

# NORTH DAKOTA GEOLOGICAL SURVEY CIRCULAR NO. 52

Summary of S. D. Johnson - Edwin Werner #1  
Ramsey County, North Dakota  
Permit #427, Well #411

By LaVerne Nelson  
April, 1954

S. D. Johnson - Edwin Werner #1, Ramsey County, North Dakota. C S W SE Section 11, T. 158 N., 63 W. (660 feet from south line and 1980 feet from east line of section 11). Elevation D.F. 1551 feet, G.L. 1545 feet.

The S. D. Johnson - Edwin Werner #1 was spudded September 25, 1953. 10 3/4" was set at 170' and cemented with 75 sacks of cement. The well was drilled to a total depth of 3340', plugged and abandoned October 4, 1953. No DST's taken.

Cement plugs were set at the following depths: 2600' w/20 sacks, 1780' w/20 sacks, 1400' w/20 sacks, 1300' w/20 sacks, 200' w/20 sacks, top surface w/10 sacks.

Formation tops were determined from samples and electric log, not all lithologic tops were called in following list. Colors were determined from rock color chart.

## Formation Tops

Cretaceous System	
Niobrara	520
Greenhorn	933
Dakota	1305
Jurassic System	
Sundance	1483
Piper	1600
Mississippian System	
Top of Mississippian	1668
Englewood	1727 ? (Electric log)
Devonian System	
Nisku	1765
Duperow	1842
Souris River	2120
Ashern	2197
Silurian System	
Interlake	2235
Ordovician System	
Upper Stony Mt.	2440
Lower Stony Mt.	2510
Red River	2612
Winnipeg Shale	3145
Winnipeg Sand	3327
Total Depth	3340

<u>From</u>	<u>To</u>	<u>Formation</u>
180	410	Shale--medium gray N5, massive, brittle shale.
410	480	Shale--medium gray N5, lumpy, bentonitic shale.

480	520	Shale-medium gray N5, massive, compact shale.
520	570	Shale-medium gray N5, lumpy, disaggregated, highly calcareous. First white specks. Bentonitic.
570	600	Shale-medium gray N5, lumpy, disaggregated, highly calcareous. Bentonitic. Much grayish black N2 non calcareous, flaky shale.
600	630	Shale--medium gray N5, lumpy, spongy, calcareous, bentonitic. First appearance of inoceranous fragments. Some greenish gray. 5G6/1, laminated, brittle shale. Some pyrite.
630	660	Medium gray, laminated, brittle, non calcareous. Some pyrite and bentonite.
660	670	Shale--same, much siltstone concretions.
670	700	Shale--same, calcareous.
700	760	Shale--medium dark gray N4, massive, compact, calcareous shale. Some light olive gray 5Y6/1 sucrosic limestone and clear calcite rhombs. A little bentonite and pyrite.
760	900	Shale --medium dark gray N4, lumpy, spongy shale slightly bentonitic, calcareous and pyritic.
900	940	Shale--dark gray N3, lumpy, disaggregated shale. Bentonitic and some pyrite.
940	970	Shale--dark gray N3, massive, spongy shale. Highly bentonitic.
970	1050	Shale--dark gray N3, lumpy, disaggregated, highly calcareous. First prolific appearance of inoceramus fragments. Some bentonite. Some white speckled shale.
1050	1070	Shale--dark gray N3, disaggregated. Some pyrite and bentonite.
1070	1200	Shale--medium dark gray N4, disaggregated, calcareous. Numerous inoceramus fragments. Second white specks.
1200	1230	Shale--grayish black N2, platy, compact, bentonitic.
1230	1260	Shale--same, some greenish gray shale 5GY6/1.
1260	1300	Shale--medium dark gray N4, platy, spongy, bentonitic. Some pyrite.
1300	1307	Shale--medium gray N5, lumpy, compact.
1307	1310	(1 hr) Shale--same as above.
1310	1320	Shale--medium dark gray N4, platy, disaggregated.
1320	1360	Shale--same, highly calcareous.
1360	1490	Shale--same, some subangular, medium sized, quartz grains.
1490	1510	Sandstone--medium sized, subangular, clear quartz grains cemented and calcite. Slightly, shaly.
1510	1610	Shale--medium dark gray N4, massive, highly calcareous shale. Some fragments of sand and siltstone and quartz grains.
1610	1630	Limestone--buff, sublithographic, dense. Some shale as above.
1630	1640	Limestone--buff, sublithographic to very fine grained. Much chert. A few coarse, angular, frosted quartz grains. Some shale.
1640	1650	Limestone--limestone as above, some fine sand grains cemented firmly to calcite. A little chert, shale quartz grains as above.
<u>From</u>	<u>To</u>	<u>Formation</u>
1650	1670	Limestone--buff, sublithographic, dense. Some subcrystalline yellowish gray 5Y8/1 dolomite. Much iron stained chert.

