

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 87

Summary of Williston Basin Oil Ventures - Swanson No. 1
Williams County North Dakota
Permit No. 86 - Well No. 70

by LaVerne B. Nelson
July 1954

Williston Basin Oil Ventures - Swanson No. 1, Williams County, North Dakota, SW SE Section 10, T. 156N., R. 96W. (660 feet from South line and 1980 feet from east line.) Elevation G.L. 2427 feet.

The Williston Basin Oil Ventures - Swanson No. 1 was spudded May 24, 1952, 10 3/4" casing was set to a depth of 710 feet and cemented with 600 sacks of cement. The well was drilled to a total depth of 8794 feet, plugged and abandoned August 14, 1952.

Fifteen foot cement plugs were set at surface, 710 feet and 2960 feet, each with 60 sacks of cement.

Core Record

Core #1 8681-8690

Core #2 8690-8712

DST

DST #1 8520-8676

Tool open 2 hours 5 minutes shut-in 20 minutes. Faint blow of air when tool opened, lasting 9 minutes then dying. Recovered 145' of gas cut drilling mud.

Pressures: Initial flowing pressure 0#, Final flowing pressure 0#,
Bottom hole shut-in pressure 0# Hydrostatic pressure 5100#.

DST #2

Tool open 3 hours, shut-in 20 minutes. Fair blow of air increasing to good blow for 1 1/2 hours, decreasing to fair blow during the rest of the test. Recovered 2700' of salty sulfur water. Cut with total (Methane) gas throughout and slightly cut with ethane on upper several feet.

Pressures: Initial flowing pressure 325#, Final flowing pressure 1700#,
Bottom hole shut-in pressure 3800#, Hydrostatic pressure 4750#.

Formation tops were determined from samples and electric logs. Depths were determined from electric log depth unless otherwise stated. Colors were determined from rock color chart.

FORMATION TOPS

Cretaceous System

Pierre	1620
Niobrara	3713
Greenhorn	4103

Muddy	4563
Dakota Silt Zone	4743
Dakota Sandstone	4840
Jurassic System	
Morrison	5260
Sundance	5463
Piper	6027
Triassic System	
Spearfish	6285
Mississippian System	
Amsden	6965
Big Snowy	7095
Charles	7830
Mission Canyon	8493

740-750	Light gray calcareous, silty, black lignite, white, fine grained, sucrosic limestone, medium to coarse, well rounded, calcite cemented frosted quartz, white chert.
750-760	Lignite, black, medium gray shale, silty.
760-770	Lignite, black, medium gray, silty shale, grayish yellow siltstone and pale red siltstone.
770-780	Shale, medium gray, silty, black lignite.
780-790	Shale, brownish black, black lignite.
790-800	Poor sample.
800-810	Lignite, black, brownish black, lithographic limestone, grayish yellow siltstone and medium gray, silty shale.
810-820	Lignite, black, brownish black lithographic limestone and medium gray shale.
820-900	Shale, medium gray, silty, slightly calcareous. Black lignite, grayish yellow siltstone. Very fine to fine grained quartz.
900-920	Siltstone, medium light gray. medium dark gray shale and black lignite.
920-940	Shale, medium gray, bentonitic, slightly calcareous, silty. Some grayish yellow siltstone and black lignite.
940-950	Poor sample.
950-990	Shale, medium to medium dark gray, silty, bentonitic, micaceous, lumpy. Some very fine grained quartz.
990-1100	Sandstone, very fine grained, rounded, argillaceous, silty. Much lignite.
1100-1130	Lignite, black. Much very fine grained quartz as above and medium gray, lumpy shale.
1130-1150	Shale, medium and dark gray, lumpy, calcareous, silty. Black lignite as above.
1150-1160	Sandstone, very fine grained, rounded, argillaceous. Some shale as above and lignite.
1160-1180	Shale, medium gray, silty, slightly calcareous, lumpy. Some lignite and sandstone.
1180-1200	Shale, medium gray, silty, lumpy and lignite. Some very fine grained quartz.
1200-1250	Sandstone, very fine grained, argillaceous.
1250-1260	Shale, medium gray, silty, lumpy. Some moderate brown siltstone and very fine grained quartz as above.
1260-1280	Sandstone, very fine grained, argillaceous. Some medium gray shale

as above.

