Sample Description

Continental Oil Company
State #1 - McClave Block
Kiowa County, Colorado
Section 11, 20S, 49W
330' FSL; 330' FEL
Gr. Elev. 4043; DF 4052

By: T. R. Carpen
8-19-52

215-240 Shale, black, hard; Silty shale, dark gray, hard; shalely limestone, white, hard, massive, dense, tight

260 Shale, calcareous, dark gray, hard

360 Shale, dark gray with white specks, calcareous, hard; inoc. prms; little brown calcite

Greenhorn Limestone - 360

400 Limestone, light gray, silty, dense, massive, hard, tight; also some dark gray calcareous shale as above

Graneros Shale - 400

470 Shale, calcareous, dark gray with white specks, hard

480 Shale, calcareous, dark gray, hard; trace pyrite and white bentonitic clay, soft.

510 Shale as above

520 Shale as above; trace white calcareous sandstone; fine, sub-angular, well cemented, hard, tight

560 Shale, dark gray, hard

Dakota Sandstone

570 Sandstone, light gray, very fine grained, sub-angular, hard, well cemented with clay, porous

580 Sandstone, as above with frequent light green grains in sandstone

590 Sandstone as above with few pyrite grains in sandstone

600 Sandstone as above but fine to medium, more dirty, more porous

630 Sandstone, light gray, fine, angular, hard and well cemented with silica, but friable, some green grains (maybe glauconite), very porous

650 Sandstone as above with little black calcareous shale

660 Sandstone as above with trace white silty marl

670 Sandstone as above but dirtier, less porous, calcareous cement; also abundant black calcareous shale

680 Sandstone, white, fine, angular to sub-angular, friable, hard, calcareous cement, very porous

700 Shaley siltstone, light gray to white, hard

710 Sandstone, gray, fine, sub-round to sub-angular, some dark grains, poorly cemented, soft, very porous; also dark gray to blackish, soft

720 Sandstone as above; also dark gray to black silty shale, siliceous

730 Sandstone and silty shale as above; also abundant white silty calcareous clay (marl) soft, chalky, with flecks of dark minerals

740 Sandstone and silty as above also sandstone, medium, gray, sub-angular, dark and green grains, soft, very porous.

750 Sandstone, light to dark gray, silty, dirty, very fine grained, sub-round, clay cement, slightly porous

770 Silty shale, gray to black, siliceous

790 Shale, black, soft

800 Siltstone, light gray, siliceous, well cemented, hard (quartzite like), non porous

810 Silty shale, black, siliceous, slightly calcareous, trace light grey clay, soft

810 - 820 Silty shale as above; also dark gray shaley siltstone, non porous

830 Sandstone, light gray, very fine grained, sub-angular, well to poorly cemented, porous

840 Sandstone, white, fine, sub-angular, poorly cemented, soft; very porous, little white limestone, massive, soft, non-porous; trace pyrite

850 Sandstone as above but harder, less porous

860 Sandstone as above but medium grained with grains of pyrite and light grained shale (Basal sandstone); light grain silty shale, pyritic, calcareous, soft; also white limestone, silty, massive, soft, non porous

Morrison - 855

870 As above

880 Brown to maroon shale, calcareous, silty, hard, also as above

890 Brown to maroon shale as above also; brown to maroon shaley limestone with calcite, hard, non porous; trace black calcareous shale

900 Limestone, white to buff to light green, massive, hard, tight with calciteveins

910 Limestone, as above; also limestone, pink to buff, fine crystalline, hard, non porous; little black shale, fissile.

920 Light green shale, pyritic; also sandstone, light green, very fine grained, angular, clay cement, soft, porous

Morrison Sand? - 920

940 Sandstone, white with chips of orange chert, fine to medium, sub-angular, siliceous cement, hard, very porous.

950 Sandstone as above also light gray to white limestone, massive, soft, non porous

1020 Sand, loose, coarse to medium, round to sub-round, many frosted with orange chert; extremely porous; also little black or light gray or purple shale

1030 Chert, orange to yellow; maroon calcareous, shale with orange chert imbedded

1040 As above; little black shale

1060 Sand, loose, coarse-medium, round to sub round, many frosted with orange chert chips or grains; little black or purple shale.

1070 Sand as above; little light gray silty shale, very hard.

1100 Sandstone, white, fine, sub angular, well cemented, siliceous, hard, porous; also black to gray calcareous shale

1120 As above; also sandstone, light green to white, very fine grained, soft, clay & calcareous cement, slightly porous

1130 As above; also sandstone, light green to white, very fine grained, soft, clay & calcareous cement, slightly porous

1150 Sandstone, as above; varicolor shale and silty shale (brown, maroon, blue, light green, white, black) trace pyrite & limestone as above.

1160 Green, gray and maroon silty shale, calcareous, hard

1170 As above; also limestone, gray, massive, hard, tight

1180 Varicolor silty shale as above; also light green to white sandstone, very fine grained, calcareous & clay cement, slightly porous

1180 - 1190 Sandstone as above except fine, sub-round with orange grains, well cement, hard, porous; also green slightly calcareous shale.
1200 Sandstone as above grading into light green silty shale
1210 Sandstone, white to light green to light gray, fine to very fine
1230 Green shale as above; also gray-brown limestone, massive, soft, tight
1240 Green to maroon varigated shale, slightly calcareous, slightly silty, hard; little limestone as above
1250 Green shale, bentonitic with pyrite flecks; also light gray limestone, massive, soft, tight
1270 Limestone as above but darker gray, hard, pyritic, silty, tight; also siltstone, pinkish tan, angular to sub-angular, calcareous cement, soft, porous

Sundance or Entrada Sandstone??? 1265

1280 As above; also siltstone, white to gray, very calcareous, soft, porous
1300 Sandstone, tan, very fine grained, angular to sub-angular, calcareous and bentonite cement, hard to soft, with orange grains, porous; little maroon shale, slightly calcareous
1310 Sandstone as above but medium grain
1340 Maroon shale, slightly calcareous, soft; black shale, fissile; some sandstone as above and green shale (cavings)
1350 As above more black shale, also purple shale
1370 Black shale as above, slightly silty
1390 Maroon silty shale; light green shale
1410 Sand, loose, fine to medium, tan to orange, sub round to sub-angular, many frosted, very porous
1430 Sandstone, tan-orange, fine, sub round to sub angular, calcareous and bentonite cement, soft, porous
1490 Cinnamon red shale, siltstone & silty shale, bentonitic, slightly calcareous, hard; trace selenite gypsum
1530 Siltstone, pink to tan, calcareous, hard, slightly porous
1540 As above; also abundant purple silty shale, hard
1550 Varicolored shales, mostly purple and green

Permian ?? 1560

1560 Brick red shale and silty shale, slightly calcareous, hard; little purple shale as above
1570 As above; little gypsum, white, sucrosic, soft and selenite; Also siltstone, white to light gray, slightly calcareous, hard, porous
1580 Brick red siltstone, hard, slightly porous, slightly calcareous; also little as above
1600 As above
1610 As above trace gypsum, white, sucrosic, hard

Day Creek - 1610

1640 Anhydrite, pink to white, massive, hard; also red silty shale
1660 Cinnamon red shale & silty shale, slightly calcareous; anhydrite as above

