

**OPERATOR**

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

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-259-3141  
 Well Name: DERRICK # 2  
 Location: S2 NW SW SE Sec.4-15w-18w  
 Pool: IN FIELD  
 State: KANSAS

API: 15-051-26,383-00-00  
 Field: RUDER NORTHEAST  
 Country: USA



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

Scale 1:240 Imperial

Well Name: DERRICK # 2  
 Surface Location: S2 NW SW SE Sec.4-15w-18w  
 Bottom Location:  
 API: 15-051-26,383-00-00  
 License Number: 4787  
 Spud Date: 10/19/2012 Time: 4:00 PM  
 Region: ELLIS COUNTY  
 Drilling Completed: 10/24/2012 Time: 12:58 PM  
 Surface Coordinates: 780' FSL & 2310' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 2019.00ft  
 K.B. Elevation: 2029.00ft  
 Logged Interval: 2900.00ft To: 3750.00ft  
 Total Depth: 3750.00ft  
 Formation: ARBUCKLE  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: Latitude:  
 N/S Co-ord: 780' FSL  
 E/W Co-ord: 2310' FEL

**LOGGED BY**

Company: SOLUTIONS CONSULTING  
 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: MED ROTARY

Rig Type: MED ROTARY  
Spud Date: 10/19/2012  
TD Date: 10/24/2012  
Rig Release: 10/25/2012

Time: 4:00 PM  
Time: 12:58 PM  
Time: 11:00 PM

### ELEVATIONS

K.B. Elevation: 2029.00ft  
K.B. to Ground: 10.00ft

Ground Elevation: 2019.00ft

### NOTES

DECISION TO RUN PRODUCTION CASING BASED ON FAVORABLE STRUCTURE, LOG ANALYSIS AND POSITIVE RESULTS OF STRADDLE TEST # 1 OF THE UPPER ARBUCKLE.

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) CONVENTIONAL STRADDLE TEST

### FORMATION TOPS SUMMARY AND CHRONOLOGY OF DAILY ACTIVITY

#### DERRICK # 2

780' FSL & 2310' FEL, SE/4

Sec. 4-15s-18w

2019' GL 2029' KB

<u>FORMATION</u>	<u>SAMPLE TOPS</u>	<u>LOG TOPS</u>
Anhydrite	1206+ 823	1205+ 824
B-Anhydrite	1243+ 786	1241+ 788
Topeka	2996- 967	2998- 969
Heebner Shale	3270-1241	3270-1241
Toronto	3292-1263	3290-1261
LKC	3322-1293	3322-1293
BKC	3552-1523	3556-1527
Arbuckle	3624-1595	3624-1595
RTD	3750-1721	
LTD		3752-1723

### SUMMARY OF DAILY ACTIVITY


10-19-12 Spud, set 8 5/8" surface casing to 225.59' w/ 150 sxs common, 2%Gel, 3%CC, plug down 9:15 PM, slope 0 degree

10-20-12 270', drilling plug

10-21-12 1450' drilling

- 10-21-12 1450', drilling
- 10-22-12 2410', drilling, displace 2893'-2901'
- 10-23-12 3100', drilling
- 10-24-12 3607', drilling, RTD 3750' @ 12:58PM, short trip, logs, start DST 1
- 10-25-12 3750' finish pulling DST # 1, decision to run production casing

### DST # 1 CONVENTIONAL STRADDLE TEST

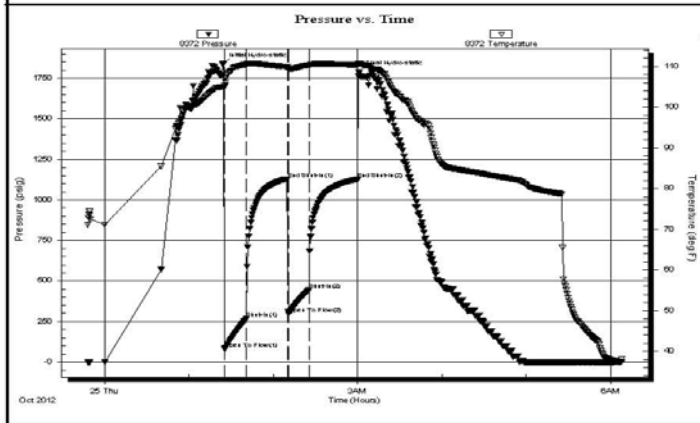
 <p><b>TRILOBITE TESTING, INC.</b></p>	<b>DRILL STEM TEST REPORT</b>	
	TDI inc 1310 Bison Rd Hays Ks 67601 ATTN: Herb Deines	<b>4-15s-18w Ellis</b> <b>Derrick #2</b> Job Ticket: 49361 <b>DST#: 1</b> Test Start: 2012.10.24 @ 23:48:05

