



Scale 1:240 (5"=100') Imperial

Well Name: Helmers #1-1
Location: Sec. 01 - T22S - R12W, Stafford County, KS
Licence Number: API No.: 15-185-23747-0000
Spud Date: May 2, 2012
Surface Coordinates: 1900' FSL & 2150' FEL; 3-D Location

Region: Max
Drilling Completed: May 10, 2012

Bottom Hole Coordinates:

Ground Elevation (ft): 1807' K.B. Elevation (ft): 1814'
Logged Interval (ft): 2600' To: 3710' Total Depth (ft): 3711' (LTD)
Formation: Arbuckle
Type of Drilling Fluid: Chemical Gel/Polymer

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Valhalla Exploration, LLC
Address: 133 N. Glendale
Wichita, KS 67208

GEOLOGIST

Name: Derek W. Patterson
Company: Valhalla Exploration, LLC
Address: 133 N. Glendale
Wichita, KS 67208

REMARKS

After review of the open hole logs, log calculations, DST #6 results, and sample analysis, it was decided upon by operator to run 5 1/2" production casing to further evaluate the Viola section of the Helmers #1-1.

The well samples were saved, submitted, and will be available for review at the Kansas Geologic Survey's Well Sample Library located in Wichita, KS.

Respectfully Submitted,

Derek W. Patterson

COMMENTS

Please Note: The RTD was 3710' and the LTD 3711'.

After comparison between the electric log curves and the drill time curves for the Helmers #1-1, I am recommending that all drill time, gas curves, lithology, and DST #1 - DST #4 intervals be shifted 4' deeper/lower.

My report reflects the 4' shift of the above. I have also changed all connection and circulation points to match the overall shift.



General Information

Service Companies

Drilling Contractor: Southwind Drilling Company - Rig #4
Tool Pusher: Robert Stevenson
Daylight Driller: Brent Babcock
Evening Driller: Mike Savage
Morning Driller: Ian Laymon

Gas Detector: Bluestem Environmental
Engineer: Sidney Edelbrock
Unit: 0279
Operational By: 1500'

Drilling Fluid: Mud-Co/Service Mud
Engineer: Rick Hughes
 Jason Whiting

Logging Company: Superior Well Services
Engineer: Jason Cappellucci
Logs Ran: DI, CDNL, Micro

Testing Company: Superior Testers
Tester: Jared Scheck

Deviation Survey

Depth	Survey
582'	0°
2856'	1°
3376'	3/4°
RTD - 3710'	1 1/4°

Pipe Strap

Depth	Pipe Strap
3376'	1.97' Long to Board

Bit Record

Bit #	Size	Make	Type	Serial Number	Depth In	Depth Out	Feet	Hours
1	12 1/4"	JZ	HP-11	LX2691	0'	582'	582'	6.5
2	7 7/8"	Reed	S-52	B156906	582'	3710'	3128'	90

Surface Casing

5.3.2012	Ran 14 joints of new 24 #/ft 8 5/8" casing, tallying 571', set @ 582' KB. Cemented with 450 sacks of 60/40 Poz, 3% calcium chloride, 2% gel, 1/2# flo-seal per sack. Cement did circulate. Plug down @ 0330 hrs 5.3.12. By Quality.
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Production Casing

5.12.2012	Ran 89 joints of new 15.5 #/ft 5 1/2" production casing, tallying 3793', set @ 3706' KB. Cemented with 50 sacks of 60/40 Poz scavenger and 125 sacks Econ-O-Bond. Cement did circulate. Plug down @ 0145 hrs 5.13.12. By Basic.
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Daily Drilling Report

Date	7:00 AM Depth	Previous 24 Hours of Operations
5.7.2012	3271'	<p>Drilling and connections Severy and into Topeka. Geologist Derek W. Patterson on location, 1140 hrs 5.6.12. Reset Bloodhound to correspond with geograph. Resume drilling and connections Topeka, Heebner, Toronto, and into Brown Lime. Stop @ 3224' for short trip. CTCH, short trip (21 stands), 0220 hrs 5.7.12. CTCH, resume drilling following short trip, 0420 hrs 5.7.12. Drilling and connections Brown Lime, and into Lansing. Test system with positive response. Drilling and connections Lansing.</p> <p>Made 462' over past 24 hrs of operations. WOB: 28k RPM: 70 PP: 700 SPM: 60 DMC: \$257.60 CMC: \$5,283.85</p>
5.8.2012	3447'	<p>Drilling Lansing. CFS @ 3294' (LKC 'D'). Resume drilling and connections Lansing. CFS @ 3318' (LKC 'F'). Resume drilling and connections Lansing. CFS @ 3376' (LKC 'H'). DST warranted. CTCH, drop survey, strap out for DST #1, 1540 hrs 5.7.12. TIH with tool. Conducting DST #1, test successful. TIH with bit, CTCH, run in premix, resume drilling following DST #1, 0150 hrs 5.8.12. Drilling and connections Lansing.</p> <p>Made 176' over past 24 hrs of operations. WOB: 30k RPM: 70 PP: 750 SPM: 60 DMC: \$186.75 CMC: \$5,470.60</p>
5.9.2012	3596'	<p>Drilling and connections Lansing, Base Kansas City, Viola, and into Simpson. CFS @ 3534' (Simpson) for Viola gas kick. Resume drilling and connections Simpson. CFS @ 3574', CFS @ 3584', CFS @ 3590' (Arbuckle). Shows warrant DST. CTCH, TOH for DST #2, 1920 hrs 5.8.12. TIH with tool. Conducting DST #2, test successful. TIH with bit, CTCH, run in premix, resume drilling following DST #2, 0635 hrs 5.9.12. CFS @ 3596' (Arbuckle).</p> <p>Made 149' over past 24 hrs of operations. WOB: 32k-36k RPM: 70 PP: 750 SPM: 60 DMC: \$585.65 CMC: \$6,056.25</p>
5.10.2012	3601'	<p>CFS @ 3596' (Arbuckle). Shows warrant DST. CTCH, TOH for DST #3, 0825 hrs 5.9.12. TIH with tool. Conducting DST #3, test unsuccessful. TIH with bit, CTCH, short trip (6 stands), CTCH, TOH for DST #4, 1905 hrs 5.9.12. TIH with tool. Conducting DST #4, test successful. TIH with bit, CTCH, resume drilling following DST #4, 0555 hrs 5.10.12. CFS @ 3601' (Arbuckle).</p> <p>Made 5' over past 24 hrs of operations. WOB: 36k RPM: 70 PP: 750 SPM: 60 DMC: \$656.05 CMC: \$6,712.30</p>
5.11.2012	RTD - 3710' LTD - 3711'	<p>CFS @ 3601' (Arbuckle). Resume drilling Arbuckle. CFS @ 3609' (Arbuckle). Resume drilling and connections ahead to RTD of 3710'. RTD reached, 1310 hrs 5.10.12. CTCH, drop survey, TOH for open hole logging operations, 1500 hrs 5.10.12. Rig up loggers. Commence open hole logging operations, 1650 5.10.12. Open hole logging operations complete, 2015 hrs 5.10.12. Decision made to run straddle test across the Viola. TIH with tool. Test will be monitored on location by tester with reports into geologist. Conducting DST #5.</p> <p>Geologist Derek W. Patterson off location, 2050 hrs 5.10.12.</p> <p>Made 113' over past 24 hrs of operations. WOB: 36k RPM: 70 PP: 750 SPM: 60 DMC: \$677.95 CMC: \$7,390.25</p>
5.12.2012	RTD - 3710' LTD - 3711'	<p>Conducting DST #5, test unsuccessful due to bottom packer failure. Decision made to rerun straddle test with different packer location. TIH with tool. Conducting DST #6, test successful. Orders received to run 5 1/2" production casing for further evaluation of the Helmers #1-1.</p> <p>DMC: \$390.60 CMC: \$7,780.85</p>



