

H. K. RIDDLE

Kiesal Estate No. 1

Sec. 8, T. 19 S., R. 47 E.

March 14, 1962

Malheur County, Oregon

Descriptions of Well Samples*

- 130 - 150 Crystal ash: Grayish white, hard, very fine, partially cemented with silica.
- 150 - 180 Tuffaceous sandstone: Grayish white, fine to medium grained, hard, partially cemented with silica and lime. Contains a layer of conglomerate sandstone composed of dark chert pebbles and pieces of white, fine volcanic ash.
- 180 - 190 Siltstone: firm.
- 190 - 240 Sandstone: Grayish white, firm to very friable, fine grained, with coarse fragments of subrounded black chert and medium-sized quartz grains. Slightly calcareous. Some fine magnetite crystals.
- 240 - 330 Siltstone: Light gray, firm, fine sandy, with scattered coarse subrounded fragments of black chert and medium-sized quartz grains. Slightly calcareous. Very small gas show in mud.
- 330 - 905 Tuffaceous siltstone - shale: Light gray, firm, slightly calcareous. Occasional small pieces of chert, white ash, and quartz. Gas analyzer recorded 41 units (516 - 520).
- 905 - 935 Tuffaceous sandstone: Light gray, friable, fine silty, feldspathic with fine pieces of dark rock and volcanic glass. Gas shows on analyzer (Rotary Engineering Company - Well Logging Service).
- 935 - 1145 Siltstone: Light gray, firm to brittle, some laminated shaly portions.
- 1145 - 1195 Sandstone: Light gray, firm, fine silty, with scattered medium-sized quartz grains and chert fragments. Calcareous. Gas shows on analyzer.

*By V.C. Newton, Jr., Petroleum Engineer, State of Oregon Department of Geology and Mineral Industries.

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- 1195 - 1215 Silty shale: Whitish gray, firm to brittle, calcareous.
- 1215 - 1250 Sandstone: Light gray, firm to friable, fine, feldspathic, with quartz and dark chert fragments. Good gas shows on analyzer, 54 units.
- 1250 - 1655 Tuffaceous shale: Light gray, firm, silty; some scattered small pieces of fine white ash and chert.
- 1655 - 1695 Sandstone: Grayish white, friable, fine to medium grained, silty, feldspathic, with scattered small fragments of dark-gray and black chert. Occasional brownish chert fragments. Calcareous.
- 1695 - 1770 Tuffaceous shale: As above described.
- 1770 - 1850 Conglomeratic sandstone: Light-gray, friable, medium- to fine-grained sand matrix. Pebbles to coarse-grained pieces of chert. Scattered medium-sized grains of quartz. Interbedded with siltstone and fine sandstone. Calcareous.
- 1850 - 1870 Tuffaceous shale: As above described.
- 1870 - 2260 Sandstone: Grayish white, friable to firm, fine to coarse grained, feldspathic. Composed of medium to coarse grains of quartz and chert; fines are feldspar, some lime. Interbedded with firm siltstone. Gas shows through this section on the analyzer, maximum 50 units.
- 2260 - 2370 Shale: Grayish white, firm, calcareous, with thinly interbedded fine- to medium-grained sandstone.
- 2370 - 2395 Tuffaceous sandstone: Light gray, very fine, firm, with medium grains of quartz, dark chert, and fine white ash. Slightly calcareous. Gas show on analyzer 48 units.
- 2395 - 2420 Shale: As above described.
- 2420 - 2520 Tuffaceous sandstone: Above but medium grained. Some interbedded sandy siltstone. Gas shows on analyzer, 18 to 24 units.
- 2520 - 2618 Siltstone: Light gray, firm to brittle, fine sandy, interbedded with thin fine- to medium-grained sandstone. Slightly calcareous.
- 2618 - 2632 Sandstone: As above but partially cemented. Gas show on analyzer.

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- 2632 - 2665 Siltstone: As above with thin interbedded sand stringers. Gas show on analyzer.
- 2665 - 2715 Tuffaceous sandstone: Whitish, friable, very fine silty, with coarse subrounded pieces of dark grayish-black chert and small pieces of fine white ash. Also occasional small mica flakes, weathered. Gas shows on analyzer.
- 2715 - 2736 Tuffaceous siltstone: Light gray, firm to brittle, with scattered medium-sized chert, fine white ash and quartz particles.
- 2736 - 2830 Tuffaceous sandstone: Thin beds, whitish, firm, medium to fine grained with dark grayish-black chert fragments, small pieces of fine white ash and medium-sized quartz grains. Slightly calcareous. Interbedded with fine sandy siltstone.
- 2830 - 3010 Tuffaceous shale: Light gray, brittle, slightly calcareous. Scattered small pieces of fine white volcanic ash. Some small chert fragments, also.
- 3010 - 3160 Sandstone: Grayish white, firm to friable, fine to medium grained, feldspathic, scattered subrounded fragments of grayish-black chert. Interbedded with thin shale beds. Gas shows on the analyzer, 20 to 30 units.
- 3160 - 3820 Shale: Light gray, hard, silty.
- 3820 - 3870 Basalt: Fractured, brownish black, hard, microcrystalline containing a considerable amount of olivine. Gas analyzer recorded 36 units.
- 3870 - 3900 Siltstone: Medium gray, firm to hard. Gas show on analyzer.
- 3900 - 3935 Basalt: Brownish black, microcrystalline, some coarse grained, containing a considerable amount of olivine. Gas show on analyzer.
- 3995 - 4040 Siltstone: Medium gray, brittle, thinly bedded. Gas show on analyzer.
- 4040 - 4150 Basalt: Brownish black, firm, weathered dull luster, olivine altered to brownish yellow. Thin interbeds of shale. Gas show on analyzer.
- 4150 - 4270 Shale: Medium gray, friable to brittle, silty, with a few scattered pyrite crystals. Gas show on analyzer, 40 units.

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- 4270 - 4320 Tuffaceous sandstone: Medium gray, firm to friable, fine silty, with small pieces of fine white volcanic ash and scattered small basalt fragments. Gas show on analyzer, 70 to 80 units.
- 4320 - 4378 Basalt: Brownish black, hard, containing a large amount of olivine.
- 4378 - 4410 Tuffaceous sandstone: Grayish white, firm, very fine grained, silty, containing small pieces of white ash and fragments of basalt. Calcareous.
- 4410 - 4435 Basalt: Brownish black, firm to hard, with olivine; portions weathered to dull brown luster.
- 4435 - 4450 Sandstone: Light to medium gray, very fine silty, friable to firm with very small segregations of white-colored gypsum.
- 4450 - 4500 Tuffaceous siltstone: Light gray, friable to brittle, thinly bedded with numerous small pieces of fine white ash.
- 4500 - 4530 Basalt: Brownish black, hard, microcrystalline, olivine.
- 4530 - 4550 Tuffaceous sandstone: Whitish, firm, fine silty, with scattered medium-sized quartz grains, calcareous. Also some small pieces of white ash. Thin interbeds of siltstone.
- 4550 - 5106 Basalt: Brownish black, hard, microcrystalline, olivine. Some thin interbedded light-gray shale and siltstone. Gas analyzer recorded 40 to 110 units between 5044 and 5054.

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