NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 92

Summary of Socony-Vacuum Oil Company, Inc. Charles Dvorak #F 42-6-P
Dunn County, North Dakota
Permit No. 521 Well No. 505

By LaVerne B. Nelson
October, 1954

Socony Vacuum – Dvorak #F 42-6-P, Dunn County, North Dakota, SE NE Section 6, T. 141N., R. 94W. (660' from East line and 1980' from North line), Elevation G.L. 2285', K.B. 2296'.

The Socony Vacuum – Dvorak was spudded December 22, 1953. 13 3/8" casing was set to a depth of 716 feet and cemented with 540 sacks of cement 7" casing was set to a depth of 8850 feet and cemented with 1200 sacks of cement. The well was drilled to a total depth of 12,556 feet, plugged and abandoned May 22, 1954.

DST’s

DST #1 8835-8937
Hookwall packer failed.

DST #2 8735-8937
Hookwall packer failed.

DST #5 8834-8937
Open hole packer set in, casing failed.

DST #4 8826-8937
Double open-hole packers set in 7" casing. Tool open 4 hours, shut in 40 minutes. Weak blow dying in 22 minutes, dead 40 minutes then weak blow 40 minutes, dead remainder of test. Drill pipe split 33 IFP-210, FFP-275, SIP-1585, HH-4680.

DST #5 8937-8967
Mis-run.

DST #6 8899-8967 Tool open 3 hours, shut in 30 minutes. Very weak blow, dead after 20 minutes. Recovered 290' of very slightly water-cut mud with sulfur odor and trace of green oil. IFP-275, FFP-275, SIP-1100, HH-4900.

DST #7 8906-9050
Tool open 3 hours, shut in 20 minutes. Very weak blow for 20 minutes, dead remainder of test. Recovered 460' salty, sulfur water-cut mud. IFP-10, FFP-300, SIP-2750, HH-5200.

DST #8 10,293-10,402
Tool open 30 minutes, shut in 20 minutes. Fair to good blow throughout. Recovered 730' water-cut mud and salt water. IFP-300, FFP-600, SIP-4800, HH-5900.
DST #9  12,100-12,188
2000' water cushion. Tool open 3 hours, shut in 30 minutes. Weak initial blow, dead in 5 minutes. Very weak blow last hour of test. Recovered 3210' of fluid, as follows: 180' of water, 1080' mud, 1530' slightly gas-cut muddy water, 420' mud. IFP-150, FFP 1500, SIP-3425, HH-6350. Chart showed tool open only last hour of test.

Core Record

Cores:

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Plugging Record

12,350' W/4 sacks
11,650' W/4 sacks
10,350' W/4 sacks
8,845' W/18 sacks
1,600' W/50 sacks
685' W/40 sacks
Top of surface W/10 sacks.

Formation tops were determined from samples and electric logs. Depths were determined from electric log depth unless otherwise stated. Colors were determined from rock color chart.
### Formation Tops