Well Comparison Sheet

Drilling Well					Comparison Well			
Valhalla Exploration - Helmers #1-1 1900' FSL & 2150' FEL Sec. 1 - T22S - R12W					Biddle Drilling - Helmers #1 NW NW SE Sec. 1 - T22S - R12W			
1814 KB					Oil - Arbuckle 1815 KB		Structural Relationship	
Formation	Sample	Sub-Sea	Log	Sub-Sea	Log	Sub-Sea	Sample	Log
Topeka	2788	-974	2790	-976	2791	-976	2	0
King Hill	2890	-1076	2894	-1080	2893	-1078	2	-2
Queen Hill	2977	-1163	2981	-1167	2983	-1168	5	1
Heebner	3079	-1265	3082	-1268	3084	-1269	4	1
Toronto	3097	-1283	3100	-1286	3104	-1289	6	3
Douglas	3112	-1298	3114	-1300	3118	-1303	5	3
Brown Lime	3207	-1393	3211	-1397	3213	-1398	5	1
Lansing	3236	-1422	3239	-1425	3242	-1427	5	2
LKC 'B'	3254	-1440	3257	-1443	3261	-1446	6	3
LKC 'D'	3275	-1461	3276	-1462	3282	-1467	6	5
LKC 'F'	3304	-1490	3305	-1491	3310	-1495	5	4
LKC 'G'	3319	-1505	3323	-1509	3324	-1509	4	0
Muncie Creek	3358	-1544	3363	-1549	3362	-1547	3	-2
LKC 'H'	3363	-1549	3366	-1552	3368	-1553	4	1
Stark	3415	-1601	3425	-1611	3424	-1609	8	-2
LKC 'K'	3421	-1607	3431	-1617	3430	-1615	8	-2
Base Kansas City	3456	-1642	3462	-1648	3462	-1647	5	-1
Viola	3481	-1667	3485	-1671	3483	-1668	1	-3
Simpson	3527	-1713	3531	-1717	3526	-1711	-2	-6
Arbuckle	3579	-1765	3584	-1770	3575	-1760	-5	-10
Total Depth	3710	-1896	3711	-1897	3593	-1778	-118	-119

Open Holed

Please Note: DST #1 - DST #4 intervals need to be shifted 4' lower/deeper to correspond with the electric log curves.



DRILL STEM TEST REPORT

Valhalla Exploration L.L.C
 133 N Glendale Wichita KS 67206
 ATTN: Derek Patterson

1-22s-12w Stafford
 Helmers#1-1
 Job Ticket: 17135 DST#: 1
 Test Start: 2012.05.07 @ 17:27:00

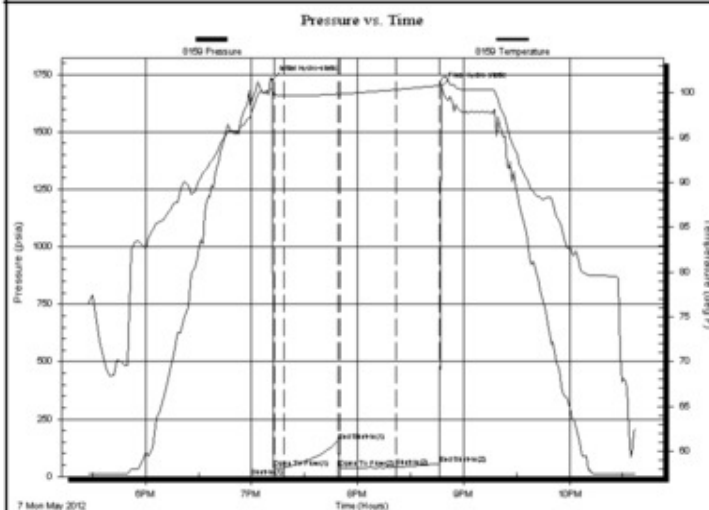
GENERAL INFORMATION:

Formation: **Lansing ' H '**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 19:13:00 Tester: Jared Scheck
 Time Test Ended: 22:37:30 Unit No: 3320-50-Great Bend
 Interval: **3352.00 ft (KB) To 3372.00 ft (KB) (TVD) CORRECTED** Reference Elevations: 1814.00 ft (KB)
 Total Depth: 3372.00 ft (KB) (TVD) **3356' - 3376'** 1807.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 7.00 ft

Serial #: 8159

Press@RunDepth: 40.82 psia @ ft (KB) Capacity: 5000.00 psia
 Start Date: 2012.05.07 End Date: 2012.05.07 Last Calib.: 2012.05.07
 Start Time: 17:27:00 End Time: 22:37:30 Time On Btm: 2012.05.07 @ 19:12:00
 Time Off Btm: 2012.05.07 @ 20:47:30

TEST COMMENT: 1st Open 5 Minutes-Very weak blow built 1/4 inch into water in 5 minutes
 1st Shut-in 30 Minutes No blow back
 2nd Open 30 Minutes-Very weak surge did not built
 2nd Shut-in 30 Minutes-No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	1726.31	100.36	Initial Hydro-static
1	39.20	99.81	Open To Flow (1)
7	39.19	99.67	Shut-In(1)
37	155.85	99.91	End Shut-In(1)
38	39.03	99.88	Open To Flow (2)
70	40.82	100.37	Shut-In(2)
95	56.79	100.82	End Shut-In(2)
96	1697.80	101.59	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2.00	Mud	0.01

Gas Rates

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



DRILL STEM TEST REPORT

Valhalla Exploration L.L.C
 133 N Glendale Wichita KS 67206
 ATTN: Derek Patterson

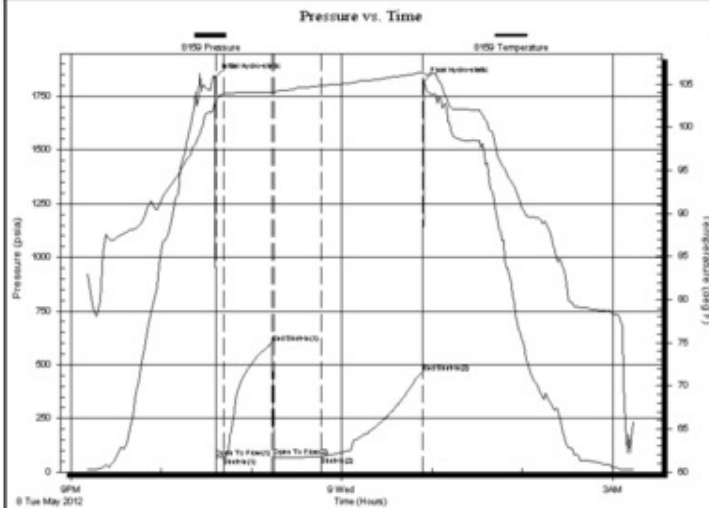
1-22s-12w Stafford
Helmerts#1-1
 Job Ticket: 17136 **DST#: 2**
 Test Start: 2012.05.08 @ 21:10:00

GENERAL INFORMATION:

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Test Type: Conventional Bottom Hole (Initial)
 Time Tool Opened: 22:36:30 Tester: Jared Scheck
 Time Test Ended: 03:14:30 Unit No: 3320-50-Great Bend
 Interval: **3524.00 ft (KB) To 3586.00 ft (KB) (TVD) CORRECTED** Reference Elevations: 1814.00 ft (KB)
 Total Depth: 3586.00 ft (KB) (TVD) **3528' - 3590'** 1807.00 ft (CF)
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 7.00 ft

Serial #: 8159 Inside
 Press@RunDepth: 71.72 psia @ 3582.00 ft (KB) Capacity: 5000.00 psia
 Start Date: 2012.05.08 End Date: 2012.05.09 Last Calib.: 2012.05.09
 Start Time: 21:10:00 End Time: 03:14:30 Time On Btm: 2012.05.08 @ 22:35:30
 Time Off Btm: 2012.05.09 @ 00:54:30

