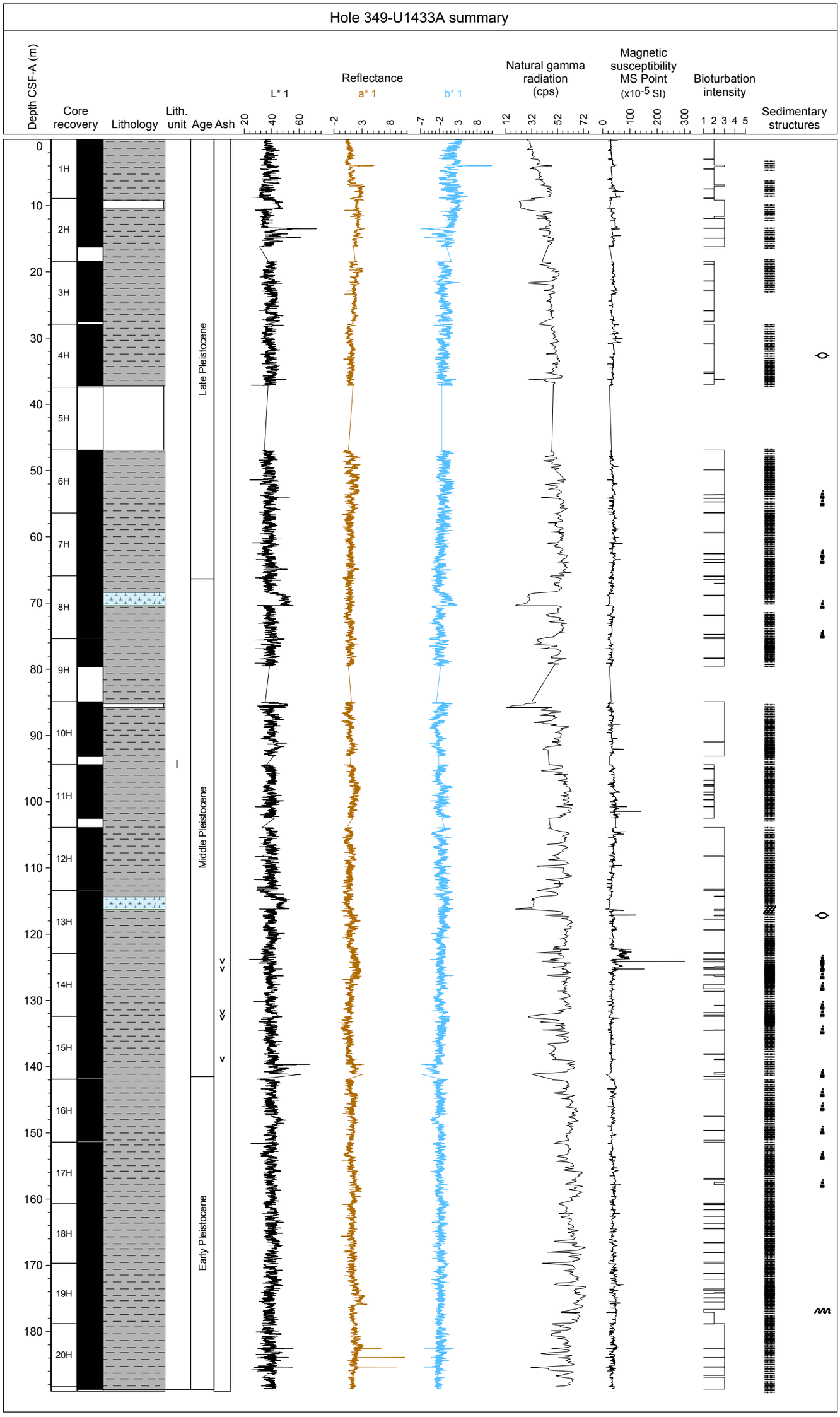
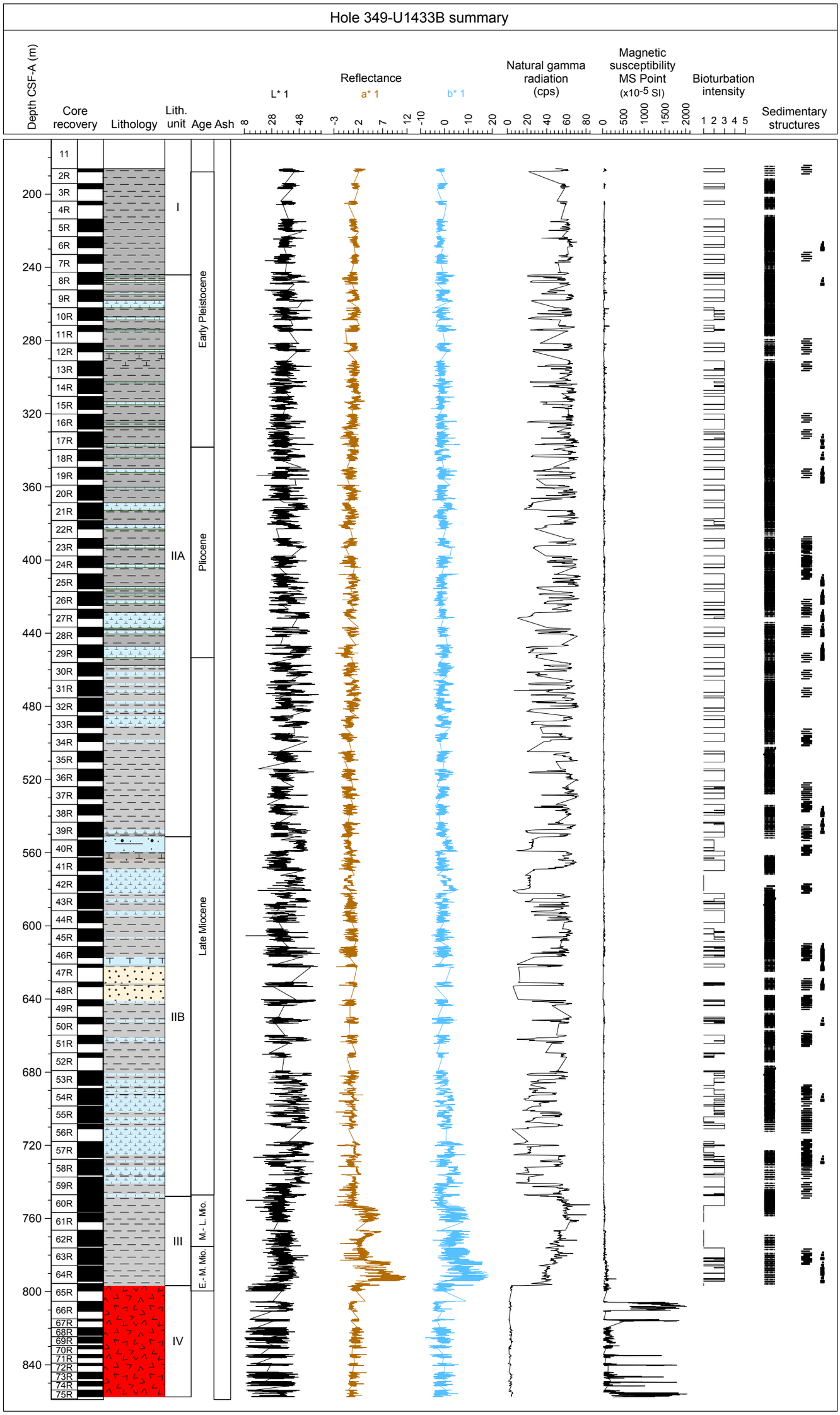
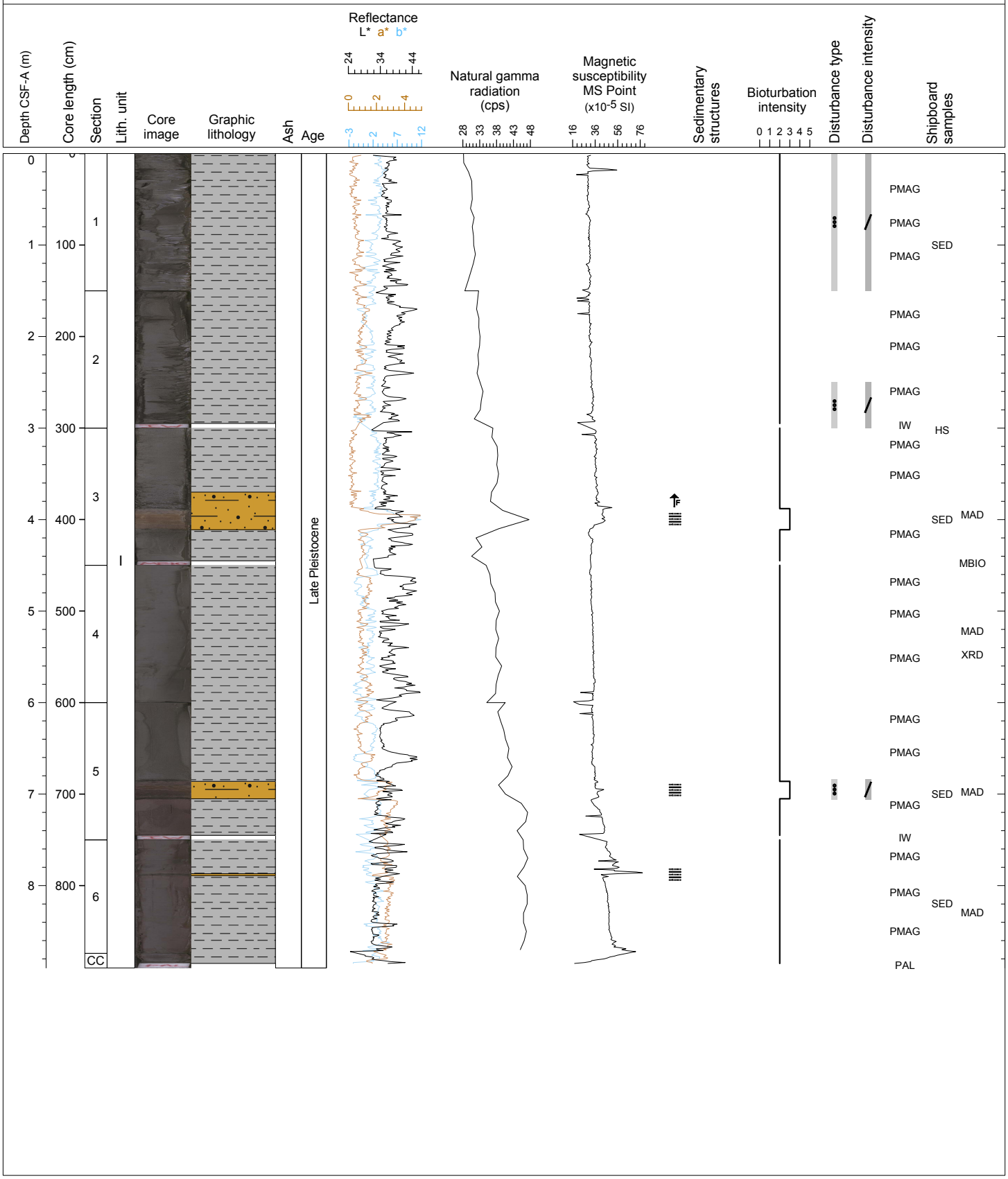

Hole 349-U1433A summary
Depth CSF-A (m)
Core recovery
Lithology
Lith. unit
Age
Ash
L* 1
Reflectance
a* 1
b* 1
Natural gamma radiation (cps)
Magnetic susceptibility MS Point (x10-5 SI)
Bioturbation intensity
Sedimentary structures
Late Pleistocene
Middle Pleistocene
Early Pleistocene
I
1H
2H
3H
4H
5H
6H
7H
8H
9H
10H
11H
12H
13H
14H
15H
16H
17H
18H
19H
20H


Hole 349-U1433B summary
Depth CSF-A (m)
Core recovery
Lithology
Lith. unit
Age
Ash
L* 1
Reflectance
a* 1
b* 1
Natural gamma radiation (cps)
Magnetic susceptibility MS Point (x10-5 SI)
Bioturbation intensity
Sedimentary structures
I
IIA
IIB
III
IV
Early Pleistocene
Pliocene
Late Miocene
M - L. Mio.
E - M. Mio.

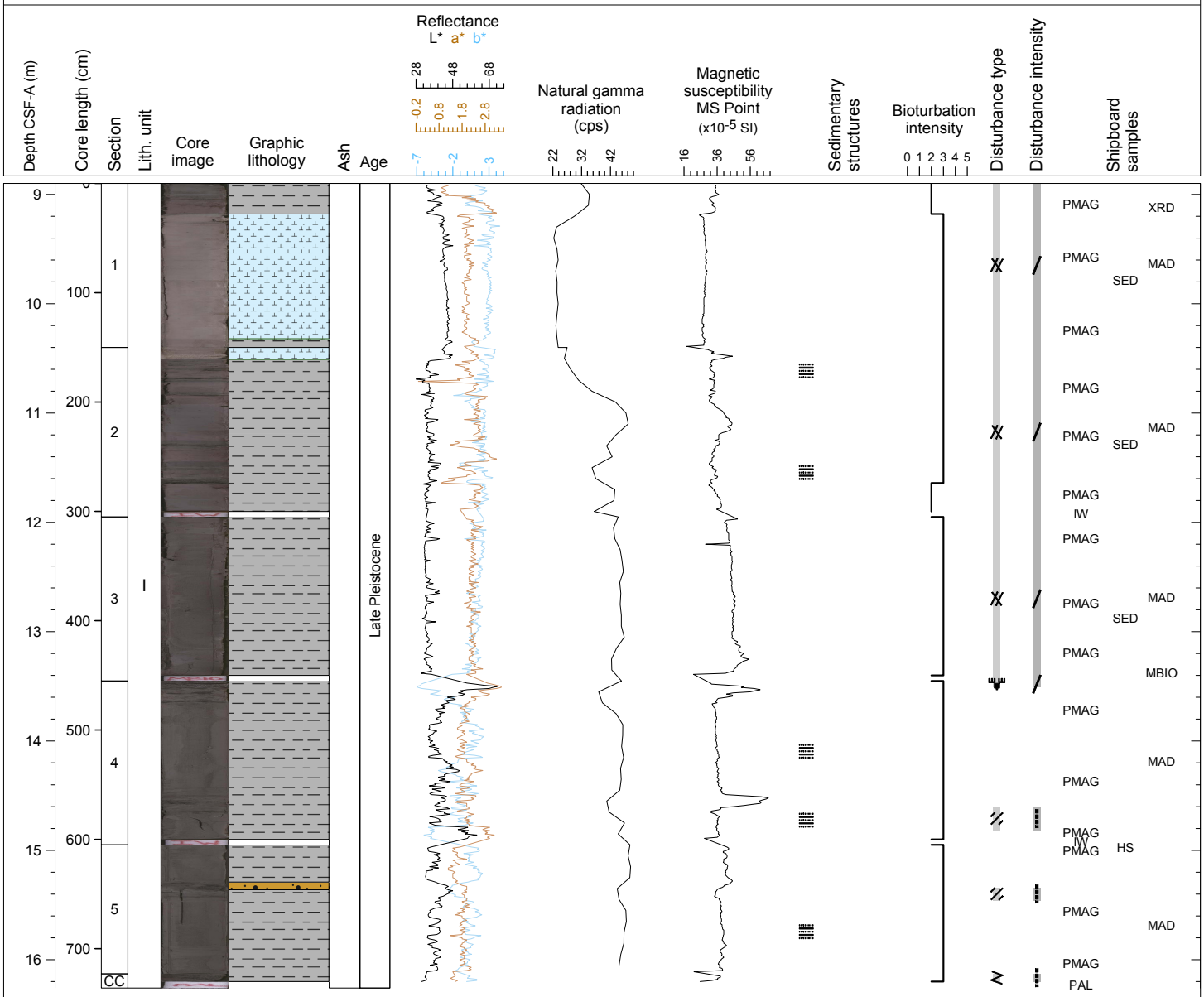
Hole 349-U1433A Core 1H, Interval 0.0-8.9 m (CSF-A)

Dark greenish gray and dark gray CLAY with interbedded brown CLAYEY SILT. A 20-cm thick, fining upward CLAYEY SILT is interbedded between the two colors of very thick-bedded CLAY. There is a reddish gray interval of CLAYEY SILT WITH BIOGENIC COMPONENTS developed in dark green gray CLAY in Section 3. Bioturbation is usually moderate in CLAY layers and heavy in CLAYEY SILT layers.



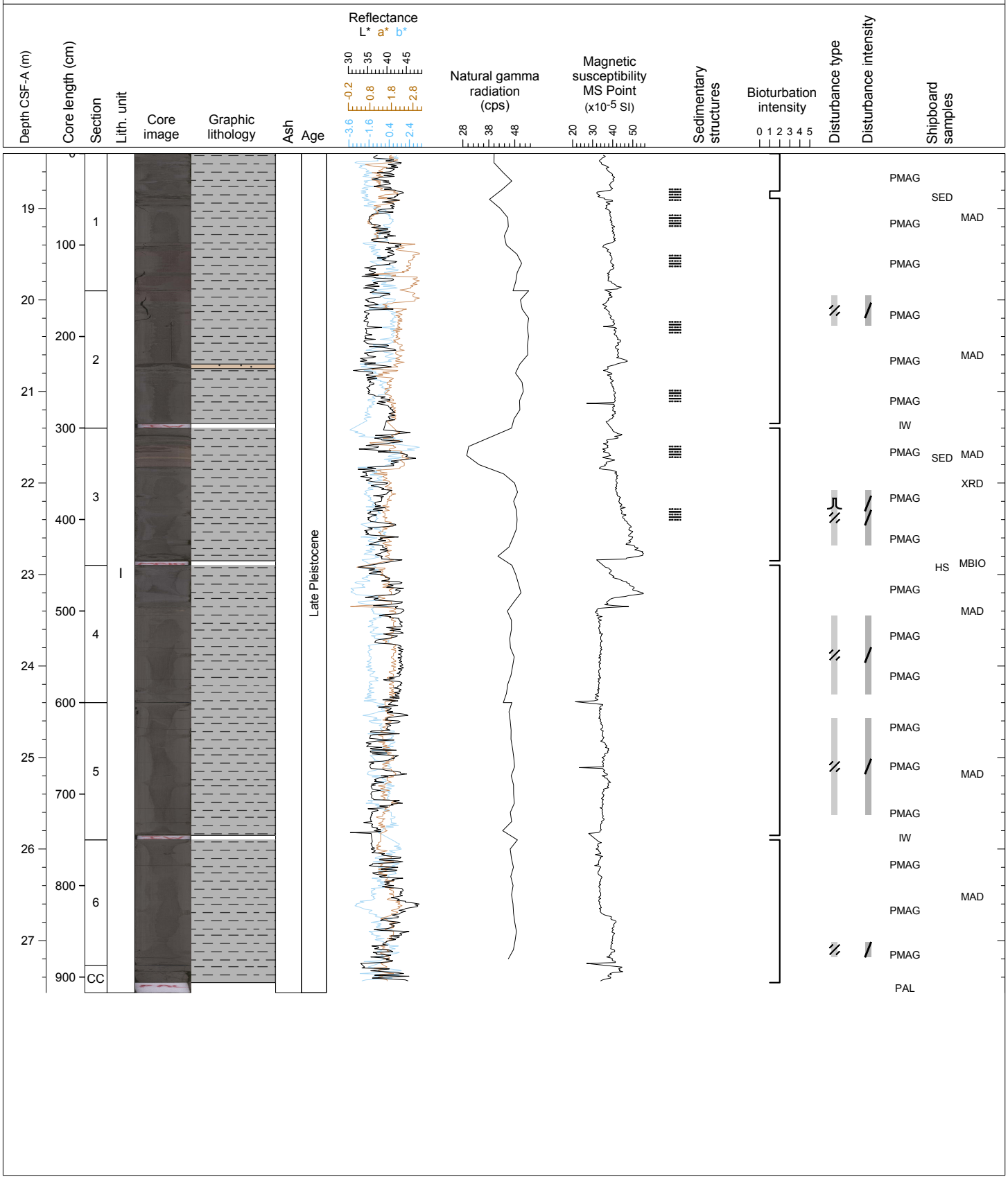
Hole 349-U1433A Core 2H, Interval 8.9-16.26 m (CSF-A)

Greenish gray and greenish brown CLAY, CLAY WITH SILT and CLAY WITH NANNOFOSSILS. There is a light-colored interval of NANNOFOSSIL OOZE WITH CLAY in Sections 1 and 2 and a 5 cm thick interval of CLAYEY SILT in Section 5. The CLAY has color banding. There are greenish CLAY WITH SILT intervals up to 3 cm thick that are slightly more consolidated than the greenish gray and brownish gray CLAY intervals.



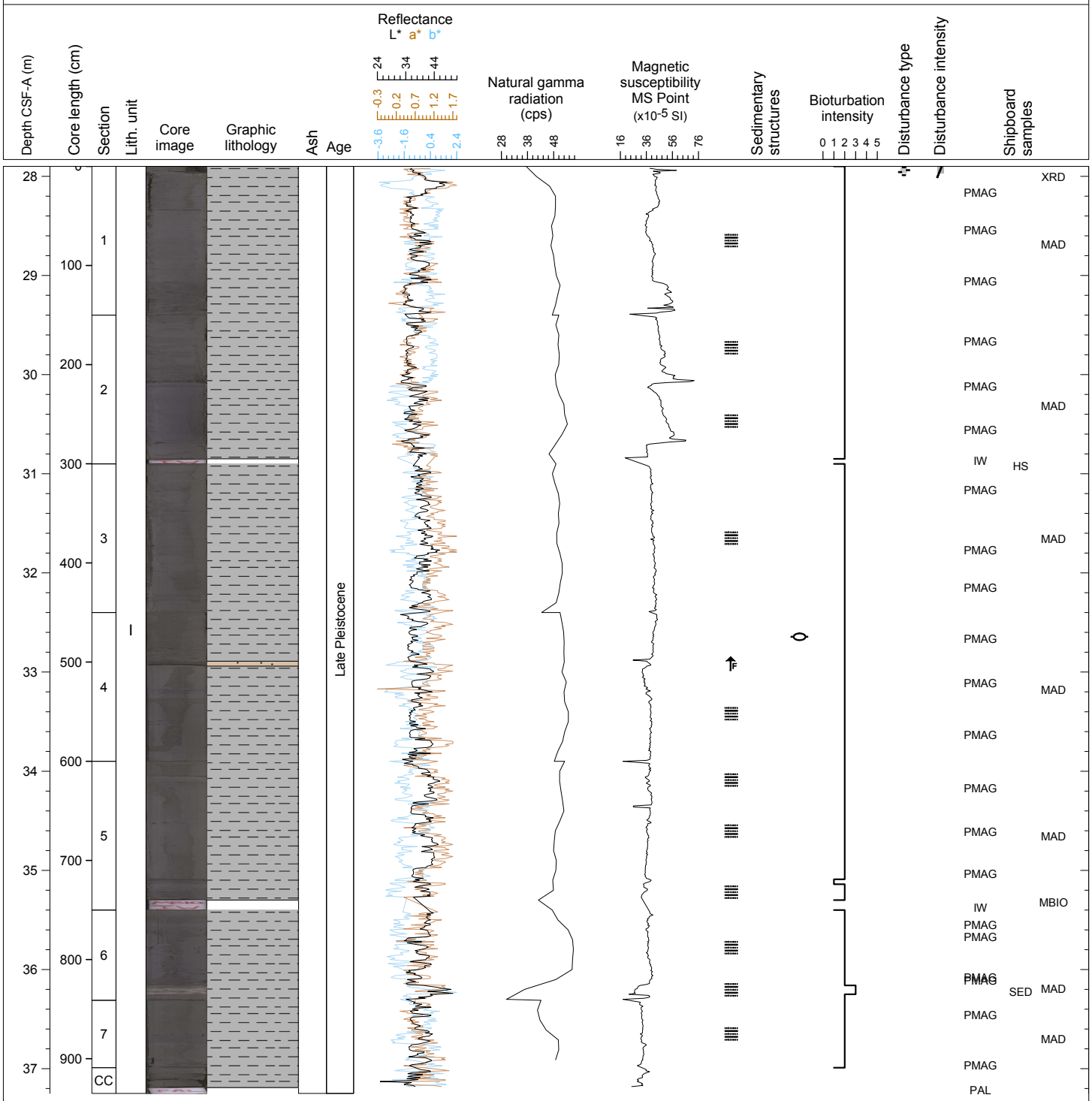
Hole 349-U1433A Core 3H, Interval 18.4-27.57 m (CSF-A)

Homogenous CLAY showing alternating sediment colors of dark greenish gray and brown. The brownish sediment contains more abundant siliciclastic material than the greenish gray sediment. Bioturbation is moderate in intensity.



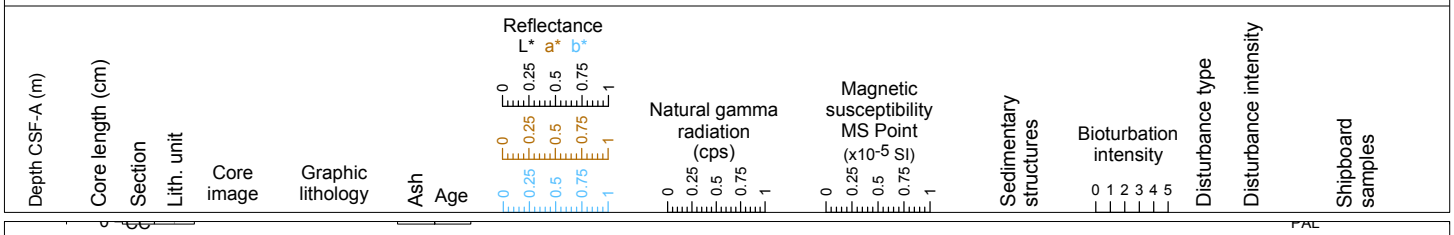
Hole 349-U1433A Core 4H, Interval 27.9-37.25 m (CSF-A)

Homogenous CLAY throughout with a NANNOFOSSIL-RICH CLAY interval at 76-85 cm in Section 6. Bioturbation is usually moderate in CLAY intervals and slightly higher in NANNOFOSSIL-RICH CLAY intervals.



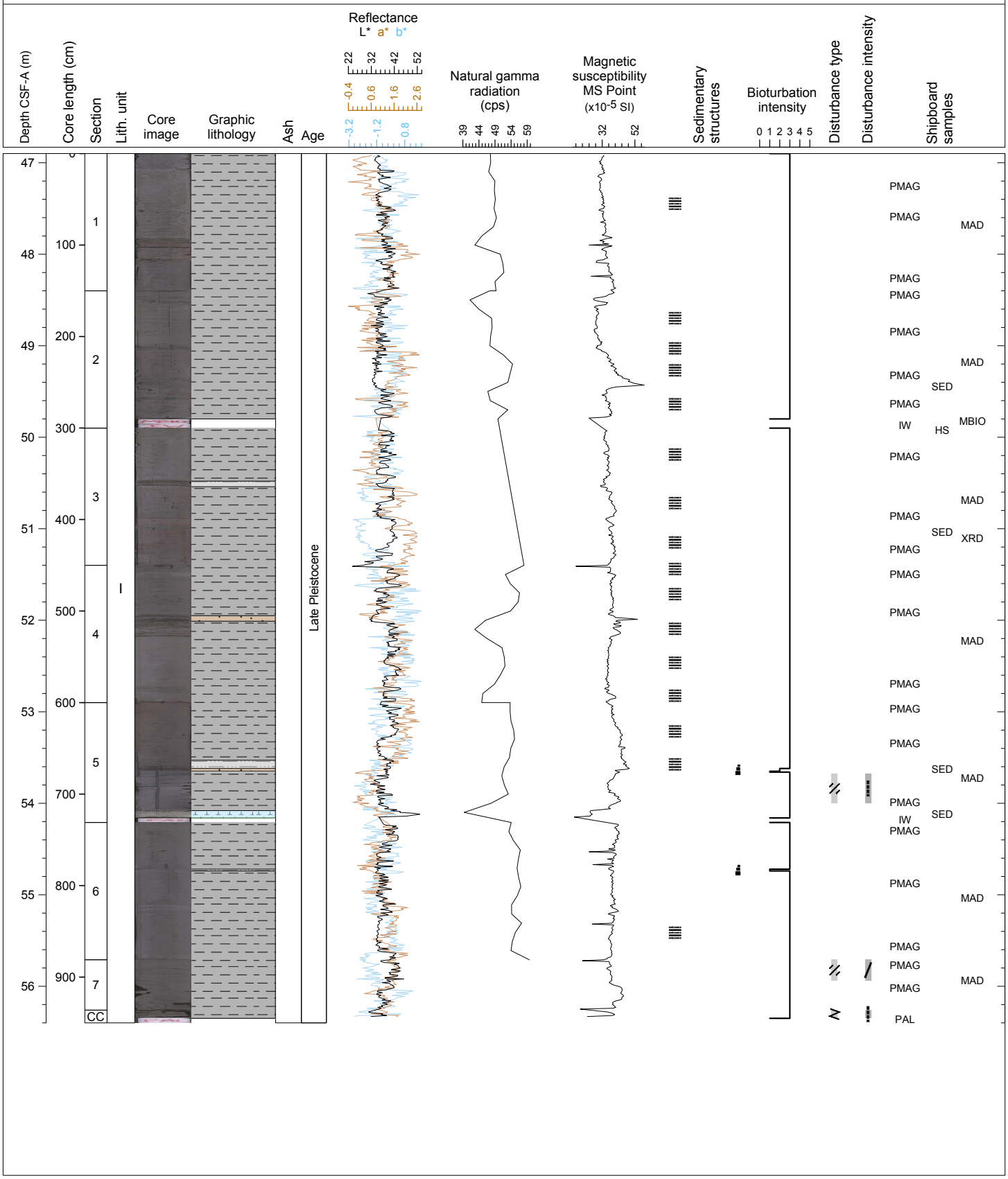
Hole 349-U1433A Core 5H, Interval 37.4-37.42 m (CSF-A)

All core to PAL.



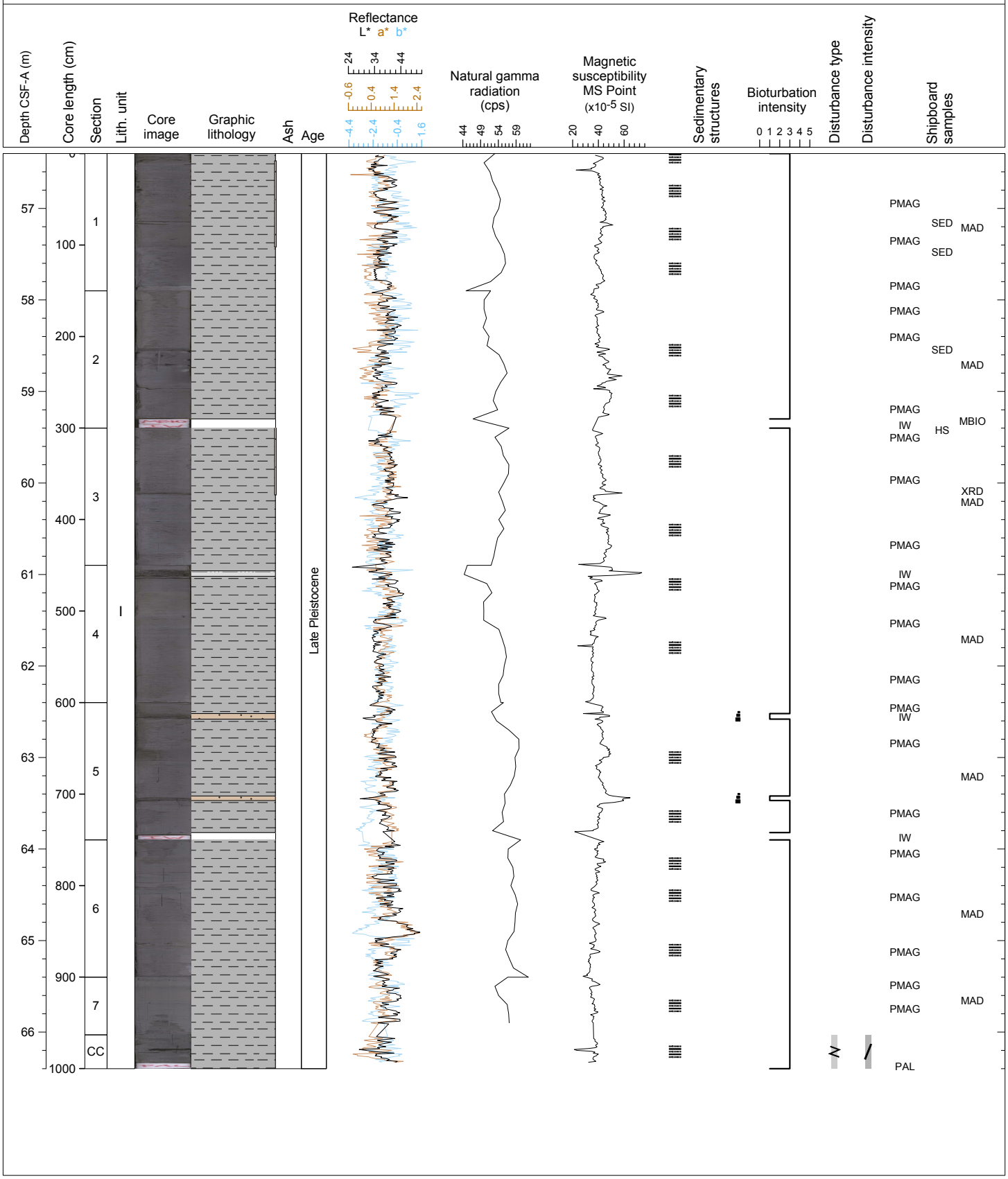
Hole 349-U1433A Core 6H, Interval 46.9-56.4 m (CSF-A)

Greenish gray and reddish gray CLAY and CLAY WITH SILT. Occasional SILT and SILTY CLAY layers grade upward and have sharp bases. These layers are interpreted as turbidites. There are thin intervals with greenish CLAY or SILT throughout. The CLAY has color banding. There is an 8 cm thick interval of light-colored NANNOFOSSIL OOZE at the base of Section 5. Bioturbation is heavy.



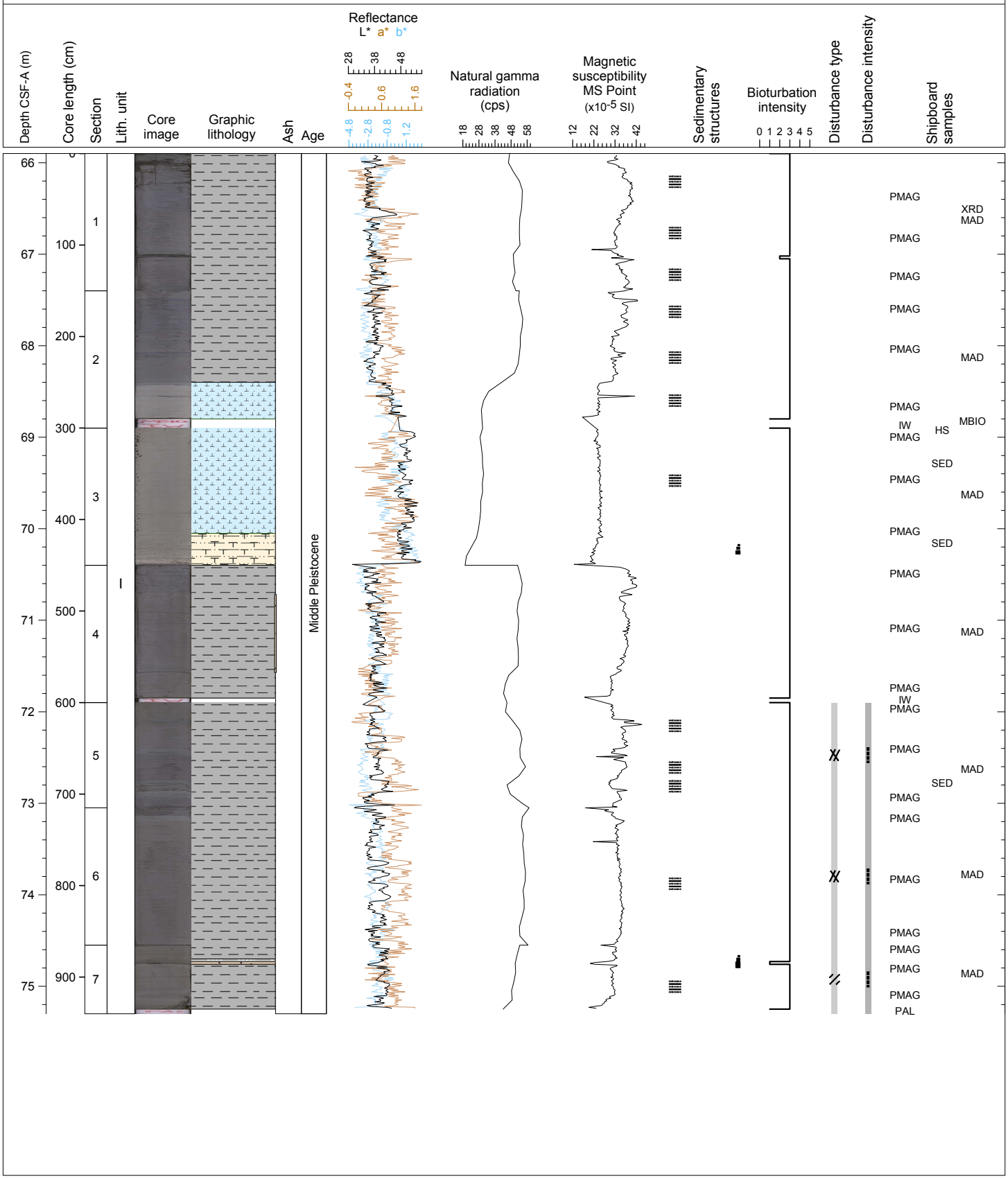
Hole 349-U1433A Core 7H, Interval 56.4-66.4 m (CSF-A)

Dark greenish gray CLAY and CLAY WITH SILT. Occasional SILT and SILTY CLAY layers grade upward and have sharp bases. These layers are interpreted as turbidites. There are thin layers and patches of greenish CLAY throughout. The CLAY has color banding. There is a discontinuous ASH layer in Section 1. Bioturbation is heavy.



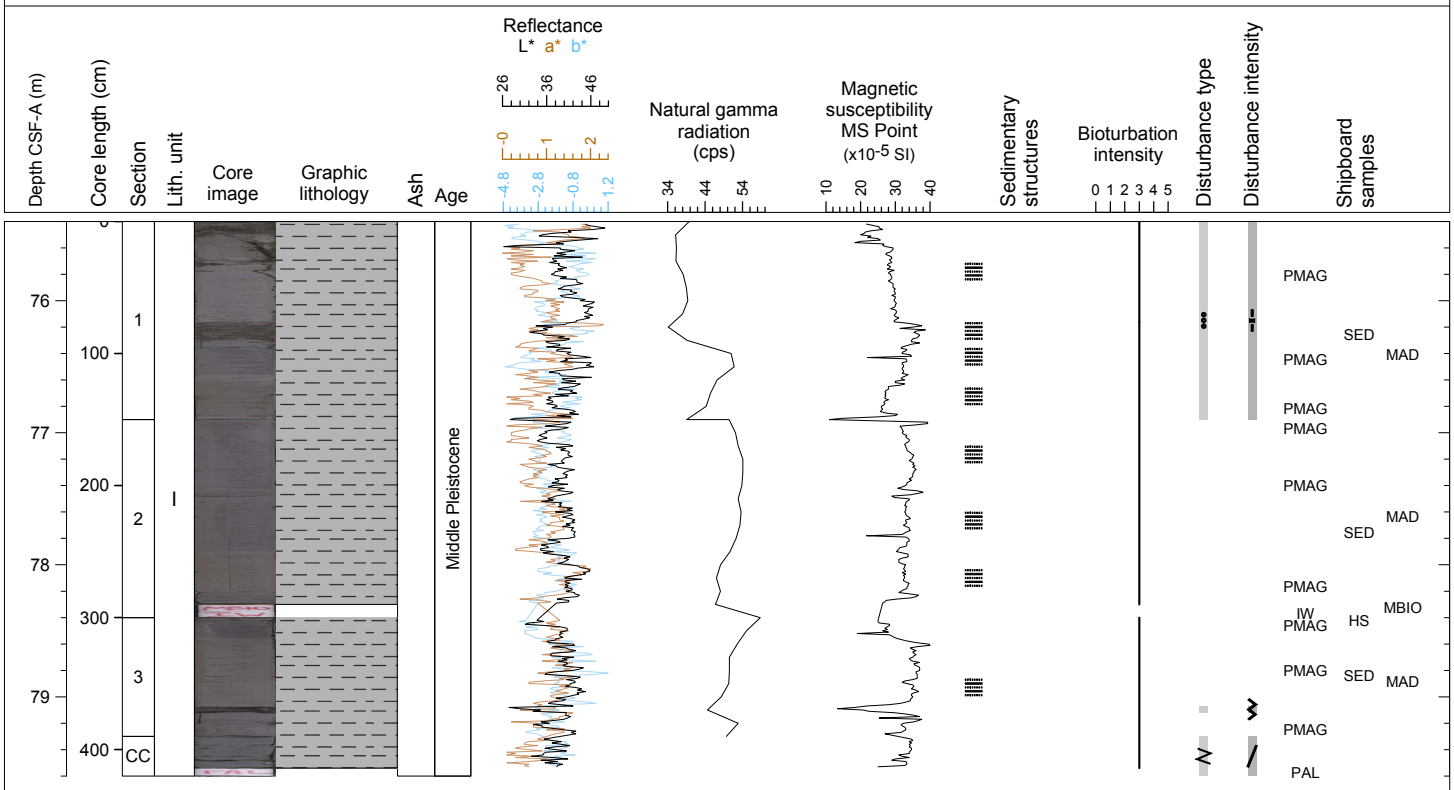
Hole 349-U1433A Core 8H, Interval 65.9-75.3 m (CSF-A)

Dark greenish gray CLAY and CLAY WITH SILT. Rare SILT and SILTY CLAY layers grade upward and have sharp bases. These layers are interpreted as turbidites. There are thin layers and patches of greenish and blackish CLAY throughout. The CLAY has color banding. There is a thick bed of NANNOFOSSIL OOZE in Sections 2 and 3. This bed has a 30 cm thick interval of graded FORAMINIFER SAND at the base. There is a discontinuous ASH layer in Section 3. Bioturbation is heavy.



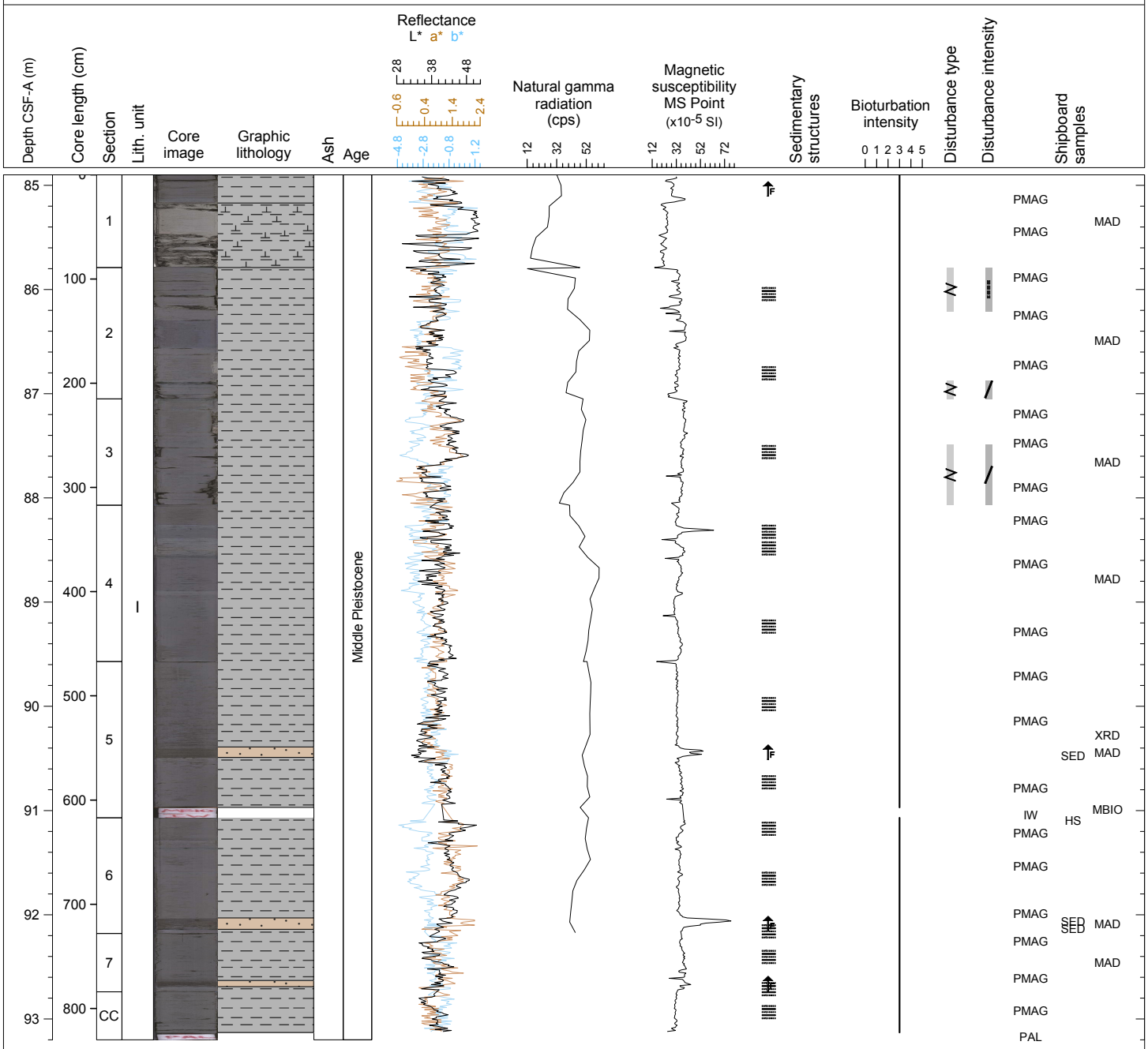
Hole 349-U1433A Core 9H, Interval 75.4-79.6 m (CSF-A)

Dark greenish gray and dark gray CLAY and minor CLAY WITH SILT. The CLAY has color banding and is mottled. Bioturbation is heavy.



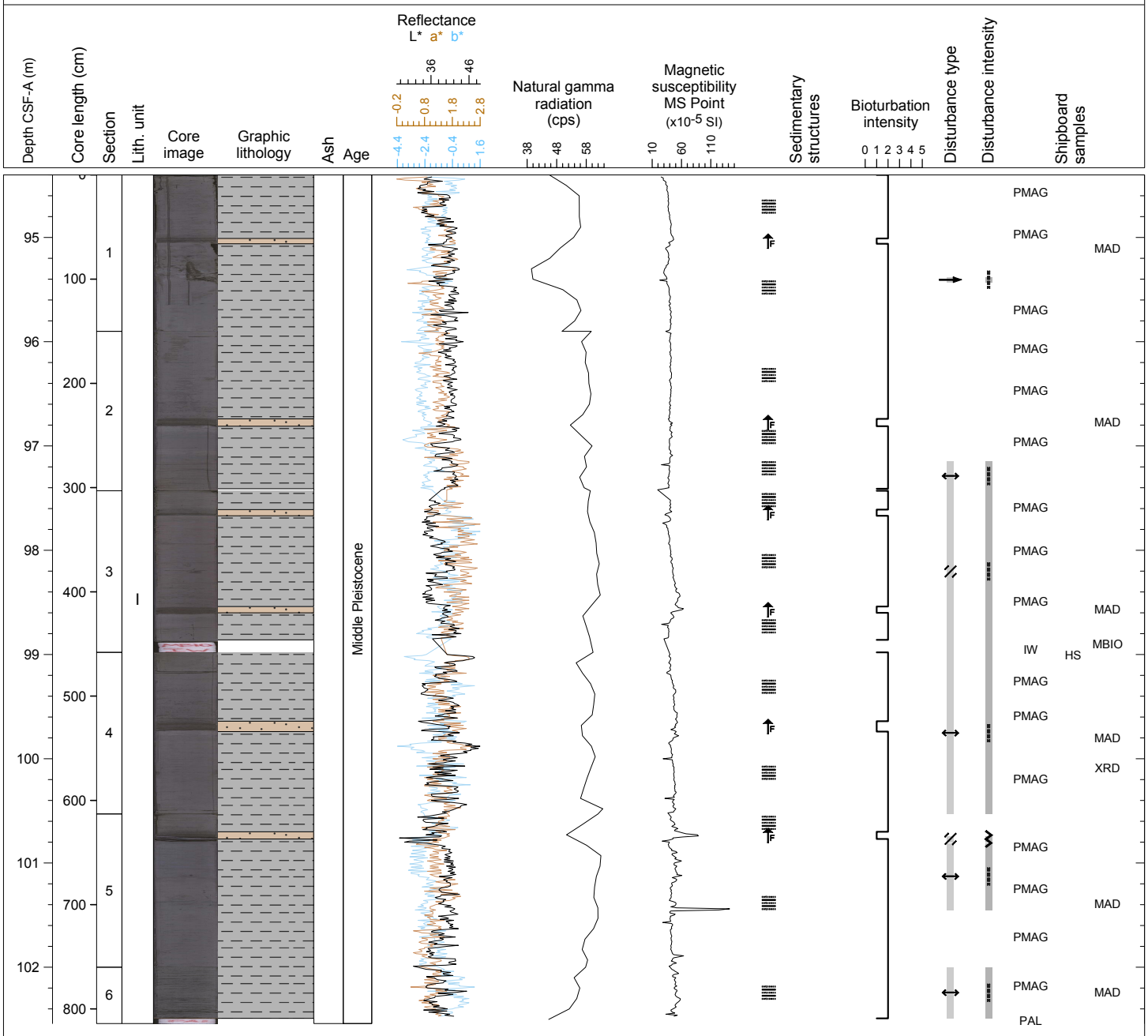
Hole 349-U1433A Core 10H, Interval 84.9-93.2 m (CSF-A)

Dark greenish gray CLAY with interbeds of CLAYEY SILT and NANNOFOSSIL-RICH CLAY. Think bedded CLAYEY SILT layers are graded, fining upward, and have sharp bases. These layers are interpreted as turbidites. There are thin layers and patches of greenish and blackish CLAY throughout. The CLAY has color banding. There is a thick bed of NANNOFOSSIL-RICH CLAY in Section 1. Very thin (1-2 cm scale) green layers occur both in CLAY and CLAYEY SILT layers. Bioturbation is heavy.



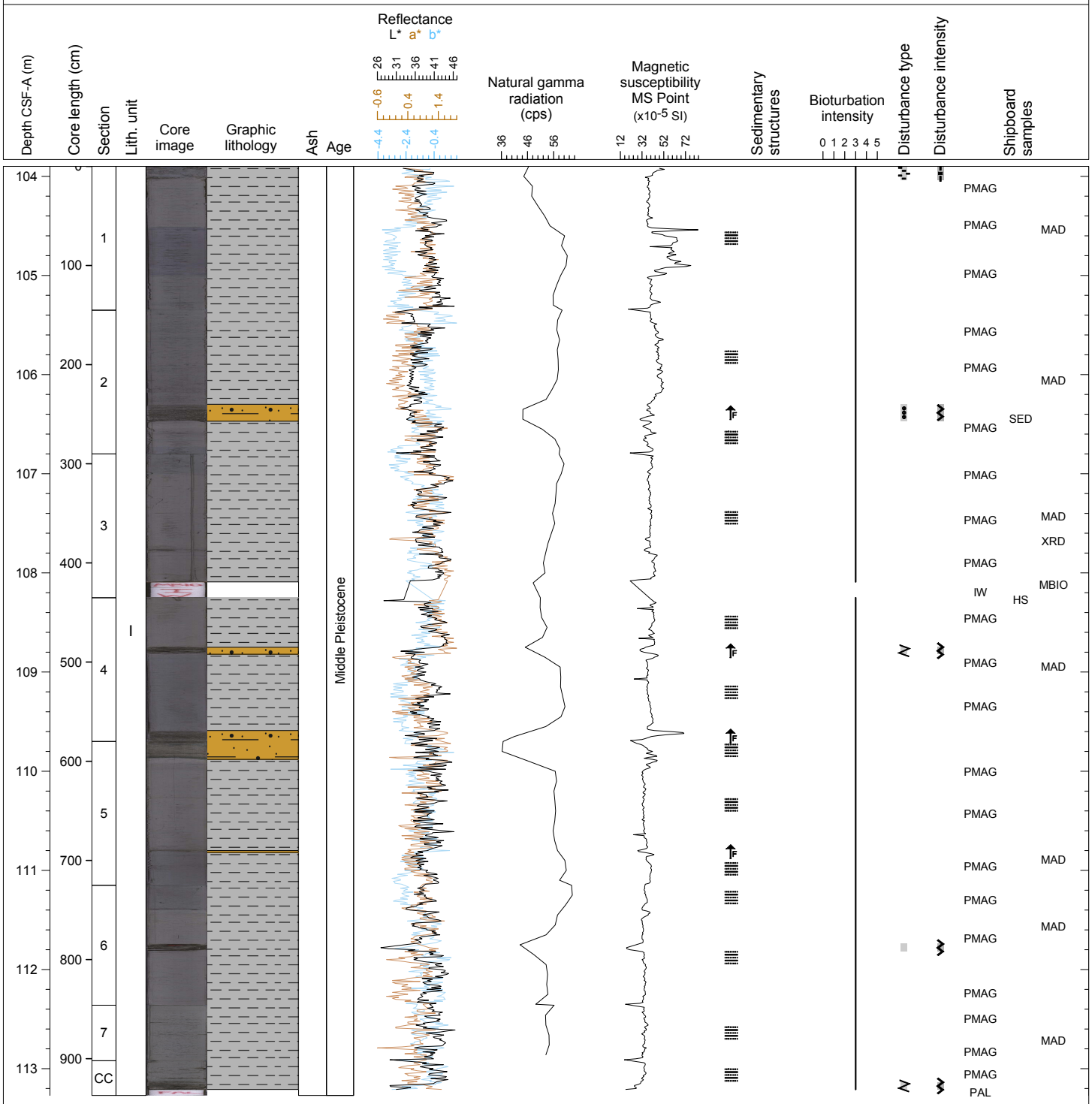
Hole 349-U1433A Core 11H, Interval 94.4-102.54 m (CSF-A)

Dark greenish gray CLAY interbedded with SILT layers up to several centimeters thick that fine upward. Sediment shows gradational changes in color from dark greenish in the upper two sections, brownish in Sections 3 and 4, and greenish in Sections 5 and 6. Cracks and/or expansion due to the high gas content was observed from the lower part of Section 2 to the end of the core, Slight to moderate bioturbation is common throughout.



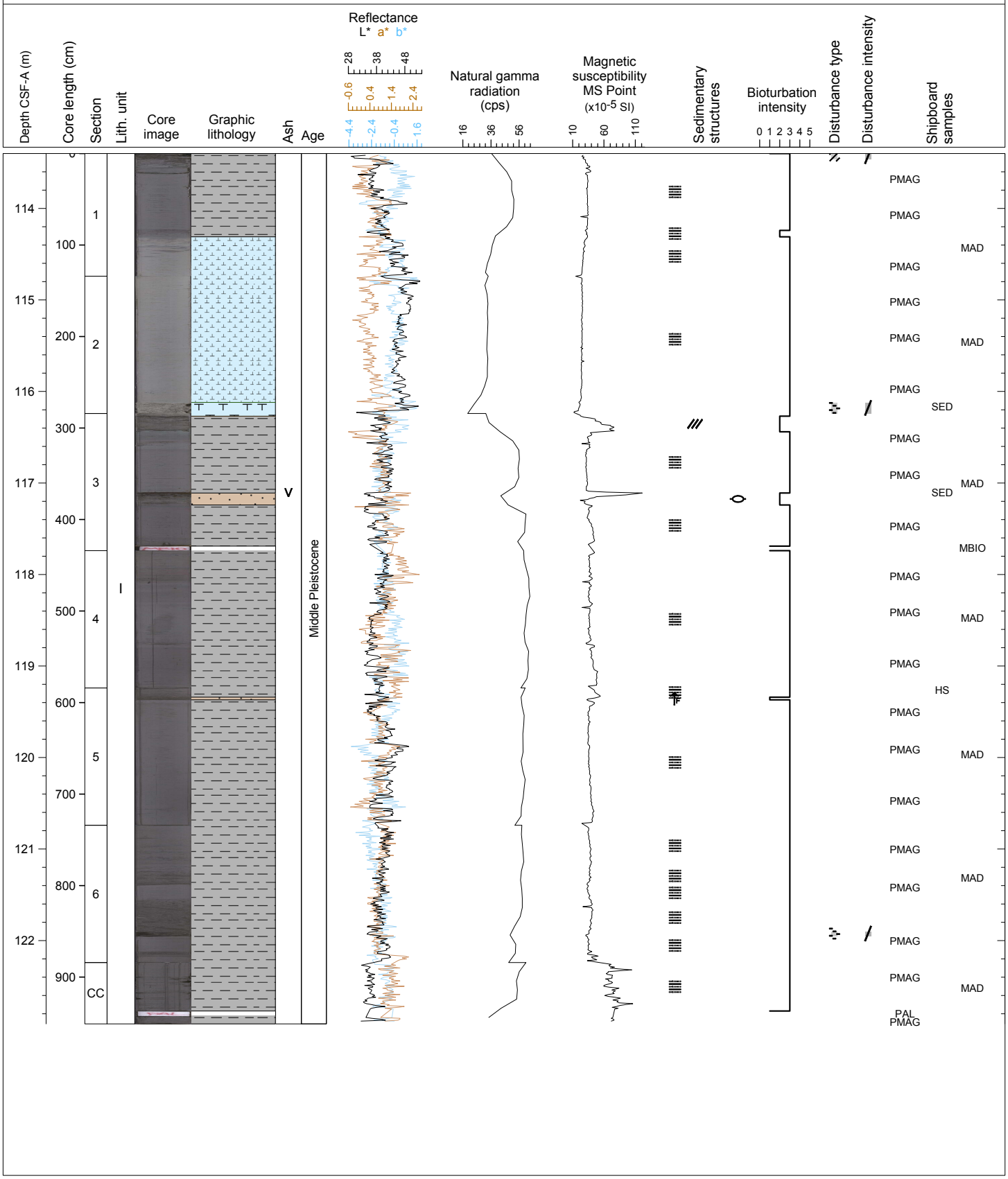
Hole 349-U1433A Core 12H, Interval 103.9-113.27 m (CSF-A)

Dark greenish gray CLAY with interbeds of CLAYEY SILT. Thin-bedded CLAYEY SILT layers fine upward and have sharp bases. These layers are interpreted as turbidites. CLAYEY SILT in usually mottled in color with spots of more greenish colors. CLAY is color banded. Bioturbation is heavy.



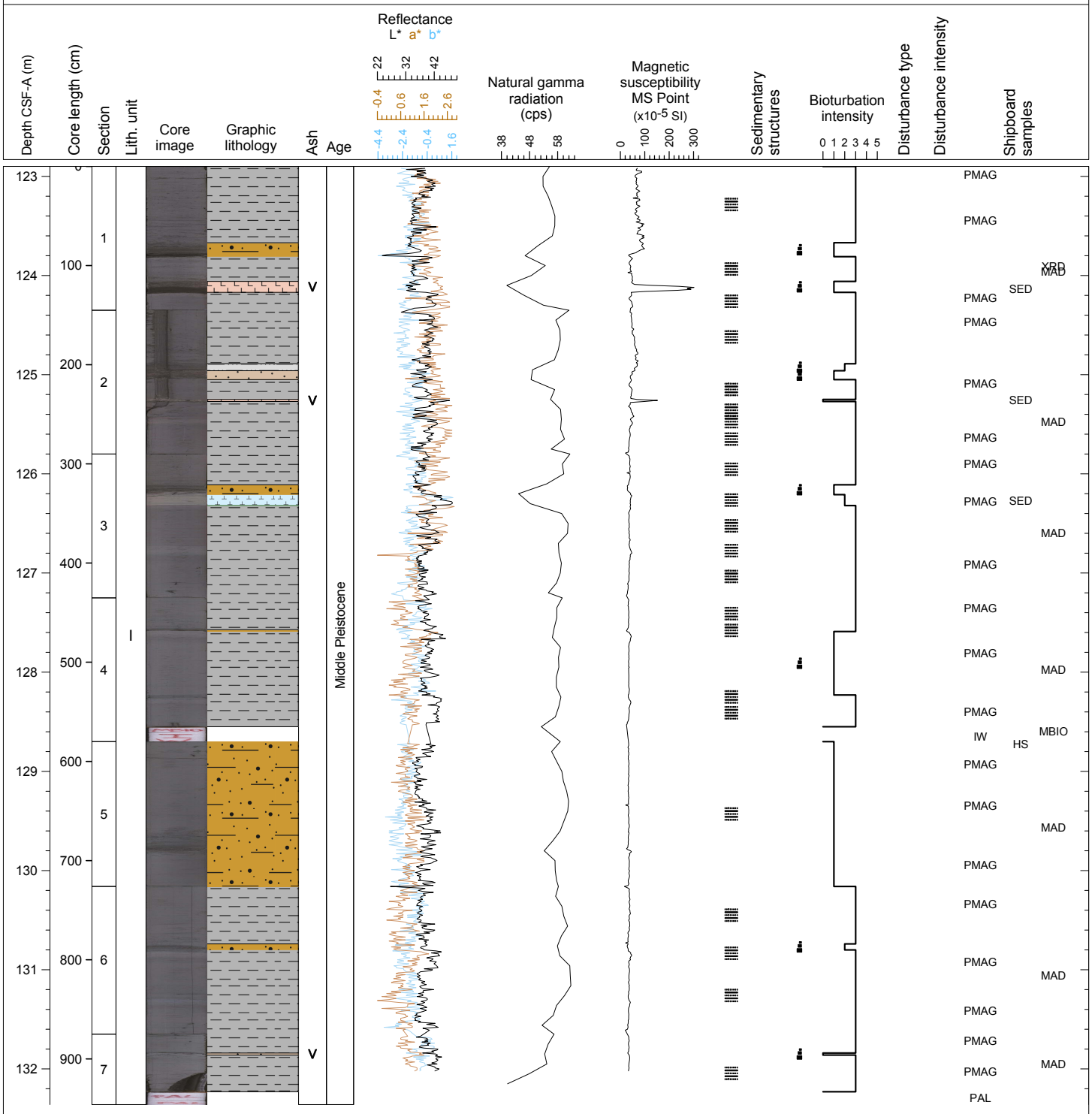
Hole 349-U1433A Core 13H, Interval 113.4-122.91 m (CSF-A)

Dark greenish gray CLAY with interbedded NANNOFOSSIL OOZE AND FORAMINIFERAL OOZE in Sections 2 and 3. Ash is present in Section 3. Below this ASH is very dark grayish brown SILT and dark grayish brown CLAY with a sharp upper boundary. Dark greenish and brownish CLAY alternates with SILT intervals in Section 5-7. Bioturbation intensity is generally moderate to high.



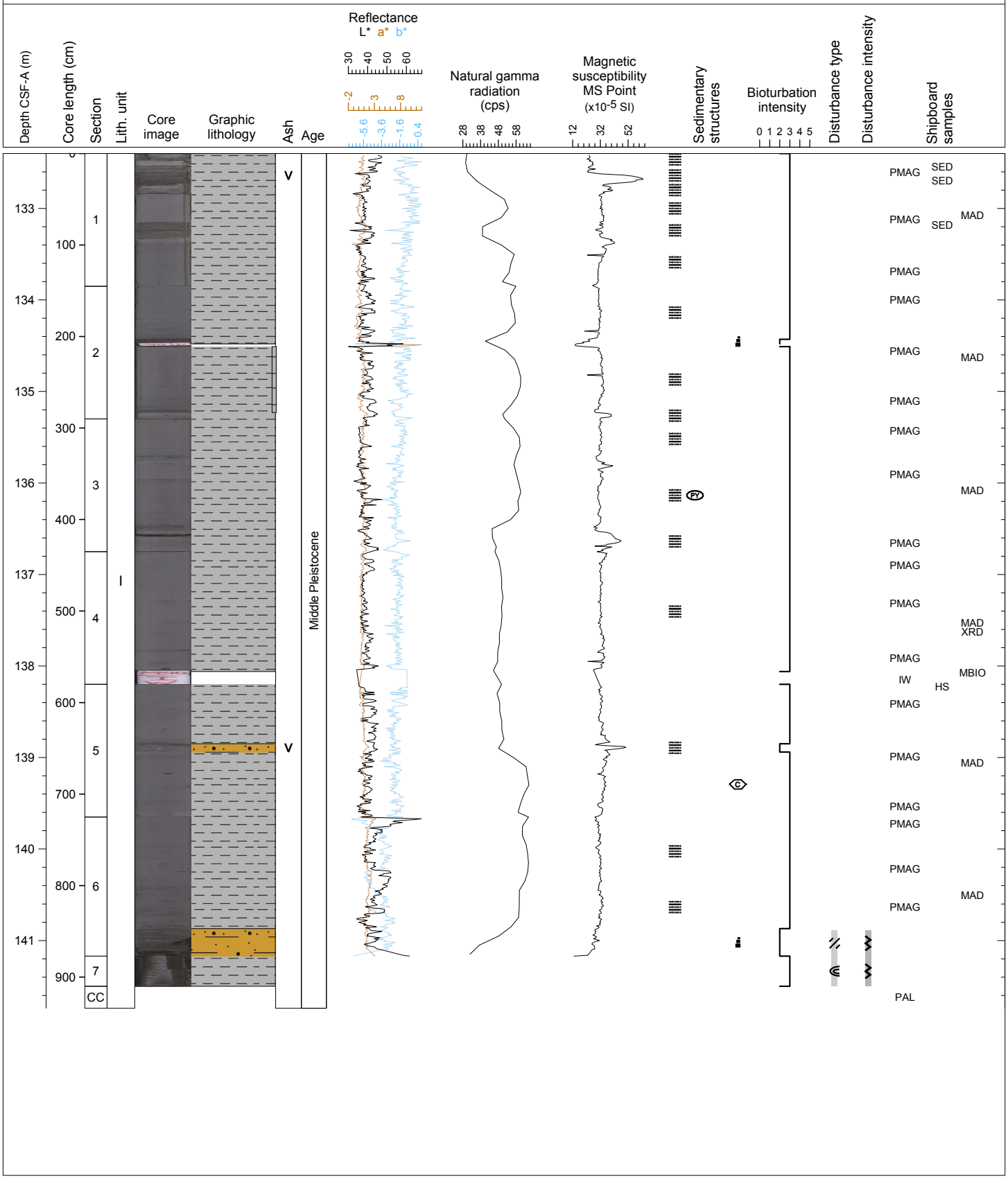
Hole 349-U1433A Core 14H, Interval 122.9-132.36 m (CSF-A)

Dark gray CLAY and CLAY WITH SILT dominates the core, interbedded with beds with higher amounts of carbonate, most notably with a light gray bed of NANNOFOSSIL OOZE WITH CLAY in Section 3. SILT layers are graded and interpreted as turbidites. Lighter units are generally higher in nannofossil content. There are occasional CLAYEY SILT and SILT beds, which are dark gray in color at the top of the core but dark greenish gray at the base of the core. There is an overall increase in greenish tone going down section. Occasional thin (<2 cm thick), felsic ash layers are noted, comprising <1% of the total section. Bioturbation is pervasive in all finer-grained lithologies.



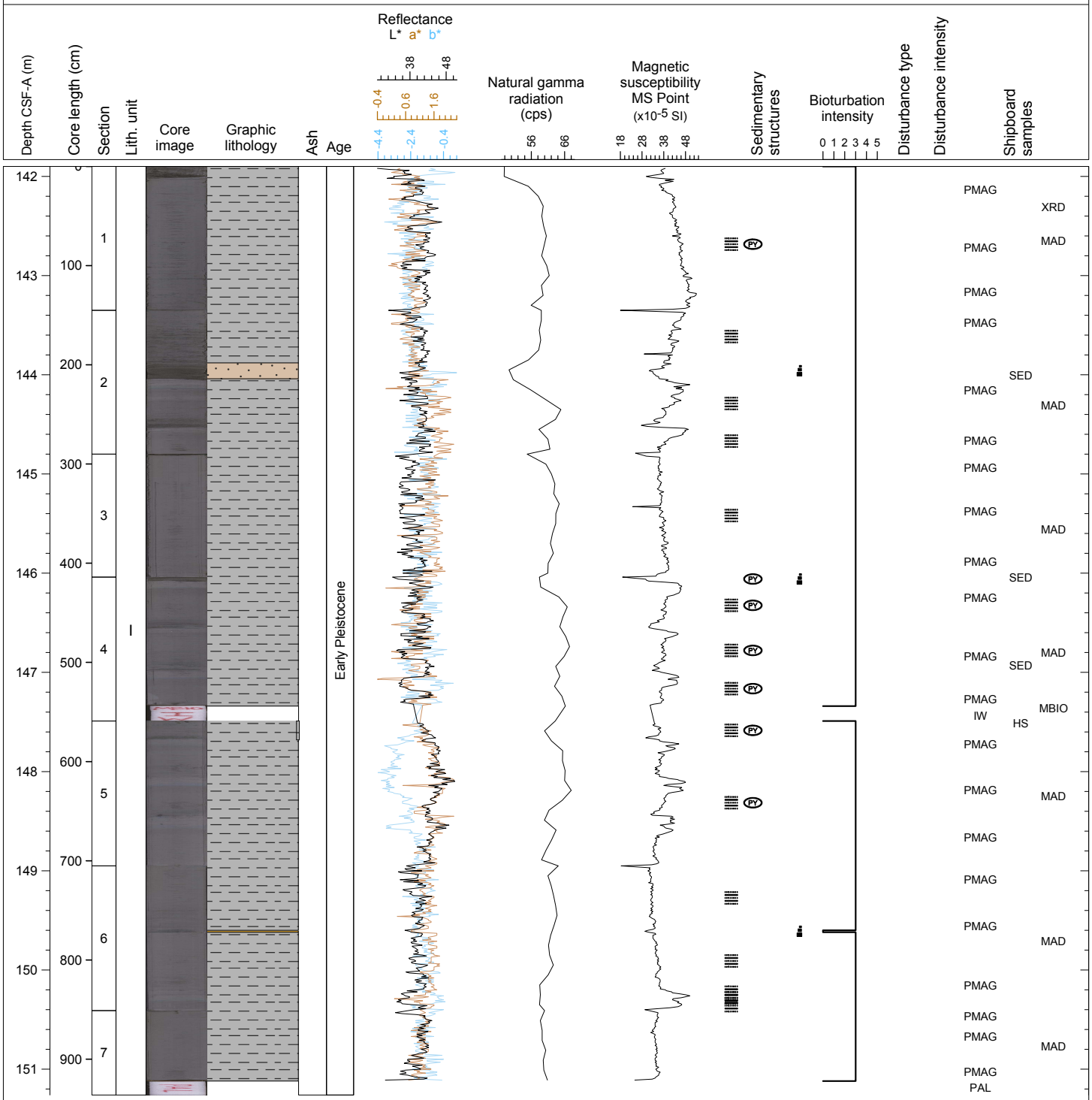
Hole 349-U1433A Core 15H, Interval 132.4-141.74 m (CSF-A)

Dark greenish gray and greenish gray, generally massive and homogenous CLAY and CLAY WITH SILT dominate the core, usually marked by faint color banding of more intense green against a background of greenish gray. Compared to the overlying section there is less lighter-colored carbonate-rich layers and those that do exist are concentrated in Section 1. Interbeds of CLAYEY SILT are graded but appear to be composed of silt-sized pellets of clay when viewed in smear slides. Concretions of pyrite, small in size but seen in most sections, are noted. An ASH filled burrow is seen in Section 5 at 71 cm. Diffuse ASH particles are found in Section 1 at 33 cm.



