

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 216

Summary of Petroleum Corporation of America - Mame Ballintine #1
Burke County, North Dakota
Well No. 1612 Permit No. 1624

by David S. Johnson
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The Petroleum Corporation of America - Mame Ballintine #1 is located in the Center NE NW of Section 6, T. 163N., R. 91W. Elevation 1958 G.L., 1969 K.B.

The Petroleum Corporation of America - Mame Ballintine #1 was spudded October 26, 1957 and 8 5/8" casing was set at 457 feet with 185 sacks of cement. 5 1/2" casing was set at 5939 feet with 200 sacks of cement. The well was perforated between 5881-5886' with 7 shots per foot, acidized, and flowed oil at the rate of 11 barrels of oil per hour during a 9 1/2 hour test through the casing. The well was drilled to a total depth of 6195 feet, plugged back to 5937 feet and completed as a producer on December 10, 1957.

NOTE: Newcastle Drilling Company has now taken over the operations of this well due to the bankruptcy of Petroleum Corporation.

Logs:

Schlumberger electric 468'-6196'.
Schlumberger gamma ray-lateral-3 468'-6194'.

Cores:

5767'-5814', recovered 47 feet.
5842'-5879', recovered 37 feet.
5879'-5899', recovered 20 feet.

Tests:

DST #1: 5788'-5814'. Tool open 4 hours, shut-in 1 hour, weak initial blow. Recovered 225 feet slightly water cut mud, 55 feet gas cut water cut mud. 55' gas cut slightly oil cut and water cut mud. 25' highly gas cut slightly oil cut salt water. Initial hydrostatic pressure 3465#, flow pressure 3450#, initial flow pressure 95#, final flow pressure 205#, shut-in pressure 1240# and building.

DST #2: 5854'-5879'. Tool open 3 hours shut-in 1 hour. Gas to surface in 10 minutes. Recovered 6093' total, 220' free oil, 150' dry, 323' heavily oil and gas cut mud emulsion. Initial hydrostatic pressure 3515#, flow pressure 3395#, initial flow pressure 85#, final flow pressure 255#, shut-in pressure 2015# and building.

DST #3: 5763'-5785'. Straddle test. Tool open 6 hours, shut-in 2 hours. Gas to surface in 3 1/4 hours. Recovered 510 feet total. 60 feet gas cut and slightly water cut mud. 60 feet highly gas cut and slightly oil cut mud cut salt water, 180 feet gas cut salt water with rainbow of oil. 150 feet salt water. Initial hydrostatic pressure 3400#, flow pressure 3375#, initial flow pressure 20#, final flow pressure 235#, shut-in pressure 1180# and building.

DST #4: 5884'-5899'. Tool open 3 hours, shut-in 90 minutes, recovered 120 feet slightly water cut slightly gas cut mud. 120 feet gas cut mud cut salt water. 120 feet slightly gas cut salt water. Initial hydrostatic pressure 3410#, flow pressure 3395#, initial flow pressure 180#, final flow pressure 180#, shut-in pressure 2400#.

Formation tops were determined from samples and the electric and gamma ray-lateral logs. Doubtful or obscure formation tops were not 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	1212
Niobrara formation	2888
Greenhorn formation	3195
Mowry formation	3464
Muddy sandstone	3574
Fall River formation	3799

Jurassic System

Rierdon formation	4461
Piper formation	4578

Triassic System

Spearfish formation	5029
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Mississippian System

