

**Official Name:** USGS 131

Logged By: M. K. V. Hodges

Selected Aliases: None

USGS Site ID: 433036112581601

Contractor Well ID: None

Drilling Agency: USGS

Year Drilled: 2009

Names of Drillers: M. Gilbert, J. Blom

Well Status: Complete

Total Depth of Hole (ft): 1,239

Total Core Recovered (ft): 416

Beginning Depth (ft): 808

Ending Depth (ft):

 Continuous Recovery

 Selected Intervals Recovered

Notes:

County &amp; State: Butte Co., ID

Quadrangle Name: Circular Butte 3 SW

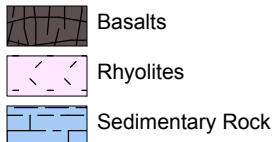
Lat / Lng: N 43 30 36.28 W 112 58 16.05

Tns / Rng / Sec: 02N 29E 11

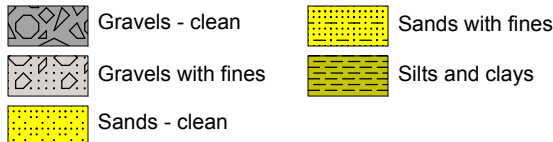
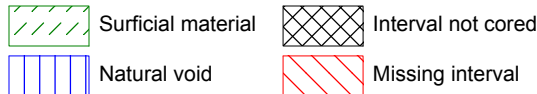
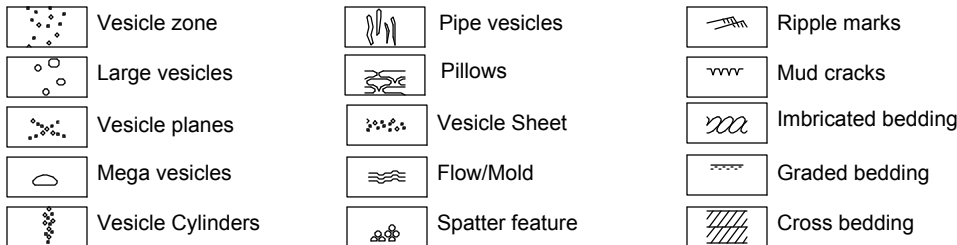
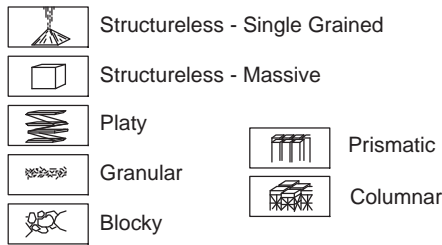
UTM Coordinates: 340665.996 4819132.320

Surface Elevation (ft): 4,977.3

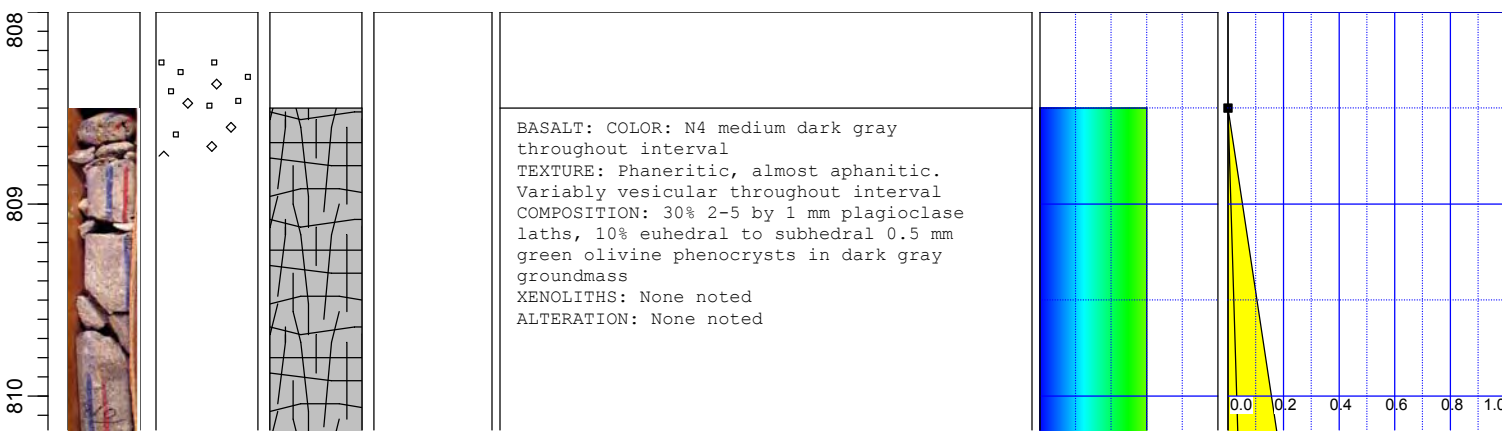
## Core Geological Profile

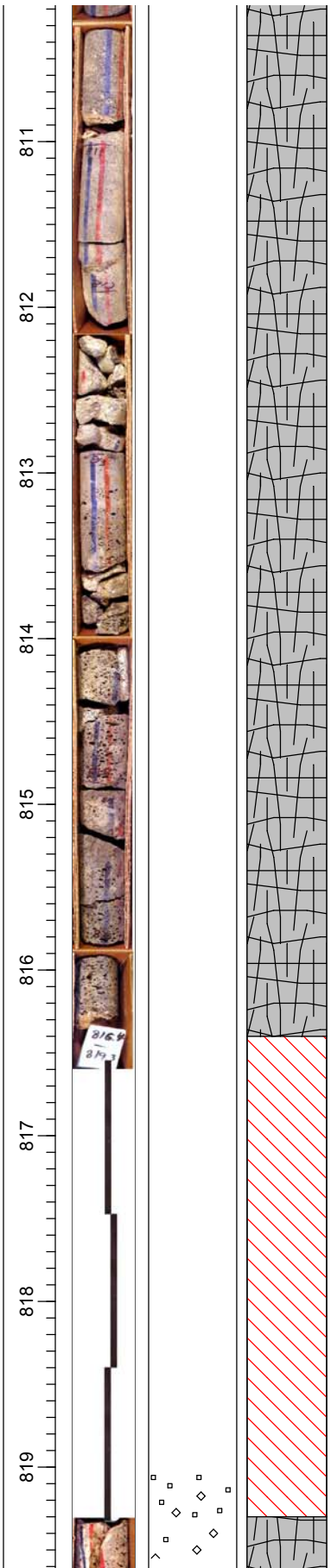
**Lithologic Patterns**

**Soil Patterns**

(See Unified Soil Classification System.)


**Intervals in Absentia**

**Igneous and Sedimentary Structure Symbols**

**Soil Structure Symbols**


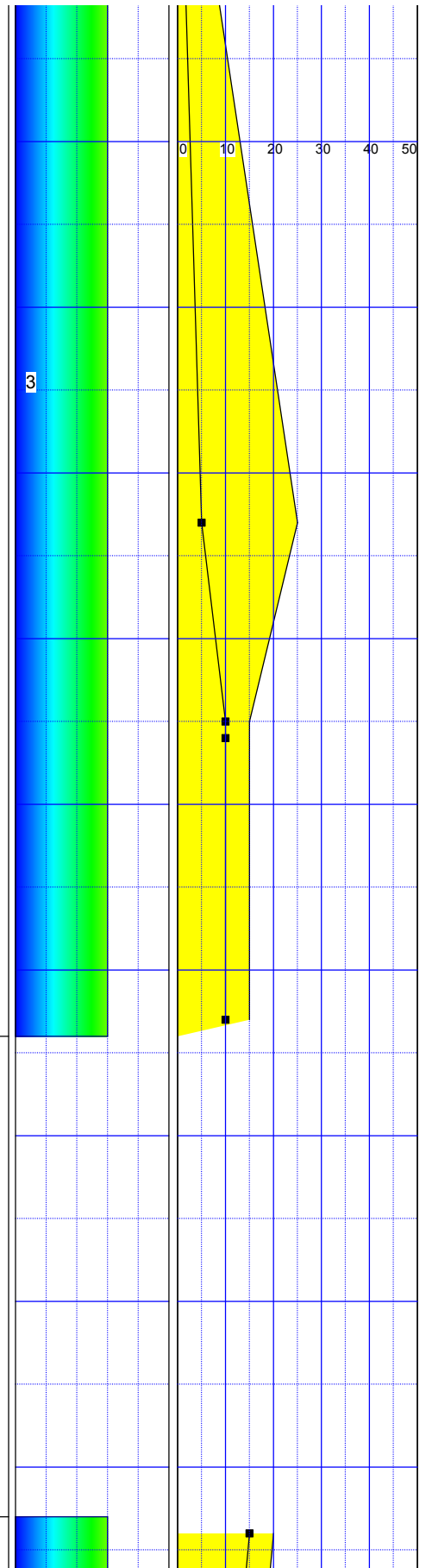
Depth (feet & tenths)	Core Photo	Igneous, Soil and Sed Structures	Lithology	Description	Fracture Frequency (See fracture classification on website.)	Vesicle Characteristics —■— Mean Size (in) 0 0.2 0.4 0.6 0.8 1.0 Volume Percentage 0 10 20 30 40 50
				Miscellaneous Text      Lithologic Description	0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

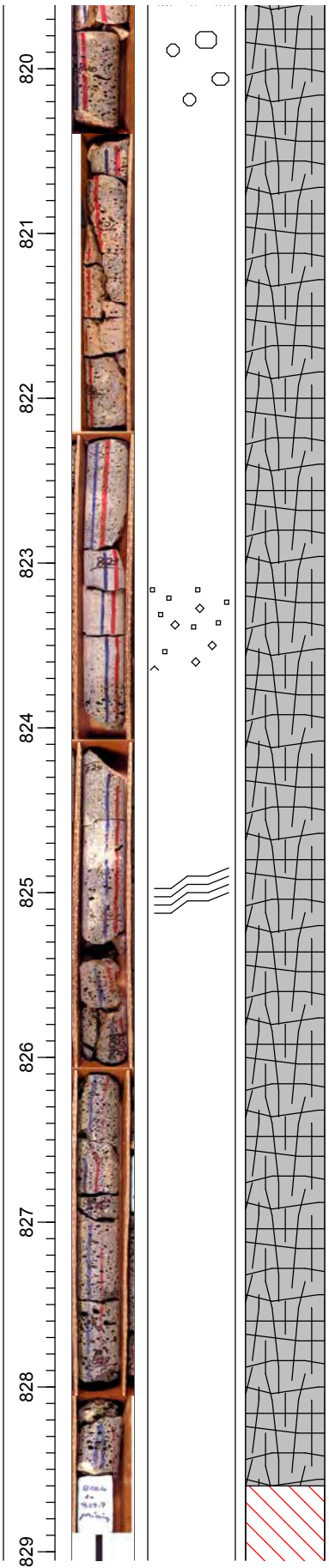




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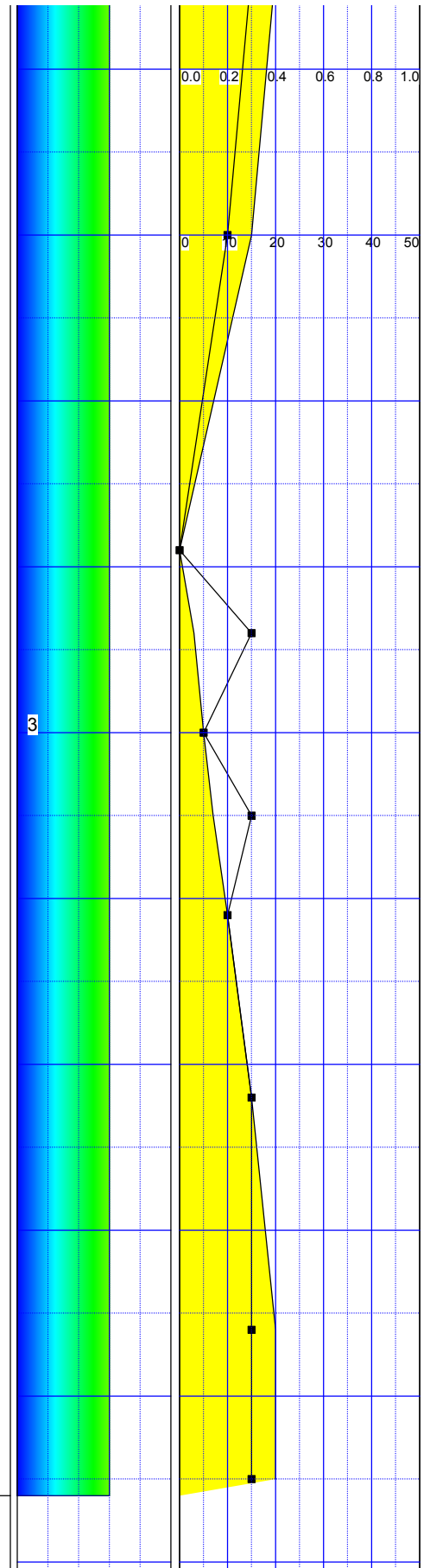
BASALT: COLOR: N5 medium gray throughout interval  
TEXTURE: Aphanitic, vesicular from top of

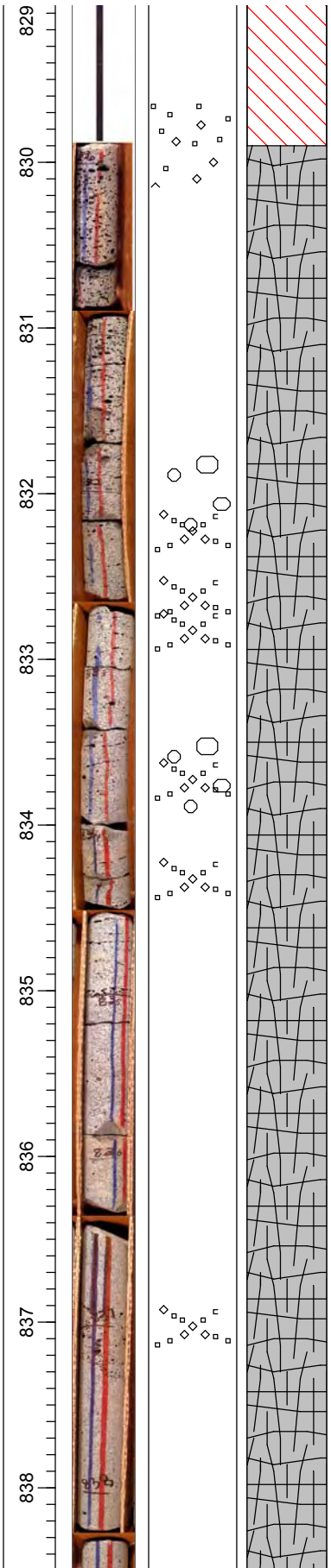




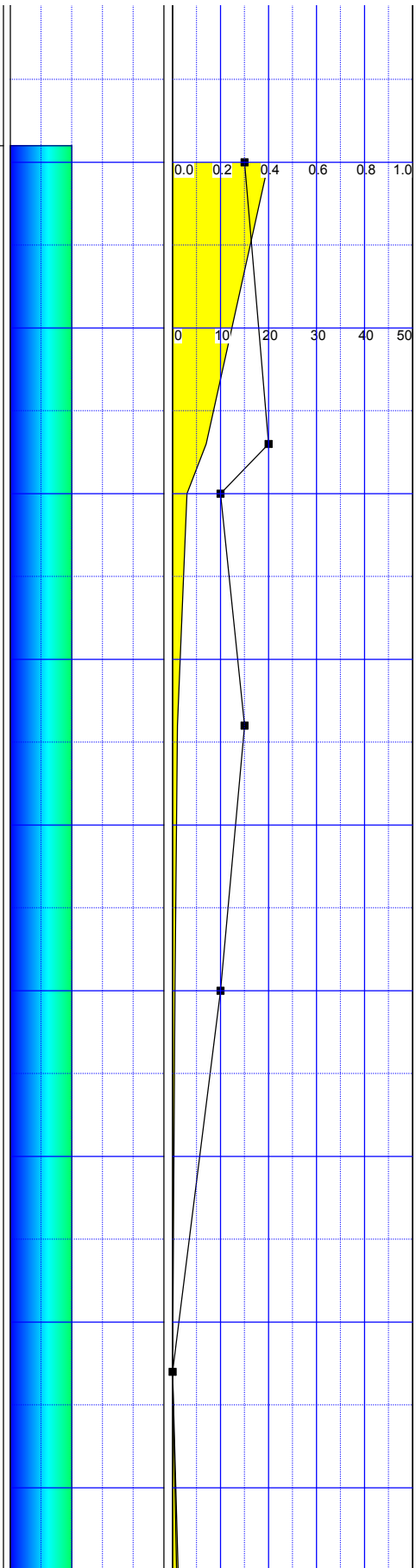
interval to 832 ft, diktytaxitic with vesicle sheets to 837.5 ft, diktytaxitic to 844 ft, increasingly vesicular to base, flow structure at base  
 COMPOSITION: 40% subhedral to euhedral green olivine microphenocrysts in gray groundmass, trace of black minerals  
 XENOLITHS: None noted  
 ALTERATION: Rusty red film on flow structure at base

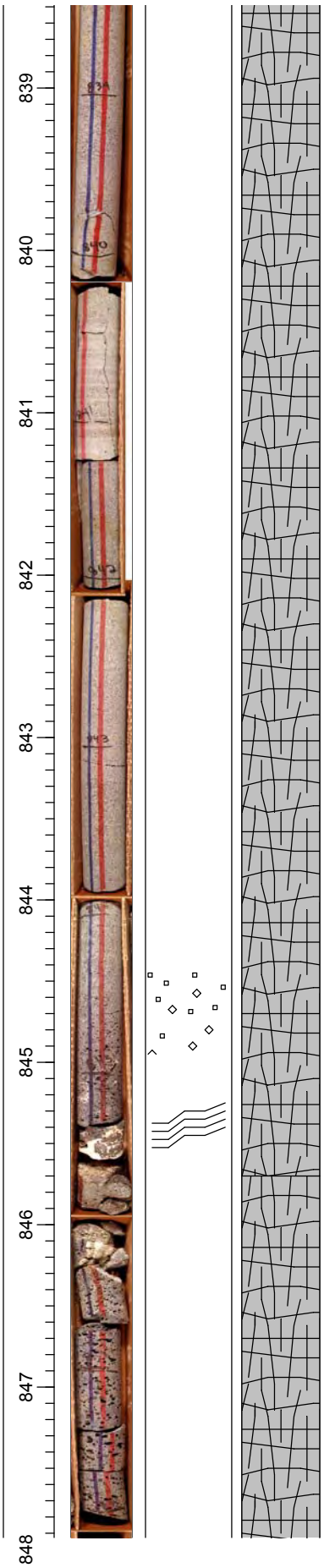
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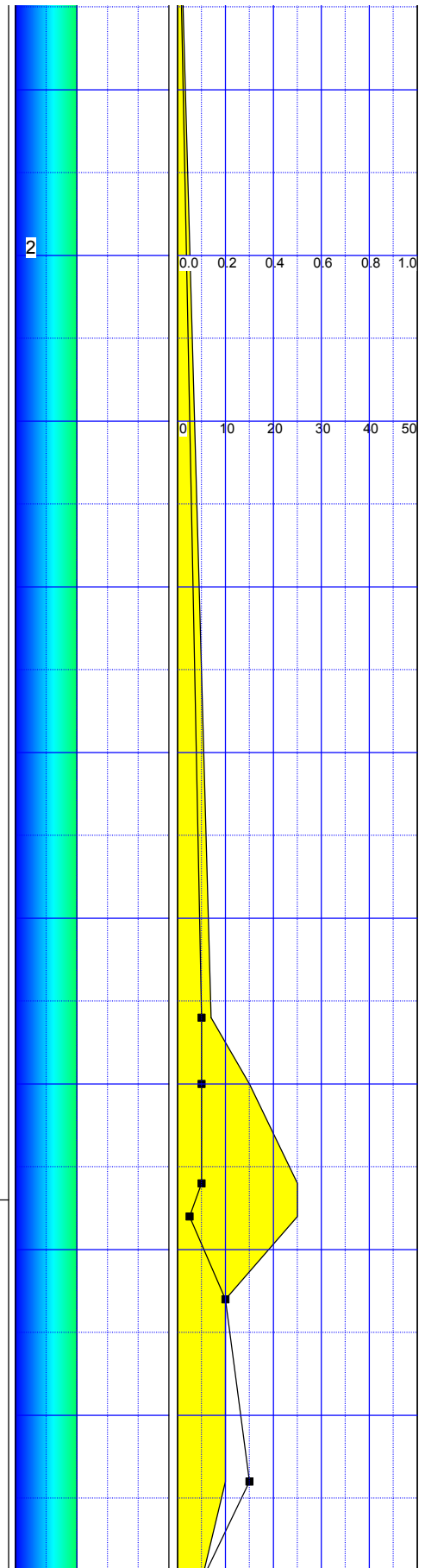


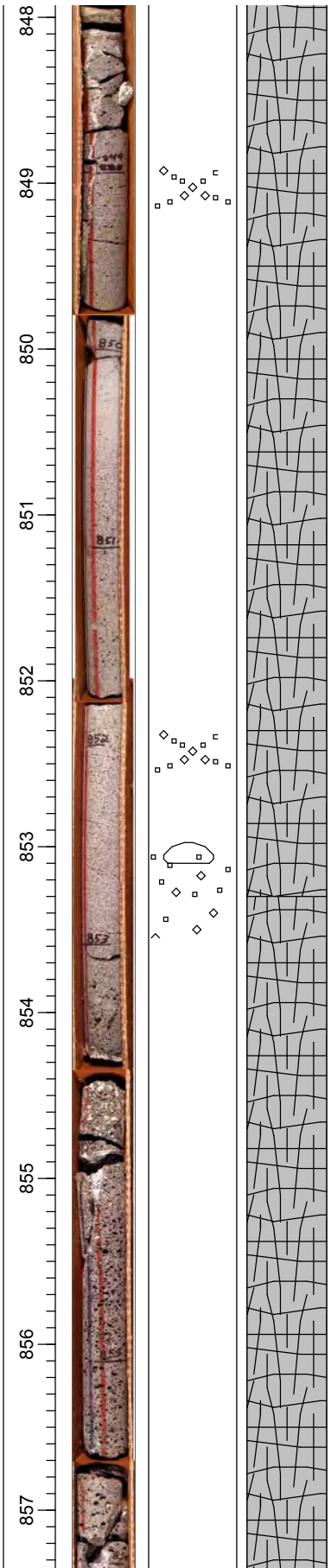
BASALT: COLOR: N4 Medium dark gray  
 TEXTURE: Aphanitic, vesicular from top of the interval to 832.3 ft, diktytaxitic with very few vesicles from 832.3 ft to 844.4 ft, vesicular to base, pipe vesicles near base, flow texture at base  
 COMPOSITION: 50% plagioclase in framework, 30% subhedral to anhedral olivine phenocrysts, 20% gray groundmass, trace tiny small black phenocrysts  
 XENOLITHS: None noted  
 ALTERATION: Buff color carbonate deposits at top and base, white film on surfaces of fractures



