Science for a changing world		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	Davis 8072 Io, ID.
Official Name: NRF-15		Logged By: T.R. LeMaitre	
Selected Aliases:			
USGS Site ID:USGS 433942 112545001	Total Core Recovered (ft):Tota	County & State: Butte Co., ID	
Contractor Well ID:	Beginning Depth (ft): 0	Quadrangle Name: Circular Butte 3NW	
Drilling Agency: USGS	Ending Depth (ft): 759.0	Lat / Lng: 43°39'42.18", 112°54'50.60"	
Year Drilled: 2008	Continuous Recovery	Tns / Rng / Sec: T04N R30E S20	
Names of Drillers: M. Gilbert and J. Blom	Selected Intervals Recove	red UTM Coordinates: 345667.274, 4835865.862	
Well Status: Complete		Surface Elevation (ft): 4,841.87	
Total Depth of Hole (ft): 759.0	Notes:		
	Core Geologica	<u>l Profile</u>	
Lithologic Patterns Soil Pat	terns (See Unified Soil Classification System	m.) Intervals in Absentia	
Basalts	Gravels - clean		ored
Rhyolites	Gravels with fines	ays Natural void Missing inter	val
Sedimentary Rock	Sands - clean		

Soil Structure Symbols

Depth	Core	Igneous Sed St	Lithc	Miscellaneous Text	Lith	ologic Des	cription		2 3 4 5	0 10 	20 30	40 50
h (feet & tenths)	Photo	ous, Soil and I Structures	Lithology		Descri	iption		Fre (Se clas	racture equency ee fracture sification on vebsite.)	Vesicle 0 0.2	e Charact – Mean S 0.4 0.6	ize (in) 0.8 1.0 ∟ ∟ ∟ ⊥
	`	ga vesicles sicle Cylinde	ers	_ _{≋≋} Flow/	/Mold ter feature		Graded bedding Cross bedding	, and the second	Granular Blocky		Colum	nar
>		sicle planes			cle Sheet	m	Imbricated bedding	W	Platy		Prisma	atic
°	o Lai	ge vesicles		Pillov	WS	7777	Mud cracks		Structureles	ss - Massi	ve	
	Ves	sicle zone		N Pipe	vesicles	- TAIN	Ripple marks		Structureles	ss - Single	Grained	

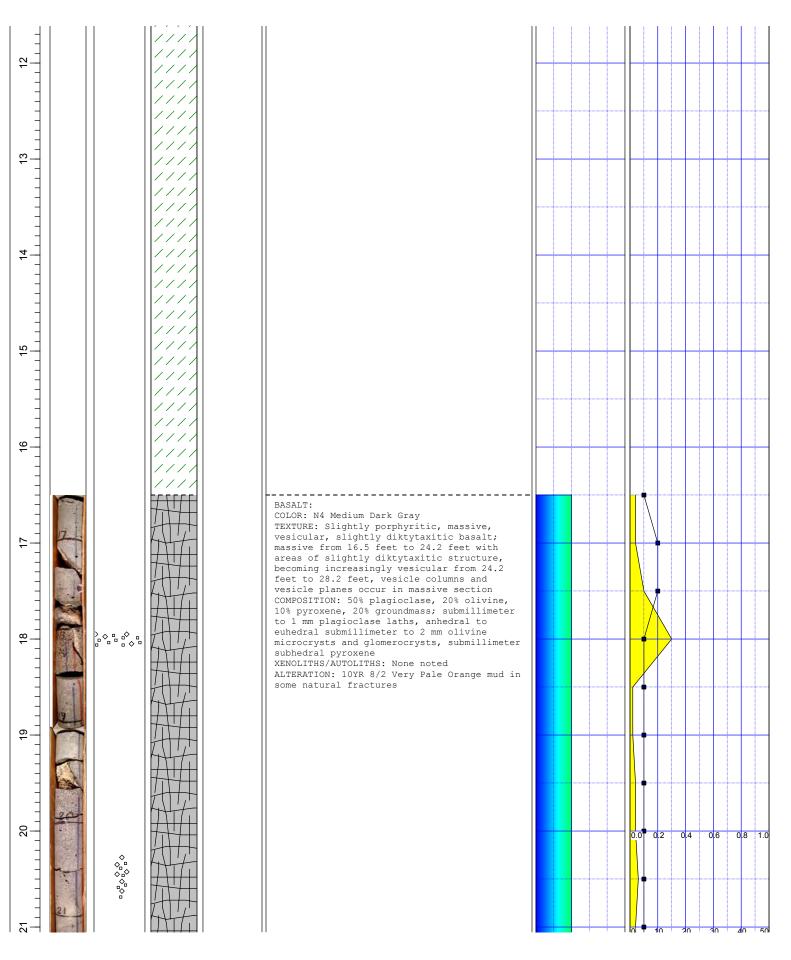
Igneous and Sedimentary Structure Symbols

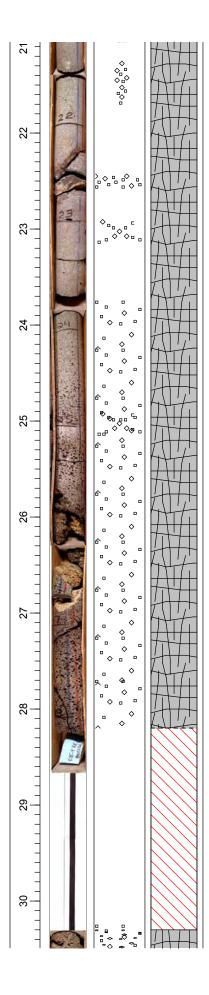
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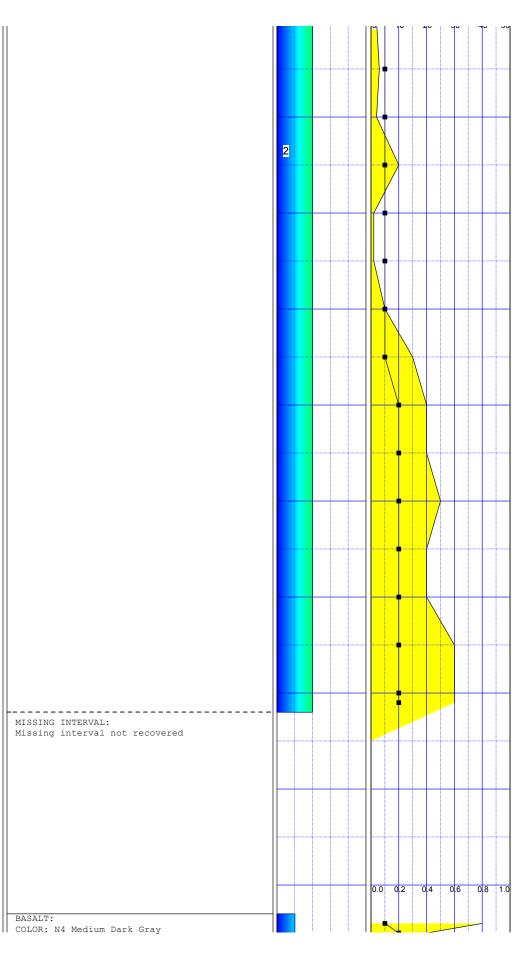




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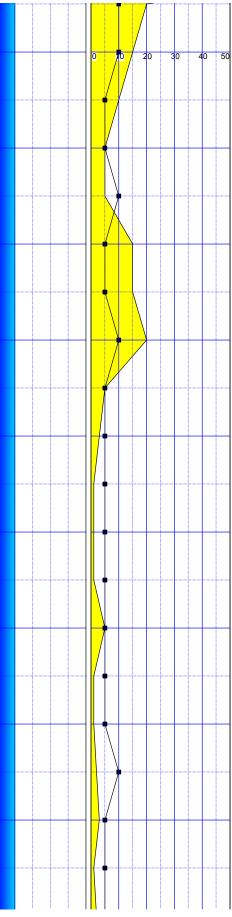






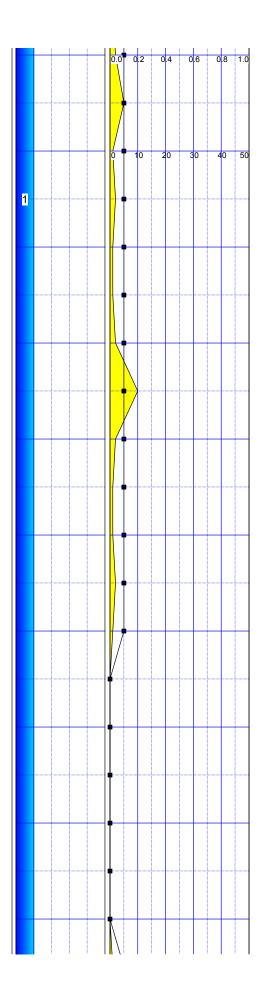
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TEXTURE: Aphanitic, vesicular, diktytaxitic basalt; vesicular from 30.3 feet to 35.1 feet and increasingly vesicular from 50.3 feet to 54.7 feet, diktytaxitic from 35.1 feet to 50.3 feet, upper vesicular zone has some large vesicles and megavesicles, vesicle planes and vesicle sheets are common throughout diktytaxitic section	
COMPOSITION: 50% plagioclase, 30% olivine, 5% pyroxene, 15% groundmass; submillimeter plagioclase laths, subhedral submillimeter olivine microcrysts and some glomerocrysts, submillimeter pyroxenes XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight alteration of olivine to	
iddingsite, 10YR 8/2 Very Pale Orange mud in some fractures	



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3 0.4 0.0 0.2 MISSING INTERVAL: Missing interval not recovered 0 10 20 BASALT: COLOR: N3 Dark Gray grading to N4 Medium Dark Gray TEXTURE: Mostly aphanitic, vesicular, diktytaxitic basalt; decreasingly vesicular from 61.5 feet to 65.9 feet and increasingly vesicular from 70.1 feet to 71.3 feet, diktytaxitic from 65.9 feet to 70.1 feet, vesicle planes common throughout, rare large vesicles throughout COMPOSITION: 45% plagioclase, 35% olivine, 5% pyroxene, 15% groundmass; submillimeter to 1 mm plagioclase laths, submillimeter to 1 mm olivine microcrysts and glomerocrysts XENOLITHS/AUTOLITHS: None noted 3 ALTERATION: Slight alteration of olivine to iddingsite, 10YR 8/2 Very Pale Orange calcic mud in some vesicles and in some fractures

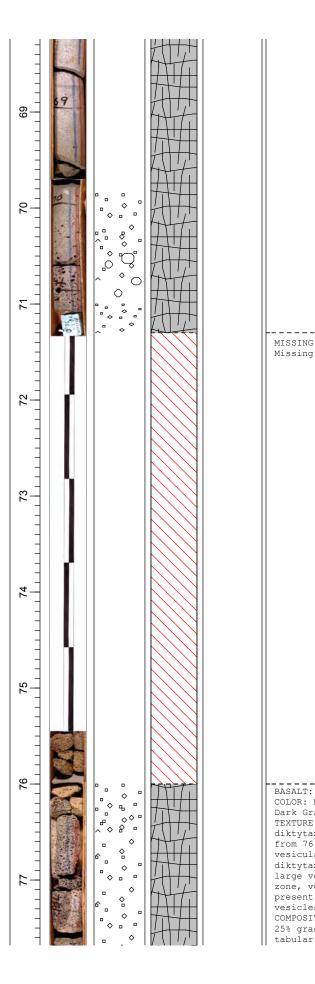
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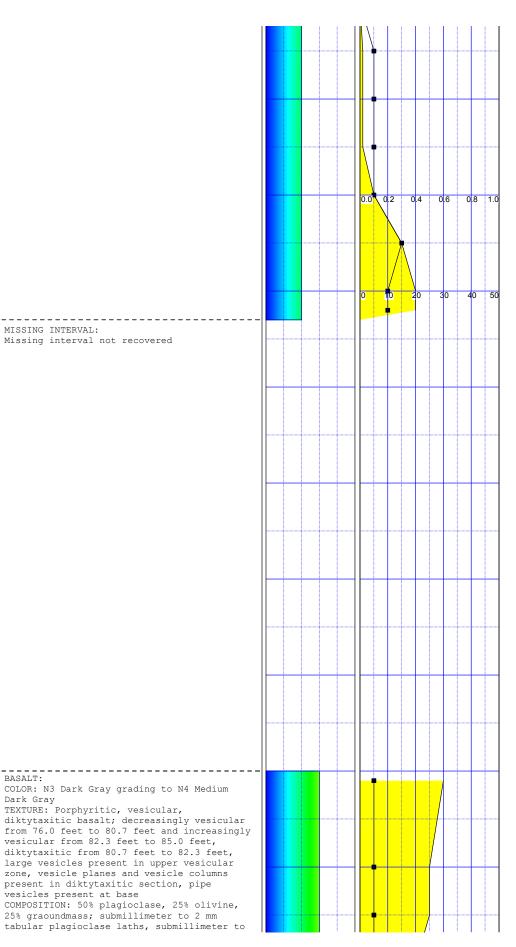
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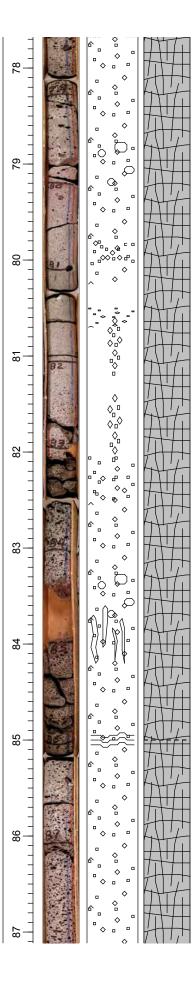
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1 mm olivine microcrysts and glomerocrysts, submillimeter black mineral present though rare

