

**OPERATOR**

Company: TDI, INC.  
 Address: 1310 BISON ROAD  
 HAYS, KANSAS 67601

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: RAYMOND TRUST # 1  
 Location: SW SW NE SW Sec.7-13s-20w  
 Pool: WILDCAT  
 State: KANSAS  
 API: 15-051-26,596-00-00  
 Field: UNNAMED  
 Country: USA



**TDI, Inc.**  
 1310 BISON ROAD  
 HAYS, KANSAS 67601  
 (785) 628-2593

Scale 1:240 Imperial

Well Name: RAYMOND TRUST # 1  
 Surface Location: SW SW NE SW Sec.7-13s-20w  
 Bottom Location:  
 API: 15-051-26,596-00-00  
 License Number: 4787  
 Spud Date: 10/4/2013 Time: 1:00 AM  
 Region: ELLIS COUNTY Time: 12:21 PM  
 Drilling Completed: 10/9/2013  
 Surface Coordinates: 1385' FSL & 1335' FWL  
 Bottom Hole Coordinates:  
 Ground Elevation: 2138.00ft  
 K.B. Elevation: 2148.00ft  
 Logged Interval: 3100.00ft To: 3980.00ft  
 Total Depth: 3980.00ft  
 Formation: ARBUCKLE  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: -99.5897419 Latitude: 38.9321944  
 N/S Co-ord: 1385' FSL  
 E/W Co-ord: 1335' FWL

**LOGGED BY**

Company: SOLUTIONS CONSULTING, INC.  
 Address: 108 W 35TH  
 HAYS, KS 67601  
 Phone Nbr: (785) 639-1337  
 Logged By: Geologist Name: HERB DEINES

**CONTRACTOR**

Contractor: SOUTHWIND DRILLING, INC.  
 Rig #: 1  
 Rig Type: MUD ROTARY  
 Spud Date: 10/4/2013 Time: 1:00 AM  
 TD Date: 10/9/2013 Time: 12:21 PM  
 Rig Release: 10/10/2013 Time: 3:30 PM

**ELEVATIONS**

K.B. Elevation: 2148.00ft Ground Elevation: 2138.00ft  
 K.B. to Ground: 10.00ft

**NOTES**

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON POSITIVE RESULTS OF DST # 1

OPEN HOLE LOGGING BY PIONEER ENERGY SERVICES: DUAL INDUCTION LOG, DUAL COMPENSATED POROSITY LOG, MICRORESISTIVITY LOG.

DRILL STEM TESTING BY TRILOBITE TESTING INC: ONE (1) STRADDLE TEST

**FORMATION TOPS SUMMARY AND CHRONOLOGY OF DAILY ACTIVITY**


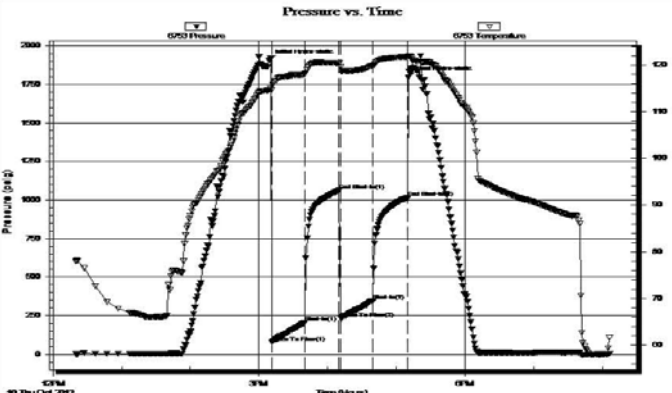
<b>Raymond Trust # 1</b>	<b>Kohl A-7</b>
<b>SW SW NE SW</b>	<b>SE SE SW</b>
<b>Sec. 7-13s-20w</b>	<b>Sec. 7-13s-20w</b>
<b>2138' GL 2148' KB</b>	<b>Reference Well</b>

