

**ENSIGN OPERATING CO.
BEALS PROSPECT
No. 1-34 CARLISLE
SW SW NE Sec. 34, T33S, R17W
COMANCHE COUNTY, KANSAS**

WELL HISTORY
ENSIGN OPERATING COMPANY
NO. 1-34 CARLISLE
BEALS PROSPECT
SW SW NE SEC. 34, T33S, R17W
COMANCHE COUNTY, KANSAS

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SYNOPSIS

The Ensign Operating Co. No. 1-34 Carlisle, SW SW NW Sec 34, T17S, R33W, Comanche County, Kansas was a 6024-foot wildcat well to test the Ordovician Simpson and Arbuckle formations for commercial oil production. The Mississippian Spergen formation was also an exploratory objective for this well.

During the process of drilling the well shows of gas and oil were drill-stem tested in the Pennsylvanian Lecompton and Fort Scott formations. The test of the Lecompton recovered water. The test of the Fort Scott recovered gas at a non commercial rate of 28 MCFD. The Mississippian Spergen formation was also drill-stem tested. This test recovered gas at a rate of 82.8 MCFD in the initial flow period of the test. The gas flow rate had decreased to 5.86 MCFD at the end of the second flow period of the test.

After an examination and evaluation of the lithologic samples, the drill-stem tests and the borehole geophysical logs it was determined that the well did not have potential for commercial oil or gas production. The well was plugged and abandoned on September 25, 1994.

GENERAL WELL INFORMATION

Operator: Ensign Operating Co.

Well Name: No. 1-34 Carlisle API No. 15-033-20984

Prospect: Beals Prospect

Location: C SW SW NE Sec. 34, T33S, R17W, 2310' FNL, 2310' FEL

County: Comanche

State: Kansas

Elevation: G.L. 1817' K.B. 1824'

Spudded: September 6, 1994 @ 7:00 P.M..

Completed Drilling: September 24, 1994 @ 5:00 P.M.

Total Depth: Driller 6024' Logger 6022'

Status: Plugged and Abandoned

Drill-Stem Tests: Drill-Stem Test No. 1 4052'-4144' Pennsylvanian Lecompton
30-60-60-120

I.O. Strong Blow, Bottom Of Bucket In One Minute.
F.O. Strong Blow, Bottom Of Bucket in 1.5 Minutes.

Recovery: 240' Muddy Water, 2400' Saltwater. Rw 0.095 @ 71.5° F.

Sampler: 4000 ML Water @ 125 psi, Rw 0.92 @ 91.2° F.

Hydrostatic Pressures 1942-1934 psi
Flow Pressures 346-728:850-1243 psi
Shut-in Pressures 1532-1539 psi
Bottom Hole Temperature 124° F

Trilobite Testing LLC Inc., Paul Simpson, Tester

Drill-Stem Test No. 2 5004'-5028' Pennsylvanian Fort Scott.
30-60-60-120

I.O. Strong Blow, Bottom Of Bucket In 30 Seconds. Gas To Surface In
30 Minutes Of initial Shut-In.

F.O. Gas To Surface.

Gas Volume:	Time	Ins Water	Orifice Size	MCF/D
Final Open	10 Min	14	3/8"	13.4
	20 Min	24	1/2"	30.7
	30 Min	20	1/2"	28.0
	40 Min	20	1/2"	28.0
	50 Min	20	1/2"	28.0
	60 Min	20	1/2"	28.0

Recovery: 30' Slightly Gas Cut Mud. 20% Gas, 80% Mud.

Sampler: 4000 ML Mud No Pressure Recorded.

Hydrostatic Pressures 2447-2437 psi

Flow Pressures 20-20:20-20 psi

Shut-In Pressures 548-1703 psi

Bottom Hole Temperature 115° F

Trilobite Testing LLC Inc., Robert Collins, Tester

Drill-Stem Test No. 3 5095'-5140' Mississippian Spergen.
30-60-60-120

I.O. Strong Blow, Gas To Surface In 10 Minutes.

F.O. Gas To Surface.

Gas Volume:	Time	Ins Water	Orifice Size	MCF/D
Initial Open	15 Min	34	3/4"	82.8
	20 Min	26	3/4"	72.4
	25 Min	18	3/4"	60.2
	30 Min	16	3/4"	56.8
Final Open	10 Min	16	1/4"	6.72
	20 Min	20	1/4"	7.51
	30 Min	18	1/4"	7.12
	40 Min	16	1/4"	6.72
	50 Min	14	1/4"	6.33
	60 Min	12	1/4"	5.86

Recovery: 50' Slightly Gas Cut Mud. 2% Gas, 98% Mud.

Sampler: 4000 ML Mud No Pressure Recorded.

Hydrostatic Pressures 2440-2408 psi
Flow Pressures 92-61:61-61 psi
Shut-In Pressures 107-61 psi
Bottom Hole Temperature 118° F

Trilobite Testing LLC Inc., Robert Collins, Tester

Logging Program: AIS/SP/GR 0' - 6021'
CNS/PDS/GR/Cal 821' - 5982'
MLS/GR/Cal 821' - 5995'

BPB Wireline Services, Dan Tollefson, Engineer

Sample Program: Thirty-foot samples from 2018' - 2251', Twenty-foot samples from 2251' - 3408', Ten-foot samples from 3408' - 6024'. Samples were examined and described at well site. Samples were caught on depth intervals by rig crews. Samples were lagged to correct depth by geologist. All depths used in this report are lagged depths. The quality of the samples was acceptable in the water drilled portion of the hole and good in the mud drilled portion of the hole. One set of dry samples was stored with the Kansas Geological Survey in Wichita, Kansas.

Mud Logging: Holmes Gas Detector Service, Unmanned Unit.

Mud Program: Mud CO Inc., Jim Weisner, Engineer

Lost Circulation: 200' Permian Cedar Hills, 5761' Ordovician Viola

Contractor: Duke Drilling Co., Inc. •, Rig No. 1, Gary Pugh, Toolpusher.

<u>Bit Record:</u>	No.	Size	Make	Type	Depth Out	Feet	Hours
	1	12.25	Sec	S3JRT	823'	823'	10.00
	2	7.875	WMc	ATJ1 RT	2010'	1187'	10.50
	3	7.875	Hughes	ATJ RR	2389'	379'	13.50
	4	7.875	Hughes	ATJ22C	5028'	2639'	111.50
	5	7.875	Reed	HP52	5821'	793'	63.50
	6	7.875	Hughes	ATJ22C	6024'	203'	10.50

Total Rotating Hours 219.5, Average 27.44 Ft/Hr

Deviation Record:

1/2° @ 600'
1/2° @ 823'
1 1/4° @ 2010'
1/4° @ 2389'
3/4° @ 4144'
1 1/4° @ 5028'
1° @ 5240'
1/4° @ 6024'

DAILY DRILLING REPORT

Ensign Operating Co.
No. 1-34 Carlisle
Beals Prospect
SW SW NE Sec. 34 T33S R17W
Comanche County, Kansas

7:00 A.M. Reports

1	Sept	6	0' (0') Rig up rotary tools. Spud @ 7:00 P.M..
2	Wed	7	741' (741')
3	Thur	8	922' (172') Set 8 5/8" @ 820', Plug Down @ 3:15 P.M. Drill Plug @ 5:40 A.M.
4	Fri	9	2255' (1333')
5	Sat	10	2700' (445')
6	Sun	11	3390' (690')
7	Mon	12	3925' (535')
8	Tue	13	4144' (219') DST No. 1 4052'-4144'
9	Wed	14	4144' (0') Rig Repair
10	Thur	15	4144' (0') Rig Repair
11	Fri	16	4144' (0') Rig Repair
12	Sat	17	4310' (166')
13	Sun	18	4715' (405')
14	Mon	19	5028' (313')
15	Tue	20	5113' (85') DST No 2 5004'-5028'
16	Wed	21	5235' (122') DST No 3 5095' 5140'
17	Thur	22	5510' (275')
18	Fri	23	5750' (240')
19	Sat	24	5850' (100')
20	Sun	25	6024' (174') Logging, Plug and Abandon.

FORMATION TOPS

Ensign Operating Co.
No. 1-34 Carlisle
SW SW NE Sec. 34, T33S, R17W
Comanche County, Kansas

G.L. 1817' K.B. 1824'	Comparison Well NW NE 3-33S-17W K.B. 1828'	Drill Time And Samples	Wire Line Logs
Tertiary	Surface +1816'	Surface +1817'	Surface +1817'
Permian			
Glaudalupian			
White Horse	NL	10' +1814'	NL
Leonardian			
Nipewalla Gr.			
Blaine	NL	86' +1738'	90' +1734'
Cedar Hills	NL	200' +1624'	204' +1620'
Sumner Gr.			
Stone Corral	825' +1003'	835' +989'	830' +994'
Salt	870' +958'	872' +952'	875' +949'
Ninnescah	1070' +758'	1078' +746'	1084' +740'
Wellington	1500' +328'	1496' +328'	1498' +326'
Hutchinson	1640' +188'	1638' +186'	1638' +186'
Wolfcampian			
Chase Gr.			
Herington	2356' -528'	2361' -537'	2350' -526'
Kridler	2368' -540'	2369' -545'	2363' -539'
Winfield	2433' -605'	2435' -611'	2419' -595'
Gage Shale	2482' -654'	2490' -666'	2475' -651'
Towanda	2500' -672'	2502' -678'	2494' -670'
Fort Riley	2552' -724'	2561' -737'	2554' -730'
Wreford	2701' -873'	2710' -886'	2705' -881'
Council Grove Gr.	2740' -912'	2750' -926'	2744' -920'
Cottonwood	2894' -1066'	2904' -1080'	2898' -1004'
Foraker	3000' -1172'	3009' -1185'	3004' -1180'
Admire	3070' -1242'	3072' -1248'	3066' -1242'
Onaga	3199' -1371'	3210' -1386'	3204' -1380'
Pennsylvanian			
Virgilian			
Wabaunsee Gr.	3246' -1418'	3253' -1429'	3246' -1422'
Root Shale	3330' -1502'	3335' -1511'	3334' -1510'
Stotler	3388' -1560'	3396' -1572'	3390' -1566'
Emporia	3506' -1678'	3522' -1698'	3520' -1696'

