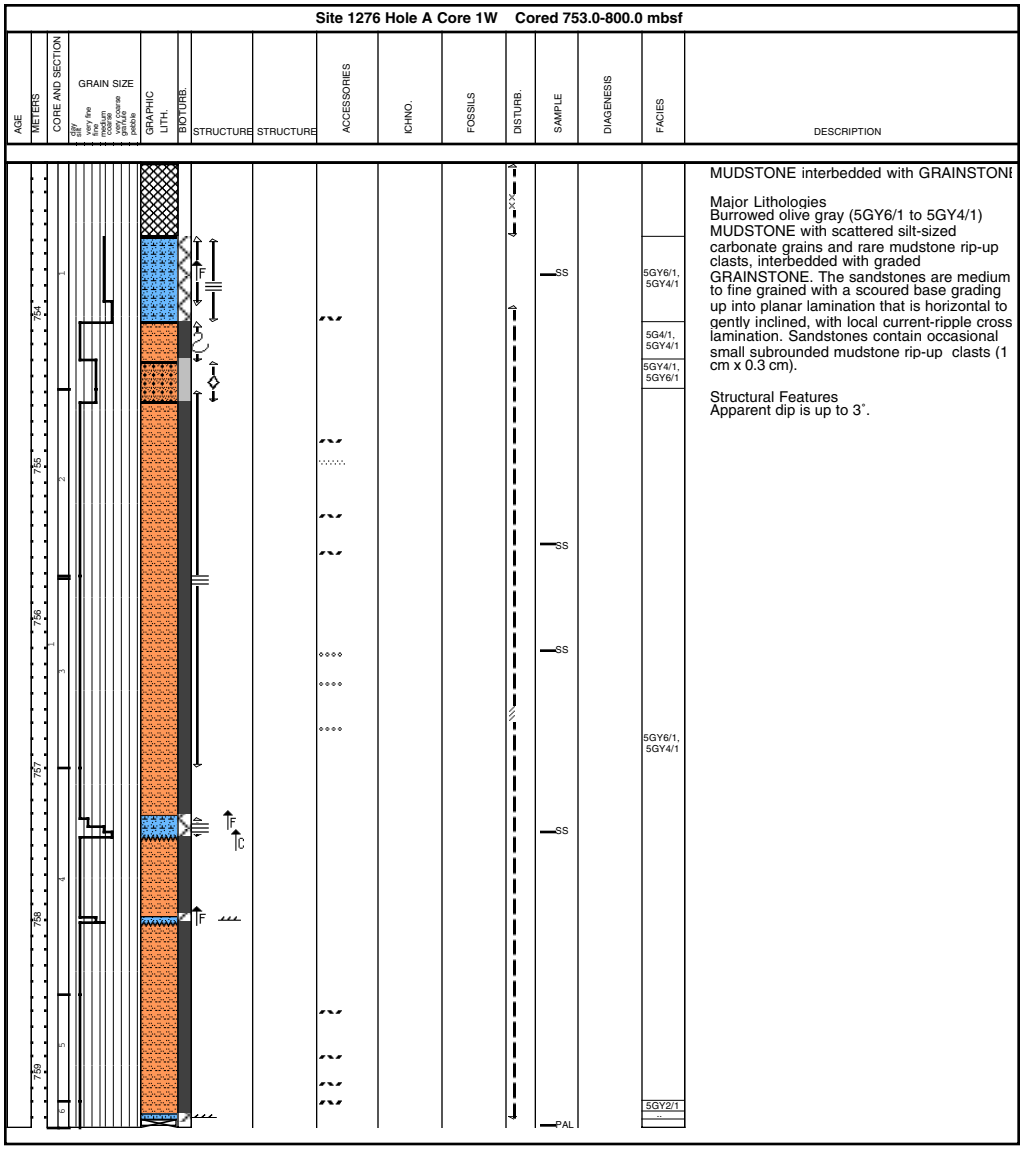
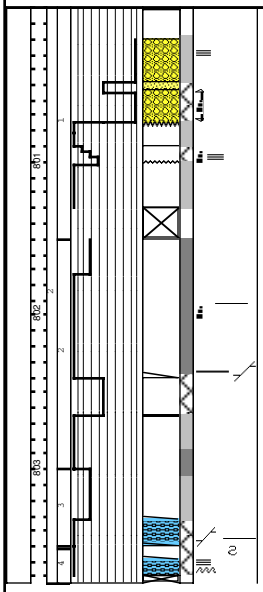
Core Photo


Site 1276 Hole A Core 1W Cored 753.0-800.0 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
754
755
756
757
758
759
SS
SS
SS
SS
PAL
5GY6/1, 5GY4/1
5G4/1, 5GY4/1
5GY4/1, 5GY6/1
5GY6/1, 5GY4/1
5GY2/1
MUDSTONE interbedded with GRAINSTONE
Major Lithologies
Burrowed olive gray (5GY6/1 to 5GY4/1) MUDSTONE with scattered silt-sized carbonate grains and rare mudstone rip-up clasts, interbedded with graded GRAINSTONE. The sandstones are medium to fine grained with a scoured base grading up into planar lamination that is horizontal to gently inclined, with local current-ripple cross lamination. Sandstones contain occasional small subrounded mudstone rip-up clasts (1 cm x 0.3 cm).
Structural Features
Apparent dip is up to 3°.

Core Photo

Site 1276 Hole A Core 2R Cored 800.0-809.5 mbsf



MUDSTONE and GRAINSTONE

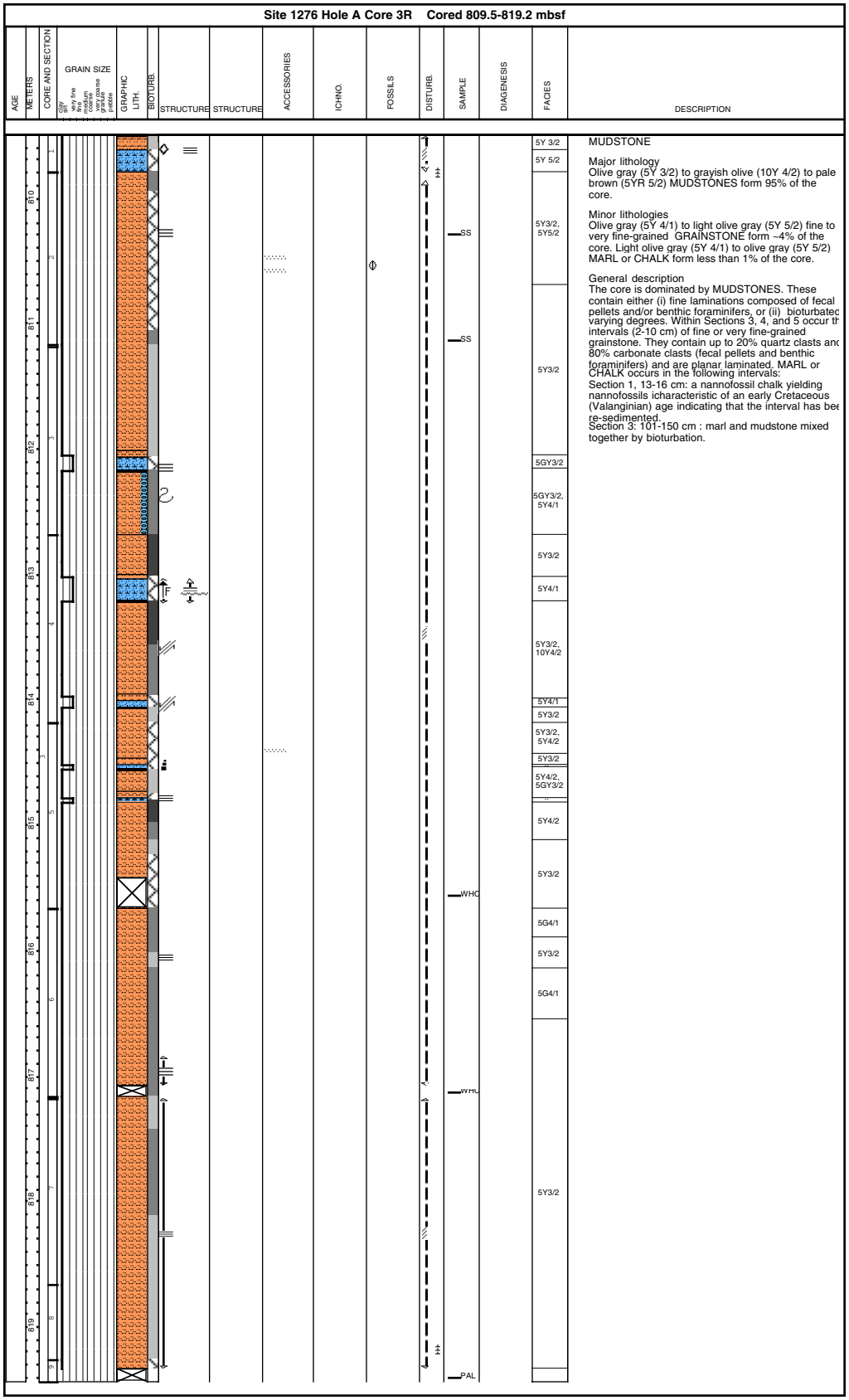
Major Lithologies
Olive green (6GY6/1) and greenish grey (6GY4/1) MUDSTONE that is variably burrowed with planar to convolute lamination. The mudstone is commonly sandy with numerous sand-sized grains mainly composed of carbonate and small mud clasts.

Minor lithology
Coarse GRAINSTONE, grading from granule-sized at the base to medium sandstone at the top of beds.

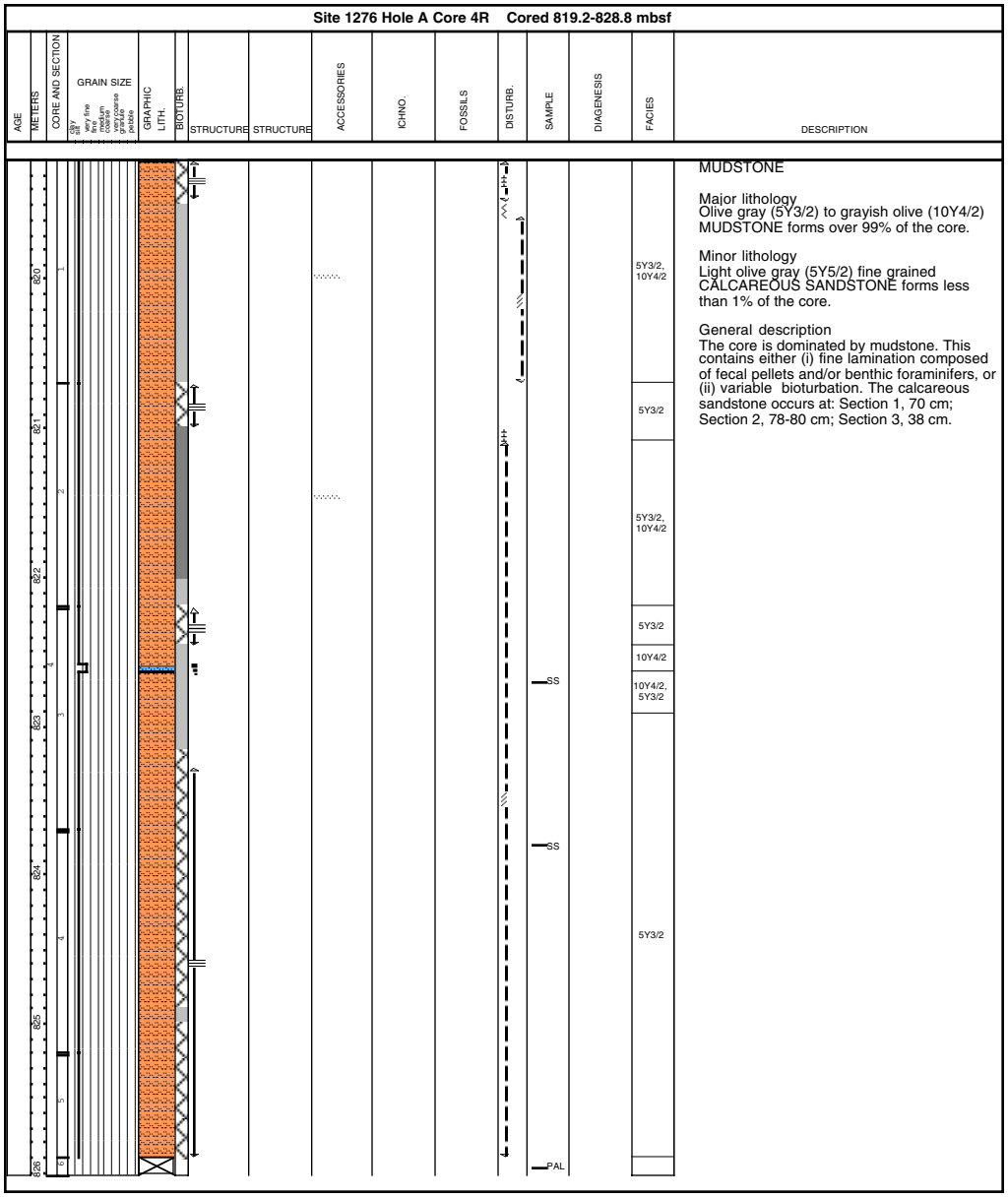
General Description
Within the grainstone, small (10 X 2 mm) elongate mudstone clasts are common near the base, also carbonate grains including benthic and plantic forams. Also, a mudstone conglomerate, rarely occurs composed of mudstone clasts or rafts. The mudstone clast are internally deformed with internal convolute lamination. The matrix contains numerous carbonate grains including forams. In section three, a sandy mudstone is present with various sedimentary clasts of granule to cobble size. These clasts are internally deformed and burrowed, in contrast to the matrix that is not deformed. An isolated infered clast of internally sheared, burrowed and color-mottled chalk occurs at the base of section three.

Structural features
Soft- sediment structures (in Section 2) are small vertical normal faults (displacement <10 mm) and rare millimeter-scale ptygmatic folds. A small shear fold with a sub-horizontal axial plane is present in the core catcher, together with small-scale crenulation lamination resulting from deformation in a semi-lithified state.

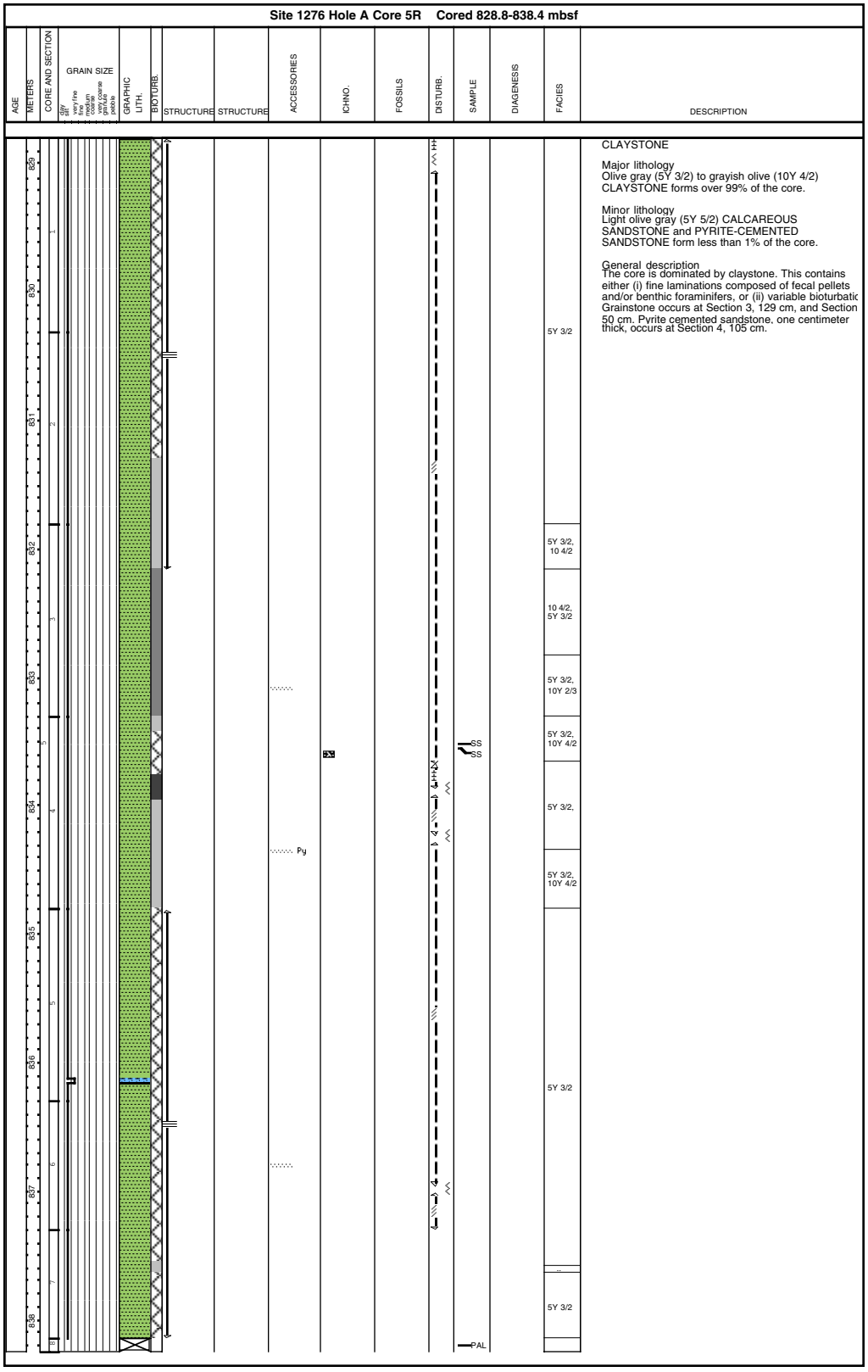
Core Photo


Site 1276 Hole A Core 3R Cored 809.5-819.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
810
811
812
813
814
815
816
817
818
819
SS
SS
WHC
WHC
PAL
5Y 3/2
5Y 5/2
5Y3/2, 5Y5/2
5Y3/2
5GY3/2
5GY3/2, 5Y4/1
5Y3/2
5Y4/1
5Y3/2, 10Y4/2
5Y4/1
5Y3/2
5Y3/2, 5Y4/2
5Y3/2
5Y4/2, 5GY3/2
5Y4/2
5Y3/2
5G4/1
5Y3/2
5G4/1
5Y3/2
MUDSTONE
Major lithology
Olive gray (5Y 3/2) to grayish olive (10Y 4/2) to pale brown (5YR 5/2) MUDSTONES form 95% of the core.
Minor lithologies
Olive gray (5Y 4/1) to light olive gray (5Y 5/2) fine to very fine-grained GRAINSTONE form ~4% of the core. Light olive gray (5Y 4/1) to olive gray (5Y 5/2) MARL or CHALK form less than 1% of the core.
General description
The core is dominated by MUDSTONES. These contain either (i) fine laminations composed of fecal pellets and/or benthic foraminifers, or (ii) bioturbatec varying degrees. Within Sections 3, 4, and 5 occur th intervals (2-10 cm) of fine or very fine-grained grainstone. They contain up to 20% quartz clasts anc 80% carbonate clasts (fecal pellets and benthic foraminifers) and are planar laminated. MARL or CHALK occurs in the following intervals:
Section 1, 13-16 cm: a nannofossil chalk yielding nannofossils icharacteristic of an early Cretaceous (Valanginian) age indicating that the interval has bee re-sedimented.
Section 3: 101-150 cm : marl and mudstone mixed together by bioturbation.

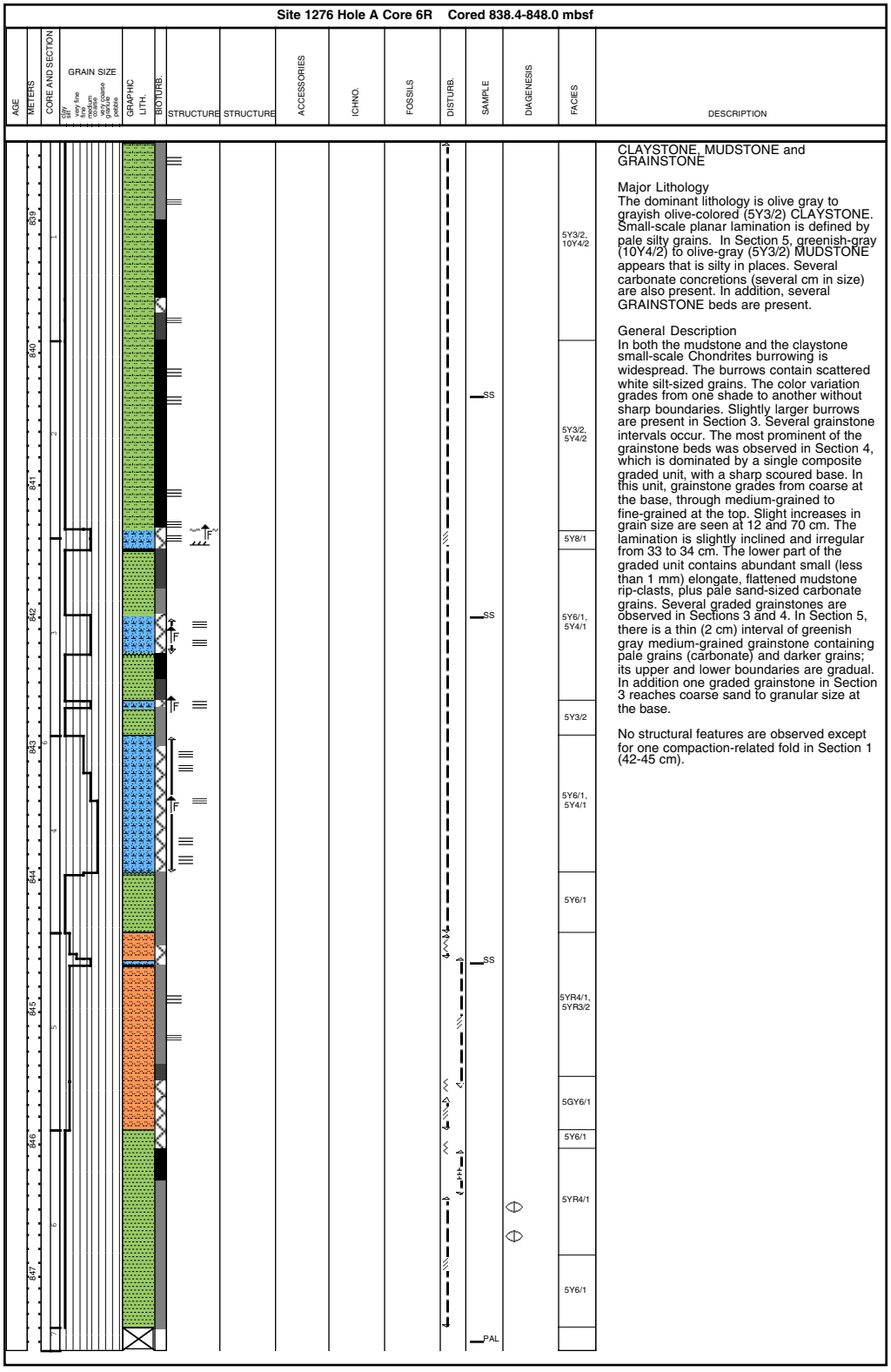
Core Photo


Site 1276 Hole A Core 4R Cored 819.2-828.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
820
821
822
823
824
825
826
SS
SS
PAL
5Y3/2, 10Y4/2
5Y3/2
5Y3/2, 10Y4/2
5Y3/2
10Y4/2
10Y4/2, 5Y3/2
5Y3/2
MUDSTONE
Major lithology
Olive gray (5Y3/2) to grayish olive (10Y4/2) MUDSTONE forms over 99% of the core.
Minor lithology
Light olive gray (5Y5/2) fine grained CALCAREOUS SANDSTONE forms less than 1% of the core.
General description
The core is dominated by mudstone. This contains either (i) fine lamination composed of fecal pellets and/or benthic foraminifers, or (ii) variable bioturbation. The calcareous sandstone occurs at: Section 1, 70 cm; Section 2, 78-80 cm; Section 3, 38 cm.

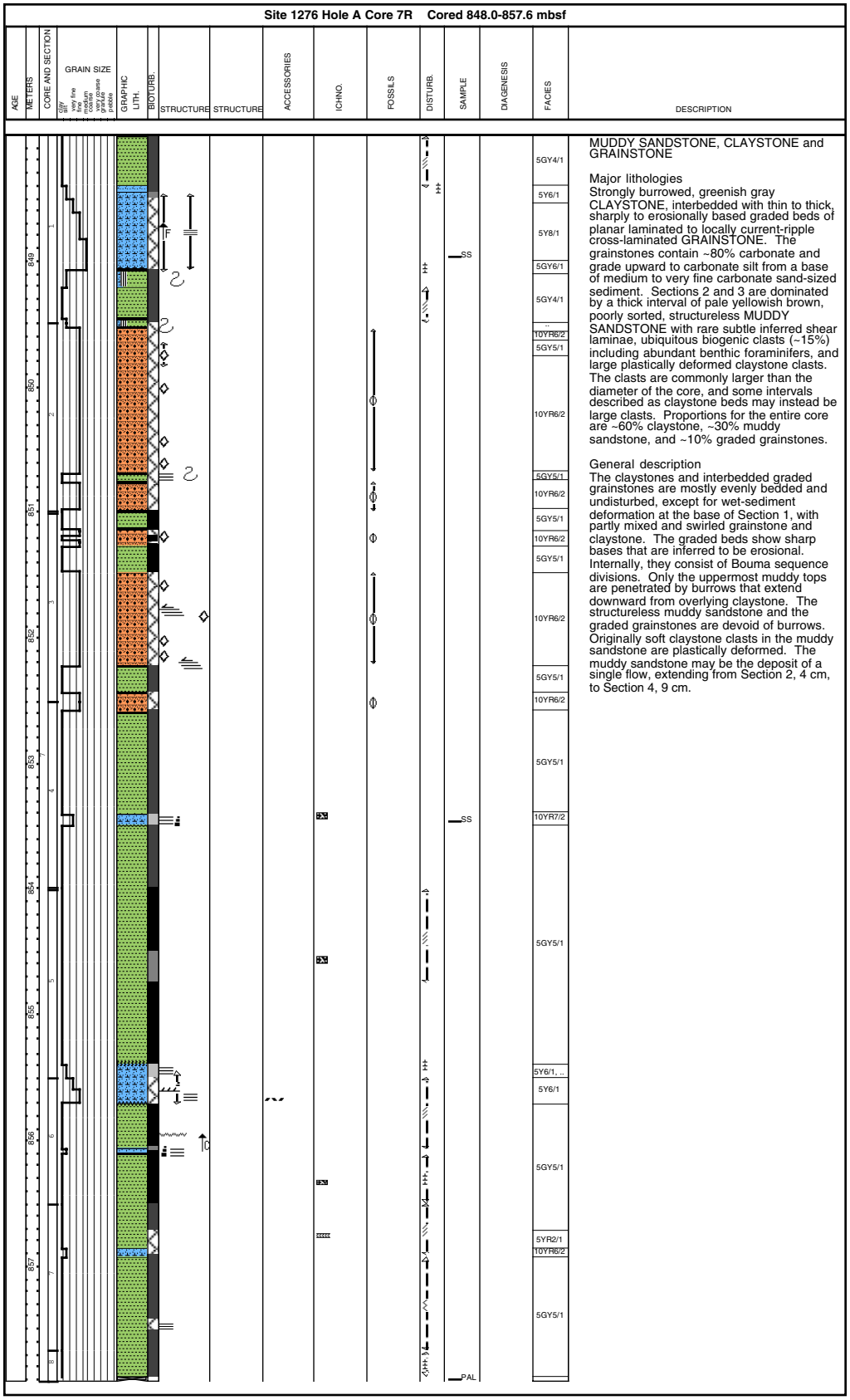
Core Photo


Site 1276 Hole A Core 5R Cored 828.8-838.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
829
830
831
832
833
834
835
836
837
838
Py
SS
SS
PAL
5Y 3/2
5Y 3/2, 10 4/2
10 4/2, 5Y 3/2
5Y 3/2, 10Y 2/3
5Y 3/2, 10Y 4/2
5Y 3/2,
5Y 3/2, 10Y 4/2
5Y 3/2
5Y 3/2
CLAYSTONE
Major lithology
Olive gray (5Y 3/2) to grayish olive (10Y 4/2) CLAYSTONE forms over 99% of the core.
Minor lithology
Light olive gray (5Y 5/2) CALCAREOUS SANDSTONE and PYRITE-CEMENTED SANDSTONE form less than 1% of the core.
General description
The core is dominated by claystone. This contains either (i) fine laminations composed of fecal pellets and/or benthic foraminifers, or (ii) variable bioturbatic
Grainstone occurs at Section 3, 129 cm, and Section 50 cm. Pyrite cemented sandstone, one centimeter thick, occurs at Section 4, 105 cm.

Core Photo


Site 1276 Hole A Core 6R Cored 838.4-848.0 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
839
840
841
842
843
844
845
846
847
SS
SS
SS
PAL
5Y3/2, 10Y4/2
5Y3/2, 5Y4/2
5Y8/1
5Y6/1, 5Y4/1
5Y3/2
5Y6/1, 5Y4/1
5Y6/1
5YR4/1, 5YR3/2
5GY6/1
5Y6/1
5YR4/1
5Y6/1
CLAYSTONE, MUDSTONE and GRAINSTONE
Major Lithology
The dominant lithology is olive gray to grayish olive-colored (5Y3/2) CLAYSTONE. Small-scale planar lamination is defined by pale silty grains. In Section 5, greenish-gray (10Y4/2) to olive-gray (5Y3/2) MUDSTONE appears that is silty in places. Several carbonate concretions (several cm in size) are also present. In addition, several GRAINSTONE beds are present.
General Description
In both the mudstone and the claystone small-scale Chondrites burrowing is widespread. The burrows contain scattered white silt-sized grains. The color variation grades from one shade to another without sharp boundaries. Slightly larger burrows are present in Section 3. Several grainstone intervals occur. The most prominent of the grainstone beds was observed in Section 4, which is dominated by a single composite graded unit, with a sharp scoured base. In this unit, grainstone grades from coarse at the base, through medium-grained to fine-grained at the top. Slight increases in grain size are seen at 12 and 70 cm. The lamination is slightly inclined and irregular from 33 to 34 cm. The lower part of the graded unit contains abundant small (less than 1 mm) elongate, flattened mudstone rip-clasts, plus pale sand-sized carbonate grains. Several graded grainstones are observed in Sections 3 and 4. In Section 5, there is a thin (2 cm) interval of greenish gray medium-grained grainstone containing pale grains (carbonate) and darker grains; its upper and lower boundaries are gradual. In addition one graded grainstone in Section 3 reaches coarse sand to granular size at the base.
No structural features are observed except for one compaction-related fold in Section 1 (42-45 cm).

Core Photo


Site 1276 Hole A Core 7R Cored 848.0-857.6 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
849
850
851
852
853
854
855
856
857
SS
SS
PAL
5GY4/1
5Y6/1
5Y8/1
5GY6/1
5GY4/1
10YR6/2
5GY5/1
10YR6/2
5GY5/1
10YR6/2
5GY5/1
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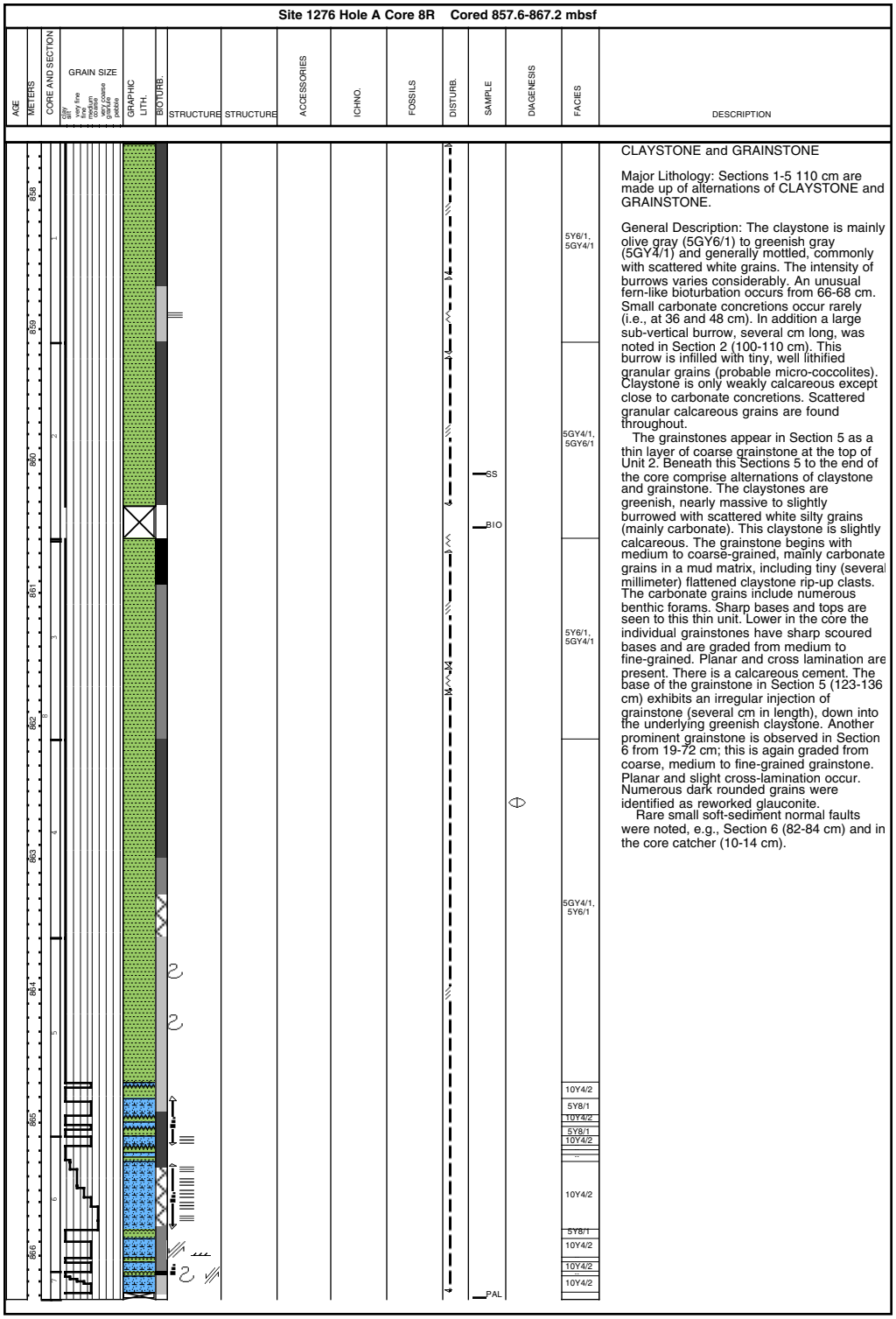
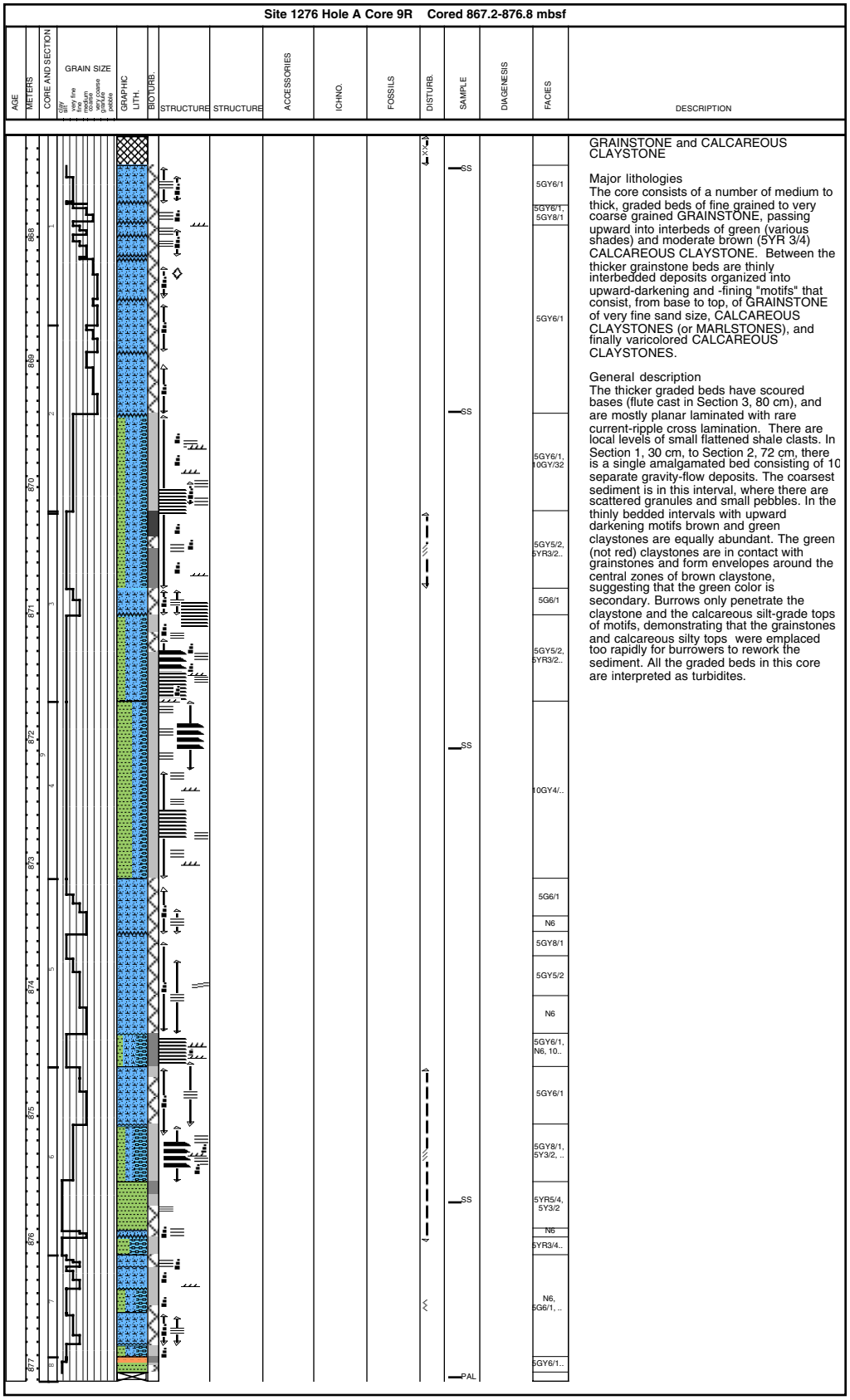
5GY5/1
10YR6/2
5GY5/1
10YR7/2
5GY5/1
5Y6/1, ..
5Y6/1
5GY5/1
5YR2/1
10YR6/2
5GY5/1
MUDDY SANDSTONE, CLAYSTONE and GRAINSTONE
Major lithologies
Strongly burrowed, greenish gray CLAYSTONE, interbedded with thin to thick, sharply to erosionally based graded beds of planar laminated to locally current-ripple cross-laminated GRAINSTONE. The grainstones contain ~80% carbonate and grade upward to carbonate silt from a base of medium to very fine carbonate sand-sized sediment. Sections 2 and 3 are dominated by a thick interval of pale yellowish brown, poorly sorted, structureless MUDDY SANDSTONE with rare subtle inferred shear laminae, ubiquitous biogenic clasts (~15%) including abundant benthic foraminifers, and large plastically deformed claystone clasts. The clasts are commonly larger than the diameter of the core, and some intervals described as claystone beds may instead be large clasts. Proportions for the entire core are ~60% claystone, ~30% muddy sandstone, and ~10% graded grainstones.
General description
The claystones and interbedded graded grainstones are mostly evenly bedded and undisturbed, except for wet-sediment deformation at the base of Section 1, with partly mixed and swirled grainstone and claystone. The graded beds show sharp bases that are inferred to be erosional. Internally, they consist of Bouma sequence divisions. Only the uppermost muddy tops are penetrated by burrows that extend downward from overlying claystone. The structureless muddy sandstone and the graded grainstones are devoid of burrows. Originally soft claystone clasts in the muddy sandstone are plastically deformed. The muddy sandstone may be the deposit of a single flow, extending from Section 2, 4 cm, to Section 4, 9 cm.

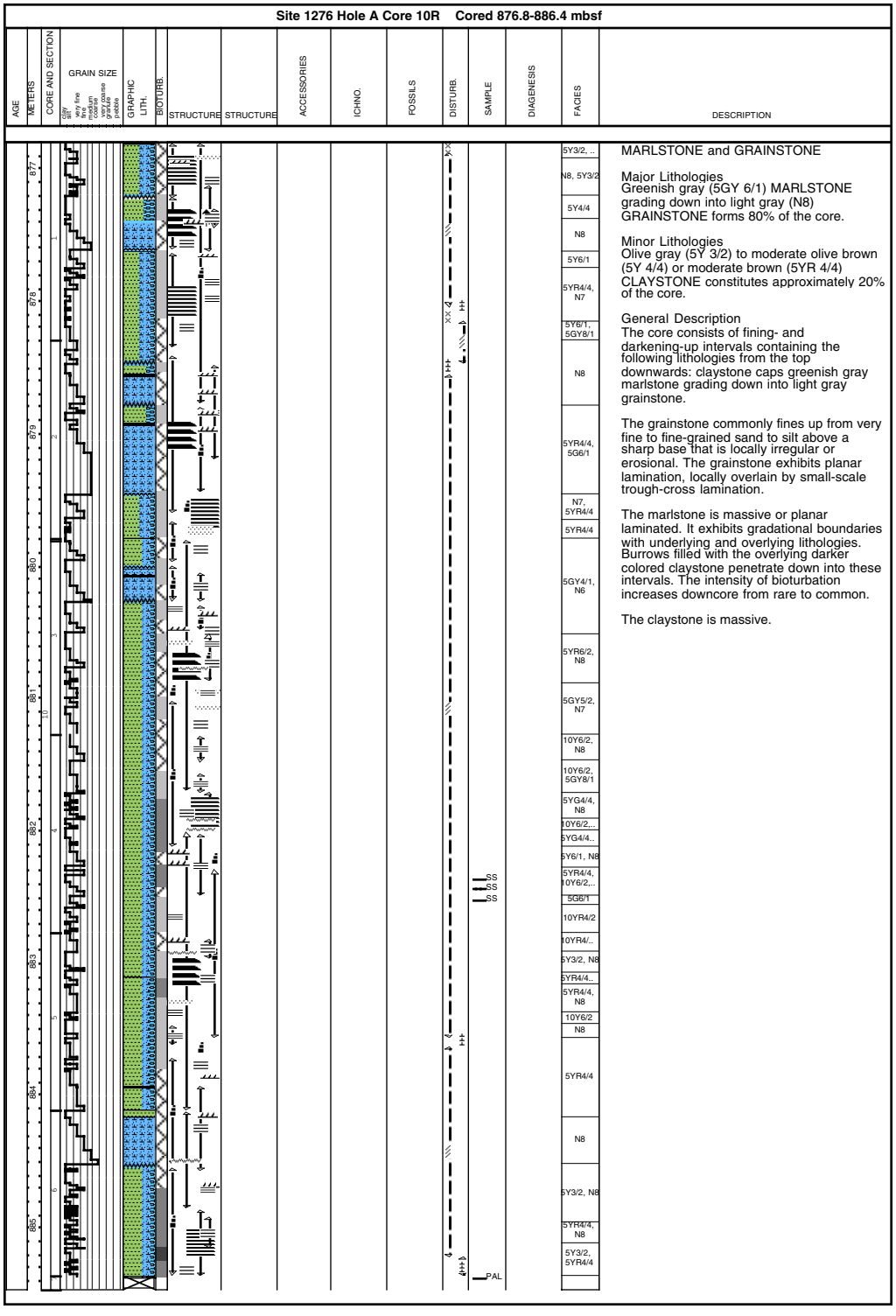
Core Photo


Site 1276 Hole A Core 8R Cored 857.6-867.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
858
859
860
861
862
863
864
865
866
SS
BIO
PAL
5Y6/1, 5GY4/1
5GY4/1, 5GY6/1
5Y6/1, 5GY4/1
5GY4/1, 5Y6/1
10Y4/2
5Y8/1
10Y4/2
5Y8/1
10Y4/2
10Y4/2
5Y8/1
10Y4/2
10Y4/2
10Y4/2
CLAYSTONE and GRAINSTONE
Major Lithology: Sections 1-5 110 cm are made up of alternations of CLAYSTONE and GRAINSTONE.
General Description: The claystone is mainly olive gray (5GY6/1) to greenish gray (5GY4/1) and generally mottled, commonly with scattered white grains. The intensity of burrows varies considerably. An unusual fern-like bioturbation occurs from 66-68 cm. Small carbonate concretions occur rarely (i.e., at 36 and 48 cm). In addition a large sub-vertical burrow, several cm long, was noted in Section 2 (100-110 cm). This burrow is infilled with tiny, well lithified granular grains (probable micro-coccolites). Claystone is only weakly calcareous except close to carbonate concretions. Scattered granular calcareous grains are found throughout.
The grainstones appear in Section 5 as a thin layer of coarse grainstone at the top of Unit 2. Beneath this Sections 5 to the end of the core comprise alternations of claystone and grainstone. The claystones are greenish, nearly massive to slightly burrowed with scattered white silty grains (mainly carbonate). This claystone is slightly calcareous. The grainstone begins with medium to coarse-grained, mainly carbonate grains in a mud matrix, including tiny (several millimeter) flattened claystone rip-up clasts. The carbonate grains include numerous benthic forams. Sharp bases and tops are seen to this thin unit. Lower in the core the individual grainstones have sharp scoured bases and are graded from medium to fine-grained. Planar and cross lamination are present. There is a calcareous cement. The base of the grainstone in Section 5 (123-136 cm) exhibits an irregular injection of grainstone (several cm in length), down into the underlying greenish claystone. Another prominent grainstone is observed in Section 6 from 19-72 cm; this is again graded from coarse, medium to fine-grained grainstone. Planar and slight cross-lamination occur. Numerous dark rounded grains were identified as reworked glauconite.
Rare small soft-sediment normal faults were noted, e.g., Section 6 (82-84 cm) and in the core catcher (10-14 cm).

Core Photo


Site 1276 Hole A Core 9R Cored 867.2-876.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
868
869
870
871
872
873
874
875
876
877
SS
SS
SS
SS
PAL
5GY6/1
5GY6/1, 5GY8/1
5GY6/1
5GY6/1, 10GY/32
5GY5/2, 5YR3/2..
5G6/1
5GY5/2, 5YR3/2..
10GY4/..
5G6/1
N6
5GY8/1
5GY5/2
N6
5GY6/1, N6, 10..
5GY6/1
5GY8/1, 5Y3/2, ..
5YR5/4, 5Y3/2
N6
5YR3/4..
N6, 5G6/1, ..
5GY6/1..
GRAINSTONE and CALCAREOUS CLAYSTONE
Major lithologies
The core consists of a number of medium to thick, graded beds of fine grained to very coarse grained GRAINSTONE, passing upward into interbeds of green (various shades) and moderate brown (5YR 3/4) CALCAREOUS CLAYSTONE. Between the thicker grainstone beds are thinly interbedded deposits organized into upward-darkening and -fining "motifs" that consist, from base to top, of GRAINSTONE of very fine sand size, CALCAREOUS CLAYSTONES (or MARLSTONES), and finally varicolored CALCAREOUS CLAYSTONES.
General description
The thicker graded beds have scoured bases (flute cast in Section 3, 80 cm), and are mostly planar laminated with rare current-ripple cross lamination. There are local levels of small flattened shale clasts. In Section 1, 30 cm, to Section 2, 72 cm, there is a single amalgamated bed consisting of 10 separate gravity-flow deposits. The coarsest sediment is in this interval, where there are scattered granules and small pebbles. In the thinly bedded intervals with upward darkening motifs brown and green claystones are equally abundant. The green (not red) claystones are in contact with grainstones and form envelopes around the central zones of brown claystone, suggesting that the green color is secondary. Burrows only penetrate the claystone and the calcareous silt-grade tops of motifs, demonstrating that the grainstones and calcareous silty tops were emplaced too rapidly for burrowers to rework the sediment. All the graded beds in this core are interpreted as turbidites.

Core Photo


Site 1276 Hole A Core 10R Cored 876.8-886.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
877
878
879
880
881
882
883
884
885
SS
PAL
5Y3/2, ..
N8, 5Y3/2
5Y4/4
N8
5Y6/1
5YR4/4, N7
5Y6/1, 5GY8/1
N8
5YR4/4, 5G6/1
N7, 5YR4/4
5YR4/4
5GY4/1, N6
5YR6/2, N8
5GY5/2, N7
10Y6/2, N8
10Y6/2, 5GY8/1
5YG4/4, N8
10Y6/2,..
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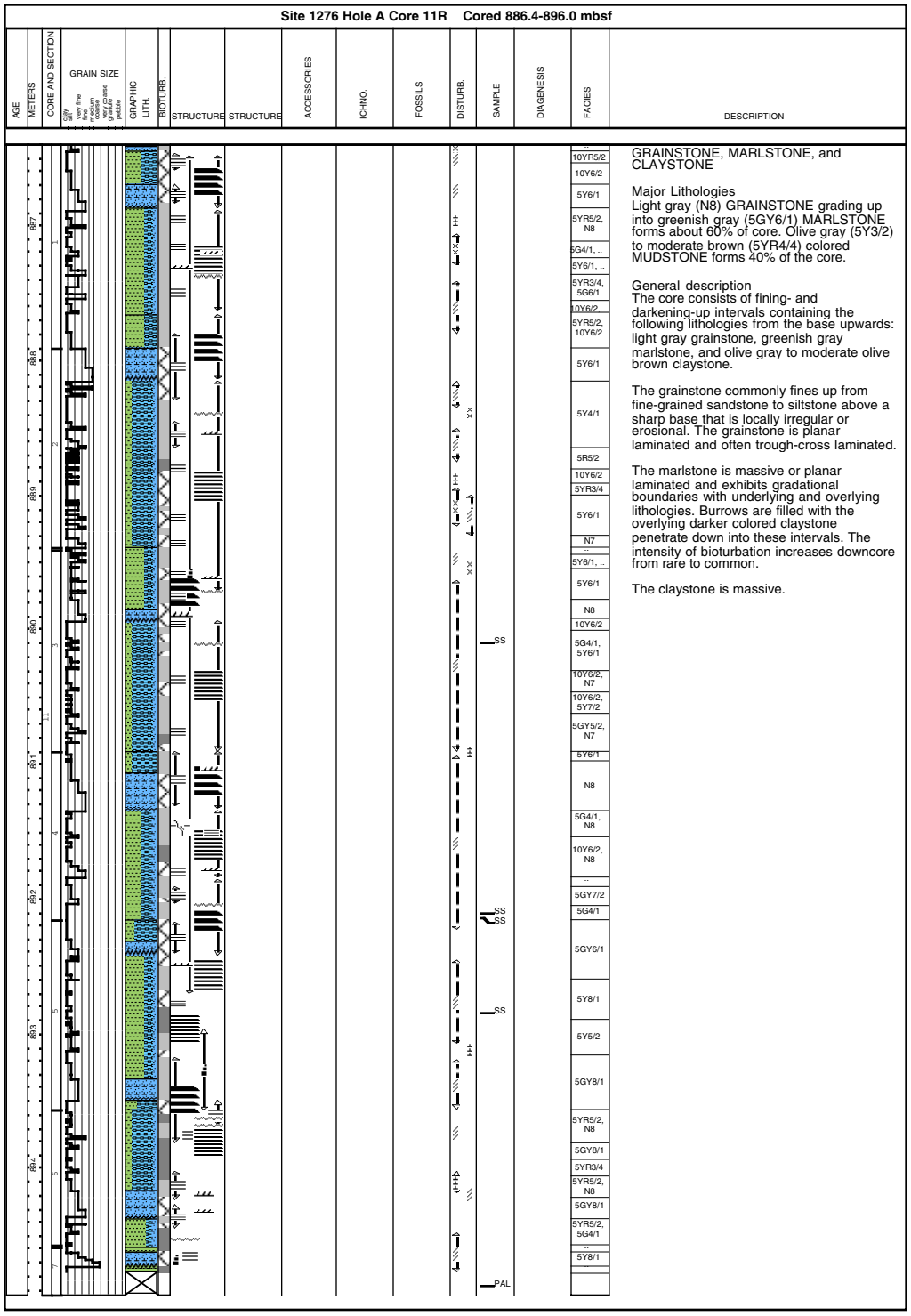
5G6/1
10YR4/2
10YR4/..
5Y3/2, N8
5YR4/4..
5YR4/4, N8
10Y6/2
N8
5YR4/4
N8
5Y3/2, N8
5YR4/4, N8
5Y3/2, 5YR4/4
MARLSTONE and GRAINSTONE
Major Lithologies
Greenish gray (5GY 6/1) MARLSTONE grading down into light gray (N8) GRAINSTONE forms 80% of the core.
Minor Lithologies
Olive gray (5Y 3/2) to moderate olive brown (5Y 4/4) or moderate brown (5YR 4/4) CLAYSTONE constitutes approximately 20% of the core.
General Description
The core consists of fining- and darkening-up intervals containing the following lithologies from the top downwards: claystone caps greenish gray marlstone grading down into light gray grainstone.
The grainstone commonly fines up from very fine to fine-grained sand to silt above a sharp base that is locally irregular or erosional. The grainstone exhibits planar lamination, locally overlain by small-scale trough-cross lamination.
The marlstone is massive or planar laminated. It exhibits gradational boundaries with underlying and overlying lithologies. Burrows filled with the overlying darker colored claystone penetrate down into these intervals. The intensity of bioturbation increases downcore from rare to common.
The claystone is massive.

Core Photo



GRAINSTONE, MARLSTONE, and CLAYSTONE

Major Lithologies
Light gray (N8) GRAINSTONE grading up into greenish gray (5GY6/1) MARLSTONE forms about 60% of core. Olive gray (5Y3/2) to moderate brown (5YR4/4) colored MUDSTONE forms 40% of the core.

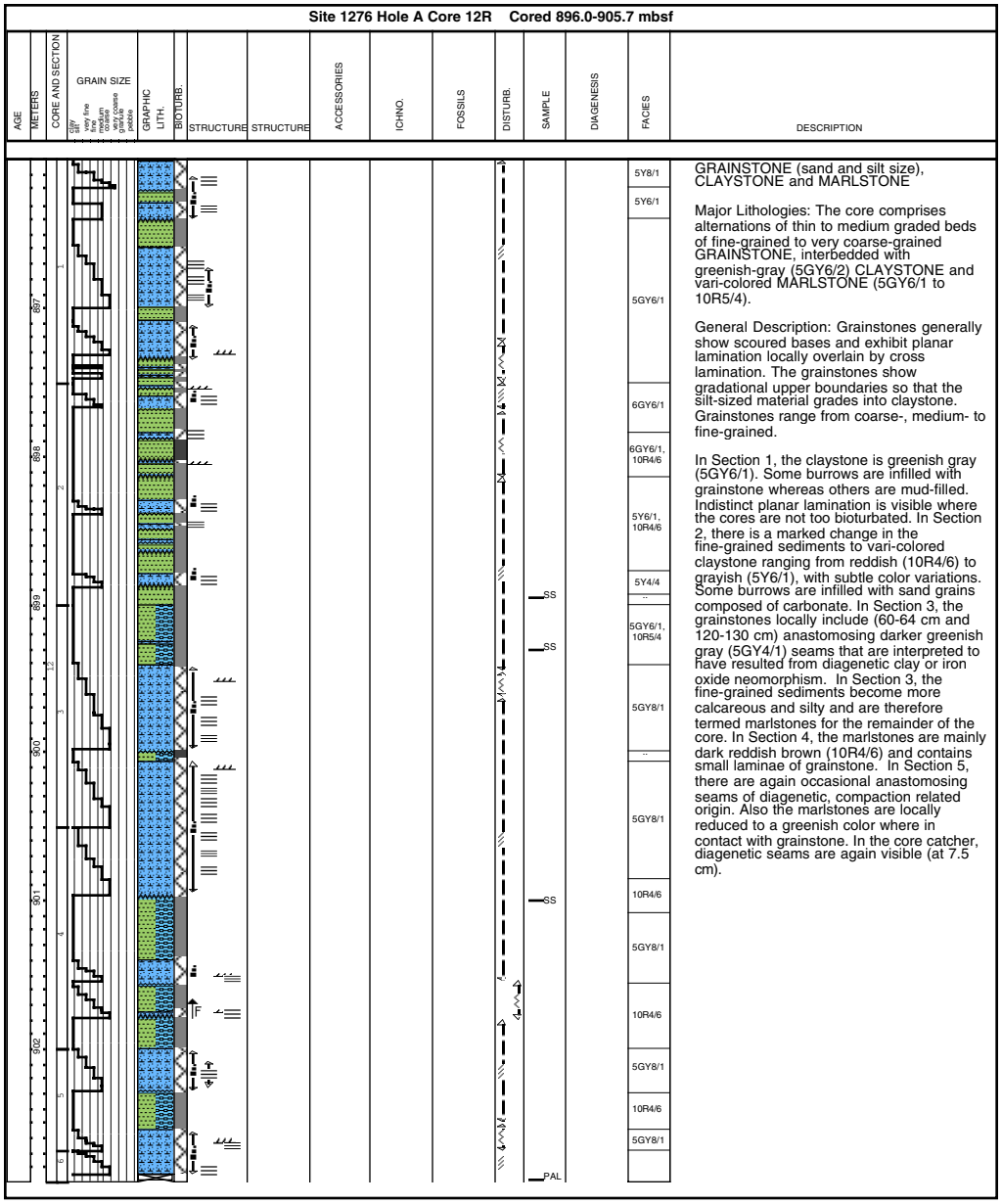
General description
The core consists of fining- and darkening-up intervals containing the following lithologies from the base upwards: light gray grainstone, greenish gray marlstone, and olive gray to moderate olive brown claystone.

The grainstone commonly fines up from fine-grained sandstone to siltstone above a sharp base that is locally irregular or erosional. The grainstone is planar laminated and often trough-cross laminated.

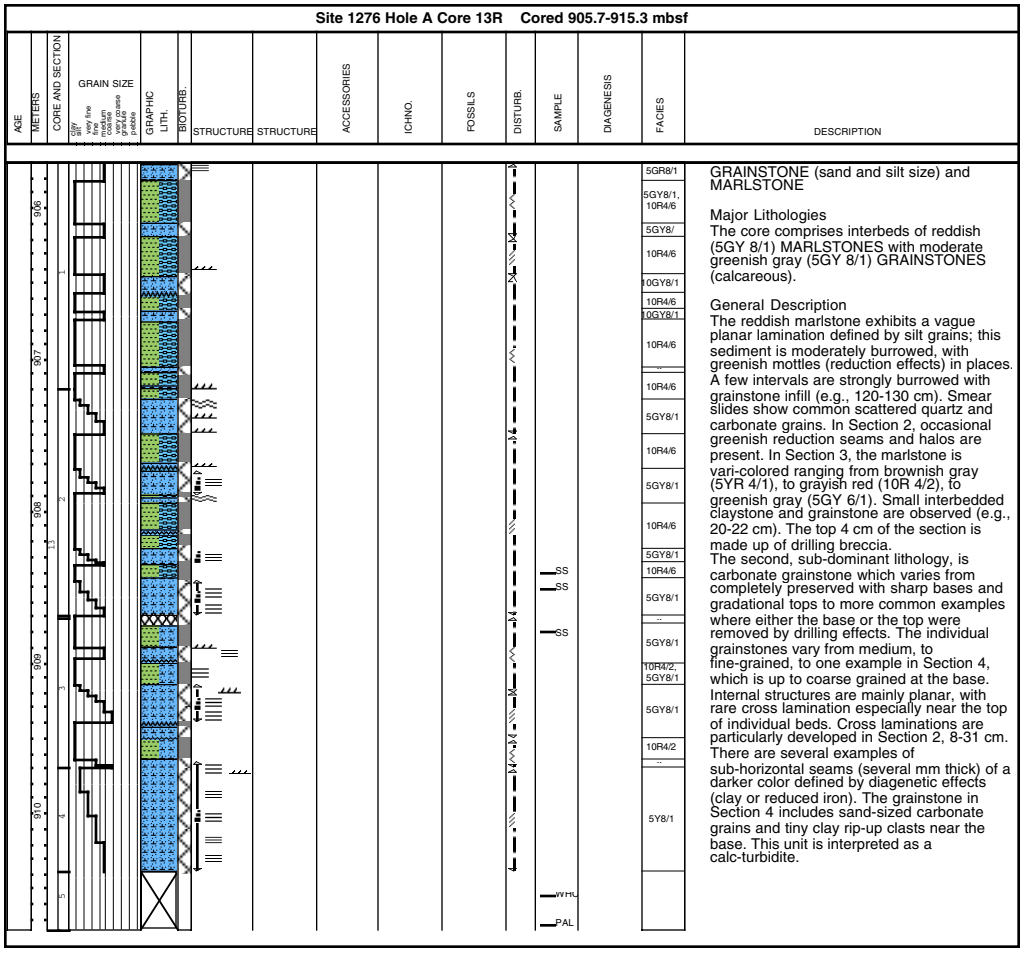
The marlstone is massive or planar laminated and exhibits gradational boundaries with underlying and overlying lithologies. Burrows are filled with the overlying darker colored claystone penetrate down into these intervals. The intensity of bioturbation increases downcore from rare to common.

The claystone is massive.

Core Photo


Site 1276 Hole A Core 12R Cored 896.0-905.7 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
897
898
899
900
901
902
SS
SS
SS
PAL
5Y8/1
5Y6/1
5GY6/1
6GY6/1
6GY6/1, 10R4/6
5Y6/1, 10R4/6
5Y4/4
5GY6/1, 10R5/4
5GY8/1
5GY8/1
10R4/6
5GY8/1
10R4/6
5GY8/1
10R4/6
5GY8/1
GRAINSTONE (sand and silt size), CLAYSTONE and MARLSTONE
Major Lithologies: The core comprises alternations of thin to medium graded beds of fine-grained to very coarse-grained GRAINSTONE, interbedded with greenish-gray (5GY6/2) CLAYSTONE and vari-colored MARLSTONE (5GY6/1 to 10R5/4).
General Description: Grainstones generally show scoured bases and exhibit planar lamination locally overlain by cross lamination. The grainstones show gradational upper boundaries so that the silt-sized material grades into claystone. Grainstones range from coarse-, medium- to fine-grained.
In Section 1, the claystone is greenish gray (5GY6/1). Some burrows are infilled with grainstone whereas others are mud-filled. Indistinct planar lamination is visible where the cores are not too bioturbated. In Section 2, there is a marked change in the fine-grained sediments to vari-colored claystone ranging from reddish (10R4/6) to grayish (5Y6/1), with subtle color variations. Some burrows are infilled with sand grains composed of carbonate. In Section 3, the grainstones locally include (60-64 cm and 120-130 cm) anastomosing darker greenish gray (5GY4/1) seams that are interpreted to have resulted from diagenetic clay or iron oxide neomorphism. In Section 3, the fine-grained sediments become more calcareous and silty and are therefore termed marlstones for the remainder of the core. In Section 4, the marlstones are mainly dark reddish brown (10R4/6) and contains small laminae of grainstone. In Section 5, there are again occasional anastomosing seams of diagenetic, compaction related origin. Also the marlstones are locally reduced to a greenish color where in contact with grainstone. In the core catcher, diagenetic seams are again visible (at 7.5 cm).

Core Photo



GRAINSTONE (sand and silt size) and MARLSTONE

Major Lithologies

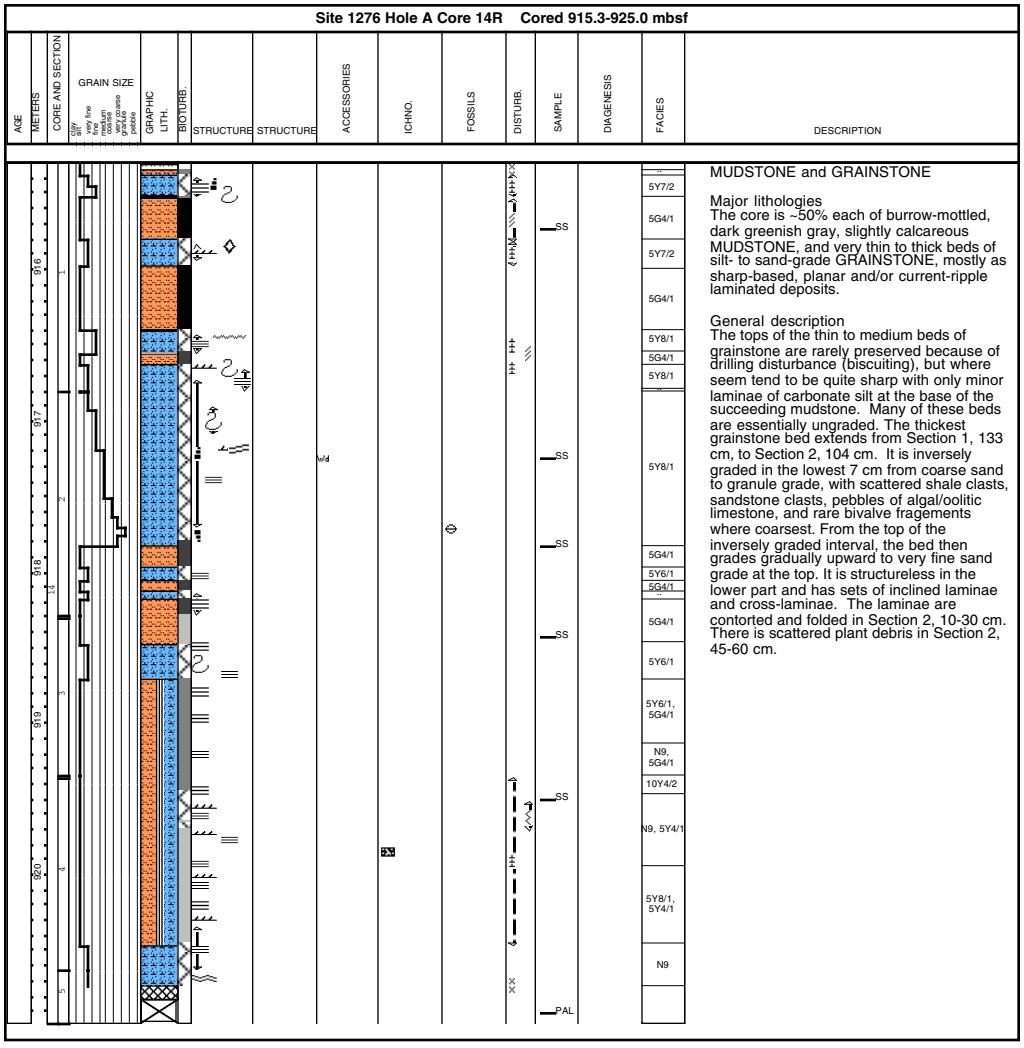
The core comprises interbeds of reddish (5GY 8/1) MARLSTONES with moderate greenish gray (5GY 8/1) GRAINSTONES (calcareous).

General Description

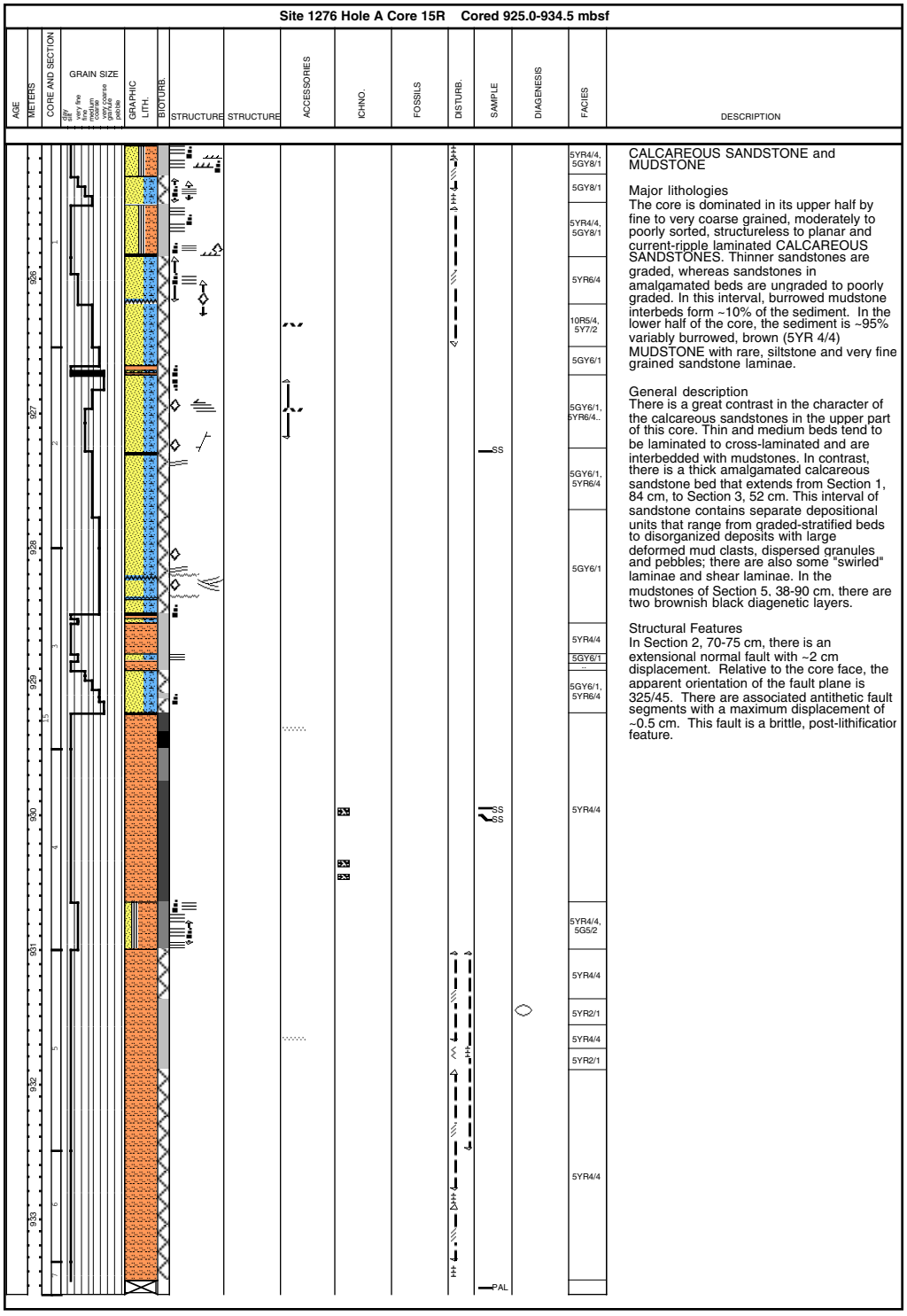
The reddish marlstone exhibits a vague planar lamination defined by silt grains; this sediment is moderately burrowed, with greenish mottles (reduction effects) in places. A few intervals are strongly burrowed with grainstone infill (e.g., 120-130 cm). Smear slides show common scattered quartz and carbonate grains. In Section 2, occasional greenish reduction seams and halos are present. In Section 3, the marlstone is vari-colored ranging from brownish gray (5YR 4/1), to grayish red (10R 4/2), to greenish gray (5GY 6/1). Small interbedded claystone and grainstone are observed (e.g., 20-22 cm). The top 4 cm of the section is made up of drilling breccia.

The second, sub-dominant lithology, is carbonate grainstone which varies from completely preserved with sharp bases and gradational tops to more common examples where either the base or the top were removed by drilling effects. The individual grainstones vary from medium, to fine-grained, to one example in Section 4, which is up to coarse grained at the base. Internal structures are mainly planar, with rare cross lamination especially near the top of individual beds. Cross laminations are particularly developed in Section 2, 8-31 cm. There are several examples of sub-horizontal seams (several mm thick) of a darker color defined by diagenetic effects (clay or reduced iron). The grainstone in Section 4 includes sand-sized carbonate grains and tiny clay rip-up clasts near the base. This unit is interpreted as a calc-turbidite.

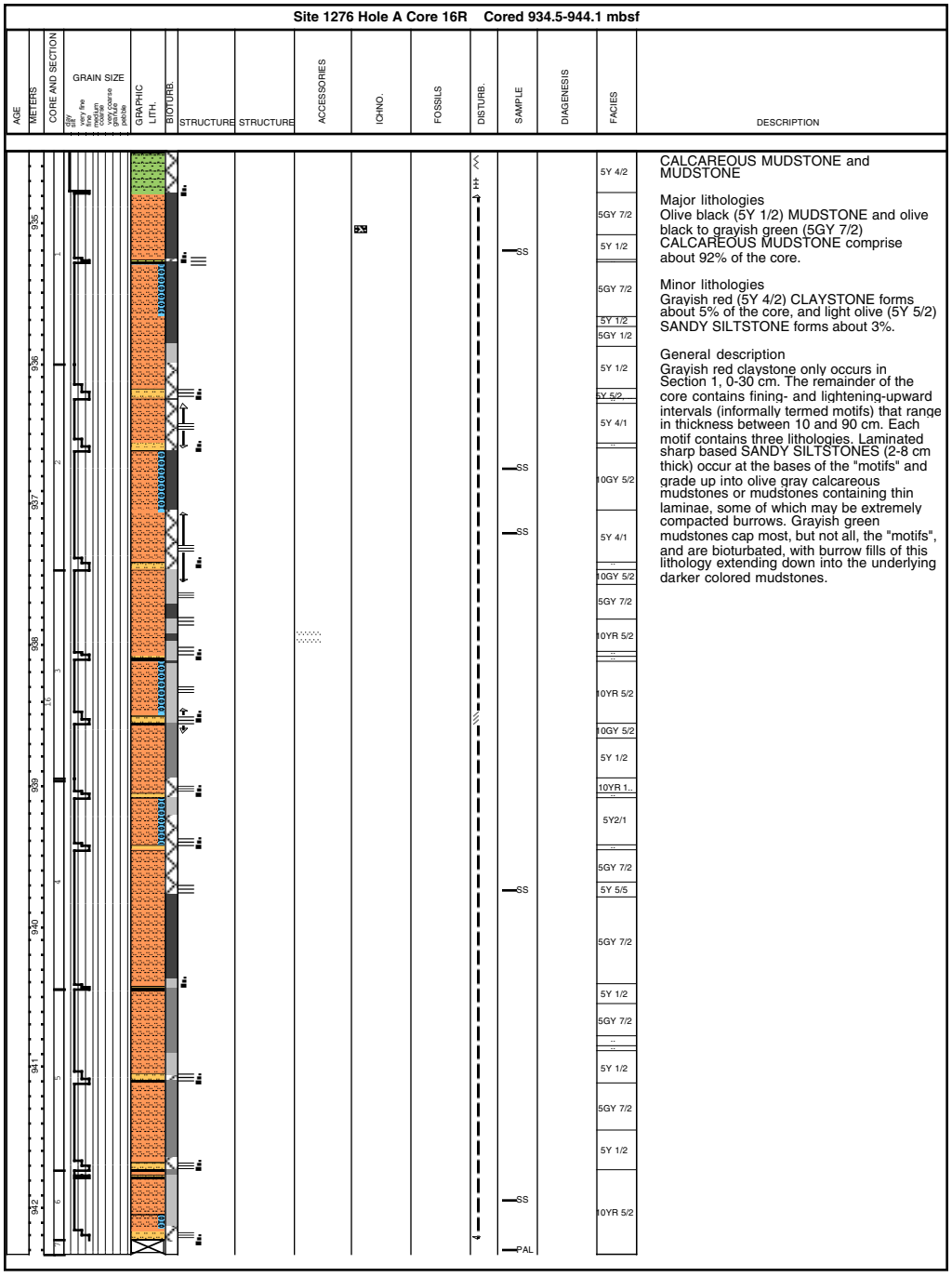
Core Photo


Site 1276 Hole A Core 14R Cored 915.3-925.0 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
916
917
918
919
920
SS
PAL
5Y7/2
5G4/1
5Y7/2
5G4/1
5Y8/1
5G4/1
5Y8/1
5Y8/1
5G4/1
5Y6/1
5G4/1
5G4/1
5Y6/1
5Y6/1, 5G4/1
N9, 5G4/1
10Y4/2
N9, 5Y4/1
5Y8/1, 5Y4/1
N9
MUDSTONE and GRAINSTONE
Major lithologies
The core is ~50% each of burrow-mottled, dark greenish gray, slightly calcareous MUDSTONE, and very thin to thick beds of silt- to sand-grade GRAINSTONE, mostly as sharp-based, planar and/or current-ripple laminated deposits.
General description
The tops of the thin to medium beds of grainstone are rarely preserved because of drilling disturbance (biscuiting), but where seem tend to be quite sharp with only minor laminae of carbonate silt at the base of the succeeding mudstone. Many of these beds are essentially ungraded. The thickest grainstone bed extends from Section 1, 133 cm, to Section 2, 104 cm. It is inversely graded in the lowest 7 cm from coarse sand to granule grade, with scattered shale clasts, sandstone clasts, pebbles of algal/oolitic limestone, and rare bivalve fragements where coarsest. From the top of the inversely graded interval, the bed then grades gradually upward to very fine sand grade at the top. It is structureless in the lower part and has sets of inclined laminae and cross-laminae. The laminae are contorted and folded in Section 2, 10-30 cm. There is scattered plant debris in Section 2, 45-60 cm.

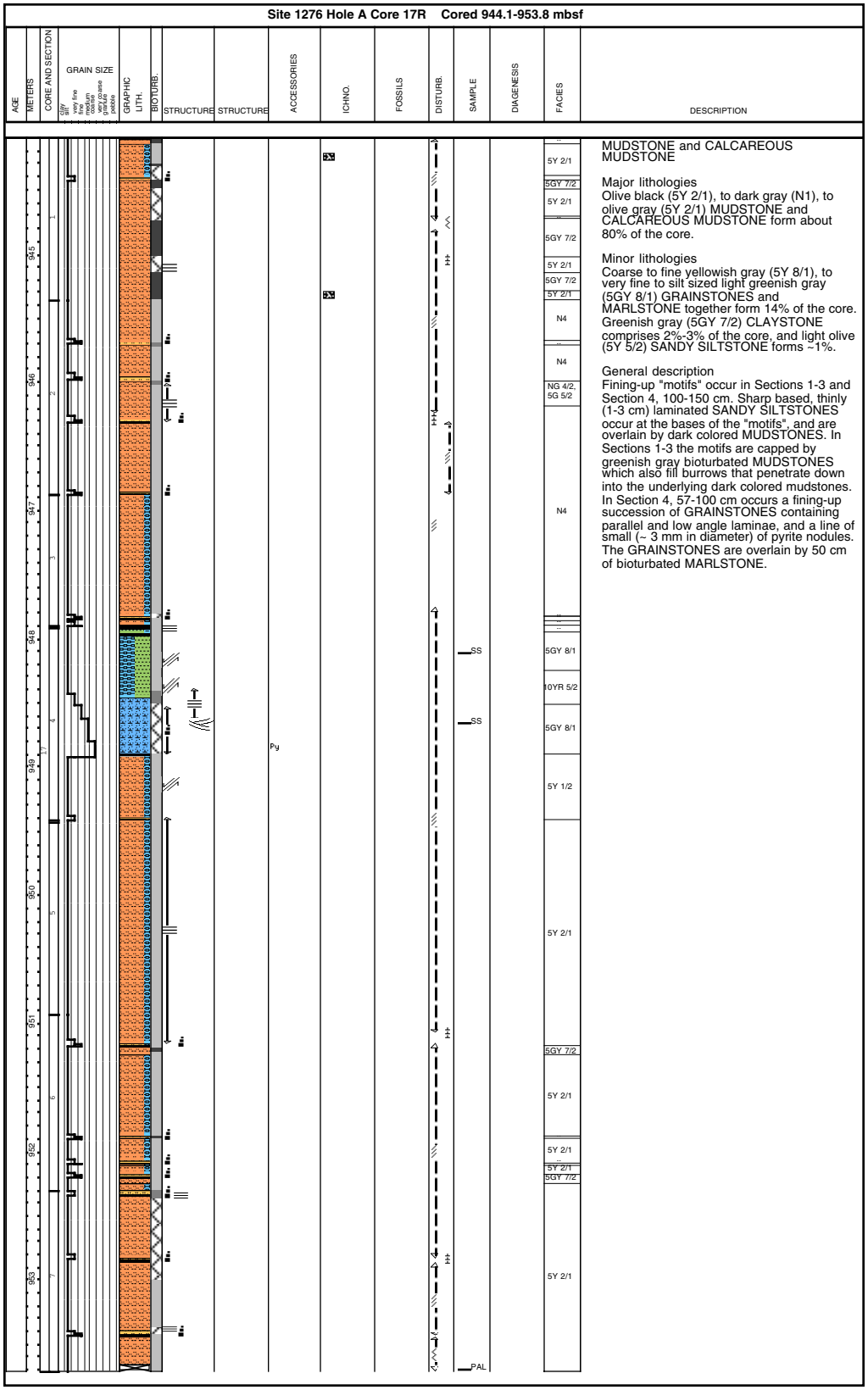
Core Photo


Site 1276 Hole A Core 15R Cored 925.0-934.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
926
927
928
929
930
931
932
933
SS
SS
SS
PAL
5YR4/4, 5GY8/1
5GY8/1
5YR4/4, 5GY8/1
5YR6/4
10R5/4, 5Y7/2
5GY6/1
5GY6/1, 5YR6/4..
5GY6/1, 5YR6/4
5GY6/1
5YR4/4
5GY6/1
5GY6/1, 5YR6/4
5YR4/4
5YR4/4, 5G5/2
5YR4/4
5YR2/1
5YR4/4
5YR2/1
5YR4/4
CALCAREOUS SANDSTONE and MUDSTONE
Major lithologies
The core is dominated in its upper half by fine to very coarse grained, moderately to poorly sorted, structureless to planar and current-ripple laminated CALCAREOUS SANDSTONES. Thinner sandstones are graded, whereas sandstones in amalgamated beds are ungraded to poorly graded. In this interval, burrowed mudstone interbeds form ~10% of the sediment. In the lower half of the core, the sediment is ~95% variably burrowed, brown (5YR 4/4) MUDSTONE with rare, siltstone and very fine grained sandstone laminae.
General description
There is a great contrast in the character of the calcareous sandstones in the upper part of this core. Thin and medium beds tend to be laminated to cross-laminated and are interbedded with mudstones. In contrast, there is a thick amalgamated calcareous sandstone bed that extends from Section 1, 84 cm, to Section 3, 52 cm. This interval of sandstone contains separate depositional units that range from graded-stratified beds to disorganized deposits with large deformed mud clasts, dispersed granules and pebbles; there are also some "swirled" laminae and shear laminae. In the mudstones of Section 5, 38-90 cm, there are two brownish black diagenetic layers.
Structural Features
In Section 2, 70-75 cm, there is an extensional normal fault with ~2 cm displacement. Relative to the core face, the apparent orientation of the fault plane is 325/45. There are associated antithetic fault segments with a maximum displacement of ~0.5 cm. This fault is a brittle, post-lithification feature.

