

**OPERATOR**

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

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: BICE # 1  
 Location: E2 NE NW SE Sec.22-10s-17w  
 Pool: WILDCAT  
 State: KANSAS  
 API: 15-163-24,187-00-00  
 Field: UNNAMED  
 Country: USA



Scale 1:240 Imperial

Well Name: BICE # 1  
 Surface Location: E2 NE NW SE Sec.22-10s-17w  
 Bottom Location:  
 API: 15-163-24,187-00-00  
 License Number: 4787  
 Spud Date: 4/14/2014 Time: 3:00 PM  
 Region: ROOKS COUNTY  
 Drilling Completed: 4/19/2014 Time: 6:40 PM  
 Surface Coordinates: 2310' FSL & 1465' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 2030.00ft  
 K.B. Elevation: 2040.00ft  
 Logged Interval: 2900.00ft To: 3750.00ft  
 Total Depth: 3750.00ft  
 Formation: LANSING-KANSAS CITY  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: -99.2005551 Latitude: 39.1679882  
 N/S Co-ord: 2310' FSL  
 E/W Co-ord: 1465' FEL

**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: 4/14/2014 Time: 3:00 PM  
 TD Date: 4/19/2014 Time: 6:40 PM  
 Rig Release: 4/20/2014 Time: 1:00 PM

**ELEVATIONS**

K.B. Elevation: 2040.00ft Ground Elevation: 2030.00ft  
 K.B. to Ground: 10.00ft

**NOTES**

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON FAVORABLE STRUCTURE AND RESULTS OF DST # 2

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

DRILL STEM TESTING BY TRILOBITE TESTING INC: TWO (2) CONVENTIONAL TESTS

**FORMATION COMPARISON CHART AND CHRONLOGY OF DAILY ACTIVITY**


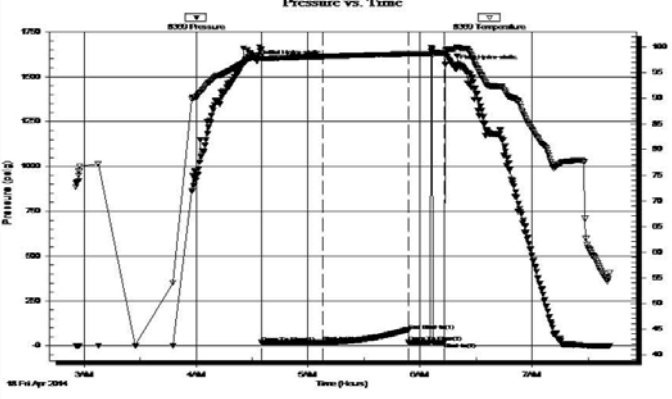
	<b>BICE # 1</b>	<b>SCHRANDT #1</b>	<b>MARSTON A 1-27</b>
	<b>E2 NE NW SE</b>	<b>100' S of E2 SE SW</b>	<b>SW NE NE NE</b>
	<b>SEC.22-10S-17W</b>	<b>SEC.22-10-17W</b>	<b>SEC.27-10-17W</b>
	<b>2030'GL 2040'KB</b>	<b>KB 2077'</b>	<b>KB 2073'</b>
<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
<b>Anhydrite</b>	<b>1296 +744</b>	<b>+ 753</b>	<b>+763</b>
<b>B-Anhydrite</b>	<b>1329 +711</b>	<b>+ 716</b>	<b>+725</b>
<b>Topeka</b>	<b>2993 -953</b>	<b>- 958</b>	<b>- 948</b>

Heebner Sh.	3214-1174	-1181	-1170
Toronto	3238-1198	-1203	-1192
LKC	3258-1218	-1223	-1213
BKC	3495-1455	-1458	-1457
Conglomerate	3538-1498	-1513	-1499
Simpson Shale	3625-1585	-1583	-1573
Simpson Dol.	3634-1594	-1592	-1583
Arbuckle	3660-1620	-1615	-1611
RTD	3750-1710	-1658	-1652