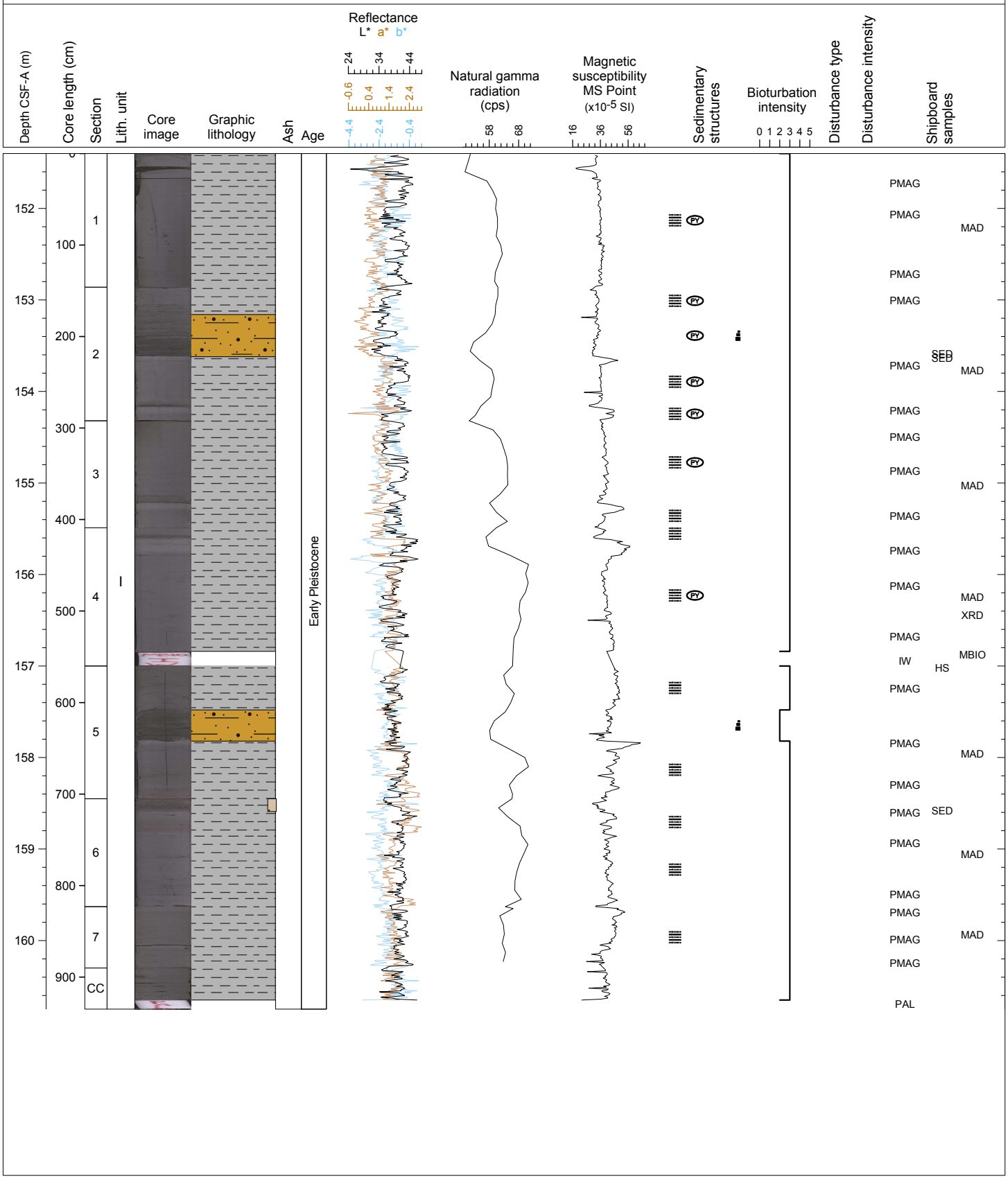
Hole 349-U1433A Core 16H, Interval 141.9-151.26 m (CSF-A)

Dark greenish gray and dark gray, generally massive and homogenous CLAY and CLAY WITH SILT dominate the core. Bioturbation is pervasive. Occasional turbidites of more silt-rich material are noted, especially in Section 2 where the SILT is ~50 cm thick. However, most CLAYEY SILT intervals are <2 cm thick and comprise <1% of the core. They are graded and have erosive bases. Bright green layers are seen rarely at intervals in the middle of the core and are suggestive of glauconite.



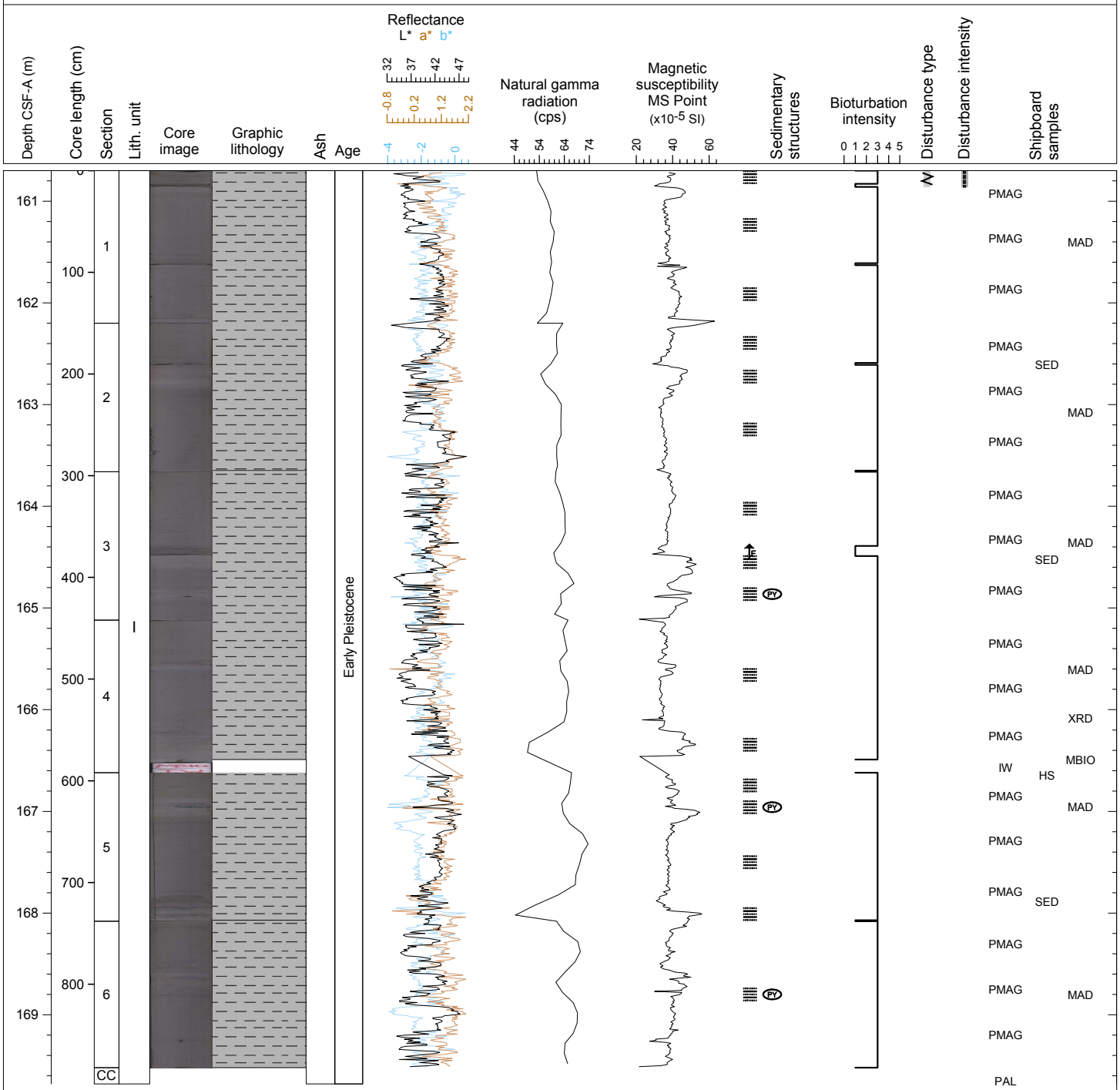
Hole 349-U1433A Core 17H, Interval 151.4-160.75 m (CSF-A)

Dark greenish gray, dark gray, dark reddish gray, generally massive and homogenous CLAY and CLAY WITH SILT dominate the core. Bioturbation is heavy. Two turbidite layers of SILT with ~20 cm thickness occur in Sections 2 and 5. They have erosive bases and fine upward.



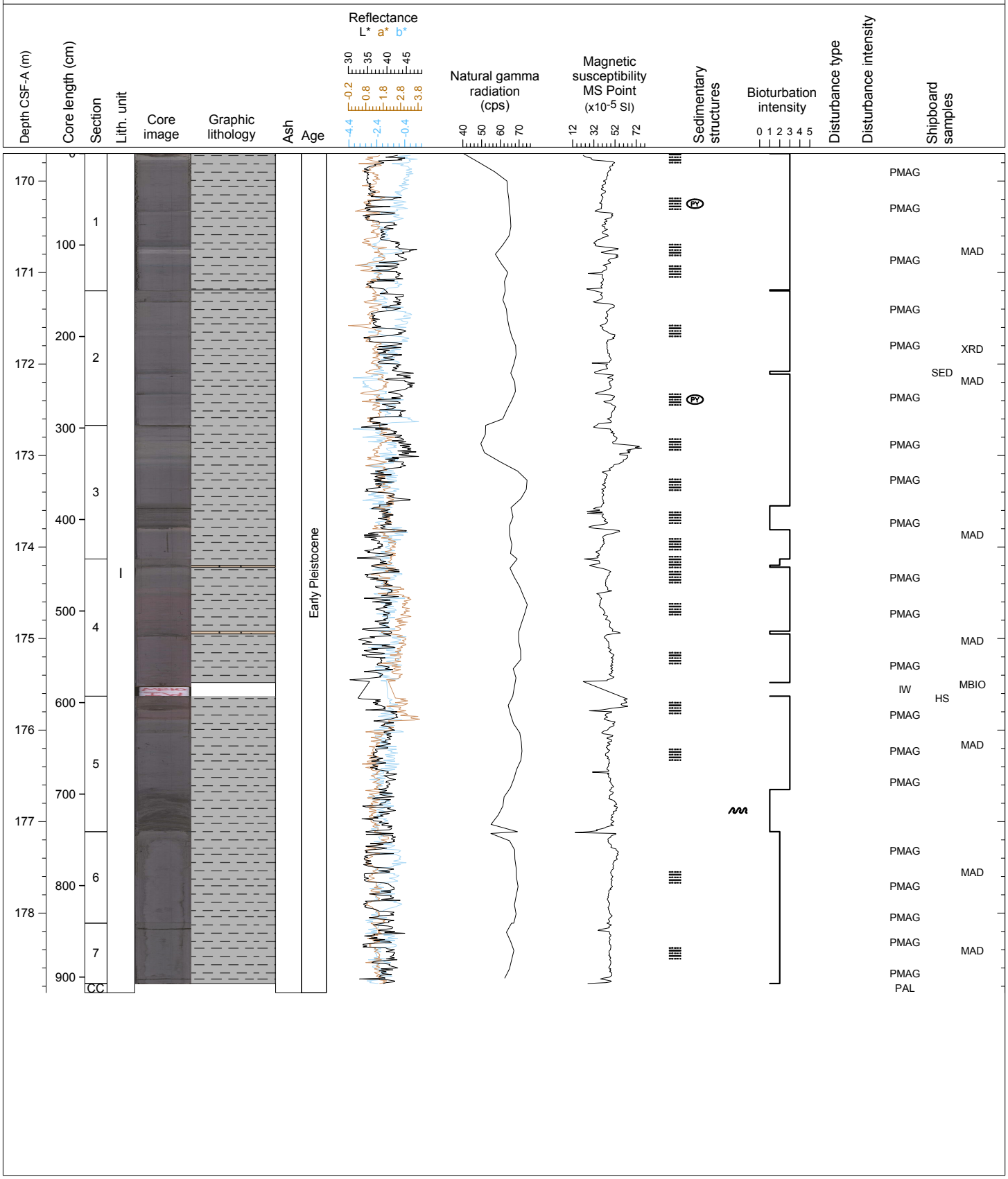
Hole 349-U1433A Core 18H, Interval 160.7-169.68 m (CSF-A)

Dark greenish gray and light greenish gray CLAY. Several cm scale very thin beds occur, and a 10 cm thick turbidite layer that fines upward is present in Section 3. Lighter greenish gray sediment contains more abundant biogenic calcite. Bioturbation is generally heavy throughout.



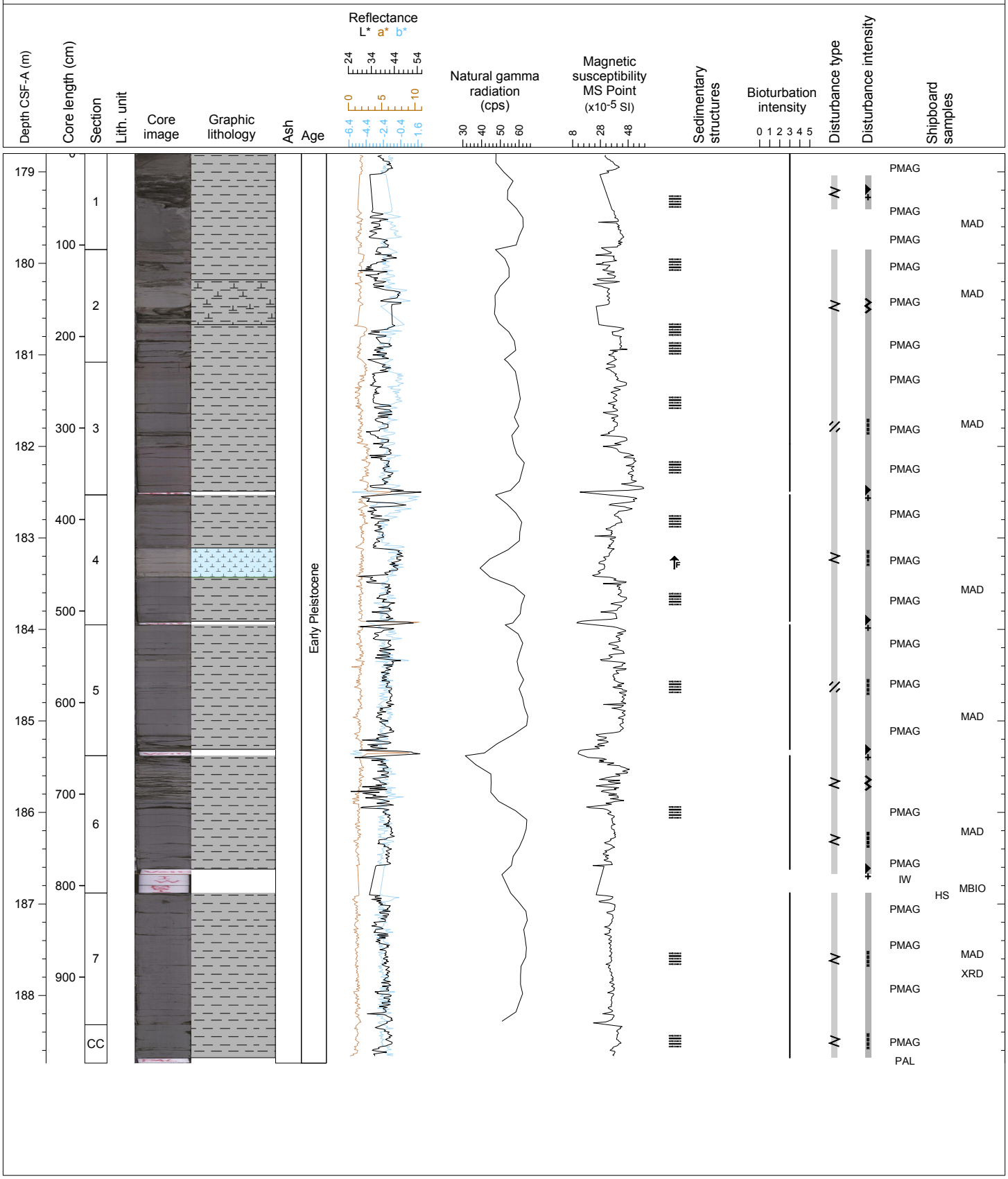
Hole 349-U1433A Core 19H, Interval 169.7-178.87 m (CSF-A)

Dark greenish gray and light greenish gray CLAY. A thick dark reddish CLAY is present from 32 cm in Section 4 to 26 cm in Section 5. The intervals of lighter greenish gray CLAY are thinner than those of the previous core. A few cm scale SILT layers are present. Pyrite nodules occur in Sections 1 and 2. Bioturbation is generally moderate to heavy throughout.



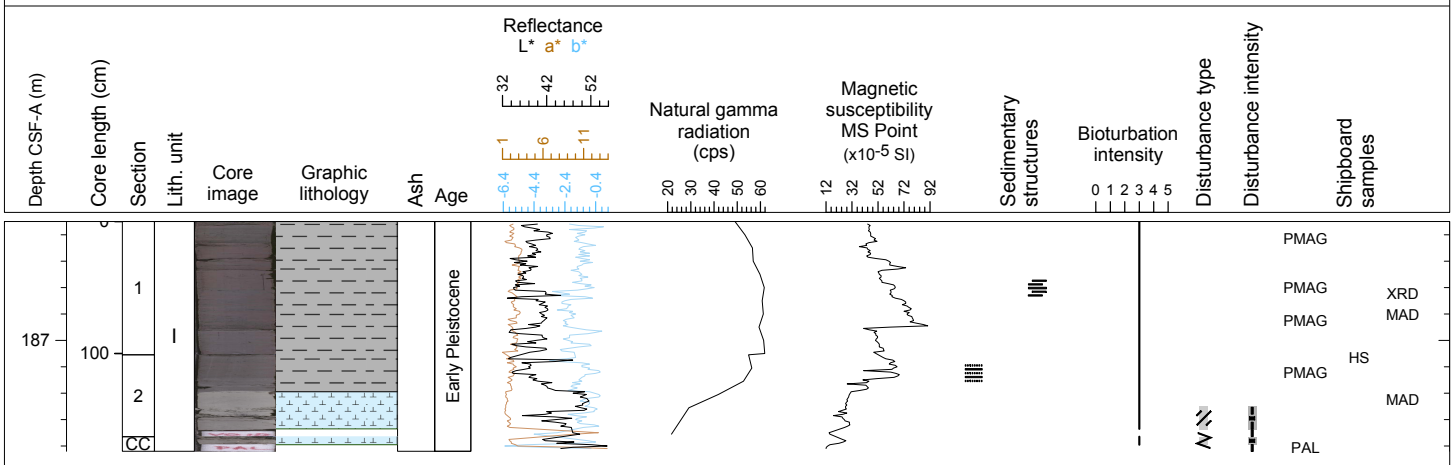
Hole 349-U1433A Core 20H, Interval 178.8-188.74 m (CSF-A)

Dark greenish gray and dark reddish gray CLAY with greenish gray NANNOFOSSIL-RICH CLAY. A single medium-bedded NANNOFOSSIL-RICH CLAY interval and a NANNOFOSSIL OOZE in Section 4 both fine upward and have erosive bases, indicating a distal turbidite origin. Very thin-bedded SILT layers occur occasionally at the bottom of thick-bedded clay layers. Bioturbation is heavy. The core is strongly disturbed by drilling.



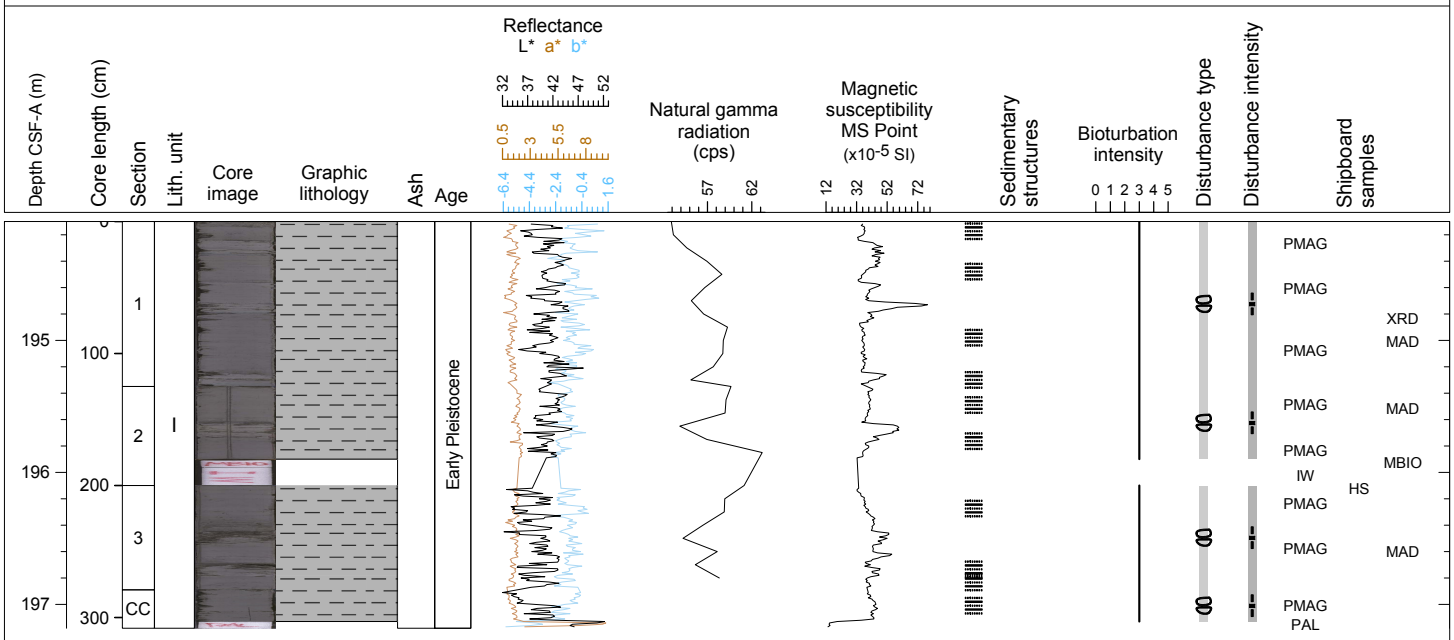
Hole 349-U1433B Core 2R, Interval 186.1-187.84 m (CSF-A)

Dark reddish brown CLAY and greenish gray NANNOFOSSIL OOZE. An abrupt and irregular contact occurs between the CLAY and NANNOFOSSIL OOZE layers. The top of reddish brown CLAY layers is overlain by very thin, laminated SILT layers. Bioturbation is heavy.



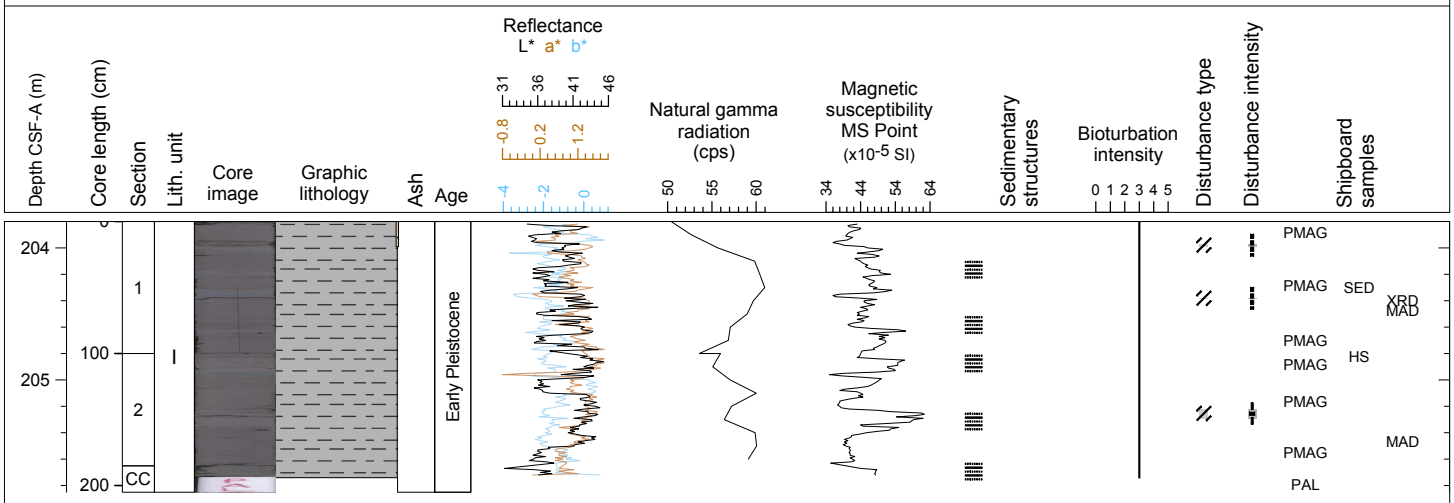
Hole 349-U1433B Core 3R, Interval 194.1-197.18 m (CSF-A)

Dark greenish gray CLAY. There are several 1-3 cm thick green layers. Bioturbation is heavy.



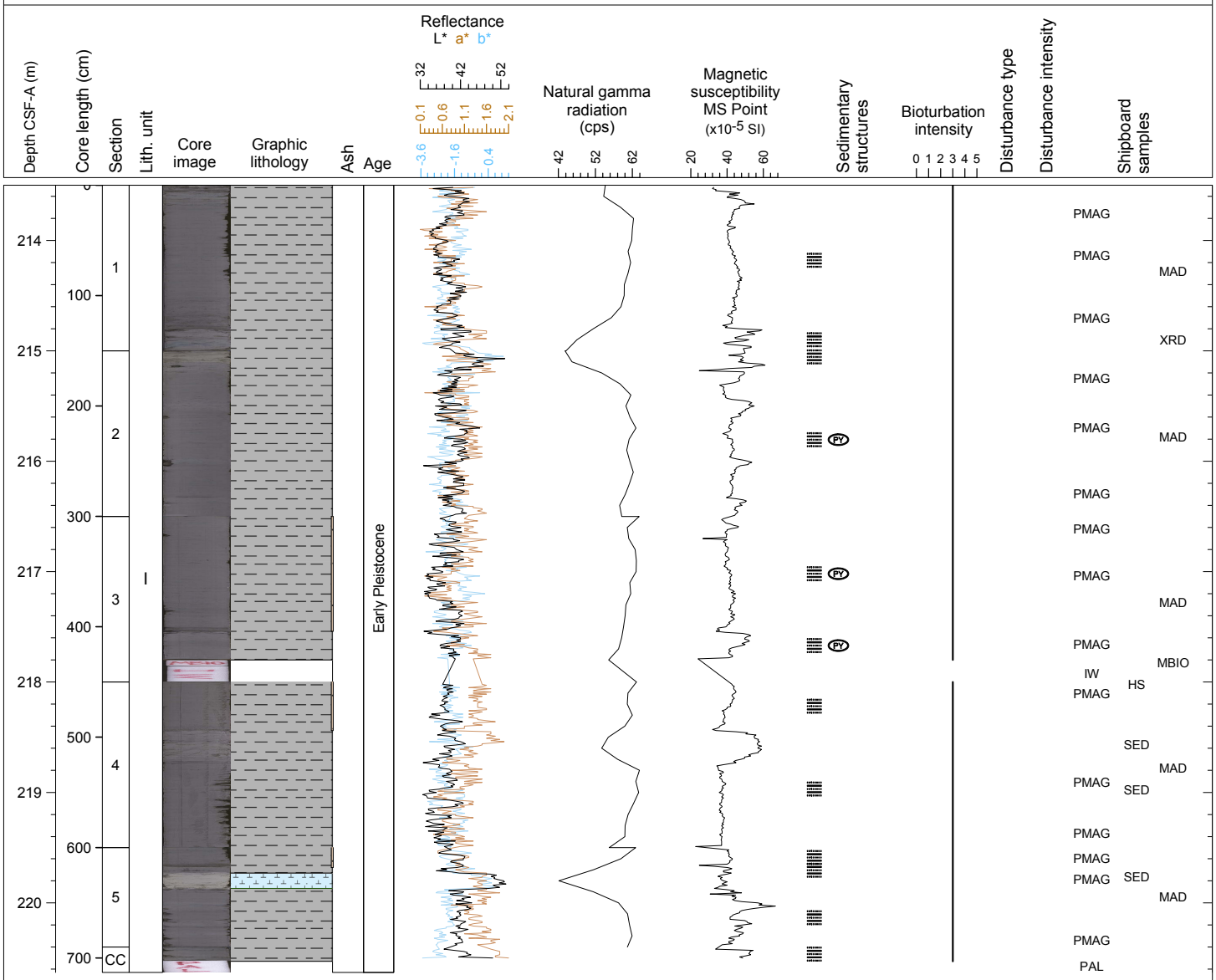
Hole 349-U1433B Core 4R, Interval 203.8-205.85 m (CSF-A)

Dark greenish gray CLAY with two very thin SILT layers in Section 1. There are several 1-3 cm thick green layers. Bioturbation is heavy.



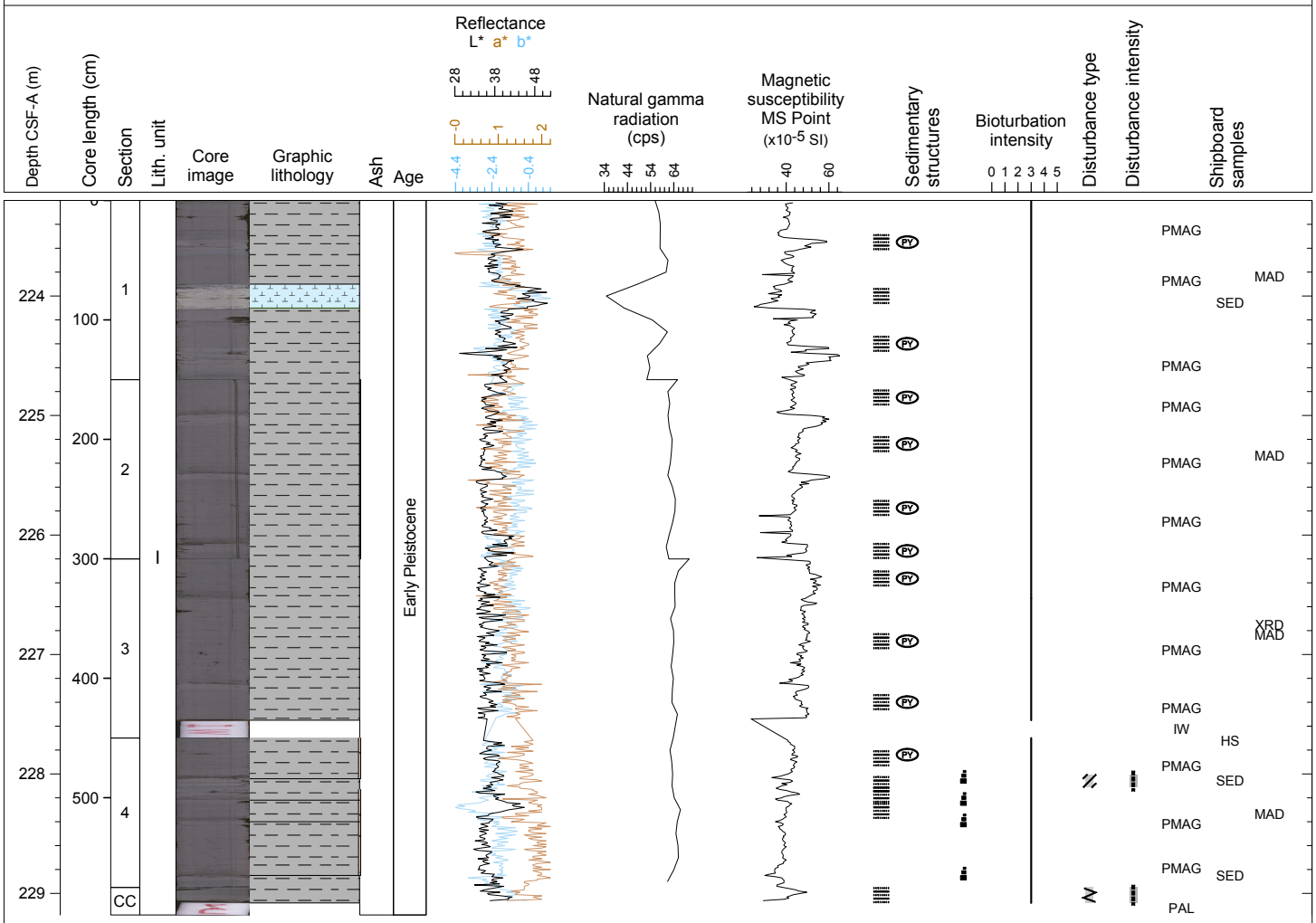
Hole 349-U1433B Core 5R, Interval 213.5-220.63 m (CSF-A)

Dark greenish gray CLAY with a ~15 cm thick lighter gray NANNOFOSSIL OOZE in Section 5. There are several 1-3 cm thick CLAY WITH SILT intervals interpreted as turbidites. Bioturbation is heavy.



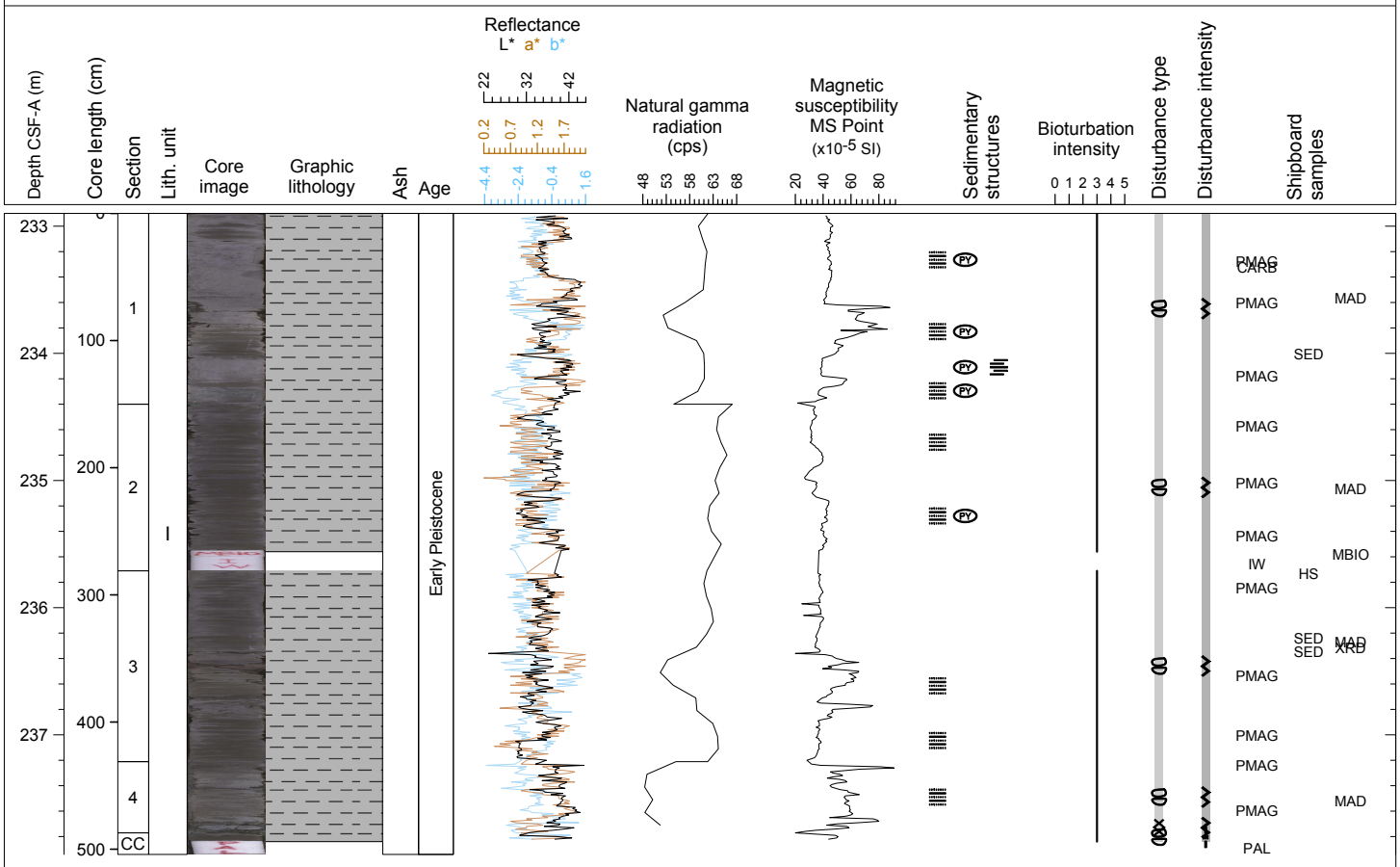
Hole 349-U1433B Core 6R, Interval 223.2-229.18 m (CSF-A)

Dark greenish gray and dark brownish gray CLAY with a ~20 cm thick lighter gray NANNOFOSSIL OOZE in Section 1. There are several <1 cm thick CLAY WITH SILT intervals interpreted as turbidites. Bioturbation is heavy.



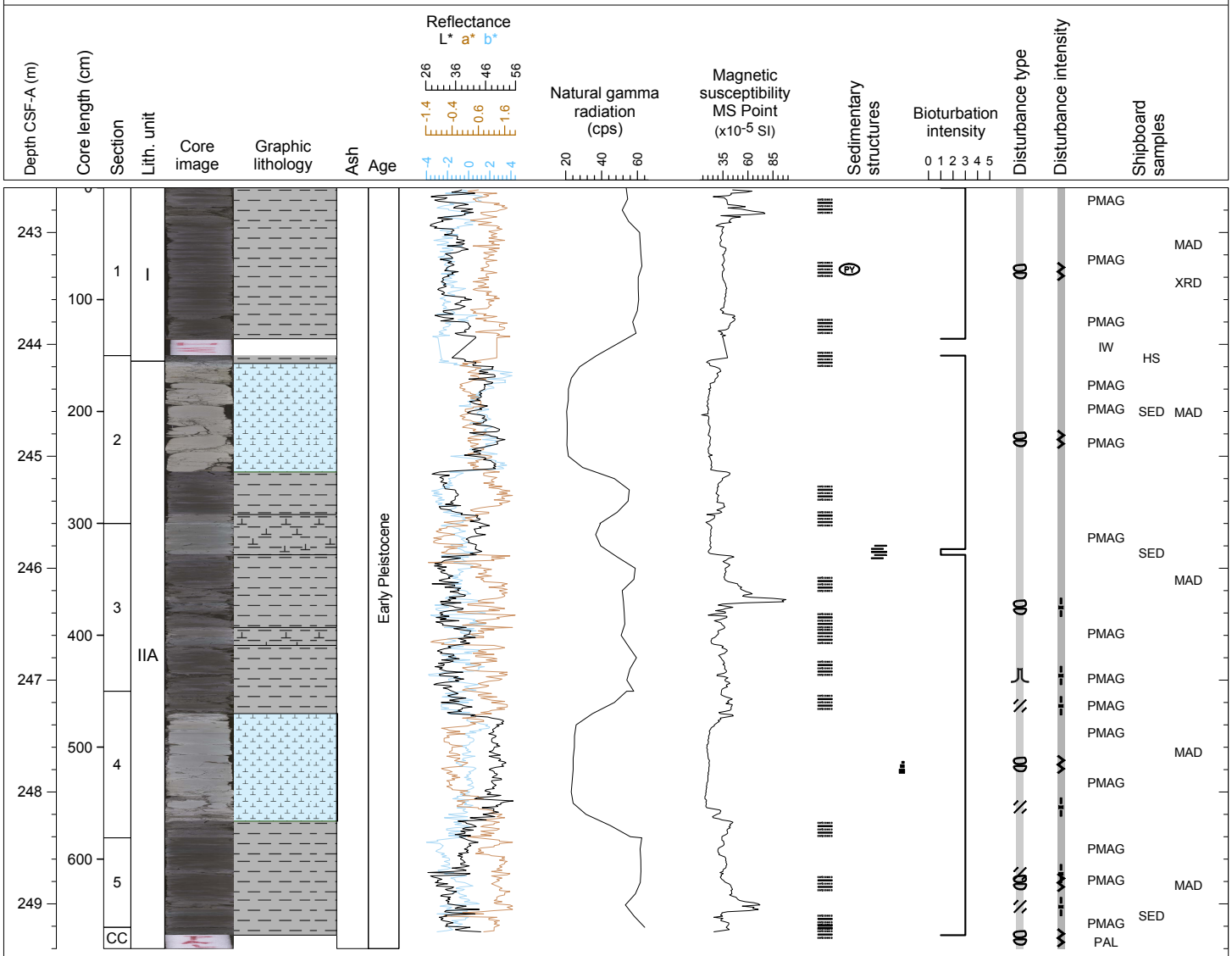
Hole 349-U1433B Core 7R, Interval 232.9-237.94 m (CSF-A)

Dark greenish gray CLAY and CLAY WITH SILT. Several 1-2 cm thick green layers occur in Sections 2,3 and 4. The core is severely biscuited throughout. Bioturbation is heavy.



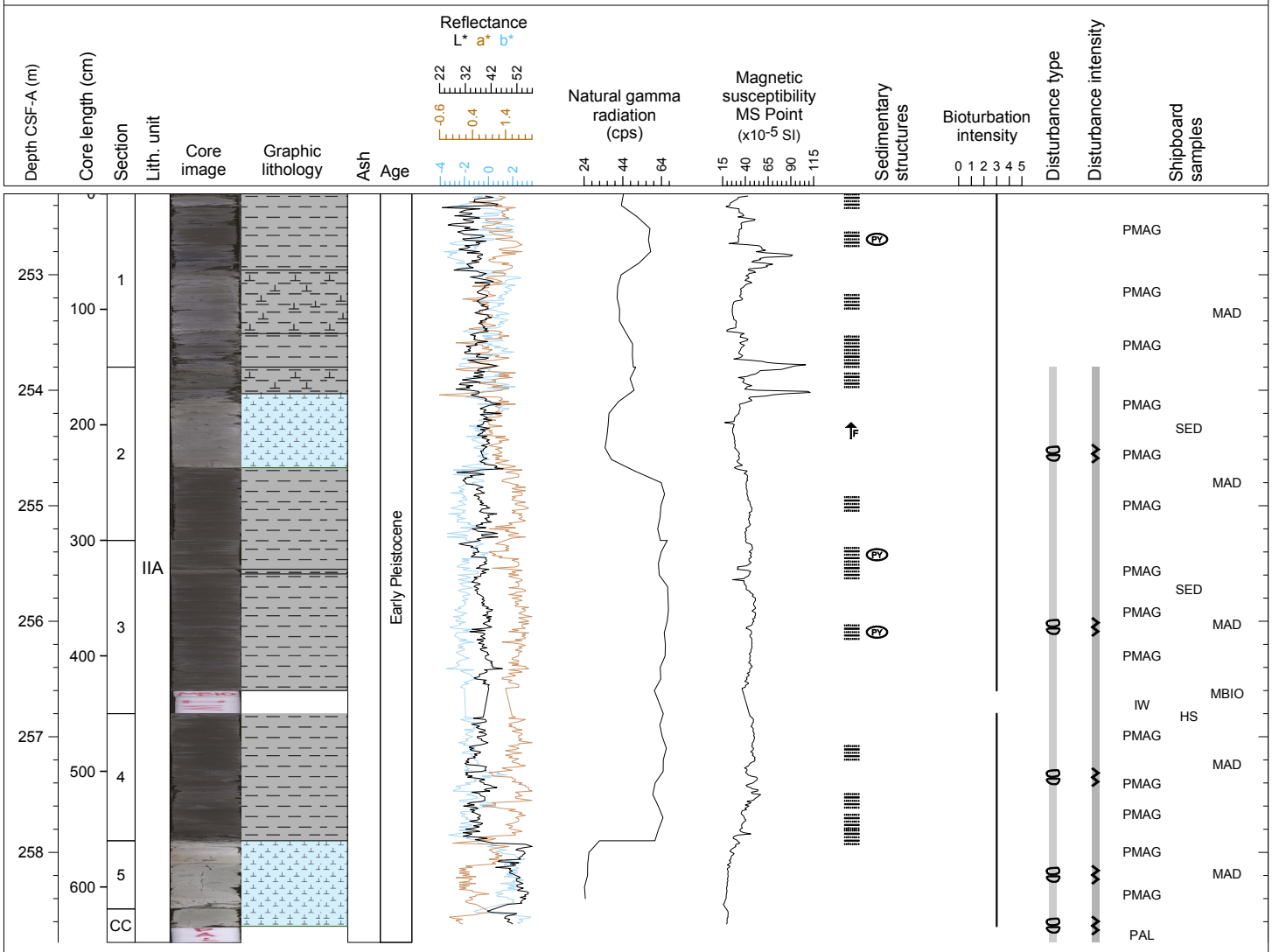
Hole 349-U1433B Core 8R, Interval 242.6-249.4 m (CSF-A)

Dark greenish gray CLAY with two thick beds of NANNOFOSSIL OOZE in Sections 2 and 4 and two medium beds of NANNOFOSSIL-RICH CLAY in Sections 2 and 3. The base of the NANNOFOSSIL-RICH CLAY bed at the top of Section 3 is laminated. Bioturbation is heavy. There is strong biscuiting throughout.



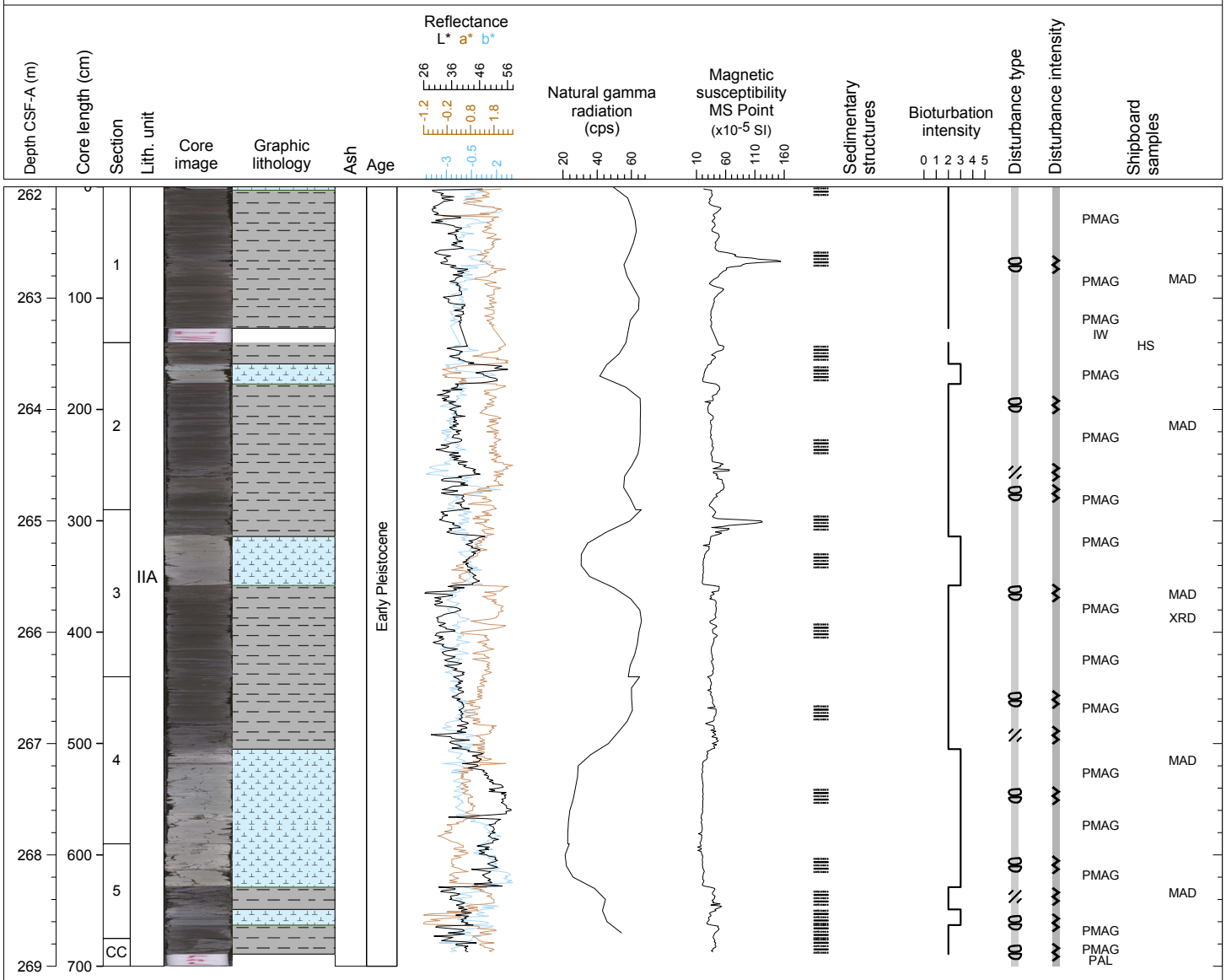
Hole 349-U1433B Core 9R, Interval 252.3-258.78 m (CSF-A)

Dark greenish gray CLAY with two thick beds of NANNOFOSSIL OOZE in Sections 2, 5 and core catcher and a thick NANNOFOSSIL-RICH CLAY in Section 1. Bioturbation is heavy. There is strong biscuiting throughout.



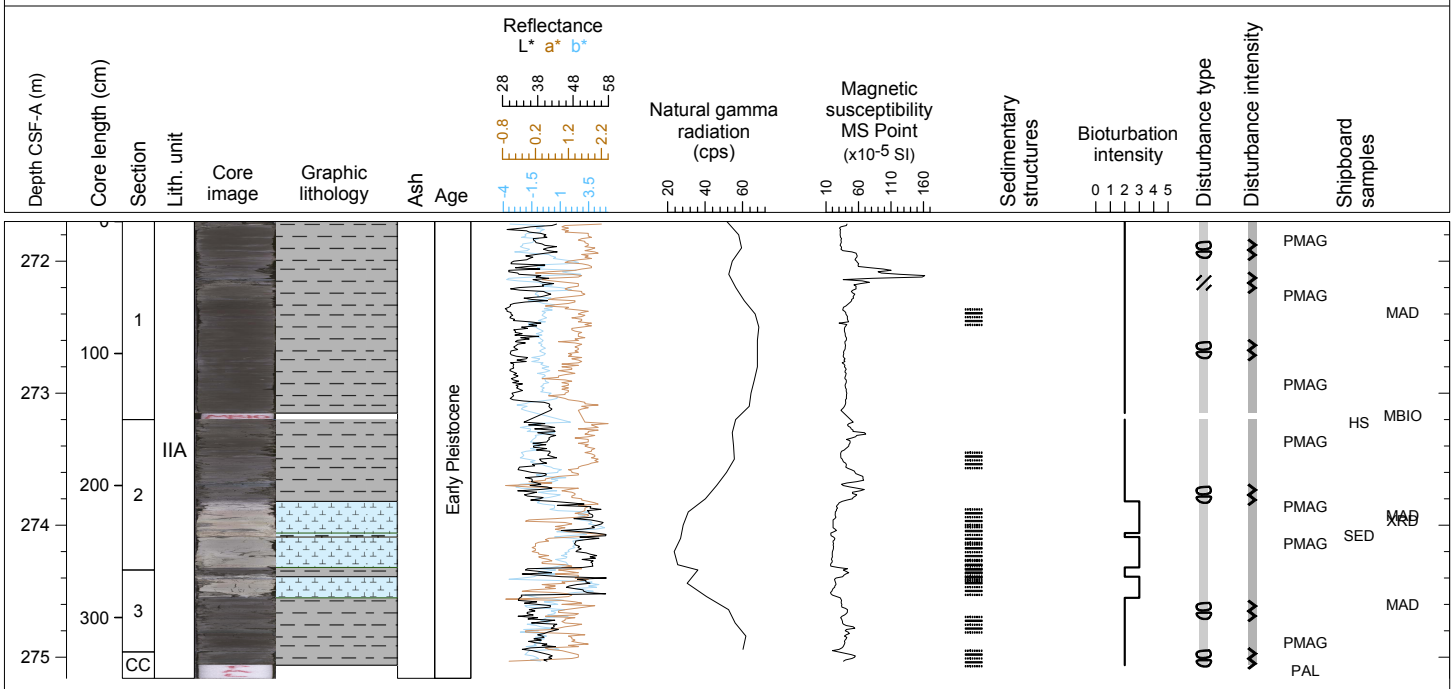
Hole 349-U1433B Core 10R, Interval 262.0-269.0 m (CSF-A)

Dark greenish gray CLAY with four thick beds of NANNOFOSSIL OOZE in Sections 2, 3, 4 and 5. Bioturbation is moderate to heavy. There is strong biscuiting and the core is fractured throughout.



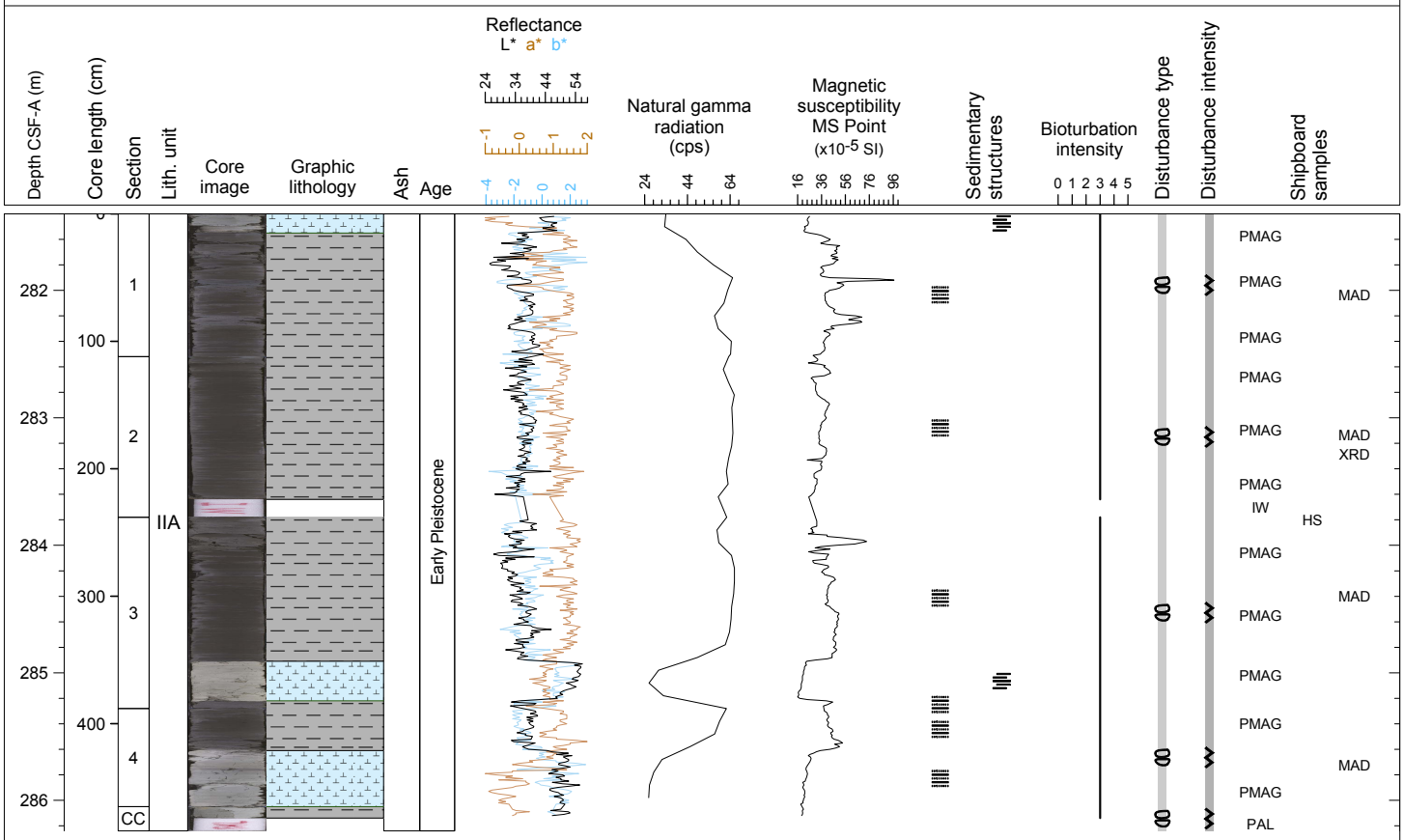
Hole 349-U1433B Core 11R, Interval 271.7-275.16 m (CSF-A)

Dark greenish gray CLAY with two thick beds of NANNOFOSSIL OOZE in Sections 2 and 3. A thin FORAMINIFERAL OOZE layer is intercalated with NANNOFOSSIL OOZE in Section 2. Bioturbation is moderate to heavy. There is strong biscuiting throughout.



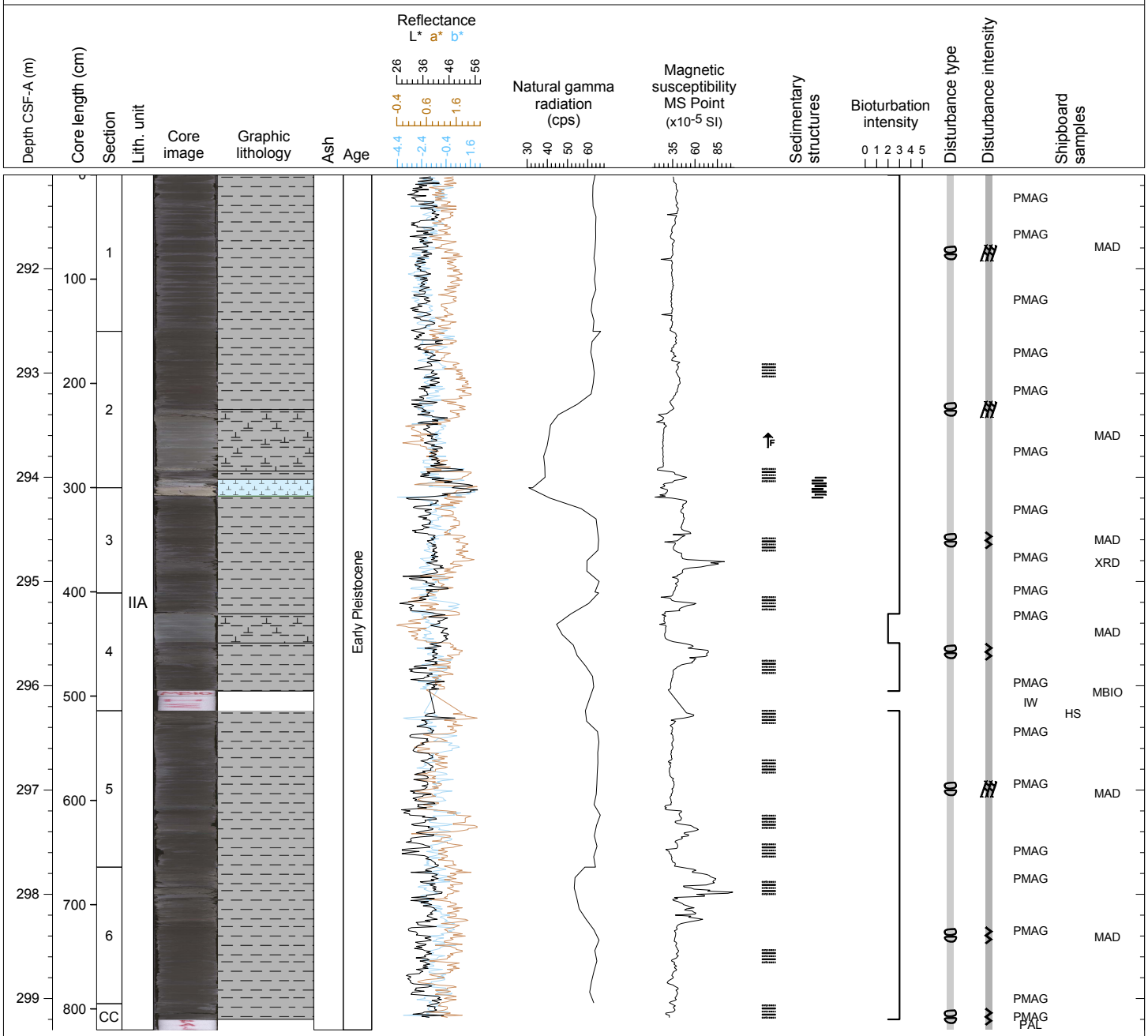
Hole 349-U1433B Core 12R, Interval 281.4-286.24 m (CSF-A)

Dark greenish gray CLAY and greenish gray NANNOFOSSIL OOZE. There are three medium beds of NANNOFOSSIL OOZE with lamination and sharp bases. The upper contact with CLAY layers either in gradational or sharp, indicating two kinds of sedimentary dynamic environments. Bioturbation is heavy. Biscuiting is strong throughout.



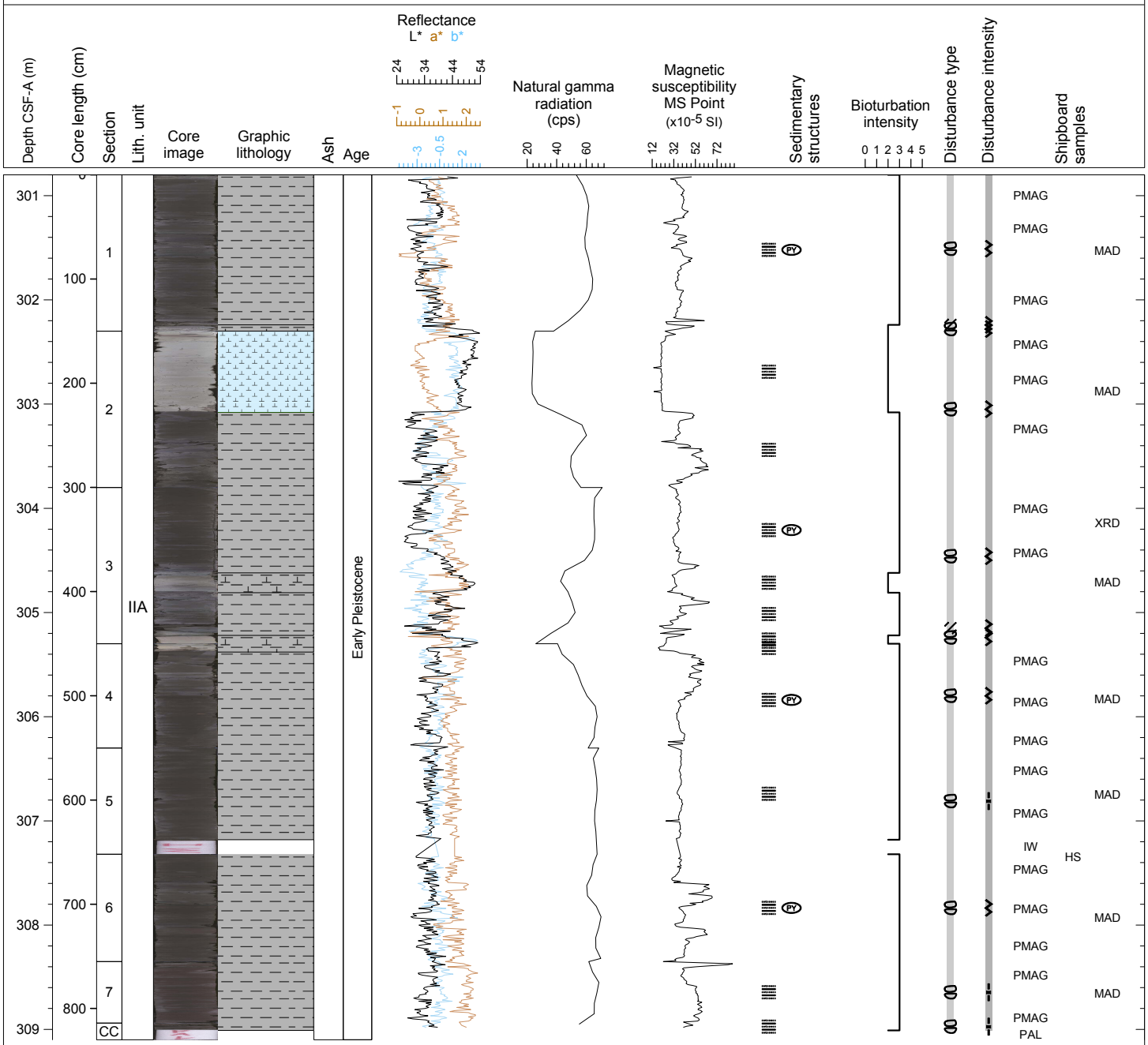
Hole 349-U1433B Core 13R, Interval 291.1-299.3 m (CSF-A)

Dark greenish gray CLAY with interbedded greenish gray NANNOFOSSIL OOZE. There are three medium beds of NANNOFOSSIL OOZE or NANNOFOSSIL-RICH CLAY. Lamination and sharp bases occur at the lower part of NANNOFOSSIL OOZE layers. Bioturbation is heavy. Biscuiting is strong throughout.



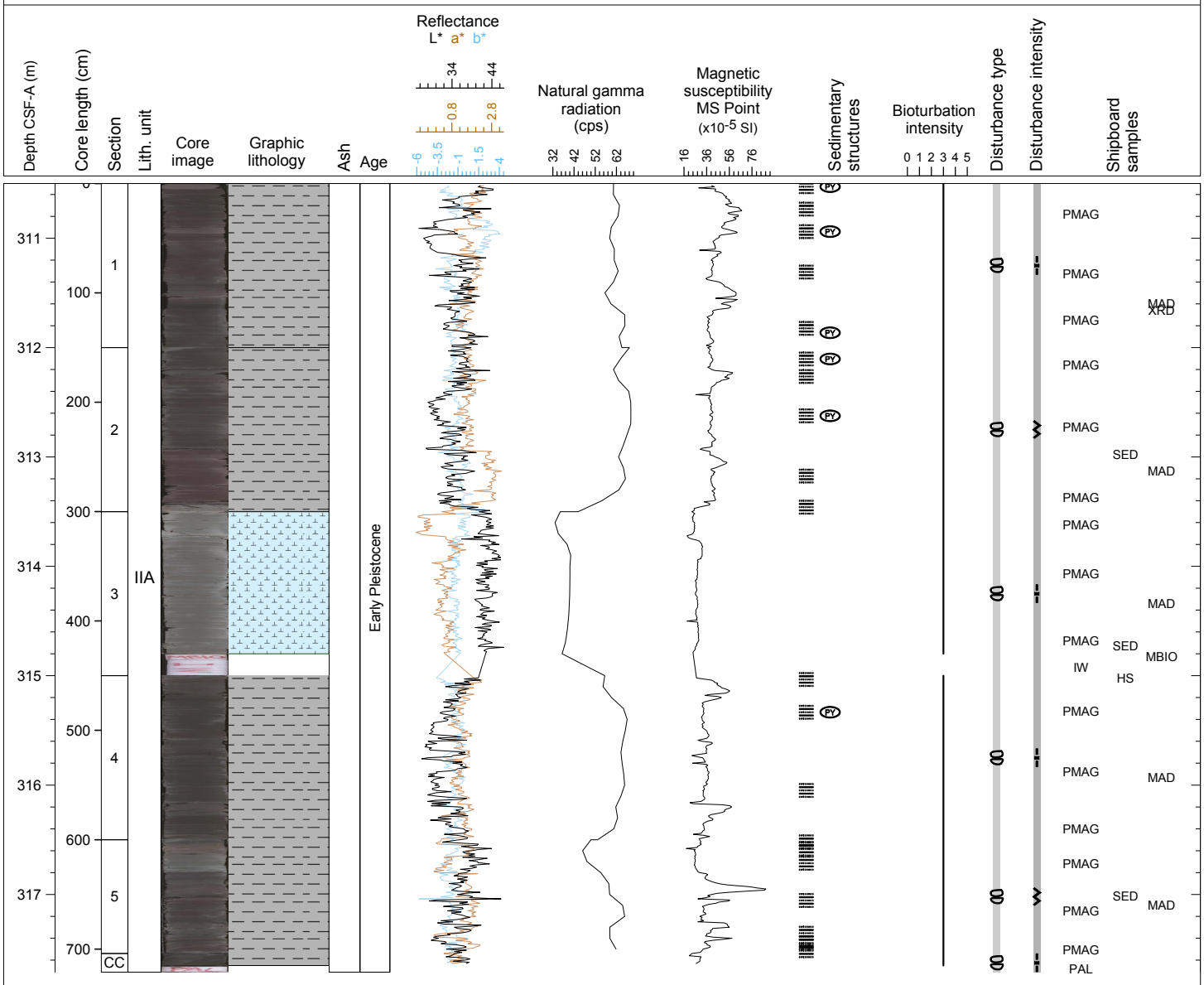
Hole 349-U1433B Core 14R, Interval 300.8-309.1 m (CSF-A)

Dark greenish gray CLAY with interbedded greenish gray NANNOFOSSIL OOZE. There are two medium beds of NANNOFOSSIL-RICH CLAY and one NANNOFOSSIL OOZE. Lamination and sharp bases occur at the lower part of the NANNOFOSSIL OOZE layers. Bioturbation is heavy. Biscuiting is strong throughout. Several pyrite nodule are present in Sections 3, 4 and 6.



