



Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1166962  
OIL & GAS CONSERVATION DIVISION

Form ACO-1  
August 2013

Form must be Typed  
Form must be Signed  
All blanks must be Filled

WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

CONTRACTOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Wellsite Geologist: \_\_\_\_\_

Purchaser: \_\_\_\_\_

Designate Type of Completion:

- New Well       Re-Entry       Workover
- Oil       WSW       SWD       SIOW
- Gas       D&A       ENHR       SIGW
- OG       GSW       Temp. Abd.
- CM (Coal Bed Methane)
- Cathodic       Other (Core, Expl., etc.): \_\_\_\_\_

If Workover/Re-entry: Old Well Info as follows:

Operator: \_\_\_\_\_

Well Name: \_\_\_\_\_

Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_

- Deepening       Re-perf.       Conv. to ENHR       Conv. to SWD
- Plug Back       Conv. to GSW       Conv. to Producer
- Commingled      Permit #: \_\_\_\_\_
- Dual Completion      Permit #: \_\_\_\_\_
- SWD      Permit #: \_\_\_\_\_
- ENHR      Permit #: \_\_\_\_\_
- GSW      Permit #: \_\_\_\_\_

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - \_\_\_\_\_

Spot Description: \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

\_\_\_\_\_ Feet from  North /  South Line of Section

\_\_\_\_\_ Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:

- NE       NW       SE       SW

GPS Location: Lat: \_\_\_\_\_, Long: \_\_\_\_\_  
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum:  NAD27       NAD83       WGS84

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total Vertical Depth: \_\_\_\_\_ Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: \_\_\_\_\_ Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: \_\_\_\_\_ Feet

If Alternate II completion, cement circulated from: \_\_\_\_\_

feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

Drilling Fluid Management Plan

*(Data must be collected from the Reserve Pit)*

Chloride content: \_\_\_\_\_ ppm Fluid volume: \_\_\_\_\_ bbls

Dewatering method used: \_\_\_\_\_

Location of fluid disposal if hauled offsite:

Operator Name: \_\_\_\_\_

Lease Name: \_\_\_\_\_ License #: \_\_\_\_\_

Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

County: \_\_\_\_\_ Permit #: \_\_\_\_\_

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

- Confidentiality Requested  
Date: \_\_\_\_\_
- Confidential Release Date: \_\_\_\_\_
- Wireline Log Received
- Geologist Report Received
- UIC Distribution
- ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_



1166962

Operator Name: \_\_\_\_\_ Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

**INSTRUCTIONS:** Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No  List All E. Logs Run: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

Did you perform a hydraulic fracturing treatment on this well?  Yes  No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons?  Yes  No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry?  Yes  No *(If No, fill out Page Three of the ACO-1)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD:	Size:	Set At:	Packer At:	Liner Run: <input type="checkbox"/> Yes <input type="checkbox"/> No
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Date of First, Resumed Production, SWD or ENHR.	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____
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Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

<b>DISPOSITION OF GAS:</b> <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	<b>METHOD OF COMPLETION:</b> <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____	<b>PRODUCTION INTERVAL:</b> _____ _____
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Conservation Division  
Finney State Office Building  
130 S. Market, Rm. 2078  
Wichita, KS 67202-3802



Phone: 316-337-6200  
Fax: 316-337-6211  
<http://kcc.ks.gov/>

Mark Sievers, Chairman  
Thomas E. Wright, Commissioner  
Shari Feist Albrecht, Commissioner

Sam Brownback, Governor

November 05, 2013

Leon Rodak  
Murfin Drilling Co., Inc.  
250 N WATER STE 300  
WICHITA, KS 67202-1216

Re: ACO1  
API 15-039-21190-00-00  
Brown 1-30  
NW/4 Sec.30-04S-30W  
Decatur County, Kansas

Dear Production Department:

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,  
Leon Rodak

Brown #1-30  
 550' FNL 1820' FWL  
 Sec. 30-4S-30W  
 2846' KB

Gilbert Unit #1-26  
 200' FNL 1050' FEL  
 Sec. 26-4S-31W  
 2901' KB

Formation	Sample top	Datum	Ref	Log tops	Datum	Ref	Log tops	Datum
Anhydrite	2606	+240	+1	2610	+236	-3	2662	+239
B/Anhydrite	2640	+206	-2	2643	+203	-5	2693	+208
Topeka	3682	-836	-10	3692	-846	-20	3727	-826
Heebner	3849	-1003	-11	3856	-1010	-18	3893	-992
Lansing	3896	-1050	-10	3908	-1062	-22	3941	-1040
Stark	4066	-1220	-14	4069	-1223	-17	4107	-1206
BKC	4108	-1262	-8	4109	-1263	-9	4155	-1254
Pawnee				4230	-1384	-16	4269	-1368
Cherokee				4314	-1468	-15	4354	-1453
Mississippi				4427	-1581	-20	4462	-1561
RTD	4500						4530	
LTD				4506			4529	

# ROBERT STOLZLE

## CONSULTING PETROLEUM GEOLOGIST

APO Corr. # 3244

6211 G. 20101 OT, W. Occident, KD 07052 - 0240

(310) 704 - 2400

### DRILLING TIME AND SAMPLE LOG

OPERATOR: Murfin Drilling Co. Inc.  
 LEASE: Brown WELL NO.: 1-30  
 FIELD: Wildcat  
 LOCATION: 550' FNL, 1820' FWL (SE. NW. NE. NW)  
 SEC.: 30 TWP: 4S RANGE: 30W  
 COUNTY: DeCATUR STATE: KS  
 API NO.: 15-039-21190-00-00

CONTRACTOR: Murfin Drilling Co. Inc., Rig # 2  
 COMMENCED: 4:30 p.m. Sept. 7, 2013 COMPLETED: 9/15/13  
 ROTARY TOTAL DEPTH: 4500' LOG TOTAL DEPTH: 4506'  
 GEOLOGICAL SUPERVISION FROM: 3570 to: T.D.  
 MUD-UP DEPTH: 3310' MUD TYPE: Chemical Polymer

FORMATION	SAMPLE		LOG		STRUCTURAL CORRECTION
	TOP	SECTA	TOP	SECTA	
Stone Overl. / Anhyd. Base of Anhydrite	2606' (+240)		2610' (+236)		-3'
		N.A.	2643' (+203)		-5'
Topokz Em.	3687' (-841)		3692' (-846)		-20'
Haberer Shale	3852' (-1006)		3856' (-1010)		-18'
Lansing Group	3904' (-1058)		3908' (-1062)		-22'
Star-K Shale	4066' (-1226)		4069' (-1223)		-17'
Bassks (F.Y. GP.	4114' (-1268)		4119' (-1273)		-19'
Rainee ls.	4225' (-1379)		4230' (-1384)		-16'
Charokred Shale	4309' (-1463)		4315' (-1469)		-16'
Mi. ss.	4432' (-1586)		4439' (-1593)		-32'
Total Depth	4500'		4506'		

ELEVATIONS  
 KB 2846'  
 GL 2835'  
 Measurements are all from KB

CASING RECORD  
 SURFACE: 5 1/2" 8 5/8"  
23# @ 221' CIVIL.  
 PRODUCTION: None-RH

WIRELINE SURVEYS  
 Bonaer Energy Services; Microlog, BHC Sonic, Dual Comp. Boosty and Dual Induction Logs were run

LOCATION W/P

Location	
Brown #1-30	30

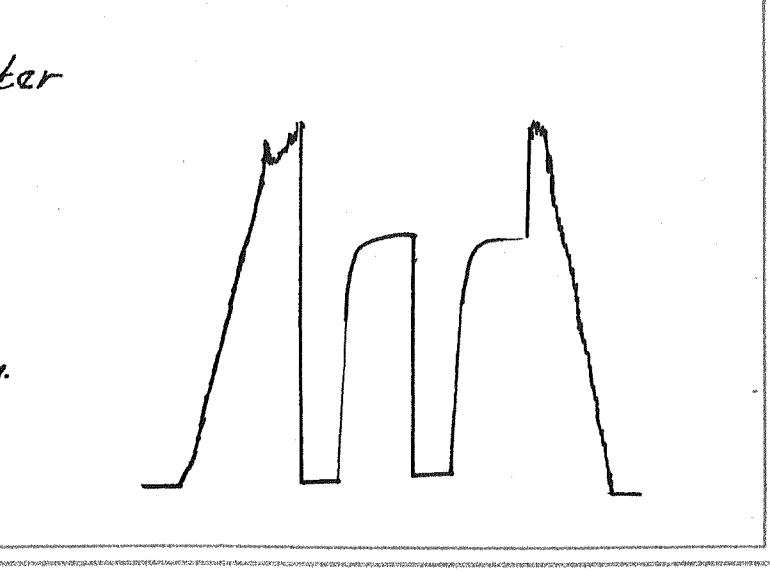
Reference Well for Structural Comparison: MDC Gilbert #126 NE 26745-R3W  
 Comments and Recommendations: Recommended well be plugged and abandoned.

DST # 1 ZONE: Toronto, Lansing A' & B' Zones  
 INTERVAL: 3845'-3930'

DST # 1 8874 Chart  
 Interval: 3845'-3930' Depth: 3846'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1912 psi	80' Mudcut Water (20% Mud)
2. Initial Flow: Start	0	18 psi	
3. Initial Flow: End	30	39 psi	
4. Initial Shut-in: End	60	1314 psi	Blow Desc:
5. Final Flow: Start	0	43 psi	I.F. - 2" in 30 Min.
6. Final Flow: End	30	62 psi	I.S.I. - No blow
7. Final Shut-in: End	60	1308 psi	F.F. - 1/2" in 30 Min.
8. Final Hydrostatic		1842 psi	F.S.I. - No blow

BHT: 116°F.  
 Rv: .094 @ 72°F.  
85,000 ppm chlorides  
 Strap 1' short  
 Deviation 1/2°



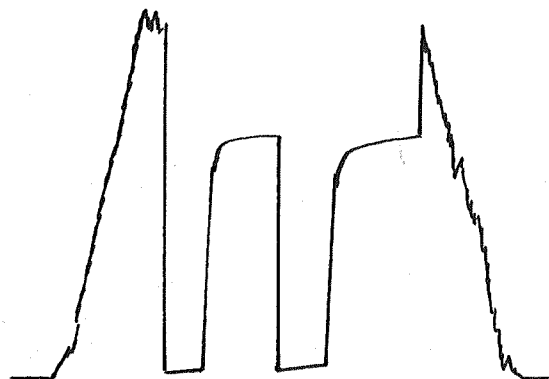
DST # 2 ZONE: Lansing E', F' & G' Zones  
 INTERVAL: 3945'-3980'

DST # 2 8874 Chart  
 Interval: 3945'-80' Depth: N.A.

