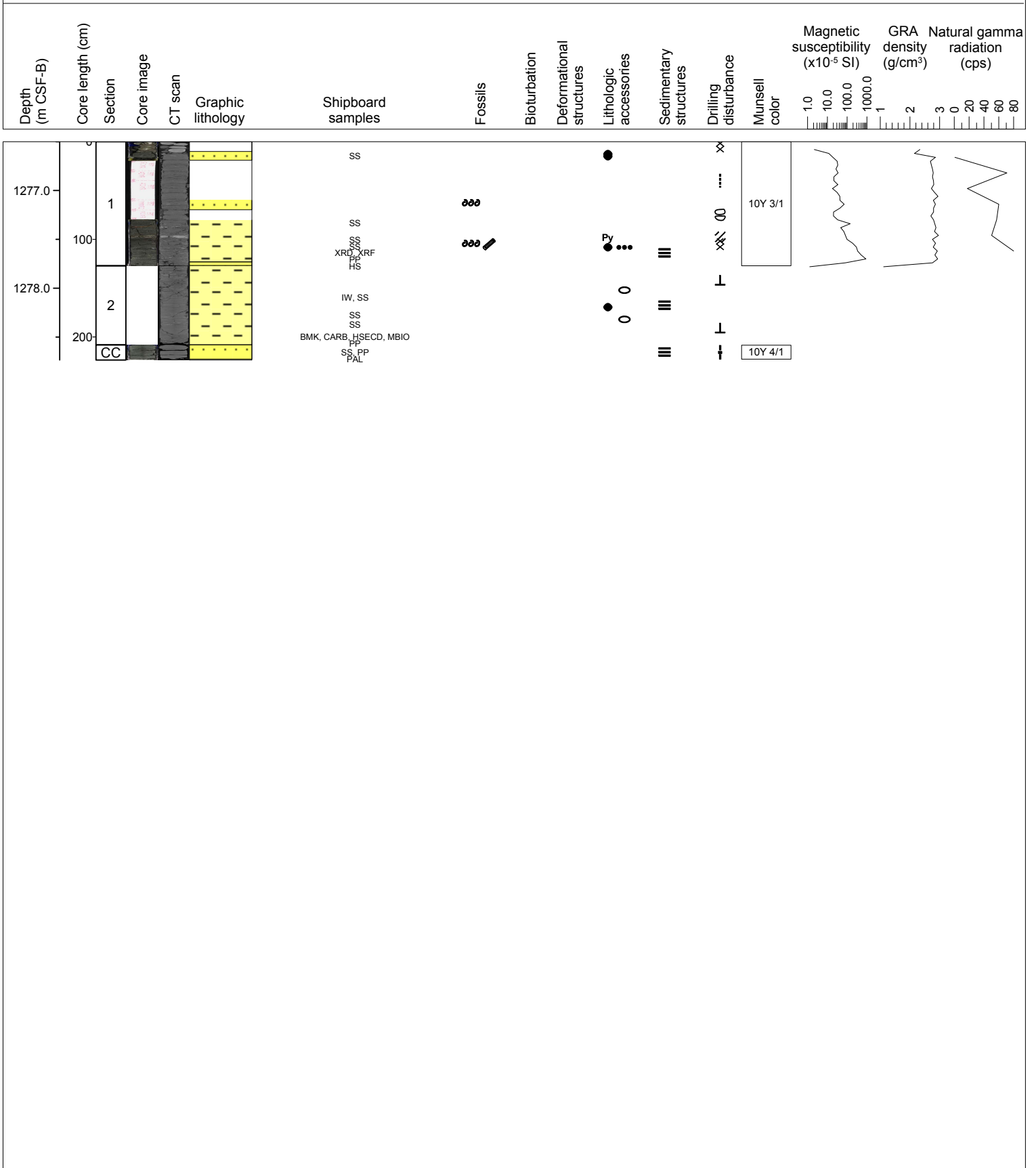


## Hole C0020A Core 1R, interval 1276.5-1278.735 m (core depth below seafloor)

Core 1 consists of fine to medium dolomitic sandstone intercalated with thin siltstone layer. Grains are subangular to subrounded and moderately sorted. Some fossil including shell fragments and wood fragments are observed. Drilling breccia at the top and the rest is slightly fractured.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.

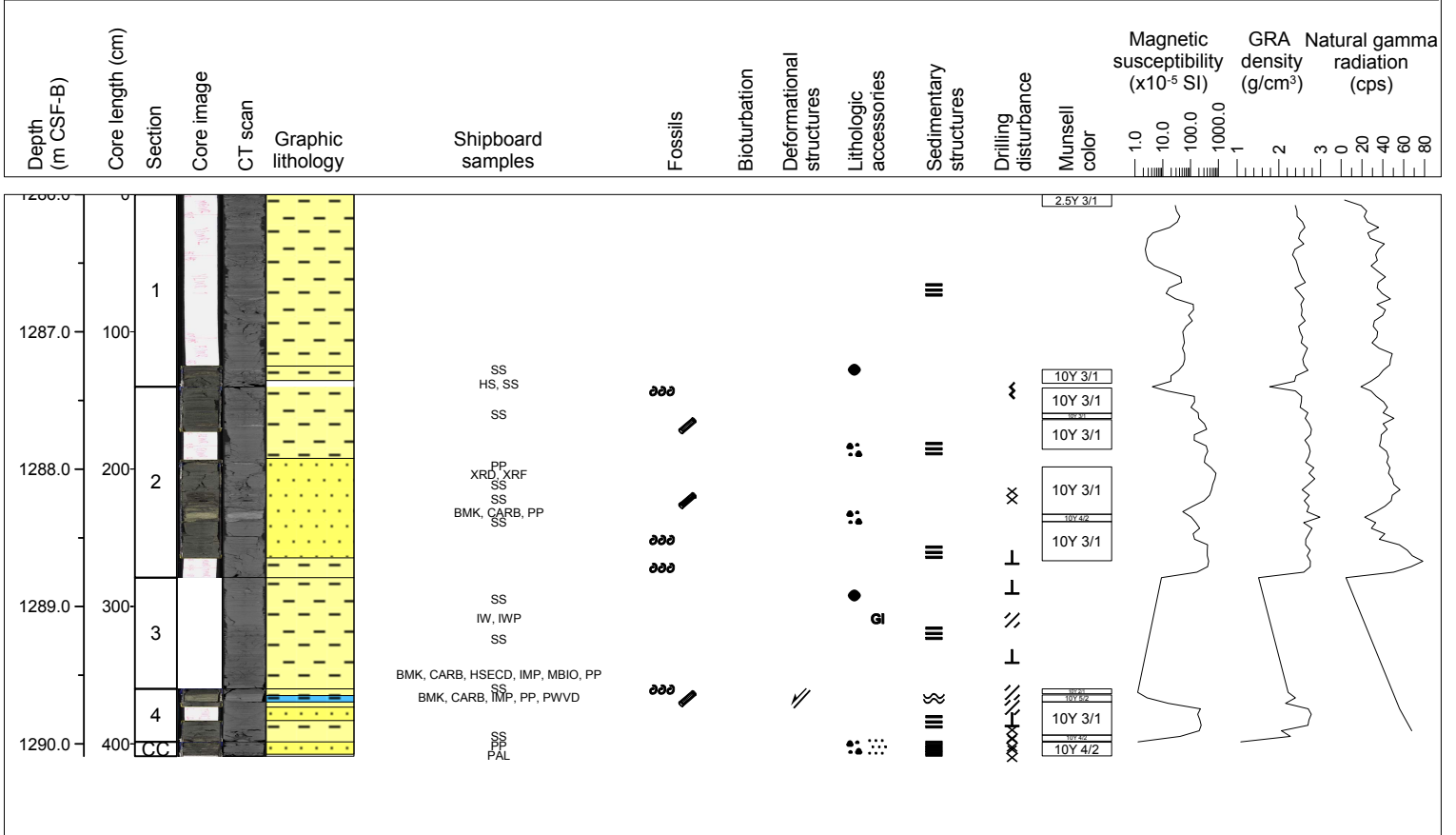


## Hole C0020A Core 2R, interval 1286-1290.09 m (core depth below seafloor)

Fine to medium sandstone intercalated with thin siltstone layer. Sandstones are dolomitic and glauconitic (transported) at some parts. Grains are subangular to subrounded and moderate to poorly sorted. Shell fragment, organic material and wood fragments are common while only a few nannofossils are observed.

Section 4 (4-9.5 cm): package of reworked shale and sandstone. Moderately fractured at the top and highly fractured in the middle of the core.

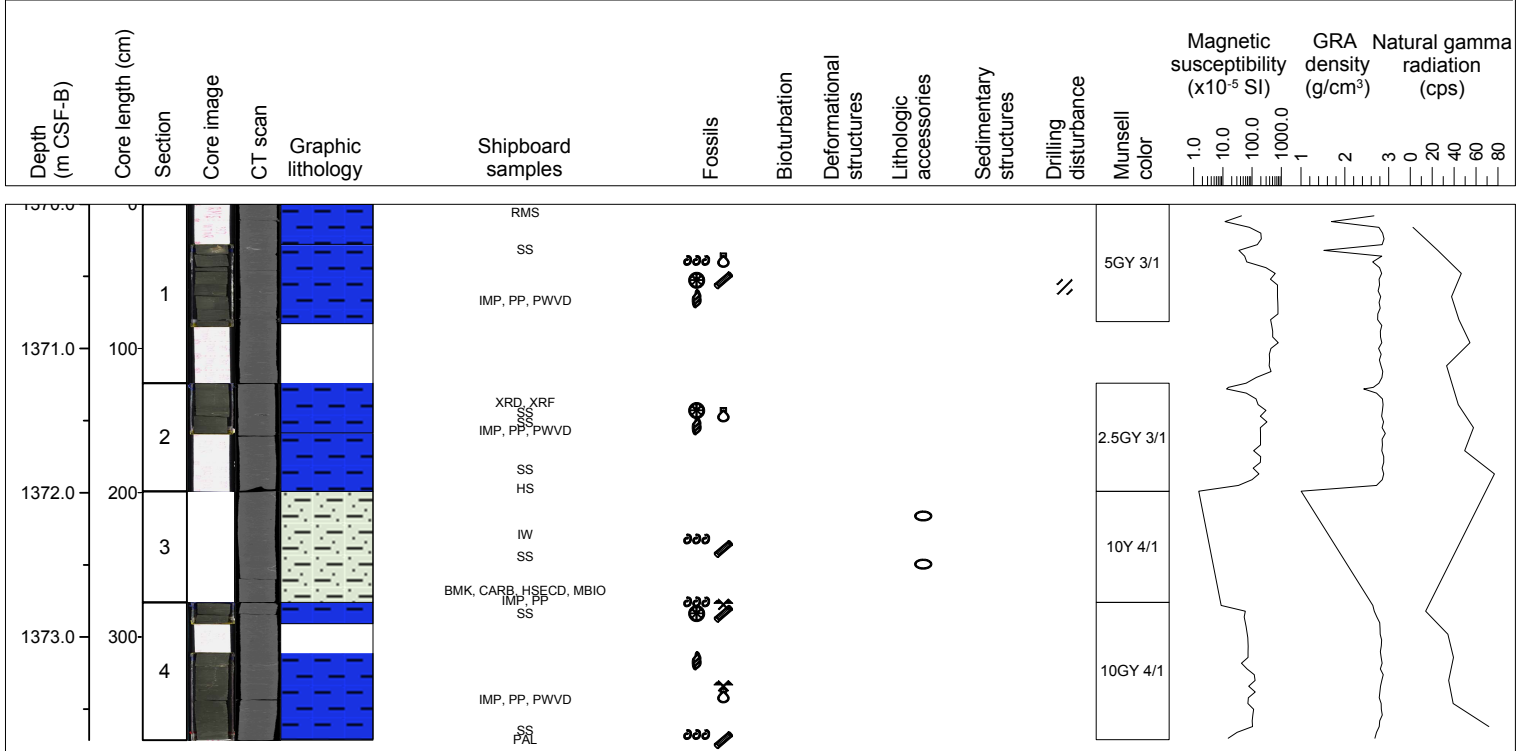
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 3R, interval 1370-1373.715 m (core depth below seafloor)

Core 3 is dominated by clayey siltstone with grains subangular to subrounded and moderate to poorly sorted. Shell fragments are the most common fossil and are scattered throughout all the core. Plant remains are observed in sections 1, 3 and 4. Diatoms appear in the upper part. Bivalves and sponge spicules are more common in the lower part and only a few gastropods are visible. Section 1 is slightly fractured.

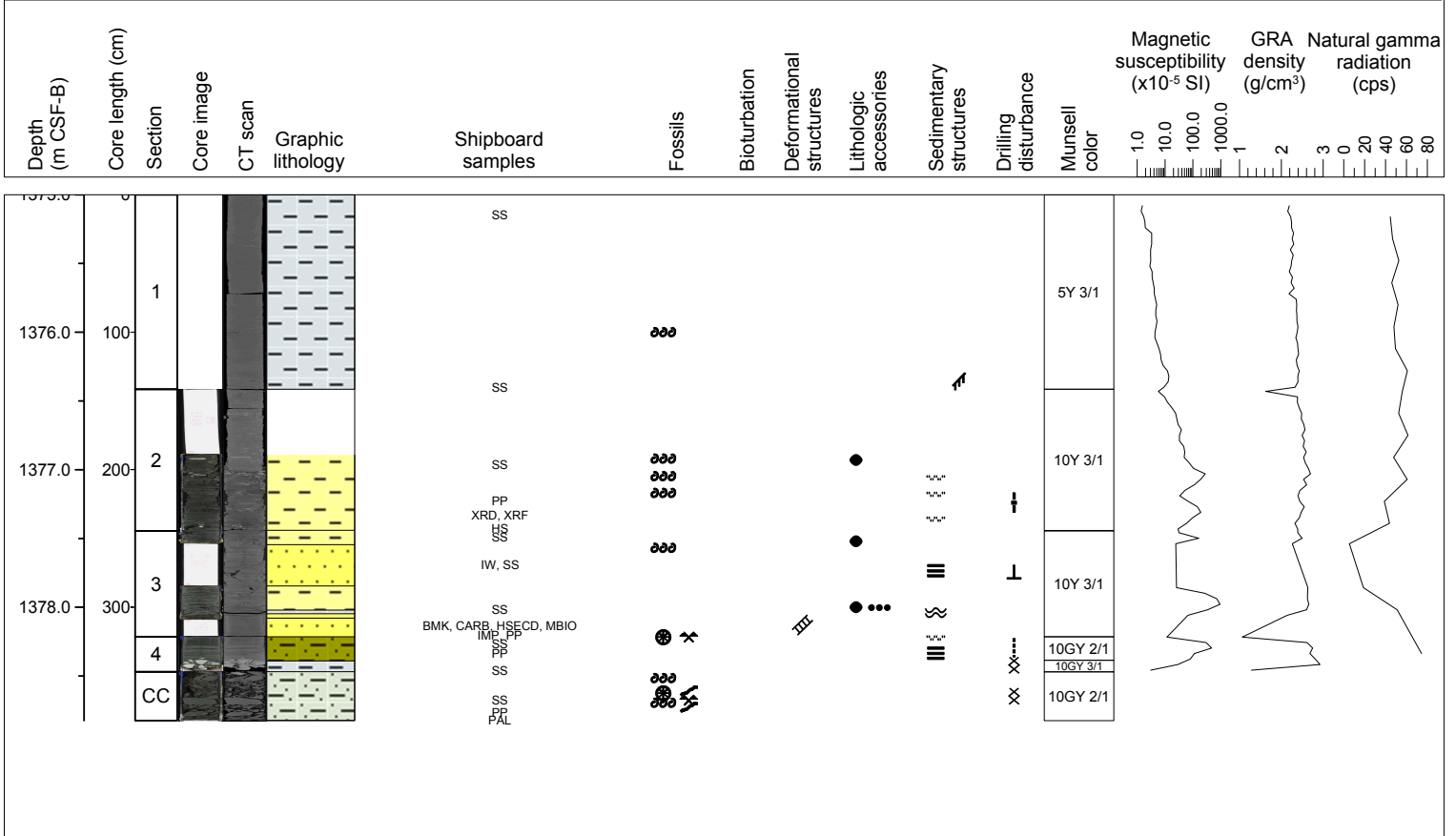
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



### Hole C0020A Core 4R, interval 1375-1378.825 m (core depth below seafloor)

The upper part of core 4 consists of clayey siltstone while the middle part is dominated by fine to medium sandstone. Grains are moderate to subangular and moderate to poorly sorted. Shell fragments are the most common fossils observed in all sections. Few sponge spicules and diatoms are found in the bottom section. The middle part of the core is moderately disturbed, the lower part shows drilling breccias.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.

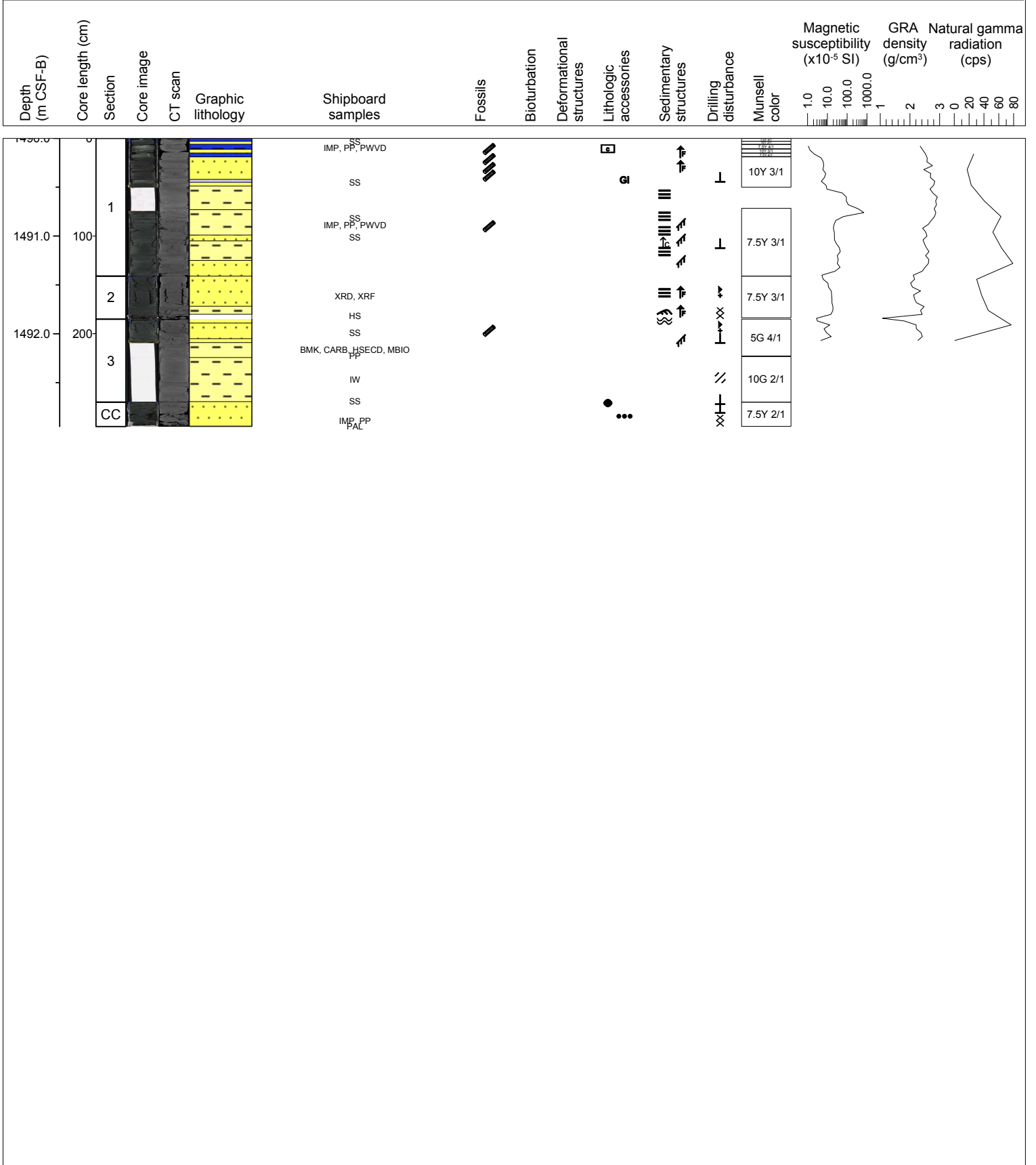


## Hole C0020A Core 5R, interval 1490-1492.95 m (core depth below seafloor)

Core 5 consists mainly of fine to medium sandstone intercalated with thin siltstone layers. The upper section shows an intercalation between sandstone and clayey siltstone. Grains are angular to sub rounded, moderate to well sorted. Plant remains are observed in some sections. No fossils observed in the smear slides.

The core is moderately fractured by drilling in the upper part, heavily disturbed with a drilling breccia in the middle part and slightly to moderately fractured in the lower part.