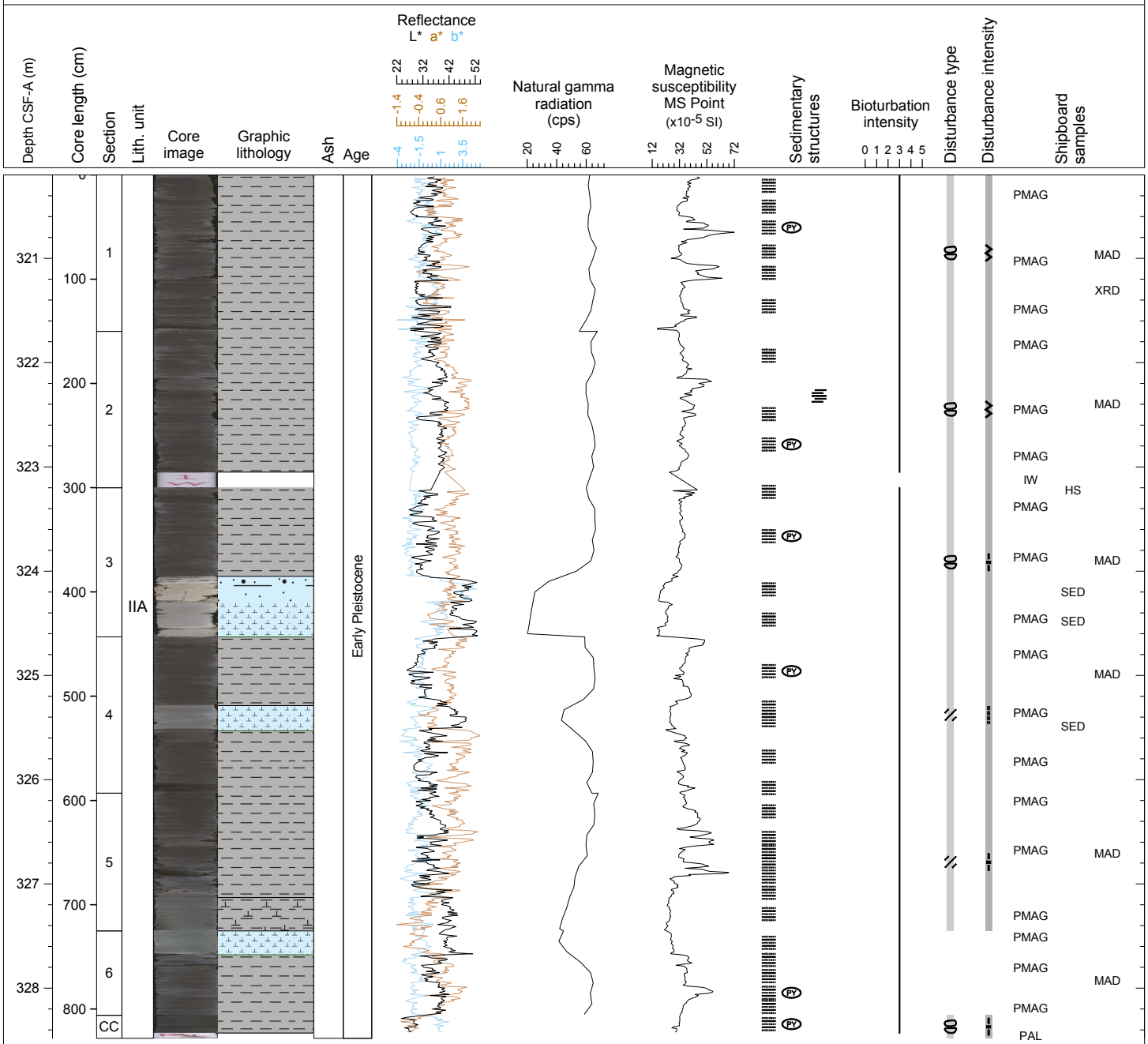
Hole 349-U1433B Core 15R, Interval 310.5-317.71 m (CSF-A)

Dark greenish gray CLAY with a very thick bed of NANNOFOSSIL OOZE in Section 3. Bioturbation is heavy. There is strong biscuiting throughout.



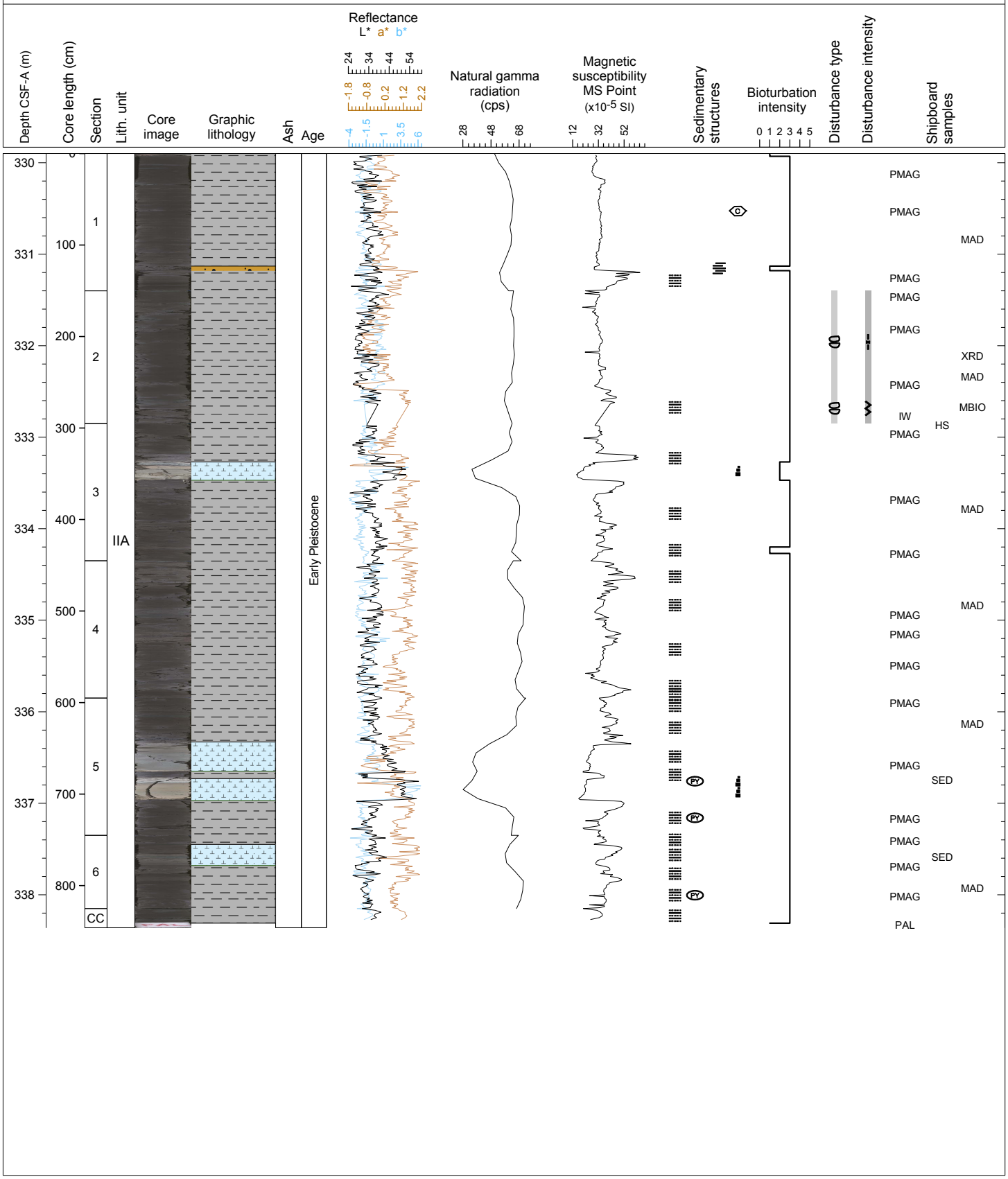
Hole 349-U1433B Core 16R, Interval 320.2-328.48 m (CSF-A)

Dark greenish gray CLAY with interbedded greenish gray NANNOFOSSIL OOZE and NANNOFOSSIL-RICH CLAY. There ia a thick bed of NANNOFOSSIL-RICH CLAY in Section 5, and three thick NANNOFOSSIL OOZE beds in Sections 3, 4 and 6. Lamination and sharp bases occur at the base of NANNOFOSSIL OOZE layers. Bioturbation is heavy. Biscuiting is strong throughout.



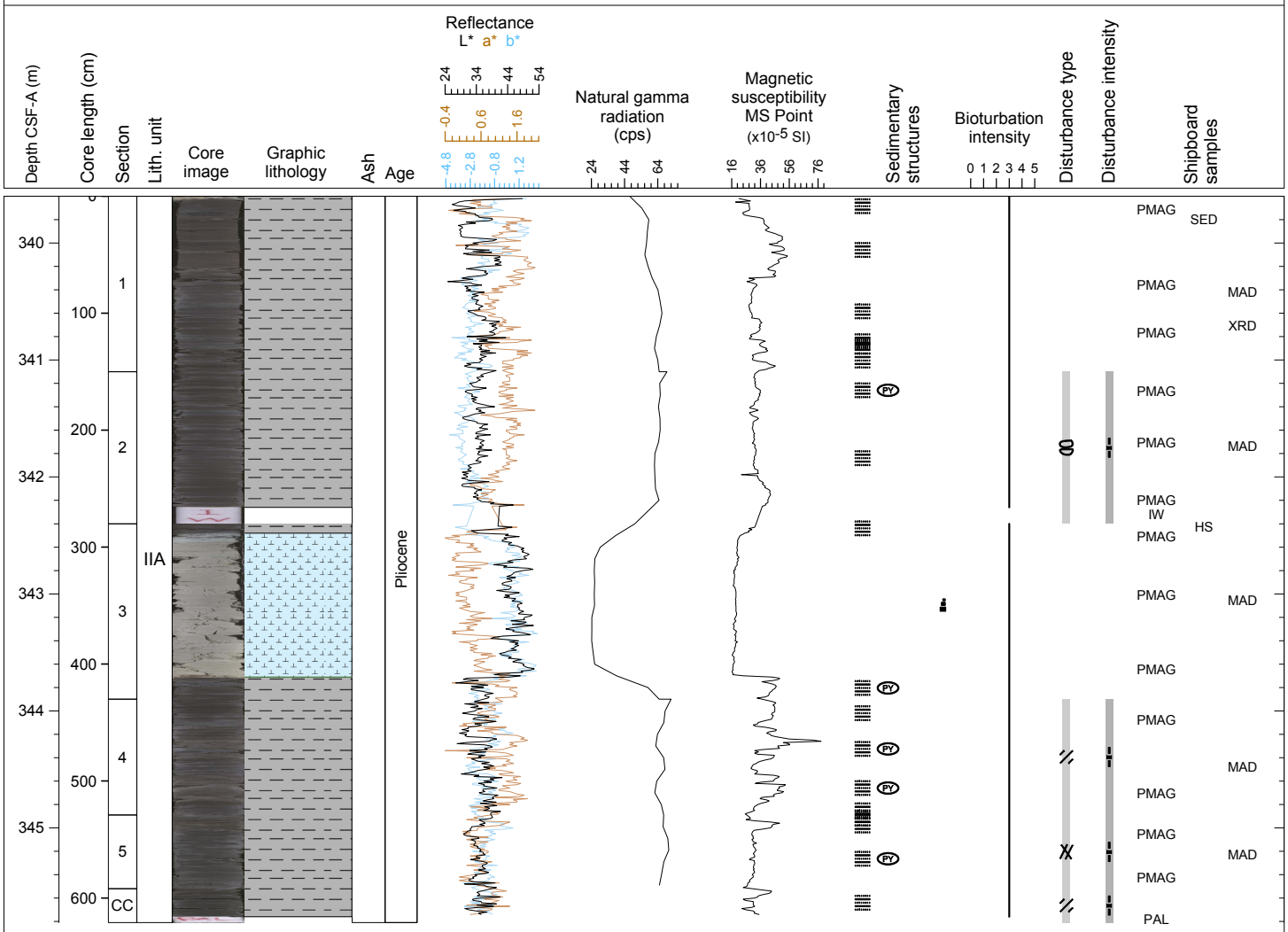
Hole 349-U1433B Core 17R, Interval 329.9-338.36 m (CSF-A)

Dark greenish gray CLAY with interbedded greenish gray NANNOFOSSIL OOZE. There are beds of NANNOFOSSIL OOZE in Sections 3, 5 and 6. Lamination and sharp bases occur at the lower part of NANNOFOSSIL OOZE layers. Bioturbation is heavy. Biscuiting is strong throughout. Rare pyrite concretions are found in the clay-rich sections.



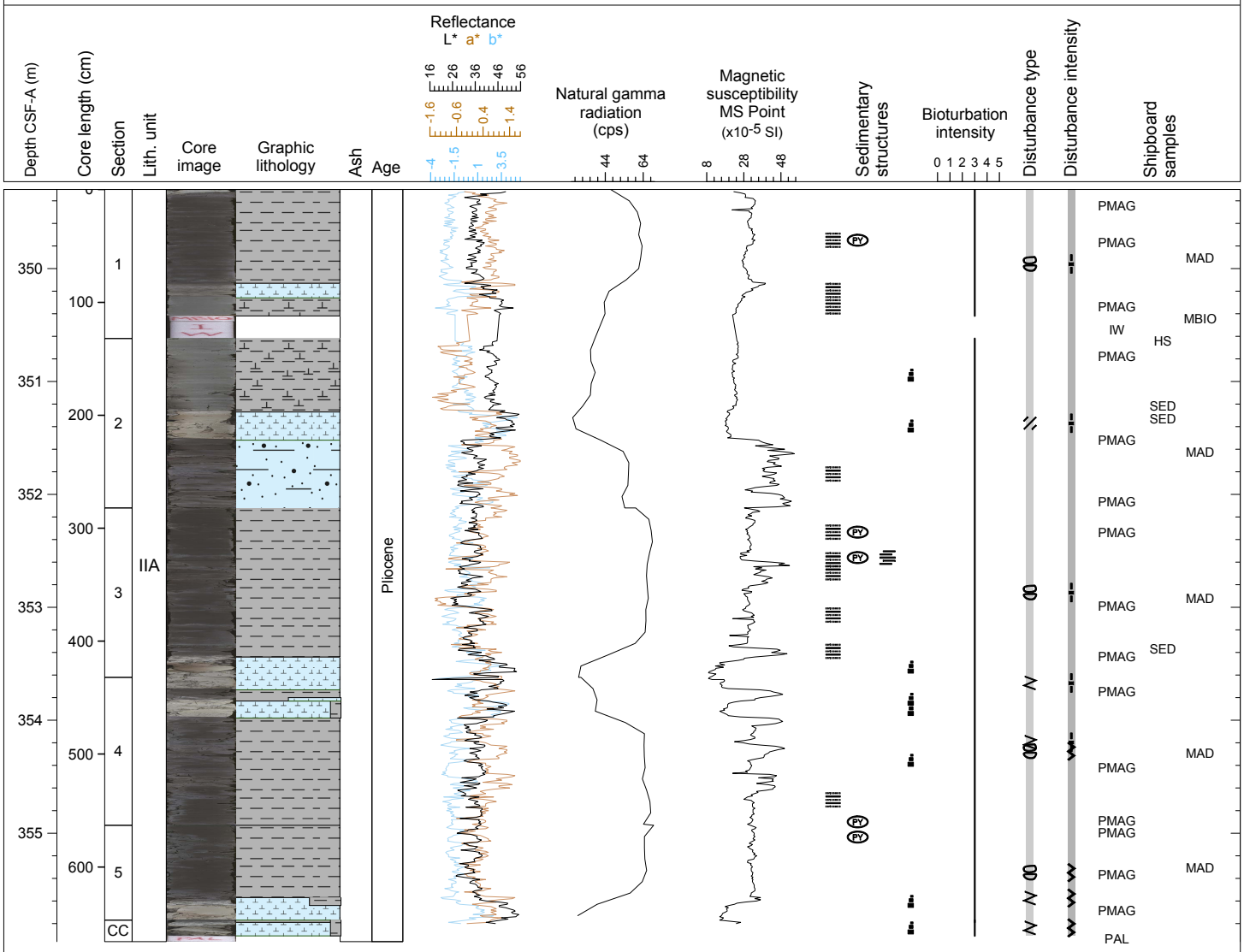
Hole 349-U1433B Core 18R, Interval 339.6-345.81 m (CSF-A)

Dark greenish gray CLAY with a very thick interbed of light greenish gray NANNOFOSSIL OOZE in Section 3. Lamination and sharp bases occur in the lower part of the NANNOFOSSIL OOZE layers. Bioturbation is heavy. Biscuiting is strong throughout.



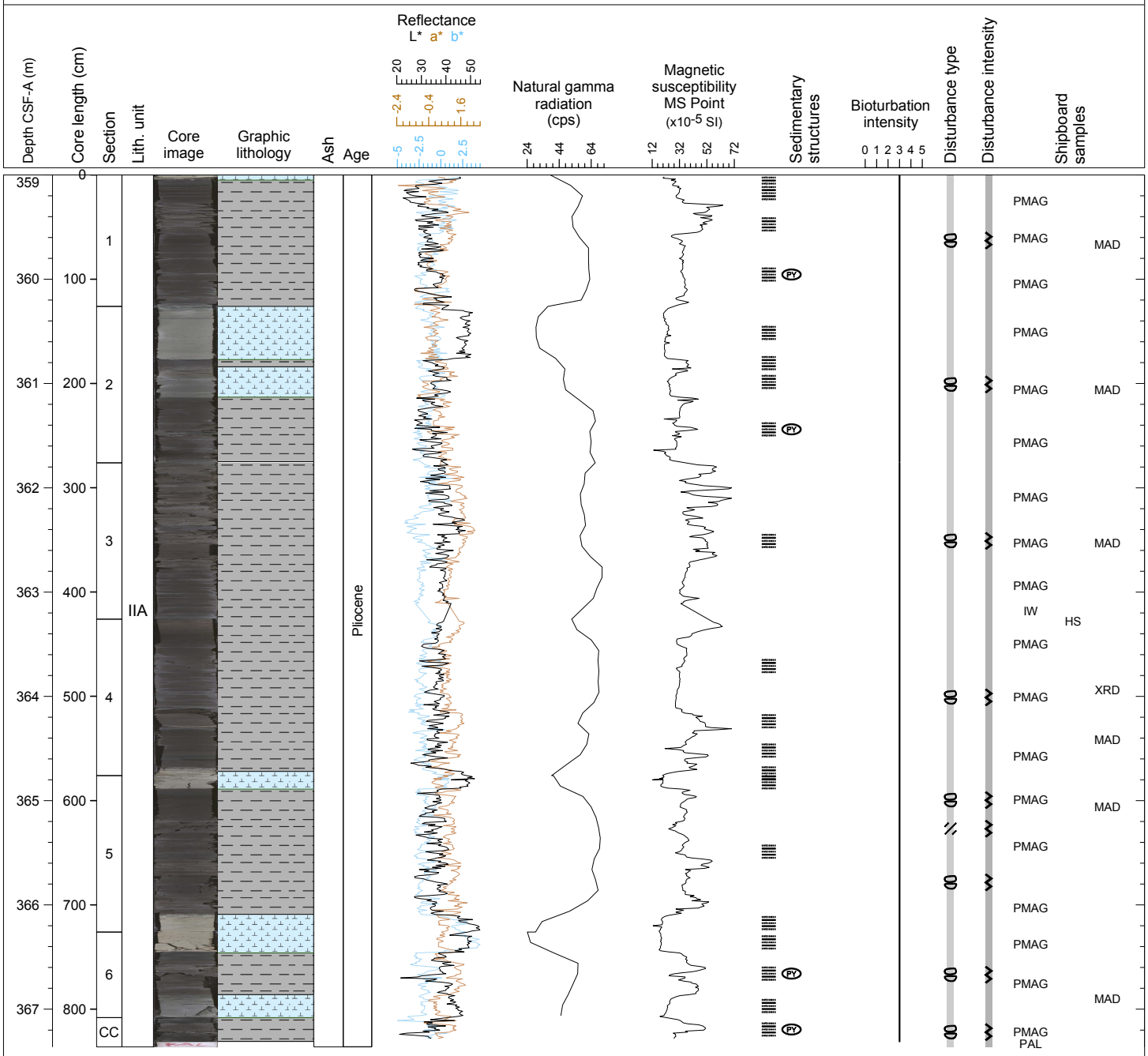
Hole 349-U1433B Core 19R, Interval 349.3-355.96 m (CSF-A)

Dark greenish gray CLAY with interbedded light greenish gray NANNOFOSSIL OOZE, FORAMINIFER-RICH NANNOFOSSIL OOZE and NANNOFOSSIL-RICH CLAY. NANNOFOSSIL OOZE layers have sharp, erosive bases, some with lamination, and grade upward to dark greenish gray CLAY. Bioturbation is heavy. Biscuiting is strong throughout.



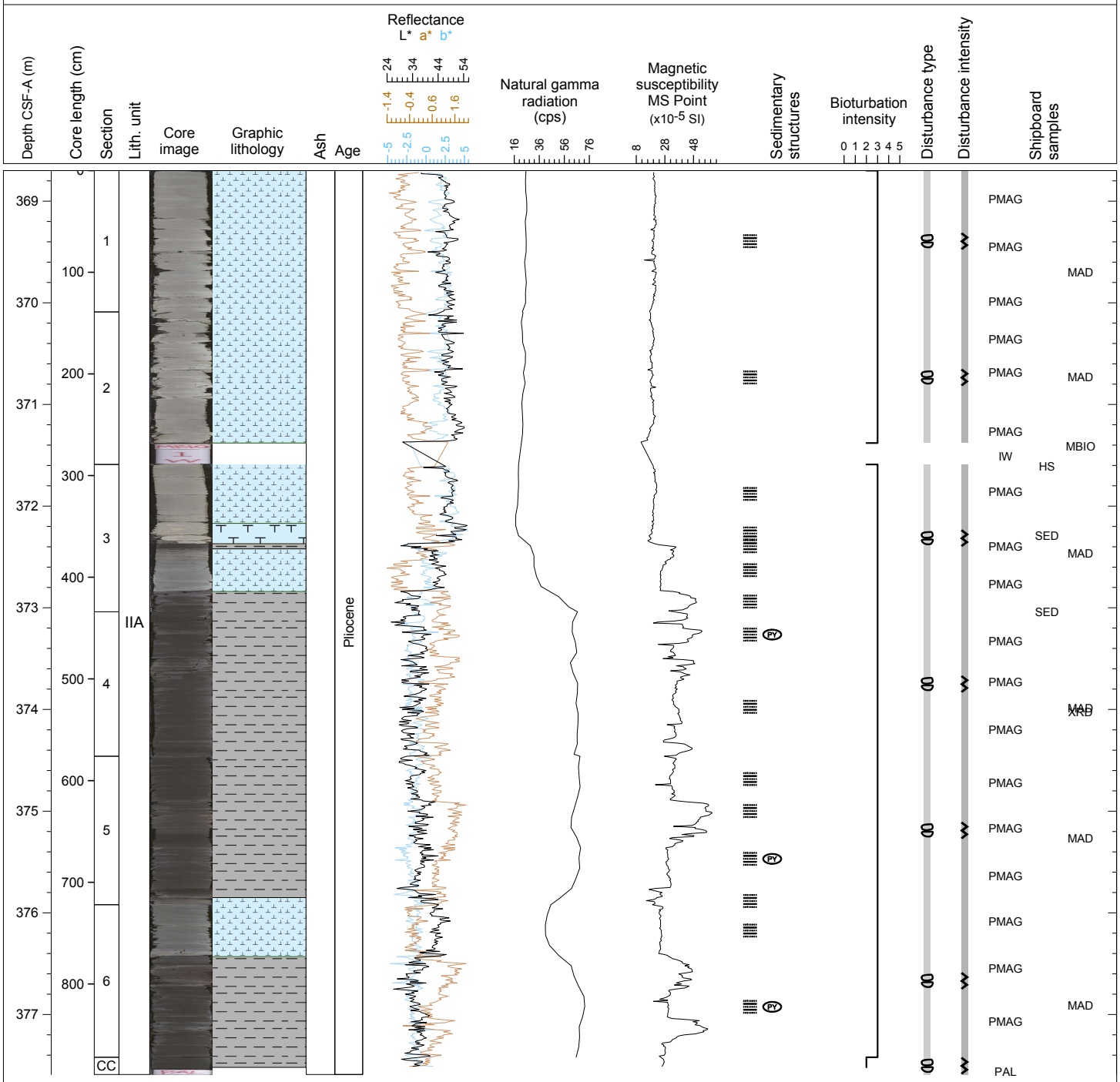
Hole 349-U1433B Core 20R, Interval 359.0-367.36 m (CSF-A)

Dark greenish gray CLAY with interbedded light greenish gray NANNOFOSSIL OOZE. NANNOFOSSIL OOZE layers have sharp, erosive bases, some with lamination, and grade upward to dark greenish gray CLAY. Bioturbation is heavy. Biscuiting is strong throughout. Pyrite is present in Sections 1, 2, and 6. There is some slight color change within dark greenish gray sediment with several thin green colored, and very dark green sediment layers.



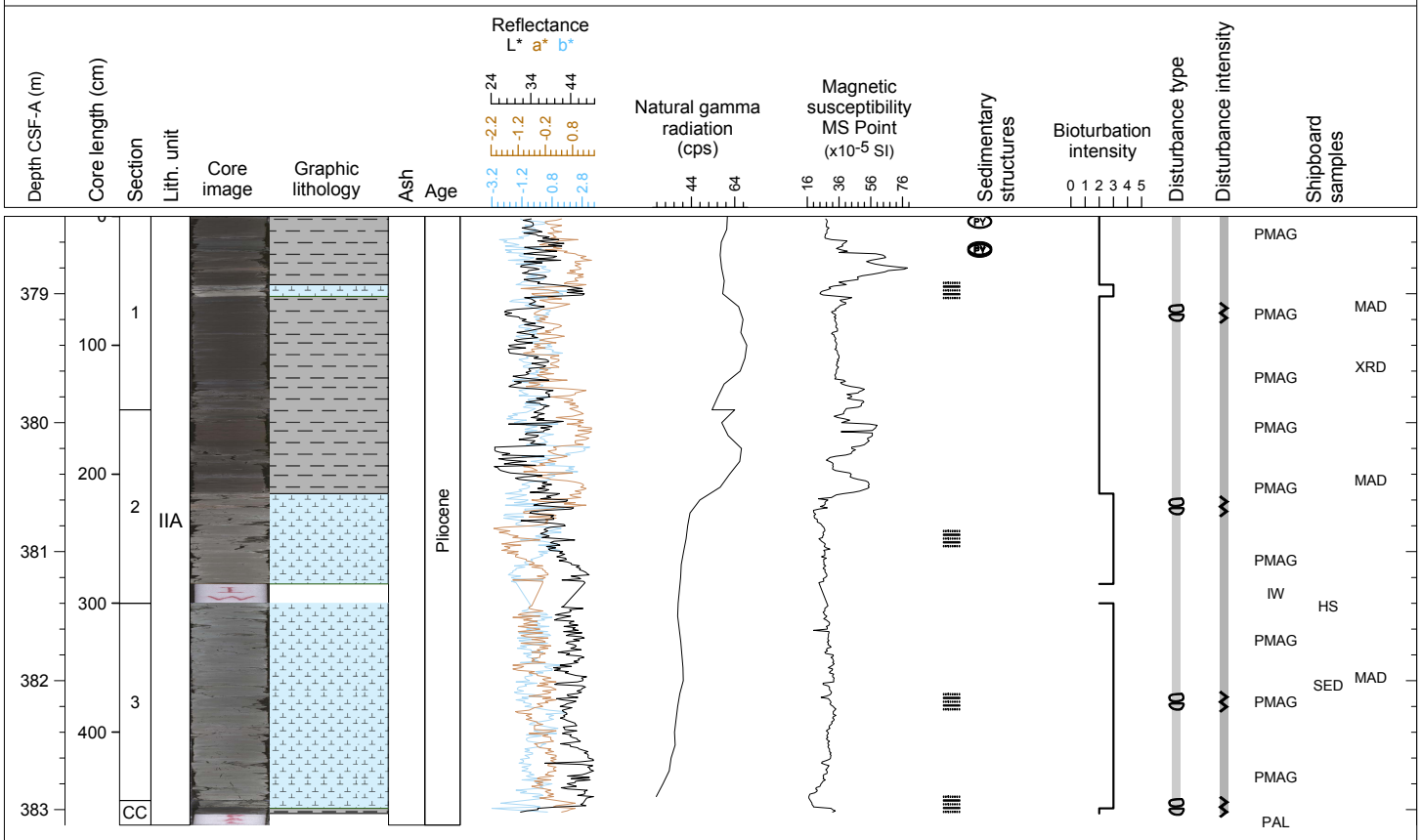
Hole 349-U1433B Core 21R, Interval 368.7-377.59 m (CSF-A)

Greenish gray NANNOFOSSIL OOZE and FORAMINIFERAL OOZE from core top to 78 cm in Section 3. Below this layer is dark greenish gray CLAY and an interval of NANNOFOSSIL OOZE with a sharp base. Pyrite is present in Sections 4, 5 and 6. Bioturbation is heavy. Sediments are well consolidated to weakly lithified. Biscuiting is strong throughout.



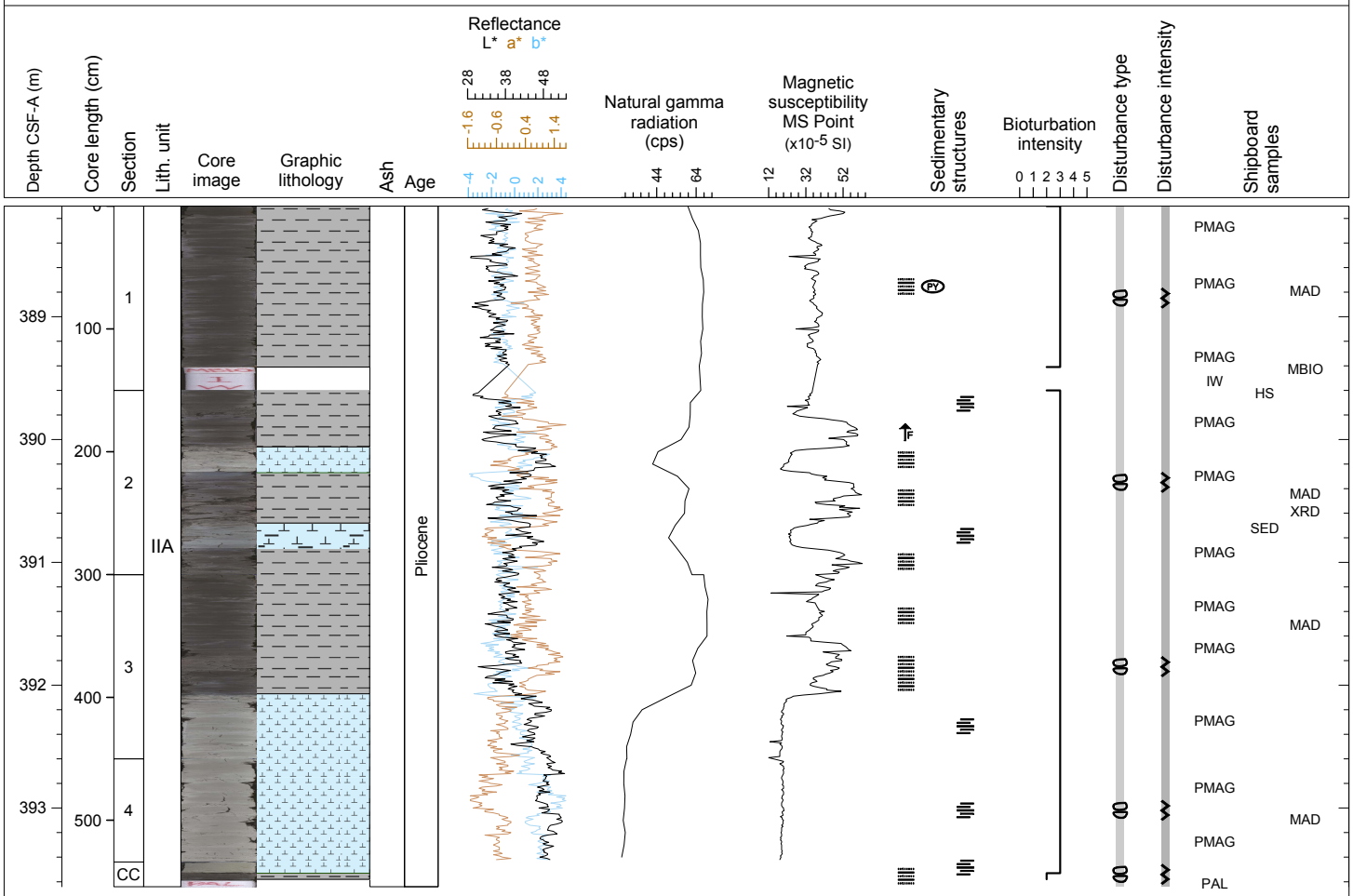
Hole 349-U1433B Core 22R, Interval 378.4-383.12 m (CSF-A)

Greenish gray NANNOFOSSIL OOZE and dark greenish gray CLAY. Both lithologies are in thick layers with gradational contacts fining upward from NANNOFOSSIL OOZE to CLAY. A thin bed of NANNOFOSSIL OOZE in Section 1 has an erosive and sharp contact with the underlying CLAY. Pyrite minerals are in CLAY layers. Bioturbation is heavy. Sediments are well consolidated to weakly lithified. Biscuiting is strong throughout.



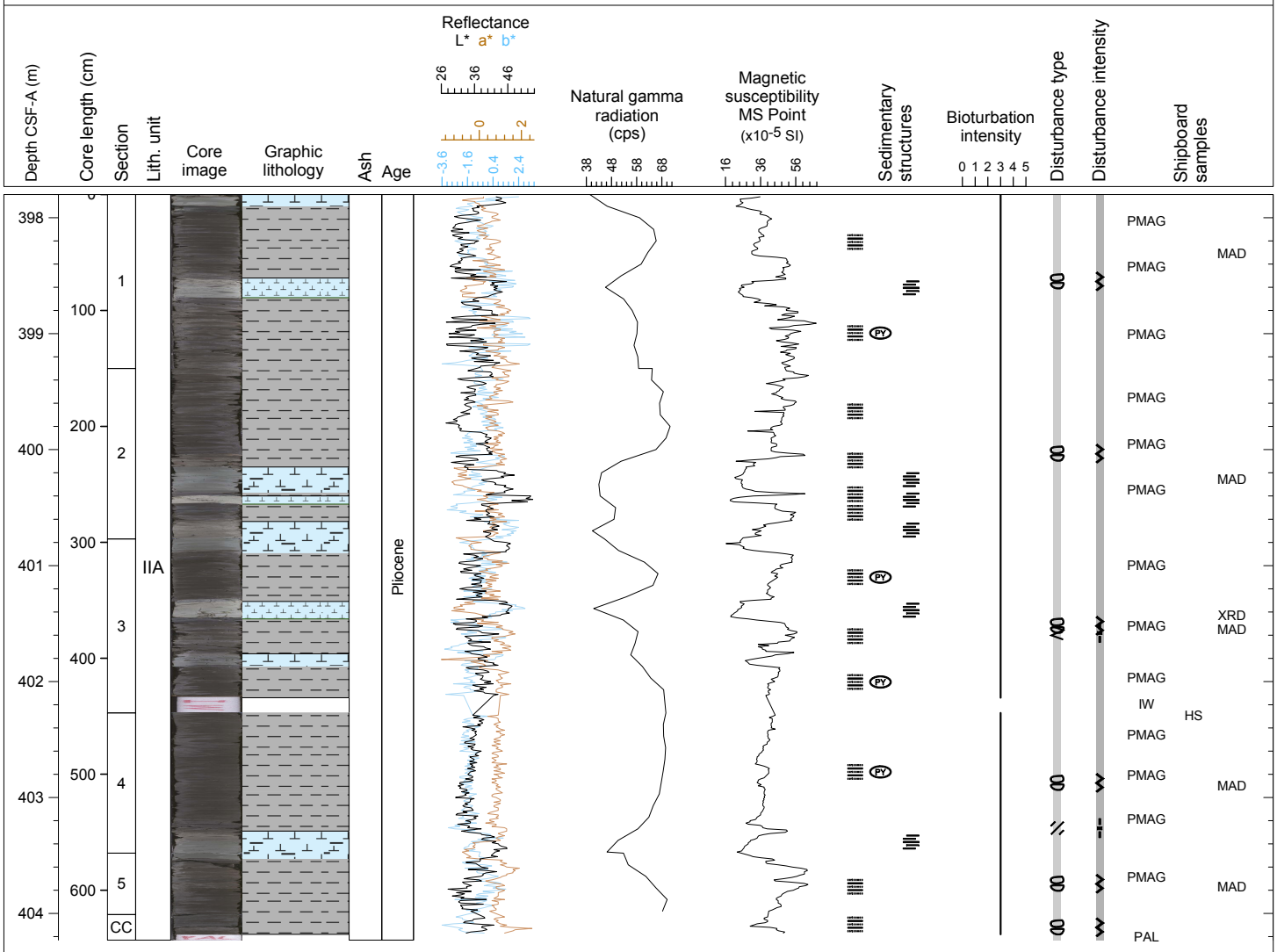
Hole 349-U1433B Core 23R, Interval 388.1-393.64 m (CSF-A)

Dark greenish gray CLAY and greenish gray NANNOFOSSIL OOZE. Both lithologies are in thick layers with gradational contact fining upward from NANNOFOSSIL OOZE to CLAY. Two thin beds of NANNOFOSSIL OOZE in Section 2 have erosive and sharp contacts with the underlying CLAY layers. Pyrite nodules occur in CLAY layers in Section 1. Bioturbation is heavy. Sediments are well consolidated to weakly lithified. Biscuiting is strong throughout.



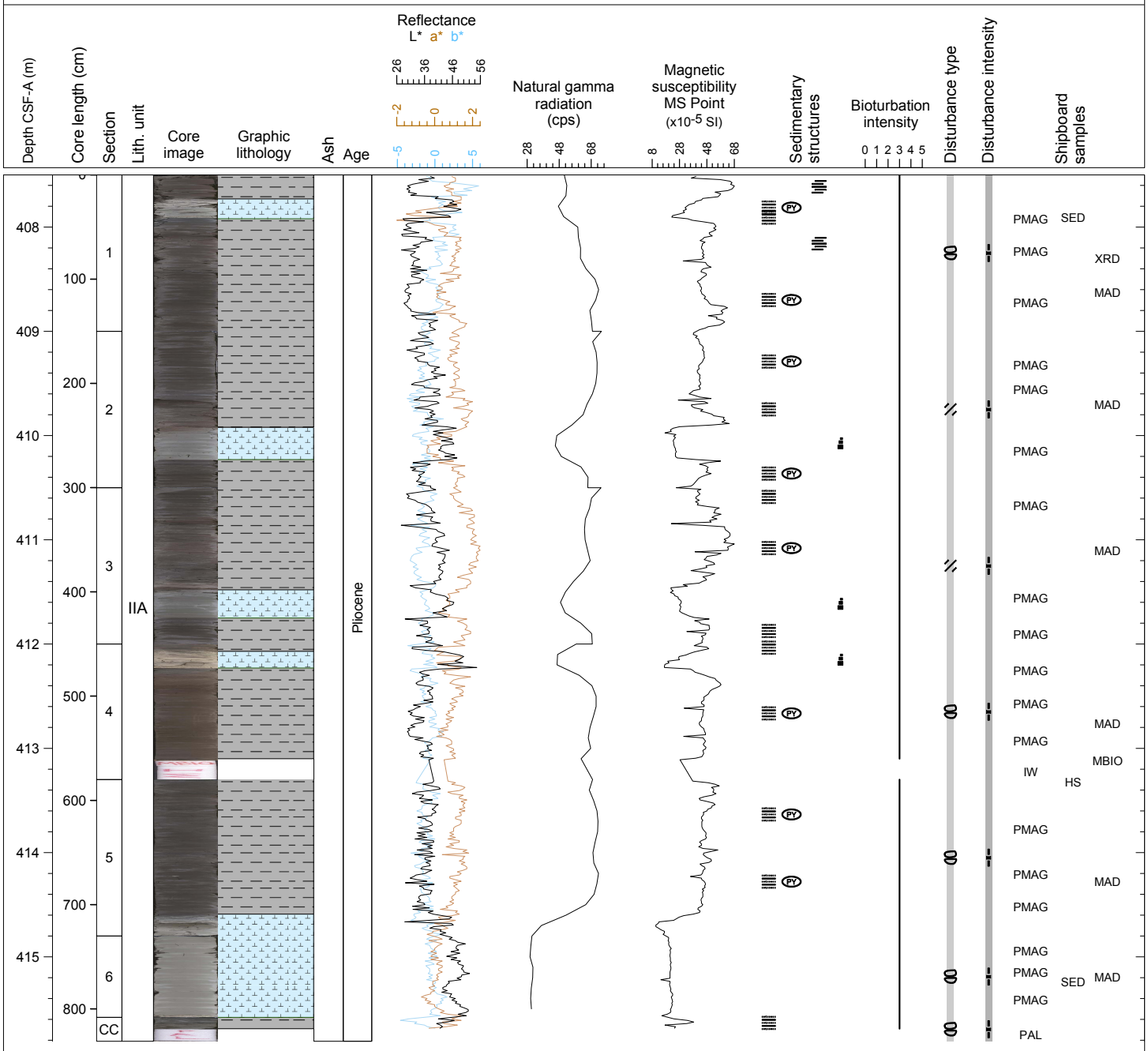
Hole 349-U1433B Core 24R, Interval 397.8-404.23 m (CSF-A)

Dark greenish gray CLAY and greenish gray NANNOFOSSIL OOZE and NANNOFOSSIL-RICH CLAY. All lithologies are in medium-thick layers with gradational contacts fining upward from NANNOFOSSIL OOZE to CLAY. NANNOFOSSIL OOZE layers have erosive and sharp contacts with underlying CLAY layers. Pyrite nodules occur frequently in CLAY layers. Bioturbation is heavy. Sediments are well consolidated to weakly lithified. Biscuiting is strong throughout.



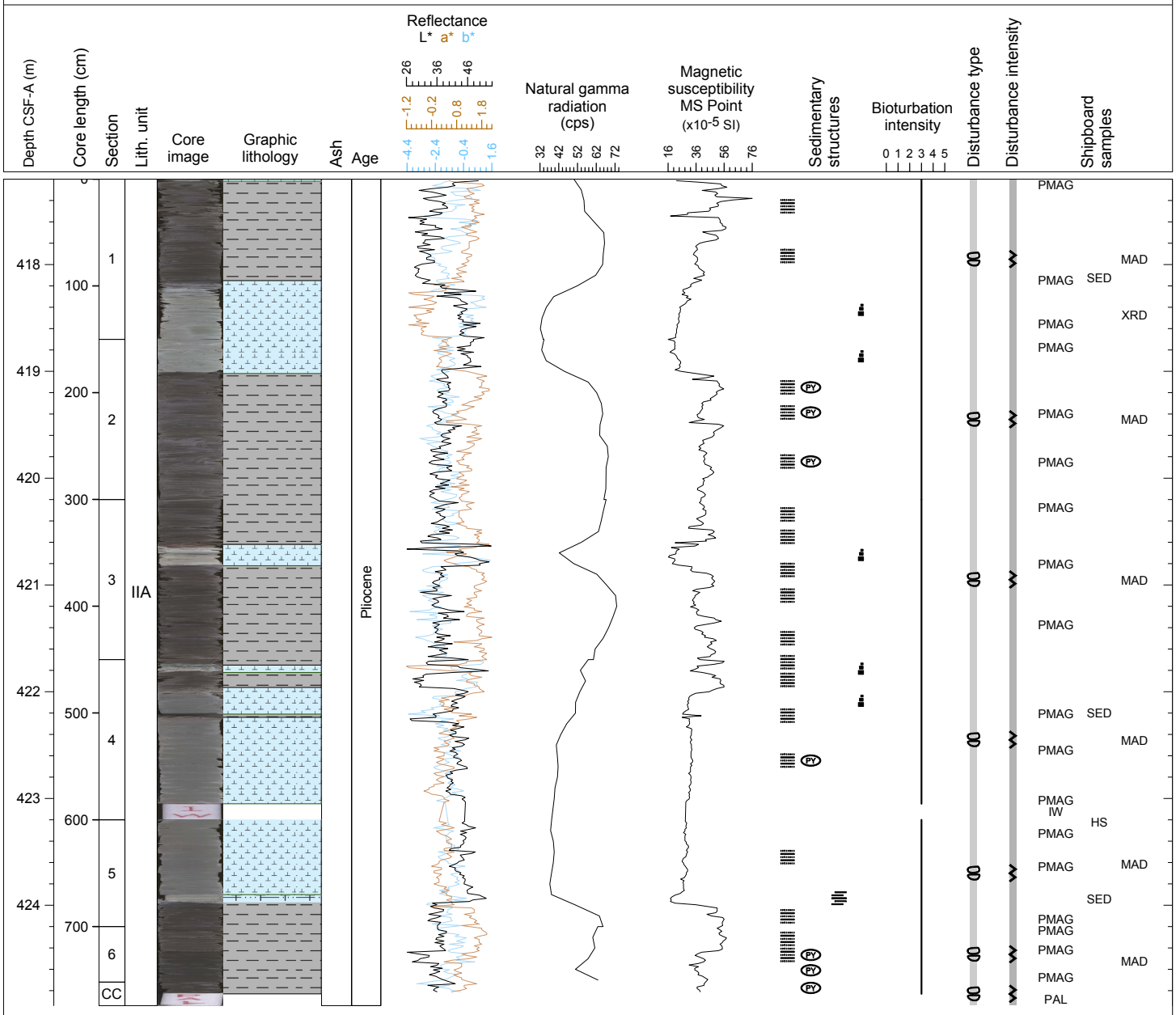
Hole 349-U1433B Core 25R, Interval 407.5-415.81 m (CSF-A)

Dark greenish gray CLAY with interbedded NANNOFOSSIL OOZE in every section. Bioturbation is heavy. There is strong biscuiting throughout.



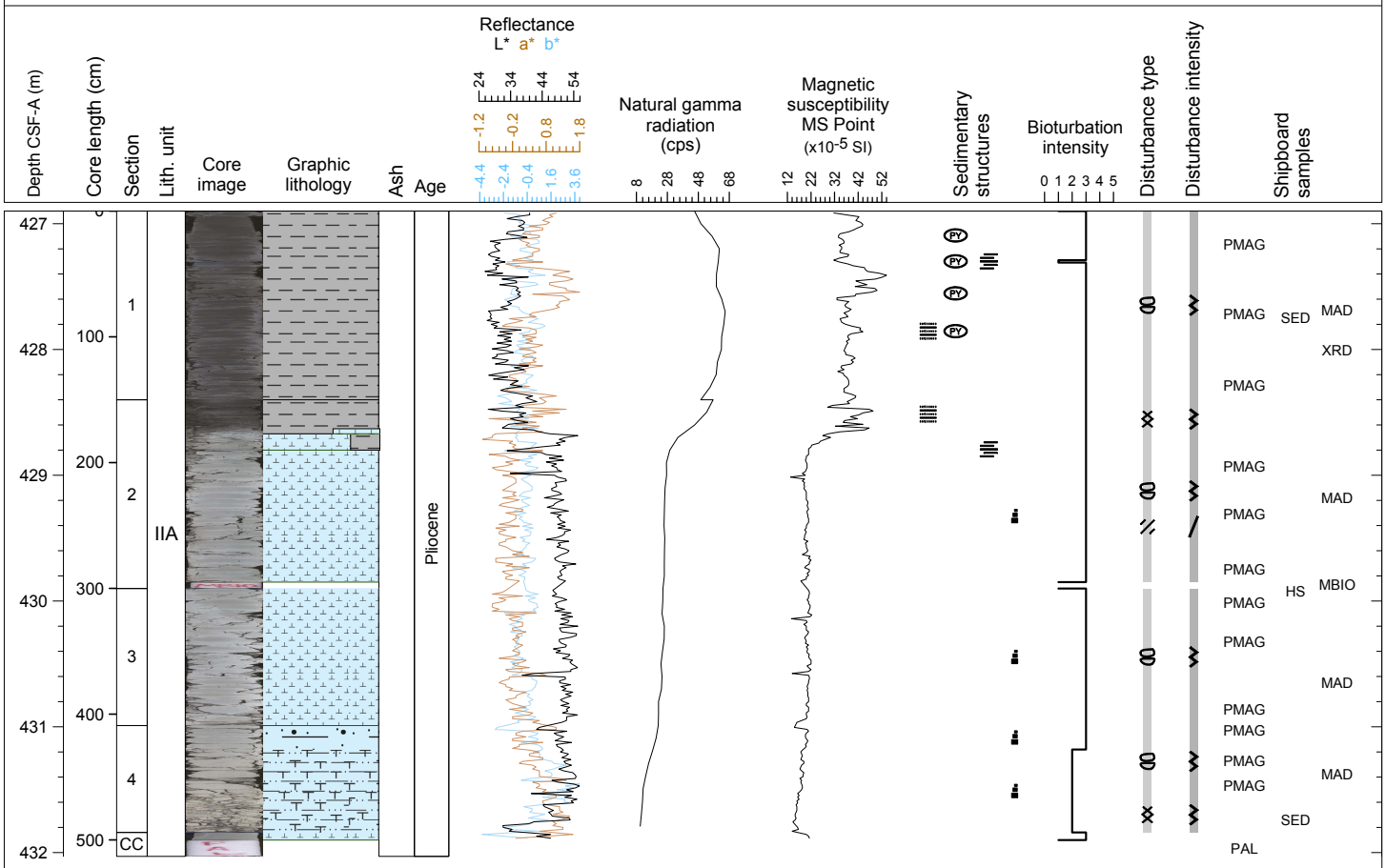
Hole 349-U1433B Core 26R, Interval 417.2-424.94 m (CSF-A)

Dark greenish gray CLAY with interbedded NANNOFOSSIL OOZE in every section. The thickness of NANNOFOSSIL OOZE in Sections 4 and 5 is up to ~2 m. Pyrite occurs in the NANNOFOSSIL OOZE in Section 4. There is an ~ 8 cm thick FORAMINIFERAL OOZE with a erosive base in Section 5. Bioturbation is heavy. There is strong biscuiting throughout.



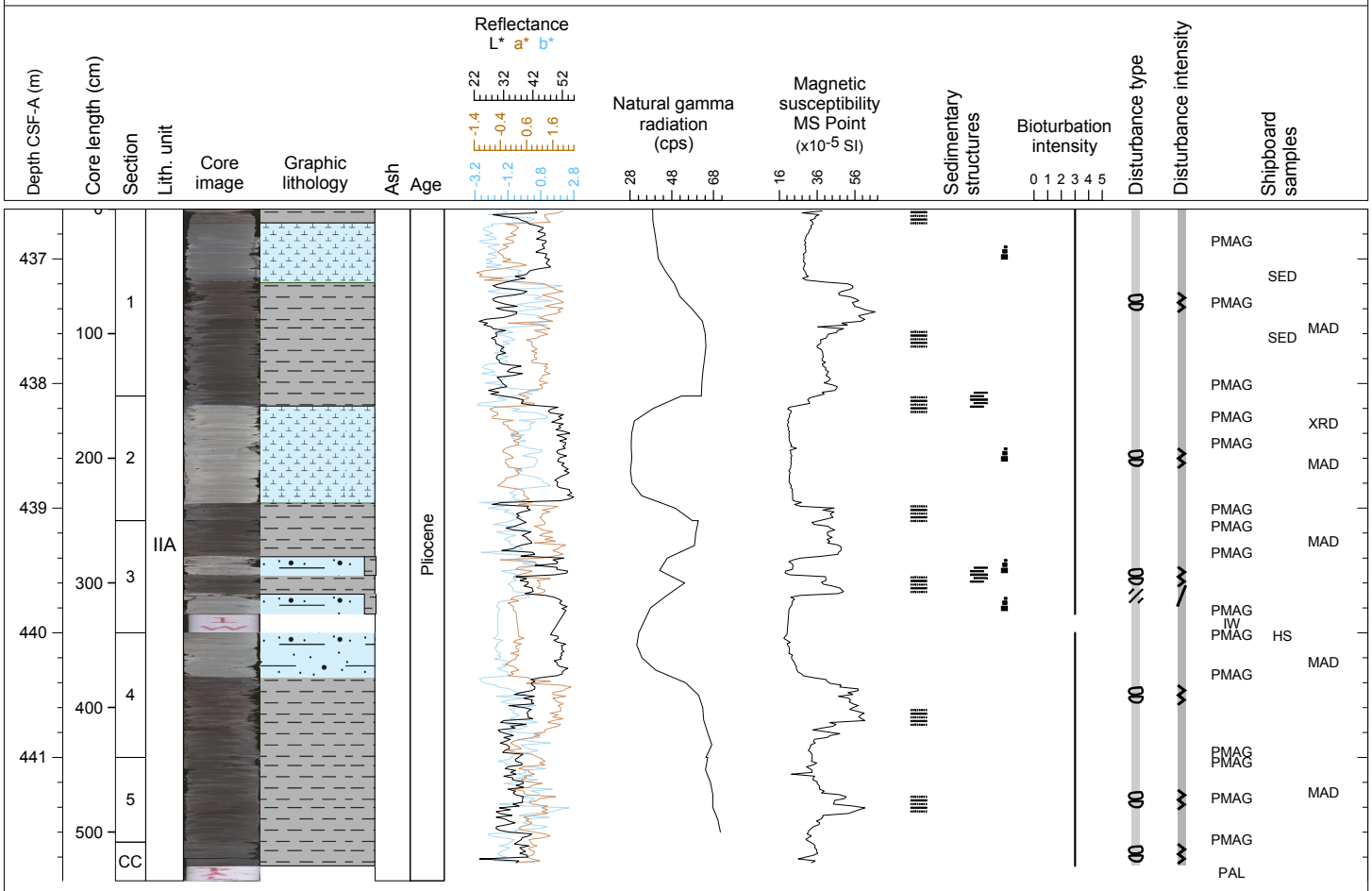
Hole 349-U1433B Core 27R, Interval 426.9-432.03 m (CSF-A)

Dark greenish gray CLAY, NANNOFOSSIL OOZE, and FORAMINIFERAL OOZE. FORAMINIFERAL OOZE at the base of Section 4 grades upward into NANNOFOSSIL OOZE from the top of Section 4 to Section 2. Bioturbation is heavy. There is strong biscuiting throughout.



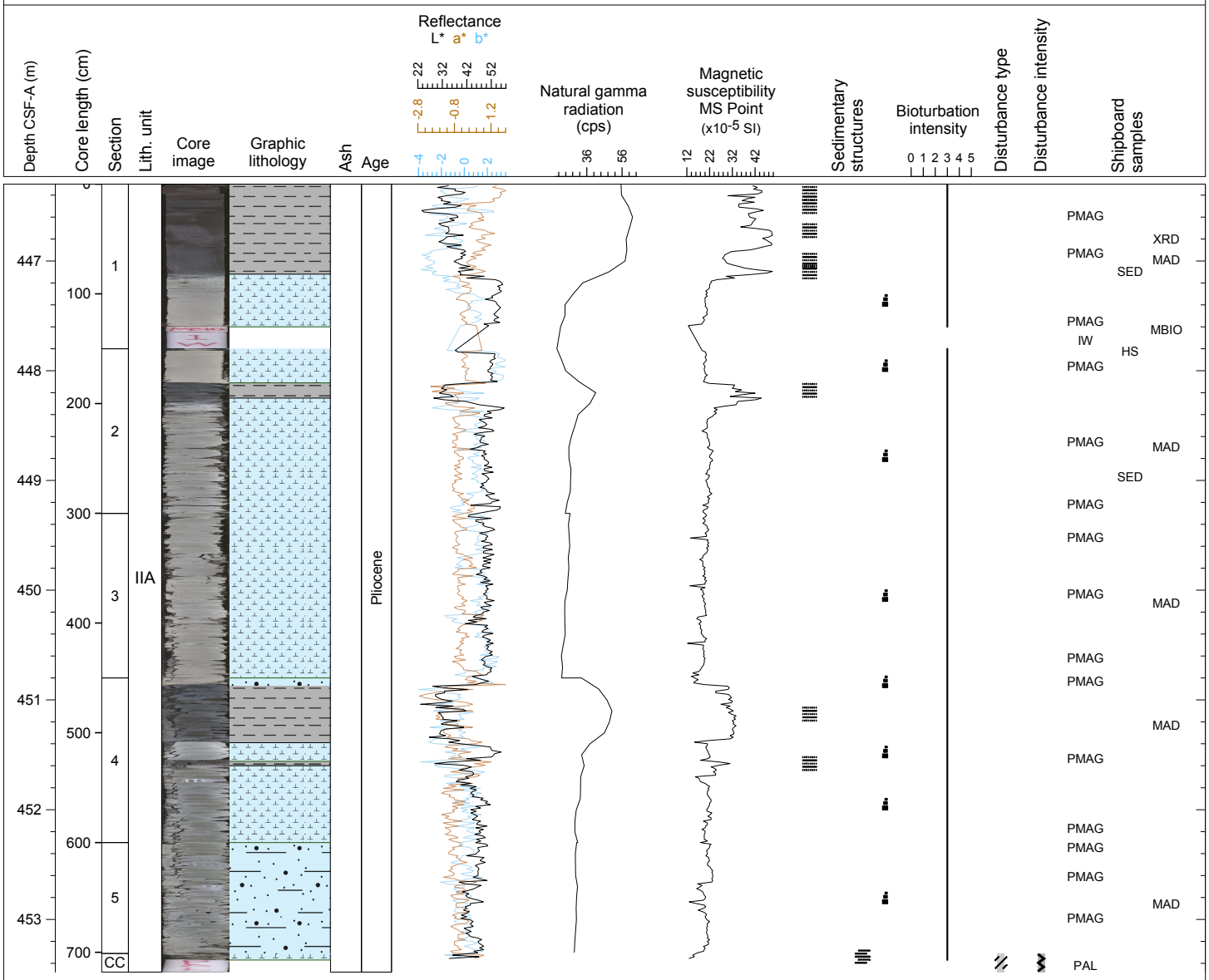
Hole 349-U1433B Core 28R, Interval 436.6-441.99 m (CSF-A)

Dark greenish gray CLAY interbedded with NANNOFOSSIL OOZE and FORAMINIFER-RICH NANNOFOSSIL OOZE. The NANNOFOSSIL OOZE beds have sharp bases and grade upward. The tops of NANNOFOSSIL OOZE beds are mixed with the overlying dark greenish gray CLAY through bioturbation. There is strong biscuiting throughout.



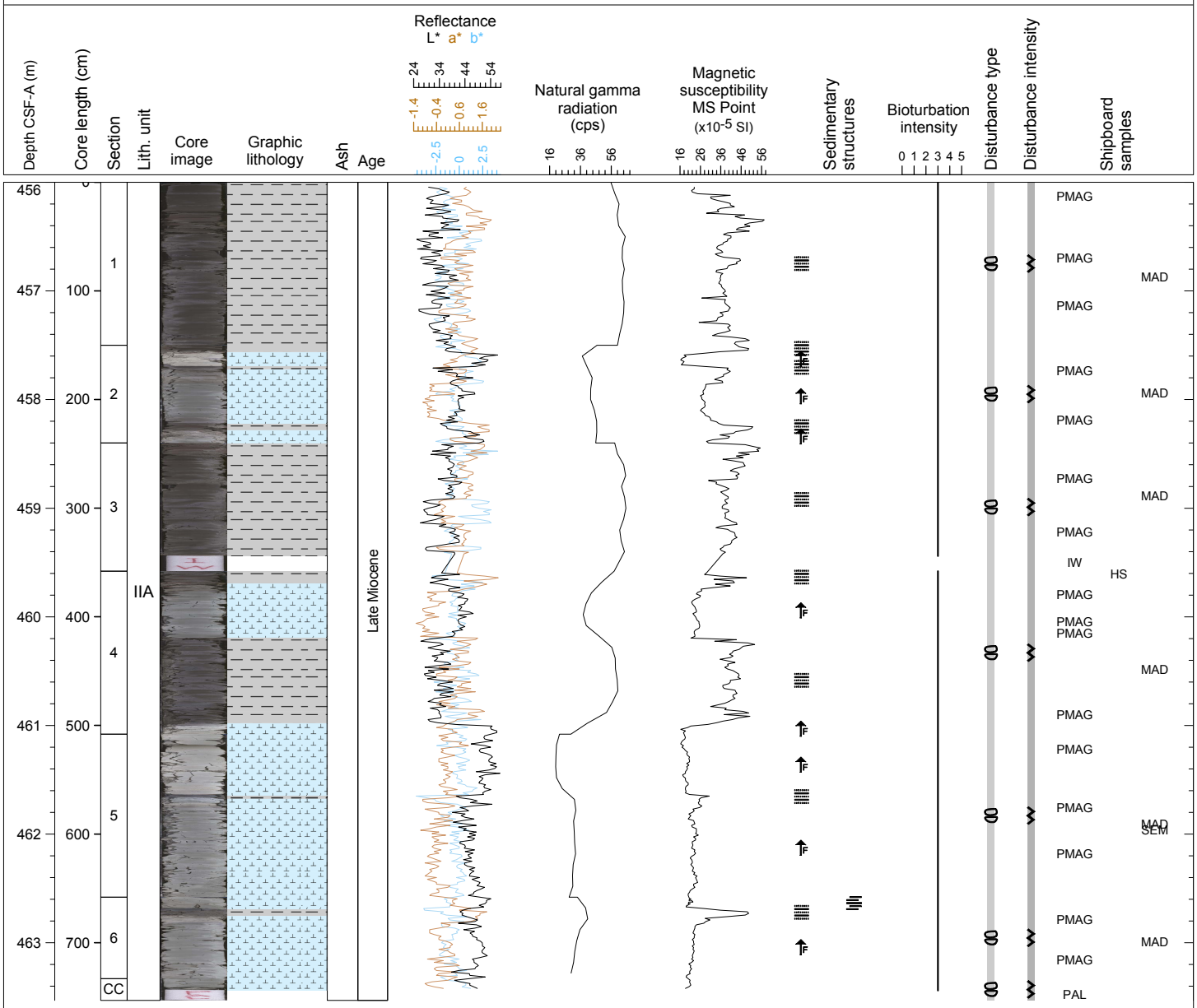
Hole 349-U1433B Core 29R, Interval 446.3-453.48 m (CSF-A)

Light greenish gray NANNOFOSSIL OOZE and FORAMINIFER-RICH NANNOFOSSIL OOZE interbedded with dark greenish gray CLAY. The core is dominated by beds of light greenish NANNOFOSSIL OOZE with a maximum thickness of ~2.5 m. They have sharp bases and grade upward. Bioturbation is strong at the tops of NANNOFOSSIL OOZE beds. There is strong biscuiting throughout.



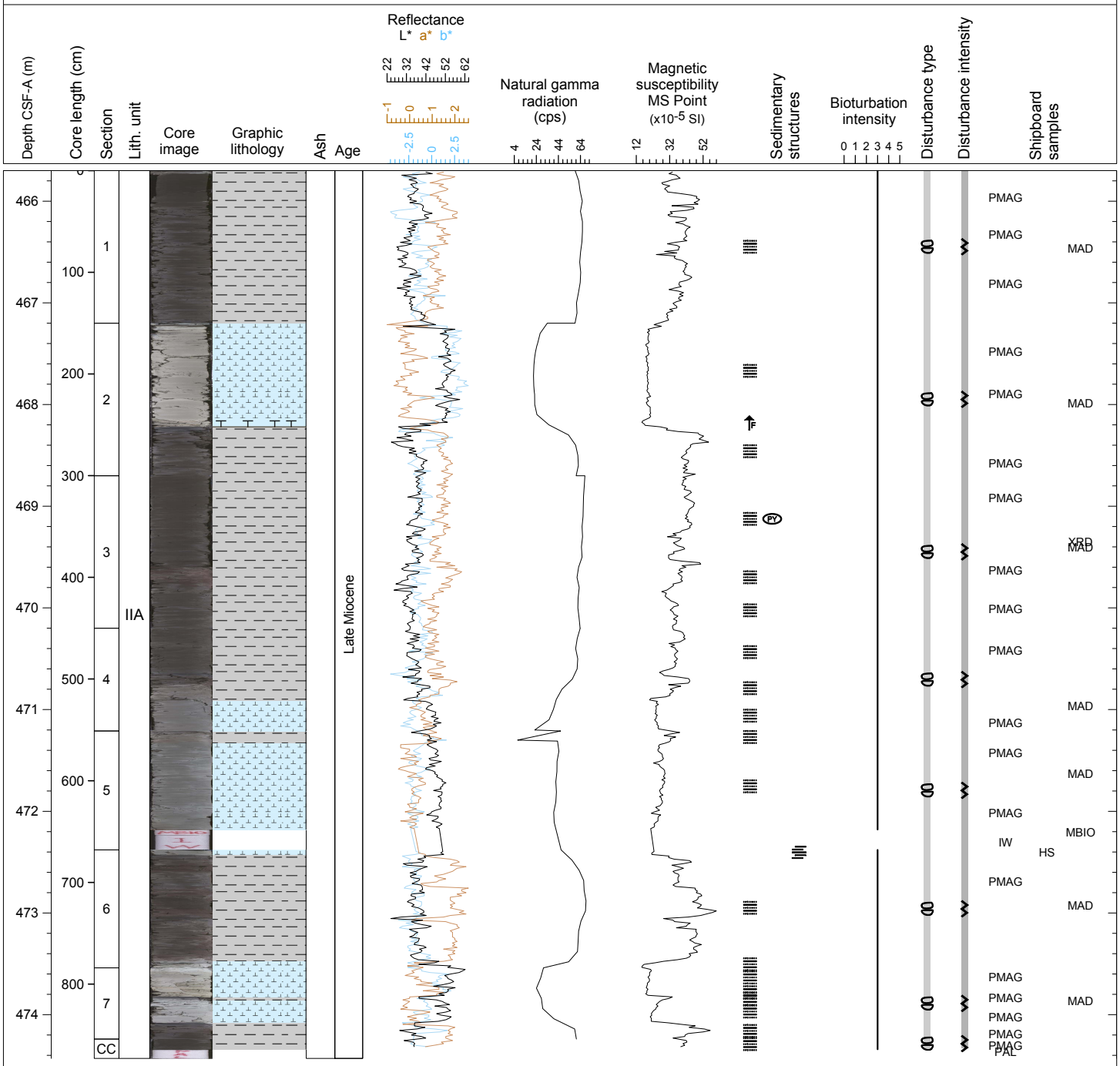
Hole 349-U1433B Core 30R, Interval 456.0-463.53 m (CSF-A)

Greenish gray NANNOFOSSIL CHALK interbedded with dark greenish gray CLAYSTONE. NANNOFOSSIL CHALK layers all have sharp bases and fine upward to CLAYSTONE layers. Bioturbation is strong throughout CLAYSTONE layers and at the tops of NANNOFOSSIL CHALK layers. CLAYSTONE layers are color banded. Biscuiting is strong throughout.