G.L. 1817' K.B. 1824'	Comparison Well NW NE 3-33S-17W K.B. 1828'	Drill Time And Samples	Wire Line Logs
Shawanee Gr.			
Topeka	3714' -1886'	3713' -1889'	3705' -1881'
Lecompton	3895' -2067'	3896' -2072'	3886' -2062'
Queen Hill	3896' -2158'	3985' -2161'	3978' -2154'
Oread	4149' -2321'	4160' -2336'	4150' -2326'
Douglas Gr.			
Heebner	4179' -2351'	4193' -2169'	4186' -2362'
Toronto	4188' -2360'	4200' -2376'	4200' -2376'
Douglas Shale	4239' -2411'	4251' -2427'	4254' -2430'
Missourian			
Lansing Gr.	4379' -2551'	4384' -2560'	4378' -2554'
Kansas City Gr.			
Cherryvale	4726' -2898'	4734' -2910'	4724' -2900'
Dennis	4729' -2901'	4729' -2901'	4736' -2904'
Stark	4786' -2958'	4793' -2969'	4786' -3052'
Swope	4793' -2965'	4796' -2972'	4792' -2968'
Hushpuckney	4822' -2994'	4830' -3006'	4824' -3000'
Hertha	4824' -2996'	4834' -3010'	4827' -3003'
Demoinesian			
Marmaton Gr.	4938' -3110'	4943' -3119'	4938' -3114'
Bandera	4970' -3142'	4974' -3150'	4969' -3143'
Pawnee	4976' -3148'	4977' -3153'	4971' -3147'
Labette	5001' -3173'	5007' -3183'	5001' -3177'
Fort Scott	5004' -3176'	5009' -3185'	5004' -3180'
Cherokee Gr.	5014' -3186'	5022' -3198'	5014' -3190'
Mississippian			
Meramecian			
Spergen	5080' -3252'	5088' -3264'	5080' -3256'
Warsaw	5136' -3308'	5144' -3320'	5148' -3324'
Osageian			
	5200' -3372'	5265' -3441'	5290' -3466'
Ordovician			
Choteu	5579' -3751'	5646' -3822'	5634' -3810'
Champlainian			
Viola	5600' -3772'	5667' -3843'	5666' -3842'
Simpson Dolo	5782' -3954'	5853' -4029'	5836' -4012'
Simpson Sh	5858' -4030'	5902' -4078'	5900' -4076'
Canadian			
Arbuckle	5918' -4091'	5970' -4146'	5972' -4148'
Total Depth	5974' -4146'	6024' -4200'	6022' -4198'

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Thirty-foot samples from 2018', Twenty-foot samples from 2251' - 3408', Ten-foot samples from 3408' - 6024'. Samples were examined and described at well site. Samples were caught on depth intervals by rig crews. Samples were lagged to correct depth by geologist. All depths used in this report are lagged depths. The quality of the samples was acceptable in the water drilled portion of the hole and good in the mud drilled portion of the hole. One set of samples was stored with the Kansas Geological Survey in Wichita, Kansas. All samples were screened to reduce up hole cavings.

- 2018 - 2061 Shale (90%), red, gray. Anhydrite (10%), white, fine crystalline. Salt by drill time, drilling with water.
- 2061 - 2081 Shale (60%), red, gray, green. Anhydrite (40%), light gray, white, fine crystalline. Salt by drill time.
- 2081 - 2125 Shale (55%), red, gray, green. Anhydrite (45%), light gray, white, fine crystalline. Salt by drill time.
- 2125 - 2166 Anhydrite (85%), white, light gray, fine crystalline. Shale (15%), gray, light green, red. Dolomite (trace), gray, fine crystalline. Salt by drill time.
- 2166 - 2194 Anhydrite (65%), white, light gray, fine crystalline. Dolomite (20%), light gray, fine crystalline. Shale (15%), gray, light green, red.
- 2194 - 2225 Anhydrite (70%), white, light gray, fine crystalline. Dolomite (20%), light gray, fine crystalline. Shale (10%), gray, light green, red.
- 2225 - 2251 Anhydrite (65%), white, light gray, fine crystalline. Dolomite (20%), light gray, fine crystalline. Shale (15%), light gray, green, red.
- 2251 - 2269 Anhydrite (45%), light gray, fine crystalline. Dolomite (45%), light gray, fine crystalline. Shale (10%), light gray, green, red. Start 20 foot sample interval.
- 2269- 2286 Dolomite (50%), light gray, fine crystalline. Anhydrite (40%), white, light gray, fine crystalline. Shale (10%), light gray, green, some red.
- 2286 - 2311 Dolomite (50%), light gray, fine crystalline. Anhydrite (35%), white, light gray, fine crystalline. Shale (15%), gray, red.
- 2311 - 2333 Dolomite (40%), light gray, fine crystalline. Anhydrite (30%), white, light gray, fine crystalline. Shale (30%), gray, greenish gray, red.

2333 - 2354 Dolomite (50%), light gray, fine crystalline. Anhydrite (30%), white, light gray, fine crystalline. Shale (20%), gray, greenish gray, red.

Herington 2361' -537', Krider 2369' -545'

2354 - 2374 Dolomite (40%), light gray, fine crystalline. Anhydrite (40%), white, light gray, fine crystalline. Shale (20%), gray, greenish gray, red.

2374 - 2389 Dolomite (65%), light gray, fine crystalline. Anhydrite (25%), light gray, white, fine crystalline. Shale (10%), gray, greenish gray, red. Trip sample, poor sample quality.

2389 - 2408 Dolomite (40%), light gray, fine crystalline. Shale (40%), gray, green, red. Anhydrite (20%), white, light gray, fine crystalline. Trip sample. poor sample quality.

2408 - 2424 Dolomite (40%), light gray, fine crystalline. Shale (50%), red, gray, green. Anhydrite (10%), white, fine crystalline.

Winfield 2435' -611'

2424 - 2436 Dolomite (60%), light gray, grayish tan, fine crystalline. Shale (40%), gray, green, red. Anhydrite, (trace), white, fine crystalline.

2436 - 2466 Dolomite (60%), light gray, grayish tan, fine crystalline. Shale (40%), red, gray, green. Anhydrite (trace), white, fine crystalline.

2466- 2486 Dolomite (55%), light gray, grayish tan, fine crystalline. Shale (45%), red, gray, green.

Gage Shale 2490' -666'

2486 - 2496 Dolomite (50%), light gray, grayish tan, fine crystalline. Shale (50%), red, gray, green.

Towanda 2511 -687'

2496 - 2524 Dolomite (30%), light gray, grayish tan, fine crystalline. Limestone (30%), grayish tan, mudstone, wackestone. Shale (40%), red, gray, green.

2524 - 2544 Dolomite (45%), light gray, grayish tan, fine crystalline. Limestone (10%), grayish tan, mudstone, wackestone. Shale (45%), gray, red, greenish gray.

Fort Riley 2561' -737'

2544 - 2566 Dolomite (55%), light gray, grayish tan, fine crystalline. Limestone (5%), grayish tan, mudstone, wackestone. Shale (40%), red, gray, green.

- 2566 - 2582 Dolomite (45%), light gray, grayish tan, fine crystalline. Limestone (10%), grayish tan, mudstone, wackestone. Shale (45%), red, gray, green.
- 2582 - 2602 Dolomite (30%), light gray, grayish tan, fine crystalline. Limestone (30%), Tan, grayish tan, wackestone, some packstone. Shale (40%), gray, green, red.
- 2602 - 2624 Limestone (40%), light gray, grayish tan, wackestone, mudstone. Dolomite (30%), tan, grayish tan, fine crystalline. Shale (30%), gray, green, red.
- 2624 - 2646 Dolomite (40%), light gray, grayish tan, fine crystalline. Limestone (20%), light gray, mudstone, wackestone. Shale (30%), gray, green, red.
- 2646 - 2670 Dolomite (45%), light gray, grayish tan, fine crystalline. Limestone (25%), light gray, mudstone, wackestone. Shale (30%), gray, green, red.
- 2670 - 2686 Dolomite (40%), light gray, grayish tan, fine crystalline. Limestone (20%), light gray, mudstone, wackestone. Shale (40%), gray, green, red.
- 2686 - 2704 Limestone (40%), light gray, mudstone, wackestone. Dolomite (20%), light gray, grayish tan, fine crystalline. Shale (40%), gray, greenish gray, red.

Wreford 2710' -886'

- 2704 - 2728 Shale (50%), gray, greenish gray, red. Limestone (35%), gray, grayish tan, mudstone, wackestone. Dolomite (15%), gray, grayish brown, fine crystalline.
- 2728 - 2744 Shale (40%), gray, greenish gray, red. Limestone (40%), gray, grayish tan, mudstone, some wackestone. Dolomite (20%), gray, grayish tan, fine crystalline.

Council Grove 2750' -926'

- 2744- 2764 Shale (40%), gray, greenish gray, red. Limestone (45%), tan, grayish tan, mudstone, wackestone, some buff, fine grained oolitic packstone with oomoldic porosity.
- 2764 - 2782 Shale (50%), gray, greenish gray, red. Limestone (40%), tan, grayish tan, mudstone, wackestone. Dolomite (10%), tan, grayish tan, fine crystalline.
- 2782 - 2795 Shale (45%), gray, green, red. Limestone (45%), tan, grayish tan, mudstone, wackestone. Dolomite (10%), tan, grayish tan, fine crystalline.
- 2795 - 2820 Shale (40%), gray, green, red. Limestone (35%), tan, grayish tan, mudstone, wackestone. Dolomite (25%), tan, grayish tan, fine crystalline.
- 2820 - 2842 Shale (65%), gray, green, red. Limestone (20%), tan, grayish tan, mudstone, wackestone. Dolomite (15%), tan, grayish tan, fine crystalline.

