>UNIT: 32</p> <p>ROCK NAME: Aphyric fine-grained basalt</p> <p>SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.</p> <p>PIECES: 1-3 (igneous description based on Piece 1b)</p> <p>CONTACTS: None</p> <p>COLOR: Very dark gray (3/1)</p> <p>PHENOCRYSTS:</p> <table border="1"> <thead> <tr> <th></th> <th>% Mode</th> <th colspan="3">Grain Size (mm):</th> <th>Shape/Habit</th> </tr> <tr> <th></th> <th></th> <th>Max</th> <th>Min</th> <th>Avg.</th> <th></th> </tr> </thead> <tbody> <tr> <td>Olivine:</td> <td>0.2</td> <td>1.5</td> <td>1.0</td> <td>1.0</td> <td>Euhedral, completely altered to saponite</td> </tr> </tbody> </table> <p>GROUNDMASS: Fine grained</p> <p>VESICLES: Non-vesicular. A few spherical vesicles (0.1 to 0.3 mm) filled with saponite.</p> <p>ALTERATION: Dark gray moderately altered basalt.</p> <p>VEINS: Several 0.1 mm veins of saponite and pyrite.</p> <p>STRUCTURE: Slight fracturing.</p>		% Mode	Grain Size (mm):			Shape/Habit			Max	Min	Avg.		Olivine:	0.2	1.5	1.0	1.0	Euhedral, completely altered to saponite
	% Mode	Grain Size (mm):			Shape/Habit																									
		Max	Min	Avg.																										
Olivine:	0.2	1.5	1.0	1.0	Euhedral, completely altered to saponite																									



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration	
0													
1	1		↑			III					cx		
2	2											μx	
10	3						III						
20	4						XX						
25	5						III						
30	6						XX						
35	7												
40	8				33A				a			cx	
45	9												
50	10												
55	11												
60	12												
65	13				TSB								
70	14				ICP								
75	15												
80	16											μx	
90													
100													
110													
120													
130													
140													
150													

309-1256D-89R-1 (Section top : 849.8 mbsf)

Volcanic Rock
UNIT: 33A
ROCK NAME: Aphyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.
PIECES: 1-16 (igneous description based on Piece 14)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with several 1-8 mm mixed alteration halos.
VEINS: Common 0.1-0.4 mm veins of saponite and minor silica, iron oxyhydroxydes, and celadonite.
STRUCTURE: Moderate fracturing. Cooling-related vein networks in Pieces 4 and 6.
ADDITIONAL COMMENTS: Piece 8 has a chilled margin with spherulitic texture. Piece 1 has several irregular vesicles filled with saponite and geladonite.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1											
1	2			XRD		↖		ca				
2	3										cx	
3	4											
4	5											
5	6											
6	7		↑			III						
7	8											
8	9											
9	10				33A							
10	11								a			
11	12		↑			III						
12	13											
13	14											
14	15											
15	16											
16	17					III						
17	18											
18	19											
19	20											
20												
100												
110												
120												
130												
140												
150												

309-1256D-90R-1 (Section top : 859.4 mbsf)

Volcanic Rock

UNIT: 33A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-20 (igneous description based on Piece 12)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.1	1.0	0.7	0.8	Euhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt. Piece 2 is a hyaloclastite altered into celadonite, saponite, silica and minor pyrite.

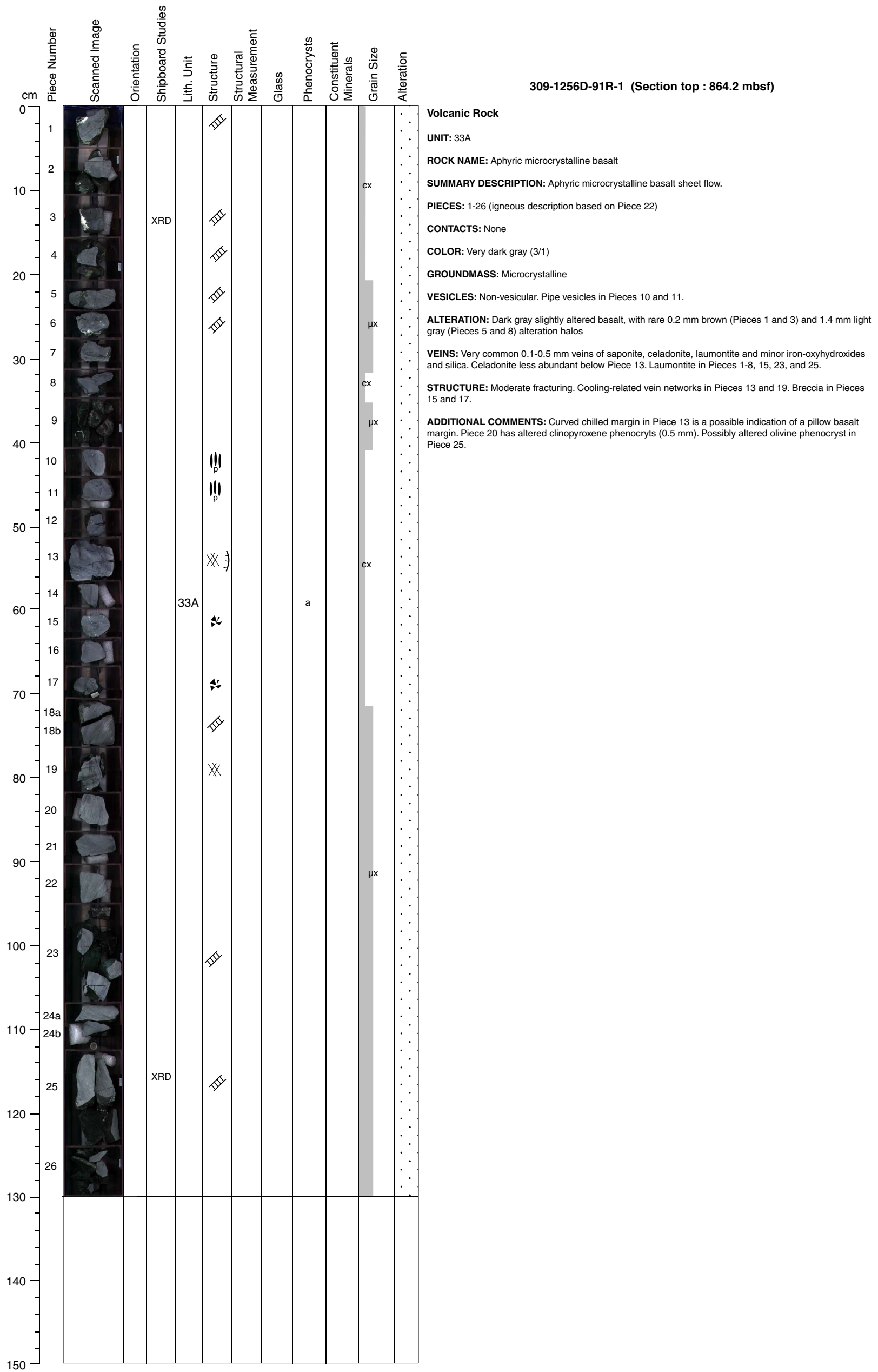
VEINS: Common 0.1-0.3 mm veins of saponite, chalcopyrite, celadonite and iron-oxyhydroxides

STRUCTURE: Slight fracturing. Y-shaped and hairline veins in Pieces 7, 12 and 17

ADDITIONAL COMMENTS: Piece 2 is an altered hyaloclastite.



Core Photo



Core Photo

309-1256D-92R-1 (Section top : 869.0 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1		↑	TSB		III oo						
2	2											
3	3											
4	4											
5	5											
6	6										μx	
7	7											
8	8											
9	9											
10	10											
11	11											
12	12											
13	13											
14	14											
15	15		↑			III					fg	
16	16				33A			a				
17	17					oo					cx	
18	18											
19	19					oo						
20	20											
21	21		↑									
22	22										μx	
23	23											
24	24											
25	25					III						
26	26		↑			III						
27	27											
28	28											
150												

Volcanic Rock

UNIT: 33A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-28 (igneous description based on Piece 21)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular. Irregular vesicles are present in Pieces 1, 17, and 19.

ALTERATION: Dark gray slightly altered basalt, with two 2-4 mm black halos. Rare amygdales of celadonite and calcium carbonate.

VEINS: Several 0.1-0.4 mm veins of saponite, chalcopyrite and minor silica and pyrite

STRUCTURE: Slight fracturing.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1										µx	
10	2							g			cx	
20	4		↑									
30	5		↑									
40	6										cx	
50	9											
60	10				33A			ca	a			
70	13											
80	15		↑								µx	
90	17											
100	18										cx	
110												
120												
130												
140												
150												

309-1256D-93R-1 (Section top : 873.8 mbsf)

Volcanic Rock

UNIT: 33A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-18 (igneous description based on Piece 15)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm)			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.1	0.3	0.2	0.2	Euhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular. Irregular to spherical vesicles filled with black, saponite, Ca-carbonate, silica minerals, and pyrite are present in Pieces 2, 4, 7, 8, 10, 15, and 18.

ALTERATION: Dark gray slightly altered basalt. Rare vesicles filled with saponite, calcium carbonate, silica and pyrite.

VEINS: Common 0.1-0.3 mm veins of saponite, pyrite, chalcocopyrite, and minor silica.

STRUCTURE: Moderate fracturing. Cooling-related Y-shaped and curved veins.

ADDITIONAL COMMENTS: Pieces 2 and 10 have chilled margins (spherulitic texture) with altered (Piece 10) or fresh (Piece 2) glass. Possibly some partially altered olivine phenocrysts in Piece 18.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1										cx	
2	2											
10	3											
15	4					III						
20	5											
25	6											
30	7											
35	8											
40	9											
45	10			ICP TSB								
50	11											
55	12				33A			a			cx	
60	13											
65	14											
70	15											
75	16a					III						
80	16b			PP PMAG								
85	17			TSB								
90	18			XRD								
95	19											
100	20											
105	21											
110	22											
115	23											
120	24											
125	25											
130												
140												
150												

309-1256D-94R-1 (Section top : 878.6 mbsf)

Volcanic Rock

UNIT: 33A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-25 (igneous description based on Piece 10)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.5	1.0	0.1	0.5	Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt.

VEINS: Common 0.1-0.3 mm veins of saponite, laumontite (in Piece 17-20), and minor pyrite and chalcopyrite

STRUCTURE: Slight fracturing.

ADDITIONAL COMMENTS: Possible altered olivine and clinopyroxene phenocrysts.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1		↑								cx	
10	2											
20	4										μx	
30	5											
40	6					⊙						
40	7											
40	8										cx	
50	9											
50	10				33A				a			
60	11					⊙					μx	
70	12											
70	13					⊙						
80	14											
80	15					⊙					cx	
90	16											
90	17										μx	
100	18a		↑				Vh					
100	18b											
110												
120												
130												
140												
150												

309-1256D-94R-2 (Section top : 879.95 mbsf)

Volcanic Rock

UNIT: 33A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-18 (igneous description based on Piece 10)

CONTACTS: None

COLOR: Very dark gray (3/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.5	0.6	0.2	0.3	Euhedral-subhedral
Clinopyroxene:	0.1	0.5	0.2	0.3	Euhedral

GROUNDMASS: Microcrystalline

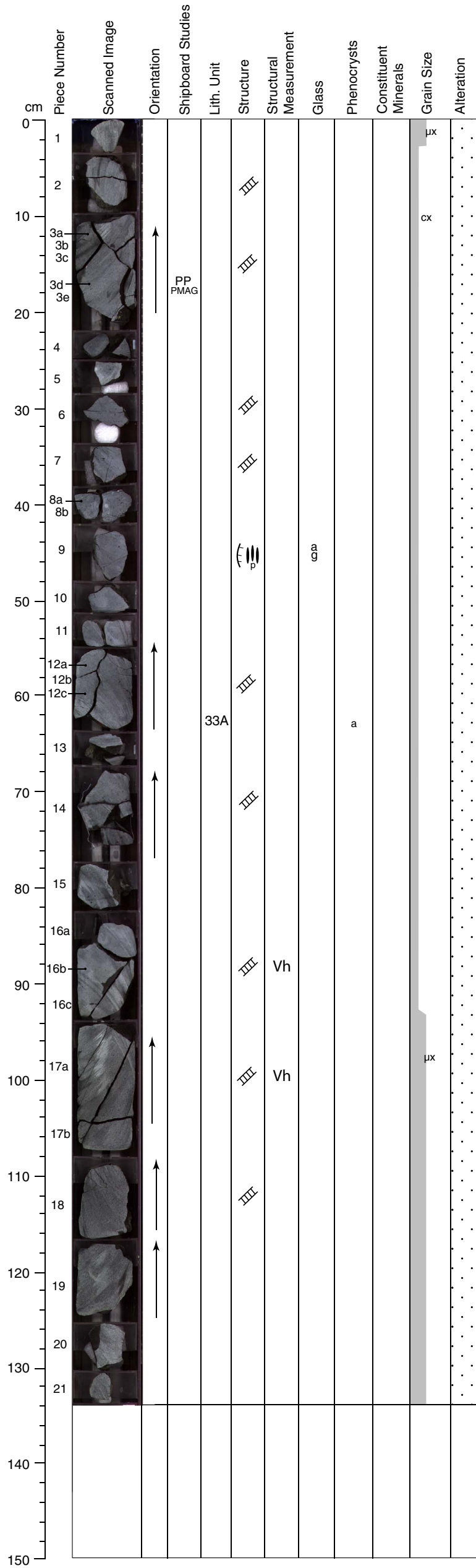
VESICLES: Non-vesicular. Irregular vesicles are present in Pieces 6, 11, 13 and 15.

ALTERATION: Dark gray slightly altered basalt.

VEINS: Several 0.1-0.2 mm veins of saponite, pyrite and chalcopyrite.

STRUCTURE: Slight fracturing.

Core Photo

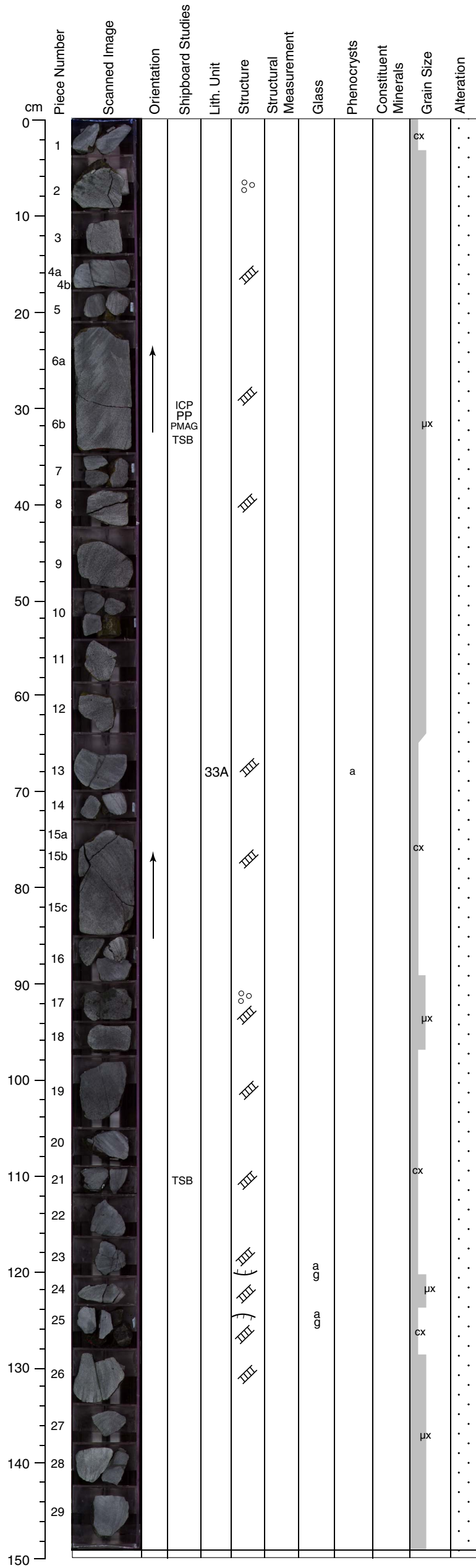


309-1256D-95R-1 (Section top : 888.2 mbsf)

Volcanic Rock
UNIT: 33A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
PIECES: 1-21 (igneous description based on Piece 18)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular. Pipe vesicles found in Piece 9.
ALTERATION: Dark gray slightly altered basalt
VEINS: Very common 0.1-0.3 mm veins of saponite, pyrite and chalcocopyrite
STRUCTURE: Moderate fracturing; evenly distributed. Mostly Y-shaped veins linked to the cooling of lava. Parallel planar veins in Pieces 16 and 17.
ADDITIONAL COMMENTS: Chilled margin located in Piece 9. Altered olivine microphenocryst found in Piece 18



Core Photo

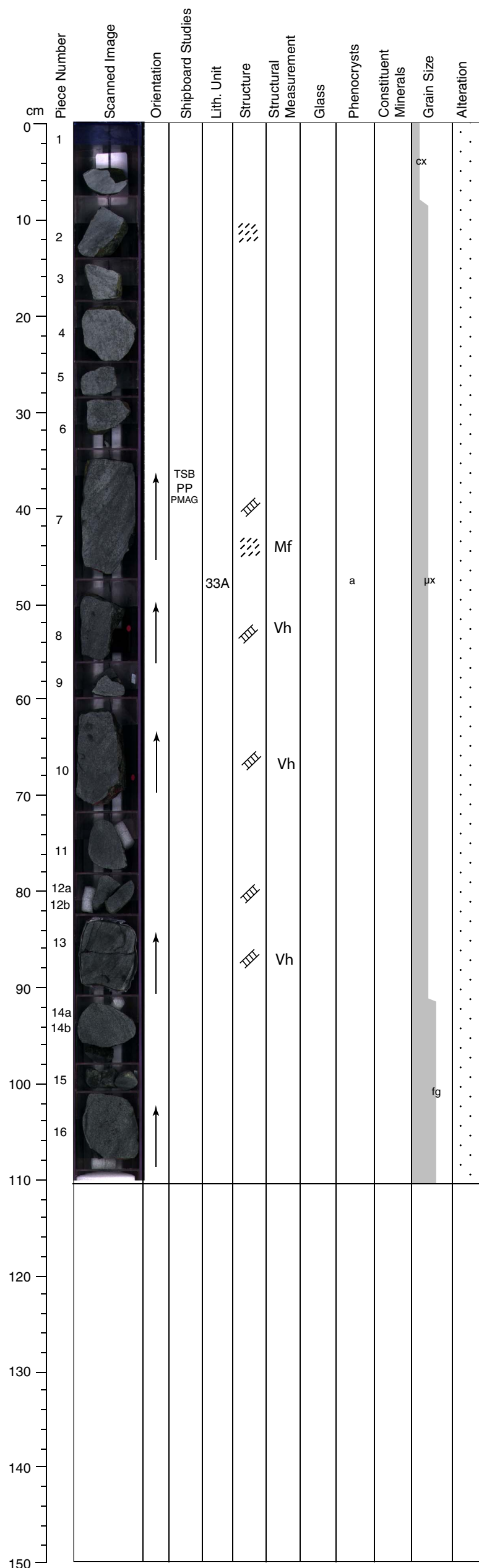


309-1256D-96R-1 (Section top : 893.0 mbsf)

Volcanic Rock
UNIT: 33A
ROCK NAME: Aphyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.
PIECES: 1-29 (igneous description based on Piece 19)
CONTACTS: None
COLOR: Black (2.5/1)
GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular. A few irregular vesicles (0.5 to ~0.8 in diameter) are present in Pieces 2 and 17.
ALTERATION: Dark gray slightly altered basalt with rare 1-1.5 mm black and mixed alteration halos
VEINS: Very common 0.1-0.4 mm veins of saponite, chalcopyrite, and pyrite
STRUCTURE: Slight fracturing; evenly distributed.
ADDITIONAL COMMENTS: Chilled margin with altered glass in Pieces 23 and 25.



Core Photo



309-1256D-97R-1 (Section top : 897.8 mbsf)

Volcanic Rock

UNIT: 33A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-16 (igneous description based on Piece 10)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.5	1.0	0.7	0.8	Euhedral-subhedral

PHENOCRYSTS: Olivine: 0.5% (1.0 mm max, 0.7 mm min, 0.8 mm avg), Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with one 1.5 mm black halo in Piece 12.

VEINS: Several 0.1-0.3 mm veins of saponite and minor celadonite, calcium carbonate and pyrite.

STRUCTURE: Slight fracturing. Magmatic layering in Pieces 2 and 7. In Piece 7 the magmatic layering is steeply dipping.

ADDITIONAL COMMENTS: Olivine phenocrysts are completely replaced by saponite.



Core Photo

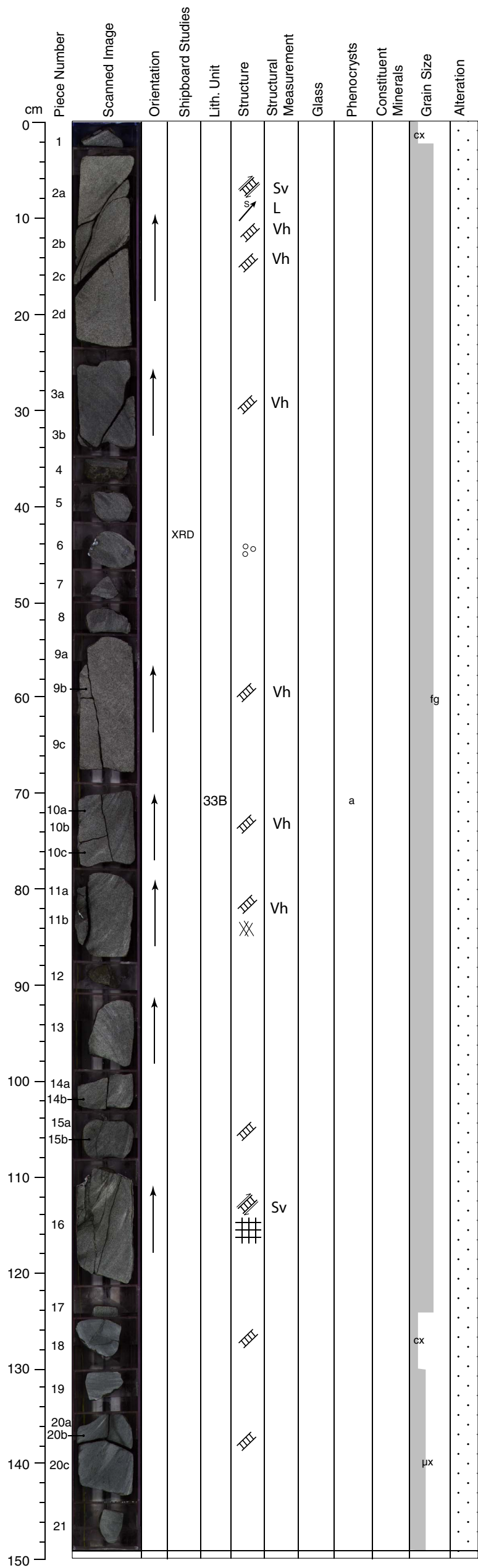
309-1256D-98R-1 (Section top : 902.6 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1					oo					μx	
2	2											
10	3		↑ TSB		33A				a		cx	
20	4											
25	5										μx	
30												
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock
UNIT: 33A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
PIECES: 1-5 (igneous description based on Piece 5)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular. A few small (0.1-0.2 mm) spherical to irregular vesicles in Piece 1.
ALTERATION: Dark gray slightly altered basalt with several 0.7-1.5 mm black alteration halos with a pyrite front.
VEINS: Several 0.1-0.4 mm veins of saponite and minor pyrite, iron oxyhydroxides and silica
STRUCTURE: Y-shaped veins in Piece 3.



Core Photo

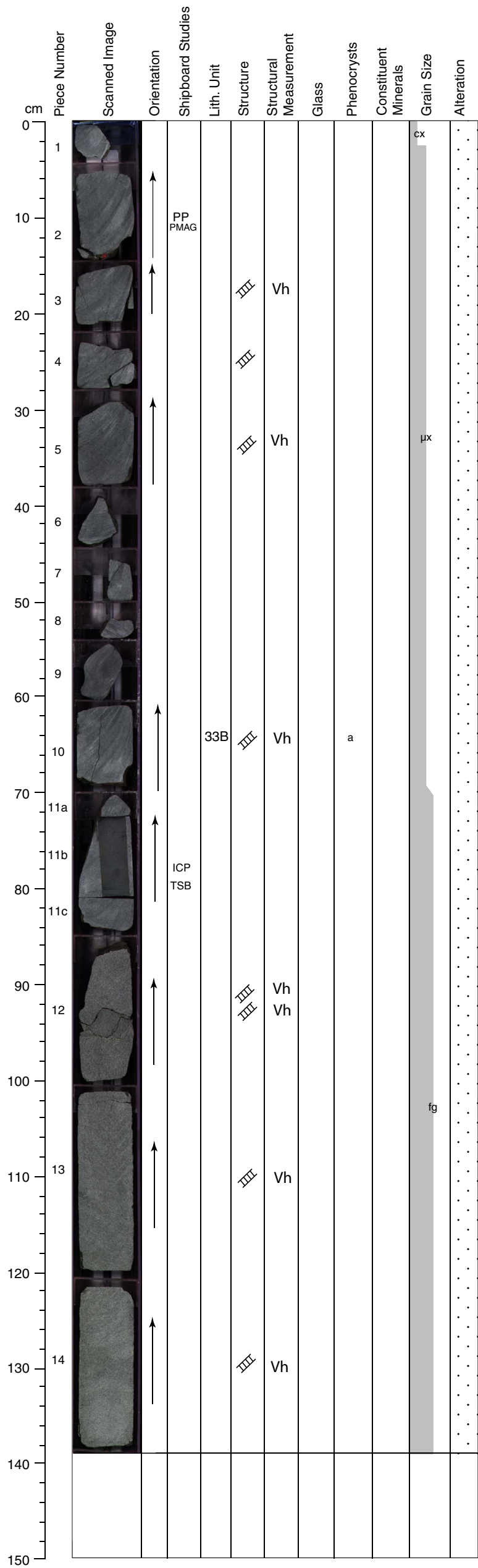


309-1256D-99R-1 (Section top : 907.4 mbsf)

Volcanic Rock
UNIT: 33B
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.
PIECES: 1-21 (igneous description based on Piece 9a)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Fine grained
VESICLES: Non-vesicular. A few large and irregular vesicles (0.2-0.5 mm) filled by saponite and silica minerals in Piece 6.
ALTERATION: Dark gray slightly altered basalt with several 0.6-3.5 mm black alteration halos with a pyrite front.
VEINS: Common 0.1-1.0 mm veins of saponite, pyrite, and minor zeolite, calcium carbonate and silica
STRUCTURE: High fracturing; evenly distributed. Mostly steeply dipping veins. Oblique slip reverse shear vein in Piece 2. Normal dip slip fault zone in Piece 16.
ADDITIONAL COMMENTS: Some very long plagioclase microlites (1.0-2.0 mm in length). A few completely altered olivine phenocrysts in Piece 9a.



Core Photo



309-1256D-99R-2 (Section top : 908.9 mbsf)

Volcanic Rock

UNIT: 33B

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.

PIECES: 1-14 (igneous description based on Piece 14)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Fine grained

VESICLES: Non-vesicular

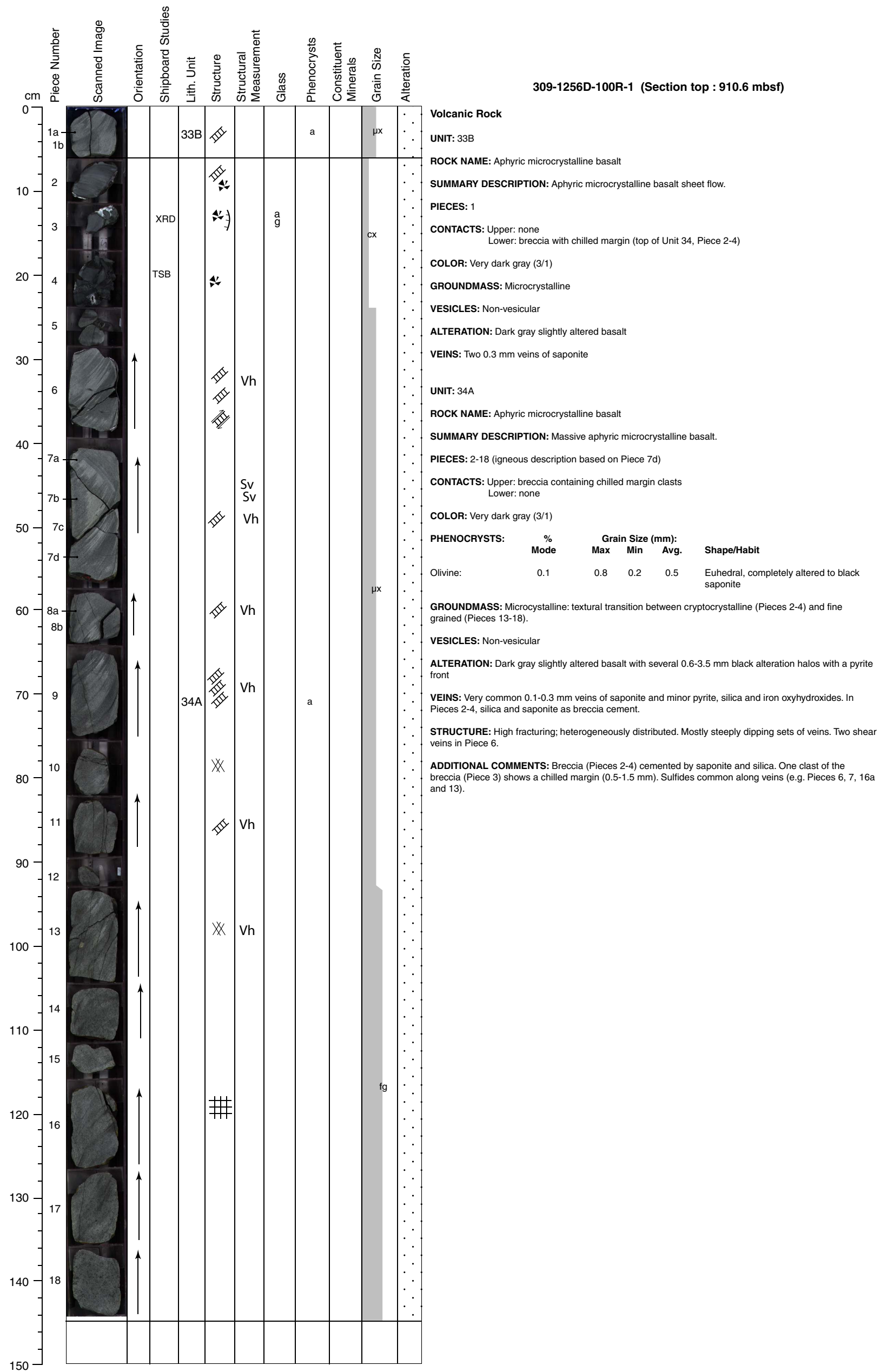
ALTERATION: Dark gray slightly altered basalt.

VEINS: Common 0.1-0.4 mm veins of saponite and minor pyrite.

STRUCTURE: Moderate fracturing, evenly distributed. Mostly steeply dipping veins.

ADDITIONAL COMMENTS: Several sulfide minerals (pyrite?) can be seen throughout the rock, especially along fracture planes.

Core Photo



Core Photo

309-1256D-100R-2 (Section top : 912.04 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1		↑			○ ○	Vh					
10	2a		↑		34A	○ ○	SV L		a		fg	
20	2b					○ ○						
30	3											
30	4a			XRD		III						
30	4b					III						
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock

UNIT: 34A

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.

PIECES: 1-4 (igneous description based on Piece 4)

CONTACTS: None

COLOR: Black (2.5/1)

GROUNDMASS: Fine grained

VESICLES: Sparsely vesicular. Spherical to irregular vesicles (0.01-0.03 mm). Some filled with sulfide minerals (pyrite), most filled with saponite. A pipe vesicle is present in Piece 4.

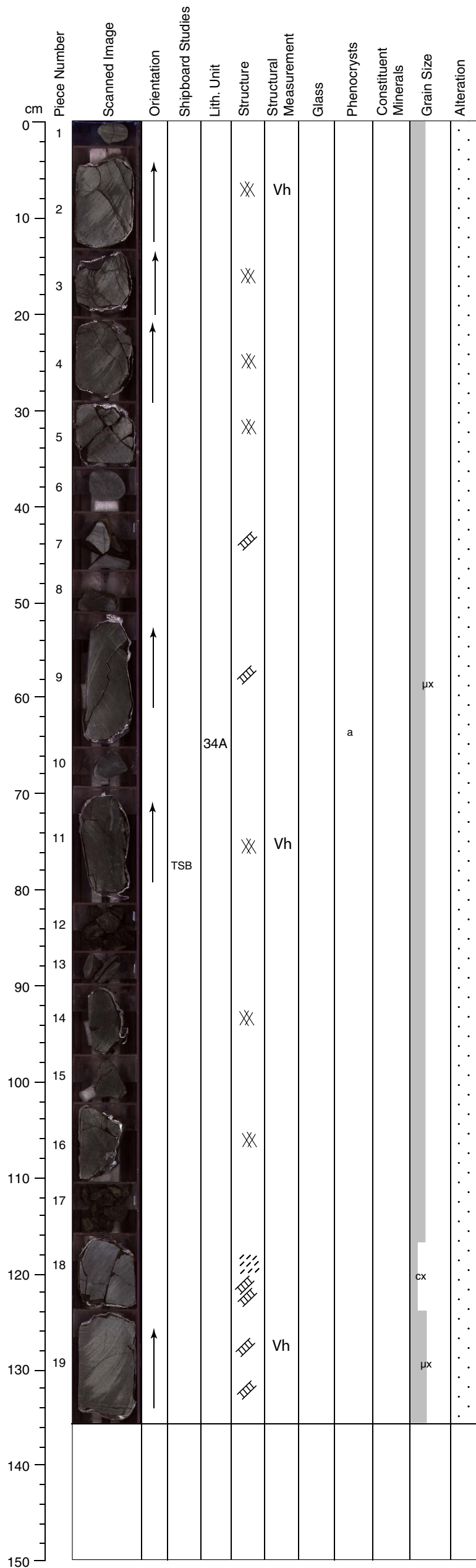
ALTERATION: Dark gray slightly altered basalt with minor saponite and pyrite amygdalae

VEINS: Common 0.1-0.5 mm veins of saponite and minor pyrite and silica. One 1.6 mm vein of silica, saponite and chalcopyrite in Piece 4.

STRUCTURE: High fracturing in Piece 2.



Core Photo



309-1256D-101R-1 (Section top : 917.0 mbsf)

Volcanic Rock

UNIT: 34A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-19 (igneous description based on Piece 4)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.1	1	0.5	0.8	Subhedral

PHENOCRYSTS: Microcrystalline

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with rare 1-6 mm black alteration halos with a pyrite front

VEINS: Very common 0.1-0.5 mm veins of saponite, minor pyrite and chalcocopyrite, and, in Pieces 15-17, minor iron-oxyhydroxides and silica

STRUCTURE: High fracturing; evenly distributed. Vein networks from Piece 2 to Piece 5 and from Piece 11 to Piece 16. Mostly steeply dipping veins.

ADDITIONAL COMMENTS: Sulfides on fracture planes (Piece 18)



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1											
2	2											
10	3					⊗						
20	4				34A	⊗			a		μx	
25	5					⊗						
30	6					⊗						
35	7											
40	8											
45	9				34B				a		fg	
50	10					III	Vh					
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-101R-2 (Section top : 918.36 mbsf)

Volcanic Rock

UNIT: 34A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-6 (igneous description based on Piece 3)

CONTACTS: Upper: none
Lower: not recovered (textural change)

COLOR: Black (2.5/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.5	1.0	0.5	0.8	Euhedral-subhedral

PHENOCRYSTS: Microcrystalline

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular. A few irregular vesicles (0.5-1.0 mm) are filled with saponite.

ALTERATION: Dark gray slightly altered basalt with rare 0.3-1 mm brown alteration halos

VEINS: Several 0.1-0.4 mm veins of saponite and pyrite, and in Pieces 4-6, iron oxyhydroxides

STRUCTURE: High fracturing; evenly distributed. Mostly steeply dipping veins.

UNIT: 34B

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.

PIECES: 7-10 (igneous description based on Piece 10)

CONTACTS: Upper: not recovered (textural change)
Lower: none

COLOR: Black (2.5/1)

GROUNDMASS: Fine grained

VESICLES: Non-vesicular

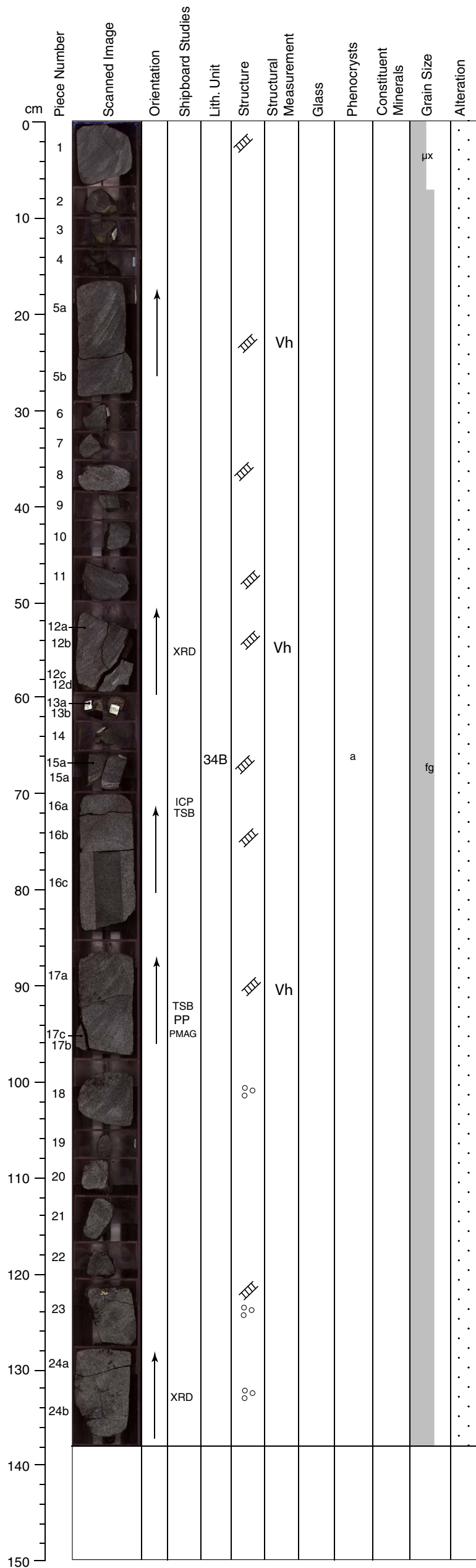
ALTERATION: Dark gray slightly altered basalt

VEINS: Several 0.1-0.4 mm veins of saponite and pyrite

STRUCTURE: Moderate fracturing. Mostly steeply dipping veins.



Core Photo



309-1256D-102R-1 (Section top : 926.6 mbsf)

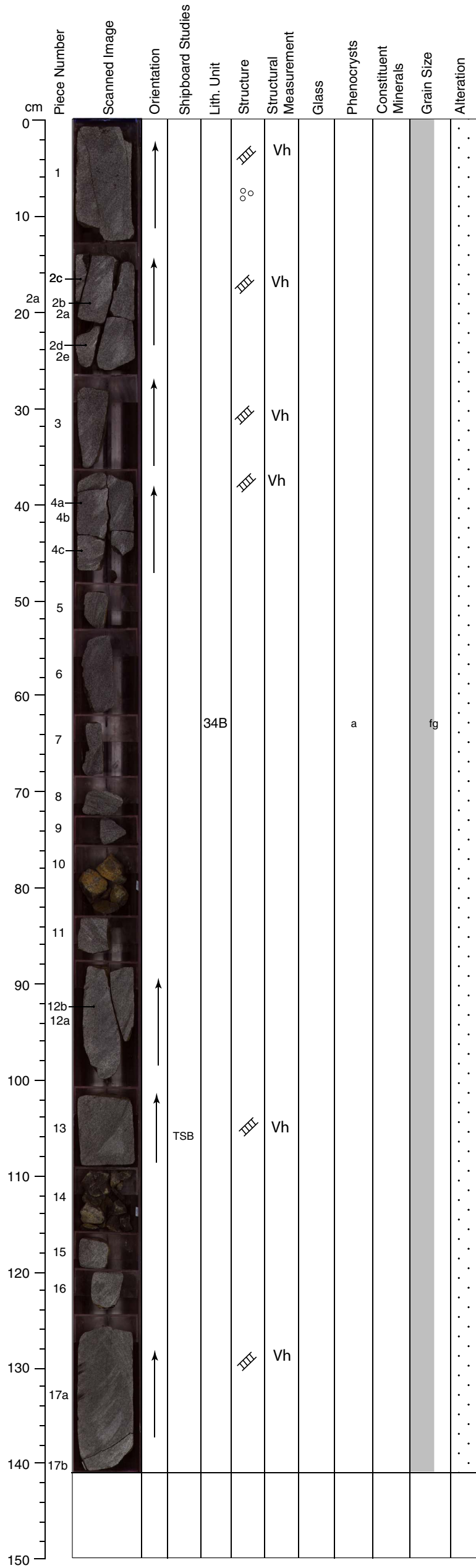
Volcanic Rock
UNIT: 34B
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.
PIECES: 1-24 (igneous description based on Piece 5a)
CONTACTS: None
COLOR: Very dark gray (3/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.1	0.7	0.3	0.5	Euhedral

GROUNDMASS: Fine grained
VESICLES: Generally non-vesicular. Some irregular vesicles filled with saponite and silica mineral in Pieces 18, 23, and 24.
ALTERATION: Dark gray slightly altered basalt
VEINS: Very common 0.1-0.3 mm veins of saponite and minor pyrite and silica
STRUCTURE: Moderate fracturing; evenly distributed.
ADDITIONAL COMMENTS: Irregular sulphide minerals (1-5 mm) are present in Pieces 17 and 23.



Core Photo



309-1256D-102R-2 (Section top : 927.98 mbsf)

Volcanic Rock
UNIT: 34B
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.
PIECES: 1-17 (igneous description based on Piece 6)
CONTACTS: None
COLOR: Very dark gray (3/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.1	1.0	0.5	0.8	Euhedral

GROUNDMASS: Fine grained
VESICLES: Generally non-vesicular. A few vesicles in Piece 1.
ALTERATION: Dark gray slightly altered basalt
VEINS: Very common 0.1-0.3 mm veins of saponite and minor pyrite and chalcocopyrite
STRUCTURE: Moderate fracturing; evenly distributed. En echelon array of veins in Piece 1. Mostly steeply dipping veins in Pieces 1 and 2.
ADDITIONAL COMMENTS: Sulfides on fault planes in Pieces 2 and 4. Olivine phenocrysts are completely replaced by saponite.



Core Photo

309-1256D-102R-3 (Section top : 929.4 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1											
1	2											
10	3											
10	4				34B				a		fg	
20	5											
30	6		↑	TSB ICP		III	Vh					
30	7				35A				a		µx	
40	8											
40	9										fg	
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock

UNIT: 34B

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.

PIECES: 1-5 (igneous description based on Piece 3)

CONTACTS: Upper: none
Lower: not recovered (textural change and change from massive flow to sheet flow)

COLOR: Very dark gray (3/1)

GROUNDMASS: Fine grained

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt

VEINS: Rare 0.1-0.3 mm veins of saponite, pyrite and minor chalcopyrite

STRUCTURE: Slight fracturing.

UNIT: 35A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 6-9 (igneous description based on Piece 6)

CONTACTS: Upper: not recovered
Lower: none

COLOR: Black (2.5/1)

PHENOCRYSTS:	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.5	0.2	0.4	Subhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt

VEINS: Rare 0.1-0.3 mm veins of saponite and pyrite

STRUCTURE: Slight fracturing.

ADDITIONAL COMMENTS: A few subhedral olivine (0.2-0.5 mm) phenocrysts are present. They are completely replaced by saponite. Sulfides on fracture planes on Pieces 6 to 9.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1										µx	
1	2											
10	3										cx	
10	4											
20	5		↑			III	Vh					
20	6		↑			III	Vh					
30	7		↑		35A				a		µx	
30	8					III						
40	9					III						
40	10					III					cx	
40	11					III						
40	12					III						
40	13					III						
40	14					III						
40	15		↑			XX					µx	
90												
100												
110												
120												
130												
140												
150												

309-1256D-103R-1 (Section top : 936.0 mbsf)

Volcanic Rock

UNIT: 35A

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.

PIECES: 1-15 (igneous description based on Piece 7)

CONTACTS: None

COLOR: Very dark gray (3/1)

PHENOCRYSTS:	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.6	0.5	0.2	0.4	Subhedral
Clinopyroxene:	0.3	0.4	0.1	0.3	Subhedral

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with common 0.3-5 mm black alteration halos

VEINS: Very common 0.1-0.5 mm veins of saponite and minor pyrite and silica

STRUCTURE: High fracturing; heterogeneously distributed. Vein set of vertical veins in Piece 7. Vein network in Piece 15.

ADDITIONAL COMMENTS: Plagioclase and Clinopyroxene phenocrysts generally form glomerocrysts. Sulfides on fracture planes (Pieces 5, 6, 13).

Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1							g				
10	2										cx	
20	3							ga				
30	4											
40	5										μx	
50	6											
60	7				35A			g				
70	8							g				
80	9											
90	10											
100	11			TSB							cx	
110	12											
120	13											
130	14										μx	
140	15										fg	

309-1256D-104R-1 (Section top : 940.8 mbsf)

Volcanic Rock

UNIT: 35A

ROCK NAME: Aphyric glassy-cryptocrystalline basalt

SUMMARY DESCRIPTION: Aphyric glassy-cryptocrystalline basalt sheet flow.

PIECES: 1-15 (igneous description based on Piece 8)

CONTACTS: None

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.5	0.8	0.2	0.5	Euhedral
Olivine:	0.1	0.5	0.2	0.3	Euhedral-subhedral

GROUNDMASS: Glassy-cryptocrystalline

VESICLES: Pieces 1-6, and 8-9 are non-vesicular. Pieces 7, 12-16 are sparsely vesicular. Piece 11 is moderately vesicular. Piece 10 is highly vesicular. Most vesicles (0.5-2.0 mm) are spherical, but there are some large (5-10 mm) vesicles in Piece 10 and 11 that are irregular.

ALTERATION: Dark gray slightly altered basalt with several 0.3 mm black alteration halos.

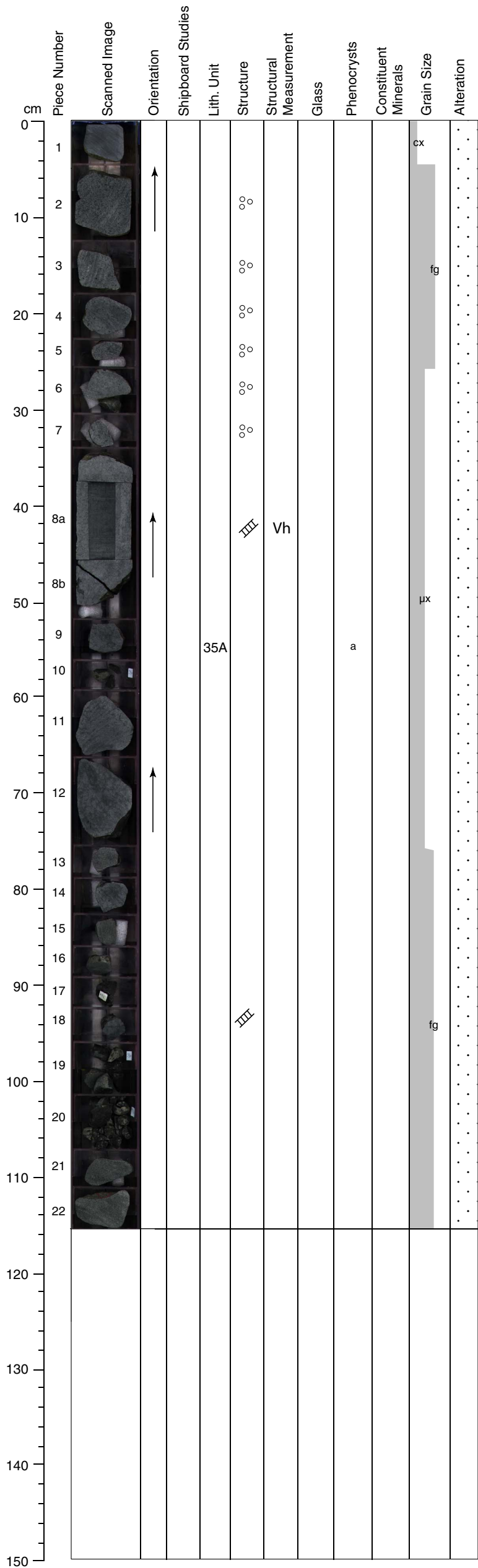
VEINS: Very common 0.1-0.3 mm veins of saponite and minor pyrite and chalcocopyrite.

STRUCTURE: Moderate to high fracturing; heterogeneously distributed. Vein network in Pieces 1, 3, and 5. Magmatic layering in Pieces 7, 8, and 9.

ADDITIONAL COMMENTS: Chilled margin with glass in Pieces 1, 3, 7 and 8. The glass is altered in Piece 3. Below the chilled margin texture changes from glassy-spherulitic to variolitic. In Piece 8, the chilled margin is slightly curved (pillow?). Olivine phenocrysts are replaced by saponite.



Core Photo



309-1256D-105R-1 (Section top : 945.6 mbsf)

Volcanic Rock
UNIT: 35A
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.
PIECES: 1-22 (igneous description based on Piece 22)
CONTACTS: None
COLOR: Black (2.5/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.1	0.1	0.1	Euhedral
Clinopyroxene:	0.1	0.1	0.1	0.1	Subhedral

GROUNDMASS: Fine grained
VESICLES: Generally non-vesicular. Pieces 2-7 are sparsely vesicular with irregular shape.
ALTERATION: Dark gray slightly altered basalt
VEINS: Several 0.1 mm veins of saponite and, in Pieces 1-7, pyrite and chalcocopyrite
STRUCTURE: Slight fracturing.
ADDITIONAL COMMENTS: Piece 22 has two large (3 mm) sulfide minerals.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
309-1256D-106R-1 (Section top : 950.4 mbsf)												
0												Volcanic Rock
0	1a		↑			Vh						UNIT: 35A
0	1b					Vh						ROCK NAME: Aphyric microcrystalline basalt
0	1c					Vh						SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
10	2											PIECES: 1-15 (igneous description based on Piece 1a)
10	2											CONTACTS: Upper: none Lower: not recovered
20	3										µx	COLOR: Black (2.5/1)
20	3											GROUNDMASS: Microcrystalline
30	4											VESICLES: Non-vesicular.
30	4											ALTERATION: Dark gray slightly altered basalt with several 0.1-0.4 mm black alteration halos.
30	5				35A				a			VEINS: Common 0.1-0.3 mm veins of saponite and minor pyrite. Pyrite veins in Piece 5.
30	5											STRUCTURE: Slight fracturing.
40	6											UNIT: 35B
40	6											ROCK NAME: Sparsely olivine-clinopyroxene-plagioclase-phyric cryptocrystalline basalt
40	7											SUMMARY DESCRIPTION: Sparsely phyric cryptocrystalline basalt sheet flow.
40	8a											PIECES: 16-23 (igneous description based on Piece 18)
40	8b											CONTACTS: Upper: not recovered Lower: not recovered
50	9											COLOR: Black (2.5/1)
50	10											PHENOCRYSTS:
50	11											Grain Size (mm):
50	11											Shape/Habit
50	12											Plagioclase: 1.5 1 0.2 0.6 Euhedral-anhedral, altered
50	13											Olivine: 0.1 0.8 0.6 0.7 Euhedral, completely replaced by saponite
50	14											Clinopyroxene: 0.5 0.7 0.15 0.2 Euhedral
50	15											GROUNDMASS: Cryptocrystalline
60	16											VESICLES: Non-vesicular. Rare vesicles filled with saponite.
60	17											ALTERATION: Dark gray slightly altered basalt.
60	18		↑	TSB ICP		Vh						VEINS: Common 0.1-0.3 mm veins of saponite and minor pyrite.
60	18											STRUCTURE: Slight fracturing. Shear vein in Piece 22.
60	19				35B				s p			ADDITIONAL COMMENTS: Plagioclase and clinopyroxene phenocrysts can form glomerocrysts.
60	20											UNIT: 35C
60	21											ROCK NAME: Aphyric microcrystalline basalt
60	22		↑	XRD		L Sv						SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
60	23											PIECES: 24-25 (igneous description based on Piece 25a)
60	24		↑	TSB		Vh Vh						CONTACTS: Upper: not recovered Lower: none
60	25a		↑	PP PMAG	35C	Vh						COLOR: Very dark gray (3/1)
60	25b											PHENOCRYSTS:
60	25b											Grain Size (mm):
60	25b											Shape/Habit
60	25b											Plagioclase: 0.5 0.6 0.3 0.5 Euhedral-subhedral
60	25b											Olivine: 0.1 0.5 0.3 0.4 Euhedral-subhedral, completely replaced by saponite
60	25b											Clinopyroxene: 0.1 0.2 0.1 0.3 Subhedral
70	24											GROUNDMASS: Microcrystalline
70	25a											VESICLES: Non-vesicular.
70	25b											ALTERATION: Dark gray slightly altered basalt.
70	25b											VEINS: Several 0.2-0.6 mm veins of saponite and pyrite.
70	25b											STRUCTURE: Slight fracturing.
130												ADDITIONAL COMMENTS: Plagioclase and clinopyroxene phenocrysts can form glomerocrysts. Piece 24 contains less phenocrysts. Some sulfides are present in the fracture planes of Piece 24.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1										µx	
2	2										cx	
10	3		↑				Vh				µx	
20	4						Vh				cx	
30	5										µx	
35	6											
40	7				35C				a		cx	
50	9		↑				Vh				µx	
60	11					⊗						
65	12					?					cx	
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-107R-1 (Section top : 955.2 mbsf)

Volcanic Rock

UNIT: 35C

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Aphyric cryptocrystalline basalt sheet flow.

PIECES: 1-12 (igneous description based on Piece 12)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm)			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.5	0.8	0.4	0.5	Euhedral-subhedral
Olivine:	0.1	0.6	0.3	0.5	Euhedral, completely replaced by saponite

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with common black alteration halos in Pieces 9-12

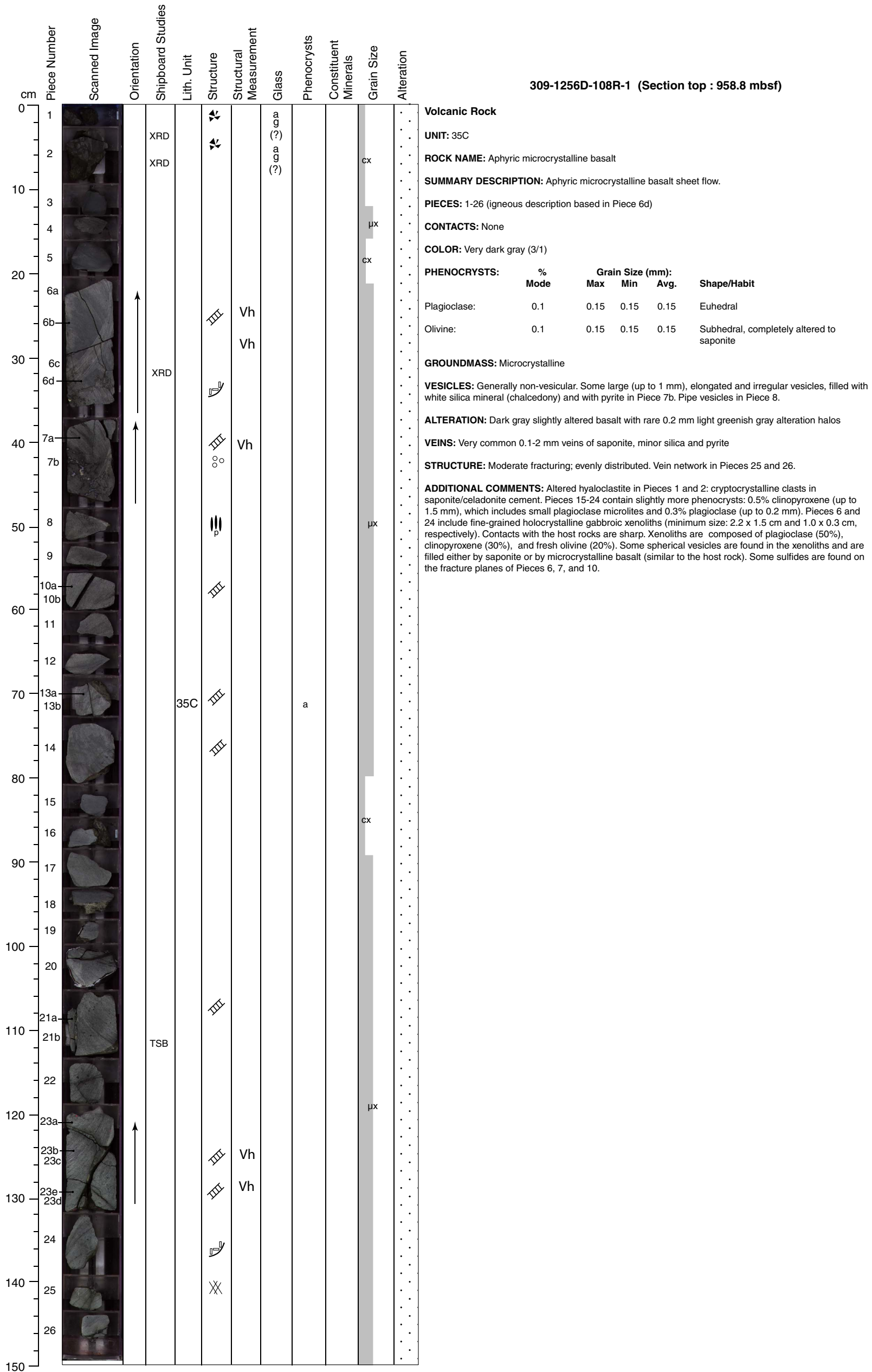
VEINS: Common 0.1-0.3 mm veins of saponite and pyrite

STRUCTURE: Slight to moderate fracturing; evenly distributed. Vein network in Piece 10.

ADDITIONAL COMMENTS: Pieces 9 has a large (4.1 x 2.3 mm) holocrystalline fine-grained xenolith. The xenolith consists of plagioclase, clinopyroxene, and altered olivine. Piece 12 has decomposed plagioclases and small (0.5 to 1.5 mm) rounded patches of fine-grained groundmass which are perhaps xenocrysts and xenoliths. Sulfide minerals are present along fracture planes in Pieces 3, 4, 7, 9, 10, and 15.



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1											
2	2					☼						
10	3			XRD		☼						
20	4		↑			☼					cx	
30	5					☼						
30	6			TSB		☼						
30	7				35C	▨		a				
40	8					▨						
40	9a		↑			▨					μx	
50	9b					▨						
50	10		↑			▨						
60	11			TSB XRD		☼						
70	12					▨						
70	13a					▨						
70	13b					▨						
80	14a					▨						
80	14b					▨						
90	15a		↑		36A	▨		a			μx	
100	15b					▨						
100	16		↑	PP PMAG TSB ICP		▨						
110	17					▨						
120	18a		↑			☉						
120	18b					▨						

309-1256D-108R-2 (Section top : 960.3 mbsf)

Volcanic Rock

UNIT: 35C

ROCK NAME: Aphyric cryptocrystalline-microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric cryptocrystalline-microcrystalline basalt sheet flow.

PIECES: 1-10 (igneous description based on Piece 1)

CONTACTS: Upper: none
Lower: appearance of breccia and textural change below

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.5	0.2	0.3	Euhedral-subhedral
Olivine:	0.1	0.4	0.2	0.3	Euhedral-subhedral

GROUNDMASS: Cryptocrystalline-microcrystalline

VESICLES: Non-vesicular.

ALTERATION: Dark gray slightly altered basalt with one 1-mm wide light greenish gray alteration halo in Piece 10.

VEINS: Very common 0.1-1.5 mm veins of saponite, pyrite, and minor silica.

STRUCTURE: High fracturing; evenly distributed.

ADDITIONAL COMMENTS: Pieces 2-6 are breccia containing polygonal microcrystalline basalt clasts and altered glass. Cemented by saponite. Some patches of cryptocrystalline areas (0.5-4 mm) distributed throughout the the microcrystalline groundmass. Sulfides are present along veins of Pieces 2-6 and 10. Piece 9 shows sharp change of grain size: microcrystalline to cryptocrystalline (chilled margin at the end of unit 35?).

UNIT: 36A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 11-18 (igneous description based on Piece 16)

CONTACTS: Upper: appearance of hyaloclastites
Lower: none

COLOR: Very dark gray (3/1)

GROUNDMASS: Microcrystalline

VESICLES: Generally non-vesicular. Sparsely irregular vesicles in Piece 18, filled with saponite.

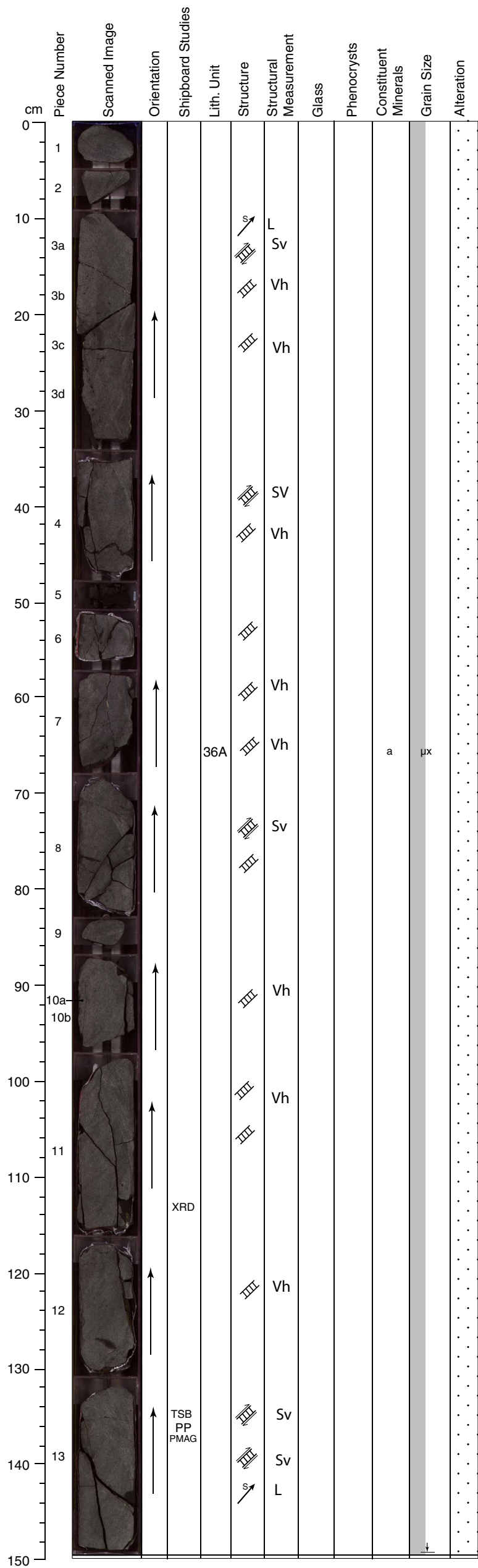
ALTERATION: Dark gray slightly altered basalt.

VEINS: Very common 0.1-1.5 mm veins of saponite, pyrite, and minor silica.

STRUCTURE: High fracturing; heterogeneously distributed.



Core Photo



309-1256D-109R-1 (Section top : 964.8 mbsf)

Volcanic Rock

UNIT: 36A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-13 (igneous description based on Piece 1)

CONTACTS: None

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm)			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	1.0	0.4	0.5	Euhedral-subhedral
Olivine:	0.1	0.9	0.4	0.5	Subhedral, altered

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular. Where present vesicles are filled with saponite and pyrite.

ALTERATION: Dark gray slightly altered basalt with several 0.1-0.5 mm pyrite-rich alteration halos.

VEINS: Very common 0.1-0.5 mm veins of saponite and pyrite.

STRUCTURE: High fracturing; evenly distributed. Shear veins in Pieces 3, 4, 8 and 13.

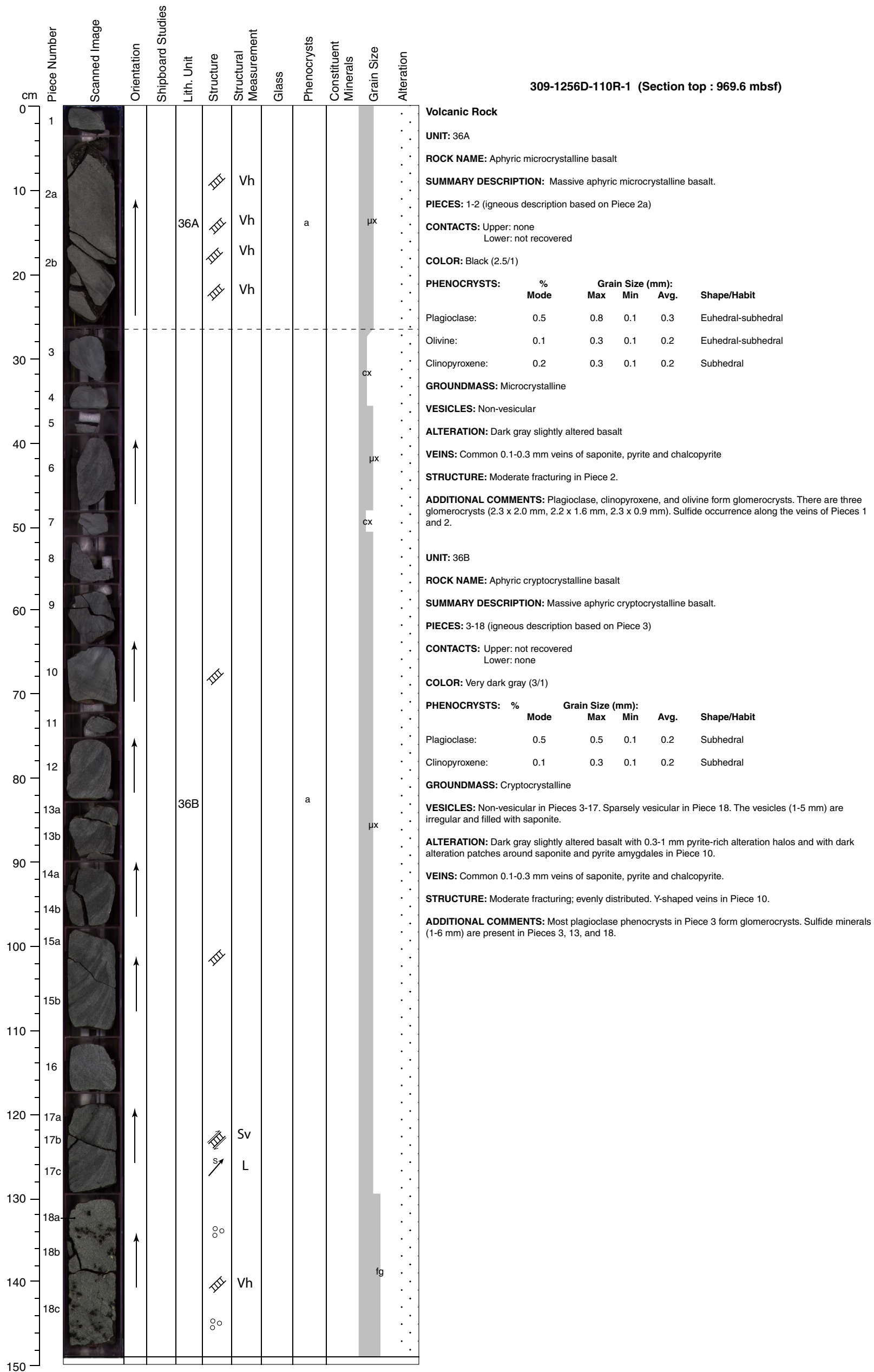
ADDITIONAL COMMENTS: Sulfide minerals and alteration minerals (celadonite, saponite) mostly concentrated along fracture planes. Olivine phenocrysts are completely altered to clay minerals (saponite). Glomeroporphyritic clusters of plagioclase and clinopyroxene (microphenocrysts) are seen throughout the section.



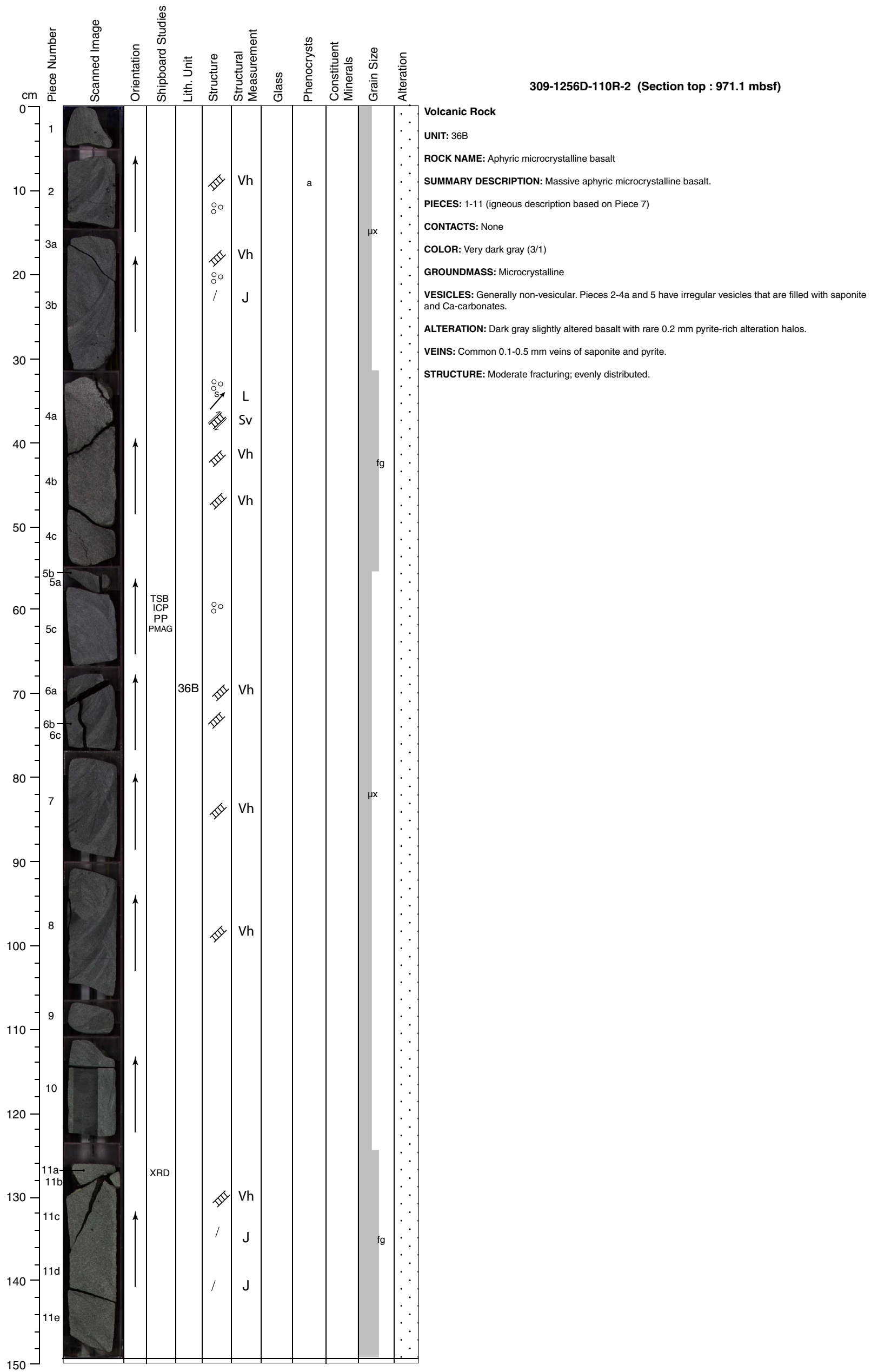
Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration	
0													Volcanic Rock
1	1												UNIT: 36A
2	2												ROCK NAME: Aphyric microcrystalline basalt
10	3												SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
15	4		↑			Vh							PIECES: 1-10 (igneous description based on Piece 10a)
20	5												CONTACTS: None
25	6												COLOR: Black (2.5/1)
30	7a				36A				a		µx		GROUNDMASS: Microcrystalline
35	7b												VESICLES: Non-vesicular
40	8b												ALTERATION: Dark gray slightly altered basalt
45	8a												VEINS: Common 0.1-0.4 mm veins of saponite, pyrite and chalcopyrite
50	9												STRUCTURE: Moderate fracturing; evenly distributed.
55	10a		↑										ADDITIONAL COMMENTS: Sulfides are present along the veins of Pieces 4 and 10a.
60	10b												
70													
80													
90													
100													
110													
120													
130													
140													
150													

Core Photo



Core Photo



Core Photo

Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0											
1		↑			III	Vh					
10					III	Vh					
20	2a 2b	↑		36B	III	Sv		a		μx	
30	3										
40	4										
50	5				III						
60											
70											
80											
90											
100											
110											
120											
130											
140											
150											

309-1256D-110R-3 (Section top : 972.6 mbsf)

Volcanic Rock

UNIT: 36B

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-5 (igneous description based on Piece 1)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm)			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.1	1.0	1.0	1.0	Subhedral

PHENOCRYSTS: Microcrystalline

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt

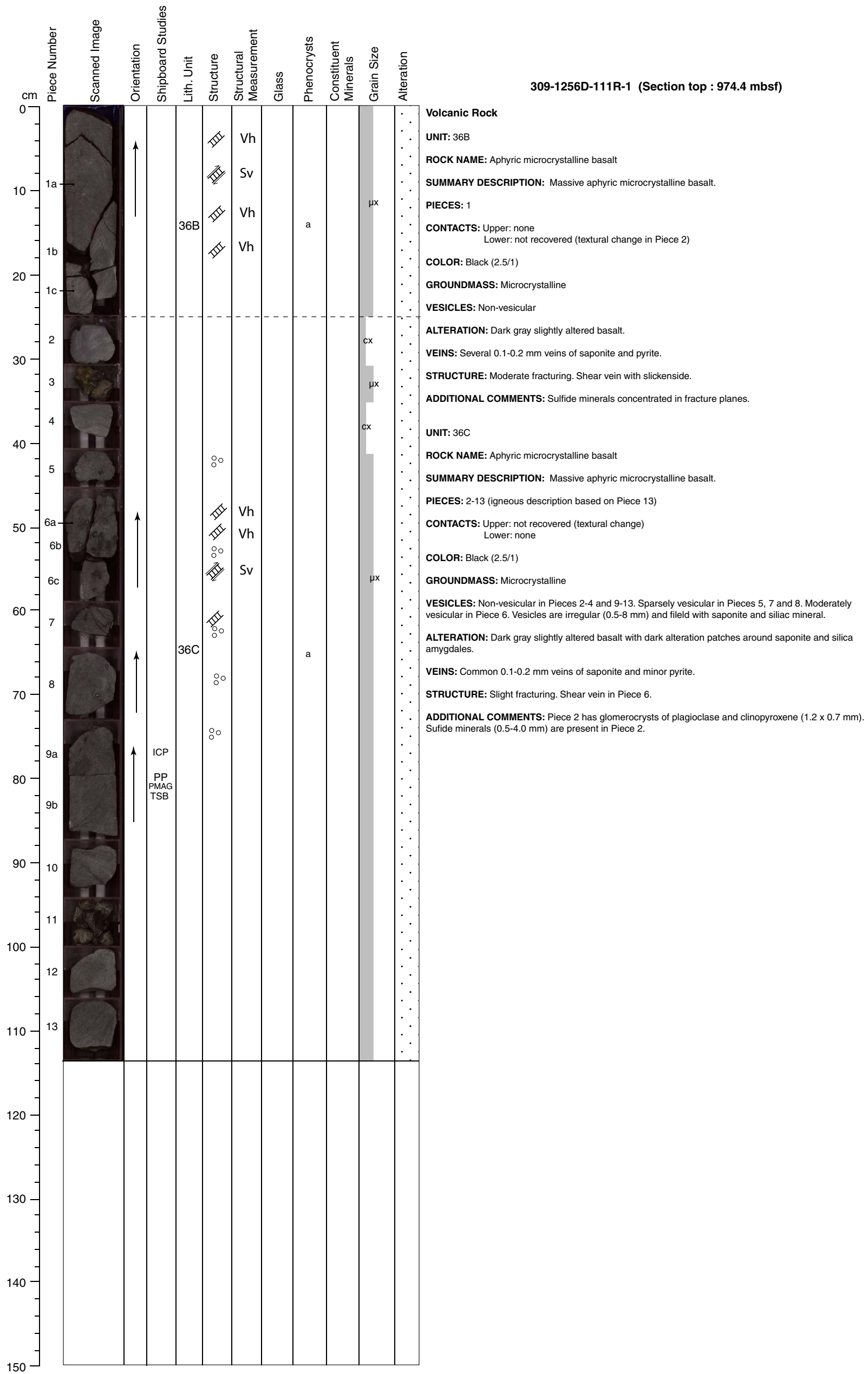
VEINS: Several 0.1-0.3 mm veins of saponite and minor pyrite

STRUCTURE: Slight fracturing.

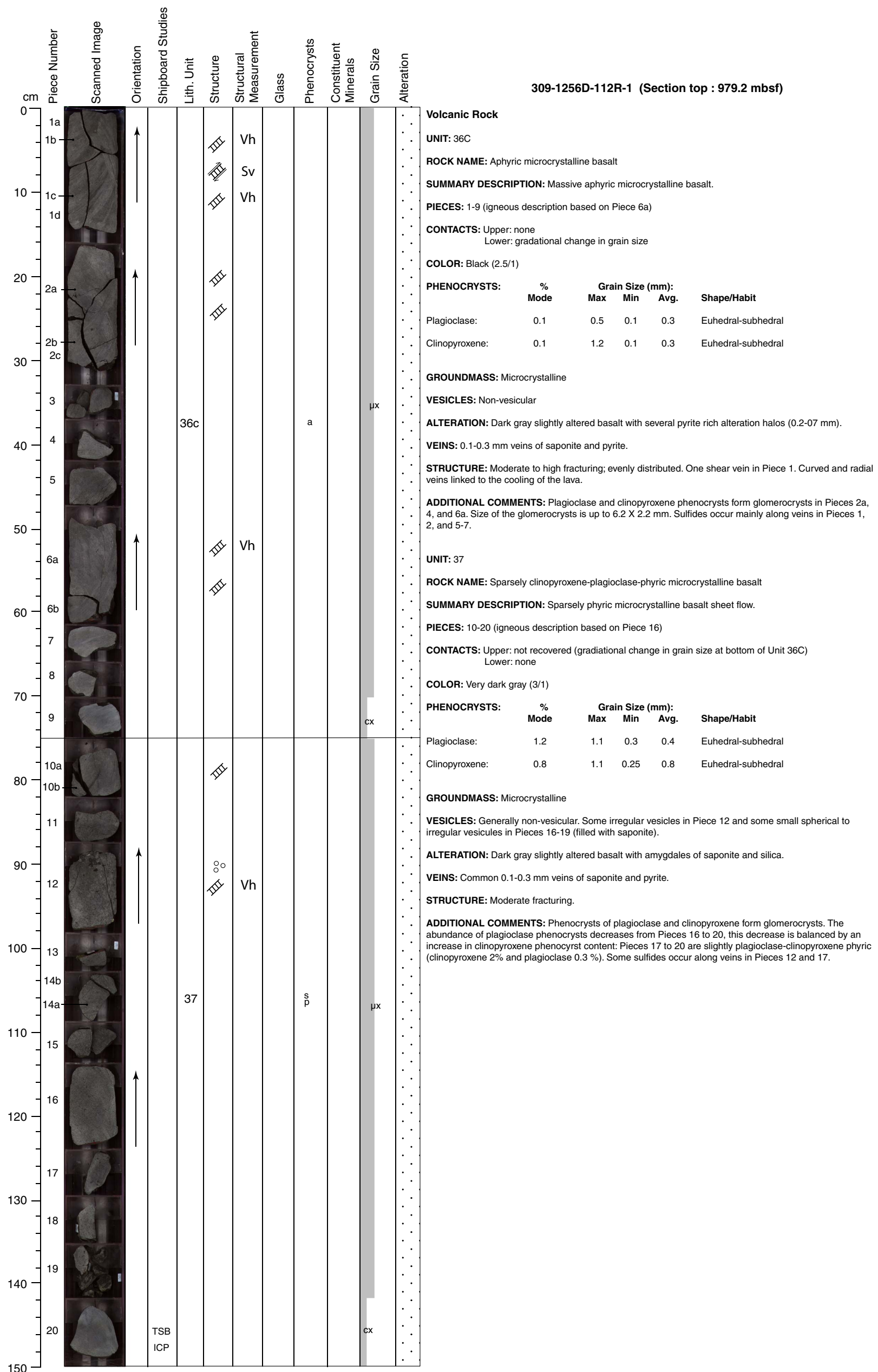
ADDITIONAL COMMENTS: Sulfide minerals concentrated along fracture planes.