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<td>Red River</td>
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20-60 Siltstone; light gray, very shaly and bentonitic, calcareous, a little black lignite.
60-80 Siltstone; as above, much medium gray shale.
80-120 Shale; medium gray, lumpy, disaggregated, bentonitic calcareous, very silty, some black lignite.
120-140 Shale; very light gray, lumpy, spongy, calcareous, bentonitic, little black lignite.
140-200 Siltstone; medium light gray, very argillaceous, bentonitic, calcareous, some medium light gray shale.
200-240 Shale; very light gray, earthy, lumpy, compact, bentonitic, calcareous.
240-260 Shale; light gray, lumpy, bentonitic, calcareous, very silty.
260-280 Lignite; black.
280-300 Poor sample.
300-320 Lignite; black some medium light gray, silty, calcareous, bentonitic, shale.
320-340 Lignite; black.
340-380 Shale; very light gray, lumpy, bentonitic, calcareous, some black lignite.
380-420 Shale; light olive gray, lumpy, bentonitic, calcareous, very silty, some black lignite.
420-460 Shale; light gray, lumpy, bentonitic, slightly silty.
460-580 Shale; light gray and light olive gray, lumpy, bentonitic, calcareous, silty, little white, micaceous bentonite.
580-620 Lignite.
620-640 Siltstone; to very fine sandstone, well cemented, pyrite concretions, some shale and lignite as above, some fragmental limestone.
640-680 Sandstone; very fine, calcite cemented, some pyrite concretions and fragmental limestone.
680-770 Shale; light gray to light olive gray, lumpy, calcareous, bentonitic, silty, some black lignite.
770-810 Shale; as above, little greenish gray, sucrosic to grainy, limestone fragments, much black lignite.
810-870 Shale; light gray and light olive gray, flaky, disaggregated, bentonitic, calcareous, silty, little black lignite.
870-910 Siltstone; medium light gray, very shaly, bentonitic, much lignite, trace of light brown and greenish gray, grainy limestone fragments.
910-930 Sandstone; very fine grained, medium light gray, shaly, calcareous, cemented, glauconitic.
930-1050 Shale; medium light gray, lumpy, calcareous, bentonitic, numerous fine quartz grain inclusions, silty, glauconitic.
1050-1190 Shale; medium light gray and light olive gray, flaky and lumpy, bentonitic, calcareous, silty, little black lignite.
1190-1330 Shale; medium light gray, lumpy, bentonitic, calcareous, very silty.
1330-1390 Siltstone; medium light gray, shaly, bentonitic calcareous.
1390-1530 Shale; medium light gray, lumpy, earthy, silty, bentonitic, calcareous, some black lignite, much shaly siltstone.
1530-1570 Siltstone; medium light gray, very shaly, calcareous, bentonitic.
1570-1610 Shale; medium light gray and light olive gray, lumpy, bentonitic, calcareous, very silty.
1610-1810 Missing samples.
1810-1910 Shale; medium light gray, lumpy, micromicaceous, bentonitic, calcareous, slightly silty.
1910-1970 Shale; medium light gray, lumpy, micromicaceous, bentonitic, trace of dense lithographic limestone.
1970-2130 Shale; medium gray, lumpy to platy, disaggregated, bentonitic. Traces of bluish white bentonite, 2070-2090 some bluish white bentonite.
2130-2430 Medium gray, lumpy, bentonitic, little pyrite, little white to bluish white, micaceous bentonite traces of light olive gray, grainy limestone.
2430-2460 Missing samples.
2460-2480 Shale; medium gray, lumpy, bentonitic.
2480-2880 Shale; medium gray, lumpy, compact, firm, little brown hard siltstone, trace of Inoceramus fragments, trace of pyrite cemented quartz grains.
2880-3420 Shale; medium gray, lumpy, spongy, bentonitic, slightly calcareous in part little white micaceous bentonite, slight traces of Inoceramus fragments, trace of limestone fragments. 3300 limestone fragments increase in amount.
3420-3480 Shale; medium gray lumpy and flaky, disaggregated, bentonitic, calcareous in part, traces of limestone and dolomite fragments.
3480-3520 Shale; medium gray and light olive gray, lumpy and flaky, disaggregated, bentonitic, traces of pyrite, siltstone, dolomite and limestone fragments.
3520-3560 Shale; medium gray, lumpy and flaky, disaggregated, bentonitic, silty traces of pyrite, dolomite and limestone fragments.
3560-3680 Shale; medium gray, flaky, disaggregated, silty, carbonaceous streaks, traces of fragments of limestone, dolomite, and siltstone.
3680-3720 Shale; dark gray, fissile, disaggregated, calcareous, traces of pyrite, limestone, siltstone fragments.
3720-3780 Shale; medium dark gray, fissile, compact, calcareous, first white specks.
3780-3820 Shale; dark gray, fissile, compact.
3820-3890 Shale; medium gray, lumpy and flaky, disaggregated, trace of pyrite.
3890-3900 Shale; medium dark gray, flaky and lumpy, disaggregated, trace of pyrite, siltstone and limestone.
3900-4060 Shale; medium gray, flaky and lumpy, trace of pyrite.
4060-4230 Shale; dark gray and light olive gray, flaky, disaggregated, trace of pyrite.
4230-4320 Shale; dark gray, platy, trace of pyrite.
4320-4380 Shale; dark gray, fissile, calcareous, silty, second white specks, some fragmental limestone and Inoceramus fragments.
4380-4450 Shale; dark gray, calcareous, trace of orange stained fragmental limestone magnetite, trace of pyrite.
4450-4500 Shale; medium gray, platy, calcareous, bentonitic, some calcareous bentonite, little pyrite.
4500-4540 Shale; dark gray, platy calcareous, trace pyrite and Inoceramus fragments, some gray bentonite.
4540-4834 Shale; dark gray, platy to fissile.
4834-4850 Shale; dark gray, fissile, some medium gray, silty shale grading to shaly sandstone.
4850-4930 Shale; dark gray and light brownish gray, fissile, compact, some white, well cemented, fine sandstone and siltstone.
4930-5120 Shale; dark gray, platy.
5120-5150 Shale; as above, light brown, siltstone.
5150-5170 Sandstone; white very fine grained, cemented.
5170-5180 Shale; light brown, platy.
5180-5200 Sandstone; fine grained, cemented, white ironstone concretions.
5200-5210 Shale; grayish white, waxy luster, friable.
5210-5230 Sandstone; fine grained, cemented, white, numerous red and light brown ironstone concretions.
5230-5240 Siltstone; light gray, argillaceous, little light brown siderite pellets.
5240-5250 Sandstone; white with light brown mottling, fine grained, cemented, some moderate red and light brown siderite pellets. Some varicolored, waxy luster, varicolored shale.