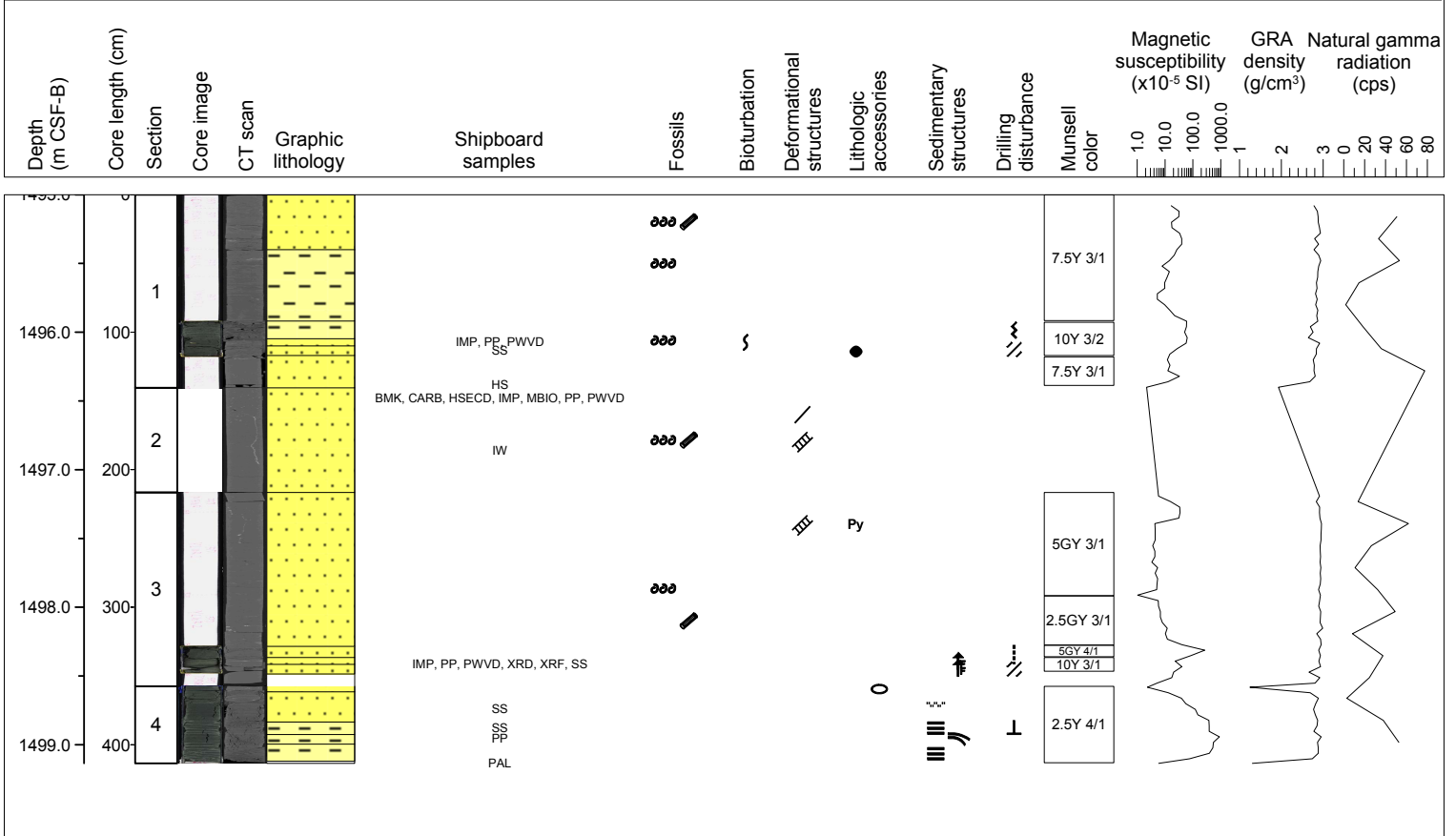
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 6R, interval 1495-1499.135 m (core depth below seafloor)

The lithology of core 6 is dominated by fine to medium sandstone intercalated with thin siltstone layers. Grains are moderate to well rounded and moderate to well sorted. Shell fragments and plant remains are common. Bioturbation is very rare. Bottom of section 1 and the bottom section is highly fractured.

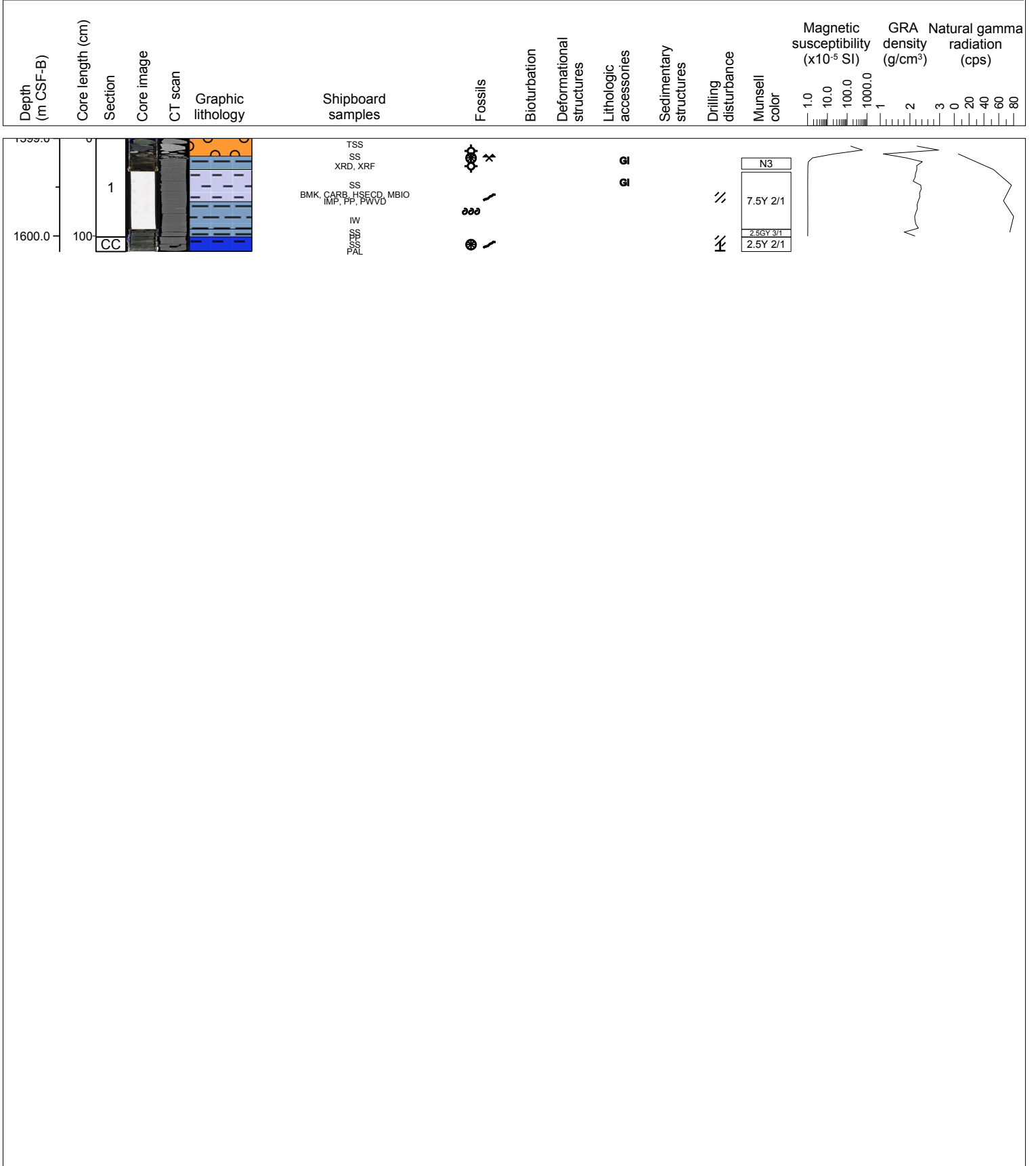
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 7R, interval 1599-1600.16 m (core depth below seafloor)

Core 7 consists of gravel in the top part while the rest is mostly glauconitic silty shale. Grains are moderate to subangular with moderate to well sorted. Organic material, shell fragments and diatoms are common. A few sponge spicules and rare radiolaria are also observed. Thin sections of the gravel showed green metatuffite at 0-5cm and anorthosite at interval 5-13cm. The core is moderately fractured.

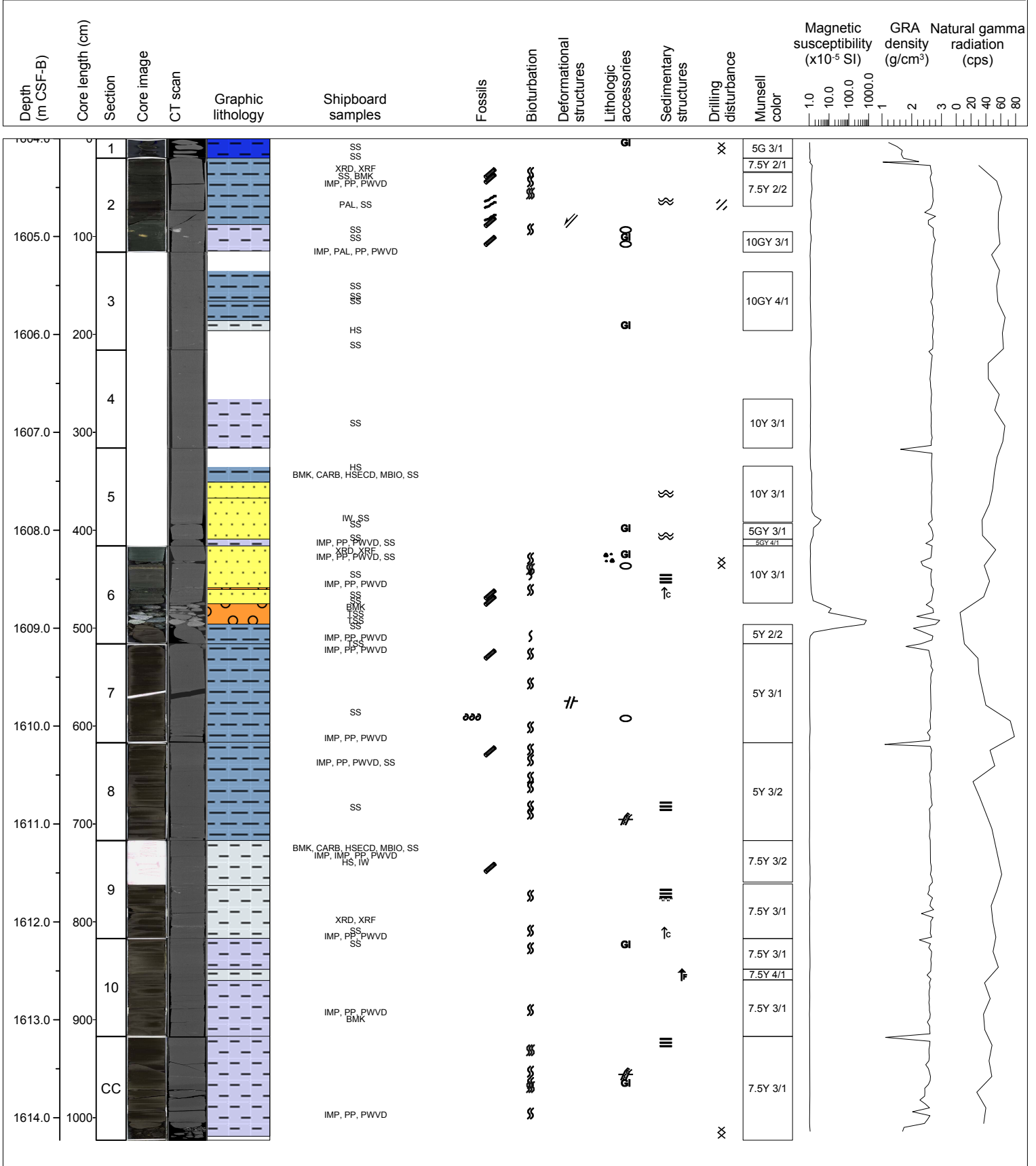
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 8L, interval 1604-1614.23 m (core depth below seafloor)

Core 8 is dominated by organic-rich silty shale with abundant volcanic glass. Conglomerates occur in the middle part of the core. Grains are moderate to subangular and moderate to well sorted. Shales are glauconitic and dolomitic in some places. Bioturbation (horizontal burrows) is common. Organic material is abundant. Common diatoms, rare sponge spicules and rare shell fragments are observed mostly in the lower part. Parallel and wavy laminations, and coarsening and fining upwards sequences are visible. The top of the core is brecciated. One breccia also occurs at the bottom of the core. Core 8L is the only larger diameter core for Expedition 337.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.

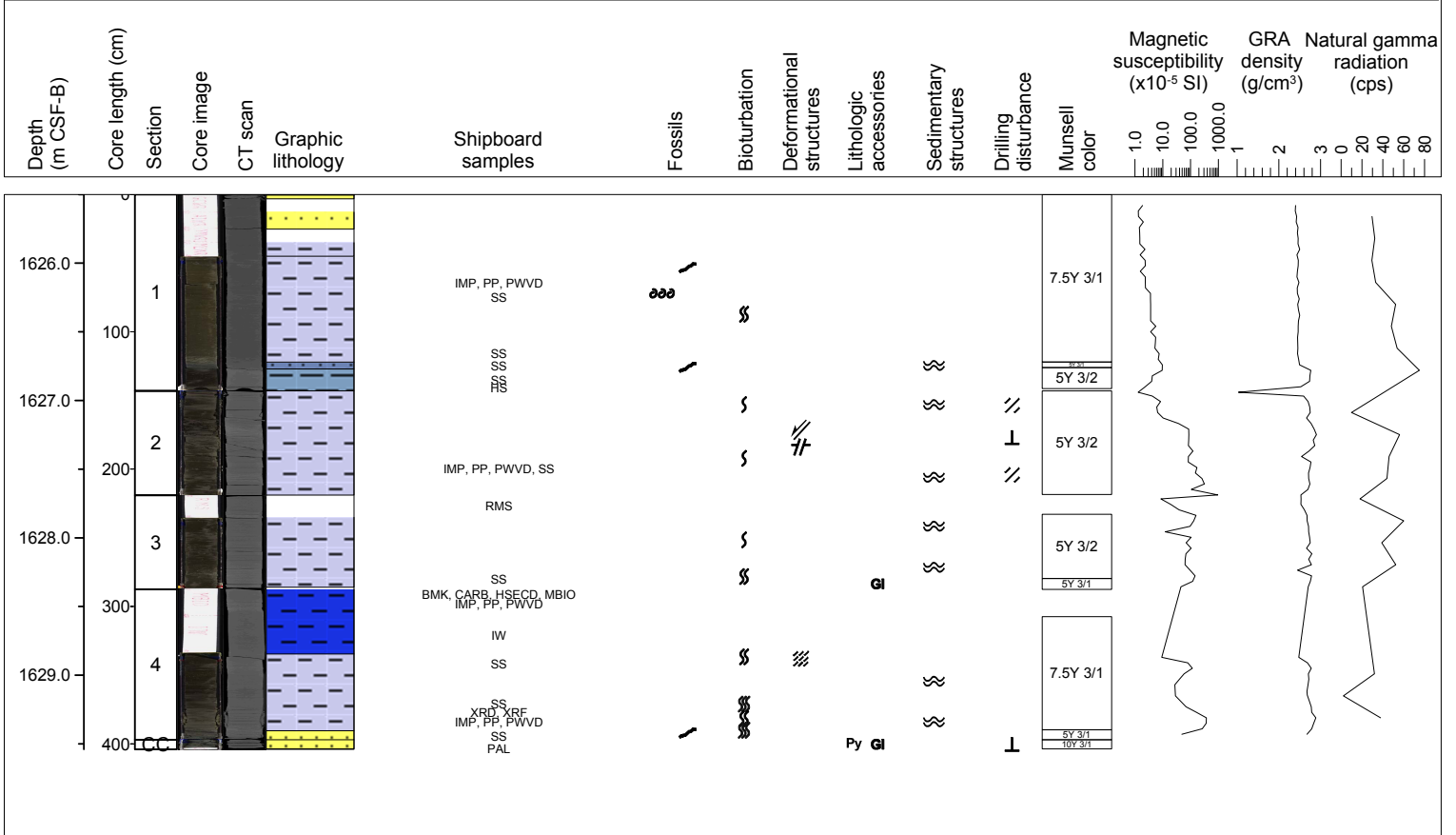




## Hole C0020A Core 9R, interval 1625.5-1629.5 m (core depth below seafloor)

Core 9 dominated by shale with 25cm glauconitic sandstone at the top of the core. Grains are moderate to subangular and moderate to well sorted. Organic material and shell fragments are common. Few wood fragments and sponge spicules are scattered in some part of the section. Rare diatoms are also observed. Bioturbation (horizontal burrows) is common. Some wavy laminations, one load structure and a normal fault are visible. The middle of the core is moderately to heavily fractured.

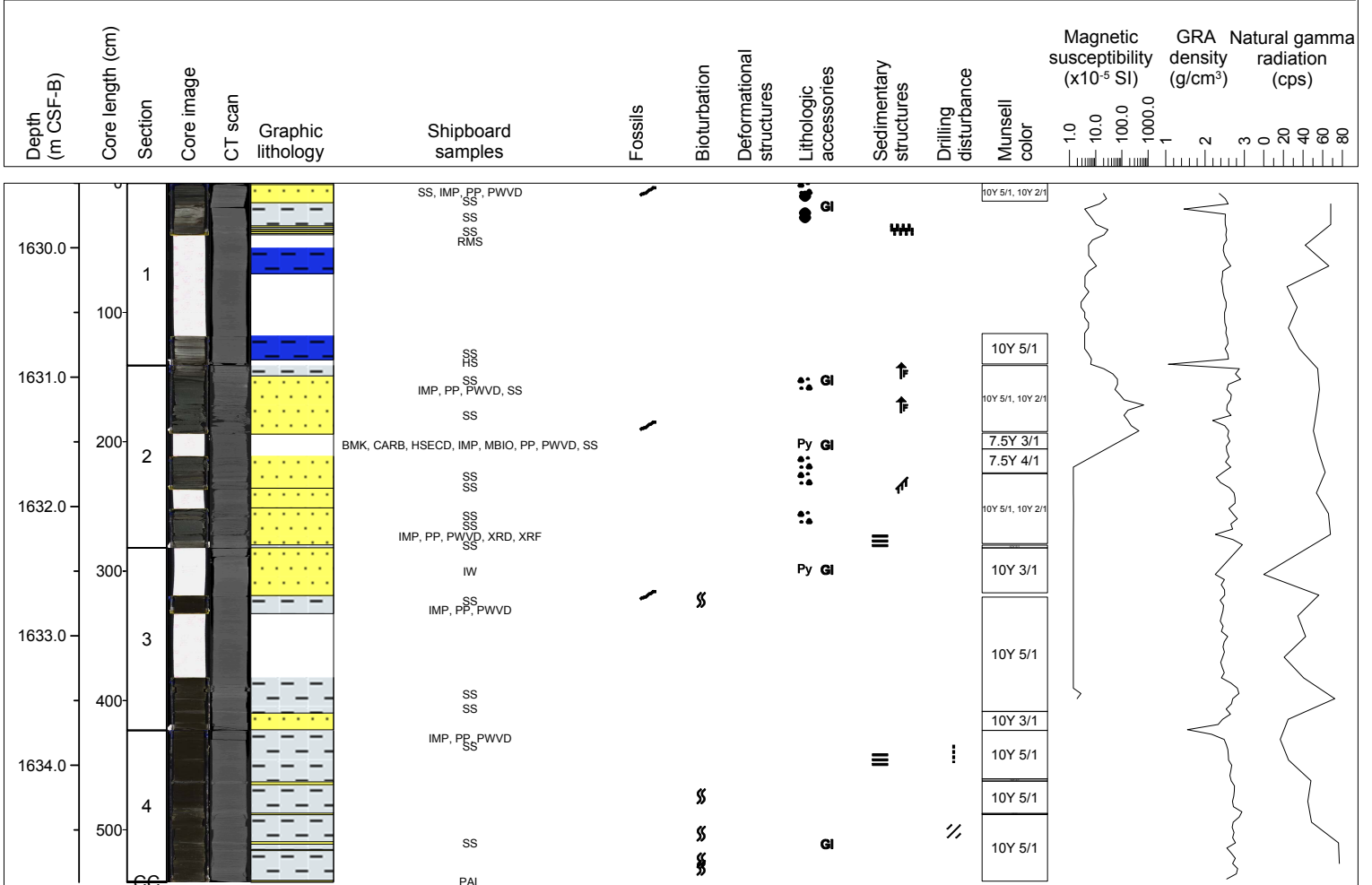
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 10R, interval 1629.5-1634.905 m (core depth below seafloor)

Core 10 mostly consists of organic-rich siltstone intercalated with thin sandstone layers (1-2cm thick). A 1.2-m-thick sandstone layer occurs in the middle of the core. Grains are moderate to subangular and moderate to well sorted. Few wood fragment, diatoms and shell fragment are observed mostly in the middle section. Moderate bioturbation appears in the lower part of the core. Cross lamination, planar lamination and 2 fining upward cycles are visible. The core is slightly disturbed at the bottom.

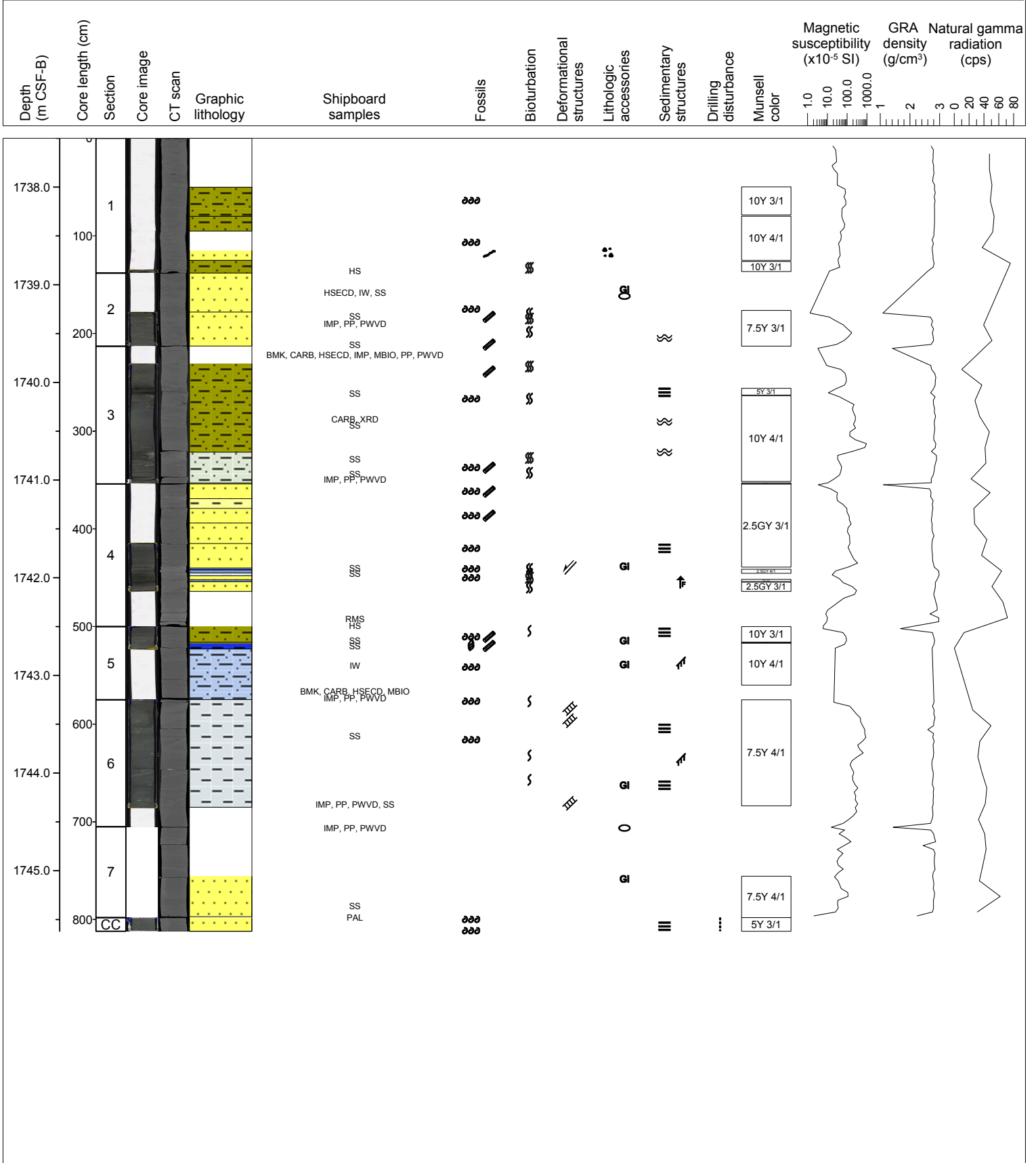
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 11R, interval 1737.5-1745.62 m (core depth below seafloor)

Mostly fine to medium sandstone with few intercalations of siltstone. Dolomitic concretions occur at the top of section 2. Grains are moderate to subangular and moderate to well sorted. Shell fragments are mostly found in the upper part, organic material and wood fragment more frequent toward the lower part. Rare sponge spicules and diatoms. Moderate to high bioturbation was visible in the core. Wavy and parallel laminations. A few cross laminations are also observable.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.