XENOLITHS/AUTOLITHS: Rare

ALTERATION: Slight to moderate alteration of olivine to iddingsite, mostly 10YR 8/2 Very Pale Orange to somewhat 10R 6/6 Moderate Reddish Orange colored calcitic mud in upper vesicles, flow and mold structure at base

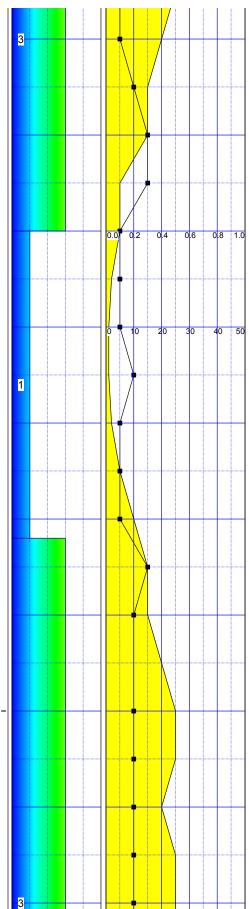
COLOR: N4 Medium Dark Gray TEXTURE: Slightly porphyritic, vesicular, diktytaxitic basalt; vesicular from 85.0 feet to 90.7 feet and from 96.9 feet to 97.8 feet, diktytaxitic from 90.7 feet to 96.9 feet with small slightly vesicular zone from 92.3 feet to 92.7 feet, rare large vesicles and very rare megavesicles, vesicle planes

BASALT:

and very rare megavesicles, vesicle planes occur throughout, pipe vesicles present at base COMPOSITION: 50% plagioclase, 20% olivine, 30% groundmass: tabular mostly submillimator

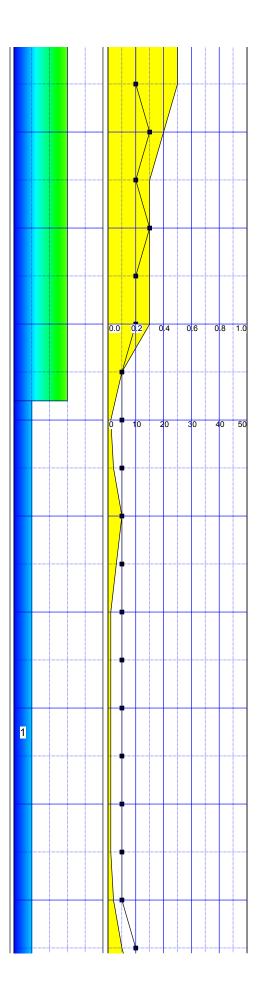
30% groundmass; tabular mostly submillimeter up to 2 mm plagioclase laths, subhedral olivine microcrysts, some black mineral present XENOLITHS/AUTOLITHS: None noted

ALTERATION: Moderate alteration of olivine to iddingsite



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COLOR: N4 Medium Dark Gray TEXTURE: Mostly aphanitic, vesicular,		
diktytaxitic basalt; decreasignly vesicular from 97.8 feet to 102.6 feet and		
increasingly vesicular from 104.8 feet to 106.8 feet, diktytaxitic from 102.6 feet to 104.8 feet, vesicles planes present		
throughout, vesicle sheets occuring in diktytaxitic region, large vesicles present		
in upper vesicular region COMPOSITION: 40% plagioclase, 40% olivine,	3	
20% groundmass; tabular submillimeter to 1 mm plagioclase laths, subhedral to euhedral olivine microcrysts and glomerocrysts, rare		
pyroxene XENOLITHS/AUTOLITHS: None noted		
ALTERATION: Slight alteration of olivine to iddingsite, flow and mold structure at base		
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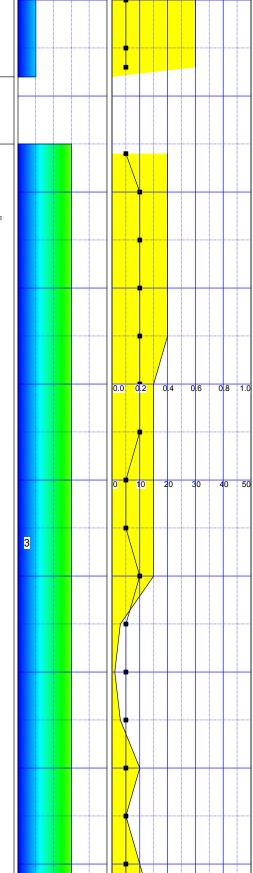
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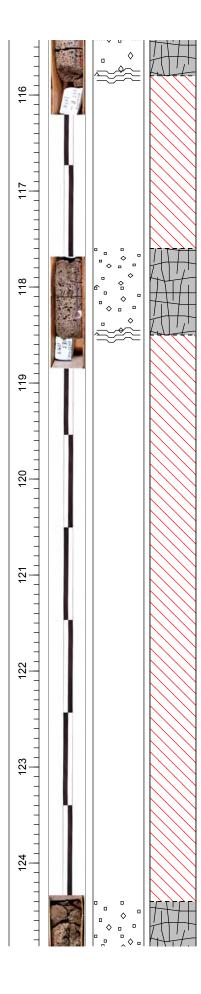
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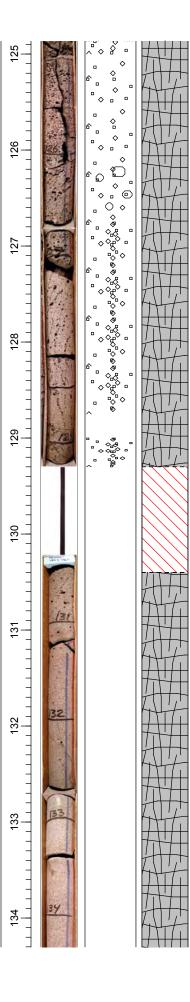
COLOR: N3 Dark Gray TEXTURE: Aphanitic, vesicular, diktytaxitic basalt; vesicular zones from 107.5 feet to 112.6 feet and from 115.1 feet to 115.8 feet, diktytaxitic with few vesicles from 112.6 feet to 115.1 feet, few vesicle planes COMPOSITION: 45% plagioclase, 30% olivine, 25% groundmass; tabular submillimeter plagioclase laths, subhedral to euhedral submillimeter olivine microcrysts and glomerocrysts, rare pyroxene XENOLITHS/AUTOLITHS: None noted ALTERATION: Moderate alteration of olivine to iddingsite, flow and mold structure at base



Page 14 of 82



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COLOR: N4 Medium Dark Gray TEXTURE: Mostly aphanitic, vesicular basalt; vesicular throughout COMPOSITION: 50% plagioclase, 20% olivine,							 			
30% groundmass; tabular submillimeter to 1 mm plagioclase laths, olivine microcrysts and glomerocrysts	2									
XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight to moderate alteration of olivine to iddingsite										
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feet to 129.3 feet, numerous vesicle columns from 127.0 feet to 129.3 feet, rare large vesicles present in vesicular zone COMPOSITION: 55% plagioclase, 30% olivine, 20% groundmass, tabular submillimeter lathework plagioclase, subhedral olivine, rare pyroxene XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight to moderate alteration of olivine to iddingsite	
MISSING INTERVAL: Missing interval not recovered BASALT: COLOR: N4 Medium Dark Gray TEXTURE: Aphanitic, vesicular, diktytaxitic basalt; slightly vesicular from 130.4 feet to 131.2 feet and increasingly vesicular from 136.0 feet 136.9 feet, diktytaxitic from 131.2 feet to 136.0 feet COMPOSITION: 55% plagioclase, 30% olivine, 20% groundmass, tabular submillimeter lathework plagioclase phenocrysts, submillimeter subhedral olivine, rare submillimeter pyroxene XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight to moderate alteration of olivine to iddingsite, 5YR 3/4 Moderate Brown flow and mold structure at base	

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BASALT: COLOR: N4 Medium Dark Gray	
TEXTURE: Aphanitic, vesicular, diktytaxitic basalt; vesicular from 136.9 feet to 145.6 feet and from 150.4 feet to 151.3 feet, diktytaxitic from 145.6 feet to 150.4 feet,	
numerous vesicle planes present throughout lower part of upper vesicular zone and in diktytaxitic region COMPOSITION: 40% plagioclase, 20% olivine,	
40% groundmass; tabular submillimeter lathework plagioclase, subhedral olivine XENOLITHS/AUTOLITHS: None noted ALTERATION: Moderate alteration of olivine	
to iddingsite, 5YR 6/4 Light Brown and 10YR 8/2 Very Pale Orange calcitic mud in fractures in upper part of section and in some vesicles in lower part of section	

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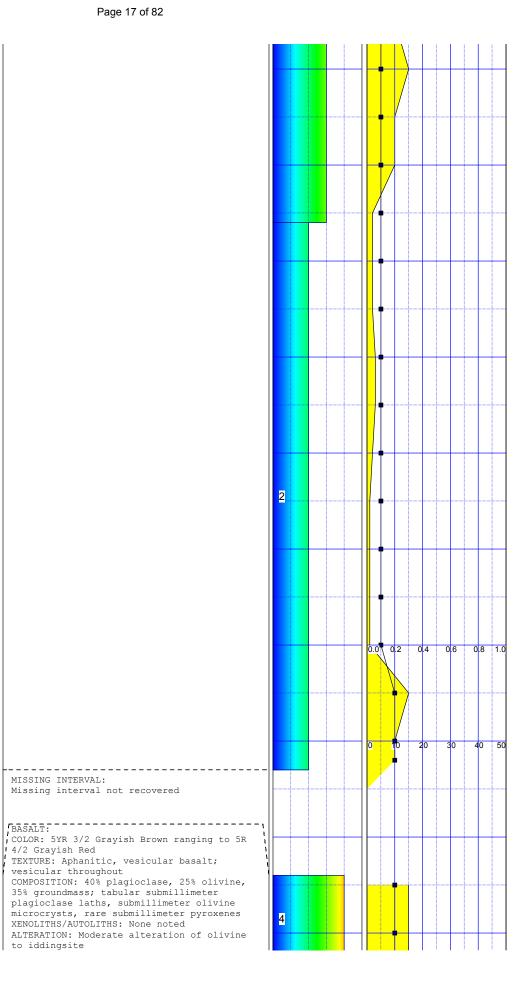
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XENOLITHS/AUTOLITHS: None noted



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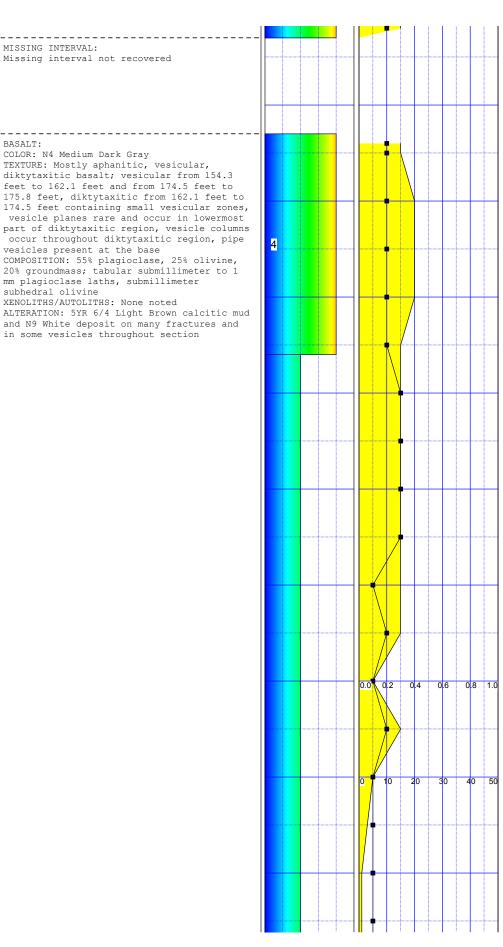
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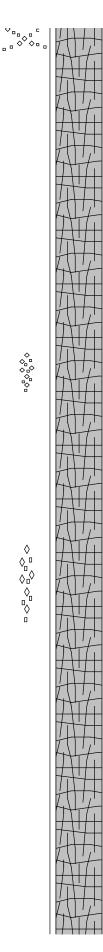
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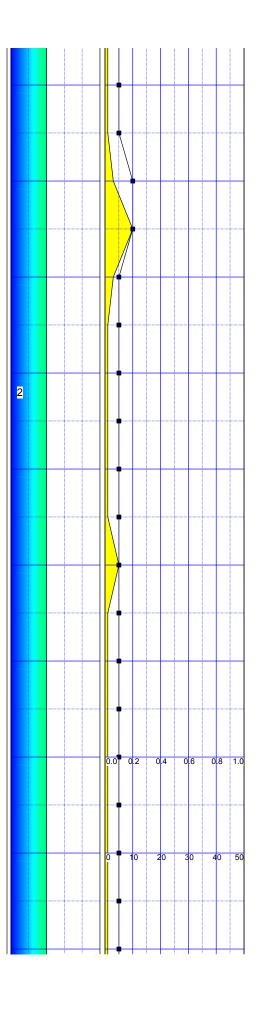