Charles formation	5374
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0-60	Glacial sand and gravel. Some shale, medium light gray, lumpy, sandy.
60-90	Shale as above, some sand and gravel.
90-180	Missing samples.
180-300	Sand grains, clear, medium grained, subangular glacial sand and gravels.
300-470	Samples missing.
470-710	Shale, medium light gray, lumpy, some sandy, slightly calcareous. Some lignite.
710-740	Shale, black, lignitic, some shale as above.
740-920	Shale, medium light gray, lumpy, sandy.
920-950	Sandstone, very light gray-clear, highly calcareous.
950-980	Lignite.
980-1010	Shale, black, lumpy, compact, some lignite.
1010-1070	Shale, light gray, lumpy
1070-1100	Shale as above. Lignite.
1100-1220	Shale, medium light gray, compact, lumpy.
1220-1430	Shale, medium light gray, lumpy, and spongy.
1430-1740	Shale, medium gray, lumpy and spongy.
1740-2140	Shale, medium gray, lumpy and compact.
2140-2230	Shale, medium gray, compact-fissile.
2230-2290	Shale, medium gray, lumpy-compact.
2290-2500	Shale, medium light gray, lumpy- fissile.
2500-2590	Circulation material.
2590-2620	Shale, medium dark gray-medium light gray, compact-fissile.
2620-2860	Circulation material.

2860-2920 Shale, medium light gray, compact-fissile.
 2920-3010 Shale, medium dark gray-medium light gray, compact-fissile, "white specks".
 3010-3130 Shale, medium gray, compact-fissile.
 3130-3220 Shale, medium dark gray, fissile.
 3220-3280 Shale, medium gray, "white specks". Some shale as above. Circulation material.
 3280-3310 Shale, medium dark gray-medium gray.
 3310-3340 Shale, dark gray, fissile, carbonaceous, circulation material.
 3340-3400 Shale, medium dark gray-medium light gray, compact-fissile. Some "white specks".
 3400-3520 Shale, dark gray fissile.
 3520-3610 Shale, medium dark gray, compact.
 3610-3700 Shale, medium dark gray-medium light gray, compact-fissile.
 3700-3820 Shale, medium light gray, lumpy, some shale as above.
 3820-3910 Shale as above, circulation material. Some sandstone, fine grained, white.
 3910-4090 Shale, medium dark gray-medium light gray-compact-fissile, Inoceramus fragments. Very small amounts of sandstone as above.
 4090-4150 Shale, medium dark gray, fissile. Some loose sand grains, clear medium grained, subangular.
 4150-4185 Shale, medium gray, fissile. Some shale as above. Small amounts of sandstone, fine grained, white.
 4185-4195 Shale, dark gray, fissile, platy.
 4195-4325 Shale, as above, some sandstone, white, fine grained.
 4325-4355 Shale, medium gray, lumpy, some shale and sandstone, as above. Small amounts of limestone, white.
 4355-4395 Shale, dark gray-medium gray, lumpy-fissile. A few Inoceramus fragments.
 4395-4405 Sample as above. Some siderite "pellets".
 4405-4455 Shale as above. Some shale, greenish gray, lumpy-splintery. Poor samples.
 4455-4465 Shale as above, some sandstone, very fine grained, white.
 4465-4475 Shale, dark gray, fissile. Some shale, medium gray, spongy.
 4475-4485 Shale, dark gray-greenish gray, splintery-fissile. Some sandstone white-very light gray, very fine grained.
 4485-4575 Shale as above. Pyrite.
 4575-4595 Shale as above. Some sandstone, white, fine grained-calcareous.
 4595-4605 Shale as above. Some shale, reddish brown, compact, waxy.
 4605-4655 Shale as above. Some limestone, very light gray, very fine grained. Some sandstone as above.
 4655-4685 Sandstone, white, very fine grained, calcareous. Shale as above.
 4685-4715 Limestone, light brownish gray, fine grained. Shale as above.
 4715-4745 Limestone as above. Some limestone, pinkish gray-(5YR8/1) very fine grained, dull, variegated shales. Some sandstone as above.
 4745-4805 Shale, variegated, mostly reddish brown, splintery-compact. Sandstone, pinkish gray, fine grained. Some limestone as above.
 4805-4835 Limestone, white, sublithographic, shale as above. Small amounts of chert.
 4835-4855 Shale, variegated, splintery. Small amounts of limestone as above.
 4355-4945 Limestone as above. Shale as above.
 4945-4955 Limestone as above. Limestone, light brownish gray, fine grained. Shale as above.