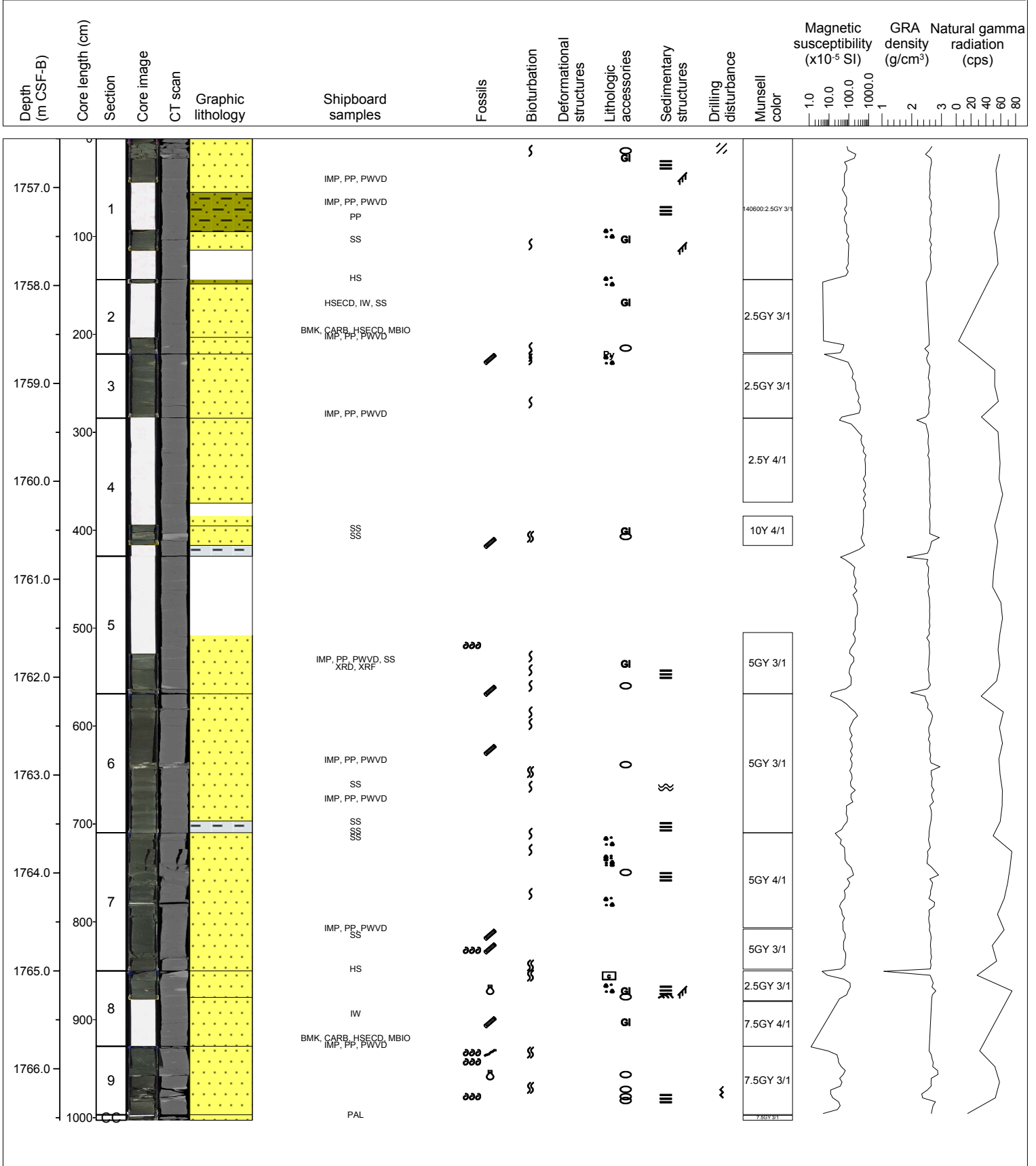




## Hole C0020A Core 13R, interval 1756.5-1766 m (core depth below seafloor)

Core 13 dominated by fine to medium sandstone with few thin shale laminae. Some of sandstones are carbonate cemented and glauconitic. Grains are moderate to rounded and moderate to poorly sorted. Organic material and wood fragments are common. Bioturbation occurs throughout the core. Wavy and parallel laminations as well as cross bedding appear in the core. Quite a few mud clasts are visible. Carbonate nodules are common throughout the core. Pyrite is visible in section 3.

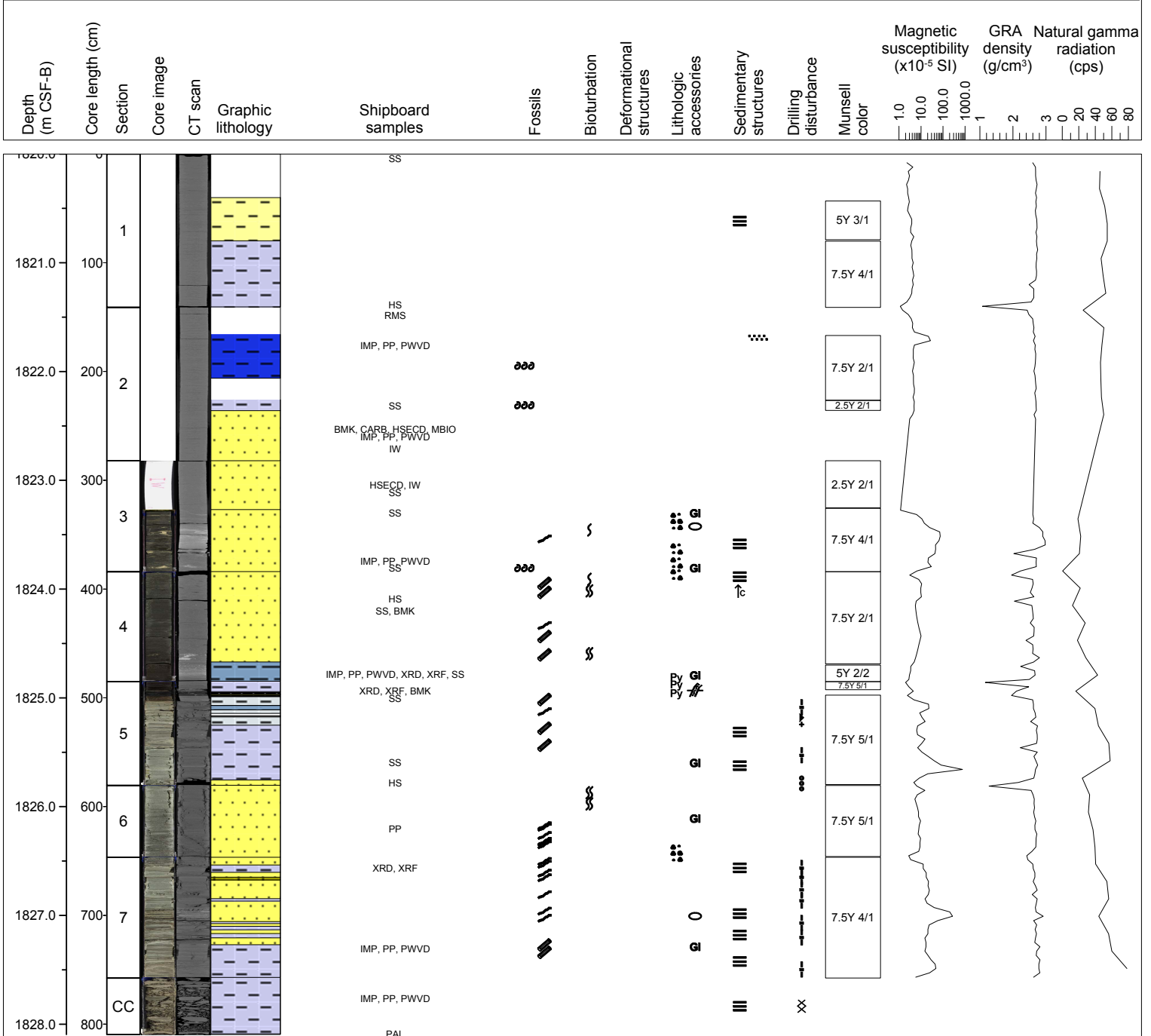
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 14R, interval 1820-1828.095 m (core depth below seafloor)

Core 14 consists of fine to medium sandstone and shale. Silty shale is common in sections 5 and 7. There is a 5-cm-thick coal horizon in section 5. Grains are moderate to subangular and moderate to well sorted. Organic material and glauconite become more frequent towards the lower part. Pyrite is common around the coal bed. Parallel laminations and bioturbation are common. Carbonate concretions are visible in section 3 and 7 (siderite - 48-59 cm). Drilling breccia occur in the core catcher. Sections 5 to 7 show moderate drilling disturbances (drilling mud enters between sandlayers and form biscuits).

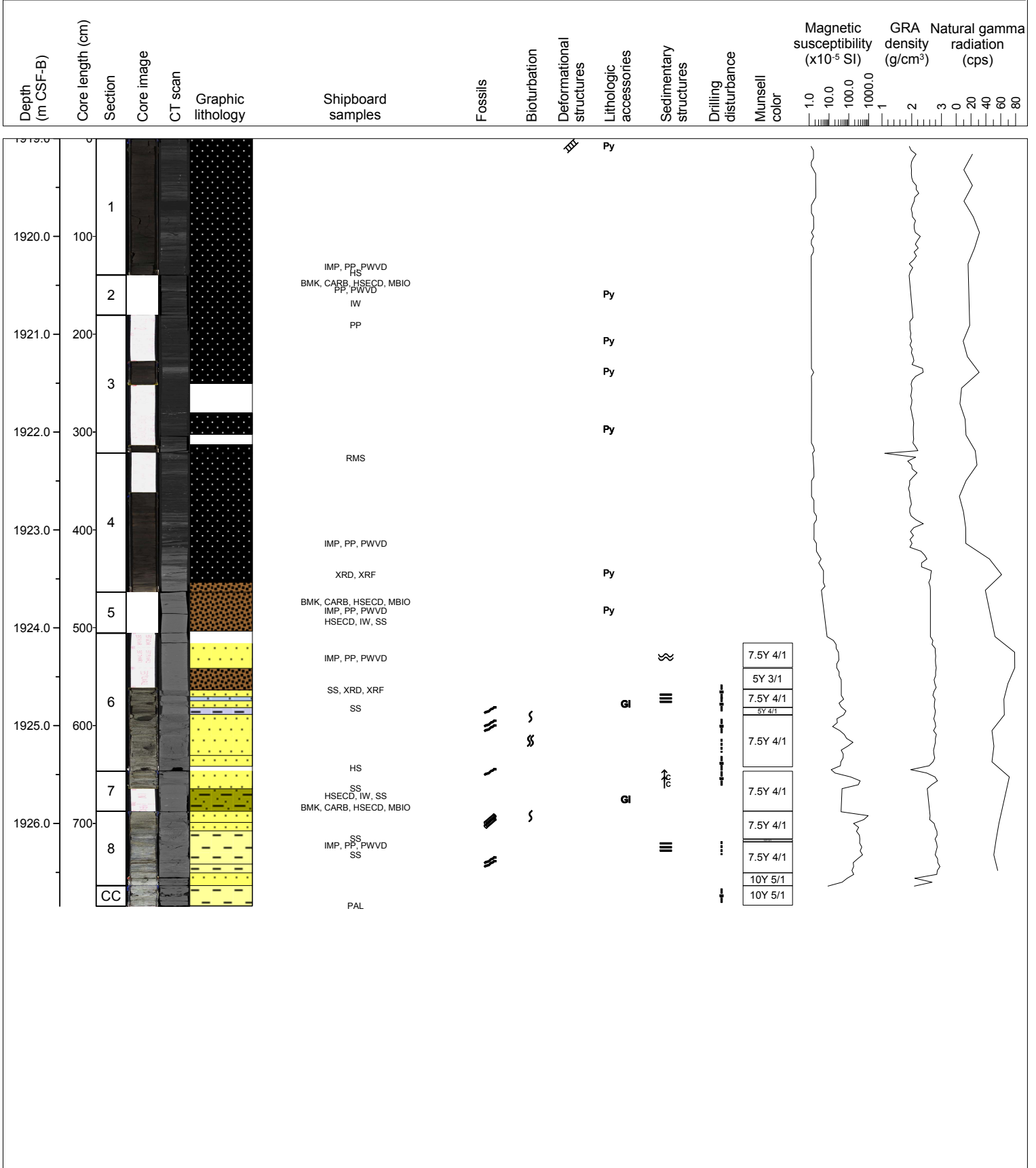
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 15R, interval 1919-1926.845 m (core depth below seafloor)

The top of section is brown coal (more lignite), fine-detrritic to xylodetrritic (4.5 m thick). Coaly shale occur below the coal. Grains of sandstones are angular to subrounded and moderate to well sorted. Pyrite and amber are observed in the coal layer. Organic material is common, bioturbation mostly in the lower part of the sections. Parallel and wavy laminations are common in some sandstones. Few coarsening upward cycles are visible in the lower part. The lower part is slightly disturbed.

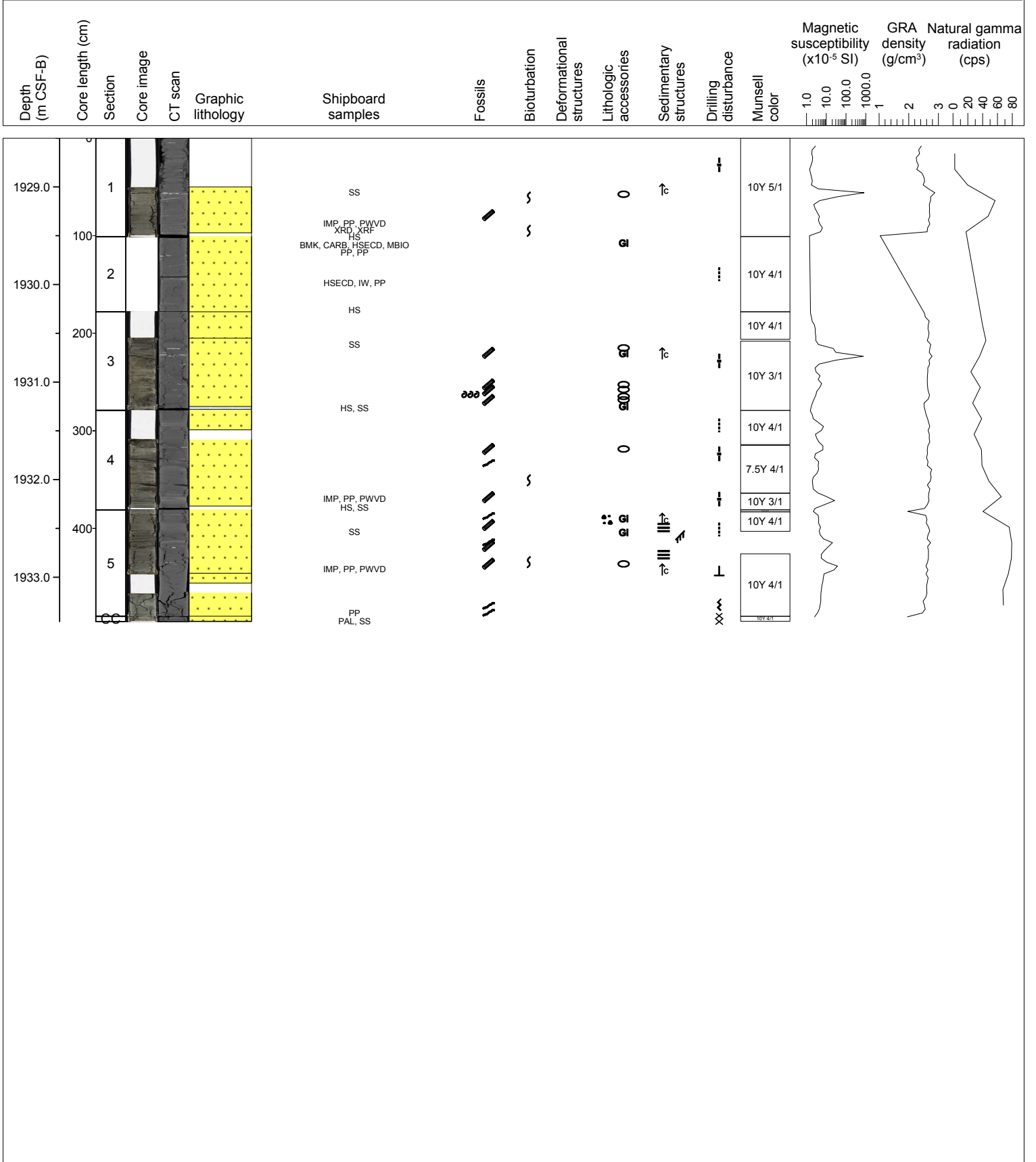
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 16R, interval 1928.5-1933.455 m (core depth below seafloor)

Core 16 dominated by organic-rich fine to medium sandstone. Grains are subangular to subrounded and moderate to poorly sorted. Glauconite is common. The upper part of the core is slightly disturbed by drilling. The other parts are moderately disturbed.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.

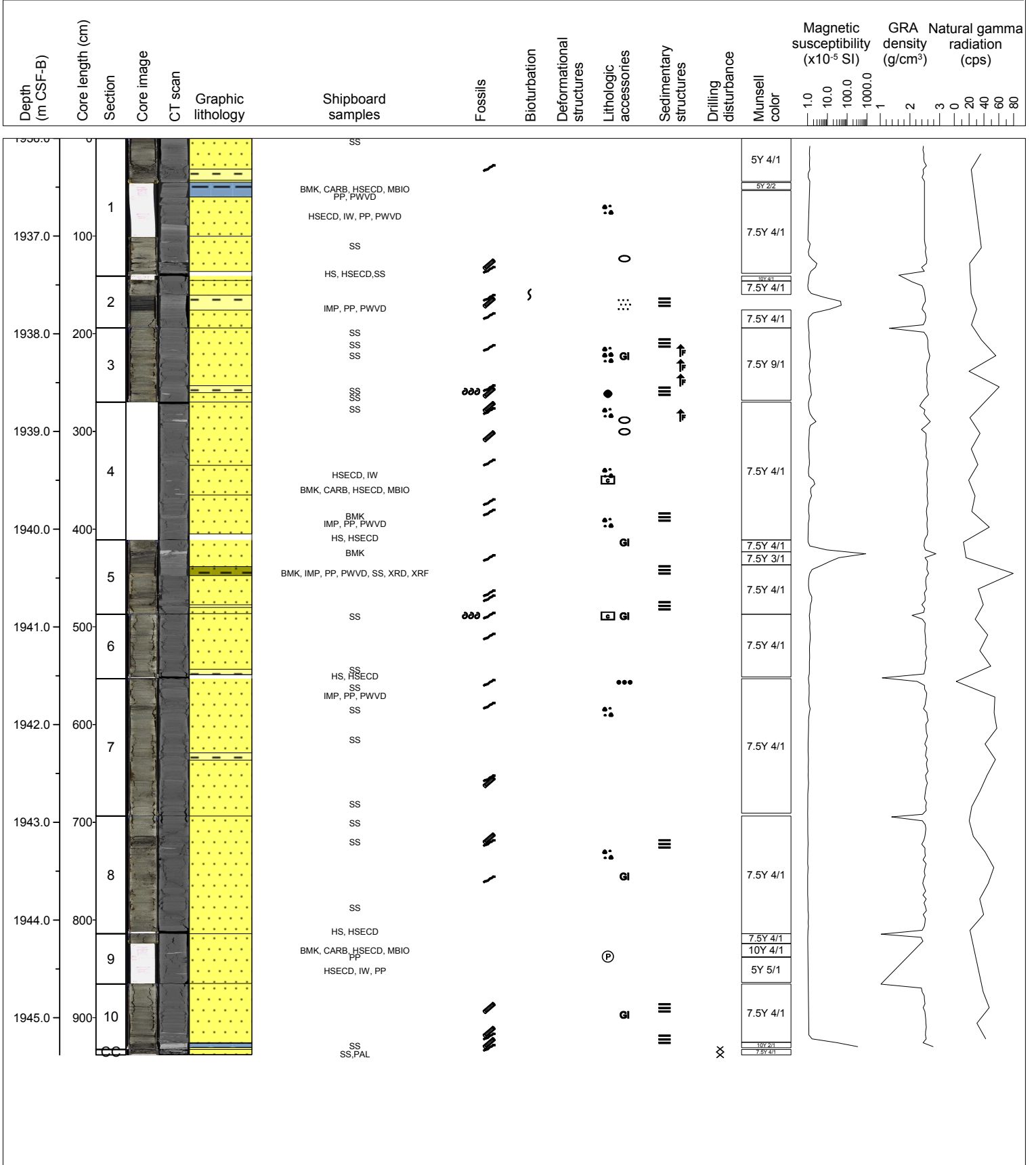




## Hole C0020A Core 17R, interval 1936-1945.38 m (core depth below seafloor)

Core 17 consist of fine to coarse sandstone with some fine lamination of organic-rich layers, coaly shale and mudstone. Grains are subangular to subrounded and moderate to poorly sorted. Organic material, shell fragments and rare sponge spicules are observed. Fining upward sequences are common in section 3. Parallel laminations are visible in the whole core. Carbonate nodules are present in sections 1 and 4. Some well cemented sandstones also occur.

