INL Lithologic Core Storage Library
Idaho National Laboratory
Building CFA-663
Operated by the U.S. Geological Survey for the U.S. Department of Energy

Contact:
Linda C. Davis
PO Box 8072
Pocatello, ID.
83209

Official Name: USGS 108

Logged By: M. K. V. Hodges

Selected Aliases: None

USGS Site ID: 432659112582601
Contractor Well ID: USGS-108

Drilling Agency: U. S. Geological Survey
Year Drilled: 1980, deepened to 1218 in 2008
Names of Drillers: M. Gilbert, M. Vance, J. S. Blom
Well Status: complete
Total Depth of Hole (ft): 1,218

Total Core Recovered (ft): 457.6
Beginning Depth (ft): 760.0
Ending Depth (ft): 1,218
[x] Continuous Recovery
[ ] Selected Intervals Recovered

County & State: Butte Co., ID
Quadrangle Name: Scoville
Lat / Lng: N43 26' 58.79" W112 58' 26.34"
Tns / Rng / Sec: T02N R29E S35
UTM Coordinates: 340275.815 4812428.230
Surface Elevation (ft): 5,031.36

Notes:

Core Geological Profile

Lithologic Patterns
- Basalts
- Rhyolites
- Sedimentary Rock

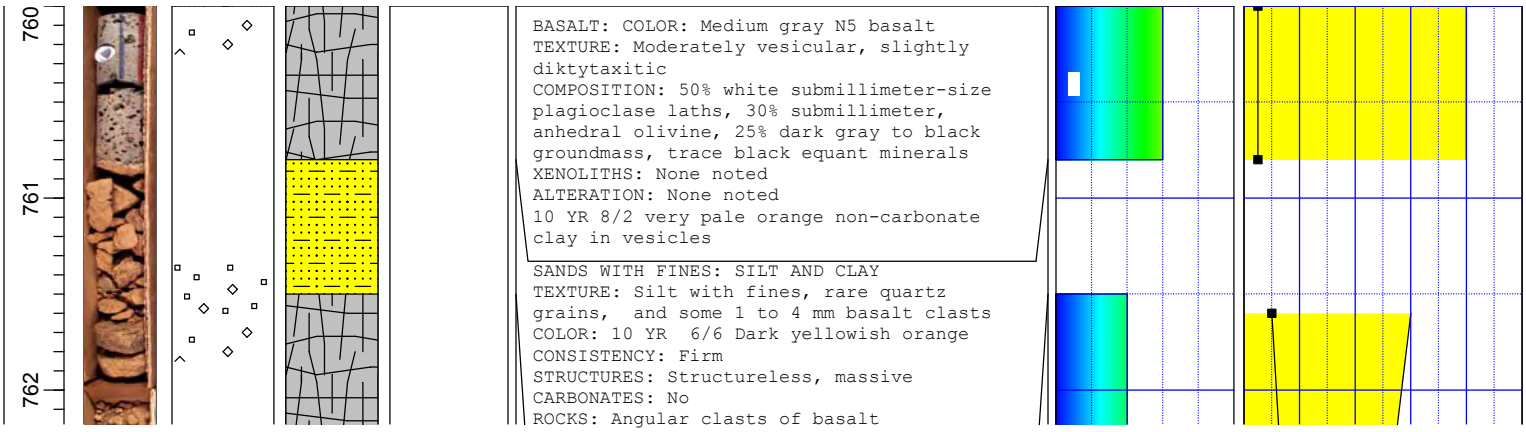
Soil Patterns
(See Unified Soil Classification System.)
- Gravels - clean
- Gravels with fines
- Sands - clean
- Sands with fines
- Silts and clays

Intervals in Absentia
- Surficial material
- Natural void
- Interval not cored
- Missing interval

Igneous and Sedimentary Structure Symbols
- Vesicle zone
- Large vesicles
- Vesicle planes
- Mega vesicles
- Vesicle Cylinders
- Pipe vesicles
- Pillows
- Vesicle Sheet
- Flow/Mold
- Spatter feature
- Ripple marks
- Mud cracks
- Imbricated bedding
- Graded bedding
- Cross bedding

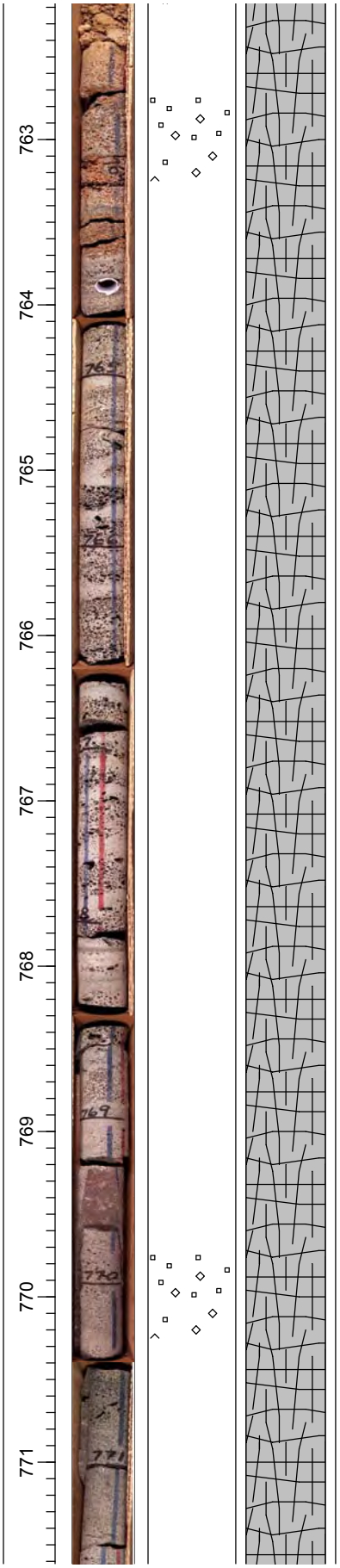
Soil Structure Symbols
- Structureless - Single Grained
- Structureless - Massive
- Platy
- Granular
- Blocky
- Prismatic
- Columnar

Depth (feet & tenths) | Core Photo | Igneous, Soil and Sed Structures | Lithology | Description (Miscellaneous Text | Lithologic Description) | Fracture Frequency (See fracture classification on website.) 0 1 2 3 4 5 | Vesicle Characteristics: Mean Size (in) 0 0.2 0.4 0.6 0.8 1.0; Volume Percentage 0 10 20 30 40 50



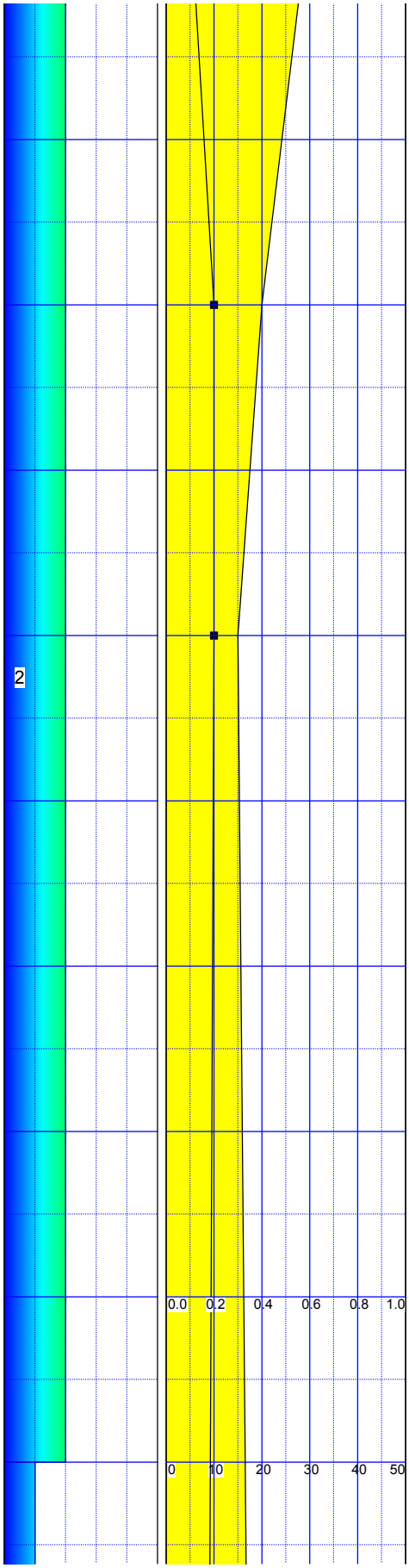
BASALT: COLOR: Medium gray N5 basalt
TEXTURE: Moderately vesicular, slightly diktytaxitic
COMPOSITION: 50% white submillimeter-size plagioclase laths, 30% submillimeter, anhedral olivine, 25% dark gray to black groundmass, trace black equant minerals
XENOLITHS: None noted
ALTERATION: None noted
10 YR 8/2 very pale orange non-carbonate clay in vesicles

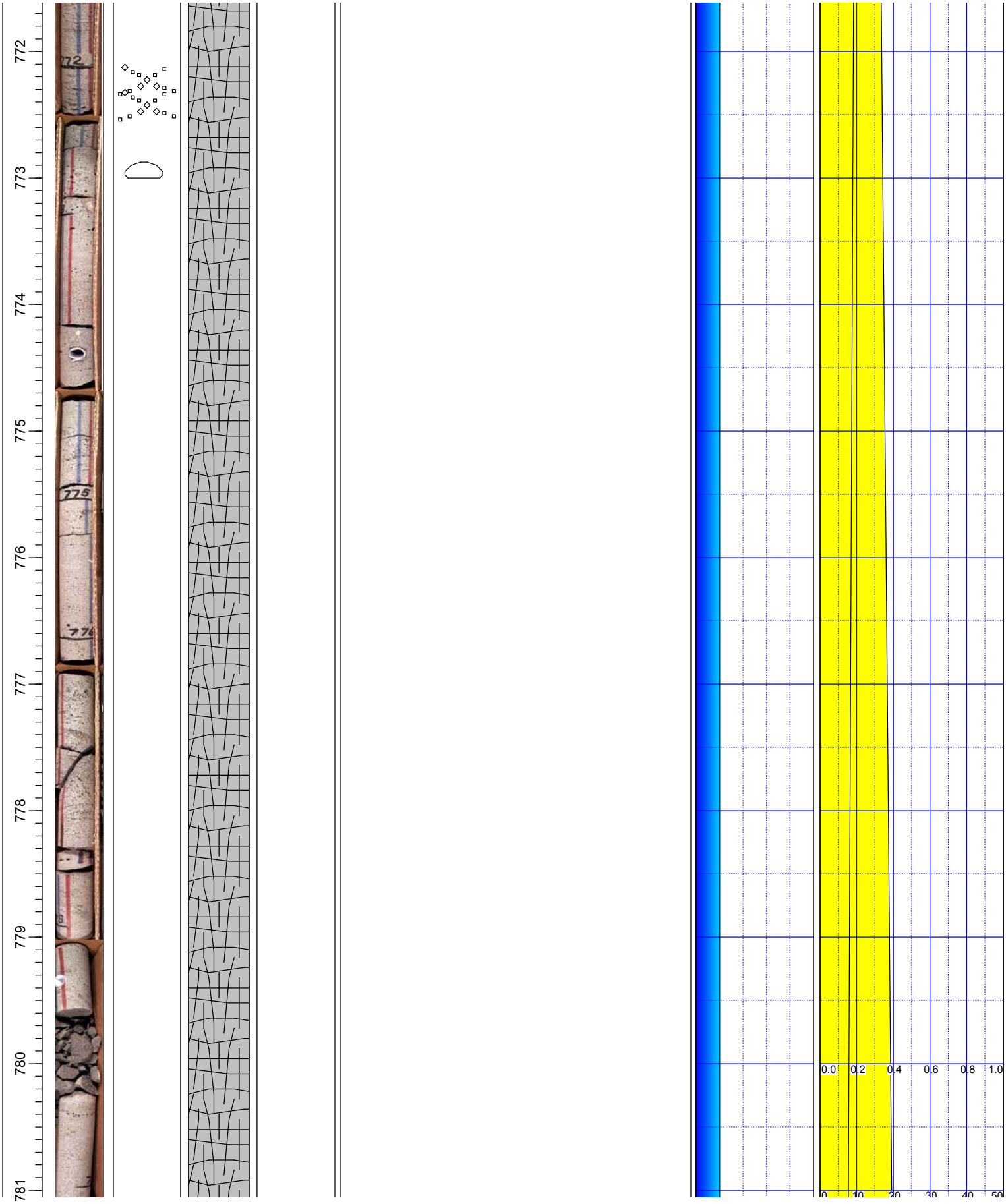
SANDS WITH FINES: SILT AND CLAY
TEXTURE: Silt with fines, rare quartz grains, and some 1 to 4 mm basalt clasts
COLOR: 10 YR 6/6 Dark yellowish orange
CONSISTENCY: Firm
STRUCTURES: Structureless, massive
CARBONATES: No
ROCKS: Angular clasts of basalt

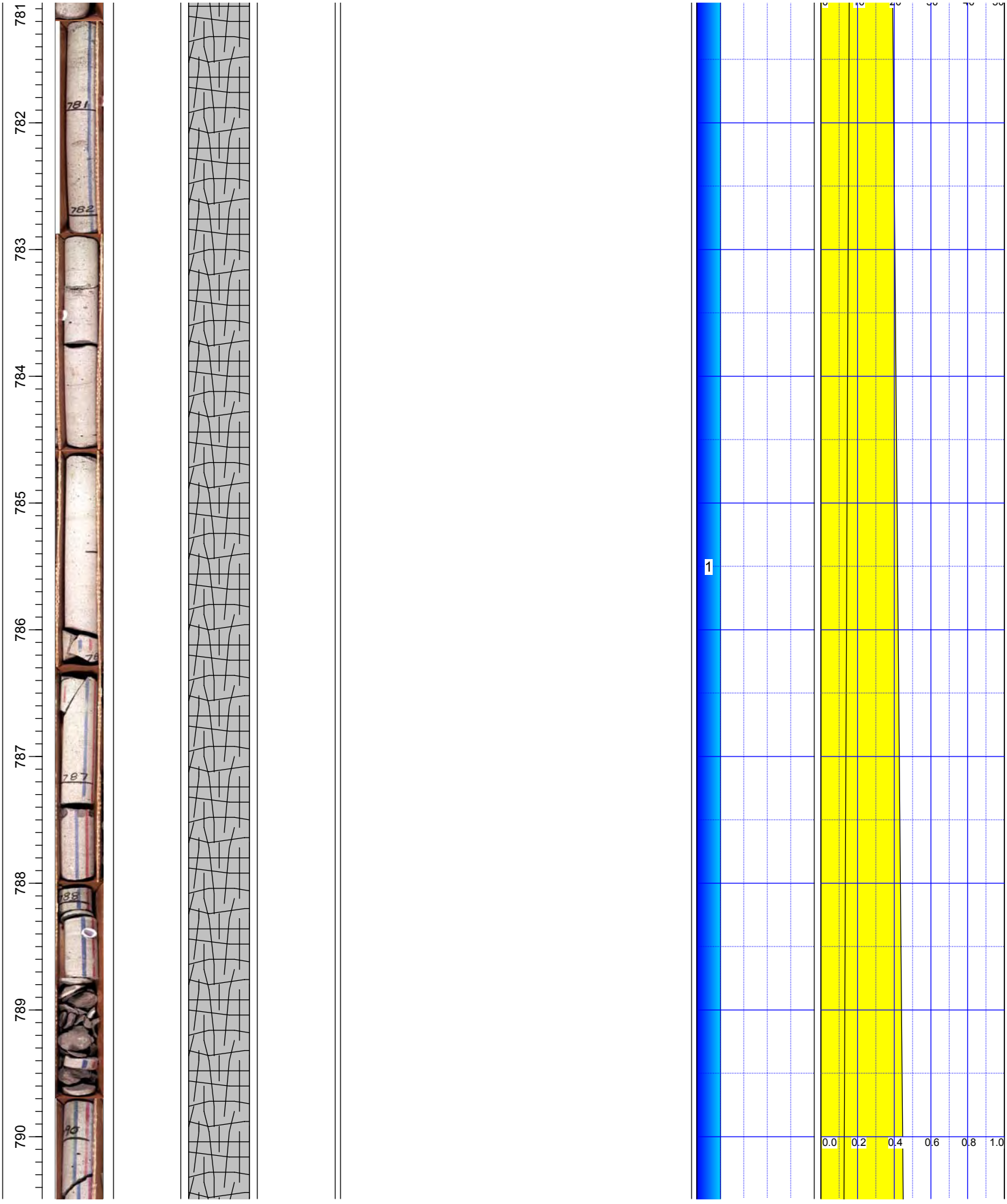


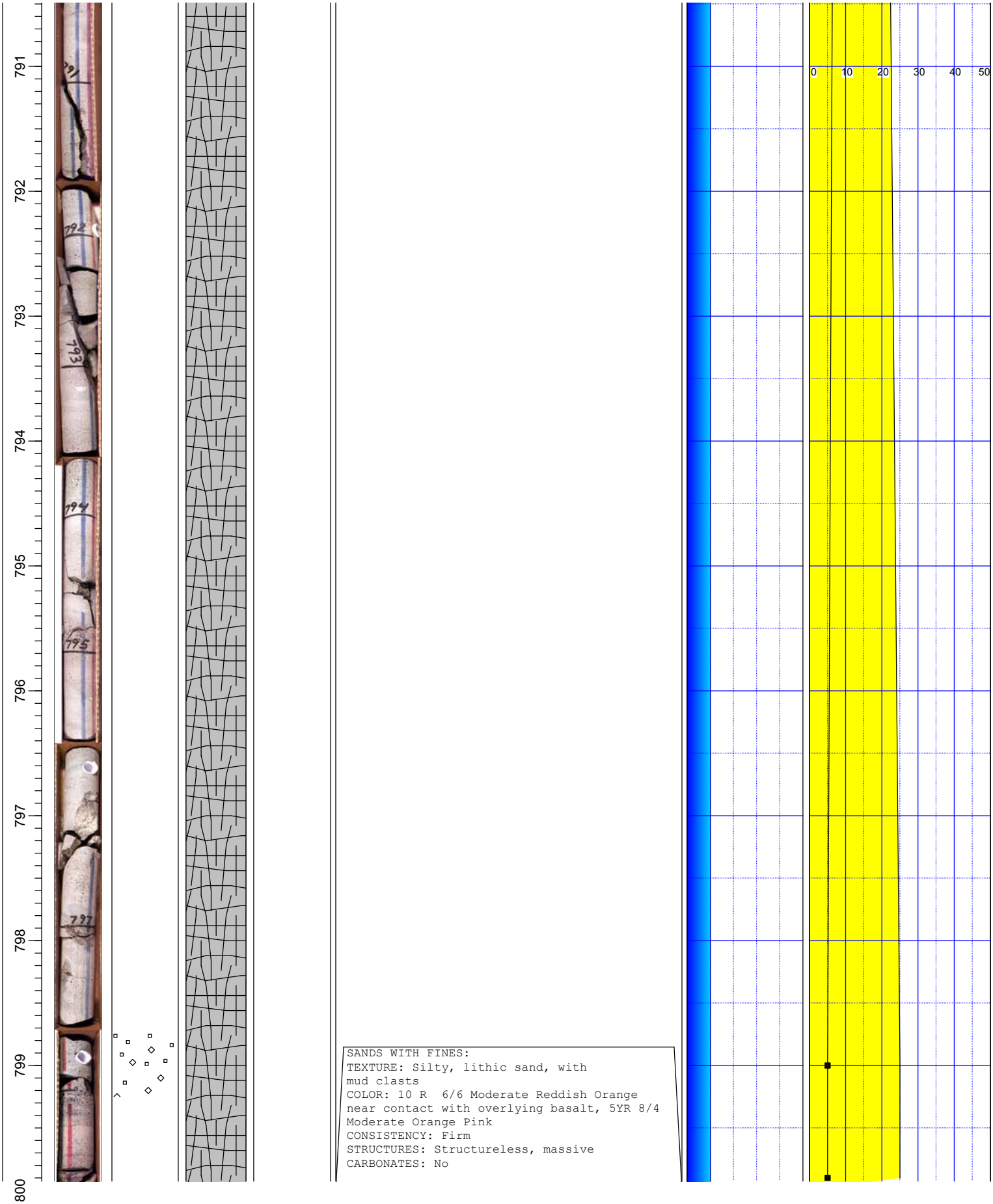
ROOTS/FOSSILS: None noted

BASALT:
COLOR: N5 medium light gray
TEXTURE: Vesicular from 761.5 ft to 769 ft, slightly vesicular and diktytaxitic from 769 to 773, decreasingly diktytaxitic from 771 to 785 ft, massive from 785 ft to 798.5 ft, increasingly vesicular to 800 ft. Vesicle planes common from 765 to 768.7 ft
COMPOSITION: 50% submillimeter plagioclase phenocrysts, 30% gray groundmass, 20% subhedral olivine
XENOLITHS: None noted
ALTERATION: None noted

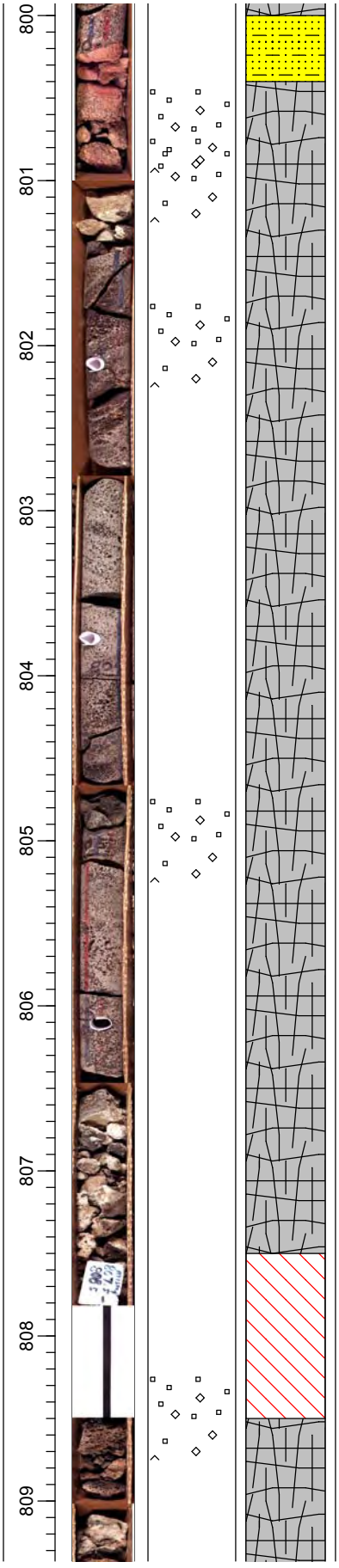



772
773
774
775
776
777
778
779
780
781
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50


781
782
783
784
785
786
787
788
789
790
781
782
787
1
0.0
0.2
0.4
0.6
0.8
1.0



SANDS WITH FINES:
TEXTURE: Silty, lithic sand, with
mud clasts
COLOR: 10 R 6/6 Moderate Reddish Orange
near contact with overlying basalt, 5YR 8/4
Moderate Orange Pink
CONSISTENCY: Firm
STRUCTURES: Structureless, massive
CARBONATES: No