- 2842 - 2864 Shale (60%), gray, green, red. Limestone (20%), tan, grayish tan, mudstone, wackestone. Dolomite (20%), tan, grayish tan, fine crystalline.
- 2864 - 2882 Shale (50%), gray, green, red. Limestone (25%), tan, grayish tan, mudstone, wackestone. Dolomite (25%), tan, grayish tan, fine crystalline.
- 2882 - 2896 Shale (60%), gray, green, red. Limestone (15%), tan, grayish tan, mudstone, wackestone. Dolomite (25%), tan, grayish tan, fine crystalline.

Cottonwood 2904' -1080

- 2896 - 2925 Shale (55%), gray, green, red. Limestone (15%), tan, grayish tan, mudstone. Dolomite (30%), tan, grayish tan, fine crystalline.
- 2925 - 2940 Shale (70%), gray, green, red. Limestone (10%), tan, grayish tan, mudstone. Dolomite (20%), tan, grayish tan, fine crystalline.
- 2940 - 2960 Shale (70%), gray, green, red. Limestone (10%), tan, grayish tan, mudstone. Dolomite (20%), tan, grayish tan, fine crystalline.
- 2960 - 2976 Shale (75%), gray, green, red. Limestone (10%), tan, grayish tan, mudstone. Dolomite (15%), tan, grayish tan, fine crystalline.
- 2976 - 2996 Shale (50%), gray, green, red. Limestone (10%), tan, grayish tan, mudstone, wackestone. Dolomite (40%), tan, grayish tan, fine crystalline.

Foraker 3009' -1185'

- 2996 - 3018 Shale (65%), gray, green, red. Limestone (5%), tan, grayish tan, mudstone, some wackestone. Dolomite (30%), tan, grayish tan, fine crystalline.
- 3018 - 3042 Shale (70%), gray, green, red. Limestone (10%), tan, grayish tan, mudstone. Dolomite (20%), grayish tan, fine crystalline.
- 3042 - 3062 Shale (80%), gray, green, red. Limestone (5%), tan, grayish tan, mudstone. Dolomite (15%), tan, grayish tan, fine crystalline.

Admire 3072' -1248'

- 3062 - 3080 Shale (80%), gray, green, red. Limestone (trace), tan, grayish tan, tan, mudstone. Dolomite (20%), tan, grayish tan, fine crystalline.
- 3080 - 3096 Shale (75%), gray, green, red. Limestone (trace), tan, grayish tan, mudstone. Dolomite (25%), tan, grayish tan, fine crystalline.
- 3096 - 3113 Shale (80%), gray, green, red. Dolomite (20%), tan, grayish tan, fine crystalline. Limestone (trace), tan, grayish tan, mudstone.

- 3113 - 3142 Shale (80%), gray, green, red. Dolomite (20%), tan, grayish tan, fine crystalline. Limestone (trace), tan, grayish tan, mudstone, wackestone.
- 3142 - 3158 Shale (60%), gray, green, red. Dolomite (35%), tan, grayish tan, fine crystalline. Limestone (5%), tan, grayish tan, mudstone, wackestone.
- 3158 - 3178 Shale (80%), gray, green, red. Dolomite (20%), tan, grayish tan, fine crystalline. Limestone (trace), gray, grayish tan, mudstone.
- 3178 - 3198 Shale (75%), gray, green, red. Dolomite (20%), tan, grayish tan, fine crystalline. Limestone (5%), grayish tan, tan, mudstone.
- 3198 - 3206 Shale (50%), gray, green, red. Dolomite (25%), tan, grayish tan, fine crystalline. Limestone (25%), grayish tan, mudstone, wackestone.

Onaga 3210' -1386'

- 3206 - 3228 No Sample.

Wabaunsee 3253' 1429'

- 3228 - 3264 Shale (60%), gray, green, red. Dolomite (20%), tan, grayish tan, fine crystalline. Limestone (20%), grayish tan, tan, wackestone, mudstone.
- 3264 - 3281 Shale (50%), gray, green, red. Dolomite (35%), tan, grayish tan, fine crystalline. Limestone (15%), grayish tan, tan, wackestone, mudstone.
- 3281 - 3298 Shale (85%), gray, green, red. Dolomite (15%), tan, grayish tan, fine crystalline. Limestone (trace), tan, grayish tan, mudstone.
- 3298 - 3324 Shale (80%), gray, green, red. Dolomite (15%), tan, grayish tan, fine crystalline. Limestone (5%), tan, grayish tan, mudstone, wackestone.

Root Shale 3335' -1511'

- 3324 - 3338 Shale (75%), gray, green, red. Dolomite (20%), tan, grayish tan, fine crystalline. Limestone (5%), tan, grayish tan, mudstone, wackestone.
- 3338 - 3358 Shale (85%), gray, green, red. Dolomite (15%), tan, grayish tan, fine crystalline. Limestone (trace), tan, grayish tan, mudstone, wackestone.
- 3358 - 3380 Shale (85%), gray, green, red. Dolomite (15%), tan, grayish tan, fine crystalline. Limestone (trace), tan, grayish tan, mudstone, wackestone.

Stotler 3396' -1572'

- 3380 - 3408 Shale (60%), gray, green, red. Dolomite (20%), tan, grayish tan, fine crystalline. Limestone (20%), tan, grayish tan, mudstone, some wackestone.

- 3408 - 3426 Shale (85%), gray, green, red. Dolomite (15%), tan, grayish tan, fine crystalline. Limestone (trace), tan, grayish tan, mudstone, wackestone. Start 10-foot sample interval 3440'-3450' drillers depth.
- 3426 - 3438 Shale (60%), gray, green, red. Limestone (20%), tan, grayish tan, mudstone, wackestone. Dolomite (20%), tan, grayish tan, fine crystalline.
- 3438 - 3446 Shale (70%), gray, green, red. Limestone (15%), tan, grayish tan, mudstone, wackestone. Dolomite (15%), tan, grayish tan, fine crystalline.
- 3446 - 3454 Shale (70%), gray, green, red. Limestone (20%), tan, grayish tan, mudstone, wackestone. Dolomite (10%), tan, grayish tan, fine crystalline.
- 3454 - 3464 Shale (80%), gray, green, red. Limestone (15%), tan, grayish tan, mudstone, wackestone. Dolomite (5%), tan, grayish tan, fine crystalline.
- 3464 - 3476 Shale (75%), gray, green, red. Limestone (20%), tan, grayish tan, mudstone, wackestone. Dolomite (5%), tan, grayish tan, fine crystalline.
- 3476 - 3488 Shale (80%), gray, green, red, trace black. Limestone (15%), tan, grayish tan, mudstone, wackestone. Dolomite (5%), tan, grayish tan, fine crystalline.
- 3488 - 3496 Shale (80%), gray, green, red, trace black. Limestone (20%), tan, grayish tan, mudstone, wackestone. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3496 - 3506 Shale (70%), gray, green, red., trace black. Limestone (30%), tan, grayish tan, wackestone, mudstone. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3506 - 3521 Shale (75%), gray, green, red. Limestone (25%), tan, grayish tan, wackestone, mudstone. Dolomite (trace), tan, grayish tan, fine crystalline. Started displacing hole with "light mud" at 3508'.

Emporia 3522' -1698'

- 3521 - 3524 Shale (80%), gray, green, red. Limestone (20%), tan, grayish tan, wackestone, mudstone. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3524 - 3527 Shale (85%), gray, green, red. Limestone (15%), tan, grayish tan, wackestone, mudstone. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3527 - 3537 Shale (90%), gray, green, red. Limestone (10%), tan, grayish tan, wackestone, mudstone. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3537 - 3557 Shale (85%), gray, green, red. Limestone (10%), tan, grayish tan, wackestone, mudstone. Dolomite (5%), tan, grayish tan, fine crystalline. Hole sweep sample.
- 3557 - 3570 Shale (90%), gray, green, red. Limestone (5%), tan, grayish tan, wackestone, mudstone. Dolomite (5%), tan, grayish tan, fine crystalline. Hole sweep sample.

- 3570 - 3575 Shale (35%), gray, green, red. Limestone (30%), tan, grayish tan, mudstone, wackestone. Dolomite (35%), tan, grayish tan, fine crystalline.
- 3575 - 3583 Limestone (65%), tan, gray, wackestone, mudstone. Shale (35%), gray, green, red. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3583 - 3598 Limestone (80%), tan, gray, wackestone, mudstone, fusulinids. Shale (20%), gray, green, black. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3598 - 3610 Limestone (90%), tan, grayish tan, wackestone, mudstone. Shale (10%), gray, black, green. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3610 - 3618 Limestone (90%), tan, grayish tan, wackestone, mudstone. Shale (10%), gray, black, green. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3618 - 3621 Limestone (90%), tan, grayish tan, wackestone, mudstone. Shale (10%), gray, black, green. Dolomite (trace), tan, grayish tan, fine crystalline.
- 3621 - 3636 Limestone (80%), tan, grayish tan, wackestone, mudstone. Shale (20%), gray, black, green.
- 3636 - 3647 Limestone (95%), tan, grayish tan, tan, wackestone, mudstone. Shale (5%), black, gray, green. Chert (trace), gray.
- 3647 - 3656 Limestone (90%), tan grayish tan, wackestone, mudstone. Shale (10%), black, gray, green.
- 3656 - 3670 Limestone (95%), tan, grayish tan, wackestone, mudstone. Shale (5%), black, gray, green.
- 3670 - 3675 Limestone (90%), tan, grayish tan, mudstone, wackestone. Shale (10%), gray, black, green.
- 3675 - 3682 Limestone (80%), tan, grayish tan, wackestone, mudstone. Shale (20%), gray, black, green.
- 3682 - 3694 Limestone (80%), tan, grayish tan, wackestone, mudstone. Shale (20%), gray, black, green.
- 3694 - 3701 Limestone (90%), tan, grayish tan, wackestone, mudstone. Shale (10%), gray, black, green.
- 3701 - 3706 Limestone (75%), grayish tan, tan, wackestone, mudstone. Shale (25%), gray, black, green.