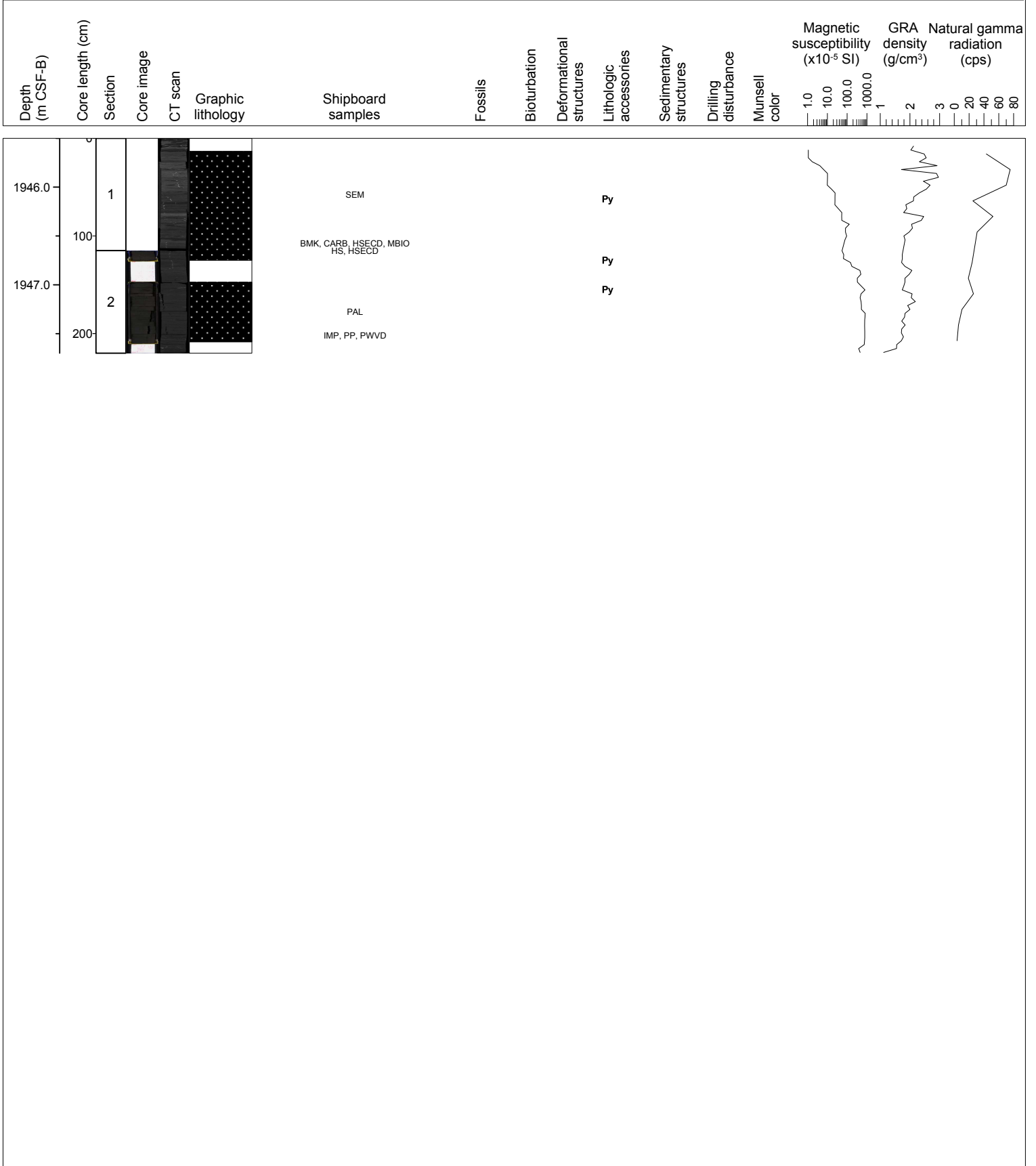
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



Hole C0020A Core 18R, interval 1945.5-1947.7 m (core depth below seafloor)

Brown coal consist mainly of fine-detrritic to xylo-detrritic coal with some xylitic and detritic layers.  
Pyrite veins are very common.

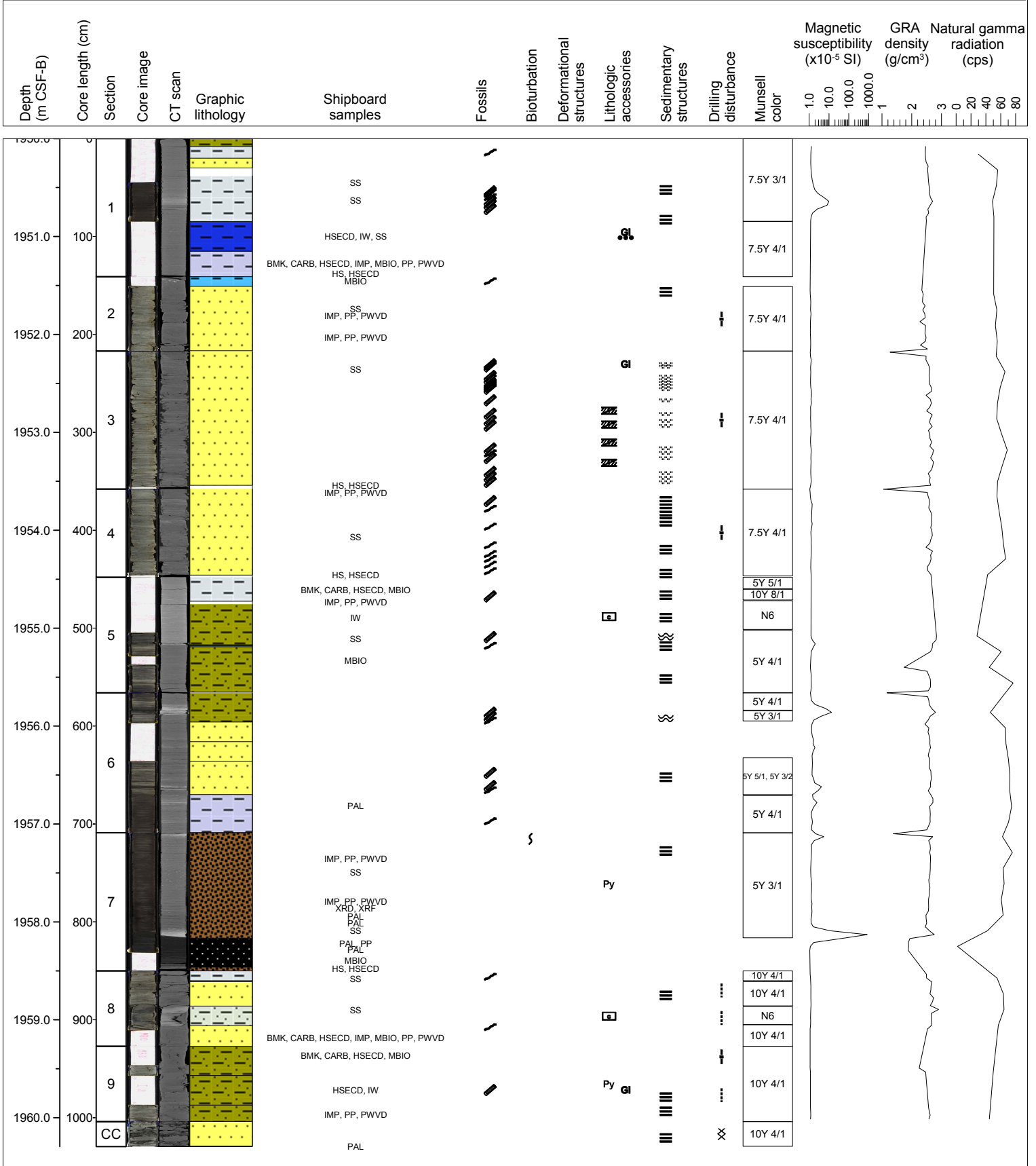
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 19R, interval 1950-1959.5 m (core depth below seafloor)

Core 19 consists mostly of organic-rich sandstone and silty sandstone. One coaly shale (1m) and one thin coal layer (11cm) are observed in the middle of the sections. Grains are subangular to subrounded and moderate to poorly sorted. Organic material is common. Glauconite is visible in sections 1, 3 and 9. Pyrite occur in the coal, in coaly shale (abundant) and in silty sandstones at the bottom. Parallel laminations and wavy bedding occur throughout the core. Carbonate cemented silty sandstones are visible in the middle part and in the lower part of the core. Small oil shows are visible in section 3.

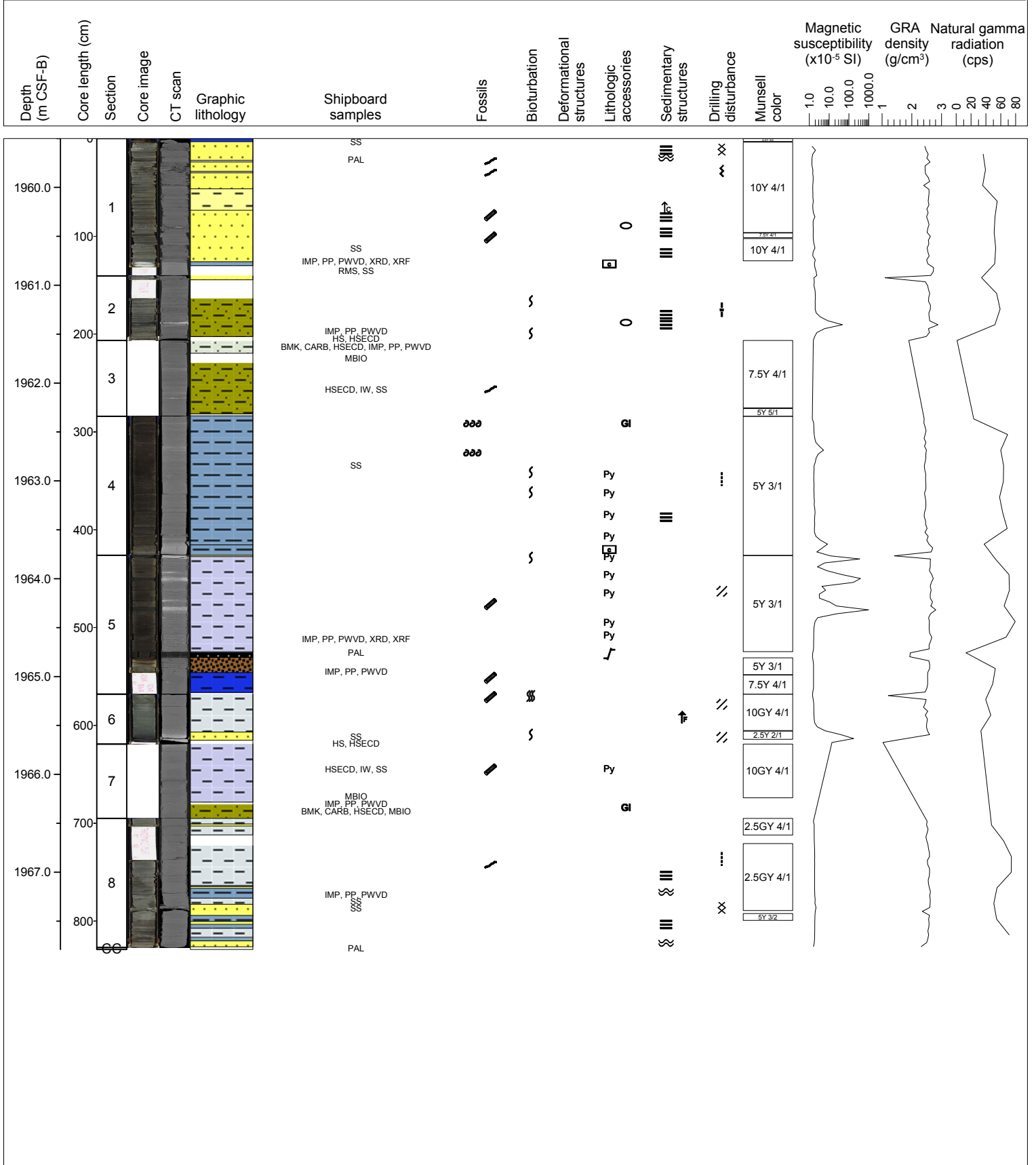
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 20R, interval 1959.5-1967.79 m (core depth below seafloor)

The top of the section is dominated by dolomitic sandstone. From section 3 to the bottom, shale and siltstone occur. One coal bed and coaly shale occur in section 5. Grains are subangular to subrounded and moderate to well sorted. Organic material is abundant. Pyrite is common in silty shales and shales. Parallel and wavy laminations, cross and trough cross bedding are common. Carbonate concretions occur in the upper part. Some carbonate cemented horizons are visible throughout the core. The core is moderately disturbed.

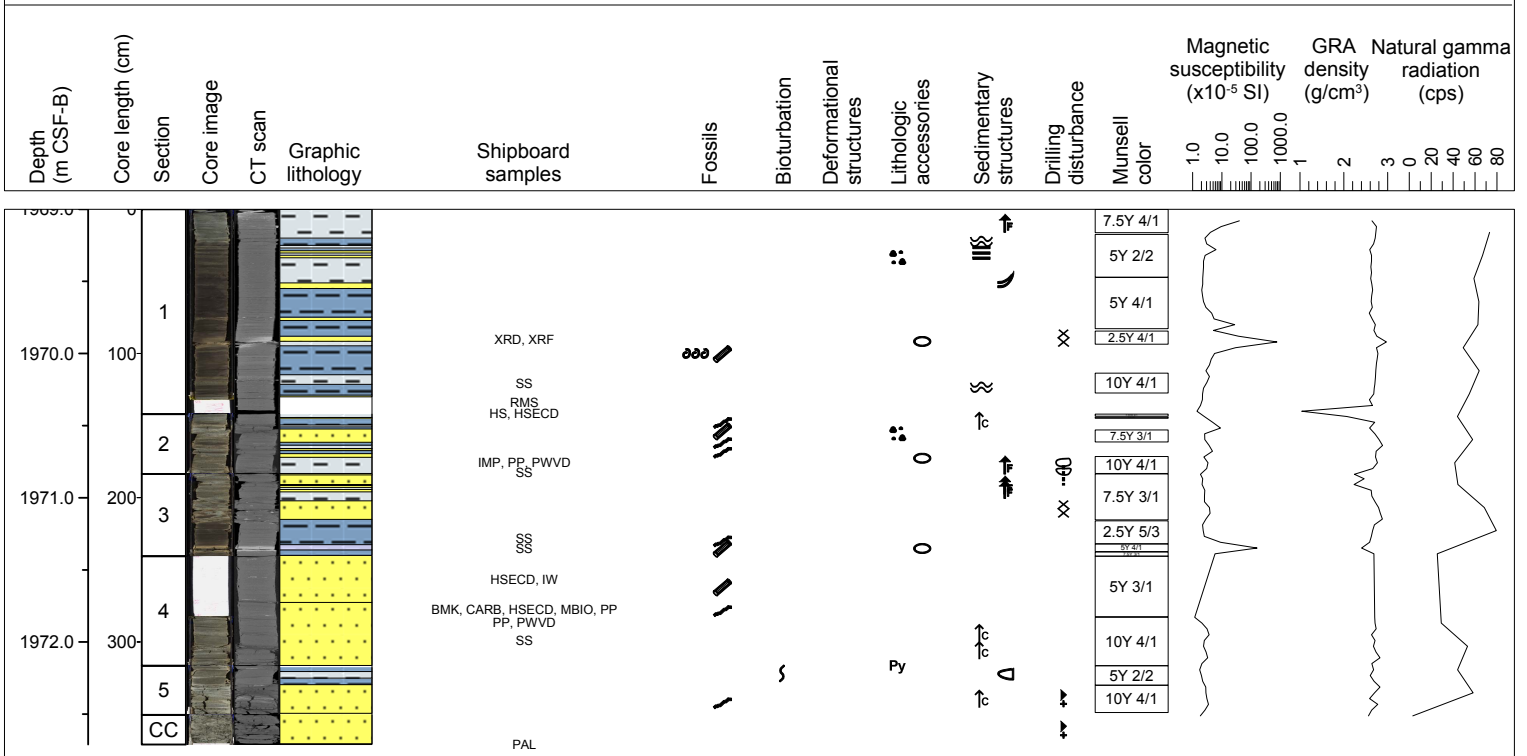
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 21R, interval 1969-1972.71 m (core depth below seafloor)

The lithology of core 21 is mostly organic-rich siltstone and shale intercalated with some sandstones (2-32cm). At the bottom sandstone is dominant. Grains are moderate to angular and moderate to well sorted. In some parts, dolomitic siltstones occur. Organic material is common. Some bioturbation is visible in the lower part of the core. Parallel and wavy laminations as well as flaser and lenticular bedding are present. Some fining upward cycles are observable in the middle part of the core. Some coarsening upward cycles occur near the bottom. Carbonate concretions are visible in sections 1, 2, 3, 5 (mostly sideritic). Drilling breccias and drilling biscuits appear in the upper and middle part of the core.

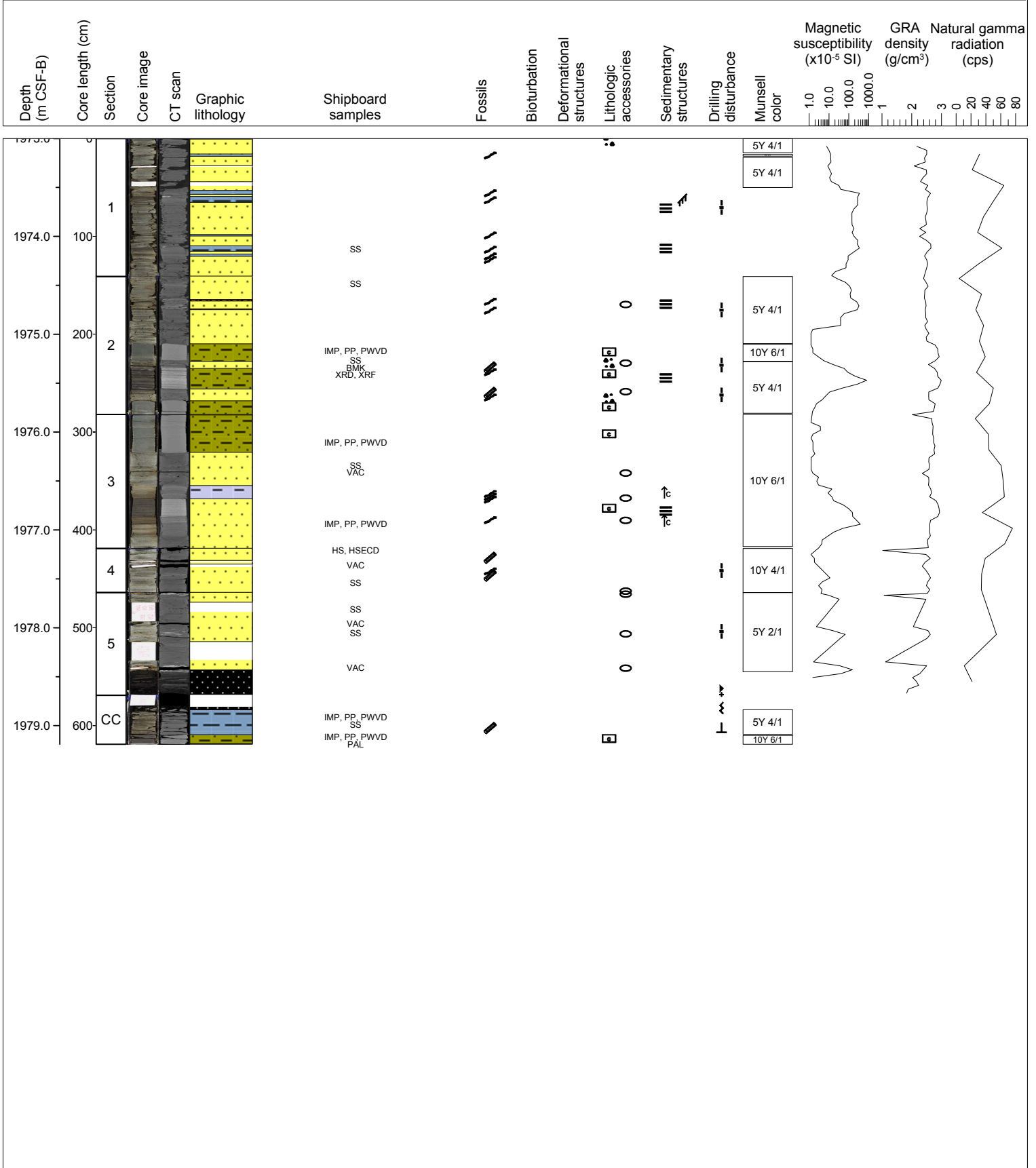
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 22R, interval 1973-1979.19 m (core depth below seafloor)

The lithology of Core 22 consists of fine to medium sandstone intercalated with some thin siltstone layer. Thin brown coal layer (25cm) observed at the bottom part of the section along with coaly shale. Grains are angular to subrounded, moderate to well sorted. Organic material and sponge spicules are observed. Parallel and cross laminations and some coarsening upward sequences occur. Carbonate nodules (common siderite) are common. At some parts sandstones are dolomitic and aragonitic. The core is slightly disturbed at the top and at the bottom.