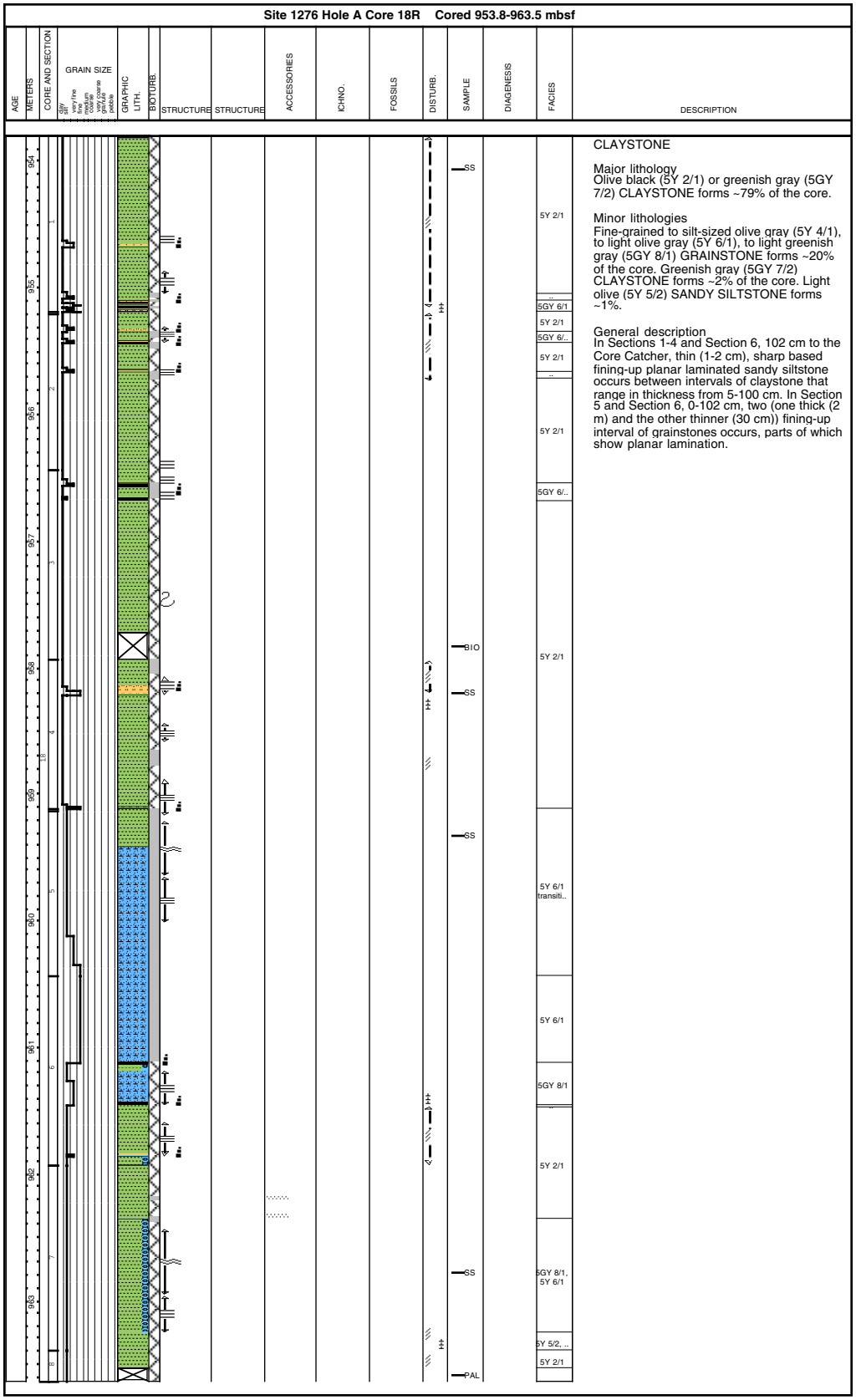
Core Photo


Site 1276 Hole A Core 16R Cored 934.5-944.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
935
936
937
938
939
940
941
942
SS
PAL
5Y 4/2
5GY 7/2
5Y 1/2
5GY 7/2
5Y 1/2
5GY 1/2
5Y 1/2
5Y 5/2
5Y 4/1
10GY 5/2
5Y 4/1
10GY 5/2
5GY 7/2
10YR 5/2
10YR 5/2
10GY 5/2
5Y 1/2
10YR 1..
5Y2/1
5GY 7/2
5Y 5/5
5GY 7/2
5Y 1/2
5GY 7/2
5Y 1/2
5GY 7/2
5Y 1/2
10YR 5/2
CALCAREOUS MUDSTONE and MUDSTONE
Major lithologies
Olive black (5Y 1/2) MUDSTONE and olive black to grayish green (5GY 7/2) CALCAREOUS MUDSTONE comprise about 92% of the core.
Minor lithologies
Grayish red (5Y 4/2) CLAYSTONE forms about 5% of the core, and light olive (5Y 5/2) SANDY SILTSTONE forms about 3%.
General description
Grayish red claystone only occurs in Section 1, 0-30 cm. The remainder of the core contains fining- and lightening-upward intervals (informally termed motifs) that range in thickness between 10 and 90 cm. Each motif contains three lithologies. Laminated sharp based SANDY SILTSTONES (2-8 cm thick) occur at the bases of the "motifs" and grade up into olive gray calcareous mudstones or mudstones containing thin laminae, some of which may be extremely compacted burrows. Grayish green mudstones cap most, but not all, the "motifs", and are bioturbated, with burrow fills of this lithology extending down into the underlying darker colored mudstones.

Core Photo


Site 1276 Hole A Core 17R Cored 944.1-953.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
945
946
947
948
949
950
951
952
953
17
Py
SS
SS
PAL
5Y 2/1
5GY 7/2
5Y 2/1
5GY 7/2
5Y 2/1
5GY 7/2
5Y 2/1
N4
N4
NG 4/2, 5G 5/2
N4
5GY 8/1
10YR 5/2
5GY 8/1
5Y 1/2
5Y 2/1
5GY 7/2
5Y 2/1
5Y 2/1
5Y 2/1
5GY 7/2
5Y 2/1
MUDSTONE and CALCAREOUS MUDSTONE
Major lithologies
Olive black (5Y 2/1), to dark gray (N1), to olive gray (5Y 2/1) MUDSTONE and CALCAREOUS MUDSTONE form about 80% of the core.
Minor lithologies
Coarse to fine yellowish gray (5Y 8/1), to very fine to silt sized light greenish gray (5GY 8/1) GRAINSTONES and MARLSTONE together form 14% of the core. Greenish gray (5GY 7/2) CLAYSTONE comprises 2%-3% of the core, and light olive (5Y 5/2) SANDY SILTSTONE forms ~1%.
General description
Fining-up "motifs" occur in Sections 1-3 and Section 4, 100-150 cm. Sharp based, thinly (1-3 cm) laminated SANDY SILTSTONES occur at the bases of the "motifs", and are overlain by dark colored MUDSTONES. In Sections 1-3 the motifs are capped by greenish gray bioturbated MUDSTONES which also fill burrows that penetrate down into the underlying dark colored mudstones. In Section 4, 57-100 cm occurs a fining-up succession of GRAINSTONES containing parallel and low angle laminae, and a line of small (~ 3 mm in diameter) of pyrite nodules. The GRAINSTONES are overlain by 50 cm of bioturbated MARLSTONE.

Core Photo



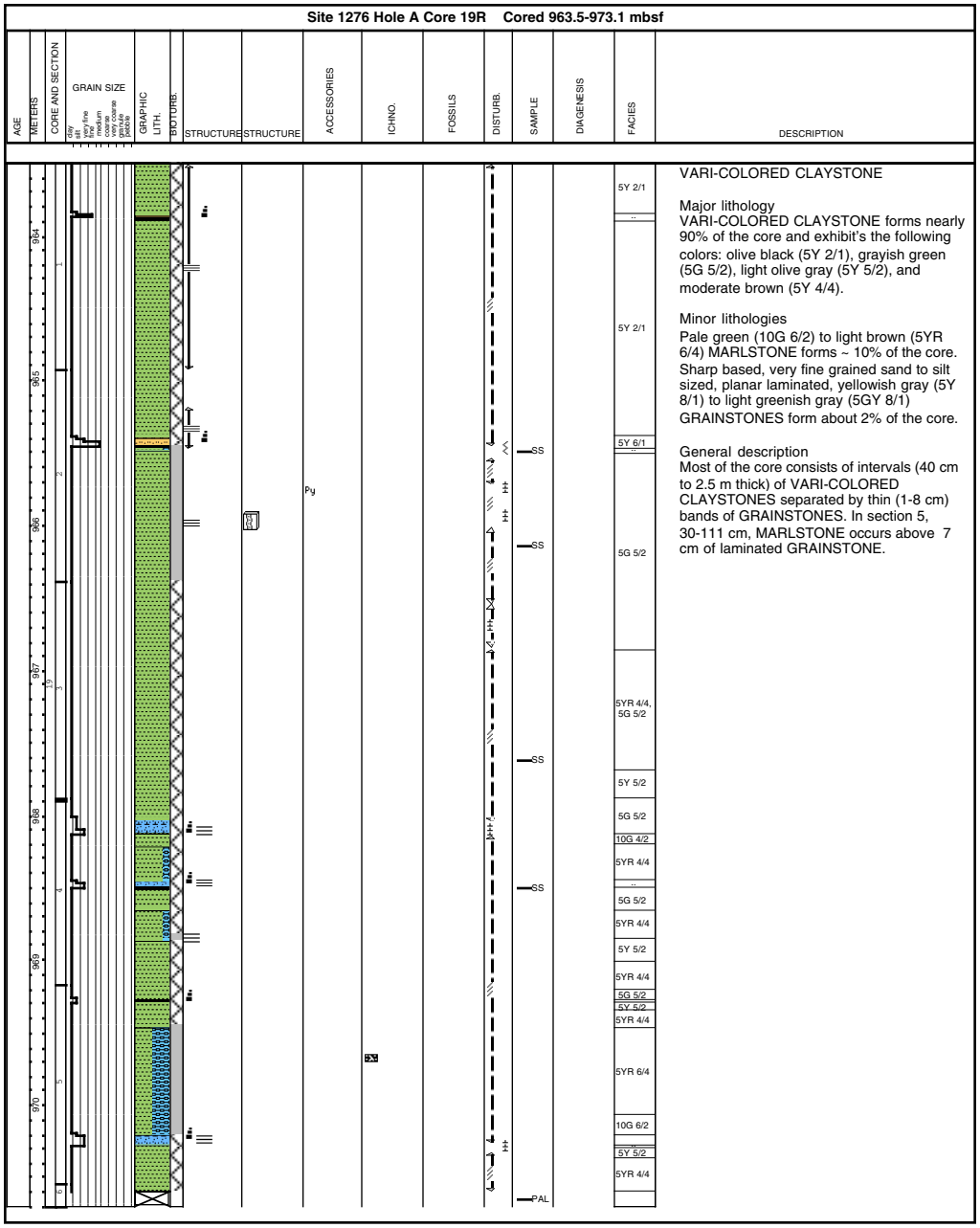
CLAYSTONE

Major lithology
Olive black (5Y 2/1) or greenish gray (5GY 7/2) CLAYSTONE forms ~79% of the core.

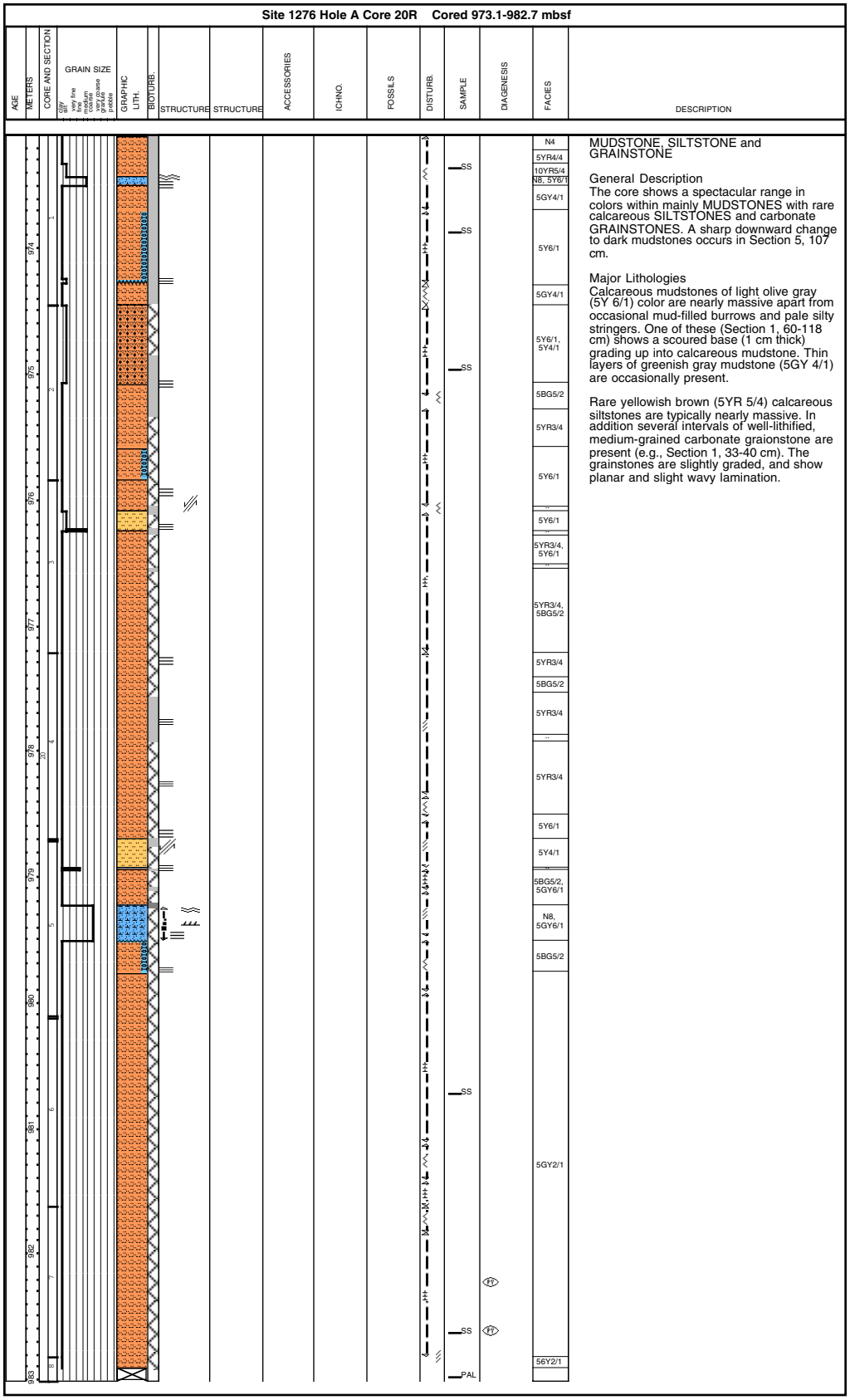
Minor lithologies
Fine-grained to silt-sized olive gray (5Y 4/1), to light olive gray (5Y 6/1), to light greenish gray (5GY 8/1) GRAINSTONE forms ~20% of the core. Greenish gray (5GY 7/2) CLAYSTONE forms ~2% of the core. Light olive (5Y 5/2) SANDY SILTSTONE forms ~1%.

General description
In Sections 1-4 and Section 6, 102 cm to the Core Catcher, thin (1-2 cm), sharp based fining-up planar laminated sandy siltstone occurs between intervals of claystone that range in thickness from 5-100 cm. In Section 5 and Section 6, 0-102 cm, two (one thick (2 m) and the other thinner (30 cm)) fining-up interval of grainstones occurs, parts of which show planar lamination.

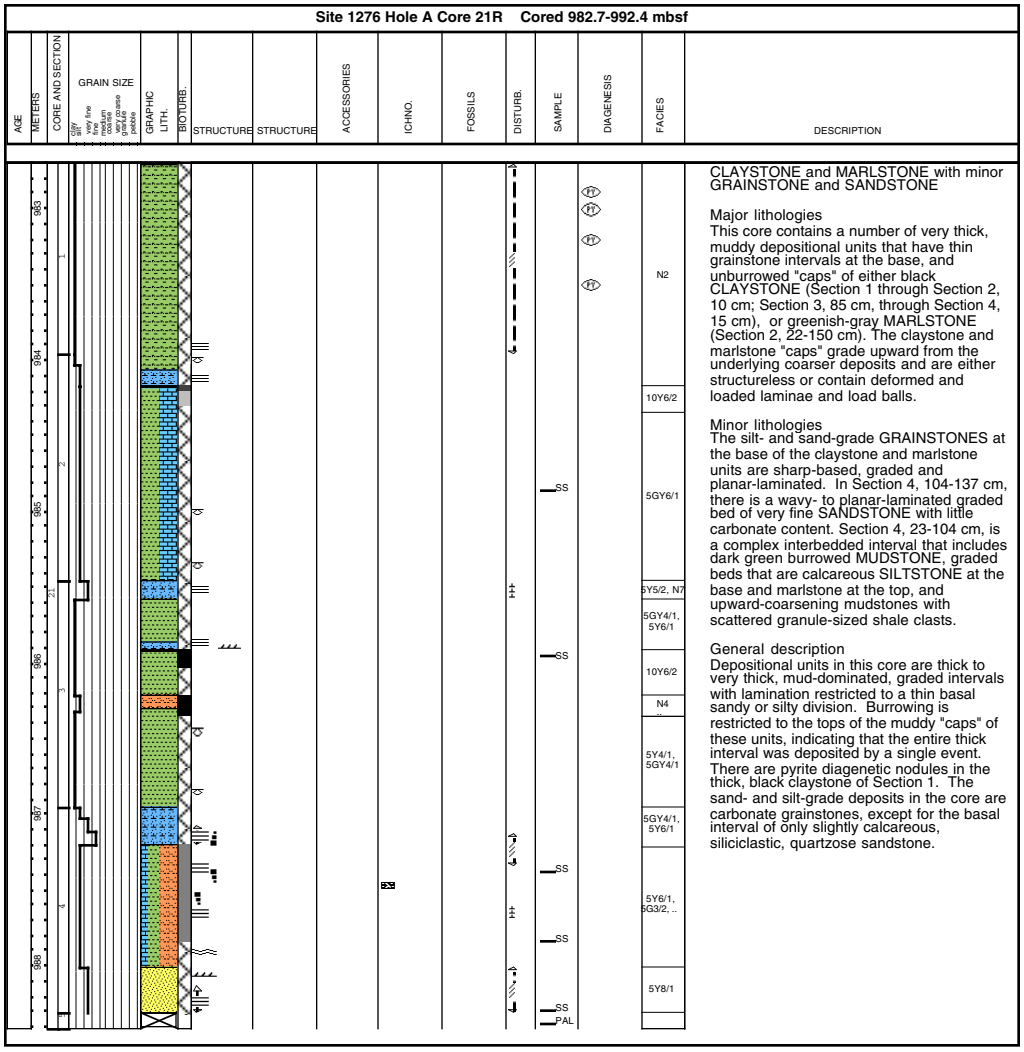
Core Photo


Site 1276 Hole A Core 19R Cored 963.5-973.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
964
965
966
967
968
969
970
SS
PAL
Py
5Y 2/1
5Y 6/1
5G 5/2
5YR 4/4, 5G 5/2
5Y 5/2
5G 5/2
10G 4/2
5YR 4/4
5G 5/2
5YR 4/4
5Y 5/2
5YR 4/4
5G 5/2
5Y 5/2
5YR 4/4
5YR 6/4
10G 6/2
5Y 5/2
5YR 4/4
VARI-COLORED CLAYSTONE
Major lithology
VARI-COLORED CLAYSTONE forms nearly 90% of the core and exhibit's the following colors: olive black (5Y 2/1), grayish green (5G 5/2), light olive gray (5Y 5/2), and moderate brown (5Y 4/4).
Minor lithologies
Pale green (10G 6/2) to light brown (5YR 6/4) MARLSTONE forms ~ 10% of the core. Sharp based, very fine grained sand to silt sized, planar laminated, yellowish gray (5Y 8/1) to light greenish gray (5GY 8/1) GRAINSTONES form about 2% of the core.
General description
Most of the core consists of intervals (40 cm to 2.5 m thick) of VARI-COLORED CLAYSTONES separated by thin (1-8 cm) bands of GRAINSTONES. In section 5, 30-111 cm, MARLSTONE occurs above 7 cm of laminated GRAINSTONE.

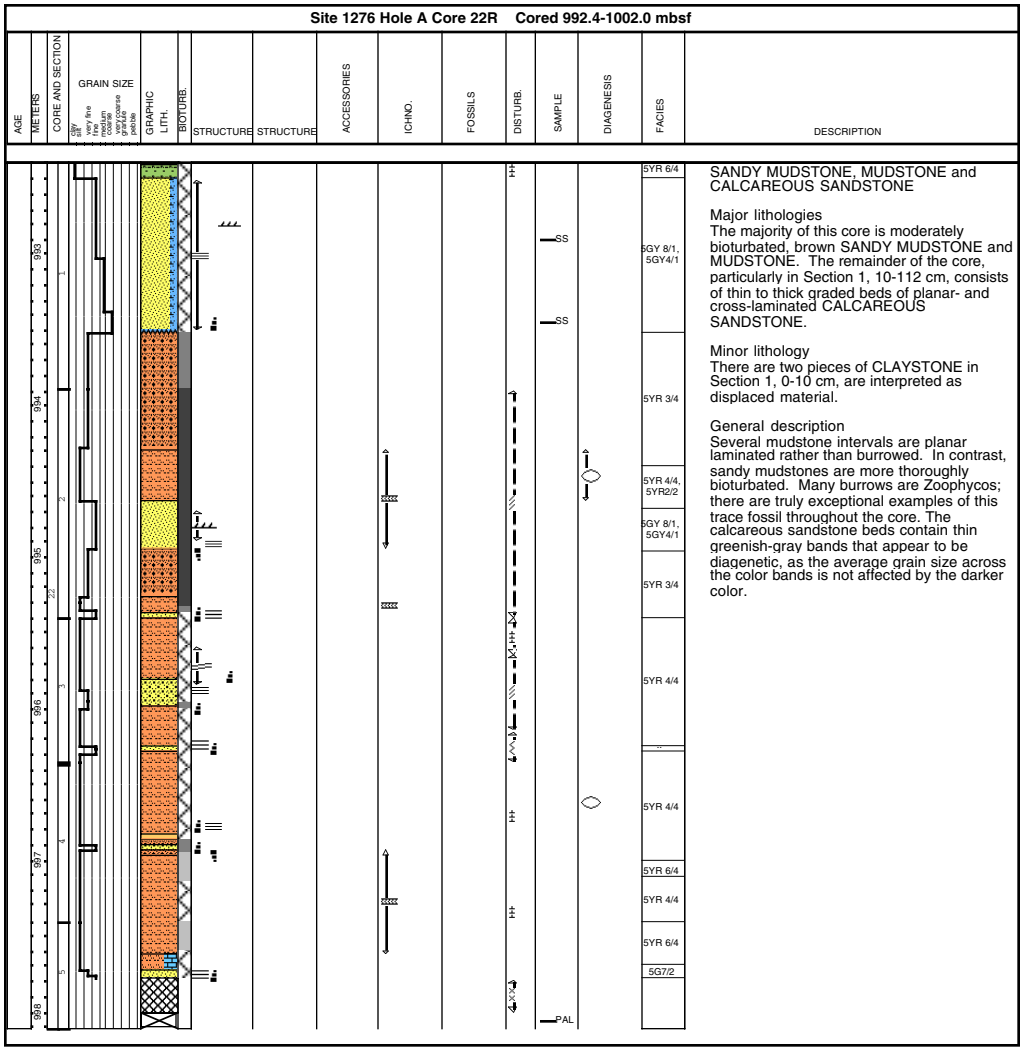
Core Photo


Site 1276 Hole A Core 20R Cored 973.1-982.7 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
974
975
976
977
976
979
980
981
982
983
SS
PAL
N4
5YR4/4
10YR5/4
N8, 5Y6/1
5GY4/1
5Y6/1
5GY4/1
5Y6/1, 5Y4/1
5BG5/2
5YR3/4
5Y6/1
5Y6/1
5YR3/4, 5Y6/1
5YR3/4, 5BG5/2
5YR3/4
5BG5/2
5YR3/4
5YR3/4
5Y6/1
5Y4/1
5BG5/2, 5GY6/1
N8, 5GY6/1
5BG5/2
5GY2/1
56Y2/1
MUDSTONE, SILTSTONE and GRAINSTONE
General Description
The core shows a spectacular range in colors within mainly MUDSTONES with rare calcareous SILTSTONES and carbonate GRAINSTONES. A sharp downward change to dark mudstones occurs in Section 5, 107 cm.
Major Lithologies
Calcareous mudstones of light olive gray (5Y 6/1) color are nearly massive apart from occasional mud-filled burrows and pale silty stringers. One of these (Section 1, 60-118 cm) shows a scoured base (1 cm thick) grading up into calcareous mudstone. Thin layers of greenish gray mudstone (5GY 4/1) are occasionally present.
Rare yellowish brown (5YR 5/4) calcareous siltstones are typically nearly massive. In addition several intervals of well-lithified, medium-grained carbonate graionstone are present (e.g., Section 1, 33-40 cm). The grainstones are slightly graded, and show planar and slight wavy lamination.

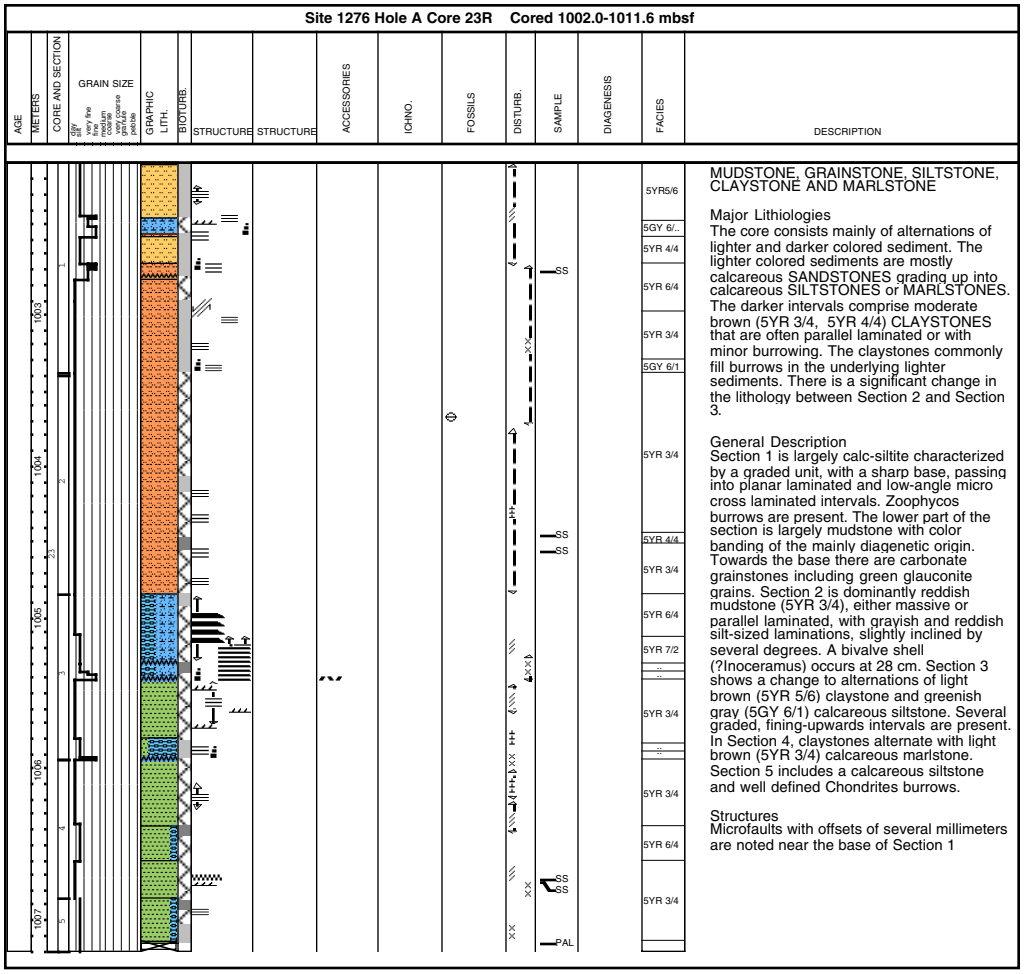
Core Photo


Site 1276 Hole A Core 21R Cored 982.7-992.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
983
984
985
986
987
988
21
SS
PAL
N2
10Y6/2
5GY6/1
5Y5/2, N7
5GY4/1, 5Y6/1
10Y6/2
N4
5Y4/1, 5GY4/1
5GY4/1, 5Y6/1
5Y6/1, 5G3/2, ..
5Y8/1
CLAYSTONE and MARLSTONE with minor GRAINSTONE and SANDSTONE
Major lithologies
This core contains a number of very thick, muddy depositional units that have thin grainstone intervals at the base, and unburrowed "caps" of either black CLAYSTONE (Section 1 through Section 2, 10 cm; Section 3, 85 cm, through Section 4, 15 cm), or greenish-gray MARLSTONE (Section 2, 22-150 cm). The claystone and marlstone "caps" grade upward from the underlying coarser deposits and are either structureless or contain deformed and loaded laminae and load balls.
Minor lithologies
The silt- and sand-grade GRAINSTONES at the base of the claystone and marlstone units are sharp-based, graded and planar-laminated. In Section 4, 104-137 cm, there is a wavy- to planar-laminated graded bed of very fine SANDSTONE with little carbonate content. Section 4, 23-104 cm, is a complex interbedded interval that includes dark green burrowed MUDSTONE, graded beds that are calcareous SILTSTONE at the base and marlstone at the top, and upward-coarsening mudstones with scattered granule-sized shale clasts.
General description
Depositional units in this core are thick to very thick, mud-dominated, graded intervals with lamination restricted to a thin basal sandy or silty division. Burrowing is restricted to the tops of the muddy "caps" of these units, indicating that the entire thick interval was deposited by a single event. There are pyrite diagenetic nodules in the thick, black claystone of Section 1. The sand- and silt-grade deposits in the core are carbonate grainstones, except for the basal interval of only slightly calcareous, siliciclastic, quartzose sandstone.

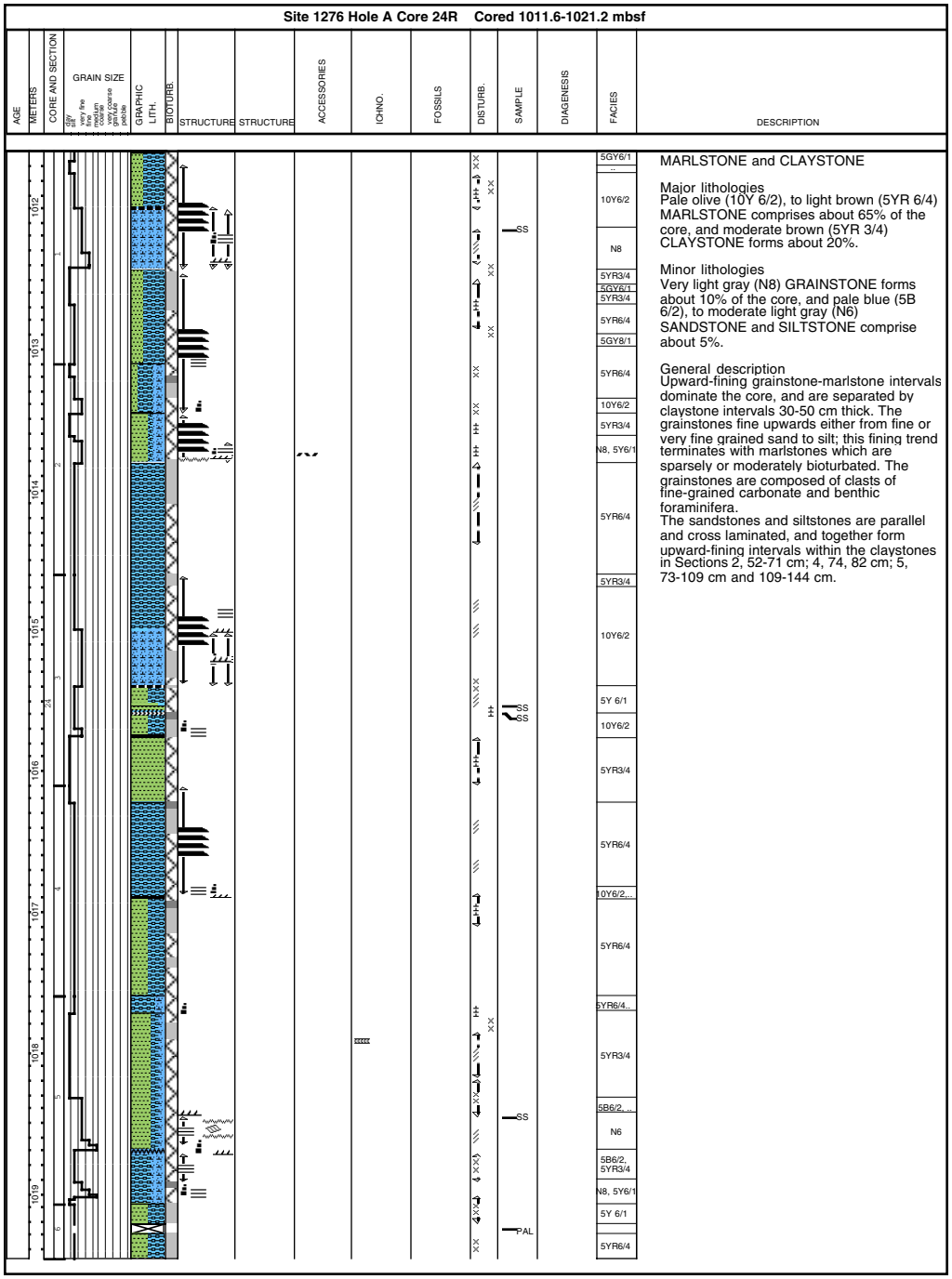
Core Photo


Site 1276 Hole A Core 22R Cored 992.4-1002.0 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
993
994
995
996
997
998
22
SS
SS
PAL
5YR 6/4
5GY 8/1, 5GY4/1
5YR 3/4
5YR 4/4, 5YR2/2
5GY 8/1, 5GY4/1
5YR 3/4
5YR 4/4
5YR 4/4
5YR 6/4
5YR 4/4
5YR 6/4
5G7/2
SANDY MUDSTONE, MUDSTONE and CALCAREOUS SANDSTONE
Major lithologies
The majority of this core is moderately bioturbated, brown SANDY MUDSTONE and MUDSTONE. The remainder of the core, particularly in Section 1, 10-112 cm, consists of thin to thick graded beds of planar- and cross-laminated CALCAREOUS SANDSTONE.
Minor lithology
There are two pieces of CLAYSTONE in Section 1, 0-10 cm, are interpreted as displaced material.
General description
Several mudstone intervals are planar laminated rather than burrowed. In contrast, sandy mudstones are more thoroughly bioturbated. Many burrows are Zoophycos; there are truly exceptional examples of this trace fossil throughout the core. The calcareous sandstone beds contain thin greenish-gray bands that appear to be diagenetic, as the average grain size across the color bands is not affected by the darker color.

Core Photo


Site 1276 Hole A Core 23R Cored 1002.0-1011.6 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1003
1004
1005
1006
1007
SS
SS
SS
SS
PAL
5YR5/6
5GY 6/..
5YR 4/4
5YR 6/4
5YR 3/4
5GY 6/1
5YR 3/4
5YR 4/4
5YR 3/4
5YR 6/4
5YR 7/2
5YR 3/4
5YR 3/4
5YR 6/4
5YR 3/4
MUDSTONE, GRAINSTONE, SILTSTONE, CLAYSTONE AND MARLSTONE
Major Lithiologies
The core consists mainly of alternations of lighter and darker colored sediment. The lighter colored sediments are mostly calcareous SANDSTONES grading up into calcareous SILTSTONES or MARLSTONES. The darker intervals comprise moderate brown (5YR 3/4, 5YR 4/4) CLAYSTONES that are often parallel laminated or with minor burrowing. The claystones commonly fill burrows in the underlying lighter sediments. There is a significant change in the lithology between Section 2 and Section 3.
General Description
Section 1 is largely calc-siltite characterized by a graded unit, with a sharp base, passing into planar laminated and low-angle micro cross laminated intervals. Zoophycos burrows are present. The lower part of the section is largely mudstone with color banding of the mainly diagenetic origin. Towards the base there are carbonate grainstones including green glauconite grains. Section 2 is dominantly reddish mudstone (5YR 3/4), either massive or parallel laminated, with grayish and reddish silt-sized laminations, slightly inclined by several degrees. A bivalve shell (?Inoceramus) occurs at 28 cm. Section 3 shows a change to alternations of light brown (5YR 5/6) claystone and greenish gray (5GY 6/1) calcareous siltstone. Several graded, fining-upwards intervals are present. In Section 4, claystones alternate with light brown (5YR 3/4) calcareous marlstone. Section 5 includes a calcareous siltstone and well defined Chondrites burrows.
Structures
Microfaults with offsets of several millimeters are noted near the base of Section 1

Core Photo



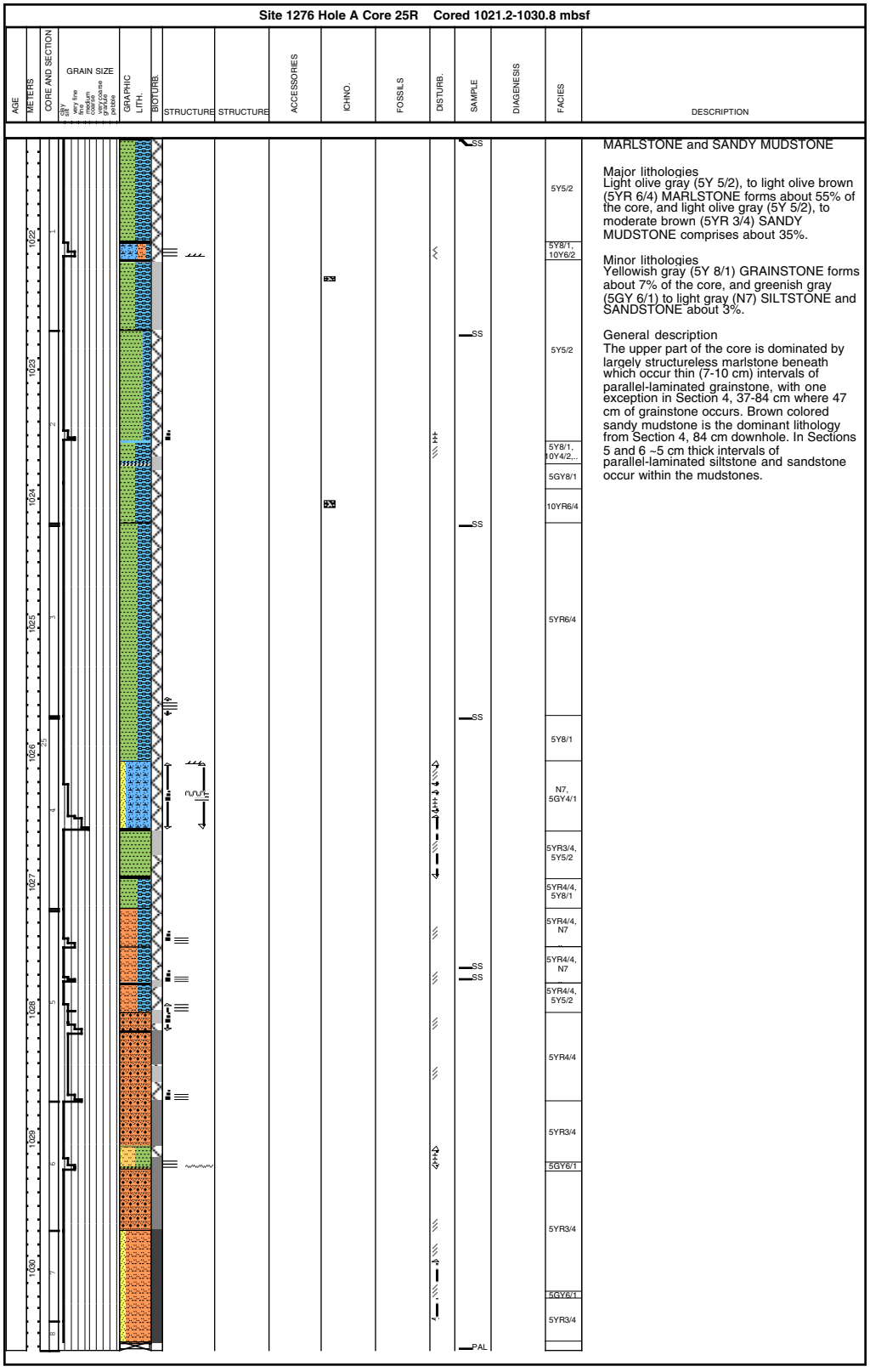
MARLSTONE and CLAYSTONE

Major lithologies
Pale olive (10Y 6/2), to light brown (5YR 6/4) MARLSTONE comprises about 65% of the core, and moderate brown (5YR 3/4) CLAYSTONE forms about 20%.

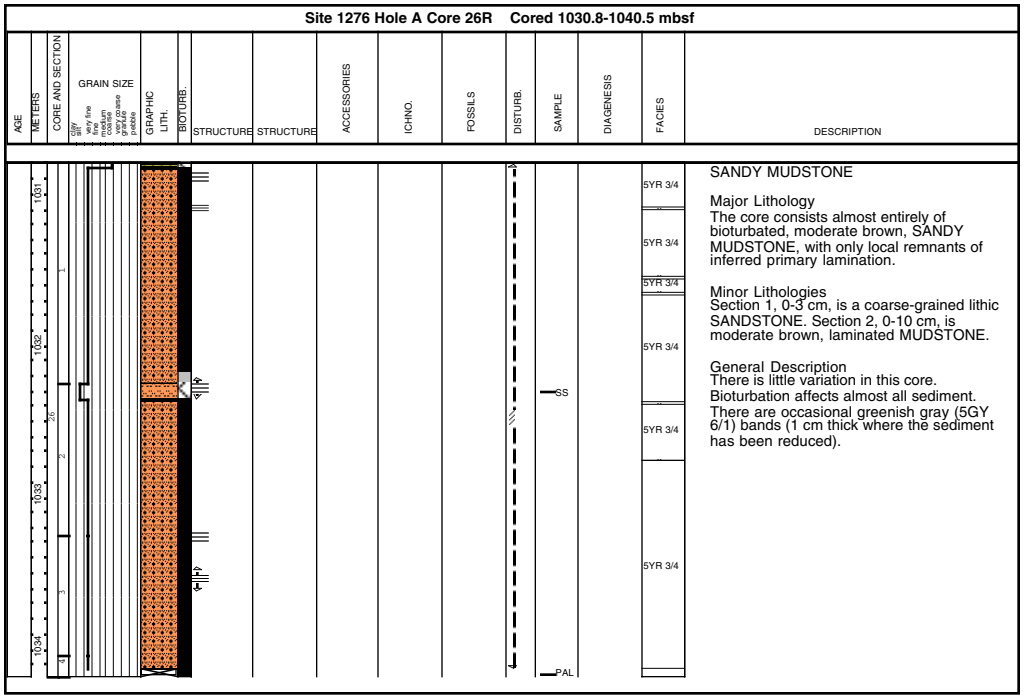
Minor lithologies
Very light gray (N8) GRAINSTONE forms about 10% of the core, and pale blue (5B 6/2), to moderate light gray (N6) SANDSTONE and SILTSTONE comprise about 5%.

General description
Upward-fining grainstone-marlstone intervals dominate the core, and are separated by claystone intervals 30-50 cm thick. The grainstones fine upwards either from fine or very fine grained sand to silt; this fining trend terminates with marlstones which are sparsely or moderately bioturbated. The grainstones are composed of clasts of fine-grained carbonate and benthic foraminifera.
The sandstones and siltstones are parallel and cross laminated, and together form upward-fining intervals within the claystones in Sections 2, 52-71 cm; 4, 74, 82 cm; 5, 73-109 cm and 109-144 cm.

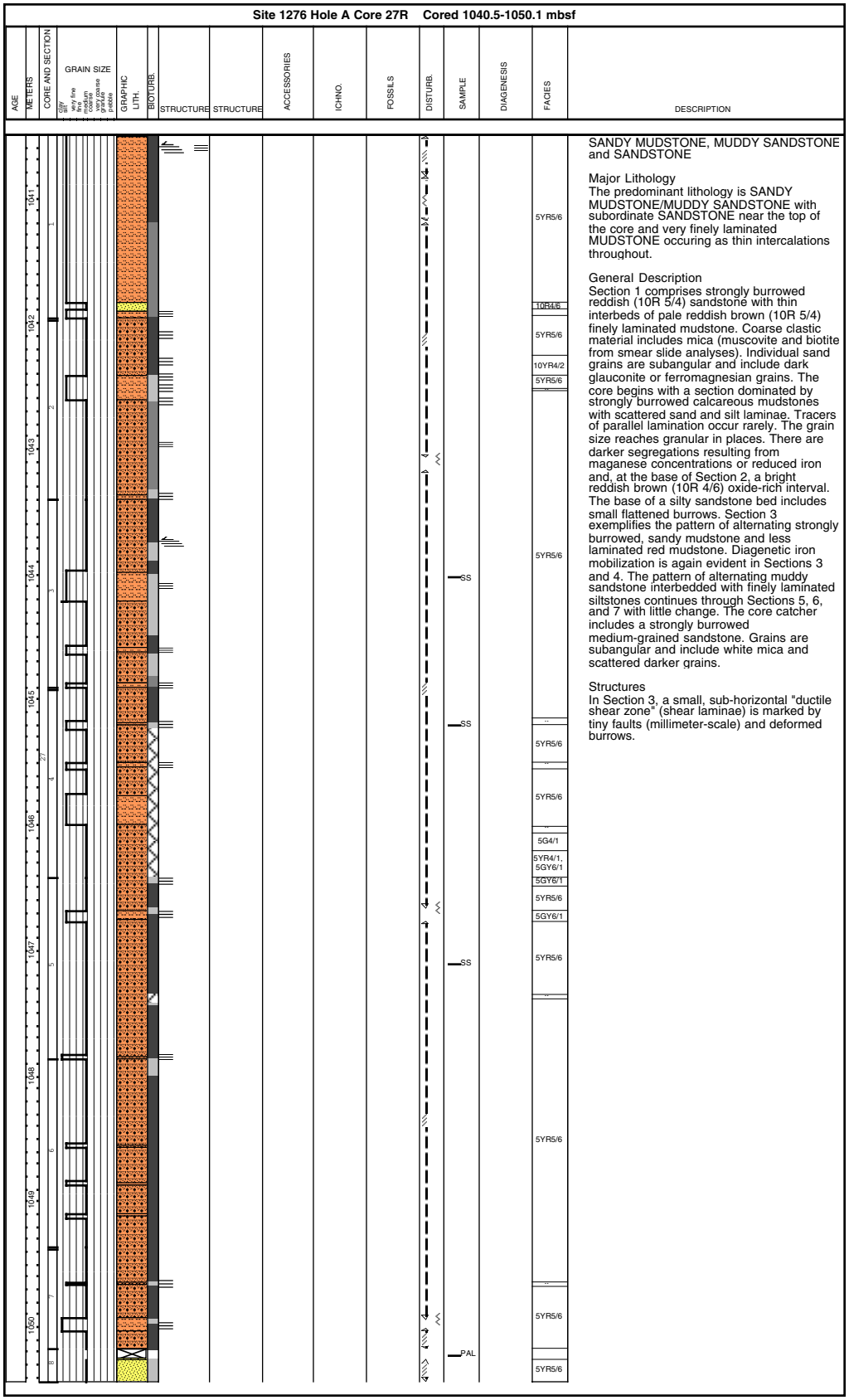
Core Photo


Site 1276 Hole A Core 25R Cored 1021.2-1030.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1022
1023
1024
1025
1026
1027
1028
1029
1030
SS
PAL
5Y5/2
5Y8/1, 10Y6/2
5Y5/2
5Y8/1, 10Y4/2,..
5GY8/1
10YR6/4
5YR6/4
5Y8/1
N7, 5GY4/1
5YR3/4, 5Y5/2
5YR4/4, 5Y8/1
5YR4/4, N7
5YR4/4, N7
5YR4/4, 5Y5/2
5YR4/4
5YR3/4
5GY6/1
5YR3/4
5GY6/1
5YR3/4
MARLSTONE and SANDY MUDSTONE
Major lithologies
Light olive gray (5Y 5/2), to light olive brown (5YR 6/4) MARLSTONE forms about 55% of the core, and light olive gray (5Y 5/2), to moderate brown (5YR 3/4) SANDY MUDSTONE comprises about 35%.
Minor lithologies
Yellowish gray (5Y 8/1) GRAINSTONE forms about 7% of the core, and greenish gray (5GY 6/1) to light gray (N7) SILTSTONE and SANDSTONE about 3%.
General description
The upper part of the core is dominated by largely structureless marlstone beneath which occur thin (7-10 cm) intervals of parallel-laminated grainstone, with one exception in Section 4, 37-84 cm where 47 cm of grainstone occurs. Brown colored sandy mudstone is the dominant lithology from Section 4, 84 cm downhole. In Sections 5 and 6 ~5 cm thick intervals of parallel-laminated siltstone and sandstone occur within the mudstones.

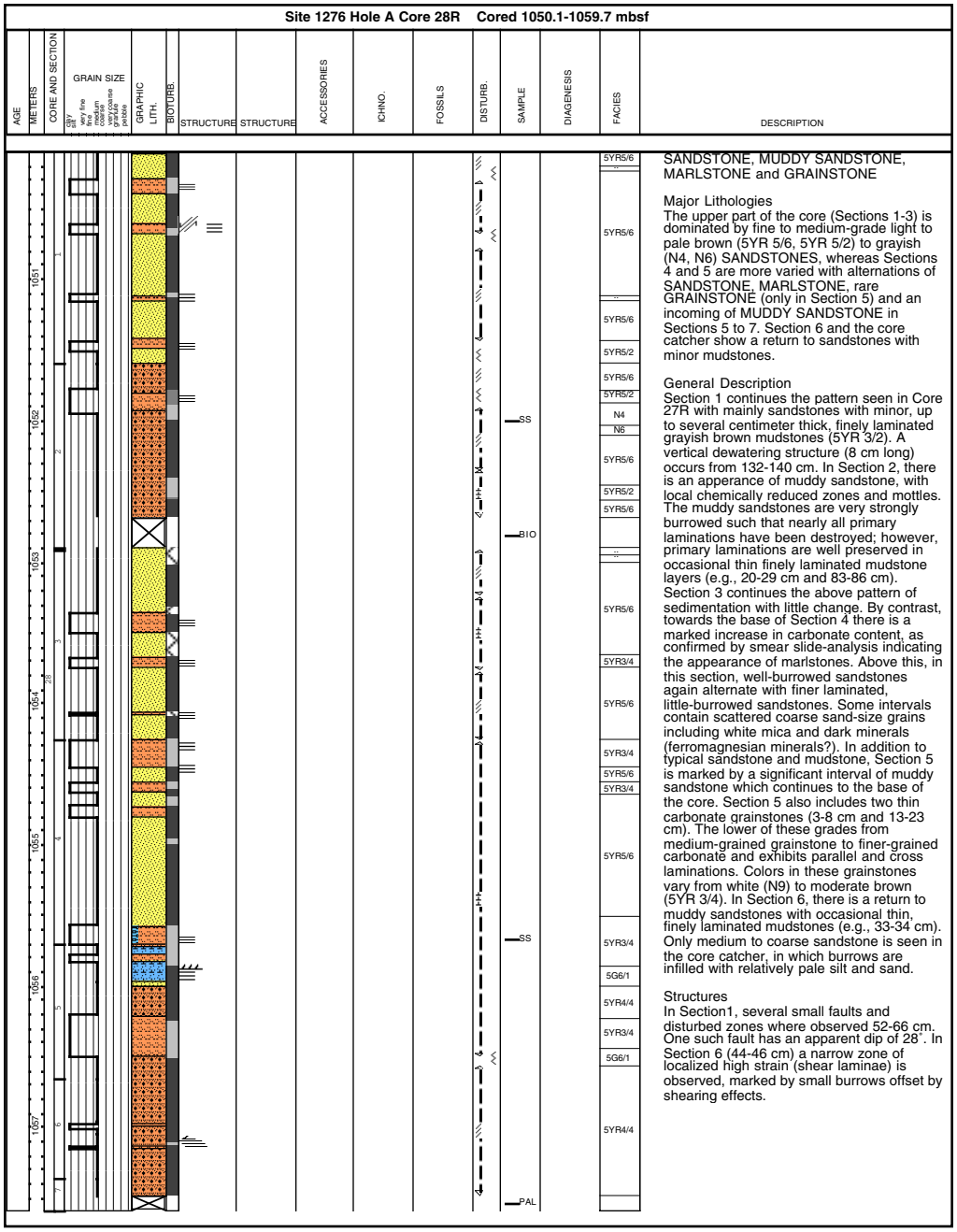
Core Photo


Site 1276 Hole A Core 26R Cored 1030.8-1040.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1031
1032
1033
1034
SS
PAL
5YR 3/4
5YR 3/4
5YR 3/4
5YR 3/4
5YR 3/4
5YR 3/4
SANDY MUDSTONE
Major Lithology
The core consists almost entirely of bioturbated, moderate brown, SANDY MUDSTONE, with only local remnants of inferred primary lamination.
Minor Lithologies
Section 1, 0-3 cm, is a coarse-grained lithic SANDSTONE. Section 2, 0-10 cm, is moderate brown, laminated MUDSTONE.
General Description
There is little variation in this core. Bioturbation affects almost all sediment. There are occasional greenish gray (5GY 6/1) bands (1 cm thick where the sediment has been reduced).

Core Photo


Site 1276 Hole A Core 27R Cored 1040.5-1050.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
clay
silt
very fine
fine
medium
coarse
very coarse
granules
pebbles
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1041
1042
1043
1044
1045
1046
1047
1048
1049
1050
27
1
2
3
4
5
6
7
8
SS
SS
SS
PAL
5YR5/6
10R4/6
5YR5/6
10YR4/2
5YR5/6
5YR5/6
5YR5/6
5G4/1
5YR4/1, 5GY6/1
5GY6/1
5YR5/6
5GY6/1
5YR5/6
5YR5/6
5YR5/6
5YR5/6
SANDY MUDSTONE, MUDDY SANDSTONE and SANDSTONE
Major Lithology
The predominant lithology is SANDY MUDSTONE/MUDDY SANDSTONE with subordinate SANDSTONE near the top of the core and very finely laminated MUDSTONE occuring as thin intercalations throughout.
General Description
Section 1 comprises strongly burrowed reddish (10R 5/4) sandstone with thin interbeds of pale reddish brown (10R 5/4) finely laminated mudstone. Coarse clastic material includes mica (muscovite and biotite from smear slide analyses). Individual sand grains are subangular and include dark glauconite or ferromagnesian grains. The core begins with a section dominated by strongly burrowed calcareous mudstones with scattered sand and silt laminae. Tracers of parallel lamination occur rarely. The grain size reaches granular in places. There are darker segregations resulting from maganese concentrations or reduced iron and, at the base of Section 2, a bright reddish brown (10R 4/6) oxide-rich interval. The base of a silty sandstone bed includes small flattened burrows. Section 3 exemplifies the pattern of alternating strongly burrowed, sandy mudstone and less laminated red mudstone. Diagenetic iron mobilization is again evident in Sections 3 and 4. The pattern of alternating muddy sandstone interbedded with finely laminated siltstones continues through Sections 5, 6, and 7 with little change. The core catcher includes a strongly burrowed medium-grained sandstone. Grains are subangular and include white mica and scattered darker grains.
Structures
In Section 3, a small, sub-horizontal "ductile shear zone" (shear laminae) is marked by tiny faults (millimeter-scale) and deformed burrows.

Core Photo



SANDSTONE, MUDDY SANDSTONE, MARLSTONE and GRAINSTONE

Major Lithologies

The upper part of the core (Sections 1-3) is dominated by fine to medium-grade light to pale brown (5YR 5/6, 5YR 5/2) to grayish (N4, N6) SANDSTONES, whereas Sections 4 and 5 are more varied with alternations of SANDSTONE, MARLSTONE, rare GRAINSTONE (only in Section 5) and an incoming of MUDDY SANDSTONE in Sections 5 to 7. Section 6 and the core catcher show a return to sandstones with minor mudstones.

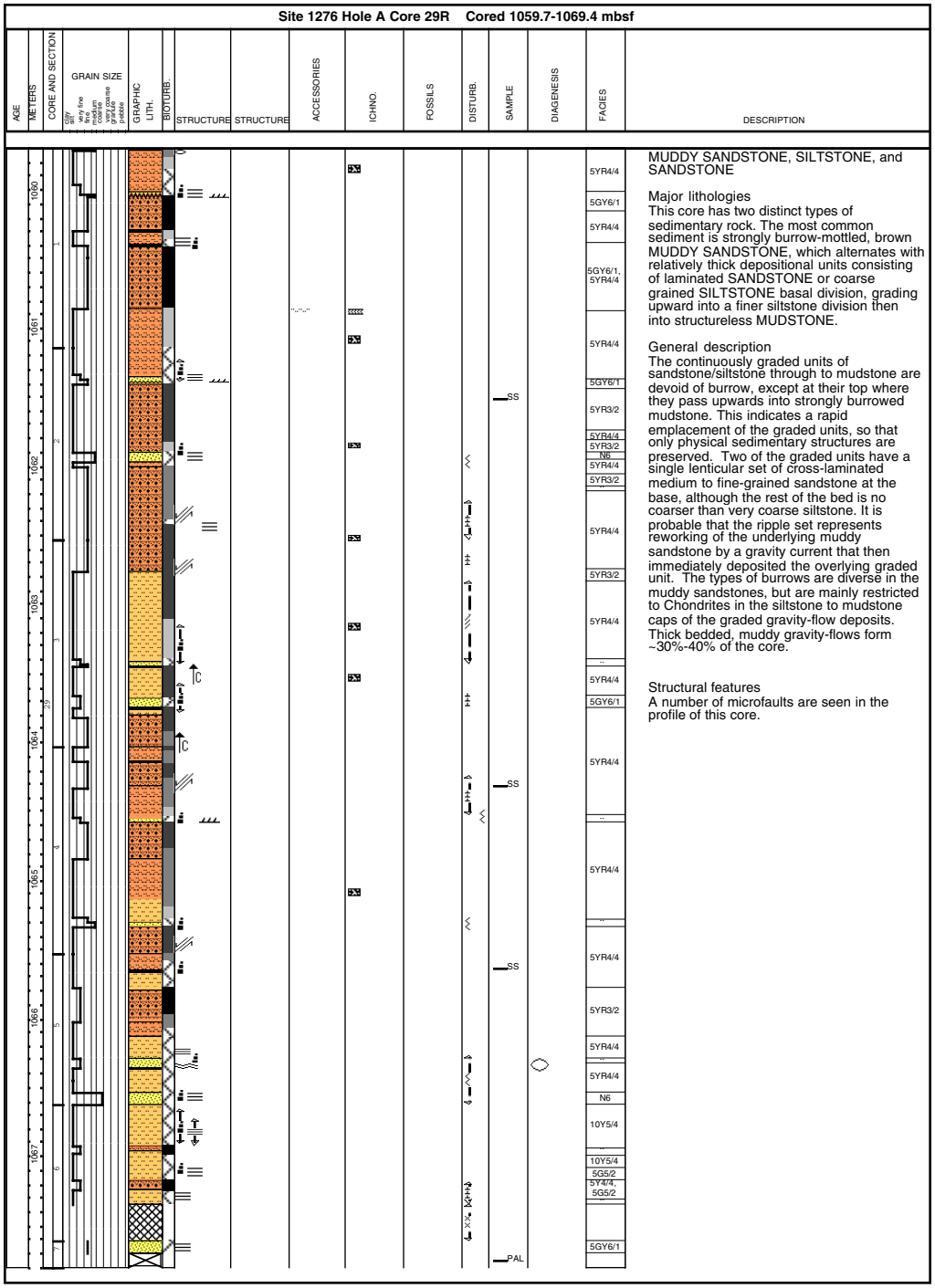
General Description

Section 1 continues the pattern seen in Core 27R with mainly sandstones with minor, up to several centimeter thick, finely laminated grayish brown mudstones (5YR 3/2). A vertical dewatering structure (8 cm long) occurs from 132-140 cm. In Section 2, there is an apperance of muddy sandstone, with local chemically reduced zones and mottles. The muddy sandstones are very strongly burrowed such that nearly all primary laminations have been destroyed; however, primary laminations are well preserved in occasional thin finely laminated mudstone layers (e.g., 20-29 cm and 83-86 cm). Section 3 continues the above pattern of sedimentation with little change. By contrast, towards the base of Section 4 there is a marked increase in carbonate content, as confirmed by smear slide-analysis indicating the appearance of marlstones. Above this, in this section, well-burrowed sandstones again alternate with finer laminated, little-burrowed sandstones. Some intervals contain scattered coarse sand-size grains including white mica and dark minerals (ferromagnesian minerals?). In addition to typical sandstone and mudstone, Section 5 is marked by a significant interval of muddy sandstone which continues to the base of the core. Section 5 also includes two thin carbonate grainstones (3-8 cm and 13-23 cm). The lower of these grades from medium-grained grainstone to finer-grained carbonate and exhibits parallel and cross laminations. Colors in these grainstones vary from white (N9) to moderate brown (5YR 3/4). In Section 6, there is a return to muddy sandstones with occasional thin, finely laminated mudstones (e.g., 33-34 cm). Only medium to coarse sandstone is seen in the core catcher, in which burrows are infilled with relatively pale silt and sand.

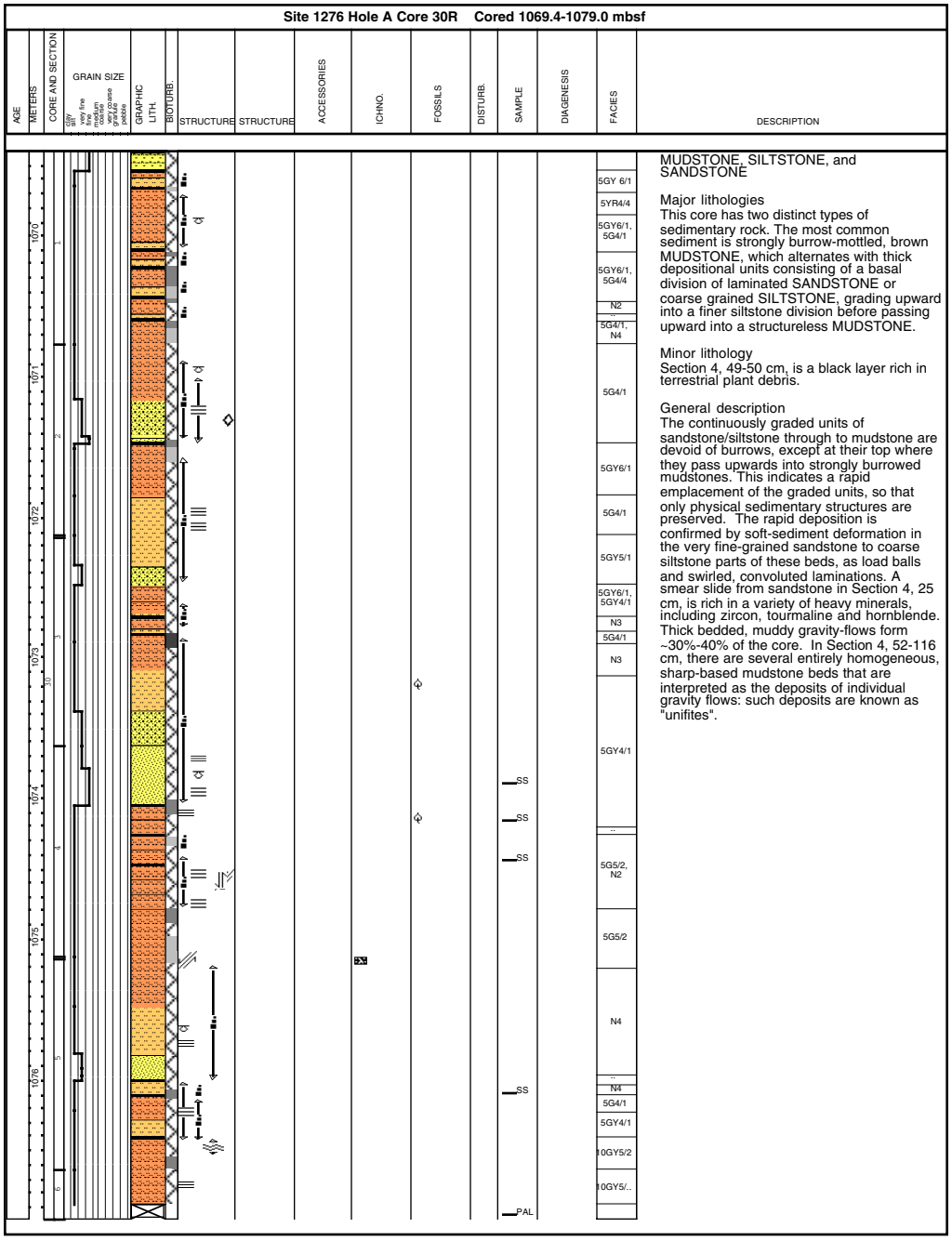
Structures

In Section1, several small faults and disturbed zones where observed 52-66 cm. One such fault has an apparent dip of 28˚. In Section 6 (44-46 cm) a narrow zone of localized high strain (shear laminae) is observed, marked by small burrows offset by shearing effects.

Core Photo


Site 1276 Hole A Core 29R Cored 1059.7-1069.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1060
1061
1062
1063
1064
1065
1066
1067
29
SS
SS
SS
PAL
5YR4/4
5GY6/1
5YR4/4
5GY6/1, 5YR4/4
5YR4/4
5GY6/1
5YR3/2
6YR4/4
5YR3/2
N6
5YR4/4
5YR3/2
5YR4/4
5YR3/2
5YR4/4
5YR4/4
5GY6/1
5YR4/4
5YR4/4
5YR4/4
5YR3/2
5YR4/4
5YR4/4
N6
10Y5/4
10Y5/4
5G5/2
5Y4/4, 5G5/2
5GY6/1
MUDDY SANDSTONE, SILTSTONE, and SANDSTONE
Major lithologies
This core has two distinct types of sedimentary rock. The most common sediment is strongly burrow-mottled, brown MUDDY SANDSTONE, which alternates with relatively thick depositional units consisting of laminated SANDSTONE or coarse grained SILTSTONE basal division, grading upward into a finer siltstone division then into structureless MUDSTONE.
General description
The continuously graded units of sandstone/siltstone through to mudstone are devoid of burrow, except at their top where they pass upwards into strongly burrowed mudstone. This indicates a rapid emplacement of the graded units, so that only physical sedimentary structures are preserved. Two of the graded units have a single lenticular set of cross-laminated medium to fine-grained sandstone at the base, although the rest of the bed is no coarser than very coarse siltstone. It is probable that the ripple set represents reworking of the underlying muddy sandstone by a gravity current that then immediately deposited the overlying graded unit. The types of burrows are diverse in the muddy sandstones, but are mainly restricted to Chondrites in the siltstone to mudstone caps of the graded gravity-flow deposits. Thick bedded, muddy gravity-flows form ~30%-40% of the core.
Structural features
A number of microfaults are seen in the profile of this core.

Core Photo



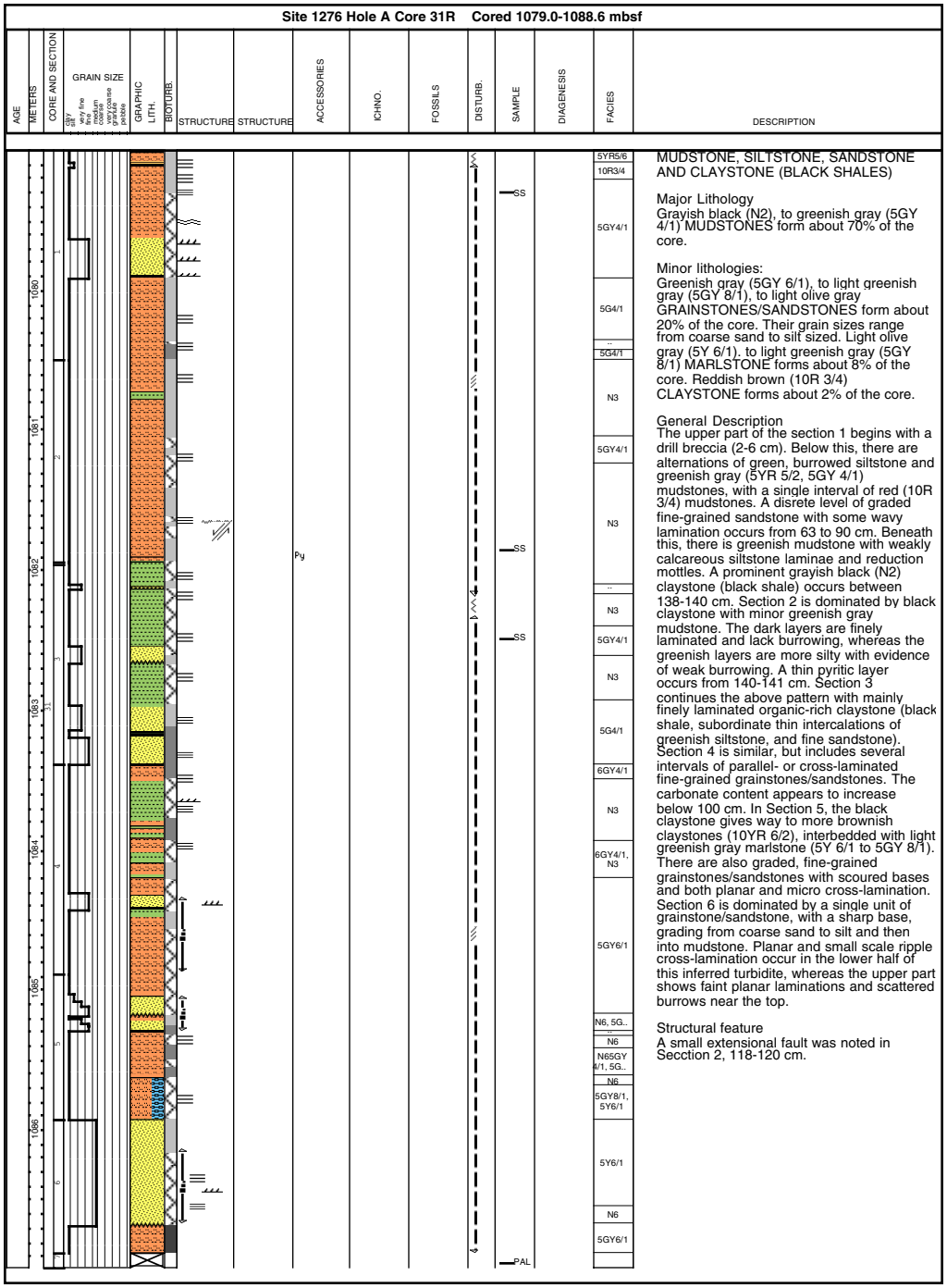
MUDSTONE, SILTSTONE, and SANDSTONE

Major lithologies
This core has two distinct types of sedimentary rock. The most common sediment is strongly burrow-mottled, brown MUDSTONE, which alternates with thick depositional units consisting of a basal division of laminated SANDSTONE or coarse grained SILTSTONE, grading upward into a finer siltstone division before passing upward into a structureless MUDSTONE.

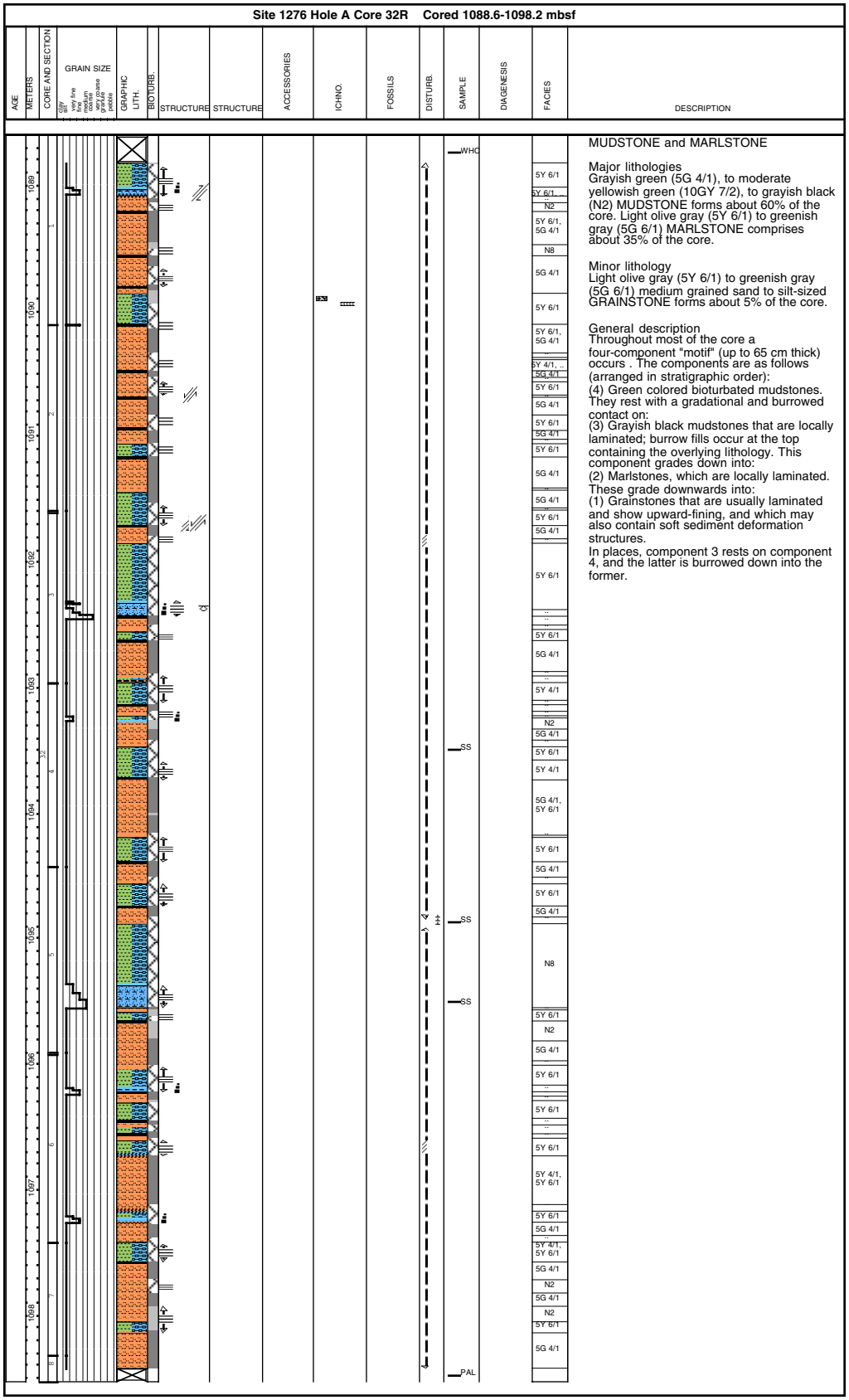
Minor lithology
Section 4, 49-50 cm, is a black layer rich in terrestrial plant debris.

General description
The continuously graded units of sandstone/siltstone through to mudstone are devoid of burrows, except at their top where they pass upwards into strongly burrowed mudstones. This indicates a rapid emplacement of the graded units, so that only physical sedimentary structures are preserved. The rapid deposition is confirmed by soft-sediment deformation in the very fine-grained sandstone to coarse siltstone parts of these beds, as load balls and swirled, convoluted laminations. A smear slide from sandstone in Section 4, 25 cm, is rich in a variety of heavy minerals, including zircon, tourmaline and hornblende. Thick bedded, muddy gravity-flows form ~30%-40% of the core. In Section 4, 52-116 cm, there are several entirely homogeneous, sharp-based mudstone beds that are interpreted as the deposits of individual gravity flows: such deposits are known as "unifites".