Topeka 3713' -1889'

- 3706 - 3714 Limestone (70%), tan, grayish tan, wackestone, mudstone. Shale (15%), gray, black, green.
- 3714 - 3728 Limestone (70%), tan, grayish tan, wackestone, mudstone. Shale (30%), black, gray, green.
- 3728 - 3740 Limestone (75%), tan, grayish tan, wackestone, mudstone. Shale (25%), black, gray, green.
- 3740 - 3748 Limestone (80%), tan, grayish tan, wackestone, mudstone, trace tan oolitic packstone with oomoldic porosity. Shale (20%), gray, black, green.
- 3748 - 3760 Limestone (80%), tan, grayish tan, wackestone, mudstone, some tan medium grained oolitic packstone with oomoldic porosity. Shale (20%), gray, black, green.
- 3760 - 3768 Limestone (70%), tan, grayish tan, wackestone, medium grained oolitic packstone with oomoldic porosity, mudstone. Shale (30%), gray, black, green.
- 3768 - 3786 Limestone (70%), tan, grayish tan, wackestone, medium grained oolitic packstone with oomoldic porosity, mudstone. Shale (30%), gray, black, green.
- 3786 - 3794 Limestone (60%), tan, grayish tan, wackestone, some medium grained oolitic packstone with oomoldic porosity. Shale (40%), gray, black, green.
- 3794 - 3805 Limestone (65%), tan, grayish tan, wackestone, mudstone. Shale (35%), gray, black, green.
- 3805 - 3812 Limestone (50%), tan, grayish tan, wackestone, mudstone. Shale (50%), gray, green, black.
- 3812 - 3823 Limestone (40%), tan, grayish tan, mudstone, wackestone, some fine grained oolitic packstone. Shale (60%), gray, black, green.
- 3823 - 3830 Shale (60%), green, gray, black. Limestone (40%), tan, grayish tan, wackestone, mudstone, trace oolitic packstone with oomoldic porosity.
- 3830 - 3840 Limestone (65%), tan, grayish tan, mudstone, wackestone, some coarse grained packstone. Shale (35%), gray, green, black.
- 3840 - 3850 Limestone (70%), tan, grayish tan, mudstone, wackestone, some coarse grained packstone. Shale (30%), gray, green, black.
- 3850 - 3861 Limestone (60%), tan, grayish tan, wackestone, packstone, mudstone. Shale (40%), gray, green, black.
- 3861 - 3869 Limestone (75%), tan, grayish tan, tan, wackestone, packstone, mudstone. Shale (25%), gray, green, black.

3869 - 3879 Shale (65%), gray, green, black. Limestone (35%), tan, grayish tan, wackestone, mudstone.

3879 - 3890 Shale (55%), gray, green, black. Limestone (45%), tan, grayish tan, wackestone, mudstone.

Lecompton 3896' -2072'

3890 - 3901 Shale (50%), gray, green, black. Limestone (50%), tan, grayish tan, wackestone, mudstone.

3901 - 3912 Shale (55%), gray, green, black. Limestone (45%), tan, grayish tan, coarse grained packstone, wackestone, mudstone.

3912 - 3920 Limestone (55%), tan, wackestone, packstone, trace oolitic packstone with oomoldic porosity. Shale (45%), black, green, gray.

3920 - 3929 Limestone (50%), tan, grayish tan, wackestone, mudstone, trace oolitic packstone with oomoldic porosity. Shale (50%), black, gray, green.

3929 - 3939 Shale (50%), gray, green, black. Limestone (50%), tan, grayish tan, wackestone, mudstone.

3939 - 3954 Shale (80%), black, gray, green, calcareous. Limestone (20%), tan, grayish tan, wackestone, mudstone.

3954 - 3966 Shale (80%), black, calcareous, gray, green. Limestone (20%), tan, grayish tan, wackestone, mudstone.

3966 - 3971 Shale (65%), black, calcareous, gray, green. Limestone (35%), tan, grayish tan, wackestone, mudstone.

3971 - 3977 Shale (55%), black, calcareous, gray, green. Limestone (50%), tan, grayish tan, wackestone, mudstone, some coarse grained packstone.

Queen Hill 3985' -2161'

3977 - 3988 Shale (50%), black, calcareous, gray, green. Limestone (50%), tan, grayish tan, wackestone, mudstone, some coarse grained packstone.

3988 - 3994 Shale (60%), black, gray, green. Limestone (40%), tan, grayish tan, wackestone, packstone.

3994 - 4002 Shale (55%), black, calcareous, gray, green. Limestone (45%), tan, wackestone, mudstone, some coarse grained packstone.

4002 - 4010 Shale (65%), black, gray, green. Limestone (35%), tan, grayish tan, wackestone, mudstone.

- 4010 - 4014 Shale (60%), black, gray, green. Limestone (40%), tan, mudstone, wackestone. Sandstone (trace), light gray, fine grained.
- 4014 - 4018 Shale (55%), black, gray, green. Limestone (45%), tan, mudstone, wackestone. Sandstone (trace), light gray, fine grained.
- 4018 - 4024 Shale (45%), black, gray, green. Limestone (50%), grayish tan, tan, mudstone, some wackestone. Sandstone (5%), light gray, fine grained, micaceous.
- 4024 - 4038 Shale (50%), black, gray, green. Limestone (45%), grayish tan, mudstone, wackestone. Sandstone (5%), light gray, fine grained, micaceous, clay filled matrix.
- 4038 - 4050 Shale (55%), black, gray, green. Limestone (40%), tan, grayish tan, mudstone, wackestone. Sandstone (5%), light gray, fine grained, micaceous, mostly clay filled, some inter granular porosity.
- 4050 - 4054 Shale (35%), black, gray, green. Limestone (40%), grayish tan, tan, mudstone, wackestone. Sandstone (25%), light gray, micaceous, clay filled matrix, some sandstone with inter granular porosity. No show.
- 4054 - 4070 Sandstone (40%), light gray, fine grained, micaceous, some sand with clay filled matrix most sand with good inter granular porosity. No show. Shale (40%), gray, black, green. Limestone (20%), grayish tan, mudstone, some wackestone.
- 4070 - 4096 Sandstone (55%), light gray, fine grained, micaceous, most sandstone has clay filled matrix, some sandstone with inter granular porosity. No show. Shale (30%), black, gray, green. Limestone (15%), grayish tan, mudstone, some wackestone.
- 4096 - 4108 Sandstone (70%), light gray, fine grained, micaceous, some sand with clay filled matrix some sand with good inter granular porosity. No show of oil. Shale (30%), gray, black, green. Limestone (trace), grayish tan, mudstone.
- 4108 - 4124 Sandstone (75%), light gray, fine grained, micaceous, some sand with clay filled matrix, some sand with good inter granular porosity. Shale (25%), gray, black, green. Limestone (trace), grayish tan, mudstone. Mud Gas 10 Units, 4108'-4112'; 45 Units 4112'-4127'.
- 4124 - 4138 Sandstone (75%), light gray, fine grained, micaceous, some sand with good inter granular porosity. Shale (25%), black, gray. Mud Gas 45 Units, 4112'-4127'
- 4138 - 4144 Sandstone (85%), light gray, fine grained, micaceous, some sand with good inter granular porosity. Shale (15%), gray, black. Mud Gas 7 Units, 4138'-4140'.

Drill-Stem Test No. 1 4052'-4144' Pennsylvanian Lecompton
30-60-60-120

I.O. Strong Blow, Bottom Of Bucket In One Minute.
F.O. Strong Blow, Bottom Of Bucket in 1.5 Minutes.

Recovery: 240' Muddy Water, 2400' Saltwater. Rw 0.095 @ 71.5° F.

Sampler: 4000 ML Water @ 125 psi, Rw 0.92 @ 91.2° F.

Hydrostatic Pressures 1942-1934 psi
Flow Pressures 346-728:850-1243 psi
Shut-In Pressures 1532-1539 psi
Bottom Hole Temperature 124° F

Trilobite Testing LLC Inc., Paul Simpson, Tester

Note: Drawworks clutch broke when pulling DST out of hole. Rig was not operating for three days while repairs were made. Drilling mud jelled. Added water immediately but sample cuttings would not dropout in first five sample intervals after drilling resumed. Chlorides were very high, in excess of 40, 000 ppm.

4144 - 4149 No Sample.

4149 - 4154 Shale (65%), gray, black. Sandstone (35%), light gray, fine grained, micaceous, some sandstone with inter granular porosity.

Oread 4160' -2336'

4154 - 4166 Shale (65%), gray, black, green. Sandstone (35%), light gray, fine grained, inter granular porosity, micaceous.

4166 - 4176 Shale (50%), gray, black, green. Sandstone (50%), light gray, fine grained, some inter granular porosity. Limestone (trace-5%), tan, light brown, mudstone.

4176-4186 Shale (70%), black, gray, green. Sandstone (30%), light gray, fine grained, some inter granular porosity, micaceous, some sandstone with black carbonaceous partings. Limestone (trace), tan, light brown, mudstone.

Heebner 4193' -2169'

4186 - 4199 Shale (60%), black, gray, green. Limestone (25%), tan, brown, mudstone. Sandstone (15%), light gray, fine grained, inter granular porosity, micaceous. Mud Gas 25 Units, 4193'-4196'.

