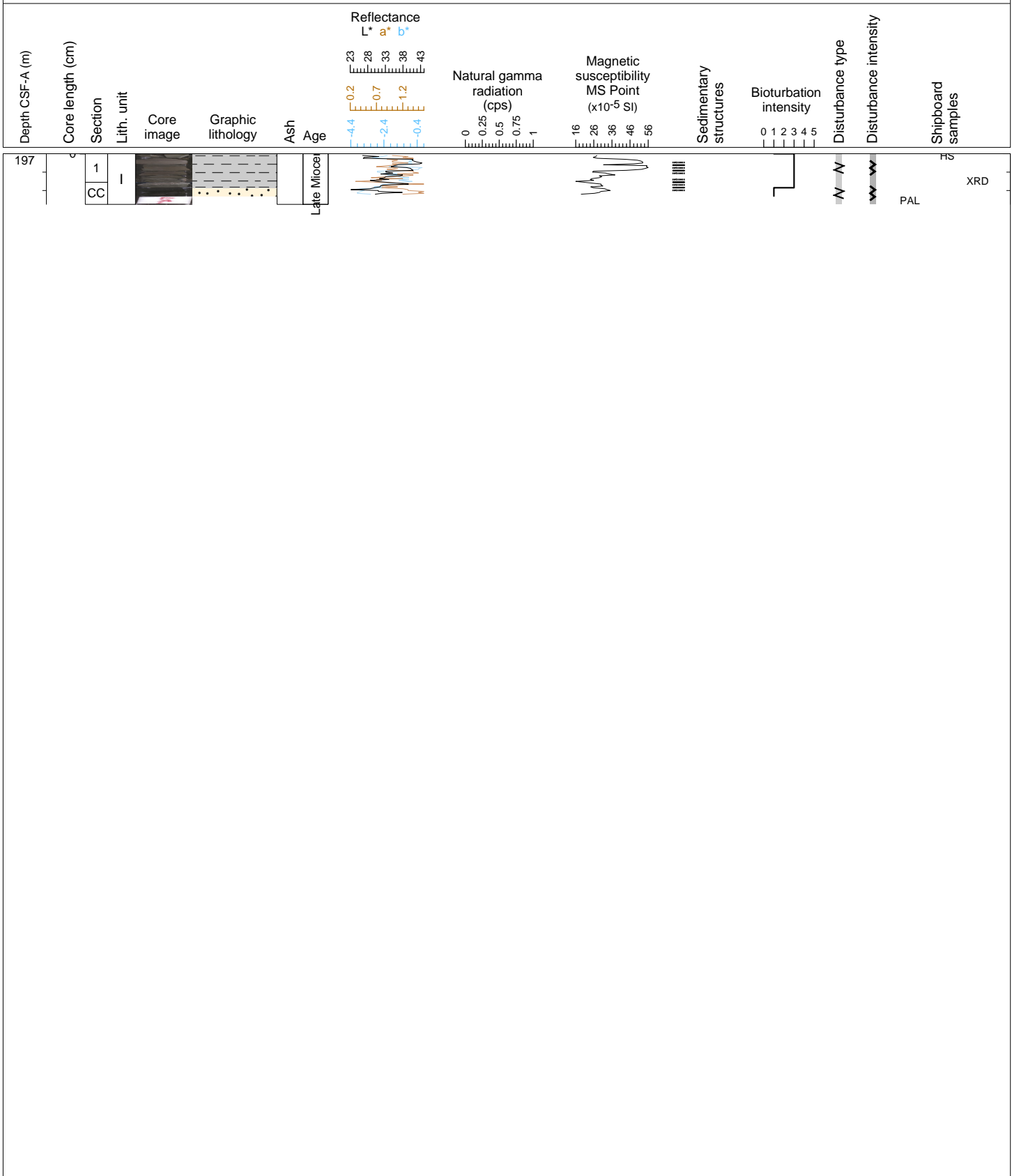


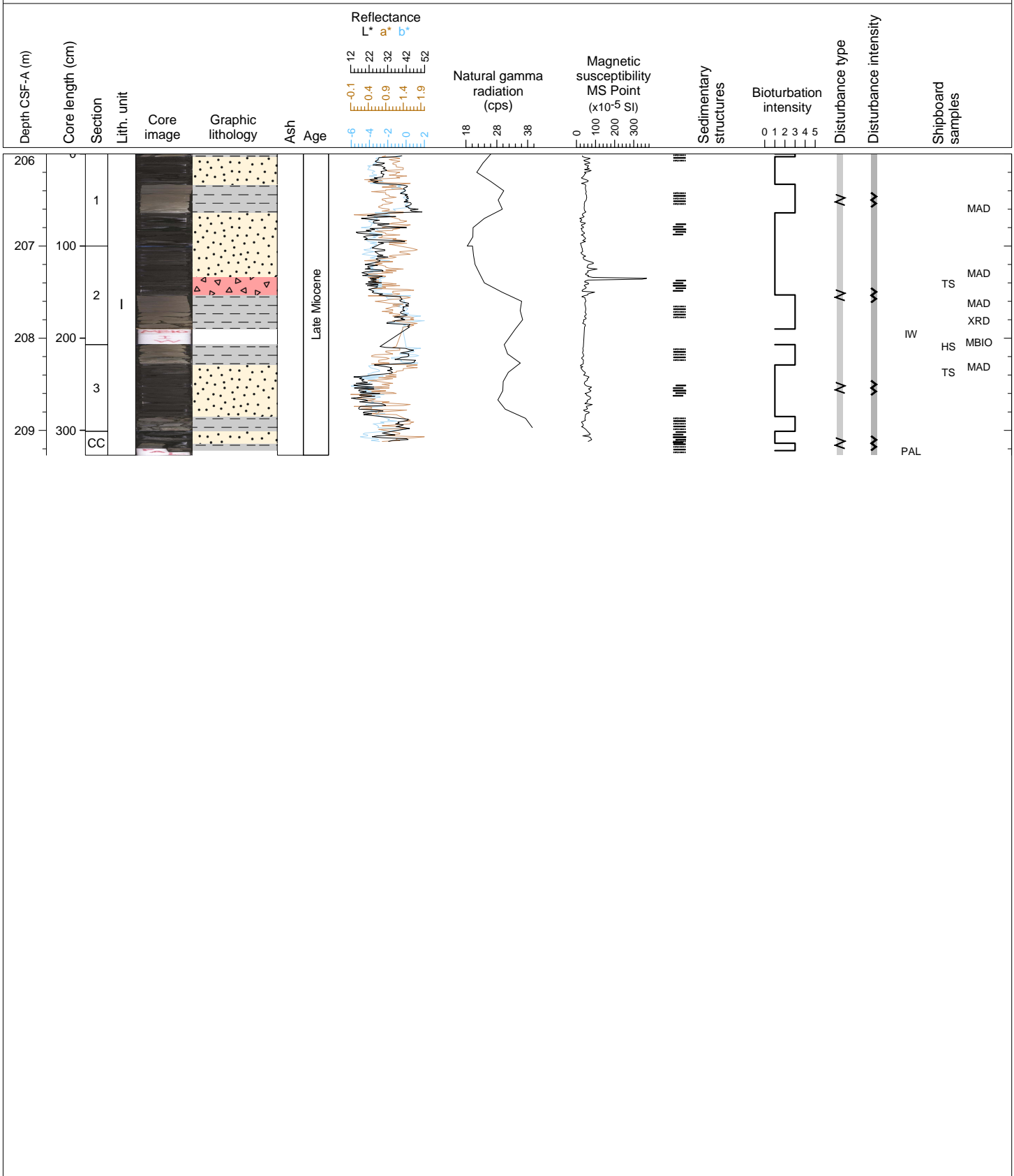
Hole 349-U1434A Core 2R, Interval 197.0-197.55 m (CSF-A)

Dark greenish gray CLAYSTONE and black SANDSTONE. CLAYSTONE is color banded and heavily bioturbated. SANDSTONE is a black in color indicating a volcanic source of the sand grains. The core is severely fragmented.



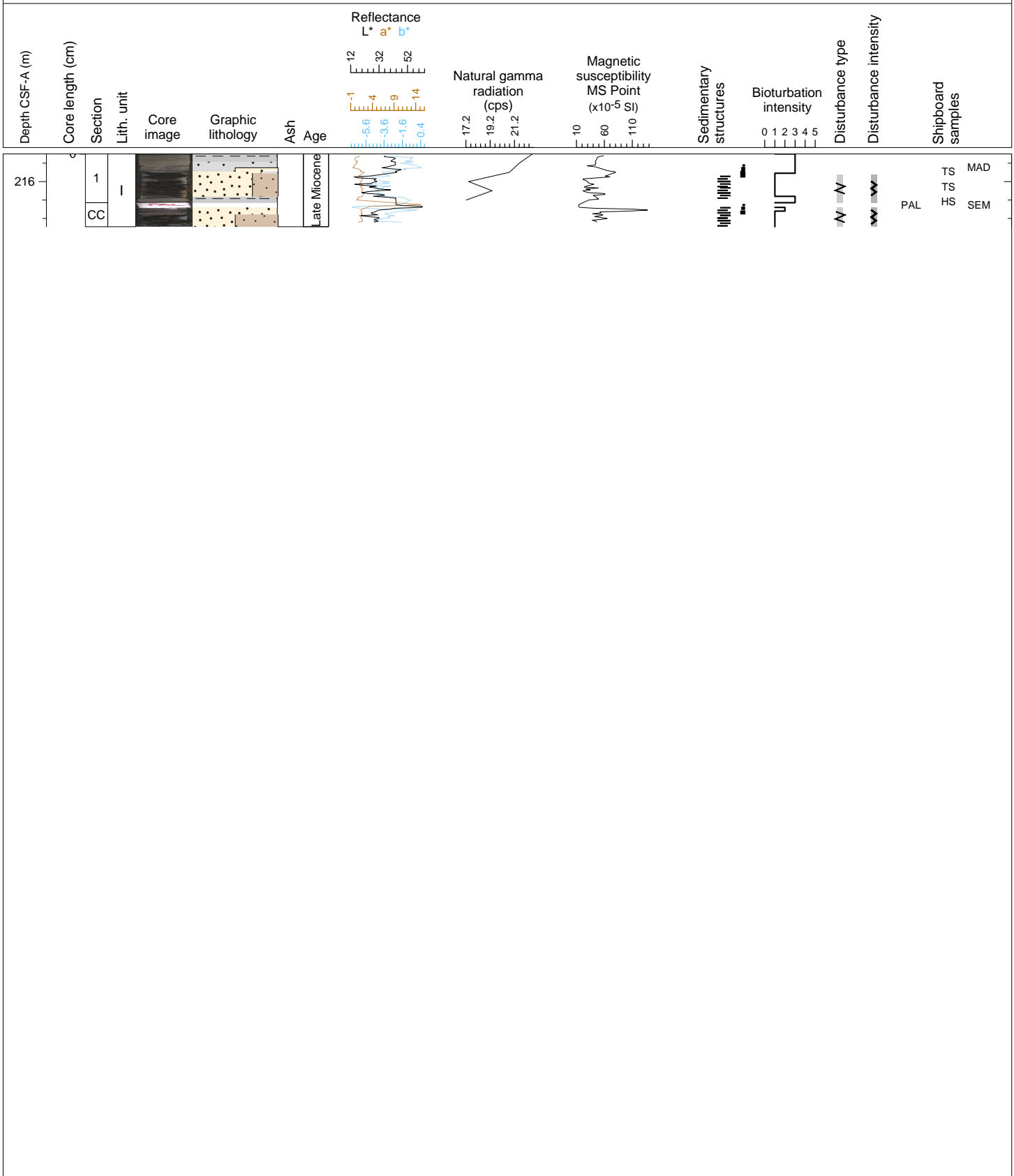
Hole 349-U1434A Core 3R, Interval 206.0-209.27 m (CSF-A)