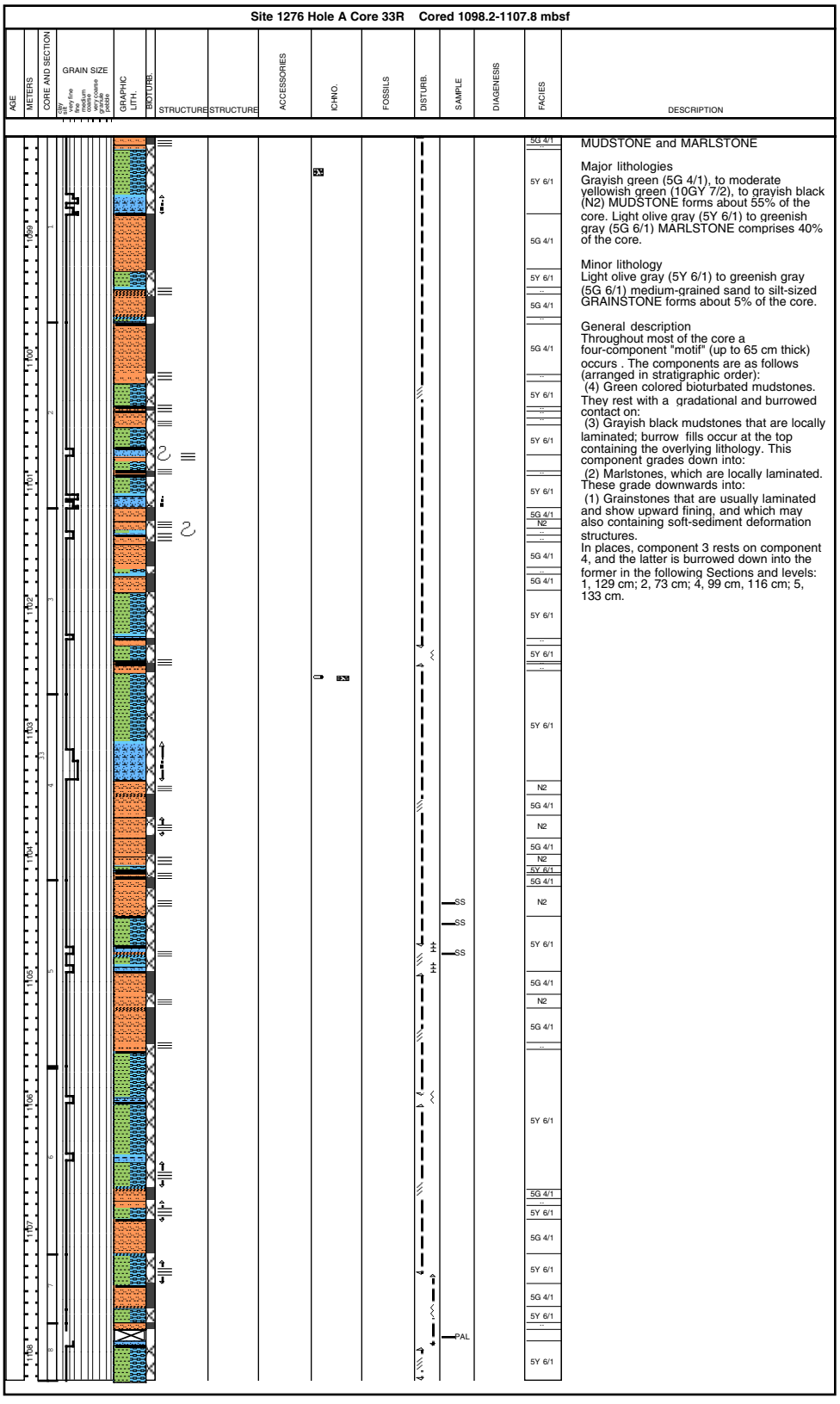
Core Photo


Site 1276 Hole A Core 31R Cored 1079.0-1088.6 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1060
1061
1062
1063
1064
1065
1066
Py
SS
SS
SS
PAL
5YR5/6
10R3/4
5GY4/1
5G4/1
5G4/1
N3
5GY4/1
N3
N3
N3
5GY4/1
N3
5G4/1
6GY4/1
N3
6GY4/1, N3
5GY6/1
N6, 5G..
N6
N65GY 4/1, 5G..
N6
5GY8/1, 5Y6/1
5Y6/1
N6
5GY6/1
MUDSTONE, SILTSTONE, SANDSTONE AND CLAYSTONE (BLACK SHALES)
Major Lithology
Grayish black (N2), to greenish gray (5GY 4/1) MUDSTONES form about 70% of the core.
Minor lithologies:
Greenish gray (5GY 6/1), to light greenish gray (5GY 8/1), to light olive gray GRAINSTONES/SANDSTONES form about 20% of the core. Their grain sizes range from coarse sand to silt sized. Light olive gray (5Y 6/1). to light greenish gray (5GY 8/1) MARLSTONE forms about 8% of the core. Reddish brown (10R 3/4) CLAYSTONE forms about 2% of the core.
General Description
The upper part of the section 1 begins with a drill breccia (2-6 cm). Below this, there are alternations of green, burrowed siltstone and greenish gray (5YR 5/2, 5GY 4/1) mudstones, with a single interval of red (10R 3/4) mudstones. A disrete level of graded fine-grained sandstone with some wavy lamination occurs from 63 to 90 cm. Beneath this, there is greenish mudstone with weakly calcareous siltstone laminae and reduction mottles. A prominent grayish black (N2) claystone (black shale) occurs between 138-140 cm. Section 2 is dominated by black claystone with minor greenish gray mudstone. The dark layers are finely laminated and lack burrowing, whereas the greenish layers are more silty with evidence of weak burrowing. A thin pyritic layer occurs from 140-141 cm. Section 3 continues the above pattern with mainly finely laminated organic-rich claystone (black shale, subordinate thin intercalations of greenish siltstone, and fine sandstone). Section 4 is similar, but includes several intervals of parallel- or cross-laminated fine-grained grainstones/sandstones. The carbonate content appears to increase below 100 cm. In Section 5, the black claystone gives way to more brownish claystones (10YR 6/2), interbedded with light greenish gray marlstone (5Y 6/1 to 5GY 8/1). There are also graded, fine-grained grainstones/sandstones with scoured bases and both planar and micro cross-lamination. Section 6 is dominated by a single unit of grainstone/sandstone, with a sharp base, grading from coarse sand to silt and then into mudstone. Planar and small scale ripple cross-lamination occur in the lower half of this inferred turbidite, whereas the upper part shows faint planar laminations and scattered burrows near the top.
Structural feature
A small extensional fault was noted in Secction 2, 118-120 cm.

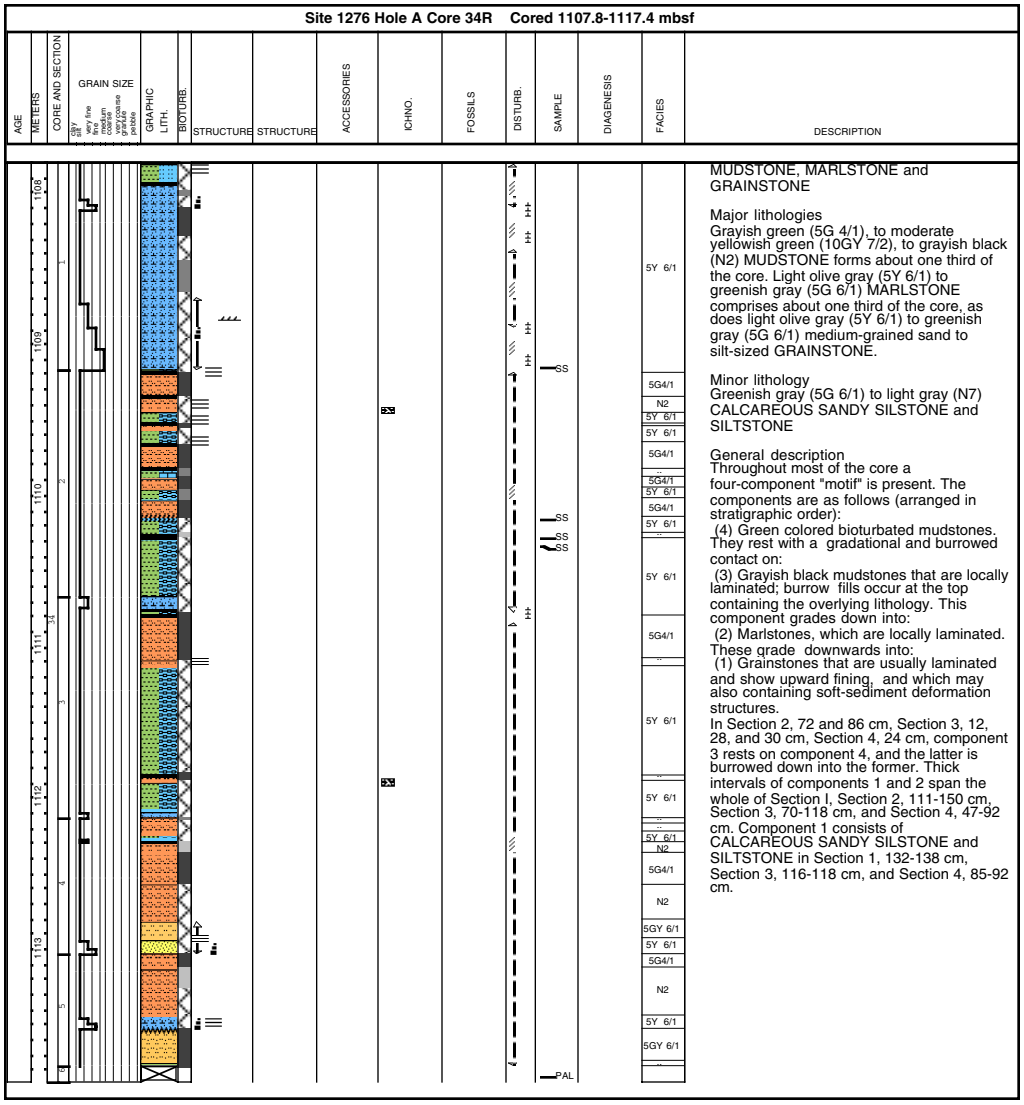
Core Photo


Site 1276 Hole A Core 32R Cored 1088.6-1098.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
WHC
SS
SS
SS
PAL
MUDSTONE and MARLSTONE
Major lithologies
Grayish green (5G 4/1), to moderate yellowish green (10GY 7/2), to grayish black (N2) MUDSTONE forms about 60% of the core. Light olive gray (5Y 6/1) to greenish gray (5G 6/1) MARLSTONE comprises about 35% of the core.
Minor lithology
Light olive gray (5Y 6/1) to greenish gray (5G 6/1) medium grained sand to silt-sized GRAINSTONE forms about 5% of the core.
General description
Throughout most of the core a four-component "motif" (up to 65 cm thick) occurs . The components are as follows (arranged in stratigraphic order):
(4) Green colored bioturbated mudstones. They rest with a gradational and burrowed contact on:
(3) Grayish black mudstones that are locally laminated; burrow fills occur at the top containing the overlying lithology. This component grades down into:
(2) Marlstones, which are locally laminated. These grade downwards into:
(1) Grainstones that are usually laminated and show upward-fining, and which may also contain soft sediment deformation structures.
In places, component 3 rests on component 4, and the latter is burrowed down into the former.

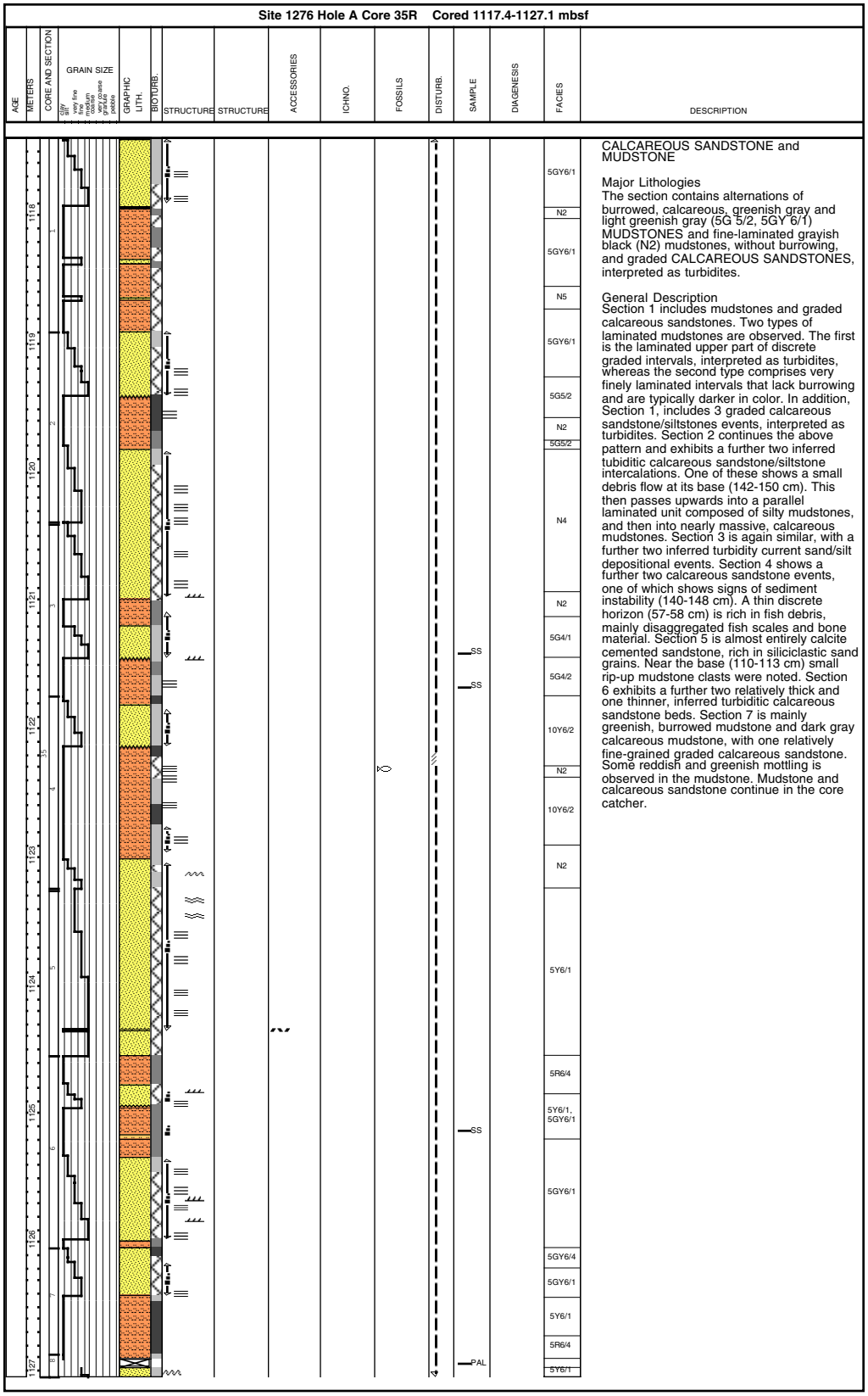
Core Photo


Site 1276 Hole A Core 33R Cored 1098.2-1107.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
clay
very fine
fine
medium
coarse
very coarse
granule
pebble
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
SS
SS
PAL
MUDSTONE and MARLSTONE
Major lithologies
Grayish green (5G 4/1), to moderate yellowish green (10GY 7/2), to grayish black (N2) MUDSTONE forms about 55% of the core. Light olive gray (5Y 6/1) to greenish gray (5G 6/1) MARLSTONE comprises 40% of the core.
Minor lithology
Light olive gray (5Y 6/1) to greenish gray (5G 6/1) medium-grained sand to silt-sized GRAINSTONE forms about 5% of the core.
General description
Throughout most of the core a four-component "motif" (up to 65 cm thick) occurs . The components are as follows (arranged in stratigraphic order):
(4) Green colored bioturbated mudstones. They rest with a gradational and burrowed contact on:
(3) Grayish black mudstones that are locally laminated; burrow fills occur at the top containing the overlying lithology. This component grades down into:
(2) Marlstones, which are locally laminated. These grade downwards into:
(1) Grainstones that are usually laminated and show upward fining, and which may also containing soft-sediment deformation structures.
In places, component 3 rests on component 4, and the latter is burrowed down into the former in the following Sections and levels: 1, 129 cm; 2, 73 cm; 4, 99 cm, 116 cm; 5, 133 cm.

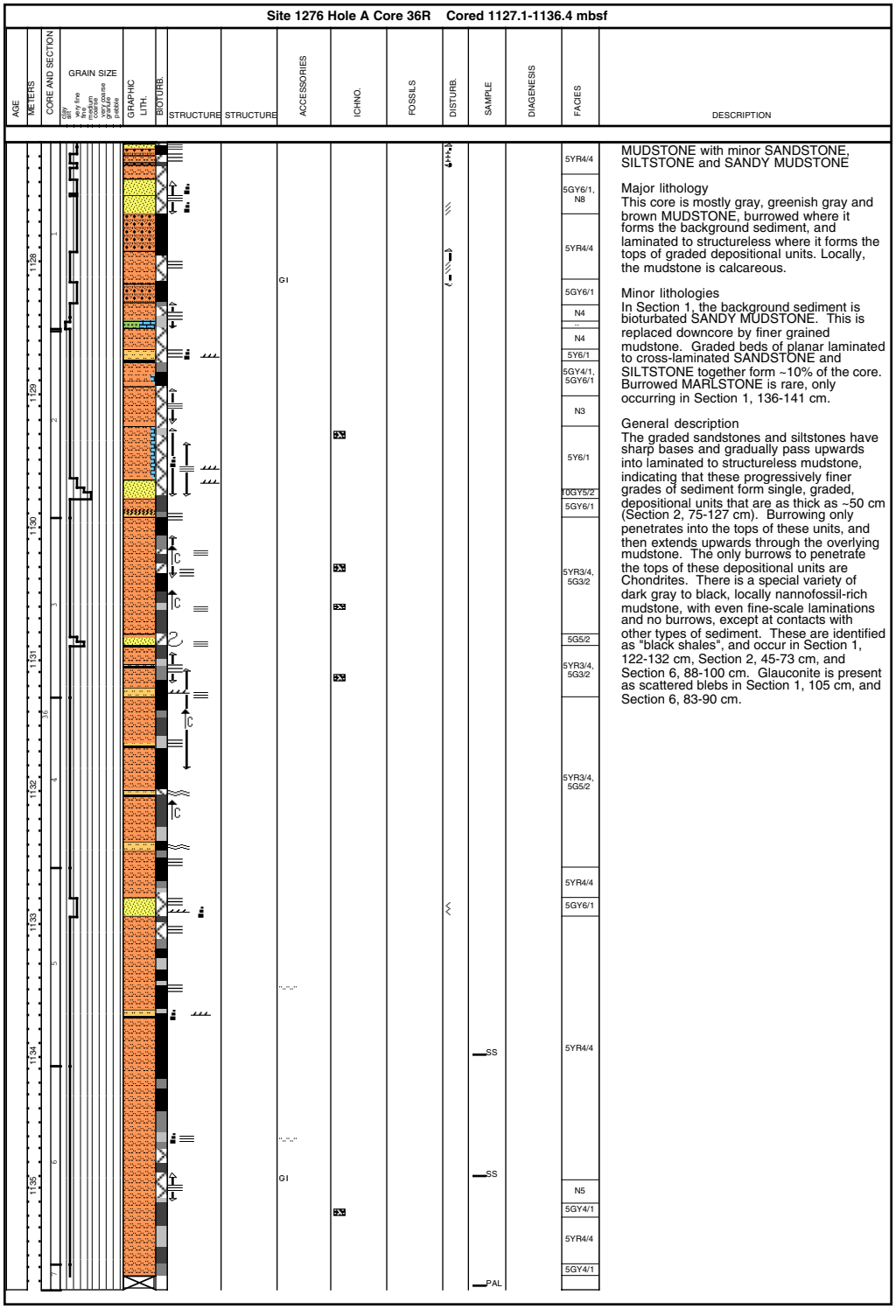
Core Photo


Site 1276 Hole A Core 34R Cored 1107.8-1117.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1108
1109
1110
1111
1112
1113
SS
PAL
5Y 6/1
5G4/1
N2
5GY 6/1
MUDSTONE, MARLSTONE and GRAINSTONE
Major lithologies
Grayish green (5G 4/1), to moderate yellowish green (10GY 7/2), to grayish black (N2) MUDSTONE forms about one third of the core. Light olive gray (5Y 6/1) to greenish gray (5G 6/1) MARLSTONE comprises about one third of the core, as does light olive gray (5Y 6/1) to greenish gray (5G 6/1) medium-grained sand to silt-sized GRAINSTONE.
Minor lithology
Greenish gray (5G 6/1) to light gray (N7) CALCAREOUS SANDY SILSTONE and SILTSTONE
General description
Throughout most of the core a four-component "motif" is present. The components are as follows (arranged in stratigraphic order):
(4) Green colored bioturbated mudstones. They rest with a gradational and burrowed contact on:
(3) Grayish black mudstones that are locally laminated; burrow fills occur at the top containing the overlying lithology. This component grades down into:
(2) Marlstones, which are locally laminated. These grade downwards into:
(1) Grainstones that are usually laminated and show upward fining, and which may also containing soft-sediment deformation structures.
In Section 2, 72 and 86 cm, Section 3, 12, 28, and 30 cm, Section 4, 24 cm, component 3 rests on component 4, and the latter is burrowed down into the former. Thick intervals of components 1 and 2 span the whole of Section I, Section 2, 111-150 cm, Section 3, 70-118 cm, and Section 4, 47-92 cm. Component 1 consists of CALCAREOUS SANDY SILSTONE and SILTSTONE in Section 1, 132-138 cm, Section 3, 116-118 cm, and Section 4, 85-92 cm.

Core Photo


Site 1276 Hole A Core 35R Cored 1117.4-1127.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1118
1119
1120
1121
1122
1123
1124
1125
1126
1127
SS
SS
SS
PAL
5GY6/1
N2
5GY6/1
N5
5GY6/1
5G5/2
N2
5G5/2
N4
N2
5G4/1
5G4/2
10Y6/2
N2
10Y6/2
N2
5Y6/1
5R6/4
5Y6/1, 5GY6/1
5GY6/1
5GY6/4
5GY6/1
5Y6/1
5R6/4
5Y6/1
CALCAREOUS SANDSTONE and MUDSTONE
Major Lithologies
The section contains alternations of burrowed, calcareous, greenish gray and light greenish gray (5G 5/2, 5GY 6/1) MUDSTONES and fine-laminated grayish black (N2) mudstones, without burrowing, and graded CALCAREOUS SANDSTONES, interpreted as turbidites.
General Description
Section 1 includes mudstones and graded calcareous sandstones. Two types of laminated mudstones are observed. The first is the laminated upper part of discrete graded intervals, interpreted as turbidites, whereas the second type comprises very finely laminated intervals that lack burrowing and are typically darker in color. In addition, Section 1, includes 3 graded calcareous sandstone/siltstones events, interpreted as turbidites. Section 2 continues the above pattern and exhibits a further two inferred tubiditic calcareous sandstone/siltstone intercalations. One of these shows a small debris flow at its base (142-150 cm). This then passes upwards into a parallel laminated unit composed of silty mudstones, and then into nearly massive, calcareous mudstones. Section 3 is again similar, with a further two inferred turbidity current sand/silt depositional events. Section 4 shows a further two calcareous sandstone events, one of which shows signs of sediment instability (140-148 cm). A thin discrete horizon (57-58 cm) is rich in fish debris, mainly disaggregated fish scales and bone material. Section 5 is almost entirely calcite cemented sandstone, rich in siliciclastic sand grains. Near the base (110-113 cm) small rip-up mudstone clasts were noted. Section 6 exhibits a further two relatively thick and one thinner, inferred turbiditic calcareous sandstone beds. Section 7 is mainly greenish, burrowed mudstone and dark gray calcareous mudstone, with one relatively fine-grained graded calcareous sandstone. Some reddish and greenish mottling is observed in the mudstone. Mudstone and calcareous sandstone continue in the core catcher.

Core Photo



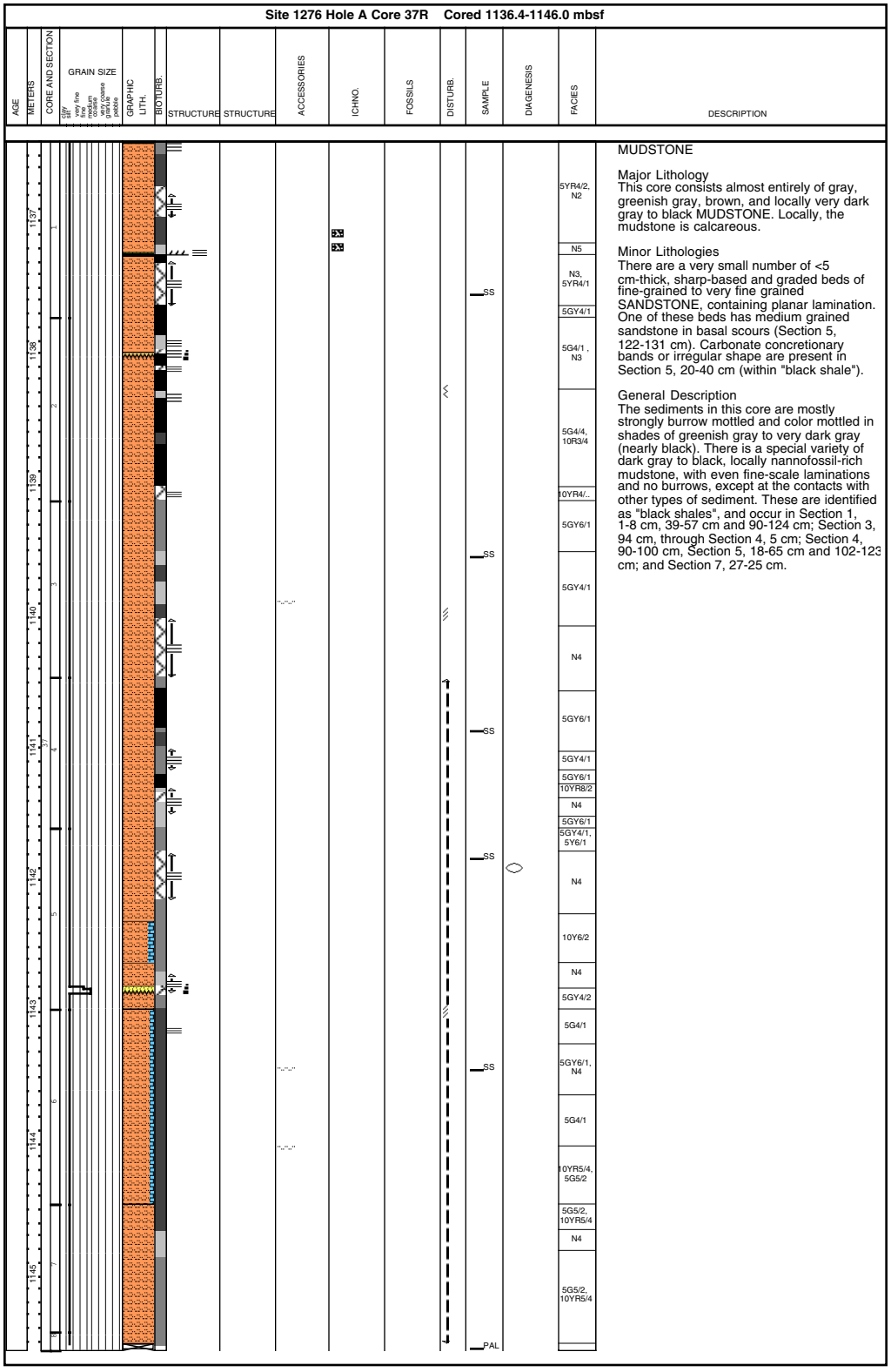
MUDSTONE with minor SANDSTONE, SILTSTONE and SANDY MUDSTONE

Major lithology
This core is mostly gray, greenish gray and brown MUDSTONE, burrowed where it forms the background sediment, and laminated to structureless where it forms the tops of graded depositional units. Locally, the mudstone is calcareous.

Minor lithologies
In Section 1, the background sediment is bioturbated SANDY MUDSTONE. This is replaced downcore by finer grained mudstone. Graded beds of planar laminated to cross-laminated SANDSTONE and SILTSTONE together form ~10% of the core. Burrowed MARLSTONE is rare, only occurring in Section 1, 136-141 cm.

General description
The graded sandstones and siltstones have sharp bases and gradually pass upwards into laminated to structureless mudstone, indicating that these progressively finer grades of sediment form single, graded, depositional units that are as thick as ~50 cm (Section 2, 75-127 cm). Burrowing only penetrates into the tops of these units, and then extends upwards through the overlying mudstone. The only burrows to penetrate the tops of these depositional units are Chondrites. There is a special variety of dark gray to black, locally nannofossil-rich mudstone, with even fine-scale laminations and no burrows, except at contacts with other types of sediment. These are identified as "black shales", and occur in Section 1, 122-132 cm, Section 2, 45-73 cm, and Section 6, 88-100 cm. Glauconite is present as scattered blebs in Section 1, 105 cm, and Section 6, 83-90 cm.

Core Photo



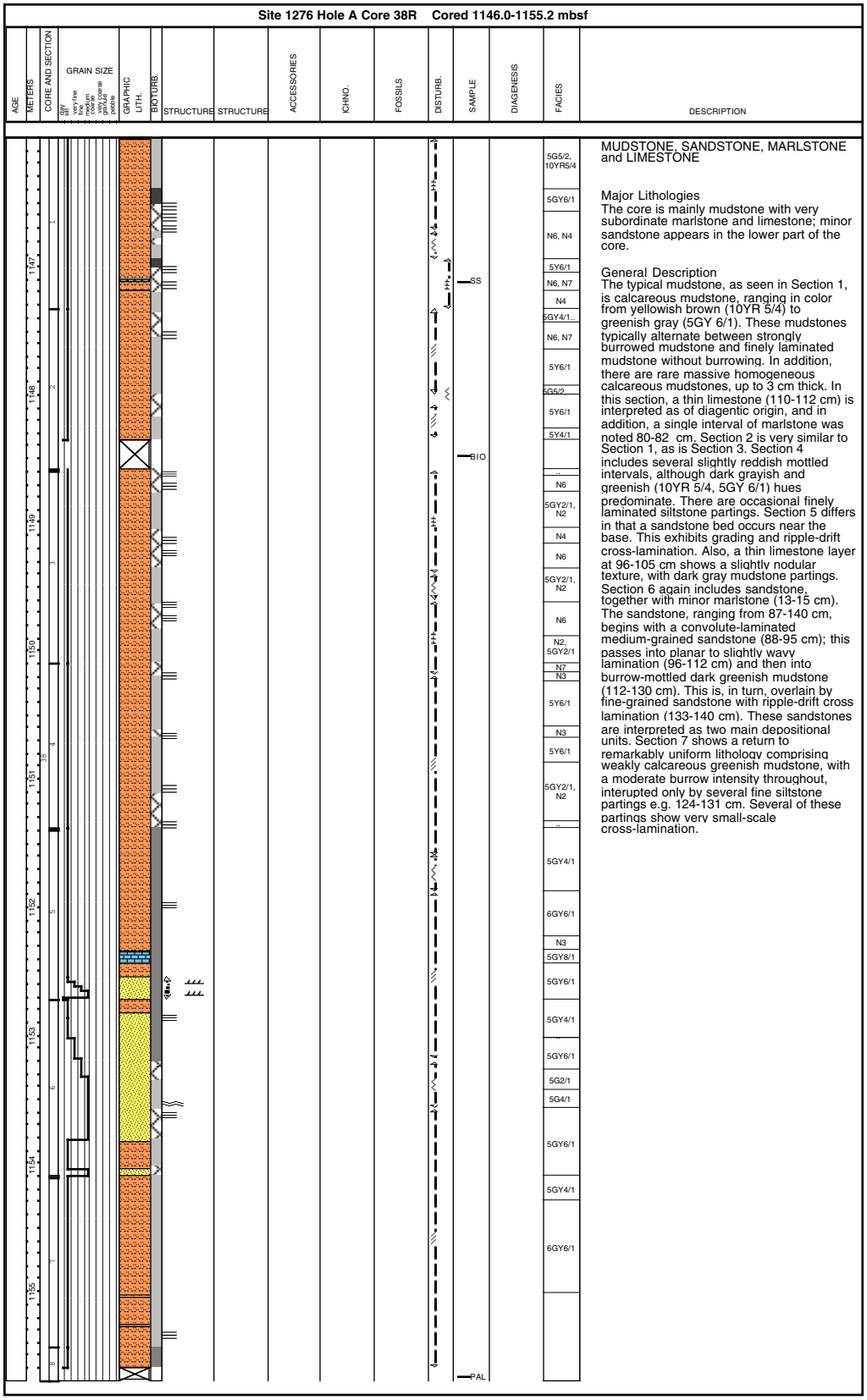
MUDSTONE

Major Lithology
This core consists almost entirely of gray, greenish gray, brown, and locally very dark gray to black MUDSTONE. Locally, the mudstone is calcareous.

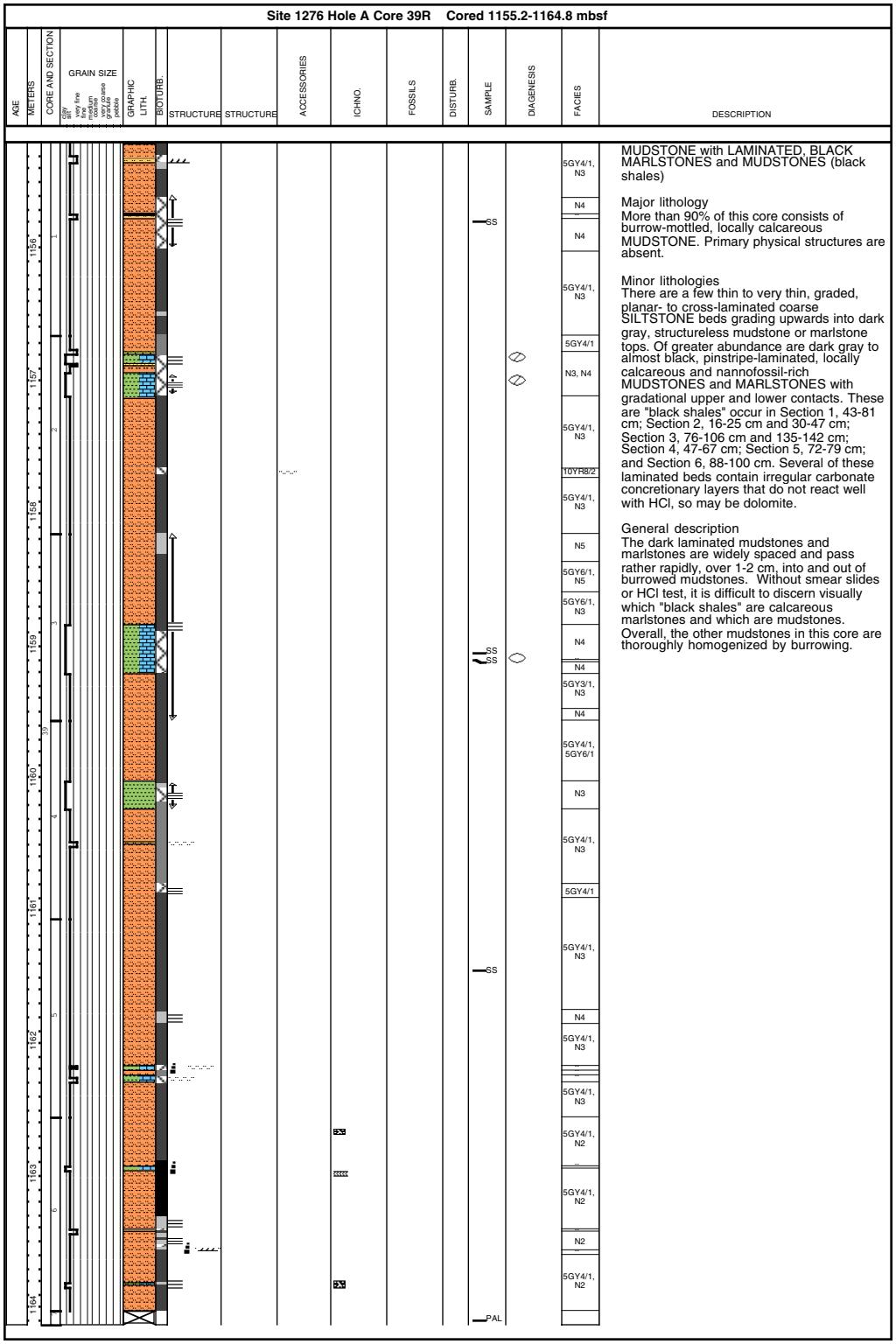
Minor Lithologies
There are a very small number of <5 cm-thick, sharp-based and graded beds of fine-grained to very fine grained SANDSTONE, containing planar lamination. One of these beds has medium grained sandstone in basal scours (Section 5, 122-131 cm). Carbonate concretionary bands or irregular shape are present in Section 5, 20-40 cm (within "black shale").

General Description
The sediments in this core are mostly strongly burrow mottled and color mottled in shades of greenish gray to very dark gray (nearly black). There is a special variety of dark gray to black, locally nannofossil-rich mudstone, with even fine-scale laminations and no burrows, except at the contacts with other types of sediment. These are identified as "black shales", and occur in Section 1, 1-8 cm, 39-57 cm and 90-124 cm; Section 3, 94 cm, through Section 4, 5 cm; Section 4, 90-100 cm, Section 5, 18-65 cm and 102-123 cm; and Section 7, 27-25 cm.

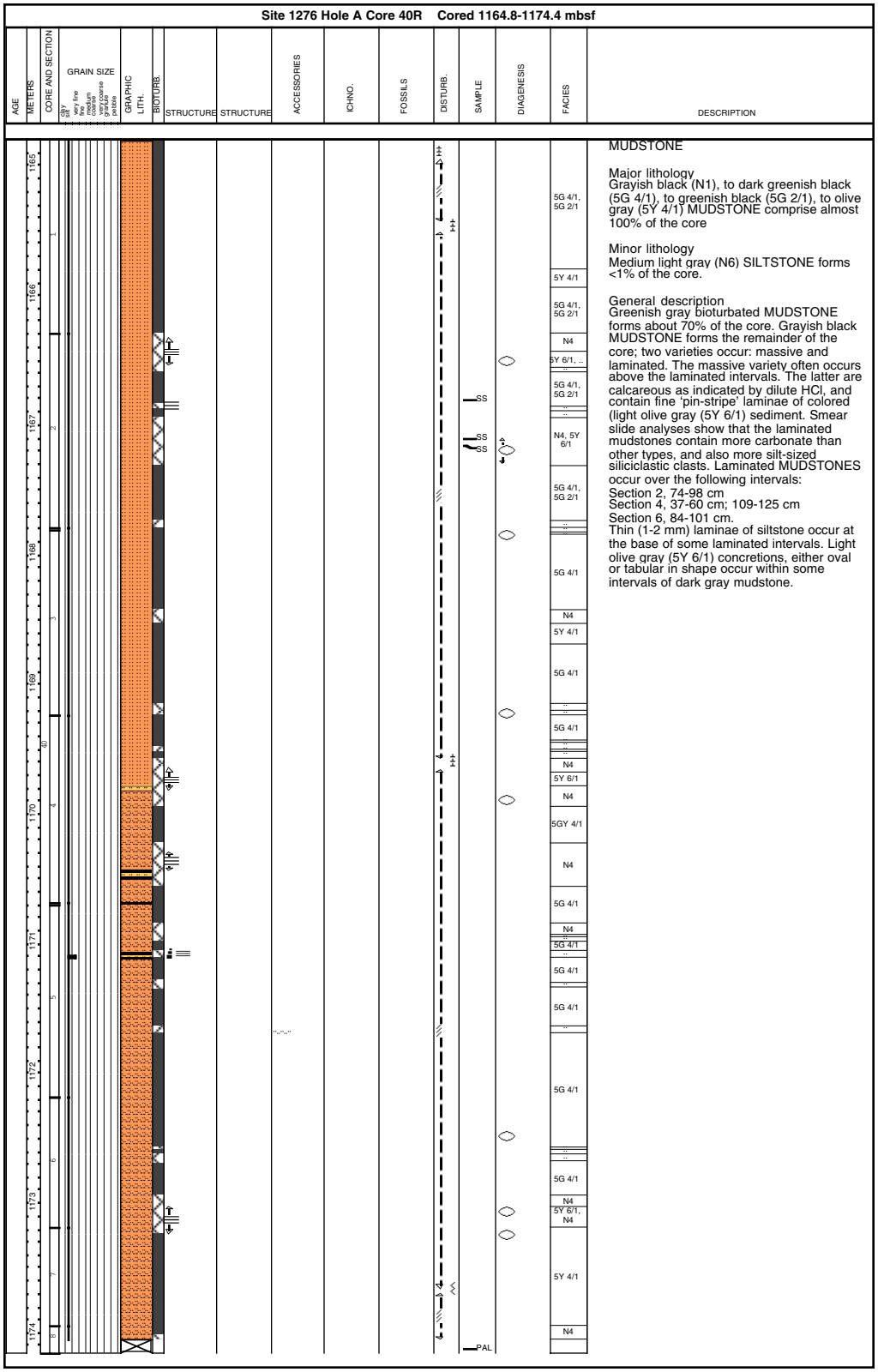
Core Photo


Site 1276 Hole A Core 38R Cored 1146.0-1155.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
BIO
PAL
MUDSTONE, SANDSTONE, MARLSTONE and LIMESTONE
Major Lithologies
The core is mainly mudstone with very subordinate marlstone and limestone; minor sandstone appears in the lower part of the core.
General Description
The typical mudstone, as seen in Section 1, is calcareous mudstone, ranging in color from yellowish brown (10YR 5/4) to greenish gray (5GY 6/1). These mudstones typically alternate between strongly burrowed mudstone and finely laminated mudstone without burrowing. In addition, there are rare massive homogeneous calcareous mudstones, up to 3 cm thick. In this section, a thin limestone (110-112 cm) is interpreted as of diagentic origin, and in addition, a single interval of marlstone was noted 80-82 cm. Section 2 is very similar to Section 1, as is Section 3. Section 4 includes several slightly reddish mottled intervals, although dark grayish and greenish (10YR 5/4, 5GY 6/1) hues predominate. There are occasional finely laminated siltstone partings. Section 5 differs in that a sandstone bed occurs near the base. This exhibits grading and ripple-drift cross-lamination. Also, a thin limestone layer at 96-105 cm shows a slightly nodular texture, with dark gray mudstone partings. Section 6 again includes sandstone, together with minor marlstone (13-15 cm). The sandstone, ranging from 87-140 cm, begins with a convolute-laminated medium-grained sandstone (88-95 cm); this passes into planar to slightly wavy lamination (96-112 cm) and then into burrow-mottled dark greenish mudstone (112-130 cm). This is, in turn, overlain by fine-grained sandstone with ripple-drift cross lamination (133-140 cm). These sandstones are interpreted as two main depositional units. Section 7 shows a return to remarkably uniform lithology comprising weakly calcareous greenish mudstone, with a moderate burrow intensity throughout, interupted only by several fine siltstone partings e.g. 124-131 cm. Several of these partings show very small-scale cross-lamination.

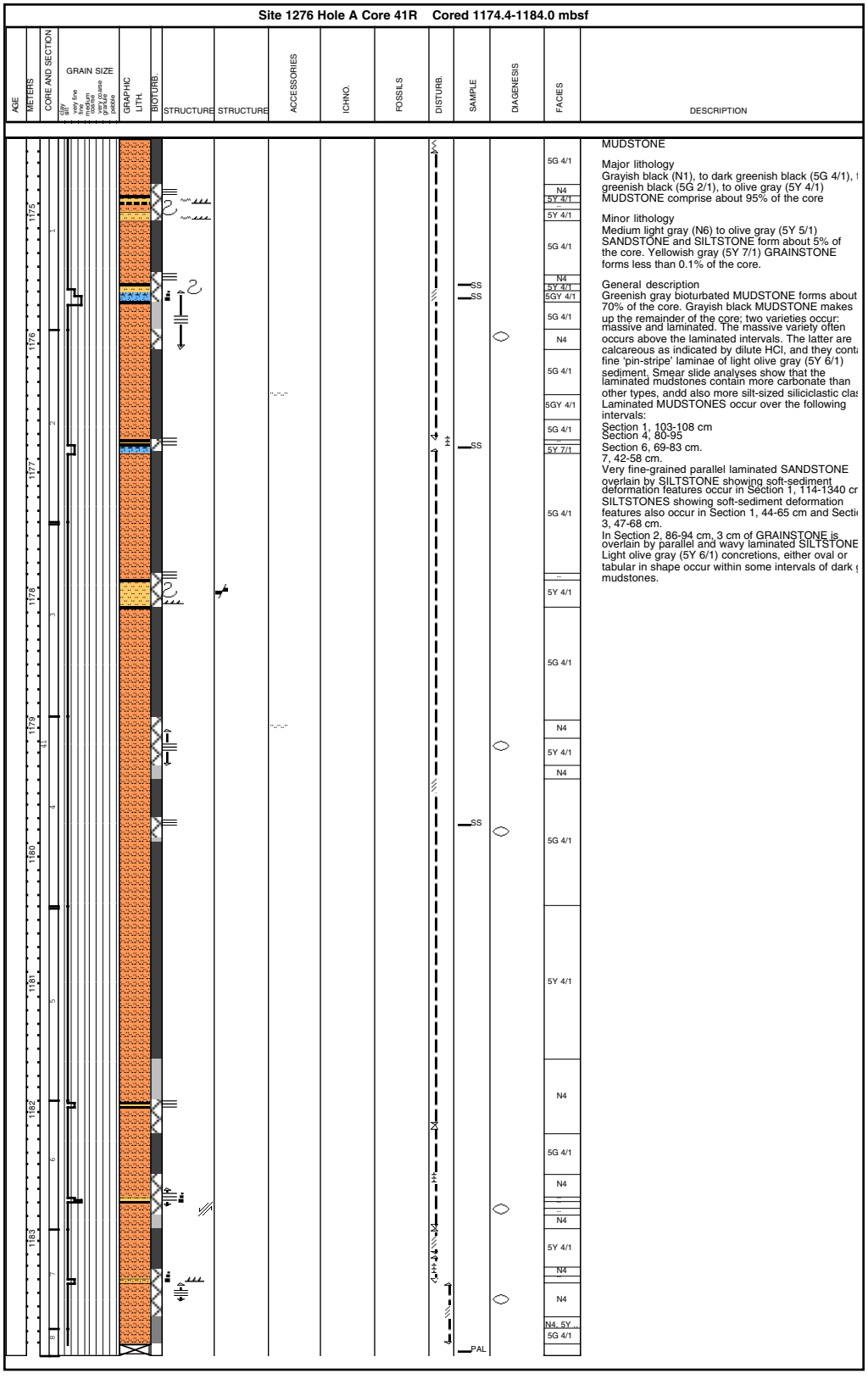
Core Photo


Site 1276 Hole A Core 39R Cored 1155.2-1164.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
PAL
5GY4/1, N3
N4
5GY4/1
N3, N4
10YR8/2
N5
5GY6/1, N5
5GY6/1, N3
5GY3/1, N3
5GY4/1, 5GY6/1
N3
5GY4/1, N2
N2
MUDSTONE with LAMINATED, BLACK MARLSTONES and MUDSTONES (black shales)
Major lithology
More than 90% of this core consists of burrow-mottled, locally calcareous MUDSTONE. Primary physical structures are absent.
Minor lithologies
There are a few thin to very thin, graded, planar- to cross-laminated coarse SILTSTONE beds grading upwards into dark gray, structureless mudstone or marlstone tops. Of greater abundance are dark gray to almost black, pinstripe-laminated, locally calcareous and nannofossil-rich MUDSTONES and MARLSTONES with gradational upper and lower contacts. These are "black shales" occur in Section 1, 43-81 cm; Section 2, 16-25 cm and 30-47 cm; Section 3, 76-106 cm and 135-142 cm; Section 4, 47-67 cm; Section 5, 72-79 cm; and Section 6, 88-100 cm. Several of these laminated beds contain irregular carbonate concretionary layers that do not react well with HCl, so may be dolomite.
General description
The dark laminated mudstones and marlstones are widely spaced and pass rather rapidly, over 1-2 cm, into and out of burrowed mudstones. Without smear slides or HCl test, it is difficult to discern visually which "black shales" are calcareous marlstones and which are mudstones. Overall, the other mudstones in this core are thoroughly homogenized by burrowing.

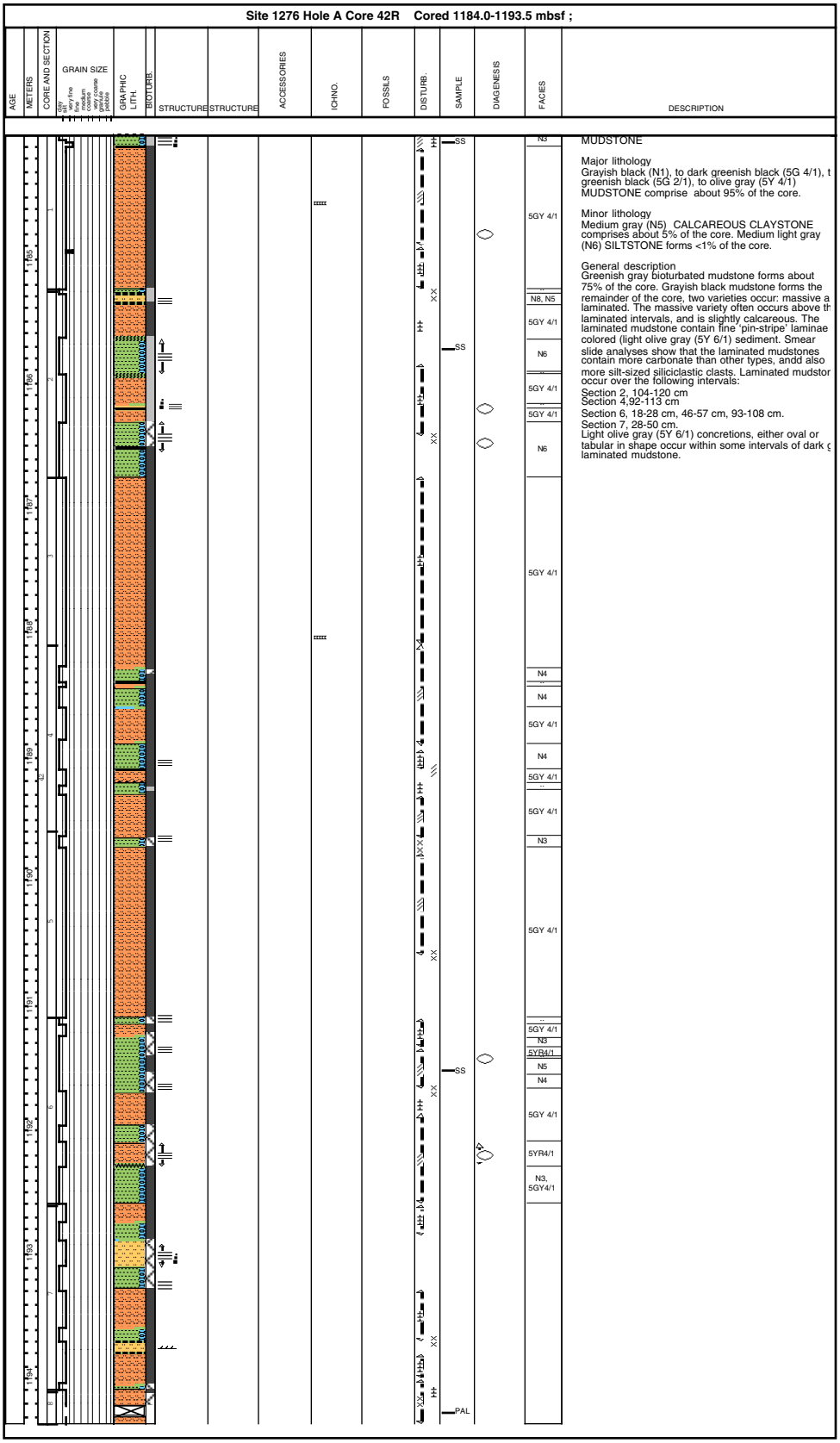
Core Photo


Site 1276 Hole A Core 40R Cored 1164.8-1174.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1165
1166
1167
1168
1169
1170
1171
1172
1173
1174
SS
SS
SS
PAL
5G 4/1, 5G 2/1
5Y 4/1
5G 4/1, 5G 2/1
N4
5Y 6/1, ..
5G 4/1, 5G 2/1
N4, 5Y 6/1
5G 4/1, 5G 2/1
5G 4/1
N4
5Y 4/1
5G 4/1
N4
5Y 6/1
N4
5GY 4/1
N4
5G 4/1
N4
5G 4/1
5G 4/1
5G 4/1
5G 4/1
5G 4/1
N4
5Y 6/1, N4
5Y 4/1
N4
MUDSTONE
Major lithology
Grayish black (N1), to dark greenish black (5G 4/1), to greenish black (5G 2/1), to olive gray (5Y 4/1) MUDSTONE comprise almost 100% of the core
Minor lithology
Medium light gray (N6) SILTSTONE forms <1% of the core.
General description
Greenish gray bioturbated MUDSTONE forms about 70% of the core. Grayish black MUDSTONE forms the remainder of the core; two varieties occur: massive and laminated. The massive variety often occurs above the laminated intervals. The latter are calcareous as indicated by dilute HCl, and contain fine 'pin-stripe' laminae of colored (light olive gray (5Y 6/1) sediment. Smear slide analyses show that the laminated mudstones contain more carbonate than other types, and also more silt-sized siliciclastic clasts. Laminated MUDSTONES occur over the following intervals:
Section 2, 74-98 cm
Section 4, 37-60 cm; 109-125 cm
Section 6, 84-101 cm.
Thin (1-2 mm) laminae of siltstone occur at the base of some laminated intervals. Light olive gray (5Y 6/1) concretions, either oval or tabular in shape occur within some intervals of dark gray mudstone.

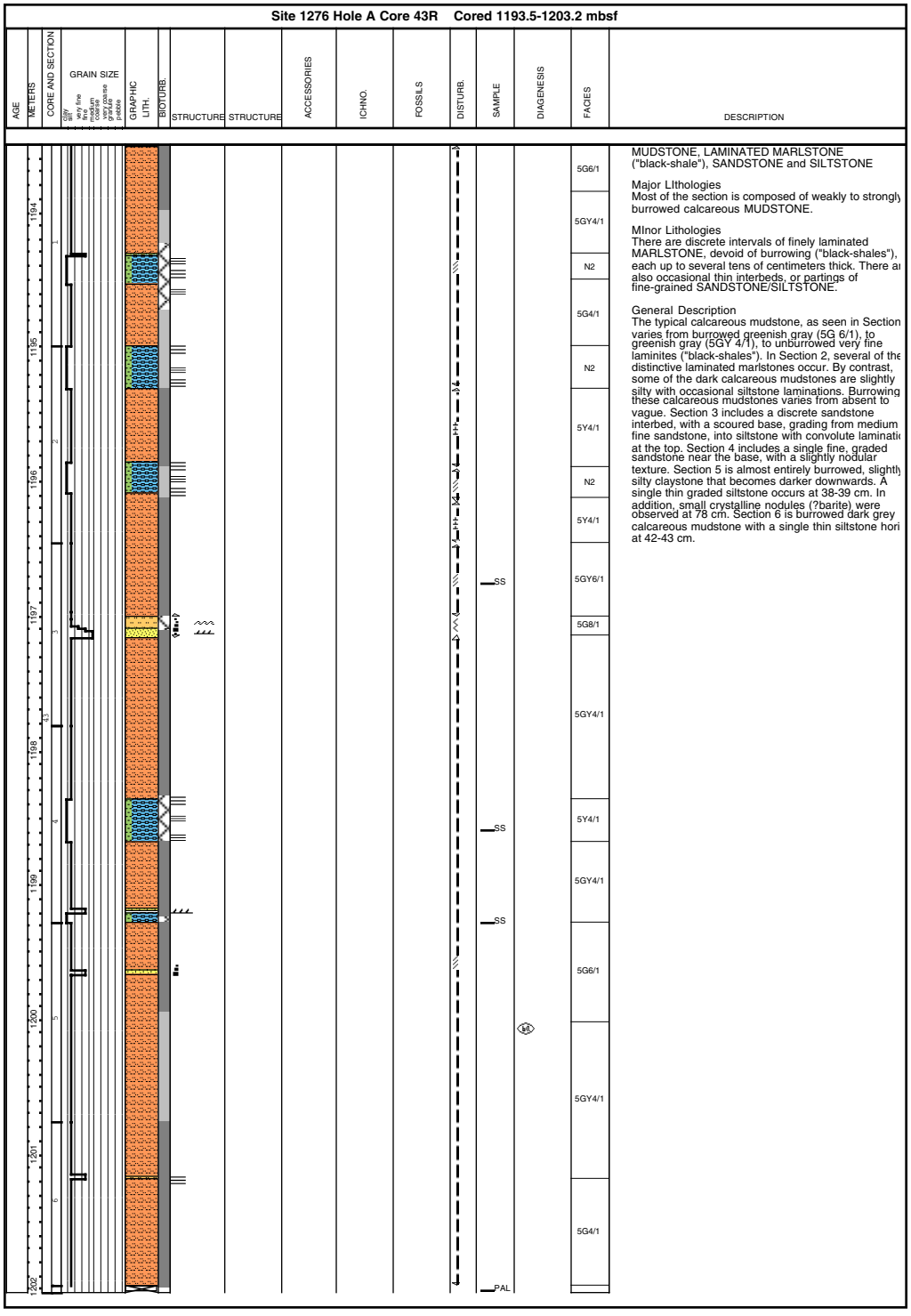
Core Photo


Site 1276 Hole A Core 41R Cored 1174.4-1184.0 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1175
1176
1177
1178
1179
1180
1181
1182
1183
SS
PAL
5G 4/1
N4
5Y 4/1
5GY 4/1
5Y 7/1
N4, 5Y ...
MUDSTONE
Major lithology
Grayish black (N1), to dark greenish black (5G 4/1),
greenish black (5G 2/1), to olive gray (5Y 4/1)
MUDSTONE comprise about 95% of the core
Minor lithology
Medium light gray (N6) to olive gray (5Y 5/1)
SANDSTONE and SILTSTONE form about 5% of
the core. Yellowish gray (5Y 7/1) GRAINSTONE
forms less than 0.1% of the core.
General description
Greenish gray bioturbated MUDSTONE forms about
70% of the core. Grayish black MUDSTONE makes
up the remainder of the core; two varieties occur:
massive and laminated. The massive variety often
occurs above the laminated intervals. The latter are
calcareous as indicated by dilute HCl, and they cont
fine 'pin-stripe' laminae of light olive gray (5Y 6/1)
sediment. Smear slide analyses show that the
laminated mudstones contain more carbonate than
other types, andd also more silt-sized siliciclastic cla
Laminated MUDSTONES occur over the following
intervals:
Section 1, 103-108 cm
Section 4, 80-95
Section 6, 69-83 cm.
7, 42-58 cm.
Very fine-grained parallel laminated SANDSTONE
overlain by SILTSTONE showing soft-sediment
deformation features occur in Section 1, 114-1340 cr
SILTSTONES showing soft-sediment deformation
features also occur in Section 1, 44-65 cm and Secti
3, 47-68 cm.
In Section 2, 86-94 cm, 3 cm of GRAINSTONE is
overlain by parallel and wavy laminated SILTSTONE
Light olive gray (5Y 6/1) concretions, either oval or
tabular in shape occur within some intervals of dark
mudstones.

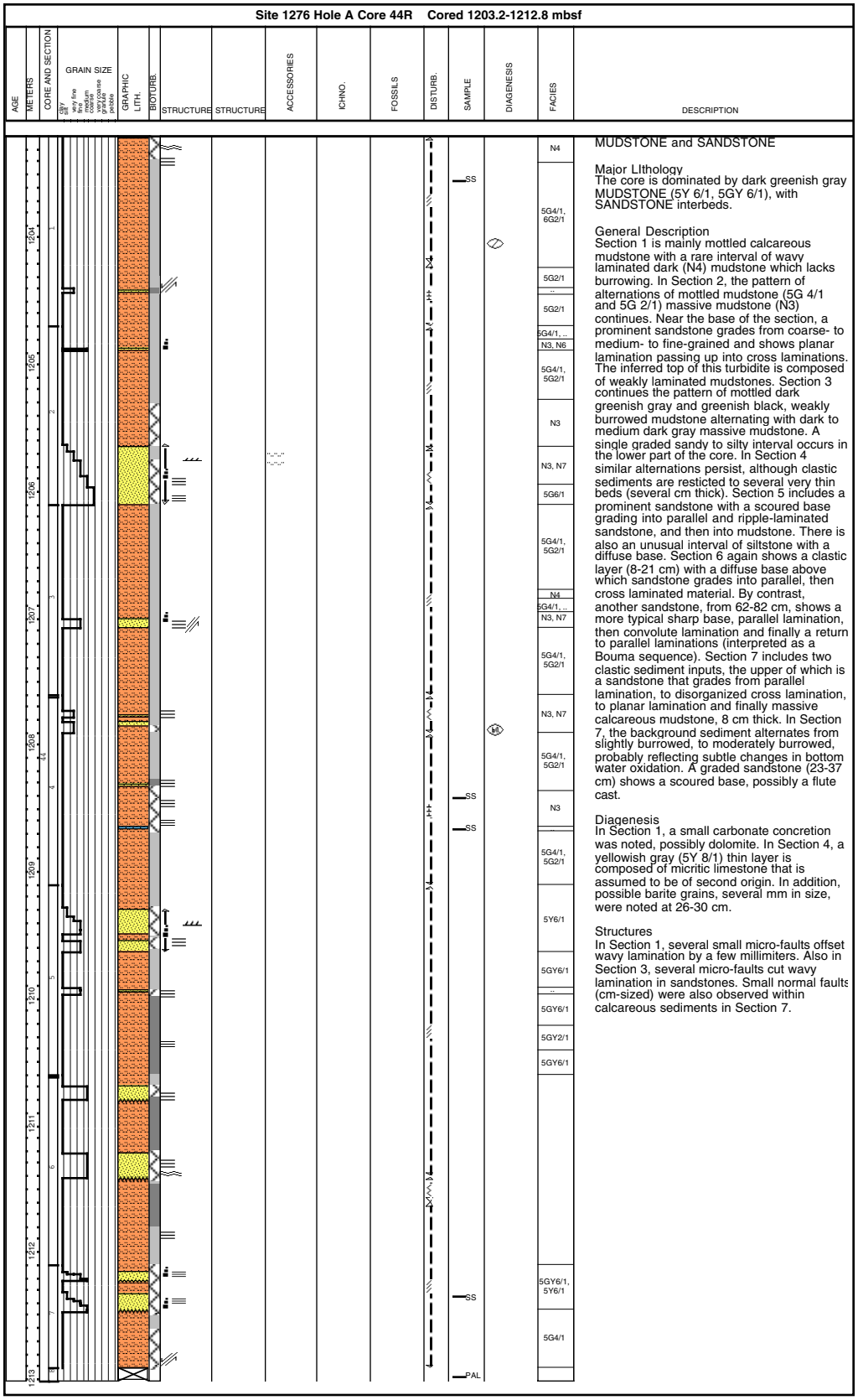
Core Photo


Site 1276 Hole A Core 42R Cored 1184.0-1193.5 mbsf ;
AGE
METERS
CORE AND SECTION
GRAIN SIZE
clay
silt
very fine
fine
medium
coarse
very coarse
granule
pebble
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
PAL
N3
5GY 4/1
N8, N5
N6
N4
5YR4/1
N5
N3, 5GY4/1
MUDSTONE
Major lithology
Grayish black (N1), to dark greenish black (5G 4/1), t
greenish black (5G 2/1), to olive gray (5Y 4/1)
MUDSTONE comprise about 95% of the core.
Minor lithology
Medium gray (N5) CALCAREOUS CLAYSTONE
comprises about 5% of the core. Medium light gray
(N6) SILTSTONE forms <1% of the core.
General description
Greenish gray bioturbated mudstone forms about
75% of the core. Grayish black mudstone forms the
remainder of the core, two varieties occur: massive a
laminated. The massive variety often occurs above th
laminated intervals, and is slightly calcareous. The
laminated mudstone contain fine 'pin-stripe' laminae
colored (light olive gray (5Y 6/1) sediment. Smear
slide analyses show that the laminated mudstones
contain more carbonate than other types, andd also
more silt-sized siliciclastic clasts. Laminated mudstor
occur over the following intervals:
Section 2, 104-120 cm
Section 4,92-113 cm
Section 6, 18-28 cm, 46-57 cm, 93-108 cm.
Section 7, 28-50 cm.
Light olive gray (5Y 6/1) concretions, either oval or
tabular in shape occur within some intervals of dark g
laminated mudstone.

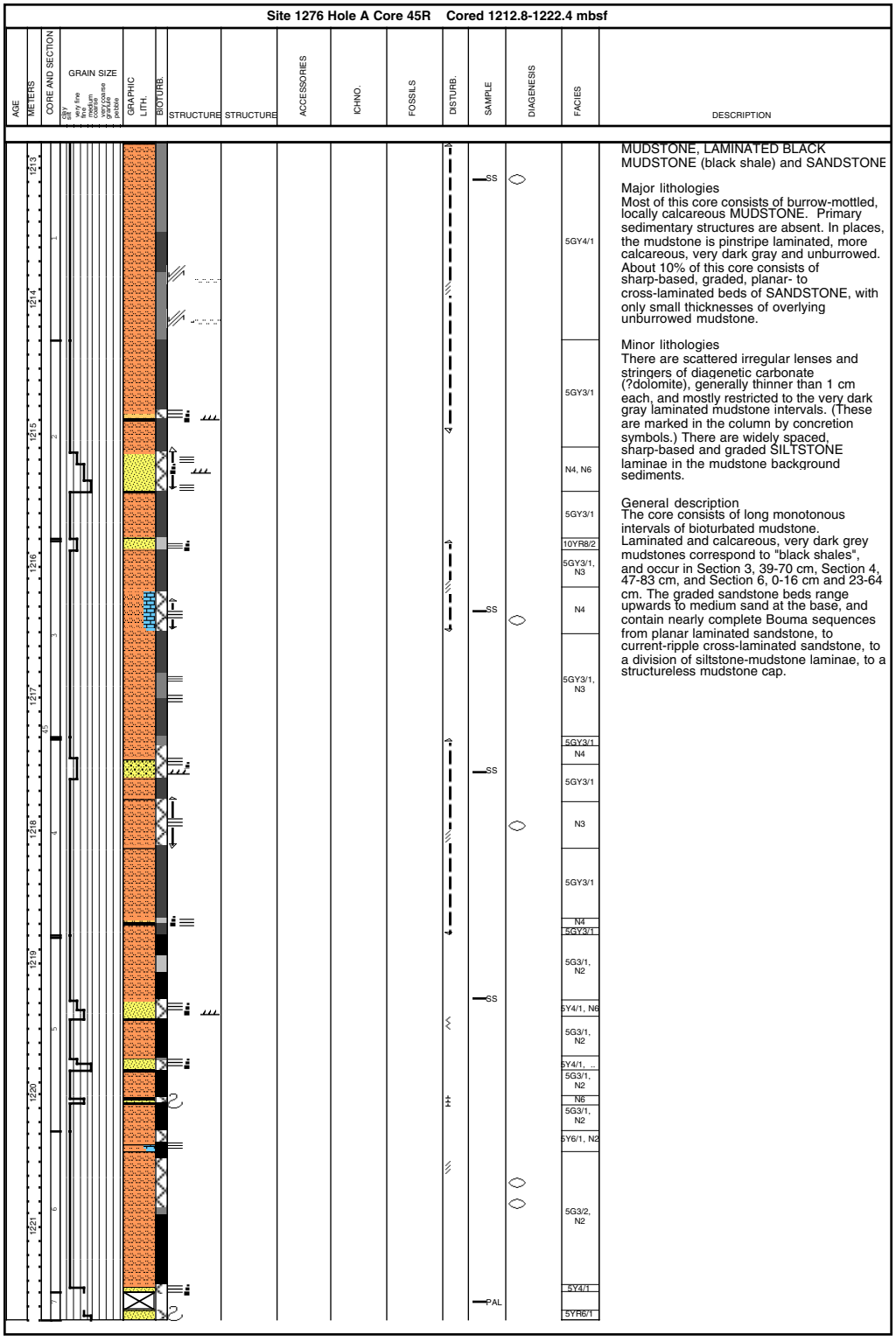
Core Photo


Site 1276 Hole A Core 43R Cored 1193.5-1203.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1194
1195
1196
1197
1198
1199
1200
1201
1202
SS
SS
SS
PAL
5G6/1
5GY4/1
N2
5G4/1
N2
5Y4/1
N2
5Y4/1
5GY6/1
5G8/1
5GY4/1
5Y4/1
5GY4/1
5G6/1
5GY4/1
5G4/1
MUDSTONE, LAMINATED MARLSTONE ("black-shale"), SANDSTONE and SILTSTONE
Major LIthologies
Most of the section is composed of weakly to strongly burrowed calcareous MUDSTONE.
MInor Lithologies
There are discrete intervals of finely laminated MARLSTONE, devoid of burrowing ("black-shales"), each up to several tens of centimeters thick. There ar also occasional thin interbeds, or partings of fine-grained SANDSTONE/SILTSTONE.
General Description
The typical calcareous mudstone, as seen in Section varies from burrowed greenish gray (5G 6/1), to greenish gray (5GY 4/1), to unburrowed very fine laminites ("black-shales"). In Section 2, several of the distinctive laminated marlstones occur. By contrast, some of the dark calcareous mudstones are slightly silty with occasional siltstone laminations. Burrowing these calcareous mudstones varies from absent to vague. Section 3 includes a discrete sandstone interbed, with a scoured base, grading from medium fine sandstone, into siltstone with convolute laminati at the top. Section 4 includes a single fine, graded sandstone near the base, with a slightly nodular texture. Section 5 is almost entirely burrowed, slightly silty claystone that becomes darker downwards. A single thin graded siltstone occurs at 38-39 cm. In addition, small crystalline nodules (?barite) were observed at 78 cm. Section 6 is burrowed dark grey calcareous mudstone with a single thin siltstone hori at 42-43 cm.

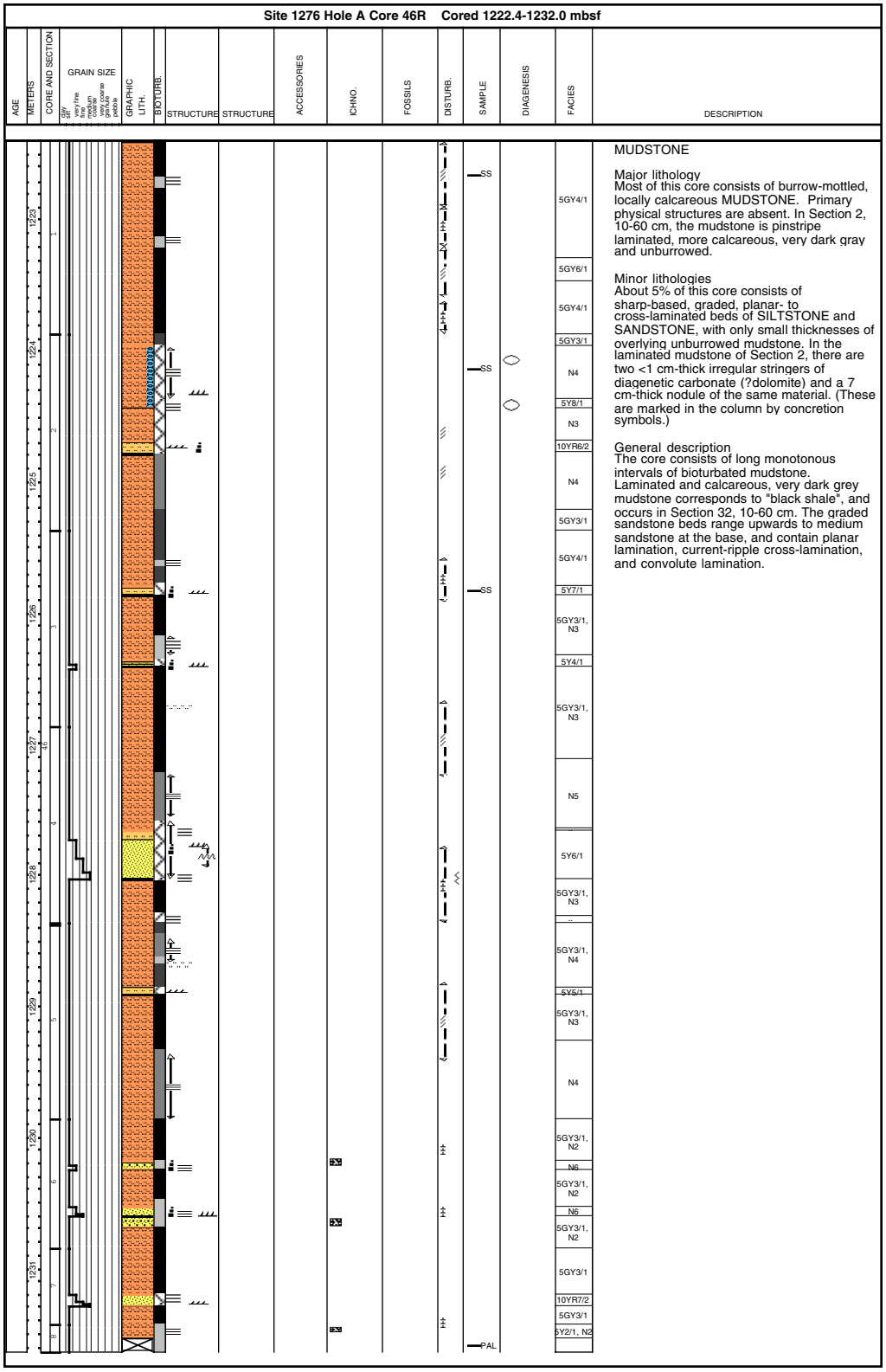
Core Photo


Site 1276 Hole A Core 44R Cored 1203.2-1212.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1204
1205
1206
1207
1208
1209
1210
1211
1212
1213
SS
PAL
N4
5G4/1, 6G2/1
5G2/1
5G2/1
5G4/1, ..
N3, N6
5G4/1, 5G2/1
N3
N3, N7
5G6/1
5G4/1, 5G2/1
N4
5G4/1, ..
N3, N7
5G4/1, 5G2/1
N3, N7
5G4/1, 5G2/1
N3
5G4/1, 5G2/1
5Y6/1
5GY6/1
5GY6/1
5GY2/1
5GY6/1
5GY6/1, 5Y6/1
5G4/1
MUDSTONE and SANDSTONE
Major LIthology
The core is dominated by dark greenish gray MUDSTONE (5Y 6/1, 5GY 6/1), with SANDSTONE interbeds.
General Description
Section 1 is mainly mottled calcareous mudstone with a rare interval of wavy laminated dark (N4) mudstone which lacks burrowing. In Section 2, the pattern of alternations of mottled mudstone (5G 4/1 and 5G 2/1) massive mudstone (N3) continues. Near the base of the section, a prominent sandstone grades from coarse- to medium- to fine-grained and shows planar lamination passing up into cross laminations. The inferred top of this turbidite is composed of weakly laminated mudstones. Section 3 continues the pattern of mottled dark greenish gray and greenish black, weakly burrowed mudstone alternating with dark to medium dark gray massive mudstone. A single graded sandy to silty interval occurs in the lower part of the core. In Section 4 similar alternations persist, although clastic sediments are restricted to several very thin beds (several cm thick). Section 5 includes a prominent sandstone with a scoured base grading into parallel and ripple-laminated sandstone, and then into mudstone. There is also an unusual interval of siltstone with a diffuse base. Section 6 again shows a clastic layer (8-21 cm) with a diffuse base above which sandstone grades into parallel, then cross laminated material. By contrast, another sandstone, from 62-82 cm, shows a more typical sharp base, parallel lamination, then convolute lamination and finally a return to parallel laminations (interpreted as a Bouma sequence). Section 7 includes two clastic sediment inputs, the upper of which is a sandstone that grades from parallel lamination, to disorganized cross lamination, to planar lamination and finally massive calcareous mudstone, 8 cm thick. In Section 7, the background sediment alternates from slightly burrowed, to moderately burrowed, probably reflecting subtle changes in bottom water oxidation. A graded sandstone (23-37 cm) shows a scoured base, possibly a flute cast.
Diagenesis
In Section 1, a small carbonate concretion was noted, possibly dolomite. In Section 4, a yellowish gray (5Y 8/1) thin layer is composed of micritic limestone that is assumed to be of second origin. In addition, possible barite grains, several mm in size, were noted at 26-30 cm.
Structures
In Section 1, several small micro-faults offset wavy lamination by a few millimiters. Also in Section 3, several micro-faults cut wavy lamination in sandstones. Small normal faults (cm-sized) were also observed within calcareous sediments in Section 7.

Core Photo


Site 1276 Hole A Core 45R Cored 1212.8-1222.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1213
1214
1215
1216
1217
45
1218
1219
1220
1221
SS
SS
SS
PAL
5GY4/1
5GY3/1
N4, N6
5GY3/1
10YR8/2
5GY3/1, N3
N4
5GY3/1, N3
5GY3/1
N4
5GY3/1
5GY3/1
N3
5GY3/1
N4
5GY3/1
5G3/1, N2
5Y4/1, N6
5G3/1, N2
5Y4/1, ...
5G3/1, N2
N6
5G3/1, N2
5Y6/1, N2
5G3/2, N2
5Y4/1
5YR6/1
MUDSTONE, LAMINATED BLACK MUDSTONE (black shale) and SANDSTONE
Major lithologies
Most of this core consists of burrow-mottled, locally calcareous MUDSTONE. Primary sedimentary structures are absent. In places, the mudstone is pinstripe laminated, more calcareous, very dark gray and unburrowed. About 10% of this core consists of sharp-based, graded, planar- to cross-laminated beds of SANDSTONE, with only small thicknesses of overlying unburrowed mudstone.
Minor lithologies
There are scattered irregular lenses and stringers of diagenetic carbonate (?dolomite), generally thinner than 1 cm each, and mostly restricted to the very dark gray laminated mudstone intervals. (These are marked in the column by concretion symbols.) There are widely spaced, sharp-based and graded SILTSTONE laminae in the mudstone background sediments.
General description
The core consists of long monotonous intervals of bioturbated mudstone. Laminated and calcareous, very dark grey mudstones correspond to "black shales", and occur in Section 3, 39-70 cm, Section 4, 47-83 cm, and Section 6, 0-16 cm and 23-64 cm. The graded sandstone beds range upwards to medium sand at the base, and contain nearly complete Bouma sequences from planar laminated sandstone, to current-ripple cross-laminated sandstone, to a division of siltstone-mudstone laminae, to a structureless mudstone cap.

Core Photo



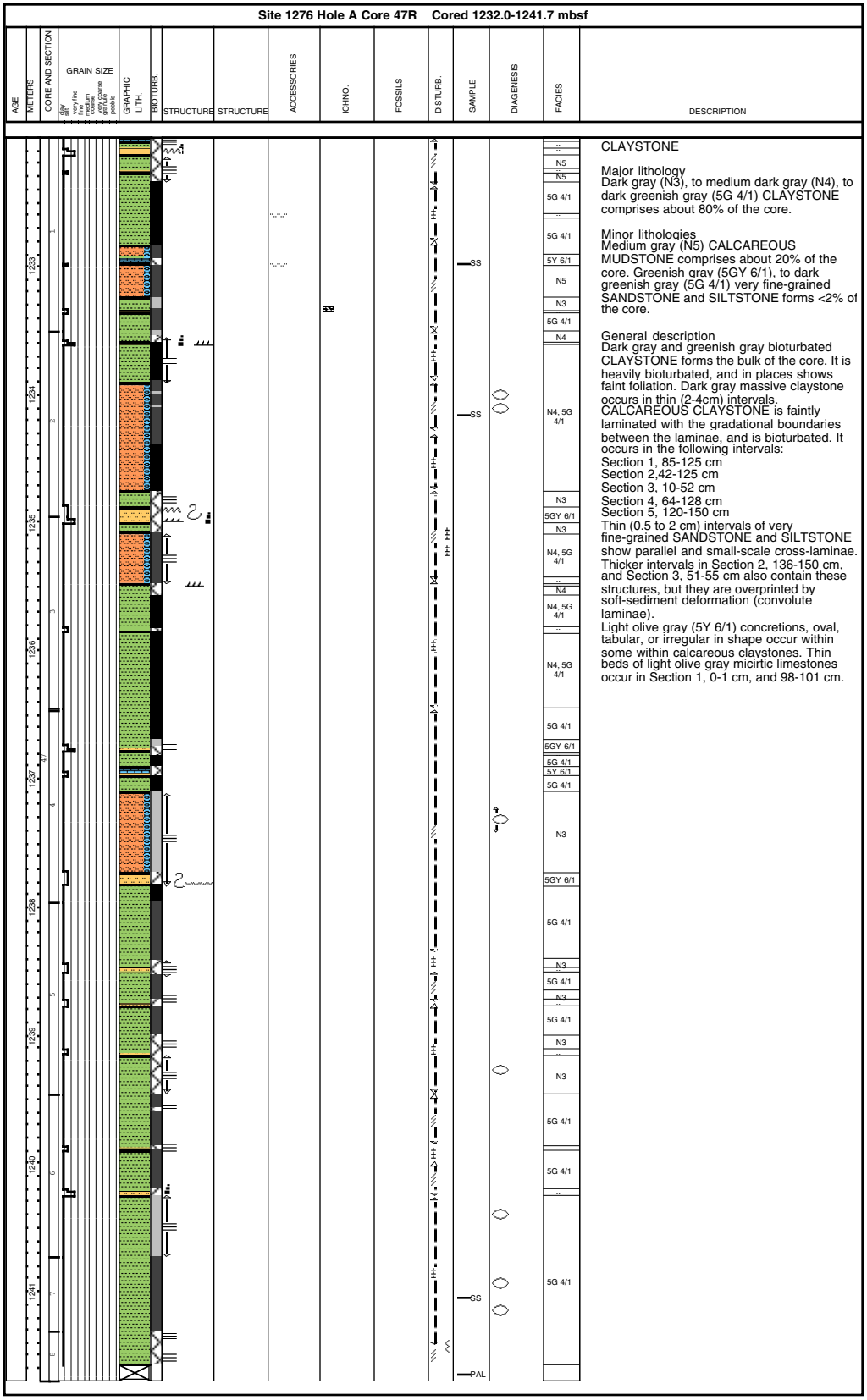
MUDSTONE

Major lithology
Most of this core consists of burrow-mottled, locally calcareous MUDSTONE. Primary physical structures are absent. In Section 2, 10-60 cm, the mudstone is pinstripe laminated, more calcareous, very dark gray and unburrowed.

Minor lithologies
About 5% of this core consists of sharp-based, graded, planar- to cross-laminated beds of SILTSTONE and SANDSTONE, with only small thicknesses of overlying unburrowed mudstone. In the laminated mudstone of Section 2, there are two <1 cm-thick irregular stringers of diagenetic carbonate (?dolomite) and a 7 cm-thick nodule of the same material. (These are marked in the column by concretion symbols.)

General description
The core consists of long monotonous intervals of bioturbated mudstone. Laminated and calcareous, very dark grey mudstone corresponds to "black shale", and occurs in Section 32, 10-60 cm. The graded sandstone beds range upwards to medium sandstone at the base, and contain planar lamination, current-ripple cross-lamination, and convolute lamination.

