

**OPERATOR**

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

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: DOLORES # 1  
 Location: SW NE NW NW Sec.15-15s-19w  
 API: 15-051-26,689-00-00  
 Pool:  
 State: KANSAS

Field: MARTINA NORTH  
 Country: USA



Scale 1:240 Imperial

Well Name: DOLORES # 1  
 Surface Location: SW NE NW NW Sec.15-15s-19w  
 Bottom Location:  
 API: 15-051-26,689-00-00  
 License Number: 4787  
 Spud Date: 6/4/2014 Time: 8:28 PM  
 Region: ELLIS COUNTY  
 Drilling Completed: 6/10/2014 Time: 9:23 AM  
 Surface Coordinates: 375' FNL & 725' FWL  
 Bottom Hole Coordinates:  
 Ground Elevation: 2009.00ft  
 K.B. Elevation: 2019.00ft  
 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: -99.4275765  
 Latitude: 38.7537857  
 N/S Co-ord: 375' FNL  
 E/W Co-ord: 725' 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: 6/4/2014 Time: 8:28 PM  
 TD Date: 6/10/2014 Time: 9:23 AM

**ELEVATIONS**

K.B. Elevation: 2019.00ft  
 K.B. to Ground: 10.00ft

Ground Elevation: 2009.00ft

**NOTES**

RECOMMENDATION TO PLUG AND ABANDON WELL BASED ON NEGATIVE RESULTS OF FOUR DSTS

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 AND TWO (2) STRADDLE TESTS


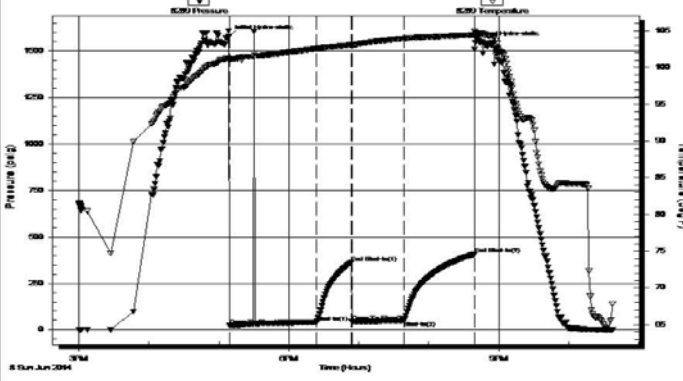
**TOPS COMPARISON**

	<b>DOLORUS # 1</b>	<b>WILLIE # 1</b>	<b>WERTH # 1</b>
	<b>SW NE NW NW</b>	<b>NW SE SE SE</b>	<b>NW NW NW</b>
	<b>SEC.15-15S-19W</b>	<b>SEC.9-15-19W</b>	<b>SEC.15-15-19W</b>
	<b>2009'GL 2019'KB</b>	<b>KB 2143'</b>	<b>KB 2024'</b>
<u>FORMATION</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1236 +783	+ 785	+787
B-Anhydrite	1268 +751	+ 749	+755
Topeka	2997- 978	- 969	
Heebner Sh.	3264-1245	-1246	-1252
Toronto	3287-1268	-1268	-1274
LKC	3310-1291	-1293	-1299
BKC	3556-1537	-1540	-1535
Marmaton Mkr	3602-1583		-1564
Congl Sand	3625-1606		-1614
Arbuckle	3676-1657	-1625	-1624
RTD	3750-1731		

**SUMMARY OF DAILY ACTIVITY**

6-04-14 RU, Spud 1:45 PM  
 6-05-14 1236', short trip, set 8 5/8" surface casing to 1237' w/ 375 sxs SMD, slope 1 degree, plug down 2:00 PM  
 6-06-14 1371', drilling  
 6-07-14 2565', displaced 2879' to 2898'  
 6-08-14 3275', CFS 3000', short trip, CFS 3350' DST # 1 3293'-3350' "A"- "C"  
 6-09-14 3460', drilling, CFS 3510', TOWB, DST # 2 3422'-3510' "H" to "J"  
 6-10-14 3690', RTD 3750' @9:23AM, CCH, TOWB, logs, straddle test 3608' to 3652' Conglomerate sand