1660 - 1610 As above, trace gypsum, white, sucrosic, hard

Day Creek-1610

1640 Anhydrite, pink to white, massive, hard; also red silty shale

1660 Cinnamon red shale & silty shale, slightly calcareous, anhydrite as above

1700 Brick red siltstone, slightly calcareous, bentonitic, soft, slightly porous; little as above

1710 As above trace white bentonite clay with green mica flecks

1730 As above little maroon shale, bentonite

1740 As above; also black shale

1750 Black to dark gray shale as above; also siltstone, gray, angular, soft, clay cement, slightly porous

1760 As above also brick red silty shale

1780 Brick red silty shale; and gray siltstone as at 1750

1810 Brick red silty shale & siltstone; trace white anhydrite, sucrosic, hard

1820 Cinnamon red shale

Blaine - 1825

1830 Anhydrite, white, sucrosic to massive, hard; also purple slightly silty shale

1850 As above

1860 Maroon to green silty shale, soft; olive green shaley siltstone, soft, non porous; some anhydrite as above

1890 Cinnamon red shale and white anhydrite (some interlaminated)

1900 As above; little black shale, soft, fissile

1910 As above

1920 As above; also sandstone, tan-orange, fine sub-angular, calcareous, well cemented, hard, slightly porous

1940 Brick red sandstone, very fine grained to medium, sub round to round, slightly calcareous, well cemented, hard, porous

1980 Brick red siltstone, calcareous, hard, slightly porous

1990 As above; also little black shale

2000 Brick red siltstone

2010 Brick red sandstone, fine gypsiferous, calcareous, sub-round, porous

2090 As above; also brick red shale; abundant cavings of purple to maroon shale, and green silty shale

2100 Cavings as above; also light gray to light green shaley siltstone; black shale; light gray shale, soft

Stone Corral - 2100

2110 Anhydrite, white massive to sucrosic; also brick red shale

2130 Anhydrite as above but mostly cavings of varicolor shales; purple, maroon, green, black, light gray; also light brown shale, soft

2140 Shale, light gray, soft; also black silty shale, hard

2210 Shale, black, calcareous-non calcareous; varying amounts of brick red shale & siltstone; abundant cavings of varicolor shales & light green shaley siltstone or very fine grained sandstone.

2210 - 2220 As above; also abundant pyrite; also loose sand, medium, red; little white to light gray clay, soft

2230 As above, no sand, more white to light gray clay

2240 As above, olive to gray calcareous shale; trace limestone, buff, dense, tight

2250 Brick red silty shale; black shale; trace limestone as above; cavings of varicolor shales and siltstones

2290 As above; mostly cavings

2300 As above; no limestone; also gray to olive gray shale, calcareous, soft

2310 Cinnamon red siltstone, sub-round, slightly calcareous, firm; black shale, silty, firm; cavings? of maroon shale; light green silty shale; clay, white, soft with green micaceous flecks; light green sandstone, very fine grained, soft, porous

2320 Cinnamon red shale, slightly silty; pyritic sandstone, black and dark quartz grains, very hard, nonporous; rest as above, Note, lt. green siltstone and very fine grained sandstone may be true cutting because it was found in contact with red shale.

2330 As above only trace of pyrite

2350 Brick red siltstone & shale; light green shaley siltstone to light green sandstone, fine, sub-round, soft, porous; sand, loose, medium, red

2380 As above but no sand; also black shale; little limestone, buff to maroon to green, dense, hard, tight

2390 As above; also brown silty shale; pyrite

2420 Black shale; brick red siltstone and shale; limestone, buff to dark gray, dense, hard, tight; cavings? light green, maroon and purple silty shale; light green, buff, dark gray and olive green siltstone

2430 As above but no limestone

2440 Brick red siltstone mostly; rest as above

2450 As above; little limestone, buff, dense, hard, tight

2470 Brick red silty shale mostly; rest as above but no limestone

2500 Brick red siltstone, calcareous, hard, slightly porous; black shale, pyritic, calcareous; sandstone, dark gray, medium to fine, sub-round, hard, porous; cavings? light green to white to light gray sandstone, very fine grained, sub-angular, white clay cement, firm, porous; maroon and light gray silty shale; gray shale; trace limestone, buff, dense, hard, tight; trace anhydrite, white to pink, massive, hard

2520 As above mostly brick red silty shale and black shale

2530 As above mostly brick red silty shale; no pyrite

2560 As above but limestone now gray to green gray

2570 As above but little more white anhydrite

2580 Black shale, calcareous; pyrite; limestone, gray, dense, hard, tight, cavings as above

2590 Brick red siltstone; trace selenite; rest as above

2600 " " " , slight calcareous, firm; black shale; rest as above

2630 " " " , and shale; with white anhydrite inclusions, granular, firm; rest as above.

2630 - 2660	Siltstone, shaley, gray, hard, slightly porous; no red; rest of cavings as above
2670	As above; trace white anhydrite; trace limestone, buff, dense, tight
2680	Black shale, slightly calcareous; light gray siltstone, soft, slightly porous; cavings as above
2690	Brick red shale and silty shale; trace pyrite
2700	Brick red siltstone, firm, slightly porous; trace pyrite
2720	Brick red siltstone; trace limestone, buff, massive, hard, tight
2730	Brick red shale; limestone as above
2740	Light green to light gray siltstone, gypsiferous, slight to very calcareous, soft, porous (true cutting found in contact with brick red siltstone) little limestone, buff to maroon to gray, hard, dense, tight; maroon shale
2750	Shale, light gray to gray, soft, talcy; black shale, hard; rest as above
2760	Brick red shale and silty shale
2770	Shale, gray, soft, talcy; limstone, buff to dark gray, dense, hard, tight; light green to gray siltstone; maroon shale; light green silty shale
2800	Brick red siltstone, calcareous, porous; some as above
2810	Light gray to green gray shale, soft, talcy; siltstone, gray, firm, porous
2820	Brick red siltstone, calcareous, soft, porous; sand, loose, medium, red
2830	Black shale, hard; shale, gray; limestone, buff to gray, dense, firm, tight
2840	Brick to cinnamon red shale, mottled with light green; rest as above
2850	As above also shale, gray to dark gray shale; light green shale; light green to gray siltstone
2860	Varigated shale, maroon brown to green; light green silty shale; shaley siltstone, gray to brown, soft, slightly porous
2870	Brick red silty shale some mottled with light green
2880	As above
2880 - 2890	Shale, silty, dark gray; Cavings of brick red silty shale; varigated shale, brown to maroon to gray; light green silty shale; gray to brown shaley siltstone.
2900	Shale, silty, buff to light gray, calcareous, hard; limestone, buff to light gray, slightly silty, dense, hard, tight; rest as above.
2910	Shaley siltstone, black, firm, slightly porous; little anhydrite, white, sucrosic; rest as above
2920	Brick red silty shale, slightly calcareous, firm; shale, light green, slightly calcareous, micaceous, firm (red & green shale found in contact with each other); cavings? maroon shale & siltstone; light green to gray siltstone; limestone, light gray, dense, tight; limestone, buff, fine crystalline, micaceous, slightly porous?