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1876 psi	2.0' Water cut Mud
2. Initial Flow: Start	0	15 psi	(15% salt water)
3. Initial Flow: End	30	32 psi	
4. Initial Shut-in: End	60	1280 psi	Blow Desc:
5. Final Flow: Start	0	34 psi	I.F. - 1/8" to 3/4"
6. Final Flow: End	30	48 psi	I.S.I. - No blow
7. Final Shut-in: End	60	1263 psi	F.F. - surf. to 1/2"
8. Final Hydrostatic		1822 psi	F.S.I. - No blow

BHT: 114°F

Rw: \_\_\_\_\_



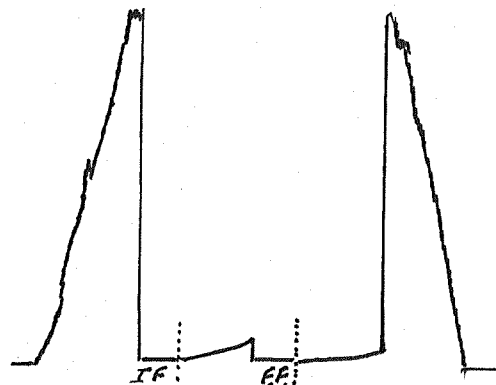
DST # 3 ZONE: Lansing-KS. City J & K Zones  
 INTERVAL: 4032'-4100'

Pressures:	Time	Press.	RECOVERY
1. Initial Hydrostatic		1962 psi	30' Drilling Mud
2. Initial Flow: Start	0	31 psi	
3. Initial Flow: End	30	31 psi	
4. Initial Shut-in: End	60	118 psi	Blow Desc:
5. Final Flow: Start	0	34 psi	I.F. - 1/4" to surf.
6. Final Flow: End	30	34 psi	I.S.I. - No blow
7. Final Shut-in: End	60	78 psi	F.F. - No blow
8. Final Hydrostatic		1858 psi	F.S.I. - No blow

BHT: 115°F

Rw: \_\_\_\_\_

DST # 3 8874 Chert  
 Interval: 4032'-4100' Depth: 4033'



### ABBREVIATIONS USED

#### ROCK TYPES:

La - Limestone  
 Sh - Shale  
 Sa - Sandstone  
 Sils - Siltstone  
 Co - Conglomerate  
 Chrt - Chert  
 Qtz - Quartzite  
 Gran - Granite  
 Dol - Dolomite  
 Chlk - chalky

#### COLOR:

Wh - White  
 Crm - Cream  
 Clr - Clear  
 Rd - Red  
 Grn - Green  
 Gry - Gray  
 Blk - Black  
 Mot - Mottled

#### HARDNESS:

Sft - Soft  
 M.Sft - Moderately soft  
 Hrd - Hard  
 V.Hrd - Very hard

#### FABRIC:

Fn.grn - Finegrained  
 VFG - Very fine grained  
 Med - Medium  
 Cne - Coarse  
 Det - Detrital  
 Fco - Fossiliferous  
 Cln - Crystalline  
 Mxn - Microcrystalline  
 Ool - Oolitic  
 Oom - Oolitic  
 Mat - Matrix

#### OTHER TERMS:

fl - Fluorescence (of oil)  
 min fl - mineral fluorescence  
 Pyr - pyritic  
 glau - glauconitic  
 carb - carbonaceous  
 otn - oil stain (of oil)  
 cut - oil cut  
 AA - as above  
 P - porosity  
 NSFOC - no stain, fluorescence, odor, or cut (of oil)  
 emp - sample  
 perm - permeability  
 F.O. - Free oil  
 vug - vugular  
 tr - trace  
 w/ - with

#### MODIFIERS:

gd - Good  
 fr - fair  
 pr - Poor  
 ex - excellent  
 v - very  
 w - well  
 tr - trace  
 occ - occasional  
 vis - visible  
 N - no  
 gran - granular  
 intergran - intergranular  
 pp - pinpoint  
 dd - dead  
 gey - gassy

#### OIL SHOWS

- Weak Oil Show
- ⊙ Fair Oil Show
- ⊕ Good Oil Show
- ⊗ Excellent Oil Show

#### TEXTURE:

Dns - Dense  
 Cly - Clayey  
 Fri - Friable  
 Earth - Earthy  
 Fleck - Fleckly  
 Fine - Finely  
 Vit - Vitreous  
 Vug - Vugular  
 Mic - Micritic

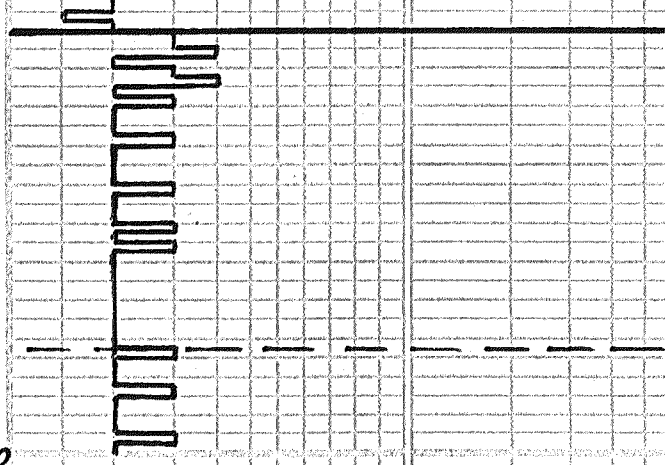
Rate of Penetration  
 (Initial, Final, etc.)

(minutes per foot)

.5 1 2 3 4 5 6 7 8 9 10

2600

Drilling with PDC Bit



2650

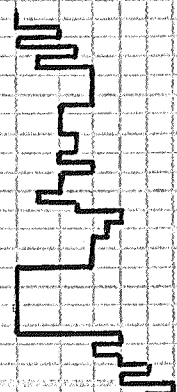
Stone Coral Anhydrite (+240')

Base of Anhydrite (-207')

3550

Trip for Button Bit

start 10' wet & dry samples and 1' drilling time at 3570'



3600

Sh: lt-dk. gry., v. sft., clayey - m. sft., earthy

Ls: gry., m. sft. - m. hrd., dns., v. fl. xln. foss. NØ NSFOC

Ls: A, A, NØ NSFOC

Sh: lt-dk. gry., sft., clayey, m. hrd. sndy - v. sndy, earthy

Sh: A, A. Ls: crm-gry., hrd., dns., v. fl. - mxln., foss., occ. sndy. NØ NSFOC

Sh: rd. brn., sft., clayey, Ls: crm., hrd., dns., v. fl. - mxln.

mic. foss., Abun. sh, sft., sdbb, sft., sdbb, NØ NSFOC



3650

3100

3150

3800

Ls: crm. - lt. gry., hrd., dns., VEG-mxln.  
 occ. foss., sandy, w.c.mfd. NΦNSFOC  
 Ss: VEG, mod. strd., w.c.mfd. NΦNSFOC  
 Sh: dk. gry., m. hrd., dns., earthy

Sh: rd. bn. - gry., sft. + clay - m. sft.,  
 earthy, cavings  
 Ls: A.A., less. sandy NΦNSFOC  
 Ls: crm. - lt. gry., m. hrd. - sft. + chiky.  
 foss. + sh. std. NΦNSFOC  
 Sh: rd. bn. - gry. gen., sft., clayey -  
 earthy

Sh: A.A., abun. rd. sh. cavings  
 Ls: crm., sft. + chiky - hrd., dns.,  
 mic., VEG-mxln., occ. foss.  
 NΦNSFOC  
 Ls: crm. - lt. gry., sft. + chik. - hrd.,  
 dns., VEG-mxln., mic., occ.  
 foss., occ. sandy NΦNSFOC

Ls: A.A., less. chiky. NΦNSFOC

Sh: rd. bn. - mar. - dk. gry., m. hrd.,  
 tr. sft. + clayey, earthy  
 Sh: A.A.  
 Ls: crm. - gry. - mar. sh. std., VEG  
 xln., rare foss. NΦNSFOC

Abun. clayey, rd. sh. cavings??

Ls: A.A., tr. sh. std.  
 NΦNSFOC  
 Ls: crm., hrd., dns., VEG-mxln.,  
 mic., occ. sh. std., occ. foss.  
 NΦNSFOC

Sh: rd. bn., sft., earthy - clayey  
 Ls: crm., hrd. - sft. + chiky, dns.,  
 VEG xln., foss. - f. foss., occ.  
 moldic φ NSFOC  
 Sh: dk. gry. - blk., m. hrd., hackly  
 Ls: crm., m. sft. - hrd., dns., VEG-  
 mxln., foss. - v. foss. w. occ.  
 gd. moldic φ NSFOC

Ls: crm. - sft. - hrd., VEG xln., foss. -  
 v. foss. - pk. stn. w. occ. ex.  
 int part. + Vug. moldic φ - VEG.  
 NSFOC

Ls: crm. - tan, hrd. - sft. A.A., less  
 foss. NΦNSFOC  
 Ss: tan, p. hrd., dns., tr. VEG, mod.  
 w. strd., v. w. c.mfd. NΦNSFOC  
 Ss: A.A. - occ. sft. + fri. A., moldic φ  
 NSFOC

Ls: crm. - gry., hrd., dns., VEG-mxln.,  
 mic., occ. foss., sh. std. NΦNSFOC  
 Ls: crm. - lt. gry., hrd., dns., VEG-  
 mxln., foss. - v. foss., tr. sandy - v.  
 sandy, sh. std. NΦNSFOC  
 Sh: tr. dk. gry. - blk., dns., hack., carb.

Ls: crm. - hrd., dns., VEG xln., foss. -  
 v. foss., tr. sandy. NΦNSFOC  
 Sh: blk., m. sft. - m. hrd., dns., carb.  
 earthy - hackly  
 Sh: A.A.

Ls: crm. - gry., sft. + chiky - hrd., dns.  
 VEG xln., foss. NΦNSFOC

Ls: crm. - gry., hrd. - m. sft., dns., tan xln.  
 mxln., mic., occ. foss., tr. sandy,  
 tr. sh. std. NΦNSFOC  
 Sh: lt. dk. gry., sft., clay - earthy

Ls: crm. - tan, hrd., dns., foss., VEG xln.  
 abun. sh. std. NΦNSFOC  
 Sh: dk. gry. - blk., m. hrd., dns., hackly

Ls: crm. - gry., hrd., dns., VEG-mxln.,  
 foss. - abun. dk. sh. stn., NΦNSFOC  
 Sh: gry. - rd. bn., sft. - m. sft., earthy -  
 hackly