**SUMMARY OF DAILY ACTIVITY**

- 4-14-14 RU, Spud 3:00 PM, set 8 5/8" surface casing to 223' w/ 160 sxs Common 2%Gel 3%CC, slope 3/4 degree, plug down 10:15PM
- 4-15-14 250', drilling, drilled plug 6:15AM
- 4-16-14 2150', drilling
- 4-17-14 2890', drilling, displaced 2609' to 2627', CFS 3336', short trip, TOWB
- 4-18-14 3336', DST # 1 3251' to 3336' "A"- "D" LKC, TIWB, CFS 3460', DST # 2 3376' - 3460' "H" - "J" LKC
- 4-19-14 3486', RTD 3750'@3:40PM, CCH, TOWB, start logs
- 4-20-14 3750', finish logs, TIWB, LDDP, run 5 1/2" production casing, RD

**DST # 1 3251' TO 3336' LKC "A" TO "D"**

 <b>TRILOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b>																																							
	TDI, Inc 1310 Bison Rd. Hays Ks 67601-9696 ATTN: Tom Denning, Herb D	<b>22-10s-17w Rooks</b> <b>Bice #1</b> Job Ticket: 55327 Test Start: 2014.04.18 @ 02:55:42	<b>DST#: 1</b>																																					
<b>GENERAL INFORMATION:</b>																																								
Formation: <b>LKC A-D</b> Deviated: No Whipstock: ft (KB) Time Tool Opened: 04:35:07 Time Test Ended: 07:41:36		Test Type: Conventional Bottom Hole (Initial) Tester: Ray Schwager Unit No: 70																																						
<b>Interval: 3251.00 ft (KB) To 3336.00 ft (KB) (TVD)</b> Total Depth: 3336.00 ft (KB) (TVD) Hole Diameter: 7.85 inches Hole Condition: Fair		Reference Elevations: 2040.00 ft (KB) 2030.00 ft (CF) KB to GR/CF: 10.00 ft																																						
<b>Serial #: 8369 Inside</b> Press@RunDepth: 17.87 psig @ 3253.00 ft (KB) Start Date: 2014.04.18 End Date: 2014.04.18 Start Time: 02:55:42 End Time: 07:41:36		Capacity: 8000.00 psig Last Calib.: 2014.04.18 Time On Btm: 2014.04.18 @ 04:32:37 Time Off Btm: 2014.04.18 @ 06:18:07																																						
<b>TEST COMMENT:</b> 30-IFP-w kb thru-out 1/4" to surface bl 45-ISIP-no bl 20-FFP-no bl, flushed tool, got surge pulled tool																																								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="4">PRESSURE SUMMARY</th> </tr> <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>1586.40</td><td>97.96</td><td>Initial Hydro-static</td></tr> <tr><td>3</td><td>16.67</td><td>97.58</td><td>Open To Flow (1)</td></tr> <tr><td>36</td><td>17.87</td><td>98.18</td><td>Shut-In(1)</td></tr> <tr><td>81</td><td>86.32</td><td>98.69</td><td>End Shut-In(1)</td></tr> <tr><td>82</td><td>17.97</td><td>98.66</td><td>Open To Flow (2)</td></tr> <tr><td>101</td><td>20.07</td><td>98.87</td><td>Shut-In(2)</td></tr> <tr><td>106</td><td>1556.57</td><td>99.61</td><td>Final Hydro-static</td></tr> </tbody> </table>			PRESSURE SUMMARY				Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation	0	1586.40	97.96	Initial Hydro-static	3	16.67	97.58	Open To Flow (1)	36	17.87	98.18	Shut-In(1)	81	86.32	98.69	End Shut-In(1)	82	17.97	98.66	Open To Flow (2)	101	20.07	98.87	Shut-In(2)	106	1556.57	99.61	Final Hydro-static	
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**DST # 2 3376' TO 3460' LKC "H" TO "J"**

 <b>TRILOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b>		
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**TRILOBITE TESTING, INC.**