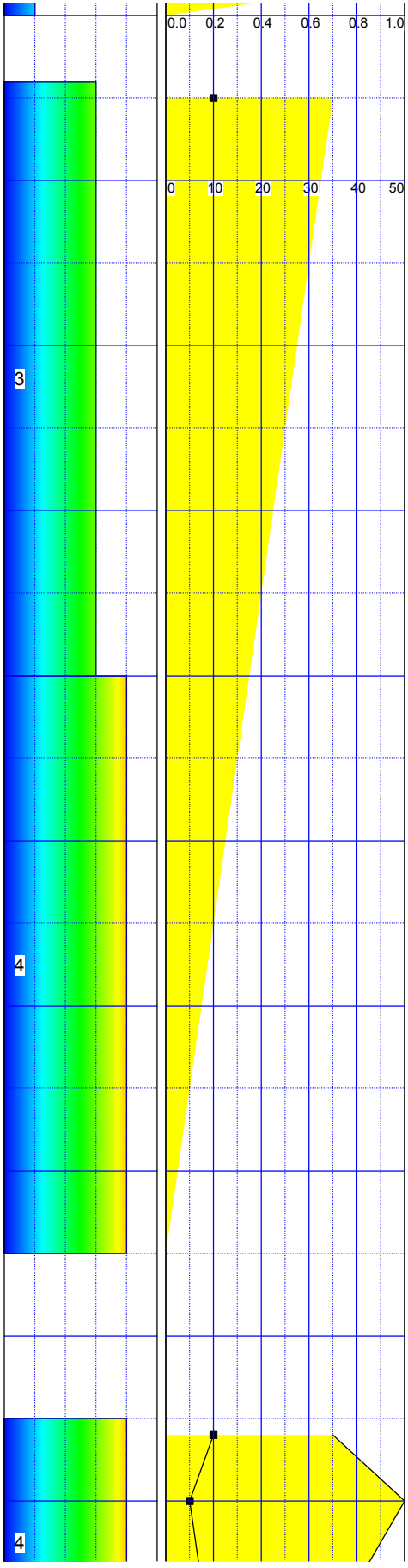


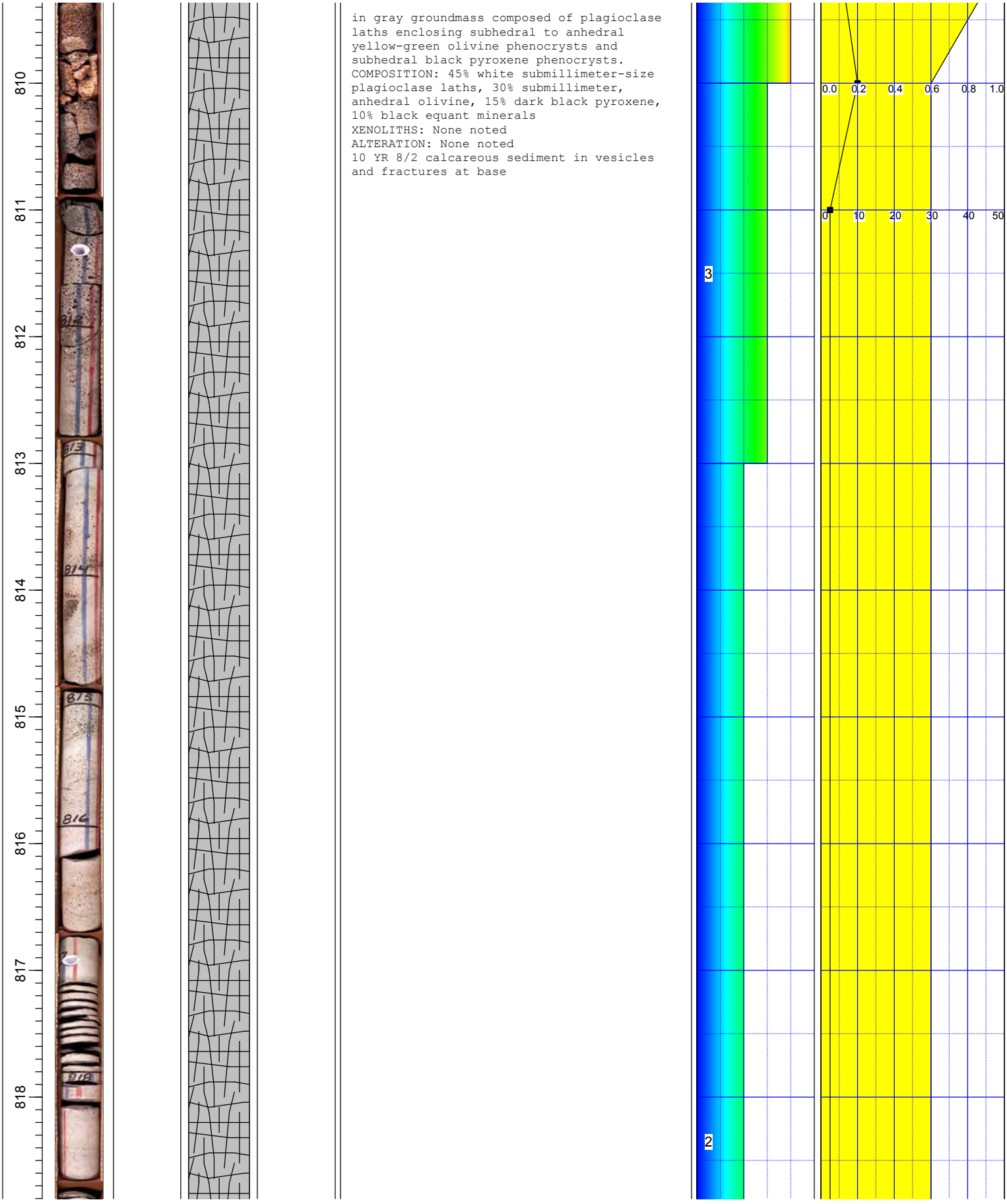
ROCKS: Angular clasts of basalt up to 7 mm in size
ROOTS/FOSSILS: None noted

BASALT:
COLOR: Dark gray N3 basalt from 800.4 ft to 807.5 ft. missing from 807.5 to 808.5 ft (scoriaceous rubble), N4 medium dark gray to N5 medium gray from 808.5 ft to 852.8 ft
TEXTURE: Vesicular to scoriaceous from top to 812 ft, somewhat vesicular and, slightly diktytaxitic from 812 to 817 ft, massive from 817 to 852.2 ft, very vesicular to base. Aphanitic, porphyritic, with 1 to 1.5 cm euhedral white plagioclase phenocrysts in gray groundmass composed of plagioclase laths enclosing subhedral to anhedral yellow-green olivine phenocrysts and subhedral black pyroxene phenocrysts.
COMPOSITION: 45% white submillimeter-size plagioclase laths, 30% submillimeter, anhedral olivine, 15% dark black pyroxene, 10% black equant minerals
XENOLITHS: None noted
ALTERATION: None noted
5Y 8/1 non-carbonate encrustation near 800.4 ft, 5YR 6/4 light brown soil in vesicles and fractures at 807 ft, 10 YR 8/2 calcareous sediment in vesicles and fractures at base

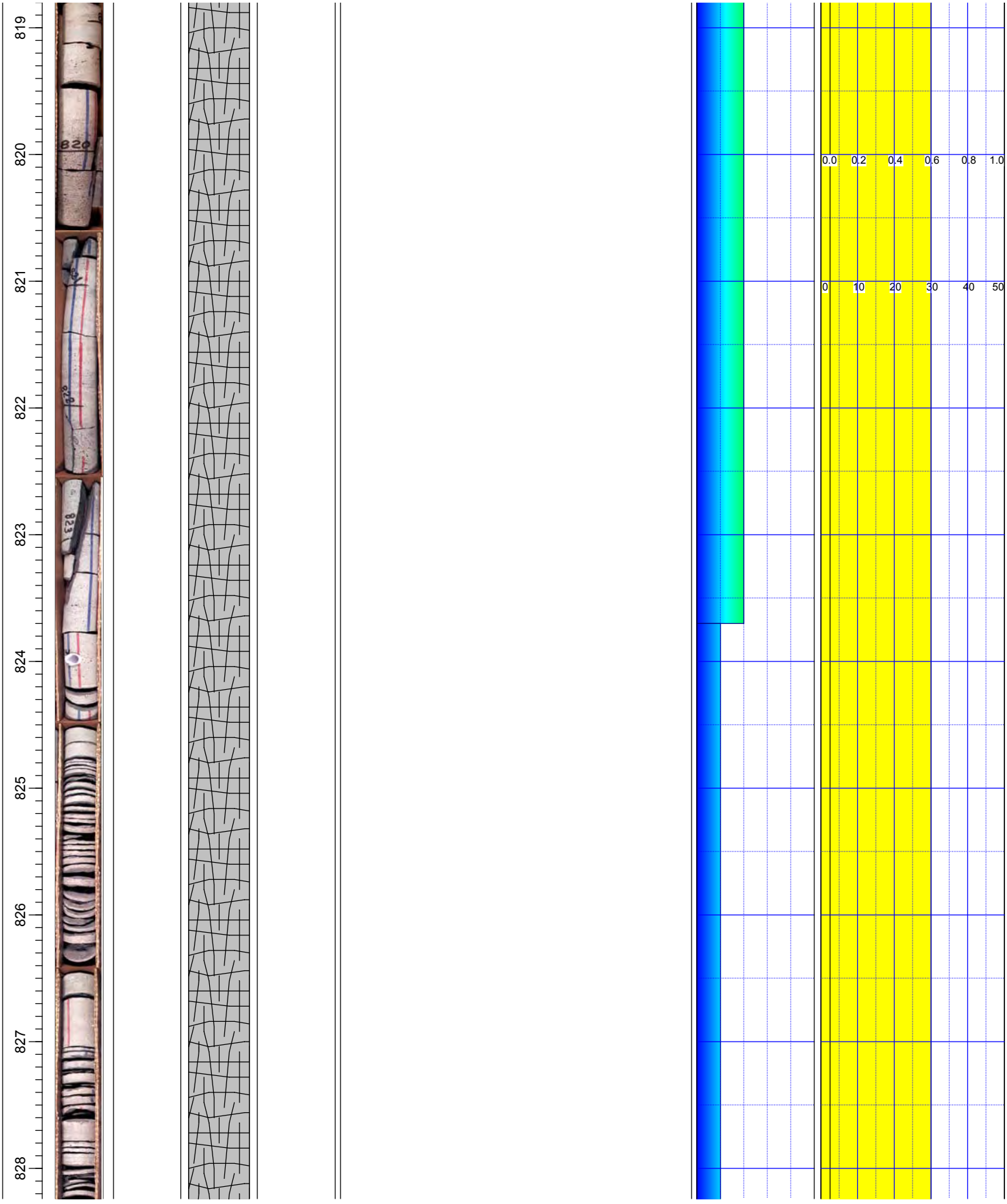
MISSING INTERVAL

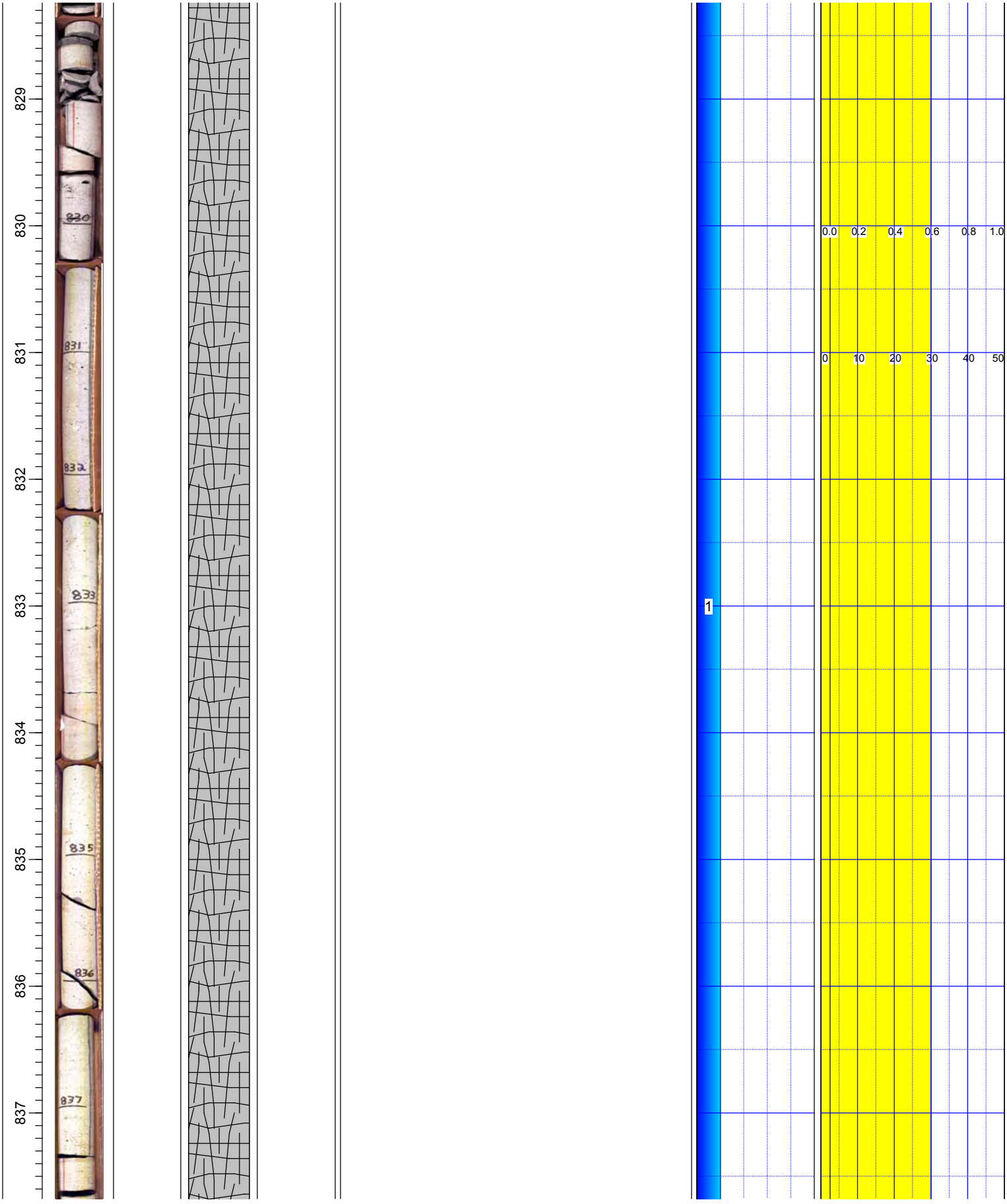
BASALT: COLOR: N4 medium dark gray to N5 medium gray from 808.5 ft to 852.8 ft
TEXTURE: Vesicular to scoriaceous from top to 812 ft, somewhat vesicular and, slightly diktytaxitic from 812 to 817 ft, massive from 817 to 852.2 ft, very vesicular to base. Aphanitic, porphyritic, with 1 to 1.5 cm euhedral white plagioclase phenocrysts

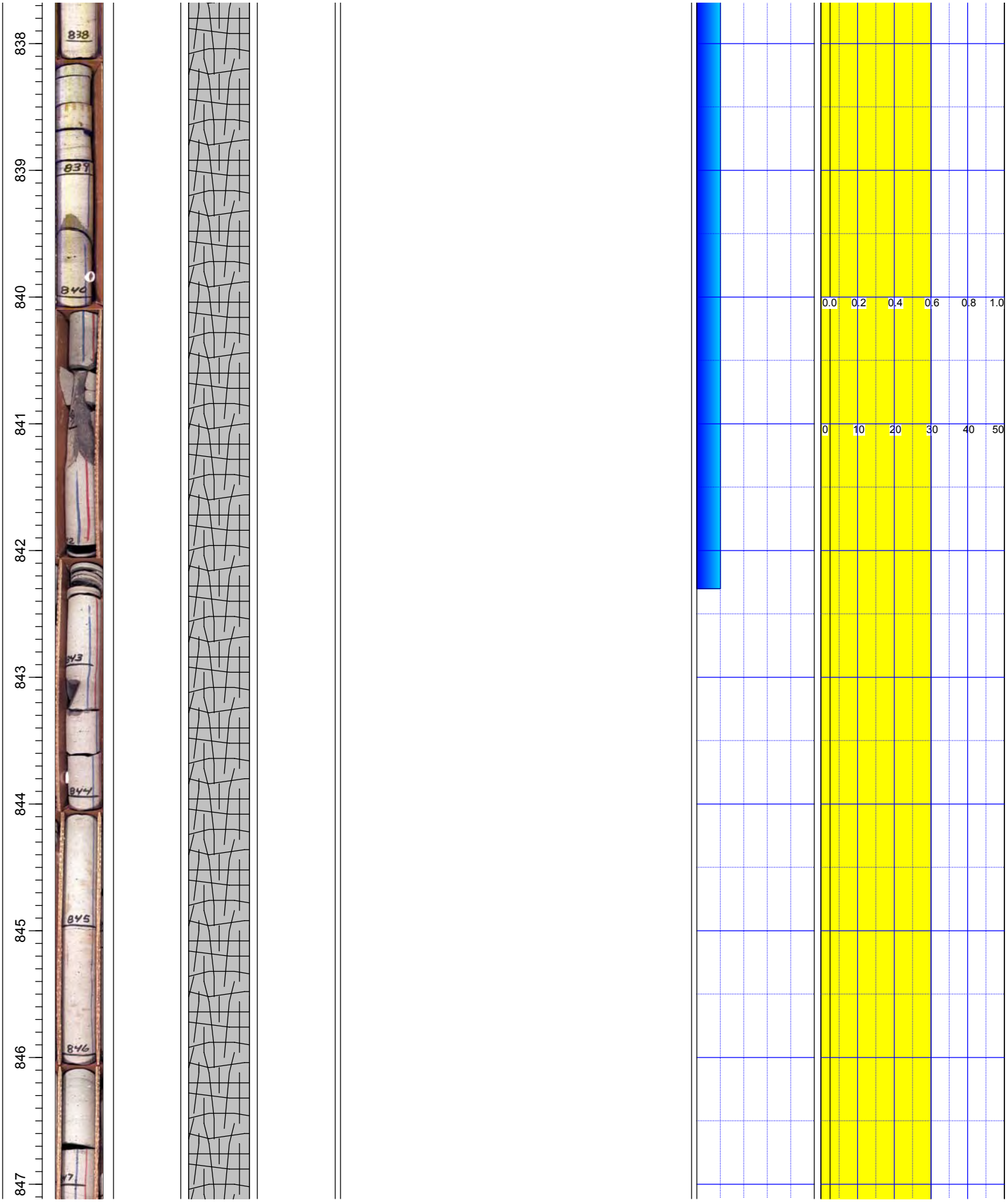


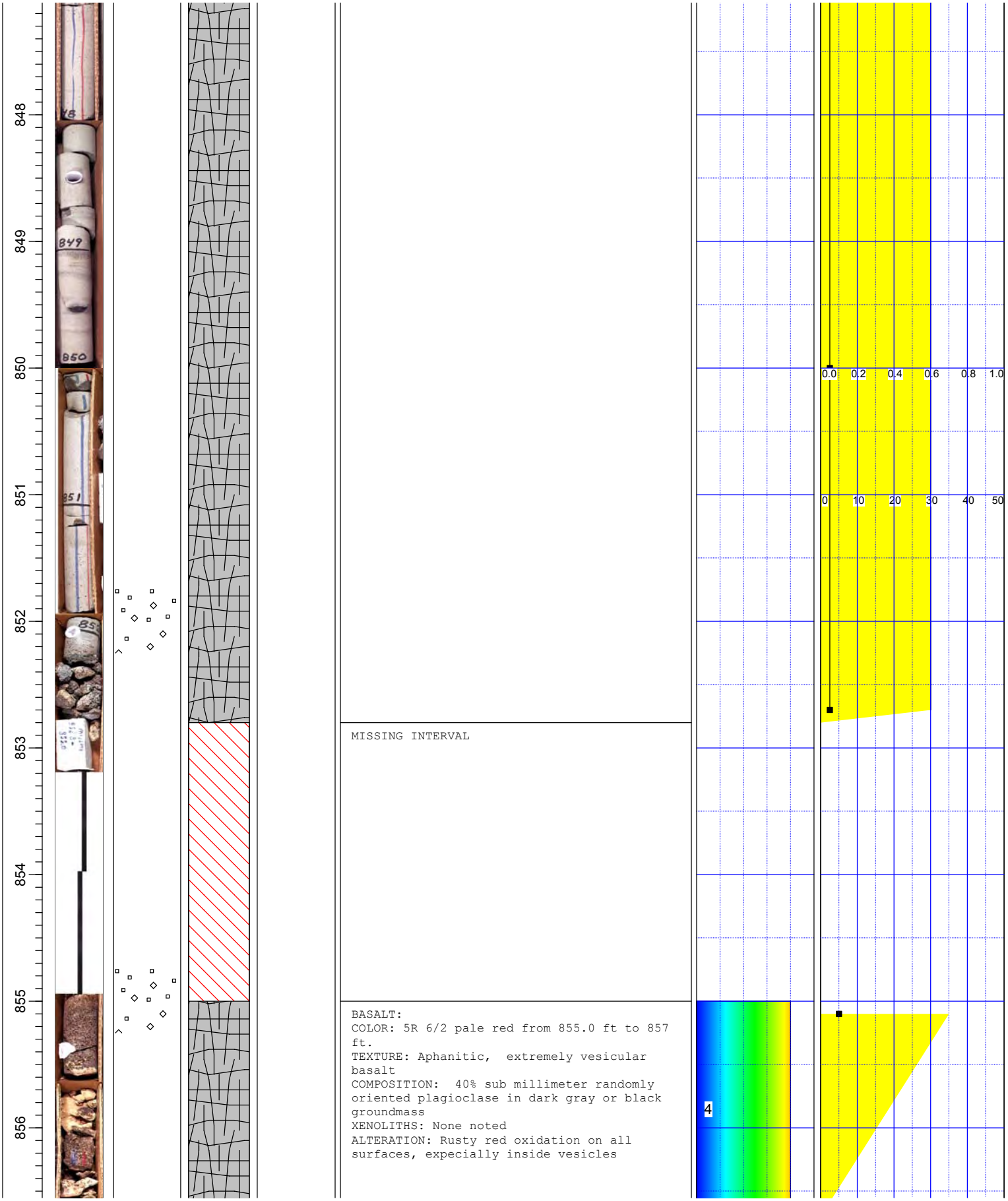


in gray groundmass composed of plagioclase laths enclosing subhedral to anhedral yellow-green olivine phenocrysts and subhedral black pyroxene phenocrysts.
COMPOSITION: 45% white submillimeter-size plagioclase laths, 30% submillimeter, anhedral olivine, 15% dark black pyroxene, 10% black equant minerals
XENOLITHS: None noted
ALTERATION: None noted
10 YR 8/2 calcareous sediment in vesicles and fractures at base


819
820
821
822
823
824
825
826
827
828
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

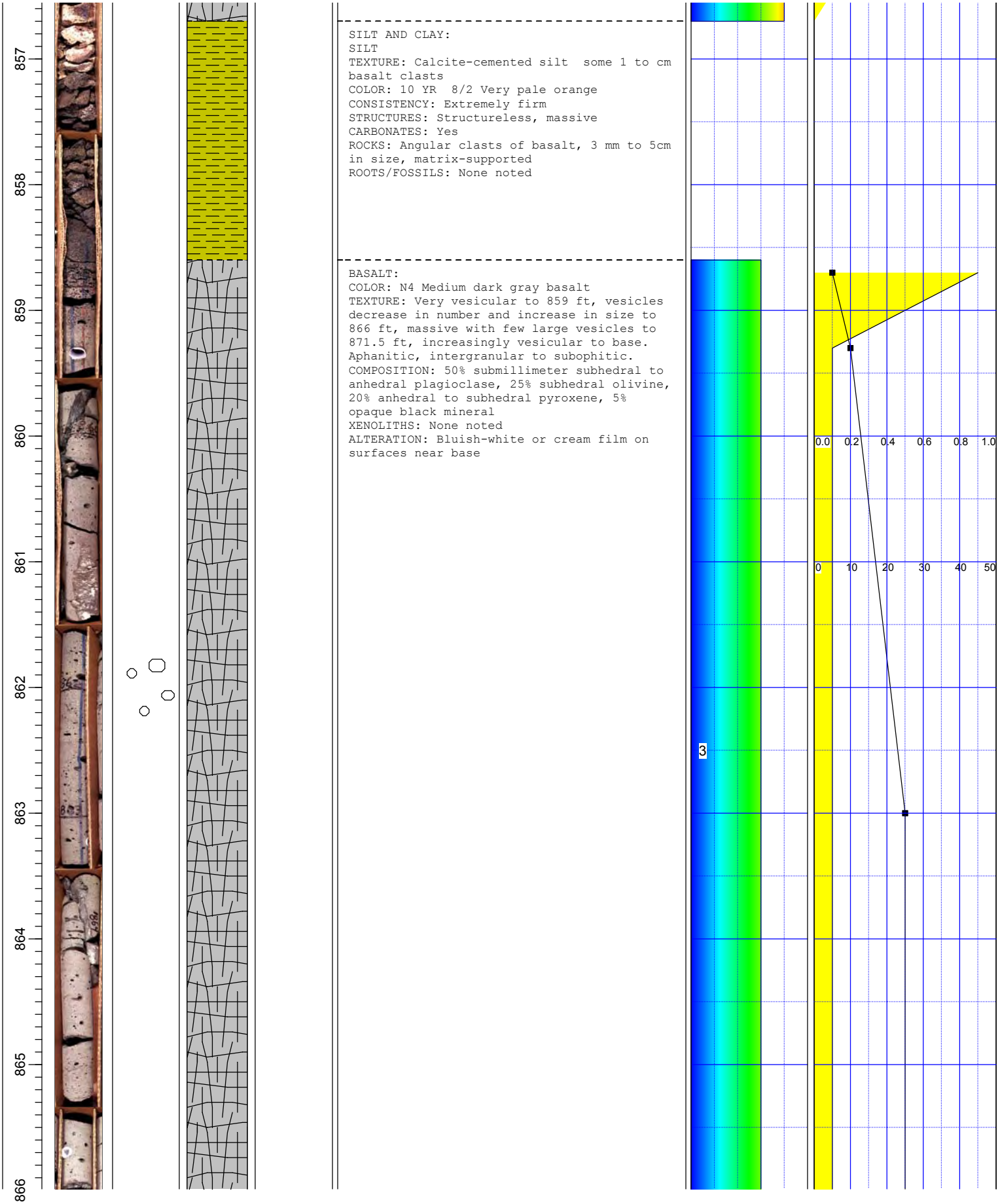

829
830
831
832
833
834
835
836
837
830
831
832
833
835
836
837
1
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