Black SANDSTONE and dark greenish gray CLAYSTONE. A layer of black BRECCIA occurs at the bottom of the SANDSTONE interval in Section 2. CLAYSTONE is color banded and heavily bioturbated. The SANDSTONE and BRECCIA are black to very dark gray in color indicating a volcanic source for the clastic grains. Parallel bedding is well developed in the SANDSTONE layers.



Hole 349-U1434A Core 4R, Interval 215.7-216.49 m (CSF-A)

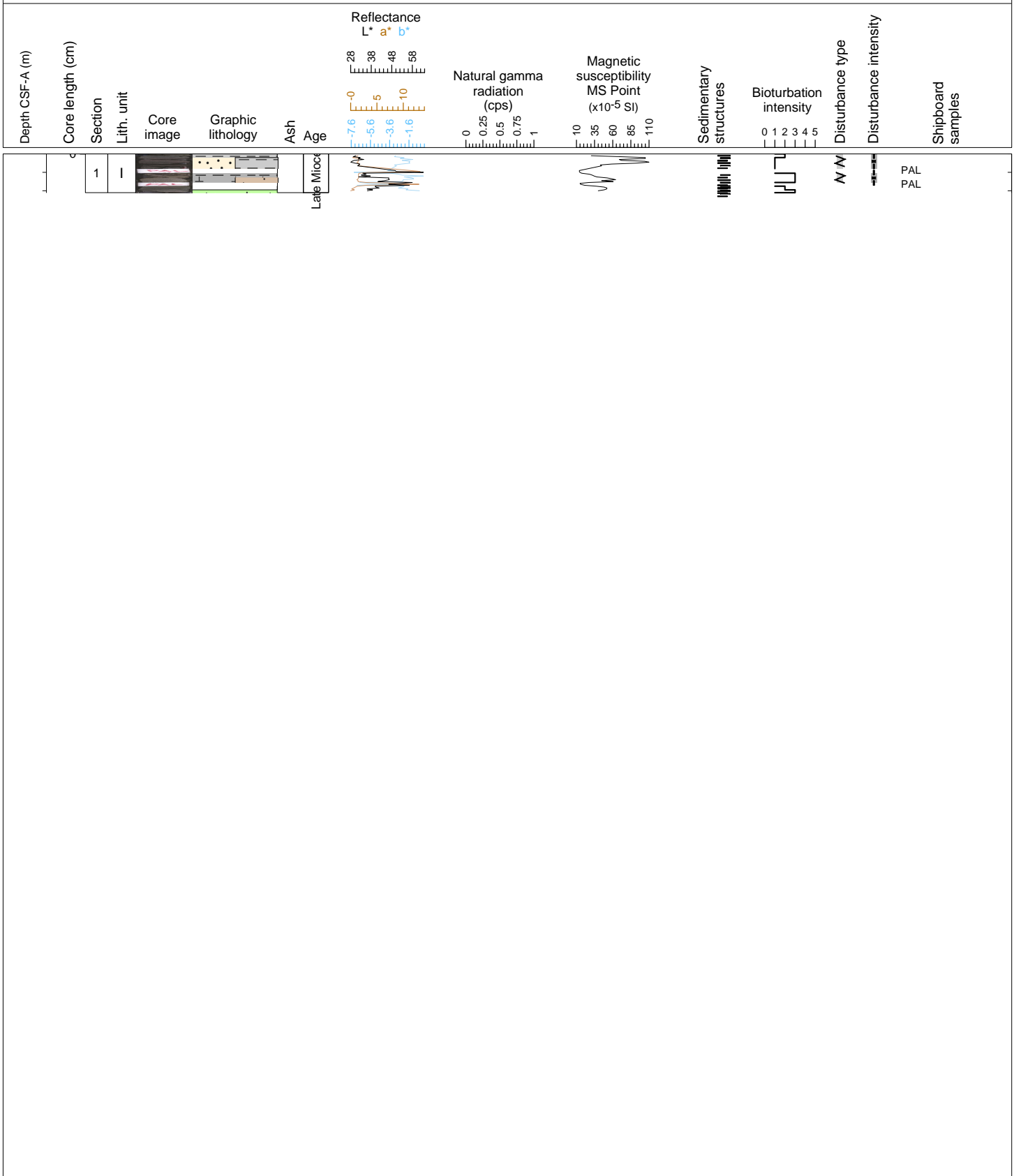
Dark greenish gray CLAYSTONE WITH SILT and SANDY CLAYSTONE, black SANDSTONE and SILTSTONE, and dark gray fine-grained SANDSTONE. The black and dark gray SANDSTONE and SILTSTONE intervals are laminated. The core is moderately to highly fragmented.





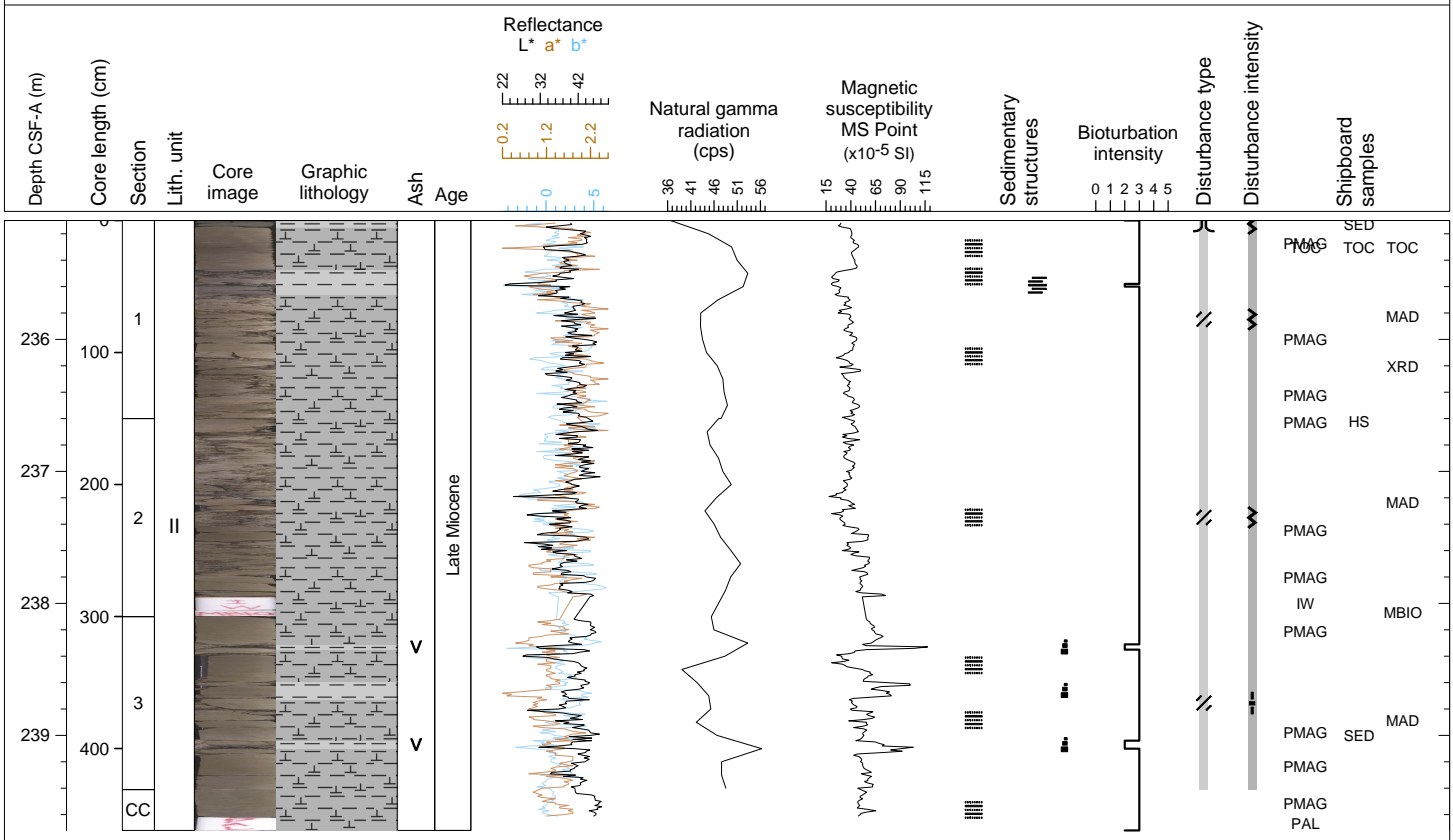
Hole 349-U1434A Core 5R, Interval 225.4-225.82 m (CSF-A)

Dark greenish gray CLAYSTONE and SANDSTONE and light greenish gray NANNOFOSSIL-RICH CLAYSTONE and SILTSTONE. The SANDSTONE and SILTSTONE are laminated. The core is moderately fragmented.



