UNIVERSITY OF TEXAS
BUREAU OF ECONOMIC GEOLOGY
AUSTIN, TEXAS

Mimeograph Circular No. 7
July 1928
[Stencils recut July 1955]

The mimeograph circulars issued from the Bureau of Economic Geology contain the record of cores and cuttings from wells received and described in the Bureau. In some instances drillers logs and other data are given although it is usually impracticable to include logs of all wells, the logs given being selected as representative of the county or area to which the circular relates. The elevations given are for the most part those reported with the drillers log. In some instances the elevation given, as indicated, is that obtained from the location of the well on the topographic map. In all cases the elevation is to be regarded as approximate only.

E. H. Sellards

## RECORD OF A DEEP WELL IN REAGAN COUNTY

A paper prepared in the Bureau of Economic Geology in 1926 and published by the American Association of Petroleum Geologists contains an account of the Big Lake oil field in Reagan County as developed to that date. Since the publication of that paper a great deal of drilling has been done in the county. Among the wells drilled is that of the Texon Oil and Land Company, B-1, in the Big Lake oil field which is now the deepest well in the world. In the following pages is given a description of the samples from this well below 5355 feet. The report previously published, reprints of which are available, gives the section in this county to 6000 feet. The description of samples here published continues the section to 8525 feet. The well as indicated by the description of samples reveals a very great thickness of black shales and limes. The rarity of fossils in the deeper sediments makes it impossible to definitely determine the age of the formations. Apparently, however, the well does not pass out of the Permian, although at this depth more than 7000 feet of Permian sediments have been penetrated.

### Texon Oil and Land Company B-1.

Located in the Big Lake oil field. Standard drilling. All samples are cuttings.

Description of samples by E. H. Sellards and O. M. Richey; submitted by Waldo Williams, Big Lake, 1928.

| | Depth in feet |
|---|---|
| Black noncalcareous shale. A little pyrite was noted in the washed material. The thin section is brown with bituminous material - | 5355-5370 |
| Black noncalcareous shale - - - - - - - - - - - - - - - - - - - - - - - - | 5370-5385 |
| Very dark gray to black indurated micaceous noncalcareous shale and some dark gray limestone noted. In thin section a few grains of quartz were noted in the shale. Small, round bodies of organic origin present. When fragments of the shale were heated in a closed tube oil collected on the sides of the tube - - - - - - - - - - - - - - - - - - - - - - | 5400-5410 |

| | Depth in feet |
|---|---|
| Very dark gray to black indurated, micaceous, noncalcareous shale and a few fragments of dark brownish gray limestone in which a little pyrite was noted. Oil collected on the sides of the tube when shale fragments were heated - - - - - - - - - - - - - - - - - - - - | 5410 - 5425 |
| Very dark gray to black indurated micaceous noncalcareous shale and brownish gray limestone. A little pyrite present. In thin section quartz was noted in both the shale and the limestone. Oval bodies present. When the shale was heated in a closed tube tiny droplets of oil collected on the sides of the tubo - - - - - - - - - - | 5425 - 5450 |
| Dark gray indurated micaceous sandy noncalcareous shale and some medium gray limestone. When fragments were heated in a closed tube faint bituminous fumes were noted - - - - - - - - - - - - - - - - - | 5450 - 5465 |
| Very dark gray indurated, micaceous, sandy, noncalcareous shale and a little dark gray limestone. When heated in a closed tube faint bituminous fumes were noted - - - - - - - - - - - - - - - - - - - - | 5465 - 5485 |
| Very dark gray to black, indurated, micaceous shale and dark gray slightly calcareous sandstone. In thin section the sandstone was seen to be fairly fine grained. When fragments were heated in a closed tube faint bituminous fumes were given off - - - - - | 5490 - 5505 |
| Dark gray indurated, micaceous shale, gray slightly calcareous sandstone and a little gray limestone. In thin section a narrow vein of calcite was noted bounding one side of a limestone fragment. Angular grains of quartz were observed in the limestone. Small, round, organic bodies present. When fragments of the sample were heated in a closed tube bituminous fumes were given off. In thin section numerous oval bodies are seen. These vary in size - - - | 5530 - 5550 |
| Very dark gray to black noncalcareous, micaceous shale, a little gray slightly calcareous sandstone, and a few fragments of gray limestone. In thin section the shale was seen to be sandy. When some of the material was heated in a closed tube faint bituminous fumes were given off. The shale is brown in thin section - | 5550 - 5560 |
| Very dark gray to black, sandy, noncalcareous, micaceous shale. A few fragments of medium gray, coarse grained, slightly calcareous sandstone were noted in the washed material. When fragments were heated in a closed tube tiny droplets of oil were seen on the sides of the tube - - - - - - - - - - - - - - - - - - - | 5560 - 5570 |
| Dark gray limestone and dark gray indurated, micaceous, noncalcareous shale. In thin section the shale appears brown - - - - - | 5575 - 5595 |
| Very dark gray indurated, micaceous shale. In thin section the shale was seen to contain sand grains. When the shale was heated in a closed tube, oil collected on the sides of the tube. Shale brown in thin section - - - - - - - - - - - - - - - - - - - - - - - - | 5615 - 5625 |
| Black micaceous noncalcareous shale, Dark gray coarse grained slightly calcareous, micaceous sandstone. In thin section the shale was seen to contain small quartz grains - - - - - - - - - - - - - - | 5640 - 5660 |

