

SINCLAIR OIL AND GAS COMPANY

Eastern Oregon Land Company 1

Sec. 15, T. 16 S., R. 44 E.

Malheur County, Oregon

Descriptions of Well Samples\*

- 0 - 210 Light-colored tuffaceous silts, micaceous with a few grains of quartz.
- 210 - 230 Sandstone: Fine to medium grained, angular to subrounded, unconsolidated, composed of quartz grains with some pyrite.
- 230 - 340 Tuffaceous silts: As above described.
- 340 - 350 Sandstone: As above.
- 350 - 400 Tuffaceous silts: As above.
- 400 - 450 Sandstone: Light colored, fairly well indurated, medium to coarse grained, angular to subrounded, moderately sorted, composed of quartz, chert, and feldspar. Also numerous grains of pyrite associated with the sandstone. Some dark reddish-brown claystone apparently just above the sandstone horizon.
- 450 - 460 Siltstone: Light cream colored, massive.
- 460 - 470 No recovery.
- 470 - 480 Altered basalt (?): With some chert fragments intermixed.
- 480 - 540 No recovery.
- 540 - 590 Tuff: Yellowish white to darker cream, with numerous angular fragments of chert.
- 590 - 630 Tuff: Tan to purplish, massive.
- 630 - 740 Tuff and tuff siltstone: Tan to cream color, with few fragments of basalt and chert (corings?).
- 740 - 800 No recovery.
- 800 - 810 Tuff and tuffaceous siltstone: Tan and cream colored with a few fragments of basalt and chert (corings?).

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- 810 - 837 As above - plus a few grains of light colored, fine to medium grained, angular to subrounded, moderately well sorted, indurated, with pieces of sandstone.
- 837 - 845 Basalt: Holocrystalline with some calcite, plus fragments of above mentioned.
- 845 - 890 Tuff and tuffaceous siltstone: Light tan to cream color, with scattered pieces of basalt, sandstone, chert, and quartz veinlets.
- 890 - 920 Tuff: White with grains of fine to medium, angular to subrounded, moderately indurated quartz and feldspar. One grain of tuff had nothing but crystals of pyrite embedded in it, some calcite.
- 920 - 930 Tuff and tuffaceous siltstone: Tan to cream color. Some of the tan-colored tuff also contains grains of pyrite.
- 930 - 960 Crystal tuff: Grayish to brownish gray and tuffaceous sandstone containing grains of basalt with scattered pieces of silica veinlets, calcite, and some slough.
- 960 - 970 No recovery.
- 970 - 980 Basaltic tuff (?): Brownish to grayish brown with considerable amount of volcanic glass. Also appears to contain large amount of secondary silica.
- 980 - 1020 Siliceous sandstone: Light colored, calcareous, made up of basic volcanic grains and dark tuff fragments in a crystal matrix of calcite and secondary silica.
- 1020 - 1050 Tuffaceous sandstone: White, fine to medium, angular to subangular, moderately indurated.
- 1050 - 1070 As above - but with some grayish-brown tuff fragments, numerous grains of chert and quartz.
- 1070 - 1100 Tuffaceous siltstone: Grayish white with above sandstone intermixed.
- 1100 - 1110 Tuffaceous siltstone: Grayish white, containing much dark basic material plus material from above.
- 1110 - 1120 Tuffaceous siltstone and sandstone: Fine grained, similar composition as siltstone, slightly calcareous, and containing some pyrite and calcite fragments.
- 1120 - 1170 Siliceous sandstone: Light colored, calcareous, composed of basic volcanic grains and dark tuff fragments, crystal matrix of calcite and silica, medium grained, well indurated.

