

NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 36

Summary of the Rhodes-Langenfeld Harold Murphy No. 1
Towner County, North Dakota

by Carole Smith
December, 1953

Rhodes - Langenfeld--Harold Murphy #1, Towner County, North Dakota.
Located: C NW NE Section 18 T.163N., R.65W. (660' south of north line, 3300'
east of west line, Section 18). Elevation: 1597 K.B., 1591 G.L.

The Rhodes - Langenfeld Murphy #1 was spudded September 29, 1952 and
abandoned as a dry hole on October 13, 1952. 256' of 10 3/4" casing was set
with 200 sacks of cement. Total Depth: 3789 feet.

No cores.

No tests.

FORMATION TOPS

	<u>Depth</u>
Cretaceous System	
Niobrara Formation	663
Greenhorn Formation	1005
Dakota	1343
Jurassic System	
Sundance Formation	1445
Piper Formation	1702
Devonian System	
Nisku	1775
Duperow	1830
Souris River Formation	2170
Dawson Bay Formation	2330
Ashern Formation	2565
Silurian System	
Interlake Formation	2595
Ordovician System	
Upper Stony Mountain	2898
Lower Stony Mountain	2980
Red River Formation	3065
Winnipeg Shale	3642
Winnipeg Sand	3760
Pre-Cambrian	
Granite	3789

Formation tops were picked by Anderson of the North Dakota Geological
Survey from sample and electric logs. Colors determined from rock color chart.
Non-interpretive sample log.

<u>From</u>	<u>To</u>	<u>Formation</u>
260	290	Shale, light olive gray to medium gray, firm; much bentonite (280-290).
290	340	Shale, greenish gray (5GY6/1), firm; traces of inoceramus fragments.
340	370	Shale, medium gray, firm, somewhat brittle; traces of inoceramus fragments.
370	460	Shale, greenish gray, medium gray, firm, brittle, micaceous; traces of iron-stones.
460	500	Shale, greenish gray to medium gray, flaky, slightly lumpy and bentonitic; slightly silty (480-500).
500	540	Shale, light olive gray, greenish gray, medium gray, firm; slightly silty (530-540).
540	580	Shale, light olive gray to medium gray, firm to flaky to lumpy, slightly silty (quite silty and pyritic at 570-580), pyritic.
580	640	Shale, medium to medium dark gray, firm, partly lumpy, pyritic.
Niobrara 663		
640	670	Shale, gray black, flaky some shale as above; much white bentonite (650-660), slightly calcareous (660-670).
670	740	Limy shale, gray black, white spotted, lumpy; some black, pyritic, non-calcareous shale (660-670, 680-690, 700-710).
740	790	Limy shale, medium to medium dark gray, pyritic, lumpy, decreasingly calcareous starting at 770.
790	980	Shale, medium gray to medium dark gray, firm, partly lumpy, slightly calcareous, pyritic; slightly more calcareous (880-900); much light brown silty shale (970-980).
980	1000	Shale, dark gray to black; flaky and lumpy.
Greenhorn 1005		
1000	1250	Limy shale, dark gray, lumpy, very calcareous; traces of pyrite; some inoceramus fragments; mostly inoceramus fragments and inoceramus limestone (1070-1100), many inoceramus fragments (1130-1140, 1170-1180, 1230-1240); decreasingly calcareous starting at 1220.
1250	1290	Shale, dark gray, flaky, micaceous; some calcareous shale as above; traces of pyrite; mostly calcareous shale (1280-1290).
1290	1320	Shale, gray black to black, soft, flaky to lumpy, slightly calcareous, pyritic; traces of limy sandstone.
Dakota 1343		
1320	1370	Shale, gray black to black, soft, flaky, micaceous; small amounts of fine sand starting at 1340; small amounts of bentonite.
Sundance 1445		
1370	1450	Sand, fine to coarse, subangular to subround; much black shale as above; some fine grained limestone; traces of bentonite, pyrite.