| | Depth in feet |
|---|---|
| Dark gray to black, micaceous noncalcareous sandy shale. Strong bituminous fumes were noted when the shale was heated in a closed tube | 5660 - 5680 |
| Black, indurated, micaceous, sandy, noncalcareous shale. Droplets of oil collected on the sides of the tube when fragments of the shale were heated | 5680 - 5700 |
| Very dark gray to black indurated, micaceous, noncalcareous shale. In thin section a few small quartz grains were noted. When the shale was heated in a closed tube oil collected on the sides of the tube. Small oval bodies present. Radiolarians? | 5700 - 5720 |
| Very dark gray to black indurated, micaceous noncalcareous shale. A few fragments of dark gray limestone and a crinoid stem were noted in the washed material. Oil collected on the sides of the tube when the shale was heated | 5730 - 5740 |
| Very dark to black indurated micaceous noncalcareous shale and medium gray coarse grained calcareous sandstone. In thin section the shale was seen to contain quartz grains. A very little pyrite noted. A shall fragment present. Oil collected on the sides of the tube when the shale was heated | 5740 - 5750 |
| Very dark gray to black indurated micaceous noncalcareous shale. Fragments of dark gray limestone in which pyrite was observed were found in the washed material. Oil collected on the sides of the tube when the shale was heated | 5750 - 5770 |
| Like sample from 5750 - 5770 feet | 5770 - 5790 |
| Dark gray indurated micaceous noncalcareous shale, dark gray limestone, and dark gray coarse grained calcareous sandstone. In thin section both the shale and the limestone were seen to contain quartz grains. When fragments of the sample were heated in a closed tube faint bituminous fumes were given off | 5790 - 5800 |
| Medium gray fossiliferous limestone and very dark gray to black indurated micaceous, noncalcareous shale. Sponge spicules were noted in a thin section of the limestone. Angular grains of quartz present also. Faint bituminous fumes were given off when the shale was heated in a closed tube | 5820 - 5825 |
| Like sample from 5825 - 5832 feet. A little pyrite was noted in some of the limestone fragments. A thin section shows small quartz grains | 5900 - 5925 |
| Brownish gray limestone and very dark gray, indurated, noncalcareous shale | 5900 - 5920 |
| Very dark gray, indurated, noncalcareous shale. In thin section the shale is brown and is seen to contain fine quartz sand | 5920 - 5940 |

Similar material at 5940 - 5960 and 5960 - 5980 feet.

| | Depth in feet |
|---|---|
| Dark gray, indurated, micaceous, sandy, noncalcareous shale. In thin section the shale is seen to contain small sand grains - - - - - - - - - - - - - - - - - - - - - - - - - - - - | 5980 - 6000 |
| Very dark gray indurated micaceous noncalcareous shale and medium gray fairly coarse grained calcareous sandstone - - - - - | 6000 - 6020 |
| Like sample from 6000 - 6020 feet - - - - - - - - - - - - - - | 6020 - 6040 |
| Very dark gray to black indurated, micaceous, noncalcareous shale and gray medium grained calcareous sandstone - - - - - - - | 6040 - 6060 |
| Black, indurated, micaceous, noncalcareous shale. In thin section seen to contain sand - - - - - - - - - - - - - - - - - - | 6075 - 6090 |
| Dark gray indurated, micaceous, noncalcareous sandy shale and medium gray, micaceous, calcareous sandstone - - - - - - - - | 6090 - 6110 |
| Like sample from 6090 - 6110 feet - - - - - - - - - - - - - - | 6110 - 6130 |
| Black, micaceous, noncalcareous shale and medium gray, micaceous, calcareous sandstone. In thin section shale seen to be thin bedded as with wavy lines - - - - - - - - - - - - - - - - - | 6135 - 6140 |
| Dark gray noncalcareous, slightly micaceous shale and dark gray, fine to moderately coarse-grained, micaceous, calcareous sandstone. In thin section shale is seen to contain fine sand - - - - - - - - - - - - - - - - - - - - - - - - - - - - | 6140 - 6160 |
| Like sample from 6140 - 6160 feet. More sandstone than shale - | 6160 - 6180 |
| Like sample from 6160 - 6180 feet - - - - - - - - - - - - - - | 6180 - 6200 |
| Medium dark gray moderately coarse grained calcareous sandstone and fragments of dark gray limestone - - - - - - - - - - - - - - - - | 6200 - 6210 |
| Like sample from 6200 - 6210 feet. In thin section seen to contain much fine sand - - - - - - - - - - - - - - - - - - - - - - - - | 6220 - 6250 |
| Light brownish gray, moderately coarse-grained, calcareous sandstone and a few fragments of hard black, noncalcareous shale. A bituminous odor is given off when the sandstone is heated - - - | 6266 - 6274 |
| Medium light gray, coarse-grained, micaceous, calcareous sandstone | 6276 - 6281 |
| Dark gray, fine-grained to moderately coarse-grained, micaceous calcareous sandstone - - - - - - - - - - - - - - - - - - - - - - - - | 6281 - 6290 |
| Dark gray, fine to moderately coarse-grained, micaceous, calcareous sandstone and dark gray sandy, noncalcareous shale - - - | 6290 - 6300 |
| Medium gray, coarse-grained, calcareous sandstone and dark gray, slightly calcareous shale - - - - - - - - - - - - - - - - - | 6305 - 6325 |

