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

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

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

Shale, medium light gray, soft, bentonitic.

Shale, medium light gray, fissile, bentonitic.

Shale, medium light gray, fissile in part, lumpy in part.

Shale, medium light gray, lumpy.

Shale, medium light gray, soft, bentonitic, some lumpy compact.

Shale, light brownish gray, soft, bentonitic; shale, medium light gray, soft, bentonitic.

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

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

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

Shale, medium light gray, lumpy, compact.

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

Shale, medium light gray, soft, bentonitic.

Shale, medium light gray, lumpy, compact, some soft, bentonitic.

Shale, medium light gray, fissile, soft to lumpy, compact.

Shale, medium light gray, soft, bentonitic.

Shale, medium dark gray, fissile, calcareous, white specks.

Shale, medium light gray, soft, fissile to lumpy, compact.

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

Shale, medium light gray, soft, bentonitic, lumpy in part.

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

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

Shale, medium dark gray, fissile to platy, calcareous, “white specks”, some Inoceramus fragments.

Shale, medium dark gray, platy, compact.

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

Shale, medium light gray, lumpy to platy.

Shale, medium light gray, bentonitic, soft.

Shale, as above; some bentonite, white.

Shale, medium light gray, platy.

Shale, medium light gray and medium dark gray, platy.

Shale, medium dark gray, platy to fissile.

Shale, medium light gray, fissile to platy.

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

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

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

Shale, medium light gray, soft, bentonitic, fissile.

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, very fine to medium grained; 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.
Dolomite, grayish pink to very light gray, microcrystalline.

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

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

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

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

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

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

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

Limestone, light gray, finely crystalline, “peppered” with fine to medium crystals of anhydrite; dolomite, as above; shale, as above.

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

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

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

Shale, variegated, platy, slightly calcareous; limestone, as above.

Sandstone, pinkish gray, very fine to fine grained, slightly calcareous.

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

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

Limestone, light yellowish gray to very light gray, finely crystalline.

Limestone, light yellowish gray to light gray, pelletaloidal to fragmental with a finely crystalline matrix.

Siltstone, very light gray, calcareous.

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

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

Limestone, brownish gray, microcrystalline, dense.

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

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

Anhydrite, light gray to light bluish gray, dense, slightly calcareous.

Anhydrite, as above and white anhydrite.

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

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

Limestone, very light brownish gray to light yellowish gray, pelletaloidal to fragmental with a finely crystalline matrix.

Limestone, as above; some white anhydrite.

Anhydrite, white; limestone, as above.
Limestone, very light brownish gray, microcrystalline to fragmental with a microcrystalline matrix.

Anhydrite, white; some limestone, as above.

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

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

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

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

Limestone, light brownish gray, granular, dolomitic, fair oil stain and cut with Ccl; limestone, as above.

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

Limestone, as above; some white anhydrite.

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

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

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

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

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

Anhydrite, white to light gray; limestone, as above.

Shale cavings.

Limestone, light brownish gray, fragmental, fine grained.

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

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

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

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

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

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

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

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

Limestone, light yellowish gray, microcrystalline.

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

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

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.
8480-8490 Dolomite, light brownish gray, microgranular.
8490-8500 Dolomite, light brownish gray, microgranular, limy.
8500-8520 Dolomite, light brownish gray, microgranular, limy.
8520-8545 Dolomite, very light brownish gray to light yellowish gray, very fine to finely crystalline.
8545-8565 Dolomite, very light brownish gray to light yellowish gray, fine to coarsely crystalline.
8565-8590 Dolomite, very light brownish gray to very light brownish gray, fine to medium crystalline.
8590-8655 Dolomite, very light brownish gray to very light yellowish gray, very fine to coarsely crystalline.
8655-8690 Dolomite, very light brownish gray to very light yellowish gray, very fine to medium crystalline.
8690-8720 Dolomite, very light brownish gray to light yellowish gray, very fine to medium crystalline.
8720-8750 Dolomite, very light brownish gray to light yellowish gray, very fine to medium crystalline; scattered sand grains, medium, rounded, frosted.
8750-8760 Dolomite, very light brownish gray to light yellowish gray, very fine to medium crystalline, dense; dolomite, as above.
8760-8785 Dolomite, very light brownish gray to light yellowish gray, very fine to medium crystalline, dense; some sandstone, as above.
8785-8805 Dolomite, very light brownish gray to light yellowish gray, very fine to finely crystalline; some sandstone, as above.
8805-8820 Dolomite, very light brownish gray to light yellowish gray, very fine to medium crystalline, dense.
8820-8915 Dolomite, very light brownish gray to light yellowish gray, very fine to finely crystalline.
8915-9020 Dolomite, very light brownish gray, microcrystalline, some white chert.
9020-9045 Dolomite, very light gray to light yellowish gray, microcrystalline, traces of chert.
9045-9070 Dolomite, very light brownish gray to light pinkish gray, microcrystalline, in part, fine to medium crystalline, in part, granular.
9070-9130 Dolomite, very light brownish gray to light yellowish gray, microcrystalline.
9130-9155 Dolomite, very light brownish gray to pale red and light yellowish gray, microcrystalline.
9155-9170 Dolomite, very light brownish gray to pale red and light yellowish gray, microcrystalline.
9170-9210 Dolomite, very light brownish gray to pale red and light yellowish gray, microcrystalline.
9210-9220 Dolomite, very light brownish gray to light yellowish gray, finely crystalline to fine grained, granular.
<table>
<thead>
<tr>
<th>Interval</th>
<th>Description</th>
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<tbody>
<tr>
<td>9220-9285</td>
<td>Limestone, very light gray, fine to medium crystalline, fragmental, slightly argillaceous.</td>
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<tr>
<td>9285-9315</td>
<td>Dolomite, light brownish gray, finely crystalline; limestone, as above.</td>
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<tr>
<td>9315-9350</td>
<td>Limestone, brownish gray, microcrystalline, dense.</td>
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<tr>
<td>9350-9390</td>
<td>Limestone, brownish gray to light brownish gray, microcrystalline in part, fine to medium crystalline, granular, in part.</td>
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<tr>
<td>9390-9425</td>
<td>Limestone, as above; traces of anhydrite, white to light gray.</td>
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<tr>
<td>9425-9500</td>
<td>Limestone, brownish gray to light brownish gray, crypto-crystalline, granular.</td>
</tr>
<tr>
<td>9500-9540</td>
<td>Dolomite, light, brownish gray, fine to medium grained, granular.</td>
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