

**OPERATOR**

Company: Murfin Drilling Company  
 Address: 250 N. Water  
 Suite 300  
 Wichita, KS 67202  
 Contact Geologist: Shauna Gunzelman  
 Contact Phone Nbr: 316-267-3241  
 Well Name: Melba #1-34  
 Location: Sec. 34 - T4S - R31W  
 Pool: Sec. 34 - T4S - R31W  
 State: Kansas  
 API: 15-153-21012-0000  
 Field: Wildcat  
 Country: USA



Scale 1:240 Imperial

Well Name: Melba #1-34  
 Surface Location: Sec. 34 - T4S - R31W  
 Bottom Location: API: 15-153-21012-0000  
 License Number: 30606  
 Spud Date: 5/1/2014  
 Region: Rawlins County  
 Drilling Completed: 5/8/2014  
 Surface Coordinates: 660' FSL & 2310' FWL  
 Bottom Hole Coordinates: Ground Elevation: 2935.00ft  
 K.B. Elevation: 2940.00ft  
 Logged Interval: 3640.00ft  
 Total Depth: 4560.00ft  
 Formation: Mississippian  
 Drilling Fluid Type: Chemical/Fresh Water Gel  
 Time: 15:30  
 Time: 15:30  
 To: 4560.00ft

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: Latitude:  
 N/S Co-ord: 660' FSL  
 E/W Co-ord: 2310' FWL

**LOGGED BY**

**Keith Reavis**  
*Consulting Geologist*

Company: Keith Reavis, Inc.  
 Address: 3420 22nd Street  
 Great Bend, KS 67530  
 Phone Nbr: 620-617-4091  
 Logged By: KLG #136  
 Name: Keith Reavis

**CONTRACTOR**

Contractor: Murfin Drilling Company  
 Rig #: 7  
 Rig Type: mud rotary  
 Spud Date: 5/1/2014  
 TD Date: 5/8/2014  
 Rig Release:  
 Time: 15:30  
 Time: 15:30  
 Time:

**ELEVATIONS**

K.B. Elevation: 2940.00ft  
 K.B. to Ground: 5.00ft  
 Ground Elevation: 2935.00ft

**NOTES**

Due to negative drill stem test results and electrical log calculations, it was determined that the Melba #1-34 be plugged and abandoned as a dry test.

Gamma ray and caliper curves were imported into this report from the electrical log suite. Log tops were generally within a couple of feet from tops picked from the drill time. No curves were shifted to provide an exact match, but rather left as recorded in the field.

The samples were saved and will be available for review at the Kansas Geological Survey Well Samples Library in Wichita, KS.

Respectfully submitted,  
 Keith Reavis

**Murfin Drilling Company**  
**daily drilling report**

DATE	7:00 AM DEPTH	REMARKS
05/03/2014		Geologist Keith Reavis on location @ 1130 hrs, 3608 ft, bit trip, out with PDC
05/04/2014	3618	finish bit trip, in with button bit, resume drilling, Howard, Topeka, Lecompton, Oread, Heebner, Lansing, show in Toronto and Lansing warrant DST
05/05/2014	3990	TOH for DST #1, conducting and complete DST #1, successful test, TOH w/tools and TIH w/bit, resume drilling, D, E, F, G
05/06/2014	4040	show in F and G zones warrant test, TOH w/bit, in w/tools, conduct and complete DST #2 - successful test, TIH w/bit, drill H, I, J, shows warrant test, TOH for DST #3
05/07/2014	4148	complete DST #3, successful test, TIH w/bit, resume drilling, BKC, Marmaton, Pawnee
05/08/2014	4395	drilling ahead, Ft. Scott, Cherokee, Mississippian, TD @ 4560, short trip, TOH for logs, going in hole with tools at 2300 hrs
05/09/2014	4560	conduct and complete logging operations at 0300 hrs, geol. off loc 0330 hrs