**GENERAL INFORMATION:**

Formation: <b>Arbuckle</b>	Test Type: Conventional Straddle (Initial)
Deviated: No Whipstock:                      ft (KB)	Tester: Andy Carreira
Time Tool Opened: 01:25:30	Unit No: 39
Time Test Ended: 06:08:20	Reference Elevations: 2029.00 ft (KB)
<b>Interval: 3598.00 ft (KB) To 3648.00 ft (KB) (TVD)</b>	2019.00 ft (CF)
Total Depth: 3751.00 ft (KB) (TVD)	KB to GR/CF: 10.00 ft
Hole Diameter: 7.88 inches Hole Condition: Poor	

<b>Serial #: 8372</b> <b>Outside</b>	Capacity: 8000.00 psig
Press@RunDepth: 445.91 psig @ 3605.00 ft (KB)	Last Calib.: 2012.10.25
Start Date: 2012.10.24      End Date: 2012.10.25	Time On Btm: 2012.10.25 @ 01:24:00
Start Time: 23:48:05      End Time: 06:08:20	Time Off Btm: 2012.10.25 @ 03:01:00

**TEST COMMENT:** IF:(15min) BOB 2 min  
 ISl:(30min) No Return  
 FF:(15min) BOB 2 min  
 FSl:(30min) No Return



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1836.25	104.98	Initial Hydro-static
2	79.81	105.43	Open To Flow (1)
17	269.38	110.47	Shut-In(1)
47	1130.93	109.83	End Shut-In(1)
47	296.49	109.54	Open To Flow (2)
62	445.91	110.27	Shut-In(2)
96	1126.77	110.35	End Shut-In(2)
97	1787.67	110.58	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
500.00	OSW o=tr w =100%	7.01
415.00	OCMV o=10% m=10% w =80%	5.82
120.00	HOCVM o=30% w =30% m=40%	1.68
5.00	CO o=100%	0.07

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

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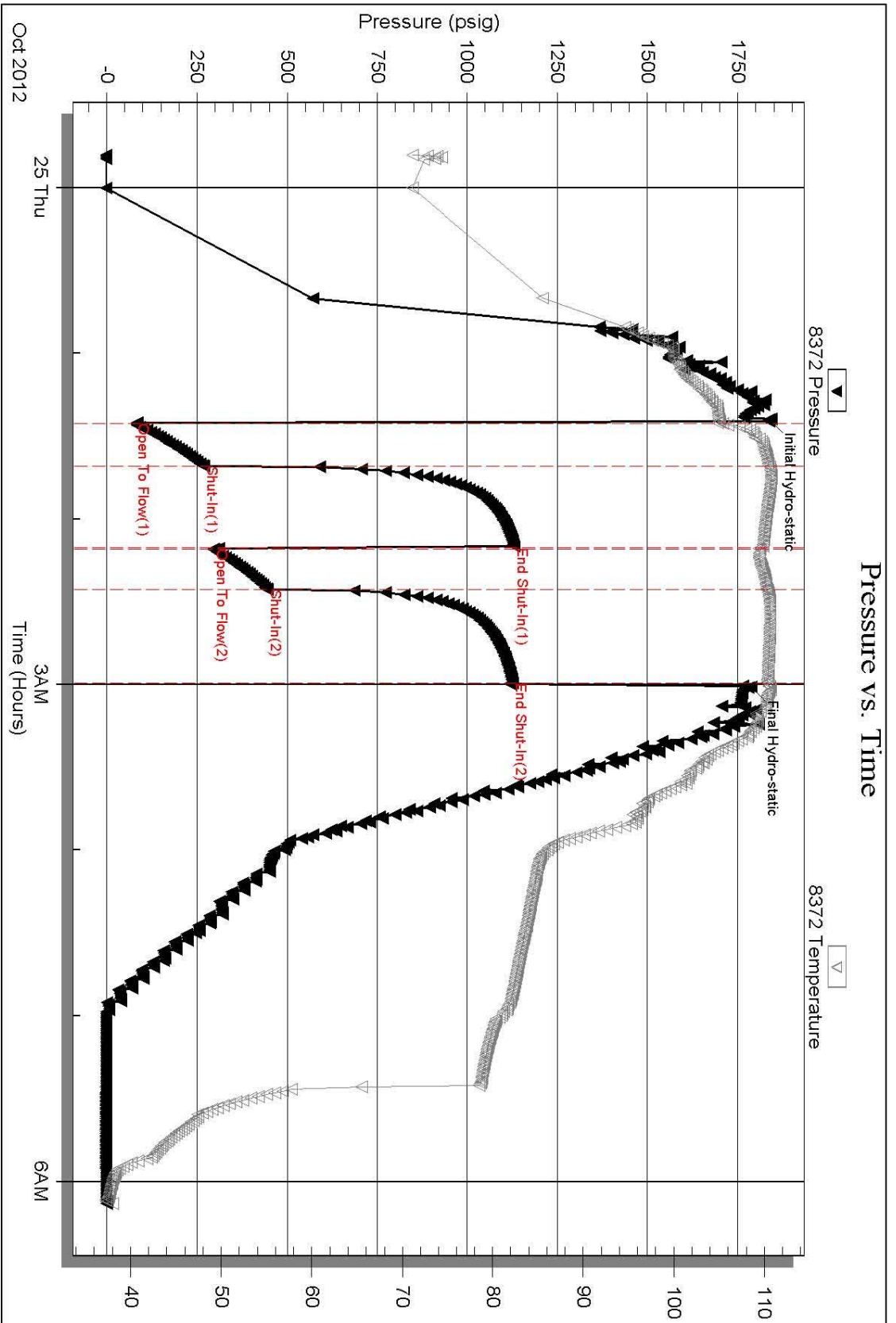
### STRADDLE TEST # 1 EXPANDED CHART