Core Photo



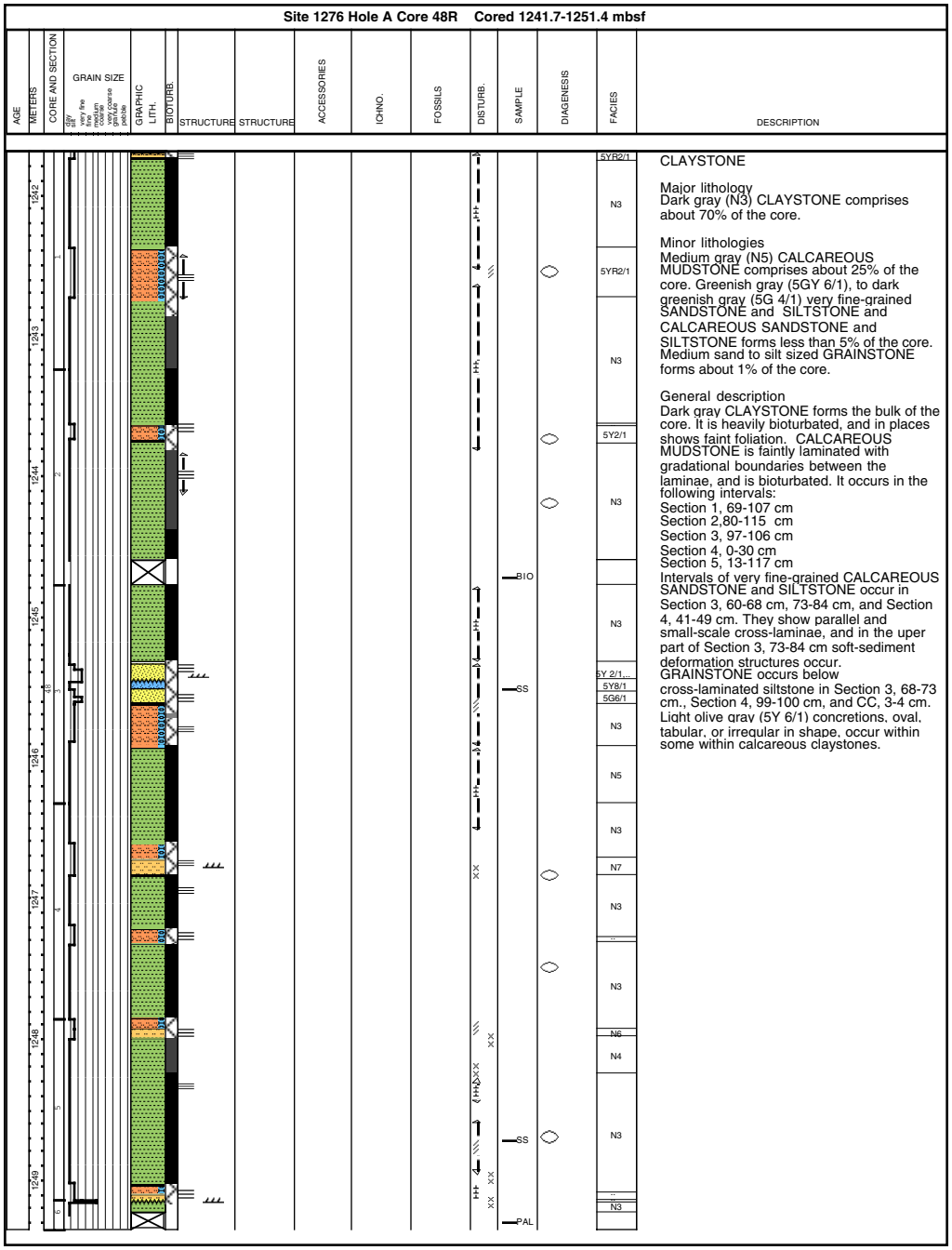
CLAYSTONE

Major lithology
Dark gray (N3), to medium dark gray (N4), to dark greenish gray (5G 4/1) CLAYSTONE comprises about 80% of the core.

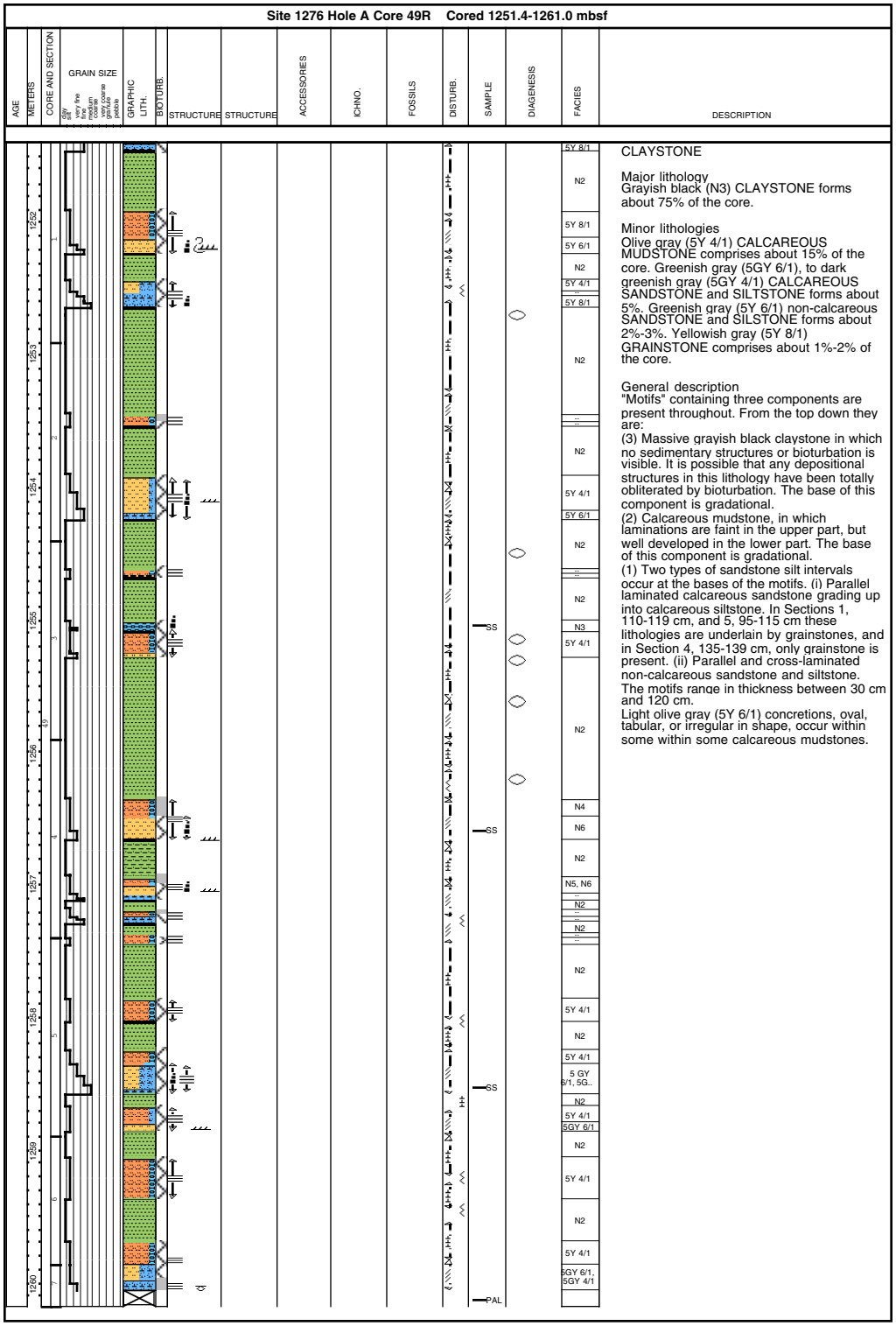
Minor lithologies
Medium gray (N5) CALCAREOUS MUDSTONE comprises about 20% of the core. Greenish gray (5GY 6/1), to dark greenish gray (5G 4/1) very fine-grained SANDSTONE and SILTSTONE forms <2% of the core.

General description
Dark gray and greenish gray bioturbated CLAYSTONE forms the bulk of the core. It is heavily bioturbated, and in places shows faint foliation. Dark gray massive claystone occurs in thin (2-4cm) intervals.
CALCAREOUS CLAYSTONE is faintly laminated with the gradational boundaries between the laminae, and is bioturbated. It occurs in the following intervals:
Section 1, 85-125 cm
Section 2,42-125 cm
Section 3, 10-52 cm
Section 4, 64-128 cm
Section 5, 120-150 cm
Thin (0.5 to 2 cm) intervals of very fine-grained SANDSTONE and SILTSTONE show parallel and small-scale cross-laminae. Thicker intervals in Section 2, 136-150 cm, and Section 3, 51-55 cm also contain these structures, but they are overprinted by soft-sediment deformation (convolute laminae).
Light olive gray (5Y 6/1) concretions, oval, tabular, or irregular in shape occur within some within calcareous claystones. Thin beds of light olive gray micritic limestones occur in Section 1, 0-1 cm, and 98-101 cm.

Core Photo


Site 1276 Hole A Core 48R Cored 1241.7-1251.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
BIO
SS
SS
PAL
5YR2/1
N3
5YR2/1
N3
5Y2/1
N3
N3
5Y 2/1...
5Y8/1
5G6/1
N3
N5
N3
N7
N3
N3
N6
N4
N3
N3
CLAYSTONE
Major lithology
Dark gray (N3) CLAYSTONE comprises about 70% of the core.
Minor lithologies
Medium gray (N5) CALCAREOUS MUDSTONE comprises about 25% of the core. Greenish gray (5GY 6/1), to dark greenish gray (5G 4/1) very fine-grained SANDSTONE and SILTSTONE and CALCAREOUS SANDSTONE and SILTSTONE forms less than 5% of the core. Medium sand to silt sized GRAINSTONE forms about 1% of the core.
General description
Dark gray CLAYSTONE forms the bulk of the core. It is heavily bioturbated, and in places shows faint foliation. CALCAREOUS MUDSTONE is faintly laminated with gradational boundaries between the laminae, and is bioturbated. It occurs in the following intervals:
Section 1, 69-107 cm
Section 2,80-115 cm
Section 3, 97-106 cm
Section 4, 0-30 cm
Section 5, 13-117 cm
Intervals of very fine-grained CALCAREOUS SANDSTONE and SILTSTONE occur in Section 3, 60-68 cm, 73-84 cm, and Section 4, 41-49 cm. They show parallel and small-scale cross-laminae, and in the uper part of Section 3, 73-84 cm soft-sediment deformation structures occur.
GRAINSTONE occurs below cross-laminated siltstone in Section 3, 68-73 cm., Section 4, 99-100 cm, and CC, 3-4 cm. Light olive gray (5Y 6/1) concretions, oval, tabular, or irregular in shape, occur within some within calcareous claystones.

Core Photo



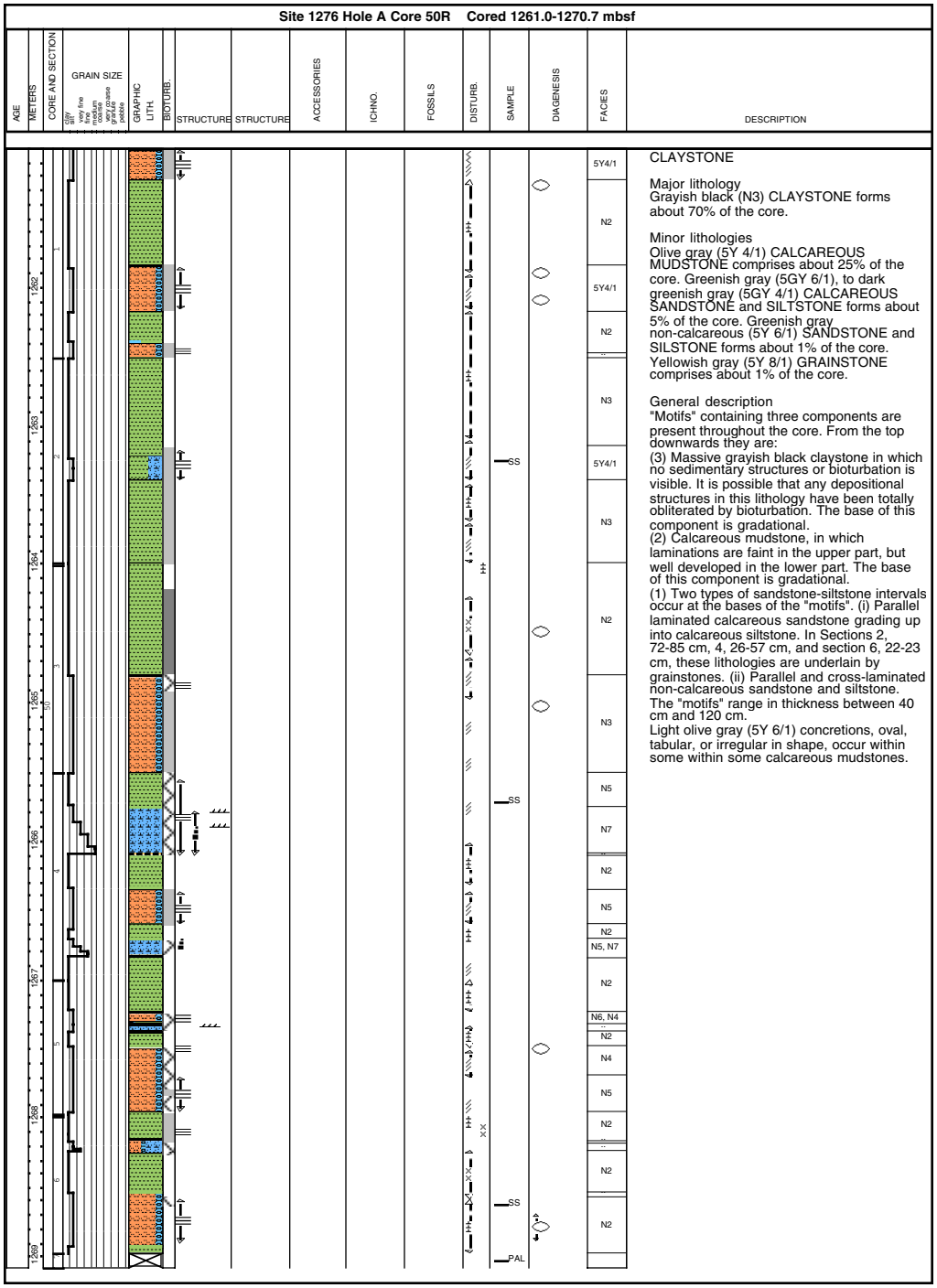
CLAYSTONE

Major lithology
Grayish black (N3) CLAYSTONE forms about 75% of the core.

Minor lithologies
Olive gray (5Y 4/1) CALCAREOUS MUDSTONE comprises about 15% of the core. Greenish gray (5GY 6/1), to dark greenish gray (5GY 4/1) CALCAREOUS SANDSTONE and SILTSTONE forms about 5%. Greenish gray (5Y 6/1) non-calcareous SANDSTONE and SILSTONE forms about 2%-3%. Yellowish gray (5Y 8/1) GRAINSTONE comprises about 1%-2% of the core.

General description
"Motifs" containing three components are present throughout. From the top down they are:
(3) Massive grayish black claystone in which no sedimentary structures or bioturbation is visible. It is possible that any depositional structures in this lithology have been totally obliterated by bioturbation. The base of this component is gradational.
(2) Calcareous mudstone, in which laminations are faint in the upper part, but well developed in the lower part. The base of this component is gradational.
(1) Two types of sandstone silt intervals occur at the bases of the motifs. (i) Parallel laminated calcareous sandstone grading up into calcareous siltstone. In Sections 1, 110-119 cm, and 5, 95-115 cm these lithologies are underlain by grainstones, and in Section 4, 135-139 cm, only grainstone is present. (ii) Parallel and cross-laminated non-calcareous sandstone and siltstone. The motifs range in thickness between 30 cm and 120 cm.
Light olive gray (5Y 6/1) concretions, oval, tabular, or irregular in shape, occur within some within some calcareous mudstones.

Core Photo



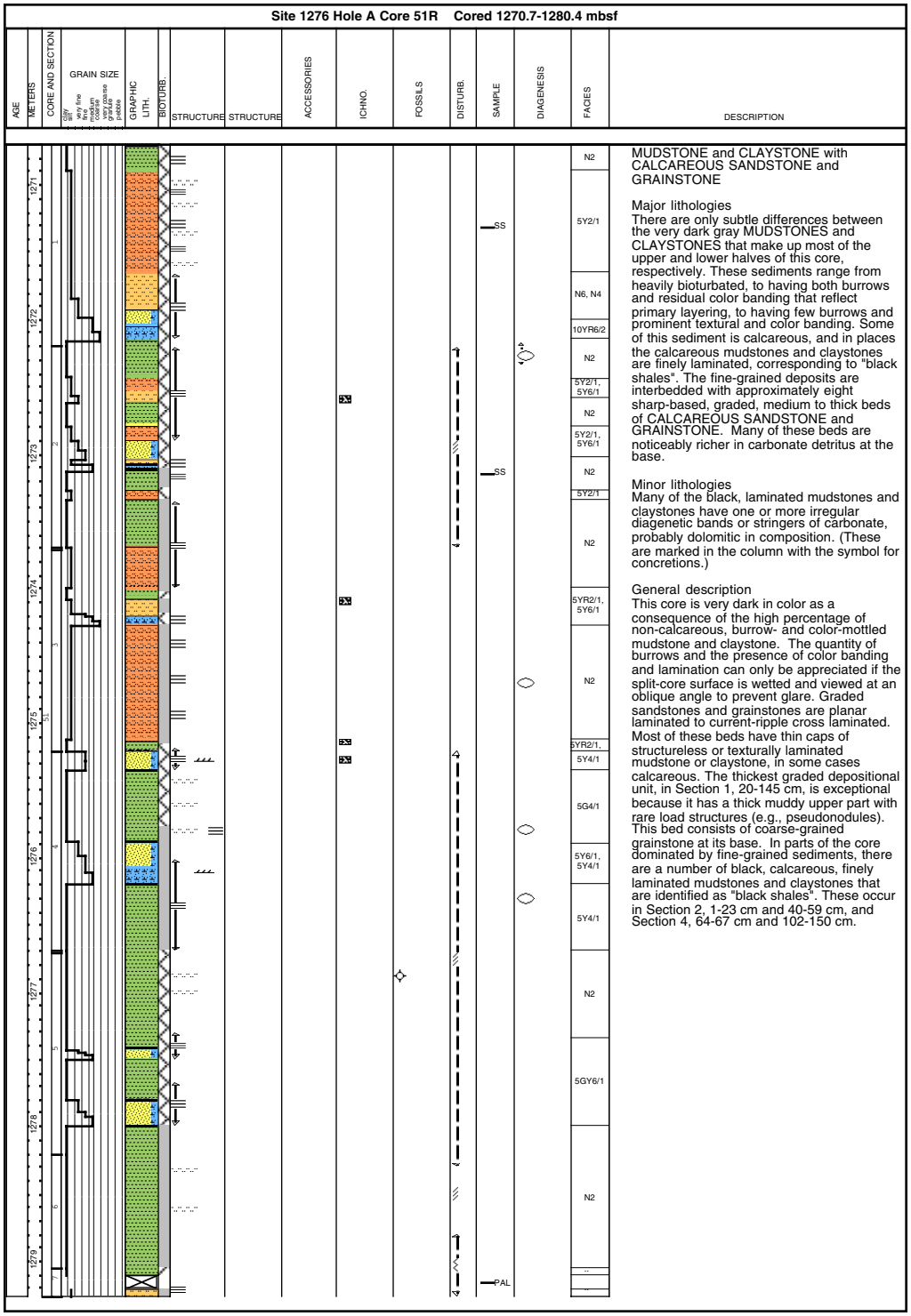
CLAYSTONE

Major lithology
Grayish black (N3) CLAYSTONE forms about 70% of the core.

Minor lithologies
Olive gray (5Y 4/1) CALCAREOUS MUDSTONE comprises about 25% of the core. Greenish gray (5GY 6/1), to dark greenish gray (5GY 4/1) CALCAREOUS SANDSTONE and SILTSTONE forms about 5% of the core. Greenish gray non-calcareous (5Y 6/1) SANDSTONE and SILSTONE forms about 1% of the core. Yellowish gray (5Y 8/1) GRAINSTONE comprises about 1% of the core.

General description
"Motifs" containing three components are present throughout the core. From the top downwards they are:
(3) Massive grayish black claystone in which no sedimentary structures or bioturbation is visible. It is possible that any depositional structures in this lithology have been totally obliterated by bioturbation. The base of this component is gradational.
(2) Calcareous mudstone, in which laminations are faint in the upper part, but well developed in the lower part. The base of this component is gradational.
(1) Two types of sandstone-siltstone intervals occur at the bases of the "motifs". (i) Parallel laminated calcareous sandstone grading up into calcareous siltstone. In Sections 2, 72-85 cm, 4, 26-57 cm, and section 6, 22-23 cm, these lithologies are underlain by grainstones. (ii) Parallel and cross-laminated non-calcareous sandstone and siltstone. The "motifs" range in thickness between 40 cm and 120 cm.
Light olive gray (5Y 6/1) concretions, oval, tabular, or irregular in shape, occur within some within some calcareous mudstones.

Core Photo



MUDSTONE and CLAYSTONE with CALCAREOUS SANDSTONE and GRAINSTONE

Major lithologies

There are only subtle differences between the very dark gray MUDSTONES and CLAYSTONES that make up most of the upper and lower halves of this core, respectively. These sediments range from heavily bioturbated, to having both burrows and residual color banding that reflect primary layering, to having few burrows and prominent textural and color banding. Some of this sediment is calcareous, and in places the calcareous mudstones and claystones are finely laminated, corresponding to "black shales". The fine-grained deposits are interbedded with approximately eight sharp-based, graded, medium to thick beds of CALCAREOUS SANDSTONE and GRAINSTONE. Many of these beds are noticeably richer in carbonate detritus at the base.

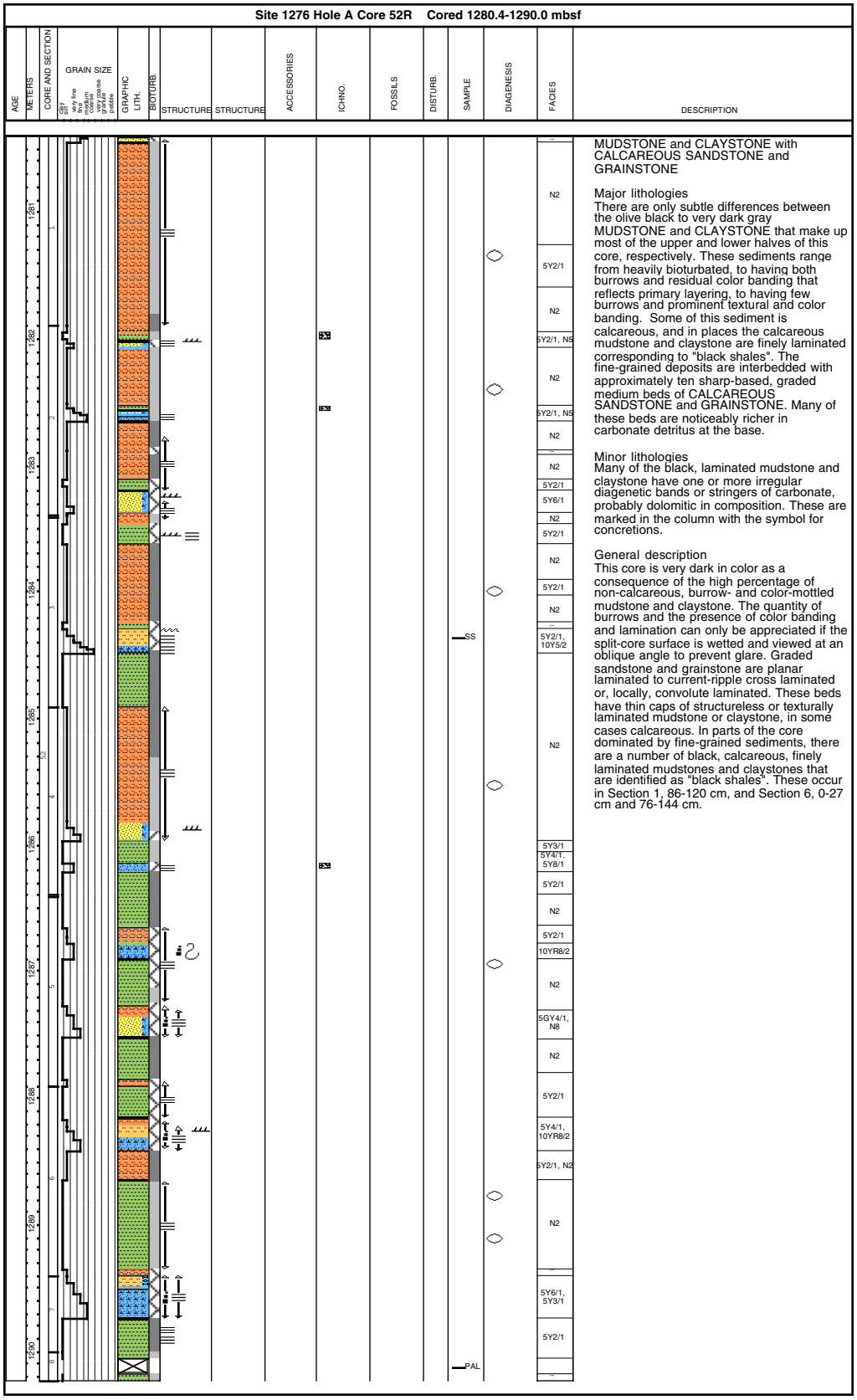
Minor lithologies

Many of the black, laminated mudstones and claystones have one or more irregular diagenetic bands or stringers of carbonate, probably dolomitic in composition. (These are marked in the column with the symbol for concretions.)

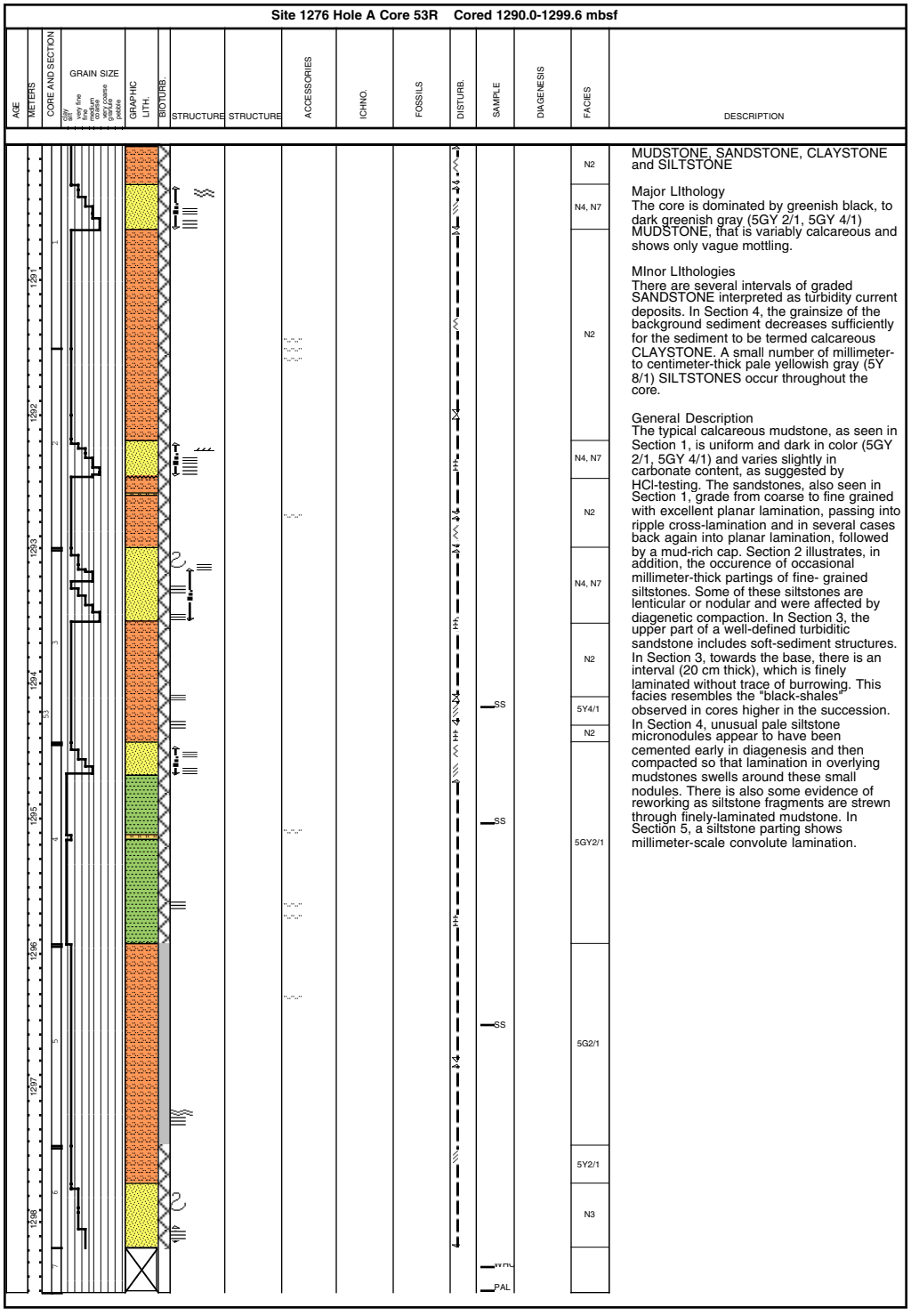
General description

This core is very dark in color as a consequence of the high percentage of non-calcareous, burrow- and color-mottled mudstone and claystone. The quantity of burrows and the presence of color banding and lamination can only be appreciated if the split-core surface is wetted and viewed at an oblique angle to prevent glare. Graded sandstones and grainstones are planar laminated to current-ripple cross laminated. Most of these beds have thin caps of structureless or texturally laminated mudstone or claystone, in some cases calcareous. The thickest graded depositional unit, in Section 1, 20-145 cm, is exceptional because it has a thick muddy upper part with rare load structures (e.g., pseudonodules). This bed consists of coarse-grained grainstone at its base. In parts of the core dominated by fine-grained sediments, there are a number of black, calcareous, finely laminated mudstones and claystones that are identified as "black shales". These occur in Section 2, 1-23 cm and 40-59 cm, and Section 4, 64-67 cm and 102-150 cm.

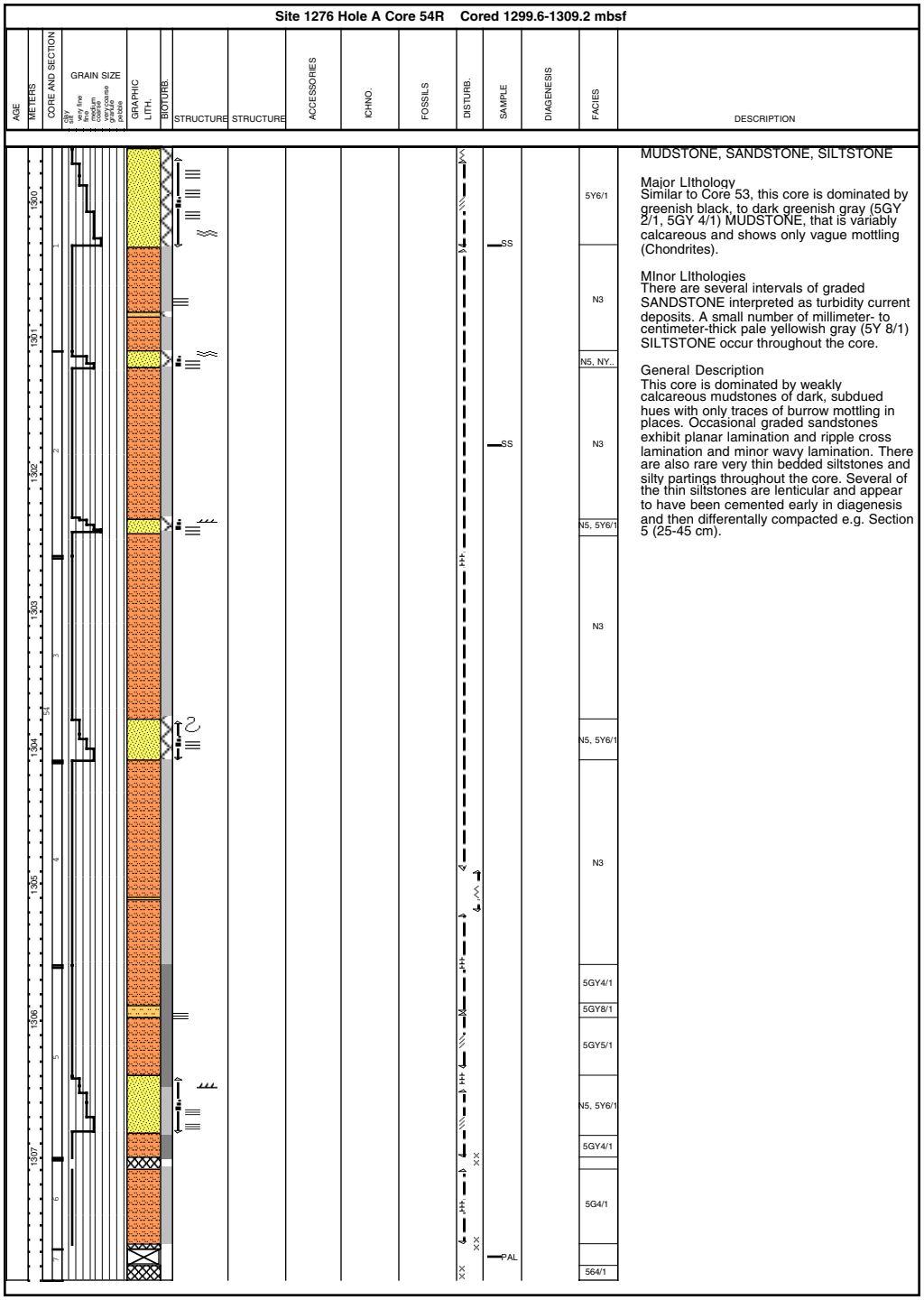
Core Photo


Site 1276 Hole A Core 52R Cored 1280.4-1290.0 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
PAL
MUDSTONE and CLAYSTONE with CALCAREOUS SANDSTONE and GRAINSTONE
Major lithologies
There are only subtle differences between the olive black to very dark gray MUDSTONE and CLAYSTONE that make up most of the upper and lower halves of this core, respectively. These sediments range from heavily bioturbated, to having both burrows and residual color banding that reflects primary layering, to having few burrows and prominent textural and color banding. Some of this sediment is calcareous, and in places the calcareous mudstone and claystone are finely laminated corresponding to "black shales". The fine-grained deposits are interbedded with approximately ten sharp-based, graded medium beds of CALCAREOUS SANDSTONE and GRAINSTONE. Many of these beds are noticeably richer in carbonate detritus at the base.
Minor lithologies
Many of the black, laminated mudstone and claystone have one or more irregular diagenetic bands or stringers of carbonate, probably dolomitic in composition. These are marked in the column with the symbol for concretions.
General description
This core is very dark in color as a consequence of the high percentage of non-calcareous, burrow- and color-mottled mudstone and claystone. The quantity of burrows and the presence of color banding and lamination can only be appreciated if the split-core surface is wetted and viewed at an oblique angle to prevent glare. Graded sandstone and grainstone are planar laminated to current-ripple cross laminated or, locally, convolute laminated. These beds have thin caps of structureless or texturally laminated mudstone or claystone, in some cases calcareous. In parts of the core dominated by fine-grained sediments, there are a number of black, calcareous, finely laminated mudstones and claystones that are identified as "black shales". These occur in Section 1, 86-120 cm, and Section 6, 0-27 cm and 76-144 cm.

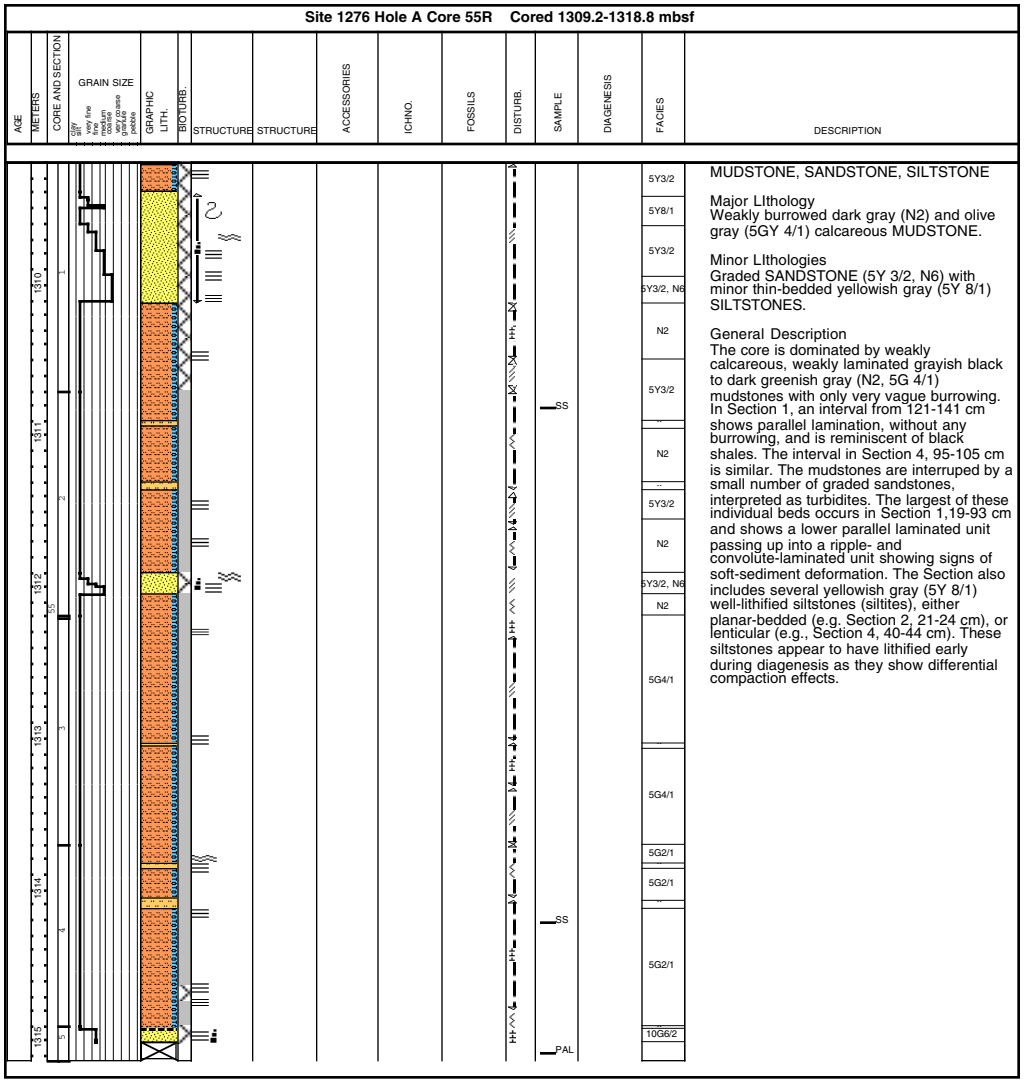
Core Photo


Site 1276 Hole A Core 53R Cored 1290.0-1299.6 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
PAL
N2
N4, N7
N2
N4, N7
N2
N4, N7
N2
5Y4/1
N2
5GY2/1
5G2/1
5Y2/1
N3
MUDSTONE, SANDSTONE, CLAYSTONE and SILTSTONE
Major LIthology
The core is dominated by greenish black, to dark greenish gray (5GY 2/1, 5GY 4/1) MUDSTONE, that is variably calcareous and shows only vague mottling.
MInor LIthologies
There are several intervals of graded SANDSTONE interpreted as turbidity current deposits. In Section 4, the grainsize of the background sediment decreases sufficiently for the sediment to be termed calcareous CLAYSTONE. A small number of millimeter- to centimeter-thick pale yellowish gray (5Y 8/1) SILTSTONES occur throughout the core.
General Description
The typical calcareous mudstone, as seen in Section 1, is uniform and dark in color (5GY 2/1, 5GY 4/1) and varies slightly in carbonate content, as suggested by HCl-testing. The sandstones, also seen in Section 1, grade from coarse to fine grained with excellent planar lamination, passing into ripple cross-lamination and in several cases back again into planar lamination, followed by a mud-rich cap. Section 2 illustrates, in addition, the occurence of occasional millimeter-thick partings of fine- grained siltstones. Some of these siltstones are lenticular or nodular and were affected by diagenetic compaction. In Section 3, the upper part of a well-defined turbiditic sandstone includes soft-sediment structures. In Section 3, towards the base, there is an interval (20 cm thick), which is finely laminated without trace of burrowing. This facies resembles the "black-shales" observed in cores higher in the succession. In Section 4, unusual pale siltstone micronodules appear to have been cemented early in diagenesis and then compacted so that lamination in overlying mudstones swells around these small nodules. There is also some evidence of reworking as siltstone fragments are strewn through finely-laminated mudstone. In Section 5, a siltstone parting shows millimeter-scale convolute lamination.

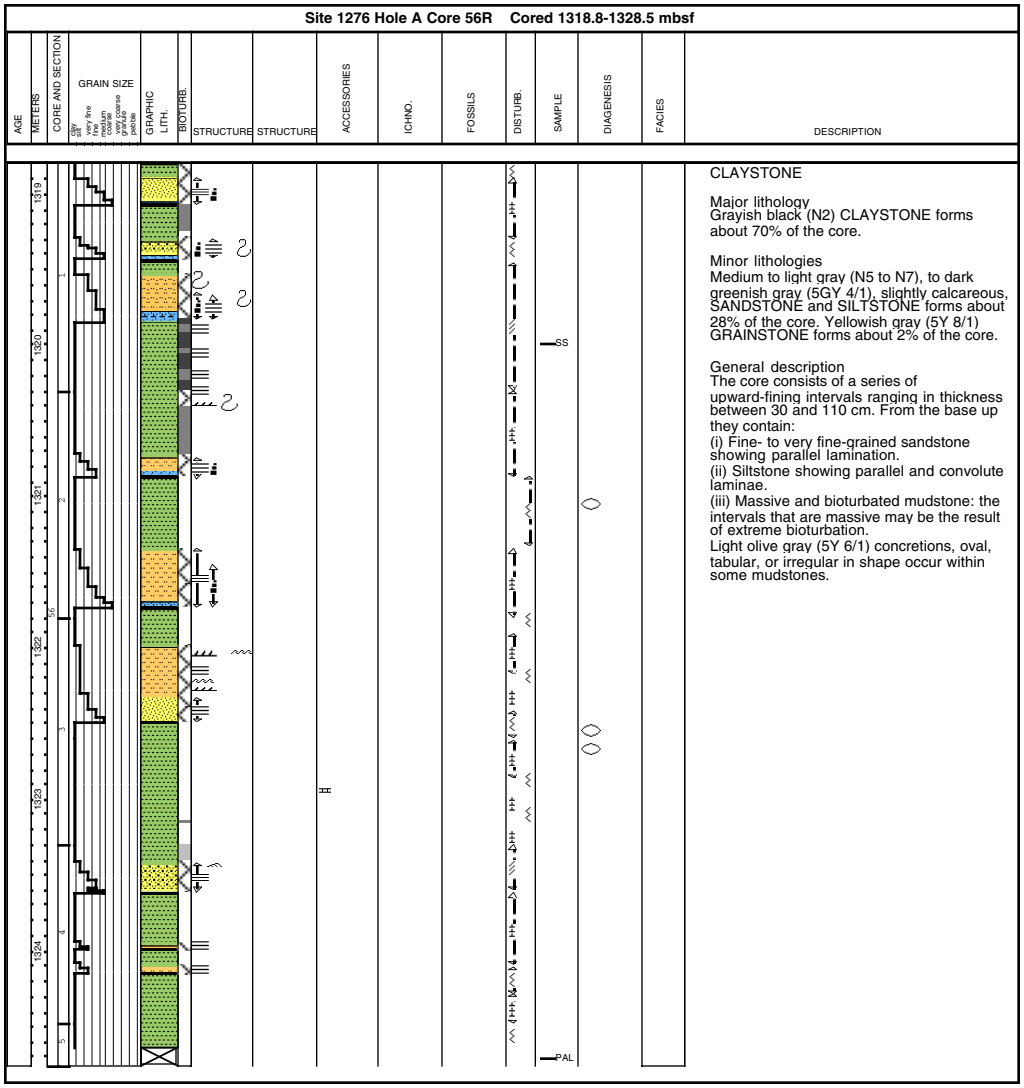
Core Photo


Site 1276 Hole A Core 54R Cored 1299.6-1309.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1300
1301
1302
1303
1304
1305
1306
1307
SS
SS
PAL
5Y6/1
N3
N5, NY..
N3
N5, 5Y6/1
N3
N5, 5Y6/1
N3
5GY4/1
5GY8/1
5GY5/1
N5, 5Y6/1
5GY4/1
5G4/1
564/1
MUDSTONE, SANDSTONE, SILTSTONE
Major LIthology
Similar to Core 53, this core is dominated by greenish black, to dark greenish gray (5GY 2/1, 5GY 4/1) MUDSTONE, that is variably calcareous and shows only vague mottling (Chondrites).
MInor LIthologies
There are several intervals of graded SANDSTONE interpreted as turbidity current deposits. A small number of millimeter- to centimeter-thick pale yellowish gray (5Y 8/1) SILTSTONE occur throughout the core.
General Description
This core is dominated by weakly calcareous mudstones of dark, subdued hues with only traces of burrow mottling in places. Occasional graded sandstones exhibit planar lamination and ripple cross lamination and minor wavy lamination. There are also rare very thin bedded siltstones and silty partings throughout the core. Several of the thin siltstones are lenticular and appear to have been cemented early in diagenesis and then differentally compacted e.g. Section 5 (25-45 cm).

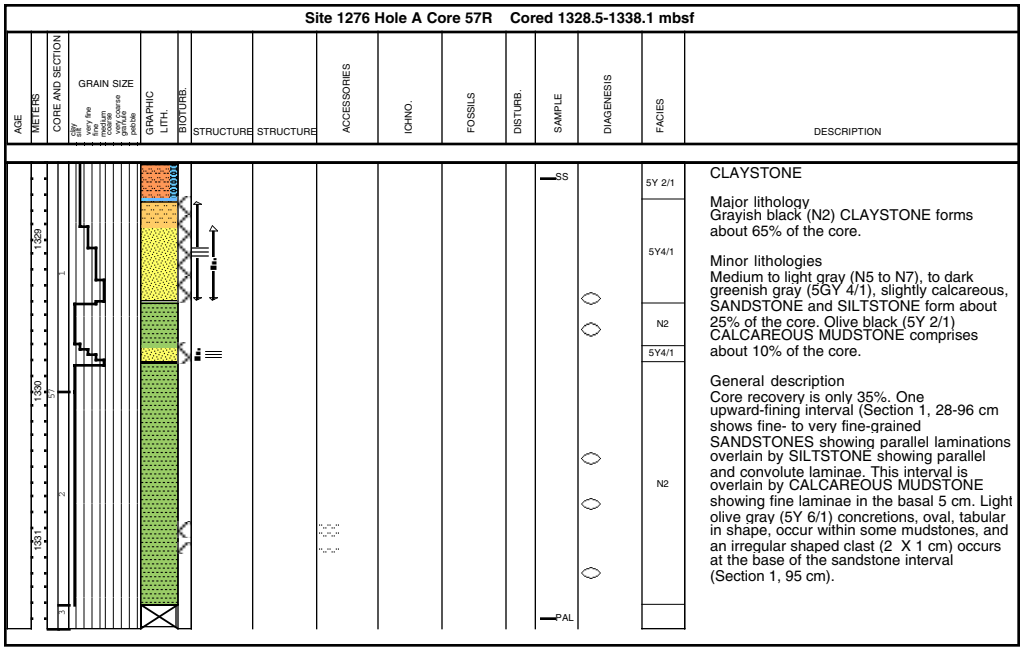
Core Photo


Site 1276 Hole A Core 55R Cored 1309.2-1318.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1310
1311
1312
1313
1314
1315
55R
SS
SS
PAL
5Y3/2
5Y8/1
5Y3/2
5Y3/2, N6
N2
5Y3/2
N2
5Y3/2
N2
5Y3/2, N6
N2
5G4/1
5G4/1
5G2/1
5G2/1
5G2/1
10G6/2
MUDSTONE, SANDSTONE, SILTSTONE
Major LIthology
Weakly burrowed dark gray (N2) and olive gray (5GY 4/1) calcareous MUDSTONE.
Minor LIthologies
Graded SANDSTONE (5Y 3/2, N6) with minor thin-bedded yellowish gray (5Y 8/1) SILTSTONES.
General Description
The core is dominated by weakly calcareous, weakly laminated grayish black to dark greenish gray (N2, 5G 4/1) mudstones with only very vague burrowing. In Section 1, an interval from 121-141 cm shows parallel lamination, without any burrowing, and is reminiscent of black shales. The interval in Section 4, 95-105 cm is similar. The mudstones are interrupted by a small number of graded sandstones, interpreted as turbidites. The largest of these individual beds occurs in Section 1,19-93 cm and shows a lower parallel laminated unit passing up into a ripple- and convolute-laminated unit showing signs of soft-sediment deformation. The Section also includes several yellowish gray (5Y 8/1) well-lithified siltstones (siltites), either planar-bedded (e.g. Section 2, 21-24 cm), or lenticular (e.g., Section 4, 40-44 cm). These siltstones appear to have lithified early during diagenesis as they show differential compaction effects.

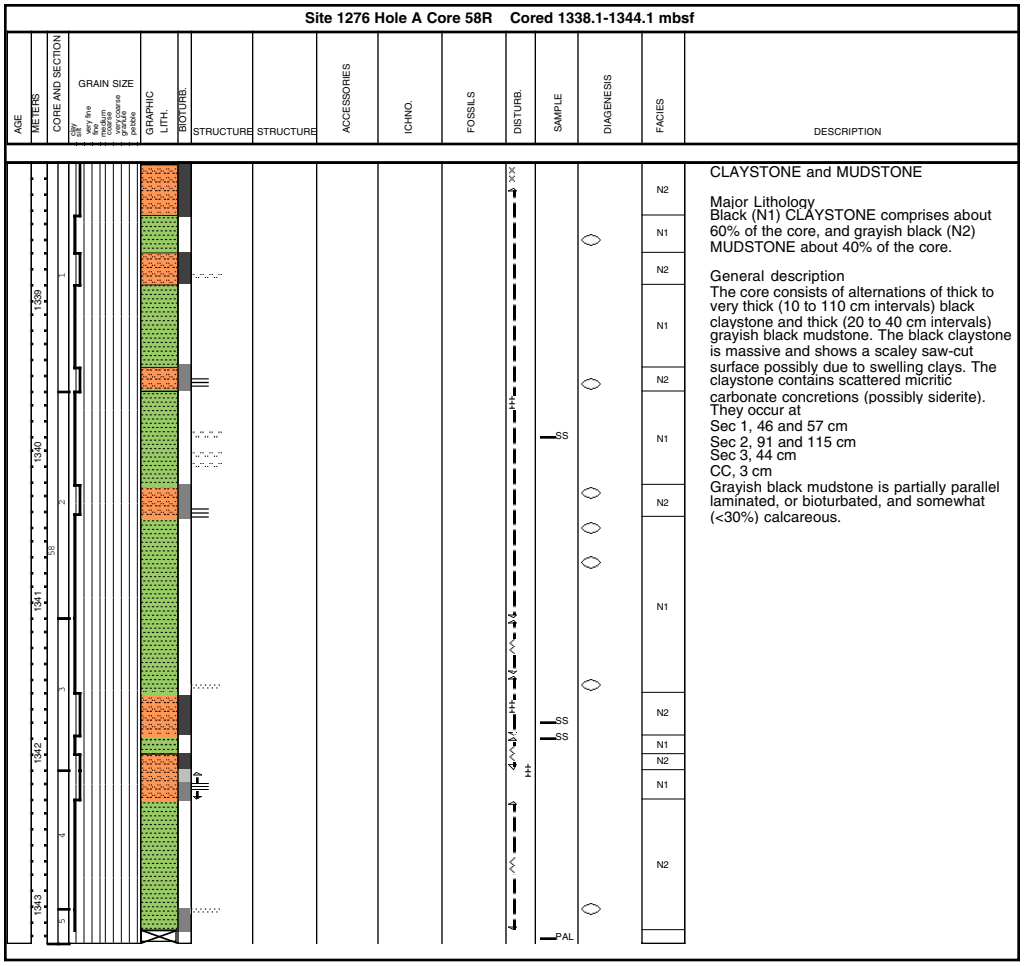
Core Photo


Site 1276 Hole A Core 56R Cored 1318.8-1328.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1319
1320
1321
1322
1323
1324
SS
PAL
CLAYSTONE
Major lithology
Grayish black (N2) CLAYSTONE forms about 70% of the core.
Minor lithologies
Medium to light gray (N5 to N7), to dark greenish gray (5GY 4/1), slightly calcareous, SANDSTONE and SILTSTONE forms about 28% of the core. Yellowish gray (5Y 8/1) GRAINSTONE forms about 2% of the core.
General description
The core consists of a series of upward-fining intervals ranging in thickness between 30 and 110 cm. From the base up they contain:
(i) Fine- to very fine-grained sandstone showing parallel lamination.
(ii) Siltstone showing parallel and convolute laminae.
(iii) Massive and bioturbated mudstone: the intervals that are massive may be the result of extreme bioturbation.
Light olive gray (5Y 6/1) concretions, oval, tabular, or irregular in shape occur within some mudstones.

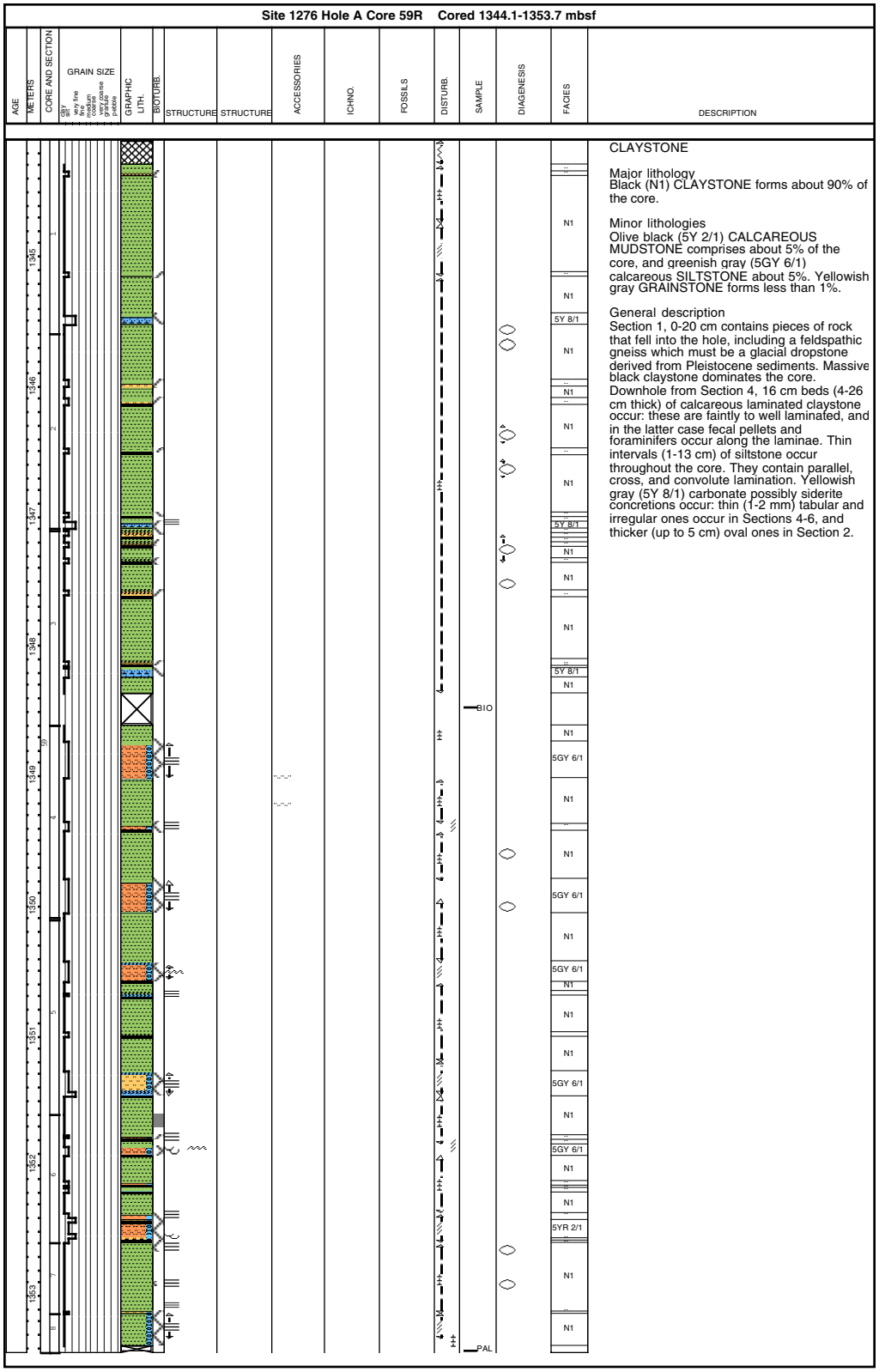
Core Photo


Site 1276 Hole A Core 57R Cored 1328.5-1338.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1329
1330
1331
SS
PAL
5Y 2/1
5Y4/1
N2
5Y4/1
N2
CLAYSTONE
Major lithology
Grayish black (N2) CLAYSTONE forms about 65% of the core.
Minor lithologies
Medium to light gray (N5 to N7), to dark greenish gray (5GY 4/1), slightly calcareous, SANDSTONE and SILTSTONE form about 25% of the core. Olive black (5Y 2/1) CALCAREOUS MUDSTONE comprises about 10% of the core.
General description
Core recovery is only 35%. One upward-fining interval (Section 1, 28-96 cm shows fine- to very fine-grained SANDSTONES showing parallel laminations overlain by SILTSTONE showing parallel and convolute laminae. This interval is overlain by CALCAREOUS MUDSTONE showing fine laminae in the basal 5 cm. Light olive gray (5Y 6/1) concretions, oval, tabular in shape, occur within some mudstones, and an irregular shaped clast (2 X 1 cm) occurs at the base of the sandstone interval (Section 1, 95 cm).

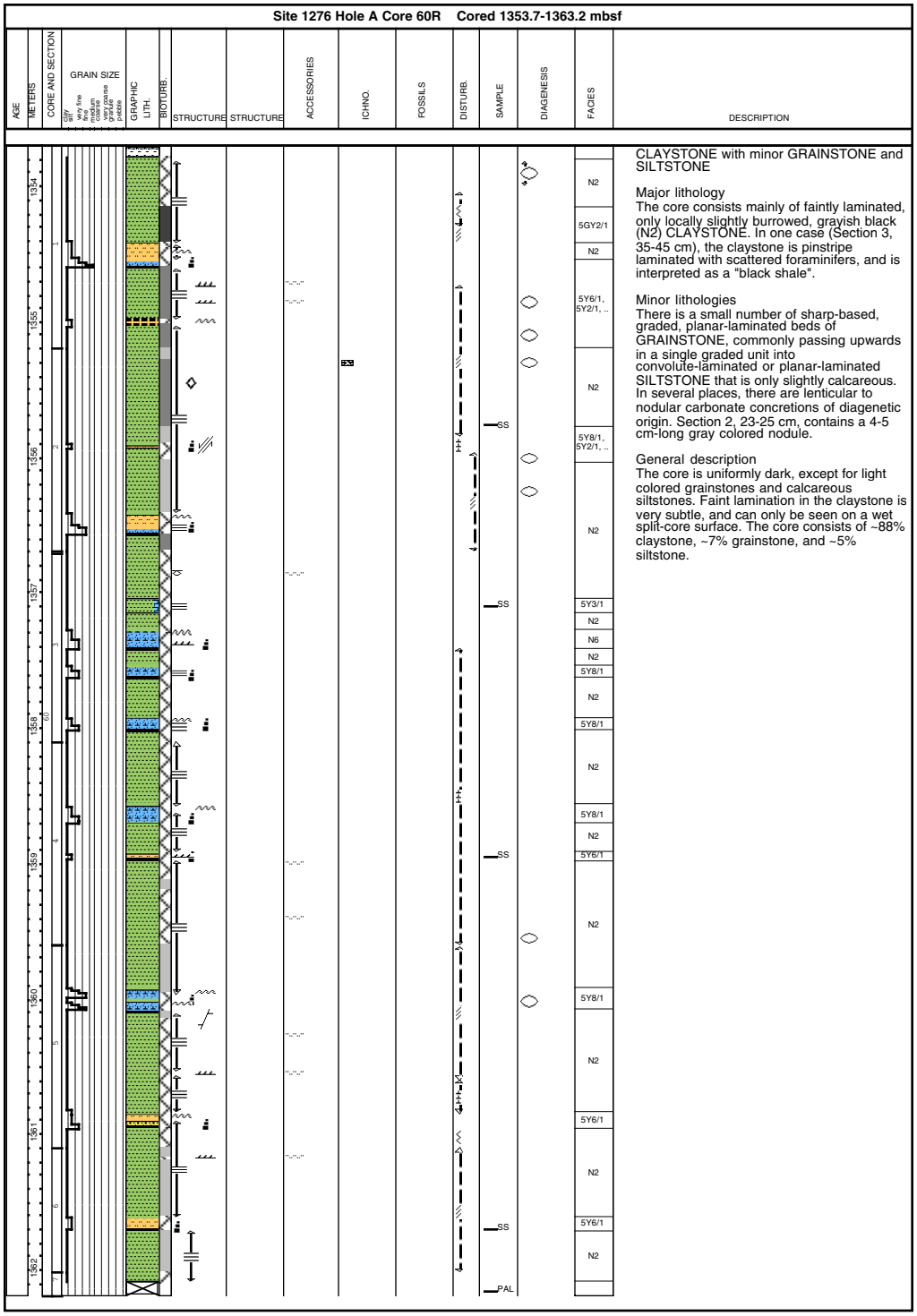
Core Photo


Site 1276 Hole A Core 58R Cored 1338.1-1344.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1339
1340
1341
1342
1343
58
SS
SS
SS
PAL
N2
N1
N2
N1
N2
N1
N2
N1
N2
N1
N2
N2
CLAYSTONE and MUDSTONE
Major Lithology
Black (N1) CLAYSTONE comprises about 60% of the core, and grayish black (N2) MUDSTONE about 40% of the core.
General description
The core consists of alternations of thick to very thick (10 to 110 cm intervals) black claystone and thick (20 to 40 cm intervals) grayish black mudstone. The black claystone is massive and shows a scaley saw-cut surface possibly due to swelling clays. The claystone contains scattered micritic carbonate concretions (possibly siderite). They occur at
Sec 1, 46 and 57 cm
Sec 2, 91 and 115 cm
Sec 3, 44 cm
CC, 3 cm
Grayish black mudstone is partially parallel laminated, or bioturbated, and somewhat (<30%) calcareous.

Core Photo


Site 1276 Hole A Core 59R Cored 1344.1-1353.7 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
BIO
PAL
CLAYSTONE
Major lithology
Black (N1) CLAYSTONE forms about 90% of the core.
Minor lithologies
Olive black (5Y 2/1) CALCAREOUS MUDSTONE comprises about 5% of the core, and greenish gray (5GY 6/1) calcareous SILTSTONE about 5%. Yellowish gray GRAINSTONE forms less than 1%.
General description
Section 1, 0-20 cm contains pieces of rock that fell into the hole, including a feldspathic gneiss which must be a glacial dropstone derived from Pleistocene sediments. Massive black claystone dominates the core.
Downhole from Section 4, 16 cm beds (4-26 cm thick) of calcareous laminated claystone occur: these are faintly to well laminated, and in the latter case fecal pellets and foraminifers occur along the laminae. Thin intervals (1-13 cm) of siltstone occur throughout the core. They contain parallel, cross, and convolute lamination. Yellowish gray (5Y 8/1) carbonate possibly siderite concretions occur: thin (1-2 mm) tabular and irregular ones occur in Sections 4-6, and thicker (up to 5 cm) oval ones in Section 2.

Core Photo



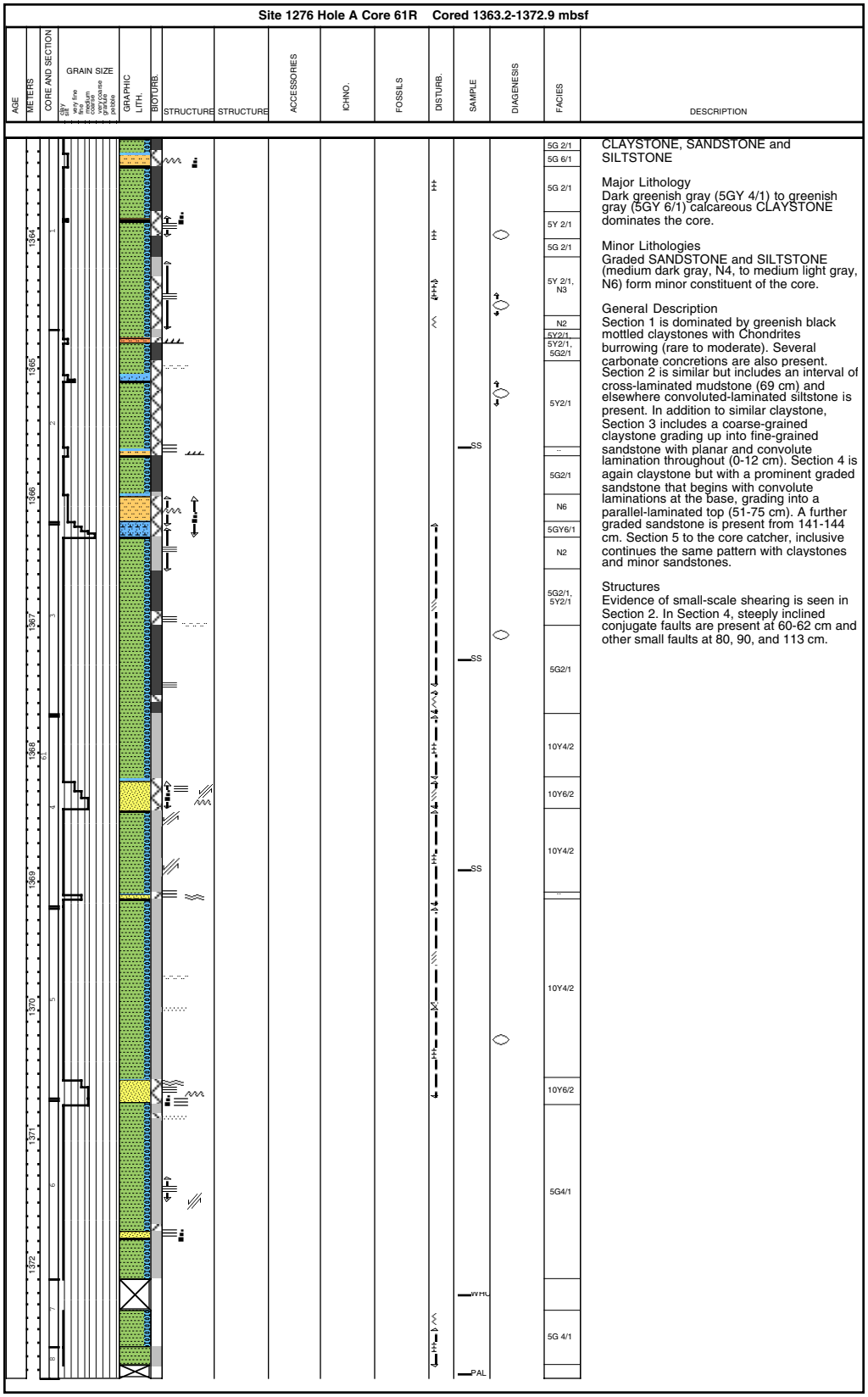
CLAYSTONE with minor GRAINSTONE and SILTSTONE

Major lithology
The core consists mainly of faintly laminated, only locally slightly burrowed, grayish black (N2) CLAYSTONE. In one case (Section 3, 35-45 cm), the claystone is pinstripe laminated with scattered foraminifers, and is interpreted as a "black shale".

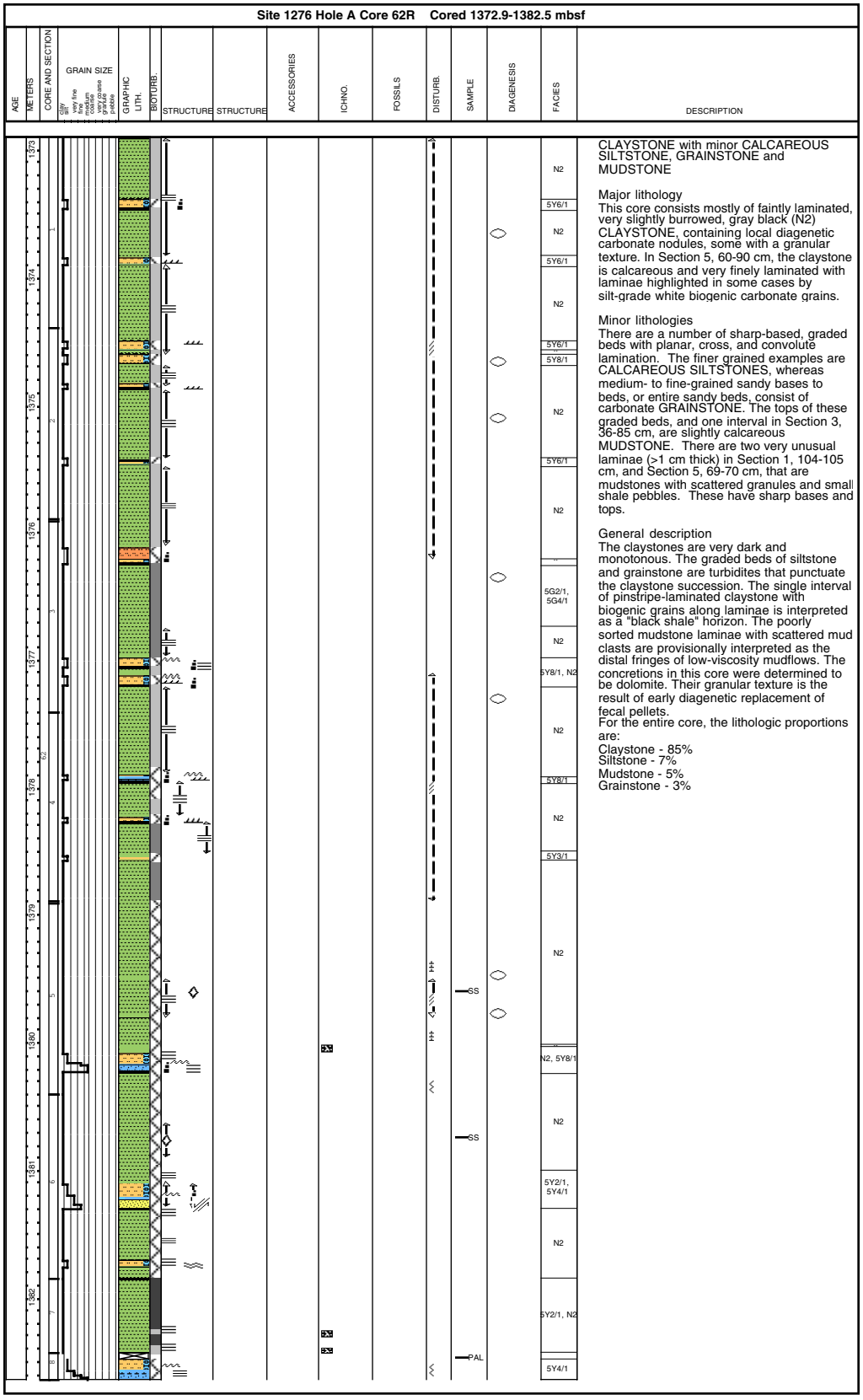
Minor lithologies
There is a small number of sharp-based, graded, planar-laminated beds of GRAINSTONE, commonly passing upwards in a single graded unit into convolute-laminated or planar-laminated SILTSTONE that is only slightly calcareous. In several places, there are lenticular to nodular carbonate concretions of diagenetic origin. Section 2, 23-25 cm, contains a 4-5 cm-long gray colored nodule.

General description
The core is uniformly dark, except for light colored grainstones and calcareous siltstones. Faint lamination in the claystone is very subtle, and can only be seen on a wet split-core surface. The core consists of ~88% claystone, ~7% grainstone, and ~5% siltstone.

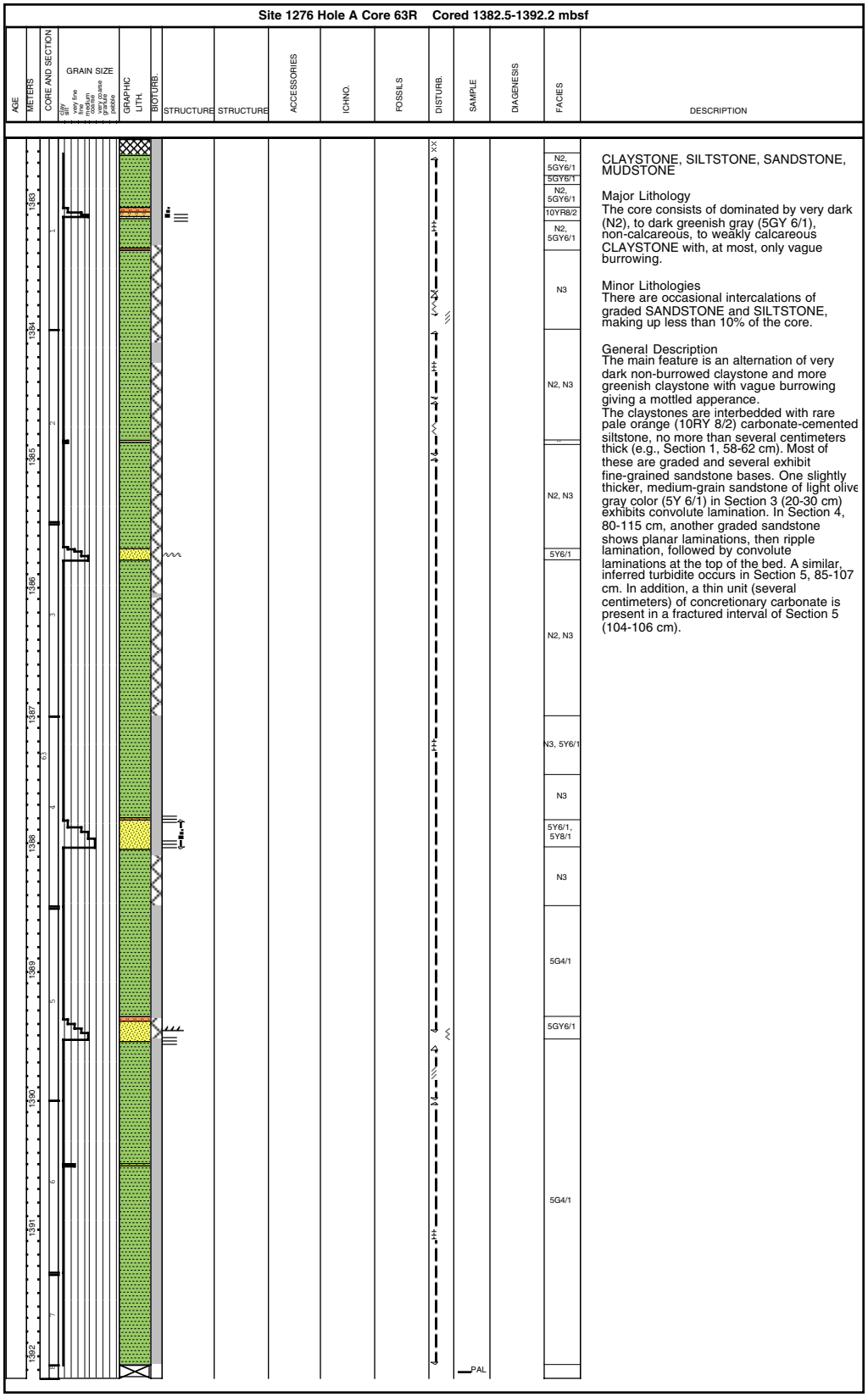
Core Photo


Site 1276 Hole A Core 61R Cored 1363.2-1372.9 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1364
1365
1366
1367
1368
1369
1370
1371
1372
SS
SS
SS
WHL
PAL
5G 2/1
5G 6/1
5G 2/1
5Y 2/1
5G 2/1
5Y 2/1, N3
N2
5Y2/1
5Y2/1, 5G2/1
5Y2/1
5G2/1
N6
5GY6/1
N2
5G2/1, 5Y2/1
5G2/1
10Y4/2
10Y6/2
10Y4/2
10Y4/2
10Y6/2
5G4/1
5G 4/1
CLAYSTONE, SANDSTONE and SILTSTONE
Major Lithology
Dark greenish gray (5GY 4/1) to greenish gray (5GY 6/1) calcareous CLAYSTONE dominates the core.
Minor Lithologies
Graded SANDSTONE and SILTSTONE (medium dark gray, N4, to medium light gray, N6) form minor constituent of the core.
General Description
Section 1 is dominated by greenish black mottled claystones with Chondrites burrowing (rare to moderate). Several carbonate concretions are also present. Section 2 is similar but includes an interval of cross-laminated mudstone (69 cm) and elsewhere convoluted-laminated siltstone is present. In addition to similar claystone, Section 3 includes a coarse-grained claystone grading up into fine-grained sandstone with planar and convolute lamination throughout (0-12 cm). Section 4 is again claystone but with a prominent graded sandstone that begins with convolute laminations at the base, grading into a parallel-laminated top (51-75 cm). A further graded sandstone is present from 141-144 cm. Section 5 to the core catcher, inclusive continues the same pattern with claystones and minor sandstones.
Structures
Evidence of small-scale shearing is seen in Section 2. In Section 4, steeply inclined conjugate faults are present at 60-62 cm and other small faults at 80, 90, and 113 cm.

