

**OPERATOR**

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

Contact Geologist: TOM DENNING  
 Contact Phone Nbr: 785-259-3141  
 Well Name: MIKE # 2  
 Location: NE NE SE SW Sec.3-15s-19w  
 Pool: IN FIELD  
 State: KANSAS

API: 15-051-26,381-00-00  
 Field: REICHERT  
 Country: USA



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

Scale 1:240 Imperial

Well Name: MIKE # 2  
 Surface Location: NE NE SE SW Sec.3-15s-19w  
 Bottom Location:  
 API: 15-051-26,381-00-00  
 License Number: 4787  
 Spud Date: 9/18/2012 Time: 9:15 AM  
 Region: ELLIS COUNTY  
 Drilling Completed: 9/24/2012 Time: 12:09 PM  
 Surface Coordinates: 1030' FSL & 2700' FEL  
 Bottom Hole Coordinates:  
 Ground Elevation: 2055.00ft  
 K.B. Elevation: 2065.00ft  
 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: Latitude:  
 N/S Co-ord: 1030' FSL  
 E/W Co-ord: 2700' 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: 9/18/2012  
TD Date: 9/24/2012  
Rig Release: 9/25/2012

Time: 9:15 AM  
Time: 12:09 PM  
Time: 6:46 AM

### ELEVATIONS

K.B. Elevation: 2065.00ft  
K.B. to Ground: 10.00ft

Ground Elevation: 2055.00ft

### NOTES

DECISION TO RUN PRODUCTION CASING TO FURTHER TEST THE ARBUCKLE AND LANSING-KANSAS CITY "J" ZONE BASED ON FAVORABLE LOG ANALYSIS AND SIGNIFICANT SHOWS OF HYDROCARBONS.

WELL LOGGED BY PIONEER ENERGY SERVICES: DUAL INDUCTION LOG, DUAL COMPENSATED POROSITY LOG, MICRORESISTIVITY LOG.

DRILL STEM TESTING COMPANY: TRILOBITE TESTING INC. 3 DSTS RAN

### FORMATION TOPS SUMMARY AND DAILY CHRONOLOGY OF ACTIVITY

#### MIKE # 2

1030' FSL & 2700' FEL, SW/4

Sec. 3-15s-19w

2055' GL 2065' KB

<u>FORMATION</u>	<u>SAMPLE TOPS</u>	<u>LOG TOPS</u>
Anhydrite		1294+ 771
B-Anhydrite		1330+ 735
Topeka	3034- 969	3040- 975
Heebner Shale	3309-1244	3313-1248
Toronto	3332-1267	3336-1271
LKC	3356-1291	3360-1295
BKC	3600-1535	3605-1540
Reworked Arbuckle	3674-1609	3678-1613
Arbuckle	3680-1615	3684-1619
RTD	3750-1685	
LTD		3753-1688

### SUMMARY OF DAILY ACTIVITY

9-18-12 Spud, set 8 5/8" surface casing to 223' w/ 150 sxs Common, 2%Gel, 3%CC, plug down 3:00PM, slope 1/2 degree, WOC 8 hrs

9-19-12 850'


9-20-12 1995', drilling

9-21-12 2800', drilling, displaced 2800'-2826'

9-22-12 3430'. CFS. DST # 1 3366' - 3430'

9-23-12 3523', DST #2 3476'-3523', DST # 3 3543'-3554'  
 9-24-12 3640', RTD 3750' 12:09PM, Log, lay down drill pipe  
 9-25-12 3750', finish cementing bottom stage cementing, top stage