**Murfin Drilling Company**  
**well comparison sheet**

DRILLING WELL					COMPARISON WELL				
Murfin - Melba #1-34					N. Wood - Erickson #61-4				
660' FSL & 2310' FWL					NE NW NE				
Sec 34 - T4S - R31W					Sec 4 - T5S - R31W				
2940 KB					2946 KB			Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	
Anhydrite	2672	268			2680	266	2		
Topeka	3741	-801	3739	-799	3750	-804	3	5	
Heebner	3906	-966	3908	-968	3916	-970	4	2	
Lansing	3954	-1014	3956	-1016	3966	-1020	6	4	
Stark	4120	-1180	4121	-1181	4134	-1188	8	7	
BKC	4175	-1235	4177	-1237	4182	-1236	1	-1	
Pawnee	4283	-1343	4285	-1345	4297	-1351	8	6	
Cherokee	4368	-1428	4372	-1432	4380	-1434	6	2	
Mississippian	4482	-1542	4491	-1551	nr				
Total Depth	4560	-1620	4563	-1623	4499	-1553	-67	-70	

**Drill Stem Test #1**

**DRILL STEM TEST REPORT**

Murfin Drilling Co., Inc.  
 20 N Water STE#300  
 Wichita, KS 67202  
 ATTN: Keith Reavis

**34-4S-31W Rawlins, KS**  
**Melba #1-34**  
 Job Ticket: 56834  
 Test Start: 2014.05.05 @ 06:21:00

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**GENERAL INFORMATION:**

Formation: Toronto-Lansing  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 08:52:00  
 Time Test Ended: 14:14:00  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66  
 Interval: 3905.00 ft (KB) To 3990.00 ft (KB) (TVD)  
 Reference Elevations: 2940.00 ft (KB)  
 Total Depth: 3990.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 KB to GR/CF: 5.00 ft

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**Serial #: 8874** Inside

Press@RunDepth: 53.57 psig @ 3906.00 ft (KB)  
 Start Date: 2014.05.05  
 Start Time: 06:22:00  
 End Date: 2014.05.05  
 End Time: 14:14:00  
 Capacity: 8000.00 psig  
 Last Calib.: 2014.05.05  
 Time On Btm: 2014.05.05 @ 08:50:30  
 Time Off Btm: 2014.05.05 @ 11:54:00

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**TEST COMMENT:** 30 - IF- 1/4" Blow built to 1"  
 60 - IS- No Return  
 30 - FF- No Blow  
 60 - FS- No Return

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**PRESSURE SUMMARY**

Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1951.31	114.83	Initial Hydro-static
2	16.76	114.47	Open To Flow (1)
31	38.41	115.35	Shut-In(1)
91	1228.68	117.22	End Shut-In(1)
92	44.75	117.00	Open To Flow (2)
121	53.97	118.31	Shut-In(2)
181	1209.92	119.34	End Shut-In(2)
184	1931.98	119.44	Final Hydro-static

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**Recovery**

**Gas Rates**



Length (ft)	Description	Volume (bbl)
10.00	OSM 100M (oil spots)	0.05
60.00	Mud 100M	0.39

### Drill Stem Test #2

	<b>DRILL STEM TEST REPORT</b>	
	Murfin Drilling Co., Inc. 20 N Water STE#300 Wichita, KS 67202 ATTN: Keith Reavis	<b>34-4S-31W Rawlins, KS</b>  <b>Melba #1-34</b> Job Ticket: 56835 <b>DST#: 2</b> Test Start: 2014.05.06 @ 00:50:00

**GENERAL INFORMATION:**

Formation: **LKC "F-G"**  
 Deviated: No Whipstock:                      ft (KB)  
 Time Tool Opened: 03:34:30  
 Time Test Ended: 08:37:00

Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66

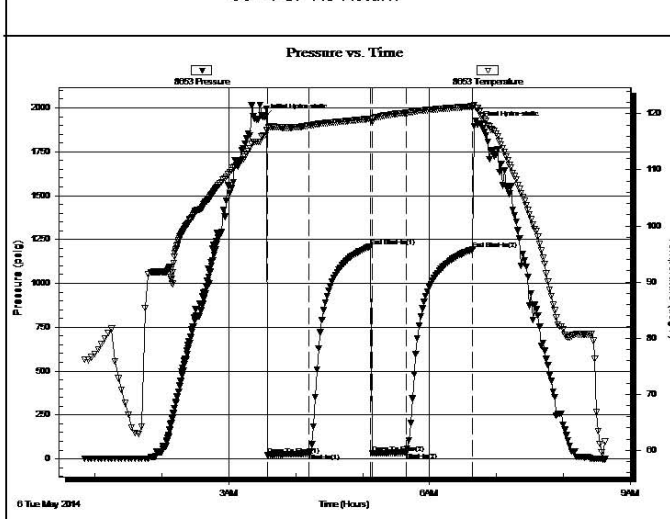
Interval: **4008.00 ft (KB) To 4040.00 ft (KB) (TVD)**  
 Total Depth: 4040.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2940.00 ft (KB)  
 2935.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8653      Outside**

