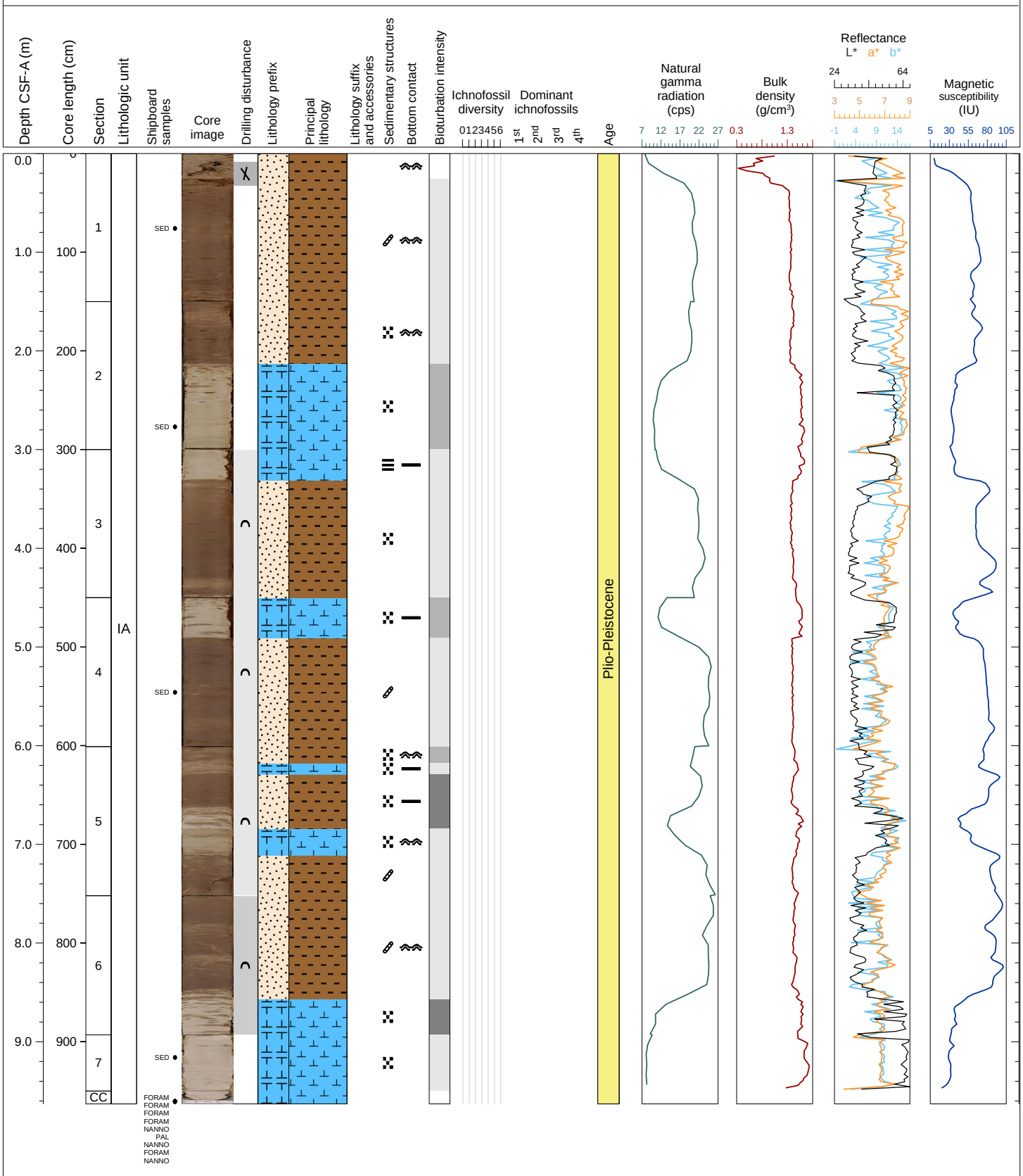
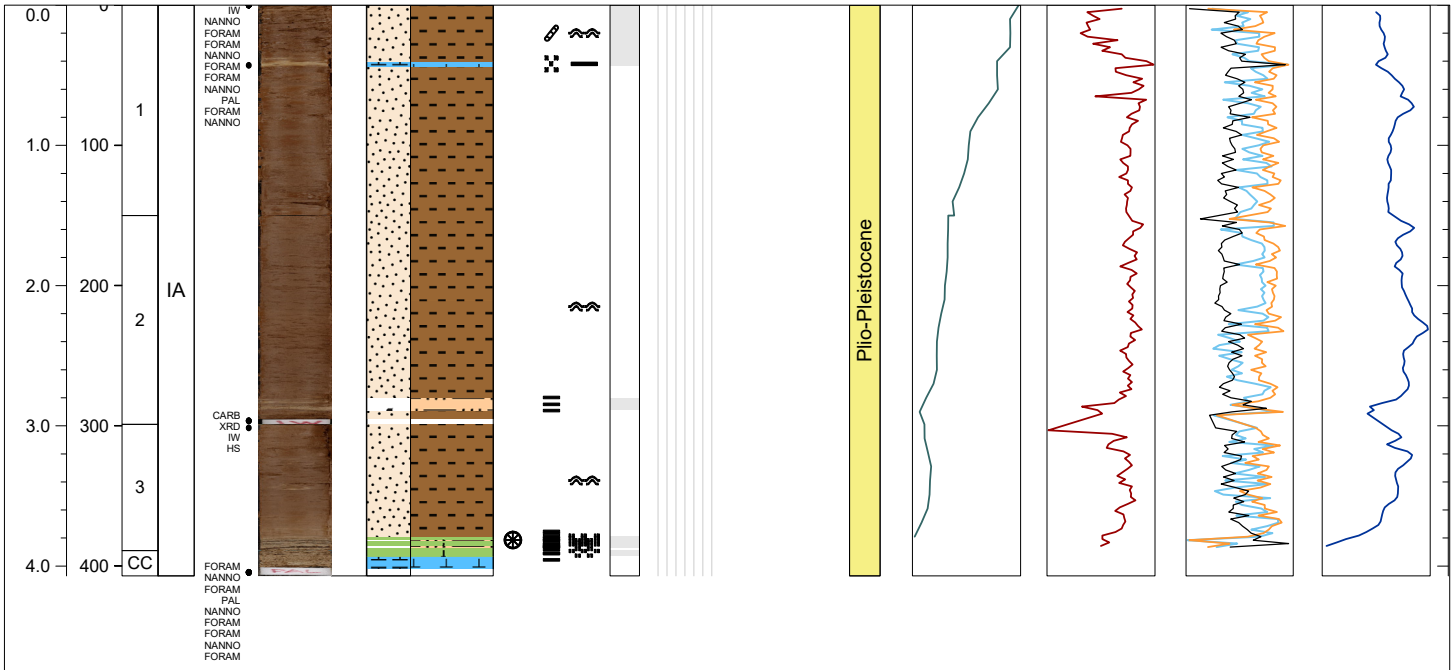
Hole 390C-U1557A Core 1H, Interval 0.0-9.63 m (CSF-A)

Core 1H contains dark yellowish brown and dark grayish brown (10YR 3/4,10YR 4/2) silty clay, and pale brown, light yellowish brown, and pinkish gray (10YR 6/3, 10YR,6/4, 7.5YR 7/2) calcareous nannofossil ooze. Sparse or moderate bioturbation throughout the core. Drilling disturbance has resulted in void in 1A and up-arching in 3A to 7A.



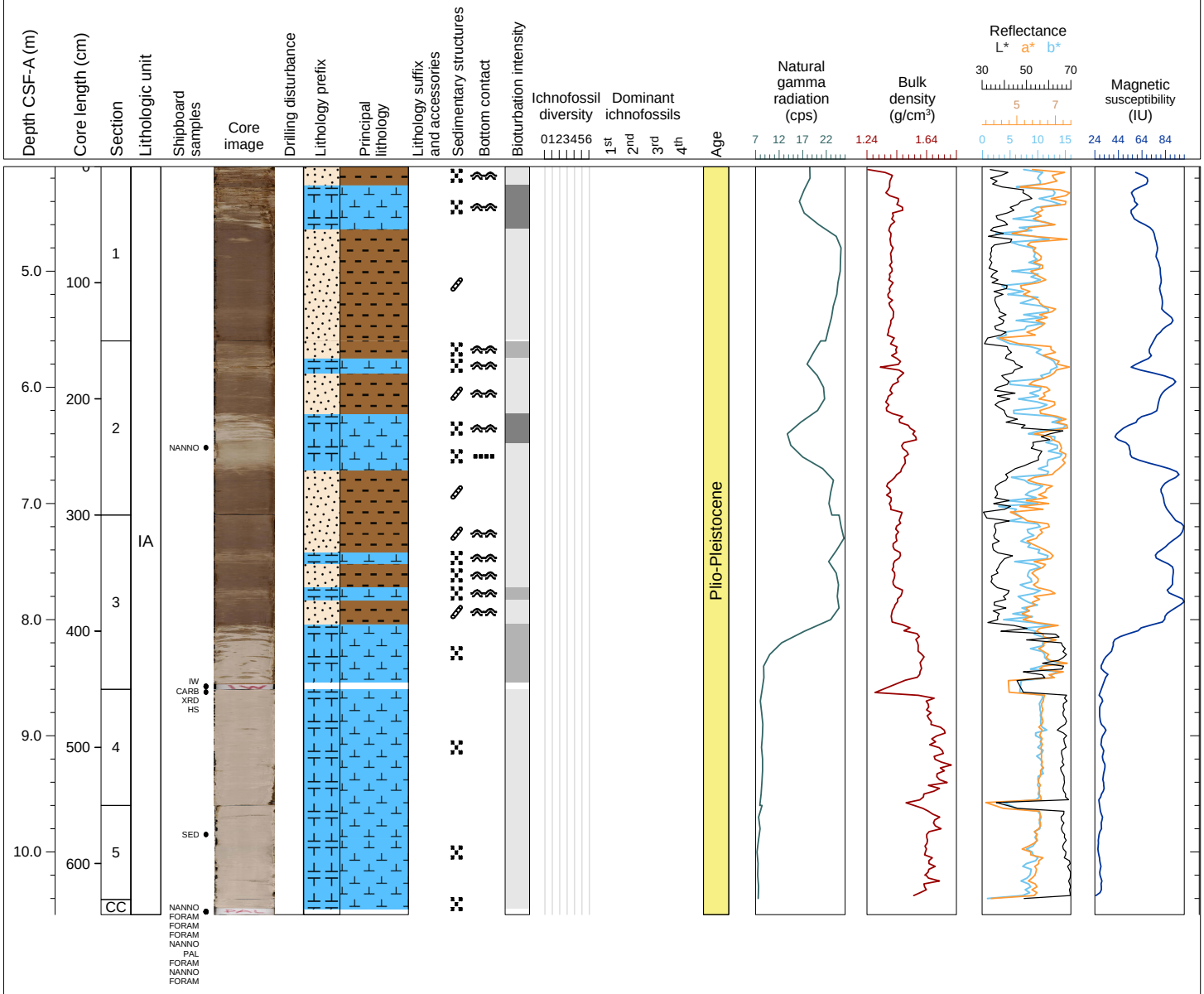
Hole 390C-U1557B Core 1H, Interval 0.0-4.07 m (CSF-A)

Core 1H contains mostly pale brown (10YR 6/3) to dark yellowish brown (10YR 3/4) silty clay. In section 3A, a portion of alternating pink-pale yellow diatom-rich silty clay was observed 81-88 cm. In this portion, also very dark grey (5Y 3/1) organic-rich layers (82-83 cm; 87-88) were observed. Sections 3A (88-90 cm) and the CC (0-4 cm) contain prominent light gray (5Y 7/2) and pale olive (5Y 6/4) diatom-rich biosiliceous ooze. There are portions with trace to abundant bioturbation along the whole core.



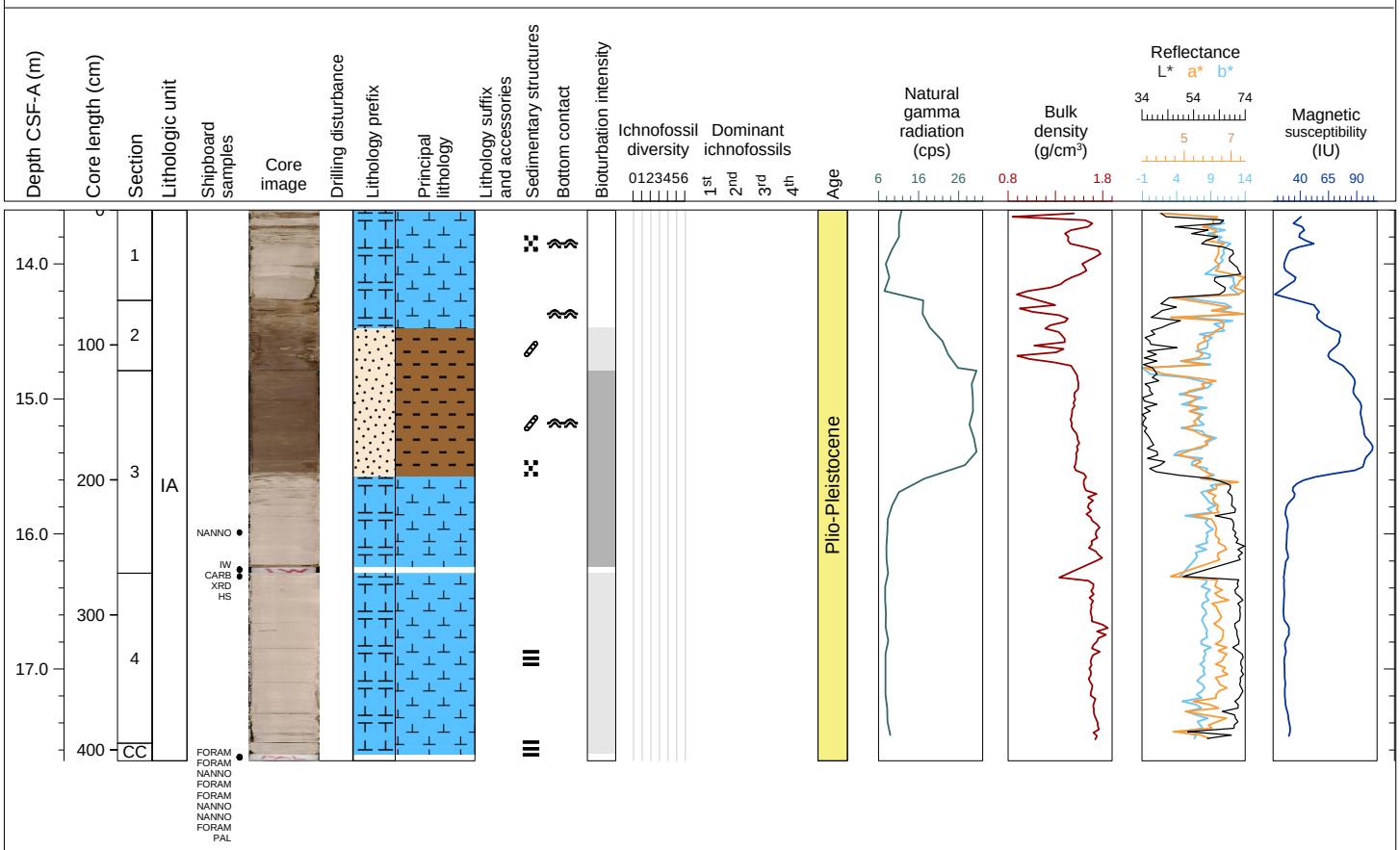
Hole 390C-U1557B Core 2H, Interval 4.1-10.54 m (CSF-A)

Core 2H contains mainly pinkish white (7.5YR 8/2) calcareous nannofossil ooze and dark yellowish brown to yellowish brown (10YR 3/4 to 10YR 5/4) silty clay. There are portions with sparse to low bioturbation, which is mostly in the form of mottling.



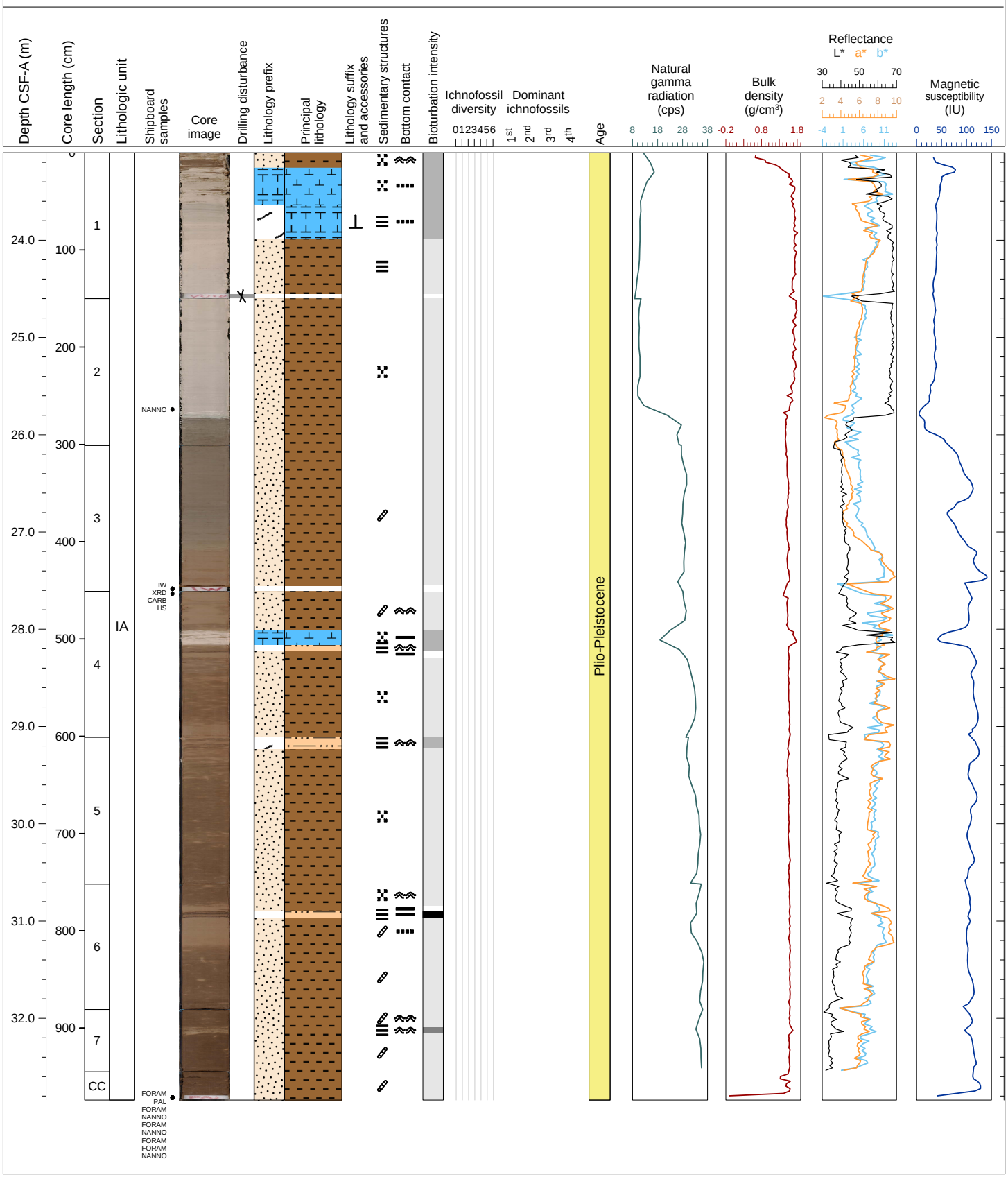
Hole 390C-U1557B Core 3H, Interval 13.6-17.68 m (CSF-A)

Core 3H contains mainly pinkish white (7.5YR 8/2) calcareous nannofossil ooze and dark yellowish brown (10YR 3/4) silty clay. There are portions with sparse to moderate bioturbation of mottling (sections 1A, 2A, and 3A) and thin laminations (sections 4A and CC).



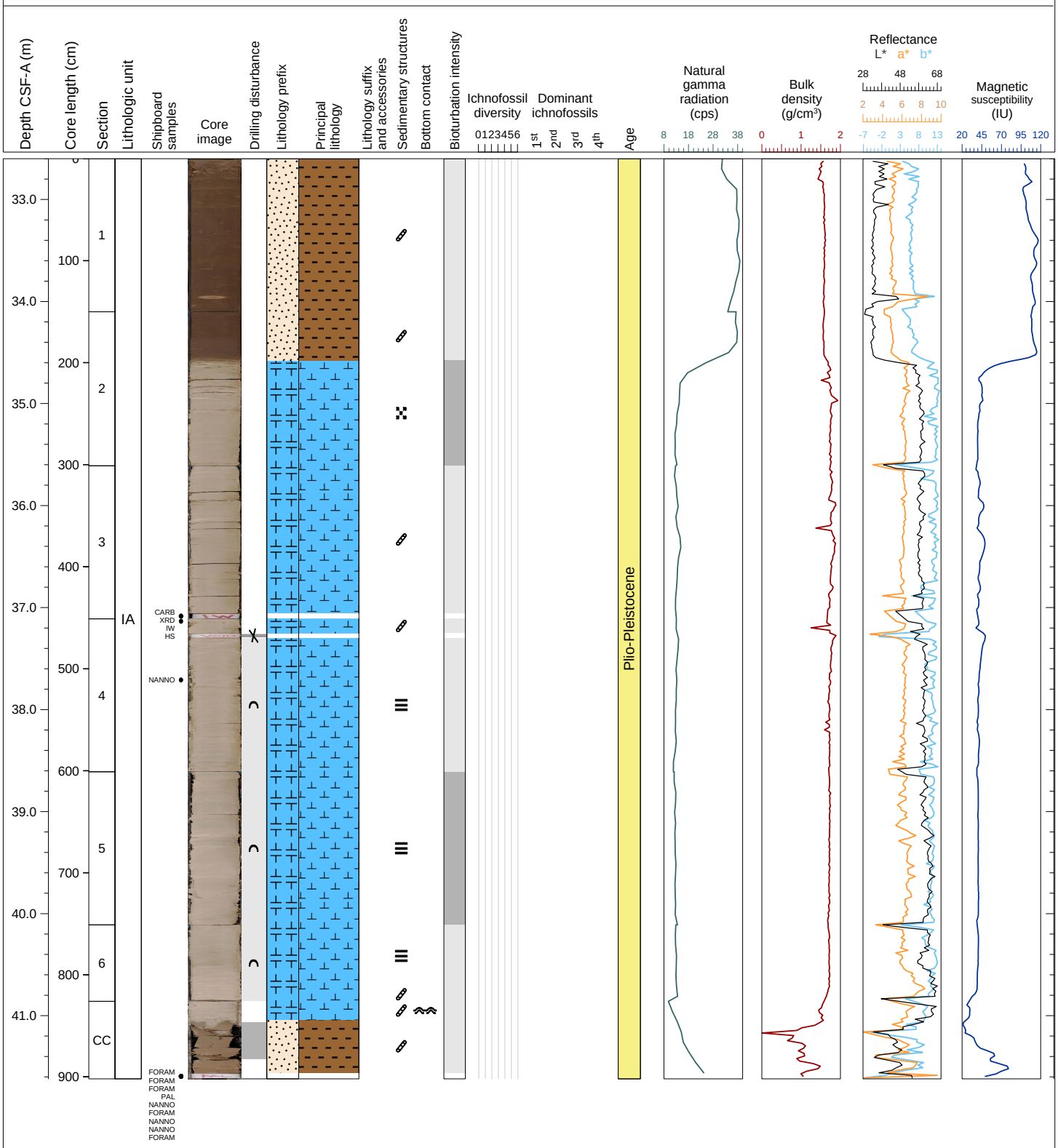
Hole 390C-U1557B Core 4H, Interval 23.1-32.84 m (CSF-A)

Core 4H contains mainly brown to very dark grayish brown (7.5YR 4/3 to 10YR 3/2) silty clay and pinkish white (7.5YR 8/2) calcareous nannofossil ooze. There are portions with thin to medium laminae of organic-rich calcareous ooze with nannofossils (sections 1A, 4A, 5A, and 6A). There is drilling disturbance: void in section 1 (145-150 cm).



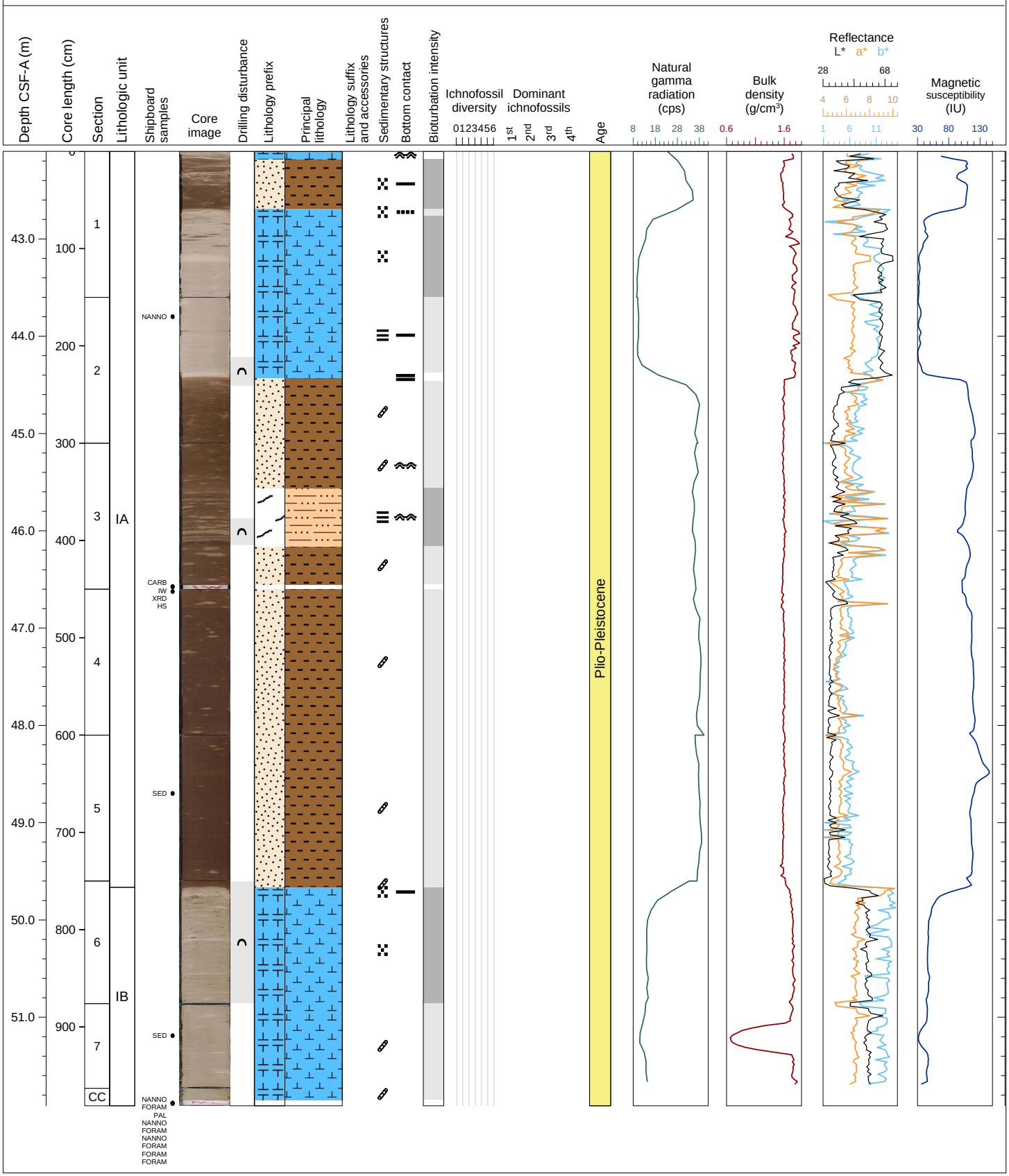
Hole 390C-U1557B Core 5H, Interval 32.6-41.62 m (CSF-A)

Core 5H contains mainly pinkish gray (7.5YR 7/2) calcareous nannofossil ooze and very dark grayish brown (7.5YR 4/3 to 0YR 3/2) silty clay. There are portions with thin to medium organic rich lamination in sections 2A, 3A, and 4A. There are portions with sparse to low bioturbation of mottling (section 1A). There are slight signs of drilling disturbance: up-arching (sections 4A, 5A and 6A), voids (section 4A) and drilling-related cracks (section CC).



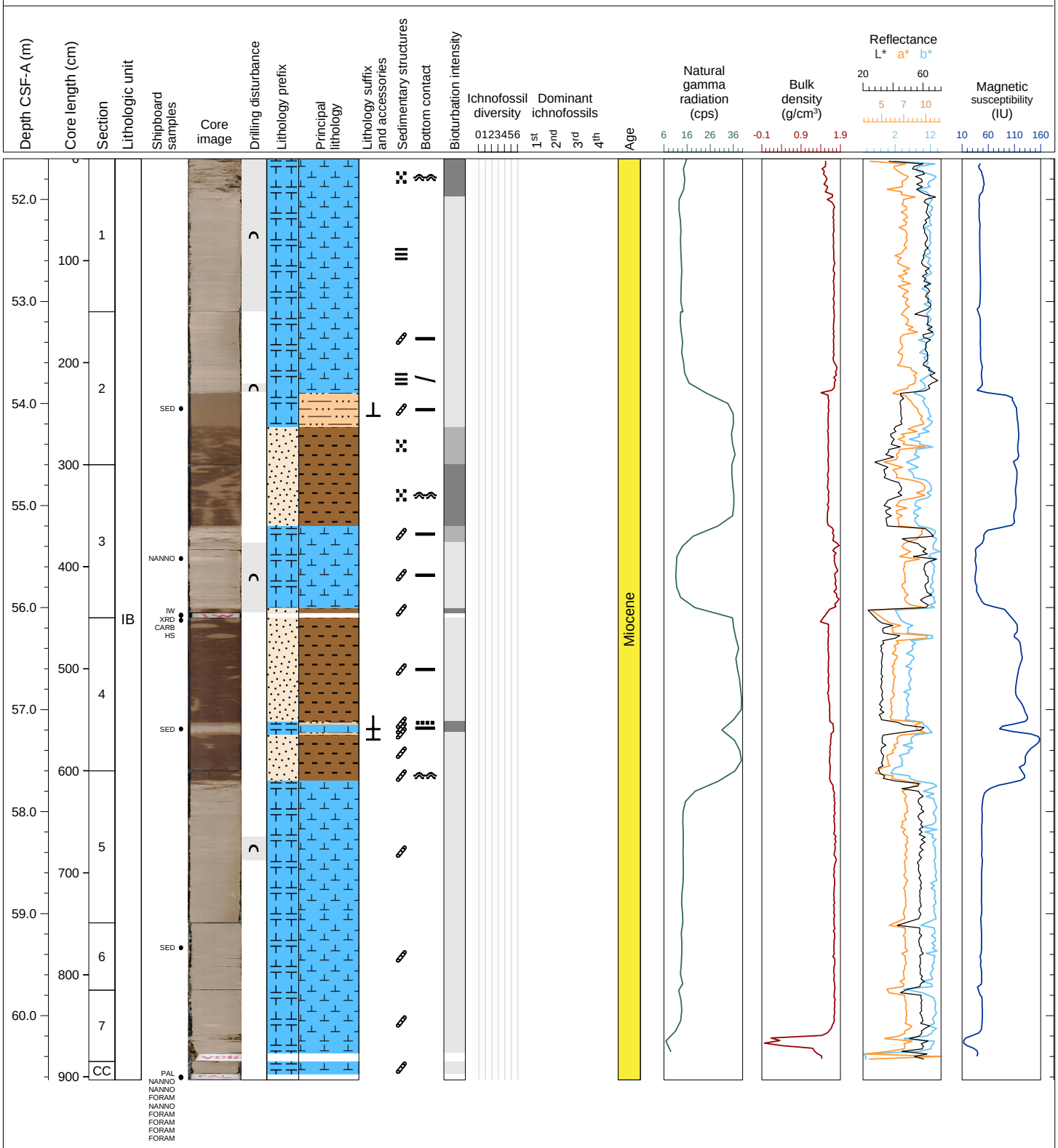
Hole 390C-U1557B Core 6H, Interval 42.1-51.91 m (CSF-A)

Core 6H contains mainly very dark grayish brown (10YR 3/2, 5/4) silty clay, as well as pinkish gray (7.5YR 7/2, 8/2) calcareous nannofossil ooze. There are portions with thin (2A; 56-78cm) to medium (section 3A; 46-106cm) organic rich laminations. There is a very dark grayish brown (10YR 3/2) prominent organic-rich silty clay in section 3A. There are portions with sparse to low bioturbation of mottling (sections 1A to CC) and lamination (section 3A). There are slight signs of drilling disturbance: up-arching (sections 2A, 3A and 6A).



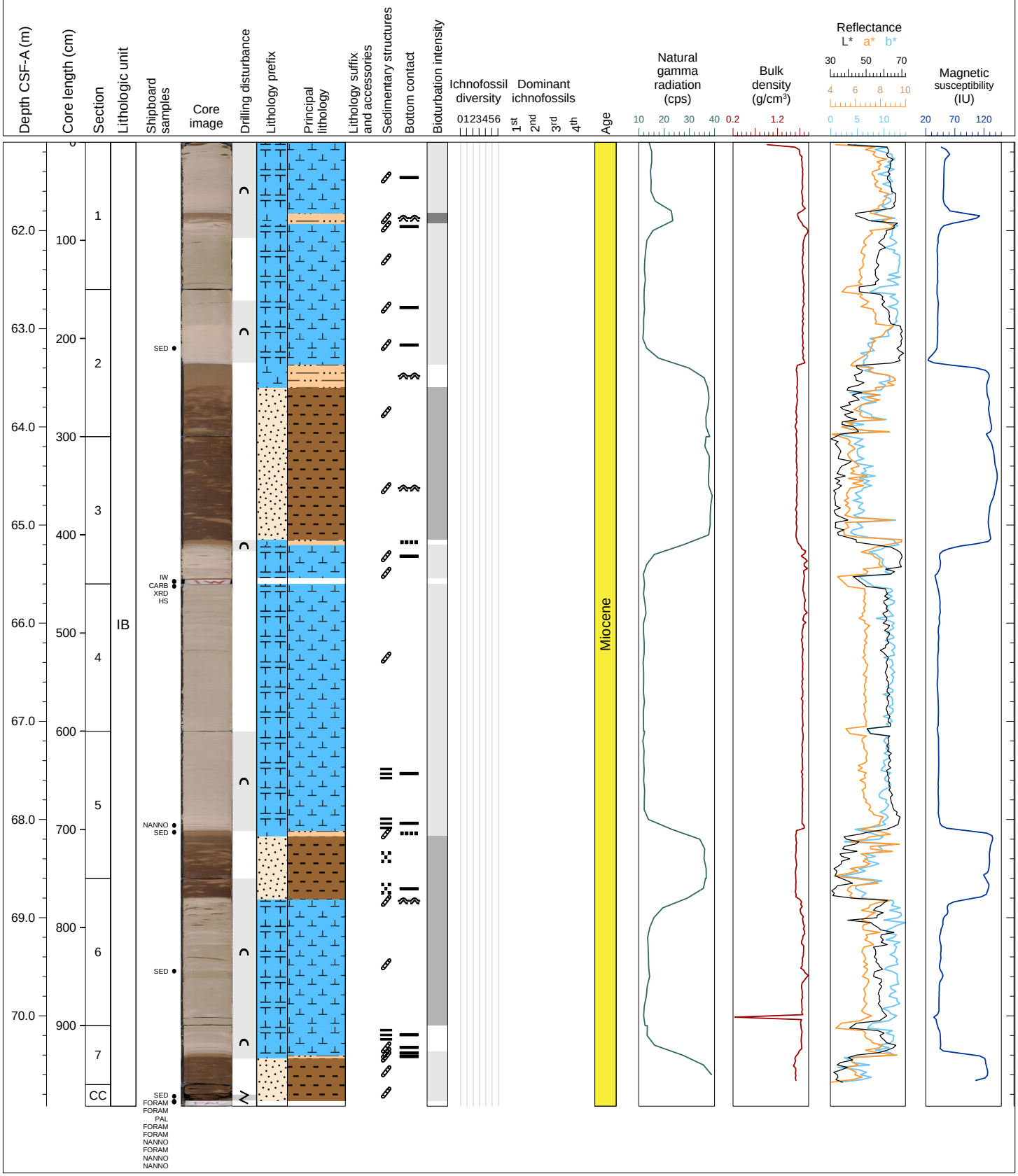
Hole 390C-U1557B Core 7H, Interval 51.6-60.63 m (CSF-A)

Core 7H contains mainly light gray (10YR 7/2) or pink 7.5YR 7/3 calcareous nannofossil ooze and brown silty clay (10 YR 5/4, 5/3). In sections 2A and 4A, a yellowish brown (10 YR 5/4) layer is calcareous silty clay with nannofossils. There are portions with sparse to moderate bioturbation or mottling and lamination. Drilling disturbance includes up-arching through most sections.



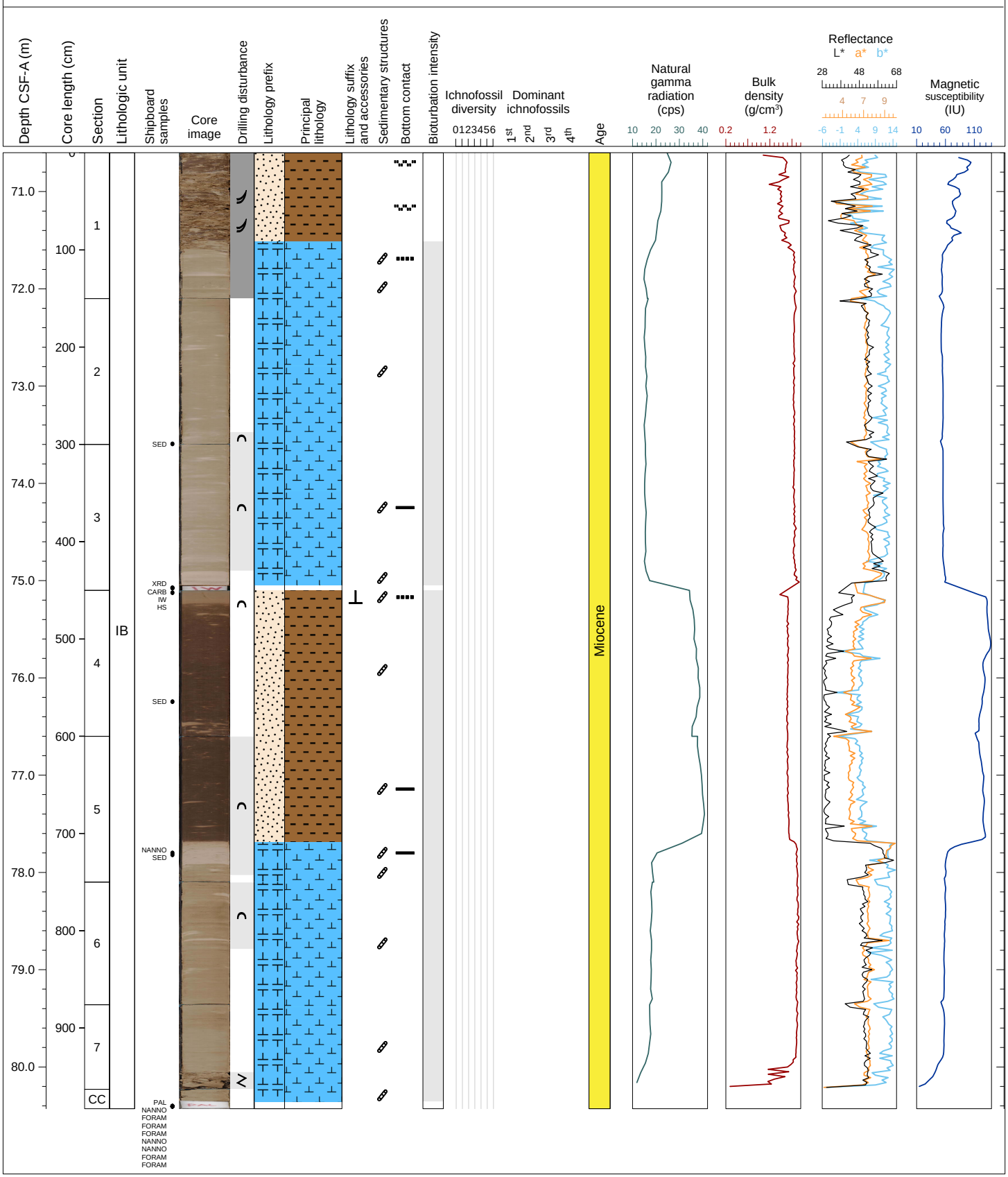
Hole 390C-U1557B Core 8H, Interval 61.1-70.92 m (CSF-A)

Core 8H contains mainly light gray (10YR 7/2) or pink (7.5YR 7/3) calcareous nannofossil ooze and dark yellowish brown silty clay (10 YR 5/4, 5/3). A yellowish brown (10 YR 5/4) layer is nannofossil-rich silty clay. Most of the core contains sparse bioturbation. Section 7A contains rare lamination. Drilling disturbance includes up-arching through most sections and fragmentation in section CC.



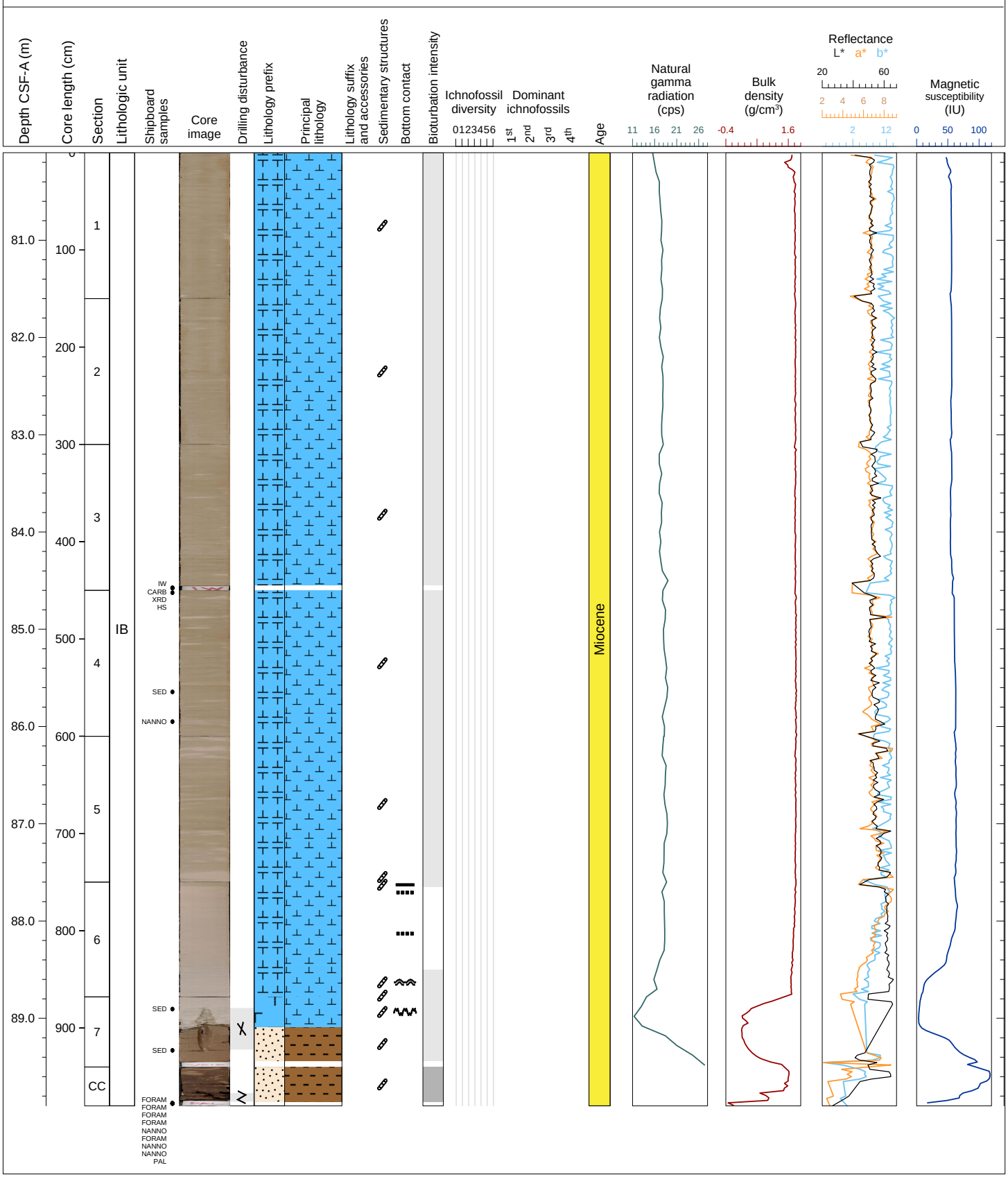
Hole 390C-U1557B Core 9H, Interval 70.6-80.43 m (CSF-A)

Core 9H contains mainly light gray (10YR 7/2), light brownish gray (10YR 6/2) or pink (7.5YR 7/3) calcareous nannofossil ooze, and brown silty clay (10 YR 4/3). A yellowish brown (10 YR 5/4) layer in the top 14 cm of section 4A is silty clay with nannofossils as an accessory. Most of the core contains sparse bioturbation. Drilling disturbance includes up-arching through most sections and slight fragmentation in below 69 cm in section 7A.



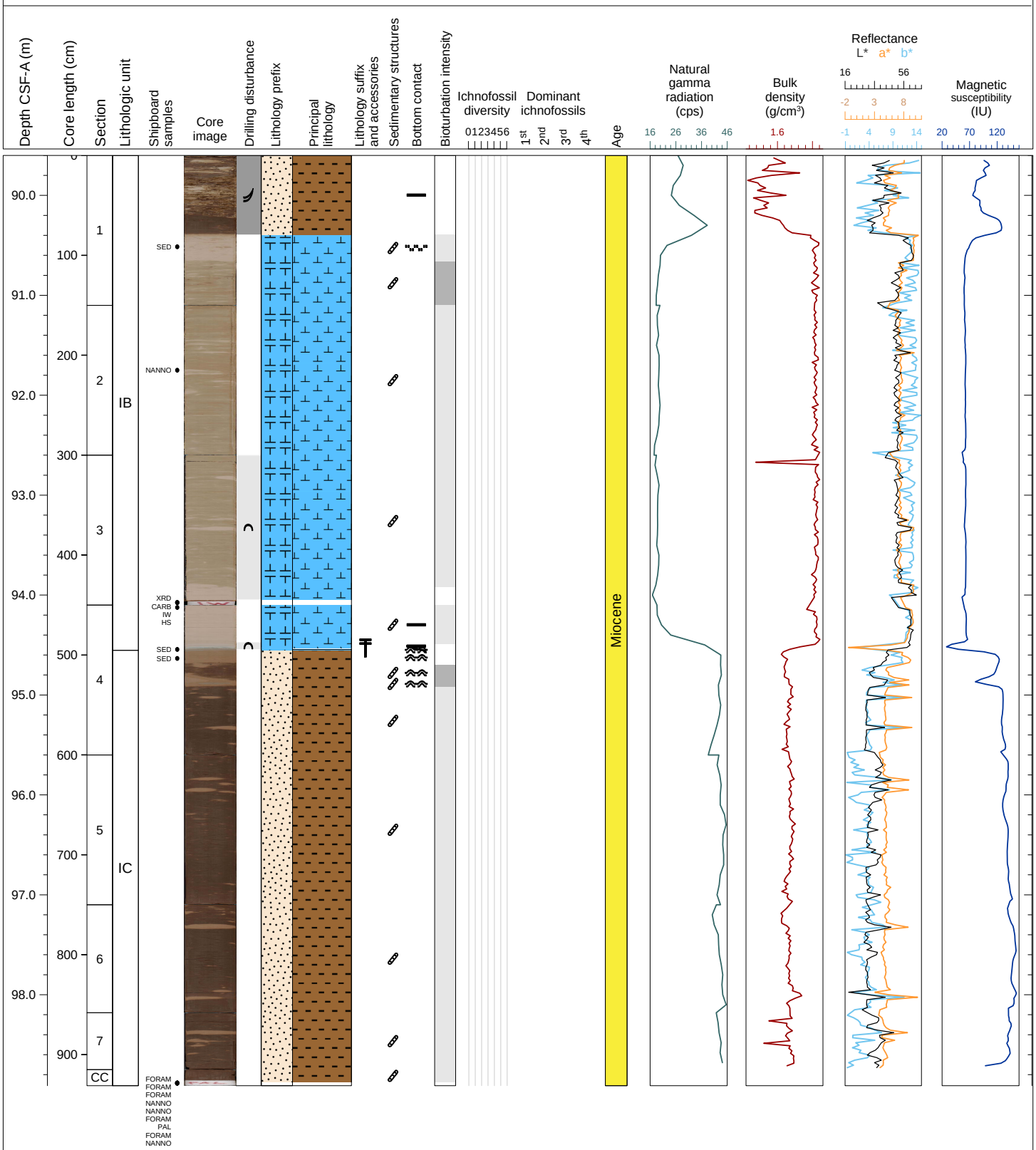
Hole 390C-U1557B Core 10H, Interval 80.1-89.9 m (CSF-A)

Core 10H contains mainly light gray (10YR 7/2) calcareous nannofossil ooze. In addition, near the bottom of the core, Section 7A contains pinkish white (7.5YR 8/2) foraminiferal nannofossil ooze and brown silty clay (10YR 4/3); a lighter brown silty clay (7.5YR 5/4) in 7A contains nannofossils. Most of the core contains sparse bioturbation. Drilling disturbance is absent in much of the core, except there is a groove in 7A and fragmentation in the section CC.



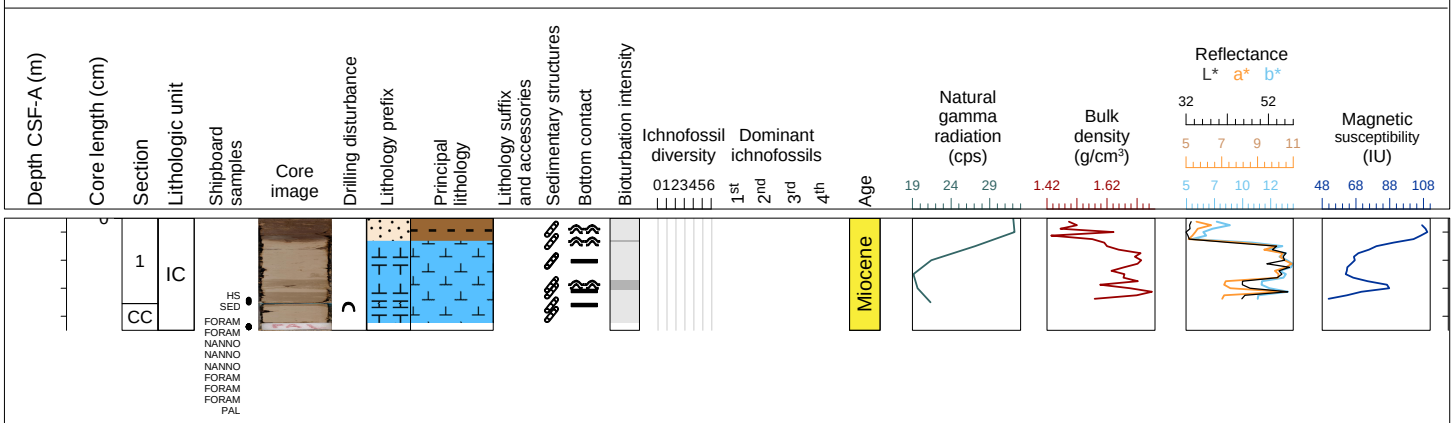
Hole 390C-U1557B Core 11H, Interval 89.6-98.91 m (CSF-A)

Core 11H contains mainly pinkish gray (7.5YR 7/2) and pink (7.5YR 7/3, 8/3) calcareous nannofossil ooze, and brown silty clay (7.5YR 4/3). A light greenish grey layer in section 4A is nannofossil-rich formainifal ooze. Most of the core contains sparse bioturbation. Fill-in occurs until 61 cm in 1A, but otherwise disturbance includes slight upward-arching in sections 3A and 4A.



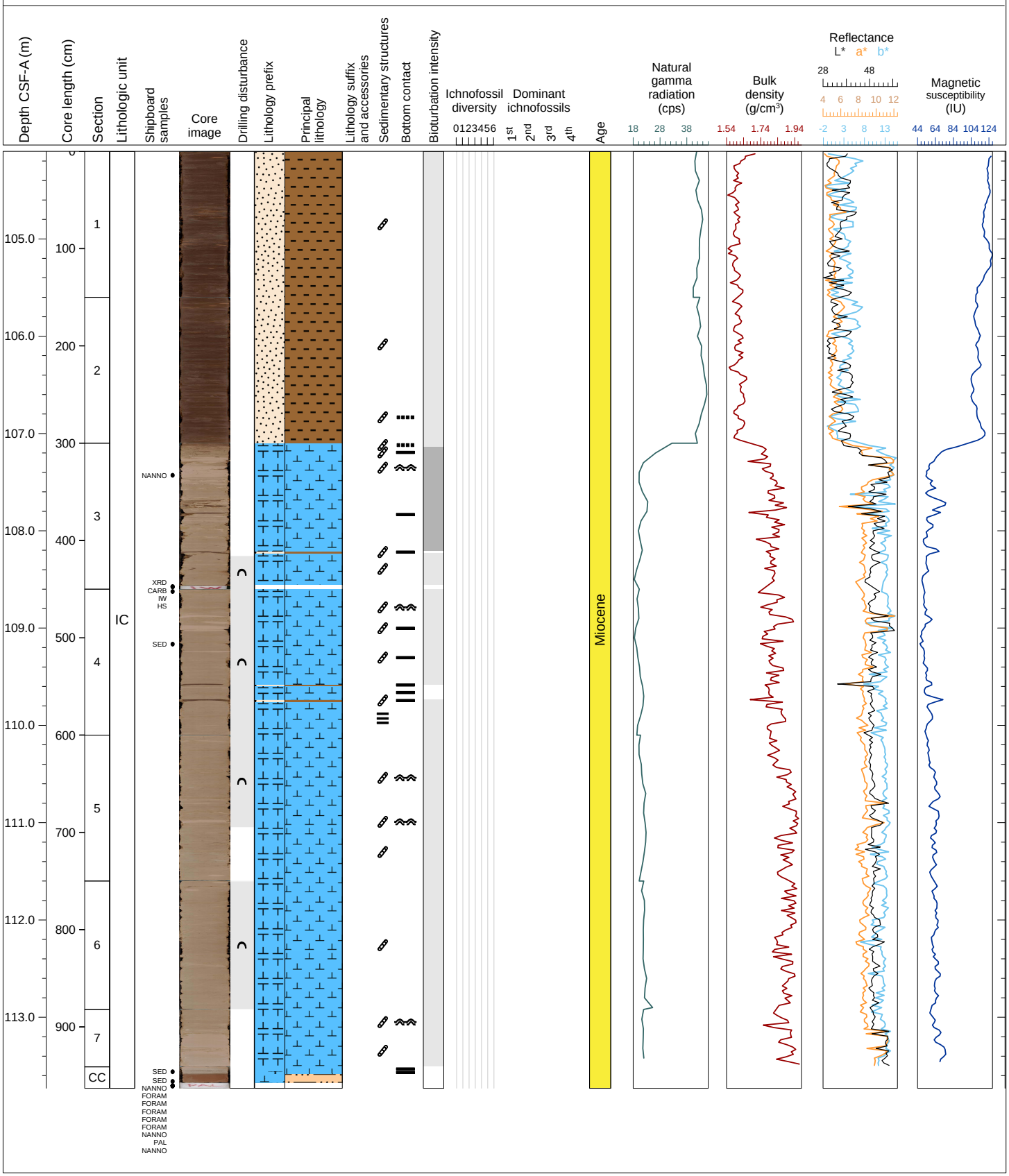
Hole 390C-U1557B Core 12X, Interval 99.1-99.9 m (CSF-A)

Core 12X contains mainly pinkish gray and pink (7.5YR 6/2, 8/3) calcareous nannofossil ooze, and brown silty clay (7.5YR 4/3). The core contains sparse to low bioturbation. One location of up-arching disturbance in section CC



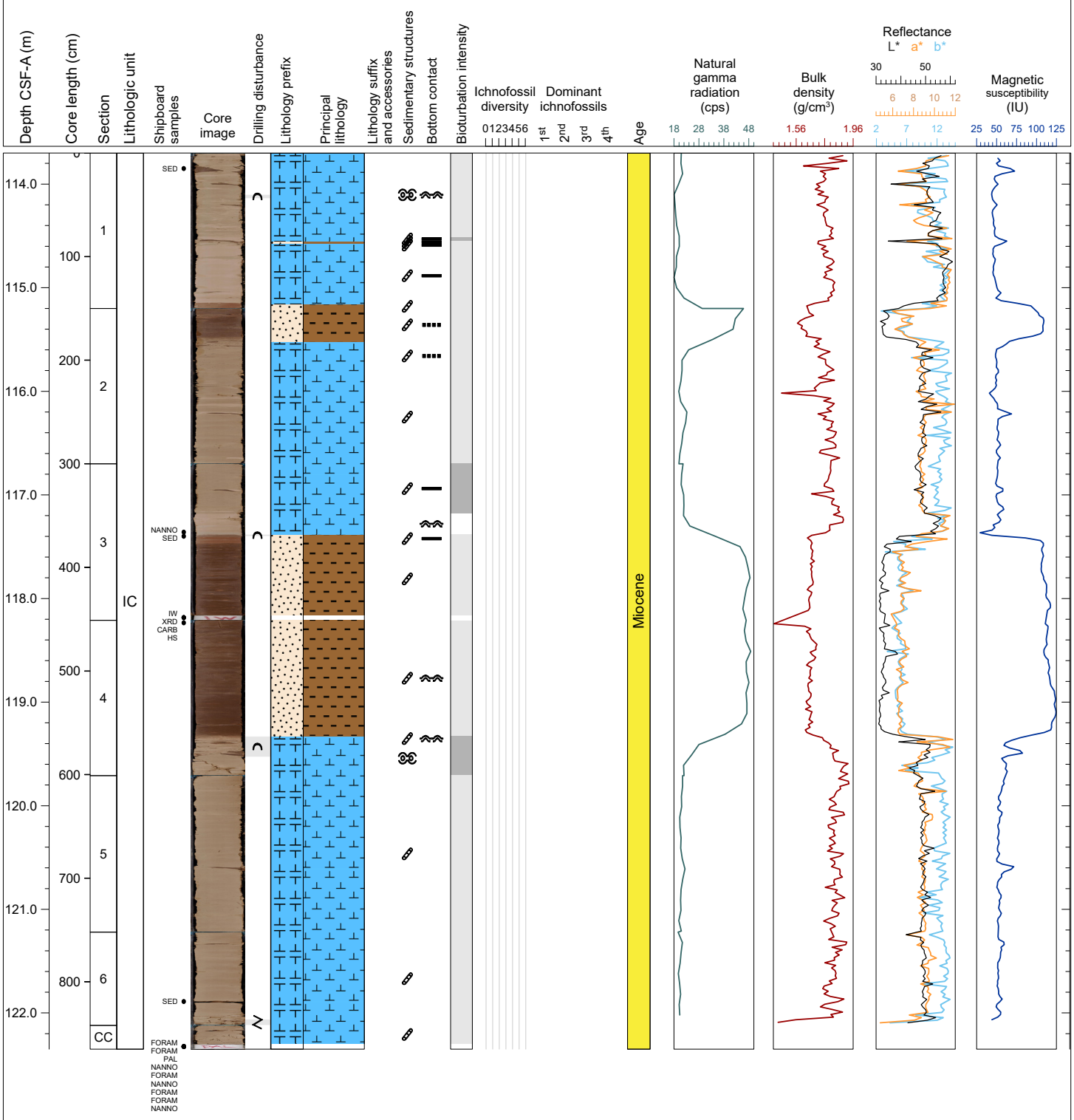
Hole 390C-U1557B Core 13X, Interval 104.1-113.73 m (CSF-A)

Core 13X contains mainly pinkish gray and pink (7.5YR 7/2, 7/3) calcareous nannofossil ooze, and brown and dark brown silty clay (7.5YR 3/4, 5/3, 5/4). The core contains sparse bioturbation and thin laminae in places. Up-arching disturbance exists through much of the core.



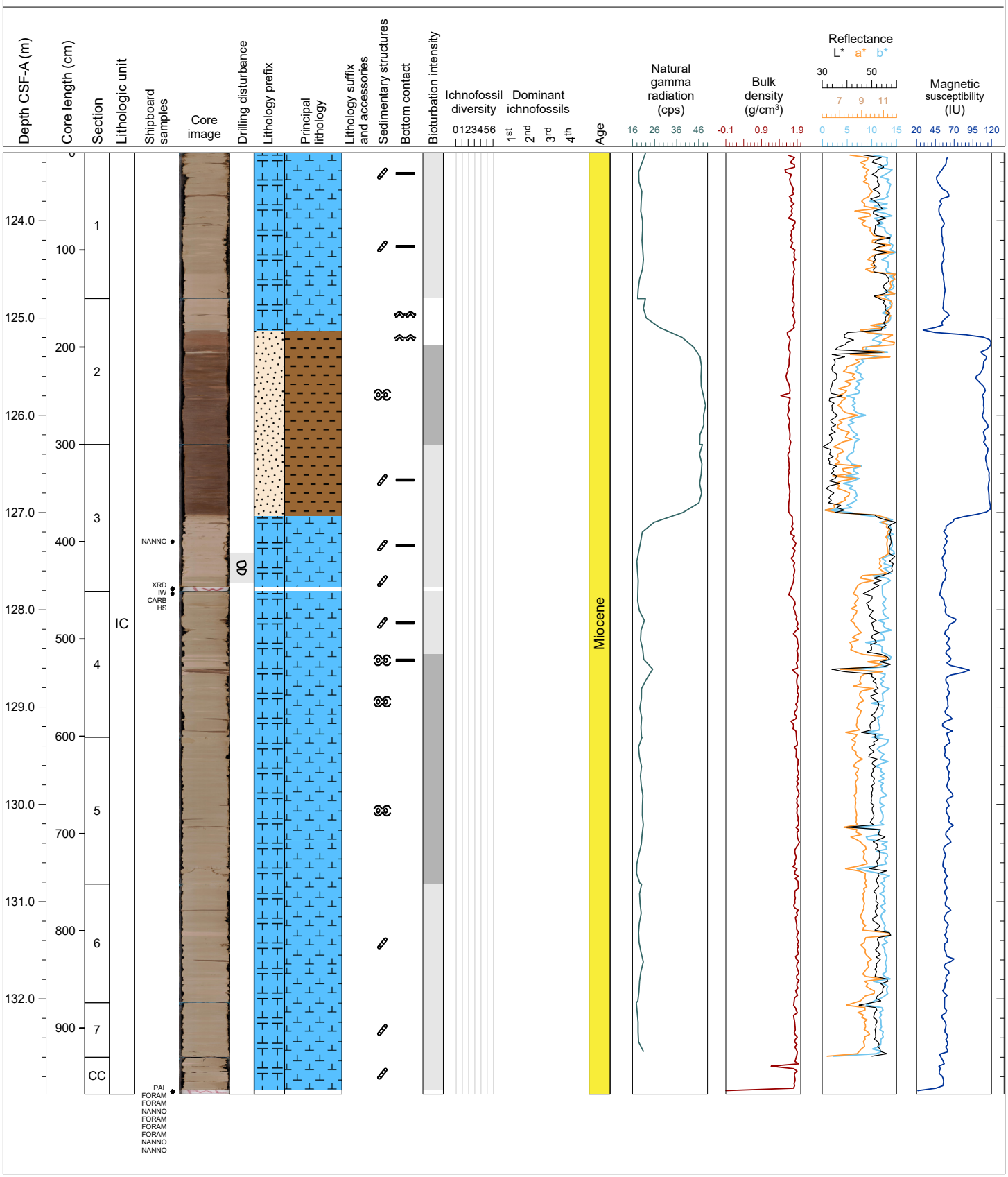
Hole 390C-U1557B Core 14X, Interval 113.7-122.35 m (CSF-A)

Core 14X contains mainly pinkish gray and pink (7.5YR 7/2, 7/3) calcareous nannofossil ooze, and brown silty clay (7.5YR 3/4, 5/3). A lighter brown interval (7.5YR , 5/4) in section 3A contains silty clay. The core contains sparse and low bioturbation and a few lens/pods in sections 1A, 2A and 5A of the brown sediment. Up-arching disturbance exists through much of the core and fragmentation at the bottom 10 cm of section 6A.



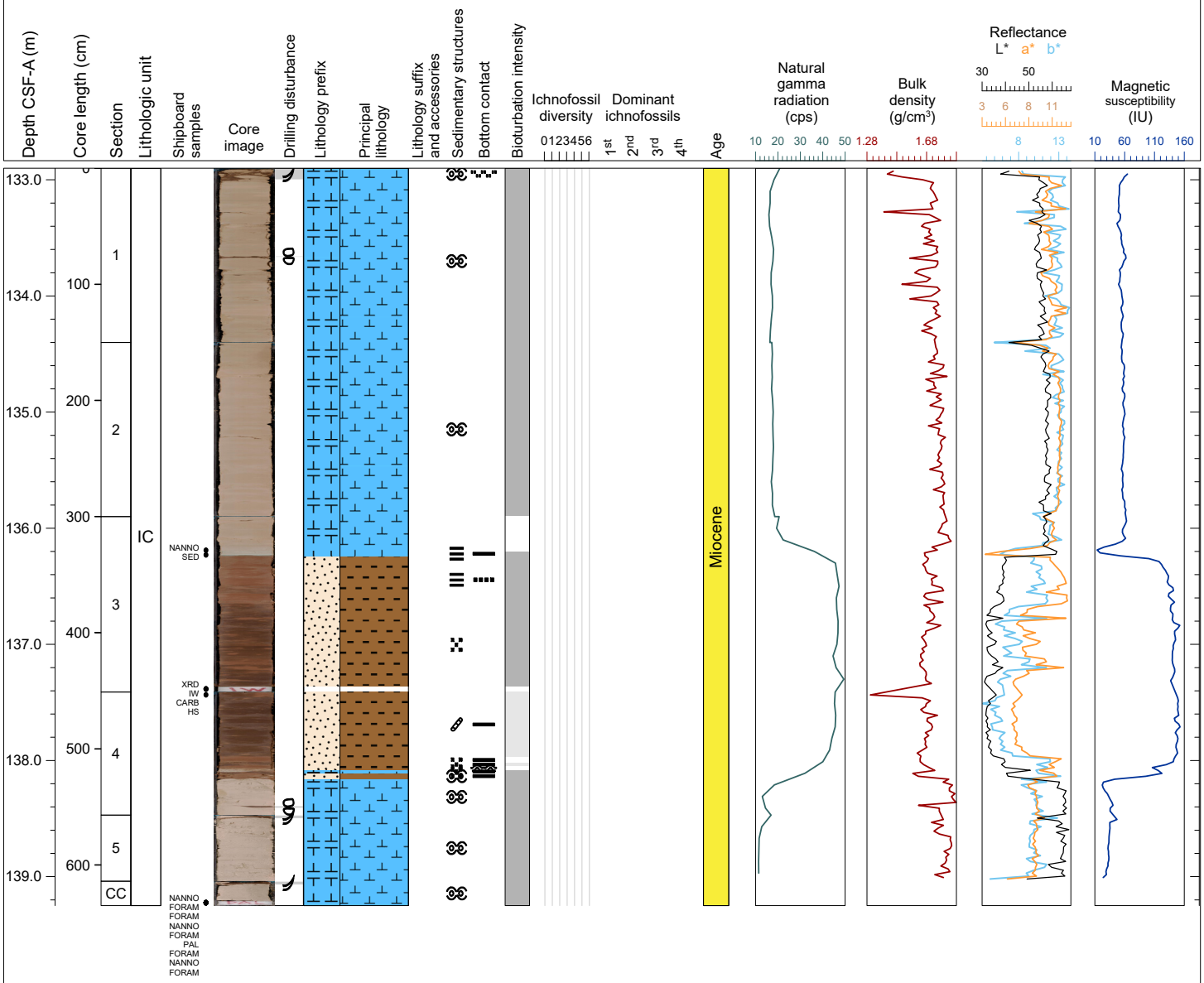
Hole 390C-U1557B Core 15X, Interval 123.3-132.98 m (CSF-A)

Core 15X contains mainly pinkish gray and pink (7.5YR 7/2, 7/3) calcareous nannofossil ooze, and brown silty clay (7.5YR 3/4, 5/3). The core contains sparse and low bioturbation and a few lens/pods in sections 1A, 2A, 4A, 5A and 6A of the brown sediment. Slight drilling biscuit disturbance exist in sections 1A to CC.



