

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 242

Summary of the Amerada Petroleum Corporation, Hunt Oil Company  
Pederson, Cater Unit No. 1  
Williams County, North Dakota

Well No. 2182- Permit No. 2194  
by Clarence G. Carlson  
January, 1961

The Amerada Petroleum Corporation - Pederson, Cater Unit No. 1, located in NE SW Section 21, T. 158N., R. 95W., Williams County, North Dakota. Elevations: Kelly Bushing 2472; Ground Level 2458.

The Amerada Petroleum Corporation - Pederson, Cater Unit No. 1 was spudded February 16, 1959 drilled to a total depth of 10,441 feet and abandoned as non-commercial on April 6, 1959. W.H. Hunt reworked this well in October, 1959 and completed the well as a producing well in November 4, 1959.

Logs Run:

Sonic  
Laterolog-Gamma Ray

Cores: None

Tests:

DST 1: 8237-8285, Four hour Johnston Test. Tool opened with weak blow increasing to strong blow in 1 hour and 20 minutes. Gas to surface in 3 hours and 20 minutes. Strong gas blow for remainder of test. Shut in 30 minutes for BHP. Recovered 120 feet of free oil, 1500 feet of water cushion, 320 feet of highly oil and gas cut drilling mud 50 to 75% oil, 40 feet of mud cut salt water. Pressures: IHP 4525, IFP 765, FFP 900, 10 minutes BHP 1605, 20 minutes BHP 2380, 30 minutes BHP 2895, FHP 4435.

DST 2: 8317-8358; Three hour Johnston Test. Opened with weak blow, died in 43 minutes. By-passed tool after one hour with no blow. Recovered 1,500 feet of water cushion, 75 feet of slightly gas cut drilling mud, no show of oil or salt water. Pressures: IHP 4492, IFP 726, FFP 743, 10 minutes BHP 1036, 20 minutes BHP 1385, 30 minutes BHP 1917; FHP 4492.

DST 3: 10,080-10,142; Four hour Johnston Test. Tool opened with very weak blow increasing to strong blow in 2 hours and 45 minutes, strong air blow for remainder of test. Recovered 2,500 feet of water cushion with oil stain, 360 feet of highly gas cut drilling mud, 300 feet of oil cut drilling mud, 75% oil, 90 feet of mud and oil cut salt water, 50% oil, 180 feet of mud cut salt water. Pressures: IHP 5625; IFP 1185, FFP 1430; 10 minutes BHP 3220, 20 minutes BHP 3585, 30 minutes BHP 3760; FHP 5610.

DST 4: 10,143-10,190; Three hour Johnston Test. Tool opened with weak blow died in two hours, dead for remainder of test. Recovered 2,500 feet of water cushion 280 feet of slightly mud cut salt water, no show of oil or gas. Pressures: IHP 5650; IFP 1190, FFP 1305; 10 minutes BHP 4145, 20 minutes BHP 4320, 30 minutes BHP 4385; FHP 5680.

DST 5: 10,195-10,274; Four hour Johnston Test. Tool opened with weak blow gradually increasing to good blow in 30 minutes, gradually decreasing good blow for remainder of test. Recovered 2,500 feet of water cushion, 630 feet of slightly mud cut salt water with a trace of oil, 1080 feet of salt water with trace of oil with some free salt in bottom 180 feet. Pressures: IHP 5745; IFP 1215, FFP 2140; 10 minutes BHP 4110, 20 minutes BHP 4230, 30 minutes BHP 4270; FHP 5790.

Casing and Completions:

- Set 9 5/8 inch casing at 4,368 feet with 2,500 sacks of Howco bulk 50-50 pozmix cement with 6% gel.
- Set 4 1/2 inch casing at 8,539 feet with 500 sacks of cement.

Perforated the interval from 8,243 feet to 8,259 feet with 5 shots per foot. Acidized with 1,500 gallons. Initial production pumping 59 barrels of oil, 2 of 1% water, 39.0 API gravity, GOR 695-1.

Formation tops were determined from samples and mechanical logs; tops were corrected to electric log tops. Colors were determined by use of the Rock Color Chart distributed by the Geological Society of America. Not all formation tops were picked in the following list.