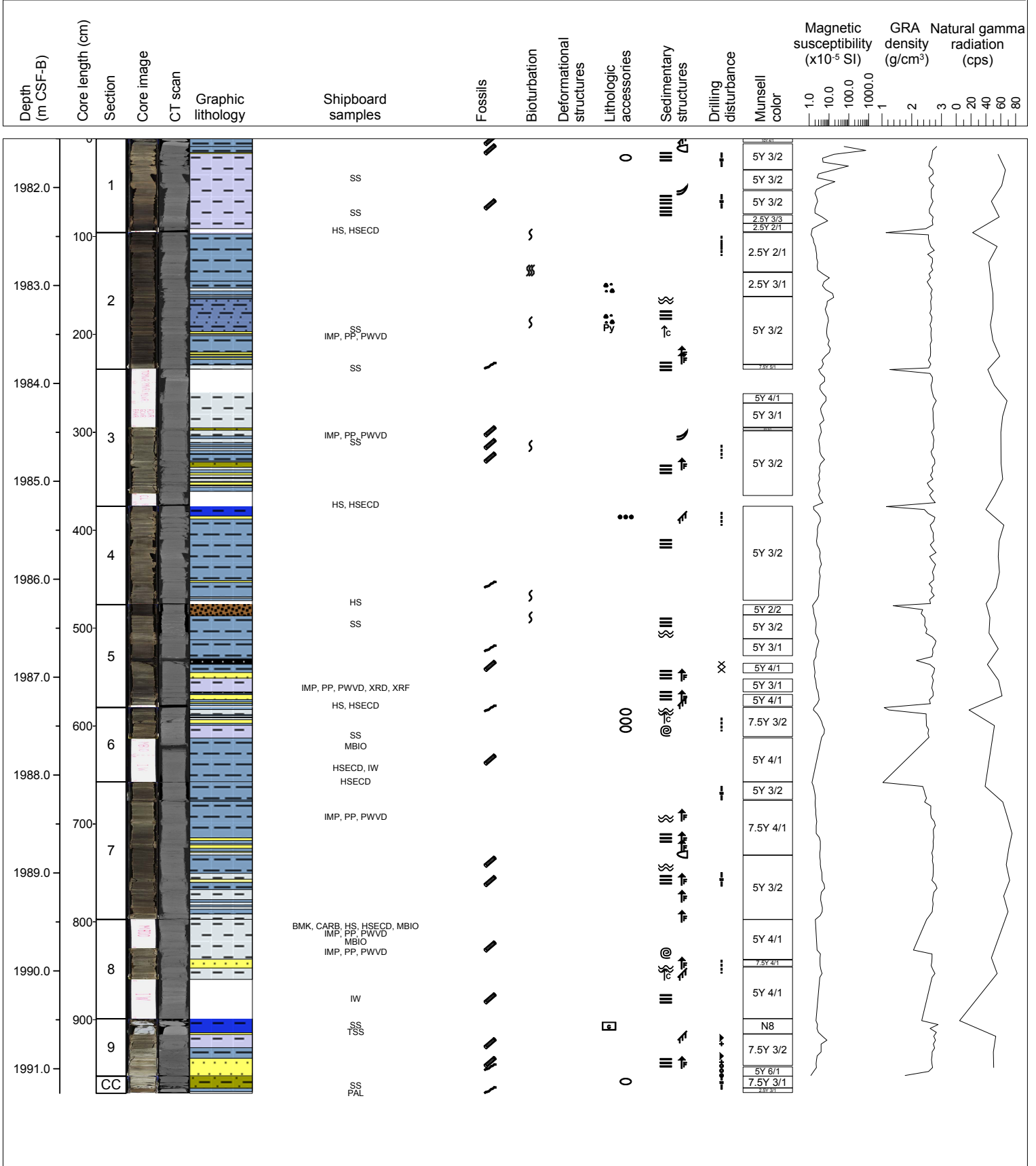
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 23R, interval 1981.5-1991 m (core depth below seafloor)

The lithology of Core 23 is dominated by shale with some intercalations of sandstone and siltstone. A few thin coal layer and coaly shale observed at section 3 and 5. Grains are subangular to well rounded and moderate to well sorted. Plant remains are common throughout the sections. Some slight bioturbation is observed particularly in the middle of the core. Parallel and wavy laminations, cross, lenticular and flaser bedding is common. Many fining and coarsening upward cycles occur throughout the core. Pyrite is visible in section 2. Carbonate concretions are visible in sections 1, 7 and 10 (sometimes sideritic). Some carbonate cemented layers are also visible. The core is slightly disturbed at the top and in the middle part. The lower-most part is soupy.

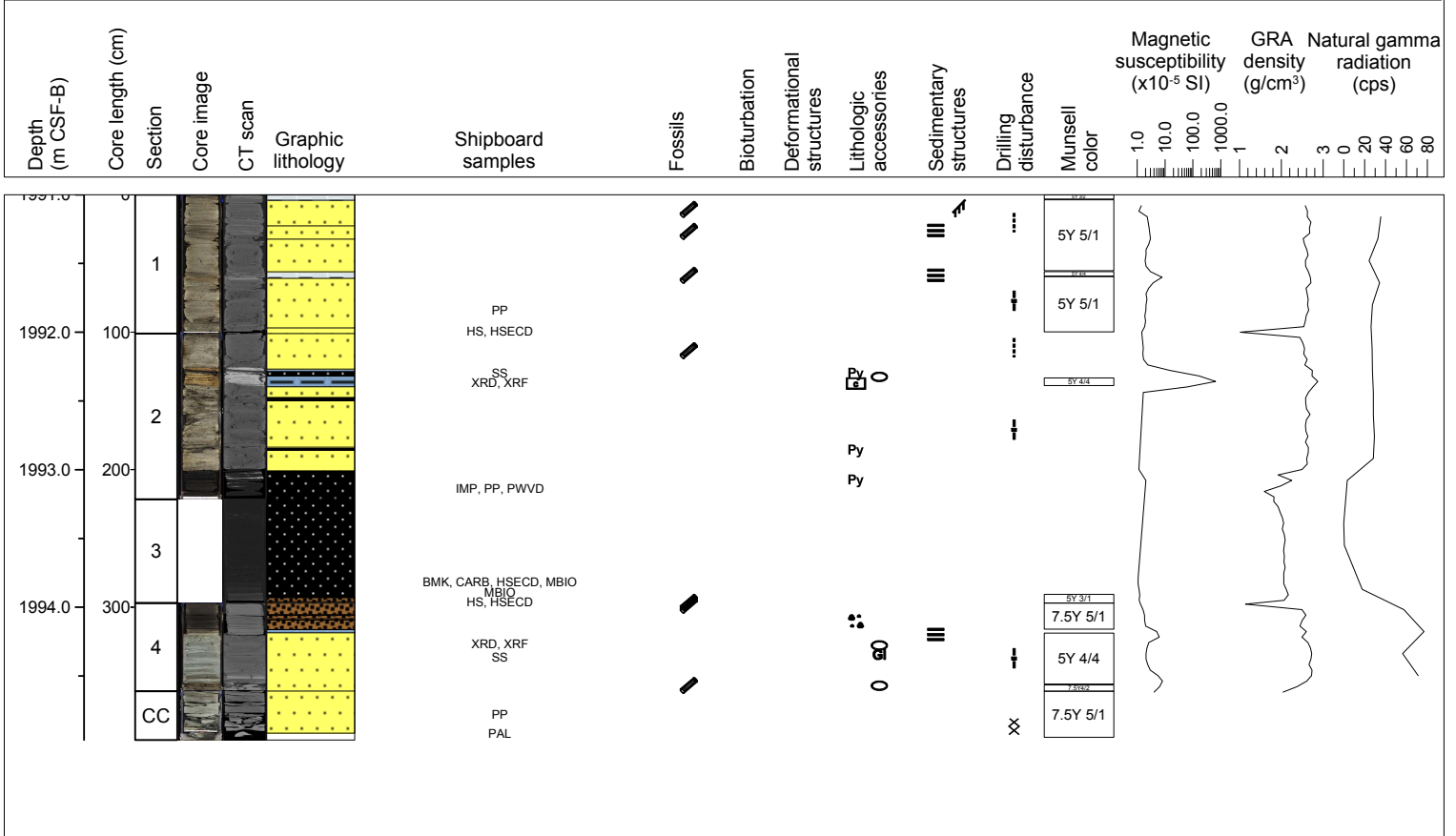
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 24R, interval 1991-1994.965 m (core depth below seafloor)

The lithology of Core 24 is mostly medium sandstone with some thin shale layers. In some parts glauconitic sandstones occur. Two coal layers are observed ranging from 2-95cm thickness. Grains are moderate to well rounded and moderate to well sorted. Plant remains are common. Wavy and parallel laminations are common in the upper part. Carbonate concretions are common in the lower part. Sideritic silty shale occur in section 2 (25-35 cm). Pyrite is visible in the coal and in sandstones. The core is slightly disturbed. A drilling breccia occur at the bottom.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.

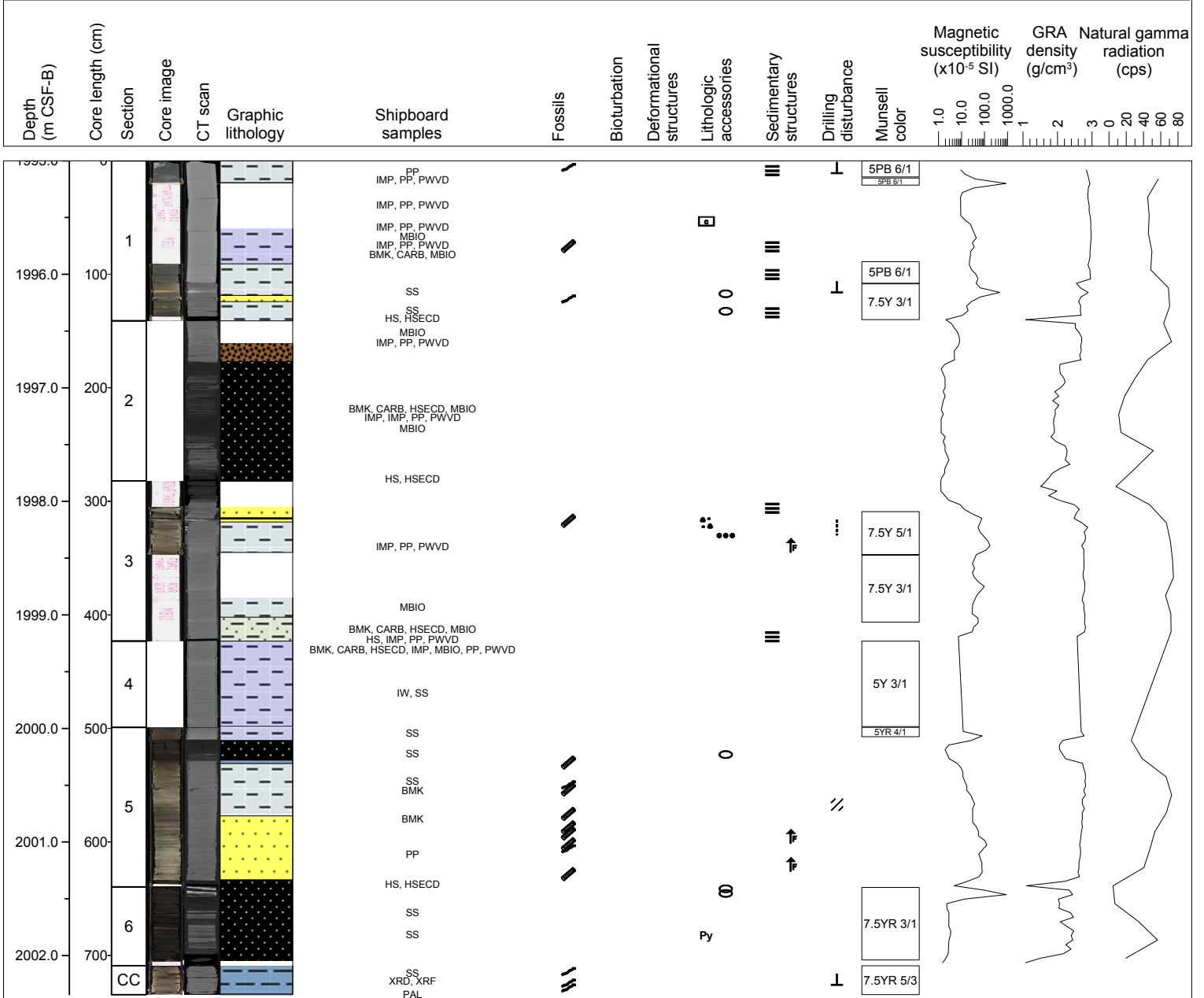




## Hole C0020A Core 25R, interval 1995-2002.345 m (core depth below seafloor)

The lithology is mostly siltstone with some intercalations of sand. Three dull brown coal layers observed (sections 2-3, 5, 6). Some sandstones are carbonate cemented (some are dolomitic). Grains are moderate to subangular and moderate to well sorted. Organic material is abundant. Parallel laminations and some fining upward sequences occur in the core. Carbonate concretions are visible in sections 1, 5 and 6. Some pyrite appears in the coal.

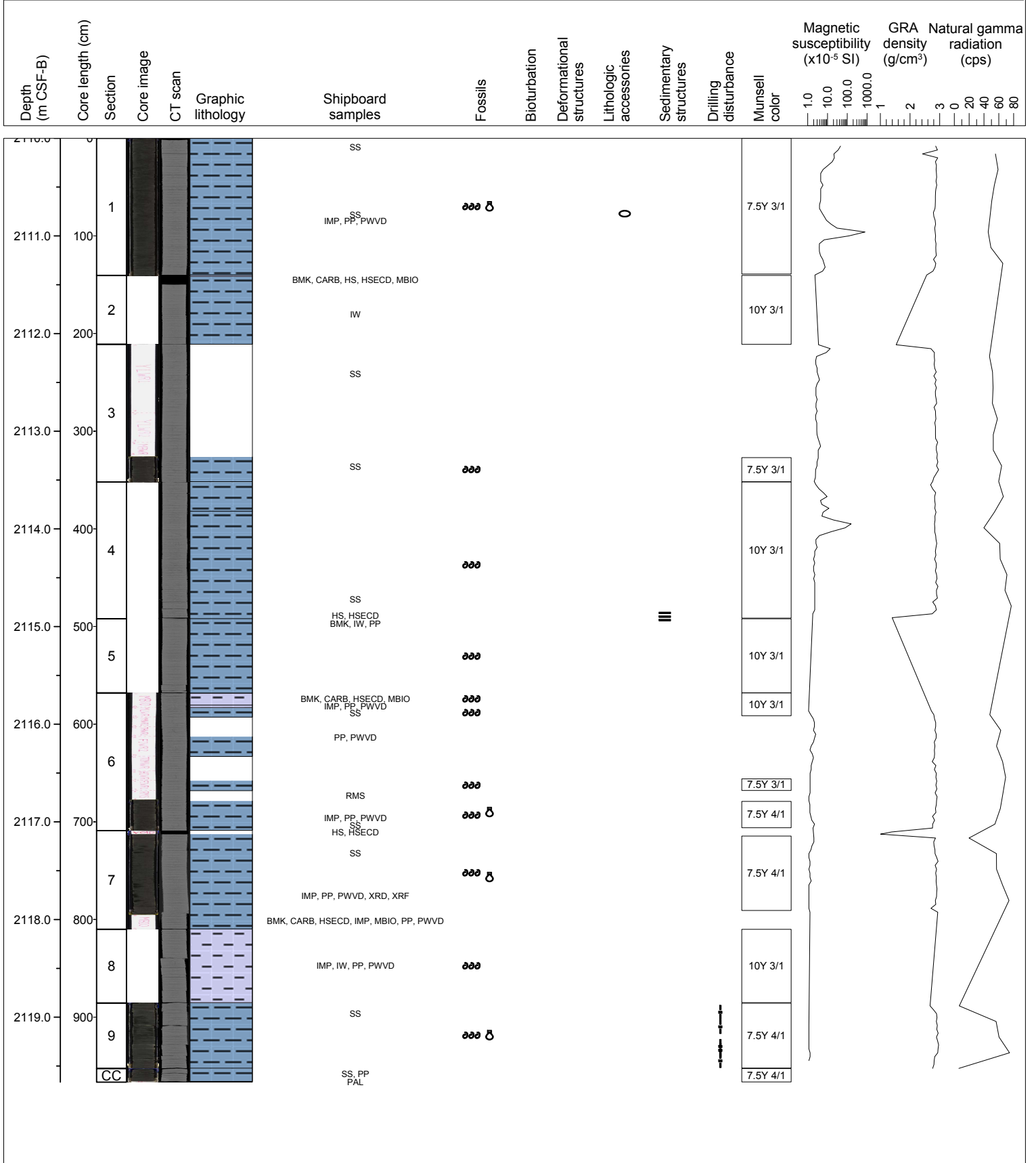
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 26R, interval 2110-2119.5 m (core depth below seafloor)

Massive silty homogeneous shale occur throughout the core. Grains are subangular to rounded and moderate to well sorted. Bivalve, gastropoda, and shell fragments are common. Few carbonate concretions are visible in the upper part.

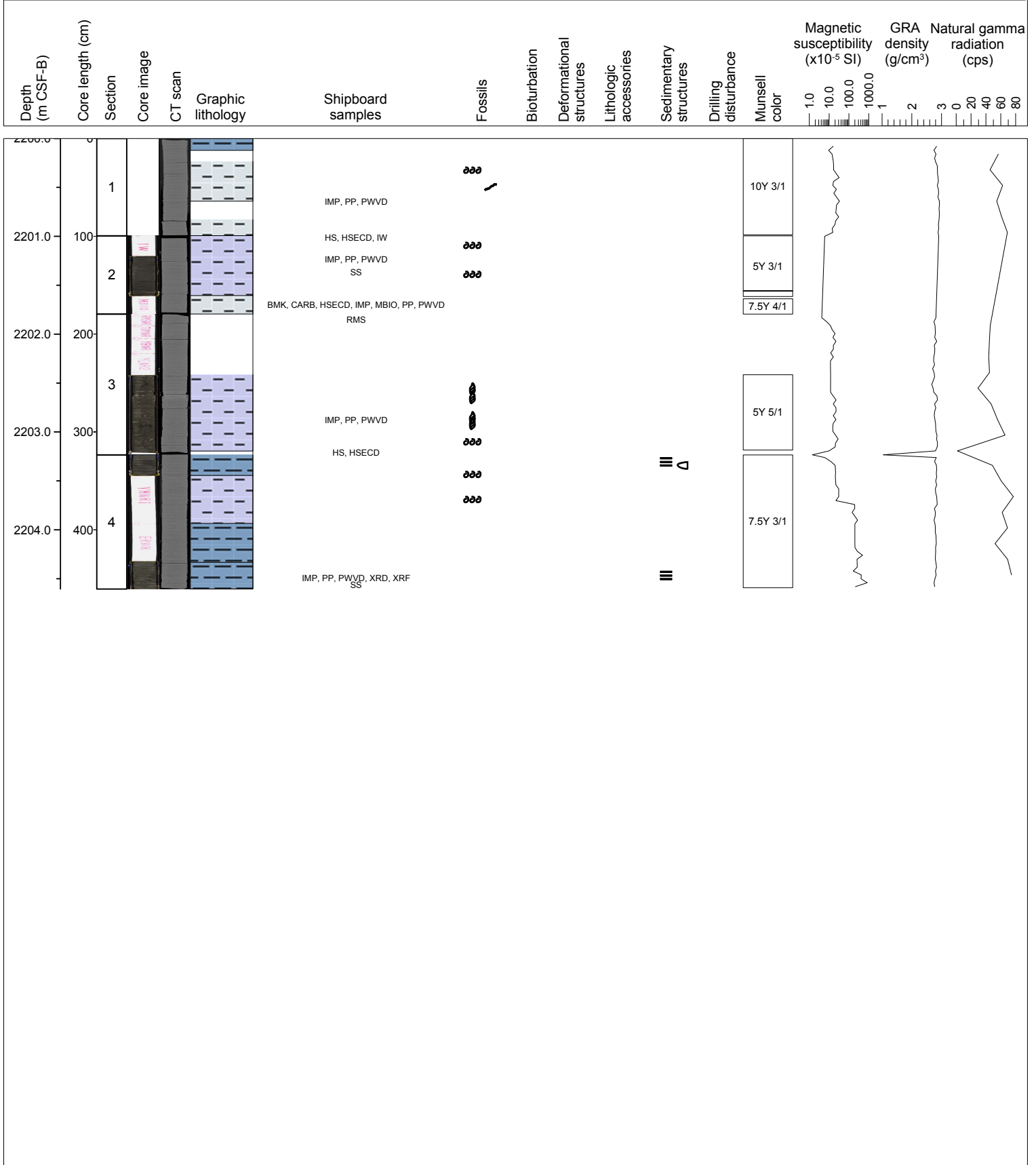
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 27R, interval 2200-2204.605 m (core depth below seafloor)

Core 27 is mostly dominated by shale and siltstone layer. Grains are subrounded to subangular and moderately sorted. Organic material and plant remains are common. Gastropods and shell fragments are common. Shaly horizons in the lower part show parallel laminations and lenticular bedding.