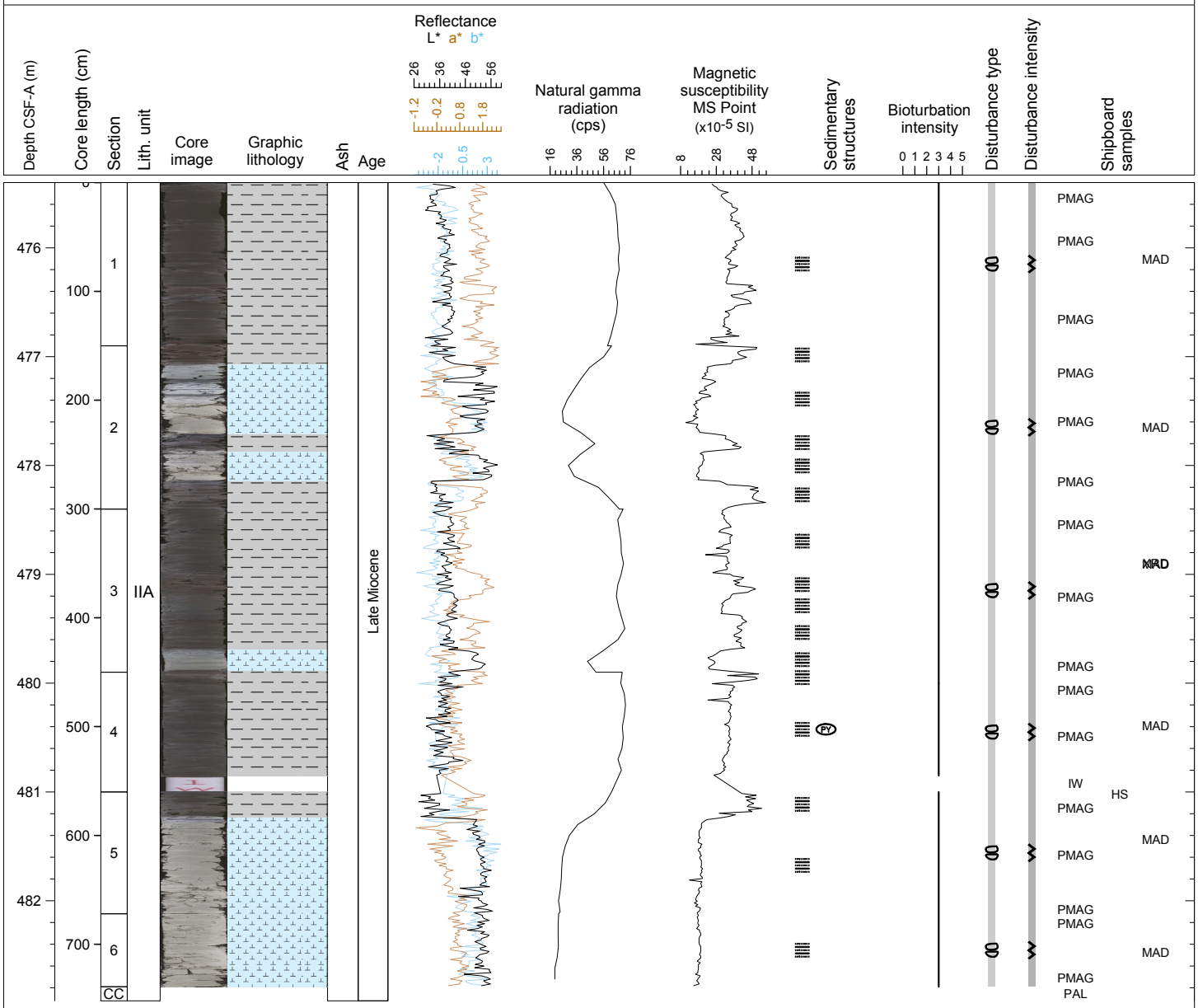
Hole 349-U1433B Core 31R, Interval 465.7-474.43 m (CSF-A)

Greenish gray NANNOFOSSIL CHALK interbedded with dark greenish gray CLAYSTONE. NANNOFOSSIL CHALK layers have sharp bases and fine upward to CLAY layers. A FORAMINIFERAL CHALK is followed by a NANNOFOSSIL CHALK interval in Section 2. Bioturbation is strong throughout CLAYSTONE layers and at the tops of NANNOFOSSIL CHALK layers. CLAYSTONE layers are color banded. Biscuiting is strong throughout.



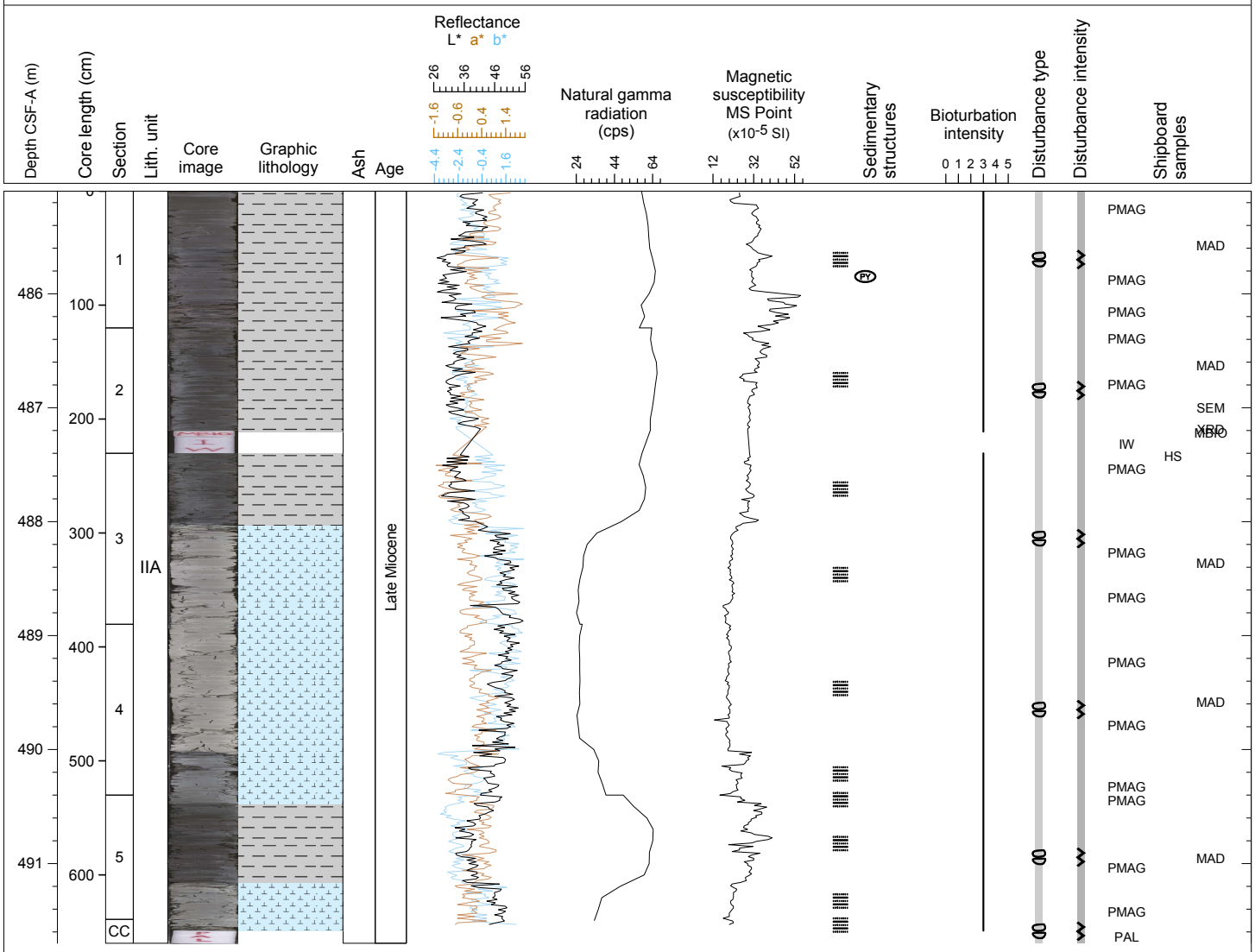
Hole 349-U1433B Core 32R, Interval 475.4-482.92 m (CSF-A)

Dark greenish gray CLAYSTONE interbedded with greenish gray NANNOFOSSIL CHALK. NANNOFOSSIL CHALK layers have a sharp base and fine upward to CLAYSTONE. Bioturbation is strong throughout CLAYSTONE layers and at the tops of NANNOFOSSIL CHALK layers. CLAYSTONE layers show color banding. Biscuiting is strong throughout.



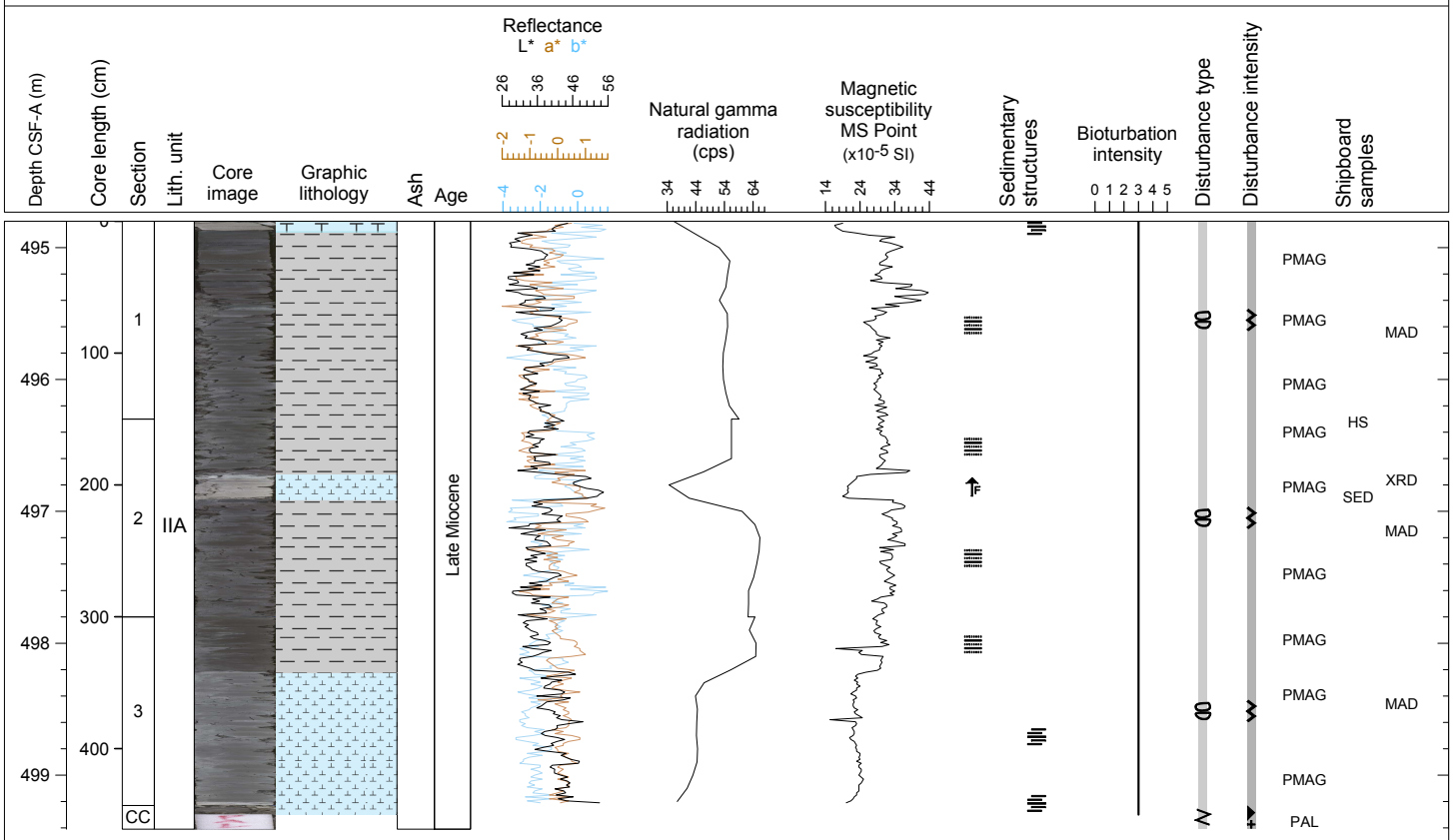
Hole 349-U1433B Core 33R, Interval 485.1-491.7 m (CSF-A)

Dark greenish gray CLAYSTONE interbedded with greenish gray NANNOFOSSIL CHALK. NANNOFOSSIL CHALK in Sections 3 and 4 shows color changes and has a sharp upper contact. Bioturbation is strong throughout the CLAYSTONE layers and at the tops of NANNOFOSSIL CHALK layers. Biscuiting is strong throughout.



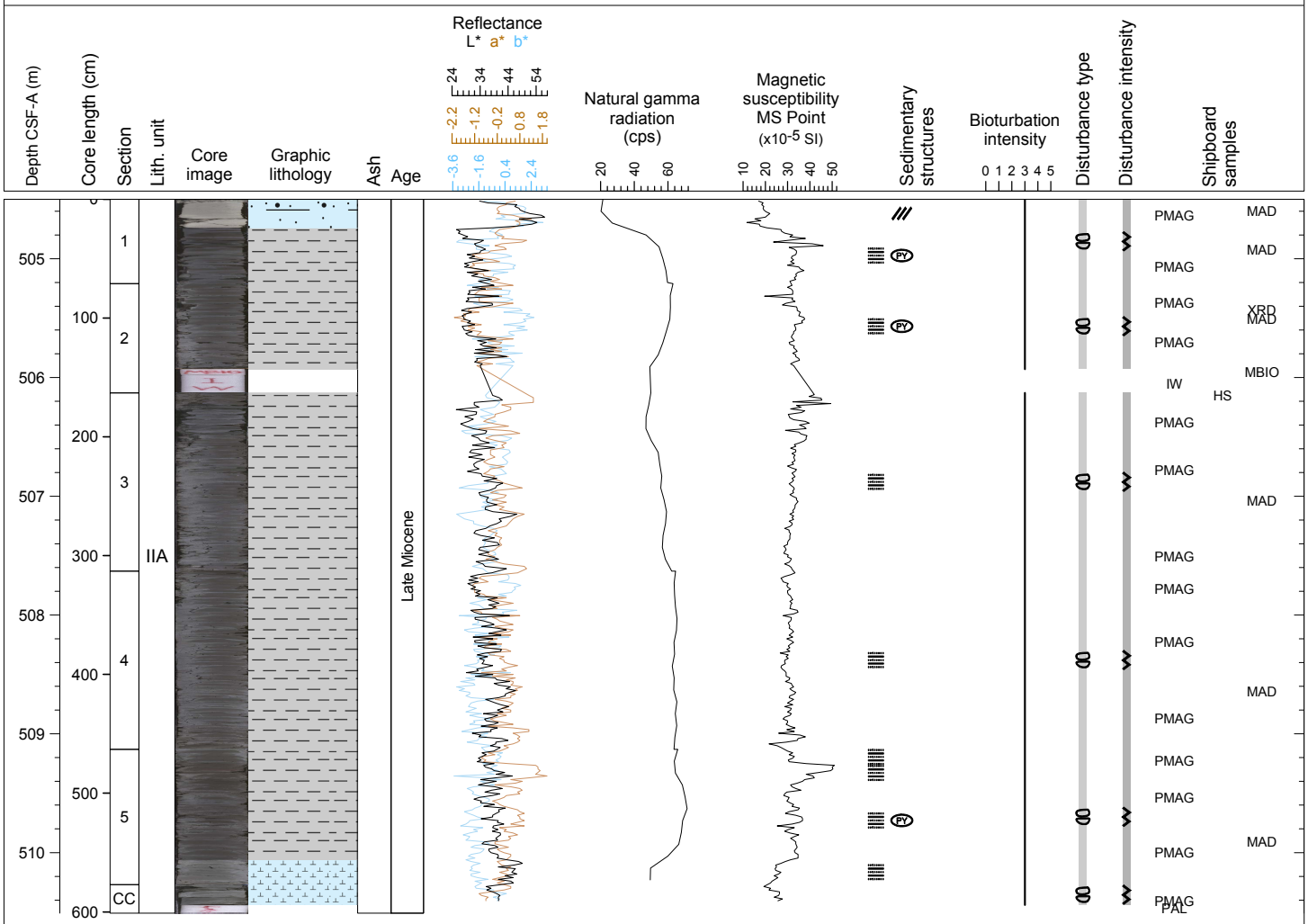
Hole 349-U1433B Core 34R, Interval 494.8-499.41 m (CSF-A)

Dark greenish gray CLAYSTONE interbedded with greenish gray NANNOFOSSIL CHALK. A FORAMINIFERA CHALK with lamination occurs at the top of Section 1. NANNOFOSSIL CHALK layers have erosive and sharp bases with underlying CLAYSTONE. Bioturbation is strong throughout the CLAY layers and at the tops of NANNOFOSSIL CHALK layers. Biscuiting is strong throughout.



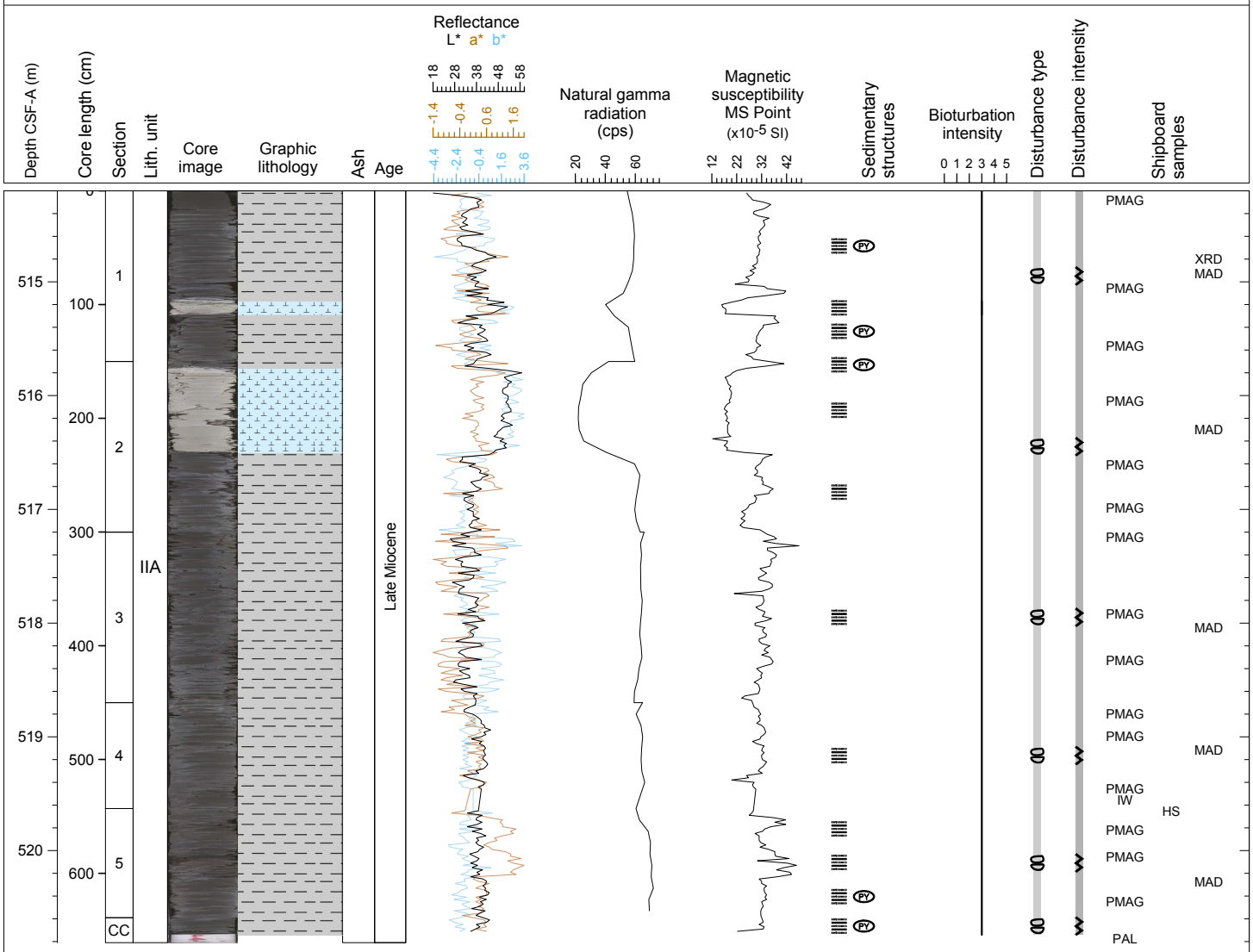
Hole 349-U1433B Core 35R, Interval 504.5-510.51 m (CSF-A)

Dark greenish gray CLAYSTONE interbedded with greenish gray FORAMINIFER-RICH NANNOFOSSIL CHALK and NANNOFOSSIL CHALK. NANNOFOSSIL CHALK layers have erosive and sharp bases with the underlying CLAYSTONE. Bioturbation is strong throughout CLAYSTONE layers and at the tops of NANNOFOSSIL CHALK layers. Biscuiting is strong throughout.



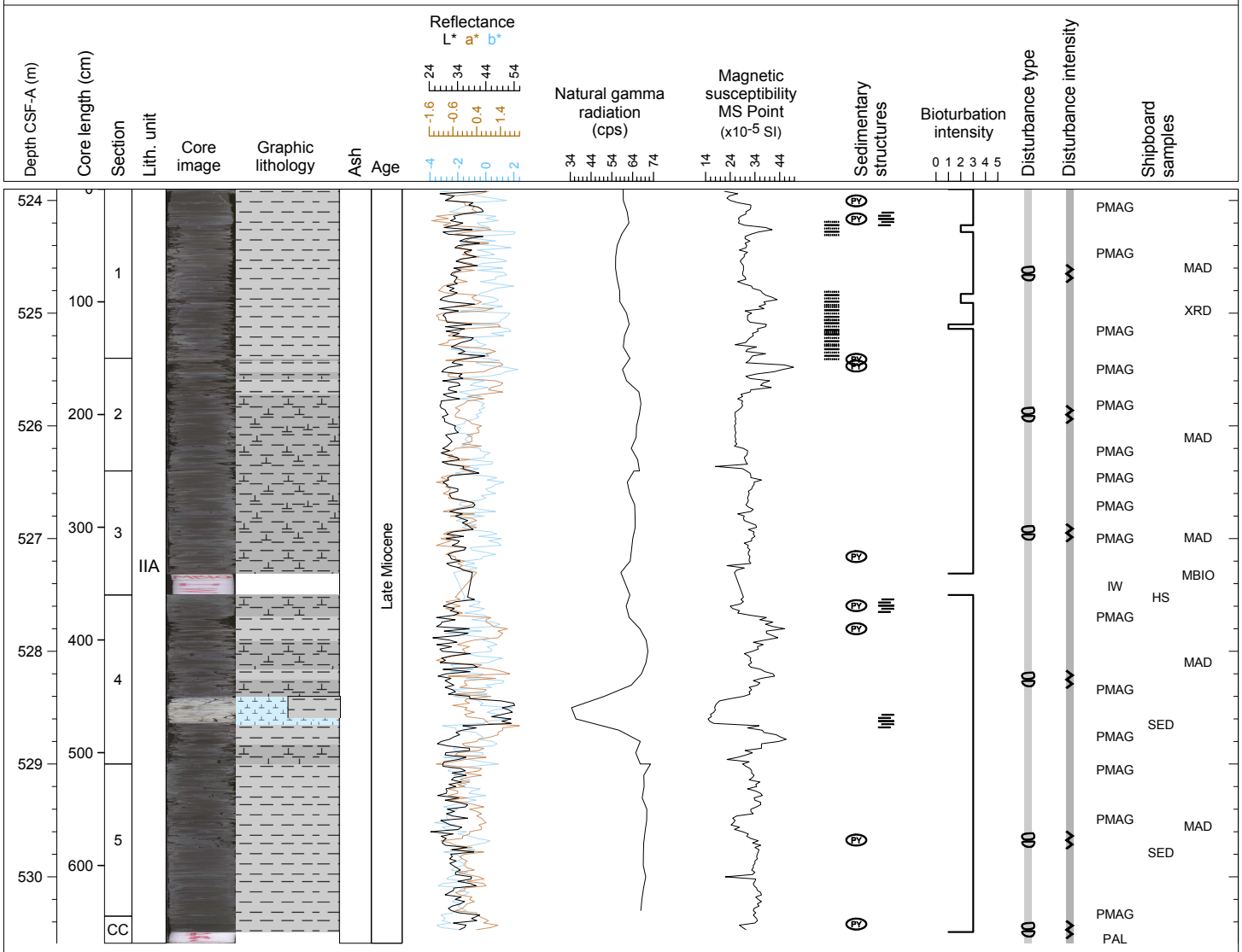
Hole 349-U1433B Core 36R, Interval 514.2-520.81 m (CSF-A)

Dark greenish gray CLAYSTONE interbedded with greenish gray NANNOFOSSIL CHALK. NANNOFOSSIL CHALK in Section 2 has a sharp basal contact and slightly coarser grains. Bioturbation is strong throughout CLAYSTONE layers and at the top of NANNOFOSSIL CHALK layers. A few millimeter-scale pyrite nodules occur in Sections 1, 5 and CC. Biscuiting is strong throughout.



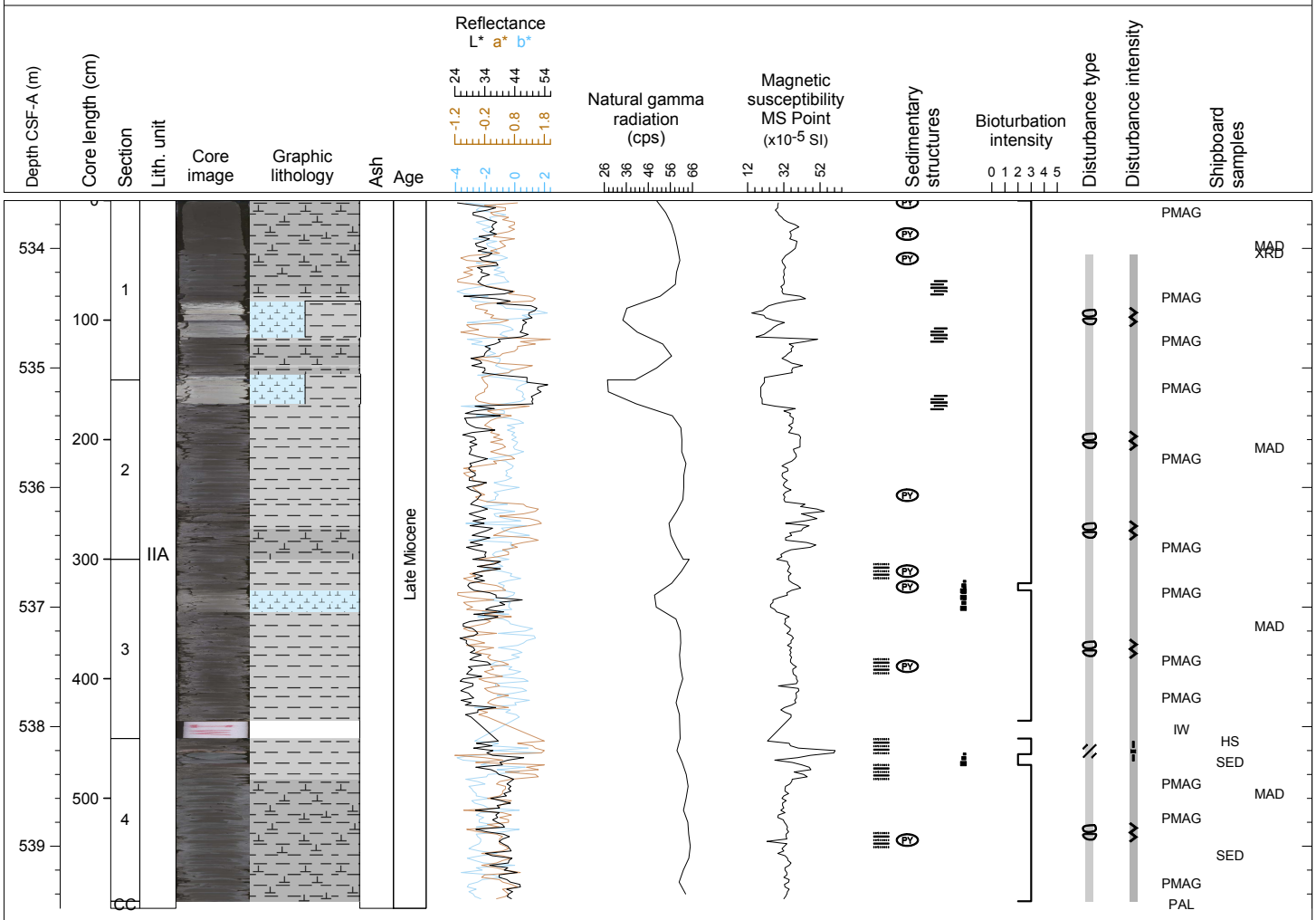
Hole 349-U1433B Core 37R, Interval 523.9-530.59 m (CSF-A)

Dark greenish gray CLAYSTONE and NANNOFOSSIL-RICH CLAYSTONE dominates this core. The sediment is largely massive and structureless, with vague color banding in places. Bands of dark gray CLAYSTONE, 10-30 cm thick, and comprising ~10% of the total section, are seen in Section 1. A single graded, light gray NANNOFOSSIL CHALK is seen in Section 4, with an erosive base and gradational contact to the overlying CLAYSTONE. This contact is heavily bioturbated by Nereites trace fossils. Pyrite concretions are found in low abundance throughout the core. Drilling disturbance with moderate to severe biscuiting is common.



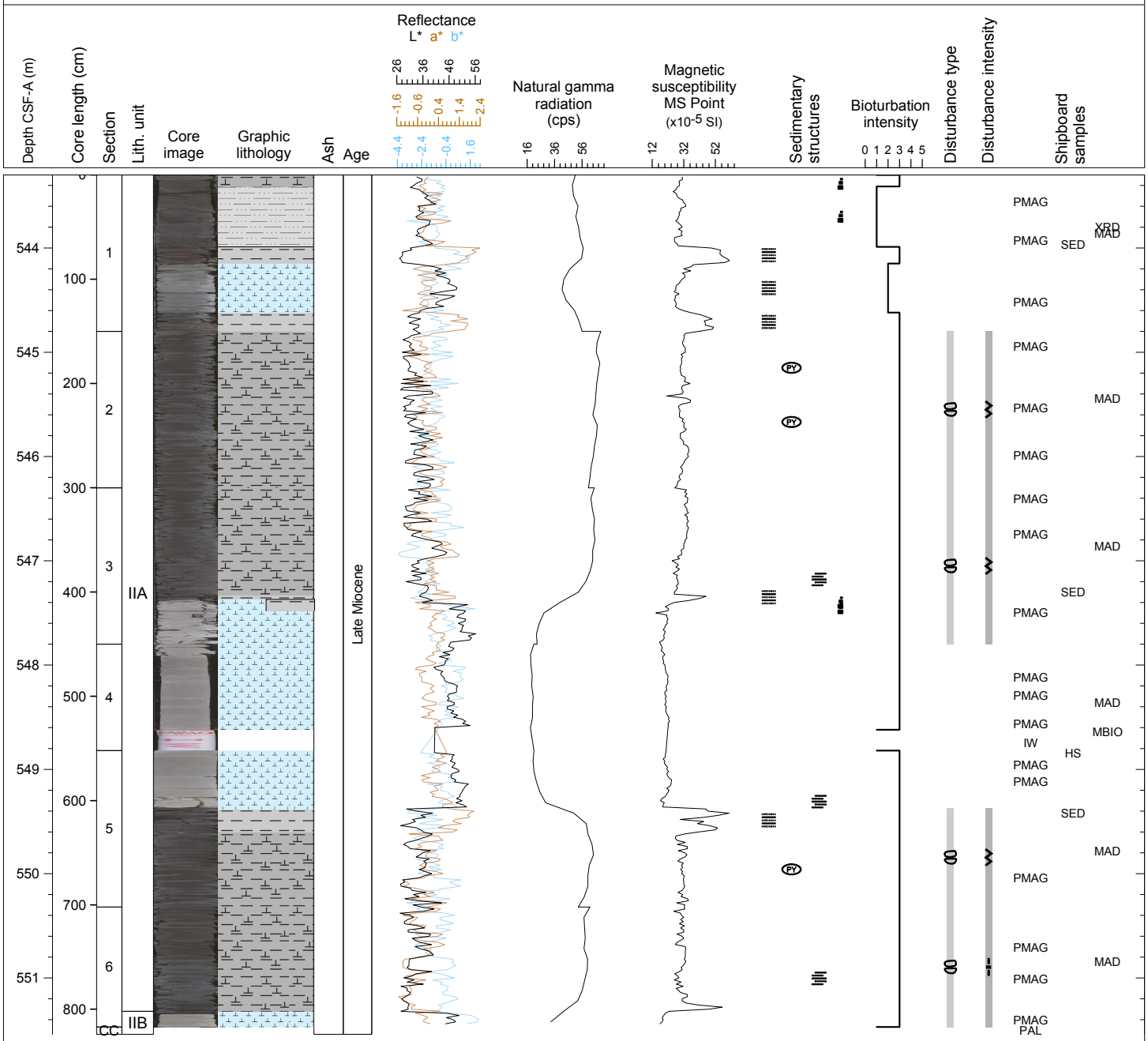
Hole 349-U1433B Core 38R, Interval 533.6-539.52 m (CSF-A)

Dark greenish gray CLAYSTONE and NANNOFOSSIL-RICH CLAYSTONE dominate this core. Graded, light gray NANNOFOSSIL CHALK layers occur in Sections 1,2 and 3, with erosive bases and gradational contact with the overlying CLAYSTONE. Drilling disturbance with moderate to severe biscuiting is common.



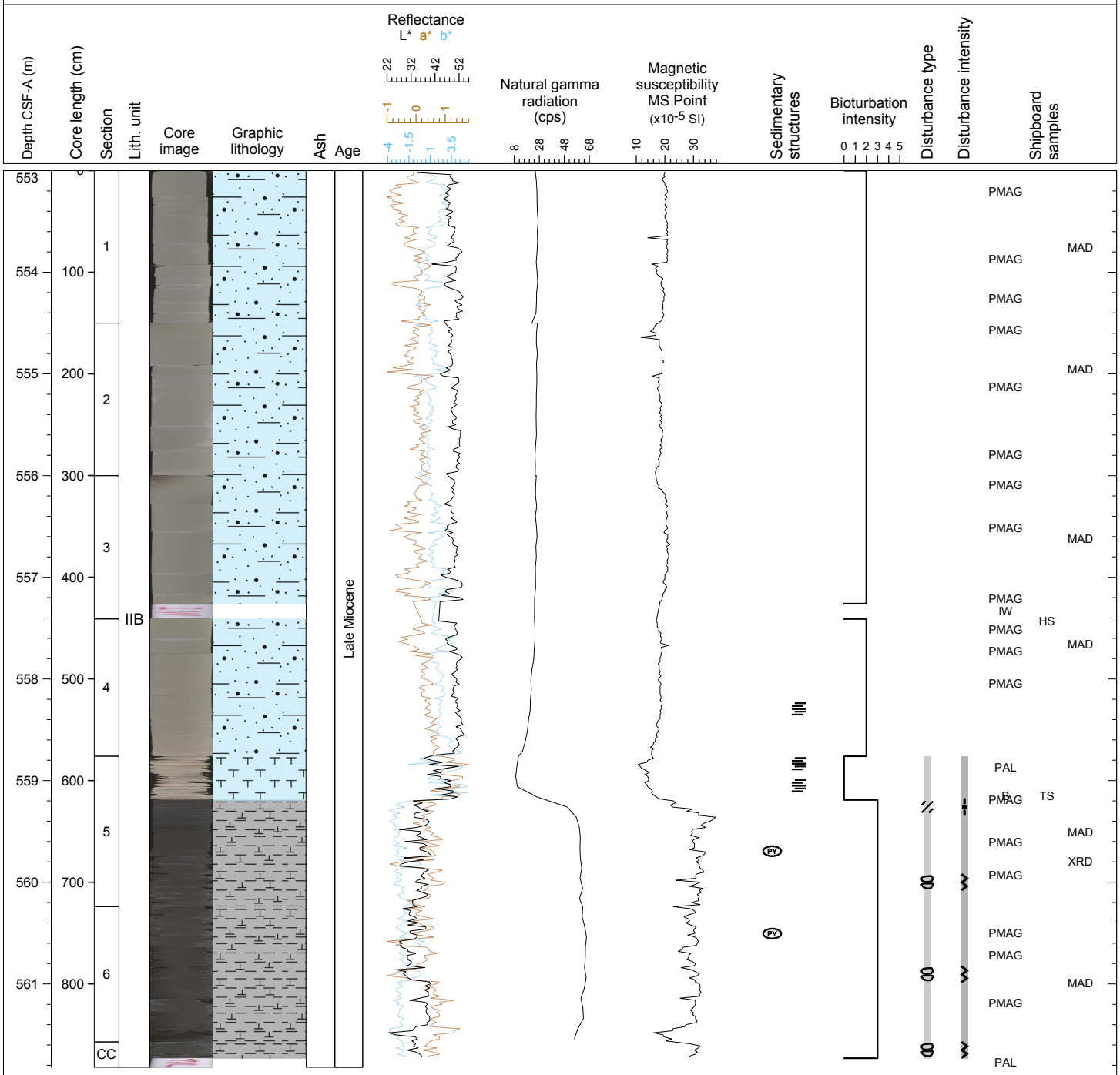
Hole 349-U1433B Core 39R, Interval 543.3-551.54 m (CSF-A)

Dark greenish gray NANNOFOSSIL-RICH CLAYSTONE, light greenish gray NANNOFOSSIL CHALK and minor dark greenish gray SILTY CLAYSTONE and dark gray CLAYSTONE. There are graded NANNOFOSSIL CHALK intervals in Sections 1, 3, 4, 5, and 6, with erosive bases and gradational contacts with the overlying CLAYSTONE. A single bed of NANNOFOSSIL CHALK starts at Section 5, 55 cm and continues upward to Section 3, 108 cm. Moderate to severe biscuiting is common.



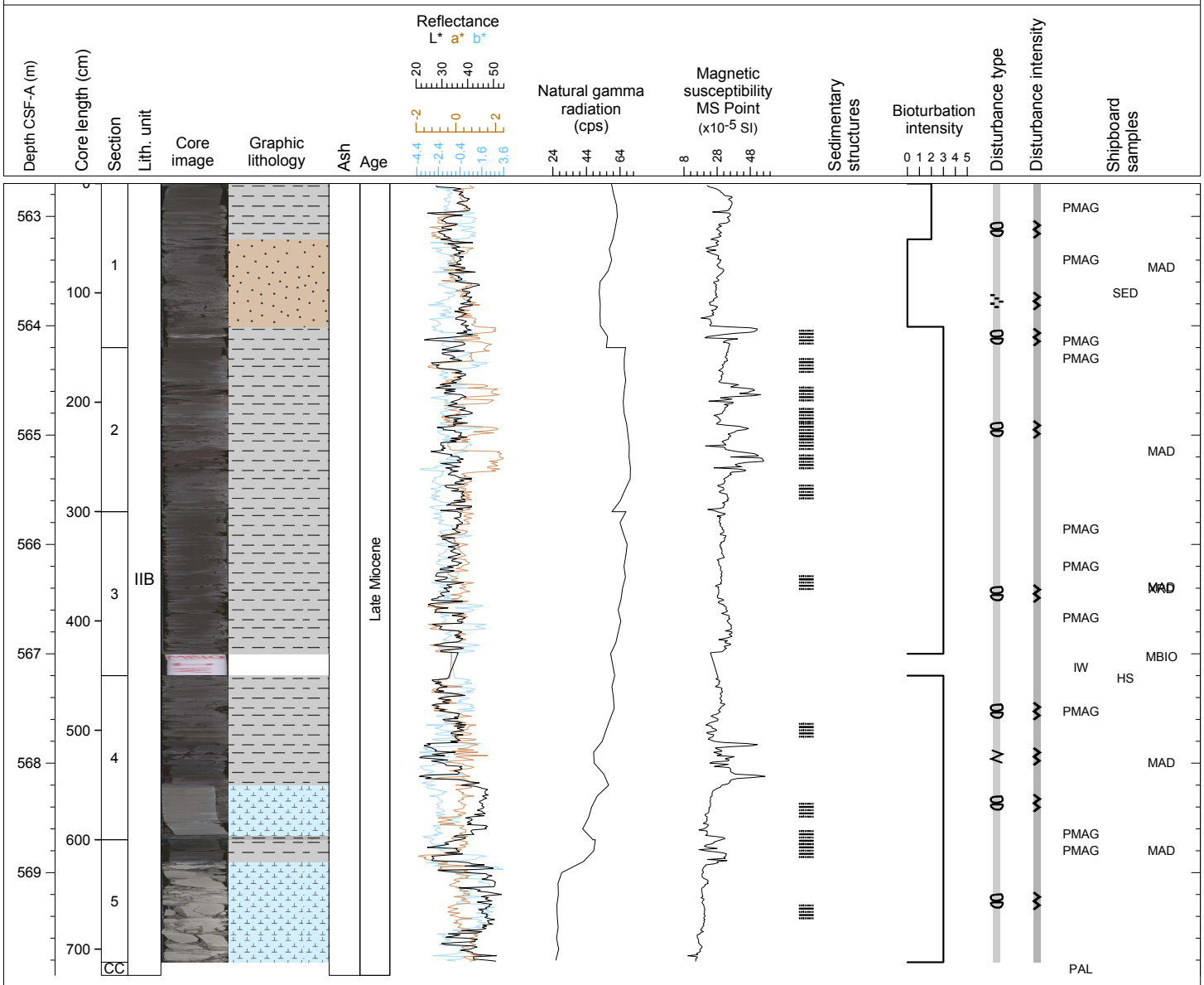
Hole 349-U1433B Core 40R, Interval 553.0-561.82 m (CSF-A)

Light greenish gray FORAMINIFER-RICH NANNOFOSSIL CHALK, FORAMINIFERAL CHALK, and dark greenish gray NANNOFOSSIL-RICH CLAYSTONE. There is one bed that grades from sand grade FORAMINIFERAL CHALK to clay grade FORAMINIFER-RICH NANNOFOSSIL CHALK from 43 cm in Section 5 to the top of the core. The bed has a sharp base and is laminated from its base to ~47 cm in Section 4. The core is biscuited from the lower part of Section 5 to the end.



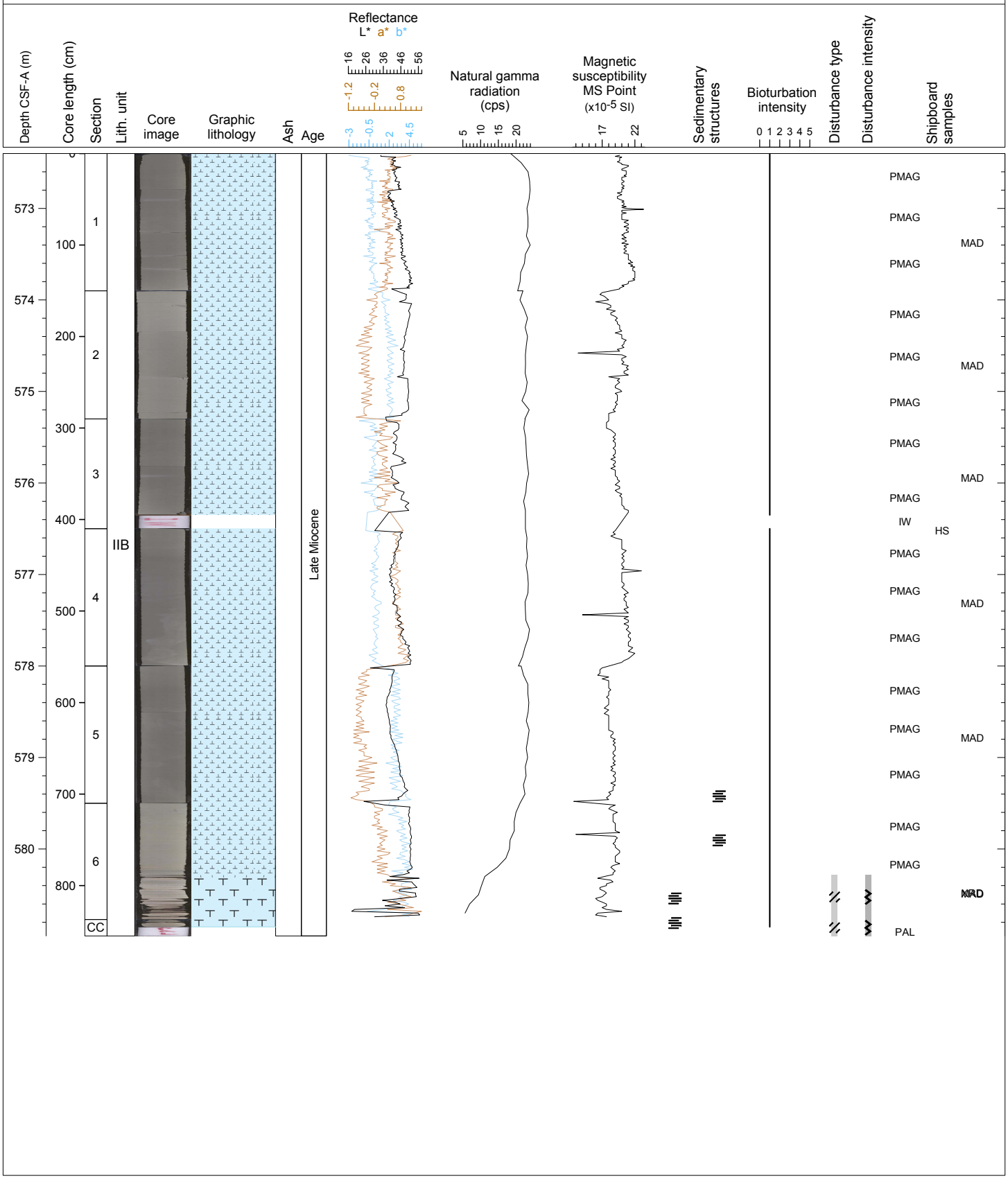
Hole 349-U1433B Core 41R, Interval 562.7-569.94 m (CSF-A)

Dark greenish gray NANNOFOSSIL-RICH CLAYSTONE and NANNOFOSSIL CHALK were present in the lower part of Sections 4 and 5. CLAYSTONE has two alternating different colors; dark greenish gray and very dark gray. A dark greenish gray SILTSTONE is found in Section 1. Drilling disturbance is strong. Pyrite nodules up to 1 cm across were present in Sections 2 and 3.



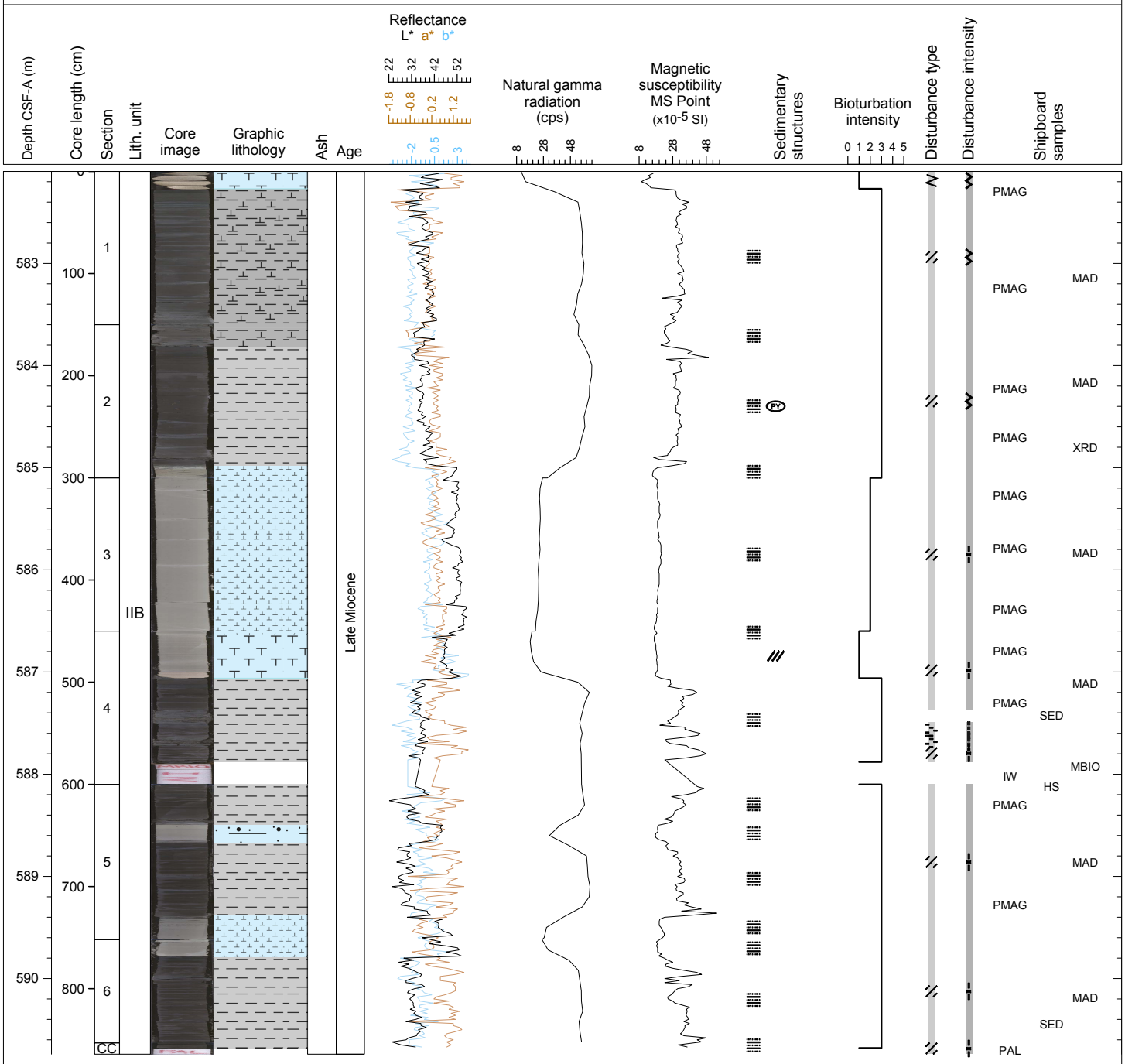
Hole 349-U1433B Core 42R, Interval 572.4-580.95 m (CSF-A)

Greenish gray NANNOFOSSIL CHALK with FORAMINIFERAL CHALK. Thick FORAMINIFERAL CHALK with parallel lamination fines upward to NANNOFOSSIL CHALK WITH FORAMINIFERS, and to very thick NANNOFOSSIL CHALK. NANNOFOSSIL CHALK is homogenous in color and in composition. Bioturbation is slight throughout.



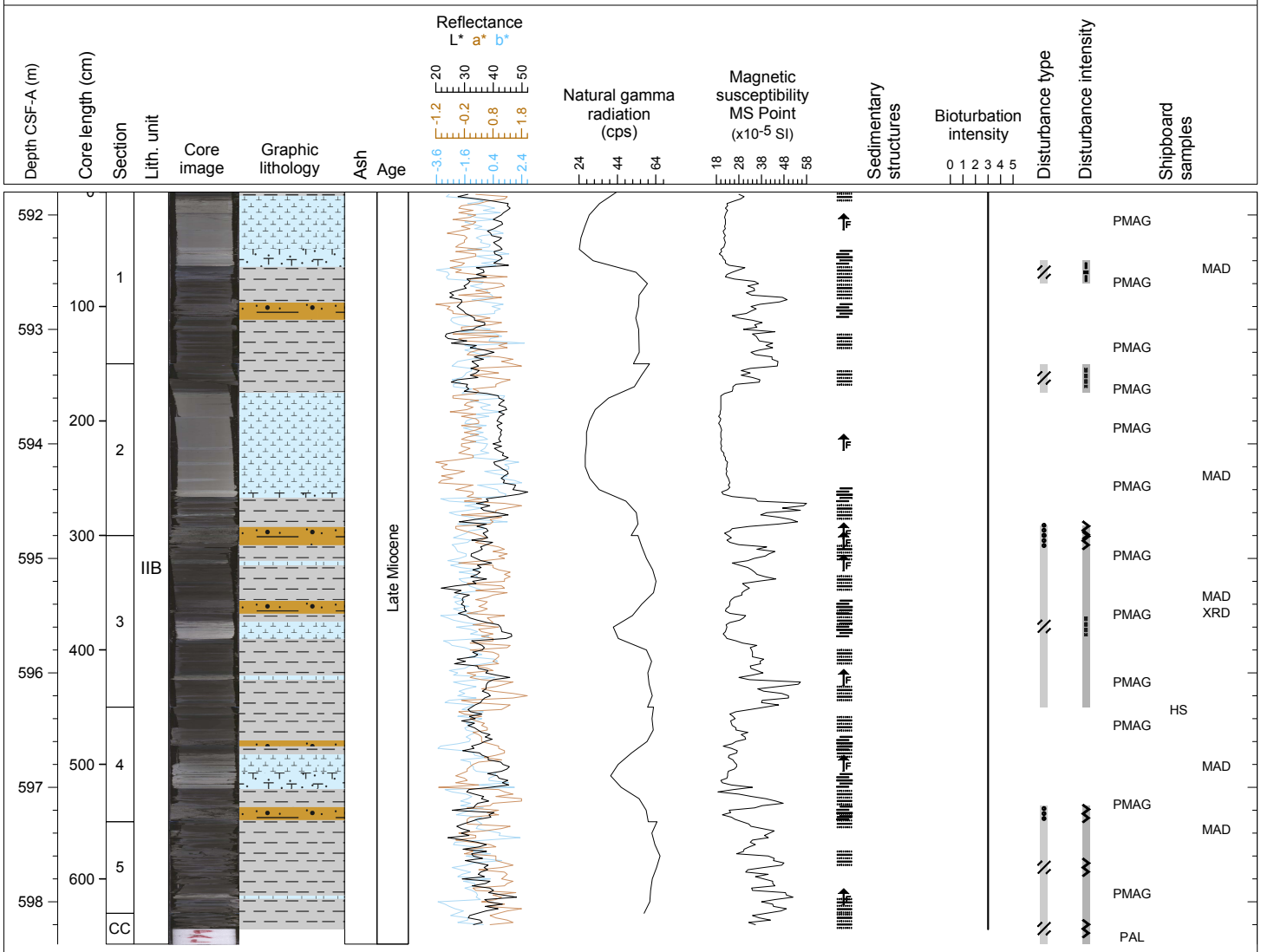
Hole 349-U1433B Core 43R, Interval 582.1-590.74 m (CSF-A)

Greenish gray NANNOFOSSIL CHALK, FORAMINIFERAL CHALK and NANNOFOSSIL-RICH CLAYSTONE, and dark greenish gray CLAYSTONE. Medium thick FORAMINIFERAL CHALK with parallel lamination fines upward to homogenous NANNOFOSSIL CHALK. Several centimeter-scale, dark green layers are present in Sections 4, 5 and 6. Bioturbation is slight to moderate throughout. A few centimeter-scale pyrite nodule are scattered in CLAYSTONE in Section 2.



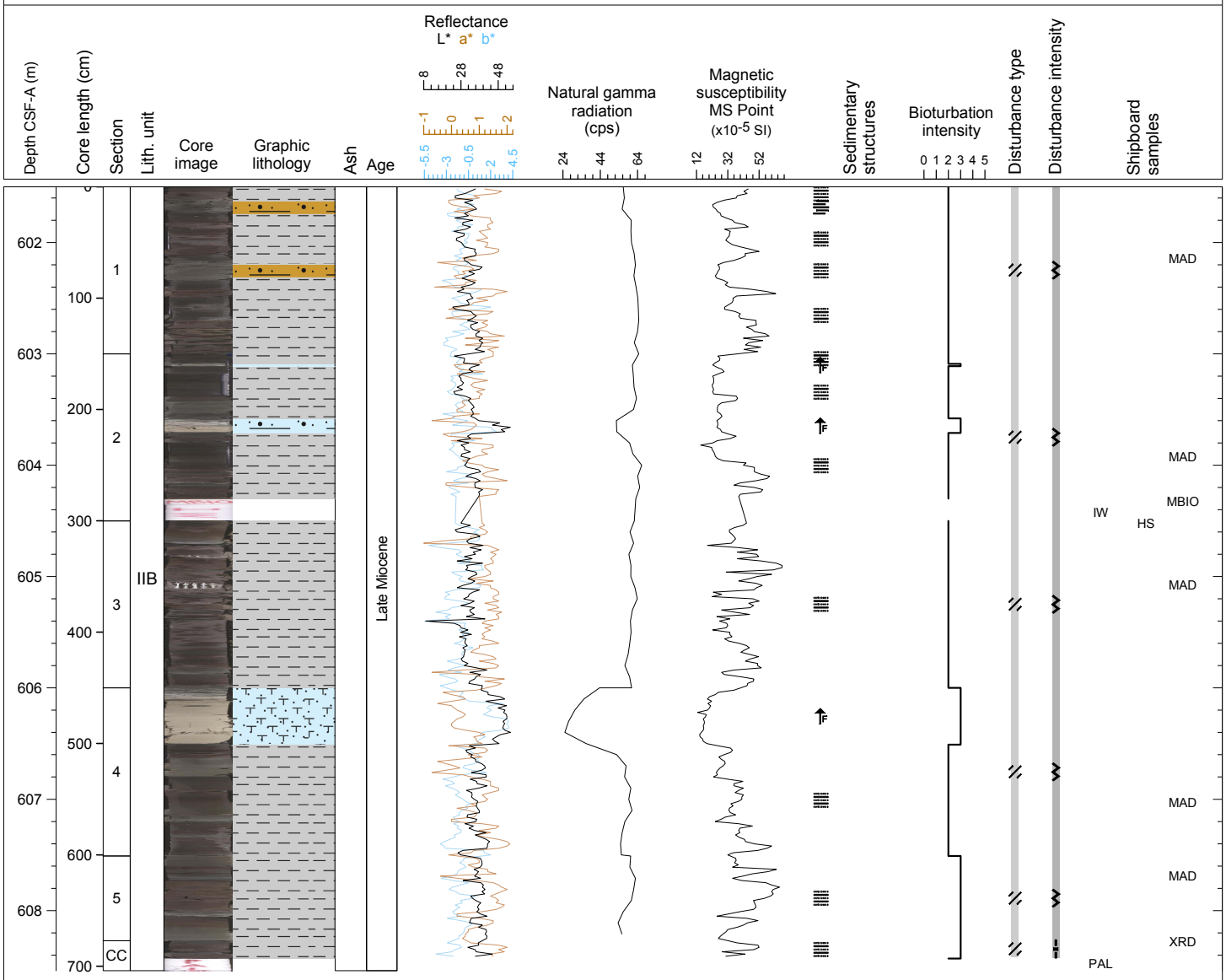
Hole 349-U1433B Core 44R, Interval 591.8-598.37 m (CSF-A)

Dark greenish gray CLAYSTONE and interbedded greenish gray NANNOFOSSIL CHALK. A few medium-bedded, parallel-laminated CLAYEY SILTSTONE layers with erosive bases occur at the bottom of CLAYSTONE layers, indicating deposition as turbidites. At the bottom of NANNOFOSSIL CHALK layers are medium- to thin-bedded, parallel-laminated FORAMINIFERAL CHALK layers with erosive bases, again interpreted as turbidites. CLAYSTONE layers are color banded with green and dark grayish brown layers. Bioturbation is heavy throughout.



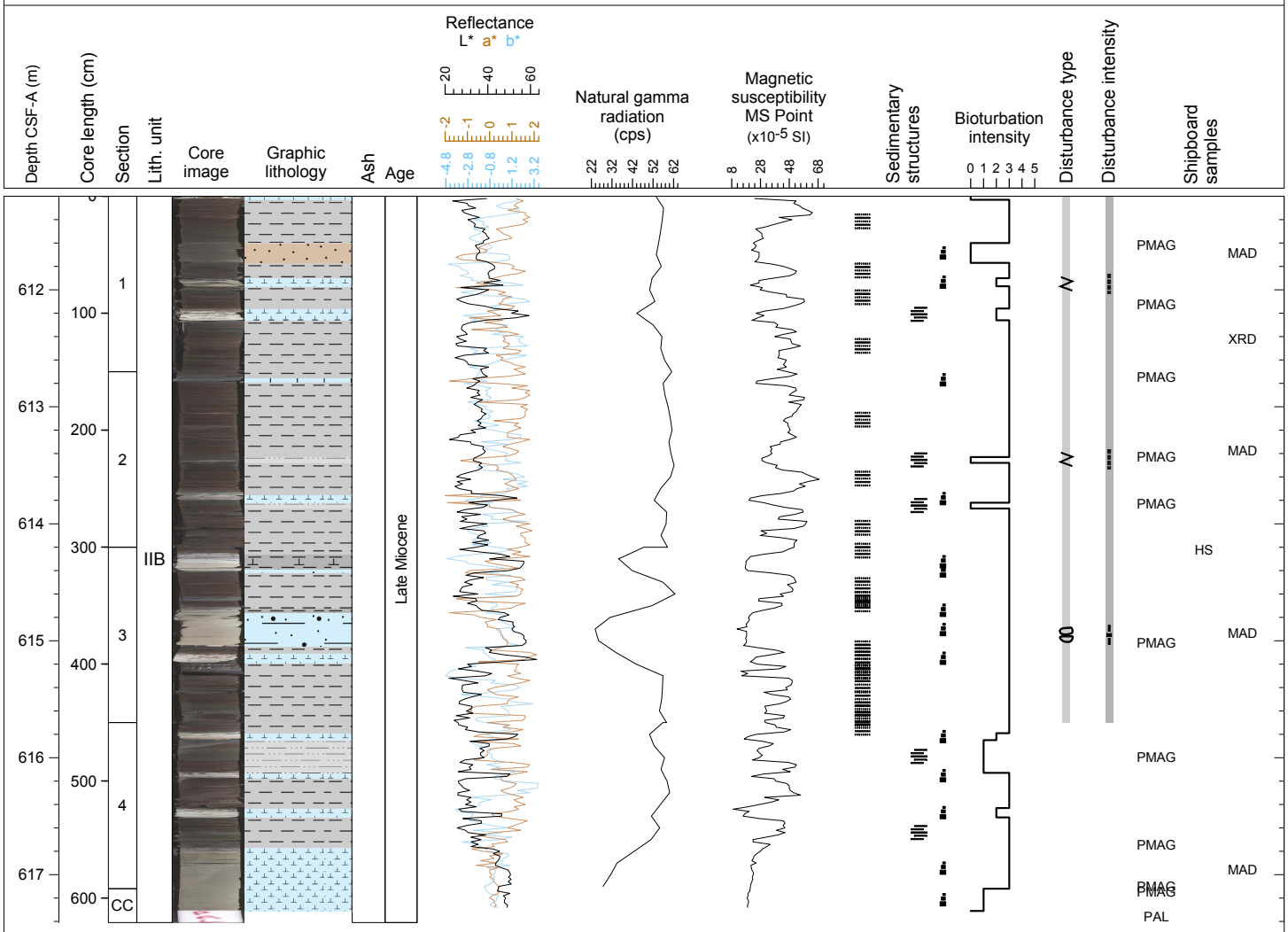
Hole 349-U1433B Core 45R, Interval 601.5-608.54 m (CSF-A)

Two greenish gray NANNOFOSSIL CHALK intervals are intercalated with dark greenish gray CLAYSTONE. NANNOFOSSIL CHALK layers have sharp bases and fine upward. CLAYSTONE layers are color banded with green and dark grayish brown layers. Bioturbation is heavy throughout.



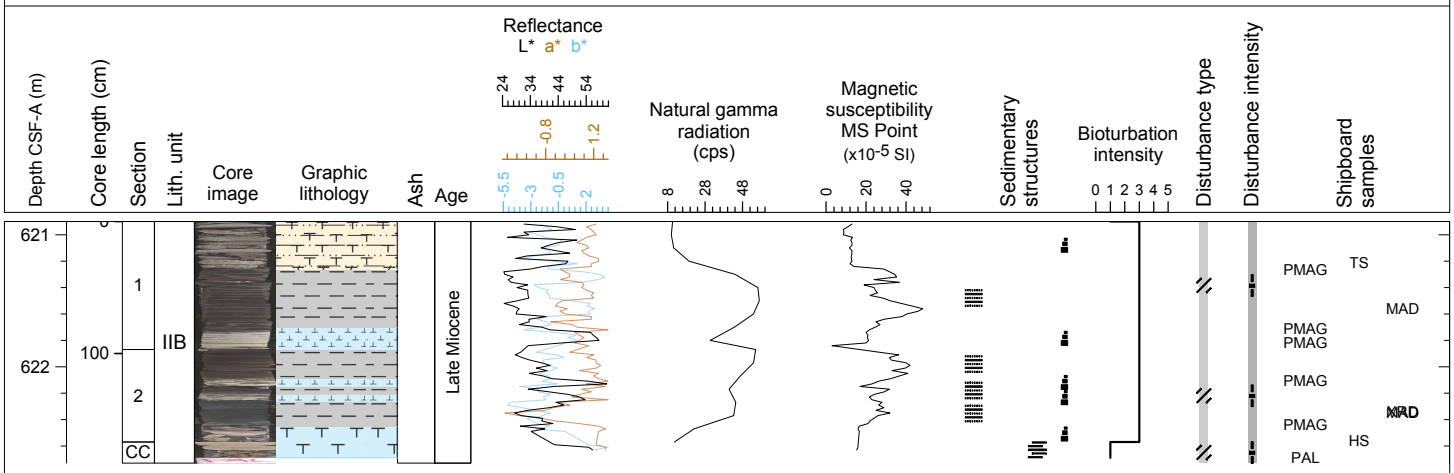
Hole 349-U1433B Core 46R, Interval 611.2-617.41 m (CSF-A)

Dark greenish gray CLAYSTONE with minor interbeds of light gray and light greenish gray NANNOFOSSIL CHALK that are interpreted as turbidite deposits. Each grades up into CLAYSTONE. Bases of carbonate units are sharp and erosive and have laminated, coarser-grained, foraminifer-bearing intervals. Bioturbation is common throughout.



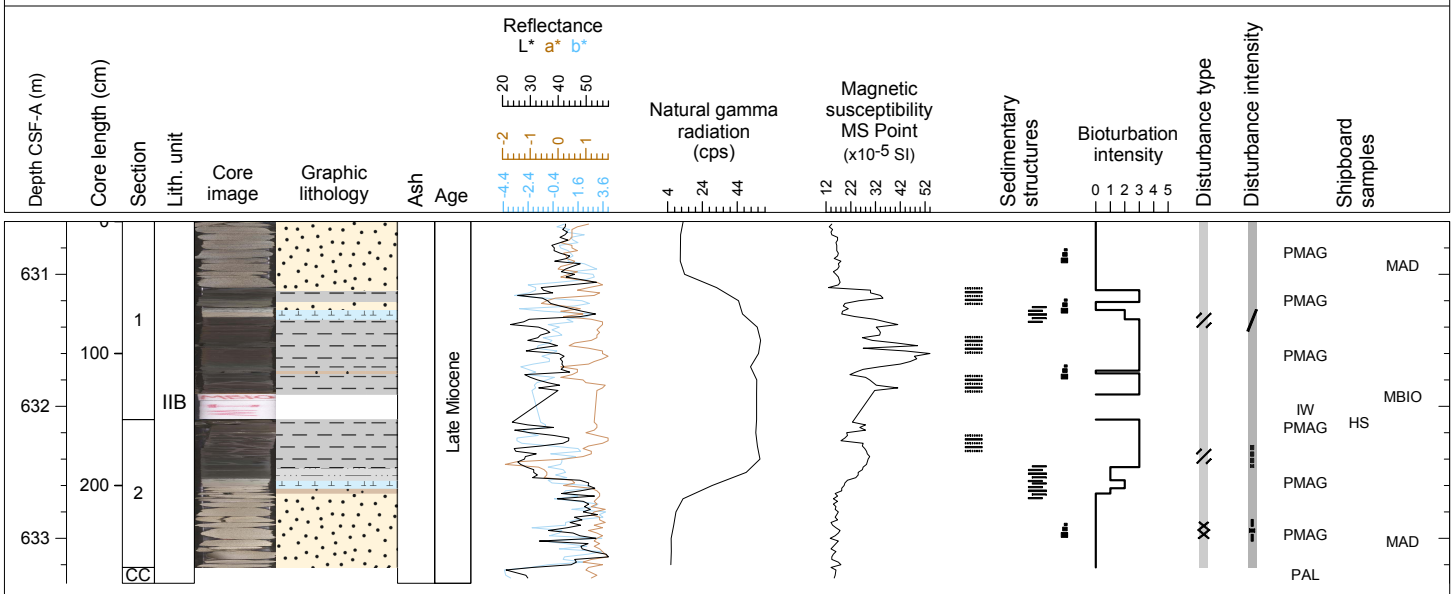
Hole 349-U1433B Core 47R, Interval 620.9-622.73 m (CSF-A)

Dark greenish gray and dark gray CLAYSTONE interbedded with FORAMINIFER-RICH SANDSTONE, NANNOFOSSIL CHALK and FORAMINIFERAL CHALK intervals. The tops of the graded NANNOFOSSIL CHALK layers show well developed trace fossils.



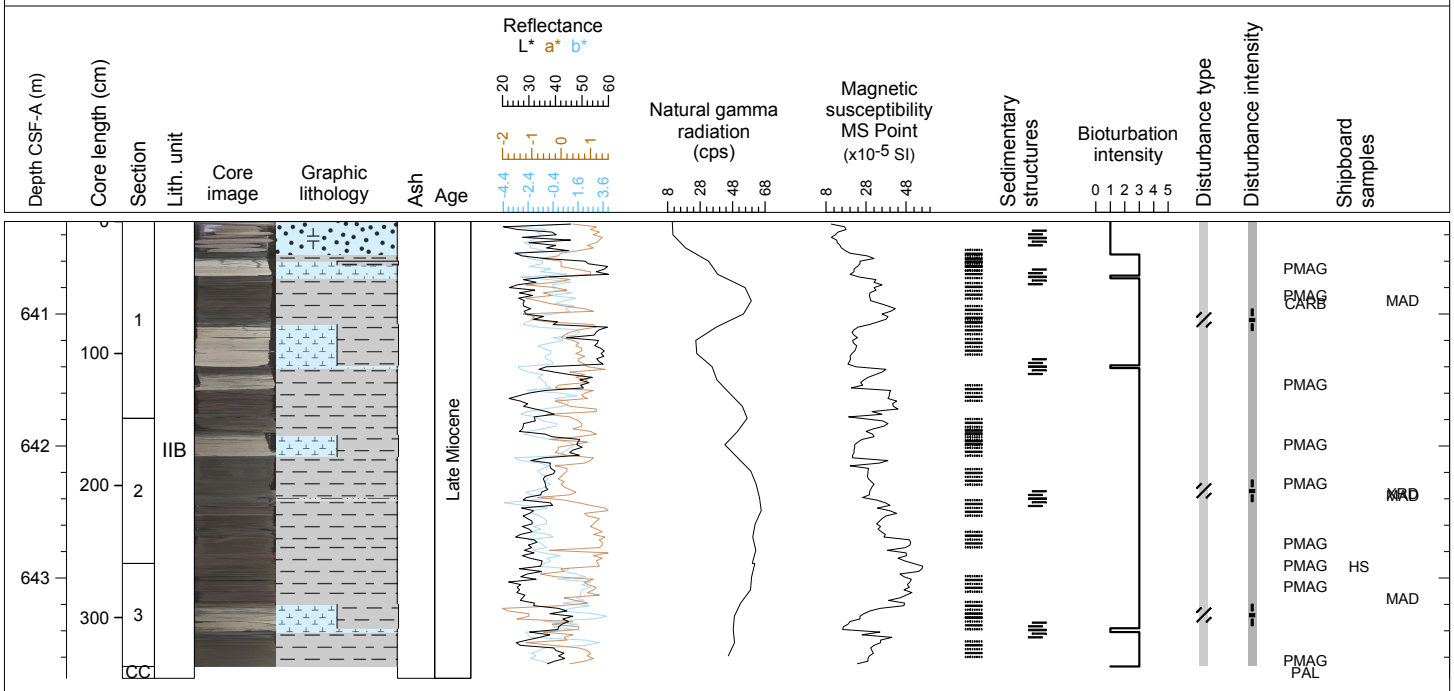
Hole 349-U1433B Core 48R, Interval 630.6-633.34 m (CSF-A)

Dark greenish gray and dark gray CLAYSTONE and SILTY CLAYSTONE with faint color banding and two turbidite interbeds, one of light gray NANNOFOSSIL CHALK and the second, 120 cm thick, graded calcareous and volcanic SANDSTONE and SILTSTONE with an erosive, sharp base and current laminations in the basal 50 cm of the bed. Top of the graded NANNOFOSSIL CHALK shows well developed trace fossils.



