

**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: Ladenburger B #1-6  
 Location: Sec. 6 - T1S - R35W  
 API: 15-153-21039-0000  
 Pool: Kansas  
 State: Kansas  
 Field: Wildcat  
 Country: USA



Scale 1:240 Imperial

Well Name: Ladenburger B #1-6  
 Surface Location: Sec. 6 - T1S - R35W  
 Bottom Location:  
 API: 15-153-21039-0000  
 License Number: 30606  
 Spud Date: 7/31/2014  
 Region: Rawlins County  
 Drilling Completed: 8/7/2014  
 Surface Coordinates: 330' FNL & 2310' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 3211.00ft  
 K.B. Elevation: 3216.00ft  
 Logged Interval: 3540.00ft  
 Total Depth: 4535.00ft  
 Formation: Lansing/Kansas City  
 Drilling Fluid Type: Chemical/Fresh Water Gel  
 Time: 2:45 PM  
 Time: 7:07 PM  
 To: 4535.00ft

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude:  
 Latitude:  
 N/S Co-ord: 330' FNL  
 E/W Co-ord: 2310' FEL

**LOGGED BY**



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: 7/31/2014  
 TD Date: 8/7/2014  
 Rig Release:  
 Time: 2:45 PM  
 Time: 7:07 PM  
 Time:

**ELEVATIONS**

K.B. Elevation: 3216.00ft  
 K.B. to Ground: 5.00ft  
 Ground Elevation: 3211.00ft

**NOTES**

Due to results of drill stem tests #1 through #4, it was determined that the Ladenburger B #1-6 would prove non-commercial and was therefore plugged as a dry test.

The gamma ray and caliper curves were imported into this mudlog from the electrical log suite, the sample tops picked from drill time were generally within 3 ft of the electrical log tops, therefore, no curves were shifted to provide an exact match but left as recorded in the field.

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

Respectfully submitted,  
 Keith Reavis

**Murfin Drilling Company  
 daily drilling report**

DATE	7:00 AM DEPTH	REMARKS
08/03/2014	3735	Geologist Keith Reavis on location @ 1000 hrs, 3789 ft, drilling Foraker, Stotler
08/04/2014	4095	drilling ahead, Topeka, Oread, show in Oread warrants test, short trip, TOH for DST #1, conduct DST #1, successful test, TIH w/bit, resume drilling
08/05/2014	4240	drilling ahead, Lansing A thru D, shows warrant test, TOH for DST #2 conduct and complete DST #2, successful test, TIH w/bit, resume drilling
08/06/2014	4365	drilling G thru H, TOH for DST #3, conduct DST #3, successful test, TIH w/bit, drill J zone, show warrants test, TOH for DST #4
08/07/2014	4395	conduct and complete DST #4, successful test, TIH w/bit, resume drilling rathole to TD, RTD 4535 ft @ 1907 hrs, short trip, condition hole, TOH for logs
08/08/2014	4535	conduct and complete logging operations, geologist off location 0530 hrs

**Murfin Drilling Company  
 well comparison sheet**

DRILLING WELL					COMPARISON WELL				COMPARISON WELL			
Ladenburger B #1-6					Downing #1-6				Ladenburger #1-6			
330' FNL & 2310' FEL					2150' FSL 2140' FWL				2310' FNL & 330' FWL			
Sec 6-T1S-R35W					Sec 6-T1S-R35W				Sec 6-T1S-R35W			
3216 KB					3169 KB				3210 KB			
					Structural Relationship				Structural Relationship			
Formation	sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log	Log	Sub-Sea	Sample	Log
Neva	3631	-415	3634	-418	3594	-425	10	7	3630	-420	5	2
Red Eagle	3697	-481	3699	-483	3658	-489	8	6	3694	-484	3	1
Foraker	3742	-526	3745	-529	3706	-537	11	8	3742	-532	6	3
Stotler	3889	-673	3892	-676	3852	-683	10	7	3881	-671	-2	-5
Topeka	3950	-734	3954	-738	3914	-745	11	7	3950	-740	6	2
Oread	4065	-849	4068	-852	4026	-857	8	5	4064	-854	5	2
Lansing	4171	-955	4170	-954	4134	-965	10	11	4167	-957	2	3
Lansing D	4222	-1006	4223	-1007	4185	-1016	10	9	4220	-1010	4	3
Lansing H	4328	-1112	4326	-1110	4291	-1122	10	12	4322	-1112	0	2
Stark	4385	-1169	4384	-1168	4347	-1178	9	10	4378	-1168	-1	0
BKC	4435	-1219	4436	-1220	4398	-1229	10	9	4431	-1221	2	1
Total Depth	4535	-1319	4542	-1326	4500	-1331	12	5	4550	-1340	21	14