| | Depth in feet |
|---|---|
| Medium light gray, fine-grained to moderately coarse-grained micaceous calcareous sandstone and fragments of gray, sandy, micaceous shale | 6325 - 6327½ |
| Dark gray, sandy, micaceous shale, moderately coarse-grained, micaceous, calcareous sandstone, and a few fragments of gray limestone | 6325 - 6330 |
| Dark gray sandy, micaceous shale and light gray, moderately coarse-grained, micaceous sandstone | 6340 - 6350 |
| Medium light gray, coarse-grained, micaceous, calcareous sandstone and some dark gray shale and limestone | 6350 - 6355 |
| Medium gray, coarse-grained, micaceous, calcareous sandstone | 6355 - 6365 |
| Dark gray, sandy micaceous shale and light gray moderately coarse-grained, calcareous sandstone | 6365 - 6370 |
| Like sample from 6365 - 6370 feet | 6385 - 6392 |
| Hard dark gray, sandy micaceous calcareous shale and a few fragments of limestone and sandstone | 6385 - 6390 |
| Very dark calcareous gray shale | 6390 - 6400 |
| Like sample from 6390 - 6400 feet | 6392 - 6405 |
| Dark gray shale and a few fragments of gray limestone | 6400 - 6407 |
| Like sample from 6400 - 6407 feet | 6402 - 6417 |
| Dark micaceous slightly calcareous shale. Contains an indeterminable shell fragment. In thin section shale seen to contain fine sand. Similar samples containing some limestone at 6417 - 24 and 6425 - 31 feet | 6407 - 6412 |
| Cuttings of dark gray shale and a few limestone fragments. Similar sample at 6425 - 68 feet | 6431 - 6436 |
| Dark gray shale | 6464 - 6473 |
| Dark gray, sandy, micaceous calcareous shale and some light gray limestone. Similar sample at 6473 - 80 feet | 6476 - 6480 |
| Medium gray, micaceous sandstone, dark gray, sandy, micaceous shale, and some gray limestone | 6483 - 6487 |
| Dark gray shale and brownish gray limestone | 6480 - 6483 |
| Dark gray micaceous shale and some medium gray sandstone | 6487 - 6490 |
| Dark gray micaceous shale and brownish gray limestone | 6490 - 6500 |
| Like sample from 6490 - 6500 feet | 6500 - 6508 |
| Dark gray micaceous shale and brownish gray limestone | 6500 - 6565 |

| | Depth in feet |
|---|---|
| Dark gray shale | 6508 - 6515 |
| Like sample from 6508 - 6515 feet | 6520 - 6530 |
| Dark gray shale including oil stained pieces | 6520 - 6530 |
| Dark gray, slightly calcareous shale. Similar samples at 6540 - 48 and 6548 - 63 feet | 6530 - 6540 |
| Dark gray shale and brownish gray limestone | 6553 - 6560 |
| Dark gray shale | 6565 - 6570 |
| Dark gray micaceous shale | 6570 - 6582 |
| Dark gray micaceous shale and some brownish gray limestone | 6575 - 6585 |
| Dark gray, micaceous, calcareous shale | 6585 - 6595 |
| Dark gray micaceous shale | 6595 - 6605 |
| Dark gray, sandy micaceous shale. In thin section the shale is seen to contain much fine sand | 6605 - 6615 |
| Cuttings of dark gray micaceous shale and some limestone. In the finest worked material were found small light colored globose objects with slightly roughened or pitted surfaces. In acid these objects effervesce and disintegrate but do not entirely dissolve; they are chiefly a carbonate. Similar sample at 6625 - 35 feet | 6615 - 6625 |
| Cuttings of dark gray micaceous shale. The shale breaks into splinters, Similar samples at 6645 - 55, 6655 - 65, 6665 - 75, 6675 - 85, 6685 - 95, and 6695 - 6700 feet | 6635 - 6645 |
| Cuttings of dark gray noncalcareous shale and a few fragments of light gray, moderately fine-grained sandstone. Similar samples at 6715 - 25 and 6725 - 35 feet | 6705 - 6715 |
| Very dark gray noncalcareous shale and dark gray medium-grained sandstone | 6735 - 6745 |
| Dark gray noncalcareous shale and a few small fragments of medium gray sandstone and limestone | 6745 - 6755 |
| Dark gray noncalcareous shale, medium dark gray sandstone, and a few gray limestone fragments | 6755 - 6765 |
| Dark gray noncalcareous shale and light gray, moderately coarse grained micaceous sandstone. Similar samples at 6775 - 85 and 6785 - 95 feet | 6765 - 6775 |
| Dark gray noncalcareous shale and fragments of gray medium-grained sandstone | 6805 - 6815 |
| Like sample from 6805-6815 feet, A few limestone fragments present | 6815 - 6820 |