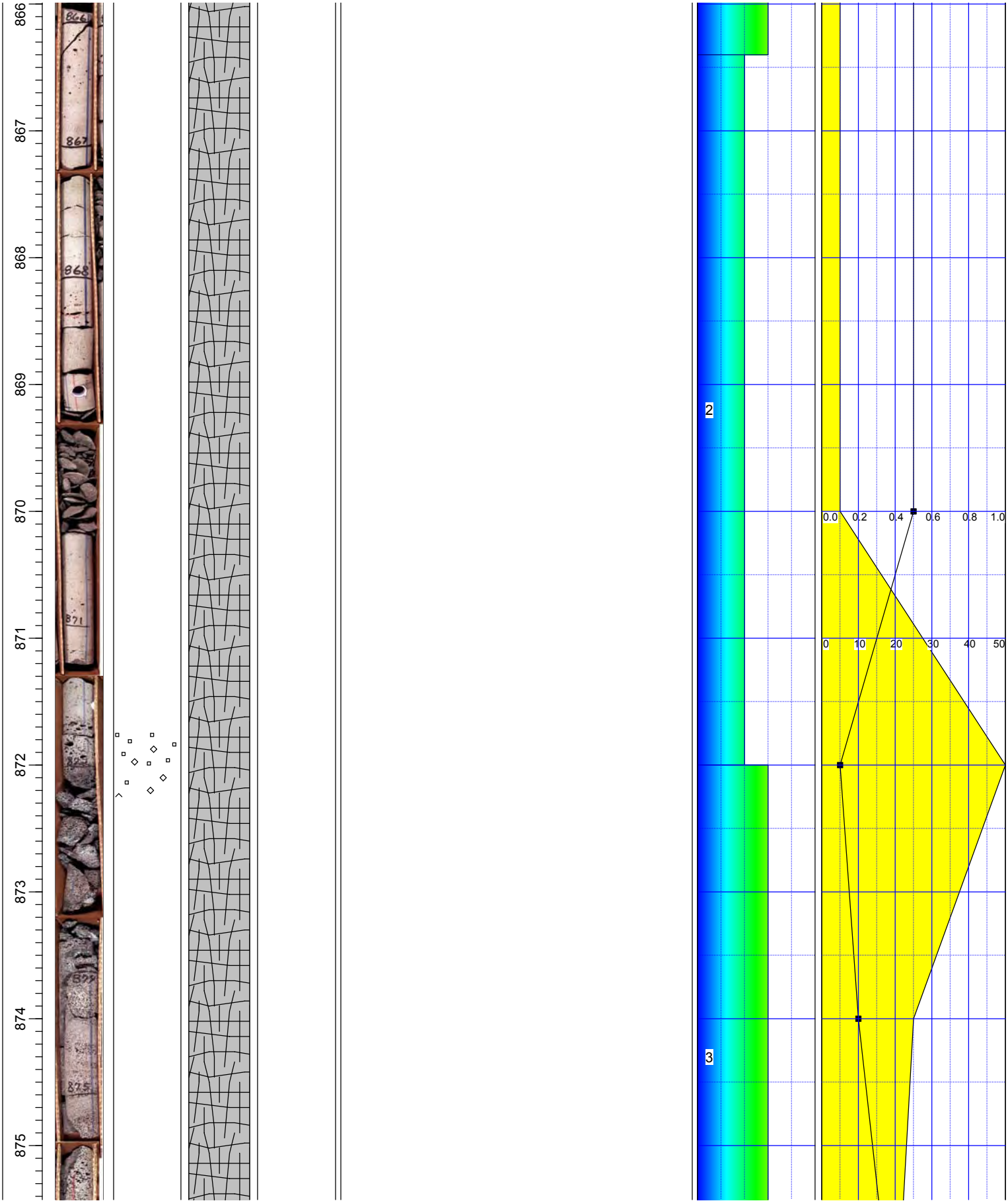

838
839
840
841
842
843
844
845
846
847
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

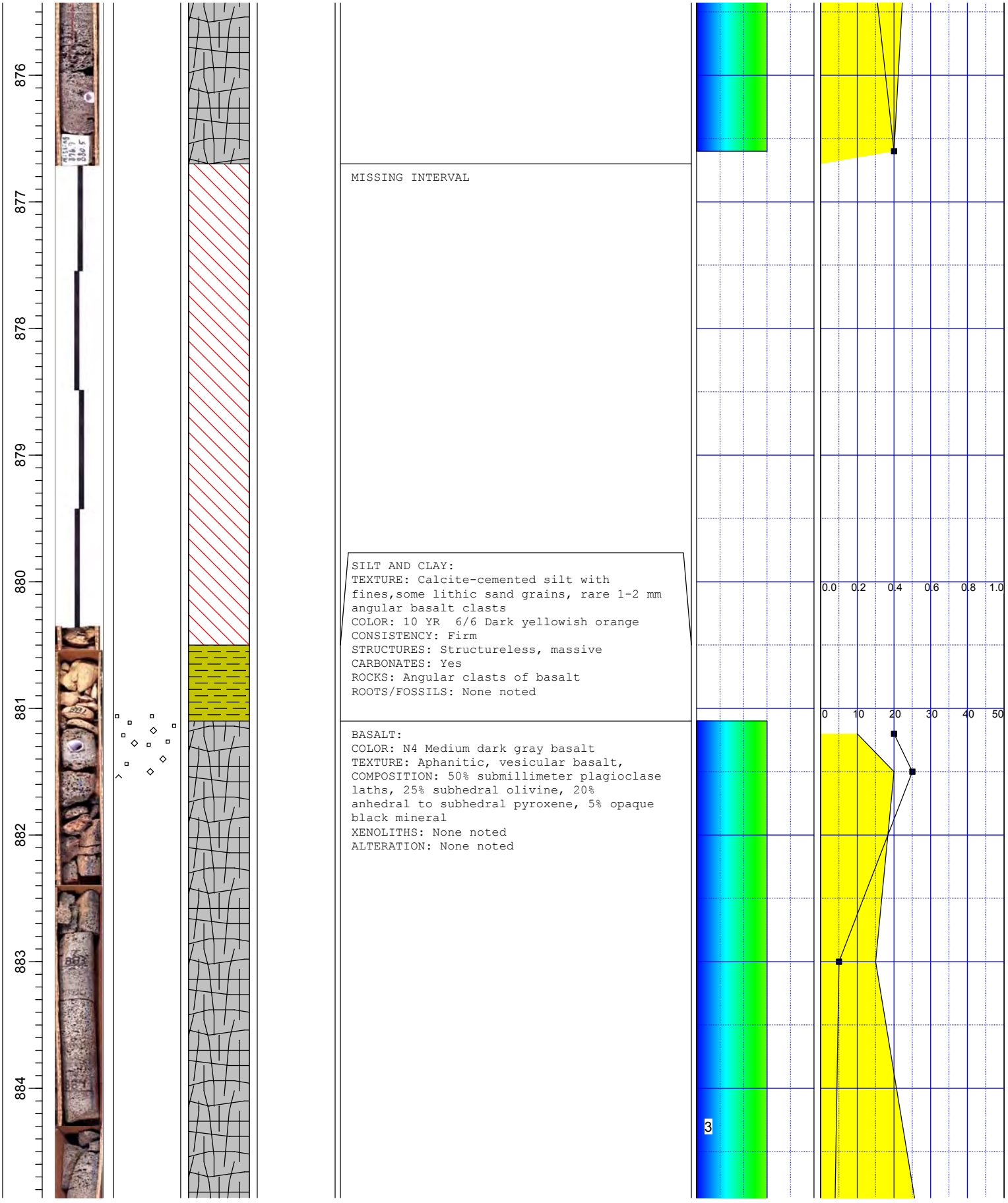


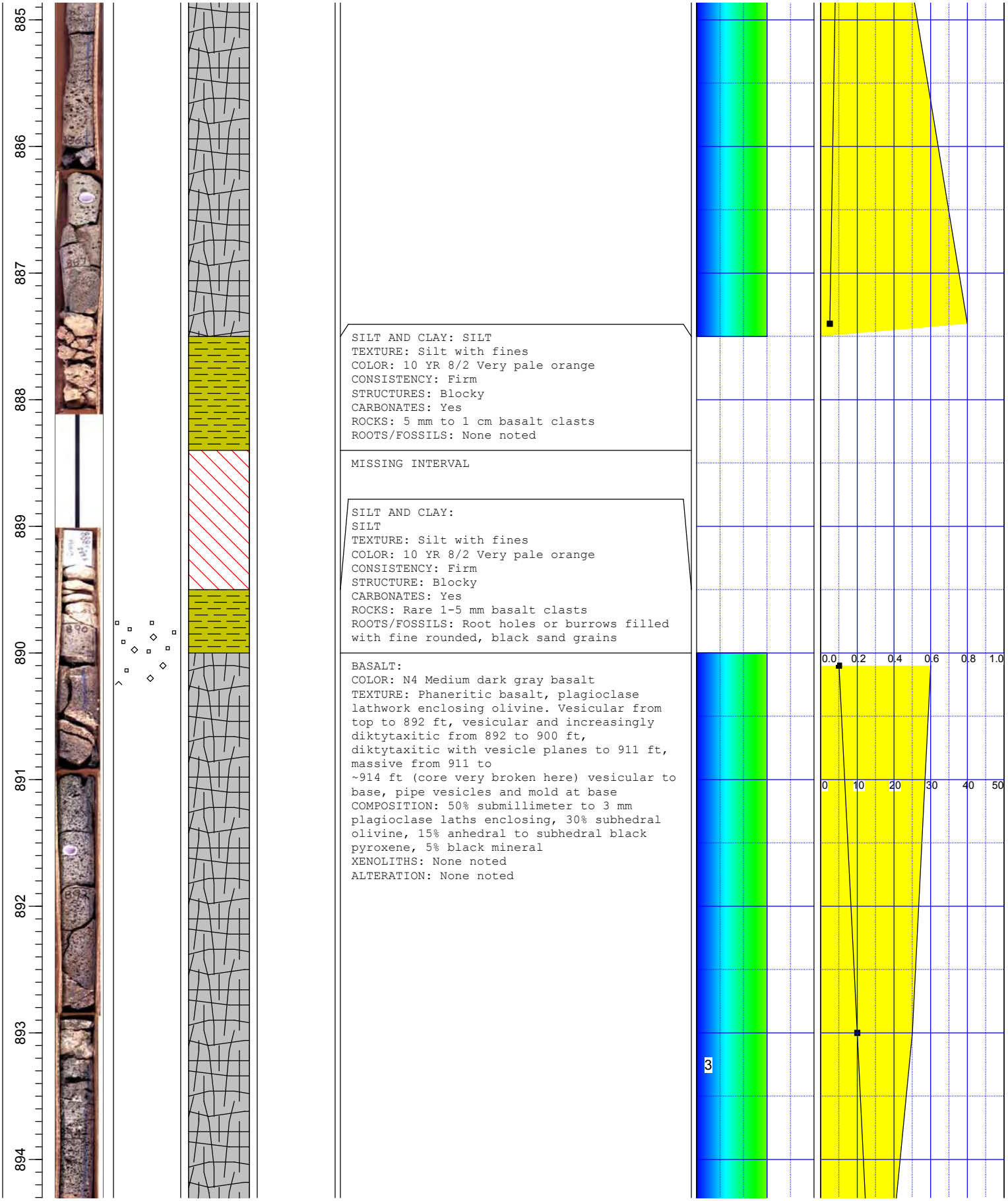
MISSING INTERVAL

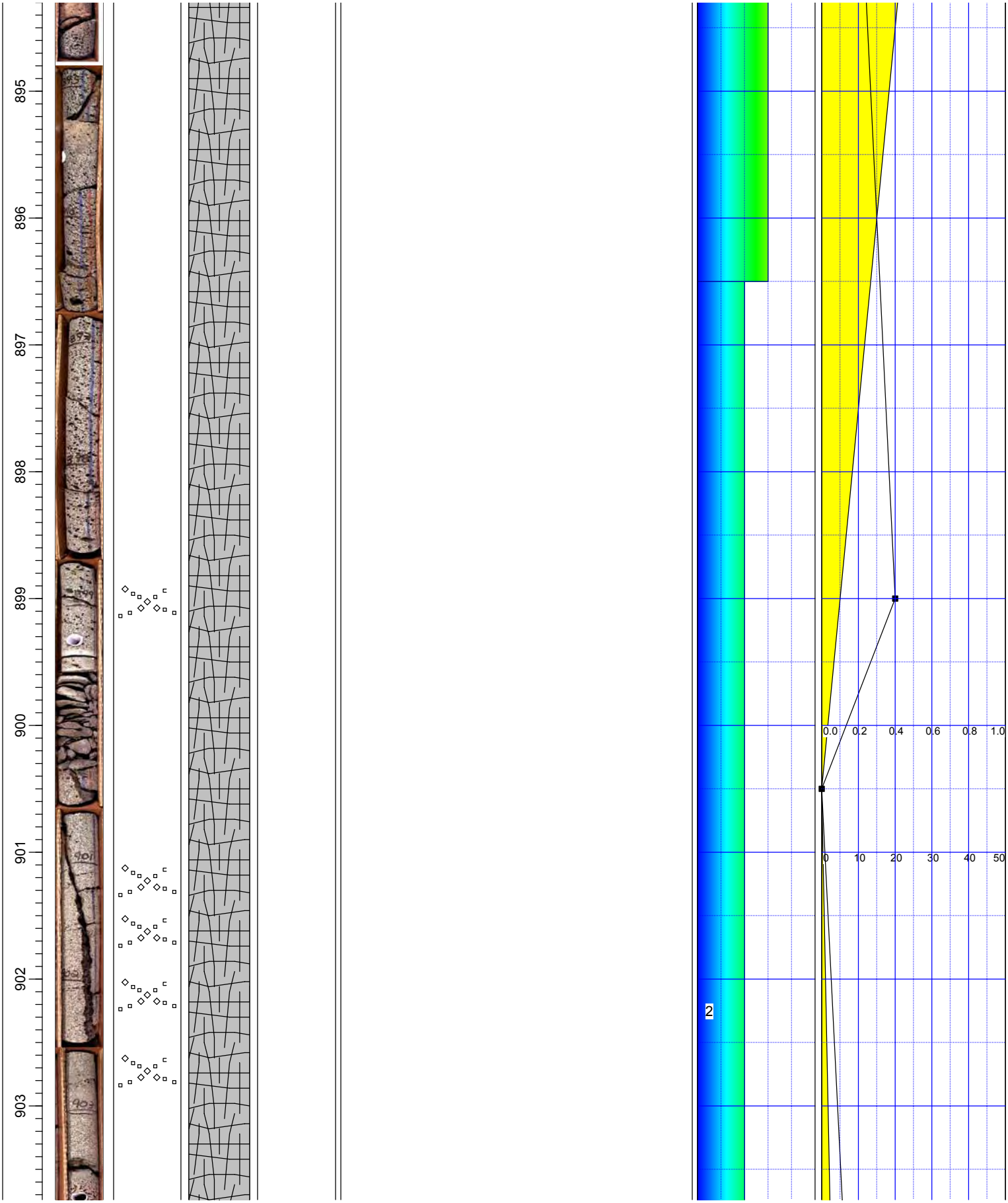
BASALT:
COLOR: 5R 6/2 pale red from 855.0 ft to 857 ft.
TEXTURE: Aphanitic, extremely vesicular basalt
COMPOSITION: 40% sub millimeter randomly oriented plagioclase in dark gray or black groundmass
XENOLITHS: None noted
ALTERATION: Rusty red oxidation on all surfaces, expecially inside vesicles

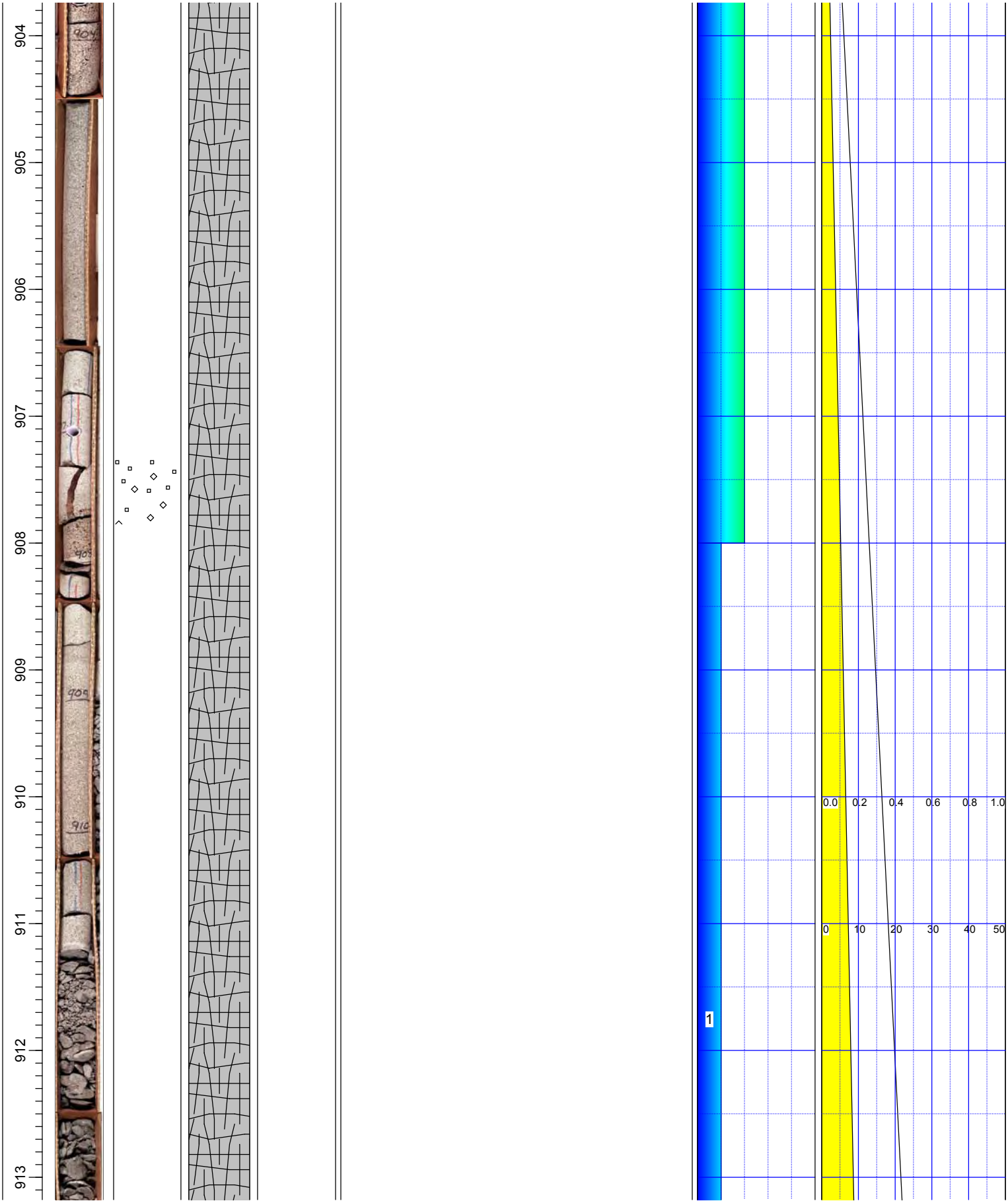

857
858
859
860
861
862
863
864
865
866
SILT AND CLAY:
SILT
TEXTURE: Calcite-cemented silt some 1 to cm basalt clasts
COLOR: 10 YR 8/2 Very pale orange
CONSISTENCY: Extremely firm
STRUCTURES: Structureless, massive
CARBONATES: Yes
ROCKS: Angular clasts of basalt, 3 mm to 5cm in size, matrix-supported
ROOTS/FOSSILS: None noted
BASALT:
COLOR: N4 Medium dark gray basalt
TEXTURE: Very vesicular to 859 ft, vesicles decrease in number and increase in size to 866 ft, massive with few large vesicles to 871.5 ft, increasingly vesicular to base. Aphanitic, intergranular to subophitic.
COMPOSITION: 50% submillimeter subhedral to anhedral plagioclase, 25% subhedral olivine, 20% anhedral to subhedral pyroxene, 5% opaque black mineral
XENOLITHS: None noted
ALTERATION: Bluish-white or cream film on surfaces near base
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

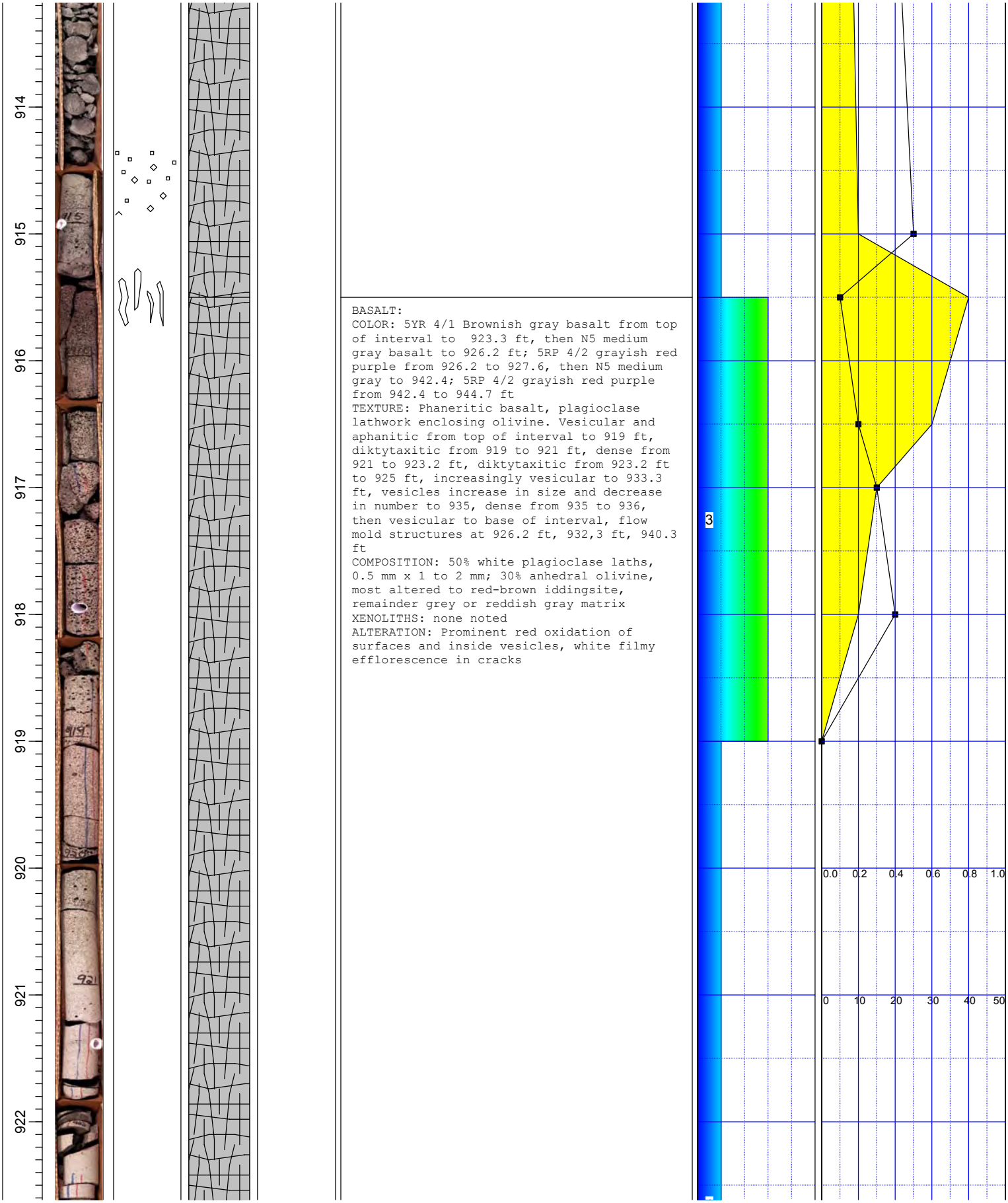

866
867
868
869
870
871
872
873
874
875
2
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50


876
877
878
879
880
881
882
883
884
MISSING INTERVAL
SILT AND CLAY:
TEXTURE: Calcite-cemented silt with fines,some lithic sand grains, rare 1-2 mm angular basalt clasts
COLOR: 10 YR 6/6 Dark yellowish orange
CONSISTENCY: Firm
STRUCTURES: Structureless, massive
CARBONATES: Yes
ROCKS: Angular clasts of basalt
ROOTS/FOSSILS: None noted
BASALT:
COLOR: N4 Medium dark gray basalt
TEXTURE: Aphanitic, vesicular basalt,
COMPOSITION: 50% submillimeter plagioclase laths, 25% subhedral olivine, 20% anhedral to subhedral pyroxene, 5% opaque black mineral
XENOLITHS: None noted
ALTERATION: None noted
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