2920 - 2930 Shale, gray, soft, calcareous, talcy; black shale, interlaminated with white granular gypsum; rest as above
2940 Shale, black
2960 Shale, gray, soft, talcy; pyrite
2970 Sandy shale, white, hard, non-porous; limestone, green to red, dense, hard, tight; rest as above
2980 Shale, black; rest as above
2990 Cinnamon red silty shale
3000 Brick red siltstone, calcareous, firm, porous
3030 Brick red silty shale and siltstone as above
3040 As above also little shale, light gray green, soft, talcy; trace pyrite
3060 Limestone, cream to light gray, massive to chalky, firm, tight; shale, silty, gray, soft; rest as above
3070 Brick red silty shale, calcareous
3090 As above; also little white limestone as at 3060
3100 Silty shale, gray, calcareous, talcy; limestone, gray, silty, dense, hard, tight
3110 Shaley siltstone, light green to white, slightly calcareous, firm, slightly porous; brick red shale; trace red chert
3120 Brick to cinnamon red shale, slightly silty, bentonitic, firm to hard; shale, silty, green gray to gray, calcareous, bentonitic, firm; little limestone, buff to gray, massive, dense, hard, tight.
3130 As above also red shale mottled with light green
3140 Brick red silty shale; siltstone, light green
3160 As above; also little limestone, grey-red, dense, hard, tight; trace gypsum
3170 Shale, black; rest as above
3180 Brick red silty shale, calcareous, hard
3190 As above, trace limestone, silty, dense, tight
3200 As above, trace anhydrite, white, sucrosic to massive

Pennsylvanian???? 3200

3220 Abundant limestone, buff to light gray, massive to microcrystalline, slightly silty, firm to hard; rest as above
3240 Brick red shale, calcareous, hard; siltstone, light green to gray, calcareous, firm, slightly porous; trace limestone as above
3257 Calcareous shale, gray, firm; shale, black

Drilling break at 3247; Circulated at 3257 for 1 hour
15 Min. Circ. as above; abundant shale, black
30 min. Circ. Limestone, white to buff, massive to fine crystalline to slightly chalky, tight
45 Min.Circ. as above but more chalky, soter, slightly porous?
1 Hour Circ. as above

CORE #1 3257-3307 using Christensen Diamond Core Bit type B12B, Face discharge; recovery 50'

3257 - 59½ Limestone, buff to cream, massive, dense, hard, tight
62 Calcareous shale, maroon, hard, with abundant white calcareous fusilinids
66 Limestone, dark red, slightly shaley, micaceous, microcrystalline, dense, hard, tight, interlaminated with dark red calcareous shale
74½ Calcareous shale, dark red, hard, interlaminated with dark red limestone as above and few 9" streaks of gray limestone, micaceous, microcrystalline, dense, hard, tight
79 Limestone, gray, micaceous, microcrystalline, dense, hard, tight with 1" streaks dark red calcareous shale and dark red limestone
90½ Calcareous shale, dark red, hard
93½ Limestone, gray, micaceous, microcrystalline, dense, hard, tight
3301 Limestone, dark red, very micaceous, otherwise as above
3307 Limestone, alternating dark red and gray, as above.
Will ream to 3307 and continue drilling

3310 - 3320 Limestone, dark red and light gray, microcrystalline to granular, silty, micaceous, dense, hard, tight; also calcareous shale, dark red, hard
3330 As above also; shale, black, firm
3340 As above also; little shale, gray, bentonitic, soft
3350 As above also; little shale, gray to green, firm
3360 As above also; limestone, white, granular to microcrystalline, (almost limestone sandstone) with green and black micaceous flakes, slightly porous?
3370 Limestone, white to light gray, massive, slightly silty, slightly chalky, dense, hard to firm, tight
Circulating on drilling break at 3376
3376 As above
20 Mins. at 3376 as above
40 Mins. at 3376 as above also limestone, light brown to pink, granular, silty, very micaceous, soft, slightly porous
60 Mins. at 3376 As above also trace limestone, buff to pink, microcrystalline matrix around abundant Fusilinids, dense, hard, tight
80 Mins. at 3376 As at 40 mins. circulation
Continued drilling
3376 - 3390 Limestone as above but more white, harder, non porous
3400 Limestone, red and gray, shaley, silty, micaceous, microcrystalline, hard, dense, tight; little limestone, white, massive, hard, tight
3410 Limestone, white to gray, massive, hard, tight
3420 Limestone, gray, fine crystalline, hard, tight
3430 Limestone, as above but fine crystalline to massive
3440 As above also calcareous shale, brick red, some mottled with light green, hard; little shale, gray, hard
3450 As above also shale, black, hard
3470 Shale, black, slightly calcareous, hard
3490 Limestone, light to dark gray, massive to fine crystalline, some slightly silty, dense, hard, tight

3500 Calcareous shale, dark red, with streaks shaley limestone, dark red, massive, dense, hard, tight
3510 Limestone, gray white to gray, massive, dense, hard, tight
3520 Limestone as above grading to dark gray, fine crystalline; little calcareous shale, black, siliceous, firm
3530 Calcareous shale, black, as above; also shale, calcareous, dark red and gray green, siliceous, slightly silty, firm
3540 As above, also limestone, gray white to dark gray, fine crystalline to massive, dense, hard, tight
3550 Limestone, gray white, as above
3560 Limestone, white to gray white, massive, slightly chalky, firm to soft, dense, tight
3570 Limestone, white as above; also limestone, gray to dark gray, massive to fine crystalline, hard, tight
3580 Limestone, dark gray as above; also shale, black, calcareous, firm; shale brick to darkred, calcareous, hard
3590 Limestone, red, slightly shaley, microcrystalline, dense, hard, tight; also shale, red, calcareous, hard
3600 Calcareous shale, dark red some mottled with light green; little light green calcareous shale and siltstone, hard
3620 Shale, red, calcareous, hard, waxy
3630 As above also shale green to gray, slightly calcareous, firm
3640 Limestone, light gray to buff, massive to cryptocrystalline, dense, hard, tight
3650 Limestone, white to cream, microcrystalline to very fine sucrosic, firm, flakey,
3660 Limestone, white, as above also limestone, dark gray, massive; limestone, brown and red, silty, shaley, micaceous, microcrystalline dense, hard, tight, little calcareous shale, red
3670 Limestone, gray brown to gray, fine crystalline to massive, firm; tight, shale, black, slightly to very calcareous, hard
3680 Calcareous shale, red and brown, some silty and micaceous, hard

Lansing-Kansas City 3680

3690 As above also limestone, white to buff, fine crystalline to slightly chalky, massive, dense, tight
3700 Limestone as above; little limestone, white, very chalky, slightly silty, massive, soft, non porous
3710 Limestone, light gray, granular to fine crystalline, silty, firm, slightly porous?
3720 Limestone, white to cream, massive to slightly chalky, slightly silty, dense, soft to firm, tight; limestone, buff to light gray, fine crystalline to massive, vitreous, hard, dense, tight
3730 As above also little calcareous shale, brown and red, hard
3740 As above more brown and red calcareous shale
3750 As above, also limestone, gray to dark gray, fine crystalline with weak oolitic texture, dense, firm, tight; trace pyrite
3760 Limestone, cream to light buff, microcrystalline to massive, firm, dense, tight; also little limestone, dark gray as above very slightly oolitic, dense, tight; also red and brown shale; trace pyrite
3770 Limestone, cream to light buff, as above, slightly oolitic, micro crystalline, very fine sucrosic matrix, firm, slightly porous; also

dark gray limestone as above but not oolitic

3780 Limestone, dark gray as above; shale, red to brown red, and black, slightly calcareous; sandstone, light green, very fine grained to fine, sub-angular, much white clay cement with few orange and green grains, soft, slightly porous

3790 Limestone, gray to buff, fine crystalline to massive, slightly silty, dense, hard, tight; also little limestone, light gray, granular (like very fine grained sandstone) silty, soft, slightly porous?