**DST #1**

**DRILL STEM TEST REPORT**

Murfin Drig Co., Inc. **6/1N/35W**

250 N. Water, Ste 300  
 Wichita, KS 67202

ATTN: Keith Reavis

**Ladenburger 'B' #1-6**

Job Ticket: 51621 **DST#: 1**

Test Start: 2014.08.04 @ 09:02:00

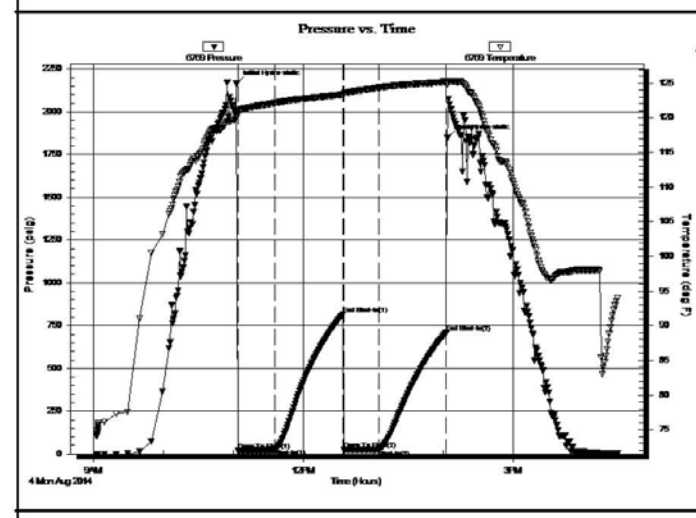
**GENERAL INFORMATION:**

Formation: **Oread**  
 Deviated: No Whipstock ft (KB)  
 Time Tool Opened: 11:03:30  
 Time Test Ended: 16:30:00  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Brandon Quintana  
 Unit No: 49  
 Interval: **4019.00 ft (KB) To 4095.00 ft (KB) (TVD)**  
 Reference Elevations: 3216.00 ft (KB)  
 Total Depth: 4095.00 ft (KB) (TVD)  
 3211.00 ft (CF)  
 Hole Diameter: 7.88 inches-Hole Condition: Fair  
 KB to GR/CF: 5.00 ft

**Serial #: 6769**

Press@RunDepth: 28.46 psig @ ft (KB)  
 Capacity: 8000.00 psig  
 Start Date: 2014.08.04  
 End Date: 2014.08.04  
 Start Time: 09:02:05  
 End Time: 16:29:59  
 Time On Btm: 2014.08.04 @ 11:02:30  
 Time Off Btm: 2014.08.04 @ 14:03:30

**TEST COMMENT:** 30 - IF - Opened w / surface blow , died back to nothing  
 60 - ISI - No Return  
 30 - FF - No Blow  
 60 - FSI - No Return



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2163.62	120.14	Initial Hydro-static
1	20.48	120.98	Open To Flow (1)
33	29.03	122.13	Shut-In(1)
91	814.60	123.34	End Shut-In(1)
92	24.96	123.55	Open To Flow (2)
122	28.46	124.36	Shut-In(2)
180	710.05	125.19	End Shut-In(2)
181	1849.18	124.90	Final Hydro-static