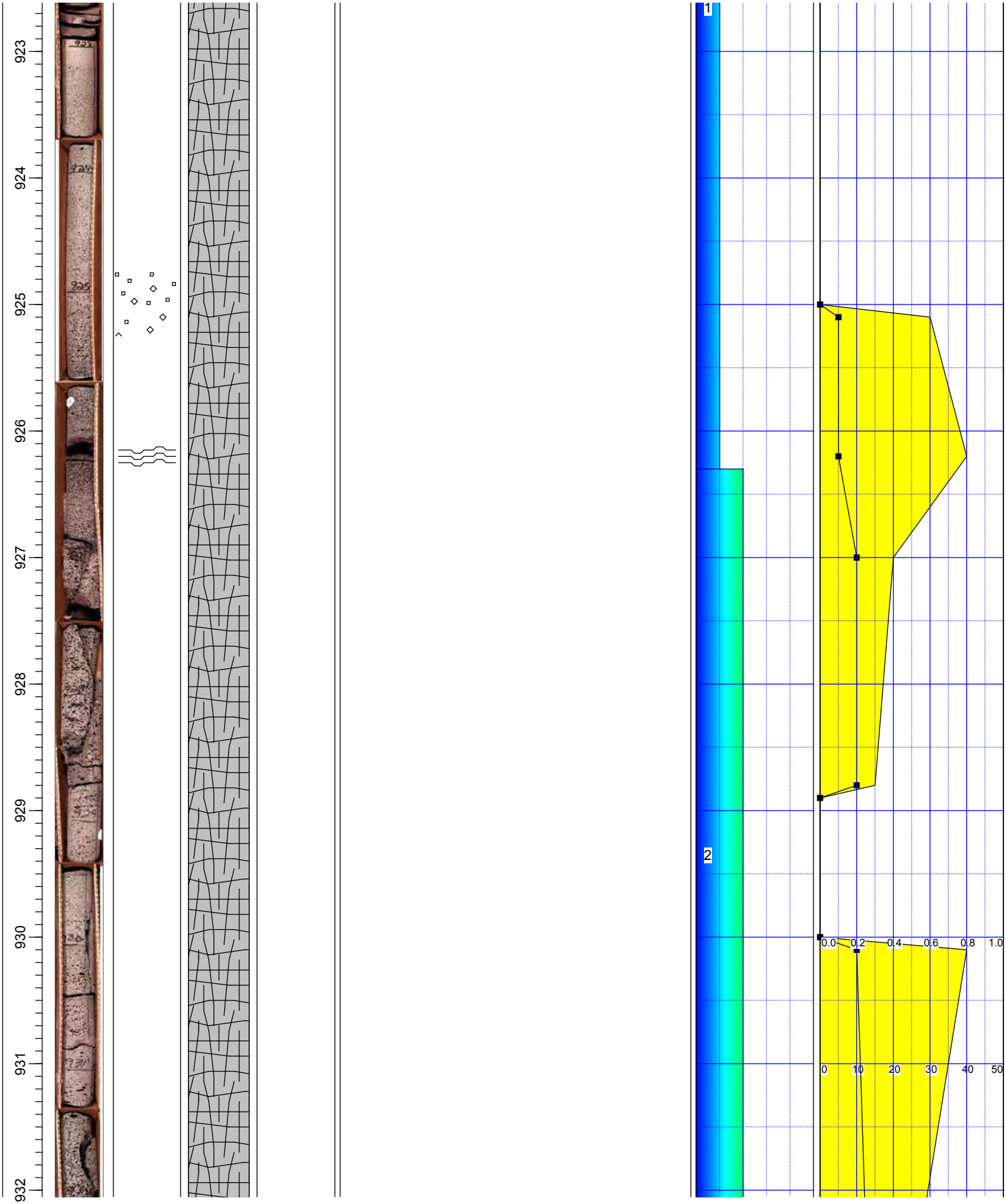

885
886
887
888
889
890
891
892
893
894
SILT AND CLAY: SILT
TEXTURE: Silt with fines
COLOR: 10 YR 8/2 Very pale orange
CONSISTENCY: Firm
STRUCTURES: Blocky
CARBONATES: Yes
ROCKS: 5 mm to 1 cm basalt clasts
ROOTS/FOSSILS: None noted
MISSING INTERVAL
SILT AND CLAY:
SILT
TEXTURE: Silt with fines
COLOR: 10 YR 8/2 Very pale orange
CONSISTENCY: Firm
STRUCTURE: Blocky
CARBONATES: Yes
ROCKS: Rare 1-5 mm basalt clasts
ROOTS/FOSSILS: Root holes or burrows filled with fine rounded, black sand grains
BASALT:
COLOR: N4 Medium dark gray basalt
TEXTURE: Phaneritic basalt, plagioclase lathwork enclosing olivine. Vesicular from top to 892 ft, vesicular and increasingly diktytaxitic from 892 to 900 ft, diktytaxitic with vesicle planes to 911 ft, massive from 911 to ~914 ft (core very broken here) vesicular to base, pipe vesicles and mold at base
COMPOSITION: 50% submillimeter to 3 mm plagioclase laths enclosing, 30% subhedral olivine, 15% anhedral to subhedral black pyroxene, 5% black mineral
XENOLITHS: None noted
ALTERATION: None noted
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

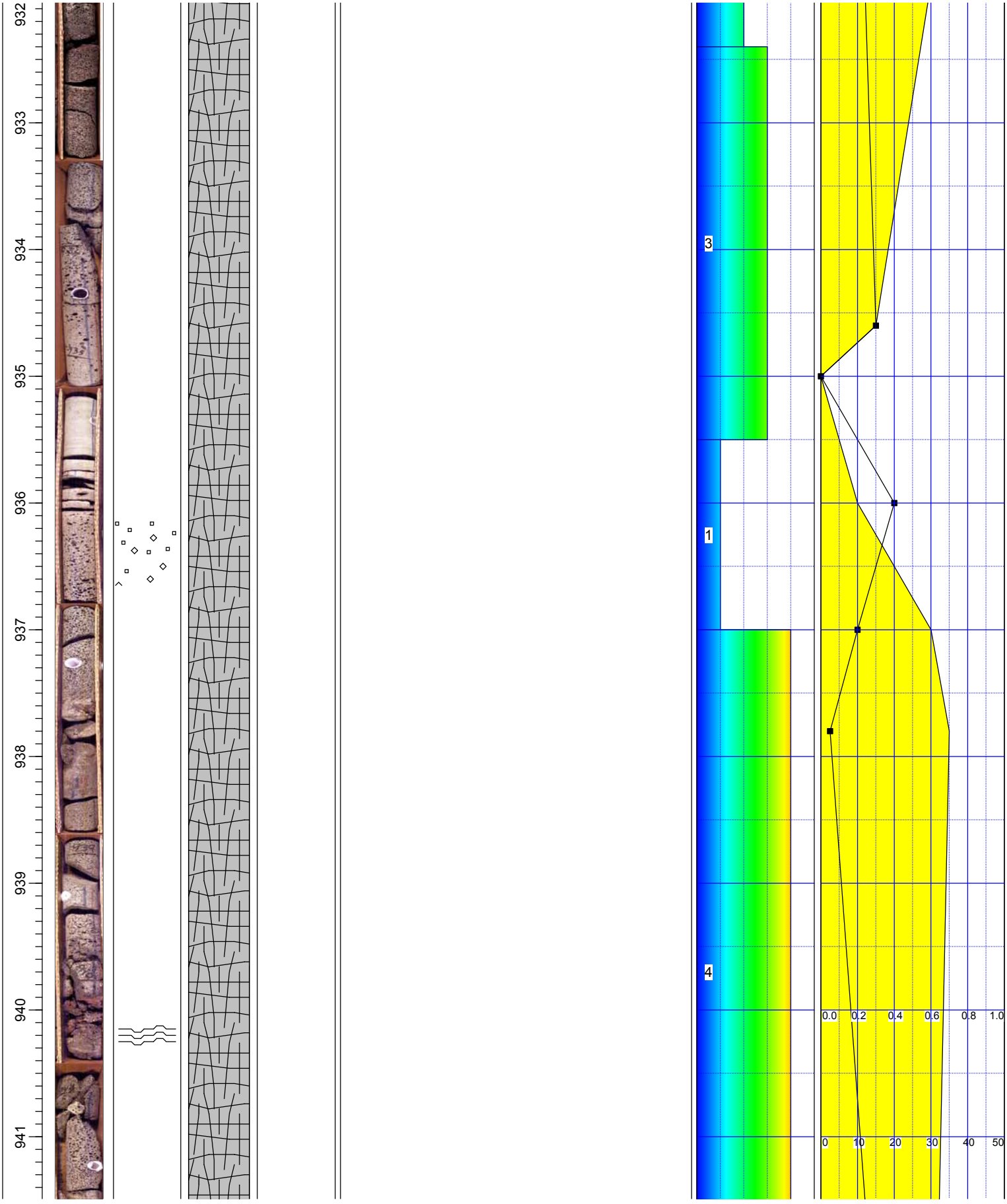

895
896
897
898
899
900
901
902
903
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
2

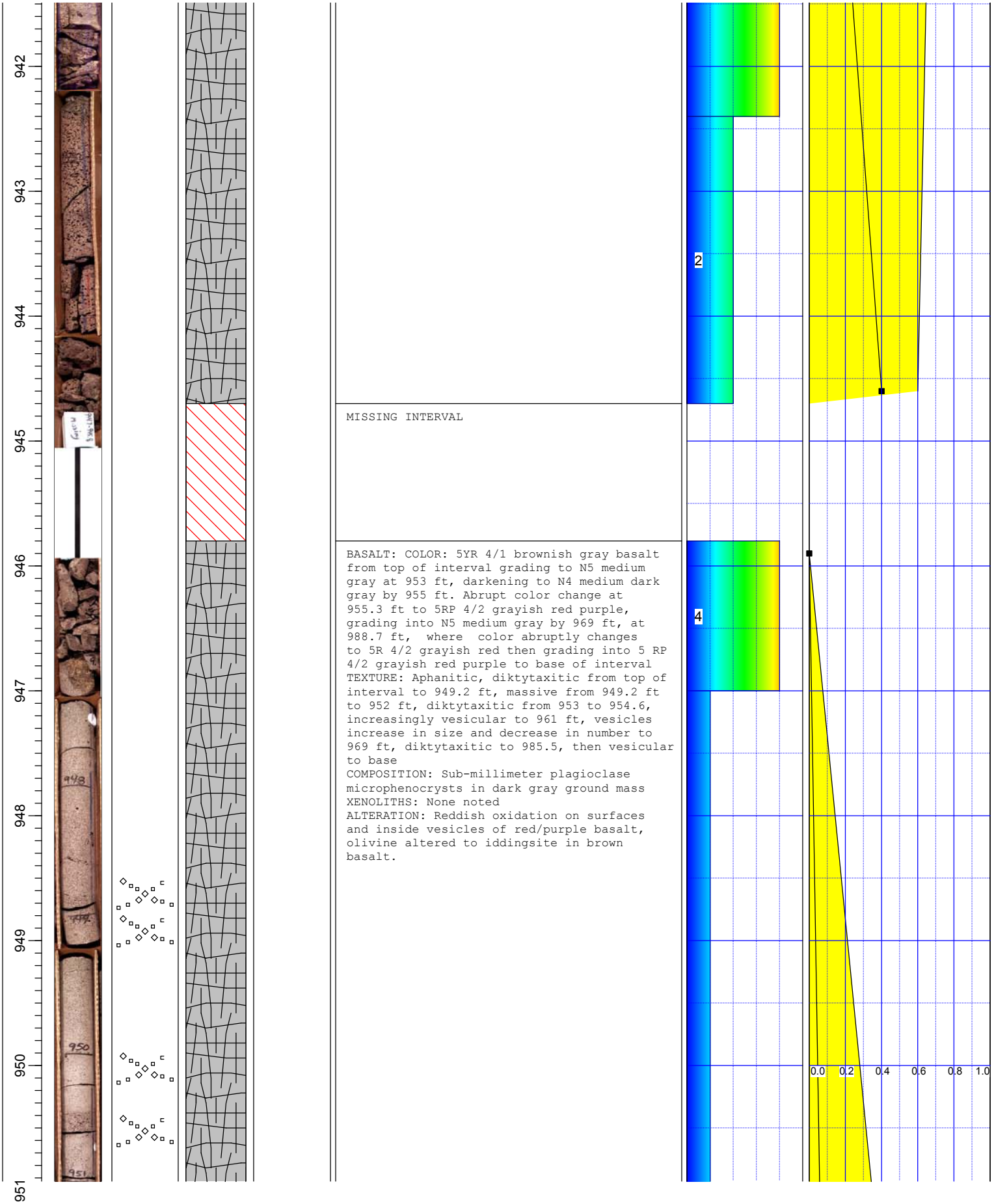

904
905
906
907
908
909
910
911
912
913
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
1



BASALT:
COLOR: 5YR 4/1 Brownish gray basalt from top of interval to 923.3 ft, then N5 medium gray basalt to 926.2 ft; 5RP 4/2 grayish red purple from 926.2 to 927.6, then N5 medium gray to 942.4; 5RP 4/2 grayish red purple from 942.4 to 944.7 ft
TEXTURE: Phaneritic basalt, plagioclase lathwork enclosing olivine. Vesicular and aphanitic from top of interval to 919 ft, diktytaxitic from 919 to 921 ft, dense from 921 to 923.2 ft, diktytaxitic from 923.2 ft to 925 ft, increasingly vesicular to 933.3 ft, vesicles increase in size and decrease in number to 935, dense from 935 to 936, then vesicular to base of interval, flow mold structures at 926.2 ft, 932,3 ft, 940.3 ft
COMPOSITION: 50% white plagioclase laths, 0.5 mm x 1 to 2 mm; 30% anhedral olivine, most altered to red-brown iddingsite, remainder grey or reddish gray matrix
XENOLITHS: none noted
ALTERATION: Prominent red oxidation of surfaces and inside vesicles, white filmy efflorescence in cracks

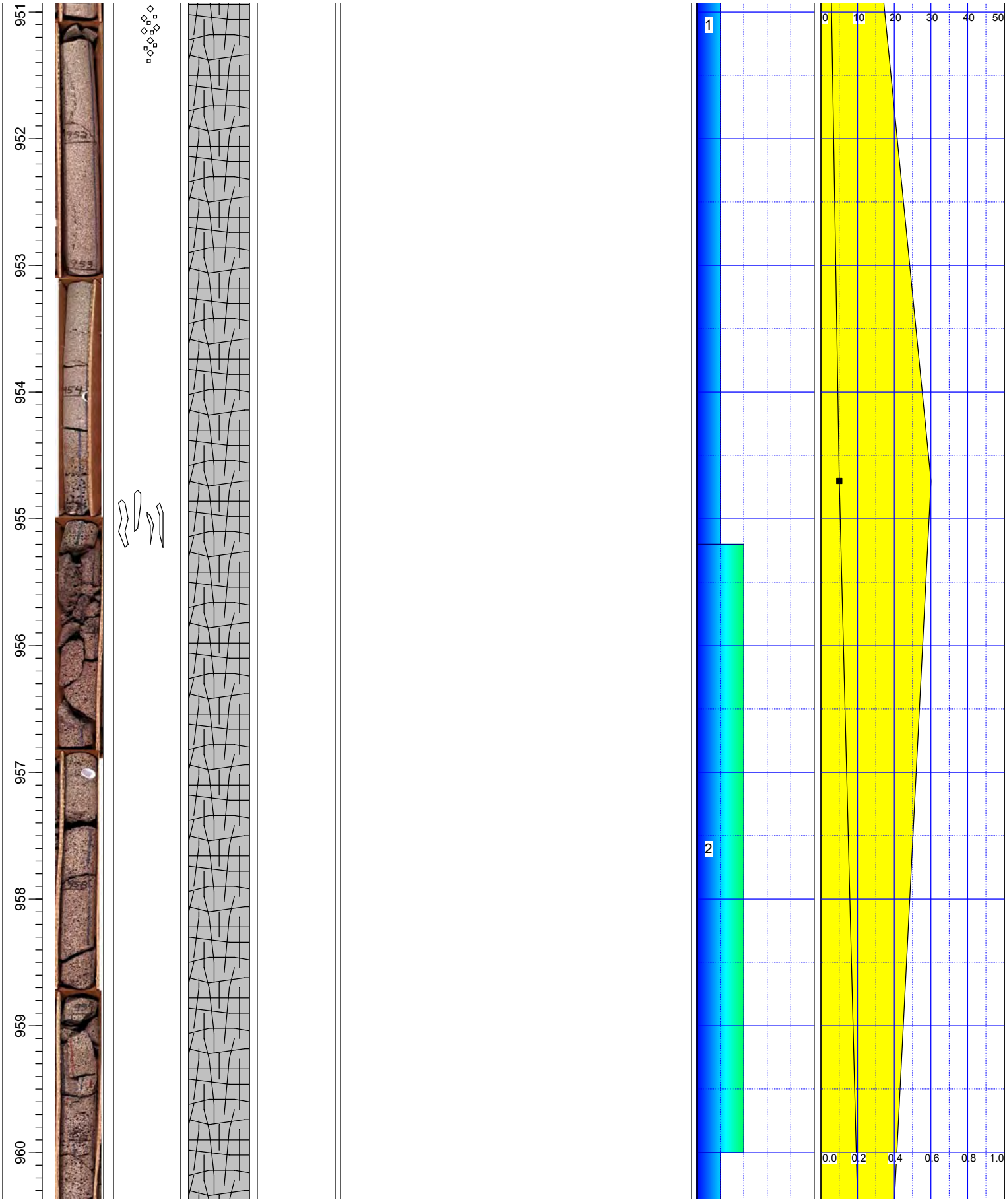

923
924
925
926
927
928
929
930
931
932
1
2
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

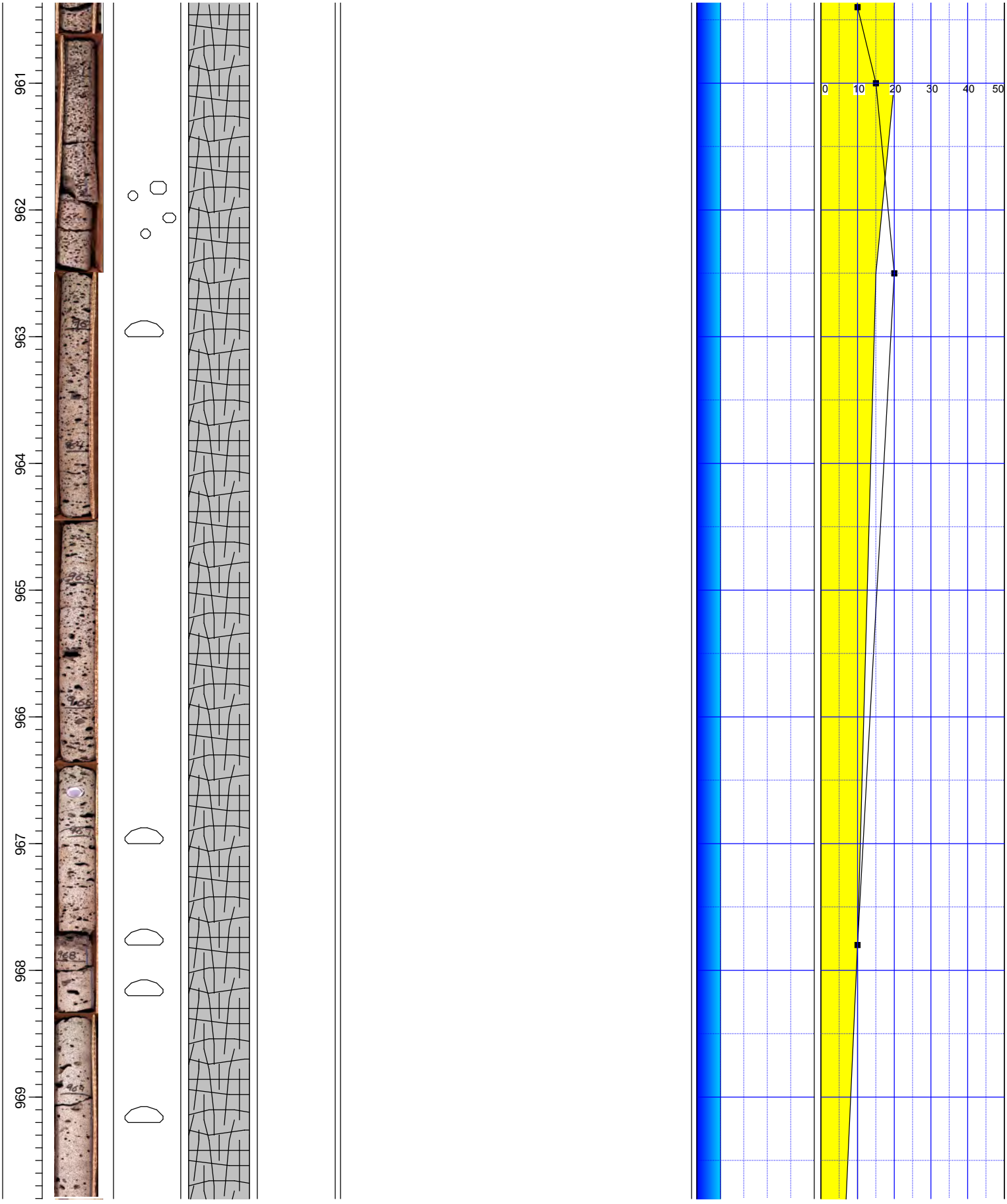

932
933
934
935
936
937
938
939
940
941
3
1
4
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