TEST COMMENT: 1st Opening 5 Minutes-Weak blow built 1 1/4 in 5 minutes
 1st Shut-in 30 Minutes-No blow back
 2nd Opening 30 Minutes-Weak blow built 1 1/4 into bucket in 30 minutes
 2nd Shut-in 60 Minutes-No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	1838.00	102.96	Initial Hydro-static
1	66.09	103.19	Open To Flow (1)
6	69.09	103.89	Shut-In(1)
38	599.20	104.07	End Shut-In(1)
39	71.23	103.94	Open To Flow (2)
71	71.72	104.83	Shut-In(2)
138	462.83	106.36	End Shut-In(2)
139	1818.22	106.37	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
20.00	Mud Oil 20% Oil 80% Mud	0.10

Gas Rates

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



DRILL STEM TEST REPORT

Valhalla Exploration L.L.C
 133 N Glendale Wichita KS 67206
 ATTN: Derek Patterson

1-22s-12w Stafford
Helmerts#1-1
 Job Ticket: 17137 **DST#: 3**
 Test Start: 2012.05.09 @ 09:50:00

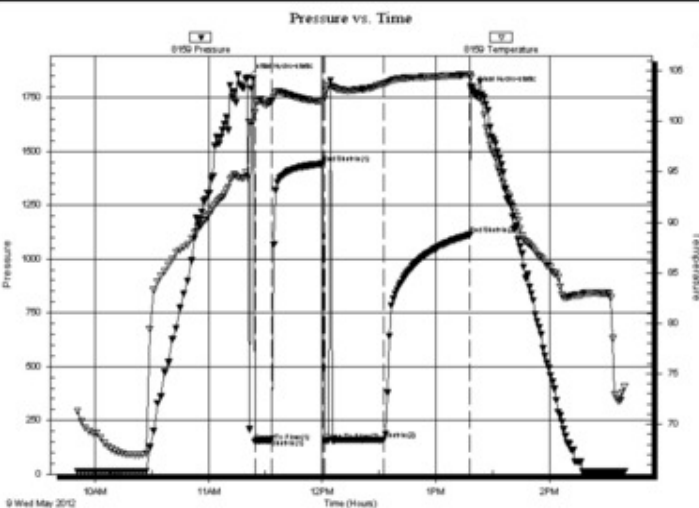
GENERAL INFORMATION:

MISRUN DUE TO PACKER FAILURE

Formation: **Arbuckle**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 11:24:30
 Time Test Ended: 14:40:00
 Test Type: Conventional Bottom Hole (Initial)
 Tester: Jared Scheck
 Unit No: 3320-50-Great Bend
 Interval: **3586.00 ft (KB) To 3592.00 ft (KB) (TVD)** **CORRECTED**
 Total Depth: 3592.00 ft (KB) (TVD) **3590' - 3596'**
 Hole Diameter: 7.88 inches Hole Condition: Poor
 Reference Elevations: 1814.00 ft (KB)
 1807.00 ft (CF)
 KB to GR/CF: 7.00 ft

Serial #: 8159 **Inside**
 Press@RunDepth: 158.96 psia @ 3588.00 ft (KB) Capacity: 5000.00 psia
 Start Date: 2012.05.09 End Date: 2012.05.09 Last Calib.: 2012.05.09
 Start Time: 09:51:00 End Time: 14:40:00 Time On Btm: 2012.05.09 @ 11:20:30
 Time Off Btm: 2012.05.09 @ 13:19:00

TEST COMMENT: 1st Opening 7 Minutes-Fair blow built 6 inches into water lost mud in hole so picked up reset tool fair blow built 4 inches onto water in 7 minutes
 1st Shut-in 30 Minutes-No blow back
 2nd Opening 30 Minutes-Weak surge did not build flushed tool weak surge did not build



PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	1840.63	94.39	Initial Hydro-static
4	150.06	100.92	Open To Flow (1)
13	163.91	101.89	Shut-In(1)
40	1442.87	102.00	End Shut-In(1)
41	155.94	102.27	Open To Flow (2)
72	158.96	103.68	Shut-In(2)
118	1112.03	104.63	End Shut-In(2)
119	1784.11	103.38	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
180.00	Mud	1.43
60.00	Mud with Spot oil 1%oil 99%mud	0.84

Gas Rates

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



DRILL STEM TEST REPORT

Valhalla Exploration L.L.C
 133 N Glendale Wichita KS 67206
 ATTN: Derek Patterson

1-22s-12w Stafford
Helmerts#1-1
 Job Ticket: 17140 DST#: 5
 Test Start: 2012.05.10 @ 20:45:00

GENERAL INFORMATION:

MISRUN DUE TO PACKER FAILURE

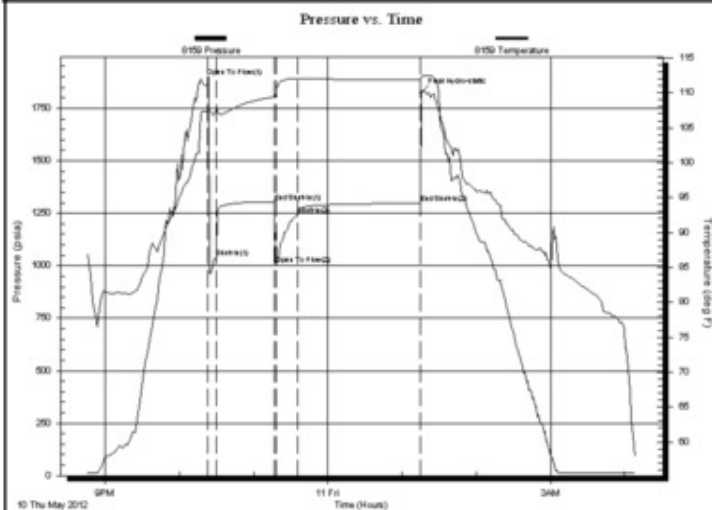
Formation: **Viola**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 22:23:00
 Time Test Ended: 04:09:00
 Interval: **3460.00 ft (KB) To 3528.00 ft (KB) (TVD)**
 Total Depth: 3711.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition: Fair
 Test Type: Conventional Straddle (Initial)
 Tester: Jared Scheck
 Unit No: 3320-Great Bend-50
 Reference Elevations: 1814.00 ft (KB)
 1807.00 ft (CF)
 KB to GR/CF: 7.00 ft

Serial #: 8159

Inside

Press@RunDepth: 1239.72 psia @ 3534.00 ft (KB) Capacity: 5000.00 psia
 Start Date: 2012.05.10 End Date: 2012.05.11 Last Calib.: 2012.05.11
 Start Time: 20:45:00 End Time: 04:09:00 Time On Btm: Time Off Btm: 2012.05.11 @ 01:15:30

TEST COMMENT: 1st Opening 5 Minutes-Strong blow built bottom of bucket in 1 minute
 1st Shut-in 45 Minutes-No blow back
 2nd Opening 30 Minutes-Strong blow built bottom of bucket in 1 minute
 2nd Shut-in 90 Minutes-No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	1898.60	107.38	Open To Flow (1)
7	1037.15	107.77	Shut-In(1)
54	1304.59	109.41	End Shut-In(1)
55	1005.82	110.12	Open To Flow (2)
73	1239.72	112.06	Shut-In(2)
172	1298.40	111.93	End Shut-In(2)
173	1823.16	112.16	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
2640.00	muddy water 30% mud 70% water	35.94
0.00	Chlorides 25,000	0.00
0.00	Resistivity .3 @ 65 degrees	0.00

Gas Rates

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



DRILL STEM TEST REPORT

Valhalla Exploration L.L.C
 133 N Glendale Wichita KS 67206
 ATTN: Derek Patterson

1-22s-12w Stafford
Helmerts#1-1
 Job Ticket: 17141 DST#: 6
 Test Start: 2012.05.11 @ 08:45:00