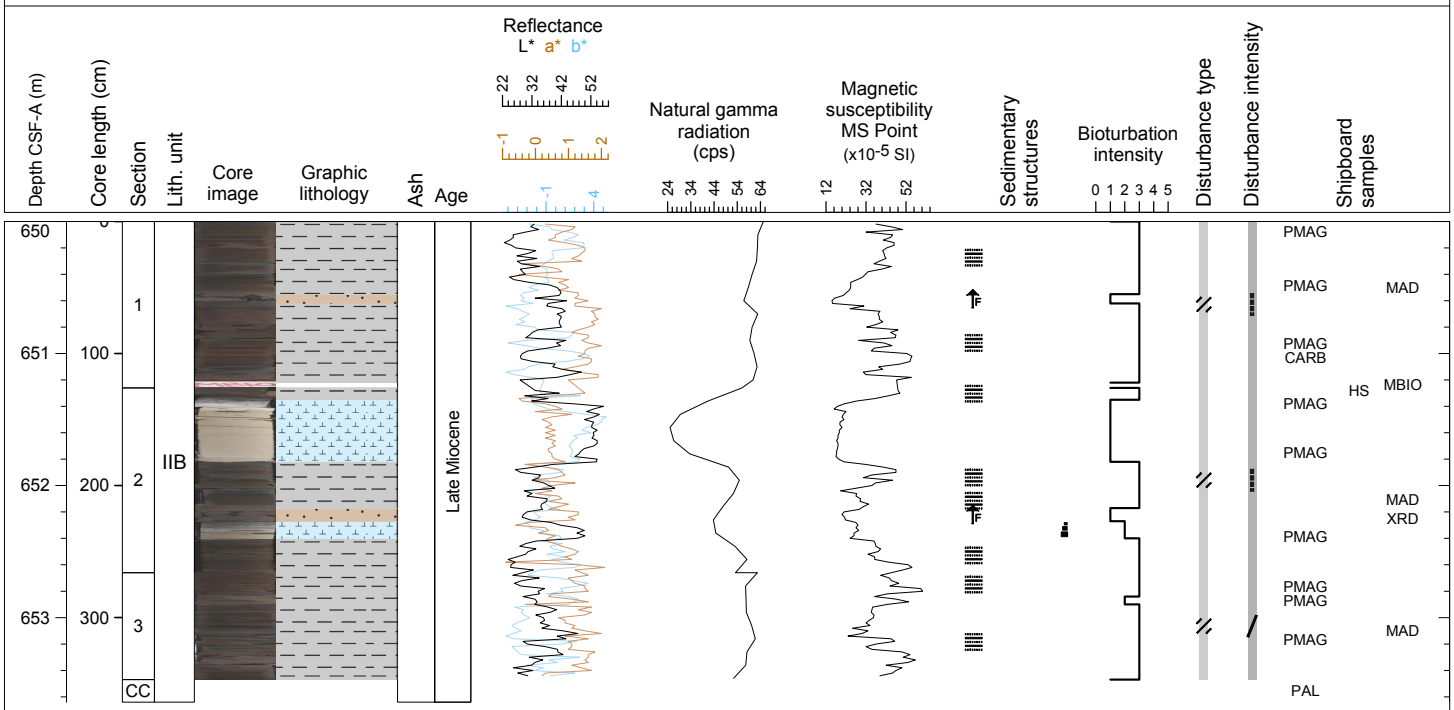
Hole 349-U1433B Core 49R, Interval 640.3-643.76 m (CSF-A)

Dark greenish gray and dark gray CLAYSTONE and SILTY CLAYSTONE with color banding interbedded with light gray NANNOFOSSIL CHALK and calcareous and volcanic SANDSTONE. The NANNOFOSSIL CHALK beds have sharp, erosive bases, fine upward, and have lamination in the bottom 1-3 cm. The top of the NANNOFOSSIL CHALK beds show well developed trace fossils. The calcareous and volcanic SANDSTONE is also graded, and has an erosive, sharp base and lamination. These beds are interpreted as turbidites. The core is fractured.



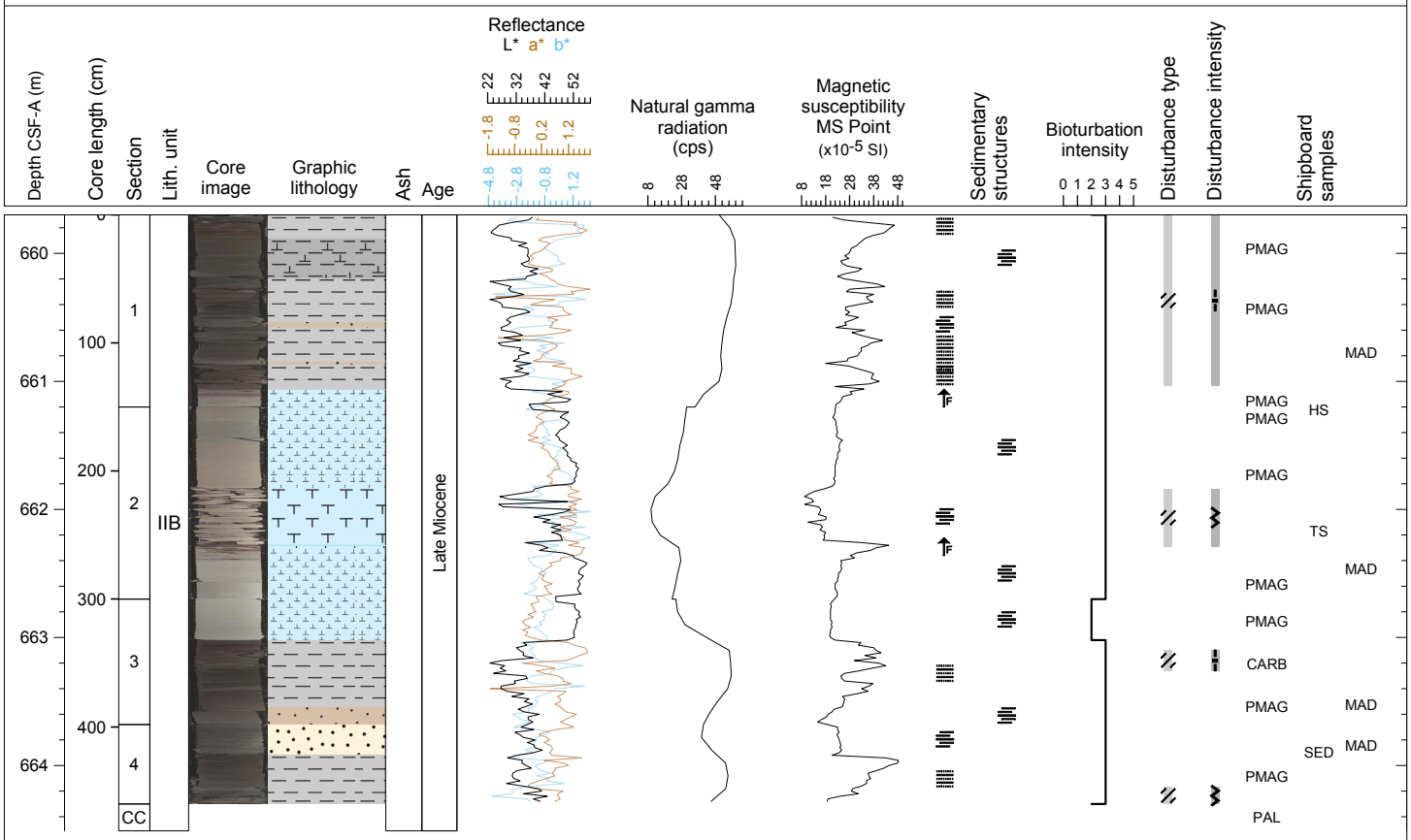
Hole 349-U1433B Core 50R, Interval 650.0-653.64 m (CSF-A)

Dark reddish gray CLAYSTONE dominates this core with two interbeds of graded NANNOFOSSIL CHALK with silt-grade foraminifer in laminated deposits immediately overlying the erosive base. Bioturbation is especially well displayed in the top of NANNOFOSSIL CHALK beds. Two thin, laminated, dark reddish gray SILTSTONE intervals are found within the background sediment. These are also normally graded and pass up into CLAYSTONE indicative of turbidite deposition.



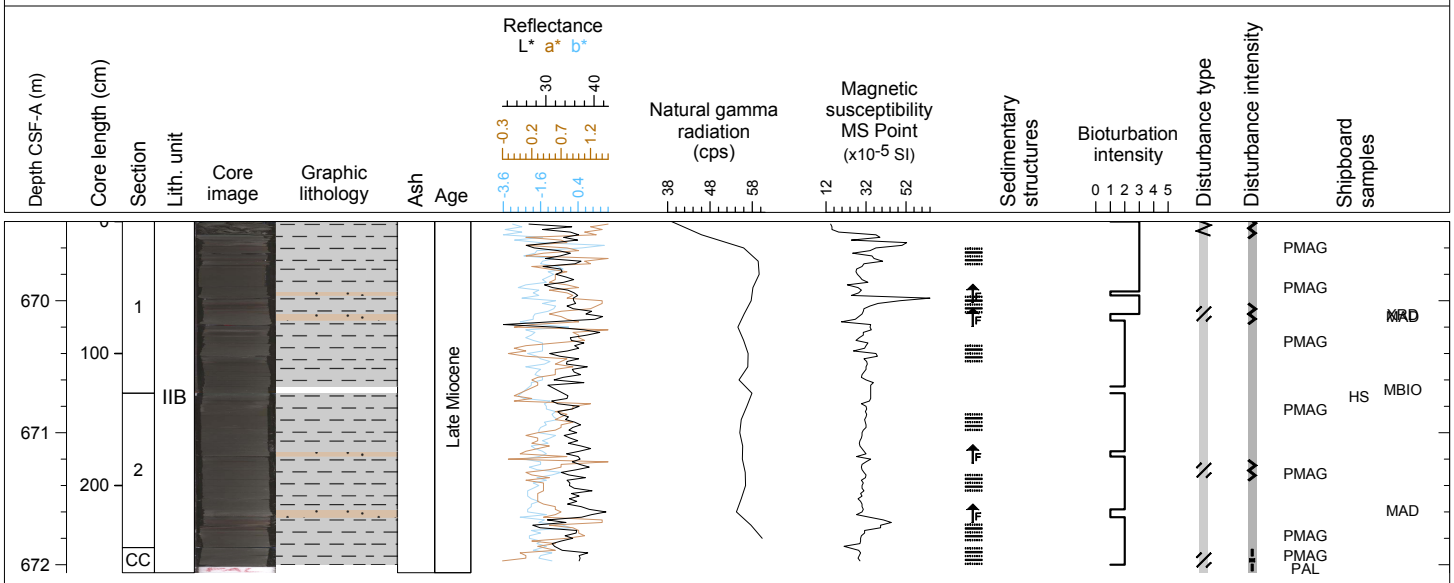
Hole 349-U1433B Core 51R, Interval 659.7-664.51 m (CSF-A)

Dark reddish gray, color banded CLAYSTONE and greenish gray, graded NANNOFOSSIL CHALK. The NANNOFOSSIL CHALK has sand-grade, parallel-laminated FORAMINIFERAL CHALK at its base and an erosive lower contact. A dark greenish gray, foraminifer-rich and volcaniclastic SANDSTONE occurs in Section 4. This bed fines upward and has an erosive base. Bioturbation is especially well displayed in the top of NANNOFOSSIL CHALK beds and in CLAYSTONE layers.



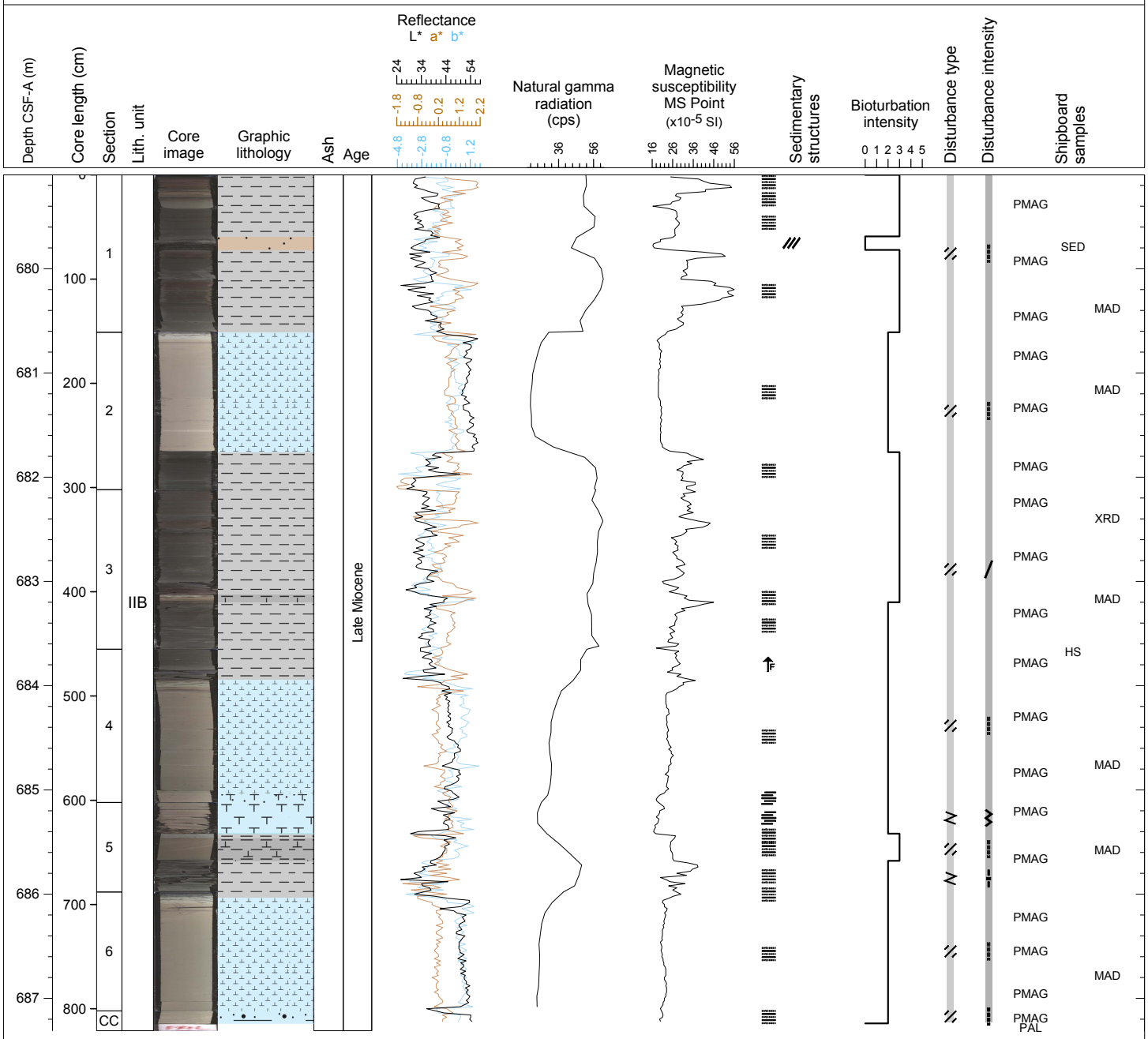
Hole 349-U1433B Core 52R, Interval 669.4-672.06 m (CSF-A)

Dark greenish gray CLAYSTONE interbedded with centimeter-scale, upward fining, thin beds of SILTSTONE with sharp bases. Bioturbation is moderate in CLAYSTONE and slight in SILTSTONE.



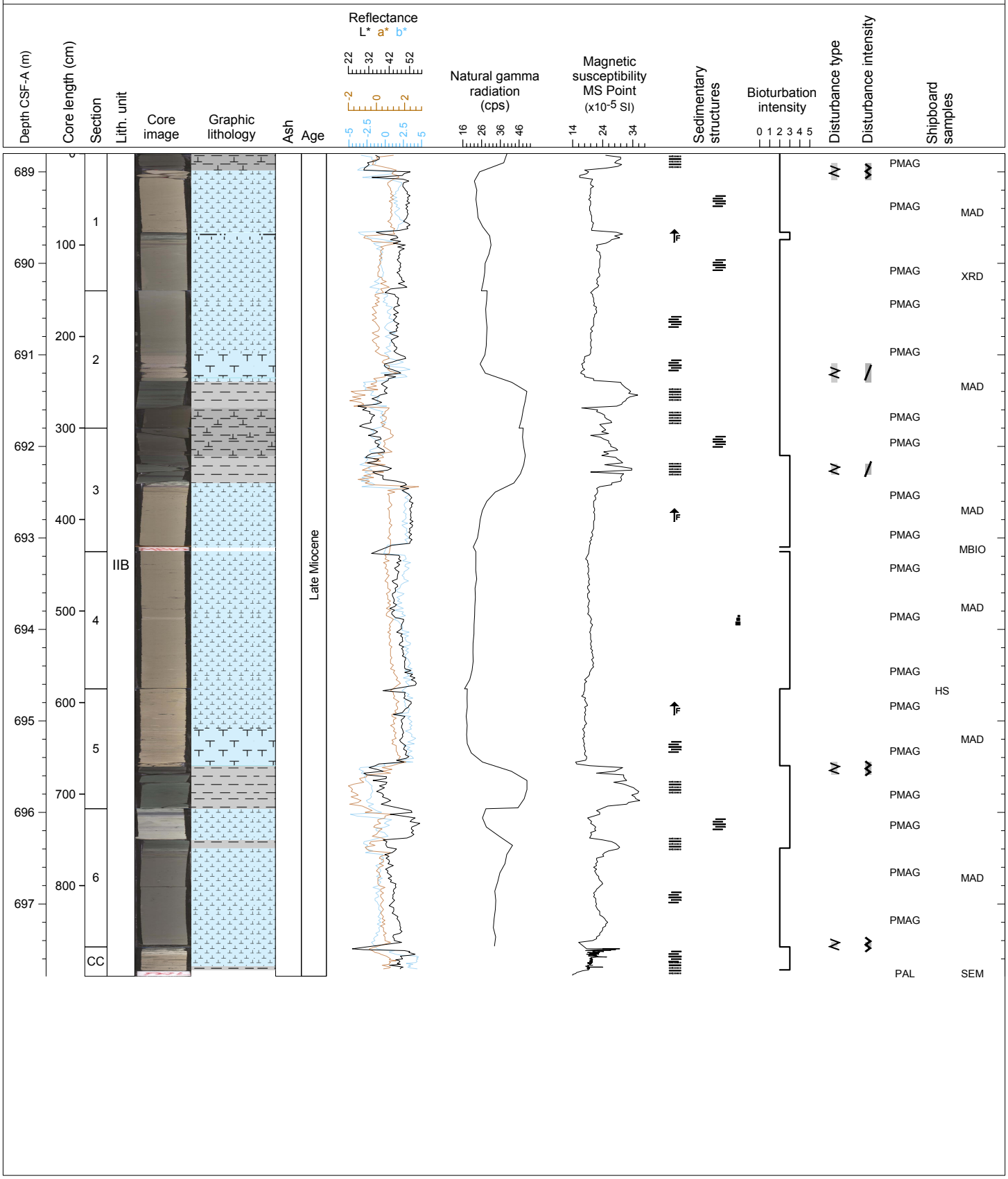
Hole 349-U1433B Core 53R, Interval 679.1-687.31 m (CSF-A)

Dark greenish gray CLAYSTONE interbedded with NANNOFOSSIL CHALK and NANNOFOSSIL-RICH CLAYSTONE. NANNOFOSSIL CHALK grades downward to FORAMINIFERAL CHALK and has a sharp contact with the underlying CLAYSTONE. The CLAYSTONE has occasional, very dark greenish-colored intervals. Bioturbation is generally moderate to high.



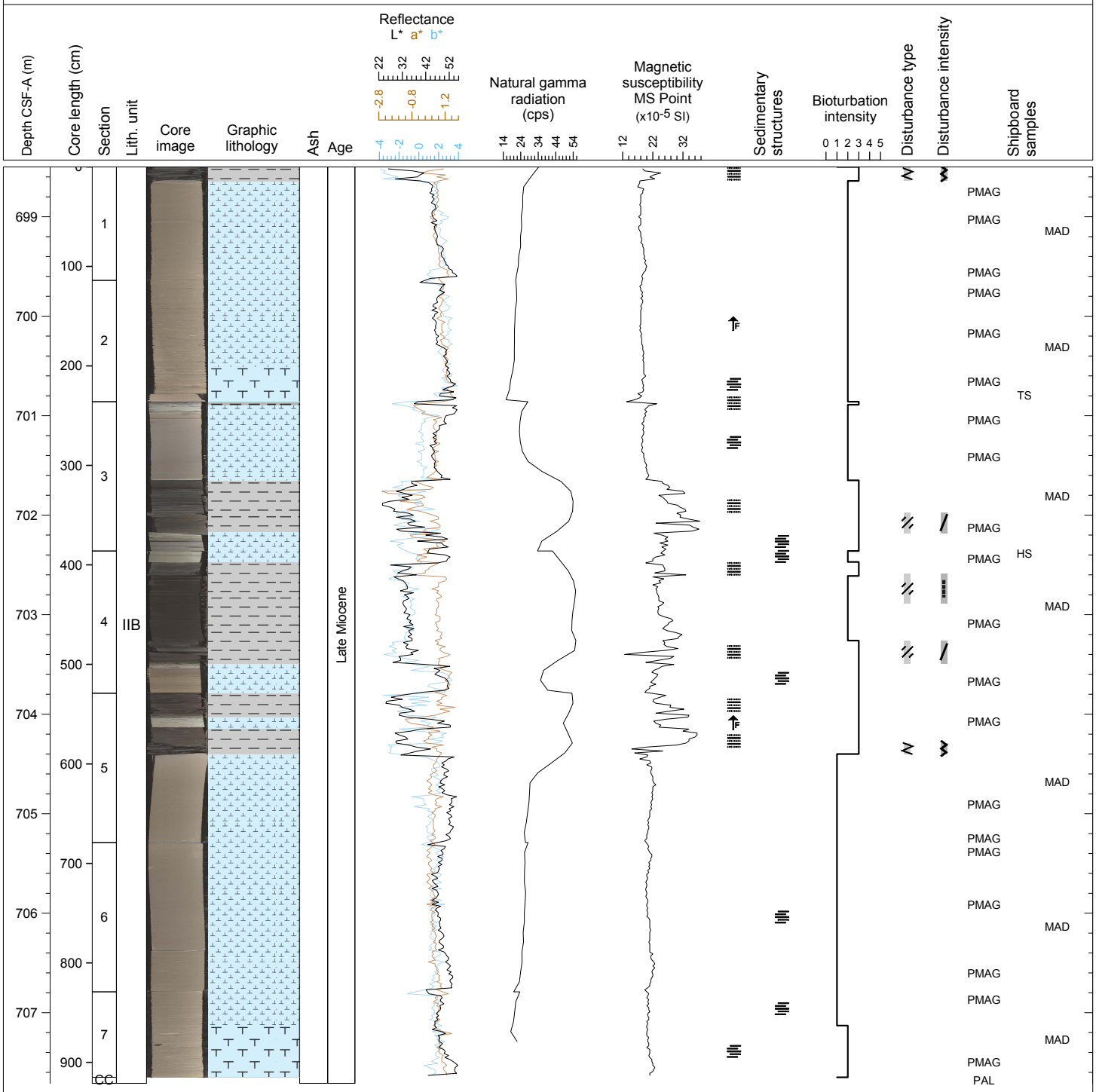
Hole 349-U1433B Core 54R, Interval 688.8-697.79 m (CSF-A)

Greenish gray NANNOFOSSIL CHALK with interbeds of dark greenish gray CLAYSTONE, NANNOFOSSIL-RICH CLAYSTONE and light greenish gray FORAMINIFERAL CHALK. Beds of FORAMINIFERAL CHALK show parallel lamination and erosive bases. These beds always fine upward and pass gradationally into CLAYSTONE. Most of the NANNOFOSSIL CHALK beds are homogeneous. CLAYSTONE is mostly color banded and heavily bioturbated. Bioturbation is also heavy along the upper part of NANNOFOSSIL CHALK layers where they pass into CLAYSTONE.



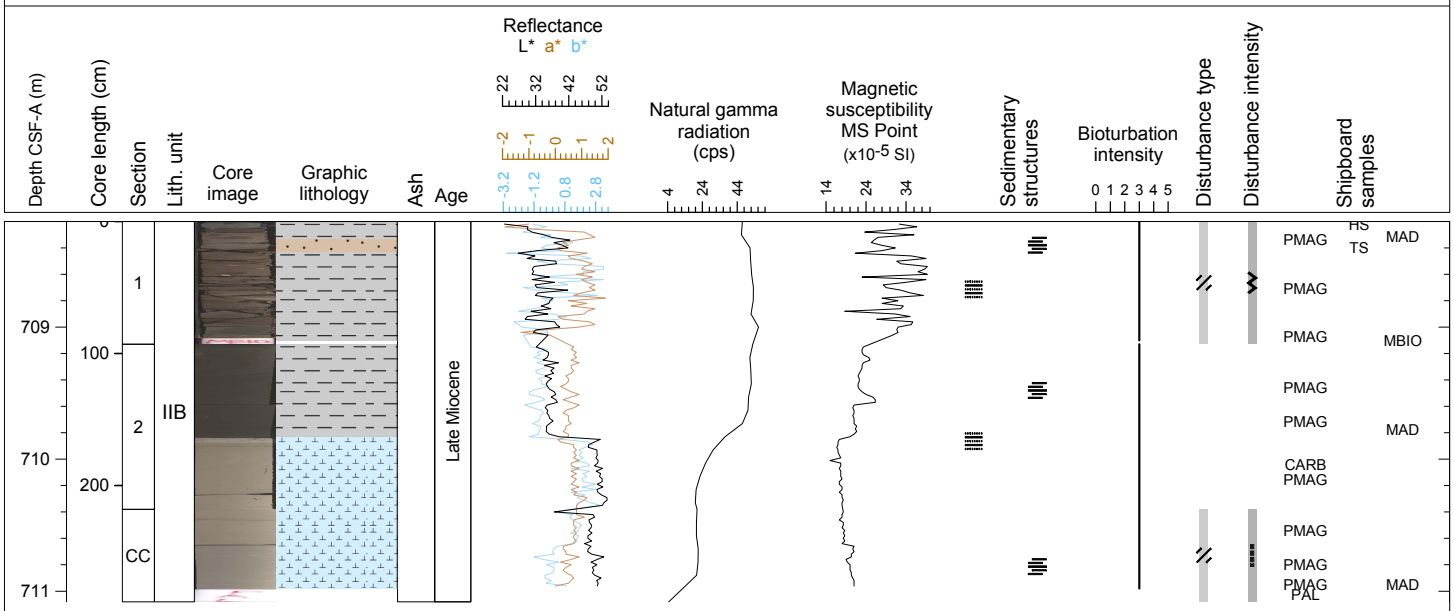
Hole 349-U1433B Core 55R, Interval 698.5-707.71 m (CSF-A)

Greenish gray NANNOFOSSIL CHALK and FORAMINIFERAL CHALK with dark greenish gray CLAYSTONE interbeds. Parallel-laminated, FORAMINIFERAL CHALK fines upward to homogeneous NANNOFOSSIL CHALK, and then to CLAYSTONE. Bases of these beds are erosive. CLAYSTONE is mostly color banded and heavily bioturbated. Bioturbation is also heavy in the upper part of NANNOFOSSIL CHALK layers.



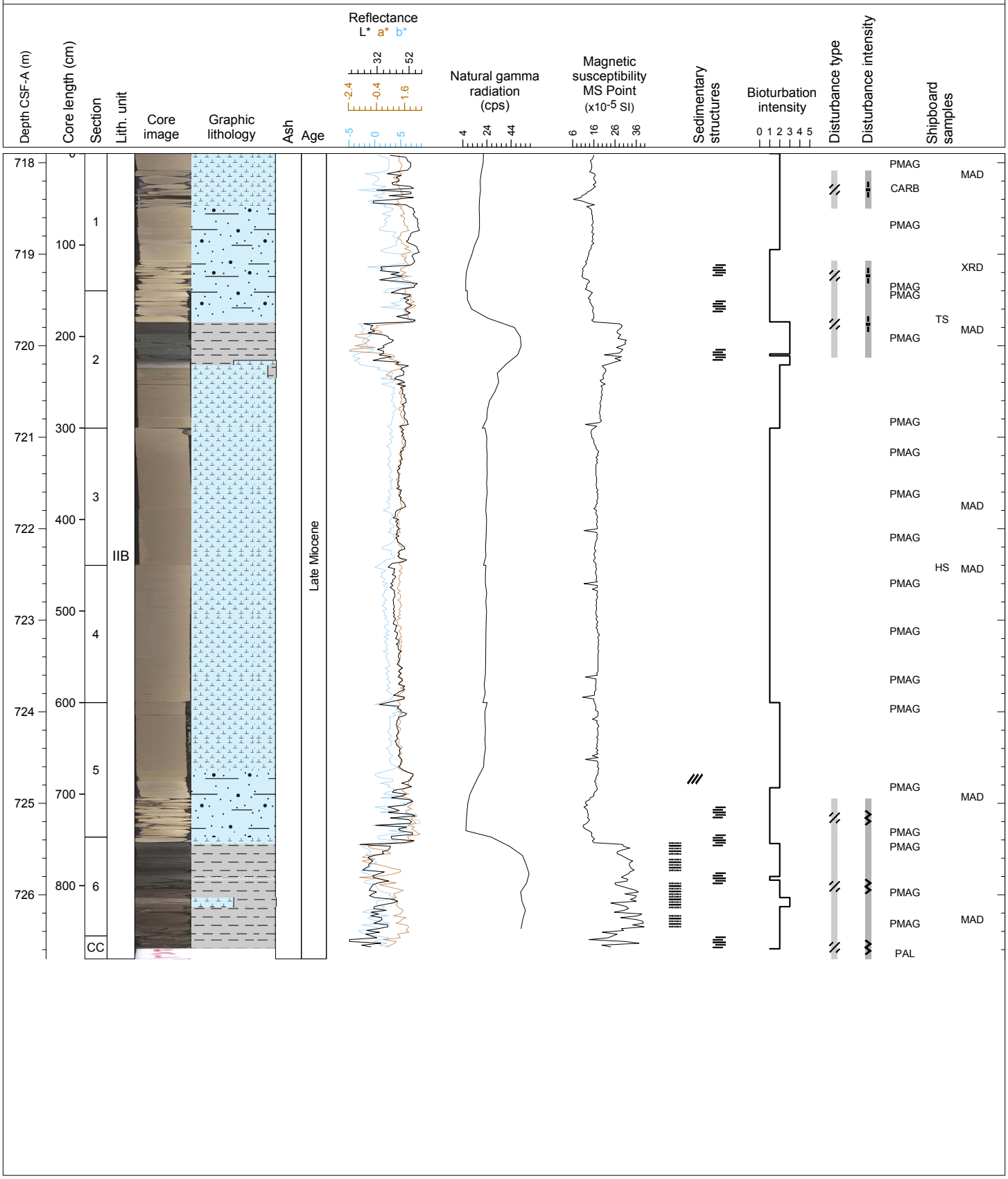
Hole 349-U1433B Core 56R, Interval 708.2-711.08 m (CSF-A)

Dark greenish gray CLAYSTONE, light greenish gray NANNOFOSSIL CHALK, NANNOFOSSIL CHALK WITH FORAMINFERS, and minor dark greenish gray SILTSTONE. The SILTSTONE and the lower part of CLAYSTONE beds are laminated and have sharp bases. The NANNOFOSSIL CHALK grades down into NANNOFOSSIL CHALK WITH FORAMINFERS. The core is highly fractured in Section 1.



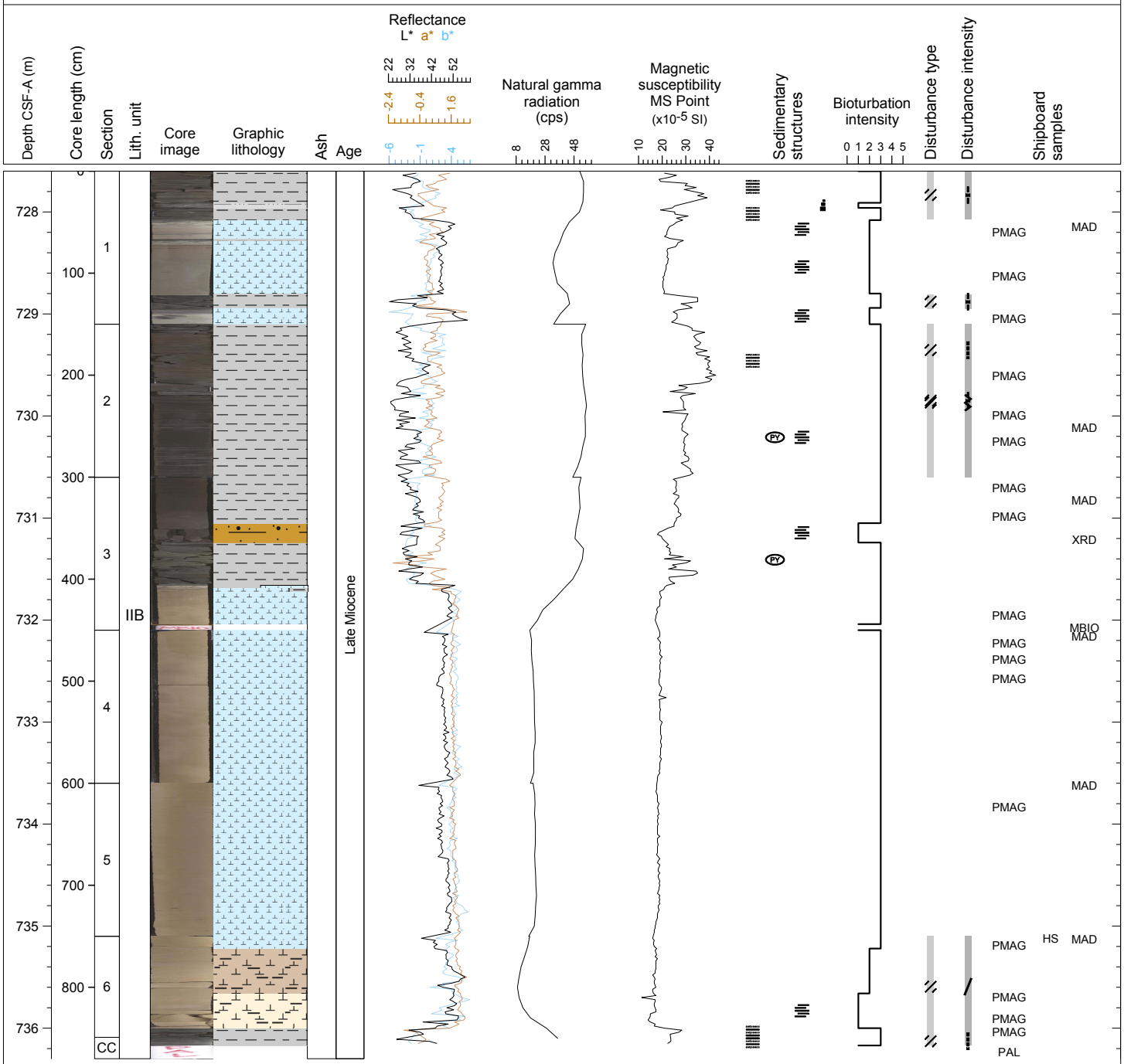
Hole 349-U1433B Core 57R, Interval 717.9-726.7 m (CSF-A)

Light greenish gray NANNOFOSSIL CHALK and FORAMINIFER-RICH NANNOFOSSIL CHALK interbedded with dark greenish gray CLAYSTONE. There is a single NANNOFOSSIL CHALK and FORAMINIFER-RICH NANNOFOSSIL CHALK bed with its base at Section 6, 7 cm that fines upward with the top at Section 2, 77 cm. There is similar very thick bed at the top of Section 2 and in Section 1. The base of these beds is laminated. CLAYSTONE intervals are highly fractured.



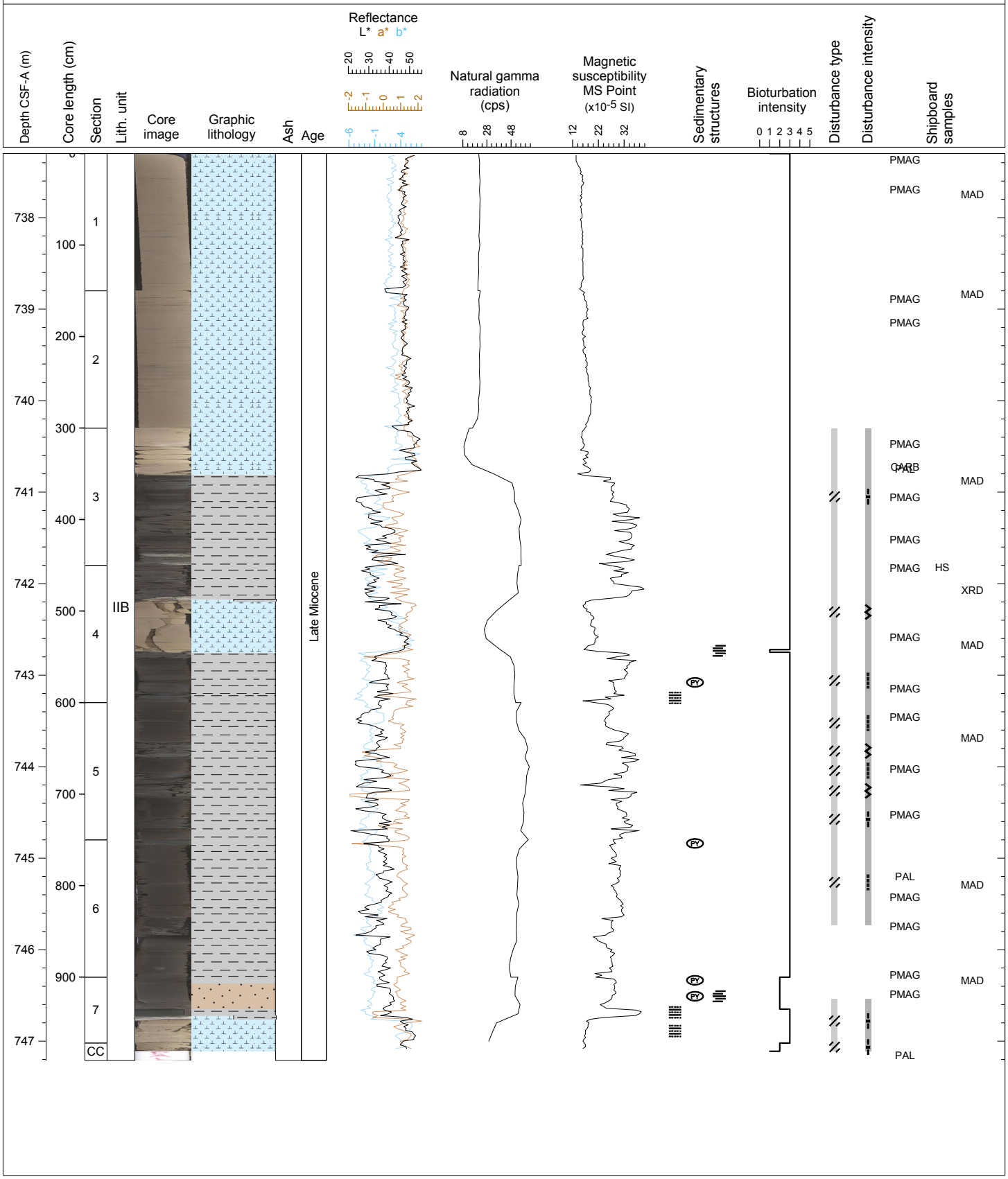
Hole 349-U1433B Core 58R, Interval 727.6-736.3 m (CSF-A)

Dark greenish gray and greenish gray CLAY interbedded with light greenish gray NANNOFOSSIL CHALK and light brownish gray SILTY NANNOFOSSIL CHALK WITH FORAMINIFERS. The NANNOFOSSIL CHALK beds have sharp bases, are laminated in the lower part and fine upward to bioturbated tops. There is one very thick bed of NANNOFOSSIL CHALK and SILTY NANNOFOSSIL CHALK WITH FORAMINIFERS that grades from a sharp base in Section 6, 90 cm upward to Section 3, 105 cm. The CLAYSTONE is fractured.



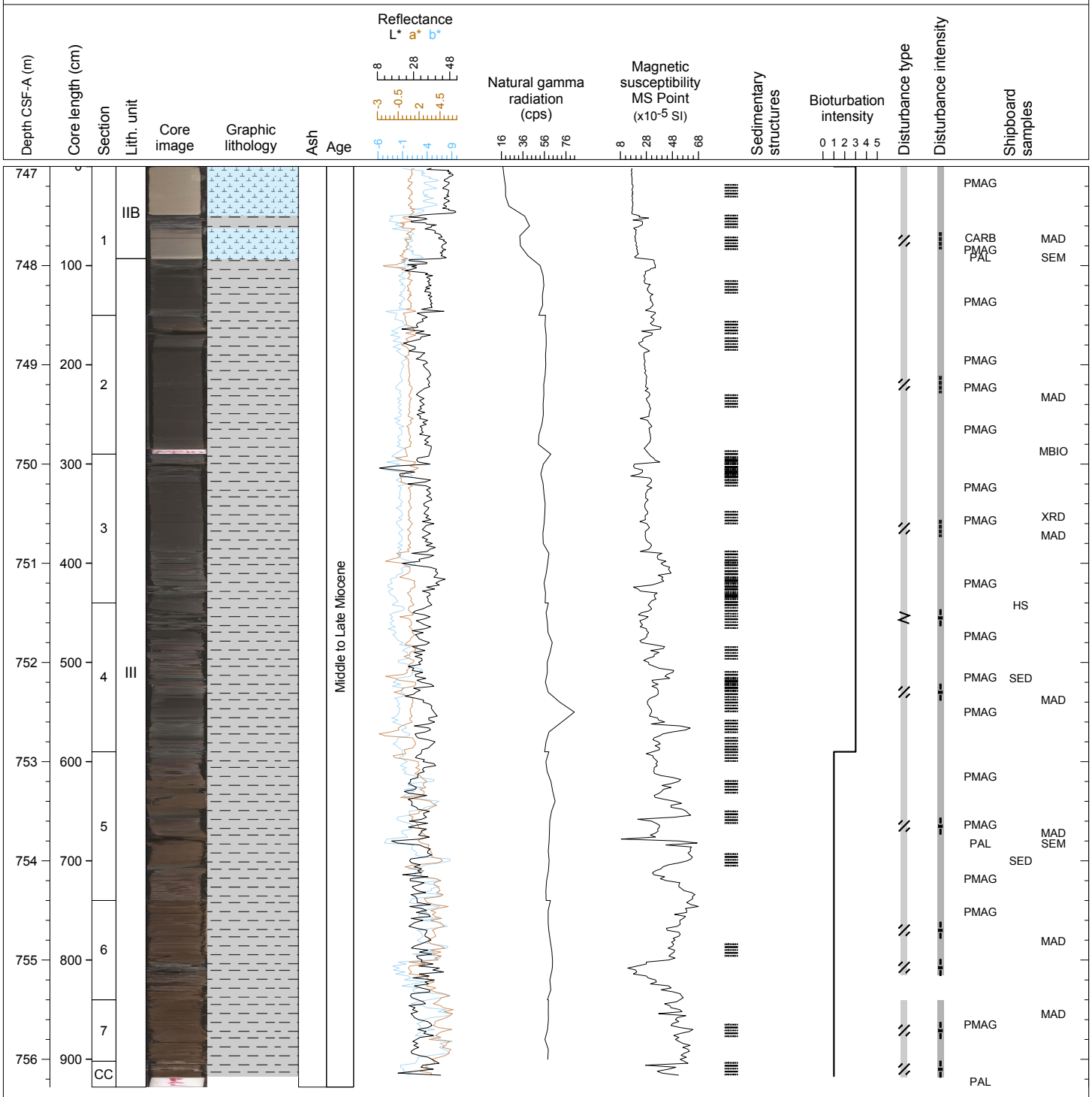
Hole 349-U1433B Core 59R, Interval 737.3-747.21 m (CSF-A)

Dark greenish gray and greenish gray CLAY interbedded with light greenish gray and gray NANNOFOSSIL CHALK and light gray SILTY NANNOFOSSIL CHALK WITH FORAMINIFERS. The NANNOFOSSIL CHALK beds have sharp bases, are laminated in the lower part and fine upward to bioturbated tops. The CLAYSTONE is fractured.



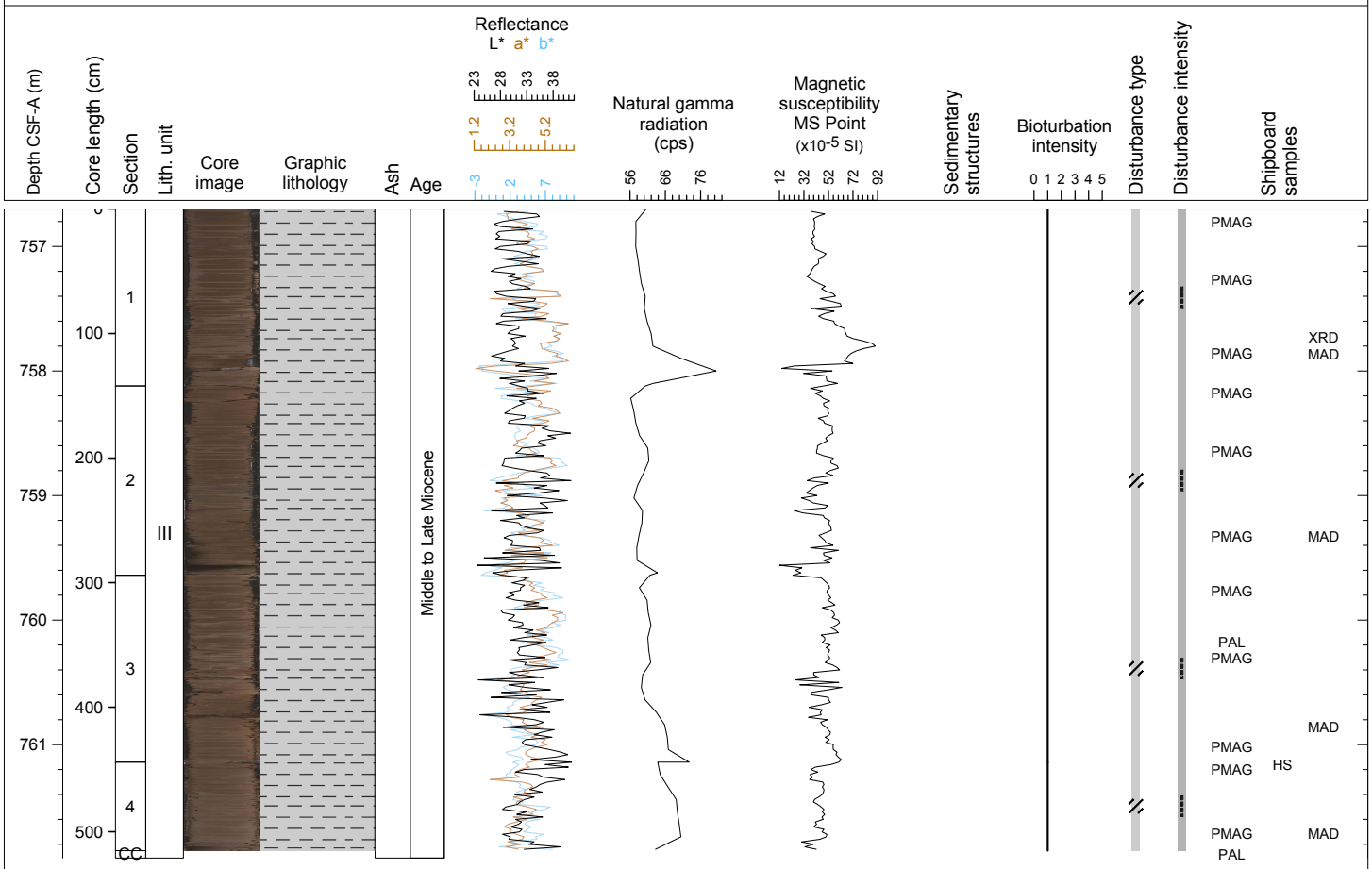
Hole 349-U1433B Core 60R, Interval 747.0-756.28 m (CSF-A)

NANNOFOSSIL CHALK in Section 1 and a dark greenish gray and dark gray CLAYSTONE. Dark greenish gray and dark gray CLAYSTONE alternate from Section 2 to 4. From approximately 15 cm of Section 5 to core end is dark reddish CLAYSTONE. Slight coring disturbance (fractured) throughout the core. Bioturbation is moderate to slight.



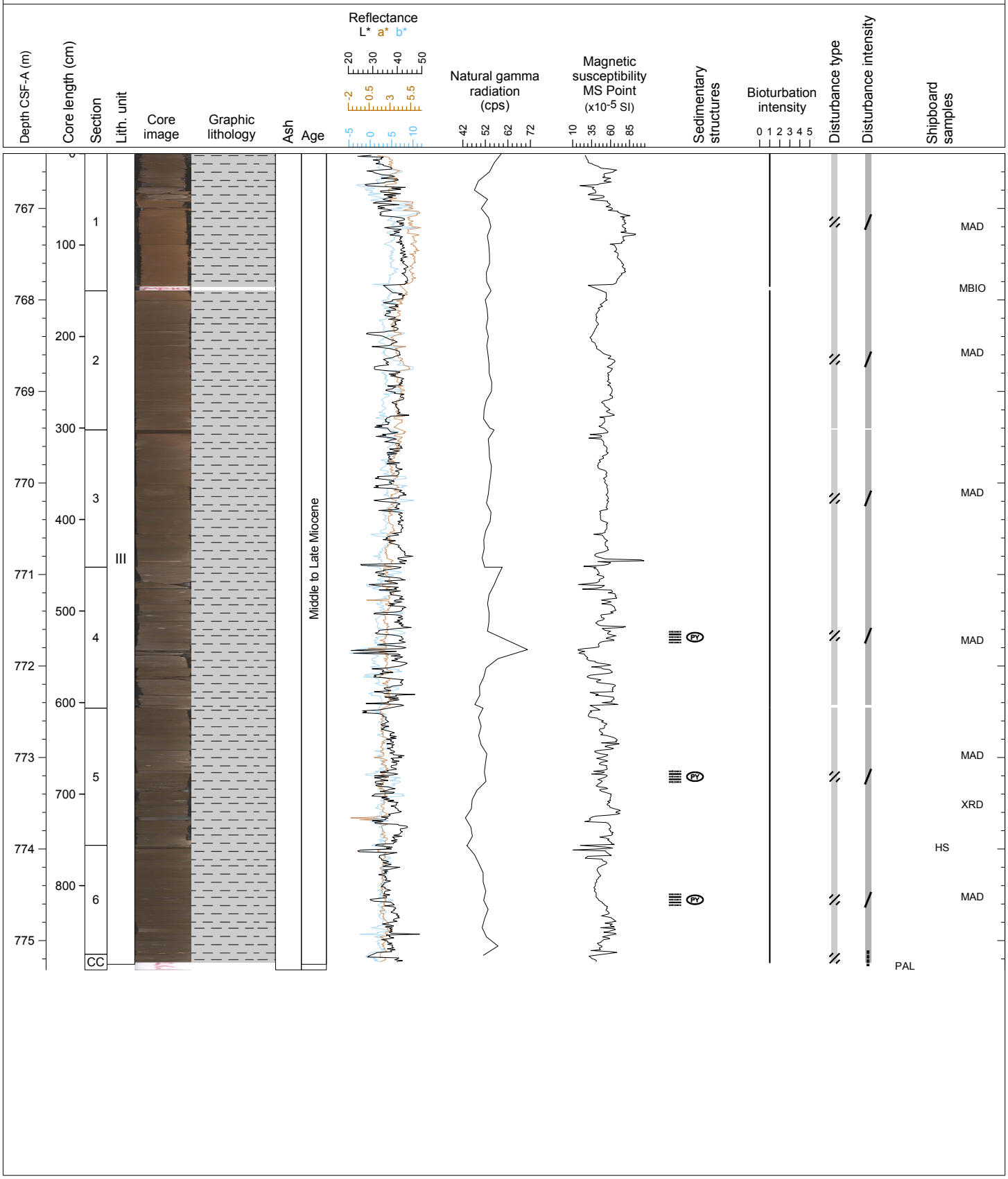
Hole 349-U1433B Core 61R, Interval 756.7-761.91 m (CSF-A)

Dark reddish CLAYSTONE. There are a few millimeter-scale greenish CLAYSTONE pods scattered throughout the core. The core is slightly fractured throughout. Bioturbation is slight.



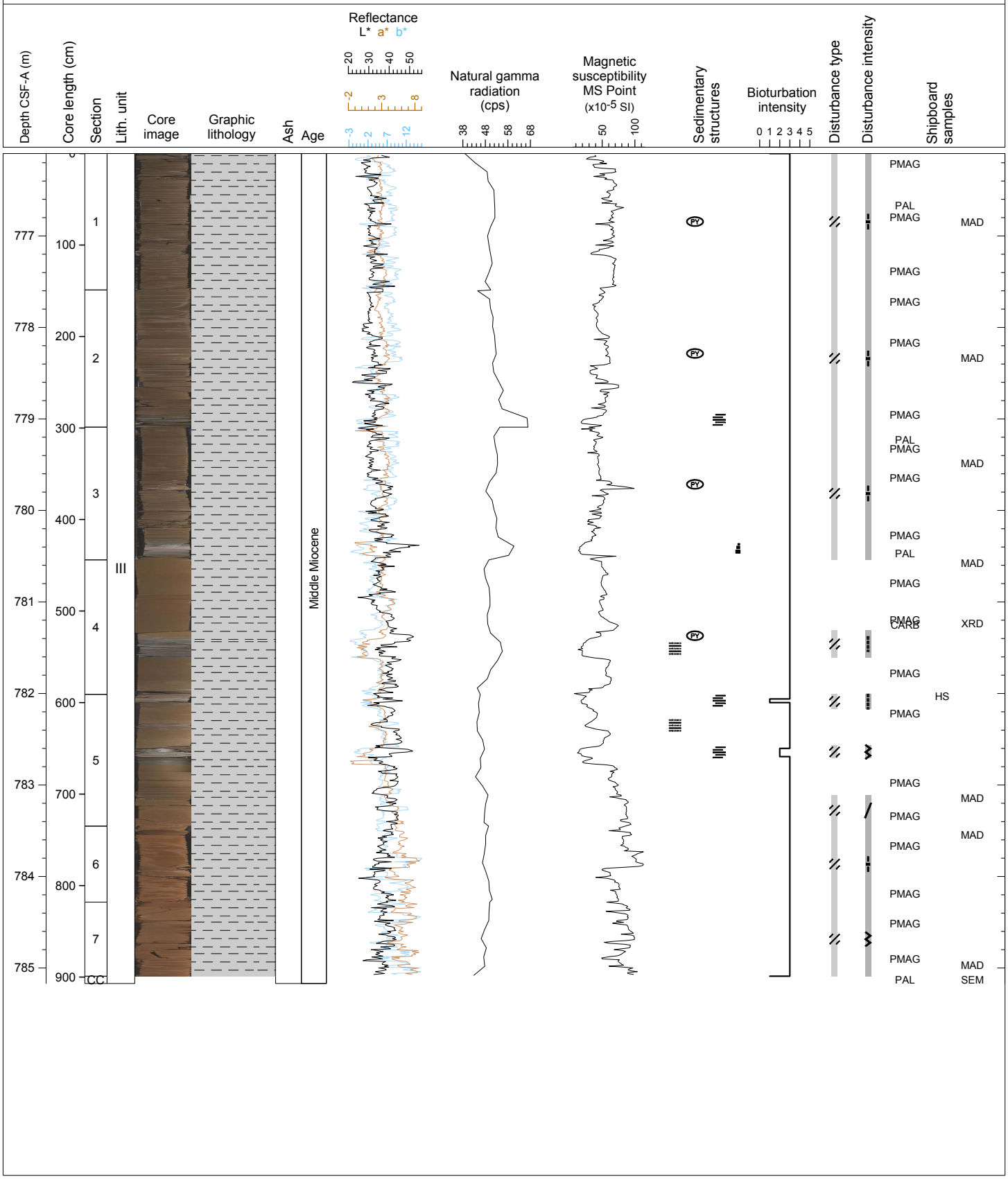
Hole 349-U1433B Core 62R, Interval 766.4-775.32 m (CSF-A)

Dark reddish brown CLAYSTONE and dark yellowish brown CLAYSTONE. This core is composed of homogenous CLAYSTONE throughout with a gradual color change from dark reddish brown CLAYSTONE in the upper three sections to dark yellowish brown CLAYSTONE. There are a few millimeter-scale pyrite nodules within dark greenish sediment pods scattered throughout the core. There is a 3-4 cm, dark greenish color band in Section 5. The core is slightly fractured. Bioturbation is slight throughout.



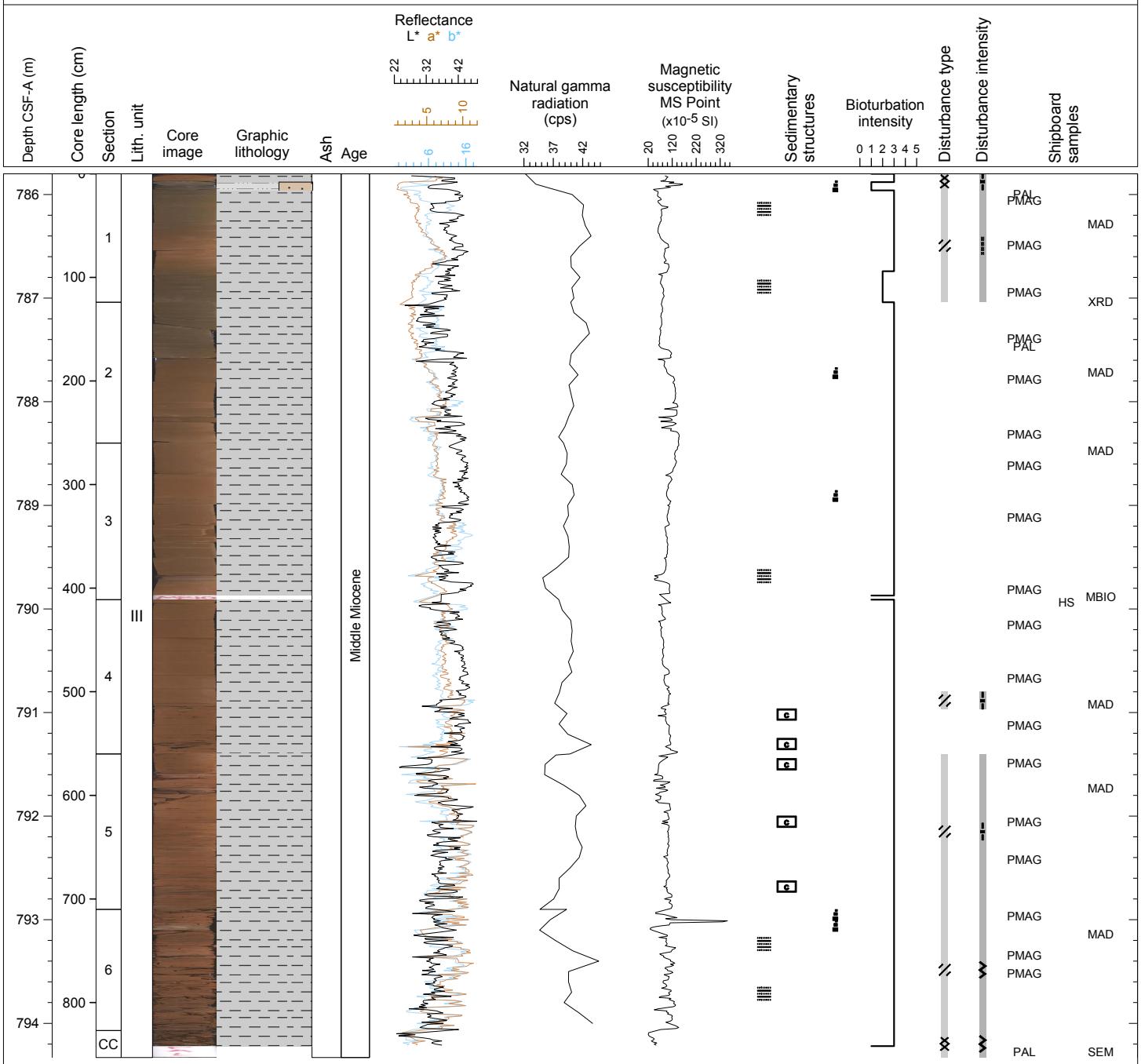
Hole 349-U1433B Core 63R, Interval 776.1-785.17 m (CSF-A)

Brown, reddish brown and dark yellowish brown CLAYSTONE and CLAYSTONE WITH SILT interbedded with greenish gray CLAYSTONE WITH SILT. Lamination is highlighted by color changes in the greenish gray CLAYSTONE WITH SILT. There are occasional pyrite nodules in the brown CLAYSTONE. The core is fractured throughout.



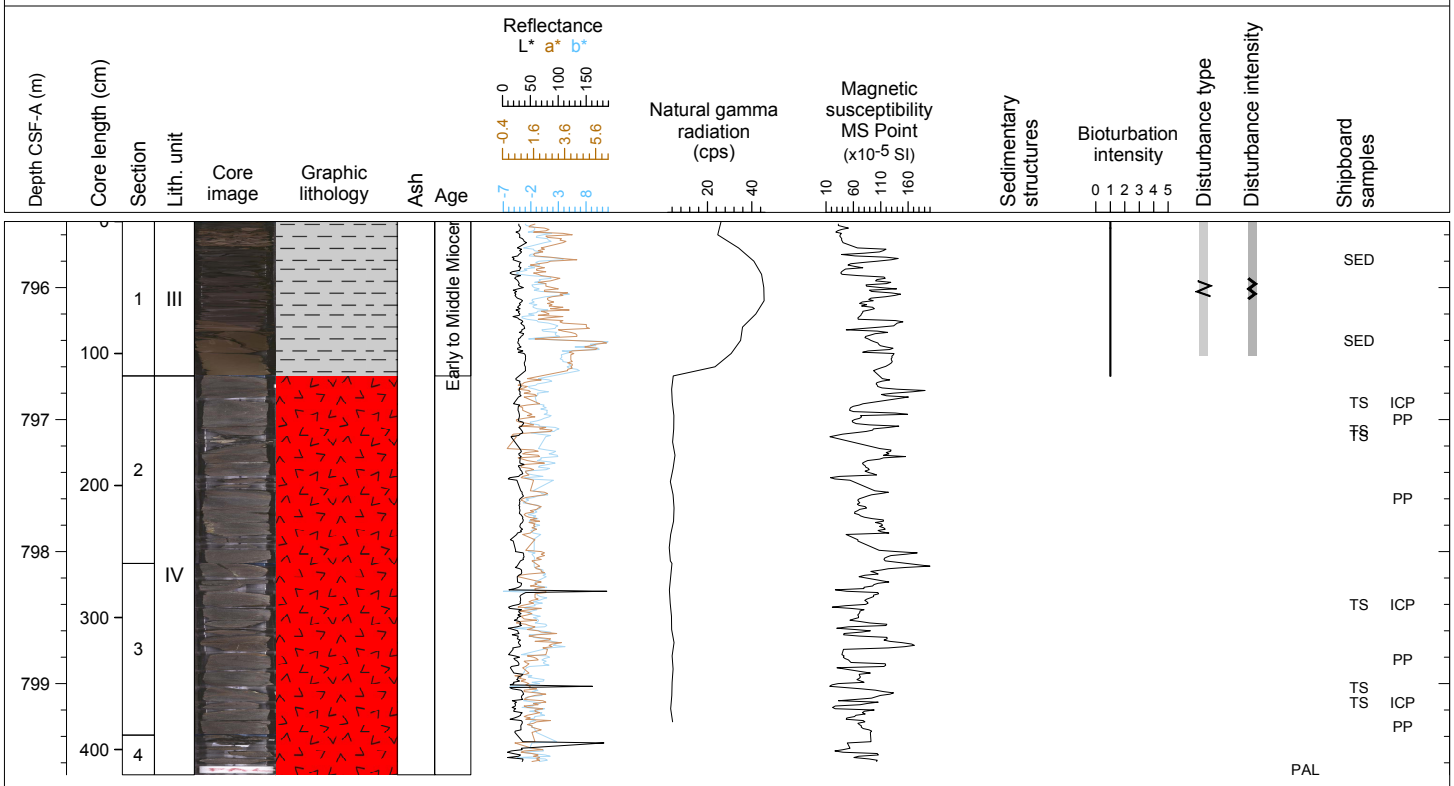
Hole 349-U1433B Core 64R, Interval 785.8-794.33 m (CSF-A)

Massive CLAYSTONE WITH SILT in a variety of vivid colors, ranging from yellow red, to dark yellowish brown to reddish gray. Few sediment structures are visible through much of the core except black-stained Zoophycos and Chondrites burrows, as well as more random black-stained patches up to 1 x 4 cm across. There is a dark greenish gray SILTSTONE in Section 1, grading up into CLAYSTONE with laminations indicative of current transport. In Section 6 there are three erosion surfaces developed, laying CLAYSTONE WITH SILT against the underlying bed, except at 12 cm depth where the erosion surface is overlain by fine sand grade material, ~4 mm thick with parallel laminae.

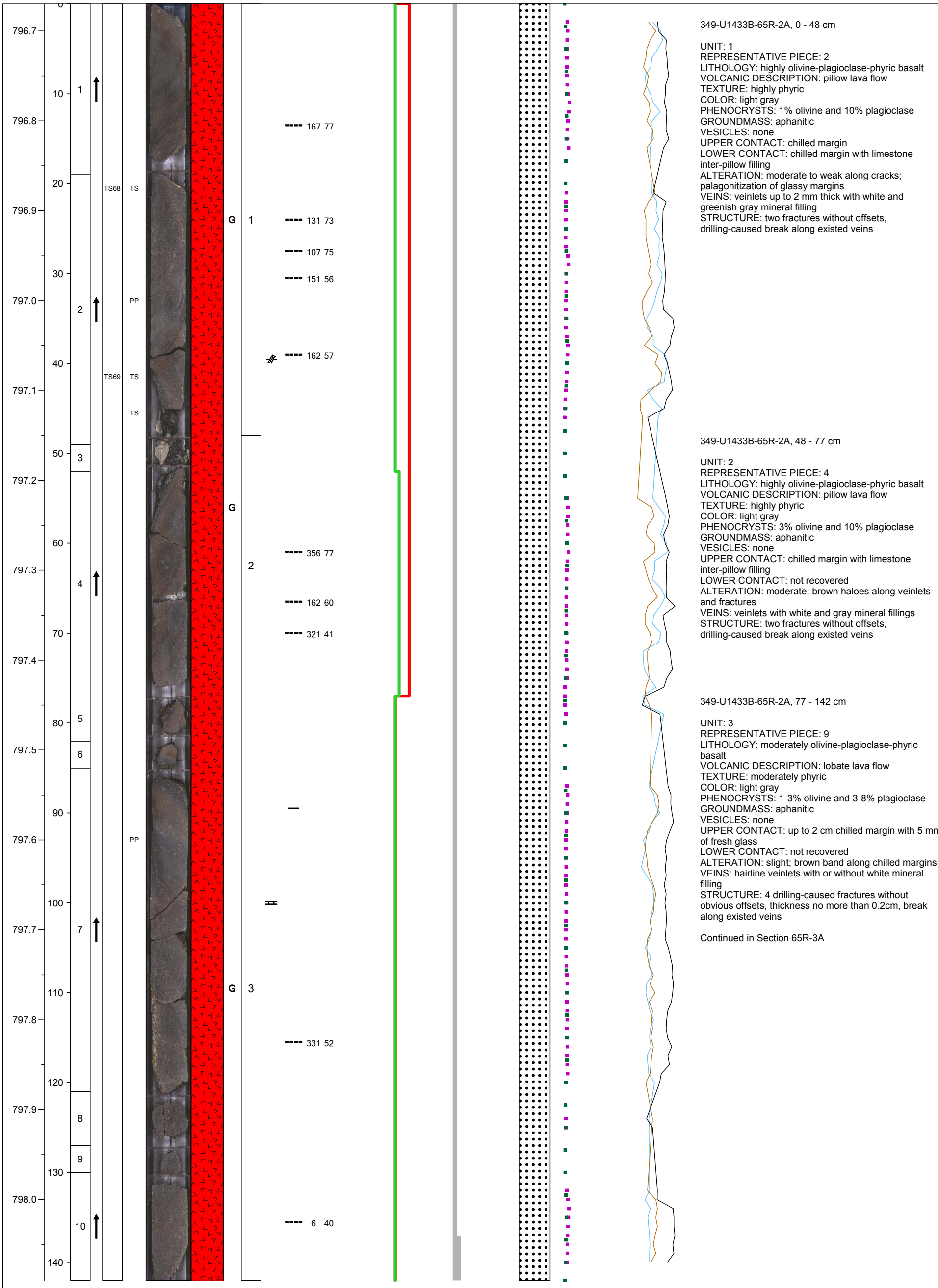


Hole 349-U1433B Core 65R, Interval 795.5-799.69 m (CSF-A)

Dark reddish brown and reddish brown CLAYSTONE in Section 1, marking the bottom of the sedimentary sequence overlying the basalt basement, which starts in Section 2 of this core. Inclined contact occurs between dark reddish brown and brown CLAYSTONE layers. Bioturbation is slight.