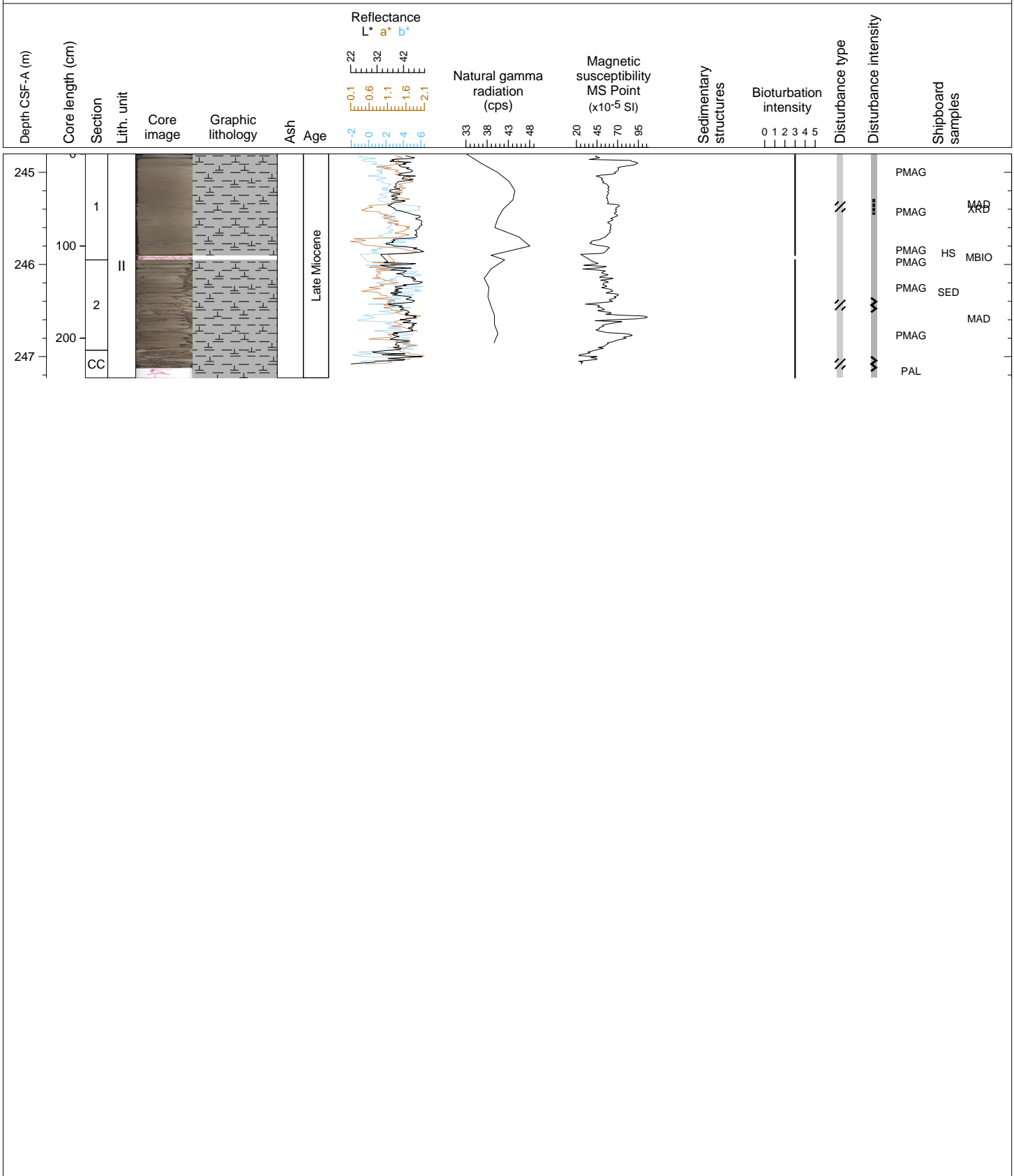
Hole 349-U1434A Core 6R, Interval 235.1-239.72 m (CSF-A)

Greenish gray NANNOFOSSIL-RICH CLAYSTONE dominates this core. The sediment is largely massive and structureless, with vague color banding in places. Several very thin, graded, dark gray CLAYSTONE WITH SAND intervals are seen in Sections 1 and 3, with an erosive base and gradational contact with the overlying CLAYSTONE. This contact is heavily bioturbated intervals by *Nereites* trace fossils. The core is highly fractured.



Hole 349-U1434A Core 7R, Interval 244.8-247.23 m (CSF-A)

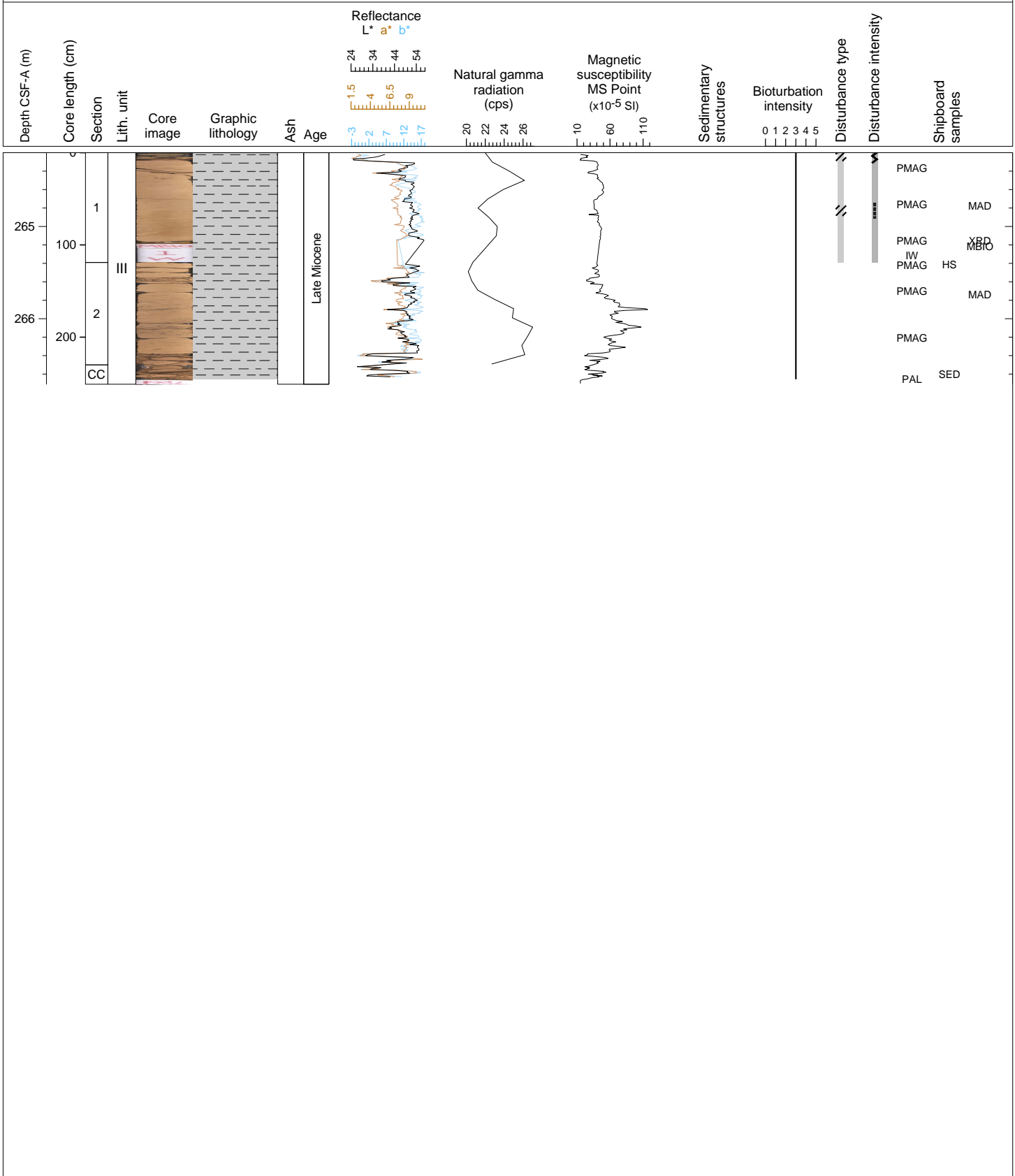
Greenish gray NANNOFOSSIL-RICH CLAYSTONE and CLAYSTONE WITH NANNOFOSSILS that is largely massive and structureless. The core is heavily bioturbated with Nereites trace fossils and highly fractured.





Hole 349-U1434A Core 9R, Interval 264.2-266.71 m (CSF-A)

Brown CLAYSTONE WITH NANNOFOSSILS dominates this core. Some small fractures occur at the top of the core. The core is heavily bioturbated with Nereites trace fossils and highly fractured.

