Summary of the McLaughlin & Erickson-Walz & Westby #1
Permit #850 - Well # 837
Bottineau County, North Dakota

by John L. Hainer
September, 1955

The McLaughlin & Erickson - Walz and Westby #1 was spudded March 15, 1955. Surface casing, 10 3/4" was set at 347 feet with 210 sacks of cement. The well was drilled to a total depth of 3115 feet. The well was non-commercial and was abandoned April 19, 1955.

Elevation: 1517' ground; 1523' K.B.

Casing: 10 3/4" @ 356' with 200 sacks; 5 1/2" @ 3115' with 200 sacks.

Cores: #1 - 3031-3070
     #2 - 3070-3089

Drill Stem Tests:
  3034-3070: Open 2 hours, received 30' slightly gas cut mud, 277' high oil and gas cut mud with very small amount of free oil, FP 40-115 lb., 20 minutes shut in pressure 190 lb., hydrostatic pressure 1745 lb.
  3045-3100: Open 4 hours, received 180' high oil and gas cut mud, 120' oil and gas cut salt water, 1800' slightly gas cut salt water, flowing pressure 95-935 lb., 30 minutes shut in pressure 1305 lb., hydrostatic pressure 1745 lb.

Perforation and Treatment:
  Perforated 3072-3084', acidized with 500 gallons; swabbed 40 barrels oil and 51 barrels water in 18 hours; swabbed 18 hours, no recovery; squeezed; perforated 3042-3047'; acidized with 1000 gallons; swabbed load oil; swabbed 10 barrels oil in 24 hours - non-commercial, dry and abandoned.

Logs Run: Electric, microlog, McCullough Radiation.

Plugging Record: 10 3/4" casing cemented @ 375' with 210 sacks: Plugs set at 1910-1840 - 20 sacks; 1113-1060 - 15 sacks; 365-312 - 20 sacks; Surface and cellar - 10 sacks. Mud weight between plugs - 10.3. B. J. Method used.

The following tops were picked from samples and electric logs, not all lithologic tops called in following list. Colors determined from Rock Color Chart.