Core Photo



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
309-1256D-113R-1 (Section top : 984.0 mbsf)												
0	1		↑			III						
10	2		↑			III	IC	ga				
20	3		↑			III		ga				
20	4		↑			III		ga			cx	
20	5		↑	TSB	37	III		ga	a			
30	6		↑			III		ga				
30	7		↑			III		ga				
30	8		↑			III		ga				
30	9		↑			III		ga				
40	10a		↑			III	Vh J					
50	10b		↑			III	Vh					
60	10c		↑			III						
70	11		↑			III						
70	12		↑			III						
70	13		↑			III						
70	14		↑			III						
80	15		↑	PP PMAG TSB		III	Vh				μx	
90	16		↑		38	III			a			
100	17		↑			III						
100	18		↑			III						
110	19a,c		↑			III						
110	19b		↑			III						
120	20		↑			III	Vh					
130	21		↑			III						
130	22		↑			III					fg	
140	23		↑			III						
140	24		↑			III						
150												



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1											
2	2											
3	3											
4	4											
5	5				38				a		fg	
6	6		↑									
30												
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-113R-2 (Section top : 985.45 mbsf)

Volcanic Rock

UNIT: 38

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.

PIECES: 1-6 (igneous description based on Piece 6)

CONTACTS: None

COLOR: Black (2.5/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.3	0.3	0.3	Euhedral
Clinopyroxene:	0.1	0.8	0.2	0.5	Subhedral

GROUNDMASS: Fine grained

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1		↑									
10	2a		↑				Vh				μx	
10	2b		↑				Vh					
20	3a		↑				Vh					
20	3b		↑				Vh					
30	3c		↑			/	J					
30	3c		↑				Sv					
30	3c		↑			↘	L					
40	3d		↑				Vh					
50	3f		↑				Vh					
50	3e		↑				Sv				fg	
50	3e		↑			↘	L					
60	3h		↑		38		Vh		a			
60	3g		↑				Vh					
70	4		↑									
70	5a		↑				Vh					
80	5b		↑				Vh					
80	6		↑	TSB ICP PP PMAG			Vh					
90	7		↑									
100	8		↑								μx	
100	9		↑									
100	10		↑									
110	11		↑									
120	12		↑	XRD		⬇		a				
120	13		↑			⬇		g			cx	
130	14		↑		39A	⬇		ga				
130	15		↑			⬇					μx	
140			↑									
150			↑									

309-1256D-114R-1 (Section top : 988.8 mbsf)

Volcanic Rock

UNIT: 38

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Aphyric fine-grained basalt sheet flow.

PIECES: 1-11 (igneous description based on Piece 3c)

CONTACTS: Upper: none
Lower: not recovered (volcanoclastite on top of Unit 39)

COLOR: Black (2.5/1)

GROUNDMASS: Fine grained

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with several (0.2 mm) discontinuous pyrite rich halos.

VEINS: Very common 0.1-0.4 mm veins of saponite, pyrite and minor chalcedony.

STRUCTURE: Highly fracturing; evenly distributed. Mostly steeply dipping veins.

ADDITIONAL COMMENTS: Sulfides halos on Pieces 3a and b.

UNIT: 39A

ROCK NAME: Sparsely clinopyroxene-olivine phyric microcrystalline moderately-vesicular basalt

SUMMARY DESCRIPTION: Massive sparsely phyric microcrystalline moderately-vesicular basalt.

PIECES: 12-15 (igneous description based on Piece 15)

CONTACTS: Upper: volcanoclastite : angular cryptocrystalline clasts cemented by altered glass (a few clasts of glass) in Pieces 12 and 14
Lower: none

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine	3	1.2	0.5	0.8	Euhedral-subhedral
Clinopyroxene:	0.1	0.5	0.15	0.2	Subhedral

GROUNDMASS: Microcrystalline

VESICLES: Moderately-vesicular (6%). Spherical and filled with saponite.

ALTERATION: Dark gray slightly altered basalt. Vesicles filled with saponite, pyrite, and calcium carbonates. Fresh glass in several pieces.

VEINS: Very common 0.1-0.4 mm veins of saponite, pyrite and minor chalcedony. One 6.0 mm vein and two 0.4 mm veins of zeolite (or anhydrite?) in Piece 12.

STRUCTURE: Slight fracturing.

ADDITIONAL COMMENTS: Some glomerocrysts in Piece 13 (0.5%, clinopyroxene and plagioclase). Olivine phenocrysts are completely replaced by saponite.

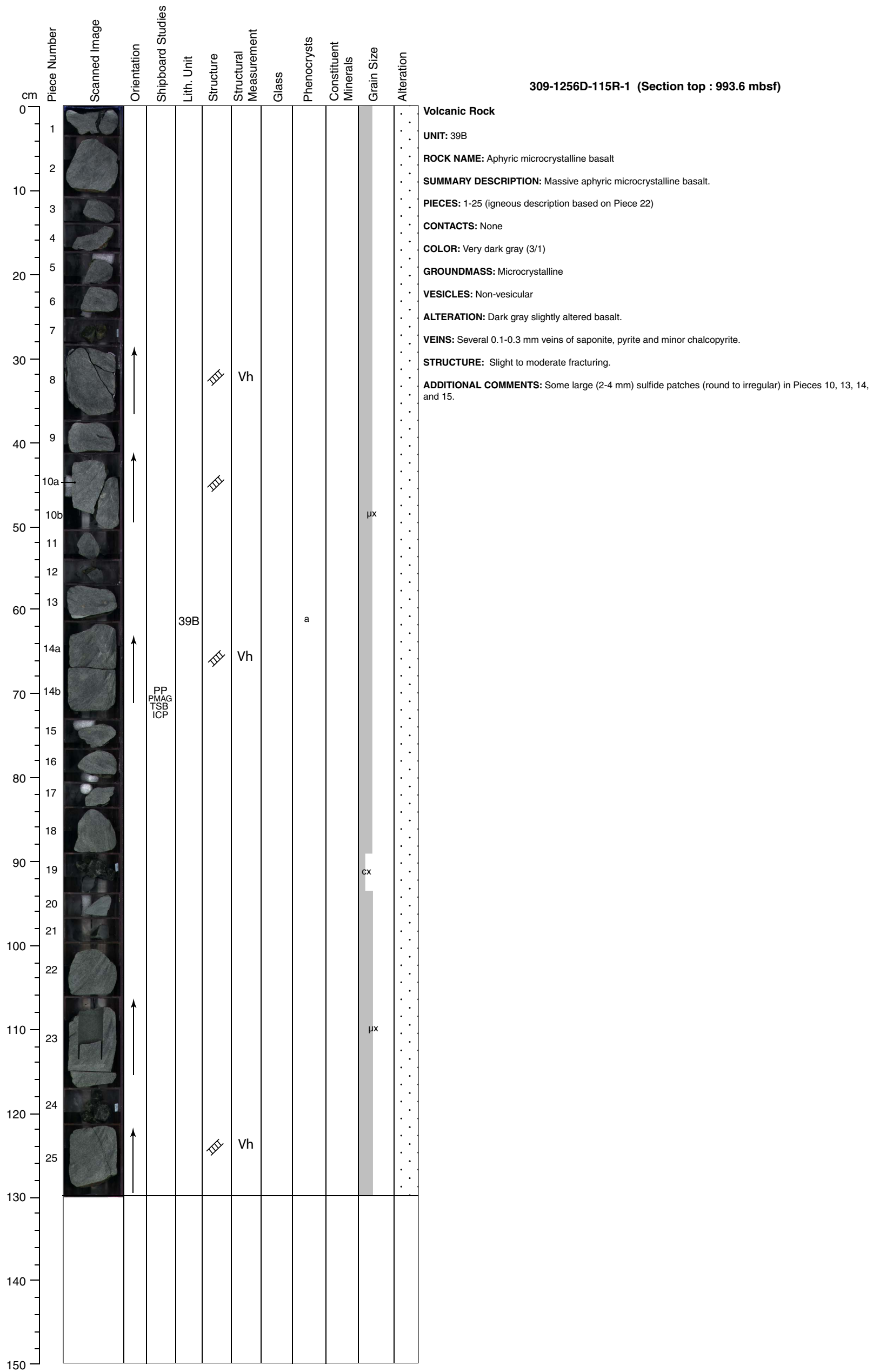


Core Photo

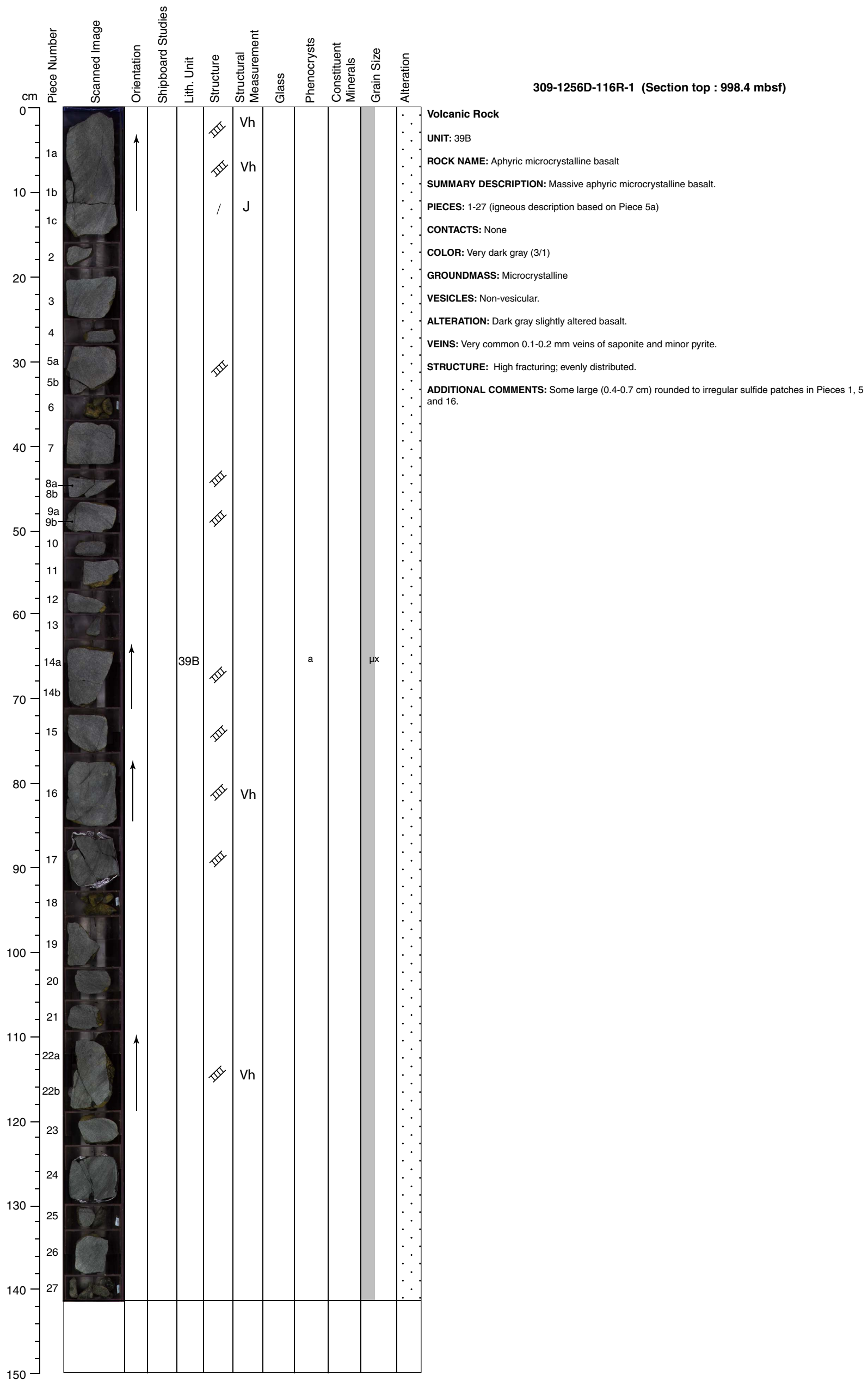
cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration																		
309-1256D-114R-2 (Section top : 990.24 mbsf)																														
0												Volcanic Rock																		
1	1					Vh						UNIT: 39A																		
2	2											ROCK NAME: Sparsely olivine-phyric moderately-vesicular microcrystalline basalt																		
3	3a											SUMMARY DESCRIPTION: Massive sparsely phyric moderately vesicular microcrystalline basalt.																		
4	3b											PIECES: 1-9 (igneous description based on Piece 8)																		
5	4			TSB								CONTACTS: Upper: none Lower: decrease of the grain size and of vesicularity in Unit 39B																		
6	5											COLOR: Black (2.5/1)																		
7	6				39A							PHENOCRYSTS:																		
8	7					Vh						<table border="1"> <thead> <tr> <th></th> <th>% Mode</th> <th colspan="3">Grain size (mm)</th> <th>Shape/Habit</th> </tr> <tr> <th></th> <th></th> <th>Max</th> <th>Min</th> <th>Avg.</th> <th></th> </tr> </thead> <tbody> <tr> <td>Olivine:</td> <td>3.0</td> <td>1.2</td> <td>0.5</td> <td>1.0</td> <td>Euhedral-subhedral</td> </tr> </tbody> </table>		% Mode	Grain size (mm)			Shape/Habit			Max	Min	Avg.		Olivine:	3.0	1.2	0.5	1.0	Euhedral-subhedral
	% Mode	Grain size (mm)			Shape/Habit																									
		Max	Min	Avg.																										
Olivine:	3.0	1.2	0.5	1.0	Euhedral-subhedral																									
9	8			PP PMAG TSB ICP								GROUNDMASS: Microcrystalline																		
10	9											VESICLES: Pieces 1-8 are moderately vesicular (8%, spherical and filled with saponite). Piece 9 is non-vesicular.																		
11	10											ALTERATION: Dark gray slightly altered basalt with several (0.5 mm) pyrite rich alteration halos																		
12	11											VEINS: Common 0.1-0.3 mm veins of saponite, pyrite and minor chalcedony.																		
13	12											STRUCTURE: Slight to moderate fracturing; evenly distributed.																		
14	13											ADDITIONAL COMMENTS: Sulfides along fracture planes or in some vesicles.																		
15												UNIT: 39B																		
16												ROCK NAME: Aphyric cryptocrystalline basalt																		
17												SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.																		
18												PIECES: 10-13 (igneous description based on Piece 10)																		
19												CONTACTS: Upper: decrease of the grain size and of vesicularity in Unit 39B Lower: none																		
20												COLOR: Black (2.5/1)																		
21												PHENOCRYSTS:																		
22												<table border="1"> <thead> <tr> <th></th> <th>% Mode</th> <th colspan="3">Grain Size (mm):</th> <th>Shape/Habit</th> </tr> <tr> <th></th> <th></th> <th>Max</th> <th>Min</th> <th>Avg.</th> <th></th> </tr> </thead> <tbody> <tr> <td>Clinopyroxene:</td> <td>0.2</td> <td>0.8</td> <td>0.1</td> <td>0.2</td> <td>Subhedral to anhedral</td> </tr> </tbody> </table>		% Mode	Grain Size (mm):			Shape/Habit			Max	Min	Avg.		Clinopyroxene:	0.2	0.8	0.1	0.2	Subhedral to anhedral
	% Mode	Grain Size (mm):			Shape/Habit																									
		Max	Min	Avg.																										
Clinopyroxene:	0.2	0.8	0.1	0.2	Subhedral to anhedral																									
23												GROUNDMASS: Cryptocrystalline																		
24												VESICLES: Non-vesicular																		
25												ALTERATION: Dark gray slightly altered basalt.																		
26												VEINS: Common 0.1-0.3 mm veins of saponite and pyrite. 2 mm veins of zeolite (or anhydrite?) and pyrite in Piece 10.																		
27												STRUCTURE: Slight to moderate fracturing; evenly distributed.																		
28												ADDITIONAL COMMENTS: Sulfides along fracture planes or in some vesicles.																		



Core Photo





Core Photo



Core Photo

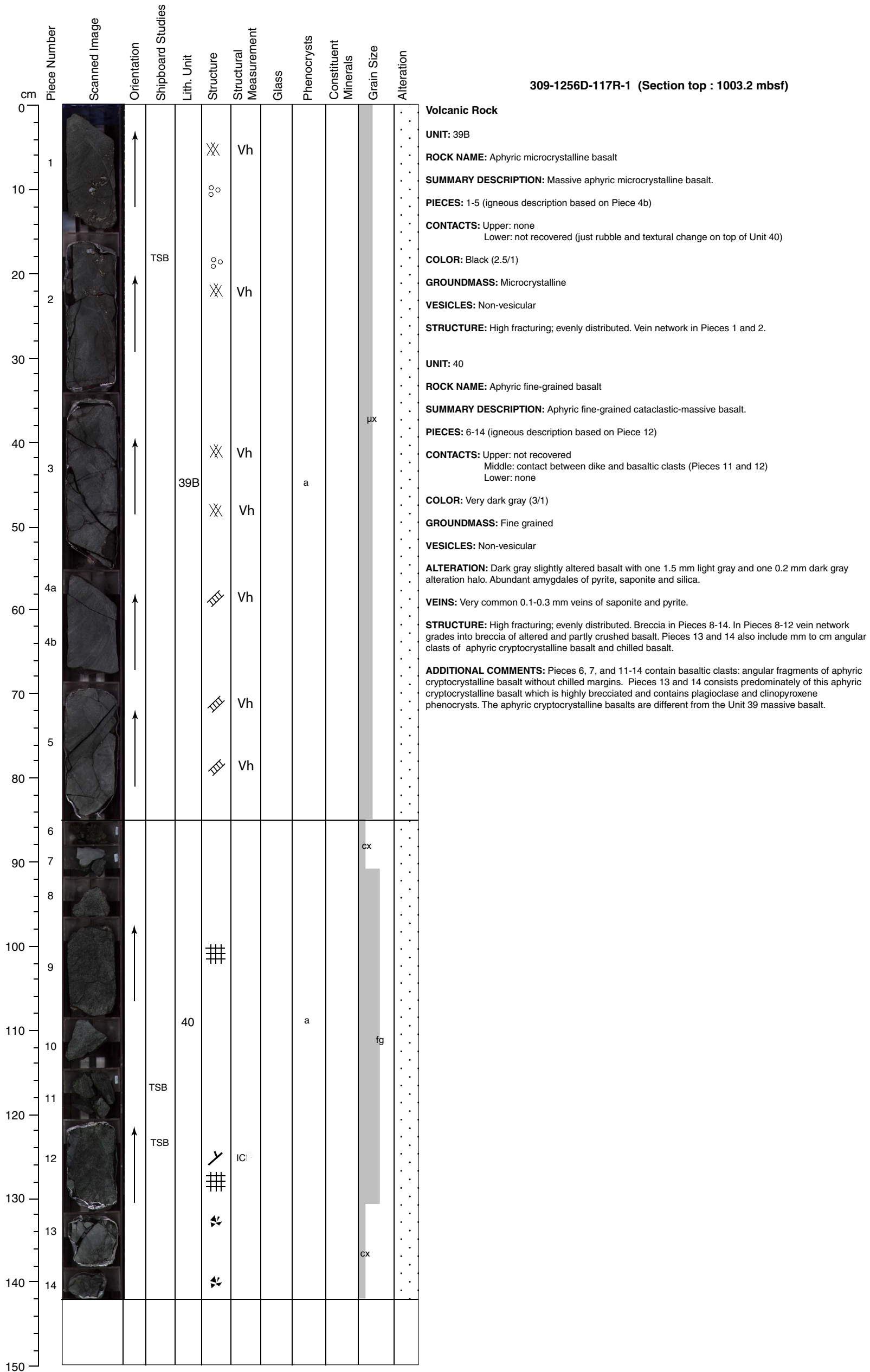
309-1256D-116R-2 (Section top : 999.82 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1		↑		39B	Vh	Vh		a		μx	
10	2											
20												
30												
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock
UNIT: 39B
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-2 (igneous description based on Piece 1)
CONTACTS: None
COLOR: Black (2.5/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular.
ALTERATION: Dark gray slightly altered basalt.
VEINS: Several 0.1 mm veins of saponite and minor pyrite and calcium carbonate.
STRUCTURE: Veins in Piece 1.



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1		↑								cx	
10	2											
20	4											
25	5		↑	TSB								
30	6										fg	
40	7		↑		40				a			
50	8											
60	9											
70	10											
80	11											
85	12										cx	
90												
100												
110												
120												
130												
140												
150												

309-1256D-117R-2 (Section top : 1004.62 mbsf)

Volcanic Rock

UNIT: 40

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Aphyric fine-grained cataclastic-massive basalt.

PIECES: 1-12 (igneous description based on Piece 9)

CONTACTS: None

COLOR: Black (2.5/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.1	0.1	0.1	Euhedral
Olivine:	0.1	1.2	0.5	0.8	Euhedral-subhedral

PHENOCRYSTS:

GROUNDMASS: Fine grained

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with one 0.2 mm pyrite rich alteration halo. Abundant amygdales of pyrite, saponite and silica.

VEINS: Common 0.1-0.4 mm veins of saponite and minor pyrite.

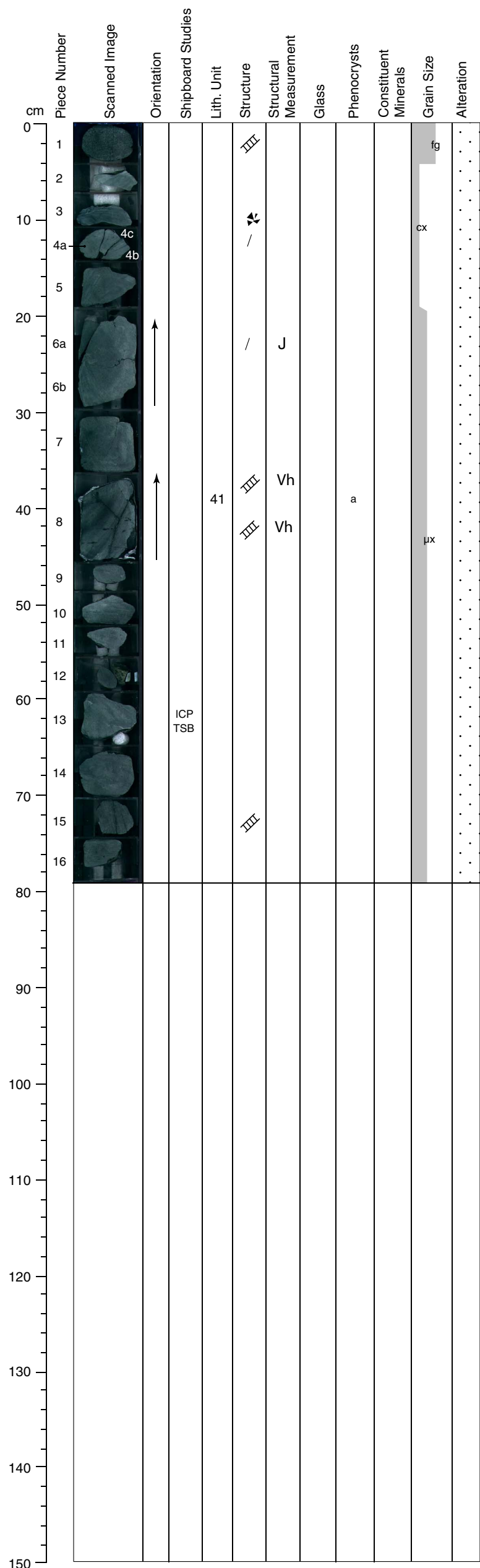
STRUCTURE: Moderate to high fracturing; heterogeneously distributed.

ADDITIONAL COMMENTS: Olivine phenocrysts completely altered to saponite. Presence of glomerocrysts of plagioclase microphenocrysts. Piece 1 has cryptocrystalline texture and plagioclase phenocrysts (0.1%). Pieces 11 and 12 have microcrystalline texture with some clinopyroxene and plagioclase phenocrysts (0.1%). Pieces 1, 11, and 12 are basaltic clasts from a lava flow.

Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration																									
0	1		↑										Volcanic Rock																								
2	2		↑										UNIT: 40																								
10	3		↑	TSB			Sv						ROCK NAME: Aphyric fine-grained basalt																								
20	4		↑		40		Vh				fg		SUMMARY DESCRIPTION: Aphyric fine-grained basalt.																								
30	4		↑						a				PIECES: 1-7 (igneous description based on Piece 5b)																								
40	5a		↑	PP PMAG TSB ICP			Vh						CONTACTS: Upper: none Lower: not recovered																								
50	5b		↑										COLOR: Black (2.5/1)																								
60	6		↑										PHENOCRYSTS:																								
70	7		↑										<table border="1"> <thead> <tr> <th></th> <th>% Mode</th> <th colspan="3">Grain Size (mm):</th> <th>Shape/Habit</th> </tr> <tr> <th></th> <th></th> <th>Max</th> <th>Min</th> <th>Avg.</th> <th></th> </tr> </thead> <tbody> <tr> <td>Plagioclase:</td> <td>0.4</td> <td>0.4</td> <td>0.2</td> <td>0.4</td> <td>Euhedral</td> </tr> <tr> <td>Clinopyroxene:</td> <td>0.5</td> <td>1</td> <td>0.3</td> <td>0.6</td> <td>Subhedral</td> </tr> </tbody> </table>		% Mode	Grain Size (mm):			Shape/Habit			Max	Min	Avg.		Plagioclase:	0.4	0.4	0.2	0.4	Euhedral	Clinopyroxene:	0.5	1	0.3	0.6	Subhedral
	% Mode	Grain Size (mm):			Shape/Habit																																
		Max	Min	Avg.																																	
Plagioclase:	0.4	0.4	0.2	0.4	Euhedral																																
Clinopyroxene:	0.5	1	0.3	0.6	Subhedral																																
80	8		↑				Vh						GROUNDMASS: Fine grained																								
90	9		↑				Vh						VESICLES: Non-vesicular																								
100	10		↑				Vh						ALTERATION: Dark gray slightly altered basalt.																								
110													VEINS: Several 0.1 mm veins of saponite, pyrite and minor chalcopyrite and silica. One 2 mm vein of saponite and pyrite in Piece 3.																								
120													ADDITIONAL COMMENTS: Groundmass clinopyroxene clusters form up to 5mm wide irregularly distributed dark patches. Occurrence of sulfides on fracture planes.																								
130													UNIT: 41																								
140													ROCK NAME: Aphyric microcrystalline basalt																								
150													SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.																								

Core Photo



309-1256D-119R-1 (Section top : 1012.80 mbsf)

Volcanic Rock

UNIT: 41

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-16 (Igneous description based on Piece 13)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm)			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.1	0.05	0.05	Subhedral
Clinopyroxene:	0.1	0.1	0.05	0.05	Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular. A few irregular vesicles near edge of Piece 13.

ALTERATION: Dark gray slightly altered basalt.

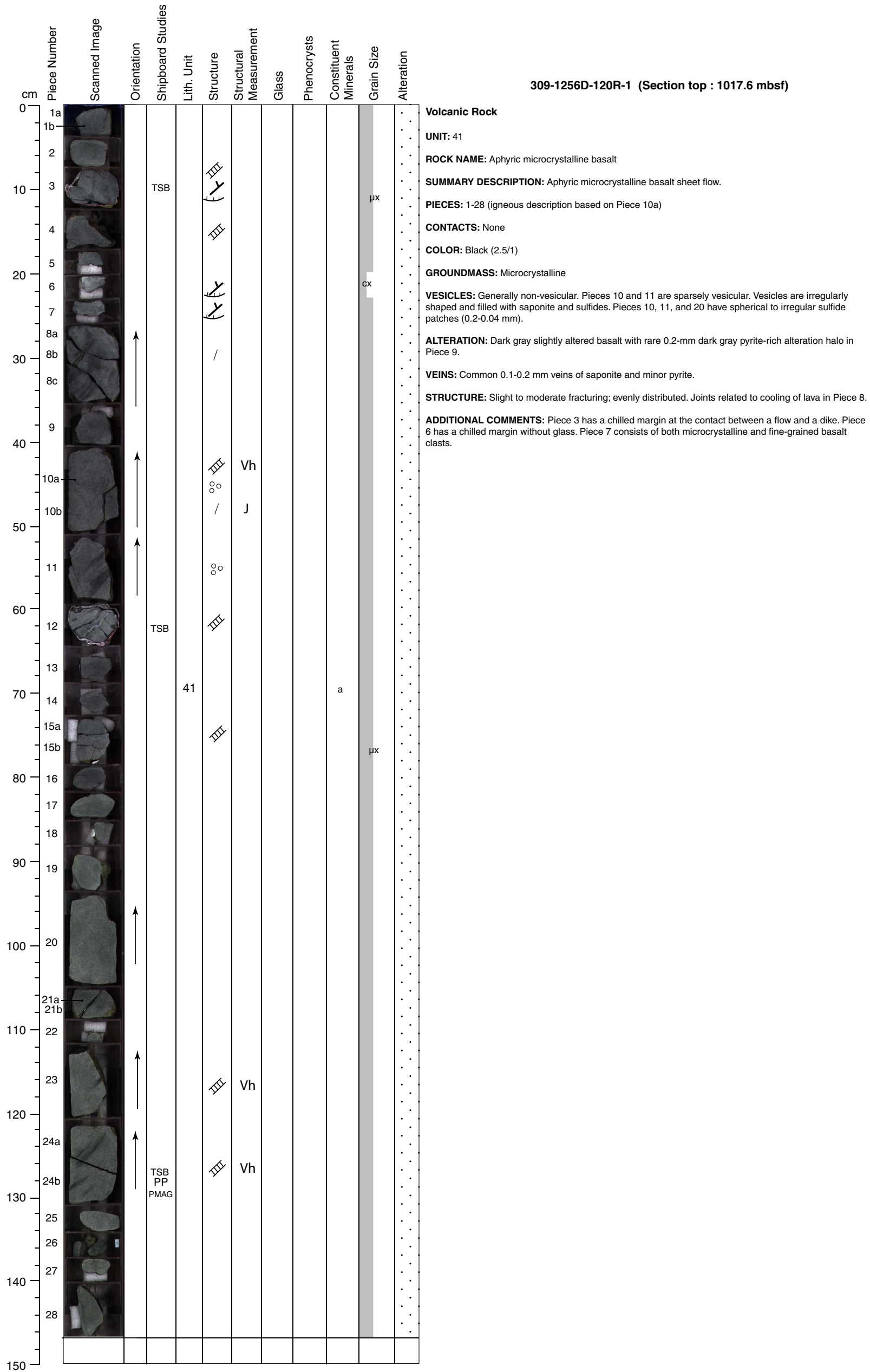
VEINS: Several 0.1-0.2 mm veins of saponite, pyrite, and minor chalcocopyrite and silica.

STRUCTURE: Slight fracturing; heterogeneously distributed.

ADDITIONAL COMMENTS: Piece 1 is a fine-grained basalt similar to the cataclastic breccia of Unit 40. Piece 3 has a small clasts of fine-grained basalt: Fine-grained basalt fills fractures between cryptocrystalline clasts. Pyroxene and plagioclase phenocrysts form glomeroporphyritic textures.



Core Photo



Core Photo

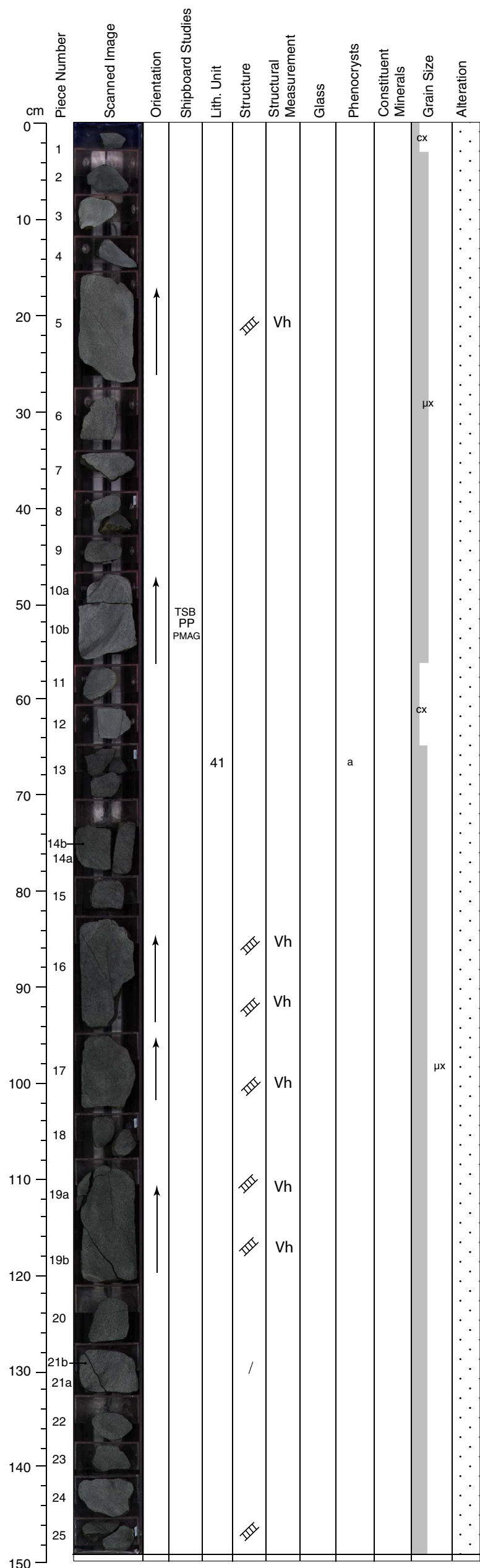
Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0											
1		↑			oo						
2		↑		41	oo			a		µx	
3		↑			III	Vh					
4											
50											
60											
70											
80											
90											
100											
110											
120											
130											
140											
150											

309-1256D-120R-2 (Section top : 1019.07 mbsf)

Volcanic Rock
UNIT: 41
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
PIECES: 1-4 (igneous description based on Piece 3)
CONTACTS: None
COLOR: Black (2.5/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular. Some irregular vesicles oriented in a preferential direction and filled with saponite in Pieces 1 and 2.
ALTERATION: Dark gray slightly altered basalt.
VEINS: Rare 0.1 mm veins of saponite.
STRUCTURE: Vein in Piece 3.
ADDITIONAL COMMENTS: Spherical to irregular patches of sulfides on Pieces 1 and 2. Presence of plagioclase microphenocrysts.



Core Photo



309-1256D-121R-1 (Section top : 1022.5 mbsf)

Volcanic Rock

UNIT: 41

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-25 (igneous description based on Piece 17)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.1	0.7	0.7	0.7	Euhedral

PHENOCRYSTS: Microcrystalline

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with rare 0.2-1.0-mm pyrite-rich alteration halos

VEINS: Several 0.1-0.2 mm veins of saponite, pyrite, and minor silica and chalcopyrite

STRUCTURE: Slight to moderate fracturing; evenly distributed.

ADDITIONAL COMMENTS: Some sulfide patches. Grain size in this section generally increases with depth from cryptocrystalline to microcrystalline. Texture is slightly more coarse in the lower part of the section. Glomeroporphyritic cluster of plagioclase and clinopyroxene in Piece 17 (3 mm).



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1					III					µx	•
2	2											•
3	3											•
4	4a											•
4	4b											•
5	5				41	III			a		cx	•
6	6					III						•
7	7										µx	•
8	8										cx	•
90												•
100												•
110												•
120												•
130												•
140												•
150												•

309-1256D-121R-2 (Section top : 1024.0 mbsf)

Volcanic Rock

UNIT: 41

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-8 (igneous description based on Piece 6)

CONTACTS: None

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm)			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.3	0.1	0.2	Subhedral-euhedral
Olivine:	0.1	0.5	0.3	0.4	Euhedral, skeletal
Clinopyroxene:	0.1	0.4	0.2	0.3	Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

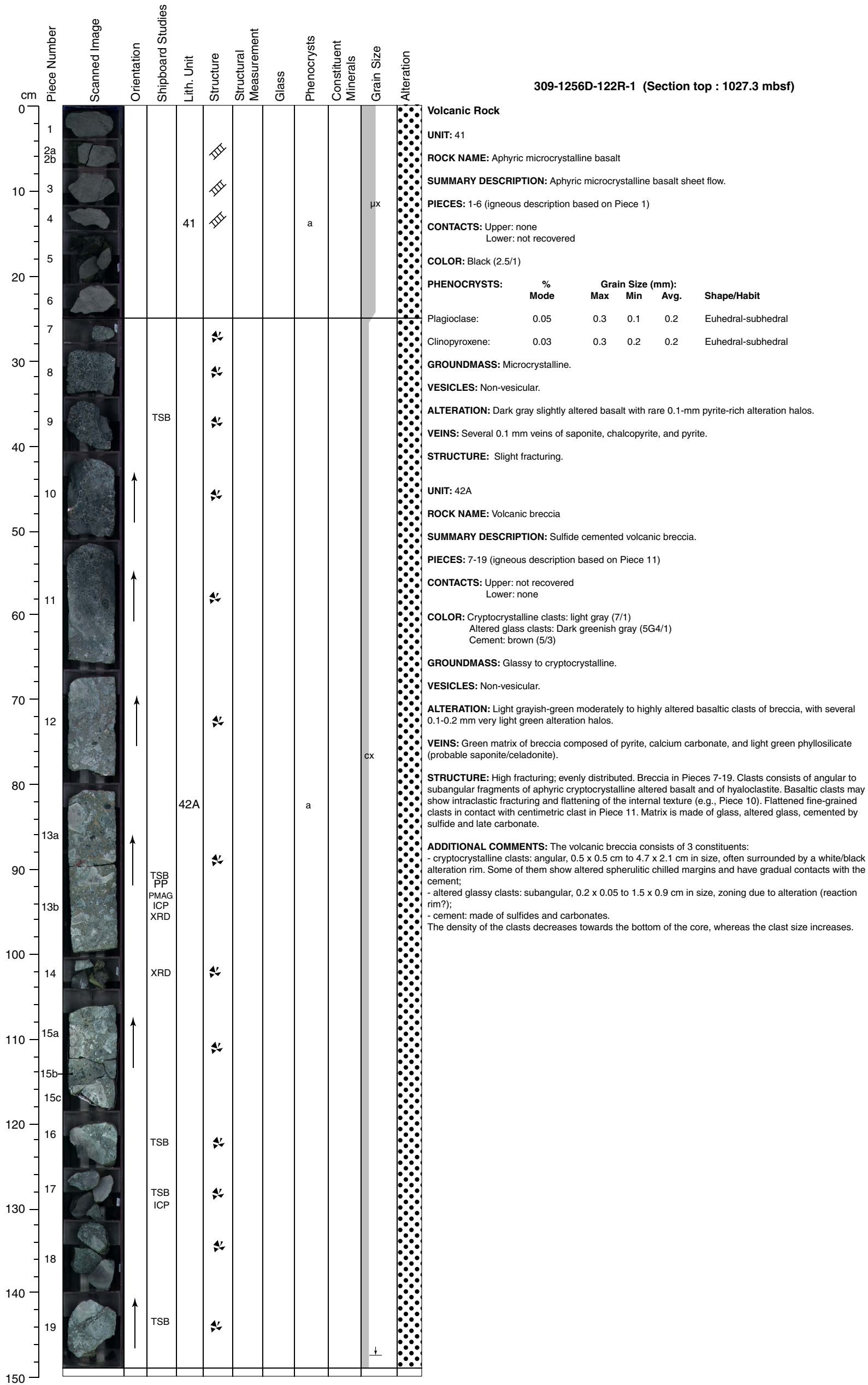
ALTERATION: Dark gray slightly altered basalt with one 0.2-mm dark gray and one 0.1-mm pyrite-rich alteration halo

VEINS: Several 0.1-0.2 mm veins of saponite, pyrite, and minor silica

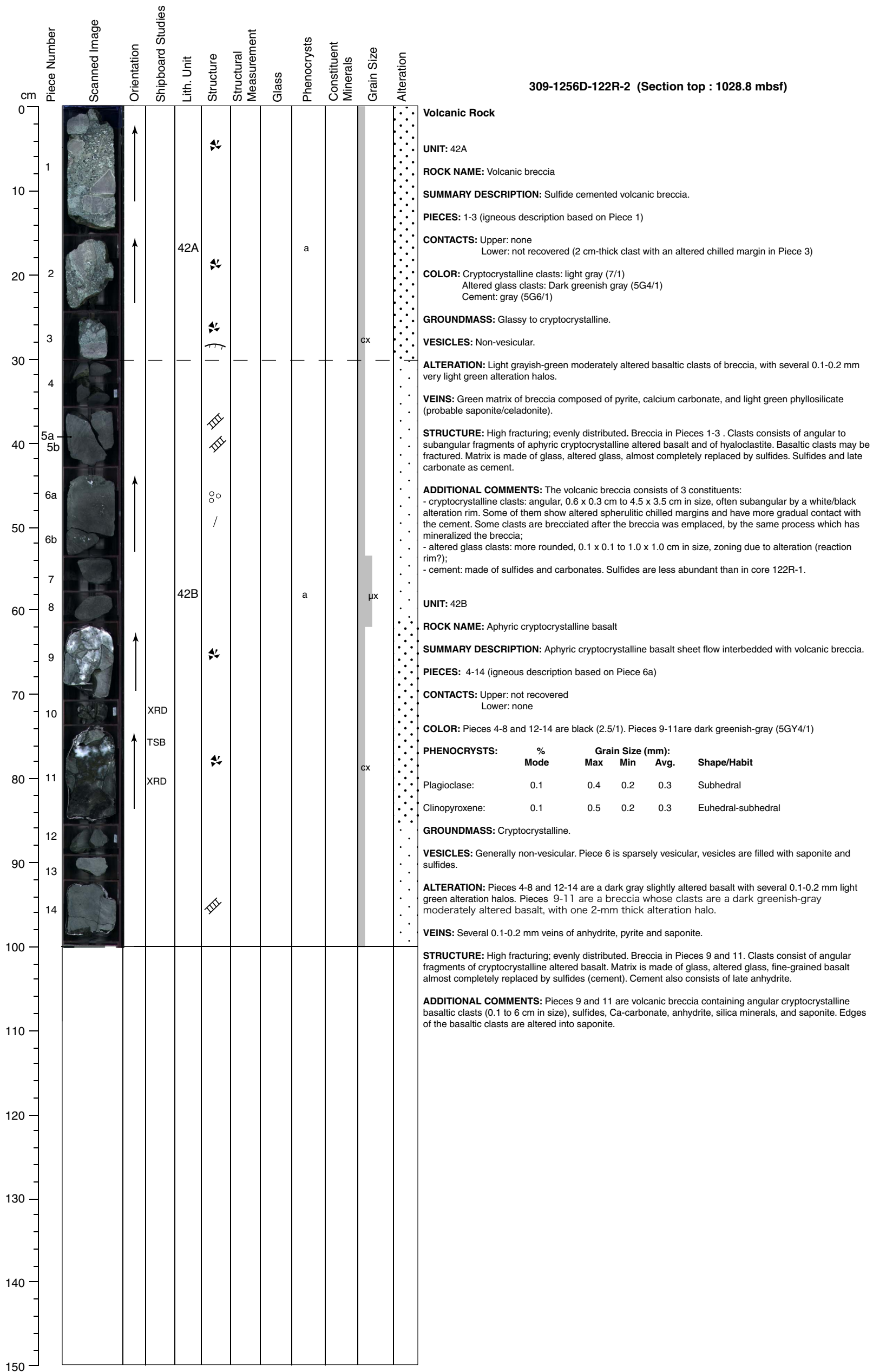
STRUCTURE: Slight fracturing.



Core Photo



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1					↖						
2	2											
10	3					⌒						
20	4		TSB			↖					cx	
30	5					↖						
30	6					↖						
30	7		XRD			↖					μx	
40	8					↖					cx	
50	9		XRD			↖					μx	
50	10					↖					cx	
60	11		TSB ICP XRD	42B					a			
60	12					↖					μx	
70	13					↖						
70	14					⌒						
70	15					↖					cx	
80	16					↖						
80	17					○○						
80	18		XRD			↖					μx	
90	19											
90	20					⌒						
100	21a 21b					↖						
100	22		XRD			↖						
110	23					⌒						
110	24					↖						
120	25					↖					μx	
120	26					↖			a			
130	27					⌒					cx	
130	28				43	⌒						
140	29		↑ PP PMAG TSB			○○						
140	30					○○					μx	
150												

309-1256D-123R-1 (Section top : 1032.1 mbsf)

Volcanic Rock

UNIT: 42B

ROCK NAME: Aphyric cryptocrystalline-microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric cryptocrystalline-microcrystalline basalt flow interbedded with volcanic breccia.

PIECES: 1-23 (igneous description based on Piece 8)

CONTACTS: Upper: none
Lower: chilled margin

COLOR: Very dark gray (3/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Grain Size (mm): Min	Grain Size (mm): Avg.	Shape/Habit
Clinopyroxene:	0.4	0.9	0.2	0.2	Euhedral

GROUNDMASS: Cryptocrystalline-microcrystalline

VESICLES: Non-vesicular. Piece 17 has a few vesicles filled by saponite.

ALTERATION: Dark gray slightly altered basalt, with several 1-5 mm light green or dark green alteration halos.

VEINS: Several 0.1-0.3 mm veins of saponite, anhydrite, and minor sulfide and calcium-carbonate

STRUCTURE: Slight fracturing. Vein filled with hyaloclastite.

ADDITIONAL COMMENTS: Chilled margins found in Pieces 3, 14, 20, 21, and 23. There is a sharp contact between basalt flow and volcanic breccia in Piece 19. Pieces 1, 4, 6, 7, 12, and 18 consist of the same materials found in Pieces 9 and 10 in core 122R-2 (anhydrite, altered glasses, sulfides and saponite). Thin layering is visible in Pieces 8 and 19.

UNIT: 43

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 24-30 (igneous description based on Piece 29)

CONTACTS: Upper: chilled margin
Lower: none

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm): Max	Grain Size (mm): Min	Grain Size (mm): Avg.	Shape/Habit
Plagioclase:	0.1	0.8	0.2	0.3	Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Generally non-vesicular. Sparsely vesicular in Pieces 29 and 30. Small (<0.2mm) spherical vesicles.

ALTERATION: Dark gray slightly altered basalt.

VEINS: Rare 0.1 mm veins of saponite and minor pyrite.

STRUCTURE: No notable structures.

ADDITIONAL COMMENTS: Larger (1.5 mm) glomerocryst(s) of plagioclase and clinopyroxene grains. A few clinopyroxene microphenocrysts. Piece 27 has a chilled margin.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1			XRD		III						
2	2					III						
10	3											
4	4											
20	5					III						
6	6											
30	7					III						
8	8					III						
40	9a 9b					III						
10	10					III						
50	11		↑		43	Vh		a			μx	
12	12											
60	13			TSB ICP								
14	14											
70	15a 15b											
16	16											
17	17					III						
80	18											
19	19											
20	20											
90	21					III						

309-1256D-124R-1 (Section top : 1036.9 mbsf)

Volcanic Rock

UNIT: 43

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-21 (igneous description based on Piece 17)

CONTACTS: None

COLOR: Black (2/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.07	0.8	0.2	0.5	Euhedral
Clinopyroxene:	0.05	0.5	0.2	0.3	Subhedral

GROUNDMASS: Microcrystalline.

VESICLES: Non-vesicular. A few vesicles filled with calcium carbonate, saponite and sulfide in Pieces 9 and 11.

ALTERATION: Dark gray slightly altered basalt with rare 2 mm black alteration halos with a pyrite front, and 0.1 mm pyrite-rich alteration halo.

VEINS: Common 0.1-0.2 mm veins of saponite, pyrite, and minor calcium carbonate and chalcopyrite.

STRUCTURE: Slight fracturing; evenly distributed.

ADDITIONAL COMMENTS: Plagioclase and clinopyroxene phenocrysts form sparse glomerocrysts. Sulfides patches (0.1-0.2 mm) in the groundmass or on fracture planes.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
309-1256D-125R-1 (Section top : 1041.71 mbsf)												
0	1											Volcanic Rock
1	2											UNIT: 43
2	3											ROCK NAME: Aphyric microcrystalline basalt
3	4											SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
4	5											PIECES: 1-16 (igneous description based on Piece 1)
5	6											CONTACTS: None
6	7											COLOR: Black (2.5/1)
7	8											GROUNDMASS: Microcrystalline
8	9				43				a			VESICLES: Generally non-vesicular. A few irregular (0.5-1.5 mm) vesicles are present in Pieces 13 and 16. The vesicles are filled with silica, saponite and pyrite.
9	10											ALTERATION: Pieces 1-11 are a dark gray slightly altered basalt. Pieces 12-16 are grayish-green, slightly to moderately altered basalt with several 4-8 mm pyrite-rich alteration halos.
10	11											VEINS: Several 0.1-0.3 mm veins of saponite, silica, and pyrite
11	12											STRUCTURE: Slight fracturing; evenly distributed.
12	13					oo						ADDITIONAL COMMENTS: Sulfides occur as circular patches (0.5-2.0 mm) in Pieces 1-13. They also appear along veins in Pieces 2, 5, 7 and 16.
13	14			TSB								
14	15											
15	16					oo						
16												
70												
80												
90												
100												
110												
120												
130												
140												
150												



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1		↑				Vh					
10	2		↑	PP PMAG TSB			Vh					
20	3		↑			XX	Vh				µx	
30	4		↑			✱						
40	5		↑				Vh					
50	6				43				a			
60	7											
70	8					⌒					cx	
80	9											
90	10											
100	11											
110	12										µx	
120	13											
130												
140												
150												

309-1256D-126R-1 (Section top : 1046.5 mbsf)

Volcanic Rock

UNIT: 43

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.

PIECES: 1-13 (igneous description based on Piece 5)

CONTACTS: None

COLOR: Black (2.5/1)

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with several 0.5-2.5 mm dark gray or dark green alteration halos.

VEINS: Common 0.1-0.2 mm veins of saponite, pyrite, and minor silica and chalcopyrite.

STRUCTURE: Slight to moderate fracturing; evenly distributed. Vein network in Piece 3.

ADDITIONAL COMMENTS: Sulfides in fractures and as patches. Chilled margin in Piece 8 (has gradual textural change from rim to the center of the piece). Piece 4 consists of several small pieces, one of them is a volcanic breccia with cryptocrystalline angular clasts. Clasts cemented with altered material (silica) (~1.5 mm). There are a few glomerocrysts of plagioclase and clinopyroxene (0.8 mm).

Core Photo

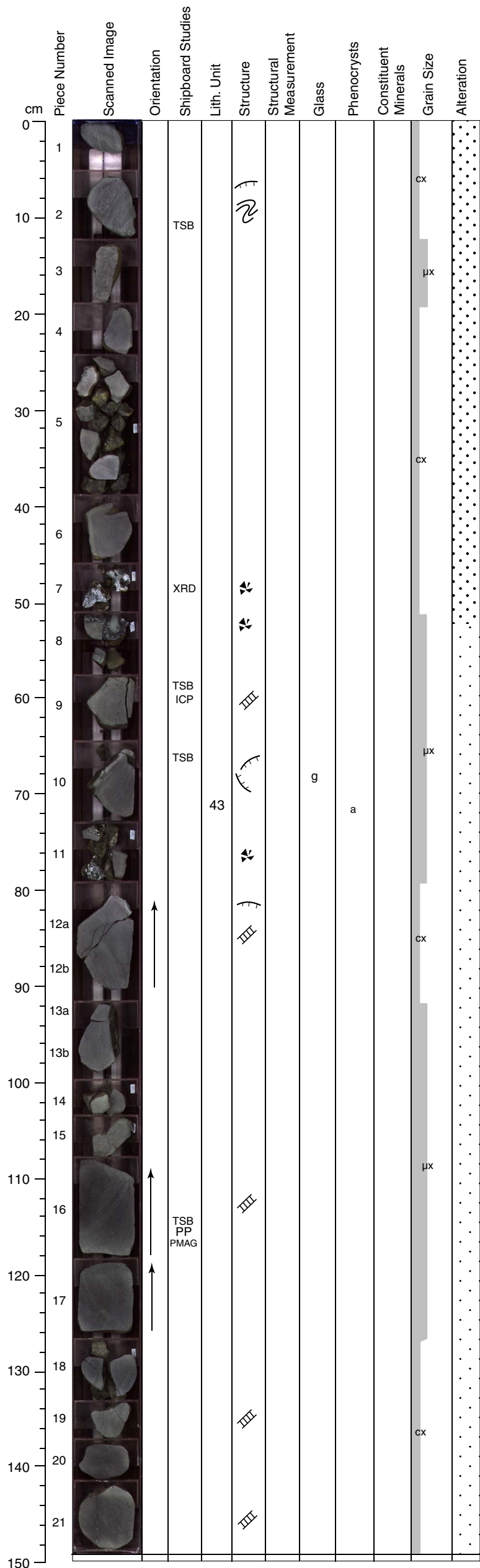
cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1					✱						
2	2		TSB			~						
10	3					~					cx	
20	4					°°		ga				
20	5										µx	
30	6											
30	7					III					cx	
40	8											
40	9										µx	
50	10											
60	11											
60	12				43			a				
70	13											
70	14										cx	
80	15					III						
90	16											
90	17											
90	18a											
90	18b											
100	19					III					µx	
110	20											
120	21											
120	22					III					cx	
130												
140												
150												

309-1256D-127R-1 (Section top : 1051.3 mbsf)

Volcanic Rock
UNIT: 43
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
PIECES: 1-22 (igneous description based on Piece 20)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with common 0.1-4.0 mm black alteration halos with or without pyrite front.
VEINS: Very common 0.1-0.3 mm veins of saponite, minor pyrite and silica.
STRUCTURE: Slight fracturing; evenly distributed. Flow banding in Pieces 2 and 3.
ADDITIONAL COMMENTS: Spherical sulfide patches in some pieces (~0.8 mm). Piece 1 appears to be part of a volcanic breccia. Cryptocrystalline clasts contain saponite and sulfides as the cement. Piece 4 has a curved chilled margin with thin black altered glass layers. There are very small vesicles in the chilled margin.



Core Photo



309-1256D-128R-1 (Section top : 1056.1 mbsf)

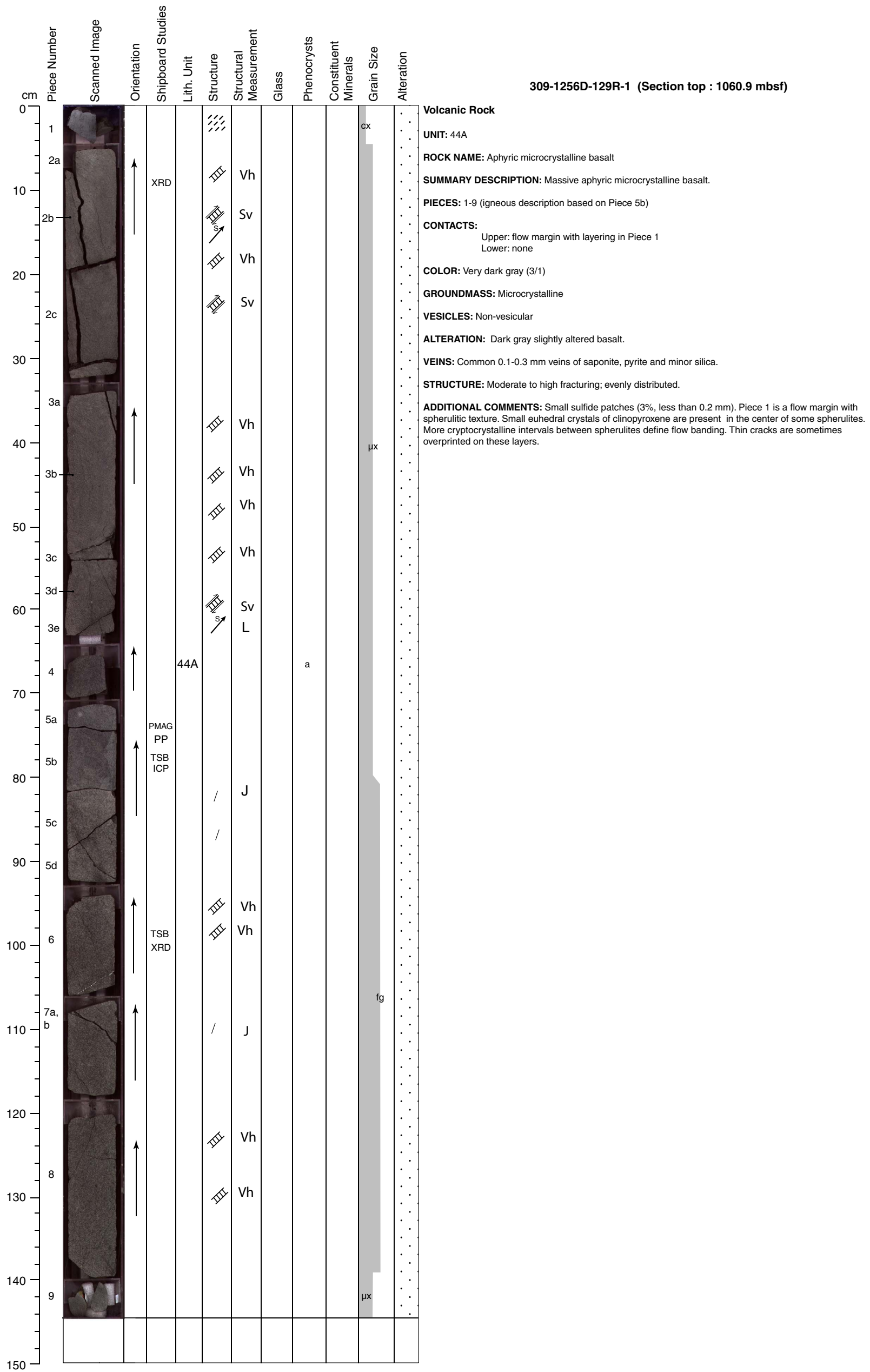
Volcanic Rock
UNIT: 43
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Aphyric microcrystalline basalt sheet flow.
PIECES: 1-21 (igneous description based on Piece 16)
CONTACTS: None
COLOR: Black (2.5/1) except for Pieces 7, 8, and 11 - dark greenish-gray (5GY4/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.5	0.5	0.5	Subhedral
Olivine:	0.5	1.0	0.5	0.8	Euhedral-subhedral
Clinopyroxene:	0.1	0.8	0.8	0.8	Subhedral

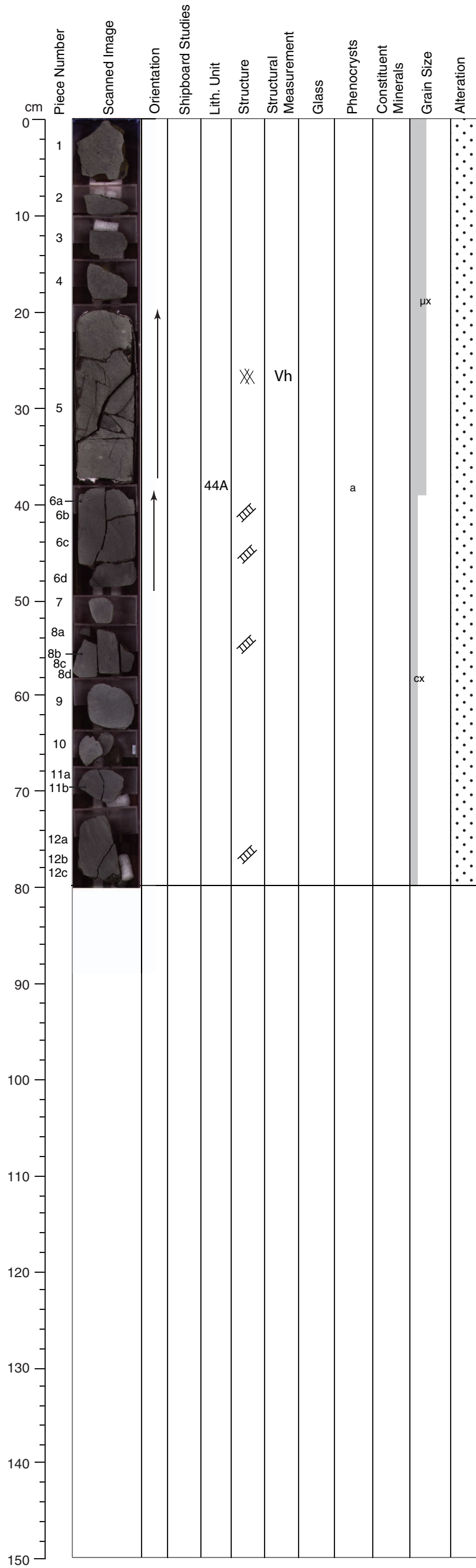
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Pieces 1-8: dark gray and green, moderately altered basalt with several light green and dark green alteration halos. Pieces 9-18: dark gray slightly altered basalt with several light gray, light green and dark green and pyrite-rich alteration halos. Amygdales of saponite and pyrite. Abundant altered glass.
VEINS: Very common 0.1-0.3 mm veins of saponite, pyrite, chalcopyrite and minor and calcium carbonate.
STRUCTURE: Moderate fracturing; heterogeneously distributed. Asymmetric multiple folding of flow banding in Piece 2.
ADDITIONAL COMMENTS: Pieces 7, 8 and 11 are hyaloclastites containing polygonal cryptocrystalline-microcrystalline basaltic clasts, altered glass, and saponite, silica minerals, and calcium carbonate cement. Some olivine, plagioclase and clinopyroxene phenocrysts form glomeroporphyritic texture. Olivine phenocrysts are relatively fresh. Piece 12 has a chilled margin. Piece 2 shows folded flow banding and a chilled margin. Inflation crack and fresh glass are present in Piece 10.



Core Photo



Core Photo

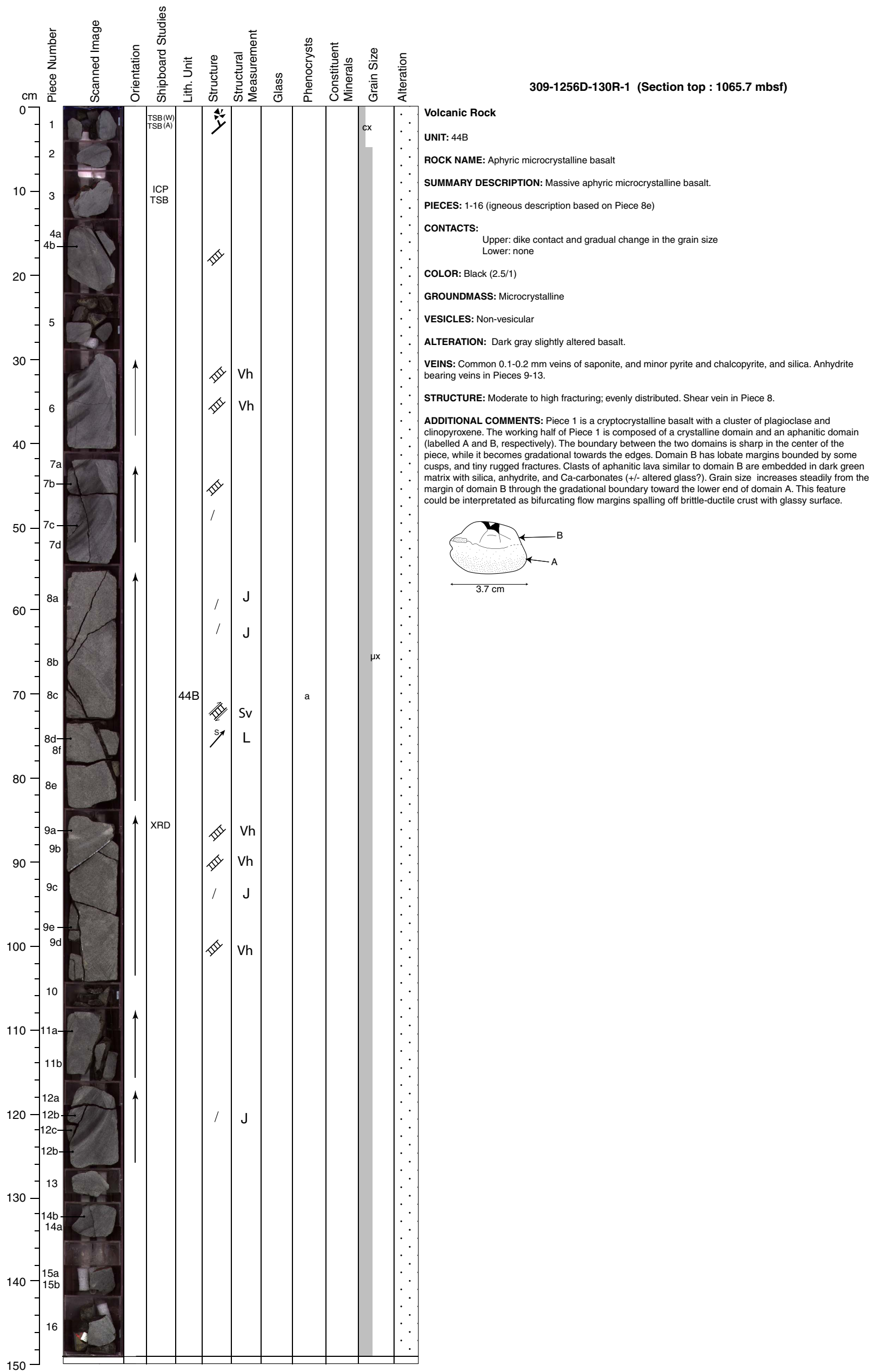


309-1256D-129R-2 (Section top : 1062.35 mbsf)

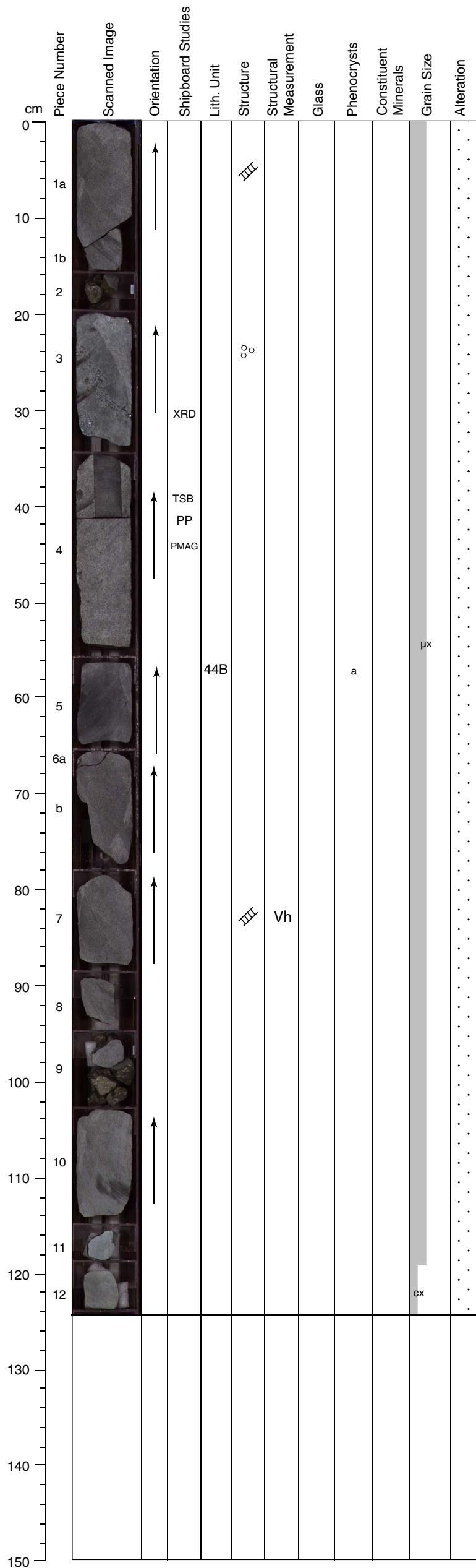
Volcanic Rock
UNIT: 44A
ROCK NAME: Aphyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.
PIECES: 1-12 (igneous description based on Piece 9)
CONTACTS:
 Upper: none
 Lower: not recovered
COLOR: Very dark gray (3/1)
GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt.
VEINS: Common 0.1-0.3 mm veins of saponite, pyrite and minor silica.
STRUCTURE: Moderate fracturing; evenly distributed. Vein network in Piece 5. Y-shaped veins in Piece 6.
ADDITIONAL COMMENTS: Some sulfide patches in the groundmass and on fracture planes.



Core Photo



Core Photo



309-1256D-130R-2 (Section top : 1067.2 mbsf)

Volcanic Rock

UNIT: 44B

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-12 (igneous description based on Piece 6b)

CONTACTS:
Upper: none
Lower: not recovered (Cryptocrystalline basalt [Piece 12] at the end of the core section)

COLOR: Very dark gray (3/1)

GROUNDMASS: Microcrystalline

VESICLES: Generally non-vesicular. Large irregular vesicles filled with anhydrite in Piece 3. These vesicles are concentrated in a layer 0.8-2 cm in size.

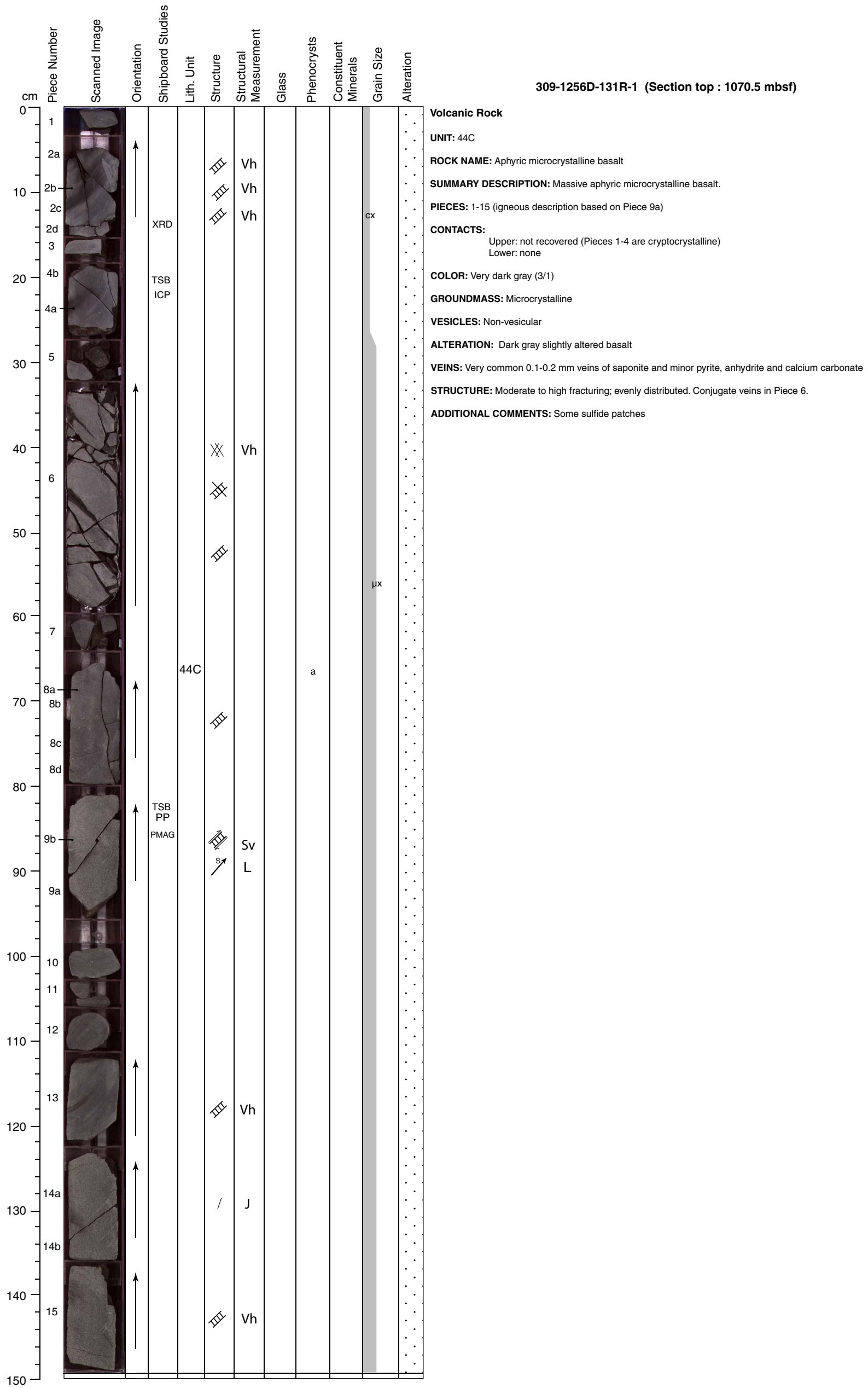
ALTERATION: Dark gray slightly altered basalt with light green alteration halos around amygdales of saponite and anhydrite

VEINS: Several 0.1 mm veins of saponite, anhydrite and minor chalcocopyrite

STRUCTURE: Slight fracturing.

ADDITIONAL COMMENTS: Some sulfide patches.

Core Photo



Core Photo

309-1256D-131R-2 (Section top : 1072.0 mbsf)

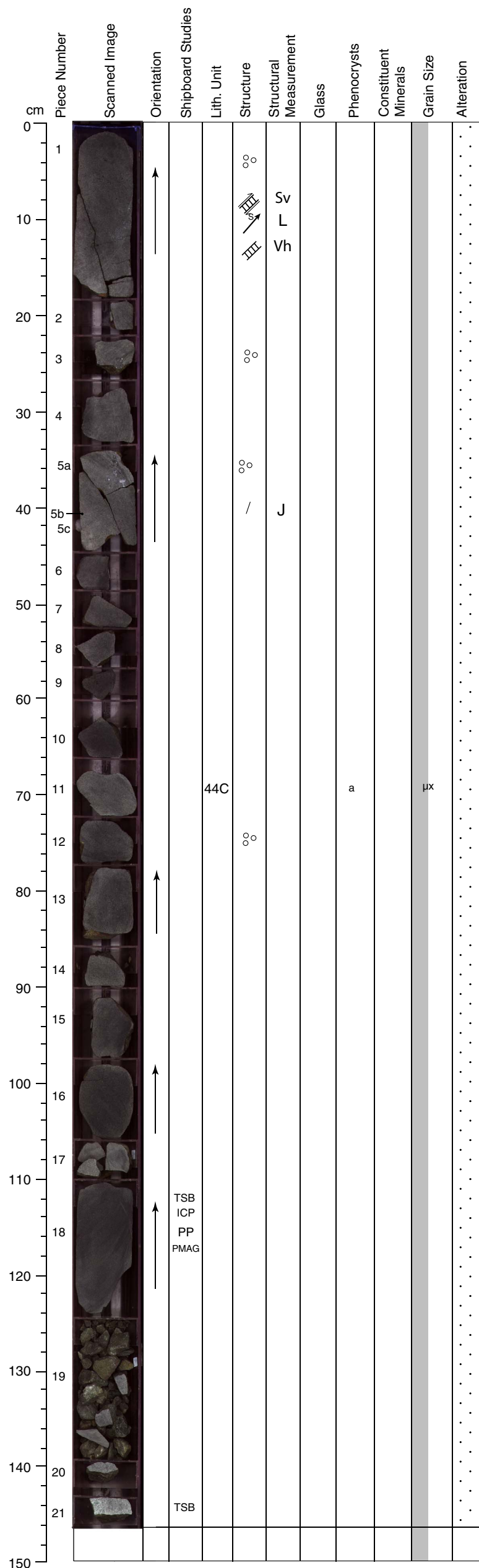
cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1		↑									
2	2a		↑									
3	2b		↑									
4	3		↑									
5	4		↑									
6	5		↑									
7	6a		↑									
8	6b		↑		44C	/			a		µx	
9	7a		↑			/						
10	7b		↑									
11	7c		↑									
12	7d		↑									
13	8		↑									
14	9		↑									
15	10		↑									

Volcanic Rock
UNIT: 44C
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-10 (igneous description based on Piece 6b)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt
VEINS: Several 0.1 mm veins of saponite and minor pyrite, calcium carbonate and anhydrite
STRUCTURE: Slight to moderate fracturing; evenly distributed
ADDITIONAL COMMENTS: Very small sulfide patches (<1 mm)



Core Photo

309-1256D-132R-1 (Section top : 1075.3 mbsf)



Volcanic Rock
UNIT: 44C
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-21 (igneous description based on Piece 4)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Generally non-vesicular. Some large vesicles filled with anhydrite in Pieces 1, 3, and 5a.
ALTERATION: Dark gray slightly altered basalt with amygdaloids of anhydrite
VEINS: Several 0.1-0.2 mm veins of saponite and minor anhydrite and calcium carbonate
STRUCTURE: Slight fracturing
ADDITIONAL COMMENTS: Very small sulfide patches (<1 mm)



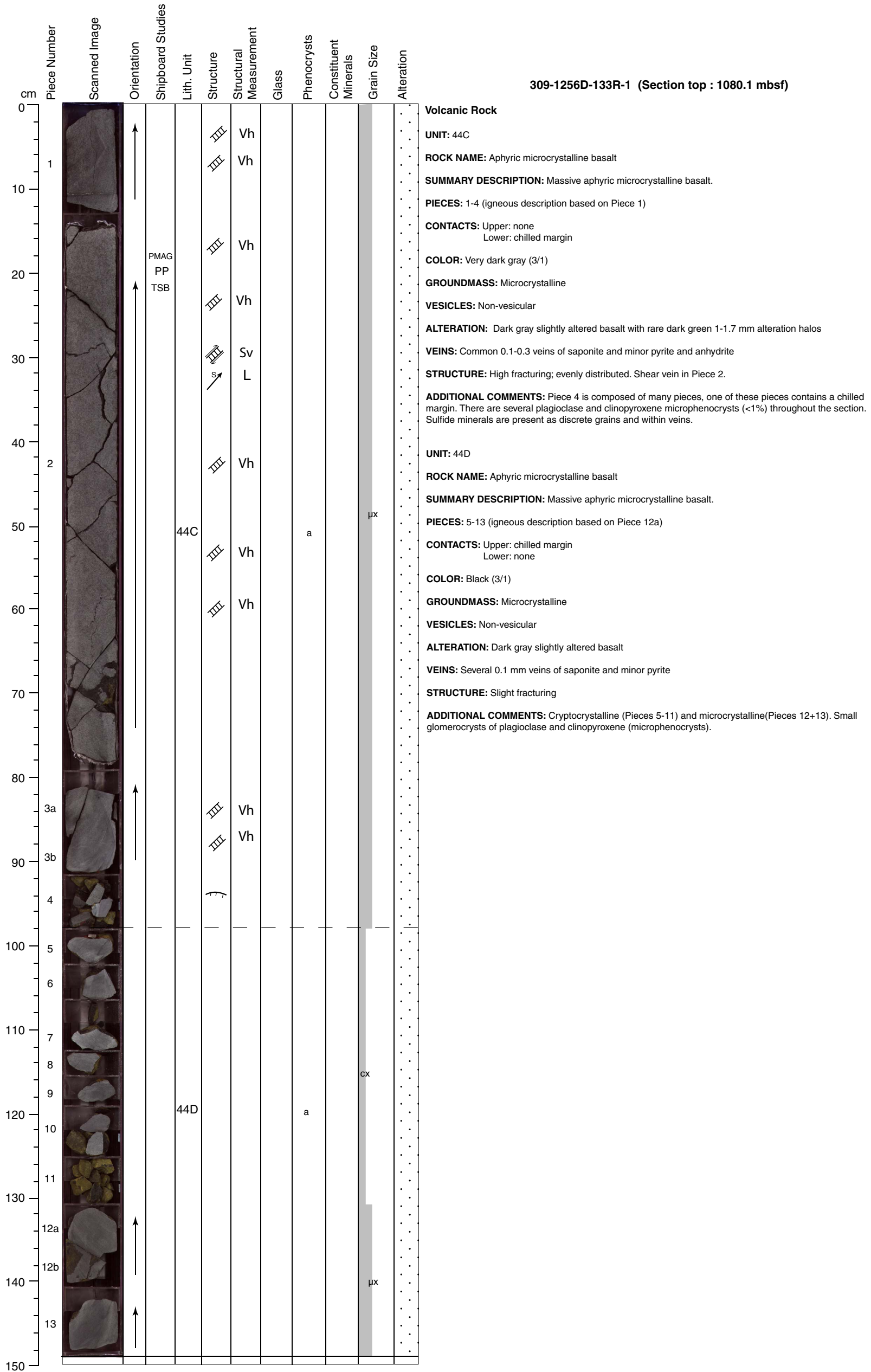
Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
0	1a											
0	1b											
10	2											
10	3											
20	4a		↑		44C	/	J		a		µx	
20	4b											
30	5											
30	6											
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-132R-2 (Section top : 1076.8 mbsf)

Volcanic Rock
UNIT: 44C
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-6 (igneous description based on Piece 4b)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with amygdales of saponite and pyrite
VEINS: Piece 3 is made up of rubble containing saponite and anhydrite
STRUCTURE: Slight fracturing

Core Photo



Core Photo

309-1256D-133R-2 (Section top : 1081.6 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1											
2	2											
10	3											
20	4		↑		44D	III	Vh		a		μx	
30	5											
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock

UNIT: 44D

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-5 (igneous description based on Piece 4)

CONTACTS: None

COLOR: Very dark gray (3/1)

PHENOCRYSTS:	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.5	1	0.5	0.8	Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with one 3 mm green alteration halo in Piece 2.

