

**OPERATOR**

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

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-628-2593  
 Well Name: DREILING D # 8  
 Location: SW SW NE NE Sec.21-14s-16w  
 Pool: IN FIELD  
 State: KANSAS

API: 15-051-26,408-00-00  
 Field: DREILING  
 Country: USA



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

Scale 1:240 Imperial

Well Name: DREILING D # 8  
 Surface Location: SW SW NE NE Sec.21-14s-16w  
 Bottom Location:  
 API: 15-051-26,408-00-00  
 License Number: 4787  
 Spud Date: 11/2/2012 Time: 3:15 PM  
 Region: ELLIS COUNTY  
 Drilling Completed: 11/6/2012 Time: 8:33 PM  
 Surface Coordinates: 1090' FNL & 1230' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 1875.00ft  
 K.B. Elevation: 1885.00ft  
 Logged Interval: 2500.00ft To: 3496.00ft  
 Total Depth: 3496.00ft  
 Formation: ARBUCKLE  
 Drilling Fluid Type: CHEMICAL/FRESH WATER GEL

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: Latitude:  
 N/S Co-ord: 1090' FNL  
 E/W Co-ord: 1230' 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: MUD ROTARY

Rig Type: MUD ROTARY  
Spud Date: 11/2/2012  
TD Date: 11/6/2012  
Rig Release: 11/8/2012

Time: 3:15 PM  
Time: 8:33 PM  
Time: 1:00 AM

### ELEVATIONS

K.B. Elevation: 1885.00ft  
K.B. to Ground: 10.00ft

Ground Elevation: 1875.00ft

### NOTES

RECOMMENDATION TO RUN PRODUCTION CASING BASED ON RESULTS OF DST # 1, FAVORABLE STRUCTURE AND EXISTING LEASE INFRASTRUCTURE TO HANDLE OIL AND PRODUCED SALT WATER.

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

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

### FORMATION TOPS SUMMARY AND CHRONOLOGY OF DAILY ACTIVITY

#### DREILING D # 8

1090' FNL & 1230' FEL, NE/4

Sec. 21-14s-16w

1875' GL 1885' KB

<u>FORMATION</u>	<u>SAMPLE TOPS</u>	<u>LOG TOPS</u>
Anhydrite	983+ 902	977+ 908
B-Anhydrite	1018+ 867	1016+ 869
Topeka	2852- 967	2853- 968
Heebner Shale	3069-1184	3070-1185
Toronto	3086-1201	3088-1203
LKC	3114-1229	3115-1230
BKC	3345-1460	3354-1469
Arbuckle		3403-1518
RTD	3496-1611	
LTD		3498-1613

### SUMMARY OF DAILY ACTIVITY

11-02-12 Spud 3:15 PM, set 8 5/8" surface casing to 223' w/ 150 sxs common, 2%Gel, 3%CC, plug down 7:00pm, WOC 8 hrs

11-03-12 411', drill plug at 3:00 AM


11-04-12 1690', drilling

11-05-12 2460', drilling, displace 2672'-2687'

11-06-12 3185', drilling, RTD 3496' @ 8:33pm, CCH, short trip

11-07-12 3496', CCH 1 1/2 hrs, TOWB, logs, straddle test # 1 3340' - 3420',  
 LDDP, run 5 1/2 "production casing, cementing top stage  
 11-08-12 3496', finish cementing, plug down 1:00AM, RD

**DST # 1 STRADDLE TEST SUMMARY**

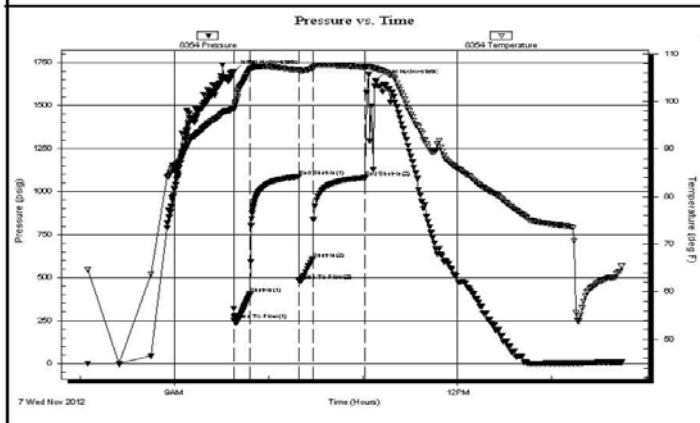
 <p><b>TRILOBITE TESTING, INC.</b></p>	<b>DRILL STEM TEST REPORT</b>		
	TDI, Inc. 1310 Bison Rd. Hays, KS 67601 ATTN: Tom Denning	<b>21/14S/16W-Ellis</b> <b>Dreiling "D" #8</b> Job Ticket: 48613 <b>DST#: 1</b> Test Start: 2012.11.07 @ 07:54:45	