FORMATION TOPS
<table>
<thead>
<tr>
<th>Depth Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>365-500</td>
<td>Shale, brownish gray 5YR4/1 to medium gray, fissile to spongy.</td>
</tr>
<tr>
<td>500-540</td>
<td>Shale, medium gray, massive to spongy.</td>
</tr>
<tr>
<td>540-600</td>
<td>Shale, brownish gray to medium gray, massive to spongy.</td>
</tr>
<tr>
<td>600-660</td>
<td>Shale, medium light gray, massive.</td>
</tr>
<tr>
<td>660-700</td>
<td>Shale, brownish gray 5YR4/1, fissile. Shale as above.</td>
</tr>
<tr>
<td>700-740</td>
<td>Shale, medium light gray, massive.</td>
</tr>
<tr>
<td>740-860</td>
<td>Shale as above. Dolomite, dark yellowish brown 10YR4/2, micro-crystalline, very dense, silty.</td>
</tr>
<tr>
<td>860-900</td>
<td>Bentonitic shale, very light gray, massive.</td>
</tr>
<tr>
<td>900-920</td>
<td>Bentonite, white. Bentonitic shale, very light gray, spongy. Some bentonitic shale, light gray with non-calcareous “white specks”.</td>
</tr>
<tr>
<td>920-960</td>
<td>Bentonitic shale, light olive gray 5Y6/1, spongy with some “white specks” as above.</td>
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<tr>
<td>960-1060</td>
<td>Bentonitic shale, light olive gray to medium light gray.</td>
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<tr>
<td>1060-1100</td>
<td>Shale, dark gray, grayish black, fissile.</td>
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<tr>
<td>1100-1160</td>
<td>Shale, medium gray, lumpy, bentonitic. Shale as above.</td>
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<tr>
<td>1160-1400</td>
<td>Shale, medium gray, lumpy, bentonitic.</td>
</tr>
<tr>
<td>1400-1440</td>
<td>Shale as above. Shale, dark gray fissile. Inoceramus prisms.</td>
</tr>
<tr>
<td>1440-1500</td>
<td>Shale as above. Little pyrite.</td>
</tr>
<tr>
<td>1500-1580</td>
<td>Shale, medium to dark gray, lumpy to foliated.</td>
</tr>
<tr>
<td>1580-1660</td>
<td>Shale, dark gray, foliated with calcareous “white specks.” Shale, medium gray, lumpy. Some Inoceramus prisms and pyrite.</td>
</tr>
<tr>
<td>1660-1700</td>
<td>Shale, medium to dark gray, foliated. Inoceramus prisms, and pyrite. Little limestone, medium gray, granular, shaly.</td>
</tr>
<tr>
<td>1700-1800</td>
<td>Shale, medium to dark gray, lumpy to foliated, few “white specks”. Inoceramus prisms and pyrite.</td>
</tr>
<tr>
<td>1800-1840</td>
<td>Shale, medium to dark gray, lumpy to foliated. Inoceramus prisms and pyrite.</td>
</tr>
<tr>
<td>1840-1880</td>
<td>Shale as above, bentonitic.</td>
</tr>
<tr>
<td>1880-2000</td>
<td>Shale, medium to medium dark gray, foliated to fissile.</td>
</tr>
<tr>
<td>2000-2030</td>
<td>Shale as above. Quartz grains, clear to multicolored, angular.</td>
</tr>
<tr>
<td>2090-2050</td>
<td>Sandstone, fine grained, colorless, friable, composed of sub-angular quartz grains and calcitic cement. Shale and few quartz grains as above.</td>
</tr>
<tr>
<td>2050-2070</td>
<td>Quartz sand, clear, subrounded, unconsolidated. Little fine grained sandstone as above.</td>
</tr>
<tr>
<td>2070-2080</td>
<td>Missing.</td>
</tr>
<tr>
<td>2080-2100</td>
<td>Quartz sand and little sandstone as above. Pyrite.</td>
</tr>
</tbody>
</table>
| 2100-2120   | Shale, medium gray, foliated. Little shale, pale reddish brown,
waxy. Quartz sand and pyrite as above.

2120-2150 Shale, medium dark gray, foliated. Little quartz sand as above.
2150-2160 Shale, medium gray, lumpy, medium dark gray, foliated. Little quartz sand as above. Trace of glauconitic siltstone.
2160-2180 Shale, light olive gray 5Y6/1, lumpy. Little medium grained sandstone, pyritic cement.
2180-2240 Shale, medium to medium dark gray, foliated. Quartz grains, clear, subrounded.
2240-2250 Shale, medium to dark gray, lumpy to foliated. Little sandstone, clear, fine grained, angular, calcitic cement, friable.
2250-2260 Shale and sandstone as above. Quartz grains, clear, subrounded, trace of moderate reddish brown shale.
2260-2300 Calcareous siltstone to argillaceous limestone, very light gray to yellowish gray. Shale as above.
2300-2350 Shale, medium to medium dark gray, lumpy to foliated. Little calcareous siltstone, pale yellowish brown.
2350-2380 Shale as above, little shale, greenish gray 5GY6/1 and moderate reddish brown 10R4/6, splintery, waxy.
2380-2390 Shale, greenish gray, moderate reddish brown, splintery, waxy, medium light to medium gray, fissile.
2390-2400 Shale as above. Little limestone, yellowish gray 5Y8/1, fragmental.
2400-2410 Missing.
2410-2480 Shale and little limestone as above.
2480-2540 Shale as above. Little calcareous siltstone, very light gray.
2540-2580 Shale, grayish red 10R4/2, greenish gray 5GY6/1, splintery, waxy. Shale, medium light gray, fissile. Little, limestone, yellowish gray, very finely crystalline.
2580-2600 Shale as above. Little sandstone, very fine grained, angular, calcareous, friable.
2600-2610 Missing.
2610-2620 Shale and sandstone as above. Unconsolidated free quartz grains, subrounded.
2620-2670 Shale as above. Little limestone, yellowish gray, very finely crystalline.
2670-2680 Shale, grayish red, greenish gray, splintery, waxy. Little limestone, grayish pink 5R8/2, finely crystalline.
2680-2700 Shale as above. Little limestone, very pale orange, finely crystalline.
2700-2710 Shale as above. Limestone, very pale orange, fine grained, very sandy.
2710-2730 Limestone, yellowish gray 5Y7/1, very finely crystalline, dense. Shale as above.
2730-2780 Limestone, white to very pale orange, very finely crystalline, dense. Shale, grayish red to greenish gray as above.
2780-2790 Sandstone, white to pale yellowish brown, calcareous cement, friable. Shale and little limestone as above.
2790-2810 Limestone, very pale orange to pale yellowish brown, very finely crystalline, dense. Shale as above.
2810-2820 Shale and limestone as above with little gypsum.
2820-2930 Anhydrite and gypsum. Shale and little limestone as above.
3000-3010 Siltstone, brownish gray, slight oil cut. Quartz sand grains as
above.