1670	1680	Limestone--same as above. Some pale reddish brown 10R5/4 subcrystalline dolomite.
1680	1700	Limestone--same as above. A little moderate reddish orange 10R6/6 fine grained, calcareous sandstone, and white oolitic limestone.
1700	1705	Limestone--buff, grainy and subcrystalline, dolomitic. Some white and iron stained chert.
1705	1710	Dolomite--buff and dark reddish brown 10R3/4, variegated, subcrystalline, dense, 30% buff, medium sized grains, grainy dolomitic limestone. A few white, oolitic limestone.
1710	1720	Dolomite--same as above - 40% oolitic limestone.
1720	1725	Dolomite--same as above - 50% oolitic limestone.
1725	1730	Limestone--grayish orange pink 5YR7/2, grainy dolomitic. A few white oolitic limestone.
1730	1740	Dolomite--yellowish gray 5Y8/1, sucrosic, limy. Some chert, and oolitic limestone. Much moderate reddish brown 10R4/6 siltstone.
1740	1775	Dolomite--yellowish gray 5Y8/1, sucrosic, calcareous. A little chert and oolitic limestone.
1745	1750	Siltstone--pale red 10R6/2 to moderate reddish brown 10R4/6 very calcareous. Some white oolitic limestone and buff dense dolomite.
1750	1770	Dolomite--yellowish gray 5Y8/1, sucrosic. Some good pinpoint to vuggy porosity.
1770	1780	Yellowish gray 5Y8/1 to grayish orange pink 5YR7/2, microsucrosic, dense, dolomitic. Much white oolitic, grainy, limestone. A little moderate reddish brown 10R4/6 siltstone.
1780	1785	Limestone--grayish orange pink 5YR7/2, microsucrosic, dolomitic. Good pinpoint to tubular porosity.
1785	1810	Dolomite--grayish orange pink 5YR7/2, subcrystalline, dense, slightly calcitic. Little chert.
1810	1815	Dolomite--same as above. Moderate orange pink 10R7/4, sucrosic, limestone.
1815	1820	Limestone--yellowish gray 5Y8/1 and moderate orange pink 10R7/4 microsucrosic, shaly.
1820	1830	Dolomite--grayish orange pink 5YR7/2, subcrystalline, dense little white, microsucrosic, oolitic limestone and moderate reddish brown 10R4/6 siltstone.
1830	1835	Limestone--grayish orange pink 5YR7/2 to buff, microsucrosic, dolomitic. Some greenish gray 5GY6/1, calcareous shale, pyrite, and clear quartz crystals.
1835	1850	Limestone--buff to grayish orange pink 5YR7/2, microsucrosic, dolomitic. Some moderate reddish brown 10R4/6 siltstone and greenish gray 5GY6/1 calcareous shale. Much white microsucrosic oolitic limestone. A little pyrite and chert.
1850	1865	Dolomite--grayish orange pink 5YR7/2, sucrosic to subcrystalline. Much moderate reddish brown 10R4/6 and white microsucrosic oolitic limestone. A few echinoid spines.
1865	1870	Limestone--white N9, grainy.
<u>From</u>	<u>To</u>	<u>Formation</u>
1870	1890	Dolomite--pale red 5R6/2, subcrystalline, and yellowish gray 5Y8/1, sucrosic, calcitic. Some white N9, microsucrosic