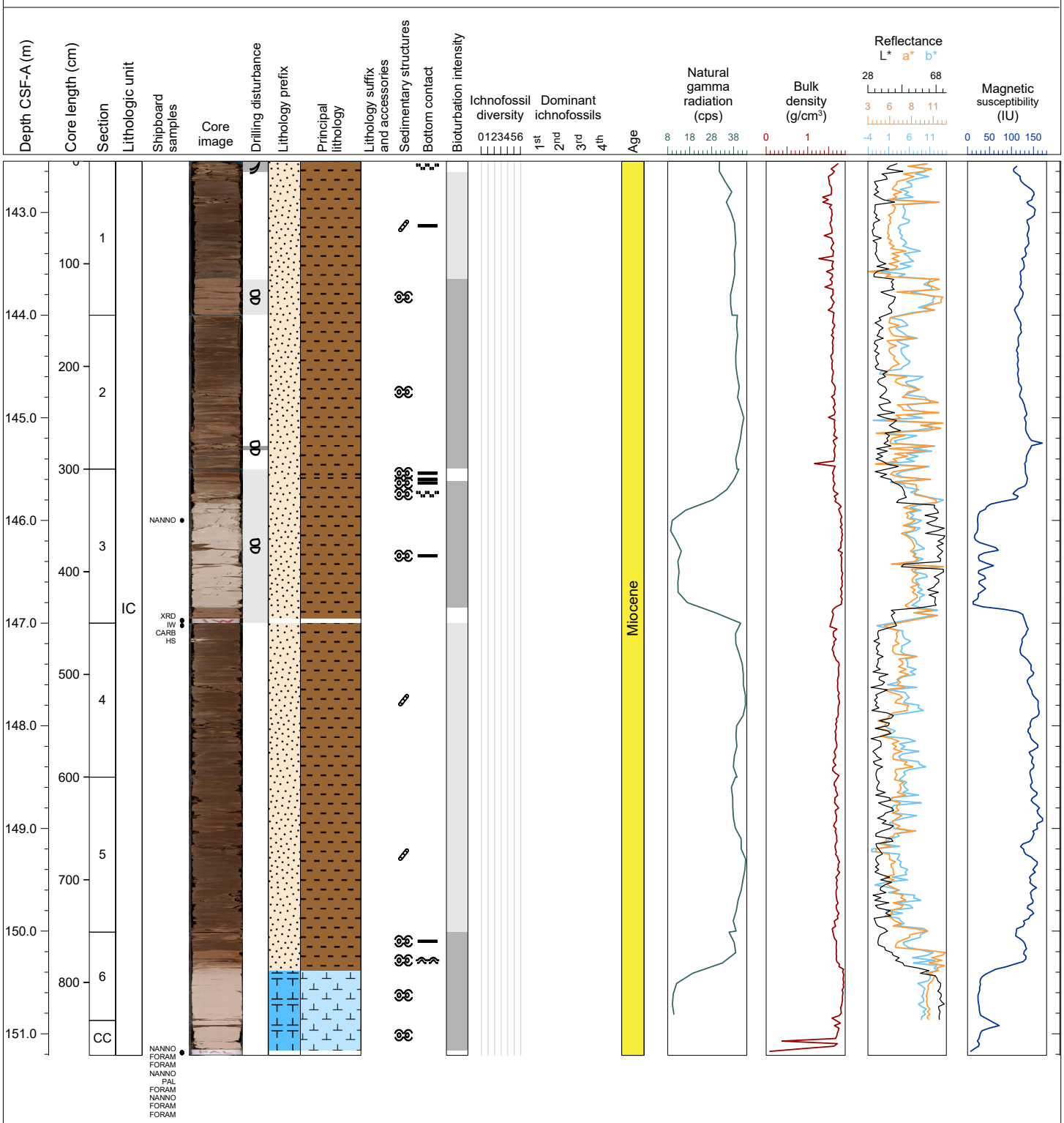
Hole 390C-U1557B Core 16X, Interval 132.9-139.25 m (CSF-A)

Core 16X contains mainly pinkish gray and pink (7.5YR 7/2, 7/3) calcareous nannofossil ooze, and brown silty clay (7.5YR 3/4, 5/3). There is a dark green to pale green (10Y 6/2) nannofossil rich silty clay with foraminifera in the section 3A (30-33 cm). Lens-pod structure at the top of the sections (1A, 3A, 5A, and CC) due to fall-in drilling disturbance. Also there is a lens-pod in the middle of the biscuit above and below due to drilling disturbance (1A; 75.5-76.5 cm, 4A; 98.5-99.5 cm).



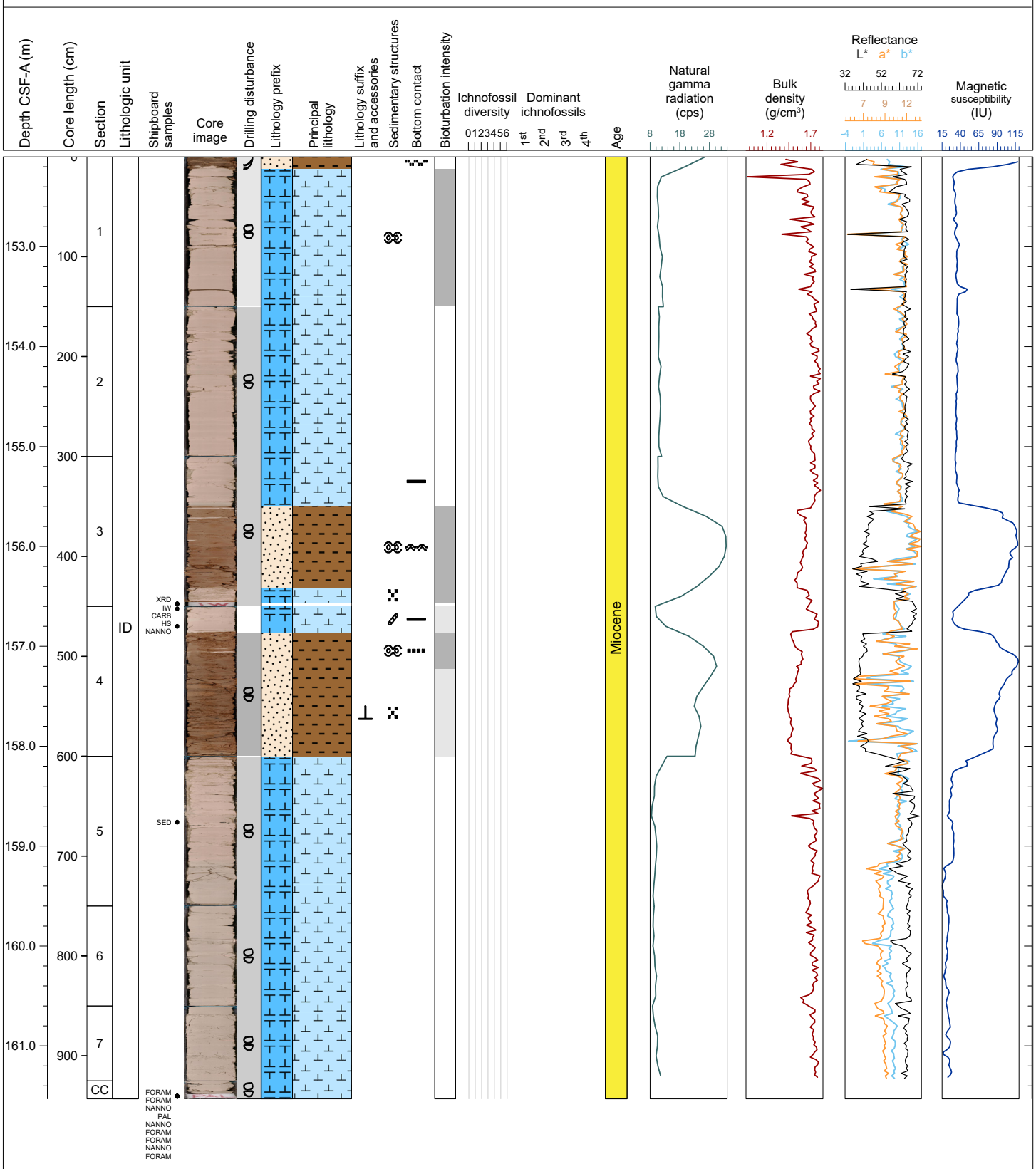
Hole 390C-U1557B Core 17X, Interval 142.5-151.21 m (CSF-A)

Core 17X contains mainly dark brown to brown (7.5YR 3/2 to 7.5YR 5/4) silty clay and pink (7.5TR 7/2) calcareous nannofossil ooze. The core contains sparse bioturbation in places. Lens-pod structure at the top of the sections (sections 1A, 3A, 6A, and CC) due to fall-in drilling disturbance.



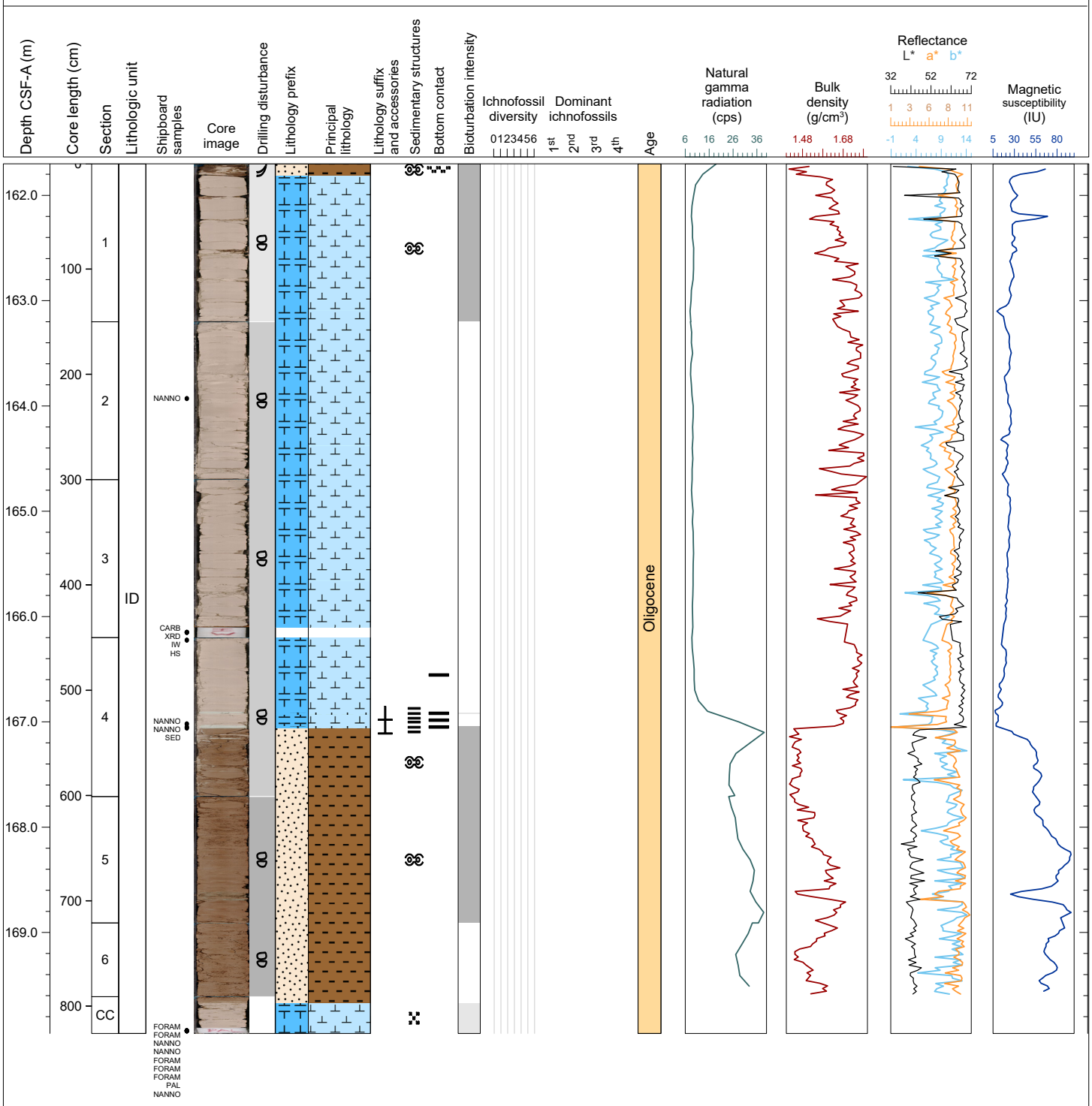
Hole 390C-U1557B Core 18X, Interval 152.1-161.53 m (CSF-A)

Core 18X contains mainly dark brown to brown (7.5YR 3/2 to 7.5YR 5/4) silty clay and pink (7.5TR 7/2) calcareous nannofossil chalk. Section 4A contains a prominent layer of brown (7.5YR 5/4) organic-rich calcareous chalk with nannofossils. The core contain spherical black organic matter in sections 3A, 4A and 5A. The core contains sparse bioturbation in places. Drilling induced lens-pod structure in sections 1A, 3A and 4A.



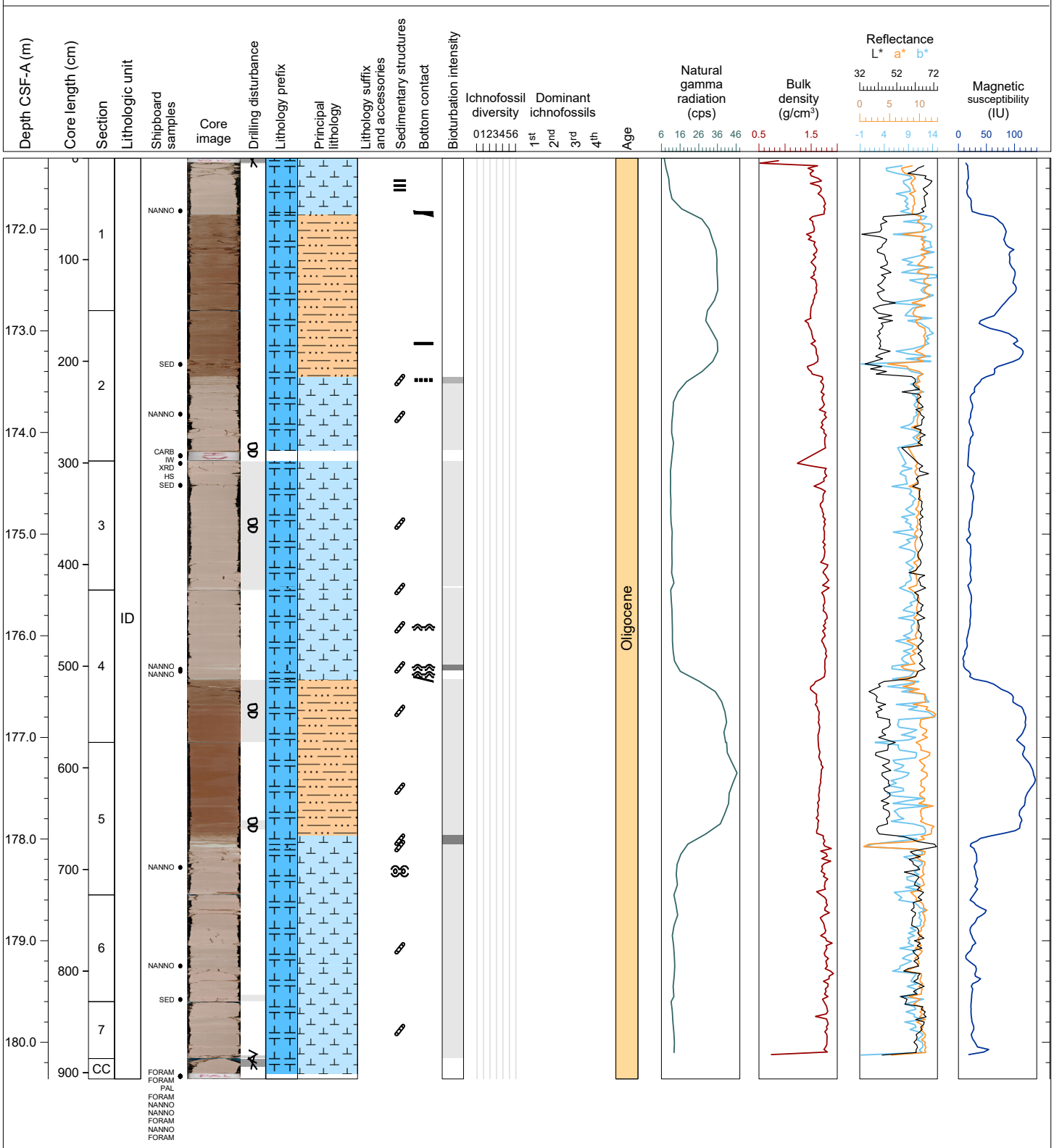
Hole 390C-U1557B Core 19X, Interval 161.7-169.96 m (CSF-A)

Core 19X contains mainly pink (7.5TR 7/2) calcareous nannofossil chalk and brown (7.5YR 5/4) silty clay. The core contains very thin to thin beds of white (5Y 8/1) foraminiferal calcareous chalk with nannofossil in section 4A (71-73 cm; 83-86 cm). Drilling disturbance includes severe fall-in at section 1A (0-11 cm) and slight to severe biscuiting in the entire core.



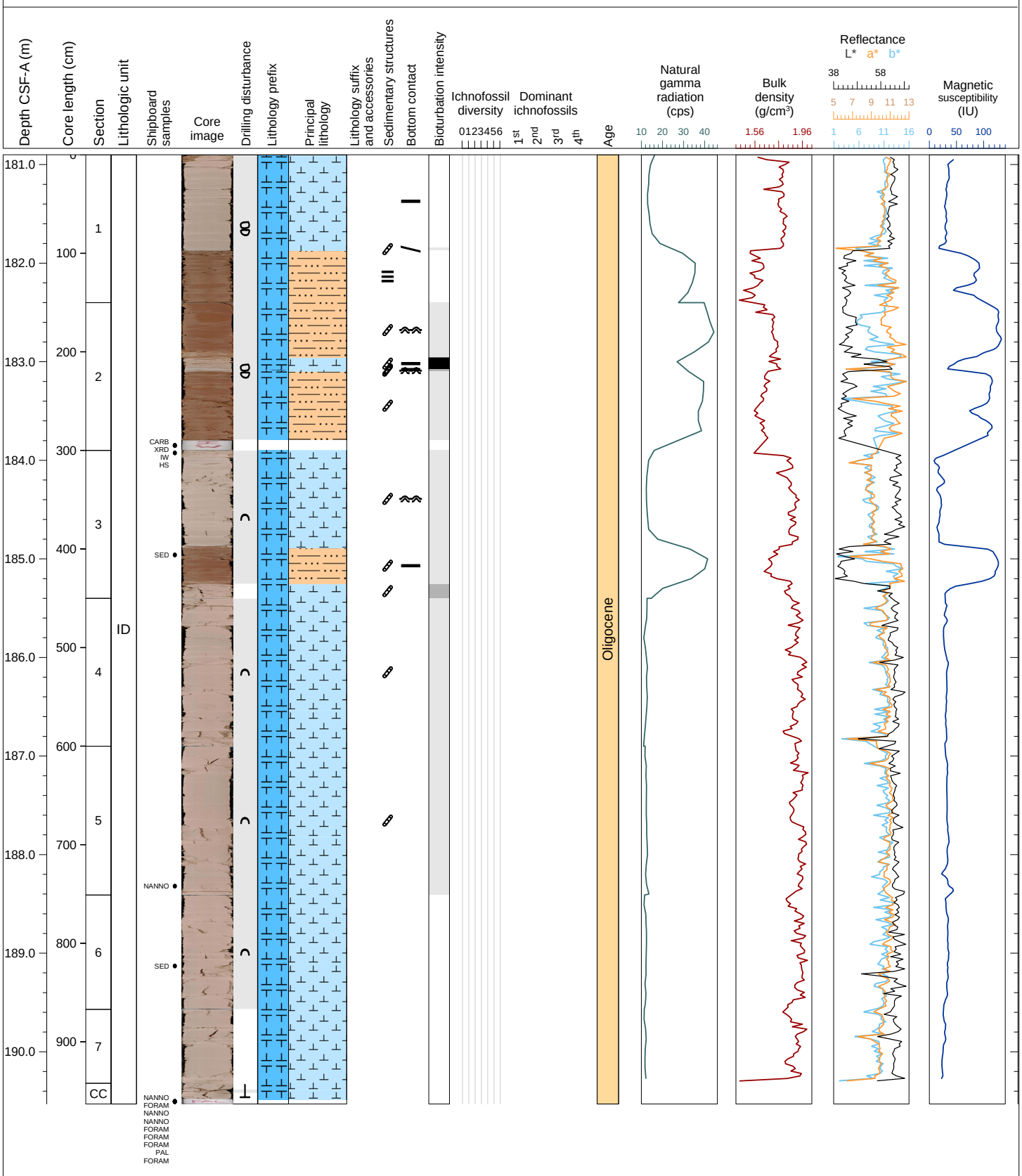
Hole 390C-U1557B Core 20X, Interval 171.3-180.36 m (CSF-A)

Core 20X contains mainly pink (7.5TR 7/3) calcareous nannofossil chalk and brown (7.5YR 5/4) calcareous silty clay. Light greenish grey (GLEY 1 8/5GY) foraminiferal nannofossil chalk appears as layers, lenses and pods. Drilling disturbance includes biscuits, fragmentation (sections 6A and CC) and a void in sections 1A and CC.



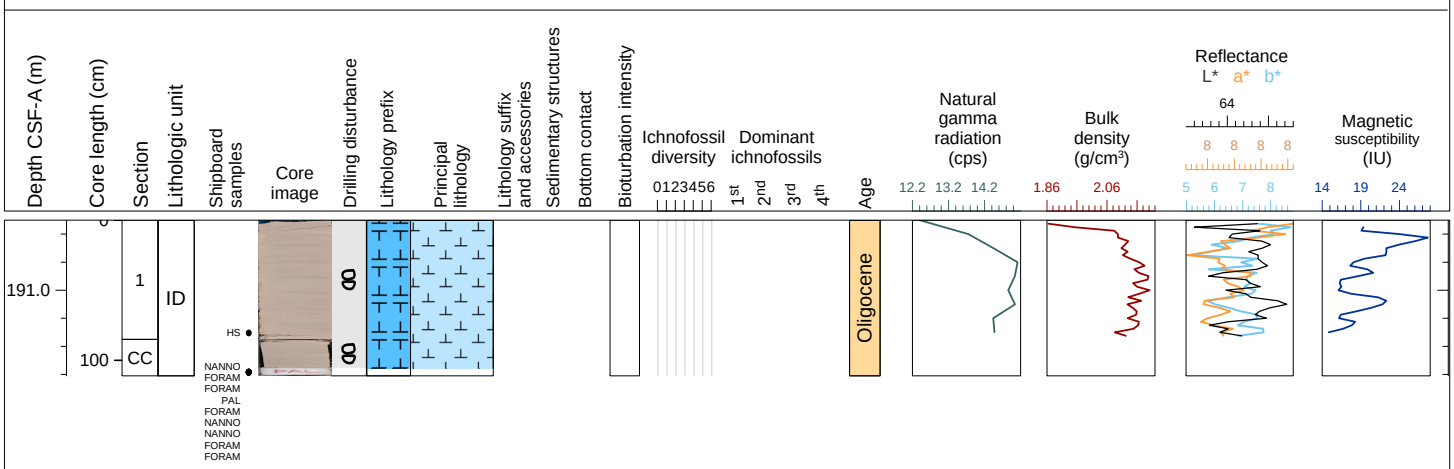
Hole 390C-U1557B Core 21X, Interval 180.9-190.53 m (CSF-A)

Core 21X contains mainly pink (7.5TR 7/3, 5YR 7/3) calcareous nannofossil chalk and light brown or brown (7.5YR 5/4, 6/4) calcareous silty clay. Light greenish grey (GLEY 1 8/5GY) foraminiferal nannofossil chalk appears as lamina in 2A and 3A. Sparse or no trace fossils through most of core except low intensity in parts of 3A. Drilling disturbance includes biscuits and up-arching throughout, and fragmentation in CC.



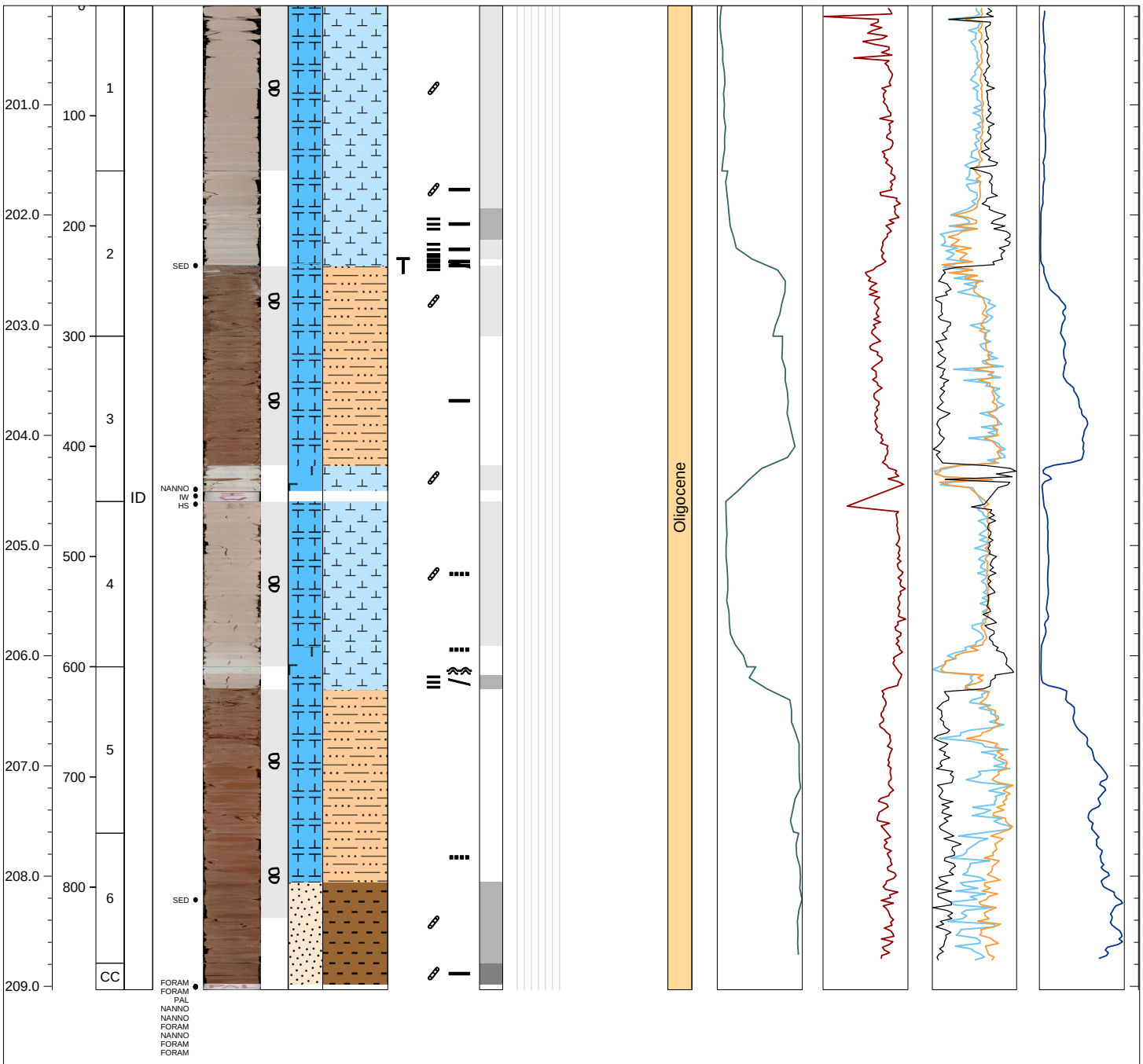
Hole 390C-U1557B Core 22X, Interval 190.5-191.61 m (CSF-A)

Core 22X contains only pink (7.5TR 7/3) calcareous nannofossil chalk. No trace fossils. Drilling disturbance includes biscuits and slight triangular void in 1A.



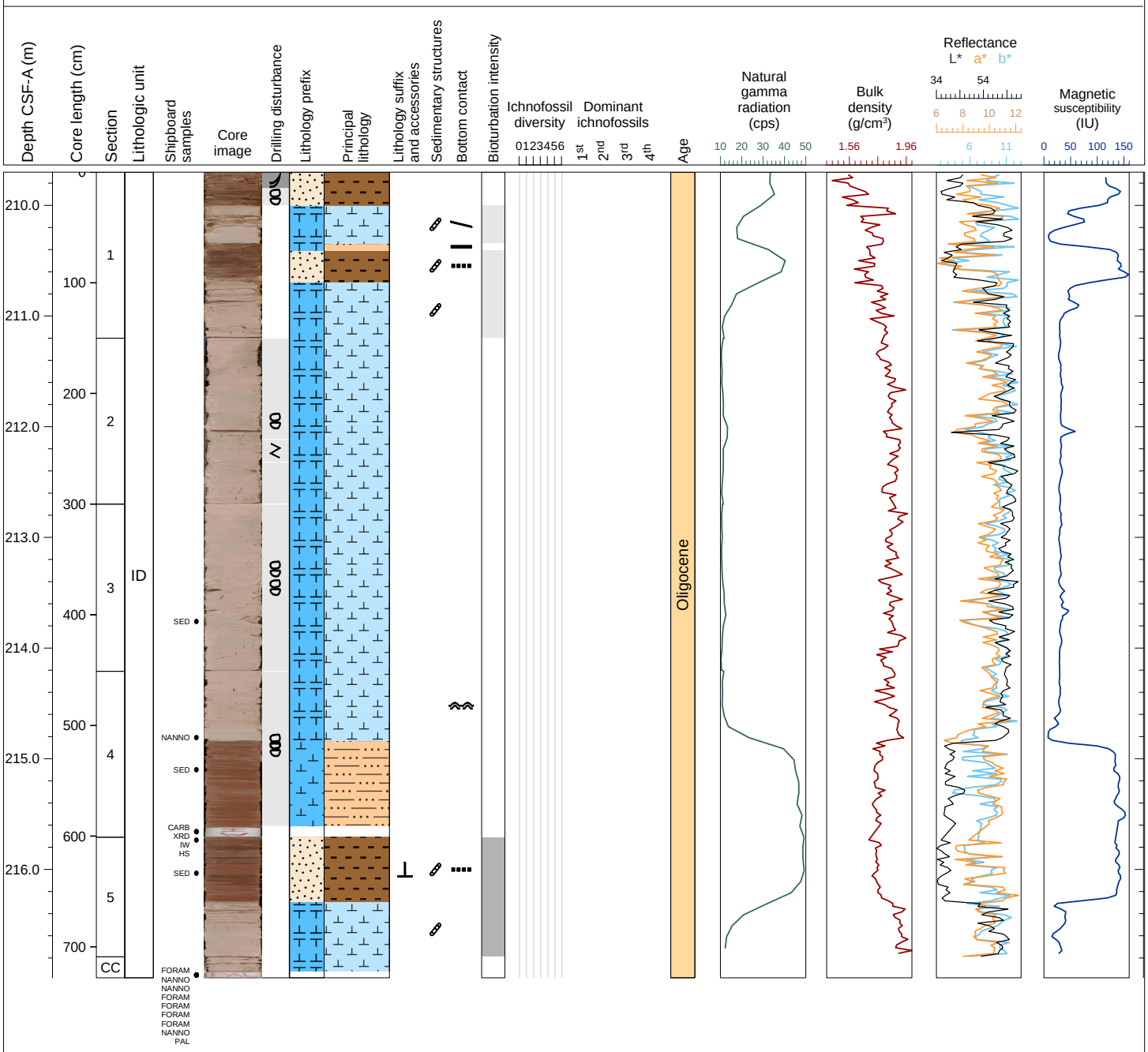
Hole 390C-U1557B Core 23X, Interval 200.1-209.03 m (CSF-A)

Core 23X contains mainly pink (7.5TR 7/3) calcareous nannofossil chalk, brown (7.5YR 5/4) calcareous silty clay, and reddish brown (5YR 4/4) silty clay with nannofossils. Light greenish grey (GLEY 1 8/5GY) foraminiferal nannofossil chalk appears pervasive in sections (3A, 4A, 5A) and in laminations (5A). One grayish green lamina is silty clay with nannofossils. Sparse to moderate and none for trace fossils. Drilling disturbance includes mainly slight or slight-faint biscuits.



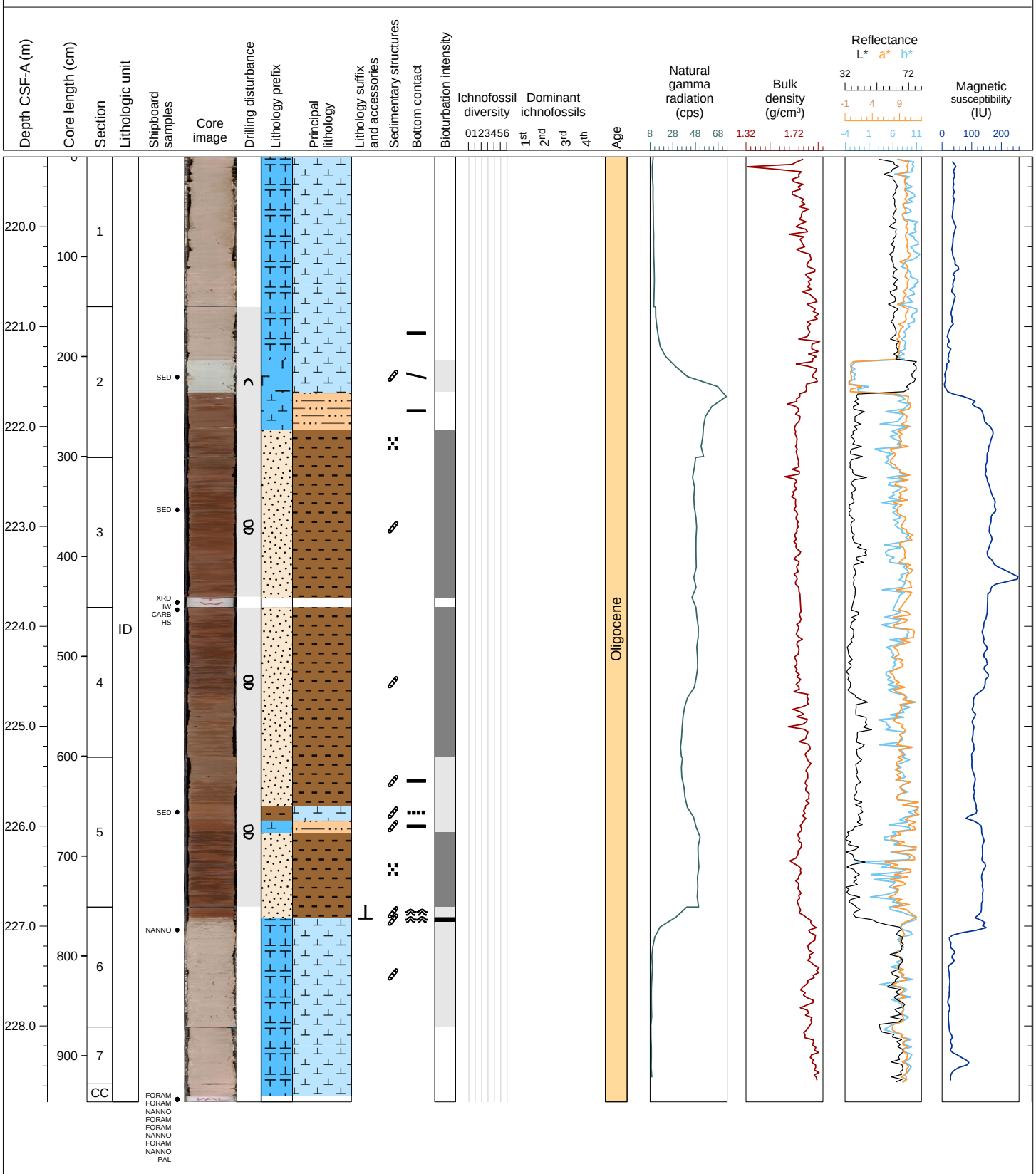
Hole 390C-U1557B Core 24X, Interval 209.7-216.98 m (CSF-A)

Core 24X contains mainly pink (7.5TR 7/3) calcareous nannofossil chalk, brown (7.5YR 5/4) nanno-fossil rich silty clay, and reddish brown (5YR 4/4) silty clay with nannofossils. Sparse to low and none for trace fossils. Drilling disturbance includes mainly slight to faint biscuits. Prominent tracks in 5A.



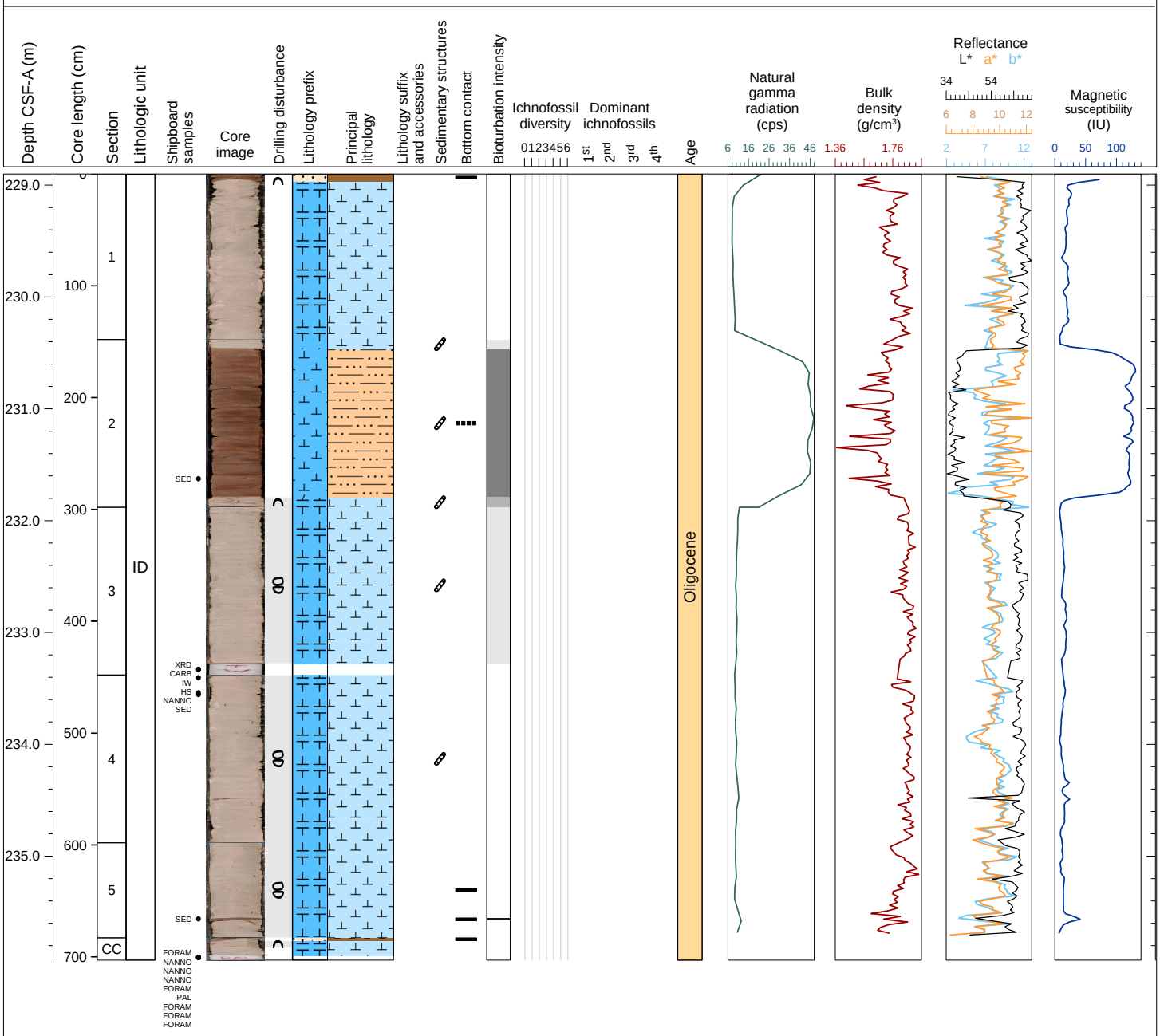
Hole 390C-U1557B Core 25X, Interval 219.3-228.76 m (CSF-A)

Core 25X contains pink (7.5TR 7/3) calcareous nannofossil chalk, reddish brown (7.5YR 5/4) silty clay, and strong brown (7.5YR 4/6) nanno-fossil rich silty clay or with nannofossils. Section 2A contains a light greenish gray (GLEY 1 8/5GY) foraminiferal nannofossil chalk. Sparse to high and none for trace fossils, with prominent tracks in 6A. Drilling disturbance includes slight biscuits in 2A to 5A.



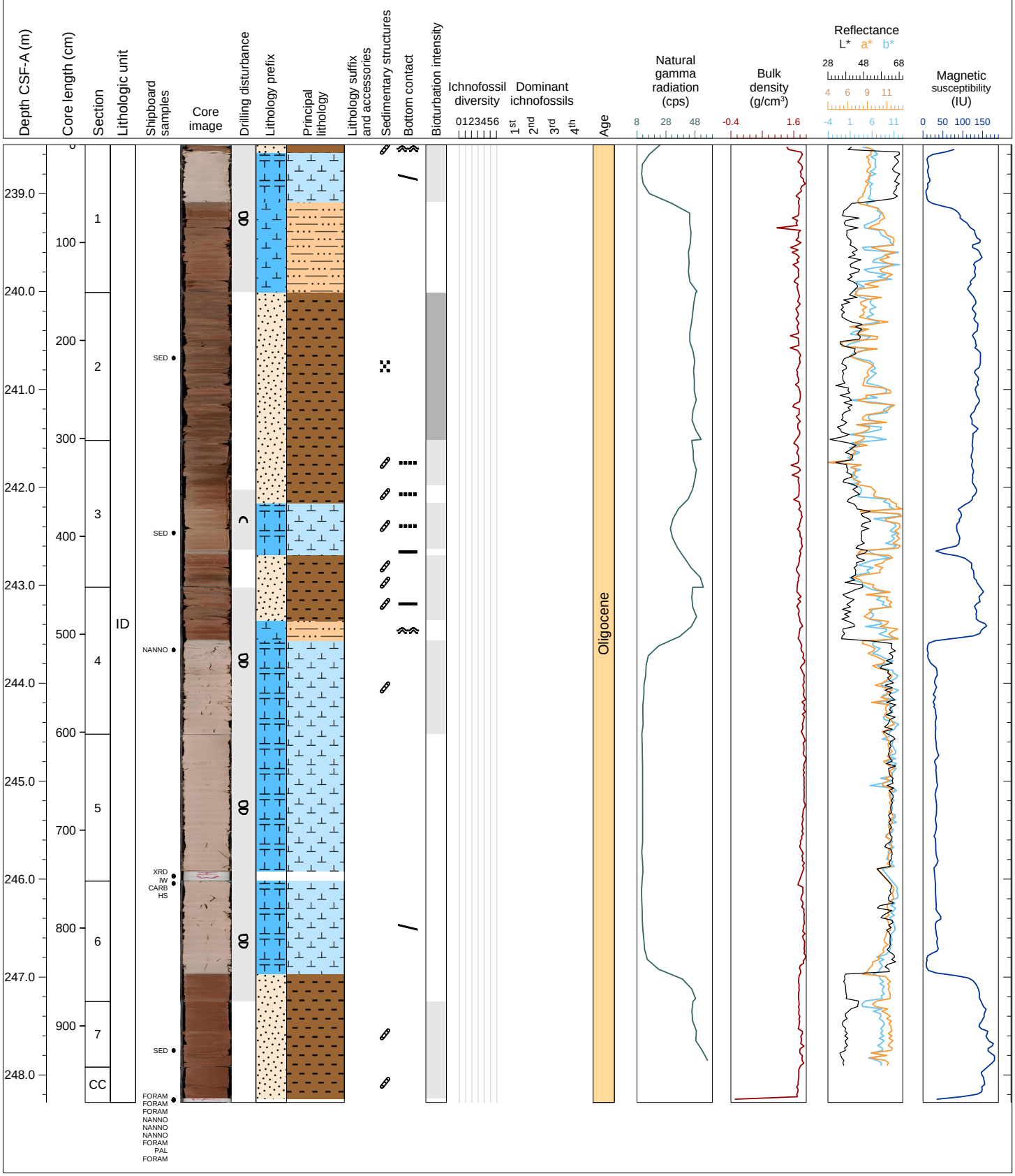
Hole 390C-U1557B Core 26X, Interval 228.9-235.93 m (CSF-A)

Core 26X contains mostly pink (7.5TR 7/3) calcareous nannofossil chalk. In addition, Section 2 contains a prominent layer of brown (7.5YR 5/3) nannofossil-rich silty clay. Two 1-2 cm layers in 4A and 5A are only silty clay (see smear slide) with no fossils. Bioturbation is generally sparse to moderate or none. Drilling disturbance includes slight biscuits in much of the core or up-arching (1A, 2A, CC).



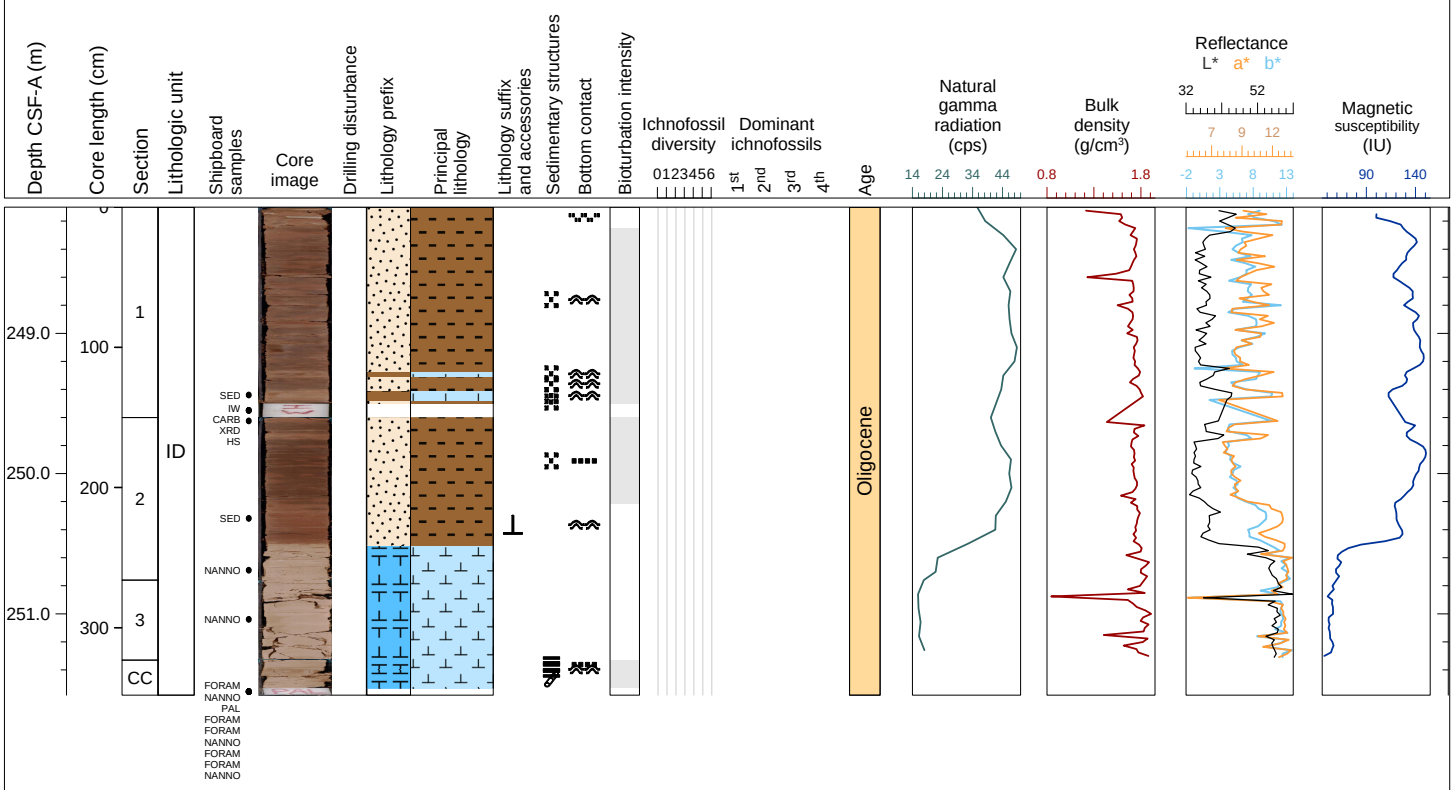
Hole 390C-U1557B Core 27X, Interval 238.5-248.28 m (CSF-A)

Core 27X contains mostly pink (7.5TR 7/3) calcareous nannofossil chalk, and brown and light reddish brown (7.5YR 5/3, 4/3) silty clay. A section in 3A of light reddish brown (5YR 6/3) is calcareous nannofossil chalk. Bioturbation is generally sparse or none. Drilling disturbance includes slight biscuits in much of the core, or up-arching (3A).



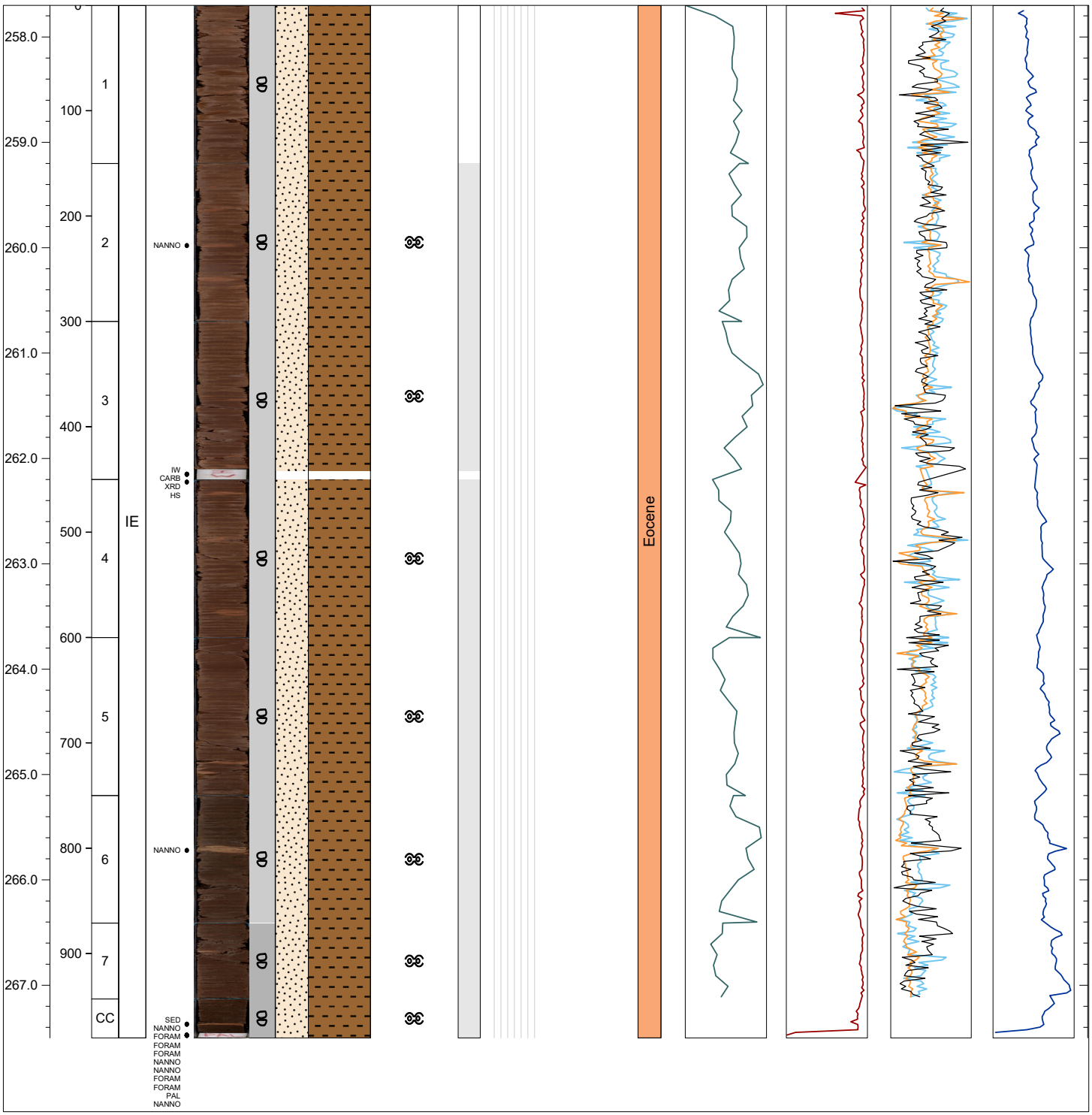
Hole 390C-U1557B Core 28X, Interval 248.1-251.58 m (CSF-A)

Core 28X contains mostly, brown (7.5YR 4/3, 5/3) silty clay and pink (7.5YR 7/3) calcareous nannofossil chalk. Sections in 1A (17-121 cm; 131-138 cm) of brown (5YR 5/3) are clayey nannofossil chalk. A section in 2A of brown (5YR 5/3) is silty clay with nannofossils. Bioturbation is generally sparse or none. Drilling disturbance includes slight biscuits in much of the core.



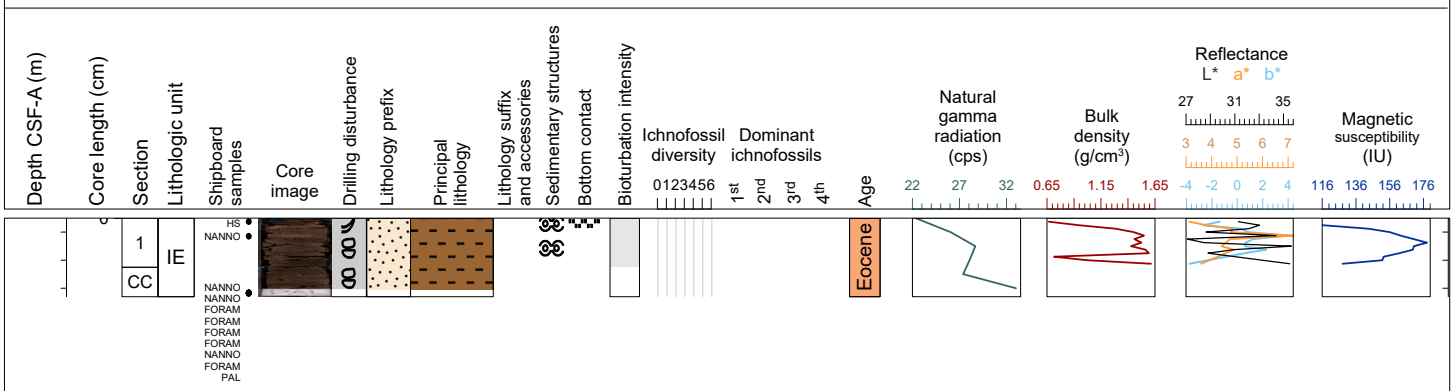
Hole 390C-U1557B Core 29X, Interval 257.7-267.5 m (CSF-A)

Core 29X contains mostly, brown to very dark brown(7.5YR 4/3 to 7.5YR 2.5/2) silty clay. Pod of brown material in 1A to CC. Bioturbation is generally sparse or none. Drilling disturbance includes moderate to severe biscuits in much of the core.



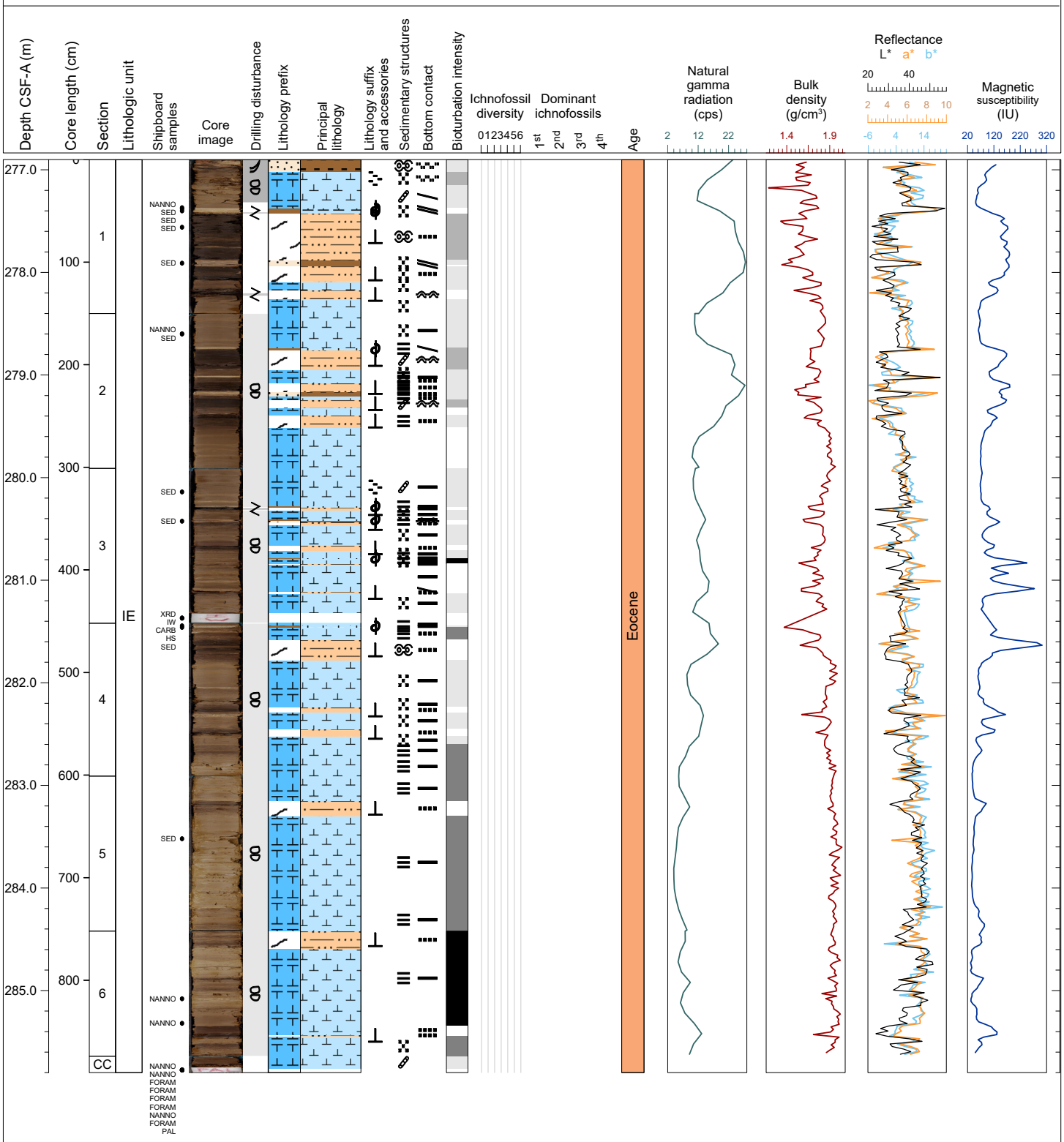
Hole 390C-U1557B Core 30X, Interval 267.3-267.86 m (CSF-A)

Core 30X contains mostly silty clay



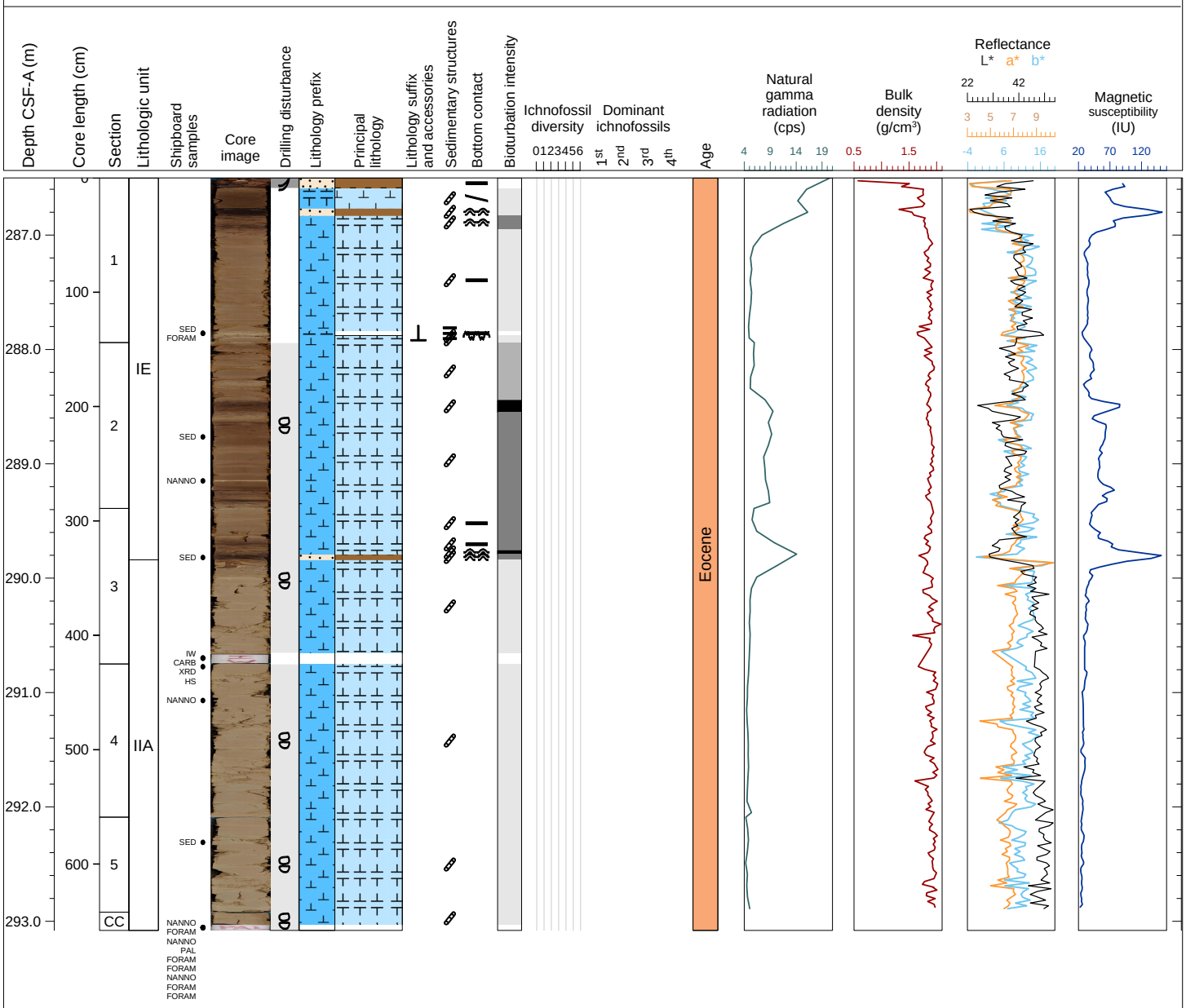
Hole 390C-U1557B Core 31X, Interval 276.9-285.8 m (CSF-A)

Core 31X contains mostly black (10YR 2/1) organic-rich silty clay with nannofossils, and brown (7.5YR 5/3) calcareous nannofossil chalk. Sections in 2A (33-35 cm), 3A (36.5-38 cm; 49.5-50 cm), 4A (3-4.5 cm) of brown thin bed are clayey calcareous chalk with bioclasts. Drilling disturbance includes slight to severe biscuits in much of the core, and fall-in (1A).



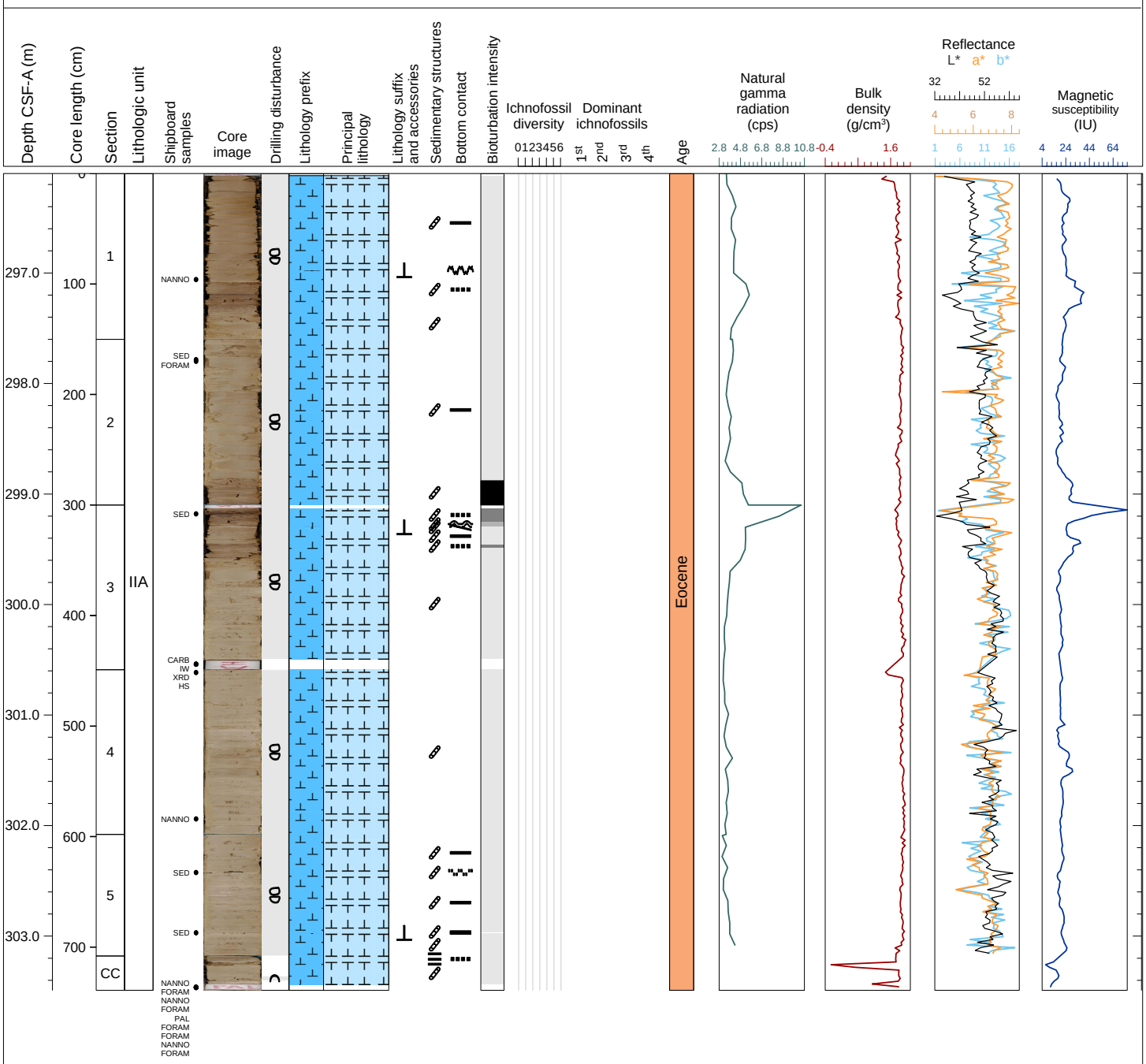
Hole 390C-U1557B Core 32X, Interval 286.5-293.08 m (CSF-A)

Core 32X contains mainly brown and pale brown (7.5YR 5/3, 4/2, 10YR 6/3) nannofossil-rich calcareous chalk, and some silty clay that may have trace amounts of organics. In 1A, a prominent clast rich layer is just below a prominent foraminifera chalk. Bioturbation ranges from none to moderate. Drilling disturbance includes slight biscuits throughout the core, and fall-in at the top 9.2 cm of 1A.



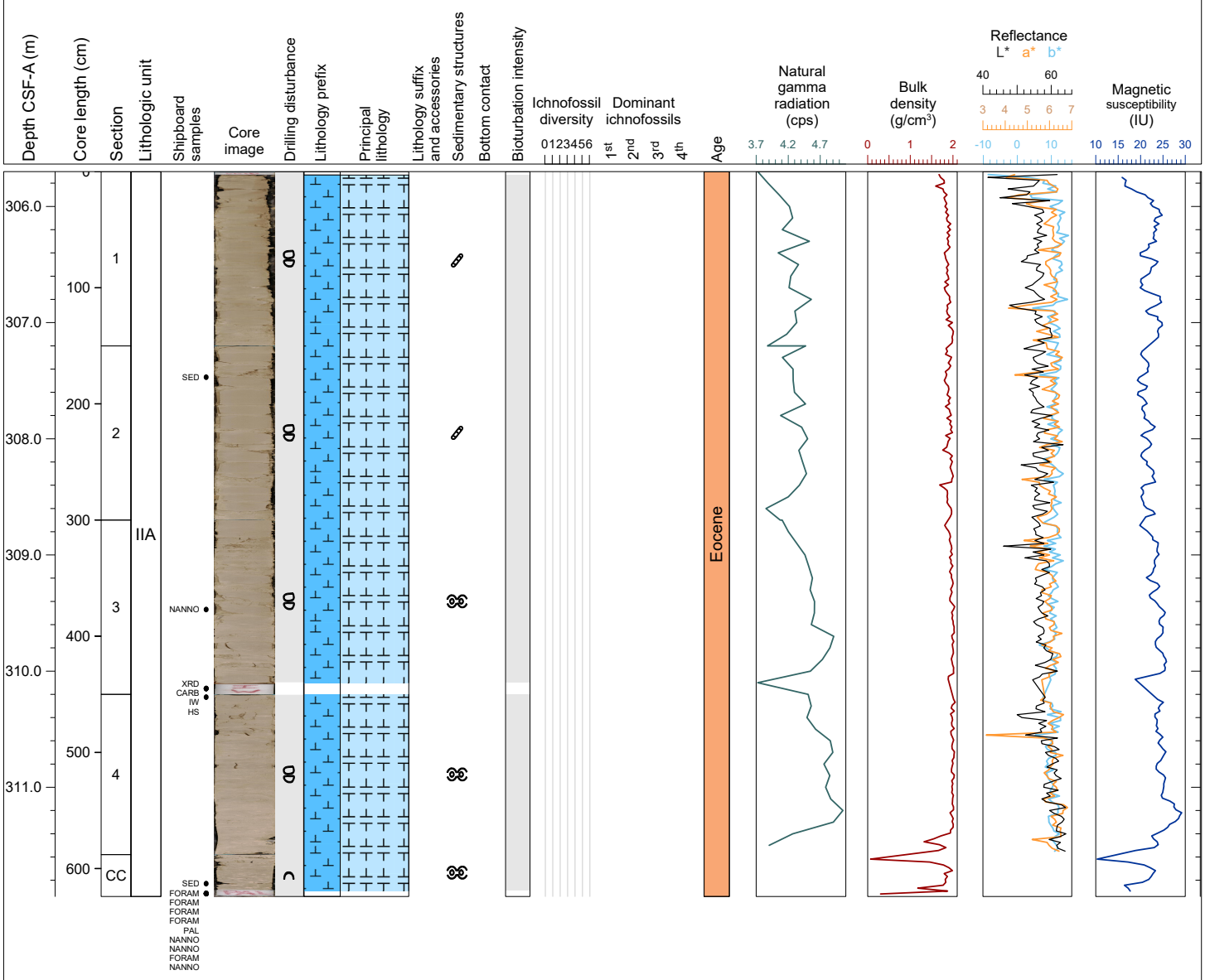
Hole 390C-U1557B Core 33X, Interval 296.1-303.49 m (CSF-A)

Core 33X contains mainly brown and pale brown (10YR 6/3, 7.5YR 4/4, 5/3) nannofossil-rich calcareous chalk. Prominent moderately consolidated layers (10YR 7/4, very pale brown) of foraminiferal calcareous chalk with nannofossils occur in a few sections. A 2 cm thick clay siltstone layer in 5A. Bioturbation is generally sparse. Drilling disturbance includes slight biscuits throughout the core.