TDI, Inc  
1310 Bison Rd.  
Hays Ks 67601-9696  
ATTN: Tom Denning, Herb D

**22-10s-17w Rooks**

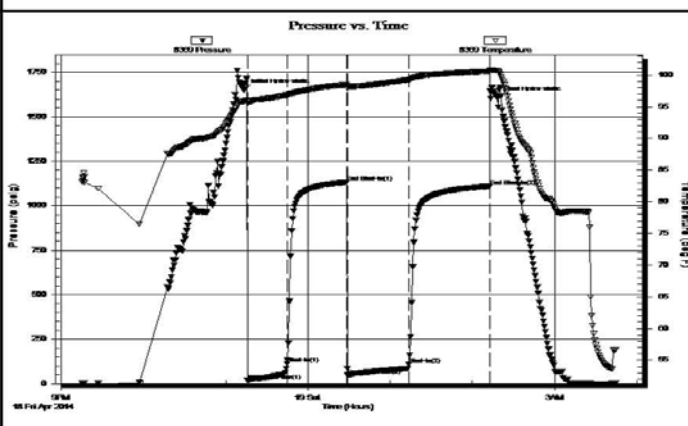
**Bice #1**  
Job Ticket: 55328 **DST#: 2**  
Test Start: 2014.04.18 @ 21:15:12

**GENERAL INFORMATION:**

Formation: **LKC H-J**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 23:15:52  
Time Test Ended: 03:44:36  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Ray Schwager  
Unit No: 70  
Interval: **3376.00 ft (KB) To 3460.00 ft (KB) (TVD)**  
Reference Elevations: 2040.00 ft (KB)  
Total Depth: 3460.00 ft (KB) (TVD)  
2030.00 ft (CF)  
Hole Diameter: 7.85 inches Hole Condition: Fair  
KB to GR/CF: 10.00 ft

**Serial #: 8369 Inside**  
Press@RunDepth: 107.49 psig @ 3378.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2014.04.18 End Date: 2014.04.19 Last Calib.: 2014.04.19  
Start Time: 21:15:12 End Time: 03:44:36 Time On Btm: 2014.04.18 @ 23:13:37  
Time Off Btm: 2014.04.19 @ 02:18:06

**TEST COMMENT:** 30-IFP-w k to strg in 20 min  
45-ISIP-no bl  
45-FFP-w k to strg in 40 min  
60-FSP-no bl



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1651.30	95.87	Initial Hydro-static
3	18.07	95.51	Open To Flow (1)
32	113.11	96.86	Shut-In(1)
75	1133.21	98.48	End Shut-In(1)
76	48.27	98.18	Open To Flow (2)
120	107.49	99.25	Shut-In(2)
179	1110.53	100.58	End Shut-In(2)
185	1606.24	100.68	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
0.00	270'GIP	0.00
60.00	CO	0.84
45.00	GMO 20%G40%M40%O	0.63
60.00	GMO 20%G10%M70%O	0.84