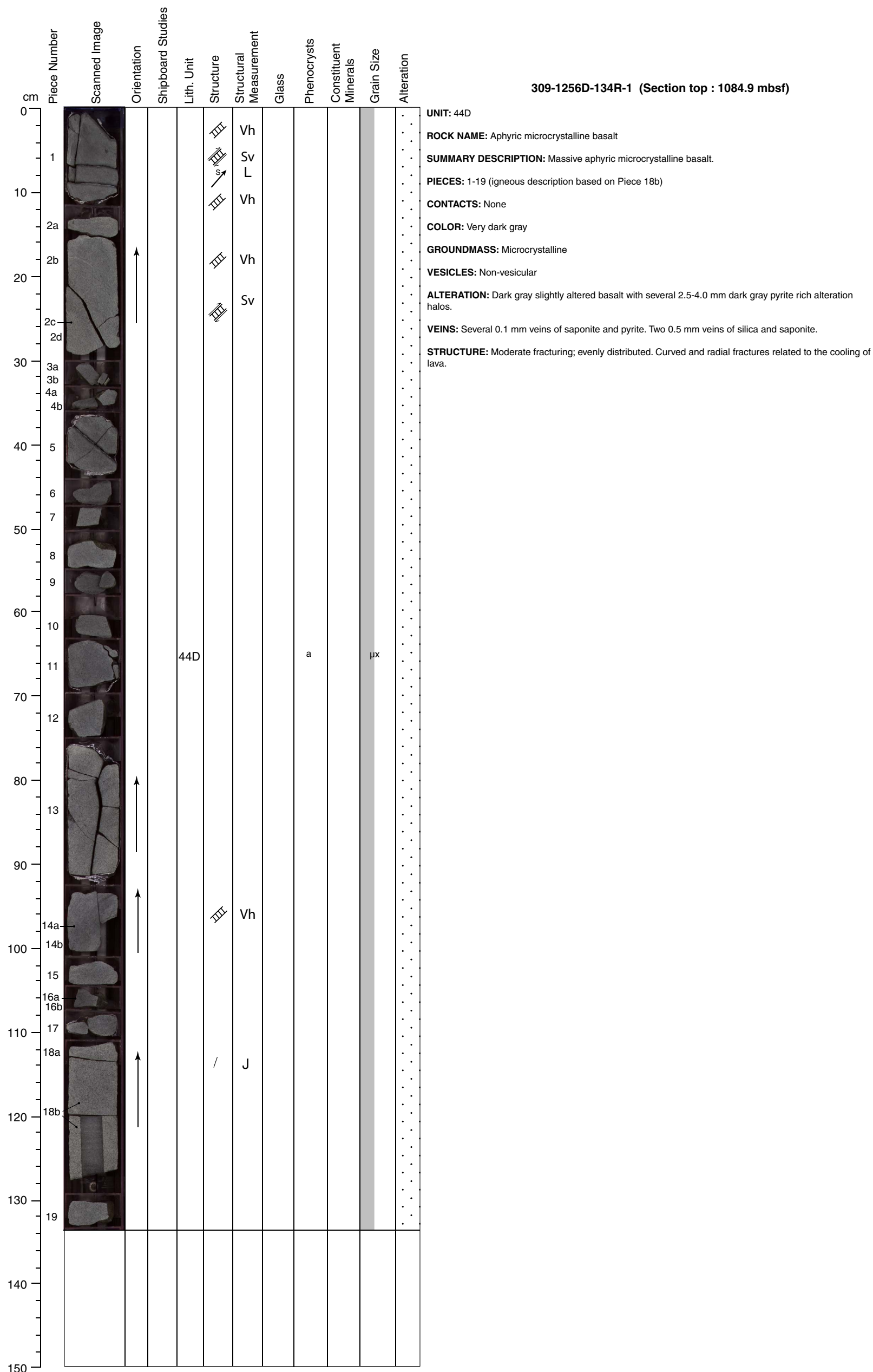
VEINS: Several 0.1 mm veins of saponite and minor pyrite and anhydrite.

STRUCTURE: Slight fracturing

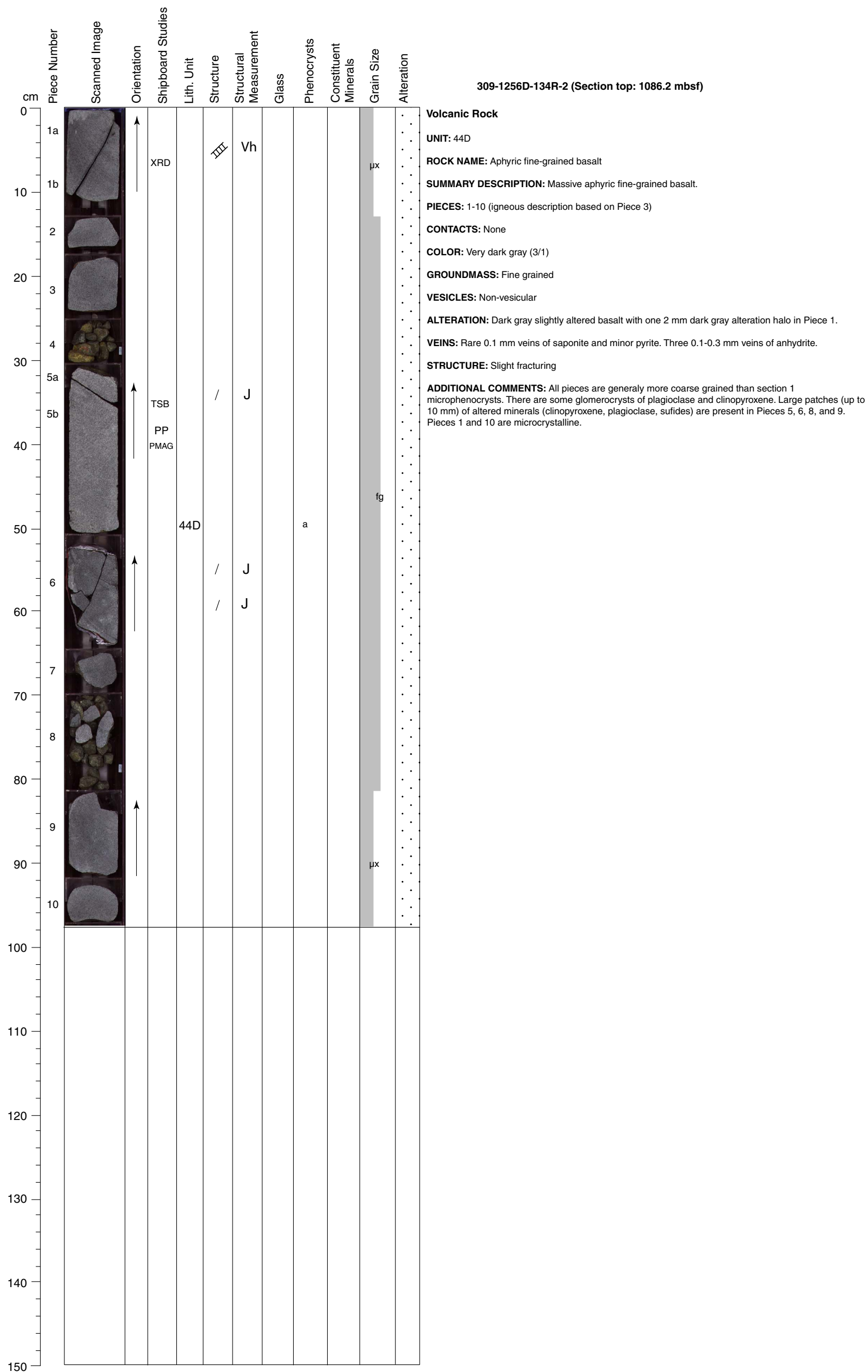
ADDITIONAL COMMENTS: Clinopyroxene phenocrysts are less frequent or absent in Pieces 1-3. Sulfide flakes/ patches within the rock and along fracture planes.



Core Photo



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1a		↑				Vh					
1	1b		↑				Vh					
2	1c		↑				Vh					
3	1d		↑				Vh					
4	2		↑									
5	3		↑									
6	4		↑									
7	5a		↑	PP PMAG		/	J					
8	5b		↑	TSB ICP								
9	5c		↑	TSB	44D		Vh		a			
10	6		↑				Vh					
11	7		↑				Vh					
12	8a		↑				Vh					
13	8b		↑				Vh					
14	9		↑				Vh					
15	10		↑				Vh					
16	11a		↑				Vh					
17	11b		↑				Vh					
18	12		↑				Vh					
19	13		↑				Vh					
20	14		↑				Vh					
21	15		↑				Vh					
22	16a		↑				Vh					
23	16b		↑				Vh					
24	17		↑				Vh					
25	18		↑				Vh					

309-1256D-135R-1 (Section top: 1089.7 mbsf)

Volcanic Rock

UNIT: 44D

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-9 (igneous description based on Piece 7)

CONTACTS: Upper: none
Lower: volcanic breccia (top of unit 45)

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.5	0.3	0.4	Euhedral
Clinopyroxene:	0.1	0.4	0.2	0.3	Subhedral

GROUNDMASS: Microcrystalline

VESICLES: Generally non-vesicular. Piece 5 has irregular vesicles (2-7 mm) filled with silica, anhydrite, and saponite.

ALTERATION: Dark gray slightly altered basalt with several 1.8-4.0 mm composite light/dark with or without pyrite alteration halos.

VEINS: Several 0.1-0.2 mm veins of saponite, silica, chalcopyrite, pyrite, and minor anhydrite.

STRUCTURE: High fracturing; evenly distributed. Conjugate set of veins in Piece 5.

ADDITIONAL COMMENTS: Some plagioclase and clinopyroxene phenocrysts form glomeroporphyritic texture.

UNIT: 45

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 10-18 (igneous description based on Piece 17)

CONTACTS: Upper: volcanic breccia (Pieces 10-14)
Lower: none

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.3	0.1	0.2	Euhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Pieces 10-14: dark gray slightly altered basaltic clasts. One 4.0 mm composite light/dark alteration halo in Piece 11.

VEINS: Pieces 10-14: breccia cement composed of silica, pyrite, a chloritic, phyllosilicate saponite, and possible epidote.

STRUCTURE: High fracturing

ADDITIONAL COMMENTS: Pieces 10-14 are volcanic breccia containing angular-subangular microcrystalline-cryptocrystalline basaltic clasts (0.5-4.0 cm), altered glasses (0.1-1.2 cm) within a silica, chlorite/saponite cement. A large basaltic clast has 0.5-4.0 mm spherulitic layers (Piece 10). Most altered glass clasts are elongated (width/length <5) and are aligned subparallel to the basaltic clasts. Sulfide flakes are mostly found in the altered areas.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												Volcanic Rock
1	1					III						UNIT: 45
2	2											ROCK NAME: Aphyric microcrystalline basalt
10	3											SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
15	4											PIECES: 1-5 (igneous description based on Piece 1)
20	5		↑ PP PMAG TSB		45	III	Vh		a		μx	CONTACTS: None
25												COLOR: Very dark gray (3/1)
30						III	Vh					GROUNDMASS: Microcrystalline
35												VESICLES: Non-vesicular
40						III	Vh					ALTERATION: Dark gray slightly altered basalt with rare 3 mm dark gray (with pyrite front) or dark green alteration halos
45												VEINS: Rare 0.1-0.2 mm veins of saponite and minor silica, anhydrite, and pyrite
50												STRUCTURE: Slight fracturing
55												ADDITIONAL COMMENTS: Some plagioclase microphenocrysts
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-135R-2 (Section top : 1091.2 mbsf)



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1a										cx	
0	1b										fg	
2	2			TSB		↘					fg	
3	3										μx	
10	4a					↘					fg	
10	4b					↘					fg	
20	5					↘					fg	
20	6					↘					fg	
30	7					↘					fg	
30	8			XRD		↘					fg	
40	9					↘					fg	
40	10			XRD		↘					fg	
50	11				45				a		μx	
50	12			XRD							μx	
60	13					↘					μx	
70	14			TSB		↘					cx	
80	15										cx	
80	16										μx	
90	17										μx	
100	18										μx	
100	19										μx	
110	20			TSB		↘					cx	
110	21										cx	
120	22										μx	
120	23			XRD							μx	
130	24a										μx	
130	24b										μx	
140												
150												

309-1256D-136R-1 (Section top : 1094.5 mbsf)

Volcanic Rock

UNIT: 45

ROCK NAME: Aphyric fine-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt with intrusive contacts.

PIECES: 1-24 (igneous description based on Piece 4)

CONTACTS: Upper: none
Lower: none
Intrusive contacts (with cryptocrystalline basalt) in Pieces 2, 4, 5, 6, 7, 9 and 14

COLOR: Very dark gray (3/1)

GROUNDMASS: Host rock: fine grained to microcrystalline, Dike: glassy to cyctocrystalline

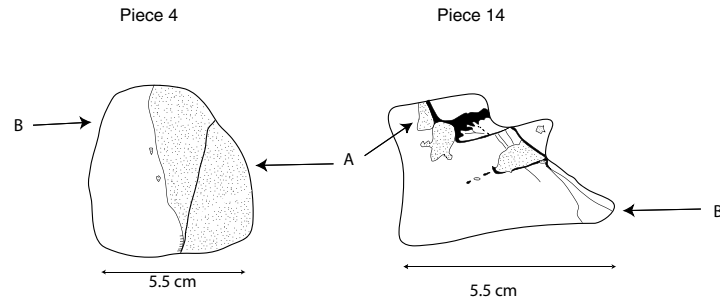
VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with common 0.5-3.0 mm dark green and light green alteration halos

VEINS: Very common 0.1-0.4 mm veins of chlorite/smectite, anhydrite and pyrite

STRUCTURE: High fracturing; heterogeneously distributed.

ADDITIONAL COMMENTS: In Piece 4, the contact between fine-grained (labelled A in the sketch) and cryptocrystalline basalt (labelled B) is sharp and slightly curved. Some rounded xenoliths (0.5 mm) of the fine-grained basalt are found in the cryptocrystalline rock. This cryptocrystalline basalt also contains some euhedral laths of plagioclase, often completely altered to chlorite/smectite. These phenocrysts can form glomerocrysts with clinopyroxene. In Piece 10, the contact is marked by the presence of a glassy area, recrystallized to spherulites. Pieces 5, 7, 9, and 14 are slightly brecciated with angular clasts of glassy (?), cryptocrystalline or microcrystalline rocks embedded in a cement of chlorite/smectite, anhydrite and sulfides. Piece 14 consists of cryptocrystalline basalt (B) with 0.4- to 1.0 cm-large patches of microcrystalline basalt (A). The microcrystalline patches are either located on fracture planes, or isolated in the cryptocrystalline basalt. Some of these patches show lobate contacts with the cryptocrystalline basalt.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
0-10	1a, 1b		↑			Vh						
10-20	1c, 2a, 2b		↑			Vh						
20-30	3, 4, 5, 6		↑			oo						
30-40	7, 8, 9, 10, 11, 12		↑	ICP TSP PP XRD PMAG	45	oo			a		µx	
40-50	13, 14, 15		↑			✱						
50-60	16, 17, 18		↑		46A				a		cx µx	
60-70												
70-80												
80-90												
90-100												
100-110												
110-120												
120-130												
130-140												
140-150												

309-1256D-137R-1 (Section top : 1099.3 mbsf)

Volcanic Rock

UNIT: 45

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-15 (igneous description based on Piece 2b)

CONTACTS: Upper: none
Lower: disappearance of breccia (top of Unit 46)

COLOR: Piece 1-12 are very dark gray (3/1). Piece 13-15 are dark greenish gray (5G4/1).

GROUNDMASS: Microcrystalline

VESICLES: Generally non-vesicular. Piece 4 and 7 are sparsely vesicular.

ALTERATION: Dark gray slightly altered basalt with several 0.1-4.0 mm dark green alteration halos. Abundant chlorite/smectite and pyrite amygdales in Pieces 4-12. Fresh and altered glass in Pieces 13-15.

VEINS: Common 0.1-0.4.0 mm veins of chlorite/smectite, anhydrite and pyrite.

STRUCTURE: Moderate fracturing; evenly distributed. Steeply dipping vein in Pieces 1 and 2.

ADDITIONAL COMMENTS: In Pieces 13-15, the microcrystalline basalt is fractured and separated into several pieces. Piece 15 is brecciated. Width of the cracks is up to 27 mm. The cracks are filled with subangular glassy-cryptocrystalline basaltic clasts (12-19 mm), altered glass (0.5-5 mm) cemented by chlorite/smectite, anhydrite, and pyrite. The basaltic clasts are composed of inner cryptocrystalline parts and surrounded by quenched glass (altered) with a thickness of 3-5 mm. Change from the cryptocrystalline part to the glass is gradational. Many altered glass clasts are elongated (width/length < 3) and are aligned subparallel to the microcrystalline basalt.

UNIT: 46A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 16-18 (igneous description based on Piece 16)

CONTACTS: Upper: beginning of massive basalt
Lower: none

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.3	0.15	0.2	Euhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt.

VEINS: Several 0.1 mm veins of chlorite/smectite, anhydrite and pyrite.

STRUCTURE: Some plagioclase phenocrysts form glomeroporphyritic texture.



Core Photo

309-1256D-138R-1 (Section top : 1104.1 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1a					/						
1	1b											
10	2			TSB ICP								
20	5											
30	7											
40	9											
50	10a		↑			III						
55	10b		↑			III						
60	11				46A				a		μx	
70	12a		↑									
80	12b		↑									
90	14											
100	16											
110	18											
120	20											
130	21		↑			III						
140												
150												

Volcanic Rock

UNIT: 46A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-21 (igneous description based on Piece 21)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray to dark green slightly altered basalt with rare light gray alteration halos

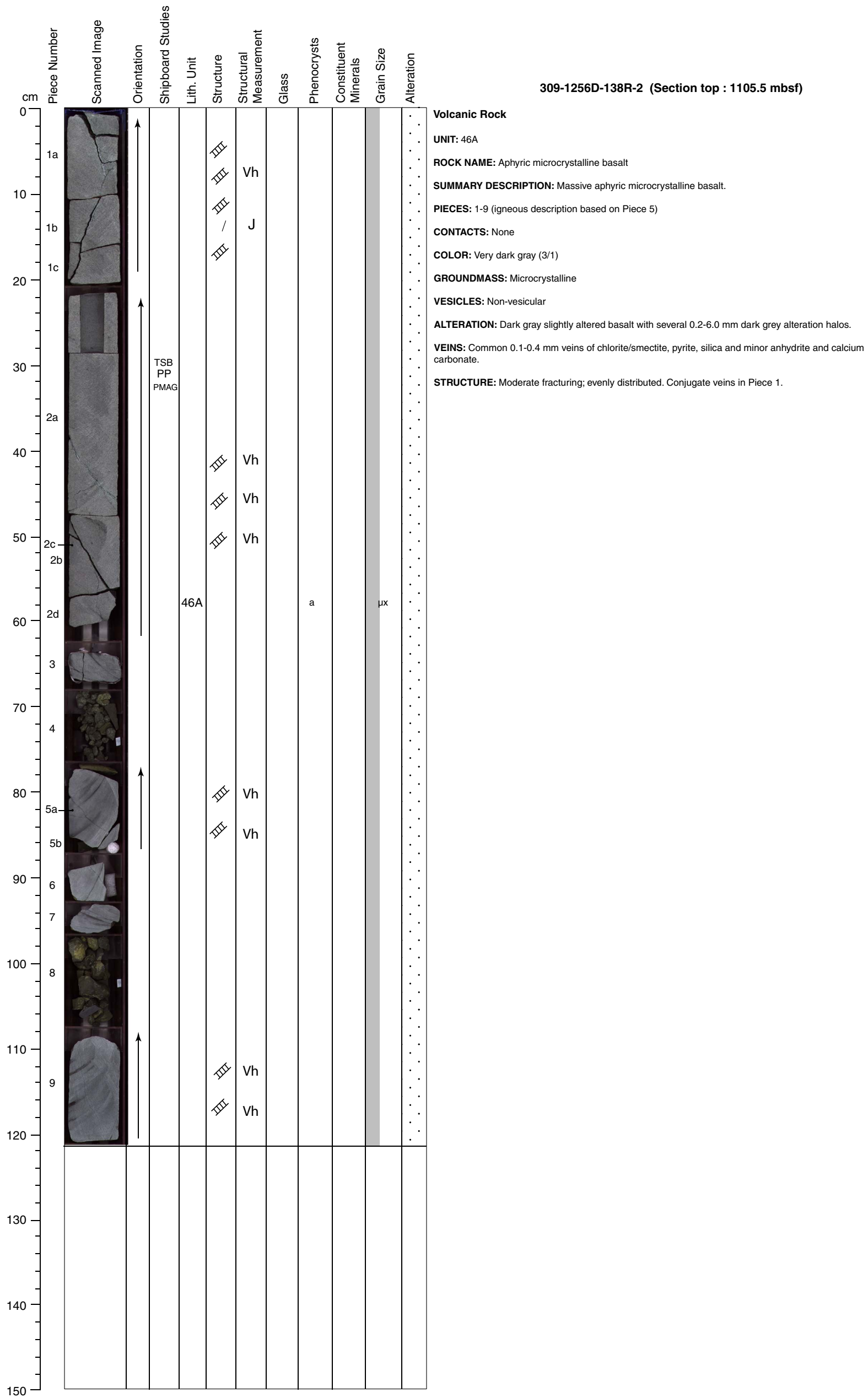
VEINS: Several 0.1-1 mm veins of chlorite/smectite, anhydrite, pyrite and minor calcium carbonate

STRUCTURE: Slight fracturing; heterogeneously distributed.

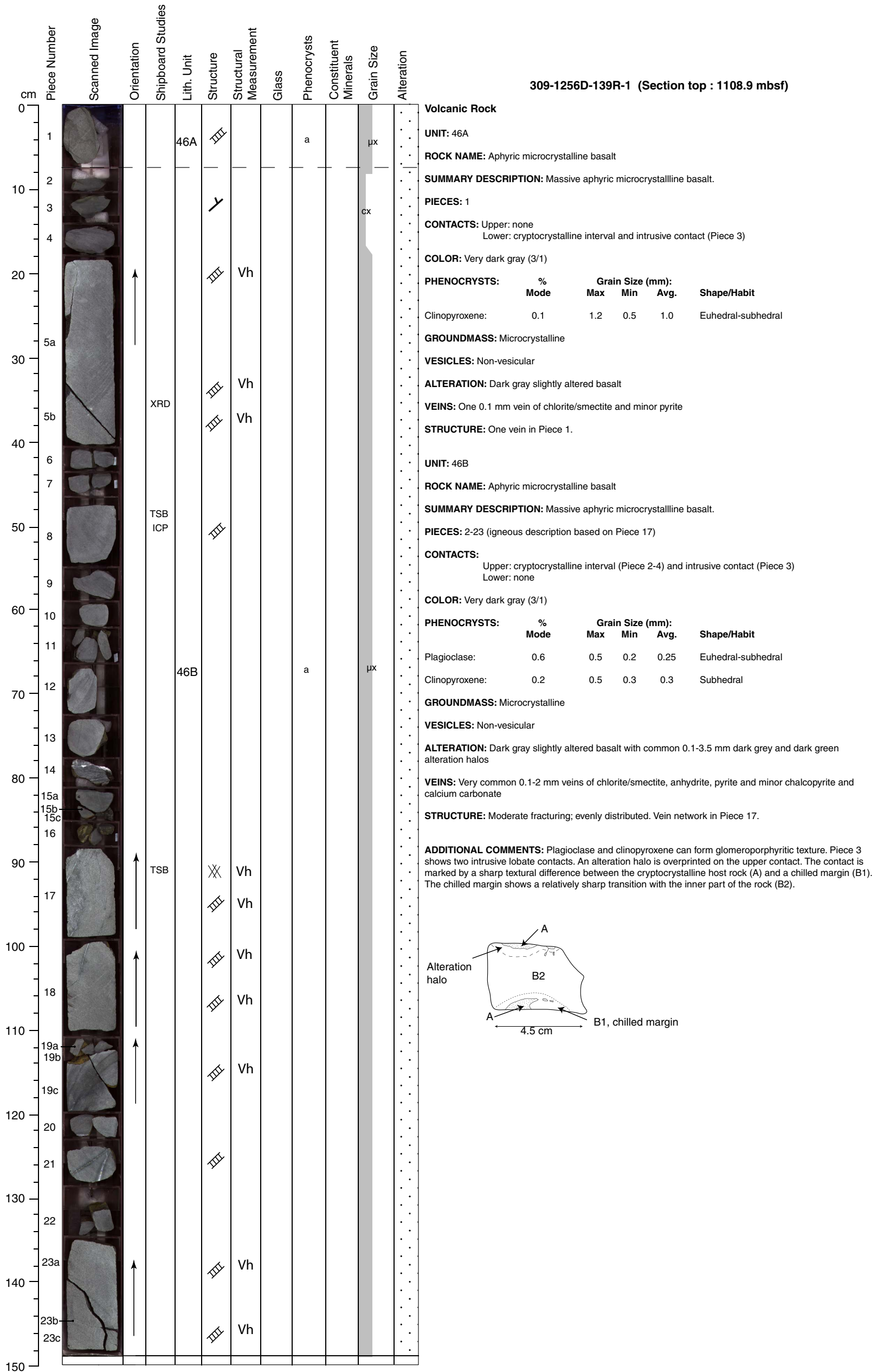
ADDITIONAL COMMENTS: High abundance of sulfide minerals both within the matrix and along fracture planes.









Core Photo



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration	
0													Volcanic Rock
1	1												UNIT: 46B
10	2		↑		46B	Vh ○ ○ III			a		μx		ROCK NAME: Aphyric microcrystalline basalt
20	3												SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
30	4												PIECES: 1-6 (igneous description based on Piece 2)
40	5												CONTACTS: None
50	6												COLOR: Dark gray (4/1)
60													GROUNDMASS: Microcrystalline
70													VESICLES: Generally non-vesicular. Piece 2 has irregular vesicles filled by secondary chlorite/smectite.
80													ALTERATION: Dark gray slightly altered basalt
90													VEINS: Rare 0.1 mm veins of chlorite/smectite
100													STRUCTURE: Slight fracturing.
110													ADDITIONAL COMMENTS: Sulfide minerals present throughout the pieces.
120													
130													
140													
150													



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1											
2	2			XRD	46B				a		µx	
3	3											
4	4		↑									
5a	5a		↑									
5c	5c											
5b	5b											
d	d											
e	e											
f	f											
6	6		↑		47				a			
7	7			TSB ICP								
8	8											
9	9											
10	10		↑									
11	11											
12	12											
13	13											
14	14											
15	15		↑									
120												
130												
140												
150												

309-1256D-140R-1 (Section top : 1113.7 mbsf)

Volcanic Rock

UNIT: 46B

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-3 (igneous description based on Piece 1)

CONTACTS: Upper: none
Lower: not recovered

COLOR: Very dark gray (3/1)

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt.

VEINS: Rare 0.1 mm veins of chlorite/smectite, chalcopryite and minor anhydrite and calcium carbonate.

ADDITIONAL COMMENTS: Presence of small sulfide flakes.

UNIT: 47

ROCK NAME: Aphyric cryptocrystalline-microcrystalline basalt

SUMMARY DESCRIPTION: Intrusive margin breccia.

PIECES: 4-15 (igneous description based on Piece 5a-f)

CONTACTS:
Upper: intrusive brecciated rock
Lower: none

COLOR: Very dark gray (3/1)

GROUNDMASS: Cryptocrystalline-microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with several light/dark green/gray alteration halos.

VEINS: Very common 0.1-1 mm veins of chalcopryite, chlorite/smectite and anhydrite.

STRUCTURE: High fracturing; evenly distributed. Set of parallel nearly vertical veins in Pieces 6 and 7.

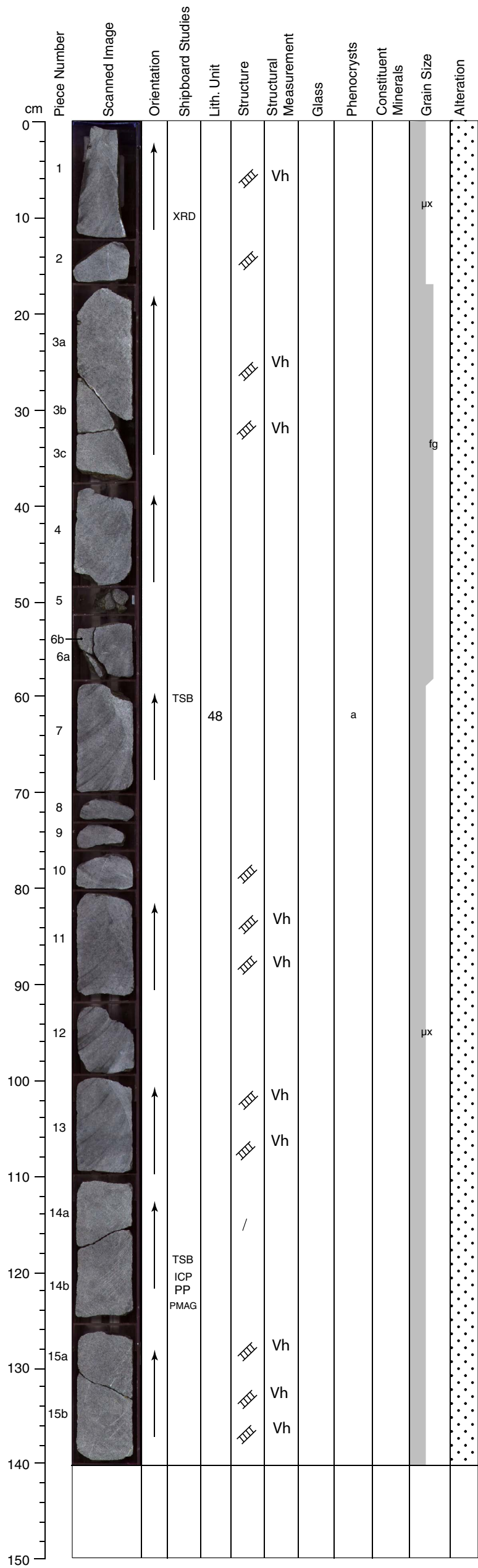
ADDITIONAL COMMENTS: Piece 14 is coarser grained than all other pieces. Complex relationship between host rock, intrusion and brecciated altered areas (sulfides, chlorite/smectite and anhydrite). Pieces 5-7 are cryptocrystalline basalts with a fracture (1.5-6 cm wide) filled with breccia containing: (1) angular to subangular cryptocrystalline-microcrystalline basaltic clasts (1-30 mm); (2) angular altered glasses (2-11 mm); (3) microcrystalline basaltic matrix cemented by sulfides and chlorite/smectite.

Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration	
0													Volcanic Rock
0-10	1		↑		47				a		fg		UNIT: 47 ROCK NAME: Aphyric fine-grained basalt SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.
10-14	2					↕							PIECES: 1 CONTACTS: Upper: none Lower: not recovered
14-16	3					↕							COLOR: Dark greenish gray (5G4/1)
16-18	4			XRD		↕							GROUNDMASS: Fine grained
18-20	5					↕							VESICLES: Non-vesicular
20-22	6					↕							ALTERATION: Dark gray slightly altered basalt with a gray alteration halo around amygdaloids of chlorite/smectite, silica and calcium carbonate
22-24	7					↕					cx		VEINS: One 1.0 mm vein of chlorite/smectite
24-26	8			TSB		↕							
26-28	9					↕							UNIT: 48
28-30	10		↑		48	↕	Vh						ROCK NAME: Aphyric microcrystalline basalt SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
30-32	11		↑	TSB ICP		↕	Vh		a				PIECES: 2-14 (igneous description based on Piece 11) CONTACTS: Upper: brecciated chilled margin (Pieces 2-9) Lower: none
32-34	12					↕							COLOR: Very dark gray (3/1) GROUNDMASS: Microcrystalline
34-36	13					↕							VESICLES: Non-vesicular
36-38	14					↕							ALTERATION: Dark gray slightly altered basalt with amygdaloids of pyrite
38-40													VEINS: Several 0.1-0.2 mm veins of chlorite/smectite, chalcocopyrite, anhydrite and minor silica and pyrite
40-42													STRUCTURE: Moderate fracturing; heterogeneously distributed.
42-44													ADDITIONAL COMMENTS: Pieces 2-6 and 8-9 show brecciated chilled margin that is altered to chlorite/smectite and sulfides. Piece 4 is cut by a crack (4-8 mm wide) filled with angular altered glass cemented by anhydrite and silica. Piece 8 shows the best preserved chilled margin, with a gradual textural change from the outer to the inner part: altered black glass, spherulitic layer (6mm wide), two thin cryptocrystalline layers (0.8 and 0.2 mm wide), and then the cryptocrystalline inner part.
44-46													
46-48													
48-50													
50-52													
52-54													
54-56													
56-58													
58-60													
60-62													
62-64													
64-66													
66-68													
68-70													
70-72													
72-74													
74-76													
76-78													
78-80													
80-82													
82-84													
84-86													
86-88													
88-90													
90-92													
92-94													
94-96													
96-98													
98-100													
100-102													
102-104													
104-106													
106-108													
108-110													
110-112													
112-114													
114-116													
116-118													
118-120													
120-122													
122-124													
124-126													
126-128													
128-130													
130-132													
132-134													
134-136													
136-138													
138-140													
140-142													
142-144													
144-146													
146-148													
148-150													



Core Photo

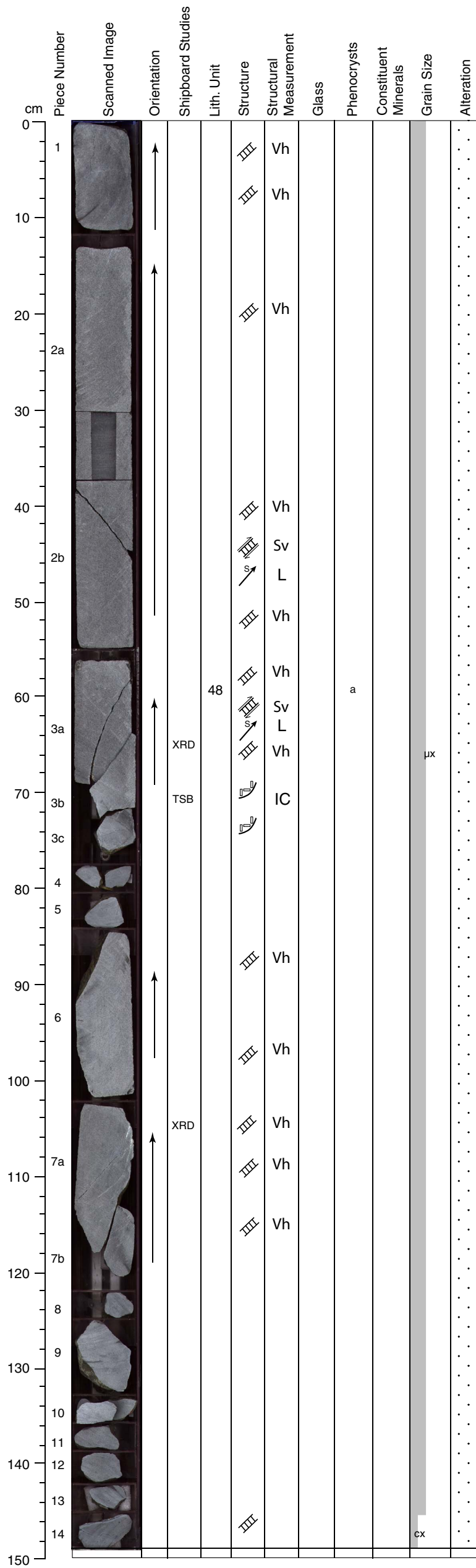


309-1256D-142R-1 (Section top : 1123.3 mbsf)

Volcanic Rock
UNIT: 48
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-15 (igneous description based on Piece 7)
CONTACTS: None
COLOR: Dark gray (4/1)
GROUNDMASS: Microcrystalline to fine grained
VESICLES: Non-vesicular
ALTERATION: Dark gray moderately altered basalt with green highly altered patches and associated dark gray alteration halos
VEINS: Several 0.1-0.4 mm veins of chlorite/smectite, anhydrite, silica and minor chalcocopyrite and pyrite
STRUCTURE: Moderate fracturing; evenly distributed.
ADDITIONAL COMMENTS: Some sulfides. Some large patches of fine-grained basalt show gradual transition to microcrystalline groundmass. The fine-grained basalt has intergranular texture and plagioclase are intensely altered to reddish minerals. Sometimes, a fresh rim is preserved. Such fine-grained areas are also recognized in Pieces 3-6.



Core Photo



309-1256D-142R-2 (Section top : 1124.7 mbsf)

Volcanic Rock
UNIT: 48
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-14 (igneous description based on Pieces 3b and c)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with rare 0.1-2.0 mm light green and dark gray alteration halos in Piece 14.
VEINS: Very common 0.1-0.7 mm veins of chlorite/smectite and minor anhydrite, chalcocopyrite, pyrite and silica.
STRUCTURE: Moderate fracturing; evenly distributed.
ADDITIONAL COMMENTS: Pieces 3b and 3c contain angular cryptocrystalline xenoliths (>6.0 x 3.2 cm). The xenoliths are rimmed by thin black altered layers. Some euhedral phenocrysts of plagioclase in the xenolith.

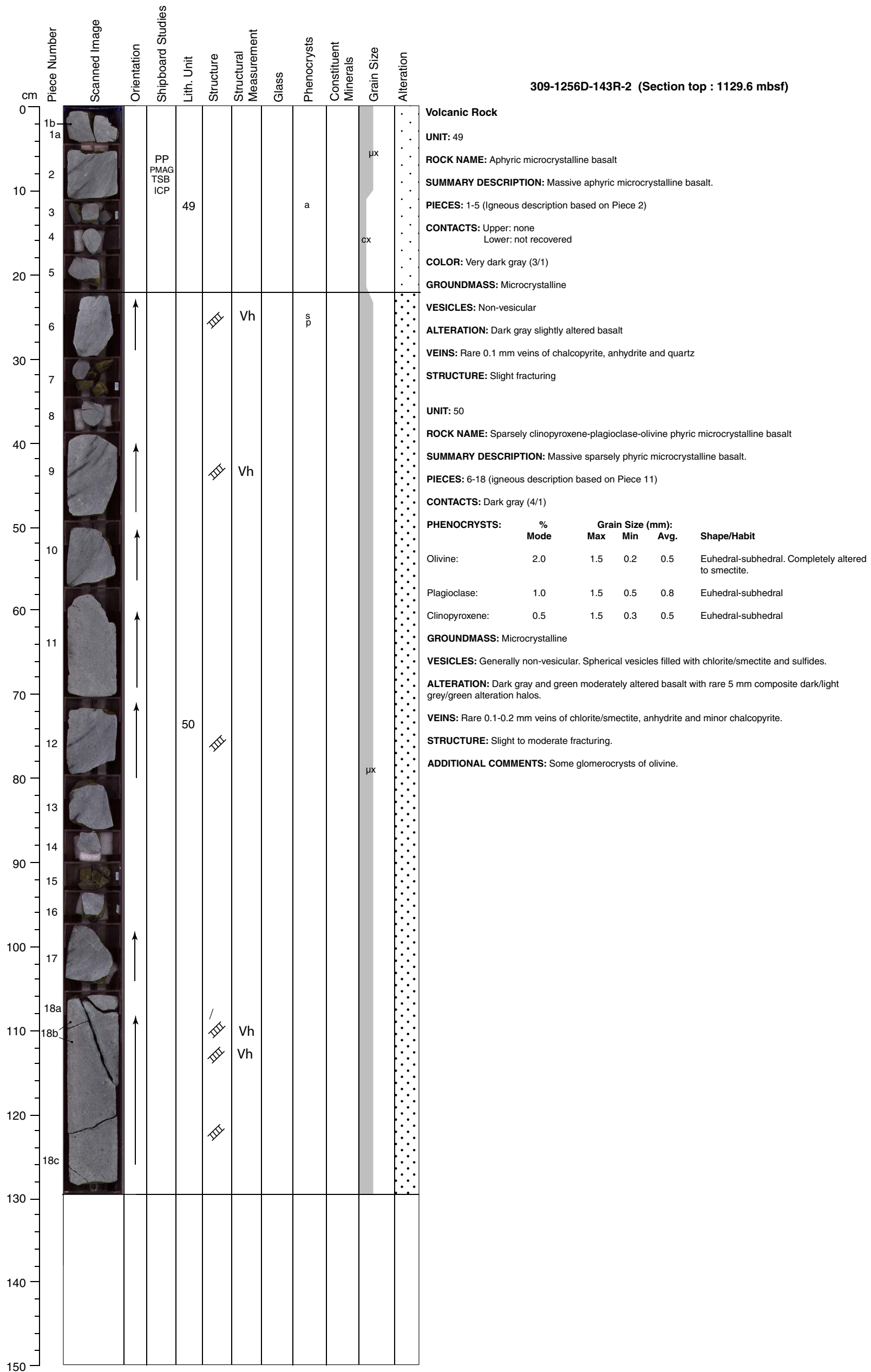


Core Photo

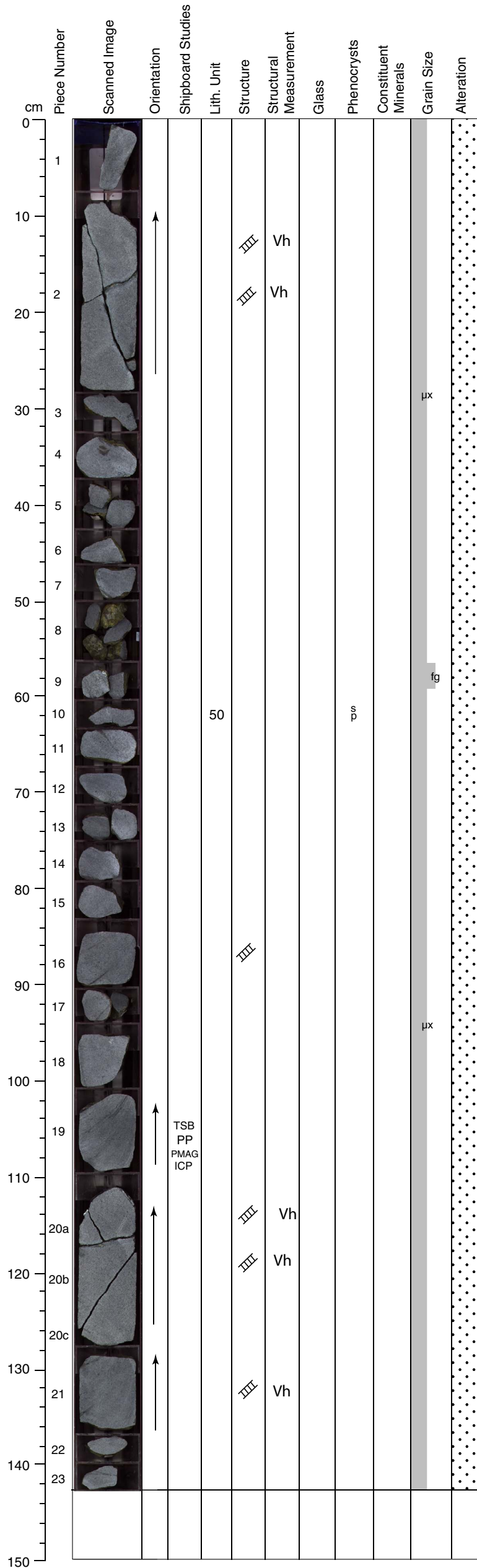
cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration																		
309-1256D-143R-1 (Section top : 1128.1 mbsf)																														
0												Volcanic Rock																		
1	1										µx	UNIT: 48																		
2	2					III						ROCK NAME: Aphyric cryptocrystalline basalt																		
3	3											SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.																		
4	4											PIECES: 1-11 (igneous description based on Piece 5a)																		
5	5a											CONTACTS: Upper: none Lower: brecciated flow top with chilled margin																		
6	5c,b			48		⊗	Vh		a		cx	COLOR: Very dark gray (3/1)																		
7	6											PHENOCRYSTS:																		
8	7		↑	TSB		⊗						<table border="1"> <thead> <tr> <th></th> <th>% Mode</th> <th colspan="3">Grain Size (mm):</th> <th>Shape/Habit</th> </tr> <tr> <th></th> <th></th> <th>Max</th> <th>Min</th> <th>Avg.</th> <th></th> </tr> </thead> <tbody> <tr> <td>Olivine:</td> <td>0.5</td> <td>0.8</td> <td>0.2</td> <td>0.5</td> <td>Subhedral</td> </tr> </tbody> </table>		% Mode	Grain Size (mm):			Shape/Habit			Max	Min	Avg.		Olivine:	0.5	0.8	0.2	0.5	Subhedral
	% Mode	Grain Size (mm):			Shape/Habit																									
		Max	Min	Avg.																										
Olivine:	0.5	0.8	0.2	0.5	Subhedral																									
9	8					⊗	Vh					GROUNDMASS: Cryptocrystalline																		
10	9											VESICLES: Non-vesicular																		
11	10											ALTERATION: Dark gray moderately altered basalt with common 0.5-4.0 mm light green or composite dark/light grey/green alteration halos.																		
12	11											VEINS: Very common 0.1-0.2 mm veins of chlorite/smectite and minor chalcopyrite, and several 1-3.5 mm veins of anhydrite and minor chlorite/smectite.																		
13	12											STRUCTURE: High fracturing. Dilational steeply dipping veins in Pieces 3 and 5.																		
14	13a					III	Vh					ADDITIONAL COMMENTS: Pieces 7-11 are part of the brecciated unit with cryptocrystalline clasts. A few altered olivines are replaced by chlorite/smectite and sulfides in Pieces 5 and 6.																		
15	13b											UNIT: 49																		
16	13c											ROCK NAME: Aphyric microcrystalline basalt																		
17	13d					III	Vh					SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.																		
18	13c											PIECES: 12-22 (igneous description based on Piece 19b)																		
19	14a					III	Vh					CONTACTS: Upper: brecciated flow top with chilled margin Lower: none																		
20	14b											COLOR: Very dark gray (3/1)																		
21	14a					III	Vh					PHENOCRYSTS:																		
22	14b											<table border="1"> <thead> <tr> <th></th> <th>% Mode</th> <th colspan="3">Grain Size (mm):</th> <th>Shape/Habit</th> </tr> <tr> <th></th> <th></th> <th>Max</th> <th>Min</th> <th>Avg.</th> <th></th> </tr> </thead> <tbody> <tr> <td>Clinopyroxene:</td> <td>0.1</td> <td>1.4</td> <td>1.2</td> <td>1.3</td> <td>Subhedral</td> </tr> </tbody> </table>		% Mode	Grain Size (mm):			Shape/Habit			Max	Min	Avg.		Clinopyroxene:	0.1	1.4	1.2	1.3	Subhedral
	% Mode	Grain Size (mm):			Shape/Habit																									
		Max	Min	Avg.																										
Clinopyroxene:	0.1	1.4	1.2	1.3	Subhedral																									
23	15a											GROUNDMASS: Microcrystalline																		
24	15b					III	Vh					VESICLES: Non-vesicular																		
25	15a											ALTERATION: Dark gray and grayish green moderately altered basalt with amygdales of chlorite/smectite.																		
26	15b					III	Vh					VEINS: Common 0.1-0.2 mm veins of chlorite/smectite and minor chalcopyrite.																		
27	15d											STRUCTURE: Moderate to high fracturing; heterogeneously distributed.																		
28	15e			49		III	Vh		a		µx	ADDITIONAL COMMENTS: Clinopyroxene forms glomeroporphyritic texture with small plagioclase grains in Pieces 19a and 19b.																		
29	16																													
30	17b																													
31	17a																													
32	17c																													
33	18a																													
34	18b																													
35	19a					/	J																							
36	19b																													
37	20			XRD		III	Vh																							
38	21																													
39	22																													



Core Photo



Core Photo



309-1256D-144R-1 (Section top : 1132.5 mbsf)

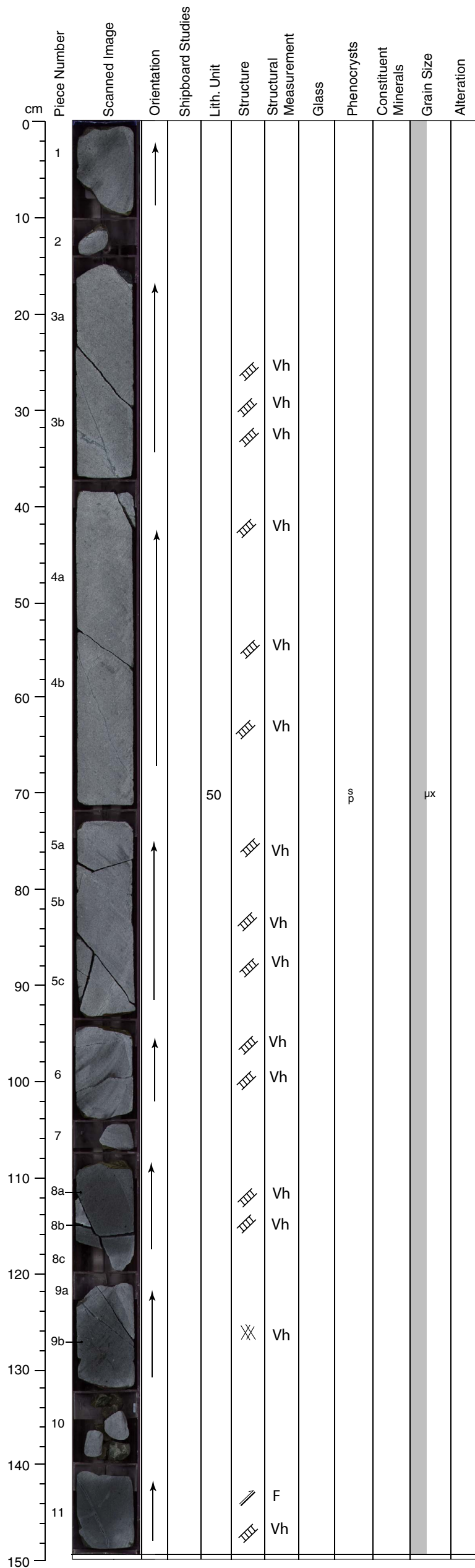
Volcanic Rock
UNIT: 50
ROCK NAME: Sparsely clinopyroxene-plagioclase-olivine phyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive sparsely phyric microcrystalline basalt.
PIECES: 1-23 (igneous description based on Piece 19)
CONTACTS: None
COLOR: Very dark gray (3/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	2.0	1.2	0.2	0.5	Subhedral. Completely altered to chlorite/smectite.
Plagioclase:	1.0	1.5	0.5	0.8	Euhedral-subhedral
Clinopyroxene:	0.5	1.5	0.3	0.5	Euhedral-subhedral

GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and green moderately altered basalt with several 1-4 mm composite dark/light gray/green alteration halos.
VEINS: Several 0.1 mm veins of chlorite/smectite and minor chalcopyrite and pyrite
STRUCTURE: Slight fracturing
ADDITIONAL COMMENTS: Fine-grained patches (1-2 cm) are distributed in all pieces. Some pieces are moderately clinopyroxene-plagioclase-olivine phyric (eg. Piece 11).



Core Photo



309-1256D-144R-2 (Section top : 1133.9 mbsf)

Volcanic Rock

UNIT: 50

ROCK NAME: Sparsely clinopyroxene-plagioclase-olivine phyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive sparsely phyric microcrystalline basalt.

PIECES: 1-11 (igneous description based on Piece 3)

CONTACTS: None

COLOR: Very dark gray (3/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	2.5	1.0	0.1	0.5	Subhedral. Completely altered to chlorite/smectite.
Plagioclase:	1.0	1.2	0.2	0.5	Euhedral-subhedral
Clinopyroxene:	0.5	1.0	0.3	0.5	Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Generally non-vesicular. A few spherical vesicles filled with chlorite/smectite.

ALTERATION: Dark gray and green moderately altered basalt with several 1.0-2.5 mm composite dark/light gray/green alteration halos.

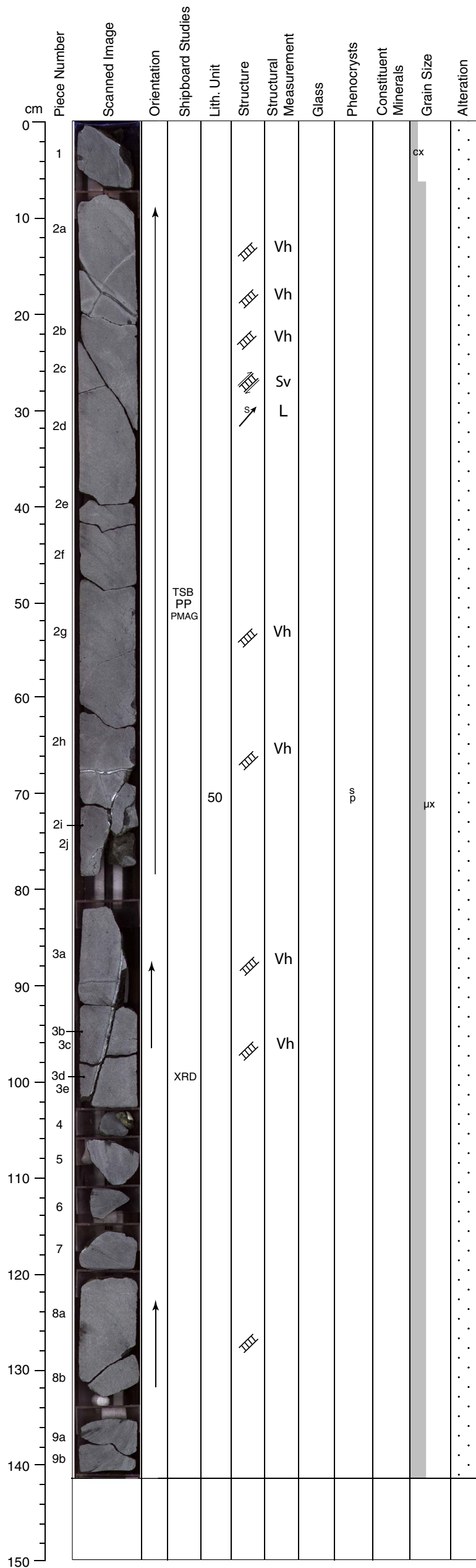
VEINS: Very common 0.1 mm veins of chlorite/smectite and minor pyrite and anhydrite. One 2.5 mm vein of chlorite/smectite and anhydrite in Piece 3b.

STRUCTURE: High fracturing; heterogeneously distributed. Vein network in Piece 9.

ADDITIONAL COMMENTS: Fine-grained patches (1-2 cm) are distributed throughout the rocks. Rocks grade into more fine-grained pieces at the bottom of the section.



Core Photo



309-1256D-145R-1 (Section top : 1137.5 mbsf)

Volcanic Rock

UNIT: 50

ROCK NAME: Sparsely clinopyroxene-plagioclase-olivine phyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive sparsely phyric microcrystalline basalt.

PIECES: 1-9 (igneous description based on Piece 2a)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	1.0	1.0	0.5	0.7	Subhedral. Completely replaced by chlorite/smectite.
Plagioclase:	0.5	1.0	0.5	0.7	Subhedral
Clinopyroxene:	0.1	1.2	0.8	1.0	Euhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

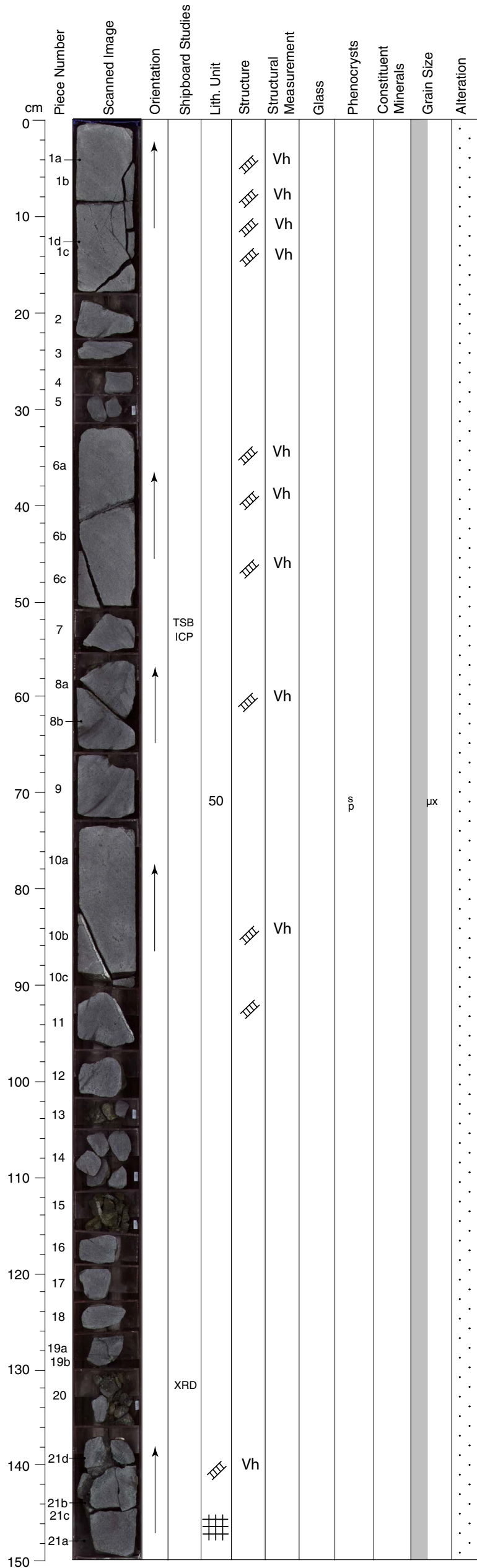
ALTERATION: Dark gray slightly altered basalt with common 1.5-4.4 mm simple or composite dark/light gray/green alteration halos.

VEINS: Very common 0.1-4 mm veins of chlorite/smectite, anhydrite and minor pyrite and quartz.

STRUCTURE: High fracturing; evenly distributed. Y-shaped fractures in Piece 2.



Core Photo



309-1256D-145R-2 (Section top : 1138.9 mbsf)

Volcanic Rock

UNIT: 50

ROCK NAME: Sparsely plagioclase-clinopyroxene-olivine phyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive sparsely phyric microcrystalline basalt.

PIECES: 1-21 (igneous description based on Piece 6a)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm)			Shape/Habit
		Max	Min	Avg.	
Olivine:	1	1.2	0.2	1	Euhedral-subhedral. Completely replaced by chlorite/smectite.
Plagioclase:	0.1	1.0	0.5	0.7	Euhedral
Clinopyroxene:	0.3	1.5	0.7	0.7	Subhedral, subophitically enclosing plagioclase

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with common 0.6-6 mm composite dark/light gray/green alteration halos

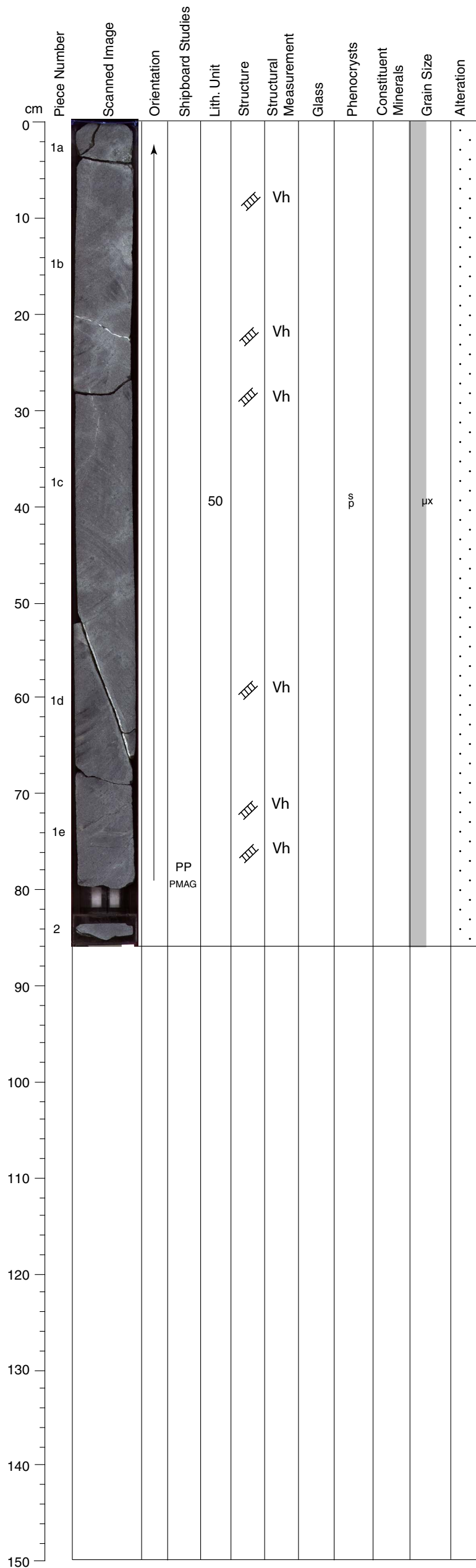
VEINS: Very common 0.1 mm and several 2.5 mm veins of chlorite/smectite, anhydrite and pyrite

STRUCTURE: Moderate fracturing; evenly distributed. Cataclastic zone in Piece 21.

ADDITIONAL COMMENTS: Small (< 5 mm) segregation patches (with fine- to medium-grained clinopyroxene subophitically enclosing plagioclase needles) are irregularly distributed within the microcrystalline groundmass (e.g. Pieces 8, 9, 10, 11, 12, 13) or are more layered in Piece 21c.



Core Photo



309-1256D-146R-1 (Section top : 1142.2 mbsf)

Volcanic Rock

UNIT: 50

ROCK NAME: Sparsely clinopyroxene-olivine-plagioclase phyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive sparsely phyric microcrystalline basalt.

PIECES: 1-2 (igneous description based on Pieces 1a and 1b)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	2.0	2.0	0.8	1.0	Euhedral-anhedral
Olivine:	0.5	1.0	0.5	1.0	Subhedral. Completely replaced by chlorite/smectite.
Clinopyroxene:	0.5	0.5	0.4	0.5	Subhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray and dark green slightly altered basalt with several 2-5 mm composite dark/light gray/green alteration halos and amygdales of chlorite/smectite

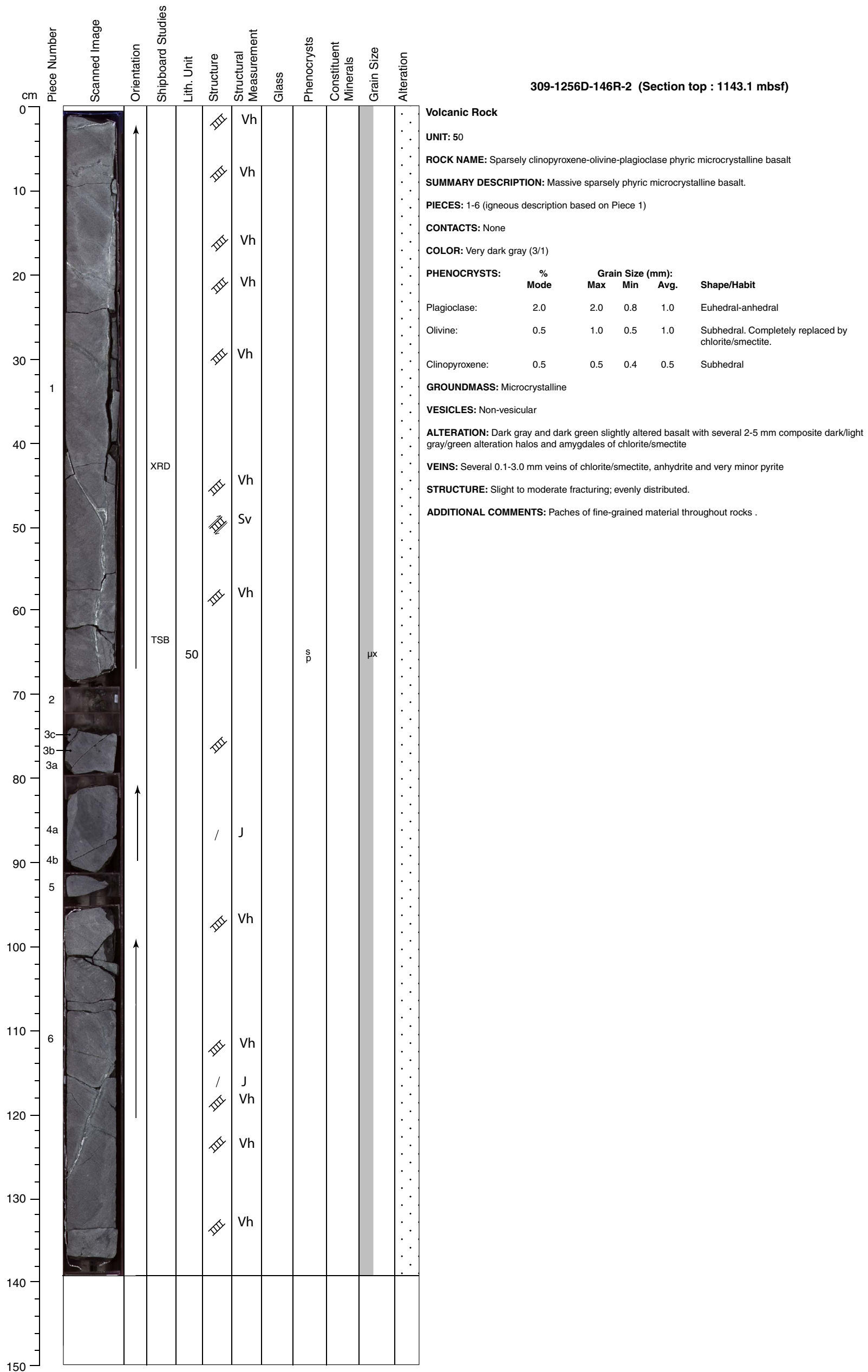
VEINS: Several 0.1-3 mm veins of chlorite/smectite, anhydrite and very minor pyrite

STRUCTURE: Slight to moderate fracturing; evenly distributed.

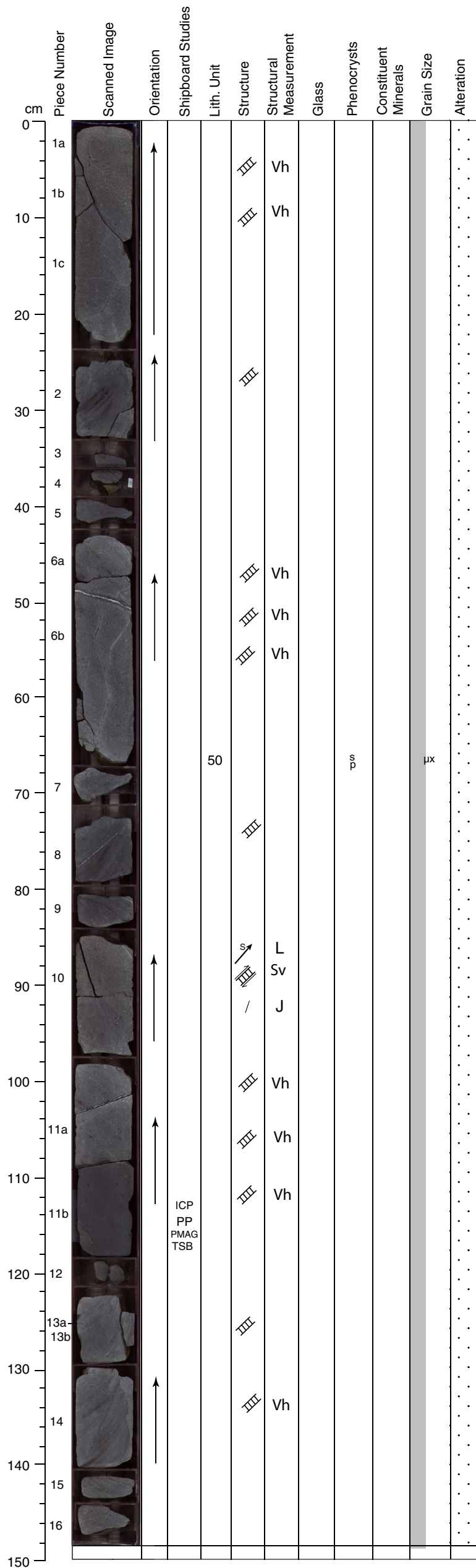
ADDITIONAL COMMENTS: Patches of fine-grained material throughout rocks. Large one is in Piece 1a (2 cm in size). Phenocrysts form glomeroporphyritic texture. Percentage of olivine increases in Piece 1e.



Core Photo



Core Photo



309-1256D-146R-3 (Section top : 1144.4 mbsf)

Volcanic Rock
UNIT: 50
ROCK NAME: Sparsely clinopyroxene-olivine-plagioclase phyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive sparsely phyric microcrystalline basalt.
PIECES: 1-16 (igneous description based on Piece 8)
CONTACTS: None
COLOR: Very dark gray (3/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	1	1.3	0.4	1.0	Euhedral to anhedral
Olivine:	0.5	1.2	0.5	1.0	Euhedral-subhedral. Completely altered to chlorite/smectite.
Clinopyroxene:	0.1	0.3	0.2	0.2	Subhedral

GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with several 0.3-4.5 mm simple and composite dark/light gray/green alteration halos and amygdales of chlorite/smectite and anhydrite.
VEINS: Very common 0.1-2 mm veins of chlorite/smectite and minor anhydrite and pyrite
STRUCTURE: Moderate fracturing; evenly distributed. One oblique slip shear vein in Piece 10.
ADDITIONAL COMMENTS: Phenocrysts form glomeroporphyritic texture.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1											
2	2					III						
10	3				50				s p		µx	
20	4											
20	5											
20	6					III						
20	7											
30	8											
30	9											
40	10											
40	11				51				a		fg- mg	
50	12											
50	13											
50	14											
60	15											
60	16			PP PMAG TSB ICP								
70	17											
70	18											
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-147R-1 (Section top : 1145.2 mbsf)

Volcanic Rock

UNIT: 50

ROCK NAME: Sparsely olivine-plagioclase phyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive sparsely phyric microcrystalline basalt.

PIECES: 1-4 (igneous description based on Piece 3)

CONTACTS: Upper: none
Lower: not recovered

COLOR: Very dark gray (3/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	1.0	1.0	0.5	0.8	Euhedral
Olivine:	0.5	1.2	0.5	0.8	Subhedral, completely altered to chlorite/smectite.

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with one 0.3 m dark gray alteration halo in Piece 3 and amygdales of chlorite/smectite and pyrite

VEINS: Rare 0.1 mm veins of chlorite/smectite

UNIT: 51

ROCK NAME: Aphyric fine- to medium-grained basalt

SUMMARY DESCRIPTION: Massive aphyric fine- to medium-grained basalt.

PIECES: 5-18 (igneous description based on Piece 10)

CONTACTS: Upper: not recovered
Lower: not recovered

COLOR: Dark greenish gray (5BG4/1)

GROUNDMASS: Fine to medium grained (doleritic)

VESICLES: Non-vesicular

ALTERATION: Dark gray and green moderately altered basalt

VEINS: Rare 0.1 mm veins of chlorite/smectite

STRUCTURE: Slight fracturing; evenly distributed.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1											
2	2										μx	
3	3											
4	4										cx	
5	5											
6	6										μx	
7	7											
8	8											
9	9					⌒						
10	10											
11	11											
12	12			52A					a			
13	13											
14	14											
15	15											
16	16											
17	17											
18	18					XX						
19	19											
20	20											
21	21					XX						
22	22											
23	23					⌒						
90												
100												
110												
120												
130												
140												
150												

309-1256D-148R-1 (Section top : 1151.1 mbsf)

Volcanic Rock

UNIT: 52A

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.

PIECES: 1-23 (igneous description based on Piece 4)

CONTACTS: Upper: not recovered
Lower: none

COLOR: Very dark gray (3/1)

PHENOCRYSTS:	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Olivine:	0.1	0.8	0.5	0.6	Euhedral-subhedral completely altered to chlorite/smectite

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with common 0.1-3 mm simple and composite dark/light gray/green alteration halos.

VEINS: Very common 0.1-0.3 (and several 2.0-4.0) mm veins of chlorite/smectite and minor pyrite and anhydrite.

STRUCTURE: Slight fracturing; evenly distributed.

ADDITIONAL COMMENTS: Chilled margin (intrusive contact) is present in Piece 9.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
309-1256D-149R-1 (Section top : 1156.1 mbsf)												
0												Volcanic Rock
1	1			XRD	52A							UNIT: 52A
2	2				52 A/B			ca				ROCK NAME: Aphyric cryptocrystalline basalt
10	3			TSB								SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.
10	3				52 A/B							PIECES: 1-8, 10, 13, 14, 16, 19, 24-30 (igneous description based on Piece 6)
20	4				52A							CONTACTS: None. Many intrusive contacts with the chilled margin of dike 52B (Pieces 2, 6, 7, 8, 11b, 15, 16, 19)
20	4				52A							COLOR: Very dark gray (3/1)
20	5				52A							GROUNDMASS: Cryptocrystalline
20	5				52 A/B							VESICLES: Non-vesicular
30	6				52 A/B							ALTERATION: Pieces 1-8 and 19: dark gray slightly altered basalt. Pieces 13, 14 and 24-30: dark gray and dark green moderately altered basalt. Common 0.2-3 mm simple and composite dark/light grey/green alteration halos.
30	7				52 A/B		IC	ca			cx	VEINS: Very common 0.1-8 mm veins of chlorite, anhydrite, epidote, pyrite, anhydrite and minor calcium carbonate.
30	7						Vh					STRUCTURE: Moderate fracturing; heterogeneously distributed. Cataclastic zones close to chilled margins in Pieces 10 and 16.
40	8				52 A/B		IC					ADDITIONAL COMMENTS: The contact between host rock (52A) and dike (52B) is outlined by a 1.0 mm-thick halo that includes pyrite. The contact is sometimes more brecciated (Pieces 7, 8, 16). In some pieces (eg. Pieces 3, 5, 8) there is the occurrence of dike-like veins filled by basaltic cryptocrystalline clasts, altered glassy clasts, and cemented by secondary minerals.
50	9			PP	52B							UNIT: 52B
50	10				52A							ROCK NAME: Aphyric glassy to cryptocrystalline basalt
50	10				52A							SUMMARY DESCRIPTION: Aphyric glassy to cryptocrystalline dike.
60	11a			TSB ICP	52B							PIECES: 2-3, 6-9, 11-12, 15-23 (igneous description based on Piece 11b)
60	11b				52B							CONTACTS: Numerous contacts within 52A (Pieces 2, 6, 7, 8, 11b, 15, 16, 19)
60	11b				52B							COLOR: Black (2.5/1)
70	12				52B							GROUNDMASS: Glassy to cryptocrystalline
70	13				52A			a				VESICLES: Non-vesicular
70	14				52A						µx	ALTERATION: Pieces 2-3, 6-9, 11-12, 17-23: dark gray slightly altered basalt. Pieces 15-16: dark gray and dark green moderately altered basalt. Common 0.2-3 mm simple and composite dark/light gray/green alteration halos.
70	15				52B							VEINS: Very common 0.1-8 mm veins of chlorite, anhydrite, epidote, pyrite, and minor calcium carbonate.
80	16			TSB	52 A/B		IC					STRUCTURE: Moderate fracturing; heterogeneously distributed.
80	16				52B							ADDITIONAL COMMENTS: In some pieces (eg. Piece 6) the chilled margin is altered to white minerals over 2.0 mm long.
90	17				52B							
90	18				52B							cx
90	19			TSB ICP	52 A/B			ca				
100	20				52B							
100	21				52B							
110	22				52B							
110	23				52B							
120	24				52A							
120	25				52A							
120	26				52A							
130	27				52A							µx
130	28			PMAG	52A		Vh					
140	29				52A							
150	30				52A							



Core Photo

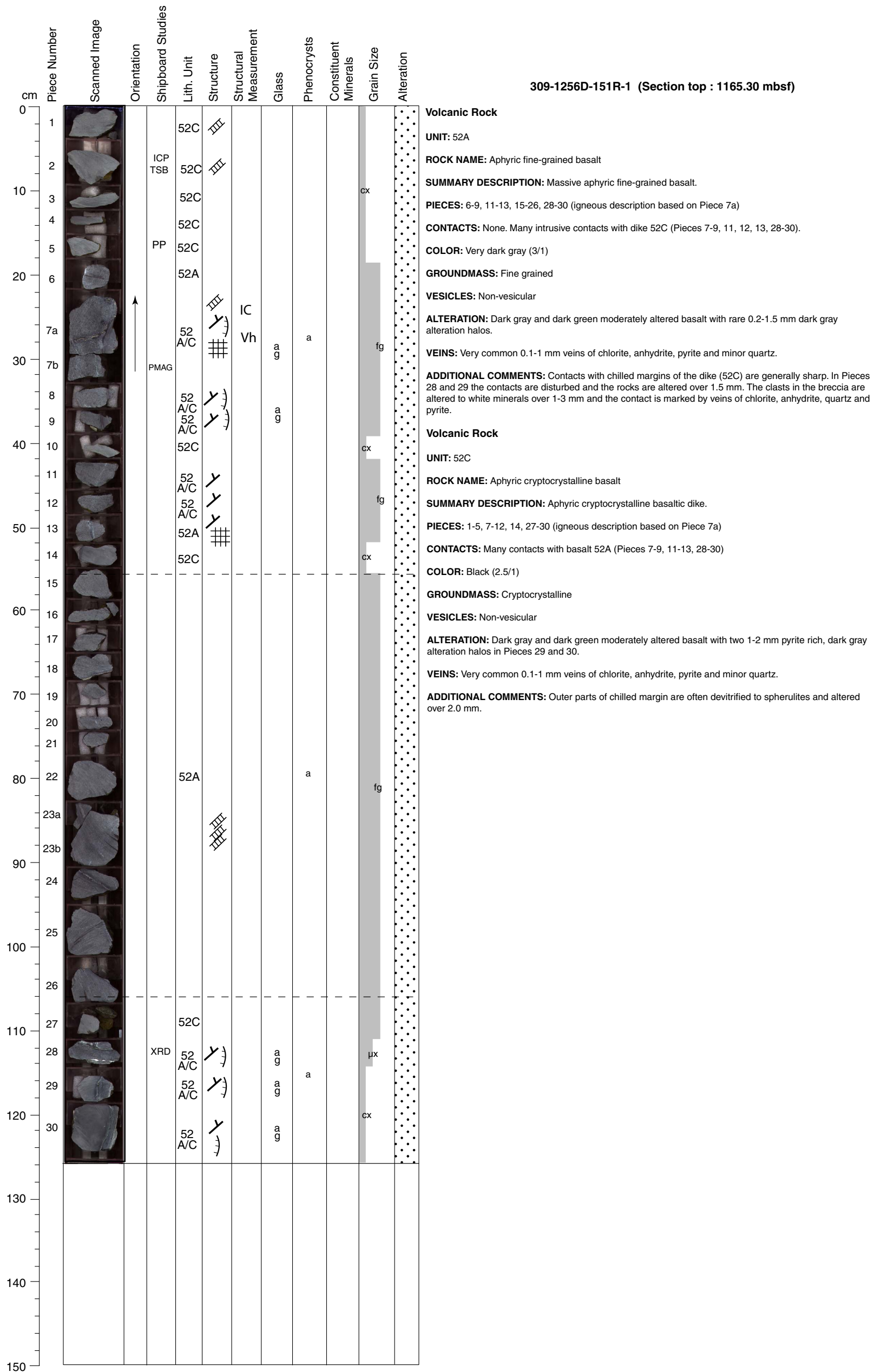
cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1										μx	
2	2										cx	
10	3a		↑	PP PMAG TSB ICP XRD	52A	III	Vh					
20	3b		↑			III	Vh					
30	3c		↑			III	Vh					
40	4								a			
50	5										μx	
60	6a		↑			III	Vh					
70	6b		↑			III	Vh					
80	7		↑			III I	Vh IC	ga				
90	8											
100	9											
110	10											

309-1256D-150R-1 (Section top : 1160.3 mbsf)

Volcanic Rock
UNIT: 52A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-10 (igneous description based on Piece 7)
CONTACTS: None
COLOR: Black (2.5/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray slightly altered basalt with rare 0.2-1.5 mm composite dark/light gray/green alteration halos.
VEINS: Several 0.1-1.3 mm veins of chlorite, anhydrite, pyrite and epidote.
STRUCTURE: Moderate to high fracturing; evenly distributed. Stepped dilational veins in Piece 3.
ADDITIONAL COMMENTS: Piece 7 shows a contact with a glassy to cryptocrystalline dike (similar to Unit 52B). The contact is sharp. A chilled margin is present along the contact of the dike but also in small clasts now included in the host rock. The host microcrystalline basalt is brecciated over 5 mm along the contact. The brecciated zone consists of elongated basaltic clasts of glass (0.1-1 mm) that are cemented by secondary minerals. The elongated clasts of glass are oriented along the cracks.



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1											
2	2											
10	3											
4	4											
20	5a											
	5b											
6	6					III						
7	7											
30	8					III						
9	9				53A	III			a			
40	10		PP			III						
11	11											
50	12a					/						
	12b											
13	13											
60	14											
15	15											
70	16a											
	16b											
17	17					III						
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-152R-1 (Section top : 1169.9 mbsf)

Volcanic Rock

UNIT: 53A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-17 (igneous description based on Piece 11)

CONTACTS: Upper: not recovered
Lower: none

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.2	1	0.2	0.5	Euhedral-subhedral

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt (Pieces 1-5) and dark and green moderately altered basalt (Pieces 6-17), both types of basalt have rare 0.3-0.5 mm light green or dark green alteration halos.