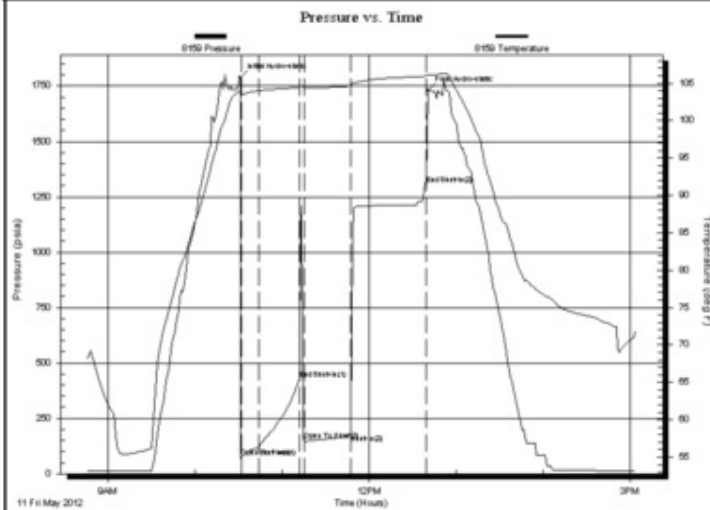
GENERAL INFORMATION:

Formation: **Viola**
 Deviated: No Whipstock: ft (KB)
 Time Tool Opened: 10:32:00
 Time Test Ended: 15:04:00
 Interval: **3440.00 ft (KB) To 3504.00 ft (KB) (TVD)**
 Total Depth: 3693.00 ft (KB) (TVD)
 Hole Diameter: 7.88 inches Hole Condition:
 Test Type: Conventional Straddle (Initial)
 Tester: Jared Scheck
 Unit No: 3320-GB-50
 Reference Elevations: 1814.00 ft (KB)
 1807.00 ft (CF)
 KB to GR/CF: 7.00 ft

Serial #: 8159

Press@RunDepth: 177.47 psia @ ft (KB) Capacity: 5000.00 psia
 Start Date: 2012.05.11 End Date: 2012.05.11 Last Calib.: 2012.05.11
 Start Time: 08:45:00 End Time: 15:04:00 Time On Btm: 2012.05.11 @ 10:31:00
 Time Off Btm: 2012.05.11 @ 12:40:30

TEST COMMENT: 1st Opening 10 Minutes-Fair blow built 6 inches
 1st Shut-in 30 Minutes-No blow back
 2nd Opening 30 minutes-Fair blow built bottom of bucket in 30 minutes
 2nd Shut-in 60 Minutes-No blow back



PRESSURE SUMMARY

Time (Min.)	Pressure (psia)	Temp (deg F)	Annotation
0	1789.63	103.94	Initial Hydro-static
1	75.07	103.46	Open To Flow (1)
13	114.39	104.00	Shut-In(1)
41	429.19	104.43	End Shut-In(1)
44	149.86	104.38	Open To Flow (2)
76	177.47	104.64	Shut-In(2)
128	1306.68	105.96	End Shut-In(2)
130	1730.03	106.10	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
240.00	muddy oil cut gas 40%gas 10%oil 50%r	2.27
0.00	240 gas in pipe	0.00

Gas Rates

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

ROCK TYPES

LITHOLOGY

- Anhy
- Bent
- Brec
- Cht
- Clyst
- Coal
- Congl
- Dol
- Gyp
- Igne
- Lmst
- Meta
- Mrlst
- Salt
- Shale
- Shcol
- Shgy
- Sltst
- Ss
- Till
- Sltstn
- Shale
- Sandylms
- Lms
- Gry sh
- Dtd
- Dol
- Carb sh
- pipesymbol

FOSSIL

- unknown lith
- Red shale
- Oomoldic
- Fuss
- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom
- MINERAL
- Sity

STRINGER

- Sand
- Dol
- Chlorite
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chilt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil

TEXTURE

- Sulphur
- Tuff
- Red shale
- Sh
- Sandylms
- Lms
- Gryslt
- Grysh
- Dol
- Clystn
- Carbsh
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln

OIL SHOW

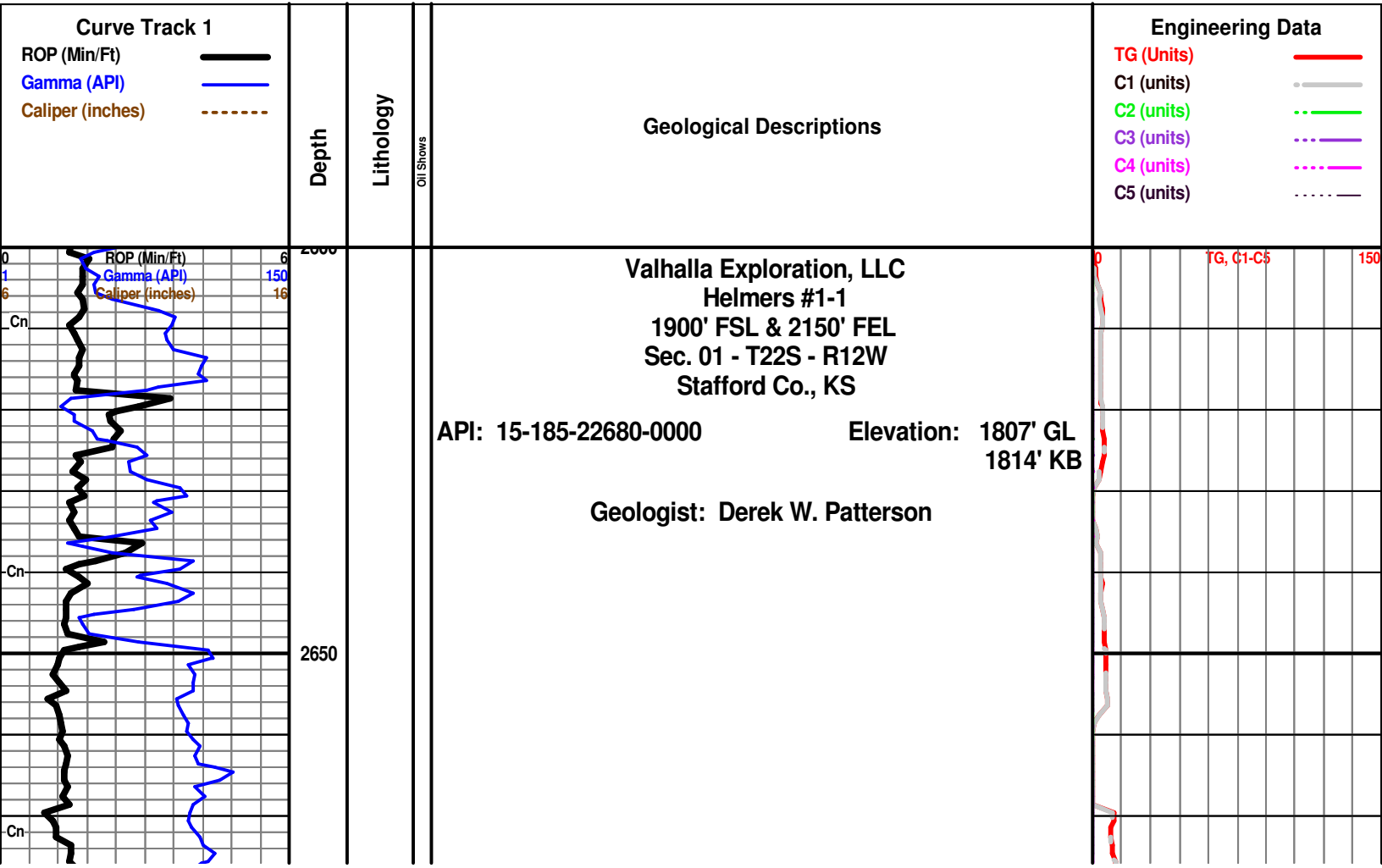
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest
- Gas show
- Good
- Fair
- Poor
- Dead