**GENERAL INFORMATION:**

Formation: <b>Arbuckle</b>	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock: ft (KB)	Tester: Dustin Rash
Time Tool Opened: 09:37:45	Unit No: 38
Time Test Ended: 13:44:15	Reference Elevations: 1885.00 ft (KB)
<b>Interval: 3340.00 ft (KB) To 3420.00 ft (KB) (TVD)</b>	1875.00 ft (CF)
Total Depth: 3497.00 ft (KB) (TVD)	KB to GR/CF: 10.00 ft
Hole Diameter: 7.88 inches	Hole Condition: Fair

<b>Serial #: 8354</b> <b>Inside</b>	Capacity: 8000.00 psig
Press@RunDepth: 607.65 psig @ 3346.00 ft (KB)	Last Calib.: 2012.11.07
Start Date: 2012.11.07      End Date: 2012.11.07	Time On Btm: 2012.11.07 @ 09:37:25
Start Time: 08:04:45      End Time: 13:44:15	Time Off Btm: 2012.11.07 @ 11:07:45

**TEST COMMENT:** IF-Strong building blow. BOB in 45 seconds.  
 ISI-No Return.  
 FF-Strong building blow. BOB in 45 seconds.  
 FSI-No Return.



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1697.90	98.60	Initial Hydro-static
1	251.74	98.46	Open To Flow (1)
11	407.41	106.64	Shut-In(1)
42	1086.34	106.61	End Shut-In(1)
42	481.07	106.43	Open To Flow (2)
51	607.65	106.93	Shut-In(2)
84	1079.97	107.18	End Shut-In(2)
91	1646.97	106.92	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
252.00	5%Oil/90%Water/5% Mud	3.53
819.00	10%Gas/5%Oil/60%Water/30% Mud	11.49
504.00	10%Gas/5%Oil/15%Water/70% Mud	7.07