Press@RunDepth: 35.24 psig @ 4009.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2014.05.06      End Date: 2014.05.06      Last Calib.: 2014.05.06  
 Start Time: 00:51:00      End Time: 08:37:00      Time On Btm: 2014.05.06 @ 03:32:30  
 Time Off Btm: 2014.05.06 @ 06:42:30

TEST COMMENT: 30 - IF- 1/2" Blow built to 1"  
 60 - IS- No Return  
 30 - FF- No Blow  
 60 - FS- No Return



Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	1947.00	116.17	Initial Hydro-static
2	23.04	117.13	Open To Flow (1)
40	29.78	117.93	Shut-In(1)
95	1210.94	119.12	End Shut-In(1)
96	31.81	118.50	Open To Flow (2)
126	35.24	120.14	Shut-In(2)
186	1193.46	121.31	End Shut-In(2)
190	1907.48	120.96	Final Hydro-static

Length (ft)	Description	Volume (bbl)
20.00	Mud 100M	0.10

Gas Rates			
	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

### Drill Stem Test #3

	<b>DRILL STEM TEST REPORT</b>	
	Murfin Drilling Co., Inc. 20 N Water STE#300 Wichita, KS 67202 ATTN: Keith Reavis	<b>34-4S-31W Rawlins, KS</b>  <b>Melba #1-34</b> Job Ticket: 56836 <b>DST#: 3</b> Test Start: 2014.05.06 @ 23:02:00

**GENERAL INFORMATION:**

Formation: **LKC "I-J"**  
 Deviated: No Whipstock:                      ft (KB)  
 Time Tool Opened: 02:22:00  
 Time Test Ended: 08:38:00

Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66

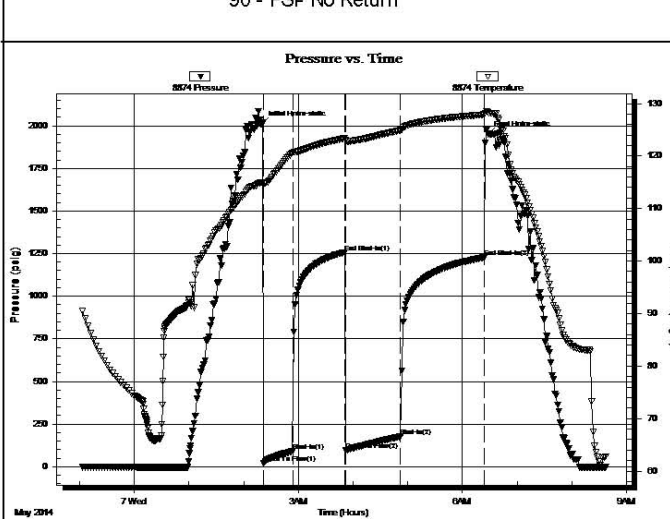
Interval: **4078.00 ft (KB) To 4148.00 ft (KB) (TVD)**  
 Total Depth: 4148.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2940.00 ft (KB)  
 2935.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8874      Inside**

Press@RunDepth: 176.82 psig @ 4079.00 ft (KB)      Capacity: 8000.00 psig  
 Start Date: 2014.05.06      End Date: 2014.05.07      Last Calib.: 2014.05.07  
 Start Time: 23:03:00      End Time: 08:38:00      Time On Btm: 2014.05.07 @ 02:20:00  
 Time Off Btm: 2014.05.07 @ 06:28:00

TEST COMMENT: 30 - IF- BoB in 28 min.  
 60 - IS- No Return  
 60 - FF- BoB in 32 min  
 90 - FS- No Return