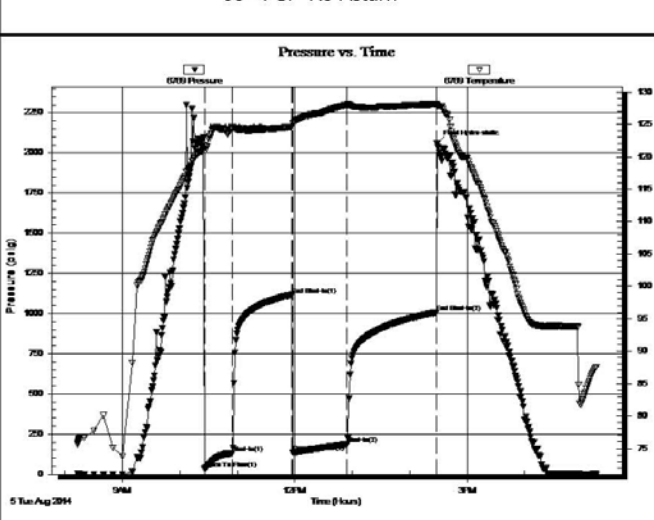
**Recovery**

Length (ft)	Description	Volume (bbl)
2.00	100% mud	0.01


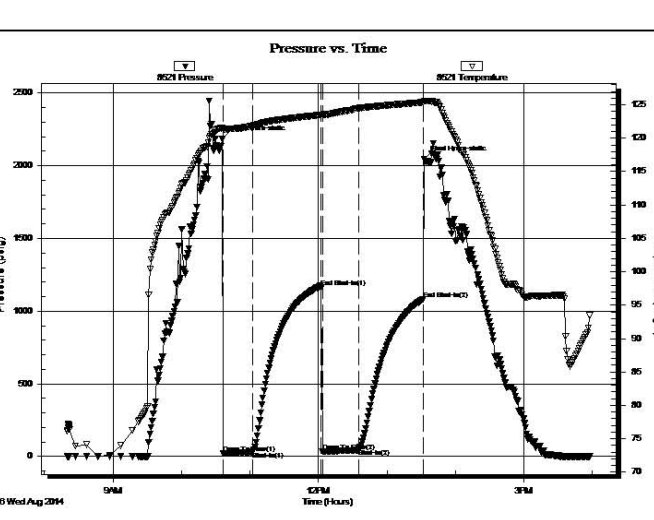
**Gas Rates**

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


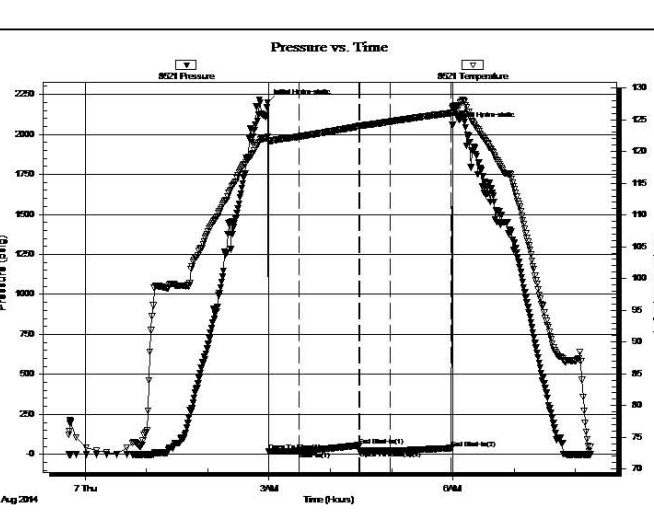
**DST #2**

	<b>DRILL STEM TEST REPORT</b>																																										
	Murfin Drig Co., Inc. 250 N. Water, Ste 300 Wichita, KS 67202 ATTN: Keith Reavis	<b>6/1N/35W</b>  <b>Ladenburger 'B' #1-6</b> Job Ticket: 51622 <b>DST#: 2</b> Test Start: 2014.08.05 @ 08:13:00																																									
<b>GENERAL INFORMATION:</b> Formation: <b>LKC "A-D"</b> Deviated: No Whipstock      ft (KB) Time Tool Opened: 10:25:30 Time Test Ended: 17:14:30 Test Type: Conventional Bottom Hole (Initial) Tester: Brandon Quintana Unit No: 49 Reference Elevations: 3216.00 ft (KB) 3211.00 ft (CF) KB to GR/CF: 5.00 ft Interval: <b>4116.00 ft (KB) To 4240.00 ft (KB) (TVD)</b> Total Depth: 4240.00 ft (KB) (TVD) Hole Diameter: 7.88 inches Hole Condition: Fair																																											
Serial #: <b>6769</b> <b>Outside</b> Press@RunDepth: 186.02 psig @ 4117.00 ft (KB)      Capacity: 8000.00 psig Start Date: 2014.08.05      End Date: 2014.08.05      Last Calib.: 2014.08.05 Start Time: 08:13:05      End Time: 17:14:30      Time On Btm: 2014.08.05 @ 10:24:30 Time Off Btm: 2014.08.05 @ 14:28:30																																											
TEST COMMENT: 30 - IF - Opened w/ surface blow , built to 9" 60 - ISI - No Return 60 - FF - Opened w/ surface blow , built to 9 3/4" 90 - FSI - No Return																																											
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**DST #3**

	<b>DRILL STEM TEST REPORT</b>																																									
	Murfin Drig Co., Inc. 250 N. Water, Ste 300 Wichita, KS 67202 ATTN: Keith Reavis	<b>6/1N/35W</b>  <b>Ladenburger 'B' #1-6</b> Job Ticket: 51623 <b>DST#: 3</b> Test Start: 2014.08.06 @ 08:20:00																																								