Serial #: 8372

Outside TDI inc

Derrick #2

DST Test Number: 1



### STRADDLE TEST # 1 BOTTOM PACKER CHART

	<b>DRILL STEM TEST REPORT</b>
	TDL inc <span style="float: right;"><b>4-15s-18w Ellis</b></span>
	1310 Bison Rd Hays Ks 67601 <span style="float: right;"><b>Derrick #2</b></span>
ATTN: Herb Deines <span style="float: right;">Job Ticket: 49361       <b>DST#: 1</b></span>	
	Test Start: 2012.10.24 @ 23:48:05

**GENERAL INFORMATION:**

Formation:         **Arbuckle**  
 Deviated:         No Whipstock:                          ft (KB)  
 Time Tool Opened: 01:25:30  
 Time Test Ended:  06:08:20

**Interval:         3598.00 ft (KB) To  3648.00 ft (KB) (TVD)**  
 Total Depth:       3751.00 ft (KB) (TVD)  
 Hole Diameter:     7.88 inches   Hole Condition: Poor

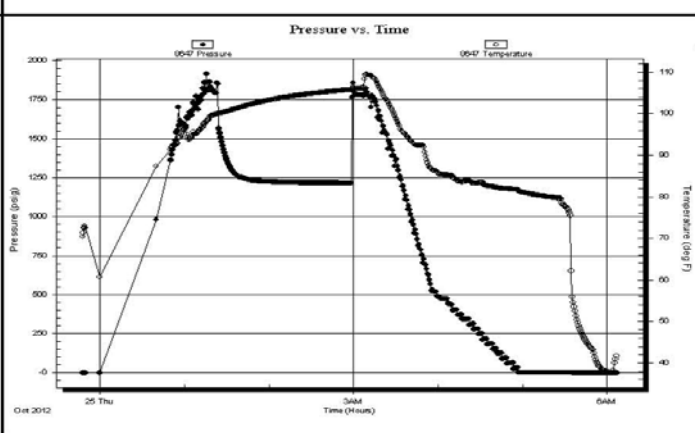
Test Type:    Conventional Straddle (Initial)  
 Tester:       Andy Carreira  
 Unit No:      39

Reference Elevations:    2029.00 ft (KB)  
                                       2019.00 ft (CF)  
 KB to GR/CF:            10.00 ft