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

### DST # 1 STRADDLE TEST EXPANDED CHART

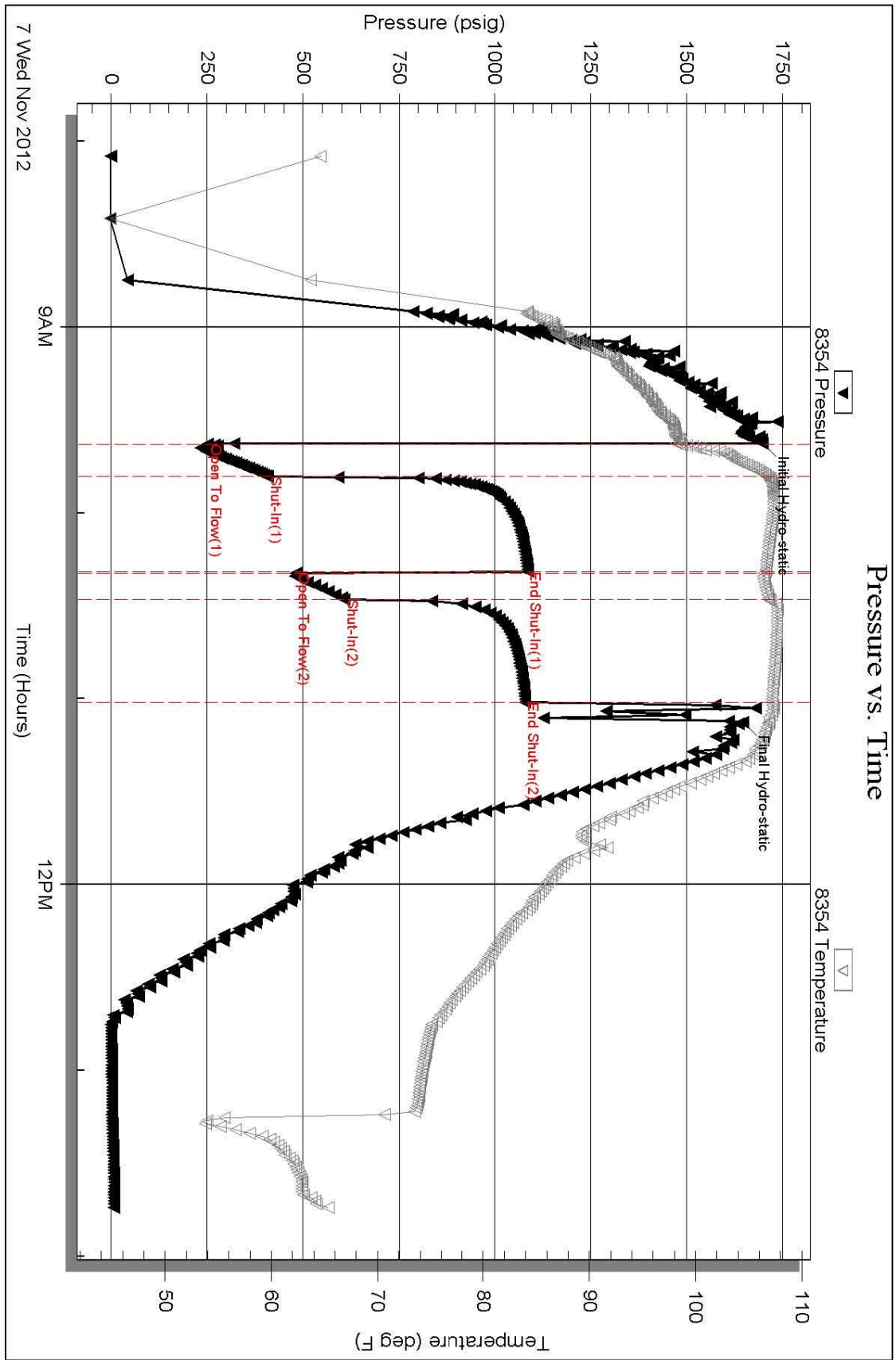
Serial #: 8354

Inside

TDI, Inc.

Drilling "D" #8

