

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 260

Summary of the James H. Snowden, et al - M. A. Morrison No. 1
Bowman County, North Dakota
Well No. 1446 - Permit No. 1458

by Clarence G. Carlson
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The James H. Snowden, et al - M. A. Morrison No. 1 well is located in the C SE SW of Section 34, T. 130N., R. 103W., Bowman County, North Dakota. Elevations: 3014 G.L., 3028 K.B.

The James H. Snowden, et al - M. A. Morrison No. 1 well was spudded May 29, 1957, drilled to a total depth of 9,552 feet, was plugged and abandoned July 10, 1957.

LOGS RUN:

Electric Log
Radioactivity

CORES: None

TESTS:

DST 1 - 7,000 - 7,072; open 1 hour, recovered 360 feet of mud plus 510 feet of highly mud cut water. 45 minutes, FSIP 2965#, FP 65-475#, HP 3910#.

DST 2 - 7,555 - 7,577; open 1 hour, recovered 1,040 feet of slightly mud cut water with slight sulphur odor. Pressures: 30 minute, ISIP 3315#, 30 minute FSIP 3245#, FP 65-475#, HP 4270#.

DST 3 - 9,268 - 9,350; open 2 hours, used 1,440 feet of water cushion; recovered 1,440 feet of slightly gas cut water cushion, plus 370 feet of slightly gas cut mud with a trace of oil. Pressures: 30 minute, ISIP 3255#, FSIP 3520#, FP 805-910#, HP 5270#.

DST 4 - 9,273 - 9,352; open 4 hours, recovered 475 feet of slightly gas and water cut mud with a trace of oil plus 650 feet of slightly gas and mud cut water with a trace of oil and slight sulphur odor. Pressures: 60 minute FSIP 3215#, FP 230-580#, HP 5270#.

DST 5 - 7,319 - 7,395; Straddle Packer, open 1 1/2 hours; recovered 2,115 feet of mud cut salt water, clearing up with depth and quite salty. Pressures: 45 minutes FSIP 2990#, FP 80-950#, HP 4150#.

CASING RECORD:

Set 10 3/4" casing at 813 feet with 450 sacks of cement.
Set 25 sack cement plugs at 9,277-8,753-8,472-7,555-7,100-6,928-6,538 and 4,684 feet.
Set a 30 sack plug at 830 feet and a 5 sack plug at the surface.

Formation tops were determined from samples and mechanical logs corrected to the electric log tops. Not all formations were picked in the following list.

FORMATION TOPS

Cretaceous System	
Greenhorn Formation	3740
Newcastle Sandstone	4390
Fall River Formation	4734
Jurassic System	4875
Piper Limestone	5438
Triassic System	
Spearfish Formation	5686
Permian System	
Minnekahta Formation	6365
Opeche Formation	6405
Mississippian System	
Kibbey Sandstone	6928
Kibbey Limestone	6993
Madison Group	7100
Devonian System	
8472	
Silurian System	
Interlake Formation	8753
Ordovician System	
Stony Mountain Formation	9140
Red River Formation	9278
60-170	Lignite.
170-250	Lignite; traces of siltstone, very light gray.
250-300	Lignite; traces of siltstone, very light gray, very fine to fine grained, micaceous; some siltstone, very light gray,
300-360	Shale, medium light gray, soft, fissile, micaceous; lignite; some siltstone, very light gray.
360-390	Shale, medium light gray, soft, fissile to lumpy, micaceous; some limestone, white, chalky, silty; some siltstone, light gray, micaceous.
390-420	Siltstone, light gray, micaceous; some shale, medium light gray, soft, lumpy to fissile.
420-470	Siltstone, light gray, sandy, micaceous, bentonitic; some shale, as above.
470-490	Siltstone, as above; some sandstone, very light gray, fine to medium grained, argillaceous, calcareous.
490-510	Sandstone, mostly loose fine to medium, subangular to rounded grains; some shale, medium light gray, soft.
510-520	Sandstone, as above; some shale, medium light gray, contains lignite and plant fragments, soft, fissile.
520-540	Siltstone, medium light gray, sandy, bentonitic, shale, as above.
540-550	Sandstone, mostly loose, fine to medium, subangular to rounded grains, a little shale, as above.
550-560	Lignite, shale, medium light gray.
560-570	Siltstone, medium light gray, bentonitic, sandy; lignite.
570-590	Shale, medium light gray, silty, bentonitic; some lignite.
590-690	Shale, as above; sandstone, fine to medium, subangular to rounded, loose grains.
690-780	Shale, medium light gray, sandy, bentonitic; traces of lignite; some sandstone, very light gray, fine grained, argillaceous.