| | Depth in feet |
|---|---|
| Like sample from 6805 - 6815 feet - - - - - - - - - - - - - | 6820 - 6830 |
| In thin section seen to contain much fine sand and Radiolaria?- | 6820 - 6830 |
| Dark gray noncalcareous shale for the most part - - - - - | 6830 - 6840 |
| Medium light gray, coarse-grained, slightly calcareous sandstone and some dark gray noncalcareous shale - - - - - - - - | 6840 - 6850 |
| Like sample from 6840 - 6850 feet. Shale and sandstone about equal in abundance - - - - - - - - - - - - - - - - - - - | 6850 - 6860 |
| Dark gray, micaceous, noncalcareous shale and medium gray, moderately coarse-grained, micaceous sandstone. Similar samples at 6870 - 80 and 6880 - 90 feet - - - - - - - - - - - - - - - - | 6860 - 6870 |
| Medium gray, coarse grained, micaceous sandstone and dark gray micaceous shale - - - - - - - - - - - - - - - - - - - | 6890 - 6900 |
| Very dark gray micaceous shale and a few fragments of medium gray, coarse grained sandstone - - - - - - - - - - - - - - - - | 6900 - 6910 |
| Very dark gray micaceous shale. Similar samples at 6950-60, 6960-70, and 6970-80 feet - - - - - - - - - - - - - - - - - - - - | 6910 - 6920 |
| Dark gray, micaceous shale. Some oil stained. Similar samples at 6990-7000 and 7000-10 feet. Diatoms ? were observed at 6900-10 feet - - - - - - - - - - - - - - - - - - - - - - - - | 6980 - 6990 |
| Very dark gray micaceous shale and some dark gray limestone. Contains fine sand. The wash material contains light colored, round, undetermined objects - - - - - - - - - - - - - - - - - - | 7010 - 7020 |
| Like sample from 7010-7020 feet. The wash material contains light colored, round undetermined objects. Similar sample at 7030 - 40 feet - - - - - - - - - - - - - - - - - - - - - - - - | 7020 - 7030 |
| Dark gray micaceous shale and brownish gray limestone - - - | 7040 - 7050 |
| Dark gray calcareous shale and a few small fragments of brownish gray limestone. Similar sample at 7060 - 70 feet - - - - - - - - - | 7050 - 7060 |
| Dark gray calcareous shale and brownish gray limestone. Similar sample at 7080-90 feet - - - - - - - - - - - - - - - - - - | 7070 - 7080 |
| Very dark gray, micaceous shale. Similar samples at 7100-10, 7110-20, and 7120-30 feet - - - - - - - - - - - - - - - - - - | 7090 - 7100 |
| Dark gray calcareous shale and a few fragments of sandstone and limestone - - - - - - - - - - - - - - - - - - - - - - - - | 7130 - 7140 |
| Dark gray calcareous shale and some brownish gray limestone - - | 7140 - 7150 |
| Dark gray, slightly calcareous shale. Oil stained - - - - - | 7150 - 7160 |

| | Depth in feet |
|---|---|
| Dark gray calcareous shale and medium gray limestone. Includes oil stained shale. Similar samples at 7170-80, 7180-90, 7190-7200, 7200-10 and 7210-20 feet - - - - - - - - - - | 7160 - 7170 |
| Dark gray shale and medium gray limestone. Similar sample at 7230-40 feet - - - - - - - - - - - - - - - - - - - - - - | 7220 - 7230 |
| Dark gray, slightly calcareous shale - - - - - - - - - - - | 7240 - 7250 |
| Very dark gray noncalcareous shale - - - - - - - - - - - - | 7250 - 7260 |
| Like sample from 7250 - 7260 feet. A few medium gray limestone fragments present - - - - - - - - - - - - - - - - - - - - | 7260 - 7270 |
| Dark gray calcareous shale and a little pyrite - - - - - - - | 7270 - 7280 |
| Dark gray, slightly calcareous shale. Similar samples at 7290-7300, 7300-10 and 7310-20 feet - - - - - - - - - - - - - - - | 7280 - 7290 |
| Very dark gray, slightly calcareous shale, a few fragments of limestone, and grains of clear quartz - - - - - - - - - - - - - - | 7320 - 7330 |
| Dark gray, slightly calcareous shale - - - - - - - - - - - - | 7330 - 7340 |
| Dark gray calcareous shale and a little medium gray limestone. Similar samples at 7350-60, 7370-80, 7380-90 and 7800-10 feet - - - | 7340 - 7350 |
| Dark gray calcareous shale. In thin section seen to contain a few Radiolaria. The wash material contains light colored, round, undetermined objects - - - - - - - - - - - - - - - - - - - - - - - | 7410 - 7420 |
| Dark gray, calcareous shale and a few fragments of brownish gray limestone. Similar samples at 7430-40, 7440-50, 7450-60, 7460-70, 7470-80 feet - - - - - - - - - - - - - - - - - - - - - - | 7420 - 7430 |
| Dark gray calcareous shale. Oil stained. Similar samples at ten-foot intervals to 7600 feet. Many of these samples contain round undetermined small objects possibly Radiolaria - - - - - - - | 7490 - 7500 |
| Very dark gray calcareous shale and a few small fragments of brownish gray limestone. The wash material contains light colored, round, undetermined objects, possibly Radiolaria. Similar samples at ten-foot intervals to 7710 feet - - - - - - - - - - - - - - - - | 7600 - 7610 |
| Dark gray, slightly calcareous shale and a few clear quartz grains. Similar samples at ten-foot intervals to 7760 feet - - - | 7710 - 7720 |
| Very dark gray shale, fragments of medium gray limestone, and rounded grains of clear quartz. The wash material contains light colored, round, undetermined objects. Essentially similar samples varying somewhat in the amount of quartz and limestone to 8110 feet, taken at ten-foot intervals. Sponge spicules abundant in sample at 8010-8020 feet - - - - - - - - - - - - - - | 7760 - 7770 |