FORMATION TOPS

Cretaceous System	
Mowry formation	4510
Fall River formation	4893
Jurassic System	5283
Piper limestone	6056
Triassic System	
Spearfish formation	6298
Mississippian System	
Amsden formation	6734
Big Snowy Group	6790
Kibbey sandstone	7226
Kibbey limestone	7376
Madison group	7526
Poplar interval	7526
Ratcliffe interval	8050
Frobisher-Alida interval	8351
Bakken formation	9577
Devonian System	
Three forks formation	9677
Birdbear formation	9873
Duperow formation	9966

4375-4825	Shale, medium dark gray to grayish black, fissile, soft.
4825-4885	Shale, medium gray to medium dark gray, fissile, soft.
4885-4945	Sandstone, very light gray, very fine to fine grained, slightly calcareous, micaceous and argillaceous, some siltstone, medium light gray, argillaceous, micaceous, much shale as above.
4945-4975	Sandstone, very light gray to light brownish gray, very fine to fine grained, argillaceous, slightly calcareous, some loose fine to medium rounded to subangular sand grains; much shale as above.

5097-5127 Sandstone, very light gray to white and colorless, very fine to fine grained, slightly argillaceous; much shale, medium to medium dark gray, soft, fissile.

5127-5217 Sandstone, very light gray to light brownish gray, very fine to fine grained, argillaceous, micaceous; traces of shale, very light gray to light brownish gray, lumpy to fissile, soft, micaceous; much shale, as above.

5217-5306 Sandstone, very light gray to very pale orange, very fine to fine and medium grained, subangular to rounded, quartzose; shale, very light gray to light olive gray, (5Y6/1) lumpy to fissile, soft, traces of lignite.

5306-5396 Shale, light olive gray, (5Y6/1), to light brownish gray, soft, fissile, waxy, some sandstone as above.

5396-5486 Shale, greenish gray, (5G6/1) to medium light greenish gray (5G7/1) platy to fissile, calcareous.

5486-5786 Shale, as above; some sandstone, light greenish gray (5G8/1), very fine to fine grained, argillaceous, calcareous.

5786-5846 Shale, greenish gray (5G6/1), to medium light greenish gray (5G7/1) and traces of grayish red (10R4/2), lumpy to platy and fissile, soft, calcareous.

5846-5908 Shale, as above, a little limestone, very light gray, very finely crystalline.

5908-5938 Shale, mostly greenish gray to medium light greenish gray, some grayish red, lumpy to platy and fissile, soft calcareous.

5938-5968 Shale, as above; some limestone, light gray to light brownish gray, fine grained, fragmental, slightly argillaceous, some sandstone, very light gray, very fine to fine grained, argillaceous, calcareous.

5968-6028 Shale, as above; a little sandstone, as above.

6028-6058 Limestone, very light gray, fine grained, granular, shale as above.

6058-6148 Limestone, very light gray to light yellowish gray, very finely crystalline, dense.

6148-6208 Limestone, as above; some shale, light olive gray, (5Y6/1) to pale reddish brown (10R5/4), lumpy to platy, compact, slightly calcareous.

6208-6238 Dolomite, brownish gray, finely crystalline, limy, very argillaceous with a little colorless to white anhydrite; some shale cavings in sample.

6238-6264 Dolomite, as above; some shale, pale brown to pale reddish brown, lumpy, slightly calcareous.

6264-6324 Shale, moderate reddish brown, (10R4/6), to pale reddish brown, (10R5/4) lumpy, slightly calcareous, silty, some white anhydrite.

6324-6504 Siltstone, moderate reddish orange, very slightly calcareous, sandy in part, with very fine to fine, rounded, frosted quartz grains, a little white anhydrite.

6504-6594 Siltstone, as above, traces of colorless anhydrite, traces of sandstone, moderate reddish orange, very fine to medium grained, silty, slightly calcareous.

6594-6624 Shale, variegated, grayish red purple (5RP4/2) pale reddish brown (10R5/4) greenish gray (5G6/1), moderate red (5R5/4), dusky yellow (5Y6/4), platy, compact.

6624-6684 Shale, medium gray, platy, compact, some siltstone, moderate reddish orange, slightly calcareous, sandy.

