

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 195

Summary of the Gulf Oil Corporation - Wm. Rusch and Nemaha Royalty Co. #1  
Renville County, North Dakota  
Well No. 1726 - Permit No. 1738

by Robert M. Eisenhard  
April 1958

Gulf Oil Corporation - Wm. Rusch and Nemaha Royalty Co. #1 is located in the SE of the NW of Sec. 3, T. 163N., R. 85W., Renville County, North Dakota. Elevation 1669 feet D.F.

The Gulf Oil Corporation - Wm. Rusch and Nemaha Royalty Co. #1 was spudded January 18, 1958; drilled to a total depth of 4298 feet and plugged back to 4269 feet and completed as a new oil discovery (Sherwood Field) February 6, 1958.

Logs: Electric, Laterolog, Microlaterolog, Gamma Ray-Neutron.

Cores: None.

Tests:

DST #1: 4100'-4122', Open 1 hour, weak blow throughout test. Recovered 450' fluid, 90' SOCM, 90' WCM and 270' SW. Pressures: IH 2260, ISI 2155, IF 30, FF 160, FSI 1890, FH 2260, SI 30 minutes.

DST #2: 4185'-4238', Open 1 hour, GTS 22 minutes at ZOMCF. Decrease to very weak at end of test. Recovered 2800' fluid, 90' GCM, 1260' G and OCM, 1505' free oil, (18 barrels) and 1/2 barrel SW. Pressures: ISI 1870, IF 680, FF 965, FSI 1765, IH 2425, FH 2390, SI 30 minutes.

Casing:

8 5/8" surface casing set at 329' with 160 sacks of cement and 5 1/2" production casing set at 4298' with 80 sacks of cement.

Completion Test Data:

The Wm. Rusch and Nemaha Royalty Co. #1 was completed February 6, 1958 after a five hour completion. The test was taken flowing, with 4263' of 2 3/8" tubing run. The well was perforated from 4204' to 4220' with 4 jets per foot. The perforations were treated with 500 gals MCA.

Completion Test Results:

The well was potentialized at 547 BOPD, extrapolated from the five hour test. The GOR was 219 cubic feet of gas per barrel of oil. Water was negligible. Gravity of the oil - 27.8<sup>0</sup> (corrected to 600 API).

Transporter: Safety Transfer Company, Mohall, North Dakota

Formation tops were picked from samples and electric logs; corrected to electric logs. Not all formation tops are called. Colors are from the rock color chart distributed by the Geological Society of America.

FORMATION TOPS

Cretaceous System	
Pierre formation	483
Niobrara formation	1998
Greenhorn formation	2295
basal Cretaceous sandstone	2810
Jurassic System	
Piper limestone	3693
Triassic System	
Spearfish formation	3927
Mississippian System	
Charles formation	4084
MC 3	4202
330-390	Shale, brownish medium gray; lignite.
390-480	Shale, brownish medium light gray to brownish medium gray, some silty; minor lignite; minor medium to coarse, subangular to rounded, quartz grains.
480-570	Shale, medium light gray and light brownish gray, lumpy.
570-660	Shale, medium light gray, lumpy.
660-930	Shale, light gray.
930-1020	Shale, brownish medium light gray.
1020-1110	Shale, brownish medium gray.
1110-1310	Missing.
1310-1400	Shale medium dark gray and medium gray.
1400-1670	Missing.
1670-1720	Shale, medium light gray and medium dark gray.
1720-1810	Shale, as above; much pyrite.
1810-1900	Missing.
1900-1960	Shale, medium dark gray to medium light gray; some pyrite.
1960-2100	Missing.
2100-2160	Shale, dark gray to medium gray, much medium dark gray calcareous shale with abundant white specks; some pyrite.
2160-2190	Shale, dark gray to medium gray, some pyrite.
2190-2250	Shale, medium dark gray to medium light gray, minor medium dark gray calcareous shale with abundant white specks.
2250-2360	Shale, dark gray to medium light gray.
2360-2390	Shale, medium dark gray, few cuttings with abundant white specks; subrounded to subangular, coarse clear, quartz grains.
2390-2420	Shale, medium gray to dark gray shale, some medium dark gray calcareous shale with abundant white specks.
2420-2480	Shale, as above; many Inoceramus fragments.
2480-2570	Shale, dark gray to medium light gray.
2570-2840	Shale, dark gray to medium dark gray.
2840-2870	Shale, medium gray, calcareous, with abundant white specks, Greenhorn cavings.
2810-3200	Shale, medium gray to dark gray; a few coarse, subrounded frosted to clear quartz grains and a few moderate red carbonate nodules; a few pieces of pyrite cemented medium grained quartz sandstone.
3200-3230	Shale, medium gray to medium dark gray.
3230-3260	Shale, medium dark gray, calcareous, abundant white specks, cavings.
3260-3290	Shale, medium gray; white glauconitic calcareous siltstone.