Toronto 4200' -2376

- 4199 - 4206 Shale (50%), black, gray. Limestone (40%), tan, brown, grayish brown, mudstone, medium grained packstone, wackestone. Sandstone (10%), light gray, fine grained, inter granular porosity, micaceous.
- 4206 - 4217 Limestone (65%), tan, gray, light brown, mudstone, wackestone, crinoids. Shale (30%), gray, green, black. Sandstone (5%), light gray, fine grained, micaceous.
- 4217 - 4227 Limestone (75%), tan, gray, light brown, mudstone, wackestone. Shale (25%), gray, black. Sandstone (trace), light gray, fine grained.
- 4227 - 4236 Limestone (60%), tan, gray, light brown, mudstone, wackestone. Shale (40%), gray, black. Sandstone (trace), light gray, fine grained, micaceous. Mud Gas 5 Units, 4229'-4231'.
- 4236 - 4246 Limestone (75%), tan, brown, grayish brown, mudstone, wackestone. Shale (25%), gray, black. Sandstone (trace), light gray, fine grained, micaceous.
- Douglas 4251' -2427'**
- 4246 - 4252 Limestone (60%), tan, brown, grayish brown, mudstone, wackestone. Shale (40%), gray, black, micaceous. Sandstone (trace-5%), light gray, fine grained, micaceous.
- 4252 - 4259 Limestone (80%), tan, grayish tan, light brown, mudstone, wackestone, fossiliferous. Shale (20%), gray, black.
- 4259 - 4270 Limestone (85%), tan, grayish tan, light brown, mudstone, wackestone, fossiliferous, trace vuggy and pin point porosity. Shale (15%), gray, black. Mud Gas 5 Units, 4267'-4270'.
- 4270 - 4276 Limestone (90%), tan, grayish tan, light brown, wackestone, coarse grained packstone, mudstone, fossiliferous. Shale (10%), black, gray.
- 4276 -4283 Limestone (90%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone, fossiliferous. Shale (15%), gray, black. Sandstone (trace), light gray. fine grained.
- 4283 - 4294 Limestone (85%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone, fossiliferous. Shale (10%), gray, black. Sandstone (5%), light gray, fine grained, micaceous. Mud Gas 18 Units, 4290'-4307'.
- 4294 - 4314 Limestone (90%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone, fossiliferous. Shale (10%), black, gray. Sandstone (trace), light gray, fine grained.

- 4314 - 4324 Limestone (90%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone, fossiliferous. Shale (10%), black, gray. Sandstone (trace), light gray, fine grained, micaceous.
- 4324 - 4334 Limestone (85%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone, fossiliferous. Shale (10%), black, gray. Sandstone (5%), light gray, fine grained, micaceous.
- 4334 - 4346 Limestone (95%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone, fossiliferous. Shale (5%), black, gray. Sandstone (trace), light gray, fine grained, micaceous.
- 4346 - 4354 Limestone (75%), tan, grayish tan, light brown, coarse grained, packstone, wackestone, mudstone, fossiliferous. Shale (20%), gray, black. Sandstone (5%), light gray, fine grained, micaceous.
- 4354 - 4362 Limestone (40%), tan, grayish tan, light brown, mudstone, wackestone, some coarse grained packstone, fossiliferous. Shale (50%), gray, black. Sandstone (10%), light gray, fine grained, micaceous, carbonaceous partings.
- 4362 - 4372 Limestone (70%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone. Shale (25%), gray, black. Sandstone (5%), light gray, fine grained, micaceous.

Lansing 4384' -2560'

- 4372 - 4386 Limestone (65%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone. Shale (30%), black, gray. Sandstone (5%), light gray, fine grained, micaceous, carbonaceous.
- 4386 - 4398 Limestone (80%), tan, grayish tan, light brown, coarse grained packstone, wackestone, mudstone, fossiliferous. Shale (20%), black, gray. Sandstone (trace), light gray, fine grained, micaceous, carbonaceous.
- 4398 - 4407 Limestone (90%), brown, grayish tan, tan, wackestone, mudstone, some coarse grained packstone. Shale (10%), black, gray. Sandstone (trace), light gray, fine grained, micaceous, carbonaceous.
- 4407 - 4412 Limestone (90%), tan, grayish tan, grayish brown, wackestone, mudstone, coarse grained packstone. Shale (10%), black, gray.
- 4412 - 4417 Limestone (85%), tan, grayish tan, grayish brown, wackestone, mudstone, some coarse grained packstone, fossiliferous. Shale (15%), black, gray.
- 4417 - 4423 Limestone (95%), tan, grayish tan, grayish brown, coarse grained packstone, wackestone, mudstone, fossiliferous. Shale (5%), black, gray.

- 4432 - 4448 Limestone (95%), tan, grayish tan, coarse grained packstone, wackestone, mudstone. Shale (5%), gray, black.
- 4448 - 4466 Limestone (95%), tan, grayish tan, coarse grained packstone, wackestone, mudstone. Shale (5%), gray, black.
- 4466 - 4473 Limestone (100%), tan, grayish tan, coarse grained packstone, wackestone, mudstone, trace vuggy porosity. Shale (trace), black, gray.
- 4473 - 4484 Limestone (100%), tan, grayish tan, coarse grained packstone, wackestone, trace oolitic packstone with oomoldic porosity, trace vuggy porosity. Shale (trace), gray, black.
- 4484 - 4494 Limestone (100%), tan, grayish tan, coarse grained packstone, wackestone, mudstone, some vuggy porosity. Shale (trace), black, gray.
- 4494 - 4504 Limestone (100%), tan, grayish tan, coarse grained packstone, wackestone, mudstone, some vuggy porosity. Shale (trace), black. Chert (trace), gray.
- 4504 - 4512 Limestone (100%), tan, grayish tan, coarse grained packstone, wackestone, mudstone, some vuggy porosity. Shale (trace), black, gray.
- 4512 - 4516 No Sample.
- 4516 - 4524 No Sample. Displaced mud in hole with new mud at 4519'.
- 4524 - 4534 Limestone (90%), tan, grayish tan, coarse grained packstone, wackestone, mudstone. Shale (10%), gray, black.
- 4534 - 4550 Limestone (80%), tan, grayish tan, coarse grained packstone, wackestone, mudstone. Shale (20%), gray, black. Samples going to s--t.
- 4550 - 4562 Limestone (90%), tan, grayish tan, wackestone, coarse grained packstone, mudstone. Shale (10%), gray, black.
- 4562 - 4576 Limestone (80%), tan, grayish tan, wackestone, packstone, mudstone. Shale (20%), gray, black. Dolomite (trace), tan, fine crystalline.
- 4576 - 4583 Limestone (70%), tan, grayish tan, wackestone, coarse grained packstone. Shale (30%), gray, black, greenish gray.
- 4583 - 4594 Limestone (50%), tan, grayish tan, wackestone, mudstone, some packstone. Shale (50%), gray, greenish gray, black, pyritic.
- 4594 - 4600 Limestone (50%), tan, grayish tan, wackestone, mudstone, some packstone. Shale (50%), gray, greenish gray, black, pyritic.

- 4600 - 4605 Limestone (60%), tan, grayish tan, mudstone, wackestone. Shale (40%), black, gray, greenish gray, pyritic.
- 4605 - 4620 Limestone (70%), tan, grayish tan, mudstone, wackestone. Shale (30%), black, gray, greenish gray, pyritic.
- 4620 - 4633 Limestone (75%), tan, grayish tan, wackestone, oolitic packstone with oomoldic porosity, mudstone. Shale (25%), black, gray, greenish gray, pyritic.
- 4633 - 4647 Limestone (70%), tan, grayish tan, wackestone, oolitic packstone with oomoldic and vuggy porosity, mudstone. Shale (30%), black, gray, greenish gray.
- 4647 - 4657 Limestone (80%), tan, grayish tan, wackestone, some oolitic packstone with oomoldic porosity. Shale (20%), black, gray, greenish gray.
- 4657 - 4664 Limestone (70%), tan, grayish tan, wackestone, mudstone some oolitic packstone with oomoldic porosity. Shale (30%), black, gray, greenish gray.
- 4664 - 4674 Limestone (75%), tan, grayish tan, wackestone, mudstone, some oolitic packstone with oomoldic porosity. Shale (25%), black, gray, greenish gray.
- 4674 - 4678 Limestone (65%), tan, grayish tan, wackestone, mudstone, trace oolitic packstone with oomoldic porosity. Shale (35%), black, gray, greenish gray. It appears that samples from 4633' to 4674' are bagged samples. These samples were drilled and caught by Morning Tour from 1-5 A.M.. The sample catcher caught a bucket full of samples with a thin oolite interval and bagged the sample for the next 40 feet.
- 4678 - 4688 Limestone (80%), tan, grayish tan, wackestone, mudstone. Shale (20%), gray, black, greenish gray.
- 4688 - 4706 Limestone (80%), tan, grayish tan, wackestone, mudstone, trace tan oolitic packstone with oomoldic porosity. Shale (20%), black, gray, greenish gray.
- 4706 - 4715 Limestone (90%), tan, grayish tan, wackestone, mudstone. Shale (10%), black, gray, greenish gray, pyritic.
- 4715 - 4722 Shale (50%), black, gray, greenish gray. Limestone (50%), tan, grayish tan, wackestone, mudstone.
- 4722 - 4726 Shale (60%), black, gray, greenish gray, green. Limestone (40%), tan, grayish tan, wackestone, mudstone.
- Cherryvale 4734' -2910', Dennis 4736' -2912'**
- 4726 - 4743 Shale (65%), black, gray, greenish gray, green. Limestone (35%), tan, grayish tan, mudstone, wackestone.

- 4743 - 4758 Limestone (65%), tan, grayish tan, wackestone, mudstone, some oolitic packstone with oomoldic porosity. Shale (35%), gray, black, greenish gray, green.
- 4758 - 4769 Limestone (60%), tan, grayish tan, brown, wackestone, mudstone, oolitic packstone with oomoldic porosity. Shale (40%), black, gray, greenish gray, green, pyritic.
- 4769 - 4779 Shale (55%), black, gray, greenish gray, green. Limestone (45%), brown, tan, grayish tan, mudstone, wackestone.
- 4779 - 4788 Shale (65%), black, gray, greenish gray, green. Limestone (35%), brown, tan, grayish tan, mudstone, wackestone, some oolitic packstone with oomoldic porosity.