4955-5045 Limestone as above, partly sucrosic. Shale, medium dark gray, splintery. Some variegated shales.

5045-5115 Sandstone, moderate, reddish orange (10R6/6) silty, slightly calcareous. Shale, medium gray-greenish gray, compact.

5115-5125 Sandstone, moderate reddish brown (10R4/6), silty. Shale, medium gray-greenish gray, platy.

5125-5215 Sandstone and shale as above. Siltstone, pale reddish brown, argillaceous.

5215-5235 Sample as above. Some loose frosted sand grains.

5235-5275 Shale, medium dark gray-greenish gray (5GY6/1). Small amounts of sandstone as above.

5275-5385 Sandstone as above. Some shale as above. Some loose frosted sand grains, well rounded.

5385-5405 Shale, variegated, splintery. Mostly moderate reddish brown (10R4/6).

5405-5425 Shale as above. Some limestone, light red (5R6/6), white partly oolitic.

5425-5465 Shale, medium gray, compact. Small amount of limestone, as above.

5465-5480 Limestone, moderate red (5R5/4), light brown, fine-medium grained, partly crystalline. Some shale as above.

5480-5500 Shale dark gray-medium light gray. Some limestone as above.

5500-5505 Anhydrite, white. Limestone, pinkish gray, very fine grained. Shale as above.

5505-5520 Limestone, pinkish gray-moderate pink (5R7/4). Shale as above.

5520-5550 Sample as above. Some anhydrite, white, crystalline. Some limestone, very light brown, oolitic in part.

5550-5580 Sample as above. Shale, moderate reddish brown, (10R4/6), silty.

5580-5625 Shale, medium gray, compact. Some limestone, light brown-very light gray, very fine grained, dense. Some anhydrite, white-light gray. Shale as above. Poor samples.

5625-5655 Shale, dark gray-medium light gray. Anhydrite, white. Some limestone, light brownish gray, medium grained.

5655-5665 Shale, variegated, splintery-compact. Anhydrite, white.

5665-5675 Sample as above. Limestone, brownish gray-light brownish gray, fine grained.

5675-5685 Shale, medium dark gray, compact-splintery. Some anhydrite, white-light gray, dense.

5685-5695 Shale, variegated. Anhydrite as above.

5695-5700 Limestone, brownish gray-light brownish gray, medium grained. Shale, medium gray, compact.

5700-5725 Limestone as above. Anhydrite, white-very light gray, crystalline, dense.

5725-5730 Shale, medium dark gray-greenish gray, splintery. Some limestone and anhydrite as above.

5730-5765 Limestone, very light brown, very fine grained, Shale as above. Anhydrite, white, crystalline.

Core Chip Descriptions

5767-5770 Limestone, yellowish gray (5Y8/1) microsucrosic. Some porosity.

5770-5771 Limestone, light brownish gray, medium grained.

5771-5772 Limestone as above. Thin shale stringers.

5772-5777 Limestone, light brownish gray, fine grained. Dolomite rhombs.

5777-5778 Limestone, yellowish gray, medium grained, dense.

5778-5781 Limestone, yellowish gray, fine grained, microsucrosic.