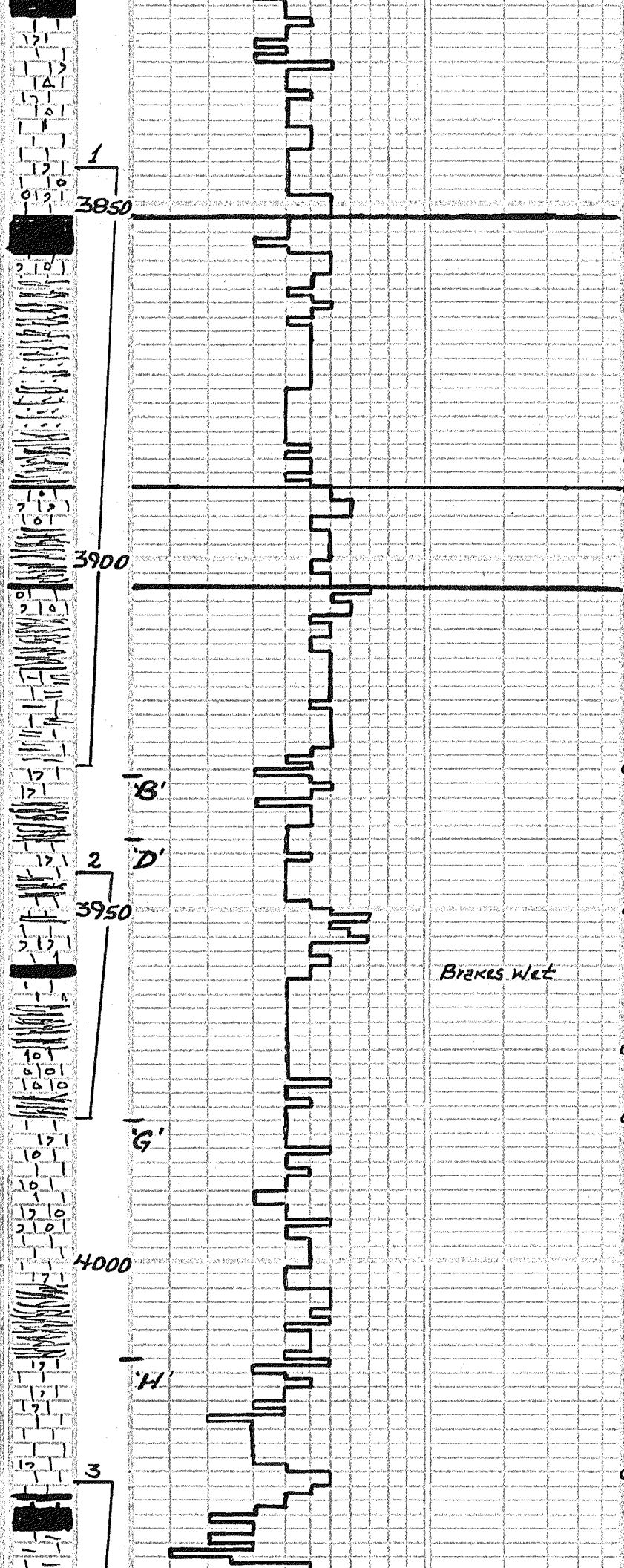
Sh: A.A., occ. clayey  
 Ls: crm. - gry., hrd., dns., VEG-mxln.,  
 foss. + sh. std., occ. sandy.  
 NΦNSFOC

Ls: crm., m. sft. - hrd., dns., VEG-mxln.,  
 occ. foss., occ. VEG. pp. Vug. φ around  
 foss. - gns., dk. blk., oil stn., No  
 odor, No f. O, tr. cut + fl., v. wk. show

TOPEKA Fm.  
 (-841')

Mud Check @ 3780'  
 M. wt. 8.8 lb./gal.  
 Vis. 63 sec. qt.  
 WL. 6.0 ml./30 min.  
 Solids 3.6%  
 chl. 1,100 ppm  
 LCM 3.0 lbs./bbl.

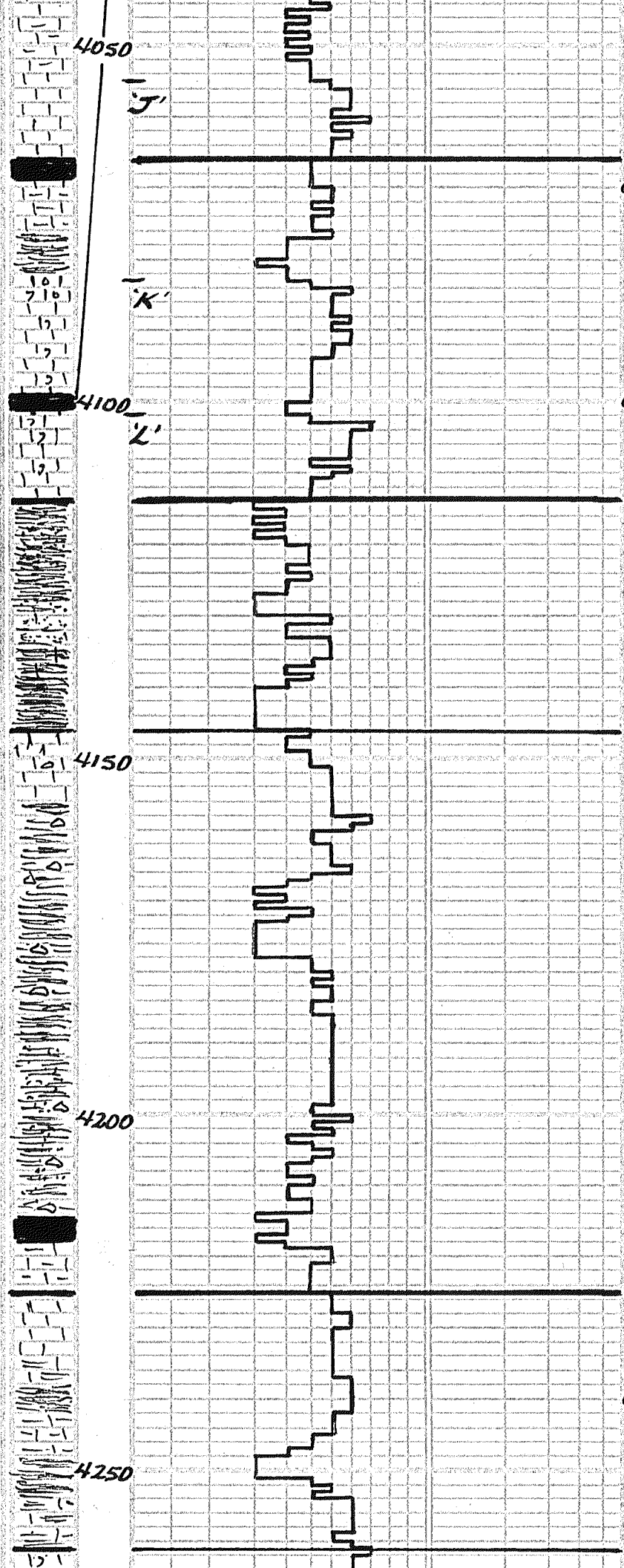




Ls: erm., hrd., sft., chiky, VEG-  
 mxln., occ. foss. NΦ NSFOC  
 Sh: dk. gry. - blk., m. sft. - m. hrd.,  
 carb., hackly  
 tr. sh. A.A., occ. gry. grn.  
 Ls: erm-wh., hrd.-m. sft., dns., VEG-  
 mxln., mic., occ. chky, tr. foss.,  
 tr. sdy. NΦ NSFOC  
 Ls: erm., sft.-hrd., dns., FNMX-mxln.  
 tr. chl. occ. foss. NΦ NSFOC  
 Sh: blk., sft.-m. sft., carb.-coaly.,  
 earthy  
 Sh: A.A.  
 Ls: erm-tan, hrd., dns., VEG-mxln.  
 mic., tr. chl., occ. foss.  
 NΦ NSFOC  
 Ls: erm.-gry.-tan, m. sft.-hrd., dns.  
 VEG-mxln., mic., tr. pyr., occ.  
 foss. + ool. NΦ NSFOC  
 Ls: A.A. NΦ NSFOC  
 Sh: rd. brn.-gry., sft., sdy. - v.  
 sdy-sfts. earthy  
 Ls: erm., hrd., dns., VEG-mxln., occ. foss.  
 + ool. w/ occ. int. ool. + vug. φ - lg. vugs.  
 hyp. dk. stn., ex. cut. + fl., No F.O.  
 No odor  
 Sh: rd. brn.-lt. gry., sft., earthy  
 Ls: wh.-erm., hrd., dns., VEG-mxln., occ.  
 qd. vug. φ - int. part. dk. brn. stn. wk.  
 odor, SSFO, qd. cut. + fl., ?perm.  
 Ls: erm-tan, hrd., dns., VEG-mxln., sft.  
 int. part. vug. φ, dk. grn. stn., wk.  
 odor, No F.O., qd. cut. + fl., ?perm.  
 Ls: erm., hrd., dns., VEG-mxln., occ. foss.  
 + ool. w/ occ. VEG pp. vug. φ, tr. int. vug.  
 φ, dk. brn.-blk. oil stn., tr. wk. cut.  
 fl., No odor, No F.O. Very wk. show  
 Ls: A.A., occ. pr. pp. φ + tr. int. vug. φ  
 dk. brn.-blk. stn. A.A. v. wk. show  
 Sh: rd. brn., sft., earthy, sly  
 tr. Ls. w/ vug. φ + blk. tan oil - 60 min. smpl. chl. 1, 100  
 Solids 5.7%  
 LCM 4#  
 Sh: rd. brn.-gry. grn., m. sft.-m. hrd.,  
 dns., sly, earthy-hackly  
 Ls: wh.-erm., hrd.-sft. chiky, VEG  
 -mxln., tr. mic., rare foss., 2-3 pc.  
 pr. vug. moldic φ NSFOC  
 Ls: wh.-lt. gry., hrd.-sft. chiky, VEG-  
 mxln., occ. VEG pp. vug. φ + tr. lgr. vug.  
 φ w/ qd. lt. dk. brn. oil stn., wk. odor,  
 tr. F.O., qd. ex. cut. + fl., ?perm.  
 Ls: A.A. w/ VEG lgr. vug. φ + shows  
 A.A.  
 Sh: gry.-gry. grn.-rd. brn., m. sft.-  
 m. hrd., dns., hackly  
 Sh: A.A.  
 Ls: erm., hrd., dns., VEG-mxln., occ. ool.  
 -v. ool. w/ tr. pr. tr. vug. int. part. φ  
 -VEG- NSFOC  
 Sh: rd. brn.-gry. grn.-dk. gry.-CAVINGS?  
 m. sft.-m. hrd., dns., earth-hack.  
 Ls: erm., hrd., dns., VEG-mxln., mic.  
 occ. foss. + ool. NΦ NSFOC  
 Sh: A.A. CAVINGS ± 90% smpl.  
 Ls: erm., hrd., dns., VEG-mxln., mic.  
 occ. foss. + ool., tr. NΦ NSFOC  
 Chik., tr. mic., tr. sdy  
 Ls: erm.-gry., hrd., dns., VEG-mxln.  
 mic., occ. foss. + ool. NΦ NSFOC  
 Sh: rd. brn.-gry. grn., sft. clayey.-  
 m. sft., earthy, occ. sdy  
 Sh: A.A., tr. blk., earth.  
 Ls: erm.-gry., hrd., dns., VEG-mxln.  
 mic., occ. foss., tr. sh. sdy,  
 NΦ NSFOC  
 Ls: erm.-lt. gry., hrd., dns.-sft. +  
 chiky, VEG-mxln., mic., occ. foss.,  
 tr. VEG pp. vug. moldic? φ NSFOC  
 Ls: A.A. NΦ NSFOC  
 Sh: rd. brn., sft.-m. sft., clay-earthy  
 gry. grn.-blk., m. sft.-m. hrd.,  
 dns., hackly  
 Ls: wh.-erm., hrd., dns., VEG-mxln., foss

