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

County & 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

Notes:

Core Geological Profile

Lithologic Patterns

- Basalts
- Rhyolites
- Sedimentary Rock

Soil Patterns

- Gravels - clean
- Gravels with fines
- Sands with fines
- Sands - clean
- Silts and clays

Intervals in Absentia

- Surfacial 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

Soil Structure Symbols

- Ripple marks
- Mud cracks
- Imbricated bedding
- Graded bedding
- Cross bedding

Depth

(foot & tenths)

Core Photo

Igneous and Sedimentary Structure Symbols

Lithology

Miscellaneous Text

Lithologic Description

Description

- BASALT: COLOR: N4 medium dark gray throughout interval
- TEXTURE: Phaneritic, almost aphanitic.
- Variably vesicular throughout interval
- COMPOSITION: 30% 2-5 by 1 mm plagioclase laths, 10% euhedral to subhedral 0.5 mm green olivine phenocrysts in dark gray groundmass
- XENOLITHS: None noted
- ALTERATION: None noted

Fracture Frequency

(See fracture classification on website.)

Vesicle Characteristics

- Mean Size (in)
- Volume Percentage

Notes:

None
MISSING INTERVAL: No more information

MISSING INTERVAL: No more information

BASALT: COLOR: N5 medium gray throughout

TEXTURE: Aphanitic, vesicular from top of

INTERVAL TO BASEMENT: No more information

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

MISSING INTERVAL: No more information
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 form 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
MISSING INTERVAL: No more information

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
MISSING INTERVAL: No more information
BASALT: COLOR: N2 dark gray at top of the interval, grading to N5 medium gray at 948 ft, then

TEXTURE: Phaneritic, porphyritic, vesicular basalt, glomerocrysts of plagioclase and olivine in star-shaped clusters, scoriaceous at the top and base

COMPOSITION: 30% 10 x 2 mm to 20 x 3 mm white plagioclase phenocrysts, 15% green olivine phenocrysts, 55% gray groundmass

XENOLITHS: None noted

ALTERATION: Reddish film on surfaces at base
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 phenocrysts

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
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

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.
MISSING INTERVAL: No more information

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
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 1,144.6 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. Dicktytaxitic from 1,175 ft to 1,181.5 ft, dicktytaxitic and vesicular to 1,188.7 ft, dicktytaxitic 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, diktytaxitic to 1,208.6 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 1,239.5 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