5250-5260 Siltstone; medium gray siltstone, and fine grained, cemented quartz grains.

5260-5300 Siltstone; medium gray and light brown, some fine grained, cemented quartz and siderite.

5300-5370 Sandstone; medium grained, subangular, frosted, white uncremented, few siderite pellets, some light brown silt and pyrite cemented quartz grains, few large subangular quartz pebbles.

5370-5450 Shale; varicolored shale, waxy luster, much medium gray shale, trace of medium grained, glauconitic sandstone.

5450-5530 Shale; medium gray and light brown, waxy to earthy luster, firm, slightly silty, some green shale.

5530-5570 Shale; moderate yellowish brown, compact, soapy luster.

5570-5650 Sandstone; fine grained, well cemented, slightly glauconitic, white subangular.

5650-5690 Shale; light olive gray and medium gray.

5690-5730 Sandstone; fine grained, well cemented, gray white, subangular.

5730-5760 Shale; greenish gray, soapy luster.

5760-5860 Shale; medium gray and light olive gray, flaky some green and greenish gray shale.

5860-5880 Sandstone; fine to medium grained, uncremented, clear and frosted, angular to subangular.

5880-5920 Limestone; light olive gray, dense, argillaceous.

5920-5960 Shale; medium gray and greenish gray, waxy, some varicolored shale.

5960-5970 Limestone; white, grainy, chalky.

5970-5980 Shale; green gray, moderate brown, and medium gray, friable.

5980-5990 Limestone; as 5960-5970.

5990-6020 Shale; greenish gray and medium gray, soapy luster, some moderate brown shale.

6020-6040 Shale; moderate yellowish brown, calcareous, resinous luster, silty, friable to brittle, streaks of argillaceous.

6040-6050 Limestone; greenish gray, argillaceous, sublithographic.

6050-6060 Shale; medium gray, calcareous, brittle.

6060-6090 Limestone; very pale orange; sublithographic, dense, dolomitic, anhydrite inclusions and vein, traces of white milky chert and chalky limestone.

6090-6100 Shale; green gray, calcareous, brittle.

6100-6110 Limestone; very pale orange, sublithographic.

6110-6130 Shale; greenish gray, calcareous, flaky, some moderate reddish brown, brittle, calcareous shale.

6130-6140 Limestone; very pale orange, argillaceous, soft shaly appearance.

6140-6150 Limestone; pinkish gray, dense, sublithographic, anhydrite inclusions.

6150-6160 Shale; greenish gray and grayish red, anhydritic, slightly calcareous in part.

6160-6190 Shale; grayish red, calcareous, anhydritic, resinous luster.

6190-6200 Limestone; pale yellowish brown, sublithographic, anhydrite.