- 1170 - 1180 No recovery.
- 1180 - 1250 Mixture of above rock types, medium-grained, calcareous sandstone appears predominant.  
Note: Much of the siliceous and calcareous material with imbedded grains of dark tuff and basalt may be cored material, but they are predominant over the cream and tan-colored tuffs and tuffaceous siltstone.
- 1250 - 1300 Equal amounts of light- to dark-gray tuff and calcareous, siliceous sandstone. Veinlets of calcite in tuff.
- 1300 - 1340 Tuff: Light colored with intermixed fragments of sandstone and scattered pieces of basalt.
- 1340 - 1360 Tuff: Light gray, with fine to medium angular grains of feldspar and some quartz (?).
- 1360 - 1370 Tuff: As above but with fragments of black shale or claystone.
- 1370 - 13 Tuff: Light gray with imbedded grains of dark basalt or tuff with veinlets of calcite.
- 13 - 1465 Tuff: Various colors ranging from dark gray to white. Also some white calcareous sandstone and intermixed fragments of basalt from above.
- 1465 - 1520 Tuff: Dark gray to dark reddish gray, massive. Some basalt fragments intermixed.
- 1520 - 1635 Basalt: Grayish brown, occasionally slight reddish cast, finely crystalline.
- 1635 - 1670 Tuffs: Light colored, dark gray, red to purplish red, varied colored fragments, very fine grained to silty, massive with scattered pieces of finely crystalline basalt. Numerous fragments of chert and calcite.
- 1670 - 1810 Basalt: Very finely crystalline, fragments of above tuffs. Also some pieces of brownish siltstone. Some of the basalt fragments have a vitreous luster giving them the appearance of having been silicified.
- 1810 - 1920 Basalt: Appears to be more coarsely crystalline than above. Some intermixed fragments of pink tuff and angular pieces of white chert.
- 1920 - 1940 Tuffs: Various colors.

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- 1940 - 1945 Tuffs: As above with a few grains of pinkish crystal rhyolite or dacite.
- 1945 - 2000 Basalt: Finely crystalline, good vitreous luster.
- 2000 - 2020 Basalt: As above with some finely crystalline dacite (?).
- 2020 - 2070 Tuffs: Light to dark colored, varied colored, with some intermixed basalt fragments.
- 2070 - 2080 Tuffs: As above with basalt fragments and considerable number of chert fragments.
- 2080 - 2090 Tuff: Medium to dark gray and brownish gray with scattered pieces of very fine to microcrystalline basalt.
- 2090 - 2110 Tuff: As above with considerable pinkish to reddish silty tuff.
- 2110 - 2130 Basalt: Very finely crystalline with intermixed silty tuffs and siltstone.
- 2130 - 2155 Siltstone: Grayish brown to brownish red.
- 2155 - 2182 Basalt: Grayish brown to gray, finely crystalline with material from above mixed in.
- 2182 - 2240 Tuffs: Drab colored, some pieces of basalt from above.
- 2240 -  
- 2310 Tuff: As above with numerous grains of brownish gray, very fine-grained sandstone and siltstone.  
Basalt: Finely crystalline, some intermixed tuff and siltstone in the interval.
- 2310 - 2360 Tuff: Drab colored, some pinkish baked.
- 2360 - 2400 Tuff and basalt: Intermixed fragments in cuttings. Apparently the drilling mud was in poor condition when these samples were taken.
- 2400 - 2520 Basalt and interbedded drab-colored tuff. Some grayish-black cinder.
- 2520 - 2570 Tuff: Fine, red-pinkish baked, some light tan, very fine-grained sandstone containing dark shale fragments. Also few fragments of dark siltstone in sample.