Stark 4793' -2669', Swope 4796' -2972

- 4788 - 4799 Shale (80%), black, gray, greenish gray, green. Limestone (20%), tan, brown, grayish tan, mudstone, wackestone, trace brown oolitic packstone with oomoldic porosity, fossiliferous. Mud Gas 65 Units, 4791'-4796'
- 4799 - 4808 Shale (85%), black, gray, greenish gray, green. Limestone (15%), tan, brown, grayish tan, mudstone, wackestone, trace brown oolitic packstone with oomoldic porosity. Mud Gas 27 Units, 4807'-4815'
- 4808 - 4822 Shale (50%), black, gray, greenish gray, green. Limestone (50%), tan, brown, grayish brown, mudstone, wackestone, trace tan oolitic packstone with oomoldic porosity.
- 4822 - 4830 Limestone (55%), tan, grayish brown, brown, mudstone, wackestone. Shale (45%), black, gray, greenish gray, green.

Hushpuckney 4830' -3006', Hertha 4834' - 3010'

- 4830 - 4842 Limestone (70%), tan, grayish tan, brown, mudstone, wackestone. Shale (50%), black, gray, green.
- 4842 - 4848 Limestone (65%), tan, grayish tan, brown, mudstone, wackestone. Shale (35%), black, gray, greenish gray, green.
- 4848 - 4861 Limestone (60%), tan, grayish tan, brown, mudstone, wackestone. Shale (40%), black, gray, greenish gray, green.
- 4861 - 4869 Shale (70%), black, green, gray, greenish gray. Limestone (30%), tan, grayish tan, brown, mudstone, wackestone.
- 4869 - 4876 Shale (65%), black, green, gray, greenish gray. Limestone (35%), tan, grayish tan, brown, mudstone, wackestone.

- 4876 - 4888 Shale (80%), black, green, gray, grayish green. Limestone (20%), tan, grayish tan, mudstone, wackestone.
- 4888 - 4901 Shale (80%), black, green, gray, grayish green. Limestone (20%), tan, grayish tan, brown, mudstone, wackestone.
- 4901 - 4911 Shale (65%), black, green, gray, grayish green, pyritic. Limestone (35%), grayish tan, tan, brown, wackestone, mudstone.
- 4911 - 4916 Shale (60%), black, green, gray, grayish green, pyritic. Limestone (40%), grayish tan, tan, brown, wackestone, mudstone.
- 4916 - 4928 Shale (65%), black, green, gray, grayish green. Limestone (35%), grayish tan, tan, brown, wackestone, mudstone.
- 4928 - 4938 Shale (50%), black green, gray, grayish green. Limestone (50%), grayish tan, tan, brown, wackestone, mudstone.

Marmaton 4943' -3119'

- 4938 - 4949 Shale (50%), black, green, gray, grayish green. Limestone (50%), grayish tan, tan, brown, wackestone, mudstone.
- 4949 - 4959 Limestone (75%), tan, buff, grayish tan, brown, wackestone, mudstone. Shale (25%), black, gray, green, greenish gray. Chert (trace), tan, light gray.
- 4959 - 4966 Limestone (90%), tan, buff, grayish tan, wackestone, mudstone. Shale (10%), black, gray, green, greenish gray.
- 4966 - 4971 Limestone (90%), tan, buff, grayish tan, wackestone, mudstone, trace packstone. Shale (10%), gray, green, black, greenish gray. Chert (trace), tan.

Bandera 4974' -3150', Pawnee 4977' -3153'

- 4971 - 4984 Limestone (80%), tan, buff, grayish tan, wackestone, packstone, mudstone, trace vuggy porosity. Shale (20%), black, green, gray, greenish gray. Chert (trace), tan, gray. Mud Gas 20 Units, 4976'-4978'
- 4984 - 4998 Limestone (90%), tan, buff, grayish tan, wackestone, packstone, mudstone, trace vuggy porosity. Shale (10%), black, gray, green. Mud Gas 10 Units, 4985'-4990'
- 4998 - 5003 Limestone (90%), tan, buff, grayish tan, wackestone, packstone, mudstone, trace vuggy porosity. Shale (10%), black, gray, green.

Labette 5007' -3183', Fort Scott 5009' -3185'

5003 - 5012 Limestone (80%), tan, buff, grayish tan, wackestone, packstone, mudstone, trace vuggy porosity. Shale (20%), black, gray, greenish gray. Mud Gas 35 Units, 5007'-5009', 95 Units, 5010-'5018'

5012 - 5021 Limestone (70%), tan, buff, grayish tan, wackestone, packstone, mudstone, some vuggy porosity, fossiliferous. Shale (30%), black, gray, greenish gray.

Cherokee 5022' -3198'

5021 - 5028 Limestone (60%), tan, buff, grayish tan, wackestone, mudstone, some packstone, trace vuggy porosity. Shale (40%), black, gray, grayish green. Mud Gas 25 Units, 5022'-5025'

Drill-Stem Test No. 2 5004'-5028' Pennsylvanian Fort Scott.
30-60-60-120

I.O. Strong Blow, Bottom Of Bucket In 30 Seconds. Gas To Surface In 30 Minutes Of initial Shut-In.

F.O. Gas To Surface.

Gas Volume:	Time	Ins Water	Orifice Size	MCF/D
Final Open	10 Min	14	3/8"	13.4
	20 Min	24	1/2"	30.7
	30 Min	20	1/2"	28.0
	40 Min	20	1/2"	28.0
	50 Min	20	1/2"	28.0
	60 Min	20	1/2"	28.0

Recovery: 30' Slightly gas Cut Mud. 20% Gas, 80% Mud.

Sampler: 4000 ML Mud No Pressure Recorded.

Hydrostatic Pressures 2447-2437 psi
Flow Pressures 20-20:20-20 psi
Shut-In Pressures 548-1703 psi
Bottom Hole Temperature 115° F

Trilobite Testing LLC Inc., Robert Collins, Tester

5028 - 5036 Limestone (40%), tan, grayish tan, wackestone, mudstone. Shale (60%), black, gray, greenish gray, gray.

5036 - 5050 Shale (65%), black, gray, greenish gray. Limestone (35%), grayish tan, tan, mudstone, wackestone.

5050 - 5055 Shale (55%), black, gray, greenish gray. Limestone (45%), grayish tan, tan, light brown, wackestone, mudstone.

- 5055 - 5067 Limestone (70%), grayish tan, light brown, tan, mudstone, wackestone. Shale (30%), gray, black, green, greenish gray, pyritic.
- 5067 - 5074 Limestone (80%), grayish tan, light brown, tan, wackestone, mudstone. Shale (20%), black, gray, green, greenish gray.
- 5074 - 5081 Limestone (65%), grayish tan, light brown, tan, wackestone, mudstone. Shale (35%), black, gray, green, greenish gray, trace green waxy shale.

Spergen 5088' -3264'

- 5081 - 5090 Limestone (70%), grayish tan, light brown, tan, wackestone, mudstone, some white medium grained packstone. Shale (30%), black, gray, greenish gray, green.
- 5090 - 5102 Limestone (80%), grayish tan, light brown, tan, wackestone, mudstone, white, tan, medium-coarse grained packstone, wackestone, trace vuggy porosity, trace limestone with dark brown oil stain, dull yellow fluorescence, delayed cut with fair residual ring. Shale (20%), black, gray, greenish gray, green. Circulated sample.
- 5102 - 5113 Limestone (90%), white, tan, grayish tan, wackestone, medium-coarse grained packstone, trace vuggy and pin point porosity, few pieces with brown oil stain, dull yellow fluorescence, delayed cut with fair residual ring. Shale (10%), black, gray, greenish gray, green. Circulated sample. Mud Gas 45 Units, 5107'-5110'.
- 5113 - 5122 Limestone (85%), white, grayish tan, wackestone, medium-coarse grained packstone, trace limestone with vuggy porosity, few pieces with brown oil stain, dull yellow fluorescence, delayed cut, with fair residual ring. Shale (15%), black, gray, greenish gray.
- 5122 - 5132 Limestone (90%), tan, buff, wackestone, mudstone, some packstone, trace vuggy porosity, few pieces of limestone with brown oil stain, dull yellow fluorescence, delayed cut, with fair residual ring. Shale (10%), black, gray, greenish gray. Mud Gas 65 Units, 5128'-5131'.
- 5132 - 5140 Limestone (90%), grayish tan, buff, tan, wackestone, mudstone, some coarse grained packstone, few pieces of limestone with vuggy porosity, few pieces of limestone with brown oil stain, dull yellow fluorescence, delayed cut, weak residual ring. Shale (10%), black, gray.

Drill-Stem Test No. 3 5095'-5140' Mississippian Spergen.
30-60-60-120

I.O. Strong Blow, Gas To Surface In 10 Minutes.
F.O. Gas To Surface.

Gas Volume:	Time	Ins Water	Orifice Size	MCF/D
Initial Open	15 Min	34	3/4"	82.8

	20 Min	26	3/4"	72.4
	25 Min	18	3/4"	60.2
	30 Min	16	3/4"	56.8
Final Open	10 Min	16	1/4"	6.72
	20 Min	20	1/4"	7.51
	30 Min	18	1/4"	7.12
	40 Min	16	1/4"	6.72
	50 Min	14	1/4"	6.33
	60 Min	12	1/4"	5.86

Recovery: 50' Slightly Gas Cut Mud. 2% Gas, 98% Mud.

Sampler: 4000 ML Mud No Pressure Recorded.