6200-6220 Shale; grayish red, silty, calcareous, anhydritic.
6220-6500 Salt and anhydrite; possibly salt or salty anhydrite, lost circulation microlog looks like a salt section. Samples are greenish gray shale.
6500-6510 Anhydrite; white, chalky and crystalline.
6510-6550 Siltstone; white, chalky and crystalline, some moderate reddish brown, silty anhydritic shale, traces of pink limestone.
6550-6570 Shale and siltstone; greenish gray, flaky, anhydritic shale and moderate reddish brown, anhydride siltstone.
6570-6630 Siltstone and shale; greenish gray shale and moderate reddish orange siltstone, anhydrite, some white crystalline anhydrite and gypsum.
6630-6660 Poor samples. Samples are cave from above.
6660-6690 Shale; moderate reddish orange and moderate reddish brown, silt and shale some white crystalline anhydrite.
6690-6740 Anhydrite; white and grayish pink, massive and white chalky gypsum, some crystalline anhydrite.
6740-6970 Salt.
6970-7000 Shale; moderate reddish orange and moderate reddish brown, anhydride calcareous, some crystalline anhydrite.
7000-7010 Shale; medium gray, flaky, some shale and silt as above.
7010-7040 Shale; moderate reddish brown and moderate reddish orange, anhydrite, calcareous siltstone and shale.
7040-7075 Salt.
7075-7085 Shale; moderate reddish orange and moderate reddish brown, anhydritic calcareous and shale.
7085-7100 Salt and anhydrite lenses.
7100-7130 Sandstone; poorly sorted, fine to medium well cemented, reddish orange, radioactive (high radioactivity or gamma ray with high resistivity.)
7130-7140 Dolomite; pale red purple, sucrosic some pale red purple calcareous sandstone.
7140-7220 Salt; streaks of argillaccous anhydrite and reddish orange anhydritic siltstone and shale.
7220-7230 Shale; moderate reddish orange and moderate reddish brown siltstone and shale, some fine grained quartz.
7230-7270 Salt; anhydrite.
7270-7330 Anhydrite; pale reddish purple, massive, some dolomite.
7330-7360 Shale; medium gray, flaky streaks of anhydrite.
7360-7420 Anhydrite; pale red purple, massive some white chalky gypsum, some moderate reddish orange anhydritic siltstone and shale.
7420-7430 Shale; medium gray, flaky.
7430-7970 Anhydrite; moderate reddish orange and reddish brown, anhydrite siltstone and shale, white and pale red massive anhydrite.
7470-7480 Shale; medium gray, flaky.
7480-7500 Siltstone; moderate reddish orange, anhydritic siltstone, some anhydrite.
7500-7510 Shale; medium gray, flaky.
7510-7530 Dolomite; white, dense, sublithographic.
7530-7540 Shale; medium dark gray, flaky.
7540-7580 Siltstone; moderate reddish orange, calcareous, anhydrite.
7580-7590 Shale; pale red purple, brittle.
7590-7610 Siltstone; moderate reddish orange, calcareous, anhydritic.
7610-7630 Limestone; white to light brown, sublithographic.
7630-7660 Shale; pale red purple, brittle, calcareous some greenish gray shale.
7660-7680  Siltstone; pale reddish brown, very calcareous, shaly and anhydritic.
7680-7710  Shale; medium dark gray, flaky, brittle, some pale red purple shale.
7710-7720  Siltstone; moderate reddish orange, calcareous, shaly, anhydritic.
7720-7760  Missing samples.
7760-7780  Shale; moderate reddish orange, silty, calcareous, some white chalky limestone.
7780-7790  Shale; greenish gray and pale red purple.
7790-7800  Limestone; yellowish gray, dense, sublithographic.
7800-7870  Shale; greenish gray and moderate reddish brown, silty, calcareous.
7870-7890  Limestone; white, dense, sublithographic.
7890-7960  Shale; green waxy shale.
7960-7980  Shale; medium dark, gray, flaky, resinous luster.
7980-8000  Sandstone; very fine grained, loosely cemented, some white, soft, chalky limestone.
8000-8040  Limestone; white, soft, chalky.
8040-8070  Shale; medium dark gray and greenish gray, flaky.
8070-8100  Limestone; white, soft chalky, some moderate reddish orange, calcareaous, siltstone and very fine grained sandstone.
8100-8140  Shale and siltstone; moderate reddish orange calcareous siltstone and pale red purple shale, some white to light gray chalky limestone.
8140-8220  Siltstone; moderate reddish orange, calcareous, anhydrite, some pale red purple shale, calcareous, traces of limestone and anhydrite.
8220-8240  Shale; greenish gray and medium dark gray, some anhydrite siltstone.
8240-8270  Missing samples.
8270-8320  Salt.
8320-8360  Limestone; gray lithographic, some white soft anhydrite, medium gray, flaky shale.
8360-8390  Anhydrite; medium dark gray to light gray, massive.
8390-8400  Dolomite; gray, dense, limey, shaly appearance.
8400-8410  Salt.
8410-8430  Poor samples.
8430-8460  Anhydrite; gray and white, massive, some gray, lithographic dolomite.
8460-8470  Limestone; light brownish gray, dense, sucrosic.
8470-8480  Shale; medium gray, flaky.
8480-8530  Limestone; light brownish gray, dense, slightly argillaceous, sucrosic.
8530-8540  Shale; moderate brown, calcareous, anhydritic.
8540-8590  Salt.
8590-8630  Limestone; yellowish gray to light brownish gray anhydrite, dense, some light gray massive anhydrite.
8630-8690  Anhydrite; gray massive, some limestone as above, slight fluorescence and cut in CCL4.
8690-8740  Limestone; dark brown, fractured, some pinpoint porosity.
8740-8885  No samples.