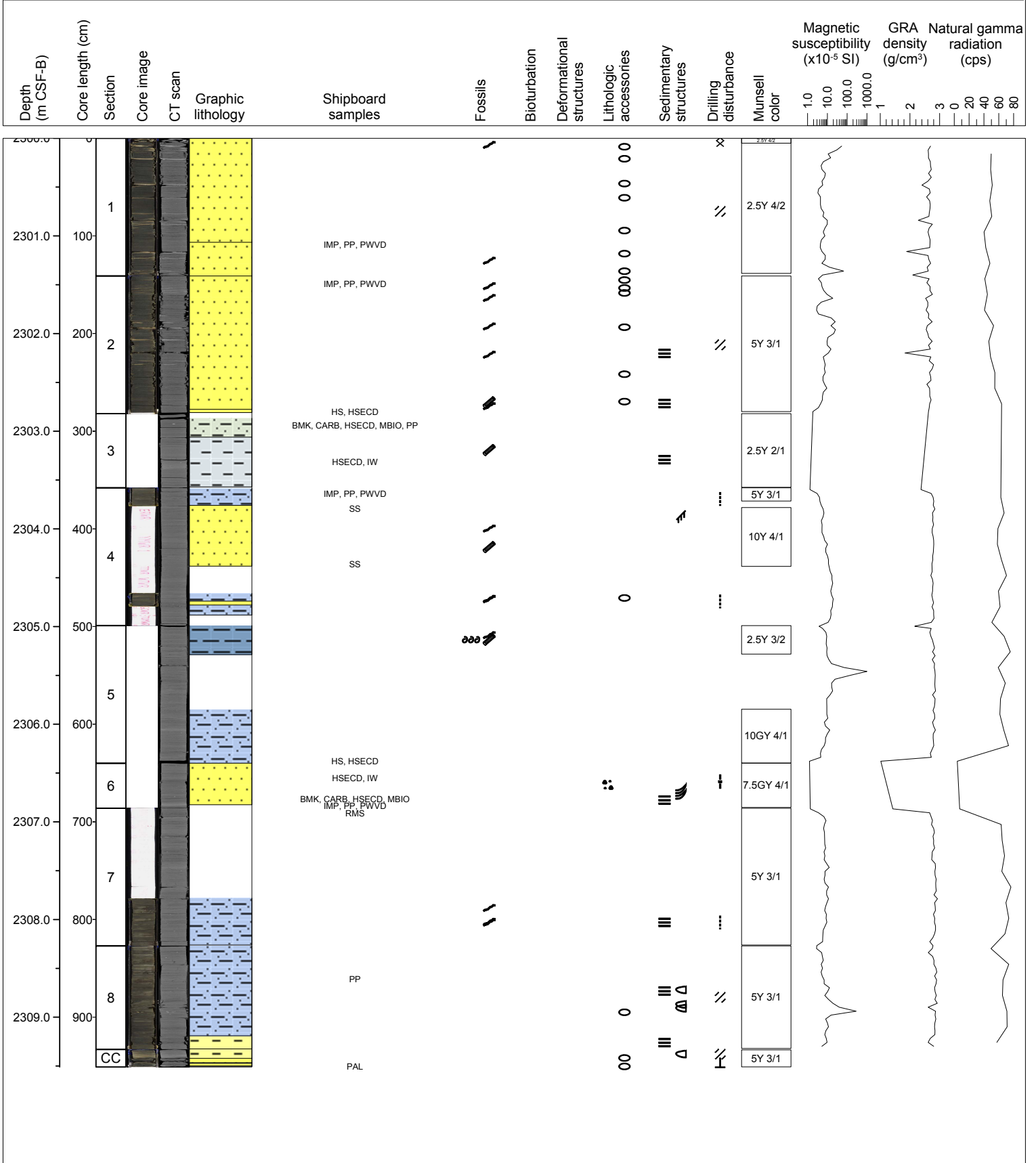
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



### Hole C0020A Core 28R, interval 2300-2309.5 m (core depth below seafloor)

The upper part of core 28 is dominated by dolomitic sandstone. The lower part shows siltstones intercalated with sandstones and shale. Grains are subangular to rounded and moderately sorted. Organic material and plant remains are common. Parallel laminations, lenticular and flaser bedding are common. Some carbonate bands and nodules (siderite) are also observed, especially in the upper part. Sandstones and siltstones at the bottom are moderately to heavily disturbed.

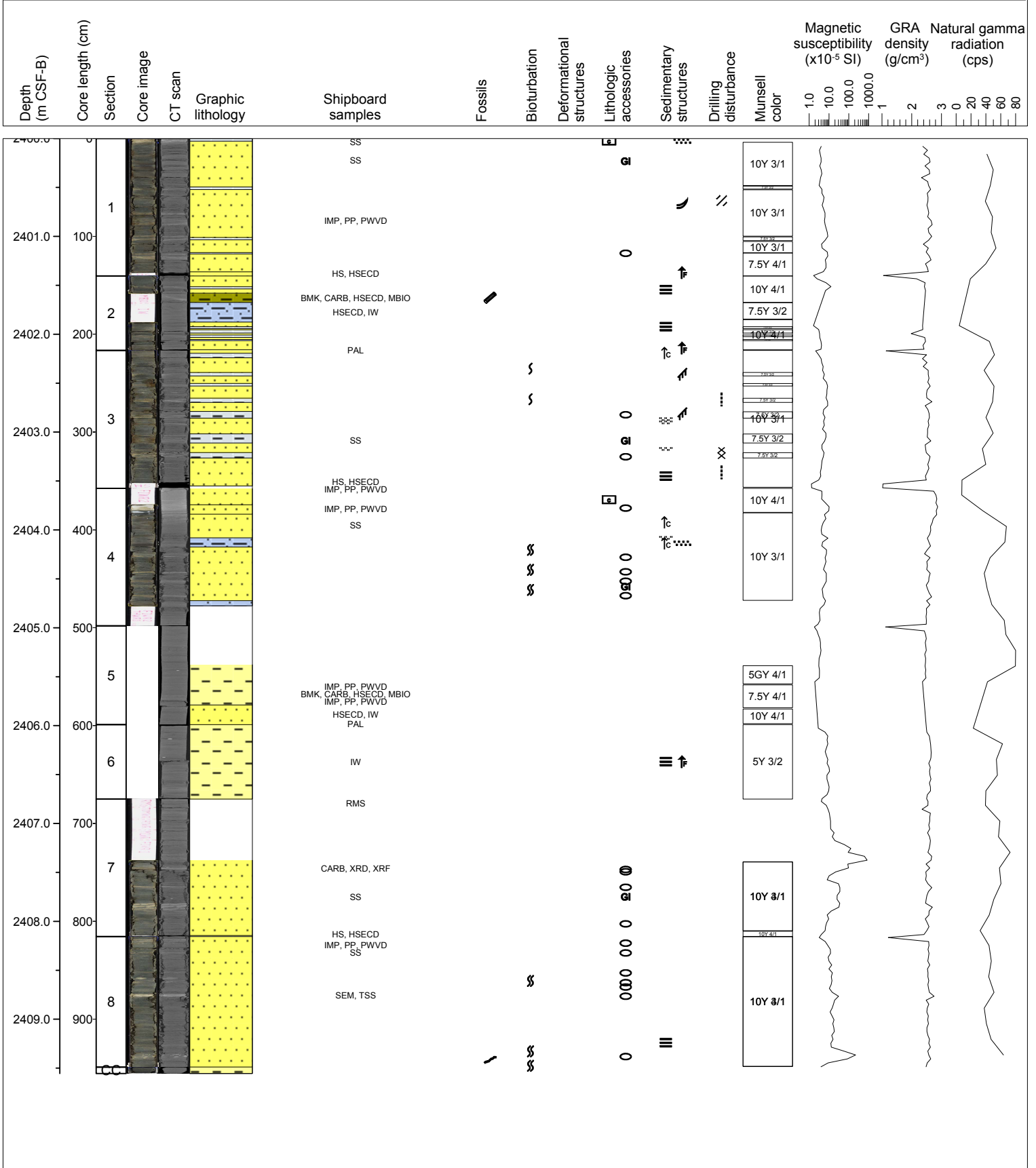
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 29R, interval 2400-2409.5 m (core depth below seafloor)

The lithology is dominated by fine to medium dolomitic sandstone intercalated with some siltstone layers at the upper part. Abundant carbonate banding and nodules (both are sometimes sideritic) are observed at the lower part of the section. Grains are moderately rounded and moderately to poorly sorted. Wood fragments are common. Bioturbation in the lower and middle part is common. Parallel laminations, cross bedding and lenticular bedding occur throughout the core. Some coarsening and fining upward sequences are visible. The upper to middle part of the core is slightly to moderately fractured by drilling.

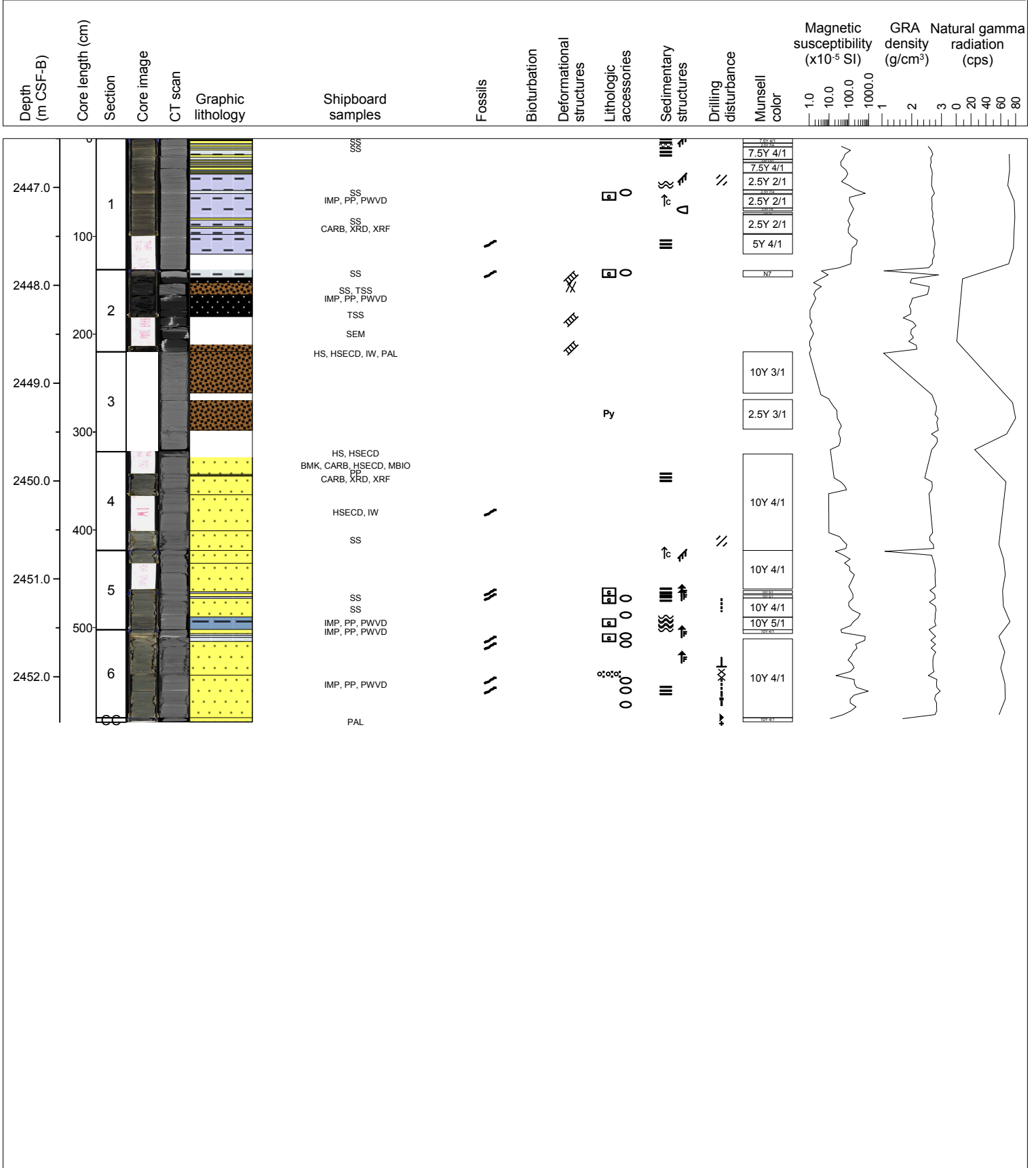
Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



## Hole C0020A Core 30R, interval 2446.5-2452.465 m (core depth below seafloor)

Core 30 is dominated by shale intercalated with fine to medium sandstones and siltstones in the upper part. The lower part is dominated by sandstones intercalated with some carbonate cemented siltstones. Grains are subangular and well sorted. Organic material is common. Some siderite concretion and some sideritic bands occur throughout the core. Parallel and wavy laminations, cross and lenticular bedding is visible in the upper part of the core and in the lower part. Some fining upward (bottom) trends and one coarsening upward trend is observable. A brown coal seam appear in section 2. Drilling breccias are visible in sections 1 and 6. Minor disturbance throughout the lower part of the core.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.




Hole C0020A Core 31R, interval 2456-2456.335 m (core depth below seafloor)

Core 31 consist of shale with two sandstone layers. Grains are mostly subangular and well sorted. Organic material common in the upper part. The core is moderatley fractured.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.

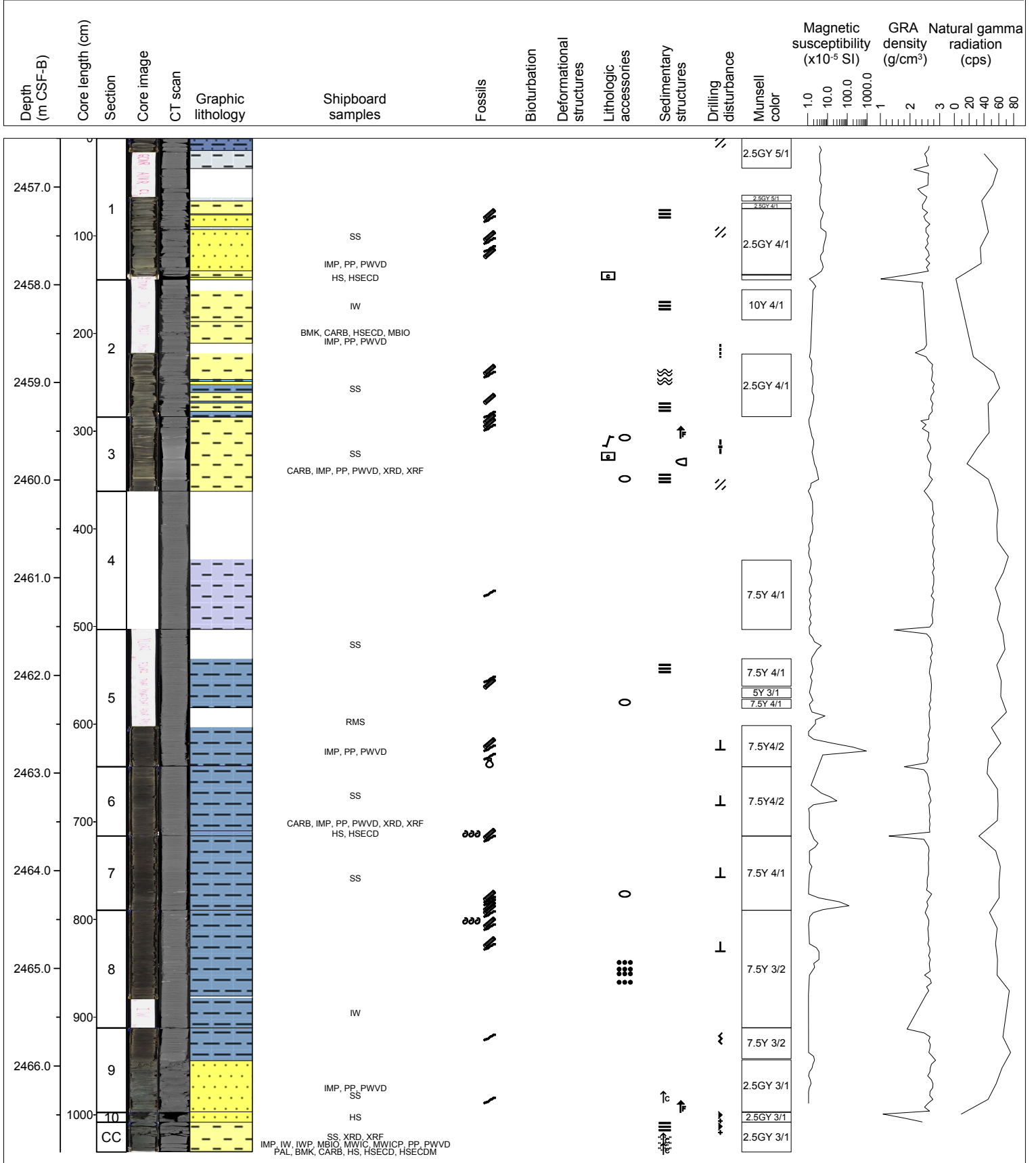
Depth (m CSF-B)	Core length (cm)	Section	Core image	CT scan	Graphic lithology	Shipboard samples	Fossils	Bioturbation	Deformational structures	Lithologic accessories	Sedimentary structures	Drilling disturbance	Munsell color	Magnetic susceptibility ( $\times 10^{-5}$ SI)	GRA density ( $\text{g}/\text{cm}^3$ )	Natural gamma radiation (cps)
-----------------	------------------	---------	------------	---------	-------------------	-------------------	---------	--------------	--------------------------	------------------------	------------------------	----------------------	---------------	--	--	-------------------------------

2456.335	0	1				IMP. PP_PWVD SS							2.5GY 4/1			
----------	---	---	---	--	--	--------------------	--	--	--	--	--	--	-----------	--	--	--

## Hole C0020A Core 32R, interval 2456.5-2466 m (core depth below seafloor)

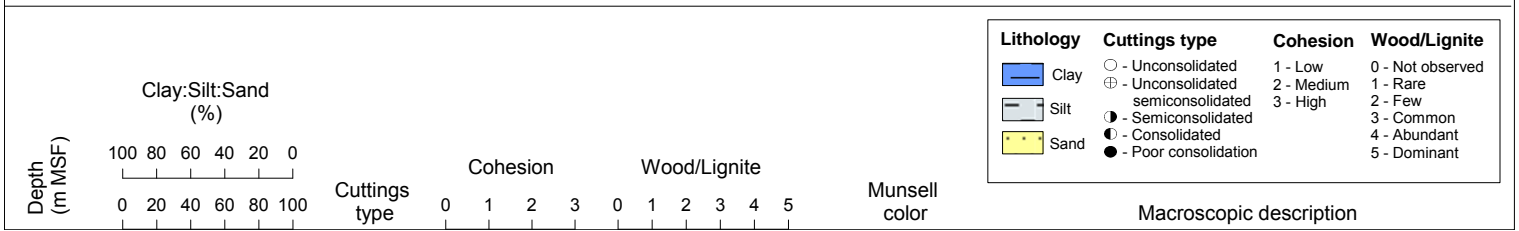
The upper part of core 32 is dominated by fine to medium dolomitic sandstone with some layers of siltstone. Abundant carbonate bands and nodules are observed in the upper part of the section (sometimes sideritic). The middle part is dominated by homogeneous silty shale and sandstone occur in the bottom part. Grains are subangular to well rounded and moderately to well sorted. Wood fragments are common. Parallel and wavy laminations are common. Coarsening upward sequences are very common at the bottom of the core. The core is moderately fractured.

Whole round sections removed before core image scanning were described when possible. In this case, the lithology and color descriptions from these intervals represent residual material from shipboard and personal samples.