- 2570 - 2640 Basalt: Dark pinkish gray, microcrystalline. Some interbedded tuffaceous siltstones, light gray to medium greenish gray, hard; some black volcanic glass. Tuffs contain veinlets of white quartz.
- 2640 - 2720 Basalt: Brownish black, microcrystalline. Contains quartz, calcite, and olivine. Few thin interbeds of dark siltstone. Portions of basalt contain metallic sulphides.
- 2720 - 2780 Basalt: Brownish black and dark pinkish gray, microcrystalline, some milky quartz and calcite. Some red and bluish-gray cinder intermixed.
- 2780 - 2840 Tuffaceous siltstone and claystone: Light-brown and dark-gray tuff with included subrounded, medium-sized fragments of basalt, feldspar, and pieces of white ash in a silty matrix.
- 2840 - 2915 Basalt: Brownish black, microcrystalline, with small amount of quartz and calcite. Also with small white fibrous crystals of zeolite. Zeolite lined fissures and filled cavities in basalt. Some portions contain a considerable amount of zeolite.
- 2915 - 2935 Tuff: Reddish brown, few scattered fragments of basalt, silty matrix.
- 2935 - 2970 Basalt: Brownish black, microcrystalline, fresh, with a small amount of zeolite.
- 2970 - 2990 Tuff: Pinkish and brownish.
- 2990 - 3280 Basalt: Dark gray to pinkish gray, altered with considerable amount of zeolite. Small amount of calcite also, and thin interbeds of tuffaceous siltstone, light brown to medium brown, firm, brittle.
- 3280 - 3300 Basalt: Dark greenish and pinkish gray, extensively mineralized, containing considerable zeolite, some clear quartz, greenish quartz, and calcite.
- 3300 - 3476 Basalt: Brownish black, microcrystalline to fine crystalline, contains olivine, with some zones of medium-gray colored mineralized basalt containing zeolite. Occasional thin beds of brownish and gray siltstone, some white tuffaceous very fine-grained sandstone.
- 3476 - 3495 Siltstone: (E log correlation).

- 3495 - 3710 Basalt: Black, microcrystalline to fine microcrystalline, with occasional interbeds of brown siltstone and greenish-brown claystone. Zones of medium-pinkish and greenish-gray, fine crystalline, mineralized basalt. Basalt contains zeolite and some quartz.
- 3710 - 3755 Tuff: Reddish brown with fragments of basalt, zeolite, and brown siltstone.
- 3755 - 4070 Basalt: Black, microcrystalline to fine microcrystalline, containing olivine, some amygdules, and veins of zeolite and quartz; some interbedded tuff.
- 4070 - 4090 Siltstone: Medium gray and brownish, firm.
- 4090 - 4170 Basalt: Dark grayish black, microcrystalline, with quartz, some zeolite. Also contains partly altered olivine.
- 4170 - 4240 Altered basalt: Black dull luster, partly altered, some glassy looking, containing zeolite.
- 4240 - 4255 Basalt: Dark gray, greenish black, partially chloritized, some unaltered, containing quartz and zeolite veins. Some interbedded brown and black shale. Quartz contains a small amount of pyrite.
- 4255 - 4270 Shale: Dull black, firm to hard. Some pieces of light-colored mica schist (?) and serpentine in the sampled interval. Also fragments of microgranite containing considerable amount of weathered biotite.
- 4270 - 4380 Basalt: Black, brownish black, microcrystalline, some glassy. Some interbedded medium-gray, firm siltstone. Portions contain zeolite and quartz. Small amount of pyrite mineralization in quartz. Basalt contains olivine. Some medium-gray microcrystalline basalt with zeolite.
- 4380 - 4505 Shale: Medium to light gray, firm, and dull black. Sample contained fragments of weathered microgranite with mica, quartz, and a few scattered pieces of greenish dark-gray, fibrous actinolite. Few fragments of whitish ash.
- 4505 - 4888  
T.D. Diorite (clastic material ?): Light colored, with weathered biotite flakes. Fragments of medium-gray siltstone and black basalt also scattered in the sample.

CORES

Core No. 1

- 3477 - 3478      Basalt: Black, hard, microcrystalline.
- 3478 - 3481      Basalt: Black, slightly serpentized, cut by a  
few very fine veinlets of calcite; contains olivine.
- 3481 - 3484      Basalt: As above, some vertical fractures.
- 3484 - 3487      Basalt: As above.
- 3487 - 3490      Basalt: As above.
- 3490 - 3493      Basalt: As above.
- 4869 - 4871      Diorite: Medium grained, hard, with crystals of  
partly altered hornblende, some very fine veinlets  
of calcite.