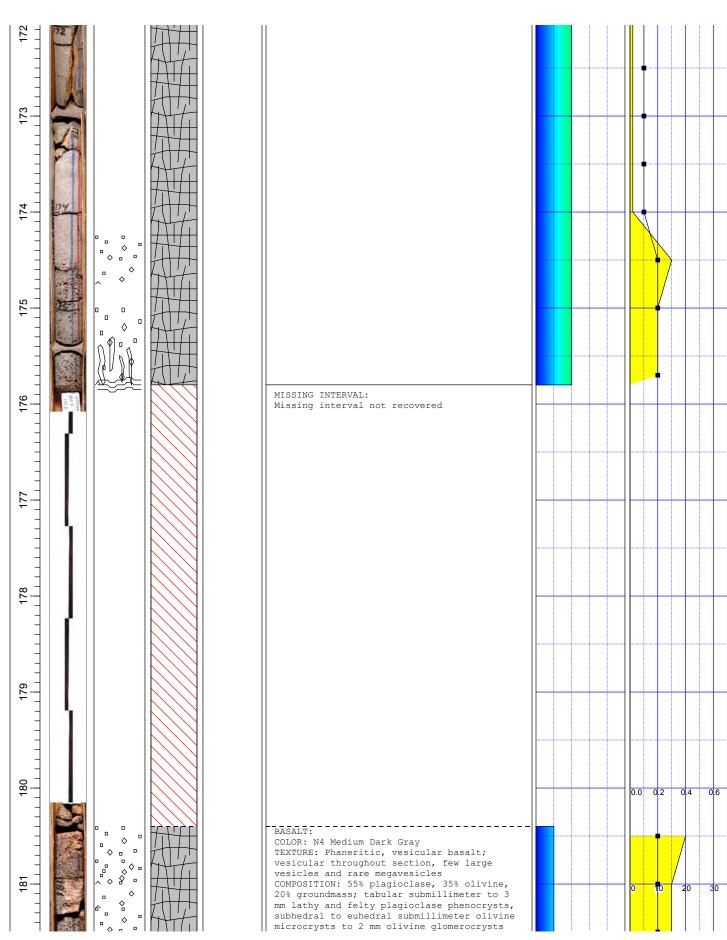
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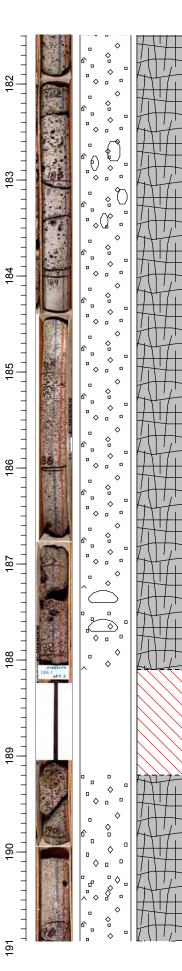






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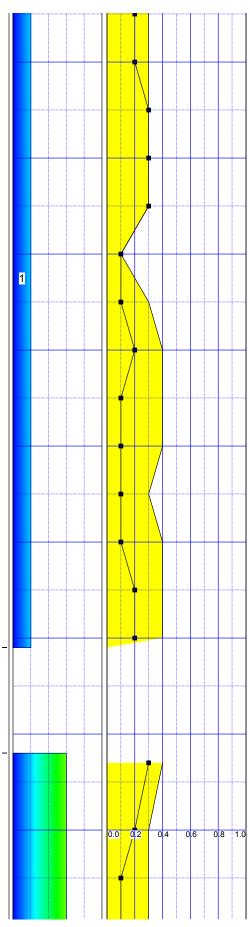


XENOLITHS/AUTOLITHS: None noted ALTERATION: 10YR 8/2 Very Pale Orange calcitic mud and 5YR 6/4 Light Brown mud in fractures and some vesicles in upper part of section, flow and mold or spatter at base of section

MISSING INTERVAL: Missing interval not recovered

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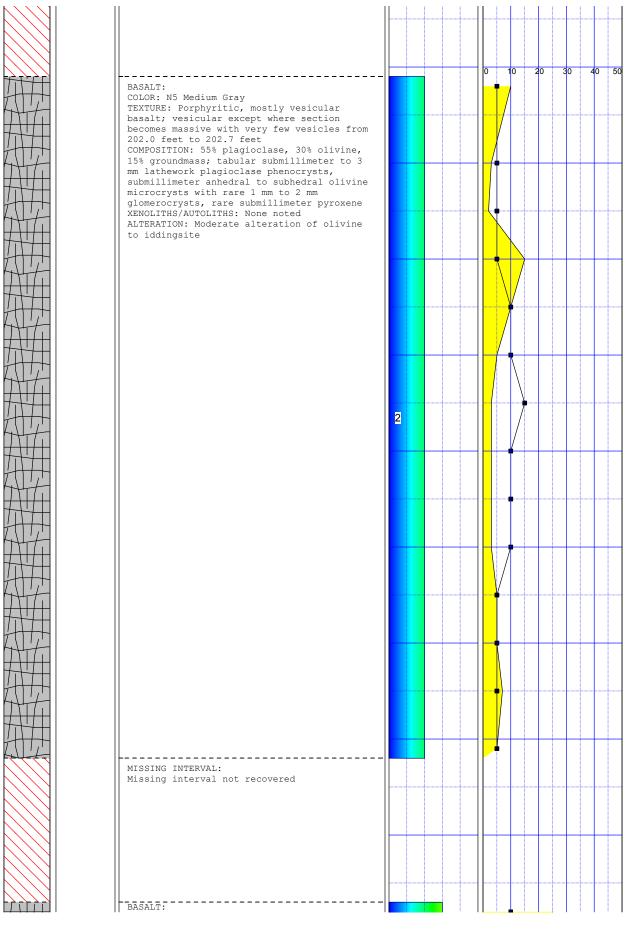
BASALT: COLOR: N4 Medium Dark Gray TEXTURE: Phaneritic, vesicular basalt; vesicular throughout section COMPOSITION: 45% plagioclase, 25% olivine, 30% groundmass; tabular submillimeter to 4 mm lathy and felty plagioclase phenocrysts, subhedral to euhedral submillimeter olivine microcrysts to 2 mm olivine glomerocrysts XENOLITHS/AUTOLITHS: None noted ALTERATION: Light to moderate areas of alteration of olivine to iddingsite, spatter or flow and molds present at base



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MISSING INTERVAL: Missing interval not recovered		
BASALT: COLOR: N3 Dark Gray TEXTURE: Porphyritic, vesicular basalt; vesicular throughout section, ophitic if groundmass is pyroxene COMPOSITION: 25% plagioclase, 5% olivine, 70% groundmass; tabular submillimeter to 2 mm plagioclase phenocrysts, rare submillimeter olivine, submillimeter	4	
pyroxene noted in groundmass XENOLITHS/AUTOLITHS: None noted ALTERATION: Very small amounts of 10YR 8/2 Very Pale Orange mud on fracture surfaces, slight alteration of olivine to iddingsite		
MISSING INTERVAL: Missing interval not recovered		
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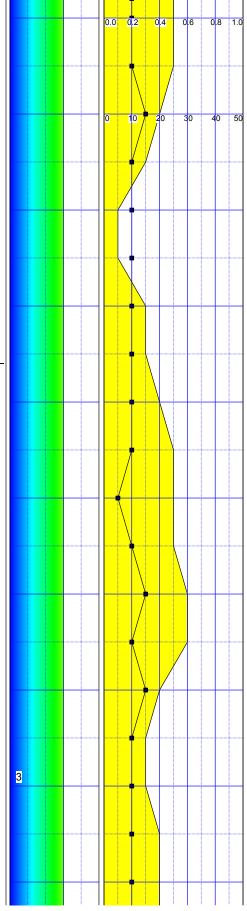
COLOR: 5R 4/2 grading to N4 Medium Dark Gray TEXTURE: Porphyritic, vesicular basalt; vesicular throughout, in areas of low amount of vesicles diktytaxitic texture appears, rare pipe vesicles at base, rare large vesicles

COMPOSITION: 40% plagioclase, 20% olivine, 40% groundmass; tabular lathy plagioclase phenocrysts up to 1 mm in size, rare pyroxene

XENOLITHS/AUTOLITHS: None noted ALTERATION: Moderate alteration of olivine to iddingsite, flow and mold structure at base

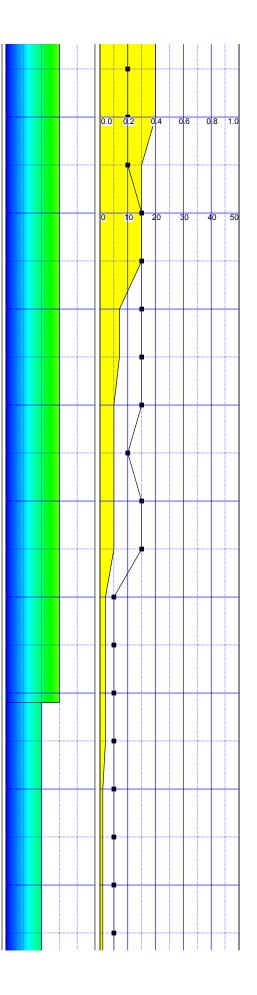


TEXTURE: Slightly phaneritic, vesicular, diktytaxitic basalt; vesicular from 213.5 feet to 224. 9 feet and from 233.9 feet to 236.2 feet, diktytaxitic from 224.9 feet to 233.9 feet, very rare large vesicles COMPOSITION: 50% plagioclase, 30% olivine, 15% pyroxene, 5% groundmass; tabular lathy plagioclase phenocrysts up to 2 mm in length, subhedral olivine microcrysts, anhedral submillimeter pyroxene XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight alteration of olivine to iddingsite, some small amounts of 10YR 8/2 Very Pale Orange mud in some vesicles near fractures and on some fracture surfaces



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BASALT: COLOR: 5YR 4/1 Brownish Gray grading to N4	
Medium Dark Gray TEXTURE: Phaneritic, porphyritic, vesicular,	
diktytaxitic, massive basalt; becoming decreasingly vesicular from 236.2 feet to	
240.9 feet with very rare megavesicles and slightly vesicular form 265.1 feet to 265.6	
feet, diktytaxitic from 240.9 feet to 254.0 feet and from 256.3 feet to 265.1 feet,	
massive from 254.0 feet to 256.3 feet, few vesicle planes and few vesicle sheets with between page page to page the page to be the second	
both occuring above massive section throughout diktytaxitic area, very rare pipe vesicles at base	
COMPOSITION: 55% plaginglage 25% eliving	

COMPOSITION: 55% plagioclase, 25% olivine, 5% pyroxene, 15% groundmass; tabular lathy

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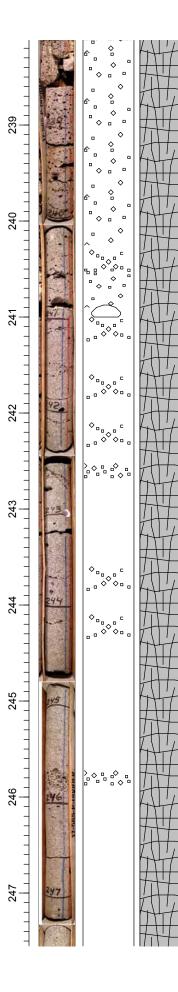
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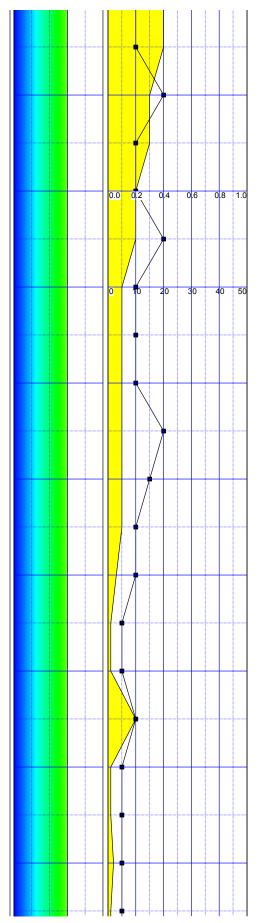
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plagioclase phenocrysts up to 2 mm in length, submillimeter subhedral olivine microcrysts to 2 mm subhedral to euhedral olivine glomerocrysts, submillimeter pyroxene XENOLITHS/AUTOLITHS: None noted

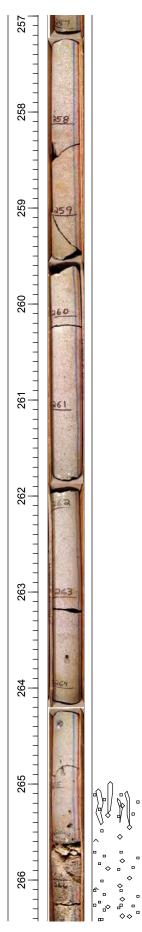
XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight alteration of olivine to iddingsite, 10YR 8/2 Very Pale Orange calcitic mud in most fractures and in vesicles around fractures with thickest area of mud at top of section



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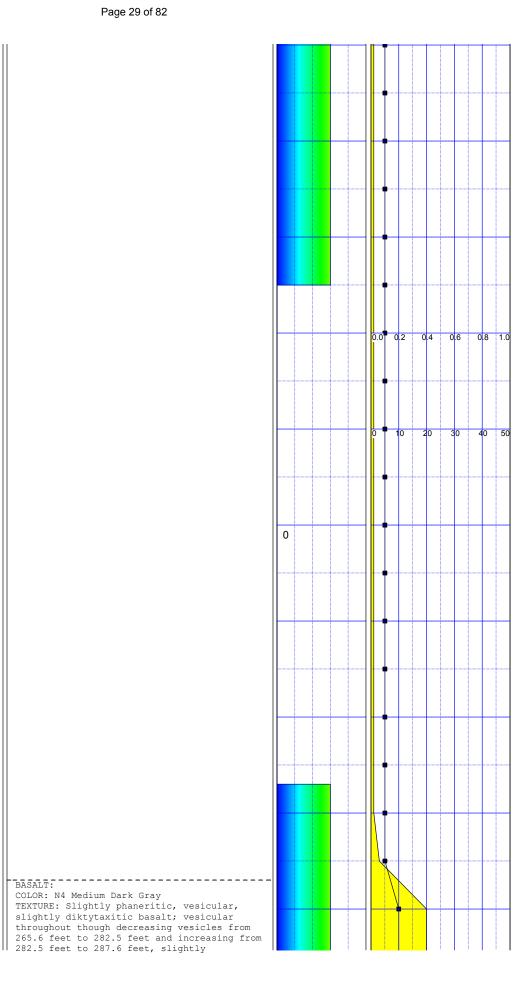
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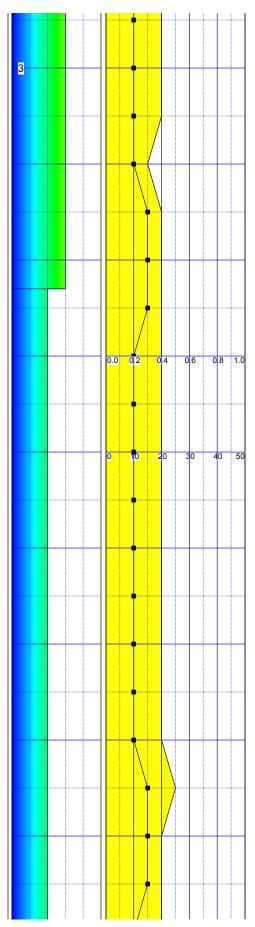
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diktytaxitic from 278.4 feet to 283.7 feet, vesicle planes rare and only in diktytaxitic section, very rare large vesicles and megavesicles present above diktytaxitic section