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 48613

Printed: 2012.11.07 @ 15:10:46

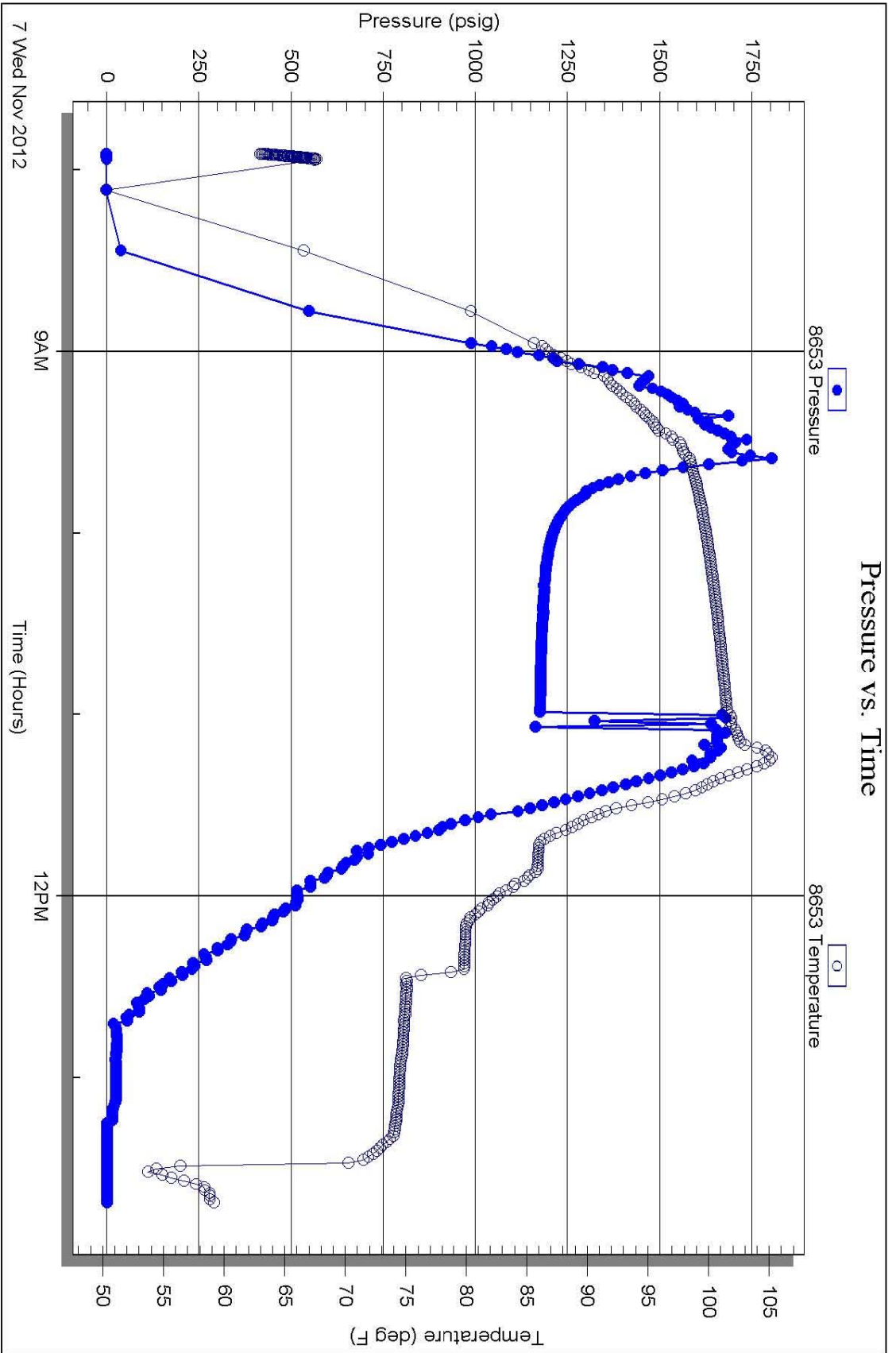
# DST # 1 STRADDLE TEST BOTTOM PACKER CHART