<u>FORMATION</u>	<u>SAMPLE TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1498+ 650	1500+ 648	+ 655
B-Anhydrite	1544+ 604	1543+ 605	+ 609
Topeka	3183-1035	3181-1033	
Heebner Shale	3412-1264	3411-1263	-1265
Toronto	3431-1283	3428-1280	-1284
LKC	3447-1299	3447-1299	-1303
BKC	3690-1542	3689-1541	-1546
Marmaton-Pawnee	3750-1602	3754-1606	-1610
Conglomerate Sand	3830-1682	3830-1682	-1686
Arbuckle	3853-1705	3850-1702	-1715
RTD	3980-1832		
LTD		3982-1834	-1793

**SUMMARY OF DAILY ACTIVITY**

- 10-04-13 350', finish RU, spud 1:00AM, drilling
- 10-05-13 1415', set 8 5/8" to 1501' w/ 475 sxs SMD, plug down 7:00PM, WOC  
12 hrs, slope 1/2 degree
- 10-06-13 1505', WOC, drill plug 8:10 AM
- 10-07-13 2510', drilling, displace 3090'-3113'
- 10-08-13 3245', drilling
- 10-09-13 3810', drilling, RTD 3980'@12:21PM, ST, CCH, TOWB, logs, start DST  
#1 straddle test of Conglomerate sand 3762'-3853'
- 10-10-13 3980', finish DST # 1, TIWB, LDDP, run production casing, RD

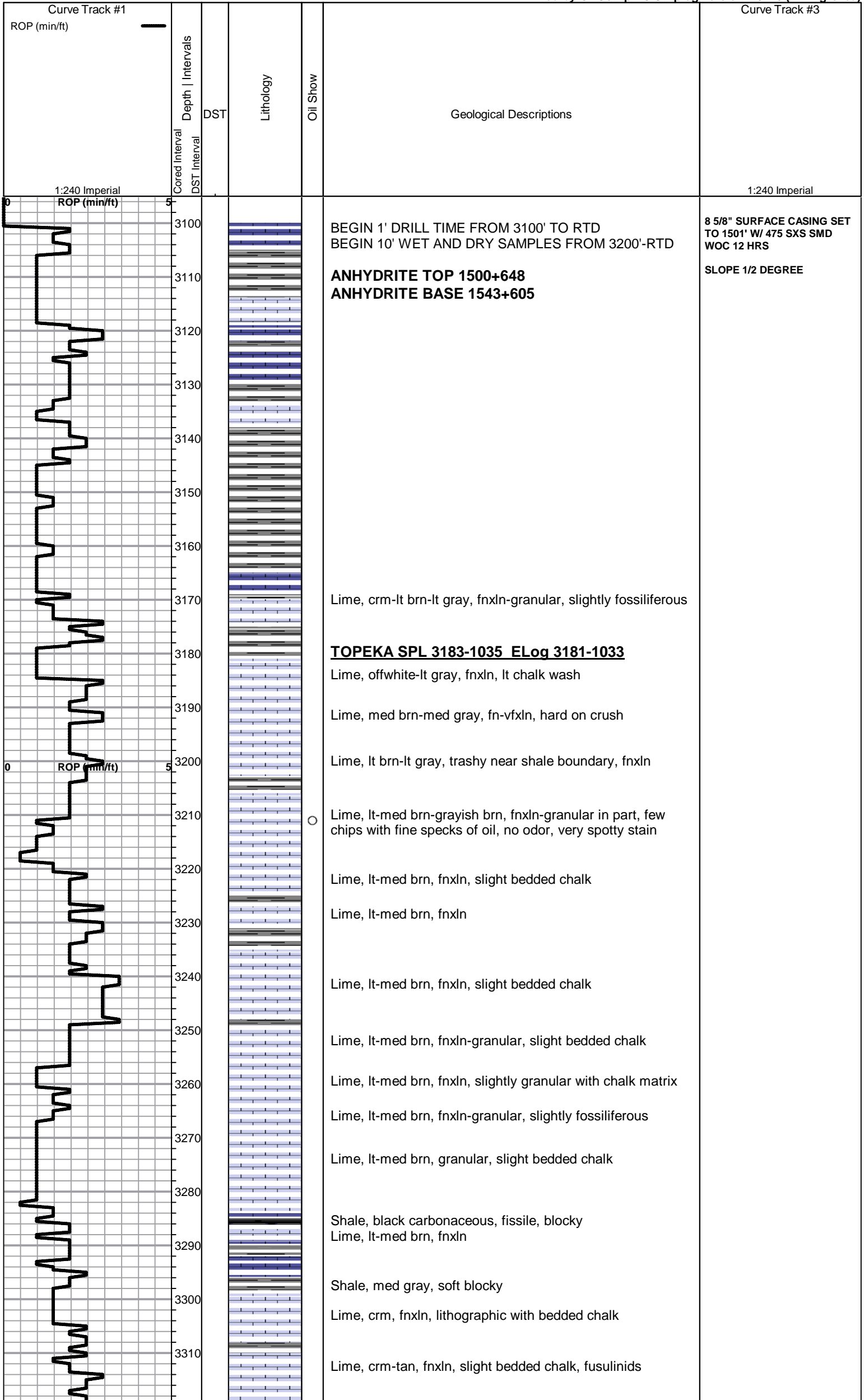
**DST # 1 STRADDLE TEST 3762'-3853' BOTTOM PACKER HELD**