Core 8855-9166
| 8855-8860 | Anhydrite; medium dark gray, massive, dense, dolomitic. |
| 8860-8862 | Anhydrite; light brownish gray, massive, dense. |
| 8862-8863 | Anhydrite; light brown, massive, limestone inclusions. |
| 8863-8865 | Anhydrite; medium dark gray, massive. |
| 8865-8907 | Anhydrite; white to very light gray, styolites filled with calcite and dark gray shale. |
| 8907-8908 | Limestone; dark brown, dense, anhydrite, slightly crystalline, carbonaceous streaks. Good fluorescence, no porosity. |
| 8908-8909 | Anhydrite; light gray, massive, slightly limey. |
| 8909-8910 | Anhydrite; dark gray, massive, slightly limey. |
| 8910-8914 | Dolomite; medium gray, dense, argillaceous, sublithographic, spotted florescence. |
| 8914-8916 | Dolomite; medium gray, fine grained, pinpoint porosity. |
| 8916-8917 | Dolomite; light brownish gray, dense, limey, anhydrite inclusions. |
| 8917-8925 | Limestone; light brownish gray, dolomitic, dense, fine grained, numerous anhydrite inclusions, slightly crystalline, spotted fluorescence. |
| 8925-8927 | Limestone; light brownish gray, oolitic, fine grained, dense matrix, some filled fractures. |
| 8927-8931 | Limestone; light brownish gray, dense, crystalline, anhydrite inclusions. |
| 8931-8934 | Limestone; brownish gray, dense, crystalline, good fluorescence. |
| 8934-8939 | Limestone; light brownish gray, dense fine grained, good fluorescence. |
| 8939-8940 | Dolomite; brownish gray to brownish black, limey, fine grained, dense, styolitic partings filled with carbonaceous material. |
| 8940-8945 | Dolomite; medium gray, limey, fine grained, dense. |
| 8945-8946 | Dolomite; dark gray, crystalline in part, limey, fine grained matrix. |
| 8946-8956 | Limestone; medium gray, slightly crystalline, fine grained matrix, slight fluorescence, styolitic partings filled with carbonaceous material. |
| 8956-8957 | Limestone; medium gray, crystalline with fine grained matrix, numerous anhydrite inclusions and black carbonaceous material in styolitic partings. |
| 8957-8968 | Limestone; medium gray, crystalline with fine grained matrix, styolitic partings, spotted fluorescence. |
| 8968-8974 | Limestone; brownish gray, crystalline with fine grained matrix, dense, spotted fluorescence. |
| 8974-9007 | Limestone; medium gray, dense, crystalline with fine grained matrix, spotted fluorescence, styolitic partings filled with carbonaceous material. |
| 9007-9015 | Limestone; light gray, dense, fragmental, dense, sublithographic matrix spotted fluorescence, styolitic partings. |
| 9015-9021 | Limestone; light gray to brownish gray, fragmental, sucrosic matrix anhydrite inclusions, slight spotted fluorescence, some secondary calcite rhombs. |
| 9021-9040 | Limestone; brownish gray, dense, crystalline in and fine grained matrix, slightly crinoidal, spotted fluorescence. |
| 9040-9056 | Limestone; as above, some brachiopod fossils. |
| 9056-9076 | Limestone; light brownish gray, dense, crystalline in fine grained matrix, some fluorescence. |
9076-9078 Dolomite; light gray, dense, fragmental, medium grained matrix.
9078-9090 Limestone; brownish gray, crystalline in fine grained matrix.
9090-9094 Limestone; light gray, very fine grained, dense, argillaceous, some vertical fracturing, good fluorescence and oil cut in CC14.
9094-9098 Dolomite; light gray, fine grained, some pinpoint porosity.
9098-9102 Limestone; light brownish gray, dense, sublithographic to fine grained, slight spotted fluorescence.
9102-9108 Limestone; light brownish gray, crystalline in fine grained matrix dense, spotted fluorescence. Anhydrite inclusions.
9108-9140 Limestone; brownish gray, fine to lithographic dense; traces of brachiopod shells.
9140-9170 Limestone; pale yellowish brown, dense, fine grained.

End of cored section.

9170-9210 Limestone; pale yellowish brown, fragmental, some pinpoint porosity, traces of spotted fluorescence.
9210-9240 Limestone, pale yellowish brown, fragmental and grainy, slight spotted fluorescence, some pinpoint porosity.
9240-9270 Limestone; dark gray; grainy, dense, fossiliferous (brachiopods), slight spotted fluorescence.
9270-9410 Limestone; medium gray, fragmental, dense, streaks of fair to good porosity, fossiliferous.
9410-9430 Limestone; dark gray, grainy to subcrystalline, dense.
9430-9460 Limestone; dark gray, dense, subcrystalline, argillaceous, some spotted fluorescence.
9460-9520 Limestone; medium gray, fragmental, fossiliferous, dense, spotted fluorescence.
9520-9590 Limestone; dark gray, dense, subcrystalline, argillaceous fossiliferous.

Core 9590-9650

9590-9650 Limestone; dark gray, dense, sublithographic, argillaceous, fossiliferous, interbedded dark gray, calcareous shale.
9650-9690 Limestone; dark gray, dense, sublithographic, argillaceous, fossiliferous.
9690-9770 Limestone; dark and medium gray, dense, fine grained, fossiliferous.
9770-9805 Limestone; dark gray, shaly appearance.