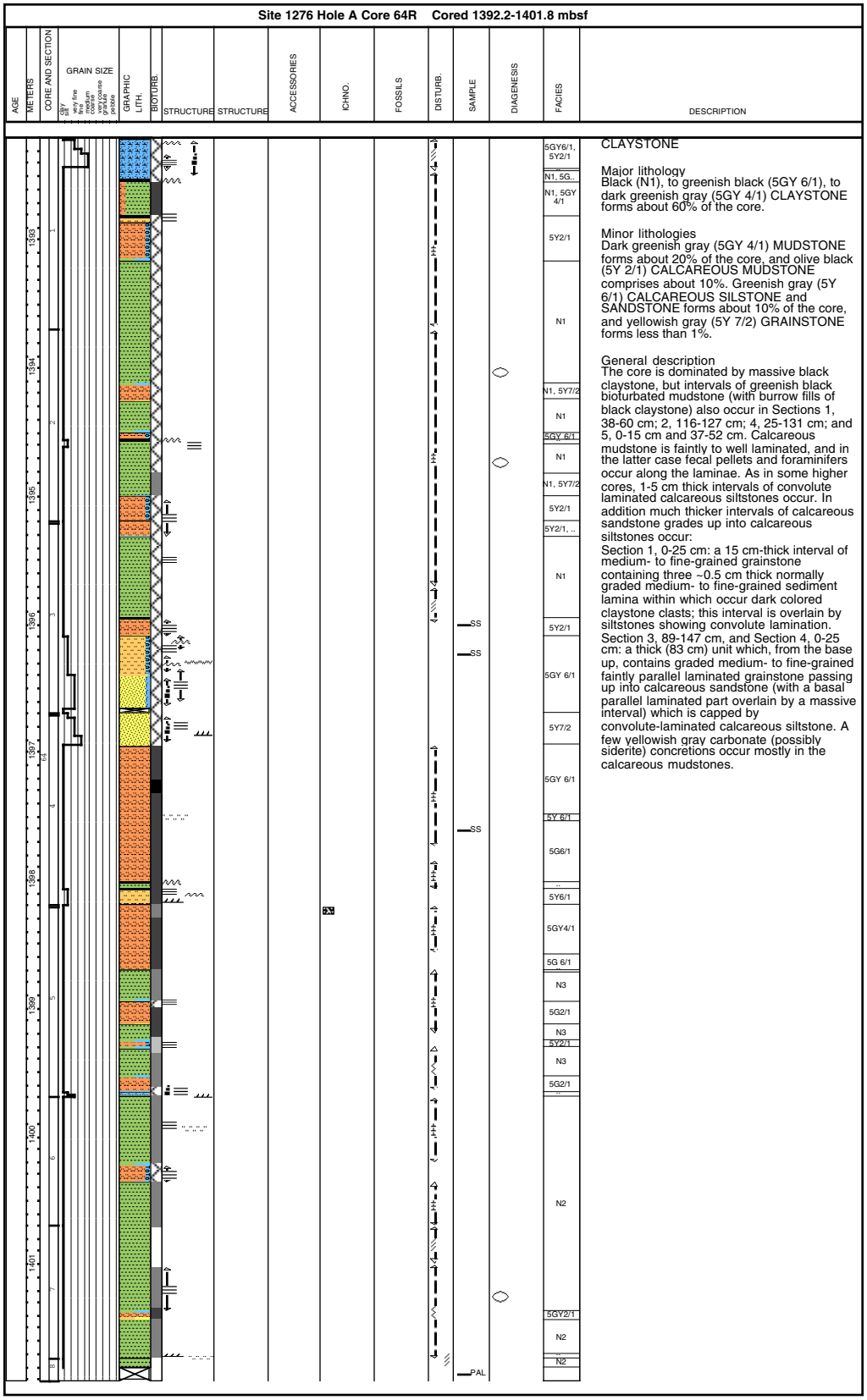
Core Photo


Site 1276 Hole A Core 62R Cored 1372.9-1382.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1373
1374
1375
1376
1377
1378
1379
1380
1381
1382
62
SS
SS
PAL
N2
5Y6/1
N2
5Y6/1
N2
5Y6/1
5Y8/1
N2
5Y6/1
N2
5G2/1, 5G4/1
N2
5Y8/1, N2
N2
5Y8/1
N2
5Y3/1
N2
N2, 5Y8/1
N2
5Y2/1, 5Y4/1
N2
5Y2/1, N2
5Y4/1
CLAYSTONE with minor CALCAREOUS SILTSTONE, GRAINSTONE and MUDSTONE
Major lithology
This core consists mostly of faintly laminated, very slightly burrowed, gray black (N2) CLAYSTONE, containing local diagenetic carbonate nodules, some with a granular texture. In Section 5, 60-90 cm, the claystone is calcareous and very finely laminated with laminae highlighted in some cases by silt-grade white biogenic carbonate grains.
Minor lithologies
There are a number of sharp-based, graded beds with planar, cross, and convolute lamination. The finer grained examples are CALCAREOUS SILTSTONES, whereas medium- to fine-grained sandy bases to beds, or entire sandy beds, consist of carbonate GRAINSTONE. The tops of these graded beds, and one interval in Section 3, 36-85 cm, are slightly calcareous MUDSTONE. There are two very unusual laminae (>1 cm thick) in Section 1, 104-105 cm, and Section 5, 69-70 cm, that are mudstones with scattered granules and small shale pebbles. These have sharp bases and tops.
General description
The claystones are very dark and monotonous. The graded beds of siltstone and grainstone are turbidites that punctuate the claystone succession. The single interval of pinstripe-laminated claystone with biogenic grains along laminae is interpreted as a "black shale" horizon. The poorly sorted mudstone laminae with scattered mud clasts are provisionally interpreted as the distal fringes of low-viscosity mudflows. The concretions in this core were determined to be dolomite. Their granular texture is the result of early diagenetic replacement of fecal pellets.
For the entire core, the lithologic proportions are:
Claystone - 85%
Siltstone - 7%
Mudstone - 5%
Grainstone - 3%

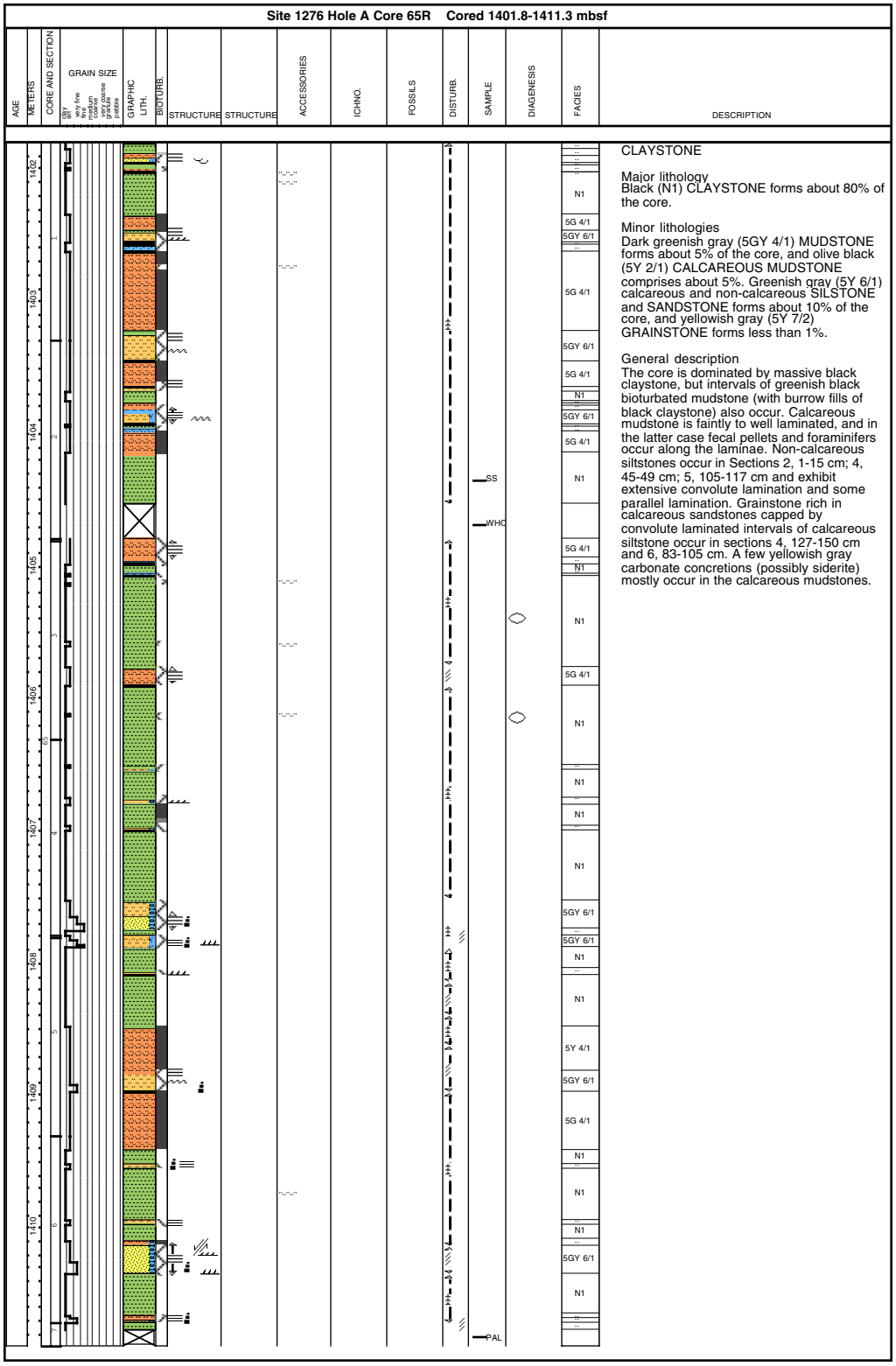
Core Photo


Site 1276 Hole A Core 63R Cored 1382.5-1392.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1383
1384
1385
1386
1387
1388
1389
1390
1391
1392
63
PAL
N2, 5GY6/1
5GY6/1
N2, 5GY6/1
10YR8/2
N2, 5GY6/1
N3
N2, N3
N2, N3
5Y6/1
N2, N3
N3, 5Y6/1
N3
5Y6/1, 5Y8/1
N3
5G4/1
5GY6/1
5G4/1
CLAYSTONE, SILTSTONE, SANDSTONE, MUDSTONE
Major Lithology
The core consists of dominated by very dark (N2), to dark greenish gray (5GY 6/1), non-calcareous, to weakly calcareous CLAYSTONE with, at most, only vague burrowing.
Minor Lithologies
There are occasional intercalations of graded SANDSTONE and SILTSTONE, making up less than 10% of the core.
General Description
The main feature is an alternation of very dark non-burrowed claystone and more greenish claystone with vague burrowing giving a mottled apperance.
The claystones are interbedded with rare pale orange (10RY 8/2) carbonate-cemented siltstone, no more than several centimeters thick (e.g., Section 1, 58-62 cm). Most of these are graded and several exhibit fine-grained sandstone bases. One slightly thicker, medium-grain sandstone of light olive gray color (5Y 6/1) in Section 3 (20-30 cm) exhibits convolute lamination. In Section 4, 80-115 cm, another graded sandstone shows planar laminations, then ripple lamination, followed by convolute laminations at the top of the bed. A similar, inferred turbidite occurs in Section 5, 85-107 cm. In addition, a thin unit (several centimeters) of concretionary carbonate is present in a fractured interval of Section 5 (104-106 cm).

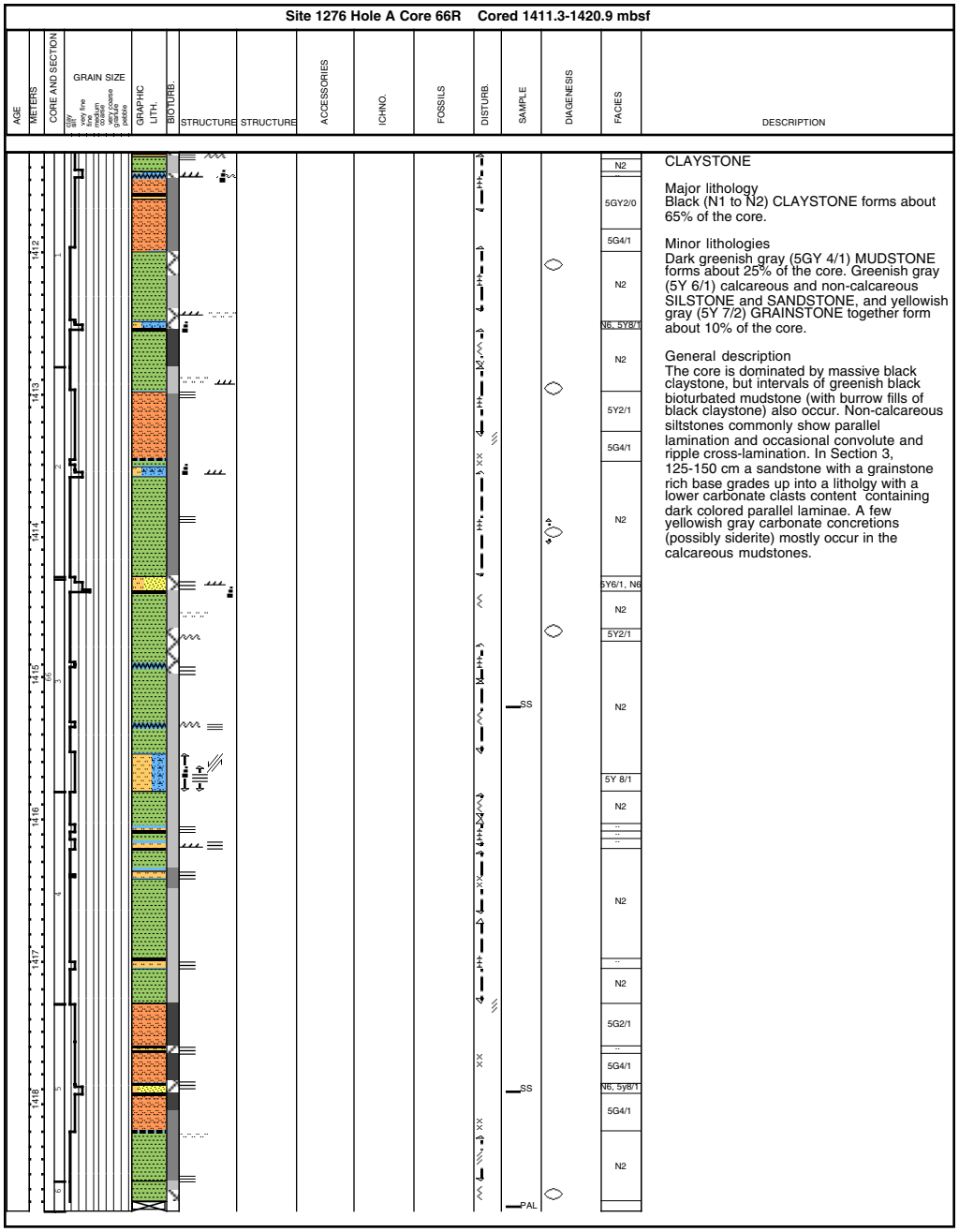
Core Photo


Site 1276 Hole A Core 64R Cored 1392.2-1401.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1393
1394
1395
1396
1397
1398
1399
1400
1401
64
SS
SS
SS
PAL
5GY6/1, 5Y2/1
N1, 5G..
N1, 5GY 4/1
5Y2/1
N1
N1, 5Y7/2
N1
5GY 6/1
N1
N1, 5Y7/2
5Y2/1
5Y2/1, ..
N1
5Y2/1
5GY 6/1
5Y7/2
5GY 6/1
5Y 6/1
5G6/1
5Y6/1
5GY4/1
5G 6/1
N3
5G2/1
N3
5Y2/1
N3
5G2/1
N2
5GY2/1
N2
N2
CLAYSTONE
Major lithology
Black (N1), to greenish black (5GY 6/1), to dark greenish gray (5GY 4/1) CLAYSTONE forms about 60% of the core.
Minor lithologies
Dark greenish gray (5GY 4/1) MUDSTONE forms about 20% of the core, and olive black (5Y 2/1) CALCAREOUS MUDSTONE comprises about 10%. Greenish gray (5Y 6/1) CALCAREOUS SILSTONE and SANDSTONE forms about 10% of the core, and yellowish gray (5Y 7/2) GRAINSTONE forms less than 1%.
General description
The core is dominated by massive black claystone, but intervals of greenish black bioturbated mudstone (with burrow fills of black claystone) also occur in Sections 1, 38-60 cm; 2, 116-127 cm; 4, 25-131 cm; and 5, 0-15 cm and 37-52 cm. Calcareous mudstone is faintly to well laminated, and in the latter case fecal pellets and foraminifers occur along the laminae. As in some higher cores, 1-5 cm thick intervals of convolute laminated calcareous siltstones occur. In addition much thicker intervals of calcareous sandstone grades up into calcareous siltstones occur:
Section 1, 0-25 cm: a 15 cm-thick interval of medium- to fine-grained grainstone containing three ~0.5 cm thick normally graded medium- to fine-grained sediment lamina within which occur dark colored claystone clasts; this interval is overlain by siltstones showing convolute lamination.
Section 3, 89-147 cm, and Section 4, 0-25 cm: a thick (83 cm) unit which, from the base up, contains graded medium- to fine-grained faintly parallel laminated grainstone passing up into calcareous sandstone (with a basal parallel laminated part overlain by a massive interval) which is capped by convolute-laminated calcareous siltstone. A few yellowish gray carbonate (possibly siderite) concretions occur mostly in the calcareous mudstones.

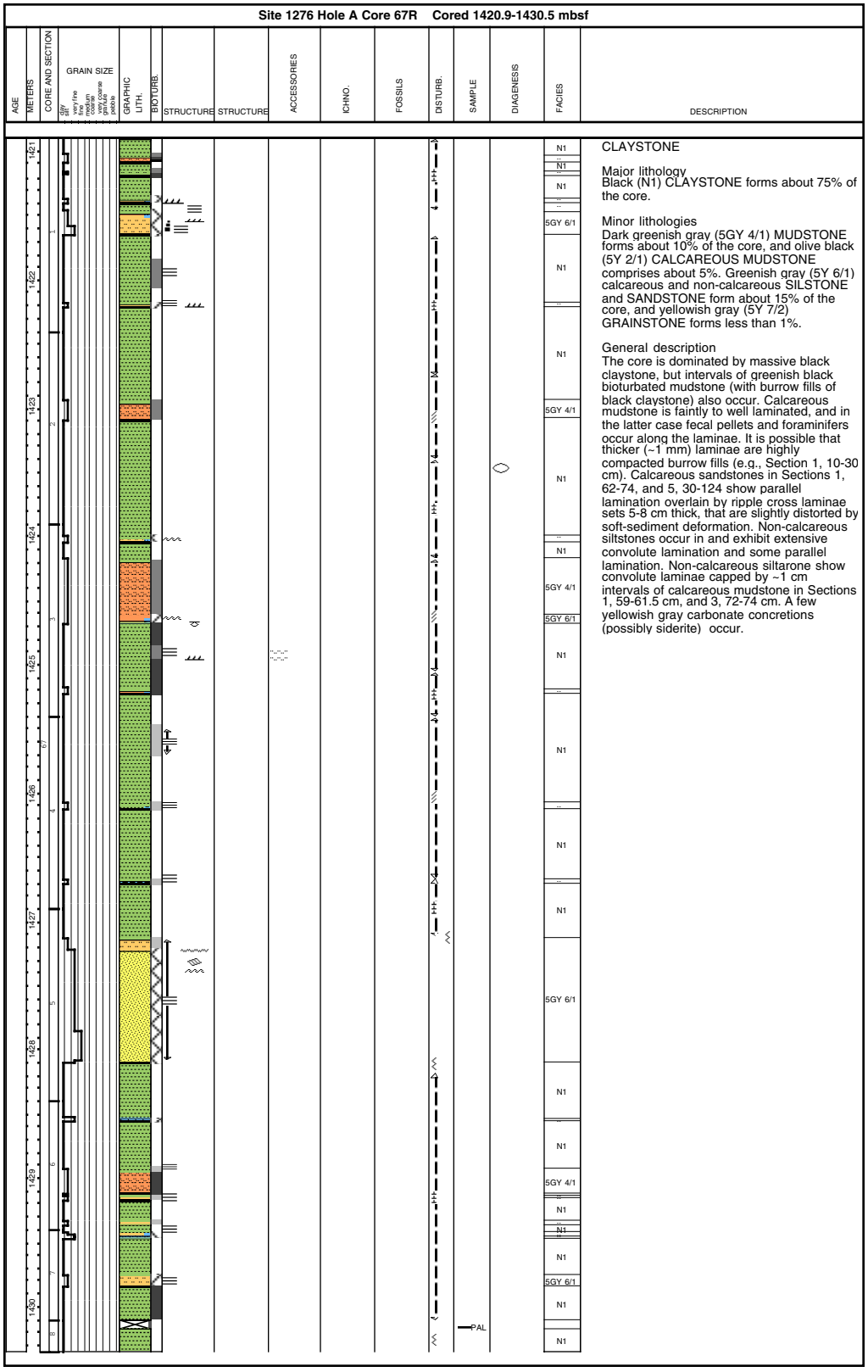
Core Photo


Site 1276 Hole A Core 65R Cored 1401.8-1411.3 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
WHC
PAL
CLAYSTONE
Major lithology
Black (N1) CLAYSTONE forms about 80% of the core.
Minor lithologies
Dark greenish gray (5GY 4/1) MUDSTONE forms about 5% of the core, and olive black (5Y 2/1) CALCAREOUS MUDSTONE comprises about 5%. Greenish gray (5Y 6/1) calcareous and non-calcareous SILSTONE and SANDSTONE forms about 10% of the core, and yellowish gray (5Y 7/2) GRAINSTONE forms less than 1%.
General description
The core is dominated by massive black claystone, but intervals of greenish black bioturbated mudstone (with burrow fills of black claystone) also occur. Calcareous mudstone is faintly to well laminated, and in the latter case fecal pellets and foraminifers occur along the laminae. Non-calcareous siltstones occur in Sections 2, 1-15 cm; 4, 45-49 cm; 5, 105-117 cm and exhibit extensive convolute lamination and some parallel lamination. Grainstone rich in calcareous sandstones capped by convolute laminated intervals of calcareous siltstone occur in sections 4, 127-150 cm and 6, 83-105 cm. A few yellowish gray carbonate concretions (possibly siderite) mostly occur in the calcareous mudstones.

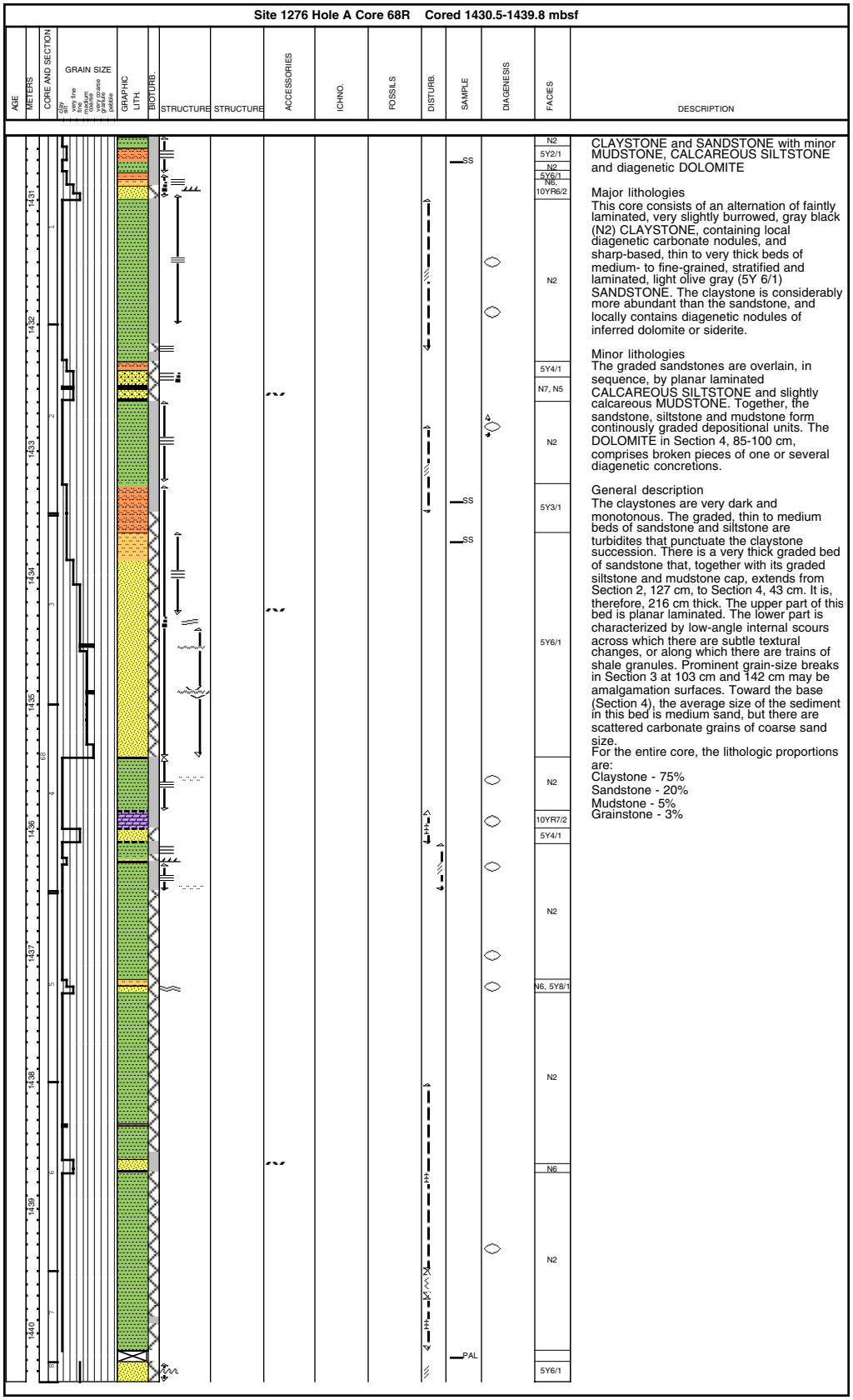
Core Photo


Site 1276 Hole A Core 66R Cored 1411.3-1420.9 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1412
1413
1414
1415
1416
1417
1418
66
SS
SS
PAL
N2
5GY2/0
5G4/1
N2
N6, 5Y8/1
N2
5Y2/1
5G4/1
N2
5Y6/1, N6
N2
5Y2/1
N2
5Y 8/1
N2
N2
N2
5G2/1
5G4/1
N6, 5Y8/1
5G4/1
N2
CLAYSTONE
Major lithology
Black (N1 to N2) CLAYSTONE forms about 65% of the core.
Minor lithologies
Dark greenish gray (5GY 4/1) MUDSTONE forms about 25% of the core. Greenish gray (5Y 6/1) calcareous and non-calcareous SILSTONE and SANDSTONE, and yellowish gray (5Y 7/2) GRAINSTONE together form about 10% of the core.
General description
The core is dominated by massive black claystone, but intervals of greenish black bioturbated mudstone (with burrow fills of black claystone) also occur. Non-calcareous siltstones commonly show parallel lamination and occasional convolute and ripple cross-lamination. In Section 3, 125-150 cm a sandstone with a grainstone rich base grades up into a litholgy with a lower carbonate clasts content containing dark colored parallel laminae. A few yellowish gray carbonate concretions (possibly siderite) mostly occur in the calcareous mudstones.

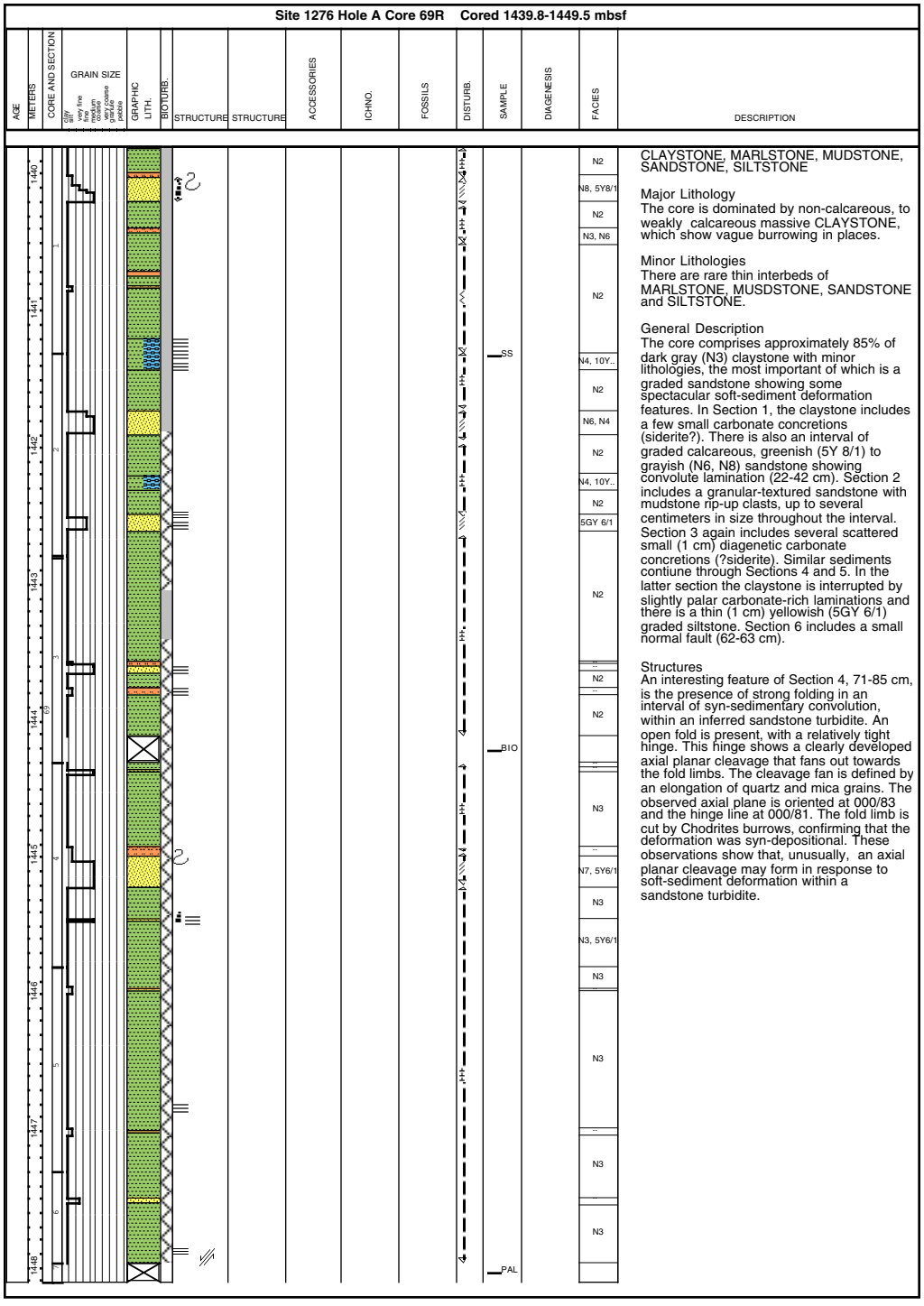
Core Photo


Site 1276 Hole A Core 67R Cored 1420.9-1430.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1421
1422
1423
1424
1425
1426
1427
1428
1429
1430
67
PAL
N1
5GY 6/1
5GY 4/1
CLAYSTONE
Major lithology
Black (N1) CLAYSTONE forms about 75% of the core.
Minor lithologies
Dark greenish gray (5GY 4/1) MUDSTONE forms about 10% of the core, and olive black (5Y 2/1) CALCAREOUS MUDSTONE comprises about 5%. Greenish gray (5Y 6/1) calcareous and non-calcareous SILSTONE and SANDSTONE form about 15% of the core, and yellowish gray (5Y 7/2) GRAINSTONE forms less than 1%.
General description
The core is dominated by massive black claystone, but intervals of greenish black bioturbated mudstone (with burrow fills of black claystone) also occur. Calcareous mudstone is faintly to well laminated, and in the latter case fecal pellets and foraminifers occur along the laminae. It is possible that thicker (~1 mm) laminae are highly compacted burrow fills (e.g., Section 1, 10-30 cm). Calcareous sandstones in Sections 1, 62-74, and 5, 30-124 show parallel lamination overlain by ripple cross laminae sets 5-8 cm thick, that are slightly distorted by soft-sediment deformation. Non-calcareous siltstones occur in and exhibit extensive convolute lamination and some parallel lamination. Non-calcareous siltarone show convolute laminae capped by ~1 cm intervals of calcareous mudstone in Sections 1, 59-61.5 cm, and 3, 72-74 cm. A few yellowish gray carbonate concretions (possibly siderite) occur.

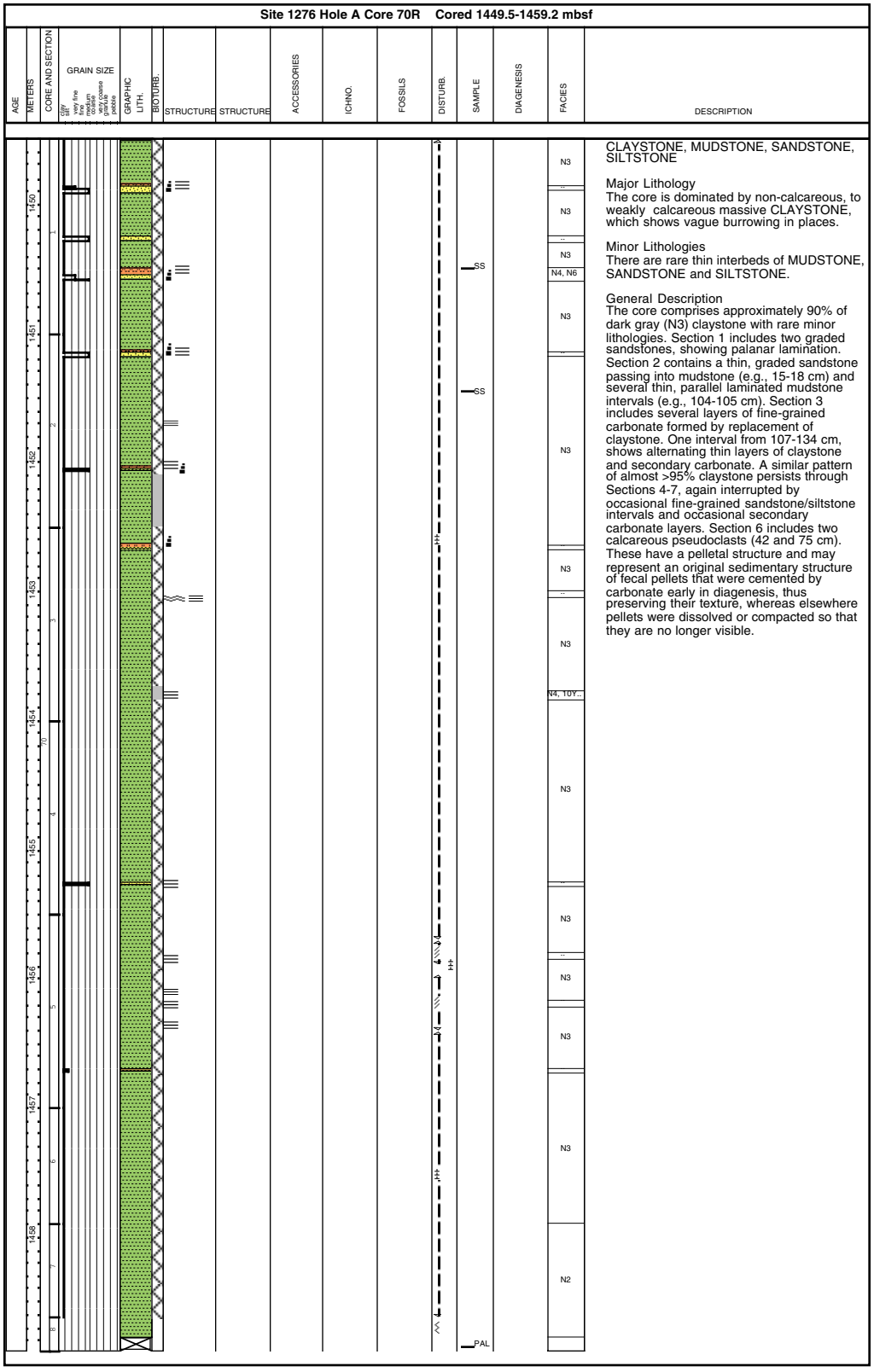
Core Photo


Site 1276 Hole A Core 68R Cored 1430.5-1439.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
SS
SS
PAL
N2
5Y2/1
N2
5Y6/1
N6, 10YR6/2
N2
5Y4/1
N7, N5
N2
5Y3/1
5Y6/1
N2
10YR7/2
5Y4/1
N2
N6, 5Y8/1
N2
N6
N2
5Y6/1
CLAYSTONE and SANDSTONE with minor MUDSTONE, CALCAREOUS SILTSTONE and diagenetic DOLOMITE
Major lithologies
This core consists of an alternation of faintly laminated, very slightly burrowed, gray black (N2) CLAYSTONE, containing local diagenetic carbonate nodules, and sharp-based, thin to very thick beds of medium- to fine-grained, stratified and laminated, light olive gray (5Y 6/1) SANDSTONE. The claystone is considerably more abundant than the sandstone, and locally contains diagenetic nodules of inferred dolomite or siderite.
Minor lithologies
The graded sandstones are overlain, in sequence, by planar laminated CALCAREOUS SILTSTONE and slightly calcareous MUDSTONE. Together, the sandstone, siltstone and mudstone form continously graded depositional units. The DOLOMITE in Section 4, 85-100 cm, comprises broken pieces of one or several diagenetic concretions.
General description
The claystones are very dark and monotonous. The graded, thin to medium beds of sandstone and siltstone are turbidites that punctuate the claystone succession. There is a very thick graded bed of sandstone that, together with its graded siltstone and mudstone cap, extends from Section 2, 127 cm, to Section 4, 43 cm. It is, therefore, 216 cm thick. The upper part of this bed is planar laminated. The lower part is characterized by low-angle internal scours across which there are subtle textural changes, or along which there are trains of shale granules. Prominent grain-size breaks in Section 3 at 103 cm and 142 cm may be amalgamation surfaces. Toward the base (Section 4), the average size of the sediment in this bed is medium sand, but there are scattered carbonate grains of coarse sand size.
For the entire core, the lithologic proportions are:
Claystone - 75%
Sandstone - 20%
Mudstone - 5%
Grainstone - 3%

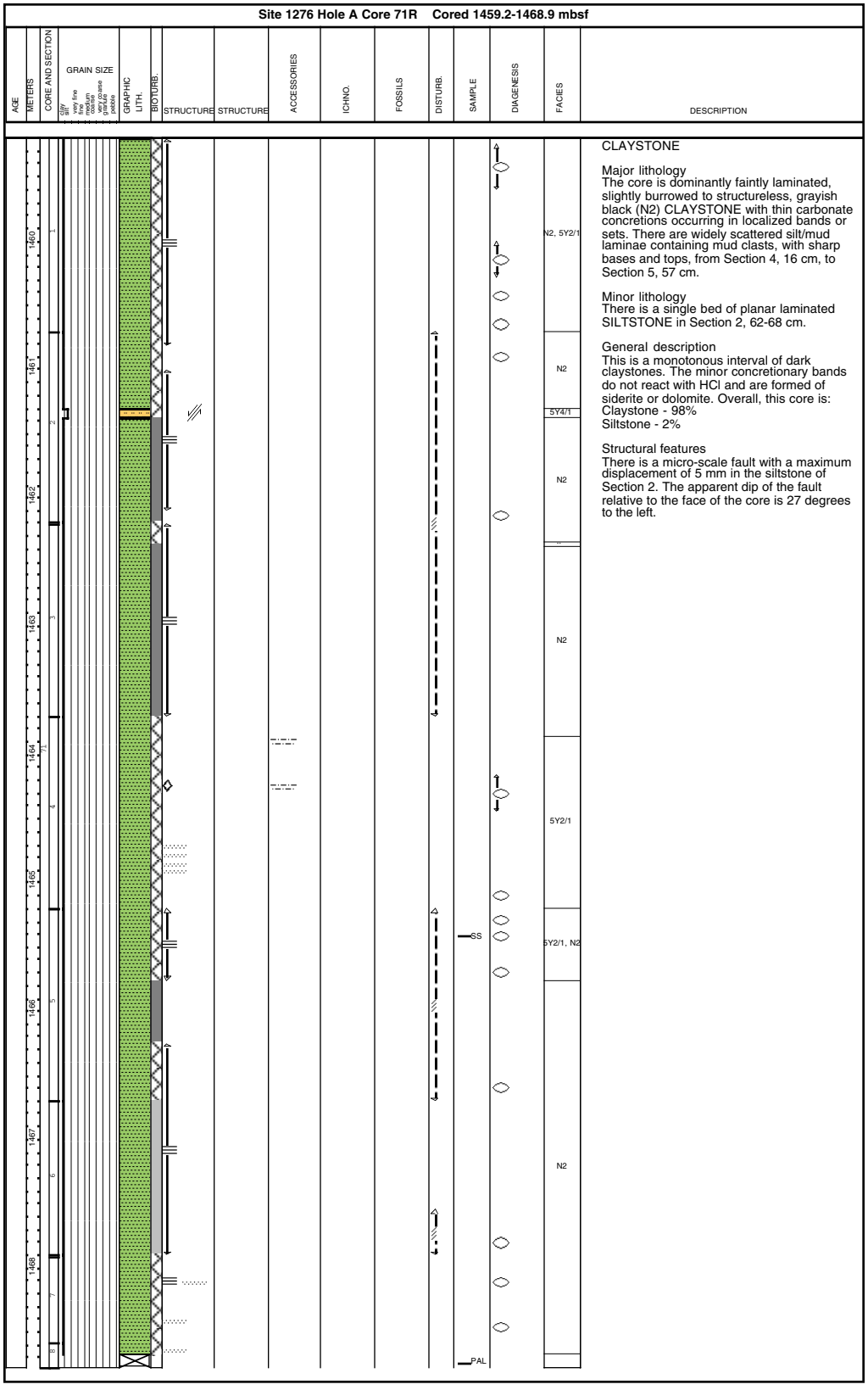
Core Photo


Site 1276 Hole A Core 69R Cored 1439.8-1449.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1440
1441
1442
1443
1444
1445
1446
1447
1448
69
SS
BIO
PAL
N2
N8, 5Y8/1
N2
N3, N6
N2
N4, 10Y..
N2
N6, N4
N2
N4, 10Y..
N2
5GY 6/1
N2
N2
N2
N3
N7, 5Y6/1
N3
N3, 5Y6/1
N3
N3
N3
N3
CLAYSTONE, MARLSTONE, MUDSTONE, SANDSTONE, SILTSTONE
Major Lithology
The core is dominated by non-calcareous, to weakly calcareous massive CLAYSTONE, which show vague burrowing in places.
Minor Lithologies
There are rare thin interbeds of MARLSTONE, MUSDSTONE, SANDSTONE and SILTSTONE.
General Description
The core comprises approximately 85% of dark gray (N3) claystone with minor lithologies, the most important of which is a graded sandstone showing some spectacular soft-sediment deformation features. In Section 1, the claystone includes a few small carbonate concretions (siderite?). There is also an interval of graded calcareous, greenish (5Y 8/1) to grayish (N6, N8) sandstone showing convolute lamination (22-42 cm). Section 2 includes a granular-textured sandstone with mudstone rip-up clasts, up to several centimeters in size throughout the interval. Section 3 again includes several scattered small (1 cm) diagenetic carbonate concretions (?siderite). Similar sediments contiune through Sections 4 and 5. In the latter section the claystone is interrupted by slightly palar carbonate-rich laminations and there is a thin (1 cm) yellowish (5GY 6/1) graded siltstone. Section 6 includes a small normal fault (62-63 cm).
Structures
An interesting feature of Section 4, 71-85 cm, is the presence of strong folding in an interval of syn-sedimentary convolution, within an inferred sandstone turbidite. An open fold is present, with a relatively tight hinge. This hinge shows a clearly developed axial planar cleavage that fans out towards the fold limbs. The cleavage fan is defined by an elongation of quartz and mica grains. The observed axial plane is oriented at 000/83 and the hinge line at 000/81. The fold limb is cut by Chodrites burrows, confirming that the deformation was syn-depositional. These observations show that, unusually, an axial planar cleavage may form in response to soft-sediment deformation within a sandstone turbidite.

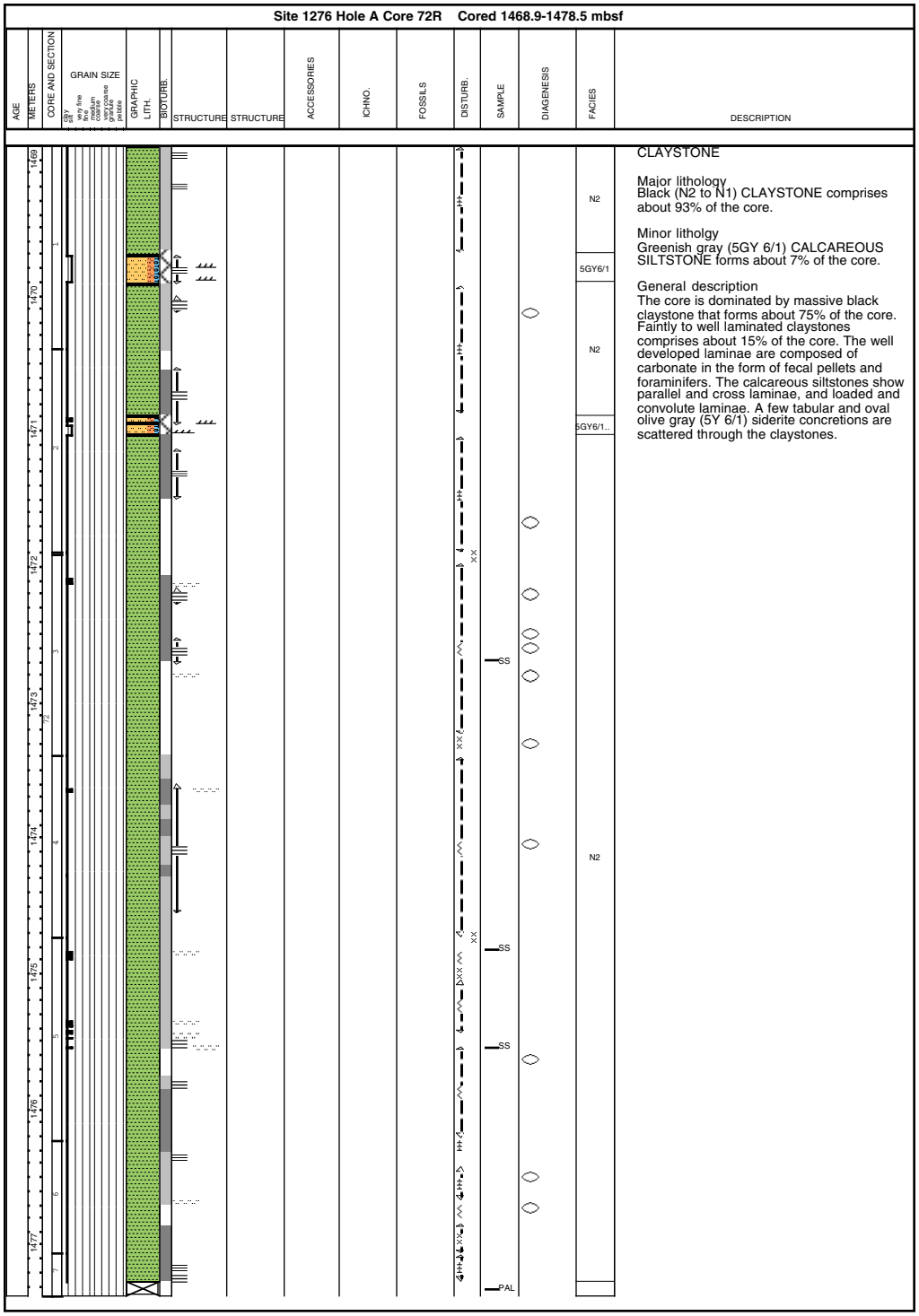
Core Photo


Site 1276 Hole A Core 70R Cored 1449.5-1459.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1450
1451
1452
1453
1454
1455
1456
1457
1458
SS
SS
PAL
N3
N3
N3
N4, N6
N3
N3
N3
N4, 10Y
N3
N3
N3
N3
N3
N2
CLAYSTONE, MUDSTONE, SANDSTONE, SILTSTONE
Major Lithology
The core is dominated by non-calcareous, to weakly calcareous massive CLAYSTONE, which shows vague burrowing in places.
Minor Lithologies
There are rare thin interbeds of MUDSTONE, SANDSTONE and SILTSTONE.
General Description
The core comprises approximately 90% of dark gray (N3) claystone with rare minor lithologies. Section 1 includes two graded sandstones, showing palanar lamination. Section 2 contains a thin, graded sandstone passing into mudstone (e.g., 15-18 cm) and several thin, parallel laminated mudstone intervals (e.g., 104-105 cm). Section 3 includes several layers of fine-grained carbonate formed by replacement of claystone. One interval from 107-134 cm, shows alternating thin layers of claystone and secondary carbonate. A similar pattern of almost >95% claystone persists through Sections 4-7, again interrupted by occasional fine-grained sandstone/siltstone intervals and occasional secondary carbonate layers. Section 6 includes two calcareous pseudoclasts (42 and 75 cm). These have a pelletal structure and may represent an original sedimentary structure of fecal pellets that were cemented by carbonate early in diagenesis, thus preserving their texture, whereas elsewhere pellets were dissolved or compacted so that they are no longer visible.

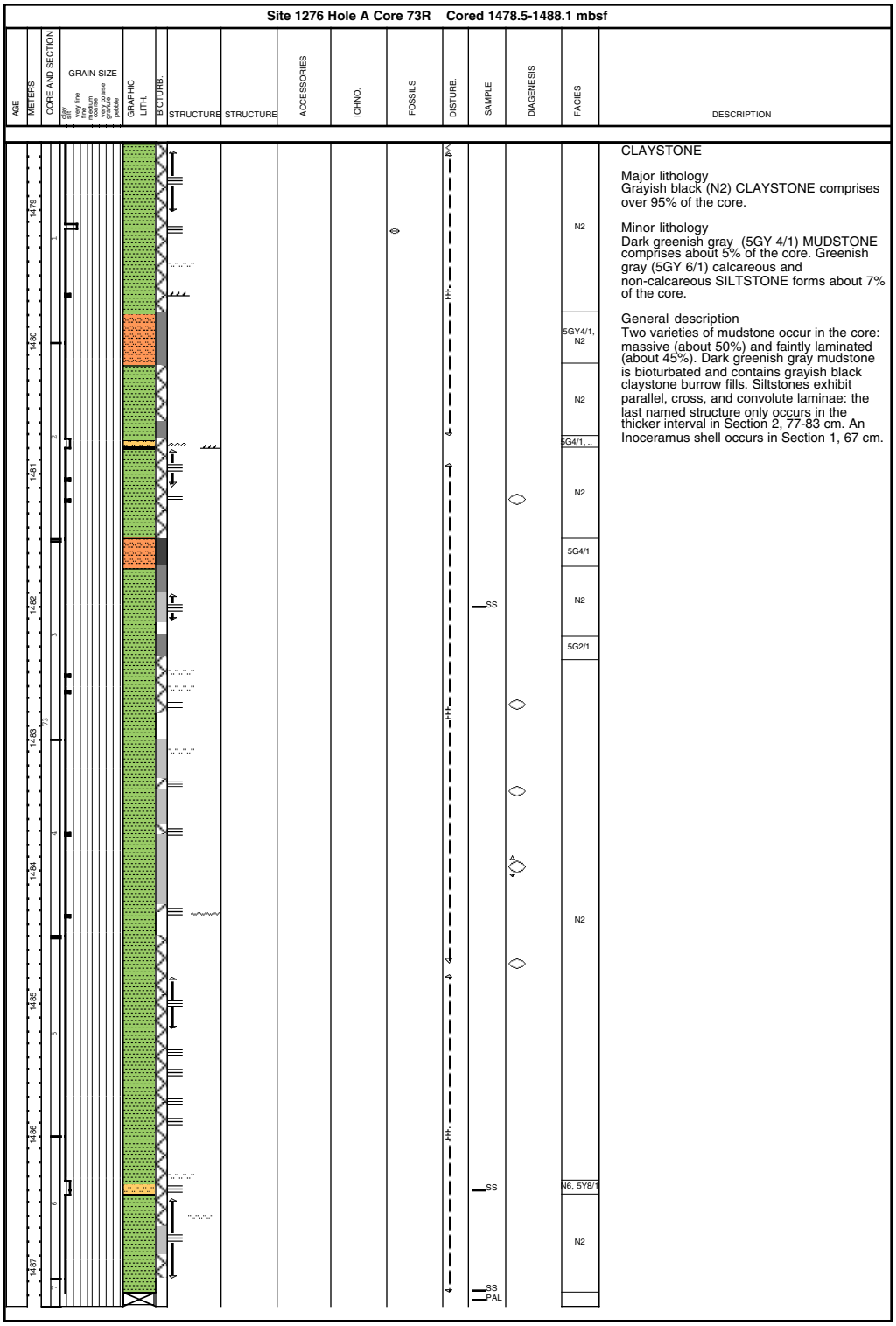
Core Photo


Site 1276 Hole A Core 71R Cored 1459.2-1468.9 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1460
1461
1462
1463
1464
1465
1466
1467
1468
SS
PAL
N2, 5Y2/1
N2
5Y4/1
N2
N2
5Y2/1
5Y2/1, N2
N2
CLAYSTONE
Major lithology
The core is dominantly faintly laminated, slightly burrowed to structureless, grayish black (N2) CLAYSTONE with thin carbonate concretions occurring in localized bands or sets. There are widely scattered silt/mud laminae containing mud clasts, with sharp bases and tops, from Section 4, 16 cm, to Section 5, 57 cm.
Minor lithology
There is a single bed of planar laminated SILTSTONE in Section 2, 62-68 cm.
General description
This is a monotonous interval of dark claystones. The minor concretionary bands do not react with HCl and are formed of siderite or dolomite. Overall, this core is:
Claystone - 98%
Siltstone - 2%
Structural features
There is a micro-scale fault with a maximum displacement of 5 mm in the siltstone of Section 2. The apparent dip of the fault relative to the face of the core is 27 degrees to the left.

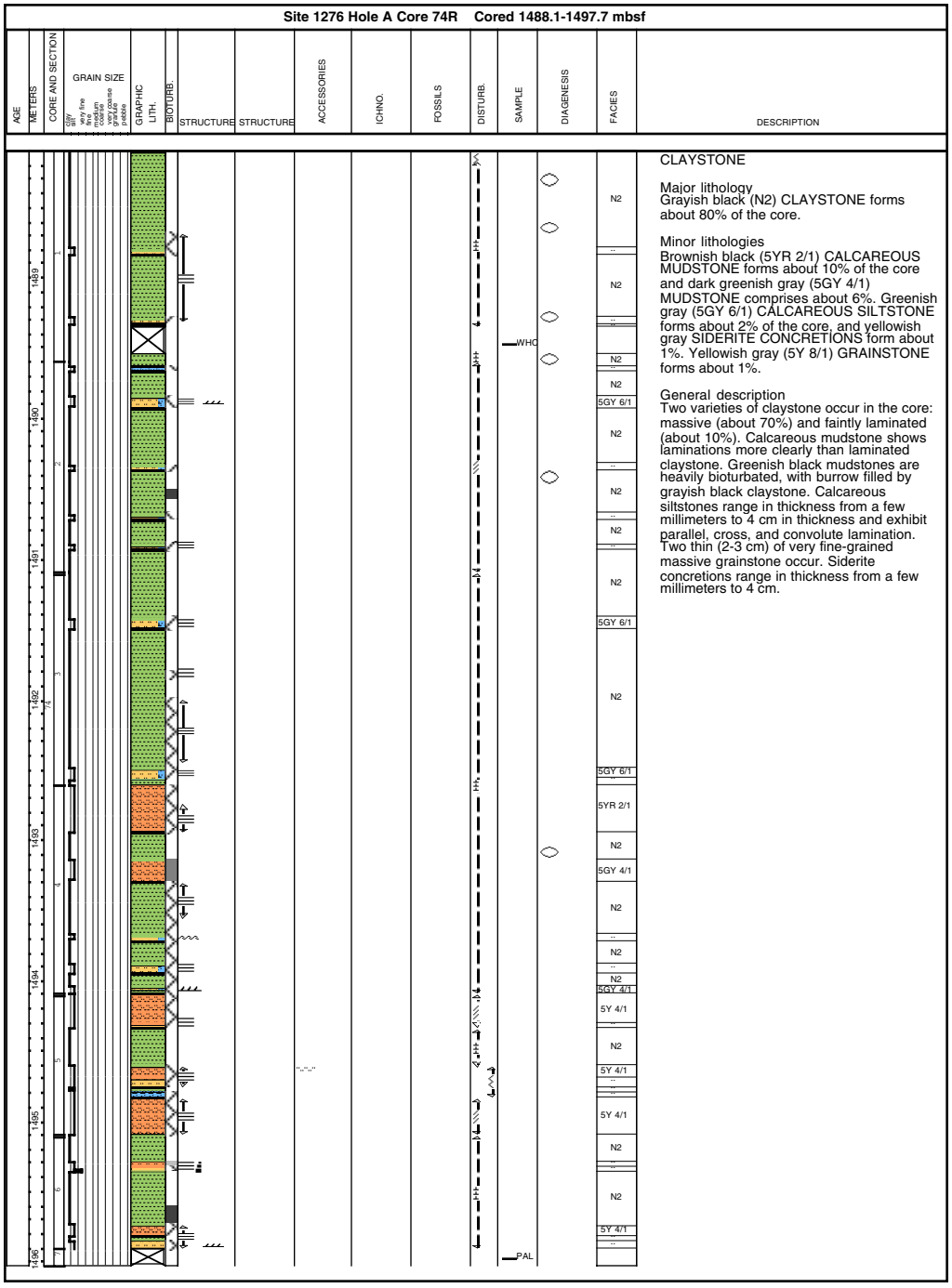
Core Photo


Site 1276 Hole A Core 72R Cored 1468.9-1478.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1469
1470
1471
1472
1473
1474
1475
1476
1477
SS
SS
SS
PAL
N2
5GY6/1
N2
5GY6/1
N2
CLAYSTONE
Major lithology
Black (N2 to N1) CLAYSTONE comprises about 93% of the core.
Minor litholgy
Greenish gray (5GY 6/1) CALCAREOUS SILTSTONE forms about 7% of the core.
General description
The core is dominated by massive black claystone that forms about 75% of the core. Faintly to well laminated claystones comprises about 15% of the core. The well developed laminae are composed of carbonate in the form of fecal pellets and foraminifers. The calcareous siltstones show parallel and cross laminae, and loaded and convolute laminae. A few tabular and oval olive gray (5Y 6/1) siderite concretions are scattered through the claystones.

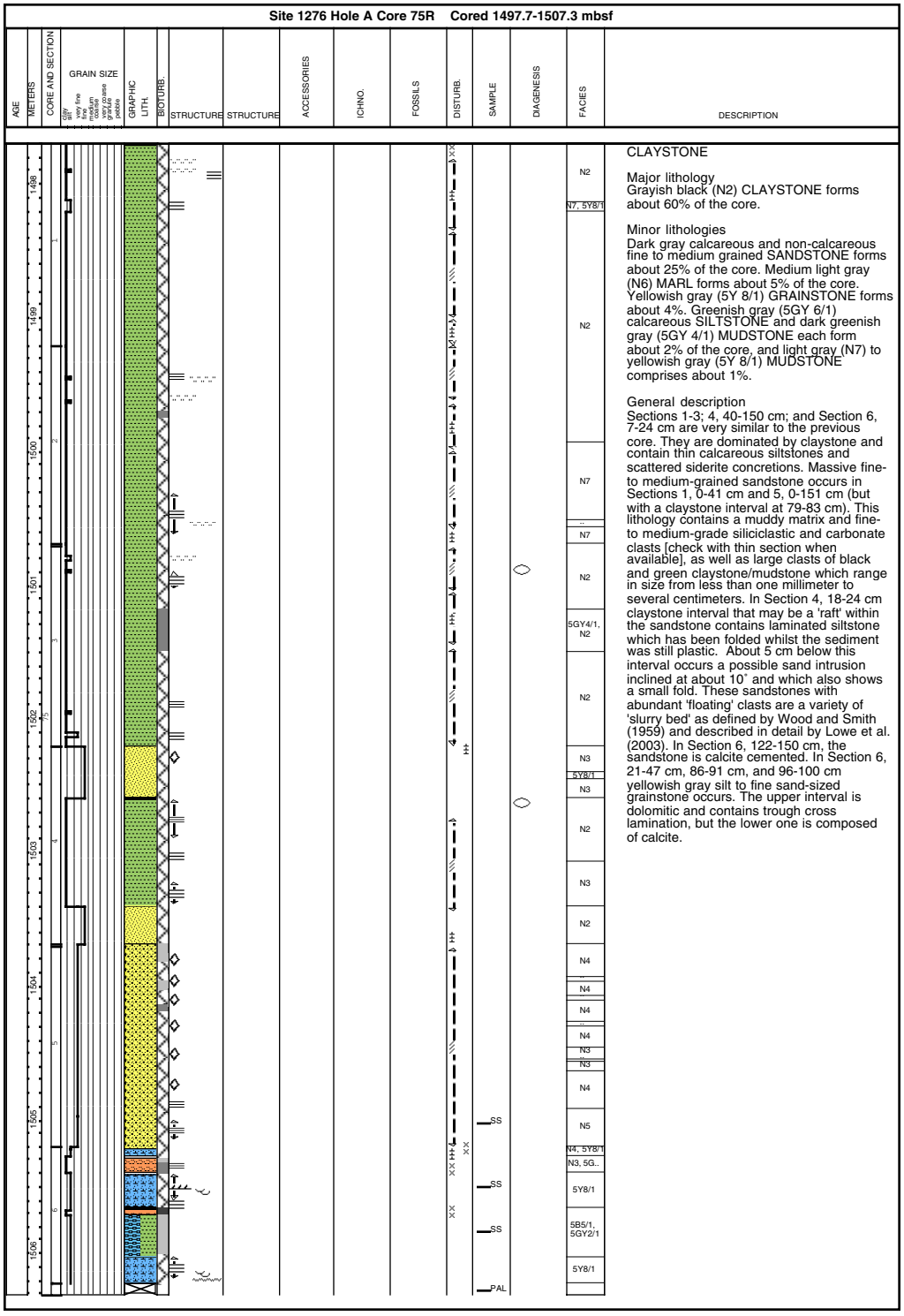
Core Photo


Site 1276 Hole A Core 73R Cored 1478.5-1488.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1479
1480
1481
1482
1483
1484
1485
1486
1487
SS
SS
PAL
N2
5GY4/1, N2
N2
5G4/1, ..
N2
5G4/1
N2
5G2/1
N2
N6, 5Y8/1
N2
CLAYSTONE
Major lithology
Grayish black (N2) CLAYSTONE comprises over 95% of the core.
Minor lithology
Dark greenish gray (5GY 4/1) MUDSTONE comprises about 5% of the core. Greenish gray (5GY 6/1) calcareous and non-calcareous SILTSTONE forms about 7% of the core.
General description
Two varieties of mudstone occur in the core: massive (about 50%) and faintly laminated (about 45%). Dark greenish gray mudstone is bioturbated and contains grayish black claystone burrow fills. Siltstones exhibit parallel, cross, and convolute laminae: the last named structure only occurs in the thicker interval in Section 2, 77-83 cm. An Inoceramus shell occurs in Section 1, 67 cm.

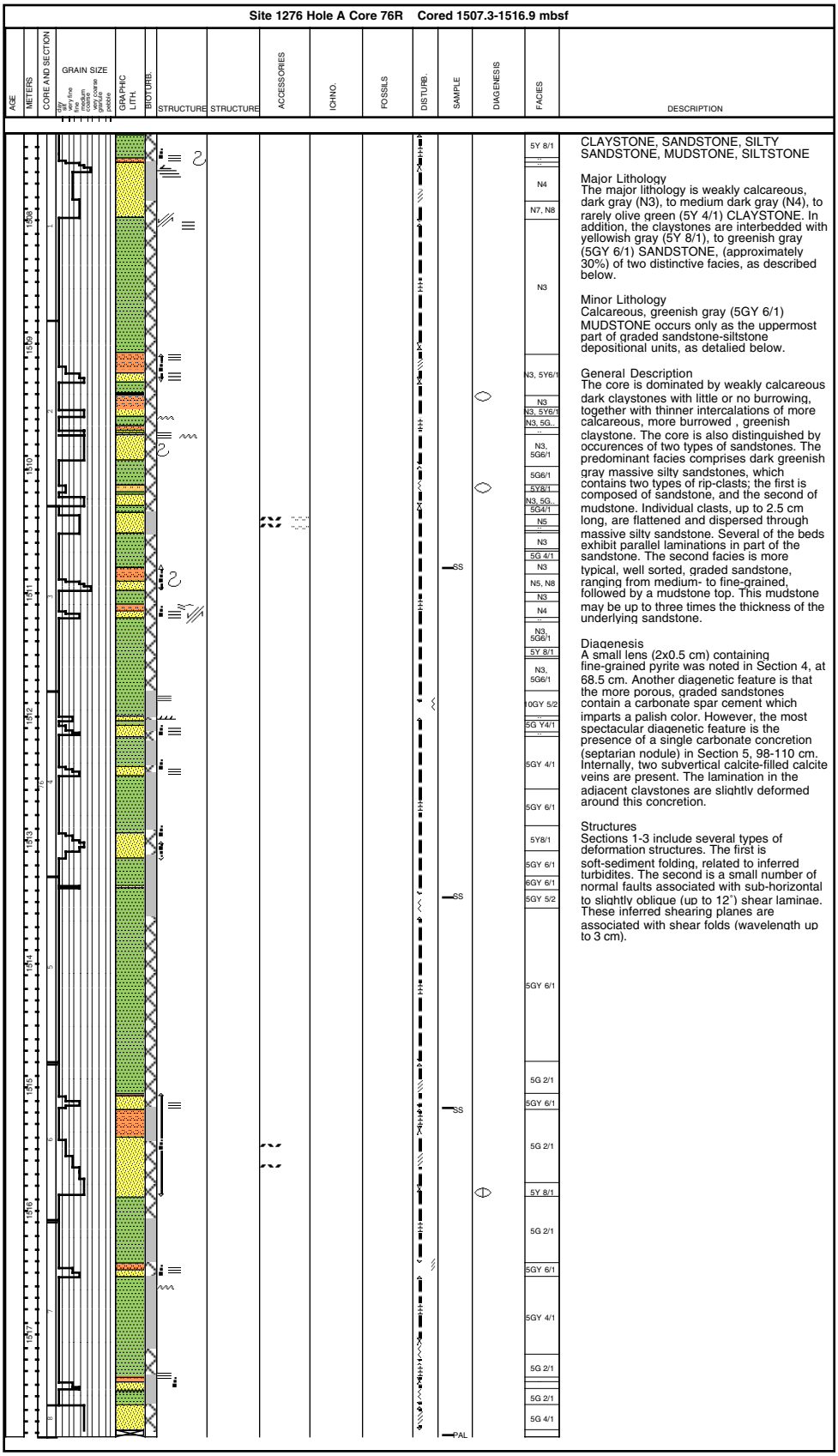
Core Photo


Site 1276 Hole A Core 74R Cored 1488.1-1497.7 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
WHC
PAL
CLAYSTONE
Major lithology
Grayish black (N2) CLAYSTONE forms about 80% of the core.
Minor lithologies
Brownish black (5YR 2/1) CALCAREOUS MUDSTONE forms about 10% of the core and dark greenish gray (5GY 4/1) MUDSTONE comprises about 6%. Greenish gray (5GY 6/1) CALCAREOUS SILTSTONE forms about 2% of the core, and yellowish gray SIDERITE CONCRETIONS form about 1%. Yellowish gray (5Y 8/1) GRAINSTONE forms about 1%.
General description
Two varieties of claystone occur in the core: massive (about 70%) and faintly laminated (about 10%). Calcareous mudstone shows laminations more clearly than laminated claystone. Greenish black mudstones are heavily bioturbated, with burrow filled by grayish black claystone. Calcareous siltstones range in thickness from a few millimeters to 4 cm in thickness and exhibit parallel, cross, and convolute lamination. Two thin (2-3 cm) of very fine-grained massive grainstone occur. Siderite concretions range in thickness from a few millimeters to 4 cm.

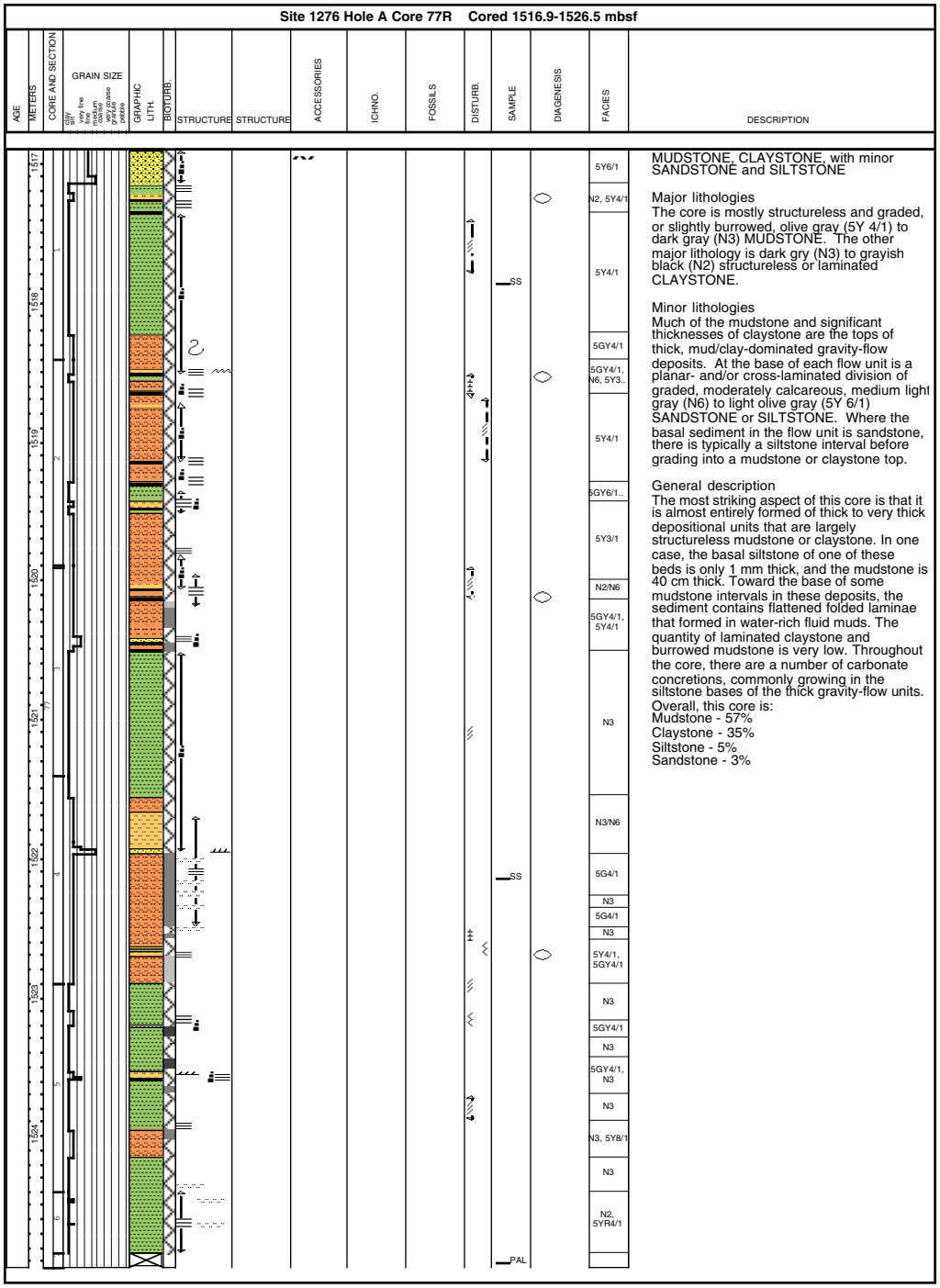
Core Photo


Site 1276 Hole A Core 75R Cored 1497.7-1507.3 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1498
1499
1500
1501
1502
1503
1504
1505
1506
SS
SS
SS
PAL
N2
N7, 5Y8/1
N2
N7
N7
N2
5GY4/1, N2
N2
N3
5Y8/1
N3
N2
N3
N2
N4
N4
N4
N4
N3
N3
N4
N5
N4, 5Y8/1
N3, 5G..
5Y8/1
5B5/1, 5GY2/1
5Y8/1
CLAYSTONE
Major lithology
Grayish black (N2) CLAYSTONE forms about 60% of the core.
Minor lithologies
Dark gray calcareous and non-calcareous fine to medium grained SANDSTONE forms about 25% of the core. Medium light gray (N6) MARL forms about 5% of the core. Yellowish gray (5Y 8/1) GRAINSTONE forms about 4%. Greenish gray (5GY 6/1) calcareous SILTSTONE and dark greenish gray (5GY 4/1) MUDSTONE each form about 2% of the core, and light gray (N7) to yellowish gray (5Y 8/1) MUDSTONE comprises about 1%.
General description
Sections 1-3; 4, 40-150 cm; and Section 6, 7-24 cm are very similar to the previous core. They are dominated by claystone and contain thin calcareous siltstones and scattered siderite concretions. Massive fine- to medium-grained sandstone occurs in Sections 1, 0-41 cm and 5, 0-151 cm (but with a claystone interval at 79-83 cm). This lithology contains a muddy matrix and fine- to medium-grade siliciclastic and carbonate clasts [check with thin section when available], as well as large clasts of black and green claystone/mudstone which range in size from less than one millimeter to several centimeters. In Section 4, 18-24 cm claystone interval that may be a 'raft' within the sandstone contains laminated siltstone which has been folded whilst the sediment was still plastic. About 5 cm below this interval occurs a possible sand intrusion inclined at about 10° and which also shows a small fold. These sandstones with abundant 'floating' clasts are a variety of 'slurry bed' as defined by Wood and Smith (1959) and described in detail by Lowe et al. (2003). In Section 6, 122-150 cm, the sandstone is calcite cemented. In Section 6, 21-47 cm, 86-91 cm, and 96-100 cm yellowish gray silt to fine sand-sized grainstone occurs. The upper interval is dolomitic and contains trough cross lamination, but the lower one is composed of calcite.

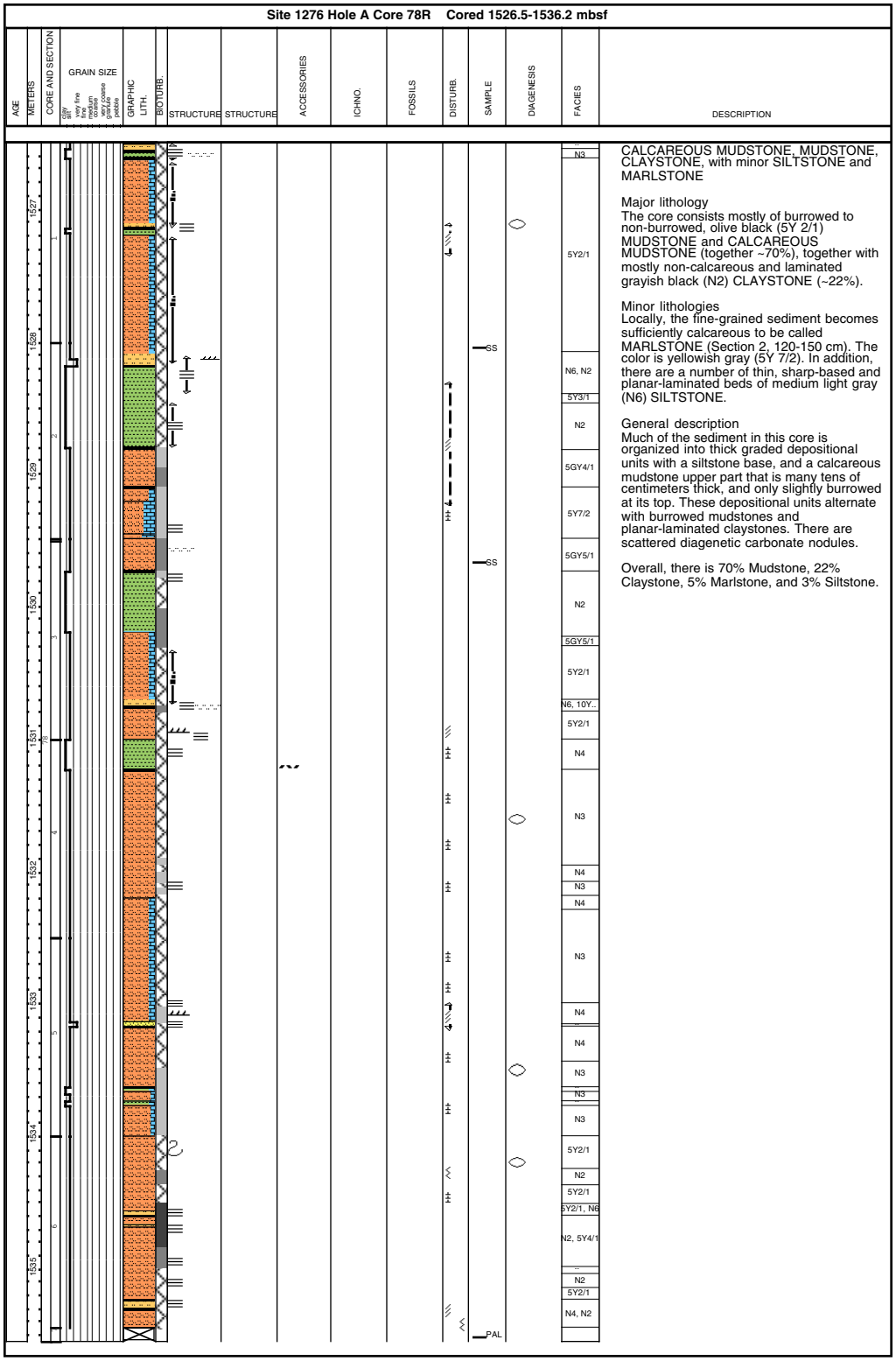
Core Photo


Site 1276 Hole A Core 76R Cored 1507.3-1516.9 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
SS
PAL
CLAYSTONE, SANDSTONE, SILTY SANDSTONE, MUDSTONE, SILTSTONE
Major Lithology
The major lithology is weakly calcareous, dark gray (N3), to medium dark gray (N4), to rarely olive green (5Y 4/1) CLAYSTONE. In addition, the claystones are interbedded with yellowish gray (5Y 8/1), to greenish gray (5GY 6/1) SANDSTONE, (approximately 30%) of two distinctive facies, as described below.
Minor Lithology
Calcareous, greenish gray (5GY 6/1) MUDSTONE occurs only as the uppermost part of graded sandstone-siltstone depositional units, as detailed below.
General Description
The core is dominated by weakly calcareous dark claystones with little or no burrowing, together with thinner intercalations of more calcareous, more burrowed , greenish claystone. The core is also distinguished by occurences of two types of sandstones. The predominant facies comprises dark greenish gray massive silty sandstones, which contains two types of rip-clasts; the first is composed of sandstone, and the second of mudstone. Individual clasts, up to 2.5 cm long, are flattened and dispersed through massive silty sandstone. Several of the beds exhibit parallel laminations in part of the sandstone. The second facies is more typical, well sorted, graded sandstone, ranging from medium- to fine-grained, followed by a mudstone top. This mudstone may be up to three times the thickness of the underlying sandstone.
Diagenesis
A small lens (2x0.5 cm) containing fine-grained pyrite was noted in Section 4, at 68.5 cm. Another diagenetic feature is that the more porous, graded sandstones contain a carbonate spar cement which imparts a palish color. However, the most spectacular diagenetic feature is the presence of a single carbonate concretion (septarian nodule) in Section 5, 98-110 cm. Internally, two subvertical calcite-filled calcite veins are present. The lamination in the adjacent claystones are slightly deformed around this concretion.
Structures
Sections 1-3 include several types of deformation structures. The first is soft-sediment folding, related to inferred turbidites. The second is a small number of normal faults associated with sub-horizontal to slightly oblique (up to 12˚) shear laminae. These inferred shearing planes are associated with shear folds (wavelength up to 3 cm).

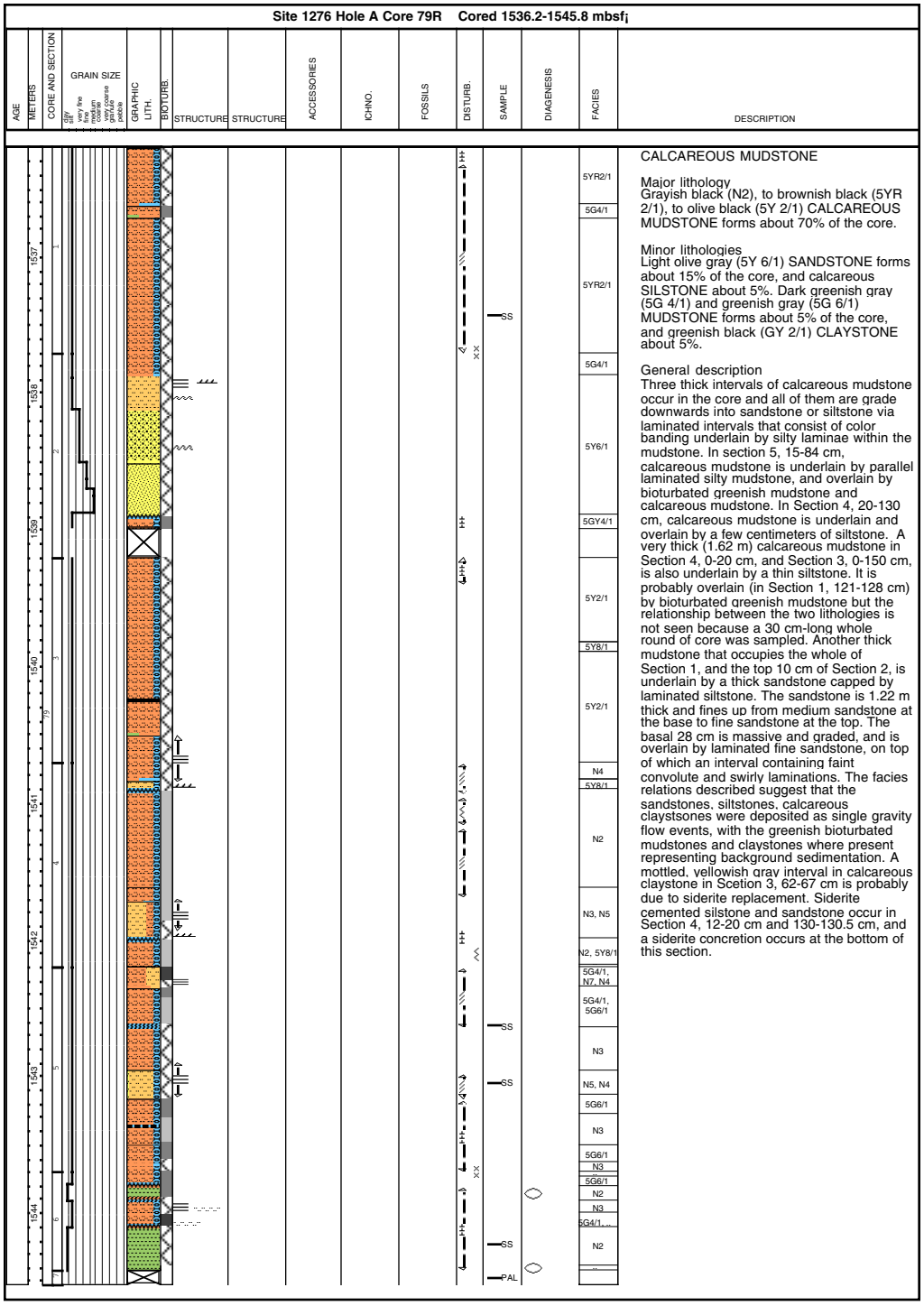
Core Photo


Site 1276 Hole A Core 77R Cored 1516.9-1526.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1517
1518
1519
1520
1521
1522
1523
1524
SS
SS
PAL
5Y6/1
N2, 5Y4/1
5Y4/1
5GY4/1
5GY4/1, N6, 5Y3..
5Y4/1
5GY6/1..
5Y3/1
N2/N6
5GY4/1, 5Y4/1
N3
N3/N6
5G4/1
N3
5G4/1
N3
5Y4/1, 5GY4/1
N3
5GY4/1
N3
5GY4/1, N3
N3
N3, 5Y8/1
N3
N2, 5YR4/1
MUDSTONE, CLAYSTONE, with minor SANDSTONE and SILTSTONE
Major lithologies
The core is mostly structureless and graded, or slightly burrowed, olive gray (5Y 4/1) to dark gray (N3) MUDSTONE. The other major lithology is dark gry (N3) to grayish black (N2) structureless or laminated CLAYSTONE.
Minor lithologies
Much of the mudstone and significant thicknesses of claystone are the tops of thick, mud/clay-dominated gravity-flow deposits. At the base of each flow unit is a planar- and/or cross-laminated division of graded, moderately calcareous, medium light gray (N6) to light olive gray (5Y 6/1) SANDSTONE or SILTSTONE. Where the basal sediment in the flow unit is sandstone, there is typically a siltstone interval before grading into a mudstone or claystone top.
General description
The most striking aspect of this core is that it is almost entirely formed of thick to very thick depositional units that are largely structureless mudstone or claystone. In one case, the basal siltstone of one of these beds is only 1 mm thick, and the mudstone is 40 cm thick. Toward the base of some mudstone intervals in these deposits, the sediment contains flattened folded laminae that formed in water-rich fluid muds. The quantity of laminated claystone and burrowed mudstone is very low. Throughout the core, there are a number of carbonate concretions, commonly growing in the siltstone bases of the thick gravity-flow units.
Overall, this core is:
Mudstone - 57%
Claystone - 35%
Siltstone - 5%
Sandstone - 3%

Core Photo


Site 1276 Hole A Core 78R Cored 1526.5-1536.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1527
1528
1529
1530
1531
1532
1533
1534
1535
SS
SS
PAL
N3
5Y2/1
N6, N2
5Y3/1
N2
5GY4/1
5Y7/2
5GY5/1
N2
5GY5/1
5Y2/1
N6, 10Y..
5Y2/1
N4
N3
N4
N3
N4
N3
N4
N4
N3
N3
N3
5Y2/1
N2
5Y2/1
5Y2/1, N8
N2, 5Y4/1
N2
5Y2/1
N4, N2
CALCAREOUS MUDSTONE, MUDSTONE, CLAYSTONE, with minor SILTSTONE and MARLSTONE
Major lithology
The core consists mostly of burrowed to non-burrowed, olive black (5Y 2/1) MUDSTONE and CALCAREOUS MUDSTONE (together ~70%), together with mostly non-calcareous and laminated grayish black (N2) CLAYSTONE (~22%).
Minor lithologies
Locally, the fine-grained sediment becomes sufficiently calcareous to be called MARLSTONE (Section 2, 120-150 cm). The color is yellowish gray (5Y 7/2). In addition, there are a number of thin, sharp-based and planar-laminated beds of medium light gray (N6) SILTSTONE.
General description
Much of the sediment in this core is organized into thick graded depositional units with a siltstone base, and a calcareous mudstone upper part that is many tens of centimeters thick, and only slightly burrowed at its top. These depositional units alternate with burrowed mudstones and planar-laminated claystones. There are scattered diagenetic carbonate nodules.
Overall, there is 70% Mudstone, 22% Claystone, 5% Marlstone, and 3% Siltstone.