### DST # 1 TEST SUMMARY

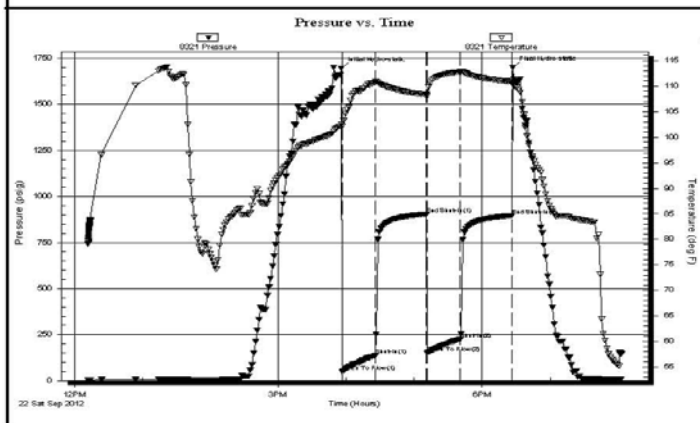
 <b>TRILOBITE TESTING, INC.</b>	<b>DRILL STEM TEST REPORT</b>	
	TDI, Inc 1310 Bison Rd Hays Ks 67601 + 9696  ATTN: Tom Denning	<b>3-15s-19w</b>  <b>Mike #2</b> Job Ticket: 48545 <b>DST#: 1</b> Test Start: 2012.09.22 @ 12:11:45

**GENERAL INFORMATION:**

Formation: <b>LKC-C-F</b>	Test Type: Conventional Bottom Hole (Initial)
Deviated: No Whipstock: ft (KB)	Tester: Jeff Brown
Time Tool Opened: 15:56:15	Unit No: 44
Time Test Ended: 20:03:06	Reference Elevations: 2065.00 ft (KB)
<b>Interval: 3366.00 ft (KB) To 3430.00 ft (KB) (TVD)</b>	2055.00 ft (CF)
Total Depth: 3430.00 ft (KB) (TVD)	KB to GR/CF: 10.00 ft
Hole Diameter: 7.88 inches Hole Condition: Good	

<b>Serial #: 8321</b> <b>Inside</b>	Capacity: 8000.00 psig
Press@RunDepth: 227.46 psig @ 3402.00 ft (KB)	Last Calib.: 2012.09.22
Start Date: 2012.09.22      End Date: 2012.09.22	Time On Btm: 2012.09.22 @ 15:55:45
Start Time: 12:11:46      End Time: 20:03:06	Time Off Btm: 2012.09.22 @ 18:27:15

**TEST COMMENT:** IFF=Good blow BOB in 11 1/4 min  
 IS=Dead no blow back  
 FFF=Good blow BOB in 13 1/2 min  
 FS=Dead no blow back




PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1695.67	102.50	Initial Hydro-static
1	50.40	102.18	Open To Flow (1)
30	139.02	110.82	Shut-In(1)
75	904.17	108.39	End Shut-In(1)
76	150.77	108.09	Open To Flow (2)
105	227.46	112.79	Shut-In(2)
151	896.52	110.86	End Shut-In(2)
152	1700.04	110.38	Final Hydro-static

Recovery		
Length (ft)	Description	Volume (bbl)
378.00	MW 45% M 55%W	5.30
31.00	WM 15%W 85%M	0.43

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

**DST # 2 TEST SUMMARY**

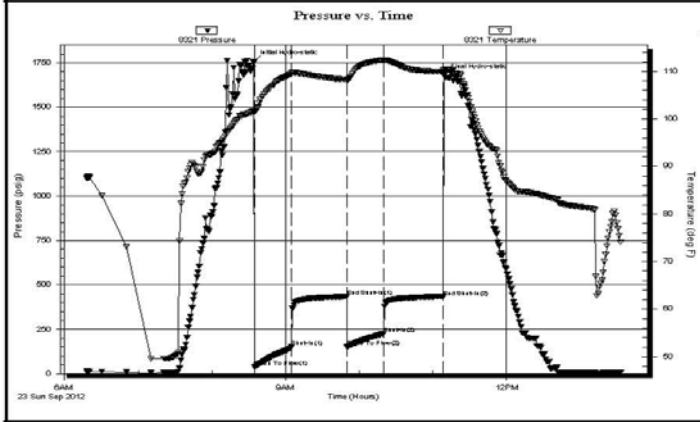
 <p style="font-size: 24px; font-weight: bold; margin: 0;"><b>TRILOBITE</b></p> <p style="font-size: 18px; font-weight: bold; margin: 0;"><b>TESTING, INC.</b></p>	DRILL STEM TEST REPORT	
	TDI, Inc 1310 Bison Rd Hays Ks 67601 + 9696 ATTN: Tom Denning	<b>3-15s-19w</b> <b>Mike #2</b> Job Ticket: 48546 <b>DST#: 2</b> Test Start: 2012.09.23 @ 06:18:14