5781-5782 Limestone, yellowish gray, (5Y8/1) fine grained, fragmental.
 5782-5783 Limestone, light brownish gray, fragmental, fossiliferous.
 5783-5784 Limestone, yellowish gray, fine grained, microsugrosic. Some porosity. Some fluorescence.
 5784-5785 Limestone as above. Thin shaly stringers. Some fluorescence.
 5785-5786 Limestone, light brownish gray, fragmental.
 5786-5788 Limestone, light brownish gray, medium grained, shaly stringers, fossiliferous.
 5788-5789 Limestone, brownish gray, fine grained, dense.
 5789-5791 Limestone, yellowish gray, fragmental. Dolomite rhombs.
 5791-5792 Limestone, light brownish gray, fragmental, fossiliferous, slight cut.
 5792-5794 Limestone, light brownish gray, medium grained, crystalline.
 5794-5797 Limestone, light brownish gray, coarse grained. Pinpoint porosity.
 5797-5799 Limestone, light brownish gray, medium grained, crystalline.
 5799-5800 Limestone, brownish gray, medium grained, crystalline. Some secondary calcite.
 5800-5801 Limestone as above. Slight cut in carbon tetrachloride.
 5801-5805 Limestone, brownish gray, fine grained, tight, interbedded anhydrite.
 5805-5808 Anhydrite, white, massive.
 5808-5809 Limestone, brownish gray, very fine-coarse grained. Anhydrite inclusions.
 5809-5812 Anhydrite, white, dense.
 5812-5814 Anhydrite as above, interbedded limestone, brownish gray, fine grained.
 5814-5815 Limestone, brownish gray, very fine-coarse grained.
 5815-5817 Anhydrite, white, dense.
 End Of Core.

5815-5820 Caving material.
 5820-5830 Limestone, brownish gray-yellowish gray, fine grained. Some anhydrite as above. Much caving.
 5830-5840 Anhydrite, white, dense. Limestone, yellowish gray, very fine grained.

Core Chip Descriptions.

5842-5843 Anhydrite, white, massive.
 5843-5852 Anhydrite, medium light gray, dense, massive.
 5852-5853 Anhydrite as above. Dolomite, stringers, very light gray, very fine grained, earthy. Fair fluorescence.
 5853-5856 Dolomite, yellowish gray, fine grained, sugrosic-earthy, good porosity. Good fluorescence, poor-good cut. Some staining.
 5857-5859 Limestone, light brownish gray, fine grained, dense. Dolomite rhombs.
 5859-5864 Dolomite, yellowish gray, sugrosic, good fluorescence, and cut.
 5864-5869 Limestone, light brownish gray, fine grained, crystalline, dense.
 5869-5870 Limestone, yellowish gray, sugrosic, fair cut.
 5870-5871 Limestone, brownish gray, fine grained, slight cut.
 5871-5872 Limestone, yellowish gray, very fine grained, dense.
 5872-5873 Limestone, yellowish gray, recrystallized.
 5873-5874 Limestone, yellowish gray, microsugrosic.
 5874-5875 Limestone, light brownish gray, fine grained, good stain and cut.

5875-5878 Limestone, light brownish gray, lithographic, hard, dense.
 Secondary calcite crystals.
 5878-5880 Limestone, light brownish gray, recrystallized.
 5880-5882 Limestone, yellowish gray, sucrosic. Good cut and fluorescence.
 5882-5883 Limestone, light brownish gray, very fine grained, crystalline,
 dense.
 5883-5884 Limestone, medium light gray, fine grained, dense.
 5884-5885 Limestone, light brownish gray, very fine grained, dense,
 anhydrite fillings.
 5885-5887 Limestone, light brownish gray, oolitic, anhydrite filling.
 5887-5889 Limestone as above, anhydrite filling, clear-white.
 5889-5890 Limestone, very fine grained. Anhydrite filling.
 5890-5894 Limestone as above. Some vugs and stylolites. Partly oolitic.
 5894-5899 Limestone, yellowish gray, sucrosic. Anhydrite fillings. Pinpoint
 porosity and vugs.
 End of Core.

5900-5915 Limestone, yellowish gray, fine grained, anhydrite, white. Shale
 cavings.
 5915-6005 Limestone, yellowish gray, fine grained, dense. Some anydrite
 filling.
 6005-6045 Limestone as above. Some, limestone, brownish gray crystalline.
 Some shale, dark gray, compact.
 6045-6075 Limestone as above. Some "pelletoidal". Some shale as above.
 6079 Circulate 1 hour.
 6075-6140 Limestone, light brownish gray, fine-medium grained, crystalline.
 Some shale, medium dark gray, compact.
 6140-6195 Sample like above. Very small amounts of anhydrite.
 6195 Circulate 2 hours.
 6195 Total Depth.