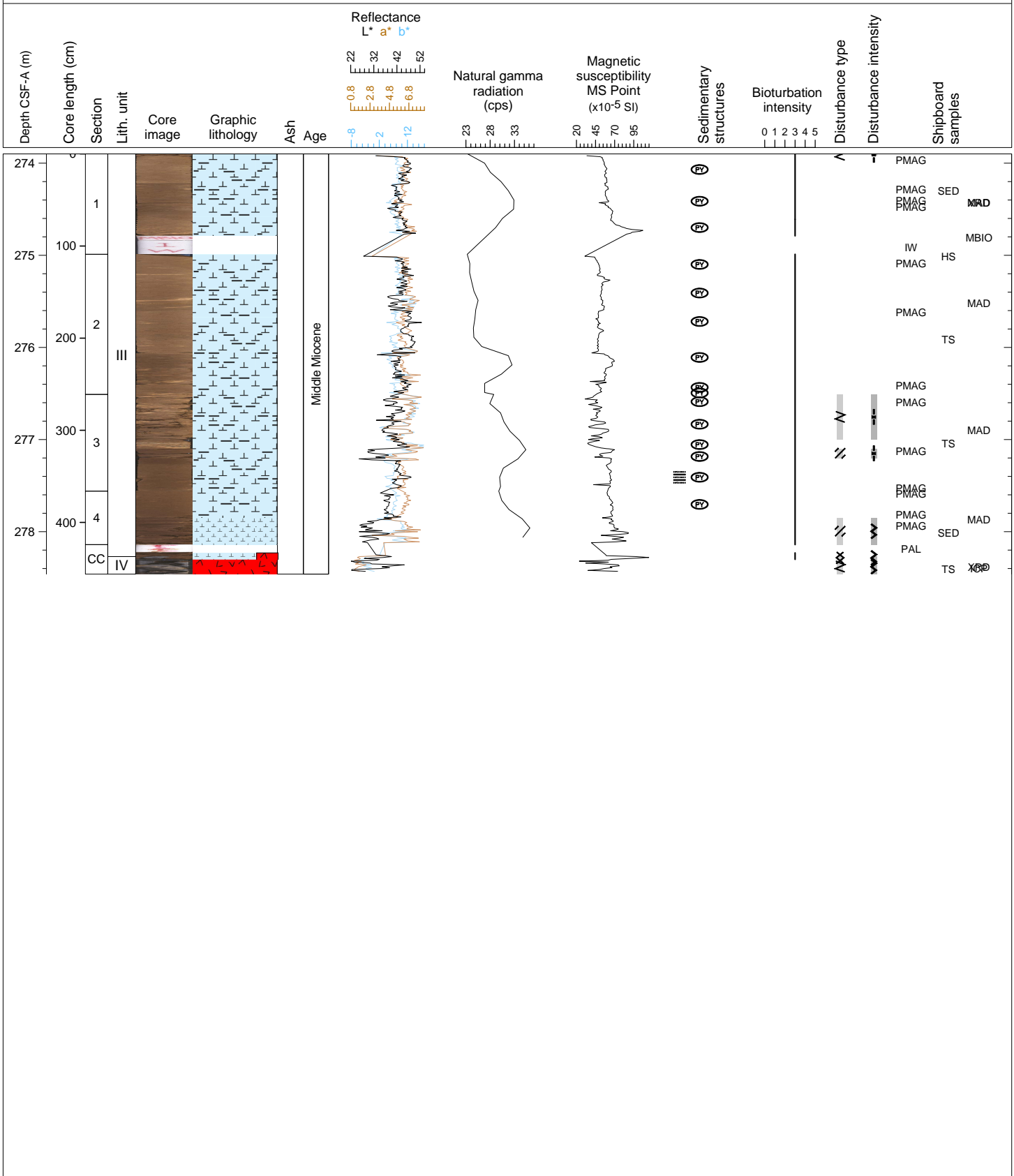


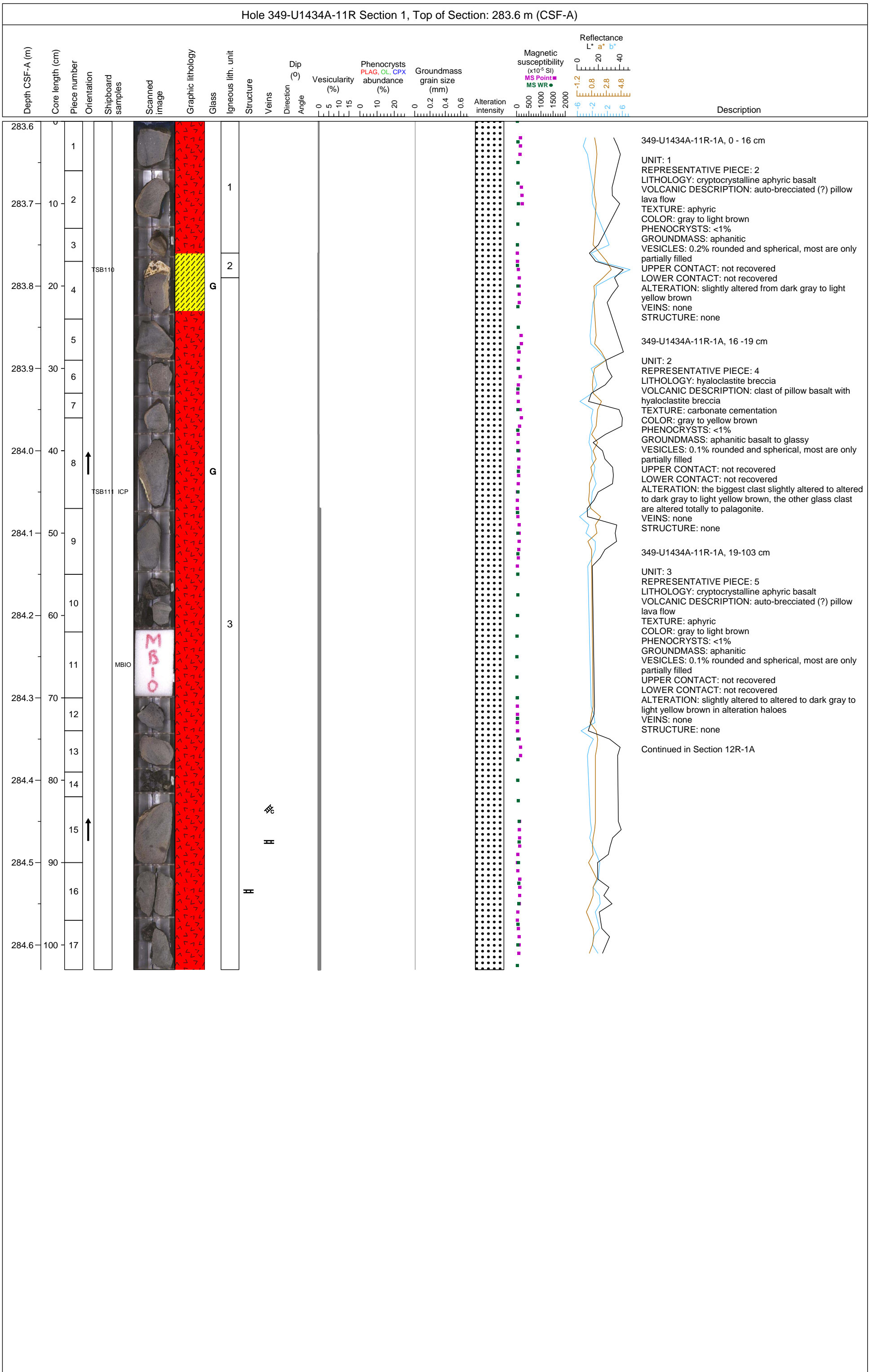
Hole 349-U1434A-10R Section CC, Top of Section: 278.14 m (CSF-A)

Depth CSF-A (m)	Core length (cm)	Piece number	Orientation	Shipboard samples	Scanned image	Graphic lithology	Glass	Igneous lith. unit	Structure	Veins	Dip (°)	Vesicularity (%)	Phenocrysts abundance (%)	Groundmass grain size (mm)	Alteration intensity	Magnetic susceptibility (x10 <sup>-5</sup> SI)	Reflectance L* a* b*	Description
278.2	10 -							III										<p>349-U1434A-10R-CC, 0 - 13 cm</p> <p>LITHOSTRATIGRAPHIC UNIT: III                      LITHOLOGY: claystone                      DESCRIPTION: claystone                      COLOR: ochre yellow to brown                      UPPER CONTACT: not recovered                      LOWER CONTACT: not recovered                      VEINS: none                      STRUCTURE: no dynamic structure                      349-U1434A-10R-CC, 13 - 32 cm</p>
278.3	20 -							1										<p>UNIT: 1                      REPRESENTATIVE PIECE: none defined                      LITHOLOGY: cryptocrystalline aphyric basalt                      VOLCANIC DESCRIPTION: auto-brecciated (?) pillow lava flow                      TEXTURE: aphyric                      COLOR: gray to light brown                      PHENOCRYSTS: &lt;1%                      GROUNDMASS: aphanitic                      VESICLES: 0.2% rounded and spherical, most are only partially filled                      UPPER CONTACT: not recovered                      LOWER CONTACT: not recovered                      ALTERATION: slightly altered from dark gray to light yellow brown                      VEINS: none                      STRUCTURE: none</p>
278.4	30 -																	Continued in Section 11R-1A

Hole 349-U1434A Core 10R, Interval 273.9-278.46 m (CSF-A)

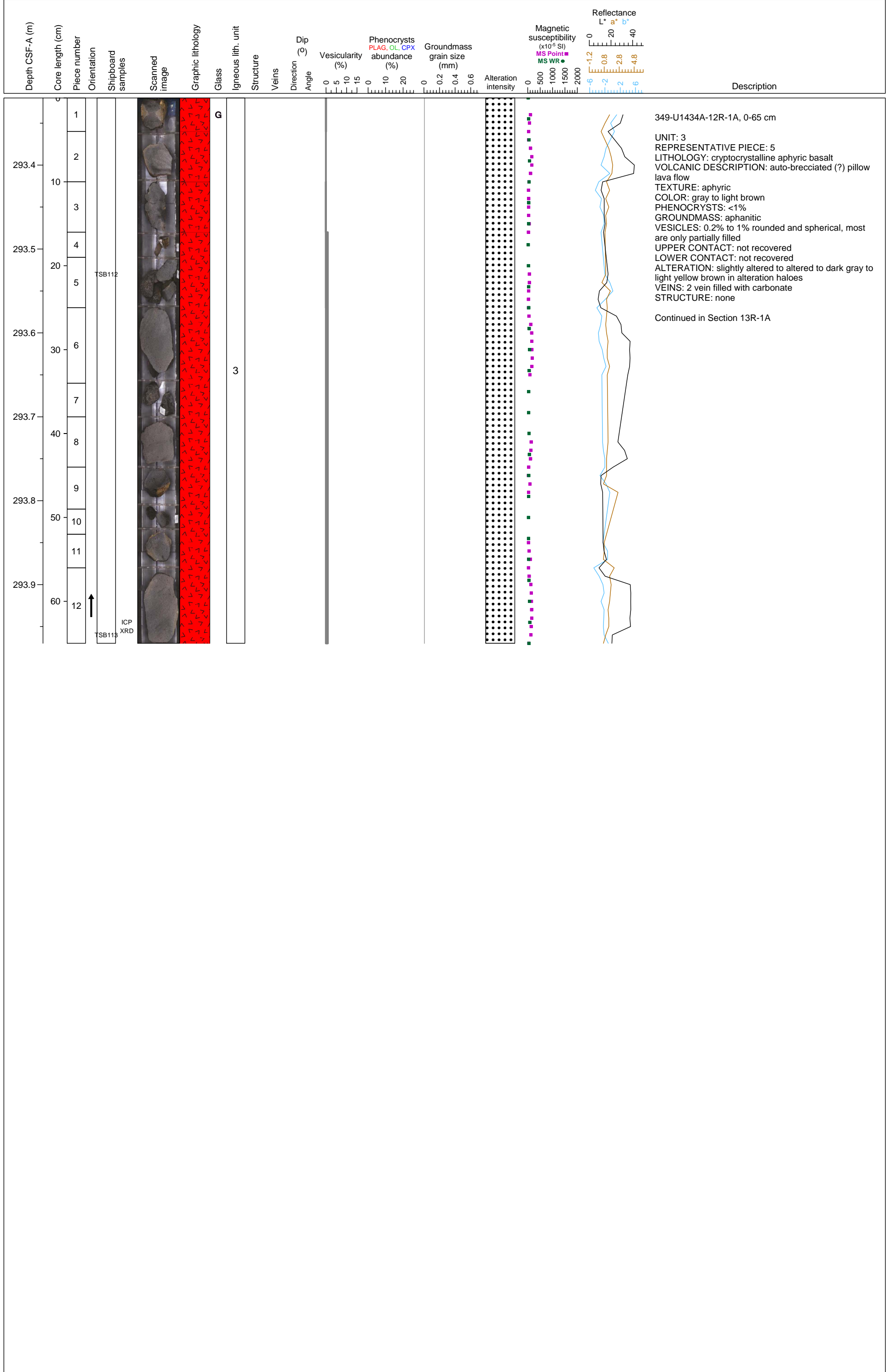
Yellowish brown and dark yellowish brown FORAMINIFER-RICH CLAYSTONE WITH NANNOFOSSILS, CLAYSTONE WITH FORAMINIFERS, AND CLAYSTONE overlying basalt at 16 cm in CC. Beds in the FORAMINIFER-RICH CLAYSTONE WITH NANNOFOSSILS and CLAYSTONE are defined by foraminifer content and slight color changes. Dark-colored mineral grains and spots are thought to be pyrite. Bioturbation is heavy throughout.