**GENERAL INFORMATION:**

Formation: <b>LKC-H-I</b>	Deviated: No Whipstock:      ft (KB)	Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened: 08:34:44	Time Test Ended: 13:33:44	Tester: Jeff Brown
Interval: <b>3476.00 ft (KB) To 3523.00 ft (KB) (TVD)</b>		Unit No: 44
Total Depth: 3523.00 ft (KB) (TVD)		Reference Elevations: 2065.00 ft (KB)
Hole Diameter: 7.88 inches	Hole Condition: Fair	2055.00 ft (CF)
		KB to GR/CF: 10.00 ft

<b>Serial #: 8321</b>	<b>Inside</b>				
Press@RunDepth: 225.53 psig @ 3512.00 ft (KB)		Capacity: 8000.00 psig			
Start Date: 2012.09.23	End Date: 2012.09.23	Last Calib.: 2012.09.23			
Start Time: 06:18:15	End Time: 13:32:44	Time On Btm: 2012.09.23 @ 08:34:14			
		Time Off Btm: 2012.09.23 @ 11:08:44			

**TEST COMMENT:** IFF=Good blow BOB in 8 3/4 min  
 IS=Weak surface blow back died out in 10 min  
 FFP=Good blow BOB in 14 1/2 min  
 FS=Weak surface blow back Died out in 10 min



PRESSURE SUMMARY			
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1756.76	101.67	Initial Hydro-static
1	38.17	101.45	Open To Flow (1)
31	150.52	109.57	Shut-In(1)
76	434.67	108.29	End Shut-In(1)
76	151.93	108.22	Open To Flow (2)
106	225.53	112.41	Shut-In(2)
154	433.48	109.94	End Shut-In(2)
155	1680.28	110.27	Final Hydro-static

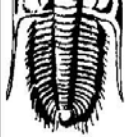
Recovery		
Length (ft)	Description	Volume (bbl)
252.00	MW 10% M 90%W	3.53
189.00	VM 30% W 70% M	2.65

\* Recovery from multiple tests

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

**DST # 3 TEST SUMMARY**

 <p style="font-size: 24px; font-weight: bold; margin: 0;"><b>TRILOBITE</b></p>	DRILL STEM TEST REPORT	



TESTING, INC.

TDI, Inc  
1310 Bison Rd  
Hays Ks 67601 + 9696  
ATTN: Tom Denning

3-15s-19w

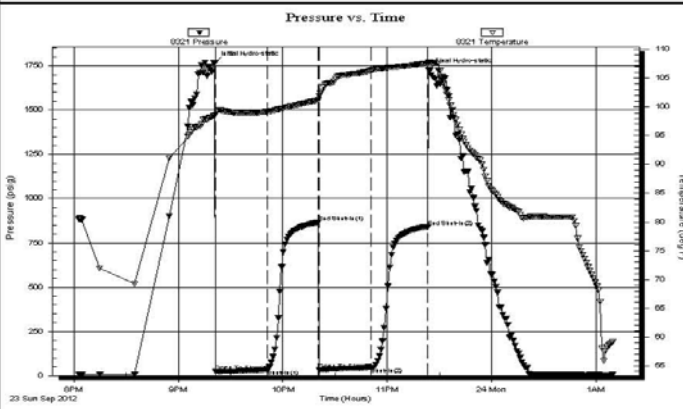
Mike #2  
Job Ticket: 48547 DST#: 3  
Test Start: 2012.09.23 @ 20:02:51

GENERAL INFORMATION:

Formation: LKC-J  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 21:21:21  
Time Test Ended: 01:09:21  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Jeff Brown  
Unit No: 44  
Interval: 3543.00 ft (KB) To 3554.00 ft (KB) (TVD)  
Reference Elevations: 2065.00 ft (KB)  
Total Depth: 3554.00 ft (KB) (TVD)  
2055.00 ft (CF)  
Hole Diameter: 7.88 inches Hole Condition: Good  
KB to GR/CF: 10.00 ft