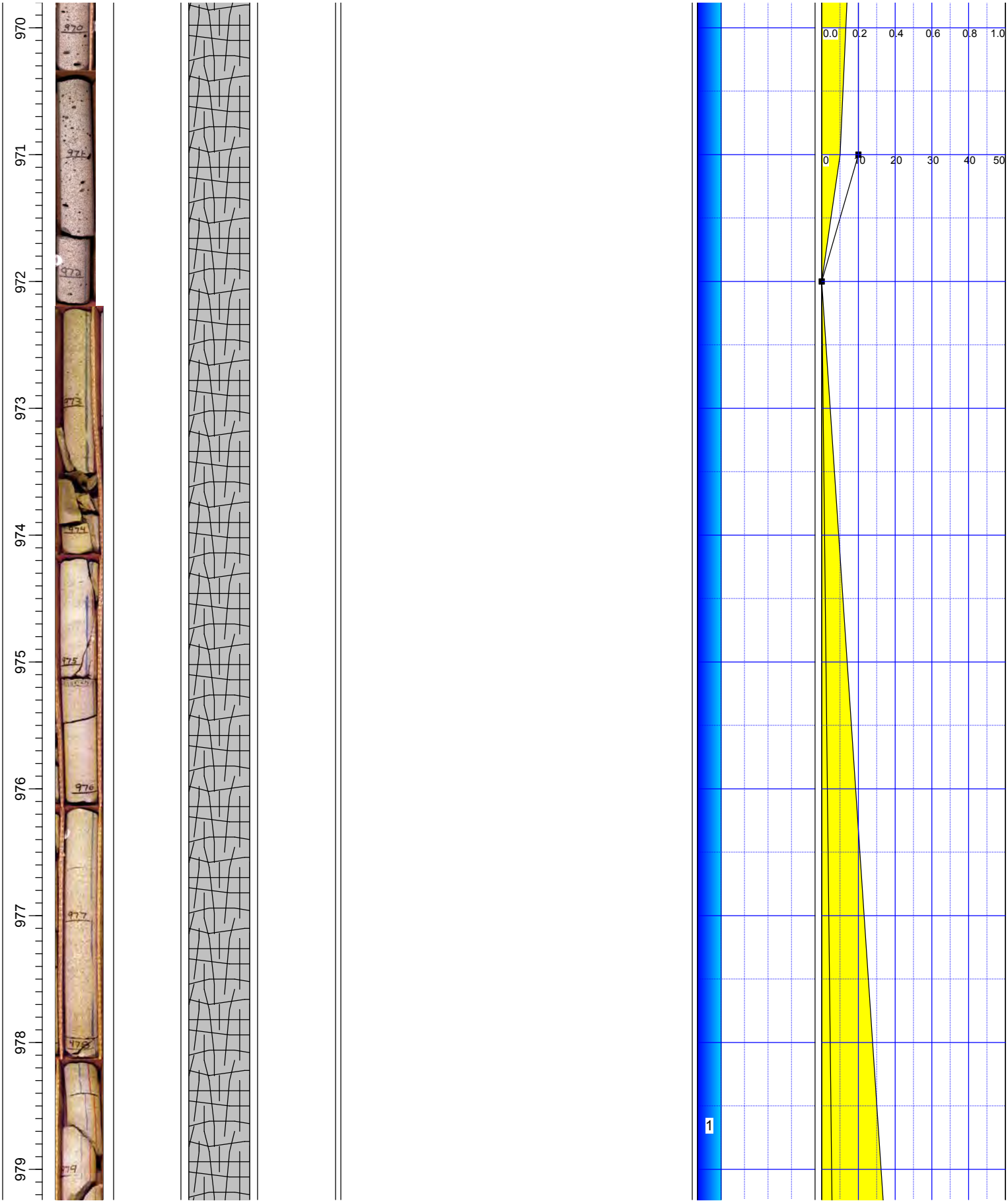


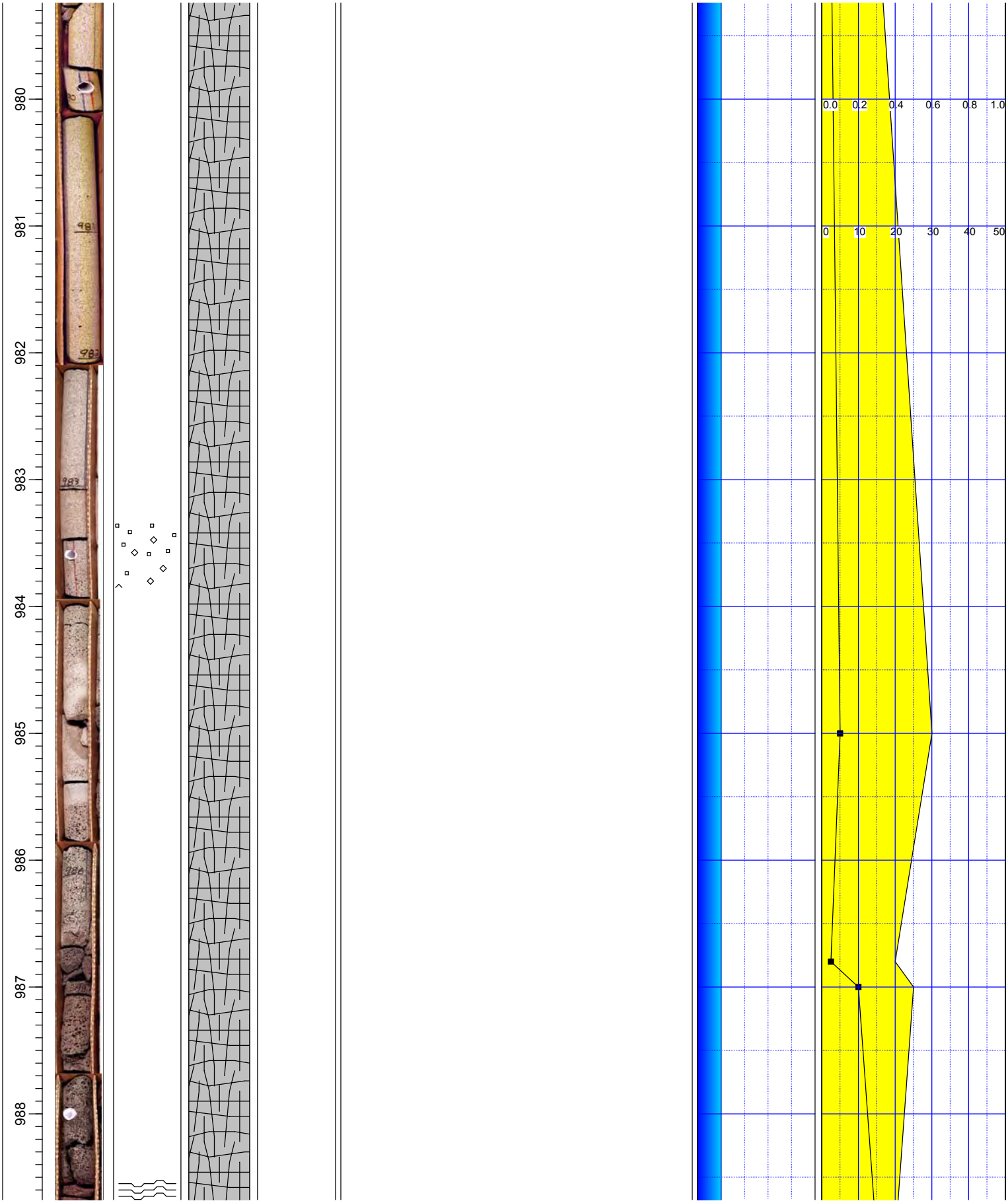
MISSING INTERVAL

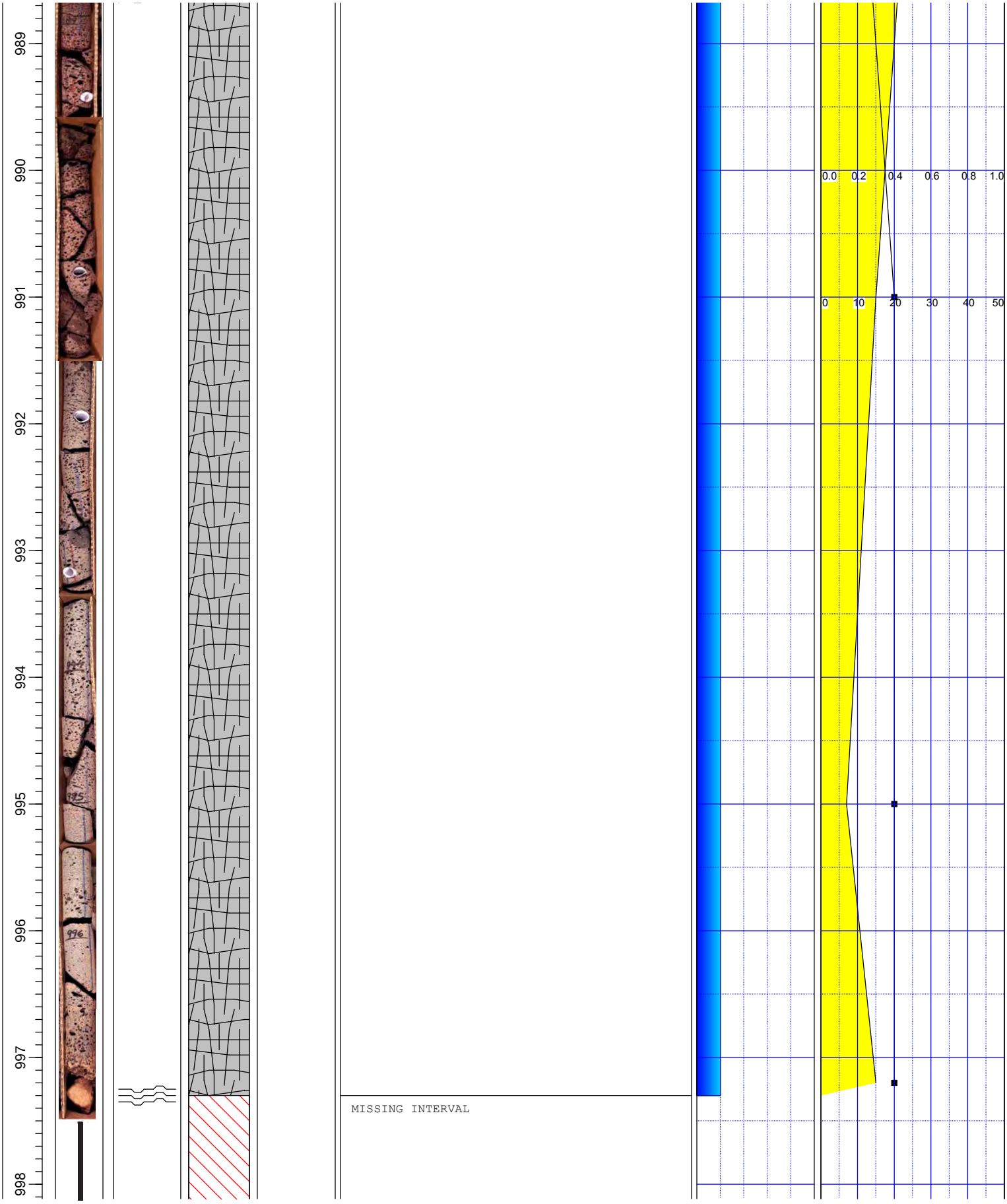
BASALT: COLOR: 5YR 4/1 brownish gray basalt from top of interval grading to N5 medium gray at 953 ft, darkening to N4 medium dark gray by 955 ft. Abrupt color change at 955.3 ft to 5RP 4/2 grayish red purple, grading into N5 medium gray by 969 ft, at 988.7 ft, where color abruptly changes to 5R 4/2 grayish red then grading into 5 RP 4/2 grayish red purple to base of interval
TEXTURE: Aphanitic, diktytaxitic from top of interval to 949.2 ft, massive from 949.2 ft to 952 ft, diktytaxitic from 953 to 954.6, increasingly vesicular to 961 ft, vesicles increase in size and decrease in number to 969 ft, diktytaxitic to 985.5, then vesicular to base
COMPOSITION: Sub-millimeter plagioclase microphenocrysts in dark gray ground mass
XENOLITHS: None noted
ALTERATION: Reddish oxidation on surfaces and inside vesicles of red/purple basalt, olivine altered to iddingsite in brown basalt.

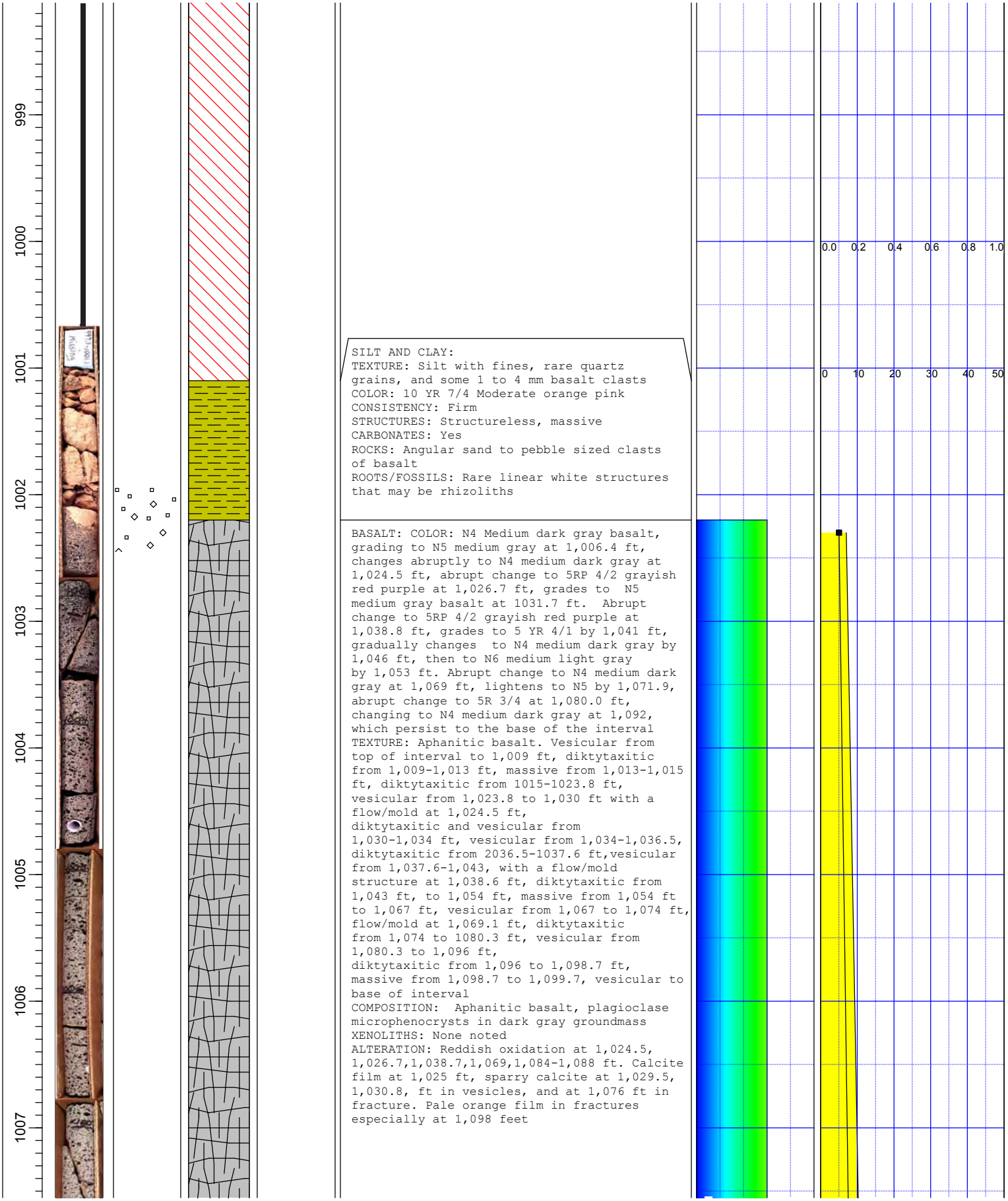

951
952
953
954
955
956
957
958
959
960
1
2
0
10
20
30
40
50
0.0
0.2
0.4
0.6
0.8
1.0


961
962
963
964
965
966
967
968
969
0
10
20
30
40
50


970
971
972
973
974
975
976
977
978
979
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
1

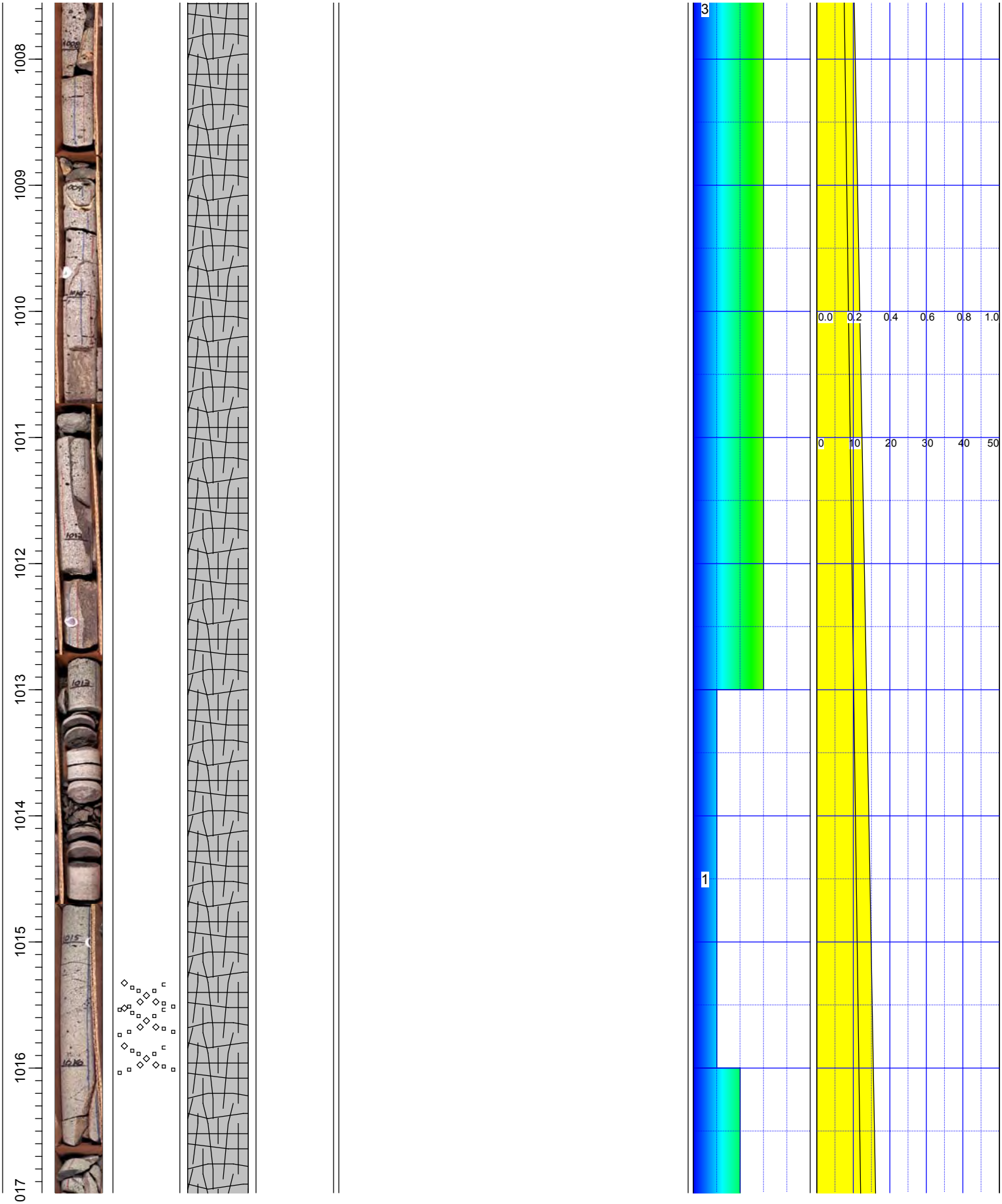

980
981
982
983
984
985
986
987
988
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

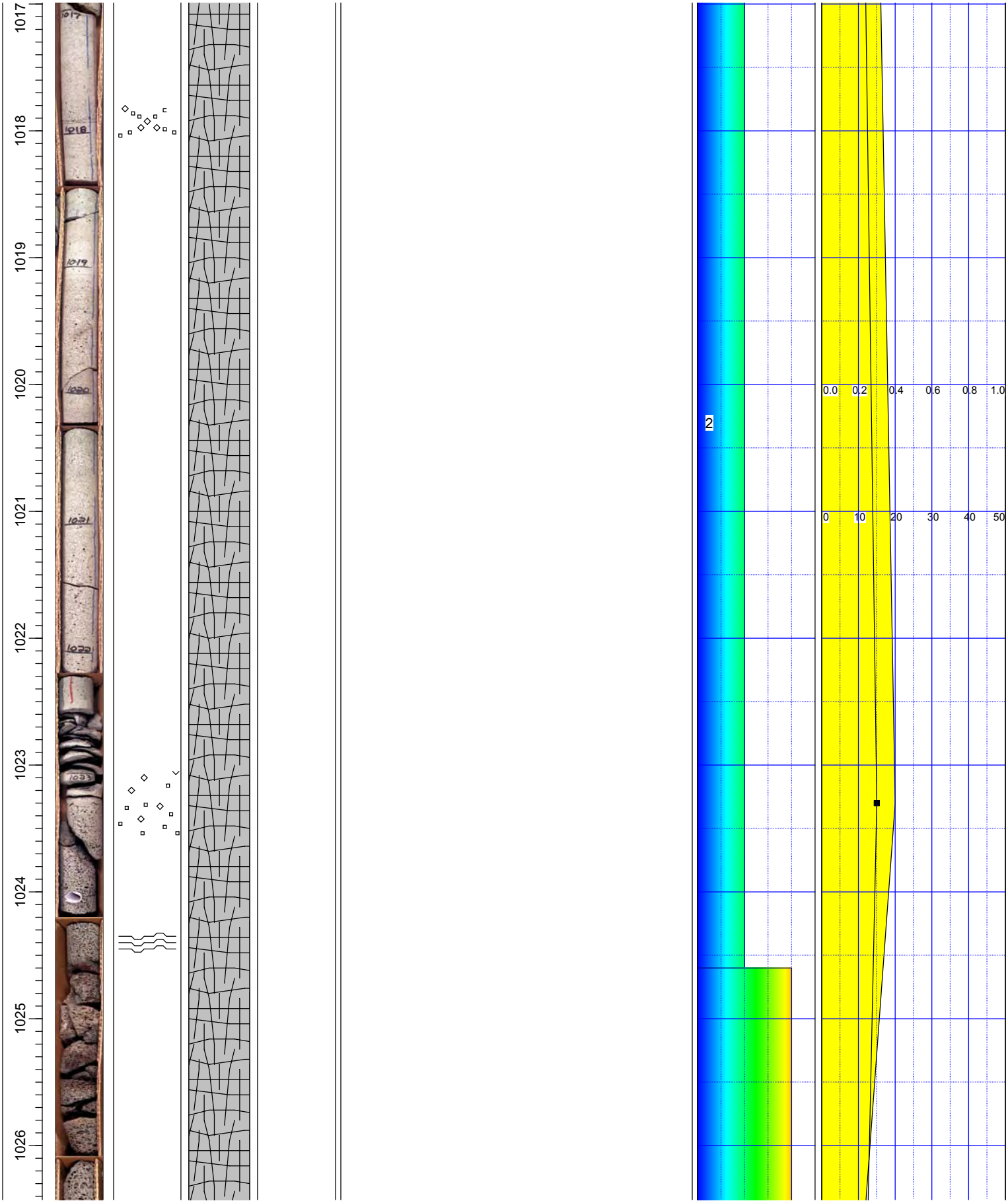

989
990
991
992
993
994
995
996
997
998
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
MISSING INTERVAL

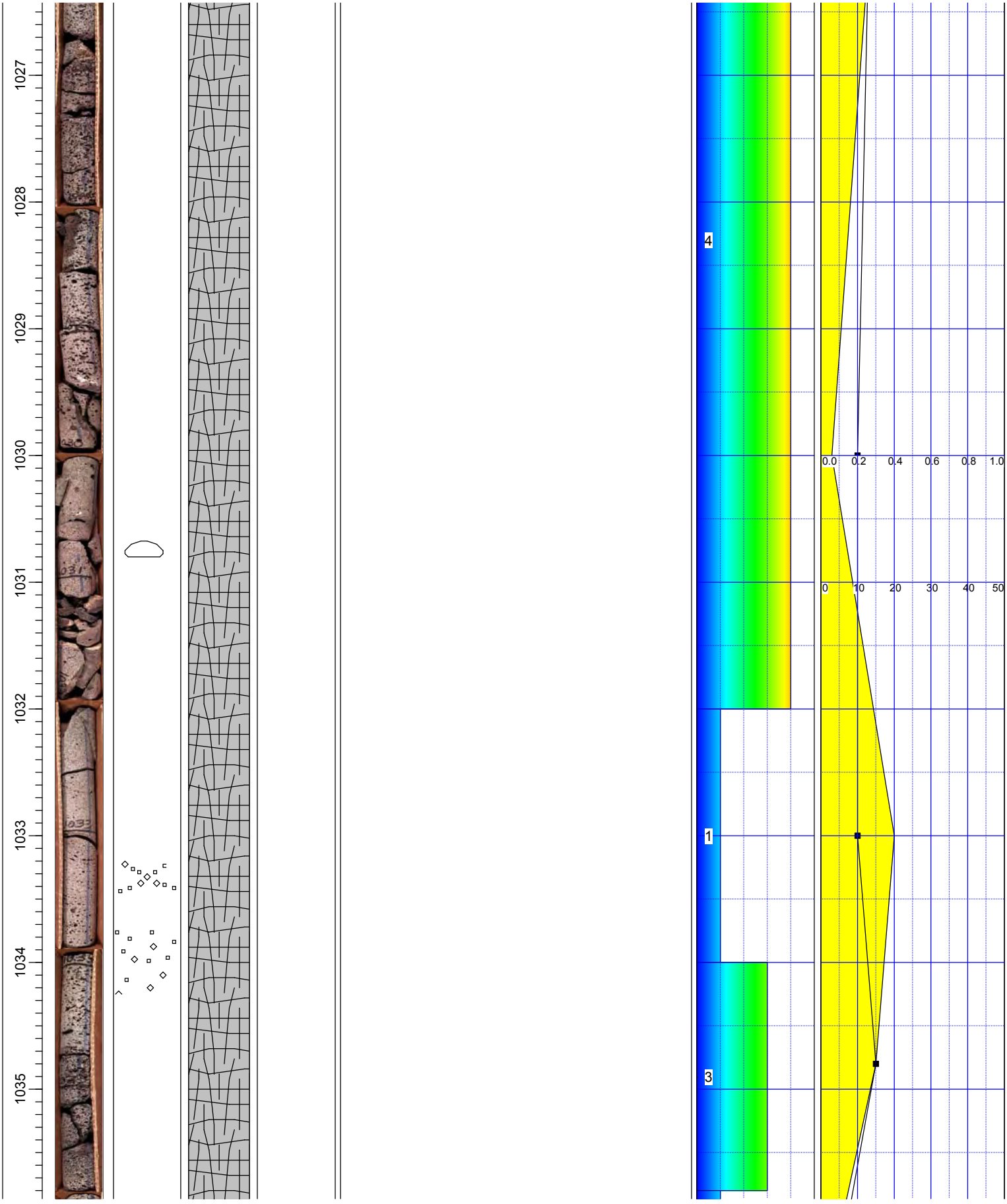


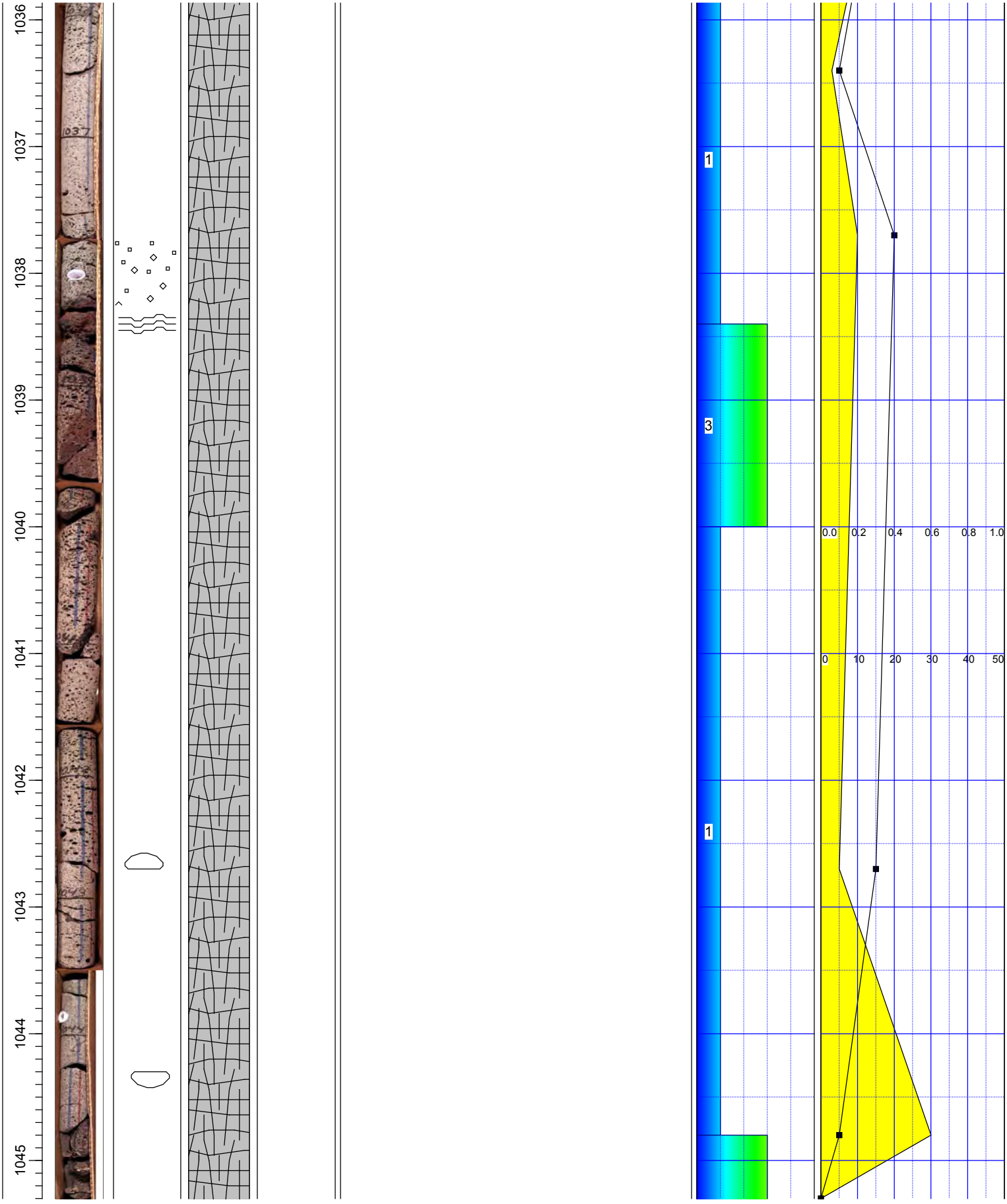
SILT AND CLAY:
TEXTURE: Silt with fines, rare quartz grains, and some 1 to 4 mm basalt clasts
COLOR: 10 YR 7/4 Moderate orange pink
CONSISTENCY: Firm
STRUCTURES: Structureless, massive
CARBONATES: Yes
ROCKS: Angular sand to pebble sized clasts of basalt
ROOTS/FOSSILS: Rare linear white structures that may be rhizoliths