780-820 Lignite; shale, light gray to medium light gray, silty, bentonitic; sandstone, fine to medium, subangular to rounded, loose grains.

820-850 Shale, medium light gray, silty, bentonitic; some sandstone, as above.

850-860 Shale, as above; some limestone, very light gray, fragmental, argillaceous, sandy.

860-970 Shale, medium light gray, soft, bentonitic.

970-1060 Shale, medium light gray, fissile, bentonitic.

1060-1190 Shale, medium light gray, fissile in part, lumpy in part.

1190-1510 Shale, medium light gray, lumpy.

1510-1820 Shale, medium light gray, soft, bentonitic, some lumpy compact.

1320-1830 Shale, light brownish gray, soft, bentonitic; shale, medium light gray, soft, bentonitic.

1830-1980 Shale, medium, light gray, soft, bentonitic in part, lumpy, compact in part.

1980-2000 Shale, as above and shale, light brownish gray, soft, bentonitic.

2000-2020 Shale, medium light gray, soft, bentonitic in part, lumpy, compact in part.

2020-2130 Shale, medium light gray, lumpy, compact.

2130-2240 Shale, medium light gray, soft, bentonitic in part, lumpy, compact in part.

2240-2760 Shale, medium light gray, soft, bentonitic.

2760-2810 Shale, medium light gray, lumpy, compact, some soft, bentonitic.

2810-3170 Shale, medium light gray, fissile, soft to lumpy, compact.

3170-3210 Shale, medium light gray, soft, bentonitic.

3210-3260 Shale, medium dark gray, fissile, calcareous, white specks.

3260-3590 Shale, medium light gray, soft, fissile to lumpy, compact.

3590-3610 Shale, medium light gray, soft, fissile and bentonitic; some white bentonite.

3610-3690 Shale, medium light gray, soft, bentonitic, lumpy in part.

3690-3700 Shale, medium dark gray, fissile, calcareous, white specks; shale, as above.

3700-3760 Shale, medium light gray, soft, fissile, bentonitic; traces of medium dark gray, fissile shale.

3770-3910 Shale, medium dark gray, fissile to platy, calcareous, "white specks", some Inoceramus fragments.

3910-3960 Shale, medium dark gray, platy, compact.

3960-4020 Shale, as above and shale, medium light gray, lumpy to fissile, soft.

4020-4040 Shale, medium light gray, lumpy to platy.

4040-4060 Shale, medium light gray, bentonitic, soft.

4060-4070 Shale, as above; some bentonite, white.

4070-4080 Shale, medium light gray, platy.

4080-4120 Shale, medium light gray and medium dark gray, platy.

4120-4620 Shale, medium dark gray, platy to fissile.

4620-4690 Shale, medium light gray, fissile to platy.

4690-4740 Shale, as above and medium dark gray, platy to fissile.

4740-4840 Sandstone, colorless to white, very fine to fine grained, firmly cemented; shale, as above.

4840-4890 Sandstone, as above; some loose, medium to coarse, subangular grains, shale, as above.

4890-4900 Shale, medium light gray, soft, bentonitic, fissile.

4900-4930 Shale, as above; some sandstone and loose sand grains, as above.

4930-4970 Shale, very light gray, lumpy, compact, greasy; shale, as above.

4970-5060 Shale, very light gray to light olive gray and light greenish gray, lumpy in part, fissile in part.

5060-5090 Shale, as above; a little sandstone, light greenish gray and very light gray, very fine to fine grained.

5090-5250 Sandstone, very light gray, very fine to fine grained; shale, as above; much medium dark gray shale cavings.