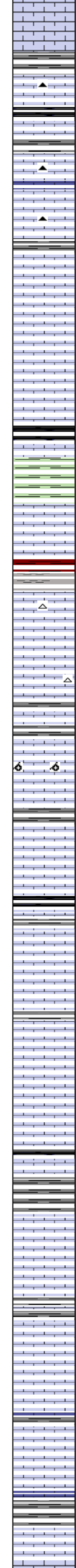
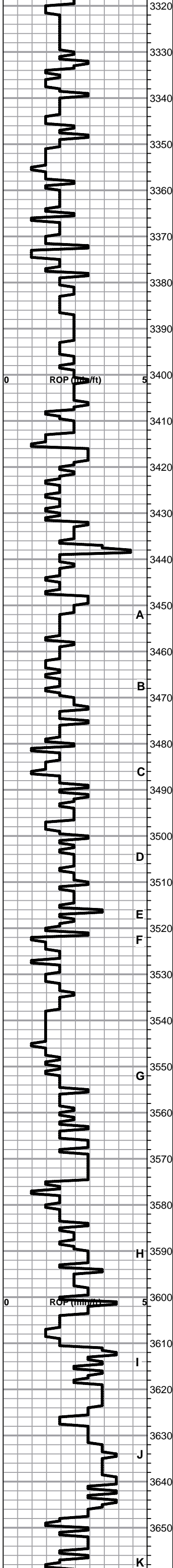
 <b>TRILOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b>																																					
	TDI Inc 1310 Bison Rd Hays, Ks 67601 ATTN: Herb Deines	7-13S-20W Ellis Co Ks <b>Raymond Trust #1</b> Job Ticket: 54448 <b>DST#: 1</b> Test Start: 2013.10.10 @ 12:20:00																																				
<b>GENERAL INFORMATION:</b> Formation: <b>Marmaton, Cong. SD</b> Deviated: No Whipstock: ft (KB) Time Tool Opened: 15:11:00 Time Test Ended: 20:06:00 Interval: <b>3762.00 ft (KB) To 3853.00 ft (KB) (TVD)</b> Total Depth: 3890.00 ft (KB) (TVD) Hole Diameter: 7.88 inches Hole Condition: Fair Test Type: Conventional Straddle (Initial) Tester: Brett Dickinson/Tim Unit No: 59 Reference Elevations: 2148.00 ft (KB) 2140.00 ft (CF) KB to GR/CF: 8.00 ft																																						
<b>Serial #: 6753      Outside</b> Press@RunDepth: 346.31 psig @ 3849.00 ft (KB)      Capacity: 8000.00 psig Start Date: 2013.10.10      End Date: 2013.10.10      Last Calib.: 2013.10.10 Start Time: 12:20:05      End Time: 20:05:59      Time On Btm: 2013.10.10 @ 15:09:00 Time Off Btm: 2013.10.10 @ 17:10:30																																						
<b>TEST COMMENT:</b> IFP-30-BOB in 4 min. ISI-30-Blow back built to 4 in. in 18 min died back FF-30-BOB in 3 min FSI-30-Built to 2 in. in 12 min died back to 1 in.																																						
	<b>PRESSURE SUMMARY</b>																																					
	<table border="1"> <thead> <tr> <th>Time (Min.)</th> <th>Pressure (psig)</th> <th>Temp (deg F)</th> <th>Annotation</th> </tr> </thead> <tbody> <tr><td>0</td><td>1903.78</td><td>114.59</td><td>Initial Hydro-static</td></tr> <tr><td>2</td><td>76.37</td><td>114.68</td><td>Open To Flow (1)</td></tr> <tr><td>31</td><td>206.61</td><td>118.02</td><td>Shut-In(1)</td></tr> <tr><td>61</td><td>1062.11</td><td>120.39</td><td>End Shut-In(1)</td></tr> <tr><td>62</td><td>232.81</td><td>119.54</td><td>Open To Flow (2)</td></tr> <tr><td>91</td><td>346.31</td><td>119.77</td><td>Shut-In(2)</td></tr> <tr><td>121</td><td>1015.73</td><td>121.60</td><td>End Shut-In(2)</td></tr> <tr><td>122</td><td>1793.95</td><td>121.88</td><td>Final