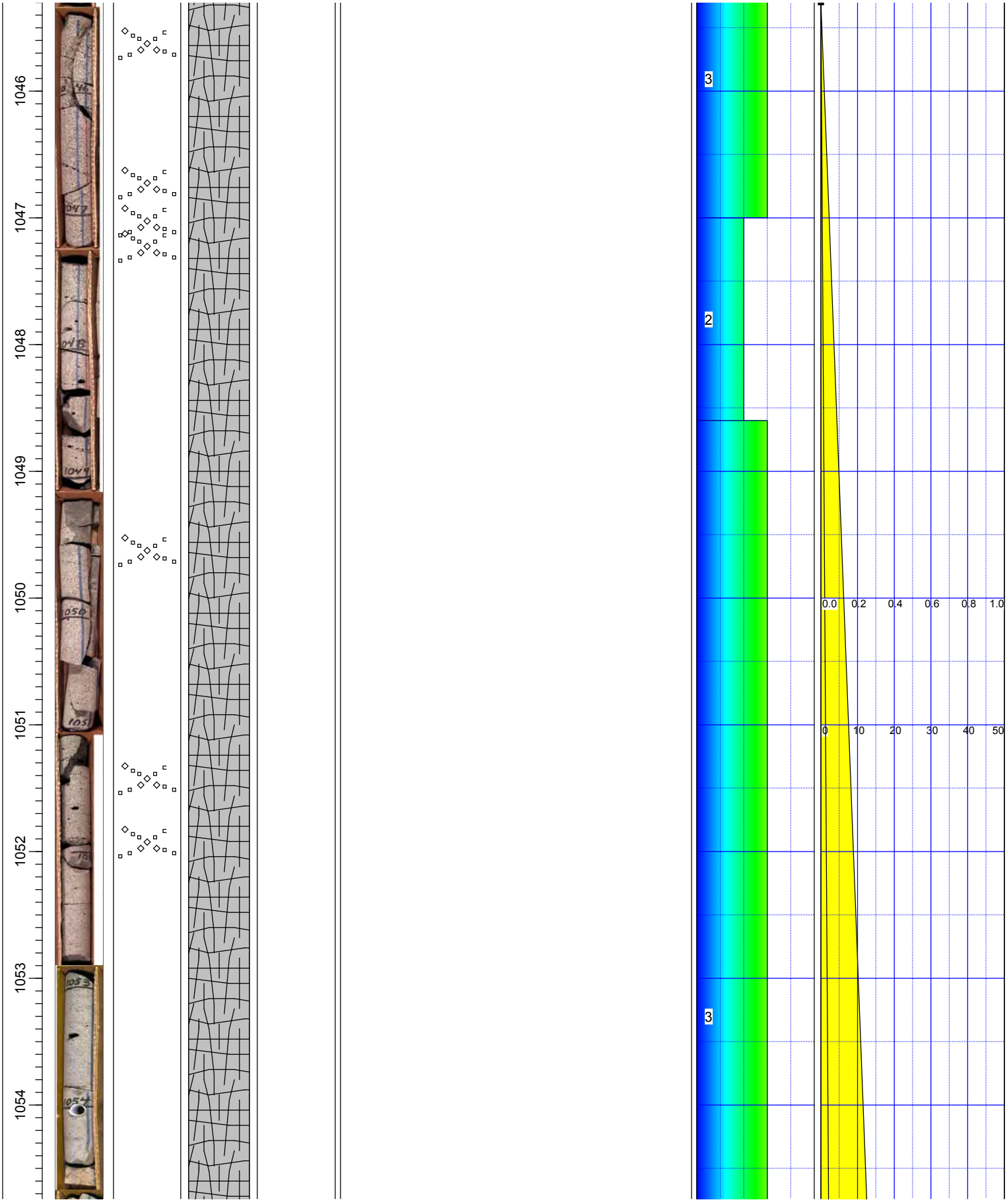
BASALT: COLOR: N4 Medium dark gray basalt, grading to N5 medium gray at 1,006.4 ft, changes abruptly to N4 medium dark gray at 1,024.5 ft, abrupt change to 5RP 4/2 grayish red purple at 1,026.7 ft, grades to N5 medium gray basalt at 1031.7 ft. Abrupt change to 5RP 4/2 grayish red purple at 1,038.8 ft, grades to 5 YR 4/1 by 1,041 ft, gradually changes to N4 medium dark gray by 1,046 ft, then to N6 medium light gray by 1,053 ft. Abrupt change to N4 medium dark gray at 1,069 ft, lightens to N5 by 1,071.9, abrupt change to 5R 3/4 at 1,080.0 ft, changing to N4 medium dark gray at 1,092, which persist to the base of the interval
TEXTURE: Aphanitic basalt. Vesicular from top of interval to 1,009 ft, diktytaxitic from 1,009-1,013 ft, massive from 1,013-1,015 ft, diktytaxitic from 1015-1023.8 ft, vesicular from 1,023.8 to 1,030 ft with a flow/mold at 1,024.5 ft, diktytaxitic and vesicular from 1,030-1,034 ft, vesicular from 1,034-1,036.5, diktytaxitic from 2036.5-1037.6 ft,vesicular from 1,037.6-1,043, with a flow/mold structure at 1,038.6 ft, diktytaxitic from 1,043 ft, to 1,054 ft, massive from 1,054 ft to 1,067 ft, vesicular from 1,067 to 1,074 ft, flow/mold at 1,069.1 ft, diktytaxitic from 1,074 to 1080.3 ft, vesicular from 1,080.3 to 1,096 ft, diktytaxitic from 1,096 to 1,098.7 ft, massive from 1,098.7 to 1,099.7, vesicular to base of interval
COMPOSITION: Aphanitic basalt, plagioclase microphenocrysts in dark gray groundmass
XENOLITHS: None noted
ALTERATION: Reddish oxidation at 1,024.5, 1,026.7,1,038.7,1,069,1,084-1,088 ft. Calcite film at 1,025 ft, sparry calcite at 1,029.5, 1,030.8, ft in vesicles, and at 1,076 ft in fracture. Pale orange film in fractures especially at 1,098 feet

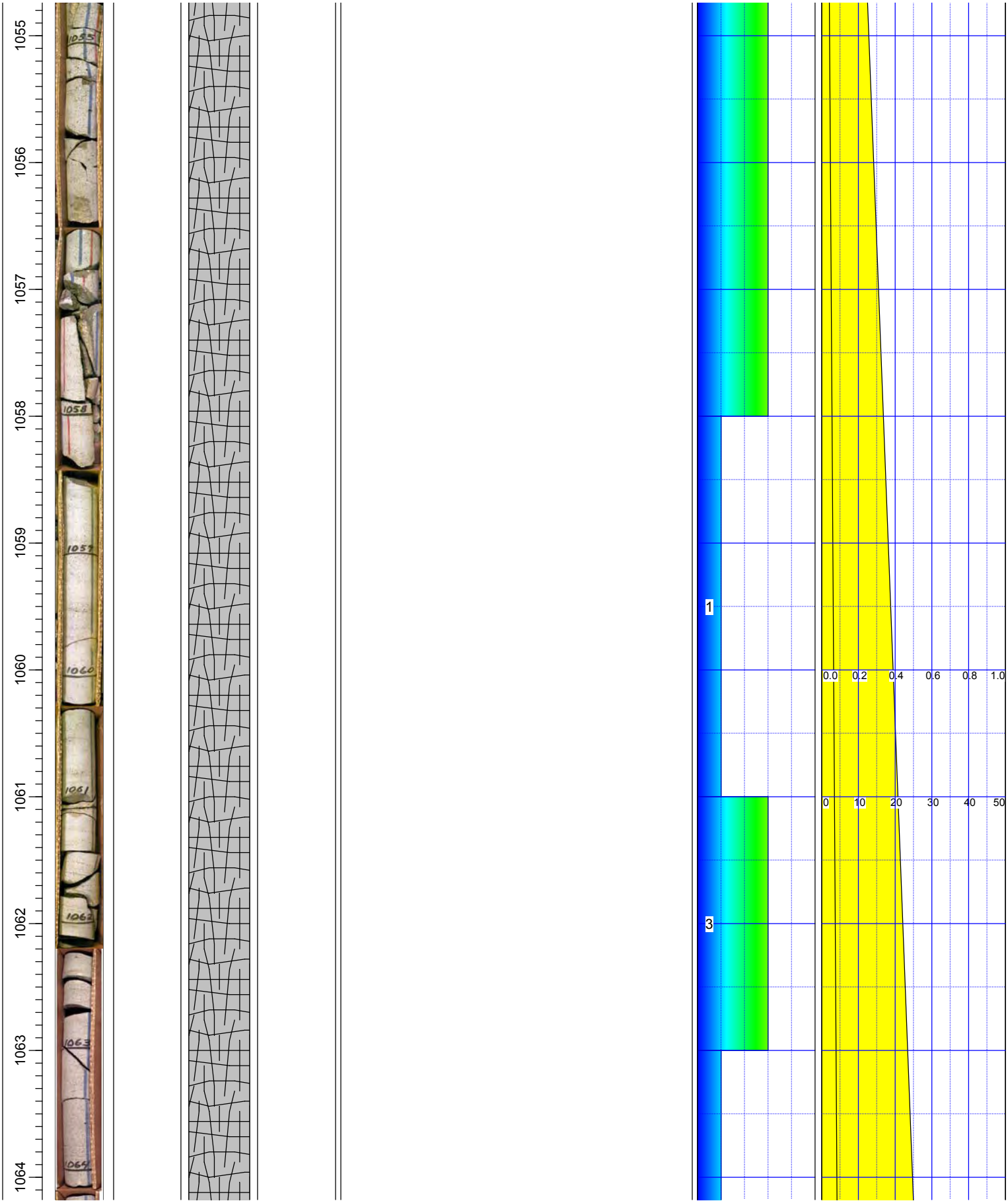

1008
1009
1010
1011
1012
1013
1014
1015
1016
1017
3
1
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

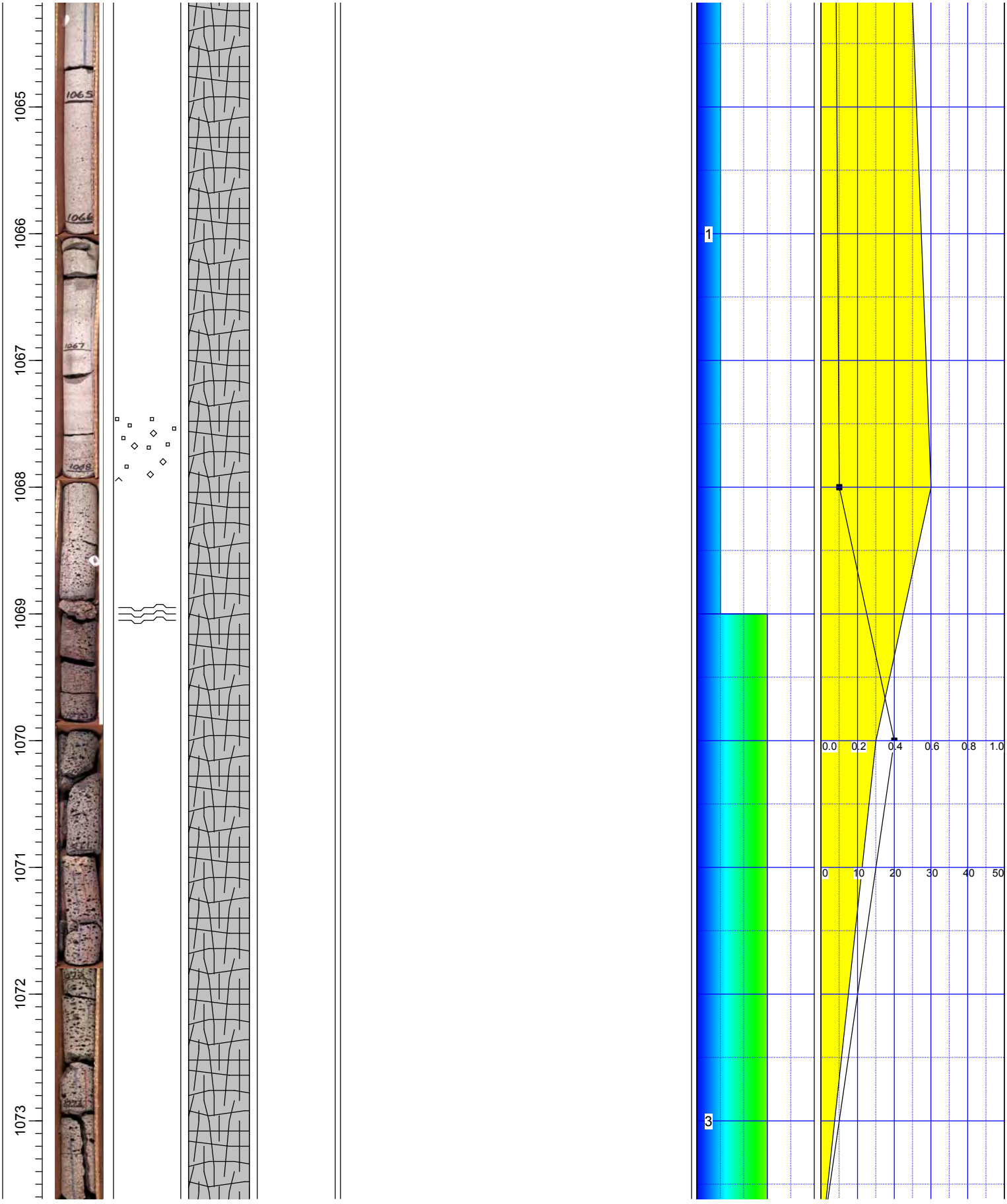

1017
1018
1019
1020
1021
1022
1023
1024
1025
1026
2
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

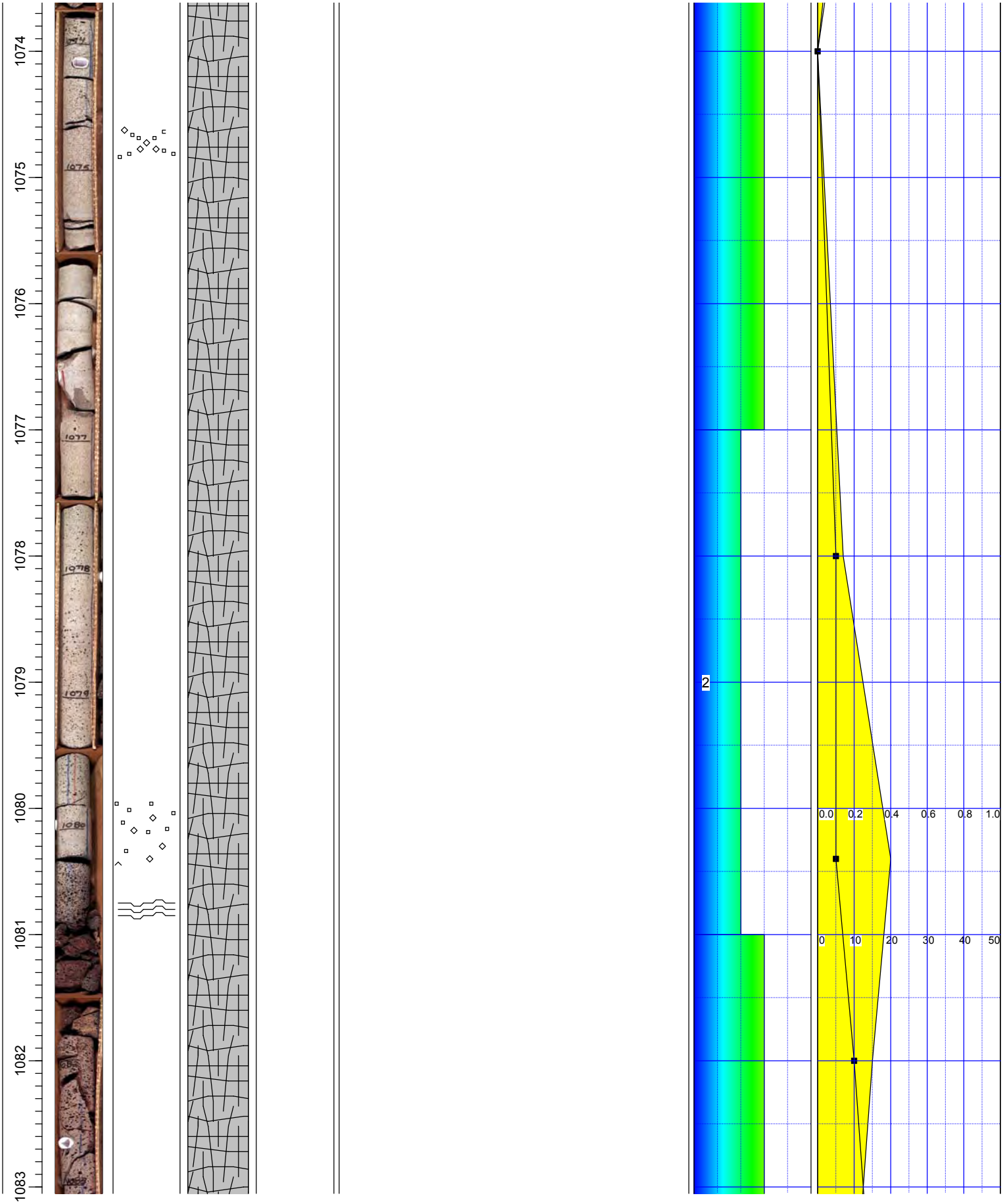

1027
1028
1029
1030
1031
1032
1033
1034
1035
4
1
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

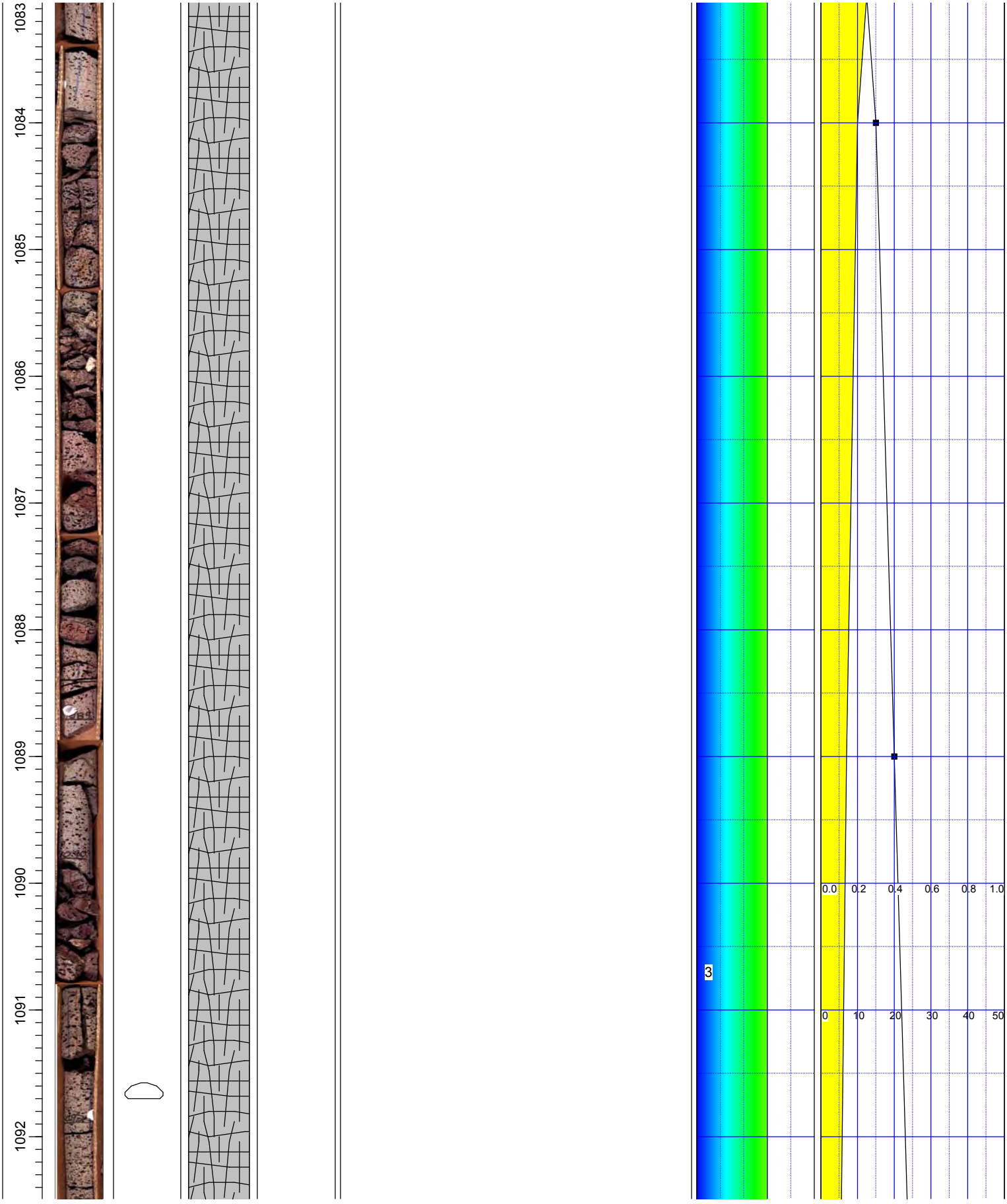

1036
1037
1038
1039
1040
1041
1042
1043
1044
1045
1
3
1
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

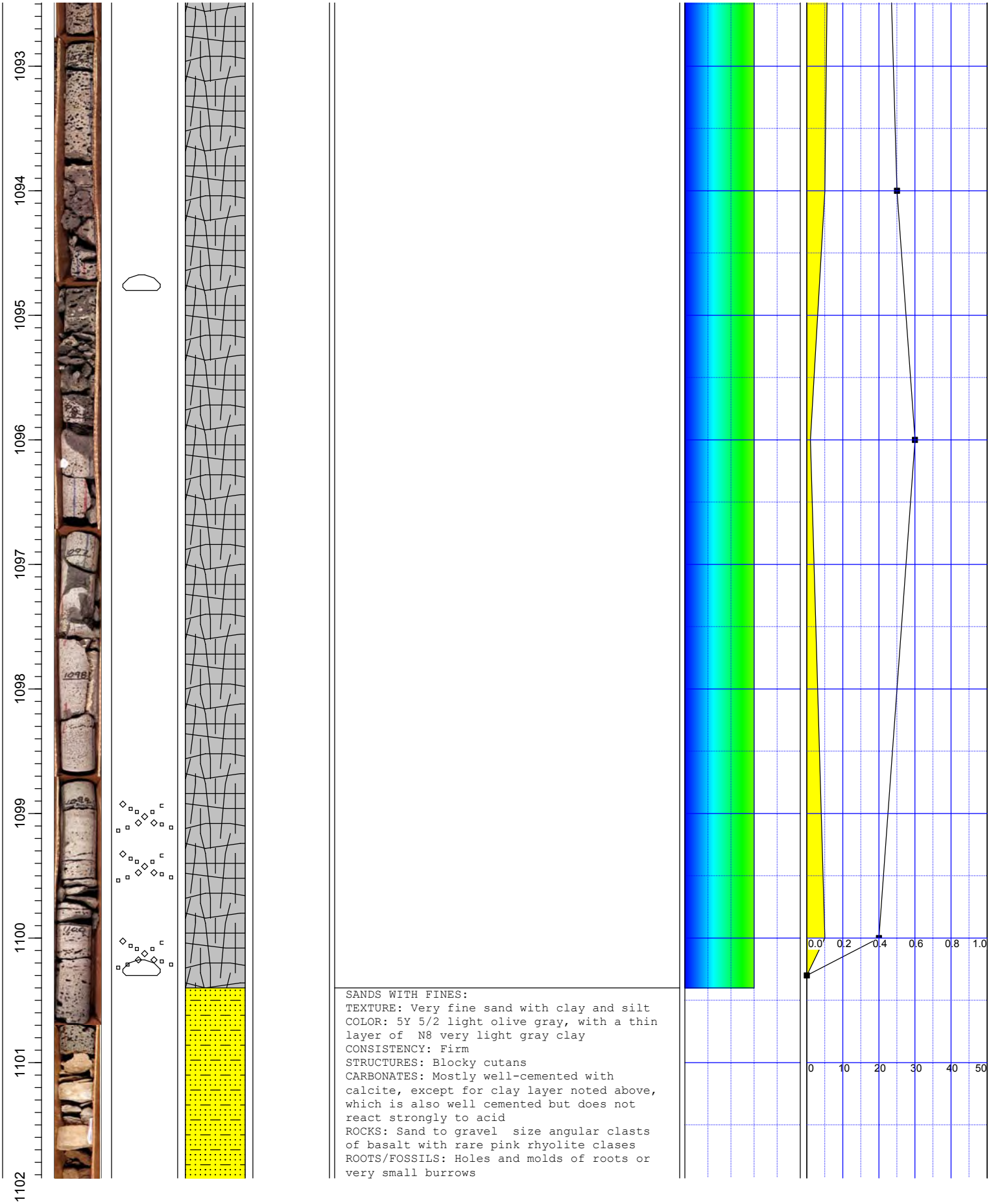

1046
1047
1048
1049
1050
1051
1052
1053
1054
3
2
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50


1055
1056
1057
1058
1059
1060
1061
1062
1063
1064
1055
1058
1059
1060
1061
1062
1063
1064
1
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