3290-3310 Shale, medium light gray to medium dark gray; minor siltstone as above.

3310-3460 Shale and minor siltstone as above; minor grayish red (5R4/6), dusky red and greenish gray (5GY6/1) shale.

3460-3550 Shale, medium light gray and medium dark gray and minor greenish gray (5GY6/1) and moderate red (5R4/6).

3550-3610 Shale, as above; some white calcareous very fine grained quartzose sandstone.

3610-3700 Shale, medium light gray to medium dark gray, minor moderate red and pale olive.

3700-3720 Limestone, pinkish gray, fine grained, very minor bluish white chert; shale as above.

3720-3740 Limestone and shale, as above; angular to rounded coarse sand grains mostly clear to frosted quartz.

3740-3760 Shale, medium light gray to medium dark gray; yellowish gray (5Y7/2) very fine grained glauconitic limestone; some sand grains as above.

3760-3840 Shale, as above; fine crystalline very light gray limestone; minor moderate red and greenish gray (5GY6/1) shale; some sand grains as above.

3840-3850 Shale, medium dark gray, medium light gray, greenish gray (5GY6/1) and minor grayish red (10R4/2).

3850-3870 Shale, dark gray, medium gray, minor greenish gray (3GY6/1) and grayish red (10R4/2); minor pinkish gray, very fine crystalline limestone; minor white fine crystalline and white lumpy gypsum; minor coarse, subrounded, clear to frosted quartz grains.

3870-3880 Shale, medium dark gray, medium light gray and grayish red (10R4/2).

3880-3890 Shale, medium dark gray, medium light gray and minor greenish gray (5GY6/1) pinkish gray, very fine crystalline very argillaceous limestone; some fine crystalline white gypsum.

3890-3900 Shale, medium dark gray and greenish gray (5GY6/1); white fine crystalline, gypsum; minor very fine crystalline very light brownish gray (5YR7/1) dolomite.

3900-3910 Shale, gypsum and dolomite as above; minor grayish red shale.

3910-3920 Shale, medium dark gray and medium light gray; minor gypsum as above.

3920-3930 Shale, medium dark gray, medium light gray and minor greenish gray (5GY6/1); minor white crystalline gypsum; minor very fine crystalline, pinkish gray dolomite.

3930-3940 Shale, medium dark gray to medium light gray, greenish gray (5GY6/1) and minor grayish red (10R4/2).

3940-3970 Shale, as above; minor slightly calcareous grayish orange pink siltstone.

3975 Circ. 3/4 Hr. Shale, medium dark gray to medium light gray, greenish gray (5GY6/1) and moderate red (5R4/6); minor white fine crystalline gypsum grayish orange pink slightly calcareous siltstone.

3970-4020 Shale, medium dark gray to medium light gray, greenish gray (5GY6/1) and grayish red (10R4/2); minor grayish orange pink siltstone and very fine sandstone.

4020-4090 Shale, siltstone and very fine sandstone, as above; many loose rounded, frosted and iron stained, coarse quartz sand grains from sandstone.

4090- Dolomite, pinkish gray, recrystallized fragmental; shale as above.  
4095 Circ. 3/4 Hr. Dolomite, pinkish gray, recrystallized fragmental and microsucrosic slight porosity.

4090-4100 Dolomite, yellowish gray to pinkish gray, microsucrosic recrystallized fragmental.

4100-4110 Limestone, very light gray, very fine crystalline.

4110-4120 Shale, medium dark gray to medium light gray; limestone as above.

4123- Circ. 1/2 Hr. - Dolomite, pinkish gray, microsucrosic and recrystallized fragmental; medium light gray, moderate red and greenish gray shale; some soft white anhydrite.

4120-4130 Shale, medium dark gray, medium light gray and greenish gray (5GY6/1).

4130-4140 Anhydrite, white to very light gray, sublithographic, shale as above.

4140-4150 Limestone, very pale yellowish brown, recrystallized fragmental; shale as above.

4150-4160 Anhydrite, white to light gray, very fine crystalline and sublithographic.

4160-4190 Shale, medium dark gray, medium light gray and pale olive; anhydrite as above.

4190-4200 Limestone, pinkish gray, very fine crystalline and oolitic.

4200-4210 Limestone, very light gray, very fine crystalline and oolitic, some porosity with heavy stain and good cut.

4203- Circ. 3/4 Hr. Limestone, very light gray, very fine crystalline and oolitic dense.

4210-4220 Limestone, very light gray to very pale orange, oolitic and very fine crystalline, slight scattered porosity,

4220-4230 Limestone, pinkish gray to very pale orange, oolitic and very fine crystalline.

4238- Circ. 3/4 Hr. Limestone as above.

4240-4300 Limestone, very light gray to pinkish gray, very fine crystalline and oolitic.

4300- Circ. 3/4 Hr. Limestone, very light gray, oolitic; some very fine quartz grains included.

4300 Total depth.