Hydro-static</td></tr> </tbody> </table>	Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation	0	1903.78	114.59	Initial Hydro-static	2	76.37	114.68	Open To Flow (1)	31	206.61	118.02	Shut-In(1)	61	1062.11	120.39	End Shut-In(1)	62	232.81	119.54	Open To Flow (2)	91	346.31	119.77	Shut-In(2)	121	1015.73	121.60	End Shut-In(2)	122	1793.95	121.88	Final Hydro-static	
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation																																			
0	1903.78	114.59	Initial Hydro-static																																			
2	76.37	114.68	Open To Flow (1)																																			
31	206.61	118.02	Shut-In(1)																																			
61	1062.11	120.39	End Shut-In(1)																																			
62	232.81	119.54	Open To Flow (2)																																			
91	346.31	119.77	Shut-In(2)																																			
121	1015.73	121.60	End Shut-In(2)																																			
122	1793.95	121.88	Final Hydro-static																																			
<b>Recovery</b>		<b>Gas Rates</b>																																				
<table border="1"> <thead> <tr> <th>Length (ft)</th> <th>Description</th> <th>Volume (bbl)</th> </tr> </thead> <tbody> <tr><td>370.00</td><td>GO 20%G 80%O</td><td>5.19</td></tr> <tr><td>560.00</td><td>GMCO 20%G 20%M 60%O</td><td>7.86</td></tr> <tr><td>0.00</td><td>120ft GIP</td><td>0.00</td></tr> <tr><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td></tr> </tbody> </table>	Length (ft)	Description	Volume (bbl)	370.00	GO 20%G 80%O	5.19	560.00	GMCO 20%G 20%M 60%O	7.86	0.00	120ft GIP	0.00							<table border="1"> <thead> <tr> <th>Choke (inches)</th> <th>Pressure (psig)</th> <th>Gas Rate (Mcf/d)</th> </tr> </thead> <tbody> <tr><td></td><td></td><td></td></tr> </tbody> </table>		Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)															
Length (ft)	Description	Volume (bbl)																																				
370.00	GO 20%G 80%O	5.19																																				
560.00	GMCO 20%G 20%M 60%O	7.86																																				
0.00	120ft GIP	0.00																																				
Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)																																				