Hydrostatic Pressures 2440-2408 psi
 Flow Pressures 92-61:61-61 psi
 Shut-In Pressures 107-61 psi
 Bottom Hole Temperature 118° F

Trilobite Testing LLC Inc., Robert Collins, Tester

5140 - 5143 Limestone (60%), buff, tan, grayish tan, wackestone, coarse grained packstone, some mudstone. Shale (40%), black, gray greenish gray, red-gray mottled, green, waxy, dark red. Note: This is the first Terra Rossa shale in samples, probably from uphole. Trip sample.

Warsaw 5144' -3320'

5143 - 5152 Limestone (75%), buff, white, tan grayish tan, coarse grained packstone, wackestone, few pieces of limestone with brown oil stain, dull yellow fluorescence, poor cut, with fair residual ring. Dolomite (10%), light gray, fine sucrosic, very fine crystalline. Shale (15%), black, gray, green, dark red.

5152 - 5166 Limestone (85%), buff, white, tan, grayish tan, coarse grained packstone, wackestone, some gray shaly chloritic limestone. Shale (15%), black, gray, green, greenish gray.

5166 - 5174 Limestone (85%), buff, white, tan, grayish tan, coarse grained packstone, wackestone, some gray fine-medium grained packstone. Shale (10%), black, gray, greenish gray, green. Dolomite (5%), light gray, fine sucrosic, very fine crystalline.

5174 - 5179 Limestone (75%), buff, white, tan, grayish tan, coarse grained packstone, wackestone. Dolomite (15%), light gray, fine sucrosic, very fine crystalline. Shale (10%), black, gray.

- 5179 - 5190 Limestone (70%), buff, white, tan, grayish tan, coarse grained packstone, wackestone. Dolomite (15%), light grayish tan, fine sucrosic, fine sucrosic, some dolomite with tan stain, yellow fluorescence, fair cut, good residual ring. Shale (15%), black, gray, green, light gray, greenish gray. Mud Gas 35 Units, 5186'-5195'.
- 5190 - 5201 Limestone (50%), buff, white, tan, grayish tan, coarse grained packstone, wackestone. Dolomite (40%), light grayish tan, fine sucrosic, fine crystalline, some vuggy porosity, some dolomite has tan oil stain, yellow fluorescence, fair cut, good residual ring. Shale (10%), black, gray, light gray, green.
- 5201 - 5212 Dolomite (45%), grayish tan, fine sucrosic, fine crystalline, some dolomite with vuggy porosity, tan oil stain, yellow fluorescence, fair cut, good residual ring. Limestone (45%), buff, white, tan, grayish tan, coarse grained packstone, wackestone. Shale (10%), black, gray, light green. Mud Gas 10 Units, 5209'-5217'.
- 5212 - 5222 Limestone (65%), buff, white, coarse grained packstone, wackestone, some limestone with bright green shale clasts. Dolomite (20%), light grayish tan, fine crystalline, sucrosic, some dolomite has brown oil stain, yellow fluorescence, good cut, good residual ring. Shale (15%), black, gray, light green.
- 5222 - 5236 Limestone (65%), buff, white, tan, coarse grained packstone, wackestone. Dolomite (15%), tan, light grayish tan, fine crystalline, fine sucrosic, some dolomite has brown oil stain, yellow fluorescence, good cut, good residual ring. Shale (20%), black, gray, light gray.
- 5236 - 5248 Limestone (35%), buff, white, tan, coarse grained packstone, wackestone. Limestone (35%), gray, wackestone, medium grained packstone, chloritic. Dolomite (10%), light grayish tan, fine crystalline, fine sucrosic, some dolomite has brown oil stain, yellow fluorescence, good cut, good residual ring. Shale (20%), black, gray, light gray. Chert (trace), gray speckled.
- 5248 - 5256 Limestone (65%), gray, wackestone, fine medium grained packstone, chloritic, fossiliferous. Limestone (20%), buff, white, tan, coarse grained packstone, wackestone. Shale (10%), black, gray, light gray. Dolomite (5%), light grayish tan, fine crystalline, fine sucrosic, some dolomite has brown oil stain, yellow fluorescence, good cut, good residual ring.

Osage 5265' -3441'

- 5256 - 5268 Limestone (65%), gray, wackestone, fine-medium grained packstone, mudstone, chloritic. Limestone (10%), buff, white, tan, coarse grained packstone, wackestone. Shale (15%), black, gray, green, greenish gray. Dolomite (10%), light grayish tan, fine crystalline, fine sucrosic, some dolomite has brown oil stain, yellow fluorescence, fair-good cut, good residual ring. Chert (trace), gray.

- 5268 - 5278 Limestone (65%), gray, wackestone, fine-medium grained packstone, mudstone. Dolomite (20%), grayish tan, fine crystalline, fine sucrosic, trace dolomite with brown oil stain, yellow fluorescence, fair-good cut, good residual ring. Chert (5%), gray, gray-white mottled. Shale (10%), black, gray, greenish gray, green.
- 5278 - 5289 Limestone (60%), gray, wackestone, fine-medium grained packstone, mudstone. Chert (10%), gray, gray-white mottled. Dolomite (25%), light grayish tan, gray, fine crystalline, fine sucrosic, few pieces of dolomite have brown oil stain, yellow fluorescence, good cut, good residual ring.
- 5289 - 5298 Dolomite (60%), gray, grayish tan, fine crystalline, fine sucrosic. Limestone (20%), gray, grayish tan, fine-medium grained packstone, wackestone. Shale (20%), black, gray, light gray. Chert (trace), gray, tan.
- 5298 - 5308 Dolomite (80%), gray, grayish tan, fine crystalline, fine sucrosic, limy. Shale (15%), gray, black, light gray. Chert (5%), gray, grayish tan, mottled.
- 5308 - 5316 Dolomite (75%), gray, grayish tan, fine crystalline, fine sucrosic. Shale (20%), black, gray, green, grayish green. Chert (5%), gray, grayish tan, mottled.
- 5316 - 5328 Dolomite (60%), gray, grayish tan, fine crystalline, fine sucrosic. Shale (35%), black, gray. Chert (5%), gray, tan, gray-white mottled.
- 5328 - 5338 Dolomite (65%), gray, grayish tan, fine crystalline, fine sucrosic. Shale (35%), black, gray. Chert (trace), gray, tan, gray-tan mottled.
- 5338 - 5348 Dolomite (80%), gray, grayish tan, fine crystalline, fine sucrosic, argillaceous. Shale (20%), gray, black. Chert (trace), gray, tan.
- 5348 - 5359 Dolomite (90%), gray, grayish tan, fine crystalline, fine sucrosic, argillaceous. Shale (10%), gray, black. Chert (trace), gray, tan.
- 5359 - 5369 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray, tan.
- 5369 - 5379 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray, tan.
- 5379 - 5388 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray, tan.
- 5388 - 5398 Dolomite (90%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (10%), black, gray.
- 5398 - 5409 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray.

- 5409 - 5418 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray.
- 5418 - 5430 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray.
- 5430 - 5436 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray.
- 5436 - 5447 Dolomite (90%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (10%), black, gray. Chert (trace), gray.
- 5447 - 5457 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray.
- 5457 - 5467 Dolomite (95%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (5%), black, gray. Chert (trace), gray.
- 5467 - 5479 Dolomite (80%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (20%), black, gray. Chert (trace), gray.
- 5479 - 5490 Dolomite (70%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (30%), black, gray. Chert (trace), gray.
- 5490 - 5500 Dolomite (70%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (30%), black, gray. Chert (trace), gray.
- 5500 - 5508 Dolomite (65%), grayish tan, gray, fine crystalline, fine sucrosic. Shale (35%), black, gray. Chert (trace), gray, tan.
- 5508 - 5519 Shale (60%), gray, black, green. Dolomite (35%), gray, grayish tan, fine crystalline, fine sucrosic. Limestone (5%), gray, grayish tan, wackestone. Shale (trace), red ? ?. Mud Gas 15 Units, 5513'-5515'.
- 5519 - 5527 Shale (65%), gray, black, some green, light gray, red, pyritic. Dolomite (35%), gray, grayish tan, fine crystalline, fine sucrosic. Limestone (trace), brown, grayish brown, mudstone.
- 5527 - 5538 Dolomite (60%), gray, grayish tan, fine crystalline, fine sucrosic. Shale (35%), black, gray, green, red, pyritic. Limestone (trace), brown, grayish brown, mudstone.
- 5538 - 5548 Shale (80%), black, gray, greenish gray. Dolomite (20%), gray, grayish tan, fine crystalline, fine sucrosic. Limestone (trace), light brown, tan with red hematitic staining.

- 5548 - 5558 Shale (80%), black, gray, greenish gray. Dolomite (20%), gray, grayish tan, fine crystalline, fine sucrosic.
- 5558 - 5572 Shale (70%), black, gray, greenish gray. Dolomite (20%), gray, grayish tan, fine crystalline. Limestone (10%), brown, gray, mudstone.
- 5572 - 5580 Shale (70%), black, gray, greenish gray. Dolomite (20%), gray, grayish tan, fine crystalline, fine sucrosic. Limestone (10%), brown, gray, mudstone.
- 5580 - 5588 Shale (80%), black, gray, greenish gray. Dolomite (10%), gray, grayish tan, fine crystalline, fine sucrosic. Limestone (10%), brown, gray, mudstone.
- 5588 - 5597 Shale (95%), black, gray, greenish gray. Dolomite (5%), gray, grayish tan, fine crystalline, fine sucrosic. Limestone (trace), brown, gray, mudstone.
- 5597 - 5610 Shale (90%), black, gray, greenish gray, red, red-gray mottled, pyritic. Dolomite (10%), gray, grayish tan, fine crystalline, fine sucrosic. Limestone (trace), tan, mudstone.
- 5610 - 5621 Shale (95%), gray, black, greenish gray, fossiliferous, pyritic. Dolomite (5%), gray, grayish tan, fine crystalline. Limestone (trace), grayish tan, mudstone.
- 5621 - 5632 Shale (90%), gray, black, greenish gray, pyritic. Dolomite (10%), gray, grayish tan, fine crystalline, fine sucrosic.
- 5632 - 5640 Shale (90%), gray, black, greenish gray, pyritic. Limestone (10%), light brown, gray, dark brown, mudstone.