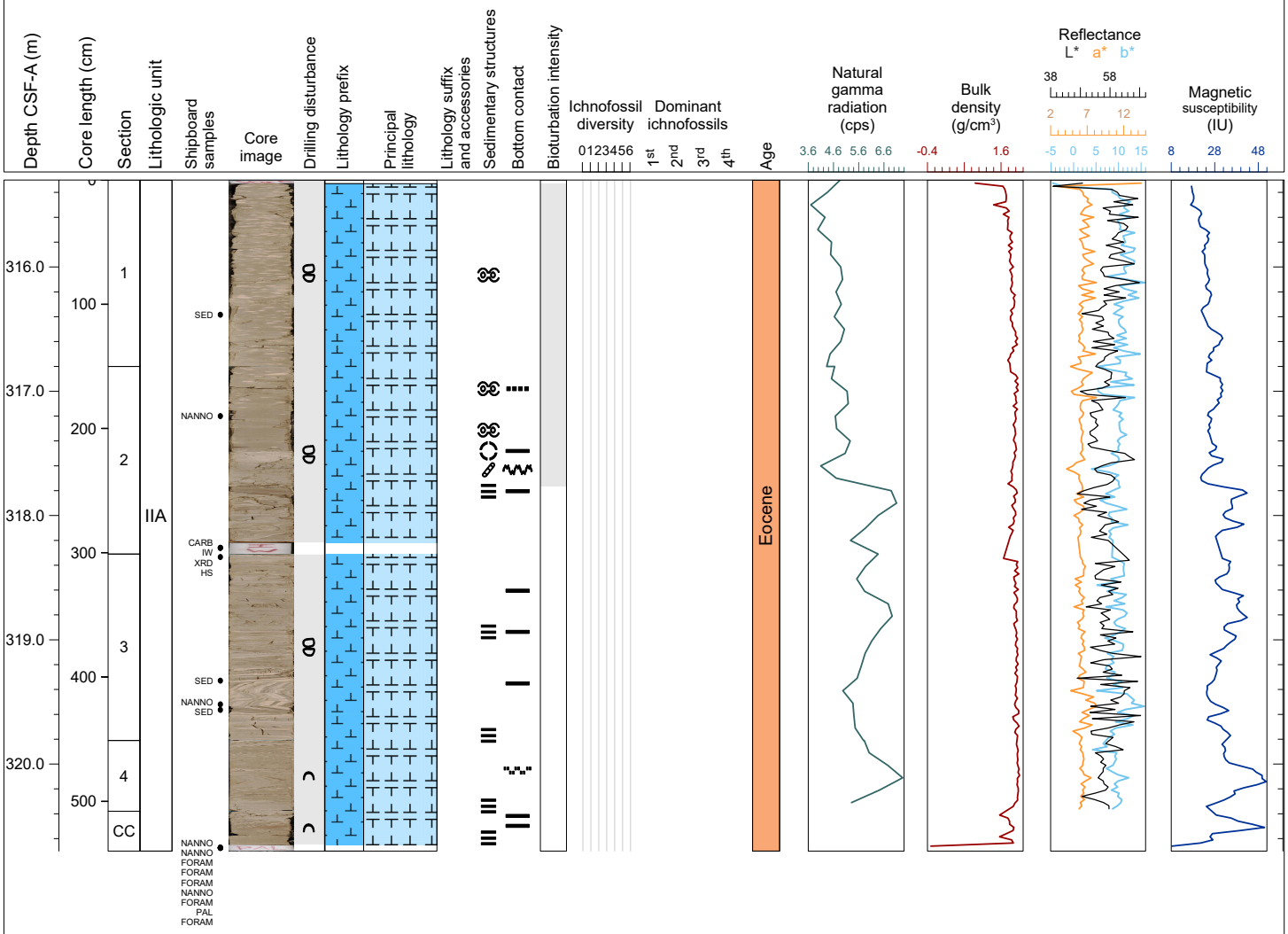
Hole 390C-U1557B Core 34X, Interval 305.7-311.94 m (CSF-A)

Core 34X contains predominantly pale brown and very pale brown (10YR 6/3 and 7/3) nannofossil-rich calcareous chalk. Becomes more very pale brown in 3A and remains so until CC. Bioturbation is generally sparse. Drilling disturbance includes slight biscuits throughout the core and slight up-arching in CC.



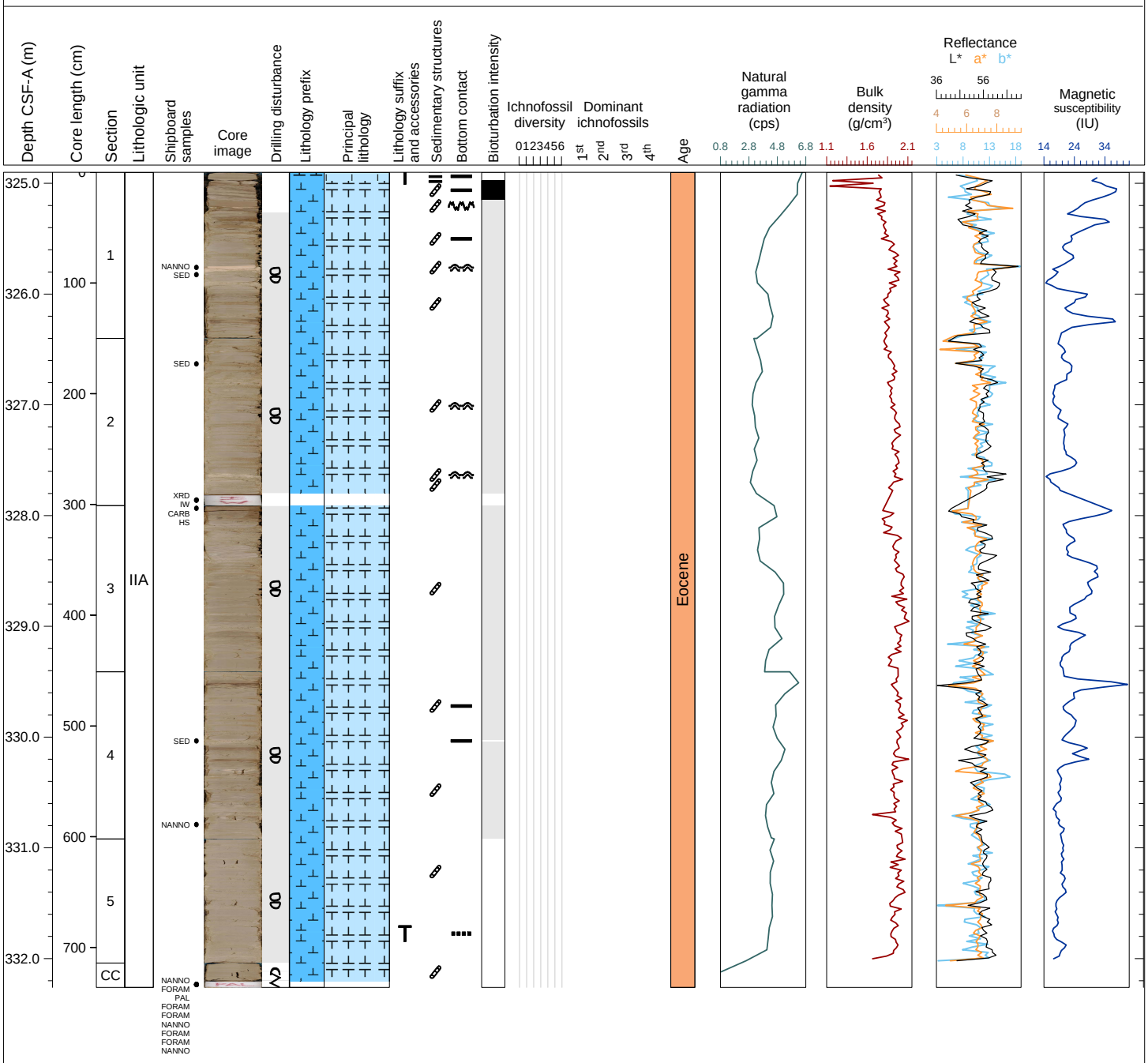
Hole 390C-U1557B Core 35X, Interval 315.3-320.7 m (CSF-A)

Core 35X is complicated. 1A and top of 2A are pale brown (10YR 6/3) nannofossil-rich calcareous chalk, and also contain pods that are millimeter size volcanic-clasts of basalt/glass material surrounded by halos of sub-centimeter very pale brown (no fossils) sediment. Rest of core is light brownish gray (10YR 6/2) and contains complex syn-sedimentary deformation associated with different rheological behaviors of the sediment (lithification degree). Light brownish gray laminae are nannofossil-rich calcareous chalk and very pale brown (10YR 7/3) laminae are common calcareous nannofossil chalk. Sections of of sub-horizontal or horizonal laminated sections may have formed in place (horizontal and sub-horizonal), or are same as or part of deformational sections in core. Bioturbation is generally sparse in 1A or 2A and none in rest of core. Drilling disturbance includes slight biscuiting throughout the core and slight up-arching in CC.



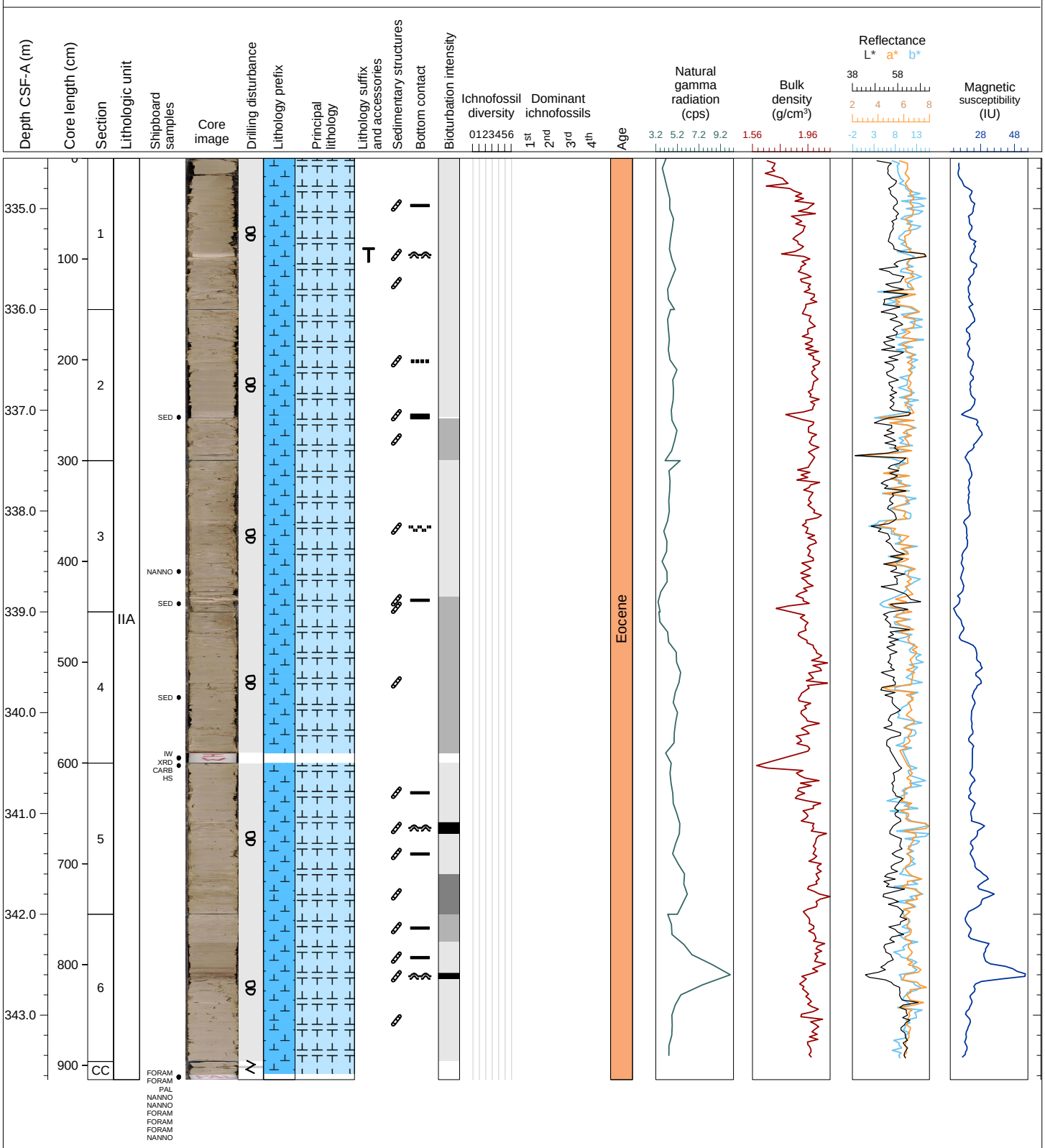
Hole 390C-U1557B Core 36X, Interval 324.9-332.26 m (CSF-A)

Core 36X contains predominantly light yellowish brown (10YR 6/4), with 5A and CC very pale brown (10 YR 7/3), nannofossil-rich calcareous chalk. Very pale brown (10YR 8/4) layers in 1A, 2A, and 4A are nannofossil-rich calcareous chalk with foraminifera or as an accessory. Below 59 cm in 5A also very pale brown (10YR 7/3) nannofossil-rich calcareous chalk with foraminifera. Bioturbation is sparse through most of core. Drilling disturbance is dominated by biscuits in 1A to 4A, none occurs in 5A and some up-arching and fragmentation in CC.



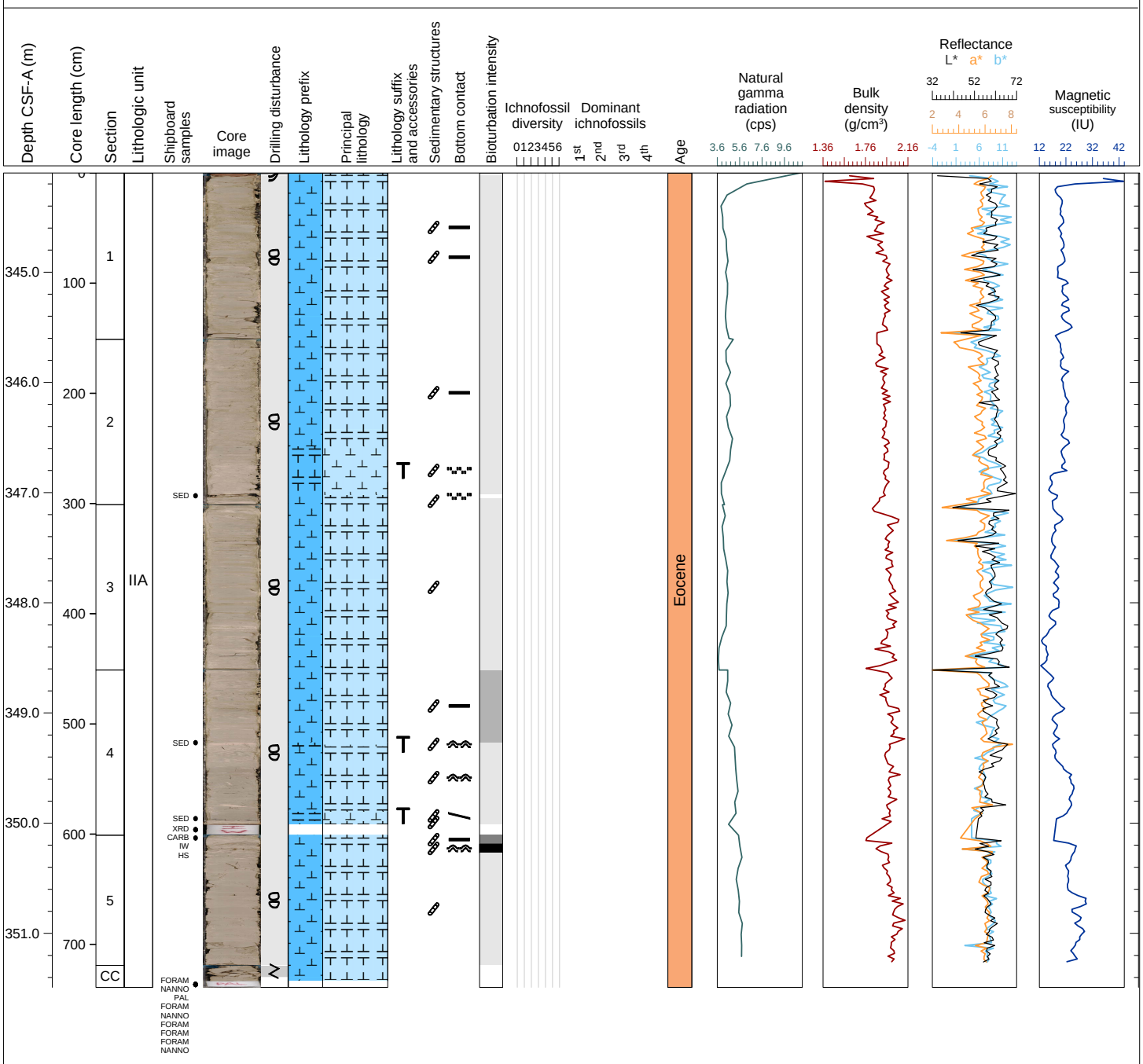
Hole 390C-U1557B Core 37X, Interval 334.5-343.64 m (CSF-A)

Core 37X contains mainly pale brown (10YR 6/3) and very pale brown (10YR 7/3) nannofossil-rich calcareous chalk. Very pale brown (10YR 8/4) layers are nannofossil-rich calcareous chalk with foraminifera. A bluish gray layer in 2A is also nannofossil-rich calcareous chalk. Bioturbation ranges from none to high. Drilling disturbance dominated by biscuits and fragmentation in CC.



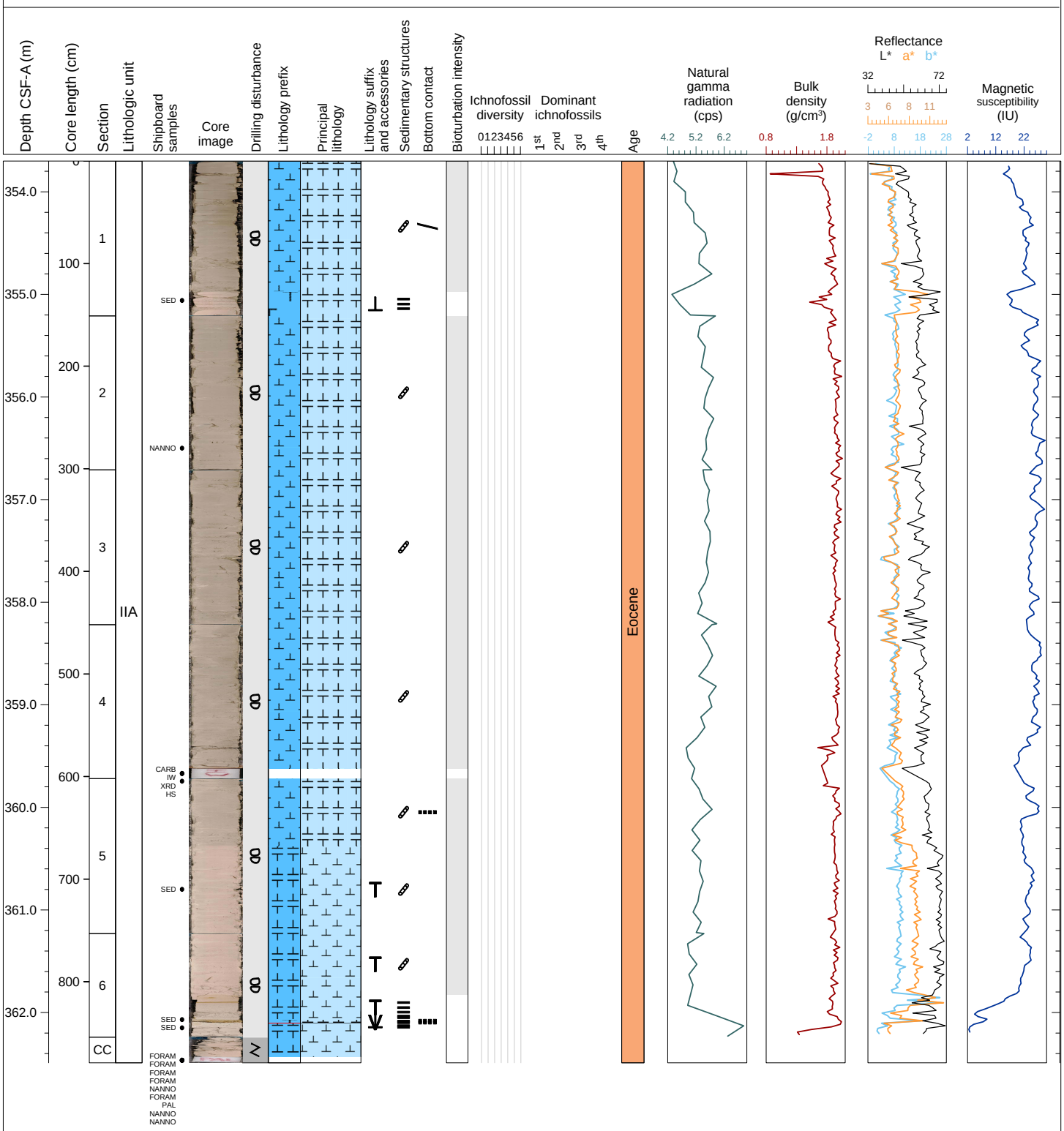
Hole 390C-U1557B Core 38X, Interval 344.1-351.49 m (CSF-A)

Core 38X contains mainly pale brown (10YR 6/3) and pinkish gray (7.5YR 6/2) nannofossil-rich calcareous chalk. Pinkish white (7.5YR 8/2) and pinkish gray (7.5YR 6/2) layers in 2A and 4A are calcareous nannofossil chalk with foraminifera. Bioturbation is mainly sparse but does range from none to high. Drilling disturbance is dominated by biscuits, throughout most of core, and fragmentation in CC.



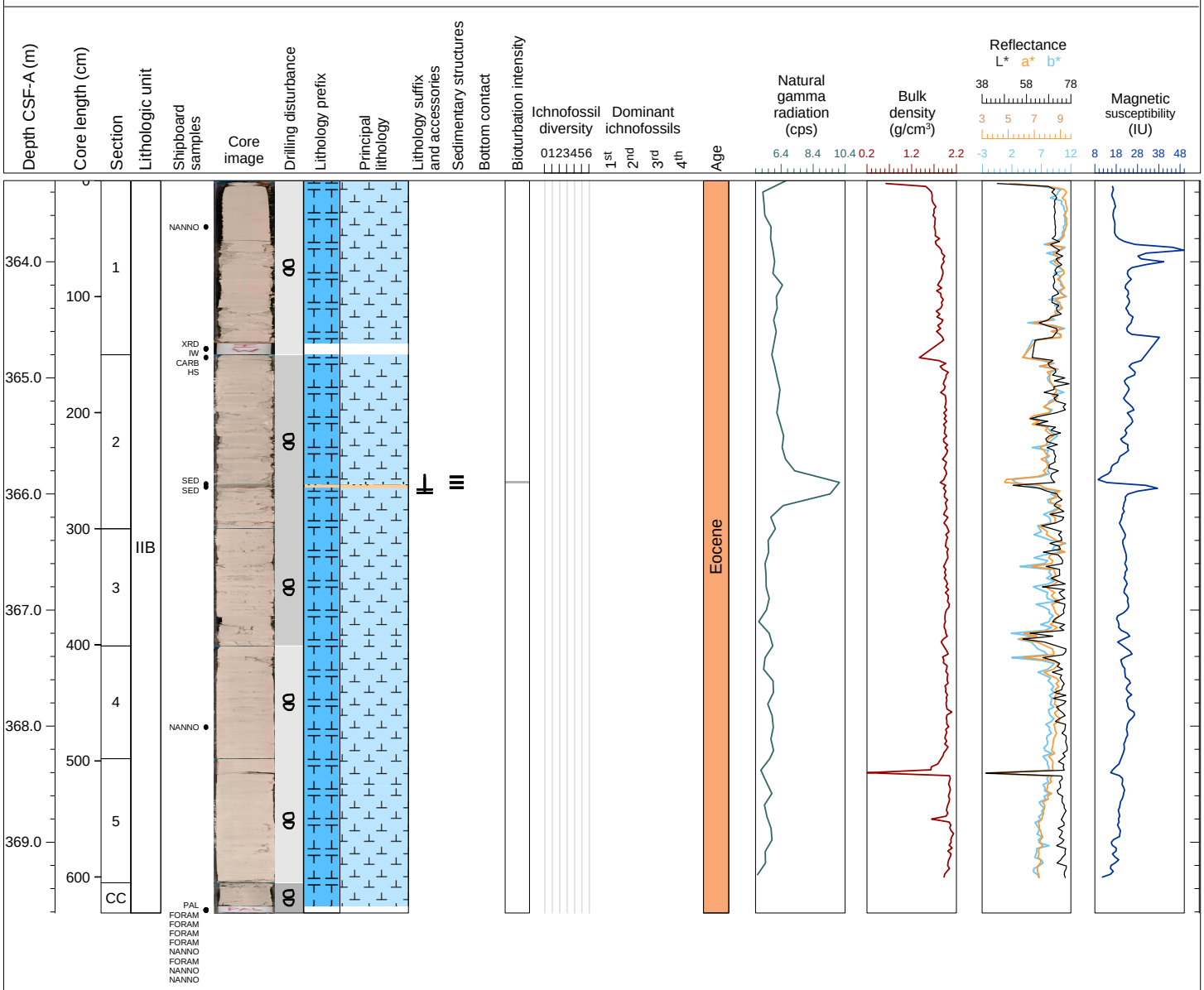
Hole 390C-U1557B Core 39X, Interval 353.7-362.49 m (CSF-A)

Core 39X contains mainly pink (7.5YR 8/3) calcareous nannofossil chalk and pinkish gray (7.5YR 6/2) nannofossil-rich calcareous chalk. Pink (7.5YR 8/3) with thin lamination section in 1A is foraminiferal nannofossil chalk with foraminifera. Bioturbation is mainly sparse. Drilling disturbance is dominated by biscuits, throughout most of core, and fragmentation in CC.



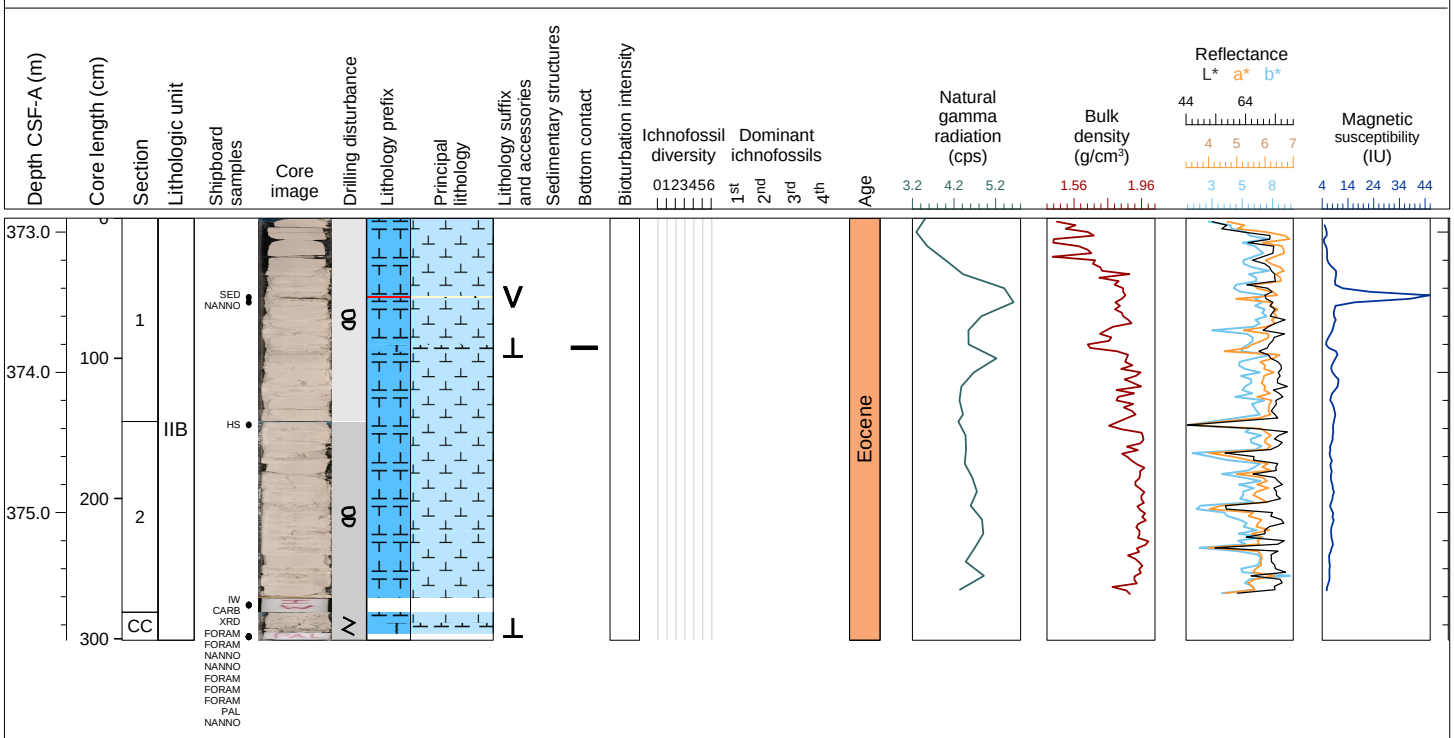
Hole 390C-U1557B Core 40X, Interval 363.3-369.61 m (CSF-A)

Core 40X contains mainly pinkish gray (7.5YR 6/2) calcareous nannofossil chalk. Dark brown (7.5YR 3/4) layers in 2A is silty clay with nannofossils. Bioturbation is mainly none. Drilling disturbance dominated by biscuits, throughout most of core, and fragmentation in CC.



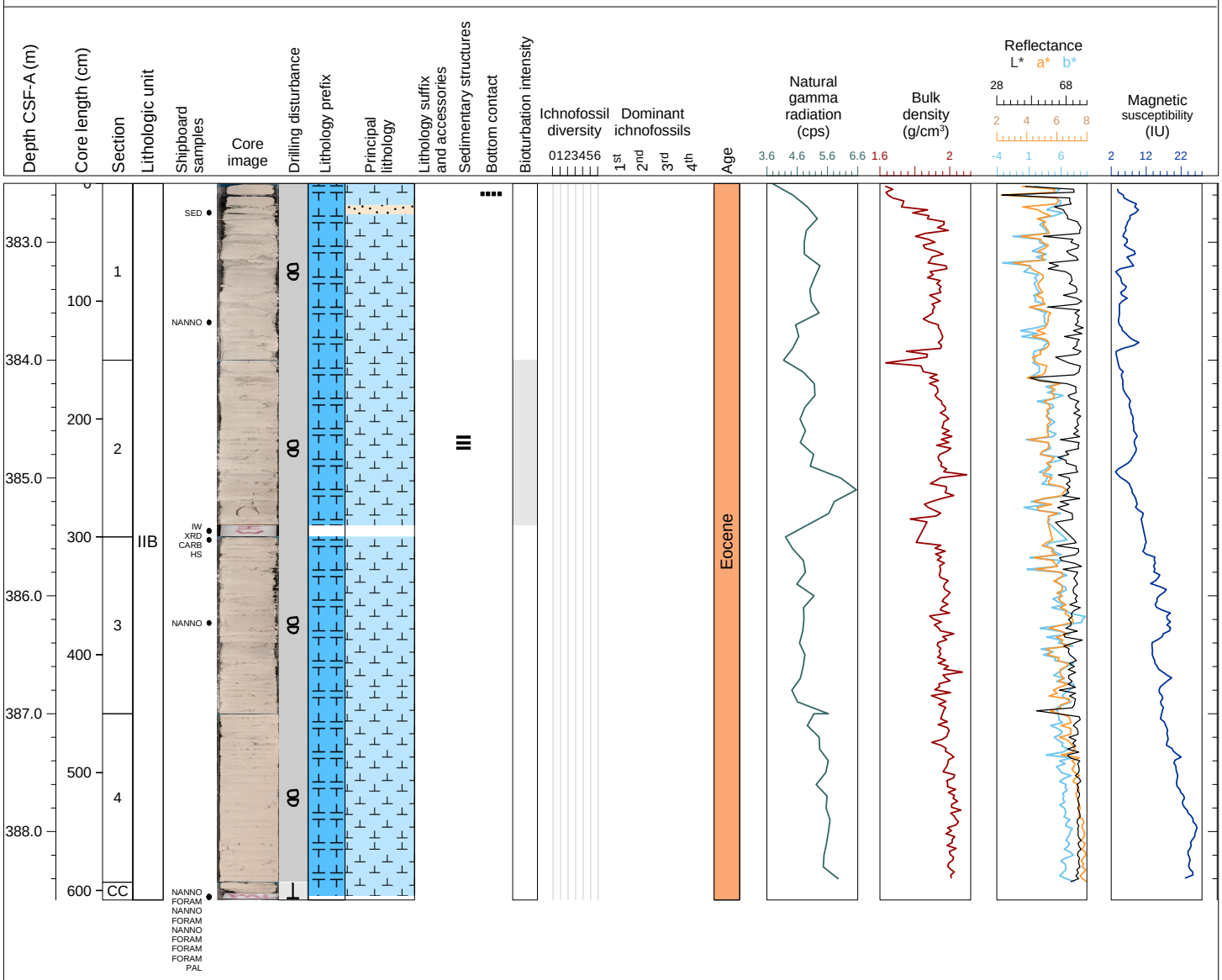
Hole 390C-U1557B Core 41X, Interval 372.9-375.91 m (CSF-A)

Core 41X contains mainly pinkish gray (7.5YR 6/2) calcareous nannofossil chalk. Greenish black (GLEY 1 2.5/5G) layers in 1A is volcanic sandy silt with volcaniclasts. 1A and the CC contain <10 cm layers of pink (7.5YR 8/3) foraminiferal calcareous chalk with nannofossils. Bioturbation is mainly none to sparse. Drilling disturbance dominated by biscuits, throughout most of core, and fragmentation in CC.



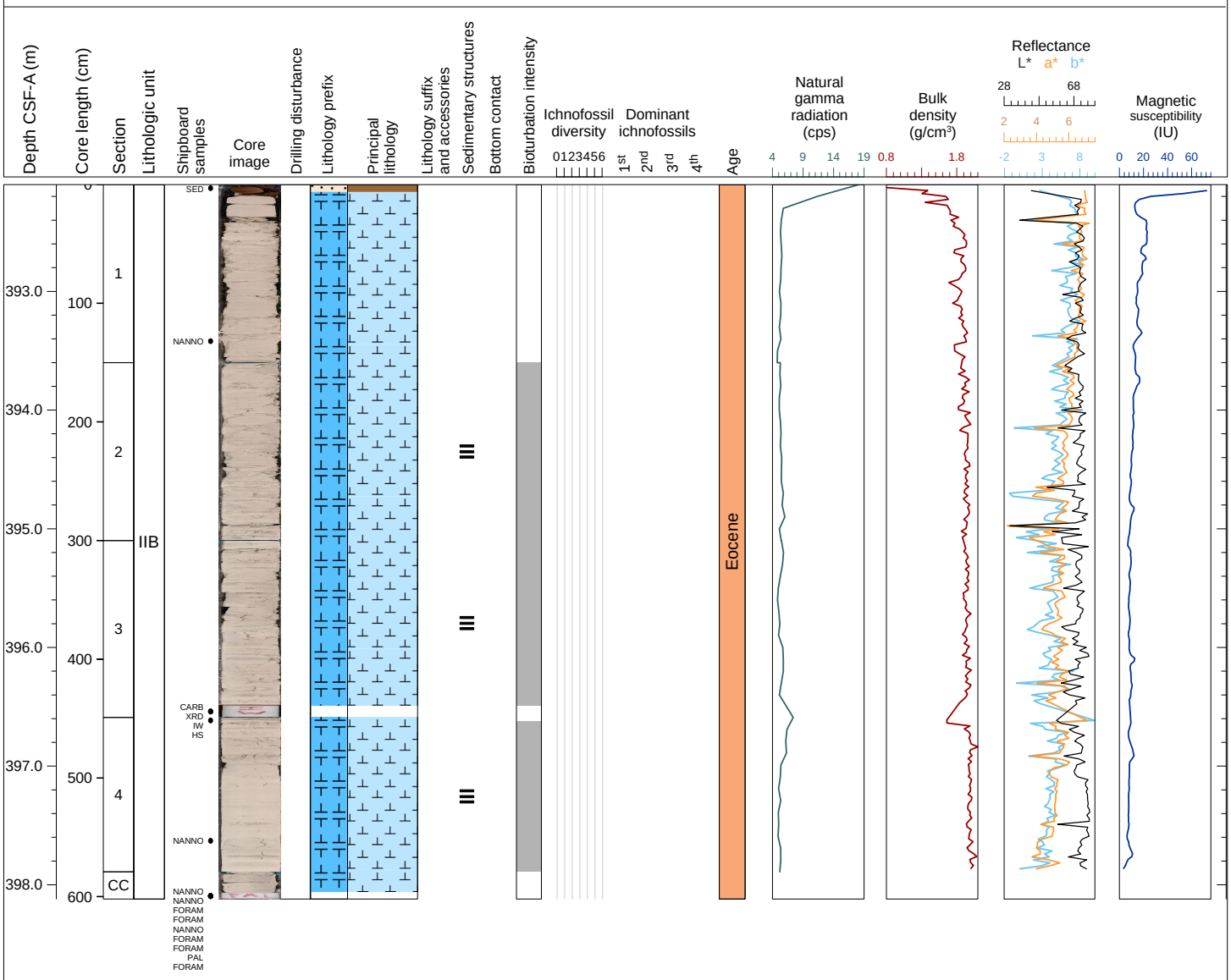
Hole 390C-U1557B Core 42X, Interval 382.5-388.58 m (CSF-A)

Core 42X contains mainly pink (7.5YR 8/3) calcareous nannofossil chalk. Greenish black (GLEY 1 2.5/5G) layers in 1A is calcareous silt with volcaniclasts and clay. Bioturbation is mainly none. Drilling disturbance dominated by biscuits, throughout most of core, and fragmentation in CC.



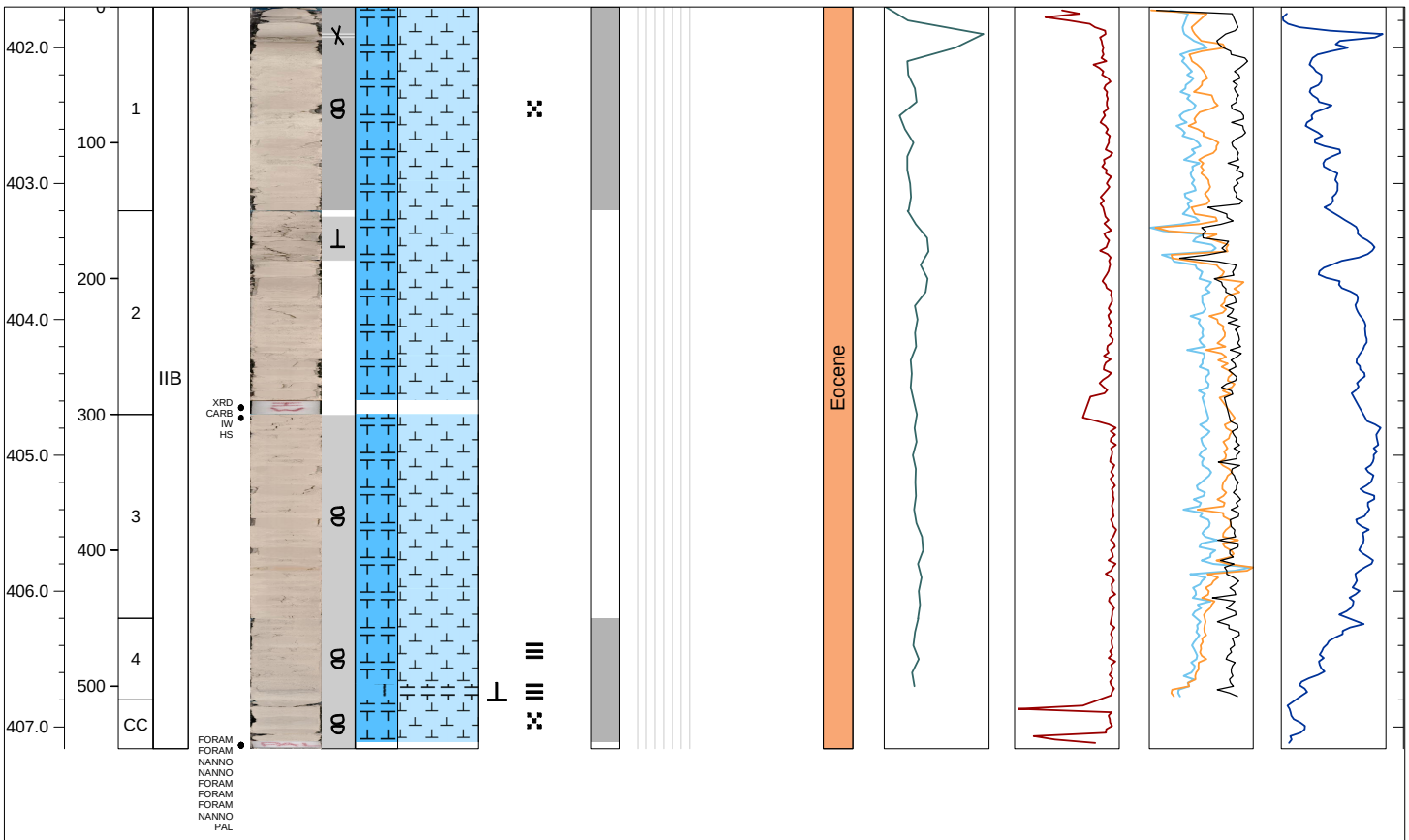
Hole 390C-U1557B Core 43X, Interval 392.1-398.12 m (CSF-A)

Core 43X contains mainly pinkish white (7.5YR 8/2) calcareous nannofossil chalk. Dark brown (7.5YR 3/4) section in 1A is silty clay. Bioturbation is mainly none. Drilling disturbance dominated by biscuits, throughout most of core, and fall-in at 1A (0-6 cm).



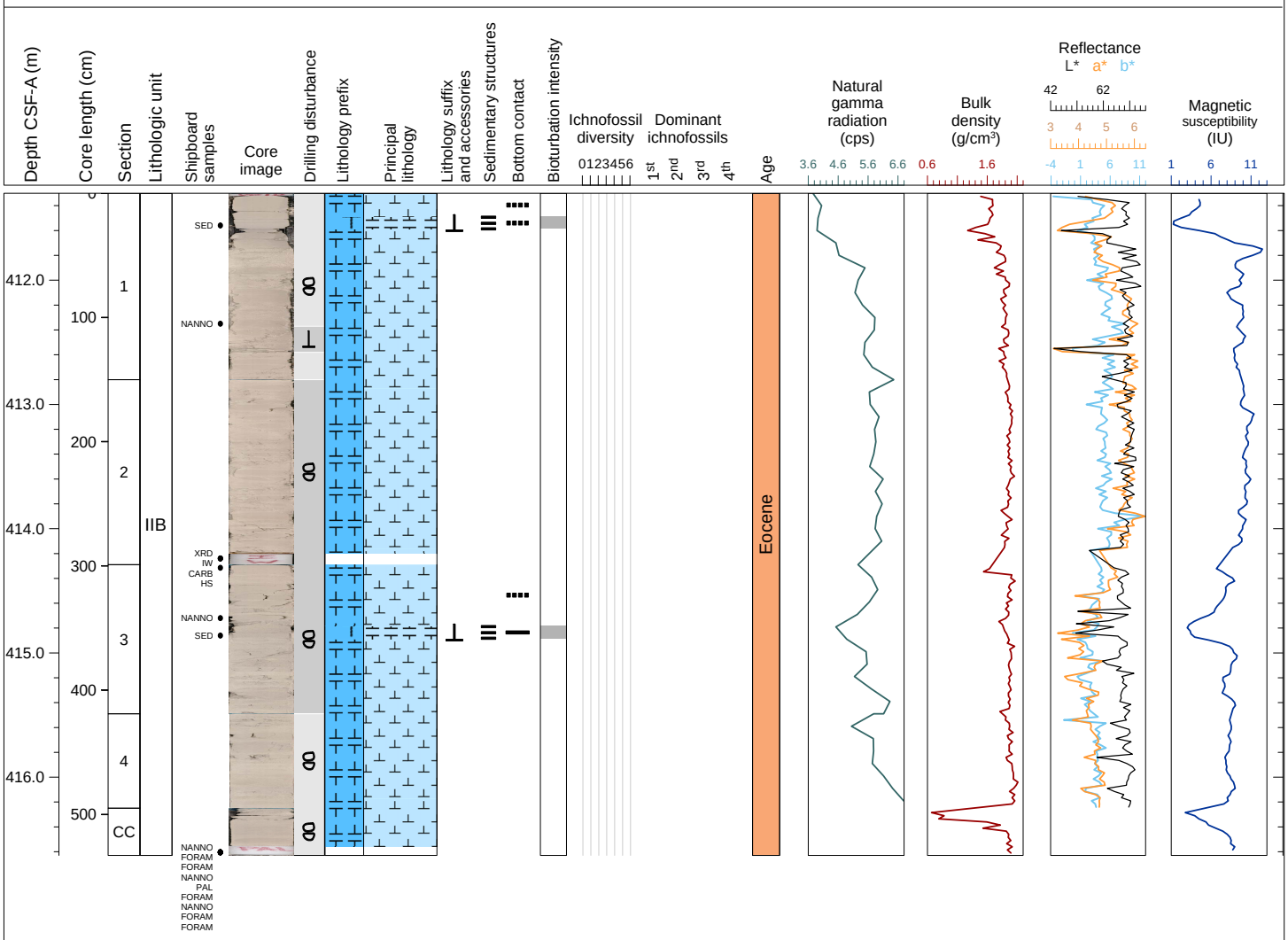
Hole 390C-U1557B Core 44X, Interval 401.7-407.16 m (CSF-A)

Core 44X contains mainly pinkish white (7.5YR 8/2) calcareous nannofossil chalk. Bioturbation is mainly none to sparse of mottling in 1A, 2A, 4A and CC. Section 4 contains (48-60 cm) a prominent pinkish white (7.5YR 8/2) foraminiferal calcareous chalk with nannofossils. Drilling disturbance dominated by biscuits, throughout most of core, and void in 1A and 2A.



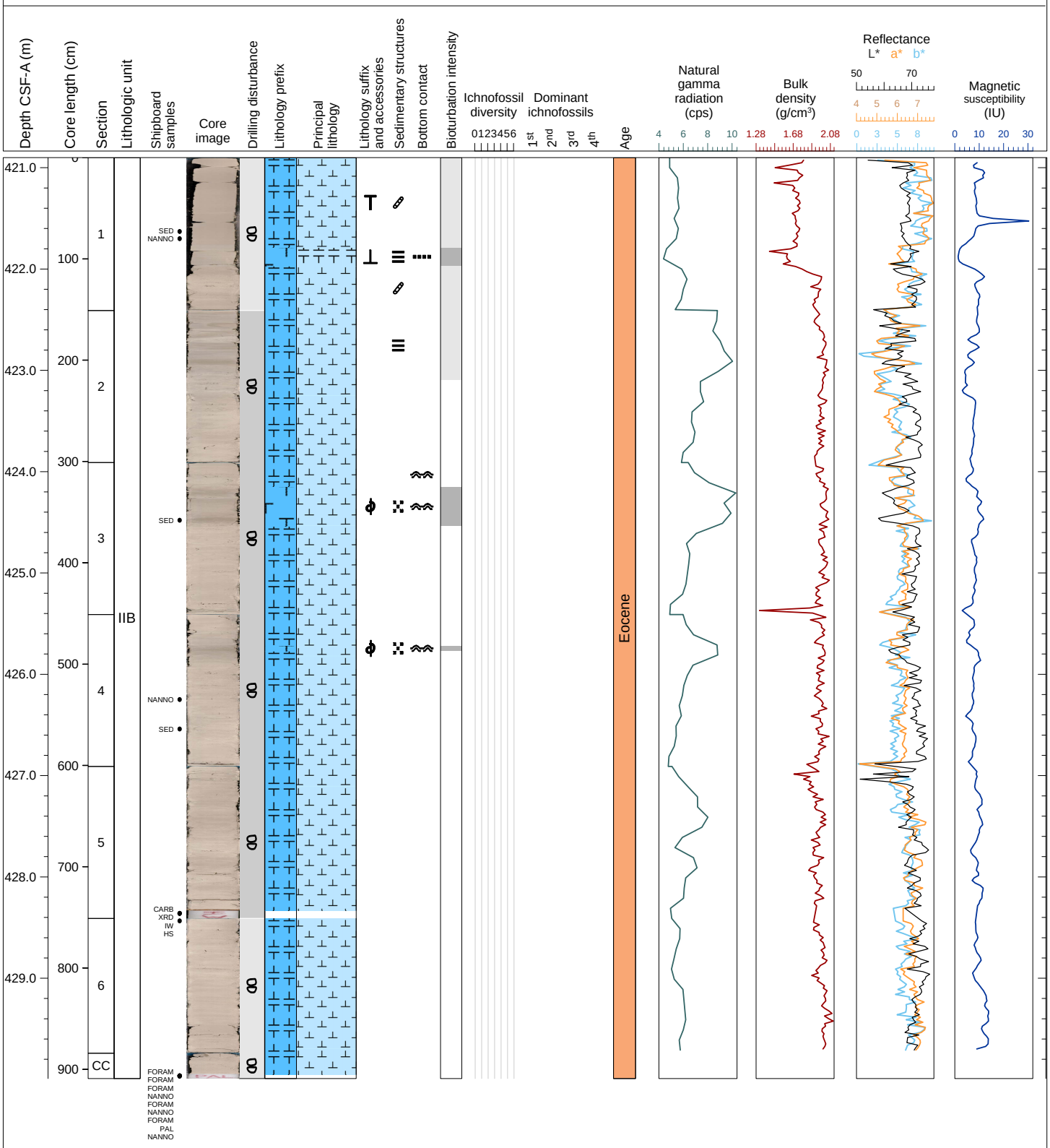
Hole 390C-U1557B Core 45X, Interval 411.3-416.63 m (CSF-A)

Core 45X contains mainly pinkish white (7.5YR 8/2) calcareous nannofossil chalk. Thin laminations with pinkish white (7.5YR 8/2) in 1A (19-29 cm) and 3A (49-60 cm) are foraminiferal calcareous chalk with nannofossils. Bioturbation is mainly none to low. Drilling disturbance dominated by biscuits, throughout most of core.



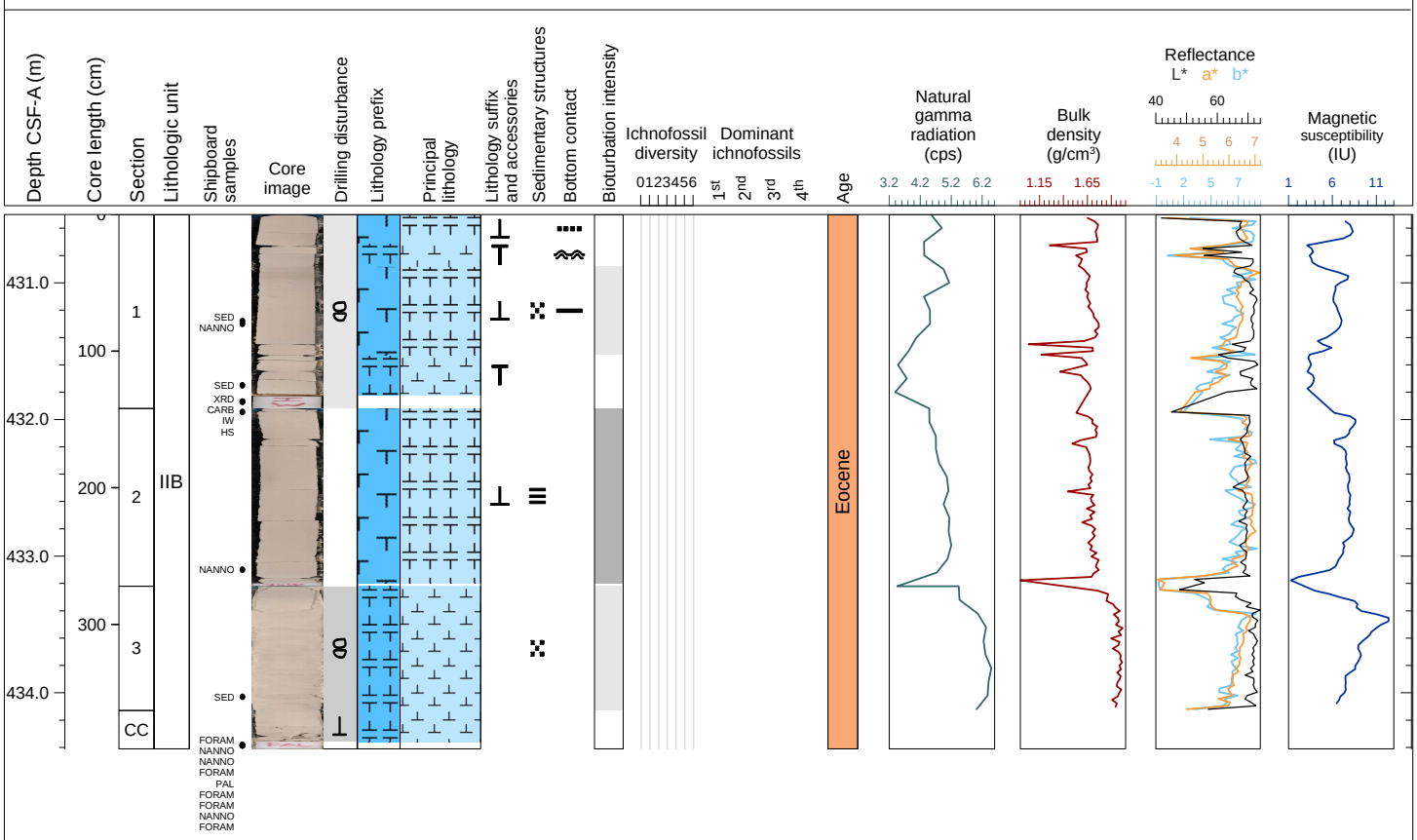
Hole 390C-U1557B Core 46X, Interval 420.9-429.99 m (CSF-A)

Core 46X contains mainly pinkish white (7.5YR 8/2) calcareous nannofossil ooze and pinkish gray (7.5YR 7/2) foraminiferal nannofossil chalk with bioclasts. Section 1A contains (87-107 cm) pinkish white (7.5YR 8/2) foraminiferal calcareous chalk with nannofossils. Pinkish gray sections in 2A (2-54 cm), 3A (24-61 cm) and 4A (31-37 cm) are foraminiferal nannofossil chalk with bioclasts. Bioturbation is mainly none to low. Drilling disturbance is dominated by biscuits throughout most of core.



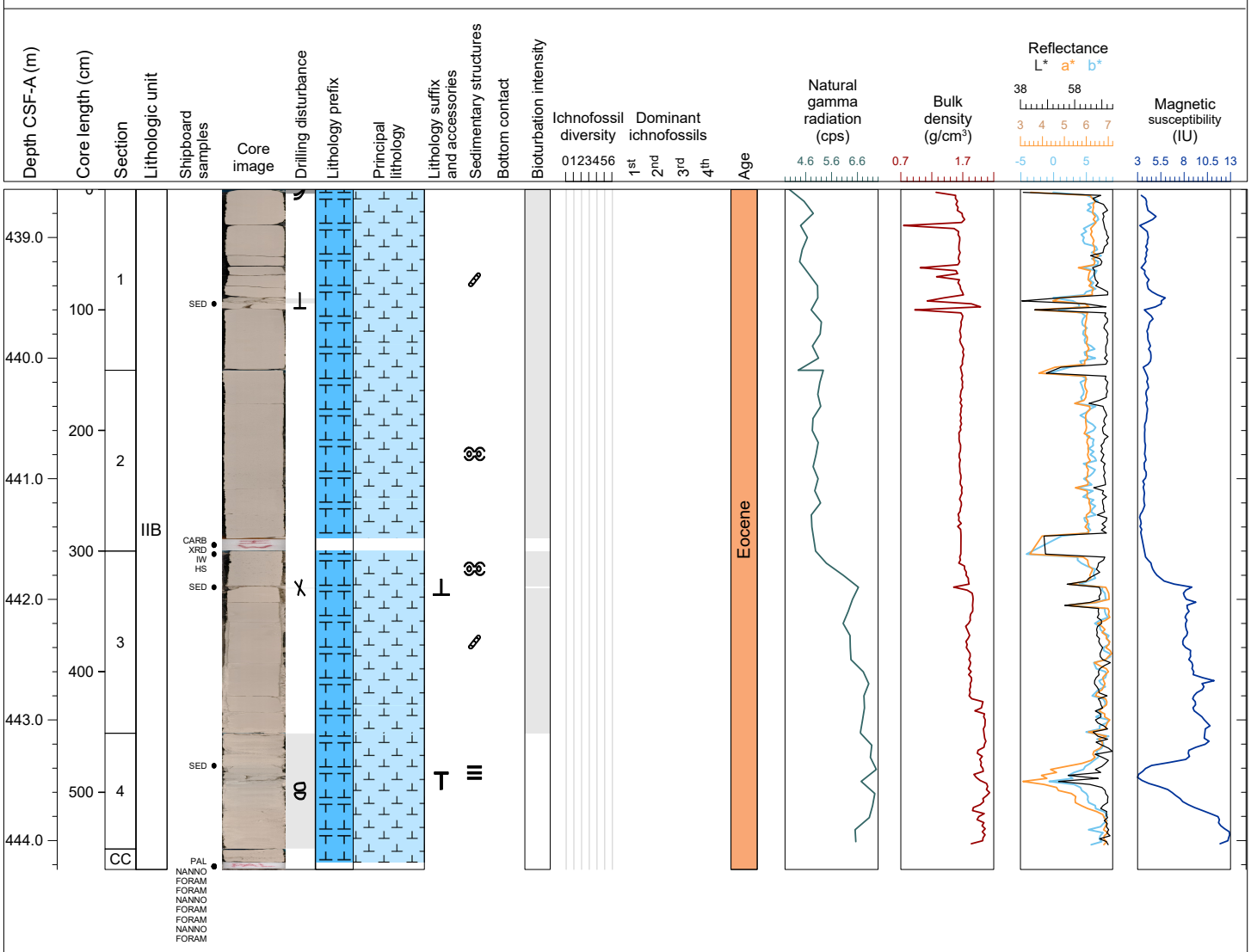
Hole 390C-U1557B Core 47X, Interval 430.5-434.41 m (CSF-A)

Core 47X contains pinkish white (7.5YR 8/2) foraminiferal calcareous chalk with nannofossils, calcareous nannofossil chalk with foraminifera, and calcareous nannofossil chalk. Bioturbation is mainly none to low. Drilling disturbance dominated by biscuits, throughout most of core.



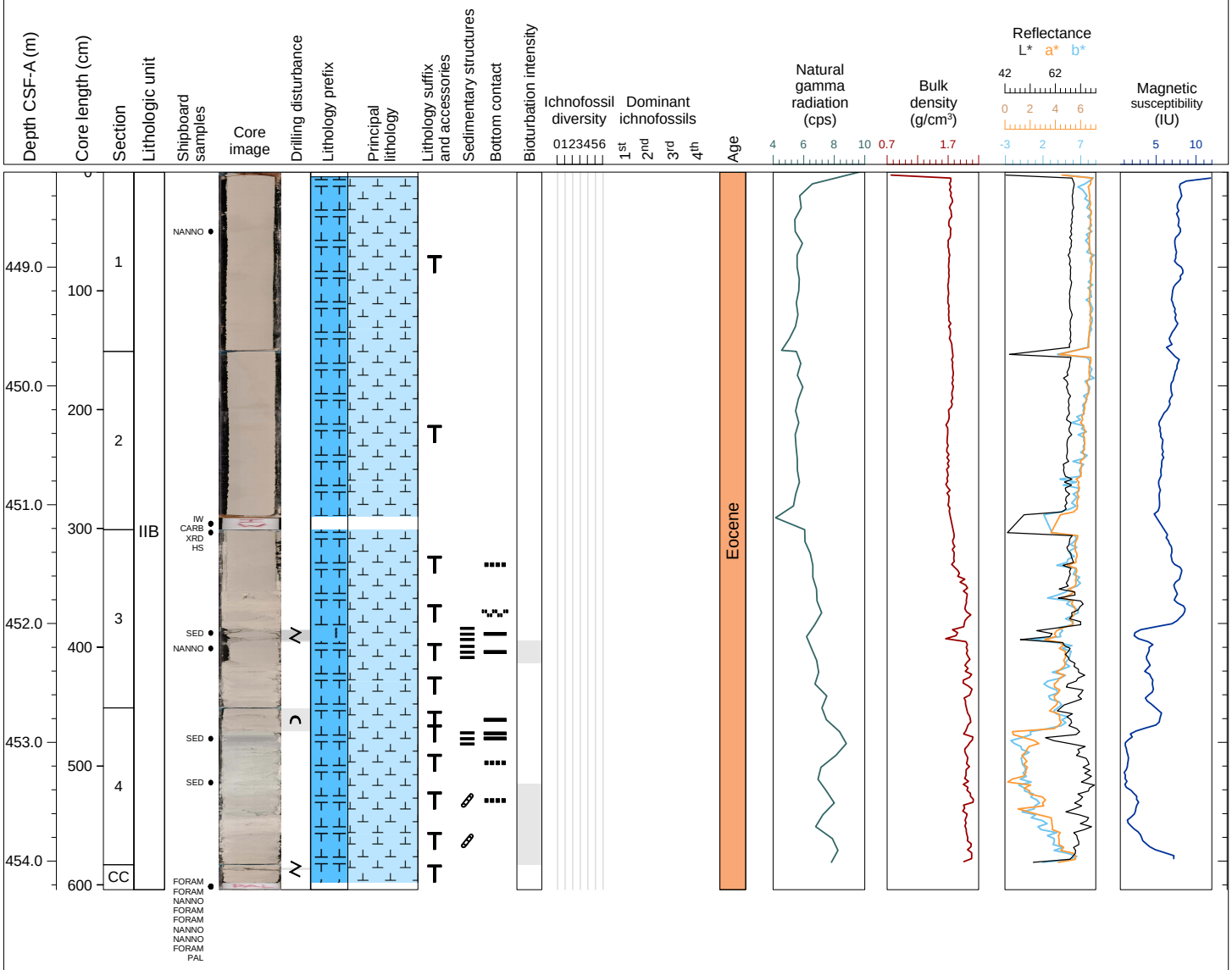
Hole 390C-U1557B Core 48X, Interval 438.6-444.24 m (CSF-A)

Core 48X contains predominantly pinkish white (7.5YR 8/2) calcareous nannofossil chalk with foraminifera as an accessory. Darker pods in 2A and 3A are calcareous silty clay with nannofossils. One section in 4A is calcareous nannofossil chalk with foraminifera. Most of core is moderately consolidated (chalk) with sections of 4A and CC unconsolidated perhaps due to drilling disturbance or storage. Bioturbation is mainly none to sparse. Minor drilling disturbance includes slight fragmentation in 1A and faint biscuits in 4A.



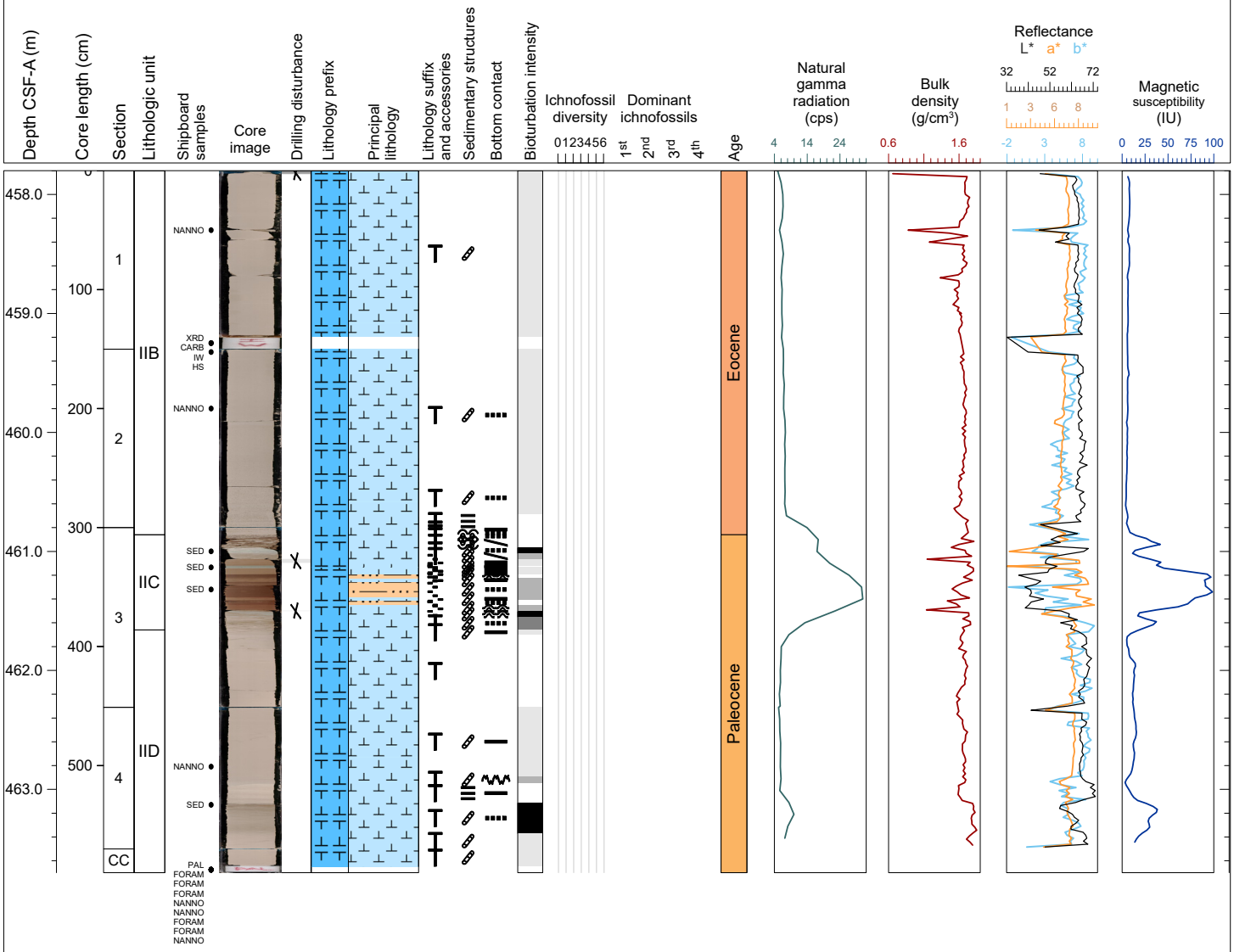
Hole 390C-U1557B Core 49X, Interval 448.2-454.24 m (CSF-A)

Core 49X contains predominantly pinkish white (7.5YR 8/2) calcareous nannofossil chalk with foraminifera. 3A has a white section (10YR 8/1) that is foraminiferal nannofossil chalk. 4A contains light greenish gray (GLEY 1 8/10Y) calcareous nannofossil chalk. Most of core is moderately consolidated (chalk) with sections of 4A unconsolidated. Bioturbation is mainly none to sparse. Minor drilling disturbance includes fall-in in upper 4 cm of 1A, slight fragmentation in 3A and CC, and up-arching in 4A.