3800 Limestone, dark gray to brown, massive to fine crystalline, dense, tight; shale, black, silty, calcareous, hard; shale, green, slightly silty, calcareous; trace pyrite

3810 Limestone, light gray to buff, massive, dense, tight; shale, red and brown, calcareous, hard; also little shale black and green as above.

3817 As above; also limestone, gray white, microcrystalline to massive, slightly chalky, slightly silty, dense, firm

Circulating in preparation for DST of 3740-3817

20 Mins. Circ. As above

40 Mins. Circ. As above; also limestone, dark gray, silty, massive to fine crystalline, dense, hard, fragmental, tight

60 Mins. Circ. As above; also limestone, white to gray white, slightly silty, massive, slightly semi chalky, soft to firm, dense, tight

80 Mins. Circ. As above but mostly shale, red mottled with light green and light green, slightly calcareous, silty, medium to hard

D.S.T. 3740-3817 Johnston test tool. Tool open 2 hours; Shut in 30 mins. Slightly to weak blow, died in 38 mins., started again at 45 mins. and continued throughout test. Recovered 80' slightly water cut drilling mud. BHPF - 0#; BHPSI Not recovered, H. H.

Continued drilling. Sample cuttings as below

3817 - 3820 Shale, black, non calcareous, hard; shale, red, slightly calcareous, hard; cavings

3830 As above

3840 Limestone, buff to gray white, massive to microcrystalline, dense, hard, tight; also limestone, dark gray, fine crystalline, with black carbonaceous inclusions, dense, medium hard, tight

3850 Limestone, dark gray as above to black, cryptocrystalline to massive with small black nodular inclusions, dense, hard, tight

3860 Limestone, buff to brown gray, fine crystalline to oolitic, dense, hard, tight

3880 Limestone, light gray to dark gray, fine crystalline to massive, slightly oolitic, dense, hard, some silty, fragmental, tight

Circulating on drilling break at 3875-80

3870 - 3880 As above

20 Mins. at 3880 As above

40 Mins. at 3880 Limestone, light buff, slightly chalky to very fine sucrosic, slightly oolitic, slightly silty, soft to firm; Oil odor on fresh cuttings, yellow white; oil fluorescence

60 Mins. at 3880 Limestone, white, massive, chalky, silty, soft, tight, slightly gas odor on fress cuttings

80 Mins. at 3880 Limestone, white, chalky as above also little limestone as at 40 Mins. Circ. with slight yellow white oil fluorescence

Diamond Core #2 3880-3901.3 Recovered 21.3 Ft.

3880 - 3882.5 Limestone, buff to light brown gray, fine crystalline to massive, abundant fossil fragments (Fusilinids, Bryazoa, Brachipods, etc.) slight oolitic, slightly stylolitic, hard, tight to slightly porous, vertical fractures.

3882.5 - 3887 Limestone, buff to light gray, massive to fine crystalline, slightly oolitic, dense, hard, tight, slightly fossil, slightly stylolitic, jagged gilsonite parting near top, vertical fractures with oil show along them

3890 Limestone, light brown to gray, massive to cryptocrystalline, with coarse brown calcite crystals and minute veinlets filled with micro crystalline; calcite, hard, tight, very fract. with Oil Show (weak)

3890.5 Shale, black, calcareous to very calcareous, few fossil fragments and few coarse crystals, brown calcite, hard

3892 Limestone, black to dark gray, with inclusions of light gray, massive to fine crystalline, hard, dense, tight with laminae and partings of black shale, calcite lined cavities 1/4" - 3/8" diameter.

3901 Limestone, light gray, microcrystalline, slightly silty, slightly micaceous, dense, hard, tight

3901.3 Shale, black, calcareous, hard

D. S. T. 3871-3901 Johnston test tool. Tool open 2 hours
Shut in 30 mins.
Weak steady blow for 2 hours
Recovered 550' Rancid, brackish water & some RHM, slightly gassy in bottom 250'
BHPF 300#; BHPSI 1050#; HH 2000#

3901 - 3910 Shale, black, non calcareous, medium hard, limestone, light to dark gray, massive to cryptocrystalline, dense, firm to hard, tight

3920 Limestone, gray white to buff, massive to slightly chalky, soft to firm, slightly silty, dense, tight

3930 Limestone, dark gray to black, massive, slightly amount of black carbonaceous material, medium to hard, dense, tight

3940 Limestone as above and as at 3920

3960 Limestone, gray to dark gray, massive to weakly oolitic, silty, hard, dense, tight

3970 Limestone, light gray, massive, slightly silty, shaley, firm, dense, tight

3980 Limestone, white, massive to slightly chalky, dense, soft, tight

4000 Limestone, light gray to buff, massive, dense, firm, tight

4010 Limestone, white to gray white, massive to very fine sucrosic, slightly oolitic, firm, dense, tight

Circulating drilling break at 4015-4020
4010 - 4020 Limestone, as above less oolitic
20 Min. Circ. at 4020 As above trace limestone, buff, microcrystalline to very oocastic, soft to firm, porous, no show
40 Min. Circ. at 4020 Limestone, buff, microcrystalline, very oocastic, slightly oolitic, firm, porous, no show
60 Min. Circ. at 4020 As above
80 Min. Circ. at 4020 " "

Diamond Core #3 4020-4036½ Recovered 16.5 Ft.
4020 - 4027 Limestone, light to gray to gray brown, mottled with dark gray in top 3 feet, coarse to fine crystalline, dense, hard, tight, shaley, stylolitic, with dark gray shale partings, pyritic, few scattered Crinoid stems, tendency to fracture vertically in bottom 3 ft. Rancid, sulf odor on break. Few spots yellow white oil fluorescence near top. Note; very small, very thin remnant of buff, slightly oocastic limestone similar to that in sample cuttings but much less oocastic
4027.5 Limestone, black to dark gray, cryptocrystalline to massive, with few coarse crystals of brown calcite, shaley, little pyrite, dense, hard, tight
4028.5 Shale, black, calcareous, hard, brittle when dry
4032.5 Limestone, gray, cryptocrystalline to massive, slightly silty, slightly micaceous, pyritic, dense, hard, tight
4036.5 Shale, black, calcareous, hard, brittle when dry
Reamed rathole and drilled to 4041
D.S.T. 4014-4041 Johnston test tool. Tool open 2 hours; Shut in 30 Mins. Weak blow for 2 hours; Recovered 90' Water cut drilling mud; BHPF 0#; BHPSI 1150#; HH 2100#
4041 - 4050 Limestone, dark gray, cryptocrystalline, slightly silty, dense, hard, tight, slightly pyritic
4070 Limestone, dark gray to black, as above with few scattered black nodules, calcareous
4080 Limestone, buff to light gray, massive to slightly chalky, firm to soft, dense, tight, flakey, also shale, black, calcareous, hard
Circulating drilling break at 4082-4085
4080 - 4085 Limestone, as above
20 Min. Circ. at 4085 As above also shale, dark gray to black, very calcareous, firm
40 Min. Circ. at 4085 As above also limestone, buff to light gray, cryptocrystalline to oolitic and oocastic, soft, porous, slightly pyritic
60 Min. Circ. at 4085 As above abut not pyrite
80 Min. Circ. at 4085 As above also little limestone, white, chalky, soft
Diamond Core #4 4085-4131.5 Recovered 46.5 Ft.
4085 - 4089 Limestone, light gray to white to buff, oolitic to oocastic, slightly fragmental, slightly chalky to very fine sucrosic, medium hard with micro shale partings, slightly pyritic, some porosity, rancid, sulf odor. Slightly stylolitic, slightly fossiliferous (Fusilinids & Brachipods)