Serial #: 8653

Below (Straddle) bp.

Drilling "D" #8

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 48613

Printed: 2012.11.07 @ 15:10:47

**ROCK TYPES**



**ACCESSORIES**

**MINERAL**

- ▲ Chert, dark
- P Pyrite
- △ Chert White

**FOSSIL**

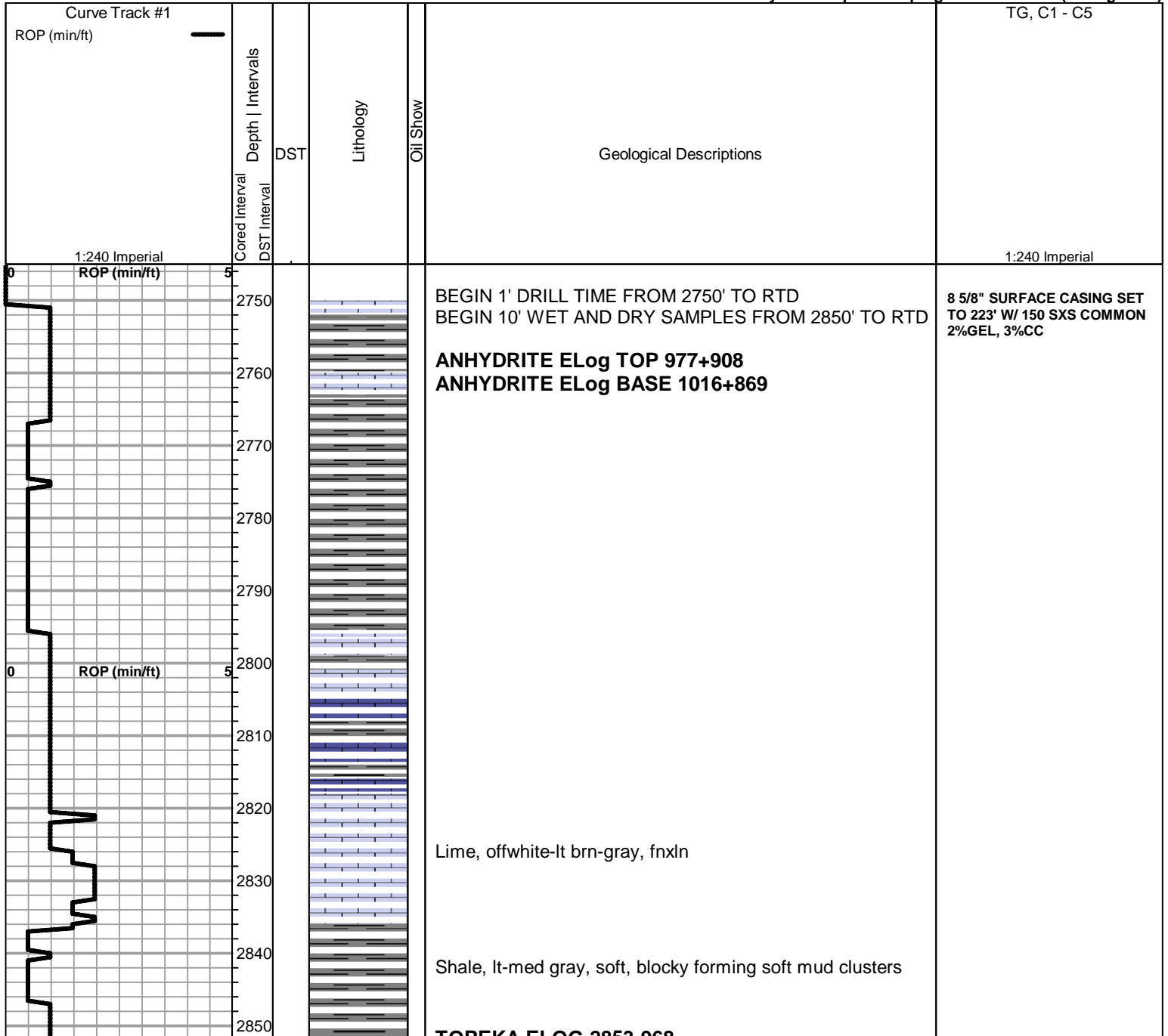
- ⊕ Oolite
- ⊕ Oomoldic

**OTHER SYMBOLS**

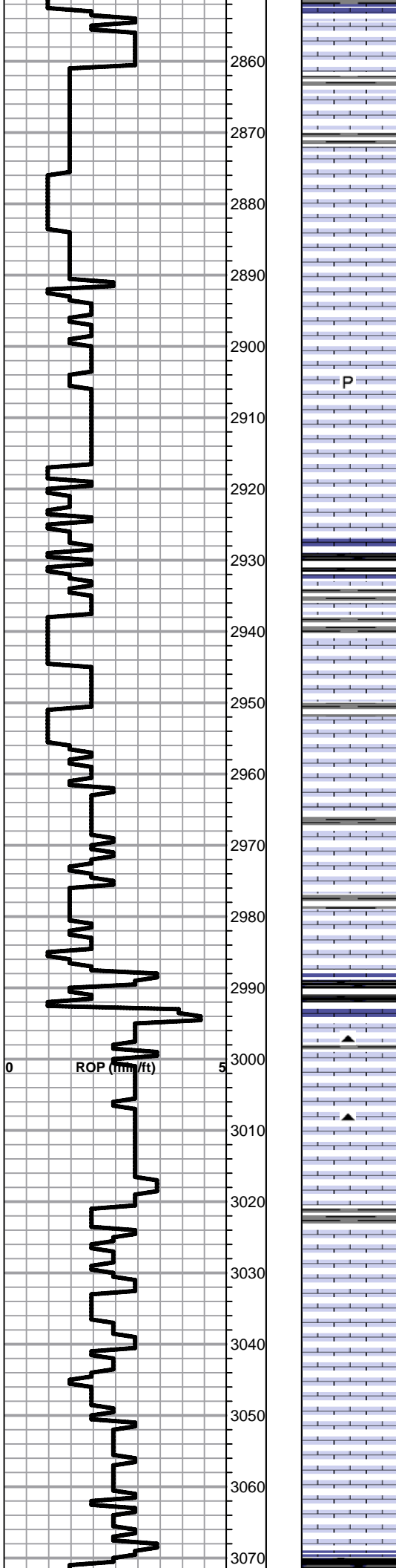
**DST**

- DST Int
- DST alt
- Core

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



**TOPEKA ELOG 2853-968**



Lime, crm-lt brn, fnxln, slight bedded chalk in part

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

Lime, lt brn-grayish brn, fnxln, bedded chalk in part

Lime, lt-med grayish brn, fnxln, fusulinids, slight chalk

Lime, lt brn-grayish brn, fnxln, slight chalk in part

P

Lime, grayish brn, fnxln, crinoid segments in part

Lime, grayish brn, fnxln

Lime, lt brn-grayish brn, fnxln with sticky chalk clumps

Lime, lt-med brn-gray, soft, crumbly with sticky chalk clumps with gray fossil traces