Core Photo



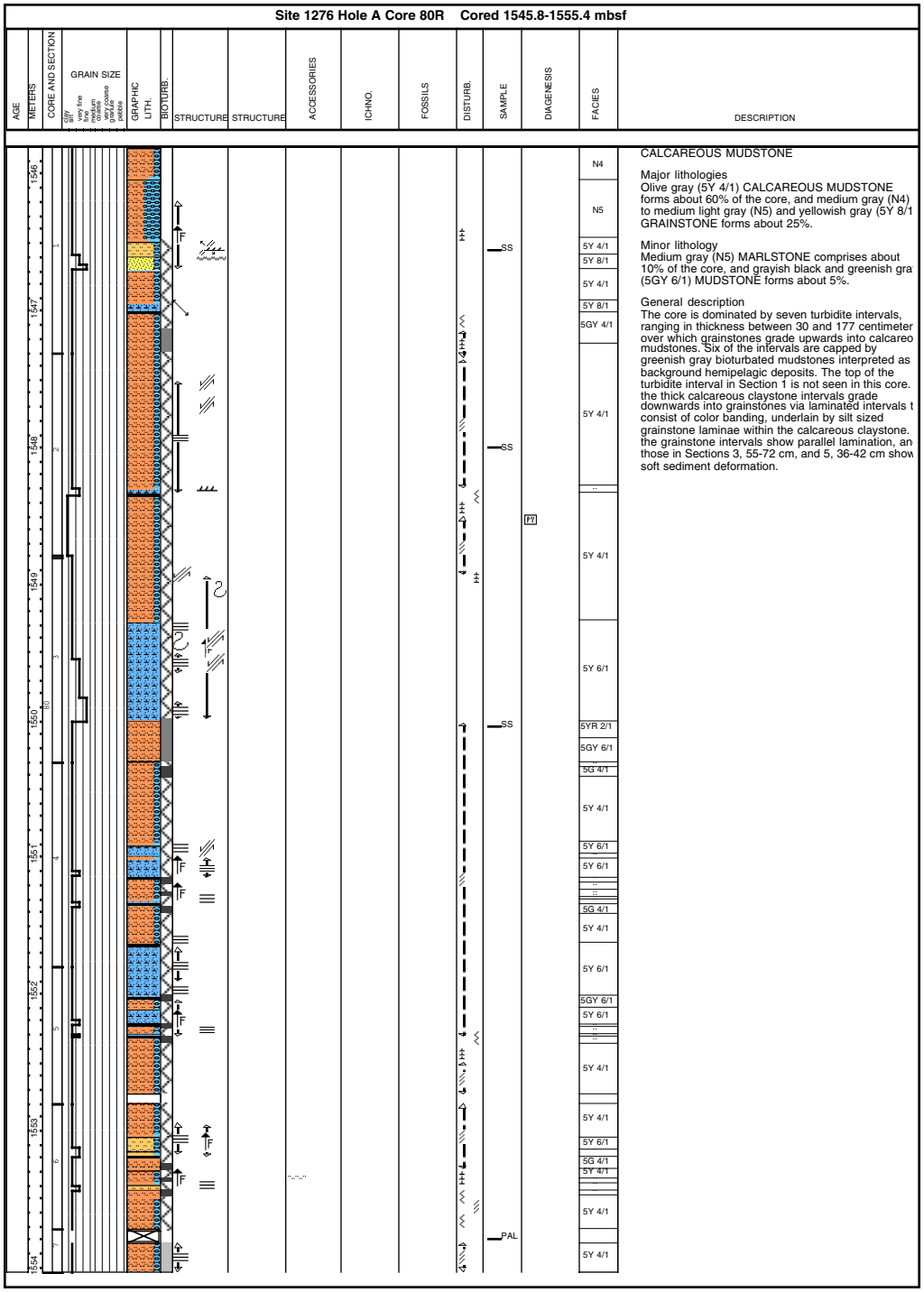
CALCAREOUS MUDSTONE

Major lithology
Grayish black (N2), to brownish black (5YR 2/1), to olive black (5Y 2/1) CALCAREOUS MUDSTONE forms about 70% of the core.

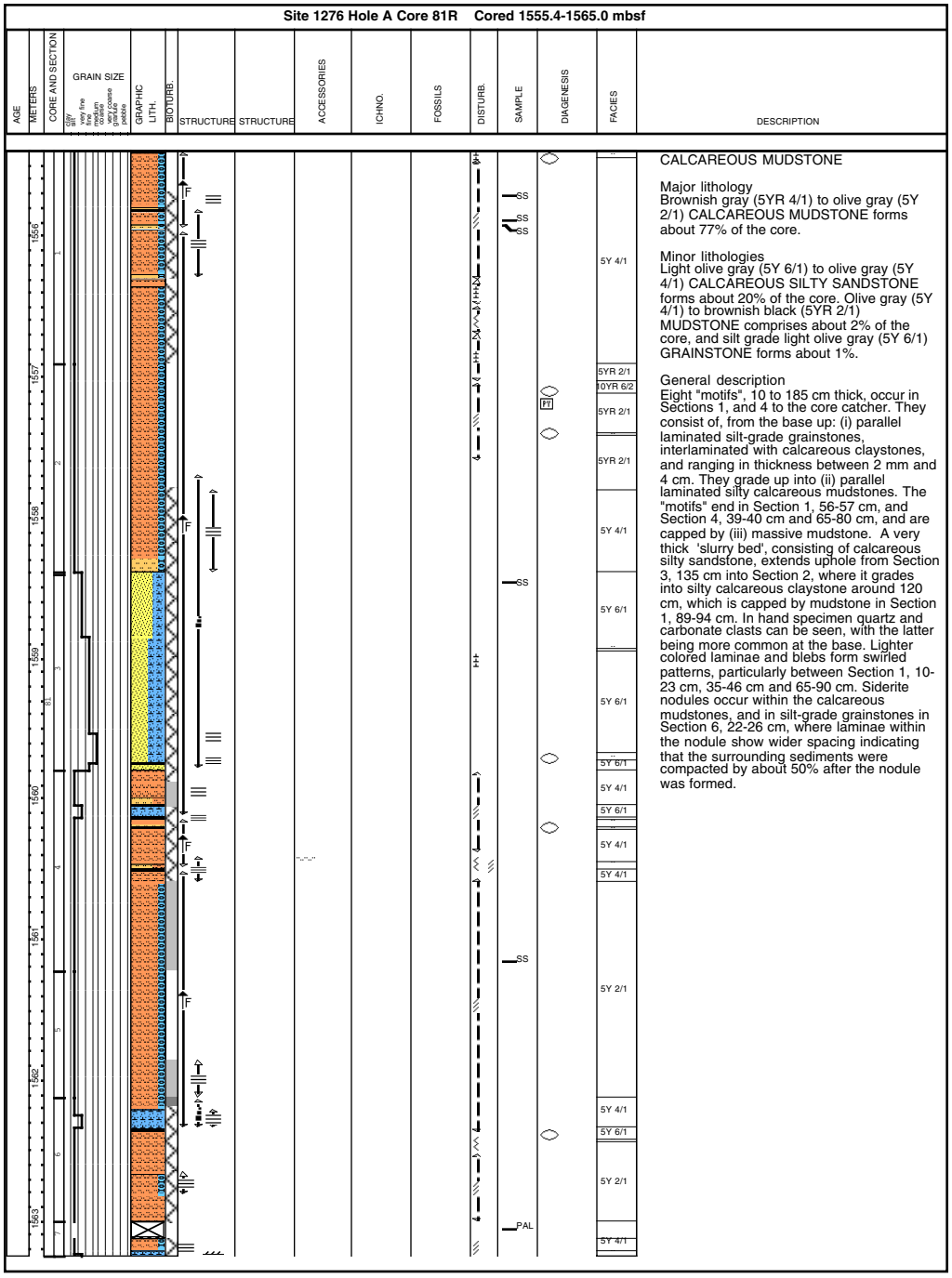
Minor lithologies
Light olive gray (5Y 6/1) SANDSTONE forms about 15% of the core, and calcareous SILSTONE about 5%. Dark greenish gray (5G 4/1) and greenish gray (5G 6/1) MUDSTONE forms about 5% of the core, and greenish black (GY 2/1) CLAYSTONE about 5%.

General description
Three thick intervals of calcareous mudstone occur in the core and all of them are grade downwards into sandstone or siltstone via laminated intervals that consist of color banding underlain by silty laminae within the mudstone. In section 5, 15-84 cm, calcareous mudstone is underlain by parallel laminated silty mudstone, and overlain by bioturbated greenish mudstone and calcareous mudstone. In Section 4, 20-130 cm, calcareous mudstone is underlain and overlain by a few centimeters of siltstone. A very thick (1.62 m) calcareous mudstone in Section 4, 0-20 cm, and Section 3, 0-150 cm, is also underlain by a thin siltstone. It is probably overlain (in Section 1, 121-128 cm) by bioturbated greenish mudstone but the relationship between the two lithologies is not seen because a 30 cm-long whole round of core was sampled. Another thick mudstone that occupies the whole of Section 1, and the top 10 cm of Section 2, is underlain by a thick sandstone capped by laminated siltstone. The sandstone is 1.22 m thick and fines up from medium sandstone at the base to fine sandstone at the top. The basal 28 cm is massive and graded, and is overlain by laminated fine sandstone, on top of which an interval containing faint convolute and swirly laminations. The facies relations described suggest that the sandstones, siltstones, calcareous claystsones were deposited as single gravity flow events, with the greenish bioturbated mudstones and claystones where present representing background sedimentation. A mottled, yellowish gray interval in calcareous claystone in Scetion 3, 62-67 cm is probably due to siderite replacement. Siderite cemented silstone and sandstone occur in Section 4, 12-20 cm and 130-130.5 cm, and a siderite concretion occurs at the bottom of this section.

Core Photo


Site 1276 Hole A Core 80R Cored 1545.8-1555.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1546
1547
1548
1549
1550
1551
1552
1553
1554
SS
PAL
FT
N4
N5
5Y 4/1
5Y 8/1
5GY 4/1
5Y 6/1
5YR 2/1
5GY 6/1
5G 4/1
CALCAREOUS MUDSTONE
Major lithologies
Olive gray (5Y 4/1) CALCAREOUS MUDSTONE forms about 60% of the core, and medium gray (N4) to medium light gray (N5) and yellowish gray (5Y 8/1 GRAINSTONE forms about 25%.
Minor lithology
Medium gray (N5) MARLSTONE comprises about 10% of the core, and grayish black and greenish gra (5GY 6/1) MUDSTONE forms about 5%.
General description
The core is dominated by seven turbidite intervals, ranging in thickness between 30 and 177 centimeter over which grainstones grade upwards into calcareo mudstones. Six of the intervals are capped by greenish gray bioturbated mudstones interpreted as background hemipelagic deposits. The top of the turbidite interval in Section 1 is not seen in this core. the thick calcareous claystone intervals grade downwards into grainstones via laminated intervals t consist of color banding, underlain by silt sized grainstone laminae within the calcareous claystone. the grainstone intervals show parallel lamination, an those in Sections 3, 55-72 cm, and 5, 36-42 cm show soft sediment deformation.

Core Photo



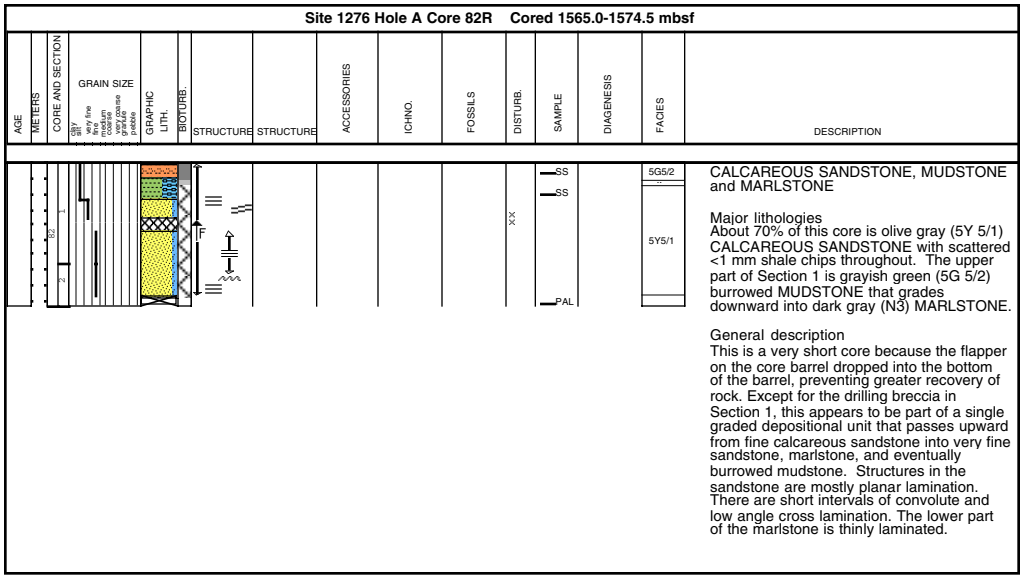
CALCAREOUS MUDSTONE

Major lithology
Brownish gray (5YR 4/1) to olive gray (5Y 2/1) CALCAREOUS MUDSTONE forms about 77% of the core.

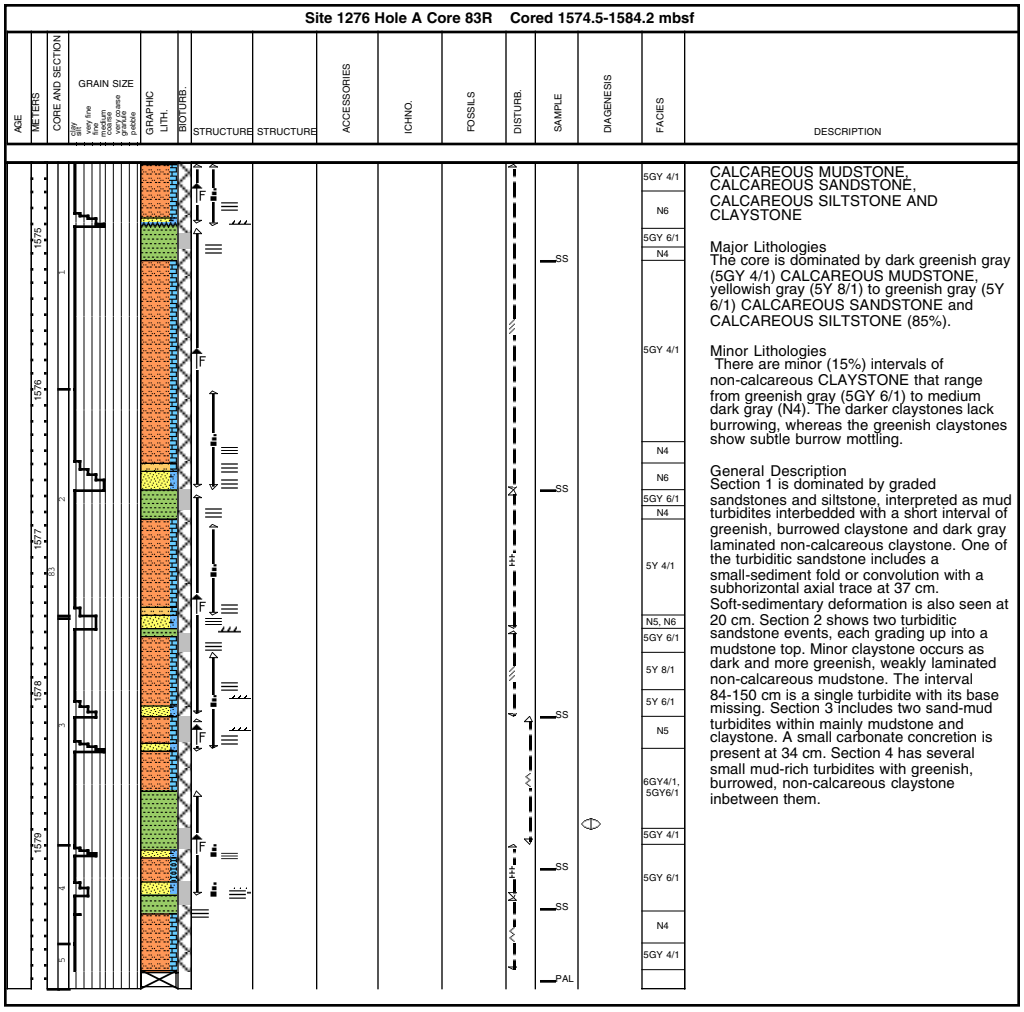
Minor lithologies
Light olive gray (5Y 6/1) to olive gray (5Y 4/1) CALCAREOUS SILTY SANDSTONE forms about 20% of the core. Olive gray (5Y 4/1) to brownish black (5YR 2/1) MUDSTONE comprises about 2% of the core, and silt grade light olive gray (5Y 6/1) GRAINSTONE forms about 1%.

General description
Eight "motifs", 10 to 185 cm thick, occur in Sections 1, and 4 to the core catcher. They consist of, from the base up: (i) parallel laminated silt-grade grainstones, interlaminated with calcareous claystones, and ranging in thickness between 2 mm and 4 cm. They grade up into (ii) parallel laminated silty calcareous mudstones. The "motifs" end in Section 1, 56-57 cm, and Section 4, 39-40 cm and 65-80 cm, and are capped by (iii) massive mudstone. A very thick 'slurry bed', consisting of calcareous silty sandstone, extends uphole from Section 3, 135 cm into Section 2, where it grades into silty calcareous claystone around 120 cm, which is capped by mudstone in Section 1, 89-94 cm. In hand specimen quartz and carbonate clasts can be seen, with the latter being more common at the base. Lighter colored laminae and blebs form swirled patterns, particularly between Section 1, 10-23 cm, 35-46 cm and 65-90 cm. Siderite nodules occur within the calcareous mudstones, and in silt-grade grainstones in Section 6, 22-26 cm, where laminae within the nodule show wider spacing indicating that the surrounding sediments were compacted by about 50% after the nodule was formed.

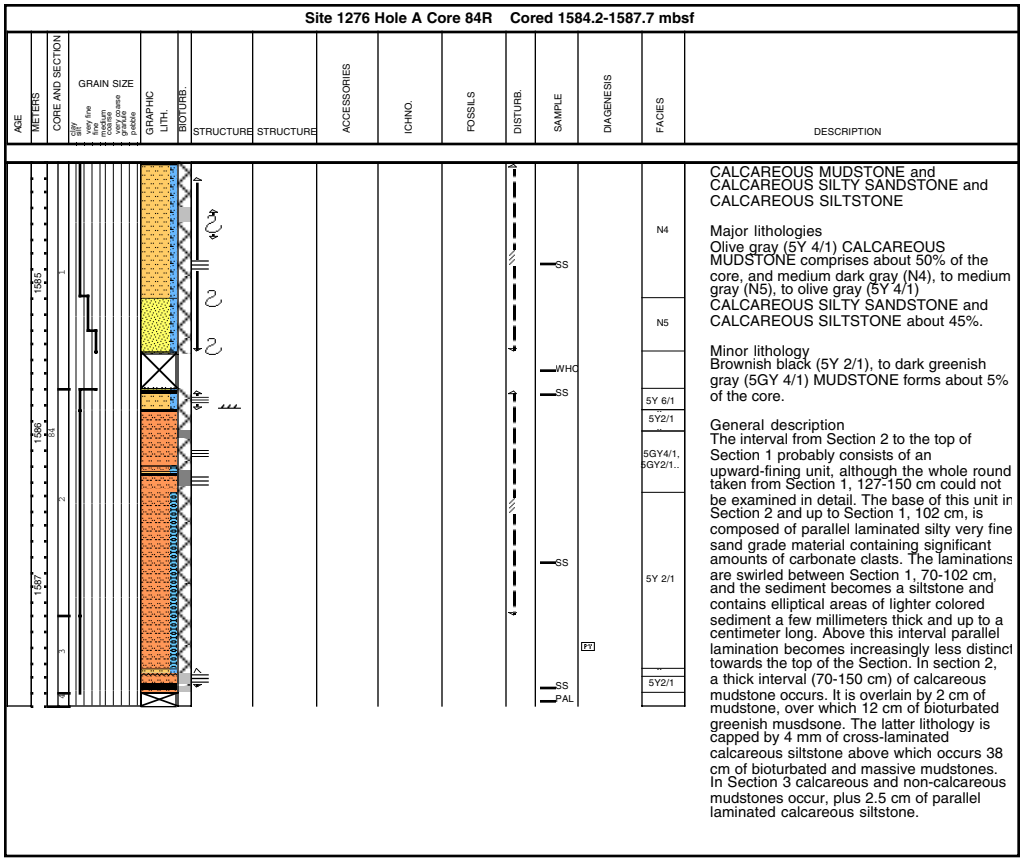
Core Photo


Site 1276 Hole A Core 82R Cored 1565.0-1574.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
82
1
2
F
SS
SS
PAL
5G5/2
5Y5/1
CALCAREOUS SANDSTONE, MUDSTONE and MARLSTONE
Major lithologies
About 70% of this core is olive gray (5Y 5/1) CALCAREOUS SANDSTONE with scattered <1 mm shale chips throughout. The upper part of Section 1 is grayish green (5G 5/2) burrowed MUDSTONE that grades downward into dark gray (N3) MARLSTONE.
General description
This is a very short core because the flapper on the core barrel dropped into the bottom of the barrel, preventing greater recovery of rock. Except for the drilling breccia in Section 1, this appears to be part of a single graded depositional unit that passes upward from fine calcareous sandstone into very fine sandstone, marlstone, and eventually burrowed mudstone. Structures in the sandstone are mostly planar lamination. There are short intervals of convolute and low angle cross lamination. The lower part of the marlstone is thinly laminated.

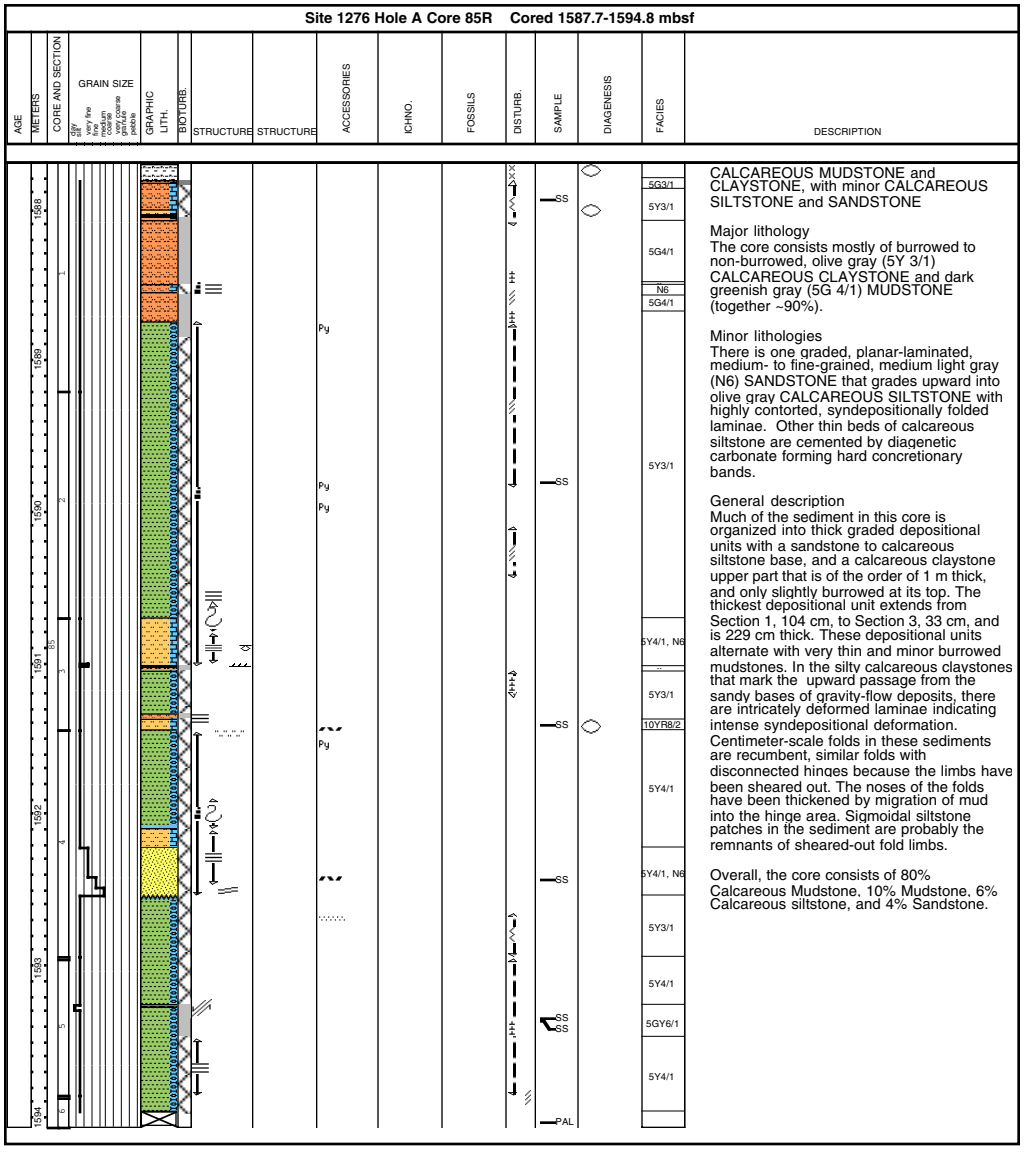
Core Photo


Site 1276 Hole A Core 83R Cored 1574.5-1584.2 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1575
1576
1577
1578
1579
83
SS
SS
SS
SS
PAL
5GY 4/1
N6
5GY 6/1
N4
5GY 4/1
N4
N6
5GY 6/1
N4
5Y 4/1
N5, N6
5GY 6/1
5Y 8/1
5Y 6/1
N5
6GY4/1, 5GY6/1
5GY 4/1
5GY 6/1
N4
5GY 4/1
CALCAREOUS MUDSTONE, CALCAREOUS SANDSTONE, CALCAREOUS SILTSTONE AND CLAYSTONE
Major Lithologies
The core is dominated by dark greenish gray (5GY 4/1) CALCAREOUS MUDSTONE, yellowish gray (5Y 8/1) to greenish gray (5Y 6/1) CALCAREOUS SANDSTONE and CALCAREOUS SILTSTONE (85%).
Minor Lithologies
There are minor (15%) intervals of non-calcareous CLAYSTONE that range from greenish gray (5GY 6/1) to medium dark gray (N4). The darker claystones lack burrowing, whereas the greenish claystones show subtle burrow mottling.
General Description
Section 1 is dominated by graded sandstones and siltstone, interpreted as mud turbidites interbedded with a short interval of greenish, burrowed claystone and dark gray laminated non-calcareous claystone. One of the turbiditic sandstone includes a small-sediment fold or convolution with a subhorizontal axial trace at 37 cm. Soft-sedimentary deformation is also seen at 20 cm. Section 2 shows two turbiditic sandstone events, each grading up into a mudstone top. Minor claystone occurs as dark and more greenish, weakly laminated non-calcareous mudstone. The interval 84-150 cm is a single turbidite with its base missing. Section 3 includes two sand-mud turbidites within mainly mudstone and claystone. A small carbonate concretion is present at 34 cm. Section 4 has several small mud-rich turbidites with greenish, burrowed, non-calcareous claystone inbetween them.

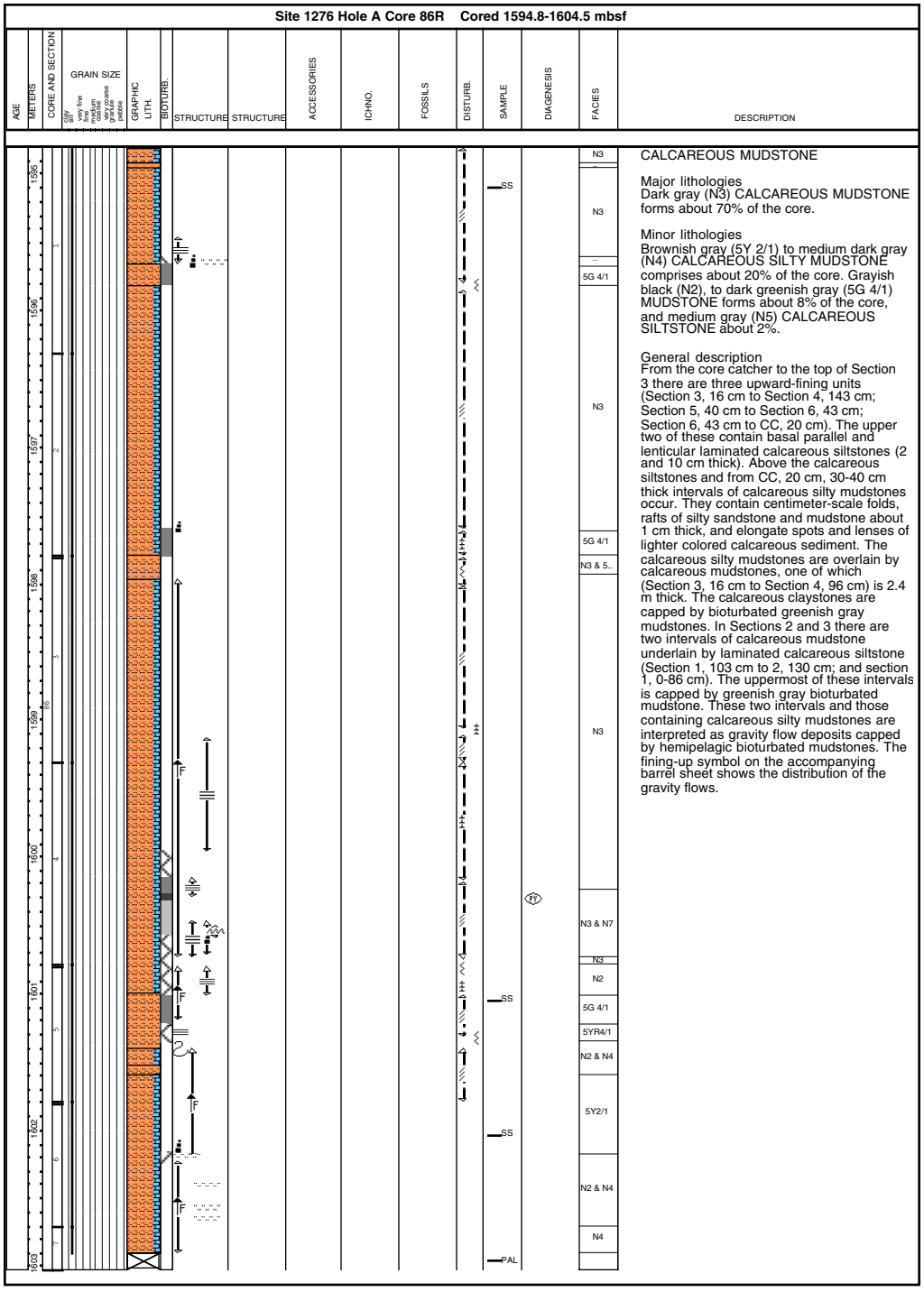
Core Photo


Site 1276 Hole A Core 84R Cored 1584.2-1587.7 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1585
1586
1587
SS
WHC
SS
SS
PAL
PY
N4
N5
5Y 6/1
5Y2/1
5GY4/1, 5GY2/1..
5Y 2/1
5Y2/1
CALCAREOUS MUDSTONE and CALCAREOUS SILTY SANDSTONE and CALCAREOUS SILTSTONE
Major lithologies
Olive gray (5Y 4/1) CALCAREOUS MUDSTONE comprises about 50% of the core, and medium dark gray (N4), to medium gray (N5), to olive gray (5Y 4/1) CALCAREOUS SILTY SANDSTONE and CALCAREOUS SILTSTONE about 45%.
Minor lithology
Brownish black (5Y 2/1), to dark greenish gray (5GY 4/1) MUDSTONE forms about 5% of the core.
General description
The interval from Section 2 to the top of Section 1 probably consists of an upward-fining unit, although the whole round taken from Section 1, 127-150 cm could not be examined in detail. The base of this unit in Section 2 and up to Section 1, 102 cm, is composed of parallel laminated silty very fine sand grade material containing significant amounts of carbonate clasts. The laminations are swirled between Section 1, 70-102 cm, and the sediment becomes a siltstone and contains elliptical areas of lighter colored sediment a few millimeters thick and up to a centimeter long. Above this interval parallel lamination becomes increasingly less distinct towards the top of the Section. In section 2, a thick interval (70-150 cm) of calcareous mudstone occurs. It is overlain by 2 cm of mudstone, over which 12 cm of bioturbated greenish musdsone. The latter lithology is capped by 4 mm of cross-laminated calcareous siltstone above which occurs 38 cm of bioturbated and massive mudstones. In Section 3 calcareous and non-calcareous mudstones occur, plus 2.5 cm of parallel laminated calcareous siltstone.

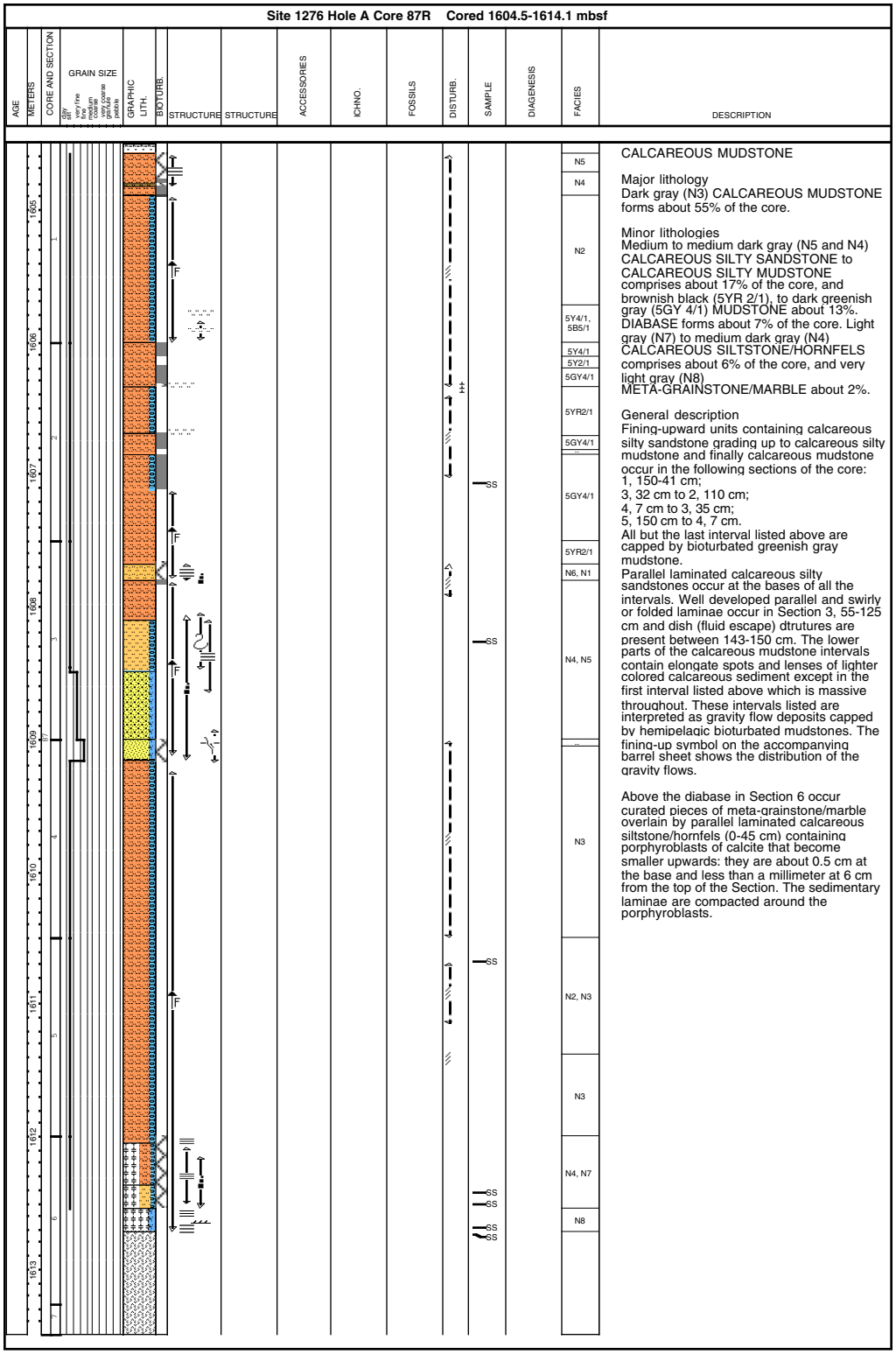
Core Photo


Site 1276 Hole A Core 85R Cored 1587.7-1594.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1588
1589
1590
1591
1592
1593
1594
85
1
2
3
4
5
6
Py
SS
PAL
5G3/1
5Y3/1
5G4/1
N6
5G4/1
5Y3/1
5Y4/1, N8
5Y3/1
10YR8/2
5Y4/1
5Y4/1, N8
5Y3/1
5Y4/1
5GY6/1
5Y4/1
CALCAREOUS MUDSTONE and CLAYSTONE, with minor CALCAREOUS SILTSTONE and SANDSTONE
Major lithology
The core consists mostly of burrowed to non-burrowed, olive gray (5Y 3/1) CALCAREOUS CLAYSTONE and dark greenish gray (5G 4/1) MUDSTONE (together ~90%).
Minor lithologies
There is one graded, planar-laminated, medium- to fine-grained, medium light gray (N6) SANDSTONE that grades upward into olive gray CALCAREOUS SILTSTONE with highly contorted, syndepositionally folded laminae. Other thin beds of calcareous siltstone are cemented by diagenetic carbonate forming hard concretionary bands.
General description
Much of the sediment in this core is organized into thick graded depositional units with a sandstone to calcareous siltstone base, and a calcareous claystone upper part that is of the order of 1 m thick, and only slightly burrowed at its top. The thickest depositional unit extends from Section 1, 104 cm, to Section 3, 33 cm, and is 229 cm thick. These depositional units alternate with very thin and minor burrowed mudstones. In the silty calcareous claystones that mark the upward passage from the sandy bases of gravity-flow deposits, there are intricately deformed laminae indicating intense syndepositional deformation. Centimeter-scale folds in these sediments are recumbent, similar folds with disconnected hinges because the limbs have been sheared out. The noses of the folds have been thickened by migration of mud into the hinge area. Sigmoidal siltstone patches in the sediment are probably the remnants of sheared-out fold limbs.
Overall, the core consists of 80% Calcareous Mudstone, 10% Mudstone, 6% Calcareous siltstone, and 4% Sandstone.

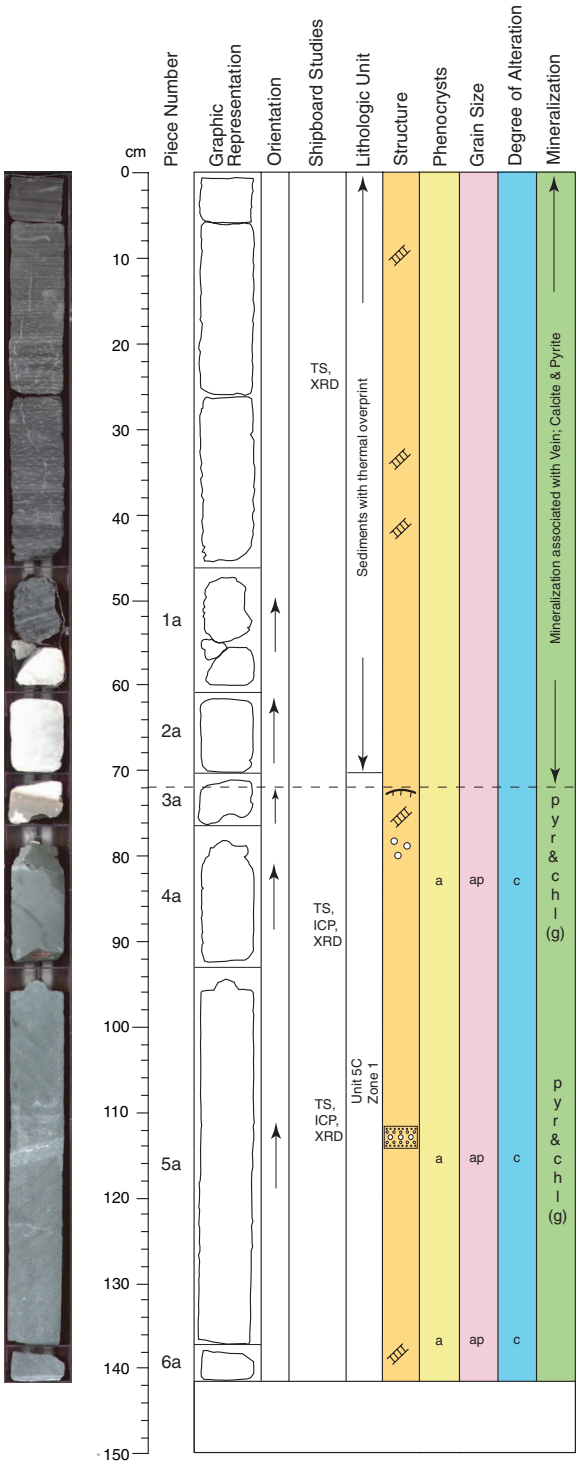
Core Photo


Site 1276 Hole A Core 86R Cored 1594.8-1604.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1595
1596
1597
1598
1599
1600
1601
1602
1603
SS
SS
SS
PAL
N3
N3
5G 4/1
N3
5G 4/1
N3 & 5..
N3
N3 & N7
N3
N2
5G 4/1
5YR4/1
N2 & N4
5Y2/1
N2 & N4
N4
CALCAREOUS MUDSTONE
Major lithologies
Dark gray (N3) CALCAREOUS MUDSTONE forms about 70% of the core.
Minor lithologies
Brownish gray (5Y 2/1) to medium dark gray (N4) CALCAREOUS SILTY MUDSTONE comprises about 20% of the core. Grayish black (N2), to dark greenish gray (5G 4/1) MUDSTONE forms about 8% of the core, and medium gray (N5) CALCAREOUS SILTSTONE about 2%.
General description
From the core catcher to the top of Section 3 there are three upward-fining units (Section 3, 16 cm to Section 4, 143 cm; Section 5, 40 cm to Section 6, 43 cm; Section 6, 43 cm to CC, 20 cm). The upper two of these contain basal parallel and lenticular laminated calcareous siltstones (2 and 10 cm thick). Above the calcareous siltstones and from CC, 20 cm, 30-40 cm thick intervals of calcareous silty mudstones occur. They contain centimeter-scale folds, rafts of silty sandstone and mudstone about 1 cm thick, and elongate spots and lenses of lighter colored calcareous sediment. The calcareous silty mudstones are overlain by calcareous mudstones, one of which (Section 3, 16 cm to Section 4, 96 cm) is 2.4 m thick. The calcareous claystones are capped by bioturbated greenish gray mudstones. In Sections 2 and 3 there are two intervals of calcareous mudstone underlain by laminated calcareous siltstone (Section 1, 103 cm to 2, 130 cm; and section 1, 0-86 cm). The uppermost of these intervals is capped by greenish gray bioturbated mudstone. These two intervals and those containing calcareous silty mudstones are interpreted as gravity flow deposits capped by hemipelagic bioturbated mudstones. The fining-up symbol on the accompanying barrel sheet shows the distribution of the gravity flows.

Core Photo


Site 1276 Hole A Core 87R Cored 1604.5-1614.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1605
1606
1607
1608
1609
1610
1611
1612
1613
SS
N5
N4
N2
5Y4/1, 5B5/1
5Y4/1
5Y2/1
5GY4/1
5YR2/1
5GY4/1
5GY4/1
5YR2/1
N6, N1
N4, N5
N3
N2, N3
N3
N4, N7
N8
CALCAREOUS MUDSTONE
Major lithology
Dark gray (N3) CALCAREOUS MUDSTONE forms about 55% of the core.
Minor lithologies
Medium to medium dark gray (N5 and N4) CALCAREOUS SILTY SANDSTONE to CALCAREOUS SILTY MUDSTONE comprises about 17% of the core, and brownish black (5YR 2/1), to dark greenish gray (5GY 4/1) MUDSTONE about 13%.
DIABASE forms about 7% of the core. Light gray (N7) to medium dark gray (N4) CALCAREOUS SILTSTONE/HORNFELS comprises about 6% of the core, and very light gray (N8) META-GRAINSTONE/MARBLE about 2%.
General description
Fining-upward units containing calcareous silty sandstone grading up to calcareous silty mudstone and finally calcareous mudstone occur in the following sections of the core:
1, 150-41 cm;
3, 32 cm to 2, 110 cm;
4, 7 cm to 3, 35 cm;
5, 150 cm to 4, 7 cm.
All but the last interval listed above are capped by bioturbated greenish gray mudstone.
Parallel laminated calcareous silty sandstones occur at the bases of all the intervals. Well developed parallel and swirly or folded laminae occur in Section 3, 55-125 cm and dish (fluid escape) dtrutures are present between 143-150 cm. The lower parts of the calcareous mudstone intervals contain elongate spots and lenses of lighter colored calcareous sediment except in the first interval listed above which is massive throughout. These intervals listed are interpreted as gravity flow deposits capped by hemipelagic bioturbated mudstones. The fining-up symbol on the accompanying barrel sheet shows the distribution of the gravity flows.
Above the diabase in Section 6 occur curated pieces of meta-grainstone/marble overlain by parallel laminated calcareous siltstone/hornfels (0-45 cm) containing porphyroblasts of calcite that become smaller upwards: they are about 0.5 cm at the base and less than a millimeter at 6 cm from the top of the Section. The sedimentary laminae are compacted around the porphyroblasts.

Core Photo



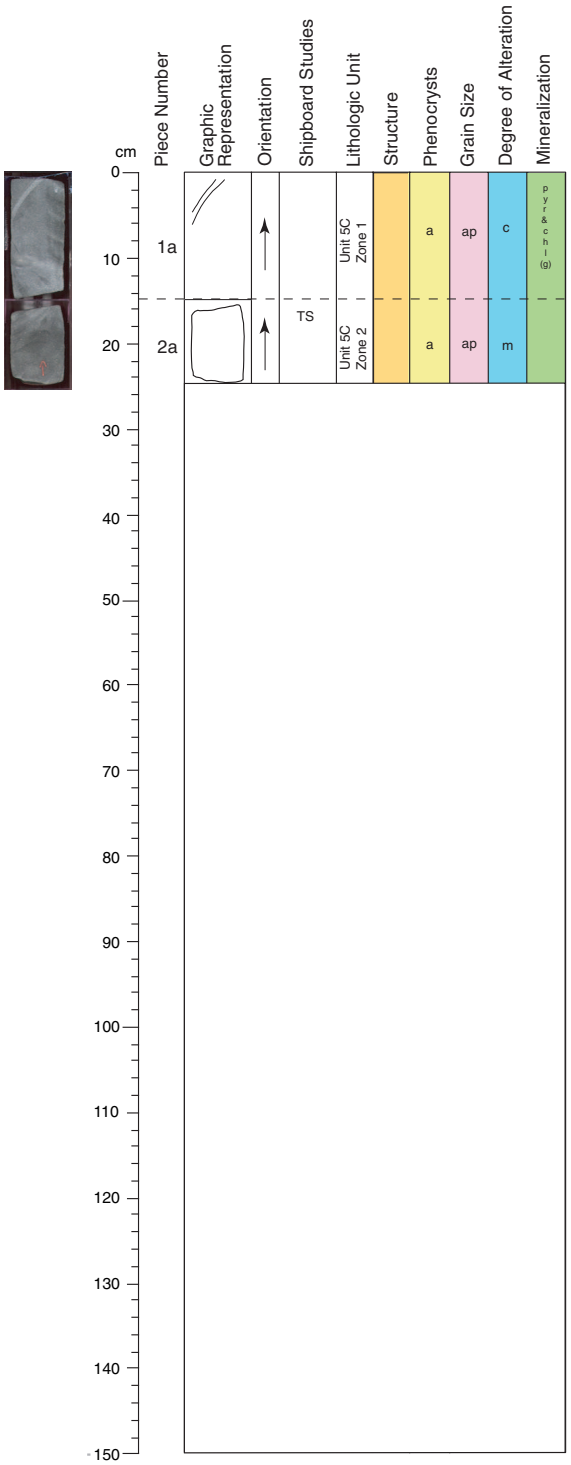
210-1276A-87R-6 (Section top: 1601.08 mbsf)

UNIT 5C, Metasediments
ROCK NAME: Hydrothermally altered mudstone and grainstone
PIECES: Overlying sediments and Pieces 1a, 2a to top of 3a
CONTACTS:
Upper: Gradual contact with the overlying contact zone
Lower: Gradual contact with the coarser grained fine-grained zone
COLOR: Greenish gray
ALTERATION: High
VEINS: 1 mm-thick calcite and pyrite ore vein from 7-14 cm.
STRUCTURE: Vertical vein within thermally altered unit. This vein shows some post-emplacement compaction
ADDITIONAL COMMENTS:

UNIT 5C (1), Zone 1 - Chilled margin
ROCK NAME: Diabase
PIECES: 3a-4a
CONTACTS:
Upper: A sharp clearly defined chilled margin contact were the sill; is in contact with the overlying meta-grainstone.
Lower: Gradual contact with the lower aphyric zone
COLOR: Greenish gray
GROUNDMASS:
Primary minerals: Plagioclase, with minor clinopyroxene, olivine and magnetite
Accessory minerals: Apatite
Secondary minerals: Chlorite, kaolinite, calcite, quartz and pyrite
Grain size: 0.2-0.4 mm
Texture: Intersertal
VESICLES: Sparsely vesicular at the top near the chilled margin at 78-80 cm
ALTERATION: Complete
VEINS: Calcite vein at 76 cm, 1 mm thick; from 78-83 mm calcite vein <1 mm thick
STRUCTURE: Chilled margin contact zone at the top of the sill with rare vesicles.
ADDITIONAL COMMENTS: Contact of the sill with the sediments is preserved in Piece 3a.

UNIT 5C (1), Zone 1 - Aphanitic diabase
ROCK NAME: Diabase
PIECES: 5a-6a
CONTACTS:
Upper: Gradual contact with the overlying contact zone
Lower: Gradual contact with the coarser grained diabase
PHENOCRYSTS:
Plagioclase <1% 0.6 mm
GROUNDMASS:
Primary minerals: Plagioclase, magnetite, with minor clinopyroxene, and olivine
Accessory minerals: Apatite
Secondary minerals: Chlorite, kaolinite, calcite, quartz and pyrite
Grain size: 0.2-0.4 mm
Texture: Intersertal
ALTERATION: Alteration is intense to complete
VEINS: Horizontal calcite vein (1-2 mm thick) at the base of the section (139 cm).
ADDITIONAL COMMENTS: A lighter colored segregation band in Piece 5a (112-114 cm); contains up to 3% apatite.

Core Photo

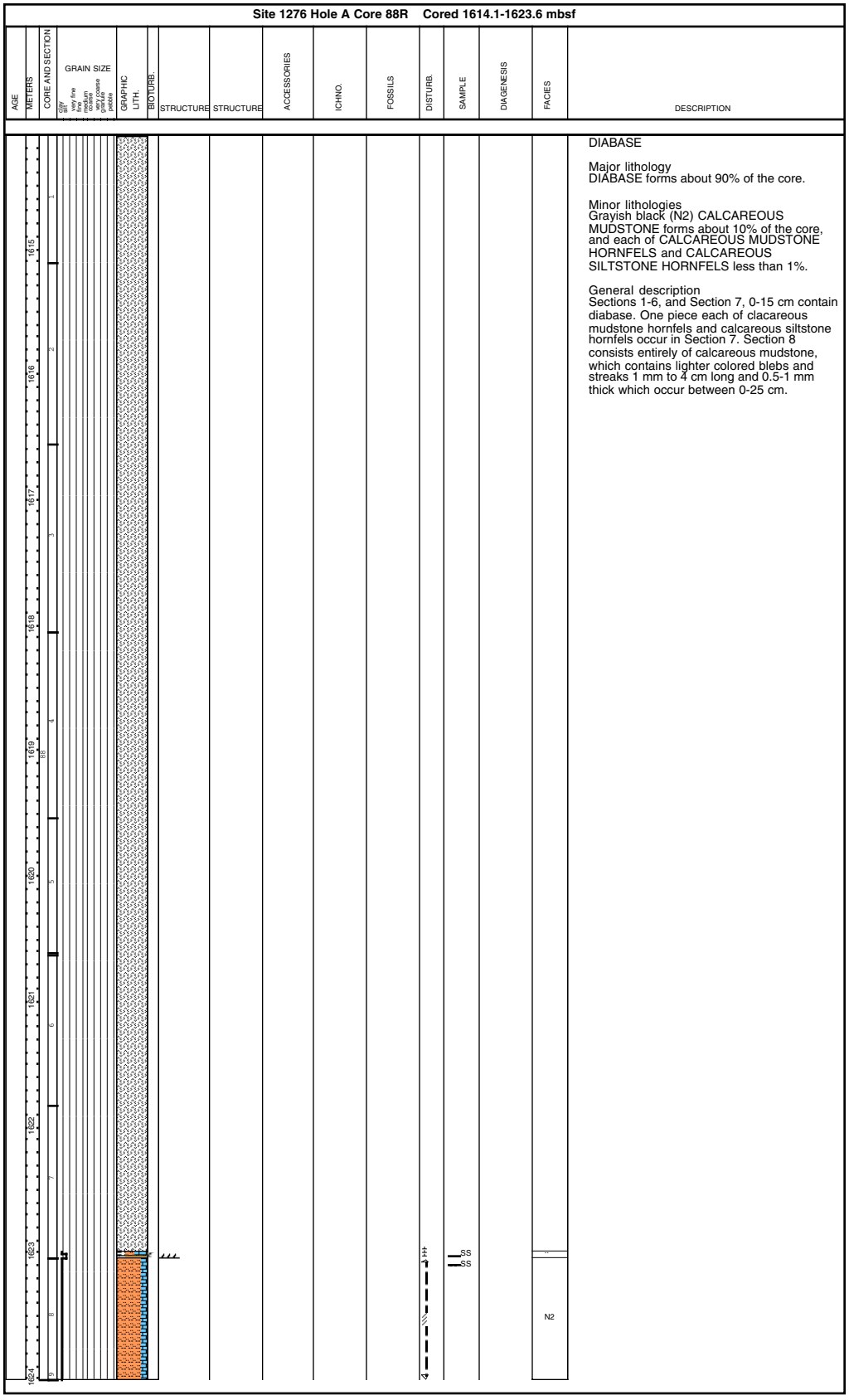


210-1276A-87R-7 (Section top: 1602.70 mbsf)

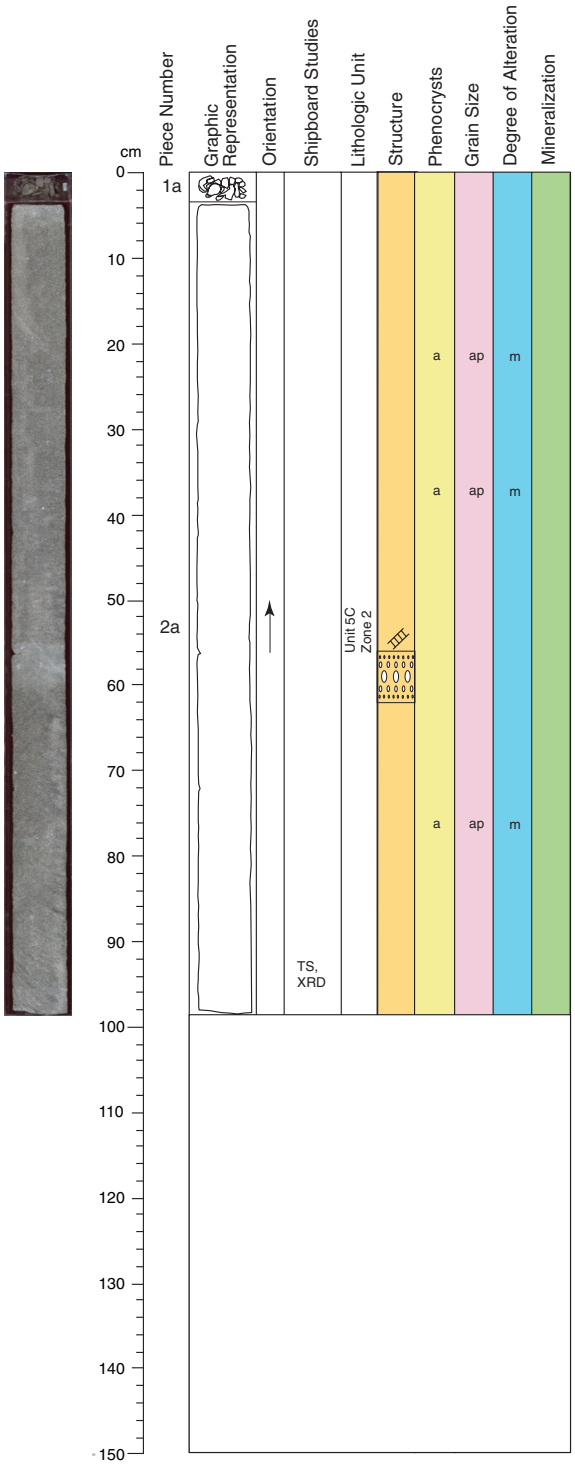
UNIT 5C, Zone 1 - Aphanitic diabase
ROCK NAME: Diabase
PIECES: 1a
CONTACTS:
Upper: Gradual contact with the overlying diabase
Lower: Gradual contact into the coarser grained diabase of Zone 2
COLOR: Greenish gray
PHENOCRYSTS:
Plagioclase <1% 0.6 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, and magnetite, with minor olivine
Accesory minerals: Apatite
Secondary minerals: Chlorite, kaolinite, calcite, quartz, pyrite.
Grain size: 0.2 - 0.4 mm
Texture: Intersertal
ALTERATION: Complete
ADDITIONAL COMMENTS:

UNIT 5C, Zone 2 - Aphanitic Diabase
ROCK NAME: Diabase
PIECES: 2a
CONTACTS:
Upper: Gradual contact with the overlying diabase of Zone 1
Lower: base of section
COLOR: Greenish gray
PHENOCRYSTS:
Plagioclase <1% 1 mm
Clinopyroxene <1% 1 mm
GROUNDMASS:
Primary minerals: Plagioclase, with minor clinopyroxene, olivine, and magnetite
Accesory minerals: Apatite
Secondary minerals: Kaolinite, calcite, quartz, pyrite, and chlorite related to alteration, and serpentine
Grain size: 0.4-0.5 mm
Texture: Intergranular
ALTERATION: Moderate
ADDITIONAL COMMENTS: Apatite (up to 3%).

Core Photo


Site 1276 Hole A Core 88R Cored 1614.1-1623.6 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1615
1616
1617
1618
1619
1620
1621
1622
1623
1624
SS
SS
N2
DIABASE
Major lithology
DIABASE forms about 90% of the core.
Minor lithologies
Grayish black (N2) CALCAREOUS MUDSTONE forms about 10% of the core, and each of CALCAREOUS MUDSTONE HORNFELS and CALCAREOUS SILTSTONE HORNFELS less than 1%.
General description
Sections 1-6, and Section 7, 0-15 cm contain diabase. One piece each of clacareous mudstone hornfels and calcareous siltstone hornfels occur in Section 7. Section 8 consists entirely of calcareous mudstone, which contains lighter colored blebs and streaks 1 mm to 4 cm long and 0.5-1 mm thick which occur between 0-25 cm.

Core Photo



210-1276A-88R-1 (Section top: 1604.50 mbsf)

UNIT 5C, Zone 2 - Aphanitic diabase

ROCK NAME: Diabase
PIECES: 2a
CONTACTS:
Upper: Gradual contact with the overlying diabase
Lower: Bottom of section
COLOR: Greenish gray
PHENOCRYSTS:

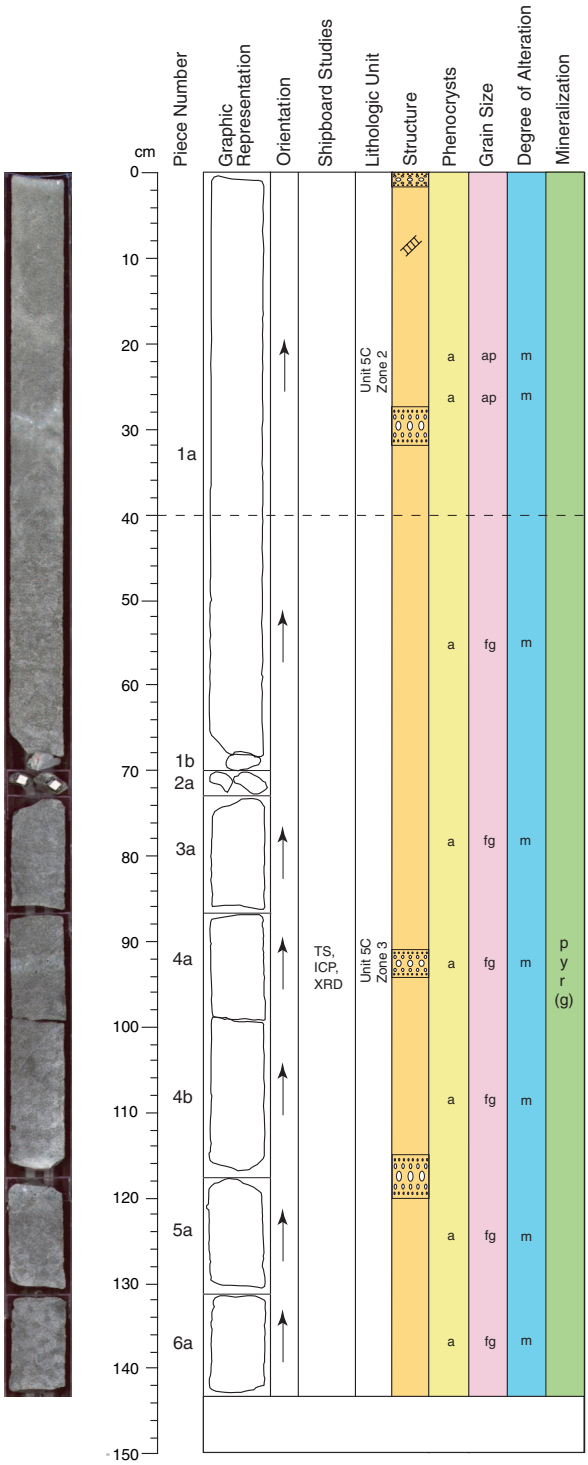
Plagioclase	<1%	3.2 mm
Clinopyroxene	<1%	1 mm

GROUNDMASS:

Primary minerals:	Plagioclase, clinopyroxene, and magnetite with minor olivine
Accessory minerals:	Biotite and apatite
Secondary minerals:	Smectite, kaolinite, quartz, and analcime
Grain size: 0.4-0.5 mm	
Texture: Subophitic to intergranular	

ALTERATION: Moderate
ADDITIONAL COMMENTS: Apatite is present (<5%). Piece 1a at the top of the core is drill breccia of claystone from the overlying units.

Core Photo



210-1276A-88R-2 (Section top: 1604.50 mbsf)

UNIT 5C, Zone 2 - Aphanitic diabase

ROCK NAME: Diabase
PIECE: 1a to 40cm
CONTACTS:
Upper: Top of section
Lower: Gradational contact into diabase of Zone 3 at 40 cm
COLOR: Greenish gray
PHENOCRYSTS:

Plagioclase	<1%	3 mm
Clinopyroxene	<1%	1 mm

GROUNDMASS:

Primary minerals:	Plagioclase, clinopyroxene, and magnetite, with minor olivine
Accessoryminerals:	Apatite and biotite
Secondary minerals:	Smectite, kaolinite, quartz, and analcime

Grain size: 0.4 - 0.5 mm
Texture: Subophitic to intergranular
ALTERATION: Moderate
VEINS: Mineralized fracture from 1-17 cm; <1 mm-thick vertical vein
ADDITIONAL COMMENTS: Segregation bands in section between 0-2 cm and 28-32 cm.

UNIT 5C, Zone 3 - Fine-grained diabase

ROCK NAME: Diabase
SUMMARY DESCRIPTION:
PIECE: 1a from 40 cm downwards, 1b-6a
CONTACTS:
Upper: Gradational contact with overlying aphanitic diabaseof Zone 2 at 40 cm
Lower: Bottom of section
COLOR: Greenish gray
PHENOCRYSTS:

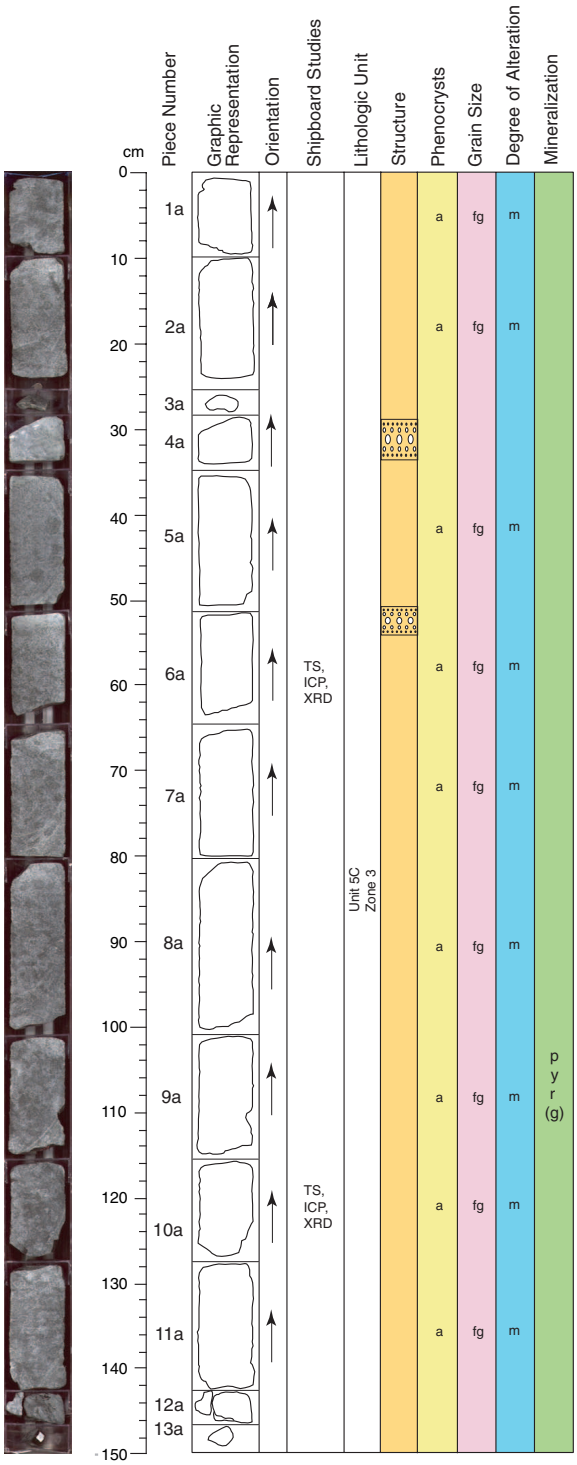
Plagioclase	<1%	1.4 mm
Clinopyroxene	<1%	1.5 mm

GROUNDMASS:

Primary minerals:	Plagioclase, clinopyroxene, magnetite, with minor olivine
Accessoryminerals:	Apatite and biotite
Secondary minerals:	Smectite, kaolinite, quartz, and analcime Minor pyrite due to hydrothermal mineralisation.

Grain size: 0.6 - 0.8 mm
Texture: Intersertal to subophitic
ALTERATION: Moderate
ADDITIONAL COMMENTS: The rock contains apatite (3%-4%) and biotite (<1%). The original composition of the rock was rich in plagioclase (up to 60%), clinopyroxene (10%-20%) and glass (10%-20%). Segregation bands occur between 91-94 cm, and 115-120 cm. These bands contain zoned albite crystals up to 1 mm but no clinopyroxene indicating a high degree of alteration. Additionally, large calcite crystals (from 1.5-4 mm) and acicular pyrite are present. A microscopic pyrite vein was seen in thin section.

Core Photo

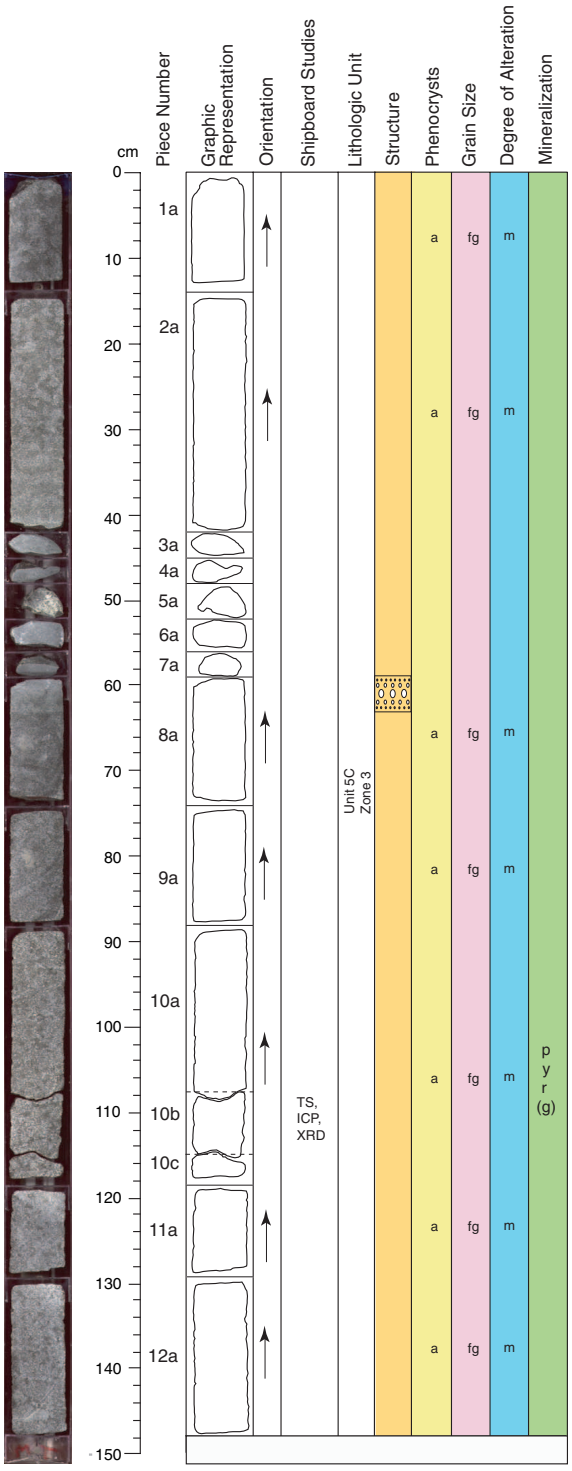


210-1276A-88R-3 (Section top: 1607.54 mbsf)

UNIT 5c, Zone 3 - Fine-grained Diabase

ROCK NAME: Diabase
PIECE: 1a - 13a
CONTACTS:
Upper: Top of section
Lower: Bottom of section
COLOR: Greenish gray
PHENOCRYSTS:
Plagioclase <1% 1.5 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, magnetite with minor olivine
Accessoryminerals: Apatite and biotite
Secondary minerals: Smectite, kaolinite, quartz, pyrite, analcime
Grain size: 0.5 - 0.7 mm
Texture: Intersertal to subophitic
ALTERATION: Moderate
ADDITIONAL COMMENTS: Accessory apatite (2%) and biotite (1%) are present. Original rock composition rich in plagioclase (60%), clinopyroxene (10%-20%) and glass (10%-20%). Segregation bands occur at 29-34 cm, and 50-54 cm.

Core Photo



210-1276A-88R-4 (Section top: 1609.04 mbsf)

UNIT 5C, Zone 3 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 1a - 12a
CONTACTS:
Upper: Top of section
Lower: Bottom of section
COLOR: Greenish gray
PHENOCRYSTS:

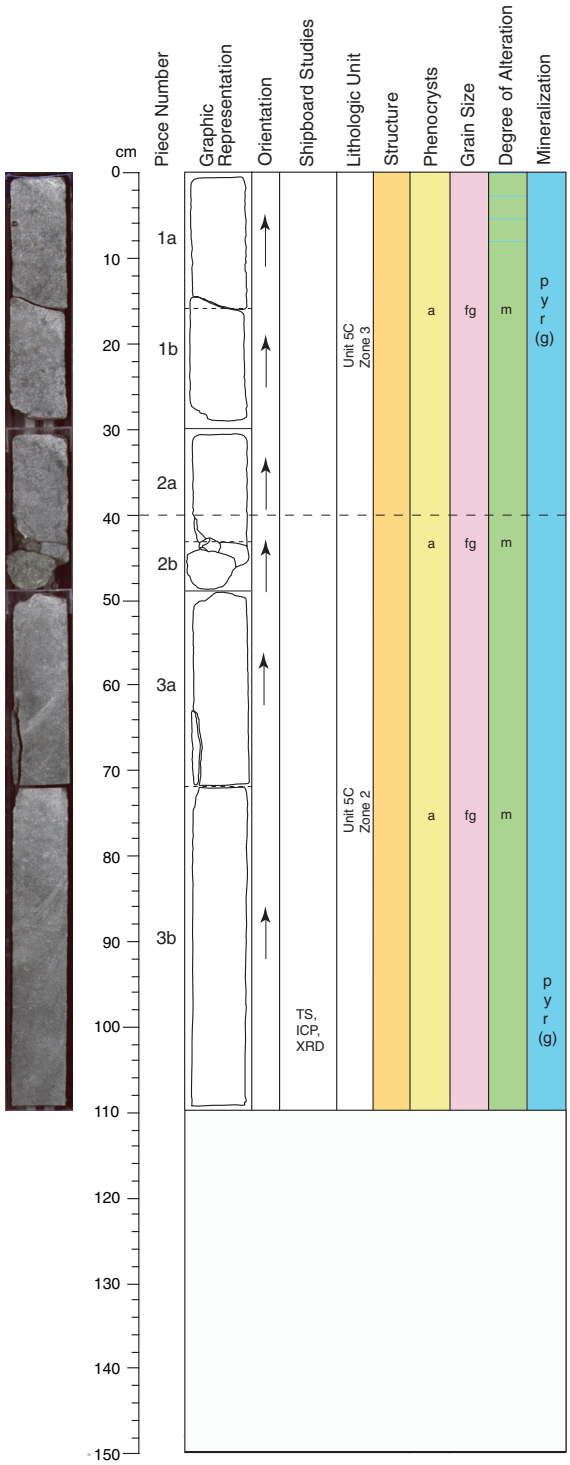
Plagioclase	<1%	1.5-4.5 mm
Clinopyroxene	<1%	1 mm

GROUNDMASS:

Primary minerals:	Plagioclase, clinopyroxene, magnetite, with minor olivine
Accessoryminerals:	Apatite and biotite
Secondary minerals:	Smectite, kaolinite, quartz, and analcime

Grain size: 0.6 - 0.8 mm
Texture: Intersertal to subophitic
ALTERATION: Moderate - Mineral alteration up to 30%
ADDITIONAL COMMENTS: Accessory apatite (4%) and biotite (<1%). Fluid inclusions in the pyroxenes are very frequent.

Core Photo



210-1276A-88R-5 (Section top: 1610.58 mbsf)

UNIT 5c, Zone 3 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 1a, 1b, 2a to 40 cm
CONTACTS:
Upper: Top of section
Lower: Gradational contact into Zone 2 at contact of 40 cm
COLOR: Greenish gray
PHENOCRYSTS:

Plagioclase	<1%	1.5 mm
Clinopyroxene	<1%	1 mm

GROUNDMASS:

Primary minerals:	Plagioclase, clinopyroxene, with minor magnetite, and olivine
Accessory minerals:	Biotite
Secondary minerals:	Smectite, kaolinite, quartz, analcime, and pyrite

Grain size: 0.6 - 0.8 mm
Texture: intersertal to subophitic
ALTERATION: Moderate with 30% alteration of minerals.