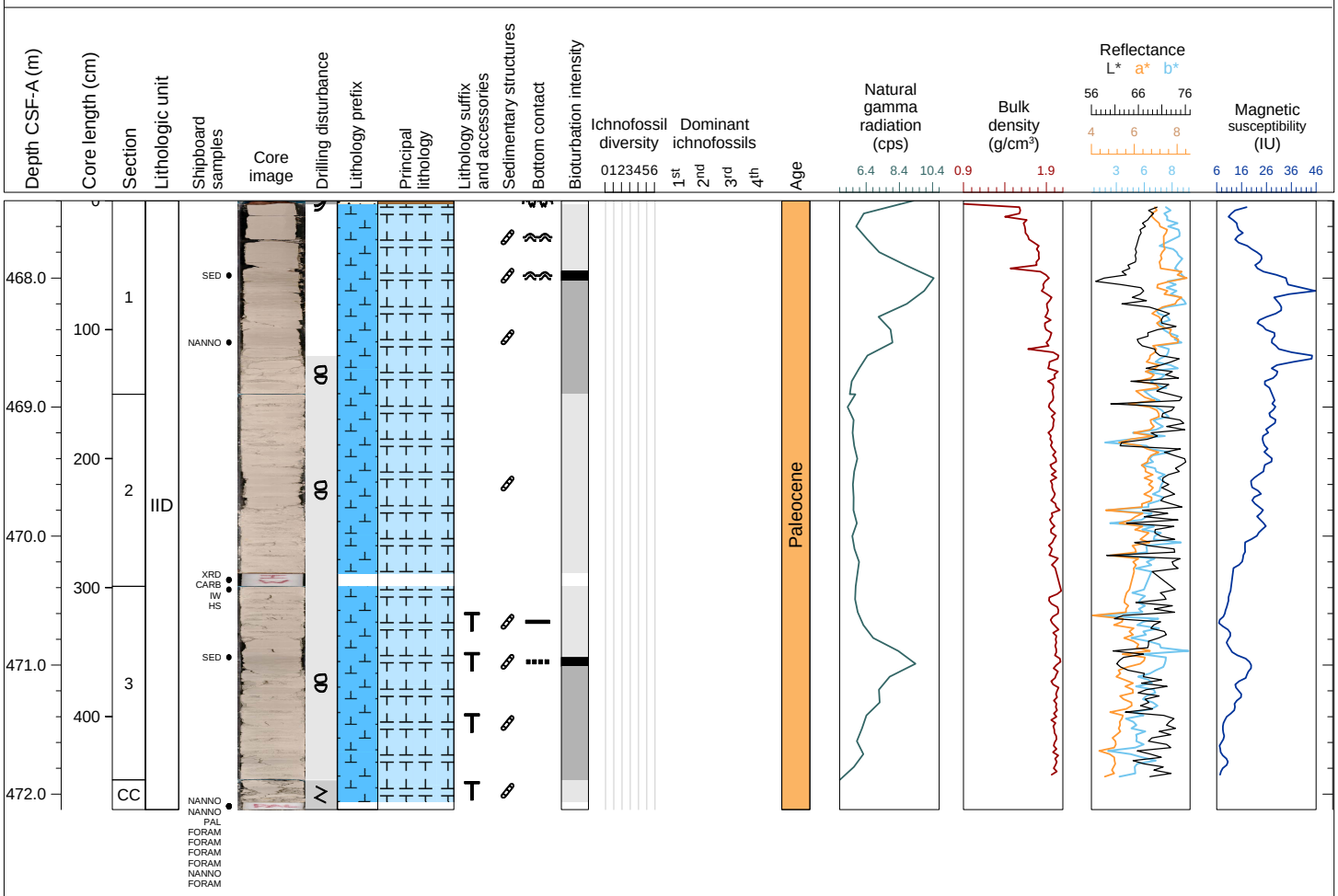
Hole 390C-U1557B Core 50X, Interval 457.8-463.7 m (CSF-A)

Core 50X contains predominantly pinkish white (7.5YR 8/2) calcareous nannofossil chalk with foraminifera or as an accessory. Section 3A was described in extra detail because it may contain the PETM. The 3A section ranges from the pinkish white unit to 7.5YR 6/3 (light brown) and 7.5YR 5/3 (brown); these brownish sub-sections contain calcareous nannofossil chalk with clay and calcareous silty clay, respectively. A light greenish gray (GLEY 1 8/10Y) calcareous nannofossil chalk is found at 32 -34 cm, which has a darker green thin lamina below pinkish laminae. Section from 6 to 17 cm contains pods, which are 7.5YR 4/3, 4/4, and pinkish white 7.5YR 8/2 sediment is interstitial. Bioturbation ranges from none to high. Minor drilling disturbance mainly includes some small voids in sides of core.



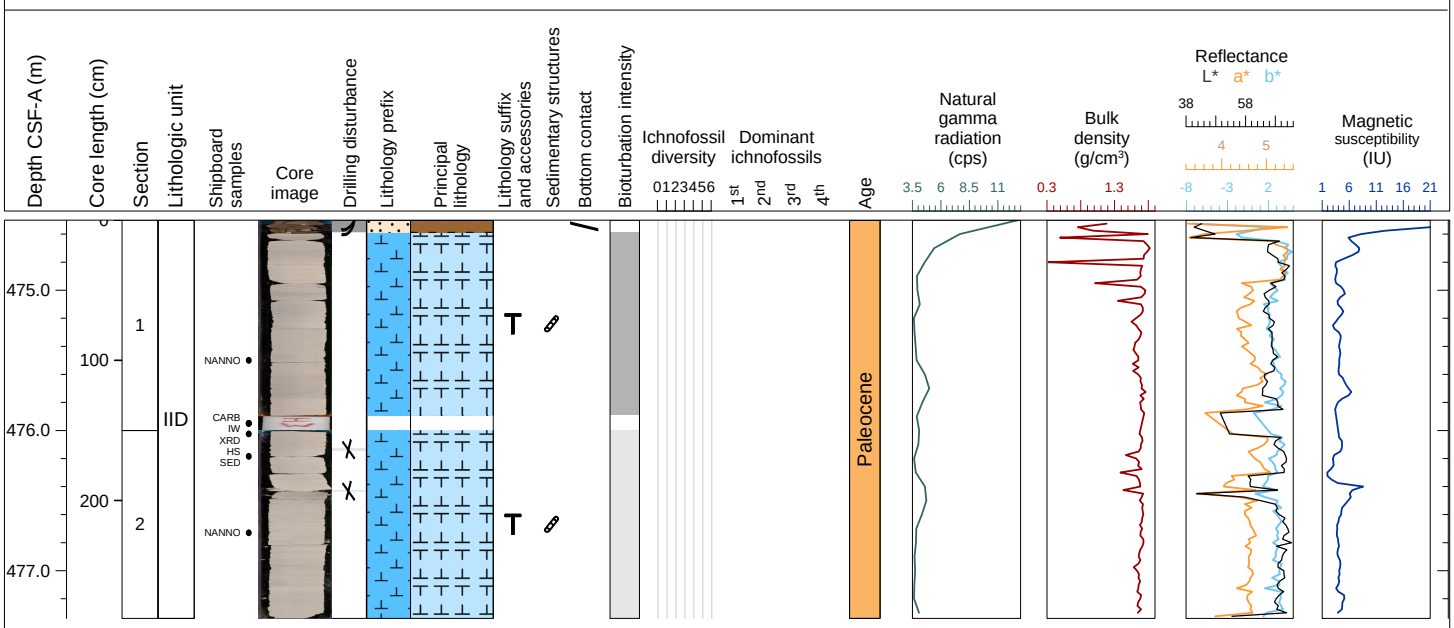
Hole 390C-U1557B Core 51X, Interval 467.4-472.12 m (CSF-A)

Core 51X contains predominantly pinkish white (7.5YR 8/2) or pink (7.5YR 7/3) nannofossil-rich calcareous chalk with an accessory of foraminifera in 1A or 2A, an nannofossil-rich calcareous chalk with foraminifera in 3A and CC. Bioturbation ranges mainly from sparse to high. Minor drilling disturbance includes fall-in in upper 4 cm of 1A, biscuits, and moderate fragmentation through the CC.



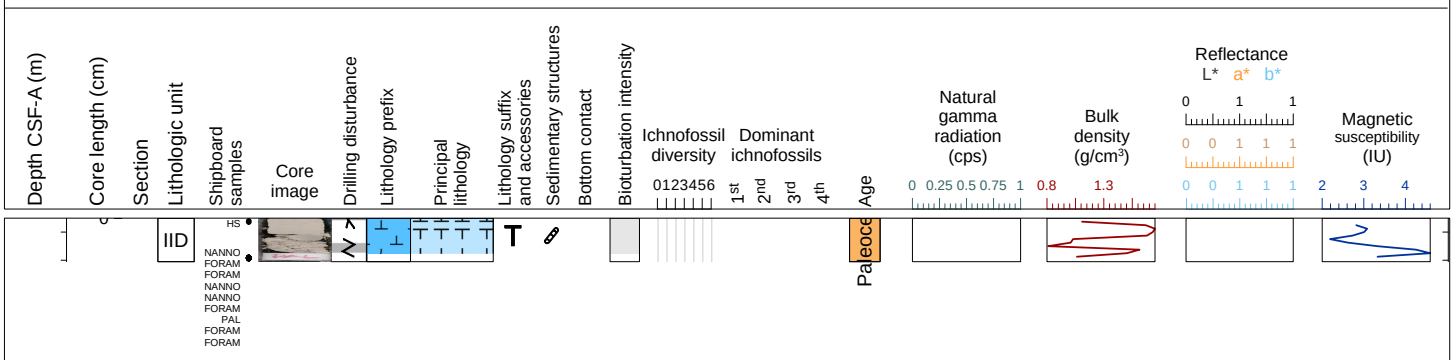
Hole 390C-U1557B Core 52X, Interval 474.5-477.34 m (CSF-A)

Core 52X contains pinkish white (7.5YR 8/2) nannofossil-rich calcareous chalk with foraminifera. Bioturbation ranges mainly from sparse to low. Minor drilling disturbance includes fall-in in upper 9 cm of 1A and slight voids on right side of 1A at 12-15 cm and left side from 42-44 cm. There is no CC.



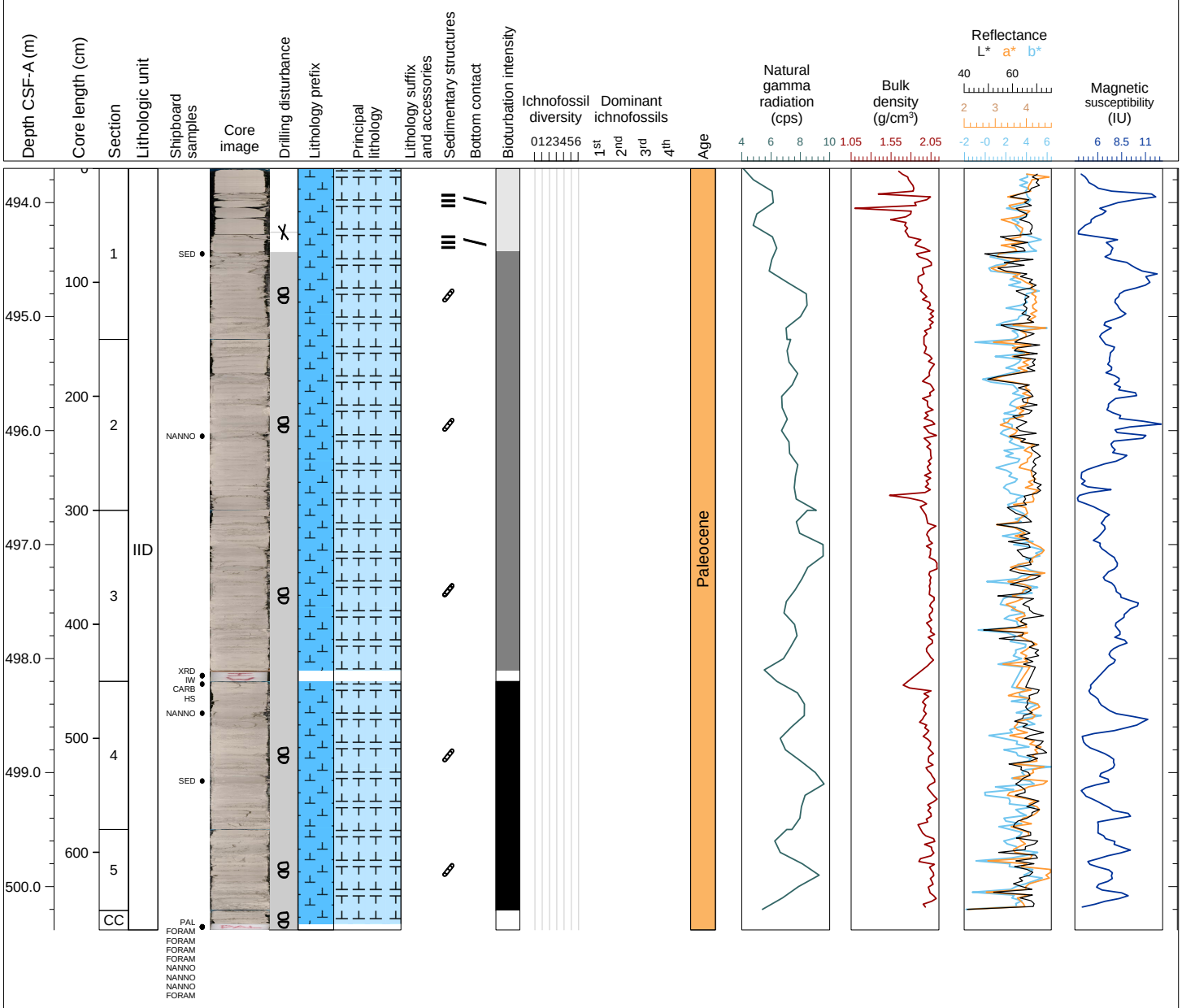
Hole 390C-U1557B Core 53X, Interval 484.1-484.41 m (CSF-A)

Core 53X consists of only the CC, which contains pinkish white (7.5YR 8/2) nannofossil-rich calcareous chalk with foraminifera. Bioturbation is sparse above the fragmented section. Drilling disturbance includes a void at the top 2 cm and moderate fragmentation, in the CC.



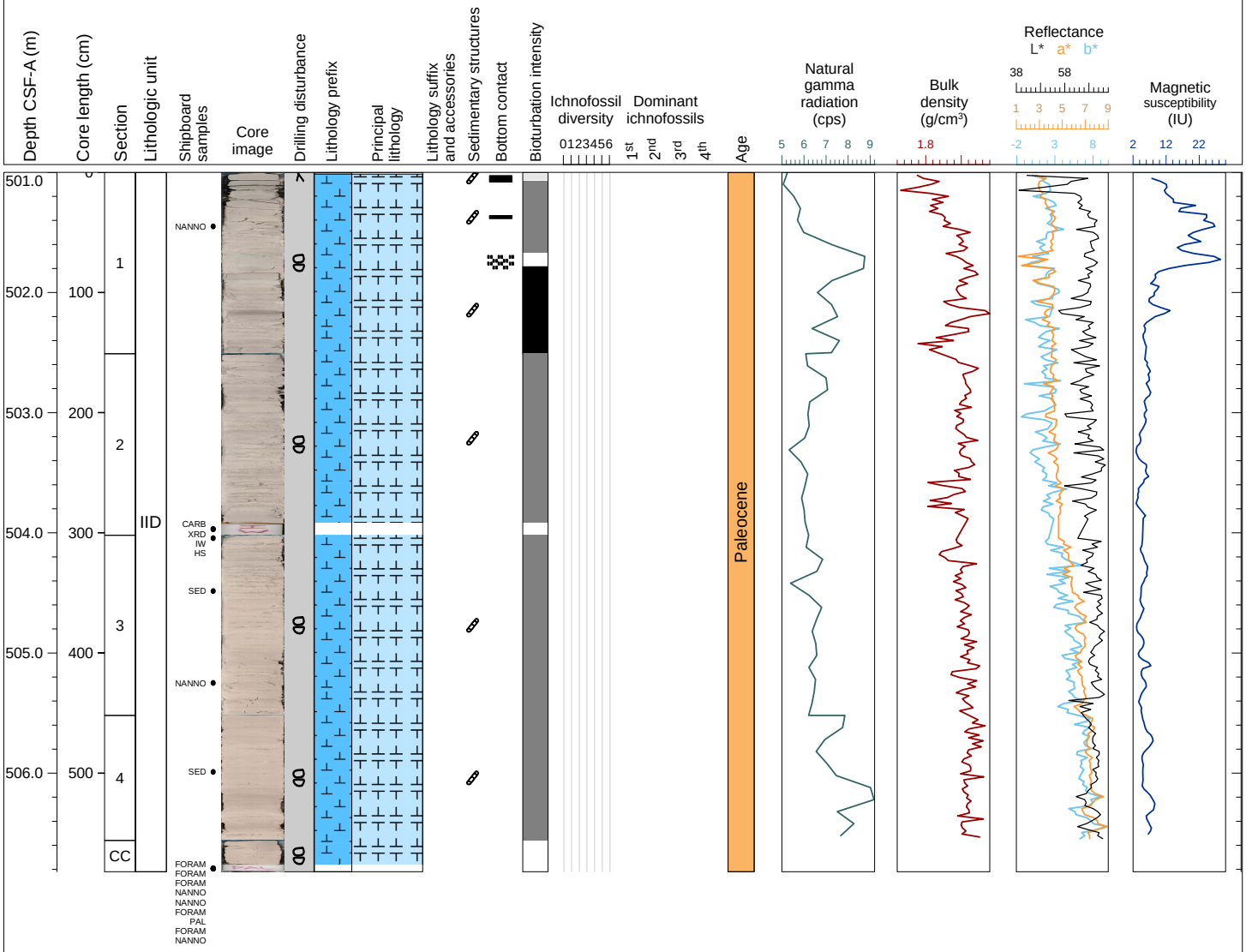
Hole 390C-U1557B Core 54X, Interval 493.7-500.38 m (CSF-A)

Core 54X consists of pinkish white (7.5YR 8/2) nannofossil-rich calcareous chalk with an accessory foraminifera. The top 73 cm of 1A includes some laminations. Bioturbation is moderate or high in still well preserved biscuit centers. Drilling disturbance is dominated by biscuits which have moderately disturbed the sediments; specifically they appear to have turned some moderately consolidated chalk to unconsolidated ooze.



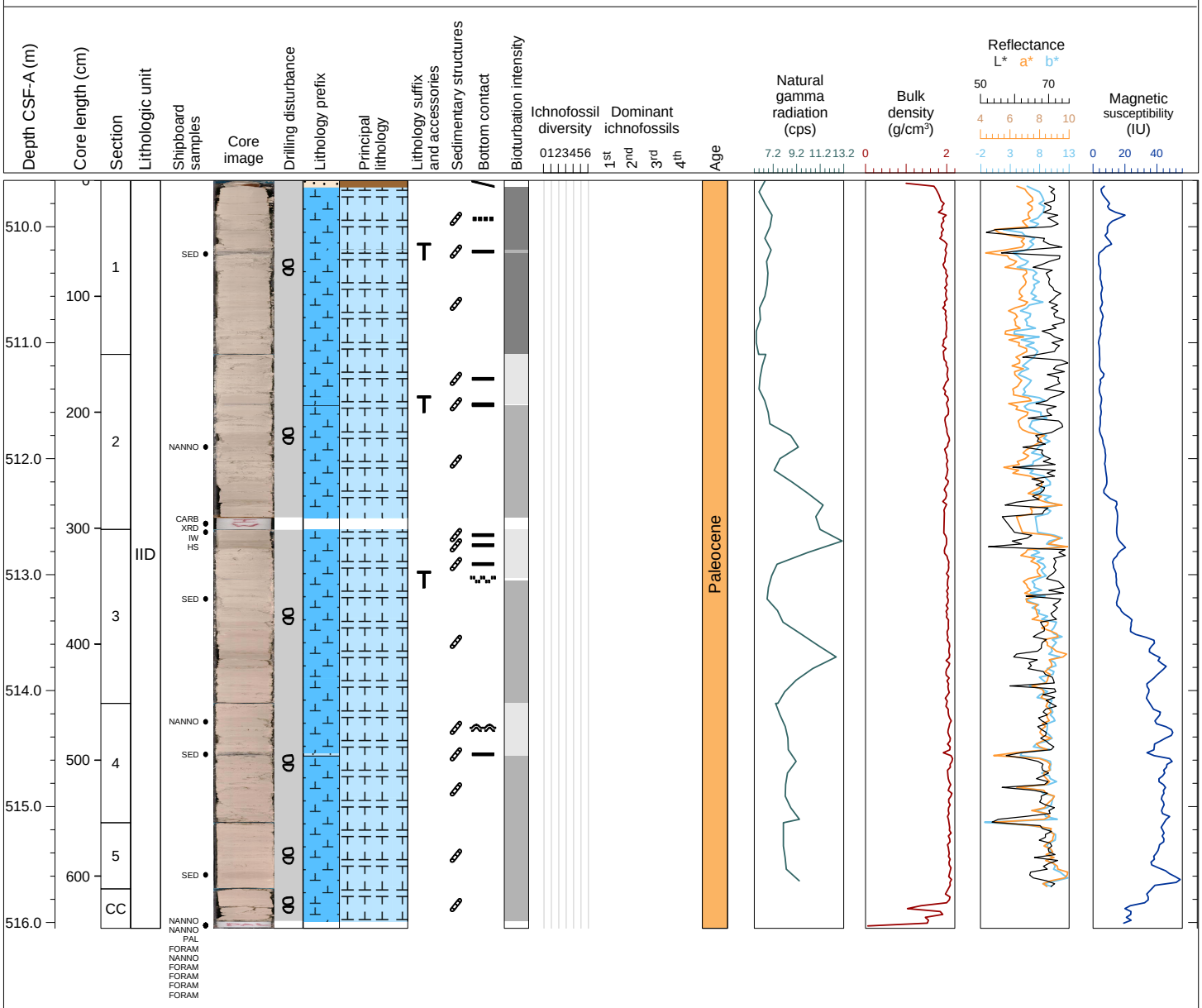
Hole 390C-U1557B Core 55X, Interval 501.0-506.82 m (CSF-A)

Core 55X consists predominantly of pinkish white (7.5YR 8/2) nannofossil-rich calcareous chalk with an accessory foraminifera. 1A includes a biscuit (to 72 cm) center that is light greenish grey GLEY 1 8/10Y and a thin laminae that is pale green GLEY 1 6/5G. 4A may be pink (7.5YR 8/3). Bioturbation is moderate or sparse in still well-preserved biscuit centers. Drilling disturbance is dominated by biscuits which have moderately disturbed the sediments; specifically they appear to have turned some moderately consolidated chalk to unconsolidated ooze.



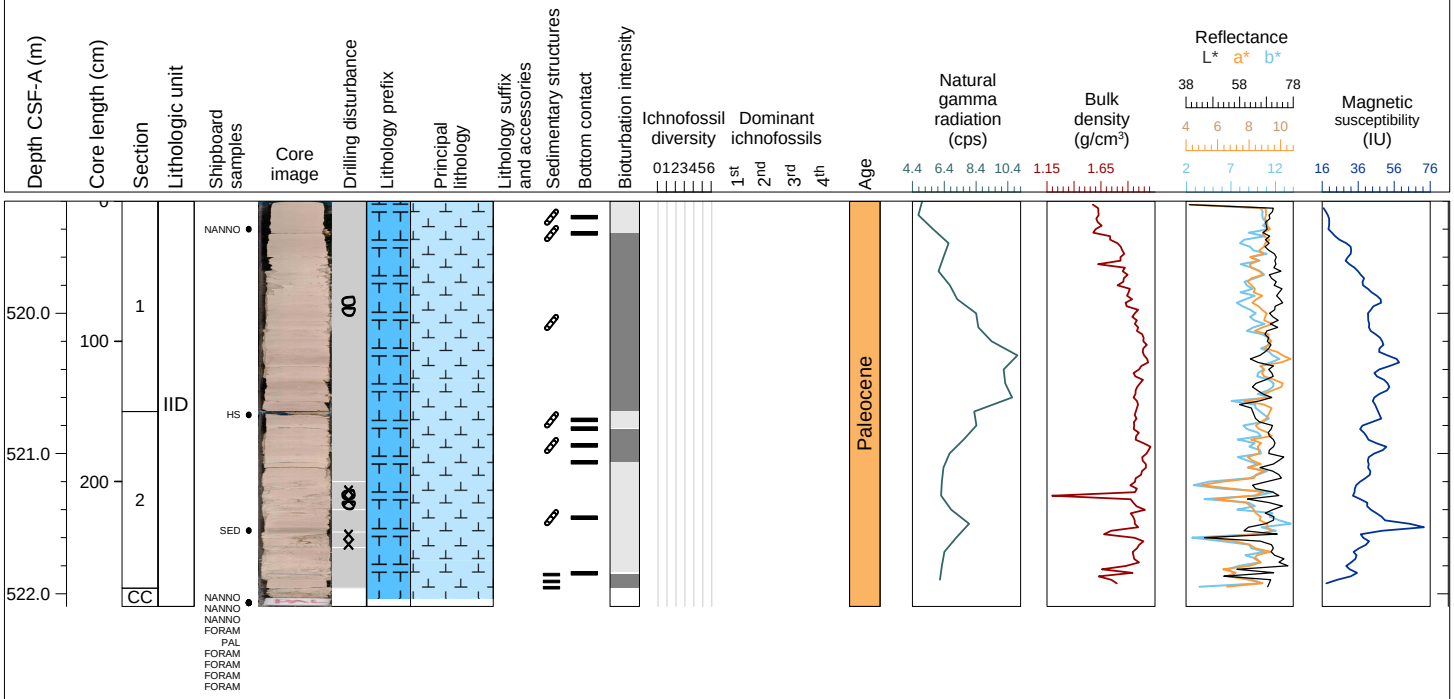
Hole 390C-U1557B Core 56X, Interval 509.6-516.05 m (CSF-A)

Core 56X consists mainly of pinkish white (7.5YR 8/2) nannofossil-rich calcareous chalk with an accessory foraminifera. In 2A, 3A, 4A are gray layers (thin laminae to larger sub-sections) that are (gray) that are nannofossil-rich calcareous chalk with foraminifera (7.5YR 6/1) or nannofossil-foraminifera calcareous chalk with organic particle (10YR 5/1). Some sections are slightly more pink or brown. Bioturbation ranges from sparse to moderate in still well-preserved biscuit centers. Drilling disturbance is dominated by biscuits which have moderately disturbed the sediments; specifically they appear to have turned some moderately consolidated chalk to unconsolidated ooze.



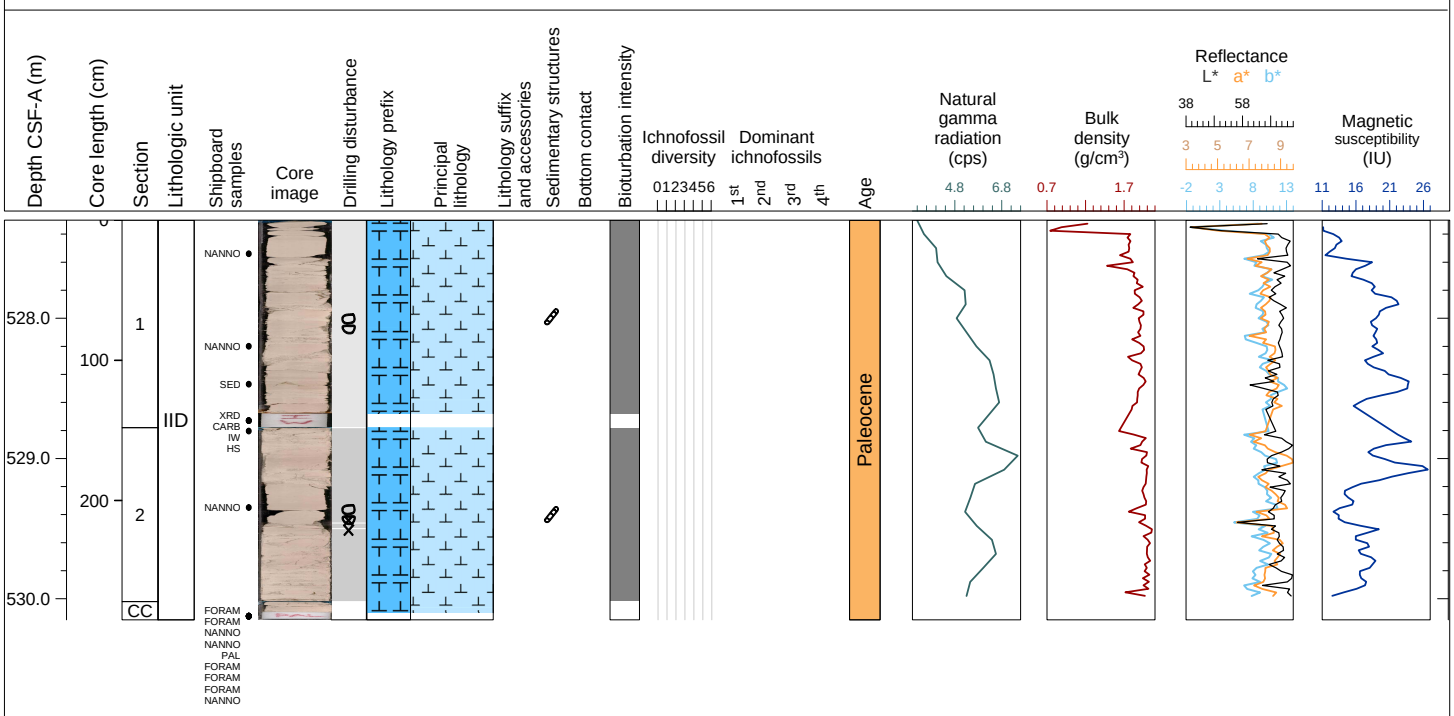
Hole 390C-U1557B Core 57X, Interval 519.2-522.09 m (CSF-A)

Core 57X consists mainly of pinkish white (7.5YR 8/2) nannofossil-rich calcareous chalk with an accessory foraminifera. Thin laminations in 2A (12-12.5 cm; 13-13.5 cm; 116-117 cm) with dark bluish gray (GLEY 2 4/10B) are calcareous nannofossil chalk with organic particles. Bioturbation ranges from sparse to moderate in still well-preserved biscuit centers. Drilling disturbance is dominated by biscuits which have moderately disturbed the sediments; specifically they appear to have turned some moderately consolidated chalk to unconsolidated ooze. Brecciation induced during drilling in 2A.



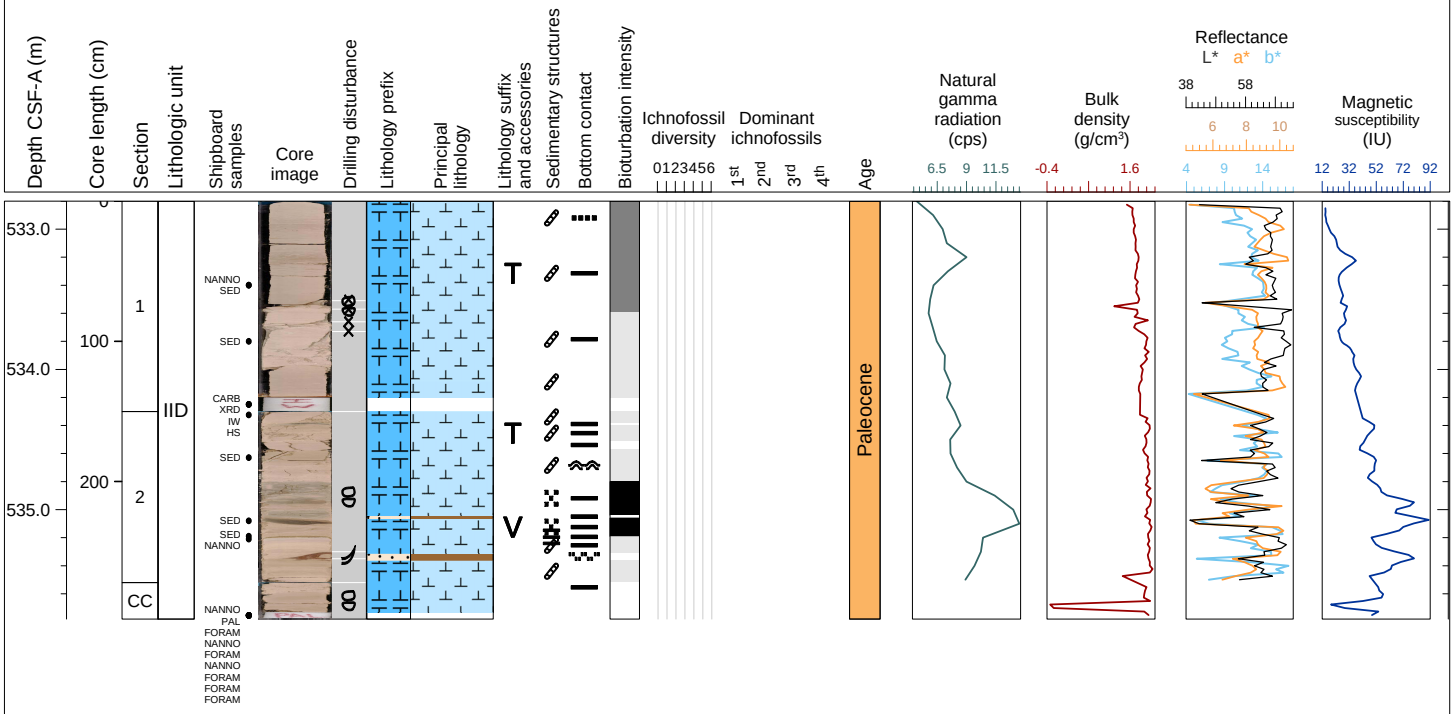
Hole 390C-U1557B Core 58X, Interval 527.3-530.15 m (CSF-A)

Core 58X consists mainly of pinkish white (7.5YR 8/2) nannofossil-rich calcareous chalk with an accessory foraminifera. Bioturbation ranges from sparse to moderate in still well-preserved biscuit centers. Drilling disturbance is dominated by biscuits which have moderately disturbed the sediments; specifically they appear to have turned some moderately consolidated chalk to unconsolidated ooze. Brecciation induced during drilling in 2A.



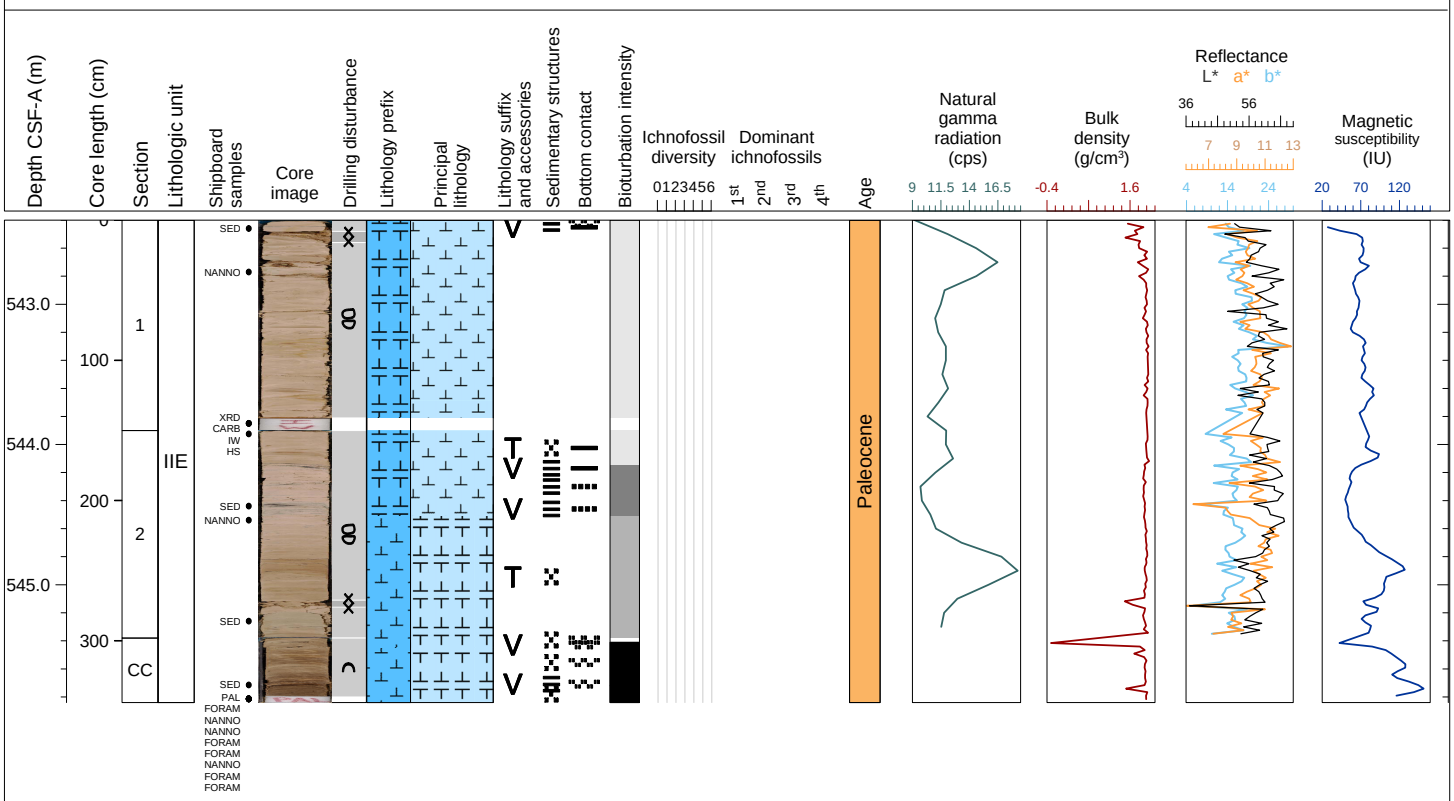
Hole 390C-U1557B Core 59X, Interval 532.8-535.78 m (CSF-A)

Core 59X consists mainly of pinkish white (7.5YR 8/2) nannofossil-rich calcareous chalk with an accessory foraminifera and pinkish gray (7.5YR 7/2) calcareous nannofossil chalk. Thin bed of bluish gray (GLEY 2 6/10B) is calcareous nannofossil chalk with volcaniclasts. Medium lamination of light olive brown (2.5Y 5/4) is calcareous nannofossil chalk with ferromagnesians. Bioturbation ranges from sparse to moderate in still well-preserved biscuit centers. Drilling disturbance is dominated by biscuits which have moderately disturbed the sediments; specifically they appear to have turned some moderately consolidated chalk to unconsolidated ooze. Brecciation induced during drilling in 1A and 2A.



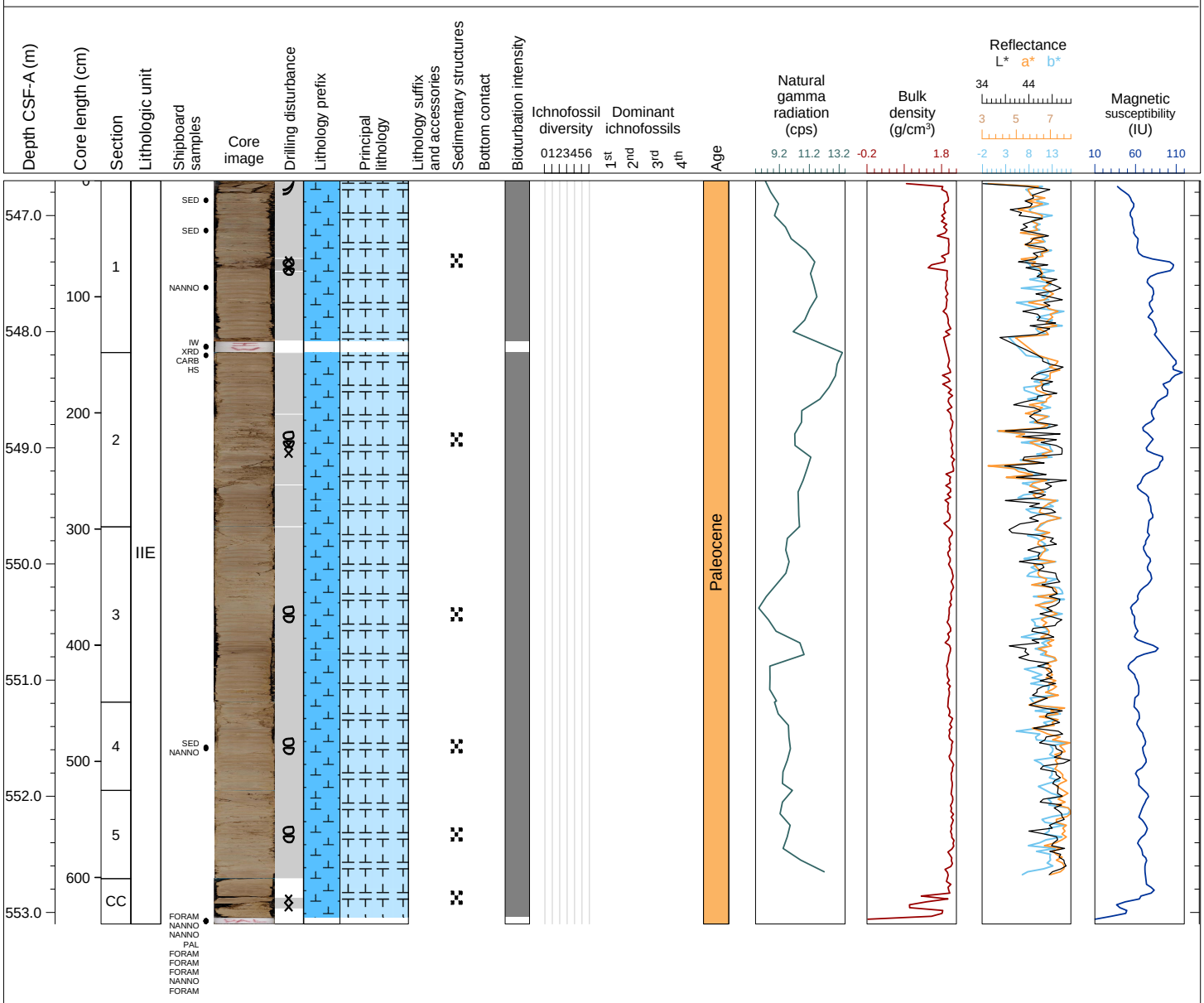
Hole 390C-U1557B Core 60X, Interval 542.4-545.84 m (CSF-A)

Core 60X consists mainly of pinkish gray (7.5YR 7/2) nannofossil-rich calcareous chalk with foraminifera and dark grayish brown (10YR 4/2) nannofossil-rich calcareous chalk. There are thin lamination of bluish gray (GLEY 2 6/10B) in 1A and 2A, which are calcareous nannofossil chalk with volcaniclasts. There are sand size of basalt fragment in 3A (3-8 cm). Thin bed of very dark grayish brown (10YR 3/2) is nannofossil-rich calcareous chalk with volcaniclasts. Cross-bedding lamination with slump structure are found in 1A. Bioturbation ranges from intense to high in 3A. Drilling disturbance is dominated by biscuits which have moderately disturbed the sediments. Brecciation induced during drilling in 1A and 2A.



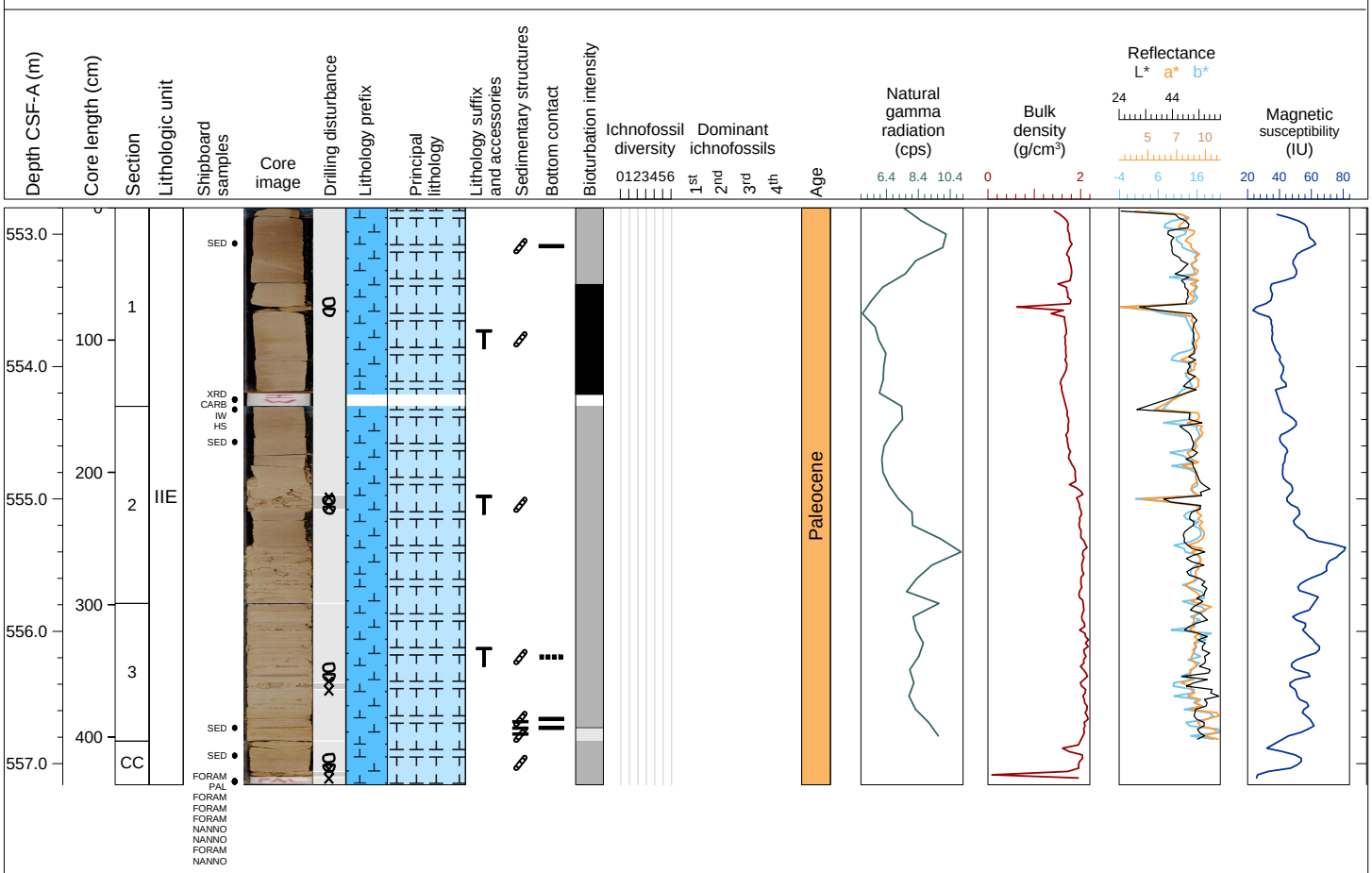
Hole 390C-U1557B Core 61X, Interval 546.7-553.1 m (CSF-A)

Core 61X consists mainly of dark grayish brown (10YR 4/2) nannofossil-rich calcareous chalk. The black scattered in 1A (17, 25 cm) are volcanic origin clasts. Bioturbation is moderate in still well-preserved biscuit centers. Drilling disturbance is dominated by biscuits which have moderately disturbed the sediments; Severe brecciation in 1A.



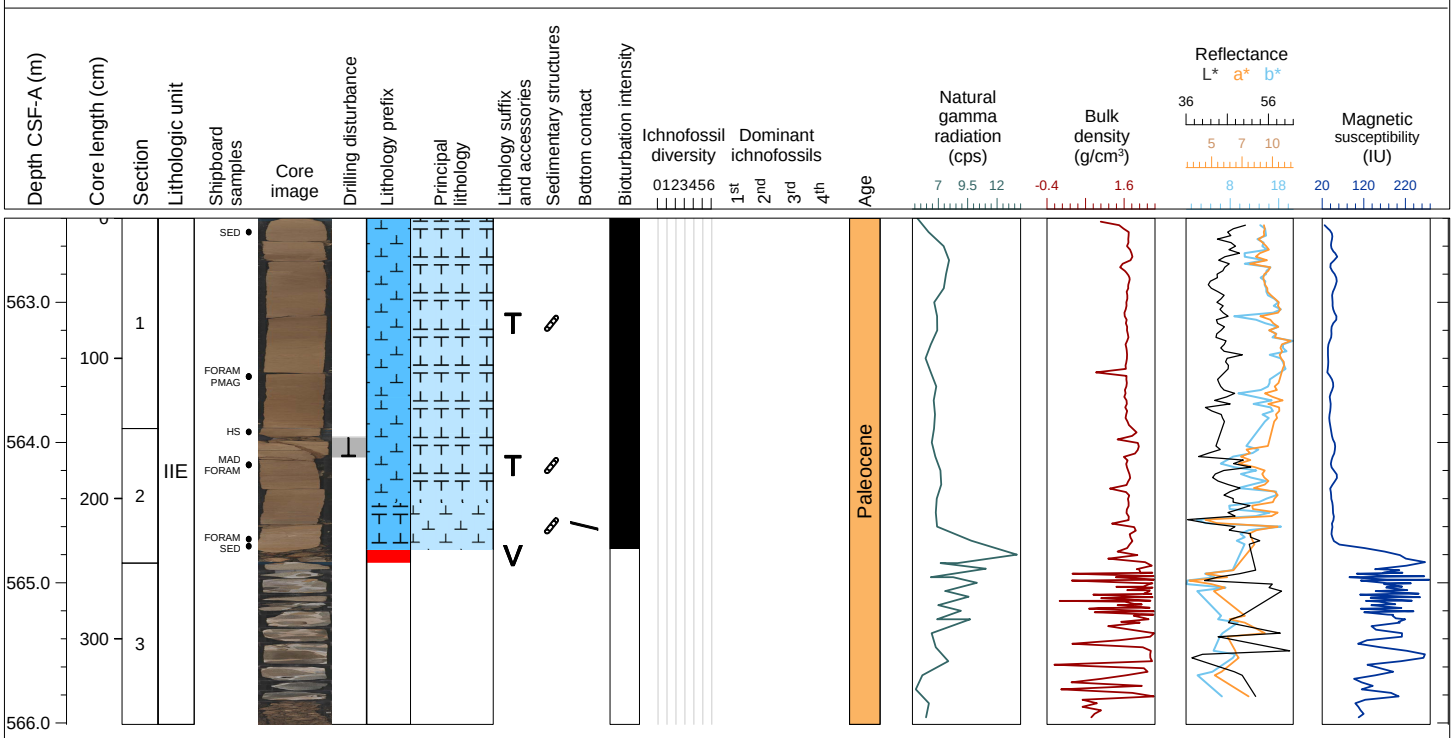
Hole 390C-U1557B Core 62X, Interval 552.8-557.16 m (CSF-A)

Core 62X consists mainly of yellowish brown (10YR 5/4) nannofossil-rich calcareous chalk with foraminifera. The strong brown thin lamination in 3A (93.5-94.5 cm) is nannofossil-rich calcareous chalk with ferromagnesians. There are silt size of oxides in section 3A (94.5-104 cm) and CC. Bioturbation is moderate to intense in still well-preserved biscuit centers. Drilling disturbance is dominated by biscuits which have slightly disturbed the sediments

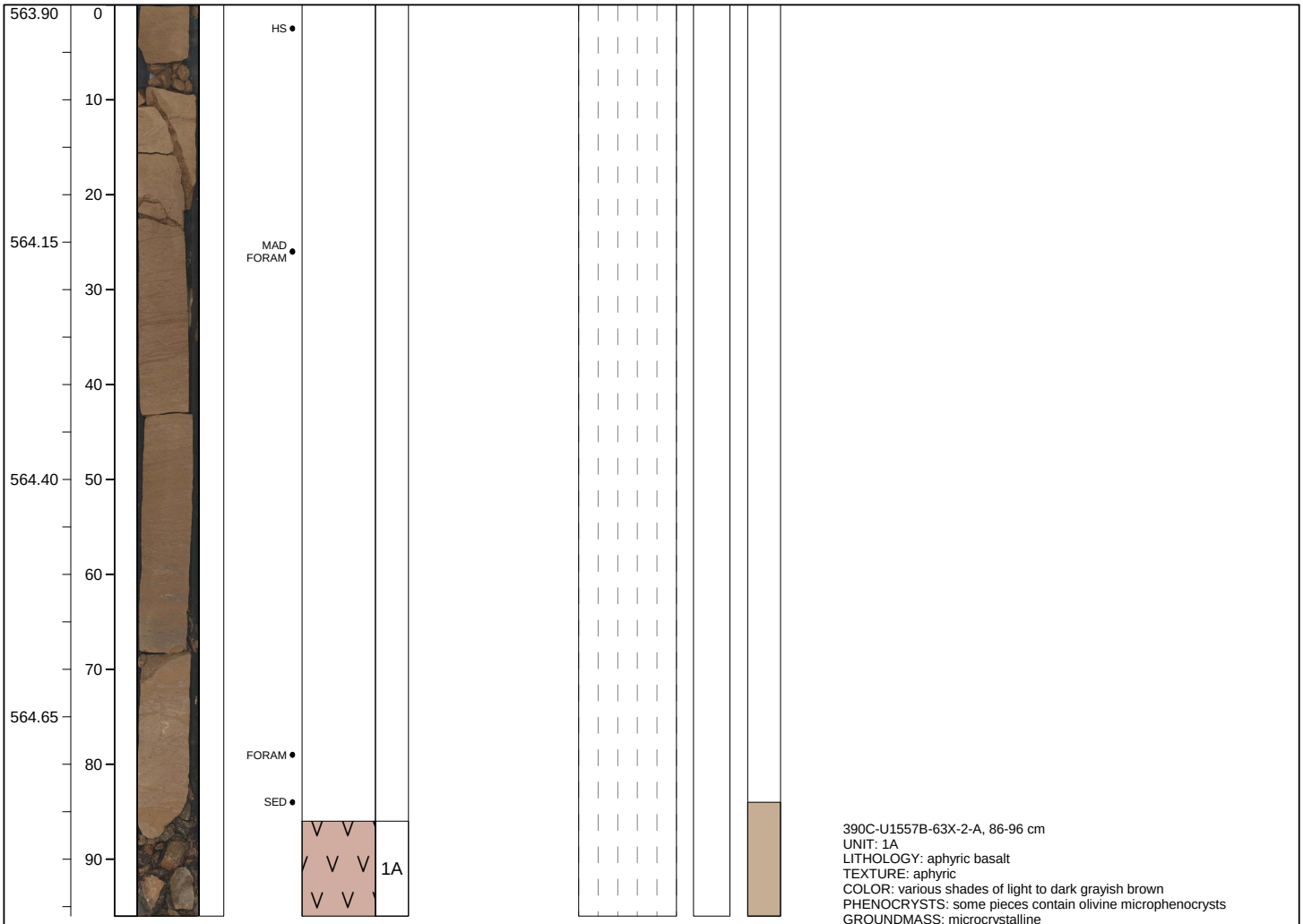


Hole 390C-U1557B Core 63X, Interval 562.4-566.01 m (CSF-A)

Core 63X is predominantly yellowish brown (10YR 5/6) nannofossil-rich calcareous chalk with foraminifera or calcareous nannofossil chalk. In 2A at 86 cm is the 'bottom of sediment,' and below is ~9-9.5 cm of altered basalt rubble, with calcareous chalk on the outside. Color varies, but many clasts are 10YR 5/6. For 3A, see extrusive hypabyssal column.

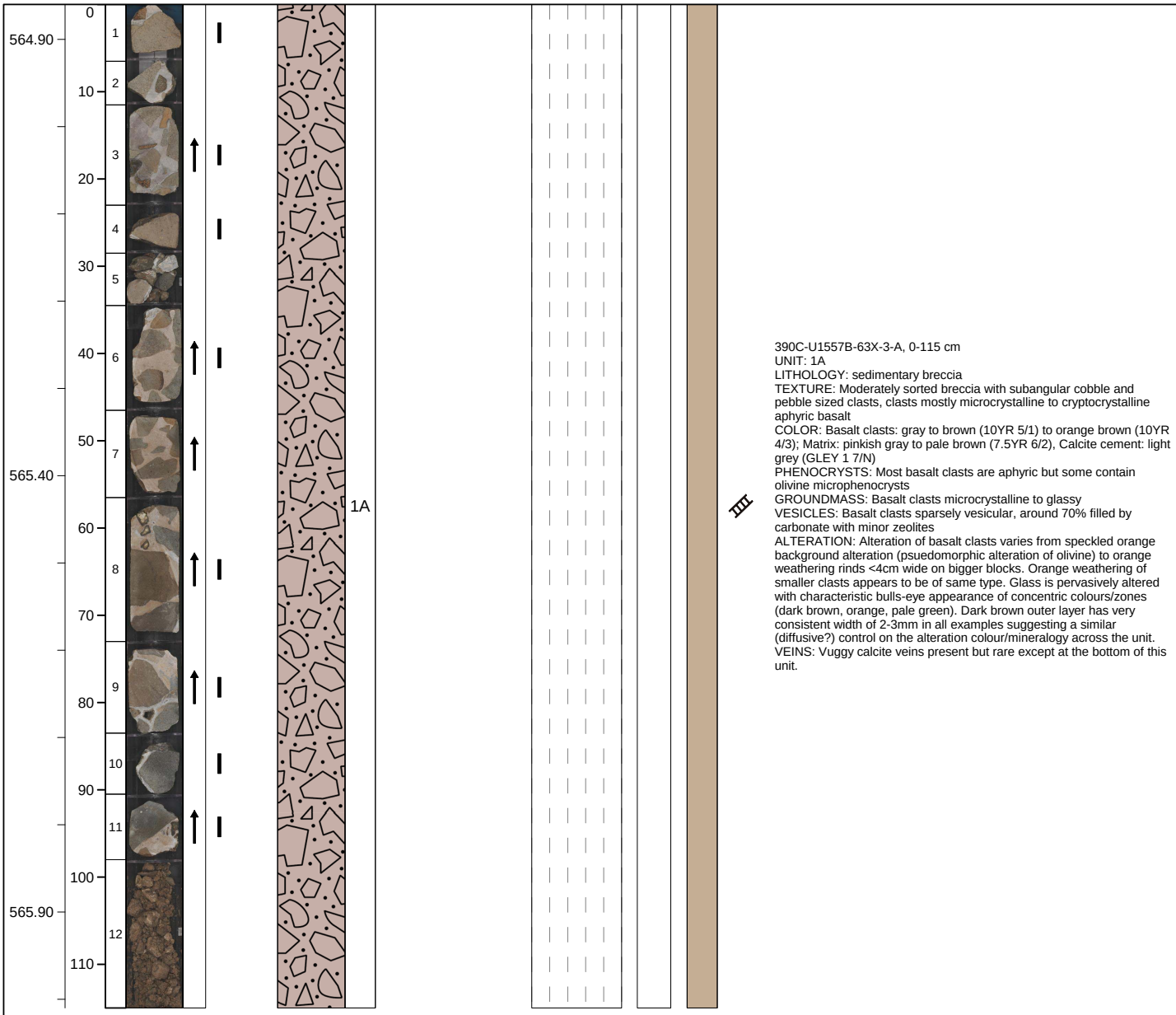


Hole 390C-U1557B-63X Section 2, Top of Section: 563.9 m (CSF-A)



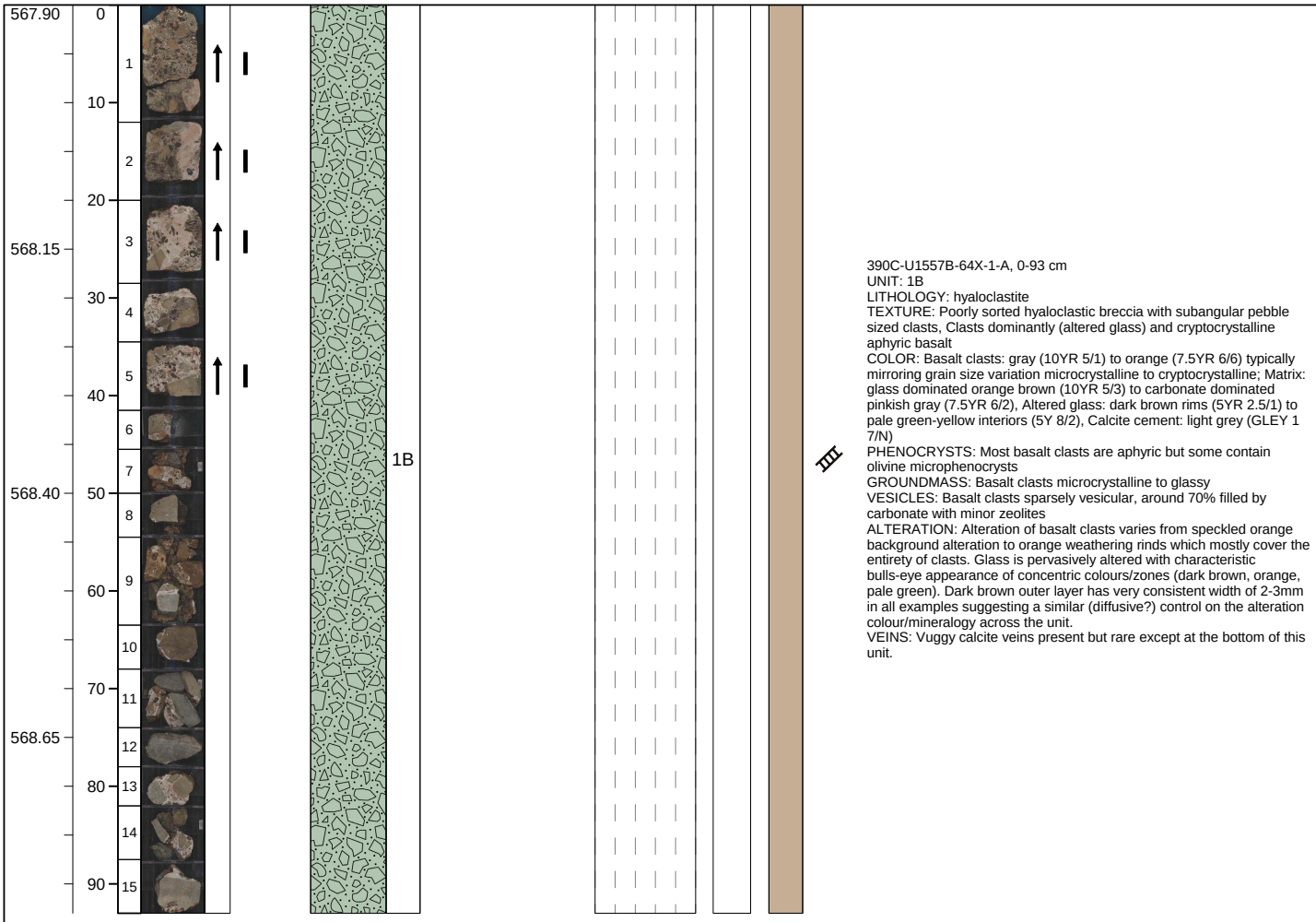
390C-U1557B-63X-2-A, 86-96 cm
UNIT: 1A
LITHOLOGY: aphyric basalt
TEXTURE: aphyric
COLOR: various shades of light to dark grayish brown
PHENOCRYSTS: some pieces contain olivine microphenocrysts
GROUNDMASS: microcrystalline
VESICLES: ranges from nonvesicular to sparsely vesicular
ALTERATION: Basaltic rubble clasts are highly to completely altered
VEINS: Sparry calcite veins partially filling voids abundant in some areas.

Hole 390C-U1557B-63X Section 3, Top of Section: 564.86 m (CSF-A)



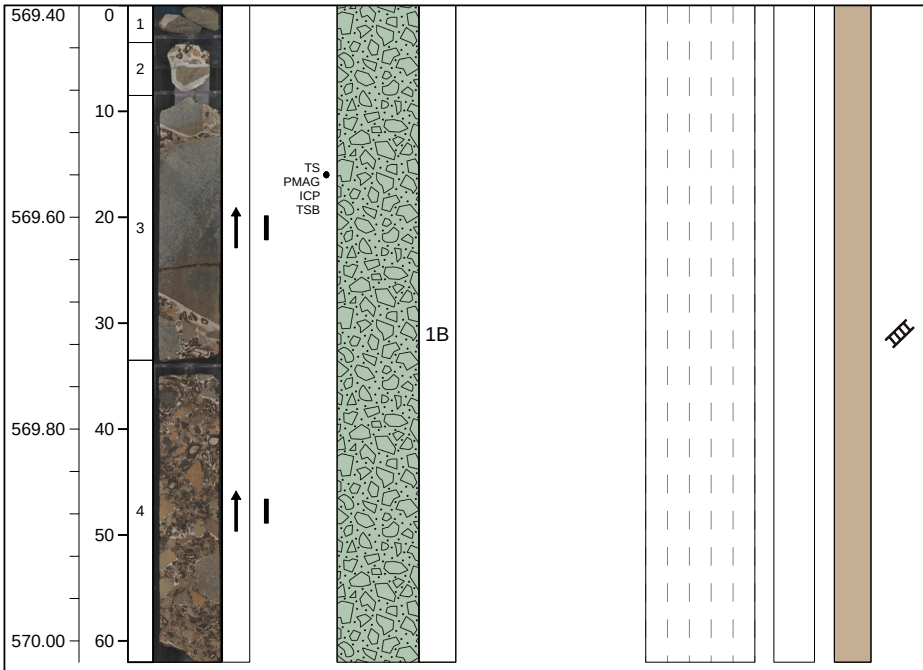
390C-U1557B-63X-3-A, 0-115 cm
UNIT: 1A
LITHOLOGY: sedimentary breccia
TEXTURE: Moderately sorted breccia with subangular cobble and pebble sized clasts, clasts mostly microcrystalline to cryptocrystalline aphyric basalt
COLOR: Basalt clasts: gray to brown (10YR 5/1) to orange brown (10YR 4/3); Matrix: pinkish gray to pale brown (7.5YR 6/2), Calcite cement: light grey (GLEY 1 7/N)
PHENOCRYSTS: Most basalt clasts are aphyric but some contain olivine microphenocrysts
GROUNDMASS: Basalt clasts microcrystalline to glassy
VESICLES: Basalt clasts sparsely vesicular, around 70% filled by carbonate with minor zeolites
ALTERATION: Alteration of basalt clasts varies from speckled orange background alteration (psuedomorphic alteration of olivine) to orange weathering rinds <4cm wide on bigger blocks. Orange weathering of smaller clasts appears to be of same type. Glass is pervasively altered with characteristic bulls-eye appearance of concentric colours/zones (dark brown, orange, pale green). Dark brown outer layer has very consistent width of 2-3mm in all examples suggesting a similar (diffusive?) control on the alteration colour/mineralogy across the unit.
VEINS: Vuggy calcite veins present but rare except at the bottom of this unit.

Hole 390C-U1557B-64X Section 1, Top of Section: 567.9 m (CSF-A)



390C-U1557B-64X-1-A, 0-93 cm
UNIT: 1B
LITHOLOGY: hyaloclastite
TEXTURE: Poorly sorted hyaloclastic breccia with subangular pebble sized clasts, Clasts dominantly (altered glass) and cryptocrystalline aphyric basalt
COLOR: Basalt clasts: gray (10YR 5/1) to orange (7.5YR 6/6) typically mirroring grain size variation microcrystalline to cryptocrystalline; Matrix: glass dominated orange brown (10YR 5/3) to carbonate dominated pinkish gray (7.5YR 6/2), Altered glass: dark brown rims (5YR 2.5/1) to pale green-yellow interiors (5Y 8/2), Calcite cement: light grey (GLEY 1 7/N)
PHENOCRYSTS: Most basalt clasts are aphyric but some contain olivine microphenocrysts
GROUNDMASS: Basalt clasts microcrystalline to glassy
VESICLES: Basalt clasts sparsely vesicular, around 70% filled by carbonate with minor zeolites
ALTERATION: Alteration of basalt clasts varies from speckled orange background alteration to orange weathering rinds which mostly cover the entirety of clasts. Glass is pervasively altered with characteristic bulls-eye appearance of concentric colours/zones (dark brown, orange, pale green). Dark brown outer layer has very consistent width of 2-3mm in all examples suggesting a similar (diffusive?) control on the alteration colour/mineralogy across the unit.
VEINS: Vuggy calcite veins present but rare except at the bottom of this unit.