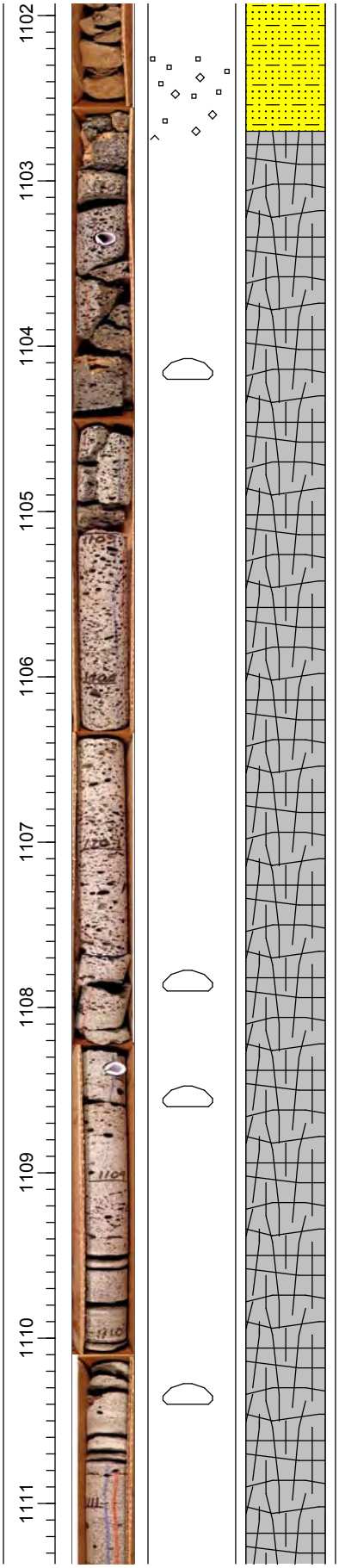

1065
1066
1067
1068
1069
1070
1071
1072
1073
1
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50


1074
1075
1076
1077
1078
1079
1080
1081
1082
1083
2
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

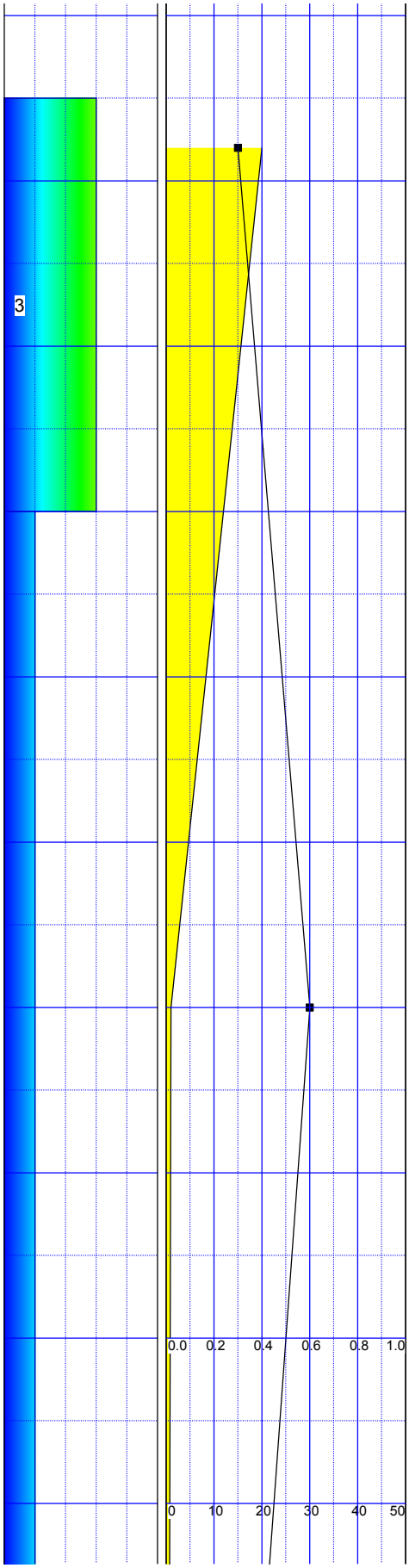

1083
1084
1085
1086
1087
1088
1089
1090
1091
1092
3
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50

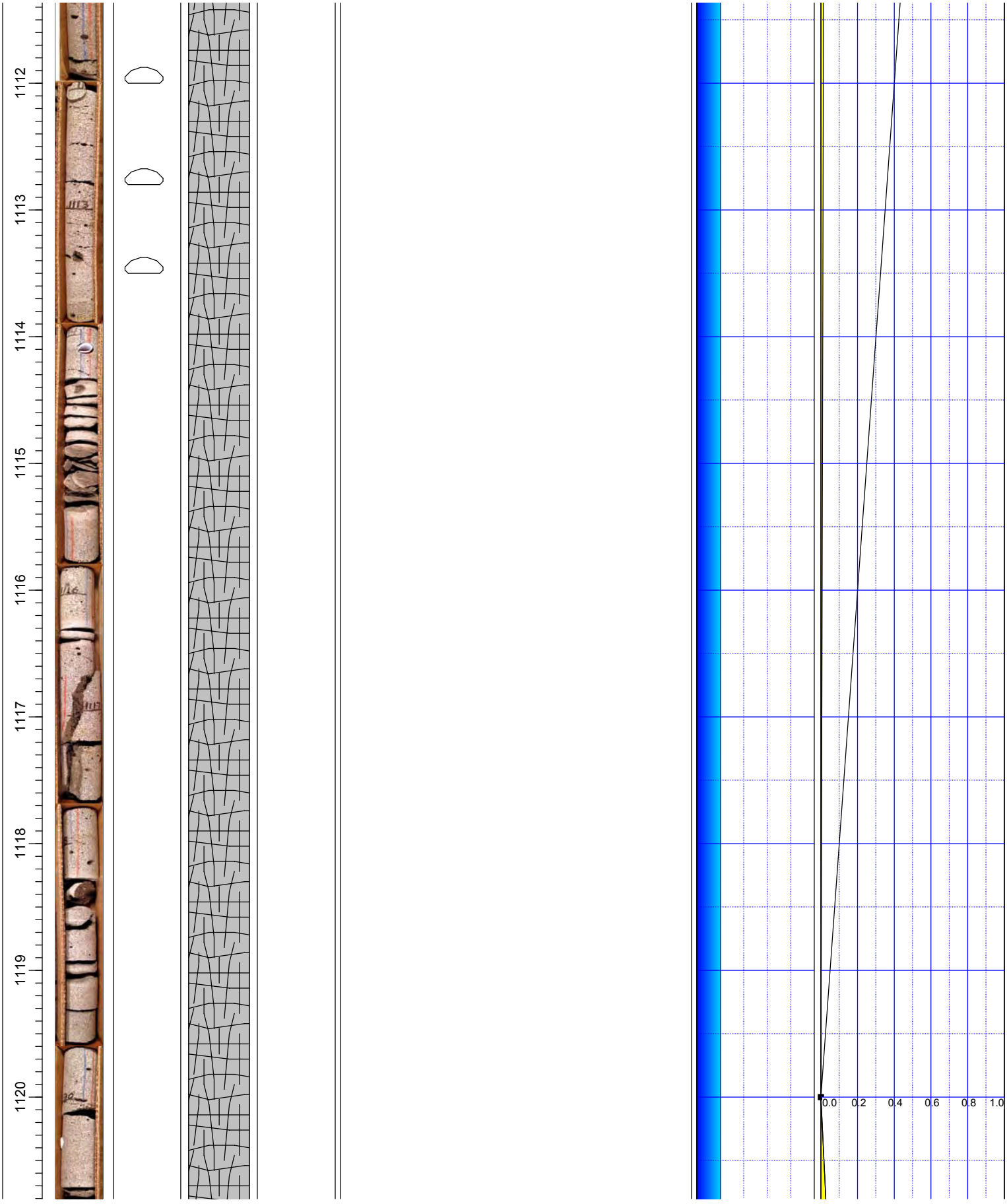


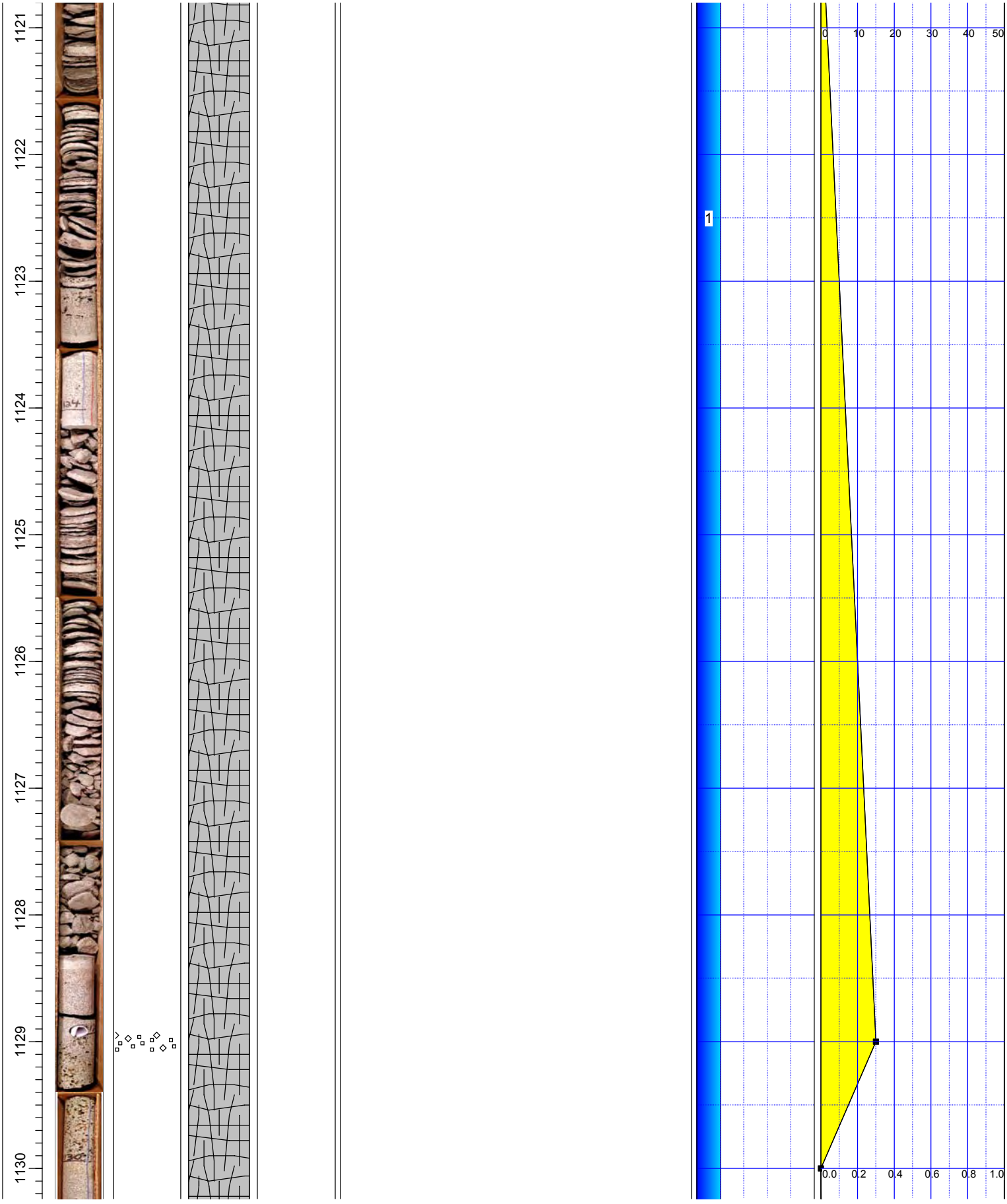
SANDS WITH FINES:
TEXTURE: Very fine sand with clay and silt
COLOR: 5Y 5/2 light olive gray, with a thin layer of N8 very light gray clay
CONSISTENCY: Firm
STRUCTURES: Blocky cutans
CARBONATES: Mostly well-cemented with calcite, except for clay layer noted above, which is also well cemented but does not react strongly to acid
ROCKS: Sand to gravel size angular clasts of basalt with rare pink rhyolite clases
ROOTS/FOSSILS: Holes and molds of roots or very small burrows

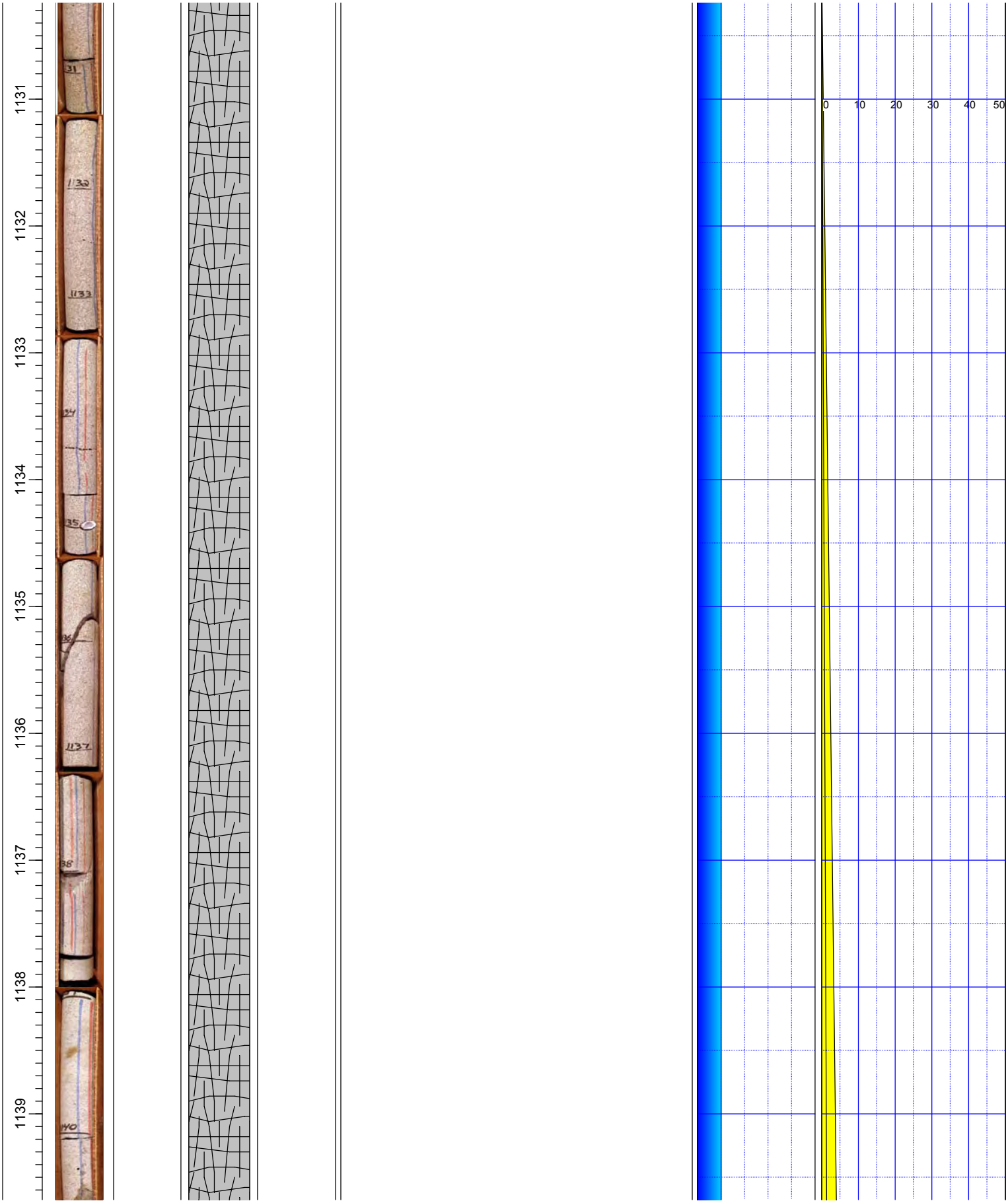


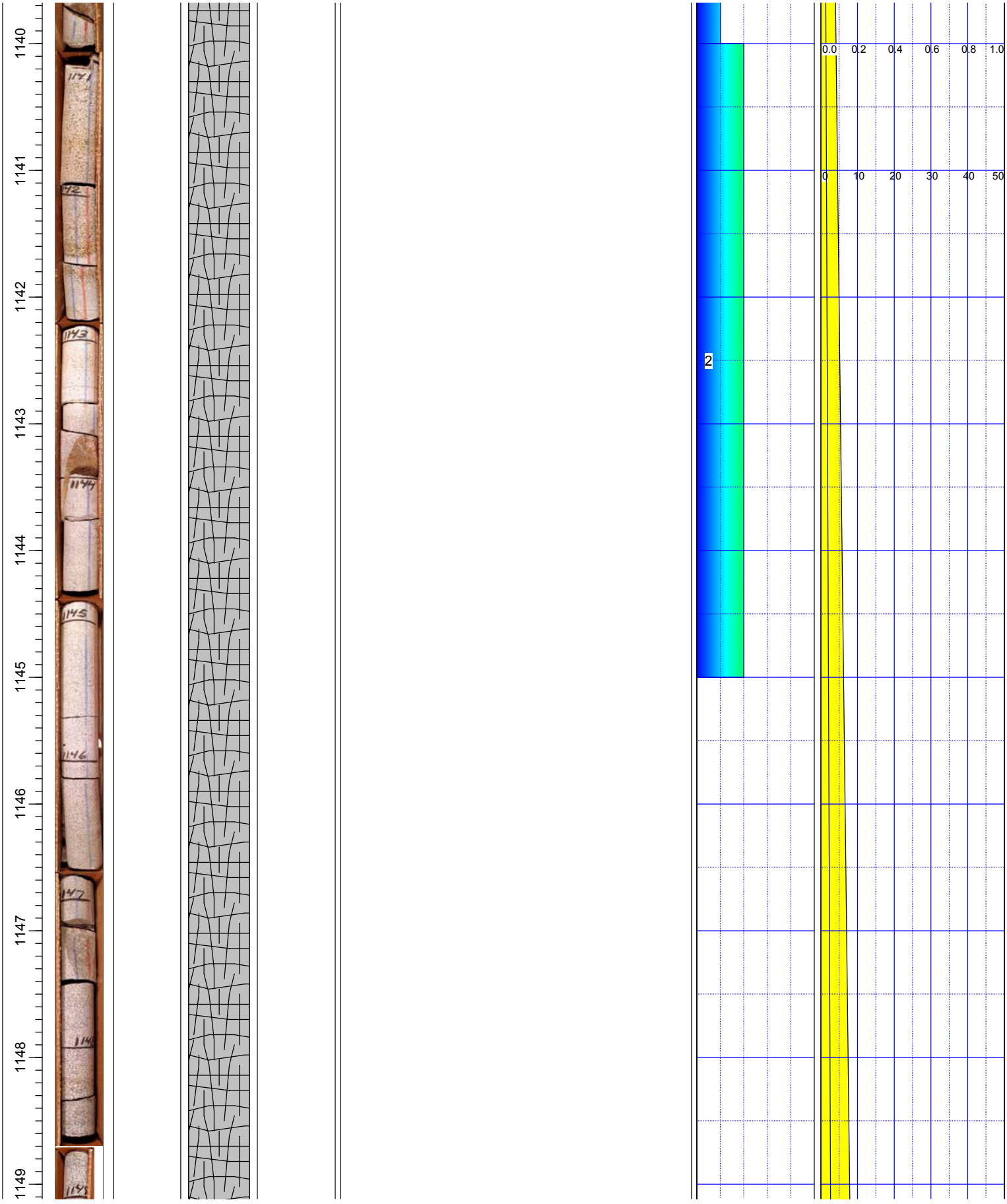
BASALT: COLOR: N4 medium dark gray to N5 medium gray
TEXTURE: Phaneritic, fine to medium grained basalt, vesicular from top of interval to 1,110 ft, diktytaxitic with a few large vesicles form 1,110 to 1,139 feet, massive from 1,139 ft to 1,141.7 ft, very coarsely diktytaxitic from 1,129-1,130 ft and from 1,141.7 to 1,142.8 ft, massive from 1,142.8 to 1,147.6 ft, diktytaxitic from 1,147.6 to 1,149 ft, massive from 1,149 to 1,166 ft, and vesicular from 1,166 to base of interval
COMPOSITION: 60% 2-3 mm plagioclase laths, randomly oriented, 30% anhedral olivine in spaces between plagioclase laths, 10% groundmass; coarsely diktytaxitic zones from 1,129-1,130 and 1,141-1,142.8 ft-large mineralogy change in coarse diktytaxitic zones, much coarser with phenocrysts of olivine, plagioclase and pyroxene up to 4 mm in length
XENOLITHS: None noted
ALTERATION: Red oxidation at 1,110 ft and at base of interval, yellow-brown stain in vesicles and on fracture surfaces 1,129-1,130, rusty yellow staining in fractures near 1,144

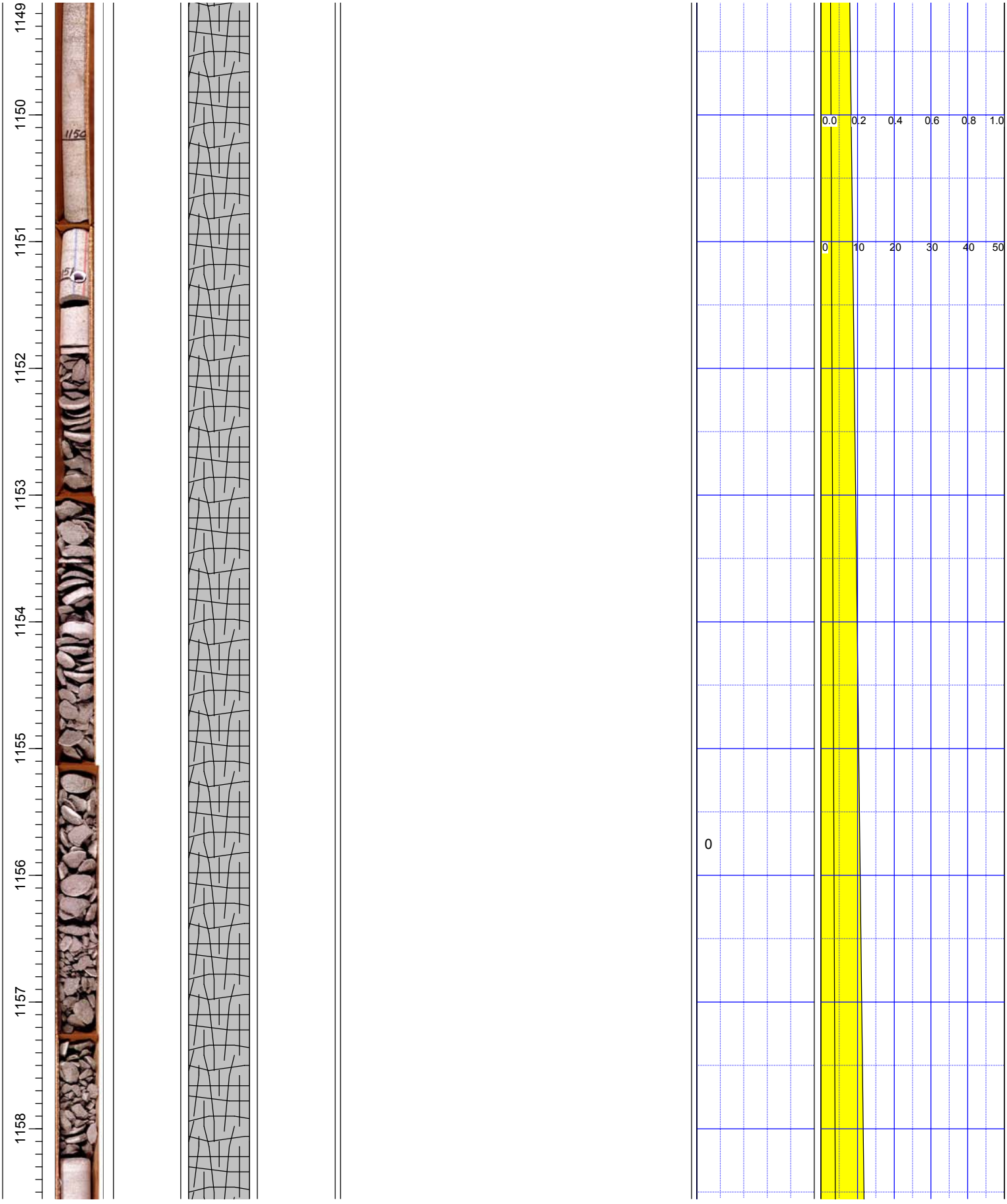


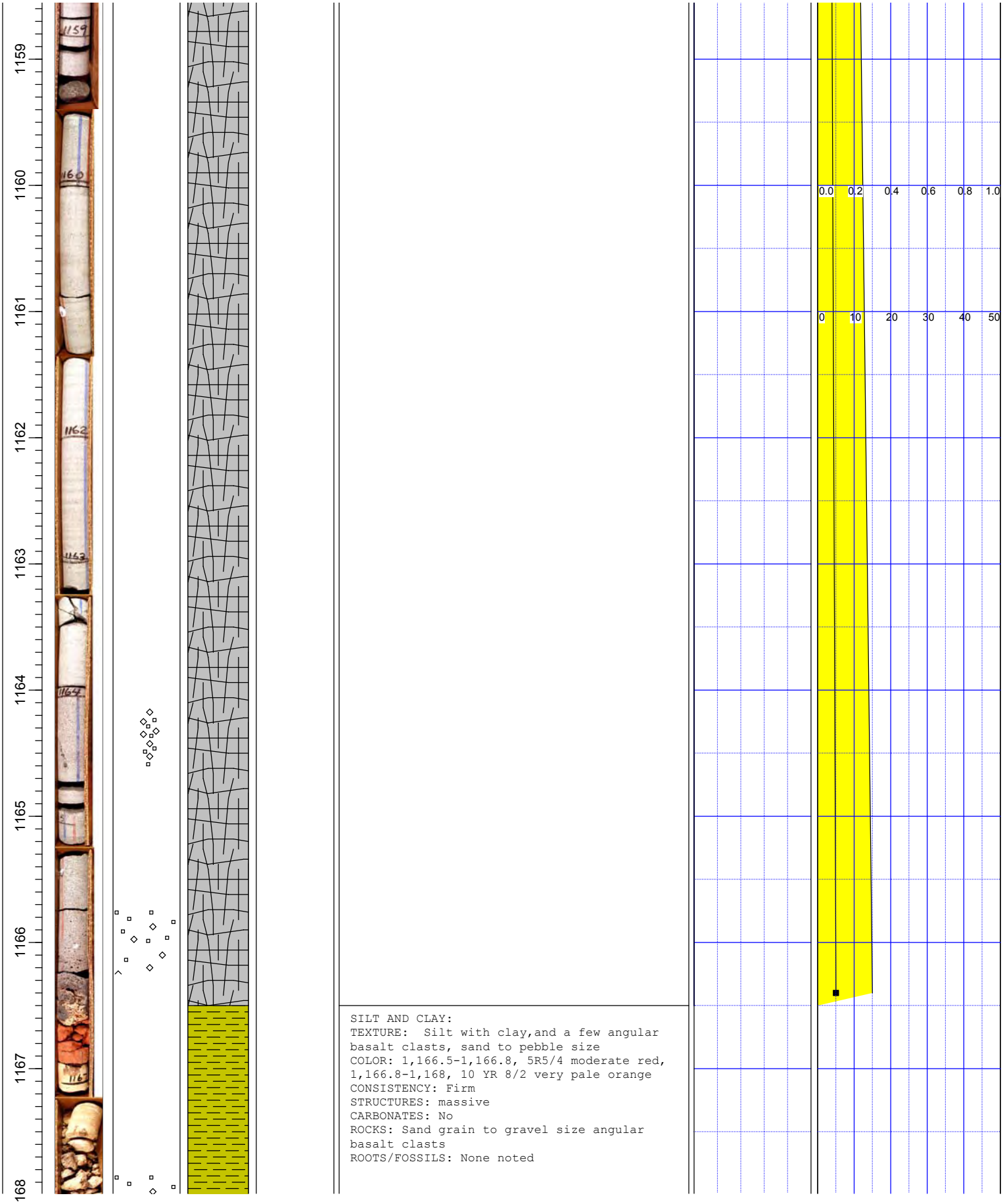

1112
1113
1114
1115
1116
1117
1118
1119
1120
0.0
0.2
0.4
0.6
0.8
1.0


1121
1122
1123
1124
1125
1126
1127
1128
1129
1130
1
0
10
20
30
40
50
0.0
0.2
0.4
0.6
0.8
1.0