4089 -4096.5 Limestone, gray to brown, massive to medium crystalline to fragmental, hard, non porous, trace glauconite, very few distorted fossils, streaks, partings and laminae of black shale

4097.1 Shale, black, slightly calcareous

4104.1 Limestone, buff to light gray, massive to very slightly chalky to fragmental to fine crystalline, dense, hard, non porous with minute veinlets of gray to tan calcite and few calcite lined small vugs. Stylolitic, few scattered Fusilinids. Less crystalline towards base and slightly pyritic

4114.1 Calcareous dolomite, gray to light gray to tan, gray green shaley streaks, microcrystalline very fine granular, hard, tight, micaceous, very slightly pyritic, in center very micaceous, slightly glauconite laminae

4116.1 Limestone, gray to dark gray to black, microcrystalline, hard, tight, micaceous, with minute veinlets of calcite, trace pyrite and glauconite

4131.5 Limestone, gray to light gray, microcrystalline, hard, tight micaceous, trace azurite, pyrite and glauconite non fossil

Reamed and resumed drilling

4131-4140 Limestone, as above

4150 Shale, black, firm; also calcite dolomite, dark gray, microcrystalline, shaley, micaceous, hard, tight

4160 Limestone, gray to dark gray, massive to fragmental, slightly chalky, slightly micaceous, hard, tight

4170 Limestone as above; also shale, red brown, calcareous, hard

4180 As above also shale, black, calcareous, firm

4190 Shaley dolomite, dark gray, massive to cryptocrystalline, medium hard, dense, tight, slightly micaceous, with black carbonate nodules, also shale red brn, calc.

Marmaton 4190

4190 - 4200 Limestone, gray to gray brown, massive slightly chalky, dense, hard, tight. Few specks of dim yellow oil fluorescence along edges of calcite veinlets

4210 As above also limestone, gray white, massive to semi chalky to very fine sucrosic, dense, soft, tight; also shaley limestone, black, glossy, medium hard, tight.

4220 Limestone, white as above; limestone, buff to gray, massive to very slightly chalky, dense, hard, tight

4230 Limestone, brown to brown gray, massive to very slightly chalky, dense, hard, tight, very few specks of dim yellow white oil fluorescence along edges of calcite veinlets, rancid odor; also shale, black, very calcareous, firm

4240 As above also little shale, brown, calcareous, silty, firm

4250 Limestone, brown to gray brown, massive to very slightly chalky, dense, hard, tight, trace of thin lines of dim oil fluorescence along edges of calcite veinlets, rancid odor; little shale, brown calcite, silty, firm

4260 Shale, black, calcareous, hard

4270 As above also limestone, gray to gray brown, massive to slightly fragmental, dense, hard, tight, shaley

4280 As above also limestone, white to cream, massive to very fine sucrosic, slightly chalky, soft, tight, slightly silty, slightly micaceous.

4290 Shale, black as above; calcareous dolomite, gray to dark gray, massive to microcrystalline, silty, micaceous, hard, dense, tight; pyrite

4300 Limestone, gray to gray brown, massive to slightly fragmental, very slight chalky, hard, dense, tight, trace dim yellow white oil fluorescence along edges of fragmental limestone.

4310 Limestone as above but no fluorescence; also shale, brown, micaceous, calcareous, firm; shale, black, calcareous, firm.

4320 As above, also calcite dolomite, massive to microcrystalline, hard, dense, tight, slightly micaceous, slightly silty, with minute veinlets filled with white calcite; slightly pyritic

4330 Limestone, light gray to buff, massive to sub lithographic to slightly chalky, dense, medium hard, tight, few specks of oil fluorescence.

4340 Shale, red and brown, calcareous, medium hard

4350 Limestone, light gray to gray, white to dark gray, massive to microcrystalline to fragmental, slightly chalky, dense, hard, tight, slightly silty, slightly micaceous, trace pyrite.

4360 Limestone, gray white, massive, semi chalky, dense, soft, tight, micaceous; also shale, black to dark gray, calcareous, hard

4370 Limestone, gray to gray brown, massive to slightly fragmental, dense, hard, tight, few specks of oil fluorescence along minute fractures; shale, black, calcareous

4380 Shale, dark gray, slightly silty, very slight to non calcareous, firm; pyrite

4390 As above also calcareous dolomite, gray to dark gray, microcrystalline, hard, dense, tight, slightly micaceous with black nodules (pyrite core); trace limestone, light gray brown, massive to slightly fragmental, very slightly chalky, hard, dense, tight with occasional thin line of oil fluorescence along minute fractures

4400 Limestone, gray brown as above with oil fluorescence as above

4410 Limestone, light gray to buff to light brown gray, massive to fragmental, dense, hard, tight, abundant yellow white fluorescence along fractures and throughout limestone.

Circulating out samples at 4412

4410-4412 As above but less fluorescence

20 Mins. Circ. Limestone as above, also calcite dolomite, gray to dark gray, massive to microcrystalline, shaley, slightly micaceous, medium hard, dense, tight; also shale, red, slightly calcareous, firm

40 Mins. Circ. As above also limestone, black, massive, hard, dense, tight, NS

60 Mins. Circ. Shale, black, non calcareous to very calcareous; limestone buff to gray as at 4410 with slight oil fluorescence.

80 Mins. Circ. As above

D.S.T. 4385-4412 Johnson test tool. Packer Failed. Misrun

D.S.T. 4362-4412 Johnson test tool. Tool open 1½ hours.
Shut in 20 mins.
Weak blow for 3 mins. then died
Recovered 10 ft. drilling mud
BHPF 0#; BHPSI 0#; H.H.2350#

Top Cherokee

4412 - 4420 Shale, black, calcareous

4430 Shale, brown, calcareous, slightly silty, firm to soft; limestone, dark gray, massive to microcrystalline, micaceous, silty, hard, dense, tight; also shale, dark gray to black, calcareous, hard.

4440 As above

4450 As above mostly shale, red brown, calcareous, firm

4460 Shale, black, calcareous, firm; limestone, gray to light gray to light brown, massive to lithographic, dense, medium hard, tight, with clear calcite filled minute veinlet which occasionally show little yellow white oil fluorescence.

4470 Shale, black as above; limestone, dark gray to gray, massive to fine crystalline, fragmental, dense, hard, tight, silty

4480 As above also limestone, light gray to tan, microcrystalline to very fine granular, silty, micaceous, hard, dense, tight

4490 As above, pyrite in black shale

4500 Shale, gray, slightly silty, slightly micaceous, calcareous, with black nodules, calcareous; limestone, gray, microcrystalline to massive, micaceous, hard, dense, tight; trace shale, brown calcareous, micaceous, silty, firm

4510 As above also limestone, light gray to buff to white, massive to microcrystalline, some semi chalky to very fine sucrosic, hard to soft, dense, tight, slightly silty, slightly micaceous.