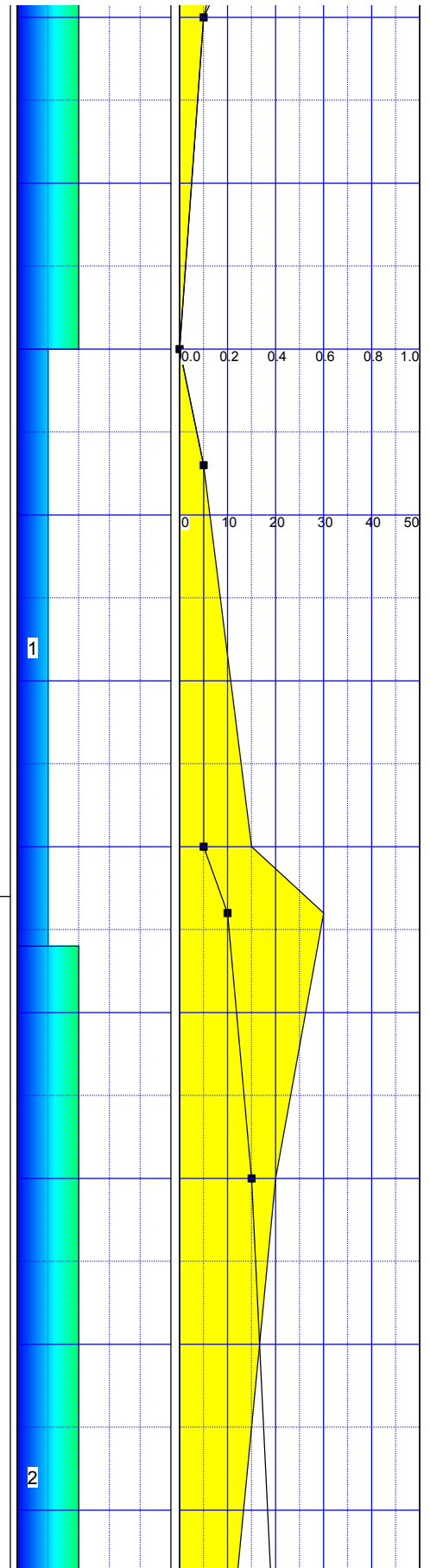


BASALT: COLOR: N4 Medium dark gray  
 TEXTURE: Aphanitic, vesicular from top of interval to 848 ft, diktytaxitic to 853 ft, vesicular to base, pipe vesicles near base, spatter at base  
 COMPOSITION: 20% white plagioclase laths, 10% green olivine phenocrysts, 70% gray groundmass  
 XENOLITHS: None noted  
 ALTERATION: White film on fracture surfaces, buff carbonate in crevices and vesicles at base

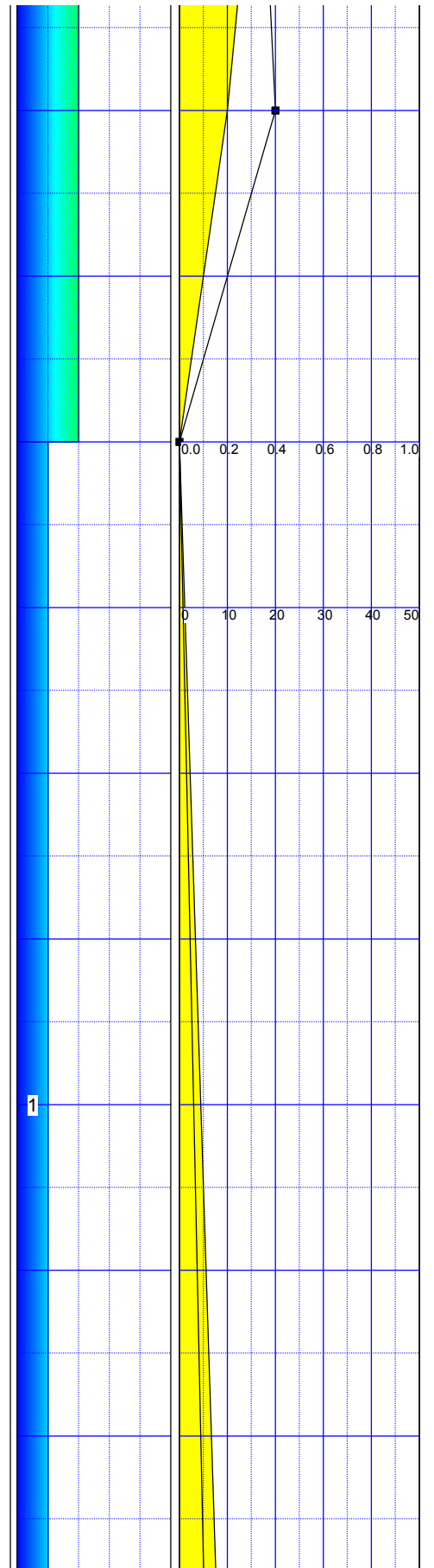
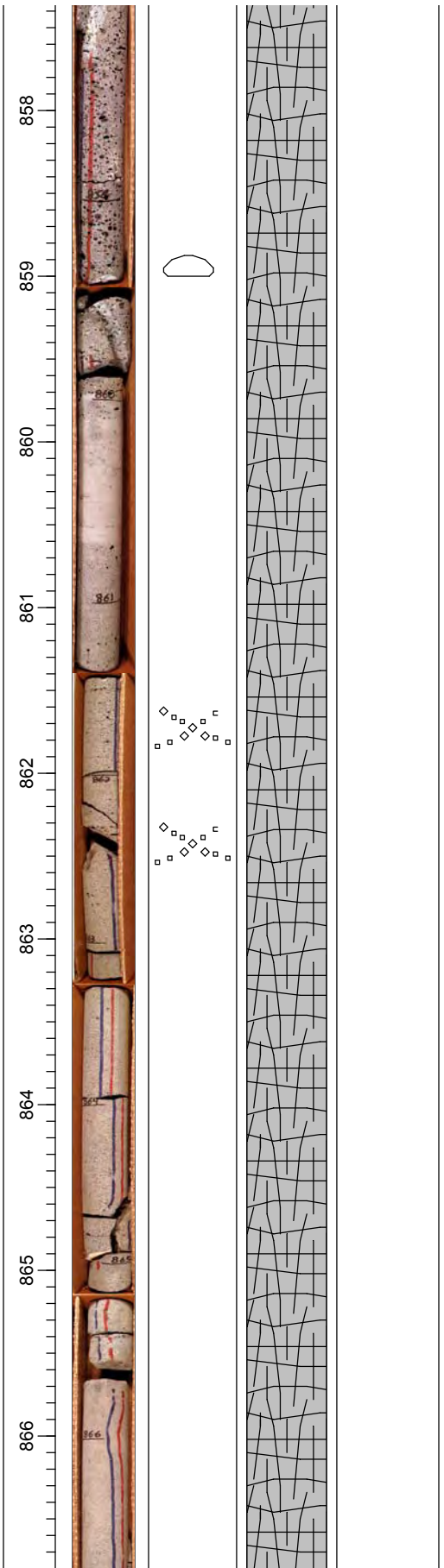


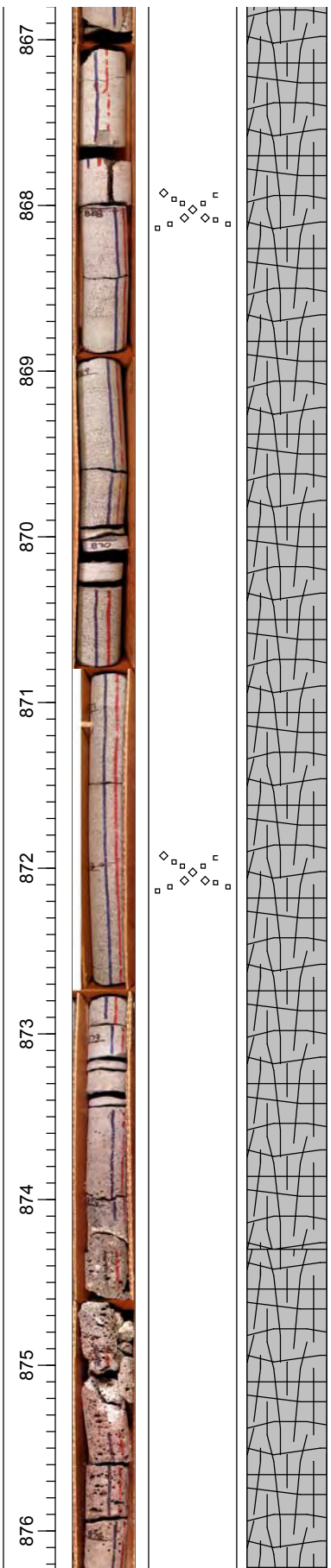


BASALT: COLOR: N5 Medium gray  
 TEXTURE: Aphanitic, vesicular from top of interval to 860 ft, diktytaxitic from 860 to 873.4 ft, vesicular to base. Flow structure at base  
 COMPOSITION: 50% white plagioclase framework, 35% green olivine phenocrysts between plagioclase laths, 15% gray groundmass  
 XENOLITHS: None noted  
 ALTERATION: Red film on flow structure at base, buff carbonate at base

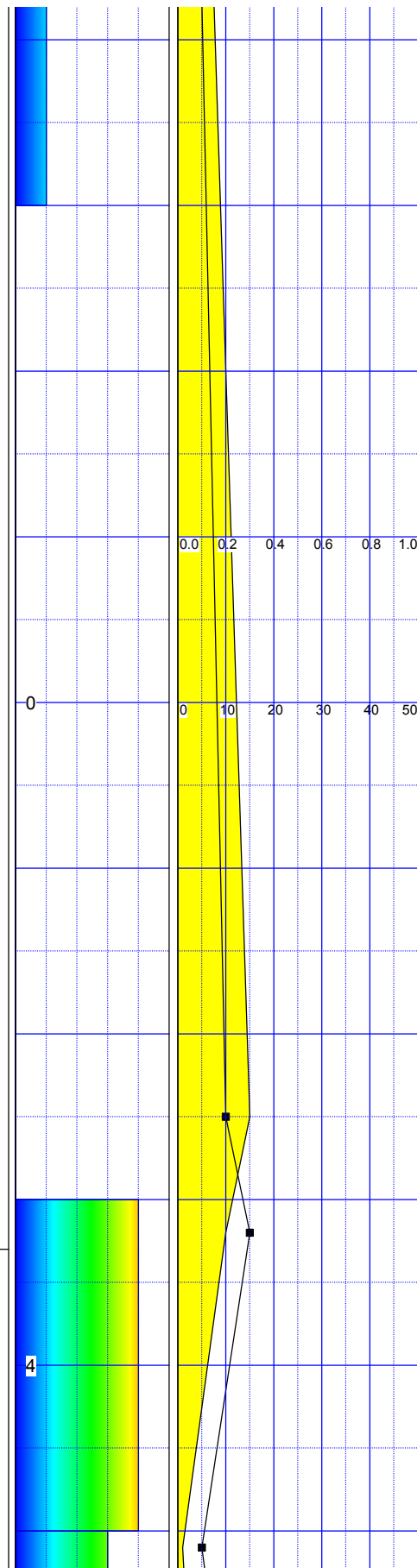




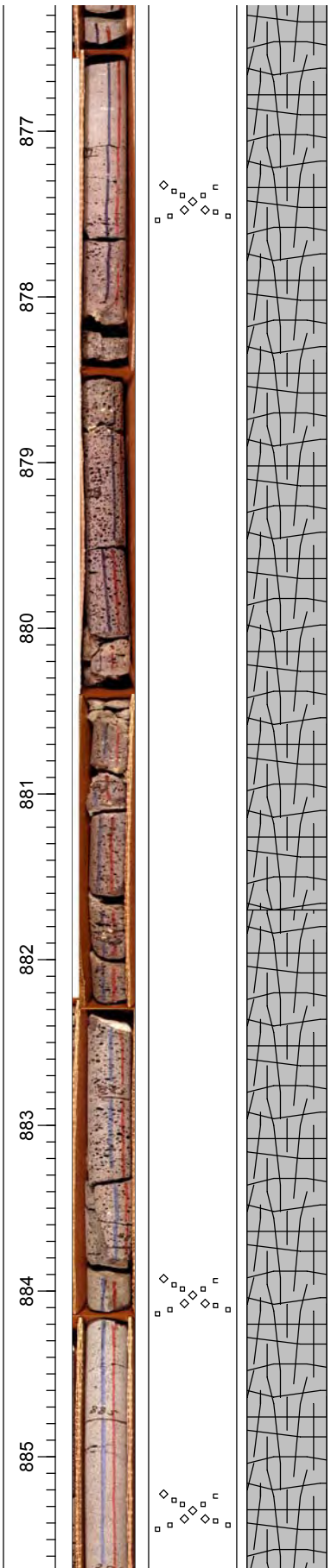




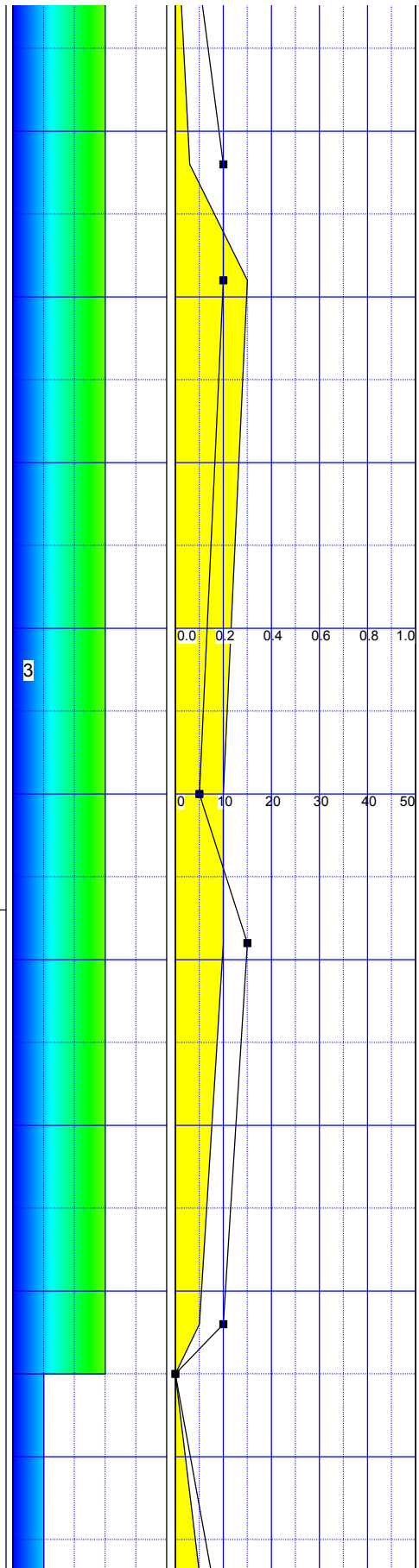
BASALT: COLOR: 5 R 4/2 Grayish red  
 TEXTURE: Aphanitic, with a few 10 mm x 1 mm plagioclase phenocrysts visible in the groundmass, vesicular throughout, except from 876 ft to 877 ft, which is diktytaxitic to massive  
 COMPOSITION: 40% plagioclase in framework, 15% olivine, remainder grayish red groundmass  
 XENOLITHS: None noted  
 ALTERATION: Reddish film on flow structure at base, buff carbonate on fracture surfaces and nearby vesicles

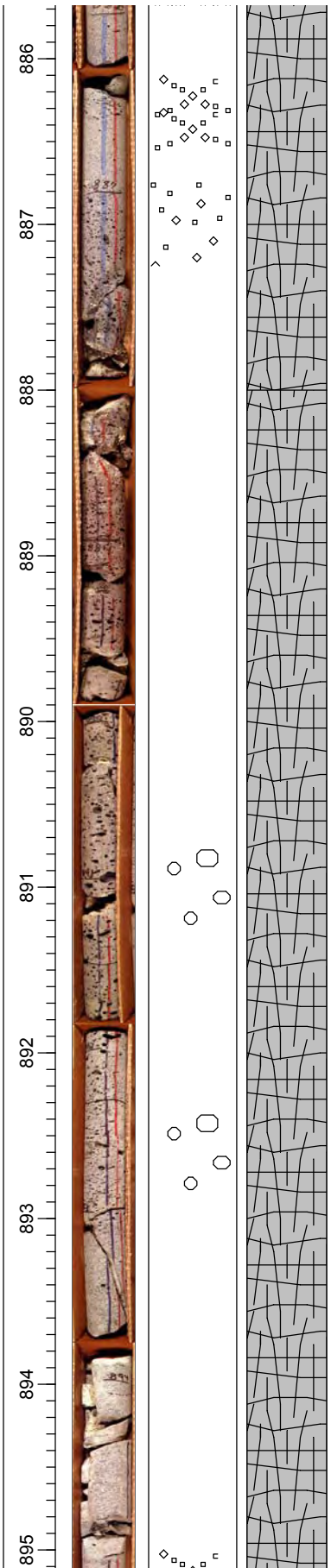




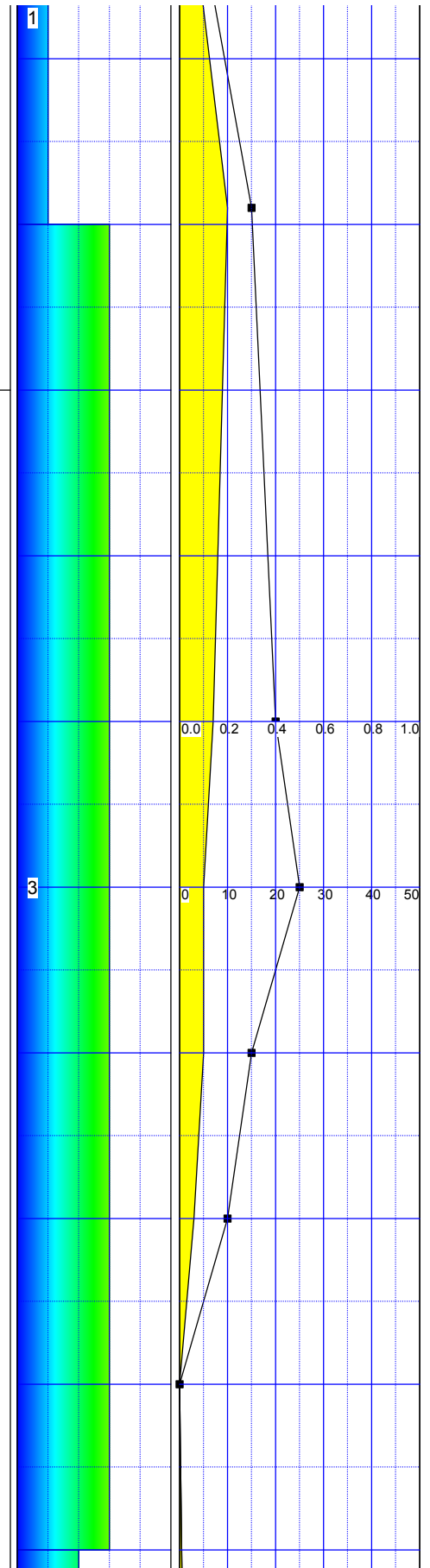


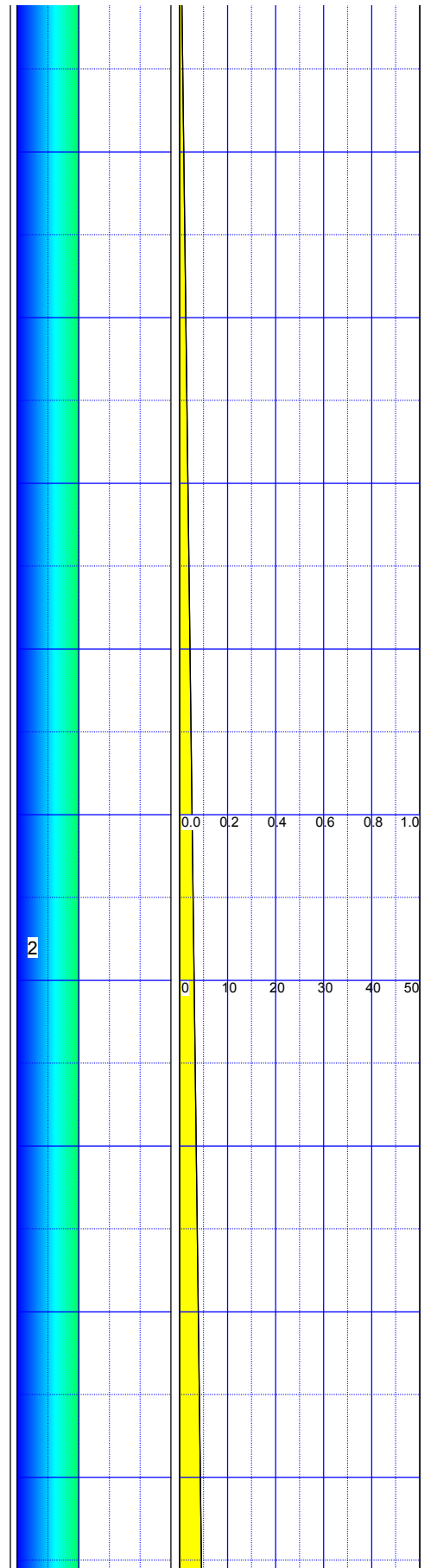
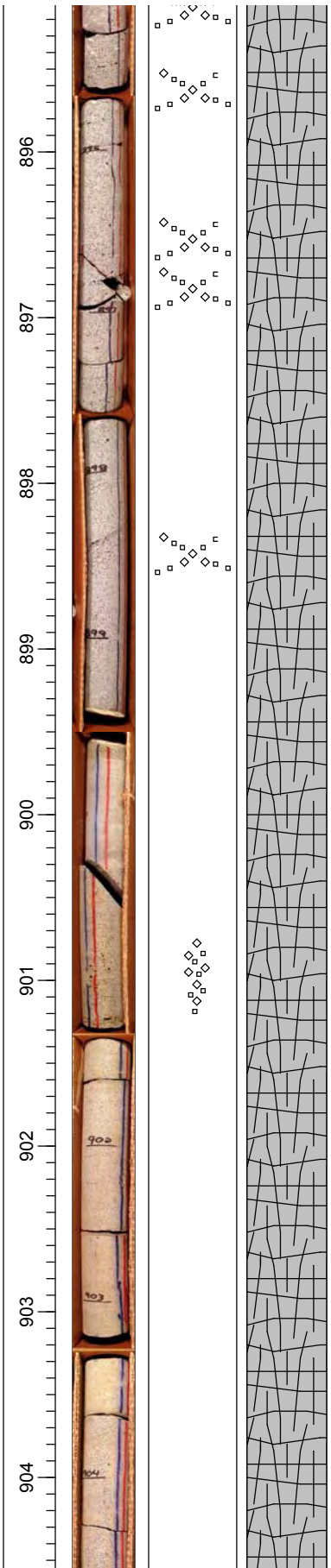
BASALT: COLOR: N4 Medium dark gray  
 TEXTURE: Aphanitic, microporphyritic, vesicular from top of interval to 884.3 ft, diktytaxitic from 884.3 to 886.9 ft, vesicular to base, flow structure at base.  
 COMPOSITION: 50% white plagioclase in framework, with a few 1 cm plagioclase phenocrysts, 30% olivine microphenocrysts in framework spaces, 20% gray groundmass  
 XENOLITHS: None noted  
 ALTERATION: Buff carbonate at base, sparry calcite fills a few vesicles