<u>From</u>	<u>To</u>	<u>Formation</u>
1450	1490	Shale, gray black to black, flaky, partly greenish gray (1460-1470); some fine grained, limy, sandstone; small amounts of bentonite.
1490	1550	Shale, mostly black, flaky; small amounts of reddish orange and pale green shale, increasing sharply at 1530; much greenish, bentonitic shale (1490-1510); traces of fine grained, limy sandstone, pyrite.
1550	1573	Shale, much reddish orange and greenish as above, much flaky black; much fine grained, limy sandstone. Fossiliferous.
1580	1600	Shale, much reddish orange, greenish, and black as above; some limy sandstone as above, sharply decreasing.
1600	1640	Shale, moderate reddish brown, slightly calcareous; some gray, black, and greenish shale; traces of pyrite.
1640	1680	Shale, moderate reddish brown, calcareous; much pale greenish, somewhat calcareous, waxy shale; much, black shale; traces of limestone as above.
Piper 1702		
1680	1710	Shale, same as above, only silty; partly sandy at (1690-1700).
1710	1720	Limestone, very pale orange, chalky, slightly shaly; much very pale orange, micro-sugary dolomite; small amounts of shale as above, and chert; trace of pyrite.
1720	1750	Dolomite, very pale orange, very fine to micro-sugary becoming yellower and more sub-crystalline (1740-1750); some shale (1740-1750); some chert.
1750	1760	Dolomite, pale yellow brown, coarse crystalline to sub-crystalline; much shale as above.
Nisku 1775		
1760	1780	Dolomite, very pale orange, mostly coarse crystalline; some shale (1770-1780).
1780	1790	Dolomite, very pale orange, slightly vuggy, sugary; porous.
1790	1800	Dolomite, pale yellow brown, micro to fine sugary.
1800	1810	Missing samples.
1810	1830	Dolomite, grayish orange pink, very fine sugary, slightly limy; traces of anhydrite, chert, pyrite.
Duperow 1830		
1830	1850	Dolomite, pale red to moderate reddish brown, micro-sugary, shaly; traces of shale, pyrite, anhydrite.
1860	1870	Dolomite, grayish orange pink to pale red, hard, somewhat limy very fine sugary, shaly; traces of pyrite, and small amounts of white anhydrite.
1870	1890	Limestone, pale yellow gray to moderate red with dark red mottlings, sub-crystalline to micro-crystalline, shaly; slightly dolomitic (1870-1880).
1890	1900	Dolomite, yellow gray to pink, dense, partly limy; much shale as above; some soft limestone; traces of pyrite and anhydrite.
1900	1910	Missing samples.

<u>From</u>	<u>To</u>	<u>Formation</u>
1910	1920	Dolomite, pale yellow brown, fine sugary, partly limy, some is denser and slightly pink; trace of gypsum; some gray shale (1910-1920).
1920	1930	Limestone, very pale orange to pale yellow brown, very fine sugary and chalky; small amount of anhydrite, gypsum; traces of pyrite.
1930	1960	Dolomite, very pale orange, grayish yellow, moderate orange pink, chalky to dense, partly limy; small amounts of pyrite and shale.
1960	1970	Dolomite, very pale orange to pale yellow brown, fine sugary and chalky; some dolomitic, reddish and grayish black shale.
1970	1980	Limestone, as above; some sugary yellow brown dolomite; small amounts of shale, gypsum, pyrite.
1980	2010	Limestone, pale yellow gray, fine sugary and chalky; some limestone as above (1970-1980); traces of gypsum, shale, pyrite.
2010	2040	Dolomite, pale yellow gray to pale yellow brown, very fine sugary, hard; increasing amounts of reddish and black shale.
2040	2070	Limestone, pale yellow gray to pale yellow brown to very pale orange, micro-sugary, hard, partly mottled with moderate red, slightly dolomitic (2060-2070); much black and reddish shale, some greenish shale; much limy dolomite (2060-2070); shell impressions.
2070	2090	Limestone, pale yellow brown, very pale orange, micro-sugary to sub-lithographic to chalky; fossiliferous; some shale as above.
2090	2110	Limestone, pale yellow brown, pale yellow gray very pale orange, chalky to dense; much black and red shale; traces of inoceramus fragments and inoceramus limestone.
2110	2120	Missing samples.
2120	2130	Shale, black, reddish orange, reddish brown, greenish; some very fine sugary light brown dolomite; a small amount of limestone as above.
Souris River 2170		
2130	2170	Shale, much black, much calcareous reddish brown; much very pale orange, sub-lithographic, slightly pink, fossiliferous limestone, traces of pyrite.
2170	2200	Limestone, very pale orange to pale yellow gray, chalky to sub-crystalline; much shale as above, especially (2170-2180); small amounts of dense dolomite (2180-2200).
2200	2210	Missing samples.
2210	2220	Limy dolomite to dolomitic limestone--white to pale yellow brown, very fine sugary to chalky; trace pyrite.
2220	2230	Dolomitic limestone, pale yellow brown, fine sugary; some gray black shale; small amount of chalky white gypsum.
2230	2260	Limestone, pale yellow gray to pale yellow brown, sub-lithographic to chalky, shaly, slightly dolomitic; some chalky white to sub-crystalline grayish orange pink gypsum and anhydrite (2240-2260).