Hole 349-U1433B-65R Section 2, Top of Section: 796.67 m (CSF-A)



349-U1433B-65R-2A, 0 - 48 cm

UNIT: 1
REPRESENTATIVE PIECE: 2
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: highly phyric
COLOR: light gray
PHENOCRYSTS: 1% olivine and 10% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: chilled margin
LOWER CONTACT: chilled margin with limestone inter-pillow filling
ALTERATION: moderate to weak along cracks; palagonitization of glassy margins
VEINS: veinlets up to 2 mm thick with white and greenish gray mineral filling
STRUCTURE: two fractures without offsets, drilling-caused break along existed veins

349-U1433B-65R-2A, 48 - 77 cm

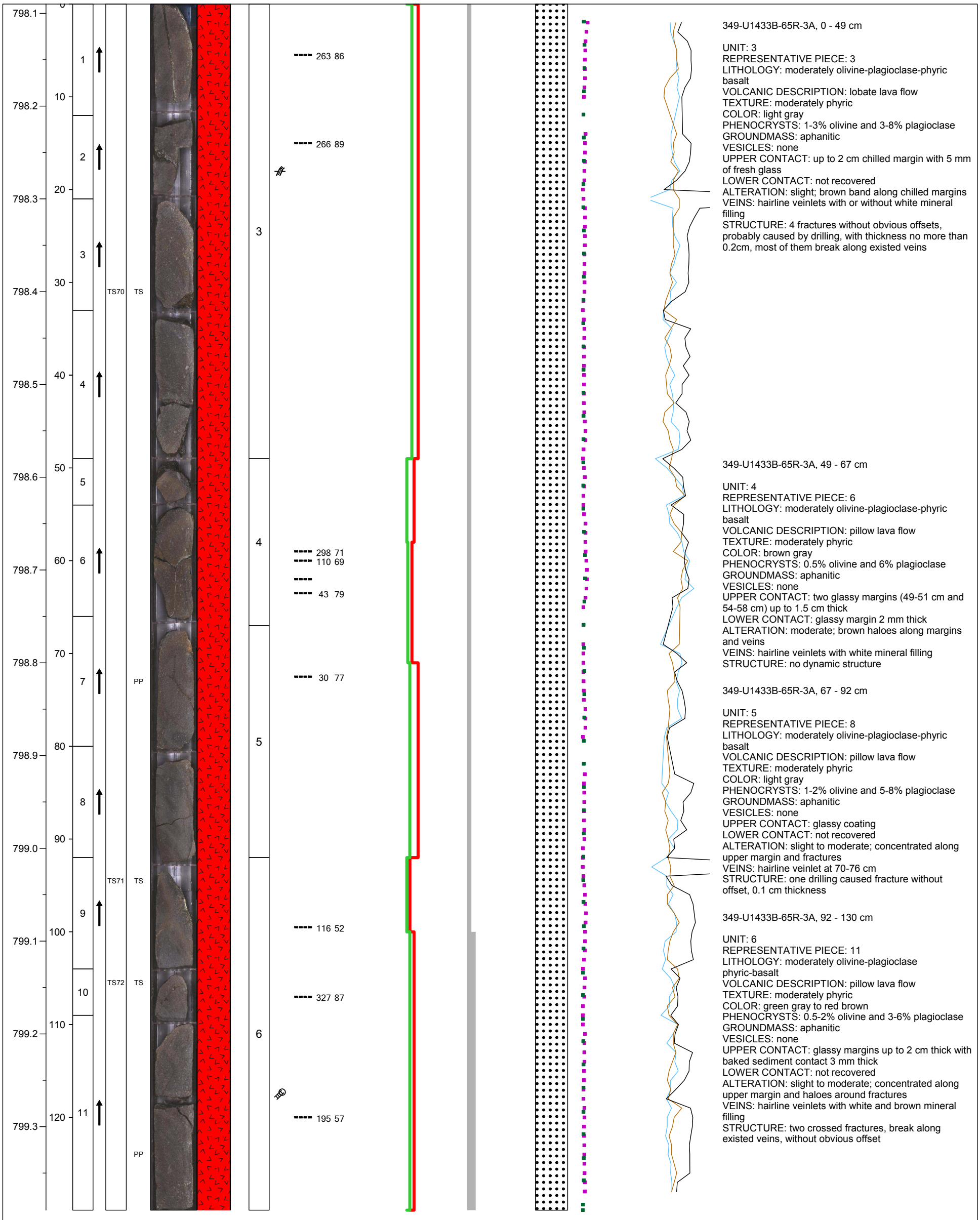
UNIT: 2
REPRESENTATIVE PIECE: 4
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: highly phyric
COLOR: light gray
PHENOCRYSTS: 3% olivine and 10% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: chilled margin with limestone inter-pillow filling
LOWER CONTACT: not recovered
ALTERATION: moderate; brown haloes along veinlets and fractures
VEINS: veinlets with white and gray mineral fillings
STRUCTURE: two fractures without offsets, drilling-caused break along existed veins

349-U1433B-65R-2A, 77 - 142 cm

UNIT: 3
REPRESENTATIVE PIECE: 9
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: lobate lava flow
TEXTURE: moderately phyric
COLOR: light gray
PHENOCRYSTS: 1-3% olivine and 3-8% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: up to 2 cm chilled margin with 5 mm of fresh glass
LOWER CONTACT: not recovered
ALTERATION: slight; brown band along chilled margins
VEINS: hairline veinlets with or without white mineral filling
STRUCTURE: 4 drilling-caused fractures without obvious offsets, thickness no more than 0.2cm, break along existed veins

Continued in Section 65R-3A

Hole 349-U1433B-65R Section 3, Top of Section: 798.09 m (CSF-A)



349-U1433B-65R-3A, 0 - 49 cm

UNIT: 3
REPRESENTATIVE PIECE: 3
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: lobate lava flow
TEXTURE: moderately phyric
COLOR: light gray
PHENOCRYSTS: 1-3% olivine and 3-8% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: up to 2 cm chilled margin with 5 mm of fresh glass
LOWER CONTACT: not recovered
ALTERATION: slight; brown band along chilled margins
VEINS: hairline veinlets with or without white mineral filling
STRUCTURE: 4 fractures without obvious offsets, probably caused by drilling, with thickness no more than 0.2cm, most of them break along existed veins

349-U1433B-65R-3A, 49 - 67 cm

UNIT: 4
REPRESENTATIVE PIECE: 6
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric
COLOR: brown gray
PHENOCRYSTS: 0.5% olivine and 6% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: two glassy margins (49-51 cm and 54-58 cm) up to 1.5 cm thick
LOWER CONTACT: glassy margin 2 mm thick
ALTERATION: moderate; brown haloes along margins and veins
VEINS: hairline veinlets with white mineral filling
STRUCTURE: no dynamic structure

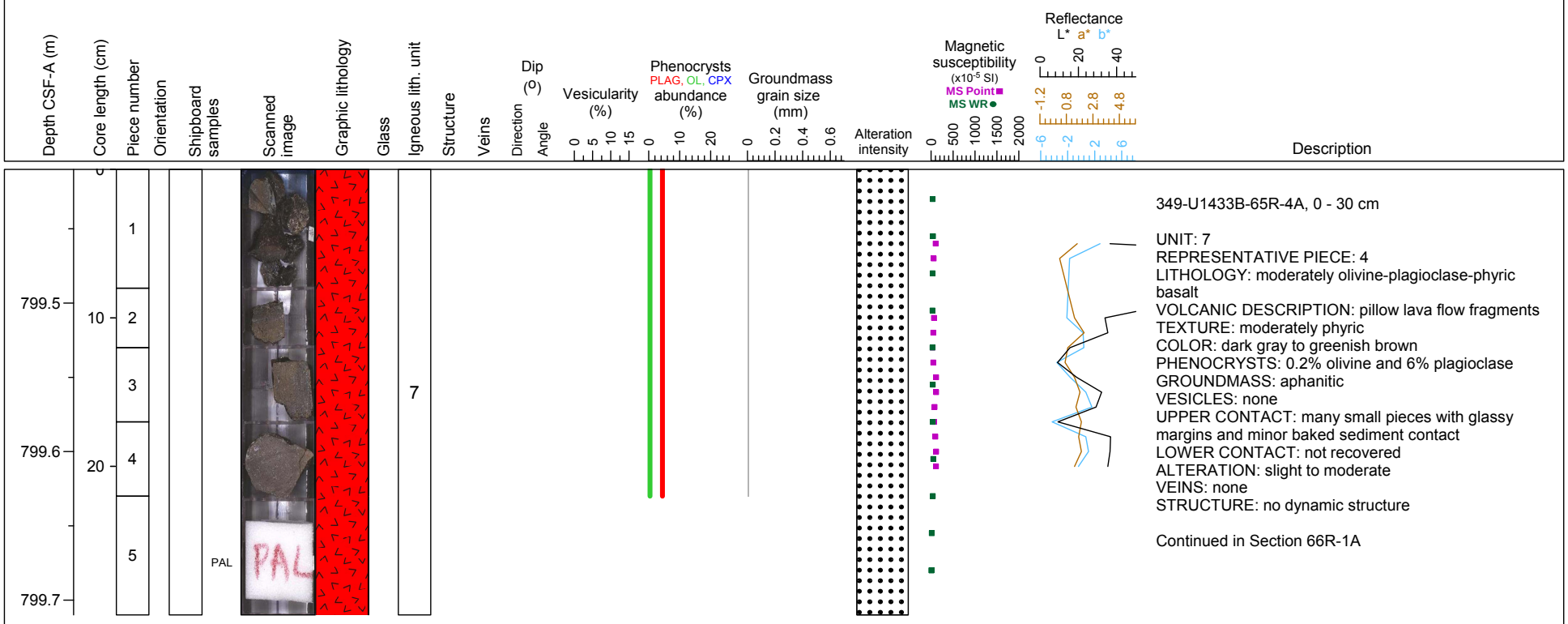
349-U1433B-65R-3A, 67 - 92 cm

UNIT: 5
REPRESENTATIVE PIECE: 8
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric
COLOR: light gray
PHENOCRYSTS: 1-2% olivine and 5-8% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: glassy coating
LOWER CONTACT: not recovered
ALTERATION: slight to moderate; concentrated along upper margin and fractures
VEINS: hairline veinlet at 70-76 cm
STRUCTURE: one drilling caused fracture without offset, 0.1 cm thickness

349-U1433B-65R-3A, 92 - 130 cm

UNIT: 6
REPRESENTATIVE PIECE: 11
LITHOLOGY: moderately olivine-plagioclase phyric-basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric
COLOR: green gray to red brown
PHENOCRYSTS: 0.5-2% olivine and 3-6% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: glassy margins up to 2 cm thick with baked sediment contact 3 mm thick
LOWER CONTACT: not recovered
ALTERATION: slight to moderate; concentrated along upper margin and haloes around fractures
VEINS: hairline veinlets with white and brown mineral filling
STRUCTURE: two crossed fractures, break along existed veins, without obvious offset

Hole 349-U1433B-65R Section 4, Top of Section: 799.39 m (CSF-A)



Hole 349-U1433B-66R Section 1, Top of Section: 805.2 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 (°) Direction Angle | Vesicularity (%) | Phenocrysts PLAG, OL, CPX abundance (%) | Groundmass grain size (mm) | Alteration intensity | Magnetic susceptibility (x10^{-5} SI) MS Point ■ MS WR ● | Reflectance L* a* b* | Description

805.2 | 0 | 1 | 7

805.3 | 10 | 2

3

805.4 | 20 | 4

805.5 | 30 | 5

805.6 | 40 | 6 | PP | 168 90

805.7 | 50 | 7 | PP | 339 88

805.8 | 60 | TS76 | TS | 315 83

805.9 | 70 | 8

806.0 | 80

PP

806.1 | 90

806.2 | 100 | 8 | 176 50

806.3 | 110 | 307 24

806.4 | 120

806.5 | 130

PP

806.6 | 140

349-U1433B-66R-1A, 0 - 7 cm

UNIT: 7
REPRESENTATIVE PIECE: 1
LITHOLOGY: moderately olivine-plagioclase phyric-basalt
VOLCANIC DESCRIPTION: pillow lava flow fragments
TEXTURE: moderately phyric
COLOR: dark gray to greenish brown
PHENOCRYSTS: 0.2% olivine and 6% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: many small pieces with glassy margins and minor baked sediment contact
LOWER CONTACT: not recovered
ALTERATION: slight to moderate
VEINS: none
STRUCTURE: no dynamic structure

349-U1433B-66R-1A, 7 - 149 cm

UNIT: 8
REPRESENTATIVE PIECE: 8b
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: massive flow
TEXTURE: sparsely phyric, vesicular
COLOR: dark gray
PHENOCRYSTS: 0.5-1% olivine and 2% plagioclase
GROUNDMASS: holocrystalline phaneritic
VESICLES: sparsely (0.1-0.5%) vesicular, rounded and filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: absent to moderately altered in the top (38-66 cm)
VEINS: minor number of thin (<0.3 mm) carbonate (3x), celadonite (1x) and saponite (1x) veins
STRUCTURE: three fractures without obvious offset or thickness, break along existed veins

Continued in Section 66R-2A

Hole 349-U1433B-66R Section 2, Top of Section: 806.69 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
Direction
Dip (°)
Angle
Vesicularity (%)
Phenocrysts PLAG, OL, CPX abundance (%)
Groundmass grain size (mm)
Alteration intensity
Magnetic susceptibility (x10^{-5} SI) MS Point MS WR
Reflectance L* a* b*
Description

806.7 0
806.8 10
806.9 20
807.0 30
807.1 40
807.2 50
807.3 60
807.4 70
807.5 80
807.6 90
807.7 100
807.8 110
807.9 120
808.0 130

306 25

PP

1

8

170 67

TS77 ICP

PP

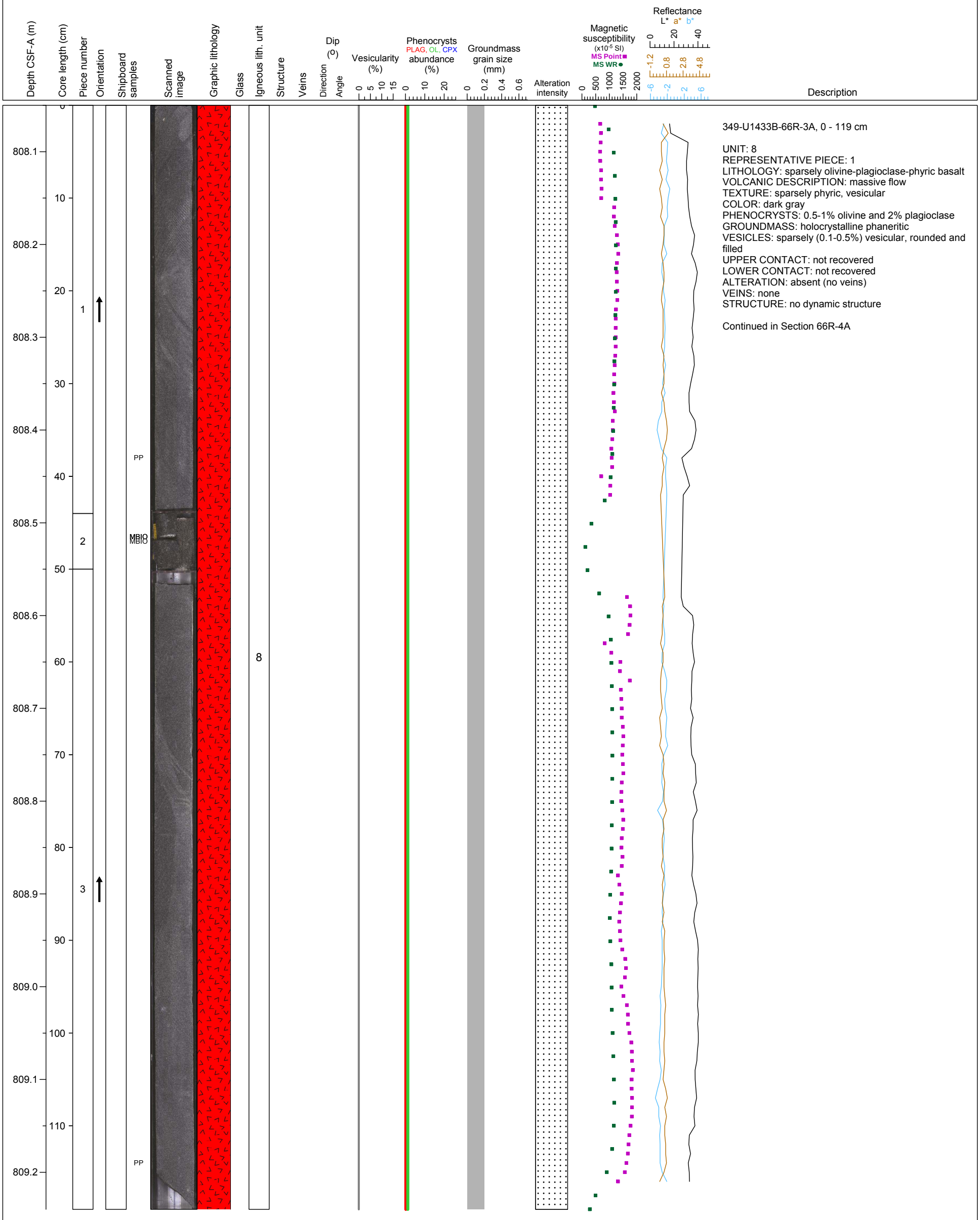
55 79

349-U1433B-66R-2A, 0 - 136 cm

UNIT: 8
REPRESENTATIVE PIECE: 1a
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: massive flow
TEXTURE: sparsely phyric, vesicular
COLOR: dark gray
PHENOCRYSTS: 0.5-1% olivine and 2% plagioclase
GROUNDMASS: holocrystalline phaneritic
VESICLES: sparsely (0.1-0.5%) vesicular, rounded and filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: absent (except in minor veins)
VEINS: minor number of hairline carbonate veins (3x)
STRUCTURE: one fracture without obvious offset, with thickness of 0.2 cm, break along existed vein

Continued in Section 66R-3A

Hole 349-U1433B-66R Section 3, Top of Section: 808.05 m (CSF-A)

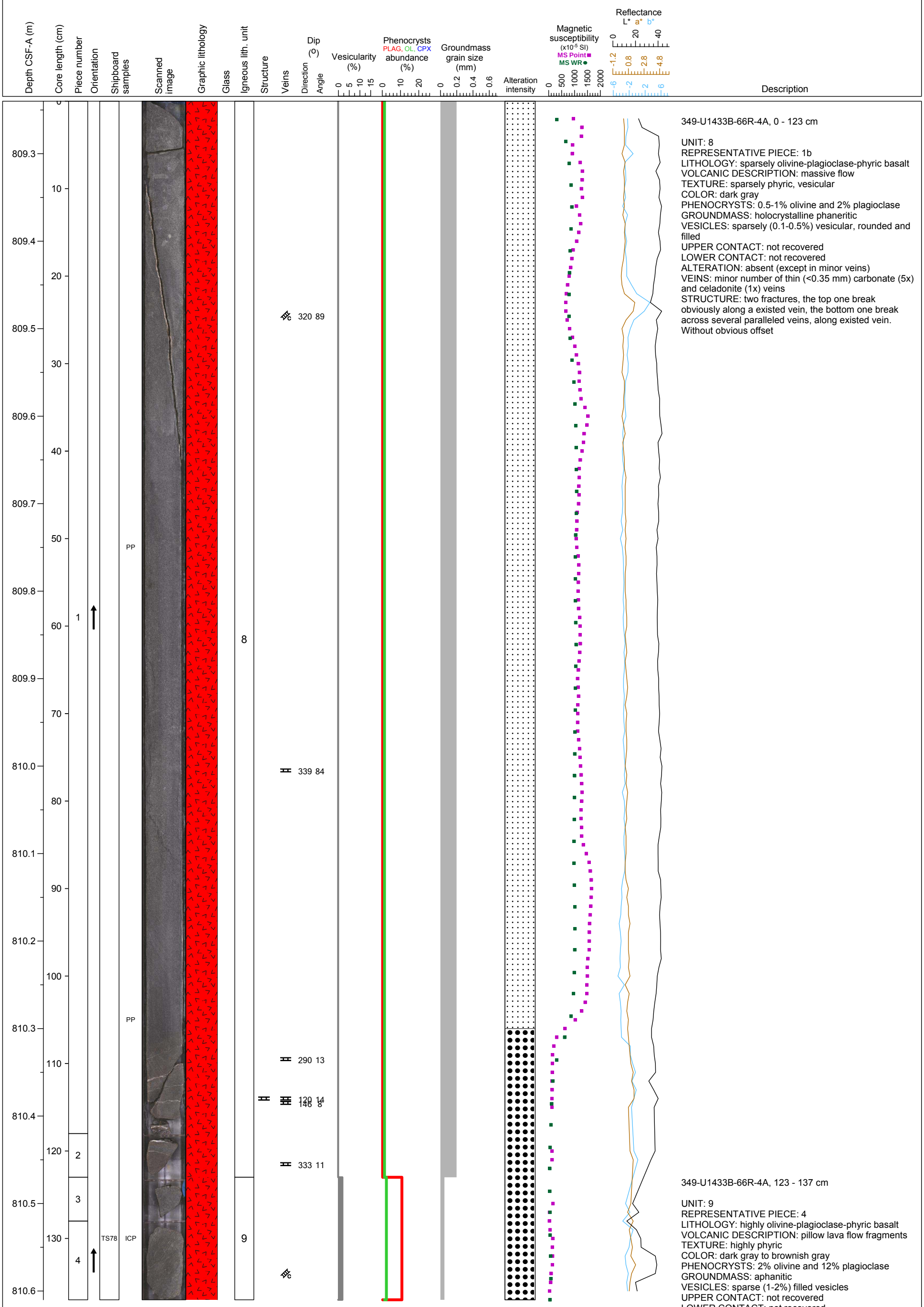


349-U1433B-66R-3A, 0 - 119 cm

UNIT: 8
REPRESENTATIVE PIECE: 1
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: massive flow
TEXTURE: sparsely phyric, vesicular
COLOR: dark gray
PHENOCRYSTS: 0.5-1% olivine and 2% plagioclase
GROUNDMASS: holocrystalline phaneritic
VESICLES: sparsely (0.1-0.5%) vesicular, rounded and filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: absent (no veins)
VEINS: none
STRUCTURE: no dynamic structure

Continued in Section 66R-4A

Hole 349-U1433B-66R Section 4, Top of Section: 809.24 m (CSF-A)



349-U1433B-66R-4A, 0 - 123 cm

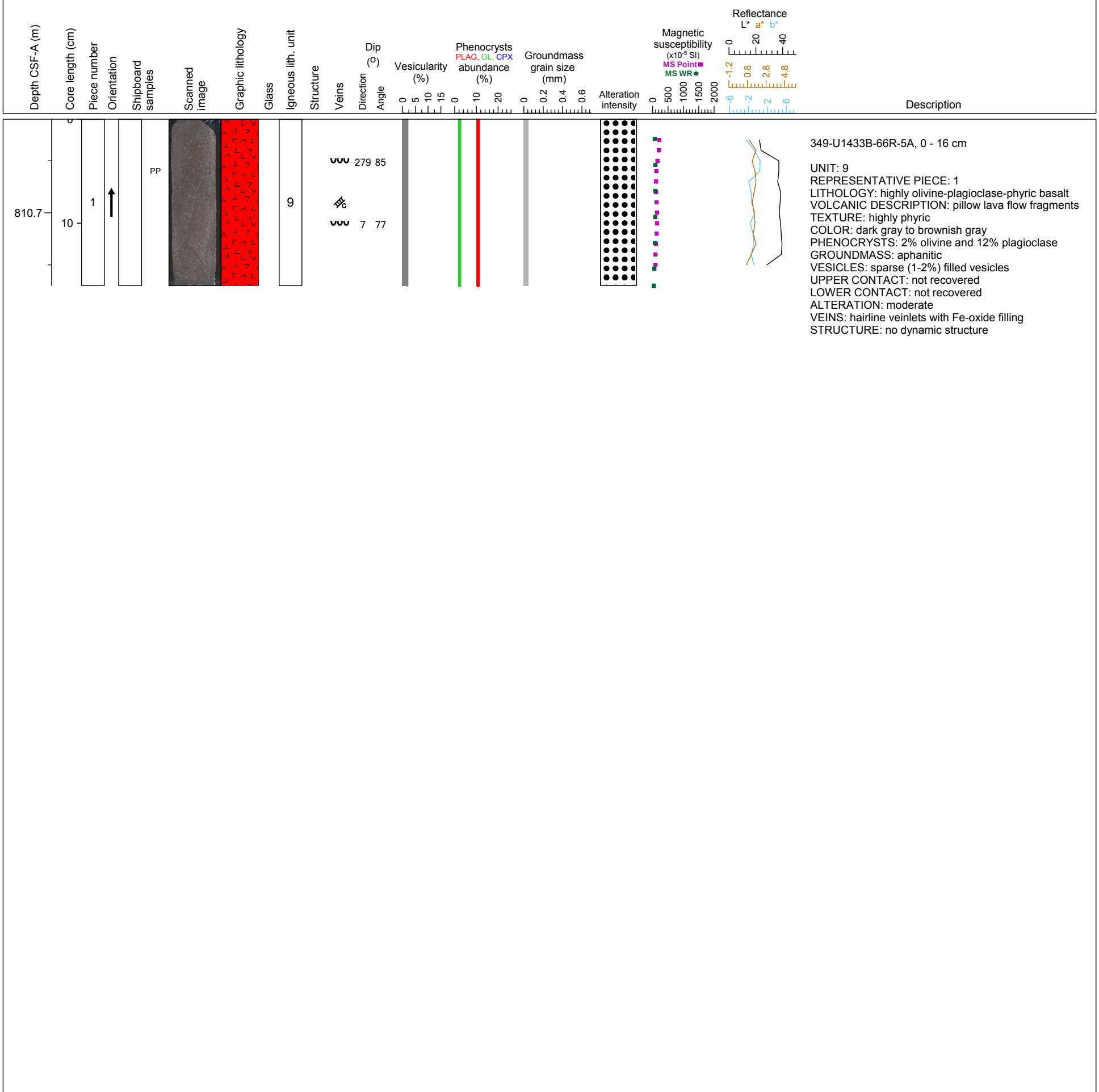
UNIT: 8
REPRESENTATIVE PIECE: 1b
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: massive flow
TEXTURE: sparsely phyric, vesicular
COLOR: dark gray
PHENOCRYSTS: 0.5-1% olivine and 2% plagioclase
GROUNDMASS: holocrystalline phaneritic
VESICLES: sparsely (0.1-0.5%) vesicular, rounded and filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: absent (except in minor veins)
VEINS: minor number of thin (<0.35 mm) carbonate (5x) and celadonite (1x) veins
STRUCTURE: two fractures, the top one break obviously along a existed vein, the bottom one break across several paralleled veins, along existed vein. Without obvious offset

349-U1433B-66R-4A, 123 - 137 cm

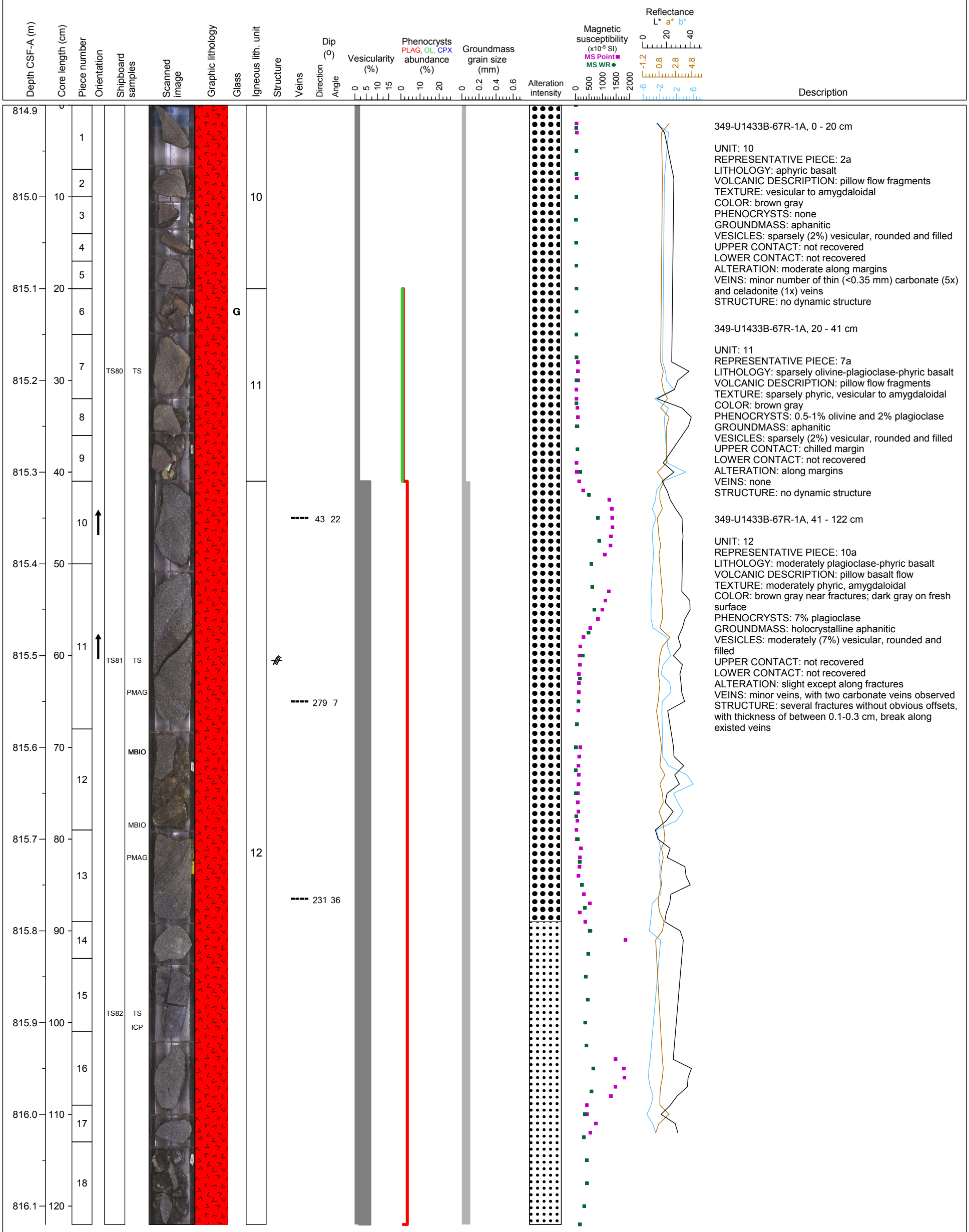
UNIT: 9
REPRESENTATIVE PIECE: 4
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow fragments
TEXTURE: highly phyric
COLOR: dark gray to brownish gray
PHENOCRYSTS: 2% olivine and 12% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparse (1-2%) filled vesicles
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate
VEINS: hairline veinlets with Fe-oxide filling
STRUCTURE: no dynamic structure

Continued in Section 66R-5A

Hole 349-U1433B-66R Section 5, Top of Section: 810.61 m (CSF-A)



Hole 349-U1433B-67R Section 1, Top of Section: 814.9 m (CSF-A)



Description

349-U1433B-67R-1A, 0 - 20 cm

UNIT: 10
REPRESENTATIVE PIECE: 2a
LITHOLOGY: aphyric basalt
VOLCANIC DESCRIPTION: pillow flow fragments
TEXTURE: vesicular to amygdaloidal
COLOR: brown gray
PHENOCRYSTS: none
GROUNDMASS: aphanitic
VESICLES: sparsely (2%) vesicular, rounded and filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate along margins
VEINS: minor number of thin (<0.35 mm) carbonate (5x) and celadonite (1x) veins
STRUCTURE: no dynamic structure

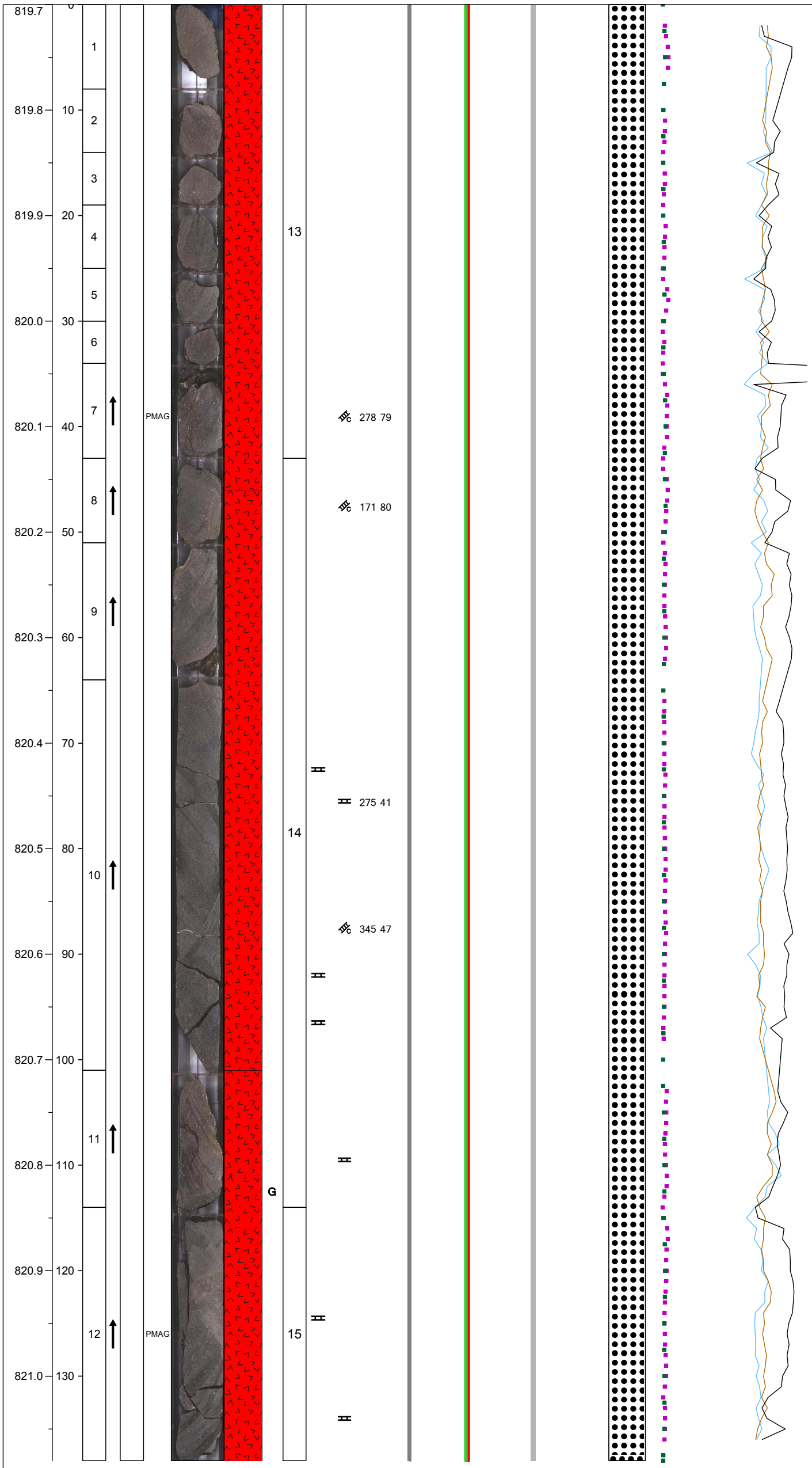
349-U1433B-67R-1A, 20 - 41 cm

UNIT: 11
REPRESENTATIVE PIECE: 7a
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow flow fragments
TEXTURE: sparsely phyric, vesicular to amygdaloidal
COLOR: brown gray
PHENOCRYSTS: 0.5-1% olivine and 2% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (2%) vesicular, rounded and filled
UPPER CONTACT: chilled margin
LOWER CONTACT: not recovered
ALTERATION: along margins
VEINS: none
STRUCTURE: no dynamic structure

349-U1433B-67R-1A, 41 - 122 cm

UNIT: 12
REPRESENTATIVE PIECE: 10a
LITHOLOGY: moderately plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow basalt flow
TEXTURE: moderately phyric, amygdaloidal
COLOR: brown gray near fractures; dark gray on fresh surface
PHENOCRYSTS: 7% plagioclase
GROUNDMASS: holocrystalline aphanitic
VESICLES: moderately (7%) vesicular, rounded and filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight except along fractures
VEINS: minor veins, with two carbonate veins observed
STRUCTURE: several fractures without obvious offsets, with thickness of between 0.1-0.3 cm, break along existed veins

Hole 349-U1433B-68R Section 1, Top of Section: 819.7 m (CSF-A)



349-U1433B-68R-1A, 0 - 43 cm

UNIT: 13
REPRESENTATIVE PIECE: 7a
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow flow fragments
TEXTURE: moderately phyric, vesicular to amygdaloidal
COLOR: brown gray
PHENOCRYSTS: 2% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (1%) vesicular, rounded and filled
UPPER CONTACT: chilled margin
LOWER CONTACT: not recovered
ALTERATION: moderate, along margins
VEINS: minor veins, with one celadonite-carbonate vein observed that has no alteration halo
STRUCTURE: 2 fractures break along existed veins, no obvious offset or thickness

349-U1433B-68R-1A, 43 - 114 cm

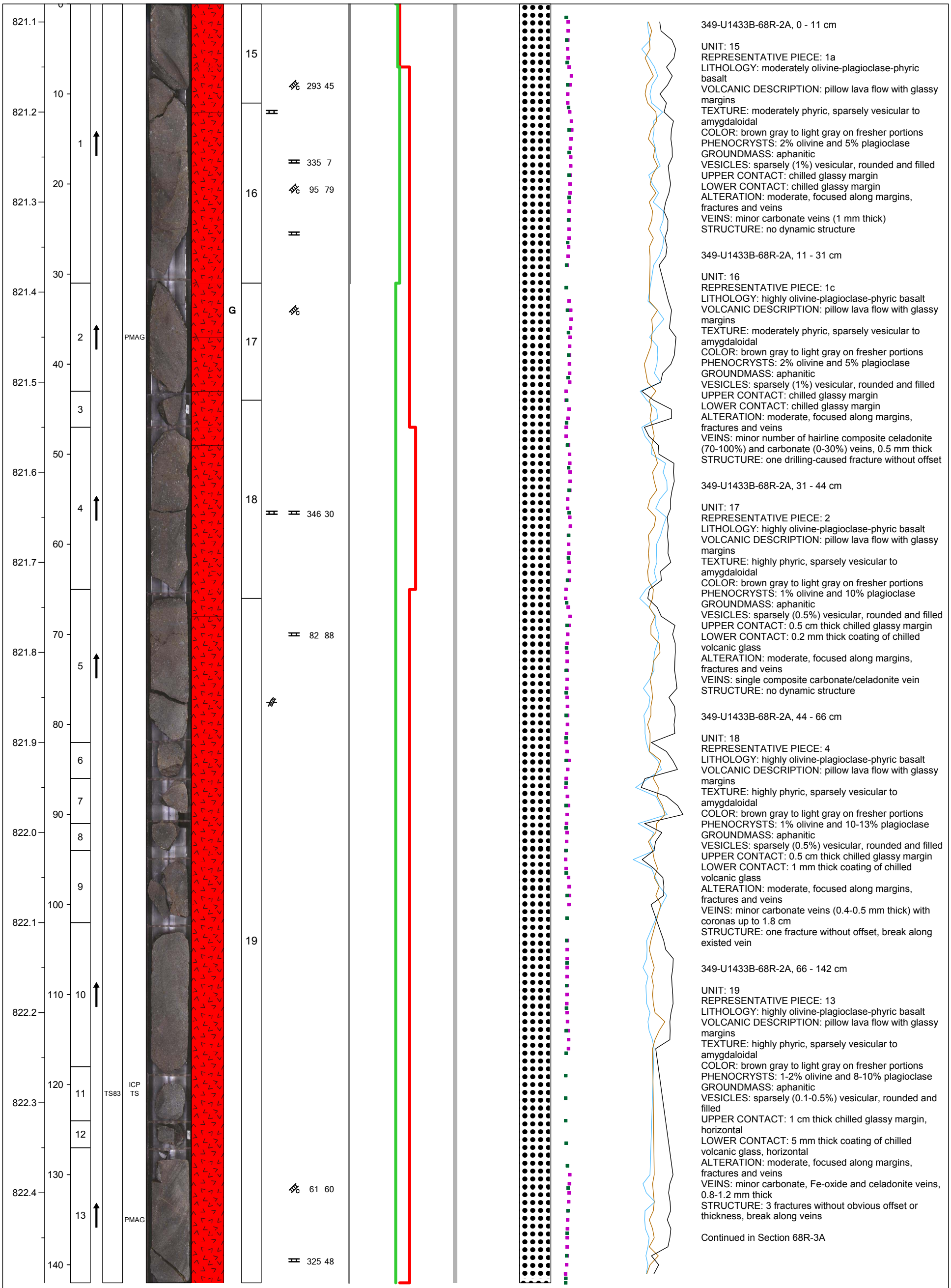
UNIT: 14
REPRESENTATIVE PIECE: 10a
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 2% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (1%) vesicular, rounded and filled
UPPER CONTACT: chilled glassy margin
LOWER CONTACT: chilled glassy margin
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: three carbonate veins with up to 3 cm alteration haloes and one saponite vein without a halo
STRUCTURE: 5 fractures break along existed veins, without obvious offset, with thickness of 0.1-0.4 cm, mostly drilling-caused

349-U1433B-68R-1A, 114 - 138 cm

UNIT: 15
REPRESENTATIVE PIECE: 12a
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 2% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (1%) vesicular, rounded and filled
UPPER CONTACT: chilled glassy margin
LOWER CONTACT: chilled glassy margin
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: minor carbonate veins (2 mm thick)
STRUCTURE: 4 fractures break along existed veins, without obvious offset, with thickness of 0.1-0.2 cm

Continued in Section 68R-2A

Hole 349-U1433B-68R Section 2, Top of Section: 821.08 m (CSF-A)



349-U1433B-68R-2A, 0 - 11 cm

UNIT: 15
REPRESENTATIVE PIECE: 1a
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 2% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (1%) vesicular, rounded and filled
UPPER CONTACT: chilled glassy margin
LOWER CONTACT: chilled glassy margin
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: minor carbonate veins (1 mm thick)
STRUCTURE: no dynamic structure

349-U1433B-68R-2A, 11 - 31 cm

UNIT: 16
REPRESENTATIVE PIECE: 1c
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 2% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (1%) vesicular, rounded and filled
UPPER CONTACT: chilled glassy margin
LOWER CONTACT: chilled glassy margin
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: minor number of hairline composite celadonite (70-100%) and carbonate (0-30%) veins, 0.5 mm thick
STRUCTURE: one drilling-caused fracture without offset

349-U1433B-68R-2A, 31 - 44 cm

UNIT: 17
REPRESENTATIVE PIECE: 2
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: highly phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 10% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (0.5%) vesicular, rounded and filled
UPPER CONTACT: 0.5 cm thick chilled glassy margin
LOWER CONTACT: 0.2 mm thick coating of chilled volcanic glass
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: single composite carbonate/celadonite vein
STRUCTURE: no dynamic structure

349-U1433B-68R-2A, 44 - 66 cm

UNIT: 18
REPRESENTATIVE PIECE: 4
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: highly phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 10-13% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (0.5%) vesicular, rounded and filled
UPPER CONTACT: 0.5 cm thick chilled glassy margin
LOWER CONTACT: 1 mm thick coating of chilled volcanic glass
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: minor carbonate veins (0.4-0.5 mm thick) with coronas up to 1.8 cm
STRUCTURE: one fracture without offset, break along existed vein

349-U1433B-68R-2A, 66 - 142 cm

UNIT: 19
REPRESENTATIVE PIECE: 13
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: highly phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1-2% olivine and 8-10% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (0.1-0.5%) vesicular, rounded and filled
UPPER CONTACT: 1 cm thick chilled glassy margin, horizontal
LOWER CONTACT: 5 mm thick coating of chilled volcanic glass, horizontal
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: minor carbonate, Fe-oxide and celadonite veins, 0.8-1.2 mm thick
STRUCTURE: 3 fractures without obvious offset or thickness, break along veins

Continued in Section 68R-3A

Hole 349-U1433B-68R Section 3, Top of Section: 822.5 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 (°) Direction Angle | Vesicularity (%) | Phenocrysts PLAG, OL, CPX abundance (%) | Groundmass grain size (mm) | Alteration intensity | Magnetic susceptibility (x10^{-5} SI) MS Point ■ MS WR ● | Reflectance L* a* b* | Description

822.5 | 0
822.6 | 10 | 1 | 19 | H | 61 60
822.7 | 20 | H
822.8 | 30 | PMAG | G G
822.9 | 40 | 2 | H | 241 66
823.0 | 50
823.1 | 60 | 3
823.2 | 70 | TS84 ICP TSB | 20 | H | 280 31
823.3 | 80 | H | 129 27
823.4 | 90 | 4
823.5 | 100
823.6 | 110 | 5 | H | 41 80
823.7 | 120 | 6 | MBIO | 21
823.8 | 130 | H | 286 69 | H | 181 10 | H | 181 10
823.9 | 140 | 7 | PMAG | H | 351 73

349-U1433B-68R-3A, 0 - 28 cm

UNIT: 19
REPRESENTATIVE PIECE: 1
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: highly phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1-2% olivine and 8-10% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (0.1-0.5%) vesicular, rounded and filled
UPPER CONTACT: 1 cm thick chilled glassy margin, horizontal
LOWER CONTACT: 5 mm thick coating of chilled volcanic glass, horizontal
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: minor carbonate, Fe-oxide and celadonite veins, 0.8-1.2 mm thick
STRUCTURE: branched fractures break along existed veins, without obvious offsets, with thickness between 0.1-0.2 cm, mostly are drilling-caused

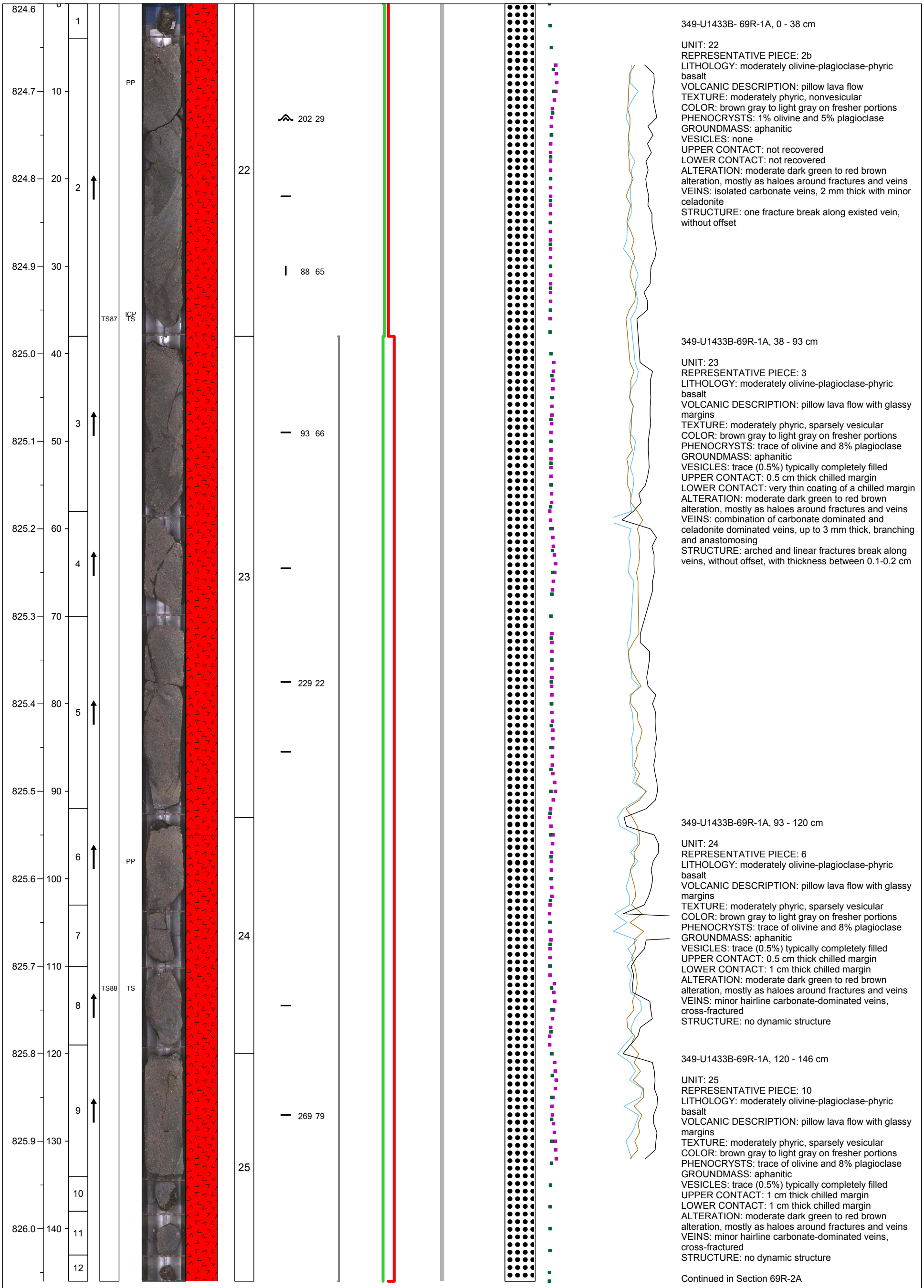
349-U1433B-68R-3A, 28 - 107 cm

UNIT: 20
REPRESENTATIVE PIECE: 2
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular to amygdaloidal
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: sparsely (1%) vesicular, rounded and filled
UPPER CONTACT: 1 cm thick chilled glassy margin, horizontal
LOWER CONTACT: 1 cm thick chilled glassy margin, sub-horizontal
ALTERATION: moderate, focused along margins, fractures and veins
VEINS: minor 0.3-0.6 mm thick carbonate and Fe-oxide veins
STRUCTURE: branched fractures break along existed veins, without obvious offsets, with thickness between 0.1-0.2 cm, mostly are drilling-caused

349-U1433B-68R-3A, 107 - 144 cm

UNIT: 21
REPRESENTATIVE PIECE: 7b
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, nonvesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: isolated carbonate veins, 2 mm thick with minor celadonite
STRUCTURE: no dynamic structure

Hole 349-U1433B-69R Section 1, Top of Section: 824.6 m (CSF-A)



349-U1433B- 69R-1A, 0 - 38 cm

UNIT: 22
REPRESENTATIVE PIECE: 2b
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, nonvesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: none
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: isolated carbonate veins, 2 mm thick with minor celadonite
STRUCTURE: one fracture break along existed vein, without offset

349-U1433B-69R-1A, 38 - 93 cm

UNIT: 23
REPRESENTATIVE PIECE: 3
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 0.5 cm thick chilled margin
LOWER CONTACT: very thin coating of a chilled margin
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: combination of carbonate dominated and celadonite dominated veins, up to 3 mm thick, branching and anastomosing
STRUCTURE: arched and linear fractures break along veins, without offset, with thickness between 0.1-0.2 cm

349-U1433B-69R-1A, 93 - 120 cm

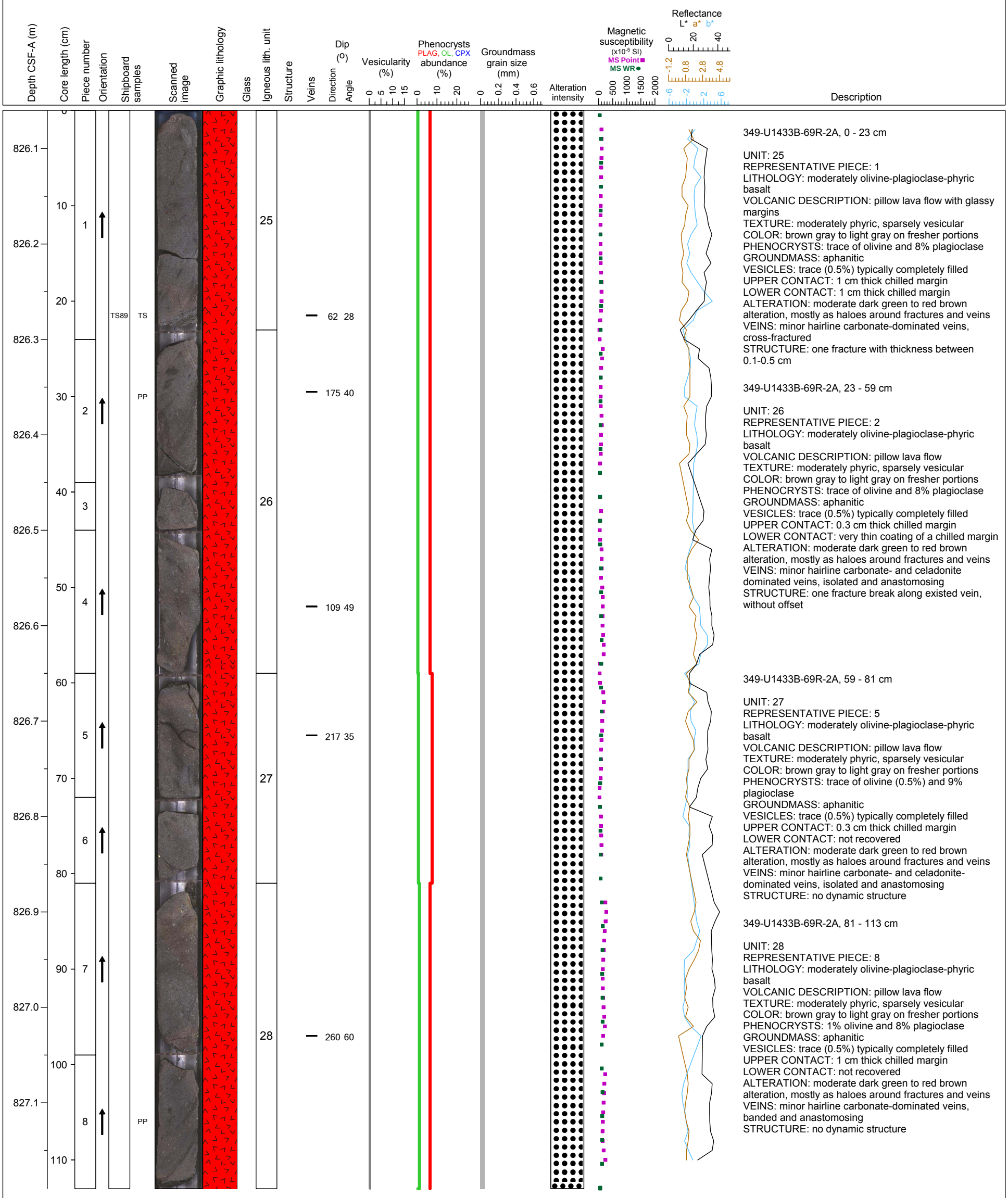
UNIT: 24
REPRESENTATIVE PIECE: 6
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 0.5 cm thick chilled margin
LOWER CONTACT: 1 cm thick chilled margin
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, cross-fractured
STRUCTURE: no dynamic structure

349-U1433B-69R-1A, 120 - 146 cm

UNIT: 25
REPRESENTATIVE PIECE: 10
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 1 cm thick chilled margin
LOWER CONTACT: 1 cm thick chilled margin
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, cross-fractured
STRUCTURE: no dynamic structure

Continued in Section 69R-2A

Hole 349-U1433B-69R Section 2, Top of Section: 826.06 m (CSF-A)



Description

349-U1433B-69R-2A, 0 - 23 cm

UNIT: 25
REPRESENTATIVE PIECE: 1
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow with glassy margins
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 1 cm thick chilled margin
LOWER CONTACT: 1 cm thick chilled margin
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, cross-fractured
STRUCTURE: one fracture with thickness between 0.1-0.5 cm

349-U1433B-69R-2A, 23 - 59 cm

UNIT: 26
REPRESENTATIVE PIECE: 2
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 0.3 cm thick chilled margin
LOWER CONTACT: very thin coating of a chilled margin
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate- and celadonite dominated veins, isolated and anastomosing
STRUCTURE: one fracture break along existed vein, without offset

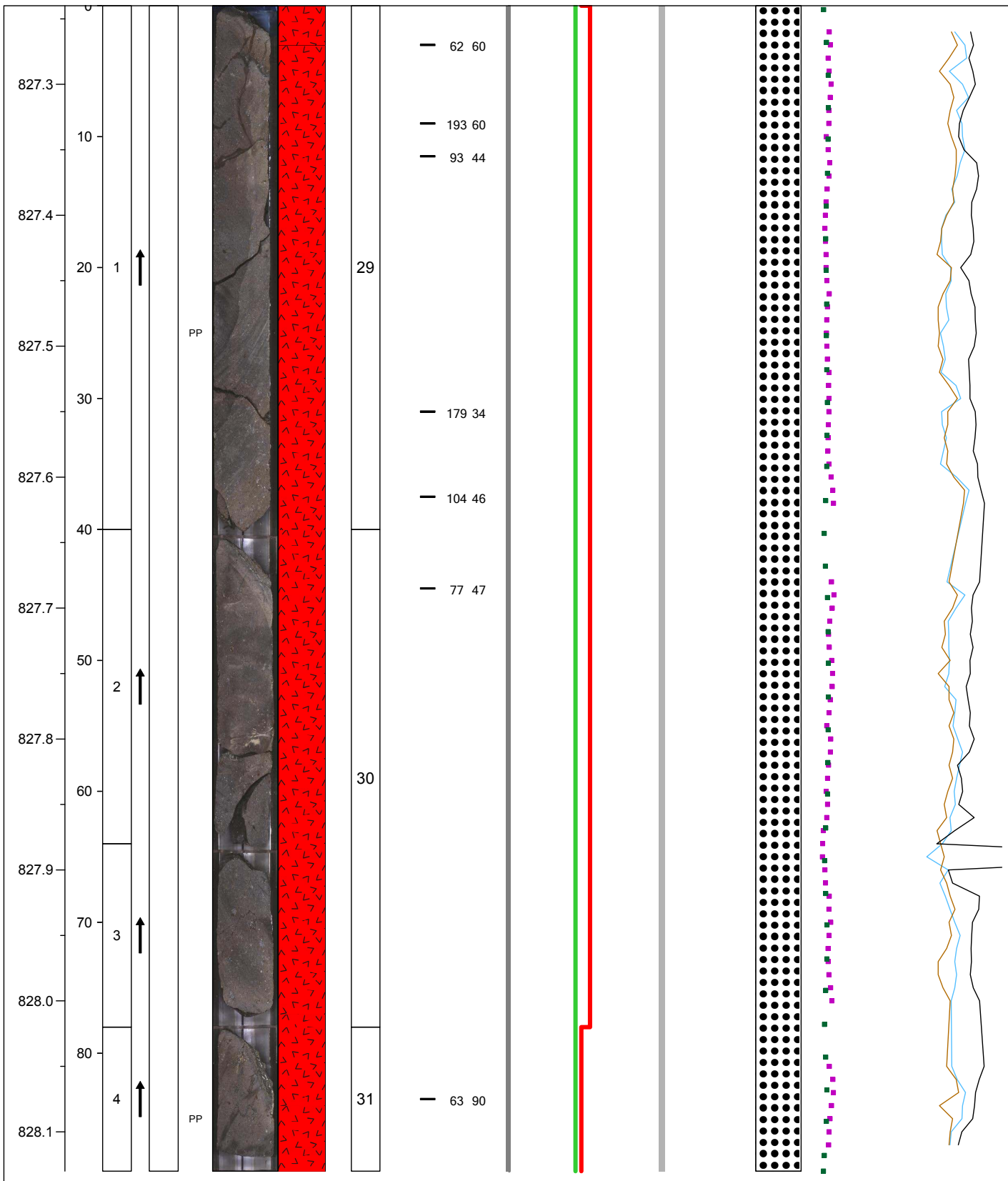
349-U1433B-69R-2A, 59 - 81 cm

UNIT: 27
REPRESENTATIVE PIECE: 5
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine (0.5%) and 9% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 0.3 cm thick chilled margin
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate- and celadonite-dominated veins, isolated and anastomosing
STRUCTURE: no dynamic structure

349-U1433B-69R-2A, 81 - 113 cm

UNIT: 28
REPRESENTATIVE PIECE: 8
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 1 cm thick chilled margin
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: no dynamic structure

Hole 349-U1433B-69R Section 3, Top of Section: 827.19 m (CSF-A)



349-U1433B-69R-3A, 0 - 40 cm

UNIT: 29
REPRESENTATIVE PIECE: 1
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (1%) typically completely filled
UPPER CONTACT: 0.5 cm thick chilled margin
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: 2 fractures break along existed vein, without obvious offset

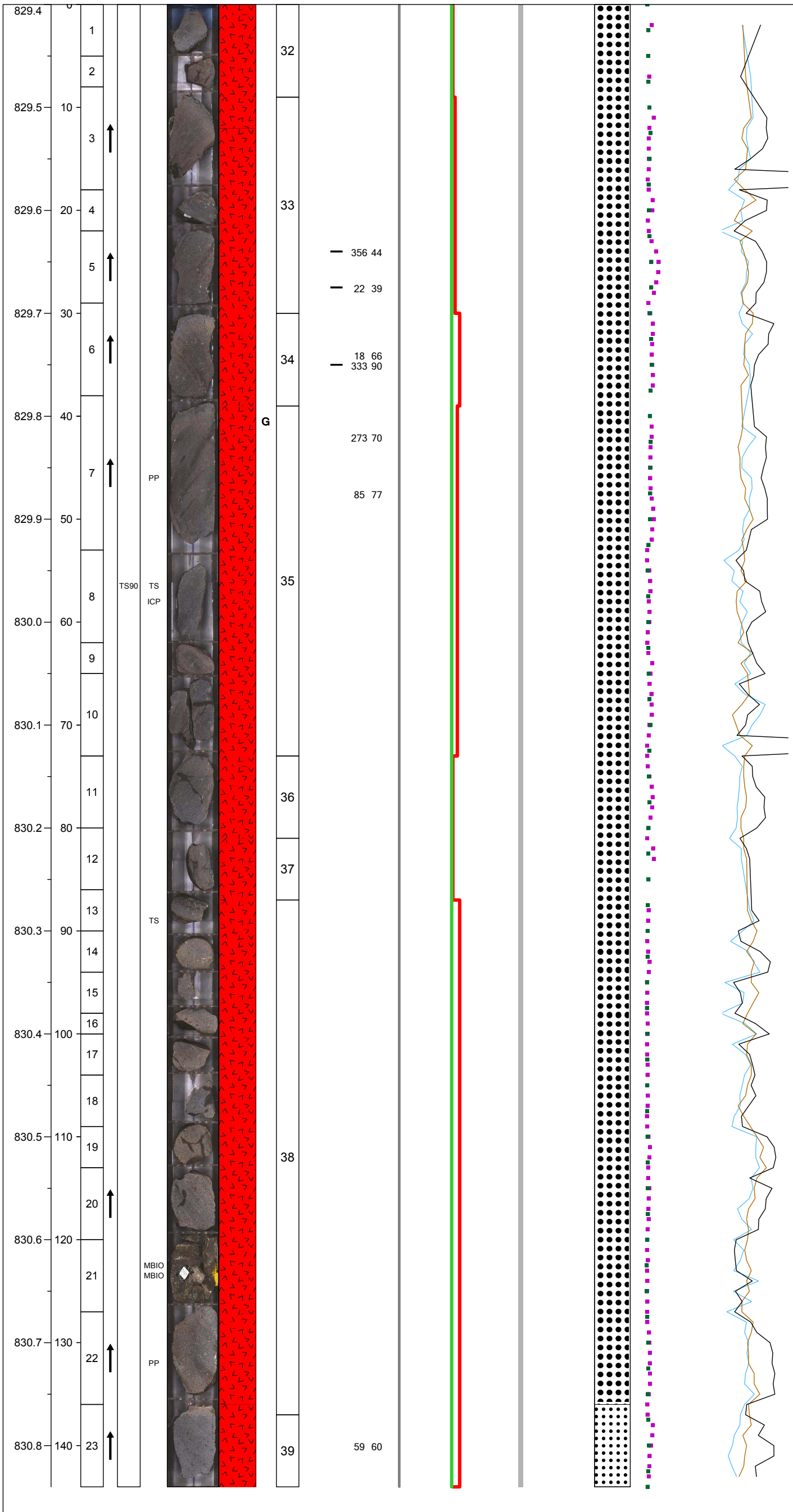
349-U1433B-69R-3A, 40 - 78 cm

UNIT: 30
REPRESENTATIVE PIECE: 2
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (1%) typically completely filled
UPPER CONTACT: 0.8 cm thick chilled margin
LOWER CONTACT: very thin coating of a chilled margin
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: 2 fractures with thickness between 0.2-0.6 cm

349-U1433B-69R-3A, 78 - 89 cm

UNIT: 31
REPRESENTATIVE PIECE: 4
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: 1% olivine and 5% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (1%) typically completely filled
UPPER CONTACT: 1.5 cm thick chilled margin
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: no dynamic structure

Hole 349-U1433B-70R Section 1, Top of Section: 829.4 m (CSF-A)



349-U1433B-70R-1A, 0 - 9 cm

UNIT: 32
REPRESENTATIVE PIECE: 1
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: sparsely phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 3% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 0.3 cm thick chilled margin
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: none
STRUCTURE: no dynamic structure

349-U1433B-70R-1A, 9 - 30 cm

UNIT: 33
REPRESENTATIVE PIECE: 3
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: sparsely phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 4% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 0.3 cm thick chilled margin
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: none
STRUCTURE: no dynamic structure

349-U1433B-70R-1A, 33 - 39 cm

UNIT: 34
REPRESENTATIVE PIECE: 6
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 6% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: no dynamic structure

349-U1433B-70R-1A, 39 - 73 cm

UNIT: 35
REPRESENTATIVE PIECE: 8
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 4% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 0.5 cm thick chilled margin
LOWER CONTACT: very thin coating of a chilled margin
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: one fracture break along existed vein, without obvious offset, with thickness between 0.2-0.4 cm

349-U1433B-70R-1A, 73 - 81 cm

UNIT: 36
REPRESENTATIVE PIECE: 11
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: sparsely phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 3% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: no dynamic structure

349-U1433B-70R-1A, 81 - 87 cm

UNIT: 37
REPRESENTATIVE PIECE: 12
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: sparsely phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 3% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 0.2 cm thick chilled glassy margin
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: none
STRUCTURE: no dynamic structure

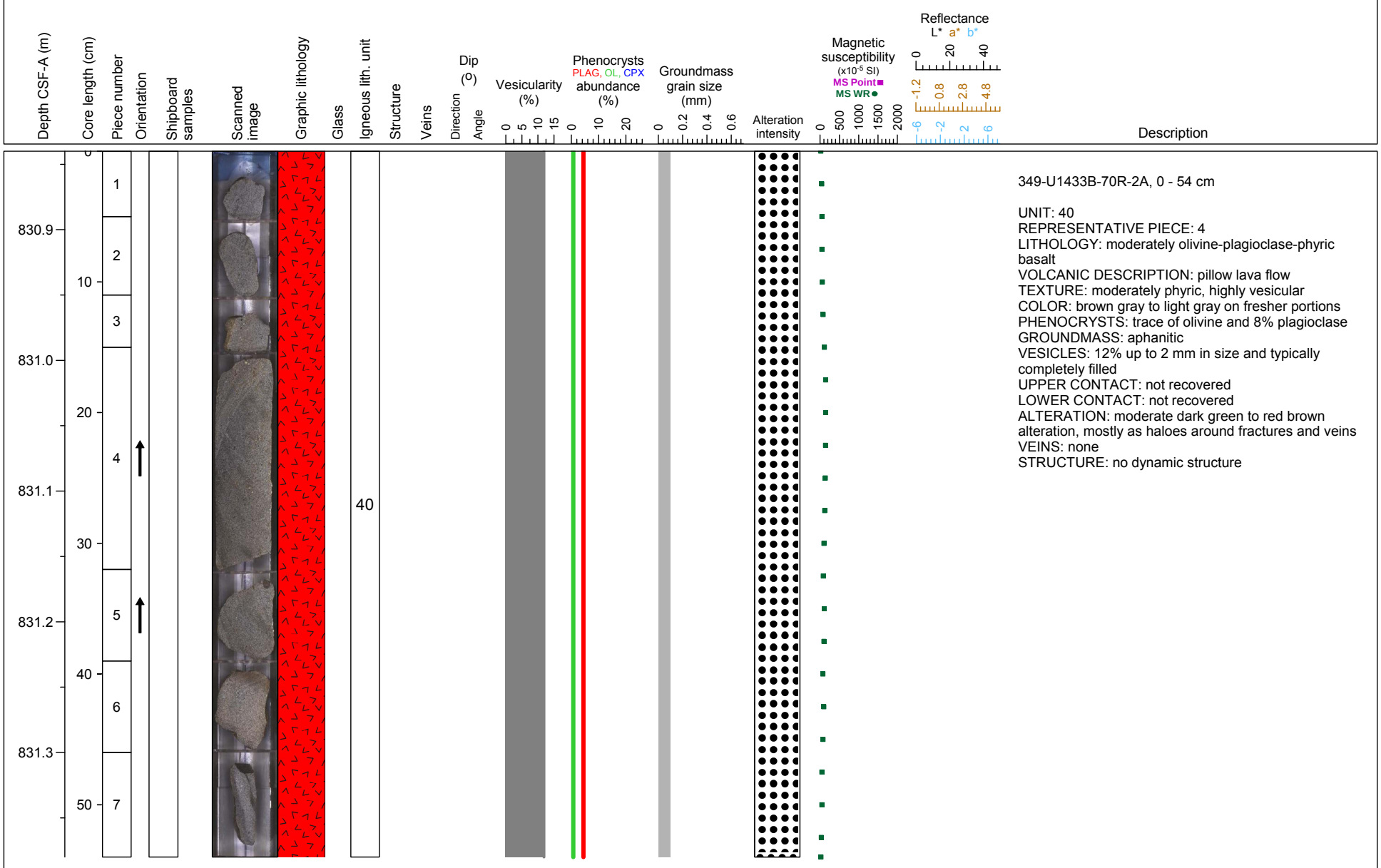
349-U1433B-70R-1A, 87 - 137 cm

UNIT: 38
REPRESENTATIVE PIECE: 22
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 6% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: 1.5 cm thick chilled glassy margin
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: no dynamic structure