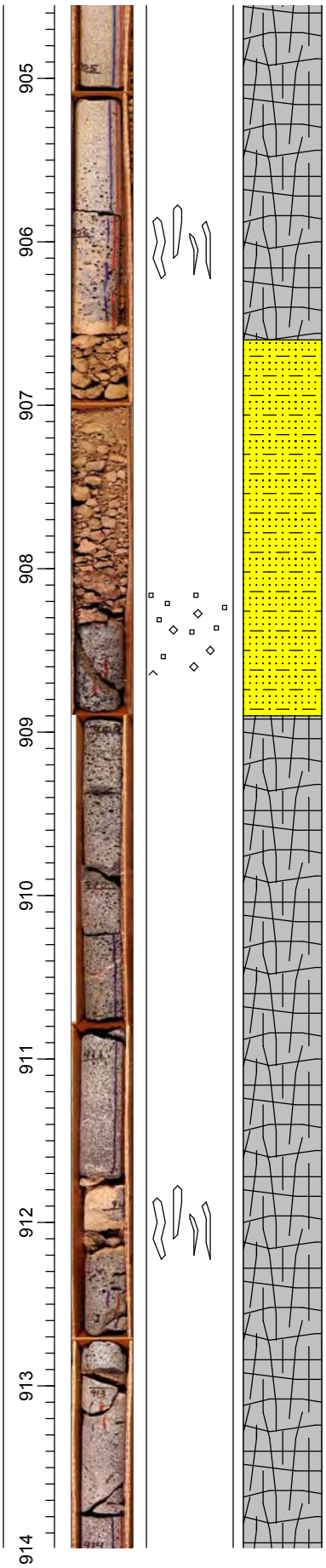




BASALT: COLOR: N4 Medium dark gray  
 TEXTURE: Aphanitic, vesicular from top of interval to 890 ft, diktytaxitic from 890 to 905.5 ft, vesicular to base, pipe vesicles near base.  
 COMPOSITION: 70% dark gray groundmass, 20% plagioclase laths, 10% olivine  
 XENOLITHS: None noted  
 ALTERATION: Buff-colored carbonate clay in some fractures, vesicles, white film on fracture surfaces,

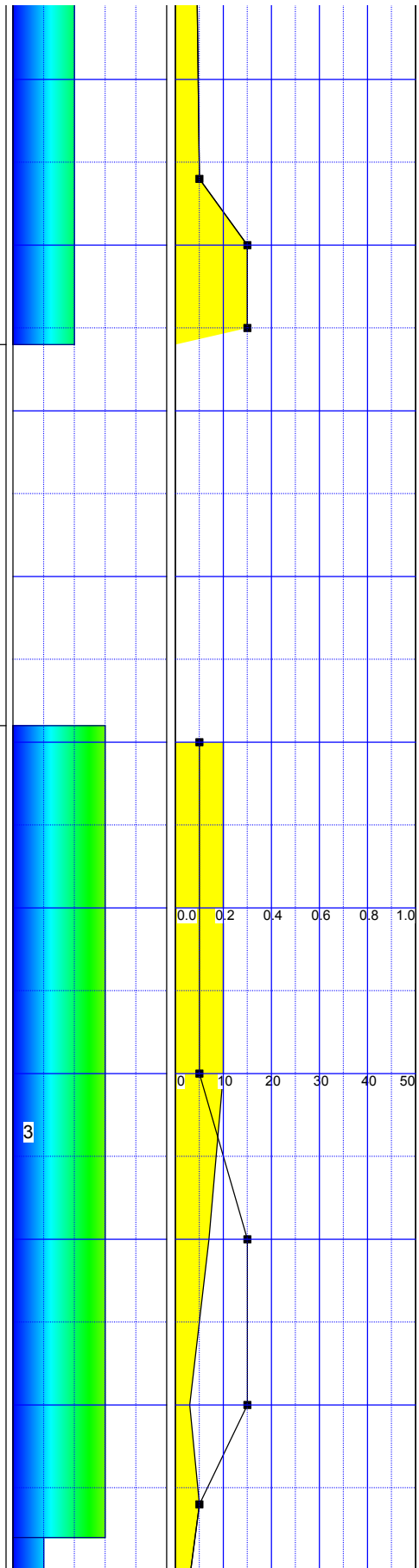


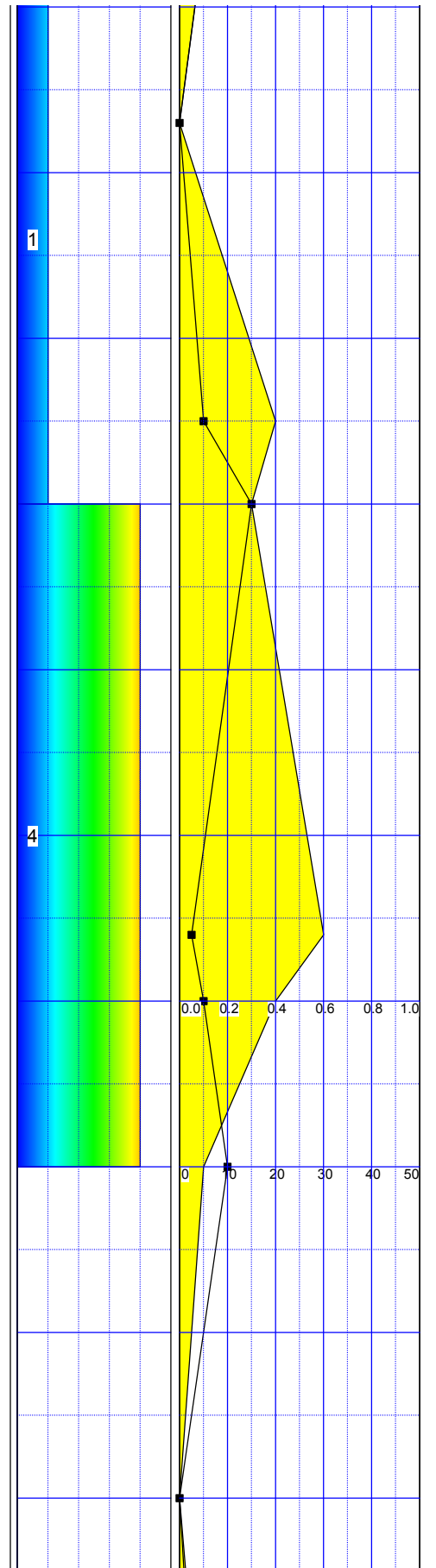
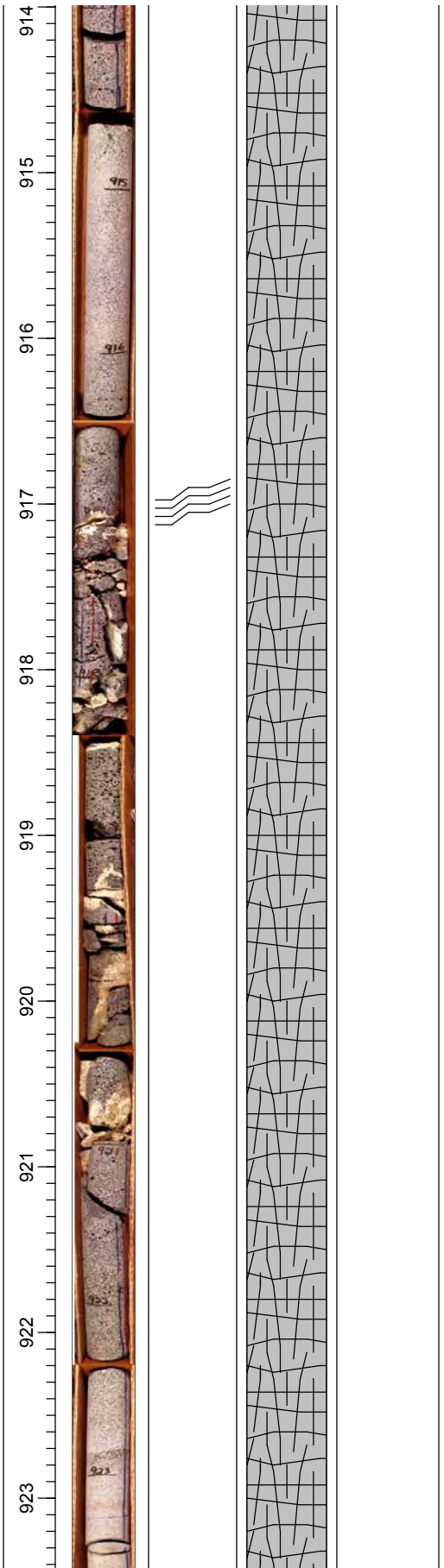


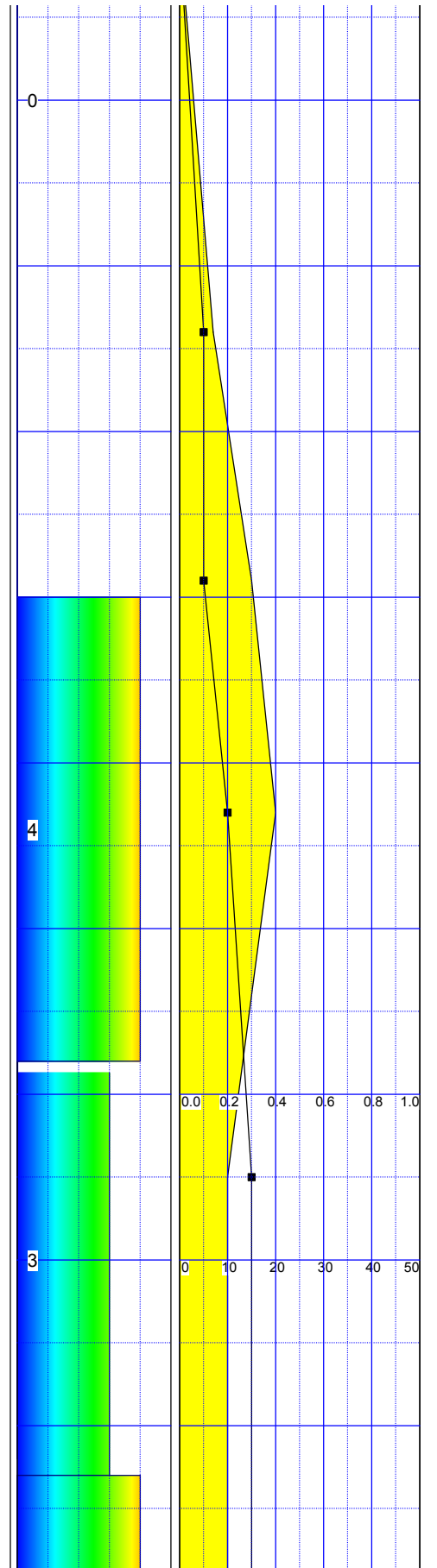
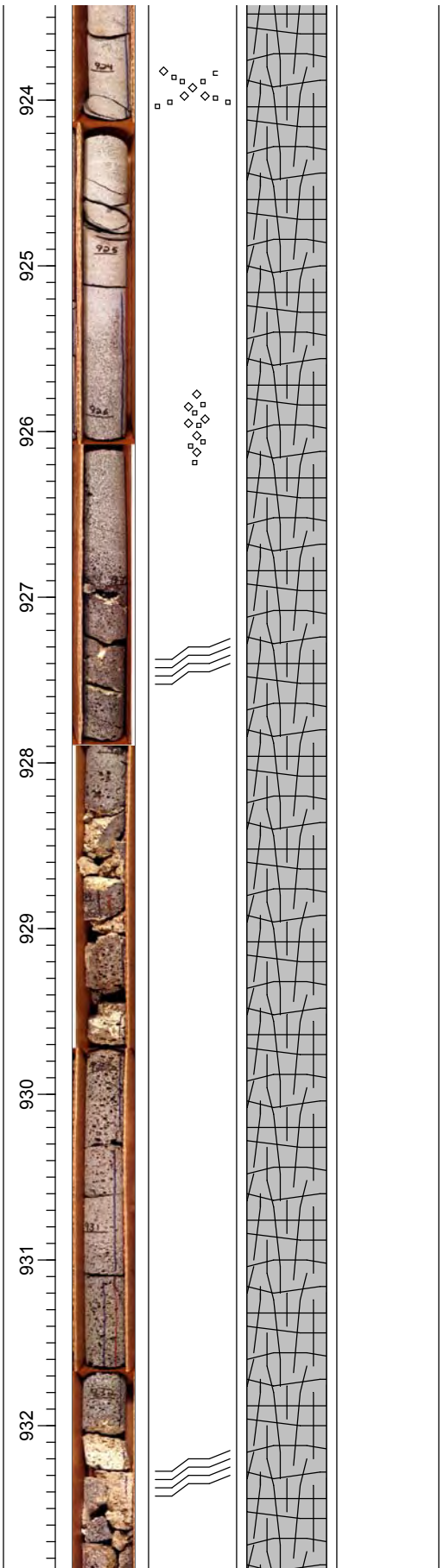


SANDS WITH FINES: TEXTURE: USCS classification SM sands with fines  
 COLOR: 5 YR 6/4 Light brown  
 CONSISTENCY: Firm  
 STRUCTURES: Blocky peds  
 FREE CARBONATE: None at the top of interval, slight reaction mid-way through, and strong reaction at the base of the interval  
 ROCKS: Few angular basalt granules, some rounded gray pumice granules  
 ROOTS/FOSSILS: None noted

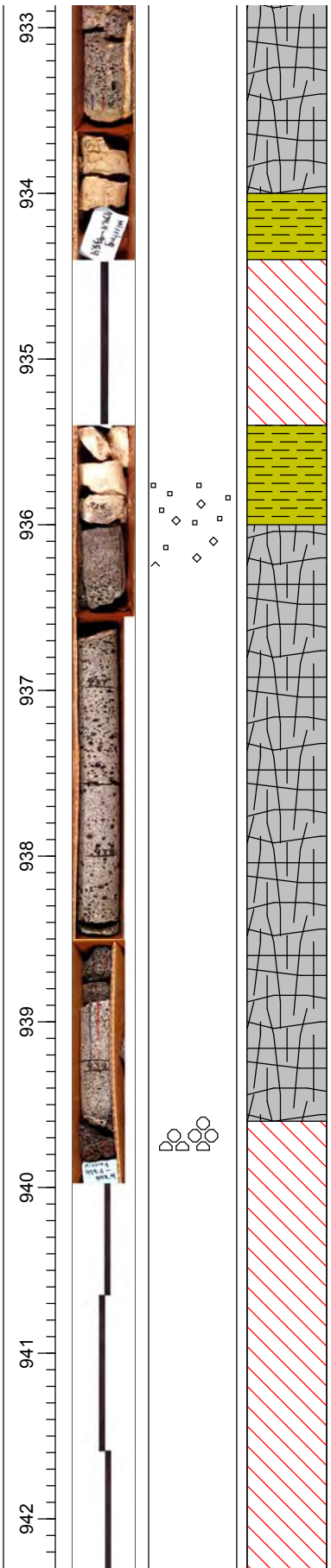
BASALT: COLOR: N4 Medium gray  
 TEXTURE: Phaneritic, porphyritic, vesicular from top of interval to 911.3 ft, diktytaxitic from 911.3 to 916.4 ft, vesicular to base, glomerocrysts of plagioclase in star-shaped clusters  
 COMPOSITION: 50% 10 x 2 mm to 20 x 3 mm white plagioclase phenocrysts, 30% green olivine phenocrysts in interstices, and in clumps, 20% gray groundmass  
 XENOLITHS: None noted  
 ALTERATION: Buff-colored amorphous fine-grained carbonate in fractures above 928 ft, buff-colored amorphous clay in fractures and vesicles from 928 ft to base











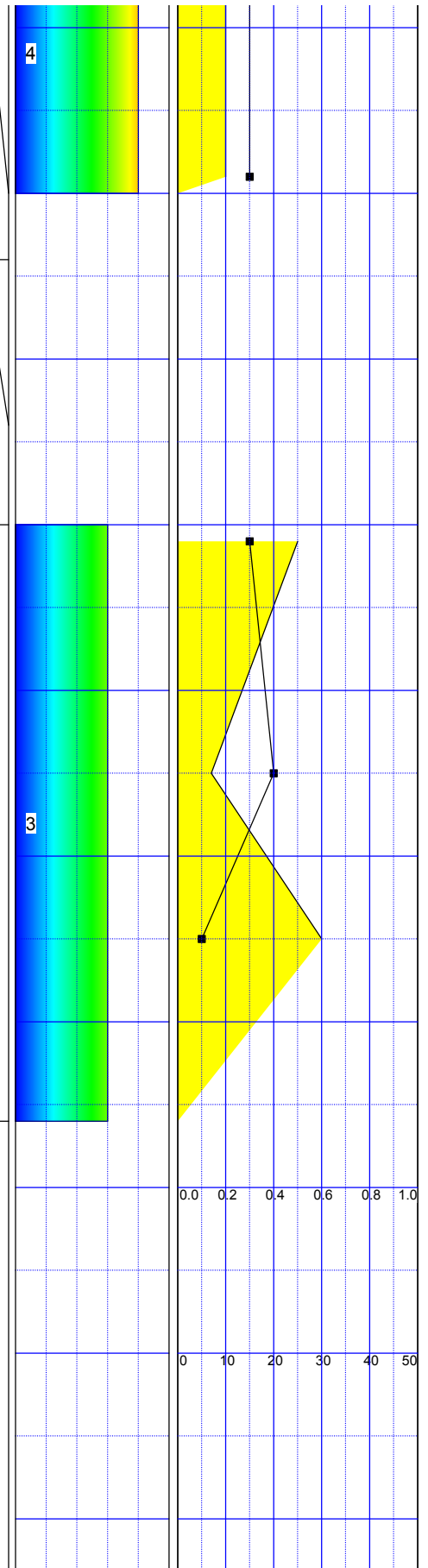
SILT AND CLAY: TEXTURE: USCS classification  
 SM sands with fines  
 COLOR: 10 YR 7/4 Grayish orange  
 CONSISTENCY: Firm  
 STRUCTURES: Massive  
 FREE CARBONATE: No  
 ROCKS: Few angular basalt pebbles  
 ROOTS/FOSSILS: None noted

MISSING INTERVAL: No more information

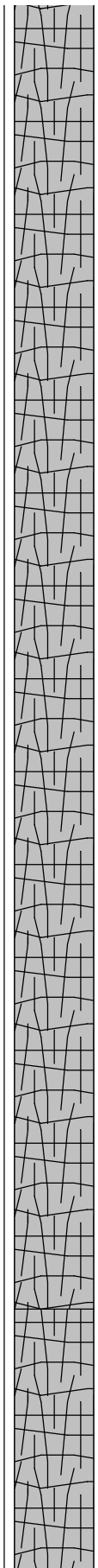
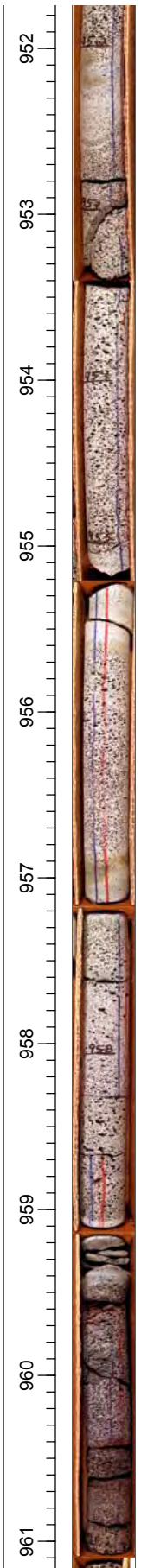
SILT AND CLAY: TEXTURE: USCS classification  
 CL clay  
 COLOR: 10 YR 7/4 Grayish orange  
 CONSISTENCY: Firm  
 STRUCTURES: Massive  
 FREE CARBONATE: Yes  
 ROCKS: Few angular basalt pebbles  
 ROOTS/FOSSILS: White calcite soil horizon

BASALT: COLOR: N5 Medium gray  
 TEXTURE: Phaneritic, porphyritic, vesicular  
 basalt, glomerocrysts of plagioclase and  
 olivine in star-shaped clusters, scoriaceous  
 at the top and base  
 COMPOSITION: 20% 10 x2 mm to 20 x 3 mm white  
 plagioclase phenocrysts, 5% green olivine  
 phenocrysts, 75% gray groundmass  
 XENOLITHS: None noted  
 ALTERATION: Orange clay in fractures and  
 vesicles

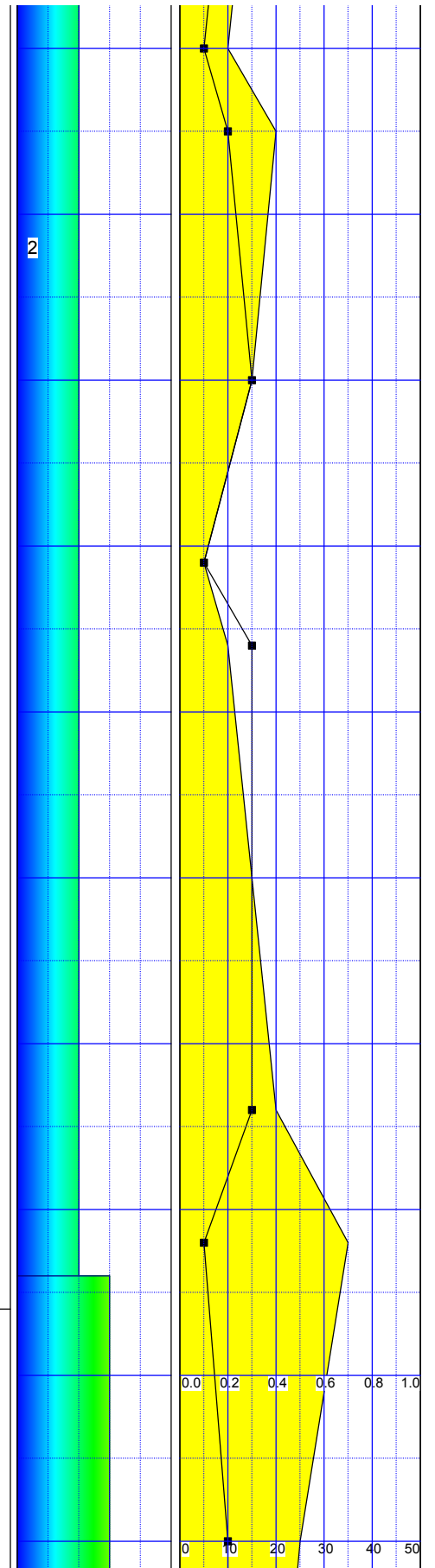
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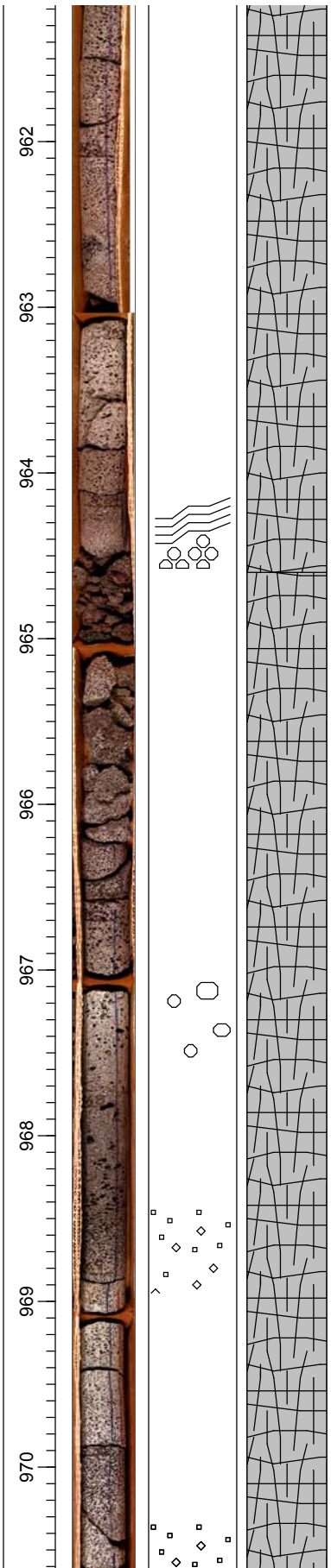