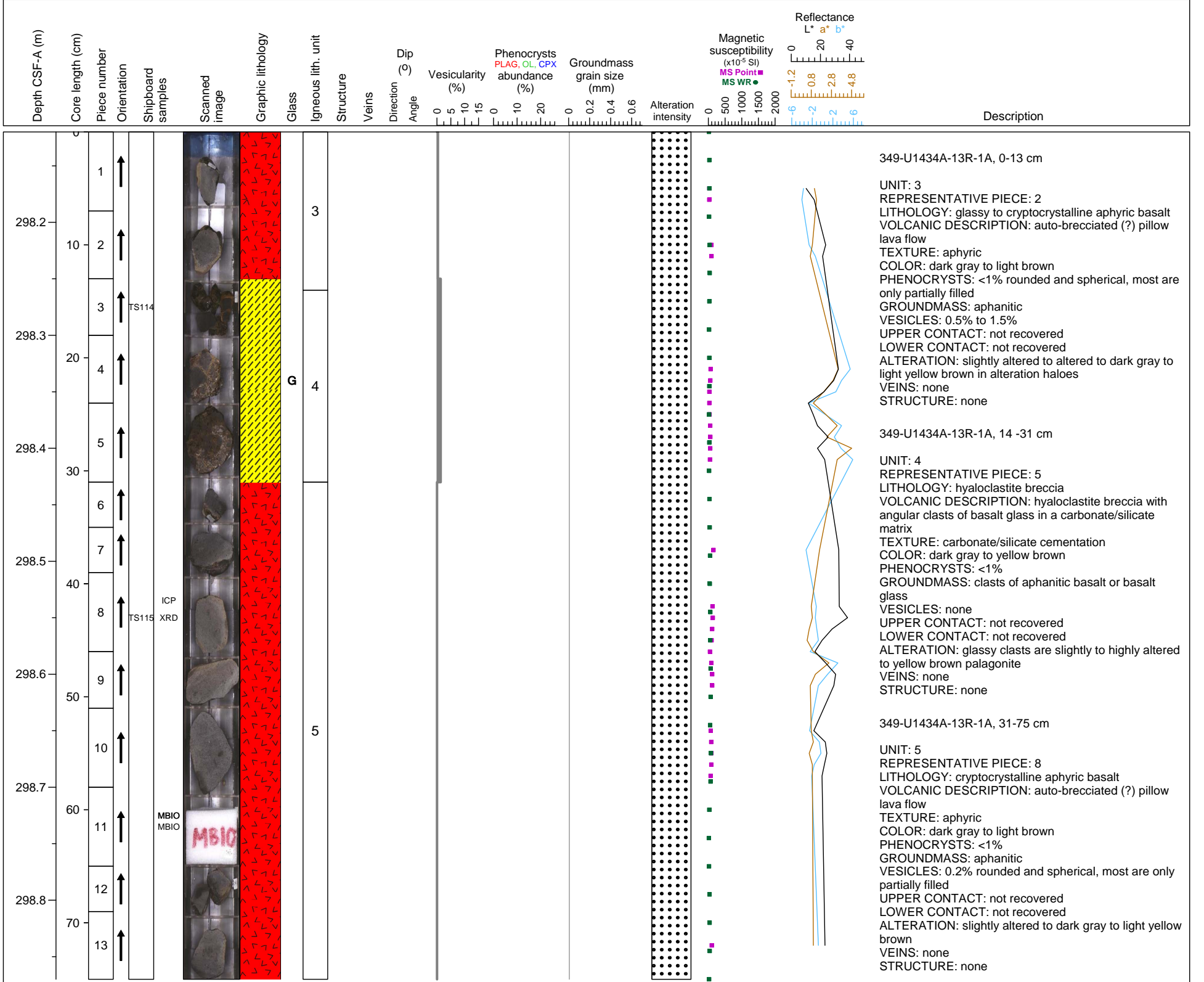




Hole 349-U1434A-12R Section 1, Top of Section: 293.3 m (CSF-A)

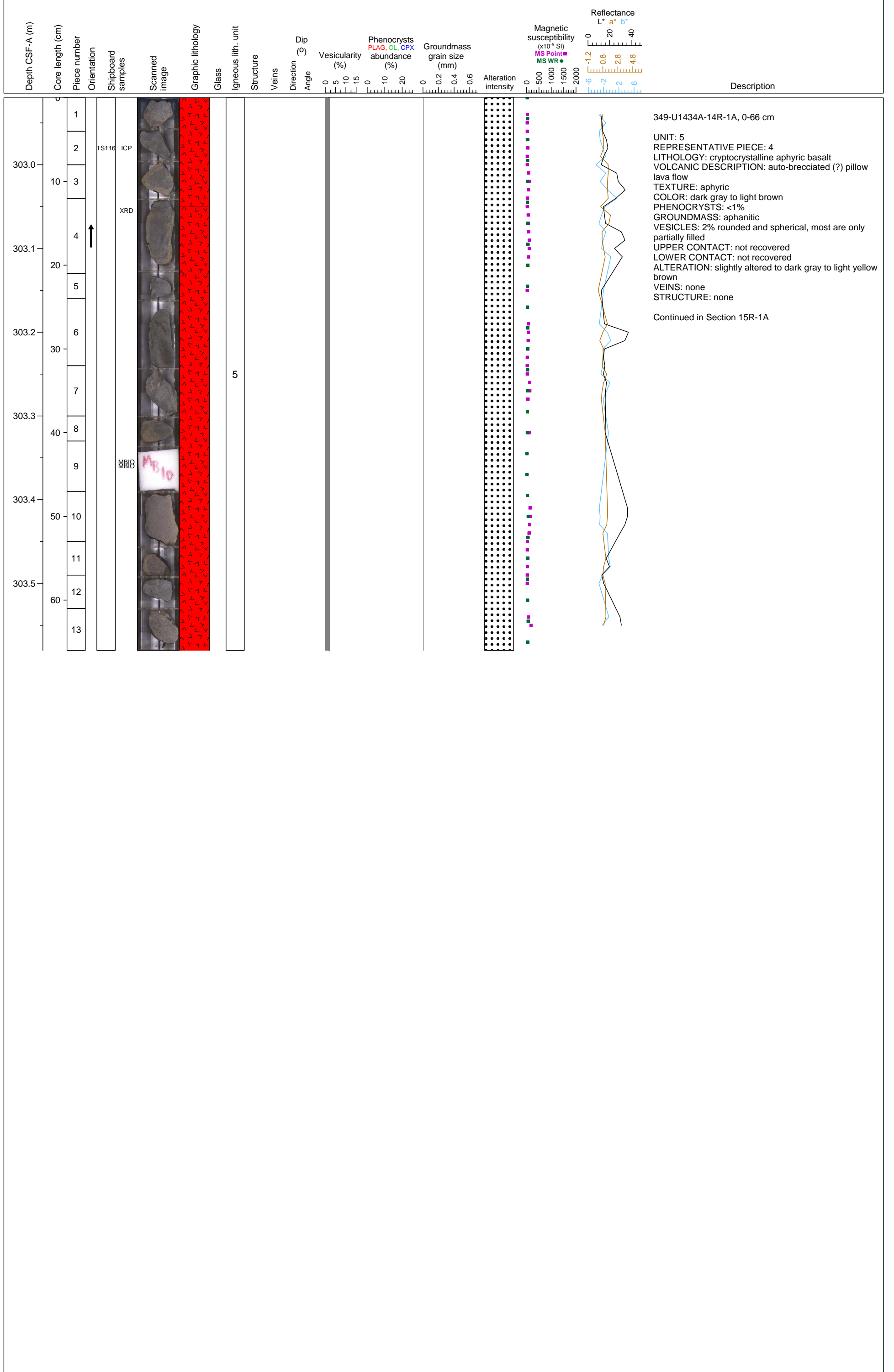


Hole 349-U1434A-13R Section 1, Top of Section: 298.1 m (CSF-A)



Continued in Section 14R-1A

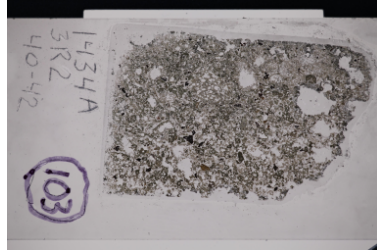
Hole 349-U1434A-14R Section 1, Top of Section: 302.9 m (CSF-A)



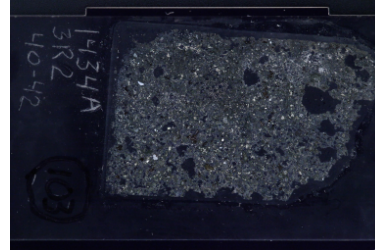




THIN SECTION LABEL ID: **349-U1434A-3R-2-W 40/42-TSB(40-42)-TS103** Thin section no.: 103  
 Unit/Subunit: I Piece no.: Observer: Dadd  
 Thin section summary: Breccia with subangular fragments of vesicular mafic glass (94%) and minor non-vesicular mafic glass shards (1%), and basaltic rock fragments (5%). The vesicular fragments are slightly altered and have plagioclase and rare clinopyroxene and olivine phenocrysts. The vesicles are lined and/or filled with zeolite (?) minerals and these also form the cement between the clasts. The nonvesicular shards vary from slightly to highly altered and have plagioclase phenocrysts. The basalt lithic grains are highly altered and plag-phyric (trachytic textures). The breccia is poorly sorted.