ROCK TYPES			
	Cht vari		Dolprim
	Clystgy		Dol Lime
	Congl		Lmst fw<7
	Chtcong1		Lmst fw7>
	Lscong1		shale, red
	shale, grn		Shcol
	shale, gry		CglSandy
	Carbon Sh		

ACCESSORIES	
<b>MINERAL</b>	<b>FOSSIL</b>
▲ Chert, dark	♣ Oomoldic
• Sandy	
•• Varicolored chert	
△ Chert White	

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





Lime, lt brn, fnxln

Lime, lt-med brn, fnxln-granular in part  
Shale, med-dark gray, soft blocky

Lime, lt brnm lt gray, fnxln  
Shale, gray-black carbonaceous, soft blocky

○ Lime, crm-lt brn, granular, bedded chalk, few chips granular with fn interxn porosity, trace of FO on crush w lt odor, spotty stain when dried.

Lime crm-lt brn, fnxln-granular

Lime, crm-lt brn, fnxln

Lime, lt-med brn, fnxln-granular, slightly fossiliferous

Lime, lt-med brn, fnxln

Lime, crm-lt brn-lt gray, fnxln,

**HEEBNER SHALE SPL 3412-1264 ELog 3411-1263**  
Shale, black carbonaceous, fissile, blocky  
Lime, lt-med brn, vfxln  
Shale, dove gray-lime green, soft blocky

○ **TORONTO SPL 3431-1283 ELog 3428-1280**  
Lime, white-crm, fossiliferous with spotty interfoss. stain, NFO, No Odor

Lime, crm, fnxln, bedded chalk grading into soft red shale

**LKC SPL 3447-1299 ELog 3447-1299**

○ **D** Lime, crm-tan, fnxln, bedded chalk, fine speckled dark staining, NFO, no odor

Lime, lt gray, fnxln, slightly fossiliferous

**B** Lime, lt gray, fnxln-slightly granular, shaley in part, slightly fossiliferous

**C** ○ Lime, crm-tan, fnxln with oomoldic chips in part, spotty staining, NFO, No Odor

Lime, crm-tan, fnxln, bedded chalk  
Shale, lt gray-grayish green, soft blocky

Lime, crm, fnxln, slight bedded chalk

**D**

Lime, lt-med brn, fnxln  
Shale, lt gray-black, soft blocky

**E**

**F** ○ Lime, white-crm, fnxln, fn vuggy in part with dark spotty stain, NFO, V Lt Odor

Lime, crm-tan, fnxln-granular in part, slight bedded chalk

Lime, crm-tan, fnxln, slight bedded chalk

**G** Lime, crm, fnxln-granular in part

Lime, crm-tan, fnxln

Shale, lt-dark gray to black carbonaceous  
Lime, crm-tan, fnxln, slight bedded chalk