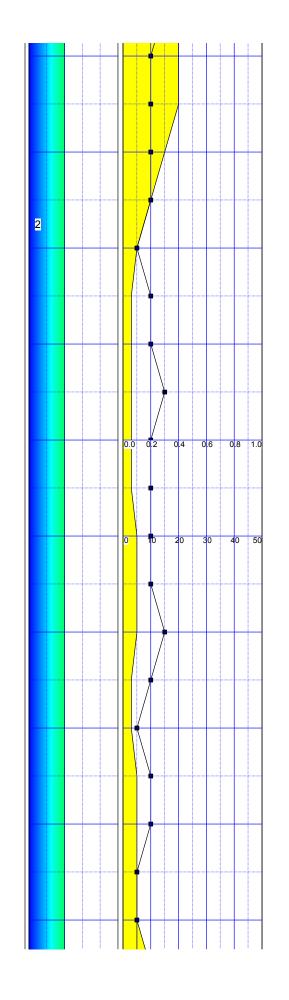
COMPOSITION: 40% plagioclase, 25% olivine, 35% groundmass; tabular submillimeter to rare 1 mm plagioclase phenocrysts, subhedral olivine microcrysts to rare 1 mm glomerocrysts, rare discernable pyroxene XENOLITHS/AUTOLITHS: Rare, located in bottom 3 feet of section ALTERATION: Slight alteration of olivine to iddingsite, 10 YR 8/2 Very Pale Orange calcitic mud located in most fractures and some vesicles throughout section as well as

at top and at base



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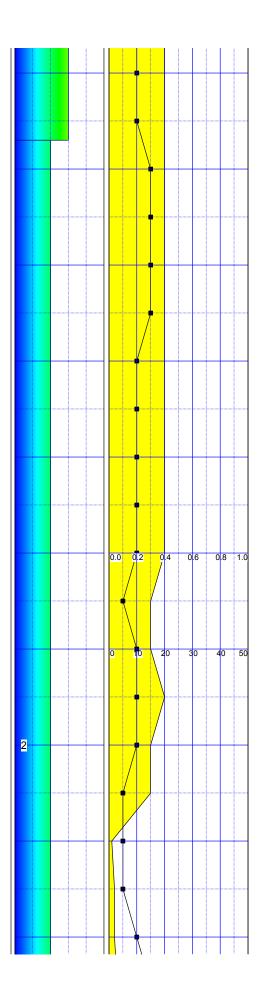
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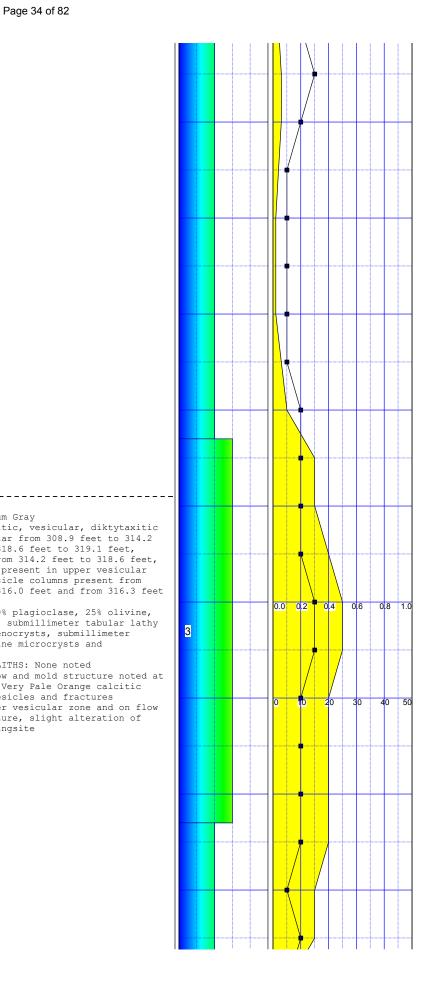
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BASALT: COLOR: 5R 4/2 Grayish Red grading to N4	-	
Medium Dark Gray TEXTURE: Slightly phaneritic, vesicular, diktytaxitic basalt; decreasingly vesicular from 287.6 feet to 302.7 feet and vesicular from 308.0 feet to 308.9 feet, diktytaxitic		
from 302.7 feet to 308.9 feet, vesicle columns present from 307.2 feet to 308.3 feet COMPOSITION: 50% plagioclase, 20% olivine,		
5% pyroxene, 25% groundmass; tabular submillimeter lathy plagioclase phenocrysts, subhedral olivine microcrysts and rare glomerocrysts, rare subhedral submillimeter		
pyroxene XENOLITHS/AUTOLITHS: None noted ALTERATION: 10 YR 8/2 Very Pale Orange calcitic mud found on most fracture surfaces		
and in some vesicles around fractures, slight alteration of olivine to iddingsite		0.0 0.2 0.4 0.6 0.8 1.0
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309 1 1 1 1 1 1 1 1 1	BASALT: COLOR: N5 Medium Gray TEXTURE: Aphanitic, vesicular, diktytax basalt; vesicular from 308.9 feet to 31
310 310	feet and from 318.6 feet to 319.1 feet, diktytaxitic from 314.2 feet to 318.6 ; vesicle planes present in upper vesicui zone, large vesicle columns present from 314.7 feet to 316.0 feet and from 316.3 to 316.8 feet COMPOSITION: 50% plagioclase, 25% oliv: 25% groundmass; submillimeter tabular i plagioclase phenocrysts, submillimeter subhedral olivine microcrysts and glomerocrysts XENOLITHS/AUTOLITHS: None noted
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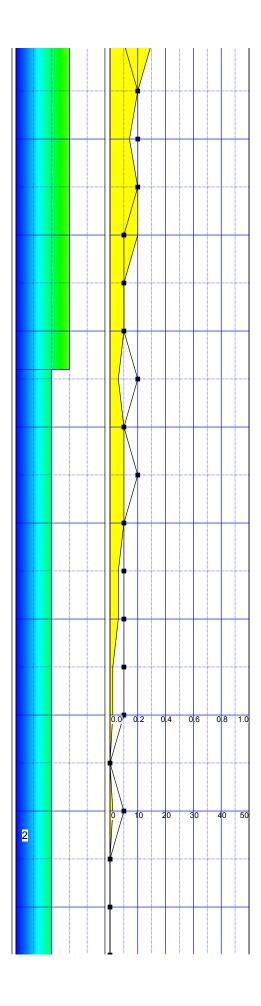
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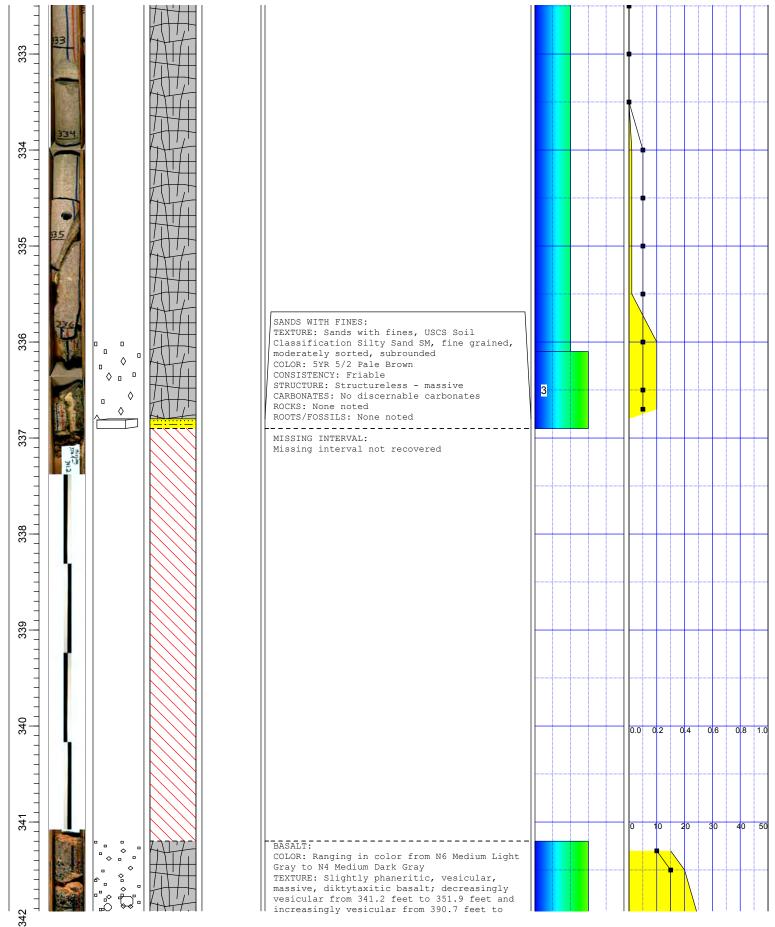
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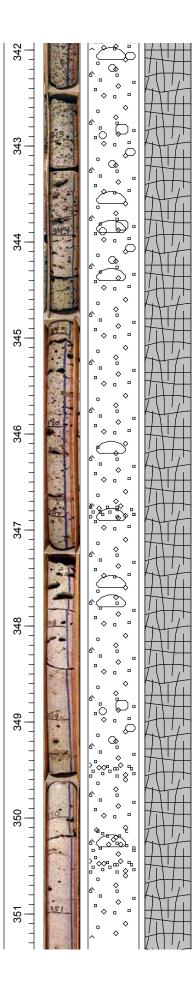
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BASALT: COLOR: N5 Medium Gray TEXTURE: Mostly aphanitic, vesicular, diktytaxtic basalt; vesicular from 319.1 feet to 328.7 feet and from 336.0 feet to 336.8 feet, diktytaxtic from 328.7 feet to 336.6 feet, diktytaxtic from 328.7 feet to 336.6 feet, diktytaxtic from 328.7 feet to 336.8 feet, diktytaxtic from 328.7 feet, diktytaxtic discornale submillimeter pytemes XBNOLTHB/AUTOLTHB: None noted ALTERATION: Slight alteration of olivine to 1 ddingsite, 10YR 6/2 Very Pale Orange calcitic mud and most natural fracture surfaces and in some vesicles around natural fractures	
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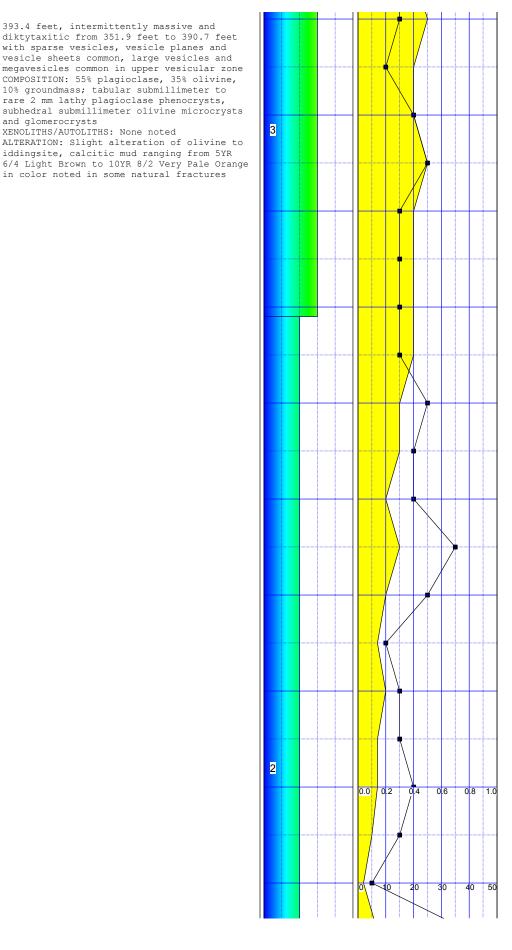




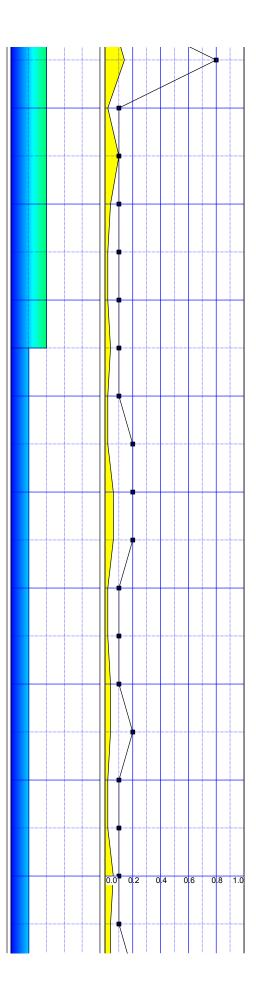


iddingsite, calcitic mud ranging from 5YR

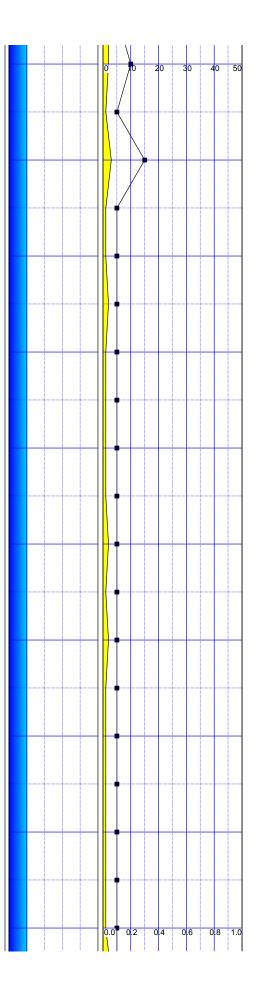
in color noted in some natural fractures