1280-1350 Shale, medium gray, lumpy, silty. Some lignite and very fine grained sandstone.

1350-1430 Shale, medium gray, lumpy, silty, calcareous. Some lignite and siltstone.

1430-1480 Shale, medium gray, lumpy, slightly calcareous. Some black lignite and light brown, dense, hard siltstone.

1480-1490 Lignite, black. Some medium gray, lumpy, silty shale.

1490-1500 Shale, medium gray, lumpy, silty, slightly calcareous. Some black lignite.

1500-1530 Lignite, black, shale as above.

1530-1620 Shale, medium gray, lumpy, silty, some black lignite.

1620-1690 Shale, medium light gray, lumpy, some black lignite, and dense, hard massive siltstone.

1690-1710 Shale, very light gray, massive, some black lignite and siltstone.

1710-1730 Shale, medium and medium dark gray, lumpy.

1730-1820 Shale, light gray, massive, some light brown siltstone, traces of pyrite.

1820-1830 Shale, medium to medium dark gray, lumpy, silty.

1830-1970 Light to medium light gray, silty, calcareous, traces of moderate yellow chert and pyrite.

1970-2120 Shale, greenish gray, lumpy, slightly calcareous, pyritic.

2120-2350 Shale, medium to greenish gray, lumpy, pyritic.

2350-2370 Shale, medium to greenish gray, lumpy, pyritic.

2370-2390 Shale, as above, trace of pale yellowish brown, silty shale.

2390-2430 Shale, medium to greenish gray, lumpy, pyritic.

2430-2470 Shale, as above, some pale yellowish brown, silty shale.

2470-2480 As above, some medium grained, subangular quartz.

2480-2490 Shale, medium gray, disaggregated, firm, some black lignite and pale yellowish brown, silty shale.

2490-2530 Shale, medium gray, firm, traces of subangular, medium quartz grains and dense, hard siltstone, trace of black lignite.

2530-2580 Shale, medium gray, firm, trace of black lignite, and moderate brown, hard siltstone.

2580-2620 Shale, medium gray, firm, some yellowish brown siltstone and lignite.

2620-2640 Shale, medium gray, firm.

2640-2650 Missing samples.

2650-2670 Shale, medium gray, firm, traces of Inoceramus fragments.

2670-2950 Shale as above, some yellowish brown siltstone, traces of Inoceramus fragments.

2950-3000 Shale, medium gray, firm, some pyrite and Inoceramus fragments, some pale yellowish brown silty shale.

3000-3320 Shale, medium light gray, friable to brittle, massive, micaceous.

3320-3610 Shale, medium to medium dark gray, firm.

3610-3620 Shale, medium light gray friable to brittle, some very pale orange, silty shale.

3620-4190 Poor samples, apparently lost circulation(?)

4190-4320 Shale, medium dark to dark gray, speckled, calcareous, samples still poor.

4320-4400 Shale, medium dark to dark gray, slightly calcareous, some Inoceramus fragments. Some pale yellowish brown hard siltstone.

4400-4470 Poor samples, lost circulation.

4470-4555 Shale medium dark to dark gray, flaky, some light gray, lumpy, bentonitic shale, traces of calcite inclusions, and fine grained calcareous sandstone with glauconite.

4555-4565 Shale, medium dark to dark gray, firm to brittle, trace of medium, well rounded, quartz grains.

4565-4595 Shale, medium dark gray, brittle silty, some very fine grained, slightly calcareous siltstone.

4595-4700 Shale, medium dark gray, flaky, brittle, some siltstone as above.

4700-4750 Shale, medium gray, friable some silty shale and siltstone.

4750-4790 Shale, pale yellow brown and moderate brown, silty, some orange brown siltstone, much medium dark to dark gray shale.

4790-4840 Sandstone, very fine grained, well rounded, much shale and silt as above.

4840-4845 Sandstone, fine to medium, angular and subangular, clear quartz, much silt, shaly and sandstone as above.

4845-4848 Sandstone, fine grained, silica cemented quartz, shale as above.

4848-4850 Sandstone, very fine grained silica cemented sandstone with some heavy minerals. Some shale and silt as above.

4850-4885 As above.

4885-4905 Shale, medium light gray, silty, micaceous, some dark gray shale as above (Possibly all cavings).

4905-4940 Sandstone, poorly sorted medium to coarse, angular to well rounded, frosted and clear quartz, some very fine grained, well cemented quartz as above 4885, traces of angular quartz pebbles.

4940-4945 Sandstone as above. Trace of pyrite cemented quartz grains.

4945-4970 Sandstone, poorly sorted, fine to very coarse, angular to well rounded, frosted and clear quartz. Some pyrite crystals & pyrite cemented quartz.

4970-5020 Sandstone, poorly sorted, fine to medium, subangular to well rounded. Much flaky dark gray shale and silty medium light gray shale.

5020-5040 Sandstone, very fine grained, well cemented. Some medium light silt and shale as above.

5040-5065 Shale, dark reddish and green and dark olive green, waxy luster, friable. Silt and shale as above.

5065-5100 Shale as above. Numerous siderite pellets.

5100-5120 Shale, dark reddish brown and medium to medium dark gray. Some siderite pellets and silt.

5120-5130 Shale, dark reddish brown, light gray, and pale red purple, waxy luster. Siderite pellets. Much gray silty shale and medium dark gray shale.

5130-5140 Shale, moderate and dark reddish brown, light gray, and moderate red, waxy luster. Some light gray silty shale and dark gray platy shale. Some fine grained well cemented quartz grains and siderite pellets.

5140-5170 Shale, light gray, waxy luster. Dark gray and medium dark gray, platy. Some light gray silty shale and siderite pellets.

5170-5180 Shale, as above. Much fine grained, well cemented quartz grains.

5180-5190 Sandstone, fine grained, well cemented. Shale as above.

5190-5220 Sandstone, poorly sorted medium to very coarse, angular to well rounded, frosted and clear, white and rose colored.

5220-5240 Sandstone, fine grained, well cemented quartz. Some medium to very coarse, angular to subangular quartz.

5240-5260 Sandstone, fine grained as above. Some light gray, silty shale.

5260-5300 Shale, medium gray, dark gray and greenish gray. Some fine grained sandstone as above. Some green silty and dark olive green silty shale.

5300-5370 Shale, medium gray to greenish gray. Trace of green silt.

5370-5375 Shale, medium dark gray and greenish gray to dark olive gray.

5375-5480 Shale, medium light gray to greenish gray, soapy luster.

5380-5430 Shale, greenish gray, micro-micaceous, brittle, calcareous. Some dark greenish gray shale.

5430-5440 Shale as above. Some silt.

5440-5470 Shale, greenish gray and dark greenish gray, silty, calcareous. Some greenish gray, calcareous, silt.

5470-5500 Shale, greenish gray and dark greenish gray, calcareous. Streaks of highly calcareous green silt to very fine grained sandstone.

5500-5550 Shale, greenish and dark greenish gray calcareous, splintery. Much white and green, glauconitic, calcareous, very fine grained sandstone and silt.

5550-5600 Shale, greenish gray, flaky and slightly brittle, silty. Traces of white fragmental limestone. Some greenish gray, calcareous, glauconitic sand.

5600-5700 Shale, greenish and dark greenish gray, friable to brittle, micro-micaceous, calcareous. Some shaly limestone and calcareous silt. Some very fine grained greenish, glauconitic sandstone.

5700-5780 Shale, dark greenish gray and greenish gray, slightly calcareous, silty. Some greenish gray, calcareous, very fine grained sand.

5780-5800 Shale, greenish gray, calcareous, silty, brittle. Some greenish gray glauconitic calcareous sand. Traces of white chalky limestone.

5800-5840 Shale, greenish gray, slightly calcareous, silty. Some greenish gray, glauconitic, calcareous sand. Traces of moderate reddish brown shale and greenish gray, shaly limestone. Traces of white fragmental limestone.

5840-5850 Shale as above. Much grayish white, sublithographic, dolomitic limestone.

5850-5860 Shale, greenish gray and moderate reddish to dark reddish brown, slightly calcareous, brittle, silty. Some greenish gray, calcareous, glaudonitic sand.

5860-5905 Shale, variegated greenish gray, dark greenish gray, and dark reddish brown, brittle, calcareous, viterous luster.

5905-5960 Limestone, white, fragmental ooltic and chalky, shaly. Some grayish grainy limestone. Shale as above.

5960-5980 Shale, greenish gray and dark greenish gray, viterous luster, brittle, calcareous.

5980-6025 Shale, greenish gray and dark reddish brown, viterous to soapy luster, brittle, calcareous.

6025-6040 Limestone, yellowish gray, sublithographic to very fine grained. Shale as above.

6040-6050 Shale, dark greenish gray, spongy, calcareous. Some limestone as above.

6050-6080 Limestone, varicolored white and pale red purple, shaly. Some dark reddish brown, calcareous interbedded shale.

6080-6110 Limestone, white to yellowish gray, sublithographic. Some greenish gray and dark reddish brown, calcareous shale.

6110-6120 Limestone, light olive gray, sublithographic and greenish gray and

dark reddish brown, calcareous shale.

6120-6140 Shale, greenish gray, silty, calcareous. Some limestone as above.

6140-6150 Limestone, white to light olive gray, sublithographic. Shale as above.

6150-6170 Shale, greenish gray, silty, slightly calcareous. Much dark reddish brown shale.

6170-6195 Shale, dark reddish brown, calcareous, slightly silty and greenish gray silty shale.

6195-6220 Shale, dark reddish brown and greenish gray, calcareous, brittle, some crystalline anhydrite.

6220-6250 Shale, dark reddish brown and greenish gray, anhydritic, calcareous, anhydrite inclusions and interbedded lenses of anhydrite. Traces of dolomite, dense, lithographic.

6250-6260 Shale, dark reddish brown, earthy luster, calcareous, anhydritic. Some coarse crystalline anhydrite.

6260-6300 Siltstone, moderate reddish orange, calcareous, anhydritic. Some coarse crystalline anhydrite and moderate reddish orange to moderate reddish brown shale.

6300-6350 Shale, greenish gray, soft, friable. Much silt and anhydrite as above. Some moderate reddish brown, brittle, calcareous shale.

6350-6400 Shale, medium gray to greenish gray, friable to brittle, calcareous, silty. Much reddish orange silt and anhydrite.

6400-6420 Shale, medium gray to greenish gray, friable to brittle, calcareous, silty. Much reddish orange siltstone with anhydrite inclusions. Traces of white, very fine grained limestone and some moderate reddish brown shale.

6420-6450 Shale, medium gray to greenish gray, brittle, calcareous, slightly silty. Much reddish orange, calcareous, anhydritic siltstone. Traces of very fine grained, white limestone. Some fine to medium, well rounded quartz grains and some moderate reddish brown to dark reddish brown, calcareous shale.

6450-6490 Silt and sandstone, reddish orange, calcareous with medium sized quartz grain inclusions, and anhydrite. Some medium gray to greenish gray shale.

6490-6560 Shale, moderate reddish brown to dark reddish brown, massive and soft. Some greenish gray shale and much reddish orange silt and sandstone.

6560-6610 Shale, medium gray to greenish gray, dolomitic, brittle, splintery, vitreous to soapy luster. Some pale red purple, anhydritic, dolomitic siltstone. Some variegated dark reddish brown and greenish gray shale with waxy to soapy luster.

6610-6640 Shale, medium gray to greenish gray, calcareous, friable. Some moderate brown, dolomitic shale. Traces of white, sucrosic anhydrite.

6640-6660 Shale, medium gray to greenish gray, calcareous and moderate brown, slightly calcareous, friable shale. Some moderate reddish orange silt to very fine grained, anhydritic calcareous sandstone.

6660-6750 Siltstone, moderate reddish orange, calcareous, silty to very fine grained, white, splintery gypsum inclusions. Dark gray, greenish gray and moderate brown, calcareous shale.

6750-6785 Shale, moderate brown and greenish gray, calcareous. Some sandstone as above.

6785-6850 Siltstone, moderate reddish orange, calcareous, with white

splintery gypsum. Some greenish gray and moderate brown shale.

6850-6895 Shale, medium light to medium dark gray, fissile, very slightly calcareous in part and slightly silty. Some moderate brown shale and moderate reddish orange siltstone. A little pyrite. Traces of yellowish gray, sublithographic limestone.

6895-6920 Siltstone, moderate reddish orange, calcareous, with inclusions of white fibrous gypsum. Some shale as above.

6920-6930 Shale, medium dark gray and greenish gray, fissile, friable. Much siltstone as above.

6930-6940 Siltstone, moderate reddish brown, calcareous, with white fibrous gypsum and some crystalline anhydrite. Some medium dark gray shale. Traces of white to yellowish gray, sublithographic limestone.

6940-6950 Shale, medium dark gray, fissile, friable. Some siltstone as above.

6950-6965 Silt, moderate reddish orange, very calcareous, muddy appearing, soft and spongy. Some white, fibrous gypsum. Traces of well rounded, frosted and pitted quartz grains, medium sized.

6965-6985 Shale, medium dark to greenish gray, earthy to waxy luster, calcareous. Some silt as above.

6985-7015 Dolomite, yellowish gray, fragmental, vuggy porosity. Some medium dark gray shale.

7015-7045 Dolomite, yellowish gray, sucrosic and fragmental in part. Some dark gray shale. Some pale red purple sucrosic dolomite.

7045-7080 Dolomite, grayish orange pink, grainy to sucrosic, some vuggy porosity.

7080-7100 Dolomite as above. Small amount of fine to medium, angular and well rounded quartz grains, not cemented. Some dark gray shale. Traces of white milky colored chert and large angular fragments of chert.

7100-7135 Shale, medium dark gray, slightly calcareous, fissile, brittle. Much dolomite as above. Much pale reddish brown silt. Some fine to medium, well rounded quartz grains.

7135-7145 Shale, medium dark gray, massive friable.

7145-7165 Shale, moderate red, slaty, splintery.

7165-7175 Sandstone, moderate reddish brown calcareous silt and fine to medium well rounded quartz grains. Much shale as above.

7175-7225 Shale, moderate red, pale red, very dusky red purple, moderate yellow green, varicolored red, slaty, splintery. Traces of pyrite.

7225-7230 Shale as above. Traces of well rounded, medium sized quartz grains.

7230-7265 Missing samples.

7265-7270 Shale as above. Some medium, angular, cemented quartz grains.

7270-7295 Shale, varicolored, pale red purple, pale red, yellowish green, dark gray, waxy luster, splintery, slaty.

7295-7300 Sandstone, medium to coarse, subangular and angular, cemented quartz grains. Some dark gray shale and shale as above.

7300-7315 Shale, varicolored as 7270. Small amount of sand as above.

7315-7330 Shale, medium light gray to dark gray, fissile, friable, very calcareous. Traces of lignite (cavings ?)

7330-7350 Shale, medium gray to dark gray, fissile, friable to splintery. Traces of pyrite. 7335 - Traces of medium grained well rounded quartz grains and some moderate reddish orange, calcareous,

siltstone.

7350-7360 Shale, dark gray, pale red, pale red purple, white, splintery, slaty. Traces of moderate reddish brown silt and fine to medium quartz grains, well rounded and frosted.

7360-7400 Shale, dark gray to black, fissile, splintery, slaty to brittle, silky luster. Some varicolored shale as above. 7370 - Traces of yellowish gray, lithographic to sublithographic dolomite.

7400-7465 Shale, dark gray, pale red, pale red purple, greenish gray, mustard yellow, friable to brittle. Some yellowish gray dolomitic limestone and white and pale red purple anhydrite. 7425-7465 - Much yellowish gray dolomitic limestone. 7460-7465 - Traces of fine to medium, subangular, cemented quartz grains.

7465-7480 Shale, dark gray, brittle. Much moderate reddish orange, calcareous silt. Some white, chalky gypsum.

7480-7490 Limestone, medium light gray, argillaceous. Some dark gray and pale red shale and moderate reddish orange silt.

7490-7510 Shale, dark gray, pale red, moderate reddish brown. Some moderate reddish orange, calcareous shale and white, chalky gypsum.

7510-7540 Shale, dark gray and pale red, brittle, traces of white, crystalline anhydrite.

7540-7550 Sandstone, fine to medium, well rounded, frosted quartz grains. Much varicolored shales as above. Some fine grained, subangular, cemented quartz grains.

7550-7565 Shale, medium light gray, soft.

7565-7580 Shale, as above. Some fine to medium, well rounded sand grains.

7580-7585 Sandstone, fine to medium, subangular, cemented sand grains. Some dark gray and pale red shale and moderate reddish orange silt.

7585-7620 Missing samples.

7620-7650 Shale, dark gray, pale red, mustard yellow, brittle. Traces of cemented subangular sandstone.

7650-7670 Missing samples.

7670-7680 Shale, medium light gray, friable, thin bedded.

7680-7690 Sandstone, moderate reddish orange, calcareous, very fine to silt. Some shale as above.

7690-7715 Limestone, yellowish gray, silty. Some white crystalline anhydrite. Some shale and silt.

7715-7735 Limestone, yellowish gray, fragmental in part, in part sub-lithographic. Some shale and silt. Traces of white crystalline anhydrite.

7735-7755 Shale, dark gray, slaty, fissile. Some limestone as above.

7755-7775 Limestone, medium gray, argillaceous, silty, shaly.

7775-7825 Sandstone, very fine to fine, calcite cemented, shaly, moderate reddish brown. Much varicolored shale. Some yellowish gray limestone.

7825-7845 Shale, medium gray, soft, disaggregated. Some limy silt and argillaceous limestone.

7845-7905 Salt, not a salt base mud. Samples are cavings.

7905-7945 Siltstone, moderate reddish orange, well cemented, highly calcareous. Traces of reddish and white crypto-crystalline anhydrite. Calcite prism inclusions in siltstone.

7945-8010 Salt.

8010-8030 Siltstone, moderate reddish orange, well cemented, calcareous. Traces of anhydrite and gypsum.

8030-8050 Salt.

8055-8065 Anhydrite, white, chunky, soft, crypto-crystalline. Some silty,

limy, moderate reddish brown shale.

8065-8070 Anhydrite as above.

8070-8100 Salt, with lenses of anhydrite.

8100-8135 Shale, dark gray to black, friable, limy, silty. Traces of white crypto-crystalline anhydrite, and yellowish gray limestone.

8135-8145 Shale as above. Yellowish gray, sucrosic, anhydrite inclusions, silty limestone. Traces of reddish brown siltstone.

8145-8200 Salt.

8200-8250 Limestone, yellowish gray to medium light gray, microsucrosic. Traces of dense crystalline anhydrite. Some medium gray shale.

8250-8280 Limestone, yellowish gray, sublithographic to micro-crystalline. Some white dense, crystalline anhydrite.

8280-8310 Shale, dark gray to black, flaky, slightly silty, slightly calcareous. Some limestone as above.

8310-8320 Salt.

8320-8340 Anhydrite, white, crystalline and crypto-crystalline. Some shale as 8280.

8340-8400 Limestone, dark brown, some gray, hard, dense, crypto-crystalline. Some shale and anhydrite. Some pinpoint porosity.

8400-8410 Anhydrite, white, crystalline, dense. Some limestone and shale.

8410-8460 Limestone, yellowish gray to medium light gray, micro-sucrosic, dense. Some anhydrite, white to bluish white, dense.

8460-8490 Salt.

8490-8530 Limestone, yellowish gray and light brown, dense micro-sucrosic. Some white sucrosic anhydrite. No porosity.

8530-8565 Limestone, yellowish gray and brown, sublithographic, dense. No porosity. Much white, bluish white and yellowish gray, massive, hard anhydrite.

8565-8570 Limestone, brown, oolitic, good interstitial porosity. Much white crystalline anhydrite. No fluorescence.

8570-8600 Limestone, dark brown, oolitic, dolomitic. Much white crystalline anhydrite. Spotted fluorescence. Slight oil cut. Some good pinpoint porosity.

8600-8610 Limestone, yellowish brown and dark brown, oolitic. Slight traces of fluorescence. Some white crystalline anhydrite.

8610-8640 Limestone, yellowish gray to dark brown, oolitic and sub-lithographic, dense. No apparent porosity. Traces of anhydrite. No fluorescence. Traces of dense, medium light gray, dense, lithographic dolomite.

8640-8650 Limestone, white to light gray, chalky, soft, vuggy, dolomitic. Some limestone as above. No fluorescence.

8650-8675 Limestone, yellowish gray to brown, oolitic, dense, no apparent porosity. Some grayish orange pink, sublithographic limestone.

T. D. of samples 8675.

T. D. of well 8794. No samples received for last 119 feet.