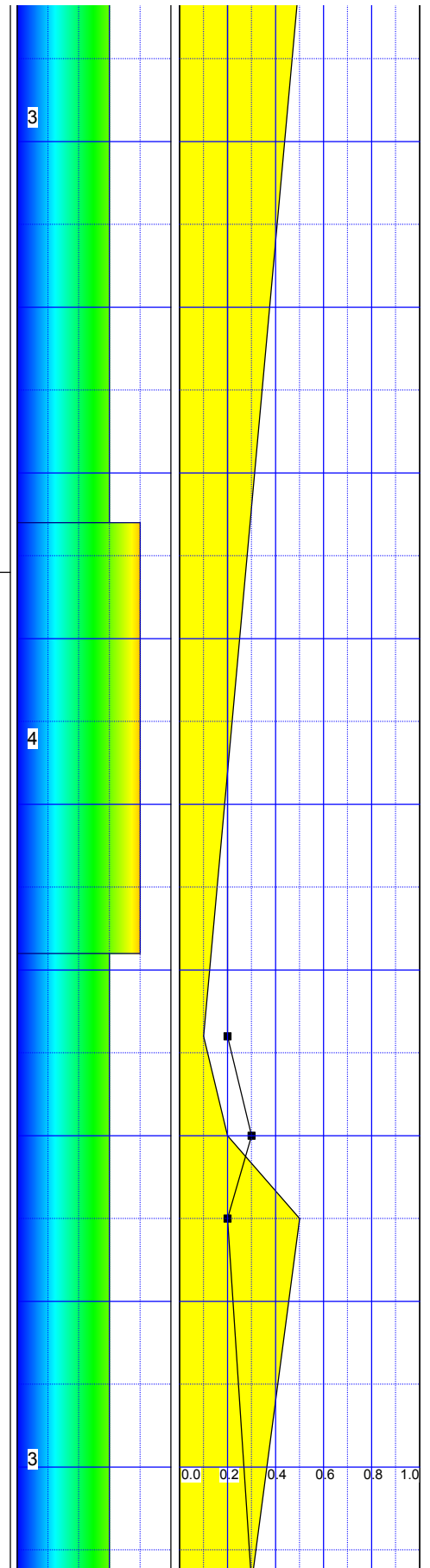


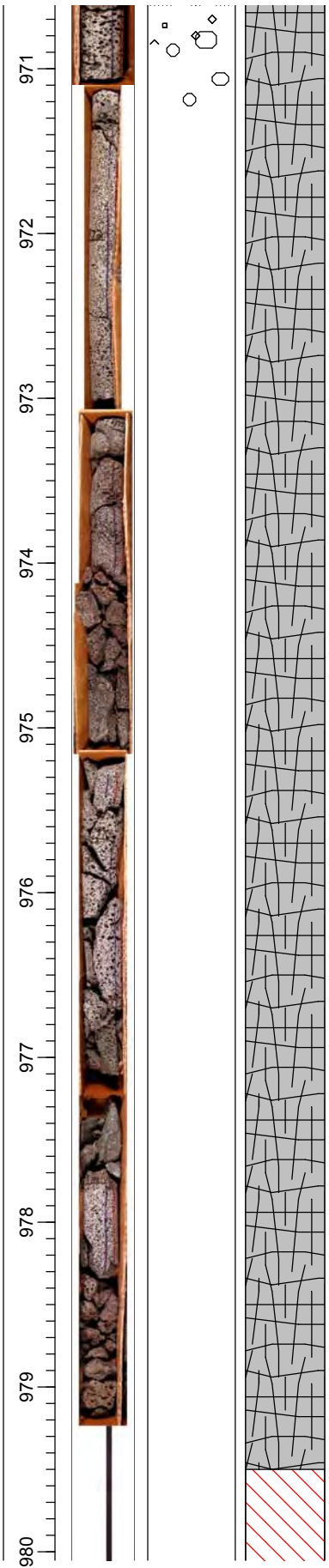
BASALT: COLOR: 5 PR 4/2 Grayish red purple  
 TEXTURE: Spatter at top, scoriaceous from top of interval to 960.5 ft, aphanitic, porphyritic, vesicular to 964.4 ft, scoriaceous to base, spatter at base  
 COMPOSITION: 10 mm x 15 mm x 2 mm plagioclase phenocrystst  
 XENOLITHS: None noted  
 ALTERATION: Reddish film on surfaces at top and base



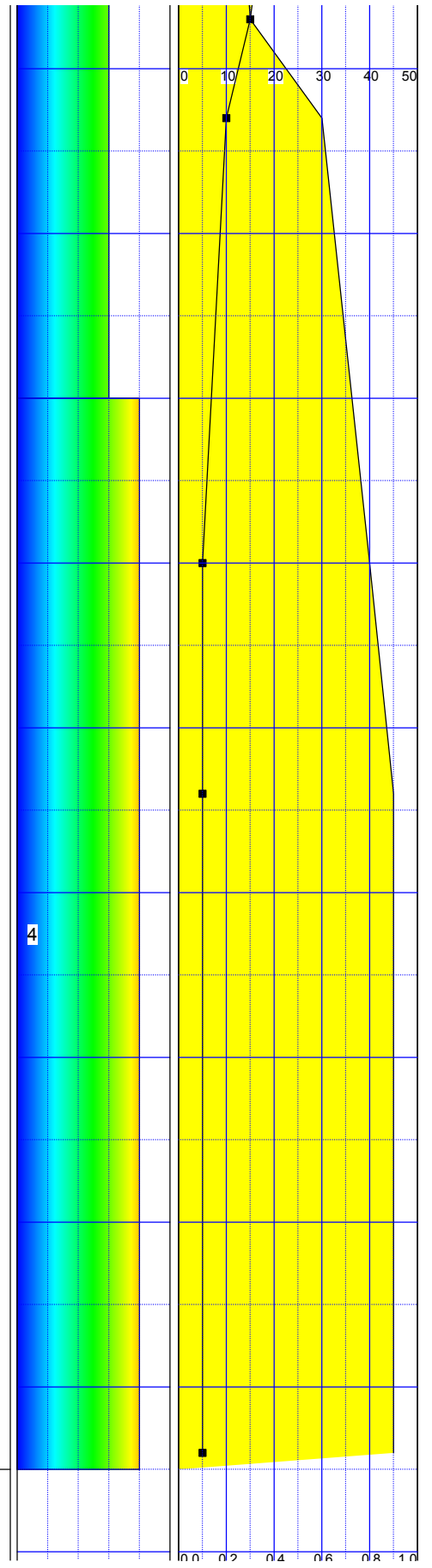


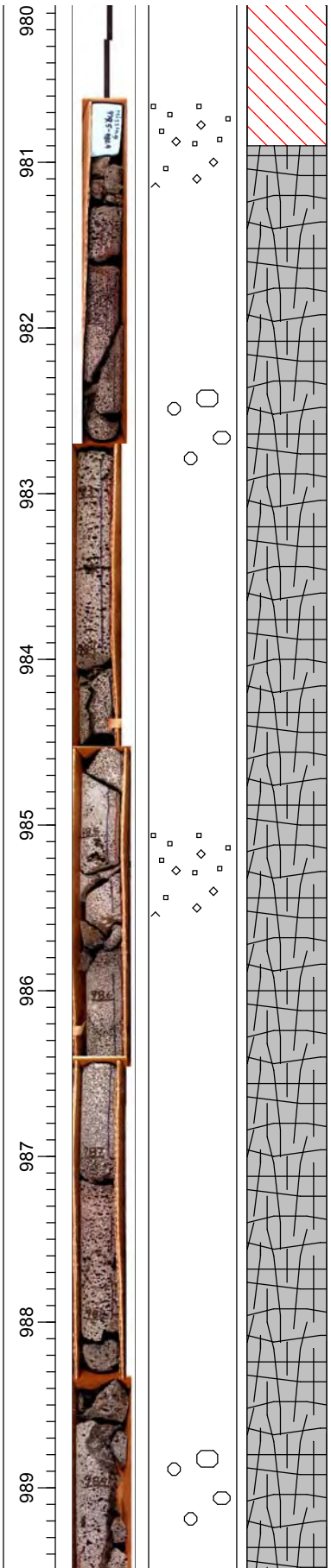
BASALT: COLOR: N2 dark gray at top of interval, grading to N5 medium gray by 967 ft, then N4 medium dark gray at 973 ft, and thence to base  
TEXTURE: Phaneritic, vesicular throughout, spatter at top of interval, at 974 ft, 979 ft,  
COMPOSITION: 50% white plagioclase phenocrysts in a framework, 40% olivine in interstices, 10% groundmass  
XENOLITHS: None noted  
ALTERATION: Reddish film on fracture surface, inside vesicles, and on spatter



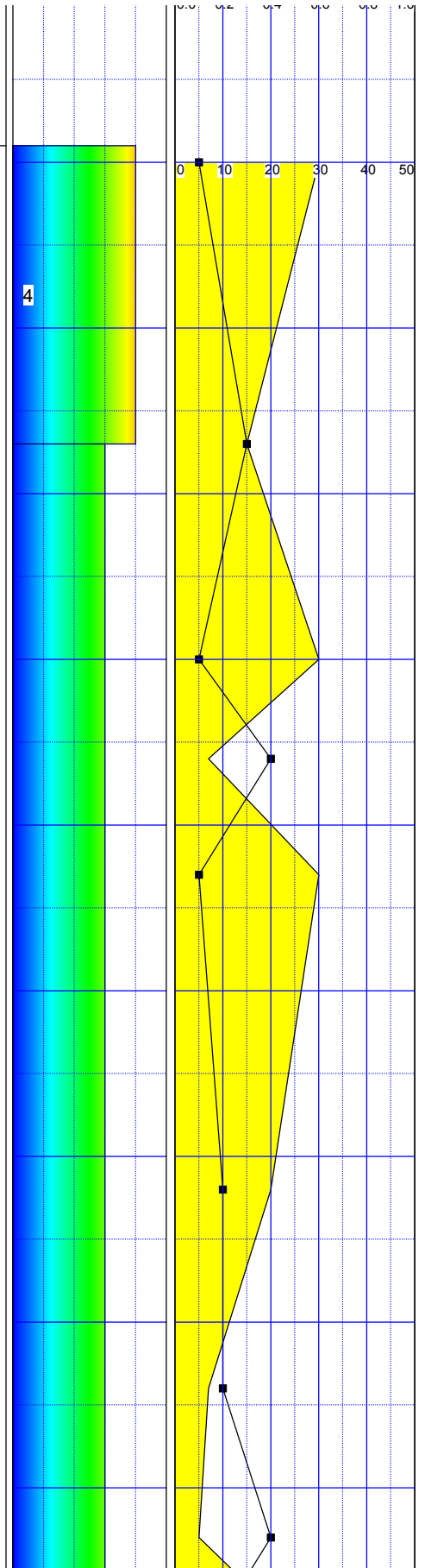


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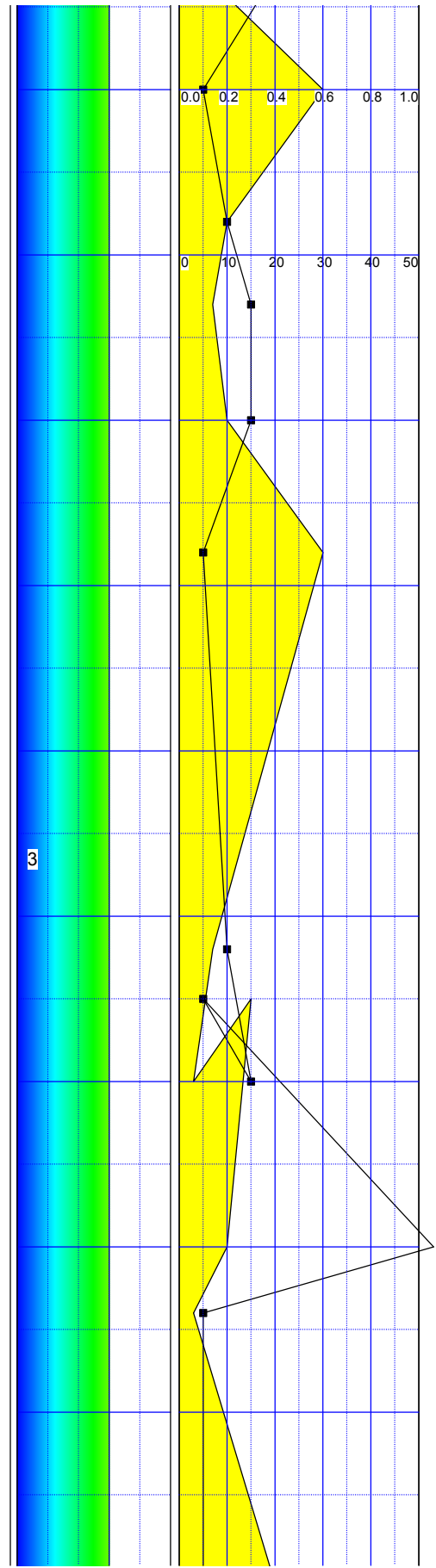
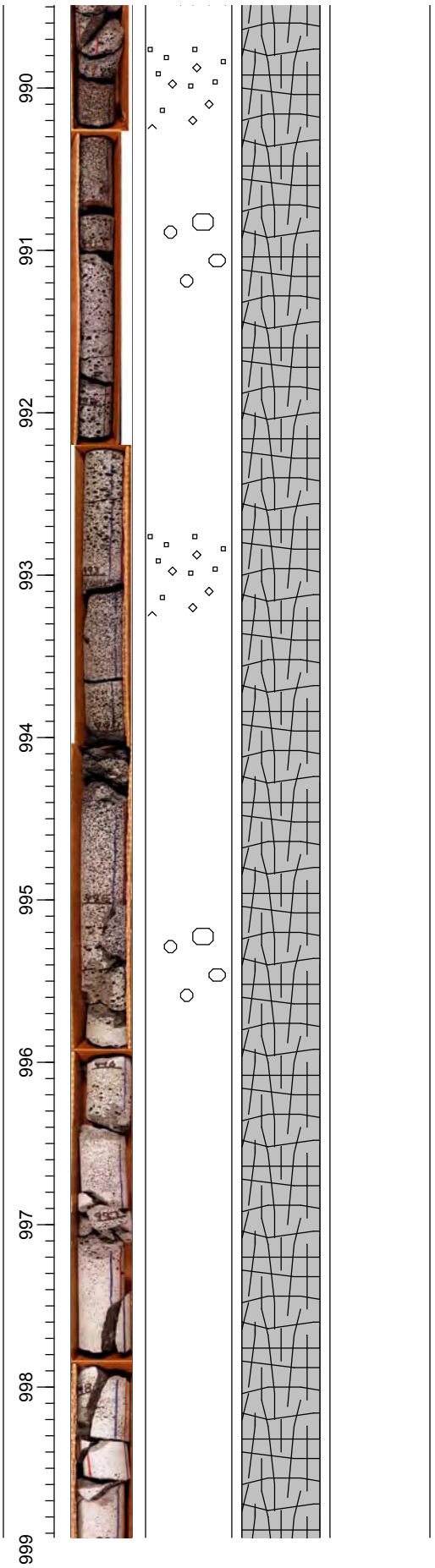


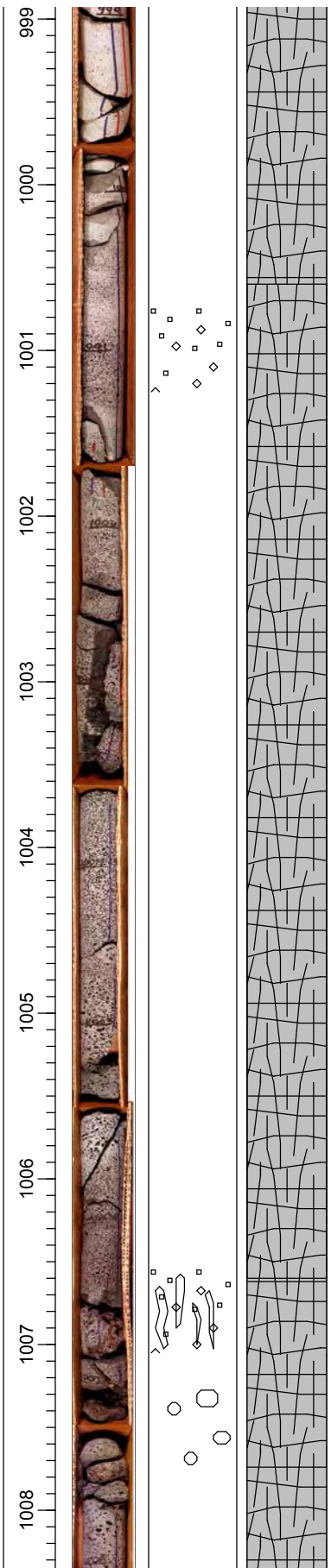


BASALT: COLOR: N4 medium dark gray throughout  
 TEXTURE: Almost aphanitic, scoriaceous from top to 982.7 ft, vesicular from 982.7 ft to 996.4 ft, large vesicles from 982.7 ft to 985.3 ft, relatively massive with a few small vesicles from 996.4 to 1,000.3 ft, vesicular from 1,000.3 ft to base of interval, spatter and flow features at 990.6 ft, 985.7 ft, 990 ft, 990.8 ft, and at base  
 COMPOSITION: 50% white plagioclase laths 2-4 mm long by 1-2 mm wide almost touching in 40% dark gray groundmass, 10% euhedral brownish green olivine  
 XENOLITHS: None noted  
 ALTERATION: Reddish film on surfaces and inside vesicle on spatter and flow features, yellow-green film on surfaces at 985.6 ft

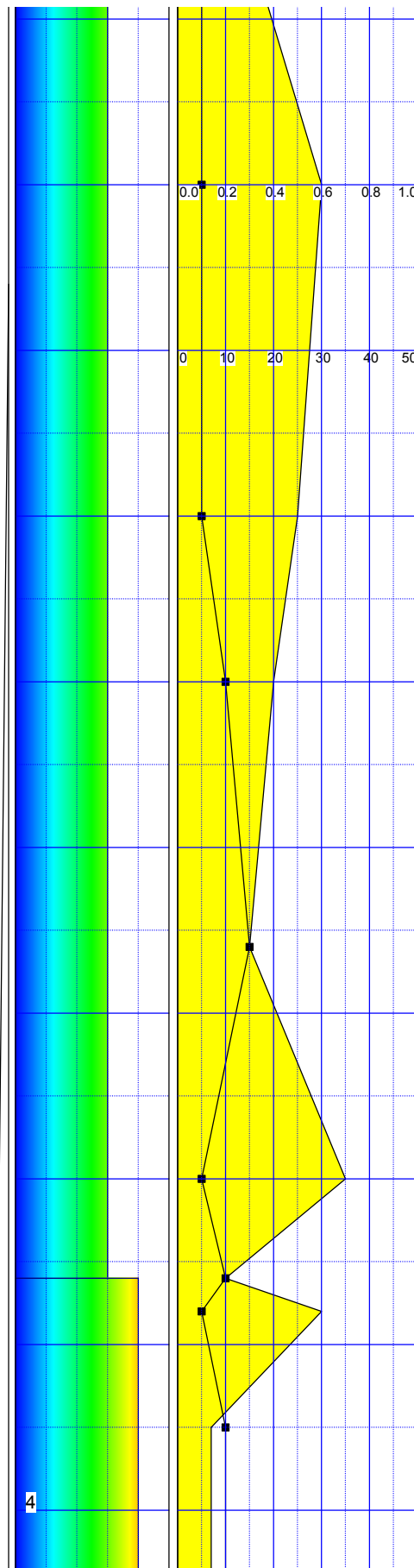


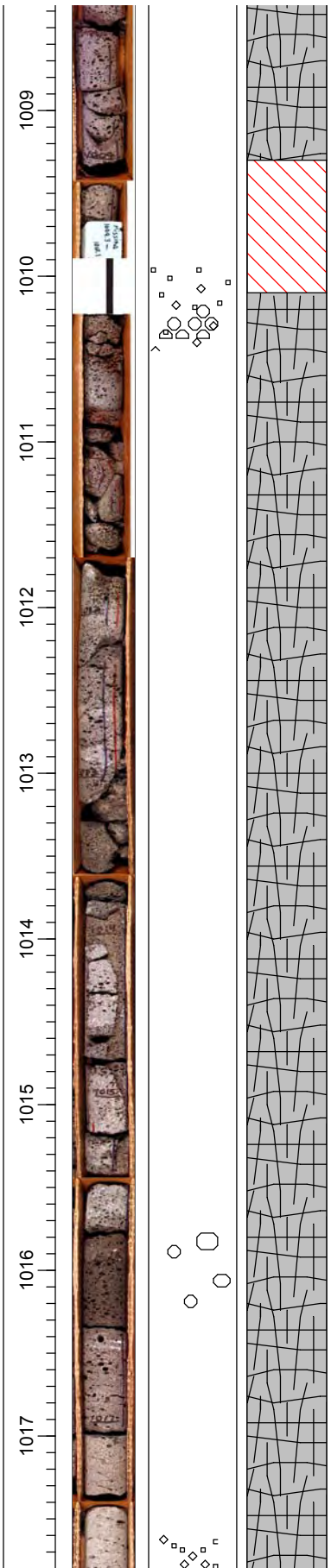






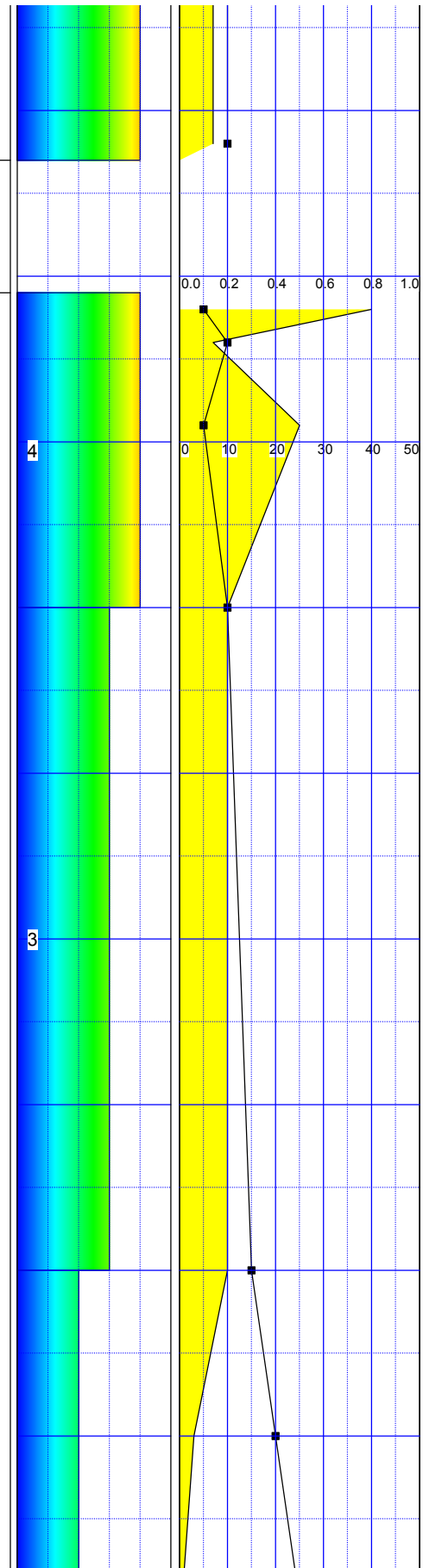
BASALT: COLOR: N3 dark gray, reddish alteration inside of all vesicles and fractures impart a reddish tinge  
 TEXTURE: Phaneritic, vesicular throughout, spatter at top and base of interval  
 COMPOSITION: 45% euhedral white plagioclase, 5% very tiny, anhedral brown olivine, suspended in 50% dark gray matrix  
 XENOLITHS: None noted  
 ALTERATION: Reddish film inside all vesicles, and on all fracture surfaces