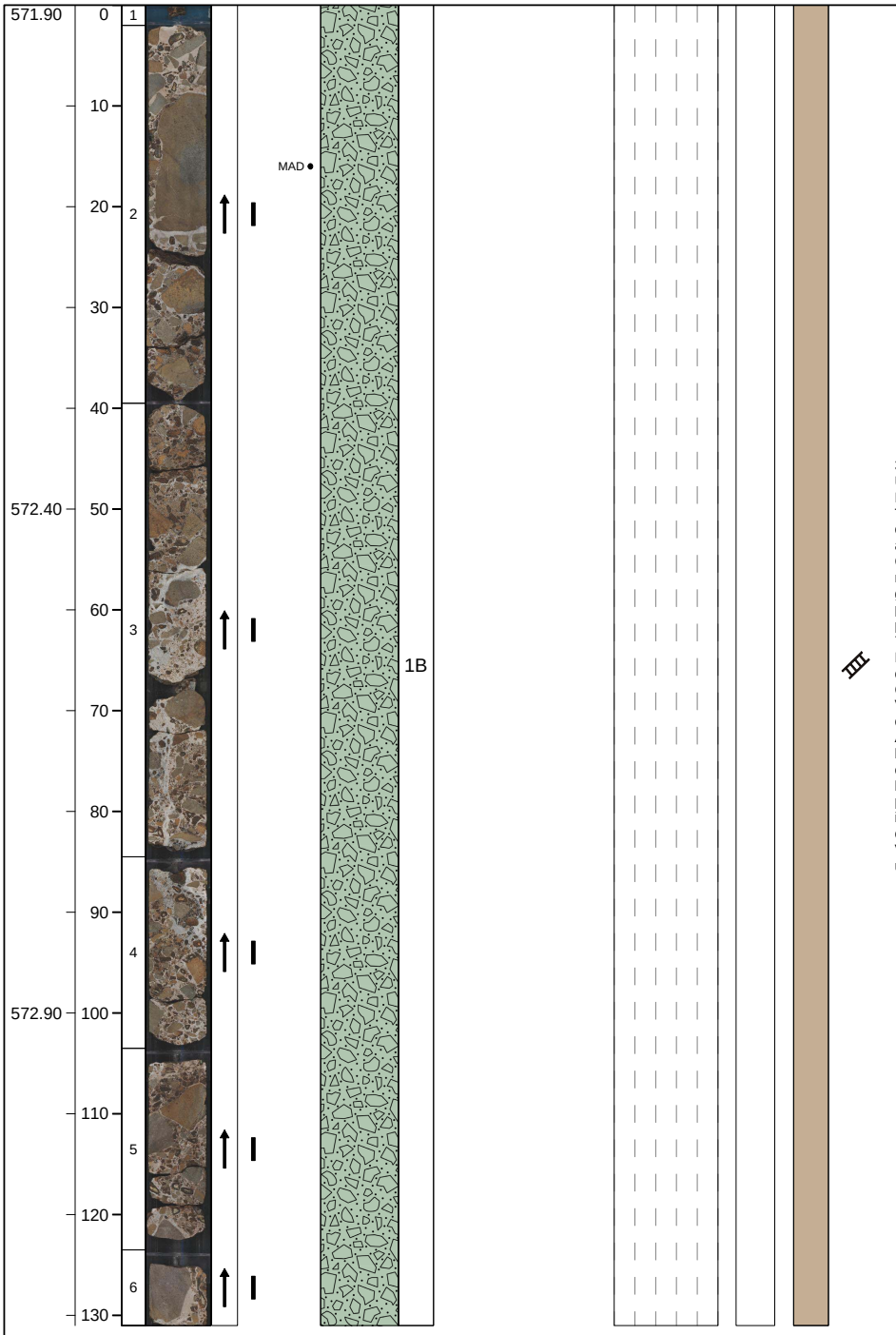
Hole 390C-U1557B-65X Section 1, Top of Section: 569.4 m (CSF-A)



Description

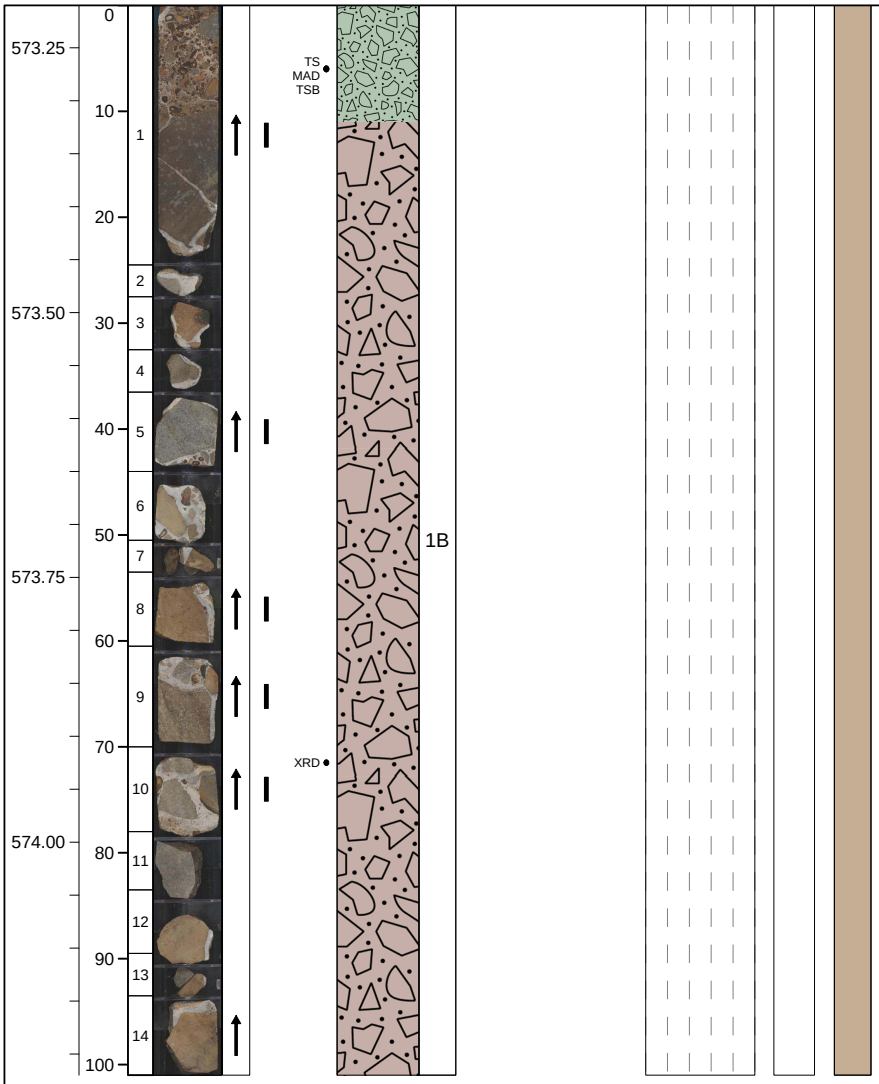
390C-U1557B-65X-1-A, 0-62 cm
UNIT: 1B
LITHOLOGY: hyaloclastite
TEXTURE: Poorly sorted breccia with subangular pebble sized clasts, clasts dominantly (altered glass) or cryptocrystalline aphyric basalt, with large aphyric basalt cobble (piece 3)
COLOR: Basalt clasts: gray (10YR 5/1) to orange (7.5YR 6/6) typically mirroring grain size variation microcrystalline to cryptocrystalline; Matrix: glass dominated orange brown (10YR 5/3) to carbonate dominated pinkish gray (7.5YR 6/2), Altered glass: dark brown rims (5YR 2.5/1) to pale green-yellow interiors (5Y 8/2), Calcite cement: light grey (GLEY 1 7/N)
PHENOCRYSTS: Most basalt clasts are aphyric but some contain olivine microphenocrysts
GROUNDMASS: Basalt clasts microcrystalline to glassy
VESICLES: Basalt clasts sparsely vesicular, around 70% filled by carbonate with minor zeolites
ALTERATION: Alteration of basalt clasts varies from speckled orange background alteration to orange weathering rinds which mostly cover the entirety of clasts. Glass is pervasively altered with characteristic bulls-eye appearance of concentric colours/zones (dark brown, orange, pale green). Dark brown outer layer has very consistent width of 2-3mm in all examples suggesting a similar (diffusive?) control on the alteration colour/mineralogy across the unit.
VEINS: Vuggy calcite veins present but rare except at the bottom of this unit.

Hole 390C-U1557B-66X Section 1, Top of Section: 571.9 m (CSF-A)



390C-U1557B-66X-1-A, 0-131 cm
UNIT: 1B
LITHOLOGY: hyaloclastite
TEXTURE: Poorly sorted breccia with subangular pebble sized clasts, clasts dominantly (altered glass) or cryptocrystalline aphyric basalt, with aphyric basalt cobble (piece 2)
COLOR: Basalt clasts: gray (10YR 5/1) to orange (7.5YR 6/6) typically mirroring grain size variation microcrystalline to cryptocrystalline; Matrix: glass dominated orange brown (10YR 5/3) to carbonate dominated pinkish gray (7.5YR 6/2), Altered glass: dark brown rims (5YR 2.5/1) to pale green-yellow interiors (5Y 8/2), Calcite cement: light grey (GLEY 1 7/N)
PHENOCRYSTS: Most basalt clasts are aphyric but some contain olivine microphenocrysts
GROUNDMASS: Basalt clasts microcrystalline to glassy
VESICLES: Basalt clasts sparsely vesicular, around 70% filled by carbonate with minor zeolites
ALTERATION: Alteration of basalt clasts varies from speckled orange background alteration to orange weathering rinds which mostly cover the entirety of clasts. Glass is pervasively altered with characteristic bulls-eye appearance of concentric colours/zones (dark brown, orange, pale green). Dark brown outer layer has very consistent width of 2-3mm in all examples suggesting a similar (diffusive?) control on the alteration colour/mineralogy across the unit.
VEINS: Vuggy calcite veins present but rare except at the bottom of this unit.

Hole 390C-U1557B-66X Section 2, Top of Section: 573.21 m (CSF-A)



390C-U1557B-66X-2-A, 0-11 cm
UNIT: 1B
LITHOLOGY: hyaloclastite
TEXTURE: Poorly sorted breccia with subangular pebble sized clasts, clasts dominantly (altered glass) or cryptocrystalline aphyric basalt
COLOR: Basalt clasts: gray (10YR 5/1) to orange (7.5YR 6/6) typically mirroring grain size variation microcrystalline to cryptocrystalline; Matrix: glass dominated orange brown (10YR 5/3) to carbonate dominated pinkish gray (7.5YR 6/2), Altered glass: dark brown rims (5YR 2.5/1) to pale green-yellow interiors (5Y 8/2), Calcite cement: light grey (GLEY 1 7/N)
PHENOCRYSTS: Most basalt clasts are aphyric but some contain olivine microphenocrysts
GROUNDMASS: Basalt clasts microcrystalline to glassy
VESICLES: Basalt clasts sparsely vesicular, around 70% filled by carbonate with minor zeolites
ALTERATION: Alteration of basalt clasts varies from speckled orange background alteration to orange weathering rinds which mostly cover the entirety of clasts. Glass is pervasively altered with characteristic bulls-eye appearance of concentric colours/zones (dark brown, orange, pale green). Dark brown outer layer has very consistent width of 2-3mm in all examples suggesting a similar (diffusive?) control on the alteration colour/mineralogy across the unit.
VEINS: Vuggy calcite veins present but rare except at the bottom of this unit.

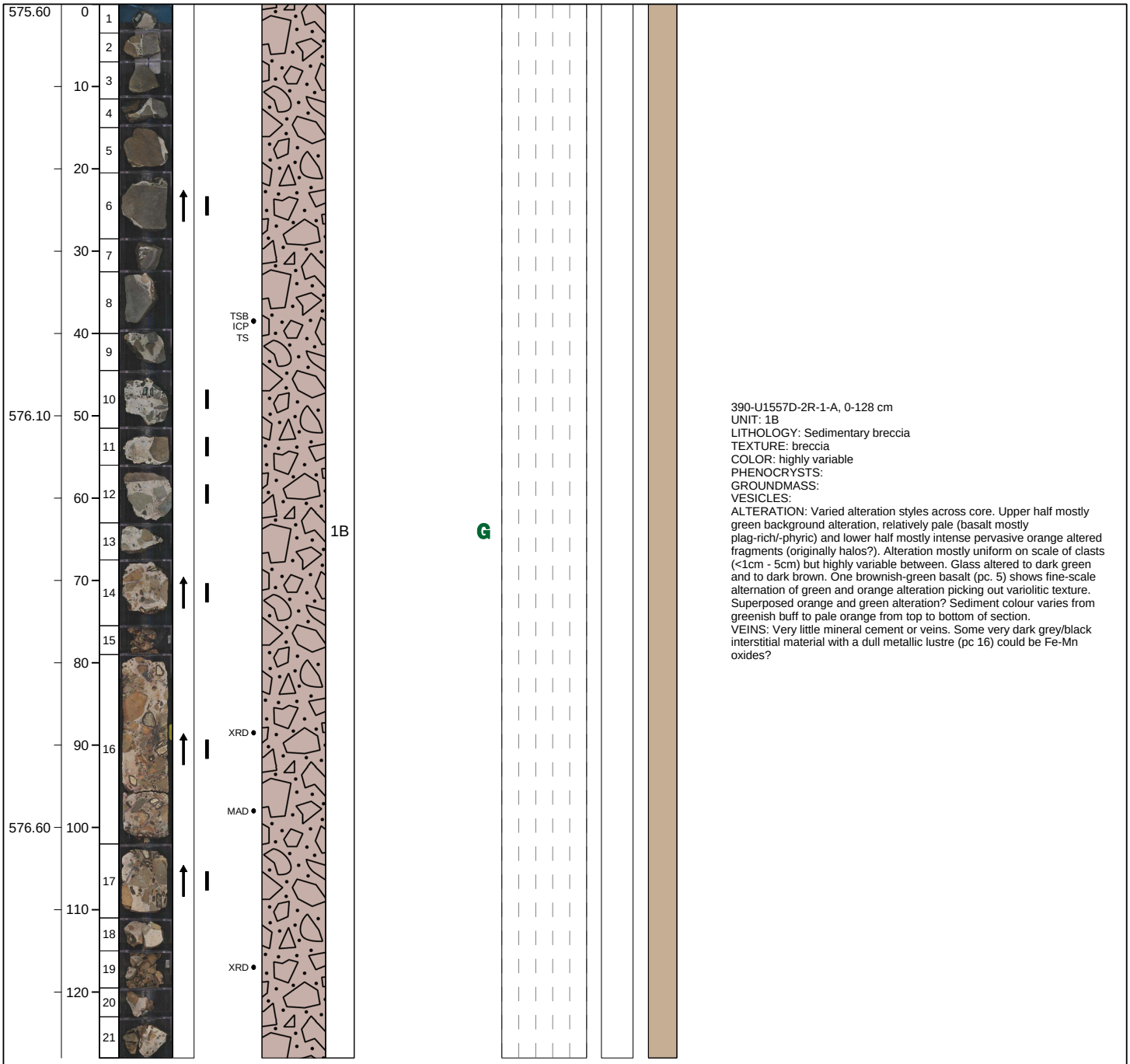
390C-U1557B-66X-2-A, 11-101 cm
UNIT: 1B
LITHOLOGY: sedimentary breccia
TEXTURE: Moderately sorted breccia with subangular cobble and pebble sized clasts, clasts mostly microcrystalline to cryptocrystalline aphyric basalt
COLOR: Basalt clasts: gray to brown (10YR 5/1) to orange brown (10YR 4/3); Matrix: pinkish gray to pale brown (7.5YR 6/2), Calcite cement: light grey (GLEY 1 7/N)
PHENOCRYSTS: Most basalt clasts are aphyric but some contain olivine microphenocrysts
GROUNDMASS: Basalt clasts microcrystalline to glassy
VESICLES: Basalt clasts sparsely vesicular, around 70% filled by carbonate with minor zeolites
ALTERATION: Alteration of basalt clasts varies from speckled orange background alteration to orange weathering rinds which mostly cover the entirety of clasts. Rare clasts of glass are pervasively altered with characteristic bulls-eye appearance of concentric colours/zones (dark brown, orange, pale green). Dark brown outer layer has very consistent width of 2-3mm in all examples suggesting a similar (diffusive?) control on the alteration colour/mineralogy across the unit.
VEINS: Sparry calcite veins and partial vug fill are abundant in bottom part of this unit filling majority of interclast space.

Hole 390-U1557D-11 Section 1, Top of Section: 0.0 m (CSF-A)

Depth (mbsf)	Section length (cm)	Piece number	Core image	Orientation	DMT	Shipboard samples	Lithology	Lith. unit	Plagioclase / Olivine 0 5 10	Glass	Groundmass size: Glass	Cryptocrystalline	Microcrystalline	Fine-grained	Medium-grained	Coarse-grained	Vesicle abundance	Alteration intensity rank	Veins/Structures	Description

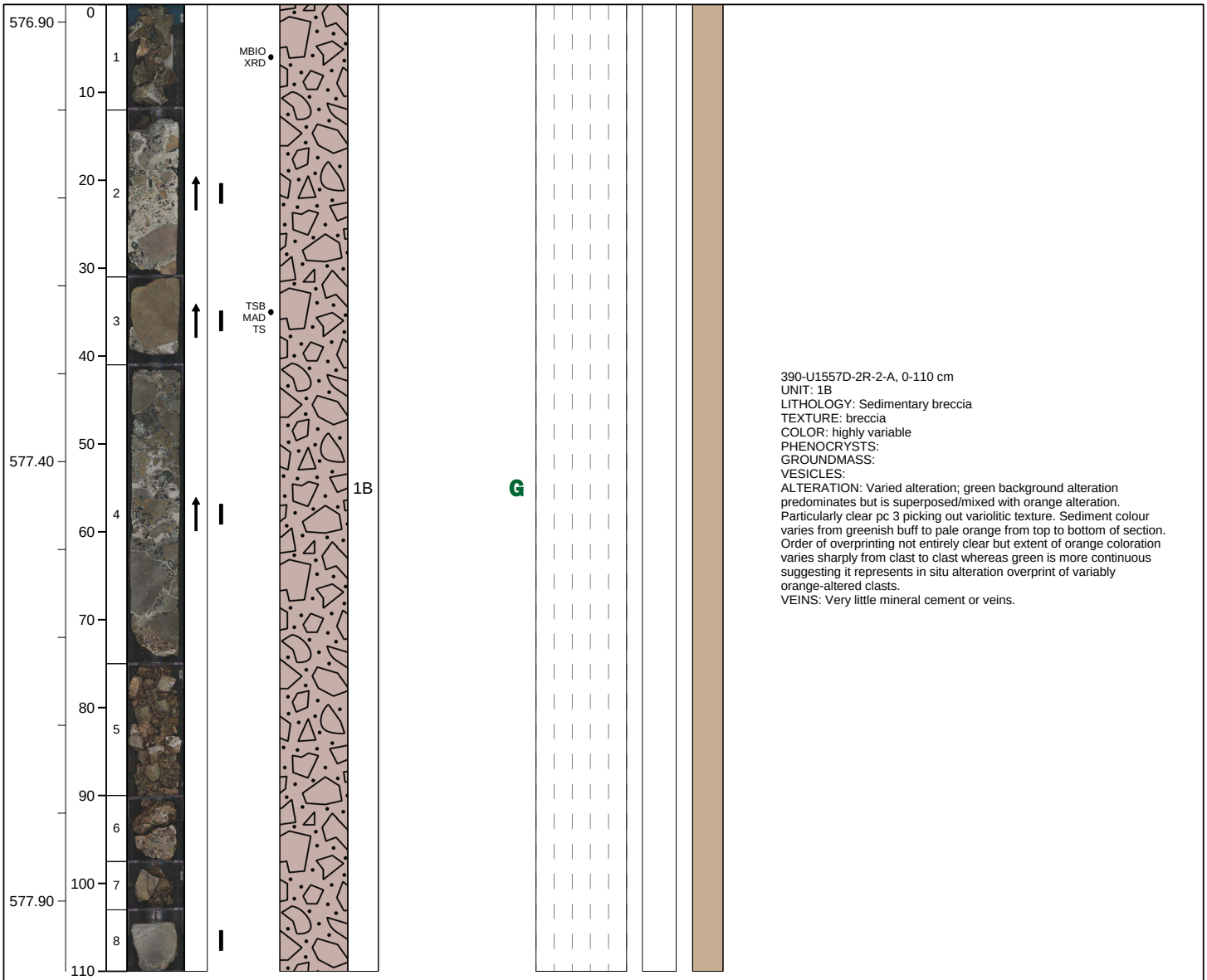
DRILLED INTERVAL 0-575.6 m

Hole 390-U1557D-2R Section 1, Top of Section: 575.6 m (CSF-A)



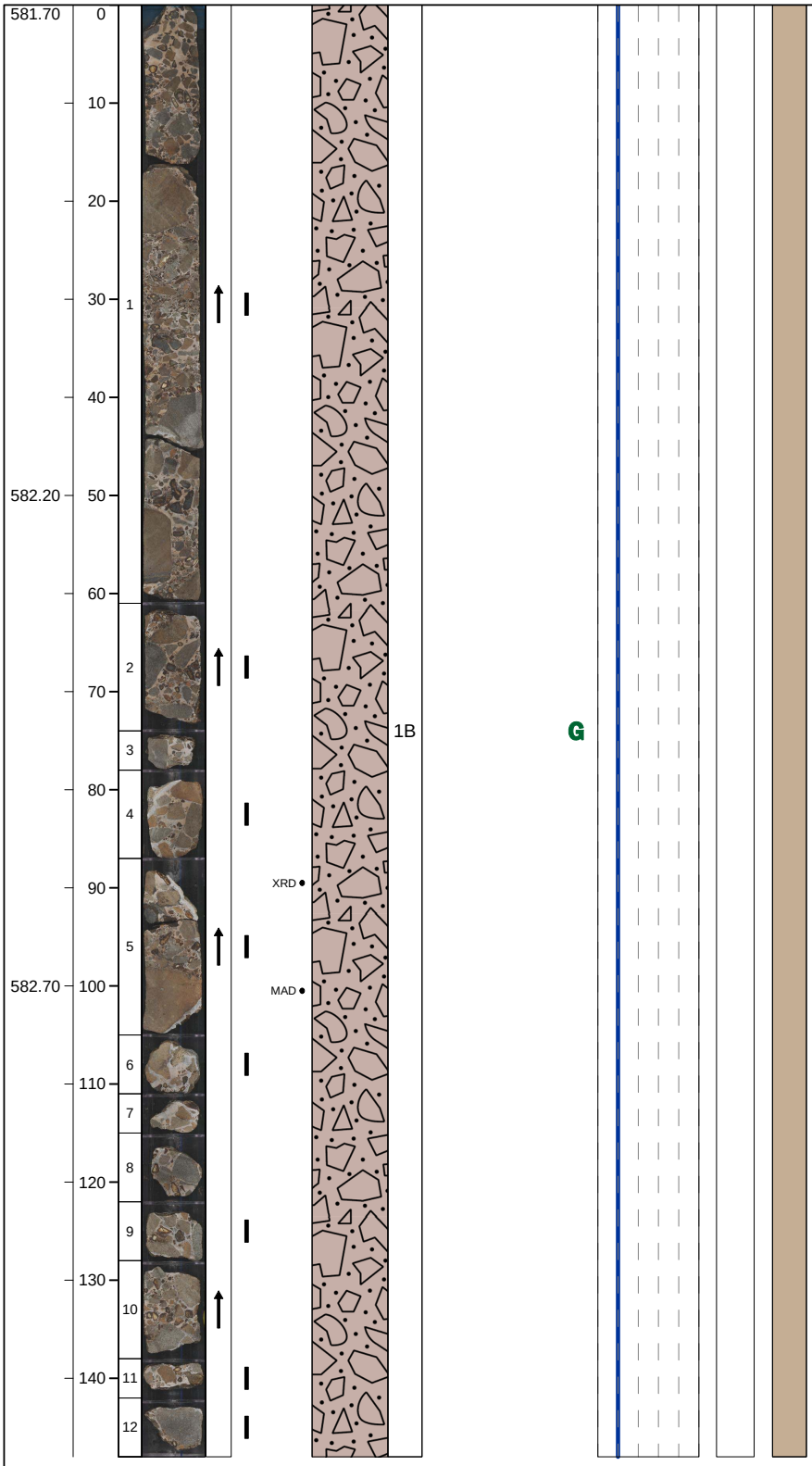
390-U1557D-2R-1-A, 0-128 cm
UNIT: 1B
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS:
GROUNDMASS:
VESICLES:
ALTERATION: Varied alteration styles across core. Upper half mostly green background alteration, relatively pale (basalt mostly plag-rich/-phyric) and lower half mostly intense pervasive orange altered fragments (originally halos?). Alteration mostly uniform on scale of clasts (<1cm - 5cm) but highly variable between. Glass altered to dark green and to dark brown. One brownish-green basalt (pc. 5) shows fine-scale alternation of green and orange alteration picking out variolitic texture. Superposed orange and green alteration? Sediment colour varies from greenish buff to pale orange from top to bottom of section.
VEINS: Very little mineral cement or veins. Some very dark grey/black interstitial material with a dull metallic lustre (pc 16) could be Fe-Mn oxides?

Hole 390-U1557D-2R Section 2, Top of Section: 576.88 m (CSF-A)



390-U1557D-2R-2-A, 0-110 cm
UNIT: 1B
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS:
GROUNDMASS:
VESICLES:
ALTERATION: Varied alteration; green background alteration predominates but is superposed/mixed with orange alteration. Particularly clear pc 3 picking out variolitic texture. Sediment colour varies from greenish buff to pale orange from top to bottom of section. Order of overprinting not entirely clear but extent of orange coloration varies sharply from clast to clast whereas green is more continuous suggesting it represents in situ alteration overprint of variably orange-altered clasts.
VEINS: Very little mineral cement or veins.

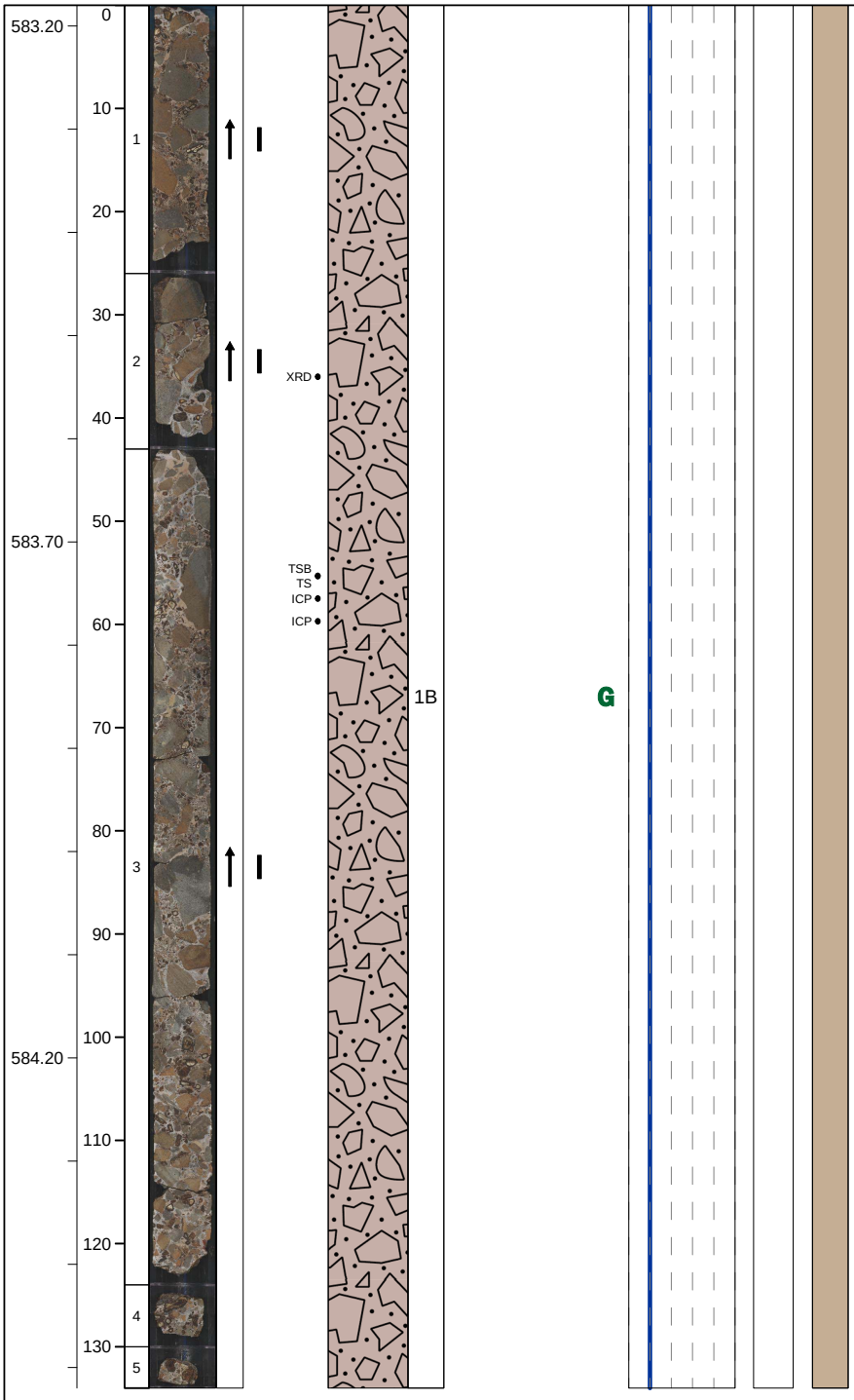
Hole 390-U1557D-3R Section 1, Top of Section: 581.7 m (CSF-A)



Description

390-U1557D-3R-1-A, 0-148 cm
UNIT: 1B
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color.
GROUNDMASS:
VESICLES:
ALTERATION: Alteration varies between clasts but without any green background. Clasts dominantly fragments of intense orange halo or otherwise orange speckled background and (brown) altered glass. Some (100%) altered glass clasts have greenish yellow cores. Rare moderately fresh glass. One patch of very dark grey slightly metallic lustre interstitial ?Fe-Mn oxide. Sediment pale pink brown color.
VEINS: Veins and carbonate cement rare, the latter increases in abundance down section. Carbonate cement where present sometimes overgrown by cream coloured ?zeolite

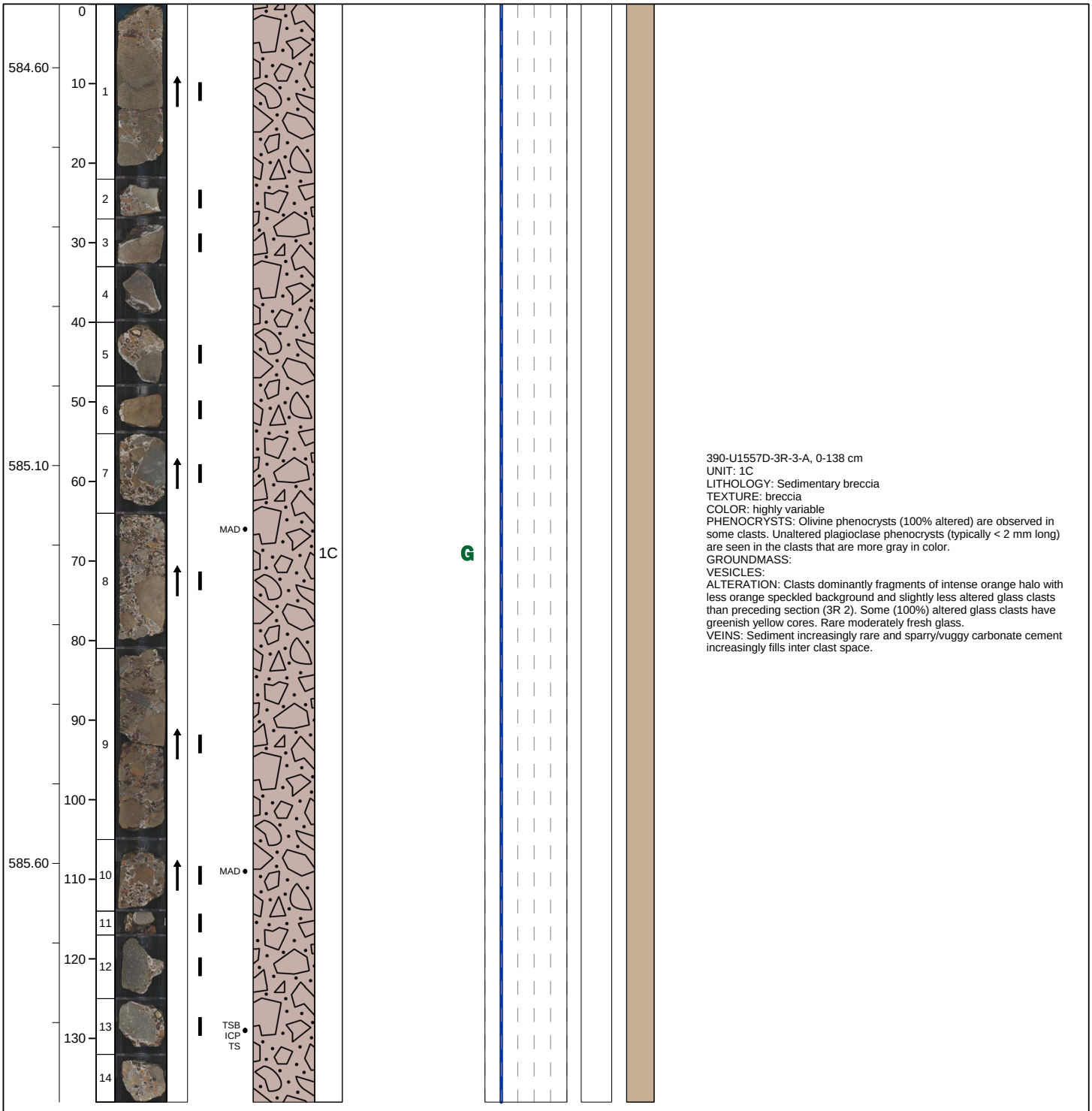
Hole 390-U1557D-3R Section 2, Top of Section: 583.18 m (CSF-A)



Description

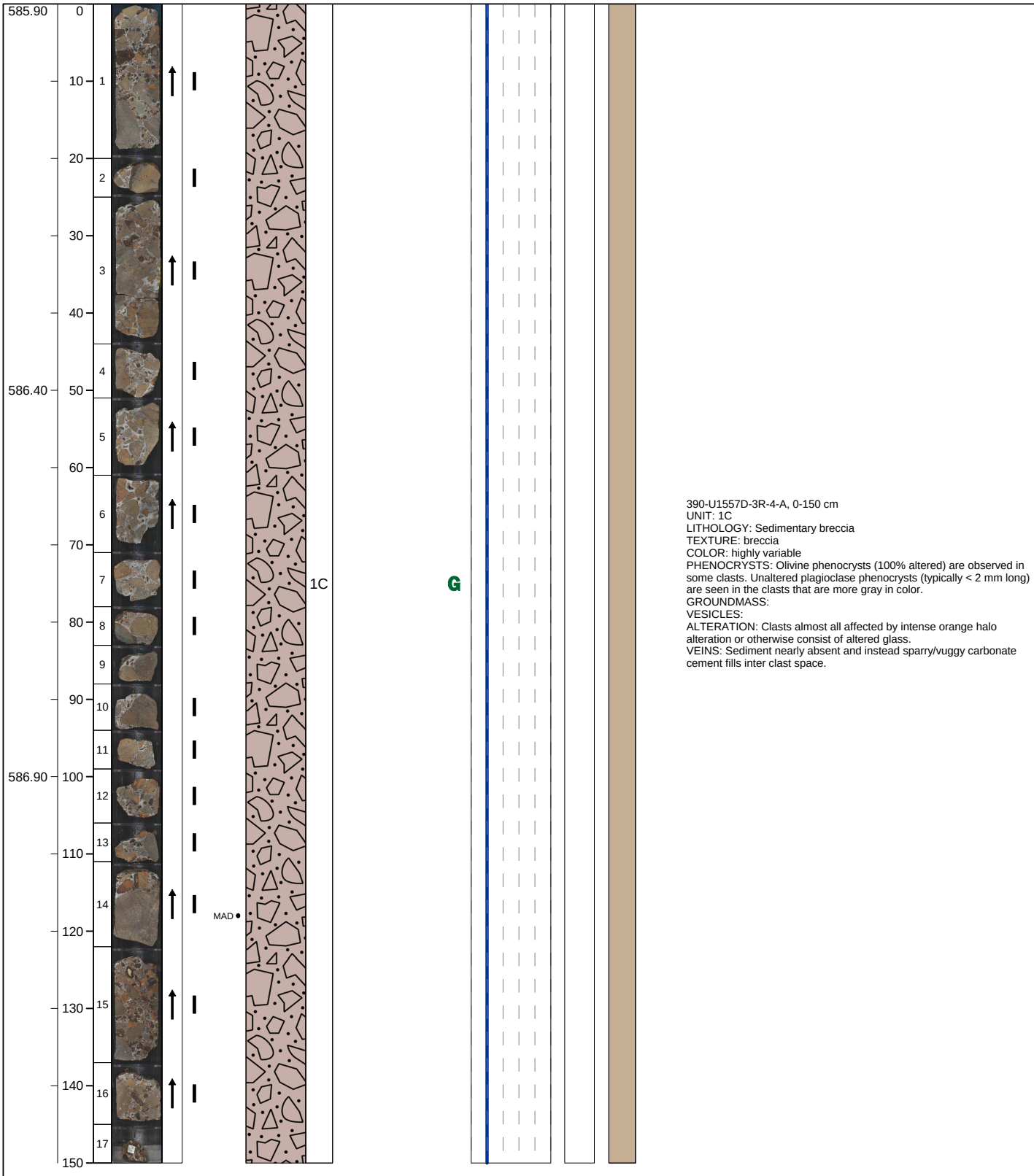
390-U1557D-3R-2-A, 0-134 cm
UNIT: 1B
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color.
GROUNDMASS:
VESICLES:
ALTERATION: Clasts dominantly fragments of intense orange halo with others orange speckled background or (brown) altered glass; similar to preceding section (3R 1). Several clasts, in this section and others in core 3R, show thin orange halos around their margins while others show apparent banding of orange halos cut by the edges of fragments (implying multiple phases of alteration). Some (100%) altered glass clasts have greenish yellow cores. Rare moderately fresh glass.
VEINS: One patch of very dark grey slightly metallic lustre interstitial ?Fe-Mn oxide. Sediment pale pink brown color. Veins and carbonate cement rare, the latter increases in abundance down section.

Hole 390-U1557D-3R Section 3, Top of Section: 584.52 m (CSF-A)



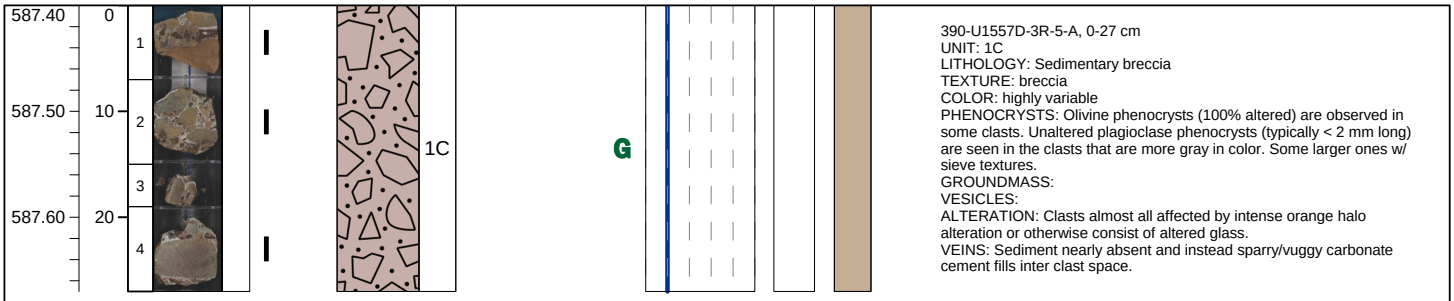
390-U1557D-3R-3-A, 0-138 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color.
GROUNDMASS:
VESICLES:
ALTERATION: Clasts dominantly fragments of intense orange halo with less orange speckled background and slightly less altered glass clasts than preceding section (3R 2). Some (100%) altered glass clasts have greenish yellow cores. Rare moderately fresh glass.
VEINS: Sediment increasingly rare and sparry/vuggy carbonate cement increasingly fills inter clast space.

Hole 390-U1557D-3R Section 4, Top of Section: 585.9 m (CSF-A)



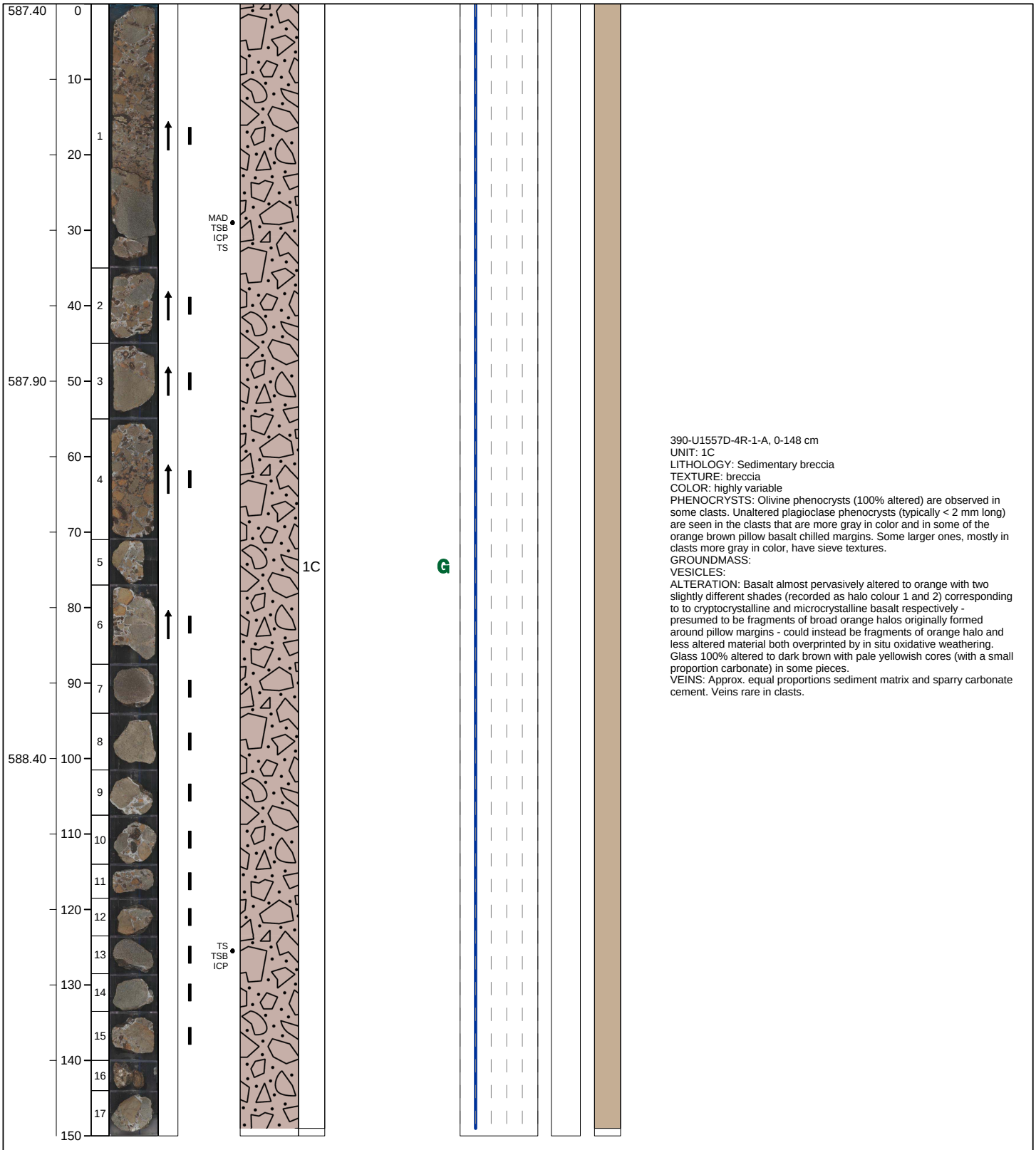
390-U1557D-3R-4-A, 0-150 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color.
GROUNDMASS:
VESICLES:
ALTERATION: Clasts almost all affected by intense orange halo alteration or otherwise consist of altered glass.
VEINS: Sediment nearly absent and instead sparry/vuggy carbonate cement fills inter clast space.

Hole 390-U1557D-3R Section 5, Top of Section: 587.4 m (CSF-A)



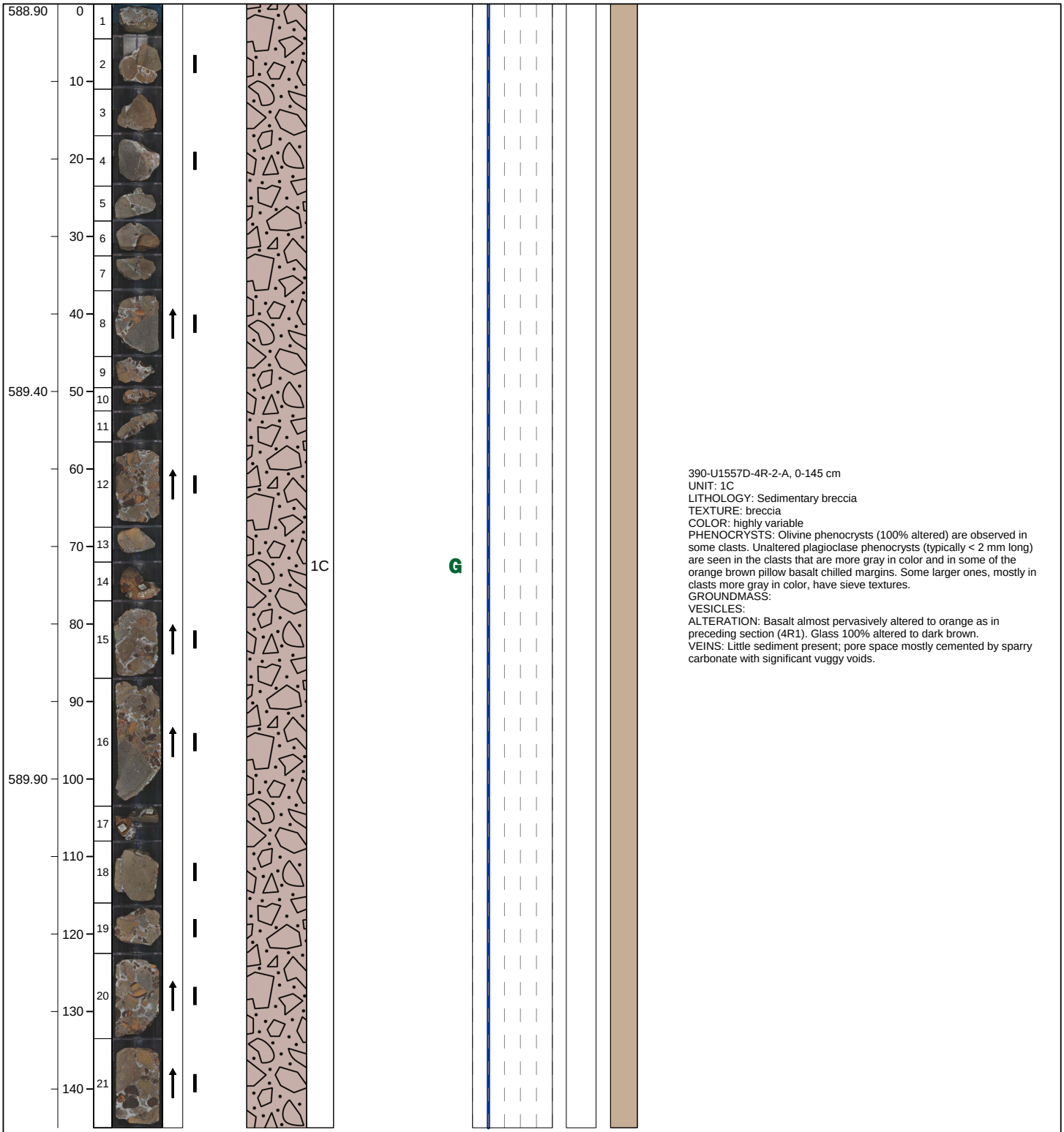
390-U1557D-3R-5-A, 0-27 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color. Some larger ones w/ sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Clasts almost all affected by intense orange halo alteration or otherwise consist of altered glass.
VEINS: Sediment nearly absent and instead sparry/vuggy carbonate cement fills inter clast space.

Hole 390-U1557D-4R Section 1, Top of Section: 587.4 m (CSF-A)



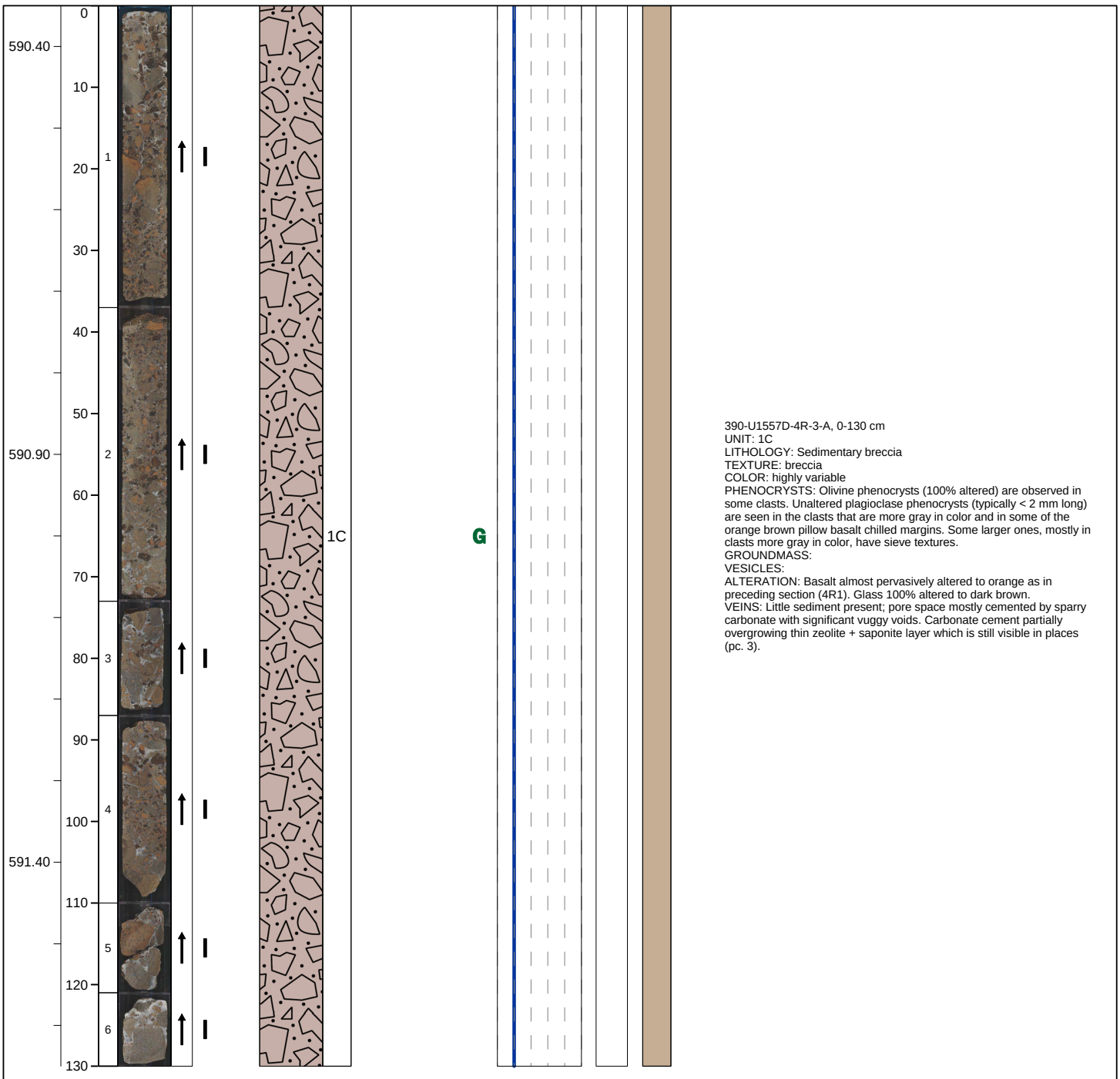
390-U1557D-4R-1-A, 0-148 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost pervasively altered to orange with two slightly different shades (recorded as halo colour 1 and 2) corresponding to to cryptocrystalline and microcrystalline basalt respectively - presumed to be fragments of broad orange halos originally formed around pillow margins - could instead be fragments of orange halo and less altered material both overprinted by in situ oxidative weathering. Glass 100% altered to dark brown with pale yellowish cores (with a small proportion carbonate) in some pieces.
VEINS: Approx. equal proportions sediment matrix and sparry carbonate cement. Veins rare in clasts.

Hole 390-U1557D-4R Section 2, Top of Section: 588.9 m (CSF-A)



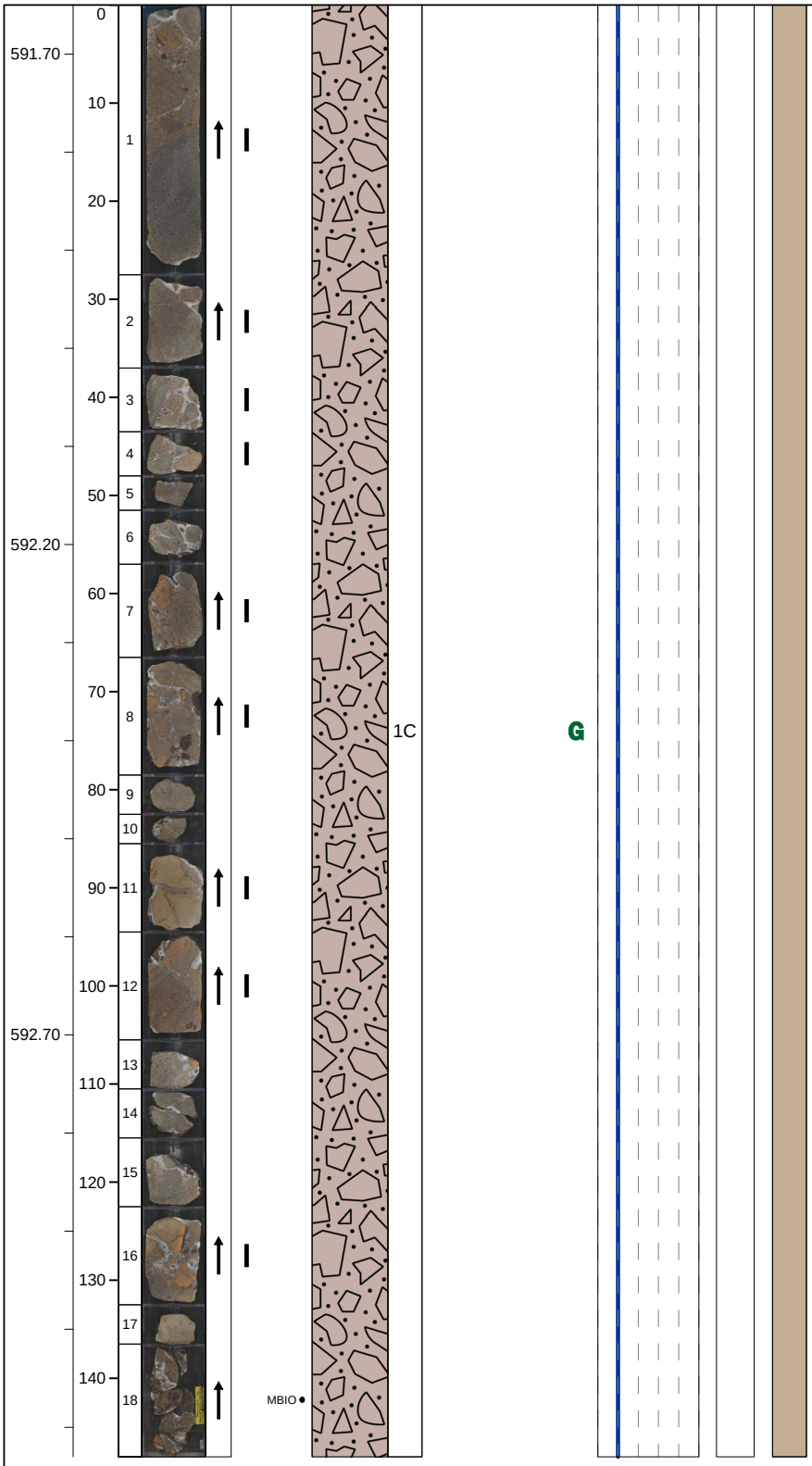
390-U1557D-4R-2-A, 0-145 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost pervasively altered to orange as in preceding section (4R1). Glass 100% altered to dark brown.
VEINS: Little sediment present; pore space mostly cemented by sparry carbonate with significant vuggy voids.

Hole 390-U1557D-4R Section 3, Top of Section: 590.35 m (CSF-A)



390-U1557D-4R-3-A, 0-130 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost pervasively altered to orange as in preceding section (4R1). Glass 100% altered to dark brown.
VEINS: Little sediment present; pore space mostly cemented by sparry carbonate with significant vuggy voids. Carbonate cement partially overgrowing thin zeolite + saponite layer which is still visible in places (pc. 3).

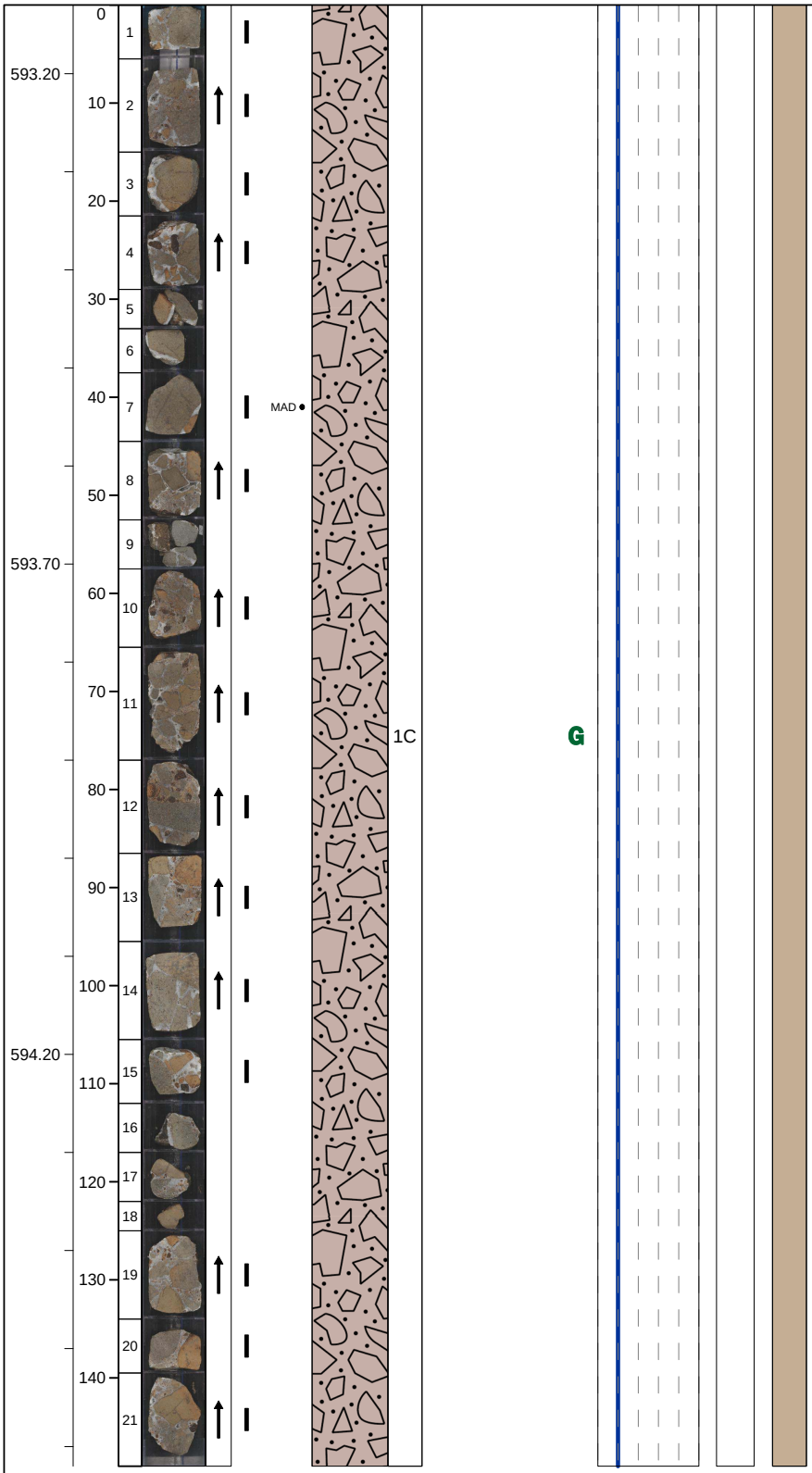
Hole 390-U1557D-4R Section 4, Top of Section: 591.65 m (CSF-A)



Description

390-U1557D-4R-4-A, 0-148 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures. Rare cpx macrocrysts identified in the microcrystalline basalt type in piece 1.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost pervasively altered to orange. Glass relatively rare and 100% altered to dark brown palagonite.
VEINS: Pore space mostly cemented by sparry carbonate with significant vuggy voids. Some basalt clasts show halos of pale brown or dark brown fuzzy/dendritic dark ?oxide growth. The latter are also common along thin veins.

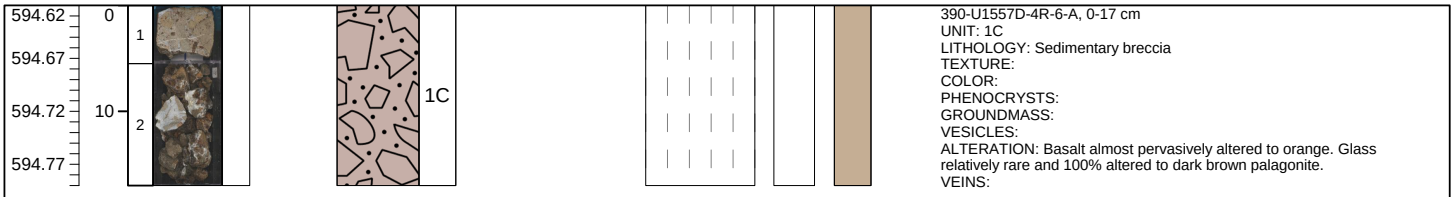
Hole 390-U1557D-4R Section 5, Top of Section: 593.13 m (CSF-A)



Description

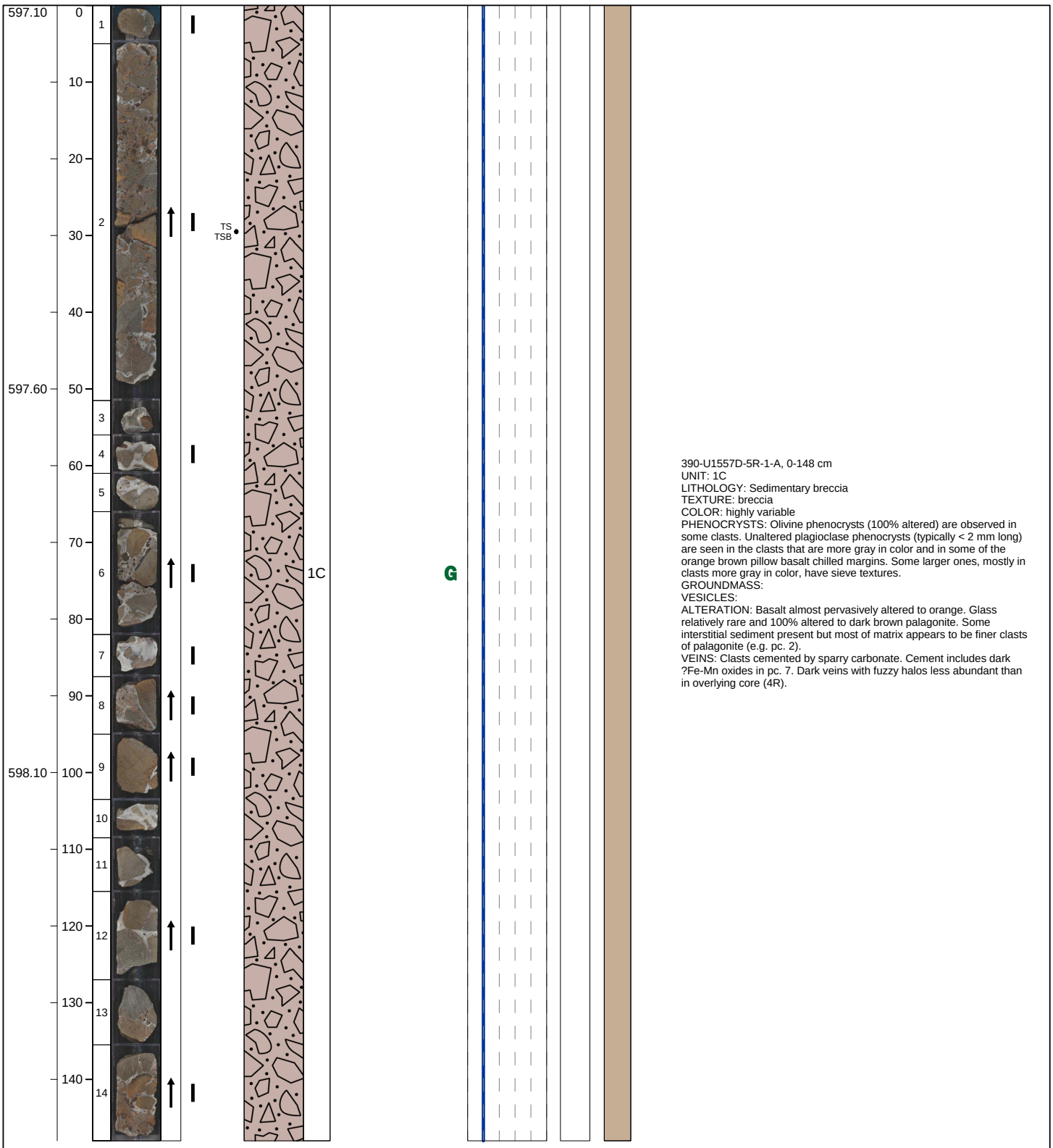
390-U1557D-4R-5-A, 0-149 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost pervasively altered to orange. Glass relatively rare and 100% altered to dark brown palagonite.
VEINS: Pore space mostly cemented by sparry carbonate with significant vuggy voids. Dark brown fuzzy/dendritic halos of dark ?oxide growth common along the edges of basalt clasts and along thin veins in their interiors.

Hole 390-U1557D-4R Section 6, Top of Section: 594.62 m (CSF-A)



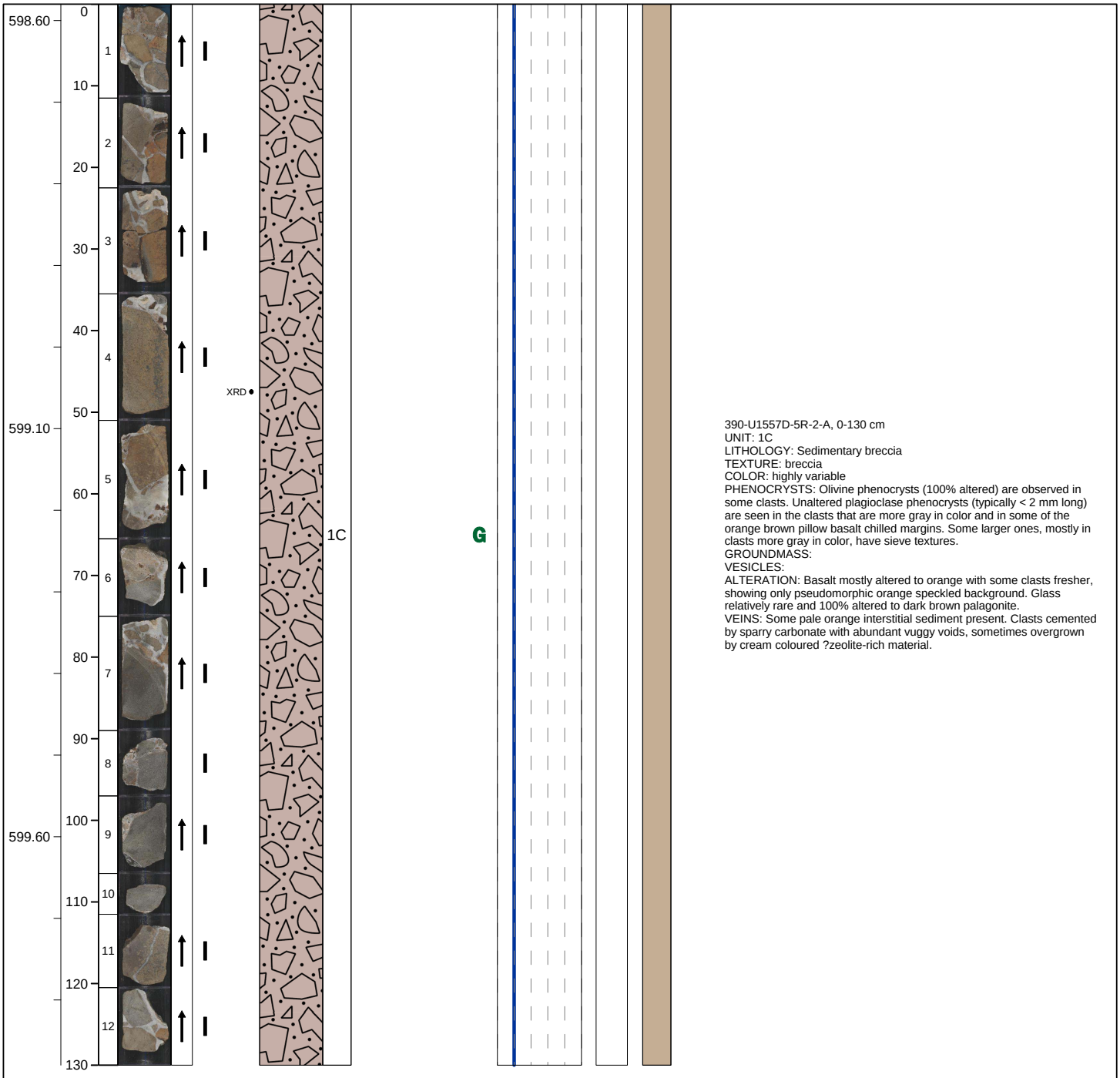
390-U1557D-4R-6-A, 0-17 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE:
COLOR:
PHENOCRYSTS:
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost pervasively altered to orange. Glass relatively rare and 100% altered to dark brown palagonite.
VEINS:

Hole 390-U1557D-5R Section 1, Top of Section: 597.1 m (CSF-A)



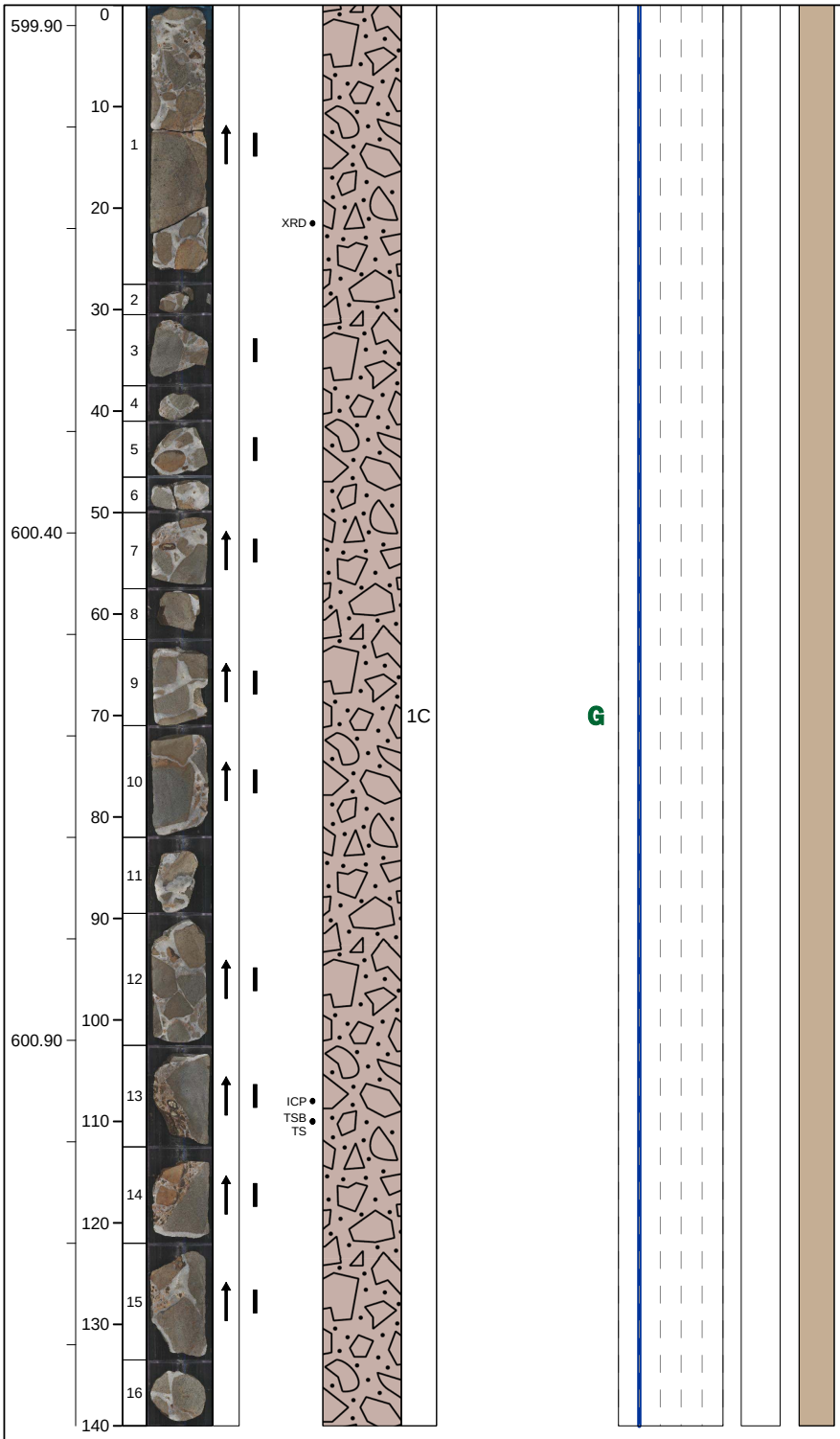
390-U1557D-5R-1-A, 0-148 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost pervasively altered to orange. Glass relatively rare and 100% altered to dark brown palagonite. Some interstitial sediment present but most of matrix appears to be finer clasts of palagonite (e.g. pc. 2).
VEINS: Clasts cemented by sparry carbonate. Cement includes dark ?Fe-Mn oxides in pc. 7. Dark veins with fuzzy halos less abundant than in overlying core (4R).