Shale, lt-med gray, soft blocky forming soft mud in part

Lime, crm-tan, fnxln-granular, bedded chalk, lt chalk wash, NS

**H** Lime, crm-tan, fnxln with lt chalk wash, NS

**I** Lime, crm, fnxln-granular, bedded chalk, NS

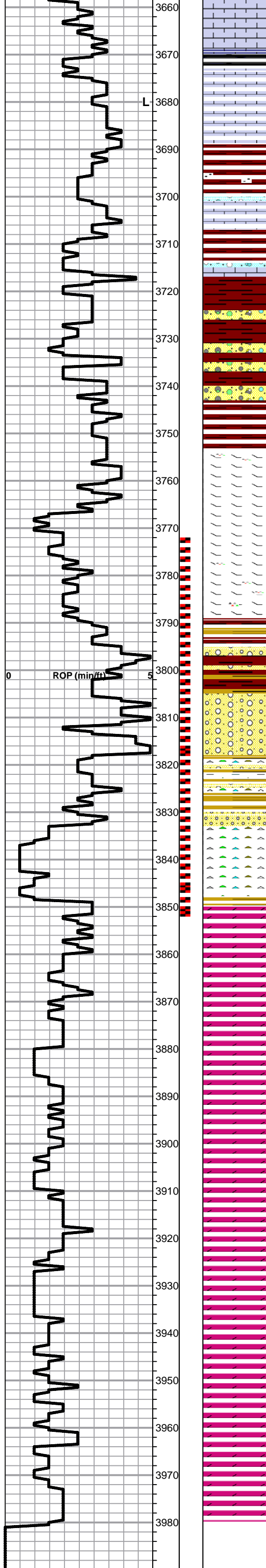
Lime, crm-lt brn, fnxln, bedded chalk, NS

**J** Lime, lt brn, fn-micro xln, slight chalk, NS

Lime, crm-lt brn, fnxln, bedded chalk

Shale, gray-black, soft blocky

**K** Lime, crm-tan, fnxln-granular, NS



Lime, crm-tan, fnxln-granular, bedded chalk, NS

Shale, black carbonaceous  
Lime, crm-tan, fnxln- micro xln, NS

Lime, crm-tan, fnxln-micro xln, bedded chalk

**BKC SPL 3690-1542 ELog 3689-1541**

Shale, reddish brn, soft blocky grading into sandy firmer shale with depth

Lime, white-tan-lt brn, fnxln, slight chalk, oolitic but cemented

Shale, red-brn, soft blocky, gritty in part

Lime, lt-med brn, micro xln, hard on crush  
Shale, reddish brn with lt red wash

Shales, reds, brns, and grays, lt red wash, some clastic lime in mix

Shale, reds, brn, maroon, orange cherts in mix

Shale, lot of reddish brn-maroon

**MARMATON-PAWNEE ELog 3754-1606**

Lime, crm-lt brn, fnxln, chips of fresh orange chert grading into dolomitic lime with depth

○ Lime, fnxln-fine granular in part, free floating oil globules in fine inter xln porosity, spotty stain, no detectable odor

Lime, tan, fnxln with increasing fresh tan cherts

Lime, tan, fnxln, dolomitic, cherty, fresh, sharp

Shale, reds, brns, maroon, soft-firm blocky

Shale, as above vari colored with mixed vari colored cherts

Clastic mix of dolomite, cherts

DST # 1 3762' TO 3853' SEE  
HEADER FOR TEST  
SUMMARY

**CONGLOMERATE SAND ELog 3830-1682**

○ Few cemented SS clusters grading into mix of vari colored cherts with no shale, V Lt Odor, with spotty contact staining at best. few quartz grains noted in part with no clusters.

**ARBUCKLE ELog 3850-1702**

Dolomite, ivory-tan, fnxln, NS or staining

Dolomite, ivory-tan, fnxln, granular in part, NS

Dolomite, ivoty-crm, fnxln-granular, few chips of lt green shale

Dolomite, ivory, granular, fn-med grain

Dolomite, ivory-crm, fnxln-granular, lt chalk wash

Dolomite, crm-tan, fn-cxln, granular, lt chalk wash

Dolomite, tan, fn-cxln, granular, lt chalk wash

Dolomite, tan-lt brn, fn-cxln, firm to hard on crush in part

Dolomite, ivory-lt brn, granular, few specks of glauconite

Dolomite, lt brn, increasing fnxln, hard on crush with depth

Dolomite, as above

Dolomite, as above

Dolomite, tan-lt brn, fnxln-granular

RAN 5 1/2" PRODUCTION  
CASING TALLEY 3983' SET  
TO 3971.5' CEMENTED W/  
130 SXS EA2, 30 SXS IN  
RATHOLE, 15 SXS IN  
MOUSEHOLE

RTD 3980-1832 LTD 3982-1834

SLOPE 1 1/4 DEGREES