**Serial #: 8647         Below (Straddle)**

Press@RunDepth:         psig @     3654.00 ft (KB)	Capacity:                    8000.00 psig
Start Date:                2012.10.24     End Date:                 2012.10.25	Last Calib.:                 2012.10.25
Start Time:               23:48:05       End Time:                 06:06:50	Time On Btm:
	Time Off Btm:

**TEST COMMENT:** IF:(15min) BOB 2 min  
 ISI:(30min) No Return  
 FF:(15min) BOB 2 min  
 FSI:(30min) No Return



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

Recovery		
Length (ft)	Description	Volume (bbl)
500.00	OSW o=tr w =100%	7.01
415.00	OCMV o=10% m=10% w =80%	5.82
120.00	HOCVM o=30% w =30% m=40%	1.68
5.00	CO o=100%	0.07

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

Trilobite Testing, Inc
Ref. No: 49361
Printed: 2012.10.25 @ 08:23:22

ROCK TYPES									
	Cht		Dolprim		shale, grn		shale, red		Lscong
	Cht vari		Lmst fw<7		shale, gry		Shcol		Del Lim
	Clayey		Carbon Sh		Dol lime		Dol lime		Dol lime

**ACCESSORIES**

**MINERAL**

- P Pyrite
- Varicolored chert
- Chert White

**FOSSIL**

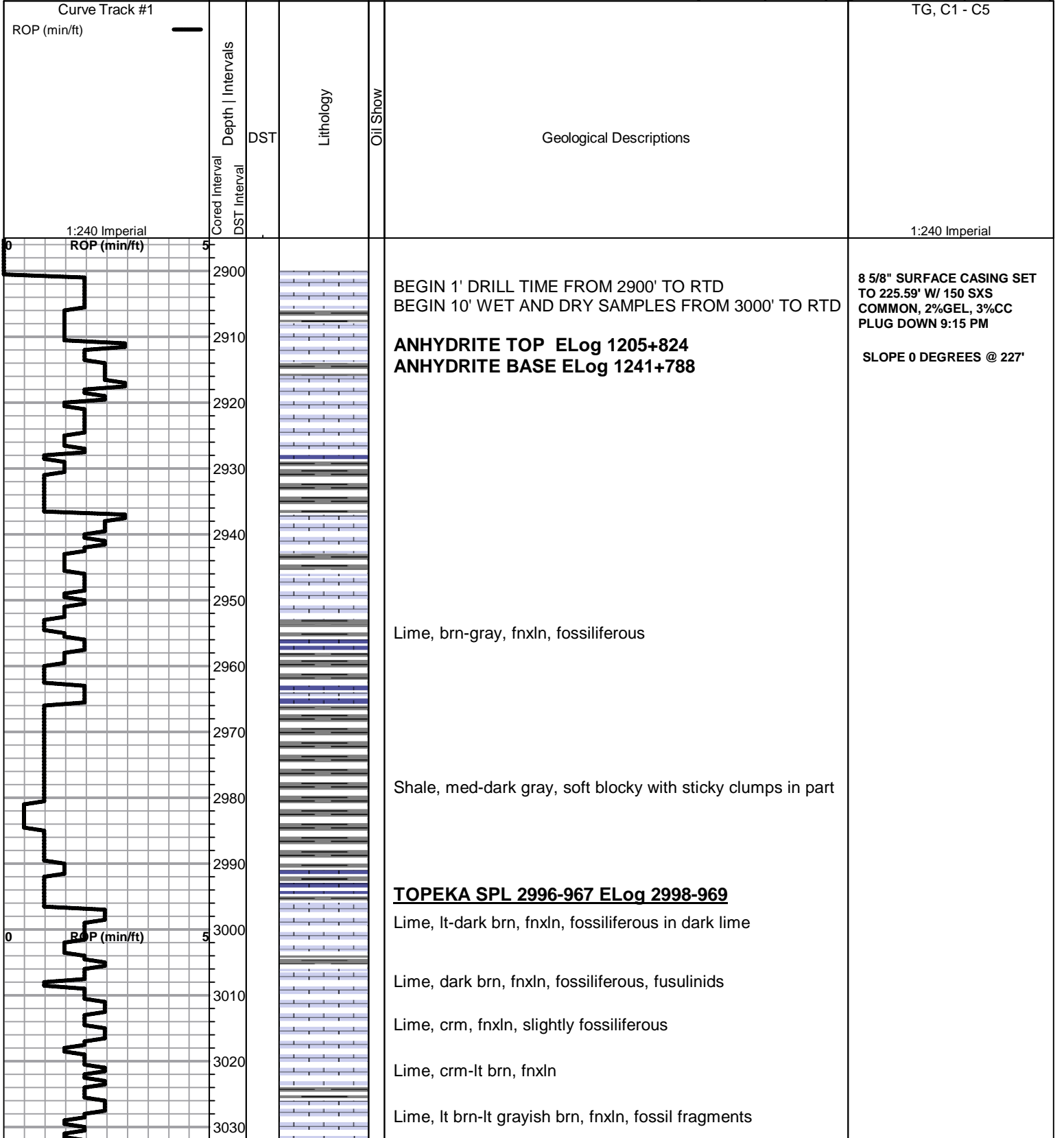
- Oolite
- Oomoldic

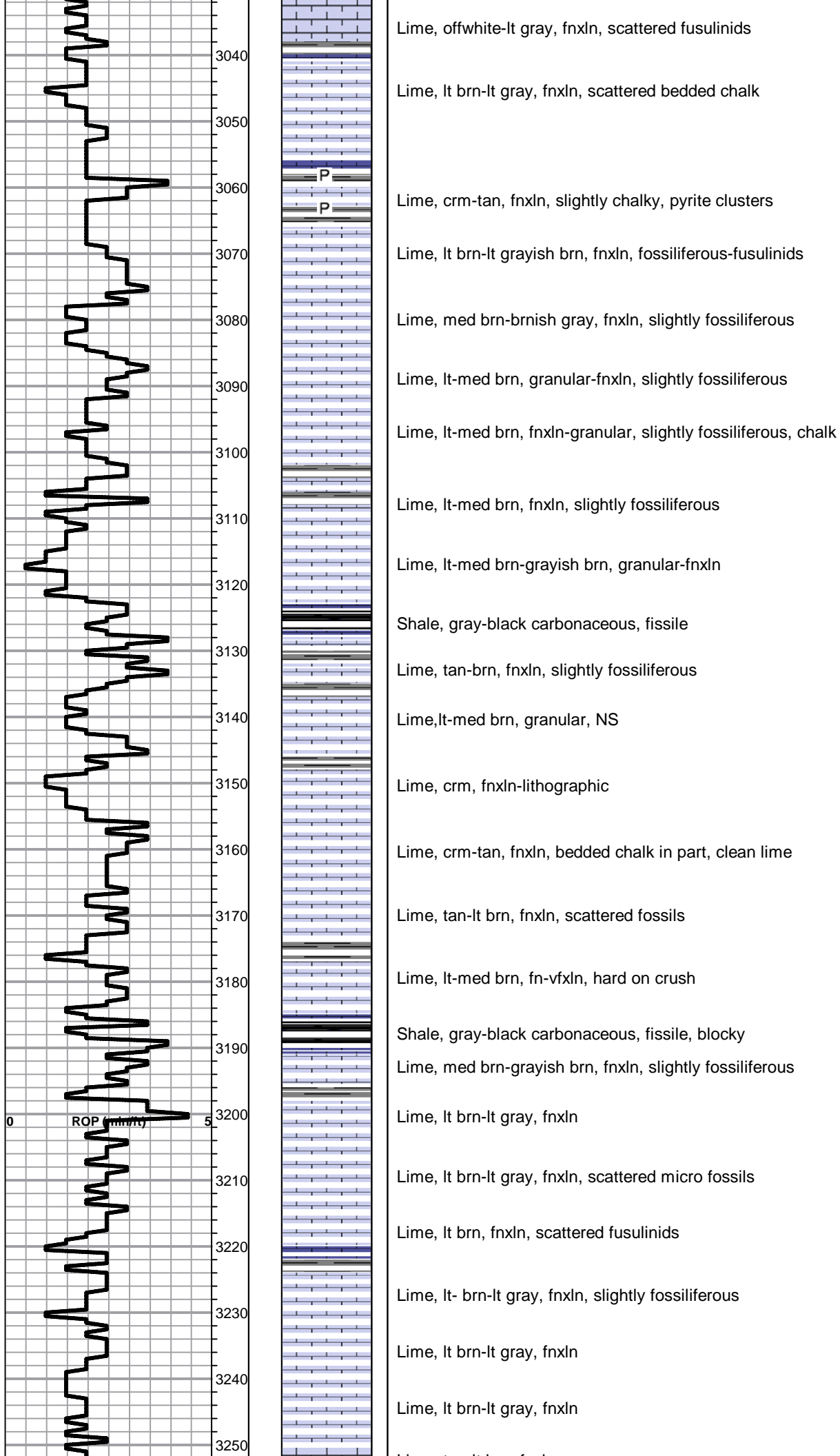
**OTHER SYMBOLS**

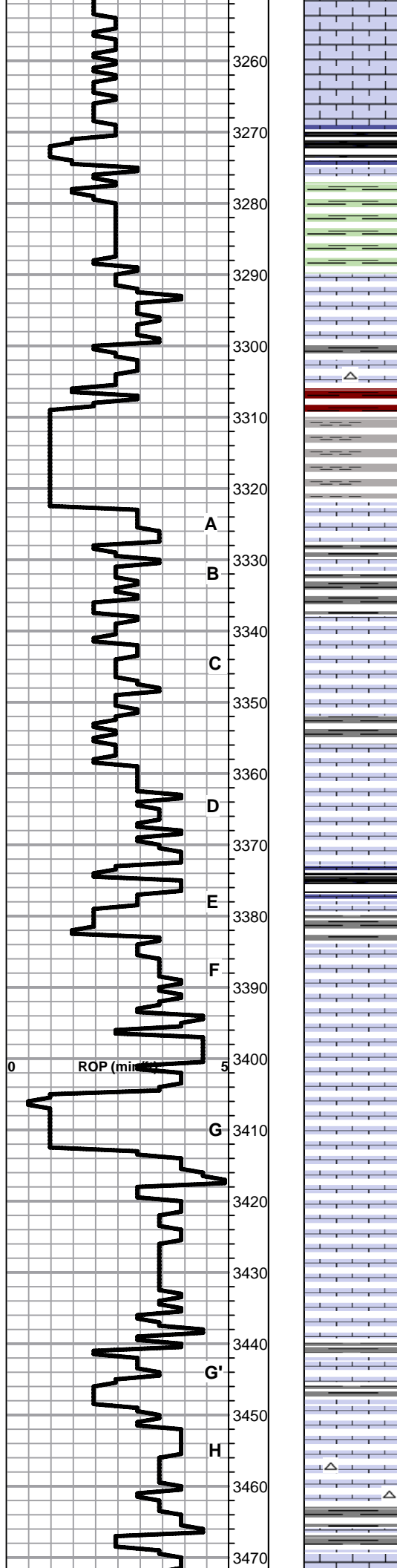
**DST**

- DST Int
- DST alt
- Core

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







Lime, tan-lt brn, fnxln

Lime, tan-lt brn, fnxln

**HEEBNER SHALE SPL 3270-1241 ELog 3270-1241**

Shale, black carbonaceous, fissile, blocky  
Lime, lt brn, fnxln

Shale, lime green, soft forming soft mud

**TORONTO SPL 3292-1263 ELog 3290-1261**

Lime, crm-lt brn, fnxln, NS

Lime, Crm-lt brn, fnxln, white chert with chalk NS

Shale, reddish brn-grayish green, soft with lt red wash

**LKC SPL 3322-1293 ELog 3322-1293**

Lime, crm-tan, fnxln, chalk, NS

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

Lime, white-crm, fn-vfxln, slightly chalky, NS

Lime, crm-tan, fn-vfxln, slight chalk, NS

Shale, gray-black carbonaceous  
Lime, grayish brn, fnxln

Lime, tan, mostly fnxln with few chips with scattered vugs with light scattered stain, very lite to nondetectable odor

Lime, tan, fnxln, cemented oolitic material

Lime, tan, oolitic with chalk, NS

Lime, crm-lt grayish brn, oolitic/oomoldic, mostly barren material with very minor staining