Hole 390-U1557D-5R Section 2, Top of Section: 598.58 m (CSF-A)



390-U1557D-5R-2-A, 0-130 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt mostly altered to orange with some clasts fresher, showing only pseudomorphic orange speckled background. Glass relatively rare and 100% altered to dark brown palagonite.
VEINS: Some pale orange interstitial sediment present. Clasts cemented by sparry carbonate with abundant vuggy voids, sometimes overgrown by cream coloured ?zeolite-rich material.

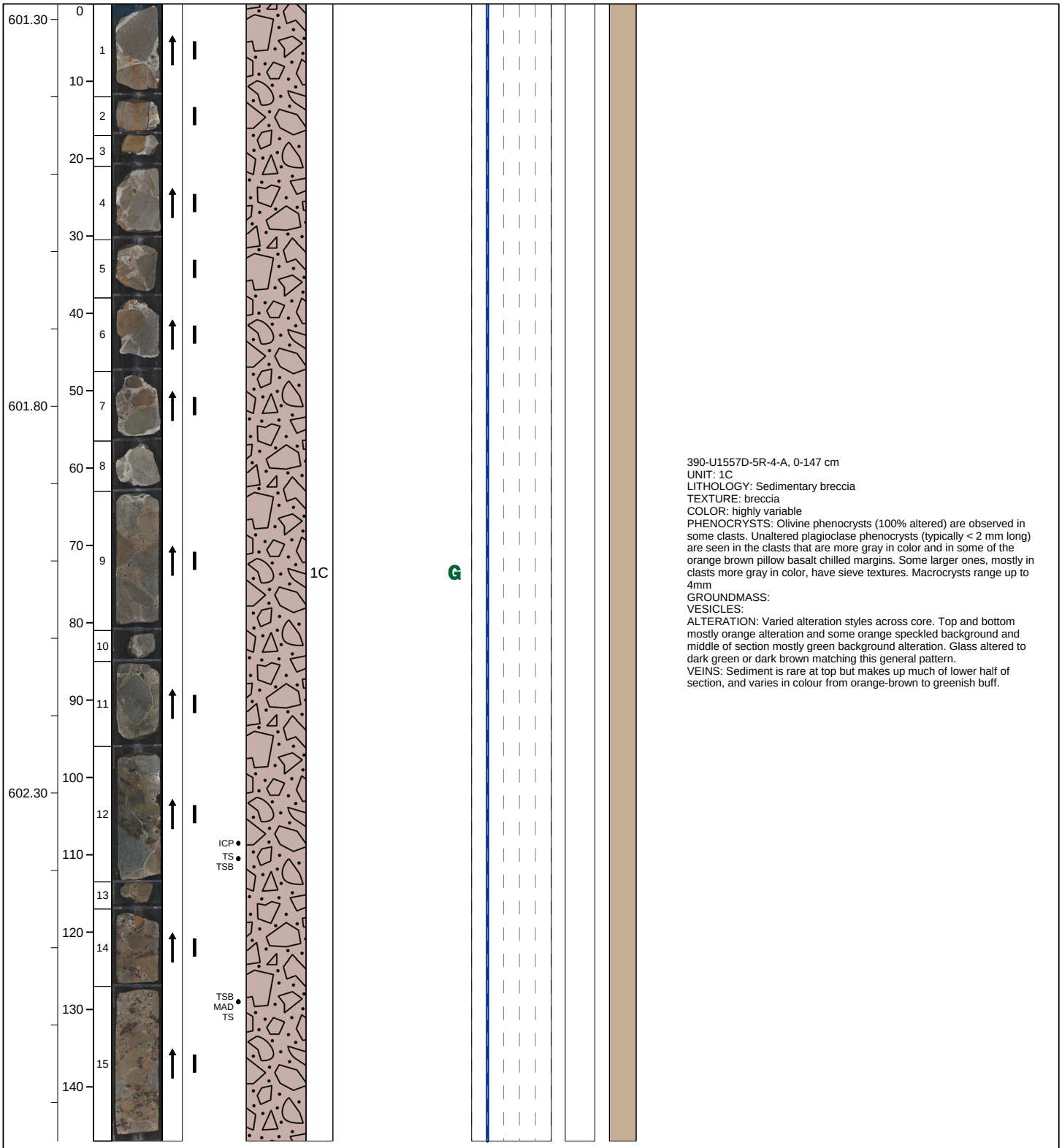
Hole 390-U1557D-5R Section 3, Top of Section: 599.88 m (CSF-A)



Description

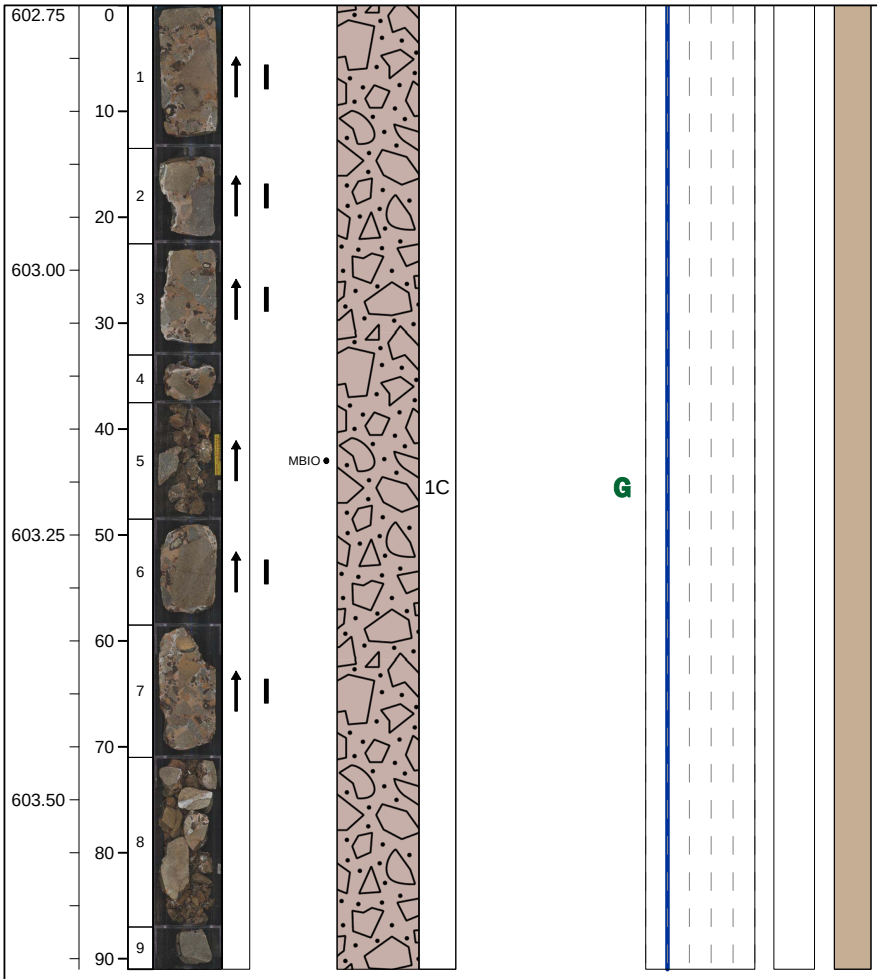
390-U1557D-5R-3-A, 0-140 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures. Rare green cpx in piece 9
GROUNDMASS:
VESICLES:
ALTERATION: Basalt mostly altered to orange with some clasts fresher, showing only pseudomorphic orange speckled background. These latter show khaki brown halos round their edges. Compared to preceding sections (4R1 through 4R2), proportion of intense orange halos is lower (and continues to decrease downsection). Glass relatively rare and 100% altered to dark brown palagonite.
VEINS: Some pale orange interstitial sediment present. Clasts cemented by sparry carbonate with abundant vuggy voids, sometimes overgrown by cream coloured ?zeolite-rich material.

Hole 390-U1557D-5R Section 4, Top of Section: 601.28 m (CSF-A)



390-U1557D-5R-4-A, 0-147 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures. Macrocrysts range up to 4mm
GROUNDMASS:
VESICLES:
ALTERATION: Varied alteration styles across core. Top and bottom mostly orange alteration and some orange speckled background and middle of section mostly green background alteration. Glass altered to dark green or dark brown matching this general pattern.
VEINS: Sediment is rare at top but makes up much of lower half of section, and varies in colour from orange-brown to greenish buff.

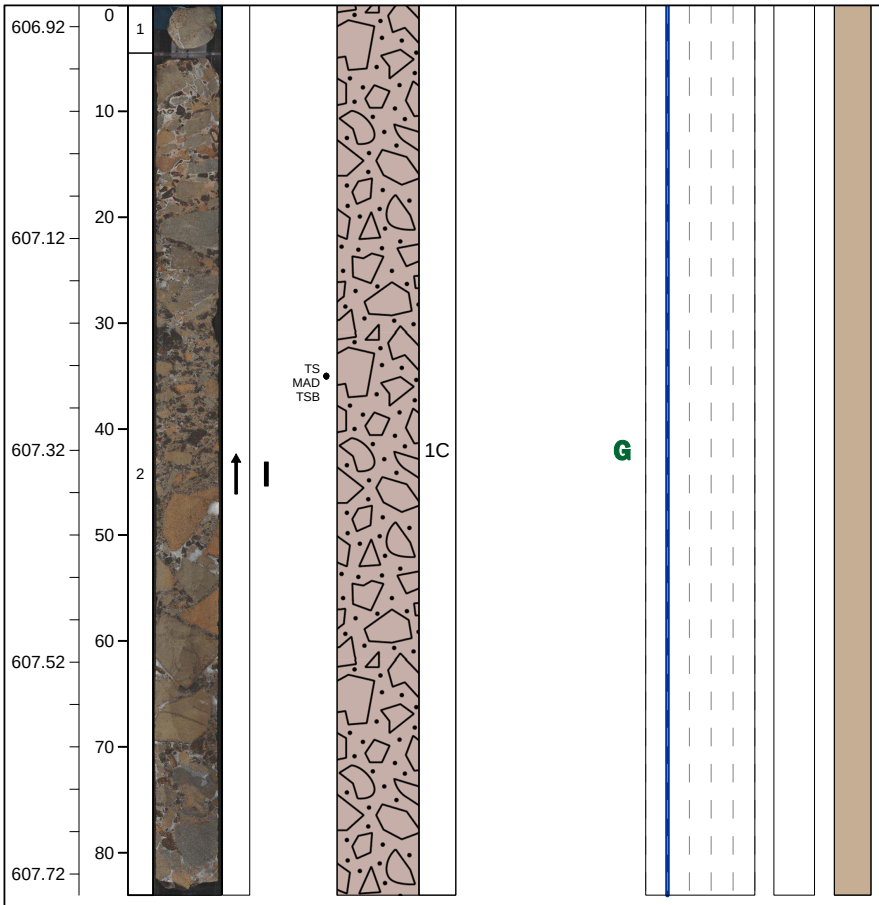
Hole 390-U1557D-5R Section 5, Top of Section: 602.75 m (CSF-A)



Description

390-U1557D-5R-5-A, 0-91 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt mostly altered to orange with uncommon clasts of fresher material, showing only pseudomorphic orange speckled background. Clasts of glass relatively rare and 100% altered to dark brown palagonite, some with pale yellow green cores.
VEINS: Sediment much more abundant than the rest of this core and carbonate cement correspondingly less abundant.

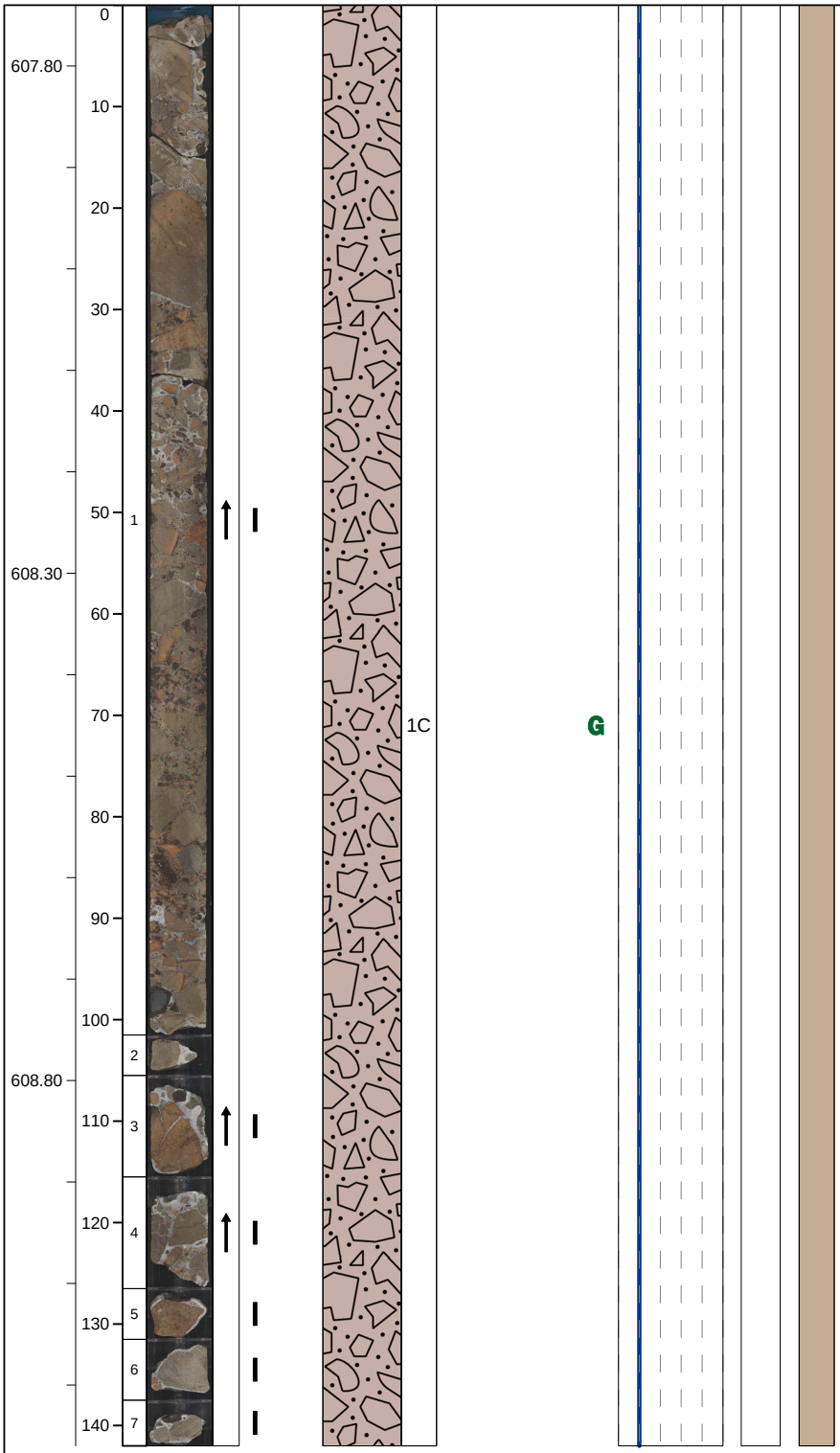
Hole 390-U1557D-6R Section 1, Top of Section: 606.9 m (CSF-A)



Description

390-U1557D-6R-1-A, 0-84 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with similar variation between intense orange and khaki brown as preceding core, 5R). Clasts of glass relatively abundant;100% altered to dark brown palagonite.
VEINS: Sediment quite abundant in section, quite strong pinkish colour (5YR 7/3) (alteration or higher clay content?). Some unusual looking waxy greyish veins in palagonite (72-76cm). Sparry carbonate stained red in one vug (8-9cm). Some dark fuzzy halos around clasts and along rare thin dark veins.

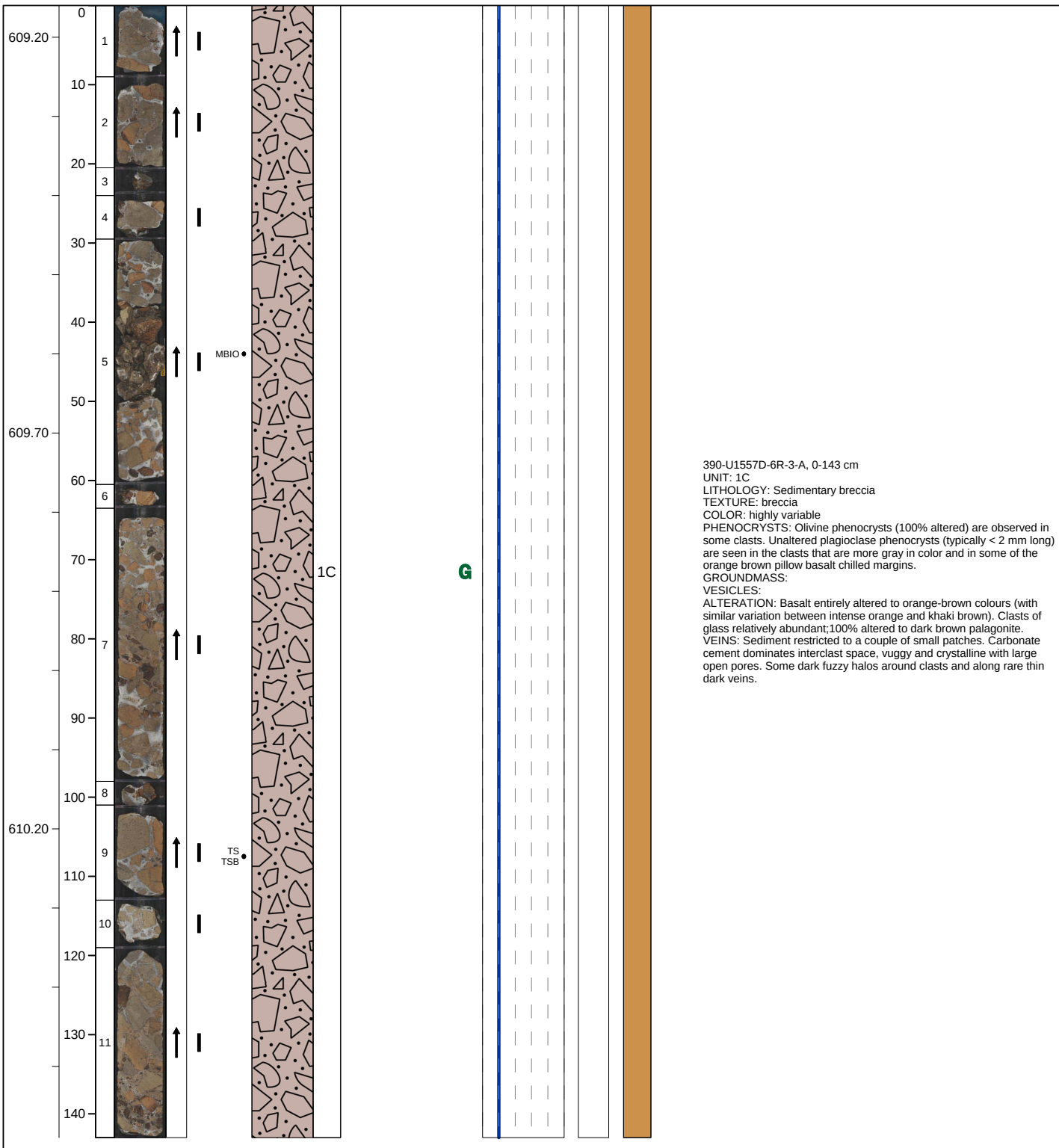
Hole 390-U1557D-6R Section 2, Top of Section: 607.74 m (CSF-A)



Description

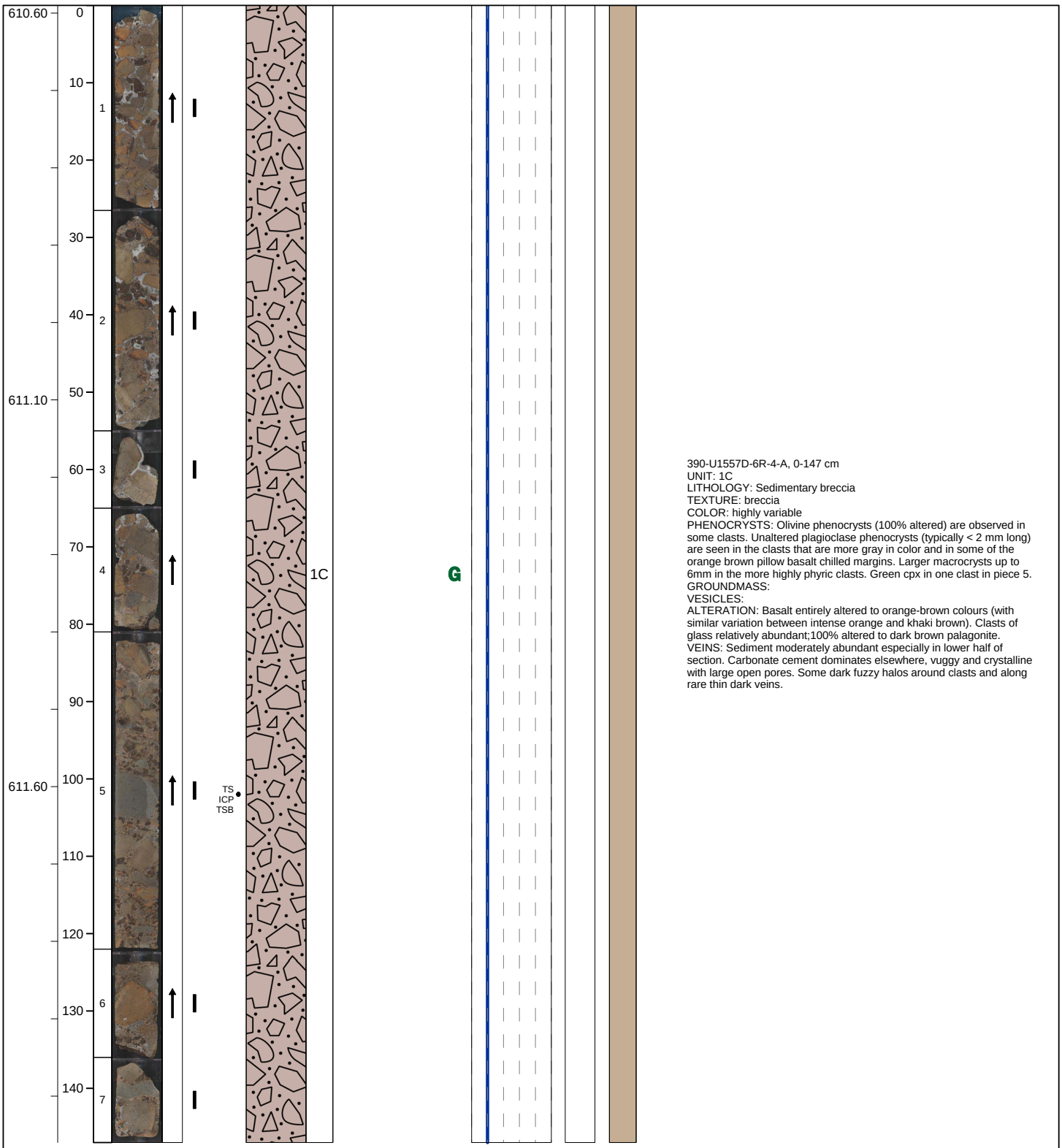
390-U1557D-6R-2-A, 0-142 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Some larger ones, mostly in clasts more gray in color, have sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with similar variation between intense orange and khaki brown). Several clasts, one <10cm diameter, show halo between the two colours. Clasts of glass relatively abundant; altered to dark brown palagonite except one with fresh/ish black core.
VEINS: Sediment mostly sparse. Carbonate cement moderately voluminous, vuggy and crystalline with large open pores as in previous core (5R). Some dark fuzzy halos around clasts and along rare thin dark veins.

Hole 390-U1557D-6R Section 3, Top of Section: 609.16 m (CSF-A)



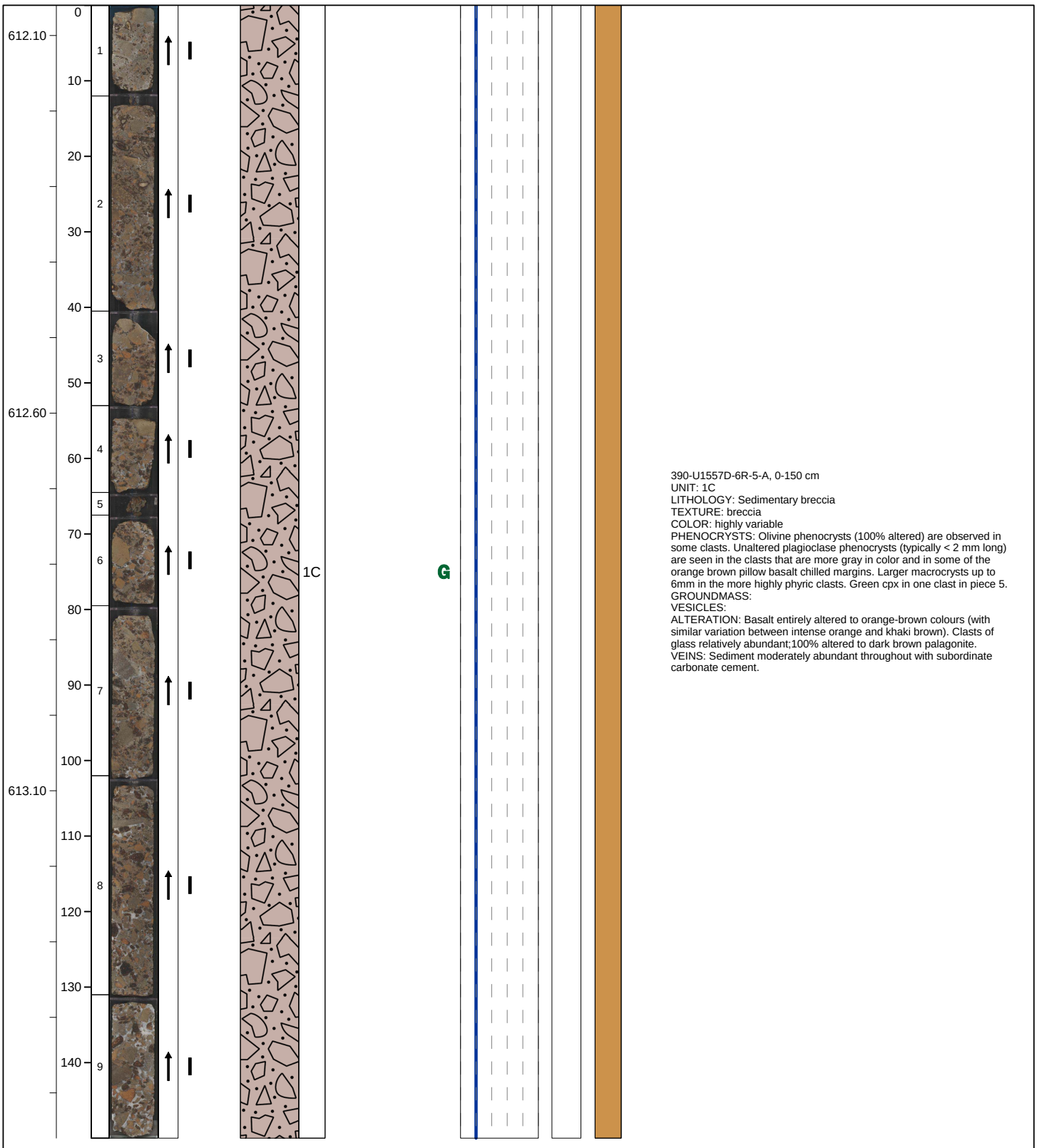
390-U1557D-6R-3-A, 0-143 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with similar variation between intense orange and khaki brown). Clasts of glass relatively abundant;100% altered to dark brown palagonite.
VEINS: Sediment restricted to a couple of small patches. Carbonate cement dominates interclast space, vuggy and crystalline with large open pores. Some dark fuzzy halos around clasts and along rare thin dark veins.

Hole 390-U1557D-6R Section 4, Top of Section: 610.59 m (CSF-A)



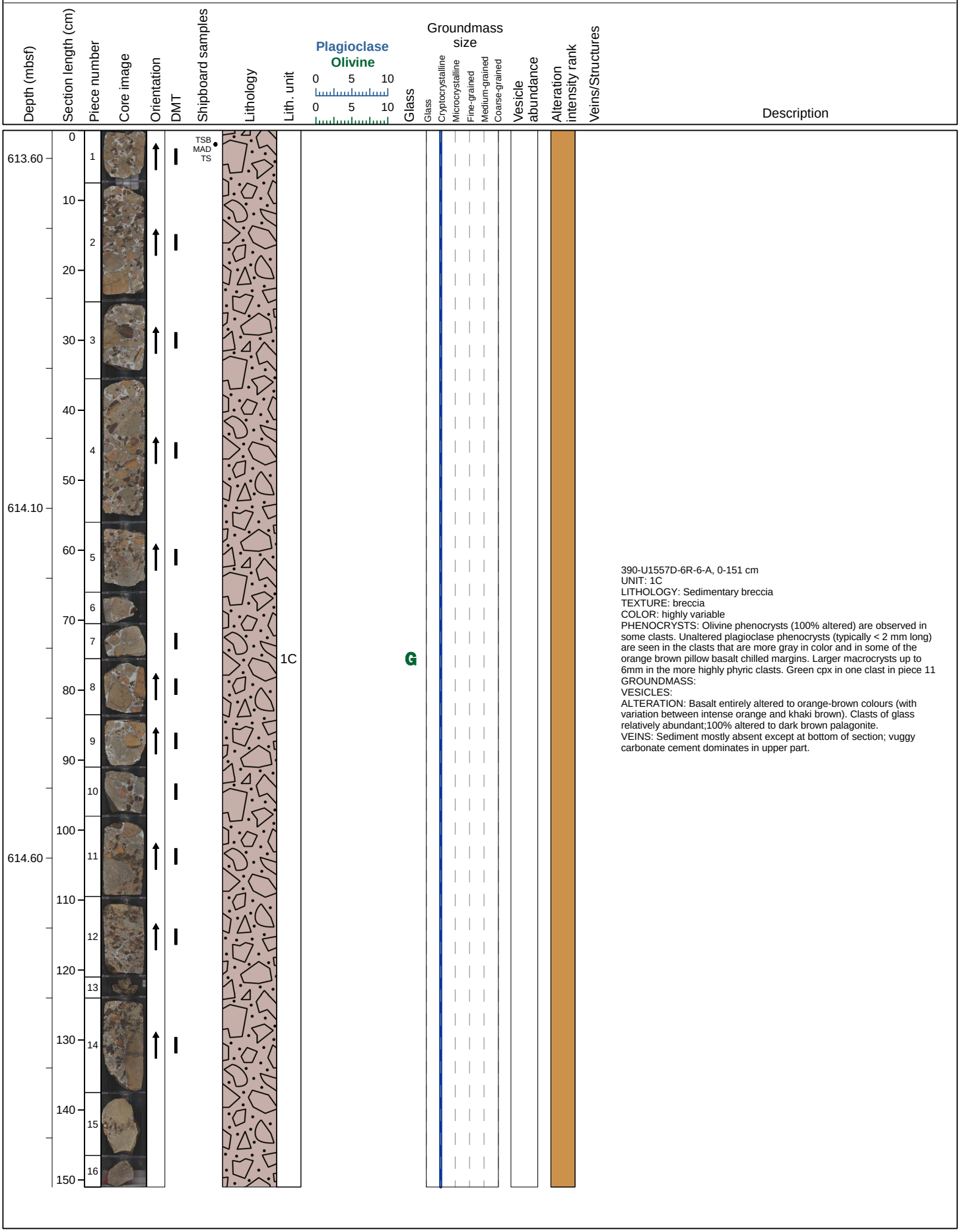
390-U1557D-6R-4-A, 0-147 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Larger macrocrysts up to 6mm in the more highly phyric clasts. Green cpx in one clast in piece 5.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with similar variation between intense orange and khaki brown). Clasts of glass relatively abundant;100% altered to dark brown palagonite.
VEINS: Sediment moderately abundant especially in lower half of section. Carbonate cement dominates elsewhere, vuggy and crystalline with large open pores. Some dark fuzzy halos around clasts and along rare thin dark veins.

Hole 390-U1557D-6R Section 5, Top of Section: 612.06 m (CSF-A)



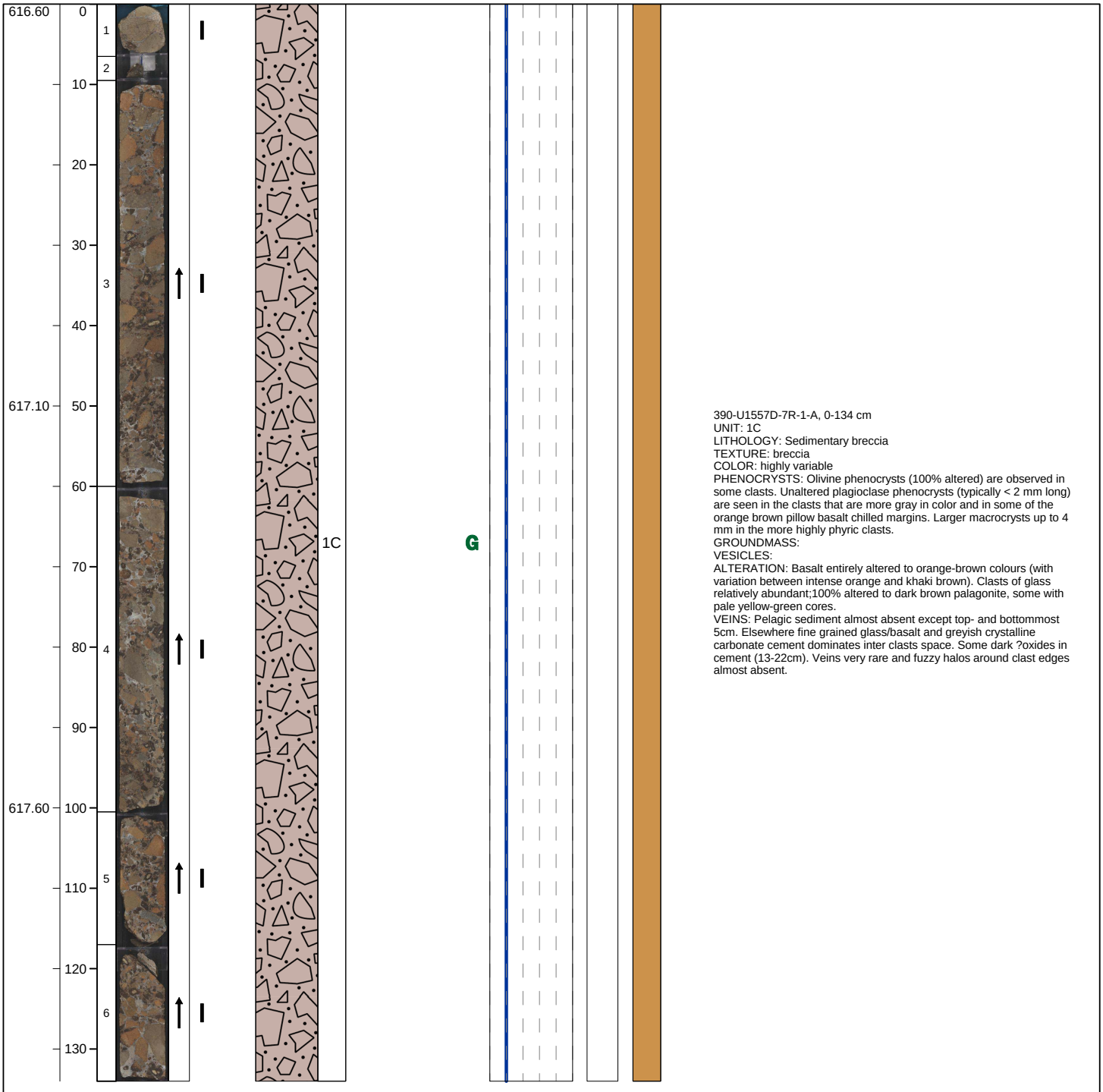
390-U1557D-6R-5-A, 0-150 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Larger macrocrysts up to 6mm in the more highly phyric clasts. Green cpx in one clast in piece 5.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with similar variation between intense orange and khaki brown). Clasts of glass relatively abundant;100% altered to dark brown palagonite.
VEINS: Sediment moderately abundant throughout with subordinate carbonate cement.

Hole 390-U1557D-6R Section 6, Top of Section: 613.56 m (CSF-A)



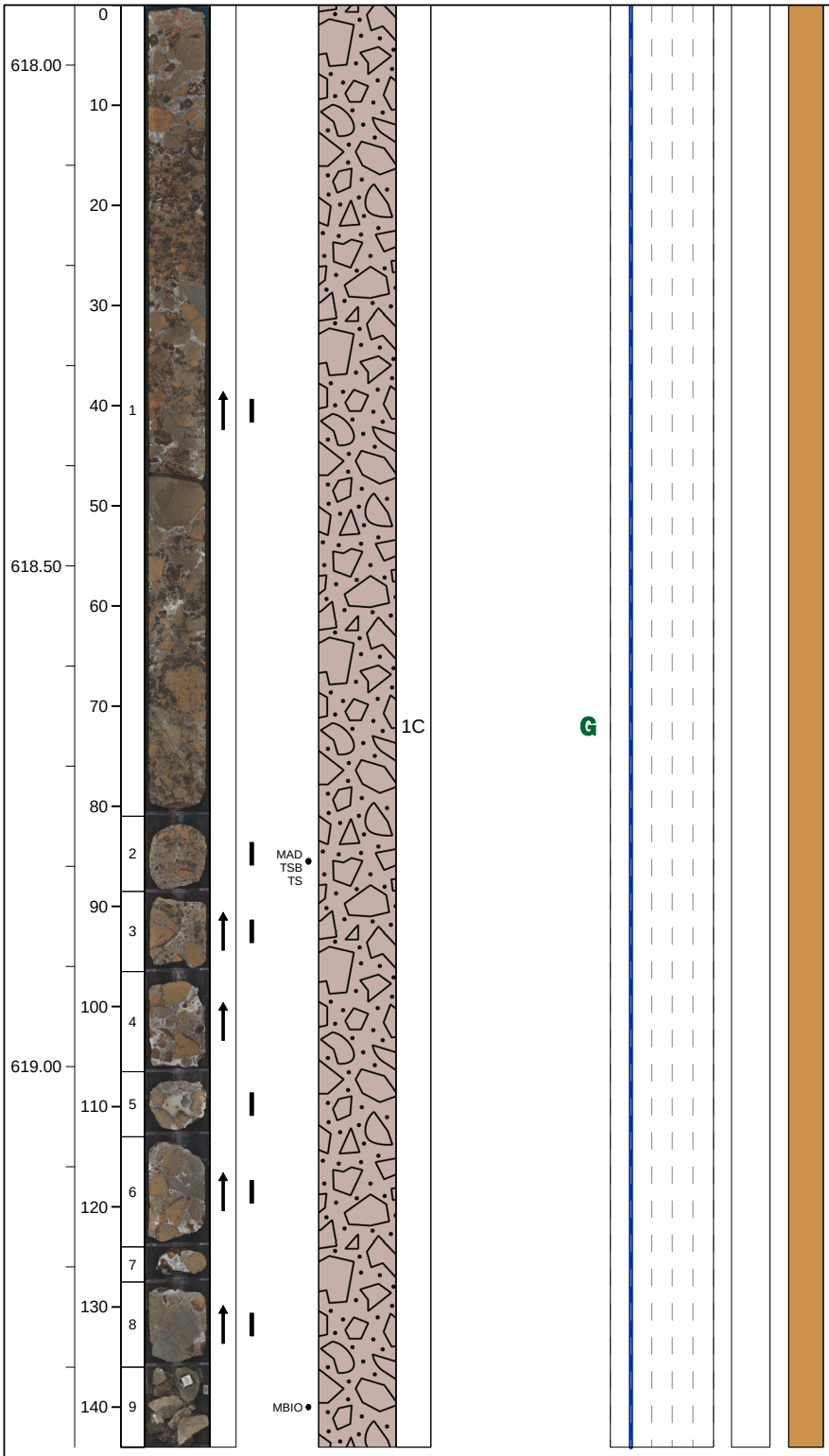
390-U1557D-6R-6-A, 0-151 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Larger macrocrysts up to 6mm in the more highly phyric clasts. Green cpx in one clast in piece 11
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with variation between intense orange and khaki brown). Clasts of glass relatively abundant;100% altered to dark brown palagonite.
VEINS: Sediment mostly absent except at bottom of section; vuggy carbonate cement dominates in upper part.

Hole 390-U1557D-7R Section 1, Top of Section: 616.6 m (CSF-A)



390-U1557D-7R-1-A, 0-134 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Larger macrocrysts up to 4 mm in the more highly phyric clasts.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with variation between intense orange and khaki brown). Clasts of glass relatively abundant;100% altered to dark brown palagonite, some with pale yellow-green cores.
VEINS: Pelagic sediment almost absent except top- and bottommost 5cm. Elsewhere fine grained glass/basalt and greyish crystalline carbonate cement dominates inter clasts space. Some dark ?oxides in cement (13-22cm). Veins very rare and fuzzy halos around clast edges almost absent.

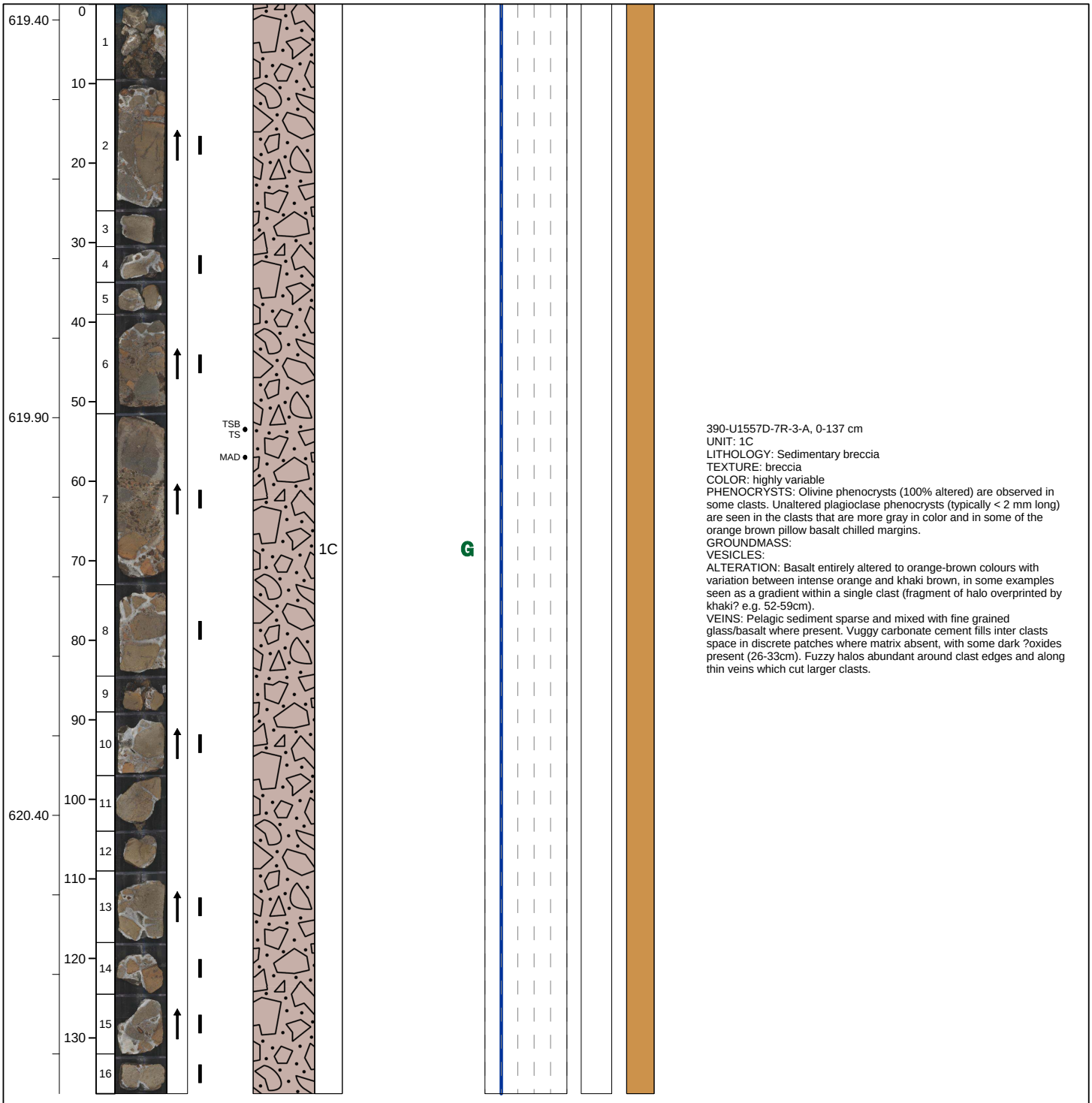
Hole 390-U1557D-7R Section 2, Top of Section: 617.94 m (CSF-A)



Description

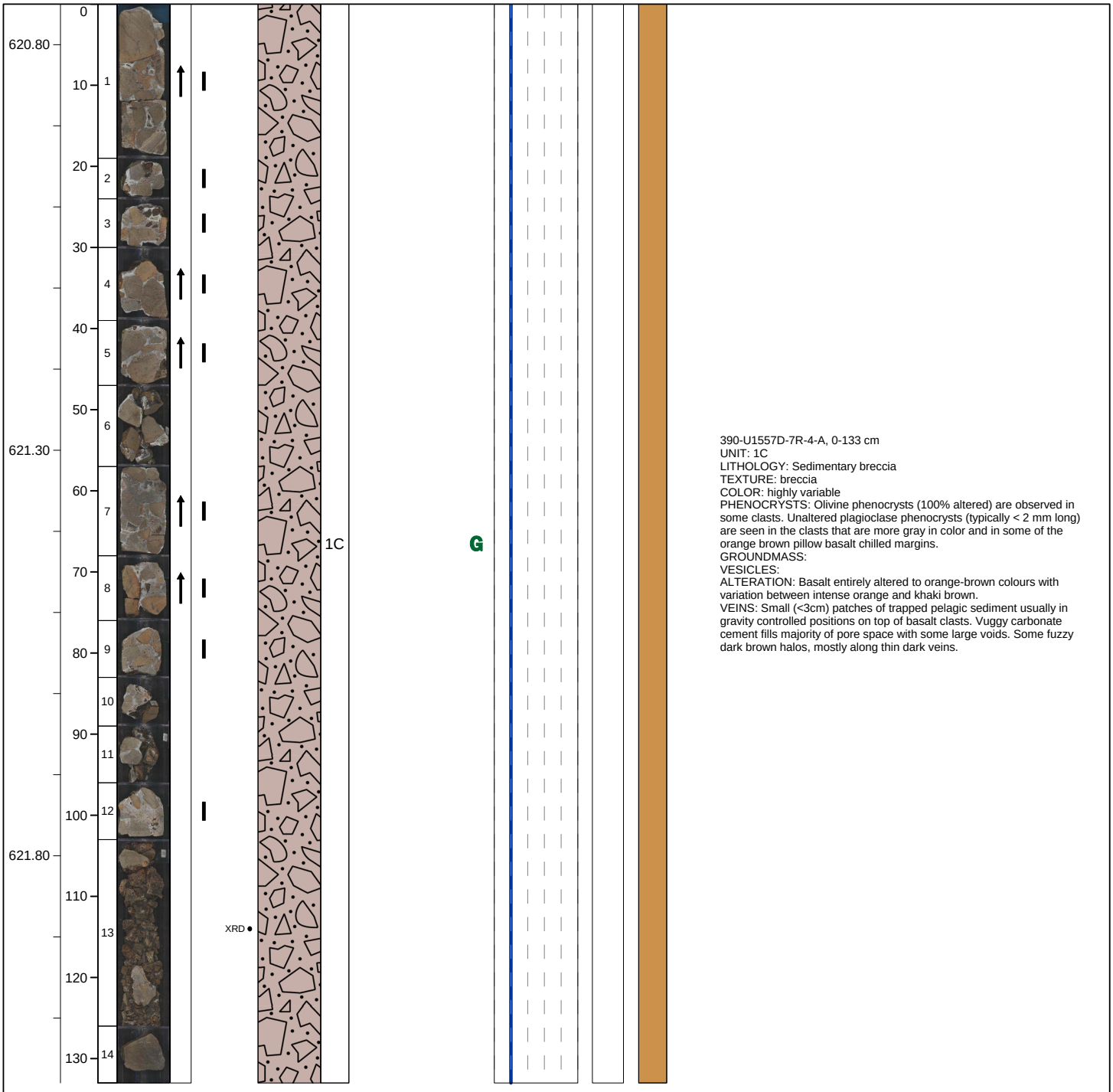
390-U1557D-7R-2-A, 0-144 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with variation between intense orange and khaki brown). Clasts of glass relatively abundant;100% altered to dark brown palagonite, some with pale yellow-green cores.
VEINS: Pelagic sediment sparse and mixed with fine grained glass/basalt where present. Vuggy carbonate cement fills inter clasts space in discrete patches where matrix absent, with some dark ?oxides present (26-33cm). Some fuzzy halos around clast edges (extending into sed matrix) in middle part of section (55-96cm).

Hole 390-U1557D-7R Section 3, Top of Section: 619.38 m (CSF-A)



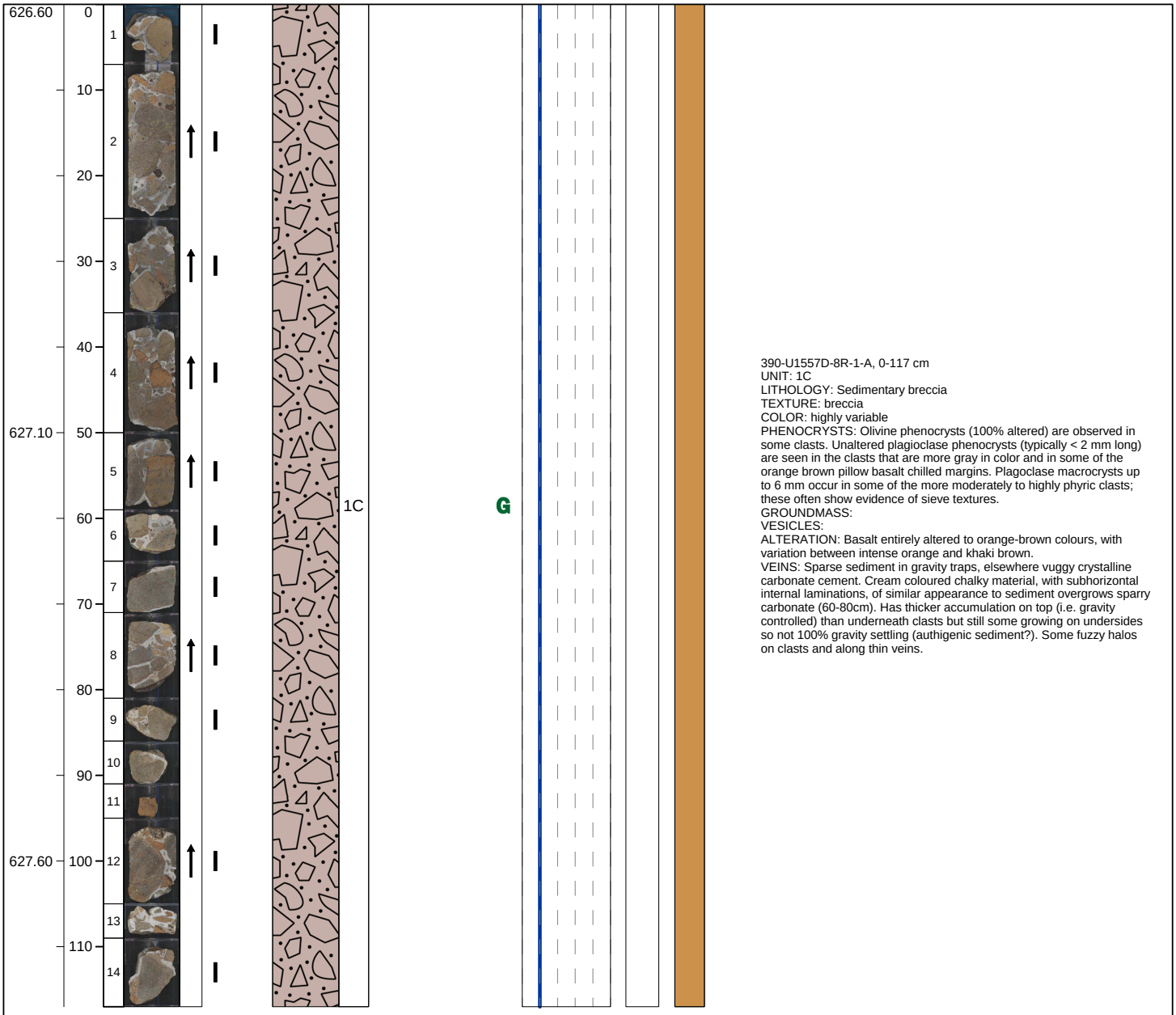
390-U1557D-7R-3-A, 0-137 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours with variation between intense orange and khaki brown, in some examples seen as a gradient within a single clast (fragment of halo overprinted by khaki? e.g. 52-59cm).
VEINS: Pelagic sediment sparse and mixed with fine grained glass/basalt where present. Vuggy carbonate cement fills inter clasts space in discrete patches where matrix absent, with some dark ?oxides present (26-33cm). Fuzzy halos abundant around clast edges and along thin veins which cut larger clasts.

Hole 390-U1557D-7R Section 4, Top of Section: 620.75 m (CSF-A)



390-U1557D-7R-4-A, 0-133 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours with variation between intense orange and khaki brown.
VEINS: Small (<3cm) patches of trapped pelagic sediment usually in gravity controlled positions on top of basalt clasts. Vuggy carbonate cement fills majority of pore space with some large voids. Some fuzzy dark brown halos, mostly along thin dark veins.

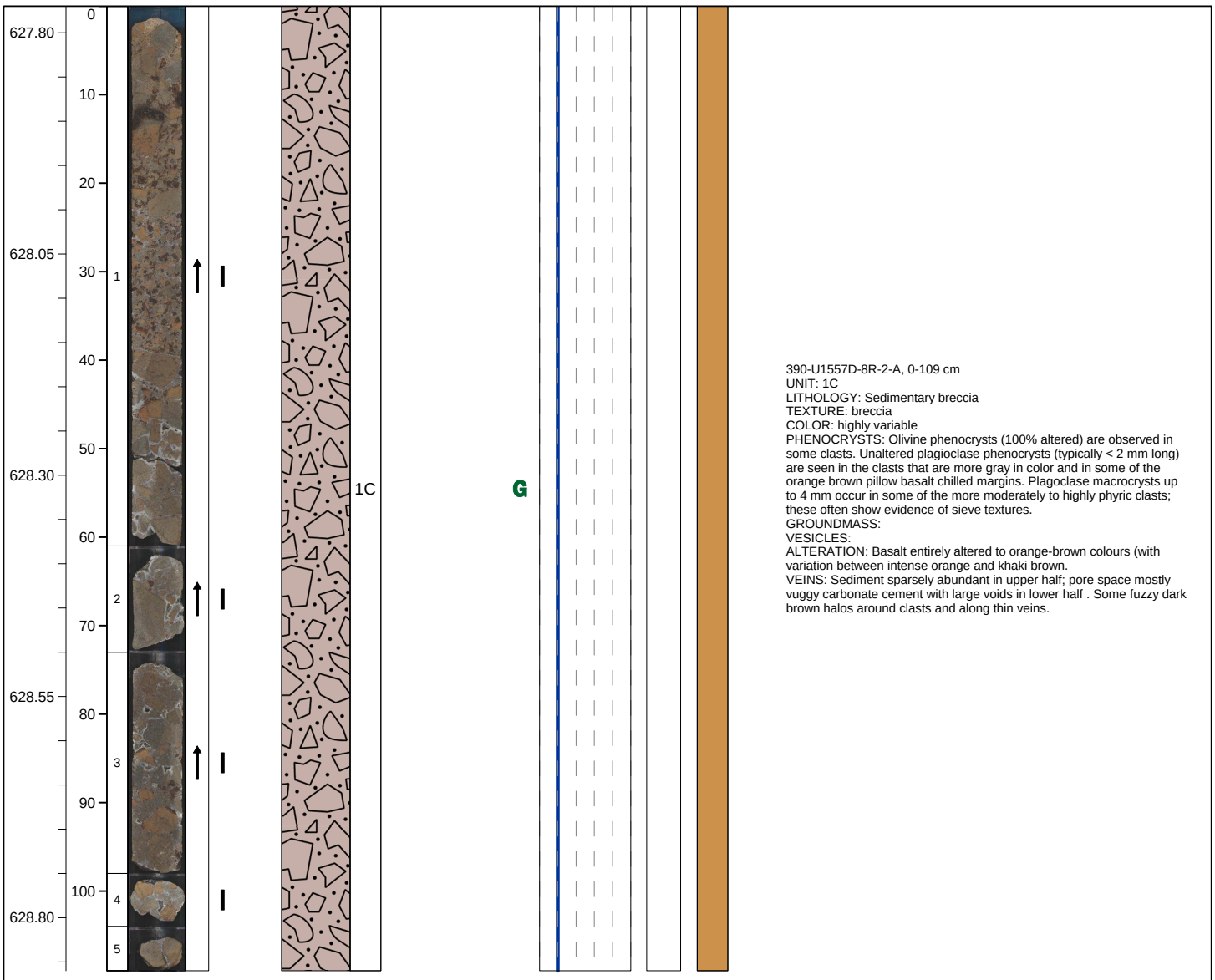
Hole 390-U1557D-8R Section 1, Top of Section: 626.6 m (CSF-A)



Description

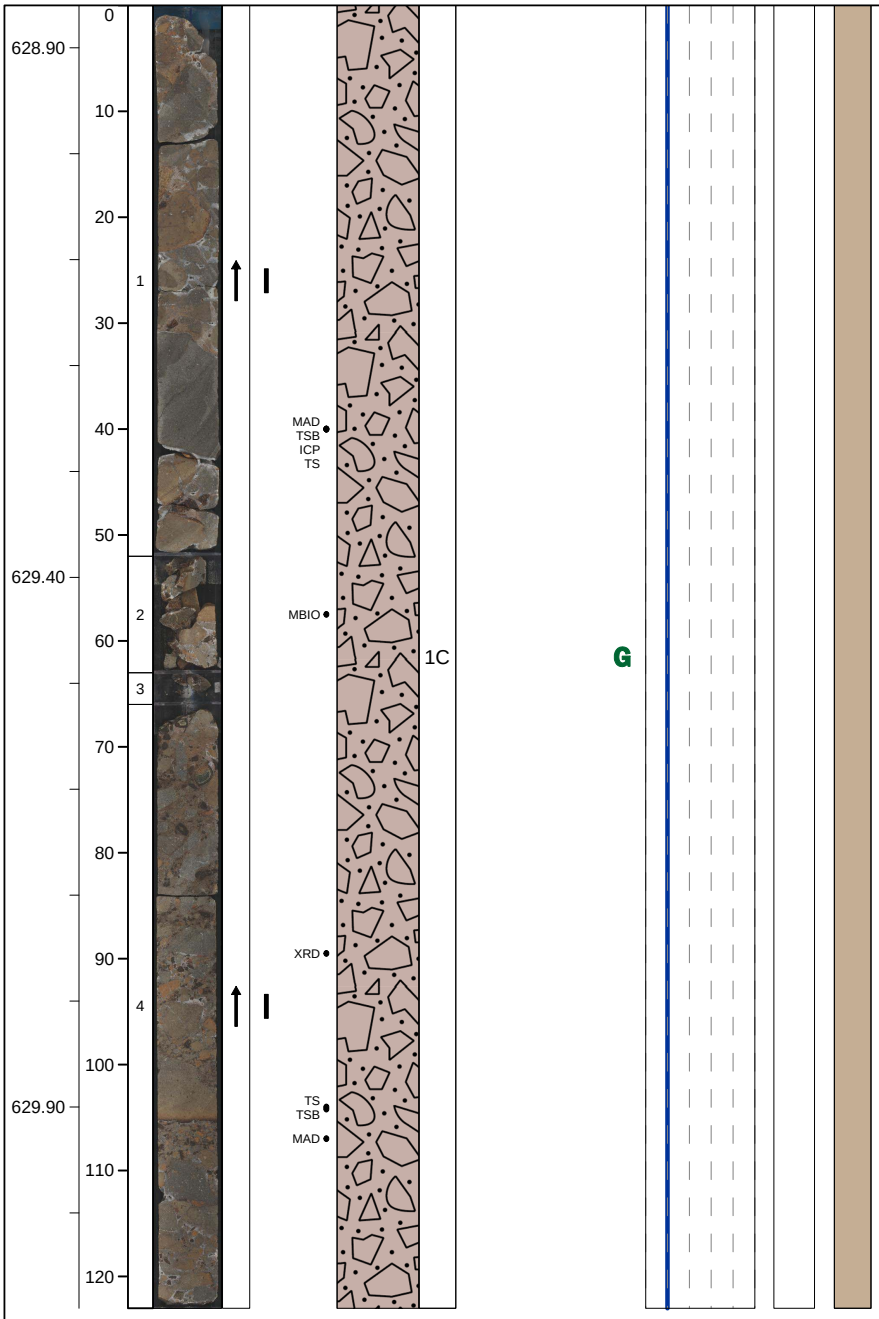
390-U1557D-8R-1-A, 0-117 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Plagoclase macrocrysts up to 6 mm occur in some of the more moderately to highly phyric clasts; these often show evidence of sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours, with variation between intense orange and khaki brown.
VEINS: Sparse sediment in gravity traps, elsewhere vuggy crystalline carbonate cement. Cream coloured chalky material, with subhorizontal internal laminations, of similar appearance to sediment overgrows sparry carbonate (60-80cm). Has thicker accumulation on top (i.e. gravity controlled) than underneath clasts but still some growing on undersides so not 100% gravity settling (authigenic sediment?). Some fuzzy halos on clasts and along thin veins.

Hole 390-U1557D-8R Section 2, Top of Section: 627.77 m (CSF-A)



390-U1557D-8R-2-A, 0-109 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Plagoclase macrocrysts up to 4 mm occur in some of the more moderately to highly phyric clasts; these often show evidence of sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt entirely altered to orange-brown colours (with variation between intense orange and khaki brown.
VEINS: Sediment sparsely abundant in upper half; pore space mostly vuggy carbonate cement with large voids in lower half . Some fuzzy dark brown halos around clasts and along thin veins.

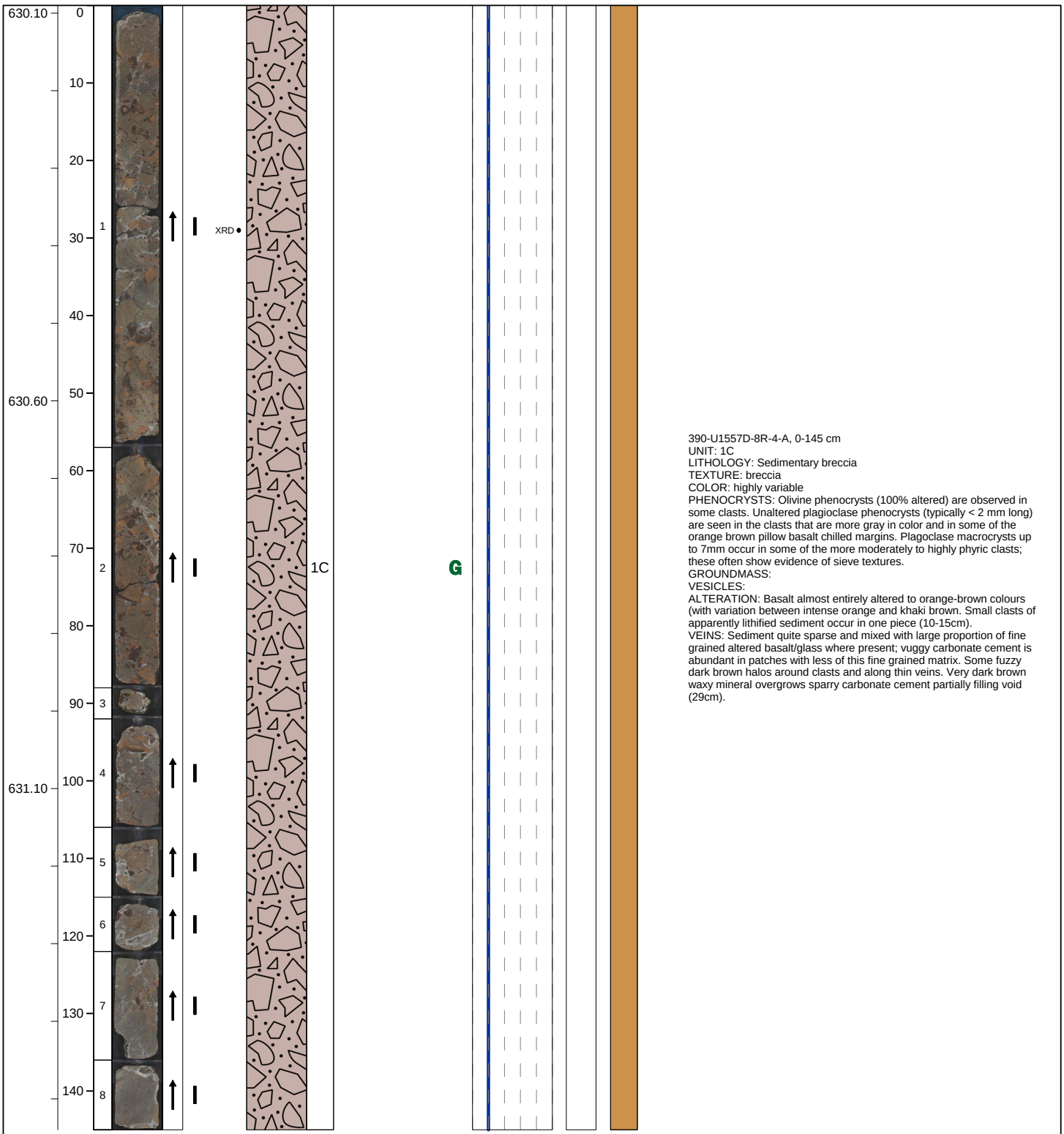
Hole 390-U1557D-8R Section 3, Top of Section: 628.86 m (CSF-A)



Description

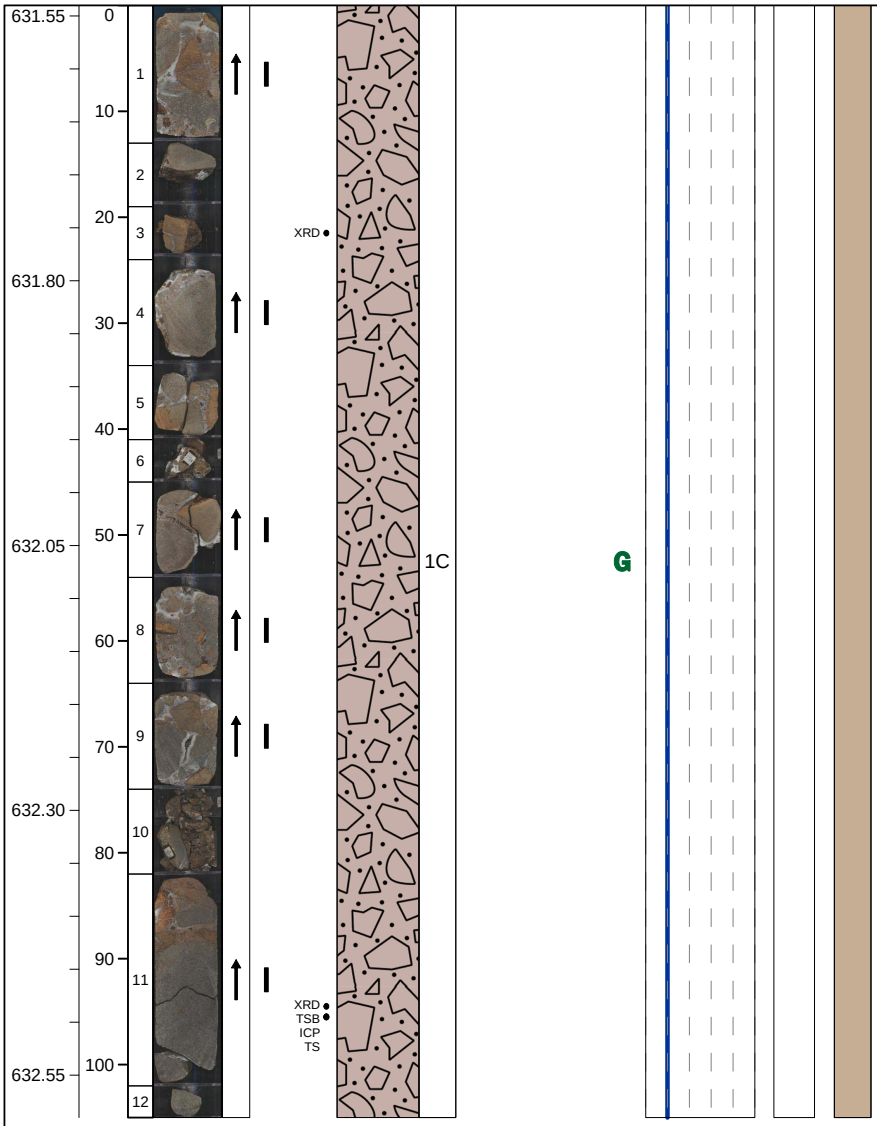
390-U1557D-8R-3-A, 0-123 cm
UNIT: 1C
LITHOLOGY: Sedmentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Plagoclase macrocrysts up to 11 mm occur in some of the more moderately to highly phyric clasts; these often show evidence of sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost entirely altered to orange-brown colours (with variation between intense orange and khaki brown. One block relatively unaltered, without reddened phenocrysts and only slight pervasive khaki alteration.
VEINS: Sediment quite sparse; mostly vuggy carbonate cement with voids. Some fuzzy dark brown halos around clasts and along thin veins. Unidentified red-orange mineral in carbonate cement (89cm).