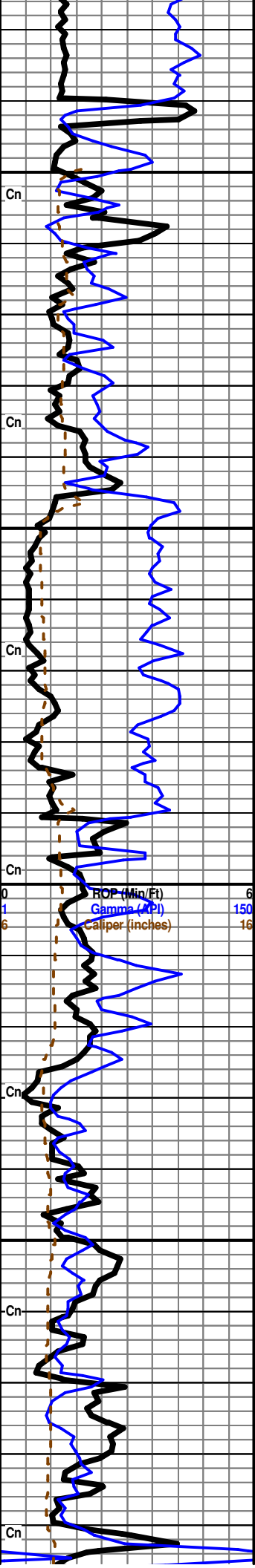
INTERVAL

- Dst
- Core
- Dst
- Straddle test

EVENT

- Rft
- Sidewall
- Dst
- Open hole
- Perforations





2700

2750

2800

2850

2894



Displaced Mud System @ 2731'

Severy 2745 (-931)

Shale: gray dk gray some dk green and brick red, blocky to rounded, very silty, abundant fissile pieces, with Siltstone stringers: gray lt gray, dense matrix, vfgrained, heavily micaceous, poor intergranular porosity, no shows noted, no fluorescence.

Start 20' Wet & Dry Samples @ 2760'

Shale: gray dk gray some dk green and brick red, blocky to rounded, very silty, abundant fissile pieces, with Siltstone stringers: gray lt gray, dense matrix, vfgrained, heavily micaceous, poor intergranular porosity, no shows noted, no fluorescence.

INFLUX Sandstone: gray lt gray, slightly friable to fairly cemented, vfgrained, round to sub-rounded well sorted grains, fair-good intergranular porosity in most, no shows noted, no fluorescence, still carrying abundant amount of Shale as above.

Topeka 2790 (-976)

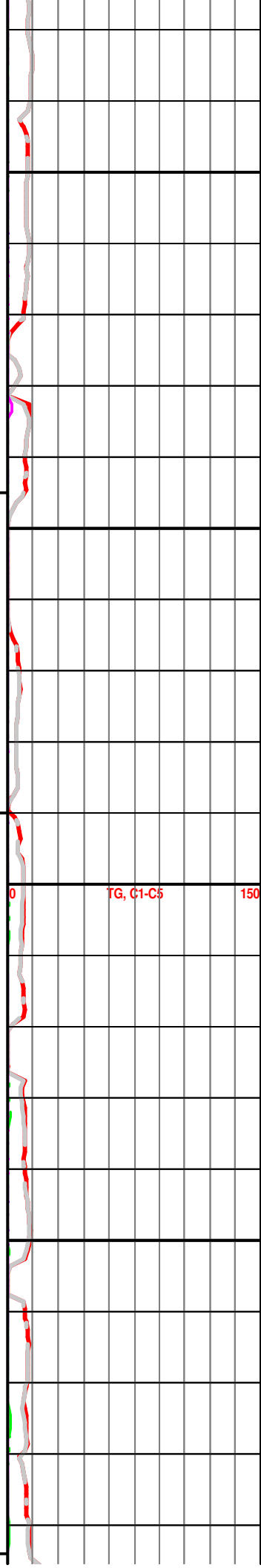
Limestone: cream lt cream, dense sub-chalky matrix, micro-cryptoxln, fossiliferous, poor-no visible porosity, no shows noted, even lt pale yellow mineral fluorescence, with interbedded Shale: gray dk gray, blocky to rounded, mostly soft.

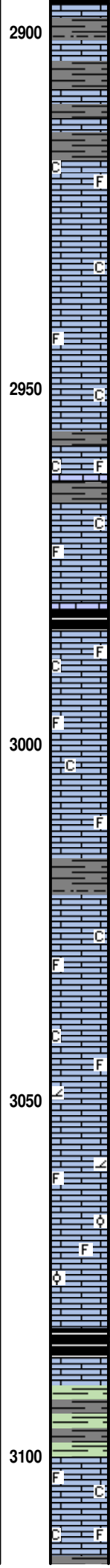
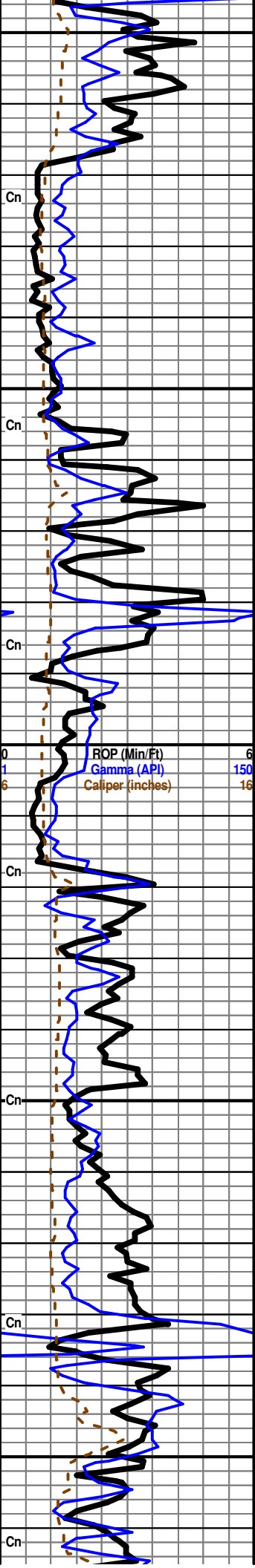
Limestone: cream lt cream lt gray, dense matrix, microxln, fossiliferous to sub-fossiliferous, scattered 2ndary xln fill, poor visible porosity, no shows noted, scattered poor lt pale yellow mineral fluorescence.

Limestone: cream lt cream lt gray, dense matrix, microxln, fossiliferous to sub-fossiliferous, scattered 2ndary xln fill, poor visible porosity, no shows noted, scattered poor lt pale yellow mineral fluorescence.

Limestone: cream gray brown, dense matrix, microxln, fossiliferous, poor visible porosity, no shows noted, scattered poor-no mineral fluorescence.

King Hill 2894 (-1080)





Shale: black, carbonaceous, blocky to rounded, mostly soft and slightly waxy, very poor show bleeding gas bubbles upon break.

Interbedded Shale and Limestone.
Geologist Derek W. Patterson On Location, 1140 hrs 5.6.12

Limestone: It cream cream lt gray, softer sub-chalky matrix, micro-vfxln, scattered sub-fossiliferous, fair interxln porosity, no shows noted, poor spotty lt yellow mineral fluorescence.

Limestone: It cream lt gray, dense to softer sub-chalky matrix, micro-vfxln, fossiliferous to sub-fossiliferous, fair interxln/pinpoint porosity in most, no shows noted, poor spotty lt yellow mineral fluorescence.

Queen Hill 2981 (-1167)
Shale: black dk gray, carbonaceous, blocky to rounded, soft and waxy, no show gas bubbles.

Limestone: tan lt brown gray some mottled, sub-chalky matrix, micro-vfxln, fossiliferous, fair interxln porosity, no shows noted, very poor-no mineral fluorescence.

Limestone: cream lt brown, dense sub-chalky matrix, microxln, fossiliferous, poor interxln porosity, no shows noted, very poor-no mineral fluorescence.

Limestone: It cream off white, softer slightly dolomitic matrix, vfxln, fossiliferous, fair interxln porosity in most, very poor lt yellow mineral fluorescence.