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

Trilobite Testing, Inc Ref. No: 55328 Printed: 2014.04.19 @ 04:23:04

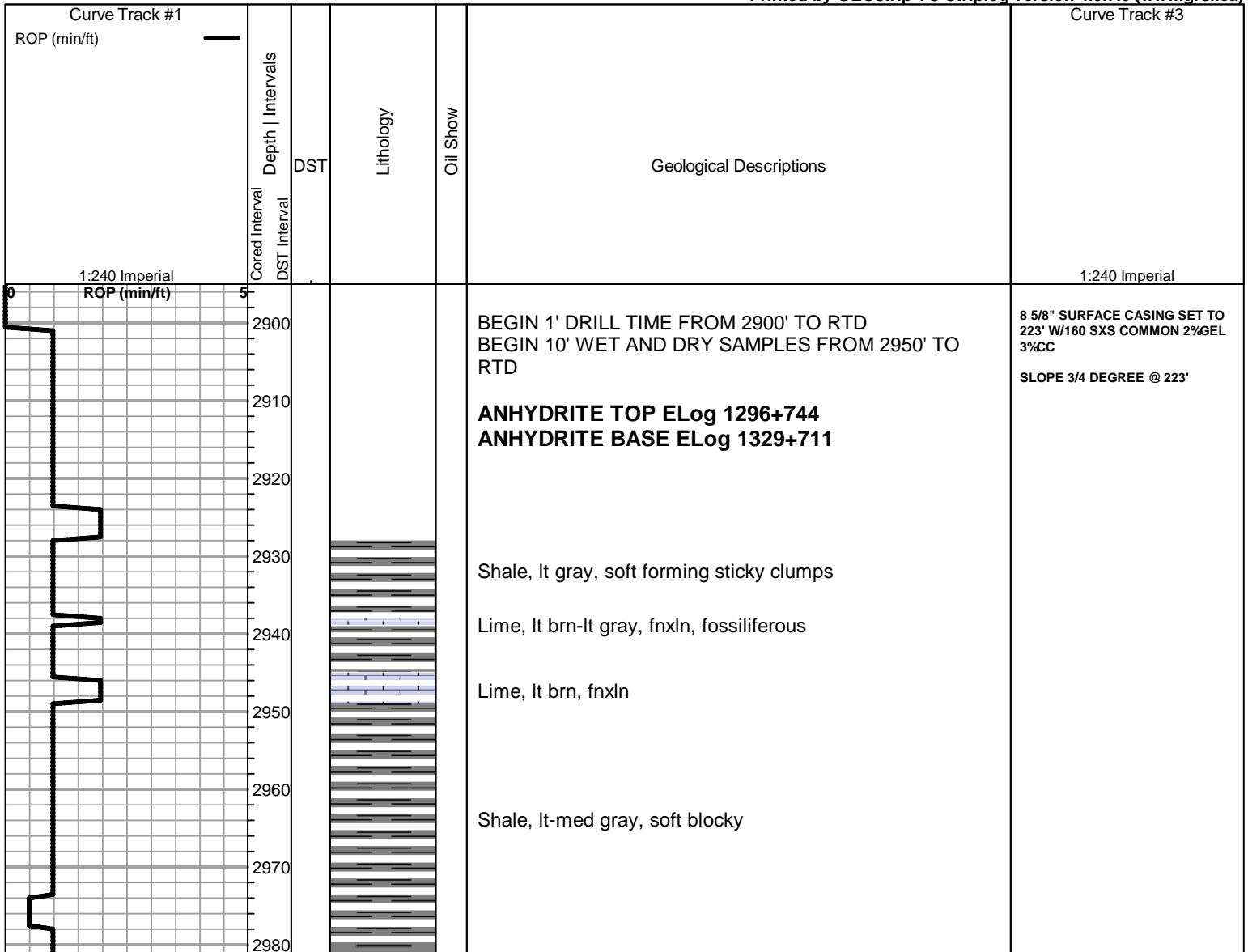
**ROCK TYPES**

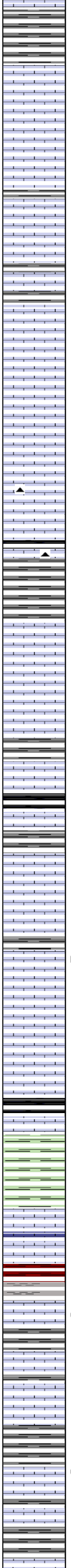
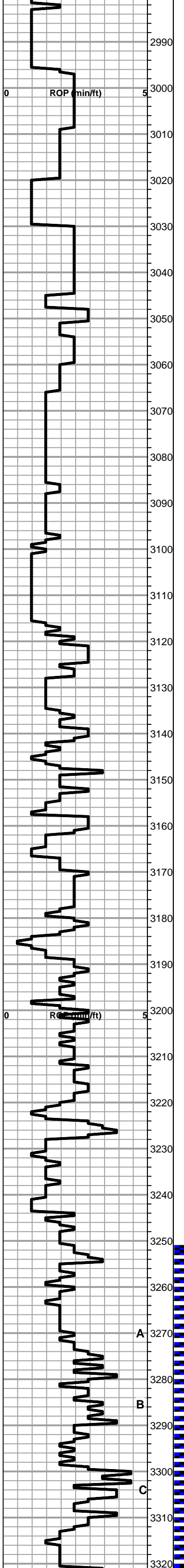
Clystgy	Dolprim	Lmst fw<7	shale, grn	shale, red
Clystcol	Dolsec	Lmst fw7>	shale, gry	Ss
Chtcongl	Dol Lime	Lscongl	Carbon Sh	

**ACCESSORIES**

<b>MINERAL</b>	<b>FOSSIL</b>
▲ Chert, dark	○ Oolite
△ Chert White	⊕ Oomoldic

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





Lime, med brn, fnxln, slightly fossiliferous  
 Shale, lt-med gray, soft-firm blocky with sticky clumps in part