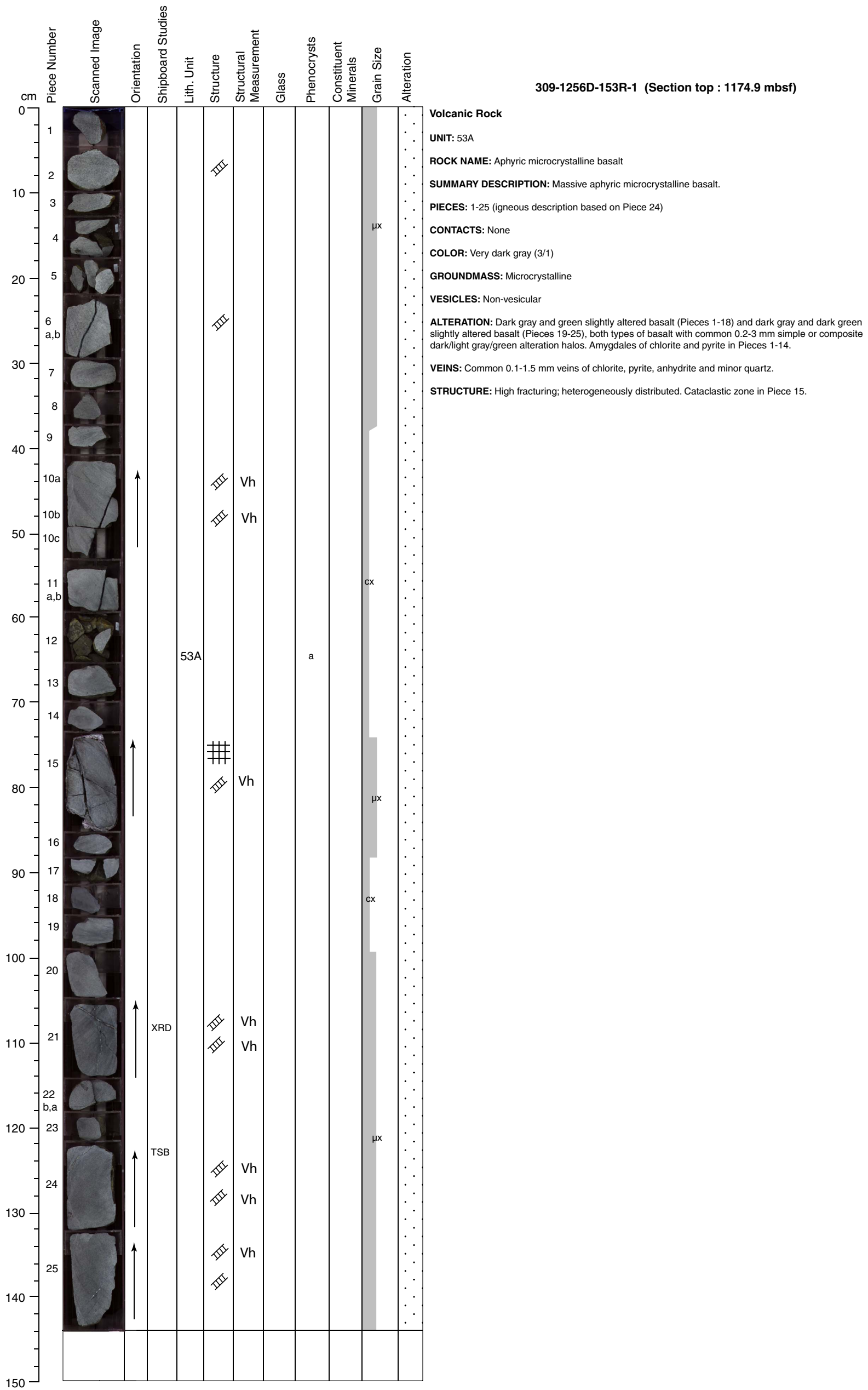
VEINS: Several 0.1-1 mm veins of chlorite and minor pyrite, anhydrite

STRUCTURE: Slight fracturing. No measured structures

ADDITIONAL COMMENTS: Grain size becomes gradually larger towards the bottom of the section and groundmass plagioclase form varioles. Piece 1 hosts a few glomerocrysts of clinopyroxene.



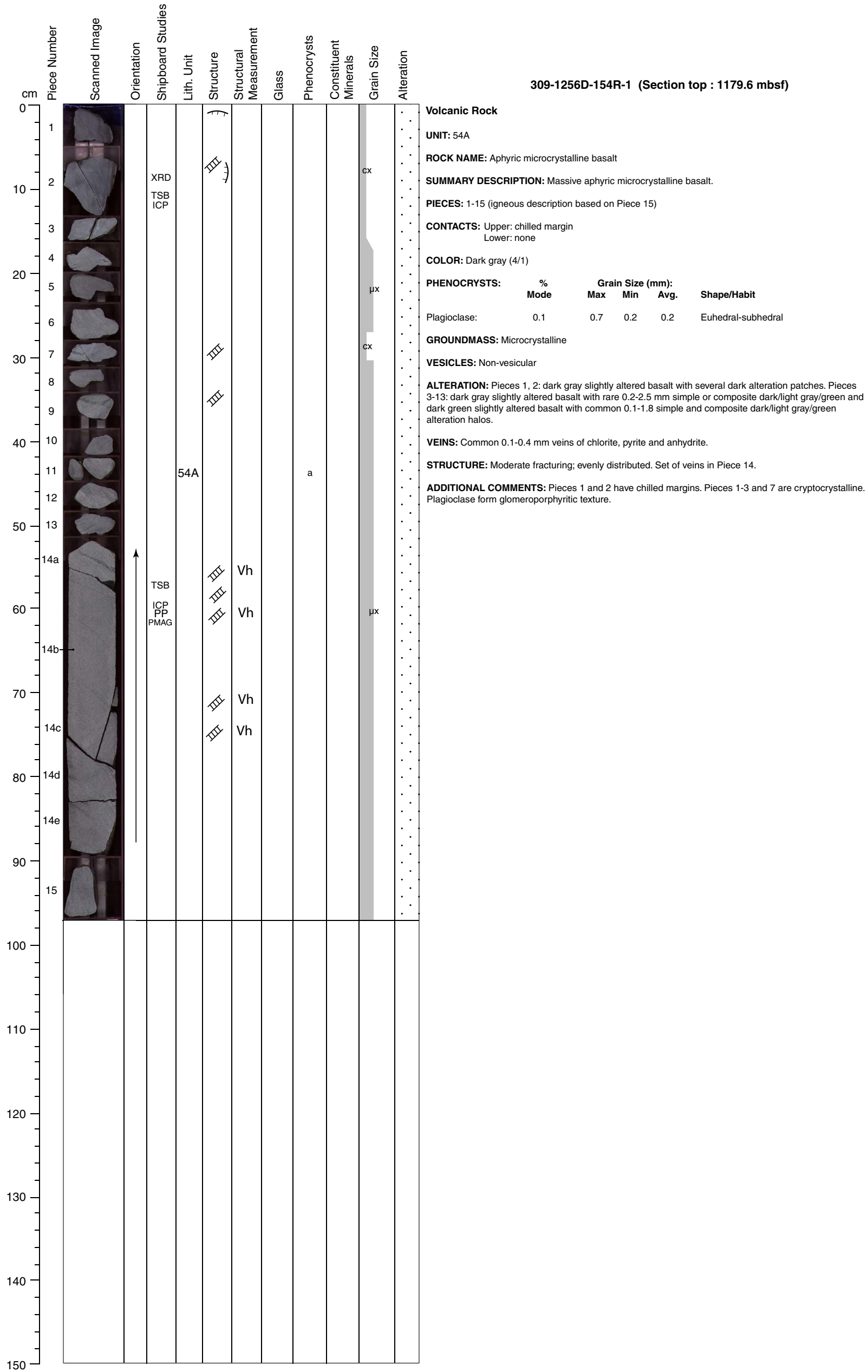
Core Photo



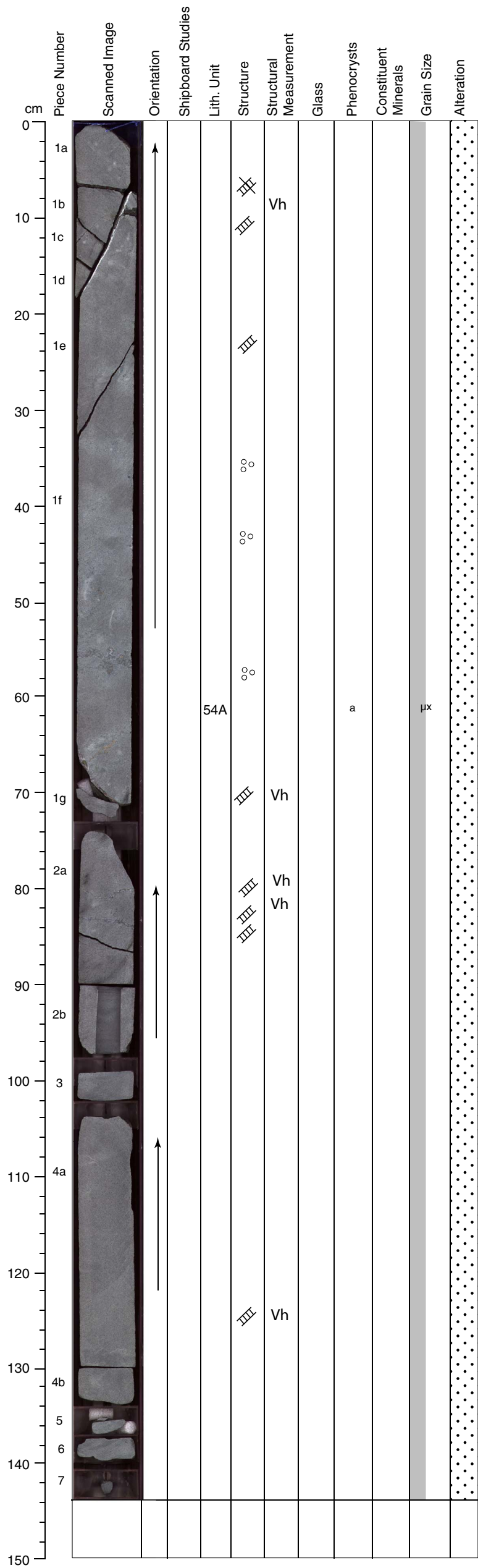
Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
309-1256D-153R-2 (Section top : 1176.3 mbsf)												
0												Volcanic Rock
1	1		↑	TSB		Vh						UNIT: 53A
10			↑			Vh						ROCK NAME: Aphyric microcrystalline basalt
20	2		↑									SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
30	3		↑									PIECES: 1-6, 8, 9 and 12-13 (igneous description based on Piece 9)
40	4		↑	TSB ICP								CONTACTS: Upper: none Lower: contact with a dike (Unit 53B) in Piece 9.
50	5		↑		53A	Vh		a			μx	COLOR: Very dark gray (3/1)
60	6		↑									GROUNDMASS: Microcrystalline
70	7		↑		53B							VESICLES: Non-vesicular
80	8		↑	XRD TSB PP PMAG	53A	Vh						ALTERATION: Green and dark gray slightly altered basalt (Pieces 1-6, 8, 9, 12-13) and dark gray slightly altered basalt (Pieces 7-10), with rare 0.2-2.5 mm simple or composite dark/light gray/green alteration halos. Amygdales of pyrite and chlorite.
90	9		↑		53 A/B	IC						VEINS: Common 0.1-0.4 mm veins of chlorite, pyrite and minor anhydrite
100	10		↑		53B	Vh		a				STRUCTURE: Moderate fracturing; evenly distributed.
110	11		↑		53B							ADDITIONAL COMMENTS: In Piece 8 and 13, 2-cm wide patches of larger grained groundmass (alteration?). Sulfides in veins.
120	12		↑			Vh						UNIT: 53B
130	13		↑		53A	Vh		a			μx	ROCK NAME: Aphyric cryptocrystalline basalt
140												SUMMARY DESCRIPTION: Aphyric cryptocrystalline basaltic dike.
150												PIECES: 7, 9-11 (igneous description based on Piece 11)
												CONTACTS: Chilled margin in Piece 9.
												COLOR: Black (2.5/1)
												GROUNDMASS: Cryptocrystalline
												VESICLES: Non-vesicular
												ALTERATION: Dark gray slightly altered basalt with several 2-3 mm composite dark/light gray/green alteration halos.
												VEINS: Common 0.1-0.7 mm veins of chlorite, pyrite and anhydrite

Core Photo



Core Photo

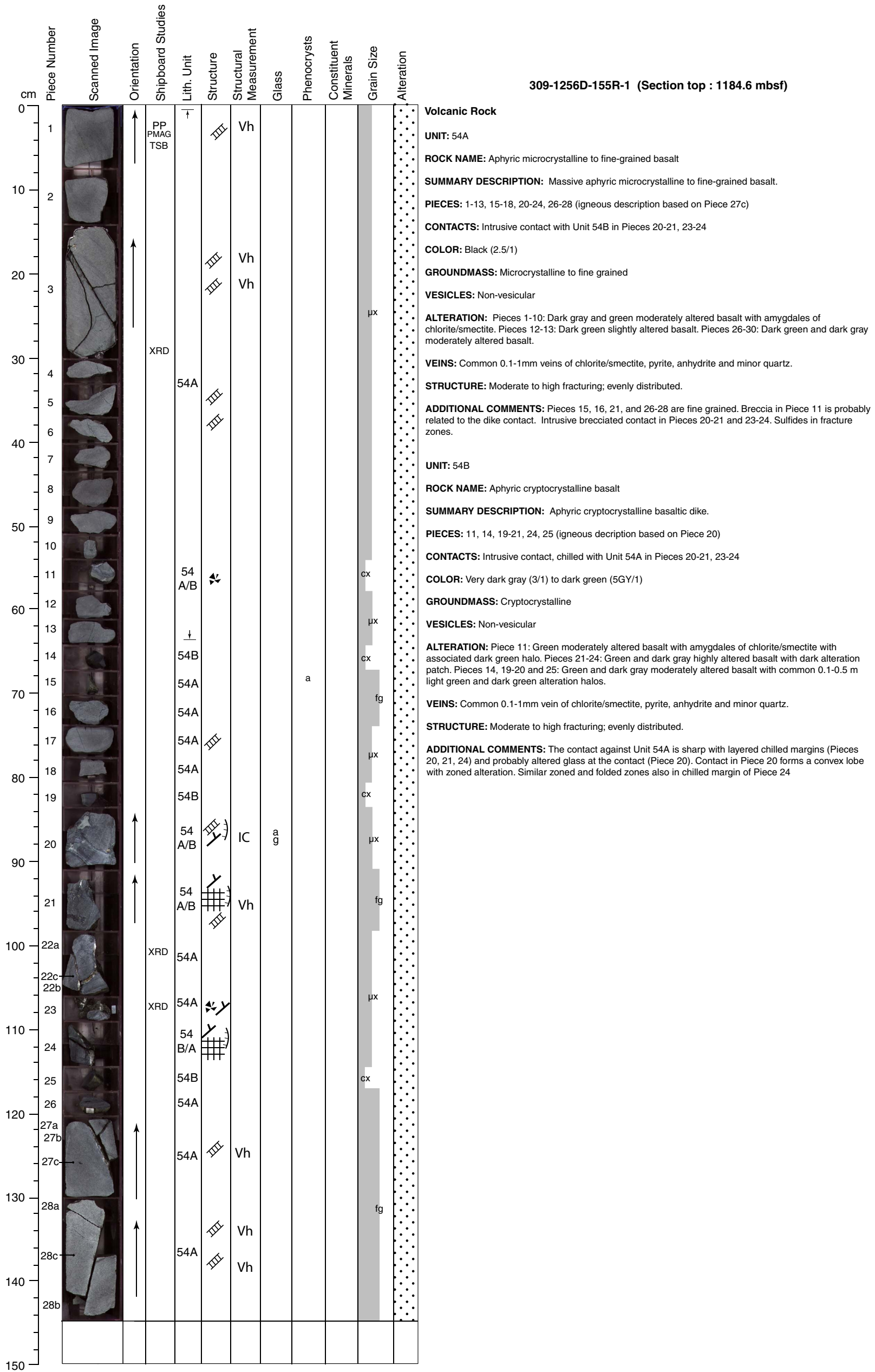


309-1256D-154R-2 (Section top : 1180.57 mbsf)

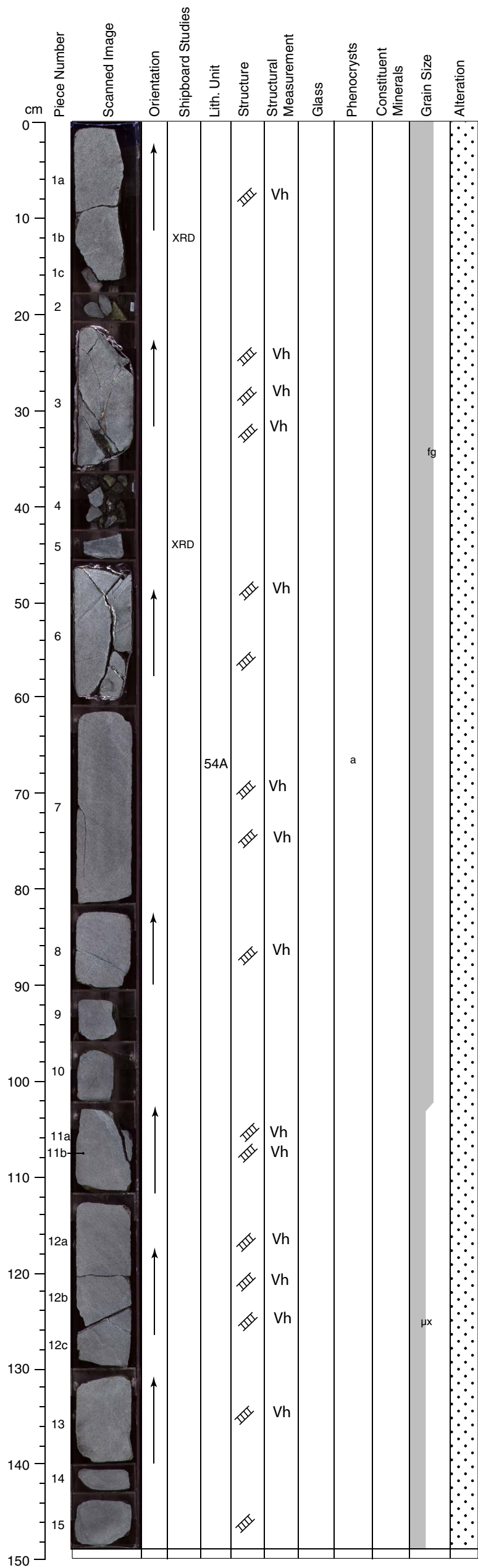
Volcanic Rock
UNIT: 54A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-7 (igneous description based on Piece 4)
CONTACTS: None
COLOR: Dark greenish gray (5BG4/1)
GROUNDMASS: Microcrystalline
VESICLES: Generally non-vesicular. Piece 1f has irregular vesicles (0.1-1.0 mm).
ALTERATION: Dark gray and dark green moderately altered basalt with rare 1.0-2 mm light green alteration halos in Pieces 1f and 2. Abundant amygdales of chlorite, pyrite, anhydrite and quartz.
VEINS: Several 0.1-1.5 mm veins of chlorite, pyrite and anhydrite.
STRUCTURE: Moderate fracturing; heterogeneously distributed. Set of veins in Piece 2.
ADDITIONAL COMMENTS: Alteration patches in Pieces 1 and 2.



Core Photo



Core Photo





309-1256D-155R-2 (Section top : 1186.1 mbsf)

Volcanic Rock
UNIT: 54A
ROCK NAME: Aphyric fine-grained basalt
SUMMARY DESCRIPTION: Massive aphyric fine-grained basalt.
PIECES: 1-15 (igneous description based on Piece 7)
CONTACTS: None
COLOR: Dark gray (4/1)
GROUNDMASS: Fine grained
VESICLES: Non-vesicular
ALTERATION: Dark gray and green moderately altered basalt with several 0.1-4 mm dark green, light green, dark gray and light gray halos
VEINS: Common 0.1-1.5 mm veins of chlorite, anhydrite and pyrite with minor quartz.
STRUCTURE: High fracturing; evenly distributed. Cooling related curved and radial veins cut by a dark green, sulfide bearing vein.
ADDITIONAL COMMENTS: Pieces 11-15 are microcrystalline.



Core Photo

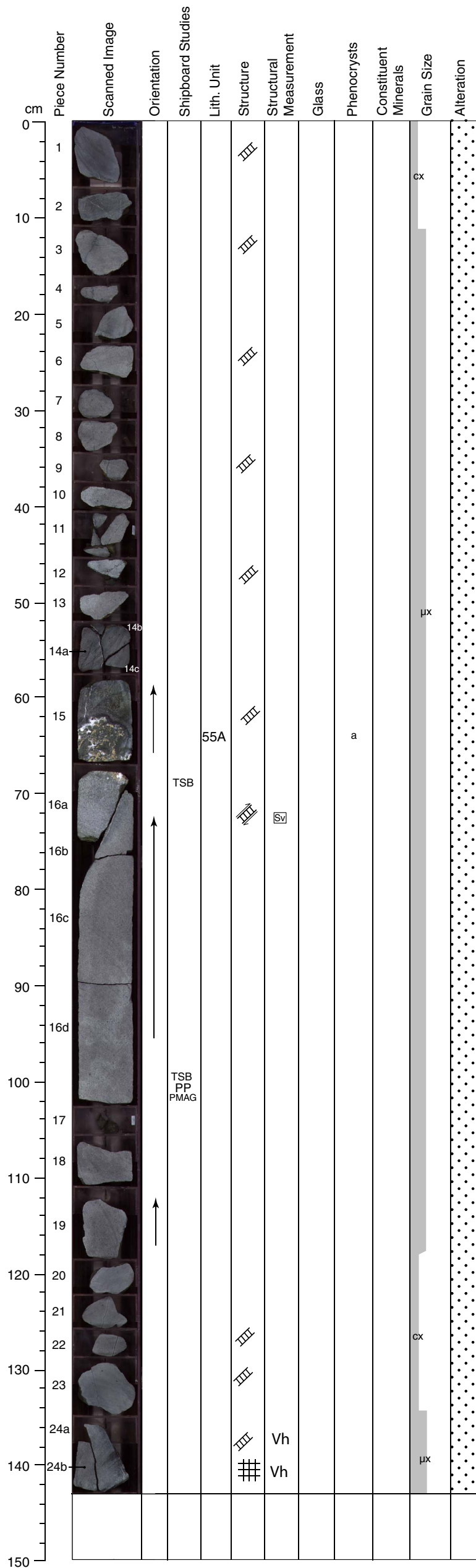
309-1256D-155R-3 (Section top : 1187.6 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1		↑		54A	III	Vh		a		μx	•••••
10	2										fg	•••••
20												
30												
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

Volcanic Rock
UNIT: 54A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-2 (igneous description based on Piece 1)
CONTACTS: Upper: none
 Lower: not recovered
COLOR: Black (2.5/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and green moderately altered basalt.
VEINS: One 0.1 mm vein of chlorite.
STRUCTURE: One measured vein in Piece 1.
ADDITIONAL COMMENTS: Piece 2 is fine grained.



Core Photo



309-1256D-156R-1 (Section top : 1189.4 mbsf)

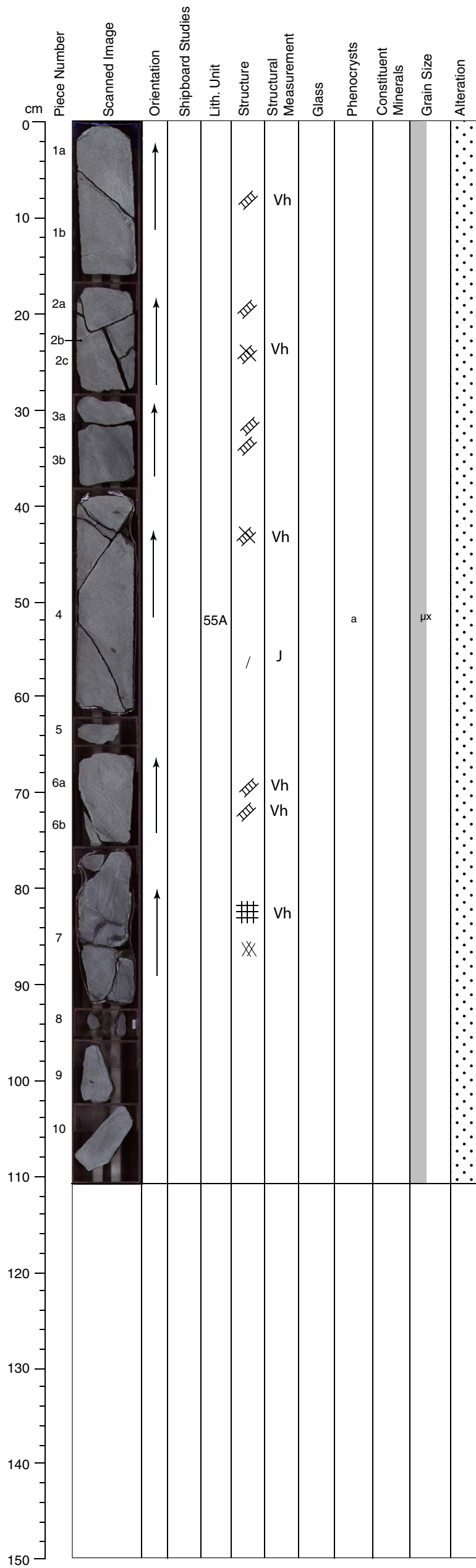
Volcanic Rock
UNIT: 55A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-24 (igneous description based on Piece 16d)
CONTACTS:
 Upper: not recovered (textural change, Piece 1 is cryptocrystalline)
 Lower: none
COLOR: Dark greenish gray (5B4/1) for microcrystalline pieces and very dark gray (3/1) for cryptocrystalline pieces
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.1	1.5	0.5	0.5	Euhedral. Not easily identified due to the large groundmass grain size and to the dark alteration patches

GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Pieces 1,2 and 20-23: Dark gray moderately altered basalt. Pieces 3-19 and 24: Dark gray and dark green moderately altered basalt with green alteration patch in Pieces 15 and 16. Both types of basalts with common 0.1-10 mm alteration halos.
VEINS: Common 0.1-1mm veins of chlorite, anhydrite, minor pyrite and quartz.
STRUCTURE: Moderate fracturing.
ADDITIONAL COMMENTS: Dark alteration patches with a few sulfides replacing interstitial material. Some relicts of clinopyroxene are still identified in some of these alteration patches. These patches are well-developed on top of Piece 16a, where they are associated with pyrite and white minerals. Pieces 20, 21, and 23 are cryptocrystalline (unit margin or part of a dike contact of which has not been recovered?). These pieces contain slightly more euhedral phenocrysts of clinopyroxene (up to 1.5 mm) and plagioclase phenocrysts (0.8 mm) than the microcrystalline pieces.



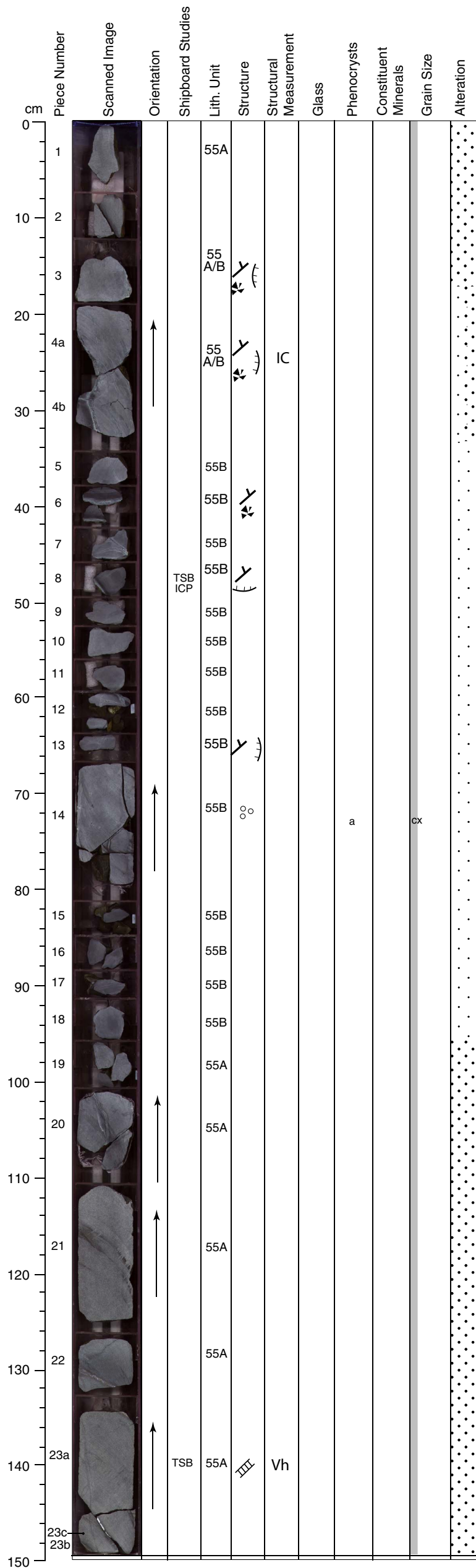
Core Photo



309-1256D-156R-2 (Section top : 1190.8 mbsf)

Volcanic Rock
UNIT: 55A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-10 (igneous description based on Piece 1a)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and dark green moderately altered basalt with common 0.3-4.0 mm simple or composite dark/light green/gray alteration halos.
VEINS: Common 0.1-0.3 mm (and two 2.0-3.0 mm) veins of chlorite, anhydrite, pyrite and minor quartz
STRUCTURE: High fracturing; evenly distributed. Conjugate veins in Pieces 2 and 4. One cataclastic zone in Piece 7.
ADDITIONAL COMMENTS: Sulfides on fracture planes.

Core Photo



309-1256D-157R-1 (Section top : 1194.2 mbsf)

Volcanic Rock

UNIT: 55A

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.

PIECES: 1-4 and 19-23 (igneous description based on Piece 23a)

CONTACTS: None. Contacts with intrusive dikes in Pieces 3 and 4.

COLOR: Dark gray (4/1)

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Pieces 1-4: Dark gray and green moderately altered basalt with several 0.6-2.0 mm simple and composite dark/light green/gray alteration halos in Piece 4. Pieces 19-23: Dark gray and dark green moderately altered basalt with several 0.3-2 mm pyrite rich alteration halos.

VEINS: Common 0.1-1.2 mm veins of chlorite, pyrite and minor anhydrite and quartz.

UNIT: 55B

ROCK NAME: Aphyric cryptocrystalline basaltic dike.

SUMMARY DESCRIPTION: Aphyric cryptocrystalline basaltic dike.

PIECES: 3-18 (igneous description based on Piece 14)

CONTACTS: Altered and brecciated chilled margin in Pieces 3 and 4.

COLOR: Black (2.5/1) for the chilled margin and Very dark gray (3/1) for the inner part.

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	0.5	0.2		Subhedral
Olivine:	0.5	1.2	0.7		Euhedral; completely altered to saponite and sulfides

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular. A few irregular vesicles filled with secondary minerals in Piece 14.

ALTERATION: Dark gray and minor dark green slightly altered basalt with common 0.1-2 mm light green alteration halos.

VEINS: Common 0.1-1.5 mm veins of chlorite, pyrite and minor quartz and anhydrite

ADDITIONAL COMMENTS: Contacts with host rock in Pieces 3 and 4 are marked by a brecciated vein containing altered chilled clasts cemented with secondary minerals. Contacts with another dike in Pieces 6, 8, and 13. The outer part of the chilled margin of the dike is altered to greenish/white secondary minerals. Only Piece 14 contains phenocrysts. In larger grained cryptocrystalline pieces, thin microlites of plagioclase form radiating aggregates.



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1		↑									
1	2a		↑			III	Vh					
2	2b		↑									
3	2c		↑	PP ICP PMAG TSB								
4	3		↑									
5	4		↑			III	Vh					
6	5a		↑			III	Vh					
7	5b		↑	TSB								
8	5c		↑			III	Vh					
9	6		↑			III	Vh					
10	6		↑			III	Vh					
11	7		↑		55A	IV			a		cx	
12	8		↑									
13	9a		↑			IV						
14	9b		↑									
15	10		↑	XRD								
16	11		↑									
17	12		↑									
18	13		↑									

309-1256D-157R-2 (Section top : 1195.7 mbsf)

Volcanic Rock

UNIT: 55A

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.

PIECES: 1-13 (igneous description based on Piece 4)

CONTACTS: None

COLOR: Very dark gray (3/1)

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Pieces 1-3: Dark gray slightly altered basalt. Pieces 4-13: Dark gray and dark green moderately altered basalt with common 0.5-2 mm simple and composite dark/light gray/green alteration halos. Rare 0.3-2 mm pyrite rich alteration halos in Pieces 22 and 23.

VEINS: Very common 0.1-5 mm veins of chlorite, pyrite, quartz and minor anhydrite.

STRUCTURE: Moderate to high fracturality

ADDITIONAL COMMENTS: Grain size slightly increases towards the bottom of the section. Pieces 7 and 9a are brecciated pieces consisting of angular to subangular microcrystalline basaltic clasts (2-6 mm), cemented by sulfides and other secondary minerals.



Core Photo

309-1256D-158R-1 (Section top : 1199.0 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
1	1											
10	2											
20	3a		↑			III	Vh					
	3b											
30	4					III						
40	5											
50	6											
	7				55A				a		cx	
60	8											
70	9											
	10											
80	11											
	12											
90	13a											
	b											
100	14											
	15											
	16											
110	17		↑									
120												
130												
140												
150												

Volcanic Rock
UNIT: 55A
ROCK NAME: Aphyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.
PIECES: 1-17 (igneous description based on Piece 17)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and minor dark green moderately altered basalt with rare 3.0 mm composite dark/light green gray alteration halos.
VEINS: Several 0.1-3.0 mm veins of chlorite, quartz and pyrite
STRUCTURE: Slight fracturing

Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1a		↑									
10	1b		↑									
20	2		↑									
30	3		↑									
40	4		↑									
50	5		↑									
55	6a		↑		55A				a			
56	6b		↑									
60	7		↑									
65	8		↑									
70	9		↑	XRD								
75	10a		↑									
80	10b		↑									
85	11a		↑									
90	11b		↑									
95	12		↑									
100	13		↑									
105	14		↑									
110	15		↑									
115	16		↑									
120	17		↑		56A				a			

309-1256D-159R-1 (Section top : 1203.8 mbsf)

Volcanic Rock

UNIT: 55A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-15 (igneous description based on Piece 1)

CONTACTS:
Upper: none
Lower: not recovered (just textural change at beginning of Unit 56A)

COLOR: Dark gray (4/1)

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

ALTERATION: Pieces 1-11: dark gray and dark green moderately altered basalt with amygdalae of chlorite, calcium carbonate, pyrite and quartz, and light gray and dark green alteration halos around amygdalae. Pieces 12-15: dark gray moderately altered basalt with one 0.1 mm dark gray alteration halo

VEINS: Several 0.1-0.2 mm veins of chlorite, pyrite, anhydrite and quartz

STRUCTURE: Slight to moderate fracturing; evenly distributed, mostly related to the cooling of lava. Incipient brecciation in Piece 12.

ADDITIONAL COMMENTS: Sulfide + quartz and calcium carbonate veins in Pieces 8, 9, 10a and b. Alteration patches in Pieces 10b and 11b. Plagioclase crystals (fibrous, dendritic) are more coarse around the patches.

UNIT: 56A

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.

PIECES: 16-17 (igneous description based on Piece 17)

CONTACTS:
Upper: not recovered (textural change)
Lower: none

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Clinopyroxene:	0.1	0.1	0.1	0.1	Subhedral

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray and dark green moderately altered basalt with green alteration patches with one 0.1-0.4 mm composite dark/light gray/green alteration halo

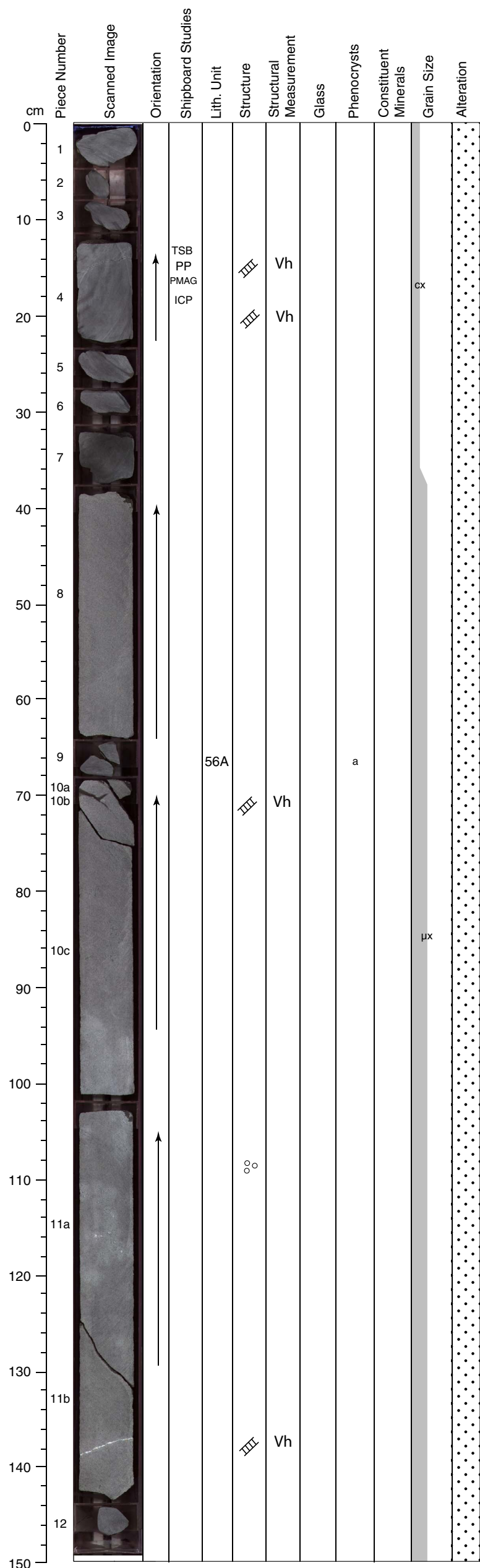
VEINS: Several 0.1-0.2 mm veins of chlorite, pyrite, anhydrite and quartz

STRUCTURE: Slight fracturing.

ADDITIONAL COMMENTS: Small (<0.1 mm) clinopyroxene microphenocrysts throughout Piece 17. Thick alteration layer (2 cm) cuts across Piece 17.



Core Photo



309-1256D-160R-1 (Section top : 1208.6 mbsf)

Volcanic Rock
UNIT: 56A
ROCK NAME: Aphyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.
PIECES: 1-12 (igneous description based on Piece 4)
CONTACTS: None
COLOR: Very dark gray (3/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.8	1	0.2	0.3	Subhedral, fractured
Clinopyroxene:	0.1	0.6	0.6	0.6	Euhedral

GROUNDMASS: Cryptocrystalline
VESICLES: Generally non-vesicular. Irregular vesicles (2x6 mm) in Piece 11a.
ALTERATION: Dark gray and dark green moderately altered basalt with rare 0.2-0.6 mm thick light green or composite dark/light gray/green alteration halos. Abundant amygdales of quartz and chlorite and light green associated alteration halos.
VEINS: Several 0.1-0.3 (and one 1.5) mm veins of chlorite, quartz and minor pyrite and anhydrite.
STRUCTURE: Slight fracturing; evenly distributed.
ADDITIONAL COMMENTS: Some plagioclase phenocrysts are elongated. Plagioclase phenocrysts can form glomeroporphyritic texture. Sulfides disseminated in the groundmass. Some alteration patches in Pieces 10c and 11a.

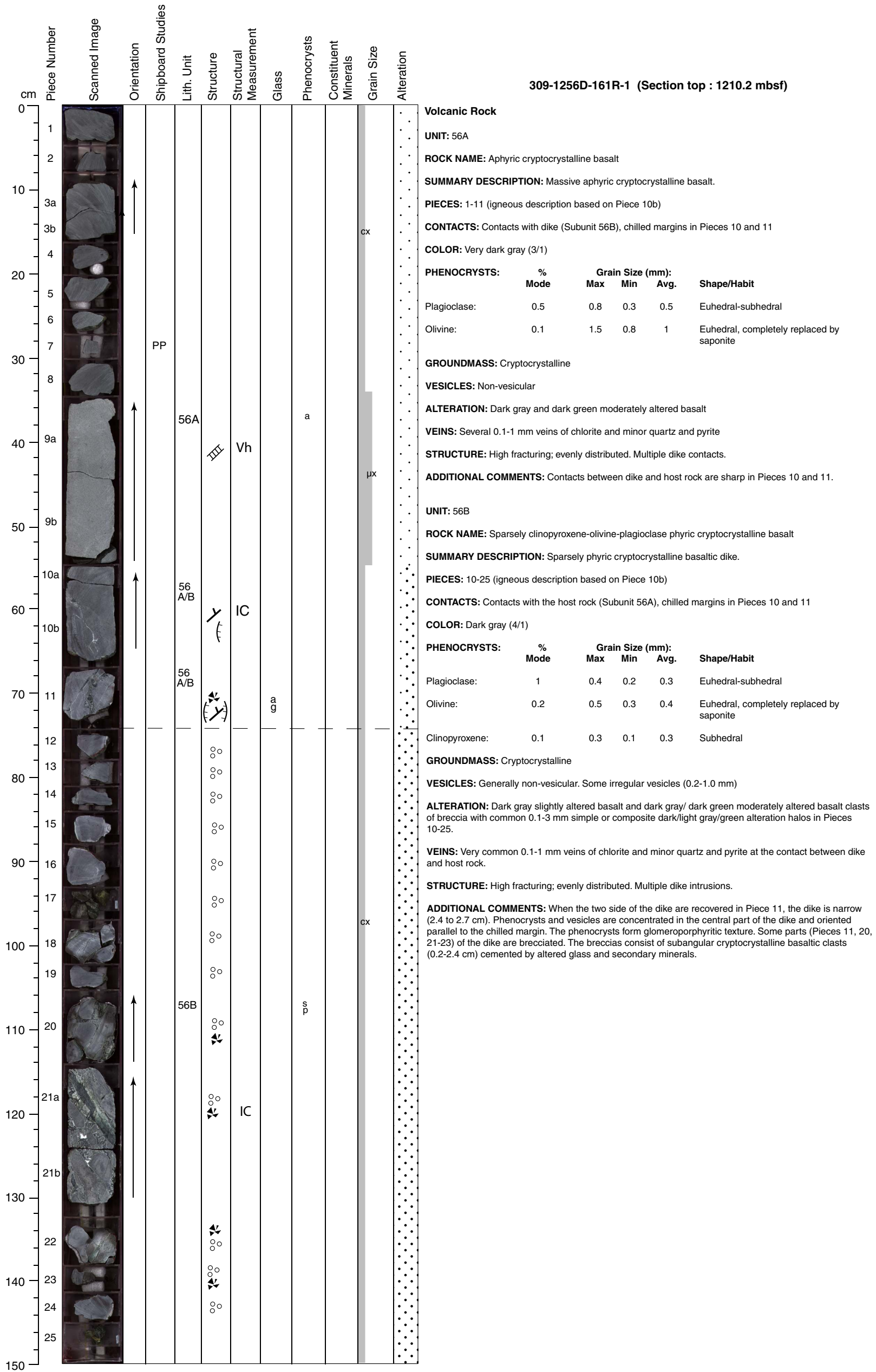


Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration																		
0																														
0	1a		↑									<p>Volcanic Rock</p> <p>UNIT: 56A</p> <p>ROCK NAME: Aphyric cryptocrystalline basalt</p> <p>SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.</p> <p>PIECES: 1-6 (igneous description based on Piece 1a)</p> <p>CONTACTS: None</p> <p>COLOR: Very dark gray (3/1)</p> <p>PHENOCRYSTS:</p> <table border="1"> <thead> <tr> <th></th> <th>% Mode</th> <th colspan="3">Grain Size (mm)</th> <th>Shape/Habit</th> </tr> <tr> <th></th> <th></th> <th>Max</th> <th>Min</th> <th>Avg.</th> <th></th> </tr> </thead> <tbody> <tr> <td>Plagioclase:</td> <td>0.5</td> <td>0.7</td> <td>0.2</td> <td>0.5</td> <td>Euhedral</td> </tr> </tbody> </table> <p>GROUNDMASS: Cryptocrystalline</p> <p>VESICLES: Non-vesicular</p> <p>ALTERATION: Dark gray and dark green moderately altered basalt</p> <p>VEINS: Several 0.1-0.2 mm veins of chlorite, quartz and pyrite</p> <p>STRUCTURE: Slight fracturing</p> <p>ADDITIONAL COMMENTS: Plagioclase phenocrysts form glomeroporphyritic texture. One olivine phenocryst in Piece 1a, completely replaced by saponite and sulfides. Some sulfides disseminated in the groundmass.</p>		% Mode	Grain Size (mm)			Shape/Habit			Max	Min	Avg.		Plagioclase:	0.5	0.7	0.2	0.5	Euhedral
	% Mode	Grain Size (mm)			Shape/Habit																									
		Max	Min	Avg.																										
Plagioclase:	0.5	0.7	0.2	0.5	Euhedral																									
10	1b																													
20	2				56A	III			a		cx																			
30	3																													
40	4																													
50	5																													
60	6																													
70																														
80																														
90																														
100																														
110																														
120																														
130																														
140																														
150																														



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
0	1a		↑	ICP TSB		IC						
0	1b		↑									
10	2		↑									
20	3a		↑	TSB PP PMAG	56B			Ga	Sp			
30	3b		↑									
40	4		↑					Ga				
40	5a		↑									
50	5b		↑									
50	6		↑	TSB								
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												

309-1256D-161R-2 (Section top : 1211.7 mbsf)

Volcanic Rock

UNIT: 56B

ROCK NAME: Sparsely olivine-clinopyroxene-plagioclase phyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Sparsely phyric cryptocrystalline basaltic complex brecciated dikes.

PIECES: 1-6 (igneous descriptions based on Piece 4)

CONTACTS: None

COLOR: Dark gray (4/1) for the inner part and gray (5/1) for the outer part of the clasts.

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	1.0	0.5	0.1	0.3	Euhedral. Some altered to yellowish minerals.
Clinopyroxene:	0.5	0.5	0.3	0.3	Euhedral
Olivine:	0.2	0.8	0.6	0.6	Euhedral. Completely replaced by saponite.

GROUNDMASS: Glassy to cryptocrystalline

VESICLES: Generally non-vesicular. Some irregular vesicles filled with saponite (1.0-2.0 mm).

ALTERATION: Dark gray slightly altered basalt and dark gray and dark green moderately altered basalt clasts of breccia with common 0.1-6.0 mm or composite dark/light gray/green alteration halos.

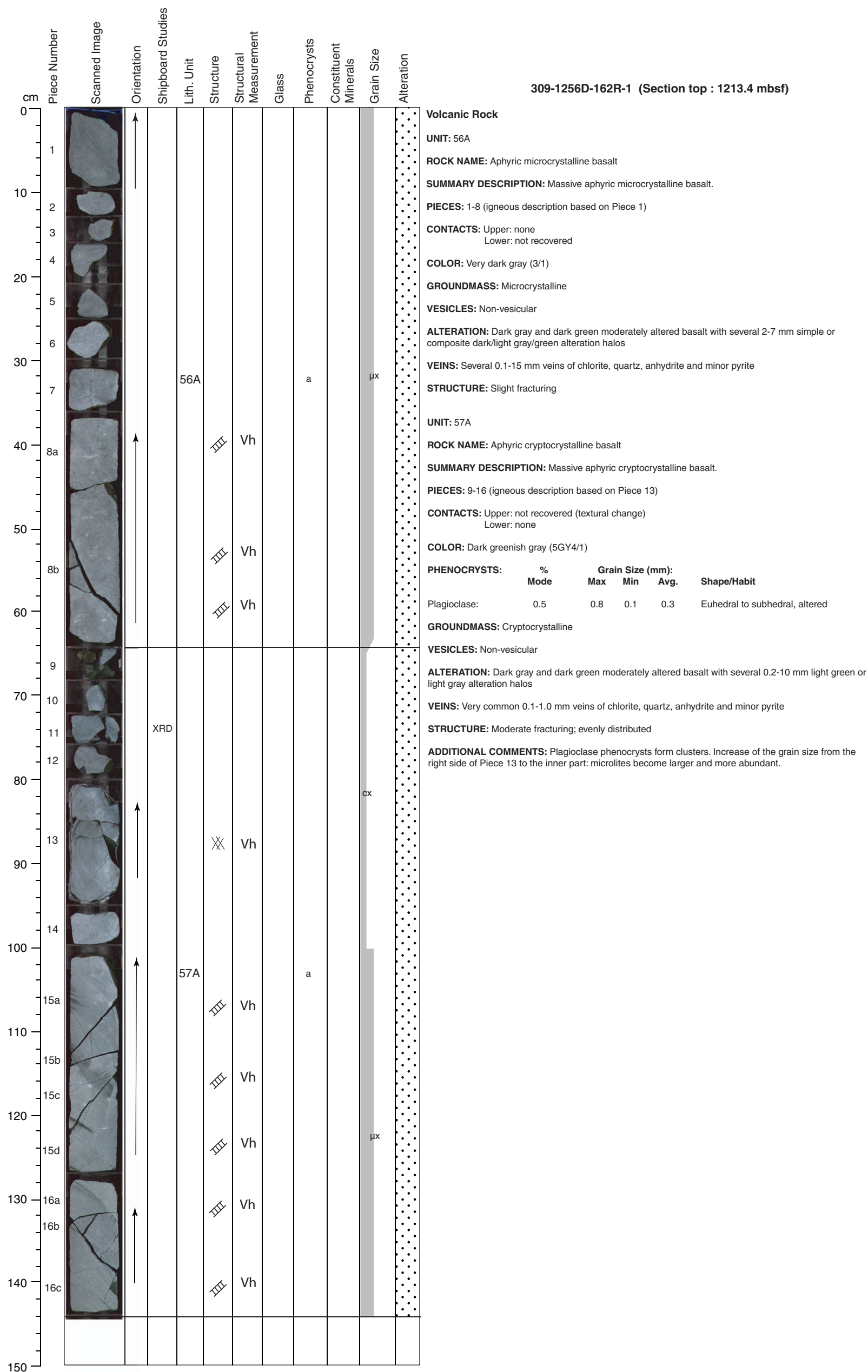
VEINS: Several 0.1-5.0 mm veins of chlorite and minor quartz and pyrite.

STRUCTURE: High-fracturing; evenly distributed. Fracturing is associated with dike intrusion.

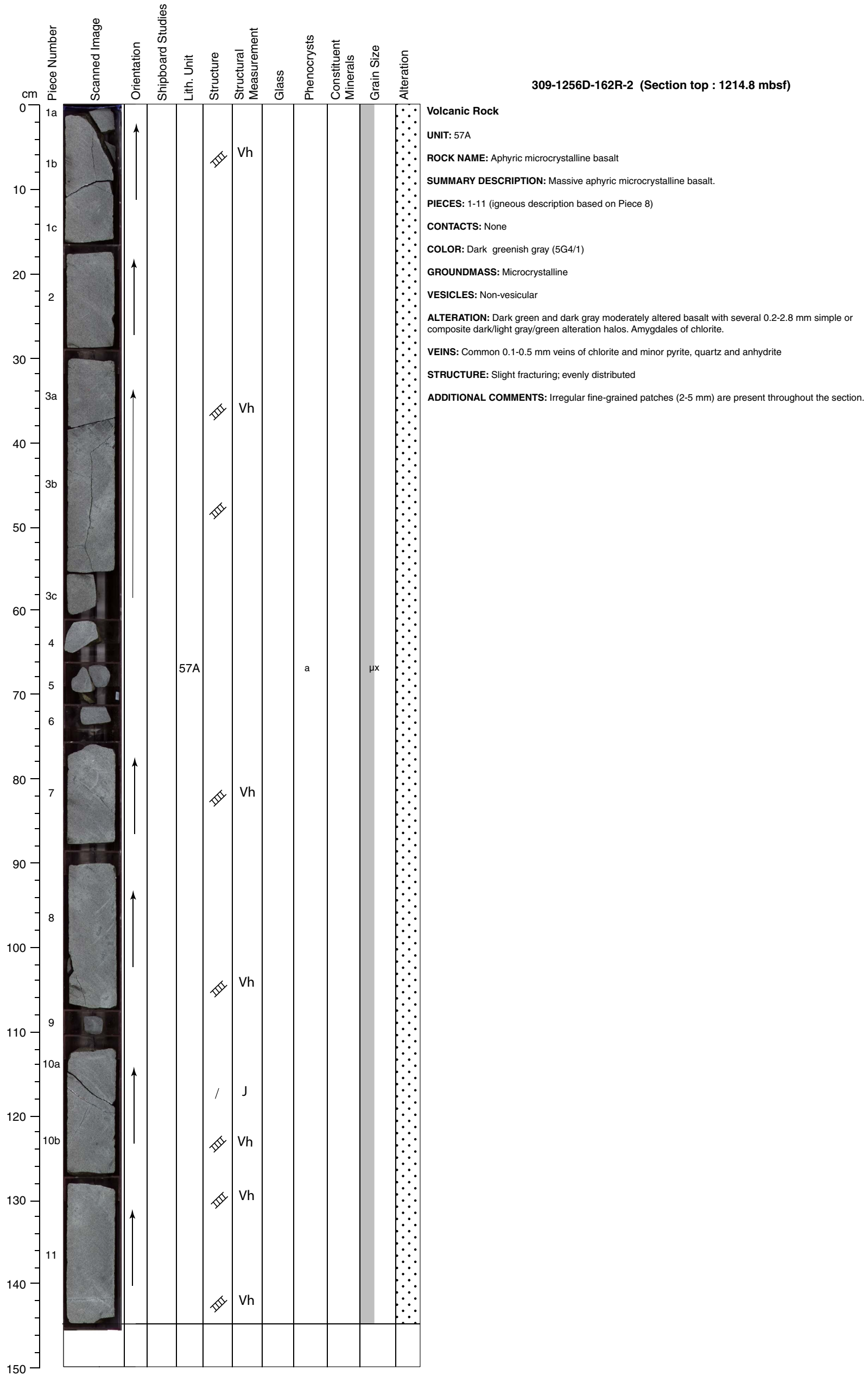
ADDITIONAL COMMENTS: All pieces are breccia with dike clasts. The clasts are angular (0.1-2.0 cm) and made of sparsely phyric spherulitic basalt cemented by altered glass, saponite, and white minerals. Pieces 1 and 4 are less fractured and exhibit dike contacts. In these pieces, the host rock is more glassy (spherulitic) compared to the rock forming Subunit 56A and the entire section is thought to be a complex dike zone, with multiple intrusions. Piece 4 contains a thin dike (2.5 cm) with sharp contacts on each side. The host rock is also spherulitic and contains phenocrysts of plagioclase and clinopyroxene, concentrated along the contact and oriented perpendicular to it. In the dike, the vesicles and phenocrysts form a layer located in the central part of the dike and parallel to the contact. In the outer part of the dike, acicular microlites of plagioclase are oriented parallel to the contact. This area also contains clusters of microphenocrysts of plagioclase and clinopyroxene. The same features are observed in Piece 1. In this piece, a small angular fragment (0.4 x 0.3 cm) of the host rock is found at the boundary of the chilled margin of the dike within the more crystallized inner part. In Piece 5b, a large aggregate (0.8 cm) of olivine phenocryst is present.



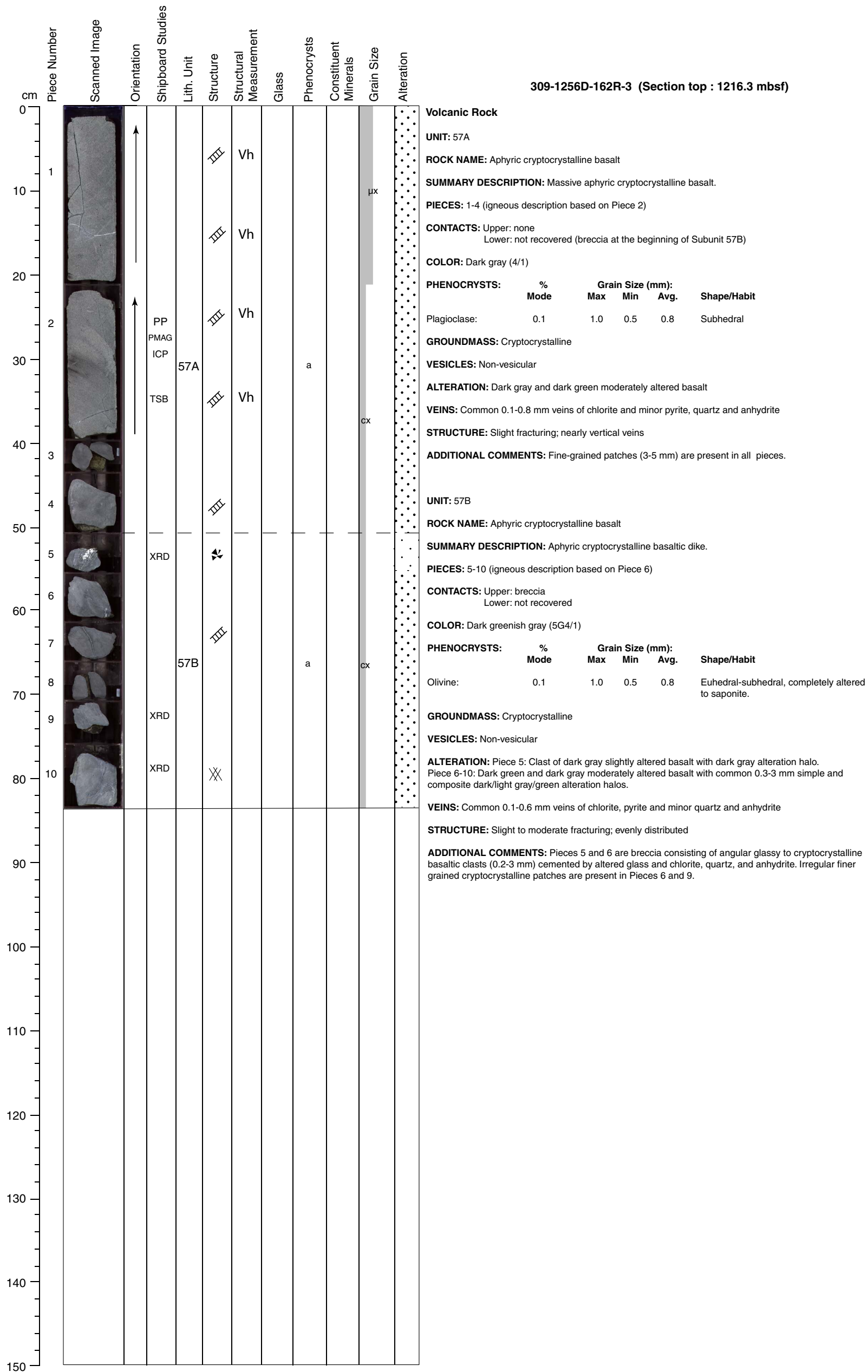
Core Photo



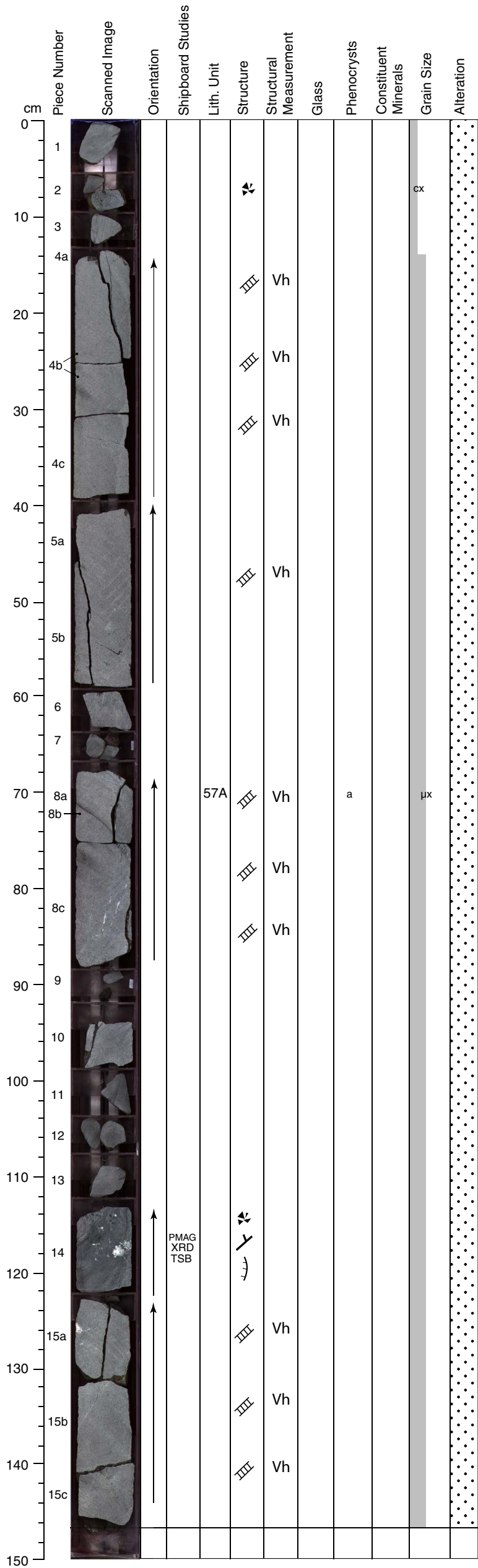
Core Photo



Core Photo



Core Photo

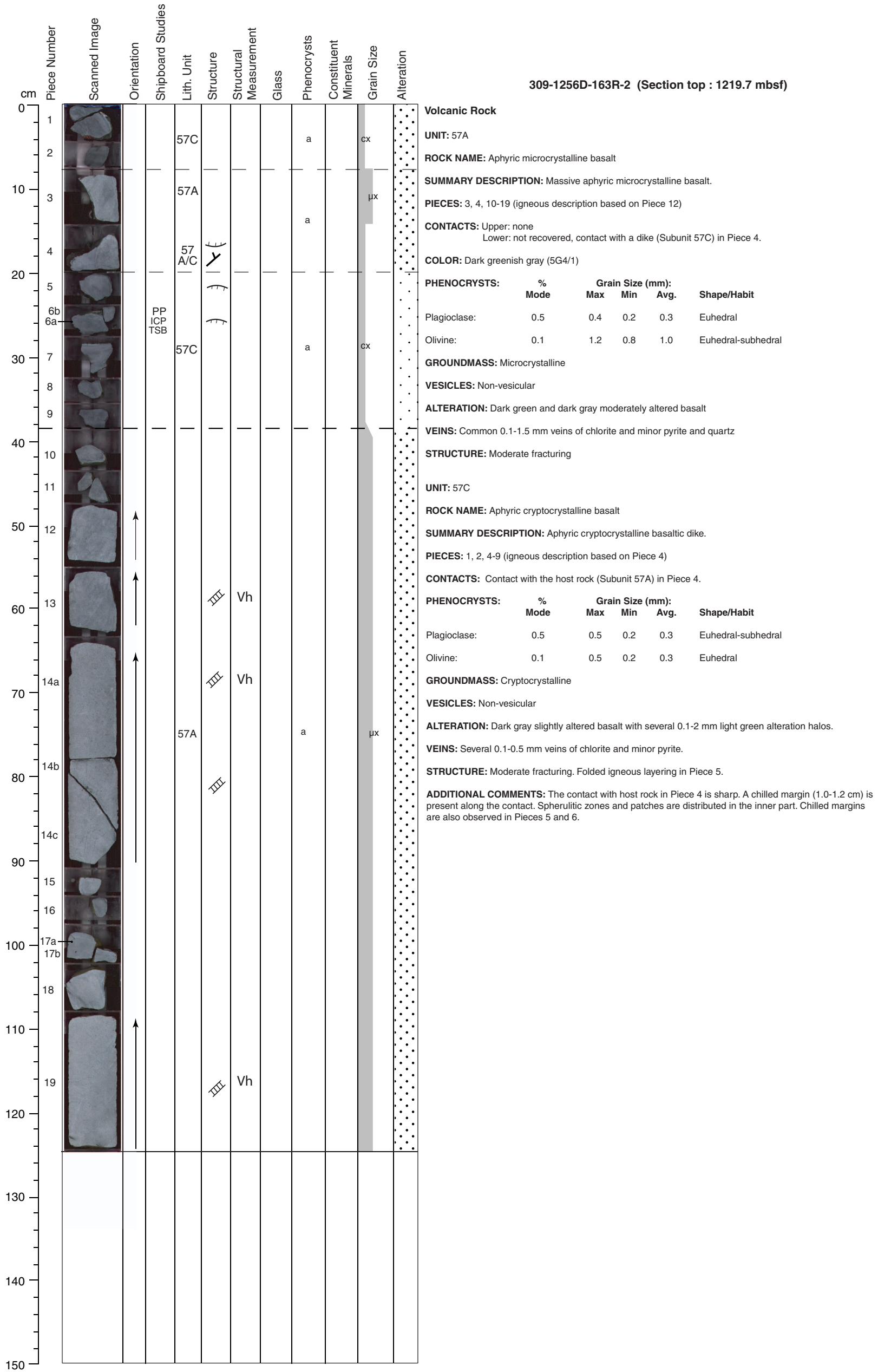


309-1256D-163R-1 (Section top : 1218.2mbsf)

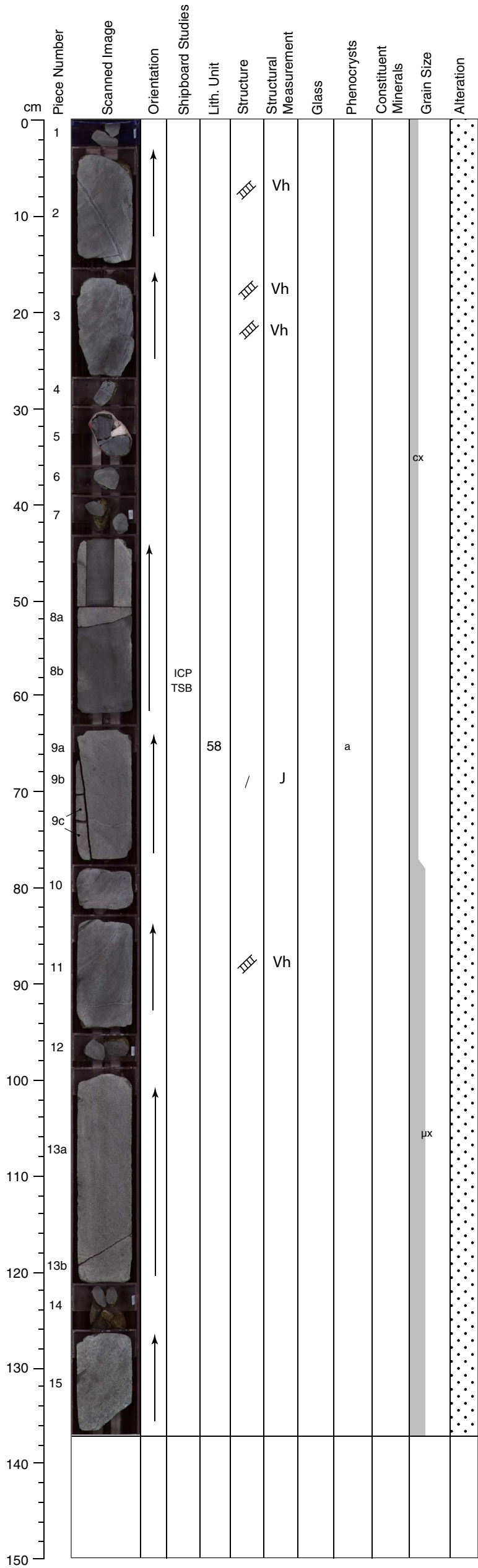
Volcanic Rock
UNIT: 57A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-15 (igneous description based on Piece 4c)
CONTACTS: None. An intrusive contact in Piece 14.
COLOR: Dark greenish gray (5G4/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark green and dark gray moderately altered basalt. Dark green alteration patch around amygdale of quartz in Piece 14.
VEINS: Common 0.1-1 mm veins of chlorite, pyrite, anhydrite and minor quartz
STRUCTURE: Moderate fracturing; evenly distributed. Set of parallel, nearly vertical veins in Piece 8c.
ADDITIONAL COMMENTS: In Piece 14, the massive basalt is intruded by a cryptocrystalline lobate dike. The chilled margin of the dike is brecciated (0.5- 3 mm clasts). Some glassy clasts are now included in the host rock.



Core Photo



Core Photo



309-1256D-163R-3 (Section top : 1221.0 mbsf)

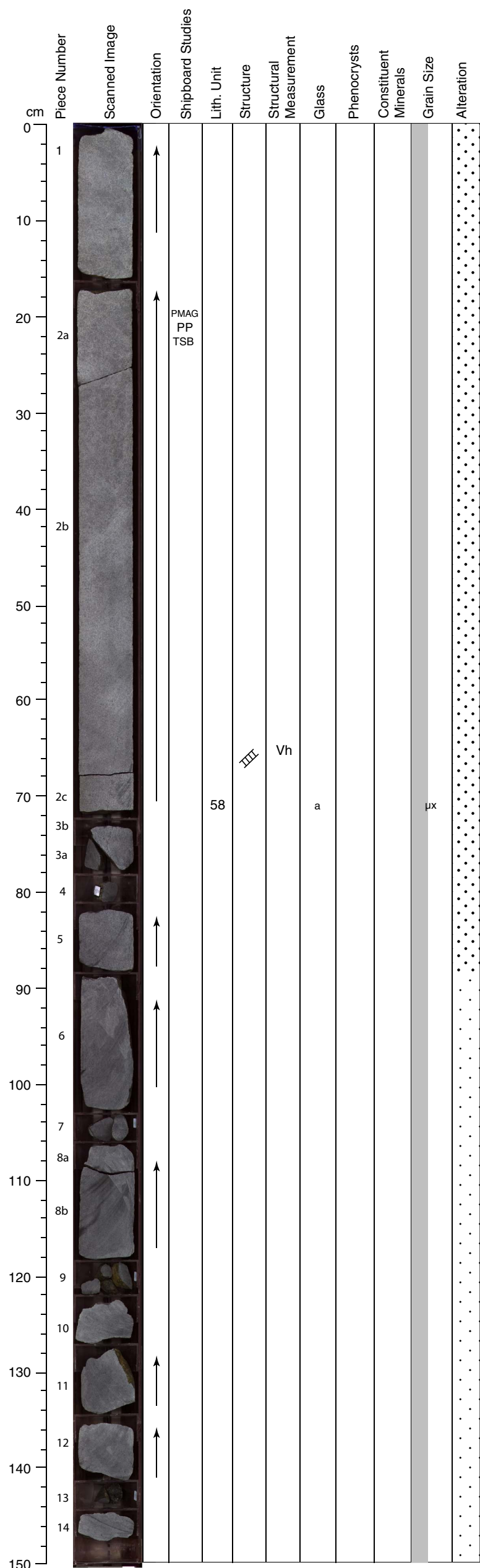
Volcanic Rock
UNIT: 58
ROCK NAME: Aphyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.
PIECES: 1-15 (igneous description based on Piece 8b)
CONTACTS:
 Upper: not recovered
 Lower: none
COLOR: Very dark gray (3/1)
PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.7	0.9	0.1	0.3	Subhedral, altered

GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and dark green moderately altered basalt with several 0.3-6 mm light green alteration halos
VEINS: Several 0.1-1.5 mm veins of chlorite and minor quartz and pyrite
STRUCTURE: Slight fracturing; evenly distributed. Alteration patches around veins in Piece 3.
ADDITIONAL COMMENTS: Plagioclase phenocrysts form glomerocrysts. Some sulfides disseminated in the groundmass. Grain size is smaller in Pieces 4 and 5. These two pieces may represent a thin dike, contacts of which were not recovered.



Core Photo

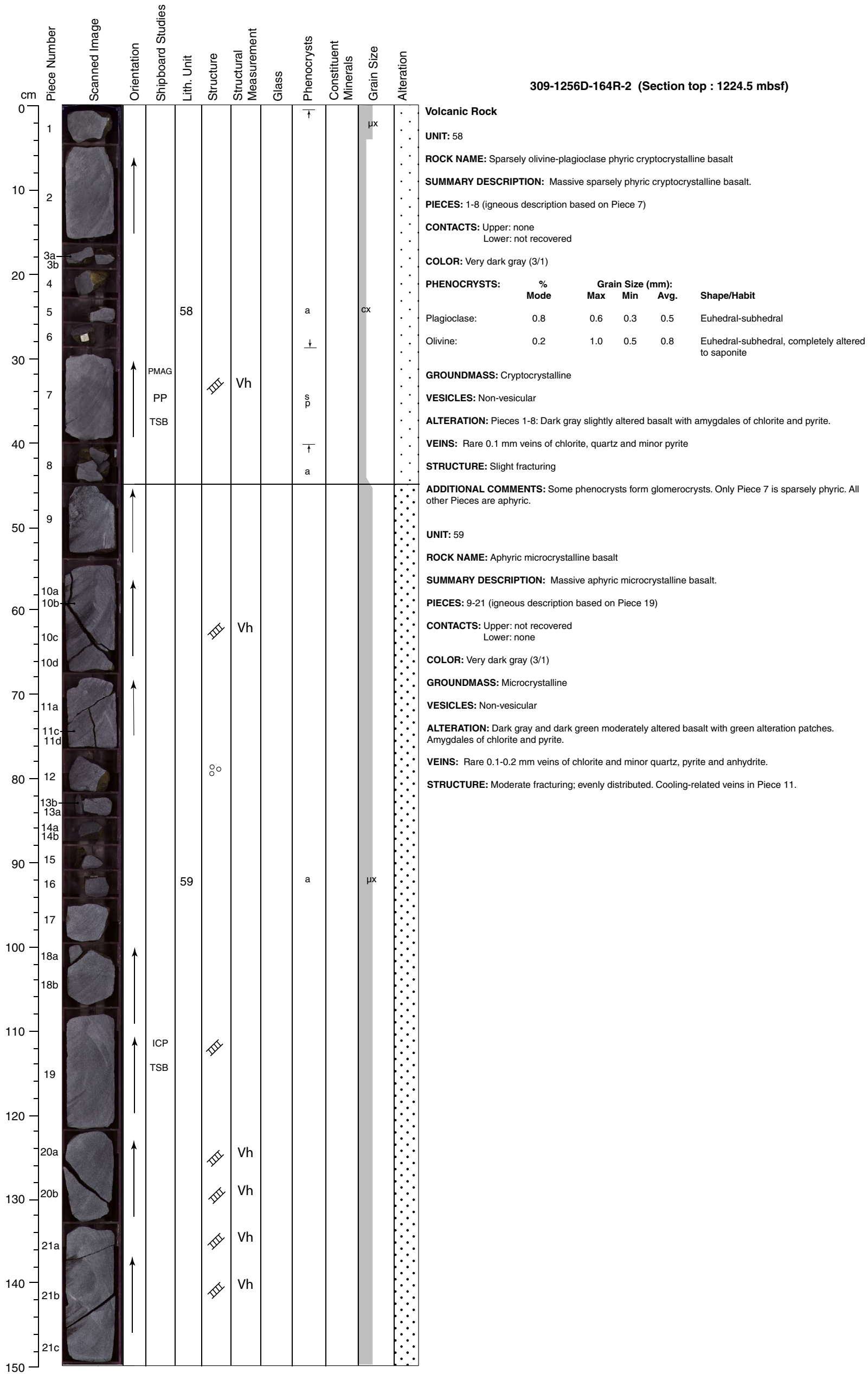


309-1256D-164R-1 (Section top : 1223.0 mbsf)

Volcanic Rock
UNIT: 58
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-14 (igneous description based on Piece 2a)
CONTACTS: None
COLOR: Dark greenish gray (5G4/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Pieces 1-5: Dark gray and green moderately altered basalt with amygdales of chlorite. Pieces 6-14: Dark gray slightly altered basalt with amygdales of chlorite.
VEINS: Rare 0.1 mm veins of chlorite and quartz
STRUCTURE: Slight fracturing; evenly distributed.
ADDITIONAL COMMENTS: Some sulfides disseminated in the groundmass



Core Photo



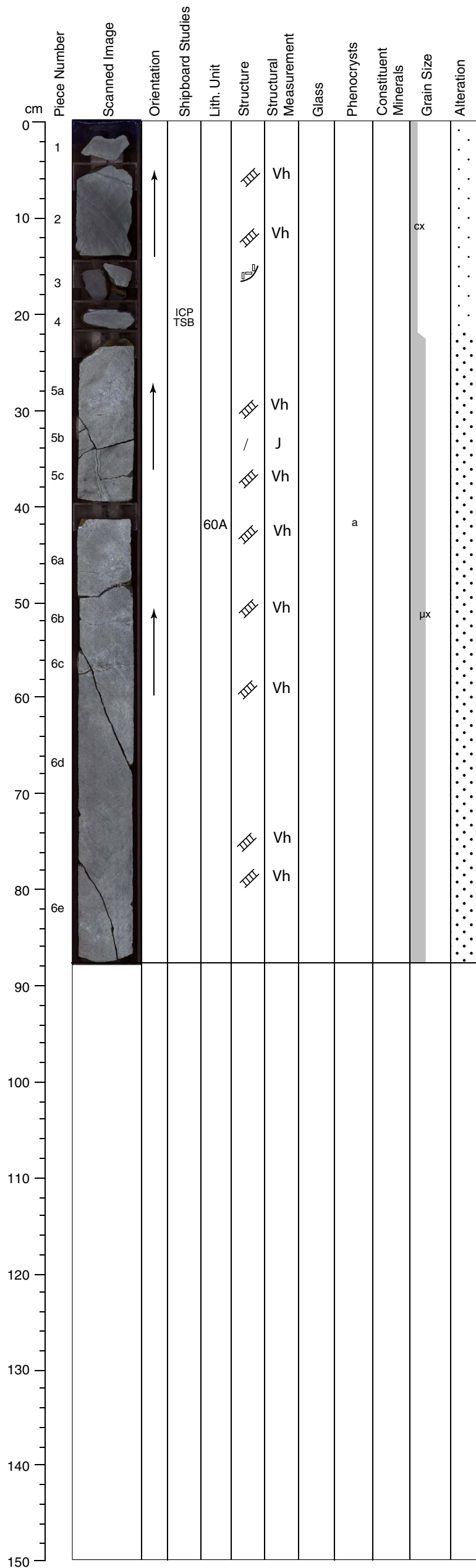
Core Photo

309-1256D-164R-3 (Section top : 1226.0 mbsf)

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration															
0																											
0-10	1a 1b 2b 2a		↑		59	III	Vh		a		μx	<p>Volcanic Rock</p> <p>UNIT: 59</p> <p>ROCK NAME: Aphyric microcrystalline basalt</p> <p>SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.</p> <p>PIECES: 1 and 2 (igneous description based on Piece 1a)</p> <p>CONTACTS: Upper: none Lower: not recovered</p>															
10-20	3 4					III						<p>COLOR: Very dark gray (3/1)</p> <p>GROUNDMASS: Microcrystalline</p> <p>VESICLES: Non-vesicular</p>															
20-30	5 6				60A				a		cx	<p>ALTERATION: Pieces 1,2: Dark gray and dark green moderately altered basalt</p> <p>VEINS: Rare 0.1 mm veins of chlorite and minor pyrite</p> <p>STRUCTURE: Slight fracturing</p>															
30-40	7		↑			III	Vh					<p>UNIT: 60A</p> <p>ROCK NAME: Aphyric cryptocrystalline basalt</p> <p>SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt</p> <p>PIECES: 3-7 (igneous description based on Piece 3)</p> <p>CONTACTS: Upper: not recovered Lower: none</p>															
40-50												<p>COLOR: Black (2.5/1)</p>															
50-60												<table border="1"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2">% Mode</th> <th colspan="3">Grain Size (mm):</th> <th rowspan="2">Shape/Habit</th> </tr> <tr> <th>Max</th> <th>Min</th> <th>Avg.</th> </tr> </thead> <tbody> <tr> <td>Plagioclase:</td> <td>0.3</td> <td>0.3</td> <td>0.1</td> <td>0.2</td> <td>Euhedral</td> </tr> </tbody> </table>		% Mode	Grain Size (mm):			Shape/Habit	Max	Min	Avg.	Plagioclase:	0.3	0.3	0.1	0.2	Euhedral
	% Mode	Grain Size (mm):			Shape/Habit																						
		Max	Min	Avg.																							
Plagioclase:	0.3	0.3	0.1	0.2	Euhedral																						
60-70												<p>GROUNDMASS: Cryptocrystalline</p> <p>VESICLES: Non-vesicular</p> <p>ALTERATION: Dark gray slightly altered basalt</p> <p>VEINS: Rare 0.1 mm veins of chlorite and minor pyrite</p> <p>STRUCTURE: Slight fracturing; nearly vertical veins.</p>															
70-80																											
80-90																											
90-100																											
100-110																											
110-120																											
120-130																											
130-140																											
140-150																											



Core Photo

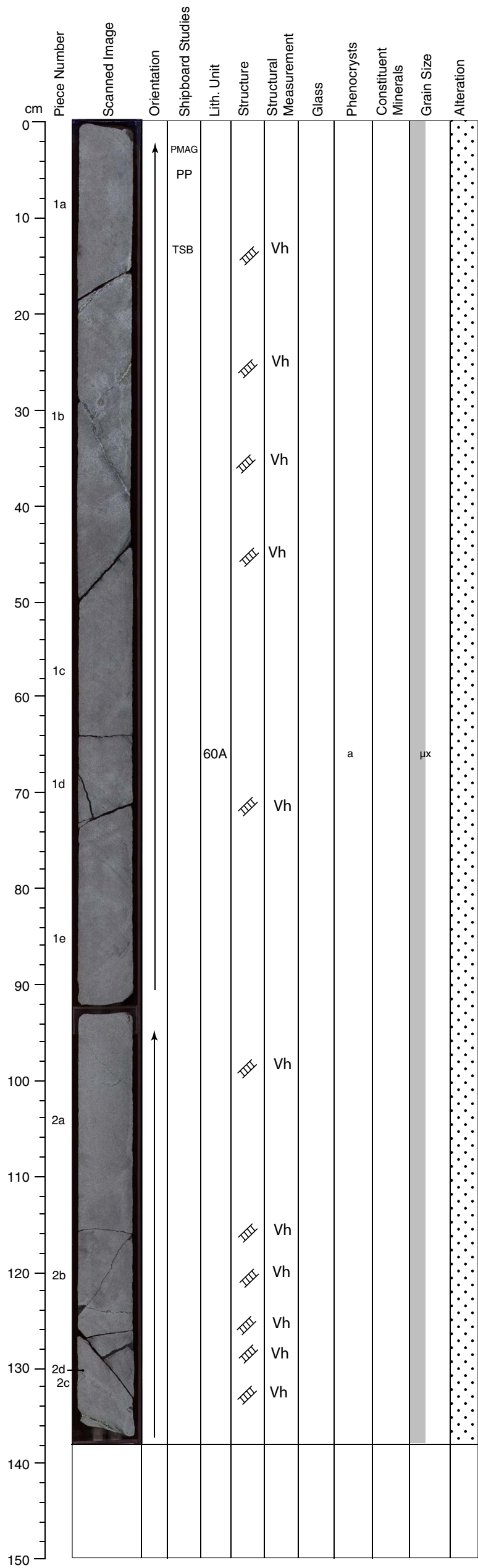


309-1256D-165R-1 (Section top : 1227.8 mbsf)

Volcanic Rock
UNIT: 60A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-6 (igneous description based on Piece 6a)
CONTACTS: None
COLOR: Greenish gray (5BG5/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Pieces 1-4: Dark gray slightly altered basalt with one 7 mm light gray alteration halo in Piece 1. Pieces 5-6: Dark gray and dark green moderately altered basalt with amygdales of chlorite, pyrite and quartz, and dark green surrounded by light green highly altered patch.
VEINS: Several 0.1-1.4 mm veins of chlorite, pyrite and minor quartz and anhydrite
STRUCTURE: Moderate fracturing; evenly distributed. Alteration patches around veins in Piece 6.
ADDITIONAL COMMENTS: A xenolith of microcrystalline basalt in Piece 3 (11 mm). Contact between the xenolith and the host rock is sharp. Fine-grained patches observed in some pieces. Pieces 1-4 are cryptocrystalline.