Serial #: 8321 Inside  
Press@RunDepth: 46.43 psig @ 3546.00 ft (KB) Capacity: 8000.00 psig  
Start Date: 2012.09.23 End Date: 2012.09.24 Last Calib.: 2012.09.24  
Start Time: 20:02:52 End Time: 01:09:21 Time On Btm: 2012.09.23 @ 21:20:51  
Time Off Btm: 2012.09.23 @ 23:23:51

TEST COMMENT: IFF-Good blow BOB in 13 1/2 min  
ISI-Weak surface blow back built to 1 1/4 in  
FFP-Good blow BOB in 14 1/2 min  
FSI-Weak surface blow back built to 2 1/4 in



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1767.61	98.57	Initial Hydro-static
1	25.84	98.64	Open To Flow (1)
30	32.92	99.17	Shut-In(1)
60	865.89	101.18	End Shut-In(1)
60	33.57	101.86	Open To Flow (2)
90	46.43	106.36	Shut-In(2)
123	838.89	107.59	End Shut-In(2)
123	1730.31	107.86	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
10.00	HOCGWM 20%G 45%O 15%W 20%M	0.14
11.00	VMCO 5%W 30%M 65%O	0.15
0.00		0.00

Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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\* Recovery from multiple tests

Trilobite Testing, Inc

Ref. No: 48547

Printed: 2012.09.24 @ 01:28:07

ROCK TYPES

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

ACCESSORIES

MINERAL

- ▲ Chert, dark
- P Pyrite
- ◆ Varicolored chert
- △ Chert White

FOSSIL

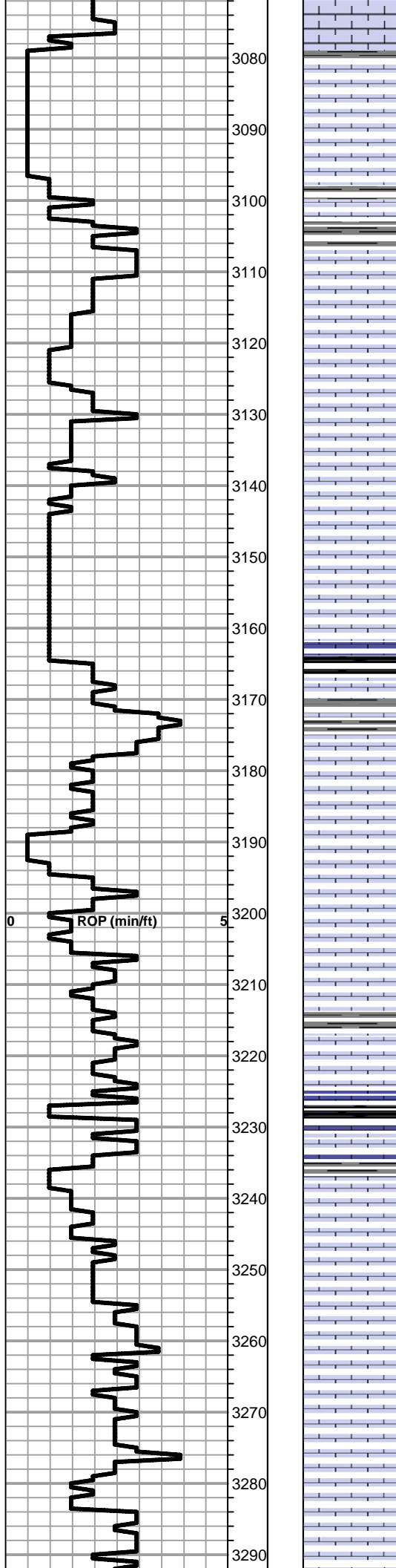
- Oolite
- ◆ Oomoldic

OTHER SYMBOLS

DST

- DST Int
- DST alt

Curve Track #1 ROP (min/ft)	Depth   Intervals Cored Interval DST Interval	DST Lithology	Oil Show Geological Descriptions	TG, C1 - C5 1:240 Imperial
<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 3070</p>		<p>BEGIN 1' DRILL TIME FROM 2900' TO RTD BEGIN 10' WET AND DRY SAMPLES FROM 3000' TO RTD</p> <p><b>ANHYDRITE TOP ELog 1294+771</b> <b>ANHYDRITE BASE ELog 1330+735</b></p> <p>Lime, med brn-grayish brn, fnxln-granular, fossiliferous</p> <p>Lime, brn, fnxln-granular, slightly fossiliferous</p> <p>Lime, lt brn-lt gray, fnxln, slightly chalky</p> <p>Lime, lt brn-gray, fnxln-granular, fusulinids, shaley in part</p> <p>Lime, brn-grayish brn, fnxln, fossiliferous</p> <p>Shale, lt gray, soft blocky - soft mud</p> <p><b><u>TOPEKA SPL 3034-969 ELog 3040</u></b></p> <p>Lime, lt-med brn, fnxln, fossiliferous, slight chalk in part</p> <p>Lime, tan-lt brn, fnxln-granular, chalk in part</p> <p>Lime, tan-lt brn, fnxln, chalky with sticky chalk clumps in part</p> <p>Lime, lt brn, fnxln, slightly fossiliferous</p>	<p>8 5/8" SET TO 223' W/ 150 SXS COMMON, 2%GEL, 3%CC SLOPE 1/2 DEGREE</p> <p>LITHOLOGY CORRECTED TO MATCH DRILL TIME USING LOG DATA</p>