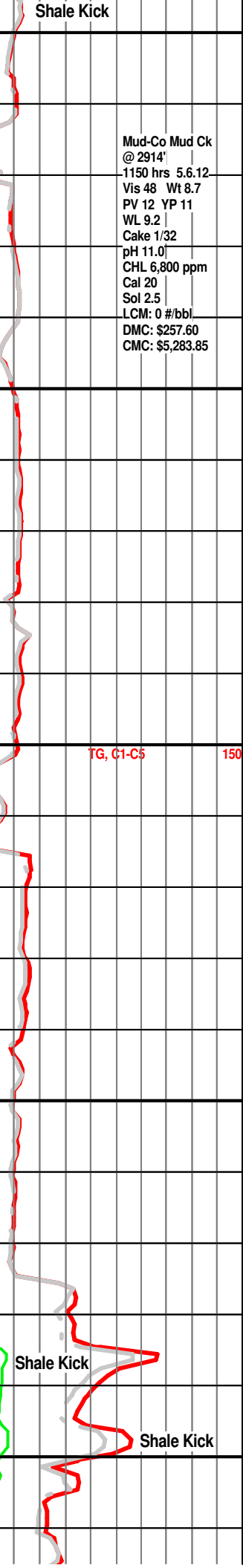
Limestone: cream lt tan, dense tighter matrix, micro-vfxln, mostly fossiliferous to oolitic, poor interxln porosity, no shows noted, very poor-no mineral fluorescence.

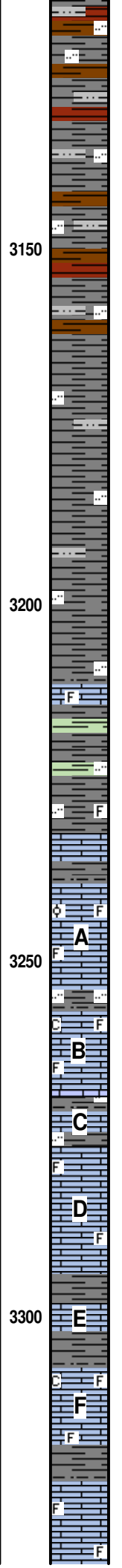
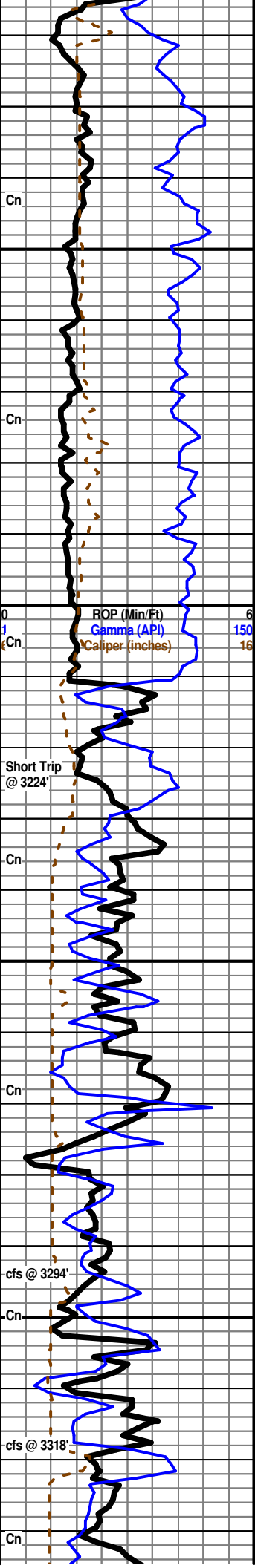
Heebner 3082 (-1268)
Shale: black dk gray, carbonaceous, blocky, hard to softer and waxy, good show bleeding gas bubbles upon break/left under lamp.

Shale: gray dk gray some dk green, blocky, hard to soft, abundant fissile and platy material, some splintery.

Toronto 3100 (-1286)
Start 10' Wet & Dry Samples @ 3100'
Limestone: It cream off white, softer chalky matrix, micro-vfxln, fossiliferous, fair interxln/interfossiliferous porosity, no shows noted, even bright pale yellow mineral fluorescence.

Douglas 3114 (-1300)





Shale: gray dk gray dk brown brick red, some carbonaceous, blocky to rounded, mostly soft, silty, abundant splintery to fissile material, with Siltstone stringers: gray lt gray, softer friable matrix, vf-fgrained, heavily micaceous, fair intergranular porosity, no shows noted, no fluorescence.

Shale: gray dk gray dk brown brick red, some carbonaceous, blocky to rounded, mostly soft, silty, abundant splintery to fissile material, with Siltstone stringers: gray lt gray, softer friable matrix, vf-fgrained, heavily micaceous, fair intergranular porosity, no shows noted, no fluorescence.

DRASTIC DECREASE IN SAMPLE QUALITY

Shale: gray dk gray dk brown, some carbonaceous, blocky to rounded, mostly soft, silty, majority of pieces very mushy, scattered Siltstone stringers as above, sample washes gray.

Shale: gray dk gray, some carbonaceous, rounded, mostly soft, silty, majority of pieces very mushy and sticky, scattered Siltstone stringers as above, sample washes gray.

Shale: gray dk gray, some carbonaceous, rounded, mostly soft, silty, majority of pieces very mushy and sticky, scattered Siltstone stringers as above, sample washes gray.

Brown Lime 3211 (-1397)

Limestone: tan lt brown, dense tight matrix, micro-cryptoxln, fossiliferous to barren, poor visible porosity, no shows noted, no fluorescence.

Shale: gray dk gray dk green, blocky to rounded, mostly soft and mushy, some silty material.

Limestone: tan lt brown, dense tight matrix, micro-cryptoxln, fossiliferous to barren, poor visible porosity, no shows noted, no fluorescence, grading to Shale: as above.

Lansing 3239 (-1425)

Limestone: cream lt cream, mostly dense matrix, vfxln, fossiliferous with scattered poor oolitic material, poor interxln/interfossiliferous porosity, some scattered 2ndary xln fill in porosity, no shows noted, no fluorescence.

Shale: gray dk gray, blocky to sub-rounded, mostly soft, heavy silt content.

Limestone: cream lt cream lt tan, softer sub-chalky to dense tight matrix, vf-microxln, fossiliferous to sub-fossiliferous, fair interxln porosity, decrease in visible porosity with depth, scattered 2ndary xln fill in few pieces, no shows noted, very poor-no mineral fluorescence.

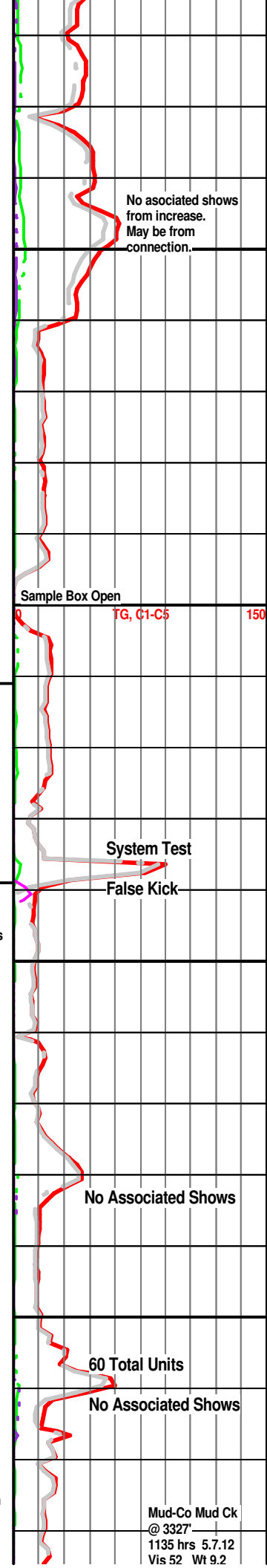
Shale: gray dk gray, blocky to rounded, mostly soft, heavy silt content, with interbedded Limestone: as above, no shows noted.