Plane-polarized: 25118461



Cross-polarized: 25118481

**SEDIMENT/SEDIMENTARY ROCK**

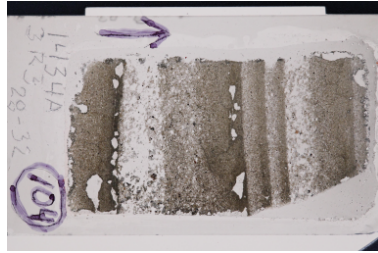
Sample domain name: Domain rel. abundance (%): Observer: Dadd

Lithology: ash-rich breccia

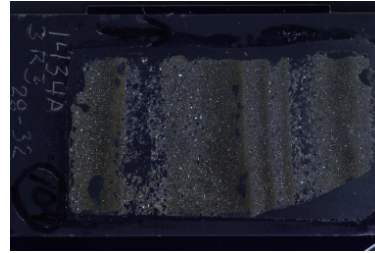
TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture	50	Tephra	95	Mineral grains	subangular
Sand texture	30	Siliciclastics	5	Ash grains	subangular
Silt texture	20	Detrital carbonate			
Clay texture		Biogenic carbonate			
		Biogenic silica			



THIN SECTION LABEL ID: **349-U1434A-3R-3-W 28/32-TSB(28-32)-TS104** Thin section no.: 104  
 Unit/Subunit: I Piece no.: Observer: Dadd  
 Thin section summary: Interbedded sandstone, siltstone and mudstone with very thin beds to laminae. Laminae grade from sandstone to claystone. The grains are mafic glass shards (95%), mostly greenish brown and vesicular with minor red brown poorly vesicular types (<5%) and single grains of plagioclase, clinopyroxene, olivine and one biotite grain. There are radiating zeolite minerals in vesicles and between grains.



Plane-polarized: 25118501



Cross-polarized: 25118521

**SEDIMENT/SEDIMENTARY ROCK**

Sample domain name: Domain rel. abundance (%): Observer: Dadd

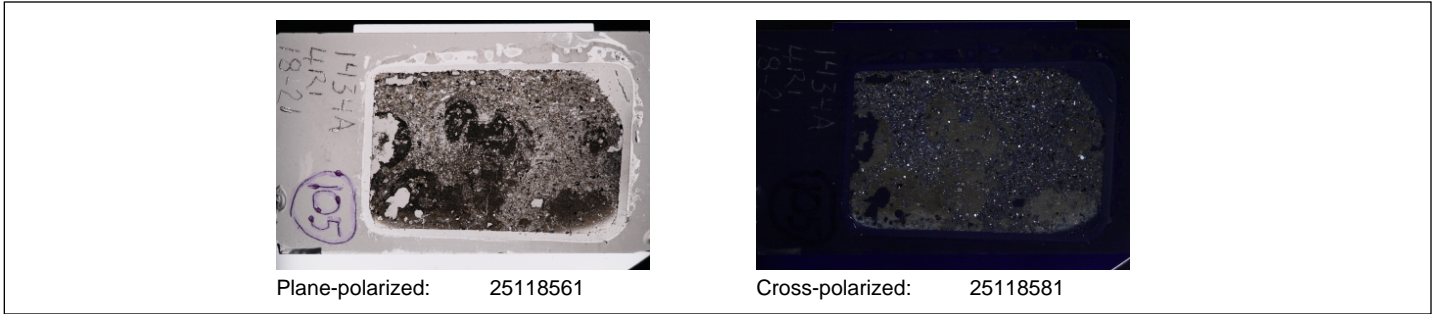
Lithology: ash-rich sandstone

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture	2	Tephra	100	Mineral grains	angular
Sand texture	30	Siliciclastics		Ash grains	angular
Silt texture	40	Detrital carbonate			
Clay texture	28	Biogenic carbonate			
		Biogenic silica			

**THIN SECTION LABEL ID: 349-U1434A-4R-1-W 18/21-TSB(18-21)-TS105** Thin section no.: 105

Unit/Subunit: I Piece no.: Observer: Dadd

Thin section summary: Volcaniclastic sandstone with silty claystone fragments. The sandstone has subangular fragments of poorly vesicular mafic glass (85%) and minor nonvesicular mafic glass shards (5%), and basaltic rock fragments (10%). The poorly vesicular fragments are altered and have plagioclase and lesser olivine phenocrysts. The vesicles are filled with zeolite (?) minerals and these also form the cement between the clasts. The nonvesicular shards vary from slightly to highly altered and have plagioclase phenocrysts. The basalt lithic grains are highly altered and plag-phyric. The claystone fragments contain mafic glass fragments and minor foraminifer tests. One clast is laminated, the others are massive. All have burrows. Contacts between the sandstone and claystone are irregular. Clasts of mafic glass protrude into the claystone suggesting it was still soft when incorporated in the sandstone.



**SEDIMENT/SEDIMENTARY ROCK**

Sample domain name: sediment clasts Domain rel. abundance (%): 40 Observer: Dadd

Lithology: silty claystone with volcanic ash

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra	20	Mineral grains	
Sand texture		Siliciclastics	88	Ash grains	subangular
Silt texture	20	Detrital carbonate			
Clay texture	80	Biogenic carbonate	2		
		Biogenic silica			

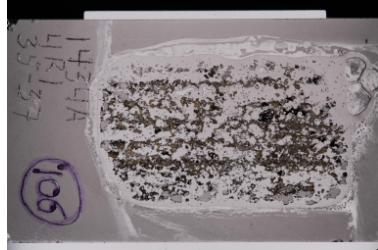
Sample domain name: sediment matrix Domain rel. abundance (%): 60 Observer: Dadd

Lithology: ash-rich sandstone

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra	94	Mineral grains	subangular
Sand texture	80	Siliciclastics	5	Ash grains	angular
Silt texture	15	Detrital carbonate			
Clay texture	5	Biogenic carbonate	1		
		Biogenic silica			



THIN SECTION LABEL ID: **349-U1434A-4R-1-W 35/37-TSB(35-37)-TS106** Thin section no.: 106  
 Unit/Subunit: I Piece no.: Observer: ZLIU, Anthony Koppers  
 Thin section summary: Breccia with angular fragments of volcanic glass, one part still fresh glass and one part devitrified. The glass shards have various shapes and are largely nonvesicular with a few clasts that are moderately vesicular. A few plagioclase and olivine grains can be observed. Plagioclase crystals usually long and thin. Rare clasts of trachytic basalt are observed with flow aligned plagioclase laths. The breccia is matrix supported and also contains a few rare foraminifers.



Plane-polarized: 25118601



Cross-polarized: 25118621

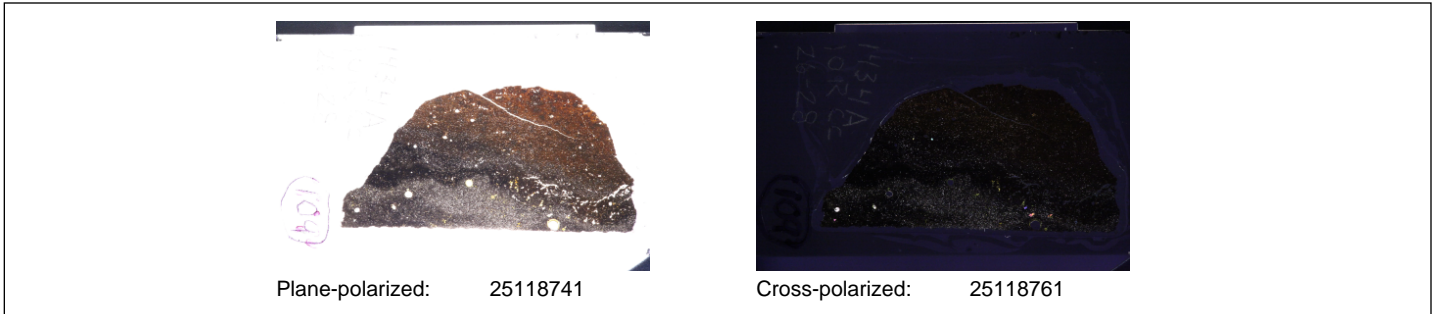
**SEDIMENT/SEDIMENTARY ROCK**

Sample domain name: Domain rel. abundance (%): 100 Observer: ZLIU

Lithology: breccia

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture	40	Tephra	95	Mineral grains	subangular
Sand texture	35	Siliciclastics	5	Ash grains	subangular
Silt texture	25	Detrital carbonate			
Clay texture		Biogenic carbonate			
		Biogenic silica			

THIN SECTION LABEL ID: **349-U1434A-10R-CC-W 26/28-TSB(26-28)-TS109** Thin section no.: 109  
 Unit/Subunit: Piece no.: Observer: G Zhang  
 Thin section summary: Highly altered cryptocrystalline aphyric basalt, containing clinopyroxene as phenocrysts, background olivine altered partly to Fe-oxide, no alteration is observed for plagioclase, vesicles of 0.5% are filled with saponite and Fe-oxides.