Lime, lt brn-lt gray, fnxln, chalky

3080

Lime, tan-lt gray, granular, chalky, NS

3090

Lime, lt brn, fnxln, chalk in part

3100

Lime, crm-tan, fnxln-granular, chalky

3110

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

3120

Lime, crm-tan, fnxln, chalky

3130

Lime, lt brn, fnxln-granular, chalky

3140

Lime, lt-med brn, granular, chalky

3150

Shale, gray-black carbonaceous

3160

Lime, crm-tan, fnxln, chalky

3170

Lime, tan, fnxln, chalky with sticky chalk clumps in part

3180

Lime, crm, fnxln, chalky

3190

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

3200

ROP (min/ft)

0

5

Lime, crm-lt brn, fnxln-granular, chalky

3210

Lime, crm-tan, fnxln-granular, chalky

3220

Shale, gray-black carbonaceous

3230

Lime, crm-tan, fnxln-granular, chalky

3240

Lime, crm-tan, fnxln-granular, chalky

3250

Lime, crm-tan, fnxln-granular, chalky

3260

Lime, tan-offwhite, fnxln, chalky

3270

Lime, offwhite-lt brn, fnxln, chalky

3280

Lime, crm-lt brn, fnxln-granular, chalky

3290

Lime, crm-lt brn, fnxln, bedded chalk

3300  
3310  
3320  
3330  
3340  
3350  
3360  
3370  
3380  
3390  
3400  
3410  
3420  
3430  
3440  
3450  
3460  
3470  
3480  
3490  
3500  
3510

0 5  
RC (mm/ft)

A  
B  
C  
D  
E  
F  
G  
H

Lime, crm-tan, fnxln, bedded chalk

**HEEBNER SHALE SPL 3309-1244 ELog 3313-1248**

Shale, black carbonaceous  
Lime, lt brn, fnxln

Shale, lime green, soft forming soft mud

**TORONTO SPL 3332-1267 ELog 3336-1271**

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

Lime, white-crm, vfxln

Shale, red wash, forming soft mud

**LKC SPL 3356-1291 ELog 3360-1295**

Lime, lt brn-lt gray, fnxln, NS

Lime, lt gray, fnxln, fossiliferous in part, NS

Shale, lime green-lt gray, soft forming soft mud clumps

Lime, tan, fnxln, bedded chalk grading into oolitic/oolmoldic lime, scattered staining, no odor, NFO

Lime, tan, fnxln, crumbly on crush, chalk in part

Lime, offwhite-tan, fn-vfxln with scattered vuggy porosity with light stain, no odor, NFO

Lime, offwhite-tan, fnxln

Shale, gray-black carbonaceous  
Lime, lt gray, fnxln  
Shale, lt gray, soft forming soft clumps