3294' cfs 20"/40" - Limestone: tan cream, dense tight matrix, micro-vfxln, fossiliferous, some grainy, fair amount of 2ndary xln fill and along edges, poor interxln porosity, no shows noted, very poor-no mineral fluorescence.

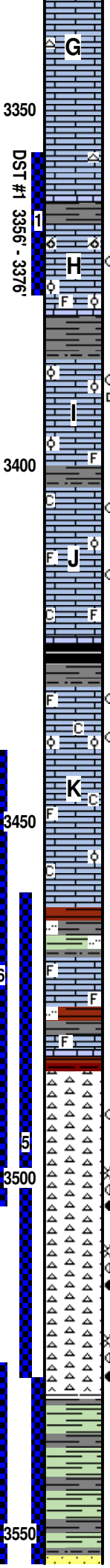
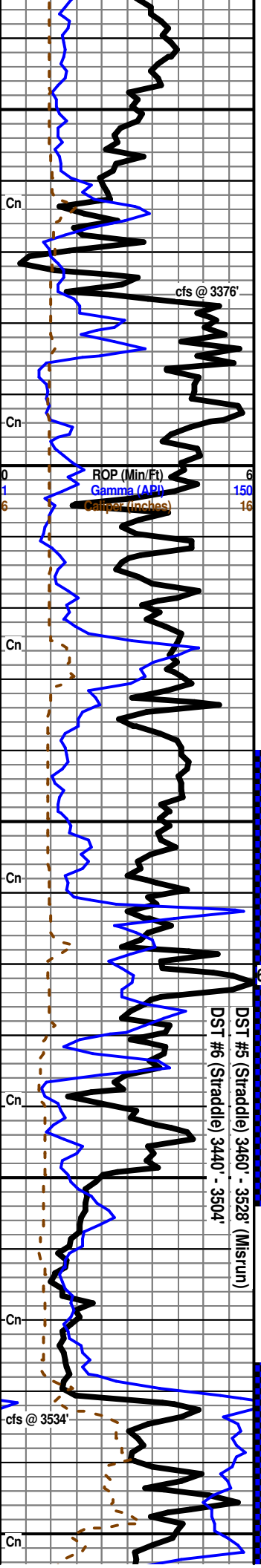
Alternating Limestone and Shale beds; Shale: gray dk gray dk green, blocky, mostly hard with some scattered softer, very limey, and some scattered interbedded Limestone and stringers, no shows noted.

3318' cfs 20"/40" - Limestone: off white lt cream, slightly chalky softer to dense tight matrix, micro-vfxln, fossiliferous in part, fair-poor interxln porosity, no shows noted, even dull lt yellow mineral fluorescence, no cut fluorescence, no odor.

Limestone: cream tan, dense matrix, micro-cryptoxln, occasionally fossiliferous, overall poor interxln porosity, no shows noted, no fluorescence.



Mud-Co Mud Ck
@ 3327'
1135 hrs 5.7.12
Vis 52 Wt 9.2



Limestone: tan cream, dense tight cherty matrix, micro-cryptoxln, mostly barren with occasional imbedded fossil, fair amount of 2ndary xln along edges, overall poor visible porosity, no shows noted, no fluorescence.

Limestone: tan cream, dense tight cherty matrix, micro-cryptoxln, mostly barren with occasional imbedded fossil, fair amount of 2ndary xln along edges, overall poor visible porosity, no shows noted, no fluorescence.

Muncie Creek 3363 (-1549)

Shale: gray dk gray, some carbonaceous, blocky to rounded, hard to softer.

3376' cfs 40"/60" - Limestone: off white lt cream, sub-friable matrix, microxln, heavily oomoldic with large molds, fair-good oomoldic porosity, heavy 2ndy xln/rexln in porosity, few pieces with good brown saturated staining within porosity/along edge, poor-very poor show oil upon break from these pieces, spotty bright lt yellow fluorescence and good bluish-white cut fluorescence in stained pieces, no odor.

Shale: gray dk gray, blocky and hard.

Limestone: cream lt cream, dense matrix, microxln, heavily oolitic, fair-poor interoolitic porosity in most, trace fair saturated edge staining and within oolites, some dead gilsonitic, very poor show brown oil upon break in few pieces, most shows are stringy and tarry, fair dull pale yellow fluorescence, poor cut fluorescence, no odor.

Shale: gray dk gray, blocky and hard.

Limestone: cream lt tan lt cream, dense to slightly friable chalky matrix, microxln, heavily oolitic-fossiliferous, fair-poor interoolitic/interfossiliferous porosity, few pieces with poor brown saturated stain within fossils/oolites with scattered associated edge staining, no live shows noted, overall poor fluorescence, no cut fluorescence, no odor.

Stark 3425 (-1611)

Shale: black dk gray, some carbonaceous, blocky to slightly rounded, hard to soft, slight show gas bubbles upon break in few pieces.

Limestone: off white lt cream, mostly dense sub-chalky matrix, heavily oolitic, fair amount of 2ndary xln fill around oolites, overall fair-poor interoolitic porosity, very poor show oil droplets upon break in few pieces, even dull pale yellow fluorescence, very poor-no cut fluorescence, no odor.

Limestone: lt cream off white, dense sub-chalky matrix, fair amount of oolitic-fossiliferous material, some 2ndary xln fill in few pieces, overall poor interxln/interfossiliferous porosity, no shows noted, poor dull pale yellow mineral fluorescence, no cut fluorescence, no odor, with scattered loose Chalk in sample.

Base Kansas City 3462 (-1648)

Shale: brick red gray dk gray dk green, mostly blocky and hard with some softer and slightly rounded, majority silty.

Limestone: cream lt cream, softer chalky matrix, micro-vfxln, heavily fossiliferous, scattered 2ndary xln fill and along edges, fair-poor interfossiliferous porosity, no shows noted, very poor dull pale yellow mineral fluorescence.

Predominately Shale: brick red gray dk gray some dk green, blocky and hard with some scattered softer and slightly rounded, abundant silty material, with interbedded Limestone: as above, no shows noted.

Viola 3485 (-1671)

Chert: cream tan lt cream yellow, mostly fresh and sharp with some scattered poor edge weathering, very poor fracture porosity in few pieces, questionable very poor show oil upon break in few pieces, slight lt yellow edge fluorescence (mineral), no cut fluorescence, no odor.

Chert: scattered as above, with influx Chert: black dk brown, dense and slightly weathered to sub-tripolitic, poor visible porosity, fair-good show bleeding oil and gas bubbles upon break, spotty bright-pale lt yellow fluorescence, fair forced bluish-white cut fluorescence, fair gassy odor.

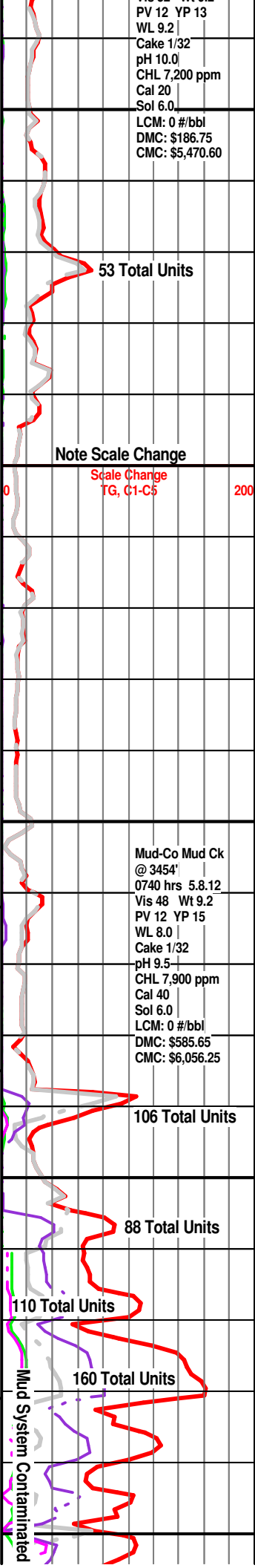
3534' cfs 0" - Chert: scattered as above, with influx Chert: black dk brown, dense and slightly weathered to sub-tripolitic, poor visible porosity, fair-good show bleeding oil and gas bubbles upon break, spotty bright-pale lt yellow fluorescence, fair forced bluish-white cut fluorescence, fair gassy odor.