**DST # 1 TEST SUMMARY**

	<p><b>DRILL STEM TEST REPORT</b></p>																																						
<p>TDI Inc. 1310 Bison Rd Hays KS 67601-9696 ATTN: Herb Deines</p>	<p><b>15 15s 19w Ellis</b> <b>Dolores #1</b> Job Ticket: 59254      <b>DST#: 1</b> Test Start: 2014.06.08 @ 15:00:00</p>																																						
<p><b>GENERAL INFORMATION:</b></p>																																							
<p>Formation: <b>LKC " A - C "</b> Deviated: No Whipstock: 2019.00 ft (KB) Time Tool Opened: 17:09:00 Time Test Ended: 22:37:00</p>		<p>Test Type: Conventional Bottom Hole (Initial) Tester: Jim Svaty Unit No: 76</p>																																					
<p>Interval: <b>3293.00 ft (KB) To 3350.00 ft (KB) (TVD)</b> Total Depth: 3350.00 ft (KB) (TVD) Hole Diameter: 7.88 inches Hole Condition: Fair</p>		<p>Reference Elevations: 2019.00 ft (KB) 2011.00 ft (CF) KB to GR/CF: 8.00 ft</p>																																					
<p><b>Serial #: 8289      Outside</b></p>																																							
<p>Press@RunDepth: 49.31 psig @ 3296.00 ft (KB) Start Date: 2014.06.08      End Date: 2014.06.08 Start Time: 15:00:02      End Time: 22:37:15</p>		<p>Capacity: 8000.00 psig Last Calib.: 2014.06.08 Time On Btm: 2014.06.08 @ 17:08:30 Time Off Btm: 2014.06.08 @ 20:39:30</p>																																					
<p><b>TEST COMMENT:</b> 75-IFP- Flushed x 2 10min. &amp; 20min. Surface Blow Building to 4 in. 30-ISIP- No Blow 45-FFP- Surface Blow Building to 4 in. 60-FSP- No Blow</p>																																							
<p><b>Pressure vs. Time</b></p>		<p><b>PRESSURE SUMMARY</b></p>																																					
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Hays KS 67601-9696  
ATTN: Herb Deines

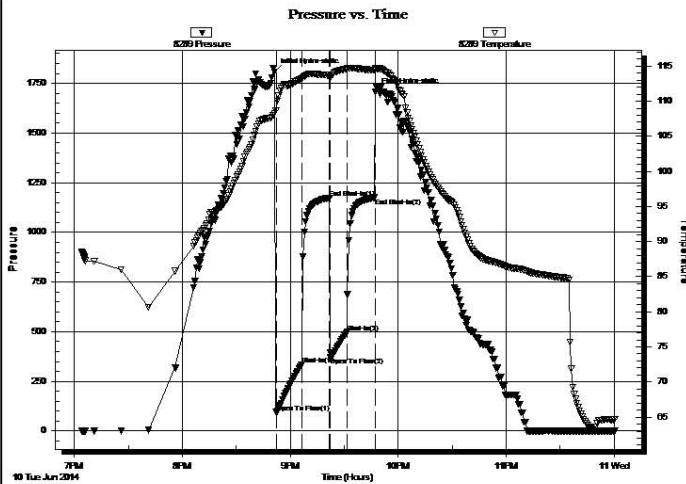
Job Ticket: 59256 **DST#: 3**  
Test Start: 2014.06.10 @ 19:04:00

**GENERAL INFORMATION:**

Formation: **Cong Sand**  
 Deviated: No Whipstock: 2019.00 ft (KB)  
 Time Tool Opened: 20:52:00  
 Time Test Ended: 00:00:00  
 Interval: **3608.00 ft (KB) To 3652.00 ft (KB) (TVD)**  
 Total Depth: 3750.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Straddle (Reset)  
 Tester: Jim Svaty  
 Unit No: 76  
 Reference Elevations: 2019.00 ft (KB)  
 2011.00 ft (CF)  
 KB to GR/CF: 8.00 ft