<b>GENERAL INFORMATION:</b> Formation: <b>LKC "G-I"</b> Deviated: No Whipstock      ft (KB) Time Tool Opened: 10:36:30 Time Test Ended: 15:57:30 Test Type: Conventional Bottom Hole (Initial) Tester: Brandon Quintana Unit No: 49 Reference Elevations: 3216.00 ft (KB) 3211.00 ft (CF) KB to GR/CF: 5.00 ft Interval: <b>4236.00 ft (KB) To 4365.00 ft (KB) (TVD)</b> Total Depth: 4365.00 ft (KB) (TVD) Hole Diameter: 7.88 inches Hole Condition: Fair																																										
Serial #: <b>8521</b> <b>Inside</b> Press@RunDepth: 50.65 psig @ 4237.00 ft (KB)      Capacity: 8000.00 psig Start Date: 2014.08.06      End Date: 2014.08.06      Last Calib.: 2014.08.06 Start Time: 08:20:05      End Time: 15:57:29      Time On Btm: 2014.08.06 @ 10:35:30 Time Off Btm: 2014.08.06 @ 13:32:30																																										
TEST COMMENT: 30 - IF - Opened w/ surface blow , built to 1" in 20 min. 60 - ISI - No Return 30 - FF - No Blow 60 - FSI - No Return																																										
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**DST #4**

	<b>DRILL STEM TEST REPORT</b>																																									
	Murfin Drig Co., Inc. 250 N. Water, Ste 300 Wichita, KS 67202 ATTN: Keith Reavis	<b>6/1N/35W</b>  <b>Ladenburger 'B' #1-6</b> Job Ticket: 58366 <b>DST#: 4</b> Test Start: 2014.08.06 @ 23:44:00																																								
<b>GENERAL INFORMATION:</b> Formation: <b>LKC "J"</b> Deviated: No Whipstock      ft (KB) Time Tool Opened: 02:59:30 Time Test Ended: 08:15:00 Test Type: Conventional Bottom Hole (Initial) Tester: Brandon Quintana Unit No: 49 Reference Elevations: 3216.00 ft (KB) 3211.00 ft (CF) KB to GR/CF: 5.00 ft Interval: <b>4340.00 ft (KB) To 4395.00 ft (KB) (TVD)</b> Total Depth: 4395.00 ft (KB) (TVD) Hole Diameter: 7.88 inches Hole Condition: Fair																																										
Serial #: <b>8521</b> <b>Inside</b> Press@RunDepth: 22.04 psig @ 4341.00 ft (KB)      Capacity: 8000.00 psig Start Date: 2014.08.06      End Date: 2014.08.07      Last Calib.: 2014.08.07 Start Time: 23:44:05      End Time: 08:14:59      Time On Btm: 2014.08.07 @ 02:58:30 Time Off Btm: 2014.08.07 @ 05:59:30																																										
TEST COMMENT: 30 - IF - Opened w/ surface blow , built to 1/4" 60 - ISI - No Return 30 - FF - No Blow 60 - FSI - No Return																																										
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**ROCK TYPES**