Core 9805-9860

9805-9845 Limestone; dark gray, slaty appearing, very shaly, sublithographic.
9845-9860 Limestone; dark gray, slaty, highly argillaceous, fossiliferous.

End of core.

9860-9880 Limestone; dark gray, dense, sublithographic, highly argillaceous.
9880-9930 Limestone; medium light gray, fine grained, dense, slightly argillaceous.
Core 9930-10,402

9930-10,010 Limestone; dark gray, sublithographic, dense, highly argillaceous.

10,010-10,020 Shale; dark gray, slaty, dense hard, highly calcareous, traces of pyrite.

10,020-10,027 Shale; grayish black, slaty, crinoid stem inclusions.

10,027-10,028 Shale; dark gray, slaty, bands of calcite crystals throughout, green glauconite inclusions.

10,028-10,038 Limestone; greenish gray, dense, sublithographic, anhydrite inclusions, bands of greenish gray, limey shale, traces of pyrite.

10,038-10,050 Shale; grayish black, dense, slaty, micaceous.

10,050-10,053 Shale; medium light gray, slaty, slightly calcareous.

10,053-10,056 Dolomite; medium light gray, subcrystalline, dense.

10,056-10,063 Limestone; medium gray, grainy, dense.

10,063-10,071 Limestone; medium gray, sucrosic, dense, slightly argillaceous.

10,071-10,075 Shale; grayish black, slaty, hard, some pyrite streaks.

10,075-10,110 Shale; greenish gray, slaty, hard, slightly calcareous, traces of pyrite.

10,110-10,123 Dolomite; grayish orange pink, dense, fine grained, greenish gray shale interbedded.

10,123-10,132 Dolomite; reddish orange, dense, fine grained, interbedded with greenish gray shale.

10,132-10,148 Dolomite; reddish orange, shaly, silty, fine grained.

10,148-10,152 Dolomite; grayish orange pink, dense, subcrystalline, green interbedded shale.

10,152-10,154 Shale; greenish gray brittle, slaty, slightly dolomitic.

10,154-10,160 Dolomite; as 10,148-10,152.

10,160-10,176 Shale; shale and dolomite interbedded as above.

10,176-10,180 Dolomite; greenish gray, highly argillaceous, dense, fine grained.

10,180-10,197 Dolomite; grayish red, dense, fine grained to sublithographic, argillaceous.

10,197-10,206 Shale; greenish gray, dolomitic, brittle, slaty, interbedded grayish orange, dense dolomite.

10,206-10,243 Dolomite, grayish red, dense, fine grained, argillaceous, some white massive anhydrite inclusions.

10,243-10,244 Shale; greenish gray, dolomitic, brittle, slaty.

10,244-10,258 Dolomite; as 10,206.

10,258-10,259 Dolomite; grayish orange pink, fine grained, dense.

10,259-10,261 Dolomite; as 10,206.

10,261-10,263 Shale; as 10,243.

10,263-10,279 Dolomite; as 10,206.

10,279-10,280 Shale; as 10,243.

10,280-10,286 Anhydrite; white, massive, with interbedded grayish red dolomite.

10,286-10,290 Dolomite; grayish red, crystals in fine grained, argillaceous limestone matrix.

10,290-10,294 Dolomite; grayish brown, dense, subcrystalline.

10,294-10,296 Limestone; grayish orange to very pale orange, sucrosic, dolomitic.

10,296-10,302 Dolomite; pale yellowish brown, dense subcrystalline, rhomb traces included, anhydrite inclusions.
10,302-10,303  Limestone; dark yellowish brown, dense, lithographic argillaceous.
10,303-10,304  Dolomite; pale yellowish brown, dense, subcrystalline.
10,304-10,313  Dolomite; greenish gray, dense, sublithographic, shaly, appearance, very argillaceous.
10,313-10,363  Limestone; pale yellowish brown, dense, sublithographic.
10,363-10,378  Limestone; pale yellowish brown, dense, microsucrosic, oolitic in part.
10,378-10,381  Shale; greenish gray, slaty, brittle, calcareous.
10,381-10,386  Dolomite; light olive gray, dense, subcrystalline.
10,386-10,402  Dolomite; grayish red, dense, fine to subcrystalline.
10,402-10,416  Anhydrite; grayish red and medium gray massive.

End of cored section.

