

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 164

Summary of the Sam Harrison - J. H. Anderson et al No. 1
Ward County, North Dakota
Well No. 392 - Permit No. 408

by Dan E. Hansen
January, 1957

The Sam Harrison - J. H. Anderson No. 1, Ward County, North Dakota.
Location: 990 feet from the west line and 400 feet from the south line of
Section 21, T. 157N., R. 85W. Elevation: 1864 G.L., and 1875 K.B.

The Sam Harrison - J. H. Anderson was spudded August 27, 1953, drilled
to a total depth of 8107, found non-productive and plugged October 21, 1953.
Two drill stem tests were taken and three cores were cut.

Logging Record:

Schlumberger electric log - Run one, 10/19/53, 1027-8100
Schlumberger microlog - Run one, 10/20/53, 3400-8098
Lane Wells radioactivity log - gamma ray, 10/19/53, 100-8091
neutron, 10/19/53, 100-8101

Coring Record:

#1 6065-6116, #2 6178-6228, #3 6319-6369

Drill Stem Tests:

DST #1 - 6016-6116. Open 1 hr. Recovered 90' very sly GCM, 3580'
sulfur water, FP 700-2000#, 15 min; SIP 2800#.

DST #2 - 7607-7645. Open 1 1/2 hrs. Recovered 290' mud. FP 250#, SIP
3000#, HP 4470#.

Casing Record:

Set 1025 feet of 10 3/4" 32# casing with 500 sacks cement.

Plugging Record:

Set Plugs Sacks cement
7154-7100 20
5954-5873 30
3720-3666 20
987-1025 10
Top of surface csg. 10

Formation tops were determined from samples, electric logs, and
radioactivity logs. Doubtful or obscure formation tops were not picked.
Color names and identifying numbers are taken from the 1948 Rock-Color Chart
which is distributed by the National Research Council, Washington, D.C.

FORMATION TOPS

Cretaceous System	
Pierre formation	1230
Niobrara formation	2598
Greenhorn formation	3060
Dakota group sandstones	
Basal sandstones	3693
Jurassic System	
Piper limestone	4639
Triassic System ?	
"Spearfish formation"	4908
Mississippian System	
Big Snowy group	
Kibby limestone	5192
Madison group	
Charles formation	5324
Mission Canyon fm.	5882
Lodgepole formation	6327
Bakken formation	6960
Devonian System	
Lyleton formation	7000
Nisku formation	7195
Duperow formation	7292
Souris River formation	7700
Dawson Bay formation	7935

0-1040	Samples missing.
1040-1200	Casing cement. Small amounts of lignite, loose quartz grains, and traces of light gray shale. Traces of clay cemented fragments that contain angular pebbles of feldspar and fine-grained to pebbles of white and clear quartz.
1200-1440	Shale, medium light gray to light olive gray, micro-micaceous, soft, spongy. Small amounts of light gray silt, calcareous at 1200-1280. Small amount of loose quartz grains in samples at 1280-1340.
1440-1760	Shale, medium light gray, massive, compact, micro-micaceous.
1760-2260	Shale, medium gray, massive, compact, micro-micaceous.
2260-2300	Shale, medium dark gray, soft, spongy, micro-micaceous, traces of light gray bentonite.
2300-2340	Samples missing.
2340-2380	Shale and bentonite as above.
2380-2730	Samples missing.
2730-2860	Shale, medium gray, as above. Traces of light blue gray and light gray bentonites, pyrite, and calcite prisms. Traces of dark gray, micro-micaceous, flaky shale.
2860-2970	Shale, medium dark gray to dark gray, soft to compact, massive to flaky, micro-micaceous. Traces of light gray bentonite and pyrite. Poor samples.
2970-3060	Shale, dark gray, compact to soft, massive to flaky, micro-micaceous.
3060-3200	Shale, medium dark gray, compact, very calcareous, "2nd white specks", calcite prisms. Globigerina at 3110-3160. A few fragments of calcite prisms cemented together to form a limestone.

3200-3690 Shale, medium dark gray, compact to flaky, micro-micaceous.

3690-3780 Sandstone, light gray, about 5% of sample, fine grained, angular quartzose, clay and calcite cemented. Traces of light brownish gray, siltstone-siderite "pellets". Traces of pyrite.

3780-3940 Shale, medium gray to medium dark gray, soft, spongy to massive, compact, micro-micaceous, silty.