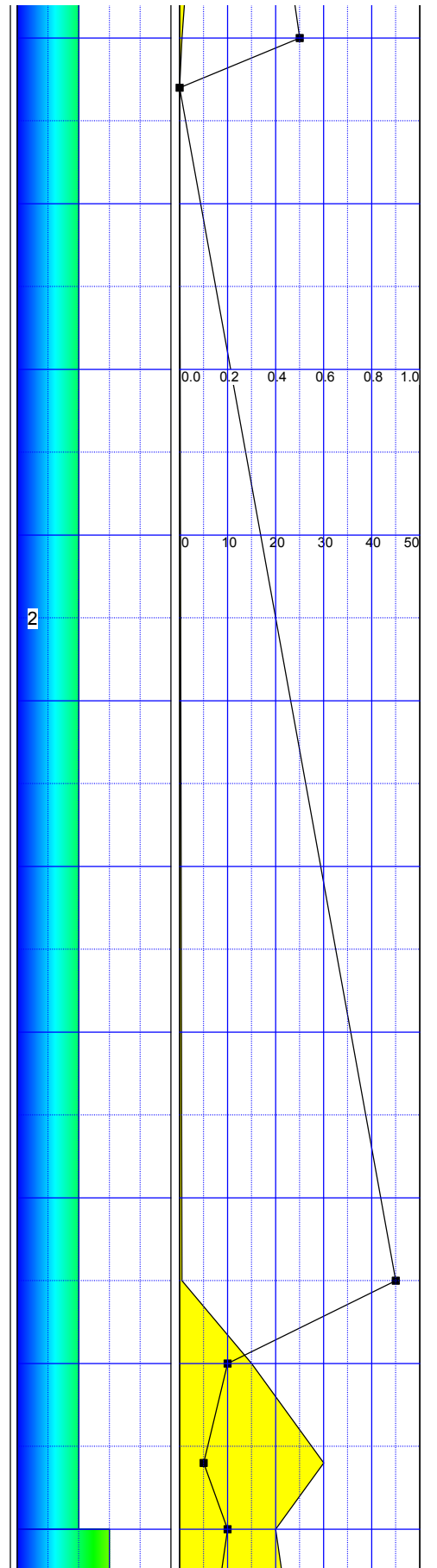
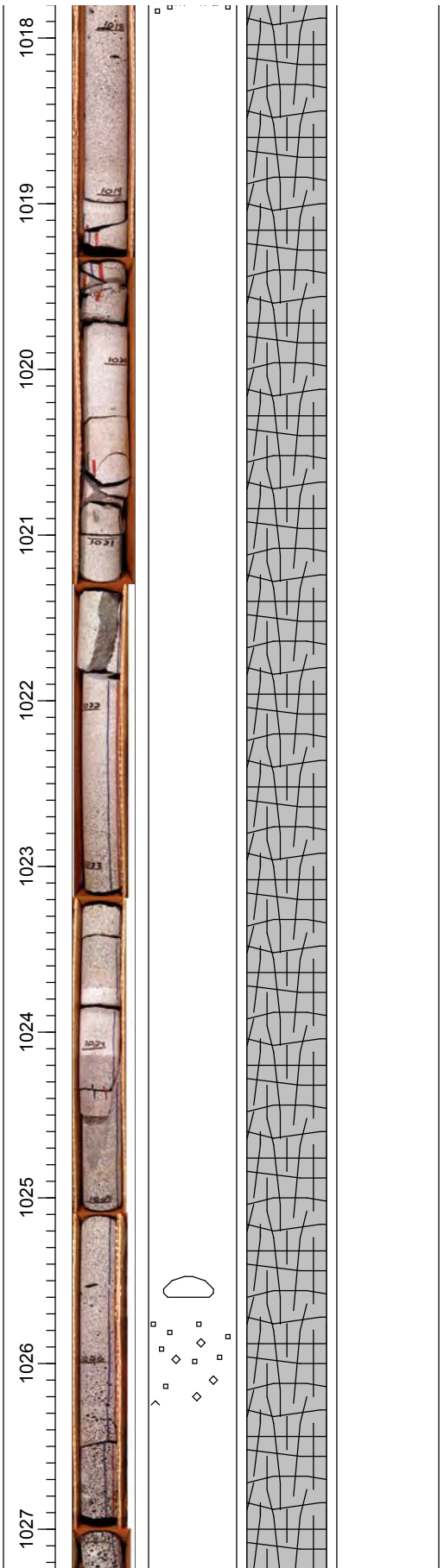


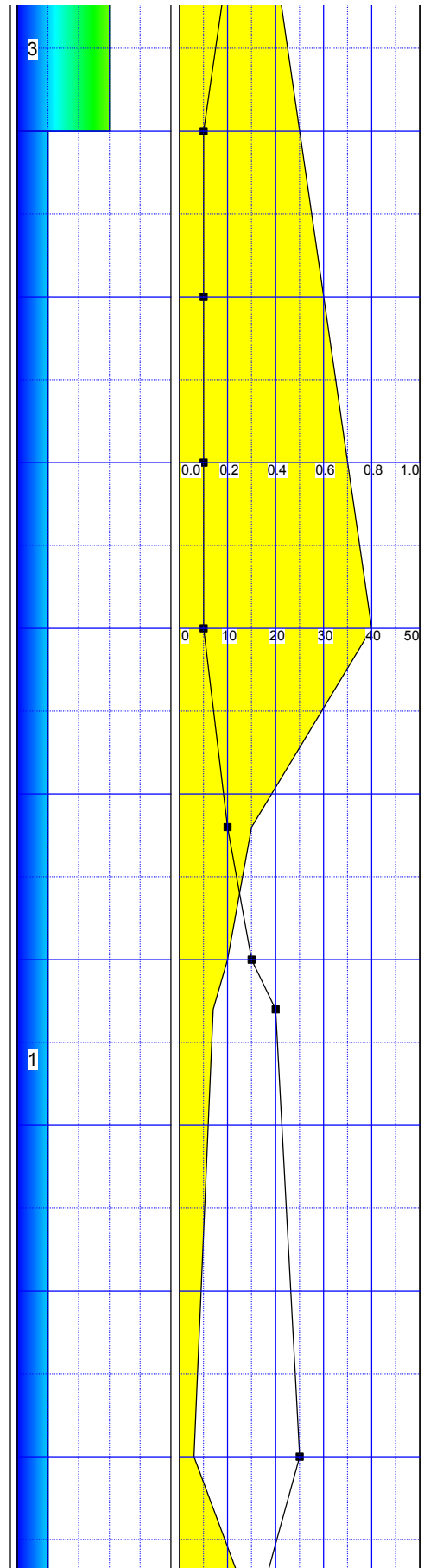
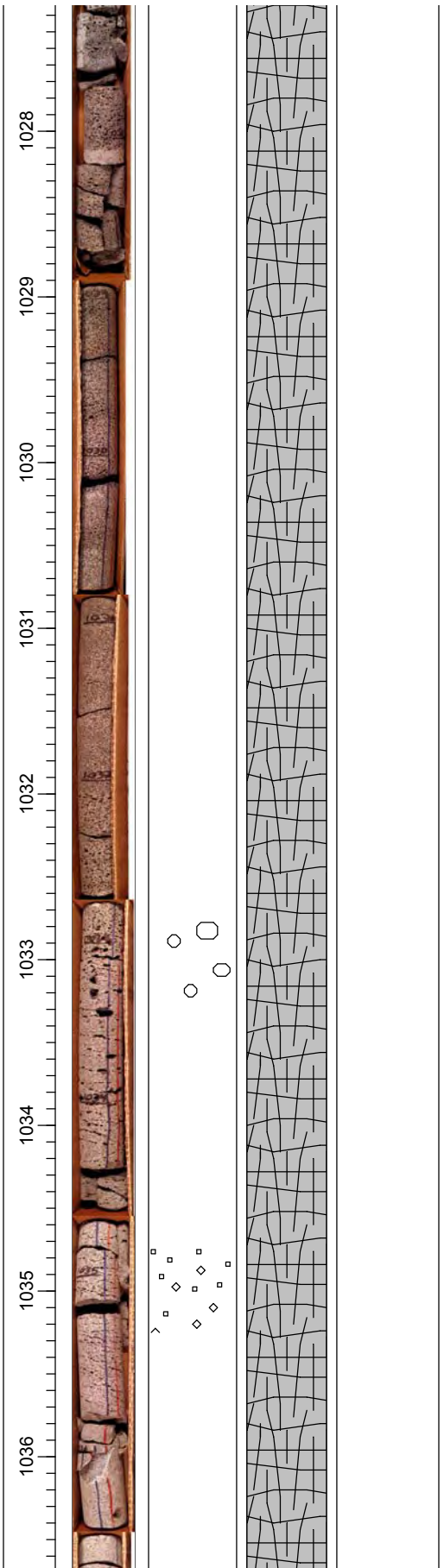


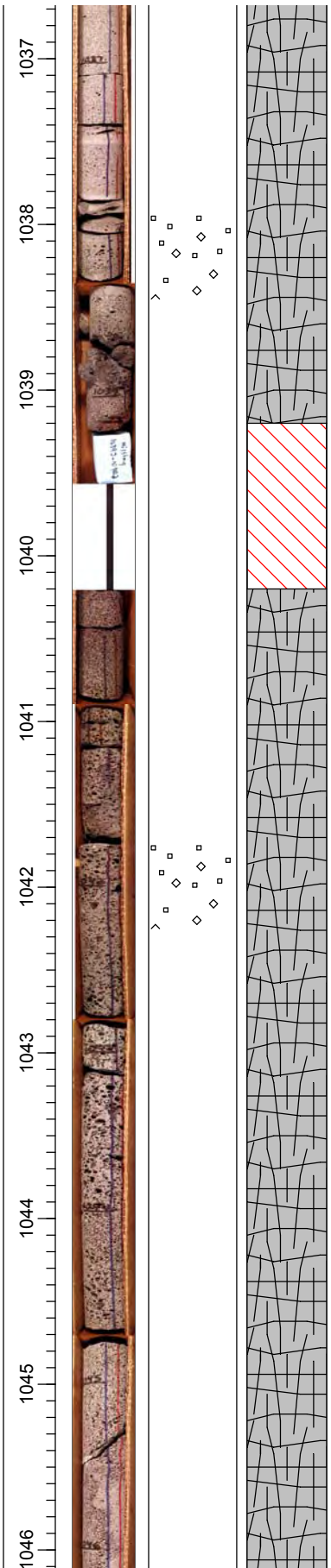
MISSING INTERVAL: Missing interval, no more information

BASALT: COLOR: N3 dark gray to 1029.4 ft, where color changes to 5 YR 4/1 brownish gray, which continues to base  
 TEXTURE: Aphanitic, decreasingly vesicular from top to 1,018.3 ft, massive to 1,022.5 ft, diktytaxitic from 1,022.5 ft to 1,026 ft, vesicular from 1,026 ft to 1,036 ft, slightly diktytaxitic from 1,036 to 1,038 ft, vesicular from there to base of interval, flow texture at base  
 COMPOSITION: 50% white euhedral plagioclase microphenocrysts, 40% green olivine microphenocrysts, 9% gray or brown groundmass, trace black mineral  
 XENOLITHS: None noted  
 ALTERATION: Reddish film on surfaces of flow structures at base, and fractures and vesicles at top



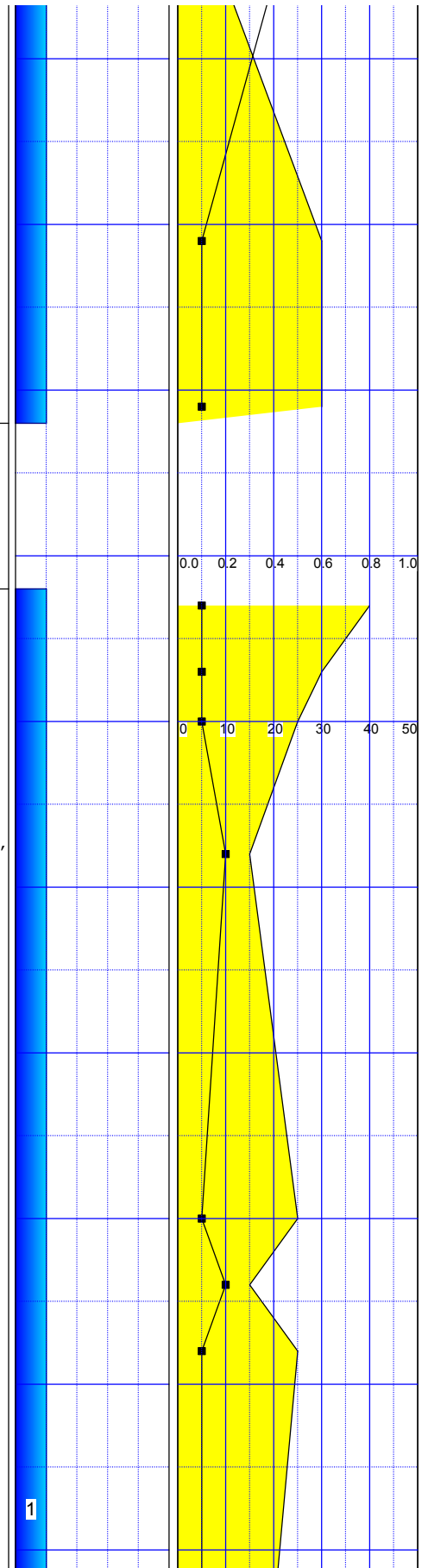




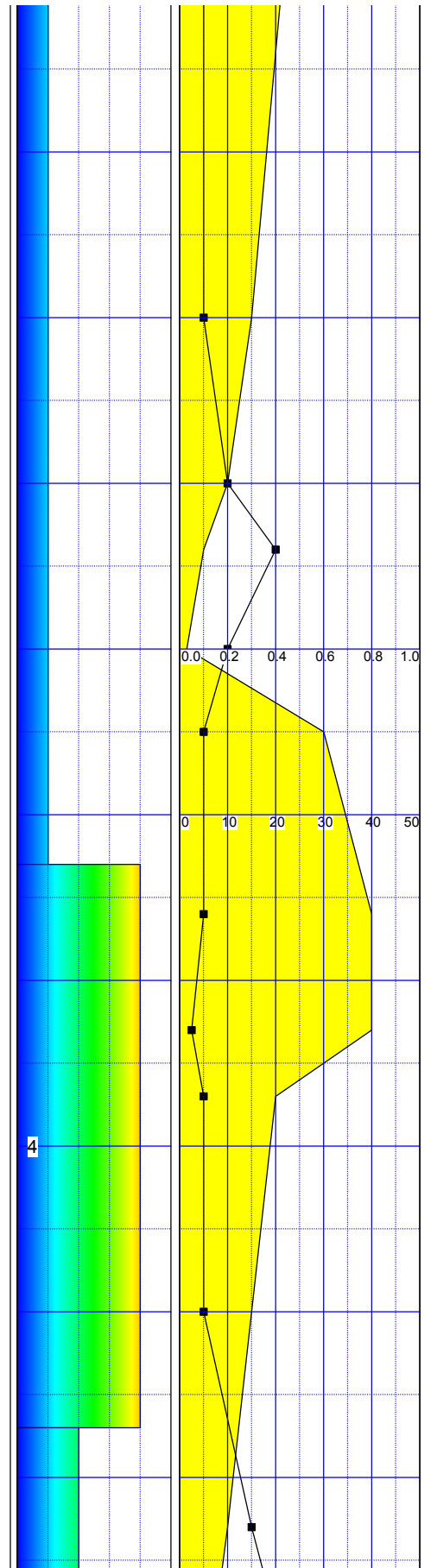
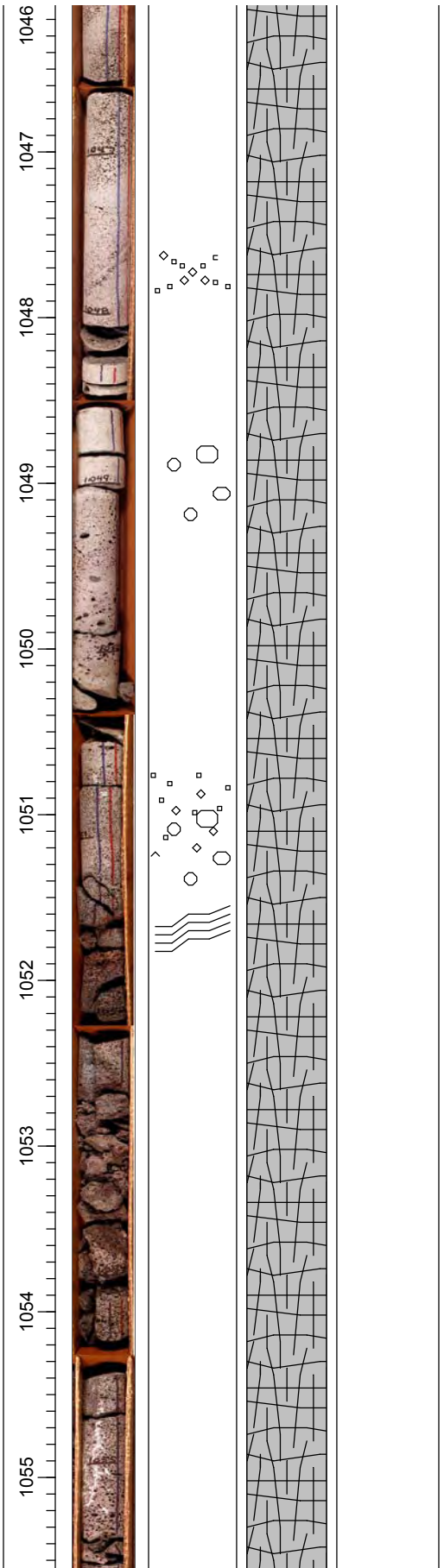