| | Depth in feet |
|---|---|
| Very dark gray noncalcareous shale. A few clear quartz grains present. In thin section seen to consist of network of sponge spicules. The wash material contains light colored, round, undetermined objects, possibly Radiolaria. Essentially similar samples at ten-foot intervals to 8220 feet. Sample at 8210-8220 feet contains fine sand in the shale | 8110 - 8120 |
| Similar material at 8120-8130; 8130-8140; 8140-8150; 8150-8160; 8160-8170 feet. | |
| Very dark gray to black noncalcareous shale. Oil stained | 8170 - 8180 |
| Very dark gray noncalcareous shale | 8180 - 8190 |
| Like sample from 8180-8190 feet | 8190 - 8200 |
| Black noncalcareous shale | 8200 - 8210 |
| Like sample from 8200 - 8210 feet. In thin section seen to contain fine sand | 8210 - 8220 |
| Dark gray to black, noncalcareous, very fine-grained micaceous shale; containing some calcite and a few grains of quartz sand. No fossils were found in wash sample | 8238 - 8243 |
| Same as preceding sample | 8243 - 8248 |
| Same as preceding sample, except some light colored calcareous material which probably dropped in from above. No fossils | 8248 - 8250 |
| Same as preceding, except bits of pyrite | 8250 - 8260 |
| Same as preceding sample. The shale is a little darker | 8260 - 8270 |
| Same as preceding sample, except a little more calcite. No fossils | 8270 - 8275 |
| Similar material at 8275-8277; 8277-8280 feet. | |
| Same as preceding. No fossils | 8280 - 8284 |
| Same as preceding at 8284-8290 feet and at 8290-8295 feet except more calcite at latter depth. | |
| Dark gray to black shale, much calcite, a few grains of pyrite. No fossils | 8295 - 8300 |
| Dark gray to black shale mixed with quantities of calcite. Some pyrite present | 8300 - 8305 |
| Dark gray to black shale with little calcite; some green material that looks like anhydrite. Some pyrite present | 8305 - 8316 |
| Same as preceding sample | 8316 - 8320 |
| Dark gray to black, noncalcareous, micaceous shale, some calcite and a very small amount of pyrite. Very little green anhydrite | 8320 - 8325 |
| Dark gray to black shale only. No fossils | 8325 - 8330 |

| | Depth in feet |
|---|---|
| Same as preceding sample, except very little calcite - - - - | 8330 - 8335 |
| Gray to black shale with some light colored calcareous material; also some calcite - - - - - - - - - - - - - - - - - - - | 8335 - 8337 |
| Same as preceding sample. No fossils - - - - - - - - - - - | 8337 - 8340 |
| Dark gray to black shale containing some pyrite, calcite and a little green colored anhydrite - - - - - - - - - - - - - - - | 8340 - 8350 |
| Dark gray to black, noncalcareous fine-grained micaceous shale with veins of calcite running through it. Quantities of loose calcite in the sample. No fossils - - - - - - - - - - - - | 8350 - 8353 |
| Dark gray to black, noncalcareous, fine grained, micaceous shale. Some calcite present. No fossils - - - - - - - | 8336 - 8364 |
| Same as preceding sample, except more calcite present. Few bits of pyrite - - - - - - - - - - - - - - - - - - - - - - - - - | 8364 - 8367 |
| Same black shale; a few small pieces of limestone cuttings. Calcite present. No fossils - - - - - - - - - - - - - - - - - - | 8367 - 8372 |
| Black shale with little calcite. No fossils in thin section - | 8372 - 8378 |
| Fine grained, gray to black shale. No fossils - - - - - - - | 8372 - 8384 |
| Dark green to black shale. Some calcite present and a few grains of well rounded quartz sand grains - - - - - - - - - - - - | 8384 - 8390 |
| Same as preceding sample except it contained a little pyrite - | 8390 - 8395 |
| Black shale with few grains of well rounded sand. Calcite present. No fossils - - - - - - - - - - - - - - - - - - - - - - | 8395 - 8402 |
| Black shale with little calcite - - - - - - - - - - - - - | 8402 - 8405 |
| Dark gray to black shale, little calcite and pyrite present - | 8405 - 8407 |
| Dark green and black shale, little calcite - - - - - - - - - | 8407 - 8411 |
| Dark gray to black shale and small amount of calcite - - - - | 8411 - 8415 |
| Similar material at 8415-8421; 8421-8427; 8427-8431; 8431-8437 feet. | |
| Dark gray to black fine grained shale. Some calcite, and a few grains of well rounded sand. No fossils - - - - - - - - - - - - - | 8437 - 8439 |
| Dark green and black, noncalcareous shale. Calcite and a small amount of pyrite present. No fossils - - - - - - - - - - - - - | 8439 - 8442 |
| Same as preceding sample - - - - - - - - - - - - - - - - - - | 8442 - 8447 |
| Same shale as preceding. A little calcite and a few well rounded grains of sand present. No fossils - - - - - - - - - - - - - | 8447 - 8449 |