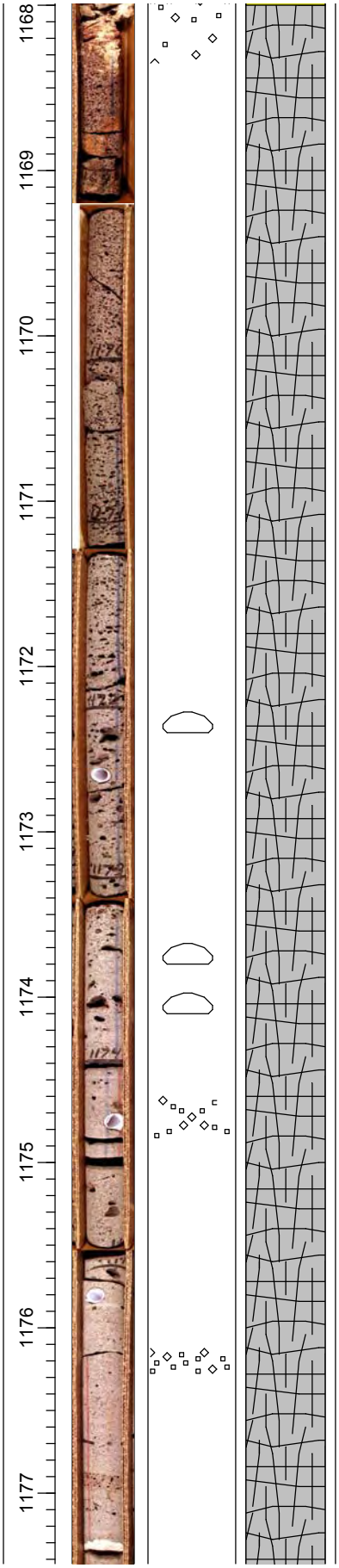

1131
1132
1133
1134
1135
1136
1137
1138
1139
0
10
20
30
40
50


1140
1141
1142
1143
1144
1145
1146
1147
1148
1149
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
2

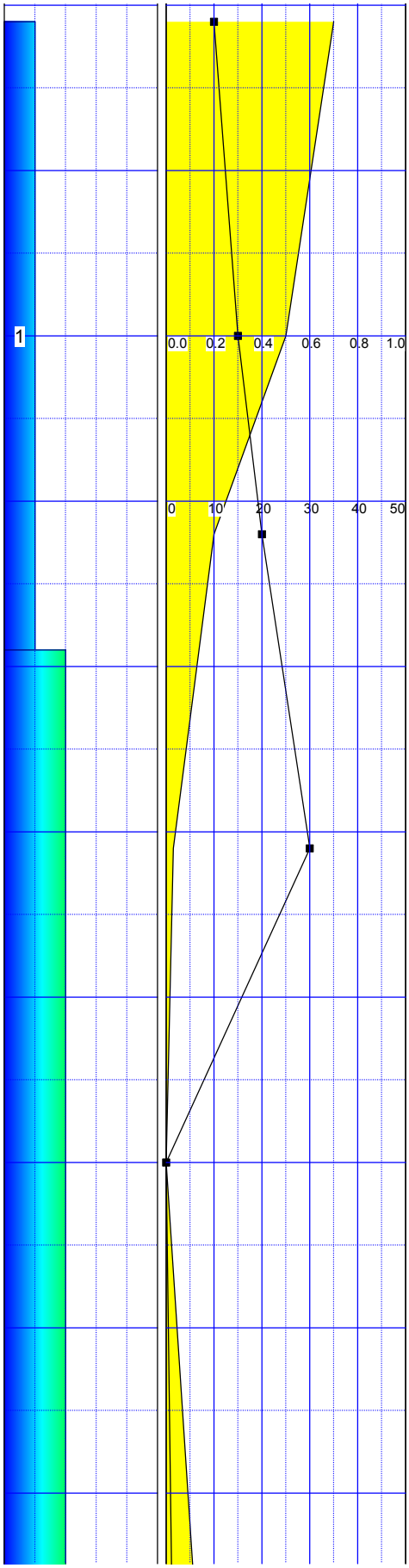

1149
1150
1151
1152
1153
1154
1155
1156
1157
1158
1150
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
0

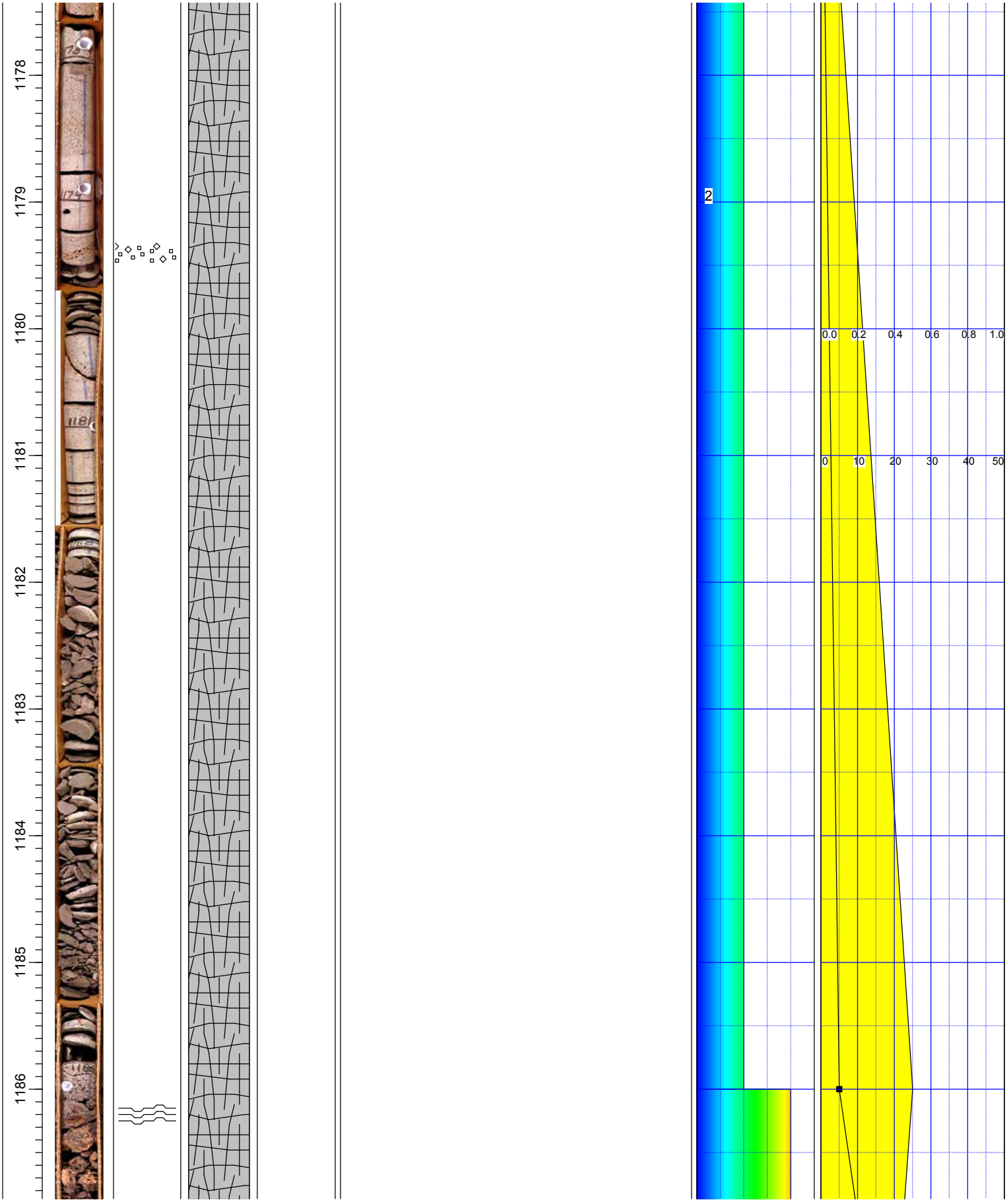


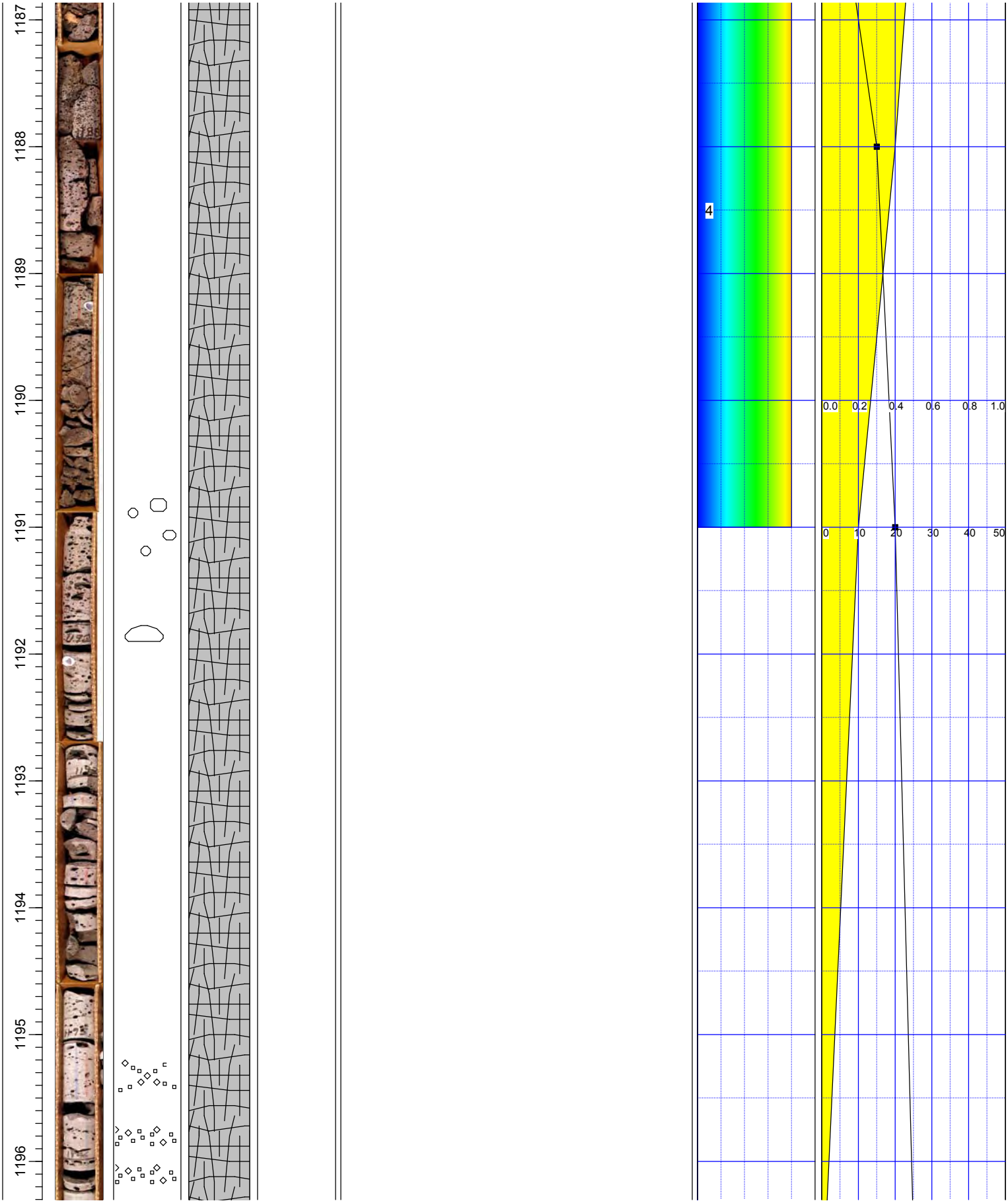
SILT AND CLAY:
TEXTURE: Silt with clay,and a few angular basalt clasts, sand to pebble size
COLOR: 1,166.5-1,166.8, 5R5/4 moderate red, 1,166.8-1,168, 10 YR 8/2 very pale orange
CONSISTENCY: Firm
STRUCTURES: massive
CARBONATES: No
ROCKS: Sand grain to gravel size angular basalt clasts
ROOTS/FOSSILS: None noted

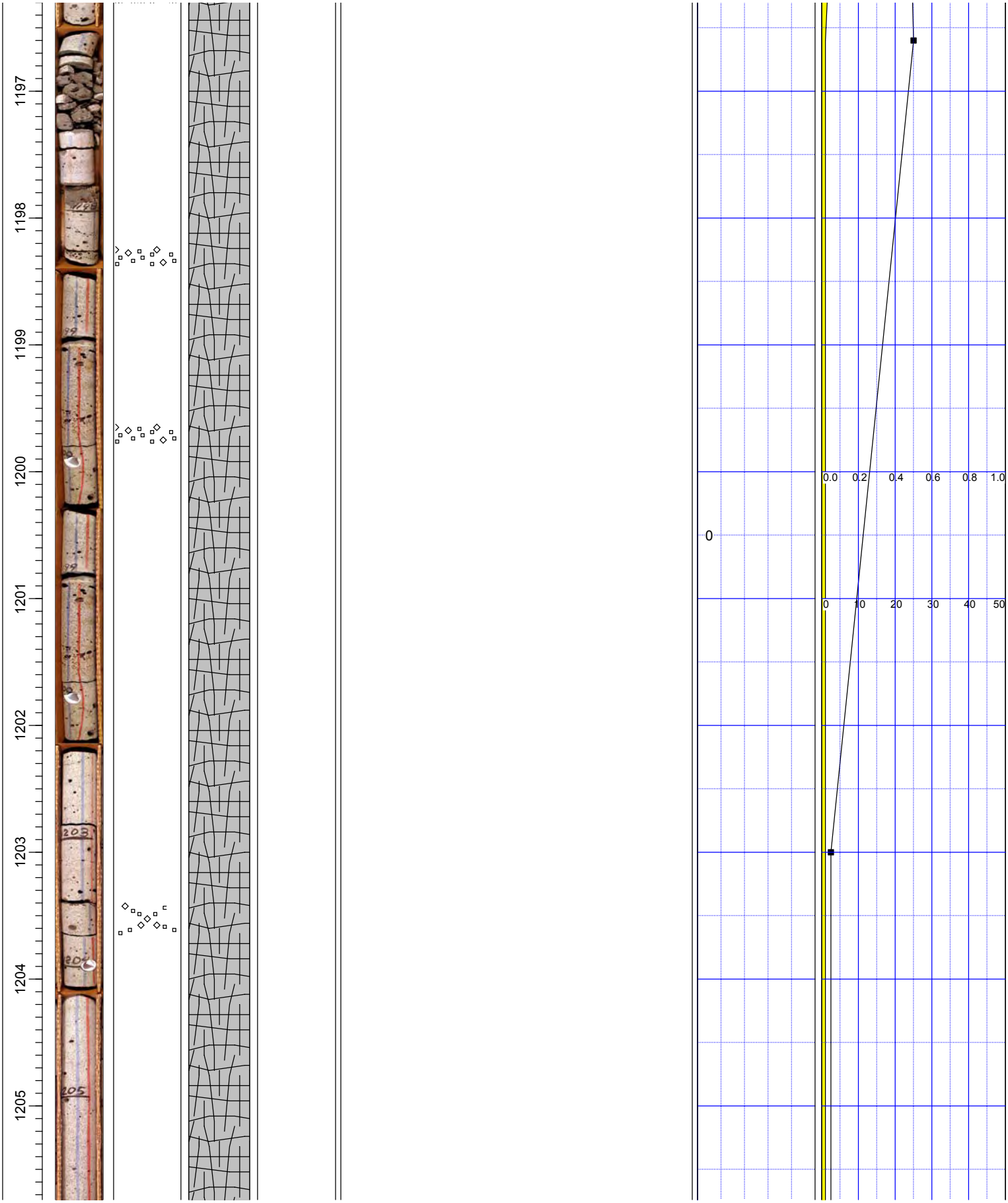


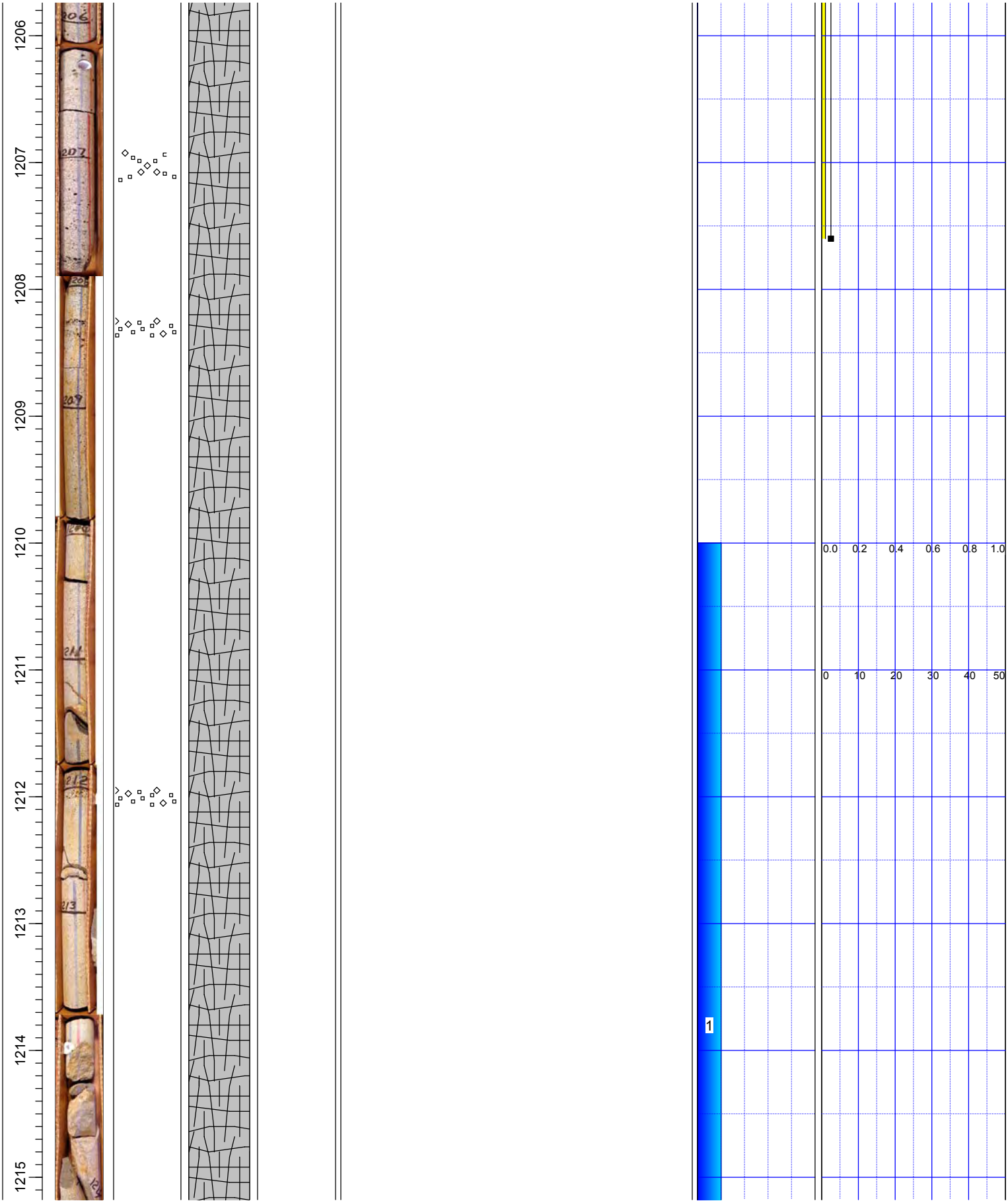
BASALT: COLOR: 5RP 4/2 grayish red purple grading to N5 medium gray by 1,178, then to N4 medium dark gray at 1,186 ft, then to N5 by 1,192 to the base of the interval
TEXTURE: Aphanitic, vesicular from top of interval to 1,173 ft, diktytaxitic to massive with large vesicles from 1,173 to 1,175.5 ft, diktytaxitic from 1,175 to 1,182, massive from approximately 1,182 to 1,185 ft (core much broken by drilling, determination difficult in this interval), vesicular from 1,185 to 1,193, vesicles increase in size and decrease in number with increasing depth, massive texture with a few very large vesicles from 1,193 to 1,198.5, diktytaxitic from 1,198.5 to base
COMPOSITION: 1 mm plagioclase microphenocrysts in dark brown to gray groundmass
XENOLITHS: None noted
ALTERATION: Rusty staining in vesicular zones, white, chalky-looking but non-carbonate fracture fill at 1,177.6 ft

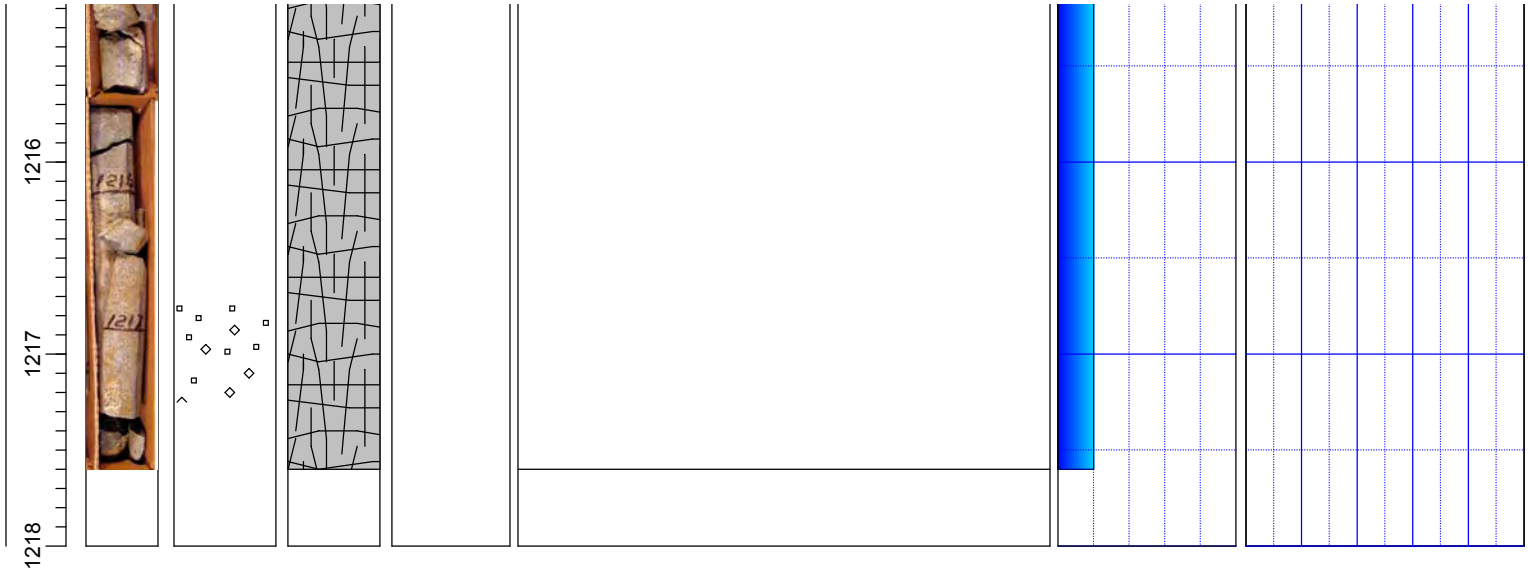



1178
1179
1180
1181
1182
1183
1184
1185
1186
2
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50


1187
1188
1189
1190
1191
1192
1193
1194
1195
1196
4
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50


1197
1198
1199
1200
1201
1202
1203
1204
1205
0.0
0.2
0.4
0.6
0.8
1.0
0
0
10
20
30
40
50


1206
1207
1208
1209
1210
1211
1212
1213
1214
1215
0.0
0.2
0.4
0.6
0.8
1.0
0
10
20
30
40
50
1


1216
1217
1218