4540 Shale, black, calcareous, firm; limestone, dark gray to gray, massive to microcrystalline, slightly silty, micaceous, hard, dense, tight; trace pyrite

4550 Shale, black, calcareous, firm; little limestone, dark gray as above.

4560 As above also little limestone, light gray to light brown gray, massive to fragmental, hard, dense, tight; pyrite

4570 Shale, black, calcareous, hard

4580 As above also limestone, dark gray, microcrystalline to massive, slightly micaceous, firm, tight

4590 Limestone, light gray to dark gray, as above, some limestone light gray is very fine sucrosic.

4590 - 4600 As above
4610 Shale, black, calcareous, medium hard
4630 As above also little shale, brown, calcareous, micaceous, slightly silty, firm
4660 Shale, black; also little limestone, light gray to gray brown, microcrystalline to massive, hard, dense, tight, slightly, micaceous, slightly silty
4680 Shale, black to dark gray, calcareous, hard; pyrite
4690 As above also limestone, gray to light gray, massive to microcrystalline, silty, micaceous, hard, dense, tight
4700 As above also shale, red brown, slightly silty, calcareous, firm
4710 Limestone, gray white to dark gray, massive to microcrystalline, slightly chalky, soft to hard, dense, tight
4720 Limestone, as above, also shale, black, calcareous, hard
Circulating drilling break at 4723-4727
4720 - 4727 Shale, black, as above also little limestone, buff to light gray brown, massive to fine crystalline to fragmental, hard, dense, tight, slightly silty, slight trace yellow white oil fluorescence along minute fractures
20 Min. Circ. at 4727 Limestone, light gray to buff to tan, massive to microcryxtalline, slightly chalky, very fine sucrosic, firm, dense, tight; little siltstone, light green to light gray, shaley, angular, white clay cement, soft, porous (Caving?)
40 Min. Circ. As above but only slight trace of siltstone
60 Min. Circ. As above also very slight trace limestone, buff as above except oolitic and oocastic, soft, porous to tight.
80 Min. Circ. As above
Resumed drilling.
4730 - 4740 Shale, black, calcareous, hard
4750 As above also limestone, black to dark gray, cryptocrystalline, slightly micaceous, hard, dense, tight
4760 As above also limestone, light gray, fine crystalline to fragmental, slightly silty, hard, tight
4770 As above also little shale, red brown to brown, calcareous, slightly silty, firm
4780 Shale, black to dark gray, slightly calcareous, hard, also little sandstone, fine to medium, light gray to light green, sub-round, clay cement, firm, slightly porous, N.S.
4820 Shale black to dark gray as above
4830 As above also calcareous dolomite, light gray to gray, microcrystalline, silty, hard, dense, tight, micaceous
4860 As above also little shale, gray green, slightly waxy, firm, slightly calcareous with black nodules; fragments of shell casts in dark shale
4870 Shale, dark gray to black, calcareous, slightly micaceous, slightly siliceous, hard
Circulating drilling break at 4870-4874
20 Min. Circ. at 4874 As above also trace sandy shale, black, firm, tight, sand grains fine to medium, sub-round
40 Min. Circ. Shale, black as above also trace clear quartz fragments, very coarse, angular to subangular, some cemented together

60 Min. Circ. Conglomerate or sandstone, very coarse to medium, white to clear, angular to sub-angular, appears fairly well cemented but is only firm to soft, slightly porous, several specks of yellow white oil fluorescence

80 Min. Circ. As above

DiamondCore #5 4874-4878 Recovered 4 ft. core pulled because of lost circulation at 4878

4874-4875 Sandstone, buff to light brown gray, fine to medium, angular, clear quartz cemented with tan to buff very micaceous very soft silty, hard, porous, shaley and dark gray shale laminae and inclusions at top, non calcareous. Odor slightly brackish to very slight burnt oil, very definite gas distillate taste, very abundant yellow white oil fluorescence throughout.

4878 As above except medium to very coarse, may be considered conglomeratic, very porous, strong oil fluorescence as above, occasionalcoal parting and streaks, half cavity in side of core 1½ ft. off bottom 1½ x 1 x 1"

D.S.T. 4872-4878 Johnson test tool. Tool open 55 mins.
Shut in 15 mins.
Gas reached surface in 5½ mins.
Strong steady blow throughout test.
Est. at least 1,000 MCF/day by Peters.
Recovered 225' Muddy salt water, slight gas cut
BHPF 400-400#
BHPSI 1015#
H.H. 2650#

Drilled 4878-4881 Cutting sample
Sandstone as in core above with spots of yellow white oil fluorescence, also abundant shale, black slightly calcareous, firm (Cavings?)

Diamond Core #6 4881-4896 Recovered 14'

4881-84½ Sandstone, buff to light gray, medium coarse, angular, clear quartz with cement of buff, micaceous silty, hard, fair to slight porosity, gas odor and taste on fresh break, abundant yellow white oil fluorescence in matrix. Dark gray and black carbon shale inclusions in bottom ½ feet. Vertical fracturing in more than one plane.

4895 Shale, black, non-calcareous, hard, brittle. Top 2½ ft. with slicken sides and small drag folds

D.S.T. 4878-4896 Johnson test tool. Tool open 1 Hr.
Shut in 15 mins.
Gas reached surface in 8 mins.
Strong blow throughout test.
Est. 200 MCF/day by Peters.
Recovered 150' water cut mud slightly salty
BHPF - 0# - 125#
BHPSI: 950#
H.H. - 2650#

Resumed drilling

60 Min. Circ. Conglomerate or sandstone, very coarse to medium, white to clear, angular to sub-angular, appears fairly well cemented but is only firm to soft, slightly porous, several specks of yellow white oil fluorescence

80 Min. Circ. As above

DiamondCore #5 4874-4878 Recovered 4 ft. core pulled because of lost circulation at 4878

4874-4875 Sandstone, buff to light brown gray, fine to medium, angular, clear quartz cemented with tan to buff very micaceous very soft silty, hard, porous, shaley and dark gray shale laminae and inclusions at top, non calcareous. Odor slightly brackish to very slight burnt oil, very definite gas distillate taste, very abundant yellow white oil fluorescence throughout.

4878 As above except medium to very coarse, may be considered conglomeratic, very porous, strong oil fluorescence as above, occasionalcoal parting and streaks, half cavity in side of core 1½ ft. off bottom 1½ x 1 x 1"

D.S.T. 4872-4878 Johnson test tool. Tool open 55 mins.
Shut in 15 mins.
Gas reached surface in 5½ mins.
Strong steady blow throughout test.
Est. at least 1,000 MCF/day by Peters.
Recovered 225' Muddy salt water, slight gas cut
BHPF 400-400#
BHPSI 1015#
H.H. 2650#

Drilled 4878-4881 Cutting sample
Sandstone as in core above with spots of yellow white oil fluorescence, also abundant shale, black slightly calcareous, firm (Cavings?)

Diamond Core #6 4881-4896 Recovered 14'

4881-84½ Sandstone, buff to light gray, medium coarse, angular, clear quartz with cement of buff, micaceous silty, hard, fair to slight porosity, gas odor and taste on fresh break, abundant yellow white oil fluorescence in matrix. Dark gray and black carbon shale inclusions in bottom ½ feet. Vertical fracturing in more than one plane.