6684-6744 Siltstone, moderate reddish orange, slightly calcareous, sandy, a little shale, medium gray to greenish gray, platy, compact.

6744-6774 Dolomite, very light gray to pale red, (10R6/2), very finely crystalline to medium and coarsely crystalline; some shale, very light gray and moderate red to grayish red, lumpy, waxy.

6774-6834 Shale, variegated, mostly moderate red (5R5/4) and pale reddish brown (10R5/4), some dusky yellow, grayish red purple, and very light gray, platy, compact.

6834-6894 Shale, variegated, platy, compact, traces of sandstone, colorless to white, very fine to fine grained.

6894-6924 Sandstone, very light gray to pinkish gray, very fine to fine grained, subangular grains, clean, quartzose; some variegated shale.

6924-6984 Shale, variegated, mostly some shale of red, platy, compact; traces of sandstone as above.

6984-7044 Shale, variegated, as above.

7044-7104 Shale, variegated, as above; some sandstone, very light gray, clean quartzose, very fine to fine grained.

7104-7134 Limestone, brownish gray, finely crystalline, very argillaceous; shale, medium gray, platy, some variegated shale, as above.

7134-7194 Limestone, light gray to light brownish gray, very fine grained, granular, argillaceous; shale, as above.

7194-7224 Shale, variegated, platy, compact, some limestone as above; traces of sandstone, pinkish gray to light gray, fine grained, subangular to subrounded grains.

7224-7284 Sandstone, pinkish gray to pale red, (10R6/2) very fine to fine grained, calcareous, well cemented, silty; some shale, variegated.

7284-7314 Sandstone, as above and siltstone, pale red (10R6/2) to pale reddish brown, (10R5/4), calcareous.

7314-7344 Sandstone, pinkish gray to pale red, (10R6/2), mostly very fine to fine grained, silty, calcareous, some fine to medium grained, rounded, frosted grains, calcareous, firmly cemented, poorly sorted; some siltstone, as above.

7344-7404 Limestone, light brownish gray, very finely crystalline, dense for the most part, traces of oolitic texture.

7404-7434 Limestone, as above with traces of white anhydrite; some siltstone, moderate orange-pink, slightly calcareous.

7434-7494 Siltstone, moderate reddish orange (10R6/6), calcareous, a little sandstone, very light gray to pinkish gray, fine to medium grained rounded, frosted, firmly cemented, calcareous.

7494-7524 Siltstone, as above; salt, colorless.

7524-7700 Salt, colorless.

7700-7730 Limestone, light gray, finely crystalline, in part, oolitic in part, very slightly argillaceous.

7730-7760 Limestone, light brownish gray to light gray, finely crystalline, in part, oolitic in part, some anhydrite, white.

7760-7850 Salt.

7850-7880 Dolomite, light brownish gray, fine grained, granular, some anhydrite, light gray, dolomitic; some white anhydrite.

7880-7910 Anhydrite, white; some limestone, light brownish gray, fine grained, granular, anhydritic.

7910-7940 Anhydrite, white; a little shale, grayish black to brownish black, platy, compact, traces of salt.

7940-7970 Anhydrite, light gray to white; some limestone, light brownish gray, fine grained, granular, anhydritic in part.

7970-8000 Limestone, light brownish gray, very finely crystalline, dense.

8000-8030 Anhydrite, light gray, dense, calcareous, a little limestone, as above.

8030-8060 Limestone, light brownish gray, very finely crystalline, dense, except for scattered vugs, traces of oolitic texture, a little fine grained, granular limestone.

8060-8090 Shale, light gray, calcareous, anhydrite, white, some limestone, as above.

8090-8120 Anhydrite, light gray and white, dense; traces of salt.

8120-8135 Anhydrite, light gray; limestone, light brownish gray, fine grained.

8135-8155 Anhydrite, white and very light gray, a little limestone, as above.

8155-8160 Limestone, light brownish gray, fine to medium crystalline, dense in part, fine grained, granular, argillaceous in part.

8160-8180 Anhydrite, very light gray, some limestone as above.

8180-8190 Anhydrite, very light gray to white, dense.

8190-8195 Anhydrite, very light gray to white; some limestone, light brownish gray, dolomitic, fine grained, granular.