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

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

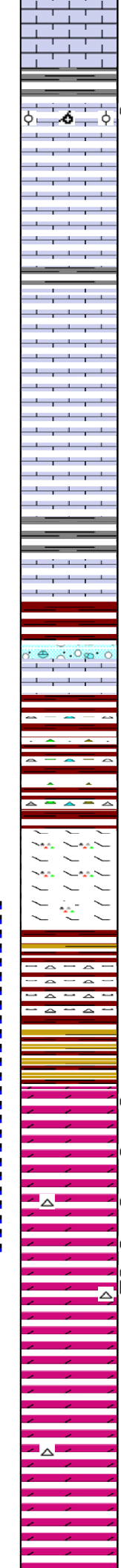
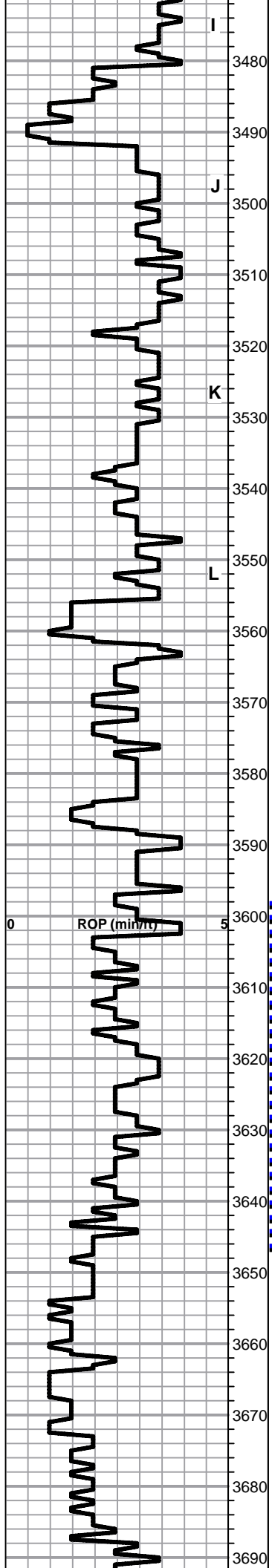
Lime, crm-tan, fnxln with few greenish tinted lime in part

Lime, dark brn, fnxln, scattered staining, NFO, scattered oolitic with fossil fragments.

Lime, crm-tan, fnxln, chert, white, fresh, sharp

Lime, lt-dark brn, fn-vfxln





Lime, crm-tan, fnxln, slight chalk

Lime, crm-tan, fnxln

Lime, lt brn, oolitic/oolmoldic, very lt odor with very light scattered staining,

Lime, crm-tan, fnxln, bedded chalk

Shale, grayish green, soft, blocky

Lime, lt-med brn, fn-vfxln

Lime, crm-tan, fnxln, slight bedded chalk

Lime, tan-lt brn, fnxln, slightly chalky

Lime, lt-med brn, fn-vfxln

Lime, lt-med brn, fnxln

**BKC SPL 3552-1523 ELOG 3556-1527**

Shale, reddish brn-brn-lt gray. soft blocky

Lime, partial clastic mix with red shale stain

Shale, reddish-brn, soft blocky with vari colored chert

Lime, crm-lt brn, fnxln, dolomitic, hard on crush, orange chert fragments

Lime crm-lt brn, fnxln with decreasing chert content

Shale, reddish brn, soft blocky

Shale, red, greens with chert nodules

**ARBUCKLE SPL 3624-1595 ELog 3624 -1595**

Dolomite, cxln, sucrosic, very lite odor, lot of fines in spl

Dolomite, white-lt brn, c xln, scattered to saturated stain, lt odor, fair to good inter xln porosity throughout

Dolomite, white-lt brn, cxln, scattered to saturated staining, lt odor on the decrease in intensity

Dolomite, white-lt brn, cxln, very lt odor, gilsonitic

Dolomite, white-lt brn, cxln

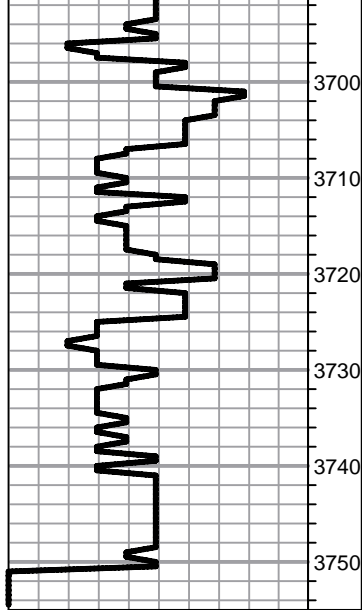
Dolomite, white-lt brn, fnxln, fn-cxln

Dolomite, ivory-crm, fn-cxln

Dolomite, ivory-crm, fn-cxln

Dolomite ivory-crm fnxln

DST # 1 STRADDLE TEST  
3598' TO 3648' SEE HEADER  
FOR TEST SUMMARY



Dolomite, ivory crm, fnxln

Dolomite, ivory, fnxln with scattered med to cxln

Dolomite, ivory-crm with pink tint in part, cxln, sucrosic

Dolomite, ivory-crm, fn-cxln

Dolomite, ivory-crm, fn-cxln

Dolomite, ivory-crm, fn-cxln with increasing rhombic development with good inter xln porosity