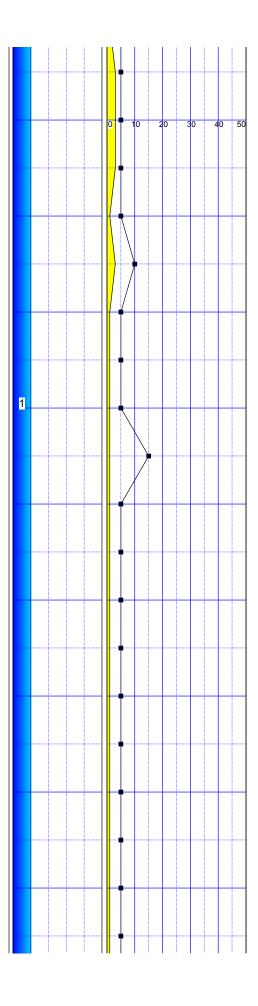
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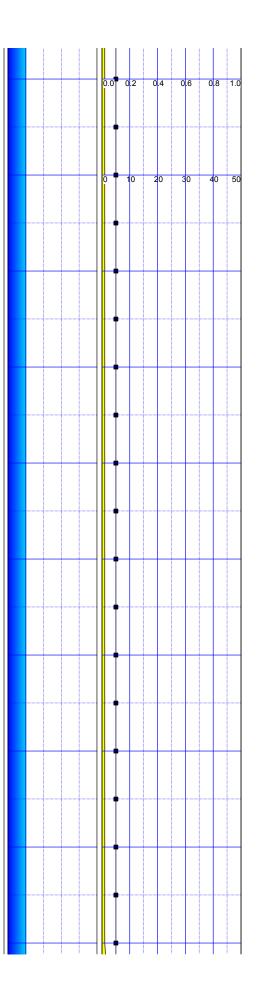


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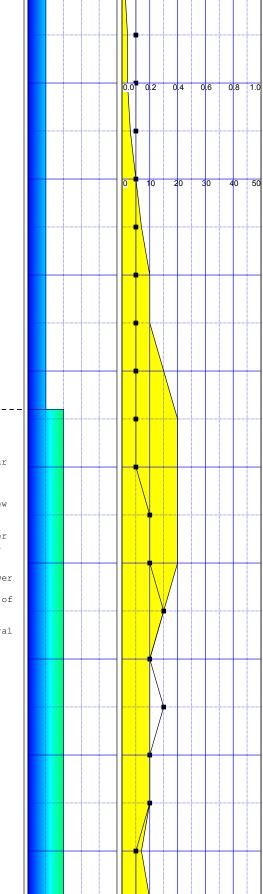
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BASALT: COLOR: N4 Medium Dark Gray ranging to N5 Medium Gray TEXTURE: Slightly phaneritic, vesicular, diktytaxitic basalt; decreasingly vesicular from 393.4 feet to 403.1 feet and increasingly vesicular from 413.5 feet to 416.5 feet, diktytaxitic with sparse vesicles from 403.1 feet to 413.5 feet, few vesicle panes and vesicle sheets

Vesicle panes and vesicle sneets COMPOSITION: 55% plagioclase, 30% olivine, 15% groundmass; tabular lathy submillimeter to 2 mm plagioclase phenocrysts, subhedral submillimeter olivine microcrysts and phenocrysts

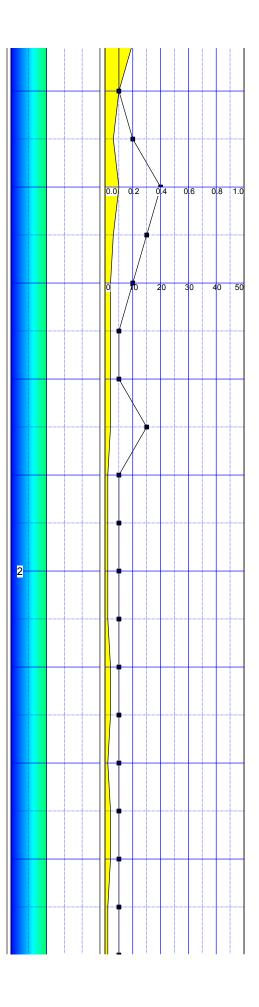
XENOLITHS/AUTOLITHS: Rare autoliths in lower part of section

ALTERATION: Slight to moderate alteration of olivine to iddingsite, 10YR 8/2 Very Pale Orange calcitic mud on natural fracture surfaces and in some vesicles around natural fractures, sparry calcite in few large vesicles



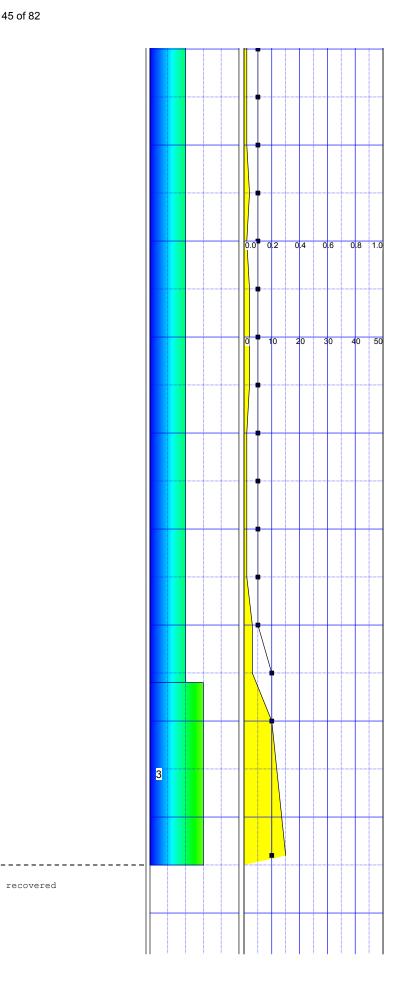
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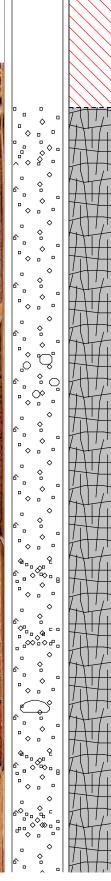
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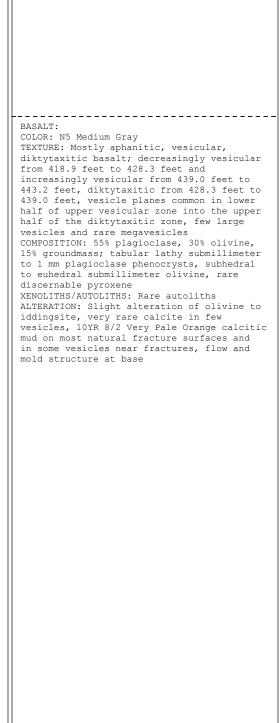


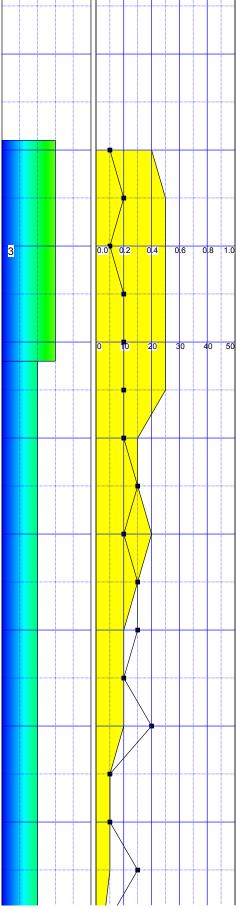
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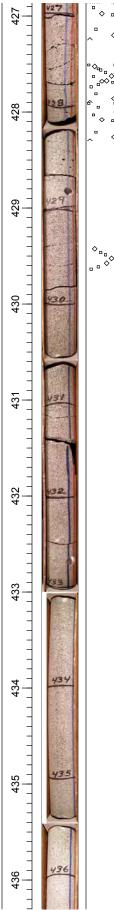
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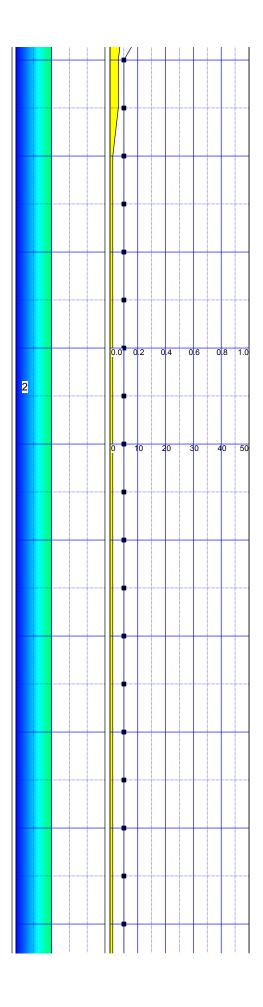




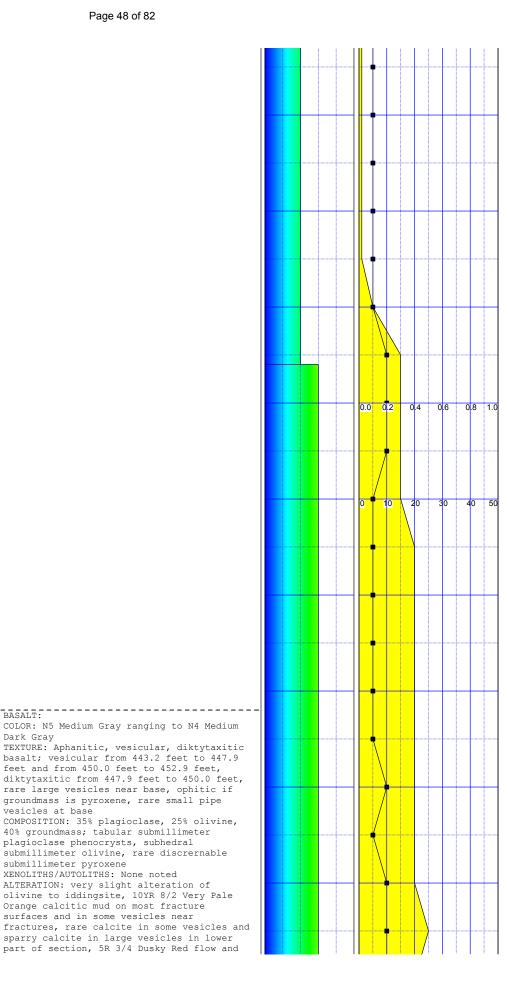








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443			443.2 feet: 10YR 8/2 Very Pale Orange very calcitic highly compacted mud with mud cracks.	BASALT: COLOR: N Dark Gra TEXTURE: basalt;
444			Not a unit but filling a void or very large	feet and diktytax rare lar groundma
445			vesicle in the basalt section.	vesicles COMPOSIT 40% grou plagiocl submilli submilli XENOLITH ALTERATI olivine Orange c surfaces fracture sparry c part of



COLOR: N5 Medium Gray ranging to N4 Medium

rare large vesicles near base, ophitic if groundmass is pyroxene, rare small pipe

COMPOSITION: 35% plagioclase, 25% olivine, 40% groundmass; tabular submillimeter plagioclase phenocrysts, subhedral submillimeter olivine, rare discrernable

sparry calcite in large vesicles in lower part of section, 5R 3/4 Dusky Red flow and

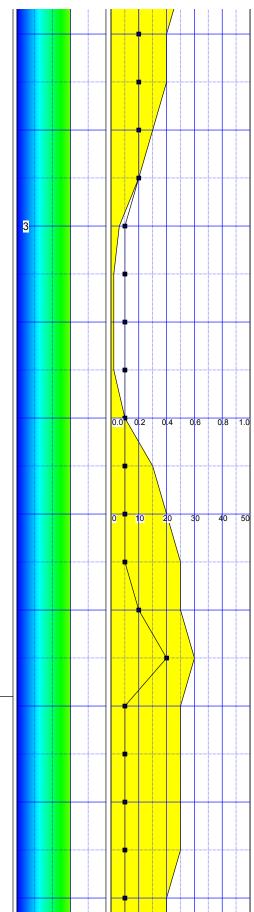
submillimeter pyroxene XENOLITHS/AUTOLITHS: None noted ALTERATION: very slight alteration of olivine to iddingsite, 10YR 8/2 Very Pale Orange calcitic mud on most fracture surfaces and in some vesicles near

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vesicles at base

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BASALT: COLOR: N4 Medium Dark Gray TEXTURE: Aphanitic, mostly vesicular, slightly diktytaxitic basalt; decreasingly vesicular from 452.9 feet to 457.7 feet and increasingly vesicular from 457.7 feet to 460.1 feet, slightly diktytaxitic where section is least vesicular, rare vesicle planes and vesicle sheets COMPOSITION: 40% plagioclase, 25% olivine, 35% groundmass; tabular lathy submillimeter plagioclase phenocrysts, subhedral
submillimeter olivine XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight alteration of olivine to iddingsite, flow and mold structure at base, calcite noted in few vesicles