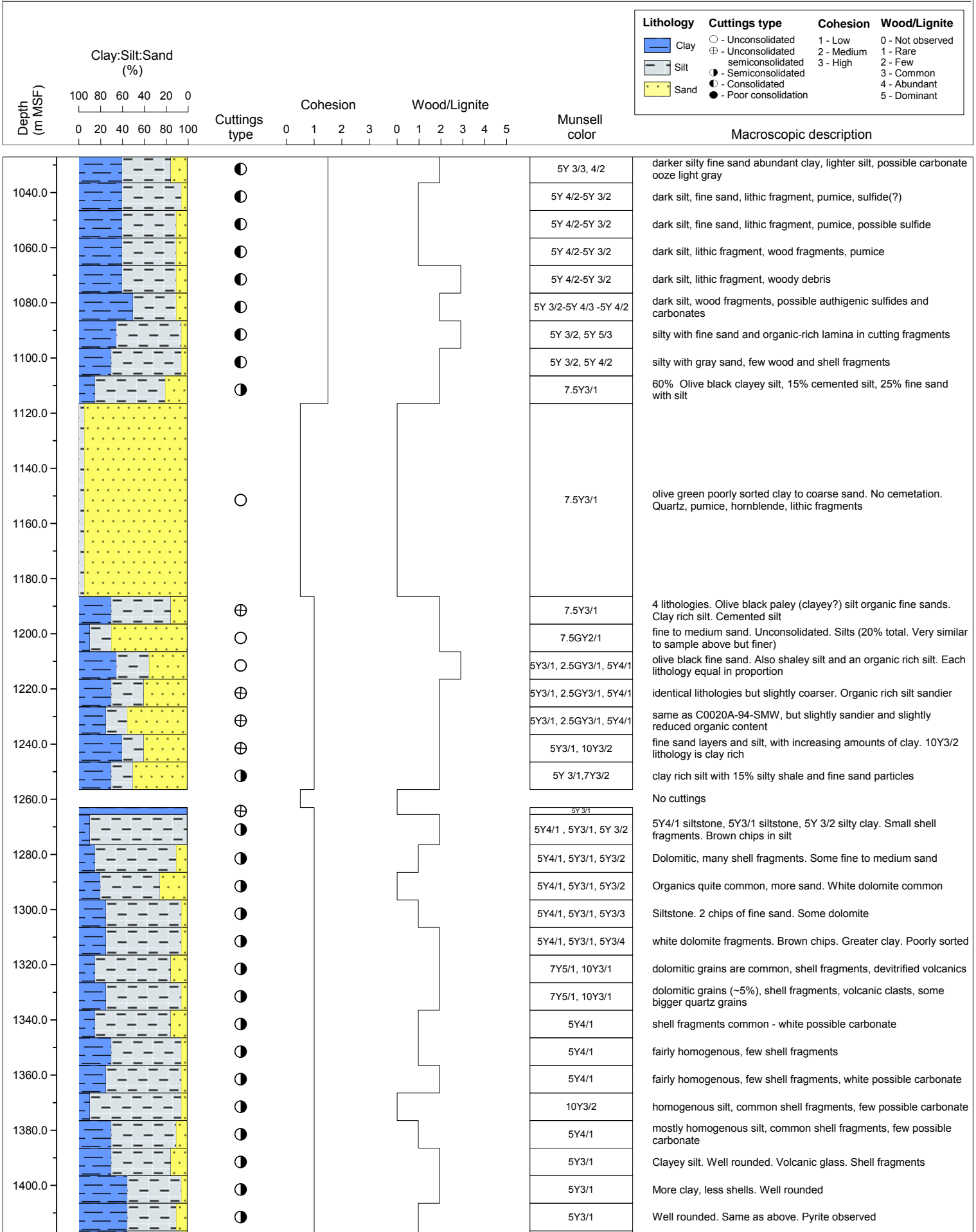


# Hole C0020A Visual Cuttings Description (Macroscopic), 636.5-2466.5 m (below sea floor)

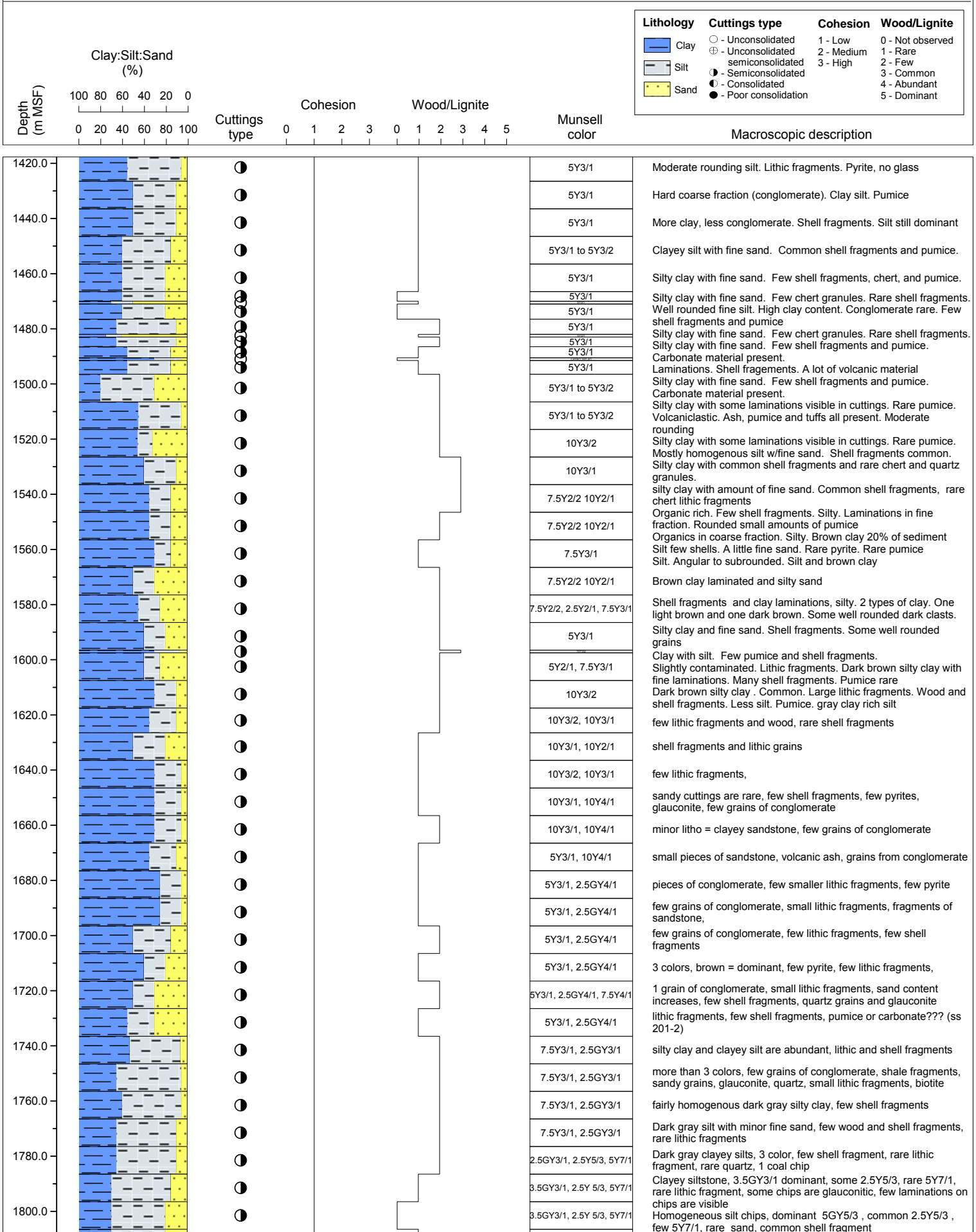


Depth (m MSF)	Clay:Silt:Sand (%)	Cuttings type	Cohesion	Wood/Lignite	Munsell color	Macroscopic description
640.0	100	●	1	0	5Y 3/2	Cement fraction. Clay rich, some fine sand with laminations
650.0	100	●	1	0	5Y 3/2	Shaly, less sand, black clastic minerals
660.0	100	●	1	0	5Y 3/2	clay rich, shell fragments
670.0	100	●	1	0	5Y 3/2	clay rich, no sands, only silt
680.0	100	●	1	0	5Y 3/2	Clay rich, silty
690.0	100	●	1	0	5Y 3/2	Clay rich, lighter particles, some coarser fragments
700.0	100	●	1	0	5Y 3/2	clay rich, lighter particles = tuffitic layers, coarser fragments in particles > 4mm
710.0	100	●	1	0	5Y 3/2	coarser, less clay, shell fragments 2-3 mm
720.0	100	●	1	0	5Y 3/2	tuffaceous, rare shells 3-4 mm, common silt, little sand
730.0	100	●	1	0	5Y 3/2	shaley, mostly clay, shell fragments common, little sand
740.0	100	●	1	0	5Y 3/2	clay, see above
750.0	100	●	1	0	5Y 3/2	clay-rich, no sand, dark colored silt grains
760.0	100	●	1	0	5Y3/2	Clay rich, dark colored silt grains, common clastic carb min and black heavy min.
770.0	100	●	1	0	5Y 3/2	Clay rich, see above
780.0	100	●	1	0	5Y 3/2	clay rich, dark colored silt grain
790.0	100	●	1	0	5Y 3/2	clay rich, common clastic carb and black heavy min, rare shell fragment (2mm)
800.0	100	●	1	0	5Y 3/2	common clastic carb min (1-4mm), few shell fragment (1-3mm)
810.0	100	●	1	0	5Y 3/2	clay rich with abundant lithic fragment, rare glauconite, black small fragment (possible wood/org material), plant debris
820.0	100	●	1	0	5Y 3/2-4/2	silt with abundant lithic fragment, rare black small fragment (possible wood/org material), plant debris
830.0	100	●	1	0	5Y 3/2-4/2	silt with abundant lithic fragment
840.0	100	●	1	0	5Y 3/2-4/2	silt with abundant lithic fragment
850.0	100	●	1	0	5Y 3/2-4/2	silt with abundant lithic fragment (possible sand, igneous rock?)
860.0	100	●	1	0	5Y 3/2-4/2	silt with abundant lithic fragment (possible metamorphic, igneous rock?)
870.0	100	●	1	0	5Y 3/2-4/2	clay rich, light colored silt, common carb mineral, quartz
880.0	100	●	1	0	5Y 3/2-4/2	clay rich, light colored silt, few lithic fragment (sand?)
890.0	100	●	1	0	5Y 3/2-4/2	clay rich, light colored silt, few lithic fragment (igneous rock?)
900.0	100	●	1	0	5Y 3/2-4/2	4/2, clay rich, light colored silt, shell fragments, lithic fragments (volcanic)
910.0	100	●	1	0	5Y 3/2-4/2	clay rich light colored fragments, volcanic fragments (black), carbonate/quartz fragments
920.0	100	●	1	0	5Y 4/2-5/2	silty. Lithic fragments of volcanic material and carbonate
930.0	100	●	1	0	5Y 3/2	rounded lithic fragments, small woody fragments. Some silt to fine sand
940.0	100	●	1	0	5Y 3/2, 5Y 4/2	light fragments (pumice?) Rounded lithic fragments
950.0	100	●	1	0	5Y 3/2, 5Y 4/2	lithic fragments and shell fragments. Clay silts, additionally white fragments (cc, quartz ~5/10%). Very low amounts of fine sand
960.0	100	●	1	0	5Y 3/2, 5Y5/2, 5Y 4/2	light colored and lithic fragments. Possible calc ooze
970.0	100	●	1	0	5Y 4/2, 5Y 4/4	clayey silt and fine sands. Light colored fragments (rare)
980.0	100	●	1	0	5Y 3/2, 5Y 4/3	light fragments (5%), fine sand (~10%, unsorted, sub angular)
990.0	100	●	1	0	5Y 4/2-5Y 3/2, 5Y 4/3	(rare) silty clay 5-10% fine sand. Lithic fragments are rare
1000.0	100	●	1	0	5Y 4/2-5Y 3/2, 5Y 4/3	(rare) silty clay, 5-10% fine sand. Common Lithic fragments
1010.0	100	●	1	0	5Y 3/2, 5Y4/3	(rare) Clayey silt, fine sand (5%). Few volc. frags., 1 big biotite, concretion??
1020.0	100	●	1	0	5Y 3/2, 5Y4/3	(rare) Darker silty, fine sand (5%), carbonate. Few lithic fragments, pumice

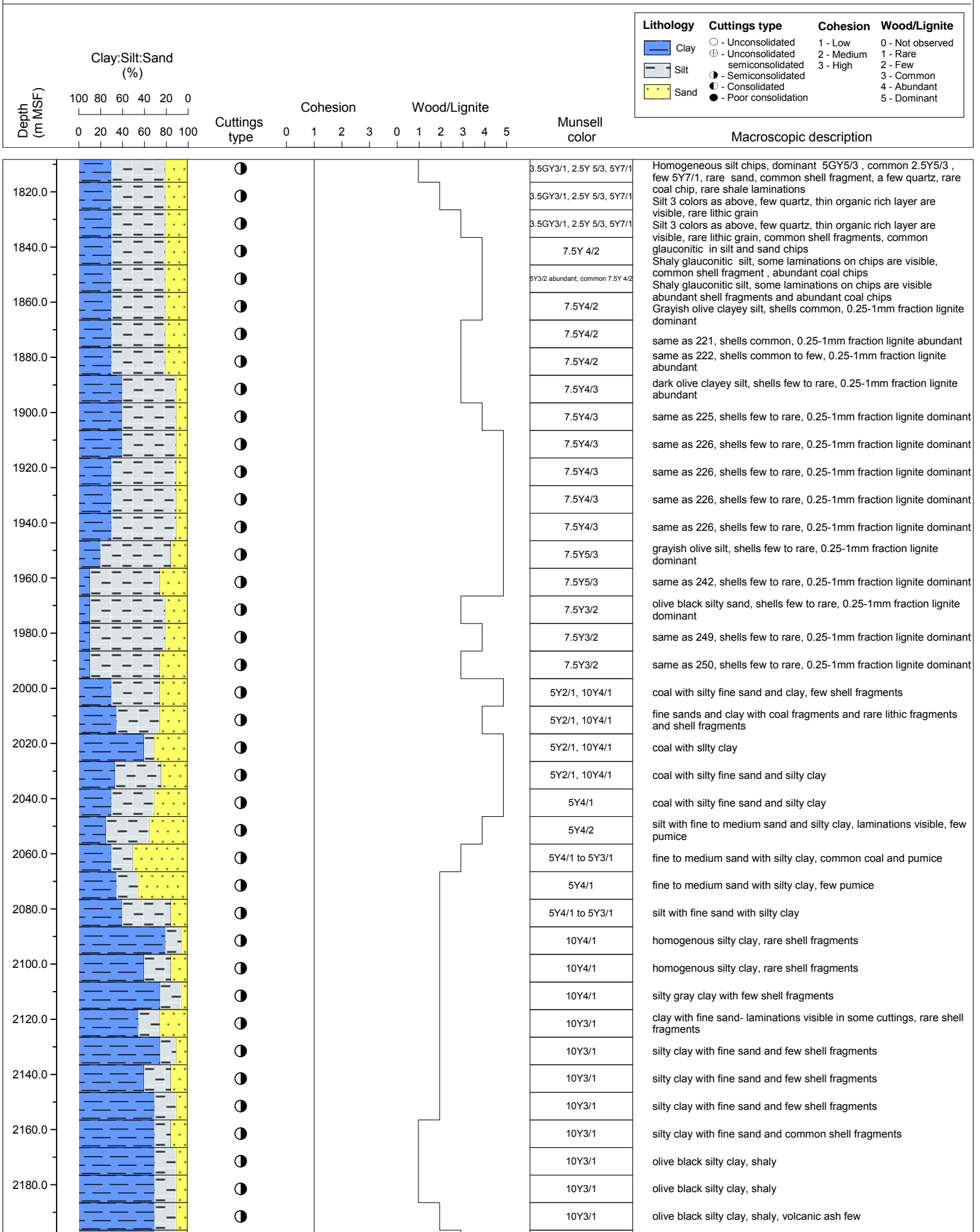
# Hole C0020A Visual Cuttings Description (Macroscopic), 636.5-2466.5 m (below sea floor)



# Hole C0020A Visual Cuttings Description (Macroscopic), 636.5-2466.5 m (below sea floor)



# Hole C0020A Visual Cuttings Description (Macroscopic), 636.5-2466.5 m (below sea floor)



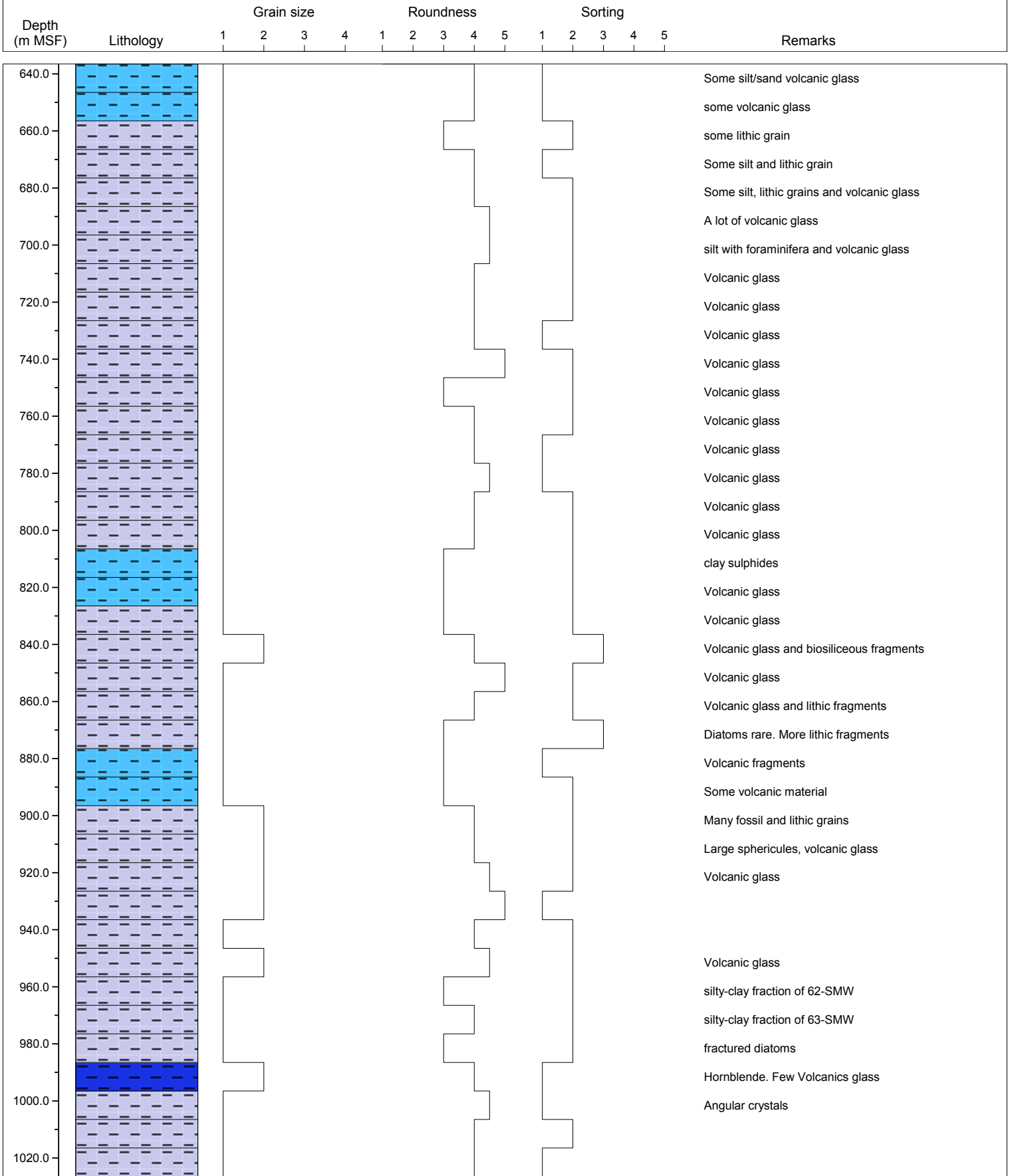
# Hole C0020A Visual Cuttings Description (Macroscopic), 636.5-2466.5 m (below sea floor)



Depth (m MSF)	Clay:Silt:Sand (%)	Cuttings type	Cohesion	Wood/Lignite	Munsell color	Macroscopic description
2200.0		●			10Y3/1	olive black silty clay, shaly, volcanic ash common
		●			10Y3/1	olive black silty clay, shaly, volcanic ash few
2220.0		●			10Y3/1	olive black silty clay, shaly, volcanic ash few
		●			10Y3/1	olive black silty clay, shaly, volcanic ash few
2240.0		●			10Y3/2	olive black silty clay, shaly, volcanic ash few
		●			10Y3/1	silty clay with fine sand, few shell fragments
2260.0		●			10Y3/1	silty clay with fine sand
		●			10Y3/1	silty clay with fine sand, common shell fragments
2280.0		●			10Y3/1 to 10Y4/1	Fine sand with silty clay, carbonate fragments common- slow reaction with HCl producing yellow fluid- likely siderite, common shell fragments
		●			7.5Y3/2 or 10Y3/1	Olive black silty clay, shaly, palagonite few-common, volcanic ash common-abundant, lignite common, shells rare-few
2300.0		●			7.5Y3/2 or 10Y3/1	same as 351, but palagonite rare
		●			7.5Y3/2 or 10Y3/1	same as 352, but palagonite barren,
2320.0		●			7.5Y3/2 or 10Y3/1	same as 353, but shells rare-barren,
		●			7.5Y3/2 or 10Y3/1	same as above, lignite few, shells rare-barren, volcanic ash common
2340.0		●			7.5Y3/2 or 10Y3/1	same as above, lignite few, shells rare-barren, volcanic ash common
		●			7.5Y3/2 or 10Y3/1	same as above, lignite few, shells rare-barren, volcanic ash common
2360.0		●			7.5Y3/2 or 10Y3/1	same as above, lignite few, shells rare-barren, volcanic ash common
		●			7.5Y3/2 or 10Y3/1	same as above, lignite few, shells rare-barren, volcanic ash common
2380.0		●			7.5Y3/2 or 10Y3/1	same as above, lignite few, shells rare-barren, volcanic ash common
		●			7.5Y3/2 or 10Y3/1	same as above, lignite few, shells rare-barren, volcanic ash common
2400.0		●			7.5Y3/2	silty clay with fine sand, common authigenic carbonates
		●			7.5Y3/2	silty clay with prevalent fine to medium sand, common authigenic carbonates, rare pumice
2420.0		●			7.5Y3/2	silty clay with fine sand, abundant authigenic carbonates, few pumice
		●			7.5Y3/2	silty clay with fine sand, abundant authigenic carbonates
2440.0		●			7.5Y3/2	silty clay with fine sand, abundant authigenic carbonates, rare pumice, lithic fragments and pumice
		●			7.5Y3/2	clayey silt with fine sand, abundant lignite and authigenic carbonate
2460.0		●			7.5Y3/2	silty clay with fine sand, abundant lignite and authigenic carbonate, rare shell fragments, pumice, and pyrite

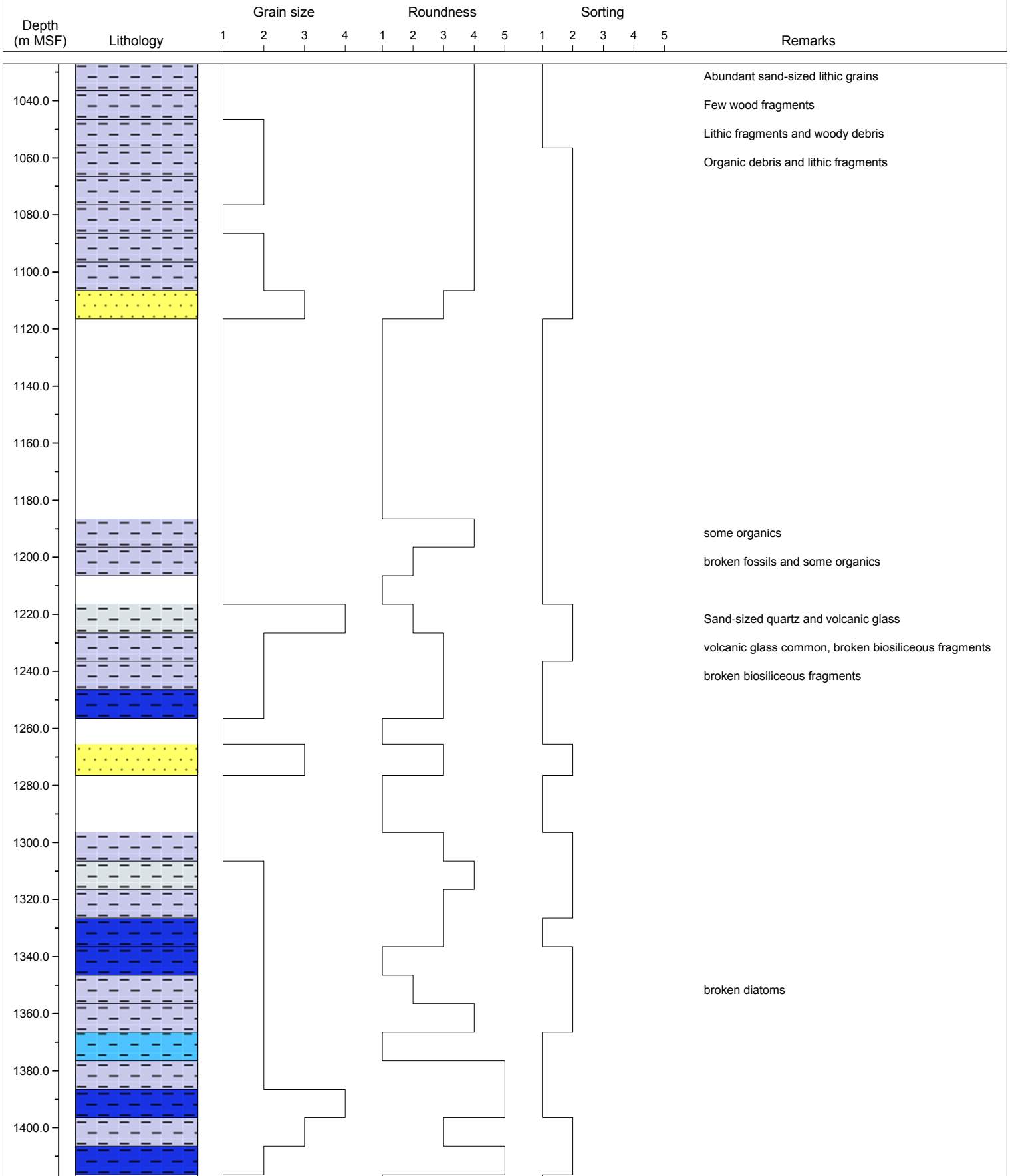
# Hole C0020A Visual Cuttings Description (Microscopic), 636.5-2466.5 m (below sea floor)