Time (Mn.)	Pressure (psig)	Temp (deg F)	Annotation
0	2009.26	114.98	Initial Hydro-static
2	22.74	114.68	Open To Flow (1)
34	91.51	120.60	Shut-In(1)
91	1257.25	123.37	End Shut-In(1)
92	95.53	122.97	Open To Flow (2)
152	176.82	124.89	Shut-In(2)
244	1226.56	127.87	End Shut-In(2)
248	1951.34	128.30	Final Hydro-static

Length (ft)	Description	Volume (bbl)
5.00	Mud (Heavy) 100M	0.02
181.00	MW 95W 5M	2.04
126.00	MW 80W 20M	1.77
20.00	OSMW 20M 80W (Oil spots)	0.28

Gas Rates			
	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

### ROCK TYPES

Cht vari	Lmst fw7>	Carbon Sh	Ss
sdy lmst	shale, grn	shale, red	
Lmst fw<7	shale, gry	Shcol	

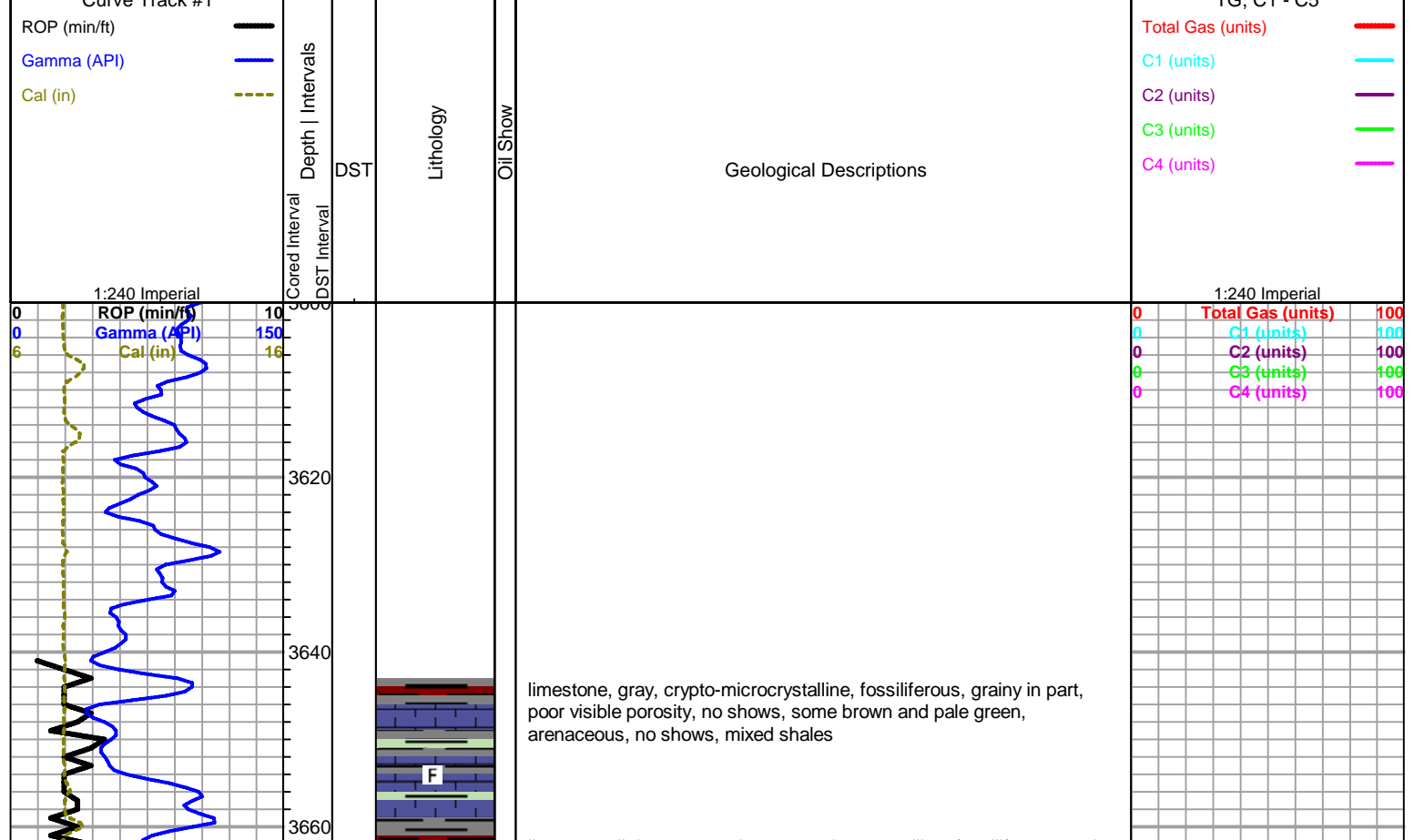
### ACCESSORIES

<b>MINERAL</b>	<b>FOSSIL</b>	<b>STRINGER</b>	<b>TEXTURE</b>
Glaucconite	Biolastic or Fragmental	Limestone	Chalky
Pyrite	Fossils < 20%	Sandstone	Lithogr
Silty	Oolite	Siltstone	
Chert White		green shale	

### OTHER SYMBOLS

<b>MISC</b>	<b>Oil Show</b>	<b>DST</b>
Daily Report	Good Show	DST Int
Digital Photo	Fair Show	DST alt
Document	Poor Show	Core
Folder	Spotted or Trace	tail pipe
Link	Questionable Stn	
Vertical Log File	Dead Oil Stn	
Horizontal Log File	Fluorescence	
Core Log File	Gas	
Drill Cuttings Rpt		

Printed by GEOstrip VC Striplog version 4.0.7.0 (www.grsi.ca)



to arenaceous, poor visible porosity, no shows

**Howard**

limestone, light gray to cream and pale green, microcrystalline, fossiliferous, some arenaceous, trace glauconitic, with limestone, cream, chalky in part, grainy, trace interclast porosity, no shows

3760 sample, flood red shale, heavy red wash

**Topeka 3741 -801**

limestone, light gray to cream, microcrystalline, fossiliferous, some limestone with brownish cast and small poorly developed vugs, some white soft very chalky limestone, no shows, fair even blueish-green fluorescence

stringers light gray/green sandstone to siltstone, very fine grain, well sorted and cemented, fair rounding, no visible porosity or shows