Shale, gray-black carbonaceous, fissile, blocky

Lime, lt-med brn-grayish brn, fnxln

Lime, lt-med brn, fnxln, bedded chalk in part

Lime, lt-med brn, fnxln-granular, bedded chalk in part

Lime, crm-lt brn, fn-vfxln, slight chalk in part

Lime, lt-dark brn, fn-vfxln

Lime, lt-dark brn, fn-vfxln

Shale, black carbonaceous, fissile, blocky

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

Lime, lt-dark brn, fnxln, hard on crush, slightly fossiliferous

Lime, lt-dark, fnxln, slight bed chalk in part

Lime, lt-dark brn-gray, fn-vfxln, hard on crush

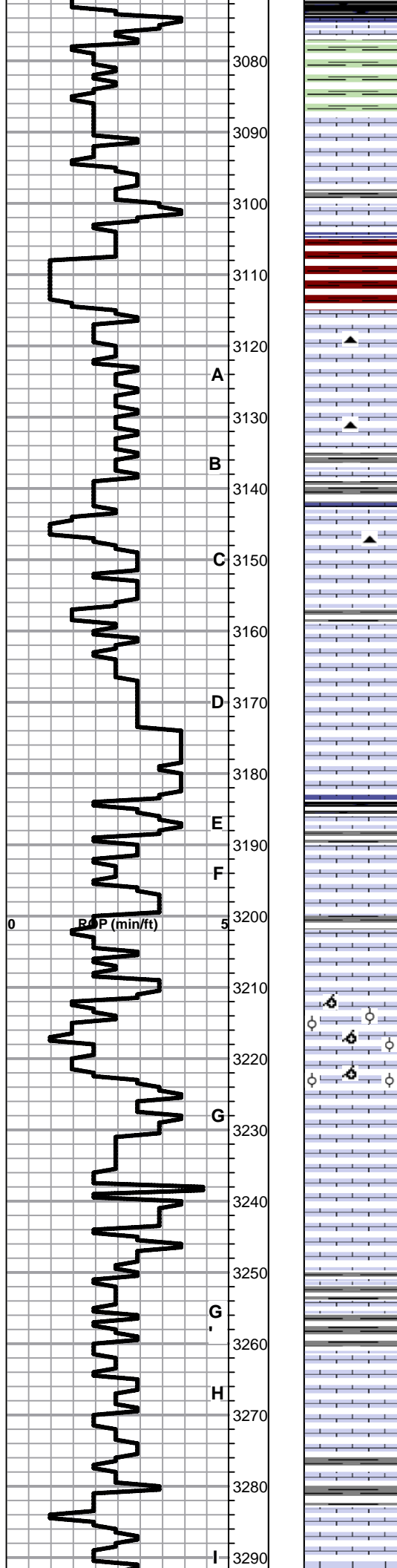
Lime, lt brn-lt grayish brn, fnxln, slight chalk in part

Lime, lt brn-lt grayish brn, fnxln, slight bed chalk in part

Lime, lt brn, fnxln, slightly fossiliferous

Lime, lt-brn, fn-vfxln, slight chalk in part

**HEEBNER SHALE ELOG 3070-1185**



Shale, black carbonaceous, fissile, blocky  
 Lime, lt-med brn, vfxln  
 Shale, lime green, soft forming soft mud in part

**TORONTO ELOG 3088-1203**

Lime, white-cream-lt brn, fnxln-granular in part , bed chalk in part, NS

Shale, red with light red wash, forming soft mud in part

**LKC ELOG 3115-1229**

Lime, lt-med brn, fn-vfxln, slight bed chalk in part, NS

Lime, cream-tan, fnxln, chalk in part, lt odor, scattered pinpoint vuggy porosity with scattered stain