Page 49 of 82

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BASALT: COLOR: N6 Medium Light Gray to N4 Medium Dark gray TEXTURE: Aphanitic, vesicular, diktytaxitic basalt; decreasingly vesicular from 460.1 feet to 471.2 feet and vesicular from 463.5 feet to 484.2 feet, diktytaxitic from 471.2 feet to 483.5 feet, few vesicle planes and vesicle sheets, large vesicle columns from 474.6 feet to 476.4 feet and from 476.8 feet to 479.6 feet, rare megavesicles COMPOSITION: 55% plagicolase, 30% olivine, 15% groundmass; tabular lathy submillimeter plagicolase phenocrysts, submillimeter subhedral olivine microcrysts to 1 mm subhedral to euhedral olivine glomerocrysts XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight to moderate alteration of		
to 479.6 feet, rare megavesicles COMPOSITION: 55% plagioclase, 30% olivine, 15% groundmass; tabular lathy submillimeter plagioclase phenocrysts, submillimeter subhedral olivine microcrysts to 1 mm subhedral to euhedral olivine glomerocrysts XENOLITHS/AUTOLITHS: None noted	3	

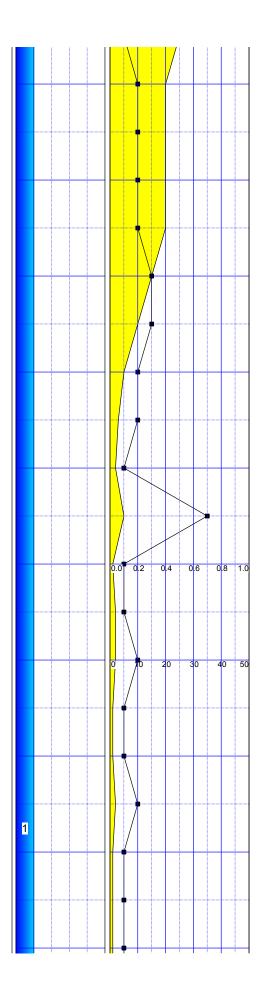
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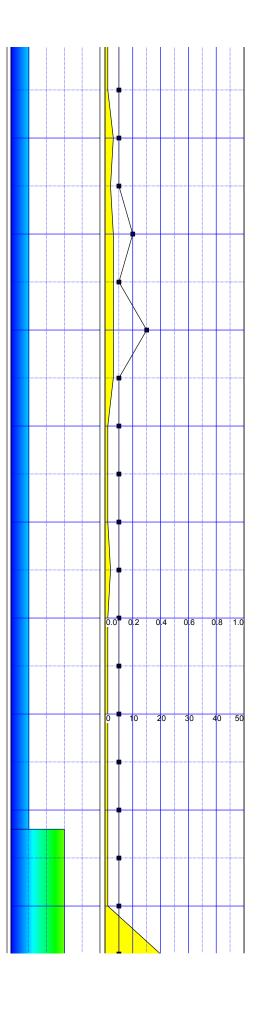
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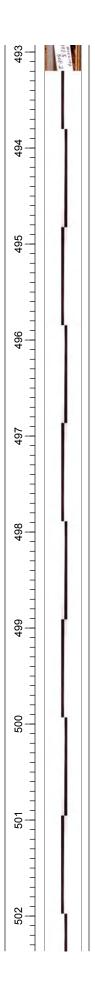
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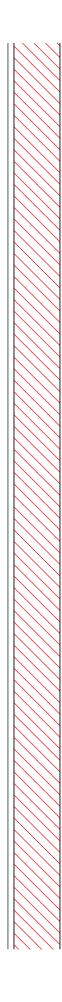


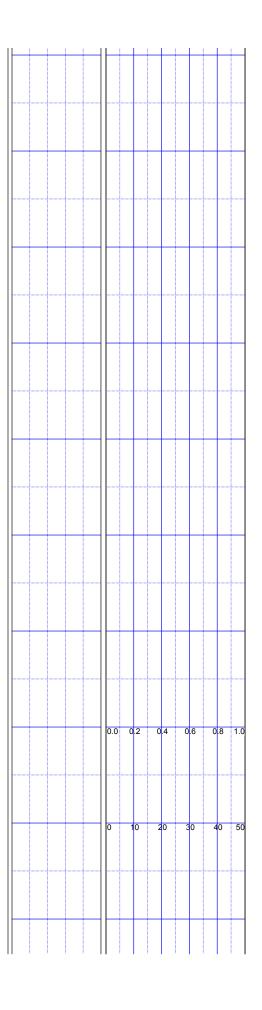
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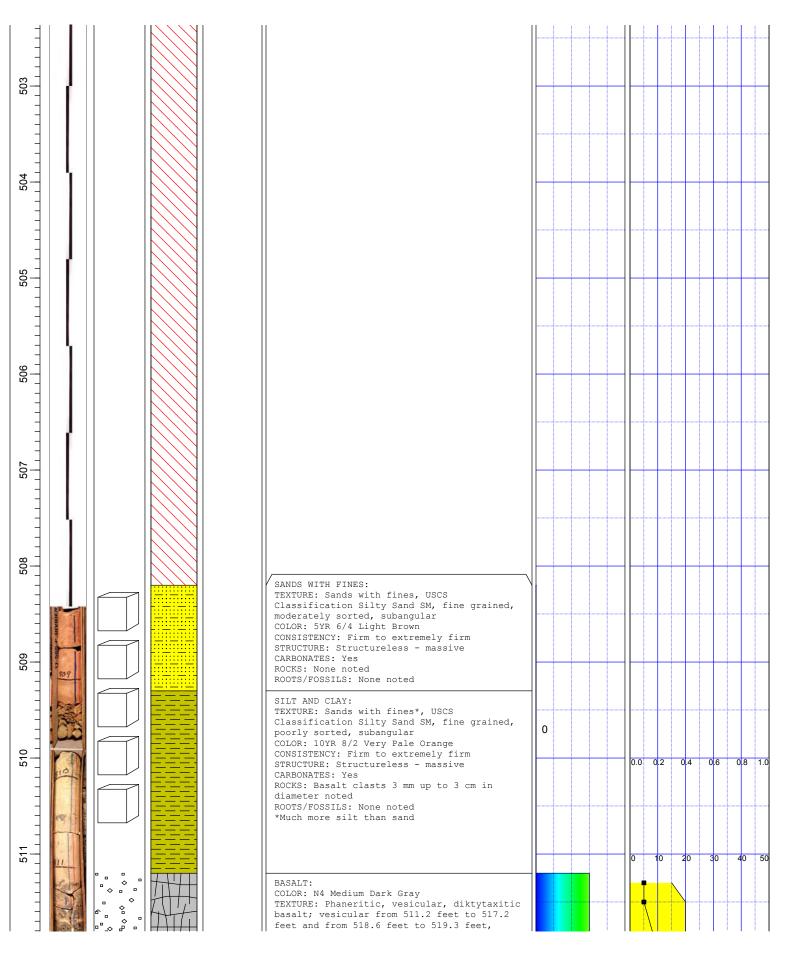
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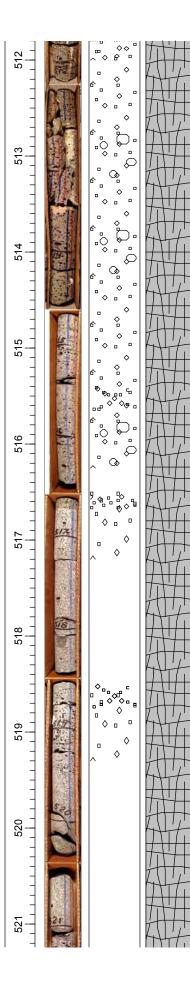
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BASALT: COLOR: 5R 4/2 Grayish Red to N4 Medium Dark		
Gray TEXTURE: Aphanitic, vesicular, diktytaxitic		
basalt; vesicular from 484.2 feet to 489.6 feet and from 490.3 feet to 491.2 feet, diktytaxitic from 489.6 feet to 490.3 feet,		
rare small pipe vesicles and rare large vesicles at base		
35% groundmass; tabular submillimeter		
euhedral submillimeter to rare 2 mm olivine microcrysts and glomerocrysts		
ALTERATION: High amount of alteration of olivine to iddingsite, 10YR 8/2 Very Pale		
COMPOSITION: 25% plagioclase, 40% olivine, 35% groundmass; tabular submillimeter plagioclase phenocrysts, subhedral to euhedral submillimeter to rare 2 mm olivine microcrysts and glomerocrysts XENOLITHS/AUTOLITHS: None noted ALTERATION: High amount of alteration of		
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TEXTURE: Sands with fines, USCS Classification Silty Sand SM, fine grained,		
moderately sorted, subangular COLOR: 5YR 6/4 Light Brown CONSISTENCY: Extremely firm	0	
STRUCTURE: Structureless - massive: ripple marks noted at 491.8 feet CARBONATES: Yes		
ROCKS: None noted ROOTS/FOSSILS: None noted		
MISSING INTERVAL:		



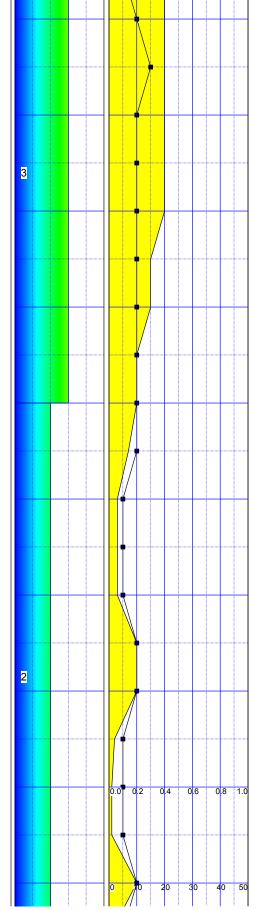






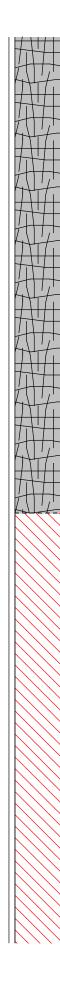


diktytaxitic from 517.2 feet to 518.6 feet and from 519.3 feet to 526.2 feet, rare vesicle planes, rare large vesicles, vesicle sheet at 516.6 feet COMPOSITION: 40% plagioclase, 25% olivine, 35% groundmass; tabular lathy submillimeter to rare 2 mm plagioclase phenocrysts, submillimeter to 1 mm anhedral to subhedral olivine microcrysts and glomerocrysts XENOLITHS/AUTOLITHS: None noted ALTERATION: 10YR 8/2 Very Pale Orange mud in some vesicles, calcite deposits in few vesicles