4895 Shale, black, non-calcareous, hard, brittle. Top 2½ ft. with slicken sides and small drag folds

D.S.T. 4878-4896 Johnson test tool. Tool open 1 Hr.
Shut in 15 mins.
Gas reached surface in 8 mins.
Strong blow throughout test.
Est. 200 MCF/day by Peters.
Recovered 150' water cut mud slightly salty
BHPF - 0# - 125#
BHPSI: 950#
H.H. - 2650#

Resumed drilling

4896-4910 Shale, black, firm, non-calcareous
4920 As above also calcareous dolomite, dark gray to cryptocrystalline to massive, shaley, micaceous, hard, tight
4930 As above also shale, light green gray, non calcareous, firm
4940 As above with black nodules in gray calcareous dolomite; pyrite
4950 As above also limestone, brown to gray, fine crystalline to fragmental, hard, tight
4960 Limestone as above grading into limestone, gray white to light gray, slight chalky to sucrosic to fine crystalline, hard, tight, slightly pyritic
4970 Shale, light gray green, very glauconitic (fine red glauconite grains) non-calcareous, firm
4980 Limestone, gray white to buff to light brown, slightly chalky to fine crystalline, silty, slightly micaceous, hard tight; also shale brown to gray brown, slightly silty, firm; fossil fragments to bryazoa
4990 As above also shale, black, slightly calcareous
5000 Limestone, buff as above, slightly glauconitic, firm
5010 Limestone, cream to buff to white, massive to semi-chalky to very fine sucrosic, slightly silty, soft to firm, tight

Top Mississippian St. Genevieve 5010

5020 Little sandstone, white to clear, fine to medium, sub round to sub-angular, slightly glauconitic, firm, porous, very slightly calcareous, with slight yellow white oil fluorescence (This sandstone represents a couple of feet of Basal Morrowan sandstone or is cavings from the Cherokee). Abundant sandy limestone, white to light gray, granular to semi chalky with red, fine to medium sand grains, slightly glauconitic, very slightly porous/: firm to soft, N.S.; little pyrite
5030 Sandy limestone, white to buff as above

Circulating cutting samples at 5035
5030-5035 Sandy limestone as above
20 to 60 Min. Circ. at 5035 Sandy limestone, as above possible very slight porosity?
Diamond Core #7 5035-5085 Recovered 50'
5035-5085 Sandy limestone, light gray to gray white, fine crystalline to granular, may be considered limestone sandstone, approximately 35% quartz grains, slightly glauconitic, slightly pyritic, hard, dense, tight, N.S. More cyrstalline towards base, occasional shaley limestone laminae; 3' zone of irregular fracturing about 10 ft. from top with light blue to gray shale along fractures. (Lost circulation in this zone at 5047 while reaming)
Resumed drilling
5085-5090 Sandy limestone as above
5110 As above

Top St. Louis at 5110

5130 Limestone, light gray to brown to buff, massive to very fine crystalline, some slightly oolitic, medium hard, dense, tight
5140 As above but silty, slightly micaceous

Circulating drilling break at 5146-5149
5149 As above
20 Min. Circ. Limestone, cream to white to buff, fine crystalline to granular to oolitic, slightly sandy, silty, firm to soft, tight to very slightly porous? N.S.

40 Min. Circ. at 5149 Limestone, as above but less crystalline, more slight chalky to granular, sandy
60 Min. Circ. at 5149 As above
80 Min. Circ. at 5149 As above
Diamond Core #8 5149-5164 Recovered 15 Ft.
5149-5149.4 Limestone, gray to buff, microcrystalline, silty, slightly dolomitic, slightly glauconite, hard, dense, tight; top inch slightly granular, with little scattered pinpoint porosity, N.S.

5153 Limestone, gray to gray brown, fine crystalline to massive to fragmental, slightly chalky, with occasional light green glauconite or malachite patches, few brown shale streaks, hard, dense, tight

5154 Limestone, brown, massive to lithographic, hard, dense, tight; Gilsonite parting at top

5159 65% limestone, gray to gray brown, microcrystalline, hard, dense, tight, mixed with 35% limestone, brown, massive to litho as above. Some irregular brown shale lined fractures, also few scattered small cavities; hard, dense, tight N.S.

5164 Limestone, as above except 65% brown, massive to ligho and 35% gray to gray brown, microcrystalline, hard, dense, tight, slightly stylolitic, N.S.

Resumed drilling

5170-5180 Limestone, gray to gray brown, fine crystalline to fragmental, slightly silty, hard, non porous; also little limestone, light gray to gray white, massive to micro-sucrosic, slightly chalky, micaceous, firm, dense, non porous

5190 Limestone, light gray to gray white, as above; also limestone, light brown, massive to sub lithographic, medium hard, dense, non porous

5200 As above; little pyrite

5210 As above with chert, milky white, vitreous, very hard

5220 Chert, milky white as above also; limestone, light brown, microcrystalline to massive, medium hard, non porous

5230 Dolomitic limestone, gray white to buff, fine crystalline, medium hard, tight; chert as above; abundant shale, gray and black, slightly calcareous (Cavings?)

5240 Limestone, brown to brown gray, fine crystalline to fragmental, some slightly oolitic, silty hard, dense, non porous; abundant gray and black shale

5250 As above but mostly cavings

5260 Limestone, as above in irregular angular or round shapes mixed in light gray shale, firm; trace fossils bryozoa

5270 Calcareous dolomite, light gray to gray to very dark gray, massive to cryptocrystalline, medium hard, slightly micaceous, very slightly silty, dense, non porous, slightly fossil brachipod? shell fragments & Bryozoa

5280 Calcareous dolomite light gray, as above; also limestone, light gray to light gray brown, fine crystalline to micro-sucrosic, slightly silty, medium hard, non porous

5290 Limestone, light brown, as above; trace chert, milky white

5310 As above; still much black and gray shale
5330 Limestone, buff to light gray brown, massive to fine crystalline, medium hard, dense, non porous; shale, black and gray (cavings?)
5350 Dolomite, buff to cream to light brown, crystalline to very fine sucrosic, slightly chalky, some slightly calcareous, hard, non-porous; trace chert, milky
5360 As above also shale, gray brown, non calcareous, firm
5370 Dolomite, light gray to tan to trace red and green, massive to very fine sucrosic to fine crystalline, slightly silty, hard, non porous; little chert, milky to cream
5380 Dolomite as above; also dolomite, light brown to dark gray, coarse crystalline to fragmental, hard, non porous, with trace glauconite in dolomite

Lost circulation at 5383 - possibly in top of Viola at 5380
After recovering circulation drilled to 5386. No sample

Diamond Core #9 5386-5393 Core head plugged with lost circulation material and barrel jammed. Recovered 5'
60% dolomite, gray brown to brown and little white, coarse crystalline to fragmental, hard, some vuggular porosity and highly fractured, N.S. mixed with 40% dolomite, white to pink, massive to slightly fragmental coarse crystalline, hard, mostly dense with some vuggular porosity, also fractured, N.S.