Choteu 5646' -3822'

- 5640 - 5649 Shale (55%), gray, black, greenish gray. Limestone (45%), light gray, buff, mudstone. Chert (trace), light gray. Note: This sample is the top of the Viola type lithology.
- 5649 - 5659 Limestone (90%), light grayish tan, buff, gray, mudstone. Chert (trace-5%) gray, white. Shale (10%), black, gray, green.

Viola 5667' -3843'

- 5659 - 5670 Limestone (100%), light grayish tan, buff, gray, mudstone. Chert (trace), gray, white. Shale (trace), gray, black.
- 5670 - 5681 Limestone (100%), light grayish tan, buff, gray, mudstone. Chert (trace), gray, white, tan.
- 5681 - 5688 Limestone (90%), light grayish brown, grayish tan, buff, gray, mudstone. Shale (10%), gray, black, grayish green.

- 5688 - 5697 Limestone (90%), grayish brown, grayish tan, light gray, mudstone. Shale (10%), gray, black, pyritic. Chert (trace), dark gray.
- 5697 - 5706 Limestone (85%), grayish brown, grayish tan, light gray, mudstone. Shale (15%), gray, black, light gray, pyritic. Chert (trace), dark gray.
- 5706 - 5718 Limestone (70%), grayish brown, grayish tan, light gray, mudstone. Shale (30%), gray, black, light gray, pyritic. Chert (trace), dark gray.
- 5718 - 5730 Limestone (65%), light gray, grayish tan, mudstone. Shale (35%), gray, black, greenish gray, pyritic. Chert (trace), gray, tan, mottled.
- 5730 - 5738 Limestone (70%), light gray, grayish tan, mudstone. Shale (30%), gray, black, greenish gray, pyritic. Chert (trace-5%), tan, gray.
- 5738 - 5749 Limestone (85%), light gray, grayish tan, mudstone. Shale (10%), gray, greenish gray, black, pyritic. Chert (5%), gray, tan, white.
- 5749 - 5761 No Sample. Lost circulation at 5761'.
- 5761- 5768 Shale (50%), black, gray, green. Limestone (25%), light grayish tan, mudstone. Dolomite (25%), tan, grayish tan, fine crystalline, fine sucrosic.
- 5768 - 5781 Shale (50%), black, gray, green. Dolomite (35%), tan, grayish tan, fine crystalline, sucrosic. Limestone (15%), light grayish tan, mudstone.
- 5781 - 5790 Limestone (90%), light brown, tan, grayish tan, mudstone, most of limestone has very fine sucrosic texture but reacts with acid as limestone. Shale (10%), black, gray, green. This may be Simpson.
- 5790 - 5802 Limestone (100%), light brown, tan, grayish tan, mudstone. Dolomite (trace), tan, sucrosic, fine crystalline.
- 5802 - 5814 Limestone (95%), light brown, tan, grayish tan, mudstone. Shale (5%), black, gray, green. Chert (trace), gray, white. Dolomite (trace), tan, sucrosic, fine crystalline.
- 5814 - 5821 Limestone (85%), tan, light brown, grayish tan, mudstone some wackestone. Shale (10%), black, gray, green. Chert (5%), gray, tan, white. Trip sample.
- 5821 - 5826 Limestone (90%), tan, light brown, grayish tan, mudstone, some wackestone. Shale (5%), black, gray, green. Chert (5%), gray, brown, tan.
- 5826 - 5834 Limestone (90%), tan, light brown, grayish tan, mudstone, some wackestone. Shale (5%), black, gray, green. Chert (5%), gray, tan, brown, white.
- 5834 - 5838 Limestone (95%),tan, light brown, grayish tan, mudstone, some wackestone. Shale (5%), gray, black, green. Chert (trace), gray.

5838 - 5842 Limestone (100%), tan, light brown, grayish tan, mudstone, wackestone. Shale (trace), gray, black, green. Chert (trace), gray, tan. Mud Gas 7 Units, 5838'-5840'

5842 - 5848 Limestone (85%), tan, buff, light brown, mudstone, some wackestone. Shale (10%), black, gray, green. Chert (trace-5%), gray, tan.

Simpson Dolomite 5852' -4028'

5848 - 5862 Limestone (50%), gray, tan, mudstone, dolomitic, looks crystalline, granular. Dolomite (30%), tan, brown, fine crystalline, sucrosic. Shale (15%), gray, black, green. Chert (5%), dark brown, brown, gray, tan. Mud Gas 7 Units, 5853'-5870'

5862 - 5880 Dolomite (80%), tan, light brown, fine sucrosic, fine crystalline. No show of oil. Limestone (10%), gray, tan, mudstone, dolomitic, looks crystalline-granular. Chert (5%), brown, gray, tan, trace white tripolitic chert.

5880 - 5892 Dolomite (90%), tan, light grayish tan, fine crystalline, fine sucrosic. Chert (5%), gray, tan, white tripolitic, brown. Shale (5%), gray, black, green. Limestone (trace), tan, mudstone, crystalline texture.

Simpson Shale 5902' -4078'

5892 - 5904 Dolomite (100%) tan, light grayish tan, fine crystalline, fine sucrosic. Chert (trace-5%), white, gray, tan, white tripolitic. Shale (trace), black, gray.

5904 - 5911 Dolomite (100%), tan, light grayish tan, fine crystalline, fine sucrosic. Chert (trace), gray, tan, white tripolitic. Shale (trace), black, gray. Mud Gas 5 Units, 5907'-5910'

5911 - 5926 Dolomite (100%), tan, light grayish tan, gray, crystalline, fine crystalline, sucrosic, some pin point and vuggy porosity. Chert (trace), gray, tan, white tripolitic. Shale (trace), gray, black.

5926 - 5938 Dolomite (100%), tan, light grayish tan, crystalline, fine crystalline, sucrosic, some pin point and vuggy porosity. Chert (trace), gray, white, tripolitic. Shale (trace), gray, green. Sandstone (trace), gray, white, medium grained, some inter granular porosity.

5938 - 5947 Dolomite (90%), tan, light grayish tan, brown, crystalline, fine crystalline, vuggy and inter crystalline porosity. Shale (5%), dark gray, black, gray. Chert (5%), tan, gray, white. Sandstone (trace), gray, medium grained, some inter granular porosity.

5947 - 5955 Dolomite (60%), tan, light grayish tan, brown, crystalline, fine crystalline, trace vuggy and inter crystalline porosity. Shale (40%), dark green, dark gray, gray, black. Sandstone (trace), gray, medium grained, some with inter granular porosity.

- 5955 - 5959 Dolomite (50%), tan, light grayish tan, brown, crystalline, fine crystalline, trace vuggy porosity and inter crystalline porosity. Shale (50%), dark green, dark gray, black. Sandstone (trace), gray, medium grained, some with inter granular porosity.
- 5959 - 5963 Dolomite (50%), tan, light brown, grayish tan, crystalline, fine crystalline, sucrosic, some vuggy and inter crystalline porosity. Shale (50%), dark green, dark gray. Sandstone (trace), gray, medium grained.
- 5963 - 5968 Shale (60%), dark green, dark gray, black, gray. Dolomite (35%), tan, light brown, grayish tan, crystalline, fine crystalline, sucrosic, some vuggy and inter crystalline porosity. Sandstone (95%), gray, medium grained,

Arbuckle 5970' -4146'

- 5968 - 5978 Shale (55%), dark green, waxy, dark gray, black, gray. Dolomite (45%), brown, tan, grayish brown, fine crystalline, fine sucrosic. No show of oil. Sandstone (trace), gray, medium grained, quartzitic.
- 5978 - 5992 Dolomite (60%), brown, tan, grayish brown, crystalline, fine sucrosic, some inter crystalline porosity. Shale (40%), dark green, dark gray. Sandstone (trace), gray, white, medium grained, some with inter granular porosity. Chert (trace), white, gray.
- 5992 - 6008 Dolomite (100%), grayish brown, grayish tan, crystalline, some sucrosic, some vuggy and inter crystalline porosity. Shale (trace), dark green, dark gray. Sandstone (trace), white, medium grained.
- 6008 - 6022 Dolomite (100%), grayish tan, tan, grayish brown, crystalline, some sucrosic, some vuggy and inter crystalline porosity. Shale (trace), dark green, dark gray. Sandstone (trace), white, medium grained.
- 6022 - 6024 Dolomite (100%), grayish tan, tan, crystalline, sucrosic, some vuggy and inter crystalline porosity. Shale (trace), dark green, dark gray. Sandstone (trace), gray, white, medium grained with inter granular porosity. Chert (trace), gray, white.

Total Depth Driller 6024' -4200'.

Total Depth Logger 6022' -4198'.

SUMMARY

The Ensign Operating Co. No. 1-34 Carlisle, SW SW NW Sec 34, T17S, R33W, Comanche County, Kansas was a 6024-foot wildcat well to test the Ordovician Simpson and Arbuckle formations for commercial oil production. The Mississippian Spergen formation was also an exploratory objective for this well.

During the process of drilling the well shows of gas and oil were drill-stem tested in the Pennsylvanian Lecompton and Fort Scott formations. The test of the Lecompton recovered water. The test of the Fort Scott recovered gas at a non commercial rate of 28 MCFD. The Mississippian Spergen formation was also drill-stem tested. This test recovered gas at a rate of 82.8 MCFD in the initial flow period of the test. The gas flow rate had decreased to 5.86 MCFD at the end of the second flow period of the test.

After an examination and evaluation of the lithologic samples, the drill-stem tests and the borehole geophysical logs it was determined that the well did not have potential for commercial oil or gas production. The well was plugged and abandoned on September 25, 1994.