limestone, white to light gray, microcrystalline, fossiliferous to bioclastic, chalky, some grainy with some interclast porosity, with limestone, light gray to white, cryptocrystalline, dense lithographic to fossiliferous, trace small solution vugs, no visible shows, abundant chalk

limestone grades to gray to light brown, mottled grainy fossiliferous, chalky, friable

limestone, white to cream, cryptocrystalline, slightly fossiliferous, dense, some small solution vugs, barren, some white slightly chalky bioclastic, some pin-point porosity, dense, no shows

limestone, light gray to white, bioclastic, some pinpoint porosity, grainy to dense to chalky, flood chalk in samples, no shows

**Heebner 3906 -966**

gray/black shale

gray green silty shale with pale green siltstone

grading to red shales, heavy red wash

**Toronto**

3950 sample - limestone, light gray to cream, microcrystalline, fossiliferous, abundant interclast and crystal lined solution vug porosity, brown to black interclast staining and stained vugs, fair show free oil, good odor, faint green fluorescence, excellent cut

**Lansing 3454 -1014**

limestone, white, some green tint, cryptocrystalline, fossiliferous to lithographic, mostly dense, scattered etching and small vugs, trace stain, fair to good fluorescence, oil sheen, no odor, some chalk

red sticky shales

3390 sample - limestone, light gray, microcrystalline, fossiliferous, vuggy, good wormy saturated black stain, bleeding heavy free oil, fleeting odor, fair even fluorescence, excellent cut - abundant shales - 30 min sample mostly shale, 60 min sample shale and ls a.a. with abundant pale green siltstone to sandy limestone

limestone, white to pale green, cryptocrystalline, lithographic to fossiliferous, mostly dense, no shows, with trace white very chalky limestone, friable, small specimens, no free oil or odor, poor spotty-saturated stain, no visible porosity, no visible porosity, no free oil or odor, poor fluorescence