Lime, lt-med brn, fnxln, slight chalk in part

Lime, lt-med brn, fnxln, few chips with light scattered staining

Lime, lt-med brn, fn-vfxln, few barren oolitic chips in part

Lime, cream-tan, fn-vfxln, chalk in part, NS

Shale, gray-black carbonaceous

Lime, cream-tan, fnxln, bed chalk in part, NS

Lime, cream-tan, fnxln, hard on crush, chalk

Lime, cream-lt gray, fn-vfxln, slight chalk

Lime, cream, fn-vfxln

Lime, cream-tan, fnxln with oolitic in part, lt scattered staining in top of interval, NFO, No Odor

Lime, cream-tan, fn-vfxln, slight chalk in part

Lime, cream-lt gray, fn-vfxln, slight chalk in part

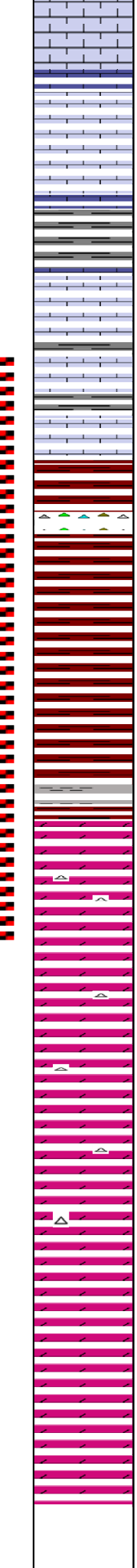
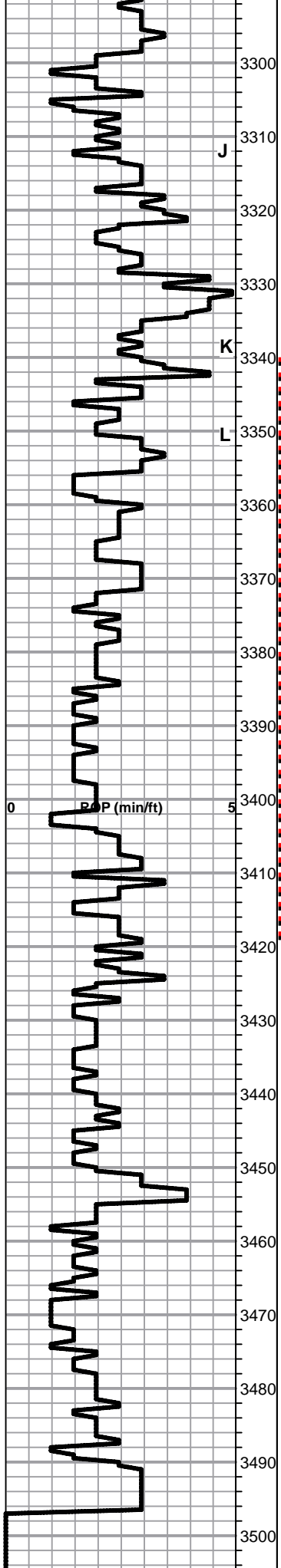
Lime, lt gray, fn-vfxln, slight chalk in part

Lime, lt-med brnish gray, fn-vfxln, NS

Lime, lt gray, vfxln, glassy appearance

Lime, cream-lt gray, fn-vfxln, slight chalk, glassy appearance





Lime, crm-lt gray, fn-vfxln, very hard on crush, glasslike

Lime, crm-lt gray, fn-vfxln, bed chalk in part

Lime, lt gray with pale green tint, fn-vfxln

Shale, lt gray, soft forming soft sticky clusters

Lime, crm, fn-vfxln, lots of bedded chalk

Lime, crm-pale gray, fn-vfxln, NS

Lime, crm-pale gray, fn-vfxln, NS

**BKC ELOG 3354-1469**

Shale, reddish brn, soft, blocky with tan chert,

Shale, lt red wash, soft

Shale, red wash, soft with sticky clusters forming in part

Shale, white - red - pink forming sticky clumps

Shale, red, soft sticky clumps

Shale, red to white, soft sticky clumps

**ARBUCKLE ELOG 3403-1518**

Dolomite, tan-lt brn, cxln, very fine samples mixed in shale

Dolomite, crm-lt brn, fnxln with fresh, sharp white chert  
finer granular and sucrosic dolomite ground up in  
samples even with reduced pump pressure

Dolomite, crm-lt brn, fnxln, no detectable odor

Dolomite, crm-lt brn, fnxln, oolitic chert in part

Dolomite, crm-lt brn, fnxln-granular

Dolomite, crm-tan, fnxln with glauconitic specks in part

Dolomite, crm-tan, fnxln-granular

Dolomite, ivory-crm, granular

Dolomite, crm, fnxln-granular

Dolomite, ivory-crm, fnxln-granular

**RTD 3496-1611 LTD 3498-1613**

DST # 1 STRADDLE TEST  
3340' TP 3420' SEE HEADER  
FOR TEST SUMMARY

RAN 84 JTS 14# 5 1/2" CASING  
SET TO 3496' W/ 150 SXS EA2  
ON BOTTOM STAGE, 105 SXS  
SMD ON TOP STAGE.