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

**ACCESSORIES**

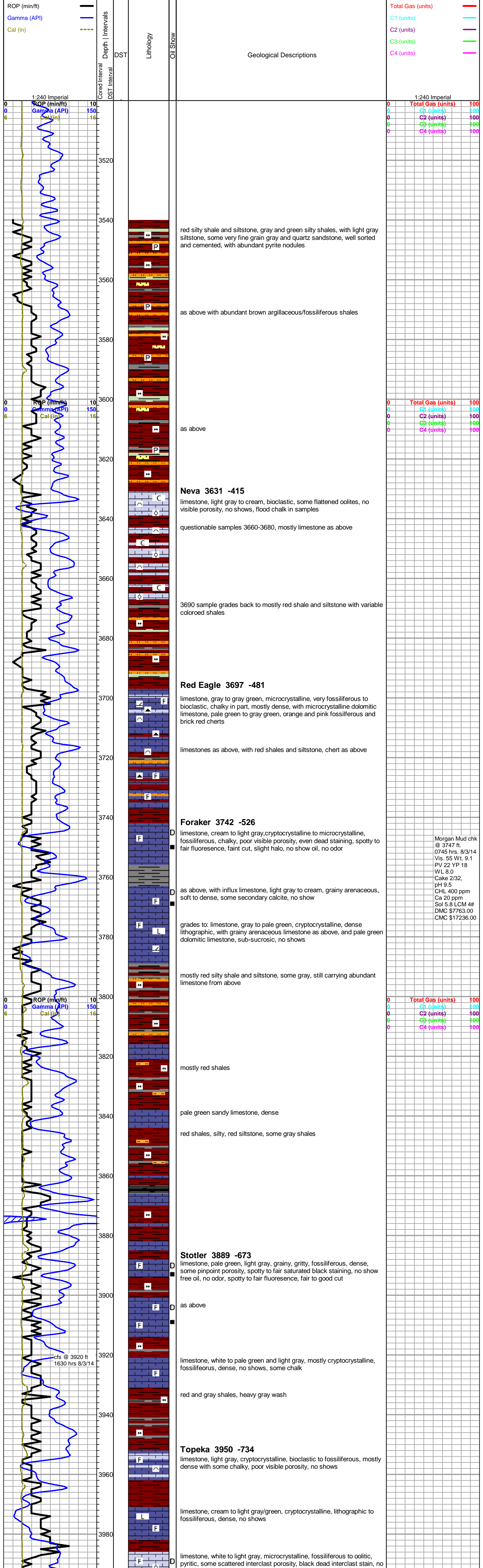
<b>MINERAL</b>	<b>FOSSIL</b>	<b>STRINGER</b>	<b>TEXTURE</b>
----------------	---------------	-----------------	----------------

- ▲ Chert, dark
- △ Dolomitic
- P Pyrite
- Silty
- △ Chert White
- Bioclastic or Fragmenta
- F Fossils < 20%
- Oolite
- Pellets
- Sandstone
- Siltstone
- C Chalky
- L Lithogr