**DST #1**  
 3845'-3930'  
 Rec: 80' MCW  
 DAVLATION 1/2°  
 STRAPI'SHORE  
**Heebner**  
**Shale**  
 (-1006')  
**Weak Show**  
**Toronto Ls.**  
 (-1044)  
**Fair-Weak Show**  
**Lansing Group**  
 -1058'  
**Weak-Fair Show**  
**Mud Check @ 3930'**  
 M.W. 9.1  
 V.S. 69  
 WL. 6.0  
 Solids 5.7%  
 LCM 4#  
**DST #2**  
 3945'-3980'  
 Rec: 20' WCM  
**Weak Show**  
**Mud Check @ 3998'**  
 M.W. 8.8  
 V.S. 52  
 WL. 6.8  
 Solids 3.5%  
 chl. 900  
 LCM 4#  
**DST #3**  
 4032'-4100'  
 Rec: 30' Mud

Brakes Wet



-v. foss., w. tr. - qd. brn. stn., tr. - qd. cut + fl., wk. odor, No F.O.  
 Ls. A.A., lgr. vugs, occ. moldic, dk. p.n., stn., qd. cut, + fl., tr. - wk. odor, No F.O., better perm.  
 Ls. A.A. w/  $\phi$  + show A.A., less  $\phi$   
 sh. rd. brn-gry. qn - blk, m. sft., dns., earthy, hackly, tr. carb.  
 sh. A.A., occ. sndy, occ. ls. pebb.  
 Ls. erm-gry., hrd., dns., vfg-mxln., mic., occ. foss., sh. std. N $\phi$ NSFOC  
 Ls. erm. - lt. gry., hrd., dns., vfg-mxln., mic., occ. foss. +ool., p.p. pe. w/ tr. p.p. vfg.  $\phi$ , phyl. dk. oil stn., No odor No F.O., qd. cut, + fl., v. perm.  
 Ls. erm-lt. gry., hrd., dns., vfg-mxln., mic., tr. chiky, occ. foss., N $\phi$ NSFOC  
 sh. dk. gry. - blk, m. sft., dns., earthy - hackly  
 sh. lt. dk. gry. - rd. brn. m. sft. - m. hrd. dns., earthy - hackly  
 Ls. wh. - cr. m., hrd. - m. sft., dns., vfg mxln. tr. foss. N $\phi$ NSFOC  
 Ls. erm - tan, hrd., dns., tr. sft. chiky, vfg-mxln., mic., tr. foss., tr. sh. std. occ. pebb. surf. N $\phi$ NSFOC  
 sh. A.A. occ. gry. qn - rd. brn, mott.  
 sh. gry. qn - rd. brn., v. sft. + clayey - m. sft., earthy, sft., sndy.  
 tr. ss. dk. gry., m. hrd., dns., vfg, mod. sft., w. rnc. w. cm. N $\phi$ NSFOC  
 sh. A.A. 1-2 pc. eq. ss. A.A. N $\phi$ NSFOC  
 Ls. erm - tan, hrd., dns., vfg - mxln., mic., rare foss., sh. std. N $\phi$ NSFOC  
 Ls. erm - tan, hrd. - sft. + chiky, occ. v. foss. +ool. - grn. stn. - w/ p.p. - tr. int part.  $\phi$  NSFOC  
 sh. rd. brn - gry., sft., clay. earthy tr. Ls. A.A. N $\phi$ NSFOC  
 sh. dk. gry. - mar. - rd. brn., m. sft. - m. hrd., occ. sndy., occ. ls. pebb. earthy - hackly  
 sh. dk. gry. - rd. brn., m. hrd. - m. sft., sndy., hackly  
 Ls. erm., hrd., dns., vfg - mxln., mic., occ. sh. std., pass pebb., N $\phi$ NSFOC  
 Cg. / sh. dk. gry. - gry. qn - rd. brn. sft. - m. hrd., dns., occ. sndy., occ. ls. pebbles., earthy - hackly  
 Cg. / sh. rd. brn. v. sft. + clayey, - m. hrd. mar., hackly, occ. sndy., occ. ls. pebb., pass. bit balled up.  
 sh. rd. brn - mar. - dk. gry., sft. + clayey - m. hrd., dns., earthy, tr. sndy. tr. Ls. A.A.  
 sh. mar. - rd. brn - gry., m. sft. - m. hrd. dns., occ. sndy. - v. sndy., tr. ls. pebb., earthy  
 sh. dk. gry. - blk., occ. rd. brn., m. hrd. - sft. + clayey, earthy, tr. carb.  
 Ls. erm., hrd., dns., vfg - mxln., mic., occ. foss. N $\phi$ NSFOC  
 Ls. erm. - lt. gry., hrd., dns., tr. m. sft., sli. chiky., occ. foss., mxln. - mic. N $\phi$ NSFOC  
 Ls. erm - lt. gry., hrd., dns., vfg - mxln., mic., occ. foss. - v. foss. N $\phi$ NSFOC  
 sh. lt. dk. gry., m. sft. - m. hrd., earthy  
 sh. gry. - blk., m. sft., sndy. - sft., - m. hrd., dns., hackly, occ. carb.  
 sh. A.A., less sndy.  
 Ls. erm - tan - gry., hrd., dns., vfg - mxln., foss., sh. std. N $\phi$ NSFOC  
 Ls. erm - tan - gry., hrd., dns., vfg - mxln., foss., sh. std. N $\phi$ NSFOC

Fair-Weak Show  
 Fair Show  
 Stark Shale (-1220')

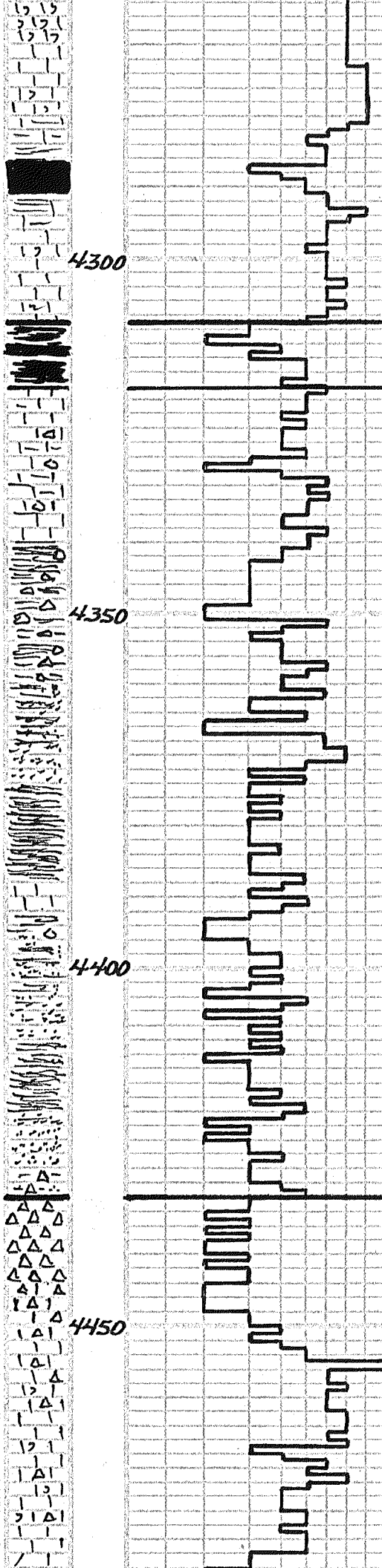
Weak Show  
 Mudcheck @ 4101'  
 M.w. 8.8 chl. 900  
 V.S. 50 LCM 4  
 W.L. 6.8  
 Solids 3.5%

Base of Ks. (City Group (-1268'))

Lenapah Ls.

Pawnee Ls. (-1379')

In. son Pawnee Ls.



4300

4350

4400

4450

**Verdigris Ls.**

**Cherokee Shale (-1463')**

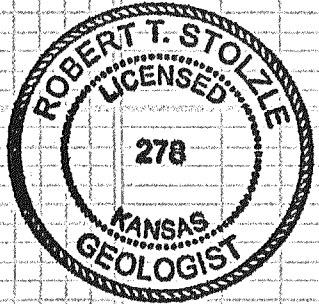
**Mississippian (Osage-Kinderhook?) (-1586')**

Ls: gry, hrd, dns, VEG XIN, rare  
 foss, tr. TAN NQNSFOC  
 Ls: A.A. NQNSFOC  
 Sh: gry-bik, m. sft, m. hrd, dns,  
 hack, tr. carb.  
 Sh: A.A.  
 Ls: crm-tan-gry, hrd, dns, VEG-  
 mxln, rare foss, tr. sh. stnd.  
 NQNSFOC  
 Ls: crm-tan, hrd, dns, VEG-mxln,  
 mic, dec. foss-v. foss.  
 NQNSFOC  
 Sh: gry-bik, m. hrd, dns, hack, carb  
 Ls: crm-tan, tr. gry, hrd, dns,  
 VEG-mxln, mic, dec. foss.  
 NQNSFOC  
 Ls: crm-tan, hrd, dns, VEG-mxln,  
 mic, occ. foss, tr. sh. stnd, occ.  
 pebb. surf. NQNSFOC  
 Sh: dk. gry, m. sft, dns, hackly  
 Ls: A.A. Abun: pebb. surf. NQNSFOC  
 dec. chiky.  
 Sh: dk. gry-mar-rd. brn, m. hrd-  
 m. sft, earthy-hackly  
 Sh: dk. gry-mar-rd. brn, m. hrd-  
 sft, clayey, tr. sndy. Abun: ls pebb  
 Ls: crm-tan, hrd, dns, mxln, mic.  
 rare foss, Abun: sh. stnd. NQNSFOC  
 Cg: sh: dk. gry-mar-rd. brn, sft-  
 m. hrd, dns, earthy-hack.  
 Abun: ls. pebb. wh-crm-tan,  
 hrd, dns, sh. stnd. NQNSFOC  
 Cg: sh: rd. brn, v. sft, clayey, occ  
 sndy, ls. pebbles A.A.  
 Cg: sh: rd. brn-gry, sft-m. hrd,  
 occ. sndy-v. sndy, tr. ss, wh,  
 m. hrd, dns, tr. VEG, mod. w. sft  
 w. rd, w. cmtd. ? NQNSFOC  
 Cg: sh: A.A., tr. ss: A.A. green shnd  
 ls. pebbles NQNSFOC  
 Cg: sh: rd. brn-dk. gry-mar, v. sft  
 clayey-m. hrd, dns, occ. sndy-  
 v. sndy, less ls. pebb.  
 Cg: sh: varie, sft-m. hrd, sndy,  
 ls. pebb. NQNSFOC  
 Ss: wh, m. sft, fni A, fni VEG, mod.  
 sft, sub ind, w. cmtd. NQNSFOC  
 Cg: sh: varie, sft-m. hrd, dns, occ.  
 sndy, less ls, clay-earthy  
 Cg: sh: A.A., tr. ch. pebb. sh. stnd,  
 tr. ss: wh-crm, m. hrd, dns, tr.  
 VEG, mod. w. sft, sub ind, w. cmtd.  
 No vis. QNSFOC  
 ch: wh-ylw, hrd, dns, vit, occ  
 weathered w/ fr-gd. vuq. Q, looks  
 old - 100% SiO<sub>2</sub>. NSFOC  
 pass. Altered Ss.  
 ch: A.A., less trip, rare Q NSFOC  
 Ls: wh-crm, m. hrd, dns, VEG XIN.  
 rare foss, rare pp. Q NSFOC  
 dec. sft, chiky  
 ch: wh-ylw, hrd, dns, vit, NQNSFOC  
 Ls: wh-crm, hrd, dns, VEG XIN.  
 rare foss, tr. chik. NQNSFOC  
 Ls: crm, hrd, dns, VEG XIN, occ.  
 chiky, sft, occ. foss. NQNSFOC  
 tr. ch: wh-ylw, hrd, dns, vit.  
 NQNSFOC  
 Ls: wh-crm, hrd, dns, fni, VEG XIN,  
 occ. sft, chik, foss. NQNSFOC  
 tr. ch: wh-ylw, hrd, dns, vit.  
 NQNSFOC  
 Ls: A.A., tr. fr. vuq. Q NSFOC  
 tr. A.A. el. rare w. NQNSFOC