Core Photo

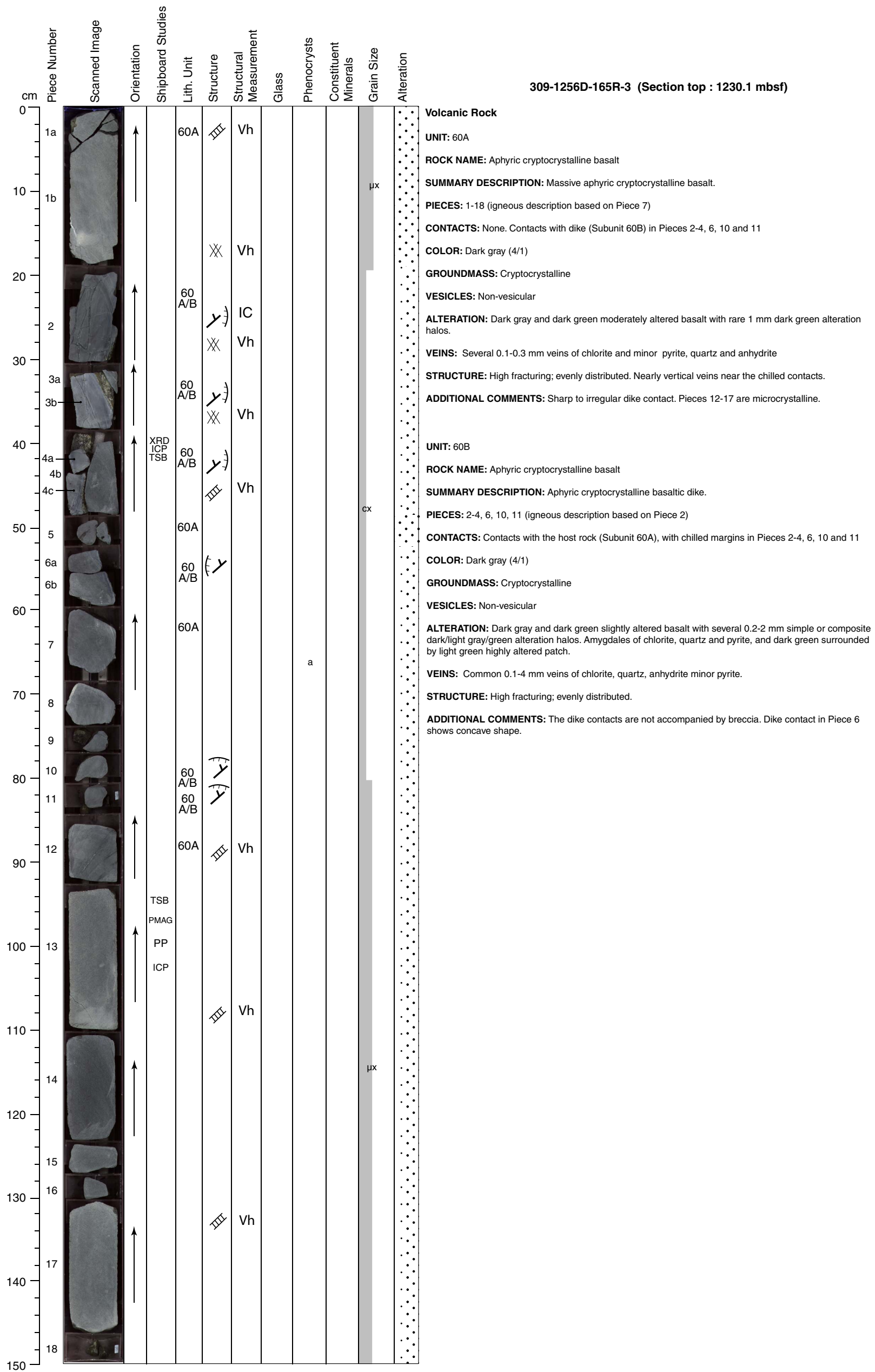


309-1256D-165R-2 (Section top : 1228.7 mbsf)

Volcanic Rock
UNIT: 60A
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-2 (igneous description based on Piece 1)
CONTACTS: None
COLOR: Greenish gray (5BG5/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and dark green moderately altered basalt with rare 0.1-0.4 mm simple or composite dark/light gray/green alteration halos. Amygdales of chlorite, quartz and pyrite, and dark green surrounded by light green highly altered patch.
VEINS: Several 0.1-1.4 mm veins of chlorite, pyrite and minor quartz and anhydrite
STRUCTURE: Moderate fracturing; evenly distributed. Stepped vein in Piece 1b. Drilling-induced joint in Piece 1c.
ADDITIONAL COMMENTS: Fine-grained patches throughout the section.



Core Photo



Volcanic Rock

UNIT: 60A

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.

PIECES: 1-18 (igneous description based on Piece 7)

CONTACTS: None. Contacts with dike (Subunit 60B) in Pieces 2-4, 6, 10 and 11

COLOR: Dark gray (4/1)

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray and dark green moderately altered basalt with rare 1 mm dark green alteration halos.

VEINS: Several 0.1-0.3 mm veins of chlorite and minor pyrite, quartz and anhydrite

STRUCTURE: High fracturing; evenly distributed. Nearly vertical veins near the chilled contacts.

ADDITIONAL COMMENTS: Sharp to irregular dike contact. Pieces 12-17 are microcrystalline.

UNIT: 60B

ROCK NAME: Aphyric cryptocrystalline basaltic dike.

SUMMARY DESCRIPTION: Aphyric cryptocrystalline basaltic dike.

PIECES: 2-4, 6, 10, 11 (igneous description based on Piece 2)

CONTACTS: Contacts with the host rock (Subunit 60A), with chilled margins in Pieces 2-4, 6, 10 and 11

COLOR: Dark gray (4/1)

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray and dark green slightly altered basalt with several 0.2-2 mm simple or composite dark/light gray/green alteration halos. Amygdales of chlorite, quartz and pyrite, and dark green surrounded by light green highly altered patch.

VEINS: Common 0.1-4 mm veins of chlorite, quartz, anhydrite minor pyrite.


STRUCTURE: High fracturing; evenly distributed.

ADDITIONAL COMMENTS: The dike contacts are not accompanied by breccia. Dike contact in Piece 6 shows concave shape.



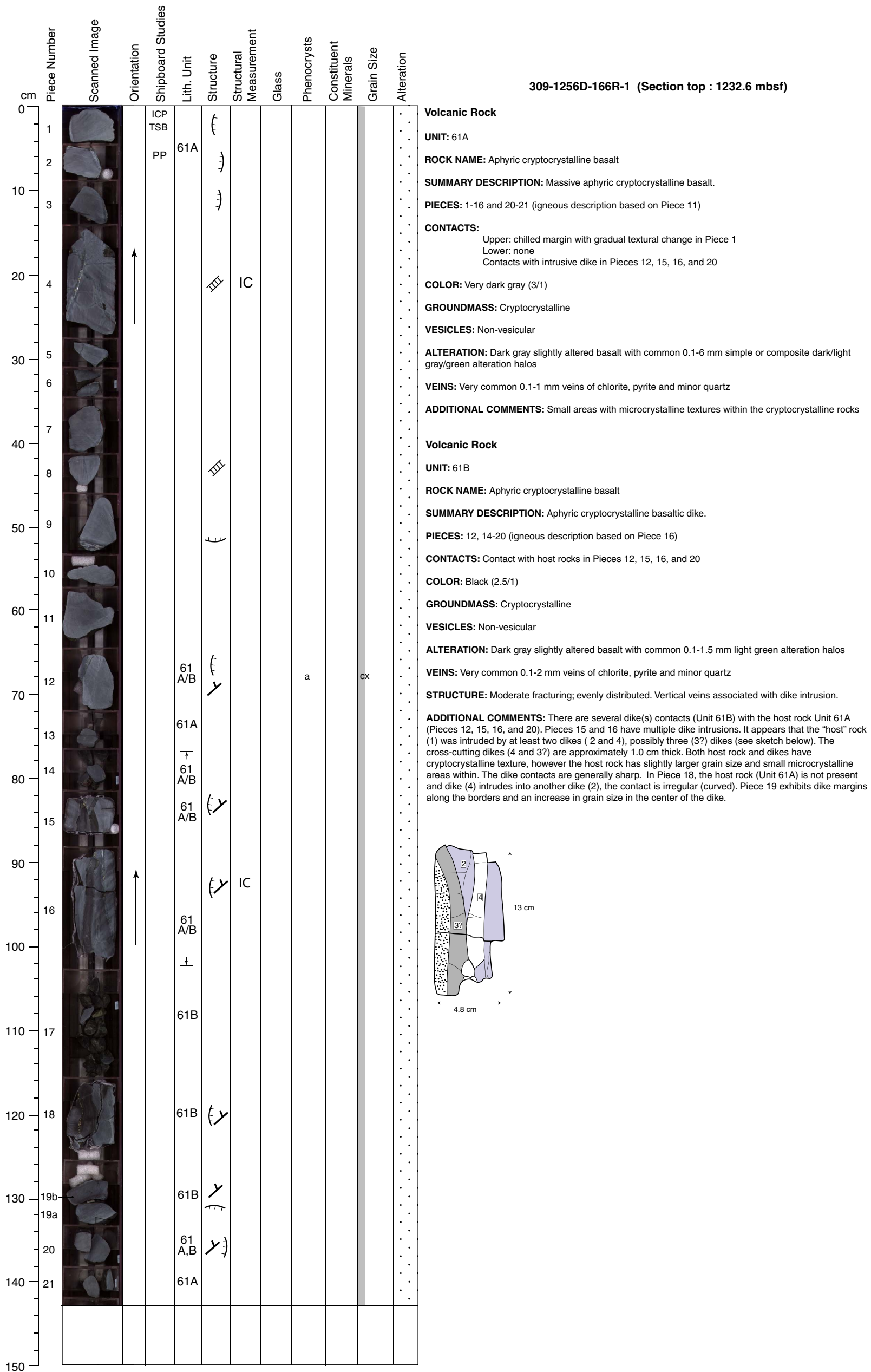
Core Photo

309-1256D-165R-4 (Section top : 1231.6 mbsf)

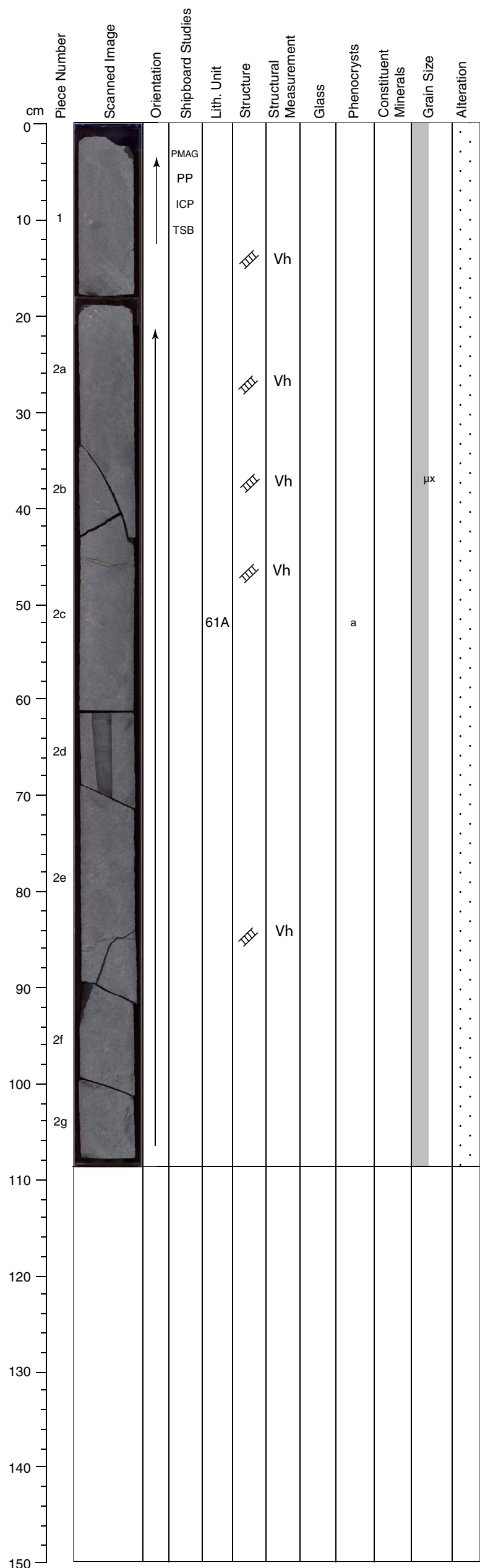
cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration	
0													Volcanic Rock
0	1a		↑		60A	III	Vh						•
10	1b					III	Vh		a	cx	•		
20													UNIT: 60A
30													ROCK NAME: Aphyric cryptocrystalline basalt
40	4												SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.
50													PIECES: 1
60													CONTACTS: Upper: none Lower: not recovered (chilled margin in Piece 1, Core 309-1256D-165R-1)
70													COLOR: Very dark gray (3/1)
80													GROUNDMASS: Cryptocrystalline
90													VESICLES: Non-vesicular
100													ALTERATION: Dark gray slightly altered basalt
110													VEINS: Common 0.1-0.3 mm veins of chlorite and minor pyrite
120													STRUCTURE: Two veins and one joint in Piece 1
130													
140													
150													



Core Photo



Core Photo



309-1256D-166R-2 (Section top : 1234.0 mbsf)

Volcanic Rock

UNIT: 61A

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-2 (igneous description based on Piece 1)

CONTACTS: None

COLOR: Very dark gray (3/1)

	% Mode	Grain Size (mm)			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.1	1.1	0.2	0.4	Euhedral, fractured and altered

PHENOCRYSTS: Microcrystalline

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

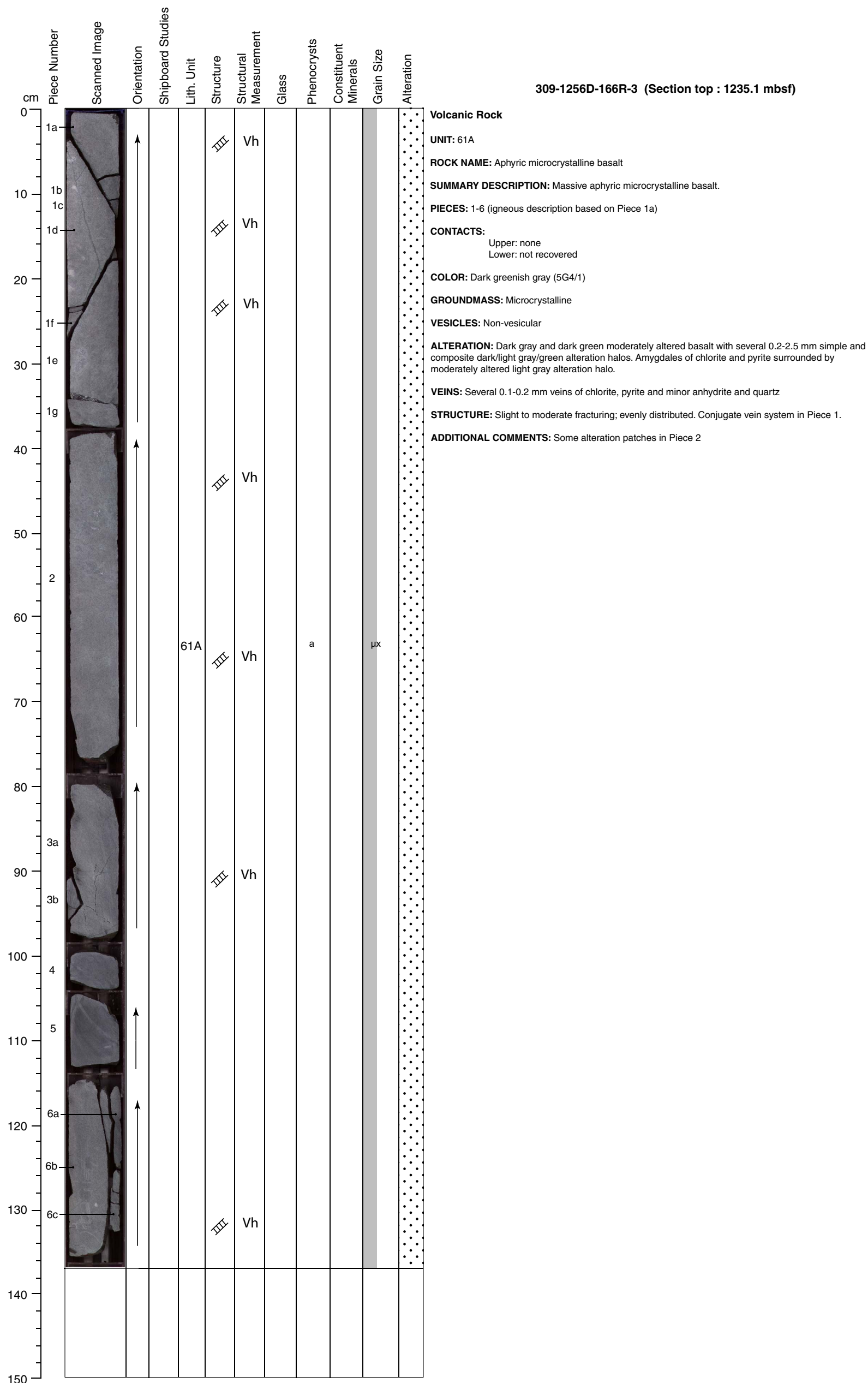
ALTERATION: Dark gray slightly altered basalt

VEINS: Rare 0.1-1.8 mm veins of chlorite and pyrite

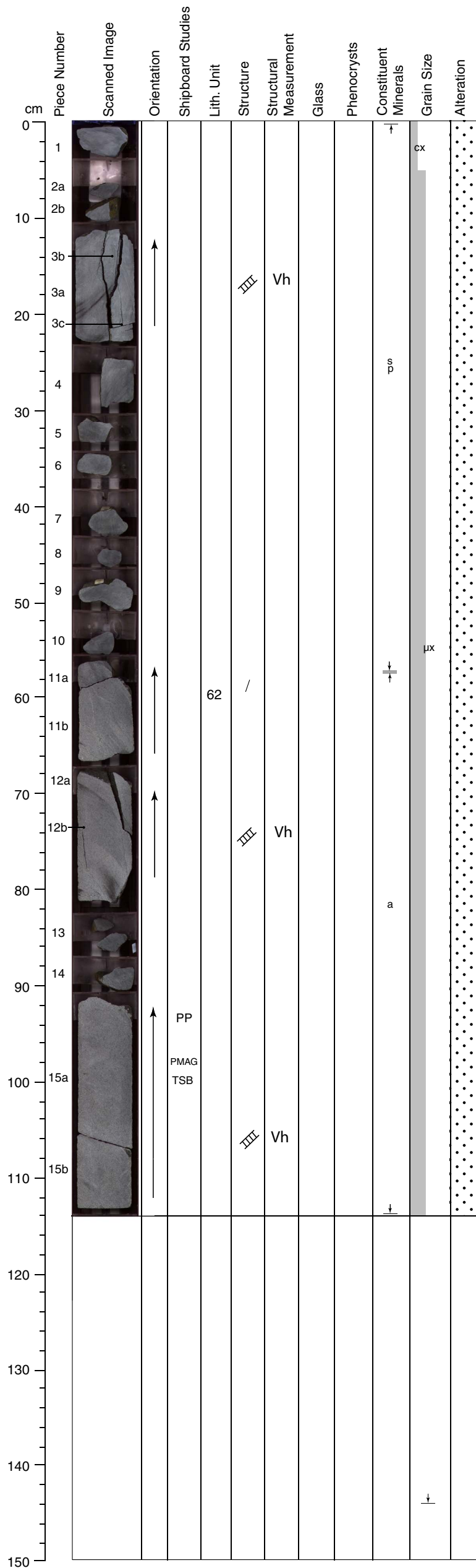
STRUCTURE: Slight fracturing; evenly distributed. Dilational vein in Piece 2.



Core Photo



Core Photo



309-1256D-167R-1 (Section top : 1236.4 mbsf)

Volcanic Rock
UNIT: 62
ROCK NAME: Sparsely-plagioclase phyric cryptocrystalline basalt
SUMMARY DESCRIPTION: Massive sparsely phyric cryptocrystalline basalt.
PIECES: 1-15 (igneous description based on Piece 1)
CONTACTS: Upper: not recovered
 Lower: none
COLOR: Dark gray (4/1)
PHENOCRYSTS:

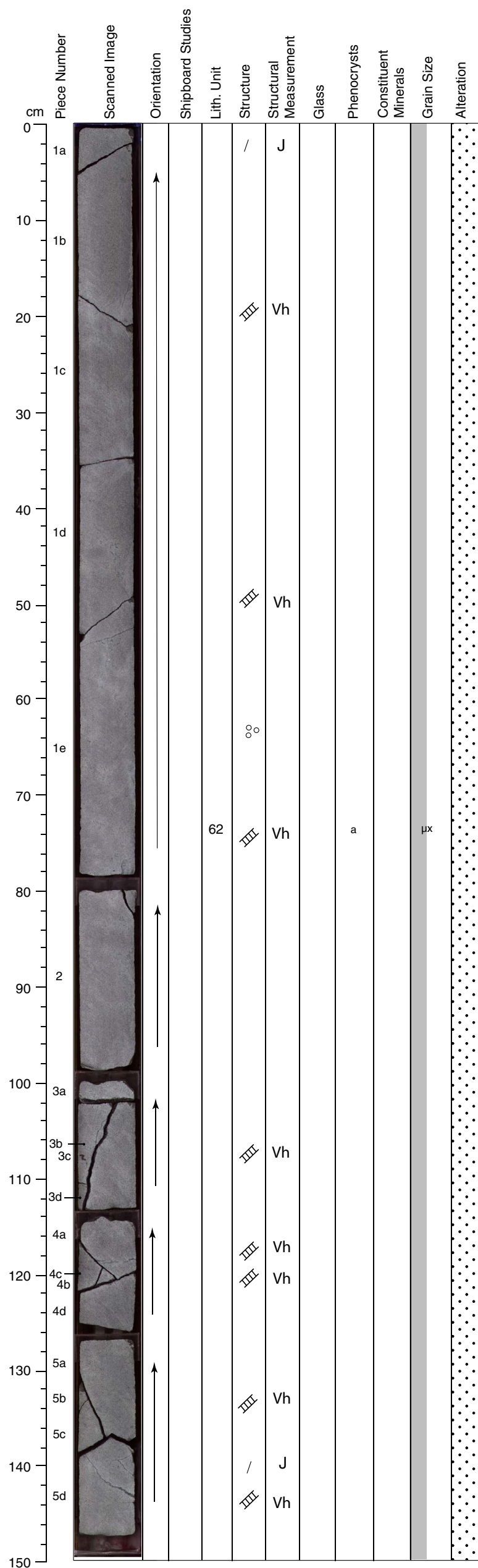
	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	1.2	0.8	0.2	0.4	Subhedral, completely or partially altered to chlorite

GROUNDMASS: Cryptocrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and dark green moderately altered basalt with rare 0.1-0.2 mm dark gray alteration halos.
VEINS: Several 0.1-0.3 mm veins of chlorite, pyrite and minor quartz
STRUCTURE: Slight fracturing; evenly distributed.
ADDITIONAL COMMENTS: Plagioclase phenocrysts form glomerocrysts. In Piece 1, some elongated microphenocrysts of plagioclase are also observed. Pieces 2 to 15 are microcrystalline basalt. In the microcrystalline Pieces 11-15 the phenocrysts are not observed, perhaps due to the coarser groundmass crystals.



Core Photo

309-1256D-167R-2 (Section top : 1237.5 mbsf)



Volcanic Rock
UNIT: 62
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-5 (igneous description based on Piece 1e)
CONTACTS: None
COLOR: Dark greenish gray (5G4/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular. One large (5 mm) vesicle in Piece 1e filled with chlorite and pyrite.
ALTERATION: Dark gray and dark green moderately altered basalt with rare 0.1-0.3 mm dark gray alteration halos. Amygdales of chlorite and pyrite surrounded by light green alteration halo.
VEINS: Common 0.1-0.4 mm veins of chlorite, pyrite and minor anhydrite and quartz
STRUCTURE: Slight fracturing; evenly distributed.
ADDITIONAL COMMENTS: Some greenish alteration patches



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
309-1256D-167R-3 (Section top : 1239.0 mbsf)												
0	1a		↑			III	Vh					
1	1b		↑			III	Vh					
10	1c		↑			III	Vh					
20	2		↑			III	Vh				µx	
30	3		↑			III	Vh					
40	4		↑									
50	5		↑									
60	6		↑		62				s p			
70	7		↑									
80	8a		↑	PP		III	Vh					
90	8b		↑	PMAG ICP TSB								
100	9		↑								cx	
110	10		↑									
120	11		↑			✦						
130	12		↑			✦						
140	13		↑									
150	14b 14a		↑		63	✦			a			
160	15		↑									
170	16		↑									
180	17		↑			III						

Volcanic Rock

UNIT: 62

ROCK NAME: Sparsely clinopyroxene-plagioclase-phyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Massive sparsely phyric cryptocrystalline basalt.

PIECES: 1-10 (igneous description based on Piece 8b)

CONTACTS: Upper: none
Lower: not recovered

COLOR: Very dark gray (3/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	1.5	0.5	0.1	0.3	Euhedral-subhedral, some altered to chlorite
Clinopyroxene:	0.5	0.3	0.1	0.1	Subhedral

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt with rare 0.1 mm dark gray alteration halos. Amygdales of chlorite and pyrite.

VEINS: Several 0.1-0.3 mm veins of chlorite and minor pyrite and anhydrite

STRUCTURE: Moderate fracturing; evenly distributed.

ADDITIONAL COMMENTS: Phenocrysts are essentially observed in the cryptocrystalline pieces. Some sulfides disseminated in the groundmass.

UNIT: 63

ROCK NAME: Aphyric cryptocrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric cryptocrystalline basalt.

PIECES: 11-17 (igneous description based on Piece 17)

CONTACTS: Upper: breccia in Pieces 11, 12, and 14 and phenocryst decrease
Lower: none

COLOR: Black (2.5/1)

PHENOCRYSTS:

	% Mode	Grain Size (mm):			Shape/Habit
		Max	Min	Avg.	
Plagioclase:	0.7	0.5	0.1	0.2	Subhedral, some altered to chlorite

GROUNDMASS: Cryptocrystalline

VESICLES: Non-vesicular

ALTERATION: Dark gray slightly altered basalt

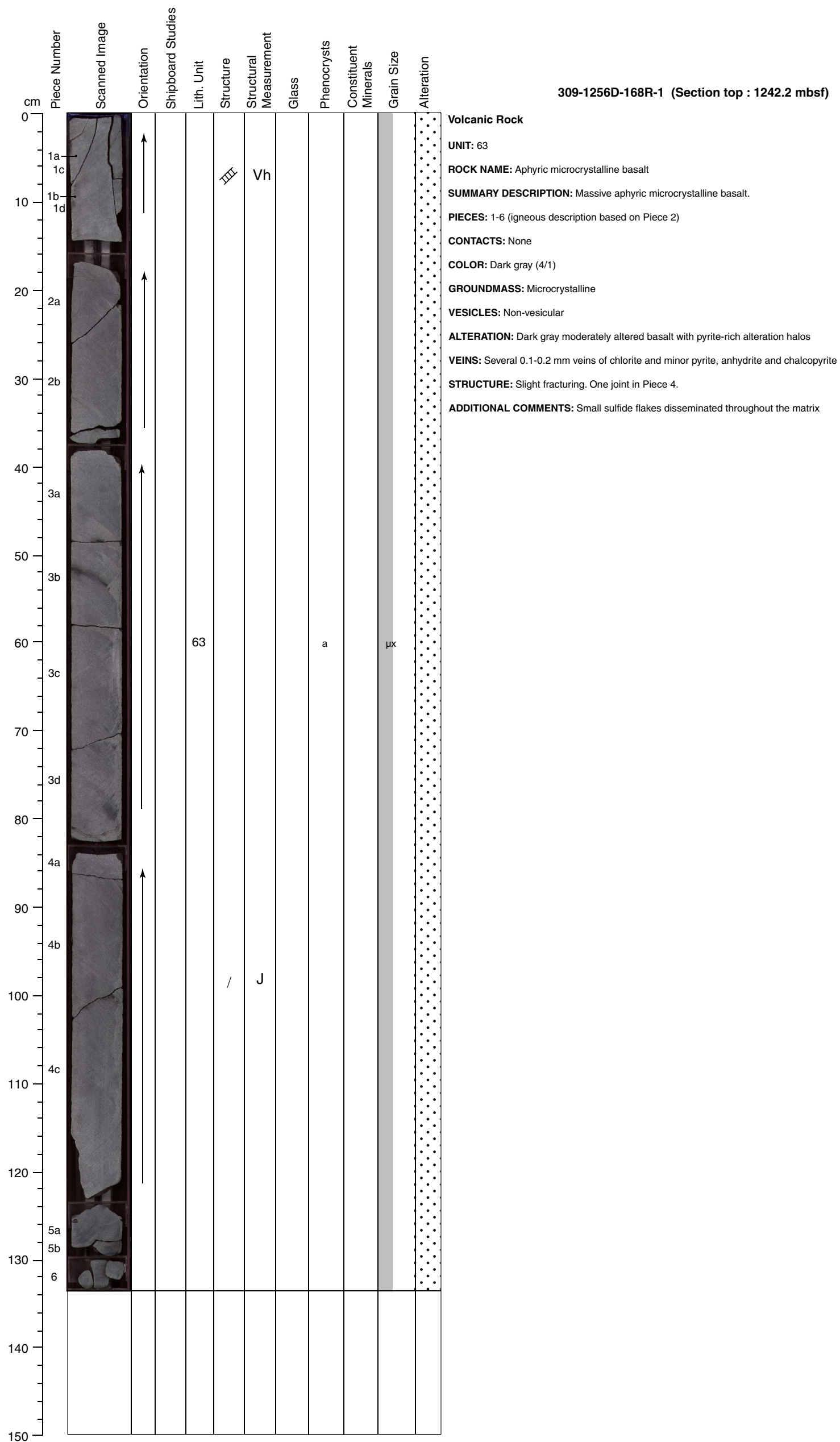
VEINS: Rare 0.1-0.3 mm veins of chlorite and minor quartz, anhydrite and pyrite

STRUCTURE: Moderate fracturing; evenly distributed.

ADDITIONAL COMMENTS: Pieces 11, 12 and 14 are volcanic breccia with 0.2-1.5 cm large clasts. The clasts are angular or subangular and composed either of cryptocrystalline basalt, some with chilled margins, or of spherulitic glass (completely altered to anhydrite). Some sulfides disseminated in the groundmass.

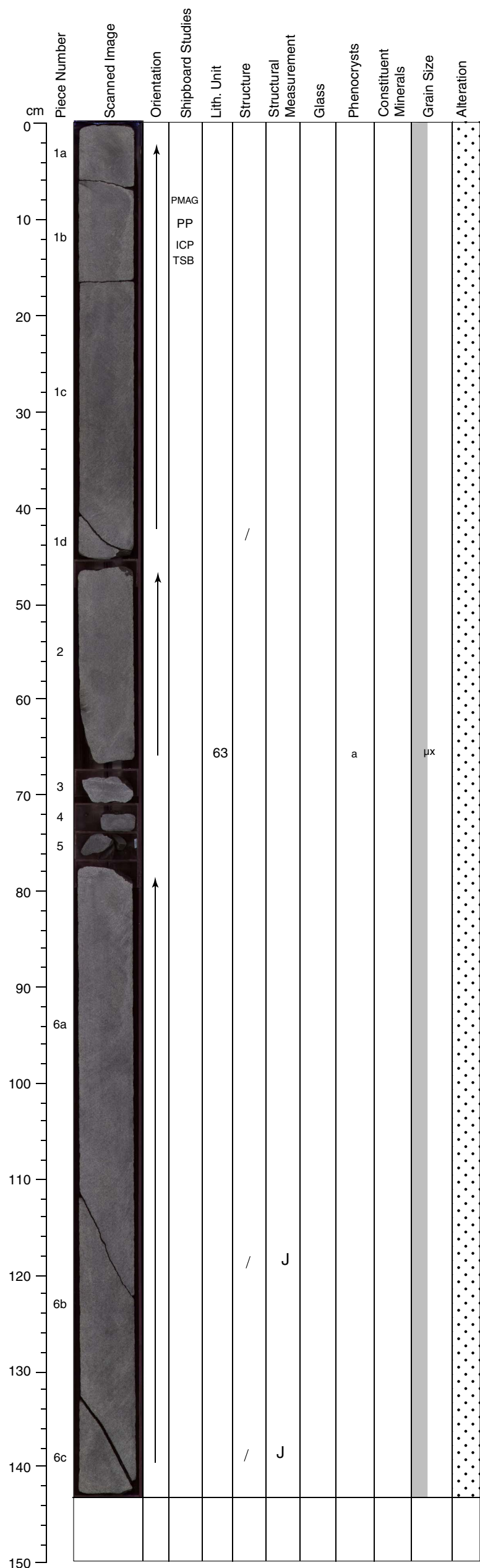


Core Photo



Core Photo

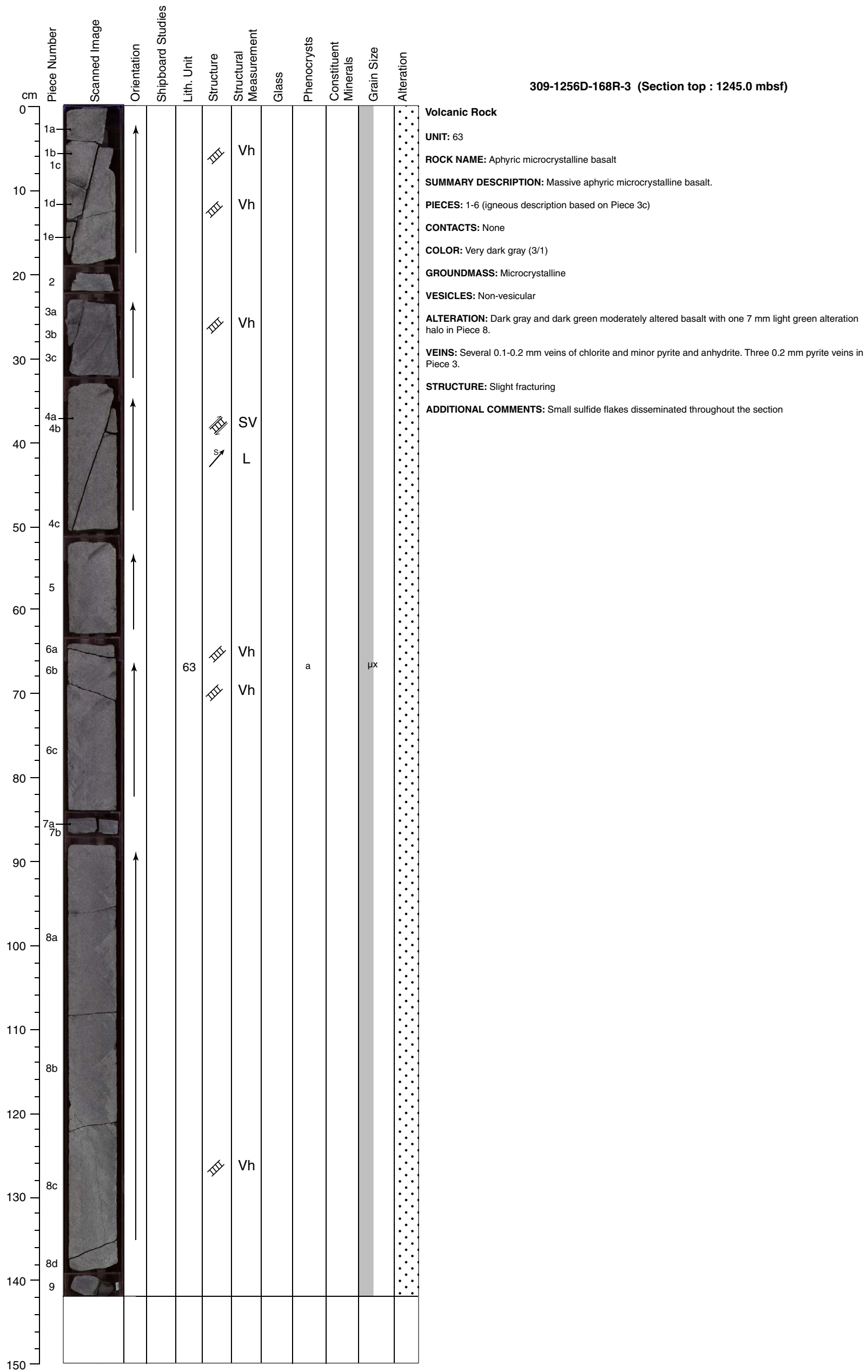
309-1256D-168R-2 (Section top : 1243.5 mbsf)



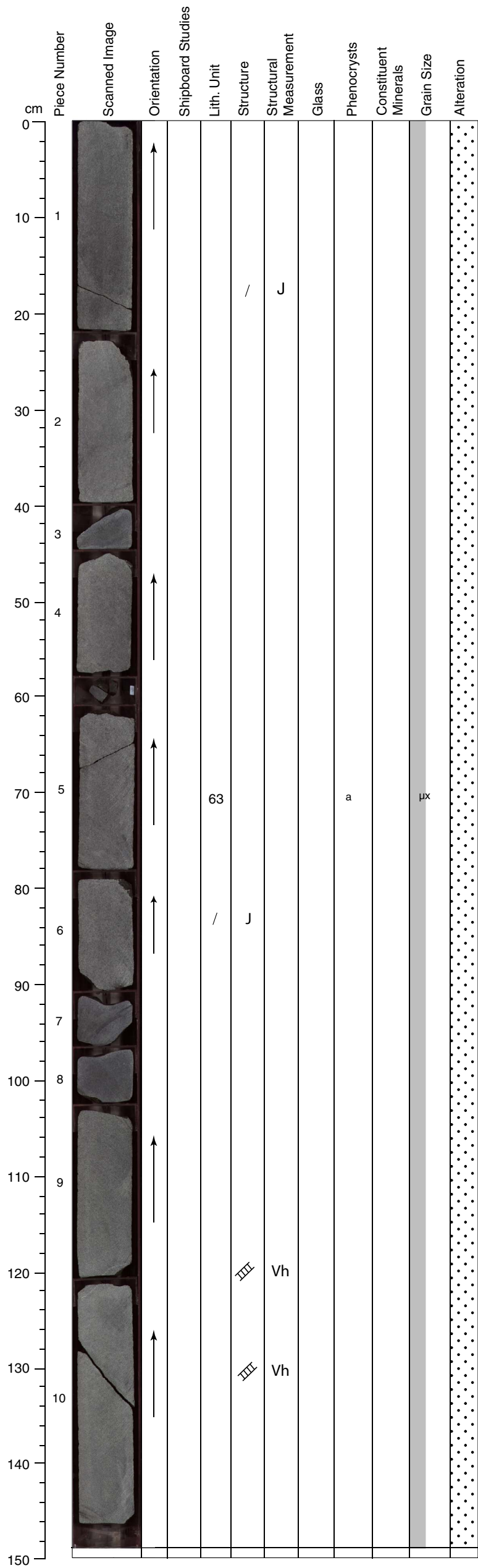
Volcanic Rock
UNIT: 63
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-6 (igneous description based on Piece 3c)
CONTACTS: None
COLOR: Dark gray (4/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and dark green moderately altered basalt with one 1 mm light gray alteration halo
VEINS: Rare 0.1-0.3 mm veins of chlorite and minor pyrite and quartz
STRUCTURE: Slight fracturing. Two joints in Piece 6.
ADDITIONAL COMMENTS: Small sulfide flakes disseminated throughout the matrix



Core Photo



Core Photo



309-1256D-168R-4 (Section top : 1246.4 mbsf)

Volcanic Rock
UNIT: 63
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-10 (igneous description based on Piece10)
CONTACTS: None
COLOR: Very dark gray (3/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and dark green moderately altered basalt
VEINS: Rare 0.1-0.2 mm veins of chlorite and minor pyrite and quartz
STRUCTURE: Slight fracturing
ADDITIONAL COMMENTS: Small sulfide flakes disseminated throughout the matrix



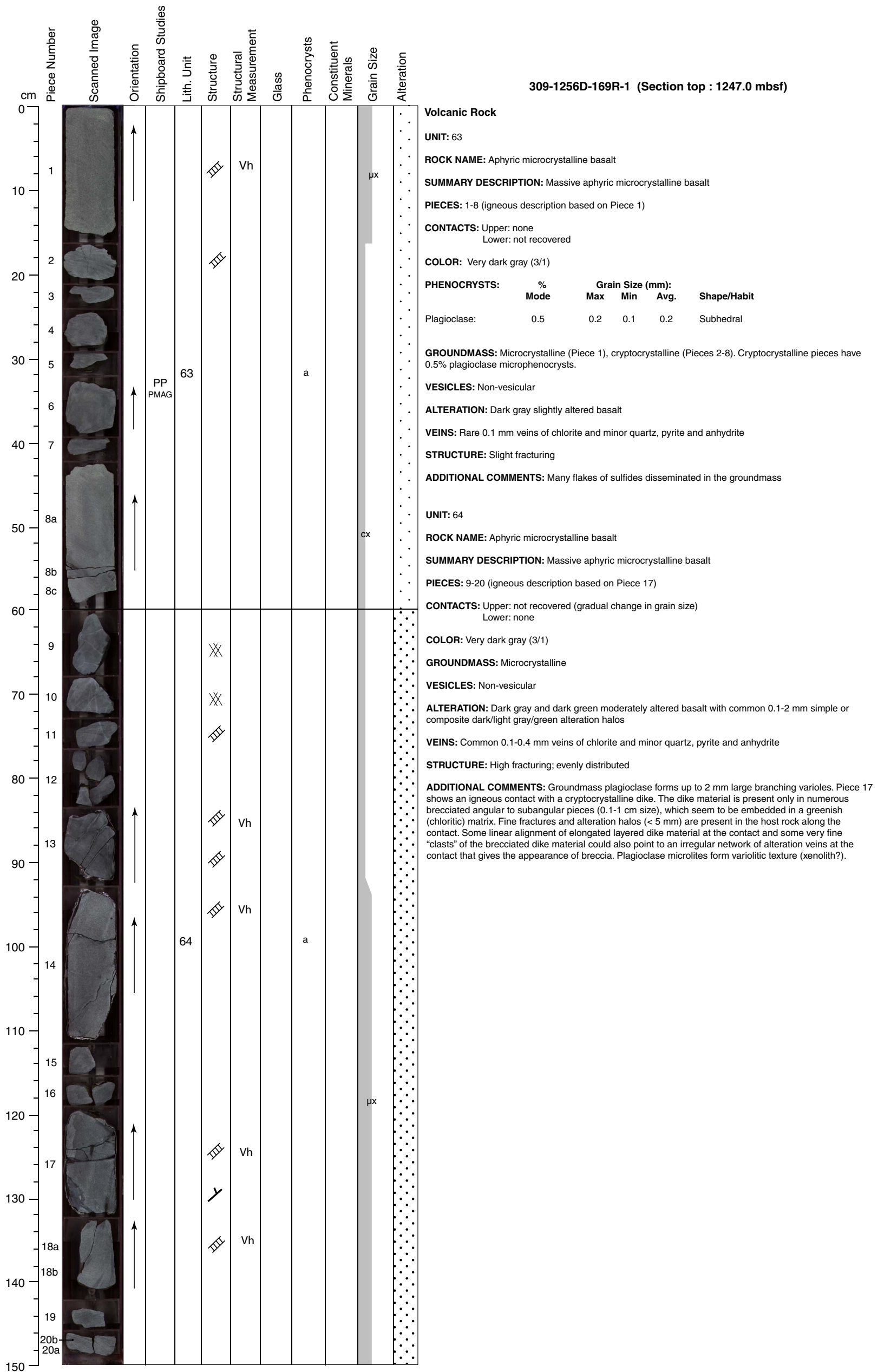
Core Photo

309-1256D-168R-5 (Section top : 1247.9 mbsf)

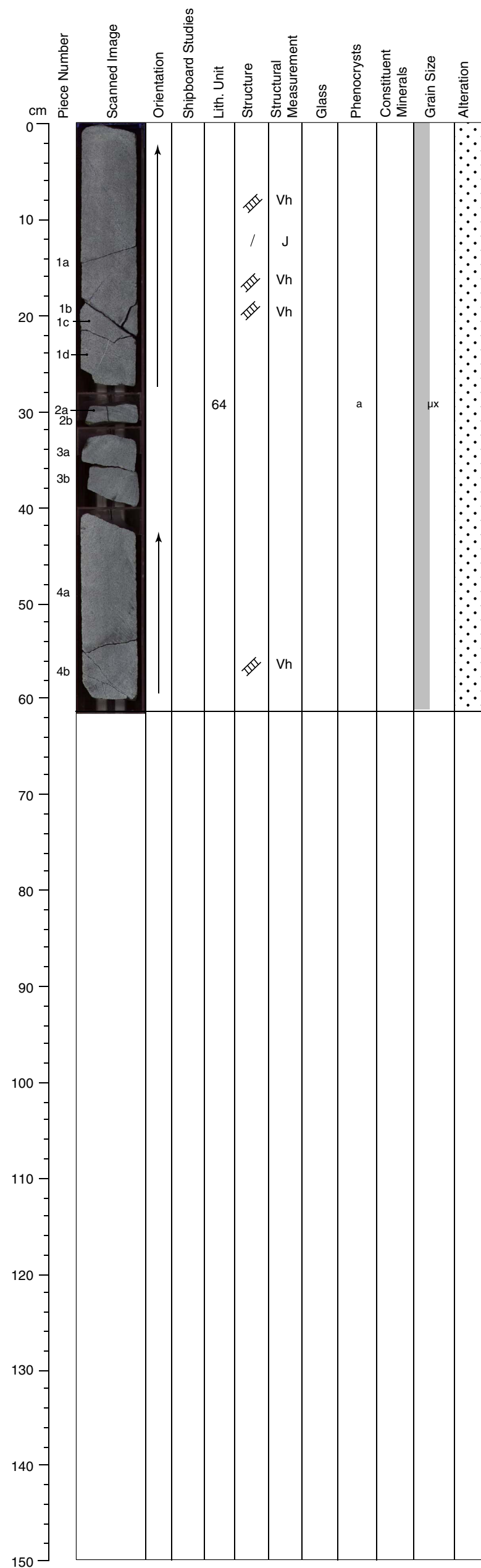
cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0	1		↑		63	/	J		a		µx	<p>Volcanic Rock</p> <p>UNIT: 63</p> <p>ROCK NAME: Aphyric microcrystalline basalt</p> <p>SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.</p> <p>PIECES: 1-3 (igneous description based on Piece2b)</p> <p>CONTACTS: None</p> <p>COLOR: Very dark gray (3/1)</p> <p>GROUNDMASS: Microcrystalline</p> <p>VESICLES: Non-vesicular</p> <p>ALTERATION: Dark gray moderately altered basalt with one 1 mm dark gray alteration halo in Piece 3</p> <p>VEINS: Rare 0.1-0.3 mm veins of chlorite and minor pyrite and anhydrite</p> <p>STRUCTURE: Slight fracturing</p> <p>ADDITIONAL COMMENTS: Small sulfide flakes disseminated throughout the matrix</p>
10	2a											
20	2b											
30	3a											
35	3b			PMAG TSB ICP PP		III	Vh					
40												
50												
60												
70												
80												
90												
100												
110												
120												
130												
140												
150												



Core Photo



Core Photo



309-1256D-169R-2 (Section top : 1248.5 mbsf)

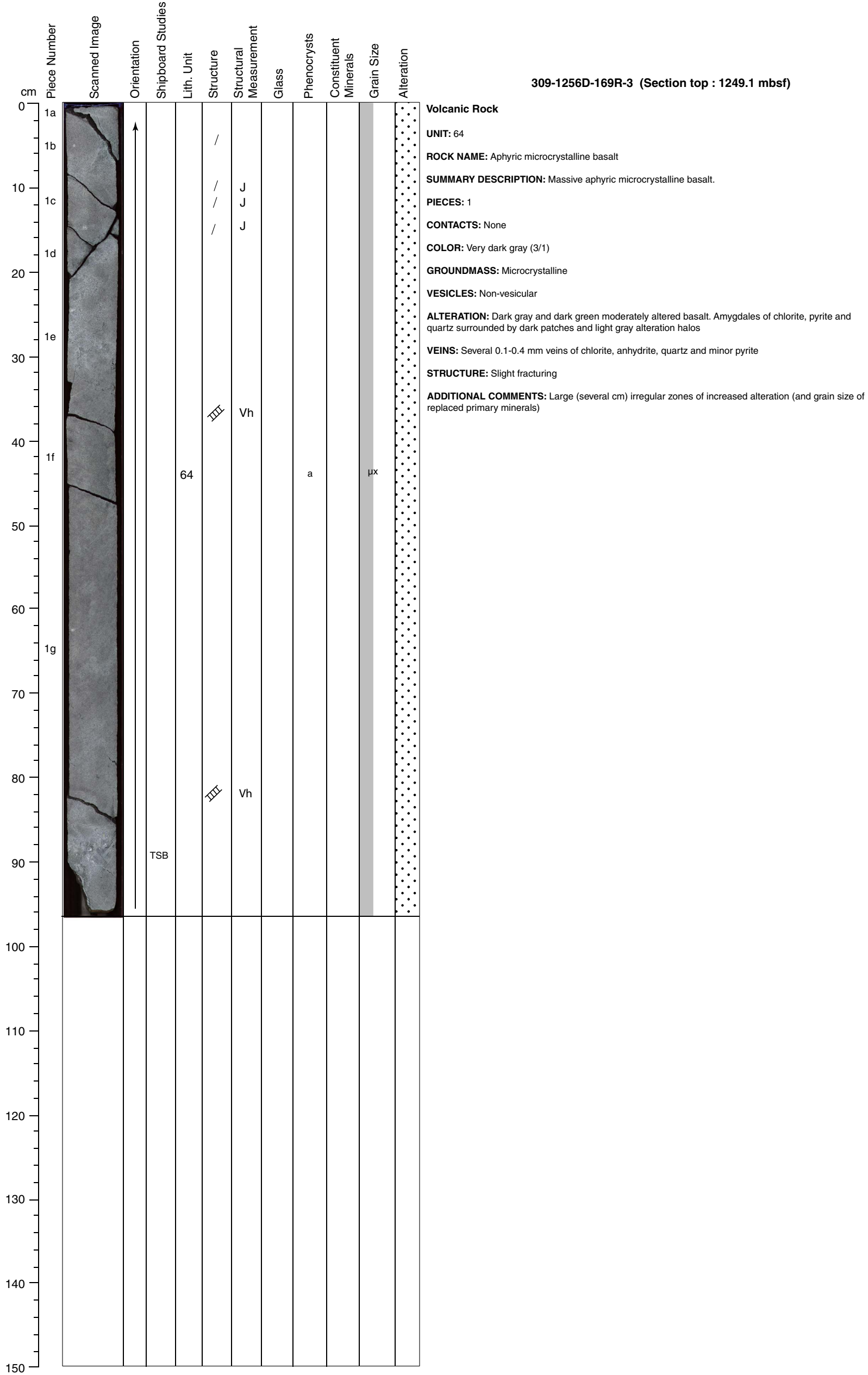
Volcanic Rock
UNIT: 64
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-4 (igneous description based on Piece 4a)
CONTACTS: None
COLOR: Dark gray (4/1)
PHENOCRYSTS:

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

GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and dark green moderately altered basalt with rare 0.2-4.5 mm simple or composite dark/light gray/green alteration halos
VEINS: Common 0.1-0.3 mm veins of chlorite and minor anhydrite, quartz and pyrite
STRUCTURE: Slight to moderate fracturing; evenly distributed. Conjugate vein set in Piece 1.



Core Photo



Core Photo

cm	Piece Number	Scanned Image	Orientation	Shipboard Studies	Lith. Unit	Structure	Structural Measurement	Glass	Phenocrysts	Constituent Minerals	Grain Size	Alteration
0												
0-10	1a		↑			/	J					
10-20	1b					III	Vh					
20-30	1c			XRD		III	Vh					
30-40	1d					III	Vh					
40-50	1e					III	Vh					
50-60	1f					III	SV					
50-60	1f					↗	L					
60-70	1g				64	III	Vh		a		μx	
60-70	1g					III	Vh					
70-80	1h											
80-90	1i											
90-100	1j											
90-100	1k											
90-100	1l											
100-110	2											
110-120	3a		↑									
110-120	3b											
120-130	3c											
130-140	4		↑			III	Vh					
140-150												

309-1256D-170R-1 (Section top : 1251.8 mbsf)

Volcanic Rock

UNIT: 64

ROCK NAME: Aphyric microcrystalline basalt

SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.

PIECES: 1-4 (igneous description based on Piece 1a)

CONTACTS: None

COLOR: Dark gray (4/1)

GROUNDMASS: Microcrystalline

VESICLES: Non-vesicular

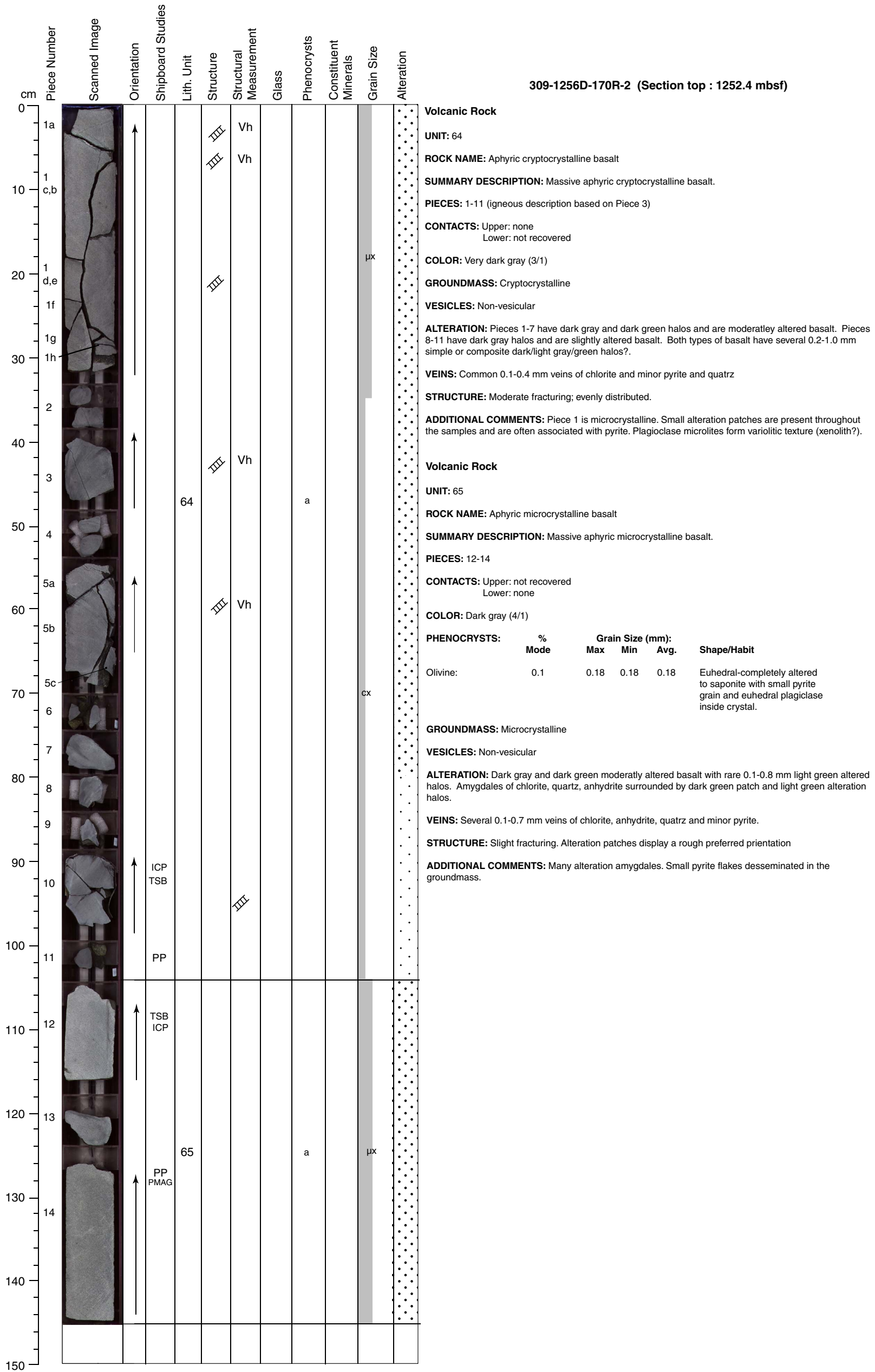
ALTERATION: Dark gray slightly altered basalt with rare 1-12 mm simple or composite dark/light gray/green alteration halos. Amygdales of chlorite surrounded by dark patches and light gray alteration halos.

VEINS: Several 0.1-1 mm veins of chlorite and minor pyrite, anhydrite and quartz

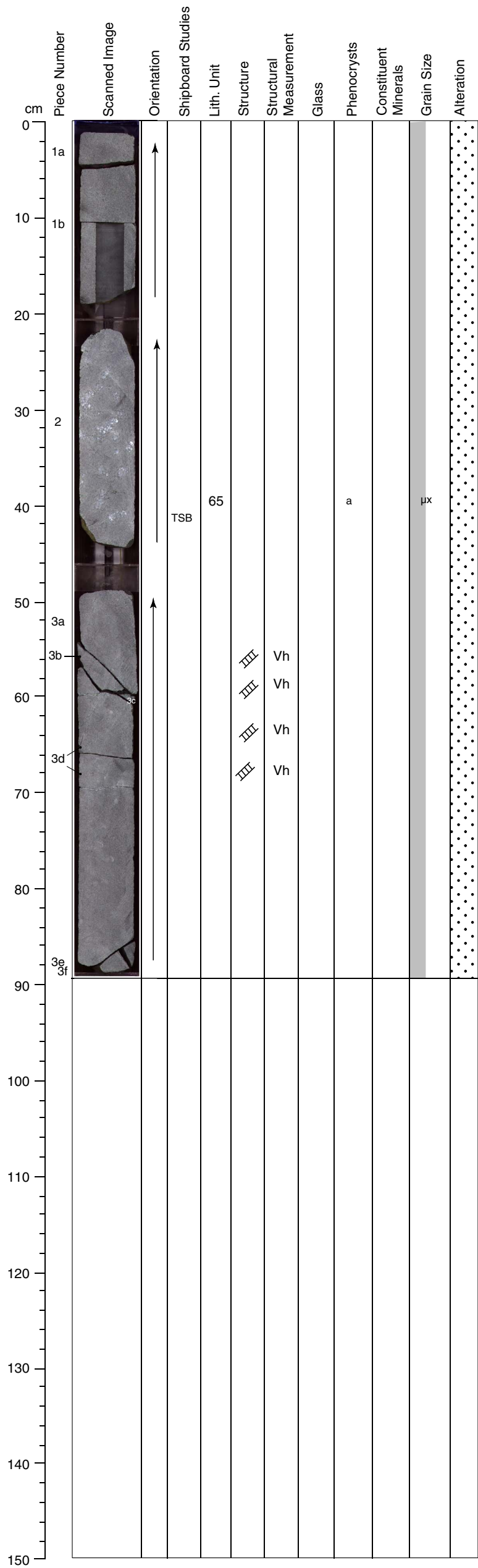
STRUCTURE: Moderate fracturing; evenly distributed

ADDITIONAL COMMENTS: Small alteration patches are present throughout the samples and are often associated with pyrite.

Core Photo



Core Photo



309-1256D-170R-3 (Section top : 1253.7 mbsf)

Volcanic Rock
UNIT: 65
ROCK NAME: Aphyric microcrystalline basalt
SUMMARY DESCRIPTION: Massive aphyric microcrystalline basalt.
PIECES: 1-3 (igneous description based on Piece 2)
CONTACTS: None
COLOR: Dark gray (4/1)
GROUNDMASS: Microcrystalline
VESICLES: Non-vesicular
ALTERATION: Dark gray and dark green moderately altered basalt with rare 0.1-0.8 mm light green altered halos. Amygdales of chlorite, quartz, anhydrite surrounded by dark green patch and light green alteration halos.
VEINS: Several 0.1-0.7 mm veins of chlorite, anhydrite, quartz and minor pyrite
STRUCTURE: Slight fracturing; alteration patches display a rough preferred orientation.
ADDITIONAL COMMENTS: Many alteration amygdales. Small pyrite flakes disseminated in the groundmass.



TS #1: 309-1256D-75R-1, 46-52 cm, Piece No: 8			Unit:27			OBSERVER:TS, CC / CL / PT, LC	
ROCK NAME: Aphyric cryptocrystalline basalt							
WHERE SAMPLED: Chilled margin							
GRAIN SIZE: Cryptocrystalline							
TEXTURE: Hypohyaline spherulitic-hypocrystalline variolitic/trachytic							
PRIMARY MINERALOGY	PERCENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
	PRESENT		min.	max.	av.		
PHENOCRYSTS	0.8	0.9					
Plagioclase	0.7	0.7	0.1	0.6	0.3	Euhedral-anhedral	The largest crystals are resorbed and have glass inclusions
Clinopyroxene	0.1	0.1	0.4	0.6	0.3	Euhedral-subhedral	
Olivine	0	0.1	0.1	0.2	0.15	Euhedral-subhedral	Completely replaced by saponite
GROUNDMASS		99.1					
Plagioclase						Subhedral, acicular-skeletal	
Clinopyroxene						Subhedral, fibrous	
Fe-Ti oxides						Subhedral-anhedral, skeletal	Titanomagnetite
Glass							Devitrified to spherulites
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Celadonite	1.5				Vesicles, interstitial areas	In external gray alteration halo	
Hydroschorlomite	0.01				Vesicles, interstitial areas	Associated with celadonite	
Iron-oxyhydroxides	0.2				Vesicles, interstitial areas	In inner gray alteration halo	
Chalcedony	0.3				Vesicles	In the alteration halo and in the host rock	
Saponite	0.4				In vesicles, and replaces plagioclase phenocrysts,	In the host rock, and in the mixed alteration halo, respectively	
STRUCTURE :	Millimetric to centimetric modal and textural planar layering. From top to bottom, the texture is defined by one centimetric layer of coalesced subspherical spherulites grading into flattened spherulites, two millimetric plagioclase rich-layers. One hypocrystalline layer with a slight preferred orientation of the phenocrysts, and one layer of flattened varioles with SPO plagioclase laths. Layering is locally folded. Two mm-scale veins intersecting with T-shape MORPHOLOGY filled with iron oxhydroxide and celadonite.						
COMMENTS :	1000 POINT COUNTING OF PRIMARY MINERALS. Plagioclase and clinopyroxene phenocrysts form glomerocrysts. In some part of the thin section, all the plagioclase microlites are orientated in the same direction. Plagioclase microlites can define a igneous layering: layer with high concentration of plagioclase microlites. Small amount of pyrite are present near vein. / One 1.4 mm and one 0.2 mm veins of iron-oxyhydroxides at rim, celadonite and chacedony at center. Mixed alteration halo adjacent to both veins; 0.8-1.5 inner green, 6-10 mm external gray.						

TS #2: 309-1256D-75R-1, 131-133 cm, Piece No: 20			Unit: 27			OBSERVER: JG, CC / CL	
ROCK NAME:		Aphyric cryptocrystalline basalt					
WHERE SAMPLED:		Flow interior					
GRAIN SIZE:		Cryptocrystalline					
TEXTURE:		Variolitic to intersertal					
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.6	0.9					
Clinopyroxene	0.5	0.5	0.2	0.5	0.4	Euhedral-subhedral	
Olivine	0	0.3	0.1	0.5	0.3	Subhedral	Always altered to saponite
Plagioclase	0.1	0.1	0.2	0.8	0.8	Subhedral	
GROUNDMASS		99.1					
Plagioclase						Subhedral-skeletal	
Clinopyroxene						Anhedral	In some parts feathery to variolitic
Fe-Ti Oxides							Titanomagnetite
Glass							Brownish alteration
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Saponite	16				Vesicles. Replaces plagioclase phenocrysts	Looks black	
Hydroschorlomite	0.1				Vesicles	Associated with saponite	
STRUCTURE :							
COMMENTS : Phenocrysts generally form glomerocrysts. Pipe vesicles surrounded by altered glass formed between plagioclase laths. Occurrence of sulfides.							





TS #3: 309-1256D-76R-2, 0-4 cm, Piece No: 1			Unit: 27			OBSERVER: JG, CC, TS/ CL, LG	
ROCK NAME:		Aphyric cryptocrystalline basalt					
WHERE SAMPLED:		Flow interior					
GRAIN SIZE:		Cryptocrystalline					
TEXTURE:		Hypocrystalline variolitic					
PRIMARY MINERALOGY	PERCENT	PERCENT	SIZE (mm)			MORPHOLOGY	COMMENTS
	PRESENT	ORIGINAL	min.	max.	av.		
PHENOCRYSTS	0.1	0.6					
Plagioclase	0.1	0.6	0.5	0.5	0.5	Euhedral	
GROUNDMASS	99.9	99.4					
Plagioclase			0.01	0.03	0.02	Subhedral-skeletal laths	
Clinopyroxene			0.01	0.04	0.02	Subhedral-anhedral	
Glass						Intersertal	Most glass tachylytic or altered
Fe-Ti oxides			0.005	0.008	0.01		Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	4					Vesicles, interstitial	
Albite	0.5					Replaces plagioclase phenocrysts	
Hydroschorlomite	0.05					Vesicles	Associated with saponite in vesicles
STRUCTURE :							
COMMENTS :		500 POINT COUNTING FOR SECONDARY MINERALS. Some large (1-3 mm), circular and empty vesicles.					



TS #4: 309-1256D-77R-1, 112-116 cm, Piece No: 22a		Unit: 28				OBSERVER: SD/CL//CC, TS/PT	
ROCK NAME: Sparsely clinopyroxene-plagioclase glomeroporphyritic fine-grained basalt							
WHERE SAMPLED: Flow Interior							
GRAIN SIZE: Fine grained							
TEXTURE: Hypohyaline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	2.7						
Plagioclase	2		0.1	0.8	0.2	Euhedral-subhedral	Glomeroporphyritic textures, resorbed
Clinopyroxene	0.7		0.2	0.6	0.2	Euhedral-anhedral	Glomeroporphyritic textures, resorbed
MICROPHENOCRYSTS	4.5						
Plagioclase	3.9		0.05	0.2	0.1	Euhedral-subhedral, sometimes dendritic	Resorbed
Clinopyroxene	0.6		0.05	0.2	0.1	Subhedral	Resorbed
GROUNDMASS	92.8						
Plagioclase	43.5					Dentritic	
Clinopyroxene	2					Euhedral-subhedral	
Glass	47.2					Interstitial	Devitrified
Fe-Ti oxides	0.1					Euhedral-subhedral	Titanomagnetite. Small grains at the variolite boundaries.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1.5					Vesicles, interstitial	
Celadonite	0.5					Vesicles, interstitial	
Fe-oxyhydroxides	0.1					Interstitial	
Albite	6					Replaces plagioclase phenocrysts	
Hydroschorlomite	0.05					Vesicles	Associated with celadonite or saponite
STRUCTURE :	Composite mm-scale vein; vein filling minerals are represented by chalcedony, iron-oxyhydroxide, and saponite from the center to the wallrocks. Chalcedony shows two different textures: blocky in the inner part, and fibrous in the outer part.						
COMMENTS :	In glomerocrysts, cpx and plagioclase show subophitic texture. In plagioclase phenocrysts, secondary melt and mineral inclusions are present. /One 0.3 mm thick vein of iron-oxyhydroxides, saponite and magnetite. One 0.5-3 mm thick vein of chalcedony. Occurrence of sulfides. POINT COUNTING FOR PRIMARY MINERALS AS PHENOCRYSTS AND IN GROUNDMASS.						



TS #5: 309-1256D-77R-2, 52-55 cm, Piece No: 8			Unit: 28			OBSERVER: CC, JG, SD/CL, LG	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric cryptocrystalline basalt						
WHERE SAMPLED:	Chilled contact						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Spherulitic to hypocrySTALLINE variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	2.8	2.8					
Plagioclase	1.6	1.6	0.2	0.6	0.3	Euhedral-subhedral	Inclusion of small plagioclase crystals. Sometimes, resorbed. Close to the upper side, intensely fractured. Some zoning.
Clinopyroxene	1.2	1.2	0.6	0.9	0.7	Euhedral-anhedral	Sometimes, resorbed in the inner part.
MICROPHENOCRYSTS	2	2					
Plagioclase	1.4	1.4	0.1	0.2	0.1	Euhedral-subhedral	Sometimes resorbed.
Clinopyroxene	0.6	0.6	0.2	0.3	0.3	Euhedral-anhedral	
GROUNDMASS	95.2	95.2					
Plagioclase						Skeletal	
Clinopyroxene						Dendritic or fibrous	
Fe-Ti oxides						Small anhedral grains	At the boundaries of the spherulites.
Glass							Devitrified to spherulites
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Celadonite	1.8				Vesicles, interstitial		
Albite	2.9				Partly replaces plagioclase phenocrysts		
Hydroschorlomite	0.01				Vesicles	Associated with celadonite	
STRUCTURE :							
COMMENTS : Plagioclase and clinopyroxene phenocrysts form glomerocrysts (where clinopyroxenes partially include plagioclase crystals). Phenocrysts are oriented perpendicular to the direction of the chilled margin. Microphenocrysts can also form such assemblages. Some irregular and empty vesicles (up to 0.2 mm). Possibly one phenocryst of olivine, being altered to glass on edge of thin section. Occurrence of sulfides.							



TS #6: 309-1256D-78R-1, 13-15 cm, Piece No: 2a			Unit: 28			OBSERVER: CC, JG, SD/LG/LC/YG	
ROCK NAME:	Sparsely clinopyroxene-plagioclase pyritic microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline porphyritic variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	4.9	4.9					
Plagioclase	3.6	3.6	0.1	0.5	0.2	Subhedral-anhedral	All are altered and partially resorbed. Some zoning on boundaries
Clinopyroxene	1.3	1.3	0.4	0.75	0.5	Subhedral-anhedral	Some are intensely fractured
MICROPHENOCRYSTS	1.3	1.3					
Plagioclase	0.8	0.8	0.01	0.07	0.05	Subhedral-anhedral	
Clinopyroxene	0.5	0.5	0.03	0.15	0.09	Subhedral	
GROUNDMASS	93.8	93.8					
Plagioclase						Subhedral-dendritic	
Clinopyroxene						Subhedral-fibrous	
Fe-Ti oxides						Small and anhedral	
Glass							Tachylytic and altered to brown phyllosilicates
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	12					Vesicles	Olive brown
Chalcedony	0.5					Vesicles	Associated with saponite
Albite	6					Replaces plagioclase phenocrysts	
Hydroschorlomite	0.01					Vesicles	Associated with saponite
STRUCTURE :							
COMMENTS : Plagioclase and clinopyroxene phenocrysts form glomerocrysts characterized by sub-ophitic relationships. Phenocrysts show a preferential orientation. Occurrence of sulfides.							



TS #7: 309-1256D-78R-3, 11-14 cm, Piece No: 2			Unit: 29A			OBSERVER: SD, TS/CL//PT	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0					
MICROPHENOCRYSTS	0.5	0.5					
Plagioclase	0.4	0.4	0.1	0.2	0.2	Euhedral-anhedral	
Clinopyroxene	0.1	0.1	0.16	0.16	0.16	Euhedral	
GROUNDMASS	99.5	99.5					
Plagioclase						Subhedral-skeletal	
Clinopyroxene						Anhedral-Fibrous	
Fe-Ti oxides						Small grains	Titanomagnetite
Glass							Tachylytic
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Celadonite	2				Vesicles		
Chalcedony	0.5				Vesicles		
Hydroschorlomite	0.05				Vesicles	Associated with celadonite	
STRUCTURE :	Vein filled with clasts of the host rock, cemented by alteration minerals. Clasts are 1 mm, have angular shape and are pervasively altered with respect to host rock. Clasts are cemented by brown saponite, chalcedony, celadonite, green phyllosilicate. Celadonite and saponite have a fibrous texture. Chalcedony has both spherulitic and blocky texture.						
COMMENTS :	Plagioclase and clinopyroxene glomeromicrocrysts, large vein composed of, celadonite, chalcedony and saponite. Smaller vein filled with Fe-Ti oxide mineral grains. / One 4 mm thick breccia-vein: elements are basaltic angular pieces and cement is composed by (in order of crystallisation) chalcedony, olive brown saponite, celadonite and unidentified pleocroic green phyllosilicate. One 2 mm thick mixed alteration halo (inner grey and outer iron-oxides and iron-hydroxides rich orange brown) adjacent to this vein. The description in the table above refers to the host rock. In the outer orange brown halo, vesicles and interstitial voids are filled by iron oxyhydroxides. Occurrence of sulfides.						



TS #8: 309-1256D-78R-3, 22-25 cm, Piece No: 3			Unit: 29A			OBSERVER: SD/TS/CL, CSD/ PT	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Flow top/chill margin						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
PHENOCRYSTS	0	0	min.	max.	av.		
MICROPHENOCRYSTS	1	1					
Plagioclase	1	1	0.05	0.2	0.07	Euhedral-subhedral	
GROUNDMASS	99	99					
Plagioclase			0.1	0.15	0.14	Euhedral-skeletal	
Clinopyroxene			0.01	0.01	0.01	Anhedral-fibrous	
Glass							Devitrified. Some slightly altered to palagonite.
Fe-Ti oxides			0.2	0.2	0.2	Euhedral	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Celadonite	0.6					vesicles, interstitial voids	
Iron oxyhydroxides	0.7					vesicles, interstitial voids	
Saponite	0.2					vesicles, interstitial voids	
Chalcedony	0.1					vesicles, interstitial voids	
Hydroschorlomite	0.01					vesicles, interstitial voids	Associated with celadonite
STRUCTURE :	Vein network associated with rock brecciation. Veins are mm-sized and are filled with (from the wallrock to the vein center) chalcedony, saponite, and green phyllosilicate (mixed layered chlorite-saponite?). One vein is filled with fibrous chalcedony at the core (syntaxial) and saponite along the wallrock. Veins include submillimetric clasts of altered basalt.						
COMMENTS :	Several 1-3 mm thick veins of (in order of crystallization) chalcedony, olive brown saponite, and unidentified pleocroic green phyllosilicate (probable saponite/chlorite). Several 0.2 mm thick veins of chalcedony and saponite. Occurrence of sulfides.						

TS #9: 309-1256D-79R-2, 48-50 cm, Piece No: 7			Unit: 29A			OBSERVER: JG, TS/LG , CL/ LC, PT	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Variolitic to intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0					
MICROPHENOCRYSTS	0.2	0.8					
Clinopyroxene	0.1	0.1	0.1	0.15	0.12	Euhedral	
Plagioclase	0.1	0.7	0.1	0.2	0.12	Euhedral	
GROUNDMASS	99.8						
Plagioclase	44.8					Skeletal laths	
Clinopyroxene	25					Subhedral-anhedral	
Glass/mesostasis	0	25					Altered to brown phyllosilicates (saponite)
Fe-Ti Oxides	5					Euhedral	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	4.2					Olivine phenocrysts, vesicles	
Albite	0.6					Plagioclase phenocrysts	
STRUCTURE :	Millimetric patches consisting of altered glass and skeletal oxide crystals show a slight shape preferred orientation (SPO).						
COMMENTS :	500 POINT COUNTING FOR SECONDARY MINERALS. Occurrence of sulfides.						





TS #10: 309-1256D-80R-1, 55-58 cm, Piece No:10		Unit: 29B			OBSERVER: TS, CC/ CL// LC		
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Near the chilled contact						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, spherulitic to hyalopilitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
PHENOCRYSTS	0	0	min.	max.	av.		
GROUNDMASS	100	100					
Glass						Subhedral, acicular-skeletal	Devitrified to spherulites
Plagioclase			0.01	0.05	0.02	Small grains	Most crystals have swallow tail structure
Fe-Ti oxides			0.01	0.03	0.02		Titanomagnetite: concentrated at the boundary of the spherulites
Clinopyroxene			0.005	0.005	0.005	Subhedral, fibrous	Radiating from the plagioclase microlites
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Celadonite	0.8					Irregular vugs	
Ceadonite/saponite	0.3					Interstitial between varioles	
Fe-oxyhydroxides	0.1					Interstitial between varioles	
Hydroschorlomite	0.01					Vugs	Associated with celadonite
STRUCTURE :	Modal and textural layering. Layers of flattened spherulites alternate with plagioclase-rich layers where laths show a strong shape preferred orientation. Layering is locally folded.						
COMMENTS :	The groundmass consists of spherulitic and hyalopilitic layers. Hyalopilitic layers are characterized by more abundant and preferentially oriented plagioclase microlites. Thickness of each layer is 0.5-1 mm. Occurrence of sulfides.						



TS #11: 309-1256D-80R-1, 103-107 cm, Piece No: 12			Unit: 29B			OBSERVER: CC, SD, TS/ LG, CL	
ROCK NAME:	Aphyric glassy to cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Glassy to hypohyaline, Spherulitic to variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0.1					
Olivine	0	0.1	0.8	0.8	0.8	Euhedral	Completely altered to brown saponite
GROUNDMASS		99.9					
Glass							Devitrified to spherulites
Plagioclase						Skeletal	Most crystals have swallow tail structure
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.1					olivine	
Iron oxyhydroxides	0.5					veins, interstitial	
STRUCTURE :							
COMMENTS : Plagioclase needles often form spherulites which serve as nuclei for the devitrified glass. Occurrence of sulfides (small euhedral grains).							



TS #12: 309-1256D-80R-1, 111-115 cm, Piece No: 12C			Unit: 29B			OBSERVER: TS, CC/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Near the chilled contact						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, Spherulitic to variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0.3					
Olivine	0	0.3	0.5	1	0.7		Completely altered to brown saponite
GROUNDMASS		99.7					
Glass							Tachylytic, altered
Plagioclase			0.01	0.03	0.02	Subhedral, acicular-skeletal	Most crystals have swallow tail texture
Fe-Ti oxides			0.01	0.03	0.02	Subhedral to fibrous	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.03					Vesicles, interstitial, replaces olivine	
STRUCTURE :							
COMMENTS : 1000 POINT COUNTING OF PRIMARY MINERALS.							



TS #13: 309-1256D-82R-1, 80-83 cm, Piece No: 13			Unit: 29B			OBSERVER: SD, TS/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Below the chilled margin						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.2	0.2					
Clinopyroxene	0.2	0.2	0.12	0.25	0.14	Subhedral	
GROUNDMASS							
Glass	99.8	99.8					Devitrified.
Plagioclase			0.01	0.05	0.02	Skeletal, bladed	Most crystals have swallow tail texture
Fe-Ti oxides			0.01	0.02	0.02	Subhedral-anhedral	
Clinopyroxene			0.01	0.07	0.05	Anhedral	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Iron-oxyhydroxides	7					Vesicles, interstitial areas	Particularly in the brown halo
Saponite	0.5					Vesicles, interstitial areas, replaces the core of plagioclase phenocrysts	
Celadonite	0.05					Vesicles, interstitial areas	
Chalcedony	0.05					Vesicles, interstitial areas	
Hydroschorlomite	0.01					Vesicles	Associated with celadonite
STRUCTURE :							
COMMENTS : Several crosscutting 0.2-1 mm veins of, from the edge to the center, celadonite/saponite, chalcedony, saponite, and green unidentified phyllosilicate same as in slides 7 and 8. Several mixed alteration halos partially overlapping. The percentages of each mineral given above are averages determined from the total area of the thin section.							



TS #14: 309-1256D-80R-2, 109-112 cm, Piece No.: 9b			Unit: 29B			OBSERVER: TS, SD,CC/CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.2	0.25					
Plagioclase	0.2	0.2	0.1	0.1	0.1	Subhedral	Laths, some slightly zoned
Clinopyroxene	0	0.05	0.15	0.2	0.2	Subhedral	
GROUNDMASS	99.75	99.75					
Plagioclase			0.02	0.04	0.03	Subhedral, acicular-skeletal	
Clinopyroxene			0.02	0.05	0.03	Subhedral-anhedral	Minor alteration to brown saponite
Glass							Tachylitic, altered
Olivine			0.03	0.08	0.04	Euhedral-subhedral	Completely alteration to green saponite
Fe-Ti oxides			0.02	0.05	0.04	Subhedral-fibrous	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1.5					Vesicles, interstitial areas	In the host rock
Celadonite	0.8					Vesicles, interstitial areas, replaces olivine	In the light grey part of the mixed halo
Iron oxyhydroxides	0.7					Vesicles, interstitial areas, replaces olivine	In the brown part of the mixed halo
Albite	0.05					Very partly replaces plagioclase phenocrysts	
Hydroschorlomite	0.01					Vesicles	Associated with celadonite
STRUCTURE :							
COMMENTS : One 0.2 mm vein of iron-oxyhydroxides at edge and celadonite at center, with adjacent mixed (light gray, brown, light gray) alteration halo. Two 0.02 mm veins of iron-oxyhydroxides. One 0.01 mm vein of celadonite (when in the the mixed halo) grading to saponite (when in the host rock). 1000 POINT COUNTING OF PRIMARY MINERALS. Pyrite in ground mass.							