**OTHER SYMBOLS**

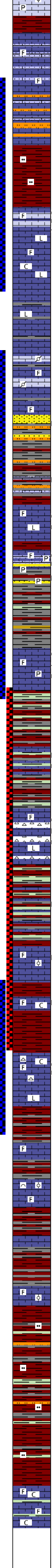
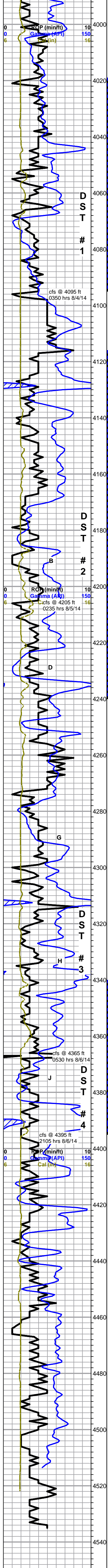
- |  |   |   |
|--|---|---|
| <p><b>MISC</b></p> <ul style="list-style-type: none"> <li>DR Daily Report</li> <li>Digital Photo</li> <li>Document</li> <li>Folder</li> <li>Link</li> <li>Vertical Log File</li> <li>Horizontal Log File</li> <li>Core Log File</li> <li>Drill Cuttings Rpt</li> </ul> | <p><b>Oil Show</b></p> <ul style="list-style-type: none"> <li>● Good Show</li> <li>● Fair Show</li> <li>○ Poor Show</li> <li>○ Spotted or Trace</li> <li>○ Questionable Stn</li> <li>D Dead Oil Stn</li> <li>■ Fluorescence</li> <li>* Gas</li> </ul> | <p><b>DST</b></p> <ul style="list-style-type: none"> <li>■ DST Int</li> <li>■ DST alt</li> <li>■ Core</li> <li>■ tail pipe</li> </ul> |
|--|---|---|

Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)



Morgan Mud chk @ 3747 ft. 0745 hrs. 8/3/14 Vis. 55 Wt. 9.1 PV 22 YP 18 WL 8.0 Cake 2/32, pH 9.5 CHL 400 ppm Ca 20 ppm Sol 5.8 LCM 4# DMC \$7763.00 CMC \$17236.00

cfs @ 3920 ft 1630 hrs 8/3/14



show free oil, no odor, faint fluorescence, slow milky cut

limestone, white to light gray and pale green, microcrystalline, fossiliferous to sandy, dense, no shows

grading to limestone, maroon, cryptocrystalline, lithographic to sandy, with siltstone, maroon, dense to soft, no shows

red silty shale

Ladenburger B 1-6 dst 1.pdf

**Oread 4065 -849**

limestone, white to light gray, cryptocrystalline, fossiliferous, some fair solution vugs and spotty etching, spotty to fair wormy black stain, streaming sheen, poor to fair show heavy oil on break, slightly gassy, no odor, even fair fluorescence, good cut

grades to limestone, white to light gray, cryptocrystalline, lithographic to slightly fossiliferous, dense, some chalk, no shows

limestone to limy shale, gray to dark gray, cryptocrystalline, lithographic to arenaceous, dense, no shows

grades to limestone, light gray, cryptocrystalline, slightly fossiliferous, arenaceous in part, with limestone, gray, mottled, pelletal, chalky, no shows

sandstone to siltstone, light gray, very fine crystalline, silty, fair rounding, poor sorting, well cemented, scattered spotty to fair dead stain, no show free oil, no odor

gray and red silty shales, some scattered silt stones

as above, some staining in silt, with some light gray sandy limestones, chalky, some dead staining

**Lansing 4171 -955**

limestone, white to light gray, cryptocrystalline, fossiliferous to lithographic, chalky in part, mostly dense, scattered small vugs with stain, trace clingy oil, no odor even mineral fluorescence, good cut

limestone, white to light gray, crypto-microcrystalline, fossiliferous, pyritic, sandy in part, some secondary calcite xtals, some fair solution vug porosity with surface etching, fair to spotty stain, slight show free oil, no odor, even mineral fluorescence, good cut, with some sandstone, pale green to quartz, very fine grain, silty, well rounded, fair sorted, pyritic, saturated black dead stain