Mudcheck@4399'  
 M.w. 9.1 lb./gal.  
 Vis. 64 sec./qt.  
 W.L. 6.4 ml/30min.  
 Chl. 900 ppm  
 Solids 5.7%  
 LCM 4#



4500



CFS

Doligry. hrd., dns., VFGXIN, occ. fr.  
 Vug.  $\phi$  NSFOL  
 Doligry. hrd., dns., VFGXIN, fr. foss.  
 w/ Vug. moldic  $\phi$  NSFOL  
 occ. Ls. crm. hrd., dns., foss.,ool.  
 w/ fr. Vug. moldic  $\phi$  NSFOL

D.T.D. 4500'  
 L.T.D. 4506'

Robert Stolze  
 9/15/13



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE #300  
Wichita, KS 67202

ATTN: Bob Stolze

### **Brown #1-30**

### **30-4s-30w Decatur,KS**

Start Date: 2013.09.11 @ 04:00:00

End Date: 2013.09.11 @ 11:10:30

Job Ticket #: 53528                      DST #: 1

Trilobite Testing, Inc  
PO Box 362 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2013.09.16 @ 14:37:33







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**30-4s-30w Decatur,KS**

250 N Water STE #300  
Wichita, KS 67202

**Brown #1-30**

Job Ticket: 53528

**DST#: 1**

ATTN: Bob Stolzle

Test Start: 2013.09.11 @ 04:00:00

## Tool Information

Drill Pipe:	Length: 3593.00 ft	Diameter: 3.80 inches	Volume: 50.40 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 234.00 ft	Diameter: 2.25 inches	Volume: 1.15 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 51.55 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	3845.00 ft			Final 68000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	85.00 ft			
Tool Length:	113.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3818.00	
Shut In Tool	5.00			3823.00	
Hydraulic tool	5.00			3828.00	
Jars	5.00			3833.00	
Safety Joint	3.00			3836.00	
Packer	5.00			3841.00	28.00 Bottom Of Top Packer
Packer	4.00			3845.00	
Stubb	1.00			3846.00	
Recorder	0.00	8653	Outside	3846.00	
Recorder	0.00	8874	Inside	3846.00	
Perforations	15.00			3861.00	
Change Over Sub	1.00			3862.00	
Drill Pipe	62.00			3924.00	
Change Over Sub	1.00			3925.00	
Bullnose	5.00			3930.00	85.00 Bottom Packers & Anchor

**Total Tool Length: 113.00**





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**30-4s-30w Decatur,KS**

250 N Water STE #300  
Wichita, KS 67202

**Brown #1-30**

Job Ticket: 53528

**DST#: 1**

ATTN: Bob Stolzle

Test Start: 2013.09.11 @ 04:00:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

85000 ppm

Viscosity: 63.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1100.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
80.00	MW 20M 80W	0.393

Total Length: 80.00 ft      Total Volume: 0.393 bbl

Num Fluid Samples: 0

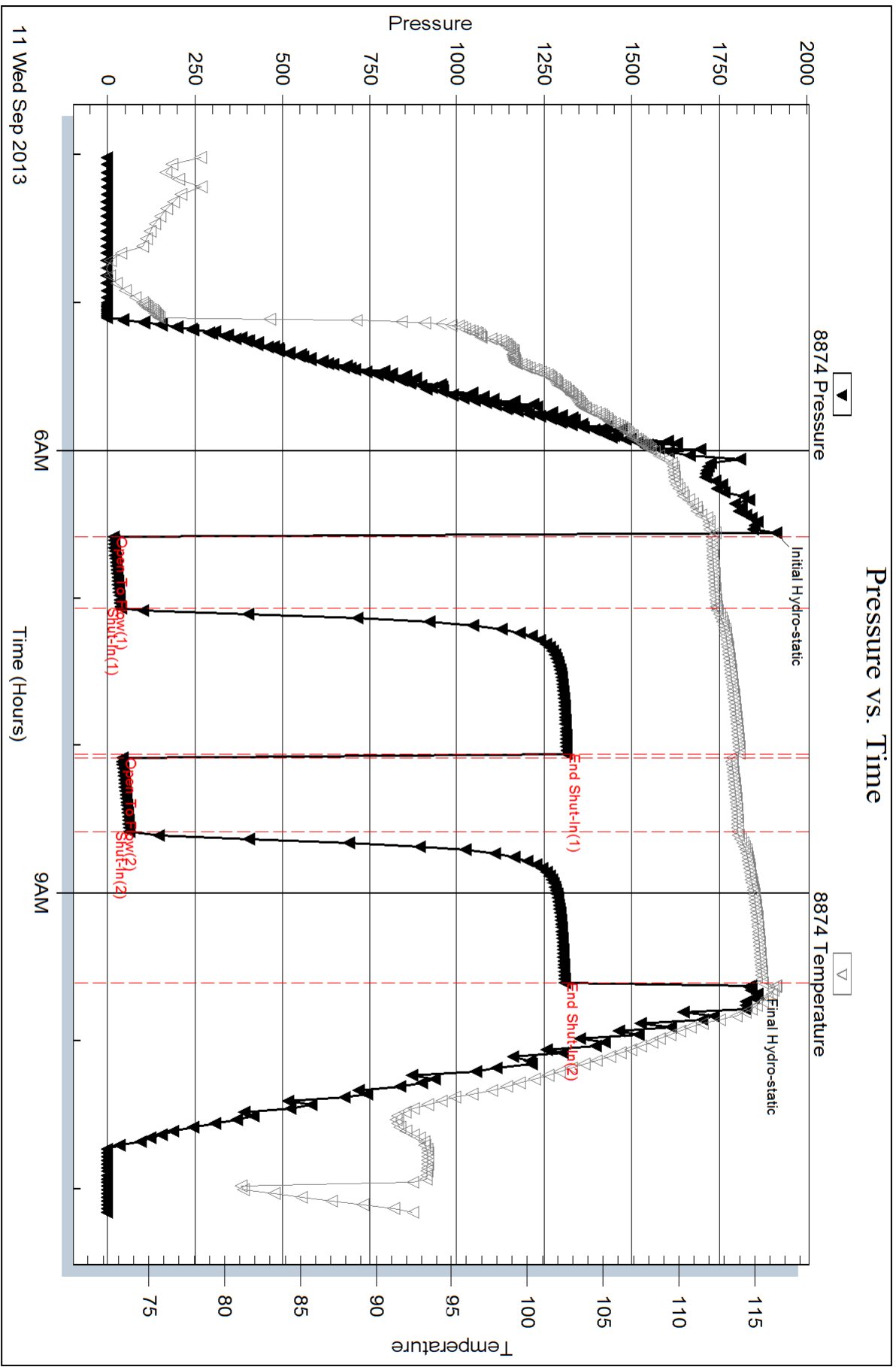
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW .094 @ 72deg. = 85000ppm



Serial #: 8653

Outside Murfin Drilling Co.

Brown #1-30

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 53528

Printed: 2013.09.16 @ 14:37:35



## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE #300  
Wichita, KS 67202

ATTN: Bob Stolze

### **Brown #1-30**

### **30-4s-30w Decatur,KS**

Start Date: 2013.09.11 @ 22:50:00

End Date: 2013.09.12 @ 05:51:30

Job Ticket #: 53529                      DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2013.09.16 @ 14:37:07



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.  
 250 N Water STE #300  
 Wichita, KS 67202  
 ATTN: Bob Stolzle

**30-4s-30w Decatur, KS**  
**Brown #1-30**  
 Job Ticket: 53529 **DST#: 2**  
 Test Start: 2013.09.11 @ 22:50:00

## GENERAL INFORMATION:

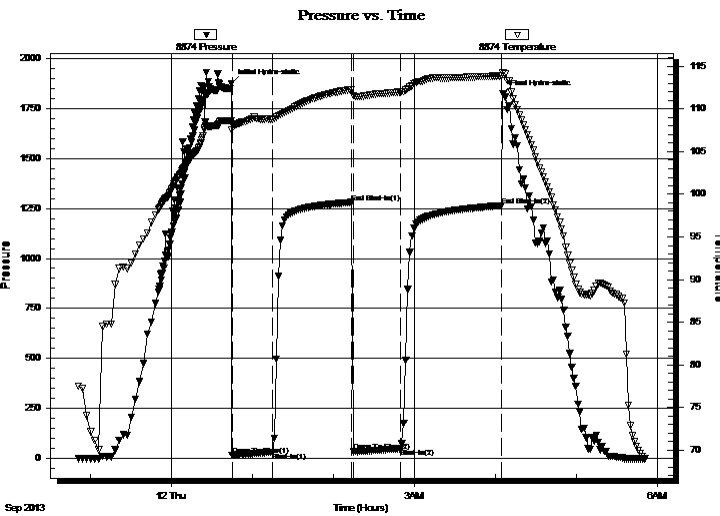
Formation: **LKC "E-G"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 00:44:40  
 Time Test Ended: 05:51:30  
 Interval: **3945.00 ft (KB) To 3980.00 ft (KB) (TVD)**  
 Total Depth: 3980.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66  
 Reference Elevations: 2846.00 ft (KB)  
 2835.00 ft (CF)  
 KB to GR/CF: 11.00 ft

## Serial #: 8874

Inside

Press @ Run Depth: 48.40 psig @ 3946.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.09.11 End Date: 2013.09.12 Last Calib.: 2013.09.12  
 Start Time: 22:51:00 End Time: 05:51:30 Time On Btm: 2013.09.12 @ 00:44:30  
 Time Off Btm: 2013.09.12 @ 04:05:30

TEST COMMENT: 30 - IF- 1/8" Blow built to 3/4"  
 60 - IS- No Return  
 30 - FF- Weak surface blow started 8 min. Built to 1/2"  
 60 - FS- No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1876.41	108.66	Initial Hydro-static
1	14.88	107.56	Open To Flow (1)
30	31.83	108.80	Shut-In(1)
89	1280.01	112.32	End Shut-In(1)
90	33.62	111.59	Open To Flow (2)
125	48.40	112.00	Shut-In(2)
200	1263.18	113.89	End Shut-In(2)
201	1821.90	114.30	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
20.00	WM 15W 85M	0.10