Hole 390-U1557D-8R Section 4, Top of Section: 630.09 m (CSF-A)



390-U1557D-8R-4-A, 0-145 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins. Plagoclase macrocrysts up to 7mm occur in some of the more moderately to highly phyric clasts; these often show evidence of sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost entirely altered to orange-brown colours (with variation between intense orange and khaki brown. Small clasts of apparently lithified sediment occur in one piece (10-15cm).
VEINS: Sediment quite sparse and mixed with large proportion of fine grained altered basalt/glass where present; vuggy carbonate cement is abundant in patches with less of this fine grained matrix. Some fuzzy dark brown halos around clasts and along thin veins. Very dark brown waxy mineral overgrows sparry carbonate cement partially filling void (29cm).

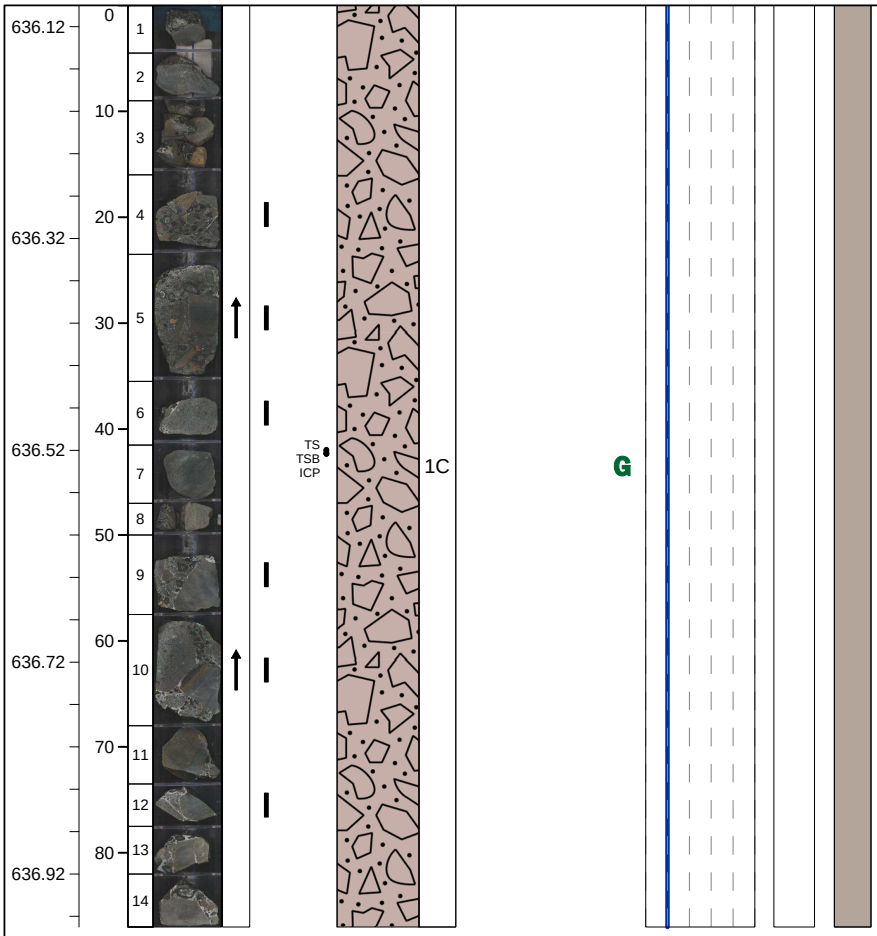
Hole 390-U1557D-8R Section 5, Top of Section: 631.54 m (CSF-A)



Description

390-U1557D-8R-5-A, 0-105 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen in the clasts that are more gray in color and in some of the orange brown pillow basalt chilled margins.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt almost entirely altered to orange-brown colours (with variation between intense orange and khaki brown. One block relatively unaltered, without reddened phenocrysts and only slight pervasive khaki alteration.
VEINS: Sediment quite sparse; mostly vuggy carbonate cement with voids. Veins and halos rare.

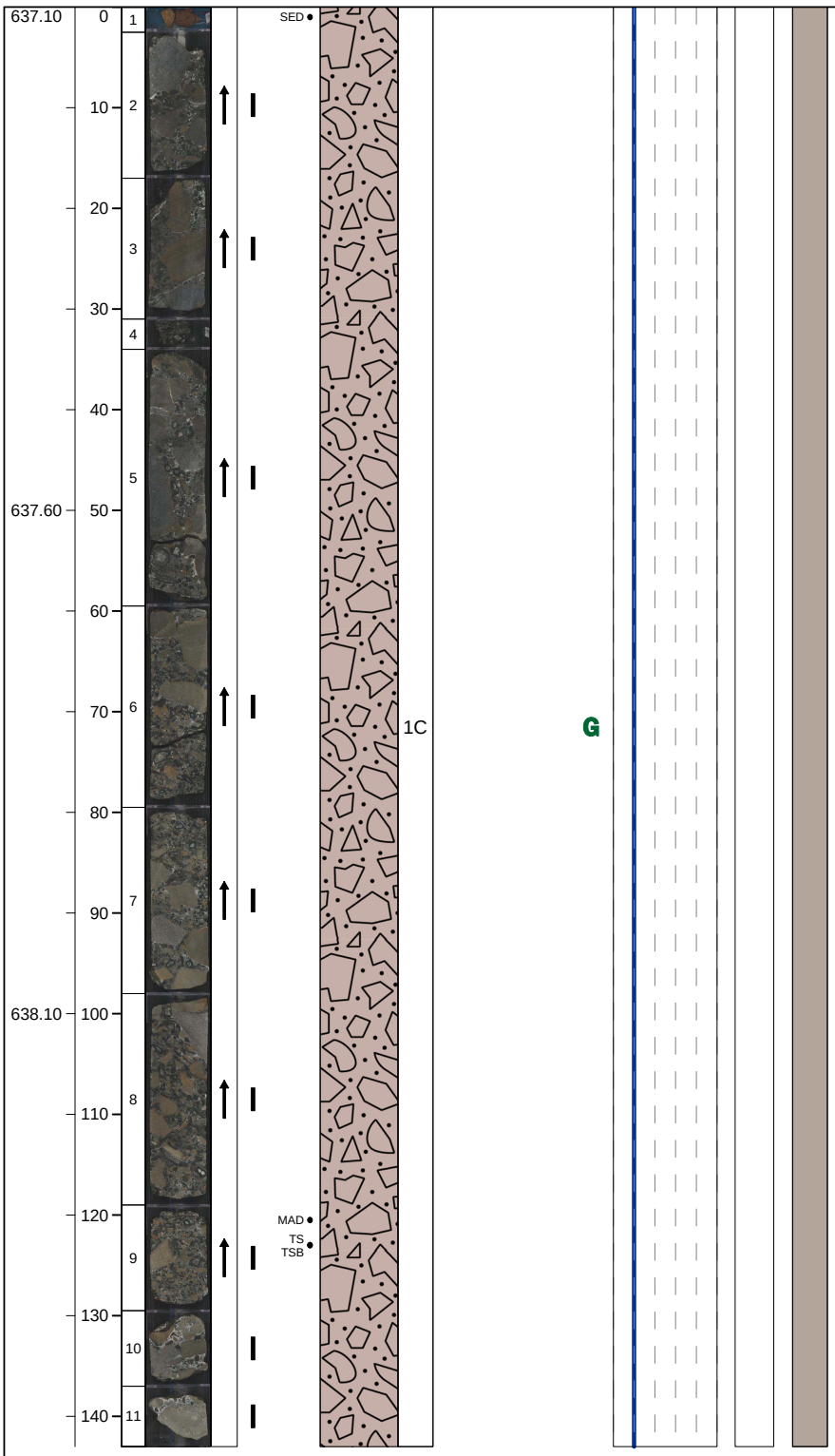
Hole 390-U1557D-9R Section 1, Top of Section: 636.1 m (CSF-A)



Description

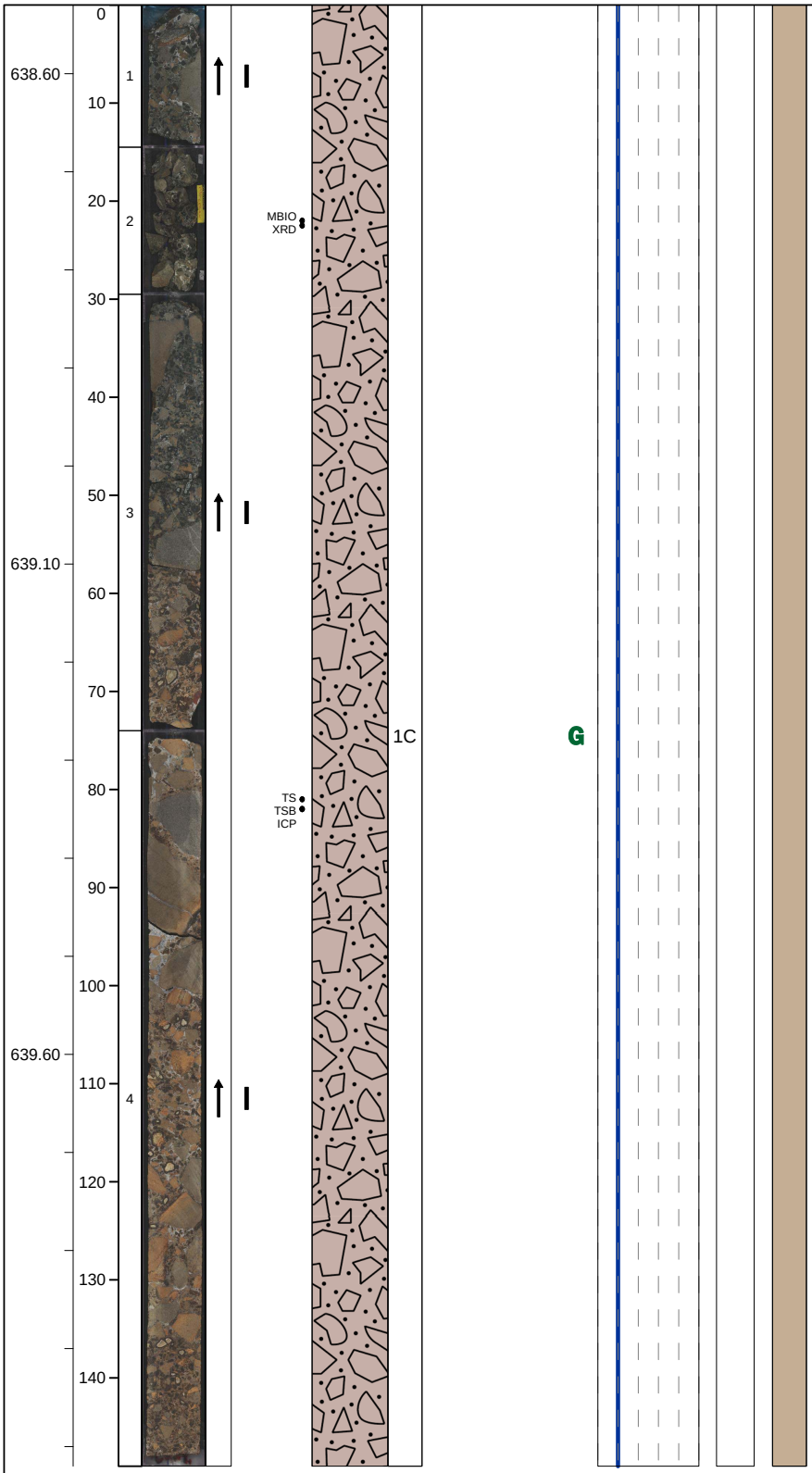
390-U1557D-9R-1-A, 0-87 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts (100% altered) are observed in some clasts. Unaltered plagioclase phenocrysts (typically < 2 mm long) are seen rarely in the clasts that are more gray in color. Plagioclase macrocrysts (up to 4mm) are observed in one clast. These larger plagioclase crystals show sieve textures.
GROUNDMASS:
VESICLES:
ALTERATION: Pervasive dark green background alteration mixing (overprinting?) with orange halos. Glass moderately abundant and 100% altered to dark green with dark outer rims and paler cores. Many basalt clasts show orange halos paralleling glassy/chilled margins cut by the fragmented edge of the clast. Others show more muted brownish halos around all the edges of the clast. Cores of some clasts look quite fresh. Coarser grained olivine phyric basalts have both red and green altered phenocrysts (= orange speckled overprinted?).
VEINS: Interclast space appears to be mostly pale greenish grey (altered) sediment. Cement seems to be volumetrically small proportion of rock more like a vein network in many place; slightly difficult to distinguish from sediments as poorly crystalline (small proportion = zeolite?).

Hole 390-U1557D-10R Section 1, Top of Section: 637.1 m (CSF-A)



390-U1557D-10R-1-A, 0-143 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS:
GROUNDMASS:
VESICLES:
ALTERATION: Pervasive dark green background alteration of basalt clasts alteration overprinting (?) fragmented orange halos. Some clasts show muted brownish halos around their edges. Glass moderately abundant and 100% altered to dark green with dark outer rims and paler green cores. Rare coarser grained olivine phyric basalts have both red and green altered phenocrysts (= orange speckled overprinted?).
VEINS: Interclast space appears to be mostly pale greenish grey (altered) sediment though difficult to distinguish from fine grained basalt/glass as everything altered to greenish colours. Cement (white to green, poorly crystalline, some proportion zeolite?) relatively small proportion of rock but more abundant than it appears at first glance. [Bin 1 (rubble) has a few fragments of semi lithified red-brown clay. Fall in unlikely as hole cased into basement. 10R 1 first core drilled after trip out for storm and bit was bounced into seafloor during re-entry so most likely picked up from seafloor]

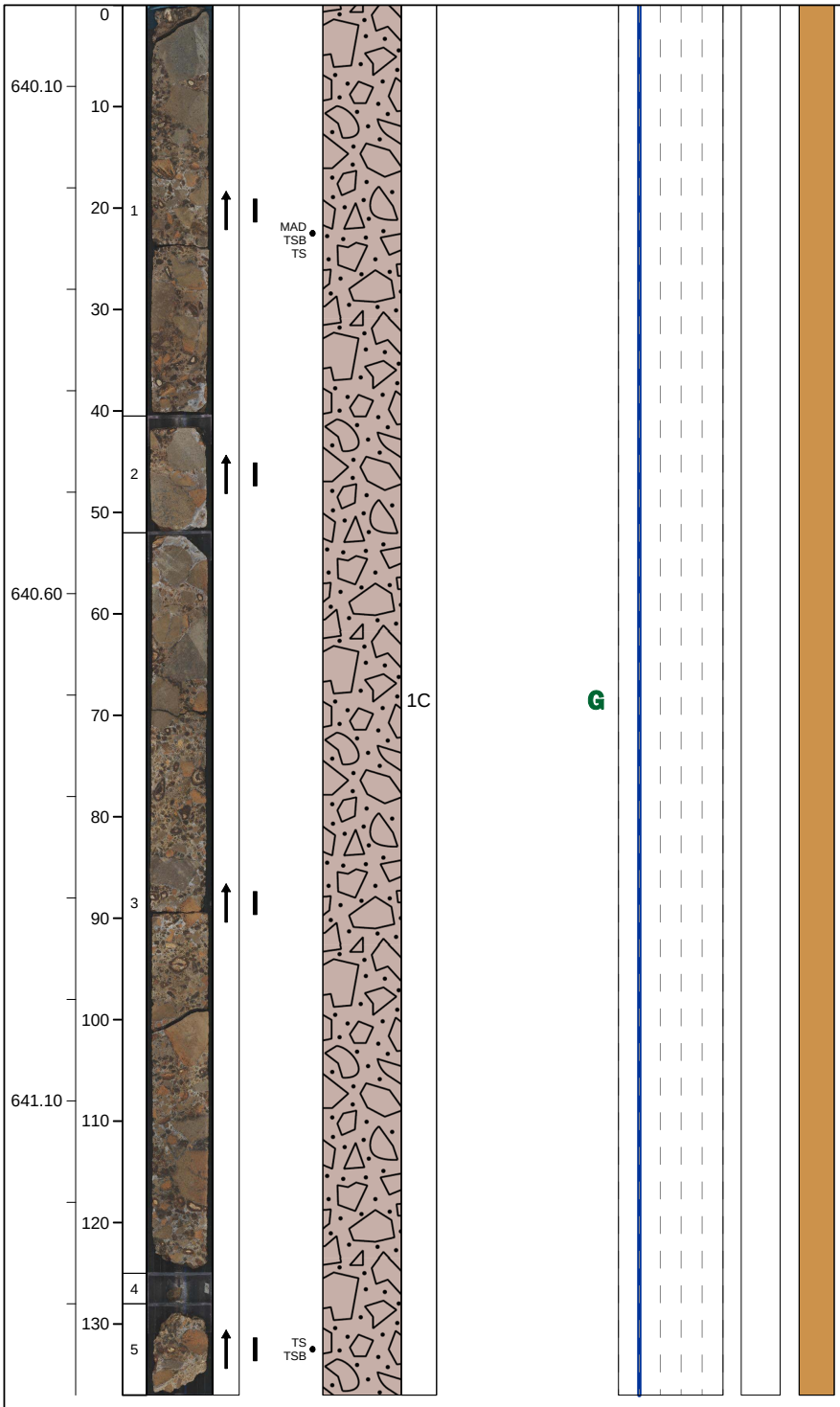
Hole 390-U1557D-10R Section 2, Top of Section: 638.53 m (CSF-A)



Description

390-U1557D-10R-2-A, 0-149 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS:
GROUNDMASS:
VESICLES:
ALTERATION: Transition from green alteration at top of section to orange/brown at the bottom. The transition occurs quite sharply at the edge of a cobble-sized clast of basalt at 56-57cm. In the upper section, glass is completely altered to dark green with pale green cores in larger clasts, while in the lower part it is altered to dark brown with pale yellow green cores. Other than the overall alteration colours the alteration in the upper and lower parts of the section is similar with abundant fragments of intense orange halo altered cryptocrystalline basalt and some coarser, fresher clasts showing more muted orange colours or in some cases just orange speckled background alteration. Superimposed on this is the broader pattern of green - orange alteration giving a brownish green colour to orange halos in the upper part.
VEINS: Sediment is moderately abundant and shows similar variation in colouration to the clasts. Some crystalline carbonate cement is present but les voluminous than in overlying cores. Fuzzy dark halos around clast margins and veins, seen abundantly in preceding cores, are all but absent.

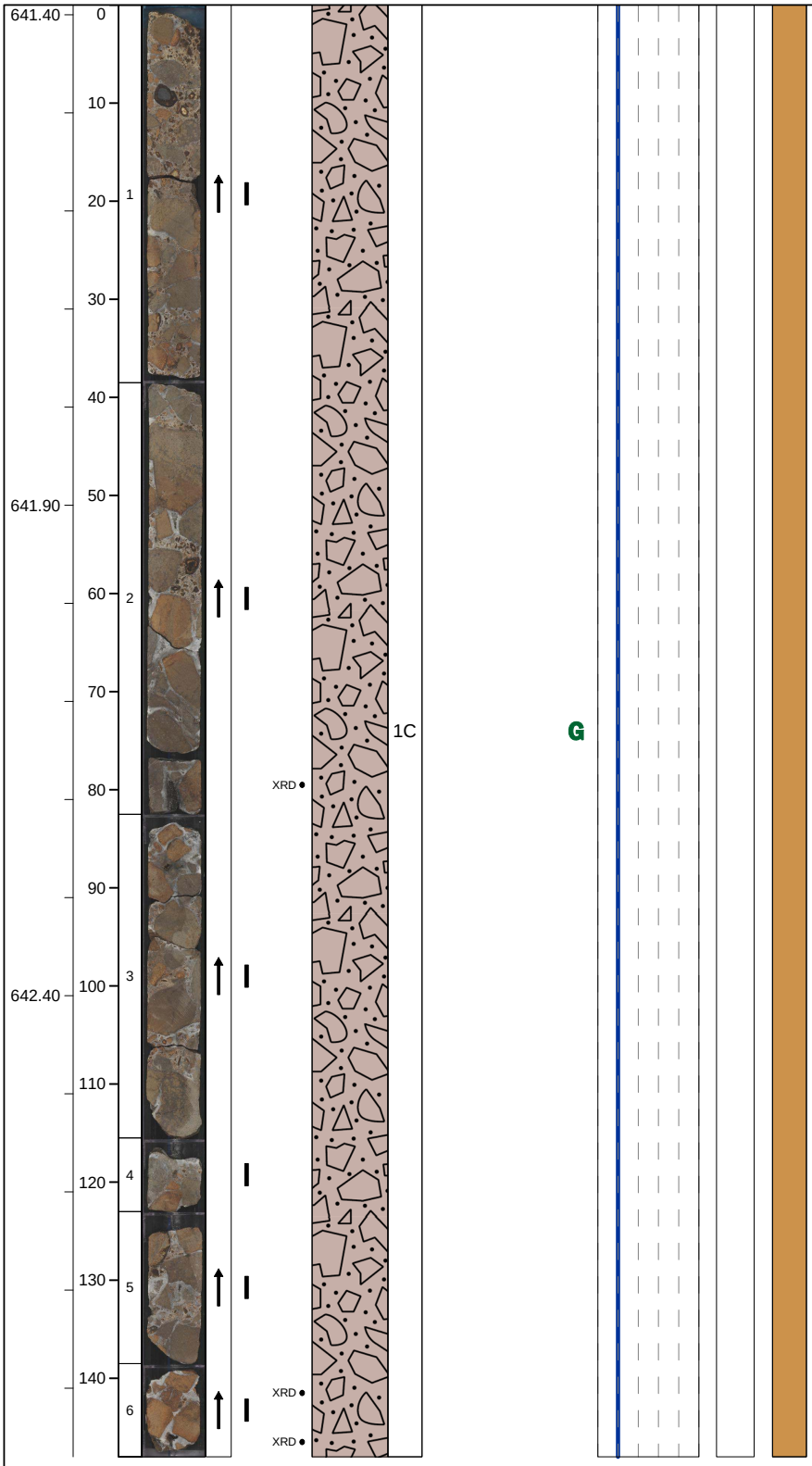
Hole 390-U1557D-10R Section 3, Top of Section: 640.02 m (CSF-A)



Description

390-U1557D-10R-3-A, 0-137 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Phenocrysts are not abundant in the clasts in this section, but where present, the olivine is 100% altered. Plagioclase macrocrysts up to 6 mm are observed in one clast. The plagioclase also occurs in association with cpx in this clast, although the cpx is brown rather than green.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely altered to intense orange colours with some slight variation between intense orange and browner colours (but more uniformly orange than in many overlying cores). Glass altered to dark brown with pale yellow green cores in larger clasts.
VEINS: Pale yellowish brown carbonate sediment more abundant than through most of this core but mixed with a large proportion of fine grained igneous material. Crystalline carbonate cement with relatively little void space present in sparse patches. Veins and halos rare. Some dark blebs of ?Fe-oxide in carbonate cement and highly altered basalt clasts in lower part of section (110-120cm).

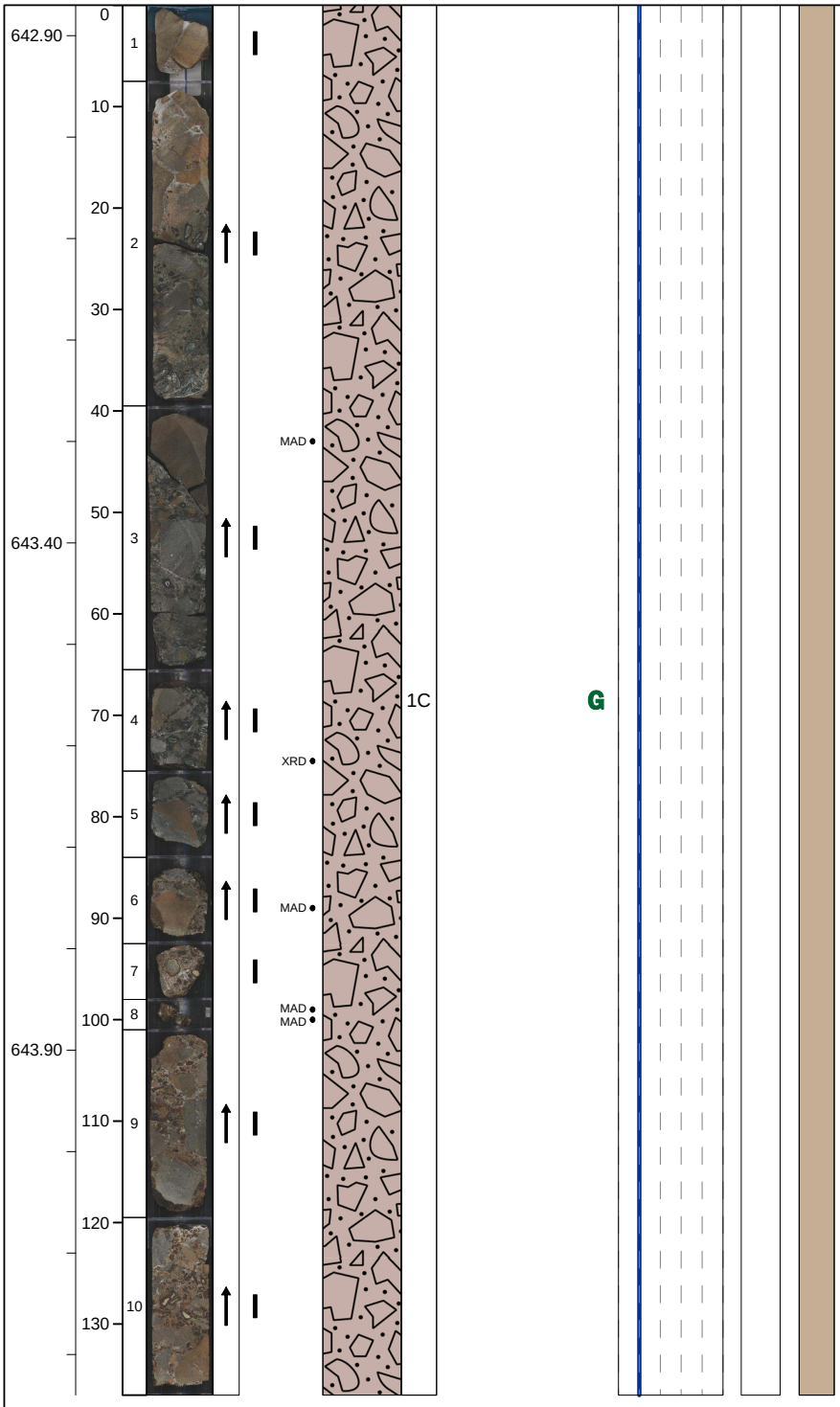
Hole 390-U1557D-10R Section 4, Top of Section: 641.39 m (CSF-A)



Description

390-U1557D-10R-4-A, 0-148 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Few phenocrysts observed; rare plagioclase crystals up to 2mm in just one or two clasts.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely altered to intense orange colours. Glass rare and altered to dark brown except one clast with a fresh(ish) black core.
VEINS: Pale yellowish brown carbonate sediment more abundant than through most of this core but mixed with a large proportion of fine grained igneous material. Vuggy crystalline carbonate cement with large voids abundant in the middle of the section. One vug shows dark staining (similar to examples seen in preceding cores) and has unusual accumulation of soft dark grey clay on back of core (contamination by drilling mud?). Veins and halos rare.

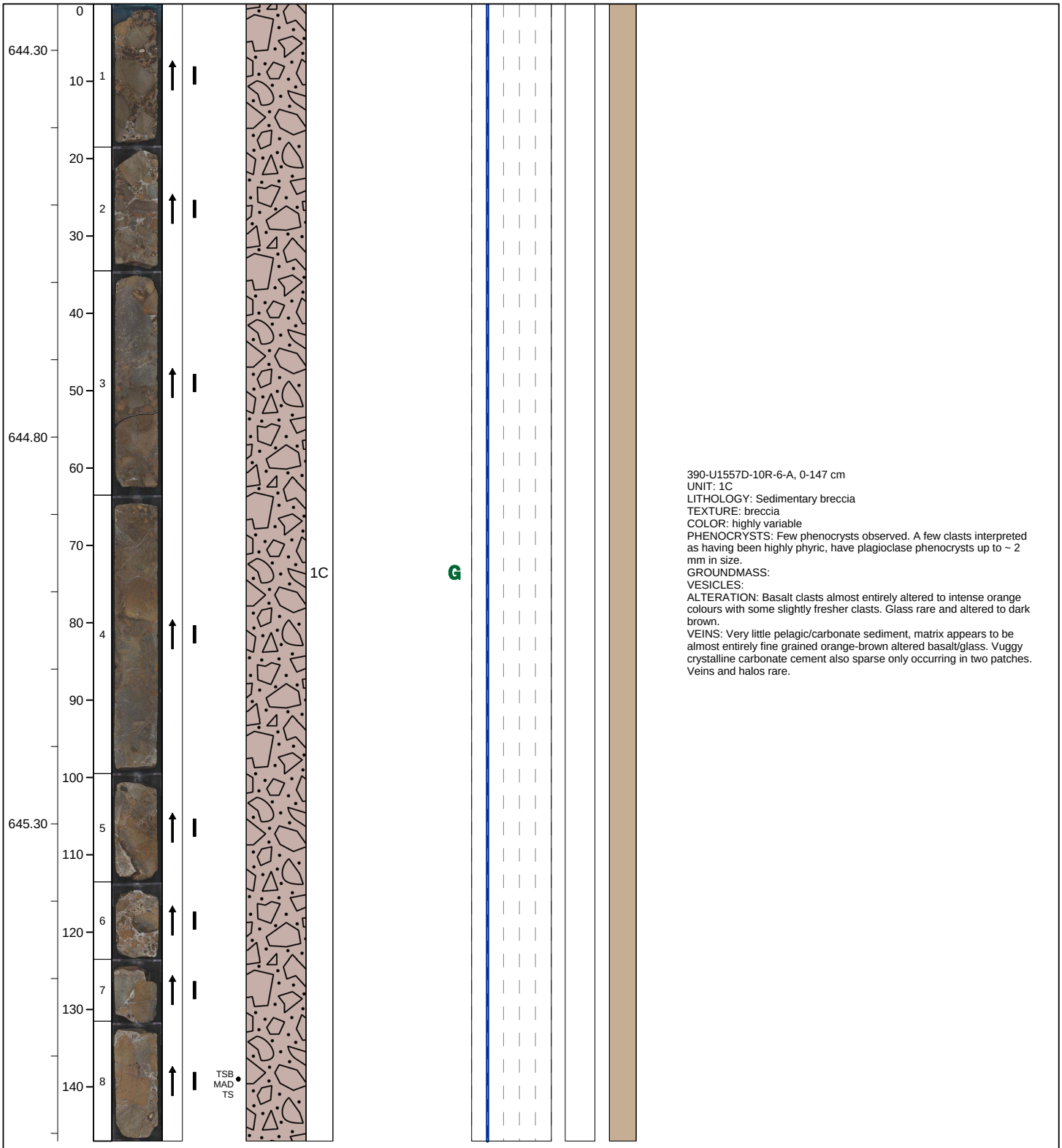
Hole 390-U1557D-10R Section 5, Top of Section: 642.87 m (CSF-A)



Description

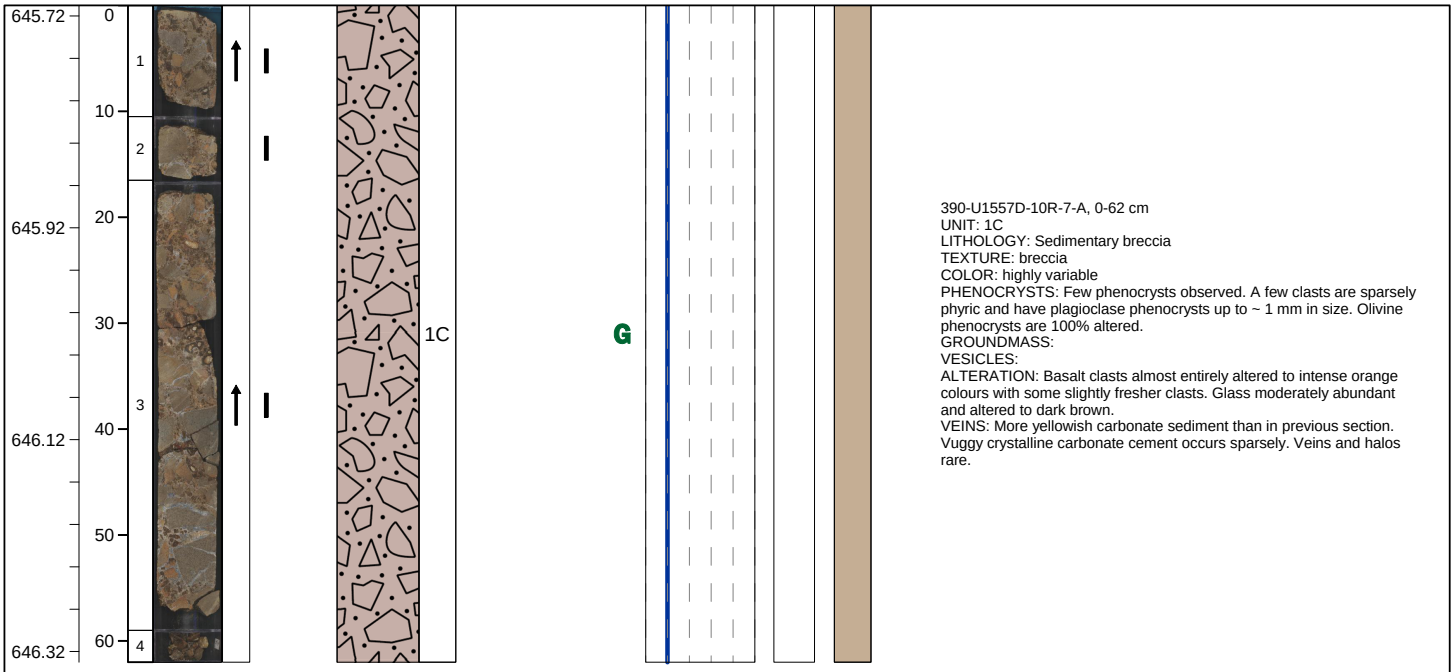
390-U1557D-10R-5-A, 0-137 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Few phenocrysts observed; rare plagioclase crystals up to 2mm in just one or two clasts.
GROUNDMASS:
VESICLES:
ALTERATION: Transitions from orange to green alteration through the section. Upper transition from orange down into green occurs along a sharp front dipping ~45 deg at 20-24cm. The lower transition back into orange has not been recovered and occurs between pcs. 5 and 6 (nominally at 84cm). The pattern of alteration in the orange and green altered sectors is very similar to that described in section 10R 2, with fragments of variably altered basalt (alteration ranging from moderate orange speckled background to intense orange halo) apparently overprinted by orange or green alteration in broader zones across the core.
VEINS: Sediment is moderately abundant and shows similar variation in colouration to the clasts. Glass mirrors this variation and is altered to dark green or brown. Crystalline carbonate cement is only sparsely present in this section. Fuzzy dark halos around clast margins and veins are absent.

Hole 390-U1557D-10R Section 6, Top of Section: 644.24 m (CSF-A)



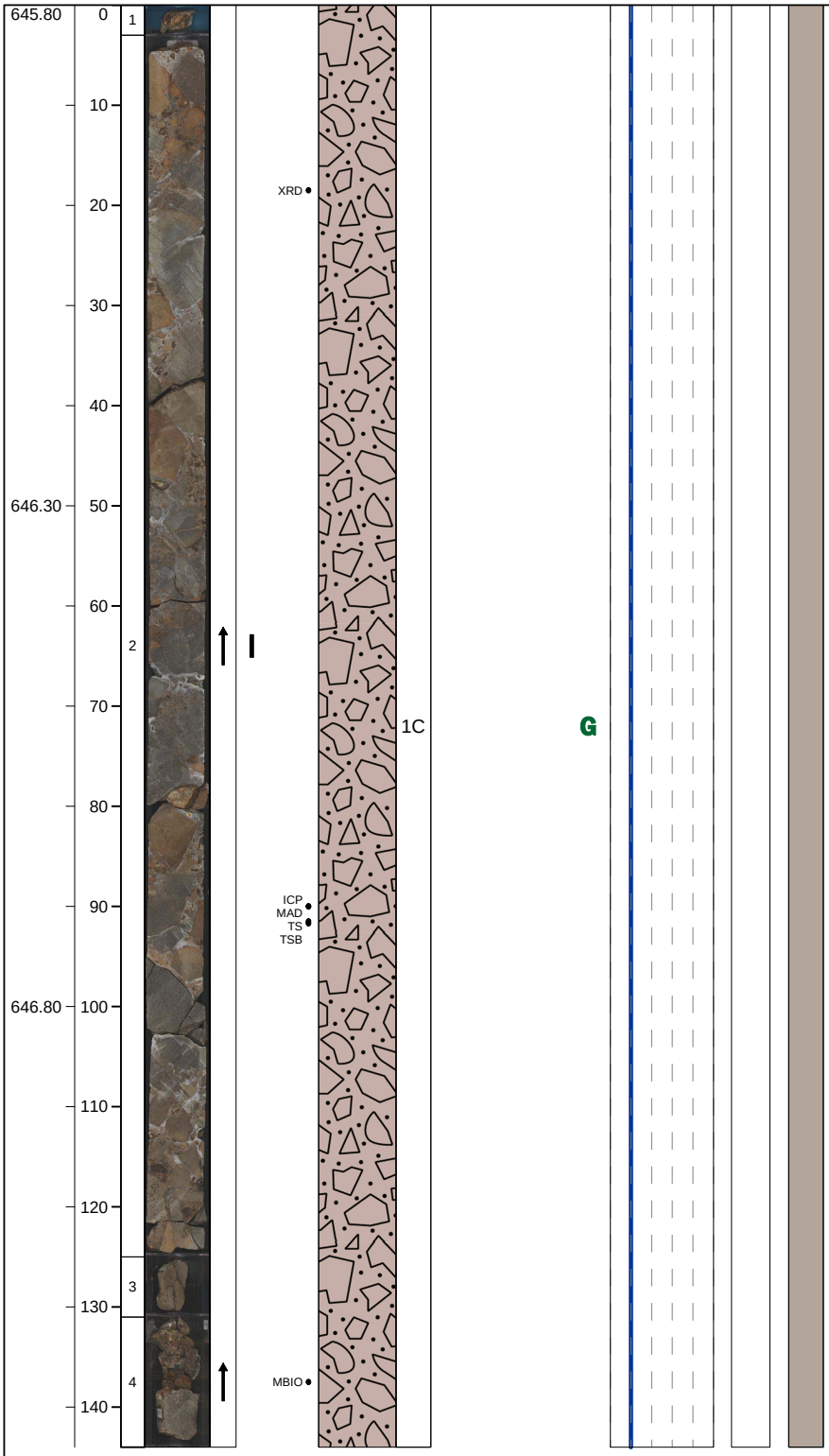
390-U1557D-10R-6-A, 0-147 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Few phenocrysts observed. A few clasts interpreted as having been highly phyric, have plagioclase phenocrysts up to ~ 2 mm in size.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely altered to intense orange colours with some slightly fresher clasts. Glass rare and altered to dark brown.
VEINS: Very little pelagic/carbonate sediment, matrix appears to be almost entirely fine grained orange-brown altered basalt/glass. Vuggy crystalline carbonate cement also sparse only occurring in two patches. Veins and halos rare.

Hole 390-U1557D-10R Section 7, Top of Section: 645.71 m (CSF-A)



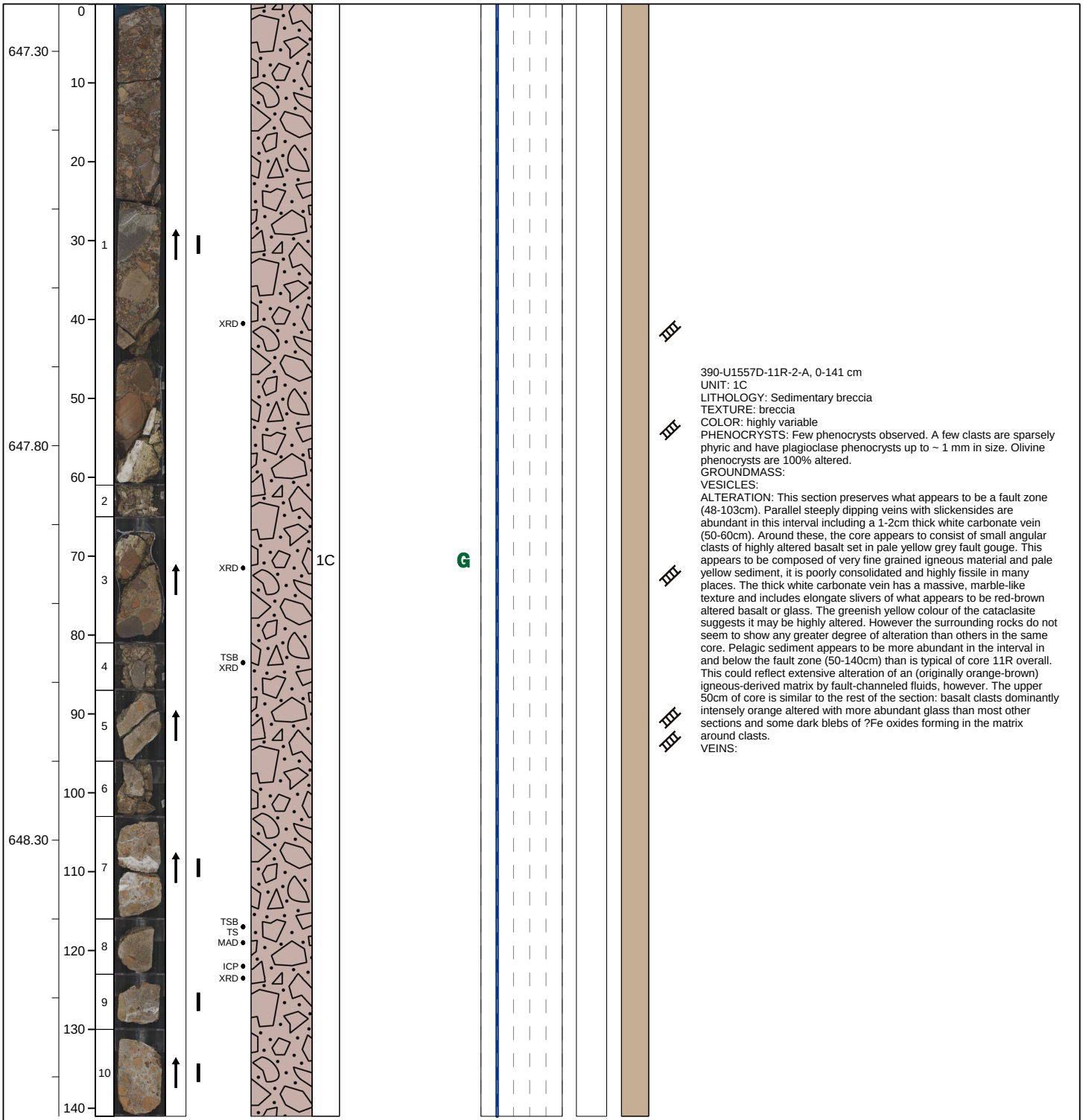
390-U1557D-10R-7-A, 0-62 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Few phenocrysts observed. A few clasts are sparsely phyric and have plagioclase phenocrysts up to ~ 1 mm in size. Olivine phenocrysts are 100% altered.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely altered to intense orange colours with some slightly fresher clasts. Glass moderately abundant and altered to dark brown.
VEINS: More yellowish carbonate sediment than in previous section. Vuggy crystalline carbonate cement occurs sparsely. Veins and halos rare.

Hole 390-U1557D-11R Section 1, Top of Section: 645.8 m (CSF-A)

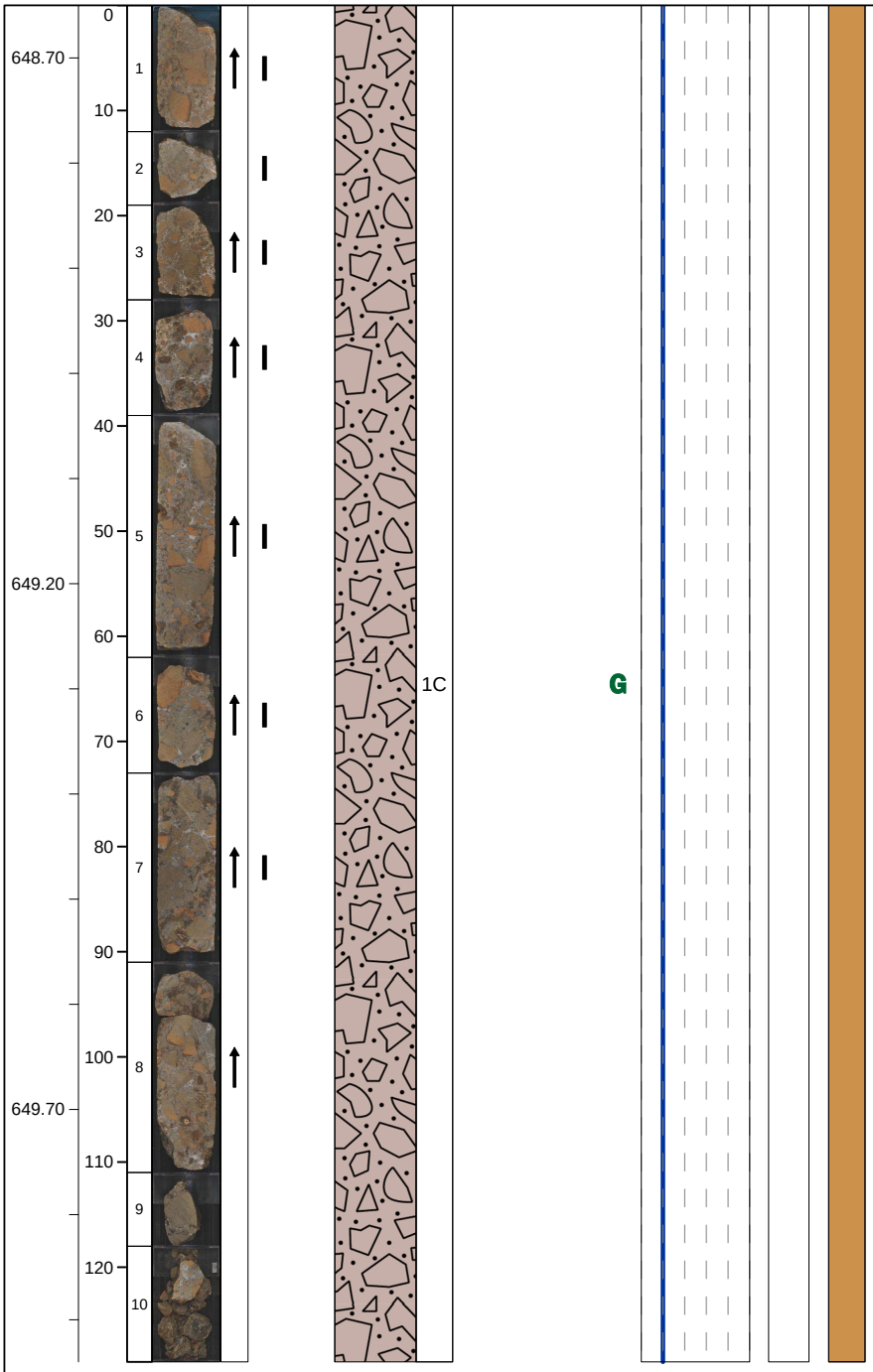


390-U1557D-11R-1-A, 0-144 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Few phenocrysts observed. A few clasts are sparsely phyric and have plagioclase phenocrysts up to ~ 3 mm in size. Olivine phenocrysts are 100% altered.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts mostly altered to intense orange colours with a few clasts only moderately altered to orange speckled background. Glass is rare and altered to dark brown with pale yellow green cores.
VEINS: Pale yellowish brown carbonate sediment more abundant than through most of this core but mixed with a large proportion of fine grained igneous material. Crystalline carbonate cement with relatively little void space present in sparse patches. A 3mm thick vein with stripes of alternate carbonate and very dark grey ?Fe-Mn oxide fill. Veins and halos otherwise rare. Some dark blebs of ?Fe-oxide in carbonate cement and highly altered basalt clasts in lower part of section (110-120cm).

Hole 390-U1557D-11R Section 2, Top of Section: 647.24 m (CSF-A)

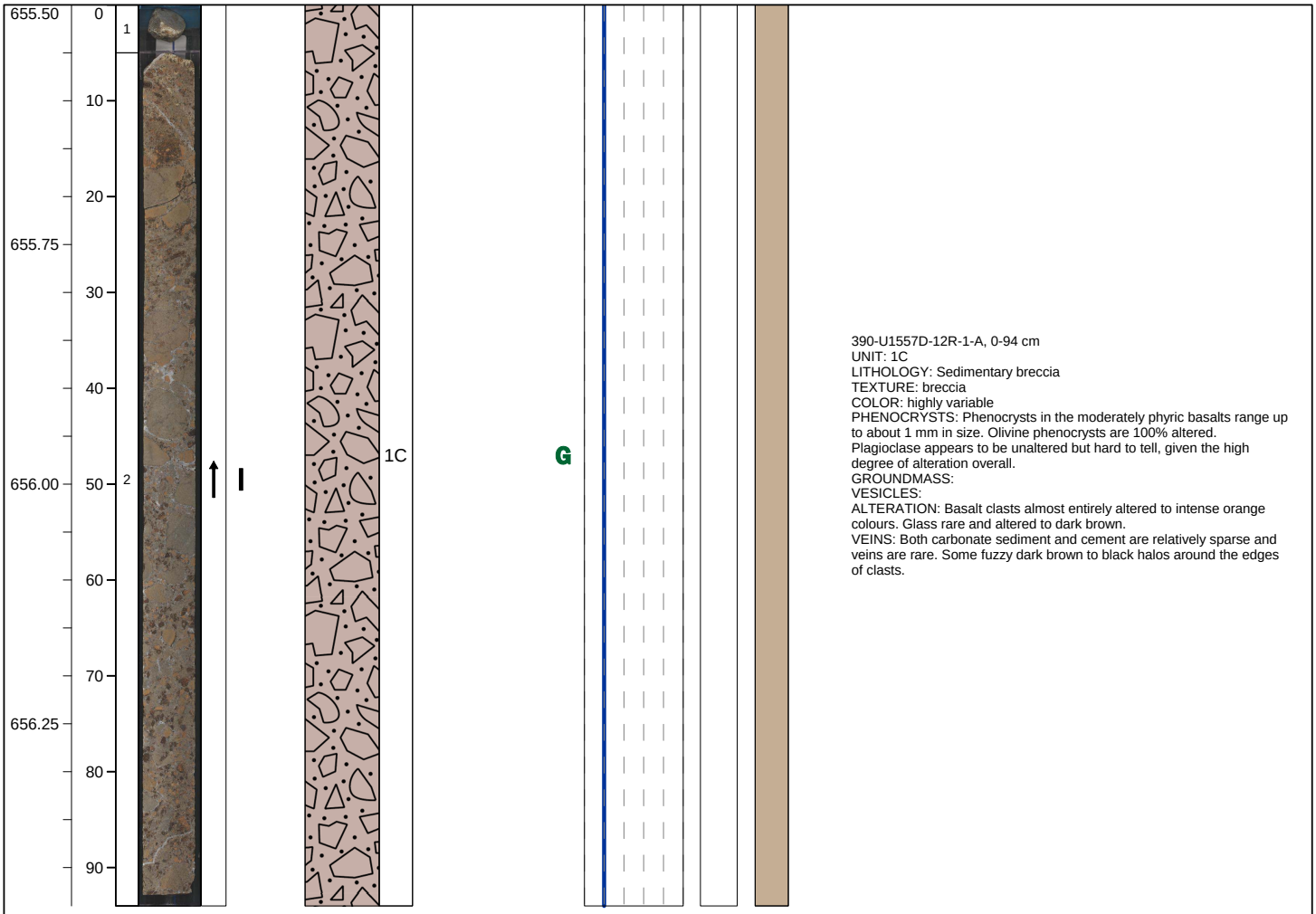


Hole 390-U1557D-11R Section 3, Top of Section: 648.65 m (CSF-A)



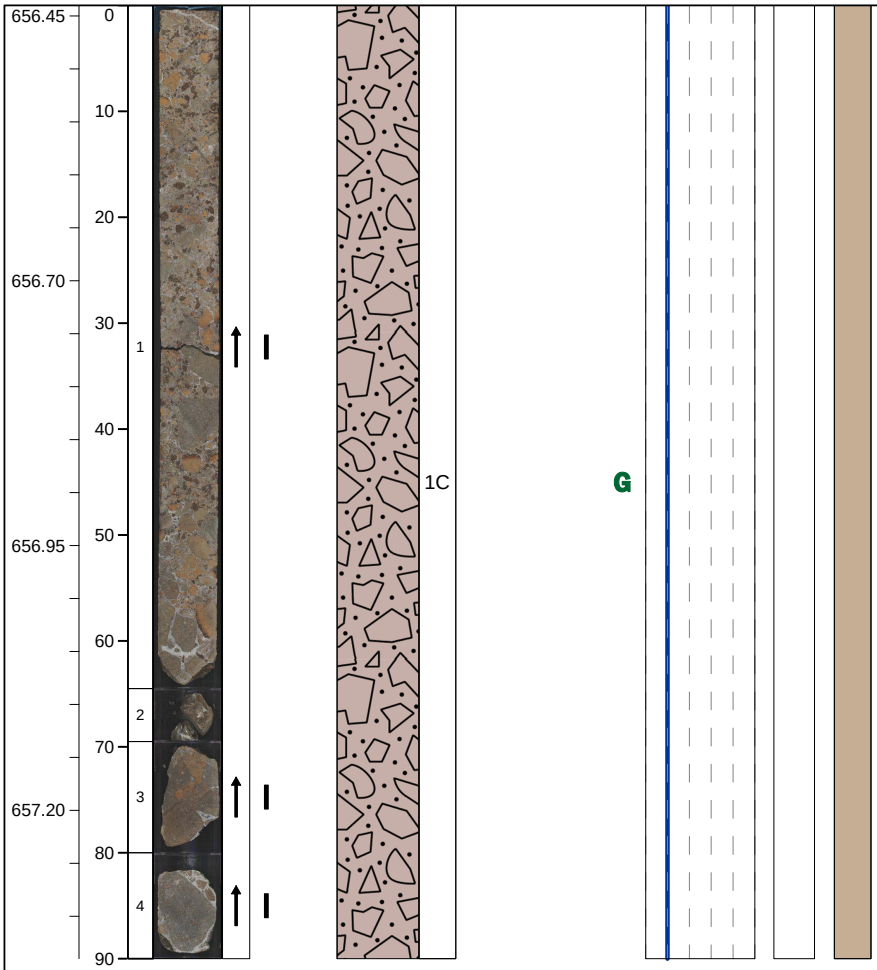
390-U1557D-11R-3-A, 0-129 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Few phenocrysts observed. A few clasts are sparsely phyric and have plagioclase phenocrysts up to ~ 1 mm in size. Olivine phenocrysts are 100% altered.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely altered to intense orange colours. Glass rare and altered to dark brown.
VEINS: Both carbonate sediment and cement are relatively sparse and veins are rare. Some fuzzy dark brown to black halos around the edges of clasts.

Hole 390-U1557D-12R Section 1, Top of Section: 655.5 m (CSF-A)



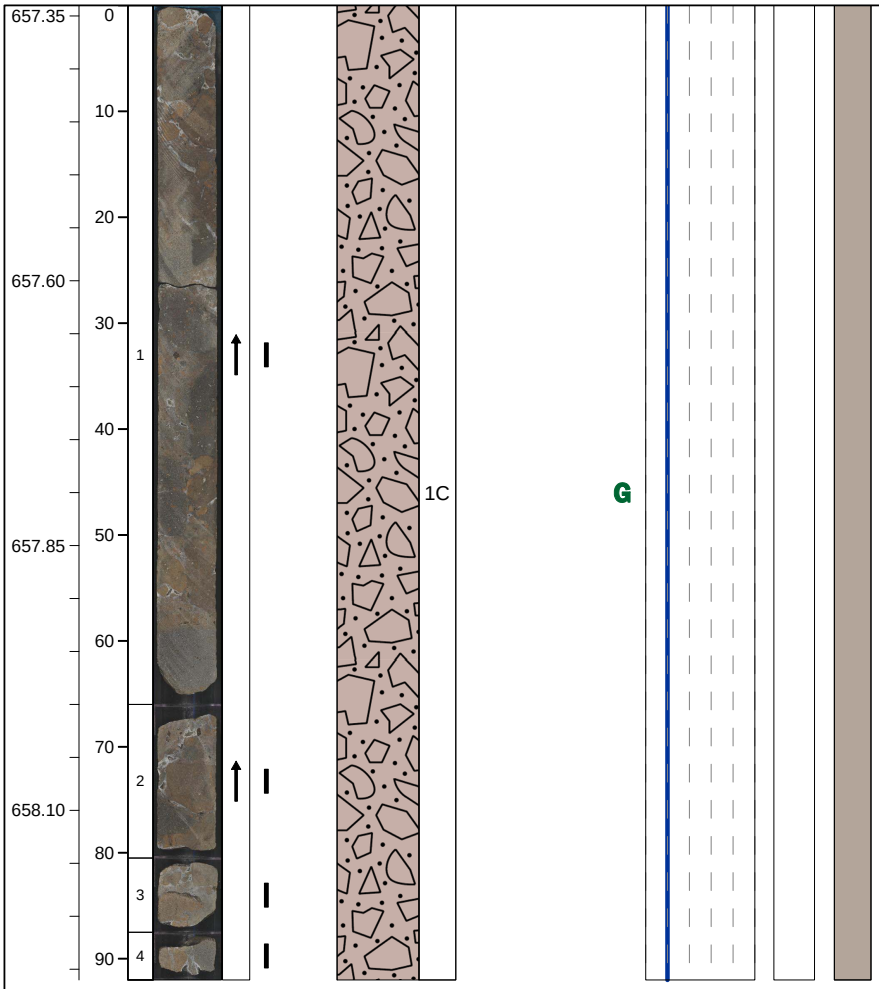
390-U1557D-12R-1-A, 0-94 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Phenocrysts in the moderately phyric basalts range up to about 1 mm in size. Olivine phenocrysts are 100% altered. Plagioclase appears to be unaltered but hard to tell, given the high degree of alteration overall.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely altered to intense orange colours. Glass rare and altered to dark brown.
VEINS: Both carbonate sediment and cement are relatively sparse and veins are rare. Some fuzzy dark brown to black halos around the edges of clasts.

Hole 390-U1557D-12R Section 2, Top of Section: 656.44 m (CSF-A)



390-U1557D-12R-2-A, 0-90 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Phenocrysts in the moderately phyric basalts range up to about 1 mm in size. Olivine phenocrysts are 100% altered. Plagioclase appears to be unaltered but hard to tell, given the high degree of alteration overall.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts altered to orange speckled background or intense orange colours; slightly fresher than preceding sections. Glass is rare and altered to dark brown with pale yellow green cores.
VEINS: Very little yellow sediment, mostly at the top of the core. Sparse crystalline carbonate cement with almost no void is typical of the core as a whole.

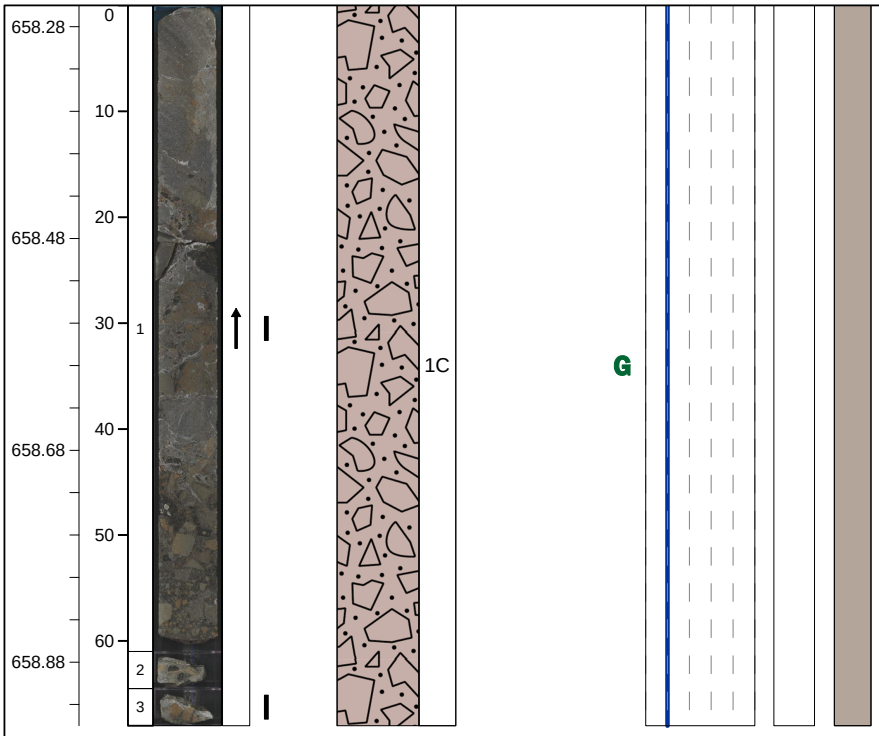
Hole 390-U1557D-12R Section 3, Top of Section: 657.34 m (CSF-A)



Description

390-U1557D-12R-3-A, 0-92 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Phenocrysts in the moderately phyric basalts range up to about 4 mm in size, and larger more equant crystals tend to show sieve textures. Olivine phenocrysts are 100% altered. Plagioclase appears to be unaltered but hard to tell, given the high degree of alteration overall.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts less altered than in adjacent sections; altered to orange halos or orange speckled background. One show green background alteration and has a 1cm orange-brown halo. Glass is almost absent.
VEINS: There does not appear to be any external input of pelagic (or authigenic) carbonate sediment at all. Clasts tightly fitting and relatively minor interclast space filled by fine grained igneous material. Some vuggy carbonate cement towards the bottom.

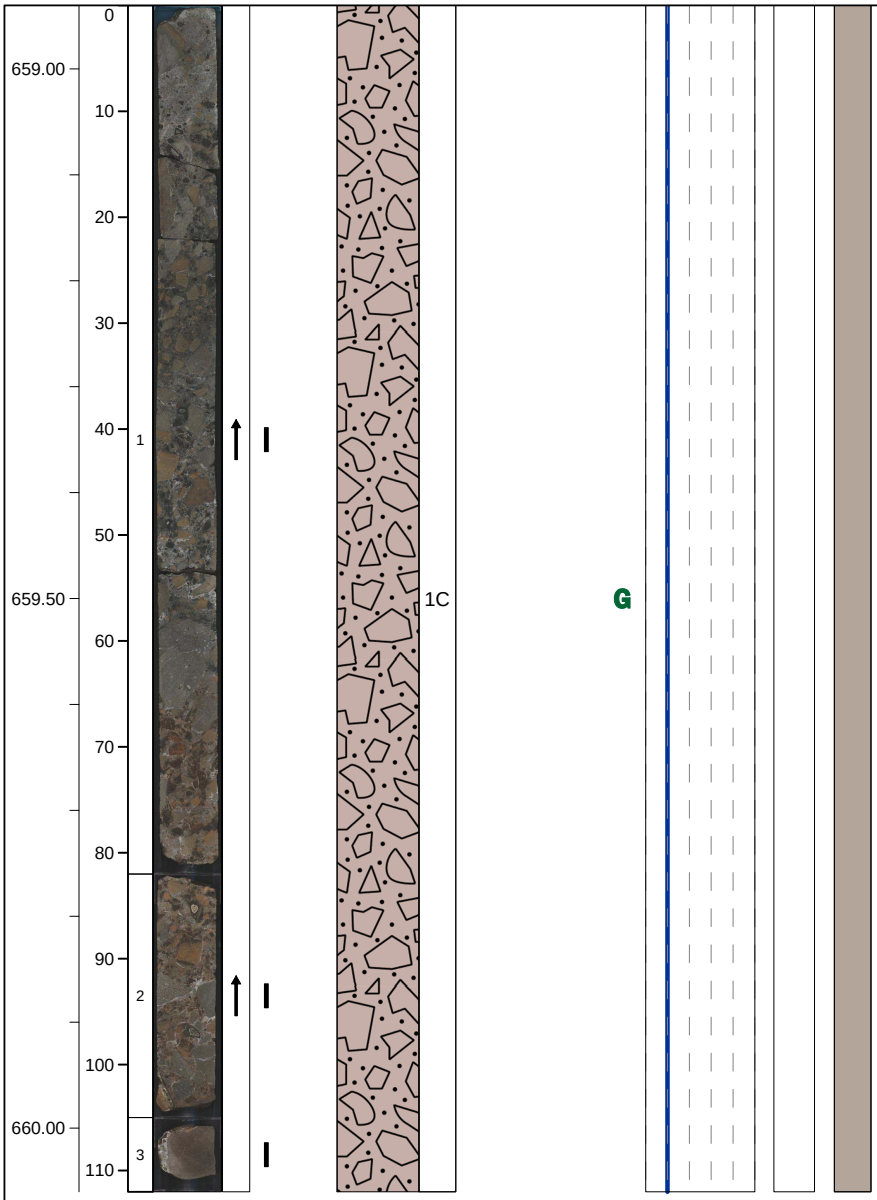
Hole 390-U1557D-12R Section 4, Top of Section: 658.26 m (CSF-A)



Description

390-U1557D-12R-4-A, 0-68 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Phenocrysts in the moderately phyric basalts range up to about 3 mm in size, and larger more equant crystals tend to show sieve textures. Olivine phenocrysts are 100% altered. Plagioclase appears to be unaltered but hard to tell, given the high degree of alteration overall.
GROUNDMASS:
VESICLES:
ALTERATION: Basalts clasts present a hybrid between green and orange alteration colours with dark green alteration superimposed on orange speckled background and orange halos; it is difficult to assign to them to a single category.
VEINS: Clasts are tightly fitting with a relatively small proportion of fine grained matrix and cement (hard to distinguish proportions). Possibly some pale greenish altered sediment present in gravity traps between clasts. Cement appears quite bright white and poorly crystalline, possibly zeolite bearing. Pale green and brick red alteration mineral coexist in some block (e.g. 36-38cm).

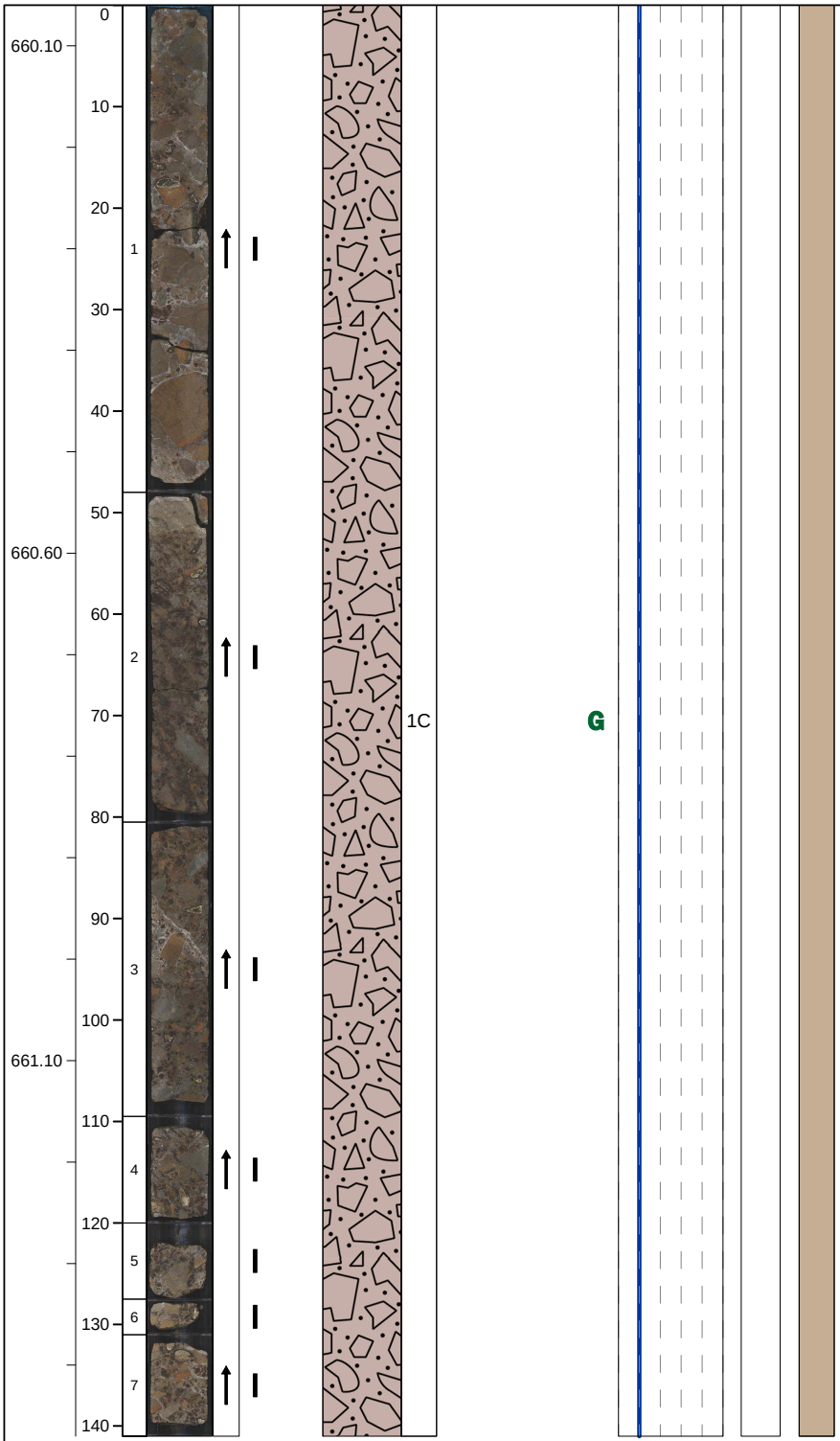
Hole 390-U1557D-12R Section 5, Top of Section: 658.94 m (CSF-A)



Description

390-U1557D-12R-5-A, 0-112 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Phenocrysts in the moderately phyric basalts range up to about 4 mm in size, and larger more equant crystals tend to show sieve textures. Olivine phenocrysts are 100% altered.
GROUNDMASS:
VESICLES:
ALTERATION: Section shows gradational transition from green to orange alteration with the boundary appearing within a single clast from dark green to orange speckled background alteration. Glass mirrors the transition altered to dark green in the upper part and dark brown in the lower part of the section.
VEINS: Matrix is difficult to distinguish from sediment and cement as in other sections in this core. Green vesicle filling minerals visible in one clast (16-20cm).