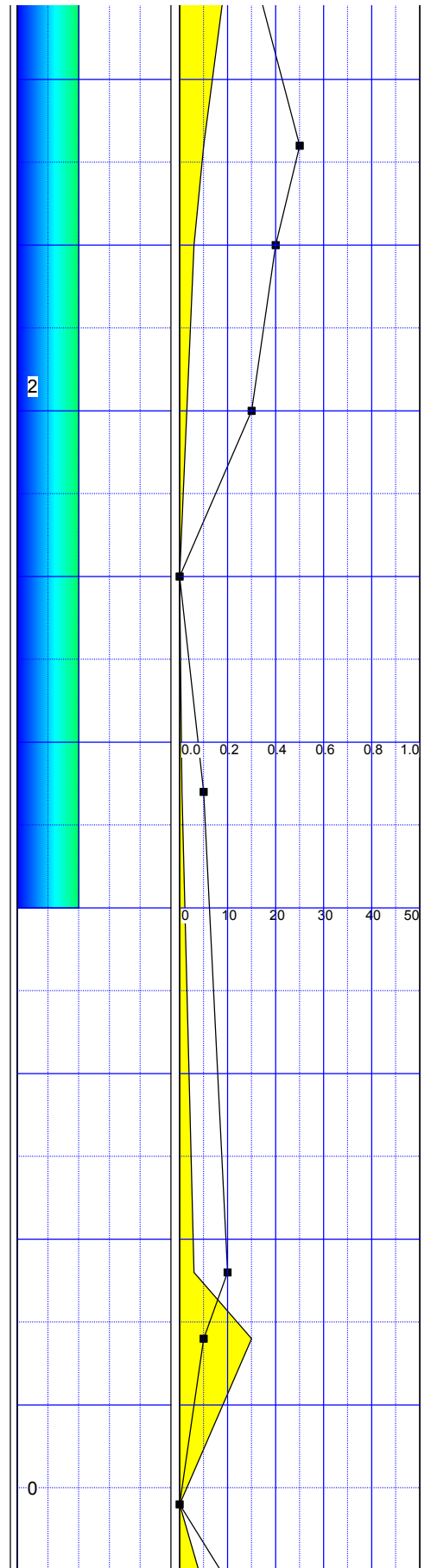
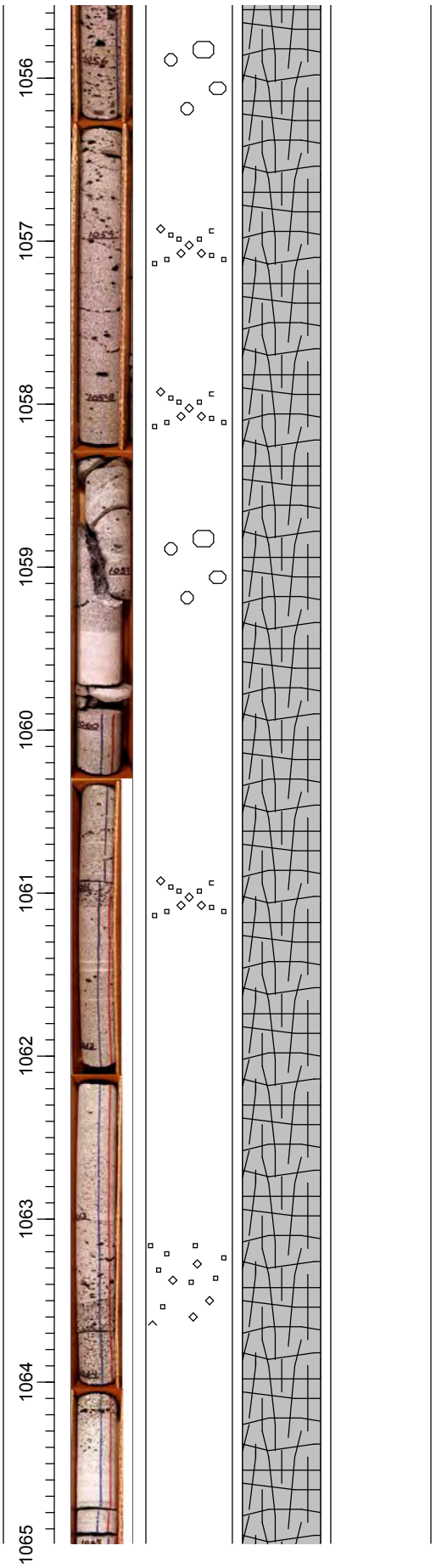
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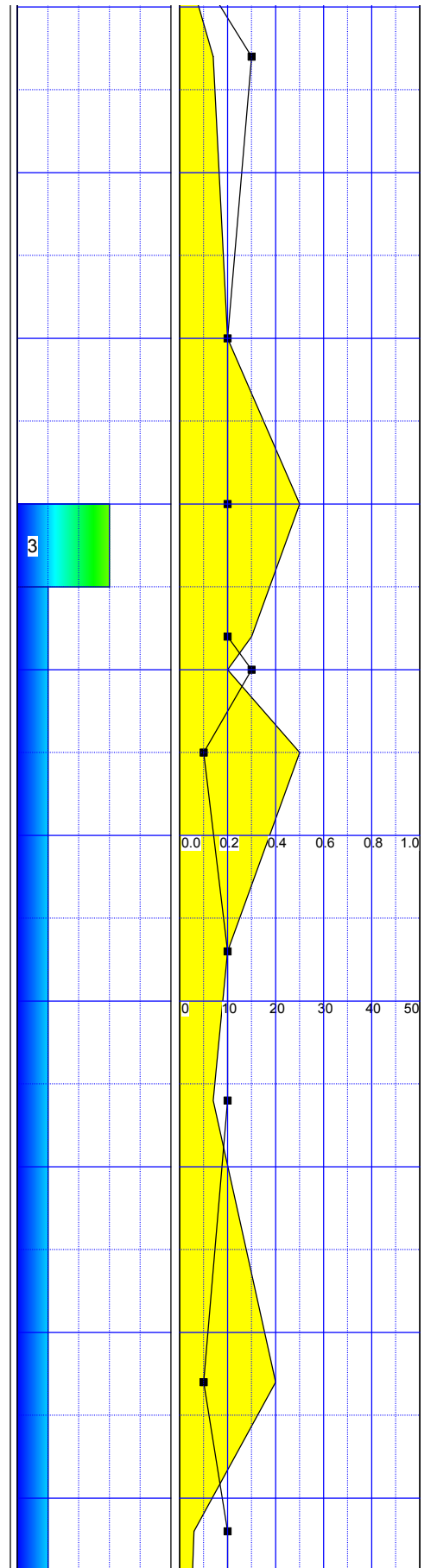
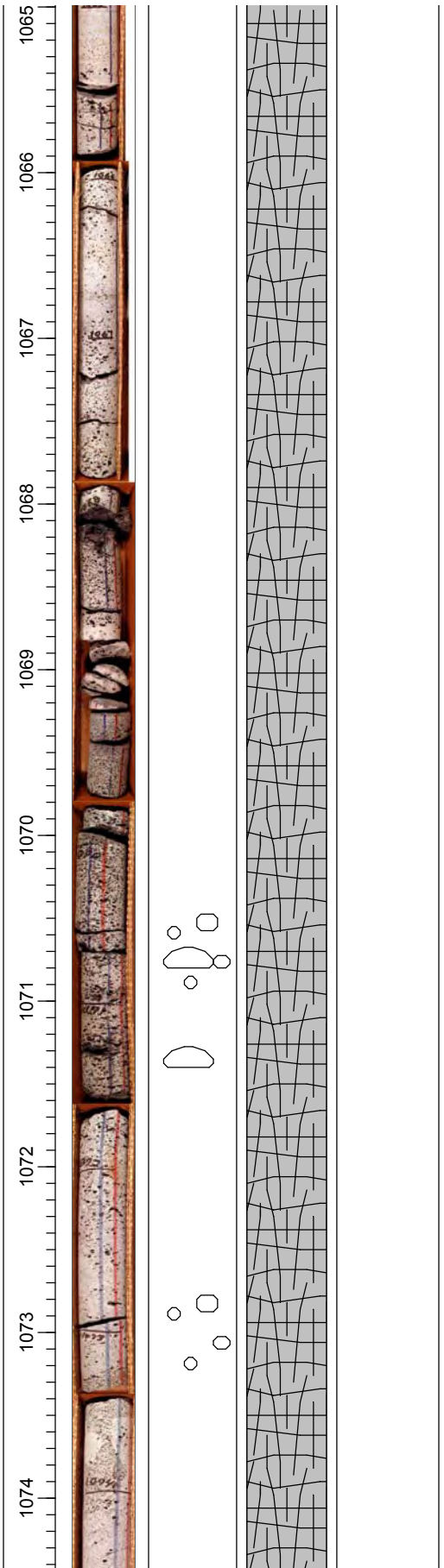
BASALT: COLOR: 5 RP 4/2 grayish red purple from top of interval grading to N5 medium gray at 1,042 ft, abruptly changing to N4 medium dark gray at 1,051.5 ft, grading to N5 medium gray by 1,055 ft, grading to N4 medium dark gray at base  
 TEXTURE: Almost aphanitic, very vesicular from top of interval to 1,046 ft, massive to slightly vesicular from 1,046 to 1,049 ft, massive with a few large vesicles to 1,050.5 ft, vesicular from 1,050.5 ft to 1,055.5 ft, diktytaxitic with a few large vesicles, vesicle sheets and planes from 1,055.5 ft to 1,067 ft, vesicular from 1,067 to 1,072 ft, massive with a few large vesicles to 1,076.5 ft, massive from 1,076.5 to 1081 ft, vesicular from there to base of interval  
 COMPOSITION: 50% euhedral white plagioclase microphenocrysts in framework, 40% anhedral green olivine microphenocrysts in interstices, 5-8% groundmass, 2% black microphenocrysts, acicular form  
 XENOLITHS: None noted  
 ALTERATION: Reddish film on surfaces of flow structures at base, and fractures and vesicles at top

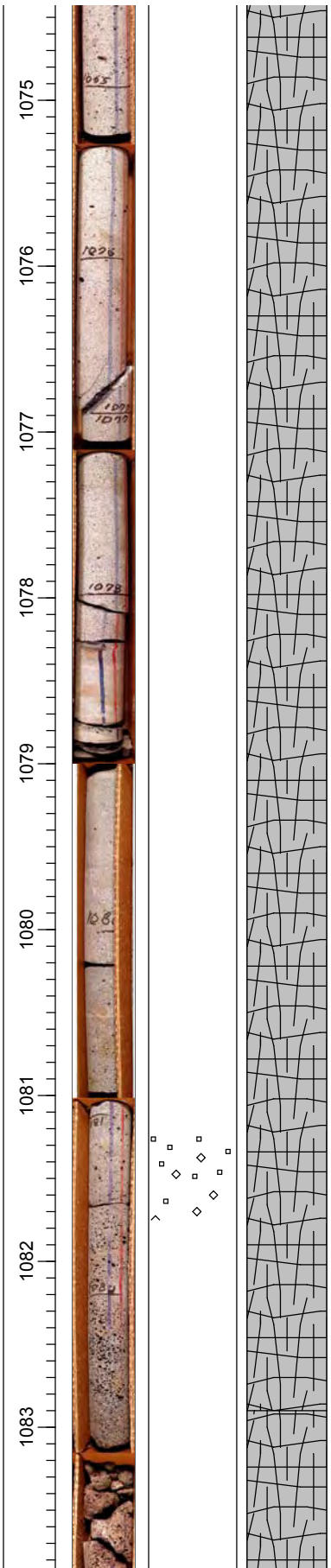




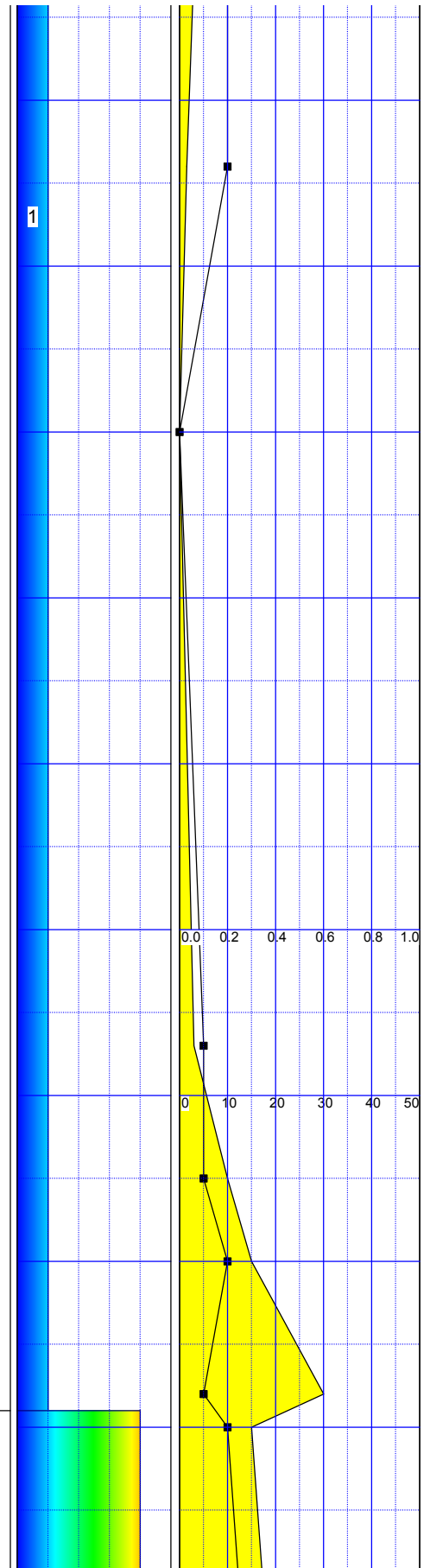


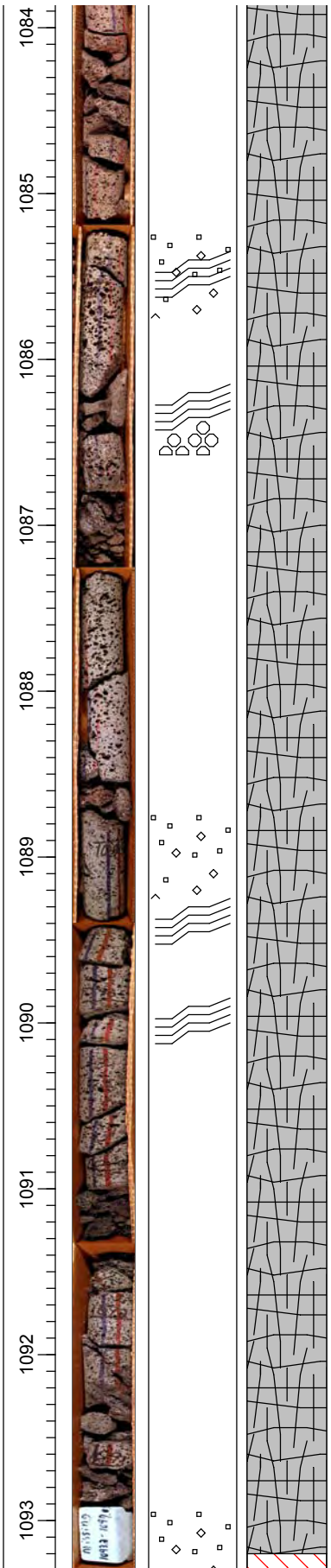






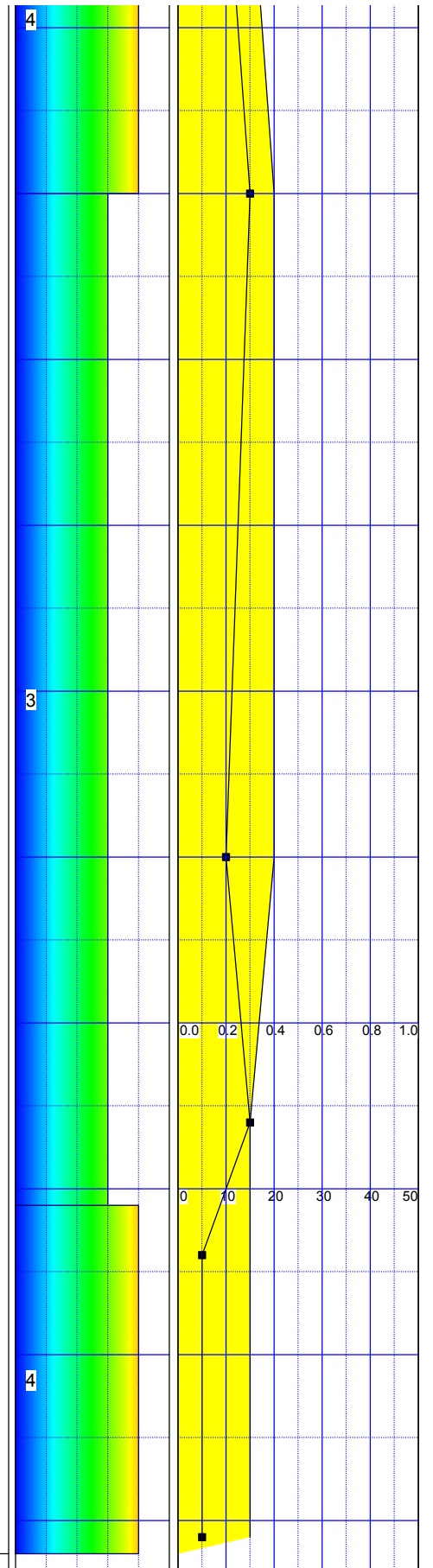
BASALT: COLOR: 5 RP 4/2 grayish red purple from top of interval grading to N5 medium gray at 1,086 ft, changing to N4 medium dark gray at 1,051.5 ft, which continues to base of interval  
 TEXTURE: Porphyritic, with stellate clusters of white plagioclase phenocrysts and green olivine microphenocrysts, and white plagioclase laths in a reddish or gray

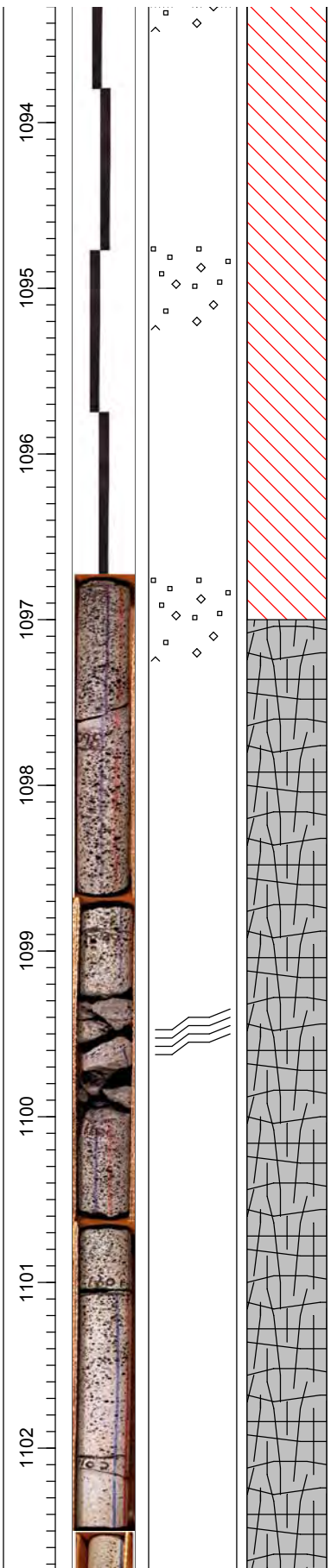




groundmass. Vesicular throughout  
 COMPOSITION: 65% red or gray groundmass, 25% plagioclase, 10% olivine  
 XENOLITHS: None noted  
 ALTERATION: Sparry calcite in vesicles and small fractures at 1,084 ft, reddish or orange film on surfaces and inside vesicles, especially at top of interval and at 1,092.2 ft

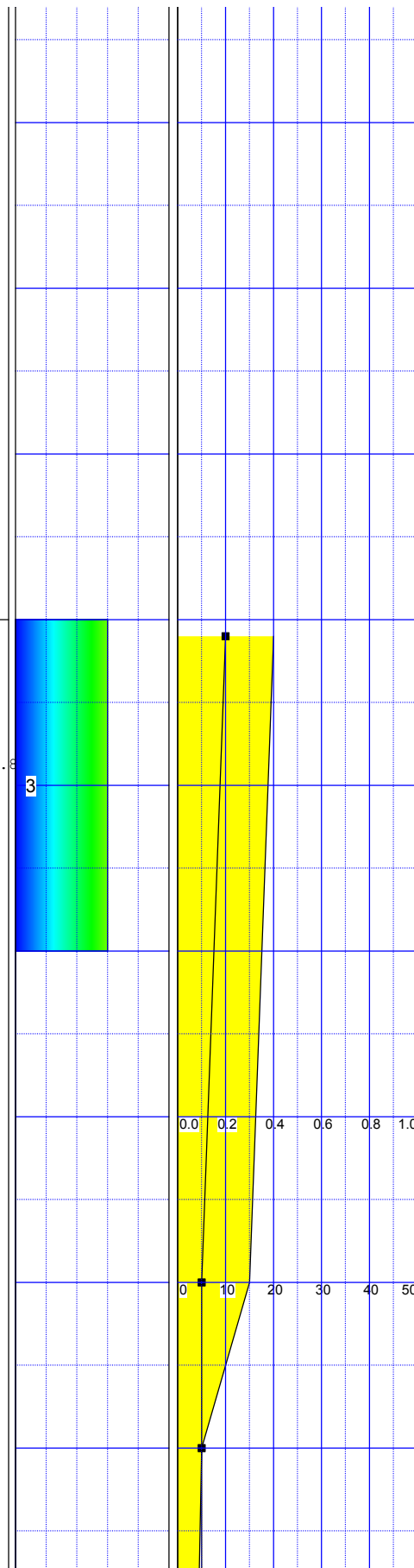
MISSING INTERVAL: Missing interval, no more





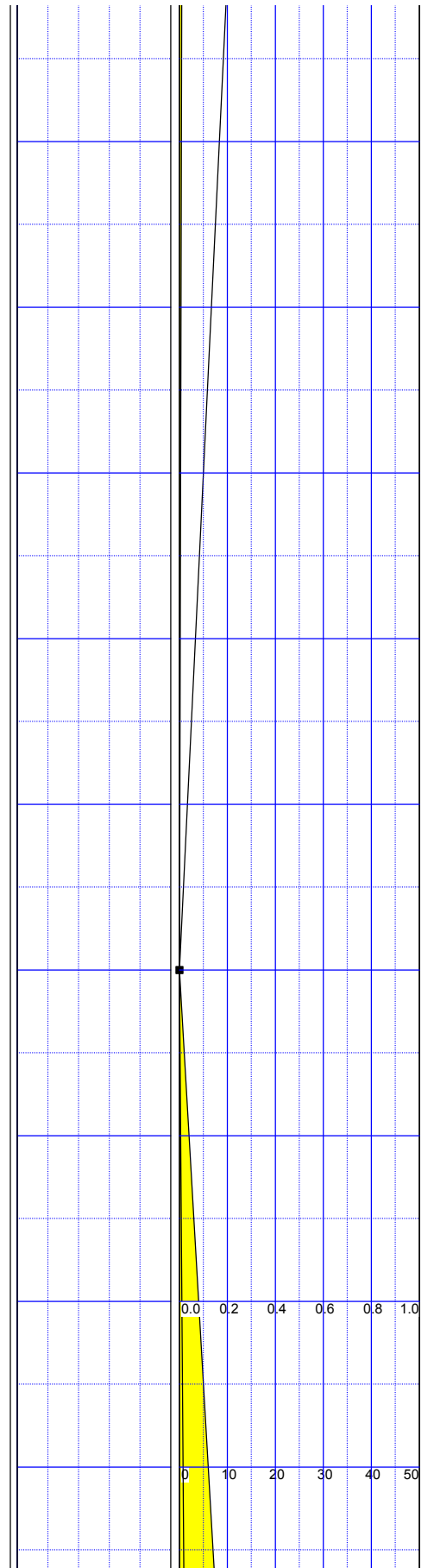
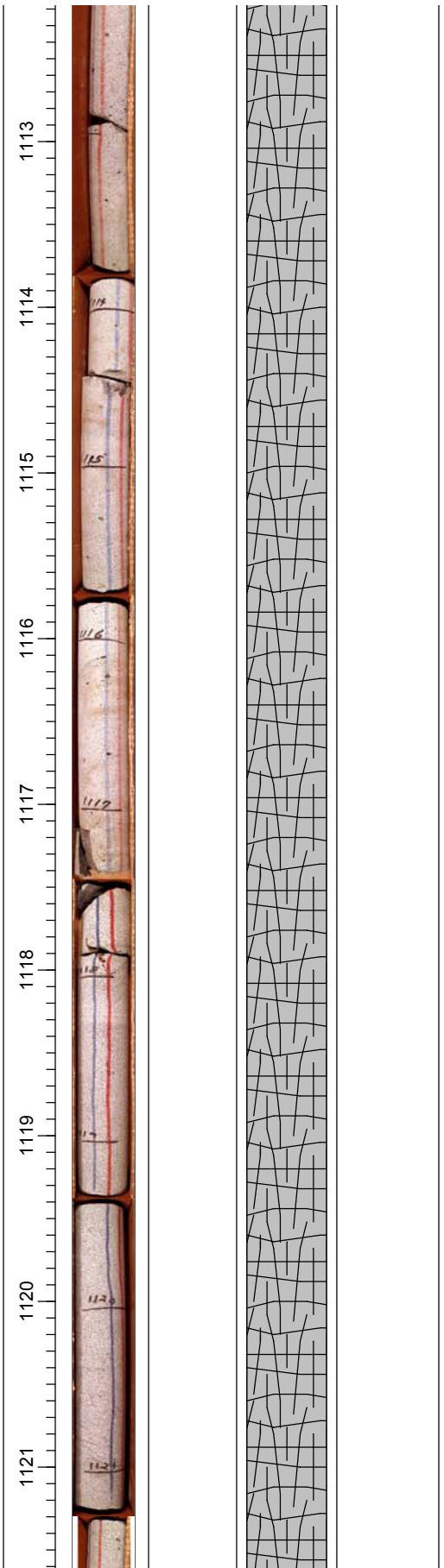
information