Ladenburger B 1-6 dst 2.pdf

limestone, cream to light gray, micro-cryptocrystalline, fossiliferous, some oolitic, pyritic, intercrystal fracturing and interclast porosity, spotty to good solution etching, spotty to saturated stain, fair sheen and slight show free oil, 1 piece bleeding and gassy, faint odor, scattered fair fluorescence, slow milky cut

red and green shales, heavy red wash, with some limestone, light gray, very fossiliferous to bioclastic, large clasts, poor interclast porosity, saturated black interclast staining, slight sheen on break, poor fluorescence, no odor, good cut

limestone, light gray to pale gray/green, cryptocrystalline, slightly fossiliferous to lithographic, some weathered, some bioclastic, weathered, fair brown to black surface stain and etching, some pinpoint porosity, with: chert, cream, fossiliferous in part, slight weathering to sharp, black and brown surface stain and etching, slight sheen in tray, poor fluorescence, fair milky streaming cut, no odor in wet cup

mixed shales and limestone, mostly pale green to light gray, some light surface stain, few pieces heavy tarry asphaltic stain, all fairly dense, no show free oil, no odor

Ladenburger B 1-6 dst 3.pdf

limestone, white to light gray, cryptocrystalline, fossiliferous to flattened oolitic, chalky in part, trace dead stain, no show oil and no odor, even light green fluorescence

limestone, light gray, crypto-microcrystalline, fossiliferous, some flattened oolitic, chalky and grainy in part, poor visible porosity, trace black asphaltic to dead stain, no show oil, no odor, even light green fluorescence

flood red shale with heavy red wash

limestone, white to light gray, recrystallized fossiliferous with chert nodules, very dense with sharp edges, solution etched and oily stained edges, some tarry clingy staining, trace free oil, good fluorescence, excellent cut with white limestone, fossiliferous, chalky, staining and show and fluorescence as limestone above, fleeting odor in wet cup, abundant chalk

lower part of J bench grades to pale green, cryptocrystalline, dense lithographic limestone

**Stark 4385 -1169**

Ladenburger B 1-6 dst 4.pdf

4420 sample, limestone, white to light gray, microcrystalline, fossiliferous, chalky in part, some dense tan oolitic, poor visible porosity, some chalk in samples, no shows

limestone, light gray to cream, bioclastic to oolitic, chalky in part, poor visible porosity, grading to limestone, light gray, fossiliferous, dense, some secondary calcite and light brown limestone, fossiliferous, dense to chalky, poor visible porosity, no shows

**Base KC 4435 -1219**

limestone, cream to light gray to pale green, grainy fossiliferous to oolitic, some arenaceous, poor visible porosity, no shows

red shales, some green and gray, silty, some light green to gray silt stone, samples wash red

as above

4535 sample and cfs samples, flood limestone, gray to white, mostly cryptocrystalline, fossiliferous, dense, abundant chalk, no shows, with: limestone, pale green arenaceous to pale green limy shale, no shows

Rotary TD 4535 ft @ 1907 hrs 8/7/14  
Pioneer Wireline TD 4542 ft  
Complete Logging Operation 0500 hrs 8/8/14

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

Morgan Mud chk @ 4095 ft		
0800 hrs. 8/4/14	Vis. 48 Wt. 9.4	PV 14 YP 22
WL 8.4	Cake 2/32,	pH 8.0
CHL 600 ppm	Ca 40 ppm	Sol 7.9 LCM 5#
DMC \$0.00	CMC \$17236.00	

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

Morgan Mud chk @ 4240 ft		
0745 hrs. 8/5/14	Vis. 48 Wt. 9.3	PV 16 YP 18
WL 8.4	Cake 2/32,	pH 8.5
CHL 600 ppm	Ca 30 ppm	Sol 7.2 LCM 6#
DMC \$216.00	CMC \$17452.00	

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

Morgan Mud chk @ 4365 ft		
0745 hrs. 8/6/14	Vis. 69 Wt. 9.1	PV 20 YP 26
WL 8.0	Cake 2/32,	pH 9.5
CHL 700 ppm	Ca 30 ppm	Sol 5.7 LCM 3#
DMC \$1839.00	CMC \$19291.00	

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

Morgan Mud chk @ 4395 ft		
0800 hrs. 8/7/14	Vis. 43 Wt. 9.2	PV 18 YP 8
WL 8.0	Cake 2/32,	pH 9.5
CHL 700 ppm	Ca 20 ppm	Sol 6.5 LCM 5#
DMC \$3050.00	CMC \$22341.00	