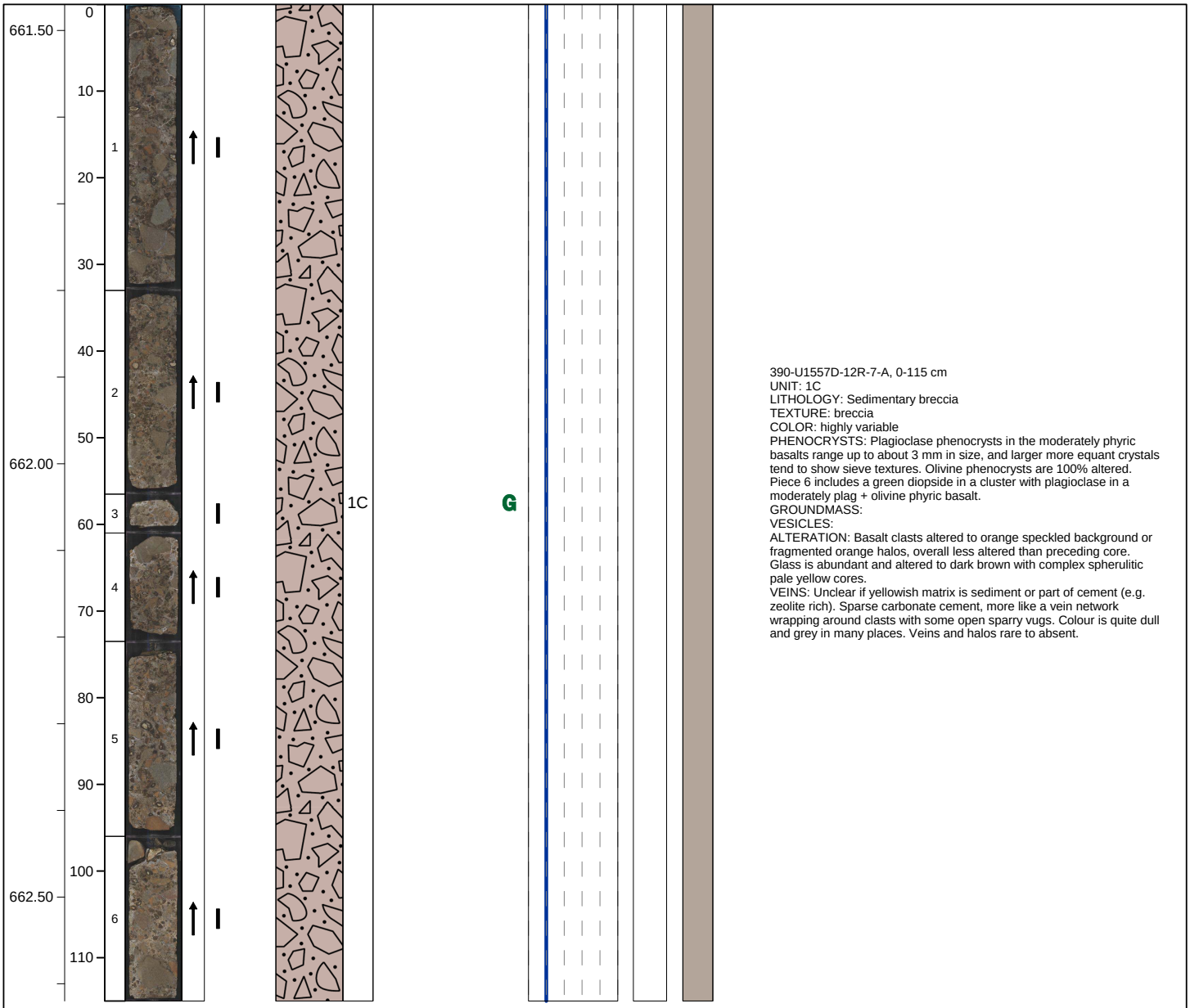
Hole 390-U1557D-12R Section 6, Top of Section: 660.06 m (CSF-A)



Description

390-U1557D-12R-6-A, 0-141 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Phenocrysts in the moderately phyric basalts range up to about 3 mm in size, and larger more equant crystals tend to show sieve textures. Olivine phenocrysts are 100% altered.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts altered to orange speckled background or intense orange colours. Glass is abundant and altered to dark brown with complex spherulitic pale yellow cores.
VEINS: Unclear if yellowish matrix is sediment or part of cement (e.g. zeolite rich). In one interval, the proportion of yellowish sediment/matrix (relative to fine grained basalt/glass clasts) increases suddenly across a sharp horizontal contact. Sparse carbonate cement, more like a vein network wrapping around clasts with some open sparry vugs. Colour is quite dull and grey in many places. Veins and halos rare to absent.

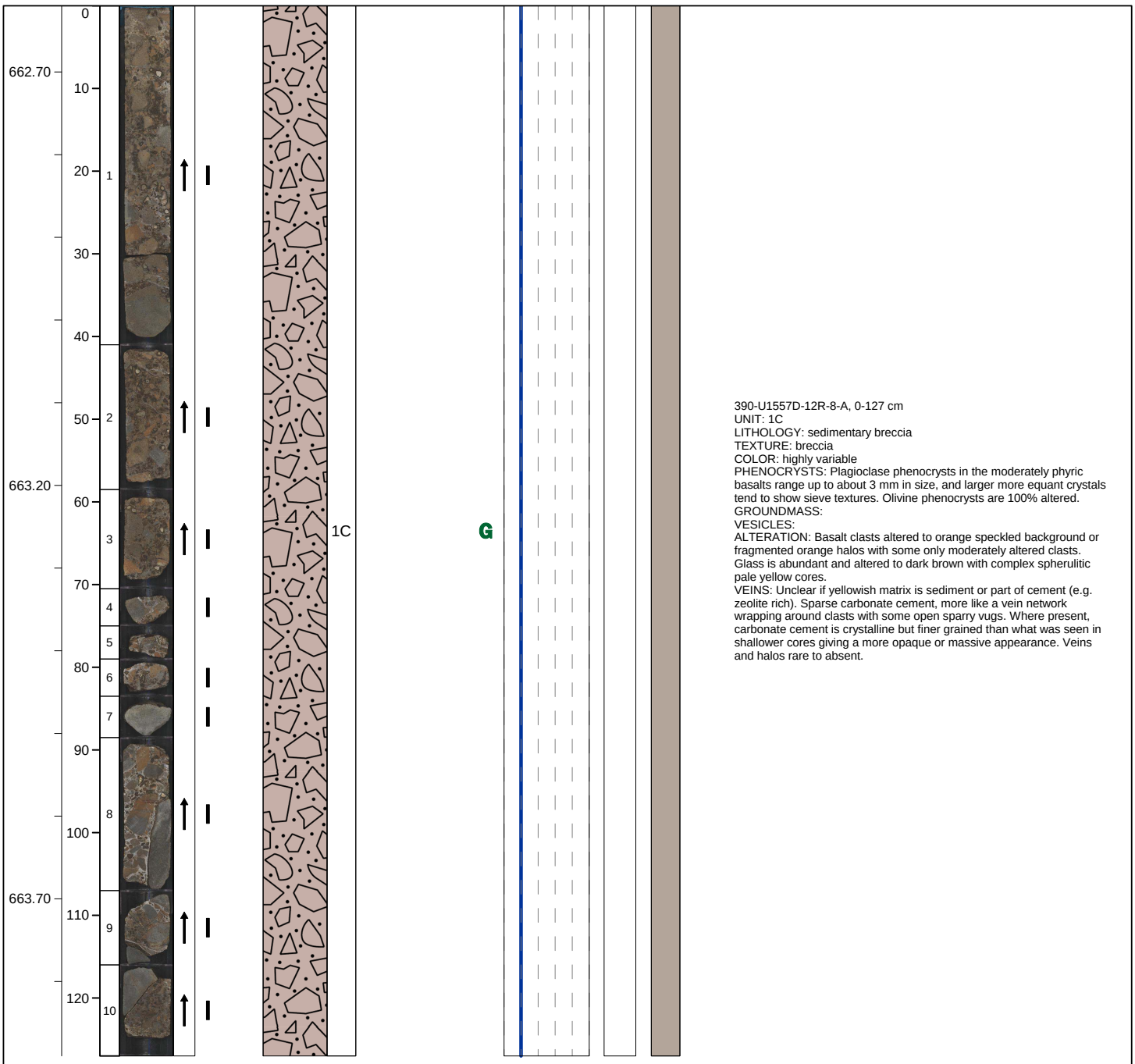
Hole 390-U1557D-12R Section 7, Top of Section: 661.47 m (CSF-A)



Description

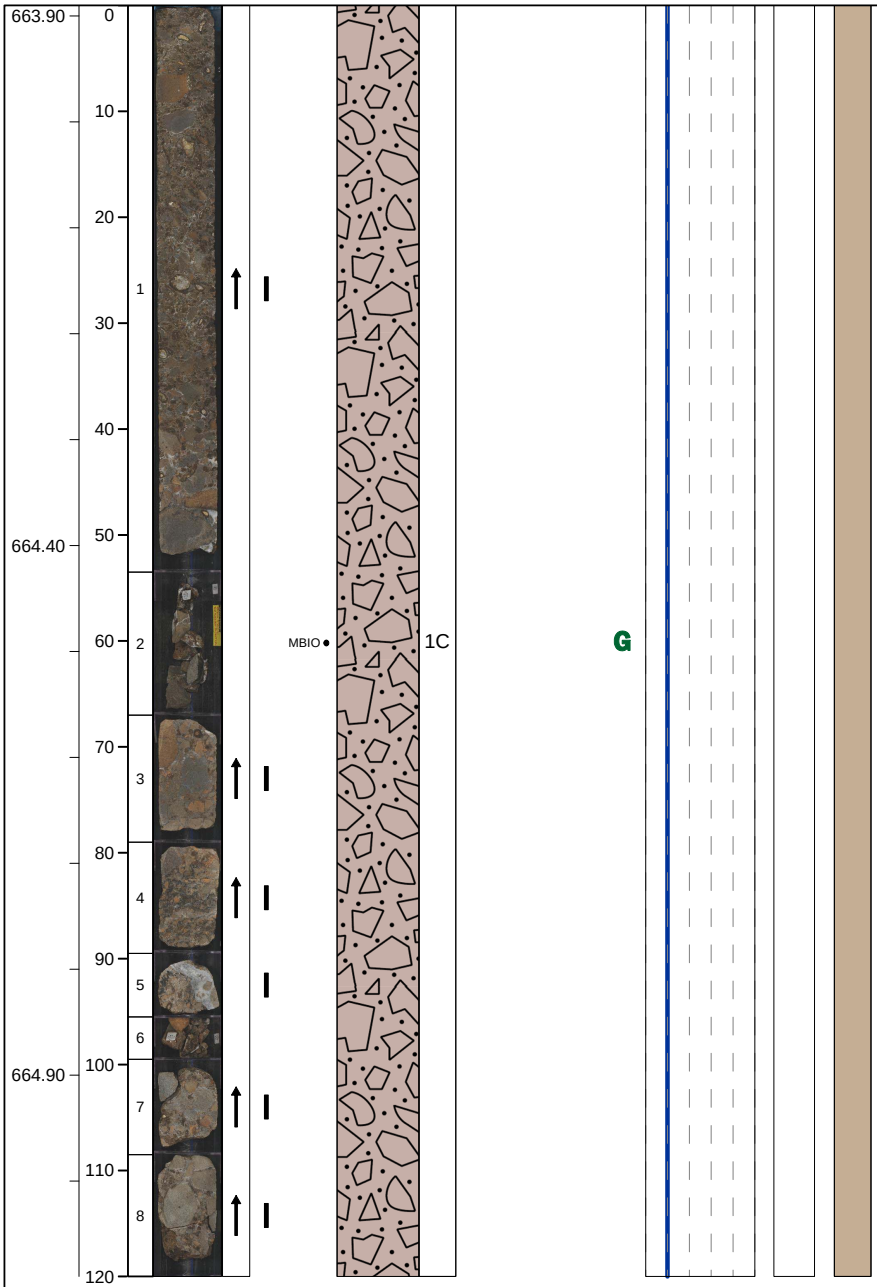
390-U1557D-12R-7-A, 0-115 cm
UNIT: 1C
LITHOLOGY: Sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Plagioclase phenocrysts in the moderately phyric basalts range up to about 3 mm in size, and larger more equant crystals tend to show sieve textures. Olivine phenocrysts are 100% altered. Piece 6 includes a green diopside in a cluster with plagioclase in a moderately plag + olivine phyric basalt.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts altered to orange speckled background or fragmented orange halos, overall less altered than preceding core. Glass is abundant and altered to dark brown with complex spherulitic pale yellow cores.
VEINS: Unclear if yellowish matrix is sediment or part of cement (e.g. zeolite rich). Sparse carbonate cement, more like a vein network wrapping around clasts with some open sparry vugs. Colour is quite dull and grey in many places. Veins and halos rare to absent.

Hole 390-U1557D-12R Section 8, Top of Section: 662.62 m (CSF-A)



390-U1557D-12R-8-A, 0-127 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Plagioclase phenocrysts in the moderately phyric basalts range up to about 3 mm in size, and larger more equant crystals tend to show sieve textures. Olivine phenocrysts are 100% altered.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts altered to orange speckled background or fragmented orange halos with some only moderately altered clasts. Glass is abundant and altered to dark brown with complex spherulitic pale yellow cores.
VEINS: Unclear if yellowish matrix is sediment or part of cement (e.g. zeolite rich). Sparse carbonate cement, more like a vein network wrapping around clasts with some open sparry vugs. Where present, carbonate cement is crystalline but finer grained than what was seen in shallower cores giving a more opaque or massive appearance. Veins and halos rare to absent.

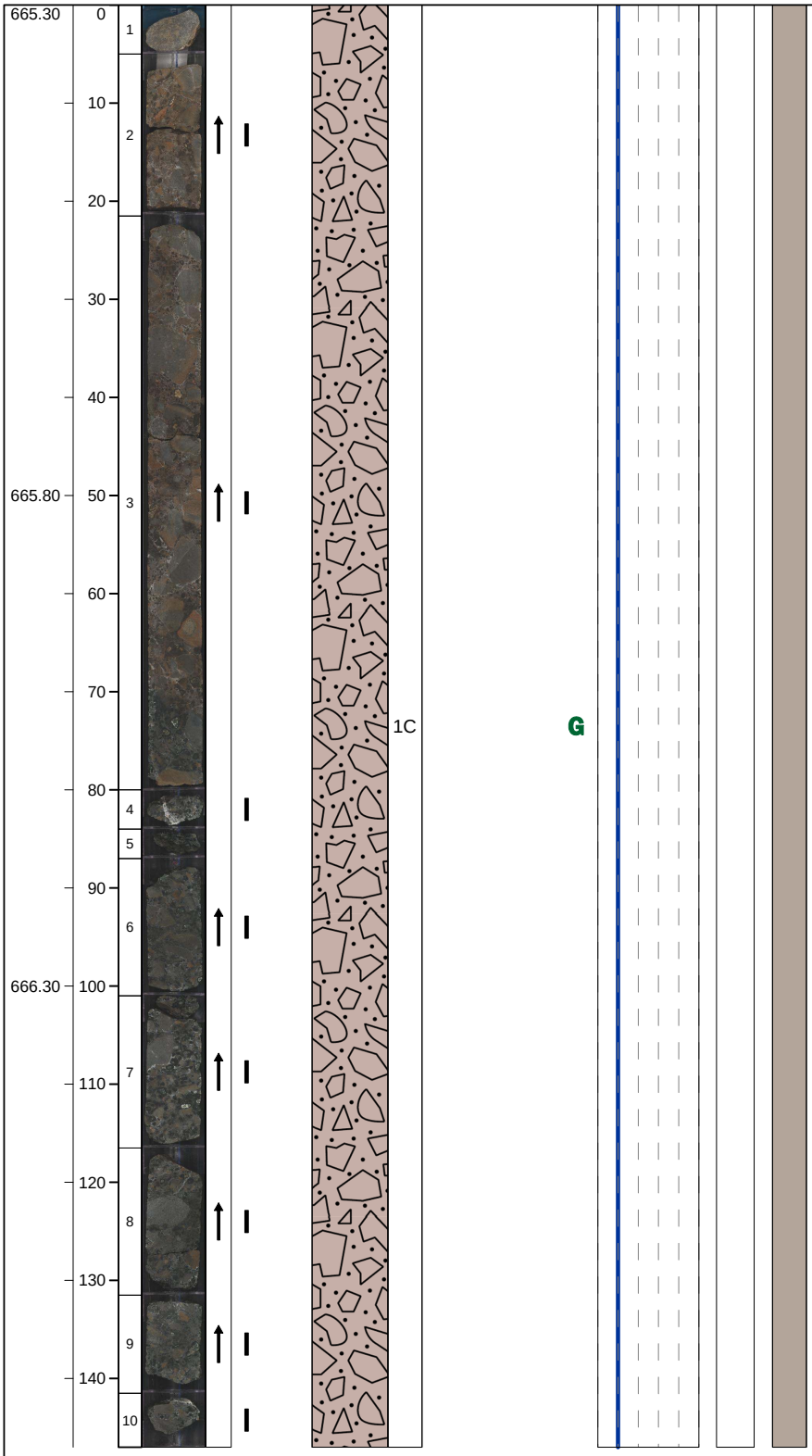
Hole 390-U1557D-12R Section 9, Top of Section: 663.89 m (CSF-A)



Description

390-U1557D-12R-9-A, 0-120 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: The clasts are predominantly aphyric or the alteration is so intense that identifying the phenocrysts is compromised.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts altered to orange speckled background or fragmented orange halos with some only moderately altered clasts. Glass is very abundant and altered to dark brown with complex spherulitic pale yellow cores.
VEINS: Unclear if yellowish matrix is sediment or part of cement (e.g. zeolite rich). Sparse carbonate cement cements both matrix and glass/basalt clasts. Cement is crystalline but relatively fine grained (intergrown with another mineral e.g. zeolite?) giving a more opaque or massive appearance. Yellow ?sediment is particularly abundant at the bottom of the section where is is abundantly included by black ?Fe oxides (recorded as a cement in the vein log). Veins and halos rare to absent.

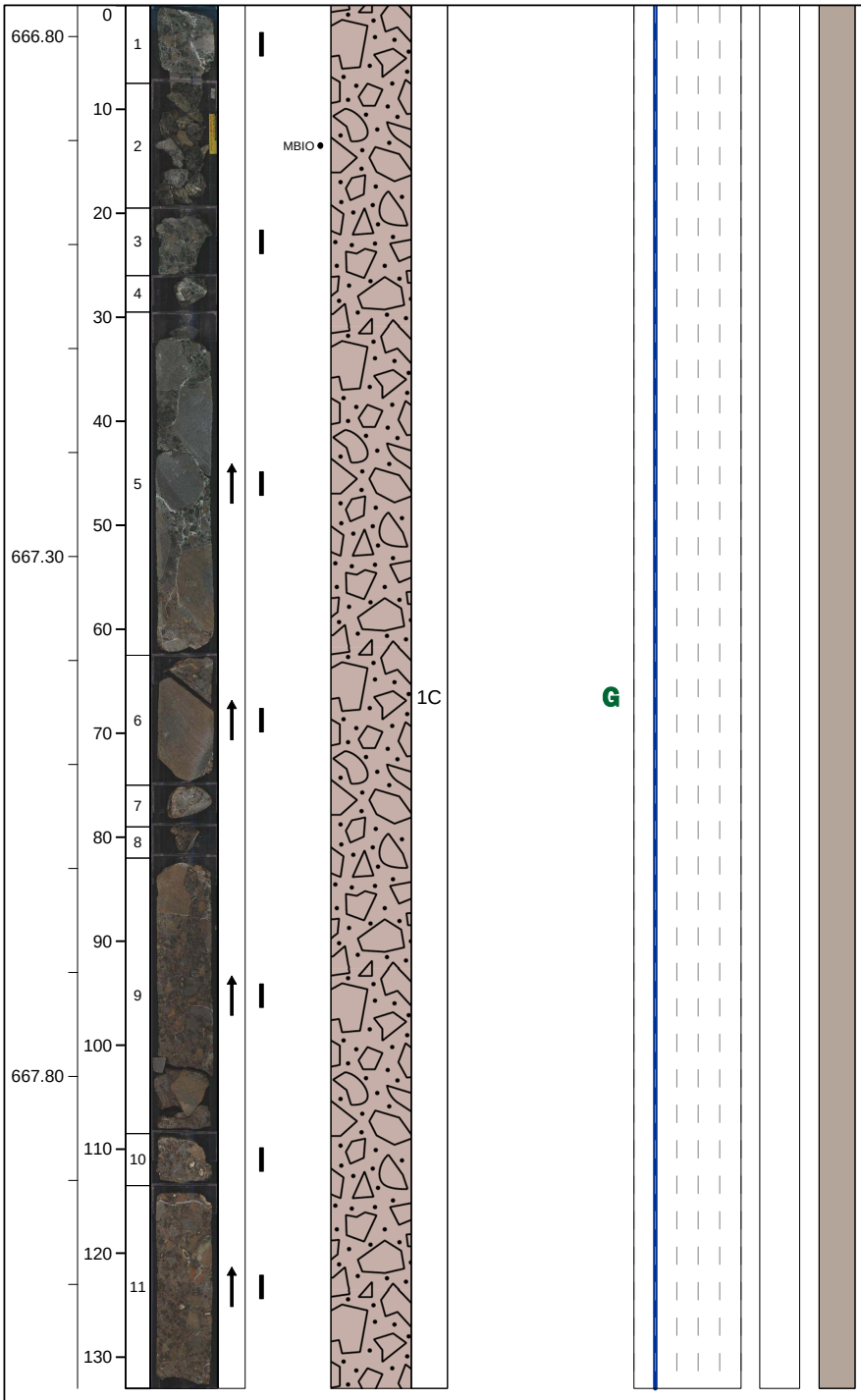
Hole 390-U1557D-13R Section 1, Top of Section: 665.3 m (CSF-A)



Description

390-U1557D-13R-1-A, 0-147 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: The clasts are predominantly aphyric but a few are plagioclase and/or olivine phyric. The olivine is 100% altered. The plagioclase crystals are < 1mm and appear unaltered. One macrocryst, ~ 3 mm, observed in one clast.
GROUNDMASS:
VESICLES:
ALTERATION: Section shows sharp transition from orange alteration to dark green alteration (68-73cm). Glass mirrors the transition; altered to dark brown in the upper part and dark green in the lower part of the section. Orange altered basalt clasts in upper part show notably dark/dull brownish colours. Green alteration in lower part overprints variably devloped orange alteration from speckled background to fragments of intense (?pillow edge) orange halo, superimposing green colours resulting in brownish colours.
VEINS: Matrix is difficult to distinguish from sediment and cement as in preceding core (12R). Cement is bright white with much less open space and free growing crystals resulting in the appearance of lower crystallinity (similar to other green zones) compared to sparry cements seen elsewhere in hole - actually just less eudhedral/smaller grainsize of crystals. Cement sparse throughout the section, almost a vein network through the matrix, occasionally cutting clasts.

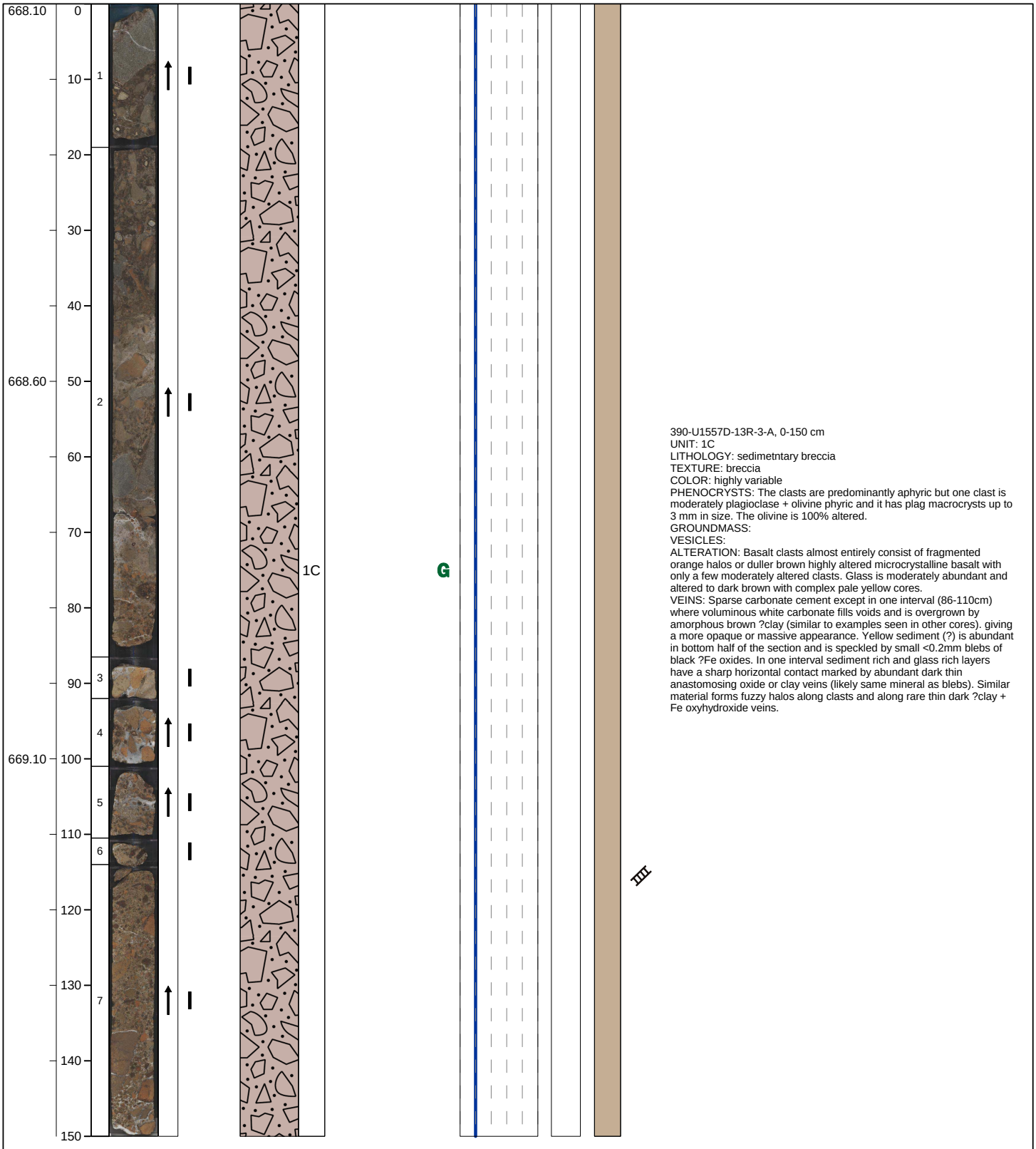
Hole 390-U1557D-13R Section 2, Top of Section: 666.77 m (CSF-A)



Description

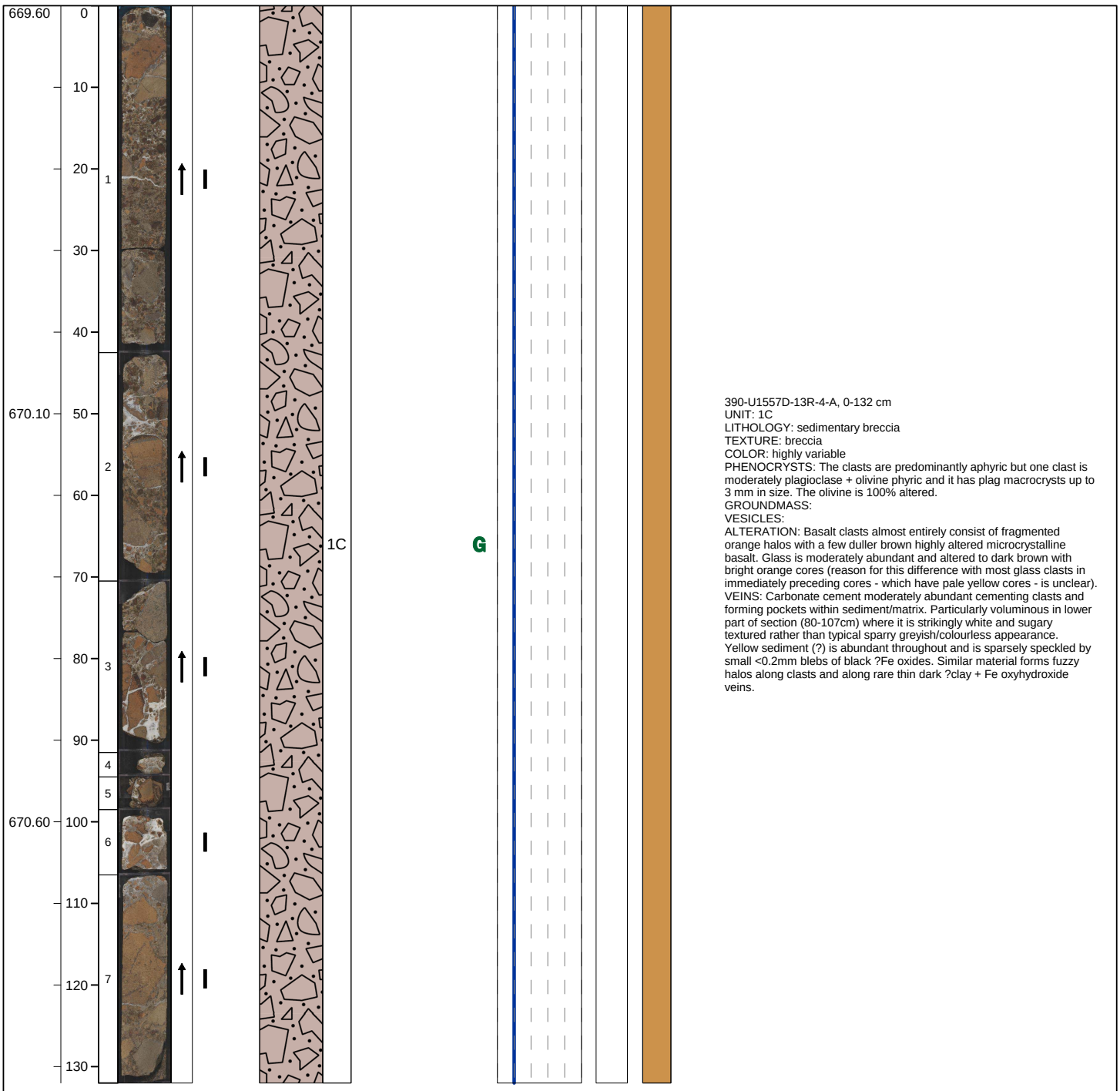
390-U1557D-13R-2-A, 0-133 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: The clasts are predominantly aphyric but a few are plagioclase and/or olivine phyric. The olivine is 100% altered. The plagioclase crystals are < 1mm and appear unaltered.
GROUNDMASS:
VESICLES:
ALTERATION: Section shows transition back to orange alteration from dark green alteration (52-55cm) across what appears to be a sharp front. Glass quite abundant and alteration colours mirror the transition. Matrix is difficult to distinguish from sediment and cement in this section. Similar variation in colours and superimposition of alteration to preceding section.
VEINS: Cement sparse throughout the section, almost a vein network through the matrix, occasionally cutting clasts. Veins otherwise rare. Some pale green vesicle filling minerals (30-36cm).

Hole 390-U1557D-13R Section 3, Top of Section: 668.1 m (CSF-A)



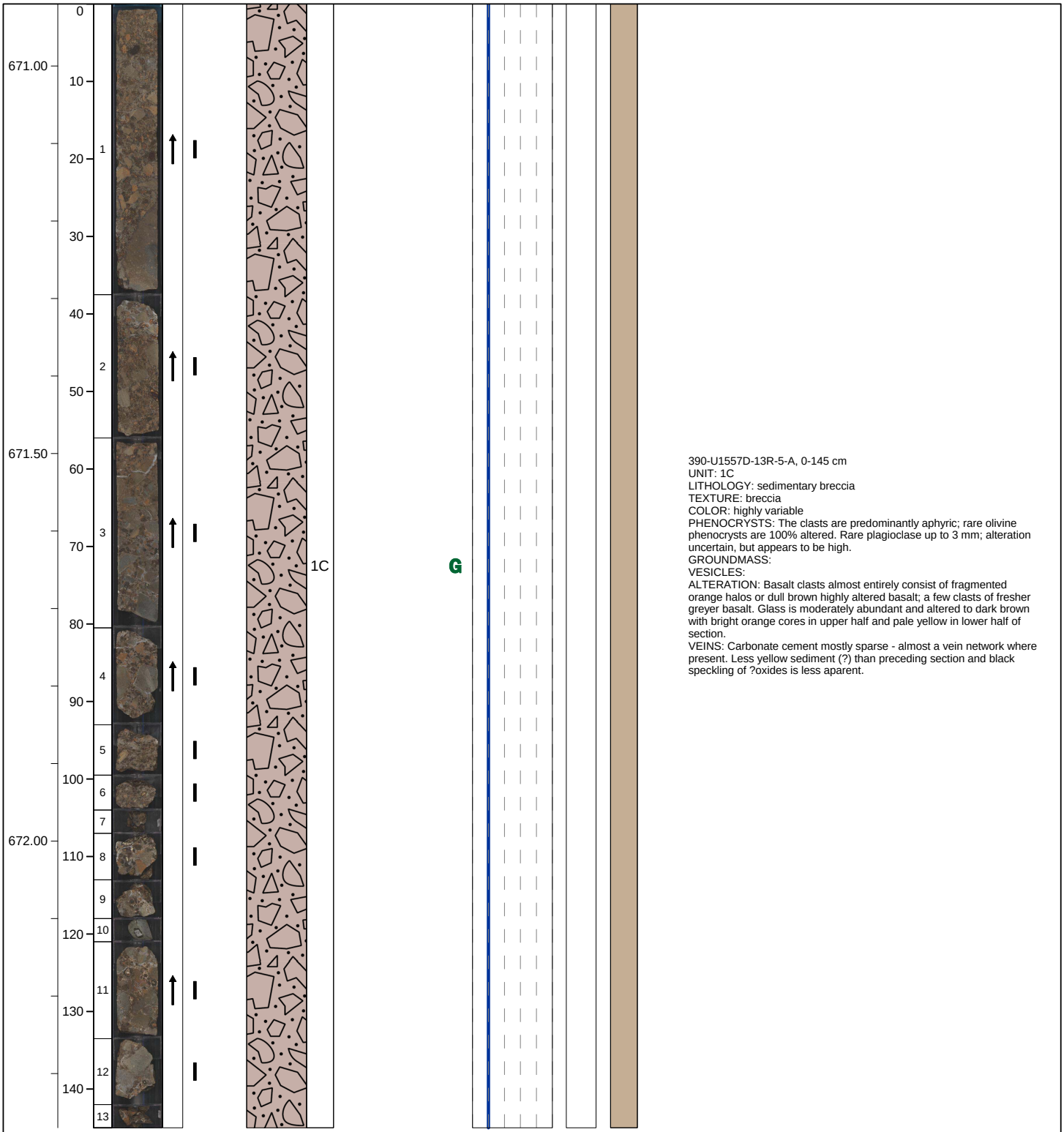
390-U1557D-13R-3-A, 0-150 cm
UNIT: 1C
LITHOLOGY: sedimetntary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: The clasts are predominantly aphyric but one clast is moderately plagioclase + olivine phyric and it has plag macrocrysts up to 3 mm in size. The olivine is 100% altered.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely consist of fragmented orange halos or duller brown highly altered microcrystalline basalt with only a few moderately altered clasts. Glass is moderately abundant and altered to dark brown with complex pale yellow cores.
VEINS: Sparse carbonate cement except in one interval (86-110cm) where voluminous white carbonate fills voids and is overgrown by amorphous brown ?clay (similar to examples seen in other cores). giving a more opaque or massive appearance. Yellow sediment (?) is abundant in bottom half of the section and is speckled by small <0.2mm blebs of black ?Fe oxides. In one interval sediment rich and glass rich layers have a sharp horizontal contact marked by abundant dark thin anastomosing oxide or clay veins (likely same mineral as blebs). Similar material forms fuzzy halos along clasts and along rare thin dark ?clay + Fe oxyhydroxide veins.

Hole 390-U1557D-13R Section 4, Top of Section: 669.6 m (CSF-A)



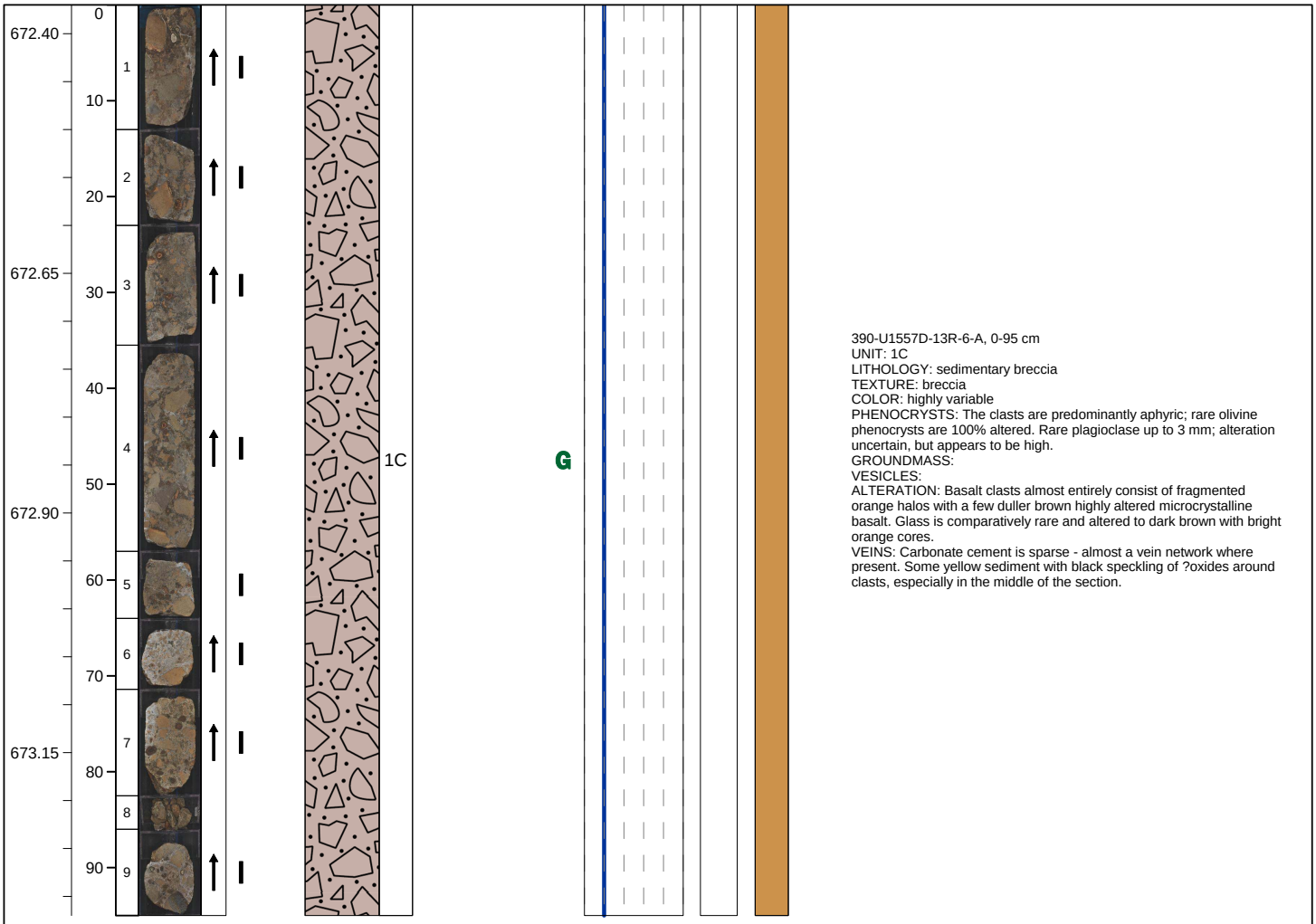
390-U1557D-13R-4-A, 0-132 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: The clasts are predominantly aphyric but one clast is moderately plagioclase + olivine phyric and it has plag macrocrysts up to 3 mm in size. The olivine is 100% altered.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely consist of fragmented orange halos with a few duller brown highly altered microcrystalline basalt. Glass is moderately abundant and altered to dark brown with bright orange cores (reason for this difference with most glass clasts in immediately preceding cores - which have pale yellow cores - is unclear).
VEINS: Carbonate cement moderately abundant cementing clasts and forming pockets within sediment/matrix. Particularly voluminous in lower part of section (80-107cm) where it is strikingly white and sugary textured rather than typical sparry greyish/colourless appearance. Yellow sediment (?) is abundant throughout and is sparsely speckled by small <0.2mm blebs of black ?Fe oxides. Similar material forms fuzzy halos along clasts and along rare thin dark ?clay + Fe oxyhydroxide veins.

Hole 390-U1557D-13R Section 5, Top of Section: 670.92 m (CSF-A)



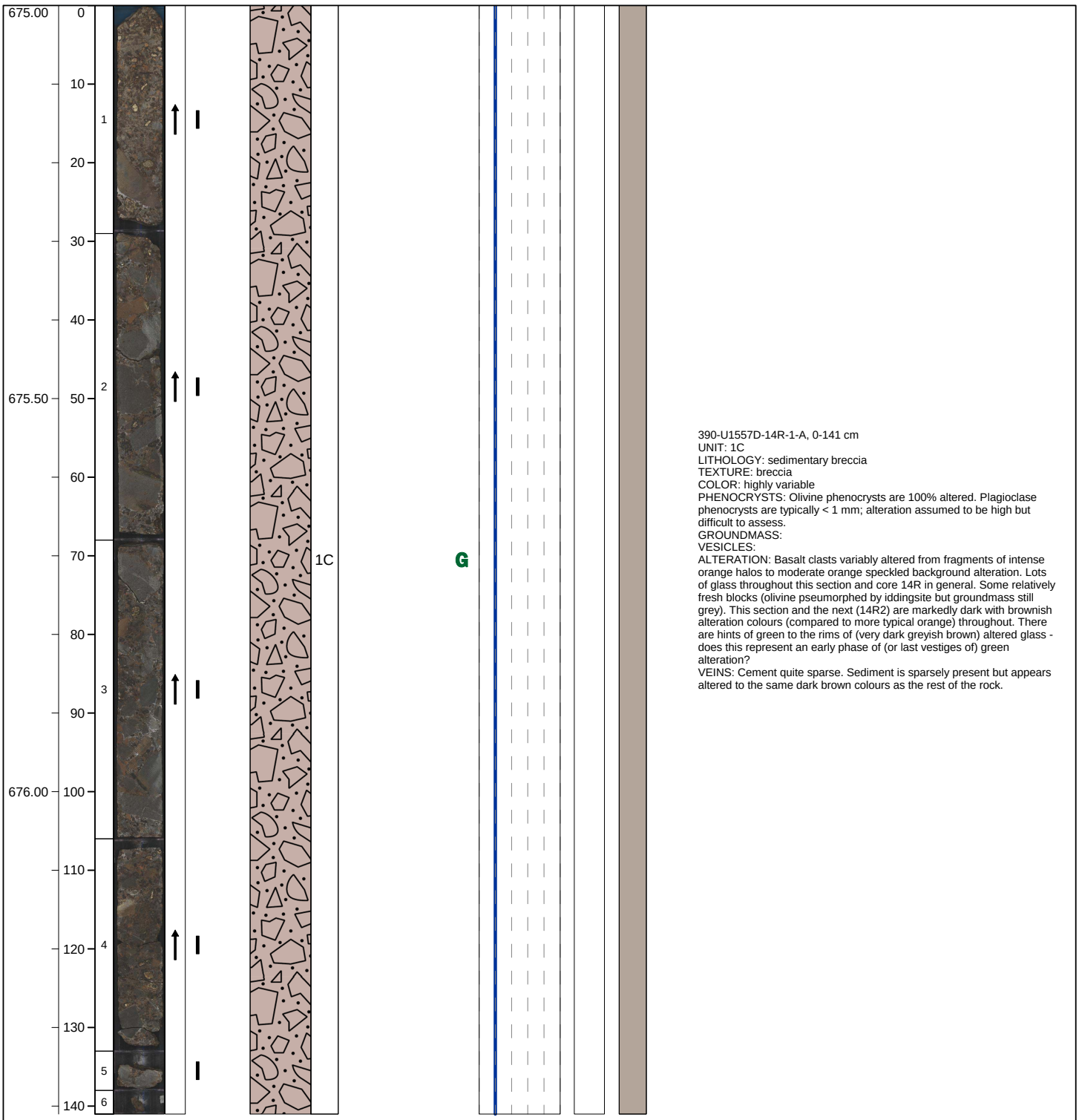
390-U1557D-13R-5-A, 0-145 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: The clasts are predominantly aphyric; rare olivine phenocrysts are 100% altered. Rare plagioclase up to 3 mm; alteration uncertain, but appears to be high.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely consist of fragmented orange halos or dull brown highly altered basalt; a few clasts of fresher greyer basalt. Glass is moderately abundant and altered to dark brown with bright orange cores in upper half and pale yellow in lower half of section.
VEINS: Carbonate cement mostly sparse - almost a vein network where present. Less yellow sediment (?) than preceding section and black speckling of ?oxides is less aparent.

Hole 390-U1557D-13R Section 6, Top of Section: 672.37 m (CSF-A)



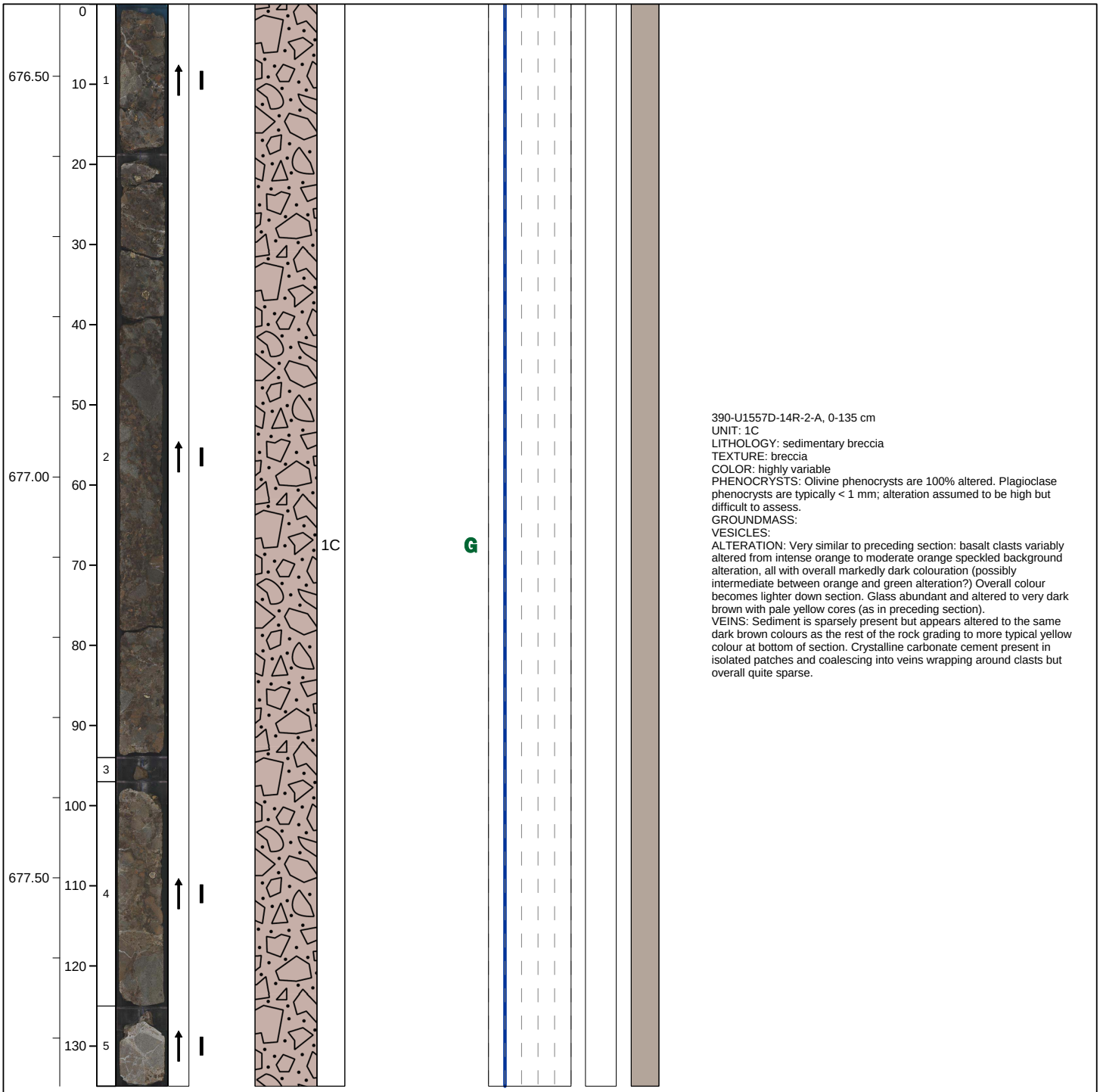
390-U1557D-13R-6-A, 0-95 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: The clasts are predominantly aphyric; rare olivine phenocrysts are 100% altered. Rare plagioclase up to 3 mm; alteration uncertain, but appears to be high.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts almost entirely consist of fragmented orange halos with a few duller brown highly altered microcrystalline basalt. Glass is comparatively rare and altered to dark brown with bright orange cores.
VEINS: Carbonate cement is sparse - almost a vein network where present. Some yellow sediment with black speckling of ?oxides around clasts, especially in the middle of the section.

Hole 390-U1557D-14R Section 1, Top of Section: 675.0 m (CSF-A)



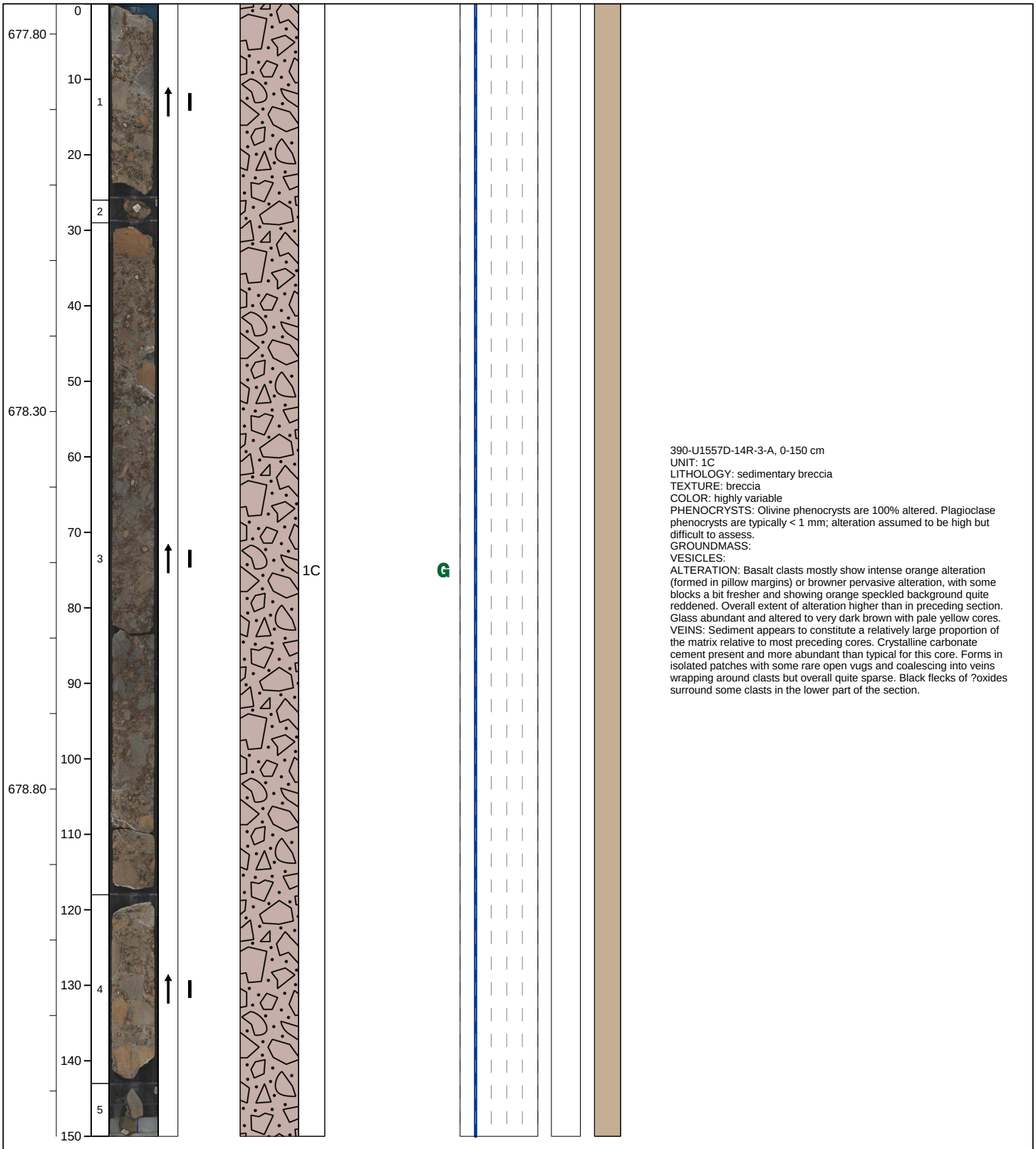
390-U1557D-14R-1-A, 0-141 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts are 100% altered. Plagioclase phenocrysts are typically < 1 mm; alteration assumed to be high but difficult to assess.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts variably altered from fragments of intense orange halos to moderate orange speckled background alteration. Lots of glass throughout this section and core 14R in general. Some relatively fresh blocks (olivine pseumorphed by iddingsite but groundmass still grey). This section and the next (14R2) are markedly dark with brownish alteration colours (compared to more typical orange) throughout. There are hints of green to the rims of (very dark greyish brown) altered glass - does this represent an early phase of (or last vestiges of) green alteration?
VEINS: Cement quite sparse. Sediment is sparsely present but appears altered to the same dark brown colours as the rest of the rock.

Hole 390-U1557D-14R Section 2, Top of Section: 676.41 m (CSF-A)



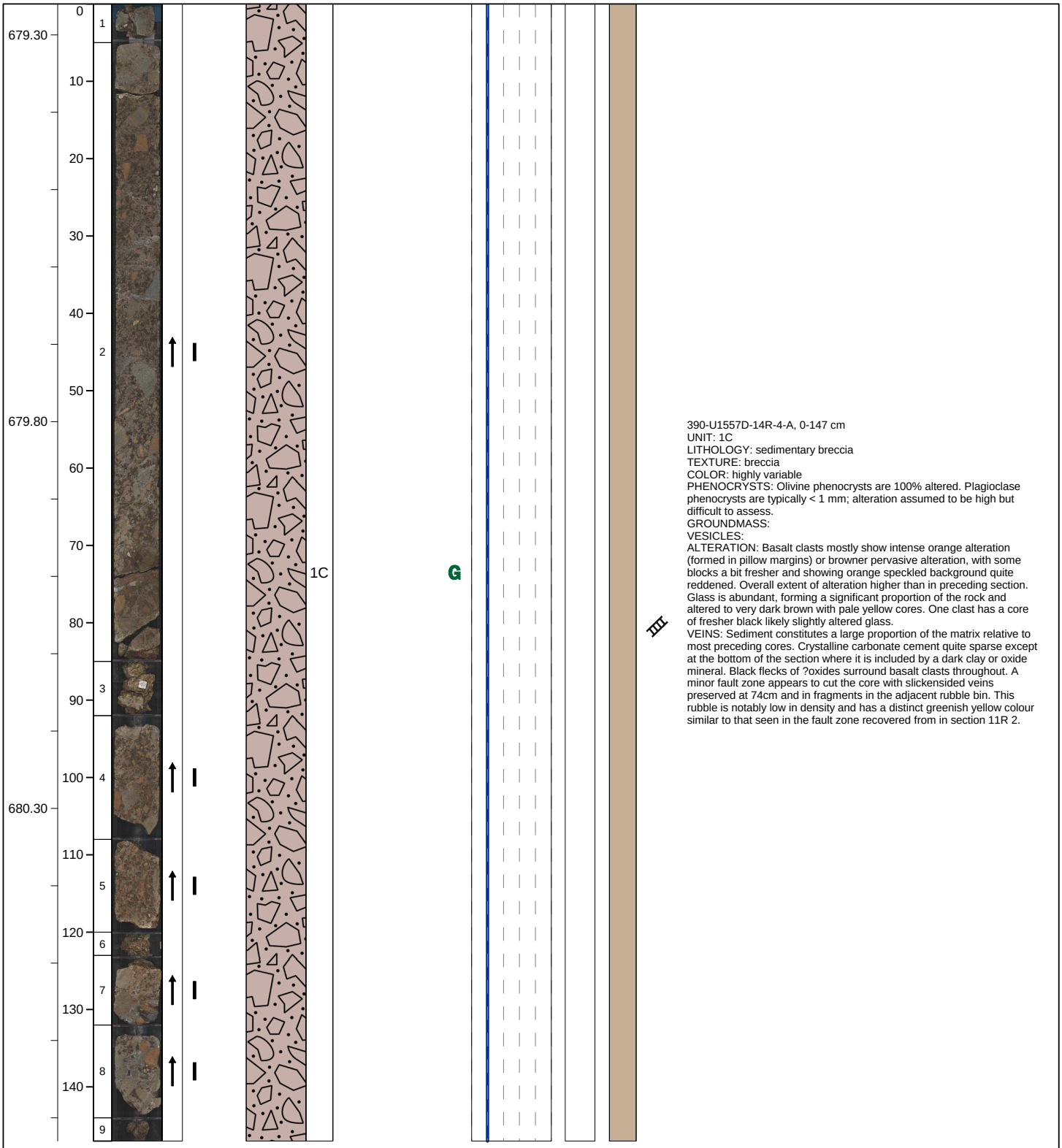
390-U1557D-14R-2-A, 0-135 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts are 100% altered. Plagioclase phenocrysts are typically < 1 mm; alteration assumed to be high but difficult to assess.
GROUNDMASS:
VESICLES:
ALTERATION: Very similar to preceding section: basalt clasts variably altered from intense orange to moderate orange speckled background alteration, all with overall markedly dark colouration (possibly intermediate between orange and green alteration?) Overall colour becomes lighter down section. Glass abundant and altered to very dark brown with pale yellow cores (as in preceding section).
VEINS: Sediment is sparsely present but appears altered to the same dark brown colours as the rest of the rock grading to more typical yellow colour at bottom of section. Crystalline carbonate cement present in isolated patches and coalescing into veins wrapping around clasts but overall quite sparse.

Hole 390-U1557D-14R Section 3, Top of Section: 677.76 m (CSF-A)



390-U1557D-14R-3-A, 0-150 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts are 100% altered. Plagioclase phenocrysts are typically < 1 mm; alteration assumed to be high but difficult to assess.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts mostly show intense orange alteration (formed in pillow margins) or browner pervasive alteration, with some blocks a bit fresher and showing orange speckled background quite reddened. Overall extent of alteration higher than in preceding section. Glass abundant and altered to very dark brown with pale yellow cores.
VEINS: Sediment appears to constitute a relatively large proportion of the matrix relative to most preceding cores. Crystalline carbonate cement present and more abundant than typical for this core. Forms in isolated patches with some rare open vugs and coalescing into veins wrapping around clasts but overall quite sparse. Black flecks of ?oxides surround some clasts in the lower part of the section.

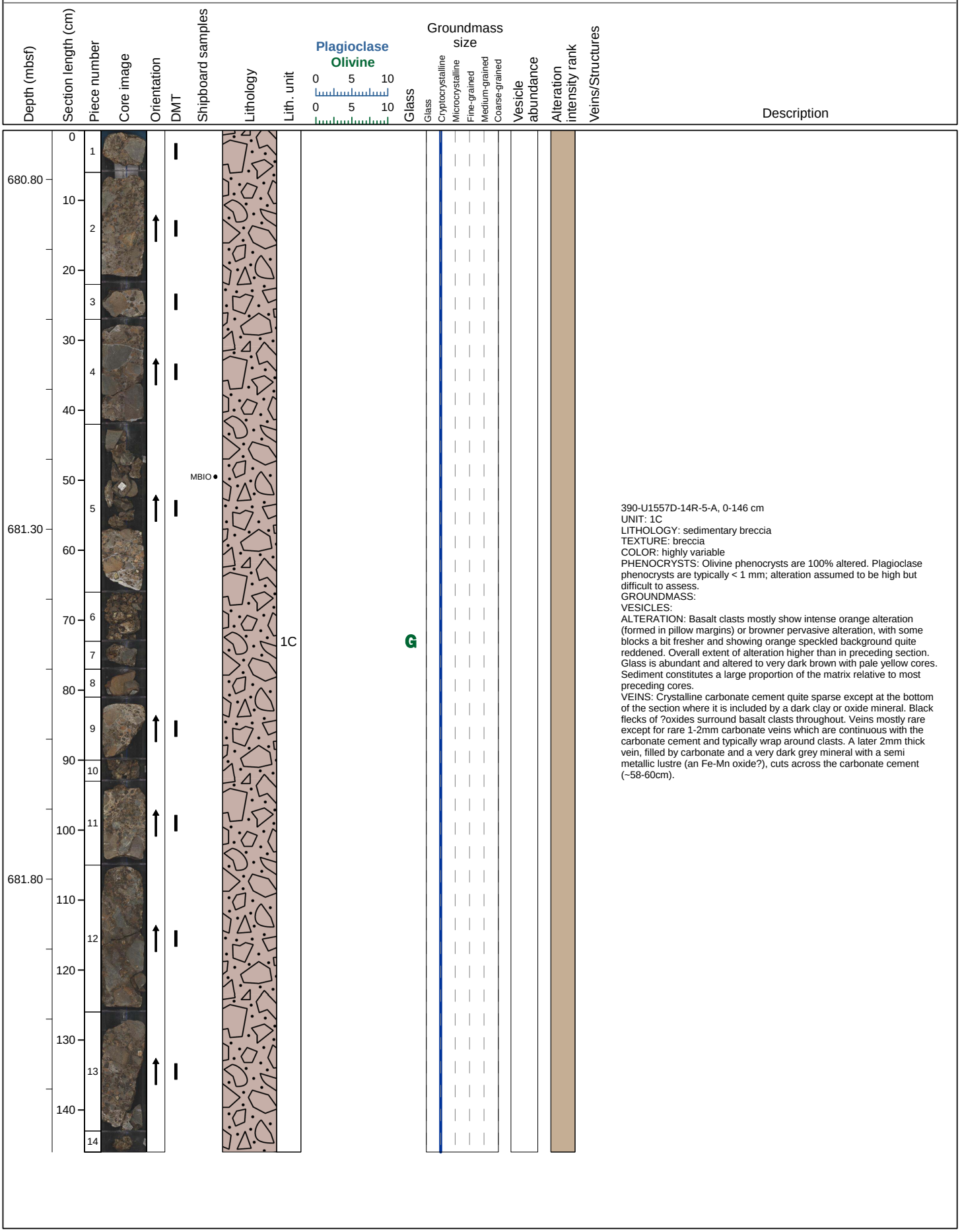
Hole 390-U1557D-14R Section 4, Top of Section: 679.26 m (CSF-A)



Description

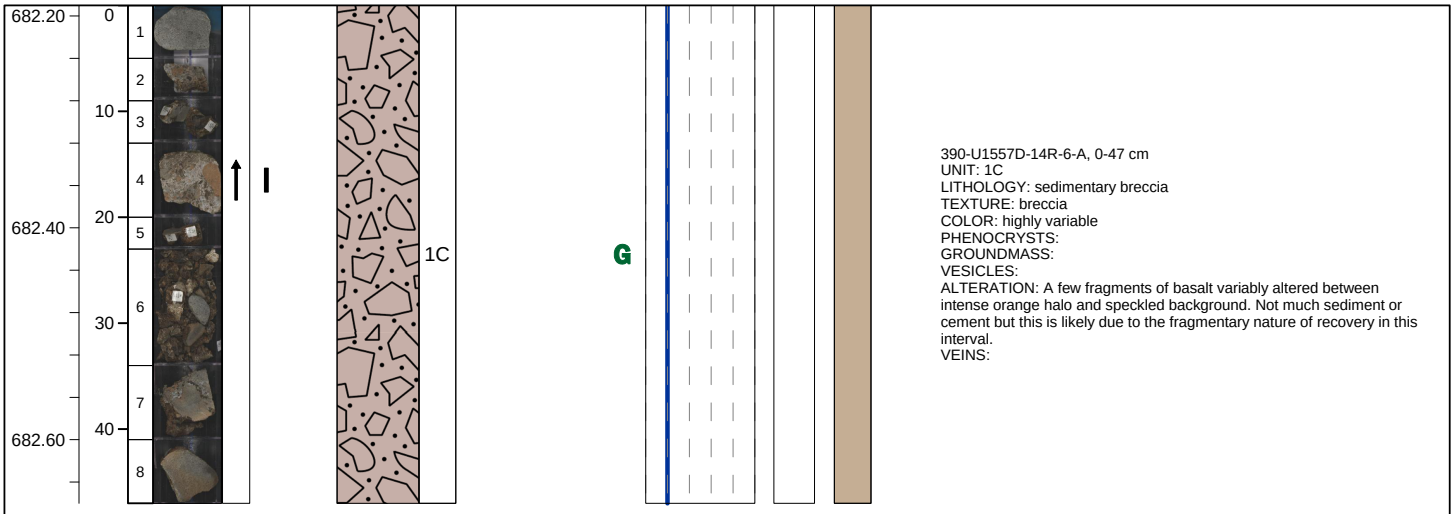
390-U1557D-14R-4-A, 0-147 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts are 100% altered. Plagioclase phenocrysts are typically < 1 mm; alteration assumed to be high but difficult to assess.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts mostly show intense orange alteration (formed in pillow margins) or browner pervasive alteration, with some blocks a bit fresher and showing orange speckled background quite reddened. Overall extent of alteration higher than in preceding section. Glass is abundant, forming a significant proportion of the rock and altered to very dark brown with pale yellow cores. One clast has a core of fresher black likely slightly altered glass.
VEINS: Sediment constitutes a large proportion of the matrix relative to most preceding cores. Crystalline carbonate cement quite sparse except at the bottom of the section where it is included by a dark clay or oxide mineral. Black flecks of ?oxides surround basalt clasts throughout. A minor fault zone appears to cut the core with slickensided veins preserved at 74cm and in fragments in the adjacent rubble bin. This rubble is notably low in density and has a distinct greenish yellow colour similar to that seen in the fault zone recovered from in section 11R 2.

Hole 390-U1557D-14R Section 5, Top of Section: 680.73 m (CSF-A)



390-U1557D-14R-5-A, 0-146 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS: Olivine phenocrysts are 100% altered. Plagioclase phenocrysts are typically < 1 mm; alteration assumed to be high but difficult to assess.
GROUNDMASS:
VESICLES:
ALTERATION: Basalt clasts mostly show intense orange alteration (formed in pillow margins) or browner pervasive alteration, with some blocks a bit fresher and showing orange speckled background quite reddened. Overall extent of alteration higher than in preceding section. Glass is abundant and altered to very dark brown with pale yellow cores. Sediment constitutes a large proportion of the matrix relative to most preceding cores.
VEINS: Crystalline carbonate cement quite sparse except at the bottom of the section where it is included by a dark clay or oxide mineral. Black flecks of ?oxides surround basalt clasts throughout. Veins mostly rare except for rare 1-2mm carbonate veins which are continuous with the carbonate cement and typically wrap around clasts. A later 2mm thick vein, filled by carbonate and a very dark grey mineral with a semi metallic lustre (an Fe-Mn oxide?), cuts across the carbonate cement (~58-60cm).

Hole 390-U1557D-14R Section 6, Top of Section: 682.19 m (CSF-A)



Description

390-U1557D-14R-6-A, 0-47 cm
UNIT: 1C
LITHOLOGY: sedimentary breccia
TEXTURE: breccia
COLOR: highly variable
PHENOCRYSTS:
GROUNDMASS:
VESICLES:
ALTERATION: A few fragments of basalt variably altered between intense orange halo and speckled background. Not much sediment or cement but this is likely due to the fragmentary nature of recovery in this interval.
VEINS: