

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 224

Summary of the Skelly Oil Company - Bismarck "A" #1
Slope County, North Dakota
Well No. 1464 - Permit No. 1476

by Herbert A. Mendoza
February, 1960

The Skelly Oil Company - Bismarck "A" #1 is located in the C SW SW, Sec. 16, T. 135N., R. 100W. Elevation: 2796 G.L., 2807 K.B. Total depth: 9024 feet.

The Skelly Oil Company - Bismarck "A" #1 was spudded June 30, 1957 and 10-3/4" casing was set at 635 feet with 500 sacks of cement. The well was plugged and abandoned as a dry hole on August 12, 1957.

Logs:

Schlumberger gamma ray-laterolog -700' - 9024'
Microlaterolog 6200'-9018'

Cores:

#1 8513'-8555'
#2 8648'-8694'

DST #1 7392' to 7422' (Amsden formation). 7-3/4" packer at 7392', 5/8" BHC, 1" THC. Tool open 2 hours, shut in 30 minutes. Opened w/fair blow which diminished to a very weak blow at end of test. Recovered 87' drilling mud. Slightly cut w/water. Chloride of mud 295,000 ppm. No show of oil or gas. IHP 4240#, IFP 30#, FFP 60#, SIP 450#, FHP 4190#.

DST #2 7880' to 7981' (Kibbey sand). 7-3/4" packer set at 7880', 5/8" BHC, 1" THC. Tool open 3 hours, initial and final shut in 30 minutes. Tool open with strong blow immediately. Gas to surface in 15 minutes. Strong blow continued for 1-1/2 hours, with flare burning intermittently. Weak blow during last 1-1/2 hours, which would not burn at all. Recovered 90', or 1.28 bbls. of water cut drilling mud w/280,000 ppm. Cl., and 7771', or 107.8 bbls. of water with 41,000 ppm. Cl. IHP 4340#, ISIP 3330#, IFP 1290#, FFP 3330#, FHP 4150#.

DST #3 8493' to 8555' (Madison formation). 7-3/4" packer set at 8493", 5/8" BHC, 1" THC. Tool open 3 hours, initial and final shut in 30 minutes. Tool opened with weak blow which diminished to very weak blow at end of test. Recovered 470' or 3.27 bbls. Salt water with 330,000 ppm, Cl. No show of oil or gas. IHP 4490#, IFP 590#, FFP 1930#, SIP 3395#, FHP 4490#.

DST #4 8648' to 8694' (Mission Canyon formation). 7-3/4" packer set at 8648 \. 5/8" BHC, 1" THC. Tool open 3 hours, shut in 30 minutes. Tool opened with strong blow which continued throughout test. Recovered 45', or 0.64 bbls. water cut mud and 4105' or 55.46 bbls. Salt water with 115,000 ppm. Cl. No show of oil or gas. IHP 4820#, IFP 590#, FFP 1930#, SIP 3395#, FHP 4665#.

DST #5 Straddle test from 8740' to 8788' (Mission Canyon formation). 7-3/4" packers set at 8740' and 8788', with 232' anchor from 8788' to 9020'. 5/8" BHC, 1" THC. Tool open 3 hours, shut in 30 minutes. Tool opened with fair blow which continued for 1-1/2 hours. Blow then decreased to weak blow and continued for remainder of test. Recovered 570' or 8.09 bbls. muddy salt

water. No show of oil or gas. IHP 4820#, IFP 10#, FFP 275#, SIP 3560#, FHP 4710#. Pressure recorder in anchor showed that the bottom packer held all right.

Plugging Record:

25 sacks of cement from 8581'-8646'
 25 sacks of cement from 8069'-8134'
 25 sacks of cement from 7827'-7892'
 25 sacks of cement from 7067'-7132'
 25 sacks of cement from 6068'-6133'
 25 sacks of cement from 5162'-5227'
 25 sacks of cement from 4848'-4913'
 25 sacks of cement from 625'-680'

Ran a 5 sack cement plug in top of surface from 17' to 27'. Cut off 10-3/4" casing approximately 5' below ground and welded a steel plate on top to seal. Filled cellar with dirt and leveled surface above well.

These were determined from samples, cores, and the gamma ray-laterolog. Not all formation tops were picked, colors and identifying numbers are taken from the Rock Color Chart distributed by the Geological Society of America.

FORMATION TOPS

Cretaceous System

Pierre formation	1620
Niobrara formation	3716
Greenhorn formation	4315
Mowry shale	4783
Newcastle sandstone	4915
Fall River sandstone	5227

Jurassic System

Rierdon formation	5540
Piper formation	6130
	6340

Triassic System

Spearfish formation	6468
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Permian System

Minnekahta formation	6986
Opeche formation	7033

Pennsylvanian System

Minnelusa formation	7147
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Mississippian System

Amsden formation	7365
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Big Snowy Group

Kibbey limestone	7712
	7996

Madison Group

	8132
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T.D.	9024
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0-60	Lignite, brownish black (5YR2/1), earthy.
60-140	Siltstone, yellowish gray (5Y7/2), fine to medium grained, calcareous, little lignite as above.
140-169	Lignite, brownish black to black, vitreous.
169-230	Siltstone, as above, little lignite, common sandstone, white to yellowish gray (5Y7/2), fine grained, loosely cemented, calcareous.

230-290 Lignite, black, vitreous.
 290-580 Lignite as above, and sandstone, yellowish gray (5Y7/2), fine grained, calcareous.
 580-610 Same as above, and clayey aggregates, calcareous.
 610-670 Siltstone, yellowish gray (5Y7/2), fine grained, common lignite, black, little limestone, greenish gray (5GY6/1) fine crystalline.
 670-730 Same as above, and common shale, medium dark gray (N4), platy, soft, carbonaceous, shell fragments.
 730-760 Limestone, light gray (N7), fine to medium crystalline, little sandstone, medium light gray (N6), medium grained, loosely cemented, common pyrite, amorphous to subhedral.
 760-820 Shale, medium light gray (N6) silty, lumpy, little lignite, rare dolomite, brownish gray (5YR4/1), fine crystalline, dense.
 820-880 Sandstone, yellowish gray (5Y7/2) to varicolored, fine grained, loosely cemented, highly calcareous, lumpy, little lignite.
 910-1270 Same as above, and shale, medium light gray (N6) sandy, calcareous.
 1270-1420 Sandstone, greenish gray (5GY6/1) fine grained, loosely cemented, calcareous, common dolomite, brownish gray (5YR4/1) dense, little shale, common pyrite and lignite.
 1420-1540 Lignite, black, abundant sandstone as above, limy.
 1540-1620 Sandstone, light gray (N7), fine grained, loosely cemented, calcareous, and lignite, black, common clayey, aggregates, impure.

Pierre 1620

1620-1720 Same as above.
 1720-2110 Shale, medium gray (N5) clayey to silty, bentonitic, little sandstone as above.
 2110-3460 Shale, medium light gray (N6) clayey, rare calcite prisms, shell fragments, little bentonite.
 3460-3700 Shale, dark greenish gray (5GY4/1) to medium dark gray (N4), clayey to silty, platy, rare calcareous white specks and Inoceramus calcite prisms, little sandstone, greenish gray (5G6/1), fine grained, loosely cemented, calcareous.

Niobrara 3716

3700-4300 Shale, dark greenish gray (5GY4/1) to dark gray (N3), platy, common white specks, rare calcite prisms.

Greenhorn 4313

4300-4310 Same as above.
 4310-4350 Shale, dark gray (N3), splintery, hard, compact, abundant calcite prisms, and white specks.
 4350-4400 Limestone, medium dark gray (N4) medium, shaly, speckled, abundant shale as above.
 4400-4408 Missing.
 4408-4450 Shale, dark greenish gray (5GY4/1) to dark gray compact, clayey to silty, common white specks and calcite prisms.
 4450-4480 Shale, medium dark gray (N4), compact, splintery, common white specks and calcite prisms, rare bentonite, very light gray (N8).

Belle Fourche 4480

4480-4590 Same as above.
 4590-4760 Shale, dark gray (N4), fissile to platy, rare white specks and calcite prisms.

4760-4780 Shale, dark gray to black, fissile, slaty, compact, little bentonite, very light gray (N8) soft.

Mowry 4783

4780-4900 Same as above, common amorphous pyrite.

4900-4915 Shale, dark gray to grayish black (N2), fissile, common sandstone, very light gray (N8), fine to medium grained, well cemented, quartzose.

Newcastle sand 4915

4915-4935 Same as above.

4935-5000 Sandstone, very light gray (N8), fine to medium grained quartzose, well cemented, abundant shale as above.

5000-5060 Shale, grayish black (N2) platy to fissile, common sandstone as above.

5060-5210 Shale as above, no sandstone, common amorphous pyrite rare glauconite, dark yellowish green (10GY4/4), calcareous, soft.

5210-5230 Shale, black (N1), splintery, soft, rare glauconite as above.

Inyan Kara Formation

Fall River 5227

5230-5300 Shale as above, abundant sandstone, light gray (N7), fine grained, "salt and pepper", well cemented.

5300-5450 Shale, grayish black (N2), soft, splintery, little sandstone as above.

5450-5460 Shale as above, and little shale, moderate red (5R4/6) soft.

5460-5500 Shale, grayish black (N2) and moderate red as above, abundant sandstone, grayish green (10GY5/2), fine grained, well cemented.

5500-5670 Shale, grayish black (N2), splintery, abundant sandstone, grayish green (10GY5/2) to white, fine to medium grained.

5670-5720 Shale, medium dark gray (N4), soft splintery, common limestone, medium gray (N5) fine siliceous.

5720-5790 Sandstone, light gray to light greenish gray (5GY8/1) fine grained, calcareous, little shale, dark gray, soft.

5790-5830 Shale and sandstone as above.

5830-5910 Shale, grayish black (N2), fissile, little sandstone medium light gray (N6), fine grained, well cemented.

5910-5960 Shale, greenish gray (5G6/1) to grayish black platy to fissile, soft little sandstone, medium light gray, fine grained, glauconitic.

5960-6000 Shale and sandstone as above, little limestone, medium light gray (N6), coarse crystalline, siliceous.

6000-6014 Missing.

6014-6050 Shale, grayish black to greenish gray (5G6/1), and little shale, moderate red (5R4/6), wane, platy to fissile.

6050-6120 Shale, as above, little limestone, medium light gray (N6), medium, slightly arenaceous.

Piper Limestone 6128

6120-6200 Shale, dark gray to greenish gray to dark reddish brown (10R3/4), soft platy, little limestone, medium light gray to grayish orange pink (10R8/2), fine to medium crystalline.

6200-6250 Limestone, grayish orange pink (5YR7/2) to pale yellowish brown (10YR6/2) fine crystalline, common shale, medium dark gray, soft to platy.

6250-6330 Limestone, pale yellowish brown (10YR6/2) to pale red (5R6/2), fine crystalline, anhydritic, abundant shale, dark gray.

Spearfish 6332

6330-6420 Limestone, yellowish gray (5Y7/2), fine crystalline, abundant shale, medium dark gray to moderate reddish brown (10R4/6), soft, anhydrite, little anhydrite, white to varicolored, calcareous.

6420-6460 Shale, medium dark gray to greenish gray (5GY6/1), soft common limestone as above, rare anhydrite, white, red-stained, little shale, moderate reddish brown (10R4/6), silty, anhydritic, calcareous.

6460-6520 Shale as above, common limestone, pale yellowish brown (10YR6/2), fine crystalline, dolomitic, little anhydrite.

6520-6560 Shale, medium dark gray to greenish gray to moderate reddish brown, soft, silty, slightly calcareous, abundant salt, little anhydrite, white, red-stained.

6560-6590 Shale as above, common anhydrite, white, crystalline.

6590-6600 Shale, medium, dark gray, common anhydrite, little limestone, medium light gray, fine crystalline.

6600-6660 Shale as above, abundant salt.

6660-6820 Halite, little anhydrite and shale, dark gray to moderate reddish brown (10YR6/2), silty, calcareous.

6820-6950 Shale, greenish gray (5GY6/1) to dark gray to moderate reddish brown (10YR6/2), silty, slightly calcareous, abundant halite, red-stained.

6950-6980 Shale, medium gray (N5), soft, platy, and little shale moderate reddish brown as above, little gypsum selenite.

Minnekahta 6986

6980-7000 Same as above.

7000-7010 Shale, greenish gray (5GY6/1) to medium dark gray (N4) platy, little limestone, yellowish gray (5Y7/2), fine crystalline.

7010-7030 Limestone, grayish pink (5R8/2) to moderate orange pink (10R7/4), fine to medium crystalline, grainy to chalky, common shale, dark gray (N3), platy.

Opeche 7033

7030-7050 Limestone as above, little shale as above.

7050-7140 Shale, moderate reddish brown (10R4/6), soft, silty, slightly calcareous, little anhydrite, white.

Minnelusa 7147

7140-7190 Shale, moderate reddish brown to dark gray (N3), little limestone, grayish orange pink (5YR7/2), grainy to chalky, common quartz grains, rounded.

7190-7220 Shale as above, abundant sandstone pale reddish brown (10R5/4), fine to medium grained, with rounded quartz grains.

7220-7250 Shale, medium dark gray (N4), platy to splintery, soft, common sandstone as above.

7250-7310 Shale as above, common sandstone, grayish pink (5R8/2) to pale reddish brown (10R5/4) fine to medium grain, poorly cemented, common limestone, pale red (10R6/2), very fine to sub-lithographic, anhydritic.

DST #1 7392-7422

Amsden 7315

- 7310-7400 Same as above.
- 7400-7450 Limestone, grayish pink (5R8/2) to pale red (5R6/2) to pale yellowish brown (10YR6/2), crystalline, dolomitic, little sandstone as above, common shale, medium dark gray (N4), soft.
- 7450-7550 Dolomite, grayish pink (5R7/2) to pale red (5R6/2), crypto-crystalline, dense, limestone, pale yellowish brown (10YR6/2), fine crystalline, little shale, moderate reddish brown (10R4/6) to dark gray, soft, silty.
- 7550-7610 Shale, dark gray to moderate reddish brown (10R4/6) silty, little dolomite and limestone as above.
- 7610-7660 Limestone, medium light gray (N6) to yellowish gray (5Y7/2), fine crystalline, dense, dolomitic, common shale, dark gray (N3), platy, soft.
- 7660-7710 Limestone, medium light to medium dark gray (N4), fine crystalline, dense, little shale as above.

Big Snowy Group 7712

- 7710-7730 Same as above, abundant ostracodes.
- 7730-7750 Shale, dark gray (N3) splintery, soft, abundant limestone, medium gray (N5), crystalline, dense.
- 7750-7800 Limestone and shale as above, ostracodes.
- 7800-7850 Limestone, olive gray (5Y4/1) to medium dark gray, fine crystalline, dense, little shale, dark gray (N3), soft.
- 7850-7905 Limestone, yellowish gray (5Y7/2) to pale yellowish brown (10YR6/2), fine to medium crystalline, dense, common shale, dark gray, platy, soft.

DST #2 7880-7981

- 7905-7965 Shale, dark gray to moderate reddish brown (10R4/6), platy, soft, and common limestone as above, little sandstone, white to pale reddish brown (10R5/4), fine grained, well cemented, calcareous.
- 7965-7995 Shale and sandstone as above, little limestone.

Kibbey lime 7996

- 7995-8025 Same as above.
- 8025-8075 Limestone, pale yellowish brown to dark yellowish brown (10YR6/2) to dark yellowish brown (10YR4/2), fine to medium crystalline, dense, common shale dark gray, soft, fossil fragments.
- 8075-8130 Limestone, moderate red (5R5/4) to dark yellowish brown (10YR4/2), fine to medium crystalline, grainy to dense, common shale, dark gray to moderate reddish brown (10R4/6), soft.

Charles 8132

- 8130-8170 Limestone, moderate red (5R5/4) to medium light gray (N6), fine crystalline, oolitic to grainy, common shale, dark gray.
- 8170-8200 Limestone, medium light gray (N6) to light brownish gray (5YR6/1), subcrystalline to oolitic, common shale, dark gray, little anhydrite, white chalky.
- 8200-8250 Limestone, yellowish gray (5Y7/2) to olive gray (5Y4/1), fine crystalline, dense, slightly oil-stained, no cut, common anhydrite, white, chalky, little gypsum satin spar.

8250-8315 Limestone, medium light gray to pale brown (5YR5/2), fine to very fine crystalline, dense, calcitic to anhydritic, common anhydrite, white.

8315-8340 Limestone as above, pinpoint porosity, oil-stained, no cut, common shale, dark gray, soft anhydrite, light bluish gray (5B7/1), medium hard, slightly calcareous.

8340-8410 Shale as above, abundant limestone, pale brown (5YR5/2) sucrosic, fine crystalline, common anhydrite, white, chalky, poor samples probably cavings ?

8410-8470 Limestone, medium light gray to pale brown as above, common shale, medium dark gray (N4), platy, soft, common anhydrite, white to light bluish gray (5B7/1), chalky.

8470-8513 Limestone, grayish orange pink (5YR7/2) to pale brown (5YR5/2), very fine to medium, grainy to subcrystalline, pinpoint porosity, slightly oil-stained, no cut. Little shale and anhydrite as above.

DST #3 8493-8555

Core #1

8513-8519 Limestone, olive gray (5Y4/1), fine crystalline, dense, fossiliferous, slightly oil-stained, no cut.

8519-8921 Limestone, olive gray, fine to medium, grainy, fossiliferous, pyritized fossils.

8921-8524 Limestone, olive gray, medium, sucrosic, stylolitic, slight cut.

8524-8541 Limestone, pale brown (5YR5/2), fine, dense, micro-stylolitic to vuggy, good cut.

8541-8548 Anhydrite, light gray (N7), crypocrystalline, hard, slightly oil-stained, no cut, slightly calcareous.

8548-8549 Limestone, pale yellowish brown (10YR6/2), crypocrystalline, sucrosic, dense.

8549-8555 Anhydrite, medium light gray (N6), very hard, dense.

8555-8575 Missing.

8575-8600 Very poor samples, probably cavings.

8600-8650 Limestone, pale yellowish brown (10YR6/2) to pale brown (5YR5/2), fine dense, common shale, dark gray, platy, common anhydrite, light to medium light gray, hard, dense.

8650-8654 Limestone, medium light to medium gray, fine to very fine, banding.

DST #4 8648-8694

8654-8676 Limestone, olive gray (5Y4/1), fine crystalline, sucrosic, dense, dolomitic.

8676-8683 Limestone, light brownish gray (5YR6/1), coarse crystalline, oolitic.

8683-8694 Limestone, light olive gray (5Y6/1), fine, sucrosic, dense, stylolitic, dry oil, little cut.

8690-8700 Limestone, light olive gray (5Y6/1) to pale brown (5YR5/2), fine to medium, dense, little shale, dark gray.

8700-8830 Limestone as above, common shale, greenish gray to dark gray, soft, platy, little anhydrite, white to light gray.

DST #5 8740-8788

8830-9024 Limestone, yellowish gray (5Y7/2) to light olive gray (5Y5/2), fine to medium, slightly oil-stained, stylolitic.