**TOPEKA SPL 2995-955**

Lime, lt-med brn, fnxln

Lime, lt brn-lt gray, fnxln

Lime, crm, fnxln-granular, bedded chalk

Lime, lt brn-lt gray, fnxln, slightly fossiliferous-fusulinids

Lime, lt-med brn-grayish brn, fn-micro xln,

Lime, lt-med brn, fn-micro xln, slightly fossiliferous

Lime, med brn-med grayish brn, fn-micro xln, slightly fossiliferous

Lime, lt-med brn, fnxln-granular

Lime, lt-med brn, granular

Lime, lt brn-lt grayish brn, fnxln, soft on crush

Shale, black carbonaceous, blocky

Shale, med gray, firm blocky, calcareous in part

Lime, crm, fnxln, lithographic, hard bedded chalk

Lime, crm-tan, fnxln, bedded chalk

Lime, lt gray-lt grayish brn, fn-vfxln

Lime, crm, fn-vfxln

Shale, black carbonaceous, fissile, blocky  
 Lime, grayish brn, fn-micro xln

Shale, med gray, firm blocky, calcareous

Lime, crm-lt brn, fnxln, bedded chalk

Lime, crm-lt brn, fn-vfxln, slight bedded chalk

Lime, lt brn, granular honeycomb with interxln porosity, NFO, No Odor, F-G wet cut on crush

Lime, crm-lt brn, fnxln-granular with chalk matrix in part

Lime, lt-med brn, fnxln

**HEEBNER SHALE SPL 3219-1179**

Shale, black carbonaceous, fissile, blocky  
 Lime, crm, vfxln

Shale, dove gray-lime green, soft forming sticky clumps

**TORONTO SPL 3243-1203**

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

Lime, lt brn-lt gray, vfxln

Shale, soft red with lt red wash

**LKC SPL 3263-1223**

Lime, crm-tan, fn-vfxln, few chips fossiliferous with spotty staining, very lt odor, NFO

Lime, crm, mostly fnxln

Lime, crm-lt brn, fnxln, lt green tint in part

Shale, tan-lt gray, soft mud

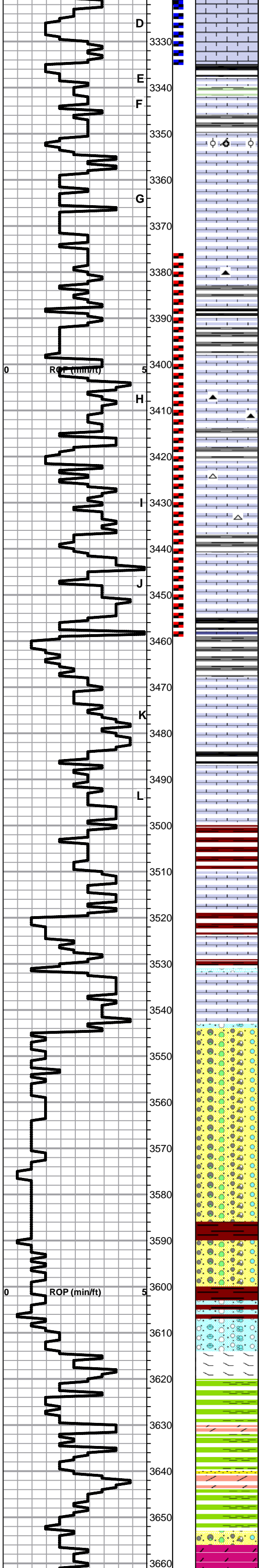
Lime, crm-lt brn, fn-micro xln, spotty staining in part, NFO, very lt odor

Lime, crm, fnxln, Lime, lt-med brn, fn-vfxln

Shale, med grayish green, soft blocky, calcareous in part

Lime, crm, fnxln, bedded chalk

DST # 1 3251' TO 3336' "A"  
 TO "D" LKC  
 SEE HEADER FOR TEST  
 SUMMARY



Lime, crm, fnxln, bedded chalk

Lime, tan-lt gray, fn-vfxln

Shale, black carbonaceous, blocky  
Lime, lt tannish gray, fn-vfxln

Lime, tan-lt brn, fnxln-granular, 2 chips, fine granular, saturated staining, NFO, No odor

Lime, white-crm, fnxln, bedded chalk, few chips oolitic-oomoldic, scattered staining, lt odor, NFO