Lime, tan-brn, crumbly on crush, fine vuggy porosity with scattered lt staining, no odor, NFO

Lime, tan-lt brn, fnxln

Lime, crm, fnxln with bedded chalk

Lime, white, oolitic/oolmoldic, barren, NS

Lime, crm, fnxln, chalky

Lime, crm-tan, fnxln

Lime, crm, fn-vfxln, slight bedded chalk in part

Shale, gray-black  
Lime, lt gray, fn-vfxln

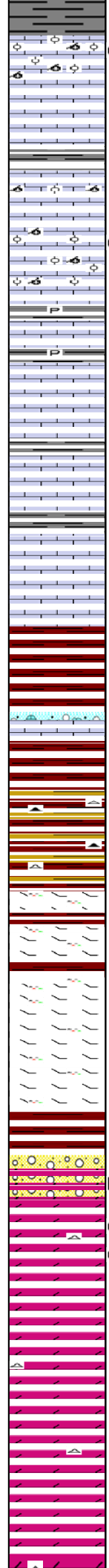
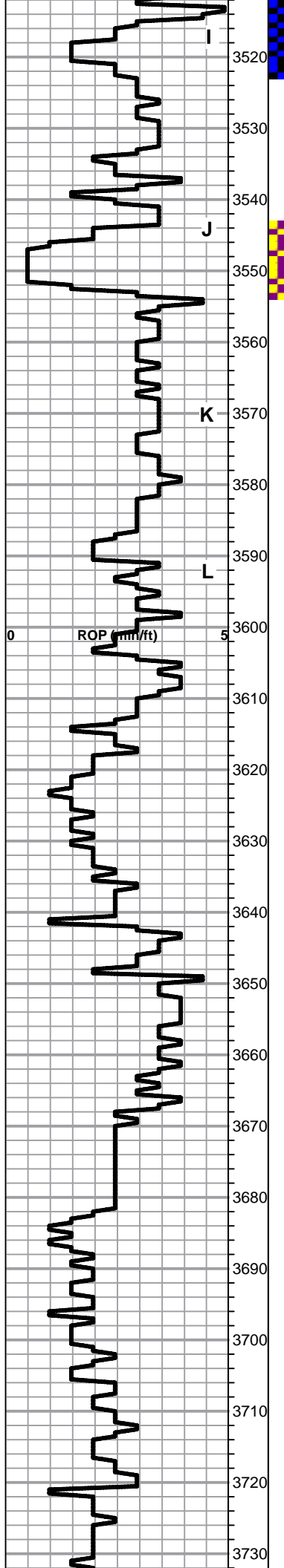
Lime, crm, fnxln with few chips with fine intercrystalline porosity with lt scattered staining, lt odor

Lime, crm, fnxln, scattered bedded chalk

DST # 1 3366' to 3430' SEE  
HEADER FOR TEST SUMMARY

DST # 2 3476' TO 3523' SEE  
HEADER FOR TEST  
SUMMARY





3520 ● Lime, crm-tan, oolitic/oolmoldic, scattered to sat. staining, V Lt odor, NFO

3530 Lime, crm, fn-vfxln, bedded chalk in part

3540 Lime, tan, fnxln, chalky

3550 ● Lime, crm-lt brn, oolitic/oolmoldic, scattered to saturated staining, SFO on break, Lt odor

3560 Lime, crm-lt brn, fn-vfxln, slight bedded chalk

3570 Lime, white-crm, fn-vfxln, bedded chalk in part

3580 Lime, white-crm, fn-vfxln, bedded chalk in part

3590 Lime, crm-lt brn, fn-vfxln  
Shale, gray, soft, blocky

3600 **BKC SPL 3356-1291 ELog 3360-1295**

3610 Shale, reddish brn, soft blocky with lt red wash

3620 Lime, lt gray-lt grn, fn-vfxln, some rework lime in part

3630 Shale, reddish brn with mix of vari color shales in part

3640 Shales, red, brns, gray, scattered chert

3650 Lime, tan-lt brn, dolomitic, orange chert in part

3660 Lime, tan-lt brn, fnxln, dolomitic, cherty

3670 **REWORKED ARBUCKLE SPL 3674-1609 ELog 3678**

3680 ● **ARBUCKLE SPL 3674-1609 ELog 3678-1613**

3690 ○ Reworked mix of lime and dolomite with dead oil staining grading into clean dolomite, lt brn, fn-med xln with gilsonian staining developing into coarse crystalline porosity with saturated staining, very lt odor