		limestone. Some tubular porosity.	
1890	1900	Dolomite--same as above - very shaly.	
1900	1910	Dolomite--grayish orange pink 5YR7/2, microsugrosic, calcitic, dense.	
1910	1920	Limestone--white and very pale orange 10YR8/2, microsugrosic, dolomitic. Some dolomite as above.	
1920	1950	Limestone--grayish orange pink 5YR7/2, microsugrosic to sugrosic, slightly dolomitic. Some greenish gray chert. A little pinpoint porosity.	
1950	1960	Limestone--same as above - slightly shaly.	
1960		(½ hr.) Pale red 10R6/2, sugrosic dolomite. Same as above.	
1960	1970	Dolomite--pale red 10R6/2, sugrosic, calcitic, some good pinpoint and tubular porosity.	
1970	1990	Limestone--white N9 to yellowish gray 5Y8/1, microsugrosic. Much moderate reddish brown 10R4/6, calcareous siltstone.	
1990	2010	Dolomite--grayish orange pink 10YR7/2, sugrosic. Some white grainy limestone.	
2010	2015	Limestone--white N9, microsugrosic, dense. A little dolomite as above	
2015	2025	Limestone--grayish orange pink 10YR7/2, microsugrosic, dolomitic, dense.	
2025	2030	Dolomite--yellowish gray 5Y7/2, sugrosic, calcitic. Some dusky yellow 5Y6/4 chert.	
2030	2040	Limestone--grayish orange pink 10R8/2, microsugrosic. Very silty.	
2040	2045	Limestone--same as above - some yellowish gray dolomite.	
2045		(¾ hr.) Pinkish gray 5YR8/1 to yellowish gray 5Y8/1, subcrystalline dolomite. Same limestone as above.	
2045	2070	Limestone--light brownish gray 5YR6/1, microsugrosic, dense.	
2070	2085	Limestone--grayish orange pink 10R8/2, microsugrosic. Very silty.	
2085	2110	Dolomite--yellowish gray 5Y8/1 to white subcrystalline. A little white microsugrosic to grainy limestone. Some good tubular porosity.	
2110	2145	Dolomite--yellowish gray 5Y8/1, sugrosic to subcrystalline, good tubular porosity.	
2145	2165	Dolomite--pinkish gray 5YR8/1, subcrystalline. Good tubular to cavernous porosity. Small fractures filled with iron oxide cement. Brachiopod fossils.	
2165	2175	Limestone--yellowish gray 5Y8/1, microsugrosic, slightly shaly. Some clear quartz crystals and pyrite. Fossil brachiopods. Some iron stained cement in fractures. Fair pinpoint porosity.	
2175	2185	Limestone--same as above - very shaly and silty.	
2185	2195	Dolomite--grayish orange pink 5YR7/2, subcrystalline, dense. Fossil brachiopods.	
2195	2200	Dolomite--same as above - very shaly with some pyrite. Much moderate reddish brown 10R4/6 siltstone.	
2200	2240	Shale--moderate reddish brown 10R4/6, calcareous. A little dolomite as above (2200-2205). 2235-40 much white sugrosic dolomite.	
<u>From</u>	<u>To</u>	<u>Formation</u>	
2240	2280	Dolomite--white, subcrystalline, dense. 2245-55 Some	moder-
		ate orange pink 10R7/4 subcrystalline dolomite. 2250-55	