# 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. 6177

Date	11-2-12	Sec.	21	Twp.	14	Range	16	County	Ellis	State	Ks	On Location		Finish	7:00 PM
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Lease **Dreiling D** Well No. **8** Location **Walker, Ks - 2 1/2 S, 1 W, 1/4 S, 1/2 E**

Contractor	<b>Southwind #1</b>	Owner	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.
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Type Job	<b>Surface</b>	Charge To	<b>T D I Inc.</b>
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Hole Size	<b>12 1/4"</b>	T.D.	<b>225'</b>
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Csg.	<b>8 5/8"</b>	Depth	<b>223'</b>
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Tbg. Size		Depth	
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Tool		Depth	
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Cement Left in Csg.	<b>15'</b>	Shoe Joint	<b>15'</b>	Cement Amount Ordered	<b>150 SX Common 3% CC</b>
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Meas Line		Displace	<b>13 BLS</b>	<b>2 1/2 Gel</b>
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**EQUIPMENT**

Pumptrk	<b>9</b>	No.		Cementer	<b>Cody</b>		Poz. Mix	
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Bulktrk	<b>1</b>	No.		Driver	<b>Lonnie M</b>		Gel.	<b>3</b>
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Bulktrk	<b>p.u.</b>	No.		Driver	<b>Math</b>		Calcium	<b>5</b>
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**JOB SERVICES & REMARKS**

Remarks:	<b>Cement did circulate</b>	Hulls	
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Rat Hole		Salt	
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Mouse Hole		Flowseal	
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Centralizers		Koi-Seal	
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Baskets		Mud CLR 48	
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D/V or Port Collar		CFL-117 or CD110 CAF 38	
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		Sand	
--	--	------	--

		Handling	<b>158</b>
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		Mileage	
--	--	---------	--

**FLOAT EQUIPMENT**

		Guide Shoe	
--	--	------------	--

		Centralizer	
--	--	-------------	--

		Baskets	
--	--	---------	--

		AFU Inserts	
--	--	-------------	--

		Float Shoe	
--	--	------------	--

		Latch Down	
--	--	------------	--

		Pumptrk Charge	<b>Surface</b>
--	--	----------------	----------------

		Mileage	<b>16</b>
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		Tax	
		Discount	
		Total Charge	

X Signature

*[Handwritten Signature]*

JOB LOG

SWIFT Services, Inc.

DATE 1-7-12 PAGE NO. 1

CUSTOMER TDI WELL NO. D 28 LEASE Drilling JOB TYPE 2-stage TICKET NO. 21962

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	2145							01 loc set up Trks
								RTD 3498' LTD 3496'
								5 1/2" x 14" x 3498' x 42'
								Cent. 1, 3, 5, 87, 8, 10, 12, 59
								Back 2, 13, 60, 74
								DV 60 @ 972'
	2115							Start FE
	2220							Break Circ.
	2330	5	0			200		Start Preflushes 500 gal Mad Flush
		5	32/0			200		20 bbl KCL Flush
	2345		36					Start 150 sks EA-2
	2350	6	0			200		End Cement
	0000	5	61			250		Wash Pth / Drop LD Plug
	0007		84.5					Start Displacement
	0010							Catch Cement / KCL in last 20 bbl
	0015	2.5	7/4					Land Plug
	0030	4.5	0			1100		Release Pressure / Float Held
	0031					150		Drop Opening Plug
	0045		60					Plug RH & MH 30/15 sks SMD
	0050	5	0			150		Start Cement
		4	27			250		End Cement
	0100		28			350		Drop Closing Plug
						1500		Start Displacement
								Circ Cement
								Land Plug
								Close DV / Release Pressure / DV Closed
								circ 15 sks to pit
								Thank you
								Nick, Wayne, David E. & Donna