**Serial #: 8289** **Outside**  
 Press@RunDepth: 496.89 psig @ 3612.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.06.10 End Date: 2014.06.11 Last Calib.: 2014.06.11  
 Start Time: 19:04:02 End Time: 00:00:15 Time On Btm: 2014.06.10 @ 20:51:15  
 Time Off Btm: 2014.06.10 @ 21:47:15

TEST COMMENT: 15-IFP- BOB in 1min.  
 15-ISIP- Very Weak Surface Blow  
 10-FFP- BOB in 1min 15sec.  
 15-FSIP- No Blow



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1808.18	108.26	Initial Hydro-static
1	94.30	108.63	Open To Flow (1)
15	335.33	113.18	Shut-In(1)
31	1172.93	113.68	End Shut-In(1)
31	370.24	113.44	Open To Flow (2)
41	496.89	114.59	Shut-In(2)
56	1174.20	114.39	End Shut-In(2)
56	1706.25	114.65	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
567.00	OMCW 3%o 5%m 92%w	7.95
252.00	OWCM 4%o 46%w 50%m	3.53
239.00	WCM 20%w 80%m Show of Oil	3.35

\* Recovery from multiple tests

**Gas Rates**

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

Trilobite Testing, Inc

Ref. No: 59256

Printed: 2014.06.11 @ 08:27:39

**DST # 4 TEST SUMMARY**



**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

TDI Inc.  
1310 Bison Rd  
Hays KS 67601-9696

**15 15s 19w Ellis**

**Dolores #1**

Job Ticket: 59257

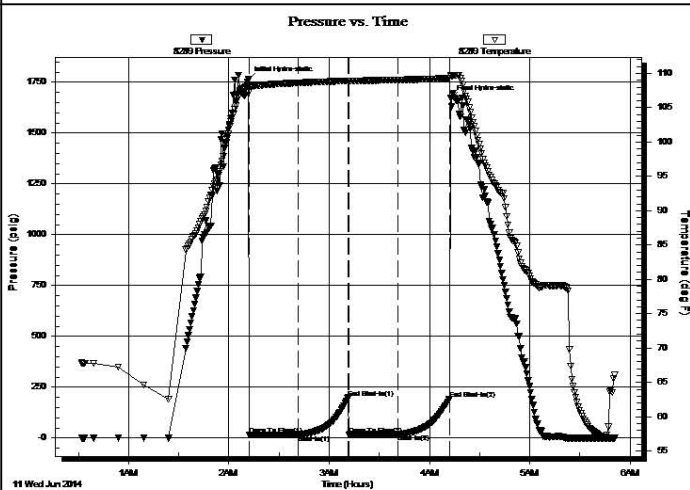
**DST#: 4**

**GENERAL INFORMATION:**

Formation: **LKC " K "**  
 Deviated: No Whipstock: 2019.00 ft (KB)  
 Time Tool Opened: 02:12:00  
 Time Test Ended: 05:51:00  
 Interval: **3502.00 ft (KB) To 3548.00 ft (KB) (TVD)**  
 Total Depth: 3751.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Straddle (Reset)  
 Tester: Jim Svaty  
 Unit No: 76  
 Reference Elevations: 2019.00 ft (KB)  
 2011.00 ft (CF)  
 KB to GR/CF: 8.00 ft

**Serial #: 8289 Outside**  
 Press@RunDepth: 18.11 psig @ 3508.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.06.11 End Date: 2014.06.11 Last Calib.: 2014.06.11  
 Start Time: 00:32:02 End Time: 05:51:00 Time On Btm: 2014.06.11 @ 02:11:45  
 Time Off Btm: 2014.06.11 @ 04:12:30

TEST COMMENT: 30-IFP- 1/4in. Blow Died in 22min.  
 30-ISIP- No Blow  
 30-FFP- No Blow  
 30-FSIP- No Blow



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1762.96	108.34	Initial Hydro-static
1	16.02	107.25	Open To Flow (1)
30	17.20	108.61	Shut-In(1)
60	198.02	108.93	End Shut-In(1)
60	17.26	108.85	Open To Flow (2)
90	18.11	109.05	Shut-In(2)
121	192.86	109.26	End Shut-In(2)
121	1670.30	109.71	Final Hydro-static