**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology      Domain rel. abundance (%): 100      Observer: G Zhang

Lithology: aphyric basalt

Texture: aligned      Average grain size: cryptocrystalline      Grain size distribution: bimodal

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	2	1.6	0.4	0.15	1	0.7	subrounded	

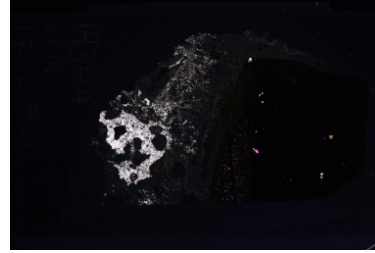
Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Clinopyroxene	0.1	0.1	0	0.3	0.7	0.5	subhedral			
Total (whole rock constituents):	0.1	0.1	0							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Mesostasis	100	85	15						
Total (groundmass constituents):	100	85	85						
Total (whole rock constituents):	97.9								

THIN SECTION LABEL ID: **349-U1434A-11R-1-W 17/19-TSB(17-19)-TS110** Thin section no.: 110  
 Unit/Subunit: Piece no.: #4 Observer: G Zhang  
 Thin section summary: Highly altered cryptocrystalline aphyric non-vesicular basalt, containing clinopyroxene as phenocrysts, background olivine altered partly to Fe-oxide, no alteration is observed for plagioclase.



Plane-polarized: 25118781



Cross-polarized: 25118841

**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology Domain rel. abundance (%): 100 Observer: G Zhang

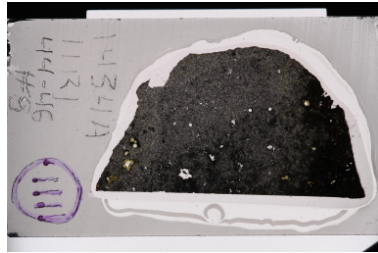
Lithology: aphyric basalt

Texture: aphanitic Average grain size: cryptocrystalline Grain size distribution: bimodal

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Clinopyroxene	0.1	0.05	0.05	0.15	0.4	0.3	subhedral			
Total (whole rock constituents):	0.1	0.05	0.05							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Mesostasis	77								
Glass	20	8	15						
Total (groundmass constituents):	97								
Total (whole rock constituents):	99.9								

THIN SECTION LABEL ID: **349-U1434A-11R-1-W 44/46-TSB(44-46)-TS111** Thin section no.: 111  
 Unit/Subunit: Piece no.: #8 Observer: G Zhang  
 Thin section summary: Slightly altered cryptocrystalline aphyric basalt, containing olivine as phenocrysts, background olivine altered partly to Fe-oxide, no alteration is observed for plagioclase, vesicles of 0.6% are filled with carbonate and saponite.



Plane-polarized: 25118861



Cross-polarized: 25118901

**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology Domain rel. abundance (%): 100 Observer: G Zhang

Lithology: aphyric basalt

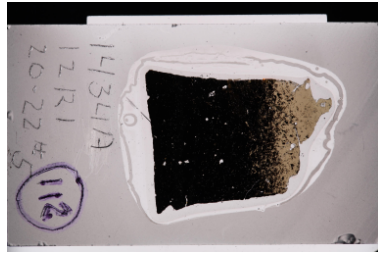
Texture: aphanitic Average grain size: cryptocrystalline Grain size distribution: equigranular

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	1	0.4	0.6	0.15	1.1	0.8	subrounded	

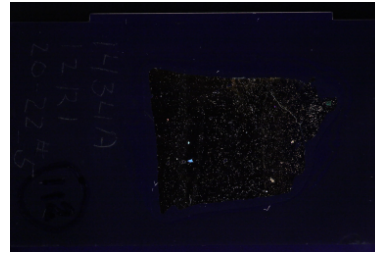
Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	0.1	0.08	0.02	0.2	0.6	0.4				
Total (whole rock constituents):	0.1	0.08	0.02							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Mesostasis	100	80	20						
Total (groundmass constituents):	100	80	80						
Total (whole rock constituents):	98.9								

THIN SECTION LABEL ID: **349-U1434A-12R-1-W 20/22-TSB(20-22)-TS112** Thin section no.: 112  
 Unit/Subunit: Piece no.: #5 Observer: G Zhang  
 Thin section summary: Moderately altered cryptocrystalline aphyric nonvesicular basalt, containing olivine as phenocrysts, background olivine altered partly to Fe-oxide, no alteration is observed for plagioclase.



Plane-polarized: 25118921



Cross-polarized: 25118941

**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology Domain rel. abundance (%): 100 Observer: G Zhang

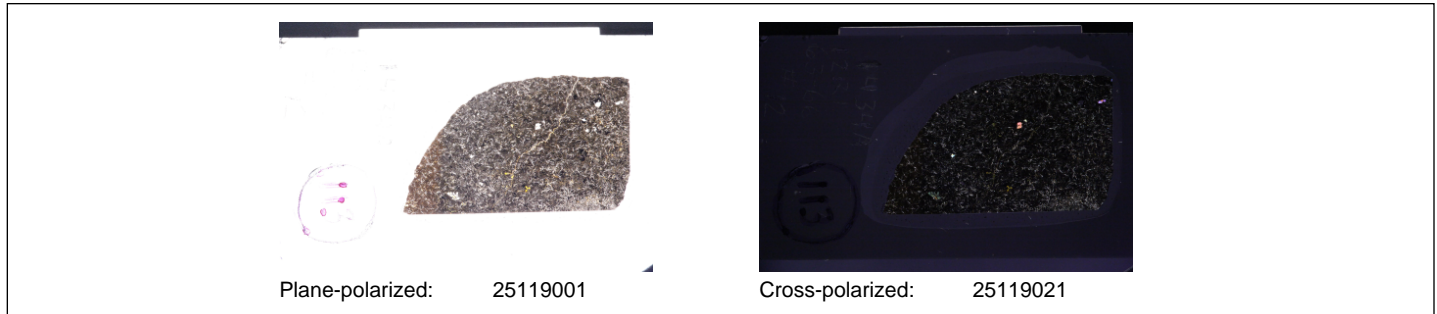
Lithology: aphyric basalt

Texture: aphanitic Average grain size: cryptocrystalline Grain size distribution: bimodal

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	0.1	0.05	0.05	0.15	0.7	0.45				
Total (whole rock constituents):	0.1	0.05	0.05							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Mesostasis	95	80	15						
Glass	20	15	5						
Total (groundmass constituents):	115	95	95						
Total (whole rock constituents):	99.9								

**THIN SECTION LABEL ID: 349-U1434A-12R-1-W 63/66-TSB(63-66)-TS113** Thin section no.: 113  
 Unit/Subunit: 3 Piece no.: #12 Observer: MTejada  
 Thin section summary: Slightly altered aphyric basalt with traces of up to 1.6 mm subhedral olivine phenocrysts in microcrystalline sparsely vesicular groundmass. The groundmass contains variolitic clusters of plagioclase needles with or without olivine microphenocrysts at the center. The plagioclase forms long thin needles that form a network enclosing interstitial altered glass or mesostasis. Glassy groundmass is completely devitrified or palagonitized and replaced by secondary oxide along altered margin.



**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology      Domain rel. abundance (%): 100      Observer: M Tejada

Lithology: aphyric basalt

Texture: hypohyaline      Average grain size: microcrystalline      Grain size distribution: bimodal

Domain comment: aphyric basalt with traces of olivine phenocrysts in hypohyaline groundmass

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	1	0	1	0.05	1.1	0.3	subrounded	partially to completely replaced by oxide, palagonite, and clay

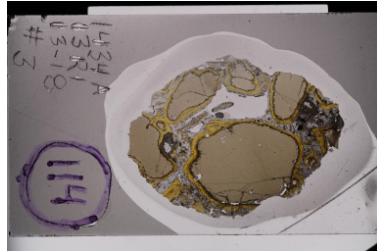
  

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.9	0.1	0.05	1.6	0.8	subhedral-anhedral		finer grains form the core of radial aggregates of plagioclase in the groundmass	larger phenocrysts partially replaced by palagonite
Total (whole rock constituents):	1	0.9	0.1							

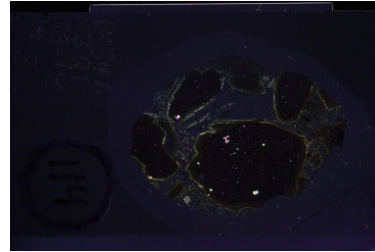
  

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	70	70	0	0.05	0.8	0.4	subhedral-anhedral		
Clinopyroxene	70	70	0	0.05	0.8	0.4	subhedral-anhedral	acicular	clustered and radial aggregates forming variolitic texture
Mesostasis	20	20	0						cryptocrystalline
Glass	10	0	10						brown to black, isotropic and completely devitrified, cut by palagonite veinlets
Total (groundmass constituents):	100	10	10						
Total (whole rock constituents):	98	88	10						

**THIN SECTION LABEL ID:** 349-U1434A-13R-1-W 13/18-TSB(13-18)-TS114 **Thin section no.:** 114  
**Unit/Subunit:** 4 **Piece no.:** #3 **Observer:** MTejada  
**Thin section summary:** Slightly altered basalt glass fragments with traces of up to 0.6 mm subhedral olivine and up to 0.9 mm clinopyroxene phenocrysts in cryptocrystalline groundmass. The groundmass contains microlites of olivine, clinopyroxene, and plagioclase. One large clinopyroxene grain occurs as a euhedral prismatic grain with a hollow center. The microphenocrysts of plagioclase and pyroxene also form hollow rectangular outlines with tails at the corners or as microcrystalline laths. Glassy groundmass is fresh and replaced only at the margins by palagonite. The basalt glass fragments are cemented together by transparent and light brown clays. Smaller glass fragments are completely devitrified or altered to palagonite.