5250-5380 Shale, medium light gray, fissile, soft, bentonitic.

5380-5460 Shale, light greenish gray, platy to fissile, calcareous, much shale, as above.

5460-5510 Limestone, very light gray, finely crystalline, much shale, as above.

5510-5560 Shale, light olive gray to light greenish gray, platy to fissile, calcareous; much shale, various shades of gray.

5560-5565 Shale, as above; traces of limestone, pale red, finely crystalline, argillaceous.

5565-5590 Limestone, very light gray to pale red, finely crystalline, argillaceous; shale, as above.

5590-5610 Shale, medium light gray, soft, fissile, bentonitic; traces of limestone, very light gray; traces of shale, greenish gray, platy, calcareous; traces of sandstone, very light gray, very fine grained.

5610-5630 Shale, light olive gray to greenish gray, platy to fissile, calcareous; much gray shale and traces of limestone, as above.

5630-5720 Shale, pale reddish brown, lumpy; much shale, as above.

5720-5900 Siltstone, moderate orange pink, with some medium, rounded, frosted sand grains.

5900-5950 Shale, pale reddish brown, lumpy; siltstone, as above.

6000-6240 Shale, pale reddish brown, lumpy; siltstone, moderate reddish orange; much medium light gray shale cavings; some euhedral quartz crystals.

6240-6385 Siltstone, moderate reddish orange; some euhedral quartz crystals, some gypsum.

6385-6390 Anhydrite, white to pinkish gray; siltstone, as above.

6390-6395 Limestone, pinkish gray, fine to medium and coarsely crystalline.

6395-6410 Limestone, very light gray to pinkish gray, fine grained, granular to finely crystalline, dense.

6410-6425 Limestone, pale red to moderate reddish orange, finely crystalline to fine grained.

6425-6520 Siltstone, moderate reddish orange; shale, pale reddish brown, silty; some euhedral quartz crystals.

6520-6530 Siltstone, moderate reddish orange, slightly sandy, rounded, frosted, fine to medium sand grains.

6530-6535 Sandstone, grayish orange pink to pale orange and pinkish gray, very fine to medium grained, poorly sorted, firmly cemented, slightly dolomitic.

6535-6540 Sandstone, pinkish gray to very pale red, very fine to fine grained with a few medium grains, slightly calcareous, firmly cemented.

6540-6545 Sandstone, as above; dolomite, pinkish gray, very finely crystalline, dense.

6545-6570 Dolomite, grayish pink to grayish red, microcrystalline, dense.

6570-6575 Sandstone, grayish pink, very fine to fine grained, slightly calcareous; some dolomite, as above.

6575-6600 Dolomite, grayish pink to very light gray, microcrystalline.

6600-6605 Sandstone, very light gray to grayish pink, very fine to fine grained, slightly calcareous; some dolomite, as above.

6605-6635 Dolomite, very light gray to pinkish gray, finely crystalline, some sandstone, as above.

6635-6640 Sandstone, very light gray to pinkish gray, very fine to fine grained, slightly calcareous; dolomite, as above.

6640-6710 Dolomite, as above; some sandstone, as above; some traces of white chert.

6710-6720 Shale, medium dark gray, platy; dolomite and sandstone, as above.

6720-6730 Shale, medium dark gray and pale reddish brown, platy; dolomite and sandstone, as above.

6730-6785 Dolomite, very light gray to pinkish gray, microcrystalline; traces of shale, as above.

6785-682 Limestone, light gray, finely crystalline, "peppered" with fine to medium crystals of anhydrite; dolomite, as above; shale, as above.

6820-6835 Shale, medium dark gray, moderate red, greenish gray, platy; some limestone, pale brown, microcrystalline.

6835-6860 Limestone, light brownish gray to pale brown, finely crystalline; a little shale, as above.

6360-6895 Limestone, very light gray to light yellowish gray, microcrystalline; a little shale, as above; some limestone, as above.

6895-6940 Shale, variegated, platy, slightly calcareous; limestone, as above.

6940-6965 Sandstone, pinkish gray, very fine to fine grained, slightly calcareous.