| | Depth in feet |
|---|---|
| Same as preceding sample | 8449 - 8454 |
| Fine grained black shale. More calcite noted than in a few preceding samples | 8454 - 8461 |
| Same as preceding sample | 8461 - 8467 |
| Dark gray to black fine grained shale. Little calcite present | 8467 - 8473 |
| Same as preceding sample. No fossils | 8473 - 8476 |
| Gray to black shale mixed with abundance of well rounded quartz sand. The sand is partly cemented as a clear calcareous sandstone | 8476 - 8480 |
| Same as preceding sample, except it contains also some calcite. No fossils | 8480 - 8484 |
| Same as preceding sample. A little less sand present | 8484 - 8486 |
| Same shale with lots of calcite and well rounded quartz sand | 8486 - 8490 |
| Dark gray to black, fine grained shale, with little sand and calcite. No fossils | 8490 - 8500 |
| Same shale with lots of calcite, but not so much sand | 8500 - 8504 |
| Same as preceding sample | 8504 - 8506 |
| Same shale as preceding with quantities of quartz sand | 8506 - 8510 |
| Gray to black shale mixed with a quantity of light colored calcareous material. Some calcite and sand were present | 8510 - 8512 |
| Same as preceding sample | 8512 - 8514 |
| Statement on last sample sack (8512-14') says: "Gas blew sample out down to 8525'." | 8514 - 8525 |

## Walters 1, Texas Pacific Coal & Oil Co.

Located on the S. W. corner of Section 206, T.P. RR. survey, Blk.1. Elevation 2721 feet.

### Drillers Log

| | Depth in feet to | | Depth in feet to |
|---|---|---|---|
| lime, white, hard | 120 | dandy shale, gray hard | 850 |
| lime, white, hard | 175 | shale, blue hard | 865 |
| lime, blue, hard | 240 | sand broken | 940 |
| lime, break, soft | 280 | bed rock | 970 |
| shale, dark, soft | 465 | sand | 1200 |
| shale, dark, soft | 475 | salt | 1245 |
| lime, break, white, soft | 480 | gyp | 1370 |

| | Depth in feet to |
|---|---|
| sand, gray, soft | 500 |
| sand, chalky | 550 |
| red rock, hard | 555 |
| sand, white | 588 |
| blue mud, soft | 666 |
| sand, gray soft | 725 |
| red bed soft | 732 |
| lime | 740 |
| red rock, hard | 760 |
| sandy shale, gray, soft | 805 |
| sand, white, soft | 1810 |
| lime, shite, hard | 1830 |
| red rock, hard | 1835 |
| lime, hard | 1870 |
| shale, light | 1910 |
| lime | 1915 |
| salt | 1950 |
| lime | 1975 |
| sand | 2000 |
| red rock | 2010 |
| sand lime | 2030 |
| sand | 2050 |
| lime | 2070 |
| salt | 2095 |
| lime | 2125 |
| sand | 2140 |
| salt | 2190 |
| red rock | 2240 |
| sand | 2295 |
| sand and water | 2245 |
| red rock | 2330 |
| lime, hard | 2360 |

| | Depth in feet to |
|---|---|
| salt | 1470 |
| gyp | 1485 |
| salt | 1650 |
| lime and salt | 1655 |
| red beds | 1625 |
| sandy lime, gray hard | 1740 |
| sandy lime | 1760 |
| lime, white, hard | 1765 |
| red bed, hard | 1780 |
| lime, white, hard | 1795 |
| sand | 2390 |
| lime | 2460 |
| lime, gray | 2840 |
| sand | 2940 |
| lime, gray | 2950 |
| sand | 2977 |
| water | 3030 |
| lime | 3134 |
| sand shale | 3140 |
| water salt | 3165 |
| sand lime | 3205 |
| blck floating water and sand | 3224 |

T.D. (Signed) F. P. Knibbs

15½ casing put in 606'6"
12½ casing put in 855'
10" " " " 1750'
8¼ " " " 2330'
6-5/8 " " " 2972'

Description of samples by E. W. Berry; submitted by R. A. Thompson. Most of the samples are cuttings.

| | Depth in feet |
|---|---|
| White, crystalline limestone. There are a few flakes of dark gray shale. The material appears to be a decomposing limestone in which the residue is calcite. A few pieces of limestone show organic fragments | surface - 20 |
| Half and half mixture of gray and white limestone | 20 - 50 |
| Gray and white cyrstalline limestone | 50 - 60 |
| Mouse gray limestone of very fine texture | 60 - 90 |
| Gray limestone with some aggregates of small pyrite crystals | 90 - 180 |
| A clayey, white gray limestone, with a small percentage of darker gray limestone | 240 - 325 |
| Slightly calcareous, fine grained sandstone | 320 |