349-U1433B-70R-1A, 137 - 144 cm

UNIT: 39
REPRESENTATIVE PIECE: 23
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, sparsely vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 6% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline carbonate-dominated veins, banded and anastomosing
STRUCTURE: no dynamic structure

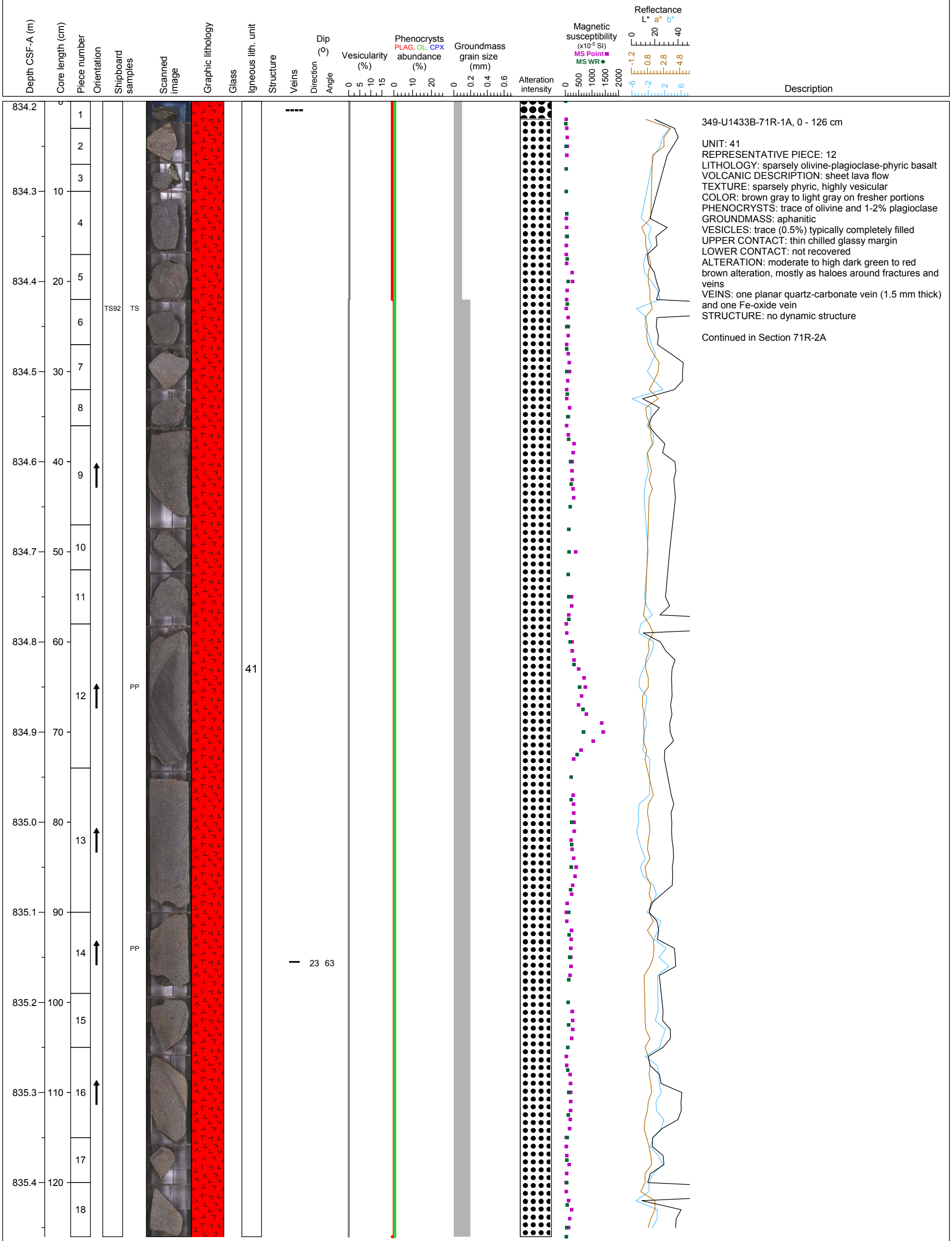
Hole 349-U1433B-70R Section 2, Top of Section: 830.84 m (CSF-A)



349-U1433B-70R-2A, 0 - 54 cm

UNIT: 40
REPRESENTATIVE PIECE: 4
LITHOLOGY: moderately olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: pillow lava flow
TEXTURE: moderately phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 8% plagioclase
GROUNDMASS: aphanitic
VESICLES: 12% up to 2 mm in size and typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: none
STRUCTURE: no dynamic structure

Hole 349-U1433B-71R Section 1, Top of Section: 834.2 m (CSF-A)

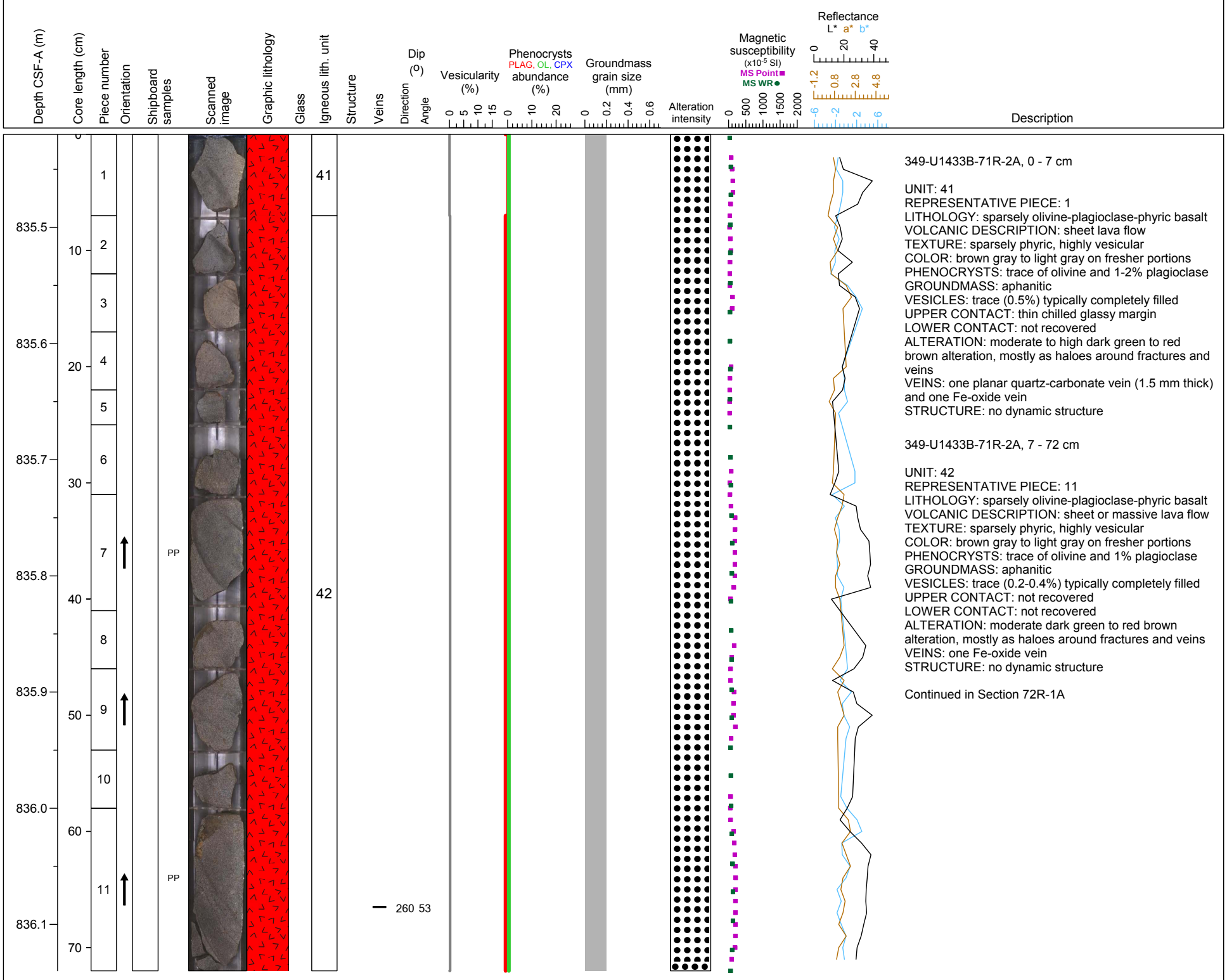


349-U1433B-71R-1A, 0 - 126 cm

UNIT: 41
REPRESENTATIVE PIECE: 12
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 1-2% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: thin chilled glassy margin
LOWER CONTACT: not recovered
ALTERATION: moderate to high dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: one planar quartz-carbonate vein (1.5 mm thick) and one Fe-oxide vein
STRUCTURE: no dynamic structure

Continued in Section 71R-2A

Hole 349-U1433B-71R Section 2, Top of Section: 835.46 m (CSF-A)



349-U1433B-71R-2A, 0 - 7 cm

UNIT: 41
REPRESENTATIVE PIECE: 1
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 1-2% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: thin chilled glassy margin
LOWER CONTACT: not recovered
ALTERATION: moderate to high dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: one planar quartz-carbonate vein (1.5 mm thick) and one Fe-oxide vein
STRUCTURE: no dynamic structure

349-U1433B-71R-2A, 7 - 72 cm

UNIT: 42
REPRESENTATIVE PIECE: 11
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 1% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2-0.4%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: one Fe-oxide vein
STRUCTURE: no dynamic structure

Continued in Section 72R-1A

Hole 349-U1433B-72R Section 1, Top of Section: 839.1 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 (°) Direction Angle | Vesicularity (%) | Phenocrysts PLAG, OL, CPX abundance (%) | Groundmass grain size (mm) | Alteration intensity | Magnetic susceptibility (x10^{-5} SI) MS Point ■ MS WR ● | Reflectance L* a* b* | Description

839.1 | 0 | 1 | 2 | 10 | 839.2 | 3 | 20 | 839.3 | 4 | 5 | 30 | 839.4 | 6 | 7 | 40 | 839.5 | 8 | 50 | 839.6 | 9 | 60 | 839.7 | 10 | 70 | 839.8 | 11 | 80 | 839.9 | 12 | 90 | 840.0 | 100 | 840.1 | 13 | 110 | 840.2 | 120 | 840.3 | 14

MBIO
MBIO

PP

TS93

TS
ICP

PP

42

H 26 63

H 119 31

43

H 105 28

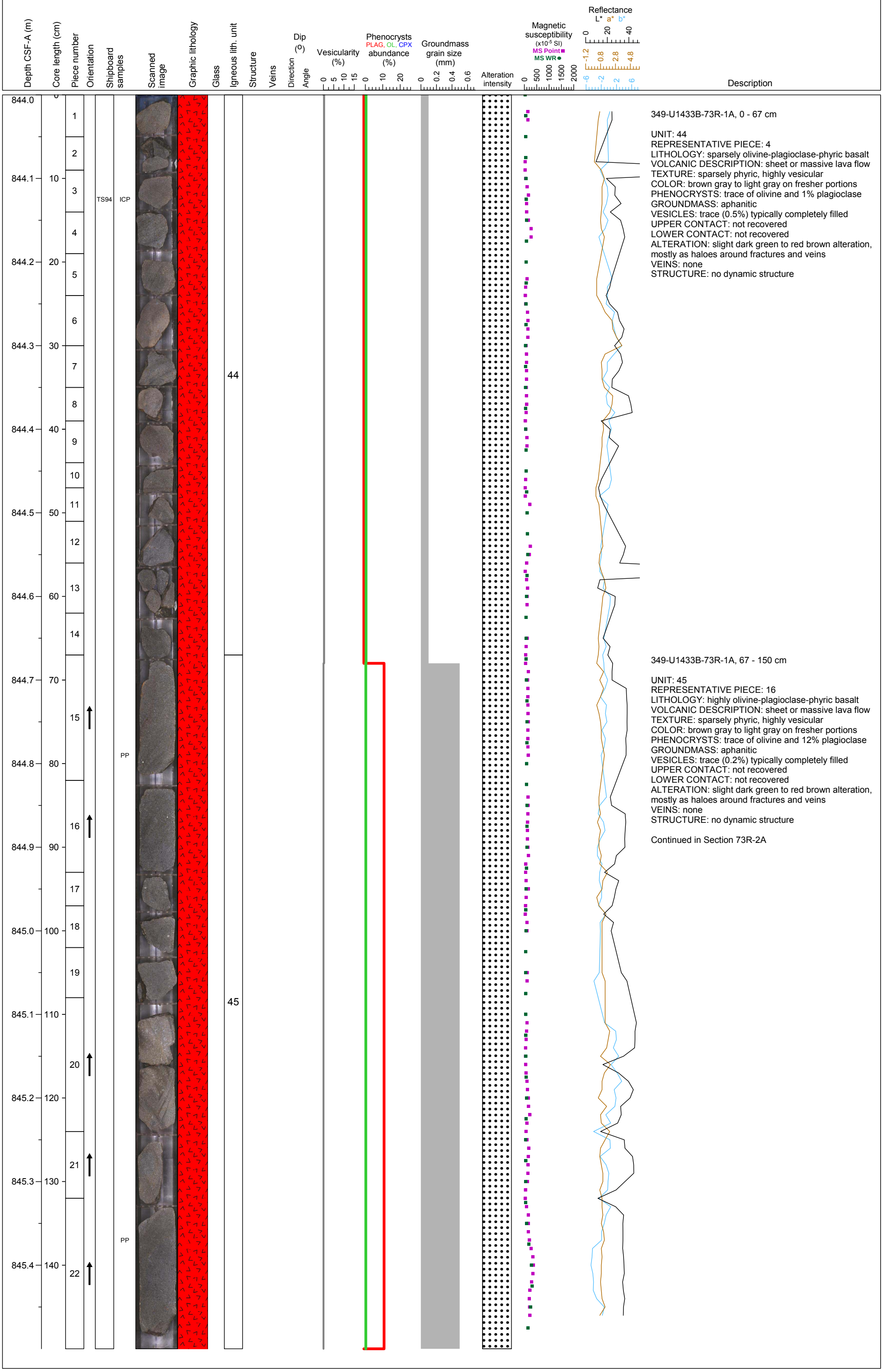
349-U1433B-72R-1A, 0 - 74 cm

UNIT: 42
REPRESENTATIVE PIECE: 2
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 1% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2-0.4%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: one hairline celadonite vein
STRUCTURE: one vertical arched fracture, with thickness between 0.1-0.4 cm, break along existed vein, no obvious offset

349-U1433B-72R-1A, 74 - 128 cm

UNIT: 43
REPRESENTATIVE PIECE: 13
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 12% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: none
STRUCTURE: one vertical arched fracture, with thickness between 0.1-0.4 cm, breaks along existing vein, no obvious offset

Hole 349-U1433B-73R Section 1, Top of Section: 844.0 m (CSF-A)



349-U1433B-73R-1A, 0 - 67 cm

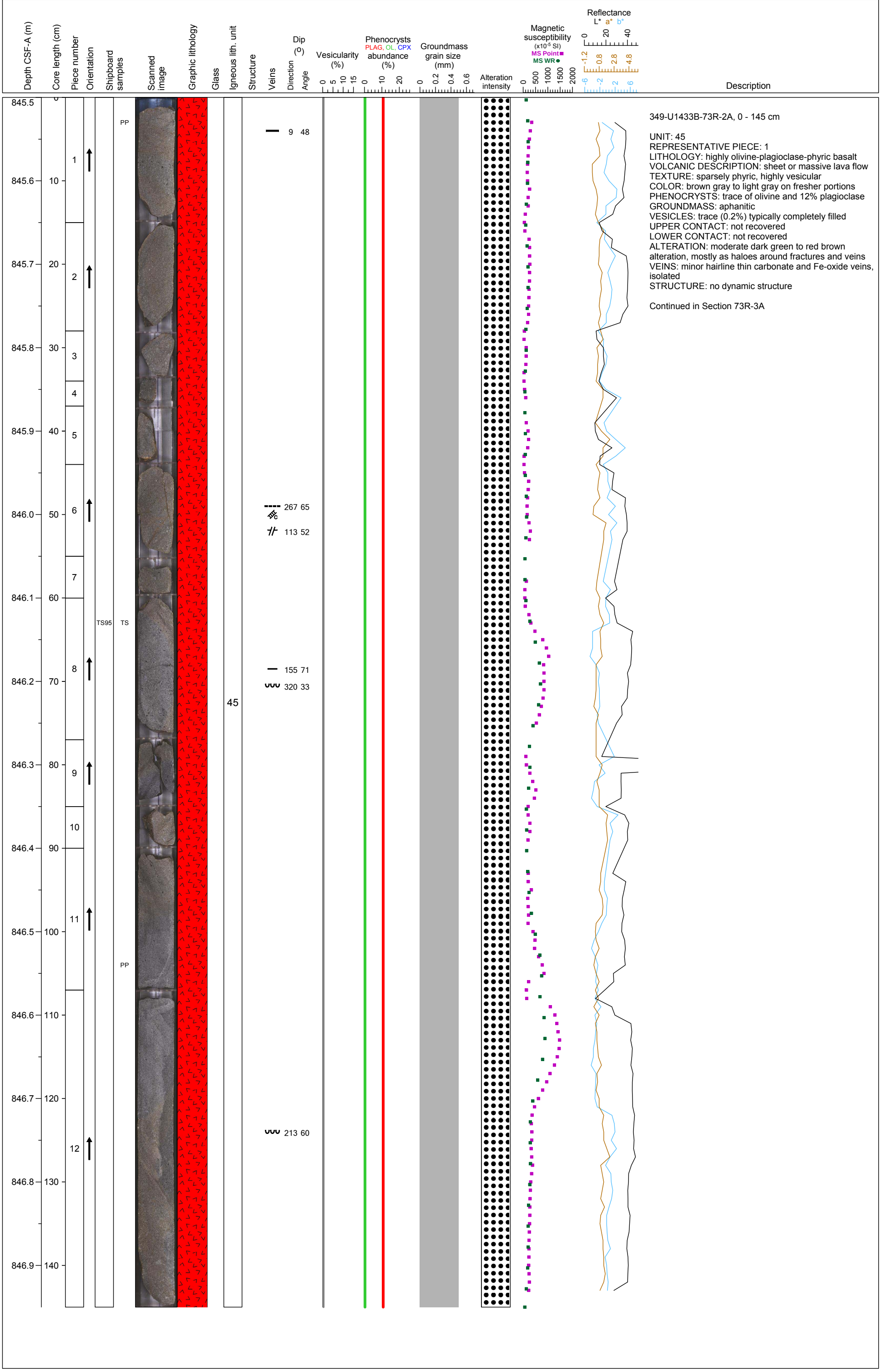
UNIT: 44
REPRESENTATIVE PIECE: 4
LITHOLOGY: sparsely olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 1% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.5%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: none
STRUCTURE: no dynamic structure

349-U1433B-73R-1A, 67 - 150 cm

UNIT: 45
REPRESENTATIVE PIECE: 16
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 12% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: none
STRUCTURE: no dynamic structure

Continued in Section 73R-2A

Hole 349-U1433B-73R Section 2, Top of Section: 845.5 m (CSF-A)

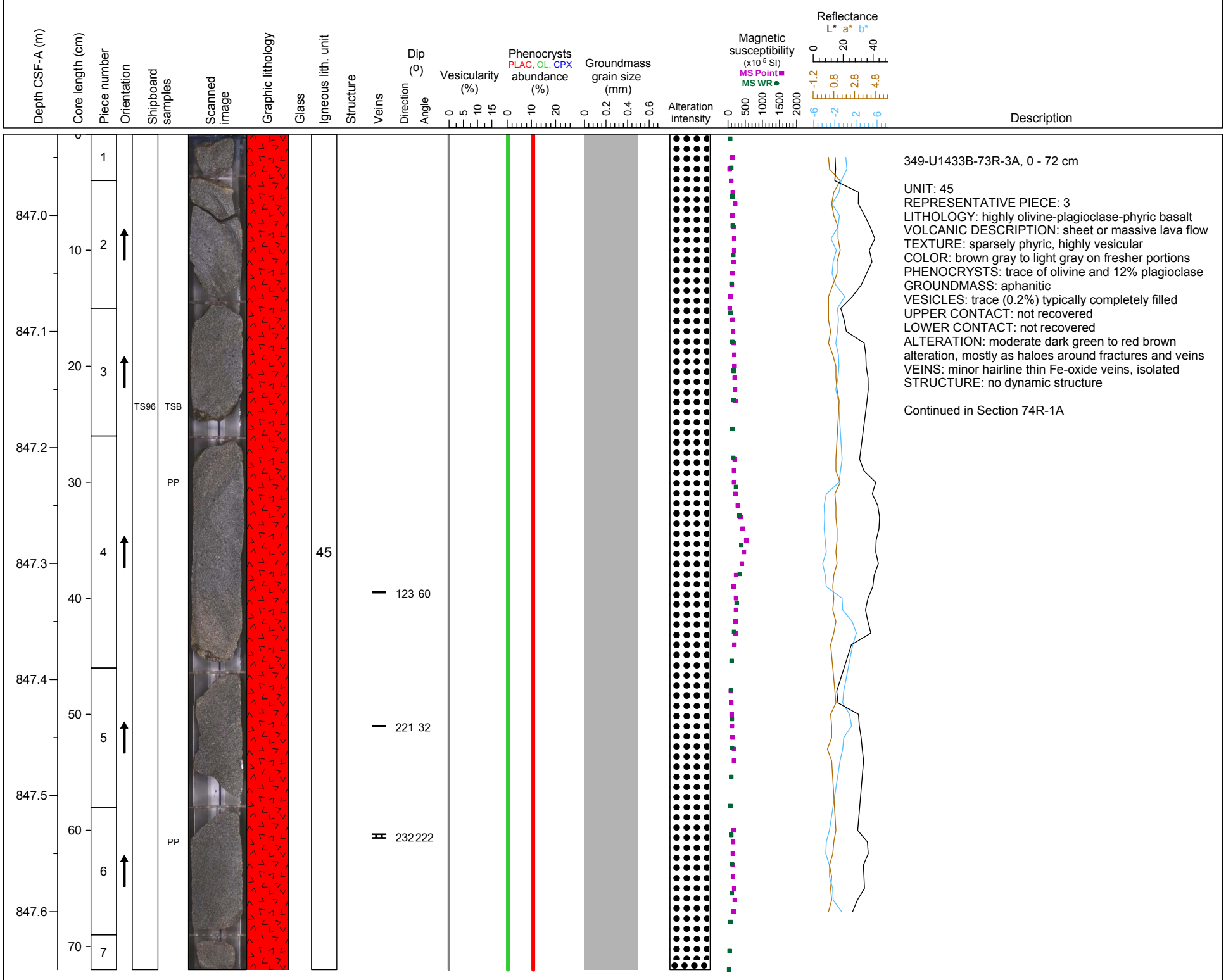


349-U1433B-73R-2A, 0 - 145 cm

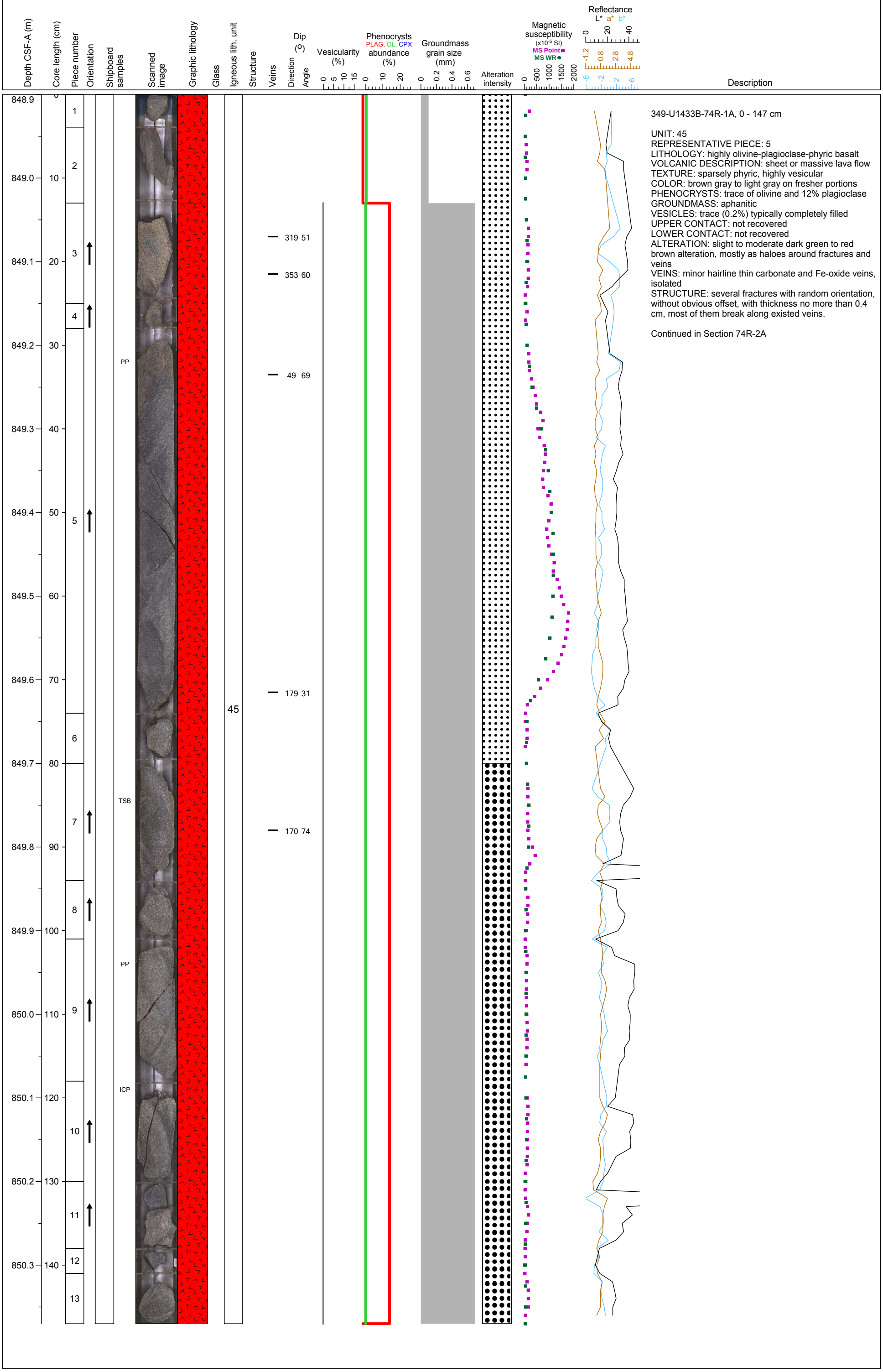
UNIT: 45
REPRESENTATIVE PIECE: 1
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 12% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline thin carbonate and Fe-oxide veins, isolated
STRUCTURE: no dynamic structure

Continued in Section 73R-3A

Hole 349-U1433B-73R Section 3, Top of Section: 846.95 m (CSF-A)



Hole 349-U1433B-74R Section 1, Top of Section: 848.9 m (CSF-A)

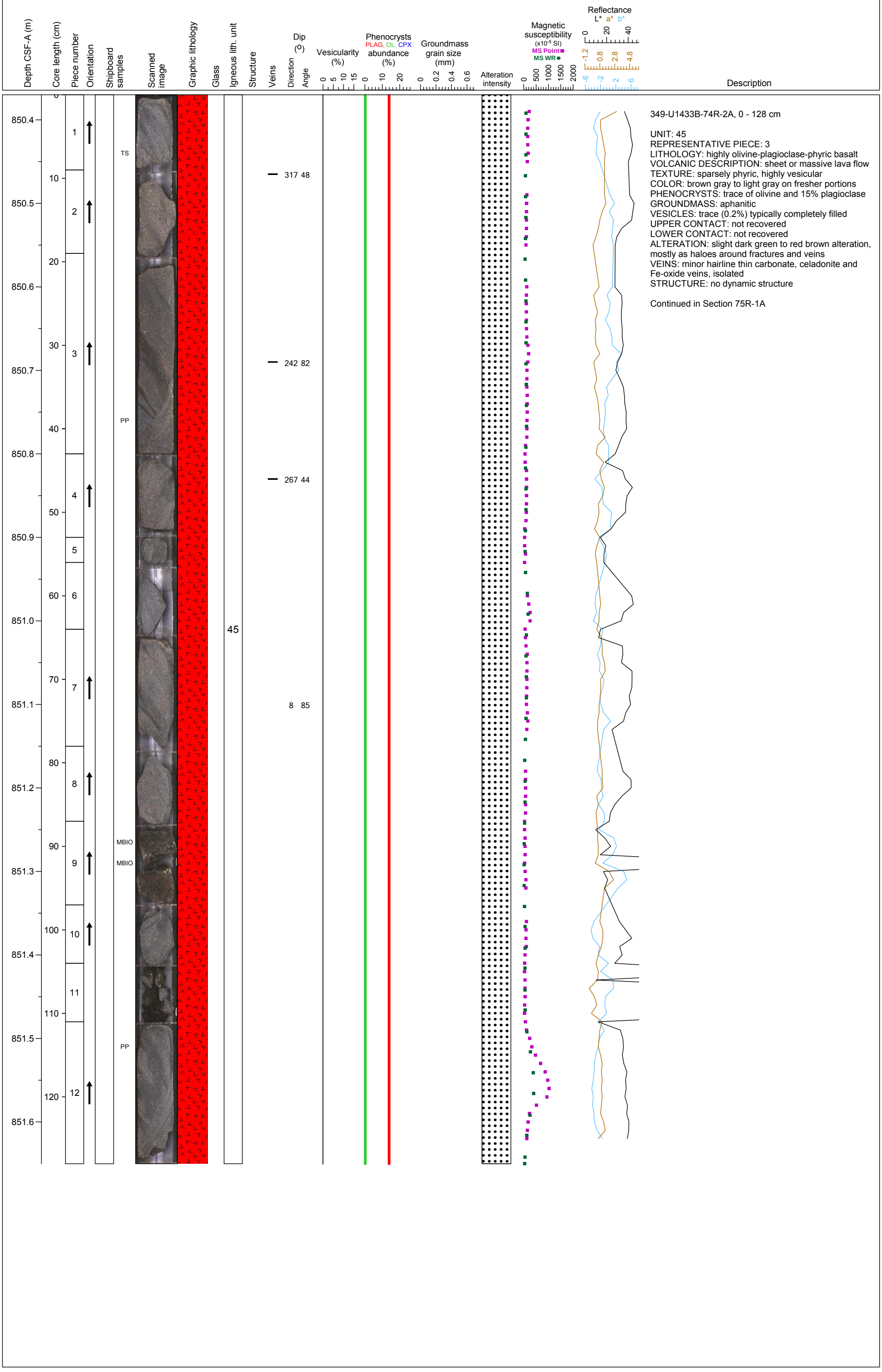


349-U1433B-74R-1A, 0 - 147 cm

UNIT: 45
REPRESENTATIVE PIECE: 5
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 12% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight to moderate dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline thin carbonate and Fe-oxide veins, isolated
STRUCTURE: several fractures with random orientation, without obvious offset, with thickness no more than 0.4 cm, most of them break along existed veins.

Continued in Section 74R-2A

Hole 349-U1433B-74R Section 2, Top of Section: 850.37 m (CSF-A)

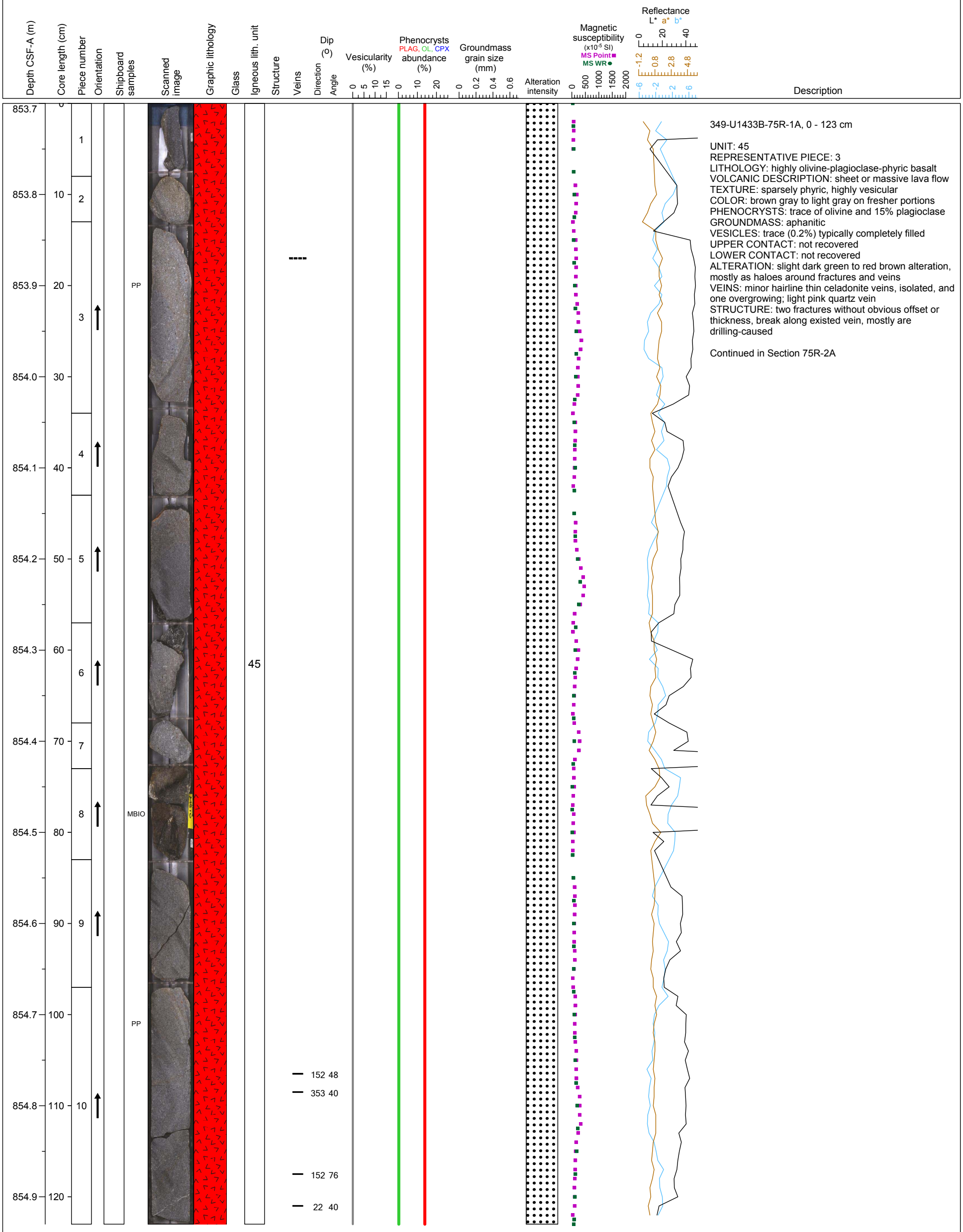


349-U1433B-74R-2A, 0 - 128 cm

UNIT: 45
REPRESENTATIVE PIECE: 3
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 15% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline thin carbonate, celadonite and Fe-oxide veins, isolated
STRUCTURE: no dynamic structure

Continued in Section 75R-1A

Hole 349-U1433B-75R Section 1, Top of Section: 853.7 m (CSF-A)

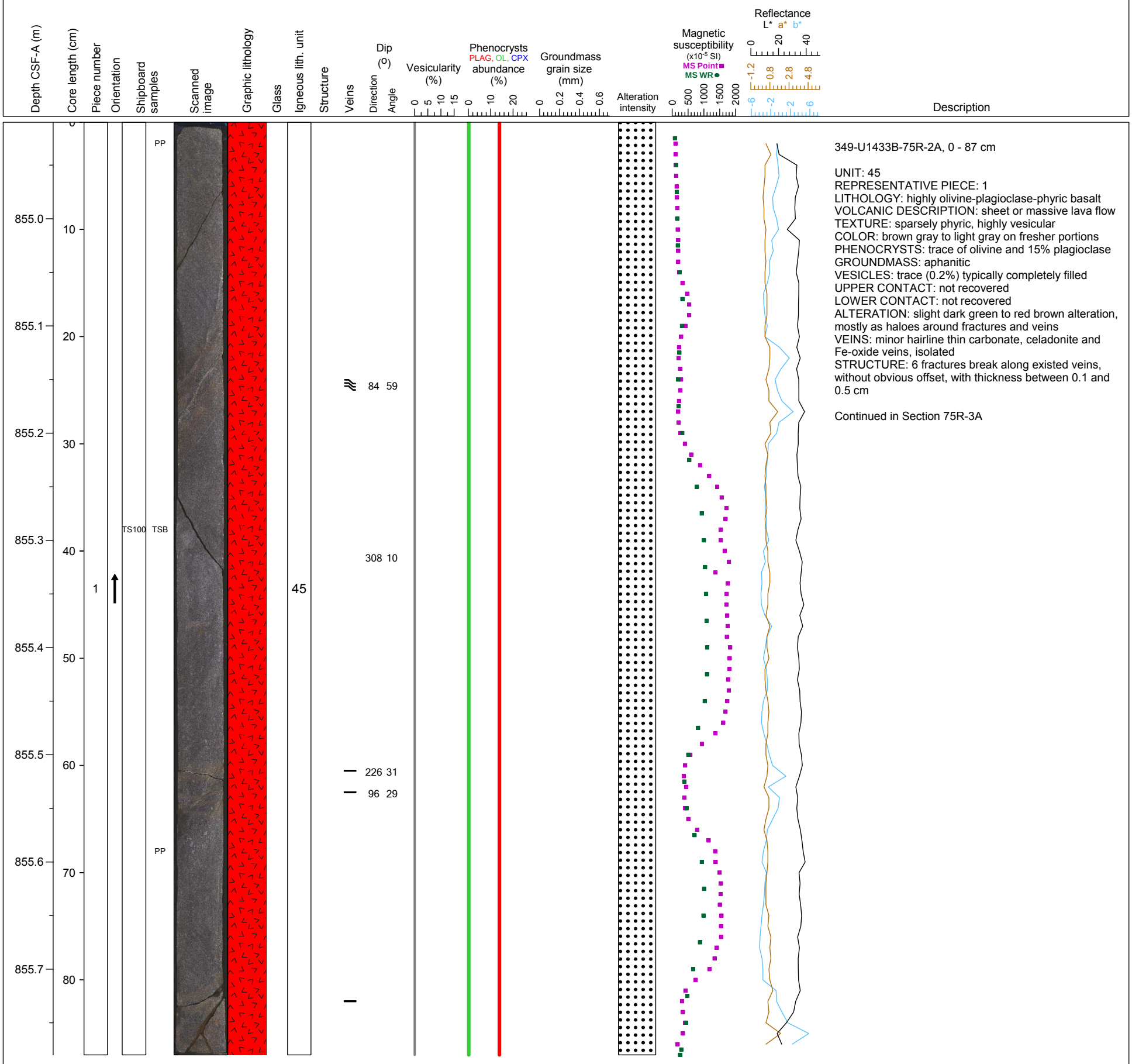


349-U1433B-75R-1A, 0 - 123 cm

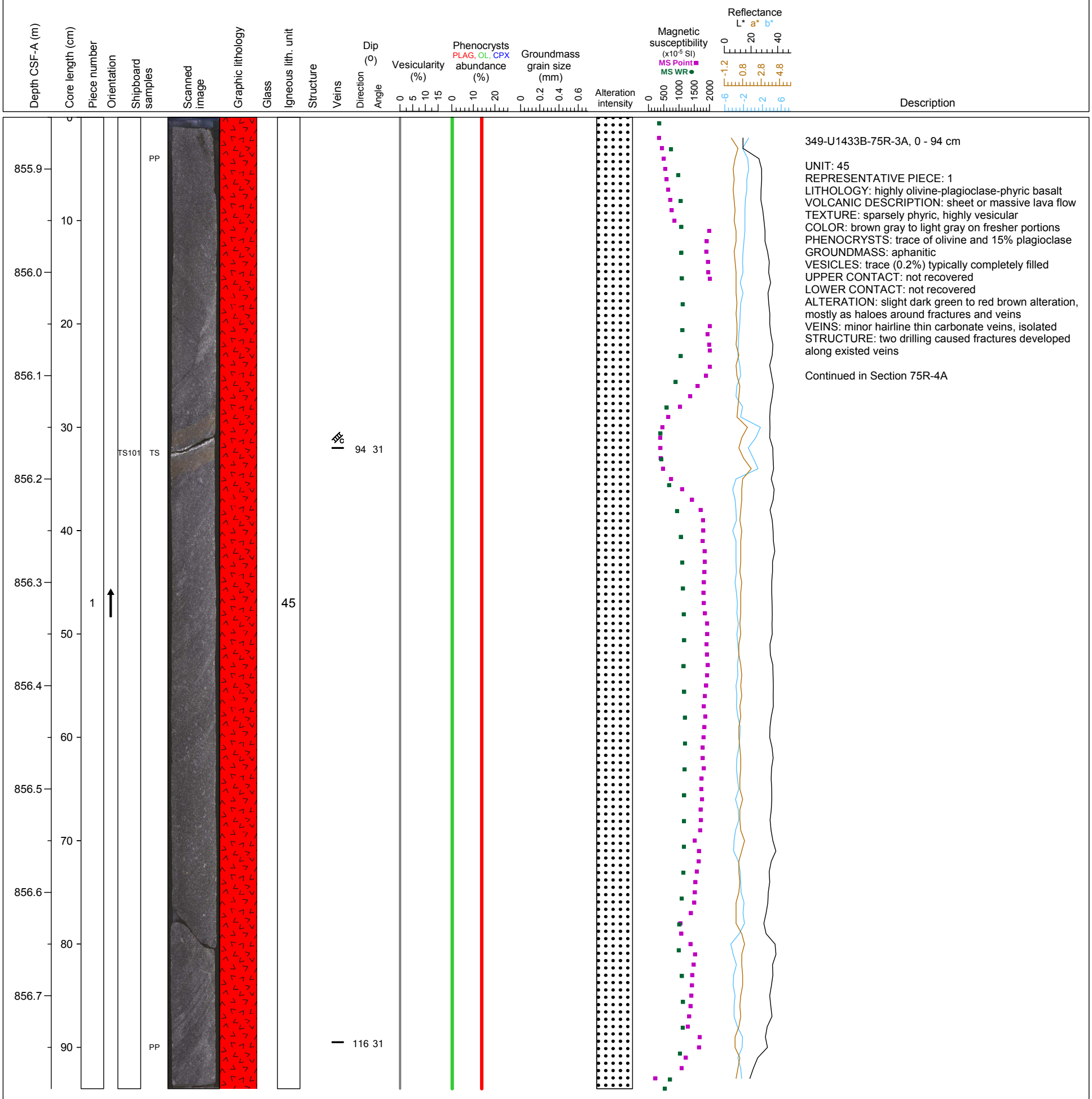
UNIT: 45
REPRESENTATIVE PIECE: 3
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 15% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline thin celadonite veins, isolated, and one overgrowing; light pink quartz vein
STRUCTURE: two fractures without obvious offset or thickness, break along existed vein, mostly are drilling-caused

Continued in Section 75R-2A

Hole 349-U1433B-75R Section 2, Top of Section: 854.93 m (CSF-A)



Hole 349-U1433B-75R Section 3, Top of Section: 855.8 m (CSF-A)

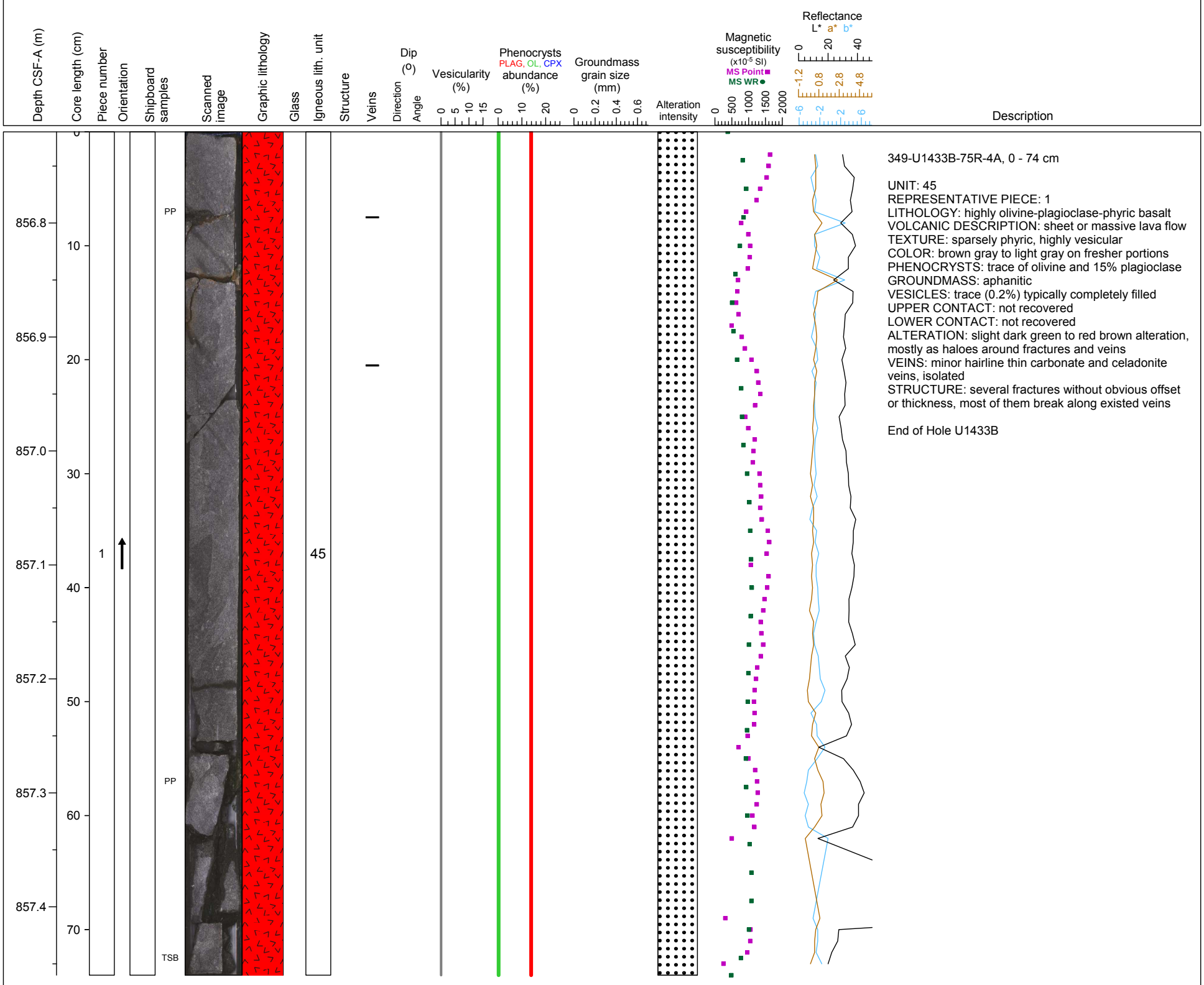


349-U1433B-75R-3A, 0 - 94 cm

UNIT: 45
REPRESENTATIVE PIECE: 1
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 15% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline thin carbonate veins, isolated
STRUCTURE: two drilling caused fractures developed along existed veins

Continued in Section 75R-4A

Hole 349-U1433B-75R Section 4, Top of Section: 856.74 m (CSF-A)



349-U1433B-75R-4A, 0 - 74 cm

UNIT: 45
REPRESENTATIVE PIECE: 1
LITHOLOGY: highly olivine-plagioclase-phyric basalt
VOLCANIC DESCRIPTION: sheet or massive lava flow
TEXTURE: sparsely phyric, highly vesicular
COLOR: brown gray to light gray on fresher portions
PHENOCRYSTS: trace of olivine and 15% plagioclase
GROUNDMASS: aphanitic
VESICLES: trace (0.2%) typically completely filled
UPPER CONTACT: not recovered
LOWER CONTACT: not recovered
ALTERATION: slight dark green to red brown alteration, mostly as haloes around fractures and veins
VEINS: minor hairline thin carbonate and celadonite veins, isolated
STRUCTURE: several fractures without obvious offset or thickness, most of them break along existed veins

End of Hole U1433B

Sample	Top Depth [m]	Bottom Depth [m]	Lithology prefix	Principal lithology	Lithology suffix	Complete lithology name	Rock/domain comment	Total of texture group estimates [%]	Sand texture [%]	Silt texture [%]	Clay texture [%]	Ash [%]	Siliciclastic [%]	Detrital carbonate [%]	Biogenic carbonate [%]	Biogenic silica [%]	Mineral grain roundness	Ash grain roundness	Mafic tephra abundance	Felsic tephra abundance	Lithic grains abundance	Quartz abundance	Calcite, allogenic abundance	Glass abundance	Palagonite abundance	Chlorite abundance	Clay minerals abundance	Feldspar abundance	Mica - biotite, musc abundance	Ferromagnesian - oli, pyx, amph abundance	Heavy minerals abundance	Apatite abundance	Barite abundance	Zircon abundance	Opaques abundance	Oxide abundance	Clay minerals, authigenic abundance	Glauconite abundance	Dolomite, authigenic abundance	Sulfides, authigenic abundance	Pyrite, authigenic abundance	Calcite, authigenic abundance	Calcareous nannofossils abundance	Benthic foraminifers abundance	Planktonic foraminifers abundance	Foraminifers abundance	Shells abundance	Diatoms abundance	Radiolarians abundance	Silicoflagellate, ebridian, actinscidian abundance	Other microfossils abundance	Calcareous bioclasts (undiff.) abundance	Biosiliceous fossil fragments abundance	Sponge spicule fragments abundance	Organic matter abundance	Wood fragments abundance	Charcoal abundance	Biogenic fragment roundness
349-U1433A-1H-1-A 100/100-SED	1	1	nannofossil rich	clay		nannofossil rich clay		100		20	80	3			30	20						Tr	R	R			D	Tr								R		D			Tr		R	D				R	Tr	R		D	D	R				
349-U1433A-1H-3-A 100/100-SED	4	4		clay	with silt	clay with silt		100		30	70				10	50											R	Tr								Tr		R										D	D		Tr	C	D				
349-U1433A-1H-5-A 100/100-SED	7	7		clay	with silt	clay with silt		100		35	65	2	30			30						R	Tr	R			D	Tr								R	Tr	D				Tr					R	R	D			D	D				
349-U1433A-1H-6-A 70/70-SED	8.2	8.2		clay		clay		100		10	90	3			10	5						D		R	R		D								R		D					D														
349-U1433A-2H-1-A 89/89-SED	9.79	9.79		nannofossil ooze	with clay	nannofossil ooze with clay		100		25	75		10		75	15	angular						Tr				A										A					Tr	D		R			C	C				C	A			angular
349-U1433A-2H-2-A 89/89-SED	11.29	11.29		clay		clay		100		30	70		95		5												D								R		D				R		Tr												angular
349-U1433A-2H-3-A 93/93-SED	12.88	12.88	silty	clay		silty clay		100		25	75	3	94		3		subangular	angular	Tr	R		C					D	R								C		D				R		Tr								R				angular
349-U1433A-3H-1-A 48/48-SED	18.88	18.88		clay		clay		100		5	95											Tr					A	Tr								Tr		A				Tr												Tr		
349-U1433A-3H-3-A 33/33-SED	21.73	21.73		clay	with nannofossils	clay with nannofossils		100		40	60		65		30	5											D										D						A		R			D							D		
349-U1433A-4H-6-A 83/83-SED	36.23	36.23		nannofossil ooze		nannofossil ooze		100	10	60	30		35		55	10											D										D						A		D			D							R		
349-U1433A-6H-2-A 105/105-SED	49.45	49.45	silty	clay		silty clay		100		30	70	3	87	5	3	2	subangular	angular	R	Tr	Tr	A	C				D			R						C		D				Tr		Tr								A				
349-U1433A-6H-3-A 114/114-SED	51.04	51.04	silty	clay		silty clay		100		35	65	5	91	2	2		subangular	angular	R		Tr	A	R				D	R		R						C		D				R	Tr													
349-U1433A-6H-5-A 122/122-SED	54.12	54.12		nannofossil ooze		nannofossil ooze		100		20	80		2	5	90	3	subrounded	angular									R									R		R				D		C			R	Tr				C				angular
349-U1433A-6H-5-A 73/73-SED	53.63	53.63		silt		silt		100		95	5	3	93	3		1	subrounded	angular	Tr		C	A	C				Tr	C								C		Tr	R			C										D		
349-U1433A-7H-1-A 108/108-SED	57.48	57.48		clay		clay		100		2	98		97		2	1	angular					C					D	C	Tr						R		D							Tr							Tr		Tr		
349-U1433A-7H-1-A 76/76-SED	57.92	57.92		ash(tuff)	with clay	ash(tuff) with clay		100		90	10	80	15	2		3	angular	angular	R	D	C	Tr					C	R									C								Tr			R								
349-U1433A-7H-2-A 65/65-SED	58.55	58.55	foraminifer rich	silt		foraminifer rich silt		100	1	60	39	2	68		30		angular	angular	Tr			D		Tr			D	C	Tr							R		D							D										
349-U1433A-8H-3-A 126/126-SED	70.16	70.16	foraminifer rich	sand		foraminifer rich sand		100	70	30		3		45	50	2	angular	angular	Tr				C																		C		D		C						R		angular
349-U1433A-8H-3-A 39/39-SED	69.29	69.29		nannofossil ooze		nannofossil ooze		100		20	80	2	15		80	3		subangular	R								C									C		C					D		A		C	C					C		angular
349-U1433A-8H-5-A 88/88-SED	72.78	72.78		clay		clay		100		40	60		90			10	subangular	subangular					R				D									C		D				R				R	C					C		angular
349-U1433A-9H-1-A 86/86-SED	76.26	76.26	silty	clay	with nannofossils	silty clay with nannofossils		100		40	60	2	85		3	10	subrounded				A	R	C				D									C		D				C	A									C		angular
349-U1433A-9H-2-A 86/86-SED	77.76	77.76		clay	with nannofossils	clay with nannofossils		100		10	90		83	5	10	2	subrounded	subangular	Tr	Tr		C	A				D									C		D				A	A									A		subangular
349-U1433A-9H-3-A 44/44-SED	78.84	78.84	nannofossil rich	clay		nannofossil rich clay		100		10	90		65	5	30		subrounded		Tr			C	C				D									C		D				C	A		C							R		subangular
349-U1433A-10H-5-A 91/91-SED	90.48	90.48		silt	with volcanic ash	silt with volcanic ash		100		90	10	30	55		5		angular	angular	D		A	D		D			Tr	R	D							R		Tr						R		R										
349-U1433A-10H-6-A 100/100-SED	92.07	92.07		silt	with biogenic components	silt with biogenic components		100	20	65	15	15	35		5	25	angular	angular	Tr		D	R		R				R	R								Tr								R		D										
349-U1433A-10H-6-A 107/107-SED	92.14	92.14		silty clay		silty clay	green layer	100	5	30	65	10	5		2	17	angular	angular	D		Tr	Tr		D			A		Tr							Tr		A	A					Tr		Tr										
349-U1433A-12H-2-A 110/110-SED	106.45	106.45		silt	with volcanic ash	silt with volcanic ash		100		85	15	35	45		3	2	angular	angular	D		A	D		D			Tr	R	R							R		Tr	R					R		R										
349-U1433A-13H-2-A 143/143-SED	116.17	116.17		foraminiferal ooze		foraminiferal ooze		100	70	20	10	2	8		85	5	angular	angular			R			R			R									Tr		R					D		A			R							
349-U1433A-13H-3-A 87/87-SED	117.11	117.11		ash(tuff)		ash(tuff)		100	20	75	5	95	2		2	1	angular	angular		A		Tr		A	Tr		Tr	Tr								R		Tr					Tr												
349-U1433A-14H-1-A 124/124-SED	124.14	124.14		ash(tuff)	with clay	ash(tuff) with clay		100		40	60	70					subangular	subangular	D	Tr		R	Tr	A			D	D								D		D				Tr	Tr													
349-U1433A-14H-2-A 91/91-SED	125.26	125.26		ash(tuff)		ash(tuff)		100	10	30	60	80			10		subangular	subangular	D	Tr		D	Tr	A			R	R								D		R				Tr												
349-U1433A-14H-3-A 47/47-SED	126.27	126.27		clay		clay		100		5	95		2			5											C									C																	
349-U1433A-15H-1-A 15/15-SED	132.55	132.55	silty	foraminiferal ooze		silty foraminiferal ooze		100	20	60	20	3	40		55	2	angular	angular		R		C		R			R	A								Tr		R						D				Tr		C				
349-U1433A-15H-1-A 30/30-SED	132.7	132.7		ash(tuff)	with clay	ash(tuff) with clay		100	10	70	20	80	17		1	2	angular	angular		D		Tr		D			R	R	Tr							Tr		R						Tr			Tr								
349-U1433A-15H-1-A 78/78-SED	133.18	133.18		clayey silt		clayey silt		100	5	50	45	3	95			2	angular	angular		R		Tr		R			D	R								Tr		D						Tr		Tr		Tr		R				
349-U1433A-16H-2-A 66/66-SED	144.01	144.01		clayey silt	with nannofossils	clayey silt with nannofossils		100	10	60	30	2	80		18		angular	angular	R	R	Tr	C		R			A	C	Tr							Tr		A					C		R								Tr		
349-U1433A-16H-4-A 1/1-SED	146.05	146.05		silt	with clay	silt with clay		100	1	79	20	1	84		15		angular	angular	Tr	Tr	R	A		Tr			A	A								R		A					Tr		C										
349-U1433A-16H-4-A 89/89-SED	146.93	146.93		silt		silt		100		95	5	2	88		10		angular	angular	Tr		Tr	D		Tr			C	A								R		C	Tr			R			C										
349-U1433A-17H-2-A 73/73-SED	153.59	153.59		silt		silt		100	5	75	20	5	85	5	5		subangular	angular	R		C	D		R			C	R								R		C	R				C		R			Tr						angular
349-U1433A-17H-2-A 78/78-SED	153.64	153.64		clay	with silt	clay with silt		100		20	80	2	95		3		subangular	angular	R		R	C	R	R			D	Tr								Tr		D				R	R											
349-U1433A-17H-6-A 13/13-SED	158.58	158.58	clayey	silt		clayey silt		100		75	25	3	94	3			subangular	subangular	R		R	D	R	R			A	R								R		A	R			R	Tr											

Sample	Top Depth [m]	Bottom Depth [m]	Lithology prefix	Principal lithology	Lithology suffix	Complete lithology name	Rock/domain comment	Total of texture group estimates [%]	Sand texture [%]	Silt texture [%]	Clay texture [%]	Ash [%]	Siliciclastic [%]	Detrital carbonate [%]	Biogenic carbonate [%]	Biogenic silica [%]	Mineral grain roundness	Ash grain roundness
349-U1433A-18H-2-A 41/41-SED	162.61	162.61		ash(tuff)	with silt	ash(tuff) with silt		100		95	5	60	33		5	2	angular	angular
349-U1433A-18H-3-A 87/87-SED	164.53	164.53		clay		clay		100		2	98		2		90	3	angular	angular
349-U1433A-18H-5-A 127/127-SED	167.89	167.89		clayey silt		clayey silt		100	5	65	30	5	83		10	2	angular	angular
349-U1433A-19H-2-A 90/90-SED	172.1	172.1		silt		silt		100	10	70	20	20	70		8	2	angular	angular

Sample	Mafic tephra abundance	Felsic tephra abundance	Lithic grains abundance	Quartz abundance	Calcite, allogenic abundance	Glass abundance	Palagonite abundance	Chlorite abundance	Clay minerals abundance	Feldspar abundance	Mica - biotite, musc abundance	Ferromagnesian - ol, pyx, amph abundance	Heavy minerals abundance	Apatite abundance	Barite abundance	Zircon abundance	Opaques abundance	Oxide abundance	Clay minerals, authigenic abundance	Glauconite abundance
349-U1433A-18H-2-A 41/41-SED	Tr	D	R	R		D			R	D							D		R	
349-U1433A-18H-3-A 87/87-SED		Tr	Tr	Tr		D			R	Tr							Tr		R	
349-U1433A-18H-5-A 127/127-SED	Tr			D		Tr			Tr	D							Tr		Tr	
349-U1433A-19H-2-A 90/90-SED	R			D		R			R	D							R		R	

Sample	Dolomite, authigenic abundance	Sulfides, authigenic abundance	Pyrite, authigenic abundance	Calcite, authigenic abundance	Calcareous nannofossils abundance	Benthic foraminifers abundance	Planktonic foraminifers abundance	Foraminifers abundance	Shells abundance	Diatoms abundance	Radiolarians abundance	Silicoflagellate, ebridian, actiniscidian abundance	Other microfossils abundance	Calcareous bioclasts (undiff.) abundance	Biosiliceous fossil fragments abundance	Sponge spicule fragments abundance	Organic matter abundance	Wood fragments abundance	Charcoal abundance	Biogenic fragment roundness
349-U1433A-18H-2-A 41/41-SED			R					Tr					Tr							
349-U1433A-18H-3-A 87/87-SED								Tr												
349-U1433A-18H-5-A 127/127-SED					R			Tr					Tr							
349-U1433A-19H-2-A 90/90-SED			R		Tr			Tr												

Sample	Top Depth [m]	Bottom Depth [m]	Lithology prefix	Principal lithology	Lithology suffix	Complete lithology name	Rock/domain comment	Total of texture group estimates [%]	Sand texture [%]	Silt texture [%]	Clay texture [%]	Ash [%]	Siliciclastic [%]	Detrital carbonate [%]	Biogenic carbonate [%]	Biogenic silica [%]	Mineral grain roundness	Ash grain roundness	Mafic tephra abundance	Felsic tephra abundance	Lithic grains abundance	Quartz abundance	Calcite, allogenic abundance	Glass abundance	Palagonite abundance	Chlorite abundance	Clay minerals abundance	Feldspar abundance	Mica - biotite, musc abundance	Ferromagnesian - cl, pyx, amph abundance	Heavy minerals abundance	Apatite abundance	Barite abundance	Zircon abundance	Opaques abundance	Oxide abundance	Clay minerals, authigenic abundance	Glauconite abundance	Dolomite, authigenic abundance	Sulfides, authigenic abundance	Pyrite, authigenic abundance	Calcite, authigenic abundance	Calcareous nannofossils abundance	Benthic foraminifers abundance	Planktonic foraminifers abundance	Foraminifers abundance	Shells abundance	Diatoms abundance	Radiolarians abundance	Silicoflagellate, ebridian, actiniscidian abundance	Other microfossils abundance	Calcareous bioclasts (undiff.) abundance	Bicsilliceous fossil fragments abundance	Sponge spicule fragments abundance	Organic matter abundance	Wood fragments abundance	Charcoal abundance	Biogenic fragment roundness
349-U1433B-4R-1-A 50/50-SED	204.3	204.3		clay		clay		100		5	95	1	93	4	2		subangular		Tr		Tr	R	R	Tr			D								R		D					R	R													
349-U1433B-5R-4-A 57/57-SED	218.57	218.57		clay		clay		100		5	95		96	3	1		subrounded		Tr		Tr	R	R				D								R		D					R	Tr													
349-U1433B-5R-4-A 98/98-SED	218.98	218.98		clay	with nannofossils	clay with nannofossils		100		5	95		80	5	15		subrounded				Tr	C	C				D								R		D					C	A													
349-U1433B-5R-5-A 27/27-SED	219.77	220.22		nannofossil ooze	with clay	nannofossil ooze with clay		100		10	90		12	5	83		subrounded					R	A				A								R		A					A	D		A		C									
349-U1433B-6R-1-A 86/86-SED	224.06	224.06		nannofossil ooze		nannofossil ooze		100		15	85		25	5	70		subrounded	angular	Tr			C		R			C								C		C						D		C		R							C		angular
349-U1433B-6R-4-A 115/115-SED	228.85	228.85		silt		silt		100		90	10		97	2	1		subangular	subangular	Tr		C	D					R	R							C		R						R		C									R		angular
349-U1433B-6R-4-A 36/36-SED	228.06	228.06		clay	with biogenic carbonate	clay with biogenic carbonate		100		5	95		90	8	2		subangular					R	C				D								R		D					C	R													subangular
349-U1433B-7R-1-A 111/111-SED	234.01	234.01		clay		clay		100		10	90		95	5			subangular					C	C				D	Tr							C		D					C											subangular
349-U1433B-7R-3-A 53/53-SED	236.24	236.24		clay	with silt	clay with silt		100		20	80	2	83	10	5		subangular	angular	Tr	R	R	A	C				D	Tr							C		D					C													
349-U1433B-7R-3-A 64/64-SED	236.35	236.35		silt	with nannofossils	silt with nannofossils		100		70	30		70	5	25		subangular				R	D	C				C	R							A		C					C	A		R											rounded
349-U1433B-8R-2-A 50/50-SED	244.6	244.6		nannofossil ooze	with sponge spicules	nannofossil ooze with sponge spicules		100	20	20	60			25	75		subangular						A														A	D		C		C								A				angular
349-U1433B-8R-5-A 70/70-SED	249.11	249.11		clay		clay		100		10	90		100				subrounded					C	C				D								A		D			A		C												
349-U1433B-9R-2-A 53/53-SED	254.33	254.33		nannofossil ooze		nannofossil ooze		100		30	70		10	20	70							Tr	A				R										R					A	D		A		A										subangular
349-U1433B-9R-3-A 43/43-SED	255.73	255.73		clay		clay		100		15	85		90	5	5		subrounded				R	C	C				D								C		D					C	R												
349-U1433B-11R-2-A 88/88-SED	274.08	274.08		foraminiferal ooze		foraminiferal ooze		100	10	85	5				98	2	angular										Tr										Tr					R			A											
349-U1433B-15R-2-A 98/98-SED	312.98	312.98		clay	with sand	clay with sand		100	10	5	85		85	10	5		subangular				R	C	A				D								C		D					A				C					C					angular
349-U1433B-15R-3-A 123/123-SED	314.73	314.73		sand	with foraminifers	sand with foraminifers		100	80	20		1		5	94			subangular	Tr				D														D					D			A	A	A					A				subangular
349-U1433B-15R-5-A 52/52-SED	317.02	317.02		clay	with silt	clay with silt		100		15	85		82	15	3		subrounded				C	R	C				D								A		D				A	C					C									angular
349-U1433B-16R-3-A 100/100-SED	324.2	324.2	foraminifer rich	nannofossil ooze		foraminifer rich nannofossil ooze		100		40	60	2	2		96		angular	angular		Tr		Tr						Tr								Tr							D			A					Tr						
349-U1433B-16R-3-A 128/128-SED	324.48	324.48		nannofossil ooze	with foraminifers	nannofossil ooze with foraminifers		100		30	70		2		98		angular					Tr														Tr							D			A					Tr						
349-U1433B-16R-4-A 86/86-SED	325.49	325.49		nannofossil ooze	with foraminifers	nannofossil ooze with foraminifers		100		20	80		2		98		angular					Tr														Tr							D			C					Tr						
349-U1433B-17R-5-A 90/90-SED	336.75	336.75	calcareous rich	nannofossil ooze		calcareous rich nannofossil ooze		100	2	25	73		2		98		angular					Tr						Tr								Tr							D			A					R						
349-U1433B-17R-6-A 24/24-SED	337.59	337.59		nannofossil ooze		nannofossil ooze		100		10	90		2		98		angular					Tr					R	Tr								Tr		R					D			C					Tr						
349-U1433B-18R-1-A 20/20-SED	339.8	339.8		clay	with biogenic carbonate	clay with biogenic carbonate		100		10	90	2	80		18			subangular	R					R			D								R		D					R			C					R						
349-U1433B-19R-2-A 60/60-SED	351.22	351.22		radiolarian ooze	with foraminifers	radiolarian ooze with foraminifers		100	10	25	65			20	80								C				C								C		C				C	D			C	R				C					angular
349-U1433B-19R-2-A 71/71-SED	351.33	351.33		nannofossil ooze		nannofossil ooze		100	10	30	60			40	60								D																		D	D			R	R									angular
349-U1433B-19R-3-A 125/125-SED	353.37	353.37		clay		clay		100		10	90		95	5			subrounded	subrounded	R		R	R	C				D								C		D			C		C												
349-U1433B-21R-3-A 70/70-SED	372.29	372.29		foraminiferal ooze		foraminiferal ooze		100	50	30	20				50												R								R		R						C	R	C	C					C				
349-U1433B-22R-3-A 64/64-SED	382.04	382.04		nannofossil ooze		nannofossil ooze		100	10	30	60		25		70	5											R								Tr		R					A			R										
349-U1433B-23R-2-A 112/112-SED	390.72	390.72		clay		clay		100			100		98		2												A	Tr							Tr		A					Tr											
349-U1433B-25R-1-A 41/41-SED	407.91	407.91	nannofossil rich	foraminiferal ooze		nannofossil rich foraminiferal ooze		100	5	55	40		1		99		angular		Tr			Tr														Tr					R		D			D										
349-U1433B-25R-6-A 44/44-SED	415.24	415.24		nannofossil ooze		nannofossil ooze		100		5	95				100								Tr	Tr			Tr										Tr					Tr	Tr	D		R					Tr					
349-U1433B-26R-1-A 93/93-SED	418.13	418.13		silt	with nannofossils	silt with nannofossils		100	2	68	30	5	50		45		subangular	subangular	R		Tr	A		R			C	A	R					Tr	Tr		C						C		C		Tr										
349-U1433B-26R-4-A 50/50-SED	422.2	422.2	foraminifer rich	nannofossil chalk		foraminifer rich nannofossil chalk		100		30	70		1		99		angular	angular	Tr			Tr		Tr												Tr		D					D											
349-U1433B-26R-5-A 74/74-SED	423.94	423.94	nannofossil rich	foraminiferal ooze		nannofossil rich foraminiferal ooze		100	5	60	35		2		98		angular	angular	Tr			Tr		Tr												Tr		D					D											
349-U1433B-27R-1-A 85/85-SED	427.75	427.75	nannofossil rich	clay		nannofossil rich clay		100		5	95		83	2	15							C	C				D								R		D				C	C	A			Tr	Tr					Tr			angular
349-U1433B-27R-4-A 75/75-SED	431.74	431.74		foraminiferal ooze		foraminiferal ooze		100	85	10	5			20	80		subangular						C				Tr										Tr					C			D	A					A			angular
349-U1433B-28R-1-A 103/103-SED	437.63	437.63		clay	with nannofossils	clay with nannofossils		100		10	90		88	2	10		subrounded			Tr	C	R				D			Tr							R		D					R	R	C			R					Tr	R				angular
349-U1433B-28R-1-A 54/54-SED	437.14	437.14	nannofossil rich	clay		nannofossil rich clay		100		15	85		75	5	20		subrounded					Tr	C				D								C		D					R	C	A				R					R				angular
349-U1433B-29R-1-A 80/80-SED	447.1	447.1		clay		clay		100		5	95		94	3		3	subrounded				Tr	R	R				D	Tr								R		D					Tr	R											
349-U1433B-29R-2-A 117/117-SED	448.97	448.97		nannofossil ooze		nannofossil ooze		100		20	80		5	10	85								C				Tr										Tr					C	D			A	C				C	A				subangular
349-U1433B-30R-5-A 88/88-SEM	461.96	461.96		nannofossil ooze		nannofossil ooze		100	15	50	35				20			rounded						Tr												R							A		D	D						D				

Sample	Top Depth [m]	Bottom Depth [m]	Lithology prefix	Principal lithology	Lithology suffix	Complete lithology name	Rock/domain comment	Total of texture group estimates [%]	Sand texture [%]	Silt texture [%]	Clay texture [%]	Ash [%]	Siliciclastic [%]	Detrital carbonate [%]	Biogenic carbonate [%]	Biogenic silica [%]	Mineral grain roundness	Ash grain roundness	Mafic tephra abundance	Felsic tephra abundance	Lithic grains abundance	Quartz abundance	Calcite, allogenic abundance	Glass abundance	Palagonite abundance	Chlorite abundance	Clay minerals abundance	Feldspar abundance	Mica - biotite, musc abundance	Ferromagnesian - cl, pyx, amph abundance	Heavy minerals abundance	Apatite abundance	Barite abundance	Zircon abundance	Opaques abundance	Oxide abundance	Clay minerals, authigenic abundance	Glauconite abundance	Dolomite, authigenic abundance	Sulfides, authigenic abundance	Pyrite, authigenic abundance	Calcite, authigenic abundance	Calcareous nannofossils abundance	Benthic foraminifers abundance	Planktonic foraminifers abundance	Foraminifers abundance	Shells abundance	Diatoms abundance	Radiolarians abundance	Silicoflagellate, ebridian, actinscidian abundance	Other microfossils abundance	Calcareous bioclasts (undiff.) abundance	Bicsilliceous fossil fragments abundance	Sponge spicule fragments abundance	Organic matter abundance	Wood fragments abundance	Charcoal abundance	Biogenic fragment roundness
349-U1433B-33R-2-A 70/70-SEM	487	487		clay		clay		100	10	30	60	2			5							Tr		Tr			D	Tr							R		D				C		D														
349-U1433B-34R-2-A 59/59-SED	496.89	496.89		calcareous ooze		calcareous ooze		100	20	60	20		20		80												R								R		R				A		D	D													
349-U1433B-37R-4-A 115/115-SED	528.65	528.65		nannofossil chalk	with foraminifers	nannofossil chalk with foraminifers		100		30	70		1		99		subangular		Tr					Tr			Tr								Tr		Tr				A			D					Tr						
349-U1433B-37R-5-A 79/79-SED	529.79	529.79		clay		clay		100		5	95		96	2		2	subangular				Tr	R	R				C	Tr							Tr		C					R														
349-U1433B-38R-4-A 20/20-SED	538.3	538.3		clay	with silt	clay with silt		100		10	90		98	2			subangular				C	C	C				C	R							R		C					C														
349-U1433B-38R-4-A 98/98-SED	539.08	539.08	nannofossil rich	clay		nannofossil rich clay		100		10	90		68	2	30		subangular				Tr	R	R				D								C		D			C	R	A														
349-U1433B-39R-1-A 67/67-SED	543.97	543.97	calcareous rich	clay	with silt	calcareous rich clay with silt		100		25	75		80	2	18		subrounded				Tr	C	R				D								R		D			R	D														
349-U1433B-39R-3-A 100/100-SED	547.3	547.3	calcareous rich	clay	with silt	calcareous rich clay with silt		100		15	85		72	2	26		subrounded				Tr	D	D				D								R		D			D	D														
349-U1433B-39R-5-A 60/60-SED	549.42	549.42		clay		clay		100		5	95		95	1		4	subangular				Tr	R	R				C	Tr							Tr		C					R														
349-U1433B-41R-1-A 100/100-SED	563.7	563.7		silt		silt		100	5	75	20	25	70		5		subangular	subangular	Tr		A	D		R			R	D							R		R				R														
349-U1433B-43R-4-A 83/83-SED	587.43	587.43		silt		silt		100	5	75	20	30	60		10		subangular	subangular	Tr		A	D		D			R	D							R		R				D														
349-U1433B-43R-6-A 83/83-SED	590.45	590.45		clay		clay		100		20	80	3	92		5		subangular	subangular	Tr		A	R		Tr			D	R							R		D				R														
349-U1433B-51R-4-A 22/22-SED	663.9	663.9		silty sand		silty sand		100	35	45	20	10	50		30			subangular		R		R		R			D	R							D	R	D				D			D											
349-U1433B-53R-1-A 69/69-SED	679.79	679.79		sandy siltstone		sandy siltstone		100	40	40	20	5			30			subrounded				R		R			D	R							C	R	D				D			D											
349-U1433B-60R-4-A 76/76-SED	752.16	752.16		claystone		claystone		100	10	20	70	3			10							Tr					C	Tr							D	Tr	C																
349-U1433B-60R-5-A 110/110-SED	754	754		claystone		claystone		100	5	10	85				10												C								D	Tr	C																
349-U1433B-65R-1-A 29/29-SED	795.79	795.79		clay		clay		100		5	95	2	90		2		subrounded		Tr		A	R					A	Tr							D		A				Tr														
349-U1433B-65R-1-A 90/90-SED	796.4	796.4		clay		clay		100		5	95	2	90		2		subangular		Tr		A	R					A	Tr							R		A				R														

THIN SECTION LABEL ID: **349-U1433B-40R-5-W 38/40-TSB(38-40)-TS65** Thin section no.: 65

Unit/Subunit: IIB Piece no.: Observer: Tao

Thin section summary: Sandy foraminiferal chalk with well-preserved foraminifers. It has good sorting and fines upward.