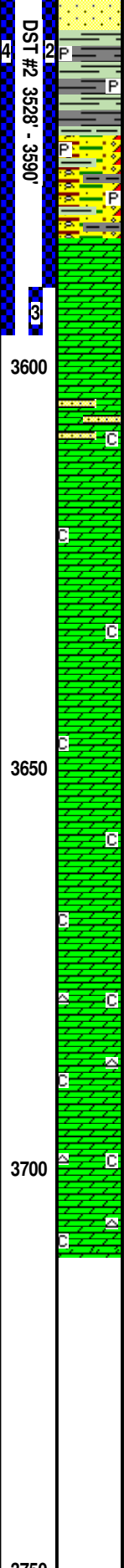
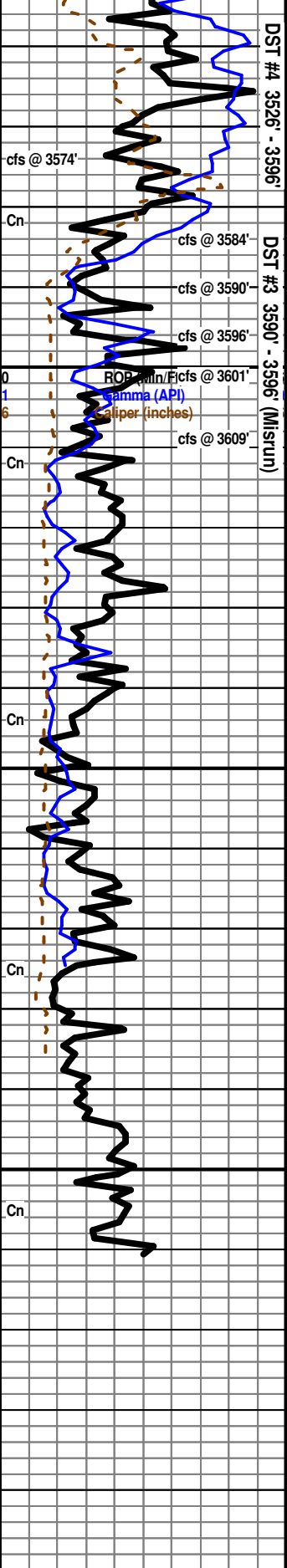
3534' cfs 20" - Chert: mixed as above, increase in tripolitic material and associated shows.

Simpson 3531 (-1717)

Shale: gray dk gray dk green, mostly blocky and hard.

Sandstone: clear angular grains in lt brown matrix, vf-coarse grained, most well cemented with some scattered friable, non-fairly sorted, fair intergranular porosity, majority have good saturated stain and





Shale: teal gray dk gray, blocky and hard with some softer and waxy, abundant platy and firm, fissile in part, fair amount of pyritic material and some scattered Pyrite.

3574' cfs 20" - Influx Conglomerate: mixed Shale as above and abundant mushy material, sample washes brown-gray.

3584' cfs 40"/60" - Conglomerate: as above, influx Shale: maroon purple gray teal, blocky and hard, sample carrying strong oil/sulfur odor but no Dolomite observed.

Arbuckle 3584 (-1770)

3586' cfs 40"/60" (3584'-3590') - Dolomite: tan gray, most friable matrix, f-coarsexln, very good rhombic development in most pieces with associated good-excellent interxln porosity, abundant free oil in tray, good saturated stain, excellent show free oil and good show gas from porosity, even greenish-yellow fluorescence, streaming milky-white cut fluorescence, very strong oil/sulfur odor.

3592' cfs 40"/60" (3590'-3596') - Dolomite: as above, grading to a dense tight microxln Dolomite: poor xln development, poor show oil with increase upon break, grading to Dolomite: lt gray white, sub-friable matrix, coarse-fxln with scattered vfxln sub-sucrosic pieces, majority good rhombic development with associated good interxln porosity, fair amount of free oil in tray, good saturated stain, good show free oil, lt yellow fluorescence, streaming cut fluorescence, very strong oil/sulfur odor.

3597' cfs 40"/60" (3597'-3601') - Dolomite: cream lt tan, mostly dense tight matrix, vf-microxln, poor sub-rhombic to poor xln development, overall poor interxln porosity, slight saturated stain, very poor show oil with fair-good increase upon break in few pieces, scattered dead gilsonitic edge staining, even bright lt yellow fluorescence, fair-good bluish-white cut fluorescence in most, moderate odor.

3605' cfs 40"/60" (3602'-3611') - Dolomite: white lt gray lt cream, sub-friable matrix, f-coarsexln, fair-good rhombic development, fair-good interxln porosity with abundant chalk fill, fair saturated stain, fair-good show oil with good increase upon break, most shows are heavy dk black tarry oil, some dead gilsonitic staining, even yellowish-green fluorescence, fair cut fluorescence, good odor, with Sandstone stringers: fgrained, well cemented, poor-fair show oil upon break with dead tarry.

(3612'-3627') - Dolomite: scattered fair rhombic as above with slight decrease in shows, grading to Dolomite: cream tan, dense tighter matrix, vfxln, overall poor xln development, poor interxln porosity in most, very poor show oil upon break, even dull greenish-yellow fluorescence, poor bluish cut fluorescence, moderate odor.

(3628'-3640') - Dolomite: off white lt cream, sub-friable to slightly cherty matrix, f-coarsexln, fair-good rhombic development, fair-good interxln porosity with abundant chalk fill, fair saturated stain, fair-good show oil with good increase upon break, most shows are heavy dk black tarry oil, some dead gilsonitic staining, even yellowish-green fluorescence, fair cut fluorescence, good odor.

(3641'-3654') - Dolomite: as above, slight decrease in visible shows, most are still heavy dk black tarry oil, with Dolomite: cream lt cream lt tan, dense tighter matrix, vfxln, poor xln development and associated porosity, very poor show upon break in few pieces, even lt greenish-yellow fluorescence across samples, moderate-good odor, with influx loose Chalk.

(3655'-3673') - Dolomite: off white lt cream, sub-friable to slightly cherty matrix, f-coarsexln, fair rhombic development, fair-good interxln scattered vuggy porosity with fair amount of Chalk fill, trace saturated stain, fair-good show oil with increase upon break, most shows are heavy dk black tarry oil, some dead gilsonitic staining, even yellowish-green fluorescence, fair bluish-white cut fluorescence, good oil/sulfur odor.

(3674'-3694') - Dolomite: lt cream cream lt tan, sub-friable matrix, vf-coarsexln, fair-good rhombic development, fair interxln porosity with fair amount of chalk fill, poor show heavy dk black tarry oil with slight increase upon break, some dead gilsonitic staining, fair amount of pieces having no show at all, even pale greenish-yellow fluorescence, fair-poor bluish-white cut fluorescence, good oil/sulfur odor, with trace Chert: cream, opaque, fresh and sharp, and scattered loose Chalk.

(3695'-3711') - Dolomite: tan cream, sub-friable to dense matrix, vf-fxln, fair-poor rhombic development, poor-fair interxln porosity, scattered chalk fill, few pieces with poor show lt brown oil droplets upon break, even pale greenish-yellow fluorescence, good oil/sulfur odor, with continued scattered Chert and loose Chalk as above.

LTD 3711 (-1897)
RTD 3710 (-1896)

Orders Received to Run 5 1/2" Production Casing For Further Evaluation

Geologist Derek W. Patterson Off Location, 2050 hrs 5.10.12

Respectfully Submitted,
Derek W. Patterson