10,416-10,440  Limestone, pale yellowish brown and grayish orange, sucrosic to sublithographic.
10,440-10,480  Limestone; light gray and very pale orange, oolitic and microsucrosic, dense.
10,480-10,540  Limestone; grayish orange and very pale orange, sucrosic.
10,540-10,570  Limestone; dark gray, dense, sublithographic.
10,570-10,640  Limestone; light gray, sucrosic and dark gray, dense, sublithographic, traces of fragmental limestone with some porosity.
10,640-10,660  Limestone; brownish gray, dense, sublithographic some light gray, sucrosic limestone.
10,660-10,670  Limestone; grayish orange pink sucrosic.
10,670-10,680  Dolomite; very pale orange to grayish orange pink, grainy.
10,680-10,700  Limestone; medium dark gray, dense, lithographic, some pinkish gray, sucrosic, limestone.
10,700-10,760  Limestone; grayish orange pink, sucrosic, some brownish gray limestone with pink inclusions.
10,760-10,780  Limestone; pale yellowish brown, sublithographic.
10,780-10,790  Limestone; medium dark gray, sublithographic and grayish orange pink sucrosic limestone.
10,790-10,830  Limestone; pale brown, fragmental.
10,830-10,880  Limestone; white to very pale orange, sublithographic to microsucrosic, dense, some anhydrite inclusions.
10,880-10,890  Limestone; as above, some pale brown dense sublithographic limestone.
10,890-10,920  Limestone; medium dark gray, dense, sublithographic.
10,920-10,940  Limestone; pale brown, dense, sublithographic, fragmental in part.
10,940-10,960  Limestone; brownish black, dense, sublithographic.
10,960-11,000  Limestone; grayish orange pink, sucrosic and brownish black sublithographic.

Cored interval 11,000-11,068

11,000-11,028  Limestone; brownish black, dense, sublithographic.
11,028-11,054  Dolomite; medium light gray to greenish gray.
11,054-11,068  Limestone; medium dark gray, dense, sublithographic.

End of cored interval.
11,070-11,090 Limestone; as above.

Cored interval 11,094-11,218

11,094-11,099 Limestone; medium dark gray, fine crystalline to sub-lithographic dense, dolomite.
11,099-11,104 Limestone; pale yellowish brown, dense, sublithographic dolomitic.
11,104-11,110 Dolomite; greenish gray, very fine grained, some porosity, limey.
11,110-11,131 Dolomite; variegated greenish gray and pale red, very fine grained.
11,131-11,152 Dolomite; greenish gray, dense, very fine crystalline, dense, anhydrite inclusions, very fossiliferous.
11,152-11,160 Limestone; greenish gray, sublithographic, dense, fossiliferous.
11,160-11,180 Limestone; medium gray to brownish gray, dense, fossiliferous, fragmental.
11,180-11,195 Limestone; medium dark gray, dense, very fine grained to sublithographic, fossiliferous, anhydrite inclusions.
11,195-11,202 Limestone; brownish gray, dense, fine grained, vugs and fractures filled with anhydrite.
11,202-11,218 Limestone; dark gray, dense, argillaceous, sublithographic.

End of cored section.

11,218-11,240 Missing samples.
11,240-11,260 Limestone; brown black, dense, lithographic some grayish orange pink sucrosic limestone.

Cored interval 11,264-11,409

11,264-11,302 Limestone; brown, black dense, sublithographic.
11,302-11,309 Dolomite; grayish red, dense, very fine grained to sub-lithographic, with pinkish spots of anhydrite inclusions.
11,309-11,311 Limestone; brownish gray, dense, sublithographic.
11,311-11,333 Limestone; varicolored, reddish gray, greenish gray, dense, very fine grained, anhydrite and calcite inclusions, brecciated.
11,333-11,378 Dolomite; pinkish gray, fragmental, calcite and anhydrite inclusions.
11,378-11,409 Dolomite; very light gray, very fine crystalline, vuggy porosity, salt crystals in vugs.

End of cored section.

11,409-11,430 Dolomite; white, dense, crystalline, some pinpoint porosity, salty crystals in vugs.
11,430-11,456 Limestone; grayish orange pink, sucrosic and sublithographic, dense.

Cored section 11,456-11,483

11,456-11,483 Limestone; yellowish gray, dense, sublithographic.
End of cored section.

11,483-11,520  Limestone; yellowish gray to grayish orange pink, very fine grained to sublithographic.

Cored section 11,523-11,606

11,523-11,546  Limestone; yellowish gray, very fine grained to sublithographic, anhydrite inclusions.
11,546-11,549  Dolomite; white to yellowish gray, fragmental slightly calcareous.
11,549-11,582  Limestone; yellowish gray, dense, very fine crystalline to subcrystalline, anhydrite filled fractures.
11,582-11,585  Limestone; white, fragmental, dense, anhydrite filled pore spaces.
11,585-11,592  Dolomite; yellowish gray, dense, very fine crystalline to sublithographic anhydrite inclusions.
11,592-11,606  Dolomite; yellowish gray, dense, sucrosic, calcareous.