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**30-4s-30w Decatur, KS**

250 N Water STE #300  
Wichita, KS 67202

**Brown #1-30**

Job Ticket: 53529

**DST#: 2**

ATTN: Bob Stolzle

Test Start: 2013.09.11 @ 22:50:00

## Tool Information

Drill Pipe:	Length: 3716.00 ft	Diameter: 3.80 inches	Volume: 52.13 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 234.00 ft	Diameter: 2.25 inches	Volume: 1.15 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 53.28 bbl</u>	Tool Chased ft
Drill Pipe Above KB:	33.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	3945.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	35.00 ft			
Tool Length:	63.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3918.00	
Shut In Tool	5.00			3923.00	
Hydraulic tool	5.00			3928.00	
Jars	5.00			3933.00	
Safety Joint	3.00			3936.00	
Packer	5.00			3941.00	28.00 Bottom Of Top Packer
Packer	4.00			3945.00	
Stubb	1.00			3946.00	
Recorder	0.00	8653	Outside	3946.00	
Recorder	0.00	8874	Inside	3946.00	
Perforations	29.00			3975.00	
Bullnose	5.00			3980.00	35.00 Bottom Packers & Anchor

**Total Tool Length: 63.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**30-4s-30w Decatur,KS**

250 N Water STE #300  
Wichita, KS 67202

**Brown #1-30**

Job Ticket: 53529

**DST#: 2**

ATTN: Bob Stolzle

Test Start: 2013.09.11 @ 22:50:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 69.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 1100.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
20.00	WM 15W 85M	0.098

Total Length: 20.00 ft      Total Volume: 0.098 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

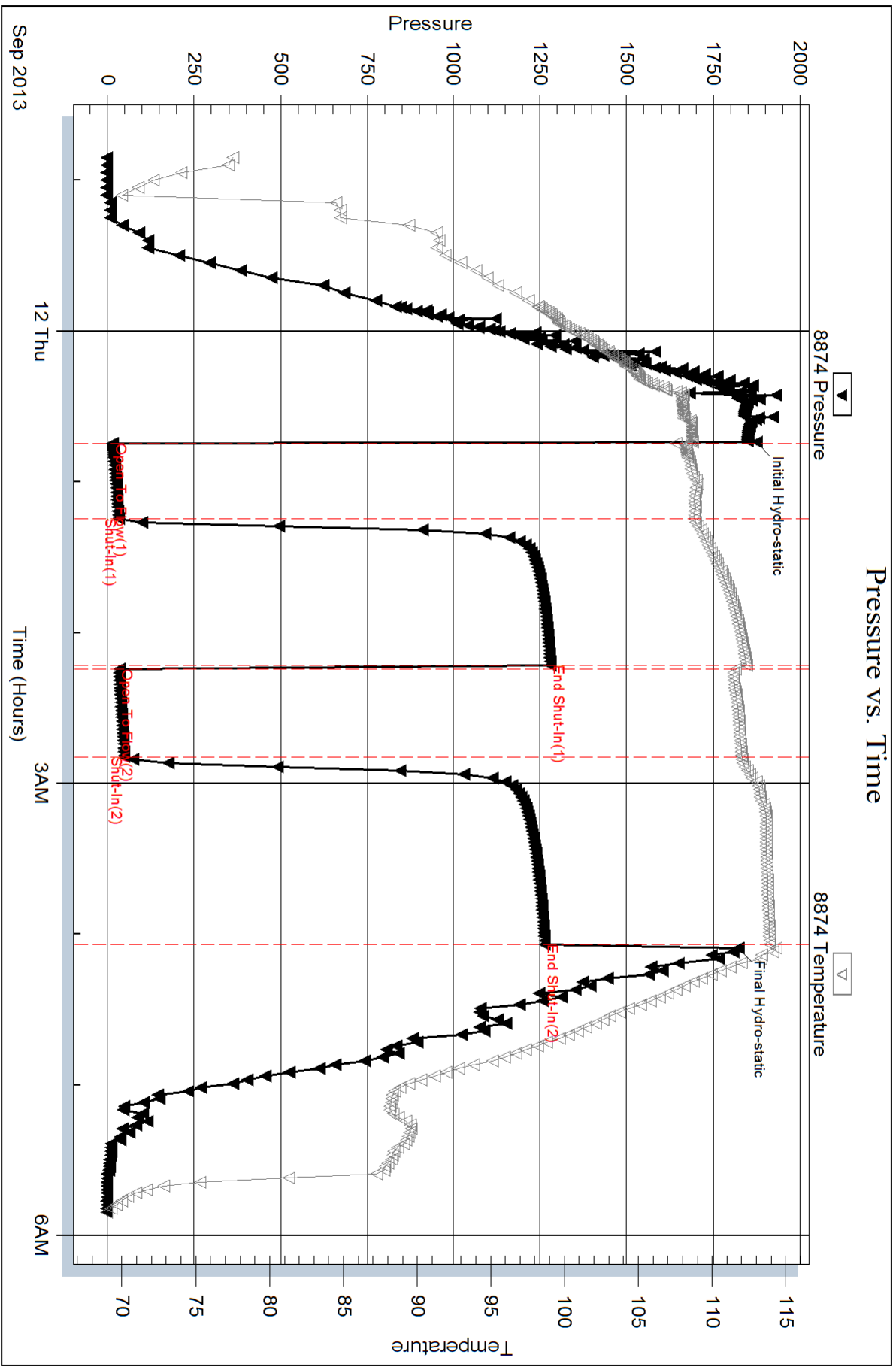
Serial #:

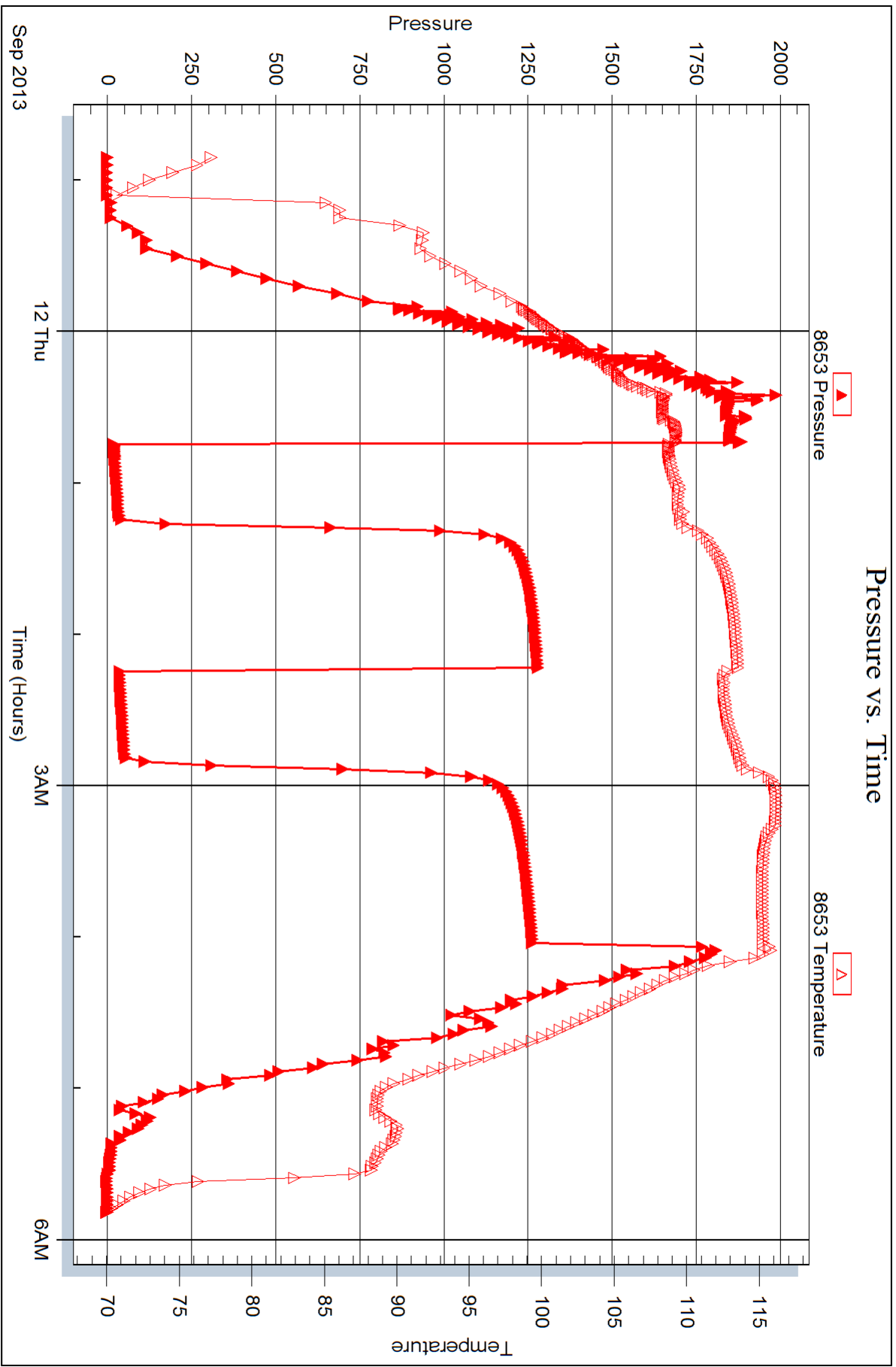
Laboratory Name:

Laboratory Location:

Recovery Comments:









## DRILL STEM TEST REPORT

Prepared For: **Murfin Drilling Co.**

250 N Water STE #300  
Wichita, KS 67202

ATTN: Bob Stolze

### **Brown #1-30**

### **30-4s-30w Decatur,KS**

Start Date: 2013.09.12 @ 21:42:00

End Date: 2013.09.13 @ 04:44:00

Job Ticket #: 53530                      DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2013.09.16 @ 14:36:20

Murfin Drilling Co. 30-4s-30w Decatur,KS Brown #1-30 DST # 3 LKC "J-K" 2013.09.12



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Murfin Drilling Co.  
 250 N Water STE #300  
 Wichita, KS 67202  
 ATTN: Bob Stolzle

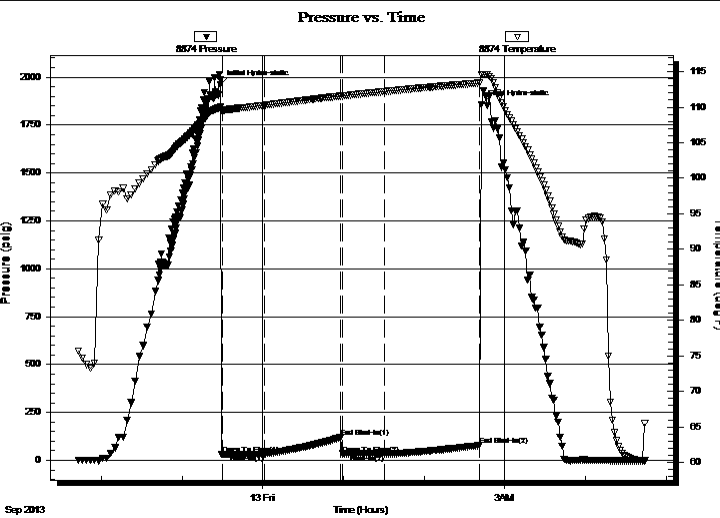
**30-4s-30w Decatur, KS**  
**Brown #1-30**  
 Job Ticket: 53530 **DST#: 3**  
 Test Start: 2013.09.12 @ 21:42:00

## GENERAL INFORMATION:

Formation: **LKC "J-K"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 23:29:40  
 Time Test Ended: 04:44:00  
 Interval: **4032.00 ft (KB) To 4100.00 ft (KB) (TVD)**  
 Total Depth: 4100.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Kevin Mack  
 Unit No: 66  
 Reference Elevations: 2846.00 ft (KB)  
 2835.00 ft (CF)  
 KB to GR/CF: 11.00 ft

**Serial #: 8874 Inside**  
 Press @ Run Depth: 34.14 psig @ 4033.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2013.09.12 End Date: 2013.09.13 Last Calib.: 2013.09.13  
 Start Time: 21:43:00 End Time: 04:44:00 Time On Btm: 2013.09.12 @ 23:28:40  
 Time Off Btm: 2013.09.13 @ 02:42:30

**TEST COMMENT:** 30 - IF- Surface Blow built to 1/4" then died back to surface  
 60 - IS- No Return  
 30 - FF- No Blow  
 60 - FS- No Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1961.87	110.01	Initial Hydro-static
1	30.65	109.54	Open To Flow (1)
33	30.70	110.26	Shut-In(1)
89	118.21	111.56	End Shut-In(1)
91	34.31	111.53	Open To Flow (2)
122	34.14	112.19	Shut-In(2)
193	78.18	113.40	End Shut-In(2)
194	1857.90	114.55	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
30.00	Mud 100M	0.15

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Murfin Drilling Co.