Lime, offwhite, fn-vfxln, bedded chalk

Lime, offwhite-white, fn-vfxln, slight bedded chalk

Lime, offwhite, fn-vfxln

Shale, black carbonaceous, blocky

Lime, crm, fnxln-granular, lt scattered staining in fine vuggy, fossiliferous lime, NFO, No Odor

Lime, crm-tan, fnxln, cherty

Shale, med gray, soft blocky  
Lime, crm-tan, fnxln-granular

Lime, tan, fn-micro xln, white chert, fresh, sharp

Lime, tan, fn-micro xln, very lt odor, source not found

Lime, crm-white, fn-micro xln, scattered oomoldic chips with lt staining, lt odor, NFO, few saturated chips

Lime, offwhite-crm, fn-micro xln bedded chalk

Shale, black carbonaceous to med gray-grayish green, soft blocky

Lime, crm, fnxln, crumbly in part, trace of hydrocarbon staining, NFO, no odor, lt halo wet cut

Lime, white-crm, fn-vfxln

Lime, crm, crumbly, trace of dead oil staining, NFO, No Odor, grading into bedded chalk with lt chalk wash

**BKC SPL 3500-1460**

Shale, lt gray-red, soft blocky-sticky clumps in part

Lime, lt brn-off white, fnxln, well cemented oolitic in part

Shale, lt red wash, soft mud

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

Lime, crm, fn-vfxln, slight bedded chalk

**CONGLOMERATE SPL 3544-1504**

Chert, vari colored, mostly fresh, sharp, few chips with flaky gilsonite, NFO, No Odor, fair wet cut

Chert, vari colored, fresh, sharp  
Shale, white, soft sticky clumps

Chert, vari colored with red shales

Chert, vari colored, lt red wash

Chert, vari, colored, white, tans, browns, vari color  
Shale, red-dark brn, soft-soft blocky

Lime, granular with red shale staining

**SIMPSON SHALE SPL 3619-1579**

Shale, blue-green, soft sticky weathered grading into firm, waxy

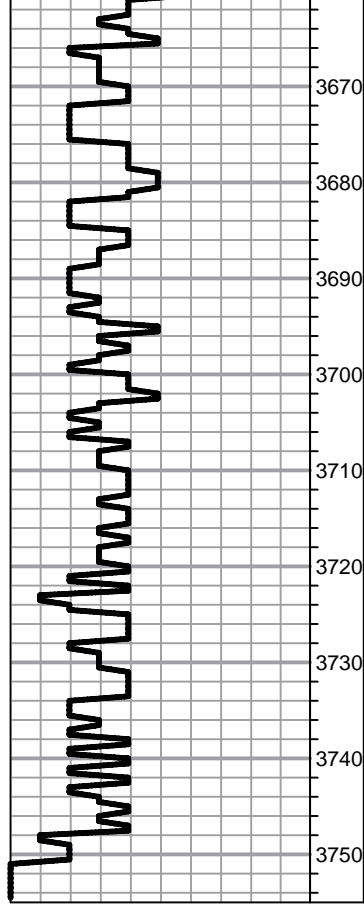
Shale, blue-green, firm, waxy  
Dolomite, lt brn, fnxln-granular  
SS, few clusters, NS, No staining

Shale, blue-green, firm, waxy grading into cherty transition

**ARBUCKLE SPL 3656-1616**

Dolomite, crm-tan, fnxln-granular, hard on crush, NS

DST # 2 3376' TO 3460' "H" TO "J" LKC SEE HEADER FOR TEST SUMMARY



3670  
3680  
3690  
3700  
3710  
3720  
3730  
3740  
3750

Dolomite, crm-tan, fnxln-granular

Dolomite, crm-tan, fnxln-granular, chert, white, fresh, sharp

Dolomite, tan-lt brn, fnxln-granular, hard on crush

Dolomite, tan-lt brn, fnxln-granular

Dolomite, tan-lt brn, fnxln-granular

Dolomite, tan-lt brn-salmon, fnxln-granular

Dolomite, as above

Dolomite, tan-lt brn-salmon, fnxln-granular, xln pyrite in part

**RTD 3750-1710 LTD 3747-1707**

**SLOPE 1 1/4 DEGREE @3750'**