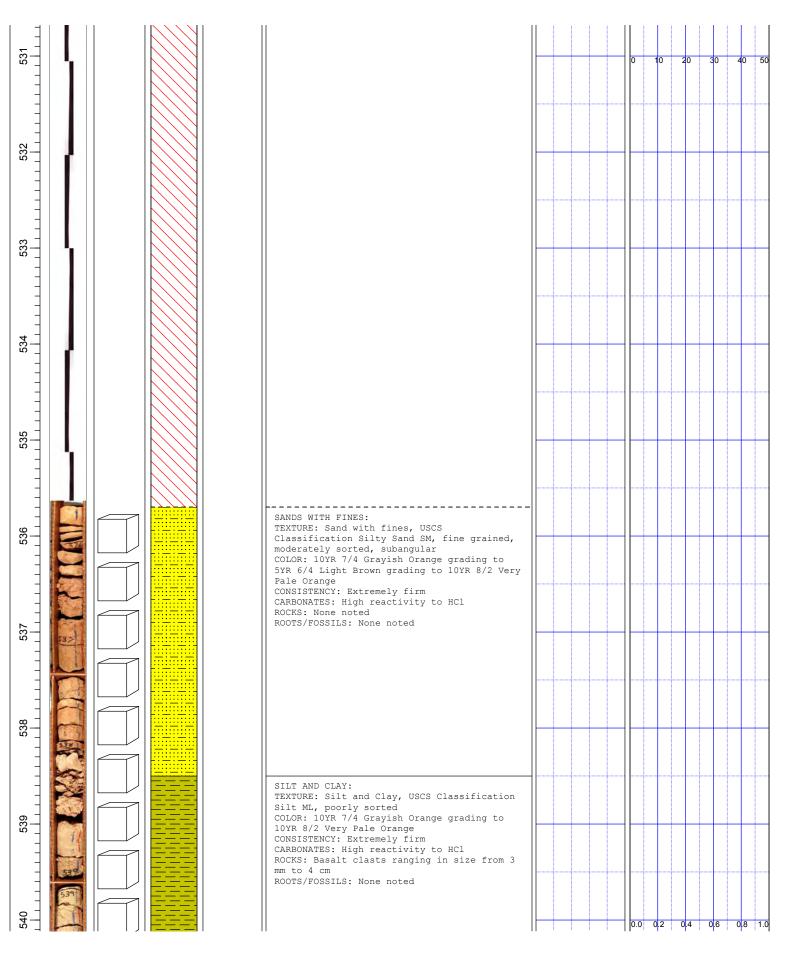


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MISSING INTERVAL: Missing interval not recovered	
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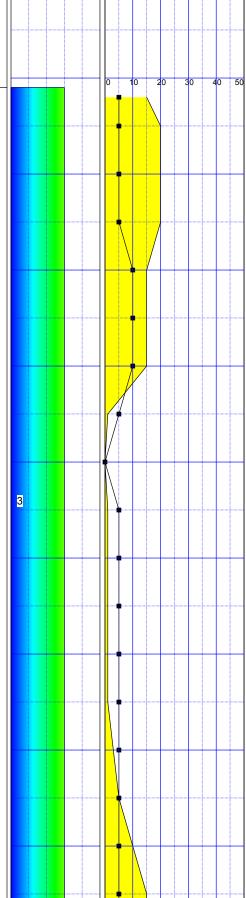
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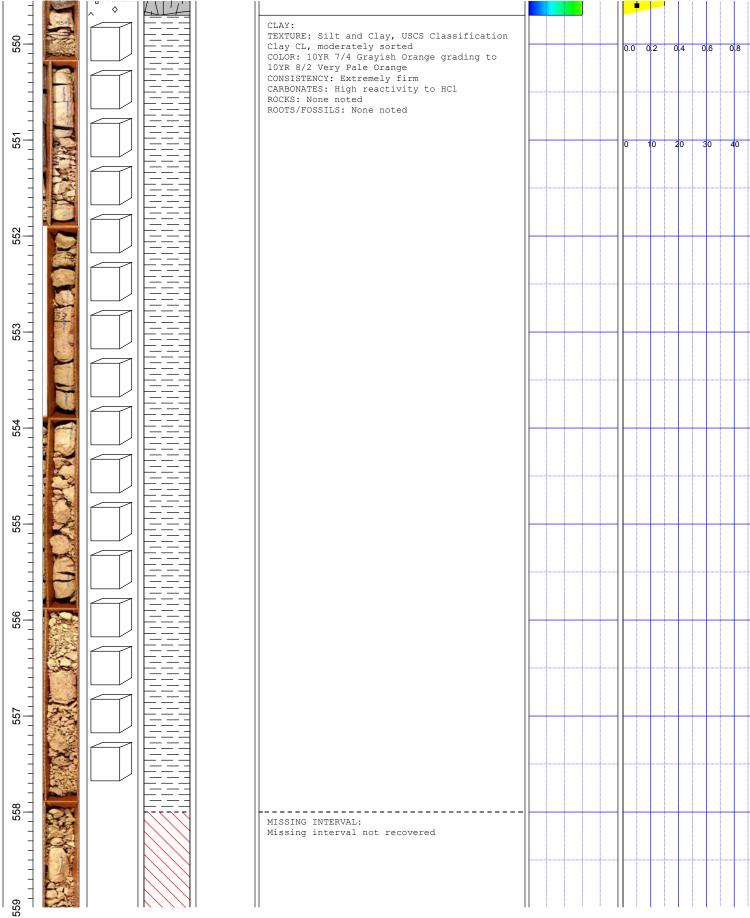
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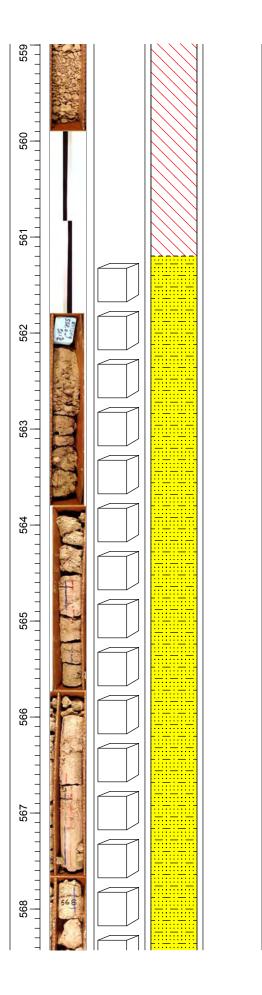
BASALT: COLOR: N4 Medium Dark Gray TEXTURE: Aphanitic, vesicular, diktyt basalt; vesicular from 541.1 feet to feet and from 548.2 feet to 549.7 fee diktytaxitic from 544.6 feet to 548.2 rare large vesicles, pipe vesicles at base, subophitic if groundmass is pyr COMPOSITION: 30% plagioclase, 20% oli 50% groundmass; tabular submillimeter plagioclase phenocrysts, submillimeter subhedral olivine microcrysts and rar olivine glomerocrysts up to 1 mm XENOLITHS/AUTOLITHS: None noted ALTERATION: 10YR 8/2 Very Pale Orange calcitic mud on fracture surfaces and some vesicles, calcite filling some v at base	544.6 et, 2 feet, 2 the coxene twine, coxene twine, coxene the coxene the coxene twine, coxene to coxene c

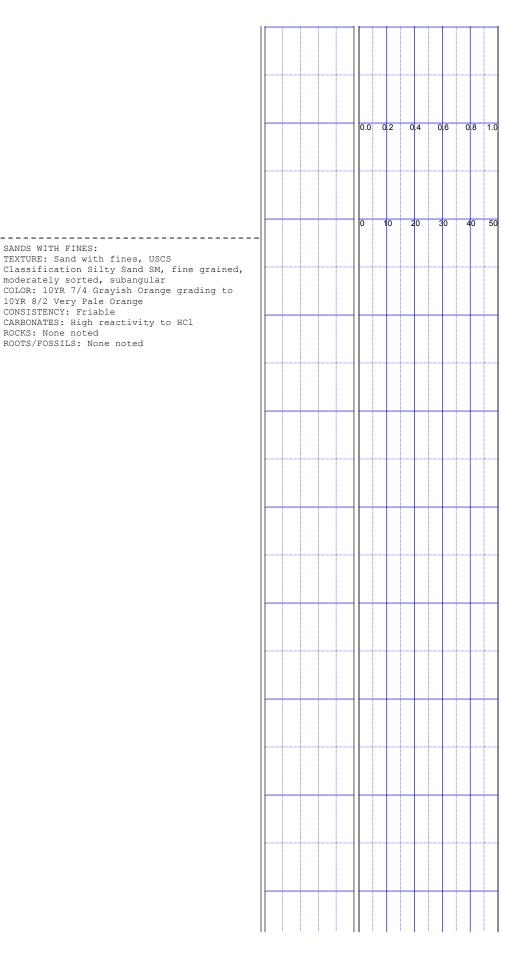


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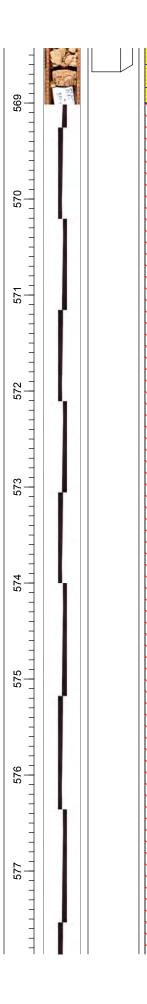
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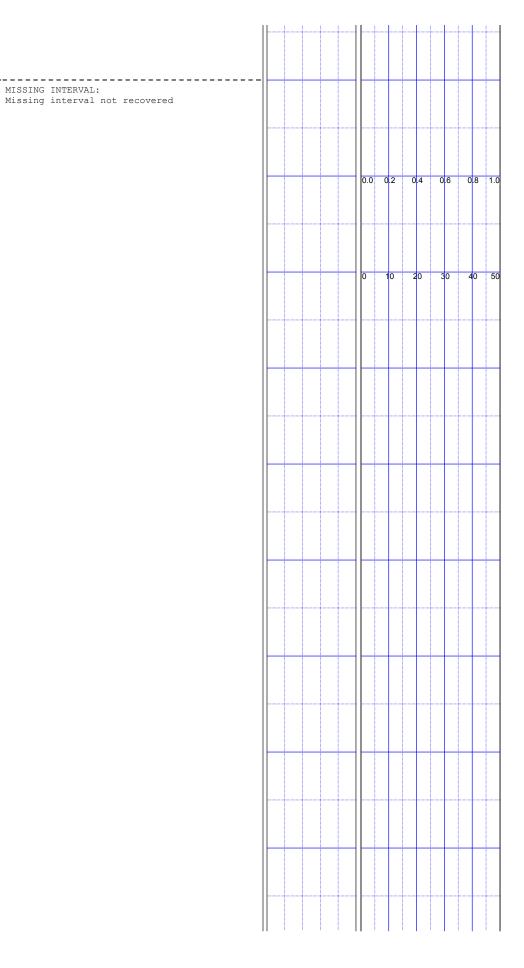


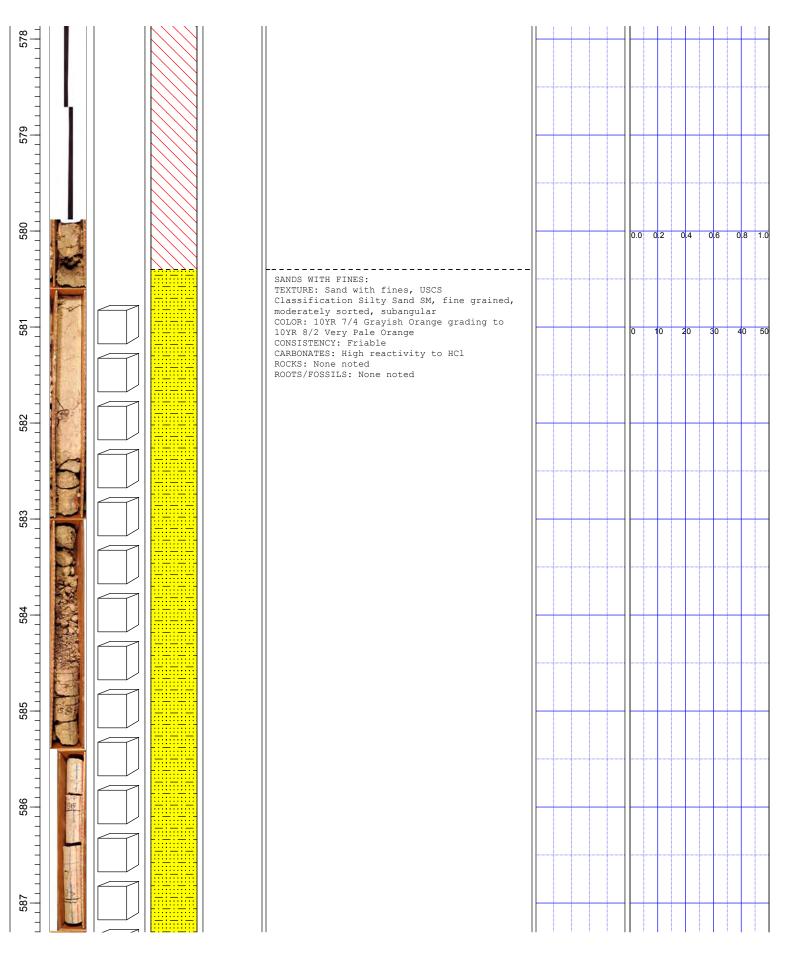




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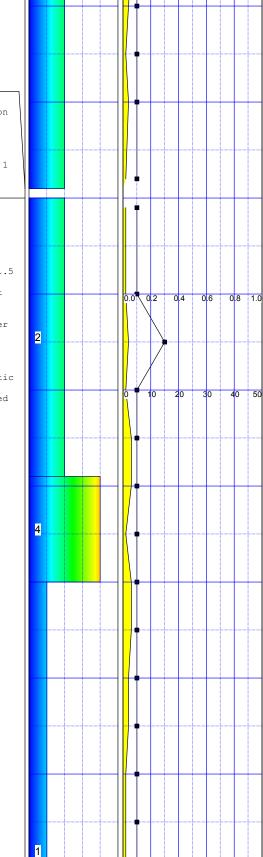
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COLOR: N4 Medium Dark Gray TEXTURE: Aphanitic, vesicular, diktytaxitic; vesicular from 588.9 feet to 596.8 feet with areas of diktytaxitic texture, 4 diktytaxitic from 596.8 feet to 598.9 feet, few large vesicles and megavesicles, vesicle planes common in lower half of vesicle zone, vesicle sheet present at 598.3 feet COMPOSITION: 55% plagioclase, 25% olivine, 0.0 0.2 0.4 0.8 1.0 0.6 20% groundmass; tabular lathy submillimeter plagioclase phenocrysts, submillimeter anhedral to subhedral olivne microcrysts, rare discernable pyroxenes XENOLITHS/AUTOLITHS: None noted ALTERATION: Very slight alteration of olivine to iddingsite, 10YR 8/2 Very Pale Orange calcitic mud in vesicles and on 3 fracture surfaces near bounding sediment 50 0 10 20 30 40 2

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SILT AND CLAY: TEXTURE: Silt and Clay, USCS Classification Silt ML, poorly sorted COLOR: 10YR 7/4 Grayish Orange CONSISTENCY: Firm CARBONATES: High reactivity to HCl ROCKS: Basalt clasts ranging in size from 1 to 2 mm ROOTS/FOSSILS: None noted

BASALT: COLOR: N4 Medium Dark Gray TEXTURE: Mostly aphanitic, diktytaxitic, slightly vesicular basalt; diktytaxitic throughout, vesicular from 609.0 to 609.2 and where vesicle sheets and columns and pipe vesicles occur, vesicle sheets at 601.5 feet and 601.9 feet, vesicle column from 603.0 feet to 605.5 feet, pipe vesicles at base, rare large vesicles COMPOSITION: 55% plagioclase, 25% olivine, 20% groundmass; tabular lathy submillimeter plagioclase phenocrysts, submillimeter subhedral olivine microcrysts and few olivine glomerocrysts up to 1 mm XENOLITHS/AUTOLITHS: None noted ALTERATION: 10YR 7/4 Grayish Orange calcitic mud on fracture surfaces, rare sparry calcite in large vesicles, 5R 3/4 Dusky Red flow and mold structure at base