3940-3960 Sandstone, loose grains of angular to rounded, white and pink, frosted to clear, medium to very coarse grained quartz. Traces of light gray chert grains. Light gray silty shale and shale as above.

3960-3990 Sandstone, light gray, very fine grained, calcareous cemented, quartzose. Trace of medium grained, quartzose sandstone cemented by pyrite. Shale as above.

3990-4000 Shale, medium dark gray, as above. With small amounts of light gray silt and brownish gray shale.

4000-4080 Shale, medium dark gray, as above. With small amounts of brownish gray and light greenish gray, waxy compact shale, slightly calcareous. Also traces of light gray and light brownish gray, very fine grained quartzose sandstone.

4110-4150 Sandstone, light brownish gray, very fine grained, calcareous, quartzose sandstone. Shales as above. Traces of fibrous anhydrite.

4150-4170 Sandstone, light gray, fine grained, quartzose, with green mineral. Shales as above.

4170-4180 Shale, light gray, silty and greenish gray, splintery. Medium dark gray shale as above.

4180-4240 Sandstone, light gray, very fine grained, silty and greenish gray (5GY6/1) fissile, waxy shale. Medium dark gray shales, as above.

4240-4280 Shale, greenish gray, (5GY6/1) flaky to splintery, micromicaceous, silty and light gray silt. Small amount of sandstone and medium dark gray shale as above.

4280-4310 Shale as above, with olive gray, soft, micro-micaceous, flaky shale.

4310-4340 Shale as above, with traces of fine grained, limey, quartzose, light gray sandstone and sandy limestone.

4340-4460 Shale, greenish gray (5GY6/1) to medium light gray, silty, splintery to flaky, micro-micaceous.

4460-4490 Shale as above, with small amounts of pale brown shale.

4490-4500 Shale, greenish gray (5GY6/1), medium light gray, light olive gray, and pale brown, waxy, slightly calcareous, and splintery. Small amount of very light gray, very calcareous siltstone.

4500-4520 Shale as above.

4520-4540 Shales as above, with calcareous, very fine grained, quartzose sandstone and sandy limestone, very light gray.

4540-4570 Sandstone, light gray, quartzose, fine grained, calcareous, and anhydrite cemented. Shales as above. Traces of coarse grained, clear, angular and frosted, rounded quartz grains.

4570-4590 Sandstones and shales as above, with much medium dark gray shale.

4590-4620 Shale, greenish gray (5GY6/1), pale brown, and pale yellowish brown, slightly calcareous. With very light gray, soft, very fine grained limestone.

4620-4640 Shale, light brownish gray, slightly calcareous, compact. Also pale brown shale as above.

4640-4650 Shale, moderate brown, waxy, slightly calcareous, shales as above.

4650-4710 Shale as above, with very light gray, sandy limestone and anhydrite limestone, very fine grained. Traces of gray chert and anhydrite.

4710-4780 Limestone, very light gray to pinkish gray, very fine grained to sublithographic, shales as above.

4780-4800 Limestone as above but anhydritic. Shales as above.

4800-4910 Anhydrite, white to light gray, crystalline, dense to soft. Shales are mainly gray with traces of pale brown shale.

4910-4930 Silt and shale, moderate brown, anhydritic.

4930-4960 Sandstone, moderate brown, very fine to fine grained, anhydritic. With medium to coarse grained, rounded, frosted quartz grains.

4960-5150 Silt as above. Shales and sandstone as above.

5150-5180 Sandstone, pale reddish brown to moderate brown, fine to coarse grained, rounded, frosted, calcareous cemented and loose quartz grains, silty and shaly.

5180-5210 Limestone, dolomitic and anhydritic, pinkish gray to light gray, very fine grained to sublithographic. Traces of white chert.

5210-5220 Sandstone, grayish orange pink, fine to medium grained, quartzose, calcareous and anhydrite cemented, silty.

5220-5260 Siltstone, shaly and very fine grained sandstone, pale reddish brown, calcareous and anhydritic.

5260-5280 Siltstone, moderate pink, shaly, calcareous and anhydritic, and pink anhydrite.

5280-5300 Siltstone as above. Greenish gray (5GY6/1) calcareous, splintery shale.

5300-5320 Siltstone and anhydrite as above.