**30-4s-30w Decatur, KS**

250 N Water STE #300  
Wichita, KS 67202

**Brown #1-30**

Job Ticket: 53530

**DST#: 3**

ATTN: Bob Stolzle

Test Start: 2013.09.12 @ 21:42:00

### Tool Information

Drill Pipe:	Length: 3780.00 ft	Diameter: 3.80 inches	Volume: 53.02 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 234.00 ft	Diameter: 2.25 inches	Volume: 1.15 bbl	Weight to Pull Loose: 73000.00 lb
			<u>Total Volume: 54.17 bbl</u>	Tool Chased 5.00 ft
Drill Pipe Above KB:	10.00 ft			String Weight: Initial 65000.00 lb
Depth to Top Packer:	4032.00 ft			Final 65000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	68.00 ft			
Tool Length:	96.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments: Chased tool 5' to bottom... Bled off initial surge after chasing tool to bottom.

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4005.00	
Shut In Tool	5.00			4010.00	
Hydraulic tool	5.00			4015.00	
Jars	5.00			4020.00	
Safety Joint	3.00			4023.00	
Packer	5.00			4028.00	28.00 Bottom Of Top Packer
Packer	4.00			4032.00	
Stubb	1.00			4033.00	
Recorder	0.00	8653	Outside	4033.00	
Recorder	0.00	8874	Inside	4033.00	
Perforations	1.00			4034.00	
Change Over Sub	1.00			4035.00	
Drill Pipe	61.00			4096.00	
Change Over Sub	1.00			4097.00	
Bullnose	3.00			4100.00	68.00 Bottom Packers & Anchor

**Total Tool Length: 96.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Murfin Drilling Co.

**30-4s-30w Decatur,KS**

250 N Water STE #300  
Wichita, KS 67202

**Brown #1-30**

Job Ticket: 53530

**DST#: 3**

ATTN: Bob Stolzle

Test Start: 2013.09.12 @ 21:42:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 52.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 900.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	Mud 100M	0.148

Total Length: 30.00 ft      Total Volume: 0.148 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

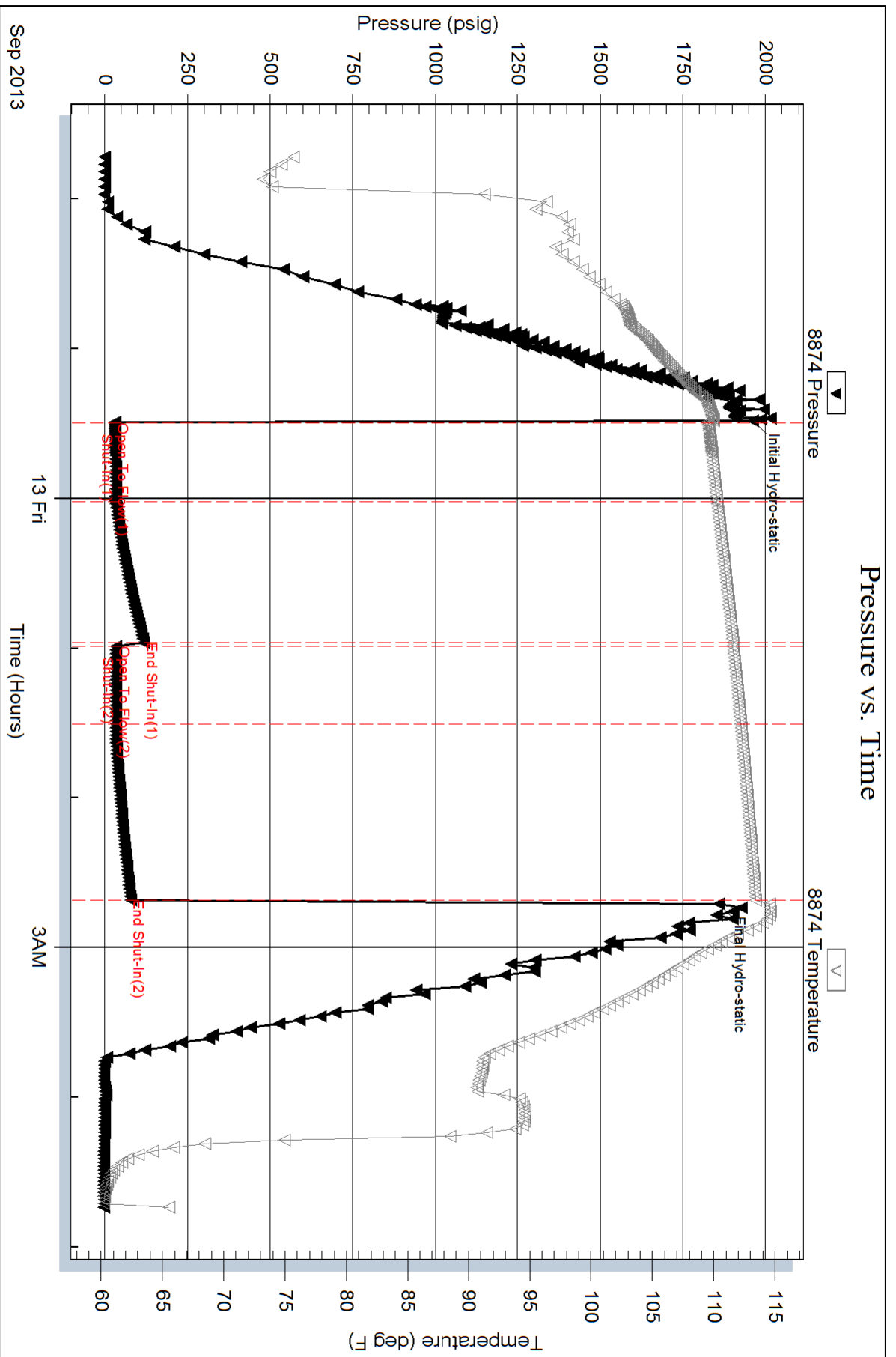
Serial #: 8874

Inside

Murfin Drilling Co.

Brown n#1-30

DST Test Number: 3



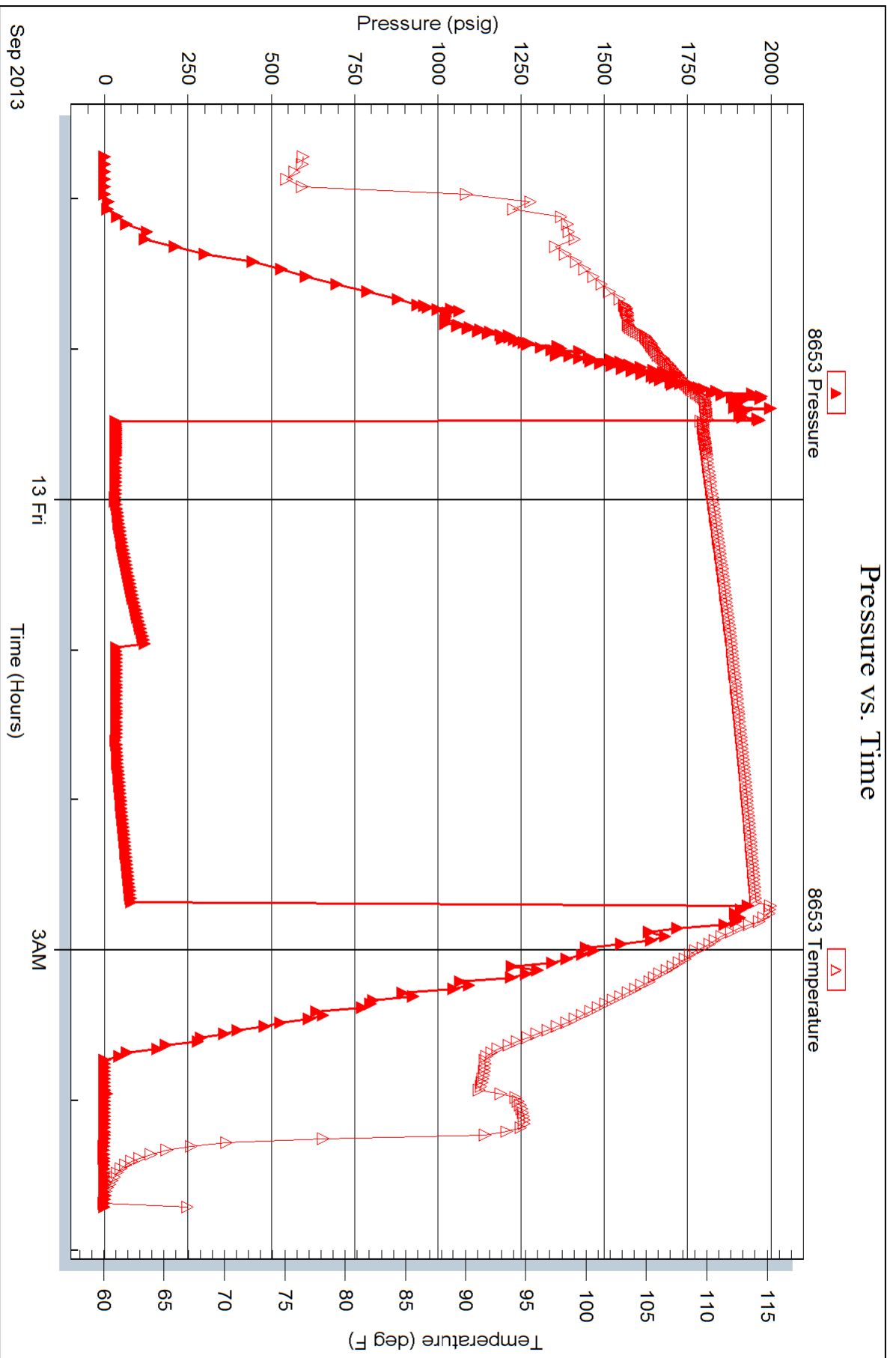


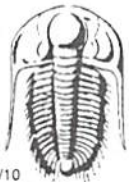
Serial #: 8653

Outside Murfin Drilling Co.