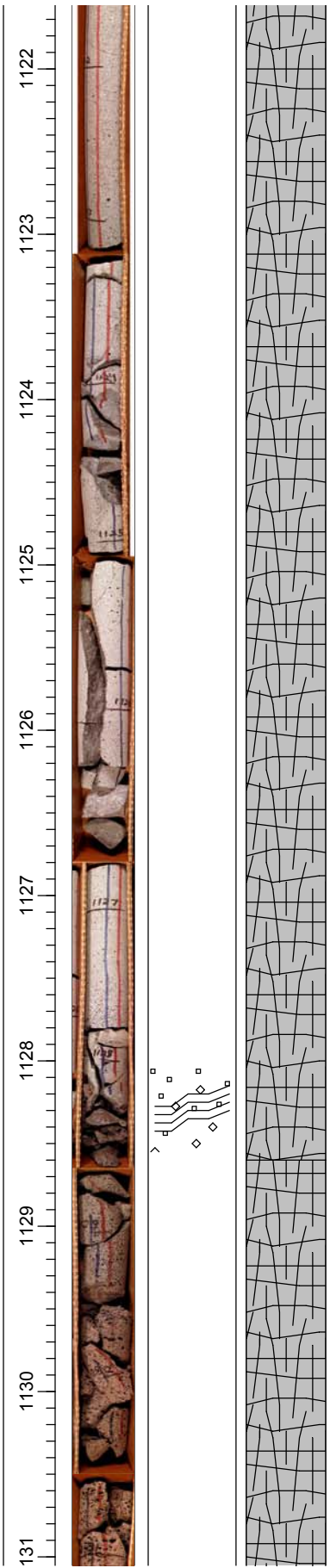
BASALT: COLOR: N4 medium dark gray from top of interval, grading to N5 medium gray at 1,101 ft, which persists to base of interval, where the basalt becomes slightly darker  
 TEXTURE: Porphyritic, glomerocrysts of white plagioclase and green olivine in gray groundmass. Vesicular from top of interval to 1,104.5 ft, massive from 1,104.5 to 1,105.8 ft, slightly diktytaxitic with stretched vesicles and vesicle planes to 1,110.8 ft, diktytaxitic to 1,127.5 ft, more vesicular to base, which has spatter texture. Flow texture at 1,099.5 ft  
 COMPOSITION: Large (1-1.25 cm) glomerocrysts of plagioclase and olivine in gray groundmass. Groundmass is 50-60% microcrystalline plagioclase framework with 35-40% subhedral to anhedral olivine in interstices, and 5-10% subhedral to euhedral black pyroxene  
 XENOLITHS: None noted  
 ALTERATION: Black film on surfaces and inside vesicles at base and at 1,099.5 ft



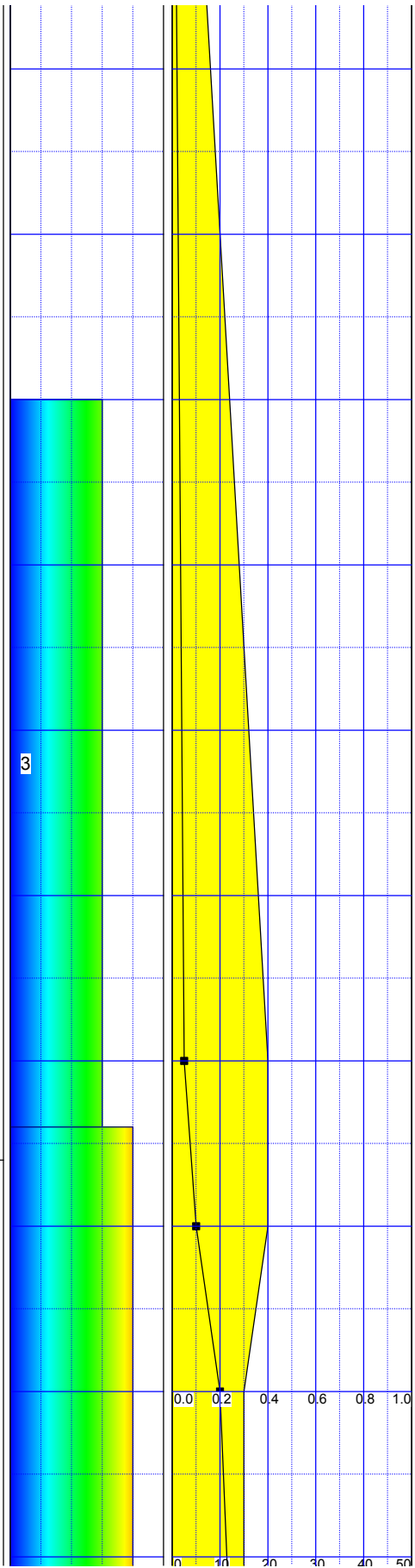


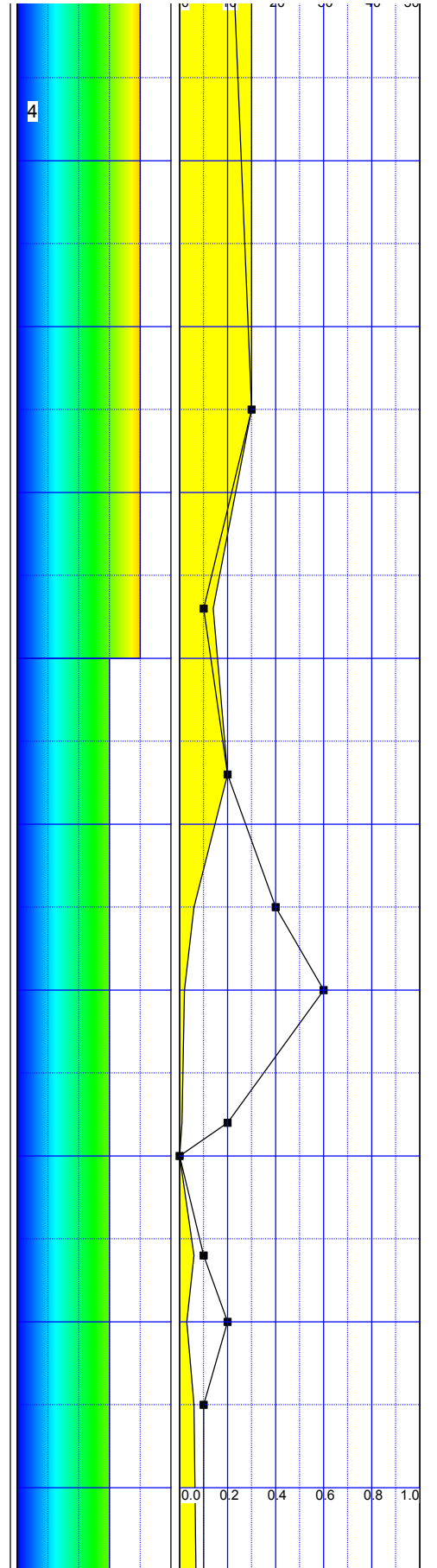
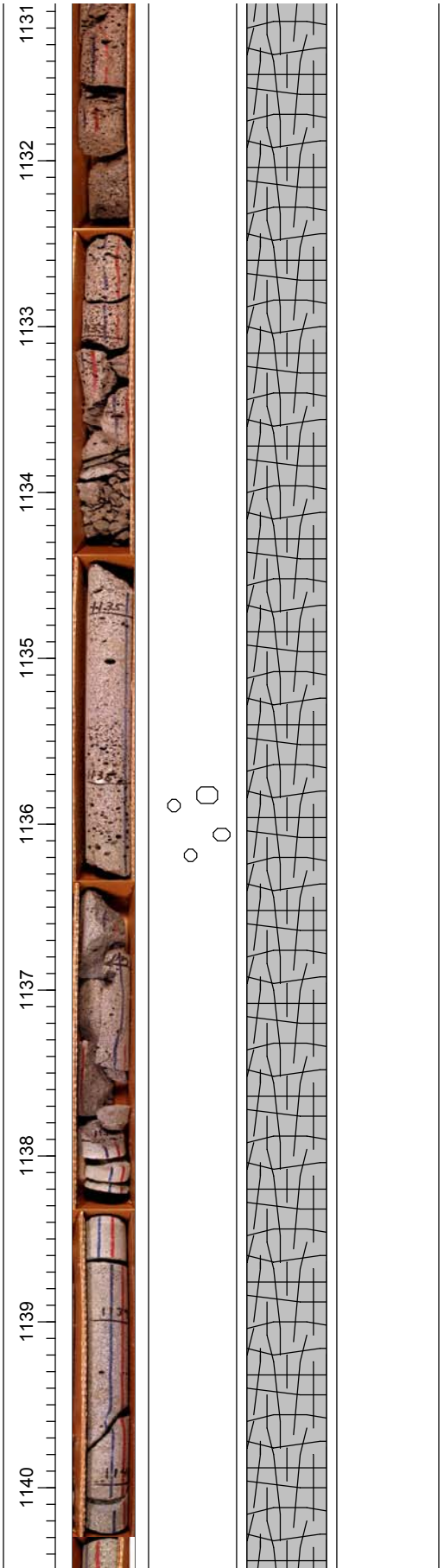


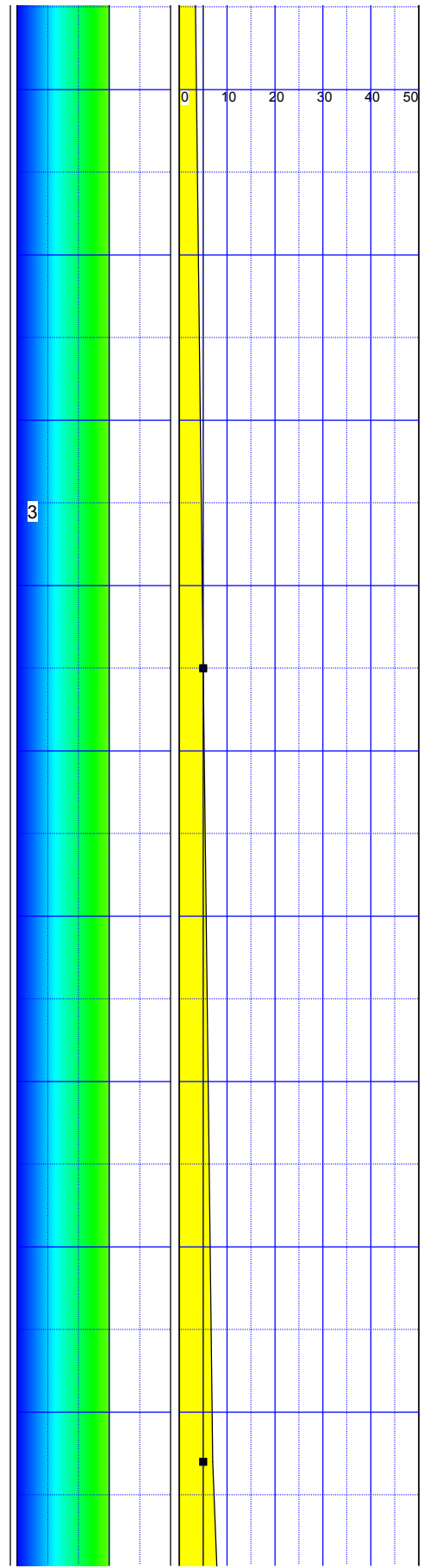
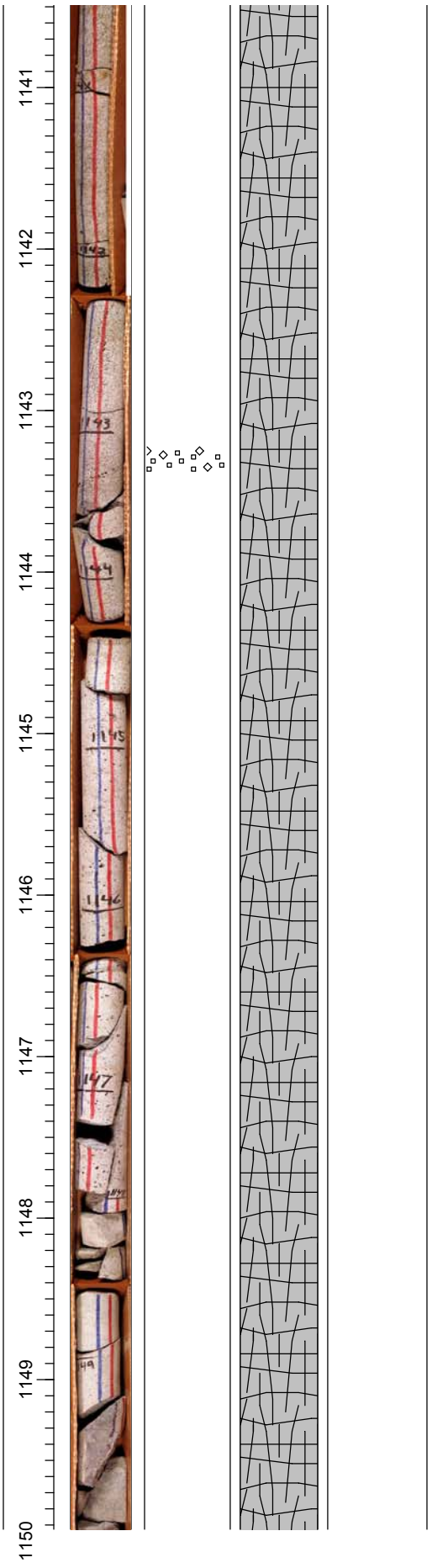


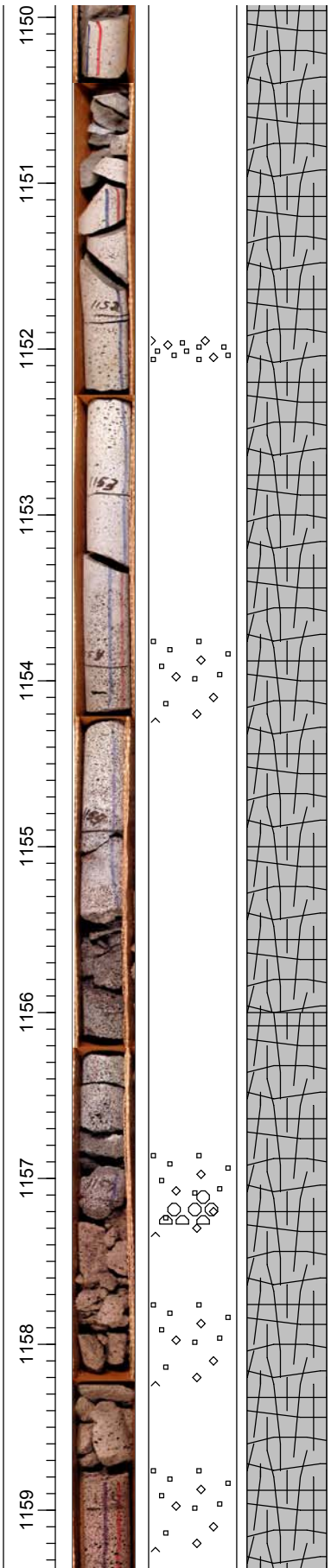


BASALT: COLOR: N4 medium dark gray at top of interval, changes abruptly to 5R 4/2 grayish red at 1,129.5 ft, then grades to N4 medium dark gray at 1,133 ft, then N3 dark gray from 1,153 ft to base  
 TEXTURE: Almost aphanitic. Vesicular from top of interval to 1,136.7 ft, diktytaxitic from 1,136.7 ft to 1,144.6 ft, slightly diktytaxitic with a few vesicles from 1144.6 to 1,151.7 ft, increasingly vesicular from 1,151.7 ft to base. spatter texture at 1,132, 1,133, 1,155.3, 1,155.5, 1,156, 1,157.2 ft, agglomerated spatter at 1,155.3 ft.  
 COMPOSITION: 50% white euhedral plagioclase, 30% green subhedral olivine, 10% black subhedral to euhedral pyroxene, 10% gray groundmass  
 XENOLITHS: None noted  
 ALTERATION: Sparry calcite in vesicles at 1,136 ft, and from 1,152 to 1,153 ft, black film on surfaces and inside vesicles, especially at base of interval

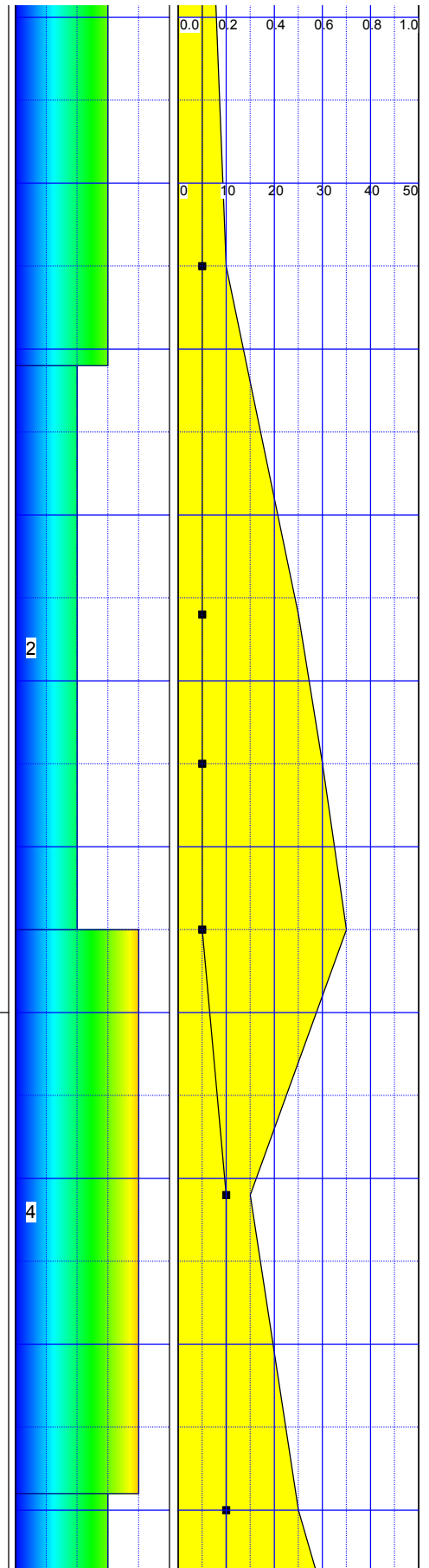




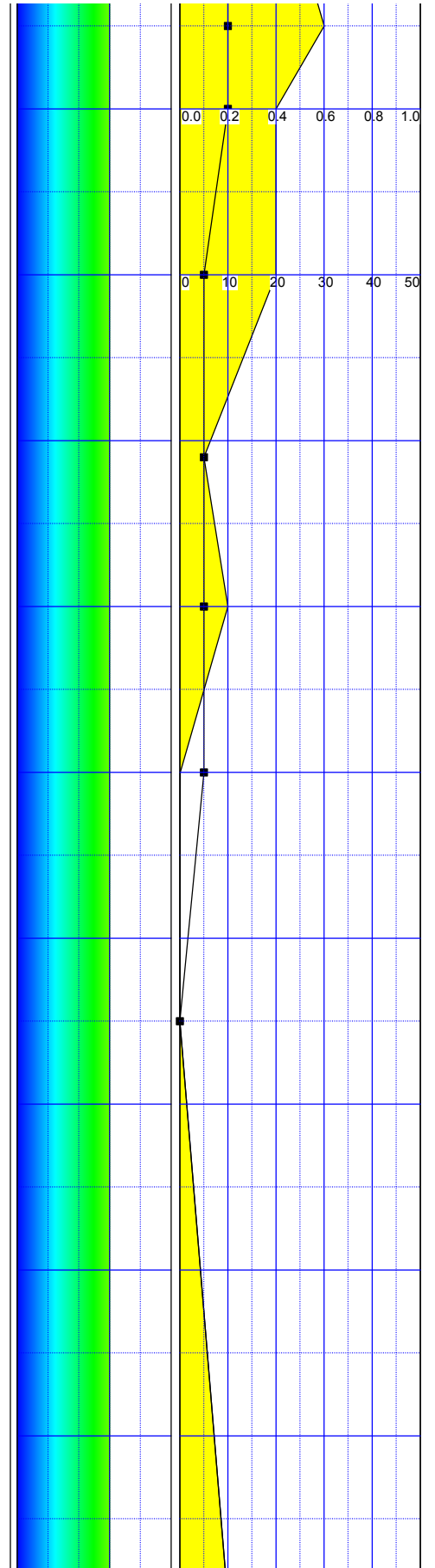
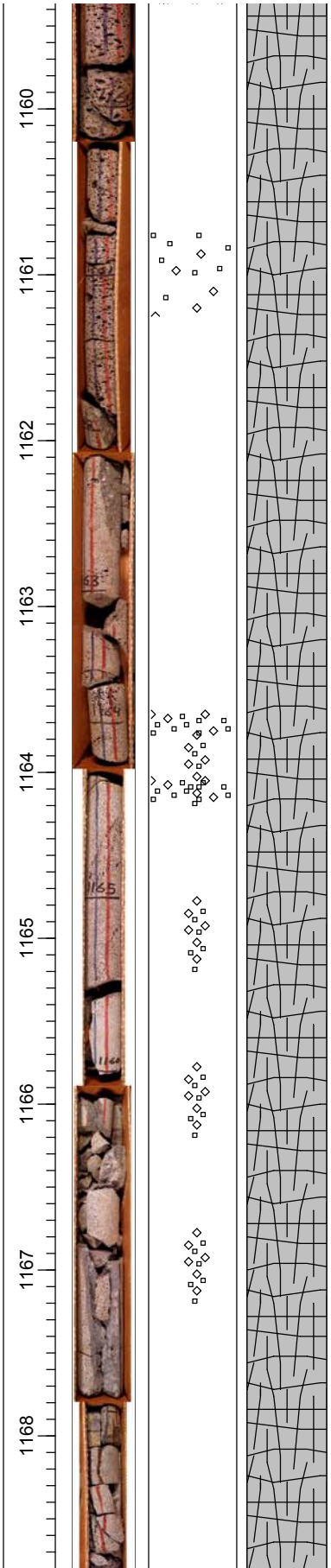


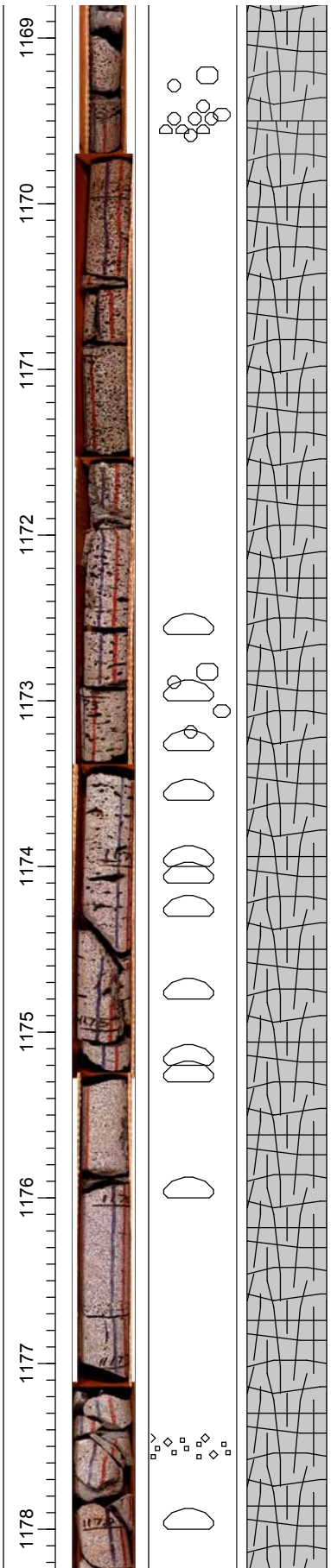


BASALT: COLOR: 10 R 4/6 moderate reddish brown at top of interval, grading to N4 medium dark gray about 1,165 ft, which persist to base of interval  
 TEXTURE: Almost aphanitic, porphyritic, white plagioclase framework in brown or gray groundmass. Vesicular from top of interval to 1,162.3 ft, diktytaxitic with vesicles, vesicle sheets and planes to 1,165.7 ft, massive from 1,165.7 to 1,166.2 ft, diktytaxitic with vesicle columns to 1,169 ft, vesicular to base, agglomerated spatter at base  
 COMPOSITION: 50% white euhedral plagioclase, 25% subhedral to euhedral olivine in spaces between plagioclase phenocrysts 15% brown or gray groundmass 10% black anhedral to euhedral pyroxene  
 XENOLITHS: None noted  
 ALTERATION: Sparry calcite in vesicles, fractures and cracks at 1,164 ft