Plane-polarized: 25119041



Cross-polarized: 25119061

**IGNEOUS ROCK - PRIMARY MINERALOGY**

**Sample domain name:** lithology **Domain rel. abundance (%):** 100 **Observer:** M Tejada

**Lithology:** basalt hyaloclastite

**Texture:** vitrophyric **Average grain size:** cryptocrystalline **Grain size distribution:** bimodal

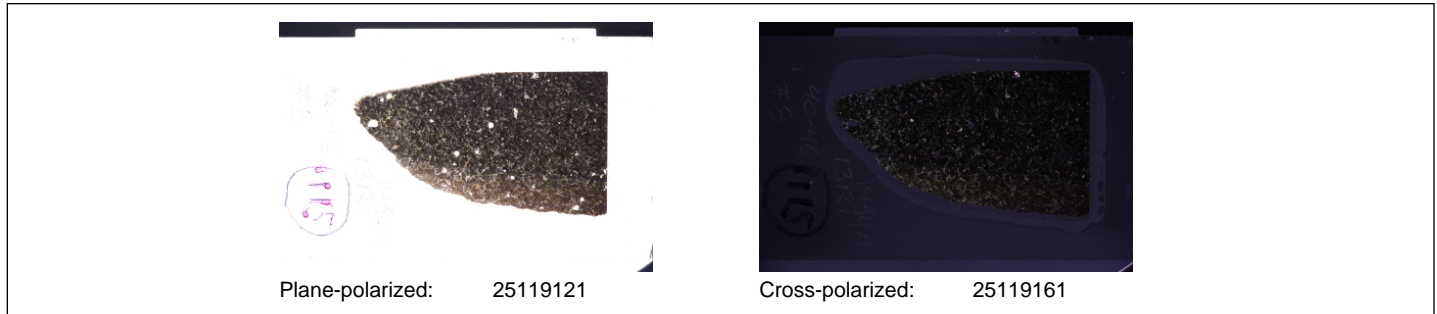
**Domain comment:** consist of fresh to moderately altered volcanic glass fragments in a matrix of clay and secondary oxides

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.9	0.1	0.04	0.6	0.2	subhedral-anhedral	prismatic	occur as microphenocrysts	larger phenocrysts partially replaced by palagonite
Plagioclase	1	1	0	0.01	0.6	0.05	subhedral-anhedral	prismatic	occur as microphenocrysts	occur as microphenocrysts
Clinopyroxene	1	1	0	0.05	0.9	0.1	subhedral-anhedral	prismatic	occur as microphenocrysts	large phenocryst has a hollow center; other grains occur as microlites in the glassy groundmass
Total (whole rock constituents):	3	2.9	0.1							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Glass	100	90	10						partially to completely devitrified or replaced by palagonite
Total (groundmass constituents):	100	10	10						
Total (whole rock constituents):	97	87	10						



**THIN SECTION LABEL ID: 349-U1434A-13R-1-W 40/46-TSB(40-46)-TS115** Thin section no.: 115  
 Unit/Subunit: 5 Piece no.: #8 Observer: MTejada  
 Thin section summary: Slightly altered aphyric basalt with traces of up to 0.8 mm subhedral olivine phenocrysts in microcrystalline sparsely vesicular groundmass. The groundmass contains variolitic clusters of plagioclase needles with or without olivine microphenocrysts at the center. The plagioclase forms long thin needles that form a network enclosing interstitial altered glass or mesostasis. Glassy groundmass is completely devitrified or palagonitized and replaced by secondary oxide along altered margin.



**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology      Domain rel. abundance (%): 100      Observer: M Tejada

Lithology: aphyric basalt

Texture: hypohyaline      Average grain size: microcrystalline      Grain size distribution: bimodal

Domain comment: aphyric basalt with traces of olivine phenocrysts in hypohyaline groundmass

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	2	0	2	0.05	1.4	0.6	subrounded	partially to completely replaced by oxide, palagonite, and clay

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.9	0.1	0.01	0.8	0	subhedral-anhedral		finer grains form the core of radial aggregates of plagioclase in the groundmass	larger phenocrysts partially replaced by palagonite
Total (whole rock constituents):	1	0.9	0.1							

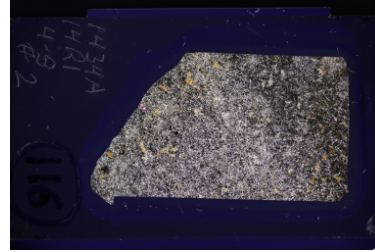
Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	55	55	0	0.05	0.5	0.2	subhedral-anhedral		
Clinopyroxene	55	55	0	0.05	0.5	0.2	subhedral-anhedral	acicular	clustered and radial aggregates forming variolitic texture
Mesostasis	35	35	0						cryptocrystalline
Glass	10	0	10						brown to black, isotropic and completely devitrified and replaced by oxide
Total (groundmass constituents):	100	10	10						
Total (whole rock constituents):	97	87	10						



**THIN SECTION LABEL ID: 349-U1434A-14R-1-W 4/8-TSB(4-8)-TS116** Thin section no.: 116  
 Unit/Subunit: 5 Piece no.: #2 Observer: MTejada  
 Thin section summary: Moderately altered aphyric basalt with traces of up to 0.8 mm subhedral olivine phenocrysts in microcrystalline sparsely vesicular groundmass. The few olivine phenocrysts are almost all completely altered to palagonite and oxides and sometimes enclosed in triangular clusters of plagioclase needles forming intersertal texture. The groundmass consists of mesostasis of cryptocrystalline clinopyroxene and oxides and minor devitrified glass, replaced by secondary oxides or palagonite especially at the altered margin.



Plane-polarized: 25119181



Cross-polarized: 25119201

**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology Domain rel. abundance (%): 100 Observer: M Tejada

Lithology: aphyric basalt

Texture: intersertal Average grain size: microcrystalline Grain size distribution: bimodal

Domain comment: aphyric basalt with traces of olivine phenocrysts in intersertal groundmass

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	1	0	1	0.05	1	0.2	rounded	partially to completely replaced by oxide, palagonite, and clay

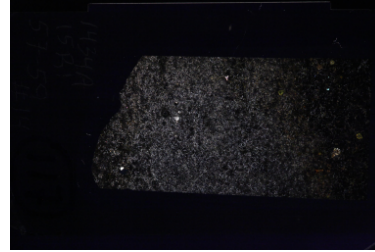
Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.5	0.5	0.05	0.8	0.1	subhedral-anhedral			partially to completely replaced by palagonite
Total (whole rock constituents):	1	0.5	0.5							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	65	65	0	0.05	1	0.8	subhedral-anhedral		
Clinopyroxene	65	65	0	0.05	1	0.8	subhedral-anhedral	acicular	triangular aggregates forming intersertal texture
Mesostasis	30	9	21						consists of cryptocrystalline clinopyroxene and oxides; replaced by secondary oxides especially
Glass	5	0	5						brown to black completely replaced by oxide, especially at the altered margin
Total (groundmass constituents):	100	26	26						
Total (whole rock constituents):	98	73	25						

**THIN SECTION LABEL ID: 349-U1434A-15R-1-W 57/59-TSB(57-59)-TS117** Thin section no.: 117  
 Unit/Subunit: 5 Piece no.: #14 Observer: MTejada  
 Thin section summary: Moderately altered aphyric basalt with traces of up to 1.2 mm euhedral to subhedral olivine phenocrysts in microcrystalline sparsely vesicular groundmass. The few olivine phenocrysts are almost all completely altered to oxides and calcite forming pseudomorphs. Plagioclase occurs as thin acicular laths forming intersertal texture. The groundmass consists of mesostasis of cryptocrystalline clinopyroxene and oxides and minor devitrified glass, replaced by secondary oxides or palagonite especially at the altered margin.



Plane-polarized: 25119241



Cross-polarized: 25119281

**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology Domain rel. abundance (%): 100 Observer: M Tejada

Lithology: aphyric basalt

Texture: intersertal Average grain size: microcrystalline Grain size distribution: bimodal

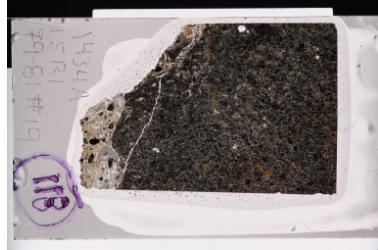
Domain comment: aphyric basalt with traces of olivine phenocrysts in intersertal groundmass

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	1	0	1	0.1	0.8	0.2	rounded	partially to completely replaced by oxide, palagonite, clay or calcite

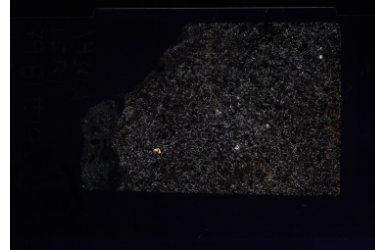
Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.3	0.7	0.1	1.2	0.4	euhedral-anhedral			partially to completely replaced by palagonite; mostly pseudomorphed by oxide, palagonite and calcite
Total (whole rock constituents):	1	0.3	0.7							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	60	60	0	0.05	0.6	0.3	subhedral-anhedral		
Clinopyroxene	60	60	0	0.05	0.6	0.3	subhedral-anhedral	acicular	triangular aggregates forming intersertal texture
Mesostasis	30	9	21						consists of cryptocrystalline clinopyroxene and oxides; replaced by secondary oxides especially at the altered margins
Glass	10	0	10						brown to black completely replaced by secondary oxide, especially at the altered margin
Total (groundmass constituents):	100	31	31						
Total (whole rock constituents):	98	68	30						

**THIN SECTION LABEL ID: 349-U1434A-15R-1-W 79/81-TSB(79-81)-TS118** Thin section no.: 118  
 Unit/Subunit: 6 Piece no.: #19 Observer: MTejada  
 Thin section summary: Moderately altered aphyric basalt with traces of up to 1 mm euhedral to subhedral olivine phenocrysts in microcrystalline groundmass. The few olivine phenocrysts are almost all completely altered to oxides and calcite forming pseudomorphs. Plagioclase occurs as thin acicular laths forming intersertal texture. The groundmass consists of mesostasis of cryptocrystalline clinopyroxene and oxides and minor devitrified glass, replaced by secondary oxides or palagonite especially at the altered margin. The section shows hyaloclastite next to the altered margin and a calcite vein cutting through it.



Plane-polarized: 25119301



Cross-polarized: 25119341

**IGNEOUS ROCK - PRIMARY MINERALOGY**

Sample domain name: lithology Domain rel. abundance (%): 100 Observer: M Tejada

Lithology: aphyric basalt

Texture: intersertal Average grain size: fine grained Grain size distribution: bimodal

Domain comment: aphyric basalt with traces of olivine phenocrysts in intersertal groundmass

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.3	0.7	0.1	1	0.4	euhedral-anhedral			partially to completely replaced; mostly pseudomorphed by oxide, palagonite and calcite
Total (whole rock constituents):	1	0.3	0.7							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	65	65	0	0.05	1	0.3	subhedral-anhedral		
Clinopyroxene	65	65	0	0.05	0.05	0.3	subhedral-anhedral	acicular	triangular aggregates forming intersertal texture; some show hollow outlines
Mesostasis	30	9	21						consists of cryptocrystalline clinopyroxene and oxides; replaced by secondary oxides especially at the altered margins
Glass	5	0	5						brown to black completely replaced by secondary oxide, especially at the altered margin
Total (groundmass constituents):	100	26	26						
Total (whole rock constituents):	99	73	26						