Drilling to 5405 to take D.S.T. Circulated samples at 5405
5395-5400 All cavings
20 Min. Circ. at 5405 Dolomite, white, coarse crystalline t- rhomb., medium hard, dense
40 Min. Circ. at 5405 As above also dolomite, gray brown to white, medium crystalline, dense, hard, no porosity evident in cuttings but drilling very fast like porous zone
60 Min. Circ. at 5405 As above
80 Min. Circ. at 5405 As above

D.S.T. 5387-5405 Tool open 1½ hours
Shut in 15 Mins.
Steady medium blow throughout test.
Recovered 2160' slightly salty water
BHPF: 900-1150#F; BHPSI: 1200#; H.H.: 2600#

Resumed Drilling
5405-5420 Dolomite, white to milky, coarse crystalline to rhomb to massive, medium hard, dense, no porosity evident, also dolomite, brown to tan, coarse to fine crystalline, medium hard, dense, slightly vuggular porosity

Simpson at 5422
5430 Dolomite, brown to tan, as above also; dolomite, slightly sandy, white, fine crystalline to slightly granular, with fine red, quartz grains, some with black carbon impurities, medium hard, tight; trace limestone, buff to light gray, massive to lithographic, hard, non-porous

5440 Sandy dolomite, white as above; little limestone, buff to light gray as above; also limestone, sandy, white to maroon to light gray to light blue, massive to microcrystalline, medium hard, tight; trace shale, light green and light purple blue, non calcareous, firm

5450 Sandy dolomite as above also; sandstone, white, fine to medium, sub round, dolomitic cement, hard, tight

5460 Sandstone, white as above to sandstone, white, medium to fine, sub-angular, quartzite like, hard, tight, slightly pyritic, N.S. also; shale; light green, slightly calcareous, firm, siliceous, some with few coarse red sand grains

5470 Sandstone as above also; dolomite limestone, light gray to buff, massive, some slightly sandy, hard, non porous

Top Arbuckle at 5475

5480 Sandstone as above, also dolomite and calcareous dolomite, buff to tan to brown, massive to fine crystalline to fragmental, hard, non porous.

5500 Dolomite as above

Circulating possible drilling break at 5502-5507

5507 Dolomite, tan as above

40 Min. Circ. at 5507 Dolomite, tan, microcrystalline to massive, hard, non porous

60 Min. Circ. at 5507 As above also calcareous dolomite, sandy, buff, massive to microcrystalline, hard, tight also calcareous to dolomite shale, dirty gray, silty with black carbonaceous specks

80 Min. Circ. at 5507 As above; dolomite, tan, slightly pyritie

Resumed drilling

5507-5510 Dolomite, sandy, buff to tan, granular to microcrystalline to very fine sucrosic, medium hard, tight

5520 As above

5530 As above but much less sandy, not granular

5540 Dolomite, tan to light gray brown, massive to microcrystalline, hard, non porous

5550 Dolomite, buff to light brown, massive to very fine sucrosic to slightly granular, slightly sandy, medium hard, tight

5560 As above slightly glauconitic

5570 As above very slightly pyritic

5580 As above also light gray in color

5590 Dolomite, light gray to cream to buff, fine crystal to granular, medium, hard, tight, slightly sandy, slightly pyritic

5600 Dolomite, sandy, buff to light brown, granular to microcrystalline, medium hard, tight

5620 Sandy dolomite, as above, also slightly oolitic

5630 As above slightly pyritic

5640 As above also; sandstone, dolomite to calcareous, buff, fine to medium, sub round with muchdolomite to calcareous cement, hard, tight; also sandstone, white to clear, very quartzitic, fine to medium, angular to sub-angular, slightly calcareous, medium hard, slightly porous, N.S.

5650 As above little chert, white to cream, opaque, brittle

5660 Dolomite - calcareous sandstone as above also abundant dolomite, cream to tan, massive to very fine sucrosic to fine crystalline, some sandy, hard to medium, non porous

5670 As above also shale, light green, non calcareous, some sandy and glauconite, firm.

5680 As above little pyrite

Circulating drilling break at 5679-5682

20 Min. Circ. at 5682 Dolomite, gray brown to gray, massive to microcrystalline, hard to firm, non porous; dolomite, white to buff to slightly pink, massive to very fine sucrosic, hard, non porous

40 Min. Circ. As above

60 Min. Circ. As above also shale, dirty dark gray to brown gray, silty, micaceous, dolomitic, slightly glauconitic and with black carbonate flecks, soft to firm

80 Min. Circ. As above

5682-5690 As above, but mostly dolomite, cream to buff to brown to gray, very fine sucrosic, medium hard, some slighty sandy, non porous

5730 Dolomite, cream to buff to light gray, fine crystalline to very fine sucrosic, medium hard, non porous, slightly pyritie

5740 Dolomite, slightly sandy, light gray to gray white, massive to fine crystal, hard, non porous, slightly pyritic, little pink

5760 As above, also little limestone, gray brown, massive hard, nonporous

5790 Dolomite, light gray to buff, fine crystalline, hard, non porous; trace chert, white, opaque

5820 Dolomite as above to very fine sucrosic, no chert

Bonneterre Formation? at 5820

5830 Dolomite, light gray to buff to pink, medium coarse crystalline, hard, non porous

5840 As above mostly pink to rose; trace chert, white, opaque

5850 As above

5880 Dolomite, light gray to buff to pink, medium to coarse crystalline, hard, non-porous, slightly glauconitic (very slight oil fluorescence at 5860 only)

5890 Dolomite, cream to gray white, fine to very fine crystalline to

5900 As above also little pink, slightly pyritic

5910 As above but more glauconite and some slightly more sandy; also dolomite, white, medium crystalline, very glauconitic, firm, slightly porous

Lost all circulation at 5914. Will attempt to recover circulation and condition hole in order to run Electric log.

1317

Schlumberger Formation Tops
By: T. R. Carpen 10-2-52

Continental Oil Co.
McClave State #1
Section 11; 20S; 49W
330' FSL; 330' FEL
Kiowa County, Colorado
Gr. Elev. 4043; DF 4052

Dakota	563	(+4489)
Morrison	856	(+4196)
Day Creek	1610	(+2442)
Blaine	1827	(+2225)
Stone Corral	2085	(+1967)
Chase	2513	(+1539)
T/Penn.??	3394	(+658)-----"D" 3356 (+696) used on Well Summary
Lansing-KC	3680	(+372)
Marmaton	4178	(-126)
Cherokee	4405	(-353)
Morrow	4752	(-700)
St. Genevieve	5014	(-962)
St. Louis	5112	(-1060)
Viola	5367	(-1315)
Simpson	5424	(-1372)
Arbuckle	5470	(-1418)
Bonneterre	5320	(-1768)
T. D.	5914	

Core No. 7, 5035'-5085'. Core No. 8, 5149'-5164'. Core No. 9, 5386'-5393'. DST 5389'-5405'; tool open 1 1/2 hours, shut in 15 minutes; medium blow throughout test; recovered 2160' water; FP 900#, SIP 1200#.

Plugged back to 4894' with 160 sacks cement. Set 5 1/2" casing at 4856' with 200 sacks. WOC 44 hours. Cleaned out to 4911'.

Acidized open hole interval 4911'-4856' with 2000 gallons Dowell X acid. Swabbed well to life, produced at the rate of 150-175 MCFD.

Shot interval 4870'-4890' with 50 quarts SNG. Cleaned out to 4902'. Well temporarily shut in. Estimated potential 374 MCFD.