8195-8215 Limestone, light brownish gray, fine grained, granular in part, very finely crystalline in part.

8215-8220 Limestone, as above; some anhydrite, very light gray.

8220-8245 Anhydrite, very light gray.

8245-8250 Limestone, light brownish gray, fine grained, fragmental in part, very finely crystalline, dense in part.

8250-8255 Dolomite, light brownish gray, microsugrosic, limy; some limestone, light brownish gray, fine grained, fragmental.

8255-8260 Limestone, light brownish gray, fine grained, fragmental to very finely crystalline.

8260-8265 Limestone, light brownish gray, microsugrosic, oil stained, fair cut with CCl<sub>4</sub>.

8265-8270 Limestone, light brownish gray, very finely crystalline, dense and fine grained, fragmental.

8270-8280 Limestone, as above, a little anhydrite, light gray.

8280-8295 Limestone, light brownish gray, fine grained, fragmental.

8295-8315 Limestone, light brownish gray, very finely crystalline, dense in part, fine grained, fragmental in part.

8315-8330 Limestone, light brownish gray, very finely crystalline to fine grained fragmental, fossiliferous.

8330-8345 Limestone, light brownish gray, fine grained, granular, fragmental, fossiliferous.

8345-8375 Limestone, light brownish gray, fine grained to finely crystalline, fragmental, fossiliferous.

8375-8380 Limestone, light brownish gray, very finely crystalline, dense.

8380-8395 Limestone, light brownish gray, very finely crystalline, to fine grained fragmental, fossiliferous.

8395-8410 Limestone, as above; traces of medium light gray, chert.

8410-8430 Limestone, light brownish gray, fine grained to finely crystalline, fragmental, fossiliferous.

8430-8440 Limestone, very light brownish gray, finely crystalline to fine grained, fragmental, very fossiliferous.

8440-8470 Limestone, very light brownish gray, oolitic with a finely crystalline matrix in part and fragmental, fossiliferous in part.

8470-8480 Limestone, very light brownish gray, finely crystalline to fine grained, fragmental, fossiliferous.

8480-8485 Dolomite, light brownish gray, microsucrosic, argillaceous, some limestone as above.

8485-8495 Dolomite, light brownish gray, microsucrosic, limy, slightly argillaceous.

8495-8515 Limestone, very light brownish gray, finely crystalline to fine grained, fragmental, fossiliferous, slightly argillaceous.

8515-8560 Limestone, very light brownish gray, finely crystalline to fine grained, fragmental, fossiliferous.

8560-8580 Dolomite, brownish gray, fine to medium grained, granular, limy, slightly argillaceous.

8580-8600 Limestone, very light brownish gray, finely crystalline to fine grained, fragmental, fossiliferous.

8600-8620 Limestone, as above; and some limestone, very light brownish gray, fine to medium crystalline, fragmental, dense.

8620-8670 Limestone, very light brownish gray, fine to medium and coarsely crystalline, fragmental, fossiliferous, dense, siliceous.

8670-8690 Limestone, as above, some light gray, fossiliferous, chert.

8690-8700 Limestone, very light brownish gray, fine to medium crystalline and fine grained, granular, fossiliferous, fragmental, a little light gray chert.

8700-8730 Limestone, very light brownish gray, fine to medium and coarsely crystalline, fragmental, fossiliferous, siliceous; some light gray fossiliferous chert.

8730-8770 Limestone, very light brownish gray, fine grained to fine to medium crystalline, fragmental, much chert, medium light gray, fossiliferous.

8770-8790 Limestone, very light gray to light yellowish gray, fine to medium and coarsely crystalline, fragmental, fossiliferous.

8790-8860 Limestone, as above; some light gray chert.

8860-8920 Limestone, very light gray to light yellowish gray, fine to medium and coarsely crystalline, fragmental, fossiliferous.

8950-8960 Limestone, very light gray to light brownish gray, fine grained to fine and medium crystalline, fragmental, fossiliferous.

8960-8970 Limestone, light gray, very fine to finely crystalline, and limestone as above.

8970-8990 Limestone, light gray, very fine to finely crystalline.

8990-9030 Limestone, light brownish gray to brownish gray, very finely crystalline, dense.