TS #15: 309-1256D-80R-3, 15-19 cm, Piece No: 3			Unit: 29B			OBSERVER: CC/CL//LC, PT	
ROCK NAME:	Aphyric glassy to cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Hypohyaline spherulitic to hypocrystalline hyalopilitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.3	0.3					
Clinopyroxene	0.3	0.3	0.3	0.35	0.3		Alteration to smectite in fractures.
MICROPHENOCRYSTS	0.2	0.2					
Plagioclase	0.1	0.1	0.07	0.07	0.1	Euhedral	Some of them are resorbed.
Clinopyroxene	0.1	0.1	0.1	0.15	0.14	Euhedral	One, fresh, has small melt inclusions on the crystal boundaries. Sometimes altered in green celadonite.
GROUNDMASS	99.5	99.5					
Plagioclase						Skeletal	
Clinopyroxene						Euhedral-fibrous	Two generation of clinopyroxene microlites: euhedral grains and fibrous laths radiating from plagioclase
Fe-Ti oxides						Small euhedral grains	Titanomagnetite
Glass							Devitrified to spherulites in the upper part of the thin section and altered to brown phyllosilicates in the lower part.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	2					Vesicles, interstitial areas	
Celadonite	2					Vesicles, interstitial areas	In alteration halo adjacent to veins
Iron oxyhydroxides	0.5					Vesicles, interstitial areas	In alteration halo adjacent to veins
Hydroschorlomite	0.01					Vesicles	Associated with celadonite
Albite	0.5					Partly replaces plagioclase phenocrysts	
STRUCTURE :	Millimetric modal and textural banding defined by layers of slightly flattened variolites and glass alternating with plagioclase+clinopyroxene-rich layers. Magmatic layering is deformed by a centimetric similar fold.						
COMMENTS :	Two types of microlite assemblages are found: variolites of plagioclase and clinopyroxene dispersed in the altered glass; or layers of (sometimes preferentially oriented) microlites of plagioclase and clinopyroxene. Occurrence of sulfides./ One 0.1 mm vein of iron-oxyhydroxides at the edge and celadonite at center, and one 0.1 mm iron-oxyhydroxides vein, 2 mm alteration halos adjacent to both these veins. Several saponite 0.05 mm veins.						



TS #16: 309-1256D-84R-1, 3-7 cm, Piece No: 1			Unit: 29B			OBSERVER: TS, SD/ LG/ LC	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypohyaline-hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.2	0.5					
Plagioclase	0.2	0.3	0.1	0.3	0.2	Euhedral-subhedral	Partially replaced by brown saponite
Olivine	0	0.2	0.1	0.2	0.15	Euhedral-subhedral	Alteration to brown saponite
GROUNDMASS		99.5					
Glass							Devitrified to spherulite
Plagioclase			0.01	0.02	0.01	Subhedral-skeletal	
Clinopyroxene			0.01	0.05	0.02	Subhedral-dendritic	Minor alteration to brown saponite
Fe-Ti oxides			0.001	0.01	0.008	Subhedral-fibrous	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Celadonitic minerals	4					olivine, vesicles, interstitial between varioles	
Albite	0.7					plagioclase	
STRUCTURE :	Millimetric modal and textural banding defined by layers of variolites+interstitial altered glass alternating with plagioclase+clinopyroxene-rich layers. Plagioclase shape preferred orientation in plagioclase+clinopyroxene-rich layers.						
COMMENTS :	500 POINT COUNTING FOR SECONDARY MINERALS. Hypocrystalline parts and hypohyaline parts form layers. In the hypohyaline layer, many plagioclase microlites are orientated in the same direction. /Two 1-2 mm thick veins of iron oxyhydroxides; one 1-8 mm thick brown halo adjacent to the vein, where olivine and plagioclase phenocrysts are altered . One 0.5 thick vein of iron oxyhydroxides at the edge and celadonitic minerals at center. Occurrence of sulfides. 1000 POINT COUNTING OF PRIMARY MINERALS.						



TS #17: 309-1256D-84R-1, 37-40 cm, Piece No: 5			Unit: 29B			OBSERVER: SD, TS/ LG, CL//PT, LC	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0.4					
Olivine	0	0.4	0.3	0.6	0.4	Subhedral	Completely replaced by brown-green minerals (saponite/celadonite)
GROUNDMASS		99.6					
Mesostasis	59.2	59.2					
Glass	0	27.2					Most glass is tachylytic. Layer (2.5 mm) of devitrified glass .
Plagioclase	9.2	9.2	0.01	0.05	0.03	Subhedral-anhedral, bladed to fibrous	Small subophitic clusters
Clinopyroxene	3.1	3.1	0.02	0.07	0.04	Subhedral-anhedral, fibrous	Small subophitic clusters
Fe-Ti oxides	0.9	0.9				Dendritic	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Celadonite/saponite	1.5					Vesicle rims, interstitial	
Saponite	2.6					Vesicle centers, interstitial	
Chalcedony	0.5					Vesicle rims	Associated with celadonite/saponite
Iron-oxyhydroxides	0.4					Groundmass	Associated with celadonite/saponite
Albite	0.1					Plagioclase phenocryst	
Pyrite	0.1					Vesicle rims	
STRUCTURE :	Magmatic flow-related fabric marked by the shape preferred orientation of celadonite vesicles and of patches of celadonite+opaque minerals replacing the glassy groundmass in the interstices. Local shape preferred orientation (SPO) of plagioclase laths.						
COMMENTS :	500 POINT COUNTING FOR SECONDARY MINERALS. Alignment of plagioclase microlites show flow movement. Vesicles diameter ranges from 0.3 mm to 2 mm. Occurrence of sulfides.						



TS #18: 309-1256D-84R1, 55-59 cm, Piece No: 7a		Unit: 29B				OBSERVER: CC, LG/ CL, LC/ PT	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline variolitic to pilotaxitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
PHENOCRYSTS			min.	max.	av.		
MICROPHENOCRYSTS	0.3	0.5					
Plagioclase	0.3	0.5	0.1	0.2	0.15	Subhedral	One of them is partially resorbed in the inner part and has an overgrowth more fresh part. Sometimes greenish alteration.
GROUNDMASS		99.5					
Plagioclase			0.01	0.05	0.03	Dendritic	
Clinopyroxene			0.005	0.09	0.01	Euhedral-fibrous	Two generation of clinopyroxene microlites: euhedral grains and fibrous laths radiating from plagioclase.
Fe-Ti oxides						Small euhedral laths	
Glass							Tachylytic
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.5					Vesicles, plagioclase phenocrysts	plagioclase replacement is very partial
Albite	0.2					Plagioclase phenocryst cores	
STRUCTURE :	Banding defined by textural domains; millimetric domains where plagioclase laths in flattened variolites have a strong shape preferred orientation alternate with variolitic layer with no or slight orientation of the plagioclase.						
COMMENTS :	500 POINT COUNTING FOR SECONDARY MINERALS.						



TS #19: 309-1256D-84R1, 63-67 cm, Piece No: 7b		Unit: 29B				OBSERVER: CC, SD/ CL// LC	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
PHENOCRYSTS			min.	max.	av.		
MICROPHENOCRYSTS	0.3	0.3					
Plagioclase	0.3	0.3	0.15	0.2	0.2	Subhedral	The center of a few crystals are partially resorbed. Greenish saponite alteration in some crystals.
GROUNDMASS	99.7	99.7					
Plagioclase						Subhedral-anhedral-skeletal	
Clinopyroxene						Euhedral to fibrous	Two generations of clinopyroxene microlites: euhedral grains and fibrous laths radiating from plagioclase
Glass							Tachylytic
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.2					Vesicles, partly replaces plagioclase phenocrysts	
Chalcedony	0.02					Vesicles	
Hydroschorlomite	0.01					Vesicles	Associated with saponite
Albite	0.1					Partly replaces plagioclase phenocrysts	
Pyrite	0.05					Disseminated	
STRUCTURE :	Textural planar domains defined by clusters of flattened and altered variolites, and by intervening darker patches of glassy mesostasis.						
COMMENTS :	One 0.2 mm en echelon vein of anhydrite and minor amount of an unidentified mineral (laumontite? prehnite?). Network of discontinuous 0.5 mm vein of pyrite, with disseminated pyrite crystals in the host-rock.						



TS #20: 309-1256D-85R-1, 72-76cm, Piece No: 1e		Unit: 30		OBSERVER: JG, CC, SD/ CL /LC, PT			
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Igneous vein within a massive basalt unit						
GRAIN SIZE:	Cryptocrystalline to microcrystalline						
TEXTURE:	Intersertal (center of vein), variolitic to intersertal (above and below)						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0					
GROUNDMASS (CENTER)							
Glass	70	70					Partially devitrified
Clinopyroxene	15	15	0.01	0.1	0.06	Subhedral-anhedral	
Plagioclase	10	10	0.01	0.1	0.05	Anhedral-subhedral	Fractured pieces are scattered within the vein material
Fe-Ti oxides	5	5					
GROUNDMASS (ABOVE AND BELOW VEIN)							
Plagioclase	50	50	0.1	0.6	0.2	Subhedral laths, skeletal	
Clinopyroxene	21	21	0.1	0.5	0.2	Subhedral	
Glass	25	25					Tachylitic, often replaced by saponite
Fe-Ti oxides	4	4					
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	18					Interstitial areas, partly replaces glass and plagioclase	Brown or olive green
Albite	1					Partly replaces plagioclase	
Hydroschorlomite	0.01					Associated, or not, with saponite	
Actinolite?	0.05					Epitaxial growth from clinopyroxene	Very thin (0.1 micrometer) needles
STRUCTURE :	1 cm thick vein characterized by a finer grain size with respect to the host rock. The vein is mostly composed of altered glass with plagioclase microlites, clinopyroxene, millimetric clast of the host rock. The wall rock has irregular morphology and is marked by patches of altered glass. Some portions of the vein show cataclastic texture characterized by rounded clinopyroxene crystals, plagioclase crystals locally fractured, and altered very fine grained/glassy matrix.						
COMMENTS :	The macroscopic difference between the darker center of the vein and its margins results mainly from the decrease in grain size and the increased abundance of (altered) glass. The vein material often sharply cuts off to the more coarse grained wallrock crystals. In other parts of the thin section, the transition is less linear with the vein material forming convex lobes that intrude into the wall rock.						



TS #21: 309-1256D-85R-1, 119-122 cm, Piece No: 1f			Unit: 30			OBSERVER: JG/CC LG, CL /	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Holocrystalline intergranular to variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	1	1					
Plagioclase	1	1	0.2	0.3	0.25	Subhedral, equant	
GROUNDMASS	99	99					
Plagioclase	50	50	0.03	0.25	0.1	Subhedral laths, skeletal	
Clinopyroxene	45	45	0.04	0.3	0.15	Anhedral-subhedral	Shows beginning alteration
Fe-Ti oxides	5	5	0.01	0.04	0.02	Subhedral	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.5					Vesicles	
STRUCTURE :							
COMMENTS : Some irregular and elongated vesicles. Occurrence of sulfides.							



TS #22: 309-1256D-85R-2, 104-107 cm, Piece No: 2d			Unit: 30			OBSERVER: CC/ CL// LC	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Holocrystalline intergranular to variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.7	0.7					
Plagioclase	0.5	0.5	0.2	0.3	0.25	Subhedral	
Clinopyroxene	0.2	0.2	0.25	0.35	0.3	Euhedral	
GROUNDMASS	99.3	99.3					
Plagioclase	31.7	31.7	0.05	0.13	0.9	Subhedral-anhedral	
Clinopyroxene	9.4	9.4	0.07	0.15	0.1	Subhedral-anhedral	Altered to brown-green saponite
Fe-Ti oxides	1.8	1.8	0.02	0.06	0.04	Anhedral to skeletal	Titanomagnetite
Glass	5.5	55				Interstitial	Devitrified
Mesostasis	50.9	50.9					Intergrowth of clinopyroxene and plagioclase
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.1					Interstitial	
Hydroschorlomite	0.01					Interstitial	Associated with saponite
Iron-oxyhydroxides	1.5					Vesicles, interstitial areas	In brown alteration halo
STRUCTURE :	Iron-oxyhydroxides and chalcedony bearing composite vein.						
COMMENTS :	The two clinopyroxene microphenocrysts form a cluster. Some irregular and elongated, empty vesicles. Small colorless needles (apatite) in overprint of the main microlites./ One 1.5 mm thick vein of iron-oxyhydroxides at rim, chalcedony at center. 1 mm thick brown alteration halo adjacent to the vein, with general orange brown staining of all the primary minerals. Numerous interstitial areas of feldspar, titanomagnetite, and very thin needles of apatite and/or actinolite.						



TS #23: 309-1256D-85R-2, 137-140 cm, Piece No: 2g		Unit: 30				OBSERVER: SD, JG, CC/ CL// LC	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior, containing alteration vein						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	0.1					
Clinopyroxene	0.1	0.1	0.4	0.4	0.4	Euhedral	
MICROPHENOCRYSTS	0.1	0.15					
Clinopyroxene	0.1	0.1	0.23	0.3	0.25	Euhedral-subhedral	Mineral and melt inclusions. Some show many parallel cracks
Plagioclase	0	0.05	0.21	0.21	0.21	Subhedral	
GROUNDMASS		99.75					
Mesostasis		66.7					
Glass		14					Devitrified
Plagioclase		12.5	0.01	0.05	0.03	Subhedral-anhedral, bladed to fibrous, skeletal	Miarolitic texture around alteration halo (?)
Clinopyroxene		3.8	0.02	0.07	0.04	Subhedral-anhedral, fibrous, skeletal	
Fe-Ti oxides		2.8				Equant-subequant	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	3					Vesicles, interstitial areas	
Iron oxyhydroxides	4					Vesicles, interstitial areas	Locally as general staining of the primary minerals
STRUCTURE :	Millimetric cataclastic zone. Clasts consist of fine grained subangular fragments of the host rock, relics of broken pyroxene and plagioclase crystals, and fragments of altered glass. Cement is silica and minor iron oxyhydroxides. Thin veins of saponite and iron oxyhydroxides are present.						
COMMENTS :	Up to 4 mm brecciated vein, whose cement is silica and minor iron oxyhydroxides. Small empty vesicles, generally spherical to irregular (0.6-0.8). Small colorless needles of apatite on most of the plagioclase microlites.						



TS #24: 309-1256D-85R3, 77-81 cm, Piece No: 9b			Unit: 31			OBSERVER: CC, TS, SD/ LG, CL	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline intersertal-intergranular to variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
Clinopyroxene	0.6	0.6	0.5	0.8	0.6	Euhedral	Inclusion of plagioclase and clinopyroxene microlites. Brownish alteration in fractures.
GROUNDMASS		99.4					
Plagioclase	16.5	20	0.2	0.3	0.25	Subhedral-anhedral	
Clinopyroxene	4.5	4.5	0.15	0.25	0.2	Euhedral-dendritic-fibrous	Altered to brown clay mineral in cracks. Some zoning on the outer edge of the crystals.
Mesostasis		59.4					
Fe-Ti oxides	1.6	1.6				Anhedral-fibrous	Titanomagnetite forms clusters
Glass	0	13.9					Tachylytic
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/celadonite	2					Vesicles, interstitial areas	
Iron oxyhydroxides	5					Vesicles, interstitial areas	
Pyrite	0.1					Disseminated	
STRUCTURE :							
COMMENTS : 500 POINT COUNTING FOR SECONDARY MINERALS. Clinopyroxene phenocrysts form glomerocrysts. Some spherical vesicles (empty or filled with smectite). Occurrence of sulfides.							



TS #25: 309-1256D-85R-4, 43-46cm, Piece No: 2f			Unit: 31			OBSERVER: TS, JG, CC/ CL	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
GROUNDMASS							
Plagioclase	23.4	23.4	0.005	0.4	0.05	Skeletal-acicular laths	Many are cut by clinopyroxene
Clinopyroxene	27	27	0.005	0.3	0.05	Anhedra-subhedral, fibrous	Also elongated prisms; fresh
Mesostasis	33.1	33.1					Consisting with small plagioclase crystals
Fe-Ti oxides	1.4	1.4	0.005	0.05	0.02	Skeletal-elongated angular	Titanomagnetite
Glass	0	11.1					Devitrified
VESICLES	4	4	0.6	1.2	1	Spherical	Spherical vesicles are filled with saponite- some are filled with a crescent of altered glass and recrystallized.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	6					Large vesicles, interstitial areas	All large vesicles fillings are plucked out
STRUCTURE :							
COMMENTS : Occurrence of sulfides (0.005-0.01 mm). 1000 POINT COUNTING OF PRIMARY MINERALS.							



TS #26: 309-1256D-85R-5, 79-82 cm, Piece No: 3b			Unit: 31			OBSERVER: TS, CC, SD/ CL	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, subophitic to intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	1.6	1.6					
Clinopyroxene	0.8	0.8	0.8	1.2	1	Subhedral-anhedral	Tabular; some zoning and resorption, glass inclusions present in the center of two of the crystals.
Plagioclase	0.8	0.8	0.6	1.2	1	Euhedral-anhedral	All have irregular margins
GROUNDMASS		97					
Clinopyroxene	47.6	47.6	0.005	0.3	0.1	Anhedral-subhedral, fibrous	Some elongated prisms
Plagioclase	33.4	33.4	0.005	0.2	0.1	Skeletal-acicular laths	
Glass/ Mesostasis	15.2	15.2					Composed of devitrified glass, small plagioclase, clinopyroxene
Fe-Ti oxides	0.8	0.8	0.005	0.08	0.05	Euhedral-skeletal-dendritic	Titanomagnetite
VESICLES	0	1.4	0.4	1.2	1	Spherical	Filled with brown saponite
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Saponite	5				Vesicles, interstitial areas		
STRUCTURE :							
COMMENTS : Clinopyroxene phenocrysts partially enclose plagioclase laths (subophitic texture). Plagioclase and clinopyroxene microlites also show subophitic relationship but more common the clinopyroxene microlites are interstitial to the plagioclase. Some interstitial sulfides. 1000 POINT COUNTING OF PRIMARY MINERALS.							



TS #27: 309-1256D-86R-3, 14-18 cm, Piece No: 1b			Unit: 31			OBSERVER: SD, CC/ LG, CL	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Holocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.3	0.3					
Clinopyroxene	0.2	0.2	0.8	1	0.9	Subhedral	Several melt inclusions present
Plagioclase	0.1	0.1	0.6	0.6	0.6	Euhedral	Zoning
GROUNDMASS	99.7	99.7					
Plagioclase	34.6	34.6	0.01	0.15	0.1	Euhedral-anhedral, dendritic, bladed	Some zoning in larger crystals
Clinopyroxene	17	17	0.03	0.45	0.01	Subhedral-anhedral, dendritic/skeletal, fibrous	Small fibrous clusters in the matrix
Glass	4.3	4.3					Altered
Fe-Ti oxides	0.5	0.5	0.01	0.02	0.02	Euhedral Equant-subequant-skeletal	Titanomagnetite
Mesostasis	43.3	43.3				Interstices	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1.5					Vesicles, partially replaces plagioclase and clinopyroxene phenocrysts	Olive brown to black
Pyrite	0.05					Disseminated	
Chalcopyrite	0.02					Disseminated	
STRUCTURE :							
COMMENTS : There are two generations of titanomagnetite crystals, a primary titanomagmatic euhedral crystal and a secondary anhedral crystal in the altered areas.							



TS #28: 309-1256D-86R-3, 94-97 cm, Piece No: 5			Unit: 31			OBSERVER: TS, CC/ CL	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, Subophytic-intergranular (=doleritic)						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)		av.	MORPHOLOGY	COMMENTS
			min.	max.			
PHENOCRYSTS	1.2	1.2					
Plagioclase	0.7	0.7	0.5	1.2	1	Subhedral-anhedral	All have irregular margins
Clinopyroxene	0.5	0.5	0.5	1	0.8	Subhedral-anhedral	Tabular; some zoning and resorption. Many glass inclusions are present in the inner part of two crystals.
GROUNDMASS	98.8	98.8					
Clinopyroxene	35.7	35.7	0.005	0.17	0.1	Anhedral-subhedral, fibrous	Also elongated prisms. Many are cut by plagioclase
Plagioclase	35.7	45.7	0.005	0.2	0.1	Skeletal-acicular laths	Many are cut by clinopyroxene
Glass	13.4	13.4					Devitrified
Fe-Ti oxides	4	4	0.005	0.05	0.03	Skeletal-elongated, angular	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)		av.	REPLACING / FILLING	COMMENTS
			min.	max.			
Saponite	5					Vesicles, interstitial areas	
STRUCTURE :							
COMMENTS : Plagioclase and clinopyroxene phenocrysts occur as glomerocrysts. Some of the plagioclase phenocrysts have inclusion of small plagioclase crystals. 1000 POINT COUNTING OF PRIMARY MINERALS.							



TS #29: 309-1256D-87R-1, 138-142 cm, Piece No: 8a			Unit: 31			OBSERVER: SD/TS/ CL// PT, LC	
ROCK NAME:	Sparsely phylic fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Holocrystalline variolitic-spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	5	5					
Clinopyroxene	4	4	0.2	0.8	0.6	Subhedral-anhedral	Broken pieces retain original shape with smaller plagioclase laths radiating out.
Plagioclase	1	1	0.1	0.4	0.2	Subhedral-anhedral	
GROUNDMASS	95	95					
Plagioclase	15.6	15.6	0.01	0.05	0.04	Subhedral-anhedral	
Clinopyroxene	5.4	5.4	0.01	0.5	0.03	Subhedral-anhedral	
Mesostasis	74	74				Interstices	Some Fe-Ti oxides (titanomagnetite)
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chalcedony	2		0.1	0.25		Breccia cement	
Green cpx	0.01					Breccia clast	
Saponite	1?						Plucked out
STRUCTURE :	Irregular, 2mm-thick cataclastic zone consisting of subangular and rounded fragments of clinopyroxene and plagioclase, altered glass, opaque minerals. The matrix is made up of fine-grained chalcedony						
COMMENTS :	Spherulitic clusters contain broken down clinopyroxene phenocryst with smaller plagioclase laths radiating out. All on the edges of a vein. Occurrence of sulfides. In the less brecciated part of the slide, most of the secondary minerals have been plucked out.						



TS #30: 309-1256D-87R-2 40-43 cm, Piece No: 3b			Unit: 31			OBSERVER: CC, SD/ LG, CL	
ROCK NAME:	Moderately clinopyroxene-phyric and vesicular fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Glassy to hypocrystalline intersertal porphyritic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	7.1	7.1					
Clinopyroxene	7.1	7.1	0.7	1.4	0.7	Anhedral	Partial to total inclusion of small laths of plagioclase. Melt inclusions in the inner part of some of them. Alterations in fractures.
GROUNDMASS	73.7	73.7					
Plagioclase	24.6	24.6	0.05	0.2	0.12		
Fe-Ti oxides	5.7	5.7	0.05	0.1	0.05		Titanomagnetite
Glass	31.1	31.1				Interstitial	Altered to brown-greenish phyllosilicates
Mesostasis	12.3	12.3				Interstitial	Small plagioclase and clinopyroxene
VESICLES	19.2	19.2	0.05	10	5	Spherical-irregular	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.5					vesicles	
Chalcedony	0.1					vesicles	associated with phyllosilicate amygdales
Iron oxyhydroxides	0.01					disseminated	
STRUCTURE :	One irregular 0.2 mm thick vein of saponite						
COMMENTS :	Clinopyroxene phenocrysts partially enclose small laths of plagioclase (similar to the laths of plagioclase in the groundmass). Perhaps the larger plagioclase crystals can be small phenocrysts. Presence of large (up to 1cm) spherical and generally empty vesicles. The texture varies gradually toward the upper part of the thin section. In the upper part of the thin section, the texture becomes glassy and the vesicles are smaller, more irregular and tend to coalesce. Proportions of minerals in the groundmass are calculated from the lower part. Occurrence of sulfides./ Occurrence of large amygdales of probably saponite, mostly plucked out. Presence of up to 1 mm empty veins.						



TS #31: 309-1256D-87R-2 65-69 cm, Piece No: 6			Unit: 31			OBSERVER: CC, TS/ CL	
ROCK NAME:	Moderately plagioclase-clinopyroxene phyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, intersertal porphyritic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	7.1	8.9					
Clinopyroxene	5	6.8	0.35	1.2	0.7	Anhedral	Partial to total inclusion of small laths of plagioclase. Alteration along fractures.
Plagioclase	2.1	2.1	0.35	0.95	0.5	Euhedral-subhedral	Partial inclusion of small laths of plagioclase.
GROUNDMASS	81	81					
Plagioclase	36.5	36.5	0.05	0.2	0.12	Subhedral-skeletal	
Clinopyroxene	6.4	6.4	0.05	0.12	0.1	Subhedral-anhedral	
Fe-Ti oxides	8.1	8.1	0.05	0.1	0.05	Euhedral-dendritic	Titanomagnetite
Glass	1.7	1.7				Interstitial	Brownish altered
Mesostasis	28.3	28.3				Interstitial	Small plagioclase and clinopyroxene crystal
VESICLES	10.1	10.1	0.1	0.5	0.2	Irregular	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	12					Vesicles, interstitial	Cores of large vesicles are plucked out
STRUCTURE :							
COMMENTS : Clinopyroxene phenocrysts partially includes small laths of plagioclase (similar to the laths of plagioclase in the groundmass). Presence of generally irregular and empty vesicles. Occurrence of sulfides.							



TS #32: 309-1256D-88R-1 79-83 cm, Piece No: 15		Unit: 32			OBSERVER: JG, TS, SD/ LG, CL		
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic-interstitial intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.8	0.8					
Clinopyroxene	0.5	0.5	0.1	0.25	0.15	Anhedral	
Plagioclase	0.3	0.3	0.05	0.15	0.1	Subhedral-anhedral	
GROUNDMASS	99.2	99.2					
Plagioclase	35	35				Subhedral- skeletal	Cores of hollow crystals often contain saponite
Clinopyroxene	48	48				Dendritic-fibrous	
Fe-Ti oxides	12	12				Euhedral-subhedral	Titanomagnetite
Glass	5	5					Altered
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	5					Vesicles, replaces core of plagioclase phenocrysts	Saponite in plagioclase cores is almost completely plucked out
Iron oxyhydroxides	0.5					Vesicles, interstitial ares	
Pyrite	1					Vesicles, interstitial areas, replaces plagioclase and cli- nopyroxene	In halo adjacent to pyrite vein
Chalcedony	0.05					Vesicles	
STRUCTURE :							
COMMENTS :	500 POINT COUNTING FOR SECONDARY MINERALS. Rectangular plagioclase microphenocrysts often enclose rectangular altered glass (saponite) or titanomagnetite./ Two up to 0.3 mm veins of pyrite with a 0.2 mm thick pyrite-rich alteration halo.						



TS #33: 309-1256D-89R-1, 64-67 cm, Piece No: 13						Unit: 33A	OBSERVER: TS, SD, PT, CC; CL
ROCK NAME:	Sparsely olivine-plagioclase-clinopyroxene phyric cryptocrystalline basalt						
WHERE SAMPLED:	Near chilled margin						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypohyaline spherulitic to hypocrySTALLINE variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	1.3	1.9					
Clinopyroxene	1	1	0.2	0.6	0.4	Euhedral-subhedral	Some resorption
Plagioclase	0.3	0.9	0.2	0.5	0.4	Euhedral-subhedral	
Olivine	0	0.1	0.1	0.2	0.15	Euhedral-subhedral	Completely replaced by saponite
GROUNDMASS		98.1					
Clinopyroxene						Anhedral, fibrous	
Plagioclase						Acicular laths	Some show swallow tail structure
Glass							Devitrified
Fe-Ti oxides						Skeletal-elongated, angular	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.3					Vesicles, amygdale rims, replaces olivine	
Celadonite	0.3					Vesicles	
Iron oxyhydroxides	0.4					Vesicles	
Hydroschorlomite	0.01					Vesicles	Associated with celadonite
Albite	1					Partly replaces plagioclase phenocrysts	
Green phyllosilicate	0.3					Amygdale cores	Unidentified, same as in slide 7, 8, and 13
Anhydrite	5					Amygdale core	
STRUCTURE :	Modal layering consisting of alternating plagioclase-rich variolitic layers and spherulitic layers. Layers thickness ranges between < 1mm to 4 mm. They are planar or slightly folded.						
COMMENTS :	1000 POINT COUNTING OF PRIMARY MINERALS Variolitic texture is present as thin (0.2-1 mm) layers. Plagioclase and clinopyroxene phenocrysts occur as glomerocrysts. A few plagioclase phenocryst in the variolitic layers. Their orientation is similar to the microlite one. Small (<0.001 mm) sulfide blebs are present. /One 2x3 mm amygdale filled with, from the rim to the center, saponite. unidentified green phyllosilicate, anhydrite.						



TS #34: 309-1256D-92R-1, 4-7 cm, Piece No: 1			Unit: 33A			OBSERVER: TS, CC/ CL// PT	
ROCK NAME:	Sparsely phylic microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	1.6					
Plagioclase	0.1	0.7	0.2	0.4	0.3	Euhedral-subhedral	Most parts are replaced by albite
Olivine	0	0.9	0.2	0.35	0.3	Euhedral-subhedral	Completely replaced by phyllosilicates
GROUNDMASS		98.4					
Clinopyroxene						Subhedral-anhedral, fibrous	
Plagioclase						Anhedral, acicular laths	Some show swallow tail structure
Glass							Devitrified
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Albite	2					Plagioclase phenocrysts and microphenocrysts	
Saponite	3					Vesicles and irregular vugs, interstitial areas	
STRUCTURE :	Local slight shape preferred orientation of plagioclase laths.						
COMMENTS :	Occurrence of sulfides (0.1-0.4mm). Plagioclase phenocrysts form glomerocrysts. Plagioclase microlites tend to be oriented. 1000 POINT COUNTING OF PRIMARY MINERALS						



TS #35: 309-1256D-94R-1, 44-51cm, Piece No: 10			Unit: 33A			OBSERVER: JG, CC/CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.1	0.1					
Plagioclase	0.1	0.1	0.2	0.3	0.2	Subhedral	
GROUNDMASS	99.9	99.9					
Clinopyroxene						Two generations: anhedral granular (10%), dendritic (90%)	Dendritic crystals show complex, fibrous branching around plagioclase or anhedral clinopyroxene microlites
Plagioclase						Subhedral, skeletal	
Glass							Altered
Fe-Ti oxides							Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	5					Vesicles, interstitial areas; plagioclase phenocrysts cores	
STRUCTURE :							
COMMENTS : One 0.6 mm thick vein of very minor saponite at the edge, and chalcedony at center. 1.2 mm thick halo adjacent to this vein.							



TS #36: 309-1256D-94R-1, 86-89 cm, Piece No: 17							Unit: 33A	OBSERVER: CC, JG, CSD, TS/ CL
ROCK NAME:	Sparsely olivine-plagioclase phyric microcrystalline basalt							
WHERE SAMPLED:	Flow interior							
GRAIN SIZE:	Microcrystalline to cryptocrystalline							
TEXTURE:	Hypocrystalline to hypohyaline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.7	1.8						
Plagioclase	0.7	1	0.15	0.35	0.2	Euhedral-subhedral	Most are altered in the inner part and/or partially resorbed on periphery or on a rim	
Olivine	0	0.8	0.2	0.35	0.2	Euhedral-subhedral	Completely replaced by saponite	
GROUNDMASS		98.2						
Clinopyroxene						Subhedral, fibrous	Two generation of microlites: small euhedral grains and interstitial fibrous crystals.	
Plagioclase						Skeletal		
Fe-Ti oxides						Small, anhedral	Titanomagnetite	
Glass						Devitrified	Altered to saponite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite	4					Vesicles, interstitial areas, completely replaces olivine	Very dark to medium olive green	
Hydroschorlomite	0.01					Vesicles	Associated with saponite	
Green phyllosilicate	0.3					Vesicles, vein	Radiating fibers (almost similar to slide 7, 8, 13, and 33); chlorite/saponite?	
Albite						plagioclase		
Chlorite?	0.02					plagioclase	Small (5 micrometers) patches	
Zeolite	1					plagioclase adjacent to vein		
STRUCTURE :								
COMMENTS : Large (up to 1mm) sub-spherical area of cryptocrystalline groundmass (fibrous plagioclase and clinopyroxene, Fe-Ti oxides, glass) between the variolites. A few sulfides, concentrated in a thin vein./ One 1-1.5 mm thick vein of, from the edge to the center, very dark green saponite (?), unidentified green phyllosilicate, large (2mm) slabs of zeolite. In a 8 mm halo adjacent to this vein, plagioclase is completely replaced by probable zeolite, and vesicles are filled with the unidentified green phyllosilicate.								



TS #37: 309-1256D-96R-1, 32-34 cm, Piece No: 6b			Unit: 33A			OBSERVER: JG, CC, TS/ CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	0.2					
Plagioclase	0.1	0.1	0.2	0.5	0.3	Subhedral	Show zonation, often form glomerocrysts, one large glass inclusion (0.003 mm)
Olivine	0	0.1	0.5	0.5	0.5	Subhedral	Completely altered to saponite
GROUNDMASS		99.8					
Plagioclase						Skeletal laths	
Clinopyroxene						1) Subhedral, 2) Fibrous-branching	Two generations of clinopyroxene microlites
Glass						Intersertal	Altered
Fe-Ti oxides						Euhedral-subhedral	Magnetite; occurrence of skeletal sulfide (0.3 mm)
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	4					Vesicles, interstitial areas	
Hydroschorlomite	0.02					Vesicles, interstitial areas	
STRUCTURE :							
COMMENTS :							



TS #38: 309-1256D-96R-1, 110-112 cm, Piece No: 21			Unit: 33A			OBSERVER: CC, TS/ CL//LC/HL	
ROCK NAME:	Aphyric glassy basalt						
WHERE SAMPLED:	Flow bottom						
GRAIN SIZE:	Microcrystalline to cryptocrystalline						
TEXTURE:	Hypohyaline hyalopilitic to spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	0.1					
Plagioclase	0.1	0.1	0.15	0.2	0.2	Euhedral, bladed	
MICROPHENOCRYSTS	1.8	1.8					
Plagioclase	1.8	1.8	0.05	0.15	0.08	Euhedral, bladed laths	Some of them show swallow tail structure. Some zoning.
GROUNDMASS		98.1					
Glass							Recrystallized to brown fibrous spherulites
Plagioclase						Acicular-fibrous	Most of them show swallow tail structure
Fe-Ti oxides						Euhedral-subhedral	A few titanomagnetite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/celadonite	0.7					Vesicles, interstitial, replaces olivine	
Iron oxyhydroxides	0.5					Vesicle cores, interstitial	
Hydroschorlomite	0.01					Vesicles	
Albite	0.05					Very partly replaces plagioclase	
STRUCTURE :	Flattened spherulites and shape preferred orientation of plagioclase microlites and crystals define a lava flow-related fabric.						
COMMENTS :	Plagioclase microphenocrysts are elongated in the same preferential direction than microlites. Sulfides occurrence. /Two 1 mm thick veins of, from the edge to the center, saponite (thin rim), chalcedony spherules and saponite, large crystals of calcite. Very discrete 0.2 mm thick alteration halo adjacent to one of these veins, mainly looking as a discoloration of the groundmass.						



TS #39: 309-1256D-97R-1, 32-37 cm, Piece No: 7			Unit: 33A			OBSERVER: SD/ CL, LG	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
Plagioclase	0.2	0.2	0.3	0.3	0.3	Euhedral-subhedral	Show resorption along the rims. Small inclusions are present along these rims. Zoning is present showing a distinction between the center of the crystal and the resorption rim. These form a glomeroporphyritic cluster.
MICROPHENOCRYSTS	0.1	0.1					
Plagioclase	0.1	0.1	0.1	0.2	0.2	Euhedral	
GROUNDMASS	99.7	99.7					
Mesostasis	48.5	48.5					
Plagioclase	45.2	45.2				Euhedral-anhedral, acicular-bladed and tabular crystals	Two distinct types of crystals; acicular to bladed and short stubby tabular crystals. Many tabular crystals have hollow centers, sometimes filled with minerals/glass and some are empty. Some laths have swallow-tail edges.
Glass	4.1	4.1					Altered
Clinopyroxene	1.5	1.5				Anhedral-fibrous	Two distinct generations; anhedral tabular crystals and crystals with fibrous spherulitic textures.
Fe-Ti oxides	0.4	0.4				Subhedral-skeletal	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	11					Interstitial areas, partly replaces clinopyroxene	
STRUCTURE :							
COMMENTS : 500 POINT COUNTING FOR SECONDARY MINERALS.							



TS #40: 309-1256D-98R-1, 9-12 cm, Piece No: 3		Unit: 33A			OBSERVER: CC, HL /LG/ LC		
ROCK NAME:	Aphyric glassy to cryptocrystalline basalt						
WHERE SAMPLED:	Flow top						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Hypohyaline spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0					
MICROPHENOCRYSTS	1.4	2.2					
Plagioclase	1.4	1.4	0.05	0.12	0.07	Subhedral	
Olivine	0	0.8	0.03	0.1	0.05	Subhedral	Completely altered in brown-green saponite.
GROUNDMASS	94.6						
Glass						Acicular	Recrystallized to brown/gray spherulites.
Plagioclase						Subhedral-anhedral, fibrous	Swallow tail structure.
Clinopyroxene						Very small euhedral grains	Surrounding the spherulites. Titanomagnetite
Fe-Ti oxides							
VEINS	2.6						Halo limited by a line of pyrite (anhedral or spherical grains) and minor anhedral magnetite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	2.5					Vesicles, olivine	
Chalcedony	0.4					Vesicles	Associated with saponite vein
STRUCTURE :	Modal layering consisting of alternating glassy, spherulitic bands and variolitic bands.						
COMMENTS :	500 POINT COUNTING FOR SAPONITE. Modal composition. Plagioclase microphenocrysts form clusters. Microlites of plagioclase and clinopyroxene also. /A few spherical vesicles (up to 0.15 mm) filled with saponite, chalcedony. Occurrence of 0.3 mm thick vein of saponite associated with, from the center to the wallrock, a discontinuous rim of chalcedony, a 1.4 mm thick alteration halo and a pyrite front. Pyrite front forms both anhedral grains and vesicles.						



TS #41: 309-1256D-99R-2, 78-82 cm Piece No: 11b		Unit: 33B			OBSERVER: CC, SD/ CL		
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
GROUNDMASS	97.6						
Mesostasis	75.1						Small microlites of plagioclase and pyroxene
Plagioclase	14.1		0.01	0.15	0.05	Subhedral-acicular	
Clinopyroxene	4.7		0.01	0.15	0.05	Subhedral-anhedral, fibrous	
Fe-Ti oxides	2.3		0.01	0.06	0.03	Subhedral-skeletal	Titanomagnetite
Glass	1.4						Completely altered to brown/greenish saponite
VESICLES	2.4		0.2	0.5	0.3	Spherical	Filled with green saponite/ hydroschorlomite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	3.5					Vesicles, interstitial areas	
Hydroschorlomite	0.005					Vesicles	Associated with saponite
STRUCTURE :							
COMMENTS : Two generations of plagioclase and clinopyroxene microlites: larger plagioclase form subhedral laths while the smaller microlites are acicular; larger clinopyroxene form subhedral grains and the smaller grains are more fibrous. There are some large anhedral sulfides.							



TS #42: 309-1256D-100R-1, 18-24 cm, Piece No: 4			Unit: 34A			OBSERVER: TS, JG, CC/ CL// PT	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Basaltic clots in volcanoclastite						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypohyaline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.8	0.85					
Plagioclase	0.6	0.6	0.2	0.6	0.4	Euhedral-subhedral-laths	Some parts are replaced by saponite. Some are resorbed.
Clinopyroxene	0.2	0.2	0.2	0.4	0.3	Subhedral	
Olivine	0	0.05	0.1	0.3	0.2	Euhedral-subhedral	Completely replaced by green-brown saponite
GROUNDMASS		98.3					
Plagioclase						Subhedral-acicular	
Clinopyroxene						Subhedral-anhedral, fibrous	
Fe-Ti oxides					0.01	Subhedral-skeletal	Titanomagnetite
Glass							Devitrified
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	3					Partly replaces plagioclase phenocrysts	
Chalcedony	0					Replaces groundmass plagioclase (and clinopyroxene?)	0.2 In alteration halo adjacent to veins
STRUCTURE :	Breccia consisting of angular to subangular basaltic clasts embedded by secondary minerals. Basaltic clasts are monomictic, consisting of aphyric cryptocrystalline basalt with spherulitic to variolitic texture. Their size ranges from 2 mm to 50 mm. Clast edges may be irregular due to replacement by secondary minerals (clay minerals and chalcedony). The largest clast is characterized by millimetric to centimetric modal and textural layering. Layering is locally folded. Texture is defined by layers of partially coalesced spherulites alternating with layers of altered glass (near the clast edges), and by layers of flattened spherulites alternating with plagioclase rich-layers (inner part), grading into variolitic texture. One clast is cut by vein filled with saponite and green, fibrous mineral (high order interference colors). The matrix consists of saponite and green, fibrous mineral, cemented by chalcedony, both fine grained and coarse grained. Sulfides are also present.						
COMMENTS :	1000 POINT COUNTING OF PRIMARY MINERALS. Edges of the basaltic clots are highly altered compared with inner parts (altered into silica minerals). Sulfides (up to 2 mm) are present in veins. A part of the largest clast corresponds to a glassy margin (palagonite). In this clasts the plagioclase phenocrysts are generally oriented in the same direction parallel to the glassy margin.						



TS #43: 309-1256D-101R-1, 76-80cm, Piece No: 11		Unit: 34A		OBSERVER: JG, TS, CSD/ CL// LC, PT			
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0					
GROUNDMASS		100					
Clinopyroxene	65	65	0.01	0.1	0.06	Two generations: 1) subhedral, 2) feathery, dentritic, branching	
Plagioclase	20	20	0.01	0.1	0.05	Subhedral (blade-shaped or skeletal)	Partly altered
Glass	0	10					Devitrified or altered to saponite
Fe-Ti oxides	5	5	0.01	0.07	0.03	Subhedral, euhedral	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	4					Interstitial areas	
STRUCTURE :	Fine grained cataclastic zone cut by anastomosing nearly parallel hydrothermal veins. Cataclastic zone is characterized by protocataclasite to cataclasite with slight foliated fabric. Clasts consists of angular to subangular plagioclase and clinopyroxene fragments from the host rock, the matrix (<50%) consists mainly of altered glass and silica.						
COMMENTS :	Occurrence of sulfides (0.02-0.05). /Quartz, chalcedony and some saponite veins are present throughout the rock. Quartz and chalcedony veins are 0.01 to 0.1mm, sinusoidal and some are lined with Fe-oxyhydroxides. Saponite veins are 0.1 mm thick and not sinusoidal. Two 0.01 mm veins of iron-hydroxides at the edge and saponite in the center. Most secondary minerals are washed out.						



TS #44: 309-1256D-102R-1, 70-72 cm, Piece No: 16a			Unit: 34B			OBSERVER: JG , SD/ LG, CL//	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, intergranular-intersertal, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	2	2					
Plagioclase	1	1	0.4	0.6	0.5	Subhedral	Often show weak zonation
Clinopyroxene	1	1	0.2	0.5	0.3	Anhedral	Resorbed rims
GROUNDMASS							
Plagioclase		98					
Clinopyroxene		29	0.05	0.2	0.1	Bladed and skeletal laths	
Fe-Ti oxides		37	0.05	0.2	0.1	Anhedral granular, or fibrous	
Glass		5				Anhedral, skeletal	Titanomagnetite and Ilmenite
		27					Altered (saponite)
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	3						Groundmass clinopyroxene and plagioclase, vesicles
STRUCTURE :							
COMMENTS : 500 POINT COUNTING FOR SECONDARY MINERALS. Occurrence of anhedral pyrite grains and disseminated sulfides.							

TS #45: 309-1256D-102R-1, 90-92 cm, Piece No: 17b			Unit: 34B			OBSERVER: SD; CSD/CC CL THIN SECTION: 45	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.2	0.3					
Plagioclase	0.2	0.2	0.3	0.6	0.3	Euhedral-subhedral	
Olivine	0	0.1	1.2	1.2	1.2	Subhedral	Completely altered to saponite.
GROUNDMASS		99.7					
Plagioclase		53.9	0.04	0.2	0.1	Euhedral-subhedral, bladed to acicular	
Clinopyroxene		28	0.03	0.2	0.08	Anhedral-subhedral, fibrous-dentritic	Two types of clinopyroxene; larger ones show partial inclusion of plagioclase microlites and the smaller ones are interstitial grains.
Glass		16.1					Tachylytic glass that appears to be altered to saponite in most areas.
Fe-Ti oxides		1.7				Anhedral-skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	5						Vesicles, interstitial areas, replaces olivine phenocrysts and partly plagioclase phenocrysts
STRUCTURE :							
COMMENTS : 1000 POINT COUNTING OF PRIMARY MINERALS.							





TS #46: 309-1256D-102R-2, 105-108 cm, Piece No: 13			Unit: 34B			OBSERVER: TS, SD/ LG, CL	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline variolitic-subophitic-intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	1.1	1.1					
Plagioclase	0.9	0.9	0.2	0.8	0.5	Euhedral-subhedral	
Clinopyroxene	0.2	0.2	0.3	0.6	0.5	Euhedral-subhedral	
GROUNDMASS		98.6					
Clinopyroxene	43.8	43.8	0.01	0.15	0.1	Anhedral, dendritic	
Mesostasis	19.3	19.3				Interstitial	They consist of small plagioclase crystals
Plagioclase	26.5	26.5	0.05	0.12	0.08	subhedral-anhedral , acicular-skeletal	
Glass	0	7.5					Devitrified
Fe-Ti oxides	1.8	1.8	0.01	0.05	0.02	Euhedral-subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1					Groundmass clinopyroxene and plagioclase	
Pyrite	0.01						
STRUCTURE :							
COMMENTS : 1000 POINT COUNTING OF PRIMARY MINERALS. Plagioclase and clinopyroxene phenocrysts show glomeroporphyritic texture. /One 0.1 mm vein alternatively composed of saponite and pyrite. Occurrence of disseminated pyrite.							



TS #47: 309-1256D-102R-3, 23-28 cm, Piece No.: 6			Unit: 35A			OBSERVER: SD, JG, CC/ LG, CL//	
ROCK NAME:	Aphyric glassy-microcrystalline basalt						
WHERE SAMPLED:	Flow top						
GRAIN SIZE:	Glassy-microcrystalline						
TEXTURE:	Hypocrystalline variolitic-trachytic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.4	0.5					
Plagioclase	0.4	0.4	0.1	0.4	0.1	Euhedral	Within devitrified glass
Olivine	0	0.1	0.6	0.6	0.6	Euhedral	Completely altered to brown saponite.
MICROPHENOCRYSTS	0.5	0.5					
Plagioclase	0.4		0.05	0.1	0.1	Euhedral, acicular	
Clinopyroxene	0.1		0.1	0.1	0.1	Subhedral	
GROUNDMASS		99					
Glass							Devitrified glass spherulites in glassy area and tachylitic in the microcrystalline area.
Plagioclase						Euhedral-subhedral, acicular	Sub-parallel alignment of crystals
Clinopyroxene						Anhedral, fibrous	
Fe-Ti oxides						Skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1.7					Vesicles, groundmass, replaces olivine and very partly plagioclase and clinopyroxene	Occurrence of large vesicle associated with silica minerals
Chalcedony	0.05					Olivine	In minor amounts, associated with saponite
Pyrite	0.01					Disseminated	
STRUCTURE :	Modal and textural layering defined by pyroxene-rich layers alternating with glassy variolitic layers						
COMMENTS :	500 POINT COUNTING FOR SAPONITE. Modal composition. The microcrystalline texture is separated by ~2-5 mm of glassy layers. Phenocrysts and some microphenocrysts are concentrated within these glassy layers. Microphenocrysts are also found within the microcrystalline texture./ Several 0.1-0.4 mm veins of pyrite associated with saponite, without alteration halo.						



TS #48: 309-1256D-104R-1, 52-56 cm, Piece No: 11			Unit: 35A			OBSERVER: CC, TS, CSD/CL	
ROCK NAME: Aphyric glassy-cryptocrystalline basalt							
WHERE SAMPLED: Flow top							
GRAIN SIZE: Glassy-cryptocrystalline							
TEXTURE: Hypohyaline spherulitic (partly variolitic)							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.3	0.3					
Plagioclase	0.3	0.3	0.15	0.5	0.2	Euhedral	Slightly zoned. Perhaps, overgrowth rim.
MICROPHENOCRYSTS	3.6	3.6					
Plagioclase	3.6	3.6	0.03	0.1	0.08	Subhedral-skeletal	Some are very elongated (1.2 mm). Often with hollow inner part. They tend to be concentrated in aggregates or in preferentially oriented layers.
GROUNDMASS	96.1	96.1					
Glass							Devitrified to spherulites in the glassy part and tachylitic or altered to saponite in the cryptocrystalline part
Plagioclase						Acicular-skeletal	
Clinopyroxene						Subhedral-fibrous	Two generations of clinopyroxene: small subhedral grains and fibrous laths.
Fe-Ti oxides						Euhedral-skeletal	Magnetite
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Saponite	3.2				Interstitial areas between clinopyroxene and plagioclase plumose; replaces plagioclase and clinopyroxene in alteration halo		
STRUCTURE :							
COMMENTS : 500 POINT COUNTING ON PRIMARY AND SECONDARY MINERALS. The proportions of the plagioclase microphenocrysts are not homogeneous in the thin section and increase in some layers or aggregates. Some rounded areas of cryptocrystalline rock are isolated in the glassy part. /Two 0.2 mm thick saponite veins present with majority of filling washed out. A third 0.06 mm vein of saponite with most material remaining is preserved. Adjacent to the 0.2 mm saponite vein, 1-3 mm alteration halo where plagioclase and clinopyroxene plumose are replaced by saponite. Halo is rich in sulfides.							



TS #49: 309-1256D-106R-1, 70-80 cm, Piece No: 18							Unit: 35B	OBSERVER: CC, TS/ CL
ROCK NAME:	Sparsely olivine-plagioclase-clinopyroxene phyric cryptocrystalline basalt							
WHERE SAMPLED:	Flow interior							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Hypohyaline spherulitic to variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	4.5	5						
Clinopyroxene	2.6	2.6	0.1	0.7	0.4	Euhedral, bladed	Green or brown glass inclusions (slightly devitrified). Some are partially altered to saponite (and calcite?) on the fracture plane and on the rim.	
Plagioclase	1.9	1.9	0.1	0.3	0.2	Euhedral-subhedral	The rim of some of them are resorbed.	
Olivine	0	0.5	0.4	0.6	0.5	Euhedral-subhedral	Completely altered to saponite and a colorless mineral.	
GROUNDMASS	94.1	94.1						
Glass							Devitrified to spherulites.	
Plagioclase						Acicular		
Clinopyroxene						Subhedral-anhedral		
Fe-Ti oxides						Euhedral-anhedral	Very few laths of ilmenite (titanomagnetite?)	
VESICLES	0.9	0.9					Some spherical segregation vesicles (0.3 mm) partially or totally filled with tachylytic glass and small plagioclase microlites.	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite	0.3					Vesicles, replaces olivine phenocrysts, plagioclase microfractures	Associated with chalcedony, except in plagioclase. Probable minor associated talc/saponite when replacing olivine	
Chalcedony	0.8					Vesicles, miarolitic voids, replaces olivine phenocrysts	Associated with saponite	
Calcium carbonate	0.02					Vesicle cores		
STRUCTURE :								
COMMENTS : 1000 POINT COUNTING FOR PHENOCRYST AND VESICLE ABUNDANCE. Clinopyroxene, plagioclase and olivine phenocrysts form glomerocrysts. Clinopyroxene crystals partially include plagioclase laths. Some clinopyroxene phenocrysts are very elongated (width/length=0.3). Microlites of plagioclase and clinopyroxene can form radial clusters. Some sulfides on fracture planes. /Two subparallel 0.04 mm veins of abundant chalcedony at the edge and pyrite plus minor saponite at center.								



TS #50: 309-1256D-106R-1, 112-114 cm, Piece No: 24			Unit: 35C			OBSERVER: TS, SD/ CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.6	0.6					
Plagioclase	0.5	0.5	0.1	0.3	0.2	Euhedral-subhedral-bladed	
Clinopyroxene	0.1	0.1	0.15	0.2	0.18	Euhedral-prismatic	
GROUNDMASS	99.4	99.4					
Plagioclase						Subhedral-skeletal-acicular	
Clinopyroxene						Anhedral-dendritic	
Mesostasis						Interstitial	
Fe -Ti oxides						Subhedral-anhedral-bladed-skeletal	Titanomagnetite
Glass							Devitrified
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1					Interstitial areas	
Chalcedony	0.3					Interstitial areas, vesicles	
STRUCTURE :							
COMMENTS : 1000 POINT COUNTING OF PRIMARY MINERALS. Sulfides (0.005-0.01 mm) occurrence./ One 0.2-0.6 mm vein of, from edge to center, saponite, chalcedony, euhedral to subhedral pyrite. 0.6 mm halo adjacent to this vein, where the totality of the basalt is replaced by saponite, and progressively grading to the normal host-rock.							



TS #51: 309-1256D-108R-1, 111-113cm, Piece No: 21			Unit: 35C			OBSERVER: JG , CC/ LG	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior of sheet flow						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline-variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.4	0.4					
Plagioclase	0.2	0.2	0.2	0.8	0.5	Euhedral to anhedral	Shows zonation, one with resorbed core
Clinopyroxene	0.2	0.2	0.2	0.7	0.5	Subhedral	Some have melt inclusion
MICROPHENOCRYSTS	0.6	0.6					
Plagioclase	0.6	0.6	0.1	0.15	0.1	Tabular-bladed, subhedral	Often form glomerocrysts
GROUNDMASS	99	99					
Glass							Tachylytic or altered to saponite
Plagioclase						Subhedral laths-skeletal	Often hollow
Clinopyroxene						Fibrous, branching	
Fe-Ti oxides						Skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	2.5					Amygdales, vesicles, groundmass	
Chalcedony	0.2					Vesicles	Associated with saponite
STRUCTURE :							
COMMENTS : Plagioclase and clinopyroxene microphenocrysts often form glomerocrysts. /Occurrence of 0.2 mm thick vein of probable saponite with majority filling washed out. This vein is cut by 0.02 mm vein of chalcedony and is associated with a 0.5 mm saponite halo. A pyrite rich front and disseminated pyrite are related to the halo. Occurrence of several amygdales of chalcedony associated with saponite, with disseminated pyrite, and amygdales of probable saponite washed out. Disseminated pyrite also in groundmass.							



TS #52: 309-1256D-108R-2, 27-30 cm, Piece No: 6			Unit: 35C			OBSERVER: CC, JG, SD/ CL//PT	
ROCK NAME:	Aphyric cryptocrystalline basalt clasts in volcanic breccia						
WHERE SAMPLED:	Flow bottom (volcanic breccia)						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypohyaline spherulitic to variolitic-hyalopilitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
GROUNDMASS	100						
Glass							Recrystallized to spherulites, altered
Plagioclase						Subhedral-acicular	Most of them display swallow tail structures. The largest seem resorbed in periphery or in the inner part and some show zonation.
Clinopyroxene						Fibrous	Very few, begin to crystallize from the plagioclase microlites.
Fe-Ti oxides						Subhedral-skeletal	Very small grains, at the boundaries of spherulites.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.5					Interstitial, replaces minor olivine microphenocrysts	
Chalcedony	0.05					Vesicles	
Pyrite	0.01					Disseminated	
STRUCTURE :	Vein network grading into breccia. Veins are filled with saponite, altered glass, sulfides, and chalcedony. In thinner veins saponite has a fibrous, fan-shaped texture.						
COMMENTS :	The plagioclase microlites generally show fan-like arrangement but in some place, they are preferentially oriented./ Veins, grading to breccia cement, are composed by saponite, pyrite, and chalcedony.						



TS #53: 309-1256D-108R-2, 58-61 cm, Piece No: 10						Unit: 36A	OBSERVER: CC, TS/ CL// PT
ROCK NAME:	Aphyric glassy to cryptocrystalline basalt clasts in volcanic breccia						
WHERE SAMPLED:	Flow top, volcanic breccia						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Hypohyaline spherulitic to hypocrySTALLINE variolitic-hyalopilitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	0.2					
Olivine	0	0.1	0.12	0.23	0.16	Euhedral-subhedral	Completely altered to saponite.
Plagioclase	0.1	0.1	0.08	0.17	0.15	Euhedral	Only in one area of the thin section, form glomerocrysts. Partly altered to albite.
GROUNDMASS		99.8					
Glass							Altered to palagonite in the external part of the clasts and recrystallized to spherulites in the inner part.
Plagioclase						Euhedral-bladed-acicular	In the glassy margin, the microlites are bladed whereas they display swallow tail structure in the inner part.
Olivine						Euhedral-subhedral	Completely altered to saponite
Clinopyroxene						Fibrous	Very few, begin to crystallize from the plagioclase microlites in the more crystallized part of the clast.
Fe-Ti oxides						Skeletal	Very small grains (40x), at the boundaries of spherulites.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	6					Vesicles, amygdales, Replaces olivine phenocrysts and fine grained groundmass	
Chalcedony	1.2					Amygdales	
Pyrite	0.5					Amygdales	
STRUCTURE :	Incipient brecciation starting from vein network. Veins are filled with saponite, chalcedony and sulfides. Saponite mostly has a fibrous and radiating texture.						
COMMENTS :	Microlites of plagioclase, altered olivine and clinopyroxene form clusters (olivine at the center of a radiating laths of plagioclase). Some sulfides in fractures. A glassy clast shows transition from homogeneous altered glass (palagonite), to glass recrystallized with few light-brown spherulites, to coalescent light-brown to red-brown spherulites. This glassy clast contains a few large (0.5 to 2mm) empty vesicles. The others clasts are hypocrySTALLINE: microlites in a spherulitic groundmass. In some part, the microlites are preferentially oriented./ Several 0.05-3 mm veins of saponite, chalcedony and pyrite						



TS #54: 309-1256D-108R-2, 99-102cm, Piece No: 16

Unit: 36A OBSERVER: AG, CC, JG/ CL

ROCK NAME: Aphyric microcrystalline basalt

WHERE SAMPLED: Flow interior

GRAIN SIZE: Microcrystalline

TEXTURE: Hypocrystalline variolitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
MICROPHENOCRYSTS	0.8	0.8					
Plagioclase	0.5	0.5	0.17	0.2	0.15	Subhedral	Some are slightly zoned in periphery.
Clinopyroxene	0.3	0.3	0.12	0.5	0.2	Subhedral	One is slightly zoned.
GROUNDMASS	99.2						
Plagioclase	61		0.02	0.11	0.055	Subhedral, skeletal	
Clinopyroxene	25.1		0.04	0.08	0.06	Subhedral-fibrous	
Mesostasis	8.8						
Fe-Ti oxides	2.1		0.02	0.05	0.035	Subhedral-anhedral, skeletal	Interstitial. Titanomagnetite
Glass	3						Generally altered to brown saponite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
Saponite	1		min.	max.	av.		Interstitial areas, very partial replacement of plagioclase
STRUCTURE :							
COMMENTS : POINT COUNTING IN GROUNDMASS. Plagioclase and clinopyroxene microphenocrysts can form glomerocrysts. Some microlites are very elongated (length up to 1.5 mm, width/length=0.33)							



TS #55: 309-1256D-109R-1, 134-136 cm, Piece No: 13			Unit: 36A			OBSERVER: SD CC, LG	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
PHENOCRYSTS			min.	max.	av.		
MICROPHENOCRYSTS	2.1	2.1					
Plagioclase	1.5	1.5	0.1	0.25	0.2	Euhedral-subhedral	Glomerocrysts of plagioclase alone and with clinopyroxene microphenocrysts. One small clinopyroxene totally enclosed by plagioclase.
Clinopyroxene	0.6	0.6	0.2	0.3	0.22	Subhedral	
GROUNDMASS	97.9	97.9					
Plagioclase						Acicular, bladed, dendritic	
Clinopyroxene						Subhedral fibrous, dendritic	
Glass							Tachylytic and altered (more rare) .
Fe-Ti oxides						Skeletal	Interstitial titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1.5						Vesicles, partial replacement of plagioclase microphenocrysts
STRUCTURE :							
COMMENTS : POINT COUNTING OF MICROPHENOCRYST PHASES. /Occurrence of several max 0.05 mm thick veins of saponite.							



TS #56: 309-1256D-110R-2, 58-60cm, Piece No: 5c			Unit: 36B			OBSERVER: JG, CC / LG, CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic to intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.8	0.8					
Plagioclase	0.5	0.5	0.1	0.4	0.3	Subhedral	Some show zonation. Greenish alteration (saponite) in some fractures
Clinopyroxene	0.3	0.3	0.1	0.3	0.2	Subhedral	
GROUNDMASS		99.2					
Plagioclase	40	40				Skeletal, bladed laths	
Clinopyroxene	40	45				Anhedral	
Glass		10					Tachylytic
Fe-Ti oxides		5				Anhedral, skeletal	Interstitial magnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1						Vesicles, partial replacement of plagioclase and clinopyroxene phenocrysts and in groundmass
Calcium-carbonate	0.05						Vesicle core, replaces olivine phenocryst
STRUCTURE :							
COMMENTS : Occurrence of disseminated sulfides.							



TS #57: 309-1256D-111R-1, 85-87 cm, Piece No: 9b					Unit: 36C	OBSERVER: TS, CC/ LG	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, subophitic-intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
GROUNDMASS	100						
Clinopyroxene	43	43				Subhedral-anhedral, dendritic	
Plagioclase	31.4	31.4	0.05	0.4	0.1	Subhedral-anhedral, skeletal	
Mesostasis	20.1	20.1	0.04	0.6	0.1	Interstitial	Small plagioclase and probably altered olivine
Glass	0	1.1					Tachylitic
Fe-Ti oxides	0.7	0.7	0.01	0.06	0.03	Euhedral-anhedral, skeletal	Magnetite
Sulfides	3.7	0					
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1					vesicles, plagioclase and clinopyroxene of the ground-mass	
STRUCTURE :							
COMMENTS : Mesostasis and glass are concentrated in elliptical to irregular areas. Matrix of a black circle (5 mm in diameter) is filled by sulfides. A late generation of plagioclase (one crystal includes several microlites of clinopyroxene)./ Occurrence of vesicle (5 mm in diameter) filled by pyrite.							



TS #59: 309 1256D-112R-1, 145-148 cm, Piece No: 20			Unit: 37			OBSERVER: SD, TS/LG/ HL	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypohyaline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.3	0.3					
Plagioclase	0.2	0.2	0.2	0.4	0.3	Euhedral-subhedral	Form glomeroporphyritic texture alone and with clinopyroxene. Some zoning and resorption in center of some grains.
Clinopyroxene	0.1	0.1	0.19	0.3	0.2	Euhedral-subhedral	Form glomeroporphyritic texture with plagioclase
MICROPHENOCRYSTS	0	0.1					
Olivine	0	0.1	0.05	0.12	0.08	Euhedral-subhedral	Several grains completely altered to saponite (0.06 mm).
GROUNDMASS		99.6					
Plagioclase						Euhedral-subhedral, fibrous, acicular	
Clinopyroxene						Subhedral-anhedral, fibrous	
Fe-Ti oxides						Skeletal	Titanomagnetite
Glass							Devitrified
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1					Filling interstices and replacing plagioclase phenocrysts	
STRUCTURE :							
COMMENTS : Some sulfide minerals present, irregular to rounded shape.							



TS #60: 309-1256D-113R1, 20-24cm, Piece No: 5		Unit: 36B			OBSERVER: CC, JG/ CSD/ PT/HL		
ROCK NAME:	Sparsely olivine-plagioclase phyric glassy to cryptocrystalline basalt						
WHERE SAMPLED:	Flow bottom cut by a vein						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Hyaline to hypohyaline spherulitic-variolitic to hyalopilitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.8	3.7					
Plagioclase	0.8	2.6	0.05	0.55	0.35	Euhedral, bladed-subhedral	Highly resorbed, only the shape and some clusters of the phenocrysts are conserved. Altered to albite.
Olivine	0	1.1	0.42	0.9	0.5	Euhedral	Completely altered to saponite
MICROPHENOCRYSTS	0.9	1.7					
Plagioclase	0.9	1.4	0.05	0.13	0.08	Euhedral, bladed	Resorbed (less than phenocrysts)
Olivine	0	0.3	0.1	0.2	0.15	Subhedral	Completely altered to saponite. Small clusters disseminated in the groundmass.
GROUNDMASS		94.6					
Glass							Fresh or recrystallized to spherulites
Plagioclase						Acicular	
Clinopyroxene						Fibrous	
Fe-Ti oxides							
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	20						
Albite	0.1					Plagioclase phenocrysts	
Pyrite	0.2					Vesicles	
Chalcopyrite	0.01					Vesicles	
STRUCTURE :	One mm-thick vein cutting the basalt is filled with saponite, green fibrous mineral, opaques, and silica (quartz in the vein center). Opaque seams and offset of the rock near the vein suggest a dextral sense of shear. Local flattening and preferred orientation of spherulites near the contact between basalt and hyaloclastite (? almost washed away during preparation).						
COMMENTS :	POINT COUNTING OF PHENOCRYSTS AND MICROPHENOCRYSTS. Olivine and plagioclase phenocrysts form glomerocrysts. Some plagioclase phenocrysts are very elongated (length up to 1 mm, width/length= 0.05). A few plagioclase phenocrysts are now isolated in the major vein. They are euhedral but fractured, and less resorbed than those in the chilled margin. Some fresh glass (amber) is conserved on the opposite side of the major vein. In the inner part, the glass recrystallizes to yellow to dark brown spherulites. Phenocrysts/microphenocrysts which are the closest to the chilled margin are oriented perpendicularly to the margin. Near the vein, the plagioclase microlites are aligned parallel to the major vein margin. In the rest of the thin section, they generally form fan-like clusters with fibrous clinopyroxene. /Some small (<0.2 mm) circular to irregular vesicles are filled with (pyrite and chalcopyrite). /They form a layer parallel to the margin in the center of the glassy margin. Sulfides in the veins. The groundmass is moderately altered to saponite with one 0.7m vein of pyrite, anhydrite and saponite. Glass altered to saponite, chlorite.						



TS #61: 309 1256D-113R-1, 79-81 cm, Piece No: 15			Unit: 38			OBSERVER: SD, TS/ LG	
ROCK NAME:	Sparsely olivine-clinopyroxene-plagioclase phyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline variolitic, subophitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	4.9	5.6					
Plagioclase	3.9	3.9	0.6	3	1.3	Euhedral-anhedral	Some grains exhibit zoning and are resorbed. Form glomerocrysts, generally alone but sometimes with clinopyroxene (subophitic). Some have secondary melt inclusions.
Clinopyroxene	1	1	1.2	3.6	1.1	Euhedral-subhedral	As glomerocrysts with subophitic textures. Show low order yellow to higher order blue color. Some have secondary melt inclusions.
Olivine	0	0.7	2	6	3	Euhedral-subhedral	Completely altered to saponite
GROUNDMASS		94.4					
Plagioclase						Euhedral-subhedral, Acicular-bladed-fibrous-skeletal	Form fibrous radiating crystals with clinopyroxene and as discrete grains.
Clinopyroxene						Aubhedral-anhedral, fibrous	Form fibrous radiating crystals with plagioclase and as discrete grains.
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
Glass							Tachylitic
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Albite	1.7					Partially replaces plagioclase phenocrysts	
Saponite	0.8					Olivine, vesicles, groundmass	
Chalcedony	0.1					Vesicles, interstitial	In vesicles associated with saponite
STRUCTURE :							
COMMENTS : 500 POINT COUNTING ON SECONDARY MINERALS. /Occurrence of two pyrite veins, respectively max 0.3 mm and 0.1 mm thickness. Disseminated sulfides in the groundmass.							



TS #62: 309-1256D-114R-1, 80-85cm, Piece No: 6			Unit: 38			OBSERVER: JG, SD/ LG	
ROCK NAME:	Aphyric, cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	0.1					
Plagioclase	0.05	0.05	0.1	0.2	0.15	Euhedral-subhedral	Often show zonation
Clinopyroxene	0.05	0.05	0.1	0.5	0.15	Euhedral	One phenocrysts shows subophitic texture
MICROPHENOCRYSTS							
GROUNDMASS	99.9	99.9					
Plagioclase						Skeletal laths, acicular	
Clinopyroxene						1) Fibrous, branching and 2) subhedral-anhedral	
Fe-Ti oxides						Subhedral-euhedral, skeletal	Titanomagnetite
Glass							Tachylitic or devitrified to small spherulites and slightly altered to saponite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.5					groundmass, vesicles	
STRUCTURE :							
COMMENTS : Rare glomerocrysts of plagioclase phenocrysts alone or with clinopyroxene.							



TS #63: 309-1256D-114R-2, 27-29cm, Piece No: 5							Unit: 39A	OBSERVER: CC,TS/ CL// LC
ROCK NAME:	Moderately olivine-plagioclase phyric microcrystalline basalt							
WHERE SAMPLED:	Flow interior							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Hypocrystalline variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	4.1	7						
Plagioclase	4.1	4.1	0.17	0.5	0.25	Subhedral-dendritic	Saponite in the cracks. Some are resorbed in the core or in the rim. Some slight zoning.	
Olivine	0	2.9	0.3	0.55	0.5	Subhedral	Completely altered to brown saponite.	
GROUNDMASS		87						
Plagioclase						Subhedral skeletal-acicular	Two types of plagioclase microlites: large skeletal to acicular laths and smaller laths in intergrowth with the elongated clinopyroxene microlites.	
Clinopyroxene						Subhedral	Two types of clinopyroxene microlites: subhedral equant grains and elongated laths which form fan-like clusters with plagioclase microlites.	
Glass							Interstitial, tachylytic or altered to brown saponite.	
Fe-Ti oxides						Subhedral-anhedral, skeletal-dendrite	Titanomagnetite	
VESICLES	6	6				Spherical	Segregation vesicles partially (crescent) or totally filled with tachylytic glass.	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite	9					Vesicles, interstitial areas, replaces olivine, and fill plagioclase fractures		
Chalcedony	0.5					Vesicle rims		
Calcium-carbonate	0.4					Vesicle cores		
Pyrite	0.01					Locally replaces plagioclase and clinopyroxene		
STRUCTURE :	1mm vein with saponite, microcrysts of quartz and pyrite. Pyrite crystals inside the vein have fibrous quartz pressure shadows							
COMMENTS :	1000 POINT COUNTING OF PHENOCRYSTS, MICROPHENOCRYSTS AND VESICLES. Some of the sulfides are fractured and altered. In some case, the microlites surrounding the vesicles are preferentially oriented and delineate the shape of the vesicles./ One 0.2 mm vein of, (from the edge to the center) saponite and/or chalcedony, and later pyrite (euhedral and subhedral 1-2 mm and 0.05 mm crystals). One 0.1 mm vein of saponite and chalcedony. The central part of both veins are plucked out. Both veins have a 0.1 mm thick alteration halo where plagioclase and clinopyroxene plumoses are partly replaced by saponite. Several 0.2 mm pyrite veins.							



TS #64: 309-1256D-114R-2, 54-56 cm, Piece No: 8							Unit: 39A	OBSERVER: TS, SD/ CL
ROCK NAME:	Sparsely plagioclase-olivine phyric microcrystalline basalt							
WHERE SAMPLED:	Flow interior of massive basalt							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Hypocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	2.1	9.9						
Olivine	0	7.8	0.4	0.7	0.5	Euhedral-subhedral	Completely replaced by brown saponite and quartz	
Plagioclase	2.1	2.1	0.3	0.5	0.4	Euhedral-subhedral	Some fractured	
GROUNDMASS		86.9						
Plagioclase						Subhedral, skeletal-acicular		
Clinopyroxene						Subhedral-anhedral, elongated-dendritic-fibrous		
Glass							Tachylytic	
Fe-Ti oxides						Subhedral-anhedral, skeletal	Titanomagnetite	
VESICLES		3.2	1.2	0.6	0.8	Spherical	Most parts are filled with saponite and quartz	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite	1.5					Vesicles and minor interstitial areas, replaces olivine		
Quartz						Vesicles		
STRUCTURE :								
COMMENTS : 1000 POINT COUNTING OF PRIMARY MINERALS AND VESICLES. Some olivine and plagioclase phenocrysts form glomeroporphyritic texture.								



TS #65: 309-1256D-115R-1, 70-72cm, Piece No: 14b			Unit: 39B			OBSERVER: JG, CSD/ CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
MICROPHENOCRYSTS	0.6	0.6					
Plagioclase	0.1	0.1	0.05	0.4	0.2	Subhedral, tabular, skeletal	Some show alteration to albite
Clinopyroxene	0.5	0.5	0.1	0.2	0.15	Subhedral	Two generations of clinopyroxene (small subhedral grains and fibrous, branching clusters with plagioclase microlites)
GROUNDMASS	99.4	99.4					
Clinopyroxene						Fibrous, branching	
Plagioclase						Acicular, skeletal	
Glass						Interstitial	Altered to brown saponite
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	1					Mesostasis, glass/vesicles	Staining on feldspars
Albite	0.1					Partially replacing plagioclase	
STRUCTURE :							
COMMENTS : Some plagioclase microphenocrysts are elongated (up to 0.95 mm lengths, width/length=0.05). Some (secondary) apatite needles crystallizing in plagioclase.							



TS #66: 309-1256D-117R-1, 17-21cm, Piece No: 2						Unit: 39B	OBSERVER: SD; TS/ LG	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Within vein network of flow interior							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Hypohyaline variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.3	0.3						
Clinopyroxene	0.3	0.3	0.1	0.3	0.2	Subhedral		
GROUNDMASS	99.7	99.7						
Plagioclase						Subhedral-anhedral, skeletal	Most altered to secondary minerals (chlorite/saponite?)	
Clinopyroxene						Subhedral-anhedral	Most altered to secondary minerals (chlorite/saponite?).	
Glass							Most altered to brown chlorite/saponite minerals , some tachylytic	
Fe-Ti oxides						Euhedral	Titanomagnetite within the matrix and surrounding sulfides.	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite/chlorite	2					groundmass		
Quarz	2					Amygdales, interstitial	interstitial between groundmass and sulfides grains	
Pyrite	4					disseminated	Irregular to euhedral grains	
STRUCTURE :								
COMMENTS : Many large sulfides (up to 0.5 mm) throughout the section. Some sulfides being replaced by titanomagnetite. /Occurrence of several 0.1-0.3 mm thick chlorite/saponite veins.								



TS #58: 309 1256D-117R-1, 116-118 cm, Piece No: 11			Unit: 40			OBSERVER: SD, CC, TS/ LG	
ROCK NAME:	Aphyric fine to medium-grained basalt						
WHERE SAMPLED:	Massive part of cataclastic-massive unit						
GRAIN SIZE:	Fine to medium grained						
TEXTURE:	Hypocrystalline, seriate						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
CONSTITUENT MINERALS	100						
Plagioclase	55		0.09	0.4	0.15	Subhedral-anhedral	Fractured and resorbed grains
Clinopyroxene	24.7		0.01	0.45	0.1	Euhedral-subhedral	Fractured and a few resorbed
Fe-Ti oxides	3		0.08	0.7	0.15	Interstitial	Titanomagnetite, in glass and within resorbed grains
Glass	17					Interstitial	Altered to brown saponite/chorite minerals
Pigeonite	0.3		0.15	0.5	0.4	Subhedral	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/chlorite	8					Plagioclase and clinopyroxene, interstitial	Interstitial between the most fractured zones of plagioclase and clinopyroxene
Albite	3					Plagioclase	
STRUCTURE :							
COMMENTS : Apatite grains are found in the larger resorbed plagioclase grains. Smaller resorbed and fractured plagioclase and clinopyroxene grains are found in the altered glass matrix. Subophitic texture in the larger grains. Plagioclase and clinopyroxene grains are more frequently twinned than in the lava flows. Most of the grains are fractured. Myrmekite texture appears to be replacing plagioclase in some grains./ Occurrence of interstitial green, pleochroic and fibrous phyllosilicate between fractured plagioclase and clinopyroxene. Some plagioclase grains are totally replaced by saponite/chlorite. Occurrence of disseminated pyrite.							



TS #67: 309-1256D-117R-1, 122-125 cm, Piece No: 12		Unit: 40				OBSERVER: CC, JG/ CL//LC, PT	
ROCK NAME: Aphyric cryptocrystalline basaltic clast and cataclastic aphyric fine-grained basalt							
WHERE SAMPLED: Margin of a cataclastic-massive unit							
GRAIN SIZE: Cryptocrystalline (clast) and fine grained (clastic dike)							
TEXTURE: Glassy spherulitic to hypohyaline variolitic (cryptocrystalline clast) to ruptured hypocrytalline doleritic (initial magmatic texture preserved in the western side of the thin section)							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Cryptocrystalline clast							
PHENOCRYSTS	0.55	0.7					
Plagioclase	0.05	0.2	0.15	0.17	0.15	Subhedral	Resorbed in the inner part.
Clinopyroxene	0.5	0.5	0.15	0.6	0.3	Euhedral	Zoning. Small inclusions of clinopyroxene.
MICROPHENOCRYSTS	0.15	0.2					
Plagioclase	0.15	0.2	0.06	0.1	0.07	Euhedral, bladed-subhedral	Less resorbed than the phenocrysts. Concentrated in the more glassy part.
GROUNDMASS	99.1	98.2					
Glass							Recrystallized to spherulites. Less altered and more tachylitic in the inner part.
Plagioclase						Acicular	
Clinopyroxene						Subhedral-fibrous	
Clastic dike							
CONSTITUENT MINERALS		100					
Plagioclase	30	55	0.1	0.45	0.2	Subhedral-anhedral	Fractured, altered in cracks. Some zoning. Two types of plagioclase: subhedral laths and anhedral areas, in interstitial part.
Clinopyroxene	20	35	0.2	1	0.5	Euhedral-subhedral	Fractured, altered to saponite in cracks.
Glass	0	5				Interstitial	Altered to dark-brown saponite
Fe-Ti oxides	3	3				Interstitial, subhedral-skeletal	Titanomagnetite. Interstitial, in the altered fractures of plagioclase or in the anhedral plagioclase areas.
Pigeonite	2	2	0.15	0.6	0.3	Subhedral	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	5					Interstitial	Locally replaces plagioclase clinopyroxene and plagioclase
Pyrite	0.05					Disseminated	
Chloritic phyllosilicate	0.01					Interstitial	Pleocroic, bluish green, associated with saponite
STRUCTURE :	Cataclastic zone consisting of rounded to angular clasts of dolerite and glassy spherulitic to variolitic basalt. Clasts are surrounded by a banded matrix that show flow texture and is made up of subangular and rounded fragments of minerals, altered glass, with variable grain size. Fragments of plagioclase show intergranular and intragranular deformation. Cross cutting relationships between protocataclastic, cataclastic and ultracataclastic (?pseudotachylite) layers are visible.						
COMMENTS :	NO POINT COUNTING FOR IGNEOUS DESCRIPTION. The contact between cataclastic-massive unit and chilled margin of the basaltic clast is sharp. A thin vein borders this contact on the top of the thin section. Two phenocrysts are cut by this vein without offset (the two parts of the phenocrysts are side to side). In the cryptocrystalline clast, plagioclase and clinopyroxene phenocrysts form glomerocrysts. Microlites are concentrated in small (<0.4 mm) clusters that show fan-like arrangement. The igneous description of the clastic dike is based on the best preserved part (western side of the thin section). Apatite needles in the interstitial anhedral plagioclase./ Veins grading to the cement of the cataclastic-massive unit consists of saponite, chalcedony, minor calcium carbonate (and minor saponite/talc?). In the most brecciated part, crystals are brecciated (some clusters are preserved): small bits of crystals in altered glass. The glass seems concentrated in the veins (one of these veins also cut the cryptocrystalline clast).						



TS #68: 309-1256D-117R-2, 23-26 cm, Piece No: 5			Unit: 40			OBSERVER: CC, JG / CSD, CL / PT, LC	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Interior of a cataclastic-massive unit						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline doleritic						
PRIMARY MINERALOGY	PERCENT	PERCENT	SIZE (mm)			MORPHOLOGY	COMMENTS
	PRESENT	ORIGINAL	min.	max.	av.		
	0	100					
CONSTITUENT MINERALS							
Plagioclase		57.4	0.04	0.55	0.17	Subhedral-anhedral	Fractured and resorbed. Some zoning. Two types of plagioclase: subhedral laths and anhedral areas, in interstitial part or in overgrowth form subhedral grains (myrmekyte).
Glass/mesostasis		28.4				Interstitial	Altered to brown-greenish saponite
Clinopyroxene		10.6	0.01	0.5	0.17	Euhedral-subhedral	Fractured and a few resorbed, sometimes altered in cracks.
Fe-Ti oxides		1.8	0.01	0.03	0.15	Interstitial, subhedral-skeletal	Titanomagnetite, in altered glass or in resorbed plagioclase in association with apatite
Pigeonite		1.8	0.15	0.3	0.2	Subhedral	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/ chlorite	20					Olivine, mesostasis	
Talc-rich phyllosilicate	0.5					Plagioclase	
Pyrite	2					Interstitial areas	
STRUCTURE :	Two millimeter wide cataclastic zones consists of angular clasts, with variable grain size, of variolitic altered basalt, fragments of plagioclase and clinopyroxene, altered glass. Fragments of plagioclase show intergranular deformation. Cataclastic zones show both straight and irregular contact with dolerite. One millimetric vein filled with clay minerals cuts one cataclastic zone.						
COMMENTS :	1000 POINT COUNTING OF CONSTITUENTS MINERALS (veins are not including). Apatite needles are found in the resorbed plagioclase grains. Smaller resorbed and fractured plagioclase and clinopyroxene grains are found in the altered glass matrix. Subophitic texture in the larger grains. Granophyric texture is replacing plagioclase in the most interstitial and anhedral grains. / Two 1-2 mm cataclastic zones composed of chlorite/smectite, talc rich phyllosilicate, abundant euhedral pyrite, quartz and minor titanite.						