5320-5390 Anhydrite, crystalline, white to pink, crystalline, and grayish pink, anhydritic, crystalline, dense limestone. Traces of quartz grains, greenish gray shale. At 5360-5370 much greenish gray shale.

5390-5420 Limestone, pinkish gray, fragmental, fine to very coarse grained, angular to rounded, oolitic and pisolitic.

5420-5430 Limestone, pale red, fragmental, fine to medium grained, silty and shale, calcareous, pale red. Limestone as above.

5430-5440 Limestone as above and anhydrite, limey, pinkish gray.

5440-5460 Anhydrite, very light gray, crystalline. With very thin bedded, soft, medium gray shale, calcareous.

5460-5470 Limestone, light brownish gray, fragmental, fine to medium grained, anhydritic, sandy and silty.

5470-5500 Anhydrite, light gray to white, crystalline and dense, shaly grading into a dense, limey and anhydritic shale.

5500-5510 Limestone, grayish orange pink to yellowish gray, very fine grained and sublithographic to coarse grained fragmental, anhydritic.

5510-5530 Limestone, yellowish gray, fragmental, fine to coarse grained, angular to rounded fragments, psuedo-oolitic. Fragments of crinoid stems and bryozoan.

5530-5540 Limestone, medium light gray, crystalline, shaly, fine grained, with a silty residue, in some cases the silty grades into fine sand grains.

5540-5560 Anhydrite, light gray, shaly.

5560-5590 Limestone, medium light gray, fine grained, shaly and silty. Poor samples.

5590-5630 Anhydrite, light gray to white, dense, dolomitic and shaly. Medium gray calcareous shale.

5630-5650 Limestone, light brownish gray, anhydritic and dolomitic, dense, fragmental to crystalline (very fine grained and sublithographic) to coarse grained, recrystallized. Small amounts of granular and silty dolomitic, light brownish gray limestone, anhydrite filled.

5650-5670 Anhydrite, light gray to white, dense, grading into a medium gray, anhydritic, calcareous shale.

5670-5680 Limestone as above.

5680-5700 Anhydrite and shale as above.

5700-5710 Limestone, light gray, very fine grained, soft, anhydritic.

5710-5730 Limestone, light brownish gray, fragmental, fine to coarse grained, recrystallized, psuedo-oolitic in part. Also, fine grained fragmental limestone is anhydrite filled, but contains some intergranular porosity (limestone is slightly silty).

5730-5740 Limestone, medium light gray, dense, shaley, very fine grained.

5740-5750 Limestone, light brownish gray, as above.

5750-5780 Anhydrite, light gray to white, shaley in part, with medium gray, soft shale.

5780-5790 Limestone, light brownish gray, fragmental, fine-coarse grained.

5790-5840 Anhydrite, white to light gray, dense, fine crystalline. Shale, medium gray, soft to compact, calcareous and anhydritic.

5840-5850 Limestone, light brownish gray, dense, very fine grained, dolomitic. Anhydrite as above.

5850-5870 Anhydrite as above.

5870-5880 Limestone, light gray, dense, anhydritic, very fine grained, limestone, light brownish gray, oolitic, much recrystallization and dense, and sandstone, very light gray, quartzose, fine grained, silty and anhydritic.

5880-5970 Limestone, light brownish-pinkish gray, fragmental, oolitic to pisolitic, and fine grained, dense with pinpoint porosity. Much recrystallization and the limestone is anhydritic.

5970-5980 Limestone, medium light gray, dense, fine grained crystalline to coarse grained fragmental, partially oolitic, shaley, with limestone as above.

5980-6020 Limestone, light brownish-yellowish gray, fragmental, partially oolitic, fine-coarse grained, much recrystallization, dense. Traces of pinpoint porosity.

6020-6065 Limestone, very light brownish gray, fragmental, partially oolitic, grainy, fine-coarse grained, very slight silt residue, traces of pinpoint porosity.

6065-6070 Reaming, limestone as above.

Core Chip Descriptions (Cored 6065-6116 - rec. 50')

6065-6084 Limestone, very light brownish gray, fragmental, generally fine grained, rounded fragments, also contains some coarse grained, recrystallized fragmental, all anhydritic.

6084-6106 Limestone, brownish gray, fragmental, fine-coarse grained, banded with thin bands of dark gray shale, anhydritic.