Dolomite, crm, fn-cxln with light pink tint in part

**RTD 3750-1721 LTD 3752-1723**

# QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025  
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 6127

Date	Sec.	Twp.	Range	County	State	On Location	Finish
10-19-12	4	15	18	Ellis	KS		9:00 p.m.
Location <i>Ways 5 to Grants Village Rd into</i>							

Lease	Well No.	Owner	
<i>Derrick</i>	<i>2</i>	To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.	
Contractor	Type Job	Charge To	
<i>Southwind #1</i>	<i>Surface</i>	<i>TDI</i>	
Hole Size	T.D.	Street	
<i>12 1/4</i>	<i>227</i>		
Csg.	Depth	City	
<i>8 5/8</i>	<i>225</i>	State	
Tbg. Size	Depth	The above was done to satisfaction and supervision of owner agent or contractor.	
		Cement Amount Ordered <i>150 con 3 1/2 cu 2 1/2 cu</i>	
Cement Left in Csg.	Shoe Joint		
<i>15'</i>			
Meas Line	Displace		
	<i>13 B C</i>		

**EQUIPMENT**

Pumptrk	No.	Cement	Common
<i>5</i>		<i>5 mg</i>	<i>150</i>
		Helper	Poz. Mix
Bulktrk	No.	Driver	Gel.
		<i>Brett</i>	<i>3</i>
		Driver	Calcium
Bulktrk	No.	Driver	<i>5</i>
<i>10</i>		<i>Doug</i>	

**JOB SERVICES & REMARKS**

Remarks:	Hulls
Rat Hole	Salt
Mouse Hole	Flowseal
Centralizers	Kol-Seal
Baskets	Mud CLR 48
D/V or Port Collar	CFL-117 or CD110 CAF 38
<i>8 5/8 on bottom Est. Circulation.</i>	Sand
<i>Mix 150 SK + Displace.</i>	Handling <i>158</i>
	Mileage

**FLOAT EQUIPMENT**

<i>Cement Circulated!</i>	Guide Shoe
	Centralizer <i>8 5/8 surge</i>
	Baskets
	AFU Inserts
	Float Shoe
	Latch Down

Pumptrk Charge	<i>Surface</i>	Tax
Mileage	<i>9</i>	Discount
		Total Charge

X Signature *[Handwritten Signature]*

JOB LOG

SWIFT Services, Inc.

DATE 10-25-72 PAGE NO. 1

CUSTOMER		WELL NO.		LEASE		JOB TYPE		TICKET NO.	
TOI		2		Derrick		5 1/2 Two Stage Longstring		22907	
CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS	
				T	C	TUBING	CASING		
	1230								On location Laying Down Drill Pipe
									TO 3750 SS 42'
									TP 3748 DV 10" 60 1190'
									Insert @ 3706 5 1/2 14"
									Centerizers 1,3,5,6,8,10,12,59
									Basket 2,13,60,76.
	1515								Start 5 1/2 casing
	1645								Drop Ball circulate Rotate
	1800	5	12		✓				Start Mud Flush
		5	20		✓				Start KCL Flush
		5	36		✓				Start Cement 150 SKS EA2
									Drop Plug
									Wash out Pump + Lines
	1820	6							Displace Plug
	1836		90.4		✓		1500		Land Plug
									Release PSI
	1840								Drop Open Plug
			7/5						Plug BH 30 MH 20
	1858						1100		Open DV
			20		✓				Start KCL Flush
			89		✓				Start SMD 160 SKS
									Drop Closing Plug
									Wash out Pump + Lines
	1925								Displace Plug
	1930		29		✓		1600		Land Plug Close DV
									Release PSI Dry
									Circulate 15 SKS to Pit
									Wash up truck
									Reck up
									Job Complete
									Thank You
									Josh, Roger, Jon, Flint