Length (ft)	Description	Volume (bbl)
1.00	Mud 100%	0.01

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

\* Recovery from multiple tests

**ROCK TYPES**

- Clystgy
- Dol Lime
- Lscongl
- Carbon Sh
- Congl
- Lmst fw<7
- shale, grn
- shale, red
- Dolprim
- Lmst fw>7
- shale, gry
- Ss

**ACCESSORIES**

**MINERAL**

- ▲ Chert, dark
- P Pyrite
- \* Sandy
- Varicolored chert

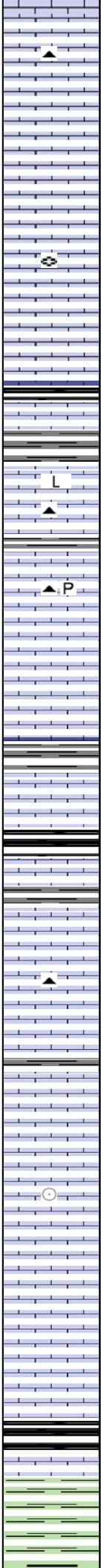
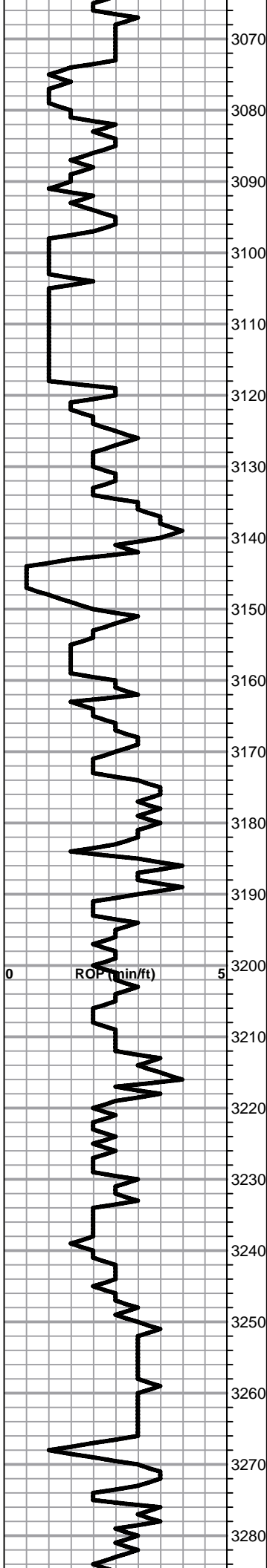
**FOSSIL**

- Crinoids
- Oolite
- ⊕ Oomoldic
- ⊕ Fossilinid

**TEXTURE**

- L Lithogr

Curve Track #1 ROP (min/ft)	Depth   Intervals Cored Interval DST Interval	DST	Lithology	Oil Show	Geological Descriptions	Curve Track #3
<p>1:240 Imperial ROP (min/ft)</p>	<p>2900 2910 2920 2930 2940 2950 2960 2970 2980 2990 3000 3010 3020 3030 3040 3050 3060</p>				<p>BEGIN 1' DRILL TIME FROM 2900' TO RTD BEGIN 10' WET AND DRY SAMPLES FROM 2950' TO RTD</p> <p><b>ANHYDRITE TOP 1236+783</b> <b>ANHYDRITE BASE 1268+751</b></p> <p>Lime, lt-med brn, fnxln, fossiliferous</p> <p>Shale, lt gray, soft forming sticky clumps</p> <p>Lime, med brn-med grayish brn, fnxln, gray mottling near shale boundary, fossiliferous</p> <p>Shale, lt-med gray forming soft mud</p> <p>Lime, lt-med brn, fnxln, slightly fossiliferous Shale, med gray, soft blocky</p> <p>Shale, dove gray, forming soft mud</p> <p>Shale, lt-med gray, soft blocky</p> <p>Lime, dark brn, fnxln, fossiliferous</p> <p><b><u>TOPEKA ELog 2997-978</u></b></p> <p>Lime, tan-lt brn, fnxln-granular in part, slight bedded chalk</p> <p>Lime, lt-med brn-med gray, fnxln, slightly fossiliferous</p> <p>Lime, tan-lt brn, fnxln-granular in part, bedded chalk with sticky chalk clumps in part</p> <p>Lime, lt brn, granular, NS</p> <p>Lime, lt brn-lt grayish brn, fnxln, slightly fossiliferous</p> <p>Lime, lt-med grayish brn, fnxln</p>	<p>1:240 Imperial</p> <p><b>8 5/8" SURFACE CASING SET TO 1237' W/ 375 SXS SMD</b></p> <p><b>SLOPE 1 DEGREE @1237'</b></p>