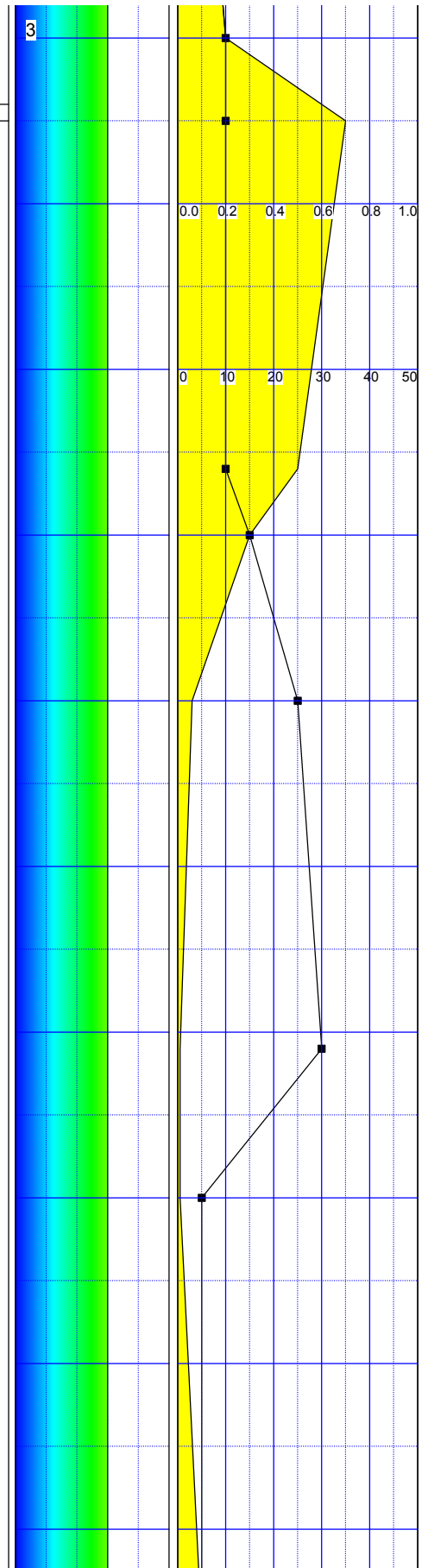


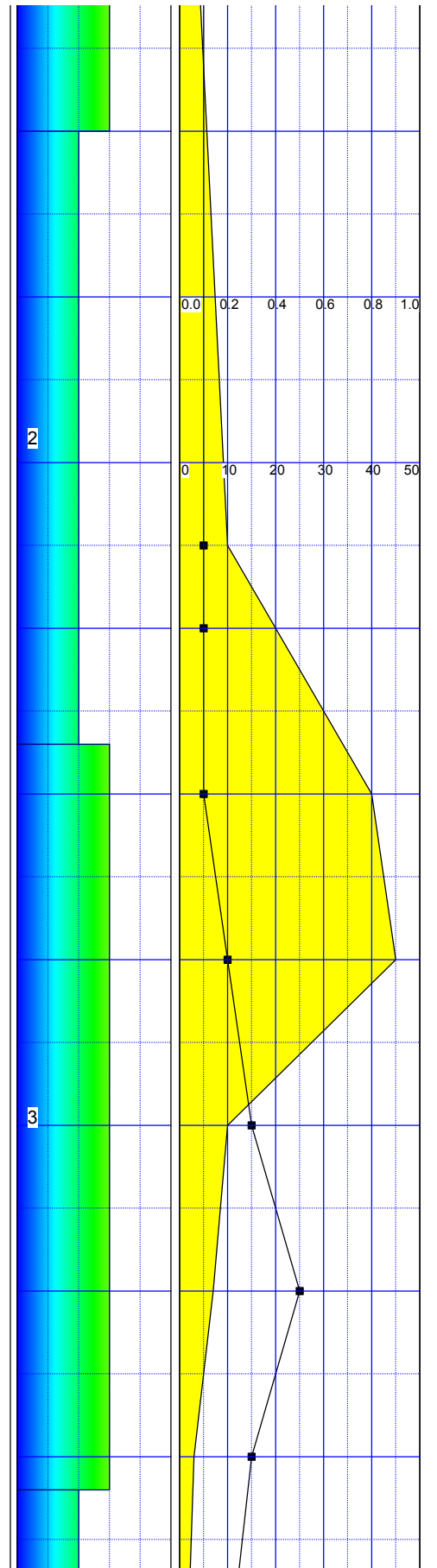
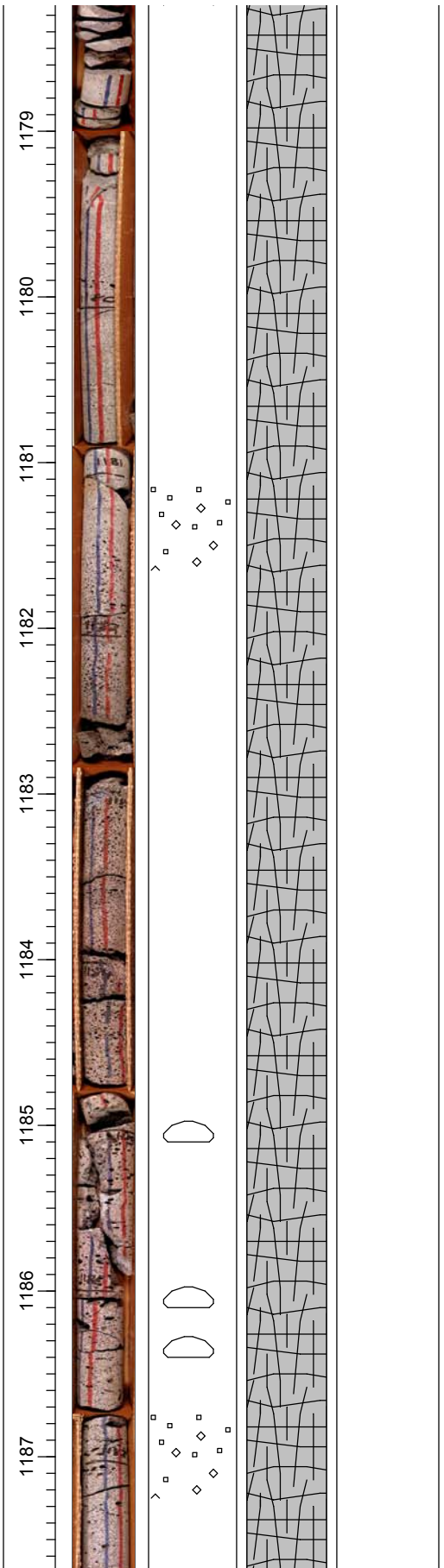


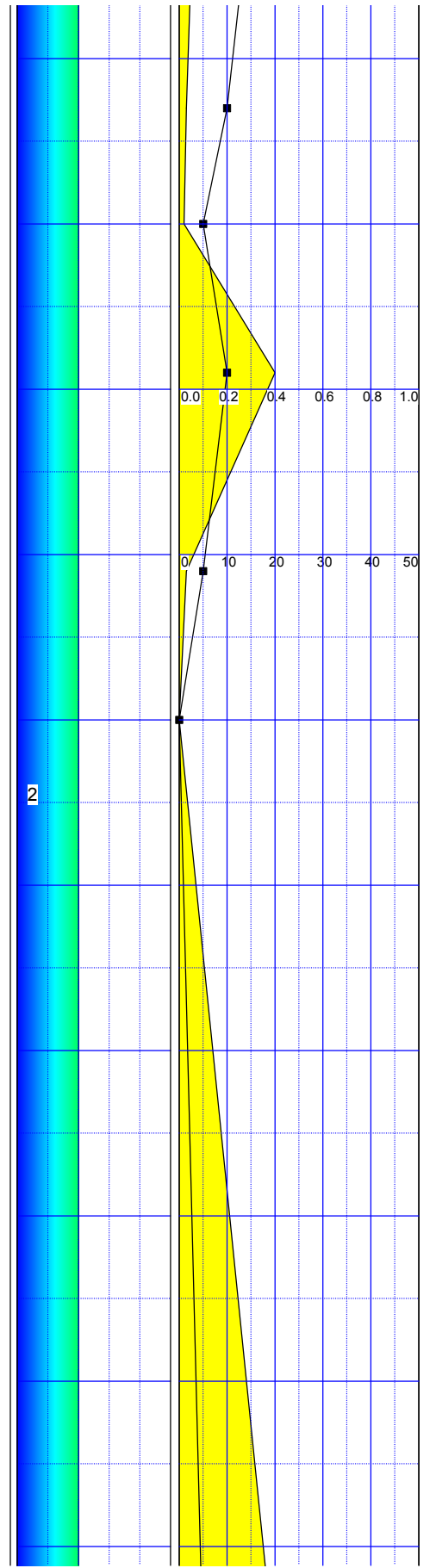
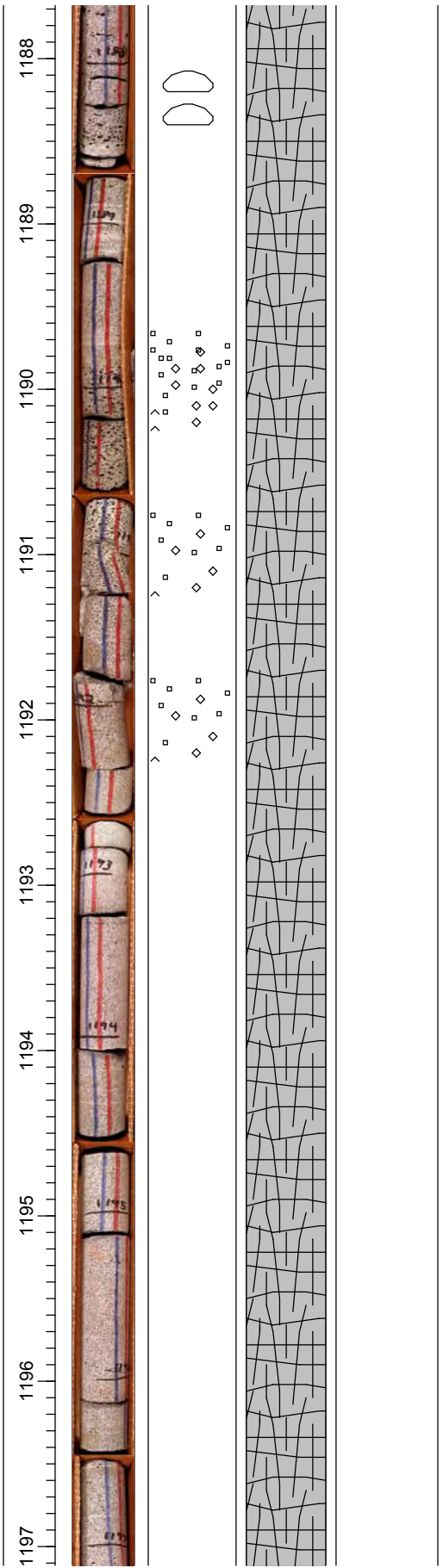


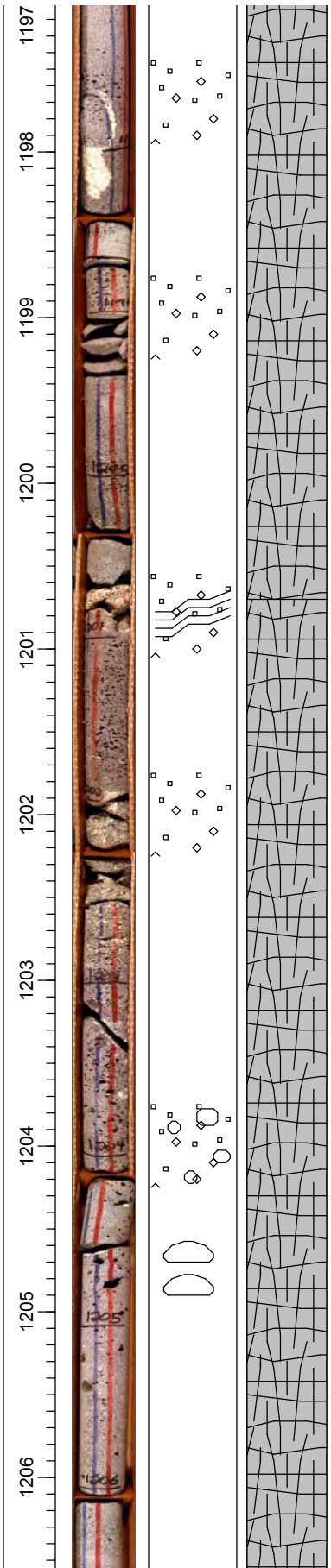


BASALT: COLOR: 5R 4/2 grayish red from top of interval grading to N4 medium dark gray by 1,171 ft, which persists to base of interval  
 TEXTURE: Aphanitic, vesicular from top of interval to 1,175 ft, vesicles increase in size and decrease in number with increasing depth. Diktytaxitic from 1,175 ft to 1,181.5 ft, diktytaxitic and vesicular to 1,188.7 ft, diktytaxitic from 1,188.7 to 1,197.5, large vesicle plane at 1,190 ft, increasingly vesicular from 1,197.5 ft to base of interval. Flow texture at 1,182.9 ft  
 COMPOSITION: 40% white euhedral plagioclase, 40% subhedral to euhedral olivine in spaces between plagioclase phenocrysts 15% brown or gray groundmass 5% black anhedral to euhedral pyroxene  
 XENOLITHS: None noted  
 ALTERATION: Sparry calcite in vesicles, fractures and cracks at 1,190.9 ft, base, pale orange clay at base and in fractures, reddish film on surfaces at top of interval.

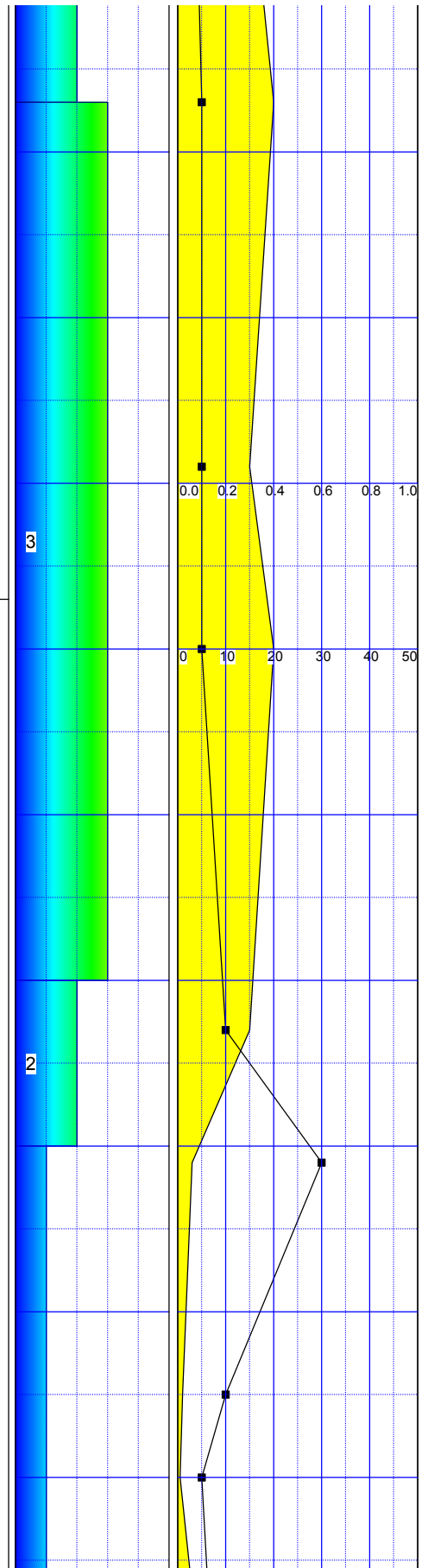


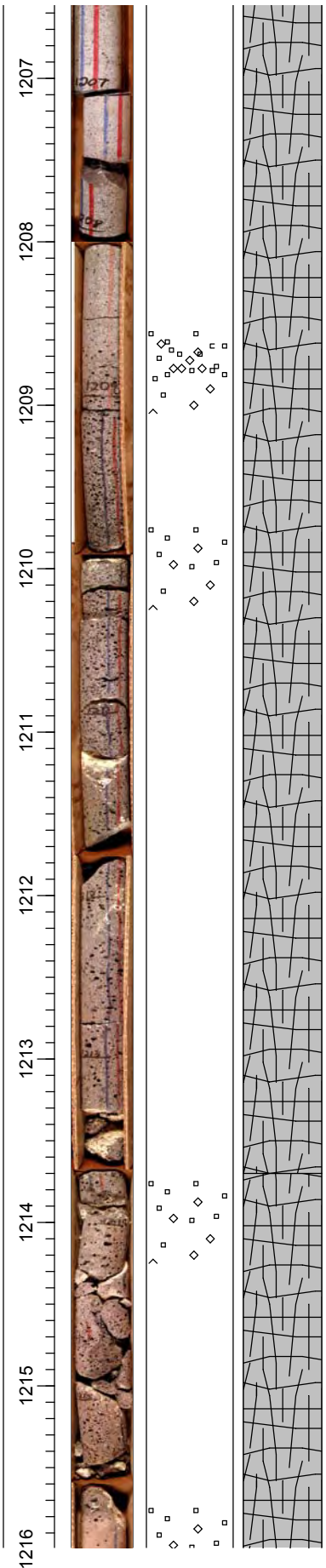




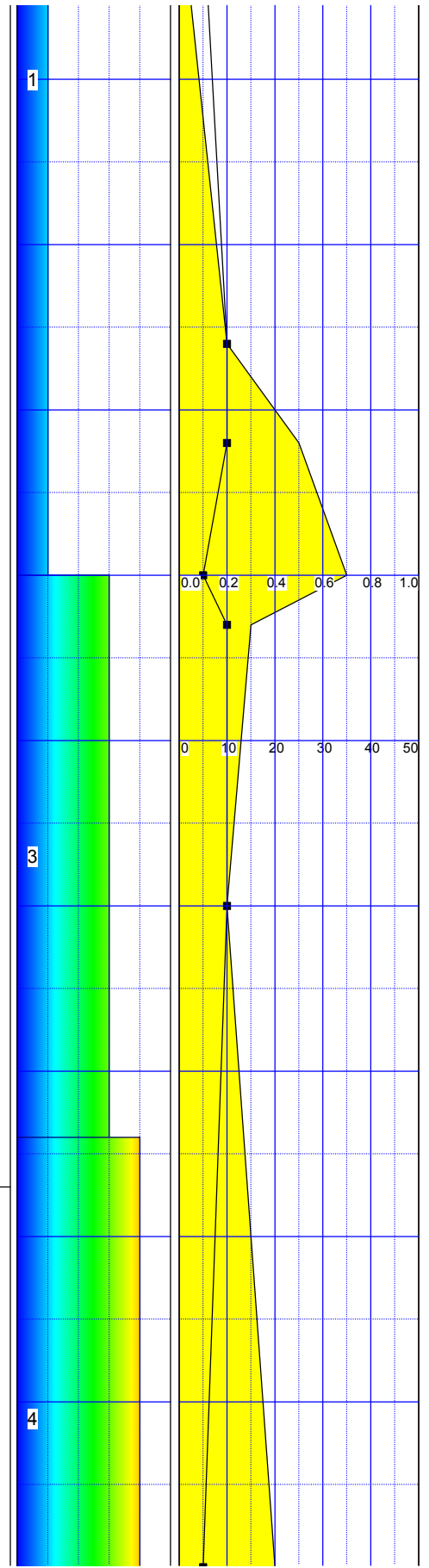


BASALT: COLOR: N4 medium dark gray  
 TEXTURE: Aphanitic, vesicular from top of interval to 1,204.1 ft, vesicles increase in size and decrease in number with increasing depth. Diktytaxitic with a few very large vesicles from 1,204.1 ft to 1,205.5 ft, vesicular to base. Spatter texture at base.  
 COMPOSITION: 60% white euhedral plagioclase, 30% subhedral to euhedral olivine in spaces between plagioclase phenocrysts 8% black anhedral to euhedral pyroxene, trace groundmass  
 XENOLITHS: None noted  
 ALTERATION: Sparry calcite in vesicles, fractures and cracks at top of interval and at 1,210 ft, pale orange clay at base and in fractures

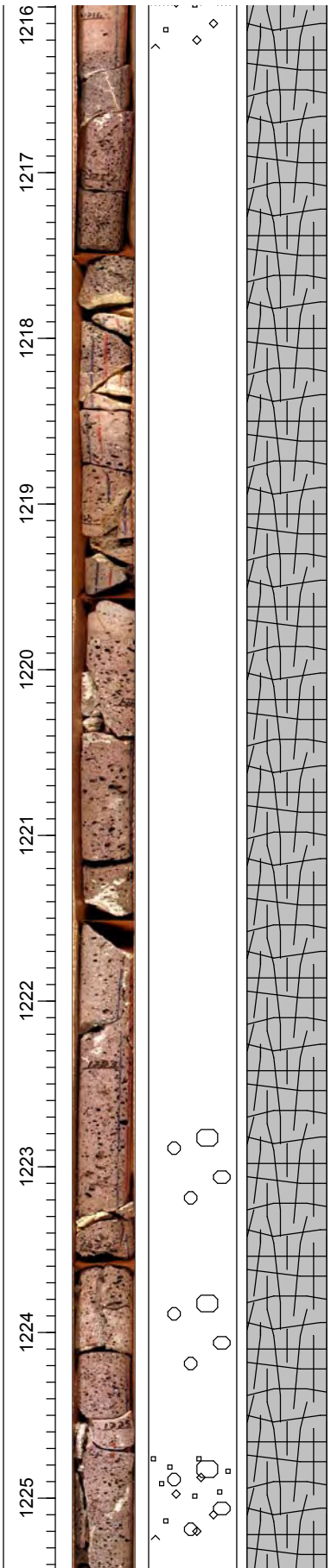




BASALT: COLOR: 5R 4/2 grayish red, gradually grading to N5 medium gray at 1,239 ft  
 TEXTURE: Aphanitic, vesicular from top of interval to 1,230.5 ft, vesicles increase in size and decrease in number with increasing depth. Diktytaxitic with a few very large vesicles from 1,230.5 ft to 1,232.8 ft, diktytaxitic with vesicle columns and planes to 1,236 ft, diktytaxitic to end of core (corehole did not penetrate through this basalt flow). Flow texture at 1,230 ft  
 COMPOSITION: 60% white euhedral plagioclase, 30% subhedral to euhedral olivine in spaces between plagioclase phenocrysts 8% black anhedral to euhedral pyroxene, trace groundmass  
 XENOLITHS: None noted  
 ALTERATION: Sparry calcite and pale orange calcareous clay in vesicles, fractures and cracks at top of interval and from 1,210 to 1,225 ft, pale orange clay in fractures







below 1,225 ft does not have calcite