6106-6116 Limestone, light brownish gray, fine-coarse grained, fragmental, recrystallized, anhydrite filled porosity. Contains a few thin bands of dark gray shale.

Sample Descriptions

6120-6140 Limestone, light brownish gray, fragmental, fine-coarse grained, gray shale fragments. Traces of white anhydrite.

- 6140-6150 Limestone, light brownish gray, fragmental, medium grained, oolitic, porosity anhydrite filled.
- 6150-6170 Limestone, light gray to pinkish gray, fragmental, generally fine grained, trace of intergranular porosity, dense.
- 6170-6180 Limestone, light gray and very light brownish gray, fragmental, fine-medium grained, rounded to angular fragments.

Core Chip Descriptions (Cored 6178-6228 - rec. 50')

- 6180-6190 Limestone, very light brownish gray to yellowish gray, fragmental, fine-coarse grained, recrystallized coarse fragments and rounded, sandy appearing, fine fragments, anhydrite filled. Trace of fossil fragments.
- 6190-6200 Limestone, very light brownish gray, coarse grained, psuedo-oolitic, much recrystallization, anhydrite and calcite filled porosity.
- 6200-6220 Limestone, very light brownish gray to yellowish gray, fragmental, silty, fine grained, grainy, intergranular and pinpoint porosity.
- 6220-6228 Limestone, very light brownish gray, fragmental, coarse grained, recrystallized, angular to rounded, psuedo-oolitic grains.

Sample Descriptions

- 6228-6260 Limestone, very light brownish gray, fragmental, fine-coarse grained, rounded to angular, recrystallized coarse grained fragments. Traces of oolites.
- 6260-6300 Limestone, light brownish gray, fragmental, fine-coarse grained, angular and rounded grains, recrystallized and slightly anhydritic, dense. Traces of bryzoan fragments and crinoid stems.
- 6300-6320 Limestone, light brownish gray, fragmental, dense, much recrystallization. Becoming shaly and anhydritic.

Core Chip Descriptions (Cored 6319-6369 - rec. 50')

- 6320-6330 Limestone, light brownish gray, fragmental, fine-coarse grained, angular to rounded, gray shale streaks, with inclusions of fine grained crystalline limestone.
- 6330-6340 Limestone, medium dark gray to brownish gray, fragmental, dense, coarse grained, recrystallized, many brachiopod shells.
- 6340-6350 Limestone, medium light gray to light gray, fragmental, coarse grained, recrystallized. Traces of dark gray shale and small amount of light gray, fragmental, fine-medium grained, psuedo-oolitic limestone.
- 6350-6360 Limestone, medium light gray, fragmental, fine-medium grained, grainy, recrystallized.
- 6360-6369 Limestone, medium gray, fragmental, dense, recrystallized, coarse grained, shaly. With pyrite streaked medium dark gray limey shale.

Sample Descriptions

- 6370-6400 Limestone, medium gray, fragmental, dense, recrystallized, coarse grained, shaly. With fragments of dark gray shale.
- 6400-6420 Limestone, light gray, fragmental, grainy, fine-coarse grained, recrystallized, shaly.
- 6420-6470 Limestone, medium gray, fragmental, dense, shaly, fine to chiefly coarse grained. Small amounts of dark gray limey, shale.
- 6470-6670 Limestone, medium light gray, fragmental, dense, fine-medium grained, shaly. Small amounts of medium gray, limey shale. Traces of shell fragments.

6670-6860 Limestone, medium gray to medium light gray, fragmental, dense, fine-medium grained, shaly. Small amounts of medium gray, limey shale. Traces of shell fragments. Small amounts of gray chert.

6860-6870 Limestone, light gray, fine grained, dense, small amounts of medium gray limey shale.

6870-6890 Limestone, medium gray to medium light gray, as above.

6890-6950 Shale, medium gray, compact, massive and limestone as above.

6950-6960 Limestone, light gray, fragmental, dense, fine-coarse grained.

6960-6980 Shale, black, flaky to compact, very thinly bedded.

6980-6990 Siltstone, light gray, calcareous and fragmental, rounded, light gray limestone.

6990-7000 Shale, black as above.

7000-7020 Siltstone, dolomitic, varying to a very fine grained sandstone, anhydritic, grayish orange pink. Small amounts of pale green and greenish gray waxy shale.

7020-7030 Shale, pale red and dolomite, pale red, dense, fine grained. Siltstone and shale as above.