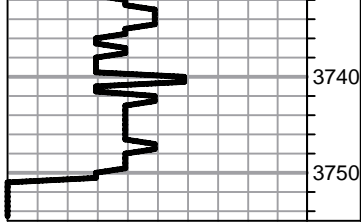
3700 Dolomite, ivory-crm, fn-cxln

3710 Dolomite, ivory-crm, fnxln  
Shale, green, blocky, waxy

3720 Dolomite, ivroy-crm, fnxln-granular in part

3730 Dolomite, ivory-crm, fnxln

DST # 3 3543' TO 3554' SEE  
HEADER FOR TEST  
SUMMARY



3740

3750



Dolomite, ivoty-crm, fnxln

5 1/2" PRODUCTION CASING  
SET OFF BOTTOM WITH 150  
SXS EA2 ON BOTTOM STAGE  
AND DV SET IN ANHYDRITE  
WITH 175 SXS SMD  
CIRCULATED TO SURFACE

# 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. 743

Date	9-18-12	Sec.	3	Twp.	15	Range	19	County	Ellis	State	KS	On Location		Finish	3.00pm
Lease	mike			Well No.	#2			Location	Antinino 1W 15 1/2 W N10						
Contractor	Southwind R15 1							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.						
Type Job	Self Face							Hole Size	1 3/4						
Csg.	8 5/8							T.D.	225						
Tbg. Size								Depth	223.05						
Tool								Charge To	T D I						
Cement Left in Csg.	20 FT							Depth							
Meas Line								Shoe Joint	90 FT						
								Displace	12.34 BBL						
									The above was done to satisfaction and supervision of owner agent or contractor.						
									Cement Amount Ordered 150 3/4 2% gel						

**EQUIPMENT**

Pumptrk	5	No.		Cementer	matt		Common	150	
				Helper					
Bulktrk	14	No.		Driver	patt		Poz. Mix		
				Driver					
Bulktrk	pa	No.		Driver	cody		Gel.	3	
				Driver			Calcium	5	

**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	
		Sand	
		Handling	158
		Mileage	

**FLOAT EQUIPMENT**

		Guide Shoe	
		Centralizer	
		Baskets	
		AFU Inserts	
		Float Shoe	
		Latch Down	
		Pumptrk Charge	Surface
		Mileage	12

X Signature	[Signature]	Tax	
		Discount	
		Total Charge	

JOB LOG

SWIFT Services, Inc.

DATE 9-25-12 PAGE NO. 1

CUSTOMER TDL WELL NO. #2 LEASE Mike JOB TYPE 2 Stage Long String TICKET NO. 21846

CHART NO.	TIME	RATE (BPM)	VOLUME (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	0100							On loc. Rig changing over to Run Pipe
	0210							Start in with 5'1/2" 14# csg. Insert Float Shoe Latchdown Baffle 3713 Cut on #1, 2, 4, 6, 8, 9, 11, 57 Bender #2, #12, #58, #80 D.V. tool #58 G. 1282'
	0345							Drop Bull
	0400							Circulate + Rotate
	0500		72					500 gal Mud Flush 20 <sup>ss</sup> KCL Flush
	0505	4 1/2	36					Mix 150 sks EA-2 cont.
	0530							Finish mixing wash out pump + line Drop D.V. Latchdown Plug Displ.
	0545		90.5			1500		Plug Down 1500 psf holding Release Press. Float held
	0550							Drop D.V. opening Plug Plug R.H. M.H. 30 + 20
	0610					1100		Open D.V. tool 20 <sup>ss</sup> KCL Flush Mix 175 sks SMD
	0630	4 1/2	99					Finish mixing Drop D.V. Closing Plug Displace
	0640		31			1500		Plug Down 1500 psf holding Release Press. D.V. closed
	0715							wash + Rack up truck Job Complete.

Thank You  
Roger Josh Jeremy