flood sticky red shale

30 min sample, limestone, white, very chalky and friable, solution vugs with black gilsonitic stain, very slight sheen, fleeting odor, fair even light green fluorescence, excellent cut, 60 sample as above, with influx limestone, gray, microcrystalline, fossiliferous, some small solution vugs, spotted to wormy black to brown staining, fair sheen, fleeting odor, spotty fluorescence, good cut

limestone, white to light gray, microcrystalline, fossiliferous, dense to chalky, poor visible porosity, some scattered white fossiliferous translucent cherts, sharp, fresh, no shows

limestone, light gray to cream, microcrystalline, fossiliferous, poor visible porosity, mostly dense, some chalk, no shows

mostly gray and green silty shales

4120 sample, light gray, microcrystalline, bioclastic to fossiliferous (forams and corals, very vuggy interclast porosity, light wormy brown to black stain, heavy streaming sheen free oil, gassy, fair show free oil on break, faint odor, light fluorescence, good cut and halo

**Stark**

limestone, gray to pale green and cream, microcrystalline, slightly fossiliferous, chert, some scattered light surface etching with very light brown staining, no show free oil, 1 piece trace heavy tarry oil on break, no odor, fair fluorescence, no cut - 60 min sample a.a. with some brown/yellow grainy limestone, chalky fossiliferous and influx gray/black silty shales

limestone, cream to light gray, micro-cryptocrystalline, some fossiliferous, some fractured with red shale fill, no shows

**Base KC 4175 -1235**

mixed shales, marked increase in green shales

poor samples, abundant shales, limestone, gray to light green, fossiliferous to arenaceous, poor visible porosity, no shows

flood red sticky shales

**Marmaton**

poor samples, mostly red and gray soft sticky shales with limestone, gray to olive, fossiliferous to argillaceous and arenaceous, some chalk, no shows

limestone, light gray to white, microcrystalline, grainy, very fossiliferous, poor visible porosity, chalky to dense, no shows, abundant chalk in samples

shales, gray, some red, silty, with salt and pepper siltstone stringers,

Morgan Mud chk @ 3710 ft. 1050 hrs. 5/4/14 Vis. 50 Wt. 8.9 PV 18 YP 16 WL 6.8 Cake 2/32, pH 10.5 CHL 1200 ppm Ca 10 ppm Sol 4.3 LCM 6# DMC \$2655.00 CMC \$10063.00

Total Gas (units) 100 C1 (units) 100 C2 (units) 100 C3 (units) 100 C4 (units) 100

Melba 1-34 DST #1.pdf

Morgan Mud chk @ 3990 ft. 1025 hrs. 5/5/14 Vis. 50 Wt. 9.2 PV 18 YP 16 WL 6.8 Cake 2/32, pH 10.0 CHL 1400 ppm Ca 10 ppm Sol 6.4 LCM 6# DMC \$00.00 CMC \$10063.00

Melba 1-34 DST #2.pdf

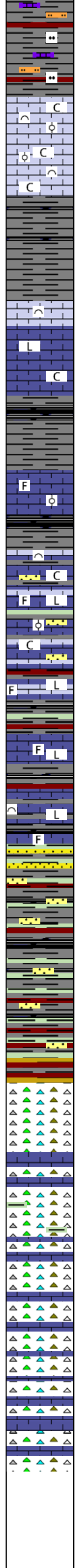
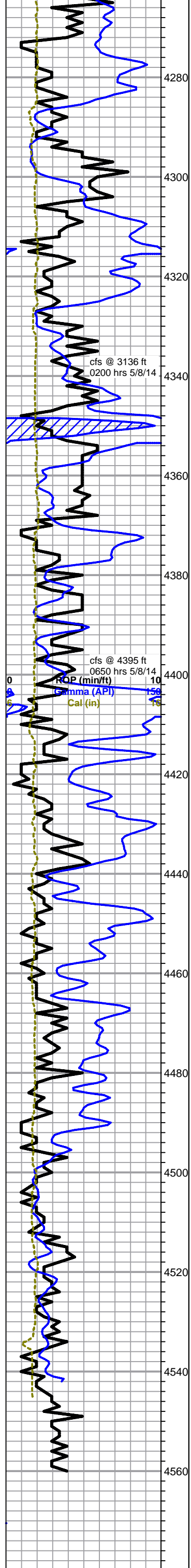
Morgan Mud chk @ 4040 ft. 1025 hrs. 5/6/14 Vis. 60 Wt. 9.0 PV 19 YP 24 WL 6.0 Cake 2/32, pH 10.5 CHL 2000 ppm Ca 10 ppm Sol 5.0 LCM 8# DMC \$2875.00 CMC \$12938.00