UNIT 5c, Zone 2 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 2a from 40 cm downwards, 2b - 3b
CONTACTS:
Upper: Gradational contact intooverlying Zone 3 (located at 40 cm)
Lower: Bottom of section
COLOR: Greenish gray
PHENOCRYSTS:

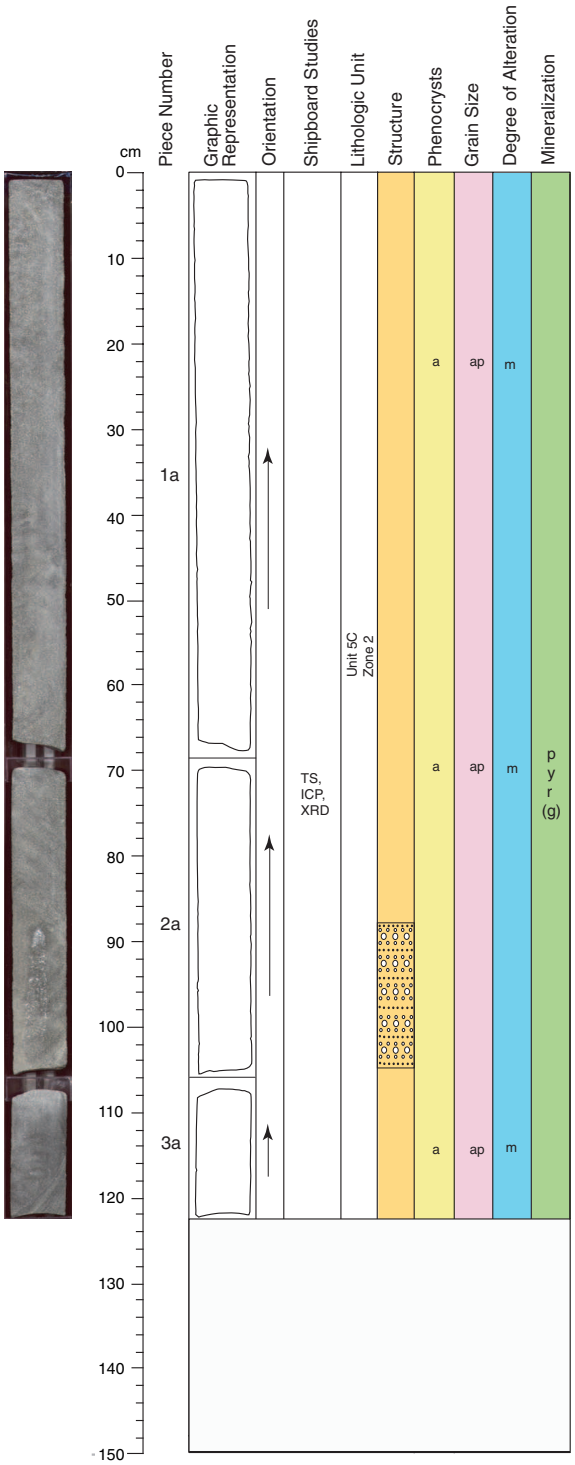
Plagioclase	<1%	1.5 mm
Clinopyroxene	<1%	1.5 mm

GROUNDMASS:

Primary minerals:	Plagioclase, clinopyroxene, with minor magnetite, and olivine
Accessory minerals:	Apatite and biotite
Secondary minerals:	Smectite, kaolinite, quartz, analcime, and pyrite

Grain size: 0.6 - 0.8 mm
Texture: Subophitic to intergranular
ALTERATION:Moderate

Core Photo



210-1276A-88R-6 (Section top: 1612.11 mbsf)

UNIT 5c, Zone 2 - Aphanitic diabase

ROCK NAME: Diabase
PIECE: 1a - 3a
CONTACTS:
Upper: Top of section
Lower: Bottom of section
COLOR: Greenish gray
PHENOCRYSTS:

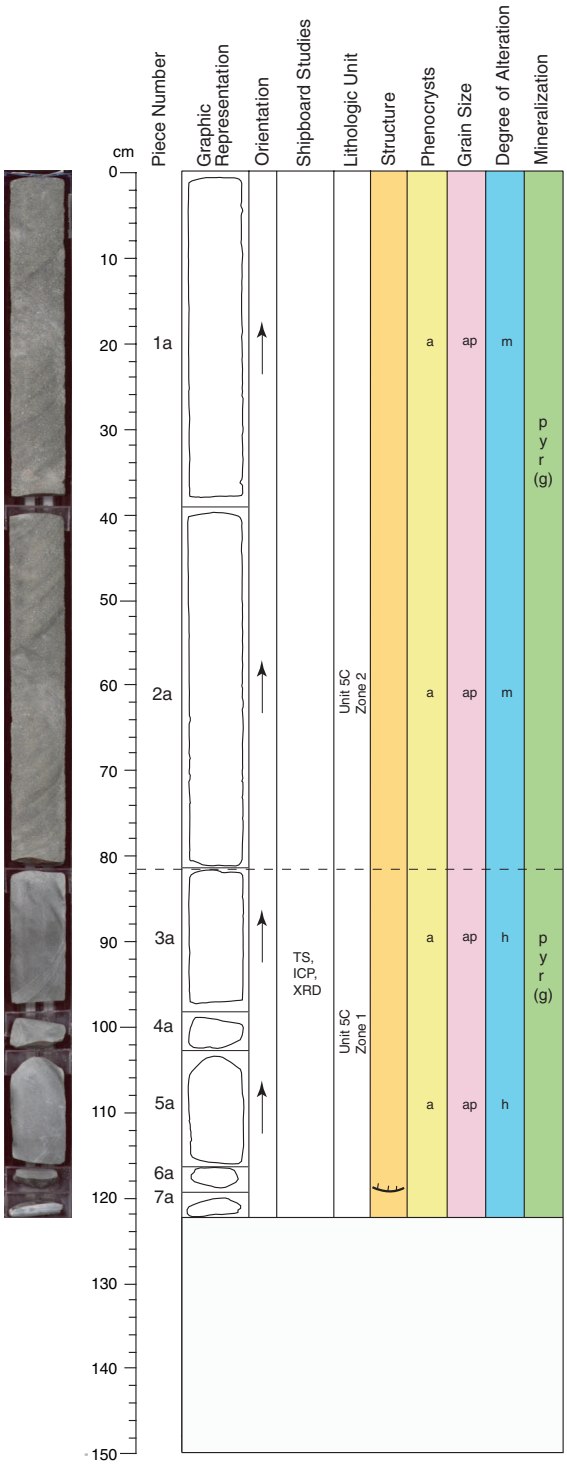
Plagioclase	<1 %	1 mm
Clinopyroxene	<1%	1 mm

GROUNDMASS:

Primary minerals:	Plagioclase, clinopyroxene, magnetite, and minor olivine
Accessory minerals:	Apatite, biotite; possibly also ilmenite (XRD analysis)
Secondary minerals:	Smectite, kaolinite, quartz, and pyrite

Grain size: 0.4-0.5 mm
Texture: Intersertal
ALTERATION: Moderate with 4%-50% altered minerals
ADDITIONAL COMMENTS: Apatite (up to 4%) and biotite (<1%) seen in thin section. Segregation band is present from 88 cm to 106 cm.

Core Photo



210-1276A-88R-7 (Section top: 1613.51 mbsf)

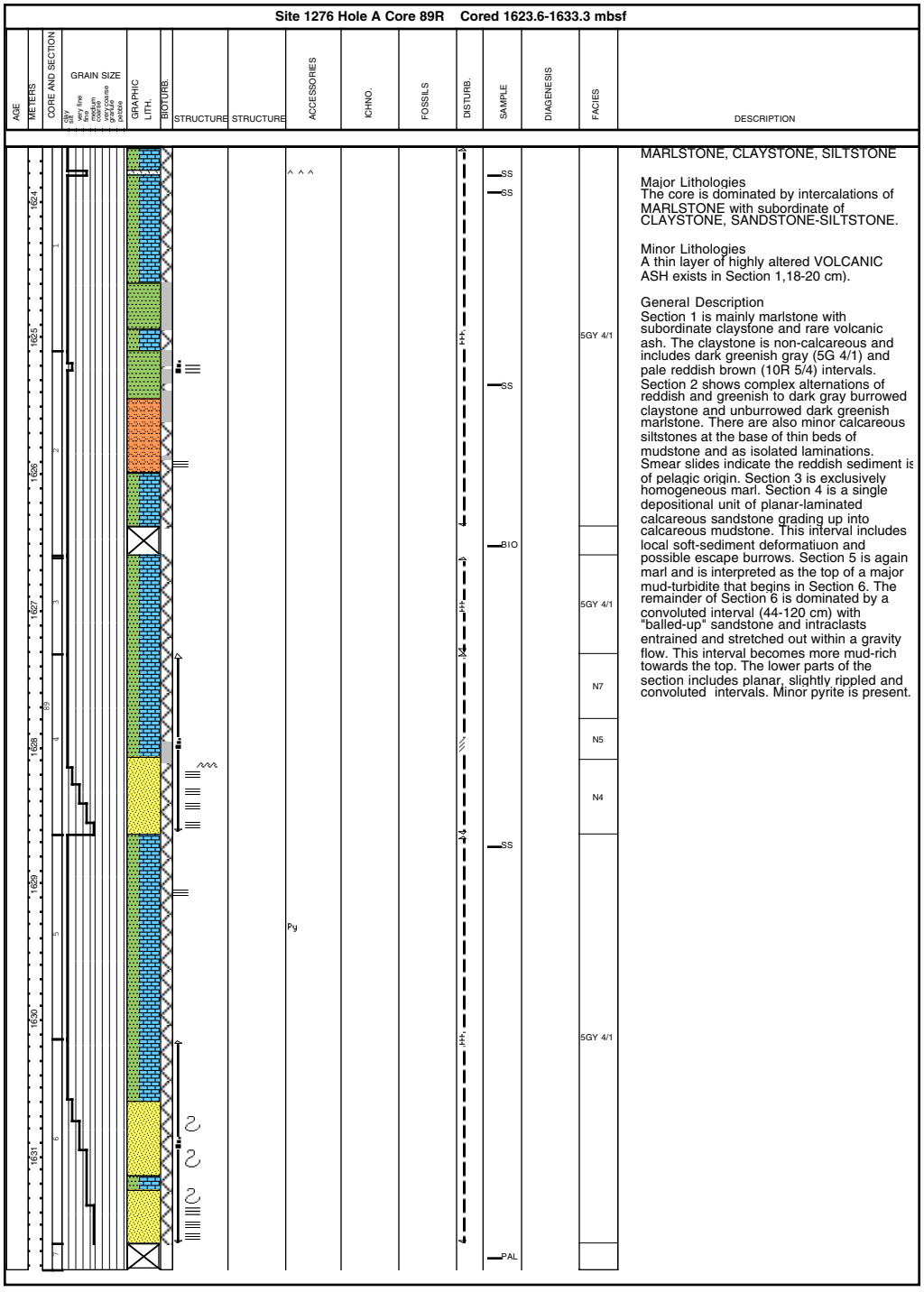
UNIT 5c, Zone 2 - Aphanitic diabase

ROCK NAME: Diabase
PIECE: 1a and 2a to 81 cm
CONTACTS:
Upper: Top of section
Lower: Gradual into Zone 1 (contact at 81 cm)
COLOR: Greenish gray
PHENOCRYSTS:
Plagioclase <1 % 1 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, magnetite, and minor olivine
Accessory minerals: Apatite and biotite
Secondary minerals: Smectite, kaolinite, quartz, and pyrite
Grain size: 0.4-0.5 mm
Texture: Intersertal
ALTERATION: Moderate with 40%-50% altered minerals

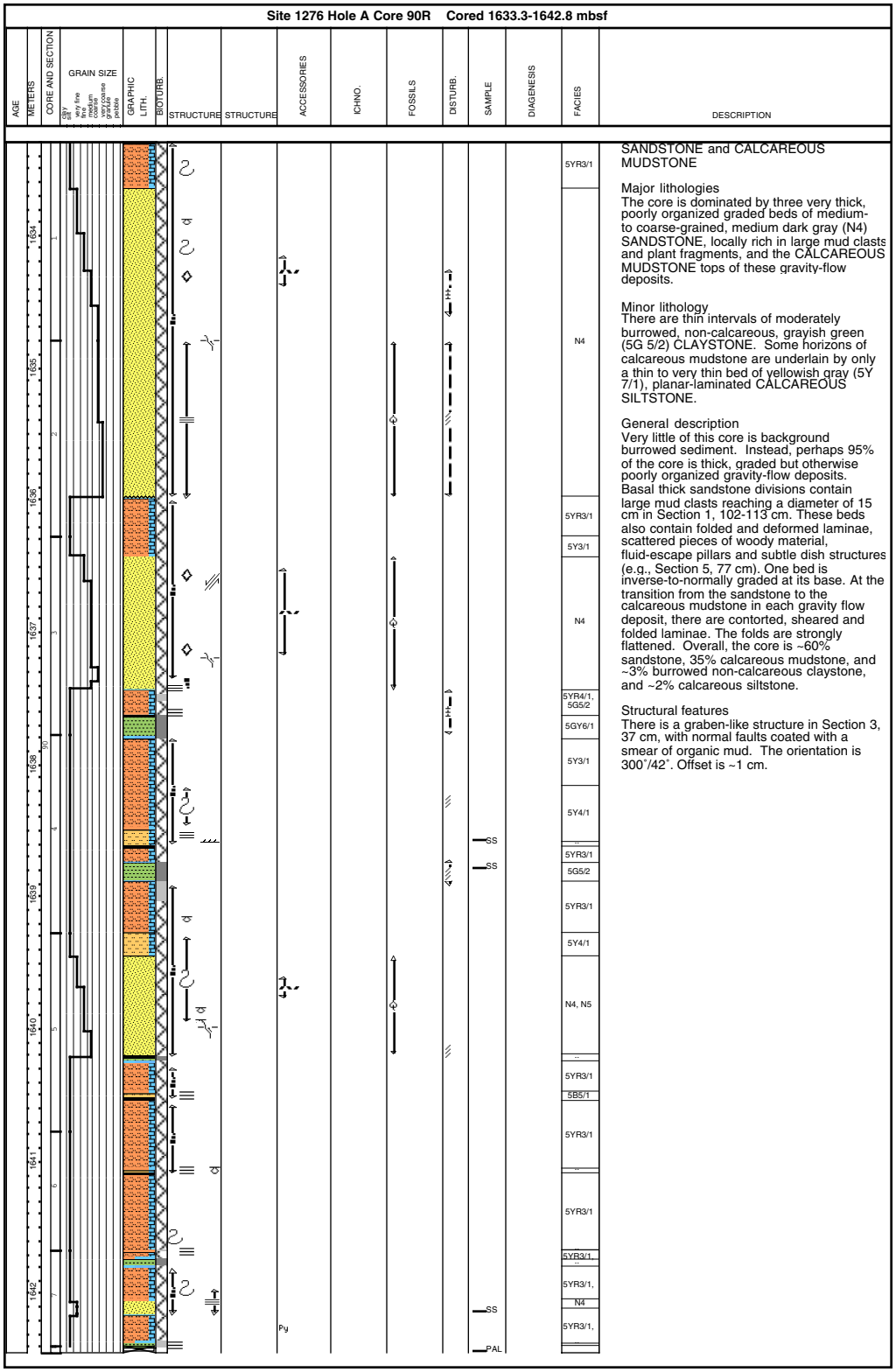
UNIT 5c, Zone 1 - Aphanitic diabase

ROCK NAME: Diabase
PIECE: 3a - 7a
CONTACTS:
Upper: Gradational contact into Zone 2 (contact at 81 cm)
Lower: Chilled margin marks lower contact with underlying sediments
COLOR: Greenish gray
PHENOCRYSTS:
Plagioclase <1 % 0.8-1 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, magnetite, and minor olivine
Accessory minerals: Apatite and biotite
Secondary minerals: Smectite, kaolinite, quartz, and pyrite
Grain size: 0.4-0.6 mm
Texture: Intersertal
ALTERATION: High, with 60 - 70% altered minerals
ADDITIONAL COMMENTS: Accessory apatite up to 3%.

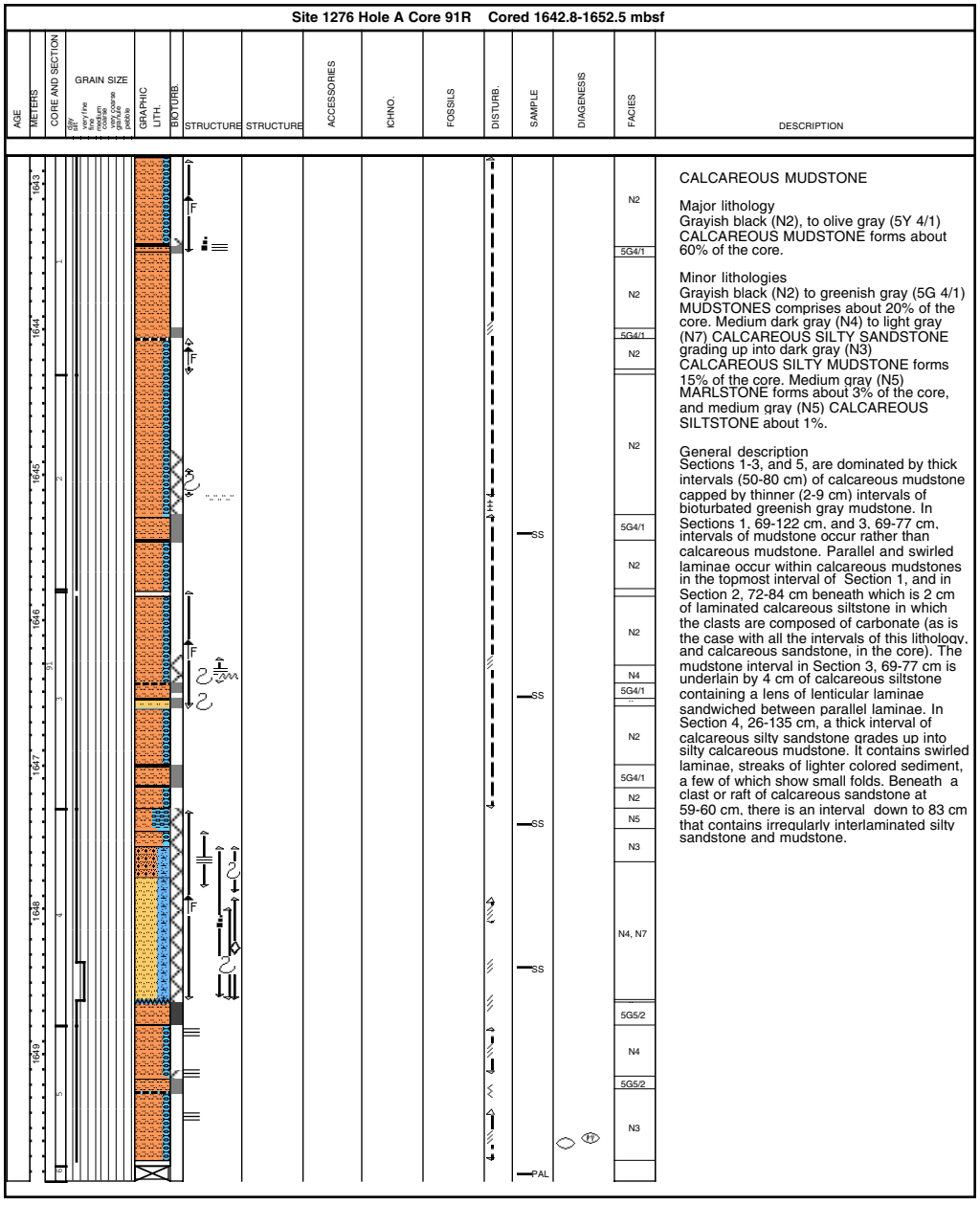
Core Photo


Site 1276 Hole A Core 89R Cored 1623.6-1633.3 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1624
1625
1626
1627
1628
1629
1630
1631
SS
GS
SS
BIO
SS
PAL
Py
5GY 4/1
5GY 4/1
N7
N5
N4
5GY 4/1
MARLSTONE, CLAYSTONE, SILTSTONE
Major Lithologies
The core is dominated by intercalations of MARLSTONE with subordinate of CLAYSTONE, SANDSTONE-SILTSTONE.
Minor Lithologies
A thin layer of highly altered VOLCANIC ASH exists in Section 1,18-20 cm).
General Description
Section 1 is mainly marlstone with subordinate claystone and rare volcanic ash. The claystone is non-calcareous and includes dark greenish gray (5G 4/1) and pale reddish brown (10R 5/4) intervals. Section 2 shows complex alternations of reddish and greenish to dark gray burrowed claystone and unburrowed dark greenish marlstone. There are also minor calcareous siltstones at the base of thin beds of mudstone and as isolated laminations. Smear slides indicate the reddish sediment is of pelagic origin. Section 3 is exclusively homogeneous marl. Section 4 is a single depositional unit of planar-laminated calcareous sandstone grading up into calcareous mudstone. This interval includes local soft-sediment deformatiuon and possible escape burrows. Section 5 is again marl and is interpreted as the top of a major mud-turbidite that begins in Section 6. The remainder of Section 6 is dominated by a convoluted interval (44-120 cm) with "balled-up" sandstone and intraclasts entrained and stretched out within a gravity flow. This interval becomes more mud-rich towards the top. The lower parts of the section includes planar, slightly rippled and convoluted intervals. Minor pyrite is present.

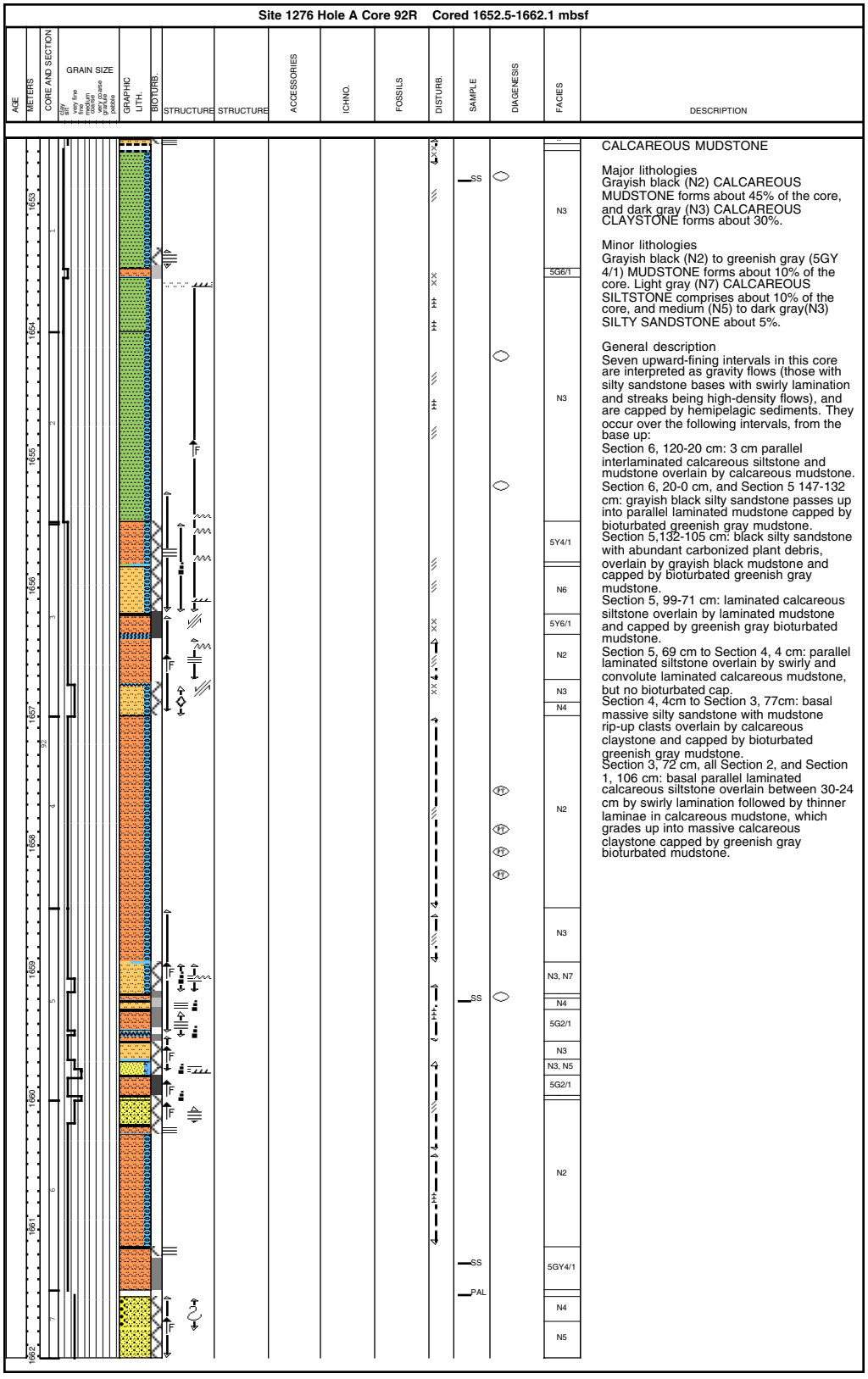
Core Photo


Site 1276 Hole A Core 90R Cored 1633.3-1642.8 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1634
1635
1636
1637
1638
1639
1640
1641
1642
SS
SS
SS
PAL
Py
5YR3/1
N4
5YR3/1
5Y3/1
N4
5YR4/1, 5G5/2
5GY6/1
5Y3/1
5Y4/1
5YR3/1
5G5/2
5YR3/1
5Y4/1
N4, N5
5YR3/1
5B5/1
5YR3/1
5YR3/1
5YR3/1,
5YR3/1,
N4
5YR3/1,
SANDSTONE and CALCAREOUS MUDSTONE
Major lithologies
The core is dominated by three very thick, poorly organized graded beds of medium- to coarse-grained, medium dark gray (N4) SANDSTONE, locally rich in large mud clasts and plant fragments, and the CALCAREOUS MUDSTONE tops of these gravity-flow deposits.
Minor lithology
There are thin intervals of moderately burrowed, non-calcareous, grayish green (5G 5/2) CLAYSTONE. Some horizons of calcareous mudstone are underlain by only a thin to very thin bed of yellowish gray (5Y 7/1), planar-laminated CALCAREOUS SILTSTONE.
General description
Very little of this core is background burrowed sediment. Instead, perhaps 95% of the core is thick, graded but otherwise poorly organized gravity-flow deposits. Basal thick sandstone divisions contain large mud clasts reaching a diameter of 15 cm in Section 1, 102-113 cm. These beds also contain folded and deformed laminae, scattered pieces of woody material, fluid-escape pillars and subtle dish structures (e.g., Section 5, 77 cm). One bed is inverse-to-normally graded at its base. At the transition from the sandstone to the calcareous mudstone in each gravity flow deposit, there are contorted, sheared and folded laminae. The folds are strongly flattened. Overall, the core is ~60% sandstone, 35% calcareous mudstone, and ~3% burrowed non-calcareous claystone, and ~2% calcareous siltstone.
Structural features
There is a graben-like structure in Section 3, 37 cm, with normal faults coated with a smear of organic mud. The orientation is 300˚/42˚. Offset is ~1 cm.

Core Photo


Site 1276 Hole A Core 91R Cored 1642.8-1652.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1643
1644
1645
1646
1647
1648
1649
91
1
2
3
4
5
6
F
SS
PAL
N2
5G4/1
N2
5G4/1
N2
N2
5G4/1
N2
N2
N4
5G4/1
N2
5G4/1
N2
N5
N3
N4, N7
5G5/2
N4
5G5/2
N3
CALCAREOUS MUDSTONE
Major lithology
Grayish black (N2), to olive gray (5Y 4/1) CALCAREOUS MUDSTONE forms about 60% of the core.
Minor lithologies
Grayish black (N2) to greenish gray (5G 4/1) MUDSTONES comprises about 20% of the core. Medium dark gray (N4) to light gray (N7) CALCAREOUS SILTY SANDSTONE grading up into dark gray (N3) CALCAREOUS SILTY MUDSTONE forms 15% of the core. Medium gray (N5) MARLSTONE forms about 3% of the core, and medium gray (N5) CALCAREOUS SILTSTONE about 1%.
General description
Sections 1-3, and 5, are dominated by thick intervals (50-80 cm) of calcareous mudstone capped by thinner (2-9 cm) intervals of bioturbated greenish gray mudstone. In Sections 1, 69-122 cm, and 3, 69-77 cm, intervals of mudstone occur rather than calcareous mudstone. Parallel and swirled laminae occur within calcareous mudstones in the topmost interval of Section 1, and in Section 2, 72-84 cm beneath which is 2 cm of laminated calcareous siltstone in which the clasts are composed of carbonate (as is the case with all the intervals of this lithology, and calcareous sandstone, in the core). The mudstone interval in Section 3, 69-77 cm is underlain by 4 cm of calcareous siltstone containing a lens of lenticular laminae sandwiched between parallel laminae. In Section 4, 26-135 cm, a thick interval of calcareous silty sandstone grades up into silty calcareous mudstone. It contains swirled laminae, streaks of lighter colored sediment, a few of which show small folds. Beneath a clast or raft of calcareous sandstone at 59-60 cm, there is an interval down to 83 cm that contains irregularly interlaminated silty sandstone and mudstone.

Core Photo



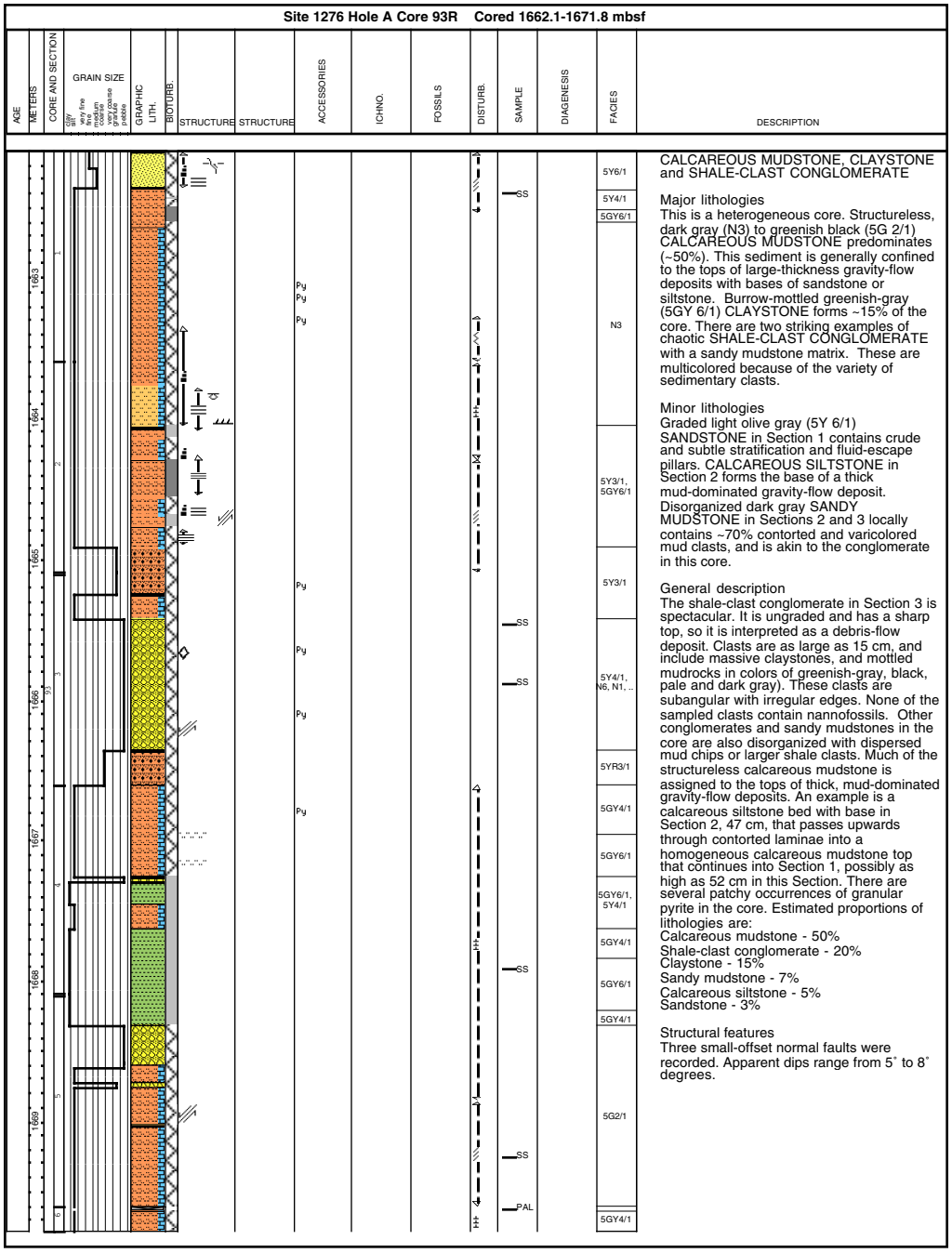
CALCAREOUS MUDSTONE

Major lithologies
Grayish black (N2) CALCAREOUS MUDSTONE forms about 45% of the core, and dark gray (N3) CALCAREOUS CLAYSTONE forms about 30%.

Minor lithologies
Grayish black (N2) to greenish gray (5GY 4/1) MUDSTONE forms about 10% of the core. Light gray (N7) CALCAREOUS SILTSTONE comprises about 10% of the core, and medium (N5) to dark gray(N3) SILTY SANDSTONE about 5%.

General description
Seven upward-fining intervals in this core are interpreted as gravity flows (those with silty sandstone bases with swirly lamination and streaks being high-density flows), and are capped by hemipelagic sediments. They occur over the following intervals, from the base up:
Section 6, 120-20 cm: 3 cm parallel interlaminated calcareous siltstone and mudstone overlain by calcareous mudstone.
Section 6, 20-0 cm, and Section 5 147-132 cm: grayish black silty sandstone passes up into parallel laminated mudstone capped by bioturbated greenish gray mudstone.
Section 5,132-105 cm: black silty sandstone with abundant carbonized plant debris, overlain by grayish black mudstone and capped by bioturbated greenish gray mudstone.
Section 5, 99-71 cm: laminated calcareous siltstone overlain by laminated mudstone and capped by greenish gray bioturbated mudstone.
Section 5, 69 cm to Section 4, 4 cm: parallel laminated siltstone overlain by swirly and convolute laminated calcareous mudstone, but no bioturbated cap.
Section 4, 4cm to Section 3, 77cm: basal massive silty sandstone with mudstone rip-up clasts overlain by calcareous claystone and capped by bioturbated greenish gray mudstone.
Section 3, 72 cm, all Section 2, and Section 1, 106 cm: basal parallel laminated calcareous siltstone overlain between 30-24 cm by swirly lamination followed by thinner laminae in calcareous mudstone, which grades up into massive calcareous claystone capped by greenish gray bioturbated mudstone.

Core Photo



CALCAREOUS MUDSTONE, CLAYSTONE and SHALE-CLAST CONGLOMERATE

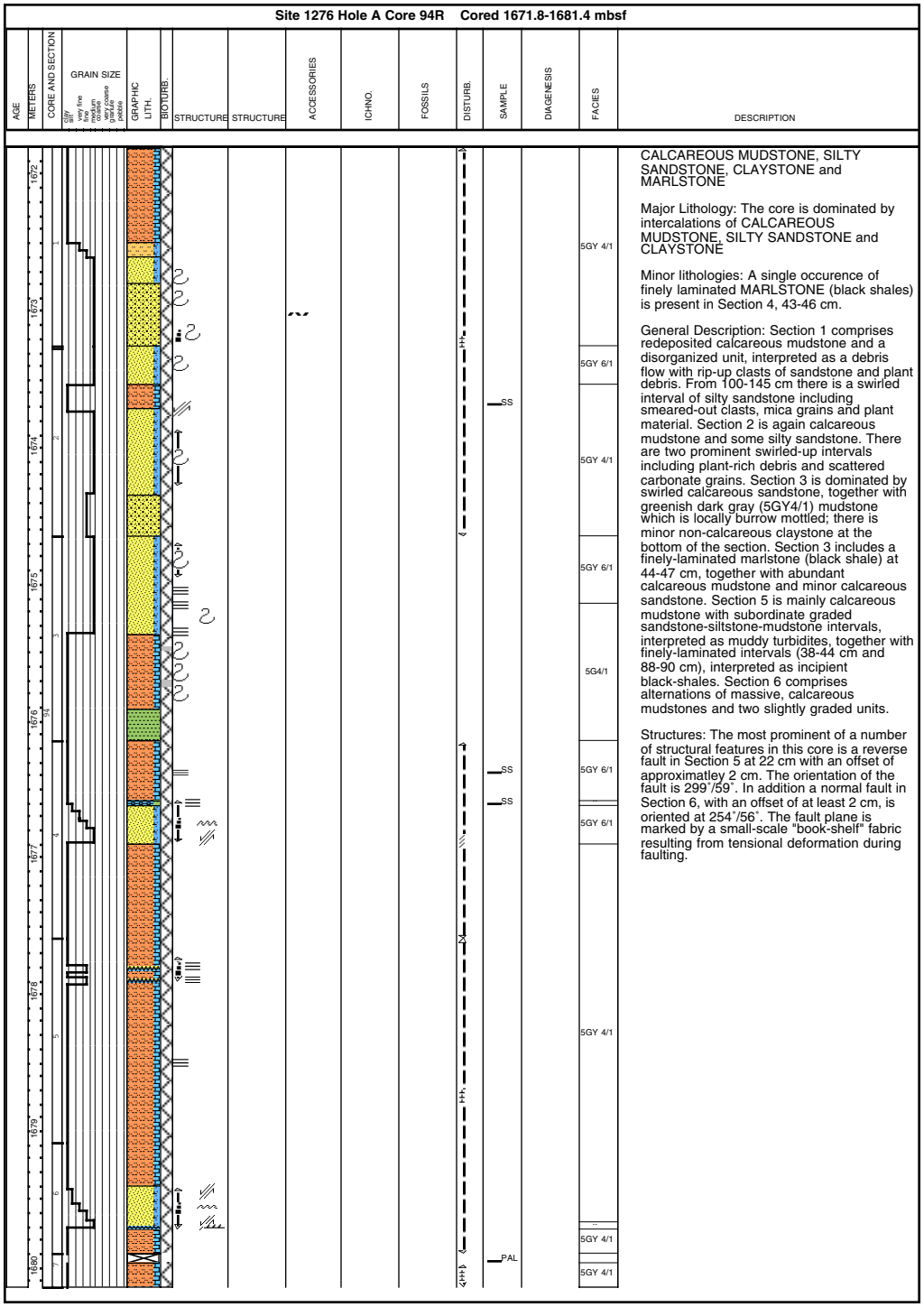
Major lithologies
This is a heterogeneous core. Structureless, dark gray (N3) to greenish black (5G 2/1) CALCAREOUS MUDSTONE predominates (~50%). This sediment is generally confined to the tops of large-thickness gravity-flow deposits with bases of sandstone or siltstone. Burrow-mottled greenish-gray (5GY 6/1) CLAYSTONE forms ~15% of the core. There are two striking examples of chaotic SHALE-CLAST CONGLOMERATE with a sandy mudstone matrix. These are multicolored because of the variety of sedimentary clasts.

Minor lithologies
Graded light olive gray (5Y 6/1) SANDSTONE in Section 1 contains crude and subtle stratification and fluid-escape pillars. CALCAREOUS SILTSTONE in Section 2 forms the base of a thick mud-dominated gravity-flow deposit. Disorganized dark gray SANDY MUDSTONE in Sections 2 and 3 locally contains ~70% contorted and varicolored mud clasts, and is akin to the conglomerate in this core.

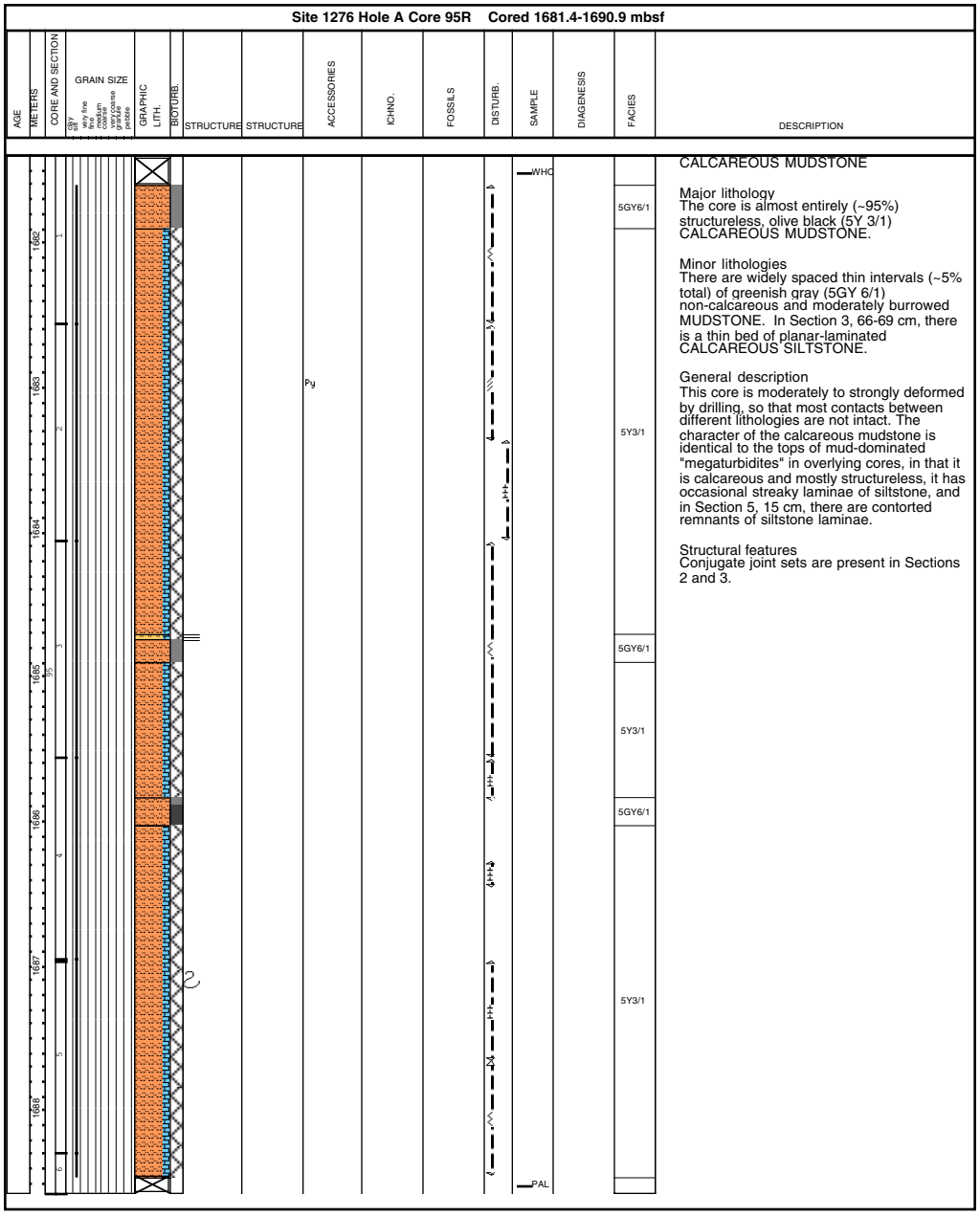
General description
The shale-clast conglomerate in Section 3 is spectacular. It is ungraded and has a sharp top, so it is interpreted as a debris-flow deposit. Clasts are as large as 15 cm, and include massive claystones, and mottled mudrocks in colors of greenish-gray, black, pale and dark gray). These clasts are subangular with irregular edges. None of the sampled clasts contain nannofossils. Other conglomerates and sandy mudstones in the core are also disorganized with dispersed mud chips or larger shale clasts. Much of the structureless calcareous mudstone is assigned to the tops of thick, mud-dominated gravity-flow deposits. An example is a calcareous siltstone bed with base in Section 2, 47 cm, that passes upwards through contorted laminae into a homogeneous calcareous mudstone top that continues into Section 1, possibly as high as 52 cm in this Section. There are several patchy occurrences of granular pyrite in the core. Estimated proportions of lithologies are:
Calcareous mudstone - 50%
Shale-clast conglomerate - 20%
Claystone - 15%
Sandy mudstone - 7%
Calcareous siltstone - 5%
Sandstone - 3%

Structural features
Three small-offset normal faults were recorded. Apparent dips range from 5˚ to 8˚ degrees.

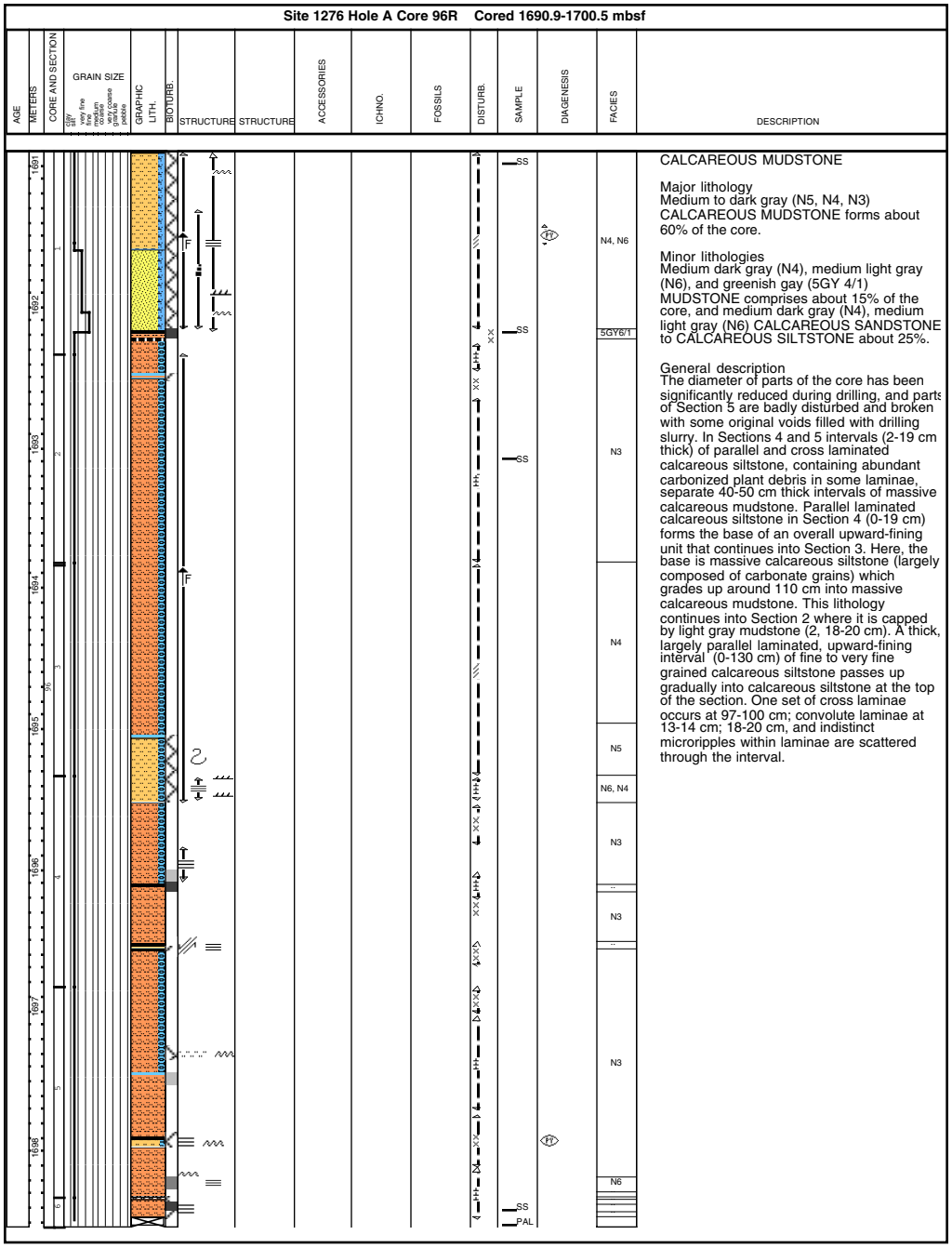
Core Photo


Site 1276 Hole A Core 94R Cored 1671.8-1681.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1672
1673
1674
1675
1676
1677
1678
1679
1680
94
SS
SS
SS
PAL
5GY 4/1
5GY 6/1
5GY 4/1
5GY 6/1
5G4/1
5GY 6/1
5GY 6/1
5GY 4/1
5GY 4/1
CALCAREOUS MUDSTONE, SILTY SANDSTONE, CLAYSTONE and MARLSTONE
Major Lithology: The core is dominated by intercalations of CALCAREOUS MUDSTONE, SILTY SANDSTONE and CLAYSTONE
Minor lithologies: A single occurence of finely laminated MARLSTONE (black shales) is present in Section 4, 43-46 cm.
General Description: Section 1 comprises redeposited calcareous mudstone and a disorganized unit, interpreted as a debris flow with rip-up clasts of sandstone and plant debris. From 100-145 cm there is a swirled interval of silty sandstone including smeared-out clasts, mica grains and plant material. Section 2 is again calcareous mudstone and some silty sandstone. There are two prominent swirled-up intervals including plant-rich debris and scattered carbonate grains. Section 3 is dominated by swirled calcareous sandstone, together with greenish dark gray (5GY4/1) mudstone which is locally burrow mottled; there is minor non-calcareous claystone at the bottom of the section. Section 3 includes a finely-laminated marlstone (black shale) at 44-47 cm, together with abundant calcareous mudstone and minor calcareous sandstone. Section 5 is mainly calcareous mudstone with subordinate graded sandstone-siltstone-mudstone intervals, interpreted as muddy turbidites, together with finely-laminated intervals (38-44 cm and 88-90 cm), interpreted as incipient black-shales. Section 6 comprises alternations of massive, calcareous mudstones and two slightly graded units.
Structures: The most prominent of a number of structural features in this core is a reverse fault in Section 5 at 22 cm with an offset of approximatley 2 cm. The orientation of the fault is 299˚/59˚. In addition a normal fault in Section 6, with an offset of at least 2 cm, is oriented at 254˚/56˚. The fault plane is marked by a small-scale "book-shelf" fabric resulting from tensional deformation during faulting.

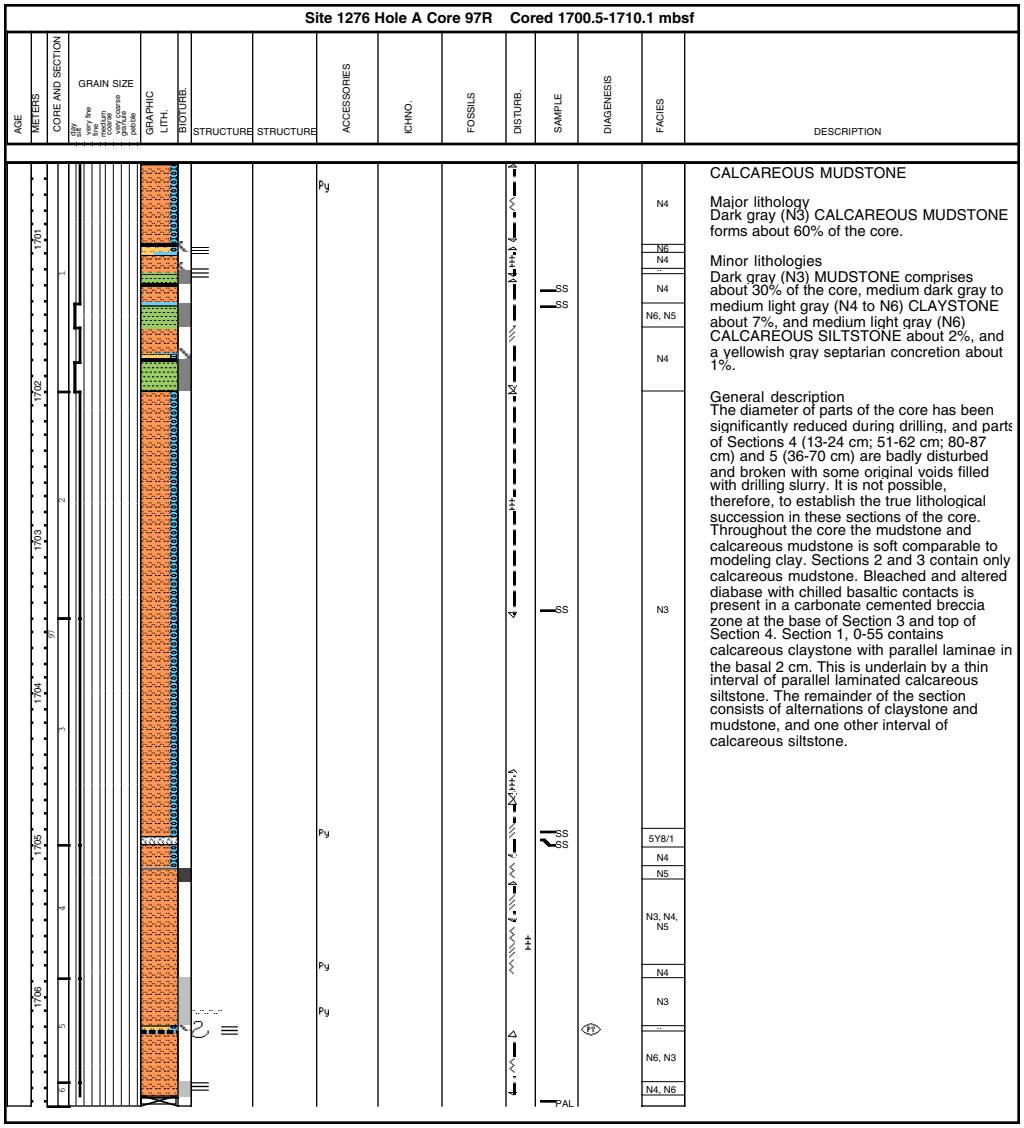
Core Photo


Site 1276 Hole A Core 95R Cored 1681.4-1690.9 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
WHC
PAL
Py
5GY6/1
5Y3/1
5GY6/1
5Y3/1
5GY6/1
5Y3/1
CALCAREOUS MUDSTONE
Major lithology
The core is almost entirely (~95%) structureless, olive black (5Y 3/1) CALCAREOUS MUDSTONE.
Minor lithologies
There are widely spaced thin intervals (~5% total) of greenish gray (5GY 6/1) non-calcareous and moderately burrowed MUDSTONE. In Section 3, 66-69 cm, there is a thin bed of planar-laminated CALCAREOUS SILTSTONE.
General description
This core is moderately to strongly deformed by drilling, so that most contacts between different lithologies are not intact. The character of the calcareous mudstone is identical to the tops of mud-dominated "megaturbidites" in overlying cores, in that it is calcareous and mostly structureless, it has occasional streaky laminae of siltstone, and in Section 5, 15 cm, there are contorted remnants of siltstone laminae.
Structural features
Conjugate joint sets are present in Sections 2 and 3.

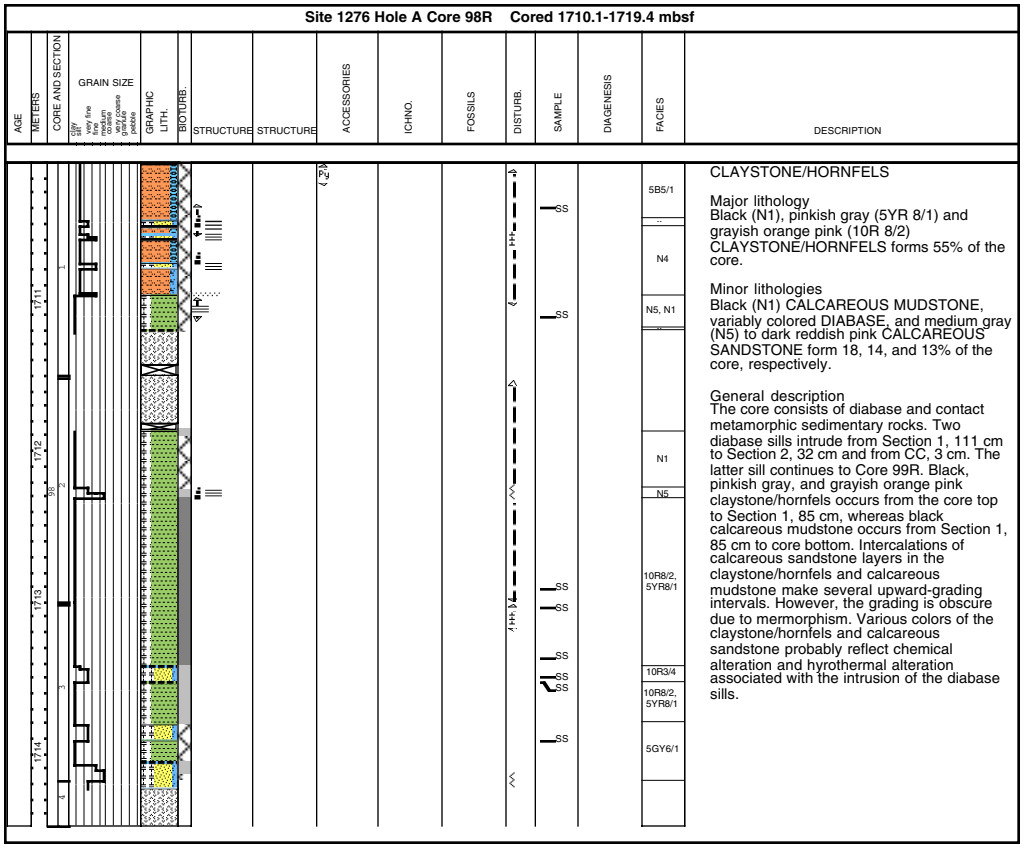
Core Photo


Site 1276 Hole A Core 96R Cored 1690.9-1700.5 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1691
1692
1693
1694
1695
1696
1697
1698
96
1
2
3
4
5
6
SS
SS
GS
SS
PAL
N4, N6
5GY6/1
N3
N4
N5
N6, N4
N3
N3
N3
N6
CALCAREOUS MUDSTONE
Major lithology
Medium to dark gray (N5, N4, N3) CALCAREOUS MUDSTONE forms about 60% of the core.
Minor lithologies
Medium dark gray (N4), medium light gray (N6), and greenish gay (5GY 4/1) MUDSTONE comprises about 15% of the core, and medium dark gray (N4), medium light gray (N6) CALCAREOUS SANDSTONE to CALCAREOUS SILTSTONE about 25%.
General description
The diameter of parts of the core has been significantly reduced during drilling, and parts of Section 5 are badly disturbed and broken with some original voids filled with drilling slurry. In Sections 4 and 5 intervals (2-19 cm thick) of parallel and cross laminated calcareous siltstone, containing abundant carbonized plant debris in some laminae, separate 40-50 cm thick intervals of massive calcareous mudstone. Parallel laminated calcareous siltstone in Section 4 (0-19 cm) forms the base of an overall upward-fining unit that continues into Section 3. Here, the base is massive calcareous siltstone (largely composed of carbonate grains) which grades up around 110 cm into massive calcareous mudstone. This lithology continues into Section 2 where it is capped by light gray mudstone (2, 18-20 cm). A thick, largely parallel laminated, upward-fining interval (0-130 cm) of fine to very fine grained calcareous siltstone passes up gradually into calcareous siltstone at the top of the section. One set of cross laminae occurs at 97-100 cm; convolute laminae at 13-14 cm; 18-20 cm, and indistinct microripples within laminae are scattered through the interval.

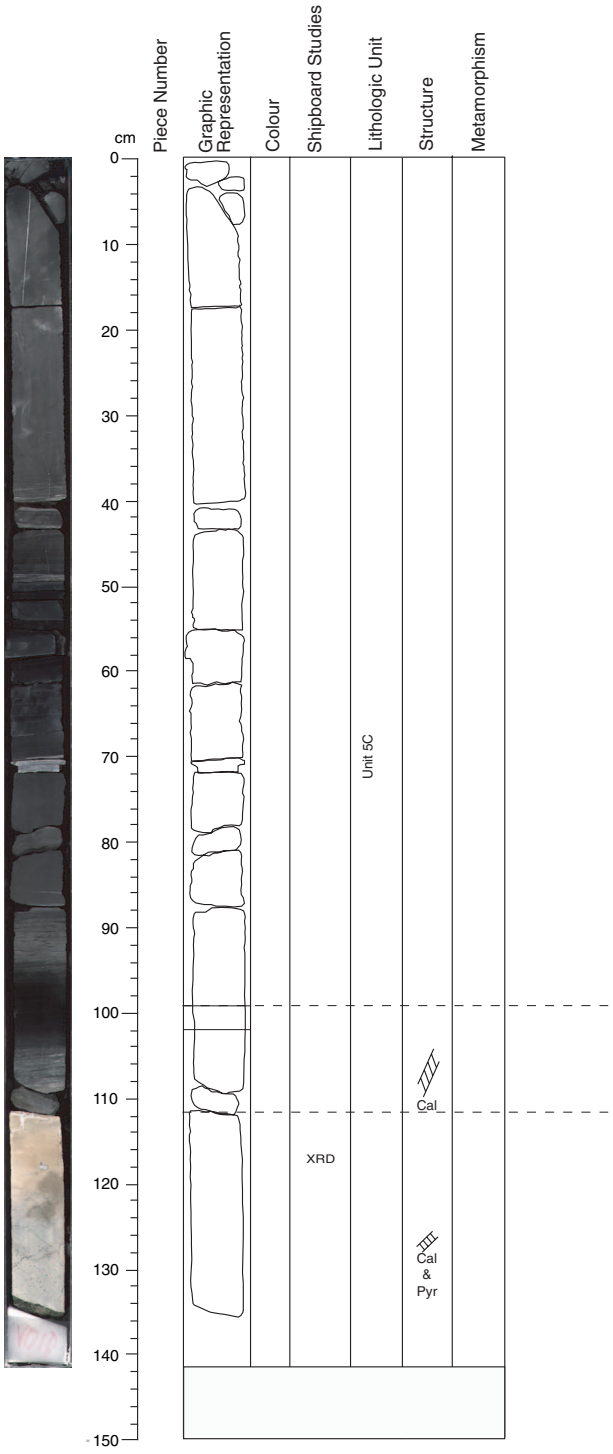
Core Photo


Site 1276 Hole A Core 97R Cored 1700.5-1710.1 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1701
1702
1703
1704
1705
1706
Py
SS
PAL
N4
N6
N4
N4
N6, N5
N4
N3
5Y8/1
N4
N5
N3, N4, N5
N4
N3
N6, N3
N4, N6
CALCAREOUS MUDSTONE
Major lithology
Dark gray (N3) CALCAREOUS MUDSTONE forms about 60% of the core.
Minor lithologies
Dark gray (N3) MUDSTONE comprises about 30% of the core, medium dark gray to medium light gray (N4 to N6) CLAYSTONE about 7%, and medium light gray (N6) CALCAREOUS SILTSTONE about 2%, and a yellowish gray septarian concretion about 1%.
General description
The diameter of parts of the core has been significantly reduced during drilling, and parts of Sections 4 (13-24 cm; 51-62 cm; 80-87 cm) and 5 (36-70 cm) are badly disturbed and broken with some original voids filled with drilling slurry. It is not possible, therefore, to establish the true lithological succession in these sections of the core. Throughout the core the mudstone and calcareous mudstone is soft comparable to modeling clay. Sections 2 and 3 contain only calcareous mudstone. Bleached and altered diabase with chilled basaltic contacts is present in a carbonate cemented breccia zone at the base of Section 3 and top of Section 4. Section 1, 0-55 contains calcareous claystone with parallel laminae in the basal 2 cm. This is underlain by a thin interval of parallel laminated calcareous siltstone. The remainder of the section consists of alternations of claystone and mudstone, and one other interval of calcareous siltstone.

Core Photo


Site 1276 Hole A Core 98R Cored 1710.1-1719.4 mbsf
AGE
METERS
CORE AND SECTION
GRAIN SIZE
GRAPHIC LITH.
BIOTURB.
STRUCTURE
STRUCTURE
ACCESSORIES
ICHNO.
FOSSILS
DISTURB.
SAMPLE
DIAGENESIS
FACIES
DESCRIPTION
1711
1712
1713
1714
98
SS
5B5/1
N4
N5, N1
N1
N5
10R8/2, 5YR8/1
10R3/4
10R8/2, 5YR8/1
5GY6/1
CLAYSTONE/HORNFELS
Major lithology
Black (N1), pinkish gray (5YR 8/1) and grayish orange pink (10R 8/2) CLAYSTONE/HORNFELS forms 55% of the core.
Minor lithologies
Black (N1) CALCAREOUS MUDSTONE, variably colored DIABASE, and medium gray (N5) to dark reddish pink CALCAREOUS SANDSTONE form 18, 14, and 13% of the core, respectively.
General description
The core consists of diabase and contact metamorphic sedimentary rocks. Two diabase sills intrude from Section 1, 111 cm to Section 2, 32 cm and from CC, 3 cm. The latter sill continues to Core 99R. Black, pinkish gray, and grayish orange pink claystone/hornfels occurs from the core top to Section 1, 85 cm, whereas black calcareous mudstone occurs from Section 1, 85 cm to core bottom. Intercalations of calcareous sandstone layers in the claystone/hornfels and calcareous mudstone make several upward-grading intervals. However, the grading is obscure due to mermorphism. Various colors of the claystone/hornfels and calcareous sandstone probably reflect chemical alteration and hyrothermal alteration associated with the intrusion of the diabase sills.

Core Photo



210-1276A-98R-1 (Section top: 1710.10 mbsf)

UNIT5c, Sediments (0 - 99 cm)

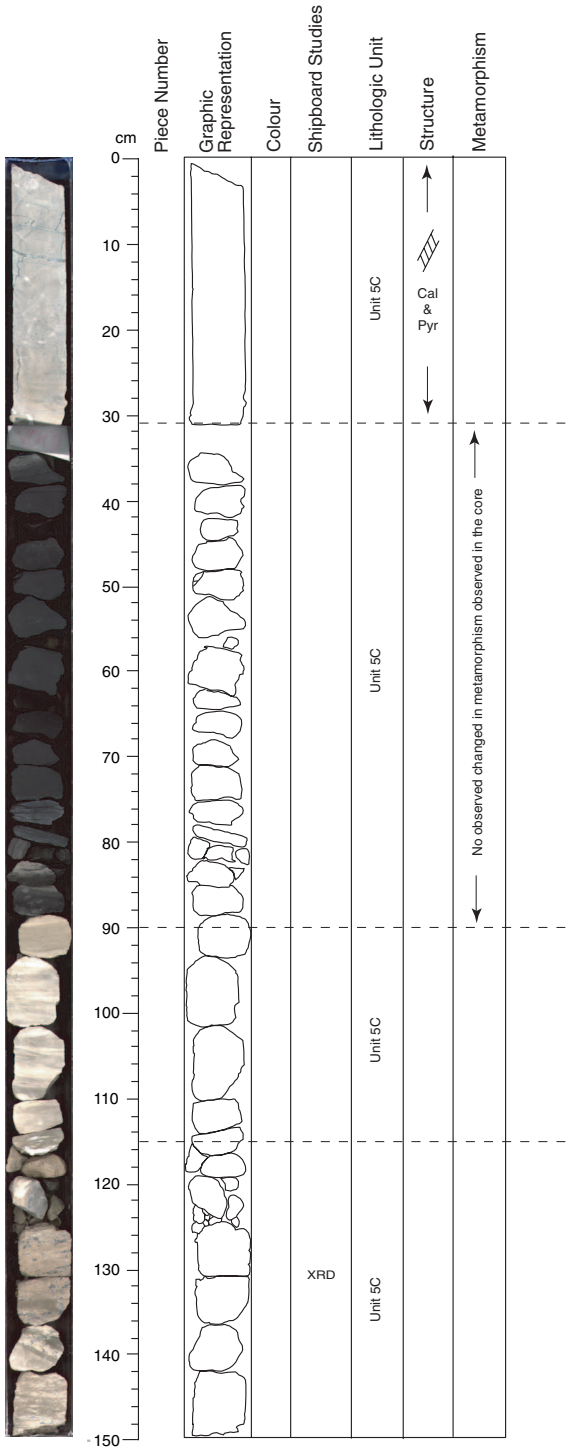
ROCK NAME: Mudstone.
CONTACTS:
Lower: Lower contact with sill
ADDITIONAL COMMENTS: There is no evidence for a thermal overprint within the upper part of the section down to 99 cm. Sedimentary Visual Core Description Sheet for discussion of sediments.

UNIT 5c, Thermally altered mudstone (99 - 112 cm)

ROCK NAME: Mudstone
CONTACTS:
Lower: There is a possible weak thermal overprint in the lowermost sediments overlying the sill.

UNIT 5c, Diabase (112 - 134 cm)
ROCK NAME: Diabase
CONTACTS:
Upper: The actural contact to the sediments is not preserved.
Lower: Bottom of section
COLOR: Light brown
PHENOCRYSTS:
Plagioclase:
GROUNDMASS:
Primary minerals: Plagioclase
Secondary minerals: Clay minerals
ALTERATION:Moderate to complete
VEINS: Mineralized veins are present in the lower sill unit at 115 cm and at the base of the sill at 134 cm. These veins contain quartz.

Core Photo



210-1276A-98R-2 (Section top: 1711.51 mbsf)

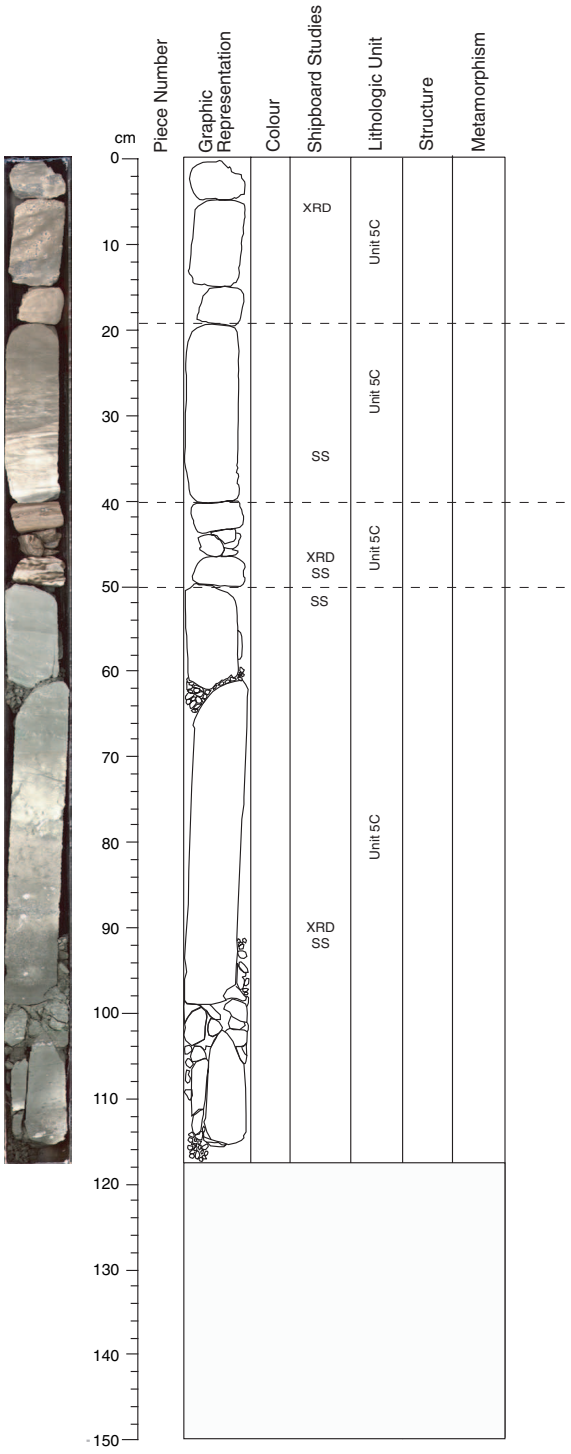
UNIT 5c, Diabase (0 - 31 cm)
ROCK NAME: Diabase
CONTACTS:
Upper: Top of section
a chilled margin is not recorded
Lower: Lower contact at 31cm does not preserve primary contact to sediments; no thermally altered contacts is recorded, indicating that it has not been recovered.
COLOR: Light brown
PHENOCRYSTS:
Plagioclase:
GROUNDMASS:
Primary minerals: Plagioclase
Secondary minerals: Clay minerals
ALTERATION: Moderate to complete
VEINS: Mineralized veins are present in the lower sill unit between 0-31 cm. These veins contain calcite and pyrite.
ADDITIONAL COMMENTS:

UNIT5c, Sediments (31 - 90 cm)
ROCK NAME: Sedimentary rock in interval.
CONTACTS:
Upper: Contact with overlying sill. A chilled margin is not recorded; it may have been removed through drilling disturbance.
Lower: These may have been removed through drilling disturbance.
COLOR: Light brown
ADDITIONAL COMMENTS: There is no thermal overprint evident in the core. See sedimentary Visual Core Description sheets for discussion of sediments.

UNIT5c, Sediments (90 - 115 cm)
ROCK NAME: Sedimentary rock in interval - Mudstone.
CONTACTS:
Upper: Contact with overlying sill. A chilled margin is not recorded; it mayy have been removed through drilling disturbance.
Lower: Sharp contact with underlying sedimentary rock.
COLOR: Light brown
GROUNDMASS:
Grain size: Very fine grained
Texture: Very finely laminated
ADDITIONAL COMMENTS: There is a change in colour between this and the overlying unit; perhaps due to hydrothermal alteration of the minerals but there is no mineralogical/thermal overprint evident in the core. See sedimentary Visual Core Description sheets for discussion of sediments.

UNIT5c, Sediments (115 - 150 cm)
ROCK NAME: Sedimentary rock in interval - Mudstone.
CONTACTS:
Upper: Contact with overlying sediments is not recorded; it may have been removed through drilling disturbance.
Lower: Sharp contact with underlying sedimentary rock in Section 1276A-98R-3 at 18 cm.
COLOR: Grayish brown
GROUNDMASS:
Grain size: Very fine grained
Texture: Very finely laminated
ADDITIONAL COMMENTS: A massive faintly laminated grayish brown rock with patches of recrystalized minerals.

Core Photo



210-1276A-98R-3 (Section top: 1713.01 mbsf)

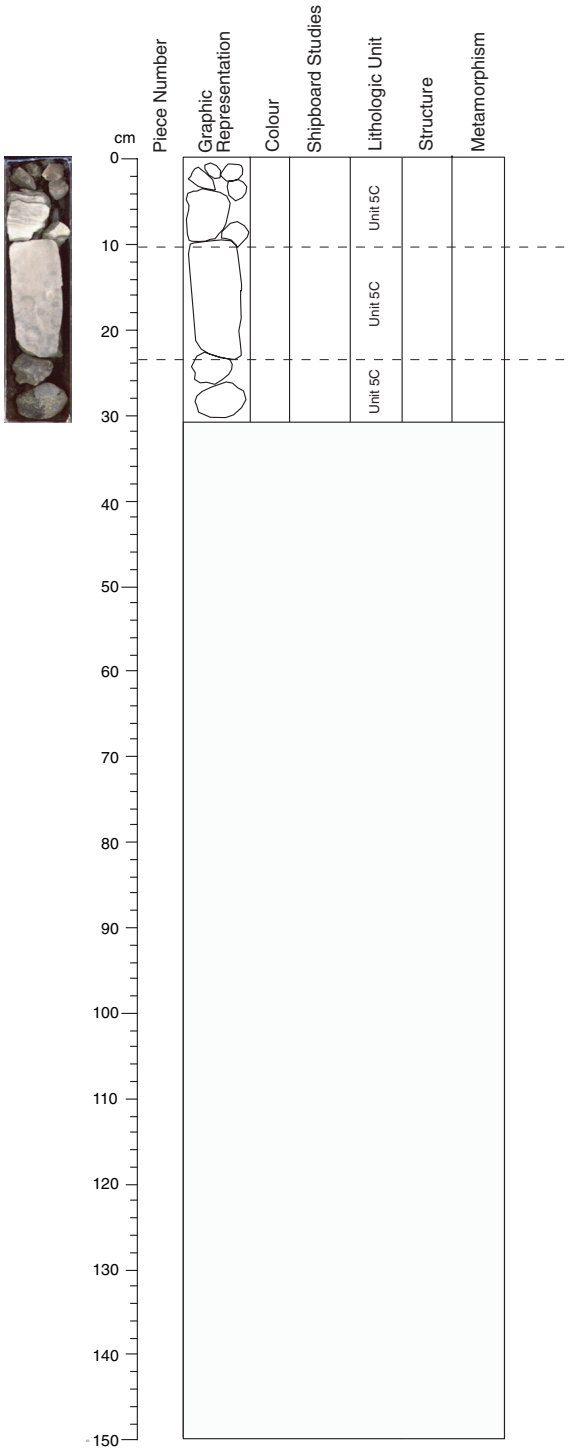
UNIT5c, Sediments (0 - 18 cm)
ROCK NAME: Sedimentary rock in interval.
CONTACTS:
Upper: Contact in Section 1276A-98R-2 at 115 cm with overlying sediments is not recorded; this may have been removed through drilling disturbance.
Lower: Sharp contact with underlying sedimentary rock.
COLOR: Greyish brown
GROUNDMASS:
Grain size: very fine grained
Texture: Very finely laminated
ADDITIONAL COMMENTS: A massive faintly laminated grayish brown rock with patches of recrystallized minerals.

UNIT 5c, Sediments (18 - 40 cm)
ROCK NAME: Sedimentary rock in interval - Mudstone.
CONTACTS:
Upper: Contact with overlying sill. A chilled margin is not recorded; this may have been removed through drilling disturbance.
Lower: Sharp contact with underlying sedimentary rock.
COLOR: Light brown
GROUNDMASS:
Grain size: Very fine grained
Texture: Very finely laminated
ADDITIONAL COMMENTS: This is similar to sediments of Section 1276A-98R-2, 90-115 cm. There are occasional recyrstallized carbonates; <1.0 mm grain-sized carbonates are present in the upper part of the section.

UNIT 5c, Sediments (40 - 50 cm)
ROCK NAME: Sedimentary rock in interval.
CONTACTS:
Upper: Sharp contact with overlying interval
Lower: Sharp contact with underlying interval
COLOR: Brownish gray
ADDITIONAL COMMENTS: Claystone and carbonate sparry cement are present. The carbonate content is recrystallized.

UNIT 5c, Sediments (50 - 115 cm)
ROCK NAME: Claystone
CONTACTS:
Upper: Sharp contact with overlying interval
Lower: Sharp contact with underlying interval
COLOR: Greenish gray
ADDITIONAL COMMENTS: This is a massive, structureless claystone unit. Crystals of white anhedral recrystallized minerals, localized in bands become more common and larger bands develop towards the base (these appear to be controlled by compositional variations within the interval). Smear slides samples taken at 90 cm show carbonate and mica in this interval.

Core Photo



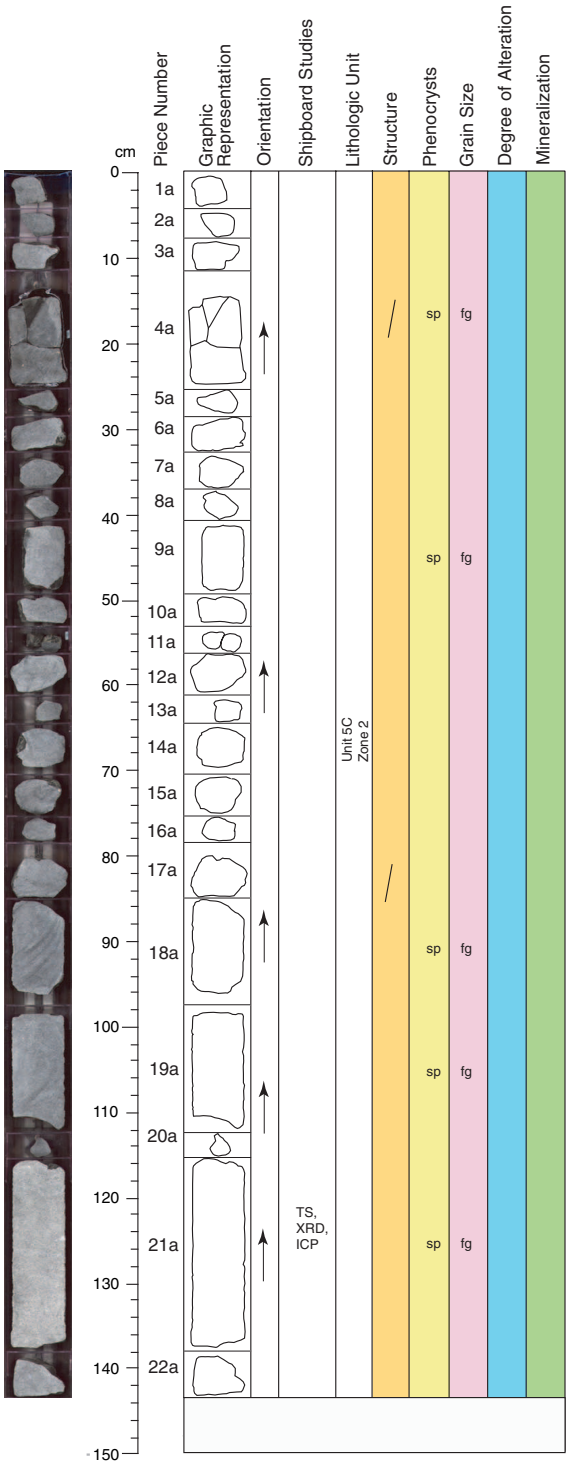
210-1276A-98R-4 (Section top: 1714.18mbsf)

UNIT 5c, Sediments (50 - 115 cm)
ROCK NAME: Claystone
CONTACTS:
Upper: Sharp contact with overlying interval
Lower: Sharp contact with underlying interval
COLOR: Greenish gray
ADDITIONAL COMMENTS: This is a massive, structureless claystone unit similar to claystone of Section 1276A-98R-3. Occasional crystals of white anhedral recrystallized minerals localized in bands become more common and larger bands develop towards the base (these appear to be controlled by compositional variations within the interval). Smear slides samples taken in Section 1276A-98R-3, 90cm show carbonate and mica in this interval.

UNIT 5c, Diabase (10 - 23 cm)
ROCK NAME: Diabase
CONTACTS:
Upper: contact not recorded - disturbed by drilling
Lower: contact not recorded - disturbed by drilling
COLOR: light brown
GROUNDMASS:
Primary minerals: Plagioclase
Secondary minerals: Clay minerals
ALTERATION:Moderate to complete

UNIT 5c, Diabase (23 - 30 cm)
ROCK NAME: Diabase
CONTACTS:
Upper: contact not recorded - disturbed by drilling
Lower: contact not recorded - disturbed by drilling
COLOR: Bluish gray
ADDITIONAL COMMENTS: This interval is composed of loose drilling breccia that appears to be aphyric diabase.