6965-7000 Sandstone, pale red to pinkish gray, very fine to fine grained, a little medium grained, slightly calcareous.

7000-7015 Traces of sandstone, as above; mostly variegated shale cavings.

7015-7020 Limestone, light yellowish gray to very light gray, finely crystalline.

7020-7055 Limestone, light yellowish gray to light gray, pelletoidal to fragmental with a finely crystalline matrix.

7055-7115 Siltstone, very light gray, calcareous.

7115-7140 Limestone, light brownish gray, very finely crystalline, dense; a little white anhydrite.

7140-7145 Limestone, light yellowish gray, very finely crystalline, traces of fragmental texture; a little white anhydrite.

7145-7150 Limestone, brownish gray, microcrystalline, dense.

7150-7165 Limestone, brownish gray to light brownish gray, microcrystalline, traces of fragmental texture, traces of chert.

7165-7200 Limestone, light brownish gray to light yellowish gray, microcrystalline in part, fragmental in part.

7200-7205 Anhydrite, light gray to light bluish gray, dense, slightly calcareous.

7205-7215 Anhydrite, as above and white anhydrite.

7215-7235 Limestone, light brownish gray, fine grained, granular, dolomitic; some anhydrite, white.

7235-7265 Limestone, very light brownish gray to light yellowish gray, microcrystalline, in part, fragmental in part.

7265-7270 Limestone, very light brownish gray to light yellowish gray, pelletoidal to fragmental with a finely crystalline matrix.

7270-7275 Limestone, as above; some white anhydrite.

7275-7285 Anhydrite, white; limestone, as above.

7285-7295 Limestone, very light brownish gray, microcrystalline to fragmental with a microcrystalline matrix.

7295-7340 Anhydrite, white; some limestone, as above.

7340-7360 Limestone, light brownish gray, fragmental with a finely crystalline matrix.

7360-7370 Limestone, brownish gray to light brownish gray, microcrystalline to fragmental with a finely crystalline matrix.

7370-7385 Limestone, light brownish gray, microgranular, dolomitic, slightly anhydritic, fair porosity.

7385-7410 Limestone, light brownish gray, fragmental with a finely crystalline matrix.

7410-7420 Limestone, light brownish gray, granular, dolomitic, fair oil stain and cut with Ccl_4 ; limestone, as above.

7420-7475 Limestone, light brownish gray, fragmental with a finely crystalline matrix.

7475-7490 Limestone, as above; some white anhydrite.

7490-7575 Anhydrite, white to very light gray; limestone, as above.

7575-7610 Limestone, very light brownish gray, fine grained, fragmental; some dolomite, light brownish gray, microgranular; some white to light gray anhydrite.

7610-7635 Limestone, very light brownish gray, fragmental, fine grained; traces of dolomite, as above.

7635-7645 Limestone, very light brownish gray, fragmental with a finely crystalline matrix.

7645-7680 Limestone, light brownish gray, fine grained, granular, dolomitic and limestone, as above.

7680-7700 Anhydrite, white to light gray; limestone, as above.

7750-7760 Shale cavings.

7760-7780 Limestone, light brownish gray, fragmental, fine grained.

7780-7785 Limestone, as above; a little anhydrite, white to light gray.

7785-7830 Limestone, very light brownish gray to light brownish gray, fragmental, fine grained in part, microgranular in part.

7830-7845 Limestone, very light brownish gray to light brownish gray, microgranular in part, oolitic to fragmental in part with a finely crystalline matrix.

7845-7935 Limestone, very light brownish gray to light brownish gray, oolitic to fragmental with a finely crystalline matrix, some microgranular limestone.

7935-7950 Dolomite, light brownish gray, fine to medium crystalline, granular, limy; limestone, as above.

7950-7955 Limestone, light gray, finely crystalline, siliceous; limestone, as above.

7955-7965 Limestone, very light brownish gray to light gray, fragmental, with a finely crystalline matrix.

7965-7990 Limestone, light yellowish gray, microcrystalline, in part, pelletoidal to fragmental in part.

7990-7995 Limestone, light yellowish gray, microcrystalline.