Melba 1-34 DST #3.pdf

Morgan Mud chk @ 4148 ft. 1025 hrs. 5/7/14 Vis. 46 Wt. 9.3 PV 14 YP 14 WL 7.6 Cake 2/32, pH 11.0 CHL 4600 ppm Ca 10 ppm Sol 7.1 LCM 6# DMC \$1375.00 CMC \$14313.00

Total Gas (units) 100 C1 (units) 100 C2 (units) 100 C3 (units) 100 C4 (units) 100





some limestone stringers as above with dense pale green cryptocrystalline limestone, no shows

**Pawnee 4283 -1343**

limestone, light gray with trace tan, microcrystalline, oolitic to bioclastic, some chalky, some secondary calcite, poor visible porosity, abundant chalk in samples, no shows, light even fluorescence

as above, some arenaceous chalky limestone, increasing chalk

soft gray shales, some black, soft, stick, heavy gray wash

limestone, light gray to cream, grainy bioclastic to fossiliferous, chalky to dense, poor visible porosity, with limestone, gray/green, microcrystalline, arenaceous to lithographic, dense, no shows, even pale fluorescence, abundant chalk

black carbonaceous and soft gray shales

limestone, light gray to cream, microcrystalline, some secondary calcite, fossiliferous, some flattened sub-oolitic, mostly dense, trace chalky, no shows

**Cherokee 4368 -1428**

limestones, mixed tan to pale green, gray and maroon, mostly cryptocrystalline, dense-cherty, lithographic, some fractured, trace sandy with limestones, light gray to cream, fossiliferous to bioclastic and oolitic, dense to chalky, sandstone, gray, very fine to fine grain, few scattered large grains, glauconitic to pyritic, mostly well rounded, poorly sorted, fair cemented, poor porosity, no shows, abundant chalk

as above grading to more light gray to cream limestones

limestone, cream to light gray and tan, mixed fossiliferous to cryptocrystalline lithographic, some chalky white bioclastic grainstones, sands drop out as does chalk, no visible porosity or shows

green and gray silty shales, some mottled, with maroon brown and black shale, stringers sandstone, reddish/brown, very fine grain, dirty clayey and glauconitic, round to sub-angular, poor sorting, mostly well cemented, no show

as above, increasing red shales, influx yellow silty shales

**Mississippian 4482 -1452 (Log 4491 -1551)**

chert, white to light gray and yellow, sharp and fresh to leached and sub-tripolitic, some scattered fair porosity, no shows or odor, some faint fluorescence

chert as above with limestone, pale green, cryptocrystalline, fossiliferous, glauconitic, no shows,

chert as above, limestone drops out, increase in yellow chert, influx orange chert, less weathered overall, abundant olive/yellow shales, silty, no shows

chert as above, with limestone, white, cryptocrystalline, dense compact lithographic

cherts as above with influx boney white chert, limestone, white, cryptocrystalline, dense fossiliferous with limestone, reddish brown, very chalky and weathered, fossiliferous, abundant reddish/brown chalk, no shows

Rotary TD 4560 ft. @ 1530 hrs 5/8/14  
Pioneer Log TD 4563 ft.  
Complete Logging Operations @ 0300 hrs 5/9/14

0	Total Gas (units)	100
0	C1 (units)	100
0	C2 (units)	100
0	C3 (units)	100
0	C4 (units)	100

Morgan Mud chk @ 4522 ft.  
1415 hrs. 5/8/14  
Vis. 55 Wt. 9.2  
PV 17 YP 22  
WL 7.6  
Cake 2/32,  
pH 11.0  
CHL 1700 ppm  
Ca 10 ppm  
Sol 6.4 LCM 6#  
DMC \$2582.00  
CMC \$16895.00