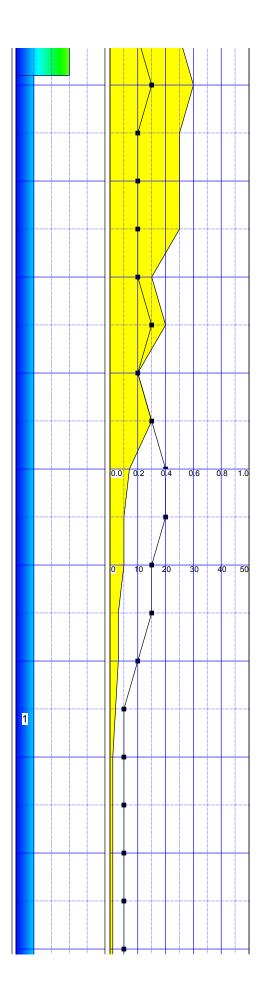
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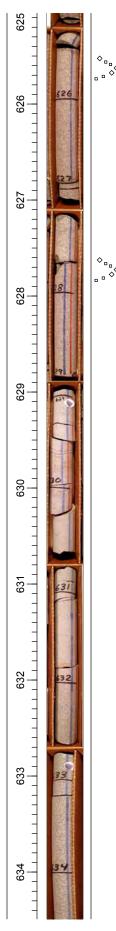
BASALT: COLOR: 5RP 4/2 Grayish Red Purple grading to M4 Medium Dark Gray TEXTURE: Slightly phaneritic, vesicular, diktytaxitic, massive basalt; vesicular from 609.2 feet to 622.5 feet and from 641.3 feet to 641.6 feet, diktytaxitic from 622.5 feet to 629.0 feet and from 632.0 feet to 621.0 feet, rare large vesicles and megavesicles, vesicle sheet at 640.9 feet, rare vesicle planes COMPOSITION: 60% plagioclase, 30% olivine, 10% groundmass; tabular lathy plagioclase phenocrysts up to 1 mm in length, submillimeter anhearla to subhedral olivine microcrysts VENOLITHS/AUTOLITHS: None noted ALTERATION: Slight alteration of olivine to iddingsite, calcite noted in some vesicles around fractures, rare sparry calcite noted in large vesicles, 5R 3/4 Dusky Red flow and mold structure at base	
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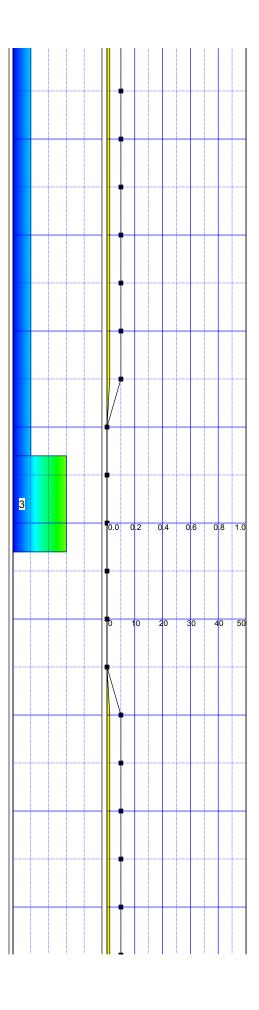
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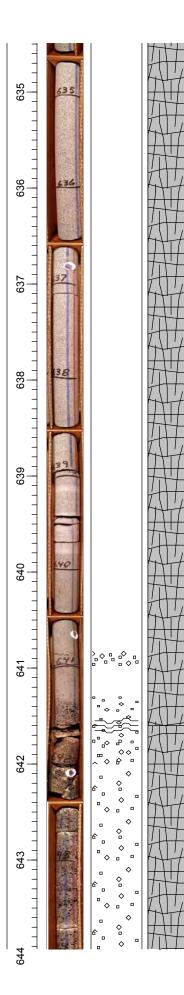
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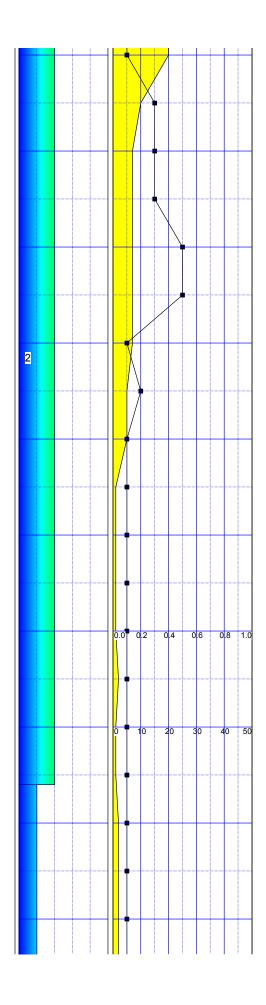


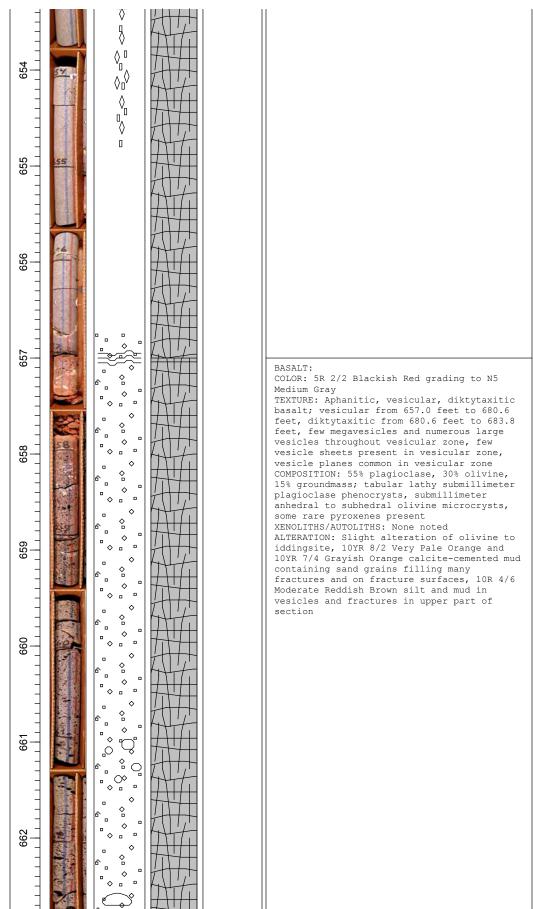


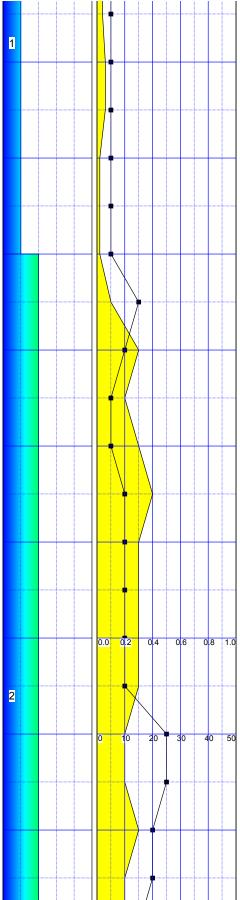
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BASALT: COLOR: N5 Medium Gray TEXTURE: Aphanitic, vesicular, diktytaxitic										
basalt; vesicular 641.6 feet to 648.5 feet and from 656.9 feet to 657.0 feet, diktytaxitic from 648.5 feet to 656.9 feet, vesicle sheets just above diktytaxitic	3			-						
section, vesicle column present from 652.5 feet to 654.8 feet, large vesicles present at lower end of upper vesicular zone, pipe vesicles at base COMPOSITION: 50% plagioclase, 30% olivine,										
20% groundmass; tabular lathy submillimeter plagioclase phenocrysts, subhedral submillimeter olivine microcrysts XENOLITHS/AUTOLITHS: None noted				+						
ALTERATION: Very slight alteration of olivine to iddingsite, calcite and sparry calcite located in some larger vesicles, 10YR 8/2 Very Pale Orange calcitic mud located on fracture surfaces and in few										

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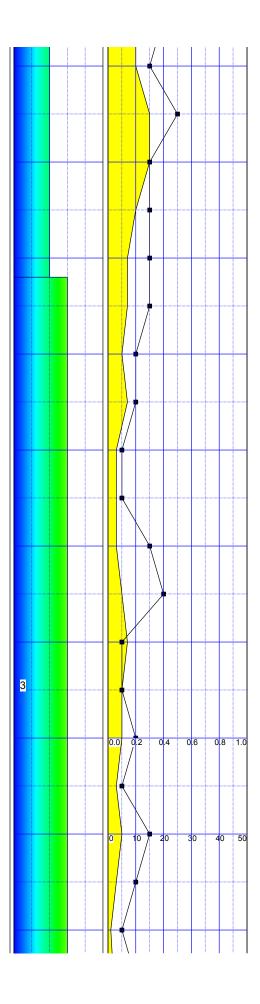






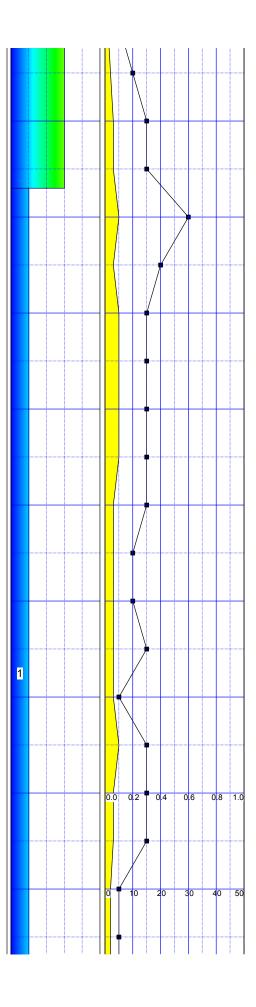
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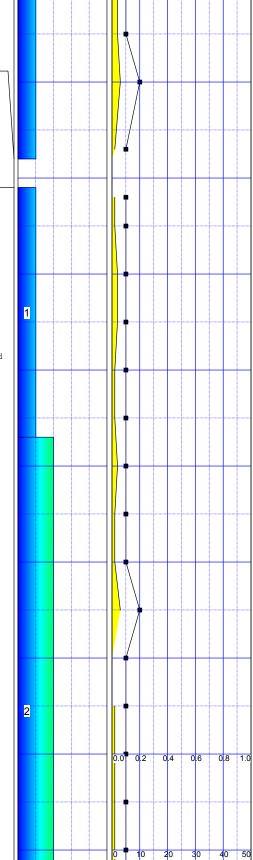


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SANDS WITH FINES: TEXTURE: Sands with Fines, USCS Classification Silty Sand SM, fine grained, moderately sorted, subrounded COLOR: 10YR 7/4 Grayish Orange to 10YR 8/2 Very Pale Orange CONSISTENCY: Extremely firm, cemented CARBONATES: High reactivity to HCl ROCKS: None noted ROOTS/FOSSILS: None noted BASALT: COLOR: N5 Medium Gray TEXTURE: Aphanitic, vesicular, diktytaxitic basalt; vesicular from 727.2 feet to 730.2 feet, diktytaxitic from 684.1 feet to 727.2 feet, few vesicle sheets present in diktytaxitic region COMPOSITION: 55% plagioclase, 30% olivine, 15% groundmass; tabular lathy submillimeter plagioclase phenocrysts, submillimeter anhedral to subhedral olivine microcrysts, some rare pyroxenes present XENOLITHS/AUTOLITHS: None noted ALTERATION: Slight alteration of olivine to iddingsite, 10YR 8/2 Very Pale Orange and 10YR 7/4 Grayish Orange calcite-cemented mud containing sand grains filling many fractures and on fracture surfaces



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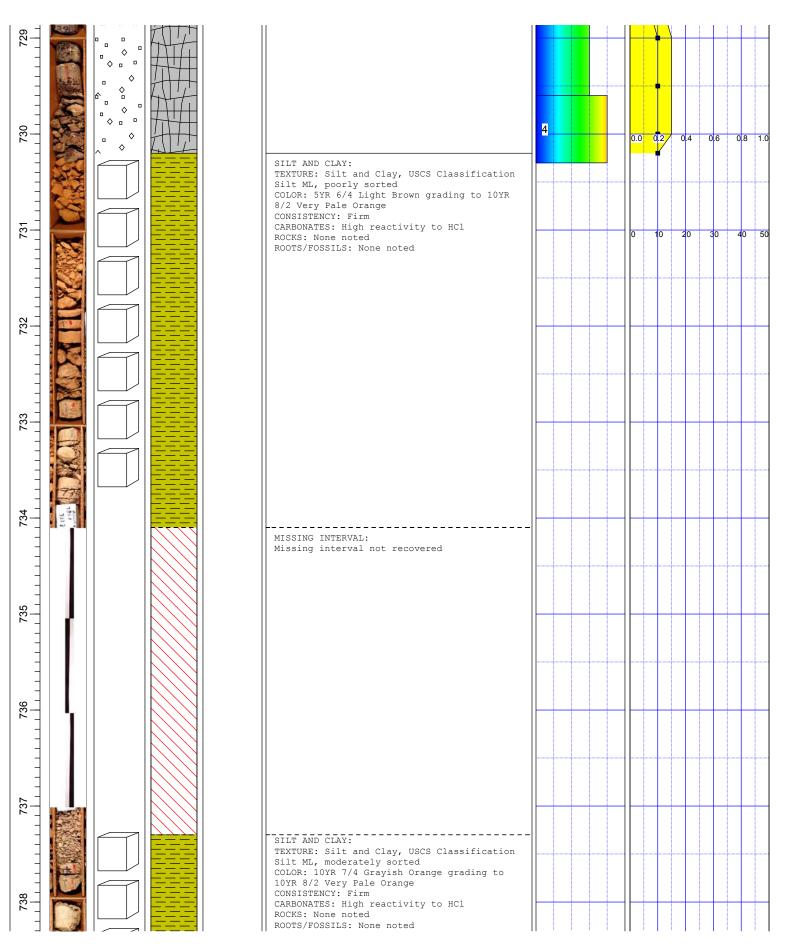
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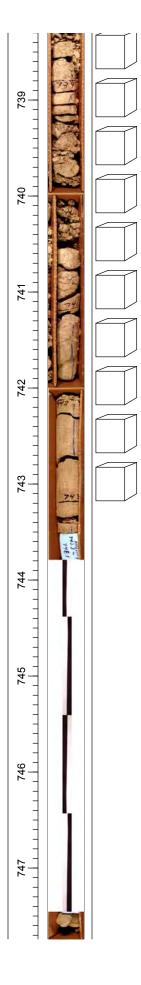
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