Plane-polarized: 25056901

Cross-polarized: 25056921

SEDIMENT/SEDIMENTARY ROCK

Sample domain name: sediment clasts Domain rel. abundance (%): 100 Observer: Tao

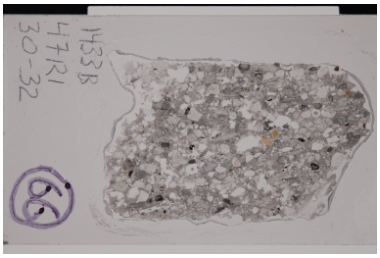
Lithology: sandy foraminiferal chalk

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra		Mineral grains	subangular
Sand texture	80	Siliciclastics	5	Ash grains	
Silt texture	20	Detrital carbonate	15		
Clay texture		Biogenic carbonate	80		
		Biogenic silica			

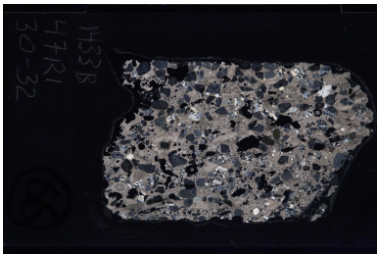
THIN SECTION LABEL ID: **349-U1433B-47R-1-W 30/32-TSB(30-32)-TS66** Thin section no.: 66

Unit/Subunit: IIB Piece no.: Observer: Tao

Thin section summary: Coarse sandstone with subangular fragments of feldspar and lithic clasts. Sediment is very well sorted.



Plane-polarized: 25079911



Cross-polarized: 25079931

SEDIMENT/SEDIMENTARY ROCK

Sample domain name: sediment clasts Domain rel. abundance (%): 100 Observer: Tao

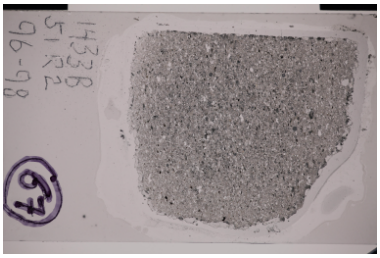
Lithology: sandstone with foraminifers

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra		Mineral grains	subangular
Sand texture	85	Siliciclastics	65	Ash grains	
Silt texture	15	Detrital carbonate	10		
Clay texture		Biogenic carbonate	20		
		Biogenic silica	5		

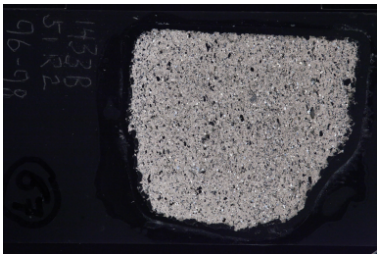
THIN SECTION LABEL ID: **349-U1433B-51R-2-W 96/98-TSB(96-98)-TS67** Thin section no.: 67

Unit/Subunit: IIB Piece no.: Observer: Tao

Thin section summary: Foraminifer-rich sandstone with subrounded fragments of lithic clasts. Sediment is very well sorted.



Plane-polarized: 25079951



Cross-polarized: 25079971

SEDIMENT/SEDIMENTARY ROCK

Sample domain name: sediment clasts Domain rel. abundance (%): 100 Observer: Tao

Lithology: foraminifer-rich sandstone

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra		Mineral grains	subrounded
Sand texture	55	Siliciclastics	40	Ash grains	
Silt texture	40	Detrital carbonate	10		
Clay texture	5	Biogenic carbonate	45		
		Biogenic silica	5		

THIN SECTION LABEL ID: **349-U1433B-55R-2-W 114/117-TSB(114-117)-TS73** Thin section no.: 73

Unit/Subunit: IIB Piece no.: Observer: Tao

Thin section summary: Foraminifer-rich nannofossil chalk. Sediment is well sorted with laminations.

Plane-polarized: 25098051

Cross-polarized: 25098071

SEDIMENT/SEDIMENTARY ROCK

Sample domain name: sediment clasts Domain rel. abundance (%): 100 Observer: Tao

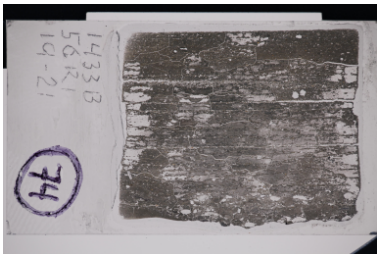
Lithology: foraminifer-rich nannofossil chalk

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra		Mineral grains	subrounded
Sand texture		Siliciclastics		Ash grains	
Silt texture	30	Detrital carbonate	20		
Clay texture	70	Biogenic carbonate	75		
		Biogenic silica	5		

THIN SECTION LABEL ID: **349-U1433B-56R-1-W 19/21-TSB(19-21)-TS74** Thin section no.: 74

Unit/Subunit: IIB Piece no.: Observer: Tao

Thin section summary: Claystone with silt. The claystone contains occasional silt-sized, angular crystals of feldspar.



Plane-polarized: 25098091

Cross-polarized: 25098111

SEDIMENT/SEDIMENTARY ROCK

Sample domain name: sediment clasts Domain rel. abundance (%): 100 Observer: Tao

Lithology: claystone with silt

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra		Mineral grains	subrounded
Sand texture		Siliciclastics	90	Ash grains	
Silt texture	10	Detrital carbonate	2		
Clay texture	90	Biogenic carbonate	3		
		Biogenic silica			

THIN SECTION LABEL ID: **349-U1433B-57R-2-W 30/33-TSB(30-33)-TS75** Thin section no.: 75

Unit/Subunit: IIB Piece no.: Observer: Tao

Thin section summary: Sandy foraminiferal chalk with well preserved foraminifers. It has good sorting and fines upward.

Plane-polarized: 25098131

Cross-polarized: 25098151

SEDIMENT/SEDIMENTARY ROCK

Sample domain name: sediment clasts Domain rel. abundance (%): 100 Observer: Tao

Lithology: sandy foraminiferal chalk

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra		Mineral grains	subrounded
Sand texture	70	Siliciclastics	5	Ash grains	
Silt texture	25	Detrital carbonate	15		
Clay texture	5	Biogenic carbonate	80		
		Biogenic silica			

THIN SECTION LABEL ID: **349-U1433B-63R-3-W 130/134-TSB(130-134)-TS86** Thin section no.: 86

Unit/Subunit: III Piece no.: Observer: Tao

Thin section summary: Claystone with pyrite minerals.

Plane-polarized: 25098971

Cross-polarized: 25098991

SEDIMENT/SEDIMENTARY ROCK

Sample domain name: sediment clasts Domain rel. abundance (%): 100 Observer: Tao

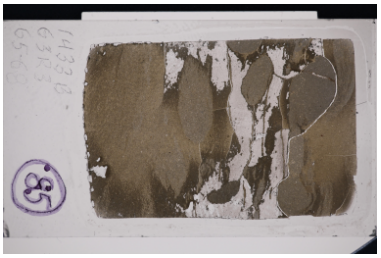
Lithology: claystone

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra		Mineral grains	subrounded
Sand texture		Siliciclastics	95	Ash grains	
Silt texture	10	Detrital carbonate			
Clay texture	90	Biogenic carbonate			
		Biogenic silica			

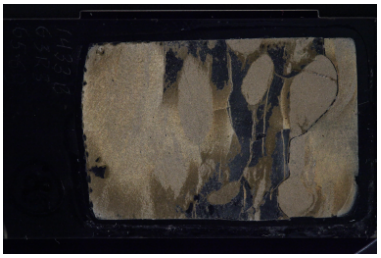
THIN SECTION LABEL ID: **349-U1433B-63R-3-W 65/68-TSB(65-68)-TS85** Thin section no.: 85

Unit/Subunit: III Piece no.: Observer: Tao

Thin section summary: Claystone with pyrite minerals and nodules. The pyrite grains are up to 1 cm in size.



Plane-polarized: 25099011



Cross-polarized: 25099031

SEDIMENT/SEDIMENTARY ROCK

Sample domain name: sediment matrix Domain rel. abundance (%): 100 Observer: Tao

Lithology: claystone

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture	10	Tephra		Mineral grains	subrounded
Sand texture		Siliciclastics	95	Ash grains	
Silt texture	20	Detrital carbonate			
Clay texture	70	Biogenic carbonate			
		Biogenic silica			

THIN SECTION LABEL ID: **349-U1433B-65R-2-W 19/22-TSB(19-22)-TS68** Thin section no.: 68

Unit/Subunit: 1 Piece no.: #2 Observer: MG Tejada

Thin section summary: Moderately altered olivine-plagioclase-phyric basalt with 2% olivine and 5% plagioclase phenocryts set in intersertal groundmass. The olivines are fresh and form subhedral to anhedral equant grains and the plagioclase laths are stubby to elongated up to 2 mm in length, with some grains showing normal continuous zoning and a few grains with preserved hollow interiors.

Plane-polarized: 25093941

Cross-polarized: 25093961

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

Texture: intersertal 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	2	1	1	0.3	0.05		subhedral-anhedral	prismatic elongated		
Plagioclase	5	5	0	0.3	0.05	1	euhedral-subhedral	prismatic elongated		form clusters; some grains have glass (?) in cracks and cleavage planes
Total (whole rock constituents):	7	6	1							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	20	20	0	0.02	0.5	0.2	subhedral	acicular	form triangular patterns enclosing mesostasis
Fe-Ti Oxide	10	10	0						brown replacement of groundmass along the margins
Mesostasis	70	45	25						0
Total (groundmass constituents):	100	75	25						
Total (whole rock constituents):	93	70	23						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: moderately altered Total alteration (%): 30

Alteration mineral:	Percent:
Saponite	0.2

THIN SECTION LABEL ID: **349-U1433B-65R-2-W 40/43-TSB(40-43)-TS69** Thin section no.: 69

Unit/Subunit: 1 Piece no.: #2 Observer: MG Tejada

Thin section summary: Moderately altered plagioclase-phyric basalt with remnant fresh glass. Plagioclase phenocrysts display bimodal grain size and habits, with larger ones forming broad laths whereas the smaller ones form elongated prisms. One grain shows overgrowth texture, indicating two generations of plagioclase crystallization.

Plane-polarized: 25079991

Cross-polarized: 25080011

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

Texture: intersertal 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
Plagioclase	10	9	1	0.2		1	euhedral-subhedral	prismatic		two generations of larger and smaller, more elongated phenocrysts; a grain shows overgrowth texture
Total (whole rock constituents):	10	9	1							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	10	10	0	0.02	0.2	0.05	subhedral	acicular	randomly oriented; swallow-tail structure
Mesostasis	80	75	5						0
Glass	10	4	6						
Total (groundmass constituents):	100	89	11						
Total (whole rock constituents):	90	80	10						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

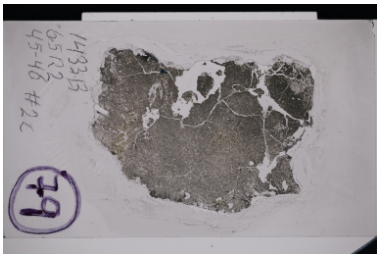
Alteration intensity: slightly altered Total alteration (%): 7

Alteration mineral:	Percent:
Carbonate	0.1
Saponite	0.2
Smectite	0.1

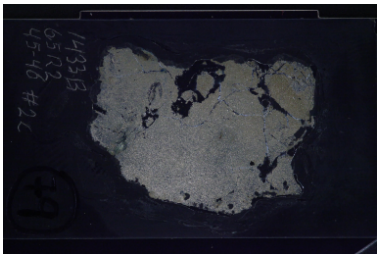
THIN SECTION LABEL ID: **349-U1433B-65R-2-W 45/46-TSB(45-46)-TS79** Thin section no.: 79

Unit/Subunit: IV Piece no.: #2 Observer: ZLIU

Thin section summary: Clayey limestone; well formed calcite crystals may be replaced nannofossils; a few planktonic foraminifer fragments are preserved; clay with dark color may contain iron oxide.



Plane-polarized: 25100611



Cross-polarized: 25100631

SEDIMENT/SEDIMENTARY ROCK

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

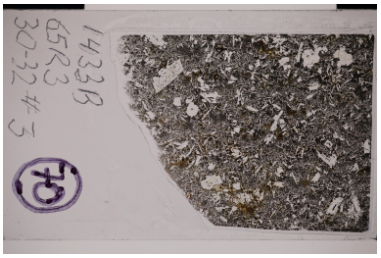
Lithology: clayey limestone

TEXTURE	Percent:	CONSTITUENT	Percent:	GRAIN ROUNDNESS	
Gravel texture		Tephra		Mineral grains	
Sand texture		Siliciclastics	40	Ash grains	
Silt texture	30	Detrital carbonate			
Clay texture	70	Biogenic carbonate	60		
		Biogenic silica			

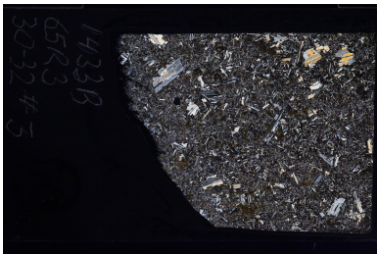
THIN SECTION LABEL ID: **349-U1433B-65R-3-W 30/32-TSB(30-32)-TS70** Thin section no.: 70

Unit/Subunit: 3 Piece no.: #3 Observer: MG Tejada

Thin section summary: Slightly altered plagioclase-phyric basalt with fine-grained groundmass. The plagioclase phenocrysts show (originally) melt inclusions along cleavages that are now mesostasized into clinopyroxene and oxides similar to the groundmass. Most plagioclase phenocrysts are cracked and show irregular outlines and discontinuous normal zoning is common. Groundmass plagioclase forms thin needle-like laths that are commonly hollow inside, with some grains showing swallow-tail texture. The groundmass is completely recrystallized into clinopyroxene and oxides and is partially replaced by brown oxide.



Plane-polarized: 25080031



Cross-polarized: 25080051

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0	1					prismatic	embayed outlines	clustered with plagioclase; pseudomorphs; completely replaced by clay
Plagioclase	10	9	1	1		2	subhedral-anhedral	prismatic	embayed outlines	most grains show embayed or irregular, curved inward outlines
Total (whole rock constituents):	11	9	2							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	70	70	0	0.2	1	0.8	subhedral	acicular	intergranular; most show hollow interiors and swallow-tail structure
Fe-Ti Oxide	10	10	0	0.02	0.5	0.05	subhedral	tabular	some grains are equant, some grains are lath-shaped
Mesostasis	20	13	7						composed of microcrystalline clinopyroxene and oxides
Total (groundmass constituents):	100	93	7						
Total (whole rock constituents):	89	83	6						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: moderately altered Total alteration (%): 25

Alteration mineral:	Percent:
Carbonate	0.01
Saponite	0.3
Smectite	0.1

THIN SECTION LABEL ID: **349-U1433B-65R-3-W 93/96-TSB(93-96)-TS71** Thin section no.: 71

Unit/Subunit: 6 Piece no.: #9 Observer: MG Tejada

Thin section summary: Moderately altered olivine-plagioclase-phyric basalt with 35% remnant fresh glass. Plagioclase phenocrysts display bimodal grain size and habits, with larger ones forming broad laths whereas the smaller ones form elongated prisms. One grain shows overgrowth texture, indicating two generations of plagioclase crystallization. Olivine phenocrysts are largely to completely replaced forming euhedral to subhedral pseudomorphs except in the fresh glassy margins. Groundmass is largely palagonitized glass with microlites of acicular plagioclase needles.

Plane-polarized: 25080071

Cross-polarized: 25080091

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: olivine-plagioclase-phyric basalt

Texture: hypocrystalline 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	5	1	4	0.1	1.1		euhedral-subhedral	tabular	six-sided euhedral forms common	large grains are completely replaced forming anhedral to euhedral pseudomorphs except in the glassy margins
Plagioclase	20	20	0	0.2	1.1	1.5	euhedral-subhedral	tabular	six-sided euhedral forms common	two generations of larger tabular and clustered grains and smaller, more elongated phenocrysts
Total (whole rock constituents):	25	21	4							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	15	15	0	0.01	0.1	0.05	subhedral	acicular	randomly oriented; swallow-tail and hollow structure
Glass	85	35	50						gradational palagonitization near the boundary of glassy margin
Total (groundmass constituents):	100	50	50						
Total (whole rock constituents):	75	38	38						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: moderately altered Total alteration (%): 12

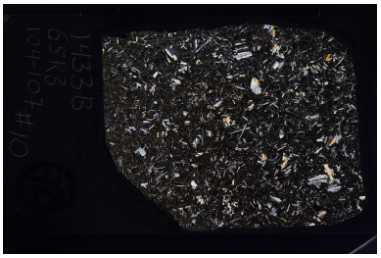
Alteration mineral:	Percent:
Saponite	0.3

THIN SECTION LABEL ID: **349-U1433B-65R-3-W 104/107-TSB(104-107)-TS72** Thin section no.: 72

Unit/Subunit: 6 Piece no.: #10 Observer: MG Tejada

Thin section summary: Highly altered olivine-plagioclase-phyric basalt with hypohyaline groundmass. Plagioclase phenocrysts display bimodal grain size and habits, with larger ones forming broad laths whereas the smaller ones form elongated prisms. Olivine phenocrysts are partially to completely replaced. Groundmass is largely cryptocrystalline with microlites of acicular plagioclase needles showing intersertal texture

Plane-polarized: 25080111



Cross-polarized: 25080131

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: olivine-plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	3	1	2	0.05	0.4		euhedral-subhedral	prismatic		partially to completely replaced forming anhedral to euhedral pseudomorphs
Plagioclase	30	30	0	0.4	0.4	2	subhedral-anhedral	prismatic		two generations of larger tabular and clustered grains and smaller, more elongated prismatic phenocrysts
Total (whole rock constituents):	33	31	2							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	15	15	0	0.01	0.8	0.05	subhedral	acicular	intersertal texture; swallow-tail and hollow structure of acicular laths
Mesostasis	85	45	40						composed of cryptocrystalline clinopyroxene and oxide; alteration into brown oxide around the veinlet
Total (groundmass constituents):	100	60	40						
Total (whole rock constituents):	67	40	27						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

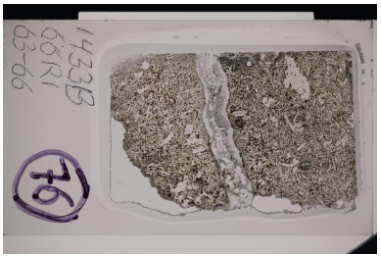
Alteration intensity: moderately altered Total alteration (%): 15

Alteration mineral:	Percent:
Carbonate	6
Saponite	0.5

THIN SECTION LABEL ID: **349-U1433B-66R-1-W 63/66-TSB(63-66)-TS76** Thin section no.: 76

Unit/Subunit: 8 Piece no.: #8 Observer: MG Tejada

Thin section summary: Highly altered plagioclase-phyric basalt with microcrystalline groundmass. Plagioclase phenocrysts occur as clusters or isolated broad laths showing remnants of hollow interiors. Groundmass is largely microcrystalline with elongated prismatic plagioclase laths enclosing clinopyroxene and oxide minerals. Clinopyroxene and oxide grains occur interstitially between plagioclase laths in the groundmass. The section is cut by a 3-mm thick vein.



Plane-polarized: 25080151

Cross-polarized: 25080171

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

Texture: phaneroporphyritic Average grain size: fine grained Grain size distribution: seriate

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	7	6	1	1		1.5	subhedral-anhedral	prismatic		cut by fine veinlets
Total (whole rock constituents):	7	6	1							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	60	60	0	0.1	0.8	0.4	subhedral-anhedral	prismatic elongated	intergranular texture; swallow-tail and hollow structure of acicular laths
Clinopyroxene	25	15	10	0.4	1	0.6	anhedral	prismatic	intergrown or interstitial with plagioclase
Fe-Ti Oxide	5	5	0	0.02	0.1	0.05	subhedral-anhedral	prismatic	equant to prismatic elongated
Mesostasis	10	0	10						composed of cryptocrystalline clinopyroxene and oxide altered into brown oxide
Total (groundmass constituents):	100	80	20						
Total (whole rock constituents):	93	74	19						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

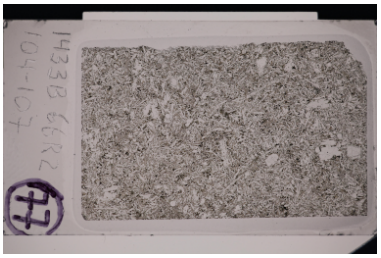
Observer: G ZHANG

Alteration intensity: fresh Total alteration (%): 1

THIN SECTION LABEL ID: **349-U1433B-66R-2-W 104/107-TSB(104-107)-TS77** Thin section no.: 77

Unit/Subunit: 8 Piece no.: #1 Observer: MG Tejada

Thin section summary: Slightly altered plagioclase-phyric basalt with microcrystalline groundmass. Plagioclase phenocrysts occur as clusters or isolated broad laths showing remnants of hollow interiors and (originally) glass inclusions. Groundmass is largely microcrystalline with elongated prismatic plagioclase laths enclosing clinopyroxene and oxide minerals. Clinopyroxene and oxide grains occur interstitially between plagioclase laths in the groundmass. Remaining mesostasis is replaced by oxide and clay.



Plane-polarized: 25080191

Cross-polarized: 25080211

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: olivine-plagioclase-phyric basalt

Texture: phaneroporphyritic Average grain size: fine grained Grain size distribution: seriate

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	5	4	1	0.05	1		subhedral-anhedral	prismatic		partially altered to iddingsite along cracks and outlines
Plagioclase	7	6	1	2	1	2	subhedral-anhedral	prismatic		remnant overgrowth structure in a few grains outlined by mesostasized (originally) glass inclusions
Total (whole rock constituents):	12	10	2							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	68	68	0	0.1	0.8	0.4	subhedral-anhedral	prismatic elongated	intergranular texture; swallow-tail and hollow structure of acicular laths
Clinopyroxene	25	23	2	0.4	1	0.6	anhedral	prismatic	intergrown or interstitial with plagioclase
Fe-Ti Oxide	5	5	0	0.01	0.5	0.1	subhedral-anhedral	prismatic	equant to prismatic elongated
Mesostasis	2	0	2						composed of cryptocrystalline clinopyroxene and oxide altered into brown oxide and clay
Total (groundmass constituents):	100	96	4						
Total (whole rock constituents):	88	84	4						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: slightly altered Total alteration (%): 4

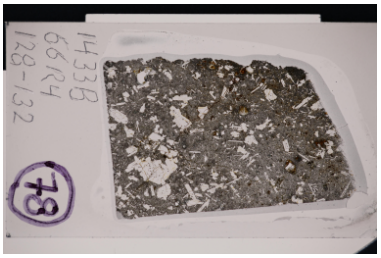
Alteration mineral:	Percent:
Carbonate	0.1
Saponite	0.1
Smectite	0.2

Vesicle filling:	Percent:
Saponite	40
Smectite	20
Total vesicle fill	100

THIN SECTION LABEL ID: **349-U1433B-66R-4-W 128/132-TSB(128-132)-TS78** Thin section no.: 78

Unit/Subunit: 9 Piece no.: #4 Observer: MG Tejada

Thin section summary: Slightly altered olivine-plagioclase-phyric basalt with cryptocrystalline groundmass. Plagioclase phenocrysts display overgrowth texture, discontinuous zoning and remnants of hollow interiors and (originally) melt inclusions. Olivine phenocrysts are largely to completely replaced forming euhedral to subhedral pseudomorphs. Groundmass includes microlites of acicular plagioclase needles and cryptocrystalline clinopyroxene and oxide.



Plane-polarized: 25080231

Cross-polarized: 25080251

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: olivine-plagioclase-phyric basalt

Texture: hypocrystalline 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):	1	0	1	0.1	0.6	0.4	subrounded	

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	5	1	4	0.1	2		euhedral-subhedral	tabular	six-sided euhedral forms common	large grains are completely replaced forming anhedral to euhedral pseudomorphs
Plagioclase	20	20	0	1	2	2.5	euhedral-subhedral	tabular	six-sided euhedral forms common	
Total (whole rock constituents):	25	21	4							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	15	15	0	0.01	0.1	0.05	subhedral	acicular	randomly oriented microlites; swallow-tail and hollow structure
Mesostasis	85	78	7						cryptocrystalline clinopyroxene and oxides; slightly altered to secondary oxide
Total (groundmass constituents):	100	93	7						
Total (whole rock constituents):	74	69	5						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: moderately altered Total alteration (%): 12

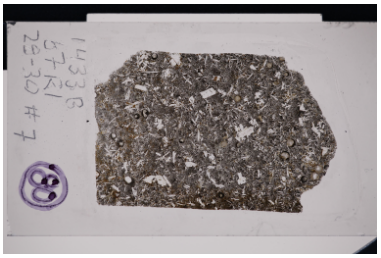
Alteration mineral:	Percent:
Saponite	0.4
Smectite	0.1

Vesicle filling:	Percent:
Saponite	20
Smectite	60
Total vesicle fill	100

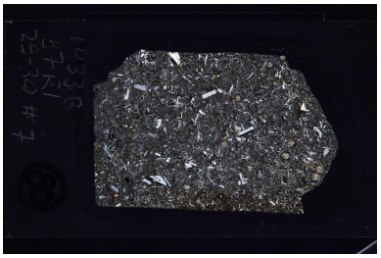
THIN SECTION LABEL ID: **349-U1433B-67R-1-W 28/30-TSB(28-30)-TS80** Thin section no.: 80

Unit/Subunit: 11 Piece no.: #7 Observer: MG Tejada

Thin section summary: Slightly altered olivine-plagioclase-phyric basalt with microcrystalline groundmass. Plagioclase phenocrysts display overgrowth texture, discontinuous zoning and remnants of hollow interiors and (originally) melt inclusions. Olivine phenocrysts are completely replaced forming euhedral to subhedral pseudomorphs. Groundmass includes microlites of acicular plagioclase needles and cryptocrystalline clinopyroxene and oxide.



Plane-polarized: 25097451



Cross-polarized: 25097471

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: olivine-plagioclase-phyric basalt

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

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	5	0	5	0.2	0.6	0.4	subrounded	filled with oxide, calcite and/or silica

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0	1	0.6	1.3			tabular		six-sided euhedral to subhedral pseudomorphs
Plagioclase	10	7	3	0.4	1.3	0.8	euhedral-subhedral	tabular		two generations of larger tabular and clustered grains and smaller, more elongated prismatic phenocrysts
Total (whole rock constituents):	11	7	4							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	70	70	0	0.01	0.1	0.05	subhedral	acicular	intersertal texture; swallow-tail and hollow structure observed
Mesostasis	30	20	10						cryptocrystalline clinopyroxene and oxides; slightly altered to secondary oxide
Total (groundmass constituents):	100	90	10						
Total (whole rock constituents):	84	76	8						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: slightly altered Total alteration (%): 10

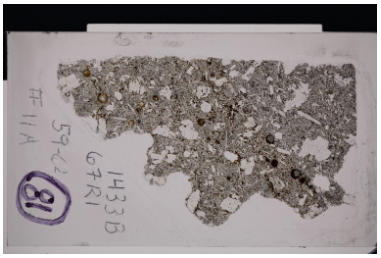
Alteration mineral:	Percent:
Celadonite	0.1
Saponite	0.5
Smectite	0.3

Vesicle filling:	Percent:
Saponite	60
Smectite	30
Total vesicle fill	100

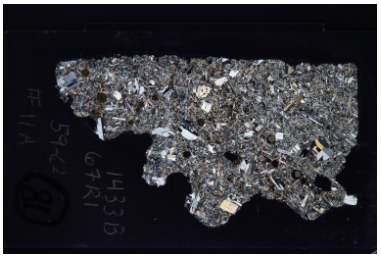
THIN SECTION LABEL ID: **349-U1433B-67R-1-W 59/62-TSB(59-62)-TS81** Thin section no.: 81

Unit/Subunit: 12 Piece no.: #11 Observer: M Tejada

Thin section summary: Slightly altered plagioclase-phyric basalt, with traces of pseudomorphed olivine phenocrysts in fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth, and (originally) melt inclusions, with a few grains showing irregular outlines and remnant hollow interiors. Groundmass is microcrystalline containing intergrowth of plagioclase and clinopyroxene. Clinopyroxene occurs with oxide as interstitial minerals in between plagioclase laths forming intergranular texture.



Plane-polarized: 25097491



Cross-polarized: 25097511

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

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

Domain comment: plagioclase phyric basalt with traces of olivine pseudomorphs in fine grained groundmass

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	2	0	2	0.3	1.2	0.6	rounded	completely filled by celadonite and secondary oxides

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0	1	0.3	0.7	0.4	subhedral-anhedral	tabular		pseudomorphed by secondary oxide and green clay
Plagioclase	15	14	1	0.4	0.7	1.5	euhedral-subhedral	tabular		zoned, some with holes or melt inclusions now mesostasized into clinopyroxene and oxides along cleavage planes and in the cores
Total (whole rock constituents):	16	14	2							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	50	50	0	0.04	0.6	0.4	subhedral		elongated prismatic laths and needles; intimately intergrown or in triangular patterns enclosing clinopyroxene and oxides
Clinopyroxene	40	35	5	0.01	0.4	0.25	subhedral	equant	occurs interstitially between or as intergrowth with plagioclase laths; replaced by secondary oxides and green clay
Fe-Ti Oxide	10	8	2	0.02	0.6	0.2	subhedral	tabular	replaced by red brown secondary oxide
Total (groundmass constituents):	100	93	7						
Total (whole rock constituents):	82	76	6						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

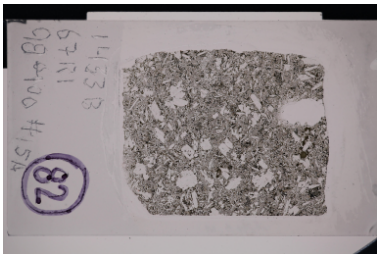
Alteration intensity: fresh Total alteration (%): 1

Alteration mineral:	Percent:
Carbonate	0.01
Celadonite	0.1

THIN SECTION LABEL ID: **349-U1433B-67R-1-W 98/100-TSB(98-100)-TS82** Thin section no.: 82

Unit/Subunit: 12 Piece no.: #15 Observer: M Tejada

Thin section summary: Slightly altered plagioclase-phyric basalt, with traces of fresh olivine microphenocrysts in medium-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth, and melt inclusions, with a few grains showing irregular outlines. Groundmass is microcrystalline containing intergrowth of plagioclase and clinopyroxene. Clinopyroxene occurs with oxide as interstitial minerals in between plagioclase laths forming intergranular texture. Remnants of cryptocrystalline mesostasis are altered to secondary oxide.



Plane-polarized: 25097531

Cross-polarized: 25097551

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.8	0.2	0.2	0.8		anhedral	tabular		
Plagioclase	10	10	0	0.8	0.8	2	euhedral-subhedral	tabular		twinned and zoned, some with melt inclusions along cleavage planes
Total (whole rock constituents):	11	10.8	0.2							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	60	60	0	0.1	0.8	0.5	subhedral	prismatic elongated	lath and needle
Clinopyroxene	20	20	0	0.1	0.8	0.4	anhedral	interstitial	intergrowth with plagioclase
Fe-Ti Oxide	10	10	0	0.01	0.8	0.4	subhedral-anhedral	interstitial	intergrowth with clinopyroxene
Mesostasis	10	5	5						contains secondary oxides and cryptocrystalline clinopyroxene
Total (groundmass constituents):	100	95	5						
Total (whole rock constituents):	89	85	4						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: slightly altered Total alteration (%): 3

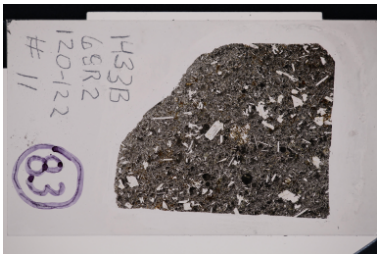
Alteration mineral:	Percent:
Saponite	0.3
Smectite	0.1

Vesicle filling:	Percent:
Saponite	50
Smectite	50
Total vesicle fill	100

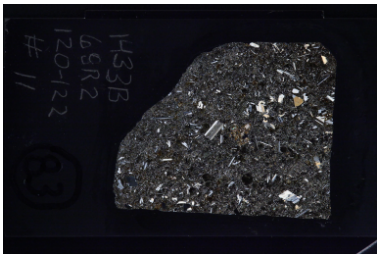
THIN SECTION LABEL ID: **349-U1433B-68R-2-W 120/122-TSB(120-122)-TS83** Thin section no.: 83

Unit/Subunit: 19 Piece no.: #11 Observer: M Tejada

Thin section summary: Moderately altered plagioclase-phyric basalt, with traces of psudomorphed olivine microphenocrysts in fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth, and melt inclusions, with a few grains showing irregular outlines. Groundmass contains microlites of plagioclase and cryptocrystalline clinopyroxene and oxide as interstitial minerals in between plagioclase laths forming intersertal texture. The rock is sparsely vesicular with vesicles filled by secondary oxide and celadonite.



Plane-polarized: 25097571



Cross-polarized: 25097591

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately plagioclase-phyric basalt

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

Domain comment: hypohyaline

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	3	0	3	0.5	1.2	0.6	rounded	completely filled with secondary oxide and celadonite

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.1	0.9	0.6	3		anhedral	tabular		completely altered to oxide and clay
Plagioclase	10	10	0	0.6	3	1	euhedral-subhedral	tabular		twinned and zoned, some with melt inclusions along cleavage planes
Total (whole rock constituents):	11	10.1	0.9							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	50	50	0	0.1	0.8	0.5	subhedral	prismatic elongated	lath and needle
Clinopyroxene	5	5	0	0.1	0.8	0.4	anhedral	interstitial	intergrowth with plagioclase
Fe-Ti Oxide	5	5	0	0.01	0.8	0.4	subhedral-anhedral	interstitial	intergrowth with clinopyroxene
Mesostasis	40	20	20						contains secondary oxides and cryptocrystalline clinopyroxene
Total (groundmass constituents):	100	80	20						
Total (whole rock constituents):	86	69	17						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G Zhang

Alteration intensity: moderately altered Total alteration (%): 30

Alteration mineral:	Percent:
Saponite	20
Smectite	10

THIN SECTION LABEL ID: **349-U1433B-68R-3-W 71/73-TSB(71-73)-TS84** Thin section no.: 84

Unit/Subunit: Piece no.: #3 Observer: G Zhang

Thin section summary: Moderately altered highly plagioclase-phyric nonvesicular basalt, containing 15% plagioclase phenocrysts.

Plane-polarized: 25097611

Cross-polarized: 25097631

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	15	12	3	0.8		2	subhedral	prismatic short		
Total (whole rock constituents):	15	12	3							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	25	24	1	0.2	0.5		subhedral		
Mesostasis	40	20	20						
Total (groundmass constituents):	65	44	21						
Total (whole rock constituents):	85								

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G Zhang

Alteration intensity: moderately altered Total alteration (%): 40

Alteration mineral:	Percent:
Celadonite	5
Clay (brown)	5
Saponite	20
Smectite	10

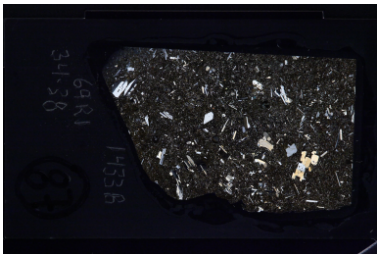
Vesicle filling:	Percent:
Saponite	100
Total vesicle fill	100

THIN SECTION LABEL ID: **349-U1433B-69R-1-W 34/38-TSB(34-38)-TS87** Thin section no.: 87

Unit/Subunit: Piece no.: #2 Observer: G Zhang

Thin section summary: Moderately altered highly plagioclase-phyric basalt, containing 15% plagioclase as phenocrysts and 0.1% vesicles filled with carbonate.

Plane-polarized: 25098171



Cross-polarized: 25098191

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

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

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	0.1	0	0.1	0.3	1	0.5	subrounded	

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	16	15	1	0.5		2	subhedral	prismatic short		
Total (whole rock constituents):	16	15	1							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	6	6	0	0.1	0.4		subhedral		
Fe-Ti Oxide	8	8	0						
Mesostasis	75	70	5						
Total (groundmass constituents):	89	84	5						
Total (whole rock constituents):	83.9								

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G Zhang

Alteration intensity: moderately altered Total alteration (%): 50

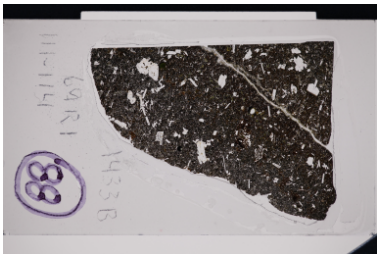
Alteration mineral:	Percent:
Celadonite	5
Clay (brown)	10
Saponite	30
Smectite	5

Vesicle filling:	Percent:
Carbonate	5
Fe-oxide	10
Saponite	50
Total vesicle fill	90

THIN SECTION LABEL ID: **349-U1433B-69R-1-W 111/114-TSB(111-114)-TS88** Thin section no.: 88

Unit/Subunit: Piece no.: #8 Observer: G Zhang

Thin section summary: Moderately altered highly plagioclase-phyric basalt, containing 15% plagioclase as phenocrysts and 0.2% vesicles filled with carbonate and saponite.



Plane-polarized: 25098211

Cross-polarized: 25098231

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

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

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	0.2	0.02	0.18	0.1	1.5	0.8	subrounded	

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	15	12	3	0.8		2	subhedral	prismatic short		
Total (whole rock constituents):	15	12	3							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	12	12	0	0.1	0.6		subhedral		
Fe-Ti Oxide	10	10	0						
Mesostasis	90	70	20						
Total (groundmass constituents):	112	92	20						
Total (whole rock constituents):	84.8								

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G Zhang

Alteration intensity: highly altered Total alteration (%): 60

Alteration mineral:	Percent:
Clay (brown)	40

IGNEOUS ROCK - VEINS AND HALOS

Sample domain name: **vein type 1** Observer: G Zhang

Vein type: uniform vein

Ave. vein thickness (cm): 0.08

Vein boundary: uncertain boundary or contact

Vein connectivity: isolated

Vein shear sense:

Vein generation: primary

Vein filling mineral:	Percent:
Saponite	30

THIN SECTION LABEL ID: **349-U1433B-69R-2-W 20/23-TSB(20-23)-TS89** Thin section no.: 89

Unit/Subunit: Piece no.: #1 Observer: G Zhang

Thin section summary: Highly altered highly plagioclase-phyric basalt, containing 15% plagioclase as phenocrysts.

Plane-polarized: 25098251

Cross-polarized: 25098271

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

Texture: variolitic 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
Plagioclase	10	9	1	0.1		1.5	subhedral	prismatic short		
Total (whole rock constituents):	10	9	1							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	5	5	0	0.02	0.3		subhedral		
Mesostasis	92	60	32						
Glass	50	20	30						
Total (groundmass constituents):	147	85	62						
Total (whole rock constituents):	90								

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G Zhang

Alteration intensity: moderately altered Total alteration (%): 30

Alteration mineral:	Percent:
Saponite	20

Vesicle filling:	Percent:
Carbonate	100
Total vesicle fill	85

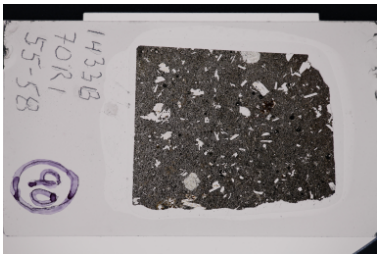
IGNEOUS ROCK - VEINS AND HALOS

Sample domain name:	**vein type 1**	Observer:	G Zhang
Vein type:	vein network	Ave. vein thickness (cm):	0.11
Vein boundary:	uncertain boundary or contact	Vein connectivity:	network
Vein shear sense:		Vein generation:	primary

THIN SECTION LABEL ID: **349-U1433B-70R-1-W 55/58-TSB(55-58)-TS90** Thin section no.: 90

Unit/Subunit: Piece no.: #8 Observer: G Zhang

Thin section summary: Moderately altered highly plagioclase-phyric basalt, containing 15% plagioclase as phenocrysts and 0.5% vesicles filled with carbonate.



Plane-polarized: 25098291

Cross-polarized: 25098311

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-olivine-phyric basalt

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

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	0.5	0.075	0.425	0.5	1	0.6	subrounded	

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	15	12	3	0.8		2	subhedral	prismatic short		
Total (whole rock constituents):	15	12	3							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	15	15	0	0.05	0.2		subhedral		
Mesostasis	60	50	10						
Glass	60	20	40						
Total (groundmass constituents):	135	85	50						
Total (whole rock constituents):	84.5								

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G Zhang

Alteration intensity: highly altered Total alteration (%): 60

Alteration mineral:	Percent:
Smectite	10

THIN SECTION LABEL ID: **349-U1433B-70R-1-W 88/90-TSB(88-90)-TS91** Thin section no.: 91

Unit/Subunit: Piece no.: #13 Observer: G Zhang

Thin section summary: Highly altered highly plagioclase-phyric basalt, containing 15% plagioclase as phenocrysts and 0.1% vesicles filled with carbonate.

Plane-polarized: 25101881

Cross-polarized: 25101901

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-phyric basalt

Texture: variolitic 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
Plagioclase	15	10	5	0.1		1.5	subhedral	prismatic short		
Total (whole rock constituents):	15	10	5							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	2	1	1	0.01	0.2		subhedral		
Fe-Ti Oxide	1	1	0						
Mesostasis	60	20	40						
Total (groundmass constituents):	63	22	41						
Total (whole rock constituents):	85								

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G Zhang

Alteration intensity: moderately altered Total alteration (%): 40

Alteration mineral:	Percent:
Saponite	20
Smectite	10

Vesicle filling:	Percent:
Saponite	100
Total vesicle fill	100

THIN SECTION LABEL ID: **349-U1433B-71R-1-W 22/24-TSB(22-24)-TS92** Thin section no.: 92

Unit/Subunit: Piece no.: #6 Observer: G Zhang

Thin section summary: Moderately altered highly plagioclase-phyric basalt, containing 15% plagioclase as phenocrysts and 0.2% vesicles filled with saponite.

Plane-polarized: 25098351

Cross-polarized: 25098371

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: plagioclase-olivine-phyric basalt

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

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	0.02	0	0.02	0.8	0.8	0.8	subrounded	

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	5	5	0	0.8		1.2	subhedral	prismatic short		
Total (whole rock constituents):	5	5	0							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	35	35	0	0.1	0.4		subhedral		
Fe-Ti Oxide	4	4	0						
Mesostasis	40	35	5						
Total (groundmass constituents):	79	74	5						
Total (whole rock constituents):	94.98								

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G Zhang

Alteration intensity: fresh Total alteration (%): 1

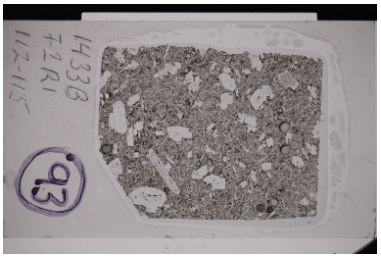
Alteration mineral:	Percent:
Saponite	1

Vesicle filling:	Percent:
Saponite	60
Smectite	40
Total vesicle fill	100

THIN SECTION LABEL ID: **349-U1433B-72R-1-W 112/115-TSB(112-115)-TS93** Thin section no.: 93

Unit/Subunit: 43 Piece no.: #13 Observer: M Tejada

Thin section summary: Slightly altered olivine-plagioclase-phyric basalt, with fresh to partially replaced olivine microphenocrysts in fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and (originally) melt inclusions now mesostasized into clinopyroxene and oxides, with a few grains showing irregular outlines. Groundmass is microcrystalline containing intergrowth of plagioclase and clinopyroxene. Clinopyroxene occurs with oxide as interstitial minerals in between plagioclase laths forming intergranular texture.



Plane-polarized: 25098391

Cross-polarized: 25098411

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately olivine-plagioclase-phyric basalt

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

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	3	0	3	0.5	1.2	1	rounded	completely filled with secondary brown oxide and celadonite

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	2	1.8	0.2	0.1	0.4		anhedral	tabular		mostly fresh but some grains are partially replaced by clay and oxide
Plagioclase	10	10	0	0.8	0.4	3	euhedral-subhedral	tabular		twinned and zoned, some with melt inclusions along cleavage planes
Total (whole rock constituents):	12	11.8	0.2							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	40	40	0	0.05	1.2	1	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Clinopyroxene	40	40	0	0.05	1	0.4	anhedral	interstitial	intergrowth with plagioclase or interstitial within plagioclase laths
Fe-Ti Oxide	15	15	0	0.03	0.2	0.05	anhedaral	interstitial	intergrowth with clinopyroxene
Mesostasis	5	5	0						consists of cryptocrystalline clinopyroxene and oxides
Total (groundmass constituents):	100	100	0						
Total (whole rock constituents):	85	85	0						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: slightly altered Total alteration (%): 8

Alteration mineral:	Percent:
Saponite	0.85

Vesicle filling:	Percent:
Total vesicle fill	20

THIN SECTION LABEL ID: **349-U1433B-73R-1-W 11/14-TSB(11-14)-TS94** Thin section no.: 94

Unit/Subunit: Piece no.: #3 Observer: G Zhang

Thin section summary: Slightly altered highly plagioclase-phyric nonvesicular basalt, containing 15% plagioclase as phenocrysts.

Plane-polarized: 25098431

Cross-polarized: 25098451

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: sparsely plagioclase-phyric basalt

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

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	0.1	0.08	0.02	0.5	0.5	0.5	subrounded	

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	5	5	0	0.3		1.5	subhedral	prismatic short		
Total (whole rock constituents):	5	5	0							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	35	35	0	0.1	0.8	0.6	subhedral		
Total (groundmass constituents):	35	35	0						
Total (whole rock constituents):	94.9								

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: M Tejada

Alteration intensity: moderately altered Total alteration (%): 48

Alteration comments: Alteration of plagioclase phenocrysts and groundmass clinopyroxene and mesostasis; dominated by green clay and celadonite giving the rock a strong green tint, with a bit of brown tint at the margin

Alteration mineral:	Percent:
Celadonite	20.5
Clay (green)	3
Clay (other)	18.5
Oxide (other)	5
Saponite	0.5

Vesicle filling:	Percent:
Total vesicle fill	100

THIN SECTION LABEL ID: **349-U1433B-73R-2-W 61/65-TSB(61-65)-TS95** Thin section no.: 95

Unit/Subunit: 44 Piece no.: #8 Observer: M Tejada

Thin section summary: Moderately altered olivine-plagioclase-phyric basalt, with completely replaced olivine microphenocrysts in fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and (originally) melt inclusions now mesostasized into clinopyroxene and oxides, with a few grains showing partially replaced interiors. Groundmass is microcrystalline containing intergrowth of plagioclase and clinopyroxene. Clinopyroxene occurs with oxide as interstitial minerals in between plagioclase laths forming intergranular texture.

Plane-polarized: 25098471

Cross-polarized: 25098491

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately olivine-plagioclase-phyric basalt

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

Vesicle	Original (%)	Empty (%)	Filled (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Comments
Total (whole rock constituents):	1	0	1	0.8	1.6	0.8	rounded	completely filled with secondary brown oxide and celadonite or saponite

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	2	0	2	0.1	0.25		anhedral	tabular		completely replaced by clay and oxide
Plagioclase	10	9	1	1.5	0.25	3	euhedral-subhedral	tabular		some with melt inclusions along cleavage planes; two grains with replacement vugs in interior
Total (whole rock constituents):	12	9	3							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	40	35	5	0.4	2	1	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Clinopyroxene	40	20	20	0.1	1.6	0.4	anhedral	interstitial	intergrowth with plagioclase or interstitial within plagioclase laths
Fe-Ti Oxide	15	15	0	0.05	0.4	0.2	anhedral	interstitial	intergrowth with clinopyroxene
Mesostasis	5	5	0						consists of cryptocrystalline secondary oxides and green clay
Total (groundmass constituents):	100	75	25						
Total (whole rock constituents):	87	65	22						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: M Tejada

Alteration intensity: moderately altered Total alteration (%): 49

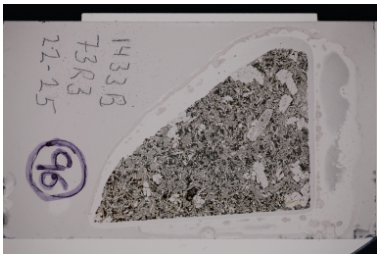
Alteration comments: Alteration of plagioclase phenocrysts and groundmass clinopyroxene and mesostasis; dominated by green clay and celadonite giving the rock a strong green tint, with a bit of brown tint at the margin

Alteration mineral:	Percent:
Celadonite	22
Clay (green)	7
Clay (other)	18
Oxide (other)	2

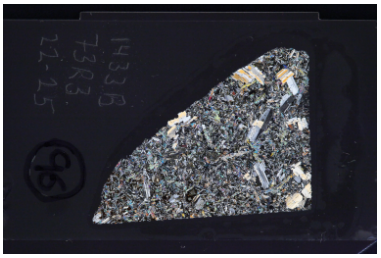
THIN SECTION LABEL ID: **349-U1433B-73R-3-W 22/25-TSB(22-25)-TS96** Thin section no.: 96

Unit/Subunit: 44 Piece no.: #3 Observer: M Tejada

Thin section summary: Moderately altered olivine-plagioclase-phyric basalt, with completely replaced olivine microphenocrysts in fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and (originally) melt inclusions now mesostasized into clinopyroxene and oxides, with a few grains showing partially replaced interiors and cut by green clay veinlets. Groundmass is microcrystalline containing intergrowth of plagioclase and clinopyroxene. Clinopyroxene is closely intergrown with plagioclase and occurs with oxide as interstitial minerals in between plagioclase laths forming intergranular texture.



Plane-polarized: 25098511



Cross-polarized: 25098531

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately olivine-plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0	1	0.8	1.8		anhedral	tabular		completely replaced by clay and oxide
Plagioclase	5	4	1	1	1.8	3	euhedral-subhedral	tabular		some with melt inclusions along cleavage planes; two grains with replacement vugs in interior
Total (whole rock constituents):	6	4	2							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	40	40	0	0.05	1.4	1	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Clinopyroxene	40	20	20	0.05	1.8	0.4	anhedral	interstitial	intergrowth with plagioclase or interstitial within plagioclase laths
Fe-Ti Oxide	15	15	0	0.05	0.4	0.2	anhedral	interstitial	intergrowth with clinopyroxene
Mesostasis	5	0	5						consists of altered cryptocrystalline and clinopyroxene secondary oxides and green clay
Total (groundmass constituents):	100	75	25						
Total (whole rock constituents):	94	71	24						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: M Tejada

Alteration intensity: moderately altered Total alteration (%): 47

Alteration comments: Alteration of plagioclase phenocrysts by veinlets and groundmass clinopyroxene and mesostasis; dominated by secondary oxide and green clay giving it a green and brown tint near the veinlet

Alteration mineral:	Percent:
Clay (green)	27
Clay (other)	16
Oxide (other)	4

THIN SECTION LABEL ID: **349-U1433B-74R-1-W 83/86-TSB(83-86)-TS97** Thin section no.: 97

Unit/Subunit: 45 Piece no.: #7 Observer: M Tejada

Thin section summary: Moderately plagioclase-phyric basalt with medium-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and (originally) melt inclusions now mesostasized into clinopyroxene and oxides. Groundmass is microcrystalline containing intergrowth of plagioclase and clinopyroxene. Clinopyroxene is closely intergrown with plagioclase and occurs with oxide as interstitial minerals in between plagioclase laths forming intergranular texture.

Plane-polarized: 25101921

Cross-polarized: 25101941

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately plagioclase-phyric basalt

Texture: intergranular Average grain size: medium grained Grain size distribution: bimodal

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	10	8	2	1		3	subhedral-anhedral	tabular		some with melt inclusions along cleavage planes and at overgrowth boundaries
Total (whole rock constituents):	10	8	2							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	40	35	5	0.4	2	1	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Clinopyroxene	40	20	20	0.1	2.2	0.4	anhedral	interstitial	intergrowth with plagioclase or interstitial within plagioclase laths
Fe-Ti Oxide	15	15	0	0.05	0.4	0.2	anhedral	interstitial	intergrowth with clinopyroxene
Mesostasis	5	5	0						consists of cryptocrystalline secondary oxides and green clay
Total (groundmass constituents):	100	75	25						
Total (whole rock constituents):	90	68	23						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: M Tejada

Alteration intensity: moderately altered Total alteration (%): 14

Alteration comments: Alteration restricted to olivine cracks and groundmass

Alteration mineral:	Percent:
Oxide (other)	14.4

THIN SECTION LABEL ID: **349-U1433B-74R-1-W 118/120-TSB(118-120)-TS98** Thin section no.: 98

Unit/Subunit: 45 Piece no.: #10 Observer: M Tejada

Thin section summary: Moderately altered plagioclase-phyric basalt with fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and melt inclusions with euhedral to subhedral shape. A few grains have remnant hollow interiors. Groundmass is intersertal with plagioclase laths forming triangular laths enclosing cryptocrystalline clinopyroxene and oxide. Mesostasis is replaced by brown oxide forming aggregates and masses around plagioclase laths in the groundmass.

Plane-polarized: 25101961

Cross-polarized: 25101981

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	10	10	0	1		3.5	euhedral-subhedral	tabular		twinned and zoned, some with melt inclusions along cleavage planes and overgrowth boundaries
Total (whole rock constituents):	10	10	0							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	30	30	0	0.05	1	0.8	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Mesostasis	70	62	8						consists of cryptocrystalline clinopyroxene and oxides
Total (groundmass constituents):	100	92	8						
Total (whole rock constituents):	90	83	7						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: M Tejada

Alteration intensity: slightly altered Total alteration (%): 9

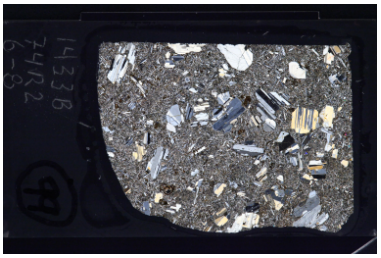
Alteration mineral:	Percent:
Oxide (other)	9.8

THIN SECTION LABEL ID: **349-U1433B-74R-2-W 6/8-TSB (6-8)-TS99** Thin section no.: 99

Unit/Subunit: 45 Piece no.: #1 Observer: M Tejada

Thin section summary: Slightly altered olivine-plagioclase-phyric basalt with fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and melt inclusions with euhedral to subhedral shape. A few grains have remnant hollow interiors and melt-filled cracks. Groundmass is intersertal with plagioclase laths forming triangular laths enclosing cryptocrystalline clinopyroxene and oxides. Mesostasis is replaced by brown oxide forming aggregates and masses around plagioclase laths in the groundmass.

Plane-polarized: 25102051



Cross-polarized: 25102071

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately olivine-plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Plagioclase	15	15	0	0.5		4	euhedral-subhedral	tabular		twinned and zoned, some with melt inclusions along cleavage planes and overgrowth boundaries
Total (whole rock constituents):	15	15	0							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	65	65	0	0.1	1	0.8	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Fe-Ti Oxide	10	10	0	0.01	0.1	1	anhedral	interstitial	occur along margins of plagioclase phenocrysts and as aggregates of very fine masses
Mesostasis	25	20	5						consists of cryptocrystalline clinopyroxene and oxides
Total (groundmass constituents):	100	95	5						
Total (whole rock constituents):	85	81	4						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

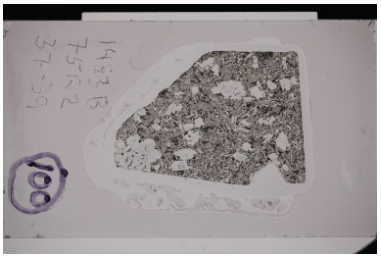
Observer: G ZHANG

Alteration intensity: slightly altered Total alteration (%): 5

THIN SECTION LABEL ID: **349-U1433B-75R-2-W 37/39-TSB (37-39)-TS100** Thin section no.: 100

Unit/Subunit: 45 Piece no.: Observer: M Tejada

Thin section summary: Slightly altered olivine-plagioclase-phyric basalt with fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and melt inclusions with euhedral to subhedral shape. A few grains have remnant hollow interiors and melt-filled cracks. Groundmass is intersertal with plagioclase laths forming triangular laths enclosing cryptocrystalline clinopyroxene and oxides. Mesostasis is replaced by brown oxide forming aggregates and masses around plagioclase laths in the groundmass.



Plane-polarized: 25098551

Cross-polarized: 25098571

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately olivine-plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.1	0.9	0.4	1.6		euhedral-subhedral	tabular		pseudomorphs; completely replaced by palagonite; one grain still has unaltered portion
Plagioclase	15	12	3	0.6	1.6	3	subhedral-anhedral	tabular		remnant hollow interiors with (originally) melt inclusions are now replaced by brown and green clay giving it a vuggy, sieved texture
Total (whole rock constituents):	16	12.1	3.9							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	40	40	0	0.05	1	0.6	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Clinopyroxene	45	25	20	0.1	1	0.6	anhedral	prismatic	interlocking with plagioclase; replaced by celadonite, green clay and brown oxide
Fe-Ti Oxide	15	15	0	0.01	0.1	0.1	anhedral	interstitial	occur along margins of plagioclase phenocrysts and as aggregates of very fine masses
Total (groundmass constituents):	100	80	20						
Total (whole rock constituents):	84	67	17						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: M Tejada

Alteration intensity: moderately altered Total alteration (%): 20

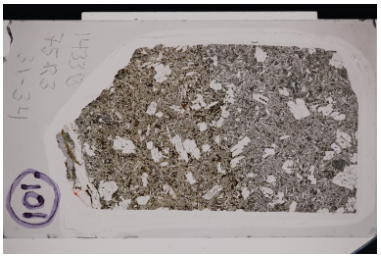
Alteration comments: Alteration restricted to olivine cracks and groundmass

Alteration mineral:	Percent:
Clay (brown)	1
Clay (green)	17
Oxide (other)	2

THIN SECTION LABEL ID: **349-U1433B-75R-3-W 31/34-TSB (31-34)-TS101** Thin section no.: 101

Unit/Subunit: 45 Piece no.: #1 Observer: M Tejada

Thin section summary: Moderately altered olivine-plagioclase-phyric basalt with fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and melt inclusions with euhedral to subhedral shape. A few grains have remnant hollow interiors and melt-filled cracks. Groundmass is intersertal with plagioclase laths forming triangular laths enclosing cryptocrystalline clinopyroxene and oxides. Mesostasis is replaced by brown oxide forming aggregates and masses around plagioclase laths in the groundmass.



Plane-polarized: 25098591

Cross-polarized: 25098611

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately olivine-plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.1	0.9	0.4	1.6		euhedral-subhedral	tabular		pseudomorphs; completely replaced by palagonite; one grain still has unaltered portion
Plagioclase	15	12	3	0.6	1.6	3	subhedral-anhedral	tabular		remnant hollow interiors with (originally) melt inclusions are now replaced by brown and green clay giving it a vuggy, sieved texture
Total (whole rock constituents):	16	12.1	3.9							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	40	40	0	0.05	1	0.6	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Clinopyroxene	45	25	20	0.1	1	0.6	anhedral	prismatic	interlocking with plagioclase; replaced by celadonite, green clay and brown oxide
Fe-Ti Oxide	15	15	0	0.01	0.1	0.1	anhedral	interstitial	occur along margins of plagioclase phenocrysts and as aggregates of very fine masses
Total (groundmass constituents):	100	80	20						
Total (whole rock constituents):	84	67	17						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

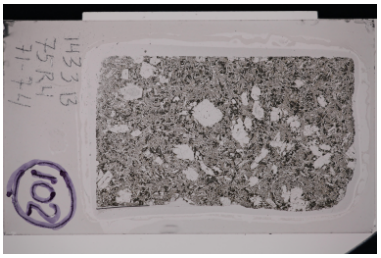
Alteration intensity: slightly altered Total alteration (%): 10

Alteration mineral:	Percent:
Saponite	1

THIN SECTION LABEL ID: **349-U1433B-75R-4-W 71/74-TSB (71-74)-TS102** Thin section no.: 102

Unit/Subunit: 45 Piece no.: #1 Observer: M Tejada

Thin section summary: Slightly altered olivine-plagioclase-phyric basalt with large clustered plagioclase and smaller euhedral to subhedral olivine phenocryst pseudomorphs in fine-grained groundmass. Plagioclase phenocrysts display zoning, overgrowth texture, and (originally) melt inclusions with euhedral to subhedral shape. A few grains have remnant hollow interiors. Groundmass is intergranular with plagioclase laths forming triangular laths enclosing cryptocrystalline clinopyroxene and oxides. The groundmass is replaced by green clay, celadonite, and minor calcite, giving it a green tinge.



Plane-polarized: 25102151

Cross-polarized: 25102171

IGNEOUS ROCK - PRIMARY MINERALOGY

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

Lithology: moderately olivine-plagioclase-phyric basalt

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

Phenocryst	Original (%)	Present (%)	Replaced (%)	Size min. (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Special Features	Comments
Olivine	1	0.2	0.8	0.2	1.6		euhedral-subhedral	tabular		pseudomorphs; completely replaced by palagonite and green clay; some with clinopyroxene infill
Plagioclase	10	8	2	1.4	1.6	3	subhedral-anhedral	tabular		remnant hollow interiors with (originally) melt inclusions are now replaced by brown and green clay giving it a vuggy, sieved texture
Total (whole rock constituents):	11	8.2	2.8							

Groundmass	Original (%)	Present (%)	Replaced (%)	Size min (mm)	Size max. (mm)	Size mode (mm)	Shape	Habit	Comments
Plagioclase	40	40	0	0.08	1	0.6	subhedral	prismatic elongated	lath and needle forming triangular enclosures with clinopyroxene and oxides inside
Clinopyroxene	45	35	10	0.1	1	0.8	anhedral	prismatic	interlocking with plagioclase; replaced by celadonite, green clay and brown oxide
Fe-Ti Oxide	15	15	0	0.01	0.1	0.1	anhedral	aggregate	occur along margins of plagioclase phenocrysts and as aggregates of very fine masses
Total (groundmass constituents):	100	90	10						
Total (whole rock constituents):	89	80	9						

IGNEOUS ROCK - SECONDARY MINERALOGY (ALTERATION)

Observer: G ZHANG

Alteration intensity: fresh Total alteration (%): 1

Alteration mineral:	Percent:
Saponite	0.1
Smectite	0.6