3070 Lime, lt-med brn-med grayish brn, fnxln-granular  
Chert, lt gray, fossiliferous

3080 Lime, lt-med brn, fnxln

3090 Lime,lt-med brn, fnxln

3100 Lime, lt-med brn, granular, slightly fossiliferous, fusulinids,  
slight bedded chalk

3110 Lime, lt-med brn, granular, slightly fossiliferous, slight  
bedded chalk

3120 Shale, black carbonaceous, fissile, blocky

3130 Shale, lt gray, firm, calcareous in part

L  
3135 Lime, crm, fnxln, lithographic

3140 Lime, crm-off white, fnxln-granular, NS

P  
3145 Lime, tan-lt brn, granular, NS, no wet cut

3150 Lime, lt-med brn, fnxln-granular, slightly fossiliferous  
Chert, lt gray, fossiliferous

3160 Lime, lt brn-lt gray, fnxln-granular

3170 Lime, lt brn-lt gray, fn-vfxln

3180 Shale, black carbonaceous, blocky  
Lime, med brn, fn-vfxln, slightly fossiliferous

3190 Lime, lt brn, fnxln-granular, NS

3200 Lime, lt-med brn, fnxln-granular

\* 3210 Lime, tan-lt brn, fnxln-granular, lt odor, NFO, No Stain

3220 Lime, tan-lt brn, fnxln-granular, slight bedded chalk

O  
3230 Lime, crm-tan, fnxln-granular, slight bedded chalk, crinoids

3240 Lime, crm-lt brn, granular-fnxln

3250 Lime, lt brn, fnxln

**HEEBNER SHALE ELog 3264-1245**

3260 Shale, black carbonaceous, fissile, blocky  
Lime, med brn, vfxln

3270 Shale, dove gray-lime green, soft blocky

**TORONTO ELog 3287-1268**

Lime, crm, fnxln, lot of bedded chalk, NS

Lime, crm-lt brn, fn-vfxln, NS

Shale, red-dark brn, soft mud-soft blocky

**LKC ELog 3310-1291**

Lime, tan-lt brn, fn-vfxln

Lime, lt-med brn, fn-vfxln, NS

Lime, lt-med brn, fnxln, gray mottling near shale boundary

Lime, crm-tan, fnxln-oolitic/oomoldic with fine vugs, lt odor, lt staining in small chips

Lime, crm-tan, fnxln with increasing bedded chalk

Lime, lt-med brn, fnxln

Shale, lt-med gray, soft-firm blocky

Lime, tan-lt brn, fnxln, spotty staining in fine interxln porosity, NFO, No Odor

Lime, tan-lt brn, fnxln, slight bedded chalk

Shale, black carbonaceous, fissile, blocky  
Lime, pale gray, fn-vfxln

Lime, crm, fnxln, slight bedded chalk, cemented fossil beds, NS, No Odor

Lime, tan-lt brn, fnxln, slight bedded chalk

Lime, tan-lt brn, fnxln-oolitic/oomoldic, scattered spotty staining, NFO, No Odor, logs show zone to be wet

Lime, tan-lt brn, fn-vfxln

Lime, tan-lt brn, fn-micro xln, slight bedded chalk

Lime, lt brn, fnxln

Lime, lt brn, fnxln

Shale, med-dark gray, firm forming slivers

Lime, crm-tan, fnxln, slight bedded chalk  
Chert, white-milky white, fresh, sharp, fossiliferous