		Some pinpoint porosity. 2260-65 Iron stained and slightly silty with some ironstone concretions. 2275-80 Dark reddish brown 10R3/4, spongy, clay.	
2280	2510	Dolomite--very pale orange and grayish orange pink, sucrosic to subcrystalline. Very dense. 2280-85 A little white and moderate red mottling. Some tubular porosity. 2290-95 A little pinpoint porosity. 2300-05 A little greenish gray 5G6/1 shale. 2320-25 Some pale red purple 5RP6/2, subcrystalline dolomite. 2340-45 Iron staining on dolomite. 2345-50 Some pale reddish brown 10R5/4 ironstone. Good vuggy porosity. 2355-60 Very shaly and some ironstone. Fossiliferous. 2360-70 A little vuggy porosity. 2370-75 Some clear, angular quartz grains. 2375-80 Very shaly to quartz grains as above. 2385-90 Many quartz grains. 2395-2400 Very shaly. 2400-05 Much clear quartz. Some iron staining. 2405-15 Variegated pale red 5R6/2 to very pale orange 10YR8/2. Some quartz crystals. 2440-45 Very silty and iron stained. 2450-55 A little greenish gray 5GY6/1 shale and moderate yellow 5Y7/6 chert. 2455-65 Silty and iron stained. 2465-75 Well rounded quartz grains suspended in calcitic dolomite matrix.	
2510 mite.	2520	Shale--greenish gray 5GY6/1 calcareous, platy. Some	dolo-
2520	2540	Dolomite--very pale orange 10YR8/2 to grayish orange pink 5YR7/2, sucrosic, dense, fossiliferous. 2530-35 Much well rounded, medium sized, frosted quartz grains.	
2540	2600	Limestone--much medium bluish gray 5B8/1, angular, fragmental, sandy, fossiliferous limestone. Some grayish orange pink 10YR7/2 sucrosic, dolomitic limestone. Bryozoa colonies and brachiopods.	
2600	2630	Limestone--grayish orange pink 10YR7/2 to very pale orange 10YR8/2, sublithographic, dense, dolomitic. Very fossiliferous. Some medium bluish gray limestone as above.	
2630	2640	Limestone--pinkish gray 5YR8/1, microsucrosic, dense. A few clear quartz crystals.	
2640	2755	Dolomite--grayish orange pink 10R8/2, sublithographic, dense. Some dolomite rhombs. 2660-70 Some moderate yellow 5Y7/6, calcareous siltstone. Very porous. 2680-85 Sucrosic dolomite. 2710-25 Some well rounded, frosted, medium sized quartz grains. 2740-50 Much dense, lithographic dolomite.	
2755	2815	Limestone--pinkish gray 5YR8/1, grainy to microsucrosic, dense. Some pinpoint porosity. 2785-90 A little moderate reddish brown 10R4/6, clay.	
2815	2845	Limestone--very pale orange 10YR8/2 to white N9, microsucrosic, friable. Very "powdery" looking.	
2845	2855	Dolomite--grayish orange pink 10R8/2, sucrosic, calcitic, dense. Some limestone as above.	
2855	2860	Limestone--very pale orange 10YR8/2 to white N9, microsucrosic, "powdery".	
<u>From</u>	<u>To</u>	<u>Formation</u>	
2860	2875	Dolomite--grayish orange pink 5Y7/2 sucrosic to subcrystalline, some pinpoint porosity. A little limestone as	

		above. 2865-70 Much good pinpoint porosity.	
2875	2880	Limestone--grayish orange pink 5YR7/2, microsugrosic, dense.	
2880	2885	Shale--greenish gray, 5GY6/1, massive, brittle. Some pyrite. Limestone and dolomite as above.	
2885	2890	Dolomite--grayish orange pink 5YR7/2, sublithographic. Quite shaly.	
2890	2910	Limestone--grayish orange pink 10R8/2, microsugrosic. Some dolomite as above. 2900-10 Same - moderate reddish orange 10R6/6 silt.	
2915	2945	Limestone--white N9, sublithographic to microsugrosic, echinoid spines and brachiopods. Dolomite rhombs.	
2945	3040	Limestone--very pale orange 10YR8/2, microsugrosic, dense.	
3040	3095	Limestone--grayish orange pink 10R8/2 to very pale orange 10YR8/2, subcrystalline, dolomitic. Some moderate red 5R4/6 siltstone. Fossiliferous, Brachiopods and Bryozoans. 3060-75 Slightly shaly. 3090-95 Some shale and pyrite.	
3095	3135	Limestone--very light gray N8, sublithographic to microsugrosic, dense, dolomitic fossiliferous, some moderate reddish brown 10R4/6 siltstone.	
3135	3150	Limestone--same as above - quite sandy.	
3150	3155	Limestone--same as above - quite shaly and silty.	
3155	3205	Shale--greenish gray 5GY6/1, calcareous, disaggregated (Limestone) some limestone. Some quartz fine grained, well sorted.	
3205	3245	Shale--light olive gray 5Y6/1 and greenish gray 5G6/1 splintery, brittle, massive. 3210-15 Some moderate reddish brown 10R4/6 siltstone. 3220-25 Shale more lumpy and disaggregated. 3240-45 Some limestone.	
3245	3275	Limestone--white N9 to pale orange 10YR8/2, microsugrosic. Some moderate reddish brown 10R4/6 siltstone. 3260-75 Some	shale as
above.			
3275	3330	Shale--light olive gray 5Y6/1 and greenish gray 5G6/1, splintery brittle, massive. 3285-3300 Much limestone (50%).	