| | Depth in feet |
|---|---|
| Calcareous sandstone; composed of minute angular quartz sand cemented with calcite; and a white limestone with some small rhombs of siderite - - - - - - - - - - - - - - - - - - - - - - | 400 - 420 |
| Fine grayish white quartz sand of the type of "pack sand." ... Pyritized wood present - - - - - - - - - - - - - - - - - - - - | 480 |
| Minute rounded quartz grains, "pack sand," slightly cemented by calcite - - - - - - - - - - - - - - - - - - - - - - - | 500 |
| Fine quartz sand, slightly calcareous. The grains are less rounded than in preceding sample. There is some brownish quartz. One fossil found, a minute Nodosaria (?). Very little phosphate noted. In thin section the material is very fine sandstone. Contains what appears to be a small echinoid spine and a cross section of an echinoid plate (?). Several fragments of forams noted. (Comanchean, J.A.U.). - - - - - - - - - - - - - - - - - - - - - - | 555 |
| Cream colored, (irregular grained) limestone, containing some small rounded grains of clear quartz - - - - - - - - - - - - - - | 688 |
| Slightly calcareous sand, and silt composed of rounded quartz grains. ... 715, - - - - - - - - - - - - - - - - - - - - - - - - | 780 - 850 |
| Slightly calcareous rounded grain gray quartz sand. No fossils. Phosphate present - - - - - - - - - - - - - - - - - - - - | 850 - 860 |
| Slightly calcareous, fine grained sandstone - - - - - - - - | 860 - 870 |
| Grayish,white, slightly calcareous sandstone and some red clay | 870 - 890 |
| Calcareous, brownish gray sandstone and greenish shale. No fossils found. No phosphate - - - - - - - - - - - - - - - - - - | 890 - 940 |
| Red, slightly indurated silt - - - - - - - - - - - - - - - - | 940 - 1125 |
| Mostly a white calcareous powder product of the drill. On washing there remain fragments of limestone, and some silicoeous fragments. Note: The limestone is mostly gray and is believed to have been derived from Comanchean, some fragments of red rock are believed to have come from Triassic. One very poorly preserved Ostracoda valve was noted. Sample was very small and unsatisfactory. J.A.U. - - - - - - - - - - - - - - - - - - - - - - | 1170 - 1190 |
| Lumps of white to gray sandstone - - - - - - - - - - - - - - | 1190 - 1225 |
| Flesh colored rock salt, anhydrite rhombs, lumps of deep red, brown, calcareous sandstone and some light gray sandstone - - - - - | 1255 - 1370 |
| White, colorless anhydrite - - - - - - - - - - - - - - - - - | 1370 - 1390 |
| Salt with some anhydrite - - - - - - - - - - - - - - - - - - | 1390 |

| | Depth in feet |
|---|---|
| Irregular lumps of colorless and flesh colored rock salt; nearly all is soluble in water - - - - - - - - - - - - - - - - - - | 1420 - 1450 |
| Like preceding but containing calcareous matter and aggregates of pink anhydrite ? cyrstals. Some polyhalite - - - - | 1450 - 1460 |
| Rock salt (halite), colorless anhydrite and some fine grained reddish brown mudstone - - - - - - - - - - - - - - - - - | 1460 - 1470 |
| White anhydrite. There are also some small flakes of pink anhydrite. No fossils - - - - - - - - - - - - - - - - - - - | 1470 - 1485 |
| Very fine grained sand stone and mudstone - - - - - - - - - | 1635 - 1640 |
| Mixture of white and dark gray anhydrite, reddish fine grained sandstone, some few rounded quartz grains, and a very few pieces of pink anhydrite - - - - - - - - - - - - - - - - - - | 1650 - 1665 |
| Red sandstone - - - - - - - - - - - - - - - - - - - - - - - - | 1665 - 1695 |
| Colorless and yellowish anhydrite with a few grains of fine red sandstone - - - - - - - - - - - - - - - - - - - - - - - - | 1695 |
| Mixture of white anhydrite and red mudstone - - - - - - - - - | 1745 |
| Rock salt, white anhydrite, some little reddish fine grained sandstone - 1915 - 1950 - - - - - - - - - - - - - - - - - - | 2050 - 2070 |
| Note: This well is in the Upper (salt beds) Permian from 1190 - 2070'. E. W. B. | |
| Ground up anhydrite and sand set in a fairly hard cake by hydration of the cumulated anhydrite - - - - - - - - - - - - - - - - | 2270 - 2340 |
| Gray dolomitic limestone and a few pieces of greenish shale - | 2590 - 2600 |
| Fine grained dolomitic limestone - - - - - - - - - - - - - - - | 2740 - 2745 |
| Much like sample from 2740 - 2745', but showing minute black patches. In thin section the limestone is seen to be fine grained. In thin section the limestone is seen to be fine grained. Some dolomite rhombs and one grain of quartz noted. The rock has an obscure lumpy texture, showing some fairly well defined spherical bodies of unknown origin - - - - - - - - - - - - - - - - - - - - - - - - | 2740 - 2750 |
| Dolomitic limestone and olive green shale which is slightly calcareous - - - - - - - - - - - - - - - - - - - - - - - - | 2750 |
| Dolomitic limestone and non-calcareous blue green shale. The shale contains some very fine grained quartz - - - - - - - - - - - - | 2790 |
| White dolomitic limestone and greenish shale - - - - - - - - - | 2800 - 2805 |
| Almost pure white dolomitic limestone - - - - - - - - - - - - - | 2850 - 2860 |