9030-9160 Limestone, light gray, finely crystalline, slightly argillaceous.

9160-9240 Limestone, light gray, finely crystalline, cherty.

9240-9260 Limestone, light brownish gray, fine grained, granular, oil stained, fair cut with  $\text{Ccl}_4$ .

9260-9280 Limestone, brownish gray, cryptocrystalline, some limestone, light brownish gray, fine grained, granular.

9280-9310 Limestone, brownish gray, cryptocrystalline, argillaceous.

9310-9370 Limestone, light gray to medium gray, finely crystalline, argillaceous.

9370-9420 Limestone, brownish gray, cryptocrystalline, slightly argillaceous, some light gray, fine grained to finely crystalline limestone, slightly argillaceous.

9420-9470 Limestone, light gray to medium gray, fine grained to finely crystalline, argillaceous.

9470-9480 Limestone, light gray to medium gray, very finely crystalline, siliceous.

9480-9540 Limestone, as above, some chert, light gray to medium light gray.  
 9540-9550 Limestone, medium gray, finely crystalline, very argillaceous.  
 9550-9570 Limestone, medium gray to light gray, chalky in part, finely crystalline, in part, very argillaceous; a little chert, very light gray.  
 9570-9590 Shale, dark brownish gray, platy.  
 9590-9595 Shale, as above, some siltstone, very light gray, calcareous, sandy.  
 9595-9600 Siltstone, very light gray, sandy, calcareous.  
 9600-9620 Sandstone, very light brownish gray, very fine to fine grained, silty, calcareous, some siltstone, as above.  
 9625-9645 Siltstone, very light brownish gray, calcareous.  
 9645-9675 Shale, dark brownish gray, platy, compact.  
 9675-9680 Dolomite, very pale orange, fine grained, silty.  
 9680-9685 Dolomite, as above; traces of interbedded greenish gray shale; traces of sandstone, very light gray, very fine to fine grained, calcareous.  
 9685-9700 Dolomite, very pale orange, finely crystalline, silty, some siltstone very pale orange, dolomitic.  
 9700-9715 Dolomite, very light gray, finely crystalline, interbedded with shale, light greenish gray, slightly dolomitic, contains pyrite crystals.  
 9715-9720 Shale, light greenish gray to very light gray, slightly dolomitic, contains pyrite crystals; much dolomite, very pale orange, finely crystalline.  
 9720-9745 Dolomite, very pale orange, finely crystalline; traces of shale, as above.  
 9745-9750 Dolomite, as above; some shale, light greenish gray, dolomitic.  
 9750-9790 Dolomite, very pale orange, finely crystalline; some shale, grayish red, calcareous, some light greenish gray shale.  
 9790-9800 Shale, grayish red, calcareous; dolomite, very light gray to grayish red, argillaceous.  
 9800-9810 Shale, grayish red, calcareous, silty; a little anhydrite, white.  
 9810-9830 Shale, very light gray, dolomitic, shale, grayish red, calcareous, dolomite, very pale orange, finely crystalline.  
 9830-9850 Shale, grayish red, calcareous; some shale, light greenish gray, calcareous and dolomite, as above.  
 9850-9860 Dolomite, very pale orange, finely crystalline, shale, grayish red and light greenish gray, calcareous.  
 9860-9870 Limestone, light brownish gray, very finely crystalline, traces of anhydrite, white, dolomite, as above.  
 9870-9890 Limestone, light brownish gray to brownish gray, very finely crystalline.  
 9890-9900 Limestone, light brownish gray to brownish gray, oolitic in part, very finely crystalline in part; some anhydrite, very light gray.  
 9900-9910 Limestone, light brownish gray, microsucrosic, slightly dolomitic; some limestone, as above.  
 9910-9930 Limestone, very light brownish gray, finely crystalline, some microsucrosic limestone, as above.  
 9930-9950 Limestone, brownish gray, very finely crystalline, dense, some limestone, very light brownish gray, finely crystalline, fragmental.  
 9950-9975 Limestone, brownish gray to light brownish gray, finely crystalline, fragmental in part, very finely crystalline, dense in part.

9975-9980 Limestone, very light gray to light yellowish gray, finely crystalline, argillaceous, limestone as above.