TS #69: 309-1256D-118R-1, 11-13 cm, Piece No: 3							Unit: 40	OBSERVER: JG , CC / CL / PT	
ROCK NAME:	Cataclastic fine-grained basalt								
WHERE SAMPLED:	Upper part of cataclastic-massive unit								
GRAIN SIZE:	Fine grained								
TEXTURE:	Ruptured doleritic texture. Bearing an altered glass matrix								
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS		
			min.	max.	av.				
CONSTITUENT MINERALS		100							
Plagioclase	44	44	0.1	2	2	Subhedral, bladed-anhedral	Partially included in clinopyroxene (ophitic to subophitic relationship) often resorbed, some zoning.		
Clinopyroxene	32	32		1		Anhedral			
Olivine	0	5				Euhedral	Completely replaced by saponite		
Glass	0	15					Tachylitic and altered to saponite (and spherulitic, devitrified on one side)		
Fe-Ti oxides	4	4	0.02	0.1	0.03	Subhedral	Titanomagnetite		
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS			
		min.	max.	av.					
Saponite	7				Interstitial areas, replaces olivine, and only partly clinopyroxene and plagioclase				
Talc-rich phyllosilicate	0.2				Olivine rim	Talc/saponite or talc/chlorite?			
Chalcedony	0.2				Olivine	Associated with saponite			
Pyrite	0.05				Disseminated				
STRUCTURE :	Intragranular and intergranular microcracks and veins filled with secondary minerals.								
COMMENTS :	1000 POINT COUNTING ON CONSTITUENT MINERALS. All phenocrysts appear ruptured to scattered pieces of various size embedded in an altered groundmass. No alignment or flow structure can be seen. Apatite needles in anhedral areas of plagioclase. / One 6 mm thick vein composed of, (from the edge to the center) saponite/chlorite and up to 3 mm radiating prisms of anhydrite. 0.7 mm alteration halo adjacent to the anhydrite vein, where saponite or saponite/chlorite replaces plagioclase and clinopyroxene.								



TS #70: 309-1256D-118R-1 42-46 cm, Piece No: 5a							Unit: 40	OBSERVER: TS, CC/ CL
ROCK NAME:	Aphyric fine-grained basalt							
WHERE SAMPLED:	Interior of clataclastic-massive unit							
GRAIN SIZE:	Fine grained							
TEXTURE:	Hypocrystalline, doleritic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
CONSTITUENT MINERALS		100						
Plagioclase		51.9	0.04	1.2	0.4	Subhedral-anhedral, blade-acicular	Some strongly zoned. A few resorbed. Subophitic relationship with clinopyroxene.	
Clinopyroxene		34.8	0.06	0.7	0.3	Subhedral-anhedral, dendritic	Some parts are altered to clay minerals	
Olivine	0	1.6	0.1	1	0.5	Subhedral	Completely replaced by brown saponite, talc, magnetite	
Fe-Ti oxides		2.2	0.01	0.15	0.05	Subhedral-anhedral, dendritic	Titanomagnetite	
Mesostasis		9.5				Interstitial	Small clinopyroxene, plagioclase, and cemented by saponite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite	6					Only a few interstitial, much replaces olivine		
Saponite/talc	0.2					Replacing olivine rim		
Magnetite	0.01					Replacing olivine rim	Associated with saponite/talc	
Pyrite	0.1					Disseminated		
STRUCTURE :								
COMMENTS : POINT COUNTING OF 1000 PRIMARY MINERALS. Most crystals are brecciated. Apatite needles occur in large plagioclase area.								



TS #71: 309-1256D-119R-1, 63-65 cm, Piece No: 13			Unit: 41			OBSERVER: CC, TS/ CL	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	1.6	1.6					
Plagioclase	1.1	1.1	0.16	0.75	0.3	Subhedral	Alteration to saponite in cracks.
Clinopyroxene	0.5	0.5	0.12	0.32	0.2	Subhedral	
MICROPHENOCRYSTS	2.6	2.6					
Plagioclase	2.6	2.6	0.04	0.16	0.1	Subhedral	
GROUNDMASS	89.7						
Plagioclase						Anhedra, skeletal-acicular	Two generations of crystals: microlites with swallow tail or hollow square features and large anhedra and interstitial areas.
Clinopyroxene						Subhedral-anhedra, fibrous	Two types of microlites: small subhedral grains and fibrous laths branching from plagioclase microlites.
Fe-Ti oxides						Subhedral-skeletal	Interstitial, titanomagnetite
Glass						Interstitial	Altered to brown saponite
VESICLES	6.1		1.5	2.5	2	Spherical	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.5					Vesicles, interstitial	
Chalcedony	1.5					Amygdales, miarolitic voids	
STRUCTURE :							
COMMENTS : Large (up to 2.5 mm) spherical vesicles surrounded by alteration halos. Plagioclase and clinopyroxene phenocrysts form glomerocrysts.							



TS #72: 309-1256D-120R-1, 10-12 cm, Piece No: 3			Unit: 41			OBSERVER: SD; TS/ CL	
ROCK NAME:	Aphyric microcrystalline basalt (host) in contact with dike						
WHERE SAMPLED:	Dike contact						
GRAIN SIZE:	Microcrystalline (host), Glassy-cryptocrystalline (dike)						
TEXTURE:	Hypocrystalline, variolitic (host), Hypohyaline spherulitic (dike)						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
MICROCRYSTALLINE BASALT							
PHENOCRYSTS							
Olivine	0	0.2 0.2	0.1	0.3	0.2	Subhedral	Completely replaced by brown saponite
GROUNDMASS							
Plagioclase		99.8				Euhedral-anhedral, skeletal-fibrous-acicular	Some swallow-tail structure.
Clinopyroxene						Euhedral-anhedral, fibrous-acicular	Along the chilled contact and cracks glass is devitrified to spherulites. Inner parts are tachylytic.
Glass							Titanomagnetite
Fe-Ti oxides						Subhedral-anhedral, skeletal	
DIKE							
PHENOCRYSTS							
Plagioclase	0.4 0.4	0.4 0.4 99.6	0.1	0.5	0.2	Euhedral-subhedral	Some form glomeroporphyritic texture
GROUNDMASS							
Glass	99.6						Along the chilled contact and cracks, glass is devitrified to spherulites. The groundmass forms flow layering structure that is composed of thin glassy layers (0.01 mm) and devitrified layers (0.02-0.15 mm). Some yellow glass is present (palagonite?). The layers are parallel to the chilled contact.
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Saponite	7				Vesicles, amygdales, replaces olivine		
Quartz	1				Vesicles, amygdales, replaces olivine	Often associated with colorless unidentified 0.05 mm long needles (actinolite?)	
STRUCTURE :							
COMMENTS : One 0.2 mm vein of (from the edge to the center) minor saponite, abundant pyrite and quartz, grading to 1 mm thick vein, due to the replacement of the host rock by pyrite. One 0.01 mm vein of (from the edge to the center) saponite, quartz associated with colorless unidentified needles (actinolite?), anhydrite and large (0.2 mm) euhedral pyrite crystals. Both veins are sub perpendicular to the contact between glass and crystalline basalt, contact which is locally underlined by a 0.15 mm vein of chlorite.							



TS #73: 309-1256D-120R-1, 60-65 cm, Piece No: 12						Unit: 41	OBSERVER: SD/ CSD/ PT	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Flow interior							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Hypocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0	1						
Olivine	0	1	0.2	0.4	0.3	Euhedral-subhedral	Completely replaced by saponite.	
MICROPHENOCRYSTS	0.1	0.1						
Plagioclase	0.1	0.1	0.15	0.15	0.15	Euhedral		
GROUNDMASS	99.9	98.9						
Plagioclase						Euhedral-anhedral, skeletal-fibrous-acicular	Swallow-tail grains	
Clinopyroxene						Euhedral-anhedral, fibrous		
Glass/mesostasis							Devitrified	
Fe-Ti oxides						Euhedral-anhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite	4					Olivine, mesostasis/fills vesicles		
Pyrite	3					Vesicles		
Quartz	0.5					Vesicles		
Calcium carbonate	0.1					Vesicles		
STRUCTURE :	Shape and crystallographic preferred orientation of plagioclase acicular crystals along the quartz vein wall rock.							
COMMENTS :	Vesicle with large sulfide mineral in the center. Saponite replaces olivine phenocrysts and interstitial areas of mesostasis, saponite fills vesicles. /A 1.5 mm quartz vein with a rim of saponite and anhydrite is present. There is also a concentration of sulfides in and around this vein, however, the 0.1 thick halo is composed of saponite. The anhydrite is 0.1mm thick and occurs as a discontinuous margin of the vein.							



TS #74: 309-1256D-120R-1, 126-128 cm, Piece No: 24b			Unit: 41			OBSERVER: TS, CC/ LG, CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
GROUNDMASS		100					
Clinopyroxene	57.5	57.5	0.01	0.1	0.05	Subhedral-anhedral, dendritic-fibrous	
Plagioclase	22.7	22.7	0.01	0.12	0.05	Subhedral-anhedral, skeletal-acicular	
Mesostasis	13	13				Interstitial	Small plagioclase, clinopyroxene, and olivine
Glass	0	4.2					Altered to brown saponite
Fe-Ti oxides	2.6	2.6	0.01	0.04	0.02	Euhedral-anhedral, laths-skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	4					Groundmass, olivine, vesicles	
Pyrite	3					Vesicles	0.8-3 mm spherical to irregular patches
STRUCTURE :							
COMMENTS : 1000 POINT COUNTING OF PRIMARY AND SECONDARY MINEALS. Occurrence of two empty vesicles (0.6-2 mm diameter) with a 0.6 mm thick dark gray halo. Occurrence of a 0.05 mm saponite vein.							



TS #75: 309-1256D-121R-1, 51-53 cm, Piece No: 10b							Unit: 41	OBSERVER: TS, CC/ LG, CL
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Near flow bottom							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Hypocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.2	0.3						
Plagioclase	0.2	0.2	0.2	0.3	0.25	Subhedral	All form glomeroporphyritic texture. Greenish alteration in cracks.	
Olivine	0	0.1	0.1	0.2	0.2	Subhedral	Completely replaced by saponite.	
GROUNDMASS		99.7						
Clinopyroxene						Subhedral-anhedral, dendritic-fibrous		
Plagioclase						Subhedral-anhedral, skeletal-acicular		
Glass						Interstitial	Tachylitic and altered to brown saponite.	
Fe-Ti oxides						Euhedral-subhedral, bladed-skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite	2.5					Groundmass, vesicles, olivine		
STRUCTURE :								
COMMENTS : Some microlites of plagioclase are elongated (width/length=0.03).								



TS #76: 309-1256D-122R-1, 35-38 cm, Piece No: 9							Unit: 42A	OBSERVER: TS, CC/ CL// PT
ROCK NAME:	Hyaloclastite with glassy aphyric basalt clasts							
WHERE SAMPLED:	Hyaloclastite							
GRAIN SIZE:	Glassy							
TEXTURE:	Glassy							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.1	0.2						
Plagioclase	0.1	0.2	0.02	0.06	0.04	Euhedral	Most parts are replaced by albite (+phillipsite?)	
GROUNDMASS		99.8						
Glass							Completely replaced by brown phyllosilicate. Central parts of large (>1 mm) clast is replaced by chalcedony.	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Brown phyllosilicate	85					Glass	Chlorite/saponite or talc/saponite	
Phillipsite?	10					Glass, replaces plagioclase phenocrysts?	Pale brown, radiating crystals forming spherules	
Albite	4					Replaces plagioclase phenocrysts		
Chalcedony	1					Glass	In microfractures	
STRUCTURE :	Hyaloclastite breccia consisting of angular to subangular altered glassy shards, from submillimetric to millimetric in size. Matrix is composed of quartz, clay minerals, acicular crystals of unidentified mineral cemented by quartz with finer grain-size, carbonate, sulfides, albite, and anhydrite.							
COMMENTS :	The rock consists of rounded to angular glassy clasts (0.3-3 mm). Edge of the clasts have thin (0.05-0.08 mm) alteration halos./ The cement of this hyaloclastite is composed of euhedral pyrite (+ sphalerite?), abundant quartz (various sizes and shapes), aggregates of broken anhydrite crystals, aggregates of brownish green phyllosilicate (probable saponite/chlorite), anhydrite, thin needles of probable actinolite (often radiating from the phyllosilicate) and late calcium carbonate.							



TS #77: 309-1256D-122R-1, 90-93 cm, Piece No: 13b			Unit: 42A			OBSERVER: CC, SD / CL, LG/ PT	
ROCK NAME:	Volcanic breccia with glassy clasts						
WHERE SAMPLED:	Middle of a volcanic breccia						
GRAIN SIZE:	Glassy						
TEXTURE:	Glassy spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.1	0.1					
Plagioclase	0.1	0.1	0.04	0.27	0.06	Euhedral-subhedral	Some are resorbed
GROUNDMASS	99.9	99.9					
Glass							Recrystallized to spherulites in the largest clast. Completely altered to brown phyllosilicate in the other clasts.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Brown phyllosilicate	100					Basaltic clasts, glass	Saponite/talc? And saponite/chlorite?
Pyrite	0.1					Disseminated	
STRUCTURE :	Polymictic breccia consisting of mm- to cm-scale clasts of altered basalt and submillimetric to millimetric clasts of altered glassy shards. The basalt clasts have subangular shape and spherulitic texture. Spherulites are locally flattened defining a textural layering. Basalt clasts are rimmed by phyllosilicates (mixed layer saponite-chlorite?). The matrix consists of brownish altered glass, chalcedony, and unidentified acicular mineral. Breccia is cemented by sulfides and carbonate.						
COMMENTS :	The volcanic breccia consists of angular to subangular clasts of (sometimes completely) altered glass. Only the largest clast (1.7 cm) contains some microphenocrysts of plagioclase. The smaller and less crystallized clasts (0.2-0.5 mm) are cut by thin fractures. A sort of zonation of the alteration can be observed in the less fractured ones. / The biggest clast is totally replaced by saponite/chlorite and show 0.2 mm thick chlorite/unidentified phyllosilicate halo. The cement is composed of interstitial chalcedony, both euhedral and anhedral pyrite (40% of the cement) and late calcium carbonate.						



TS #78: 309-1256D-122R-1, 119-124 cm, Piece No: 16		Unit: 42A			OBSERVER: TS, CC/ CL// PT		
ROCK NAME:	Aphyric glassy basalt in volcanic breccia						
WHERE SAMPLED:	Hyaloclastite						
GRAIN SIZE:	Glassy						
TEXTURE:	Glassy, spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Basaltic clast							
PHENOCRYSTS	0	0.2					
Plagioclase	0	0.2	0.05	0.3	0.2	Euhedral-subhedral	Completely replaced by saponite
GROUNDMASS		99.8					
Glass							Glass with isolated spherulites, coalescent spherulites, black devitrified glass (tachylitic)
Plagioclase						Acicular	
Glass clasts							
PHENOCRYSTS		0					
GROUNDMASS		100					
glass							Devitrified brown crystals are present along edges and cracks.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	30?					Replaces glass	Not clear if most glass is replaced or not by phyllosilicate
Philipsite?	15					Replaces glass	Very pale brown parallel radiating fibers
STRUCTURE :	Polymictic breccia consisting of basaltic clasts and altered glassy (hyaloclastic) shards. Basaltic clasts are characterized by spherulitic to variolitic texture. Glass with partially coalesced spherulites are present. Local textural layering defined by layers of partially coalesced spherulites and fully coalesced spherulites is observed. Layering may be folded. Clast edges are irregular and replaced by secondary minerals, grading into the matrix. Basaltic clasts are fractured by Y-shaped cracks filled with quartz. Altered glassy shards have angular shape. The matrix is made up of chalcedony, saponite, altered glass. Cement is composed of sulfides and carbonate.						
COMMENTS :	From the margin to the inner part, the basaltic clast has the following textural zones: glass with isolated spherulites; coalescent spherulites; and black devitrified glass and acicular plagioclase with layer structure. Glass clots have subrounded to angular shape (0.3-4 mm). The glass clots are brecciated. In the less fractured one, zonation of the alteration. The basaltic clast contains few elongated subangular vesicles filled with secondary minerals. / The cement of this breccia is composed of chalcedony, pyrite, saponite and minor calcium carbonate.						



TS #79: 309-1256D-122R-1, 126-130 cm, Piece No: 17			Unit: 42A			OBSERVER: CC, TS/ CL / LC	
ROCK NAME:	Aphyric glassy basalt						
WHERE SAMPLED:	Clast in sulfide cemented volcanic breccia						
GRAIN SIZE:	Glassy						
TEXTURE:	Glassy spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.3	0.5					
Plagioclase	0.3	0.5	0.07	0.17	0.12	Euhedral, bladed- subhedral, acicular	Half of them are replaced by saponite/chlorite
GROUNDMASS	99.5						
Glass							Recrystallized brown to black spherulites.
Plagioclase						Acicular	Swallow tail features.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/chlorite	10					Amygdales, replaces glass and plagioclase	
STRUCTURE :	Igneous layering defined by different modal concentration of spherulites and plagioclase microlites. Brittle-ductile microcracks are present.						
COMMENTS :	Plagioclase microlites are preferentially oriented parallel to the glassy margin. In the inner part (opposite side to the light-brown spherulitic area), microlites are very small and are concentrated on layers (0.1-0.4 mm) which are parallel to the glassy margin in some place but then seem folded. /Several 0.1-0.2 mm veins of saponite/chlorite alternate with pyrite and silica.						



TS #80: 309-1256D-122R-1, 140-143 cm, Piece No: 19			Unit: 42A			OBSERVER: CC, SD/ CL// PT	
ROCK NAME:	Glassy clasts in hyaloclastite						
WHERE SAMPLED:	Hyaloclastite						
GRAIN SIZE:	Glassy						
TEXTURE:	Glassy						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.05	0.05					
Plagioclase	0.05	0.05	0.02	0.15	0.05	Euhedral	One is surrounded by a sort of halo in the glass also visible in reflected light.
GROUNDMASS	99.95	99.55					
Glass							Completely altered to chlorite/saponite (+phillipsite?).
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	50					Replaces glass	
Phillipsite?	5					Replaces glass	
STRUCTURE :	Polymictic breccia consisting of one cm-scale altered basaltic clast and altered glassy shards (hyaloclastite). The basaltic clast has a spherulitic texture, irregular rims grading into the hyaloclastic material. Hyaloclastic shards are fractured and altered. The matrix is made up of chalcedony, altered glass, fibrous mineral with radial texture, cemented by sulfides and carbonate.						
COMMENTS :	The volcanic breccia consists of angular to subangular clasts of altered glass (0.3-1.1 cm). The clasts are brecciated. The less fractured ones show zonation of the alteration from the rim to the inner part (or from the fractures to the more preserved part). /The cement of the breccia is composed by saponite/chlorite, pyrite, quartz and calcium carbonate.						



TS #81: 309-1256D-122R-2, 74-77cm, Piece No: 11						Unit: 42B	OBSERVER: SD/ LG	
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Brecciated flow interior							
GRAIN SIZE:	Glassy							
TEXTURE:	Hypohyaline spherulitic, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0							
GROUNDMASS	100							
Plagioclase						Subhedral, acicular	Some swallow tail structures.	
Clinopyroxene						Anhedral, fibrous-dendritic		
Glass							Devitrified to spherulites and some altered to saponite/chlorite.	
Fe-Ti oxides						Anhedral	Titanomagnetite surrounding some smaller sulfides.	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite/chlorite	15					Groundmass, vesicles		
Quarz	5					In amygdales, vesicles		
Pyrite	2					Disseminated	euhedral crystals	
STRUCTURE :								
COMMENTS : Sulfides are found throughout the section, larger and euhedral (up to 0.2 mm) in the altered areas and smaller and anhedral in the glassy areas. /Occurrence of 12 mm thick vein of anhydrite euhedral and large crystals, in some areas replaced by saponite/chlorite. Occurrence of three 0.1-0.3 mm crosscutting and empty veins, associated with 1.2 mm alteration halo. Outer 0.7 mm dark green halo mainly of saponite, inner 0.5 mm light green halo consists of mixed saponite and chlorite. Occurrence of 0.03 mm pyrite veins. Pyrite grains are euhedral when associated with quartz and anhydrite, irregular in basalt.								



TS #82: 309-1256D-123R-1, 15-19 cm, Piece No: 4			Unit: 42B			OBSERVER: CC, JG /CSD, CL	
ROCK NAME:	Volcanic breccia with glassy clasts						
WHERE SAMPLED:	Middle of a volcanic breccia						
GRAIN SIZE:	Glassy						
TEXTURE:	Glassy spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0					
MICROPHENOCRYSTS	0.05	0.05					
Plagioclase	0.05	0.05	0.05	0.07	0.05	Euhedral-subhedral, needles	Some are resorbed
GROUNDMASS	99.95						
Glass							Recrystallized to spherulites in the largest clasts. Completely altered to greenish-brown saponite/chlorite in the smaller clasts.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/chlorite	35					Glass	
Albite	0.01					Plagioclase phenocryst	
STRUCTURE :							
COMMENTS : The volcanic breccia consists of angular to subangular clasts of altered glass (0.3-2 cm). Only the largest one (2 cm) contains some microphenocrysts of plagioclase. This clast still shows spherulites in its inner part while it is surrounded by a 3 mm broad altered rim. The smaller clasts are less crystallized and completely altered to greenish saponite/chlorite. They are cut by thin fractures. / The cement of this breccia (80% of the thin section) is composed of saponite/chlorite (minor) quartz, pyrite, anhydrite, prehnite, late calcium carbonate. Some actinolite or apatite(?) appear as fine hair like knots in the matrix.							



TS #83: 309,1256D,123R-1, 55-58 cm, Piece No: 11			Unit: 42B			OBSERVER: SD, CSD, JG / CL	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypohyaline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Plagioclase	0	0.3	0.1	0.2	0.13	Euhedral	Altered to chlorite/saponite
GROUNDMASS		99.7					
Plagioclase						Subhedral, acicular	
Clinopyroxene						Subhedral, acicular-fibrous	
Fe-Ti oxides						Subhedral	Titanomagnetite
Glass							Devitrified
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	0.4					Plagioclase phenocrysts and interstitial areas	
Pyrite	0.1					Interstitial areas	
Chalcopyrite	0.01					mesostasis and interstitial areas	
STRUCTURE :							
COMMENTS : Two 0.02 mm sinuous veins of chlorite/saponite, chalcedony and pyrite. Sulfides present in groundmass. Titanomagnetite in sulfides (?).							



TS #84: 309-1256D-123R-1,136-138 cm, Piece No: 29					Unit: 43	OBSERVER: JG, CC/ LG	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Upper part of sheet flow						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, predominantly intergranular, partly variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	1.5						
Plagioclase	1		0.2	0.6	0.4	Subhedral, tabular	Fractured, alteration in fractures, partly resorbed
Clinopyroxene	0.5		0.2	0.5	0.3	Anhedral-subhedral	
GROUNDMASS	98.5						
Plagioclase	50					Acicular, skeletal	Tachylytic or altered to saponite Titanomagnetite
Clinopyroxene	40					1) Subhedral-anhedral, 2) fibrous-branching	
Glass		5					
Fe-Ti oxides	3.5						
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.5					Vesicles, groundmass	
STRUCTURE :							
COMMENTS : Disseminated pyrite in groundmass.							



TS #85: 309-1256D-124R-1, 59-63 cm, Piece No: 13			Unit: 43			OBSERVER: JG, CC/ LG	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Intergranular (in some parts slightly variolitic)						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.05	0.05					
Plagioclase	0.05	0.05		0.4		Anhedral	Resorbed and altered
GROUNDMASS	99.95						
Plagioclase	45	45				Skeletal laths	
Clinopyroxene	45	45				Two generations: 1) subhedral, granular, 2) fibrous, branching	
Fe-Ti oxides	8	8				Subhedral, skeletal	Titanomagnetite
Glass	0	1.95					Tachylitic or altered to saponite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite	0.3					Groundmass, vesicles	
STRUCTURE :							
COMMENTS : Disseminated interstitial and irregular grains of pyrite. Occurrence of small unidentified phyllosilicate vesicles.							



TS #86: 309-1256D-125R-1, 54-58 cm, Piece No: 14			Unit: 43			OBSERVER: JG , CC/ LG, CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, intergranular-interstitial, variolitic (in some areas of the section the plagioclase tends to form a variolitic texture)						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.2	0.2					
Clinopyroxene	0.2	0.2	0.2	0.8	0.5	Subhedral	Fractured, zonation rim
MICROPHENOCRYSTS	0	0.1					
Plagioclase	0	0.1	0.1	0.3	0.2	Anhedral	Resorbed, altered to albite
GROUNDMASS		99.7					
Plagioclase			0.05	0.15	0.1	Bladed, often skeletal	
Clinopyroxene			0.05	0.2	0.1	Subhedral-anhedral	
Fe-Ti oxides						Euhedral,subhedral	Titanomagnetite
Glass						Interstitial	Altered to brown-greenish saponite/chlorite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/ chlorite	10					Amygdales, groundmass	
Albite	2					Plagioclase phenocrysts and in groundmass.	
Quartz	1					Amygdales, vesicles	In amygdales, associated with saponite/chlorite.
STRUCTURE :							
COMMENTS : Amygdales secondary minerals are also associated with unidentified green phyllosilicate. Occurrence of 0.1 mm thick vein of saponite and quartz. Occurrence of disseminated pyrite and chalcopyrite.							



TS #87: 309-1256D-126R-1, 14-17 cm, Piece No: 2						Unit: 43	OBSERVER: JG, CSD/ CL	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Flow interior							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Hypocrystalline, partly variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.6	0.6						
Clinopyroxene	0.5	0.5	0.5	0.8	0.6	Subhedral-euhedral		
Plagioclase	0.1	0.1	0.2	0.4	0.3	Anhedral-Subhedral	Some zoned	
GROUNDMASS	99.4	99.4						
Clinopyroxene	36.4					1) Subhedral-granular, 2) dendritic-branching		
Plagioclase	49					Skeletal laths		
Glass		8				Interstitial	Altered to a dark green saponite	
Fe-Ti oxides	6						Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite	0.5					interstitial and mesostasis		
Calcium carbonate	0.1					replacing feldspar phenocrysts		
STRUCTURE :								
COMMENTS :								



TS #88: 309-1256D-127R-1, 3-6 cm, Piece No: 2		Unit: 43		OBSERVER: CC, SD; CSD/ CL /LC			
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypohyaline spherulitic to variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
PHENOCRYSTS			min.	max.	av.		
MICROPHENOCRYSTS		0.45					
Plagioclase	0.01	0.4	0.08	0.2	0.15	Subhedral-anhedral	Completely altered to carbonate and brown-greenish chlorite/smectite. Sometimes a fresh overgrowth mantles the altered inner part.
Clinopyroxene	0.05	0.05	0.2	0.25	0.2	Subhedral	
GROUNDMASS		99.55					
Glass							Devitrified to spherulites and altered to chlorite/smectite or tachylytic in the variolitic area.
Plagioclase						Acicular, skeletal	
Clinopyroxene						Subhedral-fibrous	
Fe-Ti oxides						Anhedral-subhedral	Interstitial, titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/smectite	10					Interstitial, replaces plagioclase, olivine	98% in the alteration halo immediately adjacent to the vein located at the edge of the TS
Albite	1					Plagioclase phenocrysts	only in the alteration halo immediately adjacent to the vein located at the edge of the TS
Titanite							
STRUCTURE :	Igneous layering consisting of alternating glassy spherulitic and variolitic sheets. The modal layering is cut by an irregular saponite vein and by an alteration halo						
COMMENTS :	One side of the thin section is more intensely altered over 3 mm. Plagioclase and clinopyroxene phenocrysts form glomerocrysts. The texture varies from essentially glassy (spherulites and some isolated microlites) to variolitic (with interstitial tachylytic glass). The variolitic areas form layers perpendicular to the altered side but sometimes folded. These layers are separated by areas with more abundant glass. A thin vein filled with green secondary mineral is preferentially located in one of the variolitic layers. Some sulfides disseminated in the groundmass./ One side of the thin section consist is a 3 mm dark green alteration halo adjacent to a chlorite/smectite vein almost completely plucked out. This altered halo is separated from the host rock pyrite front. One sinuous 0.01mm vein of chlorite/smectite is present. A 7mm halo of saponite with associated pyrite and chalcopyrite surrounds the vein. The percentages of secondary minerals given the table refer to the host rock.						



TS #89: 309-1256D-128R-1, 6-12 cm, Piece No: 2			Unit: 43			OBSERVER: CC/ CL// LC	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Chilled margin						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Glassy spherulitic to hyalopilitic-variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
PHENOCRYSTS			min.	max.	av.		
MICROPHENOCRYSTS	0.05	0.2					
Plagioclase	0.05	0.2	0.07	0.2	0.09	Subhedral-acicular	Altered to brown-greenish chlorite
GROUNDMASS		99.8					
Plagioclase						Acicular-fibrous	Swallow-tail structures.
Clinopyroxene						Subhedral grains or laths, fibrous	
Fe-Ti oxides						Anhedral-subhedral	Interstitial, titanomagnetite
Glass							Devitrified to spherulites and altered to chlorite (chilled margin) to spherulitic-tachylytic (inner part).
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	20					Replaces plagioclase, clinopyroxene, interstitial	90% in the inner alteration halo, 50-80% in the outer halo.
Titanite	5					Replaces titanomagnetite	Probably very chlorite rich phyllosilicate
STRUCTURE :	Millimetric super imposed folds with similar and asymmetric geometry affect modal and textural magmatic domains. Layering consists mainly of sheets of spherulites alternating with discontinuous sheets of variolites. Irregular micrometric thick veins filled with fibrous clay minerals cut layering and folds. Igneous layering and folds are bordered by 2-3 mm thick recrystallized halos with chlorite and titanite (and epidote ?).						
COMMENTS :	Microlites are preferentially concentrated in thin layers, separated by altered spherulitic glass. In the layers, microlites show variolitic texture and the glass is tachylytic. These layers can be linear or curved. Their geometry can also be more complex (coalescent, flame-like shape). Some disseminated sulfides/ Both irregular sides of the thin section are veins. 3 mm thick green (light then dark) alteration halos adjacent to both veins, contain 50 to 100% secondary minerals (mostly chlorite/ saponite and less titanite). One 0.005 mm vein of chlorite.						



TS #90: 309-1256D-128R-1, 58-63 cm, Piece No: 9			Unit: 43			OBSERVER: SD; CC/ CSD, CL// LC	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.2	0.8					
Plagioclase	0.1	0.5	0.14	0.42	0.42	Euhedral	Completely altered to green chlorite. In some cases plagioclase rim can be seen.
Clinopyroxene	0.1	0.1	0.3	0.4	0.3	Euhedral	
Olivine	0	0.2	0.18	0.4	0.3	Euhedral to anhedral	Difficult to distinguish individual grains due to the complete replacement by chlorite/saponite minerals.
GROUNDMASS	99.2						
Plagioclase						Subhedral-anhedral, acicular-fibrous-dendritic	
Clinopyroxene						Subhedral-anhedral, fibrous-dendritic	
Fe-Ti oxides							Within sulfide grains
Glass							Tachylytic in the interstices, some altered to brown chlorite/saponite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	3					Amygdales, interstitial areas, replaces olivine and plagioclase phenocrysts	
Titanite	0.3					Amygdales	Associated with chlorite/saponite
Ca-Carbonates	0.1					Plagioclase phenocrysts??	
Pyrite	0.1					Interstitial areas, replaces plagioclase and clinopyroxene	Restricted to 1-1.5 mm patches
STRUCTURE :	Slight alignment and preferred orientation of altered glassy patches. Irregular curved veins (<0.1 mm thick) filled with saponite and carbonates cut the alignment of patches at small angle. One 0.5 mm-thick irregular-stepped vein cut at high angle the patch alignments and saponite veins. Colorless (low relief) fibers arranged in micrometric shear bands. Pyrite grains in 0.5 mm vein are locally fractured asymmetrically and locally have pressure shadows.						
COMMENTS :	One 0.1 to 0.5mm vein composed of (from edge to center) chlorite/saponite, quartz, pyrite, colorless undulate fibers (prehnite?) and calcium carbonate transects and otherwise slightly altered aphyric basalt. A 0.3 mm thick alteration halo adjacent to this vein is composed of 50% secondary minerals (35% chlorite/saponite and 15% titanite). One 0.05 mm vein of chlorite/saponite, calcium carbonate and minor pyrite.						



TS #91: 309-1256D-128R-1, 65-70 cm, Piece No: 10							Unit: 43	OBSERVER: CC, TS/ CL	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric cryptocrystalline basalt								
WHERE SAMPLED:	Chilled margin								
GRAIN SIZE:	Glassy to cryptocrystalline								
TEXTURE:	Glassy spherulitic to hypocrySTALLINE pilotaxitic-variolitic								
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS		
			min.	max.	av.				
PHENOCRYSTS	0.3	1.5							
Plagioclase	0	1.2	0.08	0.4	0.15	Subhedral	Completely altered to brown-greenish chlorite,/saponite. Sometimes a fresh overgrowth mantles the altered inner part.		
Clinopyroxene	0.3	0.3	0.2	0.9	0.3	Subhedral	One crystals totally includes some plagioclase phenocrysts.		
GROUNDMASS		98.5							
Plagioclase						Skeletal, acicular			
Clinopyroxene						Subhedral			
Glass							Devitrified to spherulites and altered (chilled margin) to tachylytic (variolitic part).		
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS		
			min.	max.	av.				
Chlorite/saponite	1.3					Vesicles, amygdales, replaces plagioclase and olivine phenocrysts	90% in the halo immediately adjacent to the vein		
Quartz	0.1					Vesicles			
Titanite	0.1					Vesicles, interstitial areas	10% in the halo immediately adjacent to the halo		
Pyrite	0.05					Replaces plagioclase and clinopyroxene	Forming 0.2 mm spots		
Prehnite (?)	0.05					Vesicles			
STRUCTURE :									
COMMENTS : POINT COUNTING FOR 1500 PHENOCRYSTS. From the chilled margin to the inner part of the sample, texture varies from glassy spherulitic without microlites to hypocrySTALLINE variolitic. The lower boundaries of the chilled margin is marked by a pilotaxitic layer: plagioclase microlites are concentrated in a layer which is parallel to the glassy margin. In some part, some fractures are preferentially located in this layer. Below this layer, the glass become interstitial and the size of the microlites increases. Thin and discontinuous plagioclase microlite layers (0.1 mm) are also found in the devitrified glass of the chilled margin. In the chilled margin the plagioclase phenocrysts and the vesicles are elongated parallel to the chilled margin. In the variolitic part, plagioclase and clinopyroxene phenocrysts form glomerocrysts. Some sulfide patches (0.15-0.2 mm). /Several 0.01-0.5 mm veins of, saponite/chlorite alone or, from edge to center, saponite/chlorite + saponite/chlorite + titanite, quartz, pyrite, and calcium-carbonate, with 0.2 mm thick light green alteration halo, where the basalt is completely replaced by chlorite/saponite and titanite.									



TS #92: 309-1256D-128R-1, 114-116cm, Piece No: 16			Unit: 43			OBSERVER: JG, CC/ CL//HL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.2	0.9					
Plagioclase	0.1	0.8	0.1	0.4	0.2	Subhedral-tabular	Inner parts always altered to green chlorites.
Clinopyroxene	0.1	0.1	0.36	0.36	0.36	Subhedral	
GROUNDMASS		99.1					
Glass	0	15.1				Interstitial	Tachylytic, altered to saponite.
Plagioclase	50					Subhedral-skeletal laths	
Clinopyroxene	30					Subhedral-granular	
Fe-Ti oxides	4						Predominantly within the altered glass (Titanomagnetite).
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Pyrite	0.5		0.5	1	0.7	Interstitial areas, replaces plagioclase and clinopyroxene	Restricted to 1-1.5 mm patches.
Chlorite/saponite	0.3					Replacing plagioclase and filling interstices	
Saponite	15					Interstitial areas	
Albite						Replacing plagioclase	
STRUCTURE :							
COMMENTS : Patches of sulfides (0.5 mm). Rare spherical vesicles (filled with secondary minerals).							



TS #93: 309,1256D,129R-1, 77-80 cm, Piece No: 5b						Unit: 44A	OBSERVER: SD/TS/ CL
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline variolitic-interstitial (hyalopilitic)-intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.3	0.4					
Plagioclase	0.3	0.3	0.2	0.46	0.28	Euhedral-subhedral	Some form glomeroporphyritic texture
Olivine	0	0.1	0.4	0.4	0.4	Subhedral	Completely altered to saponite
GROUNDMASS		99.6					
Plagioclase						Euhedral-anhedral, skeletal	Some have subophitic texture
Clinopyroxene						Subhedral-anhedral-dendritic-fibrous	Some have subophitic texture
Fe-Ti oxides						Anhedral, skeletal	Interstitial resorbed grains
Glass							Tachylytic and some altered to saponite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/Chlorite	1.5					Interstitial areas, replaces olivine	
Pyrite	0.5					Interstitial areas, replaces plagioclase and clinopyroxene	Restricted to 1-1.5 mm patches
STRUCTURE :							
COMMENTS : Sulfide minerals found throughout the groundmass.							



TS #94: 309,1256D,129R-1, 102-104 cm, Piece No: 6						Unit: 44A	OBSERVER: SD, TS/ CL// PT
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline variolitic-intersertal (hyalopilitic)-intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.2	0.3					
Plagioclase	0.2	0.2	0.35	0.6	0.47	Euhedral-subhedral	Many fractures
Olivine	0	0.1	0.36	0.36	0.36	Euhedral	Completely altered to chlorite/saponite.
GROUNDMASS	99.7						
Plagioclase						Euhedral-anhedral, skeletal	Some have subophitic texture
Clinopyroxene						Subhedral-anhedral-dendritic-fibrous	Some have subophitic texture
Fe-Ti oxides						Anhedral	Interstitial resorbed grains
Glass							Tachylytic
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	3					Interstitial, replaces olivine	
Pyrite	0.05					Disseminated	
STRUCTURE :	Anhydrite crystals filling vein have SPO (long side parallel to the vein edges) and local crystallographic preferred orientation.						
COMMENTS :	One 1 mm vein composed of (from edge to center) saponite + pyrite, minor silica and abundant anhydrite.						



PRIMARY MINERALOGY			SIZE (mm)			MORPHOLOGY	COMMENTS
PERCENT PRESENT	PERCENT ORIGINAL	min.	max.	av.			
1) Glassy-chilled margin							
GROUNDMASS							
Clinopyroxene	2		0.02	0.01	Anhedral-acicular	Forms spherulitic or bowtie-like glomerocrysts	
Plagioclase	0.4		0.05	0.01	Anhedral-acicular	Internally resorbed	
Glass	97.6				Spherulitic	Devitrified. Variably altered particularly at contacts and along veins	
2) Cryptocrystalline part							
PHENOCRYSTS							
Clinopyroxene	0.3		0.3	1	0.5	Euhedral	Partly resorbed (reaction rim and interior along veins/cleavage).
GROUNDMASS							
Clinopyroxene	3.1				Anhedral-fibrous	Branching within devitrified glass spherulites	
Plagioclase	2.4				Skeletal		
Glass	94.2				Spherulitic	Devitrified	
Fe-Ti oxides					Granular, skeletal	Extreme small and evenly distributed	
SECONDARY MINERALOGY			SIZE (mm)			REPLACING / FILLING	COMMENTS
PERCENT		min.	max.	av.			
Chlorite/saponite	0.05				Interstitial areas		
Pyrite	1				Anhedral	Larger crystals than all primary minerals	
STRUCTURE :	The chilled margin is cut by a set of orthogonal veins. Veins at a high angle with the host rock-chilled margin contact are irregular (probably due to shear) with splay morphology.						
COMMENTS :	POINT COUNTING 500 PRIMARY MINERALS for each part (chilled margin & cryptocrystalline part). It is not clear if the two rock parts represent one single magma or a dike (chilled margin) -host rock (cryptocrystalline) contact. The contact between both parts can be both sharp or gradual within less than a cm distance. See comments on thin section description sheet 96 (thin section from the archive half of this sample). Phenocrysts in the cryptocrystalline part form glomeroporphyritic texture. Occurrence of sulfides in the cryptocrystalline rock. Several 0.05-0.2 mm veins of chlorite/saponite.						



TS #96: 309-1256D-130R-1, 0-5cm, Piece No: 1 (Archive half)			Unit: 44B			OBSERVER: CC, TS/ CL	
ROCK NAME: Aphyric glassy to cryptocrystalline basalt							
WHERE SAMPLED: Chilled margin and host rock							
GRAIN SIZE: Glassy to cryptocrystalline (chilled margin), microcrystalline (host rock)							
TEXTURE: Glassy spherulitic to hypohyaline variolitic (chilled margin) and hypocrySTALLINE variolitic (host rock)							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Chilled margin							
PHENOCRYSTS							
MICROPHENOCRYSTS							
Plagioclase	0.02	0.05	0.05	0.16	0.06	Euhedral, bladed-subhedral	Often partially altered to green chlorite/saponite. Sometimes form clusters.
	0.02	0.05					
GROUNDMASS							
Plagioclase		99.5				Acicular-skeletal	Some swallow-tail grains and some hollow-square shapes.
Clinopyroxene						Subhedral-fibrous	Generally, crystallize from plagioclase nucleus.
Glass							Devitrified to brown spherulites and altered (outer part of the chilled margin) to tachylytic (inner part).
Host rock							
PHENOCRYSTS							
GROUNDMASS							
Plagioclase	100					Subhedral, skeletal-acicular	
Clinopyroxene						Subhedral-fibrous	Brownish altered
Fe-Ti oxides						Subhedral-skeletal	Interstitial, titanomagnetite
Glass							Altered.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	0.1					Replacing plagioclase	
Albite	0.05					Replacing plagioclase	
STRUCTURE :							
COMMENTS : The contact between chilled margin and fresh microcrystalline basalt is never observed, because it is always underlined by secondary minerals (veins). In these veins, some patches of microcrystalline rock are preserved. The veins are composed of chlorite/saponite, quartz, anhydrite, possible phreinite, and very minor unidentified green elongated crystals, amphibole (?). Some sharp clusters of glassy margin are separated from the glassy margin and isolated in the altered area. The outermost part of the glassy margin is fractured and the fractures are filled with chlorite/saponite but in some place with microcrystalline basalt. In the outer part of the glassy margin, the glass is recrystallized to spherulites, with some microlites and microphenocrysts of plagioclase. These crystals are sometimes oriented parallel to the chilled margin. In the inner part, the microlites (plagioclase and clinopyroxene) are still small but more abundant and they are arranged in fan-like clusters.							



TS #97: 309-1256D-130R-1, 8-12cm, Piece No: 3			Unit: 44B			OBSERVER: CC, SD/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Near top of a massive unit						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0.1					
Olivine	0	0.1	0.52	0.52	0.52	Euhedral	Completely altered to saponite/chlorite
MICROPHENOCRYSTS	0.03	0.08					
Plagioclase	0.03	0.08	0.9	0.17	0.1	Subhedral	Often partially altered to green or brown chlorite/saponite and resorbed. Sometimes form clusters.
GROUNDMASS		99.82					
Plagioclase						Acicular-skeletal	Some swallow-tail grains and some hollow-square shapes.
Clinopyroxene						Subhedral-fibrous	Two generation of clinopyroxene: subhedral grains and fibrous laths. The fibrous laths are often brownish altered.
Fe-Ti oxides						Euhedral-skeletal	Interstitial, titanomagnetite
Glass							Tachylytic
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	0.5					Replaces olivine and plagioclase phenocrysts	
Quartz	0.1					Replaces olivine and plagioclase phenocrysts	
Pyrite	0.3					Disseminated	Anhedral
STRUCTURE :							
COMMENTS : A few disseminated sulfides in the groundmass. Some interstitial and anhedral areas of plagioclase. Some apatite needles in these areas. Several 0.025mm veins of chlorite/saponite and quartz.							



TS #98: 309-1256D-130R-2, 38-41cm, Piece No: 4		Unit: 44B			OBSERVER: CC, JG/ CL		
ROCK NAME:	Aphyric fine-grained dolerite						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Fine grained						
TEXTURE:	Holocrystalline intergranular-doleritic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
CONSTITUENTS MINERALS	100						
Plagioclase	59.9		0.1	0.5	0.2	Subhedral, skeletal laths-anhedral	Two generations of plagioclase: subhedral laths and anhedral interstitial areas. The laths are relatively fresh, greenish alteration in the fractures. Some hollow-square shapes.
Clinopyroxene	34.1		0.1	0.3	0.17	Subhedral-anhedral	
Fe-Ti oxides	4.6		0.06	0.2		Euhedral-skeletal	Interstitial, titanomagnetite
Glass	1.4						Altered to greenish chlorite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.5					Interstitial	
Pyrite	1.2						Anhedral
Chalcopyrite	0.01						
STRUCTURE :							
COMMENTS : Some plagioclase and clinopyroxene crystals are elongated: plagioclase (length=2.5 mm, width/length=0.08) and clinopyroxene (length=1.4 mm and width/length=0.14). The interstitial areas are made up of plagioclase, needles of apatite (and probably some quartz). Some sulfides patches disseminated in the groundmass.							



TS #99: 309-1256D-131R-1, 22-26 cm, Piece No: 4b			Unit: 44C			OBSERVER: SD/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Flow interior						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
GROUNDMASS	100						
Plagioclase						Acicular-fibrous-skeletal	
Clinopyroxene						Subhedral-fibrous	
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite, some within sulfide grains
Glass							Altered to saponite/chlorite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/Saponite	0.1					Interstitial areas	
Titanite	1					Partly replaces titanomagnetite	
Pyrite	1.5					Disseminated	Anhedral
STRUCTURE :							
COMMENTS : Sulfides are present throughout the section, some contain titanomagnetite within them. Apatite needles are found in some of the resorbed plagioclase grains./ One 0.015 mm vein of chlorite/saponite							



TS #100: 309-1256D-131R-1, 88-90 cm, Piece No: 9b						Unit: 44C	OBSERVER: TS/CC, CL
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
GROUNDMASS	100						
Plagioclase						Subhedral-anhedral, acicular-skeletal-interstitial	Two types: subhedral laths and anhedral interstitial (crystallized with quartz)
Clinopyroxene						Subhedral, elongated-dendritic-fibrous	
Fe-Ti oxides						Euhedral-anhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.5					Interstitial, rarely replaces plagioclase	
Titanite	0.5					Close to (replacing?) titanomagnetite	
Pyrite	0.5					Disseminated	Anhedral-subhedral
Chalcopyrite	0.05					Disseminated	
STRUCTURE :							
COMMENTS : Apatite is present in the anhedral plagioclase.							



TS #101: 309-1256D-132R-1,112-114 cm, Piece No: 18						Unit: 44C	OBSERVER: JG, TS/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Hypocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
MICROPHENOCRYSTS	0.2							
Plagioclase	0.2		0.1	0.4	0.2	Subhedral	Partly resorbed	
GROUNDMASS	99.8							
Plagioclase						1) Subhedral laths, skeletal 2) anhedral/ interstitial	Radiating with clinopyroxene from a common nucleus	
Clinopyroxene						1) Subhedral-granular, 2) Dendritic, fibrous-branching		
Glass							Devitrified. Branching	
Fe-Ti oxides							Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite/saponite	1					Interstitial areas, plagioclase fractures		
Titanite	0.4					Interstitial	Generally in contact with titanomagnetite	
Pyrite	0.8					Minor disseminated. Most as large spots replacing plagioclase and clinopyroxene	Forming 0.3 mm spots, with pieces of unaltered plagioclase and clinopyroxene	
STRUCTURE :								
COMMENTS : Apatite needles in anhedral plagioclase./ One 0.05 mm vein of chlorite/smectite alternating with quartz.								



TS #102: 309-1256D-132R-1, 143-147cm, Piece No: 21			Unit: 44C			OBSERVER: TS/ CL	
ROCK NAME:	Aphyric fine-grained basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Fine grained						
TEXTURE:	Hypocrystalline, variolitic-interstitial						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		0.2					
Olivine	0	0.2	0.3	0.5	0.4	Euhedral-subhedral	100% replaced by saponite
GROUNDMASS		99.8					
Plagioclase	30	52.5	0.08	0.3	0.15	Subhedral, skeletal	Some replaced by chlorite/saponite and albite
Clinopyroxene	20	39.3	0.06	0.4	0.15	Subhedral, elongated-dendritic	Some replaced by chlorite/saponite
Glass	0	0.79				Interstitial	Tachylytic, altered to chlorite/saponite
Fe-Ti oxides	0.01	0.01	0.01	0.04	0.03	Subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	10					Interstitial areas, replaces clinopyroxene, plagioclase and olivine in alteration patches	
Titanite	0.8					Amygdales	Associated with chlorite/saponite
Albite	5					Replaces plagioclase	
Actinolite	0.05					Replaces clinopyroxene rim	Locally
Pyrite	0.5					Disseminated	
Chalcopyrite	0.01					Disseminated	
STRUCTURE :							
COMMENTS : POINT COUNTING OF 1000 PRIMARY MINERALS. Sulfides found throughout the section. /0.5-2 mm alteration patches consisting in basalt completely replaced by chlorite/saponite and minor titanite and locally quartz. Partly altered magmatic plagioclase and clinopyroxene protrude in these patches.							



TS #103: 309-1256D-133R-1, 19-20 cm, Piece No: 2			Unit: 44C			OBSERVER: JG, CC/ CL / PT	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Intergranular, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
MICROPHENOCRYSTS	0.5						
Plagioclase	0.5		0.2	0.4	0.3	Euhedral-anhedral	Some are resorbed
GROUNDMASS	99.5						
Plagioclase	45					Bladed, skeletal	
Clinopyroxene	49					1) Granular, 2) Fibrous-branching	
Fe-Ti oxides	4.5					Euhedral-Skeletal	Titanomagnetite
Glass/Mesostasis	1						Altered to saponite/chlorite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/Chlorite	4					Interstitial areas, vesicles	
Titanite	0.4					Replaces titanomagnetite	
Pyrite	0.8					Disseminated	
Chalcopyrite	0.01					Disseminated	
STRUCTURE :	Intensive intracrystalline cracking, mostly developed in plagioclase microphenocrysts and laths.						
COMMENTS :	Some sulfides in interstitial areas. Elongated plagioclase (length/width = 0.02).						



TS #104: 309-1256D-134R-2, 34-36cm, Piece No: 5b			Unit: 44D			OBSERVER: TS, CC/ CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic-interstitial						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		0.3					
Olivine		0.3	0.2	0.35	0.3	Euhedral-subhedral	Completely replaced by saponite/chlorite
GROUNDMASS		99.7					
Plagioclase			0.01	0.1	0.08	Subhedral-anhedral, skeletal-interstitial	Some replaced by saponite/chlorite and albite. Two types: subhedral laths, and anhedral area that crystallized with quartz in interstitial.
Clinopyroxene			0.01	0.2	0.08	Subhedral, elongated-dendritic	Some replaced by saponite/chlorite
Glass						Interstitial	Some tachylytic
Fe-Ti oxides			0.01	0.1	0.03	Euhedral-subhedral, skeletal	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	7					Interstitial areas, locally replaces clinopyroxene and minor plagioclase	
Albite	7					Replaces plagioclase	
Titanite	0.1					Interstitial	
Pyrite	0.5					Disseminated	
Chalcopyrite	0.01					Disseminated	
STRUCTURE :							
COMMENTS : Sulfides are observed throughout the section.							



TS #105: 309-1256D-135R-1, 33-36 cm, Piece No: 5b						Unit: 44D	OBSERVER: CC, SD/ CL	
ROCK NAME:	Sparsely olivine-clinopyroxene-plagioclase phyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Hypocrystalline variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	1.3	1.7						
Plagioclase	0.8	1.1	0.18	0.36	0.2	Subhedral	Partially resorbed and altered	
Clinopyroxene	0.5	0.5	0.17	0.9	0.6	Euhedral-subhedral		
Olivine	0	0.1	0.7	0.7	0.7	Subhedral	Completely altered to greenish saponite/chlorite and opaques	
GROUNDMASS		98.3						
Plagioclase						Subhedral, skeletal-acicular, dendritic	Swallow-tail grains and hollow-square shapes	
Clinopyroxene						Subhedral-fibrous	Two generations of clinopyroxene: subhedral grains and fibrous laths crystallizing from plagioclase microlites.	
Glass							Tachylytic	
Fe-Ti oxides						Euhedral-anhedral, skeletal	Interstitial, titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite/saponite	0.3					Minor in interstitial areas and as plagioclase phenocryst replacement, replaces two olivine phenocrysts		
Prehnite	0.08					Replaces plagioclase phenocryst		
Albite	8					Replaces plagioclase (both phenocryst and groundmass)		
Magnetite	0.001					Replaces olivine	Associated with chlorite/smectite	
Pyrite	0.5					Disseminated		
STRUCTURE :								
COMMENTS : POINT COUNTING OF 2000 PRIMARY MINERALS. Plagioclase and clinopyroxene can form glomerocrysts.								



TS #106: 309-1256D-135R-1, 46-49 cm, Piece No: 5c		Unit: 44D			OBSERVER: TS, CC/ CL		
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
Olivine	0	0.5		1.8		Euhedral	Completely replaced by chlorite
GROUNDMASS		99.5					
Plagioclase						Subhedral-anhedral, acicular-skeletal	Many parts are replaced by chlorite
Clinopyroxene						Subhedral, elongated-dendritic	Many parts are replaced by chlorite
Glass							Tachylytic
Fe-Ti oxides						Subhedral-anhedral	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	2					Amygdales, replaces plagioclase	Replaces clinopyroxene in the alteration halo
Albite	1					Replaces plagioclase	
Titanite	0.3					Disseminated	
Chalcopyrite	0.02					Disseminated	
Pyrite	0.05					Disseminated	
STRUCTURE :							
COMMENTS : Large olivine pseudomorph (up to 1.8 mm) could be present, but is totally altered. / One 0.5 mm vein of (from edge to center) minor chlorite (6%), titanite (3%), large euhedral to anhedral pyrite (45%) crystals, quartz (25%), minor chalcopyrite (5%), euhedral sphalerite (0.5%), calcium carbonate (7.5%) and prehnite (8%). 0.8 mm thick light green alteration halo adjacent to the vein, where the basalt is 95% recrystallized to chlorite and titanite. One 0.2 mm vein of chlorite, quartz and minor prehnite.							



TS #107: 309-1256D-135R-1, 127-129 cm, Piece No: 13			Unit: 45			OBSERVER: SD/ CL	THIN SECTION: 107
ROCK NAME:	Volcanic breccia						
WHERE SAMPLED:	Top of a massive unit						
GRAIN SIZE:	Glassy						
TEXTURE:	Holohyaline						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
GROUNDMASS	100						
Clinopyroxene						Anhedral	Very few small grains within altered glass.
Glass							Highly altered to chlorite, titanite, pyrite.
Fe-Ti oxides						Subhedral-anhedral	Titanomagnetite, in patches and in veins usually in conjunction with sulfide minerals.
Plagioclase						Subhedral	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	80					Replaces clasts of glass	
Titanite	4					Replaces clasts of glass	Subhedral or anhedral
Pyrite	8					Replaces clasts of glass	
STRUCTURE :							
COMMENTS :	Large sulfide minerals present usually surrounded by titanomagnetite. /The cement of this breccia is composed of broken pieces of anhydrite, minor pyrite, and later prehnite and is cross cut by a vein of large euhedral pyrite, chlorite and prehnite.						



TS #108: 309-1256D-135R-2, 22-24 cm, Piece No: 5		Unit: 45		OBSERVER: TS, SD/ CL			
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		0.1					
Olivine	0	0.1				Subhedral	Completely replaced by chlorite/magnetite.
GROUNDMASS		99.9					
Plagioclase			0.05	2.5	0.08	Subhedral-anhedral, skeletal-interstitial	Many parts are replaced by albite and/or carbonate. Two types: subhedral laths, and anhedral (crystallized with quartz interstitially)
Clinopyroxene			0.04	0.5	0.08	Subhedral-anhedral, dendritic-fibrous	Some are replaced by secondary minerals
Mesostasis							Altered glass or altered clinopyroxene
Fe-Ti oxides			0.012	0.08	0.03	Subhedral-anhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	12					Interstitial, replaces olivine	
Magnetite	0.01					Replaces olivine	Associated with chlorite
Albite	7					Partly replaces plagioclase	
Calcium carbonate	2					Partly replaces plagioclase	
Titanite	0.1					Interstitial areas	Associated with chlorite
Pyrite	1					Disseminated	
Chalcopyrite	0.1					Disseminated	
STRUCTURE :							
COMMENTS : Sulfide occurrence.							



TS #109: 309-1256D-136R-1, 4-6 cm, Piece No: 2		Unit: 45			OBSERVER: CC, JG/ CL		
ROCK NAME: Aphyric fine-grained basalt							
WHERE SAMPLED: Dike contact							
GRAIN SIZE: Fine-grained (host rock) and glassy to cryptocrystalline (chilled margin)							
TEXTURE: Hypocrystalline intersertal to doleritic (host rock) and glassy spherulitic to hypohyaline variolitic (chilled margin)							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Fine-grained basalt							
PHENOCRYSTS	0						
GROUNDMASS	100						
Plagioclase	46.8		0.1	0.5	0.2	Subhedral-anhedral	Green alteration in the fractures. Two types of plagioclase: subhedral laths and anhedral interstitial areas. Some crystals show a greenish coloration (pleochroism).
Clinopyroxene	31.1		0.15	1	0.3	Euhedral-subhedral	Mesostasis denotes the interstitial green alteration products (probably replacement of primary minerals and glass).
Mesostasis	13.4						
Glass	4.6						
Fe-Ti oxides	4.1		0.03	0.1	0.08	Euhedral-skeletal	Titanomagnetite
Chilled margin							
PHENOCRYSTS	0						
MICROPHENOCRYSTS	0.1						
Plagioclase	0.1		0.03	0.1	0.06	Euhedral-subhedral	
GROUNDMASS	99.9						
Plagioclase						Acicular-dendritic	Swallow-tail structures
Clinopyroxene						Fibrous	Crystallizing from the plagioclase microlites to form fan-like clusters.
Glass							Spherulitic-tachylytic and altered.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	10					Interstitial, vesicles, clinopyroxene	
Titanite	1					Interstitial	Often associated with chlorite
Albite	5					Replaces plagioclase	
Pyrite	0.5					Disseminated	
STRUCTURE :							
COMMENTS :							
The contact between the fine-grained basalt and the intrusive chilled margin is sharp and truncates some microlites of the fine-grained rocks. From the contact to the inner part, the chilled margin shows a textural progression: a thin layer of coalescent spherulites, tachylytic glass with a few microphenocrysts and microlites, then a variolitic area where microlites are more abundant and form fan-like clusters that tend to be coalescent. Some irregular vesicles filled with chlorite in the outer part. Sulfides (skeletal or spherical) disseminated in the groundmass.							



TS #110: 309-1256D-136R-1, 95-99 cm, Piece No: 14						Unit: 45	OBSERVER: SD, CC/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline-microcrystalline-glassy							
TEXTURE:	Holocrystalline, Holohyaline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.9							
Plagioclase	0.8		0.2	0.74	0.28	Euhedral-subhedral	Form glomeroporphyritic texture with clinopyroxene	
Clinopyroxene	0.1		0.14	0.34	0.19	Euhedral-anhedral	Form glomeroporphyritic texture with plagioclase	
GROUNDMASS	99.1							
Plagioclase						Euhedral-anhedral, acicular-skeletal-fibrous	Some swallow-tail structures.	
Clinopyroxene						Anhedral, fibrous-dendritic		
Glass							Altered to chlorite/titanite.	
Fe-Ti oxides						Anhedral	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	12					Replaces glass, plagioclase		
Titanite	0.8					Replaces glass		
Albite	5					Replaces plagioclase		
Prehnite	0.02					Replaces plagioclase		
Pyrite	0.01					Disseminated		
STRUCTURE :								
COMMENTS : Cryptocrystalline basalt incorporates microcrystalline fragments. The fragments have variolitic texture. The cryptocrystalline basalt has variolitic texture and grades into a glassy texture near the edges which are in contact with secondary minerals. The glassy areas have some variolites within them and plagioclase and clinopyroxene phenocrysts. / Several 0.02-0.3 mm veins grading to cement of breccias, composed of one or several of the following minerals: chlorite, chlorite/saponite, titanite, prehnite quartz, zeolite (laumontite?). These veins are either independent from or lining the contact between glass and crystalline basalt.								



TS #111: 309-1256D-136R-1, 121-123 cm, Piece No: 20			Unit: 45			OBSERVER: JG; CC/ CL	
ROCK NAME:	Aphyric, glassy-cryptocrystalline basalt						
WHERE SAMPLED:	Contact region (within a massive basalt unit)						
GRAIN SIZE:	Glassy-cryptocrystalline						
TEXTURE:	Holoxyaline-Hypohyaline						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
MICROPHENOCRYSTS	0.1						
Plagioclase	0.1		0.5	0.15	0.1	Subhedral	Tabular, generally resorbed and altered
GROUNDMASS							
Glass	75-85					Dendritic	Recrystallized to spherulites and brownish-red altered
Plagioclase	15-Feb					Fine needles, often skeletal with swallowtail	
Fe-Ti oxides	8					Anhedral-granular	Titanomagnetite
Clinopyroxene	2					Anhedral-fibrous	Completely altered to chlorite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	50					Replacing groundmass clinopyroxene	
Titanite	7					Disseminated, often in contact with (replacing) titanomagnetite	
Quartz	0.1					Replacing plagioclase	
Pyrite	0.8					Disseminated	
STRUCTURE :							
COMMENTS : Although the thin section represents a glassy margin, the macroscopic visible layering does not correspond with grain size change (stays constant) but rather seems to result from change in mineralogy/alteration. The section cuts a complex halo region forming layers consisting of different kinds and degrees of glass alteration (chlorite, other secondary minerals) and one band of pyrite (0.2-0.3 mm wide). At least four layers can be identified (with increasing distance from the vein): 1) a green layer of altered glass, 2) a white layer, 3) a green layer where microlites can be recognized, 4) the sulfide band enclosing cryptocrystalline rock with less altered (less chlorite?) recrystallized glass and much higher abundance of needle-shaped plagioclase. This part also hosts the plagioclase microphenocrysts but has less sulfides. Additionally, this part contains round dark patches overprinting the groundmass./ One side of the section is bordered by a vein. The 0.2 mm vein is composed of (from edge to center) chlorite + titanite, pyrite, chalcopyrite, quartz, minor euhedral epidote (pistachite), prehnite and calcium carbonate. A 9 mm-thick composite alteration halo adjacent to this vein, composed of successive halos, 100 to 90 % altered into chlorite, titanite, pyrite and chalcopyrite, while the host rock is 60 % altered (the percent of secondary minerals given in the table are those of the host-rock).							



TS #112: 309-1256D-137R-1, 27-30 cm, Piece No: 2b						Unit: 45	OBSERVER: TS, CC/ CL
ROCK NAME:	Sparsely plagioclase-clinopyroxene phyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		1.3					
Clinopyroxene	1	1	0.2	0.35	0.3	Euhedral-subhedral	Alteration along the edge and fractures
Plagioclase	0.2	0.3	0.2	0.25	0.22	Subhedral	Some replaced by albite
GROUNDMASS	98.7	98.7					
Clinopyroxene						Subhedral	Partly replaced by chlorite
Plagioclase						Subhedral-anhedral, skeletal-acicular, interstitial	Some are replaced by albite. Two types: subhedral laths, and anhedral interstitial (crystallized with quartz)
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	8					Interstitial areas, clinopyroxene	75% in the inner halo, 45% in the outer halo
Albite	5					Replaces plagioclase	
Titanite	0.5					Interstitial areas,	Associated with chlorite, abundant (5%) in the alteration halo
Pyrite	0.5					Disseminated	
STRUCTURE :							
COMMENTS : POINT COUNTING 1000 PRIMARY MINERALS. Some plagioclase and clinopyroxene phenocrysts form glomeroporphyritic texture. Apatite in the anhedral plagioclase. Sulfides occurrence. / One 1.6 mm vein of (from edge to center) chlorite, pyrite, silica and minor prehnite, with a 1.6 mm thick alteration halo composed of a 0.3 mm inner halo which is 85 % recrystallized and an outer 1.3 mm which is 50% recrystallized (chlorite, titanite and albite).							



TS #113: 309-1256D-138R-1, 10-12 cm, Piece No: 2						Unit: 46A	OBSERVER: CC, SD/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holocrystalline, intergranular							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.2	0.2						
Plagioclase	0.2	0.2	0.17	0.23	0.18	Euhedral-subhedral	Fractured, altered. Rim are sometimes slightly zoned. Some phenocrysts include small laths of plagioclase or granular crystals of clinopyroxene.	
GROUNDMASS	99.8							
Plagioclase	54.6					Subhedral-anhedral, skeletal, acicular, bladed, tabular	Partially replaced by secondary minerals (chlorite, albite, locally pyrite). Two generations: subhedral laths and anhedral interstitial areas.	
Clinopyroxene	34.1					Subhedral	Some replaced by brownish/greenish secondary phyllosilicates (chlorite)	
Fe-Ti oxides	5.7					Euhedral-subhedral, skeletal	Titanomagnetite	
Mesostasis	5.4						Replacement of (glass?) and primary minerals by greenish-brownish chlorite.	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	0.5					Interstitial areas, locally replaces plagioclase		
Albite	0.5					Locally replaces plagioclase		
Pyrite	0.5					Disseminated, locally replaces plagioclase		
Chalcopyrite	0.02					Disseminated		
STRUCTURE :								
COMMENTS : POINT COUNTING OF 1000 PHENOCRYSTS AND GROUNDMASS. Some apatite needles in the interstitial areas of plagioclase. These interstitial plagioclase crystals partially enclose clinopyroxene grains and plagioclase laths. Some skeletal sulfides.								



TS #114: 309-1256D-138R-2, 29-31 cm, Piece No: 2a				Unit: 46A		OBSERVER: SD/TS, CL THIN SECTION: 114	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Hypocrystalline variolitic with a few intergranular areas						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
GROUNDMASS	100						
Plagioclase						Euhedral-anhedral bladed-skeletal-acicular	
Clinopyroxene						Subhedral-anhedral fibrous, tabular, bladed	Several bow-tie shaped crystals
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
Glass							Altered to green-brown chlorite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	8					Interstitial, vesicles	
Albite	0.5					Replaces plagioclase	
Titanite	0.3					Interstitial	
Pyrite	1					Small disseminated, and larger crystals replace plagioclase and clinopyroxene	Forms large spots including fresh pieces of plagioclase and clinopyroxene crystals
STRUCTURE :							
COMMENTS : Apatite present in anhedral plagioclase.							



TS #115: 309-1256D-139R-1, 48-50 cm, Piece No: 8			Unit: 46B			OBSERVER: CC, TS/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Holocrystalline, intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.4	0.5					
Plagioclase	0.1	0.2	0.17	0.22	0.18	Subhedral-anhedral	Some grains are rounded. Fractured, altered to chlorite, albite and sometimes resorbed.
Clinopyroxene	0.3	0.3	0.2	0.25	0.2	Subhedral	The grains can form aggregates with a contact angle of 120 degrees.
GROUNDMASS		99.5					
Plagioclase						Subhedral, skeletal-anhedral	Partially replaced by secondary minerals. Two generations: subhedral laths and anhedral interstitial areas.
Clinopyroxene						Subhedral	Some completely replaced by greenish secondary minerals
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
Mesostasis							Greenish/brownish interstitial areas (replacement of primary minerals).
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	7					Replaces plagioclase	
Titanite	1					Disseminated	
Albite	5					Replaces plagioclase	
Actinolite	0.1					Replaces clinopyroxene	Replaces and grows from clinopyroxene where in contact with the vein
Pyrite	1					Disseminated	
STRUCTURE :							
COMMENTS : 500 POINT COUNTING ON CHLORITE. Clinopyroxene phenocrysts form glomerocrysts either with other clinopyroxene or with plagioclase. Some apatite needles in the interstitial areas of plagioclase. These areas partially includes clinopyroxene laths and titanomagnetite grains. Occurrence of sulfides. Some finer variolitic patches disseminated in the intergranular groundmass./ One 0.2 mm thick vein of, from edge to center, chlorite (30%), quartz (60%), prehnite (10%).							



TS #116: 309-1256D-139R-1, 89-91 cm, Piece No: 17						Unit: 46B	OBSERVER: SD/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holocrystalline intergranular with a few variolitic areas							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.6							
Clinopyroxene	0.5		0.17	0.4	0.285	Euhedral-subhedral	Form glomeroporphyritic texture with plagioclase.	
Plagioclase	0.1		0.16	0.37	0.25	Euhedral-anhedral	Form glomeroporphyritic texture with clinopyroxene.	
GROUNDMASS	99.4							
Plagioclase						Euhedral-anhedral bladed-skeletal-acicular-fibrous		
Clinopyroxene						Subhedral-anhedral fibrous, tabular	Several bow-tie shaped crystals	
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	8					Interstitial		
Titanite	1					Disseminated		
Albite	1					Replaces plagioclase		
Pyrite	0.5					Disseminated		
Chalcopyrite	0.2					Disseminated		
Sphalerite	0.5					Disseminated	Close to the sphalerite bearing vein	
STRUCTURE :	1-2 cm wide deformation zone (A) cut by 3 mm wide cataclastic-ultracataclastic zone (B). Deformation zone (A) is characterized by brittle ductile structures: shear bands , dilational gashes and one sub-millimetric cataclastic layer. Parallel 0.1 mm wide shear bands occur every 1 mm. They are characterized by deformed chlorite and titanite grains and by pressure-solution related seams. Dilational gashes are filled with quartz, sphalerite and sulfide. Clast in the cataclastic layer are fractured primary and secondary minerals. (B) shows one irregular margin and one sharp and straight margin. It is composed of fine grained to cryptocrystalline material derived from the fracturing of the host rock. Carbonate, sulfide and very fine grained quartz are syntectonic.							
COMMENTS :	Vein network composed of three crosscutting generations of veins: (1) several parallel 0.6 mm thick veins of quartz, euhedral sphalerite, pyrite and minor chlorite, prehnite and calcium carbonate; (2) 1.5 mm cataclastic zone (light gray on hand specimen) composed of quartz, sphalerite and minor chlorite, and grading to highly altered basalt; (3) 3 mm thick vein of sphalerite, pyrite, quartz, minor prehnite and later calcium carbonate.							



TS #117: 309-1256D-140R-1, 75-79 cm, Piece No: 7		Unit: 47		OBSERVER: CC, TS/ CL			
ROCK NAME:	Aphyric microcrystalline and chilled margin clasts in volcanic breccia						
WHERE SAMPLED:	Complex brecciated dike contact						
GRAIN SIZE:	Microcrystalline clast and glassy-cryptocrystalline (altered glassy clast)						
TEXTURE:	Hypocrystalline variolitic (microcrystalline clast) and holohyaline spherulitic to hypocrystalline variolitic (completely altered glassy clast)						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Microcrystalline clast							
PHENOCRYSTS	0						
GROUNDMASS	100						
Plagioclase						Acicular, skeletal	
Clinopyroxene						Subhedral-anhedral, fibrous	Fibrous laths nucleate from plagioclase microlites.
Fe-Ti oxides						Euhedral-subhedral, skeletal	Very abundant small grains. Titanomagnetite. Some are probably secondary.
Glass							Spherulites are completely altered to greenish chlorite. In the inner part, greenish and brownish alteration.
Glassy clast							
PHENOCRYSTS	0.1	0.2					
Clinopyroxene	0.1	0.2	0.2	0.7	0.3	Subhedral	The grains form clusters. Partially altered to chlorite (in fractures and rims). Sometimes, broken in small grains.
GROUNDMASS		99.8					
Plagioclase						Subhedral, skeletal-acicular	Partially replaced by chlorite and albite.
Clinopyroxene						Subhedral	Completely replaced by greenish/brownish chlorite
Fe-Ti oxides						Euhedral-subhedral, skeletal	Very abundant grains. Titanomagnetite. Some are probably secondary.
Mesostasis							Glass and perhaps primary minerals completely altered to greenish secondary minerals (pleochroism: yellow-green).
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	60					Replaces clinopyroxene and plagioclase	
Albite	10					Replaces plagioclase	
Pyrite	2					Disseminated	
STRUCTURE :							
COMMENTS : The contact between the two rocks (microcrystalline and chilled margin) is masked by secondary veins. Such veins also disaggregate the clasts. A lot of euhedral sulfides (chalcopyrite, pyrite), some in veins and others disseminated in groundmass. In the chilled margin, the texture varies from spherulitic (but altered) in the outer part to cryptocrystalline in the inner part. In the chilled margin, probably secondary Fe-Ti oxides because they are concentrated close to the veins. Even if still cryptocrystalline, the groundmass of the microcrystalline clast does not show grain size variation toward the contact. /Vein network: the veins are 0.04-1.3 mm thick and composed by various combinations of the following minerals: chlorite (15), quartz (30), pyrite (25), chalcopyrite (20), prehnite (5), epidote (5). The basalt is highly altered where in contact with some of these veins and the boundary between vein and host-rock cannot be distinguished.							



TS #118: 309-1256D-141R-1, 30-35 cm, Piece No: 8						Unit: 48	OBSERVER: SD, CC / CL /
ROCK NAME:	Sparsely plagioclase-phyric cryptocrystalline basalt						
WHERE SAMPLED:	Chilled margin						
GRAIN SIZE:	Cryptocrystalline (inner part) and altered glass (outer part)						
TEXTURE:	Hypocrystalline variolitic (inner part) and hypohyaline spherulitic (outer part)						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.9	2.3					
Plagioclase	0.9	2.3	0.1	0.5	0.1	Euhedral-anhedral, bladed	Partially to completely altered to calcium carbonates. Sometimes a fresh rim is preserved.
GROUNDMASS	97.7	97.7					
Plagioclase						Subhedral-anhedral fibrous-acicular	Some partially altered to calcium carbonates.
Clinopyroxene						Anhedral fibrous, tabular	
Fe-Ti oxides						Subhedral-anhedral, skeletal	Titanomagnetite, Interstitial
Glass							Devitrified to spherulitic texture.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	30					Replaces glass, clinopyroxene and plagioclase groundmass, minor plagioclase phenocrysts	90% in the glassy margin grading to 1% to cryptocrystalline inner part
Titanite	4					Replaces plagioclase phenocrysts	8% in the glassy margin grading to 0.1% to cryptocrystalline inner part
Actinolite	10					Replacing groundmass clinopyroxene	5% in the glassy margin grading to 15% to cryptocrystalline inner part
Albite	0.2					Replaces plagioclase phenocrysts	
Quartz	1					Interstitial	
Calcium carbonate	1					Replaces plagioclase phenocrysts	
Prehnite	0.05					Amygdale	
Pyrite	3					Amygdale, replacing all minerals	0.2-1 mm spots
Chalcopyrite	0.1					Disseminated and replaces plagioclase phenocrysts	
STRUCTURE :							
COMMENTS : Large altered patch in glassy area (~12.0 mm). Small spherulite patches (up to 0.15 mm) in glassy matrix within chilled margin. Spherulitic layer marks the boundary between glassy matrix and microcrystalline variolitic texture. / The amount of secondary minerals is directly related to the distance to the glassy rim, i.e. to the size of the groundmass crystals. The general color of the groundmass is green, due to chlorite and actinolite, with numerous white 0.3 mm white spots due to interstitial quartz (instead of chlorite). These light spots are clearly seen on hand specimen. Several 0.05-0.1 mm veins of quartz. One 0.01 mm discontinuous and sinuous vein of calcium carbonate, grading to a chlorite, quartz, titanite and calcium carbonate alteration patch. One 5 x 2 mm alteration patch in the glassy margin, composed of the same minerals as the previously described patch.							



TS #119: 309-1256D-141R-1, 48-51 cm, Piece No: 11						Unit: 48	OBSERVER: SD; CC/ LG	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Holocrystalline variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS								
GROUNDMASS	100							
Plagioclase						Euhedral-anhedral bladed-skeletal-acicular	Some crystals are resorbed.	
Clinopyroxene						Subhedral-anhedral fibrous, tabular, bladed	Curved fibrous and granular crystals, Some crystals are resorbed.	
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	35					Plagioclase and clinopyroxene in the groundmass		
Albite	10					Replaces plagioclase		
Actinolite	3					Groundmass	In needles, associated with chlorite	
Pyrite	0.2					disseminated	both euhedral and irregular grains	
STRUCTURE :								
COMMENTS : Sulfides present. Apatite needles in plagioclase grains. Occurrence of 0.5 mm thick vein of chlorite associated with minor needles of actinolite and titanite. Occurrence of 3 mm irregular pyrite vein.								



TS #120: 309-1256D-142R-1, 58-63 cm, Piece No: 7			Unit: 48			OBSERVER: JG/ CL	
ROCK NAME:	Aphyric fine grained basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Fine grained						
TEXTURE:	Holocrystalline doleritic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
GROUNDMASS		94					
Plagioclase	10	60	0.3	0.5	0.2	Subhedral-euhedral laths	Strongly altered and partly replaced by chlorite
Clinopyroxene	10	30	0.1	0.7	0.4	Subhedral	Subophitic
Olivine	0	4	0.2	0.2	0.2	Euhedral, subhedral	Always replaced by chlorite
Fe-Ti oxide	6				0.1	Subhedral	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	18					Replaces olivine and plagioclase	10 to 25% according to the area of the slide
Magnetite	0.05					Replaces olivine	Associated with chlorite
Titanite	1					Interstitial areas	Often associated with chlorite
Actinolite	0.5					Replaces and grows from clinopyroxene	
Prehnite	4					Interstitial areas, replaces olivine and plagioclase	Colorless or pale brown
Albite	15					Replaces plagioclase	
Epidote	0.2					Replaces plagioclase	Isolated pistacite crystals
Quartz	1					Interstitial areas	Associated with prehnite
Pyrite	0.01					Disseminated	
STRUCTURE :							
COMMENTS : There seems to be a slight variation in grain size of plagioclase and clinopyroxene (with grain sizes decreasing towards the lower left of the section).							



TS #121: 309-1256D-142R-1, 119-121 cm, Piece No: 14b			Unit: 48			OBSERVER: JG; CC/ CL	
ROCK NAME:		Aphyric fine-grained dolerite					
WHERE SAMPLED:		Interior of a massive unit					
GRAIN SIZE:		Fine grained					
TEXTURE:		Doleritic					
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
CONSTITUENT MINERALS		100	min.	max.	av.		
Clinopyroxene		42.4	0.08	0.6	0.2	Subhedral-euhedral	Often subophitic , some show alteration rims
Plagioclase		44.3	0.05	0.4	0.15	Subhedral laths	Shows alteration
Olivine	0	5	0.2	0.3	0.25	Euhedral-subhedral	Completely altered to a chlorite
Fe-Ti oxides	9	8.3				Skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	18					Interstitial, replaces olivine and some clinopyroxene	
Titanite	4					Disseminated	
Actinolite	0.05					Growing from clinopyroxene	Locally, thin needles
Prehnite	3					Interstitial areas, replaces plagioclase	Either colorless or pale brown
Albite	6					Replaces plagioclase	
Epidote	0.05					Replaces plagioclase, clinopyroxene	Pistachite
Pyrite	0.4					Disseminated	
Chalcopyrite	0.001					Disseminated	
Magnetite	0.01					Replaces olivine	
Green unidentified mineral	0.02					Replaces plagioclase	Associated with epidote. Pumpellyite??
STRUCTURE :							
COMMENTS : POINT COUNTING OF CONSTITUENT MINERALS (1000 Points). 500 POINT COUNTING ON CHLORITE. One corner of the slide is highly (60%) altered, particularly abundant chlorite.							