| | Depth in feet |
|---|---|
| Medium hard white dolomite. There are a few irregular grains of quartz. No fossils found - - - - - - - - - - - - - - | 2980 - 2985 |
| White dolomite. No fossils found and no pyrite - - - - | 2995 - 3000 |
| White dolomite. There is found a little gypsum. Some sub-angular quartz grains are present. No fossils found. 3000-3014 - 3021 - 3028 | |
| Brown and white relatively coarse grained dolomite. Pyrite is present and in the fine washed material irregular quartz sand is found - - - - - - - - - - - - - - - - - - - - - - - - - - - - | 3042 - 3050 |
| Light gray limestone - - - - - - - - - - - - - - - - - - - | 3043 |
| Straw white dolomitic limestone - - - - - - - - - - - - - | 3055 - 3070 |
| Light gray limestone. Considerable white flint - - - - - - | 3075 - 3080 |
| Almost entirely flint. Contains a bryozoan - - - - - - - - | 3075 - 3085 |
| Note: These samples from 2270-3085 are believed to be from the Permian. E.W.B. | |
| Rock salt and white anhydrite - - - - - - - - - - - - - - | 1485 |
| Note: From Permian salt beds. E.W.B. | |
| Gray clayey sandstone - - - - - - - - - - - - - - - - - - | 2125 |
| "Pack sand" with some fine grained ferruginous sandstone - - | 2245 - 2270 |
| "Pack sand" and red sandstone in about equal parts - - - - | 2270 - 2295 |
| Reddish "pack sand". Red from small ferruginous cemented pieces of sandstone noted - - - - - - - - - - - - - - - - - - - - | 2295 |
| Reddish brown sandstone. Quartz grains, small irregular and angular and some small coal fragments, showing concoidal fracture, noted - 2340 | |
| Fine grained dolomite - - - - - - - - - - - - - - - - - - - | 2355 |
| Slightly calcareous dolomite - - - - - - - - - - - - - - - | 2365 |
| Fine grained dolomite, containing some carbonaceous matter and a few crystals of pyrite. There are a small number of pieces of fine grained, red sandstone in the sample. No fossils noted - - | 2375 |
| White dolomite with a little calcite - - - - - - - - - - - | 2385 - 2390 |
| Cream colored, dolomitic limestone, containing some siderite, some pyrite and a few pieces of carbonaceous matter. 2390, 2395 - - | 2390 - 2400 |
| Strongly dolomitized limestone - - - - - - - - - - - - - - | 2405 |
| Dolomite and limestone - - - 2410 - 2425 - - - - - - - - - | 2425 - 2430 |

| | Depth in feet |
|---|---|
| White to gray limestone and dolomite closely mixed | 2430 - 2440 |
| Gray brown, dolomitic limestone | 2440 - 2450 |
| Dolomitizing limestone and a little green shale compose this sample - 2450-2460, 2460-2475 | 2475 - 2495 |
| Dolomite and calcite in smaller amount - 2500-2510, | 2510 - 2515 |
| Dolomitic oolite | 2556 |
| Partly dolomitized oolitic limestone | 2575 |
| Gray dolomite with some pyrite, and massive, gray dolomite with some scattered crystals of calcite | 2575 - 2585 |
| Gray dolomite with a few small aggregates of very small pyrite crystals. No fossils found | 2585 - 2590 |
| Gray dolomite with some pyrite | 2590 - 2620 |
| Gray dolomite, partly oolitic. Pyrite present | 2620 - 2630 |
| Semi-porous, partly oolitic dolomite | 2630 - 2640 |
| Brownish gray dolomite | 2640 - 2650 |
| Fine grained gray dolomite with some few chips of satinspar (gypsum). A little pyrite noted. No fossils noted | 2650 - 2660 |
| Brownish gray, dolomitic limestone | 2700 - 2705 |
| Very fine grained, gray, dolomitic limestone | 2705 - 2710 |

Note: Probably still in the Permian from 2070-2710'. E. W. B.

Remaining samples described by J. A. Udden:

| | |
|---|---|
| Limestone and conglomerate | 3085 - 3090 |
| Yellowish limestone and chert | 3090 - 3095 |
| Apparently a conglomerate. Most of it is chert. Some limestone and one small rounded pebble were noted. Some white quartz present. Several worn spines of brachiopods noted. Mica present in one broken fragment | 3095 - 3100 |
| Mostly chert and limestone; with the chert is some almost white quartz - Worn spines of brachiopods | 3100 - 3105 |
| Chert, white quartz, and limestone | 3100 - 3115 |
| Yellow limestone, white quartz and chert | 3115 - 3120 |

| | Depth in feet |
|---|---|
| Mostly crystalline, light limestone, which has a very peculiar texture - Fragments of crinoid stems occur in these cuttings - Some pyrite - - - - - - - - - - - - - - - - - - - - - | 3120 - 3140 |
| Like sample above. Some chalcedonic quartz noted. Many oolitic spherules noted. 3145-3150, 3150-3165, 3165-3176, 3175- 3180 | |
| Gray, finely crystalline, dolomitic limestone. Some chalcedonic quartz noted. Oolitic limestone, scarce - - - - - - | 3180 - 3185 |
| Gray, finely crystalline dolomitic limestone, showing many minute dark specks, some of which appear to be due to the presence of black carbonaceous material. Some clear calcite present - - - | 3185 - 3190 |
| Fine grained sandstone - No fossils noted - - - - - - - - - - | 3190 - 3200 |
| Mostly white flint with some limestone and sandstone. Considerable pyrite present. Sand present is mostly below 1/8 mm. - | 3200 - 3205 |

Note: The rock at 3120 feet is not at all like the single sample I have seen from the oil producing horizon, in Santa Rita No. 1.
J. A. Udden, July, 1924.