End of cored section.

11,606-11,690  Dolomite; grayish orange pink, sucrosic, dense, trace of white milky chert.
11,690-11,700  Limestone; yellowish gray, dense, sublithographic, chalky in part.
11,700-11,770  Dolomite; grayish orange pink, sucrosic, dense, some limestone as above, traces of milky chert.
11,770-11,790  Dolomite; as above becoming more calcareous.
11,790-11,940  Dolomite; yellowish gray, dense, subcrystalline, sucrosic in part, calcareous, some gypsum.
11,940-11,960  Dolomite; yellowish gray, dense, sublithographic.
11,960-11,980  Dolomite; white, dense, microsucrosic.
11,980-12,000  Dolomite; light brownish gray, dense, sucrosic.
12,000-12,010  Dolomite; grayish orange pink, very fine crystalline, highly iron stained.
12,010-12,030  Dolomite; light brownish gray, dense, very fine grained to sublithographic.
12,036  Circulation 1 3/4 hour. Dolomite as above.
12,030-12,050  Dolomite; brownish gray, dense, sucrosic, in part fragmental.
12,050-12,060  Dolomite; medium light gray, dense, sublithographic.
12,060-12,130  Dolomite; brownish gray, dense, sublithographic to very fine crystalline quartz grain inclusions.

Cored section 12,130-12,511

12,130-12,136  Dolomite; medium dark gray, very fine crystalline, dense.
12,136-12,142  Limestone; grayish brown, sublithographic, dense, fractures filled with anhydrite.
12,142-12,148  Dolomite; brownish gray, very fine crystalline, dense, anhydrite inclusions and fractures.
12,148-12,159  Anhydrite; yellowish brown, massive.
12,159-12,160  Dolomite; medium dark gray, dense, very fine crystalline fractures filled with anhydrite.
12,160-12,166  Dolomite; greenish gray, dense, sublithographic, argillaceous, shale fracture.
12,166-12,172 Limestone; grayish brown, dense, fine crystalline, with cleavage fuces visible.
12,172-12,184 Dolomite; greenish gray, dense, very fine crystalline, pyritic.
12,184-12,194 Dolomite; grayish brown, dense, lithographic and sucrosic in part.
12,194-12,206 Dolomite; yellowish gray, sucrosic, some pinpoint porosity, black carbonaceous residue in fractures, some fluorescence, calcareous.
12,206-12,274 Limestone; brownish gray to dark gray, dense, very fine crystalline, pyritic, slightly fossiliferous, argillaceous.
12,274-12,332 Dolomite; dark gray, dense, sublithographic to very fine crystalline.
12,332-12,339 Dolomite; yellowish gray, dense, sublithographic bands of dark carbonaceous material.
12,339-12,355 Limestone; brown black, dense, sublithographic.
12,355-12,356 Limestone; grayish brown, dense, sucrosic.
12,356-12,358 Anhydrite; grayish brown, dense, massive.
12,358-12,360 Dolomite; medium dark gray, dense, sublithographic.
12,360-12,373 Anhydrite; grayish brown and white, massive.
12,373-12,377 Dolomite; pale yellowish brown, sucrosic, some pinpoint porosity, calcareous, slight fluorescence.
12,377-12,384 Limestone; grayish brown, sucrosic to subcrystalline, dense, anhydrite inclusions.
12,384-12,386 Dolomite; pale yellowish brown, dense, very fine crystalline to sublithographic, some oil stain.
12,386-12,402 Limestone; grayish brown, dense, sublithographic, fossiliferous.
12,402-12,426 Limestone; brownish black, dense sublithographic fossiliferous, anhydrite filled fractures and inclusions, carbonaceous material in stylolites.
12,426-12,442 Anhydrite; brownish black, dense, massive.
12,442-12,444 Dolomite; pale yellowish brown, very fine crystalline to sublithographic, dense.
12,444-12,445 Limestone; brownish black, dense, very fine crystalline.
12,445-12,453 Dolomite; as 12,442-12,444.
12,453-12,456 Anhydrite; brownish black massive, dense.
12,456-12,458 Limestone; as 12,444-12,445.
12,458-12,466 Dolomite; as 12,442-12,404, black carbonaceous, residue in fractures.
12,466-12,477 Dolomite; pale yellowish brown, very fine grained, fossiliferous.
12,477-12,511 Limestone; grayish brown, dense, lithographic.

End of cored section.

12,511-12,520 Missing samples.
12,520-12,556 Limestone; grayish brown, lithographic, dense.

12,556 Total Depth