9980-10020 Limestone, brownish gray to light brownish gray, very finely crystalline, fragmental, dense.

10020-10025 Limestone, as above and limestone, light brownish gray, micro-sucrosic, dolomitic.

10025-10055 Limestone, as above, some anhydrite, very light gray to white.

10055-10080 Limestone, brownish gray to light brownish gray, very finely crystalline, dense, some finely crystalline, fragmental limestone.

10080-10105 Limestone, light brownish gray, fragmental, fine grained.

10105-10115 Limestone, light brownish gray, fine to medium crystalline, sucrosic, oil stained, slight cut with CCl<sub>4</sub>.

10115-10135 Limestone, light brownish gray, fine grained, granular; some limestone, brownish gray, very finely crystalline, dense.

10135-10145 Limestone, brownish gray, very finely crystalline, dense, some limestone, light brownish gray, fine grained, fragmental.

10145-10150 Limestone, very light brownish gray to yellowish gray, fine to medium grained, fragmental.

10150-10160 Dolomite, light brownish gray, fine to medium crystalline, granular, limy.

10160-10190 Limestone, brownish gray, very fine to finely crystalline, dense in part, some fine to medium crystalline, fragmental.

10190-10205 Limestone, brownish gray, very finely crystalline, dense, contains a few shell fragments.

10205-10210 Limestone, as above and some limestone, very light brownish gray, fine grained.

10210-10215 Limestone, light brownish gray, fine to medium crystalline, granular slightly anhydritic.

10215-10225 Limestone, as above; some limestone, light brownish gray to brownish gray, fine to medium crystalline, fragmental.

10225-10245 Limestone, light brownish gray, fine to medium crystalline, fragmental, granular in part.

10245-10255 Dolomite, light brownish gray, fine to medium crystalline, sucrosic texture; some limestone as above.

10255-10260 Limestone, light brownish gray, fine to medium crystalline, fragmental, a little dolomite, as above.

10260-10265 Limestone, light brownish gray, very fine to medium crystalline, fragmental; traces of anhydrite, light gray, slightly limy.

10265-10274 Dolomite, light brownish gray, fine to medium crystalline, sucrosic texture, some limestone as above.

10274-10290 Limestone, brownish gray, very finely crystalline, dense, some limestone, light brownish gray, fine to medium crystalline, fragmental.

10290-10295 Limestone, light brownish gray, fine to medium crystalline, sucrosic, oil stained, fair cut with CCl<sub>4</sub>.

10295-10300 Limestone, as above; and some limestone, light brownish gray, fine to medium crystalline, fragmental.

10300-10310 Limestone, very light brownish gray to yellowish gray, fine to medium crystalline, fragmental.

10310-10320 Dolomite, light brownish gray, fine to medium and coarsely crystalline sucrosic; some limestone, as above.

10320-10325 Limestone, brownish gray, very finely crystalline, dense, some anhydrite, light gray, slightly calcareous, some limestone as above.



- 10325-10340 Limestone, very light brownish gray, fine to medium crystalline, fragmental.
- 10340-10350 Limestone, as above, some anhydrite, light gray slightly calcareous.
- 10350-10355 Limestone, brownish gray, very finely crystalline, dense.
- 10355-10360 Limestone, as above, some limestone, very light brownish gray, fine to medium grained, granular in part, slightly dolomitic.
- 10360-10365 Dolomite, very light brownish gray, fine to medium crystalline, granular, limy, some limestone, as above.
- 10365-10375 Dolomite, as above, some limestone, light brownish gray, fine to medium crystalline, granular, slightly dolomitic.
- 10375-10380 Dolomite, light brownish gray, fine to medium, and coarsely crystalline.
- 10380-10395 Dolomite, as above and dolomite, light brownish gray, finely crystalline.
- 10395-10415 Limestone, medium gray to medium light gray, very finely crystalline, dense.
- 10415-10425 Dolomite, light brownish gray, fine to medium crystalline, granular, limy, some limestone, brownish gray, very finely crystalline, dense.
- 10425-10440 Limestone, light brownish gray, fine to medium crystalline, fragmental, in part, very finely crystalline, dense, in part, some dolomite as above.