<u>From</u>	<u>To</u>	<u>Formation</u>
2260	2270	Limestone, white, pale yellow brown, pale yellow gray, fine sugary and/or chalky; small amounts of dolomite, gypsum, anhydrite, shale, pyrite.
2270	2300	Shale, flaky black, a small amount of reddish brown; some limestone and dolomite as above; much shaly, limy dolomite (2290-2300)--pale yellow brown; chalky to very fine sugary.
2300	2310	Dolomite, white, pale, yellow brown, pale brown, fine sugary to sub-crystalline; much shale as above; some anhydrite.
2310	2340	Dolomite, pale brown, very fine sugary to chalky; some limestone--pale brown, very fine grained and chalky (2310-2320); much dense to chalky anhydrite, (2320-2340); traces of pyrite.
Dawson Bay 2330		
2340	2360	Dolomite, pale brown, very fine sugary and chalky, slightly limy; some sub-crystalline and chalky, very pale orange to white anhydrite; small amount of limestone; trace of pyrite.
2360	2370	Limestone, grayish orange pink, fine sugary and chalky; small amounts of shale, anhydrite, and pyrite.
2370	2390	Limestone, pale yellow brown, fine sugary and chalky, shaly, moderate red mottlings, pink tinged; traces of anhydrite, pyrite.
2390	2420	Limestone, grayish orange pink, chalky, shaly, much moderate anhydrite, fossils.
2420	2440	Dolomite, pale yellow brown, very fine sugary; pinkish, shaly, and somewhat limy (2430-2440).
2440	2450	Limestone, pale yellow brown, pinkish, fine sugary; much fine sugary dolomite as above; small amounts of shale and anhydrite.
2450	2470	Dolomitic limestone, pale brown, pale yellow gray, pinkish, shaly, chalky and fine grained; traces of shale and pyrite.
2470	2480	Anhydrite, white to grayish orange pink, sub-crystalline; small amounts of pyrite, shale, limestone.
2480	2490	Missing samples.
2490	2520	Limestone, very pale orange to pale yellow brown, chalky and medium sugary, slightly pink tinged; small amount of anhydrite; increasingly dense and pink starting at 2500.
Ashern 2565		
2520	2580	Limestone, very pale orange, very pale yellow brown to pale yellow gray, micro-crystalline to chalky, some moderate red stain; much shale--gray, red, green (2550-2580).
Interlake 2595		
2580	2600	Shale, mostly moderate reddish brown, dolomitic; some dark gray shale; some dense limestone as above.
2600	2610	Shale, mostly black, some dolomitic reddish brown, some pinkish, chalky to fine grained limestone.
2610	2620	Limestone, grayish orange pink to pale yellow, brown, fine sugary to sub-lithographic, shaly.

<u>From</u>	<u>To</u>	<u>Formation</u>
2620	2630	Limy dolomite, pale yellow gray, yellow brown, pinkish, dense to chalky, somewhat vuggy, slightly moderate red mottled; some limestone and shale.
2630	2680	Limestone, pale brown, pale yellow brown, very pale orange, dense to fine sugary, slightly vuggy; small amounts of dolomite as above; much gray, red, greenish shale (2640-80) traces of pyrite.
2680	2720	Limestone, very pale orange, dense, sub-crystalline, semi-translucent, partly chalk; much shale, mostly moderate reddish brown, dolomitic, waxey.
2720	2780	Shale, mostly dark gray, some reddish; some limestone as above, much limestone (2730-2740, 2750-2780).
2780	2810	Dolomite, very pale orange, very pale yellow brown, very pale yellow gray, dense, partly pink tinged and streaked; some limestone as above; much red, gray, green shale; traces of pyrite.
2810	2840	Dolomite, very pale orange, micro-crystalline; some shale as above; much shale (2810-2820); traces of pyrite.
2840	2860	Dolomite, white, sub-lithographic; traces of shale, pyrite.
2860	2890	Dolomite, white to very pale orange, lithographic, shaly, limy; some dolomite is grayed pink (2870-2890); traces of shale, pyrite.
Stony Mountain 2898		
2890	2940	Dolomite, white to very pale orange, micro-sugary; much moderate orange pink, shaly, dolomite starting at 2900, some semi-translucent, yellowish dolomite starting at 2910; traces of pyrite, shale; much shale (2920-2940).
2940	2980	Dolomite, white to very pale orange, micro-sugary, some is yellowish and pinkish, much gray shale; traces of fossils, pyrite, fine sand, the dolomite becomes slightly pink and limy (2970-2980).
Lower Stony Mountain 2980		
2980	2990	Shale, mostly gray; much chalky to fine sugary limestone; some dolomite as above.
2990	3000	Limestone, gray, shaly, dense; sub-crystalline to crystalline white limestone.
3000	3020	Limestone, gray and dark red, dense; some chalky, shaly limestone, gray; fossiliferous; much shale (3010-3020).
Red River 3065		
3020	3070	Limestone, gray, very fine sugary to lithographic, very fossiliferous.
3070	3080	Limestone, dense, hard, chalk, medium brown; some very pale orange, dense, dolomite; some gray shale.
3080	3090	Limestone, very pale orange to very pale yellow brown, micro-sugary, shaly.
3090	3140	Limestone, very pale orange, pale yellow gray, pale yellow brown, white, very fine sugary to dense; fossiliferous; small amounts of dense dolomite, much dolomite (3140-3150) traces of pyrite.