Lime, tan-crm, fnxln, bedded chalk

Lime, crm, fnxln, slight bedded chalk, no shows noted

Lime, crm-tan, fnxln, bedded chalk

Shale, med gray, soft-firm blocky

Lime, crm-tan, fnxln

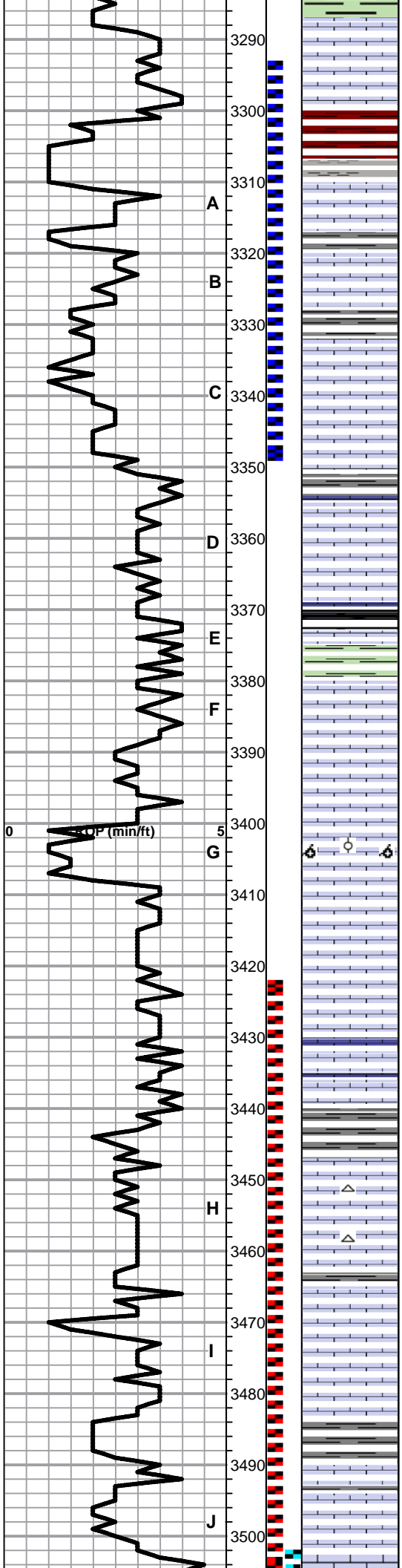
Lime, crm-tan, oolitic/oomoldic, NFO, No Odor, scattered chips with lt staining