Lithology		Clayey siltstone	Silty sand/ silty sandstone	Grain size	Roundness	Sorting
Mud/ mudstone	Silt/siltstone	Sand/sandstone	Volcanic ash	1 - Very fine	1 - Rounded	1 - Poor
Silty shale/ silty mudstone	Sandy silt/ sandy siltstone	Silt intercalated with shale/sand		2 - Fine	2 - Subrounded	2 - Moderate
				3 - Medium	3 - Moderate	3 - Well sorted
				4 - Coarse	4 - Subangular	5 - Angular



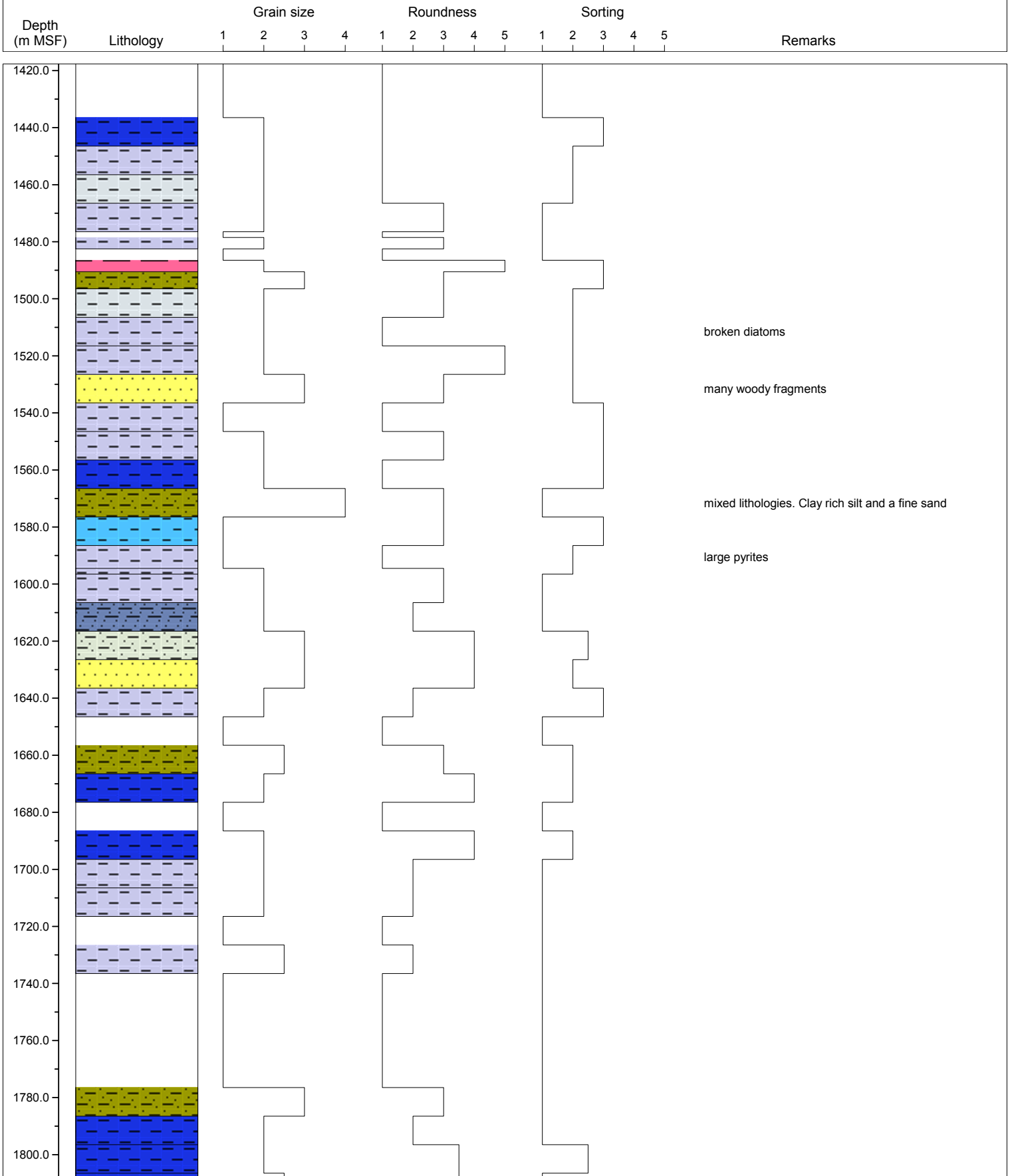
# Hole C0020A Visual Cuttings Description (Microscopic), 636.5-2466.5 m (below sea floor)

Lithology		Clayey siltstone	Silty sand/silty sandstone	Grain size	Roundness	Sorting
Mud/mudstone	Silt/siltstone	Sand/sandstone	Volcanic ash	1 - Very fine	1 - Rounded	1 - Poor
Silty shale/silty mudstone	Sandy silt/sandy siltstone	Silt intercalated with shale/sand		2 - Fine	2 - Subrounded	2 - Moderate
				3 - Medium	3 - Moderate	3 - Well sorted
				4 - Coarse	4 - Subangular	
					5 - Angular	



# Hole C0020A Visual Cuttings Description (Microscopic), 636.5-2466.5 m (below sea floor)

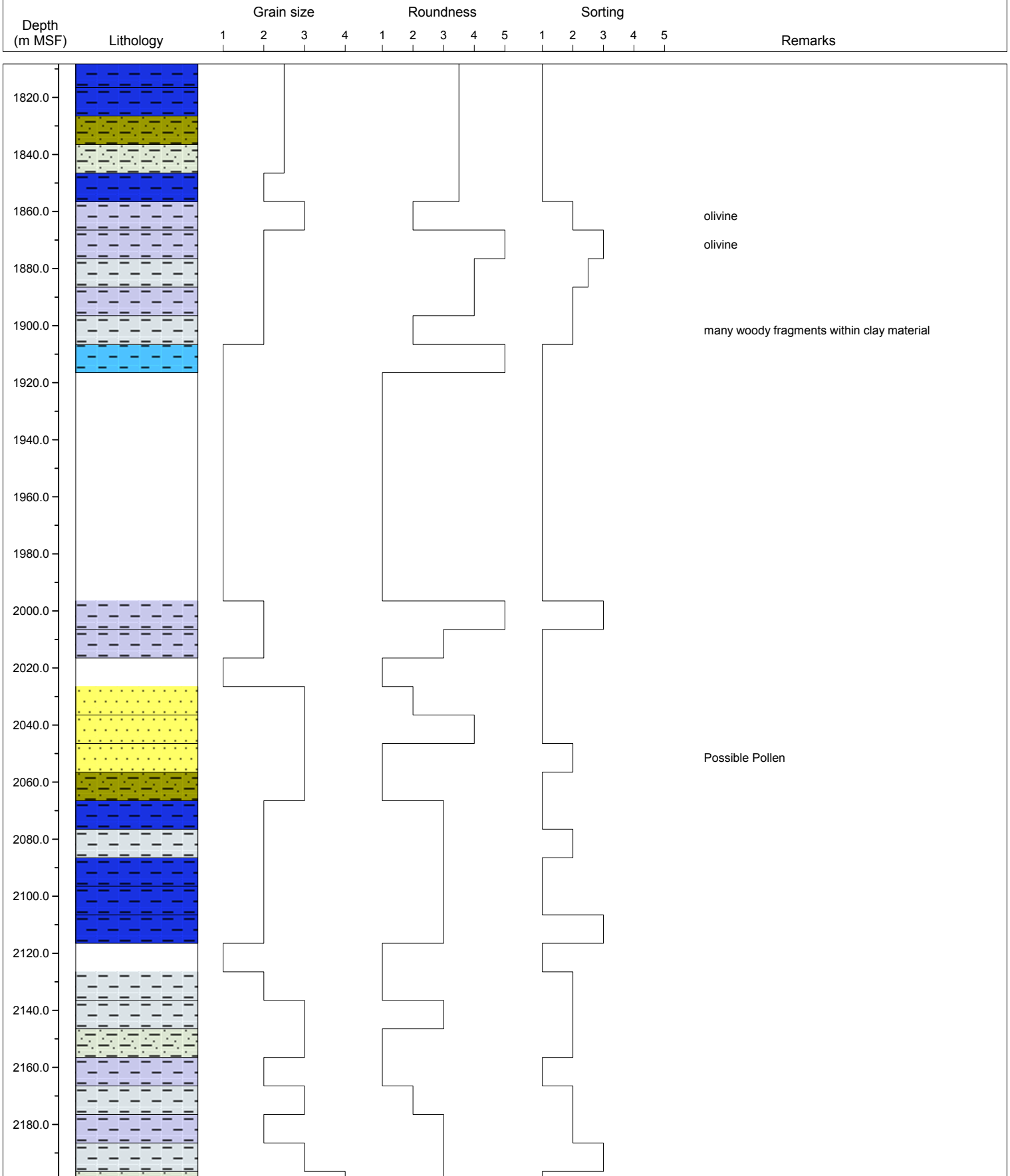
Lithology		Clayey siltstone	Silty sand/silty sandstone	Grain size	Roundness	Sorting
Mud/mudstone	Silt/siltstone	Sand/sandstone	Volcanic ash	1 - Very fine	1 - Rounded	1 - Poor
Silty shale/silty mudstone	Sandy silt/sandy siltstone	Silt intercalated with shale/sand		2 - Fine	2 - Subrounded	2 - Moderate
				3 - Medium	3 - Moderate	3 - Well sorted
				4 - Coarse	4 - Subangular	5 - Angular





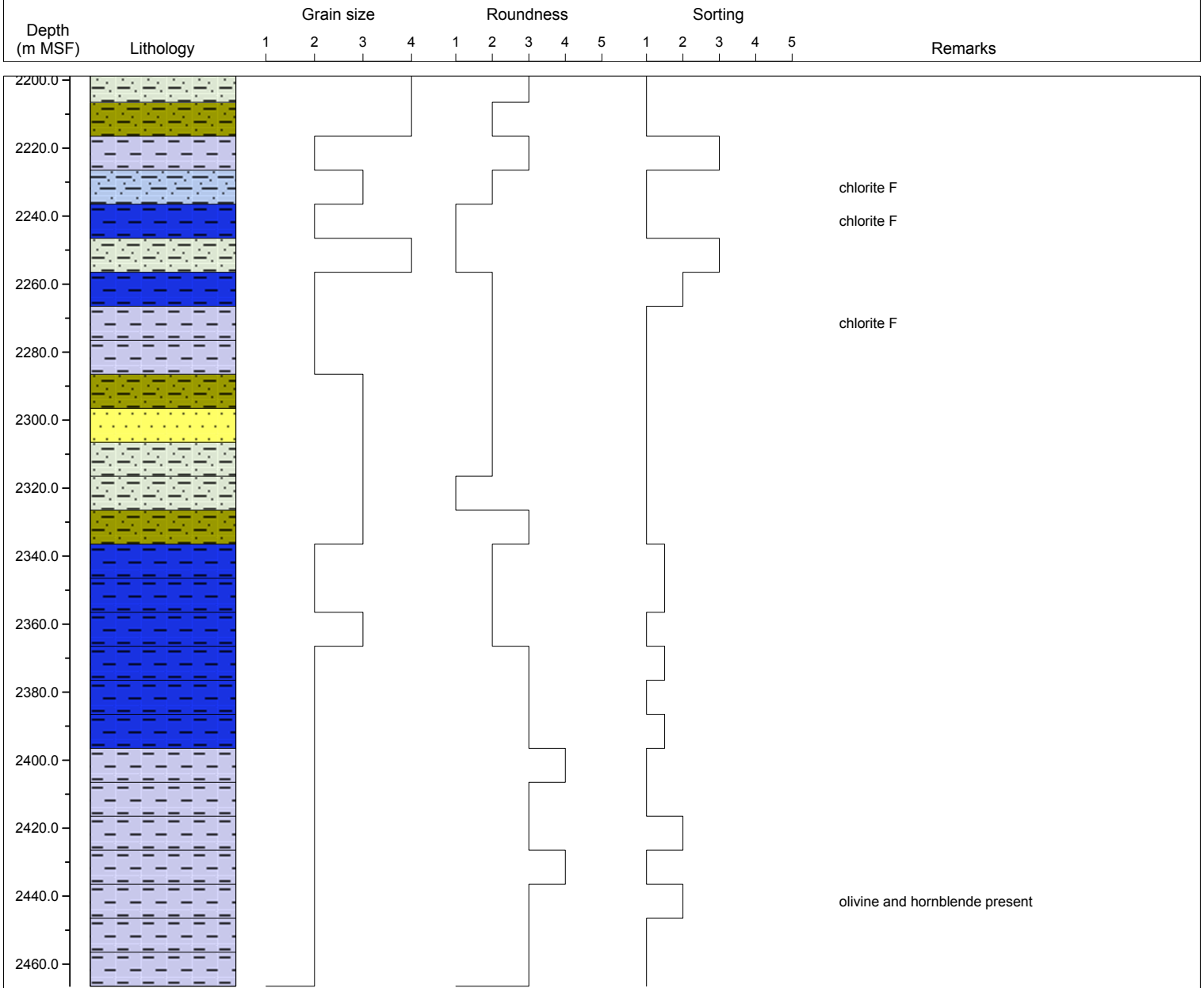
# Hole C0020A Visual Cuttings Description (Microscopic), 636.5-2466.5 m (below sea floor)

Lithology		Clayey siltstone	Silty sand/silty sandstone	Grain size	Roundness	Sorting
Mud/mudstone	Silt/siltstone	Sand/sandstone	Volcanic ash	1 - Very fine	1 - Rounded	1 - Poor
Silty shale/silty mudstone	Sandy silt/sandy siltstone	Silt intercalated with shale/sand		2 - Fine	2 - Subrounded	2 - Moderate
				3 - Medium	3 - Moderate	3 - Well sorted
				4 - Coarse	4 - Subangular	5 - Angular



# Hole C0020A Visual Cuttings Description (Microscopic), 636.5-2466.5 m (below sea floor)

Lithology		Clayey siltstone	Silty sand/silty sandstone	Grain size	Roundness	Sorting
Mud/mudstone	Silt/siltstone	Sand/sandstone	Volcanic ash	1 - Very fine	1 - Rounded	1 - Poor
Silty shale/silty mudstone	Sandy silt/sandy siltstone	Silt intercalated with shale/sand		2 - Fine	2 - Subrounded	2 - Moderate
				3 - Medium	3 - Moderate	3 - Well sorted
				4 - Coarse	4 - Subangular	5 - Angular







## Smear slides Site C0020 (core continued)

Hole ID	Core	Type	Section	Interval	From (mbst)	To (mbst)	Lithology	Key component	Grain size	Grain size #	Roundness	Roundness #	Sorting	Sorting #	Remarks	Clay	Quartz	Feldspar	Lithic fragments	Mica	Glauconite	Pyroxene	Fe-Mg silicate mineral	Volcanic glass	Pumice	Iron sulfide	Palagonite	Calcite	Aragonite	Dolomite	Siderite	Barite	Organic material	Wood/lignite	Diatoms	Sponge spicules	Radiolaria	Siliceous flagellates	Foraminifera	Shell fragments	Nannofossil						
C0020A	29	R	1	2400.02	2400.02		dolomite		fine	2	subangular	5	poorly sorted	1		F	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	D	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed					
C0020A	29	R	1	22-23	2400.23		fine sand		fine	2	well rounded	1	moderate sorting	2		F	D	not observed	A	R	R	not observed	Olivine R	not observed	not observed	not observed	not observed	not observed	not observed	D	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed			
C0020A	29	R	3	19-93	2403.955	2403.996	fine sand	dolomitic	fine	2	moderate	3	poorly sorted	1		R	A	not observed	A	C	F	not observed	not observed	F	not observed	not observed	not observed	not observed	not observed	D	not observed	not observed	C	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed			
C0020A	29	R	4	37-38	2403.945	2403.955	sand		coarse	4	well rounded	1	poorly sorted	1		F	A	not observed	A	F	F	not observed	Olivine F	C	F	not observed	not observed	not observed	not observed	A	not observed	not observed	not observed	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed		
C0020A	29	R	7	100	2407.75		fine to medium sand		medium	3	subrounded	2	poorly sorted	1		C	A	not observed	A	F	F	not observed	Olivine F	C	F	not observed	not observed	not observed	not observed	F	not observed	not observed	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed		
C0020A	29	R	8	16-17	2408.315	2408.325	silty clay	dolomitic	very fine	1	well rounded	1	well sorted	3		F	R	not observed	A	R	not observed	not observed	not observed	F	not observed	not observed	not observed	not observed	D	not observed	not observed	not observed	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed		
C0020A	30	R	1	6-1	2446.5	2446.51	Fine sand		fine	2	moderate	3	moderate sorting	2		F	A	not observed	A	C	F	not observed	not observed	F	F	not observed	not observed	not observed	not observed	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed		
C0020A	30	R	1	10	2446.6		silt	organic-rich	very fine	1	subangular	4	well sorted	3		F	F	not observed	D	F	not observed	not observed	R	not observed	not observed	not observed	not observed	not observed	D	not observed	not observed	C	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed		
C0020A	30	R	1	55	2447.05		medium sand		medium	3	angular	5	well sorted	3		R	F	not observed	A	F	not observed	not observed	R	not observed	C	not observed	not observed	not observed	F	not observed	not observed	D	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed		
C0020A	30	R	1	79	2525.5		silty clay		very fine	1	subrounded	2	well sorted	3		D	F	not observed	F	not observed	R	not observed	not observed	F	not observed	R	not observed	R	A	not observed	F	C	not observed	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	30	R	2	4	2447.88		silty clay	dolomitic	very fine	1	moderate	3	well sorted	3		A	F	not observed	not observed	not observed	R	not observed	not observed	R	not observed	F	not observed	R	not observed	A	R	not observed	A	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed
C0020A	30	R	2	18	2448.02		silty clay	organic-rich	very fine	1	angular	5	well sorted	3		C	F	not observed	D	not observed	not observed	not observed	not observed	R	not observed	F	not observed	not observed	not observed	not observed	D	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	30	R	4	90	2450.6		sand		medium	2	subrounded	2	poorly sorted	1		R	A	not observed	A	F	not observed	not observed	Olivine F	C	not observed	C	not observed	F	not observed	not observed	R	not observed	not observed	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	30	R	5	48	2451.19		silt		very fine	1	moderate	3	well sorted	3		A	F	not observed	C	F	R	not observed	not observed	C	R	not observed	not observed	not observed	A	R	not observed	R	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	30	R	5	60	2451.31		silt		very fine	1	well rounded	1	poorly sorted	1		C	C	not observed	A	R	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	A	R	not observed	R	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	31	R	1	29.5	2456.295		Silty clay		very fine	1	subangular	5	well sorted	3		A	F	not observed	F	F	F	not observed	not observed	F	not observed	not observed	not observed	not observed	not observed	D	not observed	not observed	F	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	32	R	1	100	2457.5		silty sand	dolomitic	medium	3	subangular	5	moderate sorting	2		F	C	not observed	A	F	R	not observed	Olivine R	F	R	not observed	not observed	F	C	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed
C0020A	32	R	2	111	2459.06		silt		very fine	1	well rounded	1	well sorted	1		not observed	F	not observed	C	R	not observed	not observed	R	not observed	not observed	not observed	not observed	D	F	not observed	R	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed
C0020A	32	R	3	37	2459.725		clay	dolomitic	very fine	1	subrounded	2	well sorted	1		D	F	not observed	A	F	R	not observed	not observed	F	not observed	not observed	A	not observed	A	not observed	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed
C0020A	32	R	5	15.5	2461.865		silty clay		very fine	1	subrounded	2	moderate sorting	2		A	C	not observed	A	R	R	not observed	not observed	F	not observed	not observed	not observed	not observed	C	not observed	not observed	R	F	not observed	F	not observed	F	not observed	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	32	R	6	29.5	2463.23		silty clay		very fine	1	subrounded	2	well sorted	1		A	F	not observed	A	C	R	not observed	not observed	F	not observed	not observed	not observed	not observed	D	not observed	not observed	R	F	not observed	R	F	not observed	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	32	R	7	43	2464.075		silty clay		very fine	1	subangular	4	moderate sorting	2		D	F	not observed	A	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	F	not observed	not observed	R	F	not observed	R	F	not observed	R	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	
C0020A	32	R	CC	16-18	2466.735	2466.755	Fine sand		fine	2	subrounded	2	moderate sorting	2	chlorite R	R	A	not observed	D	F	R	not observed	not observed	C	not observed	not observed	not observed	not observed	R	not observed	not observed	C	F	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	not observed	

Abundances: R=Rare(&lt;0.1%), F=Few (0.1-1%), C=Common (1-10%), A=Abundant(10-50%), D=Dominant(&gt;50%)

Thin sections Site C0020 (core)

Sample	From (mbsf)	To (mbsf)	Lithology	Grain size	Roundness	Sorting	Remarks	Quartz	Epidote	Kyanite	Feldspar	Lithic fragments	Mica	Olivine	Volcanic glass	Iron sulfides	Chlorite	Clays	Calcite
C0020A7R-1	1599	1599.05	Fine groundmass. Meta tuffite?	Coarse	Well rounded	Moderate-High	All basic igneous mineral present, no calcite	D			A		F	A	R		A		
C0020A7R-1	1599.05	1599.13	Gabbro	Coarse	Angular	Well sorted		R	A		D								
C0020A23R-9	1981.62	1981.65	calcite cemented shaly fine sandstone	fine	angular	poorly sorted		D			R	C	C	R				C	D

Sample	From (mbsf)	To (mbsf)	Lithology	Grain size	Roundness	Sorting	Remarks	Pyroxene	Organic material	Dolomite	Aragonite	Wood/lignite	Diatoms	Sponge spicules	Radiolaria	Silico flagellates	Foraminifera	Shell fragments	Nanofossils
C0020A7R-1	1599	1599.05	Fine groundmass. Meta tuffite?	Coarse	Well rounded	Moderate-High	All basic igneous mineral present, no calcite	A											
C0020A7R-1	1599.05	1599.13	Gabbro	Coarse	Angular	Well sorted		D											
C0020A23R-9	1981.62	1981.65	calcite cemented shaly fine sandstone	fine	angular	poorly sorted			R										

Abundances: R=Rare(<0.1%), F=Few (0.1-1%), C=Common (1-10%), A=Abundant(10-50%), D=Dominant(>50%)