7030-7070 Dolomite, silty, dense, light brown and shale, grayish red, dolomitic, compact.

7070-7090 Shale, light brown-pale reddish brown, calcareous, soft.

7090-7100 Shale, pale brown and greenish gray. Dolomite, dense, fine grained, light brown and pale red.

7100-7120 Shale, light brown, soft, calcareous, contains anhydrite.

7120-7190 Shale, pale brown, dolomite, light brown, dense, and anhydrite, white. Small amounts of greenish gray shale. Traces of quartz grains from 7140-7170.

7190-7220 Dolomite, limey, anhydritic, light brownish gray, fine-medium grained, dense, much recrystallized. With anhydrite and very dense light brownish gray limestone.

7220-7260 Dolomite, light brownish gray, granular, much intergranular porosity, anhydrite filled, medium grained.

7260-7300 Dolomite, light brownish gray, limey, generally fine grained, dense.

7300-7310 Shale, pale brown, slightly calcareous, inclusions of anhydrite, compact, massive.

7310-7320 Shale as above, with anhydrite, fine grained, crystalline, dense.

7320-7340 Limestone, dolomitic, very light brownish gray, fragmental, fine-medium grained, dense, rounded to angular. Traces of anhydrite.

7340-7390 Limestone, medium light gray, shaly, very fine grained, dense and shale, medium light gray, limey, anhydritic. Also white to light gray shaly anhydrite.

7390-7410 Dolomite, very limey, grayish pink, fragmental, grainy, fine-medium grained, anhydritic.

7410-7440 Dolomite, very limey, grayish orange pink, grainy, fine-medium grained, anhydritic. Traces of anhydrite, light gray shale, limestone.

7440-7460 Dolomite, very limey, very light brownish gray, granular, anhydrite filling. Small amounts of anhydrite.

7460-7550 Limestone, dolomitic, light brownish gray, fragmental, very fine to medium grained, dense. Small amounts of anhydrite. Small amounts of granular, limey dolomite.

7550-7580 Dolomite, limey, light brownish gray, granular, anhydritic. Limestone as above.

7580-7610 Limestone, light brownish gray to medium gray, fragmental, dense, fine grained, slightly shale.

7610-7630 Limestone, dolomitic, light brownish gray to medium gray, dense, fragmental, very fine to coarse grained. Small amount of anhydrite, anhydrite inclusions.

7630-7650 Limestone, dolomitic, very light brownish gray, fragmental, very fine grained, dense to medium grained, psuedo-oolitic.

7650-7670 Limestone, dolomitic, very light brownish gray, fragmental, dense, very fine grained. Small amounts of limestone as above. Small amounts of anhydrite.

7670-7700 Limestone, dolomitic, light brownish gray, fine grained, grainy grading into granular dolomite, anhydrite filling.

7700-7750 Limestone, medium light gray, very fine grained, dense, shaly, and limestone as above.

7750-7760 Limestone, brownish gray, dense, very fine grained to sub-lithographic. Small amounts of dense, light gray anhydrite.

7760-7830 Limestone, light brownish gray to light gray, fine grained, dense, slightly shaly, grainy, anhydrite filled. Traces of medium gray, limey shale.

7830-7840 Limestone, dolomitic, grayish orange pink to very light brownish gray, fine grained, fragmental, grainy, slightly shaly.

7840-7860 Dolomite, limey, anhydritic, medium light gray to light brownish gray, micro-granular. Small amounts of anhydrite, dense, very light gray.

7860-7890 Limestone, medium light gray to light brownish gray, dense, fine grained to sublithographic. Anhydrite, light gray, dense.

7890-7920 Limestone, dolomitic, light brownish gray, fine grained, gray, anhydrite filling and inclusions. Small amounts of light gray, dense anhydrite.

7920-7960 Limestone, medium light gray, dense, shaly, very fine grained to sublithographic. Limestones as above.

7960-8000 Limestone, light gray, fine grained, grainy, shaly.

8000-8030 Dolomite, pale brown to light brownish gray, granular, vuggy and intergranular porosity, much anhydrite filling.

8030-8090 Dolomite, light brownish gray to pale brown, micro-granular, vuggy and intergranular porosity, anhydrite filling.

8090-8107½ Limestone, medium light gray to medium gray, dense, very fine grained to sublithographic, shaly.

8107½ Total Depth.