Brown #1-30

DST Test Number: 3





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53528

Well Name & No. Brown # 1-300 Test No. 1 Date 9-11-13  
 Company Murfin Drilling Co. Elevation 2846 KB 2835 GL  
 Address 250 N Water STE #300 Wichita, KS 67202  
 Co. Rep / Geo. Bob Stolze Rig Murfin #2  
 Location: Sec. NW30 Twp. 4S Rge. 30W Co. Decatur State KS

Interval Tested 3845-3930 Zone Tested Toronto-LKC "A-B"  
 Anchor Length 85' Drill Pipe Run 3593 Mud Wt. 88  
 Top Packer Depth 3841 Drill Collars Run 234' Vis 63  
 Bottom Packer Depth 3845 Wt. Pipe Run 0 WL 60  
 Total Depth 3930 Chlorides 1,100 ppm System LCM 3#

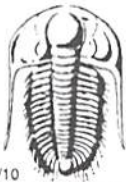
Blow Description IF - 1/4" Blow built to 2"  
ISI - NO Return  
AF - Weak Surface Blow started at 15 min. Built to 1/2"  
FSI - NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>80</u>	<u>LM</u>	<u>80</u>		<u>20</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 80 BHT 116 Gravity - API RW 094 @ 72 ° F Chlorides 85,000 ppm

(A) Initial Hydrostatic <u>1911</u>	<input checked="" type="checkbox"/> Test <u>1150</u>	T-On Location <u>3:15 AM</u>
(B) First Initial Flow <u>17</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>4:00 AM</u>
(C) First Final Flow <u>39</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>6:35 AM</u>
(D) Initial Shut-In <u>1313</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>9:35 AM</u>
(E) Second Initial Flow <u>42</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>11:00 AM</u>
(F) Second Final Flow <u>62</u>	<input checked="" type="checkbox"/> Mileage <u>50 RT</u> 77.50	Comments
(G) Final Shut-In <u>1307</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1841</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Ruined Packer
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Copies
Final Flow	<input type="checkbox"/> Extra Recorder	Sub Total <u>0</u>
Final Shut-In	<input type="checkbox"/> Day Standby	Total <u>1552.50</u>
	<input type="checkbox"/> Accessibility	MP/DST Disc't
	Sub Total <u>1552.50</u>	

Approved By \_\_\_\_\_ Our Representative \_\_\_\_\_  
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53529

Well Name & No. Brown # 1-30 Test No. 2 Date 9-11-13  
 Company Murrin Drilling Co. Elevation 2846 KB 2835 GL  
 Address 250 N Water STE # 3000 Wichita, KS 67202  
 Co. Rep / Geo. Bob Stolzie Rig Murrin #2  
 Location: Sec. NW30 Twp. 4S Rge. 30W Co. Decatur State KS

Interval Tested 3945-3988 Zone Tested LKC "E-F-G"  
 Anchor Length 35' Drill Pipe Run 3716 Mud Wt. 9.1  
 Top Packer Depth 3941 Drill Collars Run 234 Vis 69  
 Bottom Packer Depth 3945 Wt. Pipe Run 8 WL 6.05  
 Total Depth 3988 Chlorides 1,100 ppm System LCM 4#

Blow Description IF - 1/8" Blow built to 3/4"  
ISI - NO Return  
FF - Weak surface Blow started at 8 min. Built to 1/2"  
FSI - NO Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>20</u>	<u>WM</u>		<u>15</u>	<u>85</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

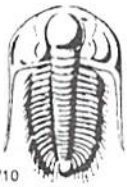
Rec Total 20 BHT 114 Gravity - API RW - @ - ° F Chlorides - ppm

(A) Initial Hydrostatic <u>1876</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>9:30 PM</u>
(B) First Initial Flow <u>14</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>10:50 PM</u>
(C) First Final Flow <u>31</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>12:45 AM</u>
(D) Initial Shut-In <u>1280</u>	<input checked="" type="checkbox"/> Circ Sub <u>NIC</u>	T-Pulled <u>3:45 AM</u>
(E) Second Initial Flow <u>33</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>6:10 AM</u>
(F) Second Final Flow <u>48</u>	<input checked="" type="checkbox"/> Mileage <u>50 RT</u> 77.50	Comments
(G) Final Shut-In <u>1263</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1821</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer

Initial Open 30  Shale Packer  
 Initial Shut-In 60  Shale Packer  
 Final Flow 30  Extra Packer  
 Final Shut-In 60  Extra Recorder  
 Extra Recorder  
 Day Standby  
 Accessibility  
 Sub Total 1552.50

Approved By \_\_\_\_\_ Our Representative

Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss sustained or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 53530

Well Name & No. Brown #1-308 Test No. 3 Date 9-12-13  
 Company Muffin Drilling Co Elevation 2846 KB 2835 GL  
 Address 2508 N Water STE # 3008 Wichita, KS 67202  
 Co. Rep / Geo. Bob Stolzle Rig Muffin #2  
 Location: Sec. NW308 Twp. 4S Rge. 30W Co. Decatur State KS

Interval Tested 4032-4100 Zone Tested LKC "J-K"  
 Anchor Length 68' Drill Pipe Run 3700' Mud Wt. 8.8  
 Top Packer Depth 4028 Drill Collars Run 234 Vis 52  
 Bottom Packer Depth 4032 Wt. Pipe Run 0 WL 6.8  
 Total Depth 4100 Chlorides 900 ppm System LCM 4#

Blow Description IF - Surface Blow built to 1/4" then died back to surface.  
IS - No Return  
PF - No Blow  
FSI - No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 30 BHT 113 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic <u>1961</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>9:00 PM</u>
(B) First Initial Flow <u>30</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>9:42 PM</u>
(C) First Final Flow <u>30</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>11:30 PM</u>
(D) Initial Shut-In <u>118</u>	<input checked="" type="checkbox"/> Circ Sub <u>NIC</u>	T-Pulled <u>2:30 AM</u>
(E) Second Initial Flow <u>34</u>	<input type="checkbox"/> Hourly Standby _____	T-Out <u>4:55 AM</u>
(F) Second Final Flow <u>34</u>	<input checked="" type="checkbox"/> Mileage <u>50RT</u> 77.50	Comments <u>Chased to 105' to Bottom. Bled off in 1/2" surge.</u>
(G) Final Shut-In <u>78</u>	<input type="checkbox"/> Sampler _____	<input type="checkbox"/> Ruined Shale Packer _____
(H) Final Hydrostatic <u>1857</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Packer _____
Initial Open <u>30</u>	<input type="checkbox"/> Shale Packer _____	<input type="checkbox"/> Extra Copies _____
Initial Shut-In <u>60</u>	<input type="checkbox"/> Extra Packer _____	Sub Total <u>0</u>
Final Flow <u>30</u>	<input type="checkbox"/> Extra Recorder _____	Total <u>1652.50</u>
Final Shut-In <u>60</u>	<input type="checkbox"/> Day Standby _____	MP/DST Disc't _____
	<input type="checkbox"/> Accessibility _____	
	Sub Total <u>1652.50</u>	

Approved By \_\_\_\_\_ Our Representative [Signature]  
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



PO Box 93999  
Southlake, TX 76092

Voice: (817) 546-7282  
Fax: (817) 246-3361

*Acct Prod-LH*  
**INVOICE**

Invoice Number: 138575

Invoice Date: Sep 8, 2013

Page: 1

**Bill To:**  
Murfin Drlg. Co., Inc.  
250 N. Water  
STE #300  
Wichita, KS 67202

Now Includes:



Customer ID	Field Ticket #	Payment Terms	
Murfin	61265	Net 30 Days	
Job Location	Camp Location	Service Date	Due Date
KS1-01	Oakley	Sep 8, 2013	10/8/13

Quantity	Item	Description	Unit Price	Amount
190.00	CEMENT MATERIALS	Brown #1-30		
		Class A Common	17.90	3,401.00
9.00	CEMENT MATERIALS	Chloride	64.00	576.00
198.93	CEMENT SERVICE	Cubic Feet	2.48	493.35
413.91	CEMENT SERVICE	Ton Mileage	2.60	1,076.17
1.00	CEMENT SERVICE	Surface	1,512.25	1,512.25
45.00	CEMENT SERVICE	Pump Truck Mileage	7.70	346.50
1.00	CEMENT SERVICE	Manifold Rental	275.00	275.00
45.00	CEMENT SERVICE	Light Vehicle Mileage	4.40	198.00
1.00	CEMENT SUPERVISOR	Alan Ryan		
1.00	EQUIPMENT OPERATOR	Wayne McGhghy		
1.00	OPERATOR ASSISTANT	Chris Helpingstine		

*Q15M*

ALL PRICES ARE NET, PAYABLE 30 DAYS FOLLOWING DATE OF INVOICE. 1 1/2% CHARGED THEREAFTER. IF ACCOUNT IS CURRENT, TAKE DISCOUNT OF

\$ 2,757.39

ONLY IF PAID ON OR BEFORE

Oct 3, 2013

Subtotal	7,878.27
Sales Tax	284.36
Total Invoice Amount	8,162.63
Payment/Credit Applied	
<b>TOTAL</b>	<b>8,162.63</b>





Acct  
LH

# INVOICE

PO Box 93999  
Southlake, TX 76092

Invoice Number: 1387 09  
Invoice Date: Sep 15, 2013  
Page: 1

Voice: (817) 546-7282  
Fax: (817) 246-3361

<b>Bill To:</b>
Murfin Drg. Co., Inc. 250 N. Water STE #300 Wichita, KS 67202

Now Includes:



Customer ID	Field Ticket #	Payment Terms	
Murfin	61128	Net 30 Days	
Job Location	Camp Location	Service Date	Due Date
KS1-03	Oakley	Sep 15, 2013	10/15/13

Quantity	Item	Description	Unit Price	Amount
		Brown #1-30		
120.00	CEMENT MATERIALS	Class A Common	17.90	2,148.00
80.00	CEMENT MATERIALS	Pozmix	9.35	748.00
7.00	CEMENT MATERIALS	Gel	23.40	163.80
50.00	CEMENT MATERIALS	Flo Seal	2.97	148.50
215.00	CEMENT SERVICE	Cubic Feet	2.48	533.20
404.10	CEMENT SERVICE	Ton Mileage	2.60	1,050.66
1.00	CEMENT SERVICE	Plug to Abandon	2,483.59	2,483.59
45.00	CEMENT SERVICE	Pump Truck Mileage	7.70	346.50
45.00	CEMENT SERVICE	Light Vehicle Mileage	4.40	198.00
1.00	EQUIPMENT SALES	8-5/8 Wooden Plug	107.64	107.64
1.00	EQUIPMENT OPERATOR	Paul Beaver		
1.00	EQUIPMENT OPERATOR	Tyler Flipse		
1.00	OPERATOR ASSISTANT	Brandon Wilkinson		

Subtotal	7,927.89
Sales Tax	566.84
Total Invoice Amount	8,494.73
Payment/Credit Applied	
<b>TOTAL</b>	<b>8,494.73</b>

ALL PRICES ARE NET, PAYABLE 30 DAYS FOLLOWING DATE OF INVOICE. 1 1/2% CHARGED THEREAFTER. IF ACCOUNT IS CURRENT, TAKE DISCOUNT OF

\$ 2,774.76

ONLY IF PAID ON OR BEFORE

Oct 10, 2013