Core Photo

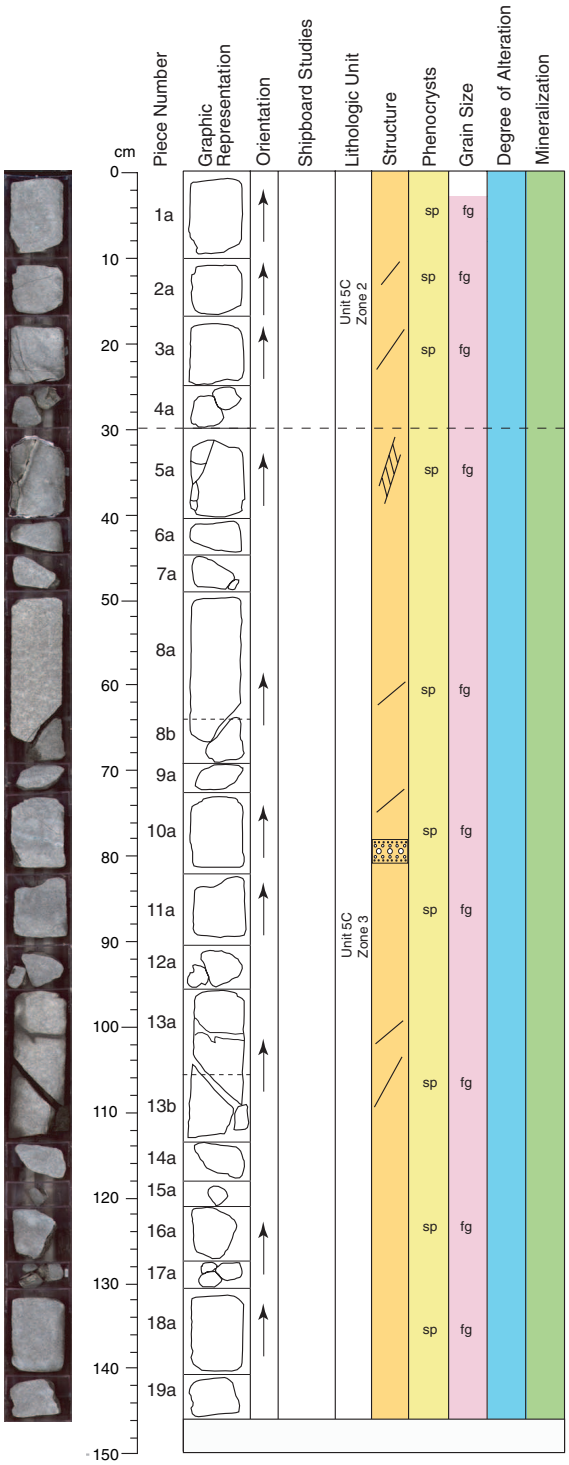


210-1276A-99R-1 (Section top: 1719.40 mbsf)

UNIT 5c, Zone 2, Fine-grained diabase

ROCK NAME: Diabase
PIECE: 1a to 22a
CONTACTS:
Upper: Top of section
Lower: Bottom of section
COLOR: Bluish gray
PHENOCRYSTS:
Clinopyroxene <1% 1-2 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, magnetite, and minor olivine
Secondary minerals: Clay minerals, zeolite, calcite, chlorite, pyrite, analcime, and serpentine
Grain size: 0.6 - 0.8 mm
Texture: Ophitic to subophitic
ALTERATION: Alteration approximately 50%
VEINS:
ADDITIONAL COMMENTS: Fractures are recorded in section 1 at 15-20cm and 83cm. These are not mineralized. Accessory apatite is seen in thin section. The original composition of the rock is rich in plagioclase (40%-50%), clinopyroxene (20%-30%), and glass (<10%).

Core Photo



210-1276A-99R-2 (Section top: 1720.83 mbsf)

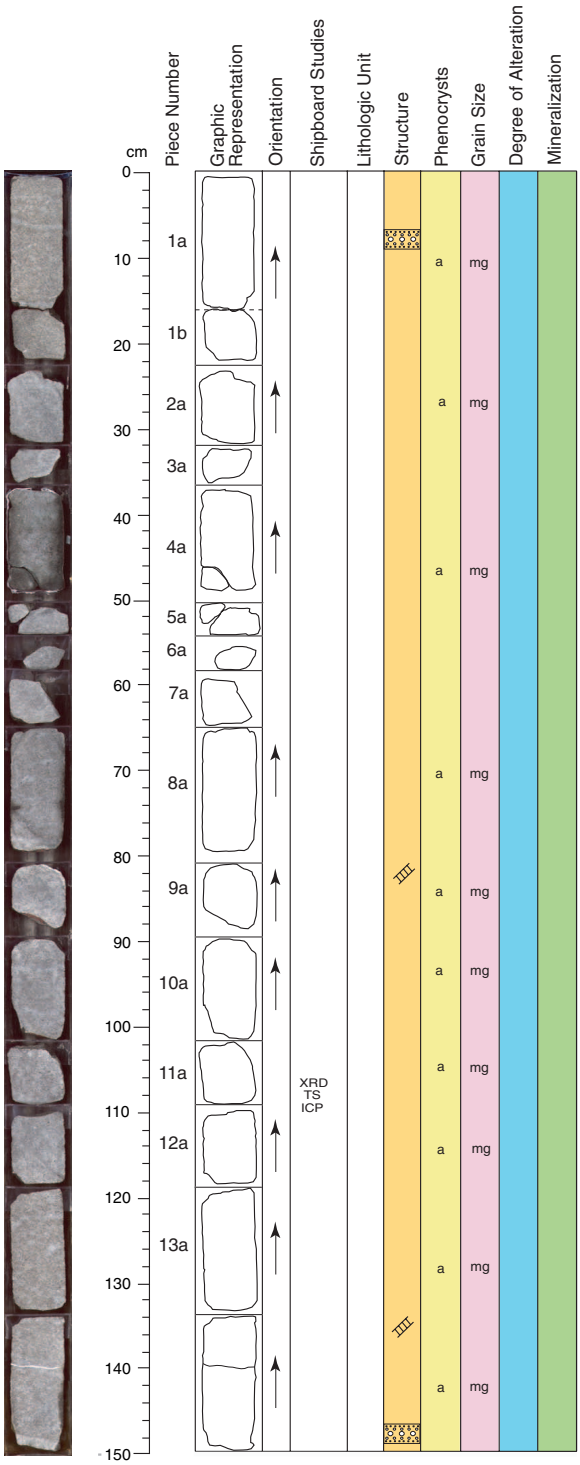
UNIT 5c, Zone 2 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 1a - 4a
CONTACTS:
Upper: Top of section
Lower: Bottom of section
COLOR: Blueish gray
PHENOCRYSTS:
Clinopyroxene: <1% 1-2 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, minor olivine, magnetite
Secondary minerals: Clay, chlorite, pyrite
Grain size: 0.6-0.8 mm
Texture: Ophitic to subophitic
ALTERATION: 50%
ADDITIONAL COMMENTS: Fractures are recorded in this section at 11 cm and 18-24 cm; these are not mineralized.

UNIT 5c, Zone 3 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 5a - 19a
CONTACTS:
Upper: The upper contact is placed between Piece 4a and Piece 5a at 30cm
Lower: Bottom of section
COLOR: Bluish gray
PHENOCRYSTS:
Clinopyroxene 30% 4-5 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, olivine, magnetite
Secondary minerals: Clay, chlorite, pyrite, and clcite
Grain size: 0.6-0.8 mm
Texture: Ophitic to subophitic
ALTERATION:
VEINS: A mineralized vein is recorded between 30-39 cm.
ADDITIONAL COMMENTS: Apatite (<3%) is present as accessory mineral.

Core Photo

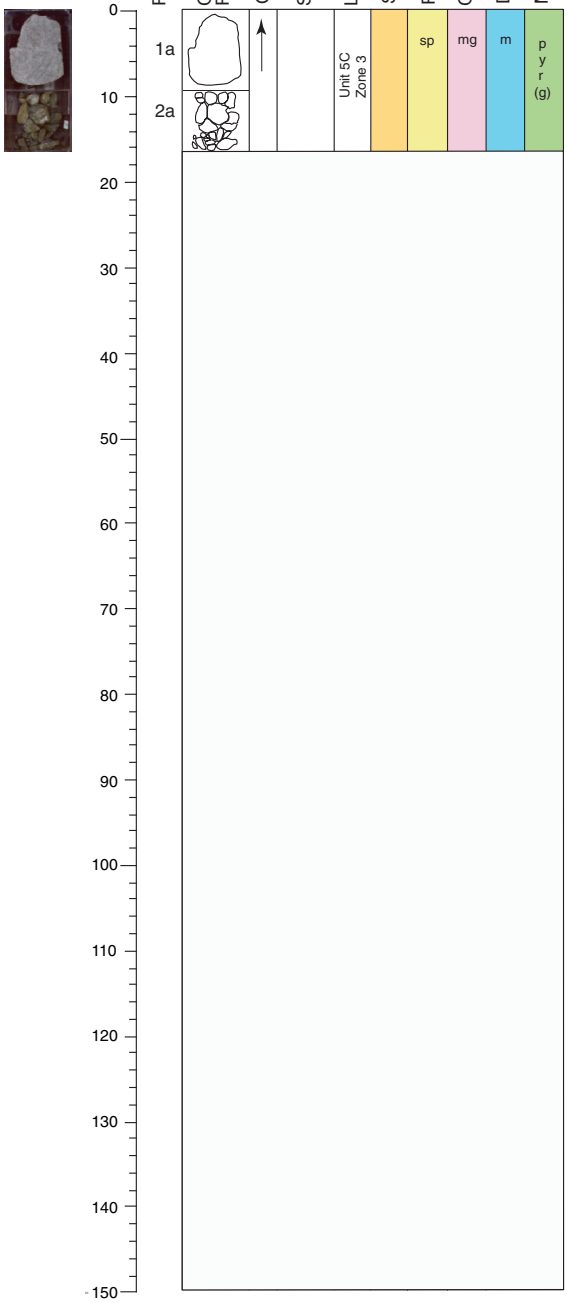


210-1276A-99R-3 (Section top: 1722.29 mbsf)

UNIT 5c, Zone 3- Fine-grained diabase

ROCK NAME: Diabase
PIECE:1a-14a
CONTACTS:
Upper: Top of section
Lower: Bottom of section
COLOR: Blueish gray
PHENOCRYSTS:
Clinopyroxene 30% 4-5 mm
GROUNDMASS:
Primary minerals: plagioclase, clinopyroxene, olivine, magnetite
Secondary minerals: clay, chlorite, pyrite, analcime, serpentine
Grain size: 0.6-0.8 mm
Texture: Ophitic to subophitic
ALTERATION: Moderate
ADDITIONAL COMMENTS: Apatite (<2%) occurs as accessory mineral.

Core Photo

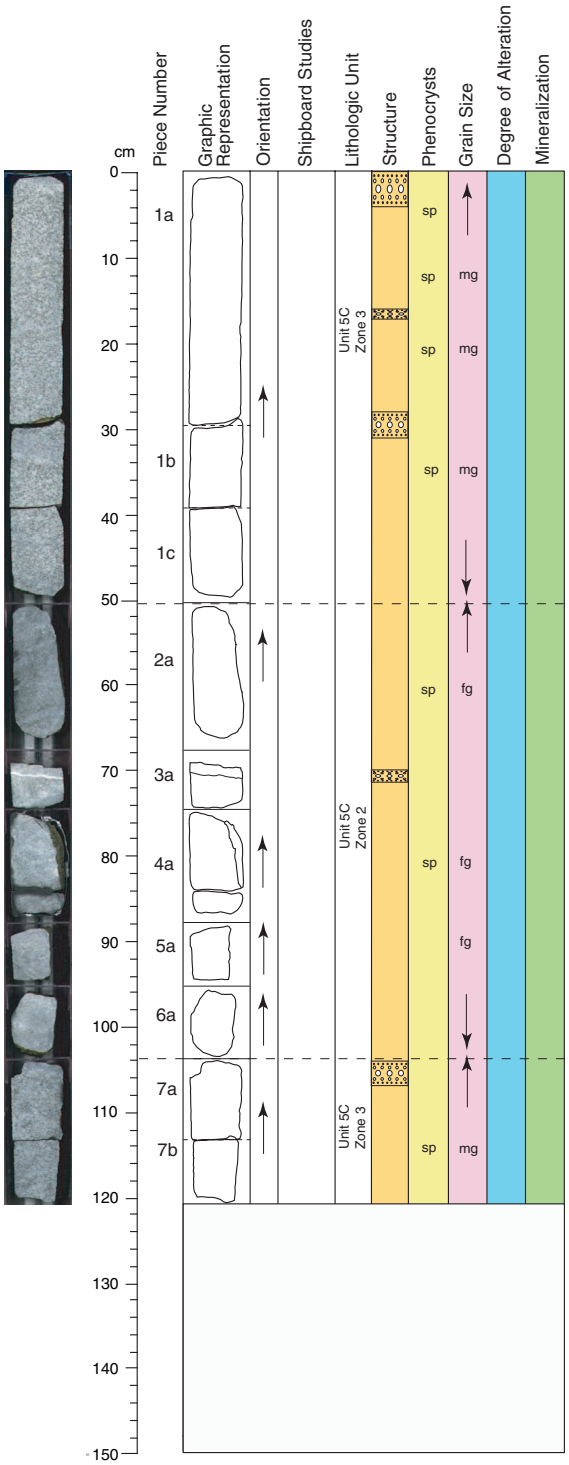


210-1276A-99R-4 (Section top: 1723.79 mbsf)

UNIT 5c, Zone 3 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 1a and 2a
CONTACTS:
Upper: Top of section
Lower: Bottom of section
COLOR: Bluish gray
PHENOCRYSTS:
Clinopyroxene 30% 4-5 mm
GROUNDMASS:
Primary minerals: plagioclase, clinopyroxene, olivine, magnetite
Secondary minerals: clay, chlorite, pyrite
Grain size: 0.6 - 0.8 cm
Texture: Ophitic to subophitic

Core Photo



210-1276A-99R-5 (Section top: 1723.96 mbsf)

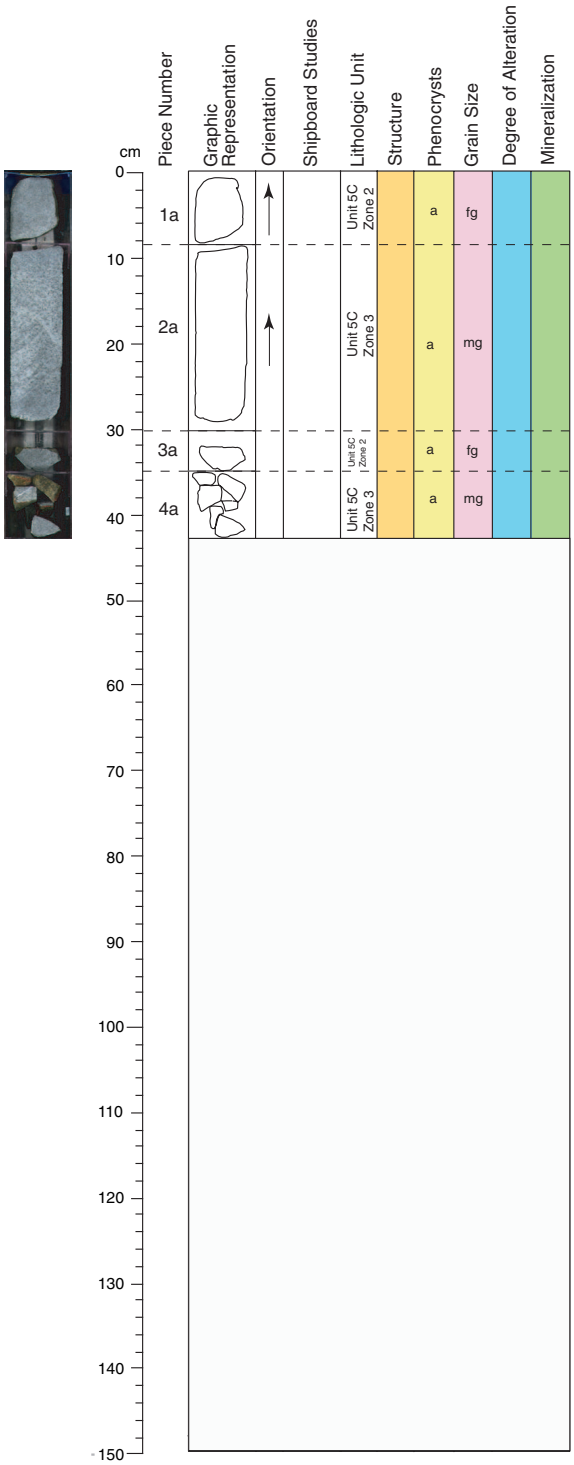
UNIT 5c, Zone 2 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 2a - 6a
CONTACTS:
PIECE: 2a - 6a:
Upper: The upper contact is placed between Piece 1c and Piece 2a at 50 cm.
Lower: The lower contact with Zone 3 is placed between Piece 6a and Piece 7a at 103 cm.
COLOR: Bluish Gray
PHENOCRYSTS:
Clinopyroxene <1% 1-2 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, magnetite, and olivine
Secondary minerals: Clay, chlorite, and pyrite
Grain size: 0.6-0.8 mm
Texture: Ophitic to subophitic
ALTERATION: Moderate
ADDITIONAL COMMENTS: A single segration band is recorded at 70-72 cm. Section 5 is out of place and pieces may not be in correct order.

UNIT 5c, Zone 3 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 1a -1c, and 7a and 7b
CONTACTS:
PIECE: 1a - 1c:
Upper: The upper contact with Zone 2 is placed between Sections 4 and 5 at the base of Section 4
Lower: The lower contact is placed between Piece 1c and Piece 2a at 50 cm
PIECE: 7a and 7b :
Upper: The upper contact with Zone 2 is placed between Piece 6a and Piece 7a at 103 cm.
Lower: The lower contact with Zone 2 is placed at the base of Section 5.
COLOR: Bluish gray
PHENOCRYSTS:
Clinopyroxene 30% 4-5 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, magnetite, and olivine
Secondary minerals: Clay, chlorite, and pyrite
Texture: Ophitic to subophitic
ALTERATION: Moderate
ADDITIONAL COMMENTS: In the upper Zone 3 interval segregarion bands are recorded at 0-4 cm, 16-17 cm, and 28-32 cm. In the lower Zone 3 interval a single segregation band and is recorded at 104-107 cm. Section 5 is out of place and pieces may not be in correct order.

Core Photo



210-1276A-99R-6 (Section top: 1725.16 mbsf)

UNIT 5c, Zone 2 - Fine-grained diabase

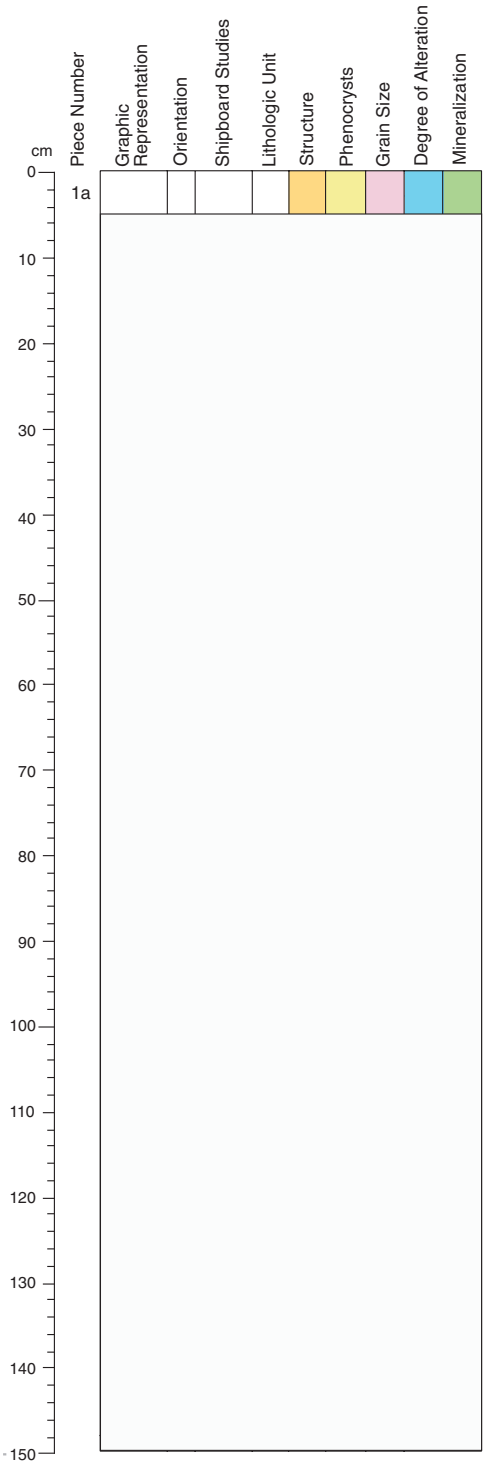
ROCK NAME: Diabase
PIECE: 1a and 3a
CONTACTS:
PIECE: 1a:
Upper: The upper contact with Zone 3 is placed between Sections 5 and 6 at the base of Section 5.
Lower: The lower contact is placed between Piece 1a and Piece 2a at 8 cm.
PIECE: 3a:
Upper: The upper contact with Zone 3 is placed between Piece 2a and Piece at 30 cm.
Lower: The lower contact with Zone 3 is placed between Piece 3a and Piece 4a at 35 cm.
COLOR: Bluish gray
PHENOCRYSTS:
Clinopyroxene <1 % 1-2 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, magnetite, and olivine
Secondary minerals: Clay, chlorite, and pyrite
Grain size: 0.6-0.8 mm
Texture: Ophitic to subophitic
ALTERATION:
ADDITIONAL COMMENTS: Section 6 is out of order and pieces may not be in correct order.

UNIT 5c, Zone 3 - Fine-grained diabase

ROCK NAME: Diabase
PIECE: 2a and 4a
CONTACTS:
PIECE: 2a:
Upper: The upper contact with Zone 2 is placed between Piece 1a and Piece 2a at 8 cm.
Lower: The lower contact is placed between Piece 2a and Piece 3a at 30 cm.
PIECE: 4a :
Upper: The upper contact with Zone 2 is placed between Piece 3a and Piece 4a at 35 cm.
Lower: The lower contact with Zone 2 is placed at the base of the core. The underlying sediments and the baked margin contact of the Zone 1 type are not recovered.
COLOR: Bluish gray
PHENOCRYSTS:
Clinopyroxene 30% 4-5 mm
GROUNDMASS:
Primary minerals: Plagioclase, clinopyroxene, olivine, and magnetite
Secondary minerals: Clay, chlorite, and pyrite
Grain size: 0.6-0.8 mm
Texture: Ophitic to subophitic

ADDITIONAL COMMENTS: Section is out of order.

Core Photo



210-1276A-102R-1 (Section top: 1732.1 mbsf)

NOTE: One piece was recovered after core was jammed in Core 101R. The piece was not described.

There was no recovery for Cores 100R, 101R, 103R, and 104R.

Core	Type	Sct	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Barite	Carbonate	ClayMineral	Dolomite	FeOxide	Feldspar	Glauconite	Heavy Minerals	Mica	Biotite	Muscovite	Opaques	Pyrite	Quartz	Silica	Zeolite	Diatoms	Fish Remains	Foraminifers	Nannofossils	Organic debris	Radiolarians	Siliceous Sponge Spicules	Bioclasts	Cement	Micrite	Rock Fragment	Carbonate Grains	Comments
Hole A																																					
1	W	1	69	753.69	M	C	C	A			A	R					R	R			R	R			T		R	C			T	A			T		Marlstone with Bioclasts
1	W	2	102	755.51	D		A	D			D	T				T	R		R		R	R						T								Claystone
1	W	3	48	756.21	M		D	A		D						T					T																Micritic chalk
1	W	4	42	757.41	M						A	C			T						R	T			T		R	C	T								Bioclastic muddy sandstone
2	R	1	45	800.45	D		A	D			D					T	R		R			R						T	R								Claystone
2	R	1	85	800.85	D		A	D			D				R		T					R				T		T									Claystone
2	R	2	8	801.58	M	R	D	C		C	R	C									T						C	A									Nannofossil Chalk
3	R	2	50	810.29	M	T	D	A			R				T						T	R					R	D				T					Nannofossil Chalk
3	R	2	133	811.12	D	T	A	D			D					T					R	R		T					T								Claystone
3	R	4	55	813.23	D	D	C	R			C										T	R					C					A			R		Bioclastic muddy sandstone
3	R	8	19	818.86	D		D	A			D			T							R	R						T	R								Claystone
4	R	3	40	822.6	M			T		R				T	T	T	T			T		R	T				R	T	T	C	R				T		Sandstone
4	R	3	52	822.72	M		R	D			D					T					T	T						T	T								Claystone
4	R	4	10	823.8	D		R	D		T	D			T							T							T	T								Claystone
5	R	4	21	833.51	D					T	D			T		T					T	T					T	T	T	T							Claystone
5	R	4	24	833.54	M						D			T		T	T	T	T		T	T								T							Claystone
6	R	2	44	840.34	D						R										T		D	C					T	R							Porcellanite with zeolite
6	R	3	60	842	D						D			T		T					R	R						T	T								Claystone
6	R	4	10	843	D					R					T												C					D					Grainstone
6	R	5	17	844.57	M					R	R			R	D	T					R	C															Glauconite Sand
6	R	5	140	845.8	D						D					T					T	R		T		T											Claystone
7	R	1	97	848.97	D					D		R			R							R					C	R				C					Calcareous Sandstone
7	R	4	95	853.45	M						R	R										R					C	R				A					Calcareous Sandstone
8	R	2	103	860.13	M		D	A		D		R									T	T															Micritic Chalk/Limestone
8	R	5	112	864.72	M					D	A	R			C												R										Glauconitic Carbonate Grains
8	R	6	7	865.17	D					D	R	C			T						T	R				T	C	C	T							Calcareous Sandstone
8	R	6	9	865.19	D	R	A	D			D	R				T					T	T							T								Claystone
8	R	6	71	865.81	M					A					D																						Glauconite Grains
9	R	1	29	867.49	D					R	R	T									T	C	A	R			R	C									Siliceous Marlstone
9	R	2	67	869.37	M					T	R						A			T		A															Shale Clast
9	R	6	107	875.68	D		R	D			D	T	T	T								T		T													Claystone
10	R	4	106	882.33	M		C	D			D		T		T		T		T	T		T						C									Calcareous Mudstone
10	R	4	115	882.42	M		D	A			C																	T		C			A				Calcareous Mudstone
10	R	4	122	882.49	D					C					R		T	T				C		T			C	T	T	T		T	C	C			Grainstone
11	R	3	72	890.12	D		C	D			D		T											T			T	R						C			Calcareous Mudstone
11	R	4	123	892.13	M		T	D			D											T		C													Zeolitic Claystone
11	R	6	60	894.17	M		C	D			D													T			T	C						R			Marlstone
12	R	2	148	898.98	M					D	A						R	R				C						R									Mudstone with carbonate cement
12	R	3	31	899.31	M	R	D	C		C	A		T				T	T				A				T			T								Calcareous Mudstone
12	R	4	55	901.05	D		A	A		R	D				T	T						C				T		T									Mudstone
13	R	2	120	908.4	D		A	D		R	D		R	T			T	T				C						R									Claystone with quartz silt
13	R	2	130	908.5	M					D	C		T	T	R		T	T									R										Muddy Limestone
13	R	3	10	908.8	D		D	A		R	D		R		R	T						R						R	T								Claystone
14	R	1	40	915.7	D		D	A		R	D			T	R						T	C				T		R	T								Claystone
14	R	2	110	917.9	M									R		T	D			T		A															Shale Clast
14	R	4	13	919.49	M					D			T	T								T						T									Sparry Limestone
15	R	1	124	926.24	M						D											T															Claystone
15	R	1	124	926.24	M						D		T									T						A	T								Nanno Marlstone
15	R	2	25	926.75	M						D		R			T																					Claystone

Core	Type	Sct	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Barite	Carbonate	ClayMineral	Dolomite	FeOxide	Feldspar	Glauconite	Heavy Minerals	Mica	Biotite	Muscovite	Opaques	Pyrite	Quartz	Silica	Zeolite	Diatoms	Fish Remains	Foraminifers	Nannofossils	Organic debris	Radiolarians	Siliceous Sponge Spicules	Bioclasts	Cement	Micrite	Rock Fragment	Carbonate Grains	Comments
Hole A (continued)																																					
15	R	2	25	926.75	M					C	A		T				T					R					T	D	T								Nanno Marlstone
15	R	2	76	927.26	M					C	D		T	T							T	C					R	R									Mudstone /Carbonate
15	R	4	45	929.95	M						A		T	R	T		R	R				A				T											Sandy Mudstone
15	R	4	50	930	D		D	A			D		R		T	T	T	T				C							T								Claystone
15	R	4	137	930.87	M	D								T		D	T	T	T		T																Sandstone (heavy mineral concentrate)
15	R	5	48	931.48	D		A	D		T	D		R			T																					Claystone
16	R	2	74	936.74	D		C	D			D			T		T	R			T		T															Mudstone
16	R	2	120	937.2	D		R	D			D				T						R							T	R								Claystone
16	R	2	145	937.45	M	C	D	C			C				C	T			T	T	T	A					T	T	T				T				Glauconitic Sandy Siltstone
16	R	4	77	939.73	D	T	C	D			D			R	R	T	R			T	T	R						T	T				T				Mudstone
16	R	6	20	941.93	D		R	D			D			T		T						T						T					T				Claystone
17	R	4	18	948.09	D		C	D		C	A					T	T											R	T				C				Marlstone
17	R	4	73	948.64	M	R	D	C		A																T	D	T					C				Foraminifer Grainstone
17	R	7	23	952.54	D	T	R	A			D			T			T				T	T						R	R				T				Claystone
18	R	1	30	954.1	D		R	D			D						T					T						T	T				T				Claystone
18	R	4	26	958.2	M	D	C	C			C			R	C	T	T					C					C		R	C		T					Silty Sandstone
18	R	5	17	959.29	D		R	D			D										T	T						R	T				R				Claystone
18	R	7	97	962.9	M		C	D			D			T		T						T					T	C		T							Calcareous Claystone
19	R	2	55	965.48	M		R	D			D			T			T			T		T					T	R	T				T				Calcareous Claystone
19	R	2	103	965.96	M					D																											Carbonate vein
19	R	3	120	967.59	D		R	D			D		T		T		T					T						R									Claystone
19	R	5	100	970.17	M					T	A																C	A									Marlstone
20	R	1	27	973.37	M		D	A		C	A		T			T						R						A									Nanno Marlstone
20	R	1	75	973.85	D		D	A			A					T					T	Q				T	T	D									Nanno Marlstone
20	R	2	50	974.95	D	R	D	A			D				T						R	R				T	R	C		R							Nanno Marlstone
20	R	3	90	976.74	D		D	A		C	D		R	T	T	T	T	T				C				T											Mudstone
20	R	5	23	978.94	M					C					R							C						A	C	R								Calcareous Sandstone
20	R	6	60	980.72	D		D	A			D					T					R	C			T				T	R								Mudstone with pyrite and plant debris
20	R	7	103	982.65	M											T					D				R					R	R							Pyrite Nodule
21	R	2	90	984.86	D	D	R	D	A	T	C	C											R				T	R	D								Muddy Nannofossil Limestone
21	R	3	51	985.97	D	T	D	A		C	D			T	T	T						R					T	C	R								Nanno Marlstone
21	R	4	41	987.37	M					R						T						C	D															Opaline Silica Clast
21	R	4	42	987.38	M					R	D					T	R	R				C	C	R			R	R									Mudstone
21	R	4	56	987.52	M						D		T		T	T						C							R								Mudstone
21	R	4	88	987.84	D		D	A		D	R																	C									Nanno Limestone
21	R	4	134.5	988.3	M					D	C					T	R	R				C							T								Muddy Grainstone
22	R	2	50	994.39	M	R	D	A			D		R	T	T	T	T	T				A						R	R								Mudstone
22	R	2	106	994.95	D						D	T			T	T	R	R	T			A							T								Mudstone
23	R	1	72	1002.72	M					T	A																	D					T				Marlstone
23	R	2	74	1004.13	M					D																											Carbonate vein
23	R	2	108	1004.47	M		A	D		D																											Micritic Chalk
23	R	2	116	1004.55	D		C	D		C	D		R							T								R									Mudstone
23	R	3	70	1005.54	D					T	C		R				R			R		T					T	T									Mudstone
23	R	4	78	1006.72	M		T	D			A		A														R	T		T							Hematitic claystone
23	R	4	79	1006.73	M			D		T				D																							Hematitic claystone
24	R	1	54	1012.14	D					C	R			T	R		R					C					C	R									Siltstone
24	R	3	93	1015.53	M		T	D			D									T		T						A									Marlstone
24	R	3	97	1015.57	M		R	D			D						T			T		T					T		T								Claystone
24	R	5	86	1018.46	M					R	C																	D									Calcareous Siltstone

Core	Type	Sct	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Barite	Carbonate	ClayMineral	Dolomite	FeOxide	Feldspar	Glauconite	Heavy Minerals	Mica	Biotite	Muscovite	Opaques	Pyrite	Quartz	Silica	Zeolite	Diatoms	Fish Remains	Foraminifers	Nannofossils	Organic debris	Radiolarians	Siliceous Sponge Spicules	Bioclasts	Cement	Micrite	Rock Fragment	Carbonate Grains	Comments
Hole A (continued)																																				
25	R	2	2	1022.72	M		D	C		D	C		T			T	T	T		T		T														Calcareous Claystone
25	R	3	1	1024.21	M		D	R			D										T						C						T		Muddy Nanno Limestone
25	R	6	46	1029.16	M	R	R	D		R	D			T								T												T		Claystone
25	R	6	52	1029.22	D	A	A	A			A			R		T	R					C												R		Sandy Mudstone
26	R	2	1	1032.27	M	R	D	A			A			C	R	T	T					A														Mudstone
26	R	2	48	1032.74	D						A		C	T			T	T				A												R		Muddy Sandstone
27	R	3	61	1044.02	M								C			T				D		R														Manganite Nodule
27	R	4	29	1045.2	M	R	A	D			D		R	T	T							C														Mudstone
27	R	5	70	1047.11	D				T		D		T	R	R	T	R	R				A						T								Mudstone
28	R	2	40	1052	D	R	D	A			A				T	T	R		R		R					T		R								Mudstone
28	R	4	140	1055.66	D	T	D	A		A	A				T	T	T	T				C						R								Marlstone
28	R	5	20	1055.9	D	R	D	C		A	A				T	T	T	T				C						A								Calcareous Claystone
28	R	6	22	1056.88	M					A	R		R		C				T			C														Quartz Sandstone with Glauconite
29	R	4	27	1064.3	M		D	A		R	D		T	T	T		T					C						C	T							Nanno Mudstone with Quartz Silt
29	R	5	10	1065.63	D	T	D	A		C	D		R			T	R					C					R	A	T							Nanno Marlstone
29	R	6	53	1067.15	M	R	D	C		C	R					T	T					C					R	D								Nanno Marlstone
29	R	CC	8	1067.69	M	D	A	R		C	R			R		R	R					D					R	T	T			R				Sandstone with carbonate cement
30	R	4	25	1073.88	D	D	A	R			R	T		R	C	R	R	R	R			D						T	R			R				Quartz Sandstone with Glauconite
30	R	4	48	1074.11	M	R	D	A			D					T	T	T			T	C				R			C							Mudstone with Organic Matter
30	R	4	80	1074.43	D		D	A		R	D		T			T			T			C						C	T							Nanno Mudstone
30	R	5	95	1076.08	M	R	D	A		C	D				T	T	T	T			R	C					T	R	R							Calcareous Mudstone with Organic Matter
31	R	1	30	1079.3	D		D	A		C	D					T						C						C	T							Nanno Mudstone
31	R	2	125	1081.75	D		D	A			D				T	T					R	C							R							Mudstone with Organic Matter
31	R	3	51	1082.46	D	R	D	A		C	A						T	T				R					R	A								Nanno Marlstone
32	R	4	53	1093.5	M	T	A	D		R				T			T	T			T	R					C	C	T					T		Marlstone
32	R	5	43	1094.85	M		T	D		T	D			T						T									R							Claystone
32	R	5	108	1095.5	M	R	D	A		C	C				T	T	T	T	T	T		A						T	T							Marlstone
32	R	6	144	1097.36	M	R	A	A			A			C	T	T	R		R		T	C							T							Mudstone
33	R	5	18	1104.38	D		R	D		T	D			T		T	T				T	R						R								Claystone
33	R	5	34	1104.54	D		T	D			D																T	A								Marlstone
33	R	5	58	1104.78	M	T	D	C		C	C					T	R			T	T						C	R	T					T		Marlstone
33	R	6	146	1107.16	D		C	D			D				T	T	R					R							T					R		Mudstone
34	R	1	135	1109.15	D	D	A	T			R			R		T						D					T	T					T			Silty Sandstone
34	R	2	98	1110.15	M	R	D	A			A			T	T	T	C					C													R		Mudstone
34	R	2	110	1110.27	M		R	D			D			T			T				R	T						T	T				T			Claystone
34	R	2	117	1110.34	D					T	D			T		T	R				T	T					T	A	T							Marlstone
35	R	3	7	1120.47	D	D	A	C		R	C					T	R	R									R	R	R							Muddy Calcareous Sandstone
35	R	3	100	1121.4	D	R	D	A			A	C			T	T					T	R					C	D								Nanno Marlstone
35	R	3	113	1121.53	D	A	A	A			A				R	R	T	T			T	A														Sandy Mudstone
35	R	4	46	1122.21	M																					D										Phosphatic Fish Remails
35	R	6	57	1125.12	D	R	D	A		R	D		R			T						C					R	C								Nanno Marlstone
36	R	5	142	1134.05	M					D																										Carbonate Nodule
36	R	6	85	1134.98	M		D	A		C	C		T			T												D								Muddy Nanno Limestone
37	R	1	114	1137.54	M		D	A		D	C																	C	T							Marlstone with Nannos
37	R	4	44	1140.95	D		A	D		R	D			T	T	T	T	T				R						R	T							Claystone
37	R	5	21	1141.86	M		D	A		D	R		T			T																				Limestone
37	R	6	47	1143.53	M		D	A		R	C																	D	T							Muddy Nanno Limestone
38	R	1	112	1147.12	M		C	D		D																										Micritic Limestone
38	R	5	98	1152.42	M		C	D		D																										Micritic Limestone
38	R	6	13	1152.95	M		D	C		D	C		T			T						R						C	T							Muddy Limestone with Nannos

Core	Type	Sct	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Barite	Carbonate	ClayMineral	Dolomite	FeOxide	Feldspar	Glauconite	Heavy Minerals	Mica	Biotite	Muscovite	Opaques	Pyrite	Quartz	Silica	Zeolite	Diatoms	Fish Remains	Foraminifers	Nannofossils	Organic debris	Radiolarians	Siliceous Sponge Spicules	Bioclasts	Cement	Micrite	Rock Fragment	Carbonate Grains	Comments
Hole A (continued)																																					
39	R	1	57	1155.77	M					D	C					T					R	C						R									Muddy Limestone
39	R	3	91	1159.14	D	R	D	A			A						R		R			R						A	R								Mudstone with Organic Matter
39	R	3	93	1159.16	M		D	C		D	R																										Micritic Limestone
39	R	5	38	1161.61	D	R	D	A			D					T	T	T	T		T	C			R												Mudstone
40	R	2	53	1166.86	D		D	A		T	A			R		T	T	T	R			C							T	T							Mudstone
40	R	2	81	1167.14	M		D	R			D			T			T	T			R						T	C	R								Calcareous Claystone
40	R	2	88	1167.21	M		R	D			D																	R	T					C			Calcareous Mudstone
40	R	3	144	1169.31	M																											D	D				Micrtitc Limestone Concretion with Spar
40	R	5	41	1171.29	M						C					T	R				T	C						T				A	A				Siltstone
41	R	1	114	1175.54	M		D	C						R		T	T				T	D					R	T	T				R				Calcareous Silstone
41	R	1	124	1175.64	M						R				T	T	R					A					D	R						T			Quartzose Grainstone
41	R	2	92	1176.82	M						R						T					R											A		A		Grainstone
41	R	5	87	1181.38	D		C	D			D					T	T				T	T						T	T								Claystone
41	R	6	74	1182.79	D		C	D			D						T				T						T	R	R								Claystone
41	R	6	80	1182.85	M		R	D			D						T				T						R	R	T								Claystone
42	R	1	6	1184.06	D	T	R	D			D						T	T	T			T						C	T								Calcareous Claystone
42	R	4	115	1189.31	M																													D			Siderite Nodule
42	R	6	42	1191.62	M	T	R	D			D					T			T		T	T					R	C	R								Calcareous Claystone
43	R	2	35	1195.38	D	R	D	A		C	D					T	T				R	C				T		C	R								Calcareous Mudstone
43	R	3	30	1196.85	D	R	D	A		R	D											C						R	R								Mudstone
43	R	4	150	1199.45	D		D	A		C	D					T	T				R	R					R	A	R								Nanno Marlstone
43	R	5	78	1200.25	M				D																												Barite Nodule
44	R	1	34	1203.54	D		D	A		T	D					T						C						T	R								Mudstone
44	R	2	126	1205.99	D	D	A	C		C	R			R	R		R				T	D					R	R	T			R					Sandstone with carbonate cement
44	R	4	61	1208.35	D			T			A			R		T	T				T	A				T			R								Mudstone
44	R	4	105	1208.79	D		C	D		D						T													T								Nodular Limestone
44	R	7	25	1212.61	M	R	D	A			C					T											C	A	R								Nanno Marlstone
45	R	1	29	1213.09	M											T					T	R								T							Limestone with Rads
45	R	3	54	1216.4	M	R	D	C			A											R					C	A	R			R					Nanno Marlstone with Forams
45	R	4	24	1217.63	D					C	C	R			T	R	R				T	D					R		R								Clayey Sandstone with carbonate cement
45	R	5	46	1219.38	D	R	D	A			D	T										C					R	C	C								Calcareous Mudstone with Organic Matter
46	R	1	25	1222.65	D		D	A			D					T						C						A	R								Marlstone with Quartz Silt
46	R	2	25	1224.16	D	T	D	A		R	D					T					T	C					T	A	R								Calcareous Mudstone
46	R	3	44	1225.89	D					C	R					T						D					R		R								Sandstone with carbonate cement
47	R	1	97	1232.97	M						T						T					T					T	T						D			Micritic Limestone
47	R	2	66	1234.19	D		D	A			D						T										T	A	T					T			Nanno Marlstone
47	R	2	139	1234.92	M	T	D	T			T			C		T	R	R	R			A					T	T					R		C		Siltstone
47	R	3	135	1236.39	M		R	D			D					T	T					T						C									Calcareous Claystone
47	R	5	118	1239.29	D		D	A		D																			T								Micritic Limestone
47	R	7	32	1241.3	D		A	D			D			T	T		C		C		T	T							T								Mudstone
48	R	2	87	1244.11	D		T	D			D						T					T						C	T					R			Calcareous Claystone
48	R	3	71	1245.49	M										T							T					T						D				Micritic Limestone/Grainstone
48	R	4	47	1246.79	M		D	T			T			R		T	R					D					R		T				A		R		Siltstone with carbonate cement
48	R	5	85	1248.71	M		T	D			D						R					R						C	T					T			Calcareous Claystone
49	R	2	12	1253.02	D		T	D			D						R					T						R	R					T			Claystone
49	R	3	63	1255.03	M																													D			Micritic Limestone
49	R	4	68	1256.58	D		D	R		T				R	T	T	C					D					T	T	T					T	T		Siltstone
49	R	5	111	1258.51	M						R			R	R							A					C	T	T				C	A	R		Calcareous Silty Sandstone
50	R	4	20	1265.7	D	T	D	C			C			R	T	T	T				R	D					T	T	T					T	R		Siltstone
50	R	6	63	1268.61	D						D						T					T						C	R								Calcareous Claystone

Core	Type	Sct	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Barite	Carbonate	ClayMineral	Dolomite	FeOxide	Feldspar	Glauconite	Heavy Minerals	Mica	Biotite	Muscovite	Opaques	Pyrite	Quartz	Silica	Zeolite	Diatoms	Fish Remains	Foraminifers	Nannofossils	Organic debris	Radiolarians	Siliceous Sponge Spicules	Bioclasts	Cement	Micrite	Rock Fragment	Carbonate Grains	Comments
Hole A (continued)																																					
51	R	1	60	1271.3	D			R			D						R					R						R	R								Claystone with Nannos
51	R	2	90	1273.1	D					D												R															Nodular Limestone
51	R	6	30	1278.5	D					T	D					T	R					C						T	R								Mudstone
53	R	1	48	1290.48	D	A	D	C		C	C				T	T	T					D					T	C	R								Calcareous Sandstone
53	R	3	48	1293.48	D	D	A	R		C	C			R			R					D					T		C								Calcareous Mudstone with Organic Matter
53	R	3	113	1294.13	D	R	D	A			D					T					R					T	T	A	R								Nanno Marlstone with Organic Matter
53	R	5	59	1296.53	D		D	A		R	D					T	T				T	R					T	R	R								Nanno Claystone
53	R	6	51	1297.95	D	R	D	C		C	C				T	T	R					D					R	R									Calcareous Siltstone
54	R	1	71	1300.31	D					D						T						A															Sandstone with carbonate cement
54	R	5	95	1306.55	D					A	R				T	T	T				T	D					R	R	C								Sandstone with carbonate cement
54	R	6	53	1307.54	D		D	A		R	D	R				T						T						C	T								Marlstone
55	R	2	9	1310.79	D		D	A		R	D					T						R						A									Nanno Marlstone
55	R	4	50	1314.2	D		D	A		R	D						T				R	T						A	R								Nanno Marlstone
56	R	1	119	1319.99	D		R	D			D						R					R							T					T			Claystone
56	R	2	48	1320.78	M		D	A		D																			T								Nodular Limestone
57	R	1	7	1328.57	M		T	D		C	D						T					C					T	R	T					T			Claystone
57	R	1	95	1329.45	M		D	A		D																			T								Limestone Clast in coars-grained Sandstone
58	R	2	28	1339.88	M	T	D	A		A	A										T	A						T				R			R		Calcareous Mudstone
58	R	3	68	1341.78	D		C	D			D						R					R							R					T			Mudstone
58	R	3	79	1341.89	D		T	D			D						R					T							R								Claystone
59	R	5	120	1351.3	M		D	R			R			T		T						D						T					T			Siltstone
59	R	6	10	1351.72	M		R	D			D						T					T							T								Claystone
60	R	2	53	1355.73	D		D	A		R	D			R		T						C						T	R								Claystone with Organic Matter
60	R	3	40	1357.1	D	R	D	A		C	D					R	T					R				T	T	A	R								Nanno Marlstone with Organic Matter
60	R	4	86	1358.96	D	C	D	R		C	C											D					R	T	T								Siltstone with carbonate cement
60	R	6	59	1361.69	D		D	C		C	C			R		T	R				T	D					T	R	R								Siltstone
61	R	2	90	1365.6	D		A	D		R	R			R		T	T				T	D					T	R	R								Siltstone with carbonate cement
61	R	3	105	1367.25	D		D	A		R	D					T					T	R						T	R								Claystone with Organic Matter
61	R	3	140	1367.6	M					D												R						T	T								Calcarerous Halo around Chert nodule
61	R	4	120	1368.9	D	T	D	A		T	D					T	T					A							R								Silty Mudstone
62	R	5	70	1379.6	M					D							T					R						R	T								Limestone
62	R	6	35	1380.75	M					D												T															Limestone
64	R	3	79	1395.99	M	T	C	D		T	D					T	R					T						R	T					R			Mudstone
64	R	3	102	1396.22	M	T	D	T			T			T		T	T			T		C							T						D	Calcareous Siltstone
64	R	4	90	1397.6	M		A	D			D		T			T	C			T		C														Mudstone
65	R	2	104	1404.34	D		R	D			D						R			T		T							T								Claystone
66	R	3	88	1415.18	D		R	D			D						R					T							R					T			Claystone
66	R	5	60	1417.9	M					A												A					T								R	Calcareous Siltstone
68	R	1	18	1430.68	D		D	A		R	C					T					T	R														Claystone
68	R	2	139	1433.39	D		D	A		C	D			T							T	A						C	R								Calcareous Mudstone
68	R	3	22	1433.72	D	C	D	A		A	R			R		T	R				T	D					T	R	R								Siltstone with carbonate cement
69	R	2	2	1441.32	D		D	A		D	A										R	R				T		R	C								Marlstone with Organic Matter
70	R	1	100	1450.5	D		D	A		R	D					T					T	R					T	R	R								Claystone
70	R	2	45	1451.45	D		D	A		R	D	T				T	T				T	R														Claystone
70	R	3	121	1453.71	D		D	A		T	D					T					C	R				T			C								Claystone with Organic Matter and Pyrite
71	R	1	87	1460.07	M						D																										Diagenetic Carbonate
71	R	2	67	1461.37	M						D																										Diagenetic Carbonate
71	R	5	22	1465.42	M						D										C																Diagenetic Carbonate
72	R	3	79	1472.69	D		D	A		T	D					T						C							R								Claystone
72	R	5	81	1475.54	M			D			D						T				T	T							R					T			Claystone

Core	Type	Sct	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Barite	Carbonate	ClayMineral	Dolomite	FeOxide	Feldspar	Glauconite	Heavy Minerals	Mica	Biotite	Muscovite	Opaques	Pyrite	Quartz	Silica	Zeolite	Diatoms	Fish Remains	Foraminifers	Nannofossils	Organic debris	Radiolarians	Siliceous Sponge Spicules	Bioclasts	Cement	Micrite	Rock Fragment	Carbonate Grains	Comments
Hole A (continued)																																					
72	R	5	107	1475.8	D		D	A		D	A											A														Marlstone
73	R	3	50	1482	D		D	C			C			T		T					C	T						R								Pyrite-rich mudstone
73	R	6	40	1486.4	M		A	D		C	D					T						T							T							Calcareous Mudstone
73	R	CC	8	1487.16	M		R	D			D						T				T	T						T	T							Claystone
75	R	5	132	1505.02	M	R	A	A			A			C		T	C				T	C						T	R				T			Sandy Mudstone
75	R	6	30	1505.5	M																												D			Micritic Limestone
75	R	6	63	1505.83	M		C	D			D					T	R					R						T	T				C			Calcareous Mudstone
76	R	2	15	1508.95	D	T	D	A		R	A					T	R				T	A						R	R							Calcareous Mudstone
76	R	3	10	1510.4	D	D	A	R		A	C			T		T	R				T	D						T	R							Sandstone with carbonate cement
76	R	3	52	1510.82	D		D	A		C	A			T							T	A						R	R							Calcareous Mudstone
76	R	5	14	1513.44	D		D	A		T	D			T		T	R					C							T							Mudstone
76	R	6	39	1515.19	M		D	A		D						T					A															Diagenetic Carbonate
76	R	CC	10	1517.67	M																								D							Plant Debris
77	R	1	96	1517.86	D		D	A		R	D					T						A						R	R							Calcareous Mudstone
77	R	4	73	1522.13	D		D	A		T	D					T						C							R							Claystone
77	R	5	145	1524.35	M	T	D	C		D						T	T				T	A					T	T	T							Siltstone with carbonate cement
78	R	2	4	1528.04	D		D	A		R	D			T		T	R					C						R	R							Calcareous Mudstone
78	R	3	17	1529.67	D		D	A		T	D					T	T					R						T								Claystone
79	R	1	123	1537.43	D		A	D			D						C				T	T					T	T	R			T	R	T		Calcareous Mudstone
79	R	5	42	1542.62	M		C	D			D						C					T						T								Mudstone
79	R	5	84	1543.04	D	R	D	R		C	R						C				T	D					T		T					T		Calcareous siltstone
79	R	6	52	1544.22	D		C	D			D			T		T	R				T	R							C							Organic Mudstone
80	R	1	76	1546.56	M																															Carbonate Vein
80	R	2	70	1548	D		C	D			D					T	C					T						T	T					T		Mudstone
80	R	3	123	1550.03	M		C	D			D			T		T													T				T			Mudstone
81	R	1	32	1555.72	D		D	A		R	D			T			T				T	C						T								Claystone
81	R	1	48	1555.88	D		R	D			D			T			R				T	T							R					T		Claystone
81	R	1	51	1555.91	D	T	C	D			D			T		T	C				T	T						T	T			T				Calcareous Mudstone
81	R	3	6	1558.46	D		D	C			C					T	C			T		D						T	T			R			R	Calcareous Siltstone
81	R	4	135	1561.15	D		D	A		C	D			T		T	T					C						C	R							Nanno Marlstone
82	R	1	5	1565.05	D		D	A		R	D			T		T						C						R	R							Claystone
82	R	1	20	1565.2	D		D	A		C	D					T					T	C						C	R							Calcareous Claystone
83	R	1	64	1575.14	D	T	D	A		T	D					T					T	A							R							Mudstone
83	R	2	64	1576.64	D					A	R					T	R					D				T			T							Sandstone with carbonate cement
83	R	3	67	1578.17	D	R	D	A		R	D			T		T						C						C	R							Calcareous Mudstone
83	R	3	133	1578.83	M					D	C											R						T	T							Diagenetic Carbonate
83	R	4	16	1579.16	D		D	A		R	D					T	R				T	C						R	R							Claystone
83	R	4	42	1579.42	M	T	D	A		R	D					T	R				R	C							R							Mudstone with Organic Matter
84	R	1	68	1584.88	M		D	A			A			R		T	T				T	A						T	T					R	T	R	Calcareous Mudstone
84	R	2	1	1585.71	M	A	A	C			C			R	T	T	R					D							C					C		R	Calcareous Silty Sandstone
84	R	2	114	1586.84	D		C	D			D		T				C					T						R	R					R			Mudstone
84	R	3	47	1587.67	M		D	A			A					T	A											T						T			Mudstone
85	R	1	23	1587.93	D		D	A		C	C			T		T	T				T	D						R	T								Calcareous Mudstone
85	R	2	62	1589.82	D		D	A		C	D			T		T	T				T	A						R	T								Calcareous Claystone
85	R	3	70	1591.4	M					D																			T								Diagenetic Carbonate
85	R	4	96	1592.41	D	D	A	R		C	C			T		T	T				T	D					T	T	R								Sandstone with carbonate cement
85	R	5	41	1593.26	D		D	A		T	D			T		R	R					A							T								Claystone
85	R	5	31	1593.36	M		D	A			D			T		T	T					A							T								Claystone with Kaolin blebs
86	R	1	26	1595.06	D		D	A		A	D						T					C						R	R								Marlstone
86	R	5	24	1601.04	D	R	D	A			D		T				R					C								T								Claystone

Core	Type	Sct	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Barite	Carbonate	ClayMineral	Dolomite	FeOxide	Feldspar	Glauconite	Heavy Minerals	Mica	Biotite	Muscovite	Opaques	Pyrite	Quartz	Silica	Zeolite	Diatoms	Fish Remains	Foraminifers	Nannofossils	Organic debris	Radiolarians	Siliceous Sponge Spicules	Bioclasts	Cement	Micrite	Rock Fragment	Carbonate Grains	Comments
Hole A (continued)																																				
86	R	6	23	1602.03	D	D	A	A			D			R		T	T				T	D						T	R							Muddy Sandstone
87	R	2	105	1607.05	D		D	A			D			T		T	R					C							R							Mudstone
87	R	2	107	1607.07	M		C	D			D					T	C					R							T							Mudstone
87	R	3	76	1608.3	M	A	D	R						R		R	R				R	D						T	R			R		R	T		Sandy Siltstone
87	R	5	6	1610.64	D		D	A		C	D		T			T	R				T	C						R	R								Calcareous Mudstone
87	R	5	7	1610.65	D		C	D			D						C				T	T						T	R					R			Calcareous Mudstone
87	R	6	41	1612.52	D	D	A	R		C	A			R		T						D							R								Muddy Sandstone with Carbonate Cement
87	R	6	50	1612.61	D	D	A	R		C	C			R		T	T					D						T							T		Clayey Sandstone with Carbonate Cement
87	R	6	67	1612.78	M		D	A		C	D	C		R			C				T	C							T								Altered Marlstone
87	R	6	72	1612.83	M					D		C					R					R							T								Authigenic Carbonate with Biotite
88	R	7	119	1623.02	M					D	C						T					A							R								Carbonate Vein with some Host Sediment
88	R	8	5	1623.09	D		D	R		A	D			T		T	R					A							T								Siltstone with carbonate cement
89	R	1	20	1623.8	M					D	A																										Altered Ash with Carbonate Cement
89	R	1	36	1623.96	D		D	A		A	D		T			T						C						R	R								Marlstone
89	R	2	26	1625.36	M		A	D			D					T	T				T	R							T								Claystone
89	R	5	6	1628.7	D		D	A		C	D		T			T	T					C						R	R								Calcareous Claystone
90	R	4	79	1638.56	D	R	D	R		A	R			T		T	T				T	D					T	T	R								Siltstone with carbonate cement
90	R	4	100	1638.77	D		D	A			D					T	T					C							T								Claystone
90	R	7	47	1642.14	M					C											R								D								Plant Debris with Carbonate Cement
91	R	2	110	1645.4	M		D	A			A			C		T	C					C															Mudstone
91	R	3	72	1646.52	M		A	A			A			C		T	C				T	C							R								Mudstone
91	R	4	10	1647.4	M		A	D			D			T		T	R				T	R						T	T								Marlstone
91	R	4	110	1648.4	M	A	D	C		C	C			R								A							T					R	C		Muddy Sandstone to Sandy Mudstone
92	R	1	131	1653.81	D		C	D			D						R				R							T	R					R			Claystone
92	R	5	71	1659.21	M																																Phosphate(?) Concretion
92	R	6	127	1661.27	M		C	D			D						C					R							T								Mudstone
93	R	1	30	1662.4	D		D	A		T	D			R		T	R				T	C						T	R								Mudstone
93	R	3	36	1665.46	M		D	A			D					T	R												T								Claystone Clast
93	R	3	78	1665.88	M		D	A		T	D			T		T	R					R							T								Claystone Clast
93	R	4	131	1667.91	D		D	A			D					T	R				T	C							T								Claystone
93	R	5	115	1669.25	D	R	D	A		C	D					T	R					A						R	R								Calcareous Mudstone
94	R	2	40	1673.66	M																								D								Mineralised Plant Debris
94	R	4	42	1676.57	D		D	A		C	D					T					R	R						C	C								Marlstone with Organic Matter
94	R	4	117	1677.32	D		D	A		T	D					T					R	C						T	R								Claystone with Organic Matter and Pyrite
96	R	1	8	1690.98	M		D	R			R			C			C					D							R			C		T			Carbonate-cemented Siltstone
96	R	1	127	1692.17	M									C		T	R					A							T			T	C			C	Calcareous Sandstone
96	R	2	75	1693.08	D		D	A			A					T	A				R	T					T	T	R					C			Calcareous Mudstone
96	R	CC	8	1698.57	D		C	D			D			T		T	C					R							T								Mudstone
97	R	1	82	1701.32	M					D	C						T					T							T			T					Microsparite Limestone
97	R	1	97	1701.47	M		R	D			D						R					T							R								Claystone
97	R	2	145	1703.45	D		D	A			A			T		T	A				T	A						T	R					A			Calcareous Mudstone
97	R	3	143	1704.93	M					D																											Carbonate Vug fill
97	R	3	143	1704.93	M					R	C											T		A					T								Hydrogunkite?
98	R	1	30	1710.4	D		D	A		R	D						R					A							R								Mudstone with Organic Matter
98	R	1	101	1711.11	M		D	A		T	D			T		T	R				T	C							R								Claystone with Organic Matter and Pyrite
98	R	2	140	1712.91	M		D	C		R	D					T	C					A							T								Claystone
98	R	3	5	1713.06	M						D						C					C		R					T								Micaceous Claystone
98	R	3	35	1713.36	M					C	D					T	R					C															Calcareous Claystone
98	R	3	48	1713.49	M					A	D																		T								Claystone with carbonate cement
98	R	3	51	1713.52	M		D	A			D					T						C															Claystone

Core	Type	Sct	Top (cm)	Depth (mbsf)	Lithology	Sand	Silt	Clay	Barite	Carbonate	ClayMineral	Dolomite	FeOxide	Feldspar	Glauconite	Heavy Minerals	Mica	Biotite	Muscovite	Opaques	Pyrite	Quartz	Silica	Zeolite	Diatoms	Fish Remains	Foraminifers	Nannofossils	Organic debris	Radiolarians	Siliceous Sponge Spicules	Bioclasts	Cement	Micrite	Rock Fragment	Carbonate Grains	Comments
Hole A (continued)																																					
98	R	3	90	1713.91	M					A				R			D																				Micaceous Claystone

"Key: D=Dominant (>50%), A=Abundant (25%-50%), C=Common (10%-25%), R=Rare (2%-105), and T=Trace (<2%). See **"Explanatory Notes"** chapter (this volume)."

Thin Section:	**87R-7, 16-19 cm Piece 2A Unit 5c**			**ODP TS# 1**	**Observer: AE**
Rock Name:	**Aphyric diabase**				
Grain Size:	**0.4-0.5 mm**				
Texture:	**Intergranular**				

Primary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
Phenocrysts					
plagioclase	<1		0.8 x 1 or 1.6 x 0.08	Subhedral	Only two in whole thin section.
clinopyroxene	<1		up to 1.2	Anhedral	
Groundmass					
plagioclase	30	50-60	0.4	Subhedral to anhedral	
clinopyroxene	10	20	0.2 to 0.4 - 0.5	Anhedral	Strongly altered.
magnetite	8	<5	0.3		
olivine		<5			
glass		15			

Secondary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
chlorite	25				
clay	30				
serpentine	<5				
calcite	3		0.48	Anhedral	
pyrite	5			Subhedral to euhedral	Acicular magnetite.

Comments
Up to 3% apatite are present.

87R-6, 86-89 cm Piece 4A Unit 5c				**ODP TS# 2**	**Observer: AE**
Rock Name:	**Aphyric diabase**				
Grain Size:	**0.2-0.4 mm**				
Texture:	**Intersertal**				

Primary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
Phenocrysts					
plagioclase	<1		0.6	Subhedral	
clinopyroxene	<1		0.8	Subhedral	
Groundmass					
plagioclase	<1	60	0.2-0.4		
clinopyroxene	<1	10	0.2-0.4		
magnetite	<<1	<5	0.04-0.08 to 0.8	Euhedral to anhedral	Smaller euhedral grains.
olivine	<<1	<5			
glass		20			

Secondary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
chlorite	45				
calcite	10		0.2-0.4	Anhedral	
clay	30				
pyrite	4		0.04-0.08 to 0.8	Euhedral to anhedral	

Comments
Accessory apatite are present up to 1%.

87R-6, 108-113 cm Piece 5A Unit 5c **ODP TS# 3** **Observer: AE**

Rock Name: **Aphyric diabase**
Grain Size: **0.2-0.4 mm**
Texture: **Intersertal**

Primary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
Phenocrysts					
plagioclase	<1		up to 0.8	Subhedral	
Groundmass					
plagioclase	<1	60	0.4		
cpx	<1	10	0.16-0.2		
magnetite	3	<5	0.04-0. 8	Subhedral to anhedral grains	
olivine		<5			
glass		20			

Secondary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
chlorite	**20**				
calcite	15		0.8		
clay	45				
pyrite	7		0.2	Subhedral to euhedral	Some acicular pyrite.

Comments

The rock contains up to 3% apatite. Fluid inclusions are very frequent especially in the pyroxene. In the thin section one zone containing spherulitic calcite up to 2.5 mm in size and acicular pyrite are found. The zone has a subophitic texture and is less altered than the remainder of the thin section.

88R-2, 93-96 cm Piece 4A Unit 5c **ODP TS# 4** **Observer: AE**

Rock Name: **Aphyric diabase**
Grain Size: **0.6-0.8 mm**
Texture: **Intersertal to subophitic**

Primary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
Phenocrysts					
plagioclase	<<1		1.4 x 0.7	Subhedral	Zoned, only one in whole thin section.
clinopyroxene	<1		1.6 (original size?)		Altered.
Groundmass					
plagioclase	50	60	0.32-0.6		
clinopyroxene	7	10-20	0.08-0.6	Subhedral to anhedral	Size only due to degree of alteration.
magnetite	5	<5	up to 0.5		
olivine		<5			
glass		10-20			

Accessory minerals	% present	% original	Size (mm)	Morphology	Comments
apatite	4		0.3	Euhedral	Only a few crystals.
biotite	<3		0.2		

Secondary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
chlorite	10				
pyrite	2				Acicular.
clay	30				

Comments

"Half the thin section is a zone which is very different from the background in terms of texture (intersertal), composition, and crystal shapes. In this zone albite crystals are up to 1 mm and zoned and clinopyroxene is totally alteration. There are large calcite crystals, generally 1.6 mm, however the largest is 4 mm. In addition, acicular pyrite up to 5 mm and clay minerals are common, and occur together with feldspar and quartz (XRD). A pyrite vein is present. Analcime was identified by XRD."

88R-3, 56-59 cm Piece 6 Unit 5c				**ODP TS# 5**	**Observer: AE**
Rock Name:	**Aphyric diabase**				
Grain Size:	**0.5-0.7 mm**				
Texture:	**Intersertal to subophitic**				

Primary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
Phenocrysts					
clinopyroxene	<1		1.2-1.8		Strongly altered.
Groundmass					
plagioclase	45	60	0.2-0.6	Anhedral	
clinopyroxene	10	20-Oct	0.38-0.5 and up to 0.7	Anhedral	
magnetite	5	<5	0.15-0.3		
olivine		<5			
glass		20-Oct			

Accesory minerals	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
apatite	2				
biotite	<3				

Secondary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
chlorite	10				
clay	20				
pyrite	2			Anhedral to subhedral	Acicular.

Comments
Anacime and quartz were identified by XRD.

88R-3, 121-125 cm Piece 10 Unit 5c **ODP TS# 6** **Observer AE**

Rock Name: **Aphyric diabase**
Grain Size: **0.6-0.8 mm**
Texture: **Intersertal to subophitic**

Primary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
Phenocrysts					
plagioclase	<1		1.14 to 1. 8	Subhedral	Zoned, albite twins.
Groundmass					
plagioclase	50	60	0.4-0.5	Subhedral	
clinopyroxene	20	20-Oct	0.4 to 0.5	Subhedral	
magnetite	5	<5	0.16 to 0.4	Subhedral	
olivine		<5			
glass		0-20			

Secondary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
chlorite	10				
clay	20				
calcite	5		0.32 to 1	Anhedral	
pyrite	7		0.16 to 0.4	Euhedral	

Comments

Apatite up to 2% in the thin section. Quartz and analcime were identified by XRD.

88R-4, 111-115 cm Piece 10B Unit 5c **ODP TS# 7** **Observer: AE**

Rock Name: **Aphyric diabase**
Grain Size: **0.6-0.8 mm**
Texture: **Intersertal to subophitic**

Primary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
Phenocrysts					
plagioclase	<1%		up to 4.5 , average 1.5	Subhedral to euhedral	Zoned, albite twins.
clinopyroxene	<1%		1 x 1	Subhedral to anhedral	Altered up to 80%
Groundmass					
plagioclase	45	60	0.5	Subhedral	
clinopyroxene	13	10-20	0.3 up to 0.7	Subhedral	
magnetite	5	<5	0.3-0.5	Subhedral	
olivine		<5			
glass		10-20			

Accessory minerals	% present	% original	Size (mm)	Morphology
apatite	4			
biotite	<1			
analcime	<1		0.5 x 0.7	

Secondary Mineralogy	% present	% original	Size (mm)	Morphology
chlorite	28			
clay	2			
calcite	<<1		0.5 x 0.7	Anhedral
pyrite	2		0.3 - 0.5	Euhedral

Comments
Fluid inclusions in clinopyroxene. Quartz and analcime were defined by XRD.

88R-5, 104-109 cm Piece 3B Unit 5c **ODP TS# 8** **Observer: AE**

Rock Name: **Aphyric diabase**
Grain Size: **0.6-0.8 mm**
Texture: **Subophitic to intergranular**

Primary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
Phenocrysts					
plagioclase	<<1		1.5 x 1.5		Only one large crystal.
clinopyroxene	<1		largest 1.6 x 1.2		Altered up to 80%.
Groundmass					
plagioclase	40	50-60			
clinopyroxene	25	20-30	0.4 to 0.7		
magnetite	3	<5	0.4 - 0.6		
olivine		<5			
glass		10			

Accessory minerals	% present	% original	Size (mm)	Morphology
biotite	<3			
apatite	5			

Secondary minerals	% present	% original	Size (mm)	Morphology
chlorite	10			
clay	20			
pyrite	2		up to 0.6	Subhedral to euhedral
calcite	<1		0.4 x 0.3	

Comments
Large clinopyroxene range in size from 0.8 to >1 mm (phenocrysts). Quartz and analcime were identified by XRD.

88R-6, 69-72 cm Piecce 2 Unit 5c **ODP TS# 9** **Observer: AE**

Rock Name: **Aphyric diabase**
Grain Size: **0.4-0.5 mm**
Texture: **Intersertal**

Primary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
Phenocrysts					
plagioclase	<<1		1.8 x 1	Subhedra	One large crystal.
clinopyroxene	<1		1 x 1	Subhedral to anhedral	
Groundmass					
plagioclase	45	60	0.32-0.6; average 0.4	Subhedral	
clinopyroxene	15	10	0.2 to 0. 8	Subhedral	
magnetite	6	<5		Subhedral	
olivine		<5			
glass		<20			

Secondary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
chlorite	5				
clay	25				
calcite	1		0.32-0.8	Anhedral	
pyrite	3			Euhedral	Some acicular.

Comments
Quartz and biotite were identified by XRD.

88R-7, 93-96 cm Piece 3 Unit 5c **ODP TS# 10** **Observer: AE**

Rock Name: **Aphyric dolerite**
Grain Size: **0.4-0.6 mm**
Texture: **Intersertal**

Primary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
Phenocrysts					
clinopyroxene	<1		0.8 to 1		
Groundmass					
plagioclase	30	60	0.4- 0.6	Subhedral	
clinopyroxene	5	10	0.4-0.6	Subhedral	
magnetite	7	<5			
olivine		<5			
glass		20			
Secondary Mineralogy					
chlorite	5				
clay	55				
calcite	3		0.2-0.8	Anhedral	
pyrite	1			Euhedral	

Comments
Accessory apatite <2%.

99R-1, 123-126 cm Piece 21 Unit 5c **ODP TS# 11** **Observer: AE**

Rock Name: **Aphyric diabase**
Grain Size: **0.6-0.8 mm**
Texture: **Ophitic to subophitic**

Primary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
Phenocrysts					
clinopyroxene	<1		1-2		
Groundmass					
plagioclase	10	40-50	0.4-0.6		
clinopyroxene	20	20-30	0.6-0.8		
magnetite	<5	<5			
olivine		<5			
glass		<10			

Secondary Mineralogy	% present	% original	Size (mm)	Morphology	Comments
chlorite	15				
clay	35				
opaque altered	12		0.2-0.4		
pyrite	3		0.2-0.4		Some acicular.

Comments
Semi-opaque, subhedral to euhedral mineral (~10% of the thin section) -- not identified on the ship. Apatite occurs as accessory mineral (<2%).

99R-3, 110-114 cm Piece 12 Unit 5c				**ODP TS# 12**	**Observer: AE**
Rock Name:	**Porphyritic diabase**				
Grain Size:	**0.6-0.8 mm**				
Texture:	**Ophitic to subophitic**				

Primary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
Phenocrysts					
clinopyroxene	30		4-5		
Groundmass					
plagioclase	12	40-50	0.4-0.6		
clinopyroxene	5	20-30	0.6-0.8		
magnetite	<5	<5			
olivine		<5			
glass		<10			

Secondary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
chlorite	5				
clay	35				
opaque altered	10		0.2-0.4		
pyrite	2		0.2-0.4		Some acicular.

Comments

Semi-opaque, subhedral to euhedral mineral (~10% of the thin section) -- not identified on the ship. Apatite occurs as accessory mineral (<2%).

88R-1, 93-95 cm Piece 2A Unit 5c				**ODP TS# 13**	**Observer: AE**
Rock Name:	**Aphyric diabase**				
Grain Size:	**0.4-0.5 mm**				
Texture:	**Subophitic to intergranular**				
Primary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
Phenocrysts					
plagioclase	<<1		3.2 x 0.92	Subhedral	Only one phenocryst.
clinopyroxene	<1		0.8 x 0.8 to 1 x 1		Altered to 70%-85%.
Groundmass					
plagioclase	50	40-50	0.48	Subhedral	
clinopyroxene	5	20	0.2-0.52	Subhedral	
magnetite	7	<5	0.2 - 0.48		
olivine		<5			
glass		<10			
Secondary Mineralogy	**% present**	**% original**	**Size (mm)**	**Morphology**	**Comments**
clay	40				
calcite	<1		0.4-0.52		
pyrite	7		0.2 - 0.48		Some acicular.

Comments

Accessory apatite <5% and biotite (<3%). Analcime and quartz were identified by XRD.

Core	Section	Piece	Top	Bottom
Hole A				
87R	6	altered sediments	0	6
87R	6		6	26
87R	6		26	45
87R	6	1A	46	58.5
87R	6	2A	60	69
87R	6	3A	70	75
87R	6	4A	76	90
87R	6	5A	92	134
87R	6	6A	136.5	140
87R	7	1A	0	15
87R	7	2A	15	25
88R	1	1A	1	3
88R	1	2A	3	100
88R	2	1A	0	68
88R	2	1B	68	69
88R	2	2A	70	73
88R	2	3A	73	86
88R	2	4A	87	99
88R	2	4B	99	116
88R	2	5A	117	130
88R	2	6A	131	142
88R	3	1A	1	9
88R	3	2A	10	24
88R	3	3A	26	27
88R	3	4A	28	34
88R	3	5A	35	50
88R	3	6A	52	64
88R	3	7A	66	80
88R	3	8A	80	100
88R	3	9A	101	115
88R	3	10A	116	127
88R	3	11A	128	142
88R	3	12A	143	146
88R	3	13A	147	148
88R	4	1A	0	13
88R	4	2A	14	41
88R	4	3A	41	44
88R	4	4A	44	47
88R	4	5A	47	51
88R	4	6A	51	55
88R	4	7A	55	58
88R	4	8A	58	73
88R	4	9A	74	87
88R	4	10A	89	107
88R	4	10B	107	114
88R	4	10C	114	117
88R	4	11A	118	128
88R	4	12A	129	148
88R	5	1A	0	16
88R	5	1B	16	28
88R	5	2A	30	43
88R	5	2B	43	48
88R	5	3A	49	71
88R	5	3B	71	108
88R	6	1A	0	67
88R	6	2A	68	105
88R	6	3A	106	121
88R	7	1A	0	38
88R	7	2A	39	80
88R	7	3A	81	97
88R	7	4A	98	102
88R	7	5A	102	115
88R	7	6A	116	117
88R	7	7A	119	120
99R	1	1A	0	4
99R	1	2A	4	7
99R	1	3A	7	11
99R	1	4A	11	23
99R	1	5A	25	28
99R	1	6A	28	32
99R	1	7A	32	36
99R	1	8A	37	40
99R	1	9A	40	48
99R	1	10A	49	53
99R	1	11A	53	56
99R	1	12A	56	60
99R	1	13A	61	64

Core	Section	Piece	Top	Bottom
Hole A				
99R	1	14A	64	69
99R	1	15A	70	74
99R	1	16A	75	78
99R	1	17A	78	83
99R	1	18A	84	95
99R	1	19A	97	111
99R	1	20A	111	114
99R	1	21A	114	137
99R	1	22A	137	142
99R	2	1A	0	9
99R	2	2A	10	16
99R	2	3A	17	24
99R	2	4A	25	30
99R	2	5A	30	40
99R	2	6A	40	44
99R	2	7A	45	49
99R	2	8A	49	66
99R	2	8B	63	69
99R	2	9A	69	72
99R	2	10A	72	81
99R	2	11A	82	89
99R	2	12A	90	95
99R	2	13A	95	109
99R	2	13B	104	112
99R	2	14A	113	118
99R	2	15A	118	120
99R	2	16A	120	127
99R	2	17A	127	130
99R	2	18A	130	140
99R	2	19A	140	145
99R	3	1A	0	16
99R	3	1B	16	22
99R	3	2A	22	31
99R	3	3A	32	36
99R	3	4A	37	49
99R	3	5A	50	54
99R	3	6A	54	57
99R	3	7A	58	63
99R	3	8A	64	79
99R	3	9A	80	88
99R	3	10A	89	101
99R	3	11A	101	109
99R	3	12A	109	118
99R	3	13A	118	133
99R	3	14A	133	149
99R	4	1A	0	8
99R	4	2A	9	16
99R	5	1A	0	29
99R	5	1B	29	39
99R	5	1C	39	49
99R	5	2A	50	66
99R	5	3A	67	73
99R	5	4A	74	87
99R	5	5A	87	94
99R	5	6A	94	102
99R	5	7A	103	112
99R	5	7B	112	120
99R	6	1A	0	8
99R	6	2A	8	29
99R	6	3A	30	35
99R	6	4A	35	43

Core	Section	Interval	Porphyr.	Contacts	Comments
Hole A					
87R	6	110-113 cm	<5 mm, anhedral		Zone defined by porphyroclasts dipping approx. 20.
88R	1	56-62 cm		gradual	Change in texture, finer crystal size, more of white (?) mineral. Vein that cut into zone
88R	2	0-1 cm			Finer crystal size and white (?) mineral.
88R	2	27-32 cm			Slightly different, not as well-defined as previous (not a band), more lika a alteration zone.
88R	2	91-94 cm	<4 mm, anhedral		Porphyroclasts of plag. and dark greenish black anhedral mineral.
88R	2	115-120 cm			See 88R_2W_91-94 cm. Relic minerals overgrown by white chlorite (?) mineral.
88R	3	29-34 cm			See 88R_2W_91-94 cm.
88R	3	51-54 cm			See 88R_2W_91-94 cm.
88R	4	59-63 cm			See 88R_2W_91-94 cm.
88R	6	88-105 cm	anhedral		Vertical zone of porphyric anhedral plag.
99R	2	77 cm		sharp, undulating	3-5-mm-wide zone of white mineral and green vein material.
99R	3	6 cm		gradational	4-mm-wide zone
99R	3	148 cm		sharp	Base missing

Core	Section	Interval	Width	App. Orient.	Fracture	Composition	halo	Metamorph.	Comment
Hole A									
87R	6	7-41 cm	1 mm	C, V		95% cc, 5% ore			Folded by compaction
87R	6	76 cm	1 mm	H		cc			Sparry crystals
87R	6	78-83 cm	<1 mm	V		cc			
87R	6	78-79 cm	10 mm	SH					
87R	6	139 cm	1-2 mm	H		cc			
87R	6	139-140 cm	1 cm	SH					Bounded by other vein
88R	1	55-57 cm	<1 mm	C		cc			
88R	2	0-17 cm	<1mm	SV					Fracture
98R	1	4-17 cm	1 mm	V		cc 70%, py 30%		In sediment	
98R	1	33-52 cm	1 mm	SV		cc 70%, py 30%		In sediment	
98R	1	59-61 cm	<1 mm	SV		py		In sediment	
98R	1	112-114 cm	<< 1 mm	N		qz 90%, py 5%, ore 5%	cc, 1mm	Metamorph.	Vein <<1 mm with halo 1 mm on each side.
98R	1	125 cm	1 mm	SH, N		qz 90%, py 5%, ore 5%		Metamorph.	
98R	2	7 cm	<1 mm	SH, N					
98R	2	8 cm	<1 mm	SH, N					
98R	2	11 cm	1 mm	SH, N		cc 90%, py 10%	green, 1 mm		Halo 1 mm on each side. Green mineral chl (?) or zeolite.
98R	2	21-28 cm	2 mm	V, C		py 95%, ore 5%			
98R	2	30-31 cm	4 mm	SV		cc			
98R	2	36-37 cm	<1 mm	SV		cc		Blk sediment	
98R	3	15-18 cm	<1 mm	O		py 50%, ore 50%			
98R	3	35-40 cm							
98R	3	40-45 cm		V, N				Beige sst	
98R	3	70-72 cm	<<1 mm	NET, H					
98R	3	77 cm	1 mm	SV, C		cc 95%, ore 5%			
99R	1	15-20 cm		H, V, N	Fracture				
99R	1	83 cm	1 mm	H, V, N	Fracture				
99R	2	11 cm	<1 mm	O	Fracture			Some opaque mineral crystallization	
99R	2	18-24 cm	<1 mm	H, V, N	Fracture			Cutting whole core width	
99R	2	30-39	2 mm	V		green min.	3 mm	Unknown green mineral (chl or possible zeolite?)	
99R	2	61 cm		O	Fracture			Cutting whole core width. Slickenlines in amp seen.	
99R	2	73 cm	1 mm	O	Fracture				
99R	2	100 cm	<<1 mm	H	Fracture		2 mm	Strange vein with halo of blueish/green unknown mineral.	
99R	2	103-109	<1 mm	O	Fracture				
99R	3	46-49 cm		C	Fracture		3 mm	Cutting whole core width.	
99R	3	82 cm	1 mm	H		qz		Open fracture but has 3-5 mm halo on both sides with green/ white unknown material.	
99R	3	139 cm	2 mm	H		qz			
99R	5	69 cm	3 mm	H, C		?		White mineral	
99R	6	39 cm	1 mm	?		?		Same white material in small non oriented piece.	