<u>From</u>	<u>To</u>	<u>Formation</u>
3150	3163	Dolomite, pale brown, dense to micro-sugary, somewhat limey; fossiliferous; some limestone as above; traces of pyrite.
3163	3170	Dolomite, pale yellow brown, porous, spongy (oolitic?); much pale brown, dense, shaly, limy dolomite.
3170	3210	Dolomite, very pale orange, very pale yellow brown, hard, micro-sugary, shaly, slightly limy; brown laminae; traces of limestone, pyrite.
3210	3230	Limestone, white to pale yellow brown, very fine sugary to hard chalky, partly dolomitic; traces of pyrite, shale, fossils.
3230	3260	Limestone, very pale orange, light gray, micro-crystalline to sub-crystalline; some pale yellow brown; medium sugary; dolomitic limestone (3250-3260).
3260	3270	Limestone, pale yellow brown, crystalline to fine sugary; some dense to very fine sugary, pale, limestone; fossiliferous; trace pyrite.
3270	3310	Limestone, pale yellow brown to dark yellow brown, fine to medium sugary; fossils; some white to very pale orange, chalky and crystalline limestone starting at 3280, much at 3290.
3310	3330	Limestone, very pale orange, fine sugary to chalky, fossiliferous; much fine to medium sugary, hard, yellow brown, dolomitic limestone (3310-3320); trace pyrite.
3330	3340	Limestone, pale yellow brown to dark yellow brown, fine sugary, fossiliferous, slightly dolomitic; some chalky white limestone.
3340	3350	Limestone, very pale orange, very fine sugary and/or chalky, fossiliferous; some limestone as above.
3350	3360	Limestone, mostly yellow brown, fine sugary; some limestone as above; traces of pyrite, fossils.
3360	3380	Limestone, very pale orange to pale yellow brown, dense to very fine sugary, partly oolitic; fossils; trace of chert.
3380	3430	Limestone, very pale orange, very fossiliferous, chalky and/or fine sugary; some yellow brown, very fine sugary; some chalky white limestone (3410-3430); traces of pyrite, fossils, chert.
3430	3440	Limestone, very pale orange, pale yellow brown, white, very fine sugary to chalky; traces of fossils, pyrite, chert.
3440	3500	Limestone, very pale yellow gray to very light gray, very fine sugary to chalky, much harder starting at 3480; traces of fossils.
3500	3510	Limestone, as above, plus some pale brown, soft, micro-sugary limestone.
3510	3550	Limestone; very pale orange, pale yellow brown, micro-sugary, partly chalky; fossiliferous.
3550	3560	Limestone, pale yellow brown, micro-sugary; some very pale orange, chalky to micro-sugary limestone; fossiliferous.
3560	3570	Limestone, white to very pale orange, very fine sugary; much shale--red, gray, black (cave?).
3570	3640	Limestone, very light gray, slightly green tinged, micro-sugary to chalky, dense, very fossiliferous; trace of pyrite.

<u>From</u>	<u>To</u>	<u>Formation</u>
Winnipeg Shale 3642		
3640	3650	Shale, pale green to gray green, soft limy to splintery; some limestone as above.
3650	3700	Shale, gray green; waxey; some copper-colored discs (hematite?); much reddish brown shale (3690-3700); trace fine sand beginning at 3680.
Winnipeg Sand 3760		
3700	3770	Shale, much gray green, waxey, as above; much lumpy, dusky yellow green, slightly calcareous shale; traces of hematite pellets; slightly silty (3710-3720); traces of pyrite; trace of fine quartz sand (3760-3770).
3770	3772	Sand, mostly sub-angular to subround, medium to coarse quartz; some shale as above; a small amount of quartzose sandstone (3772).
3772	3789	Sand and sandstone, mostly; some green shale as above.
3789		Granite.