7995-8060 Limestone, light gray to very light brownish gray, fine to medium crystalline, fragmental, slightly argillaceous.

8060-8140 Limestone, light gray to very light brownish gray, finely crystalline, fragmental, scattered brachiopod fragments, slightly argillaceous.

8140-8200 Limestone, light gray, finely crystalline, fragmental, fossiliferous, slightly argillaceous.

8200-8285 Limestone, as above; some chert.
 8285-8390 Limestone, light brownish gray, microcrystalline, dense.
 8390-8415 Dolomite, light brownish gray, microgranular; limestone, as above.
 8415-8420 Shale, medium dark gray, platy, calcareous.
 8420-8430 Limestone, light brownish gray, microcrystalline.
 8430-8465 Dolomite, light brownish gray, microgranular, limy.
 8465-8470 Shale, medium dark gray to medium gray, fissile, slightly calcareous; dolomite, as above.
 8470-8480 Dolomite, light brownish gray, microgranular, limy.
 8430-8500 Dolomite, light brownish gray, microgranular, limy.
 8500-8520 Dolomite, light brownish gray, microgranular.
 8520-8545 Dolomite, light brownish gray, fine to medium crystalline, granular in part, dense in part.
 8545-8565 Dolomite, very light brownish gray to light yellowish gray, very fine to finely crystalline.
 8565-8590 Dolomite, very light brownish gray to light yellowish gray, fine to coarsely crystalline.
 8590-8655 Dolomite, light brownish gray to very light brownish gray, fine to medium crystalline.
 8655-8660 Limestone, brownish gray, finely crystalline, dense; dolomite, as above.
 8660-8690 Limestone, brownish gray, very fine to finely crystalline.
 8690-8720 Dolomite, very light brownish gray, fine to medium crystalline, granular in part; limestone, as above.
 8720-8750 Dolomite, very light brownish gray, very fine to medium crystalline, granular; scattered sand grains, medium, rounded, frosted.
 8750-8760 Dolomite, very light gray to white, fine to medium crystalline, limy; dolomite, as above.
 8760-8770 Sandstone, colorless to pinkish gray, very fine to medium rounded, frosted, poorly sorted grains; dolomite, as above.
 8770-8785 Sandstone, as above; dolomite, very pale orange to yellowish orange, very finely crystalline, dense.
 8785-8805 Dolomite, very light brownish gray to light yellowish gray, very fine to finely crystalline; some sandstone, as above.
 8805-8820 Dolomite, light pinkish gray to light yellowish gray, fine to medium crystalline, dense.
 8820-8915 Dolomite, light pinkish gray to light yellowish gray, very fine to finely crystalline, dense.
 8915-9020 Dolomite, light pinkish gray, microcrystalline, some white chert.
 9020-9045 Dolomite, very light gray to light yellowish gray, microcrystalline, traces of chert.
 9045-9070 Dolomite, light yellowish gray to light pinkish gray, microcrystalline, in part, fine to medium crystalline, in part, granular.
 9070-9130 Dolomite, light pinkish gray to light yellowish gray, microcrystalline.
 9130-9155 Dolomite, light pinkish gray to pale red and light yellowish gray, microcrystalline.
 9155-9170 Dolomite, medium light gray, finely crystalline.
 9170-9210 Dolomite, light yellowish gray and medium light gray, finely crystalline.
 9210-9220 Dolomite, light gray to light yellowish gray, finely crystalline to fine grained, granular.

9220-9285 Limestone, very light gray, fine to medium crystalline, fragmental, slightly argillaceous.

9285-9315 Dolomite, light brownish gray, finely crystalline; limestone, as above.

9315-9350 Limestone, brownish gray, microcrystalline, dense.

9350-9390 Limestone, brownish gray to light brownish gray, microcrystalline in part, fine to medium crystalline, granular, in part.

9390-9425 Limestone, as above; traces of anhydrite, white to light gray.

9425-9500 Limestone, brownish gray to light brownish gray, cryptocrystalline, granular.

9500-9540 Dolomite, light, brownish gray, fine to medium grained, granular.