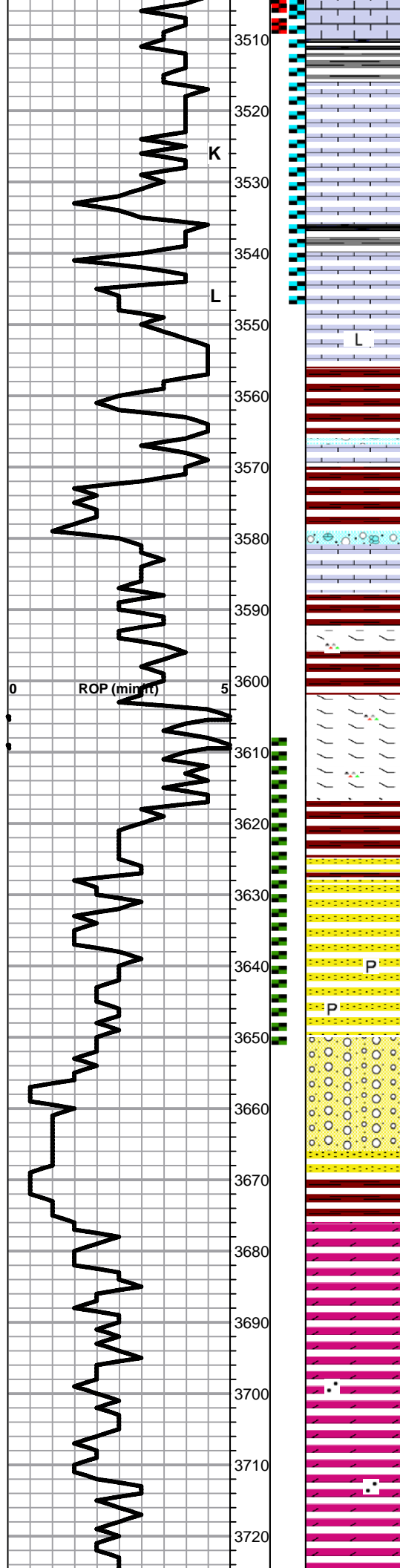
Lime, crm, fnxln, bedded chalk

DST # 1 3293' TO 3350' SEE  
HEADER FOR TEST  
SUMMARY

SLOPE 1 DEGREE @3350'

DST #2 3422' TO 3510' SEE  
HEADER FOR TEST  
SUMMARY





Lime, crm, fn-vfxln, bedded chalk

Shale, grayish green, soft blocky

Lime, crm-tan, fnxln, some brittle chips in part, slight-moderate bedded chalk, NS

Lime, crm-offwhite, mostly fn-vfxln with scattered brittle chips, NS. Tested to confirm presence of fracturing.

Lime, crm-lt brn, fn-vfxln

Lime, crm, fn-micro xln, lithographic

**BKC 3556-1537**

Shale, red-dark brn, soft blocky, slightly sandy in part, NS

Lime, crm-lt brn, fn-micro xln

Shale, red, soft blocky, cherty

Lime, clastic mix with red shale staining, fn-vfxln

Shale, red-brn, soft blocky mixed with clastic lime

Lime, crm, fnxln with orange chert fragments

**MARMATON ELog 3602-1583**

Lime, tan-lt brn, fn-micro xln, dolomitic, NS

Lime, crm-lt brn, fn-micro xln, hard on crush, orange chert

Shale, dark brn, soft-firm blocky

**CONGLOMERATE SAND 3625-1606**

Sandstone, quartz, fn grained, poorly sorted, partially cemented with clay and lime, spotty-saturated staining, SFO on crush, no detectable odor

Mix of sandstone clusters, individual grains and chert, NS

Mix of sandstone, chert and pyrite clusters with quartz inclusions

Clastic mix of sandstone, chert and reworked dolomite

Clastic mix of sandstone, chert and reworked dolomite

**ARBUCKLE ELog 3676-1657**

Dolomite, crm, fnxln-granular, fine inter xln porosity, NS

Dolomite, crm, granular

Dolomite, crm, fnxln-granular, quartz grain inclusions

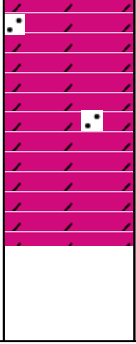
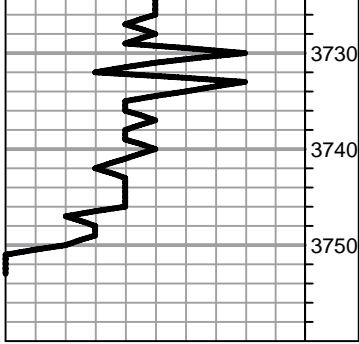
Dolomite, crm, fnxln-granular, quartz grain inclusions

Dolomite, crm, granular, fused quartz and hard clusters, NS

DST # 4 STRADDLE TEST  
3502' TO 3548' SEE HEADER  
FOR TEST SUMMARY

DST # 3 STRADDLE TEST  
3608' TO 3652' SEE HEADER  
FOR TEST SUMMARY

1ST PLUG @3656' W/50 SXS  
2ND PLUG @1250'W/50 SXS  
3RD PLUG @397'W/90 SXS  
4TH PLUG @40'W/10 SXS  
RATHOLE W/30 SXS  
MOUSEHOLE W/15 SXS



Dolomite, crm, frxn-granular, quartz inclusions, fused and clusters

Sandstone, quartz, fine grained, lt green glauconitic stain, NS

**RTD 3750-1731    LTD 3752-1733**

**SLOPE 1 DEGREE @3750'**