3010-3030 Siltstone, grayish orange pink 5YR7/2, with included sand grains as above. Little anhydrite.

3030 Circulation. Siltstone matrix, pale yellowish brown with included sand grains as above, 0.5 to 1 mm in diameter, anhydritic cement.

CORE #1

3031-3033 Siltstone with included sand as above.

3033-3034 Anhydrite, pale yellowish brown. Anhydritic limestone, pale yellowish brown, dense, oil stain and cut.

3034-3035 Anhydritic limestone as above, slightly oolitic but porosity poor due to anhydritic filling.

3035-3042 Anhydritic limestone, pale yellowish brown, finely crystalline, dense.

3042-3044 Anhydrite, white.

3044-3052 Limestone, pale yellowish brown, anhydritic, dense, finely crystalline.

3052-3053 Anhydrite, white.

3053-3057 Limestone, pale yellowish brown, anhydritic, medium crystalline, dense.

3057-3058 Anhydrite, white.

3058-3060 Limestone as above, fluorescence but no cut with CCl4.

3060-3061 Limestone, pale yellowish brown, granular to oolitic, anhydritic, oil stain and good cut.

3061-3062 Anhydrite, pale yellowish brown to white.

3062-3067 Limestone, very pale orange, finely crystalline, little vuggy, anhydritic filling, fluorescence, slight cut.

3067-3069 Limestone, very pale orange, finely crystalline with few oolites, vuggy, anhydritic filling.

3069-3070 Limestone, pale yellowish brown, coarse granular, good intergranular porosity, good oil stain, fluorescence and oil cut.

CORE #2

3070-3071 Limestone, very pale orange, finely crystalline, slightly oolitic, anhydritic, stylolites.

3071-3075 Limestone, pale yellowish brown, coarse granular, good intergranular porosity, good oil stain, fluorescence and cut.

3075-3076 Limestone, very pale orange, oolitic with anhydritic cement, little intergranular porosity, few styolites.

3076-3077 Limestone, very pale orange, finely crystalline, dense, vugs filled with anhydrite.

3077-3089 Limestone, very pale orange to pale yellowish brown, oolitic to crypto-crystalline, vuggy, oil stained.

SAMPLES

3089-3100 Limestone, very pale orange, finely crystalline to microsucrosic, fluorescence and oil cut.

3100-3103 Limestone, very pale orange, finely crystalline, fluorescent.

3103-3105 Limestone, very pale orange, fine to medium crystalline, vuggy, fluorescent.

3115 Total Depth.