TS #122: 309-1256D-142R-2, 71-74 cm, Piece No: 3b		Unit: 48				OBSERVER: CC, JG/ CL	
ROCK NAME:	Aphyric cryptocrystalline basalt and sparsely clinopyroxene-plagioclase phyric cryptocrystalline basalt						
WHERE SAMPLED:	Interior of massive basalt (xenolith?)						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Holocrystalline variolitic-intergranular to doleritic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Cryptocrystalline host rock							
PHENOCRYSTS	0						
GROUNDMASS	100						
Plagioclase						Subhedral, skeletal	
Clinopyroxene						Subhedral-anhedral	The larger microlites partially includes laths of plagioclase.
Fe-Ti oxides						Euhedral-subhedral, skeletal	Very abundant grains. Titanomagnetite. Some are probably secondary.
Xenolith							
PHENOCRYSTS	2.7	3.4					
Plagioclase	2.7	2.7	0.1	0.5	0.2	Euhedral, bladed	Green alteration in fractures. A few resorbed.
Clinopyroxene	0	0.7	0.25	0.4	0.3	Subhedral	Completely altered to chlorite and to opaques.
GROUNDMASS		96.6					
Plagioclase						Subhedral, skeletal	Very low abundance.
Clinopyroxene						Anhedral	Very small rounded grains. Recrystallization?
Fe-Ti oxides						Subhedral, skeletal	Very abundant grains. Titanomagnetite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	1					Replaces olivine, plagioclase	More abundant in coarser grained basalt
Magnetite	0.02					Replaces olivine	
Titanite	0.02						
Albite	0.5					Replaces plagioclase	
Epidote	0.01					Replaces plagioclase	Isolated pistachite crystals
Actinote	1					Growing from clinopyroxene when in contact with the vein	
STRUCTURE :							
COMMENTS :							



TS #123: 309-1256D-143R-1, 34-38 cm, Piece No: 7			Unit: 48			OBSERVER: CC, TS/ CL// PT	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric glassy to cryptocrystalline basalt						
WHERE SAMPLED:	Chilled margin adjacent to secondary vein						
GRAIN SIZE:	Altered glassy to cryptocrystalline						
TEXTURE:	Hypohyaline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Plagioclase	3	4.2				Euhedral-subhedral	Some are completely replaced by chlorite. Others are only partially replaced along fractures.
Clinopyroxene	3	3.5	0.1	0.3	0.2	Subhedral	
	0	0.7	0.15	0.4	0.2		
GROUNDMASS		95.8					
Plagioclase						Subhedral, skeletal-acicular	Two generations of microlites: larger ones (0.03 mm), subhedral to acicular laths, and smaller ones (less than 0.01 mm), acicular laths which form varioles. The larger laths are totally altered to chlorite in some cases.
Clinopyroxene						Fibrous, anhedral	Fibrous clinopyroxenes crystallizing from plagioclase microlites.
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite. Small grains, larger grains are sulfide (pyrite and chalcopyrite)
Glass							Completely altered to chlorite in the outer part, black in the intermediate part and interstitial tachylytic in the inner part.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	6					Replaces glass, plagioclase, clinopyroxene or olivine	Mainly replaces glass
Magnetite	0.5					Replaces clinopyroxene or olivine	
Titanite	0.05					Replaces clinopyroxene or olivine	
Albite	0.5					Replaces plagioclase	
Prehnite	0.5					Replaces plagioclase	
Pyrite	0.01					Replaces plagioclase	Disseminated
STRUCTURE :	Chilled margin is in contact with a cataclastic zone consisting of rounded clasts of quartz and feldspar (< mm), subrounded clasts of altered variolitic basalt (2 - 3 mm), opaque minerals, titanite; the matrix is made up of clay minerals, anhydrite. Clasts show shape preferred orientation parallel to the chilled contact. The contact between the chilled basalt and the cataclastic zone is outlined by a 1 mm wide zone (replacing the outer chilled border?) with clay minerals and opaque seams indicating shear structures. Set of orthogonal thin veins filled with clay minerals cut the chilled margin.						
COMMENTS :	POINT COUNTING FOR 1000 PRIMARY MINERALS. From the outer part to the inner one, the texture varies gradually: glass completely altered to green then brownish phyllosilicates (chlorite), black glass with a few phenocrysts and a few aggregates of plagioclase microlites (0.3-0.4 mm wide), then microlites become more abundant toward the inner part and varioles becomes coalescent, in this zone the glass is interstitial. Plagioclase and clinopyroxene phenocrysts can form glomerocrysts. Occurrence of sulfides in the groundmass. /3 mm thick vein parallel to the chilled margin and including a clast of the chloritized chilled margin; this vein is composed of quartz (40%), chlorite (38%), pyrite (10%), titanite (2%), anhydrite (5%) and prehnite (5%, locally replacing quartz). Several 0.1 mm veins of chlorite and minor titanite, chalcopyrite and pyrite.						



TS #124: 309-1256D-143R-2, 8-11 cm, Piece No: 2			Unit: 49			OBSERVER: TS, CC/ LG	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Near bottom of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	0.6					
Olivine	0	0.2				Subhedral	Completely replaced by saponite/chlorite and opaques.
Plagioclase	0.1	0.4	0.1	0.4	0.15	Subhedral	Altered to chlorite in the inner part.
GROUNDMASS		99.4					
Clinopyroxene						Subhedral-anhedral, dendritic-fibrous	Two generations: subhedral grains and fibrous laths that crystallized from plagioclase microlites.
Plagioclase						Subhedral-anhedral, skeletal-interstitial	Two types: subhedral lath and anhedral area that crystallized with quartz.
Fe-Ti oxides						Euhedral-subhedral	Titanomagnetite
Mesostasis							Green interstitial patches (chlorite, saponite), resulting from primary mineral alteration
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/chlorite						Groundmass	
Titanite	0.2					disseminated	
Pyrite	0.3					disseminated	irregular grains
STRUCTURE :							
COMMENTS :							
	Apatite in the anhedral plagioclase. Occurrence of two irregular chlorite amygdales, one of which replaces plagioclase phenocryst. Circular dark grey patch (2.3 mm diameter) associated with an irregular and empty vesicle.						



TS #125: 309-1256D-144R-1, 104-106 cm, Piece No: 19			Unit: 50			OBSERVER: CC, TS/ CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, doleritic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYST	0						
GROUNDMASS	100						
Clinopyroxene			0.05	0.8	0.6	Subhedral-anhedral	Altered to brownish minerals. The largest ones partially include laths of plagioclase and smaller clinopyroxene grains.
Plagioclase			0.03	0.2	0.15	Subhedral-anhedral, skeletal-interstitial	Two types: subhedral lath and anhedral area that crystallized with quartz. In the subhedral laths, alteration to chlorite along fractures.
Fe-Ti oxides			0.06	0.13	0.1	Euhedral-subhedral	Titanomagnetite
Olivine			0.2	0.6	0.3	Subhedral	Completely replaced by chlorite and chalcopyrite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	3					Replaces olivine and partly plagioclase	
Titanite	0.3					Interstitial, replaces olivine	
Actinolite	0.1					Growing from clinopyroxene	
Albite	2					Replaces plagioclase	
Chalcopyrite	0.001					Replaces olivine	
Pyrite	0.2					Disseminated	
STRUCTURE :							
COMMENTS : Apatite in the anhedral plagioclase. Occurrence of pyrite. The euhedral shape of olivine is not always evident, so we do not rule out that it is altered clinopyroxene in some cases.							



TS #126: 309-1256D-145R-1, 48-51 cm, Piece No: 2g			Unit: 50			OBSERVER: CC, JG/ LG	
ROCK NAME:	Sparsely olivine-plagioclase-clinopyroxene phyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		2.5					
Plagioclase	1	1	0.1	0.2	0.15	Subhedral	
Clinopyroxene	1.3	1.3	0.2	0.85	0.3	Euhedral-subhedral	Some partially or totally include small laths of plagioclase. One contains a rounded core of clinopyroxene with a different birefringence (previous resorbed crystal?).
Olivine	0	0.2	0.45	0.55	0.55	Subhedral	Completely replaced by chlorite/saponite and titanomagnetite.
GROUNDMASS		97.5					
Clinopyroxene						Subhedral	Some are partially altered to brownish chlorite.
Plagioclase						Subhedral-anhedral, skeletal	Two types: subhedral laths and anhedral interstitial areas.
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Saponite/chlorite	0.5					Groundmass, olivine phenocrysts	
Chlorite						Vesicles, replaces clinopyroxene in the groundmass, interstitial	
Quartz	0.3					Replaces plagioclase, fills vesicles	fills vesicles together with chlorite/smectite and actinolite needles
STRUCTURE :							
COMMENTS : POINT COUNTING FOR 1000 PHENOCRYSTS. Phenocrysts of plagioclase and clinopyroxene form glomerocrysts. A few sulfides (pyrite and chalcopyrite) disseminated in the groundmass. Apatite needles in the interstitial areas of plagioclase.							



TS #127: 309-1256D-145R-2, 51-55 cm, Piece No: 7			Unit: 50			OBSERVER: JG, TS / LG, CL /	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
MICROPHENOCRYSTS		4					
Clinopyroxene	2	2	0.3	0.6	0.4	Subhedral	Often show resorbtion, alteration
Plagioclase	1	1	0.2	0.5	0.3	Subhedral laths	Show alteration
Olivine	0	1	0.2	0.3	0.2		Completely altered to chlorite/saponite/magnetite
GROUNDMASS		96					
Plagioclase						Subhedral laths, anhedral-skeletal	
Clinopyroxene						subhedral-anhedral	Variable to completely altered
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	5					Replaces olivine, interstitial areas. Groundmass	
Albite	3					Replaces plagioclase	
Actinolite	3					Replaces clinopyroxene	As needles, associated or not with chlorite
Titanite	0.1					disseminated	
Magnetite	0.1					Replaces olivine or clinopyroxene	Associated with chlorite/saponite where replacing olivine or clinopyroxene
Pyrite	0.1					disseminated	
Chalcopyrite	0.1					disseminated	
STRUCTURE :							
COMMENTS : Due to the high degree of alteration of the intersertal material it is not clear if some of these areas originally formed as hypocrystalline mesostasis or small clinopyroxenes. Predominantly the rock is holocrystalline.							



TS #128: 309-1256D-146R-2, 62-64cm, Piece No: 1						Unit: 50	OBSERVER: JG;TS/ CL// LC , PT
ROCK NAME:	Sparsely plagioclase-clinopyroxene phyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, variolitic-heterogranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		3.5					
Clinopyroxene	3	3	0.2	0.8	0.4	Euhedral-subhedral	Frequently shows alteration along fractures/cleavages or at rims (chlorite)
Plagioclase	0.5	0.5	0.2	0.4	0.25	Bladed	Altered and partly replaced
GROUNDMASS		96.5					
Plagioclase	35	40				Subhedral-bladed, some are anhedral-dentritic	An original arrangement of varioles is still preserved in some areas.
Clinopyroxene	20	45				Anhedral	Generally altered
Fe-Ti oxides	5	5				Subhedral	Titanomagnetite
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Chlorite	0.1				Interstitial, replaces clinopyroxene	30% in alteration halo	
Titanite	0.5				Interstitial	5% in alteration halo	
Actinolite	0.1				Replaces clinopyroxene	Finely associated with chlorite. 10% in alteration halo	
Albite	1				Replaces plagioclase	5% in alteration halo	
Pyrite	0.8				Disseminated		
Chalcopyrite	0.01				Disseminated		
STRUCTURE :	One 2-3 mm wide composite vein. Anhydrite crystals form domino structures lined by opaque minerals and chlorite with sinistral /normal sense of shear respect to the reference frame. Quartz is dynamically recrystallized and shows wavy extinctions. Actinolite, fibrous crystals are locally bent.						
COMMENTS :	Some areas of chlorite could represent pseudomorphs of olivine but no unambiguous euhedral shape is recognized. The section is cut by three veins containing a variety of secondary minerals: / One, 1-3 mm thick vein of (from edge to center) actinolite, chlorite, anhedral and subhedral pyrite, large anhydrite slabs, quartz and prehnite. Another, 1.2 mm thick alteration halo adjacent to this vein, where the basalt is 60% altered into chlorite, actinolite and albite. Several parallel 0.2-0.4 mm veins of chlorite, titanite, pyrite and quartz.						



TS #129: 309-1256D-146R-3, 111-113 cm, Piece No: 11b						Unit: 50	OBSERVER: CC, JG/ LG	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	2.9	2.9						
Plagioclase	1.7	1.7	0.15	0.3	0.2	Subhedral	Some are partially replaced by secondary minerals.	
Clinopyroxene	1.2	1.2	0.2	1	0.6	Euhedral-subhedral	Partially or totally including small laths of plagioclase.	
GROUNDMASS		97.1						
Clinopyroxene						Anhedral-fibrous	Two types: anhedral grains and more generally fibrous laths that grow from the plagioclase microlites.	
Plagioclase						Subhedral-anhedral, acicular, skeletal	Two types: subhedral laths and anhedral interstitial areas.	
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Saponite/chlorite						Groundmass, clinopyroxene phenocrysts.		
Chlorite	0.2					Vesicles, amygdale	Max 0.4 mm diameter	
Titanite	0.05					Disseminated	In groundmass and associated with chlorite vesicles	
Albite	0.05					Plagioclase phenocrysts		
Pyrite	0.01					Disseminated		
STRUCTURE :								
COMMENTS :	POINT COUNTING FOR 1000 PHENOCRYSTS. Phenocrysts of plagioclase and clinopyroxene form glomerocrysts. A few sulfides (pyrite and chalcopyrite) disseminated in the groundmass. Perhaps one phenocryst of olivine (0.55 mm), completely pseudomorphosed to chlorite/saponite. However, the shape is a not really euhedral, and the crystal includes a rectangular area of groundmass.							



TS#130: 309-1256D-147R-1, 75-77 cm, Piece No: 16			Unit: 51			OBSERVER: SD, TS/LG/ HL	
ROCK NAME:	Aphyric fine-grained dolerite						
WHERE SAMPLED:	Interior of Massive unit						
GRAIN SIZE:	Fine grained						
TEXTURE:	Holocrystalline seriate						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
CONSTITUENT MINERALS	60.6	100					
Plagioclase	30	57.6	0.1	0.5	0.2	Euhedral-anhedral laths	Many crystals are resorbed both around rim and within the grain. Slightly zoned rims in some crystals. Some are completely altered to chlorite/saponite.
Clinopyroxene	15	23.7	0.05	0.8	0.2	Subhedral-anhedral	Many are resorbed and show ophitic to subophitic texture. Some are replaced by chlorite.
Fe-Ti oxides		3.1	0.05	0.3	0.15	Euhedral to subhedral	Contain small fragments of altered material and darker isotropic minerals (exsolution?).
Mesostasis	15.6	15.6					Composed of broken down plagioclase, clinopyroxene, titanomagnetite and altered glass (saponite?) in very small amounts.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/Sap	10					Clinopyroxene, plagioclase	
Albite	5					Plagioclase	
Pyrite	0.5					Disseminated	Associated with chlorite/mesostasis
Chalcopyrite	0.01					Disseminated	
STRUCTURE :							
COMMENTS : 1000 POINT COUNTING OF CONSTITUENT MINERALS. Sulfides present. Small pieces of glass, mostly in the altered patches within crystals. Possible presence of pigeonite but distinction is difficult because augite consists of a wide range of interference colors, from high order to low order and 2V cannot be positively identified on these crystals.							



TS #131: 309-1256D-149R1, 8-10cm, Piece No: 3						Unit: 52A/B	OBSERVER: JG, SD / CL	
ROCK NAME:	Aphyric cryptocrystalline basalt / glassy margin							
WHERE SAMPLED:	Contact 52A against 52B							
GRAIN SIZE:	Cryptocrystalline / glassy							
TEXTURE:	Variolitic-axiolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
Cryptocrystalline basalt of Unit 52A								
PHENOCRYSTS	0.1							
Clinopyroxene	0.1		0.3	0.5	0.4	Euhedral-subhedral		
GROUNDMASS	99.9							
Clinopyroxene	75					Anhedral, fibrous-branching		
Plagioclase	20					1) Subhedral, skeletal laths and 2) fine needles, accicular	Some laths are hollow	
Fe-Ti oxides	5					Euhedral-subhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	0.5					Clinopyroxene, minor plagioclase	5% in alteration halo	
Actinolite	1					Clinopyroxene	40% in alteration halo	
Albite	1					Plagioclase	10% in alteration halo	
Titanite	4					Disseminated	5% in alteration halo	
Pyrite	1					Disseminated	7% in alteration halo	
Chalcopyrite	0.1					Disseminated	0% in alteration halo	
Glassy margin of Unit 52B								
MICROPHENOCRYSTS		0.2						
Plagioclase		0.2	0.1	0.1	0.1	Subhedral		
GROUNDMASS		99.3						
Glass		99.8					Shows small spherulitic devitrification nuclei. In parts tachylitic. Larger opaque flakes in the tachylitic glass probably secondary sulfides.	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	49					Glass		
Actinolite	48					Glass		
Pyrite	3					Disseminated	In the central part of the glass finger	
STRUCTURE :	The contact between glassy portion and the host basalt is lined by alteration halo consisting of clay minerals and opaque minerals. Irregular apophyses of the halo intrude the glass. The glassy part is cut by veins filled with clays, amphibole and opaque with local stepped morphology marked by opaque mineral aggregates.							
COMMENTS :	At the contact between both sides of the chilled glass finger of Unit 52B and 52A, occurrence of a 0.1 mm vein of chlorite, pyrite and quartz, bifurcating into several chlorite and actinolite veins crosscutting the chilled margin. These two veins grade to a single 8 mm thick chlorite, titanite actinolite, pyrite, quartz, very minor epidote and prehnite vein at the front of the finger, which also include glassy and crystalline clasts. 1.3 mm alteration halo adjacent to the 8 mm vein.							



TS #132: 309-1256D-149R-1, 54-56 cm, Piece No: 11a			Unit: 52B			OBSERVER: CC, TS / CL// PT	
ROCK NAME:	Sparsely plagioclase phyric cryptocrystalline basalt						
WHERE SAMPLED:	Dike margin						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		1.1					
Plagioclase	0.8	1.1	0.1	0.4	0.3	Subhedral	Partially replaced by green/brown chlorite.
GROUNDMASS		98.9					
Plagioclase						Acicular, skeletal	
Clinopyroxene						Anhedral-fibrous	Fibrous laths grow from the plagioclase microlites.
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite. Small grains in the tachylytic glass.
Glass							Tachylytic
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.3					Replaces plagioclase	
Albite	0.2					Replaces plagioclase	
Prehnite	0.3					Replaces plagioclase	
Quartz	0.5					Amygdales	
Actinolite	0.05					Growing from clinopyroxene	In contact with veins
Pyrite	0.05					Disseminated	
STRUCTURE :	Veins filled with chlorite (along vein wall) and quartz (vein center) show stepped morphology. Infilling quartz may occur in slightly elongated crystals oblique to the vein wall.						
COMMENTS :	POINT COUNTING FOR 1000 PHENOCRYSTS. Textural and modal layering: variolitic plagioclase-rich (0.3-0.6 mm wide) and tachylytic glass (0.3-0.4 mm wide) planar layers. The microlites of plagioclase are sometimes preferentially oriented in the plagioclase-rich layers. Some small pyrite disseminated in the groundmass. / One 0.2-0.6 mm vein of (from edge to center) chlorite, titanite, pistacite, (minor), quartz, pyrite. Several 0.4 mm thick vein of chlorite (minor) chlorite and quartz. These veins crosscut each others, without clear relationship.						



TS #133: 309-1256D-149R-1, 76-78 cm, Piece No: 16			Unit: 52A			OBSERVER: CC, TS / CL// PT	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Vein network						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
PHENOCRYSTS			min.	max.	av.		
Plagioclase	0	0.3	0.1	0.25	0.13	Euhedral-subhedral	Completely replaced by secondary minerals (prehnite, albite, chlorite)
GROUNDMASS		99.7					
Plagioclase						Subhedral, acicular, skeletal	
Clinopyroxene						Anhedral-fibrous	Fibrous laths grow from the plagioclase microlites. Completely altered.
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite. Very small grains in the altered glass.
Glass							Altered (brownish chlorite).
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	70					Replacing glass, minor clinopyroxene	
Albite	0.3					Replaces plagioclase	
Prehnite	0.5					Replaces plagioclase	
Calcium carbonate	20					Replacing glass	Spectacular replacement in a portion of the slide
Pyrite	0.2					Disseminated	
STRUCTURE :	Tension gashes filled with chlorite cut through zeolite vein and suggest a sinistral sense of shear. Thin shear zones cut the veins in top-bottom direction.						
COMMENTS :	The magmatic features are preserved only in the lower east part of the thin section. The outer part of the clast is altered over 1 mm. Pyrite in the groundmass. Some apatite needles in secondary anhedral patches of plagioclase. / Two thirds of the slide is composed of pieces of completely altered glass separated and a cement made of chlorite, quartz, abundant euhedral pyrite, prehnite (minor), epidote (minor), anhydrite, large slab of zeolite (heulandite? laumontite?), late calcium carbonate. 0.05 mm veins of calcium carbonate where basalt replaced by calcium carbonate.						



TS #134: 309-1256D-149R-1, 93-98 cm, Piece No: 19						Unit: 52A-B	OBSERVER: CC, TS / CL	
ROCK NAME:	Aphyric cryptocrystalline basalt and dike chilled margin							
WHERE SAMPLED:	Dike contact							
GRAIN SIZE:	Cryptocrystalline (host rock) and glassy (dike chilled margin)							
TEXTURE:	Hypocrystalline, variolitic (host rock) and hypohyaline spherulitic (dike)							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
Host rock								
PHENOCRYSTS		0.8						
Plagioclase	0	0.8	0.13	0.25	0.15	Euhedral-subhedral	Completely replaced by secondary minerals (chlorite, albite, prehnite).	
GROUNDMASS		99.2						
Plagioclase						Subhedral, acicular, skeletal		
Clinopyroxene						Anhedral-fibrous	Fibrous laths grow from the plagioclase microlites.	
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite. Small grains in the tachylytic glass.	
Glass							Tachylytic	
Dike								
PHENOCRYSTS		0.9						
Plagioclase	0.3	0.7	0.05	0.25	0.1	Euhedral-subhedral	Elongated laths (length up to 1 mm). Partially replaced.	
Clinopyroxene	0.2	0.2	0.3	0.4	0.4	Subhedral		
GROUNDMASS		99.1						
Plagioclase						Acicular, fibrous		
Clinopyroxene						Subhedral, bleb		
Glass							Spherulitic to tachylytic. The spherulite are less well-shaped than for the flow chilled margin	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Host rock								
Chlorite	0.1					Plagioclase		
Albite	0.1					Plagioclase		
Calcium carbonate	0.1					Plagioclase		
Prehnite	0.1					Plagioclase		
Dike								
Chlorite	10					Glass. Plagioclase		
Albite	0.1					Plagioclase		
Prehnite	0.1					Plagioclase		
Titanite	3					Glass		
Magnetite	3					Glass		
STRUCTURE :								
COMMENTS :								
The contact is marked by a thick vein. In the host rock, disseminated patches of tachylytic glass in the variolitic groundmass. Some thin veinlets cut some plagioclase phenocrysts without displacement. The outer part of the chilled margin (1.2 to 10 mm wide) is apparently completely altered to chlorite. The contact is slightly curved and ruptured by pieces of black material or pieces of host rock. A 0.8mm-large, angular xenolith of the host rock is found in the outer part of the chilled margin. The chilled margin shows modal and textural layering with plagioclase+clinopyroxene-rich layers (planar to slightly curved) and spherulitic glassy layers. In the microlites-rich layers, the crystals are oriented parallel to the chilled margin. / The 1-10 mm vein at the dike contact is composed of, from edge to center, actinolite and chlorite dusty-like fine assemblage, chlorite, euhedral quartz (very partially replaced by prehnite), abundant euhedral pyrite chalcopyrite, prehnite (locally abundant) and minor epidote. 2 mm composite alteration halo (30-60% recrystallized) adjacent to this vein In the dike, one 0.1 mm vein of very minor quartz and abundant prehnite and later calcium carbonate. In the dike, 0.2 mm vein of quartz and pyrite. In the dike, 0.02 mm vein of chlorite, actinolite and titanite crosscut by a chlorite, pyrite, quartz vein. In the host rock, one 0.5 mm vein of chlorite and actinolite.								



TS #135: 309-1256D-150R-1, 8-10 cm, Piece No: 3a			Unit: 52A			OBSERVER: CC, TS, SD; CL	
ROCK NAME:	Aphyric fine-grained unit						
WHERE SAMPLED:	Interior of a massive dolerite						
GRAIN SIZE:	Fine grained						
TEXTURE:	Holocrystalline, doleritic/symplectitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	0.2					
Plagioclase	0.1	0.2	1	1	1	Subhedral	Highly fractured, brownish alteration to actinolite-chlorite-prehnite
CONSTITUENT MINERALS		99.8					
Plagioclase	58		0.1	0.4	0.18	Subhedral-anhedral, acicular, skeletal-interstitial	Many parts are replaced. Two types: subhedral laths and anhedral, interstitial area with intergrowths of quartz. Some laths are very elongated (3mm).
Clinopyroxene	33.8		0.02	0.5	0.21	Subhedral-anhedral, elongated-dendritic	Many parts are replaced by chlorite-actinolite
Fe-Ti oxides	8		0.01	0.3	0.15	Euhedral-subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	8					Interstitial, replacing minor clinopyroxene and plagioclase	
Actinolite	15					Replaces clinopyroxene	Can be with chlorite
Albite	15					Replaces plagioclase	
Titanite	3					Disseminated	
Prehnite	1					Replaces plagioclase	
Pyrite	0.3					Disseminated	
STRUCTURE :							
COMMENTS : POINT COUNTING OF 1000 PRIMARY MINERALS. Frequent symplectite intergrowth of plagioclase around vermicular clinopyroxene. Apatite needles in anhedral areas of plagioclase. / Several 0.2 mm discontinuous veins of chlorite and minor actinolite protruding from the host rock clinopyroxene. One 0.5-1.2 mm vein of euhedral quartz and minor chlorite and prehnite.							



TS #136: 309-1256D-151R-1, 7-10 cm, Piece No: 2		Unit: 52C				OBSERVER: CC, TS/ LG/ PT	
ROCK NAME:	Sparsely plagioclase-clinopyroxene phyric cryptocrystalline basalt						
WHERE SAMPLED:	Dike						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Holocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	1	1.4					
Clinopyroxene	0.7	0.7	0.3	0.42	0.4	Euhedral-subhedral	
Plagioclase	0.3	0.7	0.15	0.3	0.2	Subhedral	Partly to completely altered to chlorite/saponite, quartz
GROUNDMASS		98.6					
Plagioclase						Subhedral-anhedral, acicular, skeletal	Two types: subhedral laths and more rarely interstitial anhedral areas that can include small grains of clinopyroxene
Clinopyroxene						Subhedral-anhedral, fibrous	Two types: subhedral laths/grains or fibrous crystals growing from the plagioclase microlites.
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite/saponite	3					Replaces plagioclase phenocrysts and plagioclase and clinopyroxene in groundmass	
Actinolite	0.2					Replaces clinopyroxene	From the edge of clinopyroxene, mainly at the contact with chlorite/quartz vein
Quartz	0.5					Replaces plagioclase	Often associated with chlorite
Chalcopyrite	0.05					Disseminated	Mainly in chlorite/quartz vein
Pyrite	0.1					Disseminated	Mainly in chlorite/quartz vein
Titanite	0.1					Disseminated	Mainly associated with chlorite in the chlorite/quartz vein, but also in groundmass.
STRUCTURE :	Quartz-chlorite vein has a composite texture: fine-grained quartz along the vein wall and chlorite + amphibole + coarse-grained quartz in the vein center. Coarse-grained quartz shows dynamic recrystallization.						
COMMENTS :	POINT COUNTING OF 1000 PRIMARY MINERALS. Plagioclase and clinopyroxene form glomerocrysts with including relations. Some large anhedral pyrite (0.4 mm) disseminated in the groundmass. / Occurrence of 0.6 mm thick vein of chlorite, quartz, titanite, pyrite, and chalcopyrite with both large and euhedral quartz grains (up to 0.3 mm diameter) and small grains. Chlorite is associated with actinolite needles.						



TS #137: 309-1256D-153R-1, 122-125 cm, Piece No: 24		Unit: 53A				OBSERVER: CC, TS/ CL / PT, LC	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0						
MICROPHENOCRYSTS	0.1	0.1					
Plagioclase	0.1	0.1	0.15	0.3	0.3	Subhedral	Fractured, development of greenish alteration in fractures (chlorite, albite).
GROUNDMASS	99.9						
Plagioclase						Subhedral-anhedral, acicular, skeletal	Two types: subhedral laths and interstitial anhedral areas with intergrowths of quartz.
Clinopyroxene						Subhedral, fibrous	Two types: subhedral grains or fibrous crystals growing from the plagioclase microlites. The fibrous laths are altered to greenish/brownish actinolite.
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	3					Replaces minor plagioclase	50% in inner halo, 30% in outer halo
Albite	8					Replaces plagioclase	0% in inner halo, 8% in outer halo
Actinolite	8					Replaces clinopyroxene	43% in inner halo, 43% in outer halo
Titanite	0.5					Disseminated	7% in inner halo,
Pyrite	0.2					Disseminated	
Chalcopyrite	0.01					Disseminated	
STRUCTURE :	3 mm wide composite vein with irregular margin. At least two steps of growth:1) is characterized by fibrous amphibole, chlorite, titanite and albite. Amphibole is locally bent and oriented parallel to the vein wall. Titanite grains are organized in trails parallel to the vein wall. 2) mostly quartz and chlorite. Veins is deformed by boudinage, boudins consisting of coarse-grained quartz and sulfide. Quartz is dynamically recrystallized.						
COMMENTS :	One 2 mm thick vein composed of (from edge to center) chlorite, titanite, chlorite, pyrite,(30%) euhedral quartz (60%), minor epidote, anhydrite, prehnite and actinolite.						



TS #138: 309-1256D-153R-2, 3-6 cm, Piece No: 1						Unit: 53A	OBSERVER: TS, SD/CL / PT	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Hypocrystalline, intergranular							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
GROUNDMASS	100	100						
Plagioclase						Subhedral-anhedral , skeletal-acicular	Some altered	
Clinopyroxene						Subhedral-anhedral, dendritic-fibrous	Most altered	
Mesostasis						Interstitial	Probably altered clinopyroxene, olivine, and glasses	
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	2					Interstitial, olivine?	8% in the alteration halo	
Actinolite	1					Clinopyroxene	35% in the alteration halo	
Titanite	4					Disseminated	5% in the alteration halo	
Albite	8					Plagioclase	10% in the alteration halo	
Chalcopyrite	0.5					Disseminated	0% in the alteration halo	
Pyrite	0.1					Disseminated	0.1% in the alteration halo	
STRUCTURE :	Quartz filling the vein show dynamic recrystallization (wavy extinctions, subgrains).							
COMMENTS :	One 0.6-1 mm vein of (from edge to center) chlorite and actinolite fine grained assemblage, quartz, pyrite, minor chalcopyrite and very minor prehnite (and pumpellyite?), with a 1 mm alteration halo. One up to 5 mm very irregular alteration (chlorite, albite, pyrite) patch, containing only 10% primary minerals in the most altered part.							



TS #139: 309-1256D-153R-2, 34-36 cm, Piece No: 4						Unit: 53A	OBSERVER: SD, TS/ CL	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Holocrystalline variolitic to intergranular							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0							
GROUNDMASS	100							
Plagioclase						Euhedral-anhedral, acicular-skeletal	Most crystals are altered. Melt inclusions in some plagioclase crystals.	
Clinopyroxene						Subhedral-anhedral, fibrous	Thin subhedral laths or subhedral to anhedral tabular crystals and fibrous crystals growing from the plagioclase microlites. Many grains are altered to chlorite/actinolite.	
Fe-Ti oxides						Euhedral-anhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	4					Plagioclase		
Actinolite	4					Clinopyroxene		
Albite	3					Plagioclase		
Titanite	0.5					Disseminated		
Pyrite	1					Disseminated	Anhedral or subhedral	
Chalcopyrite	0.2					Disseminated		
STRUCTURE :								
COMMENTS :								



TS #140: 309-1256D-153R-2, 65-68 cm, Piece No: 8						Unit: 53A	OBSERVER: CC / CL	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Massive unit, just above dike contact							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Holocrystalline variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS								
GROUNDMASS	100							
Plagioclase						Subhedral-anhedral, platy, skeletal	Two types: subhedral laths and interstitial anhedral areas with intergrowths of quartz.	
Clinopyroxene						Subhedral	Sometimes show a rim of different birefringence (generally white/yellow). They are often partially altered to secondary minerals, just some patches of the crystals are preserved.	
Pigeonite						Subhedral	Interstitial crystals, elongated laths.	
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	2					Interstitial, minor olivine		
Actinolite	4					Clinopyroxene		
Titanite	0.1					Disseminated		
Albite	8					Plagioclase		
Epidote	0.5					Plagioclase		
Pyrite	0.5					Disseminated		
STRUCTURE :								
COMMENTS : The anhedral areas of plagioclase contain small laths of titanomagnetite and needles of apatite.								



TS #141: 309-1256D-154R-1, 11-13 cm, Piece No: 2						Unit: 54A	OBSERVER: CC, JG / CL
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Chilled margin of a massive unit						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypohyaline to hypocrySTALLINE variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
MICROPHENOCRYSTS	0.05	0.2					
Plagioclase	0.05	0.2	0.06	0.1	0.06	Subhedral	Altered to chlorite
GROUNDMASS							
Plagioclase		99.8				Acicular, skeletal	The larger are partially replaced by chlorite.
Clinopyroxene						Subhedral, fibrous	Thin subhedral laths or fibrous crystals growing from the plagioclase microlites.
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite (+ilmenite?). Small grains.
Glass							Devitrified to black material in the outer part and interstitial tachylytic in the inner part.
SECONDARY MINERALOGY							
	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.3					Plagioclase	
Albite	0.1					Plagioclase	
Pyrite	1					Disseminated	Anhedral to subhedral
STRUCTURE :							
COMMENTS :	The texture varies from hypohyaline with a few plagioclase microlites disseminated in dark devitrified glass (boundaries of polygonal spherulites are less dark) to hypocrySTALLINE variolitic. Textural and modal layering, with plagioclase+clinopyroxene-rich layers (1.6 mm) and more glassy layers (1.2-2 mm). In the outer part of the chilled margin, these layers are less well-shaped (coalescent patches) and transition is more gradual. Some pyrite disseminated in the groundmass and along veins. / One 0.5 mm vein of, from edge to center, chlorite (30%), titanite (5%), quartz (35%), pyrite (30%) with 0.1 mm discrete alteration halo where no primary titanomagnetite is left contrarily to the host rock. One 0.02 mm vein of chlorite, actinolite and pyrite, very minor quartz and titanite.						



TS #142: 309-1256D-154R-1, 56-60 cm, Piece No: 14b						Unit: 54A	OBSERVER: CC, SD / CL /	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Holocrystalline, intergranular							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS								
GROUNDMASS	100							
Plagioclase						Subhedral-anhedral, tabular, skeletal	Two types: subhedral laths and interstitial anhedral crystals with intergrowths of quartz.	
Clinopyroxene						Subhedral	Altered to chlorite-actinolite.	
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	2					Interstitial. Olivine		
Actinolite	0.01					Clinopyroxene	Only locally along the vein	
Titanite	0.2					Interstitial		
Pyrite	0.8					Disseminated	Anhedral	
STRUCTURE :								
COMMENTS : Some anhedral crystals of plagioclase contain small anhedral laths of titanomagnetite and needles of apatite./ One 0.2 mm and one thinner vein of chlorite and quartz.								



TS #143: 309-1256D-155R-1, 4-6 cm, Piece No: 1				Unit: 54A		OBSERVER: JG; SD / CL	
ROCK NAME:		Aphyric microcrystalline basalt					
WHERE SAMPLED:		Interior of a massive unit					
GRAIN SIZE:		Microcrystalline					
TEXTURE:		Holocrystalline, intergranular-variolitic					
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
CONSTITUENT MINERALS		100					
Plagioclase						Subhedral-anhedral, acicular skeletal laths	
Clinopyroxene						Anhedral	Largely replaced by phyllosilicates
Fe-Ti oxides						Subhedral-euhedral (skeletal)	Titanomagnetite
Mesostasis						Interstitial	Completely altered to chlorite, titanite
Olivine							Completely altered to chlorite
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Chlorite	8				Interstitial. Olivine, plagioclase		
Titanite	0.5				Interstitial		
Albite	2				Plagioclase		
Pyrite	1				Disseminated		
Chalcopyrite	0.3				Disseminated		
STRUCTURE :							
COMMENTS :							



TS #144: 309-1256D-156R-1, 68-74cm, Piece No: 16a						Unit: 55A	OBSERVER: JG / CL
ROCK NAME:	Aphyric, microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Alteration texture						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
Clinopyroxene	0.5?		0.2			Subhedral ?	Completely replaced by phyllosilicates
GROUNDMASS							
Fe-Ti oxides							Completely or to large parts altered and replaced by phyllosilicates Completely replaced
Clinopyroxene							
Plagioclase							
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	?					clinopyroxene	
Actinolite	?					clinopyroxene	
Prehnite	?					clinopyroxene	
Calcium carbonate	?					clinopyroxene	
STRUCTURE :							
COMMENTS : Almost all primary minerals are replaced by secondary minerals/ This thin section is exclusively composed of nice and exciting secondary minerals. One 4 x 10 mm amygdale (100% secondary minerals) composed of, from center to rim, euhedral quartz and euhedral pyrite, chlorite, titanite, prehnite (partly replacing quartz), late anhydrite, calcium carbonate. The rest of the thin section is an alteration patch (95% altered) related to this amygdale, with only few primary minerals shapes are recognized and few relicts of clinopyroxene are preserved.							



TS #145: 309-1256D-156R-1, 100-102 cm, Piece No: 16d						Unit: 55A	OBSERVER: SD / CL
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, intergranular-variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.4	0.6					
Plagioclase	0.3	0.5	0.5	0.6	0.6	Subhedral-anhedral	Several crystals altered to chlorite.
Clinopyroxene	0.1	0.1	0.28	0.6	0.3	Subhedral-anhedral	Altered rims
Olivine	0	0.1				Subhedral	Completely altered to chronite/titanite
GROUNDMASS		99.3					
Plagioclase						Subhedral-anhedral, bladed-acicular laths	Apatite needles and elongated titanomagnetite grains inside altered grains. Some grains appear to be in the initial stage of myrmekite texture formation.
Clinopyroxene						Subhedral-anhedral, tabular-dendritic	Subophitic texture
Fe-Ti oxides						Euhedral-subhedral	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	5					Olivine, plagioclase, amygdales	
Titanite	0.1					Olivine	
Actinolite	0.5					Clinopyroxene	
Albite	1					Plagioclase	
Quartz	0.5					Amygdales	
Pyrite	0.5					Disseminated, amygdales	8% in amygdales
Chalcoyrite	0.05					Disseminated, amygdales	5% in amygdales
STRUCTURE :							
COMMENTS :							



TS #146: 309-1256D-157R-1, 46-49 cm, Piece No: 8						Unit: 55B	OBSERVER: SD, TS / CL	
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Chilled margin dike contact							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holohyaline (chilled margin) hypocrySTALLINE (interior) spherulitic-variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.5	0.5						
Plagioclase	0.4	0.4	0.1	0.5	0.1	Euhedral-subhedral	Phenocrysts are found both in the interior of the dike and in the glassy chilled margin.	
Clinopyroxene	0.1	0.1	0.23	1	0.6	Euhedral-subhedral	Large phenocryst completely encloses smaller plagioclase crystals and partially encloses larger plagioclase crystal (ophitic to subophitic texture).	
GROUNDMASS	99.5	99.5						
Plagioclase						Subhedral-anhedral, acicular-skeletal	Microlites radiate from varioles.	
Clinopyroxene						Subhedral-anhedral, fibrous	Thin subhedral laths or subhedral to anhedral tabular crystals and fibrous crystals growing from the plagioclase microlites.	
Fe-Ti oxides						Skeletal	Interstitial titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	0.1					Plagioclase		
Albite	0.05					Plagioclase		
Pyrite	1					Disseminated	Anhedral or subhedral	
STRUCTURE :								
COMMENTS : Clinopyroxene and plagioclase phenocrysts form glomeroporphyritic texture. Small anhedral sulfide minerals present throughout the groundmass.								



TS #147: 309-1256D-157R-1, 139-142 cm, Piece No: 23							Unit: 55A	OBSERVER: SD, TS / CL / PT
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0	0						
GROUNDMASS	100	100						
Plagioclase						Subhedral-anhedral, bladed, acicular-fibrous	Crystals radiating from varioles and as thin subhedral laths. Some crystals have been replaced by chlorite.	
Clinopyroxene						Subhedral-anhedral, fibrous, dendritic, tabular	Thin subhedral laths and fibrous crystals growing from the plagioclase microlites. Some long dendritic crystals (up to 10.1 mm in length).	
Fe-Ti oxides						Euohedral-anhedral, skeletal	Interstitial titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	0.5					Interstitial		
Pyrite	0.8					Disseminated	Anhedral	
Chalcopyrite	0.05					Disseminated		
STRUCTURE :	Dynamic recrystallization of quartz in the vein.							
COMMENTS :	One 0.6 mm vein of quartz(75%) and pyrite (25%) without alteration halo.							



TS #148: 309-1256D-157R-2, 12-14 cm, Piece No: 2c		Unit: 55A			OBSERVER: SD, TS / CL		
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Holocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1						
Plagioclase	0.1		0.17	0.2	0.185	Euhedral-subhedral	Actinolite needles and small melt inclusions present inside phenocryst.
GROUNDMASS	99.9						
Plagioclase						Subhedral-anhedral, bladed, acicular-fibrous	Crystals radiating from varioles and as thin subhedral laths. Some crystals have been replaced by chlorite.
Clinopyroxene						Subhedral-anhedral, fibrous, dendritic, tabular	Thin subhedral laths and fibrous crystals growing from the plagioclase microlites.
Fe-Ti oxides						Euhedral-anhedral, skeletal	Interstitial titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.8					Interstitial	
Actinolite	0.02					Growing from cpx	Very thin needles at the rim of quartz amygdales
Quartz	0.5					Amygdales	
Pyrite	1					Disseminated	Anhedral, larger crystals than all primary minerals
Chalcopyrite	0.05					Disseminated	
STRUCTURE :							
COMMENTS : Apatite in anhedral plagioclase.							



TS #149: 309-1256D-157R-2, 28-34 cm, Piece No: 5b						Unit: 56B	OBSERVER: CC, TS / CL	
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	0.4	0.7						
Plagioclase	0.2	0.5	0.12	0.4	0.2	Euhedral-subhedral	Partially altered to chlorite (essentially in fractures). Some phenocrysts are elongated.	
Clinopyroxene	0.2	0.2	0.2	0.3	0.2	Euhedral		
GROUNDMASS		99.3						
Plagioclase						Subhedral, acicular, skeletal		
Clinopyroxene						Anhedral, fibrous	Very rare, completely altered to chlorite. These micro-lites are located in the center of radiating plagioclase microlites.	
Fe-Ti oxides						Subhedral-anhedral	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	0.15					Amygdales. Replacing plagioclase phenocrysts	8% in outer light gray halo	
Actinolite	0					Clinopyroxene	20% in outer light gray halo	
Titanite	0					Disseminated	8% in outer light gray halo	
Albite	0.1					Replacing plagioclase phenocrysts		
Prehnite	0.1					Replacing plagioclase phenocrysts		
Quartz	0.05					Amygdales		
Pyrite	0.05					Disseminated	Anhedral, restricted to one part of the host rock	
STRUCTURE :								
COMMENTS : Modal layering: plagioclase-rich layers and fibrous clinopyroxene-rich layers / Several 0.1-2mm veins of chlorite (30%), pyrite (30%), quartz (30%), prehnite, minor epidote, sphalerite, zeolite (laumontite?), anhydrite. 0.9 mm alteration halo [inner 0.1 mm dark green, 100% recrystallized in chlorite, actinolite (locally abundant) and titanite, outer 0.8 mm light gray]								



TS #150: 309-1256D-160R-1, 12-14 cm, Piece No: 4			Unit: 56A			OBSERVER: SD, TS / CL	
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric cryptocrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Holocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	4	5					
Plagioclase	2.5	3	0.07	0.3	0.13	Euhedral-anhedral	Generally altered, sometime completely to chlorite. One long dendritic lath (~15 mm in length).
Clinopyroxene	1.5	2	0.1	0.23	0.16	Subhedral-anhedral	Generally altered, sometime completely replaced.
GROUNDMASS		95					
Plagioclase						Subhedral-anhedral, bladed, acicular-skeletal	Crystals radiating from varioles and as thin subhedral laths. Some crystals have been replaced by chlorite
Clinopyroxene						Subhedral-anhedral, fibrous, dendritic, tabular	Thin subhedral laths and fibrous crystals growing from the plagioclase microlites.
Fe-Ti oxides						Euhedral-anhedral, skeletal	Titanomagnetite, interstitial and inside plagioclase crystals.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.5					Fills one vesicle, replaces plagioclase	5% in alteration halo
Actinolite	0						0.1% in alteration halo
Titanite	0						0.5% in alteration halo
Pyrite	1					Disseminated	Anhedral. More abundant far from the vein
Chalcoyrite	0.1						
STRUCTURE :							
COMMENTS : Two 0.5 mm veins of chlorite, titanite, pyrite, quartz and minor prehnite, with discontinuous 0.2 mm alteration halo.							



TS #151: 309-1256D-161R-2, 6-8 cm, Piece No: 1		Unit: 56B		OBSERVER: CC, TS / CL			
ROCK NAME:		Aphyric cryptocrystalline basalt (Dike 1) and Sparsely clinopyroxene-plagioclase cryptocrystalline basalt (Dike 2)					
WHERE SAMPLED:		Brecciated chilled margin with multiple dike contact					
GRAIN SIZE:		Glassy to cryptocrystalline					
TEXTURE:		Holohyaline to holocrystalline, spherulitic, variolitic, hyalopilitic					
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Dike 1							
PHENOCRYSTS	0	1					
Plagioclase	0	1	0.08	0.2	0.1	Euhedral, bladed	Altered to colorless minerals chlorite,
GROUNDMASS		99					
Plagioclase						Subhedral, acicular, dendritic	
Clinopyroxene						Fibrous	Two generations: subhedral grains at the center of the radiating plagioclase, these grains are completely altered to chlorite; and very small (40x), fibrous laths and subhedral grains
Fe-Ti oxides						Anhedral	Titanomagnetite, very small grains
Glass							Altered in the outer part and absent in the inner part (holocrystalline)
Dike 2							
PHENOCRYSTS	1.7	4.6					
Plagioclase	0.5	3.4	0.08	0.25	0.2	Euhedral, bladed	Altered to chlorite.
Clinopyroxene	1.2	1.2	0.2	1	0.5	Euhedral-subhedral	The larger ones show subophitic relationship with small plagioclase laths.
GROUNDMASS		95.4					
Plagioclase						Subhedral, acicular	
Clinopyroxene						Subhedral	Subhedral grains at the center of the radiating plagioclase, these grains are completely altered to chlorite.
Fe-Ti oxides						Anhedral	Titanomagnetite, very small grains at the spherulite boundaries
Glass							Recrystallized to brown spherulites
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	2					Amygdales, vesicle, plagioclase, olivine	
Actinolite	0.01					Clinopyroxene?	Associated with chlorite
Titanite	0.05					Amygdales	
Prehnite	1.5					Plagioclase	
Albite	1					Plagioclase	
Pyrite	0.01					Disseminated	
STRUCTURE :							
COMMENTS : POINT COUNTING FOR 1000 PRIMARY MINERALS. The two part of the thin section are separated by an intrusive contact. However, the presence of a small rounded xenolith of microcrystalline basalt (rock which is not observed in the thin section) in dike 2 suggests that the two parts of the thin section are two dikes. The contact is lobate. The texture of the Dike 1 chilled margin evolves from the outer part to the inner part: black altered glass to cryptocrystalline with microlites of plagioclase oriented parallel to the contact and beginning of crystallization of very small fibers of clinopyroxene. The contact is completely fractured and disturbed in some place as seen by the change of orientation of microlite layers. The groundmass of Dike 2 does not show textural evolution from the contact to the inner part. Also in Dike 2, the microlites are oriented parallel to the contact. In dike 2, small varioles of radiating plagioclase with subhedral clinopyroxene in the center are isolated in the spherulitic groundmass. / Numerous 0.02-0.2 mm veins of chlorite, titanite and locally prehnite at center.							



TS #152: 309-1256D-161R-2, 17-21 cm, Piece No: 3a			Unit: 56B			OBSERVER: CC, TS / CL	
ROCK NAME:		Sparsely clinopyroxene-plagioclase cryptocrystalline clasts in volcanic breccia					
WHERE SAMPLED:		Volcanic breccia					
GRAIN SIZE:		Glassy to cryptocrystalline					
TEXTURE:		Hypohyaline, spherulitic					
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	1.6	4.3					
Plagioclase	1	3.7	0.08	0.43	0.6	Euhedral, bladed	Altered to albite, zeolite, and chlorite. The thinner phenocrysts are the more elongated (length:1 mm, wide/length=0.08)
Clinopyroxene	0.6	0.6	0.1	0.65	0.5	Euhedral-subhedral	The larger ones show subophitic relationship with small plagioclase laths.
GROUNDMASS		95.7					
Plagioclase						Subhedral, acicular, skeletal	Some swallow-tail grains
Clinopyroxene						Subhedral	Rare, completely altered to chlorite. These microlites are located in the center of radiating plagioclase microlites.
Fe-Ti oxides						Anhedral	Titanomagnetite, very small grains at the spherulitic boundaries
Glass							Recrystallized to brown spherulites
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	10					Amygdales. Replaces glass, clinopyroxene and olivine	
Titanite	1					Glass	
Albite	3					Plagioclase phenocrysts	
Prehnite	3					Plagioclase phenocrysts	
Zeolite	3					Plagioclase phenocrysts	Laumontite or heulandite
Pyrite	0.01					Disseminated	
STRUCTURE :							
COMMENTS : POINT COUNTING FOR 1000 PRIMARY MINERALS (VEINS ARE EXCLUDED). Clasts are separated by alteration veins that contain altered glass. The glass areas are rounded, completely altered and fractured and can contain few glomerocrysts of plagioclase and clinopyroxene. The clasts are generally large but the veins can isolate smaller clasts (1-2 mm). Phenocrysts form glomerocrysts. A patch of more crystallized groundmass, near one phenocryst aggregate, located near a thin vein: the host groundmass is not glassy but cryptocrystalline variolitic, with microlites of plagioclase and clinopyroxene. / The cement of the brecciated dike/host rock contact is composed of chlorite (35%), quartz prehnite (8%), anhydrite including euhedral epidote, large slabs of zeolite (35% laumontite or heulandite?).							



TS #153: 309-1256D-161R-2, 51-55 cm, Piece No: 6		Unit: 56B				OBSERVER: CC, JG / CL	
ROCK NAME:	Moderately clinopyroxene-plagioclase phyric cryptocrystalline clasts in volcanic breccia						
WHERE SAMPLED:	Volcanic breccia						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Hypohyaline, spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.7	5.9					
Plagioclase	0	3.6	0.08	0.43	0.2	Euhedral, bladed	Altered to colorless minerals (albite, zeolite, prehnite). The larger ones show subophitic relationship with small plagioclase laths. In one place, an aggregate of large crystals is completely replaced by secondary minerals (chlorite and opaques)
Clinopyroxene	0.7	2.3	0.1	1	0.5	Euhedral-anhedral	
GROUNDMASS		94.1					
Plagioclase						Subhedral, acicular, skeletal	Altered to chlorite. These microlites are located in the center of radiating plagioclase microlites.
Clinopyroxene						Subhedral	
Fe-Ti oxides						Anhedral	Titanomagnetite, very small grains at the spherulite boundaries
Glass							Recrystallized to brown spherulite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	10					Clinopyroxene, glass	
Titanite	0.05					Glass	
Albite	1					Plagioclase	
Zeolite	1					Plagioclase	
Prehnite	1					Plagioclase, glass	
Pyrite	0.01					Disseminated	
STRUCTURE :							
COMMENTS : POINT COUNTING FOR 1000 PRIMARY MINERALS (VEINS ARE EXCLUDED). Clasts are separated by alteration veins that also contain altered glass. These glassy veins penetrate through the clasts along V-shaped fractures. The glass area is completely altered and fractured and can contain few glomerocrysts of plagioclase and clinopyroxene. Phenocrysts rarely form glomerocrysts. Some more crystallized patches disseminated in the spherulitic groundmass, with microlites of plagioclase and clinopyroxene forming varioles. / Several 0.8-2 mm veins composed of chlorite, quartz, prehnite, calcium carbonate, anhydrite, with 0.5 mm light gray alteration halo where the groundmass is enlightened.							



TS #154: 309-1256D-162R-3, 36-39 cm, Piece No: 2			Unit: 57A			OBSERVER: SD, CC / CL	
ROCK NAME:	Aphyric cryptocrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Holocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.5						
Plagioclase	0.2		0.2	0.25	0.2	Subhedral-anhedral	Some altered to phyllosilicates (chlorite)
Clinopyroxene	0.3		0.25	0.55	0.4	Subhedral-anhedral	Some altered to phyllosilicates (chlorite).
GROUNDMASS	99.5						
Plagioclase						Subhedral, acicular, skeletal	
Clinopyroxene						Subhedral-anhedral, fibrous	Some altered to phyllosilicates (chlorite) and saponite.
Fe-Ti oxides						Euhedral-anhedral	Titanomagnetite
Mesostasis							Made up of clinopyroxene, plagioclase, and titanomagnetite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.8					Interstitial plagioclase	
Titanite	0.05					Plagioclase	
Albite	0.1					Plagioclase	
Prehnite	0.1					Plagioclase	
Pyrite	1					Disseminated	
STRUCTURE :							
COMMENTS : Plagioclase and clinopyroxene phenocrysts form glomeroporphyritic texture. / Several 0.2-0.6 mm crosscutting veins of chlorite, quartz, pyrite and late anhydrite and minor prehnite.							



TS #155: 309-1256D-163R-1, 113-117 cm, Piece No: 14			Unit: 57A			OBSERVER: CC, JG / CL	
ROCK NAME:	Aphyric microcrystalline basalt (host rock) and sparsely plagioclase phyric glassy basalt (dike)						
WHERE SAMPLED:	Dike contact with glassy clasts against the host rock						
GRAIN SIZE:	Microcrystalline (host rock) and glassy (host rock)						
TEXTURE:	Holocrystalline, variolitic (host rock) and holocrystalline spherulitic (dike)						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
Host rock							
PHENOCRYSTS							
GROUNDMASS	100						
Plagioclase						Subhedral-anhedral, skeletal	Largely replaced by colorless minerals and chlorite largely replaced by secondary minerals. The primary features of the crystals are preserved only in a few grains.
Clinopyroxene						Anhedral	
Fe-Ti oxides						Subhedral-skeletal	Titanomagnetite
Dike							
PHENOCRYSTS	0.5	1.2					
Plagioclase	0.5	1.2	0.2	0.4	0.4	Euhedral	Fractured and slightly altered to chlorite and colorless minerals in fractures
MICROPHENOCRYSTS	0.6	0.6					
Plagioclase	0.6	0.6	0.05	0.12	0.1	Euhedral, skeletal	
GROUNDMASS		98.2					
Plagioclase						Acicular-dendritic	Very few patches in the spherulitic part Titanomagnetite. Very small grains. Altered or devitrified to spherulites
Clinopyroxene						Anhedral-fibrous	
Fe-Ti oxides						Anhedral	
Glass							
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite							
Actinolite						Clinopyroxene	Associated with chlorite
Titanite						Disseminated	
Prehnite						Plagioclase	
Anhydrite							
Epidote							Pistachite
Calcium carbonate						Plagioclase	
Pyrite							
Chalcocopyrite							
STRUCTURE :							
COMMENTS : The contact between dike and host rock is complex: the outer glassy part of the chilled margin form a protuberance at the left side of the thin section. At the right side, the chilled margin is now separated from the dike and isolated in the groundmass of the host rock. The outer part of the chilled margin is made of altered and fractured glass containing phenocrysts and not recrystallized to spherulites. In the inner part of the dike the glass is recrystallized to brown spherulites. At the contact with the chilled margin, the host rock is completely recrystallized to secondary minerals : more far from the contact, the host rock is still intensively altered: clinopyroxene has been completely replaced by brownish clay minerals and has lost their shape+ patches of chlorite. / The dike/host rock contact is underlined by a vein of anhydrite, prehnite, chlorite, euhedral quartz. Occurrence of a 1 cm in diameter amygdale of anhydrite and euhedral pistachite.							



TS #156: 309-1256D-163R-2, 24-28 cm, Piece No: 6a						Unit: 57C	OBSERVER: CC, SD / CL	
ROCK NAME:	Sparsely plagioclase-phyric cryptocrystalline basalt							
WHERE SAMPLED:	Dike chilled margin							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holohyaline spherulitic to hypohyaline variolitic/hyalopilitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	2.1	4.6						
Plagioclase	2.1	4.6	0.1	0.6	0.35	Euhedral-subhedral	Partially altered to colorless albite and prehnite. One is resorbed, with a skeletal core that is mantle by an euhedral rim.	
GROUNDMASS		95.4						
Plagioclase						Acicular-dendritic	Some swallow-tail grains.	
Clinopyroxene						Anhedral-fibrous	Only in the inner part of the (rock) TS?	
Fe-Ti oxides						Euhedral-skeletal	Titanomagnetite. Very small grains at the boundaries of the spherulites.	
Glass							Altered to chlorite or recrystallized to spherulites	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	0					Glass	50% in the alteration halo	
Albite	2					Plagioclase		
Prehnite	1					Plagioclase	Colorless and pale reddish brown	
Pyrite	0.3					Disseminated		
STRUCTURE :								
COMMENTS : From the outer to the inner part: glass altered to greenish/brownish minerals (chlorite) with isolated light-brown spherulites; glass completely recrystallized to brownish or dark spherulites; appearance of plagioclase microlites in the center of spherulites and of titanomagnetite grains to the boundaries; then alternating spherulite-rich and plagioclase-rich layers. Phenocrysts are concentrated in the outer part of the chilled margin. They form glomerocrysts. Plagioclase microlites layers are oriented parallel to the chilled margin. Some sulfides disseminated in the groundmass. / One 0.2 mm vein of chlorite and quartz (or chalcedony?) parallel and into the dike contact, with a 0.1-0.4 discontinuous light green alteration halo.								



TS #157: 309-1256D-163R-3, 59-62 cm, Piece No: 8b						Unit: 58	OBSERVER: TS, CC /CL
ROCK NAME:	Sparsely plagioclase-phyric cryptocrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Holocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	1	1.8					
Plagioclase	1	1.8	0.3	0.7	0.5	Subhedral	Some replaced by chlorite-actinolite-prehnite-albite
GROUNDMASS		98.2					
Plagioclase						Subhedral-anhedral, acicular-skeletal	Subhedral laths and anhedral interstitial crystallized with quartz.
Clinopyroxene						Subhedral-anhedral, dendritic-fibrous	
Fe-Ti oxides						Euhedral-subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.5					Interstitial, plagioclase	
Albite	0.1					Plagioclase	
Prehnite	0.4					Plagioclase	
Pyrite	1.2					Plagioclase, clinopyroxene	
STRUCTURE :							
COMMENTS : POINT COUNTING OF 1000 PRIMARY MINERALS. Plagioclase phenocrysts are present only in fine grained patches (2-4mm). Skeletal sulfides occurrence.							



TS #158: 309-1256D-164R-1, 19-23 cm, Piece No: 2a			Unit: 58			OBSERVER: TS, CC / CL THIN SECTION: 158	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, variolitic-intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		0					
GROUNDMASS		100					
Plagioclase						Subhedral-anhedral, skeletal	Some show ophitic texture. Some altered to chlorite/albite.
Clinopyroxene						Subhedral-anhedral, elongated, dendritic-fibrous	Some altered to chlorite.
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	7					Interstitial, replaces minor plagioclase	
Titanite	3						
Albite	0.5					Interstitial	associated with chlorite
Pyrite	0.5					Anhedral	
STRUCTURE :							
COMMENTS : Sulfide bleb (up to 0.3 mm) occurrence.							



TS #159: 309-1256D-164R-2, 32-36 cm, Piece No: 7						Unit: 58	OBSERVER: CC, SD / CL	
ROCK NAME:	Sparsely plagioclase-phyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS		3.9						
Plagioclase	0.5	3.9	0.25	0.4	0.3	Subhedral-anhedral	Altered to chlorite and colorless minerals (albite and prehnite). Some are resorbed but mantled by a fresh rim that preserved the euhedral shape of the crystal.	
GROUNDMASS		96.1						
Plagioclase						Subhedral-anhedral, skeletal	Two types: subhedral laths and interstitial areas. Some laths are elongated and can be curved.	
Clinopyroxene						Subhedral-fibrous	subhedral grains and fibrous laths forming radiating aggregates. Partially to completely altered to brownish phyllosilicates. The geometry and morphology of fibrous laths is erased by alteration.	
Fe-Ti oxides						Euhedral-subhedral-skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	1					Plagioclase		
Titanite	0.5							
Albite	1.5					Plagioclase		
Prehnite	0.5					Plagioclase	Pale brown	
Pyrite	0.7					Disseminated		
STRUCTURE :								
COMMENTS : Plagioclase phenocrysts form glomerocrysts. Apatite needles in interstitial areas of plagioclase. Some sulfides disseminated in the groundmass.								



TS #160: 309-1256D-164R-2, 115-118 cm, Piece No: 19						Unit: 59	OBSERVER: SD, CC/CL
ROCK NAME: Aphyric microcrystalline basalt							
WHERE SAMPLED: Interior of a massive unit							
GRAIN SIZE: Microcrystalline							
TEXTURE: Holocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
GROUNDMASS	100						
Plagioclase						Subhedral-anhedral, skeletal-acicular	Some altered crystals and grains containing small apatite needles.
Clinopyroxene						Anhedral, fibrous	Some altered to saponite.
Fe-Ti oxide						Anhedral, skeletal	Titanomagnetite
Mesostasis							Made up of clinopyroxene, plagioclase and titanomagnetite.
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
STRUCTURE :							
COMMENTS : CL forgot to describe this thin section.							



TS #161: 309-1256D-165R-1, 19-21 cm, Piece No: 4						Unit: 60A	OBSERVER: TS, CC / CL
ROCK NAME:		Aphyric cryptocrystalline basalt					
WHERE SAMPLED:		Near top of a massive unit					
GRAIN SIZE:		Cryptocrystalline					
TEXTURE:		Hypohyaline, variolitic					
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
Plagioclase	0.2	0.3	0.1	0.15	0.12	Euhedral-subhedral	Partially replaced by chlorite
GROUNDMASS		99.7					
Plagioclase						Subhedral-anhedral, skeletal-acicular	
Clinopyroxene						Anhedral, dendritic	
Mesostasis							Altered
Fe-Ti oxide						Subhedral-anhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Chlorite	0.1				Very minor interstitial. Replaces plagioclase		
Pyrite	1.5				Disseminated		
STRUCTURE :							
COMMENTS : Three 0.01-0.02 mm veins of quartz and minor chlorite and pyrite.							



TS #162: 309-1256D-165R-2, 13-16 cm, Piece No: 1		Unit: 60A			OBSERVER: CC, TS / CL		
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS							
GROUNDMASS	100						
Plagioclase						Subhedral-anhedral, skeletal	Two types: subhedral laths and interstitial areas with quartz intergrowth. Laths are partially altered to chlorite and colorless minerals (albite, prehnite, epidote and anhydrite).
Clinopyroxene						Subhedral	Either elongated laths or equant grains. Partially to completely altered to brownish clay minerals or to chlorite.
Fe-Ti oxides						Euhedral-skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	15					interstitial areas, amygdales. Replaces plagioclase.	25% in alteration patch
Quartz	0					Amygdales	30% in amygdale
Actinolite	3					Growing from clinopyroxene in amygdales.	25% close to amygdale and vein
Albite	10					Plagioclase	20% in alteration patch
Prehnite	10					Plagioclase	1% in alteration patch
Titanite	0.8					Disseminated	0.5% in alteration patch
Epidote	0					Plagioclase	0.1% in alteration patch, euhedral
Anhydrite	0					Plagioclase	1% in alteration patch
Pyrite	0.8					Disseminated	
STRUCTURE :							
COMMENTS : The primary igneous texture is replaced by alteration minerals. Some apatite needles in the interstitial areas of plagioclase. / One 0.4 mm vein of chlorite, quartz, minor actinolite growing from host rock clinopyroxene, and very minor epidote. 2 x 3 mm amygdale of chlorite, quartz, titanite and minor actinolite, surrounded by alteration patch. Several smaller amygdales disseminated.							



TS #163: 309-1256D-165R-3, 38-42 cm, Piece No: 4a			Unit: 60B			OBSERVER: TS, CC / CL	
ROCK NAME:	Aphyric cryptocrystalline basaltic dike						
WHERE SAMPLED:	Edge of a dike						
GRAIN SIZE:	glassy-cryptocrystalline						
TEXTURE:	Holohyaline-hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS		0.1					
Plagioclase		0.1	0.08	0.12	0.1	Euhedral-subhedral	Partly replaced by chlorite
GROUNDMASS		99.9					
Plagioclase						Subhedral-anhedral, acicular	
Glass							Devitrified
Fe-Ti oxides						Subhedral-anhedral, skeletal	Titanomagnetite
Clinopyroxene						Subhedral, fibrous	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Anhydrite	0.1					Plagioclase	In cryptocrystalline basalt
Chlorite	0.2					Amygdale	In cryptocrystalline basalt
Quartz	0.3					Amygdale	In cryptocrystalline basalt
Pyrite	1.1					Disseminated and in amygdale	In cryptocrystalline basalt
STRUCTURE :							
COMMENTS :							
From the chilled margin to interior, texture changes from holohyaline to variolitic. A bowtie plagioclase is seen in the transition zone. Two subangular clasts (1.6 X 1.5 mm, 6 X 1.8 mm) of aphyric holocrystalline microcrystalline basalt (host rock) are isolated into the dike near the chilled margin. Contact between the clasts and the dike is sharp. Sulfides occurrence. / One 0.1 mm vein of chlorite and pyrite grading to quartz, chlorite, epidote, pyrite, titanite and minor actinolite needles protruding from magmatic clinopyroxene. This vein crosscuts another similar (plus prehnite) vein, with no clear chronological relationship. One 0.3 mm vein of chlorite, quartz, anhydrite, adjacent to a 1 x 2 amygdale of chlorite, quartz, pyrite and minor actinolite. Except the presence of this amygdale, the cryptocrystalline basalt is slightly altered. The clasts of host rock contain 2% chlorite.							



TS #164: 309-1256D-165R-3, 101-104 cm, Piece No: 13						Unit: 60A	OBSERVER: CC, SD / CL T	
ROCK NAME:	Aphyric microcrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Microcrystalline							
TEXTURE:	Holocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS								
GROUNDMASS	100							
Plagioclase						Subhedral-anhedral, bladed, acicular-fibrous	Two types: subhedral laths and interstitial areas with quartz intergrowth. Laths are partially altered to chlorite.	
Clinopyroxene						Subhedral	Either elongated laths or equant grains, Partially to completely altered to brownish clay minerals or to chlorite.	
Fe-Ti oxides						Euhedral-subhedral-skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	1					Interstitial, plagioclase		
Pyrite	0.5					Disseminated		
STRUCTURE :								
COMMENTS :	The primary igneous texture is replaced by alteration minerals. Some apatite needles in the interstitial areas of plagioclase. Some sulfide disseminated in the groundmass./ One 0.2 mm vein of chlorite, titanite and quartz.							



TS #165: 309-1256D-166R-1, 1-4 cm, Piece No: 1		Unit: 61A				OBSERVER: TS, CC / CL	
ROCK NAME:	Aphyric glassy to cryptocrystalline basalt						
WHERE SAMPLED:	Top of a massive unit						
GRAIN SIZE:	Glassy to cryptocrystalline						
TEXTURE:	Holohyalline-Hypohyalline, spherulitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.1	0.4					
Plagioclase	0	0.3	0.05	0.2	0.08	Euhedral-subhedral	Most replaced by chlorite and anhydrite (?)
Clinopyroxene	0.1	0.1	0.1	0.1	0.1	Subhedral	
GROUNDMASS		99.6					
Plagioclase						Subhedral-anhedral, acicular	
Glass							Altered
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.05					Replaces plagioclase	
Albite	0.05					Replaces plagioclase	
Anhydrite?	0.05					Replaces plagioclase	
Actinolite	0.01					Amygdales	
Quartz	0.05					Amygdales	
Titanite	0.01					Amygdales	
Pyrite	1					Disseminated	
Chalcoyrite	0.01					Disseminated	
STRUCTURE :							
COMMENTS : From the top to the inner part, texture changes from glassy spherulitic (up to 2 mm) to holohyalline. / Several 0.05-0.1 mm veins of chlorite, quartz and minor acinolite. Most of these veins are parallel and into the glassy margins. One 0.3 mm chlorite vein. Several 0.4 mm long amygdales of quartz and minor acinolite needles and titanite.							



TS #166: 309-1256D-166R-2, 5-7 cm, Piece No: 1						Unit: 61A	OBSERVER: CC, TS / CL	
ROCK NAME:	Aphyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS		0.6						
Plagioclase	0.1	0.3	0.1	0.25	0.2	Euhedral	Altered to chlorite in cracks.	
Clinopyroxene	0.3	0.3	0.2	0.8	0.3	Euhedral-subhedral		
GROUNDMASS		99.4						
Plagioclase						Subhedral-anhedral, skeletal	Two types: subhedral laths and interstitial areas with quartz intergrowth. Rare laths are partially altered to chlorite and prehnite	
Clinopyroxene						Anhedral-fibrous	Few anhedral grains and fibrous laths forming radiating aggregates. Partially to completely altered to brownish clay minerals. The geometry and morphology of fibrous laths is erased by alteration.	
Fe-Ti oxides						Euhedral-skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	0.03					Interstitial. Plagioclase		
Prehnite	0.01					Plagioclase		
Pyrite	0.1							
Chalcopyrite	0.5							
STRUCTURE :								
COMMENTS : Phenocrysts form glomerocrysts. The primary igneous texture is disturbed by alteration minerals. Some sulfides (chalcopyrite) disseminated in the groundmass. Some symplectic growth of plagioclase and clinopyroxene. / Two 0.1 mm vein of chlorite (minor), titanite (minor), quartz and actinolite needles protruding from magmatic clinopyroxene.								



TS #167: 309-1256D-167R-1, 93-96 cm, Piece No: 15a			Unit: 62			OBSERVER: TS, JG / CL	
ROCK NAME:	Sparsely clinopyroxene-plagioclase-phyric microcrystalline basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	1.1	1.1					
Plagioclase	0.9	0.9	0.3	0.6	0.4	Subhedral, laths	Some have devitrified glass inclusions. Partly replaced by chlorite
Clinopyroxene	0.2	0.2	0.5	0.7	0.6	Subhedral	
GROUNDMASS	98.9	98.9					
Plagioclase						Subhedral-anhedral, acicular-skeletal	
Clinopyroxene						Subhedral-anhedral, dendritic-fibrous	
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	1					Interstitial. Plagioclase	
Albite	0.1					Plagioclase	
Pyrite	1.2						
Chalcopyrite	0.1						
STRUCTURE :							
COMMENTS : POINT CONTING OF 1000 PRIMARY MINERALS. All phenocrysts occur as glomerocrysts.							



TS #168: 309-1256D-167R-3, 51-53 cm, Piece No: 8b							Unit: 62	OBSERVER: CC, JG / CL
ROCK NAME:	Sparsely clinopyroxene-plagioclase phyric cryptocrystalline basalt							
WHERE SAMPLED:	Interior of a massive unit							
GRAIN SIZE:	Cryptocrystalline							
TEXTURE:	Holocrystalline, variolitic							
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS	
			min.	max.	av.			
PHENOCRYSTS	3.4	3.7						
Plagioclase	2	2.3	0.1	0.35	0.2	Subhedral	Fractured and partially altered to chlorite in cracks.	
Clinopyroxene	1.4	1.4	0.1	0.6	0.4	Euhedral-subhedral		
GROUNDMASS		96.3						
Plagioclase						Subhedral-anhedral, skeletal	Two types: subhedral laths and rare interstitial areas. The interstitial areas are altered to chlorite in some place.	
Clinopyroxene						Anhedral-fibrous	Few anhedral grains and fibrous laths forming axiolic aggregates. Slightly altered to brownish phyllosilicates.	
Fe-Ti oxides						Euhedral-skeletal	Titanomagnetite	
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS	
			min.	max.	av.			
Chlorite	0.8					Plagioclase		
Pyrite	0.8					Disseminated		
Chalcopyrite	0.05					Disseminated		
STRUCTURE :								
COMMENTS : Phenocrysts form glomerocrysts. Some microcrystalline areas disseminated in the variolitic groundmass. In the microcrystalline areas, the clinopyroxene grains are subhedral and equant and the microlites of plagioclase are more abundant. In the cryptocrystalline groundmass, the clinopyroxene is essentially fibrous. Some apatite needles in the interstitial areas of plagioclase.								



TS #169: 309-1256D-168R-2, 10-13 cm, Piece No: 1b				Unit: 63		OBSERVER: CC, JG / CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Interior of massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, seriate, variolitic or symplectitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0	0					
GROUNDMASS	100	100					
Plagioclase						Subhedral-anhedral, skeletal	Two types: subhedral laths and rare interstitial areas. Laths are slightly altered to chlorite.
Clinopyroxene						Subhedral-fibrous	Subhedral laths and fibrous laths forming radiating aggregates. Fibrous laths are altered to brownish phyllosilicates.
Fe-Ti oxides						Euhedral-skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	4					Amygdales. Replaces actinolite	Roughly rounded amygdales; 0.4 mm in diameter
Quartz	0.2					Amygdales	
Actinolite	0.01					Amygdales	
Pyrite	0.8					Disseminated	
STRUCTURE :							
COMMENTS : There is a continuous grain size variation between plagioclase microlites to larger crystals. This seriate texture does not allow recognition of phenocryst. Some symplectitic intergrowth between plagioclase and clinopyroxene. Fibrous laths of plagioclase and clinopyroxene form variolitic patches between the larger and more subhedral microlites. Some apatite needles in the interstitial areas of plagioclase. These interstitial areas can be altered to chlorite.							



TS #170: 309-1256D-168R-5, 35-37cm, Piece No: 3		Unit: 63		OBSERVER: JG;CC/ CL		
ROCK NAME:	Aphyric microcrystalline basalt					
WHERE SAMPLED:	Interior of a massive unit					
GRAIN SIZE:	Microcrystalline					
TEXTURE:	Holocrystalline, intergranular-variolitic					
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)		MORPHOLOGY	COMMENTS
			min.	max.	av.	
PHENOCRYSTS						
GROUNDMASS	100					
Plagioclase	43.3		0.05	0.3	0.1	1) Subhedral, skeletal laths and 2) anhedral interstitial areas
Clinopyroxene	49.7		0.05	0.15	0.1	1) anhedral-intergranular, 2) fibrous-intergranular
Fe-Ti oxides	7				0.1	Subhedral
						Partly altered (chlorite, albite). Anhedral crystals host apatite needles.
						Fibrous crystals show some alteration to phyllosicates (brownish actinolite-chlorite)
						Titanomagnetite
SECONDARY MINERALOGY	PERCENT		SIZE (mm)		REPLACING / FILLING	COMMENTS
			min.	max.	av.	
Chlorite	4					Interstitial. Minor replaces plagioclase
Albite	0					Plagioclase
Prehnite	0					Plagioclase
Actinolite	0					Clinopyroxene
Pyrite	0.5					Disseminated
Chalcopyrite	0.05					Disseminated
						10% in alteration halo
						5% in alteration halo
						5% in alteration halo
						5% in alteration halo
STRUCTURE :						
COMMENTS : POINT COUNTING ON CONSTITUENT MINERALS (1000 POINTS). /One 0.4 mm vein at the edge of the section, composed of chlorite, very minor actinolite needles, quartz, euhedral pyrite, euhedral epidote, anhydrite and prehnite. Diffuse 0.5 mm alteration halo adjacent to this vein.						



TS 171: 309-1256D-169R-3, 88-90cm, Piece No: 1g							Unit: 64	OBSERVER: JG; CC / CL	
ROCK NAME:	Aphyric microcrystalline basalt/dolerite								
WHERE SAMPLED:	Interior of a massive unit								
GRAIN SIZE:	Microcrystalline-fine grained								
TEXTURE:	Holocrystalline								
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS		
			min.	max.	av.				
PHENOCRYSTS									
CONSTITUENT MINERALS	100								
Plagioclase		47	0.2	0.3	0.25	Subhedral laths	Partly replaced by chlorite		
Clinopyroxene	0	47	0.1	0.2	0.2	Anhedral-subhedral	Completely replaced by phyllosilicates (actinolite-chlorite)		
Fe-Ti oxides		6				Euhedral-subhedral	Titanomagnetite		
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS		
			min.	max.	av.				
Chlorite	35					Interstitial, clinopyroxene			
Titanite	3					Disseminated	In chlorite		
Actinolite	22					Clinopyroxene			
Albite	5?					Plagioclase			
Prehnite	12					Plagioclase			
Anhydrite	13					Plagioclase			
Pyrite	5					Disseminated	Euhedral		
STRUCTURE :									
COMMENTS :	Due to the intense state of alteration, statements about texture and constituent mineral abundance and shape are unclear./ The whole section is a patch of alteration including a 2 mm amygdale of anhydrite. No primary clinopyroxene is left. The presence of plagioclase relics is uncertain. The proportions of the various secondary minerals are very variable according to the area of the section. The proportions given above are averages.								



TS #172: 309-1256D-170R-2, 90-93 cm, Piece No: 10			Unit: 64			OBSERVER: TS, SD, CC	
ROCK NAME:	Sparsely clinopyroxene-plagioclase-phyric cryptocrystalline basalt						
WHERE SAMPLED:	Bottom of a massive unit						
GRAIN SIZE:	Cryptocrystalline						
TEXTURE:	Hypocrystalline, variolitic						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.6	1.7					
Plagioclase	0.5	1.6	0.2	0.9	0.3	Euhedral-subhedral	Most replaced by chlorite and albite. Some form glomero-crysts.
Clinopyroxene	0.1	0.1	0.3	0.4	0.35	Subhedral	
GROUNDMASS		98.3					
Plagioclase						Subhedral, skeletal-acicular	
Clinopyroxene						Subhedral-anhedral, dendritic-fibrous	Replaced by chlorite
Mesostasis							Altered, devitrified
Fe-Ti oxides						Subhedral, skeletal	Titanomagnetite
SECONDARY MINERALOGY	PERCENT	SIZE (mm)			REPLACING / FILLING	COMMENTS	
		min.	max.	av.			
Chlorite	1				Amygdale; replaces plagioclase, clinopyroxene. Very minor interstitial	1mm long amygdale	
Albite	0.4				Plagioclase		
Prehnite	0.3				Plagioclase		
Titanite	0.1				Clinopyroxene		
Quartz	0.2				Small amygdales		
Pyrite	0.8				Disseminated		
Chalcopyrite	0.05				Disseminated		
STRUCTURE :							
COMMENTS : POINT COUNTING OF 1000 PRIMARY MINERALS. Sulfide (up to 0.1 mm) occurrence. Four 0.1-0.3 mm veins of chlorite, quartz, prehnite, euhedral pyrite, and titanite.							



TS #173: 309-1256D-170R-2, 107-109 cm, Piece No: 12			Unit: 65			OBSERVER: SD, TS / CL	
ROCK NAME:	Aphyric microcrystalline basalt						
WHERE SAMPLED:	Top of a massive unit						
GRAIN SIZE:	Microcrystalline						
TEXTURE:	Holocrystalline, variolitic-intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
PHENOCRYSTS	0.4						
Plagioclase	0.3		0.1	0.5	0.1	Euhedral-anhedral	Partially altered to phyllosilicates (chlorite). Some form glomeroporphyritic textures.
Clinopyroxene	0.1		0.1	0.4	0.1	Subhedral	Partially altered to phyllosilicates (chlorite). Some form glomeroporphyritic textures.
GROUNDMASS	99.6						
Plagioclase						Subhedral-anhedral laths, acicular	Altered crystals and some partly replaced by phyllosilicates (chlorite).
Clinopyroxene						Anhedral-subhedral, fibrous, tabular	Some crystals completely replaced by phyllosilicates (chlorite).
Fe-Ti oxides						Euhedral-anhedral, skeletal	Titanomagnetite
Mesostasis							Altered
SECONDARY MINERALOGY	PERCENT		SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	0.5					Vesicle. Interstitial. Plagioclase	
Albite	0.1					Plagioclase	
Prehnite	0.05					Plagioclase	
Quartz	0.1					Vesicle	
Pyrite	0.5					Disseminated	
STRUCTURE :							
COMMENTS : One vesicle is filled with chlorite, titanite, quartz and pyrite.							



TS #174: 309-1256D-170R-3, 41-43 cm, Piece No: 2		Unit: 65			OBSERVER: SD, JG / CL		
ROCK NAME:	Aphyric microcrystalline-fine-grained basalt						
WHERE SAMPLED:	Interior of a massive unit						
GRAIN SIZE:	Microcrystalline-fine grained						
TEXTURE:	Holocrystalline, seriate variolitic-intergranular						
PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)			MORPHOLOGY	COMMENTS
			min.	max.	av.		
CONSTITUENT MINERALS	100						
Plagioclase	47		0.05	0.45	0.1	Subhedral-anhedral laths, acicular	Altered crystals and some partly replaced by prehnite, chlorite and minor calcite
Clinopyroxene	19.9		0.05	0.6	0.1	Anhedral-subhedral, fibrous, tabular	Altered and exhibit ophitic-subophitic texture, some crystals completely replaced by phyllosilicates (chlorite).
Fe-Ti oxides	2		0.01	0.03	0.01	Euhedral-anhedral, skeletal	Titanomagnetite
Mesostasis	31.1						Altered to chlorite.
SECONDARY MINERALOGY	PERCENT	PERCENT ORIGINAL	SIZE (mm)			REPLACING / FILLING	COMMENTS
			min.	max.	av.		
Chlorite	30					Clinopyroxene, plagioclase	
Prehnite	20					Interstitial. Plagioclase, clinopyroxene	
Zeolite	5					Interstitial	Laumontite ?
Titanite	1					Interstitial	
Calcite	0.02					Plagioclase	
Pyrite	0.5					Disseminated	
Chalcopyrite	0.2					Disseminated	
STRUCTURE :							
COMMENTS : POINT COUNTING OF CONSTITUENT MINERALS (1000 POINTS). /The central part of the section is an alteration patch composed of prehnite and zeolite (laumontite?) with very few primary minerals present. These patches grade to chlorite-rich patches